

CS-1600
ASTM Host Interface
Specifications

2015/10/14 Ver.1.20

Sysmex Corporation

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1. General

This document is intended to supply the information that the CS-1600 Automated Blood Coagulation Analyzer communicates with the host computer using ASTM protocol.

2. Scope

This document describes the Data Communication Specifications for CS-1600 using ASTM “E1394-97 and E-1381-02” and ASTM” E1394-95 and E1381-95”

ASTM (the American Society for Testing and Materials), one of the world largest volunteer non-profit organization, founded in 1898 for the purpose of creating standard regulations for material, products and system services. This specification conforms to the following two standards:

- Specifications for low level protocols to transfer data between clinical laboratory instruments and computer systems.

ASTM E1381-02

ASTM E1381-95

- Standard specifications for transferring data between clinical instruments and computer systems.

ASTM E1394-97

ASTM E1394-95

3. Revision History

Revision	Date	Major Contents of Changes
1.00	January 29,2015	Initial Version
1.10	July 1, 2015	Caution is added on Table 14 about the analysis error which the masked value are output when “HOST_ASTM_OutputCurveErrorInfomation” is turned OFF.
1.20	October 14, 2015	1) The error code of [4032.0000.0000 Bump] is added in Table14. 2) Japanese character is modified in [6.4.2. Transmitting Analysis Results (When there is the re-analysis)] 3) Table 17 and Table 18 are updated. <Deleted Assay Group> TTO, Hpt, FDP, UFDP, PIC <Added Assay Group> PCcl, BXT, LA1, LA2, PSAc, Hep,C1 Inh, VIII ch, LA R, PCAT NR, PCAT, PCAT0, FVPCAT NR, FVPCAT, FVPCAT0, TT, vWF-Ac low, vWF-Ac medium, FPS 4) Caution of Table 18 is added.

4. Terminology

The definition of the terminology used in this document is described in the following.

Numerics:

Indicates ASCII codes “0” (30h) through “9” (39h)

Alphabet:

Indicates ASCII codes “A” (41h) through “Z” (5Ah) and “a” (61h) through “z” (7Ah)

Alpha-numeric:

Indicates numerical or alphabetical character

5. Communication Specifications

Communication specifications are based on a layer protocol.

- (1) Physical Layer
Specifies the sending and receiving of signals between the IPU and the host computer through physical and electrical connections
See the section "5.1 Physical Layer (Hardware)"
- (2) Data link layer
Specifies the sending and receiving of data by link connections and for each frame between the IPU and the host computer
See the section "5.2 Data Link Layer (Transmission Protocol)"
- (3) Presentation layer
Specifies the messages that are sent and received by the IPU and the host computer
See the section "5.3 Presentation Layer"

Presentation layer	←	Specifies message specifications
Data link layer	←	Specifies link connection and frame specifications
Physical layer	←	Specifies mechanical and electrical specifications

Notes

The information processing Unit (IPU) of the CS-1600 supports connection by the Ethernet and RS-232C.

From the combinations between the specifications conforming to two standards and connection types, CS-1600 supports the following three modes.

1. TCP/IP connection

The presentation layer conforms to ASTM E1394-97.

The data link layer conforms to ASTM E1381-02.

The physical layer conforms to IEEE802.3. (*1)

2.ASTM E1381-02 mode (serial interface)

The presentation layer conforms to ASTM E1394-97 mode.

The data link layer and the physical layer conform to ASTM E1381-02.

3.ASTM E1381-95 mode (serial interface)

The presentation layer conforms to ASTM E1394-95.

The data link layer and the physical layer conform to ASTM E1394-95.

	Ethernet connection	Serial connection	
		ASTM E1381-02 mode	ASTM E1381-95 mode
Presentation layer	ASTM E1394-97	ASTM E1394-97	ASTM E1394-95
Data link layer	ASTM E1381-02	ASTM E1381-02	ASTM E1381-95
Physical layer *1	IEEE802.3	ASTM E1381-02	ASTM E1381-95

*1: The IEEE802.3 specifications in the physical layer are not described in this document.

5.1. Physical Layer (Hardware)

5.1.1. Serial Connection

5.1.1.1. Connectors

Although the ASTM standard specifies a D-SUB-25-pin male connector as standard, a DB-9-pin-male I/O connector, which is located on the rear of the CS-1600, is used to communicate.

Table 1: Connector pin assignment

Pin No.	Signal name	Signal direction
1	NC	
2	Receive data RxD	To IPU from host
3	Transmit data TxD	From IPU to host
4	Data terminal ready DTR	From IPU to host
5	Signal ground SG	—
6	Data set ready DSR	To IPU from host
7	Request to send RTS	From IPU to host
8	Clear to send CTS	To IPU from host
9	NC	

The control signals are not used with ASTM specifications.

For this reason, do not make connections to unused pins.

5.1.1.2. Signal identification level

Table 2: Signal identification level

Level	Data signal	Control signal
+3V or more	Logic "0", start bit	ON
-3V or less	Logic "1", stop bit	OFF

5.1.1.3. Connection cable

Please configure a cable with a D-SUB 9pin female adaptor for connecting to the instrument's D-SUB 9 male connector in accordance with the following connection chart.

IPU DB-9		Host computer DB-9 DB-25		
TxD	3	3	2	TxD
RxD	2	2	3	RxD
SG	5	5	7	SG
RTS	7	7	4	RTS
CTS	8	8	5	CTS
DTR	4	4	20	DTR
DSR	6	6	6	DSR
NC	1			
NC	9			

5.1.1.4. Interface parameters

Table 3: Interface parameters

Parameter	Selection of settings
Baud rate	300, 2400, 4800, *9600, 19200 (bps)
Data length	7bits , 8bits*
Stop bit	1bits*, 1.5bits, 2bits
Parity	None* , Even , Odd

The value with asterisk mark (*) allows conformance with the ASTM standard.

[Note] However, 7-bit data lengths, even or odd parity and two stop bits are recognized by the ASTM standard for use with special applications.

5.1.1.5. Standard specifications (ASTM E1381-02)

The physical layer of the IPU conforms to ASTM E1381-02 "5. Physical Layer", except for the connector type.

The IPU uses a D-SUB-9 pin male connector. (The ASTM standard specifies a 25-pin male connector.)

5.1.2. Ethernet Connection

Ethernet connection conforms to IEEE802.3. The communication cable uses the UTP category 5 cable. Prepare the connector and cable which apply to the Ethernet connector of the CS-1600.

5.2. Data Link Layer (Transmission Protocol)

The data link layer transfers data between systems using a character-based protocol in accordance with ASTM E 1381-02 “5. Data Link layer”.

This section briefly describes communication control procedures. For details, refer to ASTM E1381-02. When the TCP/IP connection is intended to be used, the TCP connection is established in prior to the communication. To establish the TCP connection, the host computer acts as a server and the CS-1600 acts as a client. The CS-1600 establishes a connection by requesting a connection for the IP address and the port number that are provided by the host computer.

5.2.1. Communication status

The data link layer consists of the following two states.

- Neutral Status
- Linked status

Transition to each status is accomplished through the following three phases.

(1) Establishment phase

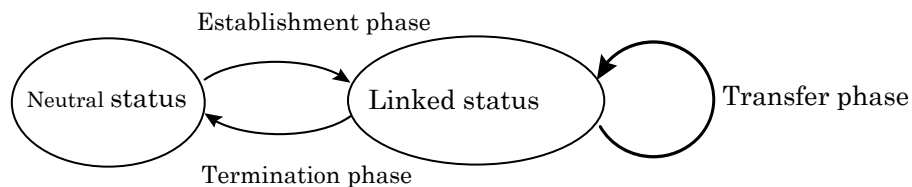
Establishes communication line, and determines the direction of data transfer. In this way, the sender and the receiver are identified, and the change is made from neutral status to linked status.

(2) Transfer phase

The sender transmits messages to the receiver until all messages are transferred.

(3) Termination phase

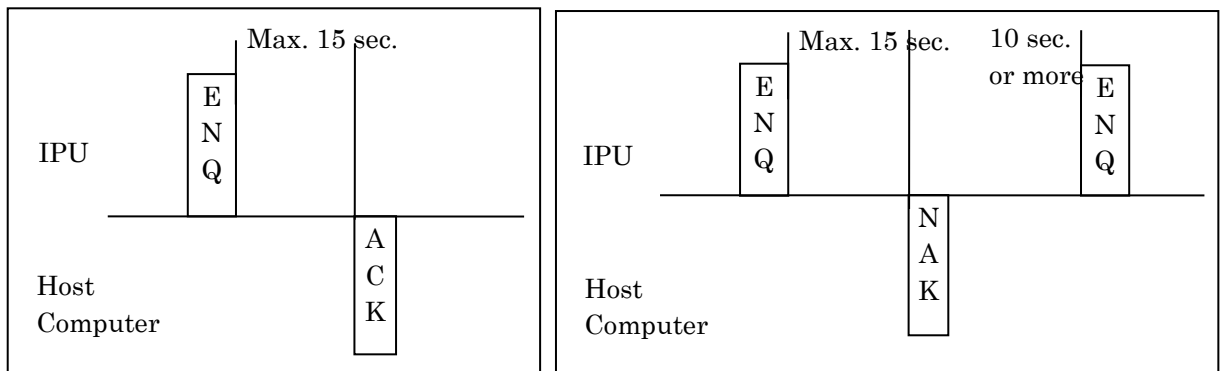
Releases the communication line. Changes the communication status both the sender and the receiver from linked status to neutral status.



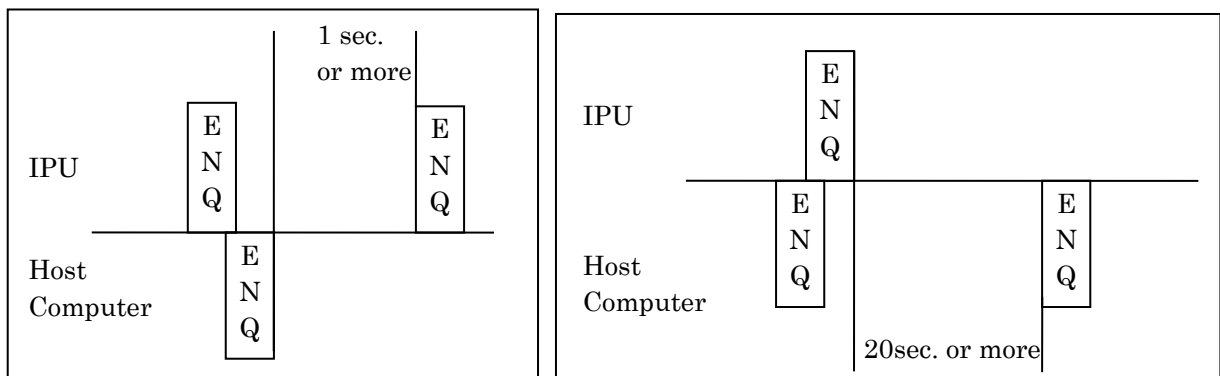
5.2.2. Establishment phase

- (1) The sender (CS-1600) sends an [ENQ] signal to the receiver (host computer). To respond to the sender, the receiver performs the following action.
 - Returns an [ACK] signal when the communication is enabled.
 - Returns a [NAK] when the communication is disabled.

If the receiver responds [NAK], the sender waits for at least 10 seconds before attempting to send another [ENQ] signal.



- (2) When both the sender and receiver send [ENQ] signals, the host computer must yield control authority to the CS-1600.
 - The CS-1600 sends [ENQ] again after 1 second.
 - The host computer must wait for 20 seconds before sending [ENQ] again.



5.2.3. Transfer phase

During the transfer phase, the sender sends messages to the receiver. The transfer phase continues until all messages have been sent.

- (1) Messages are sent in each record with multiple frames. Each frame contains a maximum of 64,000 characters (including frame overhead) in the ASTM E1381-02 mode. If the record is longer than 63,993 characters, it is divided into two or more frames. The maximum number of characters in each record is set to 240 characters in the ASTM E1381-95 mode.
- (2) Multiple records cannot be included in a single frame.
- (3) If the record contains the maximum number of characters or less, a frame with the following structure will be transferred.

[STX] [F#] [Text] [ETX] [CHK1] [CHK2] [CR] [LF]

If the record is longer than the maximum number of characters, it is divided into two or more frames. The intermediate frame text termination code is [ETB], and the final frame text termination code is [ETX], as shown below.

[STX] [F#] [Text] [ETB] [CHK1] [CHK2] [CR] [LF]

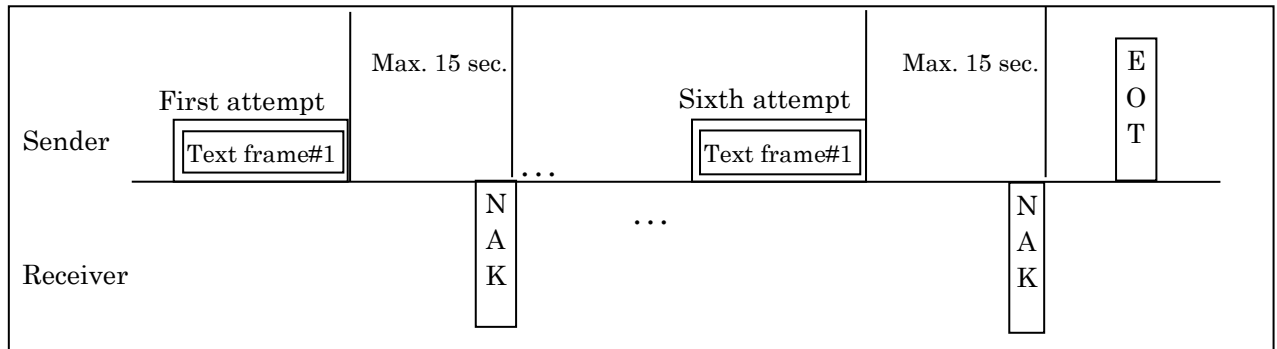
[STX] [F#] [Text] [ETB] [CHK1] [CHK2] [CR] [LF]

.....

[STX] [F#] [Text] [ETX] [CHK1] [CHK2] [CR] [LF]

Symbol	Explanation
[STX]	Start of a frame
[F#]	Frame number One of the numbers 0 to 7 is used, beginning with 1 and repeating 2,3,4,5,6,7,0. In case of retransmission, the same frame number is sent.
[Text]	ASTM E1394-97 records are used. (See the subsequent section "5.3 Presentation Layer".) For this reason, the codes below will not be used. 0x00-0x06,0x08,0x0A,0x0E-0x1F,0x7F,0xFF
[ETB]	Control code indicating end of text (for intermediate frame)
[ETX]	Control code indicating end of text (for the final frame)
[CHK1] [CHK2]	Expressed by characters "0" - "9" and "A" - "F". Characters beginning from the character following [STX] and until [ETB] or [ETX] (including [ETB] or [ETX]) are added in binary. The 2-digit numbers, which represent the least significant 8 bits in hexadecimal code, are converted to ASCII characters "0" - "9" and "A" - "F". The most significant digit is stored in CHK1 and the least significant digit in CHK2.
[CR] [LF]	Control code indicating end of frame

- (4) If the receiver has successfully received the frame, and is prepared to receive the next frame, the receiver responds with [ACK]. After the sender receives [ACK], the sender advances the frame number and either sends a new frame or transition to the termination phase.
- (5) If the receiver fails to receive the frame and is prepared to receive the same frame again, the receiver responds with [NAK]. After the sender receives [NAK], the sender sends the most recent frame again, using the same frame number. If a total of 6 attempts to send the frame failed, the sender transitions to the termination phase and must end sending of the message.



- (6) The CS-1600 processes the response of [EOT] from the Host computer as [ACK]. (Response of [EOT] from the receiver is usually a request to suspend a transmission to the sender. However, the CS-1600 does not support this function.)

5.2.4. Termination phase

During the termination phase, the status returns to neutral.

The sender sends the [EOT] to inform the receiver that the message transmission has been completed.

When the sender sends [EOT], the sender transitions to neutral status. When the receiver receives [EOT], the receiver transitions to neutral status.

5.2.5. Time out

The timer is used to detect a failure to coordinate between the sender and the receiver. The timer is used as a mean of the recovery for communication line and communication destination device failure.

- (1) During the establishment phase, the timer is set when the sender sends [ENQ]. The time out results if a response of [ACK], [NAK] or [ENQ] is not received within 15 seconds. After time out, the sender transitions to the termination phase.

- (2) During transfer phase, the 15-second timer is set when the sender sends the final character of a frame. Time out results if no response is received within 15 seconds. After time out, the sender transitions to the termination phase.

The receiver sets a 30-second timer when first entering the transfer phase or when responding (with either [ACK] or [NAK]) to a frame. Time out results if the receiver does not receive a frame or [EOT] from the sender within 30 seconds. After time out, the receiver discards the latest incomplete message and transitions to the termination phase.

5.3. Presentation Layer

5.3.1. Messages, Record and Field

5.3.1.1.Messages

In the presentation layer, all data is transmitted using messages. Messages are composed of record arrays that start with message header record (H) and end with message termination record (L).

5.3.1.2.Records

A record is a series of text, beginning with an ASCII alphabet characters referred to as the identifier.

Table 4: Records

Record Type	Record identifier	Level	Contents
Header Record	H	0	Contains the sender and the receiver information.
Patient information Record	P	1	Contains the patient information
Inquiry record	Q	1	Requires test order information requesting to the host computer
Test Order Record	O	2	Contains test order information
Test Result Record	R	3	Contains test result information
Comment Record	C	1 – 4	Not used.
Manufacturer Information Record	M	1 – 4	Not used
Scientific Information Record	S	N/A	Not used
Message Terminator Record	L	0	Indicates the end of the message

- A smaller level number indicates a higher level.
- A higher-level record contains information that is common to all lower-level records.
- All levels other than 0 must be located after higher levels. However, the comment record can be inserted at any level. They are considered to be one lower level than the preceding record. However, a consecutive comment records are not allowed.
- Example transmission
H->P->O->R->L... Correct
H->R->L..... Incorrect, because P and O must be transmitted in prior to R

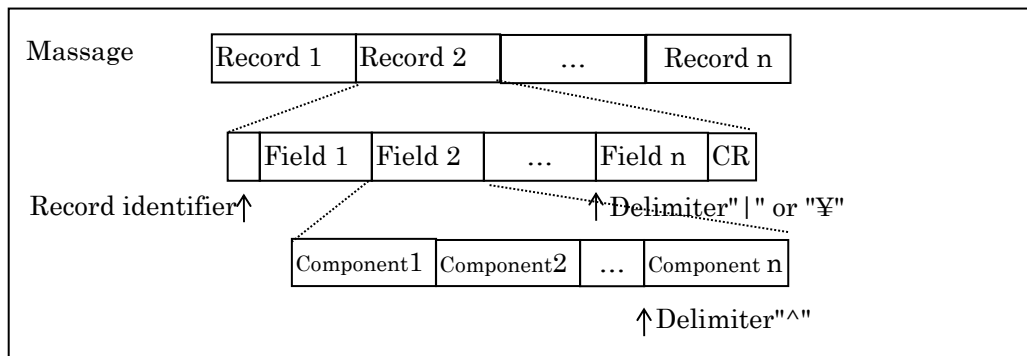
5.3.1.3.Field

A record is further divided into multiple fields by field delimiters.

A field is identified by its position within a record and has a variable length. The followings are used as delimiters.

Table 5: Fields

Type	Code	Description
Field delimiter	Vertical bar ()(7Ch)	Separates adjacent field within a record
Repeat delimiter	Back slash (\) (5Ch)	Separates multiple numbers of descriptors in a field.
Component delimiter	Caret ^ (5Eh)	Separates data elements within a field that has a hierarchical or qualifier nature.
Escape delimiter	Ampersand &(26H)	Is used within a text field to identify special case operations.



5.3.2. Communication Protocol

5.3.2.1. Analysis Order inquiry (CS-1600-> Host computer)

This protocol is used for the CS-1600 to inquire to the host computer analysis information to obtain the sample information.

Inquiry can be made with keyword of the sample ID Number in the CS-1600.

Table 6: Analysis Order Inquiry

CS-1600	Direction	Host computer
ENQ	→	
	←	ACK
H (Header Record)	→	
	←	ACK
Q (Inquiry Record)	→	
	←	ACK
L (Message Terminator Record)	→	
	←	ACK
EOT	→	

5.3.2.2. Analysis information (Host computer -> CS-1600)

This protocol is used for the host computer to respond analysis information against the inquiry made by the CS-1600.

Table 7 : Analysis Information

CS-1600	Direction	Host computer
	←	ENQ
ACK	→	
	←	H (Header Record)
ACK	→	
	←	P (Patient Record)
ACK	→	
	←	O (Test Order Record)
ACK	→	
	←	L (Message Terminator Record)
ACK	→	
	←	EOT

5.3.2.3. Analysis Results & QC Data (CS-1600 -> Host computer)

This protocol is used for the IPU to transmit the analysis result, the QC data in a real-time transmission (QC sample Number is “QCXX” and transmitted as similar to the regular sample data), and the QC data in the manual output.

Table 8 : Analysis results and QC data

CS-1600	Direction	Host computer
ENQ	→	
	←	ACK
H (Header Record)	→	
	←	ACK
P (Patient Record)	→	
	←	ACK
O (Test Order Record)	→	
	←	ACK
R : Result Record (Replicating the No. of parameters)	→	
(Replicating the No. of parameters)	←	ACK (Replicating the No. of receiving parameters)
L (Message Terminator Record)	→	
	←	ACK
EOT	→	

5.3.3. Details of Record

5.3.3.1. Header Record

[Example of transmission]

- CS-1600 -> Host computer
H|¥^&|||CS-1600^00-00^11001^^^USERINSNO^BQ203979|||||||E1394-97<CR>
- Host computer -> CS-1600
H|¥^&|||||||E1394-97<CR>

Table 9 : Details of Header record

ASTM Field	Field Name	CS-1600 -> Host	Host -> CS-1600	Max. size (Byte)	Remarks
7.1.1	Record type	H	H	1	Fixed
7.1.2	Delimiter definition	¥^&	¥^&	4	Fixed
7.1.3	Message control ID	Not used	Not used	-	
7.1.4	Access password	Not used	Not used	-	
7.1.5	Sender name or ID	Analyzer name^ Software version^ Analyzer serial No.^ Interface version^ Logical ID number ^ Nickname^ PS code	Not used	8^ 13^ 5^ ^ ^ 15^ 8	
7.1.6	Sender street address	Not used	Not used	-	
7.1.7	Reserved field	Not used	Not used	-	
7.1.8	Sender Telephone No.	Not used	Not used	-	
7.1.9	Sender characteristics	Not used	Not used	-	
7.1.10	Receiver ID	Not used	Not used	-	
7.1.11	Comment	Not used	Not used	-	
7.1.12	Processing ID	Not used	Not used	-	
7.1.13	ASTM Version No.	ASTM Version No.	ASTM Version No.	8	E1394-97 or 1
7.1.14	Date and Time of message	Not used	Not used	-	

[Detailed explanation of the fields]

1) 7.1.2 Delimiter definition

"|¥^&" is used as a fixed character string. No field delimiter is required between 7.1.1 and 7.1.2

2) 7.1.5 Sender name or ID

Analyzer name: Fixed as "CS-16000".
 Software version: Refers to the software version loaded on the CS-1600
 Analyzer Serial No.: Analyzer serial number is output.
 Interface version: Not used
 Logical ID number: Not used
 Nickname: Analyzer nickname is output.
 PS code: "BQ203979" is output.

3) 7.1.13 ASTM Version No.

If the presentation layer is E1394-97, the version number is "E1394-97".
 If the layer is E1394-95, the version number is "1"

Caution :
Refer to [Appendix C. Difference List of Transmission Content] as the difference in the specification of “Analyzer name”, “Analyzer Serial No.”, “Nickname”, “PS Code”, “ASTM Version No.” and “Receiver ID” between CS-1600 and each device.

5.3.3.2. Patient information Record

[Example of transmission]

- CS-1600 -> Host computer
P|1| | | ^Heisei^Jiro<CR>
- Host computer -> CS-1600
P|1| | | ^Heisei^Jiro<CR>

Table 10 : Details of Patient Information Record

ASTM Field	Field Name	CS-1600 -> Host *1	Host -> CS-1600	Max. size (Byte)	Remarks
8.1.1	Record type	P	P	1	Fixed
8.1.2	Sequence No.	Sequence No.	Sequence No.	4	Sequence No. of records
8.1.3	Practice assigned Patient ID	Not used	Not used	-	
8.1.4	Laboratory assigned patient ID	Not used	Not used	-	
8.1.5	Patient ID No.	Not used	Not used	-	
8.1.6	Patient name	^First name ^Last name	^First name ^Last name	^20^20	
8.1.7	Mother's maiden name	Not used	Not used	-	
8.1.8	Birth date	Not used	Not used	-	
8.1.9	Patient sex	Not used	Not used	-	
8.1.10	Patient race	Not used	Not used	-	
8.1.11	Patient address	Not used	Not used	-	
8.1.12	Reserved	Not used	Not used	-	
8.1.13	Patient telephone No.	Not used	Not used	-	
8.1.14	Attending physician name	Not used	Not used	-	
8.1.15	Special field 1	Not used	Not used	-	
8.1.16	Special field 2	Not used	Not used	-	
8.1.17	Patient height	Not used	Not used	-	
8.1.18	Patient weight	Not used	Not used	-	
8.1.19	Patient's known or suspected diagnosis	Not used	Not used	-	
8.1.20	Patient active medications	Not used	Not used	-	
8.1.21	Patient diet	Not used	Not used	-	
8.1.22	Practice field 1	Not used	Not used	-	
8.1.23	Practice field 2	Not used	Not used	-	
8.1.24	Admission and discharge dates	Not used	Not used	-	
8.1.25	Admission status	Not used	Not used	-	
8.1.26	Location	Not used	Not used	-	
8.1.27	DRG or AVG	Not used	Not used	-	
8.1.28	DRG or AVG2	Not used	Not used	-	
8.1.29	Patient religion	Not used	Not used	-	
8.1.30	Marital status	Not used	Not used	-	
8.1.31	Isolation status	Not used	Not used	-	

ASTM Field	Field Name	CS-1600 -> Host *1	Host -> CS-1600	Max. size (Byte)	Remarks
8.1.32	Language	Not used	Not used	-	
8.1.33	Hospital service	Not used	Not used	-	
8.1.34	Hospital institution	Not used	Not used	-	
8.1.35	Dosage category	Not used	Not used	-	

*1 To output the QC data, all fields other than 8.1.1 “Record Type” and 8.1.2 “Sequence number” are not used.

[Detailed Explanation of the fields]

1) 8.1.2 Sequence No.

The sequence number starts with 1 and indicates sequence position in which the record appeared in the message. This number is reset to 1 every time when the higher-level record appears in the message.

2) 8.1.6 Patient name

The first name and the last name may be with a maximum of 20 characters each with consisting of alpha-numeric.

Caution :

Refer to [Appendix C. Difference List of Transmission Content] as the difference in the specification of “Patient name” between CS-1600 and each device.

5.3.3.3. Request Information Record

[Example of transmission]

- CS-1600-> Host computer
Q|1|1^1^ 1234567890^B||^040^PT|0|20010905150000<CR>
- Host computer -> CS-1600
Not used

Table 11 : Details of Request Information Record

ASTM Field	Field Name	CS-1600 -> Host	Host -> CS-1600	Max. size (Byte)	Remarks
12.1 1	Record Type	Q	Not used	1	
12.1.2	Sequence No.	1	Not used	4	
12.1.3	Starting Range ID No.	Rack No.^ Tube position^ Sample ID No.^ Sample ID No. attribute	Not used	6^ 2^ 15^ 1^	
12.1.4	Ending Range ID No.	Not used	Not used	-	
12.1.5	Universal test ID	^^^Test code (See the Table 12) Test name When requesting multiple parameters, use the repeat symbol as below: Test parameter information1 ¥Test parameter information 2¥Test parameter information 3¥Test parameter information4¥...	Not used	^^^3 ^8	
12.1.6	Nature of request day limit	0	Not used	1	0: Request date Request date is not defined in the ASTM.
12.1.7	Beginning request date and time	YYYYMMDDHHMMSS	Not used	14	
12.1.8- 12.1 12	Ending request result date through User field No.2	Not used	Not used	-	
12.1.13	Requested information status code	(Inquiry type) *	Not used	(1)*	*First analysis/ Re-analysis order is selectable only when the "Inquire re-analysis" in Detailed Settings -Settings Change - TCP/IP (Serial port) - Host Computer - System Settings – Settings is ON.

[Detailed Explanation of the field]

1) 12.1.2 Sequence No.

The sequence number starts with 1 and indicates the sequence position in which the record appeared in the message. The number is reset to 1 when a higher-level record appears in the message.

2) 12.1.3 Starting Range ID No.

Rack No.: Assigned to the rack. Reagent table is described as below. <STAT analysis(Sample interruption) is included in Normal Sample>
Normal sample: Consists of 6-digit alpha-numeric
STAT sample(Rack interruption): Consists of 6-digit alpha-numeric
Reagent table: REAG00 is assigned.

Caution :
Refer to [Appendix C. Difference List of Transmission Content] as the difference in the specification of "Rack No." between CS-1600 and each device.

Tube Position : The sample rack position number within a rack, with consisting of 2-digit number.
Normal sample: 01 - 10
STAT sample(Rack interruptin): 01- 10
Reagent table: ΔΔ (Δ indicates a space character.)

Caution :
Refer to [Appendix C. Difference List of Transmission Content] as the difference in the specification of "Tube Position" between CS-1600 and each device.

Sample ID number: Consists of 15-digit of alpha-numeric. Depending on the direction for use, the hyphen "--(2DH) can be inserted between characters. "--is included in 15-digit number. The zero suppression function is not performed. If the number is less than 15-digit, it is aligned to the right and spaces (020H) are padded to the most significant digit. If the sample barcode can not be read, the sample ID number beginning with "ERR000000000001" is sequentially assigned to the sample number. The sample number beginning with "QC" is reserved to use for the QC analysis.

Sample ID No. attribute: M: Manual entry. Sample ID No. is manually entered through the touch panel or the IPU keyboard.
A: Automatically assigned by the analyzer. This number is assigned by the automatic-increment function, and is used to set the sample number that begins with "ERR", which is used when the ID Read error occurred.
B: Read by barcode reader. This is used when the sample ID number is read by the ID barcode reader.

Caution :
Refer to [Appendix C. Difference List of Transmission Content] as the difference in the specification of "Sample ID No. attribute" between CS-1600 and each device.

3) 12.1.5 Universal test ID

Test code: Consists of the 2-digit Host ID with 0 appended on the right. The 2-digit host ID is set in the Host ID – Basic Settings - Assay Group Settings. See the Table 17 : Parameter Code Lists

Test name: The test name is the listed name in the Basic Settings in the Assay Group Setting. It consists of up to 10 characters. See the Table 18: Parameter Code Lists.

4) 12.1.7 Date and time to start requesting results

The date format is fixed to "YYYYMMDDHHMMSS".

Here, YYYY indicates the year, MM the month, DD the day, HH (00-23), MM the minute (0-59), SS the second (0-59).

Caution :
Refer to [Appendix C. Difference List of Transmission Content] as the difference in the specification of “Date and time to start requesting results” between CS-1600 and each device.

5) 12.1.13 Requested information status code

Inquiry type :

N: Real time inquiry of the first analysis

C: Real time inquiry of re-analysis

* Either N or C is selectable only when the Inquire Re-analysis – Detailed Settings – Settings Change – TCP/IP(Serial port) – Host Computer - System Settings- Settings is ON.

Default setting is OFF.

(Examples of Communication)

First Analysis:

Q|1|000017^01^0000000000000001^A| |^^^040^PT-1|0|20150116181548| | | | |N<CR>

Re-Analysis:

Q|1|000017^01^0000000000000001^A| |^^^040^PT-1|0|20150116181548| | | | |C<CR>

Notes:

- Requested information record for the C(Inquiry of re-analysis) is transmitted only when it satisfies the following conditions ;
- The measurement mode is Standard
- The “Target” of “Automatic Output” in the System Settings is “All Data”
- The analysis is not QC analysis nor Calib.curve analysis
- The instrument is in measurable mode.
- The analysis is not multi dilution analysis(MDA).
- The analysis result data including the parameters for Re-analysis in Assay Group Settings has been already output.

- Select 9600bps or more of Baud Rate with “Ethernet connection” or “Serial connection”, because the communication data volume increases when the “Inquire re-analysis” setting in System Settings is ON.

Notes :

- When the “Inquire re-analysis” is used, set up auto re-analysis, auto re-dilution and reflex in the assay group settings of CS-1600 in the same conditions with the re-analysis logic in the Host Computer (because aspiration volume increases with the re-analysis)

If the assay group settings of CS-1600 are wrong, when the re-analysis is ordered by Host Computer, the error “Insufficient Sample” may be shown.

5.3.3.4. Test Order Record

[Example of transmission]

- CS-1600 -> Host computer
O|1||000001^01^123456789012345^B^E||R|||||N<CR>
- Host computer -> CS-1600
O|1||000001^01^123456789012345^B||^040^100.00¥^^050^100.00¥ . . .
¥^^060^100.00|R|20010807101000||||N<CR>

Table 12 : Details of Test Order Record

ASTM Field	Field name	CS-1600-> Host computer	Host computer -> CS-1600	Max. size (Byte)	Remarks
9.4.1	Record type	O	O	1	Fixed
9.4.2	Sequence No.	Sequence No.	Sequence No.	4	Sequence No. of records
9.4.3	Specimen ID	Not used	Rack No.^ Tube Position^ Sample ID No.^ Sample ID No. attribute(^Meas urement Mode)*	6^ 2^ 15^ 1(^1) *	Sample ID No. attribute is one of the followings: M: Manual entry A: Automatically assigned by analyzer B: Barcode reader
9.4.4	Instrument specimen ID	Rack No.^ Tube Position^ Sample ID No.^ Sample ID No. attribute^ Extended order request flag(^Measureme nt Mode)*	Not used	6^ 2^ 15^ 1^ 1(^1)*	*Measurement Mode is usable only when “HOST_ASTM_Specify Measurement Mode” in Other Service Settings - Service Settings is ON.
9.4.5	Universal Test ID	Not used	^^^Test code ^^Dilution ratio^Option(^Re plication)* (^Measurement Time)* When requesting multiple parameters, use the repeat symbol as below: Test parameter information1 ¥Test parameter information2¥Tes t parameter information 3¥Test parameter information4¥...	^^^3 ^^8^3 (^1)* (^1)*	*Replication is usable only when “HOST_ASTM_Specify Replication” in Other Service Settings - Service Settings is ON. *Measurement Time is usable only when “HOST_ASTM_Specify Replication” in Other Service Settings - Service Settings is ON.
9.4.6	Priority	Priority	Priority	1	S(STAT, STAT sample) R(Routine, Normal sample)
9.4.7	Requested/order date and time	Not used	YYYYMMDDHH MMSS	14	
9.4.8 - 9.4.11	Specimen collection date and time through	Not used	Not used	-	

ASTM Field	Field name	CS-1600-> Host computer	Host computer -> CS-1600	Max. size (Byte)	Remarks
	Collector ID				
9.4.12	Action code	Action code	Action code	1	N Normal sample Q QC material
9.4.13 - 9.4.31	Danger code through Material institution	Not used	Not used	-	

[Detailed explanation of the field]

1) 9.4.2 Sequence No.

The sequence starts with 1 and indicates the sequence position in which the record appeared in the message. This number is reset to 1 when a higher-level record appears in the message.

2) 9.4.3 Specimen ID

Rack No.: Up to 6-digit alpha-numeric assigned to the rack. Return the same number that was inquired.

Tube Position: The sample position number with in a rack with consisting of 2-digit number. Return the same number that was inquired.

Sample ID number: Consists of 15-digit of alpha-numeric and hyphen “-“(2Dh). Return the same number that was inquired.

Sample ID No. attribute: Indicates how the sample ID No.was registered. Return the same number that was inquired.

Measurement Mode: Specifies sampling mode.
N: Normal Mode
M: Micro-sampling Mode
Other than above value: Sample is aspirated according to the instrument setting.

In the case of QC sample, it is not possible to specify measurement mode from Host Computer. Specified measurement mode from Host Computer is not reflected in QC sample.

If the measurement mode is changed from Assay Group setting on the instrument (manual order registration or preset order), the sample is aspirated according to the specified setting from the instrument prior to Host Computer specification.

*When this block doesn't exist, the analysis is performed according to the settings specified in the instrument.

Note :

When the Inquire Re-analysis in Detailed Settings -Settings Change - TCP/IP (Serial port) - Host Computer - System Settings – Settings is ON, it is impossible to specify Micro-sampling mode. (The specified mode is not reflected.)

3) 9.4.4 Instrument Specimen ID

Rack No.: Assigned to the rack. In the reagent table, Rack No. is described as below.
[STATsample (Rack interruption) is included in Normal Sample]
Normal sample: 6-digit alpha-numeric
STAT sample: 6-digit alpha-numeric
Reagent table: REAG00

Caution :
Refer to [Appendix C. Difference List of Transmission Content] as the difference in the specification of “Rack No.” between CS-1600 and each device.

Tube Position: The sample position number with in a rack with consisting of 2-digit number.
Normal sample: 01 - 10
STAT sample(Rack interruption) : 01 -10
Reagent table: ΔΔ (“Δ” indicates a space character.)

Caution :
Refer to [Appendix C. Difference List of Transmission Content] as the difference in the specification of “Tube Position” between CS-1600 and each device.

Sample ID number: Consists of 15-digit alpha-numeric. Depends on the direction for use, the hyphen “-“(2DH) can be inserted between characters. “-“is included in 15-digit number. The zero suppression function is not performed. If the number is less than 15-digit, it is aligned to the right and spaces (020H) are padded to the most significant digit. If the sample barcode can not be read, the sample ID number beginning with "ERR000000000001" is assigned sequentially to the sample number. The sample number beginning with “QC” is reserved for the QC analysis.

Sample ID No. attribute: M: Manual entry. Sample ID No. is manually entered through the touch panel or the IPU keyboard.
A: Automatically assigned by the analyzer. This number is assigned by the automatic-increment function, and is used to set the sample number that begins with “ERR”, which is used when the ID Read error occurred.
B: Read by barcode reader. This is used when the sample ID number is read by the ID barcode reader.

Caution :
Refer to [Appendix C. Difference List of Transmission Content] as the difference in the specification of “Sample ID No. attribute” between CS-1600 and each device.

Extended order request flag:
E: Extended order
Indicates the analysis is continued, based on the rules of the analyzer. If the analysis is not continued, it is skipped.

Note:
The flag is not output if the Inquire Re-analysis in Detailed Settings -Settings Change - TCP/IP (Serial port) - Host Computer - System Settings – Settings is ON.

Caution :
Refer to [Appendix C. Difference List of Transmission Content] as the difference in the specification of “Extended order request flag” between CS-1600 and each device.

Measurement Mode: Indicates sampling mode.
N: Normal Mode
M: Micro-sampling Mode

* Measurement Mode setting is selectable either ON or OFF in Other Service Settings – Service Settings.
Default setting is OFF.
(Examples of Communication)

```

<CS-1600>Host Computer>
OFF: O|1|000017^01^0000000000000001^A^|R|||||N<CR>
ON:  O|1|000017^01^0000000000000001^A^M|R|||||N<CR>
<Host Computer -> CS-1600>
OFF:
O|1|000017^01^0000000000000001^A|^^^040^^^^2|R|20140620183015||||N|||||||
|||||<CR>
ON:
O|1|000017^02^0000000000000002^A^M|^^^040^^^^2|R|20140620183015||||N|||||||
|||||||<CR>

```

4) 9.4.5 Universal Test ID

When an order is sent from the host computer to the CS-1600, set the Universal Test ID which is sent by the “Universal Test ID” in the section 12.1.5. If other parameters than the parameters sent by Universal Test ID is received, analysis corresponding to the parameters is not performed. If there are no parameters, the analysis is skipped.

Test code: Consists of the 2-digit Host ID with 0 appended on the right. The 2-digit host ID is set in Host ID – Basic Settings - Assay Group Settings. See the Table 17 : Parameter Code Lists

Dilution ratio: Specifies the dilution ratio used in analysis with percent (%). If it is not specified, follows the instrument setting. The dilution ratio must be shown to 2-decimal places.

The dilution ratio in the CS-1600 which differs from the ordered dilution ratio by less than 0.01 percent is used for analysis.

If the MDA is set in the Default Dilution Ratio - the Basic Settings - Assay Group Setup, the MDA analysis is performed regardless of the dilution ratio specified by the host computer.

* If the unregistered dilution ratio in the CS-1600 is ordered, the Default Dilution Ratio - Basic Settings - Assay Group Settings is used for analysis.

Warning:

The setting of the dilution ratio may have a critical impact on analysis results. Set the standard setting of the dilution ratio to 100 percent. If other than 100 percent(%) is specified, make sure that the value is correct.

Note:

The redilution, re-analysis and reflex test are performed according to the ratio set by instrument even if the analysis is specified to the ratio which is different from the instrument settings. If the redilution, re-analysis and reflex test are not performed, specify Option from the host computer.

Option: Specifies performance of the redilution, re-analysis and reflex test. More than 1 option can be set with the combination of “D”, “R” and “F”. If there are no settings, follows the instrument settings

D: No redilution

R: No re-analysis

F: No reflex test

Replication: Specifies replication. “1” or “2” is selectable

If replication is specified “2” or over, the analysis is performed twice (2)

Other than the values above or no replication are specified: Sample is analyzed according to instrument setting.

If the sample is for QC analysis, it is impossible to specify the replication from Host Computer.

When Measurement Mode doesn't exist, analysis is performed according to the settings specified in the instrument.

* Repliation setting is selectable either ON or OFF in Other Service Settings – Service Settings.

Default setting is OFF.

(Examples of Communication)

OFF:

```
O|1|000017^01^0000000000000001^A| |^^^040^^^^|R|20140620183015| |||N|||||||||||||||
|||<CR>
```

ON:

```
O|1|000017^02^000000000000002^A||^040^^^2|R|20140620183015||||N|||||||  
||||<CR>
```

Note:

When the Inquire Re-analysis in Detailed Settings -Settings Change - TCP/IP (Serial port) - Host Computer - System Settings – Settings is ON and the test order record is for inquiry of re-analysis, it is impossible to specify the replication.

Measurement Time: Specifies measurement time.If there are no settings, follow the instrument settings.

M : Measurement Time(Main)

S : Measurement Time(Sub)

* Measurement Time setting is selectable either ON or OFF in Other Service Settings – Service Settings.

Default setting is OFF.

(Examples of Communication)

OFF:

```
O|1|000017^01^000000000000001^A| |^^^040^^^|R|20140620183015| |||N| |||||
|||<CR>
```

ON:

```
O|1|000017^02^000000000000002^A| |^^^040^^^M|R|20140620183015| ||||N| |||||
|||||<CR>
```

5) 9.4.6 Order of Priority

S : STAT, STAT sample

R : Routine, Normal sample

6) 9.4.7 Requested order date and time

Indicates the date and time that the inquired sample is analyzed.

The date format is fixed to "YYYYMMDDHHMMSS".

YYYY indicates the year, MM the month, DD the day, HH the hour (00-23), MM the minute (0-59), SS the second (0-59).

Caution :

Refer to [Appendix C. Difference List of Transmission Content] as the difference in the specification of “Requested order date and time” between CS-1600 and each device.

7) 9.4.12 Action code

Indicates the type of the resuled record to be sent.

N: Normal sample

Q: QC sample

5.3.3.5.Resulted record

[Example of transmission]

- CS-1600 -> Host computer
R|1|^041^PT sec^100.00^9^^^|10.2|sec||N|||||20110328135056<CR>
R|2|^042^PT %^100.00^9^^^| 99.4|%||N|||||20110328135056<<CR>
.....
- Host computer -> CS-1600
Not used

Table 13 Details of the Resulted record

ASTM Field	Field name	CS-1600 -> Host computer	Host computer -> CS-1600	Max. size (Byte)	Remarks
10.1.1	Record type	R	Not used	1	
10.1.2	Sequence No.	Sequence No.	Not used	4	Sequence No. beginning with 1
10.1.3	Universal Test ID	^^^Test code^ Parameter ^Dilution ratio^ Analysis result type^ Extended order request^ Extended order result^ Reflex test request(^Repl ication)*	Not used	^^^3^ 8^6^ 1^ 1 ^1^1(^2) *	Test code: Described in Test code (Table 17) : Parameter: Up to 10 characters *Replication can be specified only when "HOST_ASTM_Specify Replication"- Other Service Settings- Settings is ON.
10.1.4	Data or measurement value	Value	Not used	6	Up to 6 characters
10.1.5	Units	Units	Not used	7	
10.1.6	Reference ranges	Not used	Not used	-	
10.1.7	Result abnormal flags	Result abnormal flags^Evaluati on Info. ^ Instrument error Info.	Not used	1^Not specified^ Not specified	Evaluation Info. and Instrument error information are output only when the "HOST_ASTM_OutputErrorInformation"- Other Service Settings- Settings is ON.
10.1.8	Nature of abnormality testing	Not used	Not used	-	
10.1.9	Result status	Result Status	Not used	1	
10.1.10	Date of change in instrument normative values	Not used	Not used	-	
10.1.11	Operator identification	Not used	Not used	-	
10.1.12	Date/Time test started	Not used	Not used	-	
10.1.13	Date/Time test completed	YYYYMMDDHH MMSS	Not used	14	
10.1.14	Instrument identification	Not used	Not used	-	

[Detailed explanation of the field]

- 1) 10.1.2 Sequence No.

The sequence number starts with 1 and indicates the sequence position in which the record appeared in the message. This number is reset to 1 every time when the higher-level record appears in the message.

2) 10.1.3 “Universal test ID” through 10.1.13 “Date time test completed”

Parameters of each field to be set will vary depending on the contents to be transmitted.

2.1) Test parameter is output if the analysis order for the parameter is registered.

a) 10.1.3 Universal Test ID

Test code:	Indicates the assay parameter. Consists of combination of the 2-digit Host ID - Basic Settings - Assay Group Settings and 1 digit Host ID - Assay Parameter Settings - Assay Group Settings. See the Table 17 : Parameter Code list.
Parameter:	The characters of the Displayed Name – Assay Parameter Settings - Assay Group Settings are output and consist of up to 8 characters. See the Table 18 : Parameter Code (Result) list.
Dilution ratio:	Outputs the dilution ratio used in analysis with percent (%). The ratio must be shown to 2-decimal places. *If the MDA is set in the Default Dilution Ratio - Basic Settings - Assay Group Settings, the sub-field of the dilution ratio in the final report is skipped.

Caution :
Refer to [Appendix C. Difference List of Transmission Content] as the difference in the specification of “Dilution ratio” between CS-1600 and each device.

Analysis result type:

- 1: Normal (Auto output)
- 2: Average (Auto output)
- 3: Re-analysis (Auto output)
- 4: Average of re-analysis (Auto output)
- 5: Normal (Manual Output)
- 6: Average (Manual Output)
- 7: Re-analysis (Manual Output)
- 8: Average of re-analysis (Manual Output)
- 9: Final information (Auto output)
- A: Final information (Manual Output)

Caution :
Refer to [Appendix C. Difference List of Transmission Content] as the difference in the specification of “Analysis result type” between CS-1600 and each device.

Extended order request: Indicates the redilution analysis and re-analysis are performed based on the rules of the analyzer. Other than that, the extended order request will not be added.

Extended order request is output only to the result of the first analysis which satisfies the conditions to perform redilution analysis and re-analysis. All of the assay parameters in the assay groups to be output are flagged.

- D: Redilution request
- R: Re-analysis request

Caution :
Refer to [Appendix C. Difference List of Transmission Content] as the difference in the specification of “Extended order request” between CS-1600 and each device.

Extended order results: Indicates the analysis result is one of the followings: the result of the redilution analysis, reanalysis or reflex test. Other than that, the result is not output.
D: Results of redilution analysis
R: Results of re-analysis
F: Results of reflex test

Caution :
Refer to [Appendix C. Difference List of Transmission Content] as the difference in the specification of “Extended order results” between CS-1600 and each device.

Reflex test request: Indicates the reflex test is performed based on the rules of the analyzer. Other than that, the extended order request is not added.
Reflex test request is output only to the result of the first analysis which satisfies the conditions to perform the reflex analysis. All of the assay parameters in the assay groups to be output are flagged
F: Reflex test request

Caution :
Refer to [Appendix C. Difference List of Transmission Content] as the difference in the specification of “Reflex test request” between CS-1600 and each device.

Replication: Indicates the number of tested times.
*Replication setting is selectable either ON or OFF in Other Service Settings - Service Settings.
Default setting is OFF.
(Examples of Communication)

OFF: R|1|^041^PT sec^100.00^A^^^^|****.*|sec| |A| | | | |20150116172743<CR>
ON: R|1|^041^PT sec^100.00^A^^^^1|****.*|sec| |A| | | | |20150116172743<CR>

b) 10.1.4 Data

Up to 6-digit number of the analyzed data for each parameter is output. Data format is described in the Table 18 : Parameter Code Lists(Result).
If the analysis results can not be obtained, the mask characters are output to mask the integral number. The mask characters are as follows.

*: Analysis failure
/: Average calculation failure
+: Display Digit Overflow
-: Calculation failure
X: No validated calibration curve in the calculation

c) 10.1.5 Unit

Up to 7 characters of the unit for each parameter is output.
In the CS-1600, the unit set in the Asssay Parameter Settings – Assay Group Settings are output (though ASTM indicates to use the unit abbreviations specified in the ISO standard). See the Table 18: Parameter Code(Result). *The units of “Ratio” and “INR” are abbreviated.

d) 10.1.7 Result abnormal flag

L: Below the lower patient limit
H: Above the upper patient limit
<: Below lower report limit.
>: Above upper report limit
N: Normal test result
A: Analysis error

Outputs a string of characters consisting of the combination of the evaluation error code and error message, which is enclosed between square brackets “[]”. If there is more than one evaluation information, they are separated by commas.

If there is no evaluation information, it is not output.

See Table 14 for Evaluation error.

Example of output) |A^[0001.0002.0000 Initial fluctuation drop],[0008.0002.0000 Coagulation Curve Error : Sharp Drop]^|

* The Evaluation Information settings and the Instrument Error Information settings are selectable either ON or OFF in the Other Service Settings of Service Settings.

Default setting is OFF.

* There are the evaluation errors that are output by either the mask characters or the numeric values depending on the setting of “HOST_ASTM_OutputErrorInformation” – Other Service Settings – Service Settings. See Table14.

Instrument Error Information

Outputs a string of characters consisting of the error code and error message, which is enclosed between square brackets “[]”.

This is not output if there is no instrument error information.

Example of output) |A^^[34422 Insufficient Reagent (Reagent Arm Liquid Surface Not Detected)]|

* The Evaluation Information settings and the Instrument Error Information settings are selectable either ON or OFF in the Other Service Settings of Service Settings.

Default setting is OFF.

(Examples of Communication)

OFF: R|1|^041^PT sec^100.00^A^^^|****.*|sec| |A| | | | |20150116172743<CR>

ON: R|1|^041^PT sec^100.00^A^^^|****.*|sec| |A^^[34422 Insufficient Reagent (Reagent Arm Liquid Surface Not Detected)]| | | | |20150116172743<CR>

Table 14 : Analysis error, Result Abnormal Flags, and Display method of analysis results

Code	Message	Result abnormal flag	Display method of analysis results	
			“Output Error Information” is OFF	“Output Error Information” is ON
0000.0000.0000	[Dilution Ratio was Changed.]	N	Numeric values are output	Numeric values are output
0000.0000.0405	[Wave Changed 405nm]	N	Numeric values are output	Numeric values are output
0000.0000.0575	[Wave Changed 575nm]	N	Numeric values are output	Numeric values are output
0000.0000.0660	[Wave Changed 660nm]	N	Numeric values are output	Numeric values are output
0000.0000.0800	[Wave Changed 800nm]	N	Numeric values are output	Numeric values are output
0000.4000.0010	[Display Digit Overflow]	N	Masked values are output	Masked values are output
0000.4000.0020	[Calculation Failure]	N	Masked values are output	Masked values are output
0000.4000.0030	[Validated Calibration Curve is not found.]	N	Masked values are output	Masked values are output
0000.4000.0040	[Calculation based on the calibration curve failed.]	N	Masked values are output	Masked values are output
0000.4000.0041	[Extrapolation Boundary Over (Upper)]	N	Masked values are output	Masked values are output
0000.4000.0042	[Extrapolation Boundary Over (Lower)]	N	Masked values are output	Masked values are output
0000.4000.0050	[Calculated later.]	N	Numeric values are output	Numeric values are output

Code	Message	Result abnormal flag	Display method of analysis results	
			“Output Error Information” is OFF	“Output Error Information” is ON
0000.5000.0010	[Formula Calculation Failure]	N	Masked values are output	Masked values are output
0000.5000.0020	[Formula Calculation Failure]	N	Masked values are output	Masked values are output
0000.5000.0050	[Problem in Calculating Formula]	N	Masked values are output	Masked values are output
0000.6000.0100	[Upper Report Limit Over]	>	Numeric values are output	Numeric values are output
0000.6000.0200	[Lower Report Limit Over]	<	Numeric values are output	Numeric values are output
0000.6000.0300	[Upper Mark Limit Over]	H	Numeric values are output	Numeric values are output
0000.6000.0400	[Lower Mark Limit Over]	L	Numeric values are output	Numeric values are output
0000.6000.0500	[MDA Slope Ratio Over]	A	Numeric values are output	Numeric values are output
0000.6000.0600	[Difference between replicated results]	A	Numeric values are output	Numeric values are output
0000.7000.0020	[Mean Calculation Failure]	N	Masked values are output	Masked values are output
0002.0000.0000	[Slight Coagulation]	A	Numeric values are output	Numeric values are output
0004.0000.0000	[Analysis Time Over]	A	Numeric values are output	Numeric values are output
0008.0001.0000	[Initial fluctuation drop]	A	Masked values are output	Numeric values are output *1
0008.0002.0000	[Coagulation Curve Error: Sharp Drop]	A	Masked values are output	Numeric values are output *1
0008.0004.0000	[Coagulation Curve Error: Dip]	A	Masked values are output	Numeric values are output *1
0008.0008.0000	[Coagulation Curve Error: Jump Up]	A	Masked values are output	Numeric values are output *1
0008.0016.0000	[Coagulation Curve Error: Stepping Curve]	A	Masked values are output	Numeric values are output *1
0008.0032.0000	[Coagulation Curve Error: Fbg Curve Error]	A	Masked values are output	Numeric values are output *1
0008.0064.0000	[Coagulation Curve Error: Terrace]	A	Masked values are output	Numeric values are output *1
0008.0128.0001	[Early Reaction Error :Slow Reaction]	A	Masked values are output	Masked values are output
0008.0128.0002	[Early Reaction Error :Start Angle 1]	A	Masked values are output	Masked values are output
0008.0128.0004	[Early Reaction Error :Start Angle 2]	A	Numeric values are output	Numeric values are output
0008.0128.0008	[Early Reaction Error :Drift]	A	Masked values are output	Masked values are output
0008.0128.0016	[Early Reaction Error :Early %]	A	Masked values are output	Masked values are output
0008.0256.0000	[Noise]	A	Masked values are output	Masked values are output
0016.0000.0000	[Turbidity Level Over]	A	Masked values are output	Masked values are output
0032.0000.0000	[No Coagulation]	A	Masked values are output	Masked values are output
0032.0002.0000	[Flat Curve]	A	Masked values are output	Masked values are output
0064.0000.0000	[Aged Sample]	A	Masked values are output	Numeric values are output *1
0128.0000.0000	[Range Over]	A	Masked values are output	Masked values are output
0256.0000.0000	[Trans Light High:Clot.]	A	Masked values are output	Masked values are output
1100.4000.0000	[Defective Sample volume]	A	数值	数值
4001.0000.0000	[Trans Light Low]	A	Masked values are output	Masked values are output
4002.0000.0000	[Trans Light High:Chro.Imm.]	A	Masked values are output	Masked values are output
4004.0000.0000	[No Linearity]	A	Masked values are output	Masked values are output

Code	Message	Result abnormal flag	Display method of analysis results	
			“Output Error Information” is OFF	“Output Error Information” is ON
4008.0000.0000	[Reaction Curve Error]	A	Masked values are output	Masked values are output
4016.0000.0000	[Antigen Excess]	A	Masked values are output	Masked values are output
4032.0000.0000	[Bump]	A	Masked values are output	Masked values are output
4128.0000.0000	[No Polynomialadjustment]	A	Masked values are output	Masked values are output
4256.0000.0000	[Range in non-linear]	A	Masked values are output	Masked values are output
9999.0000.9010	[TEST_RECV_ELSE_ERROR]	N	Masked values are output	Masked values are output
9999.0000.9020	[ASSY_CALV_PARA_ERROR]	N	Masked values are output	Masked values are output
9999.0000.9030	[ASSY_CALV_INF_ERROR]	N	Masked values are output	Masked values are output
9999.0000.9040	[ASSY_ANLY_CALC_ERROR]	N	Masked values are output	Masked values are output
9999.0000.9050	[ASSY_RECV_ELSE_ERROR]	N	Masked values are output	Masked values are output
9999.0000.9060	[ASSY_ANLY_NOPRISET_ERROR]	N	Masked values are output	Masked values are output
9999.0000.9070	[ASSY_ANLY_NORESULT_ERROR]	N	Masked values are output	Masked values are output
9999.0000.9080	[ASSY_ANLY_DILUTION_ERROR]	N	Masked values are output	Masked values are output
9999.0000.9090	[ASSY_CALY_NODATA_ERROR]	N	Masked values are output	Masked values are output
9999.0000.9100	[ASSY_AVER_IRIGALRESULT_ERROR]	N	Masked values are output	Masked values are output
9999.0000.9110	[TEST_REAGENTLOT_ERROR]	N	Masked values are output	Masked values are output
Unknown9999	[Unknown Message]	N	Numeric values are output	Numeric values are output

*1 If the setting of “HOST_ASTM_OutputErrorInformation” - Other Service Settings – Service Settings is turned ON and also “HOST_ASTM_OutputCurveErrorInformation” - Other Service Settings – Service Settings is turned OFF, the masked values are output.

(The default value of “HOST_ASTM_OutputCurveErrorInformation” is ON, the Numeric values are output..)

e) 10.1.9 Result Status

Indicates the status of analysis result.

Since the result isn't output per parameter on CS-1600, this function is not used.

f) 10.1.13 Date /time test completed

Indicates the date and time the test was completed.

The date format is fixed with "YYYYMMDDHHMMSS".

YYYY indicates the year, MM the month, DD the day, HH the hour (00-23), MM the minute (0-59), SS the second (0-59).

2.2) Outputting Sample Info. flags;

Only the parameters with the Sample Volume flag are output.

*Sample Info Flag setting is selectable either ON or OFF in Other Service Settings of Service Settings.

Default setting is OFF.

(Note)

Sample Info. flags are used only for inspection in a clinical laboratory and not for examination of a patient. They notify an operator of the possibility of the specific abnormal sample confirmed by checking the analysis

data.

a) 10.1.3 Universal Test ID

Test Code: Not used.

Parameter: Indicates the content of sample volume flags

Defective Sample Volume: Sample suspected of defective sample volume.*

Dilution ratio: Not used.

Analysis result type: Not used.

Extended order request: Not used.

Extended order results: Not used.

Reflex test request: Not used.

b) 10.1.4 Data or measurement value

Not used.

c) 10.1.5 Units

Not used.

d) 10.1.7 Result abnormal flag

A: Results with sample volume flag.

e) 10.1.13 Date /time test completed

Indicates the date and time the test was completed.

The date format is fixed to "YYYYMMDDHHMMSS".

YYYY indicates the year, MM the month, DD the day, HH the hour (00-23), MM the minute (0-59), SS the second (0-59).

2.3) Outputting the path to the graphic data; the path to the graphic data is output only when the graphic data exists

*Output graphic data setting is selectable either ON or OFF in Other Service Settings of Service Settings.

Default setting is OFF.

(Note)

Image data is used only for inspection in a clinical laboratory and not for examination of a patient. They notify an operator of the possibility of the specific abnormal sample confirmed by checking the analysis data.

a) 10.1.3 Universal Test ID

Test code : Assay Group Code is specified.

Parameter : Type of graphic data is specified.

Normal : Normal coagulation wave

Average : Averaged coagulation wave

MDA : Graphic image of MDA

Dilution ratio: Not used.

Analysis result type: Not used.

Extended order request: Not used.

Extended order results: Not used.

Reflex test request: Not used.

b) 10.1.4 Data

The file path to the graphic data is output. The character “¥” used for the file path is converted to the characters of escape sequence “&R&”. The actual graphic data is extracted to “D:¥Sysmex¥Shared¥PNG¥ Date folder”, and the file path is output from PNG (“PNG¥ Date folder”). The date folder is fixed to “YYYYMMDD”, and the file name is determined by the information of Date and Time (fixed to “YYYYMMDDHHMM”), Sample No., Graphic data, Dilution ratio_Seq No and the result of Extended order.

Table 15 : List of information included in the file name

No.	Item	Contents	Remark
1	Date and time	Analyzed date and time is specified in the form of “YYYY_MM_DD_HH_MM”.	
2	Sample No.	Sample No. is specified.	
3	Test code	Test code specified in the test order record is specified.	
4	Type of graphic data	Type of graphic data is specified. Normal: Normal coagulation waveform Average : Averaged coagulation waveform MDA : Graphic data of MDA	
5	Dilution ratio	Dilution ratio is specified.	Omitted if the types of graphic data are other than Normal.
6	Seq No.	Sequential No. is specified.	Omitted if the types of graphic data are other than Normal.
7	Extended order	Information of whether the result is re-analyzed or not.(Optional) D : Result of redilution analysis R : Reanalysis result F : Reflex test result.	Omitted if the types of graphic data are other than Normal.

Example:

"PNG&R&20130930&R&2013_09_30_12_00_1234567890_040_Normal_100_1.PNG"

The example above shows the graphic data is saved in the

“D:¥Sysmex¥Shared¥PNG¥20030930” folder with the name of “2003_09_30_12_00_1234567890_040_Normal_100_1.PNG”.

When the IPU is shutdown, the saved graphic data folders which have passed 3 days including the day the IPU started are deleted.

- Analysis is performed twice
 "PNG&R&20130930&R&2013_09_30_12_00_1234567890_040_Normal_100_1.PNG"
 "PNG&R&20130930&R&2013_09_30_12_00_1234567890_040_Normal_100_2.PNG"
 "PNG&R&20130930&R&2013_09_30_12_00_1234567890_040_Average.PNG"
- MDA analysis
 "PNG&R&20130930&R&2013_09_30_12_00_1234567890_040_Normal_050_1.PNG"
 "PNG&R&20130930&R&2013_09_30_12_00_1234567890_040_Normal_025_1.PNG"
 "PNG&R&20130930&R&2013_09_30_12_00_1234567890_040_Normal_013_1.PNG"
 "PNG&R&20130930&R&2013_09_30_12_00_1234567890_040_MDA.PNG"
- Re-analysis
 "PNG&R&20130930&R&2013_09_30_12_00_1234567890_040_Normal_100_1.PNG"
 "PNG&R&20130930&R&2013_09_30_12_00_1234567890_040_Normal_100_1_R.PNG"
- Analysis is performed twice & Redilution analysis is performed

"PNG&R&20130930&R&2013_09_30_12_00_1234567890_040_Normal_100_1.PNG"
"PNG&R&20130930&R&2013_09_30_12_00_1234567890_040_Normal_100_2.PNG"
"PNG&R&20130930&R&2013_09_30_12_00_1234567890_040_Average.PNG"
"PNG&R&20130930&R&2013_09_30_12_00_1234567890_040_Normal_050_1_D.PNG"
"PNG&R&20130930&R&2013_09_30_12_00_1234567890_040_Normal_050_2_D.PNG"
"PNG&R&20130930&R&2013_09_30_12_00_1234567890_040_Average_D.PNG"

c) 10.1.5 Units

Not used

d) 10.1.7 Result abnormal flag

Not used

e) 10.1.13 Date /time test completed

Indicates the date and time the test was completed.

The date format is fixed to "YYYYMMDDHHMMSS".

YYYY indicates the year, MM the month, DD the day, HH the hour (00-23), MM the minute (0-59), SS the second (0-59)

5.3.3.6.Message termination record

[Examples of transmission]

- CS-1600 -> Host computer
L|1|N<CR>
- Host computer -> CS-1600
L|1|N<CR>

Table 16 : Message termination record

ASTM Field	Field name	CS-1600 -> Host computer	Host computer -> CS-1600	Max. size (Byte)	Remarks
13.1.1	Record type	L	L	1	Fixed
13.1.2	Sequence No.	1	1	4	Always 1
13.1.3	Termination cord	N	N	1	N: Normal termination

6. Examples of Communication

Examples of Communication are in the case of the serial connection (ASTM E1381-02 Mode) . Here is the example of CS-1600.

6.1. Inquiry of Analysis Order (CS-1600 => Host Computer)

- When the order inquiry is performed from CS-1600

CS-1600	<ENQ>
Host	<ACK>
CS-1600	<STX>1H ¥^& CS-1600^00-03^10000001^^^CS-1600^ BQ203979 E1394-97 <CHK1><CHK2><CR><LF>
Host	<ACK>
CS-1600	<STX>2Q 1 000001^01^ 1^B ^040^PT¥^^060^Fbg¥^^120^II¥^^150^V¥^^170^VII¥^^180^VIII¥^^ 190^IX¥^^200^X¥^^210^XI¥^^300^AT3¥^^310^APL 0 20110328133318<ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CS-1600	<STX>3L 1 N<ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CS-1600	<EOT>

6.2. Inquiry of Re-analysis Order (CS-1600→Host)

* When Inquire Re-analysis – Detailed Settings – Settings Change – TCP/IP (Serial port) – Host Computer – System Settinga – Settings is ON

CS-1600	<ENQ>
HOST	<ACK>
CS-1600	<STX>1H ¥^& CS-1600^00-03^10000001^^^CS-1600^ BQ203979 E1394-97 <CHK1><CHK2><CR><LF>
HOST	<ACK>
CS-1600	<STX>2Q 1 000001^01^ 1^B ^040^PT¥^^060^Fbg¥^^120^II¥^^150^V¥^^170^VII¥^^180^VIII¥^^ 190^IX¥^^200^X¥^^210^XI¥^^300^AT3¥^^310^APL 0 20110328133318 C<ETX><CHK1><CHK2><CR><LF>
HOST	<ACK>
CS-1600	<STX>3L 1 N<ETX><CHK1><CHK2><CR><LF>
HOST	<ACK>
CS-1600	<EOT>

6.3. Analysis Order (Host Computer => CS-1600)

- When the host computer sends orders to CS-1600

Host	<ENQ>
CS-1600	<ACK>
Host	<STX>1H ¥^& E1394-97 <CR><ETX><CHK1><CHK2><CR><LF>
CS-1600	<ACK>
Host	<STX>2P 1 100 ^Heisei^Jiro<CR><ETX><CHK1><CHK2><CR><LF>
CS-1600	<ACK>
Host	<STX>30 1 000001^01^ 1^B ^040^^100.00^DF¥^^050^^100.00¥^^060^^100.00¥^^040^^100.00^DR R 20110330123159 N ^^^^^^^^^^^^^^^^^^^^<CR><ETX><CHK1><CHK2><CR><LF>
CS-1600	<ACK>

Host	<STX>4L 1 <CR><ETX><CHK1><CHK2><CR><LF>
CS-1600	<ACK>
Host	<EOT>

6.3.1. Specify Replication

*When HOST_ASTM_SwitchMeasurementTime – Other Service Settings - Service Settings is ON.

Host	<ENQ>
CS-1600	<ACK>
Host	<STX>1H ¥& E1394-97 <CR><ETX><CHK1><CHK2><CR><LF>
CS-1600	<ACK>
Host	<STX>2P 1 100 ^Heisei^Jiro<CR><ETX><CHK1><CHK2><CR><LF>
CS-1600	<ACK>
Host	<STX>30 1 000001^01^ 1^B 1 ^040^100.00^DF^\$¥^050^100.00^M¥^060^100.00^S¥^040^100.00^DR^S R 201103 30123159 N 11 <CR><ETX><CHK1><CHK2><CR><LF>
CS-1600	<ACK>
Host	<STX>4L 1 <CR><ETX><CHK1><CHK2><CR><LF>
CS-1600	<ACK>
Host	<EOT>

6.4. Analysis Results (CS-1600 => Host Computer)

6.4.1. When analysis is performed 1 time

CS-1600	<ENQ>
HOST	<ACK>
CS-1600	<STX>1H ¥& CS-1600^00-03^10000001^^^CS-1600^ BQ203979 E1394-97<ETX><CHK1><CHK2><CR><LF>
HOST	<ACK>
CS-1600	<STX>2P 1 ^Heisei^Jiro<ETX><CHK1><CHK2><CR><LF>
HOST	<ACK>
CS-1600	<STX>30 1 000001^01^1^B^ R N<ETX><CHK1><CHK2><CR><LF>
HOST	<ACK>
CS-1600	<STX>4R 1 ^041^PT sec^100.00^9^^^ 10.2 sec N 20110328135056<ETX><CHK1><CHK2><CR><LF>
HOST	<ACK>
CS-1600	<STX>5R 2 ^042^PT %^100.00^9^^^ 99.4 % N 20110328135056<ETX><CHK1><CHK2><CR><LF>
HOST	<ACK>
CS-1600	<STX>6R 3 ^043^PT R.^100.00^9^^^ 0.57 N 20110328135056<ETX><CHK1><CHK2><CR><LF>
HOST	<ACK>
CS-1600	<STX>7R 4 ^044^PT INR^100.00^9^^^ 0.81 N 20110328135056<ETX><CHK1><CHK2><CR><LF>
HOST	<ACK>
CS-1600	<STX>0R 5 ^051^APTT sec^100.00^9^^^ 27.4 sec N 20110328135056<ETX><CHK1><CHK2><CR><LF>
HOST	<ACK>
CS-1600	<STX>1R 6 ^061^Fbg sec^100.00^9^^^ 8.5 sec N 20110328135056<ETX><CHK1><CHK2><CR><LF>
HOST	<ACK>
CS-1600	<STX>2R 7 ^062^Fbg C.^100.00^9^^^ 588.2 mg/dL N 20110328135056<ETX><CHK1><CHK2><CR><LF>
HOST	<ACK>
CS-1600	<STX>4R 8 ^063^Defective Sample Volume^^^^ A 20110328135056<ETX><CHK1><CHK2><CR><LF>
HOST	<ACK>

CS-1600	<STX>5L 1 N<ETX><CHK1><CHK2><CR><LF>
HOST	<ACK>
CS-1600	<EOT>

* When the Inquire re-analysis setting in the System Settings is ON

<6.4.2 "Transmitting Analysis Results (The first analysis)" is also the same.>

CS-1600	<ENQ>
Host	<ACK>
CS-1600	<STX>1H ¥& CS-1600^00-03^10000001^^CS-1600^ BQ203979 111111 E1394-97<ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CS-1600	<STX>2P 1 1111^Heisei^Jiro<ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CS-1600	<STX>30 1 000001^01^1^B^ R 1111 N<ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CS-1600	<STX>4R 1 ^041^PT sec^100.00^1^1^ 10.2 sec N 1111 20110328135056<ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CS-1600	<STX>5R 2 ^042^PT %^100.00^1^1^ 99.4 % N 1111 20110328135056<ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CS-1600	<STX>6R 3 ^043^PT R.^100.00^1^1^ 0.57 N 1111 20110328135056<ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CS-1600	<STX>7R 4 ^044^PT INR^100.00^1^1^ 0.81 N 1111 20110328135056<ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CS-1600	<STX>0R 5 ^051^APTT sec^100.00^1^1^ 27.4 sec N 1111 20110328135056<ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CS-1600	<STX>1R 6 ^061^Fbg sec^100.00^1^1^ 8.5 sec N 1111 20110328135056<ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CS-1600	<STX>2R 7 ^062^Fbg C.^100.00^1^1^ 588.2 mg/dL N 1111 20110328135056<ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CS-1600	<STX>4R 8 ^062^Defective Sample Volume^1111 A 1111 20110328135056<ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CS-1600	<STX>5L 1 N<ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CS-1600	<EOT>

6.4.2. Transmitting Analysis Results (When there is the re-analysis)

※ Transmitting Analysis Results (First analysis)

CS-1600	<ENQ>
Host	<ACK>
CS-1600	<STX>1H ¥& CS-1600^00-03^10000001^^CS-1600^ BQ203979 111111 E1394-97<ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CS-1600	<STX>2P 1 1111^Heisei^Jiro<ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CS-1600	<STX>30 1 000001^01^1^B^ R 1111 N<ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CS-1600	<STX>4R 1 ^041^PT sec^100.00^1^R^ 10.2 sec N 1111 20110328135407<ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CS-1600	<STX>5R 2 ^042^PT %^100.00^1^R^ 99.4 % N 1111 20110328135407<ETX><CHK1><CHK2><CR><LF>

Host	<ACK>
CS-1600	<STX>6R 3 ^043^PT R.^100.00^1^R^ 0.57 N 20110328135407<ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CS-1600	<STX>7R 4 ^044^PT INR^100.00^1^R^ 0.81 N 20110328135407<ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CS-1600	<STX>0R 5 ^051^APTT sec^100.00^1^R^ 27.4 sec N 20110328135407<ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CS-1600	<STX>1R 6 ^061^Fbg sec^100.00^1^R^ 8.5 sec N 20110328135407<ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CS-1600	<STX>2R 7 ^062^Fbg C.^100.00^1^R^ 588.2 mg/dL N 20110328135407<ETX><CHK1><CHK2><CR><LF>
CS-1600	<STX>5R 8 ^Defective Sample Volume^ A 20110328135407<ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CS-1600	<STX>6L 1 N<ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CS-1600	<EOT>

※ Transmitting Analysis Results (Second analysis)

CS-1600	<ENQ>
Host	<ACK>
CS-1600	<STX>1H ¥& CS-1600^00-03^10000001^^^CS-1600^ BQ203979 E1394-97<ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CS-1600	<STX>2P 1 ^^Heisei^Jiro<ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CS-1600	<STX>30 1 000001^01^ 1^B^E R N<ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CS-1600	<STX>4R 1 ^041^PT sec^100.00^3^R^ 10.2 sec N 20110328135407<ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CS-1600	<STX>5R 2 ^042^PT %^100.00^3^R^ 99.4 % N 20110328135407<ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CS-1600	<STX>6R 3 ^043^PT R.^100.00^3^R^ 0.57 N 20110328135407<ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CS-1600	<STX>7R 4 ^044^PT INR^100.00^3^R^ 0.81 N 20110328135407<ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CS-1600	<STX>2R 7 ^Defective Sample Volume^ A 20110328135407<ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CS-1600	<STX>3L 1 N<ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CS-1600	<EOT>

※ Transmitting Analysis Results (Final analysis)

CS-1600	<ENQ>
Host	<ACK>
CS-1600	<STX>1H ¥& CS-1600^00-03^10000001^^^CS-1600^ BQ203979 E1394-97<ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CS-1600	<STX>2P 1 ^^Heisei^Jiro<ETX><CHK1><CHK2><CR><LF>
Host	<ACK>

CS-1600	<STX>30 1 000001^01^1^B^ R N<ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CS-1600	<STX>4R 1 ^041^PT sec^100.00^9^R 10.2 sec N 20110328135407<ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CS-1600	<STX>5R 2 ^042^PT %^100.00^9^R 99.4 % N 20110328135407<ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CS-1600	<STX>6R 3 ^043^PT R.^100.00^9^R 0.57 N 20110328135407<ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CS-1600	<STX>7R 4 ^044^PT INR^100.00^9^R 0.81 N 20110328135407<ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CS-1600	<STX>0R 5 ^051^APTT sec^100.00^9^R 27.4 sec N 20110328135407<ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CS-1600	<STX>1R 6 ^061^Fbg sec^100.00^9^R 8.5 sec N 20110328135407<ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CS-1600	<STX>2R 7 ^062^Fbg C.^100.00^9^R 588.2 mg/dL N 20110328135407<ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CS-1600	<STX>5R 8 ^062^Defective Sample Volume^062^ A 20110328135407<ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CS-1600	<STX>6L 1 N<ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CS-1600	<EOT>

6.4.3. When analysis is performed twice

Example: Analysis result (First analysis)

CS-1600	<ENQ>
Host	<ACK>
CS-1600	<STX>1H ¥& CS-1600^00-03^10000001^^^CS-1600^BQ203979 E1394-97<ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CS-1600	<STX>2P 1 ^^Heisei^Jiro<ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CS-1600	<STX>30 1 000001^01^1^M^ R N<ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CS-1600	<STX>4R 1 ^041^PT sec^100.00^1^R 10.2 sec N 20110328150948<ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CS-1600	<STX>5R 2 ^042^PT %^100.00^1^R 99.4 % N 20110328150948<ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CS-1600	<STX>6R 3 ^043^PT R.^100.00^1^R 0.57 N 20110328150948<ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CS-1600	<STX>7R 4 ^044^PT INR^100.00^1^R 0.81 N 20110328150948<ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CS-1600	<STX>0R 5 ^051^APTT sec^100.00^1^R 27.4 sec N 20110328150948<ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CS-1600	<STX>1R 6 ^061^Fbg sec^100.00^1^R 7.9 sec N 20110328150948<ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CS-1600	<STX>2R 7 ^062^Fbg C.^100.00^1^R 632.9 mg/dL N 20110328150948<ETX><CHK1><CHK2><CR><LF>

Host	<ACK>
CS-1600	<STX>3L 1 N<ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CS-1600	<EOT>

Example: Analysis result (Second analysis)

CS-1600	<ENQ>
Host	<ACK>
CS-1600	<STX>1H ¥& CS-1600^00-03^10000001^^^CS-1600^ BQ203979 E1394-97<ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CS-1600	<STX>2P 1 ^Heisei^Jiro<ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CS-1600	<STX>30 1 000001^01^1^M^ R N<ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CS-1600	<STX>4R 1 ^061^Fbg sec^100.00^1^^ 7.9 sec N 20110328150948<ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CS-1600	<STX>5R 2 ^062^Fbg C.^100.00^1^^ 632.9 mg/dL N 20110328150948<ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CS-1600	<STX>6L 1 N<ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CS-1600	<EOT>

Example: Analysis result (Final analysis)

CS-1600	<ENQ>
Host	<ACK>
CS-1600	<STX>1H ¥& CS-1600^00-03^10000001^^^CS-1600^ BQ203979 E1394-97<ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CS-1600	<STX>2P 1 ^Heisei^Jiro<ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CS-1600	<STX>30 1 000001^01^1^M^ R N<ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CS-1600	<STX>4R 1 ^041^PT sec^100.00^9^^ 10.2 sec N 20110328150948<ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CS-1600	<STX>5R 2 ^042^PT %^100.00^9^^ 99.4 % N 20110328150948<ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CS-1600	<STX>6R 3 ^043^PT R.^100.00^9^^ 0.57 N 20110328150948<ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CS-1600	<STX>7R 4 ^044^PT INR^100.00^9^^ 0.81 N 20110328150948<ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CS-1600	<STX>0R 5 ^051^APTT sec^100.00^9^^ 27.4 sec N 20110328150948<ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CS-1600	<STX>1R 6 ^061^Fbg sec^100.00^9^^ 7.9 sec N 20110328150948<ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CS-1600	<STX>2R 7 ^062^Fbg C.^100.00^9^^ 632.9 mg/dL N 20110328150948<ETX><CHK1><CHK2><CR><LF>

Host	<ACK>
CS-1600	<STX>3L 1 N<ETX><CHK1><CHK2><CR><LF>
Host	<ACK>
CS-1600	<EOT>

7. Parameter Code List

Table 17 : Parameter Code Lists

Assay Group	Parameter Code	Assay Group	Parameter Code
PT	04X	FVPCAT NR	45X
APTT	05X	FVPCAT	46X
Fbg	06X	FVPCAT0	47X
Reserved	08X	Reserved	50X
Reserved	09X	TT	51X
II	12X	Reserved	52X
V	15X	Reserved	60X
VII	17X	DDimer	61X
VIII	18X	P-FDP	62X
IX	19X	Reserved	63X
X	20X	Reserved	64X
XI	21X	vWF-Ag medium	65X
XII	22X	vWF-Ag low	66X
PCcl	25X	Reserved	67X
BXT	26X	Reserved	68X
LA1	27X	Reserved	70X
LA2	28X	Reserved	71X
PSAc	29X	Reserved	72X
AT3	30X	Reserved	80X
APL	31X	Reserved	81X
Plg	32X	Reserved	82X
PC(Chrom)	33X	Reserved	83X
Hep	34X	Reserved	84X
Reserved	36X	Reserved	85X
C1 Inh	37X	Reserved	86X
VIII ch	39X	vWF-Ac low	87X
Reserved	40X	vWF-Ac medium	88X
LA R	41X	Reserved	89X
PCAT NR	42X	FPS	91X
PCAT	43X	Reserved	000
PCAT0	44X	Reserved	999

000: There is no analysis parameter for the inquired sample.

999: There is no information on the inquired sample.

“X” is replaced with a one-digit host ID defined in the Assay Parameter Definition in when transmitting analysis results.

In the case of order inquiry, order information texts and the analysis data format of formula, “X” is replaced with 0.

New analysis parameters may be added in the future. Please prepare a receive program that ignores the data when receiving the codes other than the above-mentioned codes.

The following shows the default Host ID for assay parameter defined in the Assay Group Settings.

- 1: Time / dOD
- 2: Activity % / Concentration
- 3: Ratio
- 4: INR

New analysis parameters may be added in the future. Please prepare a receive program that ignores the data when receiving the codes other than the codes shown above.

Assay group is output according to the order of the Assay Group Settings in the Settings. After the assay group registered in the Assay Group 1 is output in order, the assay group registered in the Assay Group 2 is output in order accordingly (but the assay group registered in the Assay Group1 is excluded). The formula parameter is displayed at the end in the order of “Lupus Anticoagulant”, “Protein C Global” and “Protein C Global / FV”.

Example:

Following assay group settings are output in the order of PT-> APTT ->Fbg

Assay Group1		Assay Group2	
1	PT	1	PT
2	APTT	2	Fbg

Caution :

Refer to [Appendix C. Difference List of Transmission Content] as the difference in the specification of “Order of outputting” between CS-1600 and each device.

Table 18 : Parameter Code Lists(Result)

Test code	Test name	Units	Format	Test code	Test name	Units	Format
041	PT sec	sec	####. #	451	FVPCAT NR		###. ##
042	PT %	%	####. #	461	FVPCAT sec	sec	####. #
043	PT R		###. ##	471	FVPCAT0 sec	sec	####. #
044	PT INR		###. ##	511	TT sec	sec	####. #
051	APTT sec	sec	####. #	611	DD dOD	dOD	##. ###
061	Fbg sec	sec	####. #	612	DD C.	ug/L	###. ##
062	Fbg C.	mg/dL	####. #	621	P-FDP dOD	dOD	#. ####
121	II sec	sec	####. #	622	P-FDP C.	ug/mL	####. #
122	II %	%	####. #	651	vWF-Ag medium dOD	dOD	#. ####
151	V sec	sec	####. #	652	vWF-Ag medium %	%	####. #
152	V %	%	####. #	661	vWF-Ag low dOD	dOD	#. ####
171	VII sec	sec	####. #	662	vWF-Ag low %	%	####. #
172	VII %	%	####. #	871	vWF-Ac low dOD	dOD	#. ####
181	VIII sec	sec	####. #	872	vWF-Ac low %	%	####. #
182	VIII %	%	####. #	881	vWF-Ac medium dOD	dOD	#. ####
191	IX sec	sec	####. #	882	vWF-Ac medium %	%	####. #
192	IX %	%	####. #	911	FPS dOD	dOD	#. ####
201	X sec	sec	####. #	912	FPS %	%	####. #
202	X %	%	####. #				
211	XI sec	sec	####. #				
212	XI %	%	####. #				
221	XII sec	sec	####. #				
222	XII %	%	####. #				
251	PCcl sec	sec	####. #				
252	PCcl %	%	####. #				
261	BXT sec	sec	####. #				
271	LA1 sec	sec	####. #				
281	LA2 sec	sec	####. #				
291	PSAc sec	sec	####. #				
292	PSAc %	%	####. #				
301	AT3 dOD	dOD	##. ###				
302	AT3 %	%	####. #				
311	APL dOD	dOD	##. ###				
312	APL %	%	####. #				
321	Plg dOD	dOD	##. ###				
322	Plg %	%	####. #				
331	PC dOD	dOD	##. ###				
332	PC %	%	####. #				
341	Hep dOD	dOD	##. ###				
342	Hep C.	IU/mL	###. ##				
371	C1 Inh dOD	dOD	##. ###				
372	C1 Inh %	%	####. #				
391	VIII ch dOD	dOD	#. ####				
392	VIII ch %	%	####. #				
411	LA R		###. ##				
421	PCAT NR		###. ##				
431	PCAT sec	sec	####. #				
441	PCAT0 sec	sec	####. #				

Caution :

"Units" and "Format" are decided by the assay group settings. Confirm the assay group settings and the host computer receives the result data correctly.

Appendix. A TCP/IP communication

A.1 Software

1) Data link/ Network/ Transport layer

The TCP port number used for communication with the host computer is 6000. This value can be changed in the Settings screen.

2) Session layer

The CS-1600 as a client is connected to the host computer as a server. The CS-1600 confirms the connection at the time of startup. When the communication fails, it is retried at regular intervals. If the server becomes down after the connection succeeded, the CS-1600 retries the connection.

Appendix. B Re-analysis order

B.1 Condition to inquire reanalysis

- Reanalysis setting is ON in the Inquire Reanalysis-Detailed Settings-Settings Change-TCP/IP(Serial port)-Host Computer-System Settings-Settings
- Both settings of “Auto Output” and “Including the ID read error samples” are ON, and the auto output setting is “All” in the Host Output-Automatic Output Setting-System Settings.
- Measurement mode is “Standard”
- The instrument condition is any of “Processing”, “Int. Ready” or “Int. Ready(flashing)”
- Satisfies the conditions of Table B-1 for the setting of reanalysis, redilution analysis and reflex.

Re-analysis order is not inquired in the following conditions;

- The instrument condition is “Not Ready”. (In this condition, it is impossible to perform analysis even if it receives the reanalysis order. In addition, it needs to prevent increasing the communication time by waiting the reanalysis order, because, when emergency stop is executed, all analysis results which are being analyzed are to be transmitted in a batch.)
- QC analysis
- Measurement mode is “Micro”
- MDA
- Analysis result is output manually
- Sample No. is “0”(zero)

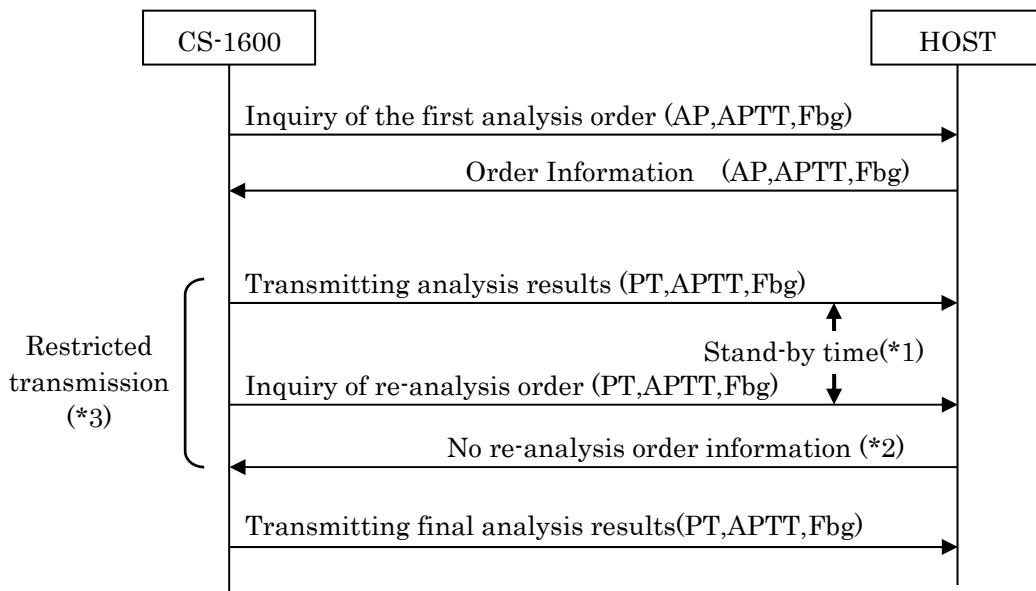
Note: The Automatic Order Inquiry in the System Settings is applied for the first analysis but not for the inquiry of re-analysis.

Table B-1 Condition to perform the inquiry of re-analysis by re-analysis settings

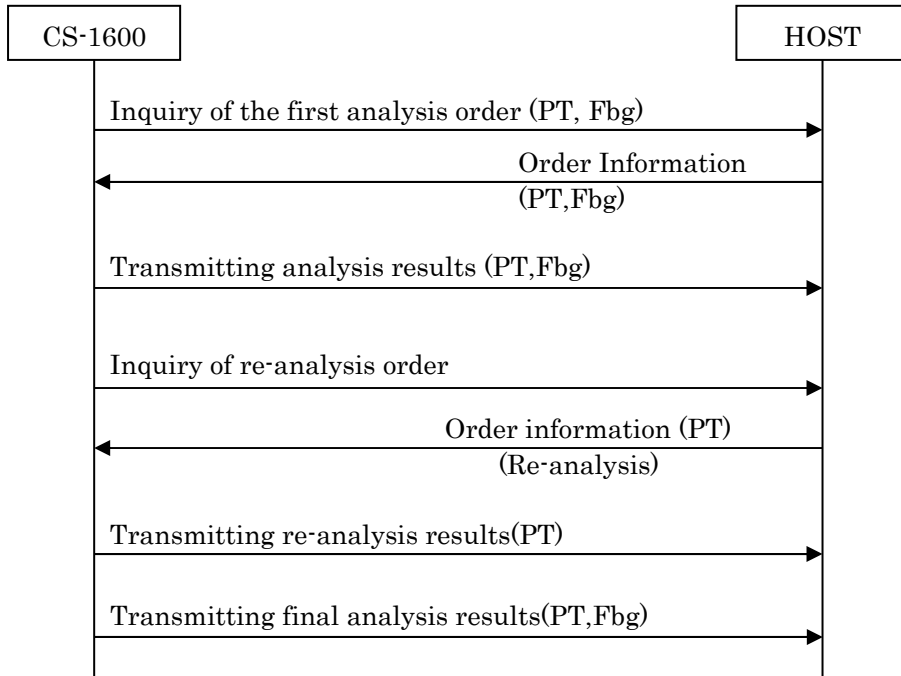
Re-analysis settings	Condition to perform the inquiry of re-analysis
Re-analysis	<ul style="list-style-type: none">• The “Perform Analysis” is ticked in the Assay Group Settings, the conditional expression is assigned and replication is once.• “R: Do not perform reanalysis” is not specified from the HC in the Option Settings, when the first analysis is inquired,• “Re-analysis” remains ticked when the manual order is registered.
Redilution analysis	<ul style="list-style-type: none">• The “Perform Analysis” is ticked in the Assay Group Settings, the conditional expression is assigned and the redilution ratio for the first analysis is different from the ratio set in the conditional expression.• “D: Do not perform redilution analysis” is not specified, when the first analysis is inquired,• “Redilution” remains ticked when the manual order is registered.
Reflex	<ul style="list-style-type: none">• It has the “Reflex condition” which uses the parameters of the output results• “F: Do not perform reflex” is not specified, when the first analysis is inquired.• “Reflex” remains ticked when the manual order is registered.

Example flows of communication sequence for the “Inquiry of measurement information”and the “Measurement information” are shown below, in the condition the Inquire re-analysis – Detailed Settings – Settings Change – TCP/IP(Serial Port) – Host Computer – System Settings - Settings is ON;

B.1 When there is no re-analysis order (Batch transmission)



B.2 When there is the re-analysis order (Batch transmission)



(*1) Stand-by time: It waits for a certain period between transmitting analysis results and inquiring the reanalysis order

(*2) No re-analysis order information: Please return “000” for the test code, if the HC “does not perform re-analysis” for the inquiry of re-analysis order.

(*3) Restricted transmission: No other transmission can interrupt during the period.

Appendix. C Difference List of Transmission Content

The CS-1600 outputs different content by the device specification from other analyzer.
Please observe the precautions for use and ensure the operation of sending and receiving systems works to use the host computer.

<CA-500>

Contents	CA-500	CS-1600	Caution
Analyzer name (Header record)	"CA-500" is output.	"CS-1600" is output.	Please check the host computer is able to receive "CS-1600".
Analyzer Serial No. (Header record)	Not Use.	<u>5-digit numbers</u> is output.	Please check the host computer is able to receive 5-digit numbers.
Nickname (Header record)	Not Use.	<u>Nickname</u> is output.	Please check the host computer is able to receive 15-digit one-byte characters in maximum. Please do not set up anything on the process for "Facility name" – "System Setting" if the host computer has trouble to receiving half width 15-digit characters in maximum.
PS Code (Header record)	Not Use.	"BQ203979" is output.	Please check the host computer is able to receive "BQ203979".
Receiver ID (Host -> CS-1600) (Header record)	"CA-500" is output.	Not Use.	The CS-1600 does not use the ReceiverID when the host computer send it to the CS-1600.
ASTM Version No. (Header record)	"1" is output.	The following content outputs based on the format type. E1394-97 : "E1394-97" E1394-95 : "1"	Please select "ASTM1381-95/1394-95" for format type in "System Setting"
Patient name (Patient Information Record)	Not Use.	First name(20-digit alpha-numeric in maximum) and Last name(20-digit alpha-numeric in maximum) is output.	Please do not output the results including the patient name. To enter the patient name, it works only from the enquiry order of host computer. Please do not use the patient name on enquiry order of host computer.
Rack Number (Ordinary Sample)	2-digit numbers is output. (Right 2-digit of Rack Number) The rack number appears in ascending order: '0001', '0002'... ('0099' of the following number is '0001'.)	<u>6-digit alpha-numeric</u> is output. The 6-digit rack numbers displayed in the CS-1600 is output.	Please check the host computer is able to receive alphabets. Please operate the CS-1600 to use numbers only (no alphabets) for the rack numbers if the host computer has trouble receiving alphabet characters. Please check the host computer is able to receive 6-digit alphabets.
Rack Number (STAT Sample)	2-digit numbers is output. (Left 2-digit of Rack Number) The rack number(STAT Sample) appears in ascending order: '0100', '0200'... ('9900' of the following number is '0100'.)	<u>6-digit alpha-numeric</u> is output. The 6-digit rack numbers displayed in the CS-1600 is output.	Please check the host computer is able to receive alphabets. Please operate the CS-1600 to use numbers only (no alphabets) for the rack numbers if the host computer has trouble receiving alphabet characters. Please check the host computer is able to receive 6-digit alphabets.
Rack Number (Reagent Table)	No target exists. CA-500 does not operate if the control is set on the reagent table.	"REAG00" is output.	Please check the host computer is able to receive alphabets.
Tube Position	STAT Sample : " 00" Reagent table : No target	STAT Sample : 01~10 Reagent table : <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> is	Please check the host computer is able to receive space.

	exists. CA-500 does not operate if the control is set on the reagent table.	space.)	
ID Information	The CS-1600 does not use “C : Set by the host computer order information”.		Please note the host computer does not output “C : Set by the host computer order information” and no other operation is working by using “C : Set by the host computer order information”.
Date and time to start requesting results (Request Information Record)	SS: “00” Fixed	SS: “00”-“59”	Please check the host computer is able to receive “00”~“59”.
Extended order request flag (Test Order Record)	Not Use.	“E” is output.	Please check the host computer is able to receive “E”.
Order of outputting Assay Group	Output by fixing. Order is as follows PT, APTT, Fbg, TTO, Hpt, IL, V, VII, VIII, IX, X, XI, XII, AT3, APL, Plg, BCPC, +Fbg, -Fbg, SFDP, DD, PFDP, +DD, +SFD, +PFD	Output by <u>variable</u> . Order is as follows The order of outputting Assay Group conforms to Measurement Group Settings of Settings. After parameters registered in “Measurement Group1” are output in series, parameters registered in “Measurement Group2” are output subsequently in series	The CS-1600 does not output “+Fbg, -Fbg, +DD, +SFD, +PFD”. The diluted assay group outputs the host ID of the assay group before dilution.
Dilution ratio (Resulted record)	Number of decimal places is not output.	<u>Two places of decimals</u> is output.	Please check the host computer is able to receive numbers to second decimal place.
Analysis result type (Resulted record)	Output as follows. CA-500 does not use “3”, “4”, “7”, “8”, “9”, “A”. 1: Normal (Auto output) 2: Average (Auto output) 3: Re-analysis (Auto output) 4: Average of re-analysis (Auto output) 5: Normal (Manual Output) 6: Average (Manual Output) 7: Re-analysis (Manual Output) 8: Average of re-analysis (Manual Output) 9: Final information (Auto output) A: Final information (Manual Output)		Please check the host computer is able to receive “3”, “4”, “7”, “8”, “9”, “A”.
Extended order request (Resulted record)	Not Use.	Output as follows. D: Redilution request R: Re-analysis request	Please check the host computer is able to receive “D”, “R”.
Extended order results (Resulted record)	Not Use.	Output as follows. D: Results of redilution analysis R: Results of re-analysis F: Results of reflex test	Please check the host computer is able to receive “D”, “R”, “F”.
Reflex test request (Resulted record)	Not Use.	“F” is output.	Please check the host computer is able to receive “F”.
How to inquiry order	The CS-1600 supports only “Smample ID No.” for order inquiry. The CS-1600 does not support “Rack No., Tube Position No.”. “Smample ID No.” : How to search analysis parameters		-

	by sample number on start of measurement. “Rack No., Tube Position No.” : How to search sample number and analysis parameters by rack number and position	
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< CA-8000/CA-7000/CA-1500 >

Contents	CA-1500	CS-1600	Caution
Analyzer name (Header record)	"CA-1500" is output.	"CS-1600" is output.	Please check the host computer is able to receive "CS-1600".
PS Code (Header record)	Not Use.	"BQ203979" is output.	Please check the host computer is able to receive "BQ203979".
Receiver ID (Host -> CS-1600) (Header record)	'Analyzer name^^ Analyzer Serial No.^^ Nickname' is output.	Not Use.	The CS-1600 does not use the ReceiverID when the host computer send it to the CS-1600.
ASTM Version No. (Header record)	"1" is output.	The following content outputs based on the format type. E1394-97 : "E1394-97" E1394-95 : "1"	Please select "ASTM1381-95/1394-95" for format type in "System Setting"
Patient name (Patient Information Record)	15-digit alpha-numeric in maximum is output.	First name(20-digit alpha-numeric in maximum) and Last name(20-digit alpha-numeric in maximum) is output.	Please set 15-digit alpha-numeric in maximum for the patient name. To enter the patient name, it works only from the enquiry order of host computer.
Rack Number (Ordinary Sample)	6-digit numbers is output. The rack number appears in ascending order: '000001', '000002'... ('000099' of the following number is '000001'.)	<u>6-digit alpha-numeric</u> is output. The 6-digit rack numbers displayed in the CS-1600 is output.	Please check the host computer is able to receive alphabets. Please operate the CS-1600 to use numbers only (no alphabets) for the rack numbers if the host computer has trouble receiving alphabet characters.
Rack Number (STAT Sample)	"STAT H" is output. ("StaHld" is output in the case of CA-7000/CA-8000.)	<u>6-digit alpha-numeric</u> is output. The 6-digit rack numbers displayed in the CS-1600 is output.	Please check the host computer has received "STAT H" for the rack number of STAT sample and no other operation is working by using "STAT H" in the process. Please check the host computer is able to receive 6-digit alpha-numeric.
Rack Number (Reagent Table)	"D1"~"D14" is output. ("C1-1"~"C2-5" is output in the case of CA-7000/CA-8000.)	"REAG00" is output.	Please check the host computer has received "D1"~"D14" for the rack number of Reagent Table and no other operation is working by using "D1"~"D14" in the process. Please check the host computer is able to receive "REAG00".
Tube Position	STAT Sample : 01~05	STAT Sample : 01~10	-
ID Information	The CS-1600 does not use "C : Set by the host computer order information".		Please note the host computer does not output "C : Set by the host computer order information" and no other operation is working by using "C : Set by the host computer order information".
Order of outputting Assay Group	Output by fixing. Order is as follows PT, APTT, Fbg, TTO, Hpt, II, V, VII, X, VIII, IX, XI, XII, TT, AT3, Apl, Plg, PC, FDP, DD.PLUS, PSAC, LA1, LA2	Output by <u>variable</u> . Order is as follows The order of outputting Assay Group conforms to Measurement Group Settings of Settings. After parameters registered in "Measurement Group1" are output in series, parameters registered in "Measurement Group2" are output subsequently in series	-
How to inquiry order	The CS-1600 supports only "Sample ID No." for order inquiry. The CS-1600 does not support "Rack No., Tube Position No." "Sample ID No." : How to search analysis parameters		-

	by sample number on start of measurement. “Rack No., Tube Position No.” : How to search sample number and analysis parameters by rack number and position	
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< CS-2000i >

Contents	CS-2000i	CS-1600	Caution
Analyzer name (Header record)	"CS-2000i" is output.	"CS-1600" is output.	Please check the host computer is able to receive "CS-1600".
PS Code (Header record)	"06317410" is output.	"BQ203979" is output.	Please check the host computer is able to receive "BQ203979".
Rack Number (STAT Sample)	"STAT□□"(□ is space) is output.	<u>6-digit alpha-numeric</u> is output. The 6-digit rack numbers displayed in the CS-1600 is output.	Please check the host computer has received "STAT□□" for the rack number of STAT sample and no other operation is working by using "STAT□□" in the process. Please check the host computer is able to receive 6-digit alpha-numeric.
Rack Number (LAS Sample)	"LXXXXX" (XXXXX is 5-digit numbers) is output. (Only CS-5100)	Not applicable	-
Tube Position	STAT Sample : 01~05 LAS Sample : 01 (Only CS-5100)	STAT Sample : 01~10 LAS Sample is not applicable.	-
Order of outputting Assay Group	Output by variable. Order is as follows The order of outputting Assay Group is an ascending order of HostID registered in Assay Group Setting	Output by variable. Order is as follows The order of outputting Assay Group conforms to Measurement Group Settings of Settings. After parameters registered in "Measurement Group1" are output in series, parameters registered in "Measurement Group2" are output subsequently in series	-

<The function which can be used by making the setting effective>

The following function is the function which can be used by making the setting effective. Please ensure the host computer is adaptable to the function to be validated.

Function	Record	CS-1600
Inquiry of re-analysis	Request Information Record 12.1.13 Requested information status code	The following is output. N: Real time inquiry of the first analysis C: Real time inquiry of re-analysis * Inquiry of re-analysis is performed only when the Inquire Re-analysis – Detailed Settings – Settings Change – TCP/IP(Serial port) – Host Computer - System Settings- Settings is ON.
Measurement Mode	Test Order Record 9.4.3 Specimen ID 9.4.4 Instrument specimen ID	The following is output. N: Normal Mode M: Micro-sampling Mode Other than above value: Sample is aspirated according to the instrument setting. * Measurement Mode setting is selectable either ON or OFF in Other Service Settings – Service Settings.
Replication	Test Order Record 9.4.5 Universal Test ID Resulted record 10.1.3 Universal Test ID	Specifies replication. In case of test order record, “1” or “2” is selectable. If replication is specified “2” or over, the analysis is performed twice (2). Other than the values above or no replication are specified: Sample is analyzed according to instrument setting. * Repliation setting is selectable either ON or OFF in Other Service Settings – Service Settings.
Measurement Time	Test Order Record 9.4.5 Universal Test ID	The following is output. M : Measurement Time(Main) S : Measurement Time(Sub) Other than the values above or no measurement time are specified: Sample is analyzed according to instrument setting. * Measurement Time setting is selectable either ON or OFF in Other Service Settings – Service Settings.
Error Information	Resulted record 10.1.7 Result abnormal flags	The following is output. Evaluation Information : Outputs a string of characters consisting of the combination of the evaluation error code and error message, which is enclosed between square brackets “[]”. Instrument Error Information : Outputs a string of characters consisting of the error code and error message, which is enclosed between square brackets “[]”. * The Evaluation Information settings and the Instrument Error Information settings are selectable either ON or OFF in the Other Service Settings of Service Settings. * There are the evaluation errors that are output by either the mask characters or the numeric values *If the setting of “HOST_ASTM_OutputErrorInformation” – Other Service Settings – Service Settings is turned ON and also “HOST_ASTM_OutputCurveErrorInformation” – Other Service Settings – Service Settings is turned OFF, the masked values are output with the following error. (The default value of “HOST_ASTM_OutputCurveErrorInformation” is ON.) <div style="display: flex; justify-content: space-between;"> <div>[Code]</div> <div>[Message]</div> </div> <div style="display: flex; justify-content: space-between;"> <div>0008.0001.0000</div> <div>[Initial fluctuation drop]</div> </div> <div style="display: flex; justify-content: space-between;"> <div>0008.0002.0000</div> <div>[Coagulation Curve Error: Sharp Drop]</div> </div> <div style="display: flex; justify-content: space-between;"> <div>0008.0004.0000</div> <div>[Coagulation Curve Error: Dip]</div> </div> <div style="display: flex; justify-content: space-between;"> <div>0008.0008.0000</div> <div>[Coagulation Curve Error: Jump Up]</div> </div> <div style="display: flex; justify-content: space-between;"> <div>0008.0016.0000</div> <div>[Coagulation Curve Error: Stepping Curve]</div> </div> <div style="display: flex; justify-content: space-between;"> <div>0008.0032.0000</div> <div>[Coagulation Curve Error: Fbg Curve Error]</div> </div> <div style="display: flex; justify-content: space-between;"> <div>0008.0064.0000</div> <div>[Coagulation Curve Error: Terrace]</div> </div> <div style="display: flex; justify-content: space-between;"> <div>0064.0000.0000</div> <div>[Aged Sample]</div> </div>
Sample Info. flags	Resulted record Sample Volume flag	Only the parameters with the Sample Volume flag are output. *Sample Info Flag setting is selectable either ON or OFF in Other Service Settings of Service Settings.

Graphic data	Resulted record Sample Volume flag	The path to the graphic data is output only when the graphic data exists. * Output graphic data setting is selectable either ON or OFF in Other Service Settings of Service Settings.
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End of Documents