

VEEDER - ROOT SERIAL INTERFACE MANUAL

for

**TLS4 Series
TLS-450 Series
TLS-450Plus Series**

**Environmental & Inventory
Management System**

Manual Number 577013-950
Revision T



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1.0 INTRODUCTION

The serial RS-232 interface is used to connect the system to a controlling computer, a display terminal (CRT) or a printing terminal. A modem can be connected directly to the system to provide telephone line access.

NOTE: The software versions for these systems vary depending on when they were purchased and if software upgrades have been installed. The version in which each function code first appeared is indicated in a box next to its description in Section 7.

2.0 HARDWARE CONNECTIONS

The RS-232 interface is a module accessed via a 9-pin D-connector located on the bottom-left of the console.

TLS-450

Table 2.0 – TLS-450 Console Slots and Supported Comm Device Types

Comm Device Type	Communication Type	Slot 1		Slot 2		Slot 3		Slot 4		Slot 5	
		P1	P2	P1	P2	P1	P2	P1	P2	P1	P2
RS-232	Serial	X	X	X	X		X	X			
RS-485	Serial	X	X	X	X		X	X			
Internal Modem	Serial	X	X	X	X		X				

Notes:

- P1 is port 1, P2 is port 2.
- Slot 1 (Ports 1 and 2), Slot 2 (Ports 1 and 2), and Slot 3 (Port 2) support Comm Device Types that need Full Handshaking for serial communications.
- Slot 3 Port 1 is not available.
- Slot 4 Port 1 does not support Comm Device Types that need Full Handshaking for serial communications. Slot 4 Port 2 is only available for Ethernet devices.

TLS-450Plus

Table 3.0 – TLS-450Plus Console Slots and Supported Comm Device Types

Comm Device Type	Communication Type	Slot 1		Slot 2		Slot 3	
		P1	P2	P1	P2	P1	P2
RS-232 Single Port	Serial	-	X	-	X	-	X

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<u>Comm Device Type</u>	<u>Communication Type</u>	<u>Slot 1</u>		<u>Slot 2</u>		<u>Slot 3</u>	
RS-232 Dual Port	Serial						
RS-485 Single Port	Serial	-	X	-	X	-	X
RS-485 Dual Port	Serial						
RS-232/RS-485 Dual Port	Serial						
Internal Modem	Serial	-	X	-	X	-	X
CDIM	DIM	X	-	X	-	-	-
IFSF	DIM	X	-	X	-	X	-

Notes:

- Slot 1 (Ports 1 and 2), Slot 2 (Ports 1 and 2), and Slot 3 (Port 2) support Comm Device Types that need Full Handshaking for serial communications.
- Slot 3 Port 1 is not available serial communication

2.1 RS-232

The RS-232 D-connector is a panel mount, 9-pin female type, wired in a Data Terminal Equipment (DTE) configuration. A modem (DCE) may be connected directly to the interface using a straight-through cable. A CRT or printing terminal (DTE) may be connected to the interface by using a null cable which reverses the sense of the transmit/receive signals. The system does not require or activate any handshake signals.

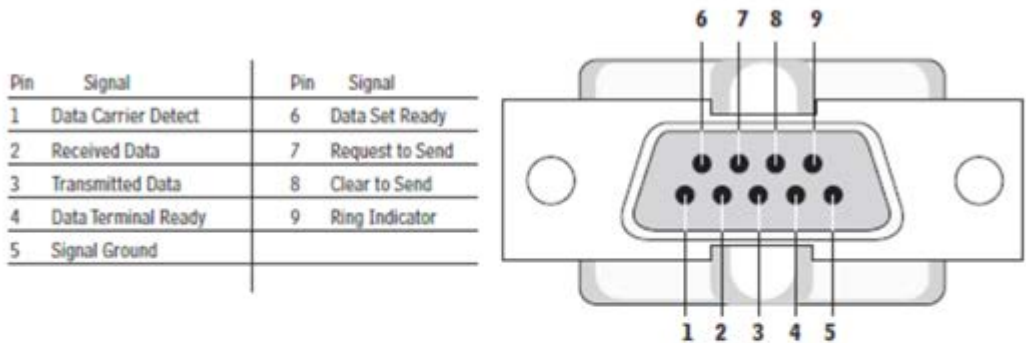
TLS4

2 optically isolated serial ports standard, labeled SERIAL 1 supporting full handshaking, and SERIAL 2.

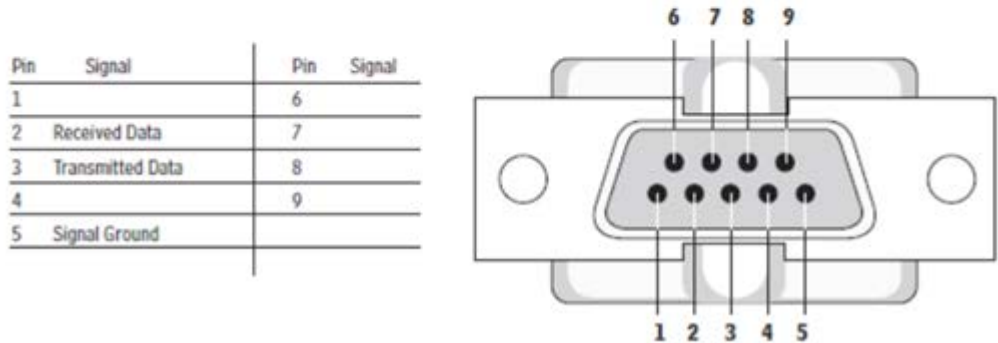
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RS-232 signals are wired to the female D-connectors as follows:

SERIAL 1



SERIAL 2



2.2 EIA RS-232 INTERFACE

The EIA RS-232 interface is designed to connect to modems for transmission of data over telephone lines. It can be used for direct local attachment of terminals if the cable run is no more than 50 feet. In practice, cable runs longer than 50 feet have performed satisfactorily; however, since the RS-232 specification is designed for operation up to 50 feet, direct connect cable runs greater than 50 feet are not warranted for proper operation.

2.3 INTERNAL MODEM

The optional internal modem operates at up to 115200 Baud. The modem module contains two RJ11 jacks for phone line connections, and is accessible at the bottom left of the console.

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3.0 CHARACTER FORMAT AND BAUD RATE

The system receives and sends characters via the RS-232 interface in an ASCII format that is configured via the system front panel keypads. Selections consist of: 1 start bit; 7 or 8 data bits; odd, even or no parity; and 1 or 2 stop bits. Communications rate is selectable: 300, 1200, 2400, 4800, 9600, 19200, 38400, 57600 or 115200 baud. The system operates in a full duplex mode. Characters are not echoed when received, and transmitted characters must not be echoed back to the system. Transmit and receive can occur simultaneously, and commands can be stacked in the system buffer (up to 128 characters).

4.0 SWITCH SETTINGS

4.1 DIP SWITCH

Not available in the TLS-4xx

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5.0 COMMAND MESSAGE FORMAT

All command and response messages are configured in a format which includes a surrounding envelope of control characters and a function code and data field message. The control characters are described in this section while the function codes and data field messages are described in subsequent sections.

The system responds to a command message that has the following configuration:

SOH	Security Code	Function Code	Data Field
-----	---------------	---------------	------------

SOH is a control-A character (ASCII 01).

The RS-232 security code is an optional six-digit code used to limit external serial access to the system for security purposes. It can be set to any unique set of characters using either the front panel switches or the external communication interface setup commands. The system will not respond to a command without the proper security code, if the DIP switch is set to enable RS-232 security.

The function code is a six character command code which the system interprets to determine the type of action to take and response to return. System function codes and response messages are defined in subsequent sections.

The data field is optional and contains information necessary to perform the selected function (such as setup information).

If the system receives a command message string containing a function code that it does not recognize, it will respond with a <SOH>9999FF1B<ETX>. The "9999" indicates that the system has not understood the command, while the "FF1B" is the appropriate checksum for the preceding <SOH>9999 string.

There is one command which does not follow the above format. The escape command is performed by sending an ESC (escape character, ASCII 27), to the system. It is a means to halt a response message at any time before its completion.

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6.0 RESPONSE MESSAGE FORMAT

There are two types of response message formats: computer (or packed data format) and display format. Each format uses a different surrounding envelope of control characters.

6.1 COMPUTER FORMAT

The computer format is a stream of numbers without any formatting characters; i.e., carriage return, line feed, spaces, labels, etc. The message format is as follows:

SOH	Function Code	Data Field	&&	Checksum	ETX
-----	---------------	------------	----	----------	-----

The function code is identical to the received command message function code.

The data field contains the response message which is described in subsequent sections.

The "&&" is a fixed tag character which indicates that the checksum immediately follows.

The Checksum is a series of four ASCII-hexadecimal characters which provide a check on the integrity of all the characters preceding it, including the control characters. The four characters represent a 16-bit binary count which is the 2's complemented sum of the 8-bit binary representation of the message characters after the parity bit (if enabled) has been cleared. Overflows are ignored. The data integrity check can be done by converting the four checksum characters to the 16-bit binary number and adding the 8-bit binary representation of the message characters to it. The binary result should be zero.

ETX is programmable if enabled via the S53100f command. If it is disabled, the ETX is a fixed Control-C character (ASCII 03). Caution should be taken before changing the ETX character, because it affects the transmitted messages on ALL communications ports of the system, and additional host devices may be connected to other ports which expect the ETX to be a Control-C.

6.2 DISPLAY FORMAT

The display format is intended for display on a CRT or printer. It includes all the necessary formatting characters such as carriage returns, line feeds, nulls, spaces, labels, etc. The message format is as follows:

SOH	Function Code	Data Field	ETX
-----	---------------	------------	-----

See subsequent sections for a description of the data field response messages.

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6.3 ASCII FLOATING POINT FORMAT

6.3.1 NOTES

6.3.1.1 HHHHHHHH (H = 0-9 or A-F) indicates the 8 "nibble" ASCII-Hexadecimal representation of a 4-Byte Floating Point number. Many data parameters are transmitted in this format.

6.3.1.2 The 32-bits are arranged as follows:

Byte	1		2		3		4	
	S EEE	EEEE	E MMM	MMMM	MMMM	MMMM	MMMM	MMMM
Nibble	1	2	3	4	5	6	7	8

S is the sign bit (0 if positive, 1 if negative).

EEE EEEE E represents the 2's exponent. It is a 2's complement value biased by 127 (7F Hex). The exponent can be determined by subtracting 127 from the value of the E field and raising 2 to the resulting power.

MMM MMMM MMMM MMMM MMMM MMMM represents the 23-bit mantissa. Since the mantissa describes a value which is greater than or equal to 1.0 and less than 2.0, the 24th bit is always assumed to be equal to 1 and is not transmitted or stored. The value of the mantissa can be determined by dividing the value of the M field by 8,388,608 (2^{23}) and adding 1.0.

6.3.1.3 The complete value of the floating point number can then be determined by multiplying the exponent by the mantissa and attaching the appropriate positive or negative sign.

6.3.1.4 By convention, 00 00 00 00 represents the value 0.0 even though it actually converts to 5.8775×10^{-39} .

6.3.1.5 The eight "nibbles" are transmitted in sequence from 1 through 8 as shown in section 6.3.1.2.

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6.3.2 EXAMPLES

6.3.2.1 3F800000 hex = 0011 1111 1000 0000 0000 0000 0000 0000 bin

S = 0 = + (positive)

E = 011 1111 1 bin = 7F hex = 127 dec

M = 000 0000 0000 0000 0000 0000 bin = 0 hex = 0 dec

Exponent = $2(127-127) = 1.0$

Mantissa = $1.0 + (0/8,388,608) = 1.0$

Decimal Value = $+1.0 \times 1.0 = 1.0$

6.3.2.2 B8D1B717 hex = 1011 1000 1101 0001 1011 0111 0001 0111 bin

S = 1 = - (negative)

E = 011 1000 1 bin = 71 hex = 113 dec

M = 101 0001 1011 0111 0001 0111 bin = 51 B7 17 hex = 5,355,287 dec

Exponent = $2(113-127) = 0.0000610352$

Mantissa = $1.0 + (5,355,287/8,388,608) = 1.63840$

Decimal Value = $-0.0000610352 \times 1.63840 = -0.0001$

6.3.2.3 C2C7FAE1 hex = 1100 0010 1100 0111 1111 1010 1110 0001 bin

S = 1 = - (negative)

E = 100 0010 1 bin = 85 hex = 133 dec

M = 100 0111 1111 1010 1110 0001 bin = 47 FA E1 hex = 4,717,281 dec

Exponent = $2(133-127) = 64$

Mantissa = $1.0 + (4,717,281/8,388,608) = 1.56234$

Decimal Value = $-64 \times 1.56234 = -99.99$

6.3.2.4 461C4000 hex = 0100 0110 0001 1100 0100 0000 0000 0000 bin

S = 0 = + (positive)

E = 100 0110 0 bin = 8C hex = 140 dec

M = 001 1100 0100 0000 0000 0000 bin = 1C 40 00 hex = 1,851,392 dec

Exponent = $2(140-127) = 8,192$

Mantissa = $1.0 + (1,851,392/8,388,608) = 1.22070$

Decimal Value = $+8,192 \times 1.22070 = 10,000$

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7.0 FUNCTION CODES AND RESPONSE MESSAGES

All response messages are sent in a format described in previous sections. The function codes and data fields of these message formats are described in this section. The data field response messages are divided into the following major groupings:

Function Codes	Response Types
001 to 094	Control Functions
101 to 122	Operational Reports (System)
201 to 2E4	Operational Reports (In-tank)
301 to 347	Operational Reports (Sensor)
373 to 385	Operational Reports (Line Leak)
401 to 408	Operational Reports (I/O Device)
501 to 572	Setup Functions & Reports (System)
521 to 531	Setup Functions & Reports (Communications)
536 to 5BF	Setup Functions & Reports (Warning, Alarm, & Auto-print)
5G1 to 5K7	Setup Functions & Reports (Address Book)
5P1 to 5Q1	Setup Functions & Reports (Auto Events)
601 to 6SU	Setup Functions & Reports (In-tank)
701 to 749	Setup Functions & Reports (Sensor)
P01 to P07	Setup Functions & Reports (Pump Sensor)
75A to 78G	Setup Functions & Reports (Pressure Line Leak)
51N to 7H5	Setup Functions & Reports (Reconciliation)
7C7 to 7C8	Setup Functions & Reports (Pump Monitor)
801 to 822	Setup Functions & Reports (I/O Device)
871 to D02	Setup Functions & Reports (Miscellaneous)
902 to 907	Diagnostic Reports (System)
A01 to A9J	Diagnostic Reports (In-tank)
B01 to B46	Diagnostic Reports (Sensor)
B61 to B8J	Diagnostic Reports (Line Leak)
BA0 to CA2	Diagnostic Reports (Reconciliation)
C01 to CA3	Reconciliation Reports
G01 to G0D	GUI Display Setup
L01 to L0B	Line Setup (Line Leak)
N01 to N07	Device VR-Bus Configuration
S51 to SA1	Line Pressure Sensor Setup & Reports (Pressure Line Leak)
VA1 to VAP	Vapor Collection Monitor

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Most response messages can be requested for either a single device (tank, sensor, line, etc.) or all devices. A "TT" in the function code signifies single device number 01 through 16. When "TT" is 00, it signifies all devices.

Typically, response messages include information on the active devices only. That is, those devices that are connected and working. However, the system can be forced to send data on inactive devices by using an inactive device number. In this case, if no valid data is available on a device, the message is filled out with question marks (?) in the place of numbers.

Computer format response messages do not include any formatting characters such as carriage returns, line feeds, spaces, nulls, labels, etc. Only those characters shown are actually included in the response message. For convenience, the messages are shown in segments and do not actually include any line feeds, carriage returns, etc. Also, the notes to the right and between the message lines are not included in the messages. All number values contained in the response messages retain leading zeroes.

Display format response messages include the formatting characters shown. All message lines end with a carriage return, line feed and six nulls. All response messages start and end with at least one blank line.

The system function codes and response messages are described in detail in the following sections under the major headings given above. A summary list of all function codes is given at the end of this document.

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7.1 CONTROL FUNCTIONS

Function Code: 001
Function Type: System Reset

Version 1

Command Format:
Display: <SOH>S00100
Computer: <SOH>s00100

Typical Response Message, Display Format:

```
<SOH>
S00100
MAR 27, 1996  4:47 PM
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>s00100YYMMDDHHmm&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. && - Data Termination Flag
3. CCCC - Message Checksum

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Function Code: 003

Function Type: Remote Alarm Reset

Version 2

Command Format:

Display: <SOH>S00300

Computer: <SOH>s00300

Typical Response Message, Display Format:

```
<SOH>
S00300
MAR 27, 1996  8:04 PM
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>s00300YYMMDDHHmm&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. && - Data Termination Flag
3. CCCC - Message Checksum

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Function Code: 010

Version 1

Function Type: Cancel Autodial Computer Mode Session

Command Format:

Display: <SOH>S01000

Computer: <SOH>s01000

Typical Response Message, Display Format:

<SOH>

S01000

MAR 27, 1996 8:04 PM

<ETX>

Typical Response Message, Computer Format:

<SOH>s01000YYMMDDHHmm&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. && - Data Termination Flag
3. CCCC - Message Checksum

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Function Code: 052

Version 1

Function Type: Start In-Tank Leak Detect Test

Command Format:

Display: <SOH>S052TT (Use 203 command for inquiry)

Computer: <SOH>s052TT

Typical Response Message, Display Format:

```
<SOH>
S052TT
MAR 27, 1996  6:28 PM

TANK    LABEL
  1      UNLEADED REGULAR      LEAK TEST START
                                TEST BY EXTERN INTERFACE
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>s052TTYMMDDHHmmTTk&&CCCC<ETX>
```

Notes:

1. YMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. k - Status Flag
0=OFF
1=ON
4. && - Data Termination Flag
5. CCCC - Message Checksum

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Function Code: 053

Version 1

Function Type: Stop In-Tank Leak Detect Test

Command Format:

Display: <SOH>S053TT

Computer: <SOH>s053TT

Typical Response Message, Display Format:

```
<SOH>
S053TT
MAR 29, 1996  6:27 PM

TANK    LABEL
 1      REGULAR UNLEADED      LEAK TEST STOP
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>s053TTYMMDDHHmmTTk&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. k - Status Flag
0=OFF
1=ON
4. && - Data Termination Flag
5. CCCC - Message Checksum

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Function Code: 054
Function Type: Delete CSLD Rate Table

Version 1

Command Format:
Display: <SOH>S054TT149
Computer: <SOH>s054TT149

Notes:

1. TT - Tank Number (command valid for single tank only)
2. 149 - This verification code must be sent to confirm the command

Typical Response Message, Display Format:

```
<SOH>
S054TT
MAR 29, 1996  6:27 PM

T 1:REGULAR UNLEADED    CSLD RECORDS DELETED
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>s054TTYMMDDHHmm&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number
3. && - Data Termination Flag
4. CCCC - Message Checksum

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Function Code: 081

Version 1

Function Type: Start Pressure Line Leak Test

Command Format:

Display: <SOH>S081QQ149

Computer: <SOH>s081QQ149

Notes:

1. 149 - This verification code must be sent to confirm the command

Typical Response Message, Display Format:

```
<SOH>
S081QQ
MAR 29, 1996  6:27 PM
```

```
Q 1:REGULAR UNLEADED
STATUS: TEST COMPLETE
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>s081QQYYMMDDHHmmQQtt&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak sensor number (Decimal, 00=All)
3. tt - Test status
 - 00=test complete
 - 01=dispensing
 - 02=testing at 3.00 gal/hr
 - 03=testing at 0.10 gal/hr
 - 04=test aborted
 - 05=running pump (manual test starting)
 - 06=line lockout
 - 07=disable alarm
 - 08=test pending
 - 09=testing delay
 - 0A=pressure check
 - 0B=testing at 0.20 gal/hr
4. && - Data Termination Flag
5. CCCC - Message Checksum

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Function Code: 082

Version 1

Function Type: Stop Pressure Line Leak Test

Command Format:

Display: <SOH>S082QQ149

Computer: <SOH>s082QQ149

Notes:

1. 149 - This verification code must be sent to confirm the command

Typical Response Message, Display Format:

```
<SOH>
S082QQ
MAR 29, 1996  6:27 PM
```

```
Q 1:REGULAR UNLEADED
STATUS: TEST COMPLETE
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>s082QQYYMMDDHHmmQQtt&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak sensor number (Decimal, 00=All)
3. tt - Test status
 - 00=test complete
 - 01=dispensing
 - 02=testing at 3.00 gal/hr
 - 03=testing at 0.10 gal/hr
 - 04=test aborted
 - 05=running pump (manual test starting)
 - 06=line lockout
 - 07=disable alarm
 - 08=test pending
 - 09=testing delay
 - 10=pressure check
 - 11=testing at 0.20 gal/hr
4. && - Data Termination Flag
5. CCCC - Message Checksum

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Function Code: 087

Version 1

Function Type: Start Pressure Line Leak Test by Type

Command Format:

Display: <SOH>S087QQ149rr

Computer: <SOH>s087QQ149rr

Notes:

1. 149 - This verification code must be sent to confirm the command

Typical Response Message, Display Format:

```
<SOH>
S087QQ
MAR 29, 1999  6:27 PM

Q 1:REGULAR UNLEADED
0.2 GPH SCHEDULED
STATUS: TEST COMPLETE
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>s087QQYYMMDDHHmmQQrrtt&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak sensor number (Decimal, 00=All)
3. rr - Test Type
 - 01=0.10 GPH
 - 02=0.20 GPH
 - 03=3.00 GPH
4. tt - Test status
 - 00=test complete
 - 01=dispensing
 - 02=testing at 3.00 gal/hr
 - 03=testing at 0.10 gal/hr
 - 04=test aborted
 - 05=running pump (manual test starting)
 - 06=line lockout
 - 07=disable alarm
 - 08=test pending
 - 09=testing delay
 - 0A=pressure check
 - 0B=testing at 0.20 gal/hr
5. && - Data Termination Flag
6. CCCC - Message Checksum

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Function Code: 089

Version 1

Function Type: Pressure Line Leak Pressure Offset Reset

Command Format:

Display: <SOH>S089QQ149

Computer: <SOH>s089QQ149

Notes:

1. 149 - This verification code must be sent to confirm the command

Typical Response Message, Display Format:

```
<SOH>
S089QQ
JAN 1, 2000 6:27 PM

Q 1:REGULAR UNLEADED
PRESSURE OFFSET RESET
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>s089QQYYMMDDHHmm&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak Line number (Decimal, 00=All)
3. && - Data Termination Flag
4. CCCC - Message Checksum

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Function Code: 091
Function Type: Close Current Shift

Version 1

Command Format:
Display: <SOH>S09100
Computer: <SOH>s09100

Typical Response Message, Display Format:

```
<SOH>
S09100
MAR 27, 1996  8:04 PM

CLOSE CURRENT SHIFT: YES
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>s09100YYMMDDHHmmff&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. ff - Close Current Shift Flag
01=If close accepted
3. && - Data Termination Flag
4. CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 092

Version 1

Function Type: Start Pressure Line Leak Profile Line Test

Command Format:

Display: <SOH>S092QQ149

Computer: <SOH>s092QQ149

Notes:

1. 149 - This verification code must be sent to confirm the comand

Typical Response Message, Display Format:

```
<SOH>
S092QQ
NOV 14, 2001  10:15 PM

START PRESSURE LINE LEAK PROFILE LINE TEST

Q 1:UNLEADED REGULAR
STATUS: RUNNING PUMP
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>s092QQYYMMDDHHmmQQtt
      QQtt&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak Sensor Number (Decimal, 00 = all)
3. tt - Test Status
 - 00 = TEST COMPLETE (DONE: BULK MOD 10000)
 - 01 = TURN PUMP ON (RUNNING PUMP)
 - 02 = PUMP ON WAIT (RUNNING PUMP)
 - 03 = PRESSURE 1 WAIT (PUMP OFF)
 - 04 = PRESSURE 2 WAIT (MEASURING Pxx 19.123 PSI)
 - 05 = CALC WAIT TIME (MEASURING Pxx 19.123 PSI)
 - 06 = PRESSURE N WAIT (MEASURING Pxx 19.123 PSI)
 - 07 = EVALUATE PERIOD (MEASURING Pxx 19.123 PSI)
 - 08 = TEST ABORT (ABORTED)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 093

Version 1

Function Type: Stop Pressure Line Leak Profile Line Test

Command Format:

Display: <SOH>S093QQ149

Computer: <SOH>s093QQ149

Notes:

1. 149 - This verification code must be sent to confirm the comand

Typical Response Message, Display Format:

```
<SOH>
S093QQ
NOV 14, 2001  10:15 PM

STOP PRESSURE LINE LEAK PROFILE LINE TEST

Q 1:UNLEADED REGULAR
STATUS: ABORTED
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>s093QQYYMMDDHHmmQQtt
      QQtt&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak Sensor Number (Decimal, 00 = all)
3. tt - Test Status
 - 00 = TEST COMPLETE (DONE: BULK MOD 10000)
 - 01 = TURN PUMP ON (RUNNING PUMP)
 - 02 = PUMP ON WAIT (RUNNING PUMP)
 - 03 = PRESSURE 1 WAIT (PUMP OFF)
 - 04 = PRESSURE 2 WAIT (MEASURING Pxx 19.123 PSI)
 - 05 = CALC WAIT TIME (MEASURING Pxx 19.123 PSI)
 - 06 = PRESSURE N WAIT (MEASURING Pxx 19.123 PSI)
 - 07 = EVALUATE PERIOD (MEASURING Pxx 19.123 PSI)
 - 08 = TEST ABORT (ABORTED)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 094

Version 1

Function Type: Recalculate Pressure Line Leak Profile Bulk Modulus

Command Format:

Display: <SOH>S094QQ149

Computer: <SOH>s094QQ149

Notes:

1. 149 - This verification code must be sent to confirm the comand

Typical Response Message, Display Format:

```
<SOH>
S094QQ
NOV 14, 2001  10:15 PM

RECALCULATE PRESSURE LINE LEAK PROFILE LINE TEST BULK MODULUS

Q 1:UNLEADED REGULAR
STATUS: DONE: BULK MOD      10000
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>s094QQYYMMDDHHmmQQtt
          QQtt&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak Sensor Number (Decimal, 00 = all)
3. tt - Test Status
 - 00 = TEST COMPLETE (DONE: BULK MOD 10000)
 - 01 = TURN PUMP ON (RUNNING PUMP)
 - 02 = PUMP ON WAIT (RUNNING PUMP)
 - 03 = PRESSURE 1 WAIT (PUMP OFF)
 - 04 = PRESSURE 2 WAIT (MEASURING Pxx 19.123 PSI)
 - 05 = CALC WAIT TIME (MEASURING Pxx 19.123 PSI)
 - 06 = PRESSURE N WAIT (MEASURING Pxx 19.123 PSI)
 - 07 = EVALUATE PERIOD (MEASURING Pxx 19.123 PSI)
 - 08 = TEST ABORT (ABORTED)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 09C

Version 6

Function Type: Manually Start/Stop Timed Sudden Loss Detection

Command Format:

Display: <SOH>S09C00f

<SOH>I09C00

Computer: <SOH>s09C00f

<SOH>i09C00

Notes:

1. f - Manual Start/Stop flag
0=Stop Sudden Loss Detection
1=Start Sudden Loss Detection

Typical Response Message, Display Format:

```
<SOH>
S09C00
NOV 14, 2014 10:15 PM

MANUAL SCHEDULED TIMED SUDDEN LOSS DETECTION

STARTED
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>s09C00YYMMDDHHmmF&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. f - Manual Start/Stop flag
0=Stopped
1=Started
2=Not manually scheduled
3. && - Data Termination Flag
4. CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 09D

Version 6

Function Type: Restart Timed Sudden Loss Detection

Command Format:

Display: <SOH>S09DTT149

Computer: <SOH>s09DTT149

Notes:

1. 149 - This verification code must be sent to confirm the command

Typical Response Message, Display Format:

```
<SOH>
S09D00
NOV 14, 2014 10:15 PM

TANK PRODUCT LABEL          SUDDEN LOSS OPERATION
 1 UNLEADED REGULAR          RESTARTED
 2 UNLEADED REGULAR          NOT RESTARTED
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>s09D00YYMMDDHHmmNNTTs&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. NN - Number of tanks to follow (Decimal)
3. TT - Tank Number (Decimal, 00=All)
4. s - Status
0=Not Restarted
1=Restarted
5. && - Data Termination Flag
6. CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

7.2 OPERATIONAL REPORTS

7.2.1 SYSTEM REPORTS

Function Code: 101
Function Type: System Status Report

Version 1

Command Format:
Display: <SOH>I10100
Computer: <SOH>i10100

Notes:

1. This command will report all active OR unacknowledged alarms and warnings up to the limit of 25 alarms in display format, and 150 alarms in computer format

Typical Response Message, Display Format:

```
<SOH>
I10100
JUL 29, 1997  9:02 AM
```

```
STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....
```

SYSTEM STATUS REPORT

```
ALL FUNCTIONS NORMAL
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i10100YYMMDDHHmmAANNTT...
AANNTT&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. AA - Alarm/Warning Category:
 - 00=All Functions Normal
 - 01=System Alarm
 - 02=Tank Alarm
 - 03=Liquid Sensor Alarm
 - 04=Vapor Sensor Alarm
 - 05=Input Alarm
 - 06=Volumetric Line Leak Alarm (OBSOLETE in TLS-450)
 - 07=Groundwater Sensor Alarm
 - 08=Type A Sensor Alarm
 - 11=Relay Alarm
 - 12=Type B Sensor Alarm
 - 13=Universal Sensor Alarm (OBSOLETE in TLS-450)
 - 14=Auto-Dial Fax Alarm (OBSOLETE in TLS-450)
 - 18=Mechanical Dispenser Interface Alarm (Version 2)
 - 19=Electronic Dispenser Interface Alarm (Version 2)
 - 20=Product Alarm (Version 2)
 - 21=Pressure Line Leak Alarm
 - 26=Wireless PLLD Alarm (OBSOLETE in TLS-450)
 - 28=Smart Sensor Alarm (future)
 - 29=Modbus Alarm (future)
 - 30=ISD Site Alarm (future)
 - 31=ISD Hose Alarm (future)
 - 32=ISD Vapor Flow Meter Alarm (future)

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code 101 Notes: (Continued)

33=PMC Alarm	(future)
34=Pump Relay Monitor Alarm	
35=VMCI Disenser Interface Alarm	
36=VMC Alarm	
37=VPM Alarm	
58=ISD Ullage Pressure sensor Alarm	(future)
59=MAG Sensor Alarm	
60=Vacuum Sensor Alarm	(future)
63=Line Pressure Sensor Alarm	
64=Printer Alarm	
65=Pump Alarm	
66=Line Alarms	
69=Legacy Resistive Sensor	
70=Legacy Current Sensor	
71=Unknown Device	
72=Undiscovered Device	
73=Communication Alarm	
74=Contact Alarm	
75=AutoEvent Alarm	
76=LVDIM	
77=CDIM	
78=MDIM	
79=EDIM	
80=USM Card	
81=IOM Card	
82=MUX Card	
83=Open Circuit	
84=Blend	
85=Meter Temp Sensor	
86=USIOM Card	
99=Externally Detected Alarm (not reported by Console)	

3. NN - Alarm Type Number:

- If AA is 01 and NN is:

01=Printer out of Paper	(Obsolete)
02=Printer Error	(Obsolete)
03=EEPROM Configuration Error	(Obsolete)
04=Battery Off	(Obsolete)
05=Too Many Tanks	(Obsolete)
06=System Security Warning	(Obsolete)
07=ROM Revision Warning	(Obsolete)
08=Remote Display Communications Error	(Obsolete)
09=Autodial Error	(Obsolete)
10=Software Module Warning	(Obsolete)
11=Tank Test Shutdown Warning	(Obsolete)
12=Protective Cover Alarm	(Obsolete)
13=BIR Shift Close Pending	(Version 2)
14=BIR Daily Close Pending	(Version 2)
15=PC(H8) Revision Warning	(Obsolete)
16=System Self Test Error	(Obsolete)
17=System Clock Incorrect Warning	(Obsolete)
18=System Device Poll Timeout	(Obsolete)
19=Maintenance Tracker NVMem Removed	(Obsolete)
20=Maintenance Tracker Communication Module Removed	(Obsolete)
21=Database Error	
22=File System Error	
23=BIR Status Warning	(Version 2)
24=VR Bus Power Outage Warning	
25=Software Upgrade Failure Alarm	
26=iButton Fault Warning	
27=iButton Fault Alarm	
28=Version Upgrade Available	
29=Expansion Box Unsupported	

- If AA is 02 and NN is:

01=Tank Setup Data Warning
02=Tank Leak Alarm

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code 101 Notes: (Continued)

03=Tank High Water Alarm
 04=Tank Overfill Alarm
 05=Tank Low Product Alarm
 06=Tank Sudden Loss Alarm
 07=Tank High Product Alarm
 08=Tank Invalid Fuel Level Alarm
 09=Tank Probe Out Alarm
 10=Tank High Water Warning
 11=Tank Delivery Needed Warning
 12=Tank Maximum Product Alarm
 13=Tank Gross Leak Test Fail Alarm
 14=Tank Periodic Leak Test Fail Alarm
 15=Tank Annual Leak Test Fail Alarm
 16=Tank Periodic Test Needed Warning
 17=Tank Annual Test Needed Warning
 18=Tank Periodic Test Needed Alarm
 19=Tank Annual Test Needed Alarm
 20=Tank Leak Test Active
 21=Tank No CSLD Idle Time Warning
 22=Tank Siphon Break Active Warning
 23=Tank CSLD Rate Increase Warning
 24=Tank AccuChart Calibration Warning (Version 2)
 25=Tank HRM Reconciliation Warning
 26=Tank HRM Reconciliation Alarm
 27=Tank Cold Temperature Warning
 28=Tank Missing Delivery Ticket Warning (Version 2)
 29=Tank/Line Gross Leak Alarm
 30=Delivery Density Warning (future)
 31=Density Warning (Version 3)
 32=Fuel Quality Alarm (Version 3)
 33=Tank High Temperature Warning
 34=Tank Low Temperature Warning
 38=Density Offset Warning (Version 3)

- If AA is 03 and NN is:
 - 02=Liquid Sensor Setup Data Warning
 - 03=Liquid Sensor Fuel Alarm
 - 04=Liquid Sensor Out Alarm
 - 05=Liquid Sensor Short Alarm
 - 06=Liquid Sensor Water Alarm
 - 07=Liquid Sensor Water Out Alarm
 - 08=Liquid Sensor High Liquid Alarm
 - 09=Liquid Sensor Low Liquid Alarm
 - 10=Liquid Sensor Liquid Warning
- If AA is 04 and NN is:
 - 02=Vapor Sensor Setup Data Warning
 - 03=Vapor Sensor Fuel Alarm
 - 04=Vapor Sensor Out Alarm
 - 05=Vapor Sensor Short Alarm
 - 06=Vapor Sensor Water Alarm
- If AA is 05 and NN is:
 - 01=Input Setup Data Warning
 - 02=Input Normal
 - 03=Input Alarm
 - 04=Generator Off
 - 05=Generator On
 - 06=Input Out Alarm
- If AA is 06 and NN is: (OBSOLETE in TLS-450)
 - 01=VLLD Setup Data Warning
 - 02=VLLD Self Test Alarm
 - 03=VLLD Shutdown Alarm
 - 04=VLLD Leak Test Fail Alarm
 - 05=VLLD Selftest Invalid Warning
 - 06=VLLD Continuous Handle On Warning
 - 07=VLLD Gross Line Test Fail Alarm
 - 08=VLLD Gross Line Selftest Fail Alarm

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code 101 Notes: (Continued)

- 09=VLLD Gross Pump Test Fail Alarm
 - 10=VLLD Gross Pump Selftest Fail Alarm
 - 11=VLLD Periodic Test Needed Warning
 - 12=VLLD Annual Test Needed Warning
 - 13=VLLD Periodic Test Needed Alarm
 - 14=VLLD Annual Test Needed Alarm
 - 15=VLLD Periodic Line Test Fail Alarm
 - 16=VLLD Periodic Line Selftest Fail Alarm
 - 17=VLLD Periodic Pump Test Fail Alarm
 - 18=VLLD Periodic Pump Selftest Fail Alarm
 - 19=VLLD Annual Line Test Fail Alarm
 - 20=VLLD Annual Line Selftest Fail Alarm
 - 21=VLLD Annual Pump Test Fail Alarm
 - 22=VLLD Annual Pump Selftest Fail Alarm
 - 23=VLLD Pressure Warning
 - 24=VLLD Pressure Alarm
 - 25=VLLD Gross Test Fault Alarm
 - 26=VLLD Periodic Test Fault Alarm
 - 27=VLLD Annual Test Fault Alarm
 - 28=VLLD Fuel Out Alarm
- If AA is 07 and NN is:
- 02=Groundwater Sensor Setup Data Warning
 - 03=Groundwater Sensor Fuel Alarm
 - 04=Groundwater Sensor Out Alarm
 - 05=Groundwater Sensor Short Alarm
 - 07=Groundwater Sensor Water Out Alarm
- If AA is 08 and NN is:
- 02=Type A Sensor Setup Data Warning
 - 03=Type A Sensor Fuel Alarm
 - 04=Type A Sensor Out Alarm
 - 05=Type A Sensor Short Alarm
 - 06=Type A Sensor Water Alarm
- If AA is 11 and NN is:
- 01=Relay Setup Data Warning
 - 02=Relay Out Alarm
- If AA is 12 and NN is:
- 02=Type B Sensor Setup Data Warning
 - 03=Type B Sensor Fuel Alarm
 - 04=Type B Sensor Out Alarm
 - 05=Type B Sensor Short Alarm
 - 08=Type B Sensor High Liquid Alarm
 - 10=Type B Sensor Liquid Warning
- If AA is 14 and NN is: (Obsolete, replaced with AA=74)
Note: Auto-Dial Fax Alarm is obsolete. This alarm category is replaced with CONTACT Alarm [AA=74]
- 01=Autodial Setup Data Warning (Obsolete)
 - 02=Autodial Failed Alarm (Obsolete)
 - 03=Autodial Service Report Warning (Obsolete)
 - 04=Autodial Alarm Clear Warning (Obsolete)
 - 05=Autodial Delivery Report Warning (Obsolete)
- If AA is 18, 19 and NN is: (Version 2)
- 01=DIM Setup Data Warning
 - 02=DIM Disabled Alarm
 - 03=DIM Communication Failure Alarm
 - 04=DIM Transaction Alarm
 - 05=DIM Firmware Alarm
- If AA is 20 and NN is: (Version 2)
- 01=BIR Setup Data Warning
 - 02=BIR Threshold Alarm
 - 03=BIR Close Shift Warning (Obsolete)
 - 04=BIR Close Daily Warning (Obsolete)

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code 101 Notes: (Continued)

- If AA is 21 and NN is:
 - 01=PLLD Setup Data Warning
 - 02=PLLD Gross Test Fail Alarm
 - 03=PLLD Annual Test Fail Alarm
 - 04=PLLD Periodic Test Needed Warning
 - 05=PLLD Periodic Test Needed Alarm
 - 06=PLLD Sensor Open Alarm
 - 07=PLLD High Pressure Alarm (Obsolete)
 - 08=PLLD Shutdown Alarm
 - 09=PLLD High Pressure Warning (Obsolete)
 - 10=PLLD Continuous Handle On Warning (Obsolete)
 - 11=PLLD Periodic Test Fail Alarm
 - 12=PLLD Annual Test Needed Warning
 - 13=PLLD Annual Test Needed Alarm
 - 14=PLLD Low Pressure Alarm
 - 15=PLLD Sensor Short Alarm (Obsolete)
 - 16=PLLD Continuous Handle On Alarm
 - 17=PLLD Fuel Out Alarm
 - 18=PLLD Line Equipment Alarm
 - 19=Gross Test Needed Alarm (Version 3)
- If AA is 26 and NN is: (OBSOLETE in TLS-450)
 - 01=WPLLD Setup Data Warning
 - 02=WPLLD Gross Test Fail Alarm
 - 03=WPLLD Periodic Test Fail Alarm
 - 04=WPLLD Periodic Test Needed Warning
 - 05=WPLLD Periodic Test Needed Alarm
 - 06=WPLLD Sensor Open Alarm
 - 07=WPLLD Communications Alarm
 - 08=WPLLD Shutdown Alarm
 - 09=WPLLD Continuous Handle On Warning (Obsolete)
 - 10=WPLLD Annual Test Fail Alarm
 - 11=WPLLD Annual Test Needed Warning
 - 12=WPLLD Annual Test Needed Alarm
 - 13=WPLLD High Pressure Warning (Obsolete)
 - 14=WPLLD High Pressure Alarm (Obsolete)
 - 15=WPLLD Sensor Short Alarm (Obsolete)
 - 16=WPLLD Continuous Handle On Alarm
 - 17=WPLLD Fuel Out Alarm
 - 18=WPLLD Line Equipment Alarm
- If AA is 28 and NN is: (future)
 - 01=Smart Sensor Setup Data Warning
 - 02=Smart Sensor Communication Alarm
 - 03=Smart Sensor Fault Alarm
 - 04=Smart Sensor Fuel Warning
 - 05=Smart Sensor Fuel Alarm
 - 06=Smart Sensor Water Warning
 - 07=Smart Sensor Water Alarm
 - 08=Smart Sensor High Liquid Warning
 - 09=Smart Sensor High Liquid Alarm
 - 10=Smart Sensor Low Liquid Warning
 - 11=Smart Sensor Low Liquid Alarm
 - 12=Smart Sensor Temperature Warning
 - 13=Smart Sensor Relay Active
 - 14=Smart Sensor Install Alarm
 - 15=Smart Sensor Sensor Fault Warning
 - 16=Smart Sensor Vacuum Warning
 - 17=Smart Sensor No Vacuum Warning
- If AA is 29 and NN is: (future)
 - 01=Improper Setup alarm
 - 02=Communication Loss alarm
- If AA is 30 and NN is: (future)
 - 01=Stage 1 Transfer Monitoring Failure warning
 - 02=Containment Monitoring Gross Failure warning
 - 03=Containment Monitoring Gross Failure alarm
 - 04=Containment Monitoring Degradation Failure warning

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code 101 Notes: (Continued)

05=Containment Monitoring Degradation Failure alarm
06=Containment Monitoring CVLD Failure warning
07=Containment Monitoring CVLD Failure alarm
08=Vapor Processor Over Pressure Failure warning
09=Vapor Processor Over Pressure Failure alarm
10=Vapor Processor Status Test warning
11=Vapor Processor Status Test alarm
12=Missing Relay Setup alarm
13=Missing Hose Setup alarm
14=Missing Tank Setup alarm
15=Missing Vapor Flow Meter alarm
16=Missing Vapor Pressure Sensor alarm
17=Missing Vapor Pressure Input alarm
18=Setup Fail warning
19=Setup Fail alarm
20=Sensor Out warning
21=Sensor Out alarm
22=PC-ISD Offline

- If AA is 31 and NN is: (future)
 - 01=Collection Monitoring Gross Failure warning
 - 02=Collection Monitoring Gross Failure alarm
 - 03=Collection Monitoring Degradation Failure warning
 - 04=Collection Monitoring Degradation Failure alarm
 - 05=Flow Performance Hose Blockage Failure warning
 - 06=Flow Performance Hose Blockage Failure alarm
 - 07=Vapor Flow Meter Setup alarm
- If AA is 32 and NN is: (future)
 - 01=Locked rotor alarm
 - 02=VFM Setup Data Warning
 - 03=VFM Device Out Alarm
- If AA is 33 and NN is: (future)
 - 01=Vapor Processor Run Time Fault warning
 - 02=Processor Monitoring Effluent Emissions Failure warning
 - 03=Processor Monitoring Effluent Emissions Failure alarm
 - 04=Processor Monitoring Over Pressure Failure warning
 - 05=Processor Monitoring Over Pressure Failure alarm
 - 06=Processor Monitoring Duty Cycle Failure warning
 - 07=Processor Monitoring Duty Cycle Failure alarm
 - 08=PMC (stand alone mode only) Setup warning
 - 09=PMC Out Alarm
- If AA is 34 and NN is: (future)
 - 01=Setup Data Warning
 - 02=Pump Relay Alarm
- If AA is 35 and NN is:
 - 01=VMCI Setup Data Warning
 - 02=VMCI DIM Disabled
 - 03=VMCI DIM Comm Timeout
- If AA is 36 and NN is: (obsolete V6f)
 - 01=VMC Comm Timeout
 - 02=Meter Not Connected
 - 03=FP Shutdown Warning
 - 04=FP Shutdown Alarm
 - 05=Setup Data Warning
- If AA is 37 and NN is:
 - 01=Gross Over-Pressure Test Warning
 - 02=VPM Gross Over-Pressure Test Failure Warning
 - 03=VPM Gross Over-Pressure Test Failure Alarm
 - 04=VPM Degradation Over-Pressure Test Failure Warning
 - 05=VPM Degradation Over-Pressure Test Failure Alarm
 - 06=VPM Sensor Test Failure Warning
 - 07=VPM Sensor Test Failure Alarm

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code 101 Notes: (Continued)

- 08=VPM Setup Failure Warning
- 09=VPM Sensor Out Failure Warning
- 10=VPM Sensor Out Failure Alarm
- If AA is 59 and NN is:
 - 02=MAG Sensor Setup Data Warning
 - 03=MAG Sensor Communication Alarm
 - 04=MAG Sensor Fault Alarm
 - 05=MAG Sensor Fuel Warning
 - 06=MAG Sensor Fuel Alarm
 - 07=MAG Sensor Water Warning
 - 08=MAG Sensor Water Alarm
 - 09=MAG Sensor High Liquid Warning
 - 10=MAG Sensor High Liquid Alarm
 - 11=MAG Sensor Low Liquid Warning
 - 12=MAG Sensor Low Liquid Alarm
 - 13=MAG Sensor Temperature Warning
 - 14=MAG Sensor Relay Active
 - 15=MAG Sensor Install Alarm
- If AA is 63 and NN is:
 - 01=LPR Sensor Setup Data Warning
 - 02=LPR Sensor Communication Alarm
- If AA is 64 and NN is:
 - 01=Printer out of Paper
 - 02=Printer Error

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code 101 Notes: (Continued)

- If AA is 65 and NN is:
 - 01=Pump Setup Data Warning
 - 02=Pump Out Alarm
 - 02=Stuck Relay or Continuous Pump
- If AA is 66 and NN is:
 - 01=Line Setup Data Warning
 - 02=Line Out Alarm
- If AA is 73 and NN is:
 - 01=Communication Setup Data Warning
 - 02=Communication Setup Data Alarm (future)
 - 03=Communication Warning
- If AA is 74 and NN is:
 - 01=Autodial SetupDataWarning
 - 02=Autodial Failed Alarm
 - 03=Autodial Service Report Warning (future)
 - 04=Autodial Alarm Clear Warning (Obsolete)
 - 05=Autodial Delivery Report Warning (Obsolete)
 - 06=Autodial No Dialtone Alarm (future)
 - 07=Autodial Fax Failed Alarm
 - 08=Email Failed (future)
 - 09=SMS Failed
- If AA is 75 and NN is:
 - 01=Auto Event Setup Data Warning
- If AA is 99 and NN is:
 - 01=Externally Dectected Communication Alarm
 - 02=Communications - Data Reception Timeout
 - 03=Communications - Failed Checksum
 - 04=Communications - Parity Error
 - 05=Modem - Line Busy
 - 06=Modem - No Answer
 - 07=Modem - No Carrier
 - 08=Modem - No Dial Tone
 - 09=Modem - Modem Error
 - 10=Modem - Modem Not Responding
 - 11=Modem - Port Not Available
 - 12=Polling - Could Not Update Queue
 - 13=Polling - Invalid Data Type Requested
- 4. TT - Tank/Sensor Number
- 5. && - Data Termination Flag
- 6. CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 110

Version 1

Function Type: Combined Alarm History Report

Command Format:

Display: <SOH>I11000

Computer: <SOH>i11000

Notes:

- This command will report history of all priority & non-priority alarms up to the limit of 50 alarms in both display and computer formats.

Typical Response Message, Display Format:

```
<SOH>
I11100
JUL 29, 1997  9:02 AM
```

```
STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....
```

```
COMBINED ALARM HISTORY
ID  CATEGORY  DESCRIPTION
W 3  OTHER    SPECIAL
SYSTEM
```

```
ALARM TYPE          STATE    DATE    TIME
WPLLD SHUTDOWN ALM  CLEAR   1-01-96  8:07AM
PAPER OUT           CLEAR   12-20-95 12:01PM
```

```
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i11000YYMMDDHHmmAAccNNTTSSYYMMDDHHmm...
AAccNNTTSSYYMMDDHHmm&&CCCC<ETX>
```

Notes:

- YYMMDDHHmm - Current Date and Time
- AA - Alarm/Warning Category:
See explanation for "AA" in Function i10100
- cc - Sensor Category
00=Other
01=Annular
02=Dispenser Pan
03=Monitoring Well
04=STP Sump
05=Containment Sump
- NN - Alarm Type Number:
See explanation for "NN" in Function i10100
- TT - Tank/Sensor Number
- SS - Alarm State
01=Alarm cleared
02=Alarm occurred
- YYMMDDHHmm - Date/Time Alarm state occurred
- && - Data Termination Flag
- CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 111

Version 1

Function Type: Priority Alarm History Report

Command Format:

Display: <SOH>I11100

Computer: <SOH>i11100

Notes:

1. This command will report history of all priority alarms and warnings up to the limit of 50 alarms in both display & computer formats.

Typical Response Message, Display Format:

```
<SOH>
I11100
JUL 29, 1997  9:02 AM
```

```
STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....
```

PRIORITY ALARM HISTORY

ID	CATEGORY	DESCRIPTION	ALARM TYPE	STATE	DATE	TIME
W 3	OTHER	SPECIAL	WPLLD SHUTDOWN ALM	CLEAR	1-01-96	8:07AM
W 3	OTHER	SPECIAL	WPLLD SHUTDOWN ALM	ALARM	1-01-96	8:06AM
	SYSTEM		BATTERY IS OFF	CLEAR	1-01-96	8:00AM
	SYSTEM		BATTERY IS OFF	ALARM	1-01-96	8:00AM

<ETX>

Typical Response Message, Computer Format:

```
<SOH>i11100YYMMDDHHmmAAccNNTTSSYYMMDDHHmm...
AAccNNTTSSYYMMDDHHmm&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. AA - Alarm/Warning Category:
See explanation for "AA" in Function i10100
3. cc - Sensor Category
00=Other
01=Annular
02=Dispenser Pan
03=Monitoring Well
04=STP Sump
05=Containment Sump
4. NN - Alarm Type Number:
See explanation for "NN" in Function i10100
5. TT - Tank/Sensor Number
6. SS - Alarm State
01=Alarm cleared
02=Alarm occurred
7. YYMMDDHHmm - Date/Time Alarm state occurred
8. && - Data Termination Flag
9. CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 112

Version 1

Function Type: Non-Priority Alarm History Report

Command Format:

Display: <SOH>I11200

Computer: <SOH>i11200

Notes:

1. This command will report history of all non-priority alarms and warnings up to the limit of 50 alarms in both display & computer formats.

Typical Response Message, Display Format:

```
<SOH>
I11200
JAN 22, 1996  3:05 PM
```

```
STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....
```

NON-PRIORITY ALARM HISTORY

ID	CATEGORY	DESCRIPTION	ALARM TYPE	STATE	DATE	TIME
	SYSTEM		PAPER OUT	CLEAR	12-20-95	12:01PM
	SYSTEM		PAPER OUT	ALARM	12-20-95	12:00PM
T 2	TANK	SPECIAL	INVALID FUEL LEVEL	CLEAR	12-20-95	11:59AM
T 2	TANK	SPECIAL	INVALID FUEL LEVEL	ALARM	12-20-95	11:59AM

```
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i11200YYMMDDHHmmAAccNNTTSSYYMMDDHHmm...
AAccNNTTSSYYMMDDHHmm&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. AA - Alarm/Warning Category:
See explanation for "AA" in Function i10100
3. cc - Sensor Category
00=Other
01=Annular
02=Dispenser Pan
03=Monitoring Well
04=STP Sump
05=Containment Sump
4. NN - Alarm Type Number:
See explanation for "NN" in Function i10100
5. TT - Tank/Sensor Number
6. SS - Alarm State
01=Alarm cleared
02=Alarm occurred
7. YYMMDDHHmm - Date/Time Alarm state occurred
8. && - Data Termination Flag
9. CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 113
Function Type: Active Alarm Report

Version 1

Command Format:
Display: <SOH>I11300
Computer: <SOH>i11300

Notes:

1. This command will report ALL active alarms and warnings regardless of their acknowledgement state. If there are more than can be contained in the non-priority and priority history storage areas, they will be reported here without time and date stamps

Typical Response Message, Display Format:

```
<SOH>
I11300
JAN 28, 1996 10:09 AM

STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....

ACTIVE ALARMS REPORT

ID  CATEGORY  DESCRIPTION          ALARM TYPE          DATE      TIME
   SYSTEM
T 2  TANK      SPECIAL            INVALID FUEL LEVEL  12-20-95  12:00PM
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i11300YYMMDDHHmma..ab..bc..cd..dAAccNNTTTYMMDDHHmm...
                                     AAccNNTTTYMMDDHHmm&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. a..a - Station Header 1: 20 ASCII characters
3. b..b - Station Header 2: 20 ASCII characters
4. c..c - Station Header 3: 20 ASCII characters
5. d..d - Station Header 4: 20 ASCII characters
6. AA - Alarm/Warning Category:
See explanation for "AA" in Function i10100
7. cc - Sensor Category
00=Other
01=Annular
02=Dispenser Pan
03=Monitoring Well
04=STP Sump
05=Containment Sump
8. NN - Alarm Type Number:
See explanation for "NN" in Function i10100
9. TT - Tank/Sensor Number
10. YYMMDDHHmm - Alarm Date and Time
11. && - Data Termination Flag
12. CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 114
Function Type: Cleared Alarm Report

Version 1

Command Format:
Display: <SOH>I11400
Computer: <SOH>i11400

Notes:

1. This command will report history of all cleared alarms up to the limit of 50 alarms in both display & computer formats.

Typical Response Message, Display Format:

```
<SOH>
I11400
JAN 28, 1996 10:09 AM
```

```
STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....
```

CLEARED ALARMS REPORT

ID	CATEGORY	DESCRIPTION	ALARM TYPE	STATE	DATE	TIME
T 4	TANK	PRODUCT 4	PROBE OUT	CLEAR	1-02-96	4:10AM
T 1	TANK	PRODUCT 1	INVALID FUEL LEVEL	CLEAR	1-02-96	1:12AM
	SYSTEM		PAPER OUT	CLEAR	1-02-96	1:09AM

```
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i11400YYMMDDHHmma..ab..bc..cd..dAAccNNTTSSYYMMDDHHmm...
AAccNNTTSSYYMMDDHHmm&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. a..a - Station Header 1: 20 ASCII characters
3. b..b - Station Header 2: 20 ASCII characters
4. c..c - Station Header 3: 20 ASCII characters
5. d..d - Station Header 4: 20 ASCII characters
6. AA - Alarm/Warning Category:
See explanation for "AA" in Function i10100
7. cc - Sensor Category
00=Other
01=Annular
02=Dispenser Pan
03=Monitoring Well
04=STP Sump
05=Containment Sump
8. NN - Alarm Type Number:
See explanation for "NN" in Function i10100
9. TT - Tank/Sensor Number
10. SS - Alarm State
01=Alarm cleared
02=Alarm occurred
11. YYMMDDHHmm - Clear Alarm Date and Time
12. && - Data Termination Flag
13. CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 11C

Version 1

Function Type: Extended Alarm Report - Date Based

Command Format:

Display: <SOH>I11C00RRyyymmddYYMMDDnnn

Computer: <SOH>i11C00RRyyymmddYYMMDDnnn

Notes:

1. RR -Report Type (Report Type should always be given. The rest of the parameters are optional following the rules below.)
 - 00=Active Alarm Report (for Active and Unacknowledged)
 - 01=Alarm History Report - All Alarms
 - 02=Alarm History Report - Priority Alarms
 - 03=Alarm History Report - Non-Priority Alarms
2. yyymmdd -Starting Date (If no start date is given or either Year, Month or Day are zeroes, it assumes request is for most recent records. If no start date is given, then the request is limited by the Maximum Records (below))

Ranges are as follows:

 - yy=Year (01 - 99, for Years 2001-2099)
 - mm=Month (01 - 12, for Months January to December)
 - dd=Day (01 - 31, however, validity depends on Month)
3. YYMMDD -Ending Date (If no end date is given or either Year, Month or Day are zeroes, it assumes request is for records starting from start date as evaluated above, limited by the Maximum Records (below)). Ranges are the same as for the Start Date fields.
4. nnn -Maximum Records - 1 - 999 (Absolute Maximum) (Decimal). (If no Maximum Records is given or it's zeroes, it assumes request is for records starting from start date, ending by end date, and limited by the Maximum Records Default of 100)

Typical Response Message, Display Format:

For an Active Alarm Report:

```
<SOH>
I11C0000
JAN 22, 1996  3:06 PM
```

```
STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....
```

Active Alarm Report

#	Label	Alarm Description	Active	Clear
T 12	PRODUCT 12	Probe Out	06-13-04 09:00	06-13-04 09:00
T 2	PRODUCT 2	Probe Out	06-13-04 09:00	06-13-04 09:00

```
<ETX>
```

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code 11C: (Continued)

For an Alarm History Report:

```
<SOH>
I11C0001
JAN 22, 1996  3:06 PM
```

```
STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....
```

Selected Range:

Previous 1 Year: 10/15/2004 04:00 PM - 10/15/2005 04:00 PM

Alarm History Report - All Alarms

#	Label	Alarm Description	Active	Clear
T 12	PRODUCT 12	Probe Out	06-13-04 09:00	06-13-04 09:00
T 2	PRODUCT 2	Probe Out	06-13-04 09:00	06-13-04 09:00

<ETX>

Typical Response Message, Computer Format:

```
<SOH>i11C00YYMMDDHHmmAAccNNTTSSYYMMDDHHmm...
AAccNNTTSSYYMMDDHHmm&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. AA - Alarm/Warning Category:
See explanation for "AA" in Function i10100
3. cc - Sensor Category
00=Other
01=Annular
02=Dispenser Pan
03=Monitoring Well
04=STP Sump
05=Containment Sump
4. NN - Alarm Type Number:
See explanation for "NN" in Function i10100
5. TT - Tank/Sensor Number
6. SS - Alarm State
01=Alarm cleared
02=Alarm occurred
7. YYMMDDHHmm - Date/Time Alarm state occurred
8. && - Data Termination Flag
9. CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 11D

Version 1

Function Type: Extended Alarm Report - Date/Time Based

Command Format:

Display: <SOH>I11D00RRyyymmddhhmmYYMMDDHHMMnnn

Computer: <SOH>i11D00RRyyymmddhhmmYYMMDDHHMMnnn

Notes:

1. RR - Report Type (Report Type should always be given. The rest of the parameters are optional following the rules below.)
00=Active Alarm Report (for Active and Unacknowledged)
01=Alarm History Report - All Alarms
02=Alarm History Report - Priority Alarms
03=Alarm History Report - Non-Priority Alarms

Note: All the entries listed below will be ignored when RR=00 (Active Alarm Report)

2. yyymmddhhmm - Starting Date/Time (If no start date/time is given or either Year, Month or Day are zeroes, it assumes request is for most recent records. If no start date/time is given, then the request is limited by the Maximum Records (below)). Ranges are as follows:
yy=Year (01 - 99, for Years 2001-2099)
mm=Month (01 - 12, for Months January to December)
dd=Day (01 - 31, however, validity depends on Month)
hh=Hour (00 - 23)
mm=Minute (00 - 59)
3. YYMMDDHHMM - Ending Date/Time (If no end date/time is given or either Year, Month or Day are zeroes, it assumes request is for records starting from start date/time as evaluated above, limited by the Maximum Records (below)). Ranges are the same as for the Start Date/Time fields.
4. nnn - Maximum Records - 1 - 999 (Absolute Maximum) (Decimal). (If no Maximum Records is given or it's zeroes, it assumes request is for records starting from start date/time, ending by end date/time, and limited by the Maximum Records Default of 100)

Typical Response Message, Display Format:

For an Active Alarm Report:

<SOH>
I11D0000
JAN 22, 1996 3:06 PM

STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....

Active Alarm Report

#	Label	Alarm Description	Active	Clear
T 12	PRODUCT 12	Probe Out	06-13-04 09:00	06-13-04 09:00
T 2	PRODUCT 2	Probe Out	06-13-04 09:00	06-13-04 09:00

<ETX>

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code 11D: (Continued)

For an Alarm History Report:

```
<SOH>
I11D0001
JAN 22, 1996  3:06 PM
```

```
STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....
```

```
Selected Range:
Previous 1 Year: 10/15/2004 04:00 PM - 10/15/2005 04:00 PM
```

Alarm History Report - All Alarms

#	Label	Alarm Description	Active	Clear
T 12	PRODUCT 12	Probe Out	06-13-04 09:00	06-13-04 09:00
T 2	PRODUCT 2	Probe Out	06-13-04 09:00	06-13-04 09:00

```
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i11D00YYMMDDHHmmAAccNNTTSSYYMMDDHHmm...
AAccNNTTSSYYMMDDHHmm&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. AA - Alarm/Warning Category:
See explanation for "AA" in Function i10100
3. cc - Sensor Category
00=Other
01=Annular
02=Dispenser Pan
03=Monitoring Well
04=STP Sump
05=Containment Sump
4. NN - Alarm Type Number:
See explanation for "NN" in Function i10100
5. TT - Tank/Sensor Number
6. SS - Alarm State
01=Alarm cleared
02=Alarm occurred
7. YYMMDDHHmm - Date/Time Alarm state occurred
8. && - Data Termination Flag
9. CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 11E
Function Type: Last Active Alarm

Version 1

Command Format:
Display: <SOH>I11E00AANNTT
Computer: <SOH>i11E00AANNTT

Notes:

1. AA - Alarm/Warning Category:
See explanation for "AA" in Function i10100
2. NN - Alarm Type Number:
See explanation for "NN" in Function i10100
3. TT - Tank/Sensor Number - When a value of 00 (TT) is applied, the last active alarm of any Tanks/Sensors (TT) for the selected Alarm/Warning Category (AA) and the selected Alarm Type Number (NN) will be displayed.

Typical Response Message, Display Format:

If custom alarm labels are enabled:

```
<SOH>
I11E0001
JUL 29, 1997  9:02 AM

ID  AC AN Category  Description                Alarm Type                Date      Time
T   3 02 08 Tank    Special                FUEL LEVEL TOO HIGH      1-01-96   8:07AM
<ETX>
```

If custom alarm labels are disabled:

```
<SOH>
I11E0001
JUL 29, 1997  9:02 AM

ID  Category  Description                Alarm Type                Date      Time
T   3 Tank    Special                Invalid Fuel Level        1-01-96   8:07AM
<ETX>
```

Notes:

1. AC - Alarm/Warning Category
See explanation for "AA" in Function i10100
2. AN - Alarm Type Number
See explanation for "NN" in Function i10100

Typical Response Message, Computer Format:

```
<SOH>i11E00YYMMDDHHmmAAccNNTTTYMMDDHHmm&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. AA - Alarm/Warning Category:
See explanation for "AA" in Function i10100
3. cc - Sensor Category
00=Other
01=Annular
02=Dispenser Pan
03=Monitoring Well
04=STP Sump
05=Containment Sump
4. NN - Alarm Type Number:
See explanation for "NN" in Function i10100
5. TT - Tank/Sensor Number
6. YYMMDDHHmm - Date/Time Alarm state occurred
7. && - Data Termination Flag
8. CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 11F
Function Type: Extended Sensor Status Report - Date/Time Based
Command Format:
Display: <SOH>I11FTTRNNyymmddhhmmYYMMDDHHMMnnn
Computer: <SOH>i11FTTRNNyymmddhhmmYYMMDDHHMMnnn

Version 1

Notes:

1. TT -Device Number (Decimal, 00=all)
2. RR -Report Type (Report Type should always be given. The rest of the parameters are optional following the rules below.)
 - 00=Sensor Status Report (for Active Sensor Alarms and Normal Sensor Status as of the time of the request)
 - 01=Sensor Status History Report (for Sensor Alarms and Normal Sensor Status for the specified Time Period)
3. NN -Device Type (If no Device Type is given or it's zeroes, it assumes request is for All Device Types as below. Request for All Device Types are only allowed when the request is for All Device Numbers (TT=00))
 - 03=Liquid Sensor
 - 04=Vapor Sensor
 - 07=Ground Water Sensor
 - 08=Type A (2-Wire CL) Sensor
 - 12=Type B (3-Wire CL) Sensor
 - 59=MAG Sensor
4. yymmddhhmm - Starting Date/Time (If no start date/time is given or either Year, Month or Day are zeroes, it assumes request is for most recent records. If no start date/time is given, then the request is limited by the Maximum Records (below)). Ranges are as follows:
 - yy=Year (01 - 99, for Years 2001-2099)
 - mm=Month (01 - 12, for Months January to December)
 - dd=Day (01 - 31, however, validity depends on Month)
 - hh=Hour (00 - 23)
 - mm=Minute (00 - 59)
5. YYMMDDHHMM - Ending Date/Time (If no end date/time is given or either Year, Month or Day are zeroes, it assumes request is for records starting from start date/time as evaluated above, limited by the Maximum Records (below)). Ranges are the same as for the Start Date/Time fields.
6. nnn - Maximum Records - 1 - 999 (Absolute Maximum) (Decimal). (If no Maximum Records is given or it's zeroes, it assumes request is for records starting from start date/time, ending by end date/time, and limited by the Maximum Records Default of 100)

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code 11F: (Continued)

Typical Response Message, Display Format:

For a Status Report:

```
<SOH>
I11F0000
JAN 22, 1996  3:06 PM

STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....

Sensor Status Report - All Sensors

#      Sensor Location      Status
L 1    Regular STP Pump     Normal
L 2    Ultra STP Pump       Normal
L 2    Diesel STP Pump      Setup Data Warning
Ms 1    Dispenser 1-2       Water Alarm
Ms 1    Dispenser 1-2       Water Warning
Ms 2    Dispenser 3-4       Normal
Ms 3    Dispenser 5-6       Normal
Ms 4    Dispenser 7-8       Normal
Ms 5    Dispenser 9-10      Normal
Ms 6    Dispenser 11-12     Normal
Ms 7    Dispenser 13-14     Normal
Ms 8    Dispenser 15-16     Normal
<ETX>
```

For a History Report:

```
<SOH>
I11F0001
JAN 22, 1996  3:06 PM

STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....

Selected Range:
Previous 1 Year: 10/15/2006 04:00 PM - 10/15/2007 04:00 PM
```

Sensor Status History Report - All Sensors

#	Sensor Location	Status	Active	Clear
L 1	Regular STP Pump	Normal		
L 2	Ultra STP Pump	Normal		
L 2	Diesel STP Pump	Setup Data Warning	06-13-07 09:00	06-13-07 09:00
Ms 1	Dispenser 1-2	Water Alarm	06-13-07 08:05	06-13-07 09:00
Ms 1	Dispenser 1-2	Water Warning	06-13-07 07:06	06-13-07 09:00
Ms 2	Dispenser 3-4	Normal		

<ETX>

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code 11F: (Continued)

Typical Response Message, Computer Format:

```
<SOH>i11F00YYMMDDHHmmAAccNNTTSSYYMMDDHHmm...  
AAccNNTTSSYYMMDDHHmm&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. AA - Alarm/Warning Category:
See explanation for "AA" in Function i10100
3. cc - Sensor Category
00=Other
01=Annular
02=Dispenser Pan
03=Monitoring Well
04=STP Sump
05=Containment Sump
4. NN - Alarm Type Number:
See explanation for "NN" in Function i10100
5. TT - Tank/Sensor Number
6. SS - Alarm State
00=Normal status
01=Alarm cleared
02=Alarm occurred
7. YYMMDDHHmm - Date/Time Alarm state occurred (all zeroes if status is normal)
8. && - Data Termination Flag
9. CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Version 5

Function Code: 122
Function Type: Setup Warning Detailed Information
Command Format:
 Display: <SOH>i12200
 Computer: <SOH>i12200

Typical Response Message, Display Format:

For a Status Report:

```
<SOH>
i12200
JAN 22, 2014  3:06 PM
```

```
STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....
```

SETUP WARNING DETAILED INFORMATION

LINE

ID	DESCRIPTION	REASON
L 1	REGULAR SOUTH	PUMP NOT SET
L 1	REGULAR SOUTH	PUMP INVALID

TANK

ID	DESCRIPTION	REASON
T 1	REGULAR	DIAMETER OUT OF RANGE

<ETX>

Display format when no active setup warnings in the system at the time of the query

```
<SOH>
i12200
JUN 1, 2000  8:06 AM
```

NO SETUP WARNING
<ETX>

Typical Response Message, Computer Format:

```
<SOH>i12200YYMMDDHHmmAADDffffffff...
SSNNffffffff&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. AA - Device Type (Decimal, 00=all)
 See explanation for "AA" in Function i10100
3. DD - Device Number (Decimal, 00=all)
4. ffffffff - Reason flag (Hex)
 -If AA is 02 Tank:
 0x00000001 = FULL_VOLUME_OUT_OF_RANGE
 0x00000002 = DIAMETER_OUT_OF_RANGE
 0x00000004 = MAX_VOLUME_OUT_OF_RANGE
 0x00000008 = HI_VOLUME_LIMIT_OUT_OF_RANGE
 0x00000010 = COEFFICIENT_OUT_OF_RANGE
 0x00000020 = HIGH_WATER_LIMIT_OUT_OF_RANGE
 0x00000040 = LO_VOLUME_LIMIT_OUT_OF_RANGE
 0x00000080 = THEFT_ALARM_LIMIT_OUT_OF_RANGE
 0x00000100 = TILT_OUT_OF_RANGE
 0x00000200 = OVERFILL_VOLUME_OUT_OF_RANGE
 0x00000400 = CHART_VOLUMES_INVALID_ERR
 0x00000800 = UNCONFIGURED_PROBE_ERR
 0x00001000 = INVALID_SLD_SETUP
 0x00002000 = INVALID_CSLD_SETUP

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code 122: (Continued)

```
0x00004000 = INVALID ACCUCHAR SETUP
0x00008000 = MISSING PRODUCT ASSIGNMENT
0x00010000 = MISSING DENSITY CODE
0x00020000 = PROBE INCORRECT FLOAT SIZE
0x00040000 = PROBE INVALID ADDRESS
0x00080000 = GASOLINE TANK NOT ASSIGNED TO VPM ZONE
0x00100000 = NON GASOLINE TANK ASSIGNED TO VPM ZONE

-If AA is 03, 04, 07, 08 or 12 Sensors:
0x00000001 = ADDRESS NOT SET
0x00000002 = VAPOR THRESHOLD NOT SET

-If AA is 05 Inputs:
0x00000001 = ADDRESS NOT SET

-If AA is 11 Relay:
0x00000001 = ADDRESS NOT SET

-If AA is 18 Mechanical Dispenser Interface:
0x00000001 = ADDRESS NOT SET

-If AA is 20 Product:
0x00000001 = LABEL NOT SET

-If AA is 37 VPM Alarm:
0x00000001 = VAPOR PRESSURE SENSOR IS DISABLED
0x00000002 = GROSS PRESSURE FAIL NOT SET TO SHUTDOWN VIA
    AUTO EVENTS
0x00000004 = DEGRD PRESSURE FAIL NOT SET TO SHUTDOWN VIA
    AUTO EVENTS
0x00000008 = INTEGRITY TEST FAIL NOT SET TO SHUTDOWN VIA
    AUTO EVENTS
0x00000010 = SENSOR OUT FAIL NOT SET TO SHUTDOWN VIA AUTO
    EVENTS

-If AA is 59 Mag Sensor:
0x00000001 = ADDRESS NOT SET

-If AA is 63 Line Pressure Sensor:
0x00000001 = ADDRESS NOT SET

-If AA is 65 Pump:
0x00000001 = SENSE DEVICE NOT SET
0x00000002 = SENSE DEVICE INVALID
0x00000004 = CONTROL DEVICE NOT SET
0x00000008 = CONTROL DEVICE INVALID
0x00000010 = TANK NOT SET
0x00000020 = TANK INVALID
0x00000040 = LINE NOT SET
0x00000080 = LINE INVALID
0x00000100 = EXCEPTION DURING CHECK
0x00000200 = PUMP RELAY MONITOR DEVICE NOT CONFIGURED
0x00000400 = PUMP RELAY MONITOR DEVICE SETUP WARNING
0x00000800 = PUMP RELAY MONITOR DEVICE WRONG TYPE

-If AA is 66 Line:
0x00000001 = PUMP NOT SET
0x00000002 = PUMP INVALID
0x00000004 = PRESSURE SENSOR NOT SET
0x00000008 = PRESSURE SENSOR INVALID
0x00000010 = EXCEPTION DURING CHECK
0x00000020 = PUMP SENSE MODE DOES NOT SUPPORT PLLD
0x00000040 = PUMP NOT TLS PUMP CONTROL
0x00000080 = MANIFOLDED PUMP NOT SAME TYPE
0x00000100 = MANIFOLDED LINE TANK NOT SET
0x00000200 = MANIFOLDED LINE STANDARD PUMP NOT EXT
0x00000400 = MANIFOLDED ONLY ONE PUMP ASSIGNED

-If AA is 74 Contact:
0x00000001 = MODEM NUMBER NOT SET
```

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

0x00000002 = MODEM_DEVICE_NOT_SET
0x00000004 = MODEM_DEVICE_DISABLED
0x00000008 = MODEM_DEVICE_MISMATCH
0x00000010 = FAX_NUMBER_NOT_SET
0x00000020 = FAX_DEVICE_NOT_SET
0x00000040 = FAX_DEVICE_DISABLED
0x00000080 = FAX_DEVICE_MISMATCH
0x00000100 = EMAIL_ADDRESS_NOT_SET
0x00000200 = EMAIL_SERV_ADDRESS_NOT_SET
0x00000400 = TCPIP_ADDRESS_NOT_SET
0x00000800 = TCPIP_PORT_NOT_SET
0x00001000 = TCPIP_DEVICE_NOT_SET
0x00002000 = TCPIP_DEVICE_DISABLED

Function Code 122: (Continued)

0x00004000 = TCPIP_DEVICE_MISMATCH
0x00008000 = SATELLITE_DEVICE_NOT_SET
0x00010000 = SATELLITE_DEVICE_DISABLED
0x00020000 = SATELLITE_DEVICE_MISMATCH

-If AA is 75 AutoEvent:

0x00000001 = TRIGGER_INFO_NOT_SET
0x00000002 = ACTION_INFO_NOT_SET
0x00000004 = ACTION_CONTACT_NOT_FOUND
0x00000008 = ACTION_DEVICE_DISABLED
0x00000010 = ACTION_PRINTER_DISABLED
0x00000020 = TRIGGER_TIME_INFO_NOT_SET
0x00000040 = TRIGGER_EVENT_INFO_NOT_SET
0x00000080 = ACTION_DEVICE_NOT_FOUND
0x00000100 = ACTION_DEVICE_NOT_ALLOWED
0x00000200 = AUTODIAL_ALARM_SET_TO_SAME_CONTACT
0x00000400 = LAST_ALM_RPT_NOT_ALLOWED_FOR_EXTINPT
0x00000800 = LAST_ALM_RPT_NOT_ALLOWED_FOR_NOTIFY

- 5. && - Data Termination Flag
- 6. CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

7.2.2 IN-TANK REPORTS

Function Code: 201

Version 1

Function Type: In-Tank Inventory Report

Command Format:

Display: <SOH>I201TT

Computer: <SOH>i201TT

Typical Response Message, Display Format:

```
<SOH>
I201TT
JAN 22, 1996  3:06 PM
```

```
STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....
```

IN-TANK INVENTORY

TANK	PRODUCT	VOLUME	TC-VOLUME	ULLAGE	HEIGHT	WATER	TEMP
1	REGULAR	5329	5413	4112	51.03	0.00	33.30

<ETX>

Typical Response Message, Computer Format:

```
<SOH>i201TTYMMDDHHmmTTpssssNNFFFFFFFF...
TTpssssNNFFFFFFFF&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. p - Product Code (one ASCII character [20h-7Eh])
4. ssss - Tank Status Bits:
 - Bit 1 - (LSB) Delivery in Progress
 - Bit 2 - Leak Test in Progress
 - Bit 3 - Invalid Fuel Height Alarm (MAG Probes Only)
 - Bit 4-16 - Unused
5. NN - Number of eight character Data Fields to follow (Hex)
6. FFFFFFFF - ASCII Hex IEEE floats:
 1. Volume
 2. TC Volume
 3. Ullage
 4. Height
 5. Water
 6. Temperature
 7. Water Volume
7. && - Data Termination Flag
8. CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 202
Function Type: In-Tank Delivery Report

Version 1

Command Format:
Display: <SOH>I202TT
Computer: <SOH>i202TT

Typical Response Message, Display Format:

<SOH>
I202TT
JUL 29, 1997 9:02 AM

STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....

DELIVERY REPORT

Volume=GALLONS
Height=INCHES
Temp=FAHRENHEIT

TANK 1:

Date / Time	Fuel Volume	FuelTC Volume	Water Height	Fuel Temp	Fuel Height
START: AUG 6, 2009 2:59 PM	7000	7000	0.00	60.00	63.34
END: AUG 6, 2009 3:09 PM	9000	9000	0.00	60.00	80.98
AMOUNT:	2000	2000			
START: AUG 6, 2009 2:41 PM	5000	5000	0.00	60.00	48.00
END: AUG 6, 2009 2:47 PM	7000	7000	0.00	60.00	63.35
AMOUNT:	2000	2000			

<ETX>

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code 202 Notes: (Continued)

Typical Response Message, Computer Format:

```
<SOH>i202TTYMMDDHHmmTTpddYYMMDDHHmmYYMMDDHHmmNNFFFFFFFF...
      TTpddYYMMDDHHmmYYMMDDHHmmNNFFFFFFFF&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. p - Product Code (one ASCII character [20h-7Eh])
4. dd - Number of Deliveries to follow (Decimal, 00 if no data available for this tank)
5. YYMMDDHHmm - Starting Date/Time
6. YYMMDDHHmm - Ending Date/Time
7. NN - Number of eight character Data Fields to follow (Hex)
8. FFFFFFFF - ASCII Hex IEEE floats:
 1. Starting Volume
 2. Starting TC Volume
 3. Starting Water
 4. Starting Temp
 5. Ending Volume
 6. Ending TC Volume
 7. Ending Water
 8. Ending Temp
 9. Starting Height
 10. Ending Height
9. && - Data Termination Flag
10. CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 203

Version 1

Function Type: In-Tank Leak Detect Report

Command Format:

Display: <SOH>I203TT

Computer: <SOH>i203TT

Typical Response Message, Display Format:

```
<SOH>
I203TT
JAN 22, 1996  3:06 PM

STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....

TANK      PRODUCT
1         REGULAR UNLEADED
TEST STATUS: OFF
TEST TYPE/RESULT:  0.2  GAL/HR TEST: PASS
START TIME: FEB 15, 2007  9:10 AM
DURATION:      1.0  HOURS
START TEMP:      45.0  DEG F
ENDING TEMP:      45.0  DEG F
START VOLUME:    7953.6  GALLONS
LEAK RATE:       0.00  GALLONS/HR
CUMULATIVE PERIODIC VOLUME CHANGE (GALLONS)
-0.01  -0.02  -0.01  -0.03  -0.05  -0.04
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i203TTYMMDDHHmmTTPYYMMDDHHmmHHNNFFFFFFFF...
      TTPYYMMDDHHmmHHNNFFFFFFFF&&CCCC<ETX>
```

Notes:

1. YMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. p - Product Code (one ASCII character [20h-7Eh])
4. YMMDDHHmm - Starting Date/Time
5. HH - Test Duration (hours)
6. NN - Number of eight character Data Fields to follow (Hex)
7. FFFFFFFF - ASCII Hex IEEE floats:
 1. Starting Temp
 2. Ending Temp
 3. Starting Volume
 4. Ending Rate
 5. Hourly changes up to the number of fields
8. && - Data Termination Flag
9. CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 204

Version 1

Function Type: In-Tank Active Shift Inventory Report

Command Format:

Display: <SOH>I204TT

Computer: <SOH>i204TT

Notes:

1. TT - tank number, 00 = all tanks
2. In Display format mode:
 - a. Shifts will displayed in descending time order
 - b. shifts will be labeled as either OPEN or CLOSED
3. In Computer format mode:
 - a. shifts will be sent in descending time order
 - b. only closed shifts will be included in response

Typical Response Message, Display Format:

<SOH>
I20401
JUN 05, 2008 03:32 PM

Volume=Gallons
Height=Inches
Temp=Fahrenheit

Shift Inventory

TANK 1:REGULAR UNLEADED

	Fuel Volume	FuelTC Volume	Ullage 100%	Ullage 90%	Fuel Height	Water Height	Water Volume	Fuel Temp
SHIFT 1 [yy/mm/dd hh:mm - yy/mm/dd hh:mm] CLOSED								
Start	8518	8492	1482	xxxx	76.26	0.00	0	64.57
End	8518	8492	1482	xxxx	76.26	0.00	0	64.57
Delivery	0							
Totals	0							
SHIFT 2 [yy/mm/dd hh:mm - yy/mm/dd hh:mm] CLOSED								
Start	8518	8492	1482	xxxx	76.26	0.00	0	64.57
End	8518	8492	1482	xxxx	76.26	0.00	0	64.57
Delivery	0							
Totals	0							
<ETX>								

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code 204 Notes: (Continued)

Typical Response Message, Computer Format:

```
<SOH>i204TTYMMDDHHmmTTpssNNNNNNNNNN...  
TTpssNNNNNNNNNN&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. p - Product Code (one ASCII character [20h-7Eh])
4. ss - Shift Number [01 - 08]
5. NN - Number of eight character Data Fields to follow (Hex)
6. FFFFFFFF - ASCII Hex IEEE floats:
 1. Start Volume
 2. Start Ullage (100% ullage)
 3. Start TC Volume
 4. Start Height
 5. Start Water
 6. Start Temperature
 7. End Volume
 8. End Ullage (100% ullage)
 9. End TC Volume
 - A. End Height
 - B. End Water
 - C. End Temperature
 - D. Total Value (Start - End + Delivery)
7. && - Data Termination Flag
8. CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 205
Function Type: In-Tank Status Report

Version 1

Command Format:
Display: <SOH>I205TT
Computer: <SOH>i205TT

Typical Response Message, Display Format:

```
<SOH>
I205TT
JAN 22, 1996  3:07 PM
```

```
STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....
```

TANK STATUS REPORT

TANK	PRODUCT	STATUS
1	REGULAR UNLEADED	NORMAL

<ETX>

Typical Response Message, Computer Format:

```
<SOH>i205TTYMMDDHHmmTTnnNN...
                                TTnnNN&&CCCC<ETX>
```

Notes:

1. YMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. nn - Number of alarms active for tank (Hex, 00=none)
4. NN - Alarm Type Number:
See explanation for "NN" when "AA" is 02 in Function i10100
5. && - Data Termination Flag
6. CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 206

Function Type: In-Tank Alarm History Report

Version 1

Command Format:

Display: <SOH>I206TT

Computer: <SOH>i206TT

Typical Response Message, Display Format:

```
<SOH>
I206TT
JAN 22, 1996  3:07 PM

STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....

TANK ALARM HISTORY

TANK 1  REGULAR UNLEADED

      LOW PRODUCT ALARM          DEC 22, 1995  3:31 PM
                                   DEC 19, 1995 10:05 AM

      INVALID FUEL LEVEL         DEC 20, 1995 11:59 AM
                                   DEC 20, 1995 11:58 AM
                                   DEC 20, 1995 11:57 AM

<ETX>
```

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code 206 Notes: (Continued)

Typical Response Message, Computer Format:

```
<SOH>i206TTYMMDDHHmmTTnnYYMMDDHHmmaaaa...  
TTnnYYMMDDHHmmaaaa&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. nn - Number of alarms in history for tank (Decimal, 00=none)
4. YYMMDDHHmm - Date and time alarm occurred
5. aaaa - Type of alarm:
 - 0001=Tank Setup Data Warning
 - 0002=Tank Leak Alarm
 - 0003=Tank High Water Alarm
 - 0004=Tank Overfill Alarm
 - 0005=Tank Low Product Alarm
 - 0006=Tank Sudden Loss Alarm
 - 0007=Tank High Product Alarm
 - 0008=Tank Invalid Fuel Level Alarm
 - 0009=Tank Probe Out Alarm
 - 000A=Tank High Water Warning
 - 000B=Tank Delivery Needed Warning
 - 000C=Tank Maximum Product Alarm
 - 000D=Tank Gross Leak Test Fail Alarm
 - 000E=Tank Periodic Leak Test Fail Alarm
 - 000F=Tank Annual Leak Test Fail Alarm
 - 0010=Tank Periodic Test Needed Warning
 - 0011=Tank Annual Test Needed Warning
 - 0012=Tank Periodic Test Needed Alarm
 - 0013=Tank Annual Test Needed Alarm
 - 0014=Tank Leak Test Active
 - 0015=Tank No CSLD Idle Time Warning
 - 0016=Tank Siphon Break Active Warning
 - 0017=Tank CSLD Rate Increase Warning
 - 0018=Tank AccuChart Calibration Warning
 - 0019=Tank HRM Reconciliation Warning
 - 001A=Tank HRM Reconciliation Alarm
 - 001B=Tank Cold Temperature Warning
 - 001C=Tank Missing Delivery Ticket Warning
 - 001D=Tank/Line Gross Leak Alarm
6. && - Data Termination Flag
7. CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 207

Version 1

Function Type: In-Tank Leak Test History Report

Command Format:

Display: <SOH>I207TT

Computer: <SOH>i207TT

Typical Response Message, Display Format:

```
<SOH>
I207TT
JUL 29, 1997  9:02 AM
```

```
STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....
```

TANK LEAK TEST HISTORY

T 1:REGULAR UNLEADED

REPORT TYPE	DATE/TIME	METHOD	HOURS	AVERAGE VOLUME	% VOLUME
FULLEST PERIODIC	08-04-15 12:34	CSLD	199	123456	99.9
FULLEST ANNUAL	08-04-15 12:34	SLD	99	23456	49.9
LAST ANNUAL	08-04-15 12:34	SLD	9	23456	39.9
LAST GROSS	08-04-15 12:34	SLD	22	13456	9.9
LAST PERIODIC	08-04-15 12:34	CSLD	109	3456	29.9

<ETX>

Typical Response Message, Computer Format:

```
<SOH>i207TTYMMDDHHmmTTNNRRnnttYYMMDDHHmmhhhhhhhhVVVVVVVVppppppppp...
TTNNRRnnttYYMMDDHHmmhhhhhhhhVVVVVVVVppppppppp&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. NN - Number of Leak History Reports to Follow (Hex)
4. RR - Leak Report Type:
00=Last Test Passed
01=Fulltest Test Passed
02=Fulltest Periodic Monthly Test Passed
5. nn - Leak History Number (1-12) for first Monthly Tests Passed.
For all report types except Fulltest Periodic nn = 1.
For Fulltest Periodic nn is the number of the month the test was performed.
6. tt - In-Tank Leak Test Type:
00=0.20 gal/hr test
01=0.10 gal/hr test
02=Gross (3 gal/hr)test
7. YYMMDDHHmm - In-Tank Leak Test Start Time
8. hhhhhhhh - Leak Test Duration in Hours (ASCII Hex IEEE float)
9. VVVVVVVV - Leak Test Volume (ASCII Hex IEEE float)
10. pppppppp - Leak Test Percentage of Full Volume (ASCII Hex IEEE float)
11. && - Data Termination Flag
12. CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 208

Version 1

Function Type: In-Tank Leak Test Results Report

Command Format:

Display: <SOH>I208TT

Computer: <SOH>i208TT

Typical Response Message, Display Format:

<SOH>

I208TT

JAN 22, 1996 3:07 PM

PREVIOUS IN TANK LEAK TEST RESULTS

TANK 1 REGULAR UNLEADED

TEST TYPE	START TIME	RESULT	LEAK RATE	HRS	VOLUME	REASON
ANNUAL	NOV 21, 1995 12:34 AM	PASSED	0.00	12	9088	
PERIODIC	NOV 21, 1995 12:34 AM	FAILED	-0.75	24	12345	
GROSS	NOV 24, 1995 12:04 AM	INVALID	0.00		5432	Product Increase Insuf Smpl 1st Per Insuf Smpl 2nd Per Low Product Level Recent Delivery Zone Temp Change Avg Temp Change Head Temp Change Temp out of Range Test too Short % Vol Too Low Invalid Fuel level

<ETX>

Typical Response Message, Computer Format:

```
<SOH>i208TTYMMDDHHmmTTNNttmmYYMMDDHHmmRRrrrrrrrrrrhhhhhhhhVVVVVVVV...
TTNNttmmYYMMDDHHmmRRrrrrrrrrrrhhhhhhhhVVVVVVVV&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. NN - Number of Results to Follow (Hex)
4. tt - In-Tank Leak Test Result Type:
 - 00=0.20 gal/hr Test
 - 01=0.10 gal/hr Test
 - 02=Gross (3 gal/hr) Test
5. mm - In-Tank Leak Manifold Status:
 - 00=Tank Not Manifoldded During Leak Test
 - 01=Tank Manifoldded During Leak Test
6. YYMMDDHHmm - Previous In-Tank Leak Test Start Time
7. RR - Previous In-Tank Leak Test Result:
 - 00=Test Invalid
 - 01=Test Passed
 - 02=Test Failed
8. rrrrrrrr - Test Rate (ASCII Hex IEEE float)
9. hhhhhhhh - Leak Test Duration in Hours (ASCII Hex IEEE float)
10. VVVVVVVV - Leak Test Volume (ASCII Hex IEEE float)
11. && - Data Termination Flag
12. CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 209

Version 1

Function Type: Enhanced In-Tank Leak Detect Report

Command Format:

Display: <SOH>I209TT

Computer: <SOH>i209TT

Typical Response Message, Display Format:

```
<SOH>
I209TT
JAN 22, 2007  3:06 PM

STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....

IN-TANK LEAK DETECT

TANK      PRODUCT
1         REGULAR UNLEADED
TEST STATUS: OFF
TEST TYPE/RESULT:  0.2  GAL/HR TEST: PASS
START TIME: FEB 15, 2007  9:10 AM
DURATION:      1.0  HOURS
START TEMP:      45.0  DEG F
ENDING TEMP:      45.0  DEG F
START VOLUME:    7953.6  GALLONS
PERCENT VOLUME:  79.5  PERCENT
LEAK RATE:       0.00  GALLONS/HR
THRESHOLD:       0.13
FUEL HEIGHT:     70.5  INCHES
WATER HEIGHT:    0.0  INCHES
CUMULATIVE PERIODIC VOLUME CHANGE (GALLONS)
0.00      -0.01  -0.02  -0.01  -0.03  -0.05  -0.04
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i209TTYMMDDHHmmTTpYYMMDDHHmmHHNNFFFFFFFFF...
TTpYYMMDDHHmmHHNNFFFFFFFFF&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. p - Product Code (one ASCII character [20h-7Eh])
4. YYMMDDHHmm - Starting Date/Time
5. HH - Test Duration (hours)
6. NN - Number of eight character Data Fields to follow (Hex)
7. FFFFFFFF - ASCII Hex IEEE floats:
 1. Starting Temp
 2. Ending Temp
 3. Starting Volume
 4. Ending Rate
 5. Fuel Height
 6. Water Height
 7. Threshold
 8. Hourly changes up to the number of fields
8. && - Data Termination Flag
9. CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 20A

Version 4

Function Type: HRM Adjusted Delivery Report

Command Format:

Display: <SOH>I20ATT

Computer: <SOH>i20ATT

Typical Response Message, Display Format:

```
<SOH>
I20ATT
JAN 22, 2011  3:06 PM
```

```
STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....
```

ADJUSTED DELIVERY REPORT

T 1:REGULAR UNLEADED

INCREASE DATE/TIME	INCREASE VOLUME	INCREASE TC VOLUME	ADJUSTMENT	DELIVERY VOLUME	DELIVERY TC VOLUME
JAN 13, 1996 2:06 AM	3795	3859	8	3803	3868
JAN 15, 1996 1:07 PM	5383	5458	30	5413	5487
JAN 17, 1996 3:13 AM	6012	6114	-1	6010	6113
JAN 19, 1996 3:22 AM	4413	4480	-3	4409	4473
JAN 21, 1996 2:52 AM	6005	6112	6	6011	6119

<ETX>

Typical Response Message, Computer Format:

```
<SOH>i20A00YYMMDDHHmmTTpPPrrYYMMDDHHmmNNFFFFFFFFF...
TTpPPrrYYMMDDHHmmNNFFFFFFFFF&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. p - Product Code (one ASCII character [20h-7Eh])
4. PP - Probe Type
5. rr - Number of Records to follow (ASCII Hex)
6. YYMMDDHHmm - Date/Time of Delivery Start
7. NN - Number of eight character Data Fields to follow (Hex)
8. FFFFFFFF - ASCII Hex IEEE floats:
 1. Increase Volume
 2. Increase Temp Comp Volume
 3. Adjustment factor
 4. Adjusted Increase Value
 5. Adjusted Temp Comp Volume
9. && - Data Termination Flag
10. CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 20B

Version 2

Function Type: BIR Adjusted Delivery Report

Command Format:

Display: <SOH>I20BTT

Computer: <SOH>i20BTT

Typical Response Message, Display Format:

```
<SOH>
I20BTT
JAN 22, 2009  3:08 PM
```

```
STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....
```

BIR ADJUSTED DELIVERY REPORT

T 1:REGULAR UNLEADED

DELIVERY START	DATE	DELIVERY END	DATE	START VOLUME	END VOLUME	ADJ DELIV	ADJ TC DELIV
JAN 21, 2009	2:52 AM	JAN 21, 1996	3:12 AM	3193	9197	6011	6119
JAN 19, 2009	3:22 AM	JAN 19, 1996	3:40 AM	4193	8602	4409	4473
JAN 17, 2009	3:13 AM	JAN 17, 1996	3:40 AM	2739	8749	6010	6113

<ETX>

Typical Response Message, Computer Format:

```
<SOH>i20BTTYMMDDHHmmTTddYYMMDDHHmmYYMMDDHHmmNNNNNNNNNN...
TTddYYMMDDHHmmYYMMDDHHmmNNNNNNNNNN&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=All)
3. dd - Number of Deliveries to follow
4. YYMMDDHHmm - Starting Date/Time
5. YYMMDDHHmm - Ending Date/Time
6. NN - Number of eight character Data Fields to follow (Hex)
7. FFFFFFFF - ASCII Hex IEEE floats:
 1. Starting Volume
 2. Ending Volume
 3. Adjusted Delivery Volume
 4. Adjusted Temperature Compensated Delivery Volume
 5. Starting Fuel Height
 6. Starting Fuel Temperature 1
 7. Starting Fuel Temperature 2
 8. Starting Fuel Temperature 3
 9. Starting Fuel Temperature 4
 10. Starting Fuel Temperature 5
 11. Starting Fuel Temperature 6
 12. Ending Fuel Height
 13. Ending Fuel Temperature 1
 14. Ending Fuel Temperature 2
 15. Ending Fuel Temperature 3
 16. Ending Fuel Temperature 4
 17. Ending Fuel Temperature 5
 18. Ending Fuel Temperature 6
 19. Total Dispensed During Delivery
 20. Starting Fuel Temperature Average
 21. Ending Fuel Temperature Average
8. && - Data Termination Flag
9. CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 20C

Version 1

Function Type: In-Tank Most Recent Delivery Report

Command Format:

Display: <SOH>I20CTT

Computer: <SOH>i20CTT

Typical Response Message, Display Format:

```
<SOH>
I20CTT
JUL 29, 1997  9:03 AM
```

```
STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....
```

LAST DELIVERY REPORT

Volume=GALLONS
Height=INCHES
Temp=FAHRENHEIT

T 1: UNLEADED

Date / Time	Fuel Volume	FuelTC Volume	Water Height	Fuel Temp	Fuel Height
START: AUG 6, 2009 2:59 PM	7000	7000	0.00	60.00	63.34
END: AUG 6, 2009 3:09 PM	9000	9000	0.00	60.00	80.98
AMOUNT:	2000	2000			

<ETX>

Typical Response Message, Computer Format:

```
<SOH>i20CTTYMMDDHHmmTTpddYYMMDDHHmmYYMMDDHHmmNNFFFFFFFF...
TTpddYYMMDDHHmmYYMMDDHHmmNNFFFFFFFF&&CCCC<ETX>
```

Notes:

1. YMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. p - Product Code (one ASCII character [20h-7Eh])
4. dd - Number of Deliveries to follow (Decimal, 00 if no data available for this tank)
5. YMMDDHHmm - Starting Date/Time
6. YMMDDHHmm - Ending Date/Time
7. NN - Number of eight character Data Fields to follow (Hex)
8. FFFFFFFF - ASCII Hex IEEE floats:
 1. Starting Volume
 2. Starting TC Volume
 3. Starting Water
 4. Starting Temp
 5. Ending Volume
 6. Ending TC Volume
 7. Ending Water
 8. Ending Temp
 9. Starting Height
 10. Ending Height
 11. Starting Mass
 12. Ending Mass
 13. Starting Density
 14. Ending Density
 15. Starting TC Density
 16. Ending TC Density
9. && - Data Termination Flag
10. CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 20D
Function Type: In-Tank Stick Height Report

Version 5

Command Format:
Display: <SOH>I20DTT
Computer: <SOH>i20DTT

Notes:

1. This command will respond only if stick height is enabled. Tank stick height is fuel height (without tilt) + stick offset. If the stick height is less than zero, it will be set to zero. If the stick height is greater than tank diameter, it will be set to tank diameter.

Typical Response Message, Display Format:

```
<SOH>
I20DTT
OCT 15, 2013  4:29 PM

TANK STICK HEIGHT

TANK  PRODUCT LABEL      INCHES
  1    REGULAR           25.0
  2   MIDGRADE           67.5
  3    SUPER            66.1
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i20DTTYMMDDHHmmTTTTTTTTTT...
                      TTTTTTTTTT&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. FFFFFFFF - Stick Height (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 20F
Function Type: Extended Delivery Report - Date/Time Based
Command Format:
Display: <SOH>I20FTTTRRyyymmddhhmmYYMMDDHHMMnnn
Computer: <SOH>i20FTTTRRyyymmddhhmmYYMMDDHHMMnnn

Version 1

Notes:

1. TT -Device Number (Decimal, 00=all)
2. RR - Report Type (Report Type should always be given. The rest of the parameters are optional following the rules below.)
00=Delivery History Report (for Inventory Information for the specified Time Period)
3. yyymmddhhmm - Starting Date/Time (If no start date/time is given or either Year, Month or Day are zeroes, it assumes request is for most recent records. If no start date/time is given, then the request is limited by the Maximum Records (below)). Ranges are as follows:
yy=Year (01 - 99, for Years 2001-2099)
mm=Month (01 - 12, for Months January to December)
dd=Day (01 - 31, however, validity depends on Month)
hh=Hour (00 - 23)
mm=Minute (00 - 59)
4. YYMMDDHHMM - Ending Date/Time (If no end date/time is given or either Year, Month or Day are zeroes, it assumes request is for records starting from start date/time as evaluated above, limited by the Maximum Records (below)). Ranges are the same as for the Start Date/Time fields.
5. nnn - Maximum Records - 1 - 999 (Absolute Maximum) (Decimal).. (If no Maximum Records is given or it's zeroes, it assumes request is for records starting from start date/time, ending by end date/time, and limited by the Maximum Records Default of 100)

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code 20F: (Continued)

Typical Response Message, Display Format:

```
<SOH>
I20F0001
JAN 22, 2008  3:06 PM
```

```
STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....
```

Delivery History Report

Volume=Gallons
Height=Inches
Temp=Fahrenheit

Selected Range:
All Records:

T 1:REGULAR UNLEADED

Date / Time	Fuel Volume	FuelTC Volume	Water Height	Fuel Temp	Fuel Height
START: AUG 12, 2009 5:06 PM	783465	0	0.00	0.00	267.15
END: AUG 12, 2009 5:16 PM	803434	0	0.00	0.00	272.11
AMOUNT:	19969	0			

TANK 3:REGULAR UNLEADED

Date / Time	Fuel Volume	FuelTC Volume	Water Height	Fuel Temp	Fuel Height
START: AUG 13, 2009 9:43 AM	783468	0	0.00	0.00	267.15
END: AUG 13, 2009 9:50 AM	803437	0	0.00	0.00	272.11
AMOUNT:	19969	0			

<ETX>

Typical Response Message, Computer Format:

```
<SOH>i20FTTYMMDDHHmmTTpnnnYYMMDDHHmmYYMMDDHHmmNNNNNNNN...
TTpnnnYYMMDDHHmmYYMMDDHHmmNNNNNNNN&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. p - Product Code (one ASCII character [20h-7Eh])
4. nnn - Number of TimeStamped Records to follow (Decimal)
5. YYMMDDHHmm - Starting Delivery Time
6. YYMMDDHHmm - Ending Delivery Time
7. NN - Number of eight character Data Fields (Hex)

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code 20F Notes: (Continued)

- 8. FFFFFFFF - ASCII Hex IEEE floats:
 - 1. Starting Volume
 - 2. Starting TC Volume
 - 3. Starting Water
 - 4. Starting Temp
 - 5. Ending Volume
 - 6. Ending TC Volume
 - 7. Ending Water
 - 8. Ending Temp
 - 9. Starting Height
 - 10. Ending Height
 - 11. Starting Mass
 - 12. Starting Density
 - 13. Starting TC Density
 - 14. Ending Mass
 - 15. Ending Density
 - 16. Ending TC Density
- 9. && - Data Termination Flag
- 10. CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 20G

Version 1

Function Type: Static Leak Test Passed Report

Command Format:

Display: <SOH>I20GTT

Computer: <SOH>i20GTT

Typical Response Message, Display Format:

```
<SOH>
I20GTT
JUL 29, 2007  9:02 AM
```

STATIC LEAK TEST LAST PASSED REPORT

TANK 1: REGULAR UNLEADED

TEST TYPE	DATE & TIME	STATUS	TOTAL HOURS	AVG. VOLUME	% VOLUME
Last Gross	JUL 27, 2007 5:00 AM	Pass		7898	79.0
Last Periodic	JUL 28, 2007 10:32 AM	Pass	10	3509	30.0
Last Annual	JUL 29, 2007 6:02 AM	Pass	9	3580	35.8

<ETX>

Typical Response Message, Computer Format:

```
<SOH>i20GTTYMMDDHHmmTTNNttYYMMDDHHmmhhhhhhhhVVVVVVVpppppppp
ttYYMMDDHHmmhhhhhhhhVVVVVVVpppppppp
ttYYMMDDHHmmhhhhhhhhVVVVVVVpppppppp...
TTNNttYYMMDDHHmmhhhhhhhhVVVVVVVpppppppp&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. NN - Number of Leak History Reports to Follow (Hex)
4. tt - In-Tank Leak Test Type:
00=0.20 gal/hr test
01=0.10 gal/hr test
02=Gross (3 gal/hr)test
5. YYMMDDHHmm - Static Leak Test Pass Time
6. hhhhhhhh - Leak Test Duration in Hours (ASCII Hex IEEE float)
7. VVVVVVVV - Leak Test Volume (ASCII Hex IEEE float)
8. pppppppp - Leak Test Percentage of Full Volume (ASCII Hex IEEE float)
9. && - Data Termination Flag
10. CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 20H
Function Type: Static Leak Test History

Version 1

Command Format:
Display: <SOH>I20HTTyyymmddhhmmYYMMDDHHMMnnn
Computer: <SOH>i20HTTyyymmddhhmmYYMMDDHHMMnnn

1. yyymmddhhmm - Starting Date/Time (If no start date/time is given or either Year, Month or Day are zeroes, it assumes request is for most recent records. If no start date/time is given, then the request is limited by the Maximum Records (below)). Ranges are as follows:
 yy=Year (01 - 99, for Years 2001-2099)
 mm=Month (01 - 12, for Months January to December)
 dd=Day (01 - 31, however, validity depends on Month)
 hh=Hour (00 - 23)
 mm=Minute (00 - 59)
2. YYMMDDHHMM - Ending Date/Time (If no end date/time is given or either Year, Month or Day are zeroes, it assumes request is for records starting from start date/time as evaluated above, limited by the Maximum Records (below)). Ranges are the same as for the Start Date/Time fields.
3. nnn - Maximum Records - 1 - 999 (Absolute Maximum) (Decimal). (If no Maximum Records is given or it's zeroes, it assumes request is for records starting from start date/time, ending by end date/time, and limited by the Maximum Records Default of 100)

Typical Response Message, Display Format:

```
<SOH>
I20HTT
JUL 29, 2007  9:02 AM

STATIC LEAK TEST HISTORY

TANK 1: REGULAR UNLEADED

      TEST   TOTAL   LEAK   START   %
TEST TYPE  DATE & TIME RESULT  HOURS  RATE  VOLUME  VOLUME
Annual    JUL  2, 2008 11:58 PM Passed    10    0.00   4995   43.0
Periodic  JUL  2, 2008 11:58 PM Passed    10    0.00   4995   43.0
Gross     JUL  2, 2008 10:56 PM Passed         -0.01   4995   43.0
Gross     JUL  2, 2008  9:36 PM Failed        -1.72   4995   43.0
Gross     JUL  2, 2008  8:43 PM Invalid         0.00   4836   41.6
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i20HTTYYMMDDHHmmTTNNttYYMMDDHHmmhhSSRRVVVVVVVVpppppppprrrrrrrr
      ttYYMMDDHHmmhhSSRRVVVVVVVVpppppppprrrrrrrr
      ttYYMMDDHHmmhhSSRRVVVVVVVVpppppppprrrrrrrr...
TTNNttYYMMDDHHmmhhSSRRVVVVVVVVpppppppprrrrrrrr&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. NN - Number of Leak History Results to Follow (Decimal)
4. tt - In-Tank Leak Test Type:
 00=0.20 gal/hr test
 01=0.10 gal/hr test
 02=Gross (3 gal/hr) test
5. YYMMDDHHmm - Static Leak Test Start Time
6. hh - Leak Test Duration in Hours (decimal 01-99)
7. SS - test status (00=invalid, 01=pass, 02=fail, 03=error)
8. RR - Number of IEEE floats
9. VVVVVVVV - Leak Test Volume (ASCII Hex IEEE float)
10. pppppppp - Leak Test Percentage of Full Volume (ASCII Hex IEEE float)
11. rrrrrrrr - Leak Test leak rate (ASCII Hex IEEE float)
12. && - Data Termination Flag
13. CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 20I

Version 1

Function Type: Enhanced In-Tank Inventory Report

Command Format:

Display: <SOH>I20ITT

Computer: <SOH>i20ITT

Typical Response Message, Display Format:

<SOH>
I20ITT
JAN 22, 1996 3:06 PM

STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....

Current Inventory Report

Volume=Gallons
Height=Inches
Temp=Fahrenheit

Fuel Volume	Fuel TC Volume	Ullage 100%	Ullage xx%	Fuel Height	Water Height	Water Volume	Fuel Temp
Tank 1: Regular Unleaded							
5329	5413	4699	3699	48.97	0.00	0.00	37.39
Tank 2: Supreme Unleaded							
11375	5413	11413	2697	52.36	0.00	0.00	43.39

MANIFOLDED TANKS INVENTORY TOTALS

T1: Regular

T2: Regular

VOLUME = 16705 GALS

TC VOLUME = 10826 GALS

<ETX>

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code 20I Notes: (Continued)

Typical Response Message, Computer Format:

```
<SOH>i20ITTYMMDDHHmmTTpssssNNFFFFFFF...  
TTpssssNNFFFFFFF&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. p - Product Code (one ASCII character [20h-7Eh])
4. ssss - Tank Status Bits:
 - Bit 1 - (LSB) Delivery in Progress
 - Bit 2 - Leak Test in Progress
 - Bit 3 - Invalid Fuel Height Alarm (MAG Probes Only)
 - Bit 4-16 - Unused
5. NN - Number of eight character Data Fields to follow (Hex)
6. FFFFFFFF - ASCII Hex IEEE floats:
 - 1. Volume
 - 2. TC Volume
 - 3. Ullage
 - 4. Height
 - 5. Water
 - 6. Temperature
 - 7. Water Volume
 - 8. User Ullage
 - 9. Mass
 - 10. Density
 - 11. TC Density
7. && - Data Termination Flag
8. CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 20L

Version 2

Function Type: BIR Adjusted Delivery Report with Range

Command Format:

Display: <SOH>I20LTTyymmddhhmmYYMMDDHHmmnnn

Computer: <SOH>i20LTTyymmddhhmmYYMMDDHHmmnnn

Notes:

1. TT - Tank Number (Decimal, 00=all)
2. yymmddhhmm - Starting Date (00000000 = no starting date = first of the month)
3. YYMMDDHHmm - Ending Date (00000000 = no ending date = current date)
4. nnn - Maximum Records [001...999] (100 = default) (decimal)

Typical Response Message, Display Format:

```
<SOH>
I20LTT
JAN 22, 1996  3:06 PM
```

```
STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....
```

BIR ADJUSTED DELIVERY REPORT

T 1:REGULAR UNLEADED

DELIVERY START	DATE	DELIVERY END	DATE	START VOLUME	END VOLUME	ADJ DELIV	ADJ TC DELIV
JAN 21, 2009	2:52 AM	JAN 21, 2009	3:12 AM	3193	9197	6011	6119
JAN 19, 2009	3:22 AM	JAN 19, 2009	3:40 AM	4193	8602	4409	4473
JAN 17, 2009	3:13 AM	JAN 17, 2009	3:40 AM	2739	8749	6010	6113

<ETX>

Typical Response Message, Computer Format:

```
<SOH>i20LTTYMMDDHHmmTTdddYYMMDDHHmmYYMMDDHHmmNNFFFFFFFF...
TTdddYYMMDDHHmmYYMMDDHHmmNNFFFFFFFF&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=All)
3. ddd - Number of Deliveries to Follow (Decimal)
4. YYMMDDHHmm - Starting Date and Time
5. YYMMDDHHmm - Ending Date and Time
6. NN - Number of eight character Data Fields to follow (Hex)

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code 20L Notes: (Continued)

- 7. FFFFFFFF - ASCII Hex IEEE floats:
 - 1. Starting Volume
 - 2. Ending Volume
 - 3. Adjusted Delivery Volume
 - 4. Adjusted Temperature Compensated Delivery Volume
 - 5. Starting Fuel Height
 - 6. Starting FuelTemperature 1
 - 7. Starting FuelTemperature 2
 - 8. Starting FuelTemperature 3
 - 9. Starting FuelTemperature 4
 - 10. Starting FuelTemperature 5
 - 11. Starting FuelTemperature 6
 - 12. Ending Fuel Height
 - 13. Ending FuelTemperature 1
 - 14. Ending FuelTemperature 2
 - 15. Ending FuelTemperature 3
 - 16. Ending FuelTemperature 4
 - 17. Ending FuelTemperature 5
 - 18. Ending FuelTemperature 6
 - 19. Total Dispensed During Delivery
 - 20. Starting Fuel Temperature Average
 - 21. Ending Fuel Temperature Average
- 8. && - Data Termination Flag
- 9. CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 20M

Version 2

Function Type: In-Tank Shift Inventory History Report - Date/Time Based

Command Format:

Display: <SOH>I20MTTRRyyymmddhhmmYYMMDDHHmmnnn

Computer: <SOH>i20MTTRRyyymmddhhmmYYMMDDHHmmnnn

Notes:

1. TT - Tank Number (Decimal, 00=All)
2. RR - Report Type (Report Type should always be given. The rest of the parameters are optional following the rules below.)
00=Shift Inventory History Report Times or Manual Shift Closings
3. yyymmddhhmm - Starting Date/Time (If no start date/time is given or either Year, Month or Day are zeros, it assumes request is for most recent records. If no start date/time is given, then the request is limited by the Maximum Records (below)). Ranges are as follows:
yy=Year (01 - 99, for Years 2001-2099)
mm=Month (01 - 12, for Months January to December)
dd=Day (01 - 31, however, validity depends on Month)
hh=Hour (00 - 23)
mm=Minute (00 - 59)
4. YYMMDDHHmm - Ending Date/Time (If no end date/time is given or either Year, Month or Day are zeros, it assumes request is for records starting from start date/time as evaluated above, limited by the Maximum records (below)). Ranges are the same as for the Start Date/Time fields.
5. nnn - Maximum Records [001...366] (Absolute Maximum) (Decimal). (If no Maximum records starting from start date/time, ending by end date/time, and limited by the Maximum Records Default of 100)

Typical Response Message, Display Format:

```
<SOH>
I20M0001
JAN 22, 1996  3:06 PM
```

```
STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....
```

Selected Range:

Previous 1 Year: 10/15/2006 04:00 PM - 10/15/2007 04:00 PM

						Volume=Gallons		Height=Inches		Temp=Fahrenheit	
Shift Inventory History											
TANK 1:REGULAR UNLEADED											
	Fuel	FuelTC	Ullage	Ullage	Fuel	Water	Water	Fuel			
	Volume	Volume	100%	90%	Height	Height	Volume	Temp			
Shift 1	mm-dd-yy	hh:mm	am								
Starting Values	8518	8492	1482	xxxx	76.26	0.00	0	64.57			
Ending Values	8518	8492	1482	xxxx	76.26	0.00	0	64.57			
Delivery Value	0										
Totals	0										

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code 20M: (Continued)

```
Shift 2 mm-dd-yy hh:mm am
Starting Values      8518      8492      1482      xxxx      76.26      0.00      0 64.57
Ending Values       8518      8492      1482      xxxx      76.26      0.00      0 64.57
Delivery Values      0
Totals               0
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i20MTTYMMDDHHmmTTpnnnnssYYMMDDHHmmNNFFFFFFFF...
                        ssYYMMDDHHmmNNFFFFFFFF...
TTpnnnnssYYMMDDHHmmNNFFFFFFFF...
                        ssYYMMDDHHmmNNFFFFFFFF...&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. p - Product Code (one ASCII character [20h-7Eh])
4. nnnn - Number of TimeStamped Records to follow (hex)
5. ss - Shift Number [01 - 08]
6. YYMMDDHHmm - TimeStamp
7. NN - Number of eight character Data Fields to follow (Hex)
8. FFFFFFFF - ASCII Hex IEEE floats:
 1. Start Volume
 2. Start Ullage (100% ullage)
 3. Start TC Volume
 4. Start Height
 5. Start Water
 6. Start Temperature
 7. End Volume
 8. End Ullage (100% ullage)
 9. End TC Volume
 10. End Height
 11. End Water
 12. End Temperature
 13. Total Value (Start - End + Delivery)
 14. Start Mass
 15. Start Density
 16. Start TC Density
 17. End Mass
 18. End Density
 19. End TC Density
9. && - Data Termination Flag
10. CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 20N

Version 3

Function Type: In-Tank Mass/Density Shift Inventory History Report

Command Format:

Display: <SOH>I20NTT

Computer: <SOH>i20NTT

Notes:

1. TT - Tank Number (Decimal, 00=All)
2. In Display format mode:
 - a. Shifts will display in descending time order
 - b. Shifts will be labeled as either OPEN or CLOSED
3. In Computer format mode:
 - a. Shifts will be sent in descending time order
 - b. Only closed Shifts will be included in response

Typical Response Message, Display Format:

<SOH>
I20NTT

JUN 5, 2008 3:06 PM

Volume=Gallons
Height=Inches
Temp=Fahrenheit

Shift Inventory

TANK 1:REGULAR UNLEADED

	Fuel Volume	Fuel Mass	Fuel Density	Fuel TC Density	Fuel Height	Water Height	Water Volume	Fuel Temp
SHIFT 1 [yy/mm/dd hh:mm - yy/mm/dd hh:mm] CLOSED								
Start	8518	44521	45.35	47.10	76.26	0.00	0	64.57
End	8600	45365	46.72	49.55	76.26	0.00	0	64.57
Delivery	0							
Totals	0							
SHIFT 2 [yy/mm/dd hh:mm - yy/mm/dd hh:mm] CLOSED								
Start	8600	45365	45.35	49.55	76.26	0.00	0	64.57
End	8410	40899	41.79	46.80	76.26	0.00	0	64.57
Delivery	0							
Totals	0							

<ETX>

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code 20N: (Continued)

Typical Response Message, Computer Format:

```
<SOH>i20NTTYMMDDHHmmTTpssNNFFFFFFFF...  
TTpssNNFFFFFFFF&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. p - Product Code (one ASCII character [20h-7Eh])
4. ss - Shift Number [01 - 08]
5. NN - Number of eight character Data Fields to follow (Hex)
6. FFFFFFFF - ASCII Hex IEEE floats:
 1. Start Volume
 2. Start Fuel Mass
 3. Start Fuel Density
 4. Start Fuel TC Density
 5. Start Ullage (100% ullage)
 6. Start Height
 7. Start Water
 8. Start Temperature
 9. End Volume
 10. End Fuel Mass
 11. End Fuel Density
 12. End Fuel TC Density
 13. End Ullage (100% ullage)
 14. End Height
 15. End Water
 16. End Temperature
 17. Total Value (*Start - End + Delivery*)
7. && - Data Termination Flag
8. CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 20P

Version 4

Function Type: HRM Adjusted Delivery Report Date/Time Based

Command Format:

Display: <SOH>I20PTTyymmddYYMMDDnnn

Computer: <SOH>i20PTTyymmddYYMMDDnnn

Notes:

1. TT - Tank Number (Decimal, 00=All)
2. yymmdd - Starting Date (If no start date is given or zeros are entered for the starting date, then the request is limited by the Maximum Records (below) or the last 240 records.)
3. YYMMDD - Ending Date (If no end date is given or zeros are entered for the ending date, then the request is limited by the Maximum records (below) or the last 240 records.)
4. nnn - Maximum Records [001...366] (default = 240) (Decimal). (If no Maximum records starting from start date, ending by end date and limited by the Maximum Records)

Typical Response Message, Display Format:

```
<SOH>
I20PTT
JAN 22, 2011  3:06 PM
```

```
STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....
```

HRM ADJUSTED DELIVERY REPORT

Selected Range:
All Records:

T 1:REGULAR UNLEADED

INCREASE DATE/TIME	INCREASE VOLUME	INCREASE TC VOLUME	ADJUSTMENT	DELIVERY VOLUME	DELIVERY TC VOLUME
JAN 13, 1996 2:06 AM	3795	3859	8	3803	3868
JAN 15, 1996 1:07 PM	5383	5458	30	5413	5487
JAN 17, 1996 3:13 AM	6012	6114	-1	6010	6113
JAN 19, 1996 3:22 AM	4413	4480	-3	4409	4473
JAN 21, 1996 2:52 AM	6005	6112	6	6011	6119

<ETX>

Typical Response Message, Computer Format:

```
<SOH>i20P00YYMMDDHHmmTTpPPrrYYMMDDHHmmNNFFFFFFFFF...
TTpPPrrYYMMDDHHmmNNFFFFFFFFF&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. p - Product Code (one ASCII character [20h-7Eh])
4. PP - Probe Type
5. rr - Number of Records to follow (ASCII Hex)
6. YYMMDDHHmm - Date/Time of Delivery Start
7. NN - Number of eight character Data Fields to follow (Hex)
8. FFFFFFFF - ASCII Hex IEEE floats:
 1. Increase Volume
 2. Increase Temp Comp Volume
 3. Adjustment factor
 4. Adjusted Increase Value
 5. Adjusted Temp Comp Volume
9. && - Data Termination Flag
10. CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 211
Function Type: Tank Chart Report

Version 1

Command Format:
Display: <SOH>I211TTThhhhhh
Computer: <SOH>i211TTFFFFFFF

Notes:

1. TT - Tank number, 00=All tanks
2. hhhhhh - height step size (inches or millimeters). Up to 6 decimal digits. If less than 6 digits are entered, use carriage return to terminate the command.
3. FFFFFFFF - height step size (ASCII Hex IEEE float)
4. Minimum Step Size: 0.010 inches or 0.397 millimeter
5. Minimum Resolution: 3 decimal places

Typical Response Message, Display Format:

```
<SOH>
I21101
OCT 15, 1996  4:29 PM
```

```
STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....
```

TANK CALIBRATION CHART

```
TANK 1
REGULAR UNLEADED
GALLONS      10028
INCHES       96.00
```

DEPTH INCHES	CAPACITY GALLONS	DEPTH INCHES	CAPACITY GALLONS	DEPTH INCHES	CAPACITY GALLONS	DEPTH INCHES	CAPACITY GALLONS
0.000	0	26.000	2413	52.000	5827	78.100	9021
0.500	69	26.500	2474	52.500	5894	78.500	9073
1.000	90	27.000	2535	53.000	5961	79.000	9123
1.500	114	27.500	2596	53.500	6028	79.500	9173
:							
:							

<ETX>

Typical Response Message, Computer Format:

```
<SOH>i211TTYMMDDHHmmTTnnnnnaaaaaaaaaAAAAAAAAAbbbbBbbbBBBBBBBB...
TTnnnnnaaaaaaaaaAAAAAAAAAbbbbBbbbBBBBBBBB&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. nnnn - Number of eight character Data Fields to follow (Hex)
4. aaaaaaaaa - Height 1 (ASCII Hex IEEE float)
5. AAAAAAAAA - Volume 1 (ASCII Hex IEEE float)
6. bbbbbbbbbb - Height 2 (ASCII Hex IEEE float)
7. BBBBBBBBB - Volume 2 (ASCII Hex IEEE float)
8. && - Data Termination Flag
9. CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 212

Version 1

Function Type: In-Tank Leak Test History Report 2

Command Format:

Display: <SOH>I212TT

Computer: <SOH>i212TT

Typical Response Message, Display Format:

```
<SOH>
I212TT
JUL 29, 1997  9:02 AM

TANK LEAK TEST HISTORY

T 1:REGULAR UNLEADED
```

REPORT TYPE	DATE/TIME	METHOD	HOURS	AVERAGE VOLUME	% VOLUME
FULLEST PERIODIC	08-04-15 12:34	CSLD	199	123456	99.9
FULLEST ANNUAL	08-04-15 12:34	SLD	99	23456	49.9
LAST ANNUAL	08-04-15 12:34	SLD	9	23456	39.9
LAST GROSS	08-04-15 12:34	SLD	22	13456	9.9
LAST PERIODIC	08-04-15 12:34	CSLD	109	3456	29.9

<ETX>

Typical Response Message, Computer Format:

```
<SOH>i212TTYMMDDHHmmTTNNRRnnttYYMMDDHHmmhhhhhhhhVVVVVVVVpppppppppzmmmmmmmm
RRnnttYYMMDDHHmmhhhhhhhhVVVVVVVVpppppppppzmmmmmmmm...
TTNNRRnnttYYMMDDHHmmhhhhhhhhVVVVVVVVpppppppppzmmmmmmmm
RRnnttYYMMDDHHmmhhhhhhhhVVVVVVVVpppppppppzmmmmmmmm...
...&&CCCC<ETX>
```

Notes:

1. YMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. NN - Number of Leak History Reports to Follow (Hex)
4. RR - Leak Report Type:
 - 00=Last Test Passed
 - 01=Fulllest Test Passed
 - 02=Fulllest Periodic Monthly Test Passed
5. nn - Leak History Number (1-12) for first Monthly Tests Passed
6. tt - In-Tank Leak Test Type:
 - 00=0.20 gal/hr test
 - 01=0.10 gal/hr test
 - 02=Gross (3 gal/hr) test
7. YMMDDHHmm - In-Tank Leak Test Start Time
8. hhhhhhhh - Leak Test Duration in Hours (ASCII Hex IEEE float)
9. VVVVVVVV - Leak Test Volume (ASCII Hex IEEE float)
10. pppppppp - Leak Test Percentage of Full Volume (ASCII Hex IEEE float)
11. zz - Number of 8 Byte Fields to Follow (Hex)
12. mmmmmmmm - In-Tank Leak Test Method (Hex)
 - 00000000=Standard
 - 00000001=CSLD
13. && - Data Termination Flag
14. CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 213

Version 1

Function Type: In-Tank Extended Standard Delivery Report

Command Format:

Display: <SOH>I213TTnn

Computer: <SOH>i213TTnn

Notes:

1. TT - Tank Number (Decimal, 00=all)
2. nn - Number of most recent deliveries (Decimal)

Typical Response Message, Display Format:

<SOH>
I213TTnn
JUL 29, 1997 9:02 AM

STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....

DELIVERY REPORT

Volume=GALLONS
Height=INCHES
Temp=FAHRENHEIT

TANK 1:

Date / Time	Fuel Volume	FuelTC Volume	Water Height	Fuel Temp	Fuel Height
START: AUG 6, 2009 2:59 PM	7000	7000	0.00	60.00	63.34
END: AUG 6, 2009 3:09 PM	9000	9000	0.00	60.00	80.98
AMOUNT:	2000	2000			
START: AUG 6, 2009 2:41 PM	5000	5000	0.00	60.00	48.00
END: AUG 6, 2009 2:47 PM	7000	7000	0.00	60.00	63.35
AMOUNT:	2000	2000			

<ETX>

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code 213 Notes: (Continued)

Typical Response Message, Computer Format:

```
<SOH>i213TTYMMDDHHmmTTpddYYMMDDHHmmYYMMDDHHmmNNFFFFFFFF...
                                TTpddYYMMDDHHmmYYMMDDHHmmNNFFFFFFFF...&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. p - Product Code (single ASCII character [20h-7Eh])
4. dd - Number of Deliveries to follow (Decimal, 00 if no data available for this tank)
5. YYMMDDHHmm - Starting Date/Time
6. YYMMDDHHmm - Ending Date/Time
7. NN - Number of eight character Data Fields to follow (Hex)
8. FFFFFFFF - ASCII Hex IEEE float:
 1. Starting Volume
 2. Starting TC Volume
 3. Starting Water
 4. Starting Temp
 5. Ending Volume
 6. Ending TC Volume
 7. Ending Water
 8. Ending Temp
 9. Starting Height
 10. Ending Height
 11. Starting Mass
 12. Ending Mass
 13. Starting Density
 14. Ending Density
 15. Starting TC Density
 16. Ending TC Density
9. && - Data Termination Flag
10. CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 214

Version 3

Function Type: In-Tank Mass/Density Inventory Report

Command Format:

Display: <SOH>I214TT

Computer: <SOH>i214TT

Typical Response Message, Display Format:

```
<SOH>
I214TT
JUL 30, 2009  9:02 AM
```

```
STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....
```

IN-TANK MASS INVENTORY

TANK	PRODUCT	VOLUME	MASS	DENSITY	HEIGHT	WATER	TEMP
1	PRODUCT 1	7343	44521	45.35	16.5	0.0	78.8

<ETX>

Typical Response Message, Computer Format:

```
<SOH>i214TTYMMDDHHmmTTpssssNNFFFFFFFF...
                                TTpssssNNFFFFFFFF...&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. p - Product Code (single ASCII character [20h-7Eh])
4. ssss - Tank Status Bits:
 - Bit 1=(LSB) Delivery in Progress
 - Bit 2=Leak test in Progress
 - Bit 3=Invalid Fuel Height Alarm (MAG Probes Only)
 - Bit 4-16 - Unused
5. NN - Number of eight character Data Fields to follow (Hex)
6. FFFFFFFF - ASCII Hex IEEE float:
 1. Volume
 2. Mass
 3. Density
 4. Height
 5. Water
 6. Temperature
 7. TC Density
 8. TC Volume
 9. Ullage
 10. Water Volume
7. && - Data Termination Flag
8. CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 215

Version 3

Function Type: In-Tank Mas/Density Delivery Report

Command Format:

Display: <SOH>I215TT

Computer: <SOH>i215TT

Typical Response Message, Display Format:

<SOH>
I215TT
APR 30, 2010 3:16 PM

STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....

IN-TANK MASS/DENSITY DELIVERY REPORT

Volume=GALLONS
Height=INCHES
Temp=FAHRENHEIT

TANK 1:PRODUCT 1

Date / Time	Fuel Volume	Mass	Density	Water Height	Fuel Temp	Fuel Height
END: MAY 26, 2010 1:28 PM	5000	0	0.00	0.00	60.00	48.00
START: MAY 26, 2010 11:56 AM	3000	0	0.00	0.00	60.00	32.65
AMOUNT:	2000					

TANK 3:PRODUCT 3

Date / Time	Fuel Volume	Mass	Density	Water Height	Fuel Temp	Fuel Height
END: MAY 26, 2010 1:28 PM	5877	0	0.00	0.00	60.00	54.63
START: MAY 26, 2010 11:56 AM	3877	0	0.00	0.00	60.00	39.49
AMOUNT:	2000					

<ETX>

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code 215 Notes: (Continued)

Typical Response Message, Computer Format:

```
<SOH>i215TTYMMDDHHmmTTpddYYMMDDHHmmYYMMDDHHmmNNFFFFFFFFf...
                                TTpddYYMMDDHHmmYYMMDDHHmmNNFFFFFFFFf...&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. p - Product Code (single ASCII character [20h-7Eh])
4. dd - Number of Deliveries to follow (Decimal, 00=no data)
5. YYMMDDHHmm - Starting Date/Time
6. YYMMDDHHmm - Ending Date/Time
7. NN - Number of eight character Data Fields to follow (Hex)
8. FFFFFFFF - ASCII Hex IEEE float:
 1. Starting Volume
 2. Starting Mass
 3. Starting Density
 4. Starting Water
 5. Starting Temp
 6. Ending Volume
 7. Ending Mass
 8. Ending Density
 9. Ending Water
 10. Ending Temp
 11. Starting Height
 12. Ending Height
 13. Starting TC Density
 14. Ending TC Density
 15. Starting TC Volume
 16. Ending TC Volume
9. f - Default Density Flag (0=new value,1=default)
10. && - Data Termination Flag
11. CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 217
Function Type: Tank Profile

Version 1

Command Format:
Display: <SOH>I217TT
Computer: <SOH>i217TT

Typical Response Message, Display Format:

```
<SOH>
I217TT
SEP 16, 2004  3:15 PM

TANK PROFILE

T 1: REGULAR UNLEADED
TANK   PRODUCT LABEL          PROFILE
1      REGULAR UNLEADED      1 PT
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i217TTYMMDDHHmmTTpp...TTpp&&CCCC<ETX>
```

Notes:

1. YMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. pp - Tank Profile Selected (Hex)
 - 00= 1 Pt
 - 01= 4 Pts
 - 02=20 Pts
 - 03=Linear
 - 04=Multipoint
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 21A (like 201)

Version 1

Function Type: In-Tank Inventory Report With User Ullage (90-100%)

Command Format:

Display: <SOH>I21ATT

Computer: <SOH>i21ATT

Typical Response Message, Display Format:

```
<SOH>
I21ATT
JAN 22, 2006  3:06 PM
```

```
STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....
```

INVENTORY REPORT

TANK	PRODUCT	FUEL VOLUME	FUEL TC VOLUME	ULLAGE 100%	ULLAGE 95%	FUEL HEIGHT	WATER HEIGHT	FUEL TEMP
1	Regular	3112	3112	6888	6543	29.88	0.00	59.99

<ETX>

Typical Response Message, Computer Format:

```
<SOH>i21ATTYYMMDDHHmmTTpssssNNFFFFFFFF...
TTpssssNNFFFFFFFF&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. p - Product Code (one ASCII character [20h-7Eh])
4. ssss - Tank Status Bits:
 - Bit 1 - (LSB) Delivery in Progress
 - Bit 2 - Leak Test in Progress
 - Bit 3 - Invalid Fuel Height Alarm (MAG Probes Only)
 - Bit 4 - 16 - Unused
5. NN - Number of eight character Data Fields to follow (Hex)
6. FFFFFFFF - ASCII Hex IEEE floats:
 1. Volume
 2. TC Volume
 3. User Ullage (90-100% : see 572 cmd for percentage)
 4. Height
 5. Water
 6. Temperature
 7. Water Volume
7. && - Data Termination Flag
8. CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 21B

Version 2

Function Type: BIR Extended Adjusted Delivery Report

Command Format:

Display: <SOH>I21BTTnn

Computer: <SOH>i21BTTnn

Notes:

1. TT - Tank Number (Decimal, 00=All)
2. nn - Number of most recent deliveries (Decimal)

Typical Response Message, Display Format:

```
<SOH>
I21BTTnn
JAN 22, 2009  3:08 PM
```

```
STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....
```

BIR ADJUSTED DELIVERY REPORT

T 1:REGULAR UNLEADED

DELIVERY	START	DATE	DELIVERY	END	DATE	START	END	ADJ	ADJ TC
						VOLUME	VOLUME	DELIV	DELIV
JAN 21, 2009	2:52 AM	JAN 21, 1996	3:12 AM	3193	9197	6011	6119		
JAN 19, 2009	3:22 AM	JAN 19, 1996	3:40 AM	4193	8602	4409	4473		
JAN 17, 2009	3:13 AM	JAN 17, 1996	3:40 AM	2739	8749	6010	6113		

<ETX>

Typical Response Message, Computer Format:

```
<SOH>i21BTTYMMDDHHmmTTddYYMMDDHHmmYYMMDDHHmmNNNNNNNNNN...
TTddYYMMDDHHmmYYMMDDHHmmNNNNNNNNNN...&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=All)
3. dd - Number of Deliveries to follow
4. YYMMDDHHmm - Starting Date/Time
5. YYMMDDHHmm - Ending Date/Time
6. NN - Number of eight character Data Fields to follow (Hex)
7. FFFFFFFF - ASCII Hex IEEE floats:
 1. Starting Volume
 2. Ending Volume
 3. Adjusted Delivery Volume
 4. Adjusted Temperature Compensated Delivery Volume
 5. Starting Fuel Height
 6. Starting Fuel Temperature 1
 7. Starting Fuel Temperature 2
 8. Starting Fuel Temperature 3
 9. Starting Fuel Temperature 4
 10. Starting Fuel Temperature 5
 11. Starting Fuel Temperature 6
 12. Ending Fuel Height
 13. Ending Fuel Temperature 1
 14. Ending Fuel Temperature 2
 15. Ending Fuel Temperature 3
 16. Ending Fuel Temperature 4
 17. Ending Fuel Temperature 5
 18. Ending Fuel Temperature 6
 19. Total Dispensed During Delivery
 20. Starting Fuel Temperature Average
 21. Ending Fuel Temperature Average
8. && - Data Termination Flag
9. CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 21C

Version 1

Function Type: In-Tank Most Recent Delivery Report with Manifolded Results

Command Format:

Display: <SOH>I21CTT

Computer: <SOH>i21CTT

Notes:

1. TT - Tank Number (Decimal, 00=all). To eliminate duplication, when TT=00 is used for Display Format the command will print information for a Manifolded Tank only if it is the Primary Tank. A non-Manifolded tank will be printed normally.

Typical Response Message, Display Format:

If the Most Recent Delivery involves a Manifolded Tank:

<SOH>
I21CTT
JUL 29, 1997 9:03 AM

STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....

LAST DELIVERY REPORT

T 1:REGULAR UNLEADED

Date / Time	Fuel Volume	TC	Fuel Volume	Water Height	Fuel Temp	Fuel Height
Start: Jul 25, 1997 2:37 PM	1157		1146	0.00	72.85	23.22
End: Jul 24, 1997 2:48 PM	4460		4414	0.00	74.56	63.06
Amount:	3303		3268			

T 2:REGULAR UNLEADED

Date / Time	Fuel Volume	TC	Fuel Volume	Water Height	Fuel Temp	Fuel Height
Start: Jul 25, 1997 2:37 PM	2531		2520	0.00	73.58	25.48
End: Jul 24, 1997 2:48 PM	5387		5365	0.00	73.24	66.36
Amount:	2856		2845			

Manifolded Tanks: T1, T2

Volume Increase = 6159 GALS
TC Volume Increase = 6113 GALS

<ETX>

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code 21C Notes: (Continued)

If the Most Recent Delivery involves a non-Manifolded Tank:

```
<SOH>
I21CTT
JUL 29, 1997  9:03 AM

STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....

LAST DELIVERY REPORT

T 1:REGULAR UNLEADED
```

Date / Time	Fuel Volume	TC	Fuel Volume	Water Height	Fuel Temp	Fuel Height
Start: Jul 25, 1997 2:37 PM	1157		1146	0.00	72.85	23.22
End: Jul 24, 1997 2:48 PM	4460		4414	0.00	74.56	63.06
Amount:	3303		3268			

```
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i21CTTYMMDDHHmmTTpddYYMMDDHHmmYYMMDDHHmmNNFFFFFFFFF...
      TTpddYYMMDDHHmmYYMMDDHHmmNNFFFFFFFFF&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. p - Product Code (one ASCII character [20h-7Eh])
4. dd - Number of Deliveries to follow (Decimal, 00 if no data available for this tank)
5. YYMMDDHHmm - Starting Date/Time
6. YYMMDDHHmm - Ending Date/Time
7. NN - Number of eight character Data Fields to follow (Hex)
8. FFFFFFFF - ASCII Hex IEEE floats:
 1. Starting Volume
 2. Starting TC Volume
 3. Starting Water
 4. Starting Temp
 5. Ending Volume
 6. Ending TC Volume
 7. Ending Water
 8. Ending Temp
 9. Starting Height
 10. Ending Height
 11. Starting Mass
 12. Ending Mass
 13. Starting Density
 14. Ending Density
 15. Starting TC Density
 16. Ending TC Density
9. && - Data Termination Flag
10. CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 21D

Function Type: In-Tank Current Siphon Manifolded Total Volumes

Version 1

Command Format:

Display: <SOH>I21DTT

Computer: <SOH>i21DTT

Notes:

1. TT - Tank Number (Decimal, 00=all).

Typical Response Message, Display Format:

```
<SOH>
I21DTT
JAN 31, 2008 14:42
```

SIPHON MANIFOLDED TANKS INVENTORY TOTALS

```
TANK:PRODUCT
T 1:PRODUCT 1
T 2:PRODUCT 2
T 3:PRODUCT 3
VOLUME      = 9000 GALLONS
TC VOLUME   = 9000 GALLONS

T 4:PRODUCT 4
T 5:PRODUCT 5
VOLUME      = 6000 GALLONS
TC VOLUME   = 6000 GALLONS
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i21DTTYMMDDHHmmNNaabbcvvvvvvvvVVVVVVVV...
NNaabbcvvvvvvvvVVVVVVVV&&CCCC<ETX>
```

Notes:

1. YMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=All)
3. NN - Number of tanks in siphon group (hex)
4. aa...zz - tank ID numbers (hex)
5. vvvvvvvv - Total manifolded volume (IEEE ascii hex)
6. VVVVVVVV - Total manifolded TC volume (IEEE ascii hex)
7. && - Data Termination Flag
8. CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 21E
Function Type: Hourly Inventory Volume

Version 2

Command Format:
Display: <SOH>I21ETTyymmddhhmm
Computer: <SOH>i21ETTyymmddhhmm

Notes:

1. yymmddhhmm - Inventory Hour to request starting with this date to the most recent. If no yymmddhhmm, return the most recent hourly record stored.

Typical Response Message, Display Format:

```
<SOH>
I21ETT
MAR 20, 2009  3:25 PM
```

```
STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....
```

TANK	Date/Time	VOLUME TC	VOLUME	ULLAGE	HEIGHT	WATER	TEMP
1	05/01/08 20:00	5329	5413	4699	47.97	0.00	37.39
	05/01/08 19:00	5129	5113	4799	47.97	0.00	37.39

```
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i21ETTYMMDDHHmmTTpssssyymmddhhmmNNFFFFFFFF...
TTpssssyymmddhhmmNNFFFFFFFF&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=All)
3. p - Product Code (one ASCII character [20h-7Eh])
4. ssss - Number of Hourly Inventory Records to follow (Decimal)
5. yymmddhhmm - Hourly Stored Inventory Date and Time
6. NN - Number of eight character Data Fields to follow (Hex)
7. FFFFFFFF - ASCII Hex IEEE floats:
 1. Volume
 2. TC Volume
 3. Ullage
 4. Height
 5. Water
 6. Temperature
 7. Water Volume
8. && - Data Termination Flag
9. CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 21F

Version 2

Function Type: Manual Shift Inventory Snapshot Volume

Command Format:

Display: <SOH>I21Fssdd

Computer: <SOH>i21Fssdd

Notes:

1. ss - Shift Number (00=All, 01, 02, 03, 04) (Decimal)
2. dd - number Day of Shift (Decimal)
 - 00=all days
 - 01=current day
 - 02=current day-1
 - 03=current day-2

Typical Response Message, Display Format:

```
<SOH>
I21F00
MAR 20, 2009  3:25 PM
```

```
STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....
```

SHIFT 1

TANK	TIME	VOLUME	TC	VOLUME	ULLAGE	HEIGHT	WATER	TEMP
1	08-05-15 06:00	8518		8492	1482	76.26	0.00	64.57
2	08-05-15 06:00	8518		8492	1482	76.26	0.00	64.57
3	08-05-15 06:00	8518		8492	1482	76.26	0.00	64.57

<ETX>

Typical Response Message, Computer Format:

```
<SOH>i21F00YYMMDDHHmmssCCttpYYMMDDHHmmNNFFFFFFFF...
ttpYYMMDDHHmmNNFFFFFFFF&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. ss - Shift Number (Decimal, 00=All, 01-04)
3. CC - Number of Tanks to follow (Decimal)
4. tt - Tank Number (Decimal)
5. p - Product Code (single ASCII character, [20h-7Eh])
6. YYMMDDHHmm - Shift Date and Time close for each tank
7. NN - Number of eight character Data Fields to follow (Hex)
8. FFFFFFFF - ASCII Hex IEEE floats:
 1. Volume
 2. TC Volume
 3. Ullage
 4. Height
 5. Water
 6. Temperature
 7. Water Volume
9. && - Data Termination Flag
10. CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Version 2

Function Code: 21G
Function Type: Tank Height Status

Command Format:
Display: <SOH>I21GTT
Computer: <SOH>i21GTT

Notes:

1. TT - Tank Number (Decimal, 00=all).

Typical Response Message, Display Format:

```
<SOH>
I21GTT
JAN 31, 2008 14:42
```

```
TANK  FUEL HEIGHT STATUS
-----
  1  HEIGHT STABLE
  2  HEIGHT INCREASING
  3  HEIGHT INCREASING
 16  UNKNOWN
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i21GTTYMMDDHHmmTTF..TTF&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number [01..32], (Decimal, 00=all)
3. F - Fuel Height Status
0=Stable
1=Increasing
2=Decreasing
3=Unknown
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 21H

Version 2

Function Type: Time Ordered Chart Sales Comparison

Command Format:

Display: <SOH>I21HTTIIiiyyymmddYYMMDD

Computer: <SOH>i21HTTIIiiyyymmddYYMMDD

Notes:

1. TT - Tank Number [01..32], (Decimal, 00=all)
2. II - First Chart ID Number [01...99] (Decimal)
3. ii - Second chart ID number [01...99] (Decimal)
4. yyymmdd - Optional Start Date
5. YYMMDD - Optional End Date
6. This command will show all daily BIR records within the specified date range.
7. Variance = change in inventory volume - sales volume

Typical Response Message, Display Format:

```
<SOH>
I21HTT
JAN 31, 2008 14:42
```

TANK *nn* CHART SALES COMPARISON BETWEEN *yyyy-mm-dd* AND *YYYY-MM-DD*

DATE	SALES	CHT <i>II</i> VARIANCE	CHT <i>ii</i> VARIANCE	CHT <i>II</i> VARIANCE%	CHT <i>ii</i> VARIANCE%
yyyy-mm-dd	sssssss.s	xxxxxxx.x	xxxxxxx.x	xxxxxxx.x	xxxxxxx.x
yyyy-mm-dd	sssssss.s	xxxxxxx.x	xxxxxxx.x	xxxxxxx.x	xxxxxxx.x
yyyy-mm-dd	sssssss.s	xxxxxxx.x	xxxxxxx.x	xxxxxxx.x	xxxxxxx.x
yyyy-mm-dd	sssssss.s	xxxxxxx.x	xxxxxxx.x	xxxxxxx.x	xxxxxxx.x
yyyy-mm-dd	sssssss.s	xxxxxxx.x	xxxxxxx.x	xxxxxxx.x	xxxxxxx.x
TOTALS:	SSSSSSSS.S	XXXXXXXXX.X	XXXXXXXXX.X	XXXXXXXXX.X	XXXXXXXXX.X

<ETX>

Typical Response Message, Computer Format:

```
<SOH>i21HTTYMMDDHHmmTTNNNNyyymmddssssssssVVVVVVVVvvvvvvvvPPPPPPPPppppppppp..
yyymmddssssssssVVVVVVVVvvvvvvvvPPPPPPPPppppppppp..
yyymmddssssssssVVVVVVVVvvvvvvvvPPPPPPPPppppppppp..
&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number [01..32], (Decimal, 00=all)
3. NNNN - Number of Comparison Records to follow (Decimal)
4. yyymmdd - Time Stamp
5. ssssssss - Sales Volume in Gallons/Liters (ASCII Hex IEEE float)
6. VVVVVVVV - Sales Variance in Gallons/Liters for 1st Chart (ASCII Hex IEEE float)
7. vvvvvvvv - Sales Variance in Gallons/Liters for 2nd Chart (ASCII Hex IEEE float)
8. PPPPPPPP - Sales Variance in percent for 1st Chart (ASCII Hex IEEE float)
9. pppppppp - Sales Variance in percent for 2nd Chart (ASCII Hex IEEE float)
10. && - Data Termination Flag
11. CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 21I

Version 2

Function Type: Time Ordered Chart Delivery Comparison

Command Format:

Display: <SOH>I21ITTIIiiyyymmddYYMMDD

Computer: <SOH>i21ITTIIiiyyymmddYYMMDD

Notes:

1. TT - Tank Number [01..32], (Decimal, 00=all)
2. II - First Chart ID Number [01...99] (Decimal)
3. ii - Second Chart ID Number [01...99] (Decimal)
4. yyymmdd - Optional Start Date
5. YYMMDD - Optional End Date
6. This command will show all ticketed deliveries within the specified date range.
7. Variance = estimated delivery volume - ticket delivery volume

Typical Response Message, Display Format:

```
<SOH>
I21ITT
JAN 31, 2008 14:42
```

TANK *nn* CHART DELIVERY COMPARISON

BETWEEN *yyyy-mm-dd* AND *YYYY-MM-DD*

DATE	TICKETED DELIVERY	CHT <i>II</i> DELIVERY	CHT <i>ii</i> DELIVERY	CHT <i>II</i> VARIANCE	CHT <i>ii</i> VARIANCE	CHT <i>II</i> VAR%	CHT <i>ii</i> VAR%
yyyy-mm-dd	dddddd.d	xxxxxxx.x	xxxxxxx.x	xxxxxxx.x	xxxxxxx.x	xxxxxxx.x	xxxxxxx.x
yyyy-mm-dd	dddddd.d	xxxxxxx.x	xxxxxxx.x	xxxxxxx.x	xxxxxxx.x	xxxxxxx.x	xxxxxxx.x
yyyy-mm-dd	dddddd.d	xxxxxxx.x	xxxxxxx.x	xxxxxxx.x	xxxxxxx.x	xxxxxxx.x	xxxxxxx.x
TOTALS:	SSSSSS.S	XXXXXX.X	XXXXXX.X	XXXXXX.X	XXXXXX.X	XXXXXX.X	XXXXXX.X

<ETX>

Typical Response Message, Computer Format:

```
<SOH>i21ITTYMMDDHHmmTTNNNN
yyymmddDDDDDDDDVVVVVVVVvvvvvvvvRRRRRRRRrrrrrrrrPPPPPPPPpppppppp..
yyymmddDDDDDDDDVVVVVVVVvvvvvvvvRRRRRRRRrrrrrrrrPPPPPPPPpppppppp..
yyymmddDDDDDDDDVVVVVVVVvvvvvvvvRRRRRRRRrrrrrrrrPPPPPPPPpppppppp..
&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number [01..32], (Decimal, 00=all)
3. NNNN - Number of Comparison Records to follow (Decimal)
4. yyymmdd - Time Stamp
5. DDDDDDDD - Ticketed Delivery Volume in Gallons/Liters (ASCII Hex IEEE float)
6. VVVVVVVV - Delivery Volume for 1st Chart (ASCII Hex IEEE float)
7. vvvvvvvv - Delivery Volume for 2nd Chart (ASCII Hex IEEE float)
8. RRRRRRRR - Delivery Variance volume for 1st Chart (ASCII Hex IEEE float)
9. rrrrrrrr - Delivery Variance volume for 2nd Chart (ASCII Hex IEEE float)
10. PPPPPPPP - Delivery Variance percent for 1st Chart (ASCII Hex IEEE float)
11. pppppppp - Delivery Variance percent for 2nd Chart (ASCII Hex IEEE float))
12. && - Data Termination Flag
13. CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 21J

Version 2

Function Type: Histogram Comparison of Tank Charts

Command Format:

Display: <SOH>I21JTTIIiiyyymmddYYMMDD

Computer: <SOH>i21JTTIIiiyyymmddYYMMDD

Notes:

1. TT - Tank Number [01..32], (Decimal, 00=all)
2. II - First Chart ID Number [01...99] (Decimal)
3. ii - Second Chart ID Number [01...99] (Decimal)
4. yyymmdd - Start Date
5. YYMMDD - End Date

Typical Response Message, Display Format:

```
<SOH>
I21JTT
JAN 31, 2008 14:42
```

TANK *nn* CHART HISTOGRAM COMPARISON BETWEEN *yyyy-mm-dd* AND *YYYY-MM-DD*

% SALES	CHT <i>II</i> COUNTS	CHT <i>ii</i> COUNTS
+5.0	AAAA	BBBB
+4.5	AAAA	BBBB
+4.0	AAAA	BBBB
+3.5	AAAA	BBBB
+3.0	AAAA	BBBB
+2.5	AAAA	BBBB
+2.0	AAAA	BBBB
+1.5	AAAA	BBBB
+1.0	AAAA	BBBB
+0.5	AAAA	BBBB
+0.0	AAAA	BBBB
-0.5	AAAA	BBBB
-1.0	AAAA	BBBB
-1.5	AAAA	BBBB
-2.0	AAAA	BBBB
-2.5	AAAA	BBBB
-3.0	AAAA	BBBB
-3.5	AAAA	BBBB
-4.0	AAAA	BBBB
-4.5	AAAA	BBBB
-5.0	AAAA	BBBB

<ETX>

Typical Response Message, Computer Format:

```
<SOH>i21JTTYMMDDHHmmTTyyymmddYYMMDDNNNNrrrrrrrrrAAAABBBB...rrrrrrrrrAAAABBBB
TTyyymmddYYMMDDNNNNrrrrrrrrrAAAABBBB...rrrrrrrrrAAAABBBB
&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number [01..32], (Decimal, 00=all)
3. yyymmdd - Start Date
4. YYMMDD - End Date
5. NNNN - Number of Histogram Bins to follow (Decimal)
6. rrrrrrrr - Bin Percent (ASCII Hex IEEE float)
7. AAAA - Number of Counts for 1st Chart (ASCII Hex short)
8. BBBB - Number of Counts for 2nd Chart (ASCII Hex short)
9. && - Data Termination Flag
10. CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 21K

Version 2

Function Type: Error Plot Comparison of Tank Charts

Command Format:

Display: <SOH>I21KTTIIiiyymddYYMMDD

Computer: <SOH>i21KTTIIiiyymddYYMMDD

Notes:

- ```

1. TT - Tank Number [01..32], (Decimal, 00=all)
2. II - First Chart ID Number [01...99] (Decimal)
3. ii - Second Chart ID Number [01...99] (Decimal)
4. yymmdd - Optional Start Date
5. YYMMDD - Optional End Date
6. Use last 30 days if no dates are supplied

```

Typical Response Message, Display Format:

<SOH>  
I21KTT  
JAN 31, 2008 14:42

TANK *nn* CHART ERROR vs. HEIGHT COMPARISON BETWEEN *yyyy-mm-dd* AND *YYYY-MM-DD*

| %       | CHT II  | CHT ii  |
|---------|---------|---------|
| HEIGHT  | VAR%    | VAR%    |
| XXXX.XX | XXXX.XX | XXXX.XX |
| XXXX.XX | XXXX.XX | XXXX.XX |
| XXXX.XX | XXXX.XX | XXXX.XX |
| XXXX.XX | XXXX.XX | XXXX.XX |
| XXXX.XX | XXXX.XX | XXXX.XX |
| XXXX.XX | XXXX.XX | XXXX.XX |
| XXXX.XX | XXXX.XX | XXXX.XX |
| XXXX.XX | XXXX.XX | XXXX.XX |
| XXXX.XX | XXXX.XX | XXXX.XX |
| XXXX.XX | XXXX.XX | XXXX.XX |
| <ETX>   |         |         |

Typical Response Message, Computer Format:

```
<SOH>i21KTTYMMDDHHmmTTyymmddYYMMDDNNNNhhhhhhhhhPPPPPPpppppppp..
 hhhhhhhhPPPPPPpppppppp
 TTyymmddYYMMDDNNNNhhhhhhhhhPPPPPPpppppppp..
 hhhhhhhhPPPPPPpppppppp
 &CCCC<ETX>
```

**Notes:**

- |     |            |                                                         |
|-----|------------|---------------------------------------------------------|
| 1.  | YYMMDDHHmm | - Current Date and Time                                 |
| 2.  | TT         | - Tank Number [01..32], (Decimal, 00=all)               |
| 3.  | yyymmdd    | - Start Date                                            |
| 4.  | YYMMDD     | - End Date                                              |
| 5.  | NNNN       | - Number of Error Points to follow (Decimal)            |
| 6.  | hhhhhhhhh  | - Height Percent (ASCII Hex IEEE float)                 |
| 7.  | ppppppppp  | - Variance Percent for 1st Chart (ASCII Hex IEEE float) |
| 8.  | ppppppppp  | - Variance Percent for 2nd Chart (ASCII Hex IEEE float) |
| 9.  | &&         | - Data Termination Flag                                 |
| 10. | CCCC       | - Message Checksum                                      |



# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 21L  
**Function Type:** Manual Delivery Report

Version 2

**Command Format:**  
**Display:** <SOH>I21LTT  
**Computer:** not supported

### Typical Response Message, Display Format:

<SOH>  
I21LTT  
JAN 31, 2009 14:42

STATION HEADER 1....  
STATION HEADER 2....  
STATION HEADER 3....  
STATION HEADER 4....

| TANK          | VOLUME | INPROGRESS |
|---------------|--------|------------|
| T 1: REGULAR  | 999999 | NO         |
| T 2: MIDGRADE | 999999 | YES        |

<ETX>

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 21M  
**Function Type:** Regulator Tank Chart Report

Version 1

**Command Format:**  
**Display:** <SOH>I21MTTII  
**Computer:** <SOH>i21MTTII

### Notes:

1. This command works for a single Tank and a single Chart ID
2. TT - Tank Number (Decimal)
3. II - Chart ID Number [02...99] (Decimal)

### Typical Response Message, Display Format:

```
<SOH>
I21M01
OCT 15, 2012 4:29 PM
```

```
STATION HEADER 1.... TANK 1, CHART 2
STATION HEADER 2.... REGULATOR TANK CHART REPORT REGULAR UNLEADED
STATION HEADER 3.... 10028 GALLONS
STATION HEADER 4.... 96.00 INCHES
```

DEPTH INCHES	CAPACITY GALLONS	DEPTH INCHES	CAPACITY GALLONS	DEPTH INCHES	CAPACITY GALLONS	DEPTH INCHES	CAPACITY GALLONS
0.000	0	26.000	2413	52.000	5827	78.100	9021
0.500	69	26.500	2474	52.500	5894	78.500	9073
1.000	90	27.000	2535	53.000	5961	79.000	9123
1.500	114	27.500	2596	53.500	6028	79.500	9173
:							
:							

```
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>i21MTTYMMDDHHmmTTIIInnnaaaaaaaaAAAAAAAAAbbbbbbBBB BBBB...&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal)
3. II - Chart ID Number [02...99] (Decimal)
4. nnn - Number of eight character Data Fields to follow (Hex)
5. aaaaaaaaa - Height 1 (ASCII Hex IEEE float)
6. AAAAAAAAA - Volume 1 (ASCII Hex IEEE float)
7. bbbbbbbb - Height 2 (ASCII Hex IEEE float)
8. BBBBBBBB - Volume 2 (ASCII Hex IEEE float)
9. && - Data Termination Flag
10. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: 21N**

Version 1

**Function Type:** Tank Chart Report with Chart ID number

**Command Format:**

**Display:** <SOH>I21NTTIIhhhhhh

**Computer:** <SOH>i21NTTIIFFFFFFFF

### Notes:

1. This command works for a single Tank and a single Chart ID
2. TT - Tank Number (Decimal)
3. II - Chart ID Number [01...99] (Decimal)
4. hhhhhh - Height Step Size (inches or millimeters)
5. FFFFFFFF - Height Step Size (ASCII Hex IEEE float)
6. Minimum Step Size: 0.010 inches or 0.397 millimeter
7. Minimum Resolution: 3 decimal places

### Typical Response Message, Display Format:

```
<SOH>
I21N01
MAR 20, 2012 3:25 PM
```

```
STATION HEADER 1.... TANK 1, CHART 1
STATION HEADER 2.... TANK CHART REPORT
STATION HEADER 3.... 10028 GALLONS
STATION HEADER 4.... 96.00 INCHES
```

DEPTH INCHES	CAPACITY GALLONS	DEPTH INCHES	CAPACITY GALLONS	DEPTH INCHES	CAPACITY GALLONS	DEPTH INCHES	CAPACITY GALLONS
0.000	0	26.000	2413	52.000	5827	78.100	9021
0.500	69	26.500	2474	52.500	5894	78.500	9073
1.000	90	27.000	2535	53.000	5961	79.000	9123
1.500	114	27.500	2596	53.500	6028	79.500	9173
:							
:							

```
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>i21NTTYMMDDHHmmTTIIInnnaaaaaaaaAAAAAAAbbbbbbbbBBBBBBBB...&&CCCC<ETX>
```

### Notes:

1. YMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal)
3. II - Chart ID Number [01...99] (Decimal)
4. nnn - Number of eight character Data Fields to follow (Hex)
5. aaaaaaaaa - Height 1 (ASCII Hex IEEE float)
6. AAAAAAAA - Volume 1 (ASCII Hex IEEE float)
7. bbbbbbbb - Height 2 (ASCII Hex IEEE float)
8. BBBBBBBB - Volume 2 (ASCII Hex IEEE float)
9. && - Data Termination Flag
10. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: 221**  
**Function Type:** Ticketed Delivery Report

Version 2

**Command Format:**  
**Display:** <SOH>I221TTtt  
**Computer:** <SOH>i221TTtt

### Notes:

1. TT - Tank Number (Decimal, 00=all)
2. tt - Report Type (if not entered will default to current)  
     01=current  
     02=previous

### Typical Response Message, Display Format:

```
<SOH>
I221TT
MAR 20, 2009 3:25 PM
```

```
STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....
```

```
CURRENT PERIOD TICKETED DELIVERY REPORT
VOLUMES ARE STANDARD
```

```
T 1:REGULAR UNLEADED
```

DELIVERY END DATE	TICKET VOLUME	GAUGE VOLUME	DLVY VAR	BEFORE TMP	AFTER TMP	EST DLVY TMP
MAR 7, 2009 8:26 AM	5901.0	5905.0	-4.0	44.8	42.4	41.0
MAR 9, 2009 11:37 AM	5901.0	5905.0	-4.0	44.6	43.2	42.4
MAR 10, 2009 11:34 PM	4099.0	4094.0	5.0	44.6	42.6	40.5

```
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>i221TTYMMDDHHmmTTpPPdddYYMMDDHHmmNNFFFFFFFF...
TTpPPdddYYMMDDHHmmNNFFFFFFFF&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. p - Product Code (one ASCII character [20h-7Eh])
4. PP - Probe type (Decimal)
5. ddd - Number of deliveries to follow (decimal) if 0, no more data for this tank will follow
6. YYMMDDHHmm - Ending date/ time
7. NN - Number of eight character Data Fields to follow (Hex)
8. FFFFFFFF - ASCII Hex IEEE floats:
  1. ticket volume
  2. gauged volume
  3. delivery variance
  4. start fuel temperature
  5. end fuel temperature
  6. estimated delivery temperature
9. && - Data Termination Flag
10. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: 222**  
**Function Type:** Bill of Lading Report

Version 2

**Command Format:**  
**Display:** <SOH>S222TTtt  
**Computer:** <SOH>s222TTtt

**Inquire:**  
<SOH>I222TTtt  
<SOH>i222TTtt

### Notes:

1. TT - Tank Number (Decimal, 00=All)
2. tt - Report Type (if tt is not entered, default is current)  
01=current  
02=previous

### Typical Response Message, Display Format:

```
<SOH>
I222TT
MAR 20, 2009 3:25 PM
```

```
STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....
```

CURRENT PERIOD TICKETED AND BOL DELIVERY REPORT

PROD 1: UNLEADED GASOLINE

DELIVERY END DATE	BOL NUMBER	TICKET VOLUME	GAUGE VOLUME	TC GAUGE VOLUME
DEC 2, 1993 2:00 AM	123456	0.0	502.0	0.0
DEC 6, 1993 2:00 AM	123983	7375.0	7369.0	7375.0
DEC 10, 1993 2:00 AM	123902	2799.0	2790.0	2799.0

<ETX>

### Typical Response Message, Computer Format:

```
<SOH>i222TTYMMDDHHmmTTpPPdddYYMMDDHHmmAAaa...aaNNFFFFFFFF...FFFFFFFF...
TTpPPdddYYMMDDHHmmAAaa...aaNNFFFFFFFF...FFFFFFFF&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=All)
3. p - Product Code (Decimal)
4. PP - Probe type (Decimal)
5. ddd - Number of deliveries to follow (decimal) if 0, no more data for this tank will follow
6. YYMMDDHHmm - Ending date/ time
7. AA - Number of ASCII characters to follow (Hex)
8. aa..aa - Bill of Lading Number (ASCII characters [20h-7Eh])
9. NN - Number of eight character Data Fields to follow (Hex)
10. FFFFFFFF - ASCII Hex IEEE floats:
  1. Ticketed volume
  2. Gauged volume
  3. Gauged TC volume
11. && - Data Termination Flag
12. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: 225**

Version 2

**Function Type:** Periodic Delivery Variance Report

**Command Format:**

**Display:** <SOH>I225TTtt

**Computer:** <SOH>i225TTtt

### Notes:

1. TT - Tank Number (Decimal, 00=all)
2. tt - Report Type (if not entered will default to current)
  - 01=current
  - 02=previous

### Typical Response Message, Display Format:

```
<SOH>
I225TT
MAR 20, 2009 3:25 PM
```

```
STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....
```

```
CURRENT PERIOD DELIVERY VARIANCE REPORT
VOLUMES ARE STANDARD
```

```
T 1:REGULAR UNLEADED
```

			TICKET VOLUME	GAUGE VOLUME	VARIANCE
MAR 7, 2009	8:26 AM		5901.0	5905.0	-4.0
MAR 9, 2009	11:37 AM		5901.0	5905.0	-4.0
MAR 10, 2009	11:34 PM		4099.0	4094.0	5.0
MAR 12, 2009	8:27 PM		3800.0	3797.0	3.0
MAR 14, 2009	8:28 AM		5900.0	5899.0	1.0
MAR 16, 2009	11:39 AM		5902.0	5916.0	-14.0
MAR 18, 2009	2:02 PM		5901.0	5900.0	1.0
TOTALS			37404.0	37417.0	-13.0

```
PERCENT VARIANCE OF SALES -13.0=-0.0%
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>i225TTYMMDDHHmmTTpPPdddYYMMDDHHmmNNFFFFFFFF...
TTpPPdddYYMMDDHHmmNNFFFFFFFF&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Numbers (Decimal, 00=all tanks)
3. p - Product Number (Decimal)
4. PP - Probe type (Decimal)
5. ddd - Number of deliveries to follow (decimal) if 000, no more data for this tank will follow
6. YYMMDDHHmm - Delivery Time
7. NN - Number of eight character Data Fields to follow (Hex)
8. FFFFFFFF - ASCII Hex IEEE floats:
  1. Ticketed volume
  2. Gauged volume
  3. Delivery variance
9. && - Data Termination Flag
10. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: 226**

Version 2

**Function Type:** Weekly Delivery Variance Report

**Command Format:**

**Display:** <SOH>I226TTtt

**Computer:** <SOH>i226TTtt

### Notes:

1. TT - Tank Number (Decimal, 00=all)
2. tt - Report Type (if not entered will default to current)
  - 01=current
  - 02=previous

### Typical Response Message, Display Format:

```
<SOH>
I226TT
MAR 20, 2009 3:25 PM
```

```
STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....
```

```
CURRENT WEEK DELIVERY VARIANCE REPORT
VOLUMES ARE STANDARD
```

```
T 1:REGULAR UNLEADED
```

	TICKET VOLUME	GAUGE VOLUME	VARIANCE
MAR 16, 2009 11:39 AM	5902.0	5916.0	-14.0
MAR 18, 2009 2:02 PM	5901.0	5900.0	1.0
TOTALS	11803.0	11816.0	-13.0
PERCENT VARIANCE OF SALES	-13.0=-0.1%		
<ETX>			

### Typical Response Message, Computer Format:

```
<SOH>i226TTYMMDDHHmmTTpPPdddYYMMDDHHmmNNFFFFFFFF...
TTpPPdddYYMMDDHHmmNNFFFFFFFF&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Numbers (Decimal, 00=all tanks)
3. p - Product Number (Decimal)
4. PP - Probe type (Decimal)
5. ddd - Number of deliveries to follow (decimal) if 0, no more data for this tank will follow
6. YYMMDDHHmm - Delivery Time
7. NN - Number of eight character Data Fields to follow (Hex)
8. FFFFFFFF - ASCII Hex IEEE float:
  1. Ticketed volume
  2. Gauged volume
  3. Delivery variance
9. && - Data Termination Flag
10. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 227

Version 2

**Function Type:** Daily Delivery Variance Report

**Command Format:**

**Display:** <SOH>I227TTMMDD

**Computer:** <SOH>i227TTMMDD

**Notes:**

1. TT - Tank number
2. MMDD - Month and day for Daily Report, if left blank will report current date

**Typical Response Message, Display Format:**

```
<SOH>
I227TT
MAR 20, 2009 3:26 PM
```

```
STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....
```

```
DAILY DELIVERY VARIANCE REPORT
VOLUMES ARE STANDARD
```

```
T 1:REGULAR UNLEADED
```

	TICKET VOLUME	GAUGE VOLUME	VARIANCE
MAR 16, 2009 11:39 AM	5902.0	5916.0	-14.0

```
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i227TTYMMDDHHmmTTpPPdddYYMMDDHHmmNNFFFFFFFF...
TTpPPdddYYMMDDHHmmNNFFFFFFFF&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. p - Product Code (one ASCII character [20h-7Eh])
4. PP - Probe Type (Decimal)
5. ddd - Number of deliveries to follow (decimal) if 000, no more data for this tank will follow
6. YYMMDDHHmm - Delivery Time
7. NN - Number of eight character Data Fields to follow (Hex)
8. FFFFFFFF - ASCII Hex IEEE float:
  1. Ticketed volume
  2. Gauged volume
  3. Delivery variance
9. && - Data Termination Flag
10. CCCC - Message Checksum



# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: 228**

Version 6

**Function Type:** Exception Report for Timed Sudden Loss Detection

**Command Format:**

**Display:** <SOH>I228TTYMMDDyymmddnnn

**Computer:** <SOH>i228TTYMMDDyymmddnnn

**Notes:**

1. TT - Tank Number (Decimal, 00=All)
2. YYMMDD - Starting Date (000000 = no starting date)
3. yymmdd - Ending Date (000000 = no ending date)
4. nnn - Maximum Records [001...999] (100 = default) (decimal)

**Typical Response Message, Display Format:**

```
<SOH>
I228TT
MAY 21, 2014 3:26 PM
```

```
STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....
```

EXCEPTION REPORT FOR TIMED SUDDEN LOSS DETECTION

T 1: Regular

START DATE	REPORT DATE	TC	START VOLUME	START HEIGHT	START WATER	THRESHOLD
May 21, 2014 12:00	MAY 21, 2014 12:16		4742	143.11	0.01	20

T 2: Kerosene

START DATE	REPORT DATE	TC	START VOLUME	START HEIGHT	START WATER	THRESHOLD
May 21, 2014 12:00	MAY 21, 2014 12:16		4342	143.11	0.01	20

<ETX>

**Typical Response Message, Computer Format:**

```
<SOH>i228TTYMMDDHHmmnnnTTrrrrrYYMMDDHHmmYYMMDDHHmmNNFFFFFFFFF...
 YYMMDDHHmmYYMMDDHHmmNNFFFFFFFFF...
 nnTTrrrrrYYMMDDHHmmYYMMDDHHmmNNFFFFFFFFF...
 ...FFFFFFFF&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. nn - Number of Tanks to follow (01-32, decimal)
3. TT - Tank Number (Decimal, 00=all)
4. rrrr - Number of records to follow (Decimal)
5. YYMMDDHHmm - Record Start Date/Time
6. YYMMDDHHmm - Record End Date/Time
7. NN - Number of eight character Data Fields to follow (Hex)
8. FFFFFFFF - ASCII Hex IEEE float:
  1. Start volume
  2. Start TC volume
  3. Start product height
  4. Start water height
  5. Start temperature
  6. Threshold used in the detection
  7. Observed inventory loss
9. && - Data Termination Flag
10. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: 229**

Version 6

**Function Type:** Period Report for Timed Sudden Loss Detection

**Command Format:**

**Display:** <SOH>I229TTYMMDDyymmddnnn

**Computer:** <SOH>i229TTYMMDDyymmddnnn

### Notes:

1. TT - Tank Number (Decimal, 00=All)
2. YYMMDD - Starting Date (000000 = no starting date)
3. yymmdd - Ending Date (000000 = no ending date)
4. nnn - Maximum Records [001...999] (100 = default) (decimal)

### Typical Response Message, Display Format:

```
<SOH>
I229TT
MAY 21, 2014 3:26 PM
```

```
STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....
```

PERIOD REPORT FOR TIMED SUDDEN LOSS DETECTION

T 1: Regular

	DATE/TIME	FUEL TC VOLUME	FUEL HEIGHT	WATER HEIGHT
START:	MAY 21, 2014 12:01 AM	3000	36.74	0.00
END:	MAY 22, 2014 5:00 AM	3000	36.74	0.00
FUEL LOSS:		0		
INDICATORS: DAILY SCHEDULED				

	DATE/TIME	FUEL TC VOLUME	FUEL HEIGHT	WATER HEIGHT
START:	MAY 21, 2014 12:01 AM	5000	45.48	0.00
END:	MAY 22, 2014 5:00 AM	3445	42.61	0.00
FUEL LOSS:		-555		
INDICATORS: DAILY SCHEDULED				
TSL RESTARTED				

<ETX>

### Typical Response Message, Computer Format:

```
<SOH>i229TTYMMDDHHmmnnTTrrrrYYMMDDHHmmYYMMDDHHmmNNFFFFFFFFF...
 YYMMDDHHmmYYMMDDHHmmNNFFFFFFFFF...
 nnTTrrrrYYMMDDHHmmYYMMDDHHmmNNFFFFFFFFF...
 ...FFFFFFFFF&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. nn - Number of Tanks to follow (01-32, decimal)
3. TT - Tank Number (Decimal, 00=all)
4. rrrr - Number of records to follow (Decimal)
5. YYMMDDHHmm - Record Start Date/Time
6. YYMMDDHHmm - Record End Date/Time
7. NN - Number of eight character Data Fields to follow (Hex)

## Serial Interface Manual

### TLS4/TLS-450/TLS-450Plus Monitoring Systems

#### Function Code 229: (Continued)

- 8.            FFFFFFFF - ASCII Hex IEEE float:
  - 1. Start volume, IEEE float
  - 2. Start TC volume, IEEE float
  - 3. Start product height, IEEE float
  - 4. Start water height, IEEE float
  - 5. Start temperature, IEEE float
  - 6. End volume, IEEE float
  - 7. End TC volume, IEEE float
  - 8. End product height, IEEE float
  - 9. End water height, IEEE float
  - 10. End temperature, IEEE float
  - 11. Observed inventory loss, IEEE float
  - 12. Error flag, unsigned long
    - Bit 1=Timed Sudden Loss Schedule Daily
    - Bit 2=Timed Sudden Loss Schedule Individual
    - Bit 3=Timed Sudden Loss Schedule Manual
    - Bit 4=Timed Sudden Loss Schedule (future)
    - Bit 5=Power Outage/Reboot during detection period
    - Bit 6=Date/Time changed
    - Bit 7=Probe Out during detection period
    - Bit 8=Operator restart Timed Sudden Loss Detection
    - Bit 9=Period disabled
    - Bit 10=Delivery occurred
    - Bit 11=Tank Chart changed
- 9.            && - Data Termination Flag
- 10.           CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: 22I**

Version 2

**Function Type:** Ticketed Delivery Daily Report

**Command Format:**

**Display:** <SOH>I22ITTymmddYYMMDDnnn

**Computer:** <SOH>i22ITTymmddYYMMDDnnn

### Notes:

1. TT - Tank Number (Decimal, 00=All)
2. yymmdd - Starting Date (000000 = no starting date = first of the month)
3. YYMMDD - Ending Date (000000 = no ending date = current date)
4. nnn - Maximum Records [001...366] (100 = default) (decimal)

### Typical Response Message, Display Format:

```
<SOH>
I22ITT
MAR 20, 2009 3:25 PM
```

```
STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....
```

```
TICKETED DELIVERY DAILY REPORT
VOLUMES ARE STANDARD
```

```
T 1:REGULAR UNLEADED
```

DELIVERY	END DATE	TICKET VOLUME	GAUGE VOLUME	DLVY VAR	BEFORE TMP	AFTER TMP	EST DLVY TMP
MAR 7,	2009 8:26 AM	5901.4	5905.2	-4.0	44.8	42.4	41.0
MAR 9,	2009 11:37 AM	5901.2	5905.6	-4.0	44.6	43.2	42.4
MAR 10,	2009 11:34 PM	4099.8	4094.9	5.0	44.6	42.6	40.5

```
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>i22ITTYYMMDDHHmmTTpPPdddddYYMMDDHHmmNNFFFFFFFFF...
TTpPPdddddYYMMDDHHmmNNFFFFFFFFF&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=All)
3. p - Product Code (one ASCII character [20h-7Eh])
4. PP - Probe type (Decimal)
5. dddd - Number of deliveries to follow (decimal) if 0, no more data for this tank will follow
6. YYMMDDHHmm - Ending date/ time
7. NN - Number of eight character Data Fields to follow (Hex)
8. FFFFFFFF - ASCII Hex IEEE floats:
  1. ticket volume
  2. gauged volume
  3. delivery variance
  4. start fuel temperature
  5. end fuel temperature
  6. estimated delivery temperature
9. && - Data Termination Flag
10. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 22J

Version 2

**Function Type:** Delivery Ticket History Report

**Command Format:**

**Display:** <SOH>I22JTTyyymmddYYMMDDnnn

**Computer:** not supported

### Notes:

1. TT - Tank Number (Decimal, 00=All)
2. yyymmdd - Starting Date (000000 = no starting date = first of the month)
3. YYMMDD - Ending Date (000000 = no ending date = current date)
4. nnn - Maximum Records [001...366] (100 = default) (decimal)

### Typical Response Message, Display Format:

<SOH>  
I22JTT  
MAR 20, 2009 3:25 PM

STATION HEADER 1....  
STATION HEADER 2....  
STATION HEADER 3....  
STATION HEADER 4....

DELIVERY TICKET HISTORY REPORT  
VOLUMES ARE STANDARD

T 1:REGULAR UNLEADED

DELIVERY	END	DATE	GAUGE VOLUME	TICKET VOLUME	ST TMP	END TMP	EST DLY TMP	BILL OF LADING / DELIVERY ID
MAR 7, 2009	8:26	AM	5901	5905	44.0	48.0	47.0	This would be 20 cha
MAR 29, 2009	11:37	AM	5901	5905	65.0	70.0	68.0	This would be 20 cha
								TRUCK 7
								1010

<ETX>

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: 231**

Version 1

**Function Type:** In-Tank Full Inventory Report

**Command Format:**

**Display:** <SOH>I231TT

**Computer:** <SOH>I231TT

### Typical Response Message, Display Format:

```
<SOH>
I23100
16-06-11 07:35
```

```
STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....
```

#### FULL INVENTORY REPORT

TANK	:	1	2	3
FULL VOLUME	:	10000	10000	10000
VOLUME	:	247	7433	1828
ULLAGE	:	9753	2567	8172
HEIGHT	:	5.8	16.7	11.4
WATER HEIGHT	:	2.0	2.5	4.8
WATER VOLUME	:	51	560	528
NET VOLUME	:	196	6873	1300
TC VOLUME	:	246	7366	1819
TC NET VOLUME	:	195	6811	1294
TEMP	:	64.5	72.0	66.1
MASS	:	-	45481	-
DENSITY	:	-	45.77	-
TC DENSITY	:	-	46.18	-

<ETX>

### Typical Response Message, Computer Format:

```
<SOH>i231TTYMMDDHHmmTTpssssNNFFFFFFFFF...
TTpssssNNFFFFFFFFF&&CCCC<ETX>
```

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. p - Product Code (single ASCII character [20h-7Eh])
4. ssss - Tank Status Bits:
  - Bit 1=(LSB) Delivery in Progress
  - Bit 2=Leak Test in Progress
  - Bit 3=Invalid Fuel Height Alarm (MAG Probes Only)
  - Bit 4-16 - Unused
5. NN - Number of eight character Data Fields to follow (Hex)
6. FFFFFFFF - ASCII Hex IEEE float:
  1. Volume
  2. TC Volume
  3. Ullage
  4. Height
  5. Water
  6. Temperature
  7. Water Volume
  8. Full Volume
  9. Net Volume
  10. TC Net Volume
  11. Mass
  12. Density
  13. TC Density
7. && - Data Termination Flag
8. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: 233**

Version 3

**Function Type:** Density Offset History Report

**Command Format:**

**Display:** <SOH>I233PP

**Computer:** <SOH>i233PP

**Typical Response Message, Display Format:**

```
<SOH>
I233PP
28-07-11 10:51

DENSITY OFFSET HISTORY REPORT

T 1:REGULAR UNLEADED
DATE / TIME DENSITY TEMP TC DENSITY TC REF TEMP TC OFFSET
28-07-11 10:51 TLS: 45.062 71.50 45.459 59.00 0.000
 FIELD: 45.060 71.70 45.464 59.00 0.005
 TOTAL: 0.005

<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i233PPYYMMDDHHmmPPNNYYMMDDHHmmnnFFFFFFFF...FFFFFFFF
 YYMMDDHHmmnnFFFFFFFF...FFFFFFFF...
PPNNYYMMDDHHmmnnFFFFFFFF...FFFFFFFF
 YYMMDDHHmmnnFFFFFFFF...FFFFFFFF&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. PP - Probe Number (Decimal, 00=All)
3. NN - Number of records to follow (Hex):
4. YYMMDDHHmm - Date/Time
5. nn - Number of eight character Data Fields to follow (Hex)
6. FFFFFFFF - ASCII Hex IEEE floats:
  1. TLS Density
  2. TLS Temp
  3. TLS TC Density
  4. Previous TC Ref Temp
  5. Previous Total TC Density Offset
  6. Field Density
  7. Field Temp
  8. Field TC Density
  9. TC Ref Temp
  10. TC Density Offset
  11. Total TC Density Offset
7. && - Data Termination Flag
8. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: 234**

Version 3

**Function Type:** In-Tank Mass/Density Inventory Report

**Command Format:**

**Display:** <SOH>I234TT

**Computer:** <SOH>i234TT

### Typical Response Message, Display Format:

```
<SOH>
I234TT
MAR 20, 2010 3:25 PM

STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....

IN_TANK MASS INVENTORY

TANK PRODUCT VOLUME MASS TC DENSITY HEIGHT WATER TEMP
1 PRODUCT 1 7343 44521 45.35 16.5 0.0 78.8
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>i234TTYMMDDHHmmTTpssssNNFFFFFFFF...
 TTpssssNNFFFFFFFF...&&CCCC<ETX>
```

### Notes:

1. YMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=All)
3. p - Product Code (one ASCII character [20h-7Eh])
4. ssss - Tank Status Bits:
  - Bit 1=(LSB) Delivery in Progress
  - Bit 2=Leak Test in Progress
  - Bit 3=Invalid Fuel Height Alarm (MAG Probes Only)
  - Bit 4-16 - Unused
5. NN - Number of eight character Data Fields to follow (Hex)
6. FFFFFFFF - ASCII Hex IEEE floats:
  - 1. Volume
  - 2. Mass
  - 3. Density
  - 4. Height
  - 5. Water
  - 6. Temperature
  - 7. TC Density
7. && - Data Termination Flag
8. CCCC - Message Checksum



# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 235

Version 3

Function Type: In-Tank Mass/Density Delivery Report

Command Format:

Display: <SOH>I235TT

Computer: <SOH>i235TT

### Typical Response Message, Display Format:

<SOH>  
I235TT  
APR 30, 2010 3:25 PM

STATION HEADER 1....  
STATION HEADER 2....  
STATION HEADER 3....  
STATION HEADER 4....

IN-TANK MASS/DENSITY DELIVERY REPORT

Volume=GALLONS  
Height=INCHES  
Temp=FAHRENHEIT

TANK 1:PRODUCT 1

Date / Time	Fuel Volume	Mass	Density	TC Height	Water Height	Fuel Temp	Fuel Height
END: MAY 26, 2010 1:28 PM	5000	0	0.00	0.00	0.00	60.00	48.00
START: MAY 26, 2010 11:56 AM	3000	0	0.00	0.00	0.00	60.00	32.65
AMOUNT:	2000						

TANK 3:PRODUCT 3

Date / Time	Fuel Volume	Mass	Density	TC Height	Water Height	Fuel Temp	Fuel Height
END: MAY 26, 2010 1:28 PM	5877	0	0.00	0.00	0.00	60.00	54.63
START: MAY 26, 2010 11:56 AM	3877	0	0.00	0.00	0.00	60.00	39.49
AMOUNT:	2000						

<ETX>

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code 235:** (Continued)

**Typical Response Message, Computer Format:**

```
<SOH>i235TTYMMDDHHmmTTpddYYMMDDHHmmYYMMDDHHmmNNFFFFFFFFf...
 TTpddYYMMDDHHmmYYMMDDHHmmNNFFFFFFFFf...&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=All)
3. p - Product Code (one ASCII character [20h-7Eh])
4. dd - Number of Deliveries to follow (Decimal, 00=no data)
5. YYMMDDHHmm - Starting Date/Time
6. YYMMDDHHmm - Ending Date/Time
7. NN - Number of eight character Data Fields to follow (Hex)
8. FFFFFFFF - ASCII Hex IEEE floats:
  1. Starting Volume
  2. Starting Mass
  3. Starting Density
  4. Starting Water
  5. Starting Temp
  6. Ending Volume
  7. Ending Mass
  8. Ending Density
  9. Ending Water
  10. Ending Temp
  11. Starting Height
  12. Ending Height
  13. Starting TC Density
  14. Ending TC Density
9. f - Default Density Flag (0=new value, 1=default)
10. && - Data Termination Flag
11. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: 237**

**Function Type:** In-Tank Product Inventory Report

Version 1

**Command Format:**

**Display:** <SOH>I237TT

**Computer:** <SOH>i237TT

### Typical Response Message, Display Format:

<SOH>  
I237TT  
JAN 22, 2012 3:06 PM

STATION HEADER 1....  
STATION HEADER 2....  
STATION HEADER 3....  
STATION HEADER 4....

#### PRODUCT INVENTORY REPORT

TANK	PRODUCT LABEL	VOLUME	TC VOLUME
1	REGULAR 1	5265	5224
2	REGULAR 2	5265	5220
3	REGULAR 3	5265	5217
4	REGULAR 4	5265	5231
TOTAL:		21060	20892
5	DIESEL	3287	3276
TOTAL:		3287	3276

<ETX>

### Typical Response Message, Computer Format:

<SOH>i237TTYMMDDHHmmNNTTpnnaaaaaaaaAAAAAAAA...  
TTpnnaaaaaaaaAAAAAAAAAbccccccccCCCCCCCC&&CCCC<ETX>

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. NN - Number of tanks to follow (Hex)
3. TT - Tank Number (Decimal, 00=all)
4. p - Product Code (one ASCII character [20h-7Eh])
5. nn - Number of eight byte ASCII Hex floats to follow
6. aaaaaaaaa - Tank Volume
7. AAAAAAAAA - Tank TC Volume
8. bb - Number of eight byte ASCII Hex floats to follow
9. cccccccc - Product Volume
10. CCCCCCCC - Product TC Volume
11. && - Data Termination Flag
12. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: 238**

**Function Type:** In-Tank Siphon ManifolDED Inventory Report

Version 1

**Command Format:**

**Display:** <SOH>I238TT

**Computer:** <SOH>i238TT

### Typical Response Message, Display Format:

<SOH>  
I238TT  
JAN 22, 2012 3:06 PM

STATION HEADER 1....  
STATION HEADER 2....  
STATION HEADER 3....  
STATION HEADER 4....

#### SIPHON MANIFOLDED INVENTORY REPORT

TANK	PRODUCT LABEL	VOLUME	TC VOLUME
1	REGULAR 1	5265	5224
2	REGULAR 2	5265	5220
TOTAL:		10530	10448
3	PREMIUM 1	5265	5217
4	PREMIUM 2	5265	5231
TOTAL:		10530	10448
5	DIESEL	3287	3276
TOTAL:		3287	3276

<ETX>

### Typical Response Message, Computer Format:

<SOH>i238TTYMMDDHHmmNNTTpnnaaaaaaaaAAAAAAAAA...  
TtpnnaaaaaaaaAAAAAAAAAbccccccccCCCCCCCC&&CCCC<ETX>

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. NN - Number of tanks to follow (Hex)
3. TT - Tank Number (Decimal, 00=all)
4. p - Product Code (one ASCII character [20h-7Eh])
5. nn - Number of eight byte ASCII Hex floats to follow
6. aaaaaaaaa - Tank Volume
7. AAAAAAAAA - Tank TC Volume
8. bb - Number of eight byte ASCII Hex floats to follow
9. cccccccc - Product Volume
10. CCCCCCCC - Product TC Volume
11. && - Data Termination Flag
12. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 239

Version 4

**Function Type:** In-Tank Manifolded Delivery Report  
With Sales Adjustment if BIR available

**Command Format:**

**Display:** <SOH>I239TT

**Computer:** <SOH>i239TT

### Typical Response Message, Display Format:

<SOH>  
I239TT  
JUL 29, 2012 9:02 AM

STATION HEADER 1....  
STATION HEADER 2....  
STATION HEADER 3....  
STATION HEADER 4....

MANIFOLDED DELIVERY REPORT

TANK PRODUCT LABEL

1 REGULAR A

2 REGULAR B

3 REGULAR C

DATE / TIME	GALLONS	TC	GALLONS
OCT 10, 2012 1:01 AM	25857		25857
OCT 9, 2012 1:01 AM	25854		25854
OCT 8, 2012 1:01 AM	25851		25851
OCT 7, 2012 1:01 AM	25848		25848
OCT 6, 2012 1:01 AM	25845		25845
OCT 5, 2012 1:01 AM	25842		25842

<ETX>

### Typical Response Message, Computer Format:

<SOH>i239TTYMMDDHHmmnnTTP...TTPddYYMMDDHHmmNNFFFFFFFF...  
nnTTP...TTPddYYMMDDHHmmNNFFFFFFFF...&&CCCC<ETX>

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. nn - Number of Tanks to follow
3. TT - Tank Number (Decimal, 00=all)
4. p - Product Code (single ASCII character [20h-7Eh])
5. dd - Number of Deliveries to follow (Decimal, 00 if no data available)
6. YYMMDDHHmm - Starting Date/Time
7. NN - Number of eight character Data Fields to follow (Hex)
8. FFFFFFFF - ASCII Hex IEEE float:
  1. Unadjusted Delivery Volume, IEEE float
  2. Unadjusted TC Delivery Volume, IEEE float
  3. Estimated Sales, IEEE float
  4. Manifolded tanks bit mask, unsigned long
  5. Probe Out bit mask, unsigned long
9. && - Data Termination Flag
10. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 23A  
**Function Type:** In-Tank Manifolded Delivery Report  
 with Sales Adjustment if BIR available

Version 4

**Command Format:**  
**Display:** <SOH>I23ATT  
**Computer:** <SOH>i23ATT

### Typical Response Message, Display Format:

```
<SOH>
I23ATT
JAN 22, 2009 3:08 PM
```

```
STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....
```

### MANIFOLDED DELIVERY REPORT

TANK	PRODUCT LABEL
1	REGULAR A
2	REGULAR B
3	REGULAR C

START DATE / TIME	END DATE / TIME	GALLONS TC	GALLONS
OCT 10, 2012 1:01 AM	OCT 10, 2012 1:21 AM	25857	25857
OCT 9, 2012 1:01 AM	OCT 9, 2012 1:21 AM	25854	25854
OCT 8, 2012 1:01 AM	OCT 8, 2012 1:21 AM	25851	25851
OCT 7, 2012 1:01 AM	OCT 7, 2012 1:21 AM	25848	25848
OCT 6, 2012 1:01 AM	OCT 6, 2012 1:21 AM	25845	25845
OCT 5, 2012 1:01 AM	OCT 5, 2012 1:21 AM	25842	25842

<ETX>

### Typical Response Message, Computer Format:

```
<SOH>i23ATTYYMMDDHHmmnnTTp...TTpddYYMMDDHHmm YYMMDDHHmmNNFFFFFFFF...
nnTTp...TTpddYYMMDDHHmm YYMMDDHHmmNNFFFFFFFF...&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. nn - Number of Tanks to follow
3. TT - Tank Number (Decimal, 00=all)
4. p - Product Code (single ASCII character [20h-7Eh])
5. dd - Number of Deliveries to follow (Decimal, 00 if no data available)
6. YYMMDDHHmm - Starting Date/Time
7. YYMMDDHHmm - Ending Date/Time
8. NN - Number of eight character Data Fields to follow (Hex)
9. FFFFFFFF - ASCII Hex IEEE float:
  1. Unadjusted Delivery Volume, IEEE float
  2. Unadjusted TC Delivery Volume, IEEE float
  3. Estimated Sales, IEEE float
  4. Manifolded tanks bit mask, unsigned long
  5. Probe Out bit mask, unsigned long
10. && - Data Termination Flag
11. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: 23B**

Version 3

**Function Type:** BIR Adjusted Mass/Density Delivery Report

**Command Format:**

**Display:** <SOH>I23BTT

**Computer:** <SOH>i23BTT

**Typical Response Message, Display Format:**

<SOH>  
I23BTT  
JAN 22, 2009 3:08 PM

STATION HEADER 1....  
STATION HEADER 2....  
STATION HEADER 3....  
STATION HEADER 4....

BIR ADJUSTED MASS/DENSITY DELIVERY REPORT

T 1:REGULAR UNLEADED

START DATE	END DATE	VOLUME	TC	MASS	START TC	END TC
			VOLUME		DENSITY	DENSITY
01/21/09 2:52 AM	01/21/09 3:12 AM	3193	9197	24452	45.73	45.73
01/19/09 3:22 AM	01/19/09 3:40 AM	4193	8602	24409	45.73	45.73
01/17/09 3:13 AM	01/17/09 3:40 AM	2739	8749	26010	45.73	45.73

<ETX>

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code 23B:** (Continued)

**Typical Response Message, Computer Format:**

```
<SOH>i23BTTYMMDDHHmmTTddYYMMDDHHmmYYMMDDHHmmNNFFFFFFFF...
 TTddYYMMDDHHmmYYMMDDHHmmNNFFFFFFFF&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=All)
3. dd - Number of Deliveries to follow
4. YYMMDDHHmm - Starting Date/Time
5. YYMMDDHHmm - Ending Date/Time
6. NN - Number of eight character Data Fields to follow (Hex)
7. FFFFFFFF - ASCII Hex IEEE floats:
  1. Starting Volume
  2. Ending Volume
  3. Adjusted Delivery Volume
  4. Adjusted Delivery Temperature Compensated Volume
  5. Starting Fuel Height
  6. Starting Fuel Temperature 1
  7. Starting Fuel Temperature 2
  8. Starting Fuel Temperature 3
  9. Starting Fuel Temperature 4
  10. Starting Fuel Temperature 5
  11. Starting Fuel Temperature 6
  12. Ending Fuel Height
  13. Ending Fuel Temperature 1
  14. Ending Fuel Temperature 2
  15. Ending Fuel Temperature 3
  16. Ending Fuel Temperature 4
  17. Ending Fuel Temperature 5
  18. Ending Fuel Temperature 6
  19. Total Dispensed During Delivery
  20. Starting Fuel Temperature Average
  21. Ending Fuel Temperature Average
  22. Adjusted Delivery Mass
  23. Starting Mass
  24. Ending Mass
  25. Starting Density
  26. Ending Density
  27. Starting TC Density
  28. Ending TC Density
8. && - Data Termination Flag
9. CCCC - Message Checksum



# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 251  
**Function Type:** CSLD Results Report

Version 1

**Command Format:**  
**Display:** <SOH>I251TT  
**Computer:** <SOH>i251TT

### Typical Response Message, Display Format:

```
<SOH>
I251TT
JAN 22, 1996 3:09 PM

STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....

CSLD TEST RESULTS
TANK PRODUCT RESULT
 1 REGULAR UNLEADED PER: JAN 22, 1996 Pass
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>i251TTYMMDDHHmmTTrr...
 TTrr&&CCCC<ETX>
```

### Notes:

1. YMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. rr - Tank CSLD Results:
  - 01=Pass
  - 02=Fail
  - 03=No Results Available
  - 04=Invalid
  - 08=Increase
  - 09=Warning
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 2E3  
**Function Type:** In-Tank Inventory History Report

Version 1

**Command Format:**  
**Display:** <SOH>I2E3TTyyymmddYYMMDDnnn  
**Computer:** <SOH>i2E3TTyyymmddYYMMDDnnn

**Notes:**  
 1. YYMMDDHHmm - Starting Date (000000 = no starting date)  
 2. YYMMDD - Ending Date (000000 = no ending date)  
 3. nnn - Maximum Records [001...999] (100 = default) (decimal)

### Typical Response Message, Display Format:

```
<SOH>
I2E3TT
JAN 22, 1996 3:06 PM
```

```
STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....
```

INVENTORY HISTORY REPORT

TANK 1: REGULAR UNLEADED

Volume=GALLONS  
 Height=INCHES  
 Temp=FAHRENHEIT

DATE/TIME	FUEL VOLUME	FUEL TC VOLUME	FUEL HEIGHT	WATER HEIGHT	WATER VOLUME	FUEL TEMP
07/01/31 03:00	5329	5413	48.97	1.30	100	37.39
07/02/01 02:00	5329	5413	48.97	1.30	100	37.39
07/02/02 01:00	5329	5413	48.97	1.30	100	37.39

<ETX>

### Typical Response Message, Computer Format:

```
<SOH>i2E3TTYMMDDHHmmTTpnnnnsssssYYMMDDHHmmNNFFFFFFFF...
 ssssYYMMDDHHmmNNFFFFFFFF...
 TTpnnnnsssssYYMMDDHHmmNNFFFFFFFF...
 ssssYYMMDDHHmmNNFFFFFFFF&&CCCC<ETX>
```

**Notes:**  
 1. YYMMDDHHmm - Current Date and Time  
 2. TT - Tank Number (Decimal, 00=all)  
 3. p - Product Code (one ASCII character [20h-7Eh])  
 4. nnnn - Number of TimeStamped Records to follow (hex)  
 5. ssss - Tank Status Bits:  
     Bit 1 - (LSB) Delivery in Progress  
     Bit 2 - Leak Test in Progress  
     Bit 3 - Invalid Fuel Height Alarm (MAG Probes Only)  
     Bit 4-16 - Unused  
 6. YYMMDDHHmm - Timestamp  
 7. NN - Number of eight character Data Fields (hex)  
 8. FFFFFFFF - ASCII Hex IEEE floats:  
     1. Volume  
     2. TC Volume  
     3. Fuel Height  
     4. Water Height  
     5. Avg Fuel Temperature  
     6. Water Volume  
     7. Mass  
     8. Density  
     9. TC Density  
 9. && - Data Termination Flag  
 10. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 2E4 Version 1  
**Function Type:** Extended In-Tank Inventory Report - Date/Time Based  
**Command Format:**  
**Display:** <SOH>I2E4TTRRyyymmddhhmmYYMMDDHHMMnnn  
**Computer:** <SOH>i2E4TTRRyyymmddhhmmYYMMDDHHMMnnn

### Notes:

1. TT - Device Number (Decimal, 00=all)
2. RR - Report Type (Report Type should always be given. The rest of the parameters are optional following the rules below.)  
00=Inventory History Report (Inventory Information for the specified Time Period)
3. yyymmddhhmm - Starting Date/Time (If a start date/time is not provided or either Year, Month or Day are zeroes, it assumes request is for most recent records. If a start date/time is not provided, then the request is limited by the Maximum Records (below). Ranges are as follows:  
 yy=Year (01-99, for Years 2001-2099)  
 mm=Month (01-12, for Months January to December)  
 dd=Day (01-31, however, validity depends on Month)  
 hh=Hour (00-23)  
 mm=Minute (00-59)
4. YYMMDDHHMM - Ending Date/Time (If an end date/time is not given or either Year, Month or Day are zeroes, it assumes request is for records starting from start date/time as evaluated above, limited by the Maximum Records (below). Ranges are the same as the Start Date/Time fields.
5. nnn - Maximum Records (1-999, Absolute Maximum) (Decimal). (If Maximum records is not given or it is zeroes, it assumes request is for records from start date/time, ending by end date start/time, and limited by Maximum Records default of 100)

### Typical Response Message, Display Format:

```
<SOH>
I2E40001
JAN 22, 1996 3:06 PM
```

```
STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....
```

```
Volume=LITERS
Height=MM
Temp=DEG C
```

INVENTORY HISTORY REPORT

Selected Range:

Date Range: JAN 1, 2009 12:00 AM - NOV 1, 2009 12:00 AM

TANK 1: Regular Unleaded

Date/Time	Fuel Volume	Fuel TC Volume	Fuel Height	Water Height	Water Volume	Fuel Temp
07-01-31 03:00	5329	5413	48.97	0.00	0.00	37.39
07-02-01 02:00	5329	5413	48.97	0.00	0.00	37.39
07-02-02 01:00	5329	5413	48.97	0.00	0.00	37.39

TANK 2: Regular Unleaded

Date/Time	Fuel Volume	Fuel TC Volume	Fuel Height	Water Height	Water Volume	Fuel Temp
07-01-31 03:00	5329	5413	48.97	0.00	0.00	37.39
07-02-01 02:00	5329	5413	48.97	0.00	0.00	37.39
07-02-02 01:00	5329	5413	48.97	0.00	0.00	37.39

<ETX>

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code 2E4: (Continued)

Typical Response Message, Computer Format:

```
<SOH>i2E4TTYMMDDHHmmTTpnnnnssssYYMMDDHHmmNNNNNNNNNN...
 ssssYYMMDDHHmmNNNNNNNNNN...
 TTpnnnnssssYYMMDDHHmmNNNNNNNNNN...
 ssssYYMMDDHHmmNNNNNNNNNN&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. p - Product Code (one ASCII character [20h-7Eh])
4. nnnn - Number of TimeStamped Records to follow (hex)
5. ssss - Tank Status Bits:
  - Bit 1 - (LSB) Delivery in Progress
  - Bit 2 - Leak Test in Progress
  - Bit 3 - Invalid Fuel Height Alarm (MAG Probes Only)
  - Bit 4-16 - Unused
6. YYMMDDHHmm - Timestamp
7. NN - Number of eight character Data Fields (hex)
8. FFFFFFFF - ASCII Hex IEEE floats:
  1. Volume
  2. TC Volume
  3. Fuel Height
  4. Water Height
  5. Avg Fuel Temperature
  6. Water Volume
  7. Mass
  8. Density
  9. TC Density
9. && - Data Termination Flag
10. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

### 7.2.3 SENSOR REPORTS

**Function Code:** 301  
**Function Type:** Liquid Sensor Status Report  
**Command Format:**  
    **Display:** <SOH>I301SS  
    **Computer:** <SOH>i301SS

Version 1

#### Typical Response Message, Display Format:

```
<SOH>
I301SS
JAN 28, 1995 10:10 AM

STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....

LIQUID STATUS REPORT

SENSOR LOCATION STATUS
 1 LIQUID # 1 SENSOR NORMAL
<ETX>
```

#### Typical Response Message, Computer Format:

```
<SOH>i301SSYYMMDDHHmmSSsssss...
 SSsssss&&CCCC<ETX>
```

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. SS - Sensor Number (Decimal, 00=all)
3. ssss - Sensor Status Value:
  - 0000=Sensor Normal
  - 0001=Sensor Setup Data Warning
  - 0002=Sensor Fuel Alarm
  - 0003=Sensor Out Alarm
  - 0004=Sensor Short Alarm
  - 0005=Sensor Water Alarm
  - 0006=Sensor Water Out Alarm
  - 0007=Sensor High Liquid Alarm
  - 0008=Sensor Low Liquid Alarm
  - 0009=Sensor Liquid Warning
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: 302**

Version 1

**Function Type:** Liquid Sensor Alarm History Report

**Command Format:**

**Display:** <SOH>I302SS

**Computer:** <SOH>i302SS

### Typical Response Message, Display Format:

```
<SOH>
I302SS
JAN 28, 1995 10:10 AM

STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....

LIQUID ALARM HISTORY REPORT

SENSOR LOCATION
 1 LIQUID # 1
 JAN 6, 1995 8:02 AM FUEL ALARM
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>i302SSYYMMDDHHmmSSNNYYMMDDHHmmaaaa...
 SSNNYYMMDDHHmmaaaa&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. SS - Sensor Number (Decimal, 00=all)
3. NN - Number of Alarm Incidents to follow
4. YYMMDDHHmm - Date and Time of Alarm
5. aaaa - Alarm type number:
  - 0001=Sensor Setup Data Warning
  - 0002=Sensor Fuel Alarm
  - 0003=Sensor Out Alarm
  - 0004=Sensor Short Alarm
  - 0005=Sensor Water Alarm
  - 0006=Sensor Water Out Alarm
  - 0007=Sensor High Liquid Alarm
  - 0008=Sensor Low Liquid Alarm
  - 0009=Sensor Liquid Warning
6. && - Data Termination Flag
7. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: 306**

Version 1

**Function Type:** Vapor Sensor Status Report

**Command Format:**

**Display:** <SOH>I306SS

**Computer:** <SOH>i306SS

**Typical Response Message, Display Format:**

```
<SOH>
I306SS
JAN 28, 1995 10:11 AM
```

```
STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....
```

VAPOR STATUS REPORT

SENSOR	LOCATION	STATUS
1	VAPOR # 1	NORMAL

<ETX>

**Typical Response Message, Computer Format:**

```
<SOH>i306SSYYMMDDHHmmSSssss...
 SSssss&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. SS - Sensor Number (Decimal, 00=all)
3. ssss - Sensor Status Value:
  - 0000=Sensor Normal
  - 0001=Sensor Setup Data Warning
  - 0002=Sensor Fuel Alarm
  - 0003=Sensor Out Alarm
  - 0004=Sensor Short Alarm
  - 0005=Sensor Water Alarm
  - 0006=Sensor Water Out Alarm
  - 0007=Sensor High Liquid Alarm
  - 0008=Sensor Low Liquid Alarm
  - 0009=Sensor Liquid Warning
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: 307**

Version 1

**Function Type:** Vapor Sensor Alarm History Report

**Command Format:**

**Display:** <SOH>I307SS

**Computer:** <SOH>i307SS

### Typical Response Message, Display Format:

```
<SOH>
I307SS
JAN 28, 1995 10:11 AM
```

```
STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....
```

VAPOR ALARM HISTORY REPORT

```
SENSOR LOCATION
 1 VAPOR # 1
 JAN 6, 1995 8:02 AM WATER ALARM
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>i307SSYYMMDDHHmmSSNNYYMMDDHHmmaaaa...
 SSNNYYMMDDHHmmaaaa&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. SS - Sensor Number (Decimal, 00=all)
3. NN - Number of Alarm Incidents to follow
4. YYMMDDHHmm - Date and Time of Alarm
5. aaaa - Alarm type number:
  - 0001=Sensor Setup Data Warning
  - 0002=Sensor Fuel Alarm
  - 0003=Sensor Out Alarm
  - 0004=Sensor Short Alarm
  - 0005=Sensor Water Alarm
  - 0006=Sensor Water Out Alarm
  - 0007=Sensor High Liquid Alarm
  - 0008=Sensor Low Liquid Alarm
  - 0009=Sensor Liquid Warning
6. && - Data Termination Flag
7. CCCC - Message Checksum



# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 311  
**Function Type:** Groundwater Sensor Status Report

Version 1

**Command Format:**  
**Display:** <SOH>I311SS  
**Computer:** <SOH>i311SS

### Typical Response Message, Display Format:

```
<SOH>
I311SS
JAN 28, 1995 10:11 AM

STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....

GROUNDWATER STATUS REPORT
```

SENSOR	LOCATION	STATUS
1	GROUND WATER # 1	NORMAL

<ETX>

### Typical Response Message, Computer Format:

```
<SOH>i311SSYYMMDDHHmmSSssss...
 SSssss&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. SS - Sensor Number (Decimal, 00=all)
3. ssss - Sensor Status Value:
  - 0000=Sensor Normal
  - 0001=Sensor Setup Data Warning
  - 0002=Sensor Fuel Alarm
  - 0003=Sensor Out Alarm
  - 0004=Sensor Short Alarm
  - 0005=Sensor Water Alarm
  - 0006=Sensor Water Out Alarm
  - 0007=Sensor High Liquid Alarm
  - 0008=Sensor Low Liquid Alarm
  - 0009=Sensor Liquid Warning
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 312

Version 1

**Function Type:** Groundwater Sensor Alarm History Report

**Command Format:**

**Display:** <SOH>I312SS

**Computer:** <SOH>i312SS

### Typical Response Message, Display Format:

```
<SOH>
I312SS
JAN 28, 1995 10:11 AM

STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....

GROUNDWATER ALARM HISTORY REPORT

SENSOR LOCATION
 1 GROUND WATER # 1
 JAN 6, 1995 8:02 AM OPEN ALARM
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>i312SSYYMMDDHHmmSSNNYYMMDDHHmmaaaa...
 SSNNYYMMDDHHmmaaaa&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. SS - Sensor Number (Decimal, 00=all)
3. NN - Number of Alarm Incidents to follow
4. YYMMDDHHmm - Date and Time of Alarm
5. aaaa - Alarm type number:
  - 0001=Sensor Setup Data Warning
  - 0002=Sensor Fuel Alarm
  - 0003=Sensor Out Alarm
  - 0004=Sensor Short Alarm
  - 0005=Sensor Water Alarm
  - 0006=Sensor Water Out Alarm
  - 0007=Sensor High Liquid Alarm
  - 0008=Sensor Low Liquid Alarm
  - 0009=Sensor Liquid Warning
6. && - Data Termination Flag
7. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 31B  
**Function Type:** MAG Sensor Status Report

Version 1

**Command Format:**  
**Display:** <SOH>I31BSS  
**Computer:** <SOH>i31BSS

### Typical Response Message, Display Format:

<SOH>  
I31BSS  
JAN 22, 2003 3:07 PM

STATION HEADER 1....  
STATION HEADER 2....  
STATION HEADER 3....  
STATION HEADER 4....

### MAG SENSOR STATUS REPORT

SENSOR	LOCATION	STATUS
1	SUMP 1	SENSOR NORMAL
2	SUMP 2	FUEL ALARM WATER ALARM INSTALL ALARM
3	SUMP 3	SENSOR NORMAL

<ETX>

### Typical Response Message, Computer Format:

<SOH>i31BSSYYMMDDHHmmSSNNaaaa...zzzz  
SSNNaaaa...zzzz&&CCCC<ETX>

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. SS - MAG Sensor Number (Decimal, 00=all)
3. NN - Number of alarm states to follow
4. aaaa..zzzz - Sensor status values:
  - 0000=MAG Sensor Normal
  - 0001=MAG Sensor Setup Data Warning
  - 0002=MAG Sensor Communication Alarm
  - 0003=MAG Sensor Fault Alarm
  - 0004=MAG Sensor Fuel Warning
  - 0005=MAG Sensor Fuel Alarm
  - 0006=MAG Sensor Water Warning
  - 0007=MAG Sensor Water Alarm
  - 0008=MAG Sensor High Liquid Warning
  - 0009=MAG Sensor High Liquid Alarm
  - 0010=MAG Sensor Low Liquid Warning
  - 0011=MAG Sensor Low Liquid Alarm
  - 0012=MAG Sensor Temperature Warning
  - 0013=MAG Sensor Relay Active
  - 0014=MAG Sensor Install Alarm
5. && - Data Termination Flag
6. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 31C

Version 1

**Function Type:** MAG Sensor Alarm History Report

**Command Format:**

**Display:** <SOH>I31CSS

**Computer:** <SOH>i31CSS

### Typical Response Message, Display Format:

```
<SOH>
I31CSS
JAN 22, 2003 3:07 PM

STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....

MAG SENSOR ALARM HISTORY REPORT

SENSOR LOCATION
 1 T1 SUMP
 JUN 23, 2003 2:12 PM WATER WARNING
 JUN 23, 2003 2:12 PM WATER ALARM
 JUN 23, 2003 2:12 PM FUEL ALARM
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>i31CSSYYMMDDHHmmSSnnYYMMDDHHmmaaaa...
 SSnnYYMMDDHHmmaaaa&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. SS - MAG Sensor Number (Decimal, 00=all)
3. nn - Number of alarms incidents to follow (Decimal, 00=none)
4. YYMMDDHHmm - Date and time alarm occurred
5. aaaa - Alarm type number:
  - 0001=MAG Sensor Setup Data Warning
  - 0002=MAG Sensor Communication Alarm
  - 0003=MAG Sensor Fault Alarm
  - 0004=MAG Sensor Fuel Warning
  - 0005=MAG Sensor Fuel Alarm
  - 0006=MAG Sensor Water Warning
  - 0007=MAG Sensor Water Alarm
  - 0008=MAG Sensor High Liquid Warning
  - 0009=MAG Sensor High Liquid Alarm
  - 0010=MAG Sensor Low Liquid Warning
  - 0011=MAG Sensor Low Liquid Alarm
  - 0012=MAG Sensor Temperature Warning
  - 0013=MAG Sensor Relay Active
  - 0014=MAG Sensor Install Alarm
6. && - Data Termination Flag
7. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 322  
**Function Type:** Pump Relay Monitor Status Report

Version 5

**Command Format:**  
**Display:** <SOH>I322QQ  
**Computer:** <SOH>i322QQ

### Typical Response Message, Display Format:

```
<SOH>
I322QQ
JUN 22, 2014 3:12 PM

PUMP RELAY MONITOR STATUS REPORT

DEVICE LABEL PUMP PUMP RELAY
 1 PUMP RELAY UNLEADED (OUT) (IN) STATUS
 1 PUMP RELAY UNLEADED OFF Q 1: OFF NORMAL
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>i322QQYYMMDDHHmmQQabsssss...
 QQabsssss&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pump Relay Monitor Number (Decimal, 00=all)
3. a - Pump Status (ASCII Hex)  
0=Off  
1=On
4. b - Relay Status (ASCII Hex)  
0=Off (or N/A - no Pump Relay assigned)  
1=On
5. ssss - Pump Relay Monitor Status Value (ASCII Hex)  
0000=Normal  
0003=Pump Relay Alarm
6. && - Data Termination Flag
7. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: 323**

Version 5

**Function Type:** Pump Relay Monitor Alarm History Report

**Command Format:**

**Display:** <SOH>I323QQ

**Computer:** <SOH>i323QQ

### Typical Response Message, Display Format:

```
<SOH>
I323QQ
JUN 22, 2014 3:12 PM

PUMP RELAY MONITOR ALARM HISTORY REPORT

DEVICE LABEL
 1 PUMP RELAY UNLEADED
 JUN 1, 2014 8:02 AM PUMP RELAY ALARM
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>i323QQYYMMDDHHmmQQNNYYMMDDHHmmaaaa...
 QQNNYYMMDDHHmmaaaa&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pump Relay Monitor Number (Decimal, 00=all)
3. NN - Number of Alarm Incidents to follow (ASCII Hex)
4. YYMMDDHHmm - Date and Time of Alarm
5. aaaa - Alarm Type number (ASCII Hex):  
0003=Pump Relay Alarm
6. && - Data Termination Flag
7. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: 341**

**Function Type:** Type A (2 Wire CL) Sensor Status Report

Version 1

**Command Format:**

**Display:** <SOH>I341SS

**Computer:** <SOH>i341SS

**Typical Response Message, Display Format:**

```
<SOH>
I341SS
FEB 18, 1990 10:53 AM

STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....

2 WIRE CL STATUS REPORT

SENSOR LOCATION STATUS
 1 2 WIRE CL SENSOR #1 FUEL ALARM
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i341SSYYMMDDHHmmSSssss...
 SSssss&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. SS - Sensor Number (Decimal, 00=all)
3. ssss - Sensor Status Value:
  - 0000=Sensor Normal
  - 0001=Sensor Setup Data Warning
  - 0002=Sensor Fuel Alarm
  - 0003=Sensor Out Alarm
  - 0004=Sensor Short Alarm
  - 0005=Sensor Water Alarm
  - 0006=Sensor Water Out Alarm
  - 0007=Sensor High Liquid Alarm
  - 0008=Sensor Low Liquid Alarm
  - 0009=Sensor Liquid Warning
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: 342**

Version 1

**Function Type:** Type A (2 Wire CL) Sensor Alarm History Report

**Command Format:**

**Display:** <SOH>I342SS

**Computer:** <SOH>i342SS

**Typical Response Message, Display Format:**

```
<SOH>
I342SS
FEB 18, 1990 10:53 AM

STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....

2 WIRE CL ALARM HISTORY REPORT

SENSOR LOCATION
 1 2 WIRE CL SENSOR #1
 FEB 12, 1990 11:32 AM FUEL ALARM
 FEB 10, 1990 10:09 AM OPEN ALARM

<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i342SSYYMMDDHHmmSSNNYYMMDDHHmmaaaa...
 SSNNYYMMDDHHmmaaaa&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. SS - Sensor Number (Decimal, 00=all)
3. NN - Number of Alarm Incidents to follow
4. YYMMDDHHmm - Date and Time of Alarm
5. aaaa - Alarm type number:
  - 0001=Sensor Setup Data Warning
  - 0002=Sensor Fuel Alarm
  - 0003=Sensor Out Alarm
  - 0004=Sensor Short Alarm
  - 0005=Sensor Water Alarm
  - 0006=Sensor Water Out Alarm
  - 0007=Sensor High Liquid Alarm
  - 0008=Sensor Low Liquid Alarm
  - 0009=Sensor Liquid Warning
6. && - Data Termination Flag
7. CCCC - Message Checksum



# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: 346**

Version 1

**Function Type:** Type B (3 Wire CL) Sensor Status Report

**Command Format:**

**Display:** <SOH>I346SS

**Computer:** <SOH>i346SS

**Typical Response Message, Display Format:**

```
<SOH>
I346SS
FEB 18, 1990 10:53 AM

STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....

3 WIRE CL STATUS REPORT

SENSOR LOCATION STATUS
 1 3 WIRE CL SENSOR #1 FUEL ALARM
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i346SSYYMMDDHHmmSSssss...
 SSssss&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. SS - Sensor Number (Decimal, 00=all)
3. ssss - Sensor Status Value:
  - 0000=Sensor Normal
  - 0001=Sensor Setup Data Warning
  - 0002=Sensor Fuel Alarm
  - 0003=Sensor Out Alarm
  - 0004=Sensor Short Alarm
  - 0005=Sensor Water Alarm
  - 0006=Sensor Water Out Alarm
  - 0007=Sensor High Liquid Alarm
  - 0008=Sensor Low Liquid Alarm
  - 0009=Sensor Liquid Warning
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: 347**

Version 1

**Function Type:** Type B (3 Wire CL) Sensor Alarm History Report

**Command Format:**

**Display:** <SOH>I347SS

**Computer:** <SOH>i347SS

### Typical Response Message, Display Format:

```
<SOH>
I347SS
FEB 18, 1990 10:53 AM
```

```
STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....
```

3 WIRE CL ALARM HISTORY REPORT

SENSOR LOCATION

```
1 3 WIRE CL SENSOR #1
 FEB 12, 1990 11:32 AM FUEL ALARM
 FEB 10, 1990 10:09 AM OPEN ALARM
```

<ETX>

### Typical Response Message, Computer Format:

```
<SOH>i347SSYYMDDHHmmSSNNYYMDDHHmmaaaa...
 SSNNYYMDDHHmmaaaa&&CCCC<ETX>
```

### Notes:

1. YYMDDHHmm - Current Date and Time
2. SS - Sensor Number (Decimal, 00=all)
3. NN - Number of Alarm Incidents to follow
4. YYMDDHHmm - Date and Time of Alarm
5. aaaa - Alarm type number:
  - 0001=Sensor Setup Data Warning
  - 0002=Sensor Fuel Alarm
  - 0003=Sensor Out Alarm
  - 0004=Sensor Short Alarm
  - 0005=Sensor Water Alarm
  - 0006=Sensor Water Out Alarm
  - 0007=Sensor High Liquid Alarm
  - 0008=Sensor Low Liquid Alarm
  - 0009=Sensor Liquid Warning
6. && - Data Termination Flag
7. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: 34E**

Version 7

**Function Type:** Sensor History by Period Report

**Command Format:**

**Display:** <SOH>I34E00AATTPRRNN

**Computer:** <SOH>i34E00AATTPRRNN

### Notes:

1. PP - Report Period Type (Optional)  
02=Weekly  
03=Monthly  
04=Yearly  
05=Custom
2. RR - Period Range Type (Optional)  
00=Current  
01=Previous  
02=Previous N Records
3. NN - Number of Reporting Periods (when RR=02)  
For Monthly: 01-12 (default=12)  
For Weekly: 01-53 (default=12)  
For Custom: 01-53 (Max 1 year) (default=12)

### Typical Response Message, Display Format:

#### By Month example:

<SOH>  
I34E00  
09/07/16 10:53 AM

STATION HEADER 1....  
STATION HEADER 2....  
STATION HEADER 3....  
STATION HEADER 4....

SENSOR HISTORY BY PERIOD - BY MONTH

Selected Range:

Range:10/01/15 12:00 AM - 09/07/16 11:59 PM

PERIOD: September 2016

SENSOR	LABEL	DATE/TIME	STATUS
C 1	Disp 1-2 Pan	09/01/16 12:00 AM	NORMAL
Ms 1	Unleaded STP	09/01/16 12:00 AM	NORMAL

PERIOD: August 2016

SENSOR	LABEL	DATE/TIME	STATUS
C 1	Disp 1-2 Pan	08/01/16 4:42 PM	NORMAL
Ms 1	Unleaded STP	08/01/16 4:42 PM	NORMAL

\*\*\* No Prior Data Exists  
<ETX>

#### By Week example:

<SOH>  
I34E00  
09/07/16 10:53 AM

STATION HEADER 1....  
STATION HEADER 2....  
STATION HEADER 3....  
STATION HEADER 4....

SENSOR HISTORY BY PERIOD - BY WEEK

Selected Range:

Range:09/13/15 12:00 AM - 09/07/16 11:59 PM

2016/09/05 - 2016/09/07

SENSOR	LABEL	DATE/TIME	STATUS
--------	-------	-----------	--------

## Serial Interface Manual

### TLS4/TLS-450/TLS-450Plus Monitoring Systems

#### Function Code 34E: (Continued)

L	3	Unleaded STP Pump	09/05/16 12:00 AM	NORMAL
L	4	Super STP Pump	09/05/16 12:00 AM	NORMAL
2016/08/29 - 2016/09/04				
SENSOR	LABEL		DATE/TIME	STATUS
L	3	Unleaded STP Pump	08/29/16 12:00 AM	NORMAL
L	4	Super STP Pump	08/29/16 12:00 AM	NORMAL
2016/08/22 - 2016/08/28				
SENSOR	LABEL		DATE/TIME	STATUS
L	3	Unleaded STP Pump	08/22/16 12:00 AM	NORMAL
L	4	Super STP Pump	08/22/16 12:00 AM	NORMAL
2016/08/15 - 2016/08/21				
SENSOR	LABEL		DATE/TIME	STATUS
L	3	Unleaded STP Pump	08/15/16 10:16 AM	NORMAL
L	4	Super STP Pump	08/15/16 10:16 AM	NORMAL

\*\*\* No Prior Data Exists

#### Typical Response Message, Computer Format:

```
<SOH>i34E00YYMMDDHHmmNNNIIIIInnnAATTSSYYMMDDHHmm...AATTSSYYMMDDHHmm
IIIIInnnAATTSSYYMMDDHHmm...AATTSSYYMMDDHHmm&&CCCC<ETX>
```

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. NNN - Number of Reporting Periods to follow (Decimal)
3. IIII - Report Period Index (Decimal)
4. nnn - Number of records to follow (Decimal)
5. AA - Device Type
  - 00=All Sensor Types (default)
  - 03=Liquid Sensor
  - 04=Vapor Sensor
  - 07=Ground Water Sensor
  - 08=Type A (2 Wire CL)Sensor
  - 12=Type B (3 Wire CL)Sensor
  - 59=MAG Sensor
6. TT - Sensor Number (Decimal, 00=all)
7. SS - Alarm State
  - 00=Normal
  - 01=Alarm
  - 02=Unknown State
8. YYMMDDHHmm - Date and Time of Alarm Status
9. && - Data Termination Flag
10. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

### 7.2.4 LINE LEAK REPORTS

Function Code: 373 Version 1  
Function Type: Pressure Line Leak Test Results (with 0.20 test data)  
Command Format:  
    Display: <SOH>I373QQ  
    Computer: <SOH>i373QQ

#### Typical Response Message, Display Format:

```
<SOH>
I373QQ
JAN 24, 1996 2:52 PM

STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....

PRESSURE LINE LEAK TEST RESULTS

Ln 1:REGULAR UNLEADED

 3.0 GAL/HR RESULTS:

LAST TEST:
 JAN 24, 1996 2:49 PM PASS

NUMBER OF TESTS PASSED
 PREV 24 HOURS : 149
 SINCE MIDNIGHT : 76

0.20 GAL/HR RESULTS:
 JAN 22, 1996 1:32 AM PASS

0.10 GAL/HR RESULTS:
 JAN 23, 1996 11:59 PM PASS

0.20 GAL/HR RESULTS:
 JAN 22, 1996 1:32 AM PASS

NO-VENT TEST ABORTS:
 3 OUT OF 10 TESTS
<ETX>
```

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code 373:** (Continued)

**Typical Response Message, Computer Format:**

```
<SOH>i373QQYYMMDDHHmmQQyyymmddhhmmrrTTPPPMMMMNNYYMMDDHHmmRRtt...
 nnYYMMDDHHmmRRtt...
 QQyyymmddhhmmrrTTPPPMMMMNNYYMMDDHHmmRRtt...
 nnYYMMDDHHmmRRtt&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak sensor number (Decimal, 00=All)
3. yyymmddhhmm - Last 3.00 gal/hr test time
4. rr - 3.00 gal/hr test result (Hex)
5. TT - 3.00 gal/hr test type (unused, always 00)
6. PPPP - Number of 3.00 gal/hr tests passed in previous 24 hours (Hex)
7. MMMM - Number of 3.00 gal/hr tests passed since midnight (Hex)
8. NN - Number of 0.10 gal/hr test results (14 character groups) to follow (Hex)
9. YYMMDDHHmm - Date and time of 0.10 gal/hr test
10. RR - Test result  
01=PASS  
02=FAIL
11. tt - 0.10 gal/hr test type (unused, always 00)
12. nn - Number of 0.20 gal/hr test results (14 character groups) to follow (Hex)
13. YYMMDDHHmm - Date and time of 0.20 gal/hr test
14. RR - Test result  
01=PASS  
02=FAIL
15. tt - 0.20 gal/hr test type (unused, always 00)
16. && - Data Termination Flag
17. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: 374**

Version 1

**Function Type:** Pressure Line Leak Test History (with 0.20 test data)

**Command Format:**

**Display:** <SOH>I374QQ

**Computer:** <SOH>i374QQ

### Typical Response Message, Display Format:

```
<SOH>
I374QQ
JAN 24, 1996 2:52 PM

STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....

PRESSURE LINE LEAK TEST HISTORY

Ln 1:REGULAR UNLEADED

LAST 3.0 PASS: JAN 24, 1996 2:49 PM

FIRST 0.10 PASS EACH MONTH: JAN 16, 1996 12:38 AM

FIRST 0.20 PASS EACH MONTH: JAN 14, 1996 10:21 PM

<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>i374QQYYMDDHHmmQQyyymmddhhmmTTNNYYMDDHHmmttnnYYMDDHHmmtt...
QQyyymmddhhmmTTNNYYMDDHHmmttnnYYMDDHHmmtt&&CCCC<ETX>
```

### Notes:

1. YYMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak sensor number (Decimal, 00=All)
3. yyymmddhhmm - Last 3.00 gal/hr test pass time ("0000000000" if no test yet)
4. TT - 3.00 gal/hr test type (unused, always 00)
5. NN - Number of 0.10 gal/hr test results (12 character groups) to follow (Hex)
6. YYMDDHHmm - Date and time of 0.10 gal/hr test
7. tt - 0.10 gal/hr test type (unused, always 00)
8. nn - Number of 0.20 gal/hr test results (12 character groups) to follow (Hex)
9. YYMDDHHmm - Date and time of 0.20 gal/hr test
10. tt - 0.20 gal/hr test type (unused, always 00)
11. && - Data Termination Flag
12. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:**375

Version 1

**Function Type:** Pressure Line Leak Test Results II (with 0.20 test data)

**Command Format:**

**Display:** <SOH>I375QQ

**Computer:** <SOH>i375QQ

**Typical Response Message, Display Format:**

```
<SOH>
I375QQ
JAN 24, 1996 2:52 PM

STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....

PRESSURE LINE LEAK TEST RESULTS

Ln 1:REGULAR UNLEADED

 3.0 GAL/HR RESULTS:

LAST TEST:
 JAN 24, 1996 2:49 PM PASSED

NUMBER OF TESTS PASSED
 PREV 24 HOURS : 149
 SINCE MIDNIGHT : 76

0.10 GAL/HR RESULTS:
 JAN 23, 1996 11:59 PM PASS

0.20 GAL/HR RESULTS:
 JAN 22, 1996 1:32 AM PASS

NO-VENT TEST ABORTS:
 3 OUT OF 10 TESTS
<ETX>
```



# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code 375:** (Continued)

**Typical Response Message, Computer Format:**

```
<SOH>i375QQYYMDDHHmmQQyyymmddhhmmrrTTPPPPMNNYYMDDHHmmRRtt
 nnYYMDDHHmmRRttaabb...
 QQyyymmddhhmmrrTTPPPPMNNYYMDDHHmmRRtt
 nnYYMDDHHmmRRttaabb&&CCCC<ETX>
```

### Notes:

1. YYMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak sensor number (Decimal, 00=All)
3. yyymmddhhmm - Last 3.0 gal/hr test time
4. rr - 3.0 gal/hr test result (Hex)
5. TT - 3.0 gal/hr test type (unused, always 00)
6. PPPP - Number of 3.0 gal/hr tests passed in previous 24 hours (Hex)
7. MMMM - Number of 3.0 gal/hr tests passed since midnight (Hex)
8. NN - Number of 0.10 gal/hr test results (14 character groups) to follow (Hex)
9. YYMDDHHmm - Date and time of 0.10 gal/hr test
10. RR - Test result
  - 00 = FAIL
  - 01 = PASS
11. tt - 0.1 gal/hr test type (unused, always 00)
12. nn - Number of 0.20 gal/hr test results (12 character groups) to follow (Hex)
13. YYMDDHHmm - Date and time of 0.20 gal/hr test
14. RR - Test result
  - 00 = FAIL
  - 01 = PASS
15. tt - 0.20 gal/hr test type (unused, always 00)
16. aa - Number of no-vent test aborts
17. bb - Number of no-vent tests
18. && - Data Termination Flag
19. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 376

Version 1

**Function Type:** Pressure Line Leak Passed Tests Results

**Command Format:**

**Display:** <SOH>I376QQ

**Computer:** <SOH>i376QQ

**Typical Response Message, Display Format:**

```
<SOH>
I376QQ
JAN 24, 1996 2:52 PM
```

```
STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....
```

PRESSURE LINE LEAK REPORTS - PASSED TESTS RESULT

Ln 1: PRESSURE LLD #1

Test Type	Date & Time
3.0 GAL/HR.	JAN 24, 1996 2:49 PM
0.2 GAL/HR.	JAN 24, 1996 2:49 PM
0.1 GAL/HR.	JAN 24, 1996 2:49 PM

<ETX>

**Typical Response Message, Computer Format:**

```
<SOH>i376QQYYMMDDHHmmQQYYMMDDHHmmRR...
 QQYYMMDDHHmmRR&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak sensor number (Decimal, 00=All)
3. YYMMDDHHmm - Date/Time Test
4. RR - Test Type
5. && - Data Termination Flag
6. CCCC - Message Checksum

## Serial Interface Manual

### TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 377

Version 1

**Function Type:** Extended Pressure Line Leak Test History (with 0.20 test data)

**Command Format:**

**Display:** <SOH>I377QRRyyymmddhhmmYYMMDDHHMMnn

**Computer:** <SOH>i377QRRyyymmddhhmmYYMMDDHHMMnn

**Notes:**

1. QQ - Device Number (Decimal, 00=all)
2. RR - Report Type (Report Type should always be given. The rest of the parameters are optional following the rules below.)  
00=Passed Test History
3. yyyymmddhhmm - Starting Date/Time (If a start date/time is not provided or either Year, Month or Day are zeroes, it assumes request is for most recent records and is limited by the Maximum Records (below). Ranges are as follows:  
yy=Year (01-99, for Years 2001-2099)  
mm=Month (01-12, for Months January to December)  
dd=Day (01-31, however, validity depends on Month)  
hh=Hour (00-23)  
mm=Minute (00-59)
4. YYMMDDHHMM - Ending Date/Time (If an end date/time is not given or either Year, Month or Day are zeroes, it assumes request is for records starting from start date/time as evaluated above, limited by the Maximum Records (below). Ranges are the same as the Start Date/Time fields.
5. nn - Maximum Records (00-36, Absolute Maximum) (Decimal). (If Maximum records is not given or it is zeroes, and no End Date/Time is given, limited by the Maximum Records Default of 12)

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code 377: (Continued)

Typical Response Message, Display Format:

```
<SOH>
I377QQ
NOV 6, 2008 10:35 AM
```

```
STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....
```

PRESSURE LINE LEAK REPORTS - PASSED TESTS HISTORY

Ln 1: PRESSURE LLD #1

Test Type	Date & Time	Test Method	Gross Test Prev 24 Hours	Gross Test Since Midnight
Gross		PLLD	10	5
Last Gross	NOV  6, 2008 9:38 AM	PLLD		
Last Periodic	NOV  6, 2008 9:43 AM	PLLD		
Last Annual	NOV  6, 2008 9:45 AM	PLLD		
First Periodic	NOV  6, 2008 9:43 AM	PLLD		
First Periodic	OCT 24, 2008 2:20 PM	PLLD		
First Annual	NOV  6, 2008 9:45 AM	PLLD		
First Annual	OCT 24, 2008 2:23 PM	PLLD		

Ln 2: PRESSURE LLD #2

Test Type	Date & Time	Test Method	Gross Test Prev 24 Hours	Gross Test Since Midnight
Gross		PLLD	9	4
Last Gross	NOV  6, 2008 8:17 AM	PLLD		
Last Periodic	NOV  6, 2008 8:23 AM	PLLD		
Last Annual	NOV  6, 2008 8:26 AM	PLLD		
First Periodic	NOV  6, 2008 8:23 AM	PLLD		
First Annual	NOV  6, 2008 8:26 AM	PLLD		

<ETX>

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code 377: (Continued)

### Typical Response Message, Computer Format:

```
<SOH>i377QQYYMMDDHHmmQQPPPPMMMMyyymmddhhmmTTyyymmddhhmmTTyyymmddhhmmTT
NNYYMMDDHHmmtt...YYMMDDHHmmtnnYYMMDDHHmmtt...YYMMDDHHmmtt...
QQPPPPMMMMyyymmddhhmmTTyyymmddhhmmTTyyymmddhhmmTT
NNYYMMDDHHmmtt...YYMMDDHHmmtnnYYMMDDHHmmtt...YYMMDDHHmmtt&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak sensor number (Decimal, 00 = All)
3. PPPP - Number of 3.0 gal/hr tests passed in previous 24 hours (Hex)
4. MMMM - Number of 3.0 gal/hr tests passed since midnight (Hex)
5. yyymmddhhmm - Last 3.0 gal/hr test time (0000000000 if no test)
6. TT - 3.0 gal/hr test type (unused, always 00)
7. yyymmddhhmm - Last 0.2 gal/hr test time (0000000000 if no test)
8. TT - 0.2 gal/hr test type (unused, always 00)
9. yyymmddhhmm - Last 0.1 gal/hr test time (0000000000 if no test)
10. TT - 0.1 gal/hr test type (unused, always 00)
11. NN - Number of 0.20 gal/hr test results (14 character groups) to follow (Hex)
12. YYMMDDHHmm - Date and time of 0.2 gal/hr test
13. tt - 0.2 gal/hr test type (unused, always 00)
14. nn - Number of 0.10 gal/hr test results (14 character groups) to follow (Hex)
15. YYMMDDHHmm - Date and time of 0.1 gal/hr test
16. tt - 0.1 gal/hr test type (unused, always 00)
17. && - Data Termination Flag
18. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: 381**  
**Function Type:** Pressure Line Leak Status

Version 1

**Command Format:**  
**Display:** <SOH>I381QQ  
**Computer:** <SOH>i381QQ

### Typical Response Message, Display Format:

```
<SOH>
I381QQ
JAN 24, 1996 2:52 PM

STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....

PRESSURE LINE LEAK STATUS

LINE DISPENSING TEST STATUS PUMP HANDLE
Ln 1:REGULAR UNLEADED ENABLED TESTING 0.10 GAL/HR OFF OFF

ACTIVE ALARMS:
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>i381QQYYMMDDHHmmQQSSSSSttNNaaaa...
 QQSSSSSttNNaaaa&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak sensor number (Decimal, 00=All)
3. SSSS - Status Bits:
  - Bit 1 - (LSB) Dispensing enabled flag  
(0=Disabled, 1=Enabled)
  - Bit 2 - Pump power  
(0=Pump Off, 1=Pump On)
  - Bit 3 - Dispenser Handle  
(0=Handle Off, 1=Handle On)
  - Bit 4-16 - Unused
4. tt - Test status
  - 00=test complete
  - 01=dispensing
  - 02=testing at 3.00 gal/hr
  - 03=testing at 0.10 gal/hr
  - 04=test aborted
  - 05=running pump (manual test starting)
  - 06=line lockout
  - 07=disable alarm
  - 08=test pending
  - 09=test delay
  - 0A=pressure check
  - 0B=testing at 0.20 gal/hr

## Serial Interface Manual

### TLS4/TLS-450/TLS-450Plus Monitoring Systems

#### Function Code 381 Notes: (Continued)

- 5. NN - number of active alarms to follow (Hex)
- 6. aaaa - type of alarm:
  - 0001=PLLD Setup Data Warning
  - 0002=PLLD Gross Test Fail Alarm
  - 0003=PLLD Annual Test Fail Alarm
  - 0004=PLLD Periodic Test Needed Warning
  - 0005=PLLD Periodic Test Needed Alarm
  - 0006=PLLD Sensor Open Alarm
  - 0007=PLLD High Pressure Alarm (Obsolete)
  - 0008=PLLD Shutdown Alarm
  - 0009=PLLD High Pressure Warning (Obsolete)
  - 000A=PLLD Continuous Handle On Warning (Obsolete)
  - 000B=PLLD Periodic Test Fail Alarm
  - 000C=PLLD Annual Test Needed Warning
  - 000D=PLLD Annual Test Needed Alarm
  - 000E=PLLD Low Pressure Alarm
  - 000F=PLLD Sensor Short Alarm (Obsolete)
  - 0010=PLLD Continuous Handle On Alarm
  - 0011=PLLD Fuel Out Alarm
  - 0012=PLLD Line Equipment Alarm
  - 0013=PLLD 3.0 Test Needed Alarm
- 7. && - Data Termination Flag
- 8. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: 382**

Version 1

**Function Type:** Pressure Line Leak Alarm History Report

**Command Format:**

**Display:** <SOH>I382QQ

**Computer:** <SOH>i382QQ

**Typical Response Message, Display Format:**

```
<SOH>
I382QQ
JAN 24, 1996 2:52 PM
```

```
STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....
```

PRESSURE LINE LEAK ALARM HISTORY REPORT

```
Ln 1:REGULAR UNLEADED
 GROSS LINE FAIL JAN 9, 1995 6:12 AM
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i382QQYYMMDDHHmmQQNNyymmddhhmmaaaa...
 QQNNyymmddhhmmaaaa&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak sensor number (Decimal, 00=All)
3. NN - number of alarms to follow (Hex)
4. yymmddhhmm - Date and time that the alarm occurred
5. aaaa - type of alarm:
  - 0001=PLLD Setup Data Warning
  - 0002=PLLD Gross Test Fail Alarm
  - 0003=PLLD Annual Test Fail Alarm
  - 0004=PLLD Periodic Test Needed Warning
  - 0005=PLLD Periodic Test Needed Alarm
  - 0006=PLLD Sensor Open Alarm
  - 0007=PLLD High Pressure Alarm (Obsolete)
  - 0008=PLLD Shutdown Alarm
  - 0009=PLLD High Pressure Warning (Obsolete)
  - 000A=PLLD Continuous Handle On Warning (Obsolete)
  - 000B=PLLD Periodic Test Fail Alarm
  - 000C=PLLD Annual Test Needed Warning
  - 000D=PLLD Annual Test Needed Alarm
  - 000E=PLLD Low Pressure Alarm
  - 000F=PLLD Sensor Short Alarm (Obsolete)
  - 0010=PLLD Continuous Handle On Alarm
  - 0011=PLLD Fuel Out Alarm
  - 0012=PLLD Line Equipment Alarm
6. && - Data Termination Flag
7. CCCC - Message Checksum



# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 383

Version 1

**Function Type:** Pressure Line Leak Test Results (0.10 test data only)

**Command Format:**

**Display:** <SOH>I383QQ

**Computer:** <SOH>i383QQ

### Typical Response Message, Display Format:

```
<SOH>
I383QQ
JAN 24, 1996 2:52 PM

STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....

PRESSURE LINE LEAK TEST RESULTS

Ln 1:REGULAR UNLEADED

 3.0 GAL/HR RESULTS:

LAST TEST:
 JAN 24, 1996 2:49 PM PASS

NUMBER OF TESTS PASSED
 PREV 24 HOURS : 149
 SINCE MIDNIGHT : 76

0.10 GAL/HR RESULTS:
 JAN 23, 1996 11:59 PM PASS
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>i383QQYYMMDDHHmmQQyyymmddhhmmrrTTPPPPPMMMNNYYMMDDHHmmRRtt...
 QQyyymmddhhmmrrTTPPPPPMMMNNYYMMDDHHmmRRtt&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak sensor number (Decimal, 00=All)
3. yyymmddhhmm - Last 3.00 gal/hr test time
4. rr - 3.00 gal/hr test result (Hex)
5. TT - 3.00 gal/hr test type (unused, always 00)
6. PPPP - Number of 3.00 gal/hr tests passed in previous 24 hours (Hex)
7. MMMM - Number of 3.00 gal/hr tests passed since midnight (Hex)
8. NN - Number of 0.10 gal/hr test results (14 character groups) to follow (Hex)
9. YYMMDDHHmm - Date and time of 0.10 gal/hr test
10. RR - Test result  
01=PASS  
02=FAIL
11. tt - 0.10 gal/hr test type (unused, always 00)
12. && - Data Termination Flag
13. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 384

Version 1

**Function Type:** Pressure Line Leak Test History (0.10 test data only)

**Command Format:**

**Display:** <SOH>I384QQ

**Computer:** <SOH>i384QQ

### Typical Response Message, Display Format:

```
<SOH>
I384QQ
JAN 24, 1996 2:52 PM
```

```
STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....
```

PRESSURE LINE LEAK TEST HISTORY

Ln 1:REGULAR UNLEADED

LAST 3.0 PASS: JAN 24, 1996 2:49 PM

FIRST 0.10 PASS EACH MONTH: JAN 16, 1996 12:38 AM

<ETX>

### Typical Response Message, Computer Format:

```
<SOH>i384QQYYMMDDHHmmQQyyymmddhhmmTTNNYYMMDDHHmmtt...
QQyyymmddhhmmTTNNYYMMDDHHmmtt&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak sensor number (Decimal, 00=All)
3. yyymmddhhmm - Last 3.00 gal/hr test pass time ("0000000000" if no test yet)
4. TT - 3.00 gal/hr test type (unused, always 00)
5. NN - Number of 0.10 gal/hr test results (12 character groups) to follow (Hex)
6. YYMMDDHHmm - Date and time of 0.10 gal/hr test
7. tt - 0.10 gal/hr test type (unused, always 00)
8. && - Data Termination Flag
9. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 385

Version 1

**Function Type:** Pressure Line Leak Test Results (with 0.20 test data listed before 0.10 test data)

**Command Format:**

**Display:** <SOH>I385QQ

**Computer:** <SOH>i385QQ

**Typical Response Message, Display Format:**

```
<SOH>
I385QQ
JAN 24, 1996 2:52 PM

STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....

PRESSURE LINE LEAK TEST RESULTS

Ln 1:REGULAR UNLEADED

 3.0 GAL/HR RESULTS:

LAST TEST:
 JAN 24, 1996 2:49 PM PASS

NUMBER OF TESTS PASSED
 PREV 24 HOURS : 149
 SINCE MIDNIGHT : 76

0.20 GAL/HR RESULTS:
 JAN 22, 1996 1:32 AM PASS

0.10 GAL/HR RESULTS:
 JAN 23, 1996 11:59 PM PASS
<ETX>
```

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code 385:** (Continued)

### Typical Response Message, Computer Format:

```
<SOH>i385QQYYMMDDHHmmQQyyymmddhhmmrrTTPPPMMMMNNYYMMDDHHmmRRtt...
 nnYYMMDDHHmmRRtt...
 QQyyymmddhhmmrrTTPPPMMMMNNYYMMDDHHmmRRtt...
 nnYYMMDDHHmmRRtt&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak sensor number (Decimal, 00=All)
3. yyymmddhhmm - Last 3.00 gal/hr test time
4. rr - 3.00 gal/hr test result (Hex)
5. TT - 3.00 gal/hr test type (unused, always 00)
6. PPPP - Number of 3.00 gal/hr tests passed in previous 24 hours (Hex)
7. MMMM - Number of 3.00 gal/hr tests passed since midnight (Hex)
8. NN - Number of 0.20 gal/hr test results (14 character groups) to follow (Hex)
9. YYMMDDHHmm - Date and time of 0.20 gal/hr test
10. RR - Test result  
01=PASS  
02=FAIL
11. tt - 0.20 gal/hr test type (unused, always 00)
12. nn - Number of 0.10 gal/hr test results (14 character groups) to follow (Hex)
13. YYMMDDHHmm - Date and time of 0.10 gal/hr test
14. RR - Test result  
01=PASS  
02=FAIL
15. tt - 0.10 gal/hr test type (unused, always 00)
16. && - Data Termination Flag
17. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

### 7.2.5 I/O DEVICE REPORTS

**Function Code:** 401  
**Function Type:** Input Status Report

Version 1

**Command Format:**  
**Display:** <SOH>I401II  
**Computer:** <SOH>i401II

#### Typical Response Message, Display Format:

```
<SOH>
I401II
MAR 27, 1996 5:44 PM

STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....

INPUT LOCATION STATUS
 1 * EXTERNAL INPUT 1 * OFF
<ETX>
```

#### Typical Response Message, Computer Format:

```
<SOH>i401IIYYMDDHHmmIIsssss...
 IIsssss&&CCCC<ETX>
```

#### Notes:

1. YYMDDHHmm - Current Date and Time
2. II - Input Number (Decimal, 00=all)
3. ssss - Input Status:
  - 0001=Input Setup Data Warning
  - 0002=Input Normal
  - 0003=Input Alarm
  - 0006=Input Out Alarm
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: 402**

Version 1

**Function Type:** Input Alarm History Report

**Command Format:**

**Display:** <SOH>I402II

**Computer:** <SOH>i402II

### Typical Response Message, Display Format:

```
<SOH>
I402II
MAR 27, 1996 5:45 PM

STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....

INPUT ALARM HISTORY REPORT

INPUT LOCATION
 1 * EXTERNAL INPUT 1 *
 JAN 15, 1996 8:04 AM SETUP DATA WARNING
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>i402IIYYMDDHHmmIINNYYMDDHHmmaaaa...
 IINNYYMDDHHmmaaaa&&CCCC<ETX>
```

### Notes:

1. YYMDDHHmm - Current Date and Time
2. II - Input Number (Decimal, 00=all)
3. NN - Number of Alarm Incidents to follow (Hex)
4. YYMDDHHmm - Date and Time of alarm
5. aaaa - Alarm type number:
  - 0001=Input Setup Data Warning
  - 0002=Input Normal
  - 0003=Input Alarm
  - 0006=Input Out Alarm
6. && - Data Termination Flag
7. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 403

Version 1

**Function Type:** Input/Generator Alarm History Report  
(Setup parameters determine whether an input is from a generator.)

**Command Format:**

**Display:** <SOH>I403II

**Computer:** <SOH>i403II

### Typical Response Message, Display Format:

```
<SOH>
I403II
MAR 27, 1996 5:47 PM
```

```
STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....
```

INPUT / GENERATOR ALARM HISTORY REPORT

```
INPUT LOCATION
 1 * EXTERNAL INPUT 1 *
 AUG 19, 1995 2:03 PM EXTERN INPUT ALARM
 AUG 20, 1995 6:15 AM EXTERN INPUT ALARM
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>i403IIYYMDDHHmmIINNYYMDDHHmmaaaa...
 IINNYYMDDHHmmaaaa&&CCCC<ETX>
```

### Notes:

1. YYMDDHHmm - Current Date and Time
2. II - Input Number (Decimal, 00=all)
3. NN - Number of Alarm Incidents to follow (Hex)
4. YYMDDHHmm - Date and Time of alarm
5. aaaa - Alarm type number:
  - 0001=Input Setup Data Warning
  - 0002=Input Normal
  - 0003=Input Alarm
  - 0004=Generator Off
  - 0005=Generator On
  - 0006=Input Out Alarm
6. && - Data Termination Flag
7. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 406  
**Function Type:** Relay Status Report

Version 1

**Command Format:**  
**Display:** <SOH>I406RR  
**Computer:** <SOH>i406RR

### Typical Response Message, Display Format:

```
<SOH>
I406RR
MAR 27, 1996 5:47 PM

STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....

RELAY LOCATION STATUS
 1 * RELAY 1 * ACTIVE / CLOSED
 2 * RELAY 2 * INACTIVE / OPEN
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>i406RRYYMMDDHHmmRRsssss...
 RRsssss&&CCCC<ETX>
```

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. RR - Relay Number (Decimal, 00=all)
3. ssss - Relay Status:  
0001=Relay Inactive  
0002=Relay Active
4. && - Data Termination Flag
5. CCCC - Message Checksum



# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 407  
Function Type: Input Diagnostics

Version 1

Command Format:  
Display: <SOH>I407II  
Computer: <SOH>i407II

### Typical Response Message, Display Format:

```
<SOH>
I407II
MAR 27, 1996 5:47 PM
```

### INPUT DIAGNOSTIC REPORT

#	ADDRESS	STATUS	DURATION	TYPE
I 1	B1.S4.1	Active	0000 01:01:28	Standard
I 2	B1.S4.2	Inactive	0000 02:01:28	Standard
<ETX>				

### Typical Response Message, Computer Format:

```
<SOH>i407IIYYMDDHHmmIINNaaa...
 IINNaaa..Sdddddddf&&CCCC<ETX>
```

#### Notes:

1. YYMDDHHmm - Current Date and Time
2. II - Input Number (Decimal, 00=all)
3. NN - Number of characters in address (hex)
4. a - Address (len<200) (All ASCII 20h-7Eh)
5. S - Status  
0 - Inactive  
1 - Active
6. dddddddd - Duration
7. f - Type  
1=Standard  
2=Generator  
3=Pump Sense  
4=Standard ACK  
5=Vapor Processor (future)
8. && - Data Termination Flag
9. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 408  
**Function Type:** Relay Diagnostics

Version 1

**Command Format:**  
**Display:** <SOH>I408RR  
**Computer:** <SOH>i408RR

### Typical Response Message, Display Format:

```
<SOH>
I408RR
MAR 27, 1996 5:47 PM
```

### RELAY DIAGNOSTIC REPORT

#	ADDRESS	STATUS	DURATION	TYPE
R 1	B1.S4.1	Active	0000 01:01:28	Standard
R 2	B1.S4.2	Inactive	0000 02:01:28	Standard

<ETX>

### Typical Response Message, Computer Format:

```
<SOH>i408RRYYMMDDHHmmRRNNaaa...
RRNNaaa..Sdddddddf&&CCCC<ETX>
```

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. RR - Relay Number (Decimal, 00=all)
3. NN - Number of characters in address (hex)
4. a - Address (len<200) (All ASCII 20h-7Eh)
5. S - Status  
0 - Inactive  
1 - Active
6. dddddddd - Duration
7. f - Type  
1=Standard  
2=Momentary  
3=Pump Control Output  
4=Pump Comm Control  
5=Vapor Processor (future)
8. && - Data Termination Flag
9. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 412  
Function Type: VMC Alarm History Report

Version 6

Command Format:  
Display: <SOH>I412xx  
Computer: <SOH>i412xx

### Typical Response Message, Display Format:

```
<SOH>
I41200
JAN 22, 2007 3:11 PM
```

#### VMC ALARM HISTORY REPORT

VMC	S/N	DATE		ALARMS
1	111111	JAN 1, 2015	8:02 AM	METER NOT CONNECTED
		JAN 10, 2015	12:00 PM	FP SHUTDOWN WARNING
		JAN 20, 2015	12:00 PM	FP SHUTDOWN ALARM
2	222222	JAN 1, 2015	8:02 AM	SETUP DATA WARNING

<ETX>

### Typical Response Message, Computer Format:

```
<SOH>i412xxYYMMDDHHmmxxNNYYMMDDHHmmaaaa...
xxNNYYMMDDHHmmaaaa...&&&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. xx - VMC Controller Number (Decimal, 01-36, 00=all)
3. NN - Number of alarm Incidents to follow (ASCII Hex)
4. YYMMDDHHmm - Date and Time of Alarm
5. aaaa - Alarm Type number (ASCII hex):
  - 0001 = VMC Communication Timeout Alarm (obsolete V6f)
  - 0002 = Roots meter not connected Alarm
  - 0003 = Fueling Point Shutdown Warning
  - 0004 = Fueling Point Shutdown Alarm
  - 0005 = Setup Data Warning
6. && - Data Termination Flag
7. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

### 7.3 SETUP FUNCTIONS & REPORTS

#### 7.3.1 SYSTEM SETUP

**Function Code:** 501  
**Function Type:** Set Time of day

Version 1

**Command Format:**  
**Display:** <SOH>S50100YYMMDDHHmm  
**Computer:** <SOH>s50100YYMMDDHHmm

**Inquire:**  
<SOH>I50100  
<SOH>i50100

#### Typical Response Message, Display Format:

<SOH>  
I50100  
JAN 22, 1996 3:11 PM  
  
SYSTEM DATE AND TIME  
<ETX>

#### Typical Response Message, Computer Format:

<SOH>i50100YYMMDDHHmmYYMMDDHHmm&&CCCC<ETX>

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. YYMMDDHHmm - Year, Month, Day, Hour and Minute
3. && - Data Termination Flag
4. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 502  
**Function Type:** Set Shift Close Time

Version 1

**Command Format:**  
**Display:** <SOH>S502SSHmm  
**Computer:** <SOH>s502SSHmm

**Inquire:**  
<SOH>I502SS  
<SOH>i502SS

**Notes:**

1. SS - Shift 01-08
2. All Shifts (SS=00) not available for Set or Inquiry Mode

**Typical Response Message, Display Format:**

<SOH>  
I50201  
JAN 22, 1996 3:12 PM  
  
SHIFT TIME 1 : DISABLED  
<ETX>

**Typical Response Message, Computer Format:**

<SOH>i502SSYYMMDDHHmmHHmm&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. HHmm - Hour and Minute (EE00=Disabled)
3. && - Data Termination Flag
4. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 503

Version 1

**Function Type:** Set Print Header Line 1, 2, 3, 4

**Command Format:**

**Display:** <SOH>S503LLaaaaaaaaaaaaaaaaaaaaaa

**Computer:** <SOH>s503LLaaaaaaaaaaaaaaaaaaaaaa

**Inquire:**

<SOH>I503LL

<SOH>i503LL

**Typical Response Message, Display Format:**

<SOH>  
I503LL  
JAN 22, 1996 3:12 PM  
  
# 1:STATION HEADER 1....  
<ETX>

**Typical Response Message, Computer Format:**

<SOH>i503LLYYMMDDHHmmaaaaaaaaaaaaaaaaaaaaaaa&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. LL - Header line number 1, 2, 3, 4
3. a - Header Line (20 ASCII characters [20h-7Eh])
4. && - Data Termination Flag
5. CCCC - Message Checksum

## Serial Interface Manual

### TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 50D

Version 1

**Function Type:** Set Print Temperature Compensation Flag

**Command Format:**

**Display:** <SOH>S50D00f

**Computer:** <SOH>s50D00f

**Inquire:**

<SOH>I50D00

<SOH>i50D00

**Typical Response Message, Display Format:**

<SOH>  
I50D00  
JAN 22, 1996 3:13 PM

PRINT TC VOLUMES  
ENABLED  
<ETX>

**Typical Response Message, Computer Format:**

<SOH>i50D00YYMMDDHHmmf&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. f - Print Temperature Compensation Flag  
0=Disable  
1=Enable
3. && - Data Termination Flag
4. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 50E

Version 1

**Function Type:** Set Temperature Compensation Value

**Command Format:**

**Display:** <SOH>S50E00DDD.hh

**Computer:** <SOH>s50E00FFFFFFFF

**Inquire:**

<SOH>I50E00

<SOH>i50E00

**Notes:**

1. DDD.hh - Compensation Temperature, Degrees and hundredths (Decimal)
2. FFFFFFFF - Compensation Temperature, Degrees (ASCII Hex IEEE float)

**Typical Response Message, Display Format:**

```
<SOH>
I50E00
JAN 22, 1996 3:13 PM

TEMP COMPENSATION
VALUE (DEG F): 60.0
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i50E00YYMMDDHHmmFFFFFFFFF&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. FFFFFFFF - Compensation Temperature, Degrees (ASCII Hex IEEE float)
3. && - Data Termination Flag
4. CCCC - Message Checksum



# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 50G

Version 1

**Function Type:** Set Header - Fax Sender Name

**Command Format:**

**Display:** <SOH>S50G00aaaaaaaaaaaaaaaaaaaaaa

**Computer:** <SOH>s50G00aaaaaaaaaaaaaaaaaaaaaa

**Inquire:**

<SOH>I50G00

<SOH>i50G00

**Notes:** Enter ONLY S50G00 to remove Fax Sender Name

### Typical Response Message, Display Format:

<SOH>  
I50G00  
JAN 22, 2008 3:12 PM

STATION HEADER 1....  
STATION HEADER 2....  
STATION HEADER 3....  
STATION HEADER 4....

FAX SENDER NAME: Veeder-Root  
<ETX>

### Typical Response Message, Computer Format:

<SOH>i50G00YYMMDDHHmmnnaaaaaaaaaaaaaaaaaaaa&&CCCC<ETX>

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. nn - Number of characters in Fax Sender Name (00-30)
3. a - Fax Name (30 ASCII characters [20h-7Eh])
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 50H  
**Function Type:** Set Header - Fax Number

Version 1

**Command Format:**  
**Display:** <SOH>S50H00aaaa.....aaaa  
**Computer:** <SOH>s50H00aaaa.....aaaa

**Inquire:**  
<SOH>I50H00  
<SOH>i50H00

**Notes:** Enter ONLY S50H00 to remove Fax Number

### Typical Response Message, Display Format:

<SOH>  
I50H00  
JAN 22, 2008 3:12 PM

STATION HEADER 1....  
STATION HEADER 2....  
STATION HEADER 3....  
STATION HEADER 4....

FAX NUMBER: 1-888-561-7942  
<ETX>

### Typical Response Message, Computer Format:

<SOH>i50H00YYMMDDHHmmNNaaaaaaaaaaaaaaaaaaaaaCCCC<ETX>

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. NN - Number of digits in Fax Number(00-40)
3. a - Fax Number (40 ASCII characters [20h-7Eh])
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 50I

Version 1

**Function Type:** Set Display Setup - Number Format

**Command Format:**

**Display:** <SOH>S50I00ab

**Computer:** <SOH>s50I00ab

**Inquire:**

<SOH>I50I00

<SOH>i50I00

### Typical Response Message, Display Format:

```
<SOH>
I50I00
JAN 22, 2007 3:16 PM

DISPLAY SETUP - NUMBER FORMAT

Decimal Separator : ,
Thousands Separator: .
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>i50I00YYMMDDHHmmab&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. a - Decimal Separator (decimal)
  - 1= " , "
  - 2= " . "
3. b - Thousands Separator (decimal)
  - 0= "None"
  - 1= " , "
  - 2= " . "
  - 3= "sp"
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 50J

Version 1

**Function Type:** Set Display Setup - Date & Time Format

**Command Format:**

**Display:** <SOH>S50J00FFc

**Computer:** <SOH>s50J00FFc

**Inquire:**

<SOH>I50J00FF

<SOH>i50J00FF

**Notes:**

1. FF - Field, 00=all Fields, but only valid for Inquiry  
01=Date Format  
02=Date Separator  
03=Time Format
2. c - Configuration (see entry based on field below)

**Typical Response Message, Display Format:**

<SOH>

I50J0000

JAN 22, 1996 3:06 PM

Display Setup - Date & Time Format

Field Name	Configuration
------------	---------------

Date Format	: mm_dd_yyyy
-------------	--------------

Date Separator	: /
----------------	-----

Time Format	: 12-hour xM
-------------	--------------

<ETX>

**Typical Response Message, Computer Format:**

<SOH>i50J00YYMMDDHHmmNNFFc...FFc&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. NN - Number of Fields To Follow
3. FF - Field
4. c - Configuration
  - If FF=01 (Date Format)  
0=mon\_dd\_yyyy  
1=yyyy\_mm\_dd  
2=mm\_dd\_yyyy  
3=dd\_mm\_yyyy
  - If FF=02 (Date Separator)  
0=-  
1=/  
2=.
  - If FF=03 (Time Format)  
0=24-hour  
1=12-hour xM
5. && - Data Termination Flag
6. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 50K

Version 2

**Function Type:** Set Inventory Maximum Number of Shifts per Day

**Command Format:**

**Display:** <SOH>S50K00N

**Computer:** <SOH>s50K00N

**Inquire:**

<SOH>I50K00

<SOH>i50K00

### Typical Response Message, Display Format:

```
<SOH>
I50K00
JAN 22, 2009 3:06 PM

INVENTORY MAXIMUM NUMBER OF SHIFTS PER DAY

MAX. NUMBER OF SHIFTS/DAY: 3
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>i50K00YYMMDDHHmmNc&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. N - Number of Shifts (Decimal, [min,max]=[1-8] default is 3)
3. && - Data Termination Flag
4. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 50L  
Function Type: Inventory Setup

Version 2

Command Format:  
Display: <SOH>I50L00  
Computer: not supported

### Typical Response Message, Display Format:

```
<SOH>
I50L00
JAN 16, 2009 3:15 PM

INVENTORY SETUP - SHIFT CLOSE METHOD
CLOSE METHOD: SNAPSHOT
CLOSE TIMEOUT: 30
NUMBER OF SHIFT PER DAY: 4

INVENTORY SETUP - SHIFT TIMES
SHIFT #1 OPENING TIME: 8:00 AM
SHIFT #2 OPENING TIME: 10:00 AM

INVENTORY SETUP - INVENTORY REPORT TIMES
INVENTORY LOG TIME: 12:00 AM
INVENTORY LOG INTERVAL: 2 Hour
STORAGE LENGTH: 2000
WEEK CLOSE DAY: Sunday

<ETX>
```

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 50M  
Function Type: Delivery Setup

Version 2

Command Format:  
Display: <SOH>I50M00  
Computer: not supported

### Typical Response Message, Display Format:

```
<SOH>
I50M00
JAN 16, 2009 3:15 PM

DELIVERY SETUP

DELIVERY METHOD: STANDARD AUTOMATIC
TICKETED DELIVERY: ENABLED
TC TICKETED DELIVERY: TC VOLUME
<ETX>
```

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 50N  
Function Type: Reconciliation Setup

Version 2

### Command Format:

Display: <SOH>I50N00  
Computer: not supported

### Typical Response Message, Display Format:

<SOH>  
I50N00  
JAN 16, 2009 3:15 PM

STATION HEADER 1....  
STATION HEADER 2....  
STATION HEADER 3....  
STATION HEADER 4....

RECONCILIATION GENERAL SETUP  
PRODUCT THRESHOLD ALARM: ENABLED  
DAILY CLOSE TIME: 2:00 AM  
WEEK CLOSE DAY: SUNDAY  
ALARM THRESHOLD DELIVERY TYPE: STANDARD  
TEMPERATURE COMPENSATION: DISABLED  
METER CALIBRATION OFFSET%: 0.25  
BIR STATUS WARNING ENABLE: DISABLED  
BIR DAILY CLOSE WARNING ENABLE: DISABLED  
BIR SHIFT CLOSE WARNING ENABLE: DISABLED

RECONCILIATION THRESHOLD ALARMS					
TEST NUMBER	TEST TYPE	THRESHOLD TYPE	CONFIG	PERCENT	OFFSET VALUE
1	MONTHLY	1-THROUGHPUT	ENABLED	1.00	130
		2-CAPACITY	DISABLED	1.00	110
		3-DELIVERY	ENABLED	1.00	100
		4-FIXED	DISABLED		
2	ROLLING DAY	1-THROUGHPUT	ENABLED	1.00	99
		2-CAPACITY	ENABLED	1.00	50
		3-DELIVERY	ENABLED	1.00	75
		4-FIXED ENABLE		1500	
3	DISABLED				
4	DISABLED				



# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code 50N: (Continued)

### BIR MULTIPLE THRESHOLD SETUP REPORT

TEST NUMBER	TEST TYPE	THRESHOLD TYPE	CONFIG	PERCENT	OFFSET VALUE
1	Monthly	1-Throughput	Enabled	1.00	130
		2-Capacity	Disabled	1.00	130
		3-Delivery	Disabled	1.00	130
		4-Fixed	Disabled		130
2	Disabled	1-Throughput	Disabled	1.00	130
		2-Capacity	Disabled	1.00	130
		3-Delivery	Disabled	1.00	130
		4-Fixed	Disabled		130
3	Disabled	1-Throughput	Disabled	1.00	130
		2-Capacity	Disabled	1.00	130
		3-Delivery	Disabled	1.00	130
		4-Fixed	Disabled		130
4	Disabled	1-Throughput	Disabled	1.00	130
		2-Capacity	Disabled	1.00	130
		3-Delivery	Disabled	1.00	130
		4-Fixed	Disabled		130

### TANK THRESHOLD ALARMS

TANK THRESHOLD

1 1.00%  
2 1.00%  
3 1.00%

<ETX>

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 511

**Function Type:** Set BIR Shift Close Warning

Version 2

**Command Format:**

**Display:** <SOH>S51100f

**Computer:** <SOH>s51100f

**Inquire:**

<SOH>I51100

<SOH>i51100

### Typical Response Message, Display Format:

```
<SOH>
I51100
JAN 22, 2009 3:06 PM

BIR SHIFT CLOSE PENDING
ENABLED
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>i51100YYMMDDHHmmf&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. f - Shift Close Warning Flag  
0=Disable  
1=Enable
3. && - Data Termination Flag
4. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 512

Version 2

**Function Type:** Set BIR Daily Close Warning

**Command Format:**

**Display:** <SOH>S51200f

**Computer:** <SOH>s51200f

**Inquire:**

<SOH>I51200

<SOH>i51200

### Typical Response Message, Display Format:

<SOH>

I51200

JAN 22, 2009 3:06 PM

BIR DAILY CLOSE PENDING

ENABLED

<ETX>

### Typical Response Message, Computer Format:

<SOH>i51200YYMMDDHHmmf&&CCCC<ETX>

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. f - Daily Close Warning Flag  
0=Disable  
1=Enable
3. && - Data Termination Flag
4. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 514

Version 1

**Function Type:** Set H-Protocol Height/Volume Format

**Command Format:**

**Display:** <SOH>S51400f

**Computer:** <SOH>s51400f

**Inquire:**

<SOH>I51400

<SOH>i51400

**Typical Response Message, Display Format:**

<SOH>  
I51400  
JAN 24, 1996 2:53 PM  
  
H-PROTOCOL DATA FORMAT  
HEIGHT  
<ETX>

**Typical Response Message, Computer Format:**

<SOH>i51400YYMMDDHHmmf&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. f - Data Format  
0=Height  
1=Volume
3. && - Data Termination Flag
4. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 517

Version 1

**Function Type:** Set System Type & Language Flags

**Command Format:**

**Display:** <SOH>S51700ULL

**Computer:** <SOH>s51700ULL

**Inquire:**

<SOH>I51700

<SOH>i51700

### Typical Response Message, Display Format:

```
<SOH>
I51700
JUL 29, 1997 9:03 AM

DISPLAY SETUP - LANGUAGE & UNITS

SYSTEM LANGUAGE ENGLISH
SYSTEM UNITS US
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>i51700YYMMDDHHmmULL&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. U - System Units:
  - 1=U.S.
  - 2=Metric
  - 3=Imperial Gallons
3. LL - System Language:
  - 01=English
  - 02=French
  - 03=Spanish
  - 04=German
  - 05=Portuguese
  - 06=Polish
  - 07=Swedish\*
  - 08=Japanese\*
  - 09=Finnish\*
  - 10=Greek
  - 11=Russian
  - 12=Turkish\*
  - 13=Dutch\*
  - 14=Italian
  - 15=Chinese
  - 16=Arabic
  - 17=Hebrew
  - 18=Portuguese-Brazil
  - 19=Hindi
  - 20=Korean
  - 21=Chinese Traditional
4. && - Data Termination Flag
5. CCCC - Message Checksum

\*Not supported in TLS-4xx platform

## Serial Interface Manual

### TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 519

Version 1

**Function Type:** Set PLLD Duration Before Precision Retest

**Command Format:**

**Display:** <SOH>S51900DDD

**Computer:** <SOH>s51900DDD

**Inquire:**

<SOH>I51900

<SOH>i51900

**Typical Response Message, Display Format:**

```
<SOH>
I51900
JUL 29, 1997 9:04 AM

PRECISION TEST DURATION
HOURS: 12
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i51900YYMMDDHHmmDDD&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. DDD - Retest Duration in hours (Decimal, 012-744)
3. && - Data Termination Flag
4. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 51A

Version 1

**Function Type:** Set Enable/Disable Auto Daylight Saving Time

**Command Format:**

**Display:** <SOH>S51A00f

**Computer:** <SOH>s51A00f

**Inquire:**

<SOH>I51A00

<SOH>i51A00

### Typical Response Message, Display Format:

```
<SOH>
I51A00
JUL 29, 1997 9:04 AM

DAYLIGHT SAVING TIME
ENABLED ON
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>i51A00YYMMDDHHmmf&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. f - Daylight Saving Time Flag  
0=Disabled  
1=Enabled
3. && - Data Termination Flag
4. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 51B

Version 1

**Function Type:** Set Start/End Daylight Saving Date and Time

**Command Format:**

**Display:** <SOH>S51BttMMODHHmm

**Computer:** <SOH>s51BttMMODHHmm

**Inquire:**

<SOH>I51Btt

<SOH>i51Btt

**Notes:**

1. tt - Start or End Time Indicator  
01=Start Date & Time  
02=End Date & Time
2. Display format returns both Start and End Date/Time
3. Computer Format only returns either Start or End Date/Time

**Typical Response Message, Display Format:**

```
<SOH>
I51B00
JUL 29, 1997 9:04 AM
DAYLIGHT SAVING TIME

START DATE APR OCCURRENCE 1 SUN 2:00 AM
END DATE OCT OCCURRENCE 4 SUN 2:00 AM
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i51B00YYMMDDHHmmttMMODHHmm&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. tt - Start or End Time Indicator  
01=Start Date & Time  
02=End Date & Time
3. MMODHHmm - Date & Time  
MM=Month (01-12)  
O=Occurrence of Week-day in Month (1-5)  
D=Day of Week (1=Monday, 2=Tuesday, .. 7=Sunday)  
HH=Hour (00-23)  
mm=Minute (00-59)
4. && - Data Termination Flag
5. CCCC - Message Checksum



## Serial Interface Manual

### TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 51C

Version 2

**Function Type:** Set Ticketed Delivery Flag Enable

**Command Format:**

**Display:** <SOH>S51C00f

**Computer:** <SOH>s51C00f

**Inquire:**

<SOH>I51C00

<SOH>i51C00

**Typical Response Message, Display Format:**

<SOH>  
I51C00  
JUL 29, 2009 9:04 AM

TICKETED DELIVERY  
ENABLED  
<ETX>

**Typical Response Message, Computer Format:**

<SOH>i51C00YYMMDDHHmmf&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. f - Ticketed Delivery flag  
0=Disabled  
1=Enabled
3. && - Data Termination Flag
4. CCCC - Message Checksum

## Serial Interface Manual

### TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 51D

Version 2

**Function Type:** Set Ticketed Delivery Temperature Compensation Flag

**Command Format:**

**Display:** <SOH>S51D00f

**Computer:** <SOH>s51D00f

**Inquire:**

<SOH>I51D00

<SOH>i51D00

**Typical Response Message, Display Format:**

<SOH>

I51D00

JUL 29, 2009 9:04 AM

TICKETED DELIVERY TEMP COMPENSATION

STANDARD

<ETX>

**Typical Response Message, Computer Format:**

<SOH>i51D00YYMMDDHHmmf&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. f - Ticketed Delivery Temperature Compensation flag  
0=Standard  
1=TC Volume
3. && - Data Termination Flag
4. CCCC - Message Checksum

## Serial Interface Manual

### TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 51E

Version 2

**Function Type:** Set Ticketed Delivery Close Day of Week

**Command Format:**

**Display:** <SOH>S51E00D

**Computer:** <SOH>s51E00D

**Inquire:**

<SOH>I51E00

<SOH>i51E00

**Typical Response Message, Display Format:**

<SOH>  
I51E00  
AUG 28, 2009 4:29 PM

CLOSE DAY OF WEEK  
SUN  
<ETX>

**Typical Response Message, Computer Format:**

<SOH>i51E00YYMMDDHHmmD&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. D - Day of Week (1=Monday, 2=Tuesday, .. 7=Sunday)
3. && - Data Termination Flag
4. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 51F  
**Function Type:** Set Euro Protocol Prefix

Version 1

**Command Format:**  
**Display:** <SOH>S51F00c  
**Computer:** <SOH>s51F00c

**Inquire:**  
<SOH>I51F00  
<SOH>i51F00

### Typical Response Message, Display Format:

```
<SOH>
I51F00
AUG 28, 2009 4:29 PM

EURO PROTOCOL PREFIX
S
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>i51F00YYMMDDHHmmc&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. c - Prefix Character (invalid choice will be default to 'S')  
0 = 'S'  
1 = 'd'
3. && - Data Termination Flag
4. CCCC - Message Checksum

## Serial Interface Manual

### TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 51G

Version 1

**Function Type:** Set Enable/Disable Custom Help View and Custom Help Edit.

**Command Format:**

**Display:** <SOH>S51G00ve

**Computer:** <SOH>s51G00ve

**Inquire:**

<SOH>I51G00

<SOH>i51G00

**Typical Response Message, Display Format:**

```
<SOH>
I51G00
JUN 22, 2001 3:15 PM

CUSTOM HELP VIEW AND EDIT

VIEW:ENABLED
EDIT:ENABLED
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i51G00YYMMDDHHmmve&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. v - Custom Help View Flag  
0=Disabled  
1=Enabled
3. e - Custom Help Edit Flag  
0=Disabled  
1=Enabled
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 51H  
**Function Type:** Set Front Panel Security  
**Command Format:**  
    **Display:** <SOH>S51H00faaaaaaaaaa  
    **Computer:** <SOH>s51H00faaaaaaaaaa

Version 1

**Inquire:**  
<SOH>I51H00  
<SOH>i51H00

### Notes:

1. f - Enable or Disable Status (if disabled no password is required)
2. aaaaaaaaaa - Password (3 to 10 ASCII Characters from 21h - 7Eh)

### Typical Response Message, Display Format:

```
<SOH>
I51H00
JUN 22, 2001 3:15 PM

Security - System Security

Field Name Configuration
Front Panel Security : Enabled

Password : *****
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>i51H00YYMMDDHHmmfaaaaaaaaaa&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. f - Front Panel Security Flag  
    0=Disabled  
    1=Enabled
3. nn - Length of Password (decimal)
4. aaaaaaaaaa - Password (3 to 10 ASCII Characters from 21h - 7Eh)
5. && - Data Termination Flag
6. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 51M  
**Function Type:** Set Delivery Method

Version 2

**Command Format:**  
**Display:** <SOH>S51M00T  
**Computer:** <SOH>s51M00T

**Inquire:**  
<SOH>I51M00  
<SOH>i51M00

### Typical Response Message, Display Format:

<SOH>  
I51M00  
JUN 22, 2009 3:12 PM

DELIVERY METHOD  
STANDARD AUTOMATIC  
<ETX>

### Typical Response Message, Computer Format:

<SOH>i51M00YYMMDDHHmmT&&CCCC<ETX>

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. T - Delivery Method Type  
0=Standard Automatic  
1=Manual  
2=Automatic Quiet Period Warning
3. && - Data Termination Flag
4. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 51R  
**Function Type:** Set HRM Feature Enable Flag

Version 4

**Command Format:**  
**Display:** <SOH>S51R00f  
**Computer:** <SOH>s51R00f

**Inquire:**  
<SOH>I51R00  
<SOH>i51R00

### Typical Response Message, Display Format:

```
<SOH>
I51R00
JUN 22, 2011 3:12 PM

HRM FEATURE ENABLE FLAG
ENABLED
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>i51R00YYMMDDHHmmf&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. f - HRM Feature Flag  
0=Disabled  
1=Enabled
3. && - Data Termination Flag
4. CCCC - Message Checksum



# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 51S  
**Function Type:** Set Time Zone

Version 1

**Command Format:**  
**Display:** <SOH>S51S00zzzz...zzzz  
**Computer:** <SOH>s51S00zzzz...zzzz

**Inquire:**  
<SOH>I51S00  
<SOH>i51S00

### Typical Response Message, Display Format:

```
<SOH>
I51S00
Feb 22, 2012 3:11 PM

Time Zone : America/New_York
Zone Info : EST EDT
Comment :
UTC Offset: UTC-05:00
```

or

```
Time Zone : America/Kentucky/Lousville
Zone Info : EST EDT
Comment : Eastern Time - Kentucky - Lousville Area
UTC Offset: UTC-05:00
```

or

```
Time Zone : EST
Zone Info : EST5
Comment :
UTC Offset: UTC-05:00
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>i51S00YYMMDDHHmmnnZZzzzz...zzzzIIiiii...iiiiNNcccc...cccc
UUuuuu...uuuu&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. nn - Number of Pairs of Fields to follow (Decimal)  
Where Each Pair of Fields is:  
2 Chars - Number of ASCII characters to follow (Hex)  
Up to 99 ASCII characters [20h-7E]
3. ZZ - Number of Characters in Time Zone to follow (Hex)
4. zzzz...zzzz - Time Zone (up to 99 ASCII characters [20h-7Eh])
5. II - Number of Characters in Zone Info to follow (Hex)
6. iiii...iiii - Zone Information (ASCII characters [20h-7Eh])
7. NN - Number of Characters in Comment to follow (Hex)
8. cccc...cccc - Comment (ASCII characters [20h-7Eh])
9. UU - Number of Characters in UTC Offset to follow (Hex)
10. uuuu...uuuu - UTC Offset (ASCII characters [20h-7Eh])
11. && - Data Termination Flag
12. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 571  
**Function Type:** Enable User Ullage

Version 1

**Command Format:**  
**Display:** <SOH>S57100e  
**Computer:** <SOH>s57100e

**Inquire:**  
<SOH>I57100  
<SOH>i57100

### Typical Response Message, Display Format:

<SOH>  
I57100  
JUN 22, 2008 3:15 PM

USER ULLAGE: ENABLED  
<ETX>

### Typical Response Message, Computer Format:

<SOH>i57100YYMMDDHHmme&&CCCC<ETX>

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. e - Disabled=0, Enabled=1
3. && - Data Termination Flag
4. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 572  
**Function Type:** Set User Ullage Percent

Version 1

**Command Format:**  
**Display:** <SOH>S57200fff  
**Computer:** <SOH>s57200fff

**Inquire:**  
<SOH>I57200  
<SOH>i57200

### Typical Response Message, Display Format:

<SOH>  
I57200  
JUN 22, 2008 3:15 PM  
  
USER ULLAGE: 90%  
<ETX>

### Typical Response Message, Computer Format:

<SOH>i57200YYMMDDHHmmfff&&CCCC<ETX>

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. fff - Ullage Percent (Integer)
3. && - Data Termination Flag
4. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

### 7.3.2 COMMUNICATIONS SETUP

**Function Code:** 521 (Obsolete V2 - See New Command 872)

Version 1

**Function Type:** Set Receiver Configuration Flag

**Command Format:**

**Display:** <SOH>S521RRf

**Computer:** <SOH>s521RRf

**Inquire:**

<SOH>I521RR

<SOH>i521RR

**Typical Response Message, Display Format:**

```
<SOH>
S521RR
MAR 29, 1996 6:27 PM
```

RECEIVER CONFIGURATION

DEVICE	LABEL	CONFIGURED
1	HOME OFFICE	ON

<ETX>

**Typical Response Message, Computer Format:**

```
<SOH>i521RRYYMMDDHHmmRRf...
RRf&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. RR - Receiver Number (Decimal)
3. f - Receiver Configuration Flag:  
0=Disabled  
1=Enabled
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 522 (Obsolete V2 - See New Command 874)  
**Function Type:** Set Receiver Location Label

Version 1

**Command Format:**

**Display:** <SOH>S522RRaaaaaaaaaaaaaaaaaaaaaa

**Computer:** <SOH>s522RRaaaaaaaaaaaaaaaaaaaaaa

**Inquire:**

<SOH>I522RR

<SOH>i522RR

**Typical Response Message, Display Format:**

```
<SOH>
I522RR
JAN 22, 1996 3:14 PM

RECEIVER LABEL

DEVICE LABEL
 1 aaaaaaaaaaaaaaaaaaaaaa
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i522RRYYMMDDHHmmRRaaaaaaaaaaaaaaaaaaaaaa...
 RRaaaaaaaaaaaaaaaaaaaaaa&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. RR - Receiver Number (Decimal)
3. a - Location Label (20 ASCII characters [20h-7Eh])
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 52D  
**Function Type:** Autodial Alarm Status

Version 1

**Command Format:**  
**Display:** <SOH>S52DRRf  
**Computer:** <SOH>s52DRRf

**Inquire:**  
<SOH>I52DRR  
<SOH>i52DRR

**Notes:**

1. RR - Receiver number (00=all)
2. f - Alarm clear flag  
1=clear; all others ignored

**Typical Response Message Display Format:**

```
<SOH>
I52DRR
JAN 1, 1996 8:06 AM

RECEIVER AUTODIAL ALARM STATUS
RCVR STATUS
1 CLEAR
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i52D00YYMMDDHHmmNNf&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. NN - Number of receiver alarm flags to follow
3. f - Alarm flags  
0=clear  
1=alarm
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

Version 2

**Function Code:** 52G  
**Function Type:** COMM DIM Setup

**Command Format:**  
**Display:** <SOH>I52GDD  
**Computer:** not supported

**Notes:**  
1. DD - COMM number (00=all)

### Typical Response Message, Display Format:

```
TLS-450
<SOH>
I52GDD
JAN 16, 2009 8:06 AM

GENERAL COMM SETUP
COMM 1:
CONFIGURED: ENABLED
SLOT: 1
PORT: 1
DEVICE: EDIM CARD
LABEL: EDIM 1
DIM PROTOCOL: VRPROTOCOLDIM
BAUD RATE: 9600
DATA BITS: 7
PARITY: ODD
STOP BITS: 1
HAND_SHAKING: NO HANDSHAKING

PROTOCOL COMM SETUP
COMM 1:
UNIT REPORTED: GALLONS
COLLECT CUMMULATIVE TOTALS: YES
TRANSACTION PRECISION: THOUSANDS
CUMULATIVE PRECISION: THOUSANDS
BLENDER ONLY SITE: NO
USE PLUS ONE ALGORITHM: NO
REPORT TANK VOLUMES: NO
SUPPRESS COMM ALARM: NO

ADVANCE COMM SETUP
COMM 1:
COMM PORT SECURITY: DISABLED
SECURITY CODE: 000000

GENERAL COMM SETUP
COMM 2:
CONFIGURED: DISABLED
SLOT: NONE
PORT: NONE
DEVICE: NONE
LABEL:
DIM PROTOCOL: UNKNOWN
BAUD RATE: 9600
DATA BITS: 7
PARITY: ODD
STOP BITS: 1
HAND_SHAKING: NO HANDSHAKING

<ETX>
```

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

### Function Code 52G: (Continued)

```
TLS-4
<SOH>
I52GDD
JAN 16, 2009 8:06 AM

GENERAL COMM SETUP
 COMM 1:
 CONFIGURED: ENABLED
 DEVICE: EDIM CARD
 LABEL: EDIM 1
 DIM PROTOCOL: VRPROTOCOLDIM
 BAUD RATE: 9600
 DATA BITS: 7
 PARITY: ODD
 STOP BITS: 1
 HAND_SHAKING: NO HANDSHAKING

PROTOCOL COMM SETUP
 COMM 1:
 UNIT REPORTED: GALLONS
 COLLECT CUMMULATIVE TOTALS: YES
 TRANSACTION PRECISION: THOUSANDS
 CUMULATIVE PRECISION: THOUSANDS
 BLENDER ONLY SITE: NO
 USE PLUS ONE ALGORITHM: NO
 REPORT TANK VOLUMES: NO
 SUPPRESS COMM ALARM: NO

ADVANCE COMM SETUP
 COMM 1:
 COMM PORT SECURITY: DISABLED
 SECURITY CODE: 000000
<ETX>
```



# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 52H  
**Function Type:** Set Comm DIM Protocol

Version 2

**Command Format:**  
**Display:** <SOH>S52HPPdd  
**Computer:** <SOH>s52HPPdd

**Inquire:**  
<SOH>I52HPP  
<SOH>i52HPP

### Notes:

1. PP - Communication Port Number
2. dd - DIM Protocol
  - 00=Unknown DIM
  - 01=Gilbarco EDIM (V2)
  - 02=Gilbarco CL (V2)
  - 03=Tokheim 67AB
  - 04=Tokheim DHC
  - 05=Wayne CL (V2)
  - 06=Schumberger
  - 07=Schumberger SAM
  - 08=Gasboy RS-422
  - 09=Gasboy CFN
  - 10=VR Protocol DIM (V2)
  - 11=Mechanical (V2)
  - 12=Low Volt Mechanical (V2)
  - 13=Wayne ID POS (V4)
  - 14=Smart Crind
  - 15=Tominaga
  - 16=Bennett
  - 17=UK Block
  - 18=Scheidt Bach

### Typical Response Message, Display Format:

<SOH>  
I52H00  
JAN 22, 2009 3:12 PM

DIM PROTOCOL

COMM	LOCATION	PROTOCOL
1	OFFICE	Veeder-Root

<ETX>

## Serial Interface Manual

### TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code 52H: (Continued)

Typical Response Message, Computer Format:

```
<SOH>i52HPPYYMMDDHHmmPPdd&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. PP - Comm Number (Decimal)
3. dd - DIM Protocol
  - 00=Unknown DIM
  - 01=Gilbarco EDIM (V2)
  - 02=Gilbarco CL (V2)
  - 03=Tokheim 67AB
  - 04=Tokheim DHC
  - 05=Wayne CL (V2)
  - 06=Schumberger
  - 07=Schumberger SAM
  - 08=Gasboy RS-422
  - 09=Gasboy CFN
  - 10=VR Protocol DIM (V2)
  - 11=Mechanical (V2)
  - 12=Low Volt Mechanical (V2)
  - 13=Wayne ID POS
  - 14=Smart Crind
  - 15=Tominaga
  - 16=Bennett
  - 17=UK Block
  - 18=Scheidt Bach
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 530  
**Function Type:** Beeper Enable/Disable

Version 1

**Command Format:**  
**Display:** <SOH>S53000x149  
**Computer:** <SOH>s53000x149

**Inquire:**  
<SOH>I53000  
<SOH>i53000

**Notes:**

1. 149 - This verification code must be sent to confirm the command

**Typical Response Message, Display Format:**

```
<SOH>
I53000
JAN 22, 1996 3:12 PM

BEEPER: ENABLED
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i53000YYMMDDHHmmx&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. x - Beeper Enable/Disable Flag  
0=Disable  
1=Enable
3. && - Data Termination Flag
4. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: 531**

**Function Type:** Set RS-232 End of Message

Version 1

**Command Format:**

**Display:** <SOH>S531PPf

**Computer:** <SOH>s531PPf

**Inquire:**

<SOH>I531PP

<SOH>i531PP

### Typical Response Message, Display Format:

<SOH>  
I531PP  
JAN 22, 1996 3:16 PM

RS-232 END OF MESSAGE

COMM	LABEL	END OF MESSAGE
1		DISABLED

<ETX>

### Typical Response Message, Computer Format:

<SOH>i53100YYMMDDHHmmPPf...  
PPf&&CCCC<ETX>

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. PP - COMM Number (Decimal, 00=all)
3. f - End of Message flag  
0=Disable  
1=Enable
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

### 7.3.3 WARNING, ALARM, & AUTO-PRINT SETUP

**Function Code: 536**

Version 1

**Function Type:** Set RS-232 Security Code per Port

**Command Format:**

**Display:** <SOH>S536PPsaaaaaa

**Computer:** <SOH>s536PPsaaaaaa

**Inquire:**

<SOH>I536PP

<SOH>i536PP

**Notes:**

1. PP - Port number (Decimal, 01..03 [..06]; 99=this port)
2. s - Enable or Disable Status (if disabled no password is required)
3. aaaaaa - Security code (6 ASCII characters from 20 Hex-7E Hex)

**Typical Response Message, Display Format:**

```
<SOH>
I536PP
JUN 1, 2009 8:05 AM

232 SECURITY CODE

PORT SECURITY CODE STATUS
 1 123456 ENABLED
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i536PPYYMDDHHmmsaaaaaa&&CCCC<ETX>
```

**Notes:**

1. YYMDDHHmm - Current Date and Time
2. s - disabled or enabled status
3. aaaaaa - Security code (6 ASCII characters from 20 Hex-7E Hex)
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 537

Version 1

**Function Type:** Set Display Format RS-232 ETX per Port

**Command Format:**

**Display:** <SOH>S537PPAB

**Computer:** <SOH>s537PPAB

**Inquire:**

<SOH>I537PP

<SOH>i537PP

### Notes:

1. PP - Port number (Decimal, 01..06]; 99=this port)
2. A - ETX CHAR 1 (value 0-255)
3. B - ETX CHAR 2 (value 0-255)
4. The default end of message character transmitted by the TLS is an <ETX> (Decimal 003 or ^C). If desired, the TLS can be programmed to transmit up to two other characters at the end of each computer format response message.
5. The TLS accepts any ASCII character (000-255) in either of the two positions. However, if the first "A" character is a <NUL> (000), the TLS reverts to its default condition. If the first character "A", is not a NULL but the second character "B" is, only the first character is transmitted as the response message. If neither character is a <NUL>, both characters are transmitted, in sequence, at the end of each computer format response message.
6. This command only sets the ETX characters. To enable the use of the custom ETX, the 531 command must be used to enable the user's custom ETX.

### Typical Response Message, Display Format:

For printable ASCII characters

```
<SOH>
I537PP
JUN 1, 2000 8:06 AM

COMPUTER MODE RS-232 ETX CHARATERS

PORT ETX ETX
 1 C D
<ETX>
```

For non-printable ASCII characters

```
<SOH>
I537PP
JUN 1, 2000 8:06 AM

COMPUTER MODE RS-232 ETX CHARATERS

PORT ETX ETX
 1 0xCC 0xDD
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>i537PPYYMMDDHHmmAB&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. A - 1st Character (value 0-255)
3. B - 2nd Character (value 0-255)
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 538

Version 1

**Function Type:** Set Computer Format RS-232 ETX per Port

**Command Format:**

**Display:** <SOH>S538PPAB

**Computer:** <SOH>s538PPAB

**Inquire:**

<SOH>I538PP

<SOH>i538PP

### Notes:

1. PP - Port number (Decimal, 01..06]; 99=this port)
2. A - ETX CHAR 1 (value 0-255)
3. B - ETX CHAR 2 (value 0-255)
4. The default end of message character transmitted by the TLS is an <ETX> (Decimal 003 or ^C). If desired, the TLS can be programmed to transmit up to two other characters at the end of each computer format response message.
5. The TLS accepts any ASCII character (000-255) in either of the two positions. However, if the first "A" character is a <NUL> (000), the TLS reverts to its default condition. If the first character "A", is not a NULL but the second character "B" is, only the first character is transmitted as the response message. If neither character is a <NUL>, both characters are transmitted, in sequence, at the end of each computer format response message.
6. This command only sets the ETX characters. To enable the use of the custom ETX, the 531 command must be used to enable the user's custom ETX.

### Typical Response Message, Display Format:

For printable ASCII characters

```
<SOH>
I538PP
JUN 1, 2000 8:06 AM

COMPUTER MODE RS-232 ETX CHARATERS

PORT ETX ETX
 1 C D
<ETX>
```

For non-printable ASCII characters

```
<SOH>
I538PP
JUN 1, 2000 8:06 AM

COMPUTER MODE RS-232 ETX CHARATERS

PORT ETX ETX
 1 0xCC 0xDD
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>i538PPYYMMDDHHmmAB&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. A - 1st Character (value 0-255)
3. B - 2nd Character (value 0-255)
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 53A  
**Function Type:** Set Shift Close Method

Version 2

**Command Format:**  
**Display:** <SOH>S53A00M  
**Computer:** <SOH>s53A00M

**Inquire:**  
<SOH>I53A00  
<SOH>i53A00

### Typical Response Message, Display Format:

```
<SOH>
I53A00
JUN 1, 2009 8:06 AM

SHIFT CLOSE METHOD: MANUAL
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>i53A00YYMMDDHHmmM&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. M - Shift Close Method (Decimal)  
0 = TIMED  
1 = MANUAL
3. && - Data Termination Flag
4. CCCC - Message Checksum



# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 545  
**Function Type:** Set TC Density Enable

Version 3

**Command Format:**  
**Display:** <SOH>S54500f  
**Computer:** <SOH>s54500f

**Inquire:**  
<SOH>I54500  
<SOH>i54500

### Typical Response Message, Display Format:

<SOH>  
I54500  
JUN 1, 2010 8:06 AM

TC DENSITY  
ENABLED  
<ETX>

### Typical Response Message, Computer Format:

<SOH>i54500YYMMDDHHmmf&&CCCC<ETX>

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. f - TC Density Enable Flag (Decimal)  
0 = Disabled  
1 = Enabled
3. && - Data Termination Flag
4. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 546

Version 1

**Function Type:** Set Tank Periodic Test Needed Warning

**Command Format:**

**Display:** <SOH>S54600f

**Computer:** <SOH>s54600f

**Inquire:**

<SOH>I54600

<SOH>i54600

**Typical Response Message, Display Format:**

<SOH>

I54600

JAN 22, 1996 3:12 PM

TANK PER TEST NEEDED WRN: DISABLED

<ETX>

**Typical Response Message, Computer Format:**

<SOH>i54600YYMMDDHHmmf&&CCCC<ETX>

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. f - Tank Periodic Test Needed Warning Flag:  
0=Disabled  
1=Enabled
3. && - Data Termination Flag
4. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 547

Version 1

**Function Type:** Set Days Before Tank Periodic Test Needed Warning

**Command Format:**

**Display:** <SOH>S54700dd

**Computer:** <SOH>s54700dd

**Inquire:**

<SOH>I54700

<SOH>i54700

**Typical Response Message, Display Format:**

<SOH>

I54700

JAN 22, 1996 3:12 PM

TANK PER TEST NEEDED WRN: DAYS= 25

<ETX>

**Typical Response Message, Computer Format:**

<SOH>i54700YYMMDDHHmmdd&&CCCC<ETX>

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. dd - Days Before Tank Periodic Test Needed Warn (Decimal, 00-30)
3. && - Data Termination Flag
4. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: 548**

Version 1

**Function Type:** Set Days Before Tank Periodic Test Needed Alarm

**Command Format:**

**Display:** <SOH>S54800dd

**Computer:** <SOH>s54800dd

**Inquire:**

<SOH>I54800

<SOH>i54800

**Typical Response Message, Display Format:**

<SOH>

I54800

JAN 22, 1996 3:12 PM

TANK PER TEST NEEDED ALM: DAYS= 30

<ETX>

**Typical Response Message, Computer Format:**

<SOH>i54800YYMMDDHHmmdd&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. dd - Days Before Tank Periodic Test Needed Alarm (Decimal, 00-30)
3. && - Data Termination Flag
4. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: 549**

Version 1

**Function Type:** Set Tank Annual Test Needed Warning

**Command Format:**

**Display:** <SOH>S54900f

**Computer:** <SOH>s54900f

**Inquire:**

<SOH>I54900

<SOH>i54900

**Typical Response Message, Display Format:**

<SOH>

I54900

JAN 22, 1996 3:12 PM

TANK ANN TEST NEEDED WRN: DISABLED

<ETX>

**Typical Response Message, Computer Format:**

<SOH>i54900YYMMDDHHmmf&&CCCC<ETX>

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. f - Annual Test Needed Warning Flag:  
0=Disabled  
1=Enabled
3. && - Data Termination Flag
4. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: 54A**

Version 1

**Function Type:** Set Days Before Tank Annual Test Needed Warning

**Command Format:**

**Display:** <SOH>S54A00ddd

**Computer:** <SOH>s54A00ddd

**Inquire:**

<SOH>I54A00

<SOH>i54A00

**Typical Response Message, Display Format:**

<SOH>

I54A00

JAN 22, 1996 3:12 PM

TANK ANN TST NEEDED WRN: DAYS=355

<ETX>

**Typical Response Message, Computer Format:**

<SOH>i54A00YYMMDDHHmmddd&&CCCC<ETX>

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. ddd - Days Before Annual Test Needed Warning (Decimal, 000-365)
3. && - Data Termination Flag
4. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 54B

Version 1

**Function Type:** Set Days Before Tank Annual Test Needed Alarm

**Command Format:**

**Display:** <SOH>S54B00ddd

**Computer:** <SOH>s54B00ddd

**Inquire:**

<SOH>I54B00

<SOH>i54B00

**Typical Response Message, Display Format:**

<SOH>

I54B00

JAN 22, 1996 3:12 PM

TANK ANN TEST NEEDED ALM: DAYS=365

<ETX>

**Typical Response Message, Computer Format:**

<SOH>i54B00YYMMDDHHmmddd&&CCCC<ETX>

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. ddd - Days Before annual Test Needed Alarm (Decimal, 000-365)
3. && - Data Termination Flag
4. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 54C

Version 1

**Function Type:** Set CSLD Evaporation Reid Vapor Pressure Chart

**Command Format:**

**Display:** <SOH>S54C00GG.G...

**Computer:** <SOH>s54C00FFFFFFFFF...

**Inquire:**

<SOH>I54C00

<SOH>i54C00

**Notes:**

1. GG.G - 12 Reid Vapor Pressures (Decimal)
2. FFFFFFFF - 12 Reid Vapor Pressures (ASCII Hex IEEE floats)
3. The command will be rejected if any value is outside the range 0.0 to 15.0, or all table values are zero.

**Typical Response Message, Display Format:**

```
<SOH>
I54C00
JAN 22, 1996 3:27 PM
```

```
CSLD EVAP CONSTANTS
REID VAPOR PRESSURE:
JAN 14.0
FEB 14.0
MAR 12.0
APR 12.0
MAY 11.0
JUN 10.0
JUL 8.0
AUG 4.0
SEP 5.0
OCT 6.0
NOV 9.0
DEC 12.0
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i54C00YYMMDDHHmmNNFFFFFFFFF&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. NN - Number of eight character Data Fields to follow (Hex)
3. FFFFFFFF - 12 Reid Vapor Pressures (ASCII Hex IEEE floats)
  1. Jan RVP
  2. Feb RVP
  3. Mar RVP
  4. Apr RVP
  5. May RVP
  6. Jun RVP
  7. Jul RVP
  8. Aug RVP
  9. Sep RVP
  10. Oct RVP
  11. Nov RVP
  12. Dec RVP
4. && - Data Termination Flag
5. CCCC - Message Checksum



# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: 54E**

Version 7

**Function Type:** Set Sensor History Period Report Configuration

**Command Format:**

**Display:** <SOH>S54E00PP (if PP=02)  
<SOH>S54E00PPW (if PP=01)  
<SOH>S54E00PPddYYMMDD (if PP=03)  
**Computer:** <SOH>s54E00PP (if PP=02)  
<SOH>s54E00PPW (if PP=01)  
<SOH>s54E00PPddYYMMDD (if PP=03)

**Inquire:**  
<SOH>I54E00

<SOH>i54E00

**Typical Response Message, Display Format:**

**By Month example:**

<SOH>  
I54E00  
JAN 22, 2016 3:27 PM

STATION HEADER 1  
STATION HEADER 2  
STATION HEADER 3  
STATION HEADER 4

SENSOR HISTROY BY PERIOD

PERIOD TYPE : BY MONTH  
<ETX>

**By Week example:**

<SOH>  
I54E00  
JAN 22, 2016 3:27 PM

STATION HEADER 1  
STATION HEADER 2  
STATION HEADER 3  
STATION HEADER 4

SENSOR HISTROY BY PERIOD

PERIOD TYPE : BY WEEK  
WEEK CLOSE DAY : SUNDAY  
<ETX>

**Custom example:**

<SOH>  
I54E00  
JAN 22, 2016 3:27 PM

STATION HEADER 1  
STATION HEADER 2  
STATION HEADER 3  
STATION HEADER 4

SENSOR HISTORY BY PERIOD

PERIOD TYPE : CUSTOM  
PERIOD DURATION : 30 DAYS  
HISTORY START DATE : 01/01/2016  
<ETX>

## Serial Interface Manual

### TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code 54E Notes:** (Continued)

**Typical Response Message, Computer Format:**

```
<SOH>i54E00YYMMDDHHmmPP&&CCCC<ETX> (if PP=02)
<SOH>i54E00YYMMDDHHmmPPW&&CCCC<ETX> (if PP=01)
<SOH>i54E00YYMMDDHHmmPPddYYMMDD&&CCCC<ETX> (if PP=03)
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. PP - Reporting Period Type
  - 01=By Week
  - 02=By Month
  - 03=Custom
3. W - Week Close Day
  - 01=Sunday
  - 02=Monday
  - 03=Tuesday
  - 04=Wednesday
  - 05=Thursday
  - 06=Friday
  - 07=Saturday
4. dd - Period Duration in Days (Min=07, Max=30)
5. YYMMDD - Sensor History Start Date
6. && - Data Termination Flag
7. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 553  
**Function Type:** Set Line Re-Enable Method

Version 1

**Command Format:**  
**Display:** <SOH>S55300f  
**Computer:** <SOH>s55300f

**Inquire:**  
<SOH>I55300  
<SOH>i55300

### Typical Response Message, Display Format:

```
<SOH>
I55300
JAN 24, 2000 2:54 PM

LINE RE-ENABLE METHOD
PASS LINE TEST
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>i55300YYMMDDHHmmf&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. f - Line Re-Enable Method Flag  
0=Pass Line Test  
1=Alarm Acknowledge
3. && - Data Termination Flag
4. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 554

Version 1

**Function Type:** Set Periodic Line Leak Test Auto-Confirm

**Command Format:**

**Display:** <SOH>S55400f

**Computer:** <SOH>s55400f

**Inquire:**

<SOH>I55400

<SOH>i55400

**Typical Response Message, Display Format:**

```
<SOH>
I55400
JUL 29, 1997 9:07 AM

0.20 GPH LINE TEST AUTO-CONFIRM: ENABLED
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i55400YYMMDDHHmmf&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. f - Periodic Line Leak Test Auto-Confirm:  
0=Disabled  
1=Enabled
3. && - Data Termination Flag
4. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 555

Version 1

**Function Type:** Set Annual Line Leak Test Auto-Confirm

**Command Format:**

**Display:** <SOH>S55500f

**Computer:** <SOH>s55500f

**Inquire:**

<SOH>I55500

<SOH>i55500

**Typical Response Message, Display Format:**

<SOH>

I55500

JUL 29, 1997 9:07 AM

0.10 GPH LINE TEST AUTO-CONFIRM: ENABLED

<ETX>

**Typical Response Message, Computer Format:**

<SOH>i55500YYMMDDHHmmf&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. f - Annual Line Leak Test Auto-Confirm:  
0=Disabled  
1=Enabled
3. && - Data Termination Flag
4. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 556

Version 1

**Function Type:** Set Line Periodic Test Needed Warning

**Command Format:**

**Display:** <SOH>S55600f

**Computer:** <SOH>s55600f

**Inquire:**

<SOH>I55600

<SOH>i55600

**Typical Response Message, Display Format:**

<SOH>

I55600

JAN 22, 1996 3:12 PM

LINE PER TST NEEDED WRN: DISABLED

<ETX>

**Typical Response Message, Computer Format:**

<SOH>i55600YYMMDDHHmmf&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. f - Periodic Test Needed Warning Flag:  
0=Disabled  
1=Enabled
3. && - Data Termination Flag
4. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 557

Version 1

**Function Type:** Set Days Before Line Periodic Test Needed Warning

**Command Format:**

**Display:** <SOH>S55700dd

**Computer:** <SOH>s55700dd

**Inquire:**

<SOH>I55700

<SOH>i55700

**Typical Response Message, Display Format:**

<SOH>

I55700

JAN 22, 1996 3:12 PM

LINE PER TST NEEDED WRN: DAYS= 25

<ETX>

**Typical Response Message, Computer Format:**

<SOH>i55700YYMMDDHHmmdd&&CCCC<ETX>

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. dd - Days Before Periodic Test Needed Warning (Decimal, 00-30)
3. && - Data Termination Flag
4. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 558

Version 1

**Function Type:** Set Days Before Line Periodic Test Needed Alarm

**Command Format:**

**Display:** <SOH>S55800dd

**Computer:** <SOH>s55800dd

**Inquire:**

<SOH>I55800

<SOH>i55800

**Typical Response Message, Display Format:**

<SOH>

I55800

JAN 22, 1996 3:12 PM

LINE PER TST NEEDED ALM: DAYS= 30

<ETX>

**Typical Response Message, Computer Format:**

<SOH>i55800YYMMDDHHmmdd&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. dd - Days Before Periodic Test Needed Alarm (Decimal, 00-30)
3. && - Data Termination Flag
4. CCCC - Message Checksum



# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: 559**

Version 1

**Function Type:** Set Line Annual Test Needed Warning

**Command Format:**

**Display:** <SOH>S55900f

**Computer:** <SOH>s55900f

**Inquire:**

<SOH>I55900

<SOH>i55900

**Typical Response Message, Display Format:**

<SOH>

I55900

JAN 22, 1996 3:12 PM

LINE ANN TST NEEDED WRN: DISABLED

<ETX>

**Typical Response Message, Computer Format:**

<SOH>i55900YYMMDDHHmmf&&CCCC<ETX>

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. f - Annual Test Needed Warning Flag:  
0=Disabled  
1=Enabled
3. && - Data Termination Flag
4. CCCC - Message Checksum

## Serial Interface Manual

### TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 55A

Version 1

**Function Type:** Set Days Before Line Annual Test Needed Warning

**Command Format:**

**Display:** <SOH>S55A00ddd

**Computer:** <SOH>s55A00ddd

**Inquire:**

<SOH>I55A00

<SOH>i55A00

**Typical Response Message, Display Format:**

<SOH>

I55A00

JAN 22, 1996 3:12 PM

LINE ANN TST NEEDED WRN: DAYS=355

<ETX>

**Typical Response Message, Computer Format:**

<SOH>i55A00YYMMDDHHmmddd&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. ddd - Days Before Annual Test Needed Warning (Decimal, 000-365)
3. && - Data Termination Flag
4. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 55B

Version 1

**Function Type:** Set Days Before Line Annual Test Needed Alarm

**Command Format:**

**Display:** <SOH>S55B00ddd

**Computer:** <SOH>s55B00ddd

**Inquire:**

<SOH>I55B00

<SOH>i55B00

**Typical Response Message, Display Format:**

<SOH>

I55B00

JAN 22, 1996 3:12 PM

LINE ANN TST NEEDED ALM: DAYS=365

<ETX>

**Typical Response Message, Computer Format:**

<SOH>i55B00YYMMDDHHmmddd&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. ddd - Days Before Annual Test Needed Alarm (Decimal, 000-365)
3. && - Data Termination Flag
4. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 564  
**Function Type:** Set Ullage

Version 1

**Command Format:**  
**Display:** <SOH>S56400f  
**Computer:** <SOH>s56400f

**Inquire:**  
<SOH>I56400  
<SOH>i56400

### Typical Response Message, Display Format:

```
<SOH>
I56400
JUN 22, 2006 3:15 PM

ULLAGE: 90%
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>i56400YYMMDDHHmmf&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. f - Ullage  
0=90%  
1=95%  
2=Custom (see 572)
3. && - Data Termination Flag
4. CCCC - Message Checksum

## Serial Interface Manual

### TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 56E

Version 2

**Function Type:** Set Manual Close Timeout in Minutes

**Command Format:**

**Display:** <SOH>S56E00NN

**Computer:** <SOH>s56E00NN

**Inquire:**

<SOH>I56E00

<SOH>i56E00

**Typical Response Message, Display Format:**

<SOH>  
I56E00  
JUN 22, 2009 3:15 PM

MANUAL CLOSE TIMEOUT: 30  
<ETX>

**Typical Response Message, Computer Format:**

<SOH>i56E00YYMMDDHHmmNN&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. NN - Number of Minutes (Decimal, [min,max] = [30(default),60]
3. && - Data Termination Flag
4. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 577

Version 2

**Function Type:** Set Inventory Close Start Time

**Command Format:**

**Display:** <SOH>S57700hhmm

**Computer:** <SOH>s57700hhmm

**Inquire:**

<SOH>I57700

<SOH>i57700

### Typical Response Message, Display Format:

```
<SOH>
I57700
JUN 22, 2009 3:15 PM

INVENTORY LOG TIME : 12:00
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>i57700YYMMDDHHmmhhmm&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. hhmm - Start Time to Record Inventory [0000-2359] where  
0000=midnight (Decimal)
3. && - Data Termination Flag
4. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 578

Version 2

**Function Type:** Set Inventory Reporting Interval

**Command Format:**

**Display:** <SOH>S57800rr

**Computer:** <SOH>s57800rr

**Inquire:**

<SOH>I57800

<SOH>i57800

**Typical Response Message, Display Format:**

<SOH>  
I57800  
JAN 22, 2009 3:16 PM

INVENTORY LOG INTERVAL : 1 Hour  
<ETX>

**Typical Response Message, Computer Format:**

<SOH>i57800YYMMDDHHmmrr&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. rr - Repeat Time to Record Inventory (Decimal)
  - 0=5 Minutes
  - 1=10 Minutes
  - 2=15 Minutes
  - 3=20 Minutes
  - 4=30 Minutes
  - 5=1 hour
  - 6=2 hours
  - 7=3 hours
  - 8=4 hours
  - 9=6 hours
  - 10=8 hours
  - 11=12 hours
  - 12=24 hours
  - 13=1 Minute
  - 99=Disabled
3. && - Data Termination Flag
4. CCCC - Message Checksum

## Serial Interface Manual

### TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 579

Version 2

**Function Type:** Tank Idle Delivery Enable/Disable

**Command Format:**

**Display:** <SOH>S57900f

**Computer:** <SOH>s57900f

**Inquire:**

<SOH>I57900

<SOH>i57900

#### Typical Response Message, Display Format:

<SOH>  
I57900  
JAN 22, 2011 3:12 PM

TANK IDLE DELIVERY  
ENABLED  
<ETX>

#### Typical Response Message, Computer Format:

<SOH>i57900YYMMDDHHmmf&&CCCC<ETX>

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. f - Tank Idle Delivery Enable/Disable Flag  
0=Disable  
1=Enable
3. && - Data Termination Flag
4. CCCC - Message Checksum



# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: 57B**

**Function Type:** Set Timed Sudden Loss Monitoring Schedule

Version 6

**Command Format:**

**Display:** <SOH>S57B00S (if S=0)  
<SOH>S57B00SHHmHHmm (if S=1)  
<SOH>S57B00SNsHHmmeHHmm (if S=2)  
<SOH>S57B00S (if S=3)

**Inquire:**  
<SOH>I57B00

**Computer:** <SOH>s57B00S (if S=0)  
<SOH>s57B00SHHmHHmm (if S=1)  
<SOH>s57B00SNsHHmmeHHmm (if S=2)  
<SOH>s57B00S (if S=3)

<SOH>i57B00

**Typical Response Message, Display Format:**  
**Daily**

```
<SOH>
I57B00
JAN 22, 2014 3:12 PM

TIMED SUDDEN LOSS DETECTION SCHEDULE

SCHEDULE TYPE: DAILY
START TIME: 11:00 PM
END TIME: 5:00 AM
<ETX>
```

**Individual**

```
<SOH>
I57B00
JAN 22, 2014 3:12 PM

TIMED SUDDEN LOSS DETECTION SCHEDULE

SCHEDULE TYPE: INDIVIDUAL
PERIOD 1:
START DAY: MONDAY
START TIME: 11:00 PM
END DAY: TUESDAY
END TIME: 6:00 AM

SCHEDULE TYPE: INDIVIDUAL
PERIOD 2: DISABLED

SCHEDULE TYPE: INDIVIDUAL
PERIOD 3:
START DAY: FRIDAY
START TIME: 11:00 PM
END DAY: SATURDAY
END TIME: 6:00 AM

SCHEDULE TYPE: INDIVIDUAL
PERIOD 4: DISABLED

SCHEDULE TYPE: INDIVIDUAL
PERIOD 5: DISABLED

SCHEDULE TYPE: INDIVIDUAL
PERIOD 6: DISABLED

SCHEDULE TYPE: INDIVIDUAL
PERIOD 7: DISABLED
<ETX>
```

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code 57B Notes:** (Continued)

**Typical Response Message, Computer Format:**

```
<SOH>i57B00YYMMDDHHmmS&&CCCC<ETX> (if S=0)
<SOH>i57B00YYMMDDHHmmSHHmHHmm&&CCCC<ETX> (if S=1)
<SOH>i57B00YYMMDDHHmmSNsHHmmeHHmmNsHHmmeHHmm...NsHHmmeHHmm&&CCCC<ETX> (if S=2)
<SOH>i57B00YYMMDDHHmmS&&CCCC<ETX> (if S=3)
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. S - Schedule Type
  - 0=Disabled
  - 1=Daily
  - 2=Individual
  - 3=Manual
3. HHmm - Time hour/minute (when S=1 or S=2)(EE00=Disabled)
4. N - Period Number (1-7, when S=2)
5. s - Start Day (when S=2)
  - 0=Disabled
  - 1=Sunday
  - 2=Monday
  - 3=Tuesday
  - 4=Wednesday
  - 5=Thursday
  - 6=Friday
  - 7=Saturday
6. e - End Day (when S=2)
  - 0=Disabled
  - 1=Sunday
  - 2=Monday
  - 3=Tuesday
  - 4=Wednesday
  - 5=Thursday
  - 6=Friday
  - 7=Saturday
7. && - Data Termination Flag
8. CCCC - Message Checksum

## Serial Interface Manual

### TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 580

Version 2

**Function Type:** Get Inventory Storage Length

**Command Format:**

**Display:** <SOH>I58000

**Computer:** <SOH>i58000

**Typical Response Message, Display Format:**

```
<SOH>
I58000
JAN 22, 2009 3:16 PM
```

```
INVENTORY STORAGE LENGTH: 2000
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i58000YYMMDDHHmmFFFFFFFFF&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. FFFFFFFF - Inventory Storage Length (ASCII Hex IEEE integer)
3. && - Data Termination Flag
4. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 581  
**Function Type:** Set Alarm Filter

Version 4

**Command Format:**  
**Display:** <SOH>S58100f  
**Computer:** <SOH>s58100f

**Inquire:**  
<SOH>I58100  
<SOH>i58100

### Typical Response Message, Display Format:

```
<SOH>
I58100
JUN 24, 2011 3:15 PM

ALARM FILTERING FLAG: ENABLED
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>i58100YYMMDDHHmmf&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. f - Alarm Filter Flag  
0=Disabled  
1=Enabled
3. && - Data Termination Flag
4. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 5BD

**Function Type:** Set Enable/Disable Custom Alarms

Version 1

**Command Format:**

**Display:** <SOH>S5BD00f

**Computer:** <SOH>s5BD00f

**Inquire:**

<SOH>I5BD00

<SOH>i5BD00

### Typical Response Message, Display Format:

<SOH>  
I5BD00  
JUN 22, 2001 3:15 PM

CUSTOM ALARM LABELS  
ENABLED  
<ETX>

### Typical Response Message, Computer Format:

<SOH>i5BD00YYMMDDHHmmf&&CCCC<ETX>

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. f - Custom Alarm Labels Flag  
0=Disabled  
1=Enabled
3. && - Data Termination Flag
4. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 5BF

Version 1

**Function Type:** Set Custom Alarm Label, device number, and indications

**Command Format:**

**Display:** <SOH>S5BF00AANNTTflpbdaaaaaaaaaaaaaaaaaaaaaa

**Computer:** <SOH>s5BF00AANNTTflpbdaaaaaaaaaaaaaaaaaaaaaa

**Inquire:**

<SOH>I5BF00

<SOH>i5BF00

### Notes:

1. AA - Alarm/Warning Category:  
See explanation for "AA" in Function i10100
2. NN - Alarm Type Number:  
See explanation for "NN" in Function i10100
3. TT - Device (or Tank) Number (Decimal, 00=all)
4. f - Custom Alarm Flag  
0=Disabled  
1=Enabled  
**Note:** This flag is ignored in TLS-450. Custom Alarm setting at alarm level is unsupported. This feature is supported at system level only. (by using 5BD command)
5. l - LCD Indication Flag  
In TLS-350:  
0=Disabled  
1=Enabled  
In TLS-450: (**future**)  
0=None  
1=Yellow  
2=Red  
**Note:** TLS-450: Version 01 supports this setting as in TLS-350 only; i.e. 0=Disabled 1=Enabled.
6. p - PRINTOUT Indication Flag  
In TLS-350:  
0=Disabled  
1=Enabled  
In TLS-450:  
**PRINTOUT flag is ignored.**  
(In TLS-450, the alarm-print assignment will be part of Automatic Events Setup - See 5P1, 5P4 & 5P6)
7. b - BEEP Indication Flag  
0=Disabled  
1=Enabled
8. d - LED Indication Flag  
0=Disabled  
1=Enabled
9. a - Custom Alarm Label (19 ASCII characters [20h-7Eh])

### Typical Response Message, Display Format:

```
<SOH>
I5BF00
JUN 22, 2001 3:15 PM

CUSTOM ALARM LABELS

IN-TANK ALARMS
OVERFILL ALARM
 T 1:(custom alarm label)
LCD: ENABLED
PRINT: ENABLED
BEEP: DISABLED
LED: ENABLED
 T 2:(custom alarm label)
LCD: ENABLED
PRINT: ENABLED
BEEP: DISABLED
LED: ENABLED
<ETX>
```

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code 5BF Notes:** (Continued)

**Typical Response Message, Computer Format:**

```
<SOH>i5BF00YYMDDHHmmnnAANNTTlpbdaaaaaaaaaaaaaaaaaaaaa...
AANNTTlpbdaaaaaaaaaaaaaaaaaaaaa&&CCCC<ETX>
```

**Notes:**

1. YYMDDHHmm - Current Date and Time
2. nn - Number of Custom Alarms to follow (Hex)
3. AA - Alarm/Warning Category:  
See explanation for "AA" in Function i10100
4. NN - Alarm Type Number:  
See explanation for "NN" in Function i10100
5. TT - Device (or Tank) Number (Decimal, 00=all)
6. l - LCD Indication Flag  
0=Disabled  
1=Enabled
7. p - PRINTOUT Indication Flag  
0=Disabled  
1=Enabled
8. b - BEEP Indication Flag  
0=Disabled  
1=Enabled
9. d - LED Indication Flag  
0=Disabled  
1=Enabled
10. a - Custom Alarm Label (19 ASCII characters [20h-7Eh])
11. && - Data Termination Flag
12. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

### 7.3.4. ADDRESS BOOK SETUP

**Function Code:** 5G1  
**Function Type:** Add Contact

Version 1

**Command Format:**  
**Display:** <SOH>S5G100aaa.....aaa  
**Computer:** <SOH>s5G100aaa.....aaa

**Inquire:**  
<SOH>I5G1RR  
<SOH>i5G1RR

#### Typical Response Message, Display Format:

```
<SOH>
I5G1RR
JUL 26, 2007 1:36 PM

CONTACT NAME

CONTACT# NAME
 1 Mrs. Lozier
<ETX>
```

#### Typical Response Message, Computer Format:

```
<SOH>i5G1RRYYMMDDHHmmRRnnaaa...aaa ...
RRnnaaa...aaa&&CCCC<ETX>
```

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. RR - Contact Identification Number (Decimal)
3. nn - Number of characters to follow
4. aaa.....aaa - Contact Name (Max. 30 ASCII characters [20h-7Eh])
5. && - Data Termination Flag
6. CCCC - Message Checksum



# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:**5G2  
**Function Type:** Delete Contact

Version 1

**Command Format:**  
**Display:** <SOH>S5G2RR  
**Computer:** <SOH>s5G2RR

**Inquire:**  
<SOH>I5G2RR  
<SOH>i5G2RR

### Typical Response Message, Display Format:

<SOH>  
I5G2RR  
JUL 26, 2007 1:36 PM

DELETE CONTACT

CONTACT#	NAME	DELETE STATUS
5	Mrs. Lozier	SUCCESS

<ETX>

-OR-

<SOH>  
I5G2RR  
JUL 26, 2007 1:36 PM

DELETE CONTACT

CONTACT#	NAME	DELETE STATUS
5		NO CONTACT EXISTS

<ETX>

### Typical Response Message, Computer Format:

<SOH>i5G2RRYYMMDDHHmmRRSSnnaaa...aaa ...  
RRSSnnaaa...aaa&&CCCC<ETX>

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. RR - Contact Identification Number (Decimal)
3. SS - Contact delete status  
00-Contact Deleted  
01-No Contact exists  
02-Failed to delete (internal error)
4. nn - Number of characters to follow
5. aaa.....aaa - Contact Name (Max. 30 ASCII characters [20h-7Eh])
6. && - Data Termination Flag
7. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 5G3

Version 1

**Function Type:** Set Contact Modem Number

**Command Format:**

**Display:** <SOH>S5G3RRaaaaa.....aaaa

**Computer:** <SOH>s5G3RRaaaaa.....aaaa

**Inquire:**

<SOH>I5G3RR

<SOH>i5G3RR

### Typical Response Message, Display Format:

<SOH>  
I5G3RR  
JUL 26, 2007 1:36 PM

CONTACT MODEM NUMBER

CONTACT#	CONTACT NAME	MODEM NUMBER
1	Mrs. Lozier	675-5647

<ETX>

### Typical Response Message, Computer Format:

<SOH>i5G3RRYYMMDDHHmmRRnnaaa...aaa ...  
RRnnaaa...aaa&&CCCC<ETX>

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. RR - Contact Identification Number (Decimal)
3. nn - Number of characters to follow
4. aaaa...aaaa - Modem Number (Max. 40 ASCII characters [20h-Eh])
5. && - Data Termination Flag
6. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 5G4

Version 1

**Function Type:** Set Contact Modem Dial-Out String

**Command Format:**

**Display:** <SOH>S5G4RRaaaaa.....aaaaa

**Computer:** <SOH>s5G4RRaaaaa.....aaaaa

**Inquire:**

<SOH>I5G4RR

<SOH>i5G4RR

### Typical Response Message, Display Format:

<SOH>

I5G4RR

JUL 26, 2007 1:36 PM

CONTACT MODEM DIAL-OUT STRING

CONTACT# : 1

NAME : Mrs. Lozier

DIAL-OUT STRING : V1E0X4&C1&D02Q057-90

<ETX>

### Typical Response Message, Computer Format:

<SOH>i5G4RRYYMMDDHRRnnaaaaa...aaaaa .....  
RRnnaaaaa...aaaaa&&CCCC<ETX>

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. RR - Contact Identification Number (Decimal)
3. nn - Number of characters to follow
- 4.aaaaa.....aaaaa - Modem Dial-Out String (Max. 50 ASCII characters)
5. && - Data Termination Flag
6. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 5G5

Version 1

**Function Type:** Set Contact Modem Communication Device Number

**Command Format:**

**Display:** <SOH>S5G5RRDD

**Computer:** <SOH>s5G5RRDD

**Inquire:**

<SOH>I5G5RR

<SOH>i5G5RR

### Typical Response Message, Display Format:

<SOH>

I5G5RR

JUL 26, 2007 1:36 PM

CONTACT MODEM COMMUNICATION DEVICE

CONTACT# CONTACT NAME

1 Mrs. Lozier

COMM DEVICE

Co 1: Modem 1 Label

<ETX>

### Typical Response Message, Computer Format:

<SOH>i5G5RRYYMMDDHHRRDD...

RRDD&&CCCC<ETX>

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. RR - Contact Identification Number (Decimal)
3. DD - Modem Communication device number (00-99)
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 5G6

Version 1

**Function Type:** Set Contact Modem Retry Count

**Command Format:**

**Display:** <SOH>S5G6RRnn

**Computer:** <SOH>s5G6RRnn

**Inquire:**

<SOH>I5G6RR

<SOH>i5G6RR

### Typical Response Message, Display Format:

```
<SOH>
I5G6RR
JUL 26, 2007 1:36 PM

CONTACT MODEM RETRY COUNT
```

CONTACT#	CONTACT NAME	RETRY COUNT
1	Mrs. Lozier	3

<ETX>

### Typical Response Message, Computer Format:

```
<SOH>i5G6RRYYMMDDHHmmRRnn...
RRnn&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. RR - Contact Identification Number (Decimal)
3. nn - Modem Retry Count (03 through 99)
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 5G7

**Function Type:** Set Contact Modem Retry Delay Time

Version 1

**Command Format:**

**Display:** <SOH>S5G7RRnnn

**Computer:** <SOH>s5G7RRnnn

**Inquire:**

<SOH>I5G7RR

<SOH>i5G7RR

### Typical Response Message, Display Format:

<SOH>

I5G7RR

JUL 29, 1997 9:06 AM

CONTACT MODEM RETRY DELAY TIME

CONTACT# CONTACT NAME

1 Mrs. Lozier

RETRY DELAY

30

<ETX>

### Typical Response Message, Computer Format:

<SOH>i5G7RRYYMMDDHHmmRRnnn...

RRnnn&&CCCC<ETX>

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. RR - Receiver Number (Decimal)
3. nnn - Retry Delay Time (001 to 099 minutes) (one additional byte for future use)
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 5G8

Version 1

Function Type: View Full Contact Info

### Command Format:

Display: <SOH>I5G8RR

Computer: <SOH>i5G8RR

### Typical Response Message, Display Format:

```
<SOH>
I5G8RR
JUL 26, 2007 1:36 PM

CONTACT NAME

CONTACT# 1
NAME Mrs. Lozier

MODEM NUMBER 123-4567
MODEM SETUP STRING
MODEM DEVICE COM1
MODEM NUM RETRIES 3
MODEM RETRY DELAY 5
MODEM IS HANGUP REQD YES

FAX NUMBER 123-4567
FAX SETUP STRING
FAX DEVICE COM1
FAX NUM RETRIES 3
FAX RETRY DELAY 5

SATELLITE CONNECT
SATELLITE DEVICE COM3
SATELLITE NUM RETRIES 5
SATELLITE RETRY DELAY 15
SATELLITE IS HANGUP REQD YES

TCP/IP ADDRESS veeder.com
TCP/IP PORT 10000
TCP/IP DEVICE COM5
TCP/IP NUM RETRIES 3
TCP/IP RETRY DELAY 30
TCP/IP IS HANGUP REQD NO

EMAIL ADDRESS johndoe@veeder.com
EMAIL SERVER smtp@somecompany.com
EMAIL SERVER PORT 25
EMAIL NUM RETRIES 3
EMAIL RETRY DELAY 60
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>i5G8RRYYMMDDHHmmRRnnAAAAAAAAA...GGggSSmmBBBBBBBBBB...nnDD...
RRnnAAAAAAAAA...&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. RR - Contact Identification Number (Decimal)
3. nn - Number of characters to follow
4. AAA.....AAA - Contact Name (Max. 30 ASCII characters [20h-7Eh])
5. GG - Number of Groups to follow
6. gg - Group ID
  - 01 = Modem
  - 02 = FAX
  - 03 = Satellite
  - 04 = TCP/IP
  - 05 = Email
  - 06 = SMS (future)

## Serial Interface Manual

### TLS4/TLS-450/TLS-450Plus Monitoring Systems

#### Function Code 5G8 Notes: (Continued)

- 7. SS - Number of Strings to follow
- 8. mm - Length of string
- 9. BBB.....BBB - String
  - if gg = 01 (Modem)
    - string 1 = Modem Number
    - string 2 = Modem Setup String
  - if gg = 02 (FAX)
    - string 1 = FAX Number
    - string 2 = FAX Setup String
  - if gg = 03 (Satellite)
    - string 1 = Satellite Connect
  - if gg = 04 (TCP/IP)
    - string 1 = TCP/IP Address
  - if gg = 05 (Email)
    - string 1 = Email Address
    - string 2 = Email Server
- 10. nn - Number of 2-digit decimal values to follow
- 11. DD - Decimal Value (ASCII)
  - if gg = 01 (Modem)
    - value 1 = Modem Device
    - value 2 = Modem Num Retries
    - value 3 = Modem Retry Delay (minutes)
    - value 4 = Modem Is Hangup Required (00=no,01=yes)
  - if gg = 02 (FAX)
    - value 1 = FAX Device
    - value 2 = FAX Num Retries
    - value 3 = FAX Retry Delay (minutes)
  - if gg = 03 (Satellite)
    - value 1 = Satellite Device
    - value 2 = Satellite Num Retries
    - value 3 = Satellite Retry Delay (minutes)
    - value 4 = Satellite Is Hangup Required (00=no,01=yes)
  - if gg = 04 ( ) TCP/IP
    - value 1 = TCP/IP Port
    - value 2 = TCP/IP Device
    - value 3 = TCP/IP Num Retries
    - value 4 = TCP/IP Retry Delay (minutes)
    - value 5 = TCP/IP Is Hangup Required (00=no,01=yes)
  - if gg = 05 (Email)
    - value 1 = Email Server Port
    - value 2 = Email Num Retries
    - value 3 = Email Retry Delay (minutes)
- 12. && - Data Termination Flag
- 13. CCCC - Message Checksum



# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 5H3

Version 1

**Function Type:** Set Contact FAX Modem Number

**Command Format:**

**Display:** <SOH>S5H3RRaaaaa.....aaaa

**Computer:** <SOH>s5H3RRaaaaa.....aaaa

**Inquire:**

<SOH>I5H3RR

<SOH>i5H3RR

**Typical Response Message, Display Format:**

<SOH>  
I5H3RR  
JUL 26, 2007 1:36 PM

CONTACT FAX NUMBER

CONTACT# CONTACT NAME

1 Mrs. Lozier

FAX NUMBER

458-5869

<ETX>

**Typical Response Message, Computer Format:**

<SOH>i5H3RRYYMMDDHHmmRRnnaaaaa.....aaaa ...  
RRnnaaaaa.....aaaa&&CCCC<ETX>

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. RR - Contact Identification Number (Decimal)
3. nn - Number of characters to follow
4. aaaa.....aaaa - FAX modem Number (Max. 40 ASCII characters [20h-7Eh])
5. && - Data Termination Flag
6. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 5H4

Version 1

**Function Type:** Set Contact FAX Dial-Out String

**Command Format:**

**Display:** <SOH>S5H4RRaaaaa.....aaaaa

**Computer:** <SOH>s5H4RRaaaaa.....aaaaa

**Inquire:**

<SOH>I5H4RR

<SOH>i5H4RR

### Typical Response Message, Display Format:

```
<SOH>
I5H4RR
JUL 26, 2007 1:36 PM

CONTACT FAX DIAL-OUT STRING

CONTACT# : 1
NAME : Mrs. Lozier
DIAL-OUT STRING : V1E0X4&C1&D02Q057-90

<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>i5H4RRYYMMDDHHRRnnaaaaa...aaaaa ...
 RRnnaaaaa...aaaaa &&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. RR - Contact Identification Number (Decimal)
3. nn - Number of characters to follow
4. aaaaa...aaaaa - FAX Dial-Out String (Max. 50 ASCII characters)
5. && - Data Termination Flag
6. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 5H5

Version 1

**Function Type:** Set Contact FAX Communication Device Number

**Command Format:**

**Display:** <SOH>S5H5RRDD

**Computer:** <SOH>s5H5RRDD

**Inquire:**

<SOH>I5H5RR

<SOH>i5H5RR

### Typical Response Message, Display Format:

<SOH>

I5H5RR

JUL 26, 2007 1:36 PM

CONTACT FAX COMMUNICATION DEVICE DETAILS

CONTACT# CONTACT NAME

COMM DEVICE

1 Mrs. Lozier

Co 1: Fax 1 Label

<ETX>

### Typical Response Message, Computer Format:

<SOH>i5H5RRYYMMDDHHRRDD...

RRDD&&CCCC<ETX>

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. RR - Contact Identification Number (Decimal)
3. DD - FAX Communication Device Number (00-99)
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 5H6  
**Function Type:** Set Contact FAX Retry Count

Version 1

**Command Format:**  
**Display:** <SOH>S5H6RRnn  
**Computer:** <SOH>s5H6RRnn

**Inquire:**  
<SOH>I5H6RR  
<SOH>i5H6RR

### Typical Response Message, Display Format:

```
<SOH>
I5H6RR
JUL 26, 2007 1:36 PM

CONTACT FAX RETRY COUNT

CONTACT# CONTACT NAME RETRY COUNT
 1 Mrs. Lozier 3
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>i5H6RRYYMMDDHHmmRRnn...
 RRnn&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. RR - Contact Identification Number (Decimal)
3. nn - FAX Retry Count (03 through 99)
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 5H7

Version 1

**Function Type:** Set Contact FAX Retry Delay Time

**Command Format:**

**Display:** <SOH>S5H7RRnnn

**Computer:** <SOH>s5H7RRnnn

**Inquire:**

<SOH>I5H7RR

<SOH>i5H7RR

### Typical Response Message, Display Format:

<SOH>  
I5H7RR  
JUL 29, 1997 9:06 AM  
  
CONTACT FAX RETRY DELAY TIME

CONTACT#	CONTACT NAME	RETRY DELAY
1	Mrs. Lozier	30

<ETX>

### Typical Response Message, Computer Format:

<SOH>i5H7RRYYMMDDHHmmRRnnn...  
RRnnn&&CCCC<ETX>

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. RR - Receiver Number (Decimal)
3. nnn - FAX Retry Delay Time (001 to 099 minutes) (one additional byte for future use)
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 5I3

Version 1

**Function Type:** Set Contact Remote TCP/IP Address

**Command Format:**

**Display:** <SOH>S5I3RRaaaaa.....aaaa

**Computer:** <SOH>s5I3RRaaaaa.....aaaa

**Inquire:**

<SOH>I5I3RR

<SOH>i5I3RR

### Typical Response Message, Display Format:

```
<SOH>
I5I3RR
JUL 26, 2007 1:36 PM

CONTACT REMOTE TCP/IP ADDRESS

CONTACT# CONTACT NAME REMOTE TCP/IP ADDRESS
 1 Mrs. Lozier remoteserver.gilbarco.com
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>i5I3RRYYMMDDHHmmRRnnaaaaa.....aaaa ...
RRnnaaaaa.....aaaa&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. RR - Contact Identification Number (Decimal)
3. nn - Number of characters to follow
4. aaaa.....aaaa - Remote TCP/IP Address (Max. 40 ASCII characters)
5. && - Data Termination Flag
6. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 5I4

Version 1

**Function Type:** Set Contact Remote TCP/IP Port Number

**Command Format:**

**Display:** <SOH>S5I4RRpppppp

**Computer:** <SOH>s5I4RRpppppp

**Inquire:**

<SOH>I5I4RR

<SOH>i5I4RR

### Typical Response Message, Display Format:

<SOH>

I5I4RR

JUL 26, 2007 1:36 PM

CONTACT REMOTE TCP/IP PORT NUMBER

CONTACT# CONTACT NAME

REMOTE TCP/IP PORT

1 Mrs. Lozier

10001

<ETX>

### Typical Response Message, Computer Format:

<SOH>i5I4RRYYMMDDHHRRppppppRRpppppp.....

RRpppppp&&CCCC<ETX>

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. RR - Contact Identification Number (Decimal)
3. ppppp - Remote TCP/IP Port Number(00000-65535)
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 5I5

Version 1

**Function Type:** Set Contact Local TCP/IP Communication Device Number

**Command Format:**

**Display:** <SOH>S5I5RRDD

**Computer:** <SOH>s5I5RRDD

**Inquire:**

<SOH>I5I5RR

<SOH>i5I5RR

### Typical Response Message, Display Format:

```
<SOH>
I5I5RR
JUL 26, 2007 1:36 PM

CONTACT LOCAL TCP/IP COMMUNICATION DEVICE

CONTACT# CONTACT NAME LOCAL TCP/IP DEVICE
 1 Mrs. Lozier TCP-IP_DEV 1
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>i5I5RRYYMMDDHHRRDD...
 RRDD&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. RR - Contact Identification Number (Decimal)
3. DD - TCP/IP Comm Device Number (00-99??)
4. && - Data Termination Flag
5. CCCC - Message Checksum



# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 5I6

Version 1

**Function Type:** Set Contact TCP/IP Retry Count

**Command Format:**

**Display:** <SOH>S5I6RRnn

**Computer:** <SOH>s5I6RRnn

**Inquire:**

<SOH>I5I6RR

<SOH>i5I6RR

### Typical Response Message, Display Format:

```
<SOH>
I5I6RR
JUL 26, 2007 1:36 PM

CONTACT TCP/IP RETRY COUNT
```

CONTACT#	CONTACT NAME	RETRY COUNT
1	Mrs. Lozier	3

<ETX>

### Typical Response Message, Computer Format:

```
<SOH>i5I6RRYYMMDDHHmmRRnn...
RRnn&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. RR - Contact Identification Number (Decimal)
3. nn - TCP/IP Retry Count (03 through 99)
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 5I7

Version 1

**Function Type:** Set Contact TCP/IP Retry Delay Time

**Command Format:**

**Display:** <SOH>S5I7RRnnn

**Computer:** <SOH>s5I7RRnnn

**Inquire:**

<SOH>I5I7RR

<SOH>i5I7RR

### Typical Response Message, Display Format:

```
<SOH>
I5I7RR
JUL 29, 1997 9:06 AM

CONTACT TCP/IP RETRY DELAY TIME

CONTACT# CONTACT NAME RETRY DELAY
 1 Mrs. Lozier 30
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>i5I7RRYYMMDDHHmmRRnnn...
 RRnnn&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. RR - Receiver Number (Decimal)
3. nnn - TCP/IP Retry Delay Time (001 to 099 minutes; (one additional byte for future use)
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 5J4

Version 1

**Function Type:** Set Contact Satellite Connection String

**Command Format:**

**Display:** <SOH>S5J4RRaaa.....aaa

**Computer:** <SOH>s5J4RRaaa.....aaa

**Inquire:**

<SOH>I5J4RR

<SOH>i5J4RR

### Typical Response Message, Display Format:

<SOH>

I5J4RR

JUL 26, 2007 1:36 PM

CONTACT SATELLITE CONNECTION STRING

CONTACT# CONTACT NAME

CONNECTION STRING

1 Mrs. Lozier

x258JB87

<ETX>

### Typical Response Message, Computer Format:

<SOH>i5J4RRYYMMDDHRRnnaaa...aaa ...  
RRnnaaa...aaa&&CCCC<ETX>

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. RR - Contact Identification Number (Decimal)
3. nn - Number of characters to follow
4. aaa...aaa - Remote Satellite Connection String (Max. 30 ASCII characters)
5. && - Data Termination Flag
6. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 5J5

Version 1

**Function Type:** Set Contact Satellite Communication Device Number

**Command Format:**

**Display:** <SOH>S5J5RRDD

**Computer:** <SOH>s5J5RRDD

**Inquire:**

<SOH>I5J5RR

<SOH>i5J5RR

### Typical Response Message, Display Format:

```
<SOH>
I5J5RR
JUL 26, 2007 1:36 PM

CONTACT SATELLITE COMMUNICATION DEVICE

CONTACT# CONTACT NAME COMM DEVICE
 1 Mrs. Lozier CO 4 : Satellite 1 Label
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>i5J5RRYYMMDDHHRRDD...
 RRDD&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. RR - Contact Identification Number (Decimal)
3. DD - FAX Communication Device Number(00-99)
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 5J6

Version 1

**Function Type:** Set Contact Satellite Mode Retry Count

**Command Format:**

**Display:** <SOH>S5J6RRnn

**Computer:** <SOH>s5J6RRnn

**Inquire:**

<SOH>I5J6RR

<SOH>i5J6RR

### Typical Response Message, Display Format:

<SOH>

I5J6RR

JUL 26, 2007 1:36 PM

CONTACT SATELLITE MODE RETRY COUNT

CONTACT# CONTACT NAME

RETRY COUNT

1 Mrs. Lozier

3

<ETX>

### Typical Response Message, Computer Format:

<SOH>i5J6RRYYMMDDHHmmRRnn...

RRnn&&CCCC<ETX>

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. RR - Contact Identification Number (Decimal)
3. nn - TCP/IP Retry Count (03 through 99)
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 5J7

Version 1

**Function Type:** Set Contact Satellite Retry Delay Time

**Command Format:**

**Display:** <SOH>S5J7RRnnn

**Computer:** <SOH>s5J7RRnnn

**Inquire:**

<SOH>I5J7RR

<SOH>i5J7RR

### Typical Response Message, Display Format:

<SOH>

I5J7RR

JUL 26, 2007 1:36 PM

CONTACT SATELLITE RETRY DELAY TIME

CONTACT# CONTACT NAME

RETRY DELAY

1 Mrs. Lozier

30

<ETX>

### Typical Response Message, Computer Format:

<SOH>i5J7RRYYMMDDHHmmRRnnn...

RRnnn&&CCCC<ETX>

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. RR - Receiver Number (Decimal)
3. nnn - Satellite Retry Delay Time (001 to 099 minutes) (one additional byte for future use)
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 5K3

Version 1

**Function Type:** Set Contact E-Mail Address

**Command Format:**

**Display:** <SOH>S5K3RRaaaaa.....aaaaa

**Computer:** <SOH>s5K3RRaaaaa.....aaaaa

**Inquire:**

<SOH>I5K3RR

<SOH>i5K3RR

### Typical Response Message, Display Format:

<SOH>  
I5K3RR  
JUL 26, 2007 1:36 PM

CONTACT E-MAIL ADDRESS

CONTACT# : 1  
CONTACT NAME : John Doe  
E-MAIL ADDRESS : johndoe@veeder.com  
<ETX>

### Typical Response Message, Computer Format:

<SOH>i5K3RRYYMMDDHHmmRRnnaaaaa.....aaaaa ...  
RRnnaaaaa.....aaaaa&&CCCC<ETX>

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. RR - Contact Identification Number (Decimal)
3. nn - Number of characters to follow
- 4.aaaaa.....aaaaa - Contact E-Mail Address (Max. 50 ASCII characters)
5. && - Data Termination Flag
6. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 5K6

Version 1

**Function Type:** Set Contact E-Mail Mode Retry Count

**Command Format:**

**Display:** <SOH>S5K6RRnn

**Computer:** <SOH>s5K6RRnn

**Inquire:**

<SOH>I5K6RR

<SOH>i5K6RR

### Typical Response Message, Display Format:

```
<SOH>
I5K6RR
JUL 26, 2007 1:36 PM

CONTACT E-MAIL MODE RETRY COUNT

CONTACT# CONTACT NAME RETRY COUNT
 1 Mr. John Doe 3
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>i5K6RRYYMMDDHHmmRRnn...
 RRnn&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. RR - Contact Identification Number (Decimal)
3. nn - E-Mail Retry Count (03 through 99)
4. && - Data Termination Flag
5. CCCC - Message Checksum



# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 5K7

Version 1

**Function Type:** Set Contact E-Mail Retry Delay Time

**Command Format:**

**Display:** <SOH>S5K7RRnnn

**Computer:** <SOH>s5K7RRnnn

**Inquire:**

<SOH>I5K7RR

<SOH>i5K7RR

### Typical Response Message, Display Format:

<SOH>

I5K7RR

JUL 26, 2007 1:36 PM

CONTACT E-MAIL RETRY DELAY TIME

CONTACT# CONTACT NAME

RETRY DELAY

1 Mrs. Lozier

30

<ETX>

### Typical Response Message, Computer Format:

<SOH>i5K7RRYYMMDDHHmmRRnnn...

RRnnn&&CCCC<ETX>

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. RR - Receiver Number (Decimal)
3. nnn - E-Mail Retry Delay Time (001 to 099 minutes) (one additional byte for future use)
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 5M1  
**Function Type:** Set Enter/Exit Setup Mode

Version 7

**Command Format:**  
**Display:** <SOH>S5M100Fmm  
**Computer:** <SOH>s5M100Fmm

**Inquire:**  
<SOH>I5M100  
<SOH>i5M100

### Typical Response Message, Display Format:

<SOH>  
I5M100  
JUL 26, 2016 1:36 PM

STATION HEADER 1....  
STATION HEADER 2....  
STATION HEADER 3....  
STATION HEADER 4....

SETUP MODE ON  
REMAINING MINUTES 11  
<ETX>

### Typical Response Message, Computer Format:

<SOH>i5M100YYMMDDHHmmFmm&&CCCC<ETX>

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. F - Setup Mode Flag  
1=Enter Setup Mode  
2=Exit Setup Mode
3. mm - Timer Minutes (01-60, default=00)
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

### 7.3.5. AUTOMATIC EVENTS SETUP

**Function Code:** 5P1

Version 1

**Function Type:** Add/Delete AutoEvent

**Command Format:**

**Display:** <SOH>S5P100IIIICTA (C=1)  
<SOH>S5P100IIIIIC (C=3,9)

**Inquire:**  
<SOH>I5P100IIII

**Computer:**<SOH>s5P100IIIICTA (C=1)  
<SOH>s5P100IIIIIC (C=3,9)

<SOH>i5P100IIII

**Notes:**

1. II II - AutoEventID  
For Inquire, 0000 means "all"  
For Add, only 0000 is valid  
For Delete and Edit, only 0001-9999 is valid  
For DeleteAll, 0000 should be used
2. C - Command (decimal)  
1=Add  
2=Edit  
3=Delete  
9=DeleteAll
3. T - Trigger Type  
0=Trigger Not Set  
1=Trigger on Time  
2=Trigger on Event
4. A - Action Type  
0=Action Not Set  
1=Action on Device  
2=Action Print Report  
3=Action Auto Connect

**Typical Response Message, Display Format:**

<SOH>  
I5P100  
JUL 26, 2007 1:36 PM

AUTOMATIC EVENTS - ALL TASKS REPORT

```

EVENT-ID - 0001
EVENT - Day Close
REPORT - BIR Daily Report
CONTACT - FMS
CON. MODE - FAX - Co 1 : Modem 1 Label

EVENT-ID - 0002
EVENT - Delivery End: T 1: REGULAR, T 2: UNLEADED
REPORT - Delivery Report
DEVICE - Front Desk Printer

EVENT-ID - 0003
TIME - Weekly, Monday, 6:00 AM
REPORT - Inventory Report
CONTACT - Mrs. Lozier
CON. MODE - FAX - Co 1 : Modem 1 Label

EVENT-ID - 0004
EVENT - Gross Test Fail Alarm: T 1: REGULAR, T 2: UNLEADED
EVENT - Sudden Loss Alarm: T 1: REGULAR, T 2: UNLEADED, T3: DIESEL
ACTION -
DEVICE - R 1: Relay 1 Sump

```

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

### Function Code 5P1: (Continued)

```

EVENT-ID - 0005
EVENT - Gross Test Fail Alarm: T 1: REGULAR, T 2: UNLEADED

EVENT - Sudden Loss Alarm: T 1: REGULAR, T 2: UNLEADED, T3: DIESEL
REPORT - Alarm History Report, Tank Leak History Report
CONTACT - FMS, Sheetz Maintenance
CON. MODE - FAX - Co 1 : Modem 1 Label

EVENT-ID - 0006
EVENT - Gross Test Fail Alarm: T 1: REGULAR, T 2: UNLEADED
EVENT - Sudden Loss Alarm: T 1: REGULAR, T 2: UNLEADED, T3: DIESEL
ACTION - Auto Connect
CONTACT - Sheetz Mgmt.
CON. MODE - Computer - Co 3 : TCP/IP 1 Label

<ETX>

```

### Typical Response Message, Computer Format:

```

<SOH>i5P100YYMMDDHHmmIIIIIT (if T=0)
<SOH>i5P100YYMMDDHHmmIIIIITttnnMMWWwwDDhhmmss (if T=1)
<SOH>i5P100YYMMDDHHmmIIIIITGGTTEAANNnnDD... (if T=2 and E=0)
 nnDD... (if T=2 and E=1)
 OOnnDD... (if T=2 and E=2)

 A<ETX> (if A=0)
 ALLDD&&CCCC<ETX> (if A=1)
 APPnnRRR...&&CCCC<ETX> (if A=2)
 AWWnnRRR...nnCC...&&CCCC<ETX> (if A=3)

```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. II II - AutoEventID  
For Inquire, 0000 means "all".  
For Add only 0000 is valid.  
For Delete, only 0001-9999 is valid.  
For DeleteAll, 0000 should be used.
3. T - Trigger Type  
0=Trigger Not Set  
1=Trigger on Time  
2=Trigger on Event  
3=Trigger AutoXmit
4. A - Action Type  
0=Action Not Set  
1=Action on Device  
2=Action Print Report  
3=Action Auto Connect  
4=Action AutoXmit
5. tt - Task Period (see command 5P3)
6. nn - Number of 2-digit entries to follow  
See explanation for "nn" in function i5P300
7. MM - Month (see command 5P3)
8. WW - Occurrence of day-of-week in month (see command 5P3)
9. ww - Day of Week (see command 5P3)
10. DD - Day of Month (see command 5P3)
11. hh - Hour of day (see command 5P3)
12. mm - Minute of hour (see command 5P3)
13. GG - Number of Triggers to follow (see command 5P4)
14. TT - Trigger Number (see command 5P4)
15. E - Trigger Event Group (see command 5P4)
16. AA - Alarm/Warning Category: (see command 5P4)

### Function Code 5P1 Notes: (Continued)

## Serial Interface Manual

### TLS4/TLS-450/TLS-450Plus Monitoring Systems

17.	NN -	Alarm Type Number:	(see command 5P4)
18.	OO -	Notification Type	(see command 5P4)
19.	nn -	Number of Devices to follow	(see command 5P4)
20.	DD -	Device Number	(see command 5P4)
21.	LL -	Action Device Type	
		See explanation for "AA" in Function i5P500	
22.	PP -	Printer Device Number	(see command 5P6)
23.	nn -	Number of Reports to follow	(see command 5P6)
24.	RRR -	Report Type ID	(see command 5P6)
25.	WW -	Connection Mode	(see command 5P7)
26.	nn -	Number of Reports to follow	(see command 5P7)
27.	RRR -	Report Type ID	(see command 5P7)
28.	nn -	Number of Contacts to follow	(see command 5P7)
29.	CC -	Contact ID	
30.	&& -	Data Termination Flag	
31.	CCCC -	Message Checksum	

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 5P2

Version 1

**Function Type:** Get Number of Auto Events

**Command Format:**

**Display:** <SOH>I5P200

**Computer:** <SOH>i5P200

### Typical Response Message, Display Format:

```
<SOH>
I5P200
JUL 26, 2007 1:36 PM

AUTOMATIC EVENTS - NUMBER OF AUTO EVENTS REPORT

Number of Automatic Events = 1234
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>i5P200NNNN
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. NNNN - Number of Auto Events
3. && - Data Termination Flag
4. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 5P3

Version 1

**Function Type:** Set Auto Event Trigger: Time Based

**Command Format:**

**Display:** <SOH>S5P300IIIIITnnMMWWwwDDhhmmss

**Computer:** <SOH>s5P300IIIIITnnMMWWwwDDhhmmss

**Inquire:**

<SOH>I5P300IIII

<SOH>i5P300IIII

### Typical Response Message, Display Format:

```
<SOH>
I5P3RR
JUL 26, 2007 1:36 PM

AUTOMATIC EVENTS - TIME BASED TRIGGER REPORT

EVENT-ID - 0001
TIME - Weekly, Monday, 6:00 AM
REPORT - Inventory Report
DEVICE - Front Desk Printer

<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>i5P300YYMMDDHHmmIIIIITnnMMWWwwDDhhmmss&&CCCC
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. IIII - AutoEventID  
See explanation for "IIII" in Function i5P1PP .
3. TT - Task Period
  - 02 - Annually by Day of Month, once per year, on given month + day + hour + minute (Jan 31, 12:00 PM)
  - 03 - Annually by Day of Week, once per year, on given month + occurrence of day in month + day of week + hour + minute (Jan, 1<sup>st</sup> Monday, 12:00 PM)
  - 04 - Monthly by Day of Month, once per month, on given day + hour + minute (15<sup>th</sup> Day of Month, at 12:00 PM)
  - 05 - Monthly by Day of Week, once per month, on given occurrence of day in month + day of week + hour + minute (2<sup>nd</sup> Sunday of every Month, 12:00 PM)
  - 06 - Weekly, once per week, on given day of week + hour + minute (Sunday, 12:00 PM)
  - 07 - Daily, once per day, on given hour + minute (12:00 PM)
  - 08 - Interval: once per period specified in HH:MM:SS (Interval must be 2 minutes or longer)
4. nn - Number of 2-digit entries to follow.  
Note - For 450: Version 1, this value is fixed to 7 (i.e. nn=07). This entry is added for supporting any future enhancements. E.g. for "on time" based tasks, command needs to includes "year" entry.
5. MM - Month (01-12; 01-Jan, 12-Dec; if Task Period choice is Annually by Day of Month [TT=02], Annually by Day of Week [TT=03])  
Note: Set this value to "01" when TT=01,05,06, 07 or 08

## Serial Interface Manual

### TLS4/TLS-450/TLS-450Plus Monitoring Systems

#### Function Code 5P3 Notes: (Continued)

- 6.           WW - Occurrence of day-of-week in month, (01-05, if Task Period choice is Annually by Day of Week [TT=03], Monthly by Day of Week [TT=05])
  - a. 5 = Last occurrence
  - b. Example: WW=3, ww=02 means third Tuesday in month
- 7.           ww - Day of Week (00-06, 00-Sunday, 06-Saturday; Weekly, if Task Period choice is Annually by Day of Week [TT=03], Monthly by Day of Week [TT=05])
  - 00-Sunday
  - 01-Monday
  - 02-Tuesday
  - 03-Wednesday
  - 04-Thursday
  - 05-Friday
  - 06-Saturday

Note: Set this value to "00" when TT=01,02,04, 06, 07 or 08
- 8.           DD - Day of Month (01-31, depends on month, if Period choice is Annually by Day of Month [TT=02], Monthly by Day of Month [TT=04])

Note: Set this value to "01" when TT=01,05,06, 07 or 08
- 9.           hh - Hour of day (00-23)
- 10.          mm - Minute of hour (00-59)
- 11.          ss - Second of Minute (00-59)
- 12.          && - Data Termination Flag
- 13.          CCCC - Message Checksum



# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 5P4

Version 1

**Function Type:** Set Auto Event Trigger: Event Based

### Command Format:

**Display:** <SOH>S5P400IIIICTTEAANNnnDD...<CR> (if E=0) <SOH>I5P400IIII  
VVnnDD...<CR> (if E=1)  
OOnnDD...<CR> (if E=2)

### Inquire:

**Computer:** <SOH>s5P400IIIICTTEAANNnnDD...<CR> (if E=0) <SOH>i5P400IIII  
VVnnDD...<CR> (if E=1)  
OOnnDD...<CR> (if E=2)

### Typical Response Message, Display Format:

```
<SOH>
I5P400
JUL 26, 2007 1:36 PM

AUTOMATIC EVENTS - EVENT BASED TRIGGER REPORT

EVENT-ID - 0006
EVENT - Gross Test Fail Alarm: T 1: REGULAR, T 2: UNLEADED
EVENT - Sudden Loss Alarm: T 1: REGULAR, T 2: UNLEADED, T3: DIESEL
ACTION - Auto Connect
CONTACT - Sheetz Mgmt.
CON. MODE - Computer - Co 3 : TCP/IP 1 Label

<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>i5P400YYMMDDHHmmIIIIIGGTTEAANNnnDD...&&CCCC<ETX> (if E=0)
 VVnnDD...&&CCCC<ETX> (if E=1)
 OOnnDD...&&CCCC<ETX> (if E=2)
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. IIII - AutoEventID  
See explanation for "IIII" in Function i5P1PP
3. C - Command (decimal)  
1=Add  
2=Change  
3=Delete  
9=Delete All
4. GG - Number of Triggers to follow (This field is used in computer format response message only.)
5. TT - Trigger Number  
00 = for Add and Delete All  
01-99 = for Change and Delete
6. E - Trigger Event Group  
0-Alarms  
1-External Inputs  
2-Notifications
7. AA - Alarm/Warning Category: (Valid only when E=0 [Alarms])  
See explanation for "AA" in Function i10100
8. NN - Alarm Type Number: (Valid only when E=0 [Alarms])  
See explanation for "NN" in Function i10100
9. nn - Number of Devices to follow
10. DD - Device Number (all devices uses NN=01 DD=00)
11. VV - External Input eVent  
01=Input Normal  
02=Input Off  
03=Generator On  
04=Generator Off

## Serial Interface Manual

### TLS4/TLS-450/TLS-450Plus Monitoring Systems

#### Function Code 5P4 Notes: (Continued)

- 12.                   OO - Notification Type (Valid only when E=2)
  - 01=Delivery Start
  - 02=Delivery Complete
  - 03=BIR Daily Close
  - 04=Inventory Shift Close
  - 05=BOL Pending (not in V1 or V2)
  - 06=SLD Test Start
  - 07=SLD Test Complete
  - 08=CSLD Test Complete
  - 09=PLLD Test Start (obsolete)
  - 10=PLLD Test Complete
  - 11=Fuel Level Set Point (not in V1 or V2)
  - 12=Tank Test Shutdown (not in V1 or V2)
  - 13=BIR Monthly Close
  - 14=Delivery Ticket Entered
  - 15=BIR Shift Close
  - 16=Startup (not in V1 or V2)
  - 17=Accuchart Calibration Complete
  - 18=Accuchart New Chart Applied
  - 19=Accuchart Calibration Error
- 13.                   && - Data Termination Flag
- 14.                   CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 5P5

Version 1

**Function Type:** Set Auto Event Action: Device Task

**Command Format:**

**Display:** <SOH>S5P500IIIIAADD

**Computer:** <SOH>s5P500IIIIAADD

**Inquire:**

<SOH>I5P500IIII

<SOH>i5P500IIII

**Typical Response Message, Display Format:**

```
<SOH>
I5P500
JUL 26, 2007 1:36 PM

AUTOMATIC EVENTS - DEVICE TASKS REPORT

EVENT-ID - 0004
EVENT - Gross Test Fail Alarm: T 1: REGULAR, T 2: UNLEADED
EVENT - Sudden Loss Alarm: T 1: REGULAR, T 2: UNLEADED, T3: DIESEL
ACTION -
DEVICE - R 1: Relay 1 Sump

<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i5P500YYMMDDHHmmIIIIAADD&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. II II - AutoEventID  
See explanation for "II II" in Function i5P100
3. AA - Alarm/Warning Category:  
See explanation for "AA" in Function i10100

Note: Relay [AA=11], Line [AA=66] & Pump [AA=65] are the only valid choices for "AA" entry. Also, 'Device Task' actions should always be configured with "Event Based" (using 5P4) triggers only. "Time Based" trigger (5P3) is not valid for "Device Task".

4. DD - Device Number (DD=00 is invalid)

Note: Auto Events will not handle pump control relays. Hence, Pump Control Output relay types can not be assigned for device tasks.

5. && - Data Termination Flag
6. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 5P6

Version 1

**Function Type:** Set Auto Event Action: Print Task

**Command Format:**

**Display:** <SOH>S5P600IIIIIPPnnRRR...

**Computer:** <SOH>s5P600IIIIIPPnnRRR...

**Inquire:**

<SOH>I5P600IIII

<SOH>i5P600IIII

**Typical Response Message, Display Format:**

<SOH>  
I5P600  
JUL 26, 2007 1:36 PM

AUTOMATIC EVENTS - PRINT TASKS REPORT

-----  
EVENT-ID - 0002  
EVENT - Delivery End: T 1: REGULAR, T 2: UNLEADED  
REPORT - Delivery Report  
DEVICE - Front Desk Printer  
-----  
<ETX>

**Typical Response Message, Computer Format:**

<SOH>i5P600YYMMDDHHmmIIIIIPPnnRRR...&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. IIII - AutoEventID  
See explanation for "IIII" in Function i5P100
3. PP - Printer Device Number (00 if not set - inquire only)  
Note: In Release 1 & 2, for Set command, this value  
should always be set be to "01"
4. nn - Number of Reports to follow

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

### Function Code 5P6 Notes: (Continued)

5. RRR - Report Type ID
  - 001 - Current Inventory Report
  - 002 - Inventory History Report
  - 003 - Shift Inventory Report
  - 004 - Delivery Report (for FAX/EMAIL only)
  - 005 - Most Recent Delivery Report
  - 006 - Combined Tank Test Results (for FAX/EMAIL only)
  - 007 - SLD Last Test Results
  - 008 - CSLD Monthly Report
  - 009 - CSLD Daily Test Results
  - 010 - CSLD State Change Results (for Print only)
  - 011 - PLLD Passed Test Results (for FAX/EMAIL only)
  - 012 - PLLD Passed Test History (for FAX/EMAIL only)
  - 013 - PLLD Last Test Results
  - 014 - Liquid Sensor Status Report
  - 015 - Vapor Sensor Status Report
  - 016 - Type A (2 Wire CL) Sensor Status Report
  - 017 - Type B (3 Wire CL) Sensor Status Report
  - 018 - Ground Water Sensor Status Report
  - 019 - MAG Sensor Status Report
  - 020 - Tank Status Report
  - 021 - Tank Alarm History Report
  - 022 - Active Alarm Report (for FAX/EMAIL only)
  - 023 - Combined Alarm History report (for FAX/EMAIL only)
  - 024 - Priority Alarm History Report (for FAX/EMAIL only)
  - 025 - Non-Priority Alarm History Report (FAX/EMAIL only)
  - 026 - Last Alarm Post Report (for Print only)
  - 027 - Sensor Status Report
  - 028 - Sensor Status History Report (for FAX/EMAIL only)
  - 029 - BIR Daily Report
  - 030 - BIR Previous Week Report
  - 031 - BIR Previous Month Report
  - 032 - BIR Periodic Report
  - 033 - Unused
  - 034 - Unused
  - 035 - AccuChart Anomaly Report
  - 036 - AccuChart Delivery Instructions
  - 037 - AccuChart Completion Status
  - 038 - AccuChart Event Log
  - 039 - Ticketed Delivery Report
  - 040 - Adjusted Delivery Report
  - 041 - BIR Last Shift Report
  - 042 - BIR Last Day Shift Report
  - 043 - BIR Current Week Report
  - 044 - BIR Current Month Report
  - 045 - BIR Daily Book Variance Report
  - 046 - BIR Previous Week Book Variance Report
  - 047 - BIR Previous Month Book Variance Report
  - 048 - BIR Periodic Book Variance Report
  - 049 - BIR Current Week Book Variance Report
  - 050 - BIR Current Month Book Variance Report
  - 051 - HRM Adjusted Delivery Report
  - 052 - HRM Diagnostic Report
  - 053 - HRM Daily History Report
  - 054 - HRM Daily History Report
  - 060 - Sensor History By Period Report
6. && - Data Termination Flag
7. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 5P7

Version 1

**Function Type:** Set Auto Event Action: Auto Connect Task  
(FAX/E-MAIL/COMPUTER)

**Command Format:**

**Display:** <SOH>S5P700IIIIWnnRRR...NNCC...

**Computer:** <SOH>s5P700IIIIWnnRRR...NNCC...

**Inquire:**

<SOH>I5P700IIII

<SOH>i5P700IIII

### Typical Response Message, Display Format:

```
<SOH>
I5P700
JUL 26, 2007 1:36 PM

AUTOMATIC EVENTS - AUTO CONNECT TASKS REPORT
```

```

EVENT-ID - 0006
EVENT - Gross Test Fail Alarm: T 1: REGULAR, T 2: UNLEADED
EVENT - Sudden Loss Alarm: T 1: REGULAR, T 2: UNLEADED, T3: DIESEL
ACTION - Auto Connect
CONTACT - Sheetz Mgmt.
CON. MODE - Computer - Co 3 : TCP/IP 1 Label

<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>i5P700YYMMDDHHmmIIIIWnnRRR...NNCC...&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. IIII - Auto Event-ID  
See explanation for "IIII" in Function i5P100
3. WW - Connection Mode  
00 = Not Set (Inquire Only)  
01 = Modem (Computer mode connection)  
02 = FAX  
03 = Satellite (Computer mode connection)  
04 = TCP/IP (Computer mode connection)  
05 = Email
4. nn - Number of Reports to follow  
For computer mode connections; "nn" should be "00"  
i.e. for WW = 01, 04
5. RRR - Report Type ID:  
See explanation for "RRR" in Function i5P600  
Note: RRR is valid only for non-computer mode connections  
(FAX[WW=02] / Email[WW=05] / Satellite[WW=03] / SMS [WW=06])
6. NN - Number of Contacts to follow  
Note: For TLS-450 Release 1, this is always 00 or 01.
7. CC - Contact ID
8. && - Data Termination Flag
9. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 5Q1

Version 1

Function Type: Automatic Events: Task Log

### Command Format:

**Display:** <SOH>I5Q100IIIIAARRRCCTTMMSSnnn (when MM= 00,01,02 or 03)  
<SOH>I5Q100IIIIAARRRCCTTMMLLDDSSnnn (when MM=04)  
<SOH>I5Q100IIIIAARRRCCTTMMPPSSnnn (when MM=05)  
<SOH>I5Q100IIIIAARRRCCTTMMWWSSnnn (when MM=06)

**Computer:** <SOH>i5Q100IIIIAARRRCCTTMMSSnnn

### Command Notes:

**Note:** All parameters mentioned below are optional following the rules below.

1.           IIII - AutoEventID  
                    0000 - Task Log for All Auto Events based on the  
                                parameters specified below  
                    0001-9999 - Task Log for Specific Auto Event
2.           AA - Report / Action Type  
                    00 - All Reports and Actions  
                    01 - All Reports  
                    02 - All Actions  
                    03 - Specific Report  
                    Note: This should be set to "00" when IIII is 0001-9999
3.           RRR - Report type ID (Always set to "000" when AA != 03)  
                    See explanation for "RRR" in Function i5P600
4.           CC - Contact (If no Contact Type is given, it assumes the  
                    request is for "All Contacts")  
                    00 - All Contacts  
                    XX - Specific Contact ID  
                    See explanation for "RR" in i5G1RR  
                    Note: This should be set to "00" when IIII is 0001-9999
5.           TT - Select Time Interval (If no Select Time Interval is  
                    given, it assumes the time interval request as  
                    "Unrestricted")  
                    00 - Unrestricted  
                    01 - Current Day  
                    02 - Current Week  
                    03 - Current Month  
                    04 - Current Year
6.           MM - Device Connection Mode (If this entry is not given, then  
                    it assumes the request is for "All Device Connection  
                    Modes")  
                    00 - All Devices And Connection Modes  
                    01 - All Devices  
                    02 - All Printers  
                    03 - All Connection Modes  
                    04 - Specific Device  
                    05 - Specific Printer  
                    06 - Specific Connection Mode  
                    Note: This should be set to "00" when IIII is 0001-9999
7.           LL - Action Device Type (when MM=04 i.e. Specific Device)  
                    See explanation for "AA" in Function i5P500
8.           DD - Action Device Number  
                    Set DD=00 for all devices uses of above device type (LL)
9.           PP - Printer Device Number (when MM=05 i.e. Specific Printer)  
                    See explanation for "PP" in Function i5P600

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

### Function Code 5Q1 Notes: (Continued)

- 10.           WW - Connection Mode (when MM=06 i.e. Specific Connection Mode)
  - 01 = Modem (Computer mode connection)
  - 02 = FAX
  - 03 = Satellite (Computer mode connection)
  - 04 = TCP/IP (Computer mode connection)
  - 05 = Email
- 11.           SS - Status (If no Status is given, it assumes request is for "Any Status")
  - 00 - Any Status
  - 01 - Successful
  - 02 - Pending
  - 03 - Failed
- 12.           nnn - Maximum Records - 001 - 999 (Absolute Maximum) (Decimal).  
 (If no Maximum Records is given or it's zeroes, it assumes request is for records matching above criteria and limited by the Maximum Records Default of 100)

### Typical Response Message, Display Format:

```
<SOH>
I5Q100
SEP 2, 2008 1:36 PM
```

#### Automatic Events - Tasks Log Report

```

EVENT TIME - 9/12/05 4:32 PM
EVENT ID - 3
REPORT - BIR Daily Report
CONTACT - FMS
LAST TIME ATTEMPTED - 9/12/05 4:37 PM
ATTEMPTS - 1
CON. MODE - FAX - Co 1: Modem 1 Label
STATUS - Success
MESSAGE - Successfully Sent

EVENT TIME - 8/10/05 7:11 AM
EVENT ID - 1
REPORT - Delivery Report
LAST TIME ATTEMPTED - 8/10/05 7:16 AM
ATTEMPTS - 3
DEVICE - Front Desk Printer
STATUS - Failed
MESSAGE - Printer not Responding

EVENT TIME - 7/12/05 4:32 PM
EVENT ID - 3
REPORT - BIR Daily Report
CONTACT - FMS
LAST TIME ATTEMPTED - 7/12/05 4:37 PM
ATTEMPTS - 1
CON. MODE - FAX - Co 1: Modem 1 Label
STATUS - Success
MESSAGE - Successfully Sent

```



# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

### Function Code 5Q1: (Continued)

```

EVENT TIME - 4/15/05 1:23 PM
EVENT ID - 5
ACTION -
LAST TIME ATTEMPTED - 4/15/05 1:28 PM
RETRIES - 5
DEVICE - R 1:Relay Tank 1 Sump
STATUS - Success
MESSAGE - Shutdown Signal Sent

EVENT TIME - 2/24/05 2:38 PM
EVENT ID - 2
ACTION - Auto Connect
CONTACT - Sheetz Mgmt.
LAST TIME ATTEMPTED - 2/24/05 2:58 PM
ATTEMPTS - 7
CON. MODE - Computer - Co 2: Modem 2 Label
STATUS - Pending
MESSAGE - Modem Busy

EVENT TIME - 2/23/05 9:00 AM
EVENT ID - 4
REPORT - Inventory Report
CONTACT - Mrs. Lozier
LAST TIME ATTEMPTED - 2/23/05 11:00 AM
ATTEMPTS - 4
CON. MODE - FAX - Co 1: Modem 1 Label
STATUS - Pending
MESSAGE - Connection Dropped

<ETX>

```

Typical Response Message, Computer Format:

```

<SOH>i5Q100YYMMDDHHmmNNNYYMMDDHHmmIIIIITADDVVnnRRR...MMCCOOYYMMDDHHmmSSEE...
 YYMMDDHHmmIIIIITADDVVnnRRR...MMCCOOYYMMDDHHmmSSEE
 &&CCCC<ETX>

```

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. NN - Number of Task Log Records to follow
3. YYMMDDHHmm - Event Date and Time
4. IIII - Auto Event ID  
See explanation for "IIII" in Function i5P100
5. T - Trigger Type  
See explanation for "T" in Function i5P100
6. A - Action Type  
See explanation for "A" in function i5P100
7. DD - Action Device Type
  - 1) DD=11 when action is on Relay Device (A=1)
  - 2) DD=65 when action is on Pump Device (A=1)
  - 3) DD=66 when action is on Line Device (A=1)
  - 3) DD=64 when action is on Printer Device (A=2)
  - 4) DD=73 when action is Auto Connect Action (A=3)  
(FAX/Email/Modem/TCPIP/Satellite)
8. VV - Action Device ID  
See explanation for "TT" in function i10100  
Note: VV=00 when MM=05 (Email)
9. nn - Number of Reports to follow

## Serial Interface Manual

### TLS4/TLS-450/TLS-450Plus Monitoring Systems

#### Function Code 5Q1: (Continued)

- 10. RRR - Report Type ID  
See explanation for "RRR" in i5P600
- 11. MM - Connection Mode  
See explanation for "WW" in i5P700  
Note: This entry is valid only when A=3
- 12. CC - Contact Identification Number (Decimal)  
See explanation for "RR" in i5G1RR  
Note: This entry is valid only when A=3
- 13. OO - Number of Attempts made
- 14. YYMMDDHHmm - Last Attempt Date And Time
- 15. SS - Status
  - 01 - Successful
  - 02 - Pending
  - 03 - Failed
- 16. EE - Extended Status Message
  - 00 - No Extended Status Available
  - 01 - Successful
  - 02 - Printer Not Found
  - 03 - Printer Not Responding
  - 04 - Printer Out Of Paper
  - 05 - Printer Error
  - 06 - Action Device Not Found (Relay/Line/Pump)
  - 07 - Shut Down Signal Sent
  - 08 - Modem Port Busy
  - 09 - Dialed Modem Busy
  - 10 - Modem No Answer
  - 11 - Modem No Carrier
  - 12 - No Dialtone
  - 13 - Modem Internal Error
  - 14 - Waiting For Connection
  - 15 - Connection Dropped
  - 16 - Connection Idle Time Expired
  - 17 - Connection Closed On Command
  - 18 - Connection In-Progress
- 17. && - Data Termination Flag
- 18. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

### 7.3.6 IN-TANK SETUP

**Function Code:** 601  
**Function Type:** Set Tank Configuration

Version 1

**Command Format:**  
**Display:** <SOH>S601TTf  
**Computer:** <SOH>s601TTf

**Inquire:**  
<SOH>I601TT  
<SOH>i601TT

#### Typical Response Message, Display Format:

```
<SOH>
I601TT
JAN 22, 1996 3:16 PM

TANK CONFIGURATION

DEVICE LABEL CONFIGURED
 1 REGULAR UNLEADED ON
<ETX>
```

#### Typical Response Message, Computer Format:

```
<SOH>i601TTYMMDDHHmmTTf...
 TTf&&CCCC<ETX>
```

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. f - Tank Configuration Flag:  
0=Off  
1=On
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 602  
**Function Type:** Set Tank Label

Version 1

**Command Format:**  
**Display:** <SOH>S602TTaaaaaaaaaaaaaaaaaaaaa  
**Computer:** <SOH>s602TTaaaaaaaaaaaaaaaaaaaaa

**Inquire:**  
<SOH>I602TT  
<SOH>i602TT

### Typical Response Message, Display Format:

```
<SOH>
I602TT
JAN 22, 1996 3:16 PM
```

```
TANK LABEL
```

```
TANK LABEL
 1 REGULAR UNLEADED
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>i602TTYMMDDHHmmTTaaaaaaaaaaaaaaaaaaaaa...
 TTaaaaaaaaaaaaaaaaaaaaa&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. a...a - Label (20 ASCII characters [20h-7Eh])
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 603  
**Function Type:** Set Tank Product Code

Version 1

**Command Format:**  
**Display:** <SOH>S603TTa  
**Computer:** <SOH>s603TTa

**Inquire:**  
<SOH>I603TT  
<SOH>i603TT

### Typical Response Message, Display Format:

<SOH>  
I603TT  
JAN 22, 1996 3:16 PM

TANK PRODUCT CODE

TANK	LABEL	
1	REGULAR UNLEADED	1

<ETX>

### Typical Response Message, Computer Format:

<SOH>i603TTYMMDDHHmmTTa...  
TTa&&CCCC<ETX>

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. a - Product Code (one ASCII character [20h-7Eh])
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 604

Version 1

**Function Type:** Set Tank 1 Point Full Height Volume

**Command Format:**

**Display:** <SOH>S604TTGGGGGG

**Computer:** <SOH>s604TTFFFFFFFF

**Inquire:**

<SOH>I604TT

<SOH>i604TT

**Notes:**

1. TT - Tank Number (Decimal, 00=all)
2. GGGGGG - Full Height Volume, Gallons (Decimal)
3. FFFFFFFF - Full Height Volume, Gallons (ASCII Hex IEEE float)

**Typical Response Message, Display Format:**

<SOH>  
I604TT  
JAN 22, 1996 3:16 PM

TANK FULL VOLUME

TANK	LABEL	GALLONS
1	REGULAR UNLEADED	9728

<ETX>

**Typical Response Message, Computer Format:**

<SOH>i604TTYMMDDHHmmTTTTTTTTTT...  
TTTTTTTTTT&&CCCC<ETX>

**Notes:**

1. YMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. FFFFFFFF - Full Height Volume, Gallons (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 605

Version 1

**Function Type:** Set Tank 4 Point Full, 3/4, 1/2, 1/4 Volumes

**Command Format:**

**Display:** <SOH>S605TTGGGGGGgggggggGGGGGGggggggg

```
or: <SOH>S605TTGGGG,gggg,GGGG,ggg
```

**Computer:** <SOH>s605TTFFFFFFFFffffffffFFFFFFFFffffffff

**Inquire:**

<SOH>I605TT

<SOH>i605TT

**Notes:**

- |    |          |   |                                                    |  |  |  |
|----|----------|---|----------------------------------------------------|--|--|--|
| 1. | TT       | - | Tank Number (Decimal, 00=all)                      |  |  |  |
| 2. | GGGGGG   | - | Full Height Volume, Gallons (Decimal)              |  |  |  |
| 3. | gggggg   | - | 3/4 Height Volume, Gallons (Decimal)               |  |  |  |
| 4. | GGGGGG   | - | 1/2 Height Volume, Gallons (Decimal)               |  |  |  |
| 5. | gggggg   | - | 1/4 Height Volume, Gallons (Decimal)               |  |  |  |
| 6. | FFFFFFFF | - | Full Height Volume, Gallons (ASCII Hex IEEE float) |  |  |  |
| 7. | fffffff  | - | 3/4 Height Volume, Gallons (ASCII Hex IEEE float)  |  |  |  |
| 8. | FFFFFFFF | - | 1/2 Height Volume, Gallons (ASCII Hex IEEE float)  |  |  |  |
| 9. | fffffff  | - | 1/4 Height Volume, Gallons (ASCII Hex IEEE float)  |  |  |  |

**Typical Response Message, Display Format:**

<SOH>

I605TT

JAN 22, 1996 3:16 PM

TANK 4 POINT VOLUMES

TANK	LABEL	GALLONS			
1	REGULAR UNLEADED	9728	7296	4864	2432
<ETX>					

Typical Response Message, Computer Format:

<SOH>i605TTYMMDDHHmmTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT...  
TTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT&&CCCC<ETX>

**Notes:**

- ```

1.      YYMMDDHHmm - Current Date and Time
2.      TT         - Tank Number (Decimal, 00=all)
3.      FFFFFFFF   - Full Height Volume, Gallons (ASCII Hex IEEE float)
4.      ffffffff   - 3/4 Height Volume, Gallons (ASCII Hex IEEE float)
5.      FFFFFFFF   - 1/2 Height Volume, Gallons (ASCII Hex IEEE float)
6.      ffffffff   - 1/4 Height Volume, Gallons (ASCII Hex IEEE float)
7.      &&         - Data Termination Flag
8.      CCCC       - Message Checksum

```

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 606

Version 1

Function Type: Set Tank 20 Point Full, 95%, 90%,...Volumes

Command Format:

Display: <SOH>S606TTGGGGGGgggggg...

or: <SOH>S606TTGGGG,gggg,GGGG,...

Computer: <SOH>s606TTFFFFFFFF...

Inquire:

<SOH>I606TT

<SOH>i606TT

Notes:

1. TT - Tank Number (Decimal, 00=all)
2. GGGGGGgggggg - Series of 20 Volumes, Gallons (Decimal)
3. FFFFFFFF - Series of 20 Volumes, Gallons (ASCII Hex IEEE float)

Typical Response Message, Display Format:

<SOH>

I606TT

JAN 22, 1996 3:16 PM

TANK 20 POINT VOLUMES

| TANK | LABEL | GALLONS | | | |
|------|------------------|---------|------|------|------|
| 1 | REGULAR UNLEADED | 9720 | 9234 | 8748 | 8262 |
| | | 7776 | 7290 | 6804 | 6318 |
| | | 5832 | 5346 | 4860 | 4372 |
| | | 3888 | 3402 | 2916 | 2430 |
| | | 1944 | 1458 | 972 | 486 |

<ETX>

Typical Response Message, Computer Format:

<SOH>i606TTYMMDDHHmmTTTTTTTTTT...
TTTTTTTTTT&&CCCC<ETX>

Notes:

1. YMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. FFFFFFFF - Series of 20 Volumes, Gallons (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 607
Function Type: Set Tank Diameter

Version 1

Command Format:
Display: <SOH>S607TTIII.hh
Computer: <SOH>s607TTFFFFFFFFF

Inquire:
<SOH>I607TT
<SOH>i607TT

Notes:

1. TT - Tank Number (Decimal, 00=all)
2. III.hh - Tank Diameter, Inches and hundredths (Decimal)
3. FFFFFFFF - Tank Diameter, Inches (ASCII Hex IEEE float)

Typical Response Message, Display Format:

<SOH>
I607TT
JAN 22, 1996 3:16 PM

TANK DIAMETER

| TANK | LABEL | INCHES |
|------|------------------|--------|
| 1 | REGULAR UNLEADED | 96.00 |

<ETX>

Typical Response Message, Computer Format:

<SOH>i607TTYMMDDHHmmTTFFFFFFFFF...
TTFFFFFFFFF&&CCCC<ETX>

Notes:

1. YMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. FFFFFFFF - Tank Diameter, Inches (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 608
Function Type: Set Tank Tilt

Version 1

Command Format:
Display: <SOH>S608TTIIII.hh
Computer: <SOH>s608TTFFFFFFFF

Inquire:
<SOH>I608TT
<SOH>i608TT

Notes:

1. TT - Tank Number (Decimal, 00=all)
2. IIII.hh - Tank Tilt, Inches and hundredths (Decimal, +/- IIII.hh)
3. FFFFFFFF - Tank Tilt, Inches (ASCII Hex IEEE float)

Typical Response Message, Display Format:

<SOH>
I608TT
JAN 22, 1996 3:16 PM

TANK TILT

| TANK | LABEL | INCHES |
|------|------------------|--------|
| 1 | REGULAR UNLEADED | 2.40 |

<ETX>

Typical Response Message, Computer Format:

<SOH>i608TTYMMDDHHmmTTFFFFFFFF...
TTFFFFFFFF&&CCCC<ETX>

Notes:

1. YMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. FFFFFFFF - Tank Tilt, Inches (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 609

Version 1

Function Type: Set Tank Thermal Expansion Coefficient

Command Format:

Display: <SOH>S609TTc.cccccc

Computer: <SOH>s609TTFFFFFFFF

Inquire:

<SOH>I609TT

<SOH>i609TT

Notes:

1. TT - Tank Number (Decimal, 00=all)
2. c.cccccc - Thermal Expansion Coefficient (decimal)
3. FFFFFFFF - Thermal Expansion Coefficient (ASCII Hex IEEE float)

Typical Response Message, Display Format:

```
<SOH>
I609TT
JAN 22, 1996  3:17 PM

TANK THERMAL COEFFICIENT

TANK   LABEL
  1    REGULAR UNLEADED      0.000700
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i609TTYMMDDHHmmTTFFFFFFFF...
                        TTTFFFFFFFFF&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. FFFFFFFF - Thermal Expansion Coefficient (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 60A

Version 1

Function Type: Set Tank Linear Calculated Full Volume

Command Format:

Display: <SOH>S60ATTGGGGGG

Computer: <SOH>s60ATTFFFFFFFF

Inquire:

<SOH>I60ATT

<SOH>i60ATT

Notes:

1. TT - Tank Number (Decimal, 00=all)
2. GGGGGG - Full Height Volume, Gallons (Decimal)
3. FFFFFFFF - Full Height Volume, Gallons (ASCII Hex IEEE float)

Typical Response Message, Display Format:

<SOH>
I60ATT
JAN 22, 1996 3:17 PM

TANK FULL VOLUME

| TANK | LABEL | TANK PROFILE | GALLONS |
|------|------------------|--------------|---------|
| 1 | REGULAR UNLEADED | 1 PT | 10000 |

<ETX>

Typical Response Message, Computer Format:

<SOH>i60ATTYYMDDHHmmTTTTTTTTTT...
TTTTTTTTTT&&CCCC<ETX>

Notes:

1. YYMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. FFFFFFFF - Full height volume (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 60B

Function Type: Set Tank Stick Height Function Enable

Version 5

Command Format:

Display: <SOH>S60B00f

Computer: <SOH>s60B00f

Inquire:

<SOH>I60B00

<SOH>i60B00

Typical Response Message, Display Format:

<SOH>

I60B00

JUL 29, 2013 9:07 AM

STICK HEIGHT OFFSET ENABLE STATUS

DISABLED

<ETX>

Typical Response Message, Computer Format:

<SOH>i60B00YYMMDDHHmmf&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. f - Stick Height Function:
0=Disabled
1=Enabled
3. && - Data Termination Flag
4. CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 60C

Version 5

Function Type: Set Tank Stick Height Offset

Command Format:

Display: <SOH>S60CTTIII.hh

Computer: <SOH>s60CTTFFFFFFF

Inquire:

<SOH>I60CTT

<SOH>i60CTT

Notes:

1. TT - Tank Number (Decimal, 00=all)
2. IIII.hh - Stick Height Offset, Inches and hundredths (Decimal)
3. FFFFFFFF - Stick Height Offset, Inches (ASCII Hex IEEE float). Value must be within the range of +144 to -144 inches. It is used to calculate stick height=height (without tilt) + stick offset

Typical Response Message, Display Format:

<SOH>

I60CTT

JUL 29, 2013 9:07 AM

TANK STICK HEIGHT OFFSET

| TANK | PRODUCT LABEL | INCHES |
|------|---------------|--------|
|------|---------------|--------|

| | | |
|---|------------------|------|
| 1 | REGULAR UNLEADED | 0.00 |
|---|------------------|------|

<ETX>

Typical Response Message, Computer Format:

<SOH>i60CTTYMMDDHHmmTTTTTTTTTT...
TTTTTTTTTT&&CCCC<ETX>

Notes:

1. YMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. FFFFFFFF - Stick Height Offset, Inches (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 60E

Version 1

Function Type: Set Tank Programmable Float Parameters

Command Format:

Display: <SOH>S60ETTIIII.tttIIII.tttIIII.tttIIII.ttt
or: <SOH>S60ETTIII.ttt,III.ttt,III.ttt,III.ttt

Inquire:
 <SOH>I60ETT

Computer: <SOH>s60ETTFFFFFFFFF...FFFFFFFFF

<SOH>i60ETT

Notes:

1. CUSTOM float size must be chosen (Function Code 62F) for these parameters to be set and used.
2. TT - Tank Number (Decimal, 00=all)
3. IIII.ttt - Float Parameters, Inches and thousandths (Decimal)
4. FFFFFFFF - Float Parameters, Inches (ASCII Hex IEEE floats)

Typical Response Message, Display Format:

<SOH>
 I60ETT
 JAN 22, 2001 10:02 AM

STATION HEADER 1....
 STATION HEADER 2....
 STATION HEADER 3....
 STATION HEADER 4....

CUSTOM FLOAT PARAMETERS

| TANK | WATER OFFSET | FUEL OFFSET | INVALID FUEL | WATER MINIMUM |
|------|--------------|-------------|--------------|---------------|
| 1 | -3.160 | 0.270 | 8.000 | 0.750 |

<ETX>

Typical Response Message, Computer Format:

<SOH>i60ETTYMMDDHHmmTTNNFFFFFFFFF...
 TTNNFFFFFFFFF&&CCCC<ETX>

Notes:

1. YMMDDHHmm - Current Date
2. TT - Tank Number (Decimal, 00=all)
3. NN - Number of eight character Data Fields to follow (Hex)
4. FFFFFFFF - Float Parameters, Inches (ASCII Hex IEEE floats):
 - 1.Water Offset
 - 2.Fuel Offset
 - 3.Invalid Fuel Level
 - 4.Minimum Water Level
5. && - Data Termination Flag
6. CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 60F
Function Type: Set Tank Probe Offset

Version 1

Command Format:
Display: <SOH>S60FTTIII.hh
Computer: <SOH>s60FTTFFFFFFFFF

Inquire:
<SOH>I60FTT
<SOH>i60FTT

Notes:

1. TT - Tank Number (Decimal, 00=all)
2. III.hh - Probe offset, Inches and hundredths (Decimal)
3. FFFFFFFF - Probe offset, Inches (ASCII Hex IEEE float)

Typical Response Message, Display Format:

<SOH>
I60FTT
JAN 22, 1996 3:16 PM

PROBE OFFSET

| TANK | LABEL | INCHES |
|------|------------------|--------|
| 1 | REGULAR UNLEADED | 2.40 |

<ETX>

Typical Response Message, Computer Format:

<SOH>i60FTTYMMDDHHmmTTFFFFFFFF...
TTFFFFFFFF&&CCCC<ETX>

Notes:

1. YMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. FFFFFFFF - Probe offset, Inches (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 60G
Function Type: Set Manual Tank Leak Test

Version 1

Command Format:
Display: <SOH>S60GTTTRCDD
Computer: <SOH>s60GTTTRCDD

Inquire:
<SOH>I60GTT
<SOH>i60GTT

Typical Response Message, Display Format:

```
<SOH>
I60GTT
JUN  1, 2000  8:06 AM

MANUAL TANK LEAK TEST
-----
```

| TANK | TEST
STATUS | TEST
CONTROL | DURATION
HOURS | TEST RATE
GAL/HR |
|--------------|----------------|-----------------|-------------------|---------------------|
| T1: UNLEADED | ON | TIMED DURATION | 10 | 0.10 |
| T2: SUPER | ON | MANUAL STOP | 24 | 0.20 |
| T3: SUPER 2 | OFF | TIMED DURATION | 3 | 0.20 |

<ETX>

Typical Response Message, Computer Format:

```
<SOH>i60GTTYMMDDHHmmTTNNSRCDD...
TTNNSRCDD&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. NN - Number of Data Fields to follow (Hex)
4. S - Test Status (0=OFF, 1=ON)
5. R - Leak test Rate (0=0.2, 1=0.1)
6. C - Test Control (0=Manual, 1=Timed Duration)
7. DD - Leak test Duration in hours
Note: Timed Control: 02 <= DD <= 24
Note: Manual Stop: DD=24.
8. && - Data Termination Flag
9. CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 60K
Function Type: Set Probe Number Installed in Tank

Version 1

Command Format:
Display: <SOH>S60KTTpp
Computer: <SOH>s60KTTpp

Inquire:
<SOH>I60KTT
<SOH>i60KTT

Notes:

1. pp - -1 if tank not assigned to probe
2. 00=all, inquiry only

Typical Response Message, Display Format:

```
<SOH>
I60KTT
MAR 26, 2007  1:50 PM

TANK INSTALLED PROBE NUMBER CONFIGURATION

TANK   LABEL                PROBE NUM
  1     REGULAR UNLEADED      1
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i60KTTYMMDDHHmmTTpp...
                        TTPp&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. pp - Probe Number to configure to tank (pp = -1 if not assigned)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 60L

Version 1

Function Type: Get Tank Setup Warning Messages

Command Format:

Display: <SOH>I60LTT

Computer: <SOH>i60LTT

Typical Response Message, Display Format:

```
<SOH>
I60LTT
JUN  1, 2000  8:06 AM

TANK PARAMETER VALIDATION

T 1: ALL PARAMETERS VIABLE

T 2: DIAMETER OUT OF RANGE
CAPACITY OUT OF RANGE
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i60LTTYMMDDHHmmTTffffff...
                        TTffffff&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. ffffffff - error flags (Hex)
 - 0x00000001 = FULL_VOLUME_OUT_OF_RANGE
 - 0x00000002 = DIAMETER_OUT_OF_RANGE
 - 0x00000004 = MAX_VOLUME_OUT_OF_RANGE
 - 0x00000008 = HI_VOLUME_LIMIT_OUT_OF_RANGE
 - 0x00000010 = COEFFICIENT_OUT_OF_RANGE
 - 0x00000020 = HIGH_WATER_LIMIT_OUT_OF_RANGE
 - 0x00000040 = LO_VOLUME_LIMIT_OUT_OF_RANGE
 - 0x00000080 = THEFT_ALARM_LIMIT_OUT_OF_RANGE
 - 0x00000100 = TILT_OUT_OF_RANGE
 - 0x00000200 = OVERFILL_VOLUME_OUT_OF_RANGE
 - 0x00000400 = CHART_VOLUMES_INVALID_ERR
 - 0x00000800 = UNCONFIGURED_PROBE_ERR
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 60M

Version 2

Function Type: Set Product Label

Command Format:

Display: <SOH>S60MPPaaaaaaaaaaaaaaaaaaaaaa

Computer: <SOH>s60MPPaaaaaaaaaaaaaaaaaaaaaa

Inquire:

<SOH>I60MPP

<SOH>i60MPP

Typical Response Message, Display Format:

```
<SOH>
I60M00
JAN 22, 2009  3:17 PM

PRODUCT LABEL
1      REGULAR UNLEADED
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i60MPPYYMMDDHHmmPPaaaaaaaaaaaaaaaaaaaaaa...
PPaaaaaaaaaaaaaaaaaaaaaa&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. PP - Product Number (Decimal)
3. aaa...aaa - Product Label (20 ASCII characters [20h-7Eh])
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 60N

Version 2

Function Type: Product Setup Report

Command Format:

Display: <SOH>I60NPP

Computer: <SOH>i60NPP

Typical Response Message, Display Format:

```
<SOH>
I60N00
JAN 22, 2009  3:17 PM

STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....

PRODUCT SETUP REPORT

PRODUCT LABEL          TANKS
  1 REGULAR             T 1: REGULAR SOUTH, T 2: REGULAR NORTH
                        T 4: TANK 4
  2 MIDGRADE            T 3: MID NORTH, T 4: MID SOUTH, T 7: TANK 7
  3 PREMIUM             T 5: PREM NORTH
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i60NPPYYMMDDHHmmPPnnTT..TT
                        PPnnTT..TT&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. PP - Product Number (Decimal, 00=all)
3. nn - Number of tanks to follow. (decimal) (Tanks assigned to this product)
4. TT - Tank Number (Decimal)
5. && - Data Termination Flag
6. CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 600

Version 2

Function Type: Set Product Available in Tank

Command Format:

Display: <SOH>S600TTPP

Computer: <SOH>s600TTPP

Inquire:

<SOH>I600TT

<SOH>i600TT

Notes:

1. PP - Set to -1 to remove Product assignment

Typical Response Message, Display Format:

```
<SOH>
I60000
JAN 22, 2009  3:17 PM

TANK PRODUCT MAPPING

TANK          PRODUCT
T 1, T 2, T 4  F 1: REGULAR UNLEADED
T 3            F 2: UNLEADED
T 5            F 3: DIESEL
T 6, T 7       F 2: UNLEADED
T 8            NOT ASSIGNED
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i600TTPPYMMDDHHmmnnTT..TTPP
nnTT..TTPP&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. nn - Number of tanks to follow. (decimal)(Tanks assigned to this product. If nn > 01 then they are manifold tanks)
3. TT - Tank Number (Decimal)
4. PP - Product Number (Decimal)
5. && - Data Termination Flag
6. CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 610

Version 1

Function Type: Set Tank Delivery Delay

Command Format:

Display: <SOH>S610TTdd

Computer: <SOH>s610TTdd

Inquire:

<SOH>I610TT

<SOH>i610TT

Typical Response Message, Display Format:

```
<SOH>
I610TT
JAN 22, 1996  3:17 PM
```

TANK DELIVERY DELAY

```
TANK    LABEL
 1      REGULAR UNLEADED          5
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i610TTYMMDDHHmmTTdd...
                        TTdd&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. dd - Indicates the length of time in minutes (01-99)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 611

Version 1

Function Type: Set Tank Leak Test Type & Start Time

Command Format:

Display: <SOH>S611TTDDRMYYMMDDHHmm<CR> (if M=1)
 MMODHHmm<CR> (if M=2)
 ODHHmm<CR> (if M=3)
 DHHmm<CR> (if M=4)
 HHmm<CR> (if M=5)
 <CR> (if M=6)
 <CR> (if M=7)
 MMDDHHmm<CR> (if M=8)
 DDHHmm<CR> (if M=9)

Inquire:
 <SOH>I611TT

Computer: (same as display format)

<SOH>i611TT

Notes:

1. TT - Tank Number (00=all tanks, Decimal)
2. DD - Test Duration in hours [2-24]
3. R - Leak test Rate (0=0.2, 1=0.1)
 0=0.2 gallons/hour Periodic
 1=0.1 gallons/hour Annual
4. M - Leak test Method
 1=On Date
 2=Annually Day-of-Week
 3=Monthly Day-of-Week
 4=Weekly Day-of-Week
 5=Daily
 6=Automatic
 7=CSLD
 8=Annually Day-of-Month
 9=Monthly Day-of-Month
5. D - Day-of-Week
 1=Monday
 2=Tuesday
 3=Wednesday
 4=Thursday
 5=Friday
 6=Saturday
 7=Sunday
6. O - Occurrence [1-5] of day-of-week in month
 5=last occurrence
 Example: 0=3, D=2 means third Tuesday in month
7. YYMM - Year (last 2 digits), Month [01...12]
8. HHmm - Hour, Minute (if EE00, set Leak Test Method to NONE)

Typical Response Message, Display Format:

```
<SOH>
I611TT
JUN 1, 2000 8:06 AM
```

TANK	LEAK TEST METHOD	TEST TYPE	TEST HOURS	TEST START METHOD	YEAR	MONTH	DAY	OCCUR	HH:MM
1	SLD	ANNUAL	2	ON DATE	YYYY	MON	DD		HH:MM
				ANNUALLY DoW		MON	DD	N	HH:MM
				ANNUALLY DoM		MON	DD		HH:MM
				MONTHLY DoW			DD	N	HH:MM
				MONTHLY DoM			DD		HH:MM
				WEEKLY			DD		HH:MM
				DAILY					HH:MM
				AUTOMATIC					
2	CSLD	PERIODIC	AUTO	CSLD					
3	CSLD	GROSS	24	AUTOMATIC					

<ETX>

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code 611: (Continued)

Typical Response Message, Computer Format:

```
<SOH>i611TTYMMDDHHmmTTDDRMYYMMDDHHmm          (if M=1)
          MMODHHmm                                (if M=2)
          ODHHmm                                  (if M=3)
          DHHmm                                   (if M=4)
          HHmm                                    (if M=5)
          (none)                                  (if M=6)
          (none)                                  (if M=7)
          MMDDHHmm                                (if M=8)
          DDHHmm                                  (if M=9)
TTDDRMYYMMDDHHmm&&CCCC<ETX>                    (if M=1)
          MMODHHmm&&CCCC<ETX>                    (if M=2)
          ODHHmm&&CCCC<ETX>                    (if M=3)
          DHHmm&&CCCC<ETX>                    (if M=4)
          HHmm&&CCCC<ETX>                    (if M=5)
          &&CCCC<ETX>                          (if M=6)
          &&CCCC<ETX>                          (if M=7)
          MMDDHHmm&&CCCC<ETX>                    (if M=8)
          DDHHmm&&CCCC<ETX>                    (if M=9)
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. DD - Leak test Duration in hours (decimal) [2...24]
4. R - Leak test Rate (0=0.2, 1=0.1)
5. M - Leak test Method:
 - If M=1 ON DATE, YYMMDDHHmm:
 - YY =Year
 - MM =Month (01-12)
 - DD =Day
 - HHmm=Hour, Minute (EE00=Disabled)
 - If M=2 ANNUALLY Day-of-Week, MMWDHHmm:
 - MM =Month (01-12)
 - O =Occurrence [1-5] of day-of-week in month
 - D =Day (1=Monday, 2=Tuesday, . . . 7=Sunday)
 - HHmm=Hour, Minute (EE00=Disabled)
 - If M=3 MONTHLY Day-of-Week, WDHHmm:
 - O =Occurrence [1-5] of day-of-week in month
 - D =Day (1=Monday, 2=Tuesday, . . . 7=Sunday)
 - HHmm=Hour, Minute (EE00=Disabled)
 - If M=4 WEEKLY Day-of-Week, DHHmm:
 - D =Day (1=Monday, 2=Tuesday, . . . 7=Sunday)
 - HHmm=Hour, Minute (EE00=Disabled)
 - If M=5 DAILY, HHmm:
 - HHmm=Hour, Minute (EE00=Disabled)
 - If M=8 ANNUALLY Day-of-Month, MMDDHHmm:
 - MM =Month (01-12)
 - DD =Day of month (1-31)
 - HHmm=Hour, Minute (EE00=Disabled)
 - If M=9 MONTHLY Day-of-Month, WDHHmm:
 - DD =Day of month (1-31)
 - HHmm=Hour, Minute (EE00=Disabled)
6. && - Data Termination Flag
7. CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 612

Version 1

Function Type: Set Tank SIPHON Manifolded Partners

Command Format:

Display: <SOH>S612TTtt...TTtt

Computer: <SOH>s612TTtt...TTtt

Inquire:

<SOH>I612TT

<SOH>i612TT

Typical Response Message, Display Format:

<SOH>

I612TT

JAN 22, 2002 3:17 PM

TANK MANIFOLDED PARTNERS

TANK	LABEL	SIPHON MANIFOLDED TANKS	LINE MANIFOLDED TANKS
2	REGULAR UNLEADED	1	3

<ETX>

Typical Response Message, Computer Format:

<SOH>i612TTYMMDDHHmmTTNNtt...

TTNNtt&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Number of the first tank to be SIPHON manifolded
3. NN - Number of tanks that are SIPHON manifolded together
4. tt - Tank numbers of other tanks to be SIPHON manifolded to first tank
5. && - Data Termination Flag
6. CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 613

Function Type: Set CSLD Probability of Detection

Version 1

Command Format:

Display: <SOH>S613TTf

Computer: <SOH>s613TTf

Inquire:

<SOH>I613TT

<SOH>i613TT

Typical Response Message, Display Format:

```
<SOH>
I613TT
JAN 22, 1996  3:17 PM
CSLD PROBABLITY OF DETECTION

T 1:REGULAR UNLEADED      : Pd=95%
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i613TTYMMDDHHmmTTf...
                        TTf&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number
3. f - Probability of Detection
1=95%
2=99%
3=CUSTOM (Inquiry Command Only)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 614
Function Type: Set CSLD Climate Factor

Version 1

Command Format:
Display: <SOH>S614TTf
Computer: <SOH>s614TTf

Inquire:
<SOH>I614TT
<SOH>i614TT

Typical Response Message, Display Format:

```
<SOH>
I614TT
JAN 22, 1996  3:17 PM
CSLD CLIMATE FACTOR

T 1:REGULAR UNLEADED      : MODERATE
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i614TTYMMDDHHmmTTf...
                        TTf&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number
3. f - Climate Factor
 1=Moderate
 2=Extreme
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 615

Function Type: Set BIR Meter Data Present

Version 2

Command Format:

Display: <SOH>S615TTf

Computer: <SOH>s615TTf

Inquire:

<SOH>I615TT

<SOH>i615TT

Typical Response Message, Display Format:

```
<SOH>
I615TT
JAN 22, 1996  3:17 PM

TANK    LABEL                METER DATA
1       REGULAR UNLEADED      YES
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i615TTYMMDDHHmmTTf...
                        TTf&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=All)
3. f - Meter Data Availability:
0=No Meter Data Available
1=Meter Data Present
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 616

Version 2

Function Type: Set Accuchart Update Scheduling

Command Format:

Display: <SOH>S616TTf

Computer: <SOH>s616TTf

Inquire:

<SOH>I616TT

<SOH>i616TT

Typical Response Message, Display Format:

<SOH>

I616TT

JAN 22, 1996 3:17 PM

TANK LABEL

CAL UPDATE

1 REGULAR UNLEADED

IMMEDIATE

<ETX>

Typical Response Message, Computer Format:

<SOH>i616TTYMMDDHHmmTTf...

TTf&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=All)
3. f - Accuchart Update Scheduling
 - 1=Immediate
 - 2=Periodic
 - 3=Complete
 - 4=Never
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 618

Version 1

Function Type: Set Tank CSLD Evaporation Compensation

Command Format:

Display: <SOH>S618TTf

Computer: <SOH>s618TTf

Inquire:

<SOH>I618TT

<SOH>i618TT

Notes:

1. Only accepted if both conditions are true for the addressed tank:
 - a. CSLD has been selected as the leak test method (S611TT).
 - b. Climate Factor has been set to Extreme (S614TT).

Typical Response Message, Display Format:

```
<SOH>
I618TT
JAN 22, 1996  3:16 PM

CSLD EVAPORATION COMPENSATION

DEVICE LABEL          ENABLED
T 1:UNLEADED GASOLINE YES
T 2:SUPER UNLEADED    YES
T 3:PREMIUM UNLEADED  NO
T 4:REGULAR GASOLINE  YES
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i618TTYMMDDHHmmTTf...
                        Ttf&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. f - CSLD Evaporation Compensation flag:
0=NO
1=YES
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 619

Function Type: Set Tank Stage II Vapor Recovery

Version 1

Command Format:

Display: <SOH>S619TTf

Computer: <SOH>s619TTf

Inquire:

<SOH>I619TT

<SOH>i619TT

Notes:

1. Only allowed if CSLD Evaporation Compensation is enabled

Typical Response Message, Display Format:

```
<SOH>
I619TT
JAN 22, 1996  3:16 PM

STAGE II VAPOR RECOVERY

DEVICE  LABEL                      ENABLED
T 1:UNLEADED GASOLINE              YES
T 2:SUPER UNLEADED                 YES
T 3:PREMIUM UNLEADED               YES
T 4:REGULAR GASOLINE               YES
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i619TTYMMDDHHmmTTf...
                        TTf&&CCCC<ETX>
```

Notes:

1. YMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. f - Stage II Vapor Recovery flag:
0=NO
1=YES
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 61A

Version 1

Function Type: Set In-Tank Leak Test Early Stop

Command Format:

Display: <SOH>S61ATTf

Computer: <SOH>s61ATTf

Inquire:

<SOH>I61ATT

<SOH>i61ATT

Typical Response Message, Display Format:

```
<SOH>
I61ATT
JUN  1, 2000  8:06 AM

IN-TANK LEAK TEST EARLY STOP
```

TANK	LABEL	TST EARLY STOP:
1	* PRODUCT 1 *	DISABLED
2	* PRODUCT 2 *	DISABLED
3	* PRODUCT 3 *	DISABLED
4	* PRODUCT 4 *	DISABLED

<ETX>

Typical Response Message, Computer Format:

```
<SOH>i6A000YYMMDDHHmmTTf...
                        Ttf&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. f - In-Tank Leak Test Early Stop Flag:
0=DISABLED
1=ENABLED
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 61B

Function Type: Set In-Tank Static Gross Test Auto-Confirm

Version 1

Command Format:

Display: <SOH>S61BTTf

Computer: <SOH>s61BTTf

Inquire:

<SOH>I61BTT

<SOH>i61BTT

Typical Response Message, Display Format:

<SOH>
I61BTT
OCT 10, 2000 3:11 PM

IN-TANK STATIC GROSS TEST AUTO-CONFIRM:

TANK	LABEL	AUTO-CONFIRM
1	REGULAR UNLEADED	DISABLED

<ETX>

Typical Response Message, Computer Format:

<SOH>i61BTTYMMDDHHmmTTf...
TTf&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. f - In-Tank Static Gross Test Auto-Confirm flag
0=Disabled
1=Enabled
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 61H

Version 2

Function Type: Set Update Apply Accuchart Chart Dates

Command Format:

Display: <SOH>S61HTTDF[data]

Computer: <SOH>s61HTTDF[data]

Inquire:

<SOH>I61HTT

<SOH>i61HTT

Notes:

1. TT - Tank Number [01..32], (Decimal, 00=all)
2. D - Date Number [1..4], (Decimal)
3. F - 1. [data] NNN = Number of Days From Start of Calibration [01-120](Decimal)
2. [data] yyyyymmdd = apply chart data using current date as start
yyyy = Year (Decimal)
mm = Month [01..12] (Decimal)
dd = Day [01..31] (Decimal)

Typical Response Message, Display Format:

```
<SOH>
I61HTT
JAN 24, 2009  2:52 PM
```

APPLY ACCUCHART CHART DATES

TANK	START DATE	NNN	APPLY DATE	D#
T 1:	2009-01-25	+	20 = 2009-02-14	1
	2009-01-25	+	25 = 2009-02-19	2
	2009-01-25	+	35 = 2009-03-01	3
	2009-01-25	+	40 = 2009-03-06	4
T 2:	2009-01-25	+	32 = 2009-02-26	1
T 3:	2009-01-25	+	34 = 2009-02-28	1
T16:	****-**-**	+	36 = ****-**-**	1

(Note: ****-**-** is displayed when there is no viable date)

Typical Response Message, Computer Format:

```
<SOH>i61HTTYMMDDHHmmTTDNNNyyyyymmdd
DNNNyyyyymmdd
DNNNyyyyymmdd
DNNNyyyyymmdd
DNNNyyyyymmdd
TTDNNNyyyyymmdd
DNNNyyyyymmdd
DNNNyyyyymmdd
DNNNyyyyymmdd&&CCCC<ETX>
```

Notes:

1. YMMDDHHmm - Current Date and Time
2. TT - Tank Number [01..32], (Decimal, 00=all)
3. D - Date Number [1..4] (Decimal)
4. NNN - Number of Days From Start of Calibration [01-120](Decimal)
5. yyyyymmdd - Apply Date (Note: This is all zeros when NNN = 00)(Decimal)
6. && - Data Termination Flag
7. CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 61I

Version 2

Function Type: Set Maximum Accuchart Calibration Period Days

Command Format:

Display: <SOH>S61ITTDDD

Computer: <SOH>s61ITTDDD

Inquire:

<SOH>I61ITT

<SOH>i61ITT

Notes:

1. TT - Tank Number [01..32], (Decimal, 00=all)
2. DDD - Max Duration in Days [014..120], (Decimal)

Typical Response Message, Display Format:

```
<SOH>
I61ITT
JAN 24, 2009  2:52 PM

MAXIMUM ACCUCHART CALIBRATION PERIOD DAYS

T 1:  30 DAYS      10 DAYS REMAINING
T 2:  60 DAYS      40 DAYS REMAINING
T 3:  90 DAYS      70 DAYS REMAINING
T16: 120 DAYS      100 DAYS REMAINING
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i61ITTYMMDDHHmmTTDDDRRR...
                                TTDDDRRR&&CCCC<ETX>
```

Notes:

1. YMMDDHHmm - Current Date and Time
2. TT - Tank Number [01..32], (Decimal, 00=all)
3. DDD - Max Duration in Days [014-120] (Decimal)
4. RRR - Days Remaining (Decimal)
5. && - Data Termination Flag
6. CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 61J

Version 2

Function Type: Set Exclude Calibration Dates

Command Format:

Display: <SOH>S61JTTTFyyyyymmdd

Computer: <SOH>s61JTTTFyyyyymmdd

Inquire:

<SOH>I61JTT

<SOH>i61JTT

Notes:

1. TT - Tank Number [01..32], (Decimal, 00=all)
2. F - 1=Exclude Records on this Date,
2=Include Records on this Date
3. yyy - Year (decimal)
4. mm - Month [01..12] (Decimal)
5. dd - Day [01..31] (Decimal)

Typical Response Message, Display Format:

```
<SOH>
I61JTT
JAN 24, 2009  2:52 PM

DATES EXCLUDED FROM ACCUCHART CALIBRATION

T 1:  2009-01-15
      2009-01-17
      2009-01-19

T 2:  2009-01-15

T 3:  2009-01-15

T16:  2009-01-15
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i61JTYYMMDDHHmmTTNNyyyyymmdd...yyyyymmdd
      TTNNyyyyymmdd...yyyyymmdd&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number [01..32], (Decimal, 00=all)
3. NN - Number of Excluded Dates (Hex)
4. yyyy - Year (Decimal)
5. mm - Month [01...12] (Decimal)
6. dd - Day [01...31] (Decimal)
7. && - Data Termination Flag
8. CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 61K
Function Type: Set Enable Accuchart Warnings

Version 2

Command Format:
Display: <SOH>S61KTTF
Computer: <SOH>s61KTTF

Inquire:
<SOH>I61KTT
<SOH>i61KTT

Notes:

1. TT - Tank Number [01..32], (Decimal, 00=all)
2. F - Accuchart Warning (Decimal)
0=Disabled
1=Enabled

Typical Response Message, Display Format:

```
<SOH>
I61KTT
JAN 24, 2009  2:52 PM

ACCUCHART WARNINGS

T 1: ENABLED
T 2: DISABLED
T 3: DISABLED
T16: ENABLED
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i61KTTYMMDDHHmmTTF...
TTF&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. F - Accuchart Warning (Decimal)
0=Disabled
1=Enabled
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 61L

Version 2

Function Type: Set Accuchart Chart Management

Command Format:

Display: <SOH>S61LTT149IIP[*data*]

Computer: <SOH>s61LTT149IIP[*data*]

Inquire:

<SOH>I61LTTii

<SOH>i61LTTii

Notes:

1. TT - Tank Number [01..32], (Decimal, 00=all)
2. II - Chart ID number [01..99]
3. P - Operation
4. ii - Chart ID number [01..99] 00 = all charts for this tank (Decimal)
5. Chart ID=1 always exists. It cannot have a different source.
6. All set operations require AccuChart to be installed.

P	Operation	[<i>data</i>]	Description
1	Set Label	s...s	Name (Max 20 Ascii Chars)
2	*Set Volume Entry	V	0 = Absolute Volume, 1 = Delta Volume
3	*Add Height-Vol Pair	Hhhh.hh vvvvv.vv	Height- Volume Pair (Decimal)
4	*Add Height-Vol Pair	vvvvv.vv	Height = current height in tank Volume (Decimal)
5	*Remove Height-Vol Pair	nnnn	Pair # [0001...9999] (Decimal)
6	Set Active Chart		
7	*Set Chart Type	T	0 = One Point 1 = Four Point 2 = Twenty Point 3 = Linear 4 = Multi Point (User Entered)
8	*Set Chart Source	C	0 = User Initial Chart 1 = Metered Drop Chart 2 = Metered Dispense Chart 3 = Automatic Chart 4 = Remote Chart
9	*Make Manual Chart		This analyzes all height-volume pairs looking for bad points. If one or more bad points are suspected, they are flagged and the chart status is set to BAD POINTS. If no bad points are found, the chart status is set to READY.

* This operation cannot be performed on an ACTIVE chart.

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code 61L: (Continued)

Typical Response Message, Display Format:

```
<SOH>
I61LTT
JAN 24, 2009  2:52 PM
```

TANK CHARTS

```
-----
TANK:          1                      DIAMETER: 96.0
CHART ID:      2                      CAPACITY: 10000
LABEL:        SUMMER 2008             ENDSHAPE: 0.000
TYPE:         ONE POINT              OFFSET:  -1.50
SOURCE:       AUTO DIM METERED CHART  TILT:    1.00
LAST CHANGE:  yyyy-mm-dd             DAYS:    60
MSSE:        123.45                  QUALITY:  678
STATUS:       ACTIVE CHART
```

SUFFICIENCY HISTOGRAM

```
HEIGHT%  COUNTS
-----
95 -100      1
90 - 95      6
85 - 90     18
80 - 85      9
75 - 80     32
70 - 75      8
65 - 70     25
60 - 65      4
55 - 60      0
50 - 55      1
45 - 50      4
40 - 45      6
35 - 40     23
30 - 35     12
25 - 30    100
20 - 25     22
15 - 20      8
10 - 15      7
 5 - 10      0
 0 -  5      0
```

```
-----
TANK:          1
CHART ID:      1
LABEL:        WINTER 2008
TYPE:         MULTI POINT
SOURCE:       {USER ENTERED, METERED DROP CHART, METERED DISPENSE CHART}
LAST CHANGE:  yyyy-mm-dd
MSSE:        123.45
STATUS:       INCOMPLETE CHART
```

VOLUME: ABSOLUTE VOLUME

#	HEIGHT	VOLUME	F	#	HEIGHT	VOLUME	F	#	HEIGHT	VOLUME	F
001	hhhh.hh	vvvvvv.vv	0	003	hhhh.hh	vvvvvv.vv	0	005	hhhh.hh	vvvvvv.vv	0
002	hhhh.hh	vvvvvv.vv	0	004	hhhh.hh	vvvvvv.vv	0	006	hhhh.hh	vvvvvv.vv	0

<ETX>

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code 61L: (Continued)

Notes:

- height-volume pairs will be listed in descending height order.
- Metric values will show one digit to the right of the decimal point.
- English values will show two digits to the right of the decimal point.

Typical Response Message, Computer Format:

```
<SOH>i61LTTYMMDDHHmmTTIIss...sstcyyyymmddEEEEEEESVN[ ]JJ[ ]KKKK[ ]...
TTIIss...sstcyyyymmddEEEEEEESVN[ ]JJ[ ]KKKK[ ]&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number [01..32], (Decimal, 00=all)
3. II - Chart ID Number [01...99] (Decimal)
4. ss...ss - Label (20 ASCII characters [20h-7Eh])
5. t - Type
 - 0=One Point
 - 1=Four Point
 - 2=Twenty Point
 - 3=Linear
 - 4=Multi Point
6. c - Source
 - 0=User/Initial Chart
 - 1=Metered Drop Chart
 - 2=Metered Dispense Chart
 - 3=Automatic Chart
 - 4=Remote Chart
7. yyyymmdd - Last Change Date
8. EEEEEEEE - MSSE (ASCII Hex IEEE float)
9. S - Type
 - 0=Active
 - 1=Ready
 - 2=Incomplete
 - 3=Bad Point
 - 4=Calculating
10. V - Volume Entry
 - 0=Absolute Volume
 - 1=Delta Volume
11. N - Number of IEEE Ascii Float Values to follow
12. dddddddd - Diameter (ASCII Hex IEEE float)
13. cccccccc - Capacity (ASCII Hex IEEE float)
14. eeeeeeee - End Shape (ASCII Hex IEEE float)
15. ooooooooo - Offset (ASCII Hex IEEE float)
16. tttttttt - Tilt (ASCII Hex IEEE float)
17. JJ - Number of Histogram Bins to follow (Hex)
18. bbbb...bbbb - Histogram Bins (ASCII Hex short (4 char per bin))
19. KKKK - Number of Height-Volume Pairs to follow (Hex)
20. kkkk - Pair ID Number (Hex)
21. hhhhhhhh - Height (ASCII Hex IEEE float)
22. vvvvvvvv - Volume (ASCII Hex IEEE float)
23. ff - Status (Hex)
 - 0=Unknown
 - 1=Good
 - 2=Bad
24. && - Data Termination Flag
25. CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 621
Function Type: Set Tank Low Level Limit

Version 1

Command Format:
Display: <SOH>S621TTGGGGGG
Computer: <SOH>s621TTFFFFFFFF

Inquire:
<SOH>I621TT
<SOH>i621TT

Notes:

1. TT - Tank Number (Decimal, 00=all)
2. GGGGGG - Low Level Limit, Gallons (Decimal)
3. FFFFFFFF - Low Level Limit, Gallons (ASCII Hex IEEE float)

Typical Response Message, Display Format:

```
<SOH>
I621TT
JAN 22, 1996  3:18 PM

TANK LOW PRODUCT LIMIT

TANK    LABEL                GALLONS
  1     REGULAR UNLEADED      1000
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i621TTYMMDDHHmmTTFFFFFFFF...
                        TTTT&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. FFFFFFFF - Low Level Limit, Gallons (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 622
Function Type: Set Tank High Level Limit

Version 1

Command Format:
Display: <SOH>S622TTGGGGGG
Computer: <SOH>s622TTFFFFFFFF

Inquire:
<SOH>I622TT
<SOH>i622TT

Notes:

1. TT - Tank Number (Decimal, 00=all)
2. GGGGGG - High Level Limit, Gallons (Decimal)
3. FFFFFFFF - High Level Limit, Gallons (ASCII Hex IEEE float)

* Set Tank Maximum Volume Limit (628 cmd) must be set before the High Level Limit.

Typical Response Message, Display Format:

```
<SOH>
I622TT
JAN 22, 1996  3:18 PM

TANK HIGH PRODUCT LIMIT

TANK   LABEL                      GALLONS  PERCENT
  1    REGULAR UNLEADED           77000      77
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i622TTYMMDDHHmmTTTTTTTTTT...
                      TTTTTTTTTT&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. FFFFFFFF - High Level Limit, Gallons (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 623

Version 1

Function Type: Set Tank Overfill Level Limit

Command Format:

Display: <SOH>S623TTGGGGGG

Computer: <SOH>s623TTFFFFFFFF

Inquire:

<SOH>I623TT

<SOH>i623TT

Notes:

1. TT - Tank Number (Decimal, 00=all)
2. GGGGGG - Overfill Level Limit, Gallons (Decimal)
3. FFFFFFFF - Overfill Level Limit, Gallons (ASCII Hex IEEE float)

* Set Tank Maximum Volume Limit (628 cmd) must be set before the Overfill Level Limit.

Typical Response Message, Display Format:

<SOH>

I623TT

JAN 22, 1996 3:18 PM

TANK OVERFILL LEVEL LIMIT

TANK	LABEL	GALLONS	PERCENT
1	REGULAR UNLEADED	9300	0

<ETX>

Typical Response Message, Computer Format:

<SOH>i623TTYMMDDHHmmTTTTTTTTTT...
TTTTTTTTTT&&CCCC<ETX>

Notes:

1. YMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. FFFFFFFF - Overfill Level Limit, Gallons (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 624

Version 1

Function Type: Set Tank High Water Level Limit

Command Format:

Display: <SOH>S624TTII.tt

Computer: <SOH>s624TTFFFFFFFF

Inquire:

<SOH>I624TT

<SOH>i624TT

Notes:

- ```

1. TT - Tank Number (Decimal, 00=all)
2. II.t - High Water Level Limit, Inches and tenths (Decimal,
 Min=0.75, Max=05.00, NotSet=0)
3. FFFFFFFF - High Water Level Limit, Inches (ASCII Hex IEEE float)

```

Typical Response Message, Display Format:

<SOH>

I624TT

JAN 22, 1996 3:18 PM

TANK HIGH WATER LEVEL LIMIT

| TANK | LABEL            | INCHES |
|------|------------------|--------|
| 1    | REGULAR UNLEADED | 4.50   |

<ETX>

Typical Response Message, Computer Format:

[illegible]

**Notes:**

- |    |            |                                                         |
|----|------------|---------------------------------------------------------|
| 1. | YYMMDDHHmm | - Current Date and Time                                 |
| 2. | TT         | - Tank Number (Decimal, 00=all)                         |
| 3. | FFFFFFFF   | - High Water Level Limit, Inches (ASCII Hex IEEE float) |
| 4. | &&         | - Data Termination Flag                                 |
| 5. | CCCC       | - Message Checksum                                      |

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 625  
**Function Type:** Set Tank Sudden Loss Limit

Version 1

**Command Format:**  
**Display:** <SOH>S625TTGGGGGG  
**Computer:** <SOH>s625TTFFFFFFFF

**Inquire:**  
<SOH>I625TT  
<SOH>i625TT

### Notes:

1. TT - Tank Number (Decimal, 00=all)
2. GGGGGG - Sudden Loss Limit, Gallons (Decimal)
3. FFFFFFFF - Sudden Loss Limit, Gallons (ASCII Hex IEEE float)

### Typical Response Message, Display Format:

```
<SOH>
I625TT
JAN 22, 1996 3:18 PM

TANK SUDDEN LOSS LIMIT

TANK LABEL GALLONS
 1 REGULAR UNLEADED 100
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>i625TTYMMDDHHmmTTFFFFFFFF...
 TTTFFFFFFFFF&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. FFFFFFFF - Sudden Loss Limit, Gallons (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 626  
**Function Type:** Set Tank Leak Alarm Limit

Version 1

**Command Format:**  
**Display:** <SOH>S626TTGGGGGG  
**Computer:** <SOH>s626TTFFFFFFFF

**Inquire:**  
<SOH>I626TT  
<SOH>i626TT

### Notes:

1. TT - Tank Number (Decimal, 00=all)
2. GGGGGG - Leak Alarm Limit, Gallons (Decimal)
3. FFFFFFFF - Leak Alarm Limit, Gallons (ASCII Hex IEEE float)

### Typical Response Message, Display Format:

```
<SOH>
I626TT
JAN 22, 1996 3:18 PM

TANK LEAK ALARM LIMIT

TANK LABEL GALLONS
 1 REGULAR UNLEADED 50
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>i626TTYMMDDHHmmTTFFFFFFFF...
 TTTFFFFFFFFF&&CCCC<ETX>
```

### Notes:

1. YMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. FFFFFFFF - Leak Alarm Limit, Gallons (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 627

Version 1

**Function Type:** Set Tank High Water Warning Limit

**Command Format:**

**Display:** <SOH>S627TTII.tt

**Computer:** <SOH>s627TTFFFFFFFF

**Inquire:**

<SOH>I627TT

<SOH>i627TT

**Notes:**

1. TT - Tank Number (Decimal, 00=all)
2. II.t - High Water Warning Limit, Inches and tenths (Decimal, Min=0.75, Max=05.00, NotSet=0)
3. FFFFFFFF - High Water Warning Limit, Inches (ASCII Hex IEEE float)

**Typical Response Message, Display Format:**

<SOH>

I627TT

JAN 22, 1996 3:18 PM

TANK HIGH WATER WARNING LIMIT

| TANK | LABEL            | INCHES |
|------|------------------|--------|
| 1    | REGULAR UNLEADED | 3.50   |

<ETX>

**Typical Response Message, Computer Format:**

<SOH>i627TTYMMDDHHmmTTFFFFFFFF...  
TTFFFFFFFF&&CCCC<ETX>

**Notes:**

1. YMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. FFFFFFFF - High Water Warning Limit, Inches (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum



# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 628

Version 1

**Function Type:** Set Tank Maximum Volume Limit

**Command Format:**

**Display:** <SOH>S628TTGGGGGG

**Computer:** <SOH>s628TTFFFFFFFF

**Inquire:**

<SOH>I628TT

<SOH>i628TT

**Notes:**

1. TT - Tank Number (Decimal, 00=all)
2. GGGGGG - Maximum Volume Limit, Gallons (Decimal)
3. FFFFFFFF - Maximum Volume Limit, Gallons (ASCII Hex IEEE float)

**Typical Response Message, Display Format:**

<SOH>  
I628TT  
JAN 22, 1996 3:19 PM  
  
TANK MAXIMUM VOLUME LIMIT

| TANK | LABEL            | GALLONS |
|------|------------------|---------|
| 1    | REGULAR UNLEADED | 9600    |

<ETX>

**Typical Response Message, Computer Format:**

<SOH>i628TTYMMDDHHmmTTTTTTTTTT...  
TTTTTTTTTT&&CCCC<ETX>

**Notes:**

1. YMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. FFFFFFFF - Maximum Volume Limit, Gallons (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: 629**

Version 1

**Function Type:** Set Tank Delivery Required Limit

**Command Format:**

**Display:** <SOH>S629TTGGGGGG

**Computer:** <SOH>s629TTFFFFFFFF

**Inquire:**

<SOH>I629TT

<SOH>i629TT

**Notes:**

1. TT - Tank Number (Decimal, 00=all)
2. GGGGGG - Delivery Required Limit, Gallons (Decimal)
3. FFFFFFFF - Delivery Required Limit, Gallons (ASCII Hex IEEE float)

**Typical Response Message, Display Format:**

<SOH>  
I629TT  
JAN 22, 1996 3:19 PM

TANK DELIVERY REQUIRED LIMIT

| TANK | LABEL  | GALLONS | PERCENT |
|------|--------|---------|---------|
| 1    | TANK 1 | 200000  | 20      |

<ETX>

**Typical Response Message, Computer Format:**

<SOH>i629TTYMMDDHHmmTTTTTTTTTT...  
TTTTTTTTTT&&CCCC<ETX>

**Notes:**

1. YMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. FFFFFFFF - Delivery Required Limit, Gallons (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 62A

Version 1

**Function Type:** Set Tank Annual Leak Test Minimum Volume

**Command Format:**

**Display:** <SOH>S62ATTGGGGGG

**Computer:** <SOH>s62ATTFFFFFFFF

**Inquire:**

<SOH>I62ATT

<SOH>i62ATT

**Notes:**

1. TT - Tank Number (Decimal, 00=all)
2. GGGGGG - Annual Test Minimum Volume, Gallons (Decimal)
3. FFFFFFFF - Annual Test Minimum Volume, Gallons (ASCII Hex IEEE float)

**Typical Response Message, Display Format:**

<SOH>  
I62ATT  
JAN 22, 1996 3:19 PM

ANNUAL LEAK TEST MIN VOLUME

| TANK | LABEL            | GALLONS |
|------|------------------|---------|
| 1    | REGULAR UNLEADED | 6000    |

<ETX>

**Typical Response Message, Computer Format:**

<SOH>i62ATTYYMMDDHHmmTTFFFFFFFF...  
TTFFFFFFFF&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. FFFFFFFF - Annual Test Minimum Volume, Gallons (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: 62C**

Version 1

**Function Type:** Set Tank Periodic Test Type

**Command Format:**

**Display:** <SOH>S62CTTp

**Computer:** <SOH>s62CTTp

**Inquire:**

<SOH>I62CTT

<SOH>i62CTT

**Typical Response Message, Display Format:**

<SOH>  
I62CTT  
JAN 22, 1996 3:19 PM  
  
TANK PERIODIC TEST TYPE

| TANK | LABEL            | PERIODIC TEST TYPE |
|------|------------------|--------------------|
| 1    | REGULAR UNLEADED | QUICK              |

<ETX>

**Typical Response Message, Computer Format:**

<SOH>i62CTTYMMDDHHmmTTp...  
TTp&&CCCC<ETX>

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. p - Periodic Test Type:  
0=Standard Test  
1=Quick Test (only MAG Probes may be set to QUICK)
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 62D

Version 1

**Function Type:** Set Enable/Disable Tank Leak Test Fail Alarms

**Command Format:**

**Display:** <SOH>S62DDTTgpa

**Computer:** <SOH>s62DDTTgpa

**Inquire:**

<SOH>I62DDTT

<SOH>i62DDTT

### Typical Response Message, Display Format:

<SOH>  
I62DDTT  
JAN 22, 1996 3:19 PM  
  
TANK LEAK TEST FAIL ALARMS

| TANK | LABEL            |                    |                |
|------|------------------|--------------------|----------------|
| 1    | REGULAR UNLEADED | GROSS TEST FAIL    | ALARM DISABLED |
|      |                  | PERIODIC TEST FAIL | ALARM DISABLED |
|      |                  | ANNUAL TEST FAIL   | ALARM DISABLED |

<ETX>

### Typical Response Message, Computer Format:

<SOH>i62DDTTYMMDDHHmmTTgpa...  
TTgpa&&CCCC<ETX>

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. g - Gross Test Fail Alarm  
0=Disabled  
1=Enabled
4. p - Periodic Test Fail Alarm  
0=Disabled  
1=Enabled
5. a - Annual Test Fail Alarm  
0=Disabled  
1=Enabled
6. && - Data Termination Flag
7. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 62F  
**Function Type:** Set MAG Probe Float Size

Version 1

**Command Format:**  
**Display:** <SOH>S62FTTf  
**Computer:** <SOH>s62FTTf

**Inquire:**  
<SOH>I62FTT  
<SOH>i62FTT

### Typical Response Message, Display Format:

```
<SOH>
I62FTT
JAN 22, 1996 3:19 PM

MAG PROBE FLOAT SIZE

TANK LABEL FLOAT SIZE:
 1 REGULAR UNLEADED 4.0 IN. PHASE SEPARATION
 2 PREMIUM 4.0 IN.
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>i62FTTYMMDDHHmmTTf...
 TTf&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. f - MAG Probe Float Size
  - 0=4.0"
  - 1=2.0"
  - 2=3.0"
  - 3=1.0"
  - 4=4.0" - Phase Separation (Version 2)
  - 5=2.0" - Low Water (Version 6)
  - 9=CUSTOM
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 62G  
Function Type: Tank Chart

Version 2

Command Format:  
Display: <SOH>I62GTT  
Computer: <SOH>i62GTT

### Notes:

1. TT - Tank Number [01..32], (Decimal, 00=all, inquire only)

### Typical Response Message, Display Format:

```
<SOH>
I62GTT
JAN 24, 2009 2:52 PM

TANK CHARTS

TANK CHART ID STATUS

 01 01 ACTIVE
 02 READY
 03 BAD POINT
 04 INCOMPLETE
 05 CALCULATING

 02 01 ACTIVE
 02 READY
 03 BAD POINT
 04 INCOMPLETE
 05 CALCULATING

<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>i62GTTYMMDDHHmmTTNNIIIs...IIIs
 TTNNIIIs...IIIs&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number [01..32], (Decimal, 00=all)
3. NN - Number of charts [00..99] (Decimal)
4. II - Chart ID Number [01..99] (Decimal)
5. s - Status  
0=Active Chart  
1=Ready Chart  
2=Incomplete Chart  
3=Bad Point Chart  
4=Calculating Chart
6. && - Data Termination Flag
7. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 630

**Function Type:** Set Tank Leak Test Notify

Version 1

**Command Format:**

**Display:** <SOH>S630TTf

**Computer:** <SOH>s630TTf

**Inquire:**

<SOH>I630TT

<SOH>i630TT

### Typical Response Message, Display Format:

<SOH>  
I630TT  
JAN 22, 1996 3:20 PM  
  
IN-TANK LEAK TEST NOTIFY

TANK	LABEL	TANK TEST NOTIFY:
1	REGULAR UNLEADED	OFF

<ETX>

### Typical Response Message, Computer Format:

<SOH>i630TTYMMDDHHmmTTf...  
TTf&&CCCC<ETX>

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. f - Tank Leak Test Notify  
0=OFF  
1=ON
4. && - Data Termination Flag
5. CCCC - Message Checksum



# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 632

**Function Type:** Set Tank Test Siphon Break

Version 1

**Command Format:**

**Display:** <SOH>S632TTf

**Computer:** <SOH>s632TTf

**Inquire:**

<SOH>I632TT

<SOH>i632TT

### Typical Response Message, Display Format:

<SOH>  
I632TT  
JAN 22, 1996 3:20 PM

TANK TEST SIPHON BREAK

TANK	LABEL	SIPHON BREAK
1	REGULAR UNLEADED	OFF

<ETX>

### Typical Response Message, Computer Format:

<SOH>i632TTYMMDDHHmmTTf...  
TTf&&CCCC<ETX>

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. f - Tank Test Siphon Break  
0=OFF  
1=ON
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: 634**

Version 4

**Function Type:** Set Tank HRM Reconciliation Warning Limit

**Command Format:**

**Display:** <SOH>S634TTGGGGGG

**Computer:** <SOH>s634TTFFFFFFFF

**Inquire:**

<SOH>I634TT

<SOH>i634TT

**Notes:**

1. TT - Tank Number (Decimal, 00=all)
2. GGGGGG - HRM Reconciliation Warning Limit, Gallons (Decimal)
3. FFFFFFFF - HRM Reconciliation Warning Limit, Gallons (ASCII Hex IEEE float)

**Typical Response Message, Display Format:**

<SOH>  
I634TT  
JAN 22, 2011 3:20 PM

RECONCILIATION WARNING LIMIT

TANK	PRODUCT LABEL	GALLONS
1	REGULAR UNLEADED	50

<ETX>

**Typical Response Message, Computer Format:**

<SOH>i634TTYMMDDHHmmTTFFFFFFFF...  
TTFFFFFFFF&&CCCC<ETX>

**Notes:**

1. YMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. FFFFFFFF - HRM Reconciliation Warning Limit, Gallons (ASII Hex IEEE Float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 635

Version 4

**Function Type:** Set Tank HRM Reconciliation Alarm Limit

**Command Format:**

**Display:** <SOH>S635TTGGGGGG

**Computer:** <SOH>s635TTFFFFFFFF

**Inquire:**

<SOH>I635TT

<SOH>i635TT

**Notes:**

1. TT - Tank Number (Decimal, 00=all)
2. GGGGGG - HRM Reconciliation Alarm Limit, Gallons (Decimal)
3. FFFFFFFF - HRM Reconciliation Alarm Limit, Gallons (ASCII Hex IEEE float)

**Typical Response Message, Display Format:**

```
<SOH>
I635TT
JAN 22, 2011 3:20 PM

RECONCILIATION ALARM LIMIT

TANK PRODUCT LABEL GALLONS
 1 REGULAR UNLEADED 90
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i635TTYMMDDHHmmTTTTTTTTTT...
 TTTTTTTTTT&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. FFFFFFFF - HRM Reconciliation Alarm Limit, Gallons (ASII Hex IEEE Float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 636

Version 1

**Function Type:** Set Tank Periodic Leak Test Minimum Volume

**Command Format:**

**Display:** <SOH>S636TTGGGGGG

**Computer:** <SOH>s636TTFFFFFFFF

**Inquire:**

<SOH>I636TT

<SOH>i636TT

**Notes:**

1. TT - Tank Number (Decimal, 00=all)
2. GGGGGG - Periodic Test Minimum Volume, Gallons (Decimal)
3. FFFFFFFF - Periodic Test Minimum Volume, Gallons (ASCII Hex IEEE float)

**Typical Response Message, Display Format:**

```
<SOH>
I636TT
JAN 22, 1996 3:19 PM

PERIODIC LEAK TEST MIN VOLUME

TANK LABEL GALLONS
 1 REGULAR UNLEADED 3000
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i636TTYMMDDHHmmTTTTTTTTTT...
 TTTTTTTTTT&&CCCC<ETX>
```

**Notes:**

1. YMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. FFFFFFFF - Periodic Test Minimum Volume, Gallons (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: 639**

Version 2

**Function Type:** Set Tank AccuChart End Shape Type and Factor

**Command Format:**

**Display:** <SOH>S639TTSU.t

**Computer:** <SOH>s639TTSFFFFFFFF

**Inquire:**

<SOH>I639TT

<SOH>i639TT

**Notes:**

1. TT - Tank Number (Decimal, 00=all)
2. S - End Shape Type
  - 0=None
  - 1=Flat
  - 2=Hemispheric
  - 3=Other (requires factor)
3. U.t - End Shape Factor, Units and tenths (Decimal, 0.0-1.0)
4. FFFFFFFF - End Shape Factor (ASCII Hex IEEE float)

**Typical Response Message, Display Format:**

<SOH>

I639TT

09/23/2013 9:08 AM

TANK	TANK LABEL	END FACTOR	END VALUE
1	REGULAR UNLEADED	NONE	
2	ULTRA	OTHER	0.2
3	DIESEL	NONE	

<ETX>

**Typical Response Message, Computer Format:**

<SOH>i639TTYMMDDHHmmTTSFFFFFFFF...  
TTSFFFFFFFF&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. S - End Shape Type
  - 0=None
  - 1=Flat
  - 2=Hemispheric
  - 3=Other (requires factor)
4. FFFFFFFF - End Shape Factor (ASCII Hex IEEE float)
5. && - Data Termination Flag
6. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: 63A**

Version 1

**Function Type:** Set Tank Low Level Threshold for Sequential Line Manifold

**Command Format:**

**Display:** <SOH>S63ATTPP.hh

**Computer:** <SOH>s63ATTFFFFFFFFF

**Inquire:**

<SOH>I63ATT

<SOH>i63ATT

**Notes:**

1. TT - Tank Number (Decimal, set for primary tank)
2. PP.hh - Low Level Pump Threshold, Percent and hundredths (Decimal)
3. FFFFFFFF - Low Level Pump Threshold, Percent (ASCII Hex IEEE float)

**Typical Response Message, Display Format:**

```
<SOH>
I63A00
JUN 1, 2001 8:07 AM

LOW LEVEL PUMP THRESHOLD FOR SEQUENTIAL LINE MANIFOLD

TANK LABEL PUMP THRESHOLD
 1 REGULAR UNLEADED 10.00%
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i63A00YYMMDDHHmmTTFFFFFFFF...
 TTFFFFFFFF&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, set for primary tank)
3. FFFFFFFF - Low Level Pump Threshold, Percent (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 63C

Version 3

**Function Type:** Set Tank Multi Point Full Volume

**Command Format:**

**Display:** <SOH>S63CTTGGGGGG

**Computer:** <SOH>s63CTTVVVVVVVV

**Inquire:**

<SOH>I63CTT

<SOH>i63CTT

**Notes:**

1. TT - Tank Number (Decimal, 00=All)
2. GGGGGG - Volume, Gallons (Decimal)
3. VVVVVVVV - Volume, Gallons (ASCII Hex IEEE float)

**Typical Response Message, Display Format:**

```
<SOH>
I63C00
SEP 16, 2011 3:15 PM

TANK MULTI POINT FULL VOLUME

TANK PRODUCT LABEL VOLUME
 1 REGULAR UNLEADED 100000
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i63CTTYMMDDHHmmTTVVVVVVVV...
 TTVVVVVVVV&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. FFFFFFFF - Volume, Gallons (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 63D  
**Function Type:** Set Tank Vapor Loss Factor

Version 5

**Command Format:**  
**Display:** <SOH>S63DTTo.00  
**Computer:** <SOH>s63DTTooooooooo

**Inquire:**  
<SOH>I63DTT  
<SOH>i63DTT

### Notes:

1. TT - Tank Number (Decimal, 00=all)
2. 0.00 - Vapor Loss Factor, Percent(Decimal, 0.00 B 0.20)
3. ooooooooo - Vapor Loss Factor, Percent(ASCII Hex IEEE Float 0.00B0.20)

### Typical Response Message, Display Format:

<SOH>  
I63D00  
APR 10, 2007 10:15 AM

VAPOR LOSS FACTOR

TANK	TANK LABEL	FACTOR
1	REGULAR	0.14%
2	PREMIUM	0.15%
3	DIESEL	0.00%

<ETX>

### Typical Response Message, Computer Format:

<SOH>i63DTTYMMDDHHmmNNTTooooooooo...  
TToooooooo&&CCCC<ETX>

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. NN - Number of tank entries to follow(Decimal)
3. TT - Tank Number (Decimal, 00=all)
4. ooooooooo - Vapor Loss Factor, Percent(ASCII Hex IEEE Float)
5. && - Data Termination Flag
6. CCCC - Message Checksum



# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: 63E**

Version 3

**Function Type:** Set Tank Multi-Point Heights and Volumes

**Command Format:**

**Display:** <SOH>S63ETTfnnIII.tttGGGGGGGGG..III.tttGGGGGGGGG <SOH>I63ETT  
**or:** <SOH>S63ETTfnnII.ttt,GGGGGGGG, ..II.ttt,GGGGGGGG  
**or:** <SOH>S63ETT9149

**Inquire:**

**Computer:** <SOH>s63ETTfnnHHHHHHHHVVVVVVVVV...HHH

<SOH>i63ETT

### Notes:

1. Set command is only valid if Tank Chart Security is disabled (Future)
2. f - Command Flag (hex)
  - a. 0=Return Height/Volume Pairs (inquire mode only)
  - b. 1=Add Height/Volume Pair(s) (set mode only)
  - c. 2=Remove Height/Volume Pair(s) (set mode only)
  - d. 3=Return Number of Pairs (inquire mode only)
  - e. 9=Clear Chart (set mode only, 149 required)
3. nn - Number of Height/Volume Pairs to follow (Decimal)  
 A maximum of 10 pairs can be sent per command to avoid overflowing the buffer
4. III.ttt - Height Inches (mm in metric) (Decimal)
5. GGGGGGGGG - Volume, Gallons (liters in metric) (Decimal)
6. HHHHHHHH - Height, Inches (mm in metric) (ASCII Hex IEEE float)
7. VVVVVVVV - Volume, Gallons (liters in metric) (ASCII Hex IEEE float)
8. SSSSS - optional starting point number. Defaults to 1. (Decimal)
9. EEEEE - optional ending point number. Defaults to last point. (Decimal)
10. ssss - optional starting point number. Defaults to 1. (Hex)
11. eeee - optional ending point number. Defaults to last point. (Hex)
12. Adding a pair with a duplicate Height will be rejected.
13. If errors occur when Adding or removing multiple pairs, no action will be done on any of the points.
14. In Inquire mode f=0, if the end is omitted, the last point will be the end
15. In Inquire mode f=0, if the start is omitted, 0 is used, all points will be returned
16. In Inquire mode, if f is omitted, 0 is used, all points will be returned

### Typical Response Message, Display Format:

<SOH>  
 I63ETT  
 SEP 16, 2004 3:15 PM

TANK MULTI-POINT HEIGHTS AND VOLUMES

T 1: REGULAR UNLEADED

TANK CAPACITY : 10000  
 CONSOLE SERIAL NUMBER: xxxxxxxxxxxxxxxxxxxxxxxx  
 PROBE S/N : YYYYYY  
 WEIGHTS AND MEASURES: zzzzzzzzzzzzzzzzzzzzz

DIAMETER 96.000  
 FULL VOLUME 10000.000  
 NUMBER OF PAIRS 3000

PAIR	HEIGHT	VOLUME	PAIR	HEIGHT	VOLUME	PAIR	HEIGHT	VOLUME
1	94.080	9800.000	1001	63.080	7800.000	2001	32.000	2800.000
2	92.160	9600.000	1002	61.160	7600.00	2002	30.320	2700.000

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code 63E:** (Continued)

3	90.240	9400.000	1003	59.320	7200.00	2003	29.820	2500.000
:								
:								
999	65.080	8000.000	1999	33.000	3100.000	2999	1.92	200.000
1000	64.420	7900.000	2000	32.500	3000.000	3000	1.00	100.000
<ETX>								

**Typical Response Message, Computer Format:**

Inquire mode, f=0, if s=1 (includes extra fields)

```
<SOH>i63ETTYMMDDHHmmfTTsc-----xxxxxxxxxxxxxxxxxxxxxyyyyyyzzzzzzzzzzzzzzzzzzzz...
 ddddddfffnnnnHHHHHHHHVVVVVVV...
 HHHHHHHVVVVVVV...
 TTsc-----xxxxxxxxxxxxxxxxxxxxxyyyyyyzzzzzzzzzzzzzzzzzzzz...
 ddddddfffnnnnHHHHHHHHVVVVVVV...
 HHHHHHHVVVVVVV&CCCC<ETX>
```

Inquire mode, f=0, if s=0

[illegible]

Inquire mode, f=3

[illegible]

Set mode, f=1 is the same as Inquire mode, but contains only the points added.

```
if s=1 (includes extra fields)
```

[illegible]

**if  $s=0$**

[illegible]

Set mode, if f=2

<SOH>i63ETTYMMDDHHmmfTTnnnn

Set mode, if f=9

<SOH>s63ETTYMMDDHHmmfTTnnnn

**Notes:**

- ```

1.      YYMMDDHHmm - Current Date and Time
2.      TT - Tank Number (Decimal, 00=all)
3.      f - Command Flag (hex)
          a. 0=Return Height/Volume Pairs      (inquire mode only)
          b. 1=Add Height/Volume Pair(s)        (set mode only)
          c. 2=Remove Height/Volume Pair(s)     (set mode only)
          d. 3=Return Number of Pairs            (inquire mode only)
          e. 9=Clear Chart                      (set mode only, 149
              required)
4.      s - Tank Chart Security Flag
          0=Disabled
          1=Enabled

```

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code 63E Notes: (Continued)

The following 4 fields marked with an asterisk are only present if Tank Chart Security is enabled.

- 5. cccccccc - * Tank Capacity, Gallons (ASCII Hex IEEE float)
- 6. x...x - * Console Serial Number (20 ASCII characters [20h-7Eh])
- 7. yyyyyy - * Probe Serial Number (Decimal)
- 8. z...z - * Weights and Measures Office (20 ASCII characters [20h-7Eh])

- 9. dddddddd - Tank Diameter, Inches (ASCII Hex IEEE float)
- 10. ffffffff - Full Volume, Gallons (ASCII Hex IEEE float)
- 11. nnnn - Number of Height/Volume Pairs (Hex)
- 12. HHHHHHHH - Height, Inches (ASCII Hex IEEE float)
- 13. VVVVVVVV - Volume, Gallons (ASCII Hex IEEE float)
- 14. && - Data Termination Flag
- 15. CCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 63H

Version 2

Function Type: Set Accuchart Delete Chart

Command Format:

Display: <SOH>S63HTT149II

Computer: <SOH>s63HTT149II

Inquire:

<SOH>I63HTT

<SOH>i63HTT

Notes:

1. TT - Tank Number [01..32], (Decimal, set for primary tank)
2. II - Chart ID number [02...99]
3. Chart ID=1 always exists. It cannot be deleted.
4. Set operation requires AccuChart to be installed.

Typical Response Message, Display Format:

```
<SOH>
I63HTT
JAN 24, 2009  2:52 PM

TANK CHARTS

TANK  CHART ID  STATUS
-----
 01    01    ACTIVE CHART
      02    READY CHART
      06    BAD POINT CHART
      07    INCOMPLETE CHART
      08    CALCULATING CHART

 02    01    ACTIVE CHART
      06    READY CHART
      07    BAD POINT CHART
      08    INCOMPLETE CHART
      09    CALCULATING CHART

<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i63HTTYMMDDHHmmTTNNIIIs...IIIs
TTNNIIIs...IIIs&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number [01..32], (Decimal, 00=all)
3. NN - Number of charts [00...99] (Decimal)
4. II - Chart ID Number [01...99] (Decimal)
5. s - Status
 - 0=Active Chart
 - 1=Ready Chart
 - 2=Incomplete Chart
 - 3=Bad Point Chart
 - 4=Calculating Chart
6. && - Data Termination Flag
7. CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 641
Function Type: Set Density Code

Version 3

Command Format:
Display: <SOH>S641PPSSSSSSSSSSSSSSSS
Computer: <SOH>s641PPSSSSSSSSSSSSSSSS

Inquire:
<SOH>I641PP
<SOH>i641PP

Notes:

1. SSSSSSSSSSSSSS - Density Code (Entry is 14 characters or empty))

Typical Response Message, Display Format:

```
<SOH>
I641PP
JAN 22, 2010  3:16 PM

DENSITY FLOAT CODE

PROBE   CODE
1       B7053686719512
2
3       A7058696729713
4       B7056772719214
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i641PPYYMMDDHHmmPPNNSSSSSSSSSSSSSS...&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. PP - Probe Number (Decimal, 00=all)
3. NN - Number of characters to follow
4. SSSSSSSSSSSSSS - Density Code
5. && - Data Termination Flag
6. CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 642

Version 3

Function Type: Set Tank Water Alarm Filter Level

Command Format:

Display: <SOH>S642TTf

Computer: <SOH>s642TTf

Inquire:

<SOH>I642TT

<SOH>i642TT

Notes:

1. TT - Tank Number (Decimal, 00=all)
2. f - Water alarm filter level

Typical Response Message, Display Format:

```
<SOH>
I64200
JAN 22, 2010  3:12 PM

WATER ALARM FILTER LEVEL

TANK    PRODUCT LABEL
  1      REGULAR          LOW
  2      MID GRADE        MEDIUM
  3      PREMIUM          HIGH
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i642TTYMMDDHHmmTTf...
                        TTf&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. f - Tank Water Alarm Filter Level
 - 1 = Low
 - 2 = Medium
 - 3 = High
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 644

Version 3

Function Type: Set Probe Density Float Serial Number

Command Format:

Display: <SOH>S644PPSSSSSSSS

Computer: <SOH>s644PPSSSSSSSS

Inquire:

<SOH>I644PP

<SOH>i644PP

Notes:

1. PP - Probe Number (Decimal, 00=all, inquiry only)

Typical Response Message, Display Format:

```
<SOH>
I64400
JAN 22, 2011  3:12 PM

PROBE DENSITY FLOAT SERIAL NUMBER

PROBE  PRODUCT LABEL          DENSITY FLOAT S/N
  1    REGULAR UNLEADED        11100123
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i644PPYMMDDHHmmPPSSSSSSSS...
PPSSSSSSSS&&CCCC<ETX>
```

Notes:

1. YMMDDHHmm - Current Date and Time
2. PP - Probe Number (Decimal, 00=all, inquiry only)
3. SSSSSSSS - Density Float Serial Number (Decimal)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 645

Version 3

Function Type: Set Tank GOST Volume Corection Enable

Command Format:

Display: <SOH>S645TTf

Computer: <SOH>s645TTf

Inquire:

<SOH>I645TT

<SOH>i645TT

Typical Response Message, Display Format:

<SOH>

I64500

JUN 29, 2011 3:16 PM

TANK GOST VOLUME CORRECTION ENABLE

TANK	PROCDUCT LABEL	GOST VOLUME CORRECTION
1	REGULAR UNLEADED	DISABLED

<ETX>

Typical Response Message, Computer Format:

<SOH>i645TTYMMDDHHmmTTf...

TTf&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. f - GOST Volume Correction Enable Flag
0 = Disabled
1 = Enabled
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 648
Function Type: Set Probe Water Minimum

Version 4

Command Format:
Display: <SOH>S648TTI.hhh
Computer: <SOH>s648TTFFFFFFFF

Inquire:
<SOH>I648TT
<SOH>i648TT

Notes:

1. TT - Tank Number (Decimal, 00=all)
2. I.hhh - Water Minimum, Inches and thousandths (Decimal)
3. FFFFFFFF - Tank Number (Decimal, 00=all)

Typical Response Message, Display Format:

<SOH>
I64800
JAN 22, 2012 3:12 PM

WATER MINIMUM

TANK	PRODUCT LABEL	INCHES
1	REGULAR	0.633

<ETX>

Typical Response Message, Computer Format:

<SOH>i648TTYMMDDHHmmTTFFFFFFFF...TTFFFFFFFF&&CCCC<ETX>

Notes:

1. YMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. FFFFFFFF - Probe Offset, Inches (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 649

Version 6

Function Type: Set Fuel High Temp Warning Limit

Command Format:

Display: <SOH>S649TTDDD.t

Computer: <SOH>s649TTFFFFFFFF

Inquire:

<SOH>I649TT

<SOH>i649TT

Notes:

1. DDD.t - Tank High Temp Warning Limit, Degrees and tenths (Decimal)
2. FFFFFFFF - Tank High Temp Warning Limit, Degrees (ASCII Hex IEEE float)

Typical Response Message, Display Format:

```
<SOH>
I64900
JAN 22, 2015  3:12 PM

FUEL HIGH TEMP WARNING LIMIT

TANK   PRODUCT LABEL          DEG F
  1     REGULAR              122.0
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i649TTYMMDDHHmmTTFFFFFFFF...
                        TTTFFFFFFFFF&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. FFFFFFFF - Fuel High Temp Warning Limit, Degrees (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 64A
Function Type: Set Fuel Low Temp Warning Limit

Version 6

Command Format:
Display: <SOH>S64ATTDDD.t
Computer: <SOH>s64ATTFFFFFFFF

Inquire:
<SOH>I64ATT
<SOH>i64ATT

Notes:

1. DDD.t - Tank Low Temp Warning Limit, Degrees and tenths (Decimal)
2. FFFFFFFF - Tank Low Temp Warning Limit, Degrees (ASCII Hex IEEE float)

Typical Response Message, Display Format:

```
<SOH>
I64A00
JAN 22, 2015  3:12 PM

FUEL LOW TEMP WARNING LIMIT

TANK    PRODUCT LABEL          DEG C
  2      REGULAR              -40.0
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>i64ATTYYMMDDHHmmTTFFFFFFFF...
                        TTTFFFFFFFFF&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. FFFFFFFF - Fuel Low Temp Warning Limit, Degrees (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 64B

Version 33

Function Type: Set Tank Water Alarm Filter Delay

Command Format:

Display: <SOH>S64BTTf

Computer: <SOH>s64BTTf

Inquire:

<SOH>I64BTT

<SOH>i64BTT

Notes:

1. TT - Tank Number (Decimal, 00=all)
2. f - Water alarm delay level
3. The set command is only operational for the water alarm filter level OFF.
For filter levels Low, Medium and High the delay time is fixed at 180 seconds.

Typical Response Message, Display Format:

<SOH>

I64B00

JAN 22, 2010 3:12 PM

WATER ALARM FILTER DELAY

TANK PRODUCT LABEL

1 REGULAR 30 S

2 MID GRADE 120 S

3 PREMIUM 180 S

<ETX>

Typical Response Message, Computer Format:

<SOH>i64BTTYMMDDHHmmTTf...

TTf&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal)
3. f - Tank Water Alarm Filter Delay
 - 1 = 30 seconds
 - 2 = 60 seconds
 - 3 = 90 seconds
 - 4 = 120 seconds
 - 5 = 150 seconds
 - 6 = 180 seconds
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 671

Version 3

Function Type: Set Tank Density High Limit

Command Format:

Display: <SOH>S671TTdd.ddd

Computer: <SOH>s671TTFFFFFFFF

Inquire:

<SOH>I671TT

<SOH>i671TT

Notes:

1. TT - Tank Number (Decimal, 00=all)
2. dd.ddd - Density High Limit (Decimal)
Value Range = [42.139, 56.185] [US]
Value Range = [675.00, 900.00] [Metric]
3. FFFFFFFF - Density High Limit (ASCII Hex IEEE float)

Typical Response Message, Display Format:

<SOH>
I671TT
JAN 22, 2010 3:16 PM

TANK DENSITY HIGH LIMIT

TANK	PRODUCT LABEL	LBS/FT^3
1	REGULAR UNLEADED	56.185

<ETX>

Typical Response Message, Computer Format:

<SOH>i671TTYMMDDHHmmTTFFFFFFFF&&CCCC<ETX>

Notes:

1. YMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. FFFFFFFF - Density High Limit (ASCII Hex IEEE float)
Value Range = [41.139, 56.185]
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 672

Version 3

Function Type: Set Tank Density Low Limit

Command Format:

Display: <SOH>S672TTdd.ddd

Computer: <SOH>s672TTFFFFFFFF

Inquire:

<SOH>I672TT

<SOH>i672TT

Notes:

1. TT - Tank Number (Decimal, 00=all)
2. dd.ddd - Density Low Limit (Decimal)
Value Range = [42.139, 56.185] [US]
Value Range = [675.00, 900.00] [Metric]
3. FFFFFFFF - Density Low Limit (ASCII Hex IEEE float)

Typical Response Message, Display Format:

<SOH>

I672TT

JAN 22, 2010 3:16 PM

TANK DENSITY LOW LIMIT

TANK	PRODUCT LABEL	LBS/FT^3
1	REGULAR UNLEADED	42.139

<ETX>

Typical Response Message, Computer Format:

<SOH>i672TTYMMDDHHmmTTFFFFFFFF&&CCCC<ETX>

Notes:

1. YMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. FFFFFFFF - Density Low Limit (ASCII Hex IEEE float)
Value Range = [41.139, 56.185]
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 6A4

Version 1

Function Type: Set Tank 1 Point Full Height Volume for Tall Tanks

Command Format:

Display: <SOH>S6A4TTGGGGGGGGGGGG

Computer: <SOH>s6A4TTFFFFFFFF

Inquire:

<SOH>I6A4TT

<SOH>i6A4TT

Notes:

1. TT - Tank Number (Decimal, 00=all)
2. GGGGGGGGGGGG - Full Height Volume, Gallons (Decimal)
3. FFFFFFFF - Full Height Volume, Gallons (ASCII Hex IEEE float)

Typical Response Message, Display Format:

<SOH>
I6A4TT
JAN 22, 1996 3:16 PM

TANK FULL VOLUME

TANK	LABEL	GALLONS
1	REGULAR UNLEADED	9728

<ETX>

Typical Response Message, Computer Format:

<SOH>i6A4TTYMMDDHHmmTTTTTTTTTT...
TTTTTTTTTT&&CCCC<ETX>

Notes:

1. YMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. FFFFFFFF - Full Height Volume, Gallons (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 6A5

Version 1

Function Type: Set Tank 4 Point Full, 3/4, 1/2, 1/4 Volumes for Tall Tanks

Command Format:

Inquire:

Display: <SOH>S6A5TTGGGGGGGGGGGGgggggggggggggg...

<SOH>I6A5TT

or: <SOH>S6A5TTGGGGG,ggggg,GGGG,ggg

Computer: <SOH>s6A5TTFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF

<SOH>i6A5TT

Notes:

- | | | | |
|----|--------------|--|--|
| 1. | TT | - Tank Number (Decimal, 00=all) | |
| 2. | GGGGGGGGGGGG | - Full Height Volume, Gallons (Decimal) | |
| 3. | gggggggggggg | - 3/4 Height Volume, Gallons (Decimal) | |
| 4. | GGGGGGGGGGGG | - 1/2 Height Volume, Gallons (Decimal) | |
| 5. | gggggggggggg | - 1/4 Height Volume, Gallons (Decimal) | |
| 6. | FFFFFFFF | - Full Height Volume, Gallons (ASCII Hex IEEE float) | |
| 7. | fffffff | - 3/4 Height Volume, Gallons (ASCII Hex IEEE float) | |
| 8. | FFFFFFFF | - 1/2 Height Volume, Gallons (ASCII Hex IEEE float) | |
| 9. | fffffff | - 1/4 Height Volume, Gallons (ASCII Hex IEEE float) | |

Typical Response Message, Display Format:

<SOH>

I6A5TT

JAN 22, 1996 3:16 PM

TANK 4 POINT VOLUMES

TANK	LABEL	GALLONS			
1	REGULAR UNLEADED	9728	7296	4864	2432
<ETX>					

Typical Response Message, Computer Format:

```
<SOH>i6A5TTYMMDDHHmmTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT...
                                TTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT&&CCCC<ETX>
```

Notes:

- ```

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. FFFFFFFF - Full Height Volume, Gallons (ASCII Hex IEEE float)
4. ffffffff - 3/4 Height Volume, Gallons (ASCII Hex IEEE float)
5. FFFFFFFF - 1/2 Height Volume, Gallons (ASCII Hex IEEE float)
6. ffffffff - 1/4 Height Volume, Gallons (ASCII Hex IEEE float)
7. && - Data Termination Flag
8. CCCC - Message Checksum

```



# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: 6A6**

Version 1

**Function Type:** Set Tank 20 Point Full, 95%, 90%,...Volumes for Tall Tanks

**Command Format:**

**Display:** <SOH>S6A6TTGGGGGGGGGGGGgggggggggggg...

**or:** <SOH>S6A6TTGGGGG,gggg,GGGG,...

**Computer:** <SOH>s6A6TTFFFFFFFFF...

**Inquire:**

<SOH>I6A6TT

<SOH>i6A6TT

**Notes:**

1. TT - Tank Number (Decimal, 00=all)
2. GGGGGGGGGGGGgggggggggggg - Series of 20 Volumes, Gallons (Decimal)
3. FFFFFFFF - Series of 20 Volumes, Gallons (ASCII Hex IEEE float)

**Typical Response Message, Display Format:**

```
<SOH>
I6A6TT
JAN 22, 1996 3:16 PM

TANK 20 POINT VOLUMES

TANK LABEL GALLONS
 1 REGULAR UNLEADED 9720 9234 8748 8262
 7776 7290 6804 6318
 5832 5346 4860 4372
 3888 3402 2916 2430
 1944 1458 972 486

<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i6A6TTYMMDDHHmmTTTTTTTTTTTT...
 TTTTTTTTTT&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. FFFFFFFF - Series of 20 Volumes, Gallons (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 6A7

Version 1

**Function Type:** Set Tank Diameter for Tall Tanks

**Command Format:**

**Display:** <SOH>S6A7TTIIIII.hh

**Computer:** <SOH>s6A7TTFFFFFFFF

**Inquire:**

<SOH>I6A7TT

<SOH>i6A7TT

**Notes:**

1. TT - Tank Number (Decimal, 00=all)
2. IIII.hh - Tank Diameter, Inches and hundredths (Decimal)
3. FFFFFFFF - Tank Diameter, Inches (ASCII Hex IEEE float)

**Typical Response Message, Display Format:**

<SOH>  
I6A7TT  
JAN 22, 1996 3:16 PM

TANK DIAMETER

TANK	LABEL	INCHES
1	REGULAR UNLEADED	96.00

<ETX>

**Typical Response Message, Computer Format:**

<SOH>i6A7TTYMMDDHHmmTTFFFFFFFF...  
TTFFFFFFFF&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. FFFFFFFF - Tank Diameter, Inches (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: 6AA**

Version 1

**Function Type:** Set Tank Linear Calculated Full Volume for Tall Tanks

**Command Format:**

**Display:** <SOH>S6AATTGGGGGGGGGGGG

**Computer:** <SOH>s6AATTFFFFFFFF

**Inquire:**

<SOH>I6AATT

<SOH>i6AATT

### Notes:

1. TT - Tank Number (Decimal, 00=all)
2. GGGGGGGGGGGG - Full Height Volume, Gallons (Decimal)
3. FFFFFFFF - Full Height Volume, Gallons (ASCII Hex IEEE float)

### Typical Response Message, Display Format:

<SOH>

I6AATT

JAN 22, 1996 3:17 PM

TANK FULL VOLUME

TANK	LABEL	TANK PROFILE	GALLONS
1	REGULAR UNLEADED	1 PT	10000

<ETX>

### Typical Response Message, Computer Format:

<SOH>i6AATTYYMDDHHmmTTTTTTTTTT...  
TTTTTTTTTT&&CCCC<ETX>

### Notes:

1. YYMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. FFFFFFFF - Full height volume (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 6AF

Version 1

**Function Type:** Set Tank Probe Offset for Tall Tanks

**Command Format:**

**Display:** <SOH>S6AFTTIIIII.hh

**Computer:** <SOH>s6AFTTTFFFFFFFFF

**Inquire:**

<SOH>I6AFTT

<SOH>i6AFTT

**Notes:**

1. TT - Tank Number (Decimal, 00=all)
2. IIII.hh - Probe offset, Inches and hundredths (Decimal)
3. FFFFFFFF - Probe offset, Inches (ASCII Hex IEEE float)

**Typical Response Message, Display Format:**

<SOH>  
I6AFTT  
JAN 22, 1996 3:16 PM

PROBE OFFSET

TANK	LABEL	INCHES
1	TANK 1	2.80

<ETX>

**Typical Response Message, Computer Format:**

<SOH>i6AFTTTYMMDDHHmmTTFFFFFFFF...  
TTFFFFFFFF&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. FFFFFFFF - Probe offset, Inches (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 6C1

Version 1

**Function Type:** Set Tank Low Level Limit for Tall Tanks

**Command Format:**

**Display:** <SOH>S6C1TTGGGGGGGGGGGG

**Computer:** <SOH>s6C1TTFFFFFFFF

**Inquire:**

<SOH>I6C1TT

<SOH>i6C1TT

**Notes:**

1. TT - Tank Number (Decimal, 00=all)
2. GGGGGGGGGG - Low Level Limit, Gallons (Decimal)
3. FFFFFFFF - Low Level Limit, Gallons (ASCII Hex IEEE float)

**Typical Response Message, Display Format:**

<SOH>  
I6C1TT  
JAN 22, 1996 3:18 PM

TANK LOW PRODUCT LIMIT

TANK	LABEL	GALLONS
1	REGULAR UNLEADED	1000

<ETX>

**Typical Response Message, Computer Format:**

<SOH>i6C1TTYMMDDHHmmTTFFFFFFFF...  
TTFFFFFFFF&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. FFFFFFFF - Low Level Limit, Gallons (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 6C2

Version 1

**Function Type:** Set Tank High Level Limit for Tall Tanks

**Command Format:**

**Display:** <SOH>S6C2TTGGGGGGGGGGGG

**Computer:** <SOH>s6C2TTFFFFFFFF

**Inquire:**

<SOH>I6C2TT

<SOH>i6C2TT

### Notes:

1. TT - Tank Number (Decimal, 00=all)
2. GGGGGGGGGGGG - High Level Limit, Gallons (Decimal)
3. FFFFFFFF - High Level Limit, Gallons (ASCII Hex IEEE float)

\* Set Tank Maximum Volume Limit (628 or 6C8 cmd) must be set before the High Level Limit.

### Typical Response Message, Display Format:

<SOH>  
I6C2TT  
JAN 22, 1996 3:18 PM  
  
TANK HIGH PRODUCT LIMIT

TANK	LABEL	GALLONS	PERCENT
1	REGULAR UNLEADED	770000	77

<ETX>

### Typical Response Message, Computer Format:

<SOH>i6C2TTYMMDDHHmmTTTTTTTTTT...  
TTTTTTTTTT&&CCCC<ETX>

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. FFFFFFFF - High Level Limit, Gallons (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 6C3

Version 1

**Function Type:** Set Tank Overfill Level Limit for Tall Tanks

**Command Format:**

**Display:** <SOH>S6C3TTGGGGGGGGGGGG

**Computer:** <SOH>s6C3TTFFFFFFFF

**Inquire:**

<SOH>I6C3TT

<SOH>i6C3TT

### Notes:

1. TT - Tank Number (Decimal, 00=all)
2. GGGGGGGGGGGG - Overfill Level Limit, Gallons (Decimal)
3. FFFFFFFF - Overfill Level Limit, Gallons (ASCII Hex IEEE float)

\* Set Tank Maximum Volume Limit (628 cmd) must be set before the Overfill Level Limit.

### Typical Response Message, Display Format:

<SOH>

I6C3TT

JAN 22, 1996 3:18 PM

TANK OVERFILL LEVEL LIMIT

TANK	LABEL	GALLONS	PERCENT
1	REGULAR UNLEADED	9300	0

<ETX>

### Typical Response Message, Computer Format:

<SOH>i6C3TTYMMDDHHmmTTTTTTTTT...  
TTTTTTTTT&&CCCC<ETX>

### Notes:

1. YMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. FFFFFFFF - Overfill Level Limit, Gallons (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 6C5

Version 1

**Function Type:** Set Tank Sudden Loss Limit for Tall Tanks

**Command Format:**

**Display:** <SOH>S6C5TTGGGGGGGGGGGG

**Computer:** <SOH>s6C5TTFFFFFFFF

**Inquire:**

<SOH>I6C5TT

<SOH>i6C5TT

**Notes:**

1. TT - Tank Number (Decimal, 00=all)
2. GGGGGGGGGGGG - Sudden Loss Limit, Gallons (Decimal)
3. FFFFFFFF - Sudden Loss Limit, Gallons (ASCII Hex IEEE float)

**Typical Response Message, Display Format:**

<SOH>  
I6C5TT  
JAN 22, 1996 3:18 PM

TANK SUDDEN LOSS LIMIT

TANK	LABEL	GALLONS
1	REGULAR UNLEADED	5556

<ETX>

**Typical Response Message, Computer Format:**

<SOH>i6C5TTYMMDDHHmmTTFFFFFFFF...  
TTFFFFFFFF&&CCCC<ETX>

**Notes:**

1. YMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. FFFFFFFF - Sudden Loss Limit, Gallons (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum



# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 6C8

Version 1

**Function Type:** Set Tank Maximum Volume Limit for Tall Tanks

**Command Format:**

**Display:** <SOH>S6C8TTGGGGGGGGGGGG

**Computer:** <SOH>s6C8TTFFFFFFFF

**Inquire:**

<SOH>I6C8TT

<SOH>i6C8TT

**Notes:**

1. TT - Tank Number (Decimal, 00=all)
2. GGGGGGGGGG - Maximum Volume Limit, Gallons (Decimal)
3. FFFFFFFF - Maximum Volume Limit, Gallons (ASCII Hex IEEE float)

**Typical Response Message, Display Format:**

<SOH>  
I6C8TT  
JAN 22, 1996 3:19 PM

TANK MAXIMUM VOLUME LIMIT

TANK	LABEL	GALLONS
1	REGULAR UNLEADED	9600

<ETX>

**Typical Response Message, Computer Format:**

<SOH>i6C8TTYMMDDHHmmTTFFFFFFFF...  
TTFFFFFFFF&&CCCC<ETX>

**Notes:**

1. YMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. FFFFFFFF - Maximum Volume Limit, Gallons (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 6C9

Version 1

**Function Type:** Set Tank Delivery Required Limit for Tall Tanks

**Command Format:**

**Display:** <SOH>S6C9TTGGGGGGGGGGGG

**Computer:** <SOH>s6C9TTFFFFFFFF

**Inquire:**

<SOH>I6C9TT

<SOH>i6C9TT

**Notes:**

1. TT - Tank Number (Decimal, 00=all)
2. GGGGGGGGGGGG - Delivery Required Limit, Gallons (Decimal)
3. FFFFFFFF - Delivery Required Limit, Gallons (ASCII Hex IEEE float)

**Typical Response Message, Display Format:**

<SOH>

I6C9TT

JAN 22, 1996 3:19 PM

TANK DELIVERY REQUIRED LIMIT

TANK	LABEL	GALLONS	PERCENT
1	TANK 1	2000000	20

<ETX>

**Typical Response Message, Computer Format:**

<SOH>i6C9TTYMMDDHHmmTTFFFFFFFF...  
TTFFFFFFFF&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. FFFFFFFF - Delivery Required Limit, Gallons (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 6SU  
**Function Type:** Printout Tank Setup Tabs

Version 2

**Command Format:**  
**Display:** <SOH>I6SUttTT  
**Computer:** not supported

### Notes:

1. tt - Tank Number (Decimal, [01..32] 00=all tanks)
2. TT - tab number
  - 00=All tabs
  - 01=General
  - 02=Limits
  - 03=Environmental Tests
  - 04=All Tanks
  - 05=Product
  - 06=Chart
  - 07=Manual Calibration
  - 08=Tank Charts
  - 09=Siphon Sets
  - 10=Accuchart

### Typical Response Message, Display Format:

```
<SOH>
I6SU01
JAN 22, 2009 3:19 PM

STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....

===== SETUP FOR ALL TANKS =====

USER ULLAGE: ENABLED - 95%
PRINT TC VOLUMES: ENABLED
TC REFERENCE TEMPERATURE: 60.0 DEG F

PERIODIC TEST NEEDED WARNINGS: ENABLED
DAYS BEFORE PERIODIC WARNING: 30
DAYS BEFORE PERIODIC ALARM: 60

ANNUAL TEST NEEDED WARNINGS: ENABLED
DAYS BEFORE ANNUAL WARNING: 30
DAYS BEFORE ANNUAL ALARM: 60
- - - - -
CSLD REID VAPOR PRESSURES

JAN: 1.0 MAY: 5.0 SEP: 9.0
FEB: 2.0 JUN: 6.0 OCT: 10.0
MAR: 3.0 JUL: 7.0 NOV: 11.0
APR: 4.0 AUG: 8.0 DEC: 12.0
- - - - -
F# PRODUCT LABEL T# TANK LABEL
- - - - -
01 SUPER 01 SUPER
02 DIESEL 02 DIESEL
03 REGULAR 03 NORTH REGULAR 1
 04 NORTH REGULAR 2
 05 REGULAR

===== SETUP FOR TANK 3 =====
CONFIGURED: YES
LABEL: NORTH REGULAR 1
PRODUCT CODE: 3
PROBE NUMBER: 3
PROBE OFFSET: 0.0
FULL VOLUME: 10000 GALLONS
```

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

### Function Code 6SU: (Continued)

```

DIAMETER: 96.0 INCHES
TILT: 0.0 INCHES
THERMAL COEFFICIENT: 0.0007
METER DATA PRESENT: NO
PUMP THRESHOLD: 200 GALLONS
STICK OFFSET FUEL: 0.0 INCHES
STICK OFFSET WATER: 0.0 INCHES
DELIVERY DELAY: 5.0 MINUTES
GROSS TEST FAIL: ALARMS ENABLED
PERIODIC TEST FAIL: ALARMS ENABLED
ANNUAL TEST FAIL: ALARMS ENABLED
- - - - -
MAX VOLUME: 9900 GALLONS
HIGH PRODUCT: 98%
DELIVERY OVERFILL: 95%
DELIVERY LIMIT: 90%
LOW PRODUCT: 500 GALLONS
HIGH WATER WARNING: 2.0 INCHES
HIGH WATER ALARM: 3.0 INCHES
LEAK ALARM LIMIT: 99 GALLONS
SUDDEN LOSS LIMIT: 75 GALLONS
HIGH TEMP WARNING: 80.0 DEG F
LOW TEMP WARNING: 30.0 DEG F
- - - - -
TANK TEST METHOD: CSLD
GROSS TEST AUTO CONFIRM: ENABLED
PROBABILITY OF DETECTION: 99%
CLIMATE FACTOR: MODERATE
EVAPORATION COMPENSATION: DISABLED
STAGE II VAPOR RECOVERY: DISABLED
- - - - -
TANK TEST METHOD: SLD
LEAK TEST RATE: 0.2 GPH
PERIODIC TEST TYPE: STANDARD
TEST FREQUENCY: mm/dd/yyyy hh:mm
GROSS TEST AUTO CONFIRM: N/A
TANK TEST SIPHON BREAK: OFF
DURATION: 2 HOURS
MINIMUM PERIODIC VOLUME: 50%
MINIMUM ANNUAL VOLUME: 40%
EARLY STOP: DISABLED
TANK TEST NOTIFY: ON
- - - - -
TANK PROFILE: TWENTY POINT
HEIGHT_ VOLUME # HEIGHT VOLUME
- - - - -
20 96.0 10000 10 48.0 5000
19 92.2 9600 9 44.4 4650
: : : :
: : : :
12 9.6 900 2 9.6 900
11 4.8 400 1 4.8 450
- - - - -
T3 SIPHON MANIFOLDED TO TANKS: 4,5
T3 LINE MANIFOLDED TO TANKS: NONE
- - - - -
CHART ID: 1
LABEL: SUMMER 2008
TYPE: ONE POINT
SOURCE: USER ENTERED
LAST CHANGE: yyyy-mm-dd
STATUS: ACTIVE
CAPACITY: 10000 GALLONS
ENDSHAPE: 0.000
OFFSET: -1.50 INCHES
TILT: 1.00 INCHES
DIAMETER: 96.1 INCHES
- - - - -
CHART ID: 2

```

# **Serial Interface Manual**

## **TLS4/TLS-450/TLS-450Plus Monitoring Systems**

LABEL:

WINTER 2008

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

### Function Code 6SU: (Continued)

TYPE: MULTI POINT

SOURCE: METERED DROP CHART

LAST CHANGE: yyyy-mm-dd

STATUS: INCOMPLETE CHART

VOLUME ENTRY: ABSOLUTE VOLUME

#	HEIGHT	VOLUME	#	HEIGHT	VOLUME
001	hhhh.hh	vvvvvv.vv	003	hhhh.hh	vvvvvv.vv
002	hhhh.hh	vvvvvv.vv	004	hhhh.hh	vvvvvv.vv

### ACCUCHART

UPDATE SCHEDULE: PERIODIC

APPLY DATE 1: yyyy/mm/dd

APPLY DATE 2: yyyy/mm/dd

APPLY DATE 3: yyyy/mm/dd

APPLY DATE 4: yyyy/mm/dd

CALIBRATION PERIOD: 120 DAYS

WARNINGS: ENABLED

<ETX>

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

### 7.3.7 SENSOR SETUP

**Function Code:** 701

Version 1

**Function Type:** Set Liquid Sensor Configuration

**Command Format:**

**Display:** <SOH>S701SSf

**Computer:** <SOH>s701SSf

**Inquire:**

<SOH>I701SS

<SOH>i701SS

**Typical Response Message, Display Format:**

```
<SOH>
I701SS
JAN 28, 1995 10:39 AM

LIQUID CONFIGURATION

DEVICE LABEL CONFIGURED
 1 LIQUID SENSOR #1 ON
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i701SSYYMMDDHHmmSSf...
SSf&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. SS - Liquid Sensor Number (Decimal, 00=all)
3. f - Configuration Flag  
0=Off  
1=On
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 702  
**Function Type:** Set Liquid Sensor Location Label

Version 1

**Command Format:**  
**Display:** <SOH>S702SSaaaaaaaaaaaaaaaaaaaaa  
**Computer:** <SOH>s702SSaaaaaaaaaaaaaaaaaaaaa

**Inquire:**  
<SOH>I702SS  
<SOH>i702SS

### Typical Response Message, Display Format:

```
<SOH>
I702SS
JAN 28, 1995 10:39 AM

LIQUID LABEL

DEVICE LABEL
 1 LIQUID SENSOR #1
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>i702SSYYMMDDHHmmSSaaaaaaaaaaaaaaaaaaaaa...
SSaaaaaaaaaaaaaaaaaaaaa&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. SS - Liquid Sensor Number (Decimal, 00=all)
3. a - Location Label (20 ASCII characters [20h-7Eh])
4. && - Data Termination Flag
5. CCCC - Message Checksum



# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: 703**

Version 1

**Function Type:** Set Liquid Sensor Type

**Command Format:**

**Display:** <SOH>S703SSt

**Computer:** <SOH>s703SSt

**Inquire:**

<SOH>I703SS

<SOH>i703SS

### Typical Response Message, Display Format:

```
<SOH>
I703SS
JAN 28, 1995 10:40 AM

LIQUID TYPE

SENSOR LOCATION TYPE
 1 LIQUID SENSOR #1 TRI-STATE (SINGLE FLOAT)
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>i703SSYYMMDDHHmmSSt...
 SSt&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. SS - Liquid Sensor Number (Decimal, 00=all)
3. t - Liquid Sensor Type:
  - 1=Tri-State
  - 2=Normally Closed
  - 3=Dual Float Hydrostatic
  - 4=Dual Float Discriminating
  - 5=Dual Float High Vapor
  - 6=Interceptor Sensor
  - 7=DW Sump 2-1 Sensor
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: 704**

Version 1

**Function Type:** Set Liquid Sensor Category

**Command Format:**

**Display:** <SOH>S704SSc

**Computer:** <SOH>s704SSc

**Inquire:**

<SOH>I704SS

<SOH>i704SS

### Typical Response Message, Display Format:

<SOH>  
I704SS  
JAN 28, 1995 10:40 AM

LIQUID CATEGORY

SENSOR	LOCATION	TYPE
1	LIQUID SENSOR #1	OTHER

<ETX>

### Typical Response Message, Computer Format:

<SOH>i704SSYYMMDDHHmmSSc...  
SSc&&CCCC<ETX>

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. SS - Liquid Sensor Number (Decimal, 00=all)
3. c - Liquid Sensor Category:
  - 1=Other
  - 2=Annular
  - 3=Dispenser Pan
  - 4=Monitoring Well
  - 5=STP Sump
  - 6=Containment Sump
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: 706**

Version 1

**Function Type:** Set Vapor Sensor Configuration

**Command Format:**

**Display:** <SOH>S706SSf

**Computer:** <SOH>s706SSf

**Inquire:**

<SOH>I706SS

<SOH>i706SS

### Typical Response Message, Display Format:

<SOH>  
I706SS  
JAN 28, 1995 10:40 AM

VAPOR CONFIGURATION

DEVICE	LABEL	CONFIGURED
1	VAPOR SENSOR #1	ON

<ETX>

### Typical Response Message, Computer Format:

<SOH>i706SSYYMMDDHHmmSSf...  
SSf&&CCCC<ETX>

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. SS - Vapor Sensor Number (Decimal, 00=all)
3. f - Configuration Flag  
0=Off  
1=On
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 707

Version 1

**Function Type:** Set Vapor Sensor Location Label

**Command Format:**

**Display:** <SOH>S707SSaaaaaaaaaaaaaaaaaaaaa

**Computer:** <SOH>s707SSaaaaaaaaaaaaaaaaaaaaa

**Inquire:**

<SOH>I707SS

<SOH>i707SS

**Typical Response Message, Display Format:**

<SOH>  
I707SS  
JAN 28, 1995 10:40 AM

VAPOR LABEL

DEVICE LABEL  
1 VAPOR SENSOR #1  
<ETX>

**Typical Response Message, Computer Format:**

SOH>i707SSYYMMDDHHmmSSaaaaaaaaaaaaaaaaaaaaa...  
SSaaaaaaaaaaaaaaaaaaaaa&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. SS - Vapor Sensor Number (Decimal, 00=all)
3. a - Location Label (20 ASCII characters [20h-7Eh])
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 708  
**Function Type:** Set Vapor Sensor Alarm Threshold

Version 1

**Command Format:**  
**Display:** <SOH>S708SSVVVVVV  
**Computer:** <SOH>s708SSFFFFFFFF

**Inquire:**  
<SOH>I708SS  
<SOH>i708SS

**Notes:**

1. SS - Vapor Sensor Number (Decimal, 00=all)
2. VVVVVV - Vapor alarm threshold (Decimal)
3. FFFFFFFF - Vapor alarm threshold (ASCII Hex IEEE float)

**Typical Response Message, Display Format:**

```
<SOH>
I708SS
JAN 28, 1995 10:41 AM

VAPOR ALARM THRESHOLD

SENSOR LOCATION THRESHOLD
 1 VAPOR SENSOR #1 100000
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i708SSYYMMDDHHmmSSFFFFFFFF...
 SSFFFFFFFF&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. SS - Vapor Sensor Number (Decimal, 00=all)
3. FFFFFFFF - Vapor alarm threshold (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: 709**

Version 1

**Function Type:** Set Vapor Sensor Category

**Command Format:**

**Display:** <SOH>S709SSt

**Computer:** <SOH>s709SSt

**Inquire:**

<SOH>I709SS

<SOH>i709SS

### Typical Response Message, Display Format:

```
<SOH>
I709SS
JAN 28, 1995 10:40 AM

VAPOR CATEGORY

SENSOR LOCATION CATEGORY
 1 VAPOR SENSOR #1 OTHER
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>i709SSYYMMDDHHmmSSc...
 SSc&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. SS - Vapor Sensor Number (Decimal, 00=all)
3. c - Vapor Sensor Category:
  - 1=Other
  - 2=Annular
  - 3=Dispenser Pan
  - 4=Monitoring Well
  - 5=STP Sump
  - 6=Containment Sump
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 711

Version 1

**Function Type:** Set Groundwater Sensor Configuration

**Command Format:**

**Display:** <SOH>S711SSf

**Computer:** <SOH>s711SSf

**Inquire:**

<SOH>I711SS

<SOH>i711SS

**Typical Response Message, Display Format:**

```
<SOH>
I711SS
JAN 28, 1995 10:41 AM

GROUNDWATER CONFIGURATION
```

DEVICE	LABEL	CONFIGURED
1	GROUNDWATER #1	ON

<ETX>

**Typical Response Message, Computer Format:**

```
<SOH>i711SSYYMMDDHHmmSSf...
SSf&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. SS - Groundwater Sensor Number (Decimal, 00=all)
3. f - Configuration Flag  
0=Off  
1=On
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 712

Version 1

**Function Type:** Set Groundwater Sensor Location Label

**Command Format:**

**Display:** <SOH>S712SSaaaaaaaaaaaaaaaaaaaaa

**Computer:** <SOH>s712SSaaaaaaaaaaaaaaaaaaaaa

**Inquire:**

<SOH>I712SS

<SOH>i712SS

**Typical Response Message, Display Format:**

<SOH>  
I712SS  
JAN 28, 1995 10:41 AM

GROUNDWATER LABEL

DEVICE LABEL  
1 GROUNDWATER #1  
<ETX>

**Typical Response Message, Computer Format:**

<SOH>i712SSYYMMDDHHmmSSaaaaaaaaaaaaaaaaaaaaa...  
SSaaaaaaaaaaaaaaaaaaaaa&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. SS - Groundwater Sensor Number (Decimal, 00=all)
3. a - Location Label (20 ASCII characters [20h-7Eh])
4. && - Data Termination Flag
5. CCCC - Message Checksum



# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 713

Version 1

**Function Type:** Set Groundwater Sensor Category

**Command Format:**

**Display:** <SOH>S713SSt

**Computer:** <SOH>s713SSt

**Inquire:**

<SOH>I713SS

<SOH>i713SS

### Typical Response Message, Display Format:

<SOH>  
I713SS  
JAN 28, 1995 10:41 AM

GROUNDWATER CATEGORY

SENSOR	LOCATION	CATEGORY
1	GROUNDWATER #1	OTHER

<ETX>

### Typical Response Message, Computer Format:

SOH>i713SSYYMMDDHHmmSSc...  
SSc&&CCCC<ETX>

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. SS - Groundwater Sensor Number (Decimal, 00=all)
3. c - Groundwater Sensor Category:
  - 1=Other
  - 2=Annular
  - 3=Dispenser Pan
  - 4=Monitoring Well
  - 5=STP Sump
  - 6=Containment Sump
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 727

Version 1

**Function Type:** Set MAG Sensor Alarm Upgrade Delay

**Command Format:**

**Display:** <SOH>S727SSHHHH

**Computer:** <SOH>s727SSHHHH

**Inquire:**

<SOH>I727SS

<SOH>i727SS

**Notes:**

1. Only responds to Smart Sensors that are of type MAG Sensor.
2. SS - Smart Sensor Number (Decimal, 00=all)
3. HHHH - MAG Sensor Alarm Upgrade Delay, Hours (ASCII Decimal)

**Typical Response Message, Display Format:**

```
<SOH>
I727SS
JAN 22, 2003 3:18 PM

MAG SENSOR ALM UPGRADE DELAY

SENSOR LABEL DELAY
1 STP SUMP 1 120
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i727SSYYMMDDHHmmSSFFFF...
 SSFFFF&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. SS - Smart Sensor Number (Decimal, 00=all)
3. FFFF - Alarm Upgrade Delay (Hex)
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: 728**

Version 1

**Function Type:** Set MAG Sensor Alarm Threshold

**Command Format:**

**Display:** <SOH>S728SSAAxxx.xx

**Computer:** <SOH>s728SSAAFFFFFFFFF

**Inquire:**

<SOH>I728SS

<SOH>i728SS

### Notes:

1. Only responds when the Smart Sensor is a MAG Sensor type.
2. SS - Smart Sensor Number (ASCII Decimal, 00=all)
3. AA - Alarm Definition Record ID, (ASCII Decimal)
4. xxx.xx - Alarm Threshold, Inches or Deg. F (ASCII Decimal)
5. FFFFFFFF - Alarm Threshold, Inches or Deg. F (ASCII Hex IEEE float)

### Typical Response Message, Display Format:

```
<SOH>
I728SSAA
JAN 22, 2003 3:18 PM
```

MAG SENSOR ALARM THRESHOLD

```
s 1:SS-01
ID VALUE THRESHOLD ALARM PROGRAMMABLE UPGRADE
1 FUEL HT > 2.0 FUEL ALARM YES NO
2 WATER HT > 5.0 WATER WARNING YES YES
3 WATER HT > 10.0 WATER ALARM YES NO
4 INSTALL POS > 5.0 INSTALL ALARM NO NO
5 FLUID TEMP < -40.0 TEMPERATURE WARNING YES NO
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>i728SSYYMDDHHmmSSrrPPAAFFppUUnnFFFFFFFFPPAAFFppUUnnFFFFFFFF...
SSrrPPAAFFppUUnnFFFFFFFFPPAAFFppUUnnFFFFFFFF&&CCCC<ETX>
```

### Notes:

1. YYMDDHHmm - Current Date and Time
2. SS - Smart Sensor Number (ASCII Decimal)
3. rr - Number of alarm definition records to follow (ASCII Decimal)
4. PP - Value for comparison (Hex)
  - 01=Total Height
  - 02=Fuel Height
  - 03=Water Height
  - 04=Install Position
  - 05=Fluid Temperature
  - 06=Board Temperature
5. AA - Alarm to monitor (Hex)
  - 01=Setup Data Warning
  - 02=Communication Alarm
  - 03=Sensor Fault Alarm
  - 04=Fuel Warning
  - 05=Fuel Alarm
  - 06=Water Warning
  - 07=Water Alarm
  - 08=High Liquid Warning
  - 09=High Liquid Alarm
  - 0A=Low Liquid Warning
  - 0B=Low Liquid Alarm
  - 0C=Temperature Warning
  - 0D=Relay Active
  - 0E=Install Alarm
6. FF - Compare Direction, 00="<", 01=">"
7. pp - Programmable Threshold, 00="No", 01="Yes"
8. UU - Alarm Upgrade, 00="No", 01="Yes"
9. nn - Number of 8-character ASCII Hex Characters to follow
10. FFFFFFFF - Alarm Threshold, Inches or Deg F (ASCII Hex IEEE float)
11. && - Data Termination Flag
12. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: 72E**  
**Function Type:** Set MAG Sensor Label

Version 1

**Command Format:**  
**Display:** <SOH>S72ESSaaaaaaaaaaaaaaaaaaaaa  
**Computer:** <SOH>s72ESSaaaaaaaaaaaaaaaaaaaaa

**Inquire:**  
<SOH>I72ESS  
<SOH>i72ESS

### Notes:

1. MAG Sensor card must be installed
2. If SS=00, only configured sensors are used
3. SS - MAG Sensor number, 00=all sensors
4. a - 20 ASCII characters [20h-7Eh]

### Typical Response Message, Display Format:

```
<SOH>
I72E00
JUN 1, 2002 8:07 AM

MAG SENSOR LABEL

DEVICE LABEL
01 MAG-1
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>i72ESSYYMDDHHmmSSaaaaaaaaaaaaaaaaaaaaa...
SSaaaaaaaaaaaaaaaaaaaaa&&CCCC<ETX>
```

### Notes:

1. YYMDDHHmm - Current Date and Time
2. SS - MAG Sensor number
3. a - 20 ASCII characters [20h-7Eh]
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: 72F**

**Function Type:** Set MAG Sensor Configuration

Version 1

**Command Format:**

**Display:** <SOH>S72FSSc

**Computer:** <SOH>s72FSSc

**Inquire:**

<SOH>I72FSS

<SOH>i72FSS

**Notes:**

1. MAG Sensor card must be installed
2. SS - MAG Sensor number, 00=all sensors
3. c - configured  
0=off  
1=on

**Typical Response Message, Display Format:**

<SOH>

I72FSS

JUN 1, 2002 8:07 AM

MAG SENSOR CONFIGURATION

DEVICE	LABEL	CONFIGURED
01	MAG-1	ON

<ETX>

**Typical Response Message, Computer Format:**

<SOH>i72FSSYYMDDHHmmSSc...SSc&&CCCC<ETX>

**Notes:**

1. YYMDDHHmm - Current Date and Time
2. SS - MAG Sensor number
3. c - Configured  
0=off  
1=on
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: 741**

**Function Type:** Set Type A (2 Wire CL) Sensor Configuration

Version 1

**Command Format:**

**Display:** <SOH>S741SSf

**Computer:** <SOH>s741SSf

**Inquire:**

<SOH>I741SS

<SOH>i741SS

**Typical Response Message, Display Format:**

```
<SOH>
I741SS
JAN 28, 1995 10:41 AM

2 WIRE CL CONFIGURATION

DEVICE LABEL CONFIGURED
 1 2 WIRE CL SENSOR #1 ON
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i741SSYYMMDDHHmmSSf...
 SSf&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. SS - Type A Sensor Number (Decimal, 00=all)
3. f - Configuration Flag  
0=Off  
1=On
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: 742**

Version 1

**Function Type:** Set Type A (2 Wire CL) Sensor Location Label

**Command Format:**

**Display:** <SOH>S742SSaaaaaaaaaaaaaaaaaaaaa

**Computer:** <SOH>s742SSaaaaaaaaaaaaaaaaaaaaa

**Inquire:**

<SOH>I742SS

<SOH>i742SS

**Typical Response Message, Display Format:**

```
<SOH>
I742SS
JAN 28, 1995 10:41 AM

2 WIRE CL LABEL

DEVICE LABEL
 1 2 WIRE CL SENSOR #1
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i742SSYYMDDHHmmSSaaaaaaaaaaaaaaaaaaaaa...
SSaaaaaaaaaaaaaaaaaaaaa&&CCCC<ETX>
```

**Notes:**

1. YYMDDHHmm - Current Date and Time
2. SS - Type A Sensor Number (Decimal, 00=all)
3. a - Location Label (20 ASCII characters [20h-7Eh])
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: 743**

Version 1

**Function Type:** Set Type A (2 Wire CL) Sensor Type

**Command Format:**

**Display:** <SOH>S743SSt

**Computer:** <SOH>s743SSt

**Inquire:**

<SOH>I743SS

<SOH>i743SS

**Typical Response Message, Display Format:**

```
<SOH>
I743SS
JAN 28, 1995 10:41 AM

2 WIRE CL TYPE

SENSOR LOCATION TYPE
 1 2 WIRE CL SENSOR #1 ULTRA 2
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i743SSYYMMDDHHmmSSt...
 SSt&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. SS - Type A Sensor Number (Decimal, 00=all)
3. t - Type A Sensor Type:  
1=ULTRA 2  
2=DISCRIM. INTERSTITIAL
4. && - Data Termination Flag
5. CCCC - Message Checksum



# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: 744**

Version 1

**Function Type:** Set Type A (2 Wire CL) Sensor Category

**Command Format:**

**Display:** <SOH>S744SSa

**Computer:** <SOH>s744SSa

**Inquire:**

<SOH>I744SS

<SOH>i744SS

**Typical Response Message, Display Format:**

```
<SOH>
I743SS
JAN 28, 1995 10:41 AM

2 WIRE CL CATEGORY

SENSOR LOCATION CATEGORY
 1 2 WIRE CL SENSOR #1 ANNULAR
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i744SSYYMMDDHHmmSSc...
 SSc&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. SS - Type A Sensor Number (Decimal, 00=all)
3. c - Type A Sensor Category:
  - 1=Other
  - 2=Annular
  - 3=Dispenser Pan
  - 4=Monitoring Well
  - 5=STP Sump
  - 6=Containment Sump
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: 746**

**Function Type:** Set Type B (3 Wire CL) Sensor Configuration

Version 1

**Command Format:**

**Display:** <SOH>S746SSf

**Computer:** <SOH>s746SSf

**Inquire:**

<SOH>I746SS

<SOH>i746SS

**Typical Response Message, Display Format:**

```
<SOH>
I746SS
JAN 28, 1995 10:41 AM

3 WIRE CL CONFIGURATION

DEVICE LABEL CONFIGURED
 1 3 WIRE CL SENSOR #1 ON
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i746SSYYMMDDHHmmSSf...
 SSf&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. SS - Type B Sensor Number (Decimal, 00=all)
3. f - Configuration Flag  
0=Off  
1=On
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: 747**

Version 1

**Function Type:** Set Type B (3 Wire CL) Sensor Location Label

**Command Format:**

**Display:** <SOH>S747SSaaaaaaaaaaaaaaaaaaaaa

**Computer:** <SOH>s747SSaaaaaaaaaaaaaaaaaaaaa

**Inquire:**

<SOH>I742SS

<SOH>i742SS

**Typical Response Message, Display Format:**

```
<SOH>
I747SS
JAN 28, 1995 10:41 AM

3 WIRE CL LABEL

DEVICE LABEL
 1 3 WIRE CL SENSOR #1
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i747SSYYMDDHHmmSSaaaaaaaaaaaaaaaaaaaaa...
SSaaaaaaaaaaaaaaaaaaaaa&&CCCC<ETX>
```

**Notes:**

1. YYMDDHHmm - Current Date and Time
2. SS - Type B Sensor Number (Decimal, 00=all)
3. a - Location Label (20 ASCII characters [20h-7Eh])
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: 748**

Version 1

**Function Type:** Set Type B (3 Wire CL) Sensor Type

**Command Format:**

**Display:** <SOH>S748SSt

**Computer:** <SOH>s748SSt

**Inquire:**

<SOH>I748SS

<SOH>i748SS

### Typical Response Message, Display Format:

```
<SOH>
I748SS
JAN 28, 1995 10:41 AM

3 WIRE CL TYPE

SENSOR LOCATION TYPE
 1 3 WIRE CL SENSOR #1 ULTRA/Z-1
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>i748SSYYMMDDHHmmSSt...
 SSt&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. SS - Sensor Number (Decimal)
3. t - Sensor Type  
1=ULTRA/Z-1  
2=ULTRA/Z-1 HV
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: 749**

Version 1

**Function Type:** Set Type B (3 Wire CL) Sensor Category

**Command Format:**

**Display:** <SOH>S749SSa

**Computer:** <SOH>s749SSa

**Inquire:**

<SOH>I749SS

<SOH>i749SS

**Typical Response Message, Display Format:**

```
<SOH>
I749SS
JAN 28, 1995 10:41 AM

3 WIRE CL CATEGORY

SENSOR LOCATION CATEGORY
 1 3 WIRE CL SENSOR #1 ANNULAR
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i749SSYYMMDDHHmmSSc...
 SSc&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. SS - Type B Sensor Number (Decimal, 00=all)
3. t - Type B Sensor Category:
  - 1=Other
  - 2=Annular
  - 3=Dispenser Pan
  - 4=Monitoring Well
  - 5=STP Sump
  - 6=Containment Sump
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

### 7.3.8 PUMP SENSOR SETUP

**Function Code:** P01  
**Function Type:** Set Pump configured

Version 1

**Command Format:**  
**Display:** <SOH>SP01QQf  
**Computer:** <SOH>sp01QQf

**Inquire:**  
<SOH>IP01QQ  
<SOH>iP01QQ

#### Typical Response Message, Display Format:

<SOH>  
IP01QQ  
JAN 24, 1996 2:54 PM

PUMP CONFIGURATION

DEVICE	LABEL	CONFIGURED
1	REGULAR UNLEADED	ON

<ETX>

#### Typical Response Message, Computer Format:

<SOH>iP01QQYYMMDDHHmmQQf...  
QQf&&CCCC<ETX>

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Pump number (Decimal)
3. f - Configuration flag  
0=Off  
1=On
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** P02  
**Function Type:** Set Pump Label

Version 1

**Command Format:**  
**Display:** <SOH>SP02QQaaaaaaaaaaaaaaaaaaaaa  
**Computer:** <SOH>SP02QQaaaaaaaaaaaaaaaaaaaaa

**Inquire:**  
<SOH>IP02QQ  
<SOH>IP02QQ

### Typical Response Message, Display Format:

<SOH>  
IP02QQ  
JAN 24, 1996 2:54 PM

PUMP LABEL

DEVICE LABEL  
1 REGULAR UNLEADED  
<ETX>

### Typical Response Message, Computer Format:

<SOH>IP02QQYYMMDDHHmmQQaaaaaaaaaaaaaaaaaaaaa...  
QQaaaaaaaaaaaaaaaaaaaaa&&CCCC<ETX>

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pump number (Decimal)
3. a - Indicates any printable ASCII character (max 20)
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** P03  
**Function Type:** Set Pump Mode

Version 1

**Command Format:**  
**Display:** <SOH>SP03QQf  
**Computer:** <SOH>SP03QQf

**Inquire:**  
<SOH>IP03QQ  
<SOH>iP03QQ

### Typical Response Message, Display Format:

<SOH>  
IP03QQ  
JAN 24, 1996 2:54 PM

PUMP MODE

PUMP	MODE
Pm 1:REGULAR UNLEADED	TLS Pump Control
<ETX>	

### Typical Response Message, Computer Format:

<SOH>iP03QQYYMMDDHHmmQQf...  
QQf&&CCCC<ETX>

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pump number (Decimal, 00=All)
3. f - Mode
  - 1= TLS Pump Control (for PLLD and line manifold)
  - 2= Pump Sense (pump sense only (as for CSLD 3 gph)
  - 3= External Pump Control
4. && - Data Termination Flag
5. CCCC - Message Checksum



# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: P04**

**Function Type:** Set Pump Tank Number

Version 1

**Command Format:**

**Display:** <SOH>SP04QQtt

**Computer:** <SOH>SP04QQtt

**Inquire:**

<SOH>IP04QQ

<SOH>IP04QQ

**Typical Response Message, Display Format:**

<SOH>  
IP04QQ  
JAN 24, 1996 2:54 PM

PUMP TANK NUMBER

PUMP	TANK NUMBER
Q 1:	3
<ETX>	

**Typical Response Message, Computer Format:**

<SOH>IP04QQYYMMDDHHmmQQtt...  
QQtt&&CCCC<ETX>

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pump number (Decimal, 00=All)
3. tt - Tank number (Decimal) (00=no tank)
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** P05  
**Function Type:** Set Pump Control Devices

Version 1

**Command Format:**  
**Display:** <SOH>SP05QQttff  
**Computer:** <SOH>sp05QQttff

**Inquire:**  
<SOH>IP05QQ  
<SOH>iP05QQ

**Notes:**

1. Unassigned - To de-assign the Pump Control Device the user must set both tt = 00 and ff = 00 for the operation to be valid.

**Typical Response Message, Display Format:**

<SOH>  
IP05QQ  
JAN 24, 1996 2:54 PM

PUMP CONTROL DEVICES

PUMP	DEVICE TYPE	DEVICE ID
Pm 1:	RELAY_	1

<ETX>

**Typical Response Message, Computer Format:**

<SOH>iP04QQYYMMDDHHmmQQttff...  
QQttff&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pump number (Decimal, 00=All)
3. tt - Device Type (Decimal)  
00 - NULL\_DEV\_TYPE  
11 - RELAY  
ff - Device ID (Decimal)
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: P06**

Version 1

**Function Type:** Set Pump - Pump Sense Device

**Command Format:**

**Display:** <SOH>SP06QQttff

**Computer:** <SOH>SP06QQttff

**Inquire:**

<SOH>IP06QQ

<SOH>iP06QQ

**Notes:**

1. Unassigned - To de-assign the Pump Sense Device the user must set both tt = 00 and ff = 00 for the operation to be valid.
2. Pump Mode - Assignment of a Pump Sense Device is not allowed for a Pump with a Pump Mode of "External Pump Control".

**Typical Response Message, Display Format:**

<SOH>  
IP06QQ  
JAN 24, 1996 2:54 PM

PUMP SENSE DEVICES

PUMP	DEVICE TYPE	DEVICE ID
Pm 1:	EXTERNAL INPUT	1

<ETX>

**Typical Response Message, Computer Format:**

<SOH>iP06QQYYMMDDHHmmQQttff...  
QQttff&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pump number (Decimal, 00=All)
3. tt - Device Type (Decimal)  
00 - NULL\_DEV\_TYPE  
05 - External Input - (see 80F Input type - pump sense)  
ff - Device ID (Decimal)
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: P07**

Version 5

**Function Type:** Set Pump - Pump Monitor Device

**Command Format:**

**Display:** <SOH>SP07QQttff

**Computer:** <SOH>sp07QQttff

**Inquire:**

<SOH>IP07QQ

<SOH>iP07QQ

**Notes:**

1. QQ - Pump ID
2. tt - Device Type
3. ff - Device ID
4. Unassigned - To de-assign the Pump Sense Device the user must set both tt = 00 and ff = 00 for the operation to be valid.

**Typical Response Message, Display Format:**

<SOH>  
IP07QQ  
JAN 24, 2014 2:54 PM

PUMP MONITOR DEVICES

PUMP	DEVICE TYPE	DEVICE ID
Pm 1:	EXTERNAL INPUT	1

<ETX>

**Typical Response Message, Computer Format:**

<SOH>iP07QQYYMMDDHHmmQQttff...  
QQttff&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pump number (Decimal, 00=All)
3. tt - Device Type, Hours (ASCII Hex IEEE float)  
00 - NULL\_DEV\_TYPE  
05 - External Input - (see 80F Input type - pump monitor)
4. ff - Device ID (Decimal)
5. && - Data Termination Flag
- CCCC - Message Checksum

### 7.3.9 PRESSURE LINE LEAK SETUP

Version 1

**Inquire:**

<SOH>I75A00

&lt;SOH&gt;i75A00

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: 774**

Version 1

**Function Type:** Set Pressure Line Leak Continuous Handle Alarm Timeout

**Command Format:**

**Display:** <SOH>S774QQtt

**Computer:** <SOH>s774QQtt

**Inquire:**

<SOH>I774QQ

<SOH>i774QQ

**Notes:**

1. QQ - Pressure Line Leak line number (Decimal, 00=All)
2. tt - Continuous Handle Alarm Timeout (Decimal, in hours, 1-16)

**Typical Response Message, Display Format:**

```
<SOH>
I774QQ
SEP 16, 2006 3:15 PM

PLLD CONTINUOUS HANDLE ALARM TIMEOUT

LINE TIMEOUT
Q 1:REGULAR UNLEADED 16 HOURS
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i774QQYYMMDDHHmmQQttQQtt...
 QQtt&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak line number (Decimal, 00=All)
3. tt - Continuous Handle Alarm Timeout (Decimal, in hours, 1-16)
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 775

Version 1

**Function Type:** Set Pressure Line Leak Profile Line Test Leak Rate

**Command Format:**

**Display:** <SOH>S775QQrr.rr

**Computer:** <SOH>s775QQFFFFFFFF

**Inquire:**

<SOH>I775QQ

<SOH>i775QQ

**Notes:**

1. QQ - Pressure Line Leak Line Number (Decimal, 00 = all)
2. rr.rr - Profile Line Test Leak Rate, GPH (Decimal)
3. FFFFFFFF - Profile Line Test Leak Rate, GPH (ASCII Hex IEEE float)

**Typical Response Message, Display Format:**

```
<SOH>
I775QQ
JAN 14, 1995 10:15 PM

PRESSURE LINE LEAK PROFILE LINE TEST LEAK RATE

LINE TEST LEAK RATE
Q 1:UNLEADED REGULAR 3.00 GPH
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>s775QQYYMMDDHHmmQQFFFFFFFF
 QQFFFFFFFF&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak Line Number (Decimal, 00 = all)
3. FFFFFFFF - Profile Line Test Leak Rate, GPH (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: 776**

Version 1

**Function Type:** Set Pressure Line Leak Profile Line Test Reference Pressure

**Command Format:**

**Display:** <SOH>S776QQppp.pp

**Computer:** <SOH>s776QQFFFFFFFF

**Inquire:**

<SOH>I776QQ

<SOH>i776QQ

**Notes:**

1. QQ - Pressure Line Leak Line Number (Decimal, 00 = all)
2. ppp.pp - Profile Line Test Reference Pressure, PSI (Decimal)
3. FFFFFFFF - Profile Line Test Reference Pressure, PSI (ASCII Hex IEEE float)

**Typical Response Message, Display Format:**

```
<SOH>
I776QQ
JAN 14, 1995 10:15 PM

PROFILE LINE TEST REFERENCE PRESSURE

LINE TEST REF PRESSURE
Q 1:UNLEADED REGULAR 10.00 PSI
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>s776QQYYMDDHHmmQQFFFFFFFF
QQFFFFFFFF&&CCCC<ETX>
```

**Notes:**

1. YYMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak Line Number (Decimal, 00 = all)
3. FFFFFFFF - Profile Line Test Reference Pressure, PSI (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum



# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 777

Version 1

**Function Type:** Set Pressure Line Leak Primary Pipe Diameter

**Command Format:**

**Display:** <SOH>S777QQI.hh

**Computer:** <SOH>s777QQFFFFFFFFF

**Inquire:**

<SOH>I777QQ

<SOH>i777QQ

**Notes:**

1. QQ - Pressure Line Leak Line Number (Decimal, 00=all)
2. I.hh - Pipe Diameter, Inches and hundredths (Decimal)
3. FFFFFFFF - Pipe Diameter, Inches (ASCII Hex IEEE float)

**Typical Response Message, Display Format:**

```
<SOH>
I777QQ
JAN 14, 1995 10:15 PM

PRESSURE LINE LEAK PRIMARY PIPE DIAMETER

LINE 1ST LINE DIAMETER
Q 1:UNLEADED REGULAR 1.75 INCHES
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>s777QQYYMMDDHHmmQQFFFFFFFFF...
 QQFFFFFFFFF&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak Line Number (Decimal, 00=all)
3. FFFFFFFF - Pipe Diameter, Inches (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: 778**

Version 1

**Function Type:** Set Pressure Line Leak Secondary Pipe Diameter

**Command Format:**

**Display:** <SOH>S778QQI.hh

**Computer:** <SOH>s778QQFFFFFFFFF

**Inquire:**

<SOH>I778QQ

<SOH>i778QQ

**Notes:**

1. QQ - Pressure Line Leak Line Number (Decimal, 00=all)
2. I.hh - Pipe Diameter, Inches and hundredths (Decimal)
3. FFFFFFFF - Pipe Diameter, Inches (ASCII Hex IEEE float)

**Typical Response Message, Display Format:**

```
<SOH>
I778QQ
JAN 14, 1995 10:15 PM

PRESSURE LINE LEAK SECONDARY PIPE DIAMETER

LINE 2ND LINE DIAMETER
Q 1:UNLEADED REGULAR 1.75 INCHES
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>s778QQYYMMDDHHmmQQFFFFFFFFF...
 QQFFFFFFFFF&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak Line Number (Decimal, 00=all)
3. FFFFFFFF - Pipe Diameter, Inches (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: 779**

Version 1

**Function Type:** Set Pressure Line Leak Primary Pipe Bulk Modulus

**Command Format:**

**Display:** <SOH>S779QQBBBBBB

**Computer:** <SOH>s779QQFFFFFFFF

**Inquire:**

<SOH>I779QQ

<SOH>i779QQ

**Notes:**

1. QQ - Pressure Line Leak Line Number (Decimal, 00=all)
2. BBBBBB - Pipe Bulk Modulus, PSI (Decimal)
3. FFFFFFFF - Pipe Bulk Modulus, PSI (ASCII Hex IEEE float)
4. Set to Default - To set Bulk Modulus to default enter 0

**Typical Response Message, Display Format:**

```
<SOH>
I779QQ
JAN 14, 1995 10:15 PM

PRESSURE LINE LEAK PRIMARY PIPE BULK MODULUS

LINE 1ST BULK MOD
Q 1:UNLEADED REGULAR 12000 PSI
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>s779QQYYMMDDHHmmQQFFFFFFFF...
 QFFFFFFFF&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak Line Number (Decimal, 00=all)
3. FFFFFFFF - Pipe Bulk Modulus, PSI (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: 77A**

Version 1

**Function Type:** Set Pressure Line Leak Secondary Pipe Bulk Modulus

**Command Format:**

**Display:** <SOH>S77AQQBBBBBB

**Computer:** <SOH>s77AQQFFFFFFFF

**Inquire:**

<SOH>I77AQQ

<SOH>i77AQQ

**Notes:**

1. QQ - Pressure Line Leak Line Number (Decimal, 00=all)
2. BBBBBB - Pipe Bulk Modulus, PSI (Decimal)
3. FFFFFFFF - Pipe Bulk Modulus, PSI (ASCII Hex IEEE float)
4. Set to Default - To set Bulk Modulus to default enter 0

**Typical Response Message, Display Format:**

```
<SOH>
I77AQQ
JAN 14, 1995 10:15 PM

PRESSURE LINE LEAK SECONDARY PIPE BULK MODULUS

LINE 2ND BULK MOD
Q 1:UNLEADED REGULAR 12000 PSI
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>s77AQQYYMDDHHmmQQFFFFFFFF...
 QQFFFFFFFF&&CCCC<ETX>
```

**Notes:**

1. YYMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak Line Number (Decimal, 00=all)
3. FFFFFFFF - Pipe Bulk Modulus, PSI (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 77B

Version 1

**Function Type:** Set Pressure Line Leak Thermal Expansion Coefficient

**Command Format:**

**Display:** <SOH>S77BQQc.cccccc

**Computer:** <SOH>s77BQQFFFFFFFF

**Inquire:**

<SOH>I77BQQ

<SOH>i77BQQ

**Notes:**

1. QQ - Pressure Line Leak Line Number (Decimal, 00=all)
2. c.cccccc - Thermal Expansion Coefficient (Decimal)
3. FFFFFFFF - Thermal Expansion Coefficient (ASCII Hex IEEE float)

**Typical Response Message, Display Format:**

<SOH>  
I77BQQ  
JAN 14, 1995 10:15 PM

PRESSURE LINE LEAK THERMAL COEFFICIENT

LINE	THERMAL COEFF
Q 1:UNLEADED REGULAR	0.000700

<ETX>

**Typical Response Message, Computer Format:**

<SOH>s77BQQYYMMDDHHmmQQFFFFFFFF...  
QQFFFFFFFF&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak Line Number (Decimal, 00=all)
3. FFFFFFFF - Thermal Expansion Coefficient (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 77C

Version 1

**Function Type:** Set Pressure Line Leak Low Pressure Shutoff

**Command Format:**

**Display:** <SOH>S77CQQf

**Computer:** <SOH>s77CQQf

**Inquire:**

<SOH>I77CQQ

<SOH>i77CQQ

**Typical Response Message, Display Format:**

```
<SOH>
I77CQQ
JAN 24, 2000 2:54 PM

PRESSURE LINE LEAK LOW PRESSURE SHUTOFF

LINE LP SHUTOFF
Q 1:REGULAR UNLEADED YES
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i77CQQYYMMDDHHmmQQf...
 QQf&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak line number (Decimal, 00=All)
3. f - Enabled/disabled flag  
0=disabled (no)  
1=enabled (yes)
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 77D

Version 1

**Function Type:** Set Pressure Line Leak Altitude Pressure Offset

**Command Format:**

**Display:** <SOH>S77DQQII.p

**Computer:** <SOH>s77DQQFFFFFFFF

**Inquire:**

<SOH>I77DQQ

<SOH>i77DQQ

**Notes:**

1. QQ - Pressure Line Leak line number (Decimal, 00=All)
2. II.p - Altitude Pressure Offset, PSI or KPA (Decimal)
3. FFFFFFFF - Altitude Pressure Offset, PSI or KPA (ASCII Hex IEEE float)
4. Value must be within the range of +5.0 to -5.0 PSI or 34.4 to -34.4 KPA

**Typical Response Message, Display Format:**

```
<SOH>
I77DQQ
JAN 1, 2000 1:44 AM

ALTITUDE PRESSURE OFFSET ADJUSTMENT

LINE OFFSET
Q 1:REGULAR UNLEADED 0.0 PSI
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i77DQQYYMDDHHmmQQFFFFFFFF...
 QQFFFFFFFF&&CCCC<ETX>
```

**Notes:**

1. YYMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak line number (Decimal, 00=All)
3. FFFFFFFF - Altitude Pressure offset, PSI or KPA (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

## Serial Interface Manual

### TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 77E

Version 1

**Function Type:** Set Pressure Line Leak Passive 0.10 GPH Test Enable Flag

**Command Format:**

**Display:** <SOH>S77EQQf

**Computer:** <SOH>s77EQQf

**Inquire:**

<SOH>I77EQQ

<SOH>i77EQQ

**Typical Response Message, Display Format:**

```
<SOH>
I77EQQ
JUL 14, 2004 10:15 PM

PRESSURE LINE LEAK PASSIVE 0.10 GPH

LINE PASSIVE
Q 1:UNLEADED REGULAR YES
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i777QQYYMMDDHHmmQQf...
 QQf&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak Line Number (Decimal, 00=all)
3. f - Passive 0.10 GPH Test Enable Flag (Decimal)  
0=Disabled  
1=Enabled
4. && - Data Termination Flag
5. CCCC - Message Checksum



# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 77F

Version 1

**Function Type:** Set Pressure Line Leak Secondary Pipe Length

Only used for the larger diameter line in dual diameter piping configurations

**Command Format:**

**Display:** <SOH>S77FQQLLLL

**Computer:** <SOH>s77FQQFFFFFFFFF

**Inquire:**

<SOH>I77FQQ

<SOH>i77FQQ

**Notes:**

1. QQ - Pressure Line Leak Line Number (Decimal, 00=all)
2. LLLL - Pipe Length, Feet (Decimal)
3. FFFFFFFF - Pipe Length, Feet (ASCII Hex IEEE float)

**Typical Response Message, Display Format:**

```
<SOH>
I77FQQ
JAN 14, 1995 10:15 PM

PRESSURE LINE LEAK LINE LENGTH LARGE

LINE LINE LENGTH
Q 1:UNLEADED REGULAR 200 FEET
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>s77FQQYYMDDHHmmQQFFFFFFFFF...
 QQFFFFFFFFF&&CCCC<ETX>
```

**Notes:**

1. YYMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak Line Number (Decimal, 00=all)
3. FFFFFFFF - Pipe Length, Feet (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 77G

Version 1

**Function Type:** Set Pressure Line Leak Fuel out limit

**Command Format:**

**Display:** <SOH>S77GQQI.hh

**Computer:** <SOH>s77GQQFFFFFFFF

**Inquire:**

<SOH>I77GQQ

<SOH>i77GQQ

**Typical Response Message, Display Format:**

<SOH>

I77GQQ

JAN 24, 1996 2:54 PM

PRESSURE LINE LEAK FUEL OUT LIMIT

LINE

FUEL OUT LIMIT

Q 1:REGULAR UNLEADED

12.2 INCHES

<ETX>

**Typical Response Message, Computer Format:**

<SOH>i77GQQYYMDDHHmmQQFFFFFFFF&&CCCC<ETX>

### Notes:

1. YYMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak line number (Decimal, 00=All)
3. FFFFFFFF - Fuel out limit (inches, IEEE float)
4. && - Data Termination Flag
5. CCCC -Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 780

Version 1

**Function Type:** Pressure Line Leak General Setup Inquiry

**Command Format:**

**Display:** <SOH>I780QQ

**Computer:** not supported

**Typical Response Message, Display Format:**

```
<SOH>
I780QQ
JAN 14, 1995 10:15 PM

PRESSURE LINE LEAK SETUP

Q 1:UNLEADED REGULAR
PIPE TYPE: FIBERGLASS
0.10 GPH TEST: ENABLED
SHUTDOWN RATE: 3.0 GPH
T 3:REGULAR UNLEADED
DISPENSE MODE:
 STANDARD
<ETX>
```

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 781

Version 1

**Function Type:** Set Pressure Line Leak Configuration

**Command Format:**

**Display:** <SOH>S781QQf

**Computer:** <SOH>s781QQf

**Inquire:**

<SOH>I781QQ

<SOH>i781QQ

**Typical Response Message, Display Format:**

```
<SOH>
I781QQ
JAN 24, 1996 2:54 PM

PRESSURE LLD CONFIGURATION
```

```
DEVICE LABEL CONFIGURED
 1 REGULAR UNLEADED ON
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i781QQYYMMDDHHmmQQf...
 QQf&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak line number (Decimal, 00=All)
3. f - Configuration flag  
0=Off  
1=On
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: 782**

Version 1

**Function Type:** Set Pressure Line Leak Label

**Command Format:**

**Display:** <SOH>S782QQaaaaaaaaaaaaaaaaaaaaa

**Computer:** <SOH>s782QQaaaaaaaaaaaaaaaaaaaaa

**Inquire:**

<SOH>I782QQ

<SOH>i782QQ

**Typical Response Message, Display Format:**

```
<SOH>
I782QQ
JAN 24, 1996 2:54 PM

PRESSURE LLD LABEL

DEVICE LABEL
 1 REGULAR UNLEADED
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i782QQYYMMDDHHmmQQaaaaaaaaaaaaaaaaaaaaa...
 QQaaaaaaaaaaaaaaaaaaaaa&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak line number (Decimal, 00=All)
3. a - Indicates any printable ASCII character
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 783

Version 1

**Function Type:** Set Pressure Line Leak 0.10 GPH Test Schedule

**Command Format:**

**Display:** <SOH>S783QQf

**Computer:** <SOH>s783QQf

**Inquire:**

<SOH>I783QQ

<SOH>i783QQ

### Typical Response Message, Display Format:

```
<SOH>
I783QQ
JAN 24, 1996 2:54 PM

PRESSURE LINE LEAK 0.10 TEST SCHEDULE

LINE 0.10 GPH TEST
Q 1:REGULAR UNLEADED DISABLED
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>i783QQYYMMDDHHmmQQf...
 QQf&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak line number (Decimal, 00=All)
3. f - 0.10 GPH Test Schedule  
0=Disabled  
1=Repetitive  
2=Auto  
3=Manual
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: 784**

Version 1

**Function Type:** Set Pressure Line Leak Shutdown Rate

**Command Format:**

**Display:** <SOH>S784QQrr

**Computer:** <SOH>s784QQrr

**Inquire:**

<SOH>I784QQ

<SOH>i784QQ

### Typical Response Message, Display Format:

```
<SOH>
I784QQ
JAN 24, 2000 2:54 PM

PRESSURE LINE LEAK SHUTDOWN RATE

LINE SHUTDOWN RATE
Q 1:REGULAR UNLEADED 3.0 GPH
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>i784QQYYMMDDHHmmQQrr...
 QQrr&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak line number (Decimal, 00=All)
3. rr - Shutdown rate
  - 01=0.10 gal/hr
  - 02=3.00 gal/hr
  - 03=0.20 gal/hr
  - 04=None
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: 786**

Version 1

**Function Type:** Set Pressure Line Leak Dispense Mode

**Command Format:**

**Display:** <SOH>S786QQf

**Computer:** <SOH>s786QQf

**Inquire:**

<SOH>I786QQ

<SOH>i786QQ

Note: See L06 if setting line leak dispensing mode to pump sense.

### Typical Response Message, Display Format:

```
<SOH>
I786QQ
JAN 24, 1996 2:54 PM

PRESSURE LINE LEAK DISPENSE MODE

LINE DISPENSE MODE
L 1:REGULAR UNLEADED STANDARD
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>i786QQYYMMDDHHmmQQf...
QQf&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak line number (Decimal, 00=All)
3. f - Dispensing Mode
  - 1=Standard
  - 2=Manifolded: Alternate
  - 3=Manifolded: Sequential
  - 4=Manifolded: All Pumps
4. && - Data Termination Flag
5. CCCC - Message Checksum



# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: 788**

Version 1

**Function Type:** Set Pressure Line Leak Piping Material

**Command Format:**

**Display:** <SOH>S788QQtt

**Computer:** <SOH>s788QQtt

**Inquire:**

<SOH>I788QQ

<SOH>i788QQ

### Typical Response Message, Display Format:

```
<SOH>
I788QQ
JUN 14, 2001 10:15 PM

PRESSURE LINE LEAK PIPE TYPE

LINE PIPE TYPE:
Q 1:UNLEADED REGULAR USER DEFINED
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>i788QQYYMMDDHHmmQQtt
 QQtt&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak Line Number (Decimal, 00=all)
3. tt - Pipe Type:
  - 01=2/3 inch Fiberglass
  - 02=2 inch Steel
  - 03=White Enviroflex PP1501 (Obsolete)
  - 04=1.5 inch Environ Geoflex II
  - 05=Omniflex CP1501
  - 06=Yellow Enviroflex PP1500 (Obsolete)
  - 07=1.5"/2.5" Enviroflex PP1502/2502 (Obsolete)
  - 08=OPW Pisces SP-15
  - 09=OPW Pisces CP-15
  - 10=WFG Coflex 2000 Ribbed
  - 11=Enviroflex PP1503/2503
  - 12=Omniflex CP1503
  - 13=1.5/2.0 inch Environ Geoflex D
  - 14=APT P175SC
  - 15=OPW Pisces CP15DW
  - 16=OPW Pisces CP20
  - 17=OPW PISCES SP20
  - 18=User Defined
  - 19=PETROTECHNIK UPP EXTRA 63MM
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: 789**

Version 1

**Function Type:** Set Pressure Line Leak Primary Pipe Length

Also used for the smaller diameter line in dual diameter piping configurations

**Command Format:**

**Display:** <SOH>S789QQLLLL

**Computer:** <SOH>s789QQFFFFFFF

**Inquire:**

<SOH>I789QQ

<SOH>i789QQ

**Notes:**

1. QQ - Pressure Line Leak Line Number (Decimal, 00=all)
2. LLLL - Pipe Length, Feet (Decimal)
3. FFFFFFFF - Pipe Length, Feet (ASCII Hex IEEE float)

**Typical Response Message, Display Format:**

```
<SOH>
I789QQ
JAN 14, 1995 10:15 PM

PRESSURE LINE LEAK PIPE LENGTH

LINE LINE LENGTH
Q 1:UNLEADED REGULAR 250 FEET
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>s789QQYYMMDDHHmmQQFFFFFFF...
 QQFFFFFFF&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak Line Number (Decimal, 00=all)
3. FFFFFFFF - Pipe Length, Feet (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 78C

Version 1

**Function Type:** Set Pressure Line Leak 0.20 GPH Test Schedule

**Command Format:**

**Display:** <SOH>S78CQQf

**Computer:** <SOH>s78CQQf

**Inquire:**

<SOH>I78CQQ

<SOH>i78CQQ

**Typical Response Message, Display Format:**

```
<SOH>
I78CQQ
JAN 24, 1996 2:54 PM

PRESSURE LINE LEAK 0.20 TEST SCHEDULE

LINE 0.20 GPH TEST
Q 1:REGULAR UNLEADED MONTHLY
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i78CQQYYMMDDHHmmQQf...
 QQf&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak line number (Decimal, 00=All)
3. f - 0.20 GPH Test Schedule  
0=Disabled  
1=Repetitive  
2=Monthly  
3=Manual
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 78E

Version 1

**Function Type:** Set Pressure Line Leak 0.10 GPH Auto Test Enable

**Command Format:**

**Display:** <SOH>S78EQQf

**Computer:** <SOH>s78EQQf

**Inquire:**

<SOH>I78EQQ

<SOH>i78EQQ

**Typical Response Message, Display Format:**

```
<SOH>
I78EQQ
JAN 24, 1996 2:54 PM

PRESSURE LINE LEAK 0.10 GPH AUTO ENABLE

LINE 0.10 AUTO
Q 1:REGULAR UNLEADED ENABLED
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i78EQQYYMMDDHHmmQQf...
 QQf&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak line number (Decimal, 00=All)
3. f - 0.10 GPH Test  
0=Disabled  
1=Enabled
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 78F

Version 1

**Function Type:** Set Pressure Line Leak Alarm Limit  
(in TLS350 this command was Pressure Line Leak dispense threshold)

**Command Format:**

**Display:** <SOH>S78FQQppppp

**Computer:** <SOH>s78FQQFFFFFFFFF

**Inquire:**

<SOH>I78FQQ

<SOH>i78FQQ

**Notes:**

1. QQ - Pressure Line Leak Line Number (Decimal, 00=all)
2. ppppp - Alarm Limit, PSI or KPA (Decimal)
3. FFFFFFFF - Alarm Limit, PSI or KPA (ASCII Hex IEEE float) Value must be within the range of 0.0 to 25.0 PSI or 0.0 to 172.0 KPA

**Typical Response Message, Display Format:**

<SOH>

I78FQQ

JAN 24, 1996 2:54 PM

PRESSURE LINE LEAK ALARM LIMIT

LINE

ALARM LIMIT

Q 1:REGULAR UNLEADED

15.0 PSI

<ETX>

**Typical Response Message, Computer Format:**

<SOH>i78FQQYYMMDDHHmmQQFFFFFFFFF&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak line number (Decimal, 00=All)
3. FFFFFFFF - Alarm Limit, PSI (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 78G

Version 1

**Function Type:** Set controlling pump

**Command Format:**

**Display:** <SOH>S78GQQnn

**Computer:** <SOH>s78GQQnn

**Inquire:**

<SOH>I78GQQ

<SOH>i78GQQ

**Typical Response Message, Display Format:**

```
<SOH>
I78GQQ
JAN 24, 1996 2:54 PM

PRESSURE LINE LEAK CONTROLLING PUMP

LINE CONTROLLING PUMP
Q 1:REGULAR UNLEADED 5
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i78GQQYYMMDDHHmmQQnn&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak line number (Decimal, 00=All)
3. nn - CONTROLLING PUMP
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** L01  
**Function Type:** Set Line Configuration

Version 1

**Command Format:**  
**Display:** <SOH>SL01QQf  
**Computer:** <SOH>sL01QQf

**Inquire:**  
<SOH>iL01QQ  
<SOH>iL01QQ

### Typical Response Message, Display Format:

```
<SOH>
iL01QQ
JAN 24, 1996 2:54 PM

PUMPS AND LINES SETUP - LINES

LINE LABEL CONFIGURED
Ln 1: REGULAR UNLEADED ON
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>iL01QQYYMMDDHHmmQQf...
 QQf&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak line number (Decimal, 00=All)
3. f - Configuration flag  
0=Off  
1=On
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** L02  
**Function Type:** Set Line Label

Version 6

**Command Format:**  
**Display:** <SOH>SL02QQaaaaaaaaaaaaaaaaaaaaa  
**Computer:** <SOH>sL02QQaaaaaaaaaaaaaaaaaaaaa

**Inquire:**  
<SOH>IL02QQ  
<SOH>iL02QQ

### Typical Response Message, Display Format:

<SOH>  
IL01QQ  
JAN 24, 1996 2:54 PM

LINE LABEL

LINE	LABEL
Ln 1:	REGULAR UNLEADED

<ETX>

### Typical Response Message, Computer Format:

<SOH>iL01QQYYMMDDHHmmQQaaaaaaaaaaaaaaaaaaaaa...  
QQaaaaaaaaaaaaaaaaaaaaa&&CCCC<ETX>

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. QQ - Line number (Decimal, 00=All)
3. a - Indicates any printable ASCII character
4. && - Data Termination Flag
5. CCCC - Message Checksum



# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** L03

Version 1

**Function Type:** Set Pressure Line Leak Monitoring

**Command Format:**

**Display:** <SOH>SL03QQf

**Computer:** <SOH>sL03QQf

**Inquire:**

<SOH>iL03QQ

<SOH>iL03QQ

**Typical Response Message, Display Format:**

```
<SOH>
iL03QQ
JAN 24, 1996 2:54 PM

PRESSURE LINE LEAK MONITORING
```

```
LINE MONITORING
Ln 1:REGULAR UNLEADED PLLD
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>iL03QQYYMMDDHHmmQQf...
 QQf&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak line number (Decimal, 00=All)
3. f - Leak Monitoring  
0=None  
1=PLLD
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** L04  
**Function Type:** Set Pressure Line Sensor

Version 1

**Command Format:**  
**Display:** <SOH>SL04QQff  
**Computer:** <SOH>sL04QQff

**Inquire:**  
<SOH>iL04QQ  
<SOH>iL04QQ

### Typical Response Message, Display Format:

<SOH>  
iL04QQ  
JAN 24, 1996 2:54 PM

PRESSURE SENSOR

LINE	LPR Sensor
Ln 1:REGULAR UNLEADED	1
<ETX>	

### Typical Response Message, Computer Format:

<SOH>iL04QQYYMMDDHHmmQQff...  
QQff&&CCCC<ETX>

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. QQ - Line number (Decimal)
3. ff - Sensor ID (Decimal, 00= clear assignment)
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** L05  
**Function Type:** Set Line Manifolded

Version 1

**Command Format:**  
**Display:** <SOH>SL05LLf  
**Computer:** <SOH>sL05LLf

**Inquire:**  
<SOH>iL05LL  
<SOH>iL05LL

### Typical Response Message, Display Format:

```
<SOH>
iL05LL
JAN 24, 1996 2:54 PM

IS LINE MANIFOLDED

LINE MANIFOLDED
Ln 1: YES
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>iL05LLYYMMDDHHmmLLf...
 LLf&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. LL - Line number (Decimal, 00=All)
3. f - Manifolded  
0=NO  
1=YES
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: L06**

Version 1

**Function Type:** Set Line Dispense Mode

**Command Format:**

**Display:** <SOH>SL06QQf

**Computer:** <SOH>sL06QQf

**Inquire:**

<SOH>iL06QQ

<SOH>iL06QQ

### Typical Response Message, Display Format:

```
<SOH>
iL06QQ
JAN 24, 1996 2:54 PM

PRESSURE LINE LEAK DISPENSE MODE

LINE DISPENSE MODE
Ln 1:REGULAR UNLEADED STANDARD
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>iL06QQYYMMDDHHmmQQf...
 QQf&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak line number (Decimal, 00=All)
3. f - Dispensing Mode
  - 1=Standard
  - 2=Manifolded: Alternate - Volume
  - 3=Manifolded: Sequential
  - 4=Manifolded: All Pumps
  - 5=PumpSense
  - 6=Manifolded: Alternate - Height
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** L07

Version 1

**Function Type:** Set Line Associated Pump Numbers

**Command Format:**

**Display:** <SOH>SL07LLpppp...

**Computer:** <SOH>sL07LLpppp...

**Inquire:**

<SOH>iL07LL

<SOH>iL07LL

**Notes:**

1. pp - A sequence of one or more 2-digit-wide zero-padded Pump numbers. If a unique zero entry (00) is given for Pump Numbers then all current Pump assignments for the Line will be removed. Multiple Pump entries are only allowed for Manifolded Lines.

**Typical Response Message, Display Format:**

```
<SOH>
iL07LL
JAN 24, 1996 2:54 PM

LINE-ASSOCIATED PUMPS

LINE PUMP
Ln 1:REGULAR UNLEADED 1
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>iL07LLYYMMDDHHmmLLnnpppp...
 LLnnpppp&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. LL - Line Number (Decimal, 00=All)
3. nn - number of pumps to follow
4. pp - Pump number (Decimal)
5. && - Data Termination Flag
6. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** L08  
**Function Type:** Set Line Alternate Modes

Version 6

**Command Format:**  
**Display:** <SOH>SL08LLf  
**Computer:** <SOH>sL08LLf

**Inquire:**  
<SOH>IL08LL  
<SOH>iL08LL

### Typical Response Message, Display Format:

```
<SOH>
IL08LL
JAN 24, 1996 2:54 PM

LINE ATERNATE MODE SWITCHOVER ENABLE

LINE ENABLED
Ln 1:REGULAR UNLEADED YES
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>iL08LLYYMMDDHHmmLLf...
 LLf&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. LL - Line Number (Decimal, 00=all, inquire only)
3. f - Auto Switchover  
0=NO  
1=YES
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** L09

Version 6

**Function Type:** Set Line Alternate Volume Mode Switchover Threshold

**Command Format:**

**Display:** <SOH>SL09LLGGGG

**Computer:** <SOH>sL09LLFFFFFFFF

**Inquire:**

<SOH>iL09LL

<SOH>iL09LL

**Notes:**

1. GGGG - Full Height Volume, Gallons (Decimal)
2. FFFFFFFF - Full Height Volume, Gallons (ASCII Hex IEEE float)

**Typical Response Message, Display Format:**

```
<SOH>
iL09LL
JAN 24, 1996 2:54 PM

LINE ALTERNATE-VOLUME MODE SWITCHOVER THRESHOLD

LINE GALLONS
Ln 1:REGULAR UNLEADED 200
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>iL09LLYYMDDHHmmLLFFFFFFFF...
 LLFFFFFFFF&&CCCC<ETX>
```

**Notes:**

1. YYMDDHHmm - Current Date and Time
2. LL - Line Number (Decimal, 00=All, inquire only)
3. FFFFFFFF - Switchover threshold, Gallons (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** L0A

Version 6

**Function Type:** Set Line Alternate Height Mode Switchover Threshold

**Command Format:**

**Display:** <SOH>SL0ALLhhh.h

**Computer:** <SOH>sL0ALLFFFFFFFF

**Inquire:**

<SOH>IL0ALL

<SOH>iL0ALL

**Notes:**

1. hhh.h - Switchover Threshold, Inches and tenths (Decimal)
2. FFFFFFFF - Switchover Threshold, Inches (ASCII Hex IEEE float)

**Typical Response Message, Display Format:**

```
<SOH>
IL0ALL
JAN 24, 1996 2:54 PM

LINE ALTERNATE-HEIGHT MODE SWITCHOVER THRESHOLD

LINE INCHES
Ln 1:REGULAR UNLEADED 2.0
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>iL0ALLYMMDDHHmmLLFFFFFFFF...
 LLFFFFFFFF&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. LL - Line Number (Decimal, 00=All)
3. FFFFFFFF - Switchover threshold, Inches (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum



# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** L0B

**Function Type:** Pumps and Lines Setup - Lines

Version 6

**Command Format:**

**Display:** <SOH>IL0BLL

**Computer:** not supported

### Typical Response Message, Display Format:

```
<SOH>
IL0BLL
JAN 24, 1996 2:54 PM

PUMPS AND LINES SETUP - LINES

----- LINE Ln: 1 -----
LINE CONFIGURATION: ENABLED
LABEL: Regular pump
LEAK MONITORING: Monitoring None
PRESSURE SENSOR: Unassigned
MANIFOLDED: ENABLED
DISPENSE MODE: Manifolded: Alternate-Height
ACTIVE SWITCHOVER: ENABLED
SWITCHOVER VOLUME: 200 GALLONS
SWITCHOVER HEIGHT: 2 INCHES
----- ASSOCIATED PUMPS
PUMP
1
2
<ETX>
```

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** S51

**Function Type:** Set LPR Sensor Configuration

Version 1

**Command Format:**

**Display:** <SOH>SS51QQf

**Computer:** <SOH>sS51QQf

**Inquire:**

<SOH>IS51QQ

<SOH>iS51QQ

### Typical Response Message, Display Format:

```
<SOH>
IS51QQ
JAN 24, 1996 2:54 PM

LINE_PRESSURE_SENSOR CONFIGURATION
DEVICE LABEL CONFIGURED
 1 REGULAR UNLEADED ON
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>iS51QQYYMMDDHHmmQQf...
 QQf&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. QQ - sensor number (Decimal, 00=All)
3. f - Configuration flag  
0=Off  
1=On
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** S53

Version 1

**Function Type:** Set LPR Sensor Label

**Command Format:**

**Display:** <SOH>SS53QQaaaaaaaaaaaaaaaaaaaaaa

**Computer:** <SOH>sS53QQaaaaaaaaaaaaaaaaaaaaaa

**Inquire:**

<SOH>IS53QQ

<SOH>iS53QQ

**Typical Response Message, Display Format:**

```
<SOH>
IS53QQ
JAN 24, 1996 2:54 PM

LINE_PRESSURE_SENSOR LABEL

DEVICE LABEL
 1 REGULAR UNLEADED
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>iS53QQYYMMDDHHmmQQaaaaaaaaaaaaaaaaaaaaaa...
 QQaaaaaaaaaaaaaaaaaaaaaa&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. QQ - sensor number (Decimal)
3. a - Indicates any printable ASCII character
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: S54**

Version 1

**Function Type:** Get LPR Sensor Serial Number

**Command Format:**

**Display:** <SOH>IS54QQ

**Computer:** <SOH>iS54QQ

**Typical Response Message, Display Format:**

```
<SOH>
IS54QQ
OCT 09, 2008 01:36 PM

LINE PRESSURE SENSOR

SENSOR LABEL SERIAL NUMBER
 1 LINE LABEL 1 1179401887
 2 Line Label Two 0000000998
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>iS54QQYYMMDDHHmmQQaaaaaaaa...
 QQaaaaaaaaCCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. QQ - sensor number (Decimal)
3. aaaaaaaaaa - Serial number (IEEE ASCII HEX long)
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** S55

Version 1

**Function Type:** Line Pressure Sensor Alarm History Report

**Command Format:**

**Display:** <SOH>IS55QQ

**Computer:** <SOH>iS55QQ

### Typical Response Message, Display Format:

```
<SOH>
IS55SS
JAN 22, 2003 3:07 PM
```

```
STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....
```

LINE PRESSURE SENSOR ALARM HISTORY REPORT

SENSOR LOCATION

```
1 LPR # 1
 JUN 23, 2003 2:12 PM DATA SETUP WARNING
 JUN 23, 2003 2:12 PM COMMUNICATION ALARM
```

<ETX>

### Typical Response Message, Computer Format:

```
<SOH>iS55SSYYMMDDHHmmSSnnYYMMDDHHmmaaaa...
 SSnnYYMMDDHHmmaaaa&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. SS - LPR Sensor Number (Decimal, 00=all)
3. nn - Number of alarms incidents to follow (Decimal, 00=none)
4. YYMMDDHHmm - Date and time alarm occurred
5. aaaa - Alarm type number:  
0001=LPR Sensor Setup Data Warning  
0002=LPR Sensor Communication Alarm
6. && - Data Termination Flag
7. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** S56

Version 1

**Function Type:** Get Pressure LPR Sensor Sample Data

**Command Format:**

**Display:** <SOH>IS56QQ

**Computer:** <SOH>iS56QQ

**Typical Response Message, Display Format:**

```
<SOH>
IS56QQ
JAN 24, 1996 2:54 PM

LINE PRESSURE SENSOR SAMPLES
DEVICE TIME SAMPLES
1 JAN 24, 1996 2:54 PM 124.343
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>iS56QQYYMMDDHHmmQQNNFFFFFFFFF...
 QQNNFFFFFFFFF&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. QQ - LPRSensor number (Decimal, 00=All)
3. NN - Number of samples followed (maximum 60 samples)
4. FFFFFFFF - sample readings ( ASCII Hex IEEE floats)
5. && - Data Termination Flag
6. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** SA1

Version 1

**Function Type:** Get Line Pressure Sensor Status

**Command Format:**

**Display:** <SOH>ISA1SS

**Computer:** <SOH>iSA1SS

### Typical Response Message, Display Format:

```
<SOH>
ISA100
MAY 12, 2008 3:06 PM
```

```
STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....
```

### LINE PRESSURE SENSOR STATUS REPORT

SENSOR	LABEL	STATUS
1	LPR SENSOR #1	NORMAL
2	LPR SENSOR #2	Setup Data Warning
3	LPR SENSOR #3	NORMAL

<ETX>

### Typical Response Message, Computer Format:

```
<SOH>iSA1QQYYMMDDHHmmSSnnNN...
SSnnNN&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. SS - LPRSensor number (Decimal, 00=All)
3. nn - Number of alarms active for LPR Sensor (Decimal, 00=none)
4. NN - Alarm Type Number (See explanation for NN when AA is 63 in Function i10100)
5. && - Data Termination Flag
6. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

### 7.3.10 Reconciliation Setup

**Function Code:** 51N  
**Function Type:** Set LV/MDIM Configuration

Version 2

**Command Format:**  
**Display:** <SOH>S51NIIIf  
**Computer:** <SOH>s51NIIIf

**Inquire:**  
<SOH>I51NII  
<SOH>i51NII

#### Typical Response Message, Display Format:

```
<SOH>
I51NII
JUN 22, 2009 3:12 PM

MDIM CONFIGURATION

DEVICE LABEL CONFIGURED
 1 MDIM #1 ON
<ETX>
```

#### Typical Response Message, Computer Format:

```
<SOH>i51NIIYYMDDHHmmIIIf...
 IIf&&CCCC<ETX>
```

#### Notes:

1. YYMDDHHmm - Current Date and Time
2. II - LV/MDIM Number (Decimal, 00-all)
3. f - LV/MDIM Configuration Flag  
0=Off  
1=On
4. && - Data Termination Flag
5. CCCC - Message Checksum



# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 51P  
**Function Type:** Set LV/MDIM Setup Configuration

Version 2

**Command Format:**  
**Display:** <SOH>S51PNNUUpPQQQQ  
**Computer:** <SOH>s51PNNUUpPQQQQ

**Inquire:**  
<SOH>I51P00  
<SOH>i51P00

### Notes:

1. NN - DIM Device Number (Decimal)
2. UU - Unit Conversion (Decimal)
3. pp - Pulse Conversion (Decimal)
4. QQQQ - Custom Pulse Conversion (Decimal)  
 QQQQ is optional when PP is not custom.

### Typical Response Message, Display Format:

```
<SOH>
I51P00
JUN 22, 2009 3:12 PM

DIM CONFIGURATION SETUP
DEVICE LABEL PULSE CONVERSION PULSE UNITS
 1 MDIM1 500 US
 2 MDIM2 1000 METRICS
 3 MDIM3 9999 (CUSTOM) US
 4 MDIM4 ½ US
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>i51P00YYMMDDHHmmNNFFUUpP...
 NNFFUUpP&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. NN - DIM Device Number (Decimal)
3. UU - Pulse Units  
 01=US  
 02=Metric  
 03=Imperial
4. pp - Pulse Conversion  
 01 - ½ Pulse Conversion  
 02 - 1 Pulse Conversion  
 03 - 2.5 Pulse Conversion  
 04 - 10 Pulse Conversion  
 05 - 25 Pulse Conversion  
 06 - 100 Pulse Conversion  
 07 - 250 Pulse Conversion  
 08 - 500 Pulse Conversion  
 09 - 1000 Pulse Conversion  
 10 - Custom Pulse Conversion
5. QQQQ - Custom Conversion (0001 - 9999)
6. && - Data Termination Flag
7. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 51Q  
**Function Type:** Set LV/MDIM Label

Version 2

**Command Format:**  
**Display:** <SOH>S51QIIaaaaaaaaaaaaaaaaaaaaa  
**Computer:** <SOH>s51QIIaaaaaaaaaaaaaaaaaaaaa

**Inquire:**  
<SOH>I51QII  
<SOH>i51QII

### Typical Response Message, Display Format:

```
<SOH>
I51QII
JUN 22, 2009 3:12 PM

LV/MDIM LABEL

DEVICE LABEL
 1 MDIM #1
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>i51QIIYYMDDHHmmIIaaaaaaaaaaaaaaaaaaaaa...
 IIaaaaaaaaaaaaaaaaaaaaa&&CCCC<ETX>
```

### Notes:

1. YYMDDHHmm - Current Date and Time
2. II - LV/MDIM Number (Decimal, 00-all)
3. aaa...aaa - LV/MDIM Label (20 ASCII Characters [20h-7Eh])
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 790  
**Function Type:** DIM Software Revision

Version 2

**Command Format:**  
**Display:** <SOH>I790PP  
**Computer:** <SOH>i790PP

**Notes:**

1. PP - Communication Port Number (Decimal, 00=all)

**Typical Response Message, Display Format:**

```
<SOH>
I790PP
JAN 1, 2000 8:00 AM

EDIM: 7VR:GILBARCO 001.ATD:Jan 4 2010
<ETX>
```

**Typical Response Message, Computer Format:**

**Notes:**

1. Response is the same as display format.

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: 792**

**Function Type:** Set Electronic Dispenser Interface String

Version 2

**Command Format:**

**Display:** <SOH>I792NN

**Computer:** <SOH>i792NN

**Typical Response Message, Display Format:**

```
<SOH>
I792NN
JUN 22, 2009 3:12 PM

DISP. MODULE DATA STRING
EDIM 1: aaaaaaaaaaaaaa
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i792NNYYMMDDHHmmNNaaaaaaaaaaaaa...
NNaaaaaaaaaaaaa&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. NN - EDIM Number (Decimal, 00=all)
3. aaaaaaaaaaaaaa - Data String (12 ASCII characters [20h-7Eh])
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: 793**

Version 2

**Function Type:** Set Reconciliation Auto Daily Closing Time

**Command Format:**

**Display:** <SOH>S79300HHmm

**Computer:** <SOH>s79300HHmm

**Inquire:**

<SOH>I79300

<SOH>i79300

**Typical Response Message, Display Format:**

<SOH>

I79300

JAN 22, 2009 3:24 PM

AUTOMATIC DAILY CLOSING

TIME: 2:00 AM

<ETX>

**Typical Response Message, Computer Format:**

<SOH>i79300YYMMDDHHmmHHmm&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. HHmm - Auto Daily Closing Time (hours & minutes)
3. && - Data Termination Flag
4. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: 794**

Version 2

**Function Type:** Set Auto Shift Closing Time 1, 2, 3, 4

**Command Format:**

**Display:** <SOH>S794SSHHmm

**Computer:** <SOH>s794SSHHmm

**Inquire:**

<SOH>I794SS

<SOH>i794SS

**Typical Response Message, Display Format:**

<SOH>  
I794SS  
JAN 22, 2009 3:24 PM

AUTO SHIFT #1 CLOSING  
TIME: 8:00 AM  
<ETX>

**Typical Response Message, Computer Format:**

<SOH>i794SSYYMMDDHHmmSSHHmm&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. SS - Shift Close Number (01, 02, 03, 04)
3. HHmm - Hour and Minute (EE00=Disabled)
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 795

Version 2

**Function Type:** Set Periodic Reconciliation Mode

**Command Format:**

**Display:** <SOH>S79500ss

**Computer:** <SOH>s79500ss

**Inquire:**

<SOH>I79500

<SOH>i79500

**Typical Response Message, Display Format:**

<SOH>

I79500

JAN 22, 2009 3:24 PM

PERIODIC RECONCILIATION

MODE: MONTHLY

<ETX>

**Typical Response Message, Computer Format:**

<SOH>i79500YYMMDDHHmmss&&CCCC<ETX>

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. ss - Periodic Reconciliation Mode  
1=Monthly  
2=Rolling
3. && - Data Termination Flag
4. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 796

Version 2

**Function Type:** Set Periodic Reconciliation Report Length

**Command Format:**

**Display:** <SOH>S79600dd

**Computer:** <SOH>s79560dd

**Inquire:**

<SOH>I79600

<SOH>i79600

### Typical Response Message, Display Format:

```
<SOH>
I79600
JAN 22, 2009 3:24 PM

PERIODIC RECONCILIATION
LENGTH: 31 DAYS
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>i79600YYMMDDHHmmdd&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. dd - Number of days for Rolling Report (Decimal, 01-31)
3. && - Data Termination Flag
4. CCCC - Message Checksum



# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 797

Version 2

**Function Type:** Set Periodic Reconciliation Alarm Flag

**Command Format:**

**Display:** <SOH>S79700ss

**Computer:** <SOH>s79700ss

**Inquire:**

<SOH>I79700

<SOH>i79700

**Typical Response Message, Display Format:**

```
<SOH>
I79700
JAN 22, 2009 3:24 PM

PERIODIC RECONCILIATION
ALARM: DISABLED
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i79700YYMMDDHHmmss&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. ss - Reconciliation Alarm Flag  
01=Disable  
02=Enable
3. && - Data Termination Flag
4. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: 798**

Version 2

**Function Type:** Set Periodic Reconciliation Alarm Threshold

**Command Format:**

**Display:** <SOH>S79800PP.hh

**Computer:** <SOH>s79800FFFFFFFF

**Inquire:**

<SOH>I79800

<SOH>i79800

**Notes:**

1. PP.hh - Alarm Threshold, Percent and hundredths (Decimal)
2. FFFFFFFF - Alarm Threshold, Percent (ASCII Hex IEEE float)

**Typical Response Message, Display Format:**

i) When per-tank alarm threshold is disabled (using 7C1 command)

```
<SOH>
I79800
JUN 1, 2000 8:07 AM

PERIODIC RECONCILIATION
ALARM THRESHOLD: 1.00%
<ETX>
```

ii) When per-tank alarm threshold is enabled (using 7C1 command)

```
<SOH>
I79800
JAN 22, 2009 3:24 PM

THE SYSTEM PERIODIC RECONCILIATION ALARM THRESHOLD CAN'T BE DISPLAYED
IF TANK PERIODIC RECONCILIATION ALARM THRESHOLD IS ENABLED
<ETX>
```

**Typical Response Message, Computer Format:**

<SOH>i79800YYMMDDHHmmFFFFFFFF&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. FFFFFFFF - Alarm Threshold, Percent (ASCII Hex IEEE float)
3. && - Data Termination Flag
4. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: 799**

Version 2

**Function Type:** Set Periodic Reconciliation Alarm Offset

**Command Format:**

**Display:** <SOH>S79900GGGGGG

**Computer:** <SOH>s79900FFFFFFFF

**Inquire:**

<SOH>I79900

<SOH>i79900

**Notes:**

1. GGGGGG - Alarm Offset, Gallons (Decimal)
2. FFFFFFFF - Alarm Threshold, Gallons (ASCII Hex IEEE float)

**Typical Response Message, Display Format:**

```
<SOH>
I79900
JAN 22, 2009 3:24 PM

PERIODIC RECONCILIATION
ALARM OFFSET: 130
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i79900YYMMDDHHmmFFFFFFFF&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. FFFFFFFF - Alarm Offset, Gallons (ASCII Hex IEEE float)
3. && - Data Termination Flag
4. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: 79B**

Version 2

**Function Type:** Set Shift Manual Adjustment Value

**Command Format:**

**Display:** <SOH>S79BTTssGGGGGG

**Computer:** <SOH>s79BTTssFFFFFFFF

**Inquire:**

<SOH>I79BTTss

<SOH>i79BTTss

**Notes:**

1. TT - Tank Number
2. ss - Shift Mode  
01=Current  
02=Previous
3. GGGGGG - Adjustment Value, Gallons (Decimal)
4. FFFFFFFF - Adjustment Value, Gallons (ASCII Hex IEEE float)

**Typical Response Message, Display Format:**

```
<SOH>
I79BTT
JAN 22, 2009 3:24 PM

T 1:REGULAR UNLEADED
CURRENT SHFT ADJ: 300
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i79BTTYMMDDHHmmTTssFFFFFFFF&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number
3. ss - Shift Mode  
0=Current  
1=Previous
4. FFFFFFFF - Adjustmnet Value, Gallons (ASCII Hex IEEE float)
5. && - Data Termination Flag
6. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: 79C**

Version 2

**Function Type:** Set Daily Manual Adjustment Value

**Command Format:**

**Display:** <SOH>S79CTTMMDDGGGGGG

**Computer:** <SOH>s79CTTMMDDFFFFFFFF

**Inquire:**

<SOH>I79CTTMMDD

<SOH>i79CTTMMDD

**Notes:**

1. TT - Tank Number
2. MMDD - Month and Day
3. GGGGGG - Adjustment Value, Gallons (Decimal)
4. FFFFFFFF - Adjustment Value, Gallons (ASCII Hex IEEE float)

**Typical Response Message, Display Format:**

```
<SOH>
I79CTT
JAN 22, 2009 3:24 PM
```

```
T 1:REGULAR UNLEADED
MAR 26 ADJ VOL: 300
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i79CTTYMMDDHHmmTTMMDDFFFFFFFF&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number
3. MMDD - Month and Day
4. FFFFFFFF - Adjustment Value, Gallons (ASCII Hex IEEE float)
5. && - Data Termination Flag
6. CCCC - Message Checksum

## Serial Interface Manual

### TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 79D

Version 2

**Function Type:** Close Current Reconciliation Shift

**Command Format:**

**Display:** <SOH>S79D00ff

**Computer:** <SOH>s79D00ff

**Inquire:**

<SOH>I79D00

<SOH>i79D00

#### Typical Response Message, Display Format:

```
<SOH>
I79D00
JAN 22, 1996 3:23 PM
```

```
MANUAL SHIFT CLOSE
```

```
RECONCILIATION SHIFT CLOSE STATUS:
```

```
STATION IS BUSY
```

```
*** CLOSE SHIFT PENDING ***
```

```
<ETX>
```

#### Typical Response Message, Computer Format:

```
<SOH>i79D00YYMMDDHHmmff&&CCCC<ETX>
```

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. ff - Close current shift flag  
01=Close shift pending (for BIR)
3. && - Data Termination Flag
4. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 79E  
**Function Type:** Clear Tank Map Table

Version 2

**Command Format:**  
**Display:** <SOH>S79E00149  
**Computer:** <SOH>s79E00149

**Notes:**

1. 149 - This verification code must be sent to confirm the command

**Typical Response Message, Display Format:**

```
<SOH>
S79E00
JAN 22, 2009 3:23 PM

RECONCILIATION CLEAR MAPS
MAPS TABLE CLEARED
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i79E00YYMMDDHHmmss&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. ss - Clear status  
00=not clear  
01=cleared
3. && - Data Termination Flag
4. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: 79F**

**Function Type:** Set BIR Temperature Compensation Flag

Version 2

**Command Format:**

**Display:** <SOH>S79F00f

**Computer:** <SOH>s79F00f

**Inquire:**

<SOH>I79F00

<SOH>i79F00

**Typical Response Message, Display Format:**

<SOH>  
I79F00  
JAN 22, 2009 3:24 PM

TEMP COMPENSATION  
STANDARD  
<ETX>

**Typical Response Message, Computer Format:**

<SOH>i79F00YYMMDDHHmmf&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. f - Status  
0=Standard  
1=TC Volume
3. && - Data Termination Flag
4. CCCC - Message Checksum



# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: 79G**

Version 2

**Function Type:** Set Meter Tank Map

**Command Format:**

**Display:** <SOH>S79G00 Bxx.Sx FP MM F NN  
<SOH>S79G00 Cxx FP MM F NN

**Inquire:**

<SOH>I79G00  
<SOH>I79G00

**Computer:** <SOH>s79G00 Bxx.Sx FP MM F NN  
<SOH>s79G00 Cxx FP MM F NN

<SOH>i79G00  
<SOH>i79G00

**Notes:**

1. Bxx.Sx - VR BUS and Slot  
Cxx - Comm Slot
2. FP - Real fueling position number (Decimal)
3. MM - Real meter number (Decimal)
4. F - Flag for Tank, Blend, Unassigned  
T=Tank  
B=Blend  
X=Probeless  
?=Unmapped
5. NN - Tank or Blend Number (Decimal)  
(00 if Flag is Probeless Tank or Unmapped)

**Typical Response Message, Display Format:**

```
<SOH>
I79G00
JAN 22, 2009 3:24 PM

SOURCE REAL REAL TANK /
ADDRESS FP METER BLEND
B1.S2 00 00 T 1 REGULAR
B1.S2 00 01 T 2 SILVER
B1.S2 00 03 T 3 BLUE
B1.S3 00 01 B1 3 BLUE
B1.S2 01 02 ?
B1.S2 02 01 X
COMM 1 01 00 T 4 E90
COMM 1 01 01 R
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i79G00YYMMDDHHmm Bxx.Sx FP MM F NN...
Cxx FP MM F NN&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. Bxx.Sx - VR BUS and Slot  
Cxx - Comm Slot
3. FP - Real Fueling Position number (Decimal)
4. MM - Real meter number
5. F - Flag for Tank, Blend, Unmapped  
T=Tank  
B=Blend (not supported)  
X=Probeless  
?=Unmapped  
R=Retired
6. NN - Tank or Blend Number (Decimal) (00 if Flag is Unmapped)
7. && - Data Termination Flag
8. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 79H

Version 2

**Function Type:** Set Meter Map Lock/Unlock by Position

**Command Format:**

**Display:** <SOH>S79H00 Bxx.Sx FP MM L  
<SOH>S79H00 Cxx FP MM L

**Inquire:**

<SOH>I79H00  
<SOH>I79H00

**Computer:** <SOH>s79H00 Bxx.Sx FP MM L  
<SOH>s79H00 Cxx FP MM L

<SOH>i79H00  
<SOH>i79H00

**Notes:**

1. Bxx.Sx - VR BUS and Slot  
Cxx - Comm Slot
2. FP - Real fueling position number (Decimal)
3. MM - Real meter number (Decimal)
4. L - Locked flag  
0=Unlocked  
1=Locked

**Typical Response Message, Display Format:**

```
<SOH>
I79H00
JAN 22, 2009 3:24 PM

SOURCE REAL REAL
ADDRESS FP METER LOCKED
B1.S2 00 00 NO
B1.S2 00 01 NO
B1.S2 00 03 YES
COMM 2 01 00 YES
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i79H00YYMMDDHHmm Bxx.Sx FP MM L...
Cxx FP MM L&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. Bxx.Sx - VR BUS and Slot  
Cxx - Comm Slot
3. FP - Real Fueling Position number (Decimal)
4. MM - Real meter number
5. L - Locked flag  
0=Unlocked  
1=Locked
6. && - Data Termination Flag
7. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: 79I**

**Function Type:** Set Meter Map Lock/Unlock All Position

Version 2

**Command Format:**

**Display:** <SOH>S79I00L

**Computer:** <SOH>s79I00L

**Inquire:**

<SOH>I79I00

<SOH>i79I00

### Typical Response Message, Display Format:

```
<SOH>
I79I00
JAN 22, 2009 3:24 PM

SOURCE REAL REAL
ADDRESS FP METER LOCKED
B1.S2 00 00 NO
B1.S2 00 01 NO
B1.S2 00 03 YES
COMM 2 01 00 YES
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>i79I00YYMMDDHHmm Bxx.Sx FP MM L...
 Cxx FP MM L&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. Bxx.Sx - VR BUS and Slot  
Cxx - Comm Slot
3. FP - Real Fueling Position number (Decimal)
4. MM - Real meter number
5. L - Locked flag  
0=Unlocked  
1=Locked
6. && - Data Termination Flag
7. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 79J

Version 2

**Function Type:** Set Daily Manual Adjustment Value (Date Range)

**Command Format:**

**Display:** <SOH>S79JTTYMMDDGGGGGG

**Computer:** <SOH>s79JTTYMMDDFFFFFFFF

**Inquire:**

<SOH>I79JTTYMMDD

<SOH>i79JYYTTMMDD

### Notes:

1. TT - Tank Number
2. YYMMDD - Date
3. GGGGGG - Manual Adjustment Volume, Gallons (Decimal)
4. FFFFFFFF - Manual Adjustment Volume, Gallons (ASCII Hex IEEE float)

### Typical Response Message, Display Format:

<SOH>  
I79JTT  
JAN 22, 2009 3:24 PM

DAILY MANUAL ADJUSTMENT VALUE

TANK	DATE/TIME	MANUAL ADJ.
1	JAN 8, 2009	500

<ETX>

### Typical Response Message, Computer Format:

<SOH>i79JTTYMMDDHHmmTTYMMDDFFFFFFFF...  
TTYMMDDFFFFFFFF&&CCCC<ETX>

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number
3. YYMMDD - Date
4. FFFFFFFF - Manual Adjustment Volume, (ASCII Hex IEEE float)
5. && - Data Termination Flag
6. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 79K

**Function Type:** Set BIR Status Warning Enable

Version 2

**Command Format:**

**Display:** <SOH>S79K00s

**Computer:** <SOH>s79K00s

**Inquire:**

<SOH>I79K00

<SOH>i79K00

### Typical Response Message, Display Format:

```
<SOH>
I79K00
JAN 22, 2009 3:24 PM

BIR STATUS WARNING: ENABLED
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>i79K00YYMMDDHHmms&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. s - Status Warning  
0=Disabled  
1=Enabled
3. && - Data Termination Flag
4. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 79L

Version 2

**Function Type:** Set Reconciliation Report Close Day

**Command Format:**

**Display:** <SOH>S79L00D

**Computer:** <SOH>s79L00D

**Inquire:**

<SOH>I79L00

<SOH>i79L00

### Typical Response Message, Display Format:

```
<SOH>
I79L00
JAN 22, 2009 3:24 PM

PERIODIC RECONCILIATION
CLOSE DAY: SUNDAY
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>i79L00YYMMDDHHmmD&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. D - Day of Week (1=Monday, 2=Tuesday, .. 7=Sunday)
3. && - Data Termination Flag
4. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 79M

Version 2

**Function Type:** Set Alarm Threshold Delivery Type

**Command Format:**

**Display:** <SOH>S79M00d

**Computer:** <SOH>s79M00d

**Inquire:**

<SOH>I79M00

<SOH>i79M00

### Typical Response Message, Display Format:

<SOH>

I79M00

JAN 22, 2009 3:24 PM

ALARM THRESHOLD DELIVERY TYPE: STANDARD

<ETX>

### Typical Response Message, Computer Format:

<SOH>i79M00YYMMDDHHmmd&&CCCC<ETX>

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. d - Delivery Type  
0=Standard  
1=Ticketed
3. && - Data Termination Flag
4. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 79N

Version 2

**Function Type:** Set Shift Manual Adjustment Value (Date Range/Shift Number)

**Command Format:**

**Display:** <SOH>S79NTTSSYYMMDDGGGGGG

**Computer:** <SOH>s79NTTSSYYMMDDFFFFFFFF

**Inquire:**

<SOH>I79NTTSSYYMMDD

<SOH>i79NTTSSYYMMDD

### Notes:

1. TT - Tank Number (Decimal, 00=all)
2. SS - Shift Number (Decimal, 00=all)
3. YYMMDD - Date
4. GGGGGG - Manual Adjustment Volume, Gallons (Decimal)
5. FFFFFFFF - Manual Adjustment Volume, Gallons (ASCII Hex IEEE float)

### Typical Response Message, Display Format:

```
<SOH>
I79NTT
JAN 22, 2009 3:24 PM

SHIFT MANUAL ADJUSTMENT VALUE

SHIFT 1

TANK DATE/TIME MANUAL ADJ.
 1 JAN 8, 2009 500
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>i79NTTTYMMDDHHmmTTYMMDDNNSSFFFFFFFFSSFFFFFFFF...
TTYMMDDNNSSFFFFFFFFSSFFFFFFFF&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal)
3. YYMMDD - Date
4. NN - Number of shift, volume data fields to follow (Decimal)
5. SS - Shift Number (Decimal)
6. FFFFFFFF - Manual Adjustment Volume, (ASCII Hex IEEE float)
7. && - Data Termination Flag
8. CCCC - Message Checksum



# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: 79P**

Version 2

**Function Type:** Set Meter Calibration Offset by Meter

**Command Format:**

**Display:** <SOH>S79P00 Bxx.Sx FP MM 0.0000  
<SOH>S79P00 Cxx FP MM 0.0000

**Computer:** <SOH>s79H00 Bxx.Sx FP MM FFFFFFFF  
<SOH>s79H00 Cxx FP MM FFFFFFFF

**Inquire:**  
<SOH>I79P00  
<SOH>I79P00

<SOH>i79P00  
<SOH>i79P00

**Notes:**

1. Bxx.Sx - VR BUS and Slot  
Cxx - Comm Slot
2. FP - Real fueling position number (Decimal)
3. MM - Real meter number (Decimal)

**Typical Response Message, Display Format:**

<SOH>  
I79P00  
JAN 22, 2009 3:24 PM

SOURCE	REAL	REAL	CALIBRATION
ADDRESS	FP	METER	OFFSET
B1.S2	00	00	0.0000
B1.S2	00	01	0.0000
B1.S2	00	03	0.0000
COMM 2	01	00	0.0000

<ETX>

**Typical Response Message, Computer Format:**

<SOH>i79P00YYMMDDHHmm Bxx.Sx FP MM FFFF...  
Cxx FP MM FFFFFFFF&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. Bxx.Sx - VR BUS and Slot  
Cxx - Comm Slot
3. FP - Real Fueling Position number (Decimal)
4. MM - Real meter number
5. FFFFFFFF - Calibration Offset (-9.99 thru 9.99) ASCII Hex IEEE float
6. && - Data Termination Flag
7. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 79Q  
**Function Type:** Set User Fueling Position

Version 2

**Command Format:**

**Display:** <SOH>S79Q00 Bxx.Sx FF BB  
<SOH>S79Q00 Cxx FP BB

**Computer:** <SOH>s79Q00 Bxx.Sx FF BB  
<SOH>s79Q00 Cxx FP BB

**Inquire:**  
<SOH>I79Q00  
<SOH>I79Q00

<SOH>i79Q00  
<SOH>i79Q00

**Notes:**

1. Bxx.Sx - VR BUS and Slot  
Cxx - Comm Slot
2. FF - Real fueling position number (Decimal)
3. BB - User fueling position number (Decimal)

**Typical Response Message, Display Format:**

<SOH>  
I79Q00  
JAN 22, 2009 3:16 PM

SOURCE	REAL	USER
ADDRESS	FP	FP
B1.S2	00	1
B1.S2	00	1
B1.S2	00	1
B1.S2	01	12
B1.S2	01	12
B1.S2	01	12
COMM 2	02	10

<ETX>

**Typical Response Message, Computer Format:**

<SOH>i79Q00YYMMDDHHmm Bxx.Sx FF BB...  
Cxx FF BB&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. Bxx.Sx - VR BUS and Slot  
Cxx - Comm Slot
3. FF - Real fueling position number (Decimal)
4. BB - User fueling position number (Decimal)
5. && - Data Termination Flag
6. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: **79S**  
 Function Type: Get Tank Map

Version 2

Command Format:  
 Display: <SOH>I**79S**00  
 Computer: <SOH>i**79S**00

### Typical Response Message, Display Format:

```
<SOH>
I79S00
JAN 22, 2009 3:16 PM
```

SOURCE ADDRESS	USER FP	REAL FP	REAL METER	TANK / BLEND	LOCKED	LAST REPORT TIME
B1.S2	1	00	00	T 1 REGULAR	NO	08/12/18 01:01
B1.S2	1	00	01	T 2 SILVER	NO	08/12/18 01:01
B1.S2	1	00	03	T 3 BLUE	NO	08/12/18 01:01
B1.S2	2	01	01	BL 3 BLUE	NO	08/12/18 01:01
B1.S2	2	01	02	?	NO	08/12/19 11:01
B1.S2	3	02	01	X	NO	08/12/28 03:28
COMM 1	1	00	04	T 4 E90	NO	08/12/18 01:01
COMM 1	1	00	01	R	NO	08/12/18 01:01

```
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>i79S00YYMMDDHHmm UU Bxx.Sx FP MM F NN L YYMMDDHHmm...
UU Cxx FP MM F NN L YYMMDDHHmm&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. UU - User fueling position number (Decimal)
3. Bxx.Sx - VR BUS and Slot  
Cxx - Comm Slot
4. FP - Real fueling position number (Decimal)
5. MM - Real meter number (Decimal)
6. F - Flag for Tank, Blend, Unmapped  
T=Tank  
B=Blend  
X=Probeless  
?=Unmapped  
R=Retired
7. NN - Tank or Blend Number (Decimal)  
(00 if Flag is Probeless Tank or Unmapped)
8. L - Locked flag.  
0=Unlocked  
1=Locked
9. YYMMDDHHmm - Last Report Date and Time
10. && - Data Termination Flag
11. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: **79R**  
 Function Type: Get Meter Offset

Version 2

Command Format:  
 Display: <SOH>I79S00  
 Computer: <SOH>i79S00

### Typical Response Message, Display Format:

```
<SOH>
I79R00
JAN 22, 2009 3:16 PM

SOURCE USER REAL REAL TANK /
ADDRESS FP FP METER BLEND OFFSET
B1.S2 01 00 00 T 1: REGULAR 0.2500
B1.S2 01 00 01 T 2: SILVER 0.1500
B1.S2 01 00 03 T 3: BLUE 0.7610
COMM 1 01 00 04 T 4: E90 -0.2500
COMM 1 01 00 01 R 0.1500
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>i79R00YYMMDDHHmm UU Bxx.Sx FP MM F NN FFFFFFFF...
UU Cxx FP MM F NN FFFFFFFF&&CCCC<ETX>
```

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. UU - User fueling position number (Decimal)
3. Bxx.Sx - VR BUS and Slot  
     Cxx - Comm Slot
4. FP - Real fueling position number (Decimal)
5. MM - Real meter number (Decimal)
6. F - Flag for Tank, Blend, Unmapped  
     T=Tank  
     B=Blend  
     X=Probeless  
     ?=Unmapped  
     R=Retired
7. NN - Tank or Blend Number (Decimal)  
     (00 if Flag is Unmapped)
8. FFFFFFFF - Calibration Offset (-9.99 thru 9.99)ASCII Hex IEEE float
9. && - Data Termination Flag
10. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 7B2

Version 2

**Function Type:** Set Meter Calibration Offset

**Command Format:**

**Display:** <SOH>S7B200pp.ppp

**Computer:** <SOH>s7B200FFFFFFFF

**Inquire:**

<SOH>I7B200

<SOH>i7B200

**Notes:**

1. pp.ppp - Meter Calibration Offset, Percent (Decimal)
2. FFFFFFFF - Meter Calibration Offset, Percent (ASCII Hex IEEE float)

**Typical Response Message, Display Format:**

```
<SOH>
I7B200
JUN 1, 2009 8:10 AM
```

```
METER CALIBRATION
OFFSET: 0.000%
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i7B200YYMMDDHHmmFFFFFFFF&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. FFFFFFFF - Meter Calibration Offset, Percent (ASCII Hex IEEE float)
3. && - Data Termination Flag
4. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 7B4  
**Function Type:** Set Individual Meter Offset

Version 2

**Command Format:**  
**Display:** <SOH>S7B400 FF MM TT +0.00  
**Computer:** not supported

**Inquire:**  
 <SOH>I7B400  
 <SOH>i7B400

### Notes:

1. FF - Fueling Position (Decimal)
2. MM - Meter Number (Decimal)
3. TT - Tank Number (Decimal)
4. 0.00 - Meter Offset, percent (Decimal +/-9.99)

### Typical Response Message, Display Format:

```
<SOH>
I7B400
JUN 1, 2013 8:10 AM

INDIVIDUAL METER OFFSET
```

FP	METER	TANK	OFFSET
01	00	3 PREMIUM	+0.00%
	01	1 UNLEADED	+0.00%
02	00	3 PREMIUM	+0.00%
	01	1 UNLEADED	+0.00%
03	00	3 PREMIUM	+0.00%
	01	1 UNLEADED	+0.00%
04	00	3 PREMIUM	+0.00%
	01	1 UNLEADED	+0.00%
05	00	3 PREMIUM	+0.00%
	01	1 UNLEADED	+0.00%
	02	2 DIESEL	+0.00%
06	00	3 PREMIUM	+0.00%
	01	1 UNLEADED	+0.00%
	02	2 DIESEL	+0.00%

<ETX>

### Typical Response Message, Computer Format:

```
<SOH>i7B400YYMMDDHHmmNNNNFFMMTT00000000...
FFMMTT00000000&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. NNNN - Number of entires to follow (ASCII Hex)
3. FF - Fuel Position (Decimal)
4. MM - Meter Position (Decimal)
5. TT - Tank Number (Decimal)
6. 00=Tank not mapped
7. 00000000 - Meter Offset, Percent (Decimal, +/-9.99)
8. && - Data Termination Flag
9. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 7B5  
**Function Type:** Set Ticketed Delivery

Version 2

**Command Format:**  
**Display:** <SOH>S7B5TTeeYYMMDDHHmmGGGGGG  
**Computer:** <SOH>s7B5TTeeYYMMDDHHmmFFFFFFFF

### Notes:

1. TT - Tank Number (Decimal, 00=all)
2. ee - edit function  
01=Edit Ticket (enter, modify)  
02=Insert Ticket Delivery
3. YYMMDDHHmm - Delivery Date/Time (End Time)
4. GGGGGG - Ticket Volume, Gallons (Decimal)
5. FFFFFFFF - Ticket Volume, Gallons (ASCII Hex IEEE float)  
Entering 0 volume will cancel ticketed delivery warning.  
VOL TC/STANDARD must match setup for ticketed delivery.

### Typical Response Message, Display Format:

<SOH>  
S7B5TT  
JAN 9, 2009 8:08 AM

STATION HEADER 1....  
STATION HEADER 2....  
STATION HEADER 3....  
STATION HEADER 4....

SET TICKETED DELIVERY

VOLUMES ARE STANDARD

T 1:UNLEADED REGULAR

	TICKET VOLUME	GAUGE VOLUME	VARIANCE
JAN 8, 2009 2:10 AM	500.0	503.0	3.0
<ETX>			

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code 7B5: (Continued)

### Typical Response Message, Computer Format:

```
<SOH>i7B5TTYMMDDHHmmTTpPPRRYYMMDDHHmmNNFFFFFFFF...
TTpPPRRYYMMDDHHmmNNFFFFFFFF&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal)
3. p - Product Code (one ASCII character [20h-7Eh])
4. PP - Probe type (Decimal)
5. RR - Result code - if an error occurs, just error code will be returned (Decimal)
  - 00=OK and data will follow
  - 01=BIR not enabled
  - 02=Tank number is invalid
  - 03=missing time/date
  - 04=Time Date not numeric
  - 05=invalid date
  - 06=time is invalid
  - 07=Date out of range of period (curr & prev via BIR)
  - 08=If there is no matching time/date for edit
  - 09=Invalid volume
  - 10=Try to insert when gauged exists
  - 30=Reserved
  - 31=Reserved
6. YYMMDDHHmm - Delivery Date/Time (End Time)
7. NN - Number of eight character Data Fields to follow (Hex)
8. FFFFFFFF - ASCII Hex IEEE floats:
  - 1. Ticketed volume
  - 2. Gauged volume
  - 3. Delivery variance
9. && - Data Termination Flag
10. CCCC - Message Checksum



# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 7B6  
**Function Type:** Set BOL number

Version 2

**Command Format:**  
**Display:** <SOH>S7B6TTeeYYMMDDHHmmaa..aa  
**Computer:** <SOH>s7B6TTeeYYMMDDHHmmaa..aa

**Inquire:**  
<SOH>I7B6TT  
<SOH>i7B6TT

### Notes:

1. TT - Tank Number (Decimal)
2. ee - edit function  
01=Edit Ticket (enter, modify)  
02=Insert Ticketed Delivery
3. YYMMDDHHmm - Delivery Date/Time (End Time)
4. aa..aa - Bill of Lading Number

### Typical Response Message, Display Format:

<SOH>  
I7B60101  
FEB 01, 2009 4:29 PM

STATION HEADER 1....  
STATION HEADER 2....  
STATION HEADER 3....  
STATION HEADER 4....

SET TICKETED DELIVERY BOL NUMBER

DELIVERY END DATE	BOL NUMBER	TICKET VOLUME	GAUGE VOLUME	TC GAUGE VOLUME
DEC 2, 2009 2:00 AM	123456	0.0	502.0	0.0

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code 7B6 Notes:** (Continued)

**Typical Response Message, Computer Format:**

```
<SOH>i7B6TTYMMDDHHmmTTpPPRRYYMMDDHHmmAAaa..aaNNFFFFFFFF...FFFFFFFF...
 TTpPPRRYYMMDDHHmmAAaa..aaNNFFFFFFFF...FFFFFFFF&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal)
3. p - Product Code (Decimal)
4. PP - Probe type (Decimal)
5. RR - Result code (Decimal) - if error occurs, only error code is returned
  - 00=OK and data will follow
  - 01=BIR not enabled
  - 02=Tank number is invalid
  - 03=missing time/date
  - 04=Time Date not numeric
  - 05=invalid date
  - 06=time is invalid
  - 07=Date out of range of period (curr & prev via BIR)
  - 08=If there is no matching time/date for edit
  - 30=Reserved
  - 31=Reserved
6. YYMMDDHHmm - Delivery Date/Time (End Time)
7. AA - Number of ASCII characters to follow
8. aa..aa - Bill of Lading Number (ASCII characters [20h-7Eh])
9. NN - Number of eight character Data Fields to follow (Hex)
10. FFFFFFFF - ASCII Hex IEEE floats - VOL TC/STANDARD must match setup for ticketed delivery
  - 1. Ticketed volume
  - 2. Gauged volume
  - 3. Gauged TC volume
11. && - Data Termination Flag
12. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 7BG

Version 2

**Function Type:** Set Ticketed Delivery Info

**Command Format:**

**Display:** <SOH>S7BGTTeYYMMDDHHmmGGGGGG,  
gggggg,TTT.TT,  
aa.aa,DD..DD

**Computer:** <SOH>s7BGTTeYYMMDDHHmmFFFFFFFF  
gggggg,TTT.TT,  
aa.aa,DD..DD

**Notes:**

1. TT - Tank Number (Decimal, 00=all)
2. ee - edit function  
01=Edit Ticket (enter, modify)  
02=Insert Ticket Delivery
3. YYMMDDHHmm - Delivery Date/Time (End Time)
4. GGGGGG - Ticket Volume, Gallons (Decimal)
5. gggggg - TC Ticket Volume, Gallons (Decimal)
6. TTT.TT - Delivery Temperature (Float)
7. aa..aa - Bill of Lading Number (20 ASCII characters [20h-7Eh])
8. DD..DD - Delivery Id (20 ASCII characters [20h-7Eh])
9. FFFFFFFF - Ticket Volume, Gallons (ASCII Hex IEEE float)  
Entering 0 volume will cancel ticketed delivery warning.  
VOL TC/STANDARD must match setup for ticketed delivery.

**Typical Response Message, Display Format:**

<SOH>  
S7BGTTe  
JAN 9, 2009 8:08 AM

STATION HEADER 1....  
STATION HEADER 2....  
STATION HEADER 3....  
STATION HEADER 4....

SET TICKETED DELIVERY

VOLUMES ARE STANDARD

T 1:UNLEADED REGULAR

	TICKET VOLUME	GAUGE VOLUME	VARIANCE VOLUME	TC TICKET VOLUME	TEMP	BOL	DELIVERY ID
JAN 8, 2009 2:10 AM	500	503	3	501	80.2	0812	94
<ETX>							

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code 7BG:** (Continued)

**Typical Response Message, Computer Format:**

```
<SOH>i7BGTTYMMDDHHmmeeTTpPPRRYYMMDDHHmmNNFFFFFFFaa.aaDD..DD...
 TTpPPRRYYMMDDHHmmNNFFFFFFFaa.aaDD..DD...&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. ee - edit function
  - 01=Edit Ticket (enter, modify)
  - 02=Insert Ticket Delivery
3. TT - Tank Number (Decimal)
4. p - Product Code (one ASCII character [20h-7Eh])
5. PP - Probe type (Decimal)
6. RR - Result code - if an error occurs, just error code will be returned (Decimal)
  - 00=OK and data will follow
  - 01=BIR not enabled
  - 02=Tank number is invalid
  - 03=missing time/date
  - 04=Time Date not numeric
  - 05=invalid date
  - 06=time is invalid
  - 07=Date out of range of period (curr & prev via BIR)
  - 08=If there is no matching time/date for edit
  - 09=Invalid volume
  - 10=Try to insert when gauged exists
  - 30=Reserved
  - 31=Reserved
7. YYMMDDHHmm - Delivery Date/Time (End Time)
8. NN - Number of eight character Data Fields to follow (Hex)
9. FFFFFFFF - ASCII Hex IEEE floats:
  1. Ticketed volume
  2. Gauged volume
  3. Delivery variance
  4. TC Ticketed volume
  5. Temperature
10. aa..aa - Bill of Lading Number (20 ASCII characters [20h-7Eh])
11. DD..DD - Delivery Id (20 ASCII characters [20h-7Eh])
12. && - Data Termination Flag
13. CCCC - Message Checksum

## Serial Interface Manual

### TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 7C1

Version 2

**Function Type:** Set Tank Periodic Reconciliation Alarm Threshold Enable

**Command Format:**

**Display:** <SOH>S7C100f

**Computer:** <SOH>s7C100f

**Inquire:**

<SOH>I7C100

<SOH>i7C100

#### Typical Response Message, Display Format:

<SOH>

I7C100

JUN 22, 2009 3:12 PM

TANK PERIODIC RECONCILIATION ALARM THRESHOLD: DISABLED

<ETX>

#### Typical Response Message, Computer Format:

<SOH>i7C100YYMMDDHHmmf&&CCCC<ETX>

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. rr - Pump Relay Monitor Number (Decimal, 00=all)
3. f - Configuration Flag (ASCII Hex)  
0=Disabled  
1=Enabled
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 7C2

Version 2

**Function Type:** Set Tank Periodic Reconciliation Alarm Threshold

**Command Format:**

**Display:** <SOH>S7C2TTPP.hh

**Computer:** <SOH>s7C2TTFFFFFFFF

**Inquire:**

<SOH>i7C2TT

<SOH>i7C2TT

**Notes:**

1. TT - Tank Number (Decimal, 00 = all)
2. PP.hh - Tank Alarm Threshold, Percent and hundredths (Decimal)
3. FFFFFFFF - Tank Alarm Threshold, Percent (ASCII Hex IEEE float)

**Typical Response Message, Display Format:**

```
<SOH>
i7C2TT
JUN 22, 2009 3:12 PM

TANK PERIODIC RECONCILIATION ALARM THRESHOLD
TANK LABEL THRESHOLD
 1 REGULAR UNLEADED 1.00%
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i7C2TTYMMDDHHmmTTFFFFFFFF&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. FFFFFFFF - Tank Alarm Threshold, Percent(ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 7C3

Version 4

**Function Type:** Set HRM Maximum Volume Limit

**Command Format:**

**Display:** <SOH>S7C3TTGGGGGG

**Computer:** <SOH>s7C3TTFFFFFFFF

**Inquire:**

<SOH>i7C3TT

<SOH>i7C3TT

**Notes:**

1. TT - Tank Number (Decimal, 00 = all)
2. GGGGGG - HRM Maximum Volume Limit, Gallons (Decimal)
3. FFFFFFFF - HRM Maximum Volume Limit, Gallons (ASCII Hex IEEE float)

**Typical Response Message, Display Format:**

<SOH>  
i7C3TT  
JUN 22, 2011 3:12 PM

HRM MAXIMUM VOLUME LIMIT  
TANK PRODUCT LABEL GALLONS  
1 REGULAR UNLEADED 132  
<ETX>

**Typical Response Message, Computer Format:**

<SOH>i7C3TTYMMDDHHmmTTFFFFFFFF...  
TTFFFFFFFF&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. FFFFFFFF - HRM Maximum Alarm Limit, Gallons (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 7D6

Version 3

**Function Type:** Accuchart Operating Height Span

**Command Format:**

**Display:** <SOH>S7D6TTaabb

**Computer:** <SOH>s7D6TTaabb

**Inquire:**

<SOH>I7D6TT

<SOH>i7D6TT

**Notes:**

1. TT - Tank Number [01..32] (Decimal, 00 = all)
2. aa - Max operating level in percent of diameter [50-99] (Decimal)
3. bb - Min operating level in percent of diameter [00-45] (Decimal)

**Typical Response Message, Display Format:**

<SOH>

I7D6TT

JUN 22, 2010 3:12 PM

ACCUCHART OPERATING SPAN

TANK	LABEL	MIN	MAX
1	UNLEADED	5%	95%
2	MIDGRADE	1%	99%
3	PREMIUM	2%	50%
16	DIESEL	5%	45%

<ETX>

**Typical Response Message, Computer Format:**

<SOH>i7D6TTYMMDDHHmmTTaabb...

TTaabb&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number [01..32] (Decimal, 00=all)
3. aa - Max operating level in percent of diameter [50-99] (Decimal)
4. bb - Min operating level in percent of diameter [00-45] (Decimal)
5. && - Data Termination Flag
6. CCCC - Message Checksum



# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: 7H0

Version 2

Function Type: BIR Multiple Threshold Setup Report

Command Format:

Display: <SOH>I7H0TT

Computer: not supported

### Typical Response Message, Display Format:

<SOH>  
I7H0TT  
JUN 22, 2009 3:12 PM

#### BIR MULTIPLE THRESHOLD SETUP REPORT

TEST NUMBER	TEST TYPE	THRESHOLD TYPE	CONFIG	PERCENT	OFFSET VALUE
1	MONTHLY	1-THROUGHPUT	ENABLE	1.00	130
		2-CAPACITY	DISABLED	1.00	110
		3-DELIVERY	ENABLE	1.00	100
		4-FIXED	DISABLED		130
2	ROLLING - 10 DAYS	1-THROUGHPUT	ENABLE	1.00	99
		2-CAPACITY	ENABLE	1.00	50
		3-DELIVERY	ENABLE	1.00	75
		4-FIXED	ENABLE		1500
3	DISABLED				
4	DISABLED				

<ETX>

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 7H1

Version 2

**Function Type:** Set BIR Multiple Threshold Test Type

**Command Format:**

**Display:** <SOH>S7H1TTff

**Computer:** <SOH>s7H1TTff

**Inquire:**

<SOH>I7H1TT

<SOH>i7H1TT

**Typical Response Message, Display Format:**

```
<SOH>
I7H1TT
JUN 22, 2009 3:12 PM
```

```
TEST TYPE
1 MONTHLY
2 ROLLING DAYS
3 DISABLED
4 DISABLED
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i7H1TTYMMDDHHmmTTff...
 TTff&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. TT - Test Number (Decimal, 00=all, inquire only, else 01-04)
3. ff - Test Type Value
  - 00=Disabled
  - 01=Monthly
  - 02=Rolling Days
  - 03=Daily
  - 04=Rolling Consecutive Days
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 7H2

Version 2

**Function Type:** Set BIR Multiple Threshold Rolling Days

**Command Format:**

**Display:** <SOH>S7H2TTdd

**Computer:** <SOH>s7H2TTdd

**Inquire:**

<SOH>I7H2TT

<SOH>i7H2TT

**Notes:**

1. dd - Only valid when Test Type is 02 - Rolling or 03 - Rolling Consecutive

**Typical Response Message, Display Format:**

<SOH>

I7H2TT

JUN 22, 2009 3:12 PM

BIR MULTIPLE THRESHOLD ROLLING DAYS

TEST	TYPE	NUMBER OF DAYS
1	MONTHLY	
2	ROLLING - 10 DAYS	10
3	ROLLING CONSECUTIVE - 10 DAYS	3
4	DISABLED	

<ETX>

**Typical Response Message, Computer Format:**

<SOH>i7H2TTYMMDDHHmmTTdd...  
TTdd&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. TT - Test Number (Decimal, 00=all, inquire only, else 01-04)
3. dd - Number of Rolling Days (Decimal)
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 7H3

Version 2

**Function Type:** Set BIR Multiple Threshold Type Enable

**Command Format:**

**Display:** <SOH>S7H3TTttf

**Computer:** <SOH>s7H3TTttf

**Inquire:**

<SOH>I7H3TT

<SOH>i7H3TT

### Typical Response Message, Display Format:

```
<SOH>
I7H3TT
JUN 22, 2009 3:12 PM

BIR MULTIPLE THRESHOLD TYPE ENABLE
```

TEST NUMBER	TEST TYPE	THRESHOLD TYPE	CONFIGURED
1	MONTHLY	1-THROUGHPUT	ENABLE
		2-CAPACITY	DISABLED
		3-DELIVERY	ENABLE
		4-FIXED	DISABLED
2	ROLLING - 10 DAYS	1-THROUGHPUT	ENABLE
		2-CAPACITY	DISABLED
		3-DELIVERY	ENABLE
		4-FIXED	DISABLED

<ETX>

### Typical Response Message, Computer Format:

```
<SOH>i7H3TTYMMDDHHmmTTttf...
TTttf&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Test Number (Decimal, 00=all, inquire only, else 01-04)
3. tt - Number of Rolling Days (Decimal)
  - 01-Percent of Throughput
  - 02-Percent of Capacity
  - 03-Percent of Deliveries
  - 04-Fixed Value
4. f - Enable/Disable Flag
  - 0=Disable
  - 1=Enable
5. && - Data Termination Flag
6. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 7H4

**Function Type:** Set BIR Multiple Threshold Percentage

Version 2

**Command Format:**

**Display:** <SOH>S7H4TTttxx.xx

**Computer:** <SOH>s7H4TTttxx.xx

**Inquire:**

<SOH>I7H4TT

<SOH>i7H4TT

### Typical Response Message, Display Format:

<SOH>  
I7H4TT  
JUN 22, 2009 3:12 PM  
  
BIR MULTIPLE THRESHOLD PERCENTAGE

TEST NUMBER	TEST TYPE	THRESHOLD TYPE	PERCENT
1	MONTHLY	1-THROUGHPUT	1.00
		2-CAPACITY	1.00
		3-DELIVERY	1.00
2	ROLLING - 10 DAYS	1-THROUGHPUT	1.00
		2-CAPACITY	1.00
		3-DELIVERY	1.00

<ETX>

### Typical Response Message, Computer Format:

<SOH>i7H4TTYMMDDHHmmTTttEEEEEEEE...  
TTttEEEEEEEE&&CCCC<ETX>

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Test Number (Decimal, 00=all, inquire only, else 01-04)
3. tt - Number of Rolling Days (Decimal)
  - 01-Percent of Throughput
  - 02-Percent of Capacity
  - 03-Percent of Deliveries
4. EEEEEEEE - Percentage value (IEEE format)
5. && - Data Termination Flag
6. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 7H5

Version 2

**Function Type:** Set BIR Multiple Threshold Offset Value

**Command Format:**

**Display:** <SOH>S7H5TTttxxxxxx

**Computer:** <SOH>s7H5TTttEEEEEEEE

**Inquire:**

<SOH>i7H5TT

<SOH>i7H5TT

### Typical Response Message, Display Format:

<SOH>

I7H5TT

JUN 22, 2009 3:12 PM

BIR MULTIPLE THRESHOLD OFFSET VALUE

TEST NUMBER	TEST TYPE	THRESHOLD TYPE	OFFSET VALUE
1	MONTHLY	1-THROUGHPUT	130
		2-CAPACITY	110
		3-DELIVERY	100
		4-FIXED	1500
2	ROLLING - 10 DAYS	1-THROUGHPUT	99
		2-CAPACITY	50
		3-DELIVERY	75
		4-FIXED	350
3	DISABLED		
<ETX>			

### Typical Response Message, Computer Format:

<SOH>i7H5TTYMMDDHHmmTTttEEEEEEEE...  
TTttEEEEEEEE&&CCCC<ETX>

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Test Number (Decimal, 00=all, inquire only, else 01-04)
3. tt - Threshold Type
  - 01-Percent of Throughput
  - 02-Percent of Capacity
  - 03-Percent of Deliveries
  - 04-Fixed Value
4. EEEEEEEE - Offset value (IEEE format)
5. && - Data Termination Flag
6. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

### 7.3.11 PUMP MONITOR RELAY SETUP

**Function Code:** 7C7

Version 5

**Function Type:** Set Pump Relay Monitor Stuck Relay

**Command Format:**

**Display:** <SOH>S7C7QQSSS

**Computer:** <SOH>s7C7QQFFFFFFFF

**Inquire:**

<SOH>I7C7QQ

<SOH>i7C7QQ

**Notes:**

1. SSS - Stuck Relay, Seconds (Decimal, 5 - 600 seconds)
2. FFFFFFFF - Stuck Relay, Seconds (ASCII Hex IEEE float)

**Typical Response Message, Display Format:**

```
<SOH>
I7C7QQ
JUN 22, 2014 3:12 PM

PUMP RELAY MONITOR STUCK RELAY

DEVICE LABEL STUCK RELAY
 1 PUMP RELAY UNLEADED 60 SEC
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i7C7QQYYMMDDHHmmQQFFFFFFFFF...
 QQFFFFFFFFF&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pump Relay Monitor Number (Decimal, 00=all)
3. FFFFFFFF - Stuck Relay, Seconds (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 7C8

**Function Type:** Set Pump Relay Monitor Max Run Time

Version 5

**Command Format:**

**Display:** <SOH>S7C8QQhh

**Computer:** <SOH>s78CQQFFFFFFFF

**Inquire:**

<SOH>I7C8QQ

<SOH>i7C8QQ

**Notes:**

1. hh - Max Run Time, Hours (Decimal, 1 - 8 hours)
2. FFFFFFFF - Max Run Time, Hours (ASCII Hex IEEE float)

**Typical Response Message, Display Format:**

```
<SOH>
I7C8QQ
JUN 22, 2014 3:12 PM

PUMP RELAY MONITOR MAX RUN TIME

DEVICE LABEL MAX RUN TIME
 1 PUMP RELAY UNLEADED 8 HR
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i7C8QQYYMMDDHHmmQQFFFFFFFF...
 QQFFFFFFFF&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pump Relay Monitor Number (Decimal, 00=all)
3. FFFFFFFF - Max Run Time, Hours (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum



# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

### 7.3.12 I/O DEVICE SETUP

**Function Code:** 801  
**Function Type:** Set Input Configuration

Version 1

**Command Format:**  
**Display:** <SOH>S801IIf  
**Computer:** <SOH>s801IIf

**Inquire:**  
<SOH>I801II  
<SOH>i801II

#### Typical Response Message, Display Format:

```
<SOH>
I801II
MAR 26, 1996 1:50 PM

EXTERNAL INPUT CONFIGURATION
```

DEVICE	LABEL	CONFIGURED
1	EXTERNAL INPUT #1	OFF

<ETX>

#### Typical Response Message, Computer Format:

```
<SOH>i801IIYYMMDDHHmmIIf...
 IIf&&CCCC<ETX>
```

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. II - Input Number (Decimal, 00=all)
3. f - Configuration Flag  
0=Off  
1=On
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: 802**

Version 1

**Function Type:** Set Input Location Label

**Command Format:**

**Display:** <SOH>S802IIaaaaaaaaaaaaaaaaaaaaa

**Computer:** <SOH>s802IIaaaaaaaaaaaaaaaaaaaaa

**Inquire:**

<SOH>I802II

<SOH>i802II

**Typical Response Message, Display Format:**

```
<SOH>
I802II
MAR 26, 1996 1:50 PM

EXTERNAL INPUT LABEL

DEVICE LABEL
 1 aaaaaaaaaaaaaaaaaaaaaa
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i802IIYYMMDDHHmmIIaaaaaaaaaaaaaaaaaaaaa...
 IIaaaaaaaaaaaaaaaaaaaaa&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. II - Input Number (Decimal, 00=all)
3. a - Location Label (20 ASCII characters [20h-7Eh])
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 806  
**Function Type:** Set Relay Configuration

Version 1

**Command Format:**  
**Display:** <SOH>S806RRf  
**Computer:** <SOH>s806RRf

**Inquire:**  
<SOH>I806RR  
<SOH>i806RR

### Typical Response Message, Display Format:

```
<SOH>
I806RR
MAR 26, 1996 1:51 PM
```

#### RELAY CONFIGURATION

DEVICE	LABEL	CONFIGURED
1	OUTPUT RELAY #1	ON

```
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>i806RRYYMMDDHHmmRRf...
RRf&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. RR - Relay Number (Decimal, 00=all)
3. f - Configuration Flag  
0=Off  
1=On
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: 807**

Version 1

**Function Type:** Set Relay Location Label

**Command Format:**

**Display:** <SOH>S807RRaaaaaaaaaaaaaaaaaaaaa

**Computer:** <SOH>s807RRaaaaaaaaaaaaaaaaaaaaa

**Inquire:**

<SOH>I807RR

<SOH>i807RR

**Typical Response Message, Display Format:**

```
<SOH>
I807RR
MAR 26, 1996 1:51 PM

RELAY LABEL

DEVICE LABEL
 1 aaaaaaaaaaaaaaaaaaaaaa
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i807RRYYMDDHHmmRRaaaaaaaaaaaaaaaaaaaaa...
RRaaaaaaaaaaaaaaaaaaaaa&&CCCC<ETX>
```

**Notes:**

1. YYMDDHHmm - Current Date and Time
2. RR - Relay Number (Decimal, 00=all)
3. a - Location Label (20 ASCII characters [20h-7Eh])
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 809  
**Function Type:** Set Relay Orientation

Version 1

**Command Format:**  
**Display:** <SOH>S809RRs  
**Computer:** <SOH>s809RRs

**Inquire:**  
<SOH>I809RR  
<SOH>i809RR

### Typical Response Message, Display Format:

```
<SOH>
I809RR
MAR 26, 1996 1:51 PM

RELAY ORIENTATION

RELAY DESIGNATION ORIENTATION
 1 EXTERNAL RELAY #1 NORMALLY OPEN
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>i809RRYYMMDDHHmmRRs...
 RR&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. RR - Relay Number (Decimal, 00=all)
3. s - Orientation:  
    1=Normally Open  
    2=Normally Closed
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 80A  
**Function Type:** Set Relay Type

Version 1

**Command Format:**  
**Display:** <SOH>S80ARRt  
**Computer:** <SOH>s80ARRt

**Inquire:**  
<SOH>I80ARR  
<SOH>i80ARR

### Notes:

1. RR - Relay number (Decimal, 00=all relays)
2. t - type
  - 1=Standard
  - 2=Pump Control Output
  - 3=Momentary
  - 4=Pump Comm Control
  - 5=Vapor Processor (only one relay can be of this type)  
(future)

### Typical Response Message, Display Format:

```
<SOH>
I80ARR
JUN 1, 2002 8:07 AM

RELAY TYPE

RELAY DESIGNATION TYPE
1 EXTERNAL RELAY #1 STANDARD
2 TANK 1 PUMP CONTROL
3 VAPOR PROCESSOR VAPOR PROCESSOR
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>i80ARRYYMDDHHRRt&&CCCC<ETX>
```

### Notes:

1. YYMDDHHmm - Current Date and Time
2. RR - Relay number (Decimal, 00=all relays)
3. t - type
  - 1=Standard
  - 2=Pump Control Output
  - 3=Momentary
  - 4=Pump Comm Control
  - 5=Vapor Processor (only one relay can be of this type)  
(future)
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 80D

Version 1

**Function Type:** Set External Input Orientation

**Command Format:**

**Display:** <SOH>S80DQQf

**Computer:** <SOH>s80DQQf

**Inquire:**

<SOH>I80DQQ

<SOH>i80DQQ

### Typical Response Message, Display Format:

```
<SOH>
I80DQQ
JAN 24, 1996 2:54 PM

EXTERNAL INPUT ORIENTATION
```

INPUT	NAME	ORIENTATION
1	REGULAR UNLEADED	Normally Open

<ETX>

### Typical Response Message, Computer Format:

```
<SOH>i80DQQYYMMDDHHmmQQf...
 QQf&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. QQ - external input number (Decimal, 00=All)
3. f - Type
  - 1=Normally Open
  - 2=Normally Closed
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 80F  
**Function Type:** Set Input Type

Version 1

**Command Format:**  
**Display:** <SOH>S80FIIIt  
**Computer:** <SOH>s80FIIIt

**Inquire:**  
<SOH>I80FII  
<SOH>i80FII

### Typical Response Message, Display Format:

<SOH>  
I80FII  
MAR 26, 1996 1:51 PM

EXTERNAL INPUT TYPE

INPUT	NAME	TYPE
1	EXTERNAL INPUT #1	Generator
2	DCD INPUT	Acknowledge Alarm

<ETX>

### Typical Response Message, Computer Format:

<SOH>i80FIIYYMMDDHHmmIIIt..  
IIIt&&CCCC<ETX>

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. II - Input Number (Decimal, 00=all)
3. t - Input type:
  - 1=Standard
  - 2=Generator
  - 3=Pump Sense
  - 4=Acknowledge Alarm
  - 5=Vapor Processor
  - 6=Pump Monitor
4. && - Data Termination Flag
5. CCCC - Message Checksum

(future)



# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 821  
**Function Type:** Set Probe Configuration

Version 1

**Command Format:**  
**Display:** <SOH>S821PPf  
**Computer:** <SOH>s821PPf

**Inquire:**  
<SOH>I821PP  
<SOH>i821PP

### Typical Response Message, Display Format:

```
<SOH>
I821PP
MAR 26, 2007 1:50 PM
```

#### PROBE CONFIGURATION

PROBE	LABEL	CONFIGURED
1	PROBE #1	ON
2	PROBE #2	OFF

<ETX>

### Typical Response Message, Computer Format:

```
<SOH>i821PPYYMMDDHHmmPPf...
PPf&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. PP - Probe Number (Decimal, 00=all)
3. f - Configuration Flag  
0=OFF  
1=ON
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: 822**

Version 1

**Function Type:** Set Probe Label

**Command Format:**

**Display:** <SOH>S822PPaaaaaaaaaaaaaaaaaaaaaa

**Computer:** <SOH>s822PPaaaaaaaaaaaaaaaaaaaaaa

**Inquire:**

<SOH>I822PP

<SOH>i822PP

**Typical Response Message, Display Format:**

```
<SOH>
I822PP
MAR 26, 2007 1:50 PM
```

PROBE LABEL

```
PROBE LABEL
 1 MAG PROBE 1
 2 MAG PROBE 2
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i822PPYYMMDDHHmmPPaaaaaaaaaaaaaaaaaaaaaa...
 PPaaaaaaaaaaaaaaaaaaaaaa&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. PP - Probe Number (Decimal, 00=all)
3. a - Probe Label (20 ASCII characters [20h-7Eh])
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

### 7.3.13 MISCELLANEOUS SETUP

**Function Code:** 871  
**Function Type:** Setup Communication Card

Version 1

**Command Format:**  
**Display:** <SOH>S871PPMMSSQQ  
**Computer:** <SOH>s871PPMMSSQQ

**Inquire:**  
<SOH>I871PP  
<SOH>i871PP

#### Typical Response Message, Display Format:

<SOH>  
I871PP  
NOV 5, 2007 12:00 AM

#### COMMUNICATION CARD SETUP

COMM #	SLOT #	PORT #	CARD TYPE
1	1	1	RS232

<ETX>

#### Typical Response Message, Computer Format:

<SOH>i871PPYYMMDDHHmmppMMSSQQ&&CCCC<ETX>

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. pp - Comm Number (decimal)
3. MM - Comm Card Type:
  - 00=No Card
  - 01=RS232
  - 02=RS485
  - 03=Internal Modem
  - 04=Dim (Version 2)
  - 05=IFSF (Version 6)
  - 06=Ethernet
  - 07=Satellite - Jbox
  - 08=Satellite - Ssat
  - 09=USB
  - 10=CDIM (Version 2)
4. SS - Slot Number (decimal)
5. QQ - Port Number (decimal)
6. && - Data Termination Flag
7. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: 872**

Version 2

**Function Type:** Set Communication Card Configuration Flag

**Command Format:**

**Display:** <SOH>S872ppf

**Computer:** <SOH>s872ppf

**Inquire:**  
<SOH>I872pp  
<SOH>i872pp

### Typical Response Message, Display Format:

```
<SOH>
I872pp
JUN 1, 2007 8:10 AM
```

#### COMMUNICATION CARD CONFIGURATION

COMM #	SLOT #	PORT #	LABEL	CONFIGURED
1	1	1	HOME OFFICE	ON

```
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>i872ppYYMMDDHHmmppSSQQf...
ppSSQQf&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. pp - Comm Number (Decimal)
3. SS - Slot Number (Decimal)
4. QQ - Port Number (Decimal)
5. f - Communication Card Configuration Flag (Decimal)  
0=Disabled  
1=Enabled
6. && - Data Termination Flag
7. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: 873**

Version 1

**Function Type:** Set Communication Port Data

**Command Format:**

**Display:** <SOH>S873PPBBDPSH

**Computer:** <SOH>s873PPBBDPSH

**Inquire:**  
<SOH>I873PP  
<SOH>i873PP

**Notes:**

1. PP - Communication Port Number (Decimal)

**Typical Response Message, Display Format:**

```
<SOH>
I873PP
JUN 1, 2007 8:10 AM
PORT SETTINGS:

COMM PORT : 1
COMM BOARD : RS-232
BAUD RATE : 9600
DATA LENGTH : 7 DATA
PARITY : ODD
STOP BIT : 1 STOP
HANDSHAKING : No Handshaking
<ETX>
```

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code 873 Notes:** (Continued)

**Typical Response Message, Computer Format:**

<SOH>i873PPYYMMDDHHmmppBBDPSh&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. pp - Comm Number (Decimal)
3. BB - Baud Rate (Decimal)
  - 00=Unknown
  - 01=Proprietary
  - 02=300
  - 03=600
  - 04=1200
  - 05=2400
  - 06=4800
  - 07=9600
  - 08=19200
  - 09=38400
  - 10=57600
  - 11=115200
4. D - Data Bit (Decimal)
  - 0=Unknown
  - 1=Proprietary
  - 2=7
  - 3=8
5. P - Parity (Decimal)
  - 0=Unknown
  - 1=Proprietary
  - 2=None
  - 3=Odd
  - 4=Even
  - 5=Mark
  - 6=Space
6. S - Stop Bit (Decimal)
  - 0=Unknown
  - 1=Proprietary
  - 2=1
  - 3=2
7. H - Handshaking (Decimal)
  - 0=No Handshaking
  - 1=RTS/CTS
  - 2=Xon/Xoff
  - 3=DTRDSR
8. && - Data Termination Flag
9. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: 874**

Version 2

**Function Type:** Set Communication Card Location Label

**Command Format:**

**Display:** <SOH>S874ppaaaaaaaaaaaaaaaaaaaaaa

**Computer:** <SOH>s874ppaaaaaaaaaaaaaaaaaaaaaa

**Inquire:**  
<SOH>I874pp  
<SOH>i874pp

**Notes:**

1. pp - Communication Number (Decimal)

**Typical Response Message, Display Format:**

```
<SOH>
I874pp
JUN 1, 2007 8:10 AM

COMMUNICATION CARD LABEL

COMM # SLOT # PORT # LABEL
 1 1 1 HOME OFFICE
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i874ppYMMDDHHmmppSSQAAAAAAAAAAAAAAAAAAAA...
ppSSQAAAAAAAAAAAAAAAAAAAA&&CCCC<ETX>
```

**Notes:**

1. YMMDDHHmm - Current Date and Time
2. pp - Comm Number (Decimal)
3. SS - Slot Number (Decimal)
4. QQ - Port Number (Decimal)
5. aaa...aaa - Location Label (20 ASCII characters [20h-7Eh])
6. && - Data Termination Flag
7. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: 877**

**Function Type:** Set Communication Device Type

Version 1

**Command Format:**

**Display:** <SOH>S877ppdd

**Computer:** <SOH>s877ppdd

**Inquire:**  
<SOH>I877pp  
<SOH>i877pp

### Typical Response Message, Display Format:

```
<SOH>
I87701
JAN 22, 2007 3:16 PM

COMM LABEL COMM DEVICE TYPE
 1 OFFICE USB MODEM
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>i87700YYMMDDHHmmppdd...
 ppdd&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. pp - Comm Number (Decimal)
3. dd - Comm Device Type Flag
  - 00= Unknown Device
  - 01= Terminal Device
  - 02= ExtModem Device
  - 03= DIM Device
  - 04= USB ThumbDrive Device
  - 05= USB Printer Device
  - 06= USB Modem Device
  - 07= TCP/IP DIM
  - 08= GSM Modem Device
4. && - Data Termination Flag
5. CCCC - Message Checksum



# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 87B  
**Function Type:** Set Modem Dial Type

Version 1

**Command Format:**  
**Display:** <SOH>S87B00f  
**Computer:** <SOH>s87B00f

**Inquire:**  
<SOH>I87B00  
<SOH>i87B00

### Typical Response Message, Display Format:

```
<SOH>
I87B00
JAN 22, 2007 3:16 PM

COMM LABEL DIAL TYPE
 1 OFFICE TONE
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>i87B00YYMMDDHHmmppf&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. pp - Comm Number (Decimal)
3. f - Dial Tone Flag  
0=Tone  
1=Pulse
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 87D

**Function Type:** Set Modem Answer-On Interval

Version 1

**Command Format:**

**Display:** <SOH>S87D00f

**Computer:** <SOH>s87D00f

**Inquire:**

<SOH>I87D00

<SOH>i87D00

### Typical Response Message, Display Format:

<SOH>

I87D00

JAN 22, 2007 3:16 PM

COMM	LABEL	ANSWER-ON
1	OFFICE	4 RINGS

<ETX>

### Typical Response Message, Computer Format:

<SOH>i87D00YYMMDDHHmmppf&&CCCC<ETX>

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. pp - Comm Number (Decimal)
3. f - Number of Rings (Decimal: 0-9)
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 87E  
**Function Type:** Set Modem Dial-In String

Version 1

**Command Format:**  
**Display:** <SOH>S87ERRaaaaaaaaaaaaaaaaaaaaa...  
**Computer:** <SOH>s87ERRaaaaaaaaaaaaaaaaaaaaa...

**Inquire:**  
<SOH>I87ERR  
<SOH>i87ERR

### Typical Response Message, Display Format:

<SOH>  
I87ERR  
JAN 22, 2007 3:14 PM

MODEM DIAL-IN STRING

RCVR	LABEL	DIAL-IN STRING
1	HOME OFFICE	aaaaaaaaaaaaaaaaaaaaa

<ETX>

### Typical Response Message, Computer Format:

<SOH>i87ERRYMMDDHHmppaaaaaaaaaaaaaaaaaaaaa...  
ppaaaaaaaaaaaaaaaaaaaaa...&&CCCC<ETX>

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. pp - Comm Number (Decimal)
3. a - Dial-in string (50 ASCII characters [20h-7Eh])
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 87F  
**Function Type:** Set Modem Dial-Out String

Version 1

**Command Format:**  
**Display:** <SOH>S87FRRaaaaaaaaaaaaaaaaaaaaa...  
**Computer:** <SOH>s87FRRaaaaaaaaaaaaaaaaaaaaa...

**Inquire:**  
<SOH>I87FRR  
<SOH>i87FRR

### Typical Response Message, Display Format:

<SOH>  
I87FRR  
JAN 22, 2007 3:14 PM

MODEM DIAL-OUT STRING

RCVR	LABEL	DIAL-OUT STRING
1	HOME OFFICE	aaaaaaaaaaaaaaaaaaaaa

<ETX>

### Typical Response Message, Computer Format:

<SOH>i87FRRYYMDDHHmmpppaaaaaaaaaaaaaaaaaaaaa...  
ppaaaaaaaaaaaaaaaaaaaaa....&&CCCC<ETX>

### Notes:

1. YYMDDHHmm - Current Date and Time
2. pp - Comm Number (Decimal)
3. a - Dial-out string (50 ASCII characters [20h-7Eh])
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 87J  
**Function Type:** Set DIM Units Reported

Version 2

**Command Format:**  
**Display:** <SOH>S87JppU  
**Computer:** <SOH>s87JppU

**Inquire:**  
<SOH>I87Jpp  
<SOH>i87Jpp

### Typical Response Message, Display Format:

<SOH>  
I87Jpp  
JAN 22, 2007 3:14 PM

DIM UNITS REPORTED

COMM #	LOCATION	UNITS
1	ISLAND 3	U.S.

<ETX>

### Typical Response Message, Computer Format:

<SOH>i87JppYYMMDDHHmmppU...ppU&&CCCC<ETX>

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. pp - Comm Number (Decimal)
3. U - Units (Decimal)
  - 1=U.S.
  - 2=Metric
  - 3=Imperial Gallons
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 87Q  
**Function Type:** Suppress DIM Comm Alarms

Version 2

**Command Format:**  
**Display:** <SOH>S87QPPf  
**Computer:** <SOH>s87QPPf

**Inquire:**  
<SOH>I87QPP  
<SOH>i87QPP

**Notes:**

1. PP - Port number (Decimal, 00 = All ports)  
Port is a BIR DIM.
2. f - Alarms Suppression Setting Flag (Decimal)  
0 = Disable Alarm Suppression  
1 = Enable Alarm Suppression

**Typical Response Message, Display Format:**

```
<SOH>
I87Q00
JAN 22, 2009 3:14 PM

SUPPRESS DIM COMM ALARMS

COMM LOCATION SUPPRESS ALARMS
 1 NO
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i87QPPYYMDDHHmmPPf&&CCCC<ETX>
```

**Notes:**

1. YYMDDHHmm - Current Date and Time
2. PP - Port Number (Decimal, 00=All Products)  
Port is a BIR DIM.
3. f - Alarm suppression Status (Decimal)  
0 = Disable Alarm Suppression  
1 = Enable Alarm Suppression
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 887

Version 1

**Function Type:** Set Dial Tone Validation Interval

**Command Format:**

**Display:** S887PPHHHH

**Computer:** s887PPHHHH

**Inquire:**

I887PP

i887PP

**Notes:**

1. PP - Modem or SiteLink Board Number (Port #) (Decimal 01..06)

**Typical Response Message, Display Format:**

```
<SOH>
I887PP
JUN 1, 2000 8:15 AM

COMM BOARD : 3 (FXMOD)
DIAL TONE VALIDATION INTERVAL: 32 HOURS
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i887PPYYMMDDHHmmHHHH&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. HHHH - Number of Idle Hours Before Receiver board checks for dial tone (Decimal 0001-9999)
3. && - Data Termination Flag
4. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: 889**

**Function Type:** DTR Normal State for Serial Satellite Boards

Version 1

**Command Format:**

**Display:** <SOH>S889PPs

**Computer:** <SOH>s889PPs

**Inquire:**

<SOH>I889PP

<SOH>i889PP

**Notes:**

1. PP - Communication Port Number

**Typical Response Message, Display Format:**

```
<SOH>
I889PP
AUG 22, 2000 4:49 PM

S-SAT : DTR NORMAL STATE

COMM LABEL DTR STATE
 1 LOCATION 1 NORMALLY HIGH
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i889PPYYMMDDHHmms&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. s - DTR Normal State for Serial Satellite Board  
0=Normally Low  
1=Normally High (Default)
3. && - Data Termination Flag
4. CCCC - Message Checksum



# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: 88E**

Version 1

**Function Type:** Set Satellite Connection String

**Command Format:**

**Display:** <SOH>S88ERRaaaaaaaaaaaaaaaaaaaaa...

**Computer:** <SOH>s88ERRaaaaaaaaaaaaaaaaaaaaa...

**Inquire:**

<SOH>I88ERR

<SOH>i88ERR

### Typical Response Message, Display Format:

```
<SOH>
I88ERR
JAN 22, 2007 3:14 PM

SATELLITE CONNECTION STRING
```

RCVR	LOCATION LABEL	CONNECTION STR
1	HOME OFFICE	aaaaaaaaaaaaaaaaaaaaa

<ETX>

### Typical Response Message, Computer Format:

```
<SOH>i88ERRYMMDDHHmmpppaaaaaaaaaaaaaaaaaaaaa...
ppaaaaaaaaaaaaaaaaaaaaa....&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. pp - Comm Number (Decimal)
3. a - Conn. string (30 ASCII characters [20h-7Eh])
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 88G  
**Function Type:** Set IP Assignment

Version 1

**Command Format:**  
**Display:** <SOH>S88GPPf  
**Computer:** <SOH>s88GPPf

**Inquire:**  
<SOH>I88GPP  
<SOH>i88GPP

**Notes:**

1. PP - Communication Port Number  
For Setup Changes to take effect this command must be followed by 88Y

**Typical Response Message, Display Format:**

```
<SOH>
I88G00
JAN 22, 2007 3:16 PM

IP ASSIGNMENT

COMM LOCATION IP ASSIGNMENT
 1 OFFICE STATIC
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i88GPPYYMMDDHHmmPPf&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. PP - Comm Number (Decimal)
3. f - IP Assignment  
0=Static  
1=Dynamic
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 88H  
**Function Type:** Get IP Address

Version 1

**Command Format:**  
**Display:** <SOH>I88HPP  
**Computer:** <SOH>i88HPP

**Notes:**

1. PP - Communication Port Number

**Typical Response Message, Display Format:**

```
<SOH>
I88H00
JAN 22, 2007 3:16 PM

IP ADDRESS

COMM LOCATION IP ADDRESS
 1 OFFICE 000.000.000.000
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i88HPPYYMMDDHHmmPPxxxxxxxxxxxxx&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. PP - Comm Number (Decimal)
3. xxxxxxxxxxxxxxxx - IP Address (15 characters [0-9,.] dotted-decimal notation)
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: 88I**  
**Function Type:** Set Static IP Address

Version 1

**Command Format:**  
**Display:** <SOH>S88IPPxxxxxxxxxxxxxxxxxx  
**Computer:** <SOH>s88IPPxxxxxxxxxxxxxxxxxx

**Inquire:**  
<SOH>I88IPP  
<SOH>i88IPP

### Notes:

1. PP - Communication Port Number
2. xxxxxxxxxxxxxxxx - IP Address with dotted-decimal notation
3. For Setup Changes to take effect this command must be followed by 88Y

### Typical Response Message, Display Format:

```
<SOH>
I88I00
JAN 22, 2007 3:16 PM

STATIC IP ADDRESS

COMM LOCATION STATIC IP ADDRESS
 1 OFFICE 000.000.000.000
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>i88IPPYYMDDHHmmPPxxxxxxxxxxxxxxxxxx&&CCCC<ETX>
```

### Notes:

1. YYMDDHHmm - Current Date and Time
2. PP - Comm Number (Decimal)
3. xxxxxxxxxxxxxxxx - Static IP Address (15 characters [0-9,.] dotted-decimal notation)
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 88J  
**Function Type:** Set Serial Command Port

Version 1

**Command Format:**  
**Display:** <SOH>S88JPPxxxxx  
**Computer:** <SOH>s88JPPxxxxx

**Inquire:**  
<SOH>I88JPP  
<SOH>i88JPP

**Notes:**  
1. PP - Communication Port Number

### Typical Response Message, Display Format:

```
<SOH>
I88J00
JAN 22, 2007 3:16 PM

SERIAL COMMAND PORT

COMM LOCATION PORT
 1 OFFICE 10001
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>i88JPPYYMMDDHHmmPPxxxxx&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. PP - Comm Number (Decimal)
3. xxxxx - Port (Decimal, 0-65535)
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 88K  
**Function Type:** Set Static Subnet Mask

Version 1

**Command Format:**  
**Display:** <SOH>S88KPPxxxxxxxxxxxxxxxxxx  
**Computer:** <SOH>s88KPPxxxxxxxxxxxxxxxxxx

**Inquire:**  
<SOH>I88KPP  
<SOH>i88KPP

### Notes:

1. PP - Communication Port Number
2. xxxxxxxxxxxxxxxx - IP Address with dotted-decimal notation
3. For Setup Changes to take effect this command must be followed by 88Y

### Typical Response Message, Display Format:

```
<SOH>
I88K00
JAN 22, 2007 3:16 PM

STATIC SUBNET MASK

COMM LOCATION STATIC SUBNET MASK
 1 OFFICE 000.000.000.000
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>i88KPPYYMDDHHmmPPxxxxxxxxxxxxxxxxxx&&CCCC<ETX>
```

### Notes:

1. YYMDDHHmm - Current Date and Time
2. PP - Comm Number (Decimal)
3. xxxxxxxxxxxxxxxx - Static Subnet Mask (15 characters [0-9,.] dotted-decimal notation)
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 88L  
**Function Type:** Set Static Gateway IP

Version 1

**Command Format:**  
**Display:** <SOH>S88LPPxxxxxxxxxxxxxxxxx  
**Computer:** <SOH>s88LPPxxxxxxxxxxxxxxxxx

**Inquire:**  
<SOH>I88LPP  
<SOH>i88LPP

### Notes:

1. PP - Communication Port Number
2. xxxxxxxxxxxxxxxx - IP Address with dotted-decimal notation
3. For Setup Changes to take effect this command must be followed by 88Y

### Typical Response Message, Display Format:

```
<SOH>
I88L00
JAN 22, 2007 3:16 PM

STATIC GATEWAY IP

COMM LOCATION STATIC GATEWAY IP
 1 OFFICE 000.000.000.000
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>i88LPPYYMDDHHmmPPxxxxxxxxxxxxx&&CCCC<ETX>
```

### Notes:

1. YYMDDHHmm - Current Date and Time
2. PP - Comm Number (Decimal)
3. xxxxxxxxxxxxxxxx - Static Gateway IP (15 characters [0-9,.] dotted-decimal notation)
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 88M  
**Function Type:** Set SSH Port

Version 1

**Command Format:**  
**Display:** <SOH>S88MPPxxxxx  
**Computer:** <SOH>s88MPPxxxxx

**Inquire:**  
<SOH>I88MPP  
<SOH>i88MPP

**Notes:**  
1. PP - Communication Port Number

### Typical Response Message, Display Format:

```
<SOH>
I88M00
JAN 22, 2007 3:16 PM

SSH PORT

COMM LOCATION PORT
 1 OFFICE 10001
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>i88MPPYYMMDDHHmmPPxxxxx&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. PP - Comm Number (Decimal)
3. xxxxx - Port (Decimal, 0-65535)
4. && - Data Termination Flag
5. CCCC - Message Checksum



# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 88N  
**Function Type:** Set HTTP Port

Version 1

**Command Format:**  
**Display:** <SOH>S88NPPxxxxx  
**Computer:** <SOH>s88NPPxxxxx

**Inquire:**  
<SOH>I88NPP  
<SOH>i88NPP

**Notes:**  
1. PP - Communication Port Number

### Typical Response Message, Display Format:

```
<SOH>
I88N00
JAN 22, 2007 3:16 PM

HTTP PORT

COMM LOCATION PORT
 1 OFFICE 10001
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>i88NPPYYMMDDHHmmPPxxxxx&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. PP - Comm Number (Decimal)
3. xxxxx - Port (Decimal, 0-65535)
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 880  
**Function Type:** Set HTTPS Port

Version 1

**Command Format:**  
**Display:** <SOH>S880PPxxxxx  
**Computer:** <SOH>s880PPxxxxx

**Inquire:**  
<SOH>I880PP  
<SOH>i880PP

**Notes:**  
1. PP - Communication Port Number

### Typical Response Message, Display Format:

```
<SOH>
I88000
JAN 22, 2007 3:16 PM

HTTPS PORT

COMM LOCATION PORT
 1 OFFICE 10001
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>i880PPYYMMDDHHmmPPxxxxx&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. PP - Comm Number (Decimal)
3. xxxxx - Port (Decimal, 0-65535)
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 88P  
**Function Type:** Set System Hostname

Version 1

**Command Format:**  
**Display:** <SOH>S88Pppxxxxxxxxxxxxxxxxxx  
**Computer:** <SOH>s88Pppxxxxxxxxxxxxxxxxxx

**Inquire:**  
<SOH>I88Ppp  
<SOH>i88Ppp

### Notes:

1. pp - Communication Port Number
2. xxxxxxxxxxxxxxxx - System Hostname (30 Chars Max). The System Hostname is not a Fully Qualified Domain Name. (i.e. The display of the System Hostname does not include the display of the domain name)

### Typical Response Message, Display Format:

<SOH>  
I88P00  
JAN 22, 2007 3:16 PM

SYSTEM HOSTNAME

COMM	LOCATION	SYSTEM HOSTNAME
1	OFFICE	Tls450

<ETX>

### Typical Response Message, Computer Format:

<SOH>i88PppYYMMDDHHmmppxxxxxxxxxxxxxxxxxx&&CCCC<ETX>

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. pp - Comm Number (Decimal)
3. xxxxxxxxxxxxxxxx - System Hostname (30 Chars Max)
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 88Q

Version 1

**Function Type:** Set Static Primary DNS Server

**Command Format:**

**Display:** <SOH>S88QPPxxxxxxxxxxxxxxxxxx

**Computer:** <SOH>s88QPPxxxxxxxxxxxxxxxxxx

**Inquire:**

<SOH>I88QPP

<SOH>i88QPP

**Notes:**

1. PP - Communication Port Number
2. xxxxxxxxxxxxxxxx - IP Address with dotted-decimal notation
3. For Setup Changes to take effect this command must be followed by 88Y

**Typical Response Message, Display Format:**

```
<SOH>
I88Q00
JAN 22, 2007 3:16 PM

STATIC PRIMARY DNS SERVER

COMM LOCATION STATIC PRIMARY DNS SERVER
 1 OFFICE 000.000.000.000
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i88QPPYYMDDHHmmPPxxxxxxxxxxxxxxxxxx&&CCCC<ETX>
```

**Notes:**

1. YYMDDHHmm - Current Date and Time
2. PP - Comm Number (Decimal)
3. xxxxxxxxxxxxxxxx - Static Primary DNS Server IP Address (15 characters [0-9,.] dotted-decimal notation)
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: 88R**

Version 1

**Function Type:** Set Static Secondary DNS Server

**Command Format:**

**Display:** <SOH>S88RPPxxxxxxxxxxxxxxxxxx

**Computer:** <SOH>s88RPPxxxxxxxxxxxxxxxxxx

**Inquire:**

<SOH>I88RPP

<SOH>i88RPP

**Notes:**

1. PP - Communication Port Number
2. xxxxxxxxxxxxxxxx - IP Address with dotted-decimal notation
3. For Setup Changes to take effect this command must be followed by 88Y

**Typical Response Message, Display Format:**

<SOH>

I88R00

JAN 22, 2007 3:16 PM

STATIC SECONDARY DNS SERVER

COMM	LOCATION	STATIC SECONDARY DNS SERVER
1	OFFICE	000.000.000.000

<ETX>

**Typical Response Message, Computer Format:**

<SOH>i88RPPYYMDDHHmmPPxxxxxxxxxxxxxxxxxx&&CCCC<ETX>

**Notes:**

1. YYMDDHHmm - Current Date and Time
2. PP - Comm Number (Decimal)
3. xxxxxxxxxxxxxxxx - Static Secondary DNS Server IP Address (15 characters [0-9,.] dotted-decimal notation)
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: 88S**  
**Function Type:** Get MAC Address

Version 1

**Command Format:**  
**Display:** <SOH>I88SPP  
**Computer:** <SOH>i88SPP

**Notes:**  
1. PP - Communication Port Number

### Typical Response Message, Display Format:

```
<SOH>
I88S00
JAN 22, 2007 3:16 PM

MAC ADDRESS

COMM LOCATION MAC ADDRESS
 1 OFFICE 00:18:8B:C0:25:77
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>i88SPPYYMMDDHHmmPPxxxxxxxxxxxxxxxxxx&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. PP - Comm Number (Decimal)
3. xxxxxxxxxxxxxxxx - MAC Address (17 characters [0-F, :] the Format of six groups of two hexadecimal digits, separated by colons)
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 88T  
**Function Type:** Set Default Gateway

Version 1

**Command Format:**  
**Display:** <SOH>S88TPPf  
**Computer:** <SOH>s88TPPf

**Inquire:**  
<SOH>I88TPP  
<SOH>i88TPP

### Notes:

1. PP - Communication Port Number
2. f - Default Gateway  
0=No  
1=Yes
3. - For Setup Changes to take effect, this command must be followed by 88Y

### Typical Response Message, Display Format:

```
<SOH>
I88T00
JAN 22, 2007 3:16 PM

DEFAULT GATEWAY

COMM LOCATION DEFAULT GATEWAY
 1 OFFICE YES
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>i88TPPYMMDDHHmmPPf&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. PP - Comm Number (Decimal)
3. f - Default Gateway  
0=No  
1=Yes
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 88U  
**Function Type:** Get Subnet Mask

Version 1

**Command Format:**  
**Display:** <SOH>I88UPP  
**Computer:** <SOH>i88UPP

**Notes:**  
1. PP - Communication Port Number

### Typical Response Message, Display Format:

```
<SOH>
I88U00
JAN 22, 2007 3:16 PM

SUBNET MASK

COMM LOCATION SUBNET MASK
 1 OFFICE 000.000.000.000
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>i88UPPYMMDDHHmmPPxxxxxxxxxxxxxxxxxx&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. PP - Comm Number (Decimal)
3. xxxxxxxxxxxxxxxx - Subnet Mask (15 characters [0-9,.] dotted-decimal notation)
4. && - Data Termination Flag
5. CCCC - Message Checksum



# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 88V  
**Function Type:** Get Gateway IP

Version 1

**Command Format:**  
**Display:** <SOH>I88VPP  
**Computer:** <SOH>i88VPP

**Notes:**  
1. PP - Communication Port Number

### Typical Response Message, Display Format:

```
<SOH>
I88V00
JAN 22, 2007 3:16 PM

GATEWAY IP

COMM LOCATION GATEWAY IP
 1 OFFICE 000.000.000.000
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>i88VPPYYMMDDHHmmPPxxxxxxxxxxxxxx&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. PP - Comm Number (Decimal)
3. xxxxxxxxxxxxxxxx - Gateway IP (15 characters [0-9,.] dotted-decimal notation)
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 88W  
**Function Type:** Get Primary DNS Server

Version 1

**Command Format:**  
**Display:** <SOH>I88WPP  
**Computer:** <SOH>i88WPP

**Notes:**  
1. PP - Communication Port Number

### Typical Response Message, Display Format:

```
<SOH>
I88W00
JAN 22, 2007 3:16 PM

PRIMARY DNS SERVER

COMM LOCATION PRIMARY DNS SERVER
 1 OFFICE 000.000.000.000
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>i88WPPYYMMDDHHmmPPxxxxxxxxxxxxxxxx&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. PP - Comm Number (Decimal)
3. xxxxxxxxxxxxxxxx - Primary DNS Server IP Address (15 characters [0-9,.] dotted-decimal notation)
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 88X  
**Function Type:** Get Secondary DNS Server

Version 1

**Command Format:**  
**Display:** <SOH>I88XPP  
**Computer:** <SOH>i88XPP

**Notes:**  
1. PP - Communication Port Number

### Typical Response Message, Display Format:

```
<SOH>
I88X00
JAN 22, 2007 3:16 PM

SECONDARY DNS SERVER

COMM LOCATION SECONDARY DNS SERVER
 1 OFFICE 000.000.000.000
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>i88XPPYYMMDDHHmmPPxxxxxxxxxxxxxxxx&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. PP - Comm Number (Decimal)
3. xxxxxxxxxxxxxxxx - Secondary DNS Server IP Address (15 characters [0-9,.] dotted-decimal notation)
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 88Y  
**Function Type:** TCP/IP Commit Setup

Version 1

**Command Format:**  
**Display:** <SOH>S88YPP149  
**Computer:** <SOH>S88YPP149

**Notes:**

1. PP - Communication Port Number
2. 149 - code must be sent to confirm the command

**Typical Response Message, Display Format:**

```
<SOH>
S88Y00
JAN 22, 2007 3:16 PM

Co 1: Ethernet 1 Label TCP/IP SETUP COMMITTED SUCCESSFULLY
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>s88YPPYYMMDDHHmmPPf&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. PP - Comm Number (Decimal)
3. f - Status Flag  
0=TCP/IP Setup not committed  
1=TCP/IP Setup committed successfully
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 88Z  
**Function Type:** Set TCP/IP DIM Port

Version 1

**Command Format:**  
**Display:** <SOH>S88ZPPxxxxx  
**Computer:** <SOH>s88ZPPxxxxx

**Inquire:**  
<SOH>I88ZPP  
<SOH>i88ZPP

**Notes:**  
1. PP - Communication Port Number

### Typical Response Message, Display Format:

<SOH>  
S88Z00  
JAN 22, 2007 3:16 PM

TCP/IP DIM PORT

COMM	LOCATION	PORT
3	OFFICE	35555

<ETX>

### Typical Response Message, Computer Format:

<SOH>s88ZPPYYMMDDHHmmPPxxxxx...  
PPxxxxx&&CCCC<ETX>

**Notes:**  
1. YYMMDDHHmm - Current Date and Time  
2. PP - Comm Number (Decimal)  
3. xxxxx - Port (Decimal, 0-65535)  
4. && - Data Termination Flag  
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: 891**

Version 2

**Function Type:** Set Accuchart Calibration Restart

**Command Format:**

**Display:** <SOH>S891TT149

**Computer:** <SOH>s891TT149

**Inquire:**

<SOH>I891TT

<SOH>i891TT

**Notes:**

1. TT - Tank Number (valid only for single tank)
2. 149 - Verification code must be sent to confirm the command

**Typical Response Message, Display Format:**

<SOH>  
S89100  
MAR 29, 1996 6:27 PM

T 1:REGULAR UNLEADED ACCU\_CHART RESTART  
<ETX>

**Typical Response Message, Computer Format:**

<SOH>s891TTYMMDDHHmmTTSS&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal)
3. SS - Status  
00=AccuChart stopped  
01=AccuChart restarted
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 893

Version 3

**Function Type:** Acknowledge Tank Event Ready Status

**Command Format:**

**Display:** <SOH>S893TT149

**Computer:** <SOH>s893TT149

**Inquire:**

<SOH>I893TT

<SOH>i893TT

**Notes:**

1. TT - Tank Number (decimal)
2. 149 - Verification code must be sent to confirm the command

**Typical Response Message, Display Format:**

<SOH>  
S89300  
MAR 29, 2011 6:27 PM

Tank	Delivery Ready	Shift Ready	Alarm Notice
1	Yes	No	No
2	No	No	No

<ETX>

**Typical Response Message, Computer Format:**

<SOH>s893TTYMMDDHHmmNNTTnnds  
TTnnds..&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. NN - Number of Tanks to follow (Decimal)
3. TT - Tank Number (Decimal)
4. nn - Number of Events to follow (Decimal)
5. d - Delivery Ready Status  
0=Not Ready  
1=Ready
6. s - Shift Ready Status  
0=Not Ready  
1-4 (Shift Number)=Ready
7. a - Alarm Notice Status  
0=Not Ready  
1=Ready
8. && - Data Termination Flag
9. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: 894**

Version 2

**Function Type:** Set Accuchart Calibration Stop

**Command Format:**

**Display:** <SOH>S894TT149

**Computer:** <SOH>s894TT149

**Inquire:**

<SOH>I894TT

<SOH>i894TT

**Notes:**

1. TT - Tank Number (valid only for single tank)
2. 149 - Verification code must be sent to confirm the command

**Typical Response Message, Display Format:**

```
<SOH>
S89400
MAR 29, 1996 6:27 PM
```

```
T 1:REGULAR UNLEADED ACCU_CHART STOP
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>s894TTYMMDDHHmmTTSS&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal)
3. SS - Status  
00=AccuChart stopped  
01=AccuChart running
4. && - Data Termination Flag
5. CCCC - Message Checksum



# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 89A  
**Function Type:** Set Email Relay

Version 4

**Command Format:**  
**Display:** <SOH>S89A00f  
**Computer:** <SOH>s89A00f

**Inquire:**  
<SOH>I89A00  
<SOH>i89A00

### Typical Response Message, Display Format:

```
<SOH>
S89A00
MAR 29, 2011 6:27 PM

EMAIL RELAY:ENABLED
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>s89A00YYMMDDHHmmf&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. f - Email Relay  
0=Disabled  
1=Enabled
3. && - Data Termination Flag
4. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: 89B**

Version 4

**Function Type:** Set Email Sender Address

**Command Format:**

**Display:** <SOH>S89B00aaaaa.....aaaaa

**Computer:** <SOH>s89B00aaaaa.....aaaaa

**Inquire:**

<SOH>I89B00

<SOH>i89B00

### Typical Response Message, Display Format:

<SOH>  
I89B00  
MAR 29, 2011 6:27 PM

EMAIL SENDER ADDRESS  
johndoe@veeder.com  
<ETX>

### Typical Response Message, Computer Format:

<SOH>i89B00YYMMDDHHmmnnnaaaaa...aaaaa&&CCCC<ETX>

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. nnn - Number of characters to follow
3. aaaaa...aaaaa - Email Sender Address (Max. 256 ASCII Characters)
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 89C  
**Function Type:** Set Relayhost/Smarthost

Version 4

**Command Format:**  
**Display:** <SOH>S89C00aaaaa.....aaaaa  
**Computer:** <SOH>s89C00aaaaa.....aaaaa

**Inquire:**  
<SOH>I89C00  
<SOH>i89C00

### Typical Response Message, Display Format:

<SOH>  
I89C00  
MAR 29, 2011 6:27 PM

Relayhost/Smarthost  
anywhere.com  
<ETX>

### Typical Response Message, Computer Format:

<SOH>i89C00YYMMDDHHmmnnnaaaaa...aaaaa&&CCCC<ETX>

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. nnn - Number of characters to follow
3. aaaaa...aaaaa - Relayhost/Smarthost (Max. 256 ASCII Characters)
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 89D  
**Function Type:** Set Sender Hostname

Version 4

**Command Format:**  
**Display:** <SOH>S89D00aaaaa.....aaaaa  
**Computer:** <SOH>s89D00aaaaa.....aaaaa

**Inquire:**  
<SOH>I89D00  
<SOH>i89D00

### Typical Response Message, Display Format:

<SOH>  
I89D00  
MAR 29, 2011 6:27 PM

Sender Hostname  
Tls450@veeder.com  
<ETX>

### Typical Response Message, Computer Format:

<SOH>i89D00YYMMDDHHmmnnnaaaaaa...aaaaa&&CCCC<ETX>

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. nnn - Number of characters to follow (Hex)
3. aaaaaa...aaaaa - Sender Hostname (Max. 256 ASCII Characters)
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 89E  
**Function Type:** Set Email Sender Name

Version 6

**Command Format:**  
**Display:** <SOH>S89E00aaaaa.....aaaaa  
**Computer:** <SOH>s89E00aaaaa.....aaaaa

**Inquire:**  
<SOH>I89E00  
<SOH>i89E00

### Typical Response Message, Display Format:

<SOH>  
I89E00  
MAR 29, 2015 6:27 PM

Email Sender Name  
John Doe  
<ETX>

### Typical Response Message, Computer Format:

<SOH>i89E00YYMMDDHHmmnnnaaaaaa...aaaaa&&CCCC<ETX>

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. nnn - Number of characters to follow (Hex)
3. aaaaaa...aaaaa - Email Sender Name (Max. 40 ASCII Characters)
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: 89F**

Version 6

**Function Type:** Set Hostname Configuration and Set Sender Hostname

**Command Format:**

**Display:** <SOH>S89F00faaaaa.....aaaaa (if f=0)  
<SOH>S89F00f (if f=1)

**Computer:** <SOH>s89F00faaaaa.....aaaaa (if f=0)  
<SOH>s89F00f (if f=1)

**Inquire:**

<SOH>I89F00

<SOH>i89F00

**Notes:**

Use **88P** to set System Hostname.

**Typical Response Message, Display Format:**

<SOH>  
I89F00  
MAR 29, 2015 6:27 PM

USE SYSTEM HOSTNAME: ENABLED  
SENDER HOSTNAME: TLS433018 (NOT USED)  
SYSTEM HOSTNAME: TLS433018  
<ETX>

**Typical Response Message, Computer Format:**

<SOH>i89F00YYMMDDHHmmfnnnaaaaa...aaaaa&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. f - System Hostname  
0=Disabled  
1=Enabled
3. nnn - Number of characters to follow (Hex)
4. aaaaa...aaaaa - Sender Hostname (Max. 255 ASCII Characters)
5. && - Data Termination Flag
6. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 89G

Version 6

**Function Type:** Set SMTP Authentication Configuration

**Command Format:**

**Display:** <SOH>S89G00aa (if aa=0) <SOH>I89G00  
<SOH>S89G00aammuuu...uuunnnppp...ppp (if aa=01,02,03)

**Computer:** <SOH>s89G00aa (if aa=0) <SOH>i89G00  
<SOH>s89G00aammuuu...uuunnnppp...ppp (if aa=01,02,03)

**Inquire:**

**Notes:**

1. mmm - Number of characters for Username (Decimal)
2. nnn - Number of characters for Password (Decimal)
3. ppppp...ppppp - Password (Max. 25 ASCII Characters)

**Typical Response Message, Display Format:**

<SOH>  
I89G00  
MAR 29, 2015 6:27 PM

AUTHENTICATION TYPE: Plain  
USERNAME: johndoe  
PASSWORD: \*\*\*\*\*  
<ETX>

**Typical Response Message, Computer Format:**

<SOH>i89G00YYMDDHHmmaammuuuuu...uuuuunnn\*\*\*\*\*&&CCCC<ETX>

**Notes:**

1. YYMDDHHmm - Current Date and Time
2. aa - Authentication Type  
00=No Authentication  
01=Plain  
02=Login  
03=CRAM MD5
3. mmm - Number of characters to follow (Hex)
4. uuuuu...uuuuu - Username (Max. 60 ASCII Characters)
5. nnn - Number of characters to follow is always 008 (Hex)
6. \*\*\*\*\* - Password (Only Asterisks are returned)
7. && - Data Termination Flag
8. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: 89H**

Version 6

**Function Type:** Set SMTP Relay Host Configuration

**Command Format:**

**Display:** <SOH>S89H00fsppppprrrrr...rrrrr

**Computer:** <SOH>s89H00fsppppprrrrr...rrrrr

**Inquire:**

<SOH>I89H00

<SOH>i89H00

### Typical Response Message, Display Format:

<SOH>  
I89H00  
MAR 29, 2015 6:27 PM

#### SMTP RELAY SETTINGS:

SMTP RELAY : Enabled  
SMTP RELAY HOSTNAME: smtprelay.sim.gilbarco.com  
SMTP RELAY PORT : 25  
SSL REQUIRED : YES  
<ETX>

### Typical Response Message, Computer Format:

<SOH>i89H00YYMMDDHHmmfspppppnnnrrrrr...rrrrr&&CCCC<ETX>

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. f - SMTP Relay Configuration flag  
0=Disabled  
1=Enabled
3. s - SSL Required  
0=NO  
1=YES
4. ppppp - SMTP Relay Port [00001-65535] (Decimal)
5. nnn - Number of characters to follow (Hex)
6. rrrrr...rrrrr - SMTP Relay Hostname (Max 255 characters)
7. && - Data Termination Flag
8. CCCC - Message Checksum



# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 89K  
**Function Type:** Set IFSF Enabled

Version 6

**Command Format:**  
**Display:** <SOH>S89K00f  
**Computer:** <SOH>s89K00f

**Inquire:**  
<SOH>I89K00  
<SOH>i89K00

### Typical Response Message, Display Format:

<SOH>  
I89K00  
MAR 29, 2015 6:27 PM

IFSF: ENABLED  
<ETX>

### Typical Response Message, Computer Format:

<SOH>i89K00YYMMDDHHmmf&&CCCC<ETX>

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. f - IFSF Enable flag (Decimal)  
0=Disabled  
1=Enabled
3. && - Data Termination Flag
4. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 89M  
**Function Type:** Set IFSF Device

Version 6

**Command Format:**  
**Display:** <SOH>S89M00d  
**Computer:** <SOH>s89M00d

**Inquire:**  
<SOH>I89M00  
<SOH>i89M00

### Typical Response Message, Display Format:

```
<SOH>
I89M00
MAR 29, 2015 6:27 PM

IFS F DEVICE: LON CARD
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>i89M00YYMMDDHHmmd&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. d - IFSF Device (Decimal)  
1=Eth1  
2=LON Card
3. && - Data Termination Flag
4. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 89N  
**Function Type:** Set IFSF Node ID

Version 6

**Command Format:**  
**Display:** <SOH>S89N00nn  
**Computer:** <SOH>s89N00nn

**Inquire:**  
<SOH>I89N00  
<SOH>i89N00

### Typical Response Message, Display Format:

```
<SOH>
I89N00
MAR 29, 2015 6:27 PM

IFSF NODE ID

DEVICE ID NODE ID
ETH1 01
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>i89N00YYMMDDHHmmnn&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. nn - Node ID (Decimal, 01-16, 01=default)
3. && - Data Termination Flag
4. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 89P  
**Function Type:** Set IFSF UDP Port

Version 6

**Command Format:**  
**Display:** <SOH>S89P00pppp  
**Computer:** <SOH>s89P00pppp

**Inquire:**  
<SOH>I89P00  
<SOH>i89P00

### Typical Response Message, Display Format:

<SOH>  
I89P00  
MAR 29, 2015 6:27 PM

IFSF UDP PORT

DEVICE ID	UDP PORT
ETH1	3486

<ETX>

### Typical Response Message, Computer Format:

<SOH>i89P00YYMMDDHHmmpppp&&CCCC<ETX>

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. pppp - IFSF UDP Port (Decimal, 1024-65535, 3486=default)
3. && - Data Termination Flag
4. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 89Q  
**Function Type:** Set IFSF TCP Port

Version 6

**Command Format:**  
**Display:** <SOH>S89Q00pppp  
**Computer:** <SOH>s89Q00pppp

**Inquire:**  
<SOH>I89Q00  
<SOH>i89Q00

### Typical Response Message, Display Format:

<SOH>  
I89Q00  
MAR 29, 2015 6:27 PM

IFSF TCP PORT

DEVICE ID	TCP PORT
ETH1	9000

<ETX>

### Typical Response Message, Computer Format:

<SOH>i89Q00YYMMDDHHmmpppp&&CCCC<ETX>

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. pppp - IFSF TCP Port (Decimal, 1024-65535, 9000=default)
3. && - Data Termination Flag
4. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 89R  
**Function Type:** Set IFSF Protocol

Version 6

**Command Format:**  
**Display:** <SOH>S89RH00d  
**Computer:** <SOH>s89RH00d

**Inquire:**  
<SOH>I89H00  
<SOH>i89H00

### Typical Response Message, Display Format:

```
<SOH>
I89R00
MAR 29, 2015 6:27 PM

IFS F PROTOCOL: STANDARD
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>i89R00YYMMDDHHmmd&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. d - IFSF Protocol (Decimal, 0=default)  
0=Standard  
1=IFS F CHINA1
3. && - Data Termination Flag
4. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 8C1  
**Function Type:** VMC Edit/Add Serial Number

Version 6

**Command Format:**  
**Display:** <SOH>S8C1xxIIIIII  
**Computer:** <SOH>s8C1xxIIIIII

**Inquire:**  
<SOH>I8C1xx  
<SOH>i8C1xx

### Notes:

1. xx - VMC Number (Decimal, 01-36, 00=all)
2. IIIIII - Serial Number (Decimal)

### Typical Response Message, Display Format:

```
<SOH>
I8C1xx
JAN 22, 2015 3:11 PM

VMC SETUP

VMC S/N
 1 111111
 2 222222
 3 333333
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>i8C1xxYYMMDDHHmmxxIIIIII...
 xxIIIIII&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. xx - VMC Number (Decimal, 01-36, 00=all)
3. IIIIII - Serial Number (Decimal)
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 8C2  
**Function Type:** VMC Remove Serial Number

Version 6

**Command Format:**  
**Display:** <SOH>S8C2xxIIIIII  
**Computer:** <SOH>s8C2xxIIIIII

**Inquire:**  
<SOH>I8C2xx  
<SOH>i8C2xx

### Notes:

1. xx - VMC Number (Decimal, 01-36, 00=all)
2. IIIIII - Serial Number (Decimal)

### Typical Response Message, Display Format:

```
<SOH>
S8C2xx
JAN 22, 2015 3:11 PM

REMOVE VMC SERIAL NUMBER

VMC S/N
1 333333
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>i8C2xxYYMMDDHHmmxxIIIIII&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. xx - VMC Number (Decimal, 01-36, 00=all)
3. IIIIII - Serial Number (Decimal)
4. && - Data Termination Flag
5. CCCC - Message Checksum



# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 8C3  
**Function Type:** VMC Edit/Add Fueling Position Number

Version 6

**Command Format:**  
**Display:** <SOH>S8C3xxAABB  
**Computer:** <SOH>s8C3xxAABB

**Inquire:**  
<SOH>I8C3xx  
<SOH>i8C3xx

### Notes:

1. xx - VMC Number (Decimal, 01-36, 00=all)
2. AA - Side A Fueling Position Number (Decimal 00-99)
3. BB - Side B Fueling Position Number (Decimal 00-99)

### Typical Response Message, Display Format:

```
<SOH>
S8C3xx
JAN 22, 2015 3:11 PM

VMC FUELING POSITION SETUP

VMC S/N SIDE A SIDE B
 1 333333 1 2
 2 333333 3 4
 3 333333 11 12
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>i8C3xxYYMMDDHHmmxxAABB...
 xxAABB&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. xx - VMC Number (Decimal, 01-36, 00=all)
3. AA - Side A Fueling Position Number (Decimal 00-99)
4. BB - Side B Fueling Position Number (Decimal 00-99)
5. && - Data Termination Flag
6. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 8C4  
**Function Type:** VMC Communications Timeout Value

Version 6

**Command Format:**  
**Display:** <SOH>S8C400hh  
**Computer:** <SOH>s8C400hh

**Inquire:**  
<SOH>I8C400  
<SOH>i8C400

### Typical Response Message, Display Format:

```
<SOH>
S8C4xx
JAN 22, 2015 3:11 PM

VMC COMMUNICATIONS TIMEOUT

TIMEOUT VALUE: 0 HOURS
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>i8C4xxYYMMDDHHmmhh&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. hh - Timeout value in hours (Decimal, 00-99, 99=Alarm Disabled)
3. && - Data Termination Flag
4. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** 8CG

**Function Type:** Get Printer Setup and Status

Version 3

**Command Format:**

**Display:** <SOH>I8CG00

**Computer:** <SOH>i8CG00

**Typical Response Message, Display Format:**

```
<SOH>
I8CG00
MAR 26, 2011 1:54 PM

PRINTER SETUP - STATUS
- - - - -
NAME: TLSIntegralPrinter
CONFIGURED: True
IS DEFAULT: True
MODEL: APS CP324HRS,0.11.1
TYPE: Internal
STATE: Idle
STATE REASONS:
STATE MESSAGE:
<ETX>
```

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code 8CG Notes:** (Continued)

**Typical Response Message, Computer Format:**

```
<SOH>i8CG00YYMMDDHHmmNNaaa...aaafEMMmmm...mmmTNPHGNJDCSSsss...sss...
NNaaa...aaafEMMmmm...mmmTNPHGNJDCSSsss...sss&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. NN - Number of characters to follow for Name (Hex)
3. a...a - Name (ASCII characters [20h-7Eh])
4. f - Configured
  - 0=False
  - 1=True
5. E - Is Default
  - 0=False
  - 1=True
6. MM - Number of characters to follow for Model (Hex)
7. m...m - Model (ASCII characters [20h-7Eh])
8. T - Type
  - 0=Unknown
  - 1=Internal
  - 2=Local(USB printer)
  - 3=Network printer
9. N - State
  - 3=Idle
  - 4=Processing
  - 5=Stopped
10. P - Paper Out
  - 0=False
  - 1=True
11. H - Head Up
  - 0=False
  - 1=True
12. G - Generic Error
  - 0=False
  - 1=True
13. N - Near End of Paper
  - 0=False
  - 1=True
14. J - Paper Jam
  - 0=False
  - 1=True
15. D - Disconnected
  - 0=False
  - 1=True
16. C - Cutter Error
  - 0=False
  - 1=True
17. SS - Number of characters to follow for State Message (Hex)
18. s...s - State Message (ASCII characters [20h-7Eh])
19. && - Data Termination Flag
20. CCCC - Message Checksum

## Serial Interface Manual

### TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** D01  
**Function Type:** Push Site ID

Version 3

**Command Format:**  
**Display:** This command is sent out by the TLS-450  
**Computer:**

#### Typical Response Message, Display Format:

Computer format only

#### Typical Response Message, Computer Format:

<SOH>iD0100YYMMDDHHmmDDDDDD000000&&CCCC<ETX>

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. DDDDDD - Site ID (Decimal)
3. 000000 - 6 Zeros
4. && - Data Termination Flag
5. CCCC - Message checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: D02  
Function Type: Server Heartbeat

Version 3

Command Format:  
Display:  
Computer: <SOH>iD0200cccc

### Typical Response Message, Display Format:

Computer format only

### Typical Response Message, Computer Format:

<SOH>iD0200YYMMDDHHmmcccc&&CCCC<ETX>

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. cccc - Heartbeat Characters (ASCII characters [20h-7Eh])
3. && - Data Termination Flag
4. CCCC - Message checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

### 7.4 DIAGNOSTIC REPORTS

#### 7.4.1 SYSTEM DIAGNOSTIC REPORTS

**Function Code:** 902 (Obsolete V2)  
**Function Type:** System Revision Level Report

Version 1

**Command Format:**  
**Display:** <SOH>I90200 (Obsolete for Display Format)  
**Computer:** <SOH>i90200 (CONTAINS HARDCODED STRING FOR INFORM)

**Typical Response Message, Display Format:**

```
<SOH>
I90200
JAN 22, 1996 3:24 PM
SOFTWARE REVISION LEVEL
VERSION 110.01
SOFTWARE# 346110-101-B
CREATED - 95.11.20.13.28

S-MODULE# 330160-115-A
SYSTEM FEATURES:
 PERIODIC IN-TANK TESTS
 ANNUAL IN-TANK TESTS
 CSLD
 BIR
 FUEL MANAGER
PLLD
 0.10 REPETITIV
 0.20 REPETITIV
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i90200YYMMDDHHmmSOFTWARE# nnnnnn-vvv-rrrCREATED - YY.MM.DD.HH.mm&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. nnnnnn-vvv - Software version number (ASCII text string)
3. rrr - Software revision level (ASCII text string)
4. YY.MM.DD.HH.mm - Date and time of software creation
5. && - Data Termination Flag
6. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: 905**

Version 1

**Function Type:** System Revision Level Report II

**Command Format:**

**Display:** <SOH>I90500 (Obsolete for Display Format)

**Computer:** <SOH>i90500 (CONTAINS HARDCODED STRING FOR INFORM)

**Typical Response Message, Display Format:**

```
<SOH>
I90500
JUL 29, 1997 9:08 AM
SOFTWARE REVISION LEVEL
VERSION 115.00 TEST #05
SOFTWARE# 346115-199-AX5
CREATED - 97.07.10.20.21

S-MODULE# 330160-115-A
SYSTEM FEATURES:
 PERIODIC IN-TANK TESTS
 ANNUAL IN-TANK TESTS
 CSLD
 BIR
 FUEL MANAGER
PLLD
 0.10 REPETITIV
 0.20 REPETITIV
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>i90500YYMMDDHHmmSOFTWARE# 346abb-Tvv-rrrCREATED - YY.MM.DD.HH.mm
nnAABBCCDDEEFFGGHHIIJJS-MODULE# nnnnnn-vvv-r&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. 346 - Software Base number (fixed)
3. a - Platform
  - 0=Standard CPU, PLLD only
  - 1=Enhanced CPU
  - 2=(Unused)
  - 3=Enhanced CPU 16 Tank
  - 4=Standard CPU without PLLD & WPLLD
  - 5=Standard CPU, WPLLD only
4. bb - Version level (eg version "15")
5. T - Software Type
  - 1="Real"
  - 2="Demo"
  - 3="IFSF"



# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

### Function Code 905 Notes: (Continued)

- 6.                   vv - Language
  - 00=English/Spanish
  - 01=English/French
  - 02=English/German
  - 03=English/Swedish
  - 04=English/Portuguese
  - 05=English/Polish
  - 06=English/Finnish
  - 07=English/Japanese
  - 08=English/Greek
  - 09=English/Russian
  - 10=English/Turkish
  - 11=English/Dutch
  - 12=English/Italian
  - 99=English only
- 7.                   rrr - Revision level (eg revision "AX1")
- 8. YY.MM.DD.HH.mm - Date and time of software creation
- 9.                   nn - number of 2 byte values to follow (Hex)
- 10.                  AA - PERIODIC IN-TANK TESTS (00=DISABLE, 01=ENABLE)
- 11.                  BB - ANNUAL IN-TANK TESTS (00=DISABLE, 01=ENABLE)
- 12.                  CC - CSLD (00=DISABLE, 01=ENABLE)
- 13.                  DD - BIR (00=DISABLE, 01=ENABLE)
- 14.                  EE - FUEL MANAGER (00=DISABLE, 01=ENABLE)
- 15.                  FF - PRECISION PLLD (00=DISABLE, 01=ENABLE)
- 16.                  GG - TANKER LOAD (00=DISABLE, 01=ENABLE)
- 17.                  HH - 0.2 GPH PLLD (00=DISABLE, 01=ENABLE)
- 18.                  II - PRECISION PLLD ON DEMAND (00=DISABLE, 01=ENABLE)
- 19.                  JJ - SPECIAL 3-TANK/LINE CONSOLE (00=DISABLE, 01=ENABLE)
- 20.                  KK - ISD (00=DISABLE, 01=ENABLE)
- 21.                  LL - PMC (00=DISABLE, 01=ENABLE)
- 22.                  nnnnnn-vvv-r - SEM Info 3 parts, if none "NO SOFTWARE MODULE"
- 23.                  nnnnnn - SEM number (ASCII text string)
- 24.                  vvv - SEM Software version number (ASCII text string)
- 25.                  r - SEM Software revision level (ASCII text string)
- 26.                  && - Data Termination Flag
- 27.                  CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: 907**

Version 1

**Function Type:** Get "About Screen" Information

**Command Format:**

**Display:** <SOH>I90700

**Computer:** <SOH>i90700

### Typical Response Message, Display Format:

```
<SOH>
I90700
JAN 22, 2007 3:24 PM

Software: Part# 342002.A.121.2 CREATED: Feb 21 2010 15:58:17
```

Hardware Description	Serial Numbers
CPU	08320252
iButton	000000f4099b0b
UNIVERSAL SENS MODULE (B1.S1)	9071013
INPUT/OUTPUT MODULE (B1.S3)	9071012
INPUT/OUTPUT MODULE (B8.S5)	4278190081

### Installed Features

```

Total Control
* Email Notification
* Custom On-Board Help
* Custom Alarms
* Custom Dashboard
TLS-450 Direct Access™ Software/Web Browser
Extended Storage L2
Business Inventory Reconciliation
AccuChart II
Continuous Statistical Leak Detection
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>i90700YYMMDDHHmmPPpp..ppCCcc..ccnnccLLss...ss
 cCLLss...ss
 MMff...ff&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Time and Date
2. PP - Number of Software Part # characters to follow (ASCII hex)
3. pp.pp - Software Part # (String)
4. CC - Number of Created Date characters to follow (ASCII hex)
5. cc..cc - Created Date Text
6. nn - Number of hardware components (ASCII hex)
7. Component type - cc (ASCII Hex char)
  - 01=CPU
  - 02=iButton
  - 50=USM card
  - 51=IOM card
  - 52=MUX card
8. LL - length of serial number string (ASCII hex)
9. ss...ss - Component serial number string
10. MM - Number of installed features (ASCII Hex char)
11. ff - feature identification number (ASCII Hex char)
  - 0=TotalAccessBundle, //!< Do not use for now
  - 1=BIRAccuchartII,
  - 2=TotalControl,
  - 3=DirectAccessOrWebBrowser,
  - 4=EmailNotification,

## Serial Interface Manual

### TLS4/TLS-450/TLS-450Plus Monitoring Systems

#### Function Code 907 Notes: (Continued)

5=CustomOnBoardHelp,  
6=CustomAlarms,  
7=CustomDashboard,  
8=ContinuousStatisticalLeakDetection,  
9=UltimateTestingLeakDetectionForDPLLD,  
0A=RiskManagementLeakDetectionForDPLLD,  
0B=BaseComplianceLineLeakDetectionForDPLLD,  
0C=Business Inventory Reconciliation  
0D=AccuChartII,  
0E=ExtendedStorageL1,  
0F=ExtendedStorageL2,  
10=3.0 GPH Testing  
11=ATG Functionality  
12=DataLogger Functionality  
13=Statistical Leak Detection  
15=Mass Calculator  
16=Timed Sudden Loss Detection  
18=IFSF Feature  
19=VMC Vaporix Feature  
1A=Vapor Collection Monitor Feature  
1B=Vapor Pressure Monitoring Feature  
1C=Vapor Leak Detection Feature  
1D=Vapor Pressure Management Feature  
1E=Reserved  
12.            && - Data Termination Flag  
13.            CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

### 7.4.2 IN-TANK DIAGNOSTIC REPORTS

Function Code: A01

Version 1

Function Type: Probe Type and Serial Number

Command Format:

Display: <SOH>IA01TT

Computer: <SOH>iA01TT

Typical Response Message, Display Format:

```
<SOH>
IA01TT
JAN 22, 2009 3:25 PM
```

			TYPE	CODE	LENGTH	SERIAL NO.	D/CODE
TANK	1	REGULAR UNLEADED	MAG6	D003	96.00	000418	091A
TANK	2	SUPER UNLEADED	MAG1	C000	96.00	278147	082B
TANK	3	PREMIUM UNLEADED	CAP0	0001	96.00	200100	0000

```
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>iA01TTYMMDDHHmmTTpPPKKKKKFFFFFFFFSSSSSScccc...
TTpPPKKKKKFFFFFFFFSSSSSScccc&&CCCC<ETX>
```

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. p - Product Code (one ASCII character [20h-7Eh])
4. PP - Probe Type: (TLS450- only MAG supported)  
01=CAP0  
02=CAP1  
03=MAG1
5. KKKK - Circuit Code (Hex)
6. FFFFFFFF - Probe Length (ASCII Hex IEEE float)
7. SSSSSS - Probe Serial Number (Decimal)
8. cccc - Probe Date Code (Hex)
9. && - Data Termination Flag
10. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** A07

Version 1

**Function Type:** Probe Reference Distance Diagnostic

**Command Format:**

**Display:** <SOH>IA07TT

**Computer:** <SOH>ia07TT

**Typical Response Message, Display Format:**

```
<SOH>
IA07TT
JAN 22, 1996 3:25 PM

PROBE 1 REGULAR
TANK 1 REGULAR UNLEADED MAG7
PROBE SERIAL NUMBER 0000123456
ORIG REF DISTANCE JUN 29, 2007 XXXXX.XX
CURR REF DISTANCE JUL 2, 2007 XXXXX.XX
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>ia07TTYMMDDHHmmTTpPPYYMMDDFFFFFFFFYYMMDDFFFFFFFF...
 TTpPPYYMMDDFFFFFFFFYYMMDDFFFFFFFF&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. p - Product Code (one ASCII character [20h-7Eh])
4. PP - Probe Type: (Probe types 01=CAP0 and 02=CAP1 are not supported by this command)  
03=MAG1
5. YYMMDD - Date of reading
6. FFFFFFFF - Original Ref distance reading (ASCII Hex IEEE float)
7. YYMMDD - Date of reading
8. FFFFFFFF - Current Reference distance reading (ASCII Hex IEEE float)
9. && - Data Termination Flag
10. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** A0X  
**Function Type:** Probe Diagnostics - General

Version 1

**Command Format:**  
**Display:** <SOH>IA0XPP  
**Computer:** <SOH>iA0XPP

### Typical Response Message, Display Format:

```
<SOH>
IA0XTT
JAN 22, 2007 3:25 PM

PROBE 1: - TANK 1
 Serial Date
Type Code Length No Yr/Wk Rev Gradient
MAG3 C000 96.00 107611 x2/07 1 178.1400
MAG3 C000 96.00 107611 x2/07 1 178.1400
MAG3 C000 96.00 107611 x2/07 1 178.1400
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>iA0XTTTYMMDDHHmmPPTTrCCCCyymml11111111ggggggggssssssssnn....
 PPTTrCCCCyymml11111111ggggggggssssssssnn....&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. PP - Probe Number (Deciamal - 00=all)
3. TT - Tank Number
4. rr - Revision (hex)
5. CCCC - Probe Code (hex)
6. YYYM - Year and Month Built (decimal)
7. 11111111 - Probe Length (ASCII Hex IEEE float)
8. gggggggg - Gradient (ASCII Hex IEEE float)
9. ssssssss - Serial Number (ASCII Hex IEEE long)
10. && - Data Termination Flag
11. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: A10

Version 1

Function Type: Probe Last Sample Buffers

Command Format:

Display: <SOH>IA10TT

Computer: <SOH>iA10TT

Typical Response Message, Display Format:

```
<SOH>
IA10TT
JAN 22, 1996 3:25 PM
TANK 1 REGULAR UNLEADED MAG NUMBER OF SAMPLES=44520
 694.000 8587.000 8587.000 8587.000 8587.000 8587.000 8589.000 8589.000
8586.000 8587.000 8587.000 38250.000 31771.000 30813.000 30617.000 30251.000
30253.000 30261.000 38262.000
TANK 2 SUPER UNLEADED CAP1 NUMBER OF SAMPLES= 1081
6852.000 6930.000 12054.000 11946.000 11963.000 11922.000 11984.000 12029.000
9026.000 8705.000 8779.000 8290.000 3733.000 4150.000 4144.000 4137.000
4132.000 4126.000 4120.000 2954.000 0.000 0.000 0.000 0.000
0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000
0.000
TANK 3 PREMIUM UNLEADED CAP0 NUMBER OF SAMPLES= 1082
 234.000 439.000 1317.000 1319.000 1307.000 1321.000 1104.000 761.000
104.000 1686.000
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>iA10TTYMMDDHHmmTTpPPSSSSNNFFFFFFFFF...
TTpPPSSSSNNFFFFFFFFF&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. p - Product Code (one ASCII character [20h-7Eh])
4. PP - Probe Type: (TLS450- only MAG supported)  
01=CAP0  
02=CAP1  
03=MAG1
5. SSSS - Sample Number (Hex)
6. NN - Number of eight character Data Fields to follow (Hex)
7. FFFFFFFF - Probe Data (ASCII Hex IEEE float)
8. && - Data Termination Flag
9. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** A14  
**Function Type:** MAG Probe Option Table

Version 1

**Command Format:**  
**Display:** <SOH>IA14PP  
**Computer:** <SOH>iA14PP

### Typical Response Message, Display Format:

```
<SOH>
IA14PP
JUN 1, 2000 8:15 AM

MAG PROBE OPTIONS TABLE

TNK LOW LEAK LEAK LEAK
NUM TEMP WATER 0.1 0.2 3.0

 1 YES YES YES YES YES
 2 YES YES NO NO NO
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>iA14PPYYMMDDHHmmPPNNLWABC...
PPNNLWABC&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. PP - Probe Number (Decimal, 00=all)
3. NN - Number of option flags to follow
4. L - Low temperature capability  
0=NO  
1=YES
5. W - Water Float  
0=NO  
1=YES
6. A - 0.10 GPH leak detection capability  
0=NO  
1=YES
7. B - 0.20 GPH leak detection capability  
0=NO  
1=YES
8. C - 3.0 GPH leak detection capability  
0=NO  
1=YES
9. && - Data Termination Flag
10. CCCC - Message Checksum



# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** A15  
**Function Type:** In-Tank Diagnostic Printout

Version 1

**Command Format:**  
**Display:** <SOH>IA1500  
**Computer:** <SOH>iA1500

### Typical Response Message, Display Format:

```
<SOH>
IA1500
JUN 3, 2002 8:07 AM

STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....

IN-TANK DIAGNOSTIC

PROBE DIAGNOSTICS
T1:PROBE TYPE MAG 1
SERIAL NUMBER 064924
LENGTH: 2489.2
DATE CODE 2774
ID CHAN=D004
GRADIENT= 350.0000
PROBE INIT:
 AUG 1,2004 12:25PM

NUM SAMPLES= 20

C00 811.0 C01 7196.8
C02 7196.5 C03 7196.7
C04 7196.3 C05 7196.8
C06 7196.8 C07 7196.2
C08 7196.6 C09 7196.1
C10 7196.8 C11 42511.1
C12 18534.4 C13 18615.1
C14 18496.6 C15 18518.9
C16 18456.4 C17 18505.8
C18 18534.4

SAMPLES READ= 2
SAMPLES USED= 2
LAST ERROR = 0
LAST SAMPLE ERROR TIME:
 AUG 2,2004 11:12PM

TEMP SENSOR DATA
T6: 72.6 F
T5: 72.1 F
T4: 70.9 F
T3: 69.4 F
T2: 68.3 F
T1: 67.6 F

REF DISTANCE
12/01/00 XXXXX.XX - (Original Reference Time/Distance)
12/01/01 XXXXX.XX - (Current Reference Time/Distance)
<ETX>
```

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code A15 Notes:** (Continued)

**Typical Response Message, Computer Format:**

```
<SOH>iA15TTYMMDDHHmmTTppppsssssslllllllllddddYYMMDDHHmm
 gggggggggzzzzoonnnnnNNcccccccc...cccccccc
 rrrrrrrrruuuuuuuuueeeeeeeeYYMMDDHHmm
 AAaaaaaaaa...aaaaaaaa
 YYMMDDhhhhhhhhYYMMDDkkkkkkkk...
TTppppsssssslllllllllddddYYMMDDHHmm
 gggggggggzzzzoonnnnnNNcccccccc...cccccccc
 rrrrrrrrruuuuuuuuueeeeeeeeYYMMDDHHmm
 AAaaaaaaaa...aaaaaaaa
 YYMMDDhhhhhhhhYYMMDDkkkkkkkk&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. pppp - Probe Type (Hex)
4. ssssss - Serial Number (Decimal)
5. llllllll - Probe Length (ASCII Hex IEEE float)
6. dddd - Date Code (Hex)
7. YYMMDDHHmm - Probe Initialized (Date and Time)
8. gggggggg - Gradient (ASCII Hex IEEE float)
9. zzzz - Id Code (Hex)
10. oo - Probe Options (Hex)
  - 00=Not Low Temperature Probe
  - 01=Low Temperature Probe
11. nnnn - Number of Samples (Hex)
12. NN - # of 8-Byte Channel Count Values to Follow (Hex)
13. cccccccc - Channel Count Values (ASCII Hex IEEE float)
14. rrrrrrrr - Samples Read (Hex)
15. uuuuuuuu - Samples Used (Hex)
16. eeeeeeee - Last Error Sample Number (Hex)
17. YYMMDDHHmm - Last Sample Error Time (Date and Time)
18. AA - # of 8-Byte Temperature Sensor Values Follow (Hex)
19. aaaaaaaaa - Temperature Sensor Values (ASCII Hex IEEE float)
20. YYMMDD - Original Reference Distance Date
21. hhhhhhhh - Original Reference Distance Value (ASCII Hex IEEE float)
22. YYMMDD - Current Reference Distance Date
23. kkkkkkkk - Current Reference Distance Value (ASCII Hex IEEE float)
24. && - Data Termination Flag
25. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** A17  
**Function Type:** Probe Communication

Version 1

**Command Format:**  
**Display:** <SOH>IA17PP  
**Computer:** <SOH>iA17PP

### Typical Response Message, Display Format:

```
<SOH>
IA17PP
MAR 26, 2007 1:50 PM

PROBE DIAGNOSTIC - COMMUNICATION REPORT

PROBE 1 Probe Label (PROBE 1) TANK 1
Type Status Samples Samples Parity Partial Comm
MAG 1 OK 1450532 1450305 0 1 Errors
 72

PROBE 2 TANK 2
Type Status Samples Samples Parity Partial Comm
MAG 12 FAIL 1450532 1450305 0 1 Errors
<ETX> 72
```

### Typical Response Message, Computer Format:

```
<SOH>iA17PPYYMDDHHmmPPTTTTssNNFFFFFFFGGGGGGGGHHHHHHHHIIIIIIII
 JJJJJJJJ...
 PPTTTTssNNFFFFFFFGGGGGGGGHHHHHHHHIIIIIIII
 JJJJJJJJ&&CCCC<ETX>
```

### Notes:

1. YYMDDHHmm - Current Date and Time
2. PP - Probe Number (Decimal, 00=all)
3. TTTT - Circuit Code (Hex)
4. ss - Status Flag (Hex)  
     00=OK  
     01=FAIL
5. NN - Number of 8-byte fields to follow (hex)
6. FFFFFFFF - Samples Read (Hex)
7. GGGGGGGG - Samples Used (Hex)
8. HHHHHHHH - Parity Errors (Hex)
9. IIIIIIII - Partial Errors (Hex)
10. JJJJJJJJ - Comm Errors (Hex)
11. && - Data Termination Flag
12. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** A18  
**Function Type:** Probe Diagnostic Printout

Version 3

**Command Format:**  
**Display:** <SOH>IA1800  
**Computer:** <SOH>iA1800

### Typical Response Message, Display Format:

<SOH>  
IA1800  
08-28-08 14:13  
Diagnostics

#### SOFTWARE REVISION

TANK : 1  
PROBE TYPE : MAG1  
SERIAL NUMBER : 168809  
PROBE ID : 0XC000  
PROBE LENGTH : 30.00  
GRADIENT : 354.520  
NUMBER SAMPLES : 20  
SAMPLES READ : 47357  
SAMPLES USED : 47348  
REF DISTANCE : 08-21-08 102.00  
                  08-27-08 102.00

TEMP 6 : 72.6  
TEMP 5 : 72.1  
TEMP 4 : 70.9  
TEMP 3 : 69.4  
TEMP 2 : 68.3  
TEMP 1 : 67.6  
TEMP 6 - TEMP 5 : 0.5  
TEMP 5 - TEMP 4 : 1.3  
TEMP 4 - TEMP 3 : 1.5  
TEMP 3 - TEMP 2 : 1.1  
TEMP 2 - TEMP 1 : 0.7

COUNTS 00 : 001319  
COUNTS 01 : 007412  
COUNTS 02 : 007412  
COUNTS 03 : 007412  
COUNTS 04 : 007412  
COUNTS 05 : 007412  
COUNTS 06 : 007412  
COUNTS 07 : 007412  
COUNTS 08 : 007412  
COUNTS 09 : 007412  
COUNTS 10 : 007412  
COUNTS 11 : 044368  
COUNTS 12 : 016952  
COUNTS 13 : 017295  
COUNTS 14 : 017435  
COUNTS 15 : 017389  
COUNTS 16 : 017468

**Function Code A18 Notes:** (Continued)

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

```
COUNTS 17 : 017460
COUNTS 18 : 044370
OPTIONS CODE : 0X0000
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>iA18TTYMMDDHHmmTTppppsssssszzzzl111111l1ggggggggSSSSSSSS
rrrrrrrruuuuuuuuYYMMDDhhhhhhhhYYMMDDkkkkkkkk
AAaaaaaaaa...aaaaaaaaBBbbbbbbbb...bbbbbbbb
NNcccccccc...ccccccccKKKKKKKK
TTppppsssssszzzzl111111l1ggggggggSSSSSSSS
rrrrrrrruuuuuuuuYYMMDDhhhhhhhhYYMMDDkkkkkkkk
AAaaaaaaaa...aaaaaaaaBBbbbbbbbb...bbbbbbbb
NNcccccccc...ccccccccKKKKKKKK&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. pppp - Probe Type (Hex)
4. ssssss - Serial Number (Decimal)
5. zzzz - Probe ID (Hex)
6. l1111111 - Probe Length (ASCII Hex IEEE float)
7. gggggggg - Gradient (ASCII Hex IEEE float)
8. SSSSSSSS - Number of Samples (Hex)
9. rrrrrrrr - Samples Read (Hex)
10. uuuuuuuu - Samples Used (Hex)
11. YYMMDD - Original Reference Distance Date
12. hhhhhhhh - Original Reference Distance Value (ASCII Hex IEEE float)
13. YYMMDD - Current Reference Distance Date
14. kkkkkkkk - Current Reference Distance Value (ASCII Hex IEEE float)
15. AA - # of 8-Byte Temperature Sensor Values to Follow (Hex)
16. aaaaaaaa - Temperature Sensor Values (ASCII Hex IEEE float)
17. BB - # of 8-Byte Temperature Sensor Difference Values to Follow (Hex)
18. bbbbbbbb - Temperature Sensor Difference Values (ASCII Hex IEEE float)
19. NN - # of 8-Byte Channel Count Values to Follow (Hex)
20. cccccccc - Channel Count Values (ASCII Hex IEEE float)
21. KKKKKKKK - Probe Options Code (ASCII-Hex unsigned long)
  - 0=Standard Temperature Probe
  - 1=Low Temperature Probe
22. && - Data Termination Flag
23. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** A20

Version 1

**Function Type:** Probe Leak Test Flags - Present Test

**Command Format:**

**Display:** <SOH>IA20TT

**Computer:** <SOH>iA20TT

### Typical Response Message, Display Format:

```
<SOH>
IA20TT
JAN 28, 1995 10:15 AM
TANK 1 REGULAR UNLEADED MAG PRESENT LEAK TEST ANALYSIS REPORT
0.1 GAL/HR FLAGS:
0.2 GAL/HR FLAGS:
TANK 2 SUPER UNLEADED CAP1 PRESENT LEAK TEST ANALYSIS REPORT
0.1 GAL/HR FLAGS:
0.2 GAL/HR FLAGS:
TANK 3 PREMIUM UNLEADED CAP0 PRESENT LEAK TEST ANALYSIS REPORT
0.2 GAL/HR FLAGS:
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>iA20TTYMMDDHHmmTTpPPNNFFFF...
TTpPPNNFFFF&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. p - Product Code (one ASCII character [20h-7Eh])
4. PP - Probe Type: (TLS450- only MAG supported)  
01=CAP0  
02=CAP1  
03=MAG1
5. NN - Number of 4-character Flag sequences to follow (Hex)
6. FFFF - Flag sequence characters indicating which Flag bits are set
7. && - Data Termination Flag
8. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** A21

Version 1

**Function Type:** Probe Leak Test Flags - Stored Test

**Command Format:**

**Display:** <SOH>IA21TT

**Computer:** <SOH>iA21TT

### Typical Response Message, Display Format:

```
<SOH>
IA21TT
JAN 28, 1995 10:15 AM
TANK 1 REGULAR UNLEADED MAG STORED LEAK TEST ANALYSIS REPORT
0.1 GAL/HR FLAGS:
0.2 GAL/HR FLAGS:
TANK 2 SUPER UNLEADED CAP1 STORED LEAK TEST ANALYSIS REPORT
0.1 GAL/HR FLAGS:
0.2 GAL/HR FLAGS:
TANK 3 PREMIUM UNLEADED CAP0 STORED LEAK TEST ANALYSIS REPORT
0.2 GAL/HR FLAGS:
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>iA21TTYMMDDHHmmTTpPPNNFFFF...
 TTpPPNNFFFF&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. p - Product Code (one ASCII character [20h-7Eh])
4. PP - Probe Type: (TLS450- only MAG supported)  
01=CAP0  
02=CAP1  
03=MAG1
5. NN - Number of 4-character Flag sequences to follow (Hex)
6. FFFF - Flag sequence characters indicating which Flag bits are set
7. && - Data Termination Flag
8. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** A22

Version 1

**Function Type:** Probe Leak Test Flags - Gross Test

**Command Format:**

**Display:** <SOH>IA22TT

**Computer:** <SOH>iA22TT

### Typical Response Message, Display Format:

```
<SOH>
IA22TT
APR 14, 1995 9:05 AM
TANK 1 REGULAR UNLEADED MAG GROSS LEAK TEST ANALYSIS REPORT
GROSS LEAK TEST FLAGS:
TANK 2 SUPER UNLEADED CAP1 GROSS LEAK TEST ANALYSIS REPORT
GROSS LEAK TEST FLAGS:
TANK 3 PREMIUM UNLEADED CAP0 GROSS LEAK TEST ANALYSIS REPORT
GROSS LEAK TEST FLAGS:
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>iA22TTYMMDDHHmmTTpPPNNFFFF...
TTpPPNNFFFF&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. p - Product Code (one ASCII character [20h-7Eh])
4. PP - Probe Type: (TLS450- only MAG supported)  
01=CAP0  
02=CAP1  
03=MAG1
5. NN - Number of 4-character Flag sequences to follow (Hex)
6. FFFF - Flag sequence characters indicating which Flag bits are set
7. && - Data Termination Flag
8. CCCC - Message Checksum



# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: A51

Version 1

Function Type: CSLD Diagnostics: Rate Table

Command Format:

Display: <SOH>IA51TT

Computer: <SOH>iA51TT

### Typical Response Message, Display Format:

```
<SOH>
IA51TT
JAN 22, 1996 3:26 PM

CSLD DIAGNOSTICS: RATE TABLE
T 1:REGULAR UNLEADED
 TIME ST LRT AVTMP TPTMP BDTMP TMRT DSPNS VOL INTVL DEL ULLG EVAP
9601210514 2 -0.194 35.9 35.6 33.1 0.06 853 9324 53.5 1.4 188 7.8
9601220056 3 -0.028 36.9 35.7 33.3 0.02 1528 6829 134.0 21.1 320 7.8
9601220417 1 -0.007 37.0 35.8 33.3 0.02 1470 6825 25.0 24.5 320 7.8
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>iA51TTYMMDDHHmmTTRRssNNttttttttFFFFFFFF...
 TTRRssNNttttttttFFFFFFFF&&ACF7<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=All Tanks)
3. RR - Number of records to follow
4. ss - Test acceptability:
  - 00=Acceptable
  - 01=Rejected - less than minimum duration requirement
  - 02=Rejected - within delivery threshold
  - 03=Rejected - excessive dispensing
  - 04=Rejected - excessive temperature change
  - 06=Rejected - outside weighted STD
5. NN - Number of eight character Data Fields to follow (decimal)
6. tttttttt - Test starting time (seconds since 1/1/70, unsigned long)
7. FFFFFFFF - ASCII Hex IEEE floats:
  1. Leak rate
  2. Accept
  3. 0.0 (obsolete)
  4. Rate of change of temperature
  5. Dispense factor
  6. Volume
  7. Test interval (minutes)
  8. Hours since last delivery
  9. Average temperature
  10. Top temperature
  11. Board temperature
  12. Ullage area
  13. Throughput
  14. Evaporation rate
8. && - Data Termination Flag
9. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: A52**

Version 1

**Function Type:** CSLD Diagnostics: Rate Test

**Command Format:**

**Display:** <SOH>IA52TT

**Computer:** <SOH>ia52TT

**Typical Response Message, Display Format:**

```
<SOH>
IA52TT
JAN 22, 1996 3:27 PM

CSLD DIAGNOSTICS: RATE TEST

TK DATE LRATE INTVL ST AVL RTE VOL C1 C3 FDBK ACPT THPUT EVAP RJT
1 9601220417 -0.024 22.6 1 -0.030 5436 67 22 30.4 36.8 7.8 0.100 0
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>ia52TTYMMDDHHmmTTYMMDDHHmmSSCCccNNFFFFFFFF...
TTYMMDDHHmmSSCCccNNFFFFFFFF&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date
2. TT - Tank Number (Decimal, 00=All Tanks)
3. YYMMDDHHmm - Date of last tank evaluation
4. SS - Status code:
  - 01=PASS
  - 02=FAIL
  - 05=NO RESULTS - Insufficient number of records
  - 06=NO RESULTS - Insufficient test time interval
  - 07=NO RESULTS - Insufficient test date range
  - 08=INVALID - excessive positive leak rate
  - 09=INVALID - negative leak waiting period
5. CC - Total count of records
6. cc - Total count of acceptable records
7. NN - Number of eight character Data Fields to follow (Hex)
8. FFFFFFFF - ASCII Hex IEEE floats:
  1. Compensated leak rate
  2. Total test time (hours)
  3. Uncompensated leak rate
  4. Average volume during tests
  5. Feedback factor (minutes)
  6. Acceptance factor (minutes)
  7. Last throughput \* tank capacity/1000
  8. DF multiplier
  9. Positive rejects
  10. Average evaporation rate
9. && - Data Termination Flag
10. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** A53

Version 1

**Function Type:** CSLD Diagnostics: Volume History Table

**Command Format:**

**Display:** <SOH>IA53TT

**Computer:** <SOH>iA53TT

### Typical Response Message, Display Format:

```
<SOH>
IA53TT
MAR 26, 1996 1:48 PM

CSLD DIAGNOSTICS: VOLUME TABLE
T 1:REGULAR UNLEADED
LAST HOUR=229957
 3141.9 3297.9 3476.7 3625.4 3742.9 3932.8 4085.4 4156.5
 4218.2 4242.4 4242.5 4242.4 4242.0 4247.0 4265.9 4281.5
 4307.5 4339.7 4405.7 4456.5 4573.2 4701.3 4854.2 5022.6
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>iA53TTYMMDDHHmmTTNNhhhhhhhhFFFFFFF...
 TTNNhhhhhhhhFFFFFFF&&CCCC<ETX>
```

### Notes:

1. YMMDDHHmm - Current Date
2. TT - Tank Number (Decimal, 00=All Tanks)
3. NN - Number of eight character Data Fields to follow (Hex)
4. hhhhhhhh - Last hour recorded (seconds since 1/1/70, unsigned long)
5. FFFFFFFF - ASCII Hex IEEE floats:
  1. Latest recorded hourly volume
  2. Intermediate hourly recorded volumes
  3. Oldest recorded hourly volume
6. && - Data Termination Flag
7. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: A54

Version 1

Function Type: 30-Second Inventory Samples

Command Format:

Display: <SOH>IA54TT

Computer: <SOH>ia54TT

### Typical Response Message, Display Format:

```
<SOH>
IA54TT
MAR 26, 1996 1:48 PM

30-SECOND INVENTORY SAMPLES

T 1:REGULAR UNLEADED
 TIME SMPLS TCVOL HEIGHT AVGTEMP TOTEMP BDTEMP
960326132554 31 3074.65 32.279 45.86 45.49 48.19
960326132624 30 3072.62 32.263 45.86 45.49 48.19
960326132654 31 3072.46 32.262 45.86 45.49 48.20
960326132724 30 3072.54 32.263 45.86 45.49 48.20
960326132754 31 3073.13 32.267 45.86 45.49 48.21
960326132824 31 3072.97 32.266 45.86 45.49 48.21
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>ia5401YYMMDDHHmmTTSSRRssNNNNNNNNNN...FFFFFFFF
 ssNNNNNNNNNN...FFFFFFFF
 TTSSRRssNNNNNNNNNN...FFFFFFFF
 ssNNNNNNNNNN...FFFFFFFF&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date
2. TT - Tank Number (Decimal, 00=All Tanks)
3. SS - Current Test State:
  - 0=No test
  - 1=Test pre-start
  - 2=Test in-progress
  - 3=Test complete
  - 4=Abort test
  - 5=Pre-delay
  - 6=End delay
4. RR - Number of records to follow
5. ss - Number of samples averaged into this record
6. NN - Number of eight character Data Fields to follow (Hex)
7. FFFFFFFF - ASCII Hex IEEE floats (except where noted):
  - 1. Time (seconds since 1/1/70, unsigned long)
  - 2. Temperature compensated volume
  - 3. Height
  - 4. Fuel temperature
  - 5. 0.0
  - 6. 0.0
  - 7. Top temperature
  - 8. Board temperature
8. && - Data Termination Flag
9. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** A55

Version 1

**Function Type:** CSLD Diagnostics: Leak Test Status

**Command Format:**

**Display:** <SOH>IA55TT

**Computer:** <SOH>iA55TT

**Typical Response Message, Display Format:**

```
<SOH>
IA55TT
MAR 26, 1996 1:49 PM

CSLD DIAGNOSTICS: LEAK TEST STATUS

TANK LABEL TEST STATUS DURATION
 1 Regular NO TEST 0.0
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>iA55TTYMMDDhhmmTTSSFFFFFFFF...
 TTSSFFFFFFFF&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date
2. TT - Tank Number (Decimal, 00=All Tanks)
3. SS - Status:
  - 00=NO TEST
  - 01=TEST PRE-START
  - 02=TEST IN PROGRESS
  - 03=TEST COMPLETE
  - 04=TEST ABORT
  - 05=TEST PRE-DELAY
  - 06=TEST END DELAY
4. FFFFFFFF - Elapsed time in minutes (ASCII Hex IEEE float)
5. && - Data Termination Flag
6. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** A56  
**Function Type:** CSLD Monthly Report

Version 1

**Command Format:**  
**Display:** <SOH>IA56TTt  
**Computer:** <SOH>iA56TTt

**NOTE:** The most current record from the previous month (if available) will be returned if a record doesn't exist for the current month.

### Typical Response Message, Display Format:

```
<SOH>
IA56TT
OCT 25, 2000 10:00 AM

CSLD MONTHLY REPORT

CURRENT MONTH
0.2 GAL/HR TEST

T 1:UNLEADED GASOLINE
PROBE SERIAL NUM 627020

OCT 25, 2000 7:15 AM RESULT: No Results Available
OCT 24, 2000 3:22 PM RESULT: Pass
OCT 23, 2000 6:26 AM RESULT: Fail
OCT 20, 2000 12:44 PM RESULT: Increase
OCT 20, 2000 5:23 AM RESULT: Warning
OCT 19, 2000 8:23 AM RESULT: Invalid
OCT 18, 2000 9:53 PM STATUS: No Idle Data
OCT 16, 2000 6:14 AM STATUS: Active
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>iA56TTYMMDDHHmmTTNNYYMMDDHHmmrr...
TTNNYYMMDDHHmmrr&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. t - Report Type  
0=Current Month  
1=Previous Month
3. TT - Tank Number (Decimal, 00=all)
4. NN - Number of CSLD State Changes (12 char) to follow (Hex)
5. YYMMDDHHmm - Date and Time of CSLD State Change
6. rr - CSLD State Change:  
01=RESULT: Pass  
02=RESULT: Fail  
03=RESULT: No Results Available  
04=RESULT: Invalid  
08=RESULT: Increase  
09=RESULT: Warning  
98=STATUS: No Idle Data  
99=STATUS: Active
7. && - Data Termination Flag
8. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** A57

Version 1

**Function Type:** Tank Test Diagnostics - CSLD Monthly Report

**Command Format:**

**Display:** <SOH>IA57TTRRyymmddhhmmYYMMDDHHMMnnnn

**Computer:** <SOH>iA57TTRRyymmddhhmmYYMMDDHHMMnnnn

**Notes:**

1. TT - Device Number (Decimal, 00=all)
2. RR - Report Type (Report Type should always be given. The rest of the parameters are optional following the rules below.)  
00=CSLD Monthly Report (for CSLD information for specified time period)
3. nnn - Maximum Records [000-999 Absolute Maximum] (Decimal). (If no Maximum Rrecords is given or it is zeroes and no End Date/Time is given, limited by the Maximum Records, Default of 100)
4. yymmddhhmm - Starting Date/Time (If no start date/time is given or either Year, Month or Day are zeroes, it assumes request is for most recent records and is limited by the Maximum records below. Ranges are as follows:  
yy=Year (01-99, for Years 2001-2099)  
mm=Month (01-12, for Months January to December)  
dd=Day (01-31, however, validity depends on Month)  
hh=Hour (00-23)  
mm=Minute (00-59)
5. YYMMDDHHMM - Ending Date/Time (If no end date/time is given or either Year, Month or Day are zeroes, it assumes request is for records starting from start date/time as evaluated above, limited by the Maximum Records (above)).

**Valid Combinations:**

If Max Records = 000, and Starting Date/Time = 0's or blank, (End Date/Time not used for this combination).  
Returns up to 100 of the most recent records.

If Max Records = 000, and Starting Date/Time is valid, and End Date/Time = 0's or blank.  
Returns up to 100 records starting from the Start Date/Time.

If Max Records = 000, and Starting Date/Time is valid, and End Date/Time is valid  
Returns all records between the Start Date/Time and the End Date/Time.

If Max Records = 1 - 999, and Starting Date/Time = 0's or blank, (End Date/Time not used for this combination).  
Returns up to the Max Records starting with the most recent records.

If Max Records = 1 - 999, and Starting Date/Time is valid, and End Date/Time = 0's or blank.  
Returns up to the Max Records starting from the Start Date/Time.

If Max Records = 1 - 999, and Starting Date/Time is valid and End Date/Time is valid.  
Returns up to the Max Records starting with the Start Date/Time and ending with the End Date/Time.

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

### Function Code A57: (Continued)

**NOTE:** The most current record from a previous date (if available) will be returned if a record doesn't exist for the selected date range.

### Typical Response Message, Display Format:

```
<SOH>
IA57TT
OCT 25, 2000 10:00 AM

Selected Range:
 Date Range: 10/15/2000 04:00 PM - 10/26/2000 04:00 PM

Tank Test Diagnostics - CSLD Monthly Report

Tank 1: Regular Unleaded
Probe Serial Number: 627020

Date/Time CSLD State Change
Oct 25, 2000 7:15 AM No Results Available
Oct 24, 2000 3:22 PM Pass
Oct 23, 2000 6:26 AM Fail
Oct 20, 2000 12:44 PM Increase
Oct 20, 2000 5:23 AM Warning
Oct 19, 2000 8:23 AM Invalid
Oct 18, 2000 9:53 PM No Idle Data
Oct 16, 2000 6:14 AM Active
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>ia57TTYMMDDHHmmTTNNNYYMMDDHHmmrr...
TTNNNYYMMDDHHmmrr&&CCCC<ETX>
```

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. NNN - Number of CSLD State Changes to follow (Hex)
4. YYMMDDHHmm - Date and Time of CSLD State Change
5. rr - CSLD State Change:
  - 01=Pass
  - 02=Fail
  - 03=No Results Available
  - 04=Invalid
  - 08=Increase
  - 09=Warning
  - 98=No Idle Data
  - 99=Active
6. && - Data Termination Flag
7. CCCC - Message Checksum



# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: A58

Version 1

Function Type: CSLD Diagnostics: Moving Average Table

Command Format:

Display: <SOH>IA58TT

Computer: <SOH>iA58TT

Typical Response Message, Display Format:

```
<SOH>
IA58TT
MAR 26, 1996 1:48 PM

CSLD DIAGNOSTICS: AGGREGATE ATG DATA QUEUE

T 1:REGULAR UNLEADED
```

DATE/TIME	SMPL CNT	AGGREG TCVOL	MOVING AVERAGE	VARIANCE	IDLE	STATE	ERROR FLAGS
960326132554	31	3074.65	3074.65	45.86	NO	NO TEST	0000
960326132624	30	3072.62	3072.62	45.86	NO	PRE START	0000
960326132654	31	3072.46	3072.46	45.86	YES	IN PROGRESS	0000
960326132724	30	3072.54	3072.54	45.86	YES	COMPLETE	0000
960326132754	31	3073.13	3073.13	45.86	YES	ABORT TEST	0000
960326132824	31	3072.97	3072.97	45.86	YES	PRE DELAY	0000
960326132854	31	3072.97	3072.97	45.86	YES	END DELAY	0000

<ETX>

Typical Response Message, Computer Format:

```
<SOH>iA5801YYMMDDHHmmTTNNssssssssnnccccccccmmmmmmmmvvvvvvvvVISEEEE
ssssssssnnccccccccmmmmmmmmvvvvvvvvVISEEEE
TTNNssssssssnnccccccccmmmmmmmmvvvvvvvvVISEEEE&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=All Tanks)
3. NN - Number of samples in queue (hex)
4. ssssssss - time stamp in seconds since 1970 (ascii hex long)
5. nn - number of probe readings (ascii hex)
6. cccccccc - tc volume in gallons/liters (ascii hex float)
7. mmmmmmmm - moving average in gallons/liters (ascii hex float)
8. vvvvvvvv - variance (ascii hex float)
9. I - 1=idle, 0=busy
10. S - state
  - 0=No test
  - 1=Test pre-start
  - 2=Test in-progress
  - 3=Test complete
  - 4=Abort test
  - 5=Pre-delay
  - 6=End delay
11. EEEE - Error flags (ascii hex short)
12. && - Data Termination Flag
13. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: A61  
Function Type: HRM Diagnostic Report

Version 4

Command Format:  
Display: <SOH>IA61TT  
Computer: <SOH>iA61TT

### Typical Response Message, Display Format:

```
<SOH>
IA61TT
MAR 26, 2011 1:48 PM

T 1:REGULAR UNLEADED

TIME STAMP ENDTEMP ENDVOL SALES STAT HR VAR
9707240757 70.61 2633.02 118.2 0 -0.037
9707240918 70.79 2547.48 204.0 0 -0.099
9707240948 70.82 2531.58 220.0 0 0.056
9707241114 70.93 2464.84 275.1 0 -11.729
9707241224 71.09 2420.87 331.2 0 11.767
9707241310 71.25 2347.41 404.2 0 -0.754
9707241412 71.38 2298.75 453.0 0 -0.019
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>iA61TTYMMDDHHmmTTpRRYYMMDDHHmmFFFFFFFFEEEESSSSSSSSVVVVVVVV...
TTpRRYYMMDDHHmmFFFFFFFFEEEESSSSSSSSVVVVVVVVV&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=All Tanks)
3. p - Product Code
4. RR - Number of Records to follow (ASCII hex)
5. YYMMDDHHmm - Record Date and Time stamp
6. FF - Status Flag (Hex)
  - 00=Data Used
  - 01=Not mapped
  - 02=Time Set Back
  - 03=Gap Too Long
  - 04=Delivery
  - 05=Temp Low
  - 06=Temp High
  - 07=Temp Increase
  - 08=Volume High
  - 09=Volume Low
  - 0A=Volume Change
  - 0B=Not Calibrated
  - 0C=Cal Time Filter
  - 0D=No Sales Data
  - 0E=Temp Decrease
  - 0F=Reset Filter
  - 10=Therm Flag
  - 11=DIM Reset
  - 12=BDIM Transaction
7. EEEEEEEE - Ending Volume (ASCII Hex IEEE float)
8. SSSSSSSS - Sales (ASCII Hex IEEE float)
9. VVVVVVVV - Hourly Variance (ASCII Hex IEEE float)
10. && - Data Termination Flag
11. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: A62  
Function Type: HRM Daily History Report

Version 4

Command Format:  
Display: <SOH>IA62TT  
Computer: <SOH>iA62TT

### Typical Response Message, Display Format:

```
<SOH>
IA62TT
MAR 26, 2011 1:48 PM

DAILY HRM HISTORY

T 1:REGULAR UNLEADED

DATE/TIME RECORDS MIN MAX AVE STATUS
9510010200 24 -0.562 0.000 -0.230 PASS
9510020200 21 -0.385 0.650 -0.057 PASS
9510030200 24 -0.402 0.092 -0.135 PASS
9510040300 24 -0.436 0.150 -0.147 PASS
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>iA62TTYMMDDHHmmTTpRRYYMMDDHHmmhhaaaaaaabbabbbbbbccccccccSS...
TTpRRYYMMDDHHmmhhaaaaaaabbabbbbbbccccccccSS&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=All Tanks)
3. p - Product Code (ASCII character [20h-7Eh])
4. RR - Number of Records to follow (ASCII hex)
5. YYMMDDHHmm - Record Date and Time stamp
6. hh - Number of hours in record (decimal)
7. aaaaaaaa - Minimum Volume (ASCII Hex IEEE float)
8. bbbbbbbb - Maximum Value (ASCII Hex IEEE float)
9. cccccccc - Average Value (ASCII Hex IEEE float)
10. SS - Status  
00=No Data Available  
01=Pass  
02=Warning  
03=Fail
11. && - Data Termination Flag
12. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: A63**

Version 4

**Function Type:** Extended HRM Diagnostic Report

**Command Format:**

**Display:** <SOH>IA63TT

**Computer:** <SOH>iA63TT

**Typical Response Message, Display Format:**

```
<SOH>
IA63TT
MAR 26, 2011 1:48 PM

T 1:REGULAR UNLEADED

TIME STAMP ENDTEMP ENDVOL SALES STAT HR VAR
9707240757 70.61 2633.02 118.2 0 -0.037
9707240918 70.79 2547.48 204.0 0 -0.099
9707240948 70.82 2531.58 220.0 0 0.056
9707241114 70.93 2464.84 275.1 0 -11.729
9707241224 71.09 2420.87 331.2 0 11.767
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>iA63TTYMMDDHHmmTTpRRYYMMDDHHmmFFNNEEEEEEEEESSSSSSSSVVVVVVVVTTTTTTTTT...
TTpRRYYMMDDHHmmFFNNEEEEEEEEESSSSSSSSVVVVVVVV
TTTTTTTTT&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=All Tanks)
3. p - Product Code (ASCII character [20h-7Eh])
4. RR - Number of Records to follow (ASCII hex)
5. YYMMDDHHmm - Record Date and Time stamp
6. FF - Status Flag (Hex)
  - 00=Data Used
  - 01=Not mapped
  - 02=Time Set Back
  - 03=Gap Too Long
  - 04=Delivery
  - 05=Temp Low
  - 06=Temp High
  - 07=Temp Increase
  - 08=Volume High
  - 09=Volume Low
  - 0A=Volume Change
  - 0B=Not Calibrated
  - 0C=Cal Time Filter
  - 0D=No Sales Data
  - 0E=Temp Decrease
  - 0F=Reset Filter
  - 10=Therm Flag
  - 11=DIM Reset
  - 12=BDIM Transaction
7. NN - Number of eight character data fields to follow (Hex)
8. EEEEEEEE - Ending Volume (ASCII Hex IEEE float)
9. SSSSSSSS - Sales (ASCII Hex IEEE float)
10. VVVVVVVV - Hourly Variance (ASCII Hex IEEE float)
11. TTTTTTTT - Ending Temperature (ASCII Hex IEEE float)
12. && - Data Termination Flag
13. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** A64

Version 4

**Function Type:** HRM Diagnostic Report with Date Range

**Command Format:**

**Display:** <SOH>IA64TTyymmddYYMMDDnnn

**Computer:** <SOH>iA64TTyymmddYYMMDDnnn

**Notes:**

1. yymmdd - Starting Date (000000 = no starting date)
2. YYMMDD - Ending Date (000000 = no ending date)
3. nnn - Maximum Records [001...999] (240 = default) (decimal)
4. If no data is entered or zeros are entered for the starting date, ending date and maximum records, the last 240 records will be returned.

**Typical Response Message, Display Format:**

<SOH>  
IA64TT  
APR 20, 2011 1:48 PM

TLS\_450 UST  
VEEDER-ROOT TEST LAB  
125 POWDER FOREST DR  
SIMSBURY, CT 06070

Volume=GALLONS  
Height=INCHES  
Temp=FAHRENHEIT

HRM Diagnostic Report

**Selected Range:**

Date Range: APR 19, 2011 12:00 AM - APR 19, 2011 11:59 PM

T 1:REGULAR UNLEADED

DATE/TIME	ENDTEMP	ENDVOL	SALES	STAT	HR	VAR
APR 19, 2011 01:00	70.61	2633.02	118.2	0		-0.037
APR 19, 2011 02:00	70.79	2547.48	204.0	0		-0.099
APR 19, 2011 03:00	70.82	2531.58	220.0	0		0.056
APR 19, 2011 04:00	70.93	2464.84	275.1	0		-11.729
APR 19, 2011 05:00	71.09	2420.87	331.2	0		11.767
APR 19, 2011 06:00	71.25	2347.41	404.2	0		-0.754
APR 19, 2011 07:00	71.38	2298.75	453.0	0		-0.019

<ETX>

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code A64 Notes:** (Continued)

**Typical Response Message, Computer Format:**

```
<SOH>iA64TTYMMDDHHmmTTpRRRRYYMMDDHHmmFFEEEEEEEESSSSSSSSVVVVVVVV...
TTpRRRRYYMMDDHHmmFFEEEEEEEESSSSSSSSVVVVVVVV&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=All Tanks)
3. p - Product Code (ASCII character [20h-7Eh])
4. RRRR - Number of Records to follow (ASCII hex)
5. YYYYMMDDHHmm - Record Date and Time stamp
6. FF - Status Flag (Hex)
  - 00=Data Used
  - 01=Not mapped
  - 02=Time Set Back
  - 03=Gap Too Long
  - 04=Delivery
  - 05=Temp Low
  - 06=Temp High
  - 07=Temp Increase
  - 08=Volume High
  - 09=Volume Low
  - 0A=Volume Change
  - 0B=Not Calibrated
  - 0C=Cal Time Filter
  - 0D=No Sales Data
  - 0E=Temp Decrease
  - 0F=Reset Filter
  - 10=Therm Flag
  - 11=DIM Reset
  - 12=BDIM Transaction
7. EEEEEEEE - Ending Volume (ASCII Hex IEEE float)
8. SSSSSSSS - Sales (ASCII Hex IEEE float)
9. VVVVVVVV - Hourly Variance (ASCII Hex IEEE float)
10. && - Data Termination Flag
11. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** A65

Version 4

**Function Type:** HRM Daily History Report with Date Range

**Command Format:**

**Display:** <SOH>IA65TTyymmddYYMMDDnnn

**Computer:** <SOH>iA65TTyymmddYYMMDDnnn

**Notes:**

1. yymmdd - Starting Date (000000 = no starting date)
2. YYMMDD - Ending Date (000000 = no ending date)
3. nnn - Maximum Records [001...999] (31 = default) (decimal)
4. If no data is entered or zeros are entered for the starting date, ending date and maximum records, the last 31 records will be returned.

**Typical Response Message, Display Format:**

<SOH>  
IA65TT  
MAR 26, 2011 1:48 PM

TLS\_450 UST  
VEEDER-ROOT TEST LAB  
125 POWDER FOREST DR  
SIMSBURY, CT 06070

Volume=GALLONS  
Height=INCHES  
Temp=FAHRENHEIT

DAILY HRM HISTORY

T 1:REGULAR UNLEADED

Selected Range:

Date Range: APR 19, 2011 12:00 AM - APR 19, 2011 11:59 PM

TIME/DATE	RECORDS	MIN	MAX	AVE	STATUS
APR 19, 2011 01:00	24	-0.562	0.000	-0.230	PASS
APR 19, 2011 02:00	21	-0.385	0.650	-0.057	PASS
APR 19, 2011 03:00	24	-0.402	0.092	-0.135	PASS
APR 19, 2011 04:00	24	-0.436	0.150	-0.147	PASS

<ETX>

**Typical Response Message, Computer Format:**

<SOH>iA65TTYMMDDHHmmTTpRRRRYYMMDDHHmmhhaaaaaaabbabbbbbbccccccccSS...  
TTpRRRRYYMMDDHHmmhhaaaaaaabbabbbbbbccccccccSS&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=All Tanks)
3. p - Product Code (ASCII character [20h-7Eh])
4. RRRR - Number of Records to follow (ASCII hex)
5. YYMMDDHHmm - Record Date and Time stamp
6. hh - Number of hours in record (decimal)
7. aaaaaaaa - Minimum Volume (ASCII Hex IEEE float)
8. bbbbbbbb - Maximum Value (ASCII Hex IEEE float)
9. cccccccc - Average Value (ASCII Hex IEEE float)
10. SS - Status  
00=No Data Available  
01=Pass  
02=Warning  
03=Fail
11. && - Data Termination Flag
12. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** A66

Version 4

**Function Type:** Extended HRM Diagnostic Report with Date Range

**Command Format:**

**Display:** <SOH>IA66TTyymmddYYMMDDnnn

**Computer:** <SOH>iA66TTyymmddYYMMDDnnn

**Notes:**

1.           yyymmdd - Starting Date (000000 = no starting date)
2.           YYMMDD - Ending Date (000000 = no ending date)
3.           nnn - Maximum Records [001...999] (240 = default) (decimal)
4.           If no data is entered or zeros are entered for the starting date, ending date and maximum records, the last 240 records will be returned.

**Typical Response Message, Display Format:**

<SOH>  
IA66TT  
APR 20, 2011 1:48 PM

TLS\_450 UST  
VEEDER-ROOT TEST LAB  
125 POWDER FOREST DR  
SIMSBURY, CT 06070

Volume=GALLONS  
Height=INCHES  
Temp=FAHRENHEIT

Extended HRM Diagnostic Report

**Selected Range:**

Date Range: APR 19, 2011 12:00 AM - APR 19, 2011 11:59 PM

**T 1:REGULAR UNLEADED**

DATE/TIME	ENDTEMP	ENDVOL	SALES	STAT	HR VAR
APR 19, 2011 01:00	70.61	2633.02	118.2	0	-0.037
APR 19, 2011 02:00	70.79	2547.48	204.0	0	-0.099
APR 19, 2011 03:00	70.82	2531.58	220.0	0	0.056
APR 19, 2011 04:00	70.93	2464.84	275.1	0	-11.729
APR 19, 2011 05:00	71.09	2420.87	331.2	0	11.767

<ETX>



# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code A66 Notes:** (Continued)

**Typical Response Message, Computer Format:**

```
<SOH>iA66TTYMMDDHHmmTTpRRRRYYMMDDHHmmFFNNEEEEEEEESSSSSSSSVVVVVVVTTTTTTTT...
 TTpRRRRYYMMDDHHmmFFNNEEEEEEEESSSSSSSSVVVVVVV
 TTTTTTTT&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=All Tanks)
3. p - Product Code (ASCII character [20h-7Eh])
4. RRRR - Number of Records to follow (ASCII hex)
5. YYMMDDHHmm - Record Date and Time stamp
6. FF - Status Flag (Hex)
  - 00=Data Used
  - 01=Not mapped
  - 02=Time Set Back
  - 03=Gap Too Long
  - 04=Delivery
  - 05=Temp Low
  - 06=Temp High
  - 07=Temp Increase
  - 08=Volume High
  - 09=Volume Low
  - 0A=Volume Change
  - 0B=Not Calibrated
  - 0C=Cal Time Filter
  - 0D=No Sales Data
  - 0E=Temp Decrease
  - 0F=Reset Filter
  - 10=Therm Flag
  - 11=DIM Reset
  - 12=BDIM Transaction
7. NN - Number of eight character data fields to follow (Hex)
8. EEEEEEEE - Ending Volume (ASCII Hex IEEE float)
9. SSSSSSSS - Sales (ASCII Hex IEEE float)
10. VVVVVVVV - Hourly Variance (ASCII Hex IEEE float)
11. TTTTTTTT - Ending Temperature (ASCII Hex IEEE float)
12. && - Data Termination Flag
13. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: A71**  
**Function Type:** Accuchart Data Sufficiency

Version 2

**Command Format:**  
**Display:** <SOH>IA71TT  
**Computer:** <SOH>iA71TT

**Notes:**

1. TT - Tank Number [01..32], (Decimal, 00=all)

**Typical Response Message, Display Format:**

```
<SOH>
IA71TT
JAN 24, 2009 2:52 PM

ACCUCHART DATA SUFFICIENCY
```

TANK	CURRENT	REQUIRED	DAYS LEFT	SUFFICIENCY IMPROVEMENT ACTION
1	45.0	60.0	10	POSTPONE UNTIL TANK VOLUME LOWERED TO 1234567
2	45.0	60.0	20	START DISPENSING
3	45.0	60.0	30	STOP DISPENSING
16	45.0	60.0	101	SCHEDULE NOW TO FILL TO 1234567

```
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>iA71TTYMMDDHHmmTTssssssssSSSSSSSSddaa...
TTssssssssSSSSSSSSddaa&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number [01..32], (Decimal, 00=all)
3. ssssssss - Current Sufficiency (ASCII Hex IEEE float)
4. SSSSSSSS - Required Sufficiency (ASCII Hex IEEE float))
5. dd - Days Left (Hex)
6. aa - Sufficiency improvement action  
 0=No change  
 1=Schedule delivery now to fill tank  
 2=Postpone delivery until tank volume lowered  
 3=Start dispensing  
 4=Stop dispensing  
 5=Continue dispensing
7. && - Data Termination Flag
8. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** A72  
**Function Type:** Accuchart Data Sufficiency Histogram

Version 2

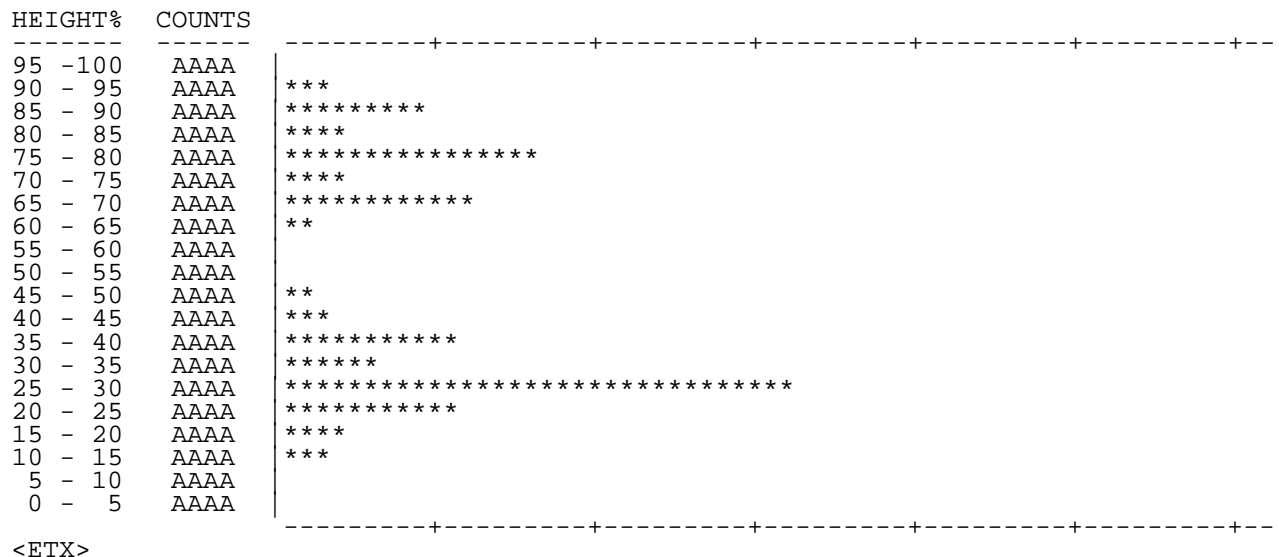
**Command Format:**  
**Display:** <SOH>IA72TT  
**Computer:** <SOH>iA72TT

**Notes:**  
1. TT - Tank Number [01..32], (Decimal, 00=all)

### Typical Response Message, Display Format:

<SOH>  
IA72TT  
JAN 24, 2009 2:52 PM

TANK *nn* ACCUCHART DATA SUFFICIENCY HISTOGRAM



<ETX>

### Typical Response Message, Computer Format:

<SOH>iA72TTYMMDDHHmmTTNNaaaaaaaaabbbbbbbbAAAA...aaaaaaaaabbbbbbbbAAAA  
TTNNaaaaaaaaabbbbbbbbAAAA...aaaaaaaaabbbbbbbbAAAA&&CCCC<ETX>

**Notes:**  
1. YYMMDDHHmm - Current Date and Time  
2. TT - Tank Number [01..32], (Decimal)  
3. NN - Number of histogram bins to follow (Decimal)  
4. aaaaaaaaaa - min height of bin in Percent (ASCII Hex IEEE float)  
5. bbbbbbbb - max height of bin in Percent (ASCII Hex IEEE float)  
6. AAAA - Number of counts in bin (ASCII Hex short)  
7. && - Data Termination Flag  
8. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** A73  
**Function Type:** Force Accuchart Calibration

Version 2

**Command Format:**  
**Display:** <SOH>SA73TT149  
**Computer:** <SOH>sA73TT149

**Inquire:**  
<SOH>IA73TT  
<SOH>iA73TT

### Notes:

1. TT - Tank Number [01..32], (Decimal, 00=all)
2. Set command forces Accuchart to attempt to calibrate

### Typical Response Message, Display Format:

```
<SOH>
IA73TT
JAN 24, 2009 2:52 PM

ACCUCHART CALIBRATION STATUS

TANK STATUS

 1 CALCULATING
 2 SUSPENDED
 3 COLLECTING
 16 STOPPED
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>iA73TTYMMDDHHmmTTs...
 TTs&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number [01..32], (Decimal, 00=all)
3. s - Current Status (Decimal)  
    1=Calculating  
    2=Suspended  
    3=Collecting  
    4=Stopped
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** A74

**Function Type:** Accuchart Calibration Feedback Report

Version 2

**Command Format:**

**Display:** <SOH>IA74TT

**Computer:** <SOH>iA74TT

**Notes:**

1. TT - Tank Number [01..32], (Decimal, 00=all)

**Typical Response Message, Display Format:**

<SOH>

IA74TT

JAN 24, 2009 2:52 PM

ACCUCHART FEEDBACK REPORT

TANK	DATE	STATUS
1	yyyy-mm-dd	INSUFFICIENT DATA COLLECTION RATE
2	yyyy-mm-dd	NOISY DATA
3	yyyy-mm-dd	DATA TOO REGIONALLY CONCENTRATED
	yyyy-mm-dd	INITIAL TANK PARAMETERS SUSPICIOUS
	yyyy-mm-dd	STATION TOO BUSY
10	yyyy-mm-dd	STATION TOO BUSY
	yyyy-mm-dd	DATA TOO REGIONALLY CONCENTRATED
12	yyyy-mm-dd	INSUFFICIENT DATA COLLECTION RATE

<ETX>

**Typical Response Message, Computer Format:**

<SOH>iA74TTYMMDDHHmmTTNNNNyymmddS...yymmddS  
TTNNNNyymmddS...yymmddS&&CCCC<ETX>

**Notes:**

1. YMMDDHHmm - Current Date and Time
2. TT - Tank Number [01..32], (Decimal, 00=all)
3. NNNN - Number of Records to follow (Decimal)
4. yymmdd - Time Stamp
5. S - Status Code (Decimal)  
0=Insufficient Data Collection Rate  
1=Noisy Data  
2=Data Too Regionally Concentrated  
3=Initial Tank Parameters Suspicious  
4=Station Too Busy  
5=Insufficient Data Collected
6. && - Data Termination Flag
7. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** A75

Version 2

**Function Type:** Accuchart Delivery Instructions

**Command Format:**

**Display:** <SOH>IA75TT

**Computer:** <SOH>iA75TT

**Notes:**

1. TT - Tank Number [01..32], (Decimal, 00=all)

**Typical Response Message, Display Format:**

<SOH>

IA75TT

JAN 24, 2009 2:52 PM

ACCUCHART DELIVERY INSTRUCTIONS

TANK	DATE	DELIVERY INSTRUCTIONS
1	yyyy-mm-dd	SCHEDULE NOW TO FILL TANK TO XXXXX (GALLONS/LITERS)
2	yyyy-mm-dd	POSTPONE UNTIL TANK VOLUME LOWERED TO XXXXX (GALLONS/LITERS)
16	yyyy-mm-dd	SCHEDULE NOW TO FILL TANK TO XXXXX (GALLONS/LITERS)

<ETX>

(Note: Only show tanks with actionable delivery instructions)

**Typical Response Message, Computer Format:**

<SOH>iA75TTYMMDDHHmmTTyyymmddsvvvvvvvv...  
TTyyymmddsvvvvvvvv&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number [01..32], (Decimal, 00=all)
3. yyymmdd - Time Stamp
4. s - Status Code (Decimal)  
1=Schedule Delivery Now  
2=Postpone Delivery
5. vvvvvvvv - Final Volume in Gallons/Liters (ASCII Hex IEEE float)
6. && - Data Termination Flag
7. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: A76**

Version 2

**Function Type:** Get Application Log Information

**Command Format:**

**Display:** <SOH>IA76TTYMMDDyyymmdd

**Computer:** <SOH>iA76TTYMMDDyyymmdd

**Notes:**

1. TT - Tank Number [01..32], (Decimal, 00=all)
2. YYMMDD - Start Date (optional)
3. yyymmdd - End date (optional)

**Typical Response Message, Display Format:**

```
<SOH>
IA76TT
JAN 22, 2007 3:24 PM
```

ACCUCHART APPLICATION LOG

DATE/TIME	TANK	MESSAGE
09-01-02 12:34:56	1	NEW CHART CREATED
09-01-03 12:34:56	2	CALIBRATION STARTED
09-01-04 12:34:56	1	CHART ACTIVATED ID=5
09-01-05 12:34:56	11	CALIBRATION STOPPED
09-01-03 12:34:56	12	CALIBRATION SUSPENDED

<ETX>

**Typical Response Message, Computer Format:**

```
<SOH>iA76TTYMMDDHHmmTTSSSSSSSScc...
TTSSSSSSSScc&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number [01..32], (Decimal, 00=all)
3. SSSSSSSS - Time stamp of log entry (ASCII Hex Long)
4. cc - Message Code (Decimal)
  - 01=New Chart Created
  - 02=Chart Activated
  - 03=Calibration Started
  - 04=Calibration Stopped
  - 05=Calibration Suspended
5. && - Data Termination Flag
6. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** A82  
**Function Type:** Adjusted Delivery Diagnostic Report

Version 6

**Command Format:**  
**Display:** <SOH>IA82TT  
**Computer:** <SOH>ia82TT

### Notes:

1. Data is the last 40 adjusted deliveries.

### Typical Response Message, Display Format:

```
<SOH>
IA82TT
JAN 24, 2015 2:56 PM

STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....

ADJUSTED DELIVERY DIAGNOTIC REPORT

T 1:REGULAR UNLEADED
INCREASE DATE / TIME VOLUME TC-VOLUME WATER TEMP HEIGHT

 END: 15/12/24 7:46
 START: 15/12/24 7:39
 IDLE END: 15/12/24 7:48 2216 2211 0.89 72.9 41.89
 IDLE START: 15/12/24 7:24 1416 1414 0.00 71.7 29.88
 SALES: 0
 AMOUNT: 800 795

<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>ia82TTYMMDDHHmmTTpddYYMMDDHHmmYYMMDDHHmmYYMMDDHHmmNNFFFFFFFFF...
 YYMMDDHHmmYYMMDDHHmmYYMMDDHHmmYYMMDDHHmmNNFFFFFFFFF
 &&CCCC
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. p - Product Code (single ASCII character [20h-7Eh])
4. dd - Number of Deliveries to follow (Decimal, 00 if no data for tank)
5. YYMMDDHHmm - Starting Date/Time
6. YYMMDDHHmm - Ending Date/Time
7. YYMMDDHHmm - Idle Start Date/Time
8. YYMMDDHHmm - Idle End Date/Time
9. NN - Number of eight character Data Fields to follow (Hex)
10. FFFFFFFF - ASCII Hex IEEE floats:
  1. Starting Volume
  2. Starting TC Volume
  3. Starting Water
  4. Starting Temp
  5. Ending Volume
  6. Ending TC Volume
  7. Ending Water
  8. Ending Temp
  4. Starting Height
  5. Ending Height
11. && - Data Termination Flag
12. CCCC - Message Checksum



# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: A91  
Function Type: Power Outage Report

Version 1

Command Format:  
Display: <SOH>IA91TT  
Computer: <SOH>ia91TT

### Typical Response Message, Display Format:

```
<SOH>
IA91TT
JAN 24, 1996 2:56 PM
```

```
STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....
```

POWER OUTAGE REPORT

Volume=GALLONS  
Height=INCHES  
Temp=FAHRENHEIT

T 1:REGULAR UNLEADED  
INCREASE DATE / TIME

	FUEL VOLUME	WATER VOLUME	TEMP
--	----------------	-----------------	------

POWER REMOVED:  JAN 16, 1996  7:46:23 AM	3367	0	43.1
POWER RESTORED: JAN 16, 1996  8:00:15 AM	3367	0	43.1
GROSS VOLUME CHANGE:	0		

<ETX>

### Typical Response Message, Computer Format:

```
<SOH>ia91TTYMMDDHHmmTTnnYYMMDDHHmmYYMMDDHHmmNNNNNNNNNN...
 YYMMDDHHmmYYMMDDHHmmNNNNNNNNNN...
 TTnnYYMMDDHHmmYYMMDDHHmmNNNNNNNNNN...
 YYMMDDHHmmYYMMDDHHmmNNNNNNNNNN&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all).
3. nn - Number of History Records to follow (Decimal)
4. YYMMDDHHmm - Power Restored Date/Time
5. YYMMDDHHmm - Power Removed Date/Time
6. NN - Number of eight character Data Fields to follow (Hex)
7. FFFFFFFF - ASCII Hex IEEE floats:
  1. Power Removed Fuel Volume
  2. Power Removed Water Volume
  3. Power Removed Temperature
  4. Power Restored Fuel Volume
  5. Power Restored Water Volume
  6. Power Restored Temperature
  7. Gross Change
8. && - Data Termination Flag
9. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: A9G**

Version 1

**Function Type:** Power Outage Inventory Report Date/Time Based

**Command Format:**

**Display:** <SOH>IA9GTTyymmddYYMMDDnnn

**Computer:** <SOH>iA9GTTyymmddYYMMDDnnn

**Notes:**

1. yymmdd - Starting date (000000 = no starting date)
2. YYMMDD - Ending Date (000000 = no ending date))
3. nnn - Maximum Records [001...999] (10 = default) (decimal)
4. If no data is entered or zeros are entered for the starting date, ending date and maximum records, the last 10 records will be returned.

**Typical Response Message, Display Format:**

```
<SOH>
IA9GTT
JAN 22, 2007 3:24 PM
```

```
STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....
```

```
Volume=GALLONS
Height=INCHES
Temp=FAHRENHEIT
```

POWER OUTAGE REPORT

Selected Range:  
All Records:

Tank 1:UNLEADED INCREASE    DATE / TIME	FUEL VOLUME	WATER VOLUME	TEMP
POWER REMOVED:    AUG 15, 2013 15:53:38	9086	0	74.4
POWER RESTORED: AUG 15, 2013 15:54:55	9026	0	74.4
GROSS VOLUME CHANGE:	-60		

<ETX>

**Typical Response Message, Computer Format:**

```
<SOH>iA9GTTYMMDDHHmmTTnnnnYYMMDDHHmmYYMMDDHHmmNNNNNNNNNN...
YYMMDDHHmmYYMMDDHHmmNNNNNNNNNN...
TTnnnnYYMMDDHHmmYYMMDDHHmmNNNNNNNNNN...
YYMMDDHHmmYYMMDDHHmmNNNNNNNNNN&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. nnnn - Number of History Records to follow (Decimal)
4. YYMMDDHHmm - Power Removed Date/Time
5. YYMMDDHHmm - Power Restore Date/Time
6. NN - Number of eight character Data Fields to follow (Hex)
7. FFFFFFFF - ASCII Hex IEEE floats:
  1. Power Removed Fuel Volume
  2. Power Remove Water Volume
  3. Power Removed Temperature
  4. Power Restored Fuel Volume
  5. Power Restored Water Volume
  6. Power Restored Temperature
  7. Gross Change
8. && - Data Termination Flag
9. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: A9H**

Version 1

**Function Type:** Power Outage Delivery Diagnostic Report Date/Time Based

**Command Format:**

**Display:** <SOH>IA9HTTyymmddYYMMDDnnn

**Computer:** <SOH>iA9HTTyymmddYYMMDDnnn

### Notes:

1. yymmdd - Starting date (000000 = no starting date)
2. YYMMDD - Ending Date (000000 = no ending date)
3. nnn - Maximum Records [001...999] (10 = default) (decimal)
4. If no data is entered or zeros are entered for the starting date, ending date and maximum records, the last 10 records will be returned.

### Typical Response Message, Display Format:

```
<SOH>
IA9HTT
JAN 22, 2007 3:24 PM
```

```
STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....
```

```
Volume=GALLONS
Height=INCHES
Temp=FAHRENHEIT
```

POWER OUTAGE DELIVERY REPORT

Selected Range:  
All Records:

```
TANK 1 PRODUCT 1
INCREASE DATE TIME VOLUME HEIGHT
 END: 28-07-08 15:14 3231 32.21
 START: 28-07-08 15:05 1244 12.22
 AMOUNT: 1987

 END: 25-07-08 14:48 4460 44.60
 START: 25-07-08 14:37 1157 11.57
 AMOUNT: 3303
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>iA9HTTYMMDDHHmmTTpdddddYYMMDDHHmmYYMMDDHHmmNNNNNNNNNN...
 YYMMDDHHmmYYMMDDHHmmNNNNNNNNNN...
 TTpdddddYYMMDDHHmmYYMMDDHHmmNNNNNNNNNN...
 YYMMDDHHmmYYMMDDHHmmNNNNNNNNNN&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. p - Product Code (one ASCII character [20h-7Eh])
4. dddd - Number of Deliveries to follow (Decimal, 0000 if no deliveries available for this tank)
5. YYMMDDHHmm - Starting Date/Time
6. YYMMDDHHmm - Ending Date/Time
7. NN - Number of eight character Data Fields to follow (Hex)
8. FFFFFFFF - ASCII Hex IEEE floats:
  1. Starting Volume
  2. Ending Volume
  3. Starting Height
  4. Ending Height
9. && - Data Termination Flag
10. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** A9J

Version 1

**Function Type:** Power Reset History Report Date/Time Based

**Command Format:**

**Display:** <SOH>IA9J00yyymmddYYMMDDnnn

**Computer:** <SOH>iA9J00yyymmddYYMMDDnnn

**Notes:**

1. yyymmdd - Starting date (000000 = no starting date)
2. YYMMDD - Ending Date (000000 = no ending date)
3. nnn - Maximum Records [001...999] (10 = default) (decimal)
4. If no data is entered or zeros are entered for the starting date, ending date and maximum records, the last 10 records will be returned.

**Typical Response Message, Display Format:**

```
<SOH>
IA9J00
JAN 22, 2007 3:24 PM
```

```
STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....
```

POWER RESET HISTORY REPORT

Selected Range:  
All Records:

POWER DOWN DATE/TIME	POWER UP DATE/TIME
MAY 20, 2011 3:52:22 PM	MAY 20, 2011 4:43:15 PM
MAY 15, 2011 10:33:38 AM	MAY 15, 2011 1:31:18 PM
MAY 12, 2011 7:33:32 PM	MAY 12, 2011 7:36:33 PM
MAY 6, 2011 3:31:22 AM	MAY 6, 2011 3:33:14 AM

<ETX>

**Typical Response Message, Computer Format:**

```
<SOH>iA9J00YYMMDDHHmmnnnYYMMDDHHmmssYYMMDDHHmmss...
YYMMDDHHmmssYYMMDDHHmmss&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. nnn - Number of Power Reset records to follow (Decimal, 000 if no data available)
3. YYMMDDHHmmss - Power Down Date/Time
4. YYMMDDHHmmss - Power Up Date/Time
5. && - Data Termination Flag
6. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

### 7.4.3 SENSOR DIAGNOSTIC REPORTS

**Function Code:** B01

Version 1

**Function Type:** Liquid Sensor Diagnostic Report

**Command Format:**

**Display:** <SOH>IB01SS

**Computer:** <SOH>iB01SS

#### Typical Response Message, Display Format:

<SOH>  
IB01SS

JAN 24, 1996 2:56 PM

SENSOR DIAGNOSTIC - LIQUID SENSOR INFORMATION REPORT

SINGLE SENSOR

SENSOR	CATEGORY	SAMPLE COUNTER	VALUE	STATUS
1	NO_CATEGORY	5	145727	Out Alarm

<ETX>

#### Typical Response Message, Computer Format:

<SOH>iB01SSYYMDDHHmmSSNNFFFFFFFF...  
SSNNFFFFFFFF&&CCCC<ETX>

#### Notes:

1. YYMDDHHmm - Current Date and Time
2. SS - Sensor Number (Decimal, 00=all)
3. NN - Number of eight character Data Fields to follow (Hex)
4. FFFFFFFF - ASCII Hex IEEE floats:
  1. Sample counter
  2. High Reference Channel
  3. Low Reference Channel
  4. Liquid Channel Last Reading
  5. Liquid Channel Average Reading
5. && - Data Termination Flag
6. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: B06

Version 1

Function Type: Vapor Sensor Diagnostic Report

Command Format:

Display: <SOH>IB06SS

Computer: <SOH>iB06SS

### Typical Response Message, Display Format:

<SOH>  
IB06SS

JAN 24, 1996 2:56 PM

SENSOR DIAGNOSTIC - VAPOR SENSOR INFORMATION REPORT

SINGLE SENSOR

SENSOR	SAMPLE COUNTER	VALUE 1	VALUE 2	VAPOR CONCENTRATION	STATUS
1	5	322	175355	322	Out Alarm

<ETX>

### Typical Response Message, Computer Format:

<SOH>iB06SSYYMMDDHHmmSSNNFFFFFFFF...  
SSNNFFFFFFFF&&CCCC<ETX>

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. SS - Sensor Number (Decimal, 00=all)
3. NN - Number of eight character Data Fields to follow (Hex)
4. FFFFFFFF - ASCII Hex IEEE floats:
  1. Sample counter
  2. High Reference Channel
  3. Low Reference Channel
  4. Vapor Channel Last Reading
  5. Vapor Channel Average Reading
  6. Water Channel Last Reading
  7. Water Channel Average Reading
5. && - Data Termination Flag
6. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** B07

Version 1

**Function Type:** Vapor Sensor Concentration (PPM) Report

**Command Format:**

**Display:** <SOH>IB07SS

**Computer:** <SOH>iB07SS

**Typical Response Message, Display Format:**

```
<SOH>
IB07SS
JAN 24, 1996 2:56 PM

VAPOR DIAGNOSTIC REPORT - VAPOR CONCENTRATION

SENSOR PPM
 1 0
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>iB07SSYYMMDDHHmmSSNNFFFFFFFF...
 SSNNFFFFFFFF&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. SS - Sensor number (Decimal, 00=All)
3. NN - Number of eight character Data Fields to follow (Hex)
4. FFFFFFFF - ASCII Hex IEEE float:
  1. Vapor concentration (ppm)
5. && - Data Termination Flag
6. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** B11

Version 1

**Function Type:** Groundwater Sensor Diagnostic Report

**Command Format:**

**Display:** <SOH>IB11SS

**Computer:** <SOH>iB11SS

### Typical Response Message, Display Format:

<SOH>  
IB11SS

JAN 28, 1995 10:16 AM

SENSOR DIAGNOSTIC - GROUNDWATER SENSOR INFORMATION REPORT

SINGLE SENSOR

SENSOR	SAMPLE COUNTER	VALUE 1	VALUE 2	STATUS
1	5	49875	90972	OUT ALARM

<ETX>

### Typical Response Message, Computer Format:

<SOH>iB11SSYYMMDDHHmmSSNNFFFFFFFF...  
SSNNFFFFFFFF&&CCCC<ETX>

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. SS - Sensor Number (Decimal, 00=all)
3. NN - Number of eight character Data Fields to follow (Hex)
4. FFFFFFFF - ASCII Hex IEEE float:
  1. Sample counter
  2. High Reference Channel
  3. Low Reference Channel
  4. Hydrocarbon Channel Last Reading
  5. Hydrocarbon Channel Average Reading
  6. Water Channel Last Reading
  7. Water Channel Average Reading
5. && - Data Termination Flag
6. CCCC - Message Checksum



# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: B21**

Version 1

**Function Type:** Ground Temperature Sensor Diagnostic Report

**Command Format:**

**Display:** <SOH>IB21SS

**Computer:** <SOH>iB21SS

**Typical Response Message, Display Format:**

```
<SOH>
IB21SS
JAN 24, 1996 2:56 PM

GROUNDTEMP DIAGNOSTIC REPORT
```

	SAMPLE	HIGH	LOW	
SENSOR COUNTER		REF	REF	VALUE
1	50	1086	215	28393

<ETX>

**Typical Response Message, Computer Format:**

```
<SOH>iB21SSYYMMDDHHmmSSNNFFFFFFFF...
SSNNFFFFFFFF&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. SS - Sensor Number (Decimal, 00=all)
3. NN - Number of eight character Data Fields to follow (Hex)
4. FFFFFFFF - ASCII Hex IEEE floats:
  1. Sample counter
  2. High Reference Channel
  3. Low Reference Channel
  4. Temperature Channel Last Reading
  5. Temperature Channel Average Reading
5. && - Data Termination Flag
6. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: B33**

Version 1

**Function Type:** MAG Sensor Diagnostic Report

**Command Format:**

**Display:** <SOH>IB33SS

**Computer:** <SOH>iB33SS

### Typical Response Message, Display Format:

```
<SOH>
IB33SS
JAN 22, 2003 3:06 PM

MAG SENSOR DIAGNOSTIC REPORT

Sensor 1: T1 SUMP

TOTAL HT 15.0 IN.
FUEL HT 5.0 IN.
WATER HT 10.0 IN.
INSTALL POS 5.0 IN.
FLUID TEMP 67.3 F
BOARD TEMP 70.3 F
<ETX>
```

### Notes:

1. Only parameters that are enabled to be displayed are shown.

### Typical Response Message, Computer Format:

```
<SOH>iB33SSYYMDDHHmmSSNNFFFFFFFF...
 SSNNFFFFFFFF&&CCCC<ETX>
```

### Notes:

1. YYMDDHHmm - Current Date and Time
2. SS - MAG SENSOR NUMBER (Decimal, 00=all)
3. NN - Number of eight character Data Fields to follow (Hex)
4. FFFFFFFF - ASCII Hex IEEE floats:
  1. Total Height
  2. Fuel Height
  3. Water Height
  4. Install Position
  5. Board Temperature
  6. Fuel Temperature(-99.9 indicates a value is not enabled for display)
5. && - Data Termination Flag
6. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: B3A**  
**Function Type:** MAG Sensor Comm Data

Version 1

**Command Format:**  
**Display:** <SOH>IB3AQQ  
**Computer:** <SOH>iB3AQQ

### Typical Response Message, Display Format:

```
<SOH>
IB3AQQ
MAR 26, 1996 1:47 PM

MAG Sensor Diagnostic Report - Communication
```

Samples Read	Samples Used	Parity Errors	Partial Read	Comm Errors	Restarts
Sensor 1: sensor1label					
100	96	1	2	0	0
Sensor 2: sensor2label					
100	96	1	2	0	0
Sensor 3: sensor3label					
100	96	1	2	0	0

<ETX>

### Notes:

#### Display Format:

1. All Communication Data - (Decimal Format)

### Typical Response Message, Computer Format:

```
<SOH>iB3AQQYYMMDDHHmmQQaaaabbbbccccdddeeeffff...
QQaaaabbbbccccdddeeeffff...&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. QQ - MAG Sensor number (Decimal, 00=All)
3. aaaa - sample read (ASCII Hex IEEE format)
4. bbbb - sample used (ASCII Hex IEEE format)
5. cccc - Parity errors (ASCII Hex IEEE format)
6. dddd - Partial Sensor Response (ASCII Hex IEEE format)
7. eeee - comm errors (ASCII Hex IEEE format)
8. ffff - restarts (ASCII Hex IEEE format)
9. && - Data Termination Flag
10. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:**B3B

Version 1

**Function Type:** MAG Sensor Type and Serial Number

**Command Format:**

**Display:** <SOH>IB3BSS

**Computer:** <SOH>iB3BSS

### Typical Response Message, Display Format:

```
<SOH>
IB3B01
MAY 11, 2007 5:36 PM

MAG SENSOR TYPE AND SERIAL NUMBER

 SENSOR LABEL TYPE SERIAL NUMBER DATE CODE
 1 MAG Sensor 1 Label MAG Sensor 5617 9951

<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>iB3BSSYYMMDDHHmmSSnnMMMMMMMMNNNNNNNNNDDDDDDDDPPPPPPPP...
 SSnnMMMMMMMMNNNNNNNNNDDDDDDDDPPPPPPPP&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. SS - MAG Sensor Number (Decimal, 00=all)
3. nn - Number of 8-byte values to follow.
4. MMMMMMMM - MAG Sensor Model (Hex)
5. NNNNNNNN - MAG Sensor Serial Number (Hex)
6. DDDDDDDD - MAG Sensor Date Code (Hex)
7. PPPPPPPP - MAG Sensor firmware version (Hex)
8. && - Data Termination Flag
9. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** B3C  
**Function Type:** MAG Sensor Constant Data

Version 1

**Command Format:**  
**Display:** <SOH>IB3CSS  
**Computer:** <SOH>IB3CSS

### Typical Response Message, Display Format:

```
<SOH>
IB3CSS
JUN 1, 2000 8:15 AM

MAG SENSOR DIAGNOSTIC REPORT - CONSTANTS

Sensor 1: SUMP UNLEADED

MAG SENSOR
SERIAL NUMBER 123456
MODEL 101
LENGTH 24.0
GRADIENT 360.000
MIN THRESHOLD 0.0
MAX THRESHOLD 24.0
NUM FLOATS 2
TEMPERATURE YES
INSTALL POS YES
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>IB3CYYMMDDHHmmSSNNVVVVVVVVVVVVVVVVVVVV...
VVVVVVVVVVVVVVVVVVVV&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. SS - MAG Sensor Number (Decimal, 00=all)
3. NN - Number of eight character data fields to follow  
NN=08 for MAG Sensors
4. VVVVVVVV - Model Number (Hex)
5. vvvvvvvv - Sensor Length (ASCII Hex IEEE float)
6. VVVVVVVV - Gradient (ASCII Hex IEEE float)
7. vvvvvvvv - Min Threshold (ASCII Hex IEEE float)
8. VVVVVVVV - Max Threshold (ASCII Hex IEEE float)
9. vvvvvvvv - Number of Floats (1 or 2) (Hex)
10. VVVVVVVV - Temperature enabled (0 or 1) (Hex)
11. vvvvvvvv - Install Position enabled (0 or 1) (Hex)
12. && - Data Termination Flag
13. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** B3D

**Function Type:** MAG Sensor Last Sample Diagnostic (Hex Format)

Version 1

**Command Format:**

**Display:** <SOH>IB3DSS

**Computer:** <SOH>IB3DSS

### Typical Response Message, Display Format:

<SOH>

IB3DSS

JAN 22, 2003 3:25 PM

MAG Sensor Diagnostic Report - Channel Data

Sensor 1:

Serial Number: 3534

Time: DEC 30, 2007 4:40 PM

	0	1	2	3	4	5	6	7	8	9
00	B610	067F	0856	108C	18E3	0857	0DCE	0000	0008	8851
10	0001	50DC	B40A	4B53	4AB3	B40F	00A1	80C4	0081	80C4
20	83A4	83B2	0000	0030	735F	4187	63E3	0258	01F4	02BC
30	0228	18B1	03E8	00AA	07FC	00DD	04B0	0004	0924	3FCC
40	CCCD	0D45	3FD9	999A	0946	4040	0000	016D	4080	0000
50	52EF									

<ETX>

### Notes:

1: Values are in ASCII Hex IEEE float format.

### Typical Response Message, Computer Format:

<SOH>iB3DSSYYMMDDHHmmSSnnVVVV...VVVV&&CCCC<ETX>

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. SS - MAG Sensor Number (Decimal, 00=all)
3. nn - Number of channels to follow (Hex)
4. VVVV - Channel Value (Hex)
5. && - Data Termination Flag
6. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** B3E

Version 1

**Function Type:** MAG Sensor Last Sample Diagnostic (Decimal Format)

**Command Format:**

**Display:** <SOH>IB3ESS

**Computer:** <SOH>IB3ESS

**Typical Response Message, Display Format:**

<SOH>  
IB3ESS  
JAN 22, 2003 3:25 PM

MAG Sensor Diagnostic Report - Channel Data

Sensor 1:

Serial Number: 3534

Time: DEC 30, 2007 4:40 PM

	0	1	2	3	4	5	6	7	8	9
00	46608	1662	2134	4237	6370	2134	3534	0	8	34897
10	1	20700	46090	19283	19123	46095	161	32964	129	32964
20	33700	33714	0	48	29535	16775	25571	600	500	700
30	552	6321	1000	170	2044	221	1200	4	2340	16332
40	52429	3397	16345	39322	2374	16448	0	365	16512	0
50	21231									

<ETX>

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** B41

**Function Type:** Type A Sensor (2 Wire CL) Diagnostic Report

Version 1

**Command Format:**

**Display:** <SOH>IB41SS

**Computer:** <SOH>iB41SS

### Typical Response Message, Display Format:

<SOH>  
IB41SS

MAR 26, 1996 1:45 PM

SENSOR DIAGNOSTIC - 2-WIRE CL SENSOR INFORMATION REPORT

SINGLE SENSOR

SENSOR	CATEGORY	COUNTER	SAMPLE VALUE	STATUS
1	NO_CATEGORY	5	4193	Out Alarm
<ETX>				

### Typical Response Message, Computer Format:

<SOH>iB41SSYYMMDDHHmmSSNNFFFFFFFF...  
SSNNFFFFFFFF&&CCCC<ETX>

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. SS - Sensor Number (Decimal, 00=all)
3. NN - Number of eight character Data Fields to follow (Hex)
4. FFFFFFFF - ASCII Hex IEEE floats:
  1. Sample Counter Value
  2. High Reference Value
  3. Low Reference Value
  4. Last Reading
  5. Current Average Value
5. && - Data Termination Flag
6. CCCC - Message Checksum



# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: B46**

Version 1

**Function Type:** Type B Sensor (3 Wire CL) Diagnostic Report

**Command Format:**

**Display:** <SOH>IB46SS

**Computer:** <SOH>iB46SS

### Typical Response Message, Display Format:

<SOH>  
IB46SS

JAN 28, 1995 10:16 AM

SENSOR DIAGNOSTIC - 3-WIRE CL SENSOR INFORMATION REPORT

SINGLE SENSOR

#### SAMPLE

SENSOR	CATEGORY	COUNTER	VALUE 1	VALUE 2	STATUS
1	PAN/SUMP:STANDARD	5	5200	100000	Normal

<ETX>

### Typical Response Message, Computer Format:

<SOH>iB46SSYYMMDDHHmmSSNNFFFFFFFF...  
SSNNFFFFFFFF&&CCCC<ETX>

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. SS - Sensor Number (Decimal, 00=all)
3. NN - Number of eight character Data Fields to follow (Hex)
4. FFFFFFFF - ASCII Hex IEEE floats:
  1. Sample Counter Value
  2. High Reference Value 1
  3. Low Reference Value 1
  4. Last Reading 1
  5. Current Average Value 1
  6. High Reference Value 2
  7. Low Reference Value 2
  8. Last Reading 2
  9. Current Average Value 2
5. && - Data Termination Flag
6. CCCC - Message Checksum

**Serial Interface Manual**  
**TLS4/TLS-450/TLS-450Plus Monitoring Systems**

**7.4.4 LINE LEAK DIAGNOSTIC REPORTS**

**Function Code: B61 (obsolete V3E use B6G)**

Version 1

**Function Type: LPR Sensor General Report**

**Command Format:**

**Display:** <SOH>IB61QQ

**Computer:** <SOH>iB61QQ

**Typical Response Message, Display Format:**

<SOH>  
IB61QQ  
MAR 26, 1996 1:47 PM

LPR Sensor Diagnostic Report - General

Type	Status	Serial Number	Date	Pressure
Sensor 1: Line P Sensor 1				
063-LINE P SENSOR	Normal	0000900014	00/02	10.062
<ETX>				

**Typical Response Message, Computer Format:**

<SOH>iB61QQYYMDDHHmmQQaaabccccccccddddeeeeeeee...  
QQaaabccccccccddddeeeeeeee&&CCCC<ETX>

**Notes:**

1. YYMDDHHmm - Current Date and Time
2. QQ - LPR Sensor number (Decimal, 00=All)
3. aaa - LPR Sensor type (Decimal)
4. b - LPR Sensor status  
0=Inactive  
1=Normal
5. cccccccc - LPR Sensor serial number (ASCII Hex IEEE Long)
6. dddd - LPR Sensor Date Code (ASCII Hex IEEE Short)
7. eeeeeeee - LPR Sensor pressure (ASCII Hex IEEE Float)
8. && - Data Termination Flag

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: B62 (obsolete V3E use B6H)**

Version 1

**Function Type:** LPR Sensor Constants Report

**Command Format:**

**Display:** <SOH>IB62QQ

**Computer:** <SOH>iB62QQ

**Typical Response Message, Display Format:**

<SOH>

IB62QQ

MAR 26, 1996 1:47 PM

LPR Sensor Diagnostic Report - Constants

Serial Number	Model	Firmware Version	Slope	Offset	Date Code
Sensor 1: Line P Sensor 1					
0000900015	1	1	500	10000	1103

<ETX>

**Typical Response Message, Computer Format:**

<SOH>iB62QQYYMMDDHHmmQQaaaaaaaaabbbbccccdddddffff...  
QQaaaaaaaaabbbbccccdddddffff&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. QQ - LPR Sensor number (Decimal, 00=All)
3. aaaaaaaaa - Serial Number (ASCII Hex IEEE format)
4. bbbb - Model Number (ASCII Hex IEEE format)
5. cccc - Firmware version (ASCII Hex IEEE format)
6. dddd - Offset (ASCII Hex IEEE format)
7. eeee - Slope (ASCII Hex IEEE format)
8. ffff - Date Code (ASCII Hex IEEE format)
9. && - Data Termination Flag
10. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: B63**  
**Function Type:** LPR Sensor Comm Data

Version 1

**Command Format:**  
**Display:** <SOH>IB63QQ  
**Computer:** <SOH>iB63QQ

### Typical Response Message, Display Format:

```
<SOH>
IB63QQ
MAR 26, 1996 1:47 PM

LPR Sensor Diagnostic Report - Communication
```

	Samples Read	Samples Used	Parity Errors	Partial Read	Comm Errors	Restart
Sensor 1: sensor1label	47	46	0	0	0	0
Sensor 2: sensor2label	47	46	0	0	0	0

<ETX>

### Typical Response Message, Computer Format:

```
<SOH>iB63QQYYMDDHHmmQQaaaabbbbccccddddeeeeffff...
QQaaaabbbbccccddddeeeeffff&&CCCC<ETX>
```

### Notes:

1. YYMDDHHmm - Current Date and Time
2. QQ - LPR Sensor number (Decimal, 00=All)
3. aaaa - Samples Read (ASCII Hex IEEE format)
4. bbbb - Samples Used (ASCII Hex IEEE format)
5. cccc - Parity Errors (ASCII Hex IEEE format)
6. dddd - Partial Read (ASCII Hex IEEE format)
7. eeee - Comm Errors (ASCII Hex IEEE format)
8. ffff - Restarts (ASCII Hex IEEE format)
9. && - Data Termination Flag
10. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: B64**  
**Function Type:** LPR Sensor Channel Data

Version 1

**Command Format:**  
**Display:** <SOH>IB64QQ  
**Computer:** <SOH>iB64QQ

### Typical Response Message, Display Format:

```
<SOH>
IB64QQ
MAR 26, 1996 1:47 PM
```

LPR Sensor Diagnostic Report - Channel Data

```
Sensor 1: Line P Sensor 1
Serial Number: 000114
Time: Jun 24, 2008 12:20 PM
```

	0	1	2	3	4	5	6	7	8	9
00	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX
10	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX
20	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX

XX XXXX  
<ETX>

### Typical Response Message, Computer Format:

```
<SOH>iB64QQYYMMDDHHmmQQnnVVVV...VVVV&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. QQ - LPR Sensor number (Decimal, 00=All)
3. nn - Number of channels to follow (Hex)
4. VVVV - Channel Value (Hex)
5. && - Data Termination Flag
6. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: B65**

Version 1

**Function Type:** LPR Sensor Channel Data (Decimal Format)

**Command Format:**

**Display:** <SOH>IB65QQ

**Computer:** <SOH>iB65QQ

**Typical Response Message, Display Format:**

```
<SOH>
IB64QQ
MAR 26, 1996 1:47 PM

LPR Sensor Diagnostic Report - Channel Data

Sensor 1: Line P Sensor 1
Serial Number: 000114
Time: Jun 24, 2008 12:20 PM

 0 1 2 3 4 5 6 7 8 9
00 XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
10 XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
20 XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
30 XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX XXXXX
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>iB65QQYYMMDDHHmmQQnnVVVV...VVVV&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. QQ - LPR Sensor number (Decimal, 00=All)
3. nn - Number of channels to follow (Hex)
4. VVVV - Channel Value (Hex)
5. && - Data Termination Flag
6. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** B6G  
**Function Type:** LPR Sensor General Report

Version 3

**Command Format:**  
**Display:** <SOH>IB6GQQ  
**Computer:** <SOH>iB6GQQ

### Typical Response Message, Display Format:

<SOH>  
IB6GQQ  
MAR 26, 1996 1:47 PM

LPR Sensor Diagnostic Report - General

Type	Status	Serial Number	Date	Pressure
Sensor 1: Line P Sensor 1 063-LINE P SENSOR	Normal	0000900014	00/02	10.062

<ETX>

### Typical Response Message, Computer Format:

<SOH>iB6GQQYYMDDHHmmQQaaabccccccccddddeeeeeeee...  
QQaaabccccccccddddeeeeeeee&&CCCC<ETX>

### Notes:

1. YYMDDHHmm - Current Date and Time
2. QQ - LPR Sensor number (Decimal, 00=All)
3. aaa - LPR Sensor type (Decimal)
4. b - LPR Sensor status  
0=Inactive  
1=Normal
5. cccccccc - LPR Sensor serial number (ASCII Hex IEEE Long)
6. dddd - LPR Sensor Date Code (ASCII Hex IEEE Short)
7. eeeeeeee - LPR Sensor pressure (ASCII Hex IEEE Float)
8. && - Data Termination Flag

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** B6H  
**Function Type:** LPR Sensor Constants Report

Version 3

**Command Format:**  
**Display:** <SOH>IB6HQQ  
**Computer:** <SOH>iB6HQQ

### Typical Response Message, Display Format:

```
<SOH>
IB6HQQ
MAR 26, 1996 1:47 PM

LPR Sensor Diagnostic Report - Constants

 Serial Model Firmware Slope Offset Date
 Number Version
Sensor 1: Line P Sensor 1
0000900015 1 1 500 10000 1103

<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>iB6HQQYYMMDDHHmmQQaaaaaaaaabbbbccccdddddffff...
 QQaaaaaaaaabbbbccccdddddffff&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. QQ - LPR Sensor number (Decimal, 00=All)
3. aaaaaaaaa - Serial Number (ASCII Hex IEEE format)
4. bbbb - Model Number (ASCII Hex IEEE format)
5. cccc - Firmware version (ASCII Hex IEEE format)
6. dddd - Offset (ASCII Hex IEEE format)
7. eeee - Slope (ASCII Hex IEEE format)
8. ffff - Date Code (ASCII Hex IEEE format)
9. && - Data Termination Flag
10. CCCC - Message Checksum



# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: B72**

Version 5

**Function Type:** Pump Relay Monitor Diagnostic

**Command Format:**

**Display:** <SOH>IB72QQ

**Computer:** <SOH>iB72QQ

**Typical Response Message, Display Format:**

```
<SOH>
IB72QQ
JUN 22, 2014 3:12 PM

PUMP RELAY MONITOR DIAGNOSTIC

DEVICE LABEL PUMP PUMP RELAY STUCK RUN
 (OUT) (IN) RELAY TIME
 1 PUMP RELAY UNLEADED OFF Q 1: OFF 0 SEC 00:00
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>iB72QQYYMMDDHHmmQQabNNccccccccddddddddd...
 QQabNNccccccccddddddddd&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pump Number (Decimal, 00=all)
3. a - Pump Status (ASCII Hex)
  - 0=Off
  - 1=On
4. b - Relay Status (ASCII Hex)
  - 0=Off (or N/A - no Pump Relay assigned)
  - 1=On
5. NN - Number of 8-character data fields to follow (ASCII Hex)
6. cccccccc - Stuck Relay, Seconds (ASCII Hex IEEE float)
  - 0 if N/A B no Pump Relay assigned
7. dddddddd B Run Time, Hours (ASCII Hex IEEE float)
8. && - Data Termination Flag
9. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** B7B

Version 1

**Function Type:** Pressure Line Leak Profile Line Test

**Command Format:**

**Display:** <SOH>IB7BQQ

**Computer:** <SOH>iB7BQQ

**Typical Response Message, Display Format:**

```
<SOH>
IB7BQQ
JUL 15, 2001 1:27 PM

PRESSURE LINE LEAK PROFILE LINE TEST

Q 1:REGULAR UNLEADED
LAST PROFILE LINE TEST: NOV 15, 2001 10:15 AM
BULK MODULUS: 12000 PSI
TEST LEAK RATE: 1.50 GPH
REF PRESSURE: 30.00 PSI

TYP:USER DEFINED
1ST LINE LEN :100 FEET
2ND LINE LEN :200 FEET
1ST LINE DIAM: 1.50 IN.
2ND LINE DIAM: 2.50 IN.
<ETX>
```

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code B7B Notes: (Continued)

Typical Response Message, Computer Format:

```
<SOH>iB7BQQYYMMDDHHmmQQaYYMMDDHHmmttNNFFFFFFFF...FFFFFFFF...
 QQaYYMMDDHHmmttNNFFFFFFFF...FFFFFFFF&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak sensor number (Decimal, 00=All)
3. a - Valid profile line test flag
  - 0=profile line test invalid
  - 1=profile line test valid
4. YYMMDDHHmm - Date and Time of Last Profile Line Test
5. tt - Pipe Type:
  - 01=2/3 inch Fiberglass
  - 02=2 inch Steel
  - 03=White Enviroflex PP1501 (Obsolete)
  - 04=1.5 inch Environ Geoflex II (Added in V11)
  - 05=Omniflex CP1501 (Added in V15)
  - 06=Yellow Enviroflex PP1500 (Obsolete)
  - 07=1.5"/2.5" Enviroflex PP1502/2502 (Obsolete)
  - 08=OPW Pisces SP-15 (Added in V18)
  - 09=OPW Pisces CP-15 (Added in V18)
  - 10=WFG Coflex 2000 Ribbed (Added in V19)
  - 11=Enviroflex PP1503/2503 (Added in V19)
  - 12=Omniflex CP1503 (Added in V19)
  - 13=1.5/2.0 inch Environ Geoflex D (Added in V19)
  - 14=APT P175SC (Added in V121)
  - 15=OPW Pisces CP15DW (Added in V19)
  - 16=OPW Pisces CP20 (Added in V19)
  - 17=OPW PISCES SP20 (Added in V26)
  - 18=User Defined (Added in V22)
  - 19=PETROTECHNIK UPP EXTRA 63MM (Added in V26)
6. NN - Number of eight character Data Fields to follow (Hex)
7. FFFFFFFF - ASCII Hex IEEE float:
  1. Bulk Modulus
  2. Test Leak Rate (GPH)
  3. Test Reference Pressure (PSI)
  4. 1<sup>st</sup> Line Length (FEET)
  5. 1<sup>st</sup> Line Diameter (INCHES)
  6. 2<sup>nd</sup> Line Length (FEET)
  7. 2<sup>nd</sup> Line Diameter (INCHES)
8. && - Data Termination Flag
9. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** B7C

Version 1

**Function Type:** Pressure Line Leak Pressure Offset Test

**Command Format:**

**Display:** <SOH>IB7CQQ

**Computer:** <SOH>iB7CQQ

**Typical Response Message, Display Format:**

```
<SOH>
IB7CQQ
JAN 1, 2000 6:27 PM

PRESSURE LINE LEAK PRESSURE OFFSET TEST

Q 1:REGULAR UNLEADED
LAST PRESSURE OFFSET TEST: +2.5 PSI DEC 1, 1999 5:20 PM
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>iB7CQQYYMMDDHHmmQQaFFFFFFFFYYMMDDHHmm...
 QQaFFFFFFFFYYMMDDHHmm&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak sensor number (Decimal, 00=All)
3. a - Valid pressure flag  
0=pressure invalid  
1=pressure valid
4. FFFFFFFF - Last Pressure Offset Test Pressure in PSI (ASCII Hex IEEE float)
5. YYMMDDHHmm - Date and Time of last Pressure Offset Test
6. && - Data Termination Flag
7. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: B7E**

Version 1

**Function Type:** Pressure Line Leak Pressure Offset Monitor Report

**Command Format:**

**Display:** <SOH>IB7EQQ

**Computer:** <SOH>iB7EQQ

### Typical Response Message, Display Format:

```
<SOH>
IB7EQQ
JAN 1, 2000 2:56 PM

PRESSURE LINE LEAK PRESSURE OFFSET MONITORS REPORT

Q 1:REGULAR UNLEADED
P0: PASS
 LAST UPDATE: 21 DAYS
Pd: FAIL
 LAST UPDATE: 44 DAYS
 Pd= 40.1 PSI
 Pd Ref=32.3 PSI
Pv: PASS
 Pv =28.1 PSI
 Pon=44.1 PSI
 Pd =40.1 PSI
Pf: PASS
 MIN = 22.5 PSI
 MAX = 37.9 PSI
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>IB7EQQYYMMDDHHmmQQAABBBBCCDDDDDEEEEEEEEEEEEEEEEEEEF
 GGGGGGGGGGGHHHHHHHHHHIIIIIIIIJJJJJJJJ...
 QQAABBBBCCDDDDDEEEEEEEEEEEEEEEEEEEF
 GGGGGGGGGGGHHHHHHHHHHIIIIIIIIJJJJJJJJJ&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak sensor number (Decimal, 00=All)
3. AA - P0 pass/fail status  
00=fail  
01=pass
4. BBBB - P0 last update in days
5. CC - Pd pass/fail status  
00=fail  
01=pass
6. DDDD - Pd last update in days
7. EEEEEEEE - Pd in PSI (ASCII Hex IEEE float)
8. FFFFFFFF - Pd Ref in PSI (ASCII Hex IEEE float)
9. GG - Pd pass/fail status  
00=fail  
01=pass
10. HHHHHHHH - Pv in PSI (ASCII Hex IEEE float)
11. IIIIIIII - Pon in PSI (ASCII Hex IEEE float)
12. JJJJJJJJ - Pd in PSI (ASCII Hex IEEE float)
13. && - Data Termination Flag
14. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: B81**

Version 1

**Function Type:** Pressure Line Leak Diagnostic Report

**Command Format:**

**Display:** <SOH>IB81QQ

**Computer:** <SOH>iB81QQ

**Typical Response Message, Display Format:**

```
<SOH>
IB81QQ
JAN 24, 1996 2:56 PM

PRESSURE LINE LEAK DIAGNOSTIC REPORT

LINE DISPENSING TEST STATUS PUMP HANDLE
Ln 1:REGULAR UNLEADED ENABLED TESTING 0.10 GAL/HR OFF OFF
14.397 PSI
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>iB81QQYYMMDDHHmmQQSSSttNNFFFFFFFFF...
 QQSSSttNNFFFFFFFFF&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak sensor number (Decimal, 00=All)
3. SSSS - Status Bits:
  - Bit 1 - (LSB) Dispensing enabled flag  
(0=Disabled, 1=Enabled)
  - Bit 2 - Pump power  
(0=Pump Off, 1=Pump On)
  - Bit 3 - Dispenser Handle  
(0=Handle Off, 1=Handle On)
  - Bit 4-16 - Unused
4. tt - Test status
  - 00=test complete
  - 01=dispensing
  - 02=testing at 3.00 gal/hr
  - 03=testing at 0.10 gal/hr
  - 04=test aborted
  - 05=running pump (manual test starting)
  - 06=line lockout
  - 07=disable alarm
  - 08=test pending
  - 09=test delay
  - 0A=pressure check
  - 0B=testing at 0.20 gal/hr
5. NN - Number of eight character Data Fields to follow (Hex)  
(always returns 01)
6. FFFFFFFF - ASCII Hex IEEE floats:
  - 1. Pressure sensor reading
  - 2. A/D low reference counts (obsolete)
  - 3. A/D high reference counts (obsolete)
  - 4. A/D sensor counts (obsolete)
7. && - Data Termination Flag
8. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: B87**

Version 1

**Function Type:** Pressure Line Leak 3.00 GPH Test Diagnostic

**Command Format:**

**Display:** <SOH>IB87QQ

**Computer:** <SOH>iB87QQ

**Typical Response Message, Display Format:**

```
<SOH>
IB87QQ
OCT 15, 1996 4:29 PM

PRESSURE LINE LEAK DIAGNOSTIC REPORT

Ln 1:PLLD NUMBER 1

 3.0 TEST PASSES
DATE/TIME PUMP ON FIRST READ SECOND READ
JAN 1, 1970 12:00 AM 0.0 PSI 0.0 PSI 0.0 PSI

 3.0 TEST FAILS
DATE/TIME PUMP ON FIRST READ SECOND READ
JAN 1, 1970 12:00 AM 0.0 PSI 0.0 PSI 0.0 PSI

 3.0 HI PRESSURE EVENTS
DATE/TIME PUMP ON FIRST READ SECOND READ
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>IB87QQYYMMDDHHmmQQRRLLYYMMDDHHmmaaaaaaabbabbbbbbcccccccc...
 RRLLYMMDDHHmmaaaaaaabbabbbbbbcccccccc...
 RRLLYMMDDHHmmaaaaaaabbabbbbbbcccccccc...
 QQRRLLYYMMDDHHmmaaaaaaabbabbbbbbcccccccc...
 RRLLYMMDDHHmmaaaaaaabbabbbbbbcccccccc...
 RRLLYMMDDHHmmaaaaaaabbabbbbbbcccccccc&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak sensor number (Decimal, 00=All)
3. RR - Test result type
  - 00=Pass
  - 01=Fail
  - 02=Hi-pressure events
4. LL - Total Events to follow (Max=5 each)
5. YYMMDDHHmm - Date/Time Test Passed
6. aaaaaaaa - Pump on pressure read (ASCII Hex IEEE float)
7. bbbbbb - First pressure read (ASCII Hex IEEE float)
8. cccccccc - Second pressure read (ASCII Hex IEEE float)
9. && - Data Termination Flag
10. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** B88

Version 1

**Function Type:** Pressure Line Leak Mid-range Test Diagnostic

**Command Format:**

**Display:** <SOH>IB88QQ

**Computer:** <SOH>iB88QQ

### Typical Response Message, Display Format:

```
<SOH>
IB88QQ
JAN 1, 1996 8:24 AM

PRESSURE LINE LEAK DIAGNOSTIC REPORT

Q 1:PLLD NUMBER 1

MID TEST PASSES
DATE/TIME PUMP ON FIRST READ SECOND READ
JAN 1, 1970 12:00 AM 0.0 PSI 0.0 PSI 0.0 PSI

MID TEST FAILS
DATE/TIME PUMP ON FIRST READ SECOND READ
JAN 1, 1970 12:00 AM 0.0 PSI 0.0 PSI 0.0 PSI
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>IB88QQYYMMDDHHmmQQRRLLYYMMDDHHmmaaaaaaaabbbbbbbcccccccc...
RRLLYYMMDDHHmmaaaaaaaabbbbbbbcccccccc...
QQRRLLYYMMDDHHmmaaaaaaaabbbbbbbcccccccc...
RRLLYYMMDDHHmmaaaaaaaabbbbbbbcccccccc&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak sensor number (Decimal, 00=All)
3. RR - Test result type  
00=Pass  
01=Fail
4. LL - Total Events to follow (Max=5 each)
5. YYMMDDHHmm - Date/Time Test Passed
6. aaaaaaaa - Pump on pressure read (ASCII Hex IEEE float)
7. bbbbbbbb - First pressure read (ASCII Hex IEEE float)
8. cccccccc - Second pressure read (ASCII Hex IEEE float)
9. && - Data Termination Flag
10. CCCC - Message Checksum



# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: B89**

Version 1

**Function Type:** Pressure Line Leak 0.20 GPH Test Diagnostic

**Command Format:**

**Display:** <SOH>IB89QQ

**Computer:** <SOH>iB89QQ

**Notes:**

- For User Defined Pipe Types PUMP ON will be PMID

**Typical Response Message, Display Format:**

```
<SOH>
IB89QQ
JAN 1, 1996 8:26 AM

PRESSURE LINE LEAK DIAGNOSTIC REPORT

Q 1:PLLD NUMBER 1
0.20 TEST RESULTS
DATE/TIME PUMP ON RATIO DURATION RESULTS
APR 9, 2008 9:57 AM 37.6 PSI 0.71 5 PASSED
APR 9, 2008 9:22 AM 40.0 PSI 0.00 5 FAILED
APR 9, 2008 9:02 AM 39.0 PSI 0.29 5 PASSED
APR 9, 2008 8:36 AM 38.5 PSI 0.43 5 PASSED
APR 9, 2008 8:17 AM 39.0 PSI 0.28 5 PASSED
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>iB89QQYYMMDDHHmmQQLLYMMDDHHmmRRaaaaaaaaabbbbbbbcccccccc...
YYMMDDHHmmRRaaaaaaaaabbbbbbbcccccccc...
QQLLYMMDDHHmmRRaaaaaaaaabbbbbbbcccccccc...
YYMMDDHHmmRRaaaaaaaaabbbbbbbcccccccc&&CCCC<ETX>
```

**Notes:**

- YYMMDDHHmm - Current Date and Time
- QQ - Pressure Line Leak sensor number (Decimal, 00=All)
- LL - Total Tests to follow (Max=10)
- YYMMDDHHmm - Date/Time Test
- RR - Test Result
  - 00=Invalid
  - 01=Pass
  - 02=Fail
  - 03=Error
- aaaaaaaa - Pump on pressure read, PSI (ASCII Hex IEEE float)
- bbbbbbbb - Fail ratio (ASCII Hex IEEE float)
- cccccccc - Duration (in minutes) (ASCII Hex IEEE float)
- && - Data Termination Flag
- CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: B8A**

Version 1

**Function Type:** Pressure Line Leak 0.10 GPH Test Diagnostic

**Command Format:**

**Display:** <SOH>IB8AQQ

**Computer:** <SOH>iB8AQQ

**Notes:**

- For User Defined Pipe Types PUMP ON will be PMID(Version 23)

**Typical Response Message, Display Format:**

```
<SOH>
IB8AQQ
JAN 1, 1996 8:30 AM

PRESSURE LINE LEAK DIAGNOSTIC REPORT

Q 1:PLLD NUMBER 1
0.10 TEST RESULTS
DATE/TIME PUMP ON RATIO DURATION RESULTS
APR 9, 2008 10:05 AM 39.0 PSI 0.72 3 PASSED
APR 9, 2008 9:21 AM 39.0 PSI 0.72 3 PASSED
APR 9, 2008 6:29 AM 39.0 PSI 0.72 3 PASSED
APR 9, 2008 5:44 AM 39.2 PSI 0.72 3 PASSED
APR 9, 2008 2:51 AM 39.0 PSI 0.72 3 PASSED

APR 9, 2008 9:41 AM 38.5 PSI 1.10 5 FAILED
APR 9, 2008 6:05 AM 38.5 PSI 1.10 5 FAILED
APR 9, 2008 2:28 AM 38.5 PSI 1.09 5 FAILED
APR 8, 2008 10:50 PM 38.5 PSI 1.10 5 FAILED
APR 8, 2008 7:15 PM 38.5 PSI 1.10 5 FAILED
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>iB8AQQYYMMDDHHmmQQLLYYMMDDHHmmRRaaaaaaaaabbbbbbbcccccccc...
QQLLYYMMDDHHmmRRaaaaaaaaabbbbbbbcccccccc&&CCCC<ETX>
```

**Notes:**

- YYMMDDHHmm - Current Date and Time
- QQ - Pressure Line Leak sensor number (Decimal, 00=All)
- LL - Total Tests to follow (Max=20; Max 10 Passed & 10 Failed)
- YYMMDDHHmm - Date/Time Test
- RR - Test Result  
00=Pass  
01=Fail
- aaaaaaaa - Pump on pressure read, PSI (ASCII Hex IEEE float)
- bbbbbbbb - Fail ratio (ASCII Hex IEEE float)
- cccccccc - Duration (in min) (ASCII Hex IEEE float)
- && - Data Termination Flag
- CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: B8F**

Version 1

**Function Type:** No-Vent (No\_Spike) Test Reports

**Command Format:**

**Display:** <SOH>IB8FQQ

**Computer:** <SOH>iB8FQQ

**Typical Response Message, Display Format:**

```
<SOH>
IB8FQQ
JAN 24, 1996 2:52 PM
```

PRESSURE LINE NO-VENT TEST REPORT

LINE	TEST ABORTS	TOTAL TESTS
Q 1:REGULAR UNLEADED	4	10

```
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>iB8FQQYYMMDDHHmmQQLLRR...
 QQLLRR&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak sensor number (Decimal, 00=All)
3. LL - No Spike Tests aborts
4. RR - Total Tests
5. && - Data Termination Flag
6. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** B8I  
**Function Type:** PLLD Last Test Result

Version 1

**Command Format:**  
**Display:** <SOH>IB8IQQ  
**Computer:** <SOH>iB8IQQ

### Typical Response Message, Display Format:

```
<SOH>
IB8IQQ
JAN 1, 2007 8:26 AM

PRESSURE LINE LEAK DIAGNOSTIC LAST TEST RESULT

Q 1:PLLD NUMBER 1
0.20 GAL/HR RESULT : JUL 10, 2007 9:33 AM PASSED

Q 2:PLLD NUMBER 2
0.20 GAL/HR RESULT : JUL 09, 2007 9:55 AM PASSED
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>iB8IQQYYMMDDHHmmQQYYMMDDHHmmTRR...
 QQYYMMDDHHmmTRR&&CCCC<ETX>
```

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak sensor number (Decimal, 00=All)
3. YYMMDDHHmm - Date/Time Test
4. T - Test Type  
0=0.2  
1=0.1  
9=No Test Result
5. RR - Test Result  
00=Pass  
01=Fail  
99=No Test Result
6. && - Data Termination Flag

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: B8J  
Function Type: PLLD Diagnostic - Manual Test

Version 1

Command Format:  
Display: <SOH>IB8JQQ  
Computer: <SOH>iB8JQQ

### Typical Response Message, Display Format:

```
<SOH>
IB8JQQ
JAN 1, 2007 8:26 AM

PLLD DIAGNOSTIC - MANUAL TEST

LINE:LINE LABEL TEST STATUS
 1:PRESSURE LLD #1 test aborted
 2:PRESSURE LLD #2 test aborted
 3:PRESSURE LLD #3 test aborted
<ETX>
```

### Typical Response Message, Computer Format:

<SOH>iB8JQQYYMMDDHHmmQQtt&&CCCC<ETX>

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. QQ - Pressure Line Leak sensor number (Decimal, 00=All)
3. tt - Test status
  - 00=test complete
  - 01=dispensing
  - 02=testing at 3.00 gal/hr
  - 03=testing at 0.10 gal/hr
  - 04=test aborted
  - 05=running pump (manual test starting)
  - 06=line lockout
  - 07=disable alarm
  - 08=test pending
  - 09=testing delay
  - 0A=pressure check
  - 0B=testing at 0.20 gal/hr
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

### 7.4.5 RECONCILIATION DIAGNOSTIC REPORTS

**Function Code:** BA0  
**Function Type:** MDIM Totalizer Report

Version 2

**Command Format:**  
**Display:** <SOH>IBA000  
**Computer:** <SOH>iBA000

#### Typical Response Message, Display Format:

```
<SOH>
IBA000
FEB 4, 1995 6:25 AM

MDIM TOTALIZER
 1 0.000
 2 0.000
 3 0.000
 4 0.000
<ETX>
```

#### Typical Response Message, Computer Format:

```
<SOH>iBA000YYMMDDHHmmddddFFFFFFFFF...
 ddddFFFFFFFFF&&CCCC<ETX>
```

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. dddd - Dim identifier
3. FFFFFFFF - Totalizer value (ASCII Hex IEEE float)
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** BA4  
**Function Type:** IFSF LON Node ID Diagnostic

Version 6

**Command Format:**  
**Display:** <SOH>IBA400  
**Computer:** <SOH>iBA400

### Typical Response Message, Display Format:

```
<SOH>
IBA400
Dec 3, 2015 6:25 AM

IFSF LON Node ID: 1
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>iBA400YYMMDDHHmmNN&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. NN - Node ID (1-16), Decimal
3. && - Data Termination Flag
4. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** BA5  
**Function Type:** IFSF Diagnostics Data Messages Report

Version 6

**Command Format:**  
**Display:** <SOH>IBA500  
**Computer:** not supported

### Typical Response Message, Display Format:

```
<SOH>
IBA500
DEC 3, 2015 8:45 AM

IFSF DIAGNOSTICS DATA MESSAGES REPORT

LAST MESSAGE RECEIVED: DEC 3, 2015 8:45:03 AM

TIME DATA
DEC 3, 2015 8:45:03 AM 30300906020602801B0003010106
DEC 3, 2015 8:45:02 AM 30300906020602801B0003010002
DEC 3, 2015 8:45:01 AM 3030090206020080400006010003020202
<ETX>
```



# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: BB1  
Function Type: VMC Status Report

Version 6

Command Format:  
Display: <SOH>IBB1xx  
Computer: <SOH>iBB1xx

### Notes:

1. xx - VMC Number (Decimal, 01-36, 00=all)

### Typical Response Message, Display Format:

```
<SOH>
IBB101
JAN 22, 2015 3:11 PM
```

```
STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....
```

### VMC REPORT

FP	VMC	S/N	STATUS	RECOV RATE %	FUEL COUNT	ERROR COUNT	REMAIN MINUTES
1	12-A	111111	02-RUNNING	85.2	12382	5	0
2	12-B	111111	02-RUNNING	93.8	13875	9	0

<ETX>

### Typical Response Message, Computer Format:

```
<SOH>iBB1xxYYMMDDHHmmxxIIIIIIIsSSrrrrrrffffeeetttt...
xxIIIIIIIsSSrrrrrrffffeeettttt&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. xx - VMC Number (Decimal, 01-36, 00=all)
3. IIIIII - Serial Number (Decimal)
4. s - Side (ASCII Hex)
  - 1=A
  - 2=B
5. SS - Status (ASCII Hex)
  - 00=Roots meter not connected
  - 01=Idle
  - 02=Running
  - 03=Last transaction failed
  - 04=FP shutdown warning
  - 05=FP shutdown alarm
  - FE=Status Unknown
  - FF=VMC Comm Timeout
6. rrrr - Recover Rate (ASCII decimal, x10)
7. ffff - Fueling Counter (ASCII Hex)
8. eeee - Error Counter (ASCII Hex)
9. tttt - Remaining Time, minutes (ASCII Hex)
10. && - Data Termination Flag
11. CCCC - Message Checksum

(obsolete V6f)

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: BB2  
Function Type: VMC Version Report

Version 6

Command Format:  
Display: <SOH>IBB2xx  
Computer: <SOH>iBB2xx

### Notes:

1. xx - VMC Number (Decimal, 01-36, 00=all)

### Typical Response Message, Display Format:

```
<SOH>
IBB201
JAN 22, 2015 3:11 PM

VMC VERSION REPORT
----- VERSIONS -----
VMC S/N HARDWARE SOFTWARE
1 111111 12-32781-22131 12.3d-7.r21281
2 111111 12-32781-19817 12.3d-8.r27391
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>iBB2xxYYMMDDHHmmxxIIIIIIhhhhhhhhhhhhhhssssssssssssss...
xxIIIIIIssSSrrrrrrffffeeettttt&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. xx - VMC Number (Decimal, 01-36, 00=all)
3. IIIIII - Serial Number (Decimal)
4. hhhhhhhhhhhhhh - VMC Hardware Version (14 ASCII characters)
5. ssssssssssssss - VMC Software Version (14 ASCII characters)
6. && - Data Termination Flag
7. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** CA1  
**Function Type:** Get Reconciliation Status

Version 2

**Command Format:**  
**Display:** <SOH>ICA100  
**Computer:** <SOH>iCA100

### Typical Response Message, Display Format:

```
<SOH>
ICA100
JAN 1, 2009 8:26 AM

STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....

RECONCILIATION STATUS

REASONS
XXXXXXXXXXXXXXXXXX
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>iCA100YYMMDDHHmmNNRR...
 RR&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. NN - User Number of decimal Data Fields to follow (Hex)
3. RR - Reasons (Decimal)
  - 00 = DIM Out
  - 01 = DIM missing starts or stops
  - 02 = DIM missing meter events
  - 03 = DIM data from phantom meters
  - 04 = Meter map not complete
  - 05 = Meter map unstable
  - 06 = Invalid fuel height
  - 07 = Probe out
  - 08 = Water removed
  - 09 = Tank siphon setup error
  - 10 = Power outage
  - 11 = Tank chart changed
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: CA2

Version 2

Function Type: Reconciliation Diagnostics Report

**Command Format:**

Display: <SOH>ICA2PPyyymmddYYMMDD

Computer: <SOH>ICA2PPyyymmddYYMMDD

**Notes:**

1. PP - Product Number (Decimal, 00=all)
2. yyymmdd - Starting Date (000000 = no starting date=first of the month)
3. YYMMDD - Ending Date (000000 = no ending date=current date)

**Typical Response Message, Display Format:**

<SOH>  
ICA2PP  
MAY 16, 2009 8:26 AM

STATION HEADER 1....  
STATION HEADER 2....  
STATION HEADER 3....  
STATION HEADER 4....

RECONCILIATION DIAGNOSTICS REPORT

F 1:REGULAR  
T 1:REGULAR  
T 3:REGULAR EAST

DATE/TIME	METER SALES	VARIANCE	REASONS
MAY 15, 2009 6:20 AM	2	3	Meter Map Not Complete Meter Map Unstable DIM Missing Starts/Stops

F 2:SUPER

DATE/TIME	METER SALES	VARIANCE	REASONS
MAY 15, 2009 6:20 AM	8	9	Power Outage Tank Chart Changed DIM Missing Starts/Stops

F 5:DIESEL

DATE/TIME	METER SALES	VARIANCE	REASONS
MAY 15, 2009 6:20 AM	14	15	DIM Data From Phantom Meters Meter Map Not Complete DIM Missing Meter Events DIM Missing Starts/Stops

<ETX>

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code CA2 Notes:** (Continued)

**Typical Response Message, Computer Format:**

```
<SOH>iCA2PPYYMMDDHHmmPPYYMMDDHHmmMMMMMMMMVVVVVVVVVNNRR...
PPYYMMDDHHmmMMMMMMMMVVVVVVVVVNNRR&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. PP - Product Number (Decimal, 00=All)
3. YYMMDDHHmm - Date and Time
4. MMMMMMMM - Meter Sales (ASCII Hex IEEE float)
5. VVVVVVVV - Variance (ASCII Hex IEEE float)
6. NN - Number of decimal Data Fields to follow (Hex)
7. RR - Reasons (Decimal)
  - 00 = DIM Out
  - 01 = DIM missing starts or stops
  - 02 = DIM missing meter events
  - 03 = DIM data from phantom meters
  - 04 = Meter map not complete
  - 05 = Meter map unstable
  - 06 = Invalid fuel height
  - 07 = Probe out
  - 08 = Water removed
  - 09 = Tank siphon setup error
  - 10 = Power outage
  - 11 = Tank chart changed
8. && - Data Termination Flag
9. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

### 7.5 RECONCILIATION REPORTS

Function Code: C01

Version 2

Function Type: Basic Inventory Reconciliation Daily "Row" Report

Command Format:

Display: <SOH>IC01PPMMDD

Computer: <SOH>iC01PPMMDD

#### Notes:

1. MMDD - Month and Day for Daily Report

#### Typical Response Message, Display Format:

```
<SOH>
IC01PP
MAR 26, 2009 1:43 PM

STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....

MAR 26, 2009 1:43 PM

DAILY RECONCILIATION REPORT

F 1:REGULAR
T 1:REGULAR UNLEADED
T 3:REGULAR UNLEAD EAST

DATE TIME OPENING METERED MANUAL CALC'D PHYSICAL WATER
MAR 25 2:00 AM VOLUME DLVRIES SALES ADJUST INVNTY INVNTY HEIGHT VARIANCE
MAR 26 2:00 AM 6081 0 1888 0 4193 4199 0.00 6

SIGNATURE _____
<ETX>
```

#### Typical Response Message, Computer Format:

```
<SOH>iC01PPYYMMDDHHmmPPnnTTYMMDDHHmmYYMMDDHHmmNNFFFFFFFF...
PPnnTTYMMDDHHmmYYMMDDHHmmNNFFFFFFFF&&CCCC<ETX>
```

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. PP - Product Number (Decimal, 00=All Products)
3. nn - Number of tanks that are mapped to the product (Decimal)
4. TT - Tank numbers mapped to product
5. YYMMDDHHmm - Opening Date and Time
6. YYMMDDHHmm - Closing Date and Time
7. NN - Number of eight character Data Fields to follow (Hex)
8. FFFFFFFF - ASCII Hex IEEE floats:
  1. Probe measured inventory at previous period close
  2. Sum total of adjusted deliveries during period
  3. Sum total of all metered sales during period
  4. Manually entered adjustments for period
  5. Calculated Inventory Volume at period close
  6. Probe measured inventory at period close
  7. Water Height at period close
  8. Variance over period
9. && - Data Termination Flag
10. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** C02

Version 2

**Function Type:** Basic Inventory Reconciliation Daily "Column" Report

**Command Format:**

**Display:** <SOH>IC0200MMDD

**Computer:** <SOH>iC0200MMDD

### Notes:

1. MMDD - Month and Day for Daily Report

### Typical Response Message, Display Format:

<SOH>  
IC0200  
MAR 26, 2009 1:43 PM

STATION HEADER 1....  
STATION HEADER 2....  
STATION HEADER 3....  
STATION HEADER 4....

MAR 26, 2009 1:43 PM

#### DAILY RECONCILIATION REPORT

PRODUCT UNLEADED

OPENING DATE MAR 25, 2009  
OPENING TIME 2:00 AM

OPENING VOLUME	6081
DELIVERIES	0
METERED SALES	1888
MANUAL ADJUST	0
CALC'D INVNTY	4193
PHYSICAL INVNTY	4199
WATER HEIGHT	0.00
VARIANCE	6

CLOSING DATE MAR 26, 2009  
CLOSING TIME 2:00 AM

SIGNATURE \_\_\_\_\_  
<ETX>

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code C02: (Continued)

Typical Response Message, Computer Format:

```
<SOH>iC02PPYYMMDDHHmmGGPPnnTT...YYMMDDHHmmYYMMDDHHmmNNFFFFFFFF...
PPnnTT...YYMMDDHHmmYYMMDDHHmmNNFFFFFFFF&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. GG - Number of product Groupings to follow (Hex)
3. PP - Product Number (Decimal, 00=All Products)
4. nn - Number of tanks that are mapped to the product (Decimal)
5. TT - Tank numbers mapped to product
6. YYMMDDHHmm - Opening Date and Time
7. YYMMDDHHmm - Closing Date and Time
8. NN - Number of eight character Data Fields to follow (Hex)
9. FFFFFFFF - ASCII Hex IEEE floats:
  1. Probe measured inventory at previous period close
  2. Sum total of adjusted deliveries during period
  3. Sum total of all metered sales during period
  4. Manually entered adjustments for period
  5. Calculated Inventory Volume at period close
  6. Probe measured inventory at period close
  7. Water Height at period close
  8. Variance over period
10. && - Data Termination Flag
11. CCCC - Message Checksum



# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** C03

Version 2

**Function Type:** Basic Inventory Reconciliation Shift "Row" Report

**Command Format:**

**Display:** <SOH>IC03PPtt

**Computer:** <SOH>iC03PPtt

### Notes:

1. tt - Shift Type (01=Current, 02=Previous)

### Typical Response Message, Display Format:

```
<SOH>
IC03PP
MAR 26, 2009 1:44 PM

STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....

MAR 26, 2009 1:44 PM

CURRENT SHIFT RECONCILIATION REPORT

F 1:REGULAR
T 1:REGULAR UNLEADED

DATE TIME OPENING METERED MANUAL CALC'D PHYSICAL WATER
MAR 26 6:00 AM VOLUME DLVRIES SALES ADJUST INVNTY INVNTY HEIGHT VARIANCE
MAR 26 1:42 PM 4114 0 1083 0 3031 3026 0.00 -5

SIGNATURE _____
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>iC03PPYYMMDDHHmmPPnnTT...YYMMDDHHmmYYMMDDHHmmNNFFFFFFF...
PPnnTT...YYMMDDHHmmYYMMDDHHmmNNFFFFFFF&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. PP - Product Number (Decimal, 00=All Products)
3. nn - Number of tanks that are mapped to the product (Decimal)
4. TT - Tank numbers mapped to product
5. YYMMDDHHmm - Opening Date and Time
6. YYMMDDHHmm - Closing Date and Time
7. NN - Number of eight character Data Fields to follow (Hex)
8. FFFFFFFF - ASCII Hex IEEE float:
  1. Probe measured inventory at previous period close
  2. Sum total of adjusted deliveries during period
  3. Sum total of all metered sales during period
  4. Manually entered adjustments for period
  5. Calculated Inventory Volume at period close
  6. Probe measured inventory at period close
  7. Water Height at period close
  8. Variance over period
9. && - Data Termination Flag
10. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** C04

Version 2

**Function Type:** Basic Inventory Reconciliation Shift "Column" Report

**Command Format:**

**Display:** <SOH>IC0400tt

**Computer:** <SOH>iC0400tt

**Notes:**

1. tt - Shift Type (01=Current, 02=Previous)

**Typical Response Message, Display Format:**

<SOH>  
IC0400  
MAR 26, 2009 1:44 PM

STATION HEADER 1....  
STATION HEADER 2....  
STATION HEADER 3....  
STATION HEADER 4....

MAR 26, 2009 1:44 PM

PREVIOUS SHIFT RECONCILIATION REPORT

PRODUCT UNLEADED

OPENING DATE MAR 26, 1996  
OPENING TIME 6:00 AM

OPENING VOLUME	4114
DELIVERIES	0
METERED SALES	1083
MANUAL ADJUST	0
CALC'D INVNTY	3031
PHYSICAL INVNTY	3026
WATER HEIGHT	0.00
VARIANCE	-5

CLOSING DATE MAR 26, 2009  
CLOSING TIME 1:42 PM

SIGNATURE \_\_\_\_\_  
<ETX>

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code C04: (Continued)

### Typical Response Message, Computer Format:

```
<SOH>iC04PPYYMMDDHHmmGGPPnnTT...YYMMDDHHmmYYMMDDHHmmNNFFFFFFFF...
PPnnTT...YYMMDDHHmmYYMMDDHHmmNNFFFFFFFF&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. GG - Number of product Groupings to follow (Hex)
3. PP - Product Number (Decimal, 00=All Products)
4. nn - Number of tanks that are mapped to the product (Decimal)
5. TT - Tank numbers mapped to product
6. YYMMDDHHmm - Opening Date and Time
7. YYMMDDHHmm - Closing Date and Time
8. NN - Number of eight character Data Fields to follow (Hex)
9. FFFFFFFF - ASCII Hex IEEE floats:
  1. Probe measured inventory at previous period close
  2. Sum total of adjusted deliveries during period
  3. Sum total of all metered sales during period
  4. Manually entered adjustments for period
  5. Calculated Inventory Volume at period close
  6. Probe measured inventory at period close
  7. Water Height at period close
  8. Variance over period
10. && - Data Termination Flag
11. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: C05

Version 2

Function Type: Basic Inventory Reconciliation Periodic "Row" Report

Command Format:

Display: <SOH>IC05PP

Computer: <SOH>iC05PP

### Typical Response Message, Display Format:

<SOH>  
IC05PP  
MAR 26, 2009 1:42 PM

STATION HEADER 1....  
STATION HEADER 2....  
STATION HEADER 3....  
STATION HEADER 4....

MAR 26, 2009 1:42 PM

### CURRENT PERIODIC RECONCILIATION REPORT

F 1:REGULAR

T 1:REGULAR UNLEADED

DATE	TIME	OPENING		METERED	MANUAL	CALC'D	PHYSICAL	WATER	
		VOLUME	DLVRIES	SALES	ADJUST	INVNTY	INVNTY	HEIGHT	VARIANCE
MAR 1	2:00 AM	5429	0	3341	0	2088	2092	0.00	4
MAR 2	2:00 AM	2092	5409	1876	0	5625	5625	0.00	0
MAR 3	2:00 AM	5625	3336	3065	0	5896	5862	0.00	-34
MAR 4	2:00 AM	5874	2009	2207	0	5676	5672	0.00	-4
MAR 5	2:00 AM	5672	0	1568	0	4104	4108	0.00	4
MAR 6	2:00 AM	4108	6503	2170	0	8441	8443	0.00	2
MAR 7	2:00 AM	8444	0	1574	0	6870	6872	0.00	2
MAR 8	2:00 AM	6872	0	2295	0	4577	4581	0.00	4
MAR 9	2:00 AM	4581	5405	2881	0	7105	7099	0.00	-6
MAR 10	2:00 AM	7099	0	3312	0	3787	3793	0.00	6
MAR 11	2:00 AM	3793	3898	2436	0	5255	5253	0.00	-2
MAR 12	2:00 AM	5253	0	1745	0	3508	3497	0.00	-11
MAR 13	2:21 AM	3497	4811	1599	0	6709	6718	0.00	9
MAR 14	2:00 AM	6718	0	2111	0	4607	4612	0.00	5
MAR 16	2:00 AM	4612	6213	3896	0	6929	6931	0.00	2
MAR 17	2:00 AM	6896	0	2807	0	4089	4096	0.00	7
MAR 18	2:00 AM	4096	3302	3440	0	3958	3969	0.00	11
MAR 19	2:00 AM	3969	4802	1930	0	6841	6839	0.00	-2
MAR 20	2:00 AM	6839	0	2079	0	4760	4775	0.00	15
MAR 21	2:00 AM	4775	5407	2242	0	7940	7947	0.00	7
MAR 22	2:00 AM	7947	0	2552	0	5395	5398	0.00	3
MAR 23	2:00 AM	5398	5410	3309	0	7499	7510	0.00	11
MAR 24	2:00 AM	7510	0	3055	0	4455	4465	0.00	10
MAR 25	2:00 AM	4465	4812	3200	0	6077	6081	0.00	4
MAR 26	2:00 AM	6081	0	1888	0	4193	4199	0.00	6
TOTALS		5407	61317	62578	0	4146	4199	0.00	53

THRESHOLD:

755

SIGNATURE \_\_\_\_\_  
<ETX>

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code C05: (Continued)

### Typical Response Message, Computer Format:

```
<SOH>iC05PPYYMMDDHHmmPPnnTT...ddYYMMDDHHmmYYMMDDHHmmNNFFFFFFFF...
PPnnTT...ddYYMMDDHHmmYYMMDDHHmmNNFFFFFFFF&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. PP - Product Number (Decimal, 00=All Products)
3. nn - Number of tanks that are mapped to the product (Decimal)
4. TT - Tank numbers mapped to product
5. dd - Number of reconciliation days to follow (Hex)
6. YYMMDDHHmm - Opening Date and Time
7. YYMMDDHHmm - Closing Date and Time
8. NN - Number of eight character Data Fields to follow (Hex)
9. FFFFFFFF - ASCII Hex IEEE floats:
  1. Probe measured inventory at previous period close
  2. Sum total of adjusted deliveries during period
  3. Sum total of all metered sales during period
  4. Manually entered adjustments for period
  5. Calculated Inventory Volume at period close
  6. Probe measured inventory at period close
  7. Water Height at period close
  8. Variance over period
10. && - Data Termination Flag
11. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: C06  
Function Type: Basic Inventory Reconciliation Periodic "Column" Report

Version 2

Command Format:  
Display: <SOH>IC0600  
Computer: <SOH>iC0600

### Typical Response Message, Display Format:

```
<SOH>
IC0600
MAR 26, 2009 1:42 PM

STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....

MAR 26, 1996 1:42 PM

CURRENT PERIODIC RECONCILIATION REPORT

PRODUCT UNLEADED

OPENING DATE MAR 1, 2009
OPENING TIME 2:00 AM

OPENING VOLUME 5407
DELIVERIES 61317
METERED SALES 62578
MANUAL ADJUST 0
CALC'D INVNTY 4146
PHYSICAL INVNTY 4199
WATER HEIGHT 0.00
VARIANCE 53
THRESHOLD 755

CLOSING DATE MAR 20, 2009
CLOSING TIME 2:00 AM

SIGNATURE _____
<ETX>
```

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code C06: (Continued)

### Typical Response Message, Computer Format:

```
<SOH>iC06PPYYMMDDHHmmGGPPnnTT...YYMMDDHHmmYYMMDDHHmmNNFFFFFFFF...
PPnnTT...YYMMDDHHmmYYMMDDHHmmNNFFFFFFFF&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. GG - Number of product Groupings to follow (Hex)
3. PP - Product Number (Decimal, 00=All Products)
4. nn - Number of tanks that are mapped to the product (Decimal)
5. TT - Tank numbers mapped to product
6. YYMMDDHHmm - Opening Date and Time
7. YYMMDDHHmm - Closing Date and Time
8. NN - Number of eight character Data Fields to follow (Hex)
9. FFFFFFFF - ASCII Hex IEEE floats:
  1. Probe measured inventory at previous period close
  2. Sum total of adjusted deliveries during period
  3. Sum total of all metered sales during period
  4. Manually entered adjustments for period
  5. Calculated Inventory Volume at period close
  6. Probe measured inventory at period close
  7. Water Height at period close
  8. Variance over period
10. && - Data Termination Flag
11. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: C07

Version 2

Function Type: Basic Inventory Reconciliation Periodic "Row" Report  
(Current/Previous)

Command Format:

Display: <SOH>IC07PPtt

Computer: <SOH>iC07PPtt

### Notes:

1. PP - Product Number (00=all products)
2. tt - Report type  
00=Current Period  
01=Previous Period

### Typical Response Message, Display Format:

<SOH>  
IC07PP  
MAR 26, 1996 1:42 PM

STATION HEADER 1....  
STATION HEADER 2....  
STATION HEADER 3....  
STATION HEADER 4....

APR 11, 1996 1:42 PM

PREVIOUS PERIODIC RECONCILIATION REPORT

F 1:REGULAR

T 1:REGULAR UNLEADED

DATE	TIME	OPENING		METERED	MANUAL	CALC'D	PHYSICAL	WATER	
		VOLUME	DLVRIES	SALES	ADJUST	INVNTY	INVNTY	HEIGHT	VARIANCE
MAR 1	2:00 AM	5429	0	3341	0	2088	2092	0.00	4
MAR 2	2:00 AM	2092	5409	1876	0	5625	5625	0.00	0
MAR 3	2:00 AM	5625	3336	3065	0	5896	5862	0.00	-34
MAR 4	2:00 AM	5874	2009	2207	0	5676	5672	0.00	-4
MAR 5	2:00 AM	5672	0	1568	0	4104	4108	0.00	4
MAR 6	2:00 AM	4108	6503	2170	0	8441	8443	0.00	2
MAR 7	2:00 AM	8444	0	1574	0	6870	6872	0.00	2
MAR 8	2:00 AM	6872	0	2295	0	4577	4581	0.00	4
MAR 9	2:00 AM	4581	5405	2881	0	7105	7099	0.00	-6
MAR 10	2:00 AM	7099	0	3312	0	3787	3793	0.00	6
MAR 11	2:00 AM	3793	3898	2436	0	5255	5253	0.00	-2
MAR 12	2:00 AM	5253	0	1745	0	3508	3497	0.00	-11
MAR 13	2:00 AM	3497	4811	1599	0	6709	6718	0.00	9
MAR 14	2:00 AM	6718	0	2111	0	4607	4612	0.00	5
MAR 16	2:00 AM	4612	6213	3896	0	6929	6931	0.00	2
MAR 17	2:00 AM	6896	0	2807	0	4089	4096	0.00	7
MAR 18	2:00 AM	4096	3302	3440	0	3958	3969	0.00	11
MAR 19	2:00 AM	3969	4802	1930	0	6841	6839	0.00	-2
MAR 20	2:00 AM	6839	0	2079	0	4760	4775	0.00	15
TOTALS		5407	45688	46332	0	4763	4775	0.00	12

THRESHOLD:

755

SIGNATURE \_\_\_\_\_  
<ETX>



# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code C07: (Continued)

### Typical Response Message, Computer Format:

```
<SOH>iC07PPYYMMDDHHmmPPnnTT...ddYYMMDDHHmmYYMMDDHHmmNNFFFFFFFF...
PPnnTT...ddYYMMDDHHmmYYMMDDHHmmNNFFFFFFFF&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. PP - Product Number (Decimal, 00=All Products)
3. nn - Number of tanks that are mapped to the product (Decimal)
4. TT - Tank numbers mapped to product
5. dd - Number of reconciliation days to follow (Hex)
6. YYMMDDHHmm - Opening Date and Time
7. YYMMDDHHmm - Closing Date and Time
8. NN - Number of eight character Data Fields to follow (Hex)
9. FFFFFFFF - ASCII Hex IEEE floats:
  1. Probe measured inventory at previous period close
  2. Sum total of adjusted deliveries during period
  3. Sum total of all metered sales during period
  4. Manually entered adjustments for period
  5. Calculated Inventory Volume at period close
  6. Probe measured inventory at period close
  7. Water Height at period close
  8. Variance over period
10. && - Data Termination Flag
11. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: C08  
Function Type: Basic Inventory Reconciliation Periodic "Column" Report  
(Current/Previous) Version 2

Command Format:  
Display: <SOH>IC0800tt  
Computer: <SOH>iC0800tt

Notes:  
1. tt - Report type  
00=Current Period  
01=Previous Period

### Typical Response Message, Display Format:

```
<SOH>
IC0800
MAR 26, 2009 1:42 PM

STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....

MAR 26, 1996 1:42 PM

PREVIOUS PERIODIC RECONCILIATION REPORT

PRODUCT UNLEADED

OPENING DATE MAR 1, 2009
OPENING TIME 2:00 AM

OPENING VOLUME 5407
DELIVERIES 61317
METERED SALES 62578
MANUAL ADJUST 0
CALC'D INVNTY 4146
PHYSICAL INVNTY 4199
WATER HEIGHT 0.00
VARIANCE 53
THRESHOLD 755

CLOSING DATE MAR 20, 2009
CLOSING TIME 2:00 AM

SIGNATURE _____
<ETX>
```

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code C08: (Continued)

Typical Response Message, Computer Format:

```
<SOH>iC08PPYYMMDDHHmmGGPPnnTT...YYMMDDHHmmYYMMDDHHmmNNFFFFFFFF...
PPnnTT...YYMMDDHHmmYYMMDDHHmmNNFFFFFFFF&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. GG - Number of product Groupings to follow (Hex)
3. PP - Product Number (Decimal, 00=All Products)
4. nn - Number of tanks that are mapped to the product (Decimal)
5. TT - Tank numbers mapped to product
6. YYMMDDHHmm - Opening Date and Time
7. YYMMDDHHmm - Closing Date and Time
8. NN - Number of eight character Data Fields to follow (Hex)
9. FFFFFFFF - ASCII Hex IEEE floats:
  1. Probe measured inventory at previous period close
  2. Sum total of adjusted deliveries during period
  3. Sum total of all metered sales during period
  4. Manually entered adjustments for period
  5. Calculated Inventory Volume at period close
  6. Probe measured inventory at period close
  7. Water Height at period close
  8. Variance over period
10. && - Data Termination Flag
11. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** C09

Version 2

**Function Type:** Individual Basic Reconciliation Daily History Diagnostic

**Command Format:**

**Display:** <SOH>IC09TTD

**Computer:** <SOH>iC09TTD

### Notes:

1. TT - Tank Number (Decimal; 00=all)
2. D - If 1, will use ticketed delivery else if not entered, default will use gauged delivery

### Typical Response Message, Display Format:

```
<SOH>
IC09TT1
JAN 1, 2009 3:30 PM

INDIVIDUAL BASIC RECONCILIATION HISTORY DIAGNOSTIC

F 1:REGULAR
T 1:REGULAR
STRT TIME END TIME STRT HT END HT STRT VL END_VL SALES DELIV OFFSET VARIN
9310310200 9311010200 0.0 0.0 10592.0 9323.0 1268.0 0.0 0.0 -1.0

9311010200 9311020200 0.0 0.0 9323.0 8101.0 1220.0 0.0 0.0 -2.0

9311020200 9311030200 0.0 0.0 8101.0 6759.0 1338.0 0.0 0.0 -4.0

F 2:MIDGRADE
T 2:MIDGRADE
STRT_TIME END_TIME STRT_HT END_HT STRT_VL END_VL SALES DELIV OFFSET VARIN
9310310200 9311010200 0.0 0.0 10592.0 9323.0 1268.0 0.0 0.0 -1.0

9311010200 9311020200 0.0 0.0 9323.0 8101.0 1220.0 0.0 0.0 -2.0

9311020200 9311030200 0.0 0.0 8101.0 6759.0 1338.0 0.0 0.0 -4.0
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>iC0900YYMMDDHHmmTTrrYYMMDDHHmmYYMMDDHHmmYYMMDDHHmmNNFFFFFFFF...
TTrrYYMMDDHHmmYYMMDDHHmmYYMMDDHHmmNNFFFFFFFF&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Time of Day.
2. TT - Tank Number (Decimal, 00=all)
3. rr - Number of records to follow (Hex)
4. YYMMDDHHmm - Requested start time
5. YYMMDDHHmm - Actual start time
6. YYMMDDHHmm - End time
7. NN - Number of eight character Data Fields to follow (Hex)
8. FFFFFFFF - ASCII Hex IEEE floats:
  1. Start height
  2. End height
  3. Start Volume
  4. End Volume
  5. Metered sales (dispensed volume)
  6. Ticket Delivery
  7. Gauged Delivery
  8. Offset volume
  9. Variance (calculated with ticketed volume)
  10. Variance (calculated with gauged volume)
9. && - Data Termination Flag
10. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: C10  
Function Type: Periodic Book Variance

Version 2

Command Format:  
Display: <SOH>IC10PPtt  
Computer: <SOH>iC10PPtt

### Notes:

1. PP - Product Number (Decimal, 00=all)
2. tt - Report Type (if not entered will default to current)  
01=current  
02=previous

### Typical Response Message, Display Format:

<SOH>  
IC10PP  
MAR 20, 2009 3:29 PM

STATION HEADER 1....  
STATION HEADER 2....  
STATION HEADER 3....  
STATION HEADER 4....

### CURRENT PERIOD BOOK VARIANCE

#### T 1:REGULAR UNLEADED

DATE	TIME	OPENING VOLUME	METERED SALES	TICKET DLVY	MAN ADJ	CLS INVNTY	BOOK INVNTY	GAUGED INVNTY	DAILY VARIANCE
MAR 5	9:18 PM	6279	151	0	0	6128	6128	6128	0= 0.00%
MAR 6	12:00 AM	6128	3069	0	0	3059	3063	3063	-4= 0.13%
MAR 7	12:00 AM	3063	2775	5901	0	6189	6196	6196	-7= 0.25%
MAR 8	12:00 AM	6196	2674	0	0	3522	3526	3526	-4= 0.15%
MAR 9	12:00 AM	3526	2427	5901	0	7000	7007	7007	-7= 0.29%
MAR 10	12:00 AM	7007	2763	4099	0	8343	8344	8344	-1= 0.04%
MAR 11	12:00 AM	8344	3091	0	0	5253	5256	5256	-3= 0.10%
MAR 12	12:00 AM	5256	3085	3800	0	5971	5972	5972	-1= 0.03%
MAR 13	12:00 AM	5972	2818	0	0	3154	3160	3160	-6= 0.21%
MAR 14	12:00 AM	3160	3041	5900	0	6019	6023	6023	-4= 0.13%
MAR 15	12:00 AM	6023	2986	0	0	3037	3030	3030	7= 0.23%
MAR 16	12:00 AM	3030	2539	5902	0	6393	6404	6404	-11= 0.43%
MAR 17	12:01 AM	6404	3061	0	0	3343	3346	3346	-3= 0.10%
MAR 18	12:00 AM	3346	3069	5901	0	6178	6179	6179	-1= 0.03%
MAR 19	12:00 AM	6179	2565	0	0	3614	3617	3617	-3= 0.12%
MAR 20	12:00 AM								
TOTALS		6279	40114	37404	0	3569	3617	3617	-48= 0.12%

THRESHOLD:

531

SIGNATURE \_\_\_\_\_  
<ETX>

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code C10: (Continued)

Typical Response Message, Computer Format:

```
<SOH>iC10PPYYMMDDHHmmPPnnTT...rrYYMMDDHHmmYYMMDDHHmmNNFFFFFFFF...
PPnnTT...rrYYMMDDHHmmYYMMDDHHmmNNFFFFFFFF&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. PP - Product Number (Decimal, 00=all)
3. nn - Number of tanks mapped to product (Decimal)
4. TT - Tank Number(s) (Decimal)
5. rr - Number of records to follow (decimal) if 0, no more data for this tank will follow
6. YYMMDDHHmm - Opening Date and Time
7. YYMMDDHHmm - Closing Date and Time
8. NN - Number of eight character Data Fields to follow (Hex)
9. FFFFFFFF - ASCII Hex IEEE floats:
  1. open volume
  2. metered sales
  3. ticketed delivery
  4. manual adjust
  5. close book inventory
  6. gauged inventory
  7. water height
  8. daily variance
  9. percent
10. && - Data Termination Flag
11. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: C11  
Function Type: Weekly Book Variance

Version 2

Command Format:  
Display: <SOH>IC11PPtt  
Computer: <SOH>iC11PPtt

### Notes:

1. PP - Product Number (Decimal, 00=all)
2. tt - Report Type (if not entered will default to current)  
01=current  
02=previous

### Typical Response Message, Display Format:

<SOH>  
IC11PP  
MAR 20, 2009 3:30 PM

STATION HEADER 1....  
STATION HEADER 2....  
STATION HEADER 3....  
STATION HEADER 4....

#### CURRENT WEEK BOOK VARIANCE

##### T 1:REGULAR UNLEADED

DATE	TIME	OPENING	METERED	TICKET	MAN	CLS	BOOK	GAUGED	DAILY
		VOLUME	SALES	DLVY	ADJ	INVNTY	INVNTY		VARIANCE
MAR 16	12:00 AM	3030	2539	5902	0	6393	6404	-11=	0.43%
MAR 17	12:01 AM	6404	3061	0	0	3343	3346	-3=	0.10%
MAR 18	12:00 AM	3346	3069	5901	0	6178	6179	-1=	0.03%
MAR 19	12:00 AM								
TOTALS		3030	8669	11803	0	6164	6179	-15=	0.17%

THRESHOLD:

216

SIGNATURE \_\_\_\_\_  
<ETX>

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code C11 Notes:** (Continued)

**Typical Response Message, Computer Format:**

```
<SOH>iC11PPYYMMDDHHmmPPnnTT...rrYYMMDDHHmmYYMMDDHHmmNNFFFFFFFF...
PPnnTT...rrYYMMDDHHmmYYMMDDHHmmNNFFFFFFFF&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. PP - Product Number (Decimal), 00=all)
3. nn - Number of tanks mapped to product (Decimal)
4. TT - Tank Number(s) mapped to product (Decimal)
5. rr - Number of records to follow
6. YYMMDDHHmm - Open date and time
7. YYMMDDHHmm - Close date and time
8. NN - Number of eight character Data Fields to follow (Hex)
9. FFFFFFFF - ASCII Hex IEEE floats:
  1. open volume
  2. metered sales
  3. ticketed delivery
  4. manual adjust
  5. close book inventory
  6. gauged inventory
  7. water height
  8. daily variance
  9. percent
10. && - Data Termination Flag
11. CCCC - Message Checksum



# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** C12  
**Function Type:** Daily Book Variance

Version 2

**Command Format:**  
**Display:** <SOH>IC12PPMMDD  
**Computer:** <SOH>iC12PPMMDD

### Notes:

1. PP - Product Number (Decimal, 00=all)
2. MMDD - Month and day for report (if not entered, will default to current day)

### Typical Response Message, Display Format:

<SOH>  
IC12PP  
MAR 20, 2009 3:30 PM

STATION HEADER 1....  
STATION HEADER 2....  
STATION HEADER 3....  
STATION HEADER 4....

#### DAILY BOOK VARIANCE

T 1:REGULAR UNLEADED

DATE	TIME	OPENING	METERED	TICKET	MAN	CLS	BOOK	GAUGED	DAILY
		VOLUME	SALES	DLVY	ADJ	INVNTY	INVNTY		VARIANCE
MAR 18	12:00 AM								
MAR 19	12:00 AM	3346	3069	5901	0	6178	6179	-1=	0.03%

THRESHOLD:

148

SIGNATURE \_\_\_\_\_  
<ETX>

### Typical Response Message, Computer Format:

<SOH>iC12PPYYMMDDHHmmPPnnTT...YYMMDDHHmmYYMMDDHHmmNNFFFFFFFF...  
PPnnTT...YYMMDDHHmmYYMMDDHHmmNNFFFFFFFF&&CCCC<ETX>

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. PP - Product Number (Decimal, 00=all)
3. nn - Number of tanks mapped to product (Decimal)
4. TT - Tank Number(s) (Decimal)
5. YYMMDDHHmm - Open date and time
6. YYMMDDHHmm - Close date and time
7. NN - Number of eight character Data Fields to follow (Hex)
8. FFFFFFFF - ASCII Hex IEEE floats:
  1. open volume
  2. metered sales
  3. ticketed delivery
  4. manual adjust
  5. close book inventory
  6. gauged inventory
  7. water height
  8. daily variance
  9. percent
9. && - Data Termination Flag
10. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: C15

Version 2

Function Type: Book Variance Daily Report

### Command Format:

Display: <SOH>IC15PPSyymmddYYMMDDnnn

Computer: <SOH>IC15PPSyymmddYYMMDDnnn

### Notes:

1. PP - Product
2. S - Show Records by Type  
0=Records and Summaries (default)  
1=Records Only  
2=Summaries Only
3. yyymmdd - Starting Date (000000=no starting date = first of the month)
4. YYMMDD - Ending Date (000000=no ending date = current date)
5. nnn - Maximum Records [001...366] (100=default) (decimal)

### Typical Response Message, Display Format:

```
<SOH>
IC15PP
JAN 1, 2009 8:26 AM
```

```
STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....
```

#### BOOK VARIANCE DAILY REPORT

```
F 1:REGULAR UNLEADED
T 1:REGULAR UNLEADED
T 3:REGULAR UNLEAD EAST
```

CLOSE DATE-TIME	OPENING	METERED	TICKET	MAN	CLS BOOK	GAUGED	DAILY
MON DD YY HH:MM	VOLUME	SALES	DLVY	ADJ	INVNTY	INVNTY	VARIANCE
MAR 19 10 2:00	3346	3069	5901	0	6178	6179	-1= 0.03%
MAR 18 10 2:00	4205	3020	2000	0	3215	3220	-5= 0.02%
MAR 17 10 2:00	3388	1234	1890	5	3990	4000	15= 0.05%
MAR 16 10 2:00	4411	2345	1700	6	3997	4111	-13= 0.05%
MAR 15 10 2:00	3210	3456	1600	0	2167	2467	4= 0.05%
MAR 14 10 2:00	1267	3210	0	0	3890	3999	-10= 0.05%
MAR 13 10 2:00	7893	1569	1440	0	4567	4566	6= 0.05%
MAR 12 10 2:00	2345	2468	0	0	5432	5433	-19= 0.05%
MAR 11 10 2:00	5678	3690	1531	0	6789	6780	16= 0.05%
MAR 10 10 2:00	4560	2378	2345	1	7890	7899	-11= 0.05%
MAR 9 10 2:00	3456	1000	1800	9	3990	4000	-7= 0.05%

```
TOTALS 3456 61317 62578 21 6178 6179 -16= 1.23%
```

```
THRESHOLD: 148
```

```
SIGNATURE _____
<ETX>
```

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code C15 Notes:** (Continued)

**Typical Response Message, Computer Format:**

```
<SOH>iC15PPYYMMDDHHmmPPnnTT...TTRRRYYMMHHmmYYMMHHmmNNFFFFFFF...
PPnnTT...TTRRRYYMMHHmmYYMMHHmmNNFFFFFFF&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. PP - Product Number (Decimal, 00=All Products)
3. nn - Number of tanks that are mapped to the product (Decimal)
4. TT - Tank Numbers mapped to product
5. RRRR - Number of Records to Follow (Decimal - based on TT above)
6. SS - Shift Number (Decimal)
7. YYMMDDHHmm - Opening Date and Time
8. YYMMDDHHmm - Closing Date and Time
9. NN - Number of eight character Data Fields to follow (Hex)
10. FFFFFFFF - ASCII Hex IEEE floats
  - 1=Probe measured inventory at previous period close
  - 2=Sum total of adjusted deliveries during period
  - 3=Sum total of all metered sales during period
  - 4=Manually entered adjustments for period
  - 5=Calculated Inventory Volume at period close
  - 6=Probe measured inventory at period close
  - 7=Water Height at period close
  - 8=Variance over period
11. && - Data Termination Flag
12. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: C20

Version 5

Function Type: Periodic Variance Analysis Report

### Command Format:

Display: <SOH>IC20PPtt

Computer: <SOH>iC20PPtt

### Notes:

1. PP - Product Number (Decimal, 00=all)
2. tt - Report Type (if not entered will default to current)  
01=current  
02=previous

### Typical Response Message, Display Format:

<SOH>  
IC20PP  
MAR 20, 2014 3:30 PM

STATION HEADER 1....  
STATION HEADER 2....  
STATION HEADER 3....  
STATION HEADER 4....

### CURRENT PERIOD VARIANCE ANALYSIS

F 1:REGULAR UNLEADED

T 1:REGULAR UNLEADED

DATE	TIME	BOOK	DLVY	SALES	BK_VAR	MTR	TEMP	VAP	WATER	UNEX
MAR 19	2:00 AM	VAR	VAR	VAR	%	VAR	VAR	VAR	CHG	VAR
MAR 20	12:00 AM	-48	-13	-35	0.12	-1	-16	0	0	-18

SIGNATURE \_\_\_\_\_

CHART ALM : T 1  
CALIB FAIL: T 1

### CORRECTIVE ACTIONS

- - - - -

CHECK TANK FOR LEAK

T 1: REGULAR UNLEADED

CHECK LINE FOR LEAK

Q 1: PLLD NUMBER 1

INSPECT METERS

T 1

INSPECT METERS/CALIBRATE

T 1

### IN-TANK TEST RESULTS

TANK 1 REGULAR UNLEADED

TEST TYPE	START TIME	RESULT
GROSS	03/20/14 06:11 AM	PASSED
PERIODIC	03/19/14 10:09 AM	PASSED
ANNUAL	03/18/14 08:07 AM	PASSED

PASSED 0.20 TANK TESTS

TANK 1 REGULAR UNLEADED

TEST TYPE	START TIME	RESULT
CSLD	03/20/14 06:11 AM	PASSED
PERCENT VOLUME	= 64.0	

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

### Function Code C20 Notes: (Continued)

#### CSLD TEST RESULTS

TANK	1	REGULAR UNLEADED	
TEST TYPE	START TIME		RESULT
PERIODIC	03/20/14 06:11 AM		Pass

#### PRESSURE LINE LEAK TEST RESULTS

Q 1: PLLD NUMBER 1

TEST TYPE	START TIME	RESULT
GROSS	03/20/14 03:23 PM	PASSED
PERIODIC	03/18/14 07:08 AM	PASSED
ANNUAL	03/16/14 05:05 AM	FAILED

<ETX>

### Typical Response Message, Computer Format:

```
<SOH>iC20PPYYMMDDHHmmPPnnTTddYYMMDDHHmmYYMMDDHHmmLLLLLLLLlllllllll
 NNFFFFFFFF...
PPnnTTddYYMMDDHHmmYYMMDDHHmmLLLLLLLLlllllllll
 NNFFFFFFFF&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. PP - Product Number (Decimal)
3. nn - Number of tanks that are mapped to the product (Decimal)
4. TT - Tank Number (Decimal, 00=all)
5. dd - Number of reconciliation records to follow
6. YYMMDDHHmm - Opening Date and Time for period
7. YYMMDDHHmm - Closing Date and Time for period
8. LLLLLLLL - failure to calibrate in 56 days (bit encoded long integer with tank 1=lsb)
9. llllllll - tank chart alarm (bit encoded long integer with tank 1=lsb)
10. NN - Number of eight character Data Fields to follow (Hex)
11. FFFFFFFF - ASCII Hex IEEE floats:
  1. book variance
  2. delivery variance
  3. sales variance
  4. book variance percent
  5. temperature variance
  6. water change
  7. unexplained variance
  8. Meter variance
  9. Vapor variance
12. && - Data Termination Flag
13. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: C21  
Function Type: Weekly Variance Analysis Report

Version 5

Command Format:  
Display: <SOH>IC21PPtt  
Computer: <SOH>iC21PPtt

### Notes:

1. PP - Product Number (Decimal, 00=all)
2. tt - Report Type (if not entered will default to current)  
01=current  
02=previous

### Typical Response Message, Display Format:

<SOH>  
IC21PP  
MAR 20, 1998 3:30 PM

STATION HEADER 1....  
STATION HEADER 2....  
STATION HEADER 3....  
STATION HEADER 4....

#### CURRENT WEEK VARIANCE ANALYSIS

F 1:REGULAR UNLEADED

T 1:REGULAR UNLEADED

DATE	TIME	BOOK	DLVY	SALES	BK_VAR	MTR	TEMP	VAP	WATER	UNEX
MAR 18	2:00 AM	VAR	VAR	VAR	%	VAR	VAR	VAR	CHG	VAR
MAR 19	12:00 AM	-15	-13	-2	0.17	-2	-2	0	0	0

SIGNATURE \_\_\_\_\_

CHART ALM : T 1  
CALIB FAIL: T 1

#### CORRECTIVE ACTIONS

- - - - -

CHECK TANK FOR LEAK

T 1: REGULAR UNLEADED

CHECK LINE FOR LEAK

Q 1: PLLD NUMBER 1

INSPECT METERS

T 1

INSPECT METERS/CALIBRATE

T 1

#### IN-TANK TEST RESULTS

TANK 1 REGULAR UNLEADED

TEST TYPE	START TIME	RESULT
GROSS	03/20/14 06:11 AM	PASSED
PERIODIC	03/19/14 10:09 AM	PASSED
ANNUAL	03/18/14 08:07 AM	PASSED

PASSED 0.20 TANK TESTS

TANK 1 REGULAR UNLEADED

TEST TYPE	START TIME	RESULT
CSLD	03/20/14 06:11 AM	PASSED
PERCENT VOLUME	= 64.0	

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

### Function Code C21 Notes: (Continued)

#### CSLD TEST RESULTS

TANK	1	REGULAR UNLEADED	
TEST TYPE	START TIME		RESULT
PERIODIC	03/20/14 06:11 AM		Pass

#### PRESSURE LINE LEAK TEST RESULTS

Q 1: PLLD NUMBER	1	
TEST TYPE	START TIME	RESULT
GROSS	03/20/14 03:23 PM	PASSED
PERIODIC	03/18/14 07:08 AM	PASSED
ANNUAL	03/16/14 05:05 AM	FAILED

<ETX>

### Typical Response Message, Computer Format:

```
<SOH>iC21PPYYMDDHHmmPPnnTTddYYMDDHHmmYYMDDHHmmLLLLLLLLlllllllll
 NNFFFFFFFF...
PPnnTTddYYMDDHHmmYYMDDHHmmLLLLLLLLlllllllll
 NNFFFFFFFF&&CCCC<ETX>
```

### Notes:

1. YYMDDHHmm - Current Date and Time
2. PP - Product Number (Decimal, 00=all products)
3. nn - Number of tanks that are mapped to the product (Decimal)
4. TT - Tank Number (Decimal, 00=all)
5. dd - Number of reconciliation records to follow
6. YYMDDHHmm - Open date and time
7. YYMDDHHmm - Close date and time
8. LLLLLLLL - failure to calibrate in 56 days (bit encoded long integer with tank 1=lsb)
9. llllllll - tank chart alarm (bit encoded long integer with tank 1=lsb)
10. NN - Number of eight character Data Fields to follow (Hex)
11. FFFFFFFF - ASCII Hex IEEE floats:
  1. book variance
  2. delivery variance
  3. sales variance
  4. book variance percent
  5. temperature variance
  6. water change
  7. unexplained variance
  8. Meter variance
  9. Vapor variance
12. && - Data Termination Flag
13. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: C22

Version 5

Function Type: Daily Variance Analysis Report

Command Format:

Display: <SOH>IC22PPMMDD

Computer: <SOH>iC22PPMMDD

### Notes:

1. PP - Product Number (Decimal, 00=all)
2. MMDD - Month and day for report (if not entered, will default to current day)

### Typical Response Message, Display Format:

<SOH>  
IC22PP  
MAR 20, 2014 3:31 PM

STATION HEADER 1....  
STATION HEADER 2....  
STATION HEADER 3....  
STATION HEADER 4....

#### DAILY VARIANCE ANALYSIS

F 1:REGULAR UNLEADED

T 1:REGULAR UNLEADED

DATE	TIME	BOOK	DLVY	SALES	BK_VAR	MTR	TEMP	VAP	WATER	UNEX
		VAR	VAR	VAR	%	VAR	VAR	VAR	CHG	VAR
MAR 18	2:00 AM									
MAR 19	12:00 AM	-15	-13	-2	0.17	-1	-2	0	0	0

SIGNATURE \_\_\_\_\_

CHART ALM : T 1  
CALIB FAIL: T 1

#### CORRECTIVE ACTIONS

- - - - -

CHECK TANK FOR LEAK

T 1: REGULAR UNLEADED

CHECK LINE FOR LEAK

Q 1: PLLD NUMBER 1

#### INSPECT METERS

T 1

#### INSPECT METERS/CALIBRATE

T 1

#### IN-TANK TEST RESULTS

TANK 1 REGULAR UNLEADED

TEST TYPE	START TIME	RESULT
GROSS	03/20/14 06:11 AM	PASSED
PERIODIC	03/19/14 10:09 AM	PASSED
ANNUAL	03/18/14 08:07 AM	PASSED

PASSED 0.20 TANK TESTS

TANK 1 REGULAR UNLEADED

TEST TYPE	START TIME	RESULT
CSLD	03/20/14 06:11 AM	PASSED
PERCENT VOLUME	= 64.0	



# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

### Function Code C22 Notes: (Continued)

#### CSLD TEST RESULTS

TANK	1	REGULAR UNLEADED	
TEST TYPE	START TIME		RESULT
PERIODIC	03/20/14 06:11 AM		Pass

#### PRESSURE LINE LEAK TEST RESULTS

Q 1: PLLD NUMBER	1	
TEST TYPE	START TIME	RESULT
GROSS	03/20/14 03:23 PM	PASSED
PERIODIC	03/18/14 07:08 AM	PASSED
ANNUAL	03/16/14 05:05 AM	FAILED

<ETX>

### Typical Response Message, Computer Format:

```
<SOH>iC22PPYYMMDDHHmmPPnnTTYMMDDHHmmYYMMDDHHmmLLLLLLLLlllllllll
 NNFFFFFFFF...
PPnnTTYMMDDHHmmYYMMDDHHmmLLLLLLLLlllllllll
 NNFFFFFFFF&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. PP - Product Number (Decimal, 00=all products)
3. nn - Number of tanks that are mapped to the product (Decimal)
4. TT - Tank Number (Decimal, 00=all)
5. YYMMDDHHmm - Open date and time
6. YYMMDDHHmm - Close date and time
7. LLLLLLLL - failure to calibrate in 56 days (bit encoded long integer with tank 1=lsb)
8. llllllll - tank chart alarm (bit encoded long integer with tank 1=lsb)
9. NN - Number of eight character Data Fields to follow (Hex)
10. FFFFFFFF - ASCII Hex IEEE floats:
  1. book variance
  2. delivery variance
  3. sales variance
  4. book variance percent
  5. temperature variance
  6. water change
  7. unexplained variance
  8. Meter variance
  9. Vapor variance
11. && - Data Termination Flag
12. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: C25

Function Type: Periodic Variance Analysis Daily Report

Version 5

### Command Format:

Display: <SOH>IC25PPtt

Computer: <SOH>iC25PPtt

### Notes:

1. PP - Product Number (Decimal, 00=all Products)
2. tt - Report Type  
01=current  
02=previous

### Typical Response Message, Display Format:

<SOH>  
IC25PP  
JAN 1, 2014 8:05 AM

STATION HEADER 1....  
STATION HEADER 2....  
STATION HEADER 3....  
STATION HEADER 4....

### CURRENT PERIOD VARIANCE ANALYSIS

F 1:UNLEADED GASOLINE

T 1:UNLEADED GASOLINE

DATE	TIME	BOOK	DLVY	SALES	BK_VAR	MTR	TEMP	VAP	WATER	UNEX
		VAR	VAR	VAR	%	VAR	VAR	VAR	CHG	VAR
DEC 10	2:00 AM	7	9	-2	0.54	-1	6	-2	4	-8
DEC 11	2:00 AM	-1	0	-1	0.07	0	0	0	4	-1
DEC 12	2:00 AM	0	0	0	0.00	0	0	0	4	0
DEC 13	2:00 AM	-2	0	-2	0.15	0	0	0	4	-2
DEC 14	2:00 AM	-3	0	-3	0.30	-1	0	-1	4	-3
DEC 15	2:00 AM	-15	-10	-5	1.04	0	0	0	4	-5
DEC 16	2:00 AM	-2	0	-2	0.14	0	0	-2	4	-2
DEC 17	2:00 AM	0	0	0	0.00	0	0	0	4	0
DEC 18	2:00 AM	-2	-5	3	0.13	0	-9	0	4	12
DEC 19	2:00 AM	2	0	2	0.13	0	0	0	4	2
DEC 20	2:00 AM	1	0	1	0.08	-2	0	0	4	1
DEC 21	2:00 AM	-1	0	-1	0.14	0	0	-1	4	-1
DEC 22	2:00 AM	5	0	5	0.36	0	0	-1	4	5
DEC 23	2:00 AM	1	0	1	0.09	0	0	-1	4	1
DEC 24	2:00 AM	-3	0	-3	0.24	0	0	0	4	-3
DEC 25	2:00 AM	7	10	-3	0.51	0	-11	0	4	8
DEC 26	2:00 AM	0	0	0	0.00	0	0	0	4	0
DEC 27	2:00 AM	5	0	5	0.40	-1	0	0	4	5
DEC 28	2:00 AM	0	0	0	0.00	0	0	0	0	0
DEC 29	2:00 AM	0	0	0	0.00	0	0	0	0	0
DEC 30	2:00 AM	-2	0	-2	0.17	0	0	-2	0	-2
DEC 31	2:00 AM	13	10	3	0.98	0	-20	-2	0	23
JAN 1	2:00 AM	-503	-503	0	33.83	-4	31	-2	0	-31

<ETX>

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code C25 Notes:** (Continued)

**Typical Response Message, Computer Format:**

```
<SOH>iC25PPYYMMDDHHmm...
 PPnnTTYddYYMMDDHHmmYYMMDDHHmmLLLLLLLLllllllllNNNNNNNN...
 PpnnTTYddYYMMDDHHmmYYMMDDHHmmLLLLLLLLllllllllNNNNNNNN...&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. PP - Product Code (Decimal)
3. nn - Number of tanks that are mapped to the product (Decimal)
4. TT - Tank Number (Decimal, 0=all)
5. dd - Number of reconciliation records to follow
6. YYMMDDHHmm - Opening Date and Time for period
7. YYMMDDHHmm - Closing Date and Time for period
8. LLLLLLLL - failure to calibrate in 56 days (bit encoded long integer with tank 1=lsb)
9. llllllll - tank chart alarm (bit encoded long integer with tank 1=lsb)
10. NN - Number of eight character Data Fields to follow (Hex)
11. FFFFFFFF - ASCII Hex IEEE floats:
  1. Book variance
  2. Delivery variance
  3. Sales variance
  4. Book variance percent
  5. Temperature variance
  6. Water change
  7. Unexplained variance
  8. Meter variance
  9. Vapor variance
12. && - Data Termination Flag
13. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: C0G**

Version 2

**Function Type:** Reconciliation Daily Report

**Command Format:**

**Display:** <SOH>IC0GPPSyymmddYYMMDDnnn

**Computer:** <SOH>iC0GPPSyymmddYYMMDDnnn

### Notes:

1. PP - Product
2. S - Show Records by Type  
0=Records and Summaries (default)  
1=Records Only  
2=Summaries Only
3. yymmdd - Starting Date (000000=no starting date = first of the month)
4. YYMMDD - Ending Date (000000=no ending date = current date)
5. nnn - Maximum Records [001...366] (100=default) (decimal)

### Typical Response Message, Display Format:

```
<SOH>
IC0GPP
JAN 1, 2009 8:26 AM
```

```
STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....
```

RECONCILIATION DAILY REPORT

```
F 1:REGULAR UNLEADED
T 1:REGULAR UNLEADED
```

CLOSE DATE-TIME	OPENING		METERED	MANUAL	CALC'D	PHYSICAL	WATER	
MON DD YY HH:MM	VOLUME	DLVRIES	SALES	ADJUST	INVNTY	INVNTY	HEIGHT	VARIANCE
AUG 7 09 2:00	6081	0	1888	0	4193	4199	1.00	6
AUG 8 09 2:00	4465	4812	3200	0	6077	6081	0.00	4
AUG 5 09 2:00	7510	0	3055	0	4455	4465	0.00	10
AUG 4 09 2:00	5398	5410	3309	0	7499	7510	0.00	11
AUG 3 09 2:00	7947	0	2552	3	5395	5398	0.00	3
AUG 2 09 2:00	4775	5407	2242	2	7940	7947	0.00	7
AUG 1 09 2:00	6839	0	2079	1	4760	4775	1.50	15
JUL 31 09 2:00	3969	4802	1930	0	6841	6839	0.00	-2
JUL 30 09 2:00	4096	3302	3440	0	3958	3969	0.00	11
JUL 29 09 2:00	1234	3210	2345	0	4567	4560	0.00	-7
TOTALS	1234	61317	62578	6	4193	4199	1.00	53

THRESHOLD:

216

SIGNATURE \_\_\_\_\_  
<ETX>

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code C0G Notes:** (Continued)

**Typical Response Message, Computer Format:**

```
<SOH>iC0GPPYYMMDDHHmmPPnnTT...TTRRRRYMMDDHHmmYYMMDDHHmmNNFFFFFFFF...
PPnnTT...TTRRRRYMMDDHHmmYYMMDDHHmmNNFFFFFFFF&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. PP - Product Number (Decimal, 00=All Products)
3. nn - Number of tanks that are mapped to the product (Decimal)
4. TT - Tank Numbers mapped to product
5. RRRR - Number of Records to Follow (Decimal)
6. YYMMDDHHmm - Opening Date and Time
7. YYMMDDHHmm - Closing Date and Time
8. NN - Number of eight character Data Fields to follow (Hex)
9. FFFFFFFF - ASCII Hex IEEE floats
  - 1=Probe measured inventory at previous period close
  - 2=Sum total of adjusted deliveries during period
  - 3=Sum total of all metered sales during period
  - 4=Manually entered adjustments for period
  - 5=Calculated Inventory Volume at period close
  - 6=Probe measured inventory at period close
  - 7=Water Height at period close
  - 8=Variance over period
10. && - Data Termination Flag
11. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** C0J  
**Function Type:** Reconciliation Shift Report

Version 2

**Command Format:**  
**Display:** <SOH>IC0JPPSSyymmddYYMMDDnnn  
**Computer:** <SOH>iC0JPPSSyymmddYYMMDDnnn

### Notes:

1. PP - Product
2. S - Shift Number (00=All, Decimal)
3. yymmdd - Starting Date (000000=no starting date = first of the month)
4. YYMMDD - Ending Date (000000=no ending date = current date)
5. nnn - Maximum Records [001...366] (100=default) (decimal)

### Typical Response Message, Display Format:

```
<SOH>
IC0JPP
JAN 1, 2009 8:26 AM
```

```
STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....
```

RECONCILIATION SHIFT REPORT

```
F 1:REGULAR UNLEADED
T 1:REGULAR UNLEADED
```

SHIFT 1:

CLOSE DATE-TIME	OPENING		METERED	MANUAL	CALC'D	PHYSICAL	WATER		
MON DD YY HH:MM	VOLUME	DLVRIES	SALES	ADJUST	INVNTY	INVNTY	HEIGHT	VARIANCE	
MAR 03 10 8:00	6081	0	1888	0	4193	4199	0.00	6	
MAR 03 10 16:00	3000	0	1000	0	2000	2000	0.00	0	

<ETX>

### Typical Response Message, Computer Format:

```
<SOH>iC0JPPYYMMDDHHmmPPnnTT...TTRRRRSSYYMMHHmmYYMMHHmmNNFFFFFFFF...
PPnnTT...TTRRRRSSYYMMHHmmYYMMHHmmNNFFFFFFFF&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. PP - Product Number (Decimal, 00=All Products)
3. nn - Number of tanks that are mapped to the product (Decimal)
4. TT - Tank Numbers mapped to product
5. RRRR - Number of Records to Follow (Decimal - based on TT above)
6. SS - Shift Number (Decimal)
7. YYMMDDHHmm - Opening Date and Time
8. YYMMDDHHmm - Closing Date and Time
9. NN - Number of eight character Data Fields to follow (Hex)
10. FFFFFFFF - ASCII Hex IEEE floats
  - 1=Probe measured inventory at previous period close
  - 2=Sum total of adjusted deliveries during period
  - 3=Sum total of all metered sales during period
  - 4=Manually entered adjustments for period
  - 5=Calculated Inventory Volume at period close
  - 6=Probe measured inventory at period close
  - 7=Water Height at period close
  - 8=Variance over period
11. && - Data Termination Flag
12. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** C0L

Version 6

**Function Type:** Volume Based Reconciliation Report

**Command Format:**

**Display:** <SOH>IC0LTTiiVVVVyyymmddHHmmYYMMDDHHmmnnn

**Computer:** <SOH>iC0LTTiiVVVVyyymmddHHmmYYMMDDHHmmnnn

**Notes:**

1. TT - Tank Number
2. ii - Valid Chart ID (01-99)
3. VVVV - Nominal volume threshold, range=99-9999 gallons, 375-9999 liters
4. yyymmddHHmm - Starting Date and Time (0000000000=no starting date = first of the month)
5. YYMMDDHHmm - Ending Date and Time (0000000000=no ending date = current date)
6. nnn - Maximum Records [001...999] (100=default) (decimal)

**Typical Response Message, Display Format:**

```
<SOH>
IC0LTT
MAY 31, 2014 8:26 AM
```

```
STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....
```

```
VOLUME BASED RECONCILIATION REPORT
NOMINAL VOLUME = 1000
```

CHART ID=3

```
T 1:REGULAR UNLEADED
T 2:REGULAR UNLEADED
```

OPEN DATE-TIME YY-MM-DD HH:MM	DURATION HH:MM	OPEN VOLUME	OPEN HEIGHT	CLOSE VOLUME	CLOSE HEIGHT	SALES VOLUME	-VARIANCE-- VOLUME	%	ERROR CODE
14-05-31 08:00	04:26	12345.6	103.5	11234.5	98.4	999.9	111.2	11.12	0000
14-05-31 12:34	06:21	11234.5	98.4	10150.7	94.8	1071.3	-12.9	-1.20	0001

<ETX>

**Typical Response Message, Computer Format:**

```
<SOH>iC0LTTYMMDDHHmmTTRRRRYMMHHmmYYMMHHmmNNFFFFFFFF...FFFFFFFFEEEE...
TTRRRRYMMHHmmYYMMHHmmNNFFFFFFFF...FFFFFFFFEEEE&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (1-32)(Decimal)
3. ii - Valid Chart ID (01-99)(Decimal)
4. RRRR - Number of Records to Follow (Decimal)
5. YYMMDDHHmm - Opening Date and Time
6. YYMMDDHHmm - Closing Date and Time
7. NN - Number of eight character Data Fields to follow (Hex)
8. FFFFFFFF - ASCII Hex IEEE floats
  - 1=Open volume
  - 2=Open height
  - 3=Close volume
  - 4=Close height
  - 5=Sales volume
  - 6=Volume variance
  - 7=Percent variance (1-100)
9. EEEE - Error code (ASCII Hex)
  - 0000=One or more dispensers connected to this tank are offline
  - 0001=Meter Map changed

## **Serial Interface Manual**

### **TLS4/TLS-450/TLS-450Plus Monitoring Systems**

**Function Code CA3:** (Continued)

- 10.                    && - Data Termination Flag
- 11.                    CCCC - Message Checksum



# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: CA3

Version 2

Function Type: Reconciliation Test Result Report

### Command Format:

Display: <SOH>ICA3PPyyymmddYYMMDDnnn

Computer: <SOH>ICA3PPyyymmddYYMMDDnnn

### Notes:

1. PP - Product
2. yyymmdd - Starting Date (000000=no starting date = first of the month)
3. YYMMDD - Ending Date (000000=no ending date = current date)
4. nnn - Maximum Records [001...366] (100=default) (decimal)

### Typical Response Message, Display Format:

<SOH>  
ICA3PP  
JAN 1, 2009 8:26 AM

### RECONCILIATION TEST RESULT REPORT

F 1:REGULAR UNLEADED  
T 1:REGULAR UNLEADED  
T 3:REGULAR UNLEADED EAST

END DATE	START DATE	TEST #/TYPE	SALES	DELIV	VARIAN	THRES LIMIT	THRES TYPE	TEST RESULT
01/31/09	01/01/09	1 - Monthly	xxxxxxx	xxxxxxx	xxxxxxx	xxxxxxx	Throughput	Pass
01/31/09	01/22/09	1 - Roll 10	xxxxxxx	xxxxxxx	xxxxxxx	xxxxxxx	Capacity	Pass
01/31/09	01/31/09	1 - RollC 7	xxxxxxx	xxxxxxx	xxxxxxx	xxxxxxx	Delivery	Pass
01/31/09	01/31/09	1 - Daily	xxxxxxx	xxxxxxx	xxxxxxx	xxxxxxx	Fixed	Pass

<ETX>

## Serial Interface Manual

### TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code CA3: (Continued)

#### Typical Response Message, Computer Format:

```
<SOH>iCA3PPYYMMDDHHmmPPnnnnYYMMDDyyymmDDssttRRvvNNNNNNNNNN...
YYMMDDyyymmddssttRRvvNNNNNNNNNN&&CCCC<ETX>
```

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. PP - Product Number (Decimal, 00=All Products)
3. nnnn - Number of Records to follow (Decimal)
4. YYMMDD - End Date
5. yyymmdd - Start Date
6. SS - Test Number (Decimal)
7. tt - Test Type
  - 01-Monthly
  - 02-Rolling Days
  - 03-Daily
  - 04-Rolling Consecutive Days
8. RR - Test Result
  - 00=Fail
  - 01=Pass
9. vv - Threshold Type (Decimal)
  - 01-Percent of Throughput
  - 02-Percent of Capacity
  - 03-Percent of Deliveries
  - 04-Fixed Value
10. NN - Number of eight character Data Fields to follow (Hex)
11. FFFFFFFF - ASCII Hex IEEE floats:
  - 1=Total Sales
  - 2=Total Deliveries
  - 3=Total Variance
  - 4=Threshold Limit
12. && - Data Termination Flag
13. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

### 7.6 GUI DISPLAY SETUP

**Function Code: G01**

Version 1

**Function Type:** Set Display Setup - System Status Configuration

**Command Format:**

**Display:** <SOH>SG0100TTc

**Computer:** <SOH>sG0100TTc

**Inquire:**

<SOH>IG0100TT

<SOH>iG0100TT

**Notes:**

1. TT - Tab, 00=all Tabs  
01=All Tanks Tab  
02=All Sensors Tab  
03='User Defined 1' Tab  
04='User Defined 2' Tab  
05='User Defined 3' Tab
2. c - Configuration  
0=Disabled  
1=Enabled

**Typical Response Message, Display Format:**

```
<SOH>
IG010000
JAN 22, 1996 3:06 PM

Display Setup - System Status

Tab Name Configuration
All Tanks : Enabled
All Sensors : Disabled
'Sump Devices' Tab : Enabled
'Prem Tank&Sens' Tab : Disabled
'User Defined 3' Tab : Disabled
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>iG0100YYMMDDHHmmNNTTc...TTc&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. NN - Number of Fields To Follow
3. TT - Tab
4. c - Configuration  
0=Disabled  
1=Enabled
5. && - Data Termination Flag
6. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** G02

Version 1

**Function Type:** Set Display Setup - All Tanks Configuration

**Command Format:**

**Display:** <SOH>SG0200FFc

**Computer:** <SOH>SG0200FFc

**Inquire:**

<SOH>IG0200FF

<SOH>iG0200FF

**Notes:**

1. FF - Field, 00=all Fields, but only valid for Inquiry
  - 01=Icon Shape
  - 02=Product Label
  - 03=Fuel Volume
  - 04=Ullage 100%
  - 05=Ullage 90%
  - 06=Fuel Volume TC
  - 07=Temperature
  - 08=Fuel Height
  - 09=Water Height
  - 10=Alarm Condition Icon
  - 11=Delivery Indicator
  - 12=Water Volume (on icon)
  - 13=Tank Ribbon Label
  - 14=Density
2. c - Configuration (see entry based on field below)

**Typical Response Message, Display Format:**

<SOH>  
IG020000  
JAN 22, 1996 3:06 PM

Display Setup - All Tanks

Field Name	Configuration
Icon Shape	: Circle
Product Label	: Disabled
Fuel Volume	: Bottom Text
Ullage 100%	: Disabled
Ullage 90%	: Disabled
Fuel Volume TC	: Disabled
Temperature	: Disabled
Fuel Height	: Disabled
Water Height	: Disabled
Alarm Condition Icon	: Disabled
Delivery Indicator	: Disabled
Water Volume ( on icon )	: Disabled
Tank Ribbon Label	: Tank Number
Density	: Disabled

<ETX>

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code G02 Notes: (Continued)

Typical Response Message, Computer Format:

<SOH>iG0200YYMMDDHHmmNNFFc...FFc&&CCCC<ETX>

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. NN - Number of Fields To Follow
3. FF - Field
4. c - Configuration
  - If FF=01 (Icon Shape)
    - 0=Circle
    - 1=Rectangle
  - If FF=02 (Product Label)
    - 0=Disabled
    - 1=Enabled
  - If FF=03 (Fuel Volume)
    - 0=Disabled
    - 1=Bottom Text
    - 2=On Tank
  - If FF=04 (Ullage 100%)
    - 0=Disabled
    - 1=Enabled
  - If FF=05 (Ullage 90%)
    - 0=Disabled
    - 1=Enabled
  - If FF=06 (Fuel Volume TC)
    - 0=Disabled
    - 1=Enabled
  - If FF=07 (Temperature)
    - 0=Disabled
    - 1=Bottom Text
    - 2=On Tank
  - If FF=08 (Fuel Height)
    - 0=Disabled
    - 1=Enabled
  - If FF=09 (Water Height)
    - 0=Disabled
    - 1=Enabled
  - If FF=10 (Alarm Condition Icon)
    - 0=Disabled
    - 1=Enabled
  - If FF=11 (Delivery Indicator)
    - 0=Disabled
    - 1=Enabled
  - If FF=12 (Water Volume)
    - 0=Disabled
    - 1=Bottom Text
    - 2=On Tank
  - If FF=13 (Tank Ribbon Label)
    - 0=Tank Number
    - 1=Product Label
  - If FF=14 (Density)
    - 0=Disabled
    - 1=Enabled
5. && - Data Termination Flag
6. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** G03

Version 1

**Function Type:** Set Display Setup - Tank Fuel Fill Configuration

**Command Format:**

**Display:** <SOH>SG03TTff

**Computer:** <SOH>sG03TTff

**Inquire:**

<SOH>IG03TT

<SOH>iG03TT

**Notes:**

1. TT - Tank Number
2. ff - Fuel Fill Configuration (see available entries below)

**Typical Response Message, Display Format:**

<SOH>  
IG03TT  
JAN 22, 1996 3:06 PM

Display Setup - Fuel Fill Selection

Tank	Label	Fuel Fill Selection
1	Regular Unleaded	Horizontal Crosshatch

<ETX>

**Typical Response Message, Computer Format:**

<SOH>iG03TTYMMDDHHmmTTff...TTff&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. TT - Tank Number (Decimal, 00=all)
3. ff - Fuel Fill Configuration
  - 01=Horizontal Crosshatch (Standard Grid)
  - 02=Horizontal Stripe
  - 03=Vertical Stripe
  - 04=Diagonal Crosshatch
  - 05=Diagonal Stripe
  - 06=Reverse Diagonal Stripe
  - 07=12.5 % gray
  - 08=25 % gray
  - 09=37.5 % gray
  - 10=50 % gray
  - 11=62.5 % gray
  - 12=75 % gray
  - 13=87.5 % gray
  - 14=Black
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: G04**

Version 1

**Function Type:** Set Display Setup - All Liquid Sensors Configuration

**Command Format:**

**Display:** <SOH>SG0400FFc

**Computer:** <SOH>SG0400FFc

**Inquire:**

<SOH>IG0400FF

<SOH>iG0400FF

**Notes:**

1. FF - Field, 00=all Fields  
01=Sensor Label  
02=Alarm Condition Icon  
03=Model  
04=Category
2. c - Configuration  
0=Disabled  
1=Enabled

**Typical Response Message, Display Format:**

<SOH>  
IG040000  
JAN 22, 1996 3:06 PM

Display Setup - All Sensors - Liquid

Field Name	Configuration
------------	---------------

Sensor Label	: Enabled
Alarm Condition Icon	: Disabled
Model	: Enabled
Category	: Disabled

<ETX>

**Typical Response Message, Computer Format:**

<SOH>iG0400YYMMDDHHmmNNFFc...FFc&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. NN - Number of Fields To Follow
3. FF - Field
4. c - Configuration  
0=Disabled  
1=Enabled
5. && - Data Termination Flag
6. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** G05

Version 1

**Function Type:** Set Display Setup - All Type-A (2-Wire CL) Sensors Configuration

**Command Format:**

**Display:** <SOH>SG0500FFc

**Computer:** <SOH>sG0500FFc

**Inquire:**

<SOH>IG0500FF

<SOH>iG0500FF

**Notes:**

1. FF - Field, 00=all Fields  
01=Sensor Label  
02=Alarm Condition Icon  
03=Model  
04=Category
2. c - Configuration  
0=Disabled  
1=Enabled

**Typical Response Message, Display Format:**

```
<SOH>
IG050000
JAN 22, 1996 3:06 PM

Display Setup - All Sensors - Type-A (2-Wire CL)

Field Name Configuration

Sensor Label : Enabled
Alarm Condition Icon : Disabled
Model : Enabled
Category : Disabled
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>iG0500YYMMDDHHmmNNFFc...FFc&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. NN - Number of Fields To Follow
3. FF - Field
4. c - Configuration  
0=Disabled  
1=Enabled
5. && - Data Termination Flag
6. CCCC - Message Checksum



# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: G06**

Version 1

**Function Type:** Set Display Setup - All Type-B (3-Wire CL) Sensors Configuration

**Command Format:**

**Display:** <SOH>SG0600FFc

**Computer:** <SOH>sG0600FFc

**Inquire:**

<SOH>IG0600FF

<SOH>iG0600FF

### Notes:

1. FF - Field, 00=all Fields  
01=Sensor Label  
02=Alarm Condition Icon  
03=Model  
04=Category
2. c - Configuration  
0=Disabled  
1=Enabled

### Typical Response Message, Display Format:

```
<SOH>
IG060000
JAN 22, 1996 3:06 PM

Display Setup - All Sensors - Type-B (3-Wire CL)

Field Name Configuration

Sensor Label : Enabled
Alarm Condition Icon : Disabled
Model : Enabled
Category : Disabled
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>iG0600YYMMDDHHmmNNFFc...FFc&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. NN - Number of Fields To Follow
3. FF - Field
4. c - Configuration  
0=Disabled  
1=Enabled
5. && - Data Termination Flag
6. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** G07

Version 1

**Function Type:** Set Display Setup - All MAG Sensors Configuration

**Command Format:**

**Display:** <SOH>SG0700FFc

**Computer:** <SOH>sg0700FFc

**Inquire:**

<SOH>IG0700FF

<SOH>iG0700FF

**Notes:**

1. FF - Field, 00=all Fields  
01=Sensor Label  
02=Alarm Condition Icon  
03=Fuel Height  
04=Water Height  
05=Temperature
2. c - Configuration  
0=Disabled  
1=Enabled

**Typical Response Message, Display Format:**

<SOH>  
IG070000  
JAN 22, 1996 3:06 PM

Display Setup - All Sensors - MAG

Field Name	Configuration
Sensor Label	: Enabled
Alarm Condition Icon	: Disabled
Fuel Height	: Enabled
Water Height	: Disabled
Temperature	: Enabled

<ETX>

**Typical Response Message, Computer Format:**

<SOH>iG0700YYMMDDHHmmNNFFc...FFc&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. NN - Number of Fields To Follow
3. FF - Field
4. c - Configuration  
0=Disabled  
1=Enabled
5. && - Data Termination Flag
6. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** G08

Version 1

**Function Type:** Set Display Setup - All Ground Water Sensors Configuration

**Command Format:**

**Display:** <SOH>SG0800FFc

**Computer:** <SOH>SG0800FFc

**Inquire:**

<SOH>IG0800FF

<SOH>iG0800FF

**Notes:**

1. FF - Field, 00=all Fields  
01=Sensor Label  
02=Alarm Condition Icon  
03=Category
2. c - Configuration  
0=Disabled  
1=Enabled

**Typical Response Message, Display Format:**

```
<SOH>
IG080000
JAN 22, 1996 3:06 PM

Display Setup - All Sensors - Ground Water

Field Name Configuration

Sensor Label : Enabled
Alarm Condition Icon : Disabled
Category : Enabled
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>iG0800YYMMDDHHmmNNFFc...FFc&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. NN - Number of Fields To Follow
3. FF - Field
4. c - Configuration  
0=Disabled  
1=Enabled
5. && - Data Termination Flag
6. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: G09**

Version 1

**Function Type:** Set Display Setup - All Vapor Sensors Configuration

**Command Format:**

**Display:** <SOH>SG0900FFc

**Computer:** <SOH>SG0900FFc

**Inquire:**

<SOH>IG0900FF

<SOH>iG0900FF

**Notes:**

1. FF - Field, 00=all Fields  
01=Sensor Label  
02=Alarm Condition Icon  
03=Category
2. c - Configuration  
0=Disabled  
1=Enabled

**Typical Response Message, Display Format:**

<SOH>  
IG090000  
JAN 22, 1996 3:06 PM

Display Setup - All Sensors - Vapor

Field Name	Configuration
------------	---------------

Sensor Label	: Enabled
Alarm Condition Icon	: Disabled
Category	: Enabled

<ETX>

**Typical Response Message, Computer Format:**

<SOH>iG0900YYMMDDHHmmNNFFc...FFc&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. NN - Number of Fields To Follow
3. FF - Field
4. c - Configuration  
0=Disabled  
1=Enabled
5. && - Data Termination Flag
6. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: G0A**

Version 1

**Function Type:** Set Display Setup - All Line Pressure Sensors Configuration

**Command Format:**

**Display:** <SOH>SG0A00FFc

**Computer:** <SOH>SG0A00FFc

**Inquire:**

<SOH>IG0A00FF

<SOH>iG0A00FF

**Notes:**

1. FF - Field, 00=all Fields  
01=Sensor Label  
02=Alarm Condition Icon  
03=Pressure
2. c - Configuration  
0=Disabled  
1=Enabled

**Typical Response Message, Display Format:**

```
<SOH>
IG0A0000
JAN 22, 1996 3:06 PM

Display Setup - All Sensors - Line Pressure

Field Name Configuration

Sensor Label : Enabled
Alarm Condition Icon : Disabled
Pressure : Enabled
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>iG0A00YYMMDDHHmmNNFFc...FFc&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. NN - Number of Fields To Follow
3. FF - Field
4. c - Configuration  
0=Disabled  
1=Enabled
5. && - Data Termination Flag
6. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** G0B

Version 1

**Function Type:** Set Display Setup - User Defined Tab Label

**Command Format:**

**Display:** <SOH>SG0B00TTaaaaaaaaaaaaaaaa

**Computer:** <SOH>SG0B00TTaaaaaaaaaaaaaaaa

**Inquire:**

<SOH>IG0B00TT

<SOH>iG0B00TT

**Notes:**

1. TT - User Defined Tab Number (01 - 03)
2. a - 15 ASCII characters [20h-7Eh]

**Typical Response Message, Display Format:**

<SOH>  
IG0B0001  
JAN 22, 1996 3:06 PM

Display Setup - User Defined Tab Label

# Tab Label  
1 User Defined 1  
<ETX>

**Typical Response Message, Computer Format:**

<SOH>iG0B00YYMMDDHHmmTTaaaaaaaaaaaaaaaa&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. TT - User Defined Tab Number
3. a - 15 ASCII characters [20h-7Eh]
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** G0C

Version 1

**Function Type:** Set Display Setup - User Defined Tab Configuration

**Command Format:**

**Display:** <SOH>SG0C00TTpiDDdd

**Computer:** <SOH>sG0C00TTpiDDdd

**Inquire:**

<SOH>IG0C00TT

<SOH>iG0C00TT

### Notes:

1. TT - User Defined Tab Number (01 - 03)
2. p - Page Number (from 1 - 3, following the specified fill rules for User Defined Tabs)
3. i - Index Position of Widget on Page (1 - 6 (7.4 LCD) or 8 (10.4 LCD)). Position on a Page is calculated from Left-to-Right and then Top-to-Bottom.
4. DD - Device Type (decimal), from the following list:
  - 00=No Device (cell de-assignment)
  - 02=Tank
  - 03=Liquid Sensor
  - 04=Vapor Sensor
  - 07=Ground Water Sensor
  - 08=Type-A (2-Wire CL) Sensor
  - 12=Type-B (3-Wire CL) Sensor
  - 59=MAG Sensor
  - 63=Line Pressure Sensor
5. dd - Device Number (decimal, 00 is 'no device' (cell de-assignment))

### Typical Response Message, Display Format:

```
<SOH>
IG0C0001
JAN 22, 1996 3:06 PM

Display Setup - User Defined Tab Configuration

User Defined Tab 1: User Defined 1

Page 1
```

Index	#	Device Type	Device Label
1	T 1	Tank	Premium
2		No Device	
3	T 2	Tank	Regular Unleaded
4	L 1	Liquid Sensor	Liq Sens 1 Lbl
5	Ms 1	MAG Sensor	MAG Sensor 1
6		No Device	

<ETX>

### Notes:

1. Index - Index Position of Widget on Page (defined above)

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code G0C Notes:** (Continued)

**Typical Response Message, Computer Format:**

```
<SOH>iG0C00YYMMDDHHmmTTPpWiDDdd...iDDdd
pWiDDdd...iDDdd&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. TT - User Defined Tab Number (01 - 03)
3. P - Number of Pages to Follow
4. p - Page Number (from 1 - 3)
5. W - Number of Widget Definitions to Follow (6 (7.4 LCD) or 8 (10.4 LCD))
6. i - Index Position of Widget on Page (1 - 6 (7.4 LCD) or 8 (10.4 LCD)).
7. DD - Device Type (decimal), from the following list:
  - 00=No Device (empty or de-assigned cell)
  - 02=Tank
  - 03=Liquid Sensor
  - 04=Vapor Sensor
  - 07=Ground Water Sensor
  - 08=Type-A (2-Wire CL) Sensor
  - 12=Type-B (3-Wire CL) Sensor
  - 59=MAG Sensor
  - 63=Line Pressure Sensor
8. dd - Device Number (decimal, 00 is 'no device' (empty or de-assigned cell))
9. && - Data Termination Flag
10. CCCC - Message Checksum



# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** G0D

Version 1

**Function Type:** Set System Status - User Defined Tab Status Report

**Command Format:**

**Display:** <SOH>SG0D00TT

**Computer:** <SOH>sG0D00TT

**Notes:**

1. TT - User Defined Tab Number (01 - 03)

**Typical Response Message, Display Format:**

<SOH>

IG0D0001

JAN 22, 1996 3:06 PM

Display Setup - User Defined Tab Configuration

User Defined Tab 1: User Defined 1

Current Inventory Report - Configured Tanks:

Fuel Volume	Fuel TC Volume	Ullage 100%	Ullage xx%	Fuel Height	Water Height	Water Volume	Fuel Temp
Index 11 - Tank 2: Regular Unleaded							
5329	5413	4699	3699	48.97	0.00	0.00	37.39
Index 13 - Tank 12: Supreme Unleaded							
11375	5413	11413	2697	52.36	0.00	0.00	43.39

Sensor Status Report - Configured Sensors:

Index	#	Device	Type	Status
2	Ms	1	Mag	Normal
4	Ms	3	Mag	Water Alarm
8	L	2	Liquid	Setup Data Warning
16	L	1	Liquid	Normal

<ETX>

**Notes:**

1. Index - Index Position of Widget on Page (defined above)

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code G0D Notes:** (Continued)

**Typical Response Message, Computer Format:**

```
<SOH>iG0D00TTYMMDDHHmmPpWiDDdd...iDDdd
pWiDDdd...iDDdd&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. TT - User Defined Tab Number (01 - 03)
3. P - Number of Pages to Follow
4. p - Page Number (from 1 - 3)
5. W - Number of Widget Definitions to Follow (6 (7.4 LCD) or 8 (10.4 LCD))
6. i - Index Position of Widget on Page (1 - 6 (7.4 LCD) or 8 (10.4 LCD)).
7. DD - Device Type (decimal), from the following list:
  - 00=No Device (empty or de-assigned cell)
  - 02=Tank
  - 03=Liquid Sensor
  - 04=Vapor Sensor
  - 07=Ground Water Sensor
  - 08=Type-A (2-Wire CL) Sensor
  - 12=Type-B (3-Wire CL) Sensor
  - 59=MAG Sensor
  - 63=Line Pressure Sensor
8. dd - Device Number (decimal, 00 is 'no device' (empty or de-assigned cell))
9. && - Data Termination Flag
10. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

### 7.7 DEVICE VR-BUS CONFIGURATION

**Function Code: N01**

Version 1

**Function Type:** Set Device VR-BUS Address

**Command Format:**

**Display:** <SOH>SN01TTDDaaaaaaaaaaaaaaaaaaaaa...

**Computer:** <SOH>sN01TTDDaaaaaaaaaaaaaaaaaaaaa...

**Inquire:**

<SOH>IN01TTDD

<SOH>iN01TTDD

**Notes:**

1. TT - Device Number (Decimal)  
Set command 00=clear all devices  
Inquire command 00=read all devices
2. DD - Device Type (Decimal)  
Set command valid for single device type only  
Inquire command 00= all device types (see table below)
3. TTDD - Not supported - TTDD=0000 (Decimal)  
For all devices (TT=00), a device type must be given  
For all device types (DD=00), a device number must be given.
4. aaa...aaa - Device Address (All ASCII 20h-7Eh) ("0" clears the address)

**Typical Response Messages, Display Format:**

```
<SOH>
IN0100
JAN 22, 2009 3:16 PM
```

GRND\_H2O\_DEVICE\_TYPE ADDRESSES

DEVICE	PRIMARY ADDRESS	SECONDARY ADDRESS
1	B2.S1.1	B2.S1.2
2	B2.S1.3	B2.S1.4
3	B2.S1.5	B2.S1.6
4	(not assigned)	

MAG PROBE DEVICE TYPE ADDRESSES

DEVICE	PRIMARY ADDRESS
1	B1.S1.1
2	B1.S1.2
3	B1.S1.3
4	(not assigned)

<ETX>

**Typical Response Message, Computer Format:**

```
<SOH>iN01TTYMMDDHHmmDDTTMMaaaaaaaaaaaaaaaaNNbbbbbbbb...
DDTTMMaaaaaaaaaaaaaaaaNNbbbbbbbb&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. TT - Device Number (hex, 00=all)
3. DD - Device Type (hex)
4. MM - Number of characters in primary address (hex)
5. aaa...aaa - VR-BUS primary Address (All ASCII 20h-7Eh)
6. NN - Number of characters in secondary address (hex)
7. bbb...bbb - VR-BUS secondary address (All ASCII 20h-7Eh)
8. && - Data Termination Flag
9. CCCC - Message Checksum

## Serial Interface Manual

### TLS4/TLS-450/TLS-450Plus Monitoring Systems

#### Function Code N01 Notes: (Continued)

Device Type	Secondary Address	Description
00		All Device Types
03		LIQUID_DEV_TYPE, Legacy Liquid Sensor
04	Yes	VAPOR_DEV_TYPE, Legacy Vapor Sensor
05		INPUT_DEV_TYPE, Power Side Input - External
07	Yes	GRND_H2O_DEV_TYPE, 3 WIRE RESISTANCE
08		COSENS_DEV_TYPE, 2 WIRE CURRENT LOOP
11		RELAY_DEV_TYPE, RELAY
12	Yes	CL3_DEV_TYPE, 3 WIRE CURRENT LOOP and RESISTANCE
56		MAG_PROBE_DEV_TYPE, Magnetostrictive Probe
57		AIR_FLOWMETER_DEV_TYPE, ISD Air/Vapor Flow Meter
58		ULLAGE_PRESSURE_DEV_TYPE, ISD Ullage Pressure Sensor
59		MAG_SENSOR_DEV_TYPE, MAG Sensor
60		VAC_SENSOR_DEV_TYPE, INTERSTITIAL VACUUM SENSOR
61		ATMP_SENSOR_DEV_TYPE, ATMOSPHERIC PRESSURE SENSOR
62		HC_SENSOR_DEV_TYPE, ISD HYDROCARBON SENSOR
63		LINE_PRESSURE_SENSOR_DEV_TYPE, Line Pressure Sensor for PLLD
78		MDIM_DEV_TYPE, MDIM

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

Version 1

**Function Code: N02**

**Function Type:** Get Available VR-BUS Addresses

**Command Format:**

**Display:** <SOH>IN02TTDD

**Computer:** <SOH>iN02TTDD

### Notes:

1. TT - Device Number (00=all devices)
2. DD - Device Type (decimal - Must enter Device Type)

### Typical Response Messages, Display Format:

```
<SOH>
IN0201
JAN 22, 2007 3:16 PM

MAG_PROBE_DEV_TYPE DEVICE TYPE ADDRESSES

AVAILABLE ADDRESSES
B1.S1.1
B1.S1.5
B1.S1.6
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>iN02TTYMMDDHHmmDDNNmmaaaaaaaaaaaaaaaaaaaaaa...
mmaaaaaaaaaaaaaaaaaaaaaaa&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. NN - Number of Devices (hex)
3. DD - Device Type (hex)
4. mm - Number of characters in Device Address (hex)
5. a - VR-BUS Address (All ASCII 20h-7Eh)
6. && - Data Termination Flag
7. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** N03  
**Function Type:** Get All Device Directory

Version 1

**Command Format:**  
**Display:** <SOH>IN0300  
**Computer:** <SOH>iN0300

### Typical Response Messages, Display Format:

```
<SOH>
IN0300
SEP 26, 2008 09:45 AM
```

All Device Directory

ADDRESS	DEVICE TYPE	SN	ENABLED
B1.S1	INPUT/OUTPUT MODULE - 14	0000485758	YES
B1.S1.2	EXTERNAL INPUT - Low Voltage	0000000005	YES
B1.S2	UNIVERSAL SENS MODULE - 16	0000462153	YES
B1.S2.1	MAG PROBE	0000176011	NO
B8.S5	INPUT/OUTPUT MODULE - 0	4278190081	YES
B8.S5.1	RELAY	3435973836	NO

<ETX>

### Typical Response Message, Computer Format:

```
<SOH>iN0300YYMMDDHHmmNNDDccccSSSSSSSSSSennaaaaaaaaaaaaaaaaaaaaa...
DDccccSSSSSSSSSSennaaaaaaaaaaaaaaaaaaaaa&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. NN - Number of Devices (hex)
3. DD - Device Type (hex)  
See explanation for "AA" in Function i10100
4. cccc - Circuit Code (hex)
5. SSSSSSSSSS - 10 character serial number string
6. e - Enabled/Disabled (1/0)
7. nn - Number of characters in Device Address (hex)
8. aaaaaa... - VR-BUS Address (All ASCII [20h-7Eh])
9. && - Data Termination Flag
10. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: N04**  
**Function Type:** Get Hardware Configuration

Version 2

**Command Format:**  
**Display:** <SOH>IN0400  
**Computer:** <SOH>iN0400

### Typical Response Messages, Display Format:

```
<SOH>
IN0400
SEP 26, 2008 09:45 AM
```

#### HARDWARE CONFIGURATION

ADDRESS	MODULE TYPE	BOARD PART NUMBER	SERIAL NUMBER	HW BUILD DATE	FIRMWARE VERSION	SW BUILD DATE
B1.S1	USC - 16	332812-001	0000656641	2006/05/12	001-AYC	2006/01/01
B1.S2	USC - 16	332812-001	0000656642	2006/05/12	001-AYC	2006/01/01
B1.S3	USC - 16	332812-001	0000656643	2006/05/12	001-AYC	2006/01/01
B1.S4	I/O - 8	332813-001	0000656804	2006/05/12	001-AYC	2006/01/01
B1.S5	I/O - 4	332813-001	0000656805	2006/05/12	001-AYC	2006/01/01
B8.S5	I/O - 1	332813-001	4278190081	2006/01/01		
Slot 1	Dual RS-232	0332913-001	0007121234	2012/07/01		
Slot 2	Fax Modem-alt	0332913-001	0007121234	2012/07/01		
Slot 5	USB Ethernet	0332913-001	0009140197	2004/09/01		

<ETX>

### Typical Response Message, Computer Format:

```
<SOH>iN0400YYMMDDHHmmNNDDSSSSSSSSjjaa...aakkbb...bbnncc...cc
DDSSSSSSSSjjaa...aakkbb...bbnncc...cc
&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. NN - Number of Devices (hex)
3. DD - Module Type (ASCII hex)  
See explanation for "AA" in Function i10100
4. SSSSSSSS - Serial Number (ASCII hex long)
5. jj - Number of character in firmware version string (hex)
6. aa...aa - Firmware version (All ASCII [20h-7Eh])
7. kk - Number of characters in HW Build Date string (hex)
8. bb...bb - Hardware Build Date string (All ASCII [20h-7Eh])
9. nn - Number of characters in Device Address (hex)
10. cc...cc - VR-BUS Address (All ASCII [20h-7Eh])
11. && - Data Termination Flag
12. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: N05**

**Function Type:** Get Extended Device Directory

Version 2

**Command Format:**

**Display:** <SOH>IN0500

**Computer:** <SOH>iN0500

### Typical Response Messages, Display Format:

```
<SOH>
IN0500
SEP 26, 2008 09:45 AM
```

#### EXTENDED DEVICE DIRECTORY

ADDRESS	MODULE/DEVICE TYPE	SERIAL NUMBER	DATE CODE	STATE
B1.S1	UNIVERSAL SENS MODULE	0011111111		IN SERVICE
B1.S2	INPUT/OUTPUT MODULE	0022222222		IN SERVICE
B1.S3	UNIVERSAL SENS CMUX	0033333333		IN SERVICE
B1.S1.1	MAG PROBE	0011110001	09/34-01	IN SERVICE
B1.S1.2	MAG PROBE	0011110002	09/34-01	IN SERVICE
B1.S1.3	MAG PROBE	0011110003	09/34-01	IN SERVICE
B1.S2.1	EXTERNAL INPUT	0022220001	09/34-01	OUT OF SERVICE
B1.S2.2	EXTERNAL INPUT	0022220002	09/34-01	OUT OF SERVICE
B1.S2.3	EXTERNAL INPUT	0022220003	09/34-01	OUT OF SERVICE

<ETX>

### Typical Response Message, Computer Format:

```
<SOH>iN0500YYMMDDHHmmNNDDccccSSSSSSSSSSyywwrrrennaa...aa
DDccccSSSSSSSSSSyywwrrrennaa...aa
&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. NN - Number of Devices (hex)
3. DD - Module/Device Type (hex)  
See explanation for "AA" in Function i10100
4. cccc - Circuit Code (hex)
5. SSSSSSSSSS - 10 character Serial Number (string)
6. yywwrr - Date Code (decimal)  
yy = year  
ww = week  
rr = revision
7. e - Module Device State  
0=Out of Service  
1=In Service
8. nn - Number of characters in Device Address (hex)
9. aa...aa - VR-BUS Address (All ASCII [20h-7Eh])
10. ee...ee - VR-BUS Address (All ASCII [20h-7Eh])
11. && - Data Termination Flag
12. CCCC - Message Checksum



# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: N06  
Function Type: Get Device Assignments

Version 2

Command Format:  
Display: <SOH>IN0600  
Computer: <SOH>iN0600

### Typical Response Messages, Display Format:

<SOH>  
IN0600  
SEP 26, 2008 09:45 AM

#### DEVICE ASSIGNMENTS

M/ER	ADDRESS	MOD/DEV TYPE	PRIMARY ASSIGNMENT	SECONDARY ASSIGNMENT
M	B0.S1	USM		
	B0.S1.1	Probe	Pb 1:Probe 1 Label	T 1:Regular
! 2	B0.S1.2	Probe	Pb 2:Probe 2 Label	!

<ETX>

### Typical Response Message, Computer Format:

<SOH>iN0600YYMDDHHmmNNDDcccccePPSSnnaa...aa  
DDcccccePPSSnnaa...aa&&CCCC<ETX>

### Notes:

1. YYMDDHHmm - Current Date and Time
2. NN - Number of Devices (hex)
3. DD - Module/Device Type (hex)  
See explanation for "AA" in Function i10100
4. cccc - Circuit Code (hex)
5. ee - Error Code
6. PP - Primary Assignment Device Type
7. SS - Secondary Assignment Device Type
8. nn - Number of characters in Device Address (hex)
9. aa...aa - VR-BUS Address (All ASCII [20h-7Eh])
10. && - Data Termination Flag
11. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** N07  
**Function Type:** Comm Diagnostics Counters

Version 2

**Command Format:**  
**Display:** <SOH>SN07PP149  
**Computer:** <SOH>sN07PP149

**Inquire:**  
<SOH>IN07PP  
<SOH>iN07PP

### Notes:

1. The Inquiry portion of the command returns all counter information. The Set portion will reset the counters.
2. PP - Comm Port Number (Decimal, 00=all)

### Typical Response Messages, Display Format:

```
<SOH>
IN0700
SEP 26, 2008 09:45 AM

COMM DIAGNOSTICS

COMM BYTES BYTES PARITY OVERRUN FRAMING BREAK RESET
TYPE RECEIVED SENT ERRORS ERRORS ERRORS INTS DATE AND TIME

Co 1: RS232 Card: DIM 1 Label
 123456 123456 123456 123456 123456 123456 12/18/08 09:45

Co 2: CDIM Card: DIM 2 Label
 123456 123456 123456 123456 123456 123456 12/18/08 13:50
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>iN07PPYYMMDDHHmmPPDDNNFFFFFFFF...FFFFFFFFyyymmddhhmm
 DDNNFFFFFFFF...FFFFFFFFyyymmddhhmm&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. PP - Comm Port Number (Decimal, 00=All)
3. DD - Comm Device Type (hex)
4. NN - Number of eight character Data Fields to follow (hex)
5. FFFFFFFFFF - ASCII Hex Long
  1. Bytes Received
  2. Bytes Sent
  3. Parity Errors
  4. Overrrun Errors
  5. Framing Errors
  6. Break Interrupts
6. yyymmddhhmm - Reset Date and Time
7. && - Data Termination Flag
8. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

### 7.8 Vapor Collection Monitor (VMC) Reports

Version 6

**Function Code:** VA1

**Function Type:** VMC A/L Daily Records Report

**Command Format:**

**Display:** <SOH>IValffYYYYMMDDHHMMyyyyymmddhhmm

**Computer:** <SOH>iValffYYYYMMDDHHMMyyyyymmddhhmm

**Notes:**

1. ff - Fuel Position Number (Decimal, 01-99, 00=Not Allowed)
2. YYYYMMDDHHMM - Start Time Stamp (Optional)
3. yyyyymmddhhmm - End Time Stamp (Optional)

**Typical Response Message, Display Format:**

```
<SOH>
IValxx
JUN 7, 2015 3:48 PM
```

```
STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....
```

```
 A/L Daily Report @23:59 - VMC:001502 Side:2 FP:03
 Avg No of Test
Date Time A/L Trans. Status
2010.07.05 23:59:00 041.3 0028 WARN
2010.07.06 23:59:00 211.0 0045 IDLE
<ETX>
```

**Typical Response Message, Computer Format:**

```
<SOH>iValffYYMMDDHHmmIIIIIIIsffYYMMDDHHmmssFFFFS...
 YYMMDDHHmmssFFFFS&&CCCC<ETX>
```

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. IIIIII - Serial Number (Decimal)
3. s - Side (1=A, 2=B) (ASCII Hex)
4. ff - Fuel Position Number (Decimal, 01-99, 00=Not Allowed)
5. YYYYMMDDHHmmss - Timestamp of data record
6. FFFF - Average A/L (ASCII decimal, x10)
7. TTTT - Number of Transactions
8. S - Status (ASCII Hex)  
0=Roots meter not connected  
1=Idle  
2=Running  
3=Last Transaction Failed  
4=FP Shutdown Warning  
5=FP Shutdown Alarm
9. && - Data Termination Flag
10. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code: VA2**  
**Function Type:** VMC A/L Exception Report

Version 6

**Command Format:**  
**Display:** <SOH>IVA2ffYYYYMMDDHHMMyyyyymmddhhmm  
**Computer:** <SOH>iVA2ffYYYYMMDDHHMMyyyyymmddhhmm

### Notes:

1. ff - Fuel Position Number (Decimal, 01-99, 00=Not Allowed)
2. YYYYMMDDHHMM - Start Time Stamp (Optional)
3. yyyyymmddhhmm - End Time Stamp (Optional)

### Typical Response Message, Display Format:

```
<SOH>
IVA2xx
JUN 7, 2010 3:48 PM
```

```
STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....
```

A/L Exception Report - VMC: 010472 Side: 1 FP: 01

Date	Time	Error Counter	Fueling Counter	Recovery Rate %	Duration	Status	Vapor Rate	Fuel Rate
2010.07.05	23:59:00	00254	09385	147.8	00027	WARN	26.43	17.88

<ETX>

### Typical Response Message, Computer Format:

```
<SOH>iVA2ffYYMMDDHHmmIIIIIIIsffYYMMDDHHmmsseeeeeffffrrrrtttttSVVVVFFFF...
YYMMDDHHmmsseeeeeffffrrrrtttttSVVVVFFFF&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. IIIIII - Serial Number (Decimal)
3. s - Side (ASCII Hex)
  - 1=A
  - 2=B
4. ff - Fuel Position Number (Decimal, 01-99, 00=Not Allowed)
5. YYYYMMDDHHmms - Timestamp of data record
6. eeeee - Error Counter (Decimal)
7. fffff - Fueling Counter (Decimal)
8. rrrr - Recover Rate (ASCII decimal, x10)
9. ttttt - Remaining Time, minutes (ASCII Hex)
10. S - Status Code
  - 0=No meter
  - 3=Not Pass
  - 4=Warning (VMC Alarm)
  - 5=Fail (VMC Stop)
11. VVVV - Vapor Rate (ASCII Decimal, x100)
12. FFFF - Fuel Rate (ASCII Decimal, x100)
13. && - Data Termination Flag
14. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** VA3  
**Function Type:** VMC A/L Transaction Report

Version 6

**Command Format:**  
**Display:** <SOH>IVA3ffYYYYMMDDHHMMyyyyymmddhhmm  
**Computer:** <SOH>iVA3ffYYYYMMDDHHMMyyyyymmddhhmm

### Notes:

1. ff - Fuel Position Number (Decimal, 01-99, 00=Not Allowed)
2. YYYYMMDDHHMM - Start Time Stamp (Optional)
3. yyyyymmddhhmm - End Time Stamp (Optional)

### Typical Response Message, Display Format:

```
<SOH>
IVA3xx
JUN 7, 2015 3:48 PM
```

```
STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....
```

A/L Transaction Report - VMC: 001499 Side: 2 FP: 07

Date	Time	Error Counter	Fueling Counter	Recovery Rate %	Duration	Status	Vapor Rate	Fuel Rate
2011.02.10	16:06:18	00001	00015	999.9	00028	NOTPASS	33.61	00.00
2011.02.10	17:00:28	00000	00018	086.9	00074	IDLE	29.95	34.45

<ETX>

### Typical Response Message, Computer Format:

```
<SOH>iVA3ffYYMMDDHHmmIIIIIIIsffYYMMDDHHmmsseeeeeffffrrrrrtttttSVVVVFFFF...
YYMMDDHHmmsseeeeeffffrrrrrtttttSVVVVFFFF&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. IIIIII - Serial Number (Decimal)
3. s - Side (ASCII Hex)
  - 1=A
  - 2=B
4. ff - Fuel Position Number (Decimal, 01-99, 00=Not Allowed)
5. YYMMDDHHmms - Timestamp of data record
6. eeeee - Error Counter (Decimal)
7. fffff - Fueling Counter (Decimal)
8. rrrr - Recover Rate (ASCII decimal, x10)
9. ttttt - Remaining Time, minutes (ASCII Hex)
10. S - Status Code
  - 0=No meter
  - 3=Not Pass
  - 4=Warning (VMC Alarm)
  - 5=Fail (VMC Stop)
11. VVVV - Vapor Rate (ASCII decimal, x100)
12. FFFF - Fuel Rate (ASCII decimal, x100)
13. && - Data Termination Flag
14. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: VA5  
Function Type: VMCI Sub Alarm History Report

Version 6

Command Format:  
Display: <SOH>IVA500  
Computer: <SOH>iVA500

### Typical Response Message, Display Format:

<SOH>  
IVA500  
JUN 7, 2015 3:48 PM

STATION HEADER 1....  
STATION HEADER 2....  
STATION HEADER 3....  
STATION HEADER 4....

#### VMCI SUB ALARM HISTORY

ID	ALARM	ID	SUB ALARM	STATE	DATE	TIME
X 1:	VMC COMM TIMEOUT	x 1:	VMC COMM TIMEOUT	CLEAR	6-11-10	12:57PM
X 1:	VMC COMM TIMEOUT	x 2:	VMC COMM TIMEOUT	CLEAR	6-11-10	12:34PM
X 1:	VMC COMM TIMEOUT	x 2:	VMC COMM TIMEOUT	ALARM	6-11-10	12:27PM
X 1:	VMC COMM TIMEOUT	x 1:	VMC COMM TIMEOUT	ALARM	6-11-10	12:17PM

<ETX>

### Typical Response Message, Computer Format:

<SOH>iVA500YYMMDDHHmmnnXXNNxxSSAAYMMDDHHmm...  
XXNNxxSSAAYMMDDHHmm&&CCCC<ETX>

#### Notes:

1. YYMMDDHHmm - Current Date and Time
2. nn - Number of Sub Alarm records to follow (Hex)
3. XX - VMCI Sensor Number (Hex)
4. NN - Alarm Type Number  
03 = VMC Comm Timeout
5. xx - VMC Sensor Number (Hex)
6. SS - Sub Alarm Type Number  
If NN is 03 and SS is:  
03 = VMC Comm Timeout
7. AA - Alarm State  
00 = Alarm Cleared  
01 = Alarm Occurred
8. YYMMDDHHmm - Date and Time Alarm state occurred
9. && - Data Termination Flag
10. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** VAH  
**Function Type:** VPM Service Report Test Fail Clear

Version 7

**Command Format:**  
**Display:** <SOH>SVAHvv149TT  
**Computer:** <SOH>sVAHvv149TT

**Inquire:**  
<SOH>IVA Hvv  
<SOH>iVA Hvv

### Notes:

1. vv - Vapor Pressure sensor/zone number (00=all, inquire only, else 01-04)
2. 149 - This verification code must be sent to confirm the command
3. TT - Test Type
  - 01 = VPM Containment Test (Gross and Degradation)
  - 02 = VPM Integrity Test
  - 04 = VPM Sensor Out

### Typical Response Message, Display Format:

```
<SOH>
IVA H00
JUN 7, 2016 3:48 PM
```

```
STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....
```

Australia/NSW - APM

VPM Service Report Test Fail Clear

#	TEST	DATE
1	VPM CONTAINMENT GROSS-DEGRADATION	04/30/10 10:37 PM
1	VPM INTEGRITY TEST	04/29/10 05:25 PM
1	VPM SENSOR OUT TEST	04/29/10 06:12 AM
2	VPM CONTAINMENT GROSS-DEGRADATION	04/30/10 07:54 PM
2	VPM INTEGRITY TEST	04/17/10 11:07 PM
2	VPM SENSOR OUT TEST	04/29/10 09:11 PM

<ETX>

### Typical Response Message, Computer Format:

```
<SOH>iVA HvvYYMMDDHHmmvvNNITTYMMDDHHmm...
vvNNITTYMMDDHHmm&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. vv - Vapor Pressure Sensor/Zone Number (01-04, 00=all)
3. NN - Number of Test Types
4. TT - Test Types
  - 01 = VPM Containment Test (Gross and Degradation)
  - 02 = VPM Integrity Test
  - 03 = Vapor Processor (future)
  - 04 = VPM Sensor Out
  - 06 = Collection (future)
5. YYMMDDHHmm - Failure Date and Time associated to Test Type
6. && - Data Termination Flag
7. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** VAJ  
**Function Type:** Vapor Pressure Monitor Event Report

Version 7

**Command Format:**  
**Display:** <SOH>IVAJvvYYYYMMDDYYYYMMDDnnnn  
**Computer:** <SOH>iVAJvvYYYYMMDDYYYYMMDDnnnn

### Notes:

1. YYMMDD -Starting Date (If no start date is given or either Year, Month or Day are zeroes, it assumes request is for most recent records. If no start date is given, then the request is limited by the Maximum Records (below))  
Ranges are as follows:  
yy=Year(01 - 99, for Years 2001-2099)  
mm=Month (01 - 12, for Months January to December)  
dd=Day (01 - 31, however, validity depends on Month)
2. YYMMDD -Ending Date (If no end date is given or either Year, Month or Day are zeroes, it assumes request is for records starting from start date as evaluated above, limited by the Maximum Records (below)). Ranges are the same as for the Start Date fields.
3. nnnn -Maximum Records - 1 - 999 (Absolute Maximum) (Decimal). (If no Maximum Records is given or it's zeroes, it assumes request is for records starting from start date, ending by end date, and limited by the Maximum Records Default of 100)

### Typical Response Message, Display Format:

```
<SOH>
IVAJ00
JUN 7, 2016 3:48 PM
```

```
STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....
```

Australia/NSW - APM

VAPOR PRESSURE MONITOR - EVENTS REPORT

DATE	TIME	ZONE	DESCRIPTION	ACTION/NAME
16-06-07	09:00:01	1	GROSS OVER PRESSURE WARNING	ZONE EVENTS
16-06-06	09:00:01	1	GROSS OVER PRESSURE WARNING	ZONE EVENTS
16-06-05	09:00:00	1	GROSS OVER PRESSURE WARNING	ZONE EVENTS

```
<ETX>
```

### Typical Response Message, Computer Format:

```
<SOH>iVAJvvYYMMDDHHmmssssvvSSSSSSSSaabb...
vvSSSSSSSSaabb&&CCCC<ETX>
```

### Notes:

1. YYMMDDHHmm - Current Date and Time
2. ssss - Number of Shutdown and Misc Events to follow (Decimal)
3. vv - Vapor Pressure Sensor/Zone Number (01-04, 00=all)
4. SSSSSSSS - Timestamp of Shutdown/Misc Events (Seconds since 1/1/1970)(Hex)
5. aa - Primary Misc Event Category  
00 = All Event Categories  
01 = System Event  
02 = Pumps Re-enabled  
03 = Test Manually Cleared  
04 = Disabled Dispensers  
05 = Sensor Event  
06 = Zone Event
6. bb - Primary Misc Event Type  
If aa = 00  
00 = bb field must also be 00

**Function Code VAJ Notes:** (Continued)



## Serial Interface Manual

### TLS4/TLS-450/TLS-450Plus Monitoring Systems

```
If aa = 01
 00 = Any System Event
 01 = VPM Startup at:
 02 = VPM Shutdown at:
 03 = Time Change Detected at:
 04 = Assessment Time Change at:
If aa = 02
 00 = Any Pumps Re-enabled Event
If aa = 03
 00 = Any Test Manually Cleared Event
 06 = VPM Sensor Self Tests
 07 = VPM Gross Over-Pressure Clear Test After Repair
 08 = VPM Degradation Over-Pressure Clear Test After
 Repair
 09 = VPM Sensor Integrity Clear Test After Repair
If aa = 04
 00 = Any Disabled Dispenser Events
 05 = VPM Gross Over-Pressure Test
 06 = VPM Degradation Over-Pressure Test
 07 = VPM Sensor Test
If aa = 05
 00 = Any Sensor Events
 01 = Sensor Comm Alarm
 02 = Sensor Comm Resumed
 03 = VPS Calibration
If aa = 06
 00 = Any Zone Events
 01 = Zone Enabled - Zone zz
 02 = Zone Disabled - Zone zz
 03 = Zone Over-Pressure Condition
 04 = Zone Degradation Over-Pressure Condition
 05 = Zone Sensor Integrity Failure Condition
7. && - Data Termination Flag
8. CCCC - Message Checksum
```

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

**Function Code:** VAK

Version 7

**Function Type:** Acknowledge Vapor Pressure Monitor Alarm to Re-Enable Site

**Command Format:**

**Display:** <SOH>SVAKvv149

**Computer:** <SOH>sVAKvv149

**Inquire:**

<SOH>IVAKvv

<SOH>iVAKvv

**Notes:**

1. vv - Vapor Pressure Sensor/Zone number(00=all, inquire only, else 01-04)
2. 149 - This verification code must be sent to confirm the command

**Typical Response Message, Display Format:**

<SOH>  
IVAK00  
JUN 7, 2016 3:48 PM

STATION HEADER 1....  
STATION HEADER 2....  
STATION HEADER 3....  
STATION HEADER 4....

Australia/NSW - APM

VPS Status  
1 Active  
<ETX>

**Typical Response Message, Computer Format:**

<SOH>iVAKvvYYMMDDHHmmvvZ...  
vvZ&&CCCC<ETX>

**Notes:**

1. YYMMDDHHmm - Current Date and Time
2. vv - Vapor Pressure Sensor/Zone Number (00=all, inquire only, else 01-04)
3. Z - Zone Shutdown Status
  - 1 = Active
  - 2 = Shutdown
  - 3 = Override
4. && - Data Termination Flag
5. CCCC - Message Checksum

# Serial Interface Manual

## TLS4/TLS-450/TLS-450Plus Monitoring Systems

Version 7

**Computer:** <SOH>iVAMvvYYYYMMDDYYYYMMDD

**Notes:**

1. YYYYMMDD -Starting Date (If no start date is given or either Year, Month or Day are zeroes, it assumes request is for most recent records.)  
Ranges are as follows:  
    yyyy=Year(2001 - 2099)  
    mm=Month (01 - 12, for Months January to December)  
    dd=Day (01 - 31, however, validity depends on Month)
2. YYYYMMDD -Ending Date (If no end date is given or either Year, Month or Day are zeroes, it assumes request is for records starting from start date as evaluated above). Ranges are the same as for the Start Date fields.

**Typical Response Message, Display Format:**

Status Codes: (W)Warn (F)Fail/Shutdown (ST-W/F)Self Test-Warn/Fail (N)No Test

* VPS 1 *	System	-----Test Results (IWC)-----			----Pressure IWC----		
Date	Status	Gross	Degrđ	Sensor Test	Max	Avg	Min
2016-06-01	W	W(-10.20)	W(-10.20)	Pass	-5.80	-8.44	-10.20
2016-06-02	W	W(-10.00)	W(-10.00)	Pass	+1.81	-4.81	-10.00
2016-06-03	W	W(-10.36)	W(-10.36)	Pass	-5.10	-8.08	-10.36
2016-06-04	Pass	Pass	W(-9.94)	Pass	-5.68	-8.11	-9.94
<ETX>							

Typical Response Message, Computer Format:

```
<SOH>iVAMvvYYMMDDHHmmNNNNvvYYYYMMDDSOgnppppppppp
 Dnppppppppp
 Lnpppppppppqqqqqqqqq
 MMMMMMMMAAAAAAANNNNNNNNN...
vvYYYYMMDDSOgnppppppppp
 Dnppppppppp
 Lnpppppppppqqqqqqqqq
 MMMMMMMMAAAAAAANNNNNNNNN&&CCCC<ETX>
```

**Notes:**

- ```

3.      YYMMDDHHmm - Current Date and Time
4.      NNNN - Number of records to follow (Hex)
5.      vv - Vapor Pressure Sensor/Zone Number (01-04, 00=all)
6.      YYYYMMDD - Report Date
7.      S - System Status
           0 = No Test
           1 = Warning
           2 = Fail

```

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code VAM Notes: (Continued)

- 6.

O - Sensor self test status

3 = Pass

0 = No Test

1 = Warning

2 = Fail

3 = Pass
- 7.

G - Gross over-pressure test status

0 = No Test

1 = Warning

2 = Fail

3 = Pass
- 8.

n - Number of values to follow [0 or 1]
- 9.

pppppppp - Worst test failure pressure, IWC (optional)
- 10.

D - Degradation over-pressure test status

0 = No Test

1 = Warning

2 = Fail

3 = Pass
- 11.

n - Number of values to follow [0 or 1]
- 12.

pppppppp - Worst test failure pressure, IWC (optional)(ASCII Hex IEEE float)
- 13.

L - Sensor test status

0 = No Test

1 = Warning

2 = Fail

3 = Pass
- 14.

N - Number of values to follow [0, 1, 2]
- 15.

pppppppp - 1st Worst test failure pressure, IWC (optional)(ASCII Hex IEEE float)
- 16.

qqqqqqqq - 2nd Worst test failure pressure, IWC (optional)(ASCII Hex IEEE float)
- 17.

MMMMMMMM - Maximum Pressure, IWC (ASCII Hex IEEE float)
- 18.

AAAAAAAA - Average Pressure, IWC (ASCII Hex IEEE float)
- 19.

NNNNNNNN - Minimum Pressure, IWC (ASCII Hex IEEE float)
- 20.

&& - Data Termination Flag
- 21.

CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: VAN
Function Type: APM Fault History Report

Version 7

Command Format:
Display: <SOH>IVANvvYYYYMMDDYYYYMMDDnnn
Computer: <SOH>iVANvvYYYYMMDDYYYYMMDDnnn

Notes:

1. YYYYMMDD -Starting Date (If no start date is given or either Year, Month or Day are zeroes, it assumes request is for most recent records. If no start date is given, then the request is limited by the Maximum Records (below))
Ranges are as follows:
yy=Year(2001 - 2099)
mm=Month (01 - 12, for Months January to December)
dd=Day (01 - 31, however, validity depends on Month)
2. YYYYMMDD -Ending Date (If no end date is given or either Year, Month or Day are zeroes, it assumes request is for records starting from start date as evaluated above, limited by the Maximum Records (below)). Ranges are the same as for the Start Date fields.
3. nnn -Maximum Records - 1 - 999 (Absolute Maximum) (Decimal). (If no Maximum Records is given or it's zeroes, it assumes request is for records starting from start date, ending by end date, and limited by the Maximum Records Default of 100)

Typical Response Message, Display Format:

```
<SOH>
IVAN00
JUN  7, 2016  3:48 PM
```

```
STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....
```

Australia/NSW - APM

AUTOMATIC PRESSURE MONITOR FAULT HISTORY REPORT

DATE	TIME	ZONE	FAULT	STATE
05/23/16	01:49 PM	1	GROSS TEST WARNING	CLEAR
05/23/16	12:47 PM	1	GROSS TEST WARNING	ALARM
05/23/16	09:00 AM	1	GROSS PRESSURE WARNIN	CLEAR
05/23/16	09:00 AM	1	GROSS PRESSURE WARNIN	ALARM

<ETX>

Typical Response Message, Computer Format:

```
<SOH>iVAN00YYMDDHHmmYYMDDYYMDDnnYYMDDHHmmvvNNSS...
YYMDDHHmmvvNNSS&&CCCC<ETX>
```

Notes:

1. YYMDDHHmm - Current Date and Time
2. YYMDD - Start Date
3. YYMDD - End Date
4. nn - Number of records to follow
5. YYMDDHHmm - Date/Time Alarm state occurred
6. vv - Vapor Pressure sensor zone number (01-04, 00=all)
7. NN - APM Alarm Type Number
 - 01 = VPM Gross Over-Pressure Test Warning
 - 02 = VPM Gross Over-Pressure Test Failure Warning
 - 03 = VPM Gross Pver-Pressure Test Failure Alarm
 - 04 = VPM Degradation Over-Pressure Test Fail Warning
 - 05 = VPM Degradation Over-Pressure Test Fail Alarm
 - 06 = VPM Sensor Test Failure Warning
 - 07 = VPM Sensor Test Failure Alarm

Function Code VAN Notes: (Continued)

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

- 09 = VPM Sensor Out Warning
- 10 = VPM Sensor Out Failure
- 8. SS - Alarm State
 - 01 = Alarm cleared
 - 02 = Alarm occurred
- 9. && - Data Termination Flag
- 10. CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: VAP
Function Type: Set VPM Assessment Time

Version 7

Command Format:
Display: <SOH>SVAP00hhMM
Computer: <SOH>sVAP00hhMM

Inquire:
<SOH>IVAP00
<SOH>iVAP00

Typical Response Message, Display Format:

<SOH>
IVAP00
JUN 7, 2016 3:48 PM

STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....

Australia/NSW - APM

VPM ASSESSMENT TIME: 02:00 AM
<ETX>

Typical Response Message, Computer Format:

<SOH>iVAP00YYMMDDHHmmhhMM&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. hh - Assessment Time Hour of Day [00-23] (Decimal)
3. MM - Assessment Time Minute of Hour [00-59] (Decimal)
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: VAR
Function Type: Set VPM Daily Warning Reduction

Version 7

Command Format:
Display: <SOH>SVAR00tdd
Computer: <SOH>sVAR00tdd

Inquire:
<SOH>IVAR00
<SOH>iVAR00

Typical Response Message, Display Format:

<SOH>
IVAR00
JUN 7, 2016 3:48 PM

STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....

Australia/NSW - APM

VAPOR PRESSURE MONITOR - SET DAILY WARN REDUCTION

SENSOR TEST : 0
<ETX>

Typical Response Message, Computer Format:

<SOH>iVAR00YYMMDDHHmmNNtdd...tdd&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. NN - Number of records to follow (Decimal)
3. t - Test Type
 - 1 = Sensor Test Warnings
 - 2 = Gross Over-Pressure Warnings (future)
 - 3 = Degradation Over-Pressure Warnings (future)
4. dd - Number of Days to suppress/filter warnings before posting the first warning (00-nn, nn is max allowed for a region/test) Australia: 0-6, default=0
5. && - Data Termination Flag
6. CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: VAS

Version 7

Function Type: Set Sensor Table VPM In Use Flag

Command Format:

Display: <SOH>SVASvvFF149

Computer: <SOH>sVASvvFF149

Inquire:

<SOH>IVASvv

<SOH>iVASvv

Notes:

1. 149 - This verification code must be sent to confirm the command

Typical Response Message, Display Format:

```
<SOH>
IVAS00
JUN  7, 2016  3:48 PM
```

```
STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....
```

Australia/NSW - APM

VAPOR PRESSURE MONITOR - SENSOR INDEX TABLE

SENSOR	TYPE	S/N	IN USE
1	VAPOR PRESS SENSOR	0006881745	YES

<ETX>

Typical Response Message, Computer Format:

<SOH>iVASvvYYMMDDHHmmvvFF...vvFF&&CCCC<ETX>

Notes:

1. YYMMDDHHmm - Current Date and Time
2. vv - Vapor Pressure Sensor/Zone number (01-04, 00=all)
3. FF - In Use Flag
00 = Not Used
01 = Used
4. && - Data Termination Flag
5. CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Function Code: VAT
Function Type: Set Tank Siphon Manifolded Partners

Version 7

Command Format:
Display: <SOH>SVATvvNNtt
Computer: <SOH>sVATvvNNtt

Inquire:
<SOH>IVATvv
<SOH>iVATvv

Typical Response Message, Display Format:

```
<SOH>
IVAT00
JUN  7, 2016  3:48 PM

STATION HEADER 1....
STATION HEADER 2....
STATION HEADER 3....
STATION HEADER 4....

Australia/NSW - APM

VAPOR PRESSURE MONITOR - ZONE MANIFOLDED TANK SET

VPS  1: SERIAL NUMBER: 0006881745 LABEL   : VaporPressureSensor1
      TANK   01 : REGULAR
      TANK   02 : SUPER
<ETX>
```

Typical Response Message, Computer Format:

```
<SOH>iVATvvYYMMDDHHmmvvNNtt...tt...
                        vvNNtt...tt&&CCCC<ETX>
```

Notes:

1. YYMMDDHHmm - Current Date and Time
2. vv - Vapor Pressure sensor zone number (01-04, 00=all)
3. NN - Number of Tanks that are part of the vapor zone
4. tt - Tank Numbers of Tanks connected by the vapor zone
5. && - Data Termination Flag
6. CCCC - Message Checksum

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

8.0 IFSF DATABASE SUPPORT

When equipped with the appropriate software and interface module, these systems can respond to commands using the International Forecourt Standards Forum (IFSF) tank gauge communications protocols as defined in the following tables. Please see the IFSF documents "PART II, COMMUNICATION SPECIFICATION" and "PART III.3 TANK LEVEL GAUGE APPLICATION" for further details.

8.1 TANK LEVEL GAUGE DATABASE

TANK LEVEL GAUGE DATABASE DB_Ad=TLG_DAT (01H)			
Data_Id	Data Element Name	M/O	Supported
CONFIGURATION DATA			
1	Nb_Tanks	M	Yes
2	Reference_Temp	O	Yes
3	TLG_Measurement_Units	O	Yes
6	Country_Code	M	Yes
7	Maint_Password	M	Yes
50	TLG_Manufacturer_Id	M	Yes
51	TLG_Model	M	Yes
52	TLG_Type	M	Yes
53	TLG_Serial_Nb	M	Yes
54	TLG_Appl_Software_Ver	M	Yes
58	IFSF_Protocol_Ver	M	Yes
59	Current_Date	O	Yes
60	Current_Time	O	Yes
61	SW_Checksum	M	Yes
TLG COMMAND			
70	Enter_Maint_Mode	M	Yes
71	Exit_Maint_Mode	M	Yes

Serial Interface Manual
TLS4/TLS-450/TLS-450Plus Monitoring Systems

8.2 TANK LEVEL GAUGE ERROR CODE DATABASE

TANK LEVEL GAUGE ERROR CODE DATABASE DB_Ad=TLG_DAT (01H) + TLG_ER_DAT (41H) + TLG_ER_ID (01H-40H)			
Data_Id	Data Element Name	M/O	Supported
ERROR DATA			
1	TLG_Error_Type	M	Yes
2	TLG_Err_Description	O	Yes
3	TLG_Error_Total	M	Yes
4	TLG_Error_Total_Erase_Date	O	Yes
UNSOLICITED DATA			
100	TLG_Error_Type_Mes	M	Yes

8.3 TANK PROBE DATABASE

TANK PROBE DATABASE DB_Ad=TP_ID (21H-3FH)			
Data_Id	Data Element Name	M/O	Supported
CONFIGURATION			
1	TP_Manufacturer_Id	M	Yes
2	TP_Type	M	Yes
3	TP_Serial_Nb	M	Yes
4	TP_Model	M	Yes
5	TP_Appl_Software_Ver	M	Yes
6	Prod_Nb	O	Yes
7	Prod_Description	O	Yes
8	Prod_Group_Code	O	Yes
9	Ref_Density	O	No
10	Tank_Diameter	O	Yes
11	Shell_Capacity	O	Yes
12	Max_Safe_Fill_Capacity	O	Yes
13	Low_Capacity	O	Yes
14	Min_Operating_Capacity	O	Yes

Serial Interface Manual
TLS4/TLS-450/TLS-450Plus Monitoring Systems

TANK PROBE DATABASE DB_Ad=TP_ID (21H-3FH)			
Data_Id	Data Element Name	M/O	Supported
15	HiHi_Level_Setpoint	O	No
16	Hi_Level_Setpoint	O	No
17	Lo_Level_Setpoint	O	No
18	LoLo_Level_Setpoint	O	No
19	Hi_Water_Setpoint	O	Yes
20	Water_Detection_Thresh	O	Yes
21	Tank_Tilt_Offset	O	Yes
22	Tank_Manifold_Partners	O	Yes
23	TP_Measurement_Units	O	Yes
CONTROL DATA			
32	TP_Status	M	Yes
33	TP_Alarm	M	Yes
TANK READING			
64	Product_Level	M	Yes
65	Total_Observed_Volume	O	Yes
66	Gross_Standard_Volume	O	Yes
67	Average_Temp	O	Yes
68	Water_Level	M	Yes
69	Observed_Density	O	Yes
70	Last_Reading_Date	O	Yes
71	Last_Reading_Time	O	Yes
UNSOLICITED			
100	TP_Status_Message	M	Yes

Serial Interface Manual
TLS4/TLS-450/TLS-450Plus Monitoring Systems

8.4 TANK CONTENTS TABLE DATABASE

TANK CONTENTS TABLE DATABASE DB_Ad=TP_ID (21H-3FH) + CAL_DAT (21H) + ENTRY (01H-FFH)			
Data_Id	Data Element Name	M/O	Supported
CONFIGURATION			
1	Strap_Level	O	No
2	Strap_Vol	O	No

8.5 TANK TEMPERATURE TABLE DATABASE

TANK TEMPERATURE TABLE DATABASE DB_Ad=TP_ID (21H-3FH) + TEMP_DAT (22H) + TEMP_ADDR (01H-08H)			
Data_Id	Data Element Name	M/O	Supported
CONFIGURATION			
1	Temp_height	O	Yes
2	Temp_value	O	Yes

8.6 TANK PROBE ERROR CODE DATABASE

TANK PROBE ERROR CODE DATABASE DB_Ad=TP_ID (21H-3FH) + TP_ER_DAT (41H) + TP_ER_ID (01H-40H)			
Data_Id	Data Element Name	M/O	Supported
ERROR DATA			
1	TP_Error_Type	M	Yes
2	TP_Err_Description	O	Yes
3	TP_Error_Total	M	Yes
4	TP_Error_Total_Erase_Date	O	Yes
5	TP_Error_Status	M	Yes
UNSOLICITED DATA			
100	TP_Error_Type_Mes	M	Yes

Serial Interface Manual
TLS4/TLS-450/TLS-450Plus Monitoring Systems

8.7 COMMUNICATION SERVICE DATABASE

COMMUNICATION SERVICE DATABASE DB_Ad=00H		
Data_Id	Variable Name	Supported
CONFIGURATION		
1	Communication_Protocol_Ver (read only)	Yes
2	Local_Node_Address	Yes
3	Recipient_Addr_Table	Yes
4	Heartbeat_Interval	Yes
5	Max_Block_Length	Yes
COMMANDS		
10	Heartbeat_Error	Yes
11	Add_Recipient_Addr	Yes
12	Remove_Recipient_Addr	Yes

Serial Interface Manual
TLS4/TLS-450/TLS-450Plus Monitoring Systems

9.0 FUNCTION CODE SUMMARY

CONTROL FUNCTIONS (7.1)

Code	Version			Feature	Function
	450	4	450Plus		
001	N/A	1	5		System Reset
002	N/A	N/A	N/A		Clear Power Reset Flag (obsolete)
003	2	1	5		Remote Alarm Reset
010	1	1	5		Cancel Autodial Computer Mode Session
031	N/A	N/A	N/A		Confirm Clear Function (obsolete)
051	N/A	N/A	N/A		Clear In-Tank Delivery Reports (obsolete)
052	1	1	5	SLD	Start In-Tank Leak Detect Test
053	1	1	5	SLD	Stop In-Tank Leak Detect Test
054	1	1	5	CSLD	Delete CSLD Rate Table
081	1	N/A	5	PLLD	Start Pressure Line Leak Test (3.00 GPH)
082	1	N/A	5	PLLD	Stop Pressure Line Leak Test
087	1	N/A	5	PLLD	Start Pressure Line Leak Test by Type
089	1	N/A	5	PLLD	Pressure Line Leak Pressure Offset Reset
091	1	1	5		Close Current Shift
092	1	N/A	5	PLLD	Start Pressure Line Leak Profile Line Test
093	1	N/A	5	PLLD	Stop Pressure Line Leak Profile Line Test
094	1	N/A	5	PLLD	Recalculate Press Line Leak Profile Bulk Modulus
09C	N/A	6	6		Manually Start/Stop Timed Sudden Loss Detection
09D	N/A	6	6		Restart Timed Sudden Loss Detection

OPERATIONAL REPORTS (7.2)

SYSTEM REPORTS (7.2.1)

Code	Version			Feature	Function
	450	4	450Plus		
101	1	1	5		System Status Report
102	N/A	N/A	N/A		System Configuration Report (obsolete use N03)
110	1	1	5		Combined Alarm History Report
111	1	1	5		Priority Alarm History Report
112	1	1	5		Non-Priority Alarm History Report
113	1	1	5		Active Alarm Report

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TLS4/TLS-450/TLS-450Plus Monitoring Systems

Code	Version			Feature	Function
	450	4	450Plus		
114	1	1	5		Cleared Alarm Report
11C	1	1	5		Extended Alarm Reports – Date Based
11D	1	1	5		Extended Alarm Reports – Date/Time Based
11E	1	1	5		Extended Alarm Reports II – Date/Time Based
11F	1	1	5		Extended Sensor Status Report – Date/Time Based
122	N/A	5	5		Setup Warning Detailed Information

IN-TANK REPORTS (7.2.2)

Code	Version			Feature	Function
	450	4	450Plus		
201	1	1	5		In-Tank Inventory Report
202	1	1	5		In-Tank Delivery Report
203	1	1	5	SLD/ CSLD	In-Tank Leak Detect Report
204	1	1	5		In-Tank Shift Inventory Report
205	1	1	5		In-Tank Status Report
206	1	1	5		In-Tank Alarm History Report
207	1	1	5	SLD/ CSLD	In-Tank Leak Test History Report
208	1	1	5	SLD/ CSLD	In-Tank Leak Test Results Report
209	1	1	5	SLD/ CSLD	Enhanced In-Tank Leak Detect Report
20A	4	1	5	BIR	HRM Adjusted Delivery Report
20B	2	1	5	BIR	BIR Adjusted Delivery Report
20C	1	1	5		In-Tank Most Recent Delivery Report
20D	N/A	5	5		In-Tank Stick Height Report
20F	1	1	5		Extended Delivery Report – Date/Time Based
20G	1	1	5	SLD	Static Leak Test Passed Report
20H	1	1	5	SLD	Static Leak Test History
20I	1	1	5		Enhanced In-Tank Inventory Report
20L	2	1	5	BIR	BIR Adjusted Delivery Report – Date/Time Based
20M	2	1	5		In-Tank Shift Inventory History Report – Date/Time Based
20N	3	1	5		In-Tank Mass/Density Shift Inventory Report
20P	4	1	5	BIR	HRM Adjusted Delivery Report – Date/Time Based
211	1	1	5		Tank Chart Report
212	1	1	5	SLD/	In-Tank Leak Test History Report 2

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Code	Version			Feature	Function
	450	4	450Plus		
				CSLD	
213	1	1	5		In-Tank Extended Standard Delivery Report
214	3	1	5		In-Tank Mass/Density Inventory Report
215	3	1	5		In-Tank Mass/Density Delivery Report
217	1	1	5		Tank Profile
21A	1	1	5		In-Tank Inventory Report With 90/95% Ullage
21B	2	1	5	BIR	BIR Extended Adjusted Delivery Report
21C	1	1	5		In-Tank Most Recent Delivery Report with Manifolded Results
21D	1	1	5		In-Tank Current Siphon Manifolded Total Volumes
21E	2	1	5		Hourly Inventory Volume
21F	2	1	5		Manual Shift Inventory Snapshot Volume
21G	2	1	5		Tank Height Status
21H	2	1	5	Accuchart	Time Ordered Chart Sales Comparison
21I	2	1	5	Accuchart	Time Ordered Chart Delivery Comparison
21J	2	1	5	Accuchart	Histogram Comparison of Tank Charts
21K	2	1	5	Accuchart	Error Plot Comparison of Tank Charts
21L	2	1	5		Manual Delivery Report
21M	N/A	1	5		Regulator Tank Chart Report
21N	N/A	1	5		Tank Chart Report with Chart ID Number
221	2	1	5	BIR	Ticketed Delivery Report
222	2	1	5	BIR	Bill of Lading Report
225	2	1	5	BIR	Periodic Delivery Variance Report
226	2	1	5	BIR	Weekly Delivery Variance Report
227	2	1	5	BIR	Daily Delivery Variance Report
228	N/A	6	6		Exception Report for Timed Sudden Loss Detection
229	N/A	6	6		Period Report for Timed Sudden Loss Detection
22I	2	1	5	BIR	Ticketed Delivery Daily Report
22J	2	1	5	BIR	Delivery Ticket History Report
231	N/A	1	5		In-Tank Full Inventory Report
233	3	1	5		Density Offset History Report
234	3	1	5		In-Tank Mass/Density Inventory Report 2
235	3	1	5		In-Tank Mass/Density Delivery Report 2
237	4	1	5		In-Tank Product Inventory Report
238	4	1	5		In-Tank Siphon Manifolded Inventory Report
239	4	1	5	BIR	Manifolded Delivery Report with Sales Adjustment if BIR

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TLS4/TLS-450/TLS-450Plus Monitoring Systems

Code	Version			Feature	Function
	450	4	450Plus		
					available
23A	4	2	5	BIR	Manifolded Delivery Report with Sales Adjustment if BIR available
23B	3	1	5	BIR	BIR Adjusted Mass/Density Delivery Report
251	1	1	5	CSLD	CSLD Results Report
2E3	1	1	5		In-Tank Inventory History Report
2E4	1	1	5		Extended In-Tank Inventory Report – Date/Time Based

SENSOR REPORTS (7.2.3)

Code	Version			Feature	Function
	450	4	450Plus		
301	1	1	5		Liquid Sensor Status Report
302	1	1	5		Liquid Sensor Alarm History Report
306	1	1	5		Vapor Sensor Status Report
307	1	1	5		Vapor Sensor Alarm History Report
311	1	1	5		Groundwater Sensor Status Report
312	1	1	5		Groundwater Sensor Alarm History Report
315	N/A	N/A	N/A		Smart Sensor Status Report (obsolete use 31B)
316	N/A	N/A	N/A		Smart Sensor Alarm History Report (obsolete 31C)
31B	1	1	5		MAG Sensor Status Report
31C	1	1	5		MAG Sensor Alarm History
322	N/A	5	5		Pump Relay Monitor Status Report
323	N/A	5	5		Pump Relay Monitor Alarm History Report
333	N/A	N/A	N/A		Smart Sensor Install Log (obsolete)
341	1	1	5		Type A (2 Wire CL) Sensor Status Report
342	1	1	5		Type A (2 Wire CL) Sensor Alarm History Report
346	1	1	5		Type B (3 Wire CL) Sensor Status Report
347	1	1	5		Type B (3 Wire CL) Sensor Alarm History Report
34B	N/A	N/A	N/A		Universal Sensor Status Report (obsolete)
34C	N/A	N/A	N/A		Universal Sensor Alarm History Report (obsolete)
34E	N/A	7	7		Sensor History by Period Report

LINE LEAK REPORTS (7.2.4)

Code	Version			Feature	Function
	450	4	450Plus		

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Code	Version			Feature	Function
	450	4	450Plus		
373	1	N/A	5	PLLD	Pressure Line Leak Test Results (with 0.20 test data)
374	1	N/A	5	PLLD	Pressure Line Leak Test History (with 0.20 test data)
375	1	N/A	5	PLLD	Pressure Line Leak Test Results II (with 0.20 test data)
376	1	N/A	5	PLLD	Pressure Line Leak Passed Test Results
377	1	N/A	5	PLLD	Enhanced Pressure Line Leak Test History (with 0.20 test data)
381	1	N/A	5	PLLD	Pressure Line Leak Status
382	1	N/A	5	PLLD	Pressure Line Leak Alarm History Report
383	1	N/A	5	PLLD	Pressure Line Leak Test Results (0.10 test data only)
384	1	N/A	5	PLLD	Pressure Line Leak Test History (0.10 test data only)
385	1	N/A	5	PLLD	Pressure Line Leak Test Results (0.20 test data listed before 0.10 test data)

I/O DEVICE REPORTS (7.2.5)

Code	Version			Feature	Function
	450	4	450Plus		
401	1	1	5		Input Status Report
402	1	1	5		Input Alarm History Report
403	1	1	5		Input/Generator Alarm History Report
406	1	1	5		Relay Status Report
407	1	1	5		Input Diagnostics
408	1	1	5		Relay Diagnostics
412	N/A	6	6		VMC Alarm History Report

SETUP FUNCTIONS & REPORTS (7.3)

SYSTEM SETUP (7.3.1)

Code	Version			Feature	Function
	450	4	450Plus		
501	1	1	5		Set Time of day
502	1	1	5		Set Shift Close Time 1, 2, 3, 4, 5, 6, 7, 8
503	1	1	5		Set Print Header Line 1, 2, 3, 4
504	N/A	N/A			Set System RS-232 Security Code (obsolete use 536)
505	N/A	N/A			Set System Type & Language Flags (obsolete use 517)
506	N/A	N/A			Set Periodic Test Needed Warning (obsolete use 546)
507	N/A	N/A			Set Days Before Periodic Test Needed Warning (obsolete use 547)
508	N/A	N/A			Set Days Before Periodic Test Needed Alarm (obsolete use 548)
509	N/A	N/A			Set Annual Test Needed Warning (obsolete use 549)

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TLS4/TLS-450/TLS-450Plus Monitoring Systems

Code	Version			Feature	Function
	450	4	450Plus		
50A	N/A	N/A			Set Days Before Annual Test Needed Warning (obsolete use 54A)
50B	N/A	N/A			Set Days Before Annual Test Needed Alarm (obsolete use 54B)
50D	1	1	5		Set Print Temperature Compensation Flag
50E	1	1	5		Set Temperature Compensation Value
50F	N/A	N/A			Set System Date/Time Display Format (obsolete use 50J)
50G	1	1	5		Set Header – Fax Sender Name
50H	1	1	5		Set Header – Fax Number
50I	1	1	5		Set Display Setup - Number Format
50J	1	1	5		Set Display Setup – Date & Time Format
50K	2	1	5		Set Inventory Maximum Number of Shifts per Day
50L	2	1	5		Inventory Shift Close Setup Report
50M	2	1	5		Delivery Setup Report
50N	2	1	5	BIR	Reconciliation Setup Report
511	2	1	5	BIR	Set BIR Shift Close Warning
512	2	1	5	BIR	Set BIR Daily Close Warning
514	1	1	5		Set H-Protocol Height/Volume Format
515	N/A	N/A	N/A	BIR	Set HRM/QPLD Monthly Printout (obsolete)
517	1	1	5		Set System Type & Language Flags
519	1	1	5	PLLD	Set PLLD & WPLLD Duration Before Precision Retest
51A	1	N/A	N/A		Set Enable/Disable Auto Daylight Saving Time
51B	1	N/A	N/A		Set Start/End Daylight Saving Date and Time (obsolete use 51S)
51C	2	1	5	BIR	Set Ticketed Delivery Flag Enabled
51D	2	1	5	BIR	Set Ticketed Delivery Temperature Compensation Flag
51E	2	1	5	BIR	Set Ticketed Delivery Close Day of Week
51F	1	1	5		Set Euro Protocol Prefix
51G	1	1	5		Set Enable/Disable System Setup Custom Help Flag
51H	1	N/A	N/A		Set Front Panel Security
51M	2	1	5		Set Delivery Method
51R	4	1	5	BIR	Set HRM Feature Enable Flag
51S	N/A	1	5		Set Time Zone

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TLS4/TLS-450/TLS-450Plus Monitoring Systems

Code	Version			Feature	Function
	450	4	450Plus		
571	1	1	5		Set Enable/Disable User Ullage
572	1	1	5		Set User Ullage Percentage

COMMUNICATION SETUP (7.3.2)

Code	Version			Feature	Function
	450	4	450Plus		
520	N/A	N/A	N/A		Set Receiver Auto Dial Type and Start Time II (obsolete use 5P1 – 5P7)
521	1	N/A	N/A		Set Receiver Configuration Flag (obsolete V2 use 872)
522	1	N/A	N/A		Set Receiver Location Label (obsolete V2 use 874)
523	N/A	N/A	N/A		Set Receiver Telephone Number (obsolete use 5G1 & 5G3 or 5H3)
524	N/A	N/A	N/A		Set Receiver Dialing Destination Type (obsolete)
525	N/A	N/A	N/A		Set Receiver Port Number to Dial (obsolete use 5G5, 5H5, 5I5, or 5J5)
526	N/A	N/A	N/A		Set Receiver Retry Number (obsolete use 5G6, 5H6, 5I6, 5J6, or 5K6)
527	N/A	N/A	N/A		Set Receiver Retry Delay Time (obsolete use 5G7, 5H7, 5I7, 5J7, or 5K7)
528	N/A	N/A	N/A		Set Receiver Confirmation Report Flag (obsolete)
529	N/A	N/A	N/A		Set Fax Auto Dial Method (obsolete)
52A	N/A	N/A	N/A		Set Receiver Report List (obsolete)
52B	N/A	N/A	N/A		Set Receiver Auto Dial Type and Start Time (obsolete)
52C	N/A	N/A	N/A		Set Receiver Auto Dial On Alarms (obsolete)
52D	1	1	5		Autodial Alarm Status
52E	N/A	N/A	N/A		Set Delay for Autodial on Alarm Clear (obsolete)
52G	2	1	5	DIM	COMM DIM Setup Report
52H	2	1	5	DIM	Set COMM DIM Protocol
530	1	1	5		Beeper Enable/Disable
531	1	1	5		Set RS-232 End of Message

WARNING, ALARM, & AUTO-PRINT SETUP (7.3.3)

Code	Version			Feature	Function
	450	4	450Plus		
536	1	1	5		Set RS-232 Security Code per Port
537	1	1	5		Set Display Format RS-232 ETX per Port
538	1	1	5		Set Computer Format RS-232 ETX per Port
53A	2	1	5		Set Shift Close Method
545	3	1	5		Set TC Density Enable
546	1	1	5		Set Tank Periodic Test Needed Warning
547	1	1	5		Set Days Before Tank Periodic Test Needed Warning

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Code	Version			Feature	Function
	450	4	450Plus		
548	1	1	5		Set Days Before Tank Periodic Test Needed Alarm
549	1	1	5		Set Tank Annual Test Needed Warning
54A	1	1	5		Set Days Before Tank Annual Test Needed Warning
54B	1	1	5		Set Days Before Tank Annual Test Needed Alarm
54C	1	1	5	CSLD	Set CSLD Evaporation Reid Vapor Pressure Chart
54E	N/A	7	7		Set Sensor History Period Report Configuration
553	1	N/A	5	PLLD	Set Line Re-Enable Method
554	1	N/A	5	PLLD	Set Periodic Line Leak Test Auto-Confirm
555	1	N/A	5	PLLD	Set Annual Line Leak Test Auto-Confirm
556	1	N/A	5	PLLD	Set Line Periodic Test Needed Warning
557	1	N/A	5	PLLD	Set Days Before Line Periodic Test Needed Warning
558	1	N/A	5	PLLD	Set Days Before Line Periodic Test Needed Alarm
559	1	N/A	5	PLLD	Set Line Annual Test Needed Warning
55A	1	N/A	5	PLLD	Set Days Before Line Annual Test Needed Warning
55B	1	N/A	5	PLLD	Set Days Before Line Annual Test Needed Alarm
564	1	1	5		Set Ullage
56E	2	1	5		Set Manual Close Timeout in Minutes
577	2	1	5		Set Inventory Close Start Time
578	2	1	5		Set Inventory Reporting Interval
579	2	1	5		Set Tank Idle Delivery Enable/Disable
57B	N/A	6	6		Set Timed Sudden Loss Monitoring Schedule
580	2	1	5		Get Inventory Storage Length
581	4	1	5		Set Alarm Filter
5BC	N/A	N/A	N/A		Set Receiver Auto Dial on Alarm II (obsolete use 5P1 , 5P4 , & 5P7)
5BD	1	1	5		Set Enable/Disable Custom Alarms
5BE	N/A	N/A	N/A		Set Custom Alarm Labels (obsolete use 5BF)
5BF	1	1	5		Set Custom Alarm Label, device number, and indications
5E2	N/A	N/A	N/A		Set Inventory Record Time 1, 2, 3, 4 (obsolete)

ADDRESS BOOK SETUP (7.3.4)

Code	Version			Feature	Function
	450	4	450Plus		

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Code	Version			Feature	Function
	450	4	450Plus		
5G1	1	1	5		Add Contact
5G2	1	1	5		Delete Contact
5G3	1	1	5		Set Contact Modem Number
5G4	1	1	5		Set Contact Modem Dial-Out String
5G5	1	1	5		Set Contact Modem Communication Device Number
5G6	1	1	5		Set Contact Modem Retry Count
5G7	1	1	5		Set Contact Modem Retry Delay Time
5G8	1	1	5		View Full Contact Info
5H3	1	1	5		Set Contact FAX Modem Number
5H4	1	1	5		Set Contact FAX Dial-Out String
5H5	1	1	5		Set Contact FAX Communication Device Number
5H6	1	1	5		Set Contact FAX Retry Count
5H7	1	1	5		Set Contact Modem Retry Delay Time
5I3	1	1	5		Set Contact Remote TCP/IP Address
5I4	1	1	5		Set Contact Remote TCP/IP Port Number
5I5	1	1	5		Set Contact Local TCP/IP Communication Device Number
5I6	1	1	5		Set Contact TCP/IP Retry Count
5I7	1	1	5		Set Contact TCP/IP Retry Delay Time
5J4	1	1	5		Set Contact Satellite Connection String
5J5	1	1	5		Set Contact Satellite Communication Device Number
5J6	1	1	5		Set Contact Satellite Mode Retry Count
5J7	1	1	5		Set Contact Satellite Retry Delay Time
5K3	1	1	5		Set Contact E-Mail Address
5K6	1	1	5		Set Contact E-Mail Mode Retry Count
5K7	1	1	5		Set Contact E-Mail Retry Delay Time
5M1		7	7		Set Enter/Exit Setup Mode

AUTOMATIC EVENTS SETUP (7.3.5)

Code	Version			Feature	Function
	450	4	450Plus		
5P1	1	1	5		Add/Delete AutoEvent
5P2	1	1	5		Get Number of Auto Events
5P3	1	1	5		Set Auto Event Trigger: Time Based
5P4	1	1	5		Set Auto Event Trigger: Event Based
5P5	1	1	5		Set Auto Event Action: Device Task
5P6	1	1	5		Set Auto Event Action: Print Task
5P7	1	1	5		Set Auto Event Action: Auto Connect Task
5Q1	1	1	5		Automatic Events : Task Log

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IN-TANK SETUP (7.3.6)

Code	Version			Feature	Function
	450	4	450Plus		
601	1	1	5		Set Tank Configuration
602	1	1	5		Set Tank Product Label
603	1	1	5		Set Tank Product Code
604	1	1	5		Set Tank 1 Point Full Height Volume
605	1	1	5		Set Tank 4 Point Full, 3/4, 1/2, 1/4 Volumes
606	1	1	5		Set Tank 20 Point Full, 95%, 90%,... Volumes
607	1	1	5		Set Tank Diameter
608	1	1	5		Set Tank Tilt
609	1	1	5		Set Tank Thermal Expansion Coefficient
60A	1	1	5		Set Tank Linear Calculated Full Volume
60B	N/A	5	5		Set Tank Stick Height Function Enable
60C	N/A	5	5		Set Tank Stick Height Offset
60E	1	1	5		Set Tank Programmable Float Parameters
60F	1	1	5		Set Tank Probe Offset
60G	1	1	5	SLD	Set Manual Tank Leak Test
60K	1	1	5		Set Probe Number Installed in Tank
60L	1	1	5		Get Tank Setup Warning Messages
60M	2	1	5		Set Product Label
60N	2	1	5		Product Setup
60O	2	1	5		Set Product Available in Tank
610	1	1	5		Set Tank Delivery Delay
611	1	1	5	SLD/ CSLD	Set Tank Leak Test Type & Start Time
612	1	1	5		Set Tank SIPHON Manifolded Partners
613	1	1	5	CSLD	Set CSLD Probability of Detection
614	1	1	5	CSLD	Set CSLD Climate Factor
615	2	1	5	BIR	Set BIR Meter Data Present
616	2	1	5	Accuchart	Set Accuchart Update Scheduling
618	1	1	5	CSLD	Set Tank CSLD Evaporation Compensation
619	1	1	5	CSLD	Set Tank Stage II Vapor Recovery
61A	1	1	5	SLD	Set In-Tank Leak Test Early Stop
61B	1	1	5	SLD	Set In-Tank Static Gross Test Auto-Confirm
61C	N/A	N/A	N/A	CSLD	Set CSLD Report Only Mode (obsolete)
61D	N/A	N/A	N/A		Set Tank LINE Manifolded Partners (obsolete)
61H	2	1	5	Accuchart	Set Update Apply Accuchart Chart Dates
61I	2	1	5	Accuchart	Set Maximum Accuchart Calibration Period Days

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Code	Version			Feature	Function
	450	4	450Plus		
61J	2	1	5	Accuchart	Set Exclude Calibration Dates
61K	2	1	5	Accuchart	Set Enable Accuchart Warnings
61L	2	1	5	Accuchart	Set Accuchart Chart Management
621	1	1	5		Set Tank Low Level Limit
622	1	1	5		Set Tank High Level Limit
623	1	1	5		Set Tank Overfill Level Limit
624	1	1	5		Set Tank High Water Level Limit
625	1	1	5		Set Tank Sudden Loss Limit
626	1	1	5		Set Tank Leak Alarm Limit
627	1	1	5		Set Tank High Water Warning Limit
628	1	1	5		Set Tank Maximum Volume Limit
629	1	1	5		Set Tank Delivery Required Limit
62A	1	1	5	SLD	Set Tank Annual Leak Test Minimum Volume
62B	N/A	N/A	N/A		Set Tank Last Annual Test (obsolete)
62C	1	1	5	SLD	Set Tank Periodic Test Type
62D	1	1	5	SLD/ CSLD	Set Enable/Disable Tank Leak Test Fail Alarms
62F	1	1	5		Set MAG Probe Float Size
62G	2	1	5		Create Tank Chart
630	1	1	5	SLD	Set Tank Leak Test Notify
631	N/A	N/A	N/A	SLD	Set Tank Leak Test Averaging (obsolete)
632	1	1	5	SLD	Set Tank Test Siphon Break
633	N/A	N/A	N/A		Set Leak Test Report Type (obsolete)
634	4	1	5	BIR	Set Tank HRM Reconciliation Warning Limit
635	4	1	5	BIR	Set Tank HRM Reconciliation Alarm Limit
636	1	1	5	SLD	Set Tank Periodic Leak Test Minimum Volume
639	2	1	5	Accuchart	Set Tank AccuChart End Shape Type and Factor
63A	1	1	5		Set Tank Low Level Threshold for Sequential Line Manifold
63C	3	1	5		Set Tank Multi Point Full Volume
63D	N/A	5	5		Set Tank Vapor Loss Factor
63E	3	1	5		Set Tank Multi Point Heights and Volumes
63H	2	1	5	Accuchart	Set Accuchart Delete Chart
641	3	1	5		Set Density Code
642	3	1	5		Set Tank Water Alarm Filter Level
644	3	1	5		Set Probe Density Float Serial Number
645	3	1	5		Set Tank GOST Volume Correction Enable
648	4	1	5		Set Probe Water Minimum
649	N/A	6	6		Set Tank Fuel High Temp Limit Warning
64A	N/A	6	6		Set Tank Fuel Low Temp Limit Warning

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Code	Version			Feature	Function
	450	4	450Plus		
64B	4	1	5		Set Tank Water Alarm Filter Delay
671	3	1	5		Set Tank Density High Limit
672	3	1	5		Set Tank Density Low Limit
6A4	1	1	5		Set Tank 1 Point Full Height Volume for Tall Tank
6A5	1	1	5		Set Tank 4 Point Full, 3/4, 1/2, 1/4 Volumes for Tall Tank
6A6	1	1	5		Set Tank 20 Point Full, 95%, 90%,... Volumes for Tall Tank
6A7	1	1	5		Set Tank Diameter for Tall Tank
6AA	1	1	5		Set Tank Linear Calculated Full Volume for Tall Tank
6AF	1	1	5		Set Tank Probe Offset for Tall Tank
6C1	1	1	5		Set Tank Low Level Limit for Tall Tank
6C2	1	1	5		Set Tank High Level Limit for Tall Tank
6C3	1	1	5		Set Tank Overfill Level Limit for Tall Tank
6C5	1	1	5		Set Tank Sudden Loss Limit for Tall Tank
6C8	1	1	5		Set Tank Maximum Volume Limit for Tall Tank
6C9	1	1	5		Set Tank Delivery Required Limit for Tall Tank
6SU	2	1	5		Printout Tank Setup Tabs

SENSOR SETUP (7.3.7)

Code	Version			Feature	Function
	450	4	450Plus		
701	1	1	5		Set Liquid Sensor Configuration
702	1	1	5		Set Liquid Sensor Location Label
703	1	1	5		Set Liquid Sensor Type
704	1	1	5		Set Liquid Sensor Category
706	1	1	5		Set Vapor Sensor Configuration
707	1	1	5		Set Vapor Sensor Location Label
708	1	1	5		Set Vapor Sensor Alarm Threshold
709	1	1	5		Set Vapor Sensor Category
711	1	1	5		Set Groundwater Sensor Configuration
712	1	1	5		Set Groundwater Sensor Location Label
713	1	1	5		Set Groundwater Sensor Category
721	N/A	N/A	N/A		Set Smart Sensor Configuration (obsolete use 72F or S51)
722	N/A	N/A	N/A		Set Smart Sensor Label (obsolete use 72E or S53)

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TLS4/TLS-450/TLS-450Plus Monitoring Systems

Code	Version			Feature	Function
	450	4	450Plus		
723	N/A	N/A	N/A		Set Smart Sensor Category (obsolete)
727	1	1	5		Set MAG Sensor Alarm Upgrade Delay
728	1	1	5		Set MAG Sensor Alarm Threshold
72E	1	1	5		Set MAG Sensor Label
72F	1	1	5		Set MAG Sensor Configuration
741	1	1	5		Set Type A (2 Wire CL) Sensor Configuration
742	1	1	5		Set Type A (2 Wire CL) Sensor Location Label
743	1	1	5		Set Type A (2 Wire CL) Sensor Type
744	1	1	5		Set Type A (2 Wire CL) Sensor Category
746	1	1	5		Set Type B (3 Wire CL) Sensor Configuration
747	1	1	5		Set Type B (3 Wire CL) Sensor Location Label
748	1	1	5		Set Type B (3 Wire CL) Sensor Type
749	1	1	5		Set Type B (3 Wire CL) Sensor Category
74B	N/A	N/A	N/A		Set Universal Sensor Configuration (obsolete)
74C	N/A	N/A	N/A		Set Universal Sensor Location Label (obsolete)
74D	N/A	N/A	N/A		Set Universal Sensor Type (obsolete)
74E	N/A	N/A	N/A		Set Universal Sensor Category (obsolete)

PUMP SENSOR SETUP (7.3.8)

Code	Version			Feature	Function
	450	4	450Plus		
771	N/A	N/A	N/A		Set Pump Sensor Configuration (obsolete use P06)
772	N/A	N/A	N/A		Set Pump Sensor Tank Number (obsolete use P04)
773	N/A	N/A	N/A		Set Pump Sensor Dispense Mode (obsolete use L06)
P01	1	N/A	5		Set Pump Configured
P02	1	N/A	5		Set Pump Label
P03	1	N/A	5		Set Pump Mode
P04	1	N/A	5		Set Pump Associated Tank
P05	1	N/A	5		Set Pump Control
P06	1	N/A	5		Set Pump Sense
P07	N/A	5	5		Set Pump - Pump Monitor Device

PRESSURE LINE LEAK SETUP (7.3.9)

Code	Version			Feature	Function
	450	4	450Plus		
75A	1	N/A	5	PLLD	Set Line Leak Lockout Schedule (All Types)
75B	N/A	N/A	N/A	PLLD	Set Line Disable Alarm Assignments (obsolete)
774	1	N/A	5	PLLD	Set Pressure Line Leak Continuous Handle Alarm

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TLS4/TLS-450/TLS-450Plus Monitoring Systems

Code	Version			Feature	Function
	450	4	450Plus		
					Timeout
775	1	N/A	5	PLLD	Set Pressure Line Leak Profile Line Test Leak Rate
776	1	N/A	5	PLLD	Set Pressure Line Leak Profile Line Test Reference Pressure
777	1	N/A	5	PLLD	Set Pressure Line Leak Primary Pipe Diameter
778	1	N/A	5	PLLD	Set Pressure Line Leak Secondary Pipe Diameter
779	1	N/A	5	PLLD	Set Pressure Line Leak Primary Pipe Bulk Modulus
77A	1	N/A	5	PLLD	Set Pressure Line Leak Secondary Pipe Bulk Modulus
77B	1	N/A	5	PLLD	Set Pressure Line Leak Thermal Expansion Coefficient
77C	1	N/A	5	PLLD	Set Pressure Line Leak Low Pressure Shutoff
77D	1	N/A	5	PLLD	Set Pressure Line Leak Altitude Pressure Offset
77E	1	N/A	5	PLLD	Set Pressure Line Leak Passive 0.10 GPH Test Enable Flag
77F	1	N/A	5	PLLD	Set Pressure Line Leak Secondary Pipe Length
77G	1	N/A	5	PLLD	Set Pressure Line Leak Fuel Out Limit
780	1	N/A	5	PLLD	Pressure Line Leak General Setup Inquiry
781	1	N/A	5	PLLD	Set Pressure Line Leak Configuration
782	1	N/A	5	PLLD	Set Pressure Line Leak Label
783	1	N/A	5	PLLD	Set Pressure Line Leak 0.10 GPH Test Schedule
784	1	N/A	5	PLLD	Set Pressure Line Leak Shutdown Rate
785	N/A	N/A	N/A	PLLD	Set Pressure Line Leak Tank Number (obsolete use P04)
786	1	N/A	5	PLLD	Set Pressure Line Leak Dispense Mode (use L06 for pump sense)
787	N/A	N/A	N/A	PLLD	Set Pressure Line Leak Disable Alarm Assignments (obsolete)
788	1	N/A	5	PLLD	Set Pressure Line Leak Piping Material
789	1	N/A	5	PLLD	Set Pressure Line Leak Primary Pipe Length
78A	N/A	N/A	N/A	PLLD	Set Pressure Line Leak Sensor Type (obsolete use L04)
78B	N/A	N/A	N/A	PLLD	Set Pressure Line Leak 0.10 GPH Test Schedule (obsolete use 78E)
78C	1	N/A	5	PLLD	Set Pressure Line Leak 0.20 GPH Test Schedule
78E	1	N/A	5	PLLD	Set Pressure Line Leak 0.10 GPH Auto Test Enable
78F	1	N/A	5	PLLD	Set Pressure Line Leak Low Pressure Alarm Limit
78G	1	N/A	5	PLLD	Set Controlling Pump
L01	1	N/A	5	LINE	Set Line Configuration
L02	N/A	6	6	LINE	Set Line Label
L03	1	N/A	5	LINE	Set Line Leak Monitoring
L04	1	N/A	5	LINE	Set Line Pressure Sensor

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TLS4/TLS-450/TLS-450Plus Monitoring Systems

Code	Version			Feature	Function
	450	4	450Plus		
L05	1	N/A	5	LINE	Set Line Manifolding
L06	1	N/A	5	LINE	Set Line Dispense Mode
L07	1	N/A	5	LINE	Set Line Associated Pumps
L08	N/A	6	6	LINE	Set Line Alternate Mode Switchover Enable
L09	N/A	6	6	LINE	Set Line Alternate – Volume Mode Switchover Threshold
L0A	N/A	6	6	LINE	Set Line Alternate – Height Mode Switchover Threshold
L0B	N/A	6	6	LINE	Set Pumps and Lines - Lines
S51	1	N/A	5	PLLD	Set LPR Sensor Configured
S53	1	N/A	5	PLLD	Set LPR Sensor Label
S54	1	N/A	5	PLLD	Set LPR Sensor Serial Number
S55	1	N/A	5	PLLD	Line Pressure Sensor Alarm History Report
S56	1	N/A	5	PLLD	LPR Sensor Samplings
SA1	1	N/A	5	PLLD	Get Line Pressure Sensor Status

RECONCILIATION SETUP (7.3.10)

Code	Version			Feature	Function
	450	4	450Plus		
51N	2	1	5	DIM	Set LV/MDIM Configuration
51P	2	1	5	DIM	Set LV/MDIM Setup Configuration
51Q	2	1	5	DIM	Set LV/MDIM Label
51R	4	1	5	BIR	Set HRM Enable Flag
790	2	1	5	DIM	DIM Software Revision
791	N/A	N/A	N/A	DIM	Set Mechanical Dispenser Interface String
792	2	1	5	DIM	Set Electronic Dispenser Interface String
793	2	1	5	BIR	Set Reconciliation Auto Daily Closing Time
794	2	1	5		Set Auto Shift Closing Time 1, 2, 3, 4
795	2	1	5	BIR	Set Periodic Reconciliation Mode
796	2	1	5	BIR	Set Periodic Reconciliation Report Length
797	2	1	5	BIR	Set Periodic Reconciliation Alarm Flag
798	2	1	5	BIR	Set Periodic Reconciliation Alarm Threshold
799	2	1	5	BIR	Set Periodic Reconciliation Alarm Offset
79A	N/A	N/A	N/A	BIR	Set Remote Printer Reconciliation Report Format
79B	2	1	5	BIR	Set Shift Manual Adjustment Value

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TLS4/TLS-450/TLS-450Plus Monitoring Systems

Code	Version			Feature	Function
	450	4	450Plus		
79C	2	1	5	BIR	Set Daily Manual Adjustment Value
79D	2	1	5	BIR	Close Current Reconciliation Shift
79E	2	1	5	DIM	Clear Tank Map Table
79F	2	1	5	BIR	Set BIR Temperature Compensation Flag
79G	2	1	5	DIM	Set Tank Meter Map
79H	2	1	5	DIM	Set Meter Map Lock/Unlock by Position
79I	2	1	5	DIM	Set Meter Map Lock/Unlock All Positions
79J	2	1	5	BIR	Set Daily Manual Adjustment Value Date Range
79K	2	1	5	BIR	Set BIR Status Warning Enable
79L	2	1	5	BIR	Set Reconciliation Report Close Day
79M	2	1	5	BIR	Set Alarm Threshold Delivery Type
79N	2	1	5	BIR	Set Shift Manual Adjustment Value Date Range/Shift Number
79P	2	1	5	BIR	Set Meter Calibration Offset By Meter
79Q	2	1	5	BIR	Set User Fueling Position
79S	2	1	5	BIR	Get Tank Map
79R	2	1	5	BIR	Get Meter Offset
7B2	2	1	5	BIR	Set Meter Calibration Offset
7B4	2	1	5	DIM	Set Individual Meter Offset
7B5	2	1	5	BIR	Set Ticketed Delivery
7B6	2	1	5	BIR	Set BOL number
7BG	2	1	5	BIR	Set Ticketed Delivery Information
7C1	2	1	5	BIR	Set Tank Periodic Reconciliation Alarm Threshold Enable
7C2	2	1	5	BIR	Set Tank Periodic Reconciliation Alarm Threshold
7C3	4	1	5	BIR	Set HRM Maximum Volume Limit
7D6	3	1	5	Accuchart	Accuchart Operating Volume Span
7H0	2	1	5	BIR	BIR Multiple Threshold Setup Report
7H1	2	1	5	BIR	Set BIR Multiple Threshold Test Type
7H2	2	1	5	BIR	Set BIR Multiple Threshold Rolling Days
7H3	2	1	5	BIR	Set BIR Multiple Threshold Type Enable

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TLS4/TLS-450/TLS-450Plus Monitoring Systems

Code	Version			Feature	Function
	450	4	450Plus		
7H4	2	1	5	BIR	Set BIR Multiple Threshold Percentage
7H5	2	1	5	BIR	Set BIR Multiple Threshold Offset Value

PUMP MONITOR RELAY SETUP (7.3.11)

Code	Version			Feature	Function
	450	4	450Plus		
7C4	N/A	N/A	N/A		Set Pump Relay Monitor Configuration (obsolete)
7C5	N/A	N/A	N/A		Set Pump Relay Monitor Label (obsolete)
7C6	N/A	N/A	N/A		Set Pump Relay Monitor Pump Relay (obsolete)
7C7	N/A	5	5		Set Pump Relay Monitor Stuck Delay
7C8	N/A	5	5		Set Pump Relay Monitor Max Run Time

I/O DEVICE SETUP (7.3.12)

Code	Version			Feature	Function
	450	4	450Plus		
801	1	1	5		Set Input Configuration
802	1	1	5		Set Input Location Label
803	N/A	N/A	N/A		Set Input Type (obsolete use 80F)
804	N/A	N/A	N/A		Set Input Dispense Mode (obsolete)
806	1	1	5		Set Relay Configuration
807	1	1	5		Set Relay Location Label
808	N/A	N/A	N/A		Set Relay Alarm Assignments (obsolete use 5P1 , 5P4 & 5P5)
809	1	1	5		Set Relay Orientation
80A	1	1	5		Set Relay Type
80B	N/A	N/A	N/A		Set Relay Tank Assignment (obsolete use P04)
80C	N/A	N/A	N/A		Set External Input Type (obsolete use 80F)
80D	1	1	5		Set External Input Orientation
80E	N/A	N/A	N/A		Set External Input Tank Number (obsolete use P04)
80F	1	1	5		Set Input Type
821	1	1	5		Set Probe Configuration
822	1	1	5		Set Probe Label

MISCELLANEOUS SETUP (7.3.12)

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TLS4/TLS-450/TLS-450Plus Monitoring Systems

Code	Version			Feature	Function
	450	4	450Plus		
871	1	1	5		Setup Communication Card
872	2	1	5		Setup Communication Card Configuration Flag
873	1	1	5		Set Communication Port Data
874	2	1	5		Setup Communication Card Location Label
877	4	1	5		Set Communication Device Type
87B	1	1	5		Set Modem Dial Type
87D	1	1	5		Set Modem Answer-On Interval
87E	1	1	5		Set Modem Dial-In String
87F	1	1	5		Set Modem Dial-Out String
87J	2	1	5	DIM	Set DIM Units Reported
87Q	2	1	5	DIM	Suppress DIM COMM Alarms
881	N/A	N/A	N/A		Set Communication Port Data (obsolete use 873)
882	N/A	N/A	N/A		Initialize Communication Port Data (obsolete)
885	N/A	N/A	N/A		Set SiteLink Modem Type (obsolete)
886	N/A	N/A	N/A		Set Modem Setup String (obsolete use 87F)
887	1	1	5		Set Dial Tone Validation Interval
889	1	1	5		DTR Normal State for Serial Satellite Boards
88D	N/A	N/A	N/A		Communication Diagnostic for SiteLink (obsolete)
88E	1	1	5		Set Satellite Connection String
88G	1	1	5		Set IP Assignment
88H	1	1	5		Get IP Address
88I	1	1	5		Set Static IP Address
88J	1	1	5		Set Serial Command Port
88K	1	1	5		Set Static Subnet Mask
88L	1	1	5		Set Static Gateway IP
88M	1	1	5		Set SSH Port
88N	1	1	5		Set HTTP Port
88O	1	1	5		Set HTTPS Port
88P	1	1	5		Set System Hostname
88Q	1	1	5		Set Static Primary DNS Server
88R	1	1	5		Set Static Secondary DNS Server
88S	1	1	5		Get MAC Address
88T	1	1	5		Set Default Gateway
88U	1	1	5		Get Subnet Mask
88V	1	1	5		Get Gateway IP
88W	1	1	5		Get Primary DNS Server
88X	1	1	5		Get Secondary DNS Server
88Y	1	1	5		TCP/IP Commit Setup

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TLS4/TLS-450/TLS-450Plus Monitoring Systems

Code	Version			Feature	Function
	450	4	450Plus		
88Z	4	1	5	DIM	Set TCP/IP DIM Port
891	2	1	5	Accuchart	Set Accuchart Calibration Restart
893	3	1	5		Acknowledge Tank Event Ready Status
894	2	1	5	Accuchart	Set Accuchart Calibration Stop
89A	4	1	5		Set Email Relay
89B	4	1	5		Set Email Sender Address
89C	4	1	5		Set Relayhost/Smarthost
89D	4	1	5		Set Sender Hostname
89E	N/A	6	6		Set Email Sender Name
89F	N/A	6	6		Set Hostname Configuration and Set Sender Hostname
89G	N/A	6	6		Set SMTP Authentication Configuration
89H	N/A	6	6		Set SMTP Relay Host Configuration
89K	N/A	6	6		Set IFSF Enabled
89M	N/A	6	6		Set IFSF Device
89N	N/A	6	6		Set IFSF Node ID
89P	N/A	6	6		Set IFSF UDP Port
89Q	N/A	6	6		Set IFSF TCP Port
89R	N/A	6	6		Set IFSF Protocol
8BC	N/A	N/A	N/A		Set Relay Alarm Assignments II (obsolete use 5P1 , 5P4 & 5P5)
8C1	N/A	6	6		VMC Edit/Add Serial Number
8C2	N/A	6	6		VMC Remove Serial Number
8C3	N/A	6	6		VMC Edit/Add Fueling Position Number
8C4	N/A	6	6		VMC Communications Timeout Value
8CG	3	1	5		Get Printer Setup and Status
D01	3	1	5		Push Site ID
D02	3	1	5		Server Heartbeat

DIAGNOSTIC REPORTS (7.4)

SYSTEM DIAGNOSTIC REPORTS (7.4.1)

Code	Version			Feature	Function
	450	4	450Plus		
901	N/A	N/A	N/A		Self Test Results Report (obsolete)
902	1	N/A	N/A		System Revision Level Report (obsolete)

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TLS4/TLS-450/TLS-450Plus Monitoring Systems

Code	Version			Feature	Function
	450	4	450Plus		
903	N/A	N/A	N/A		PC Diagnostic Report (obsolete)
905	1	N/A	N/A		System Revision Level Report II (obsolete)
907	1	1	5		Get "About" screen information

IN-TANK DIAGNOSTIC REPORTS (7.4.2)

Code	Version			Feature	Function
	450	4	450Plus		
A01	1	1	5		Probe Type and Serial Number
A07	1	1	5		Probe Reference Distance Diagnostic
A0X	1	1	5		Probe Diagnostics General
A10	1	1	5		Probe Last Sample Buffers
A14	1	1	5		MAG Probe Option Table
A15	1	1	5		In-Tank Diagnostic Printout
A17	1	1	5		Probe Communication
A18	3	1	5		Probe Diagnostic Printout
A20	1	1	5	SLD	Probe Leak Test Flags - Present Test
A21	1	1	5	SLD	Probe Leak Test Flags - Stored Test
A22	1	1	5	SLD	Probe Leak Test Flags - Gross Test
A51	1	1	5	CSLD	CSLD Diagnostics: Rate Table
A52	1	1	5	CSLD	CSLD Diagnostics: Rate Test
A53	1	1	5	CSLD	CSLD Diagnostics: Volume History Table
A54	1	1	5		30-Second Inventory Samples
A55	1	1	5	CSLD	CSLD Diagnostics: Leak Test Status
A56	1	1	5	CSLD	CSLD Monthly Report
A57	1	1	5	CSLD	CSLD Monthly Report Time Based
A58	1	1	5	CSLD	CSLD Moving Average Table
A61	4	1	5	BIR	HRM Diagnostic Report
A62	4	1	5	BIR	HRM Daily History Report
A63	4	1	5	BIR	Extended HRM Diagnostic Report
A64	4	1	5	BIR	HRM Diagnostic Report with Date Range
A65	4	1	5	BIR	HRM Daily History Report with Date Range
A66	4	1	5	BIR	Extended HRM Diagnostic Report with Date Range
A71	2	1	5	Accuchart	Accuchart Data Sufficiency
A72	2	1	5	Accuchart	Accuchart Data Sufficiency Histogram
A73	2	1	5	Accuchart	Force Accuchart Calibration
A74	2	1	5	Accuchart	Accuchart Calibration Feedback Report

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TLS4/TLS-450/TLS-450Plus Monitoring Systems

Code	Version			Feature	Function
	450	4	450Plus		
A75	2	1	5	Accuchart	Accuchart Delivery Instructions
A76	2	1	5	Accuchart	Accuchart Application Log
A82	N/A	6	6		Adjusted Delivery Diagnostic Report
A91	N/A	1	5		Power Outage Diagnostic Report
A9G	N/A	1	5		Power Outage Diagnostic Report Date/Time Based
A9H	N/A	1	5		Power Outage Delivery Diagnostic Report Date/Time Based
A9J	N/A	1	5		Power Reset History Report

SENSOR DIAGNOSTIC REPORTS (7.4.3)

Code	Version			Feature	Function
	450	4	450Plus		
B01	1	1	5		Liquid Sensor Diagnostic Report
B06	1	1	5		Vapor Sensor Diagnostic Report
B07	1	1	5		Vapor Sensor Concentration (PPM) Report
B11	1	1	5		Groundwater Sensor Diagnostic Report
B21	1	1	5		Ground Temperature Sensor Diagnostic Report
B33	1	1	5		MAG Sensor Diagnostic Report
B34	N/A	N/A	N/A		Smart Sensor Last Sample Diagnostic (obsolete use B3D or B64)
B35	N/A	N/A	N/A		Smart Sensor Type and Serial Number (obsolete use B3B or B61)
B36	N/A	N/A	N/A		Smart Sensor Constant Data (obsolete use B3C or B62)
B3A	1	1	5		MAG Sensor Comm Data
B3B	1	1	5		MAG Sensor Type and Serial Number
B3C	1	1	5		MAG Sensor Constants
B3D	1	1	5		MAG Sensor Channel Data Diagnostic (Hex Format)
B3E	1	1	5		MAG Sensor Channel Data Diagnostic (Decimal Format)
B41	1	1	5		Type A Sensor (2 Wire CL) Diagnostic Report
B46	1	1	5		Type B Sensor (3 Wire CL) Diagnostic Report
B4B	N/A	N/A	N/A		Universal Sensor Diagnostic Report (obsolete)

LINE LEAK DIAGNOSTIC REPORTS (7.4.4)

Serial Interface Manual

TLS4/TLS-450/TLS-450Plus Monitoring Systems

Code	Version			Feature	Function
	450	4	450Plus		
B61	1	N/A	N/A	PLLD	LPR Sensor General Report (obsolete V3E use B6G)
B62	1	N/A	N/A	PLLD	LPR Sensor Constants Report (obsolete V3E use B6H)
B63	1	N/A	5	PLLD	LPR Sensor Comm Data
B64	1	N/A	5	PLLD	LPR Sensor Channel Data (Hex Format)
B65	1	N/A	5	PLLD	LPR Sensor Channel Data (Decimal Format)
B6G	3	N/A	5	PLLD	LPR Sensor General Report
B6H	3	N/A	5	PLLD	LPR Sensor Constants Report
B71	N/A	N/A	N/A	PLLD	Pump Sensor Diagnostic (obsolete)
B72	N/A	5	5	PLLD	Pump Relay Monitor Diagnostic
B7B	1	N/A	5	PLLD	Pressure Line Leak Profile Line Test
B7C	1	N/A	5	PLLD	Pressure Line Leak Pressure Offset Test
B7E	1	N/A	5	PLLD	Pressure Line Leak Pressure Offset Monitor Report
B81	1	N/A	5	PLLD	Pressure Line Leak Diagnostic Report
B87	1	N/A	5	PLLD	Pressure Line Leak 3.00 GPH Test Diagnostic
B88	1	N/A	5	PLLD	Pressure Line Leak Mid-range Test Diagnostic
B89	1	N/A	5	PLLD	Pressure Line Leak 0.20 GPH Test Diagnostic
B8A	1	N/A	5	PLLD	Pressure Line Leak 0.10 GPH Test Diagnostic
B8F	1	N/A	5	PLLD	PLLD No-Vent Report
B8I	1	N/A	5	PLLD	PLLD Last Test Result
B8J	1	N/A	5	PLLD	PLLD Diagnostic - Manual Test Report

RECONCILIATION DIAGNOSTIC REPORTS (7.4.4)

Code	Version			Feature	Function
	450	4	450Plus		
B91	N/A	N/A	N/A	Accuchart	AccuChart Diagnostics Report
B93	N/A	N/A	N/A	Accuchart	AccuChart Status Report
B94	N/A	N/A	N/A	Accuchart	AccuChart Calibration History Report
BA0	2	1	5	DIM	MDIM/LVDIM Totalizer Report
BA4	N/A	6	6	IFSF	IFSF LON Node ID Diagnostic
BA5	N/A	6	6	IFSF	IFSF Diagnostics Data Messages Report
BB1	N/A	6	6		VMC Status Report

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TLS4/TLS-450/TLS-450Plus Monitoring Systems

Code	Version			Feature	Function
	450	4	450Plus		
BB2	N/A	6	6		VMC Version Report
CA1	2	1	5	BIR	Get Reconciliation Status
CA2	2	1	5	BIR	Reconciliation Diagnostic Report

RECONCILIATION REPORTS (7.5)

Code	Version			Feature	Function
	450	4	450Plus		
C01	2	1	5	BIR	Basic Inventory Reconciliation Daily "Row" Report
C02	2	1	5	BIR	Basic Inventory Reconciliation Daily "Column" Report
C03	2	1	5	BIR	Basic Inventory Reconciliation Shift "Row" Report
C04	2	1	5	BIR	Basic Inventory Reconciliation Shift "Column" Report
C05	2	1	5	BIR	Basic Inventory Reconciliation Periodic "Row" Report
C06	2	1	5	BIR	Basic Inventory Reconciliation Periodic "Column" Report
C07	2	1	5	BIR	Basic Inventory Reconciliation Periodic "Row" Report
C08	2	1	5	BIR	Basic Inventory Reconciliation Periodic "Column" Report
C09	2	1	5	BIR	Individual Basic Reconciliation Daily History Diagnostic
C10	2	1	5	BIR	Periodic Book Variance
C11	2	1	5	BIR	Weekly Book Variance
C12	2	1	5	BIR	Daily Book Variance
C15	2	1	5	BIR	Book Variance Daily Report Date Based
C20	N/A	5	5	BIR	Periodic Variance Analysis Report
C21	N/A	5	5	BIR	Weekly Variance Analysis Report
C22	N/A	5	5	BIR	Daily Variance Analysis Report
C25	N/A	5	5	BIR	Periodic Variance Analysis Daily Report
C0G	2	1	5	BIR	Reconciliation Daily Report
C0J	2	1	5	BIR	Reconciliation Shift Report
C0L	N/A	6	6	BIR	Volume Based Reconciliation Report
CA3	2	1	5	BIR	Reconciliation Test Result Report

GUI DISPLAY SETUP (7.6)

Code	Version	Feature	Function
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	450	4	450Plus		
G01	1	N/A	N/A		Set Display Setup - System Status Configuration
G02	1	N/A	N/A		Set Display Setup – All Tanks Configuration
G03	1	N/A	N/A		Set Display Setup – Tank Fuel Fill Configuration
G04	1	N/A	N/A		Set Display Setup – All Liquid Sensors Configuration
G05	1	N/A	N/A		Set Display Setup – All Type-A (2-Wire CL) Sensors Configuration
G06	1	N/A	N/A		Set Display Setup – All Type-B (3-Wire CL) Sensors Configuration
G07	1	N/A	N/A		Set Display Setup – All MAG Sensors Configuration
G08	1	N/A	N/A		Set Display Setup – All Ground Water Sensors Configuration
G09	1	N/A	N/A		Set Display Setup –All Vapor Sensors Configuration
G0A	1	N/A	N/A	PLLD	Set Display Setup –All Line Pressure Sensors Configuration
G0B	1	N/A	N/A		Set Display Setup – User Defined Tab Labels
G0C	1	N/A	N/A		Set Display Setup – User Defined Tab Configuration
G0D	1	N/A	N/A		Set Display Setup – User Defines Tab Status Report

DEVICE VR-BUS CONFIGURATION (7.7)

Code	Version			Feature	Function
	450	4	450Plus		
N01	1	1	5		Set Device VR-Bus Address
N02	1	1	5		Get Available VR-Bus Addresses
N03	1	1	5		Get All Device Directory
N04	2	1	5		Get Hardware Configuration
N05	2	1	5		Get Extended Device Directory
N06	2	1	5		Get Device Assignments
N07	2	1	5		Get COMM Diagnostics Counter

VAPOR COLLECTION MONITOR REPORTS (7.8)

Code	Version			Feature	Function
	450	4	450Plus		
VA1	N/A	6	6		VMC A/L Daily Report
VA2	N/A	6	6		VMC A/L Exception Report
VA3	N/A	6	6		VMC A/L Transaction Report
VA5	N/A	6	6		VMCI Sub Alarm History Report
VAH	N/A	7	7		VPM Service Report Test Fail Clear
VAJ	N/A	7	7		Vapor Pressure Monitor Event Report
VAK	N/A	7	7		Acknowledge Vapor Pressure Monitor Alarm to Re-Enable Site
VAM	N/A	7	7		Vapor Pressure Monitor Daily Summary Report
VAN	N/A	7	7		APM Fault History Report
VAP	N/A	7	7		Set VPM Assessment Time

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VAR	N/A	7	7		Set VPM Daily Warning Reduction
VAS	N/A	7	7		Set Sensor Table VPM In Use Flag
VAT	N/A	7	7		Set Tank Siphon Manifolded Partners