

# **ALIAS**

## ***SparkLink Protocol***

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# 1. INTRODUCTION

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The SparkLink protocol is used to establish the communication via serial communication-interfaces like RS-232, between Spark Holland instruments and computers.

Since the protocol uses a very simple message structure (no checksums etc.), it should be easy to implement and use the protocol on every computer by using e.g. 'Basic' or 'C' programming languages.

Chapters 2 to 6 are a general description of the protocol and cover the basic features.  
Chapter 7 describes device specific descriptions of commands and Protocol Function Codes.



***Before attempting to use the serial interface of any device, a good understanding of the regular operation as described in the user's manual of that device is necessary.***

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***All SparkLink PFC's are listed in the inventory on the last pages of this manual. There can be found which PFC's are available for each Spark Holland device and from which software revision they are available.***

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## 2. DEFINITIONS

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- The message structure is as follows:

**[STX] [ID] [AI] [PFC] [VALUE] [ETX]**

<b>STX</b>	→	Start of message (1 byte).
<b>ID</b>	→	Device Identifier (2 bytes).
<b>AI</b>	→	Additional Information (2 bytes).
<b>PFC</b>	→	Protocol Function Code (4 bytes).
<b>VALUE</b>	→	Value for item described in PFC (6 bytes).
<b>ETX</b>	→	End of message (1 byte).

- All characters are always standard ASCII.
- Numerical values always consist of single ASCII bytes.  
E.g. '0' is represented by 30 (Hexadecimal).  
'9' is represented by 39 (Hexadecimal).
- Message length is always 16 bytes including STX and ETX, except for ACK/NACK(0) responses.
- Non-used message parts may be received as either spaces (20 Hexadecimal) or zeros (30 Hexadecimal). Spaces (SP) are only relevant for values in a message and these are only leading spaces. A leading space is interpreted by the device as a '0' (30 Hexadecimal). Non-used message parts in the return value are always returned as '0' (30 Hexadecimal).
- The message-structure as described above, also reflects the order in which the transmission of a message is performed.
- Values are always transmitted/received with MSB first or if applicable with leading spaces first.
- Every message needs a response. The response could be an ACK (Acknowledge), a NACK(0) (Not Acknowledge) or an answer to the requested information. The response of a device doesn't need to be answered (either ACK or NACK(0)) by the PC.
- Since the device will act as a slave to the PC, it should never start communicating to the PC if no response is expected.
- After sending a message to the device, the PC should wait for a response before sending other messages to the device. Responses are always within 1 second (usually within 10 milliseconds).
- Whenever a device does not respond, the PC should always retry. It can be possible that the device is not ready to respond.
- A 'Broadcast command' is a command for all devices on the bus. This command uses a device identifier (ID) of '00'.
- Broadcast commands never need any response.

### 3. PARAMETER DESCRIPTION

- STX** (02 Hex) Start of message. All messages (except ACK/NACK(0) responses) must start with STX. Devices and computer should ignore transmitted data if this STX is missing.
- ETX** (03 Hex) End of message. All messages (except ACK/NACK(0) responses) must end with ETX. Devices and computer should ignore transmitted data if this ETX is not the sixteenth byte of the message, see chapter 4, Response description.

- ID** (xx) Device identifier (two bytes). Range 00-99 (it's possible to expand to FF). In the ID field **no spaces** are allowed. The first character represents the product identification and the second character represents the device number on the bus.

The Spark Holland instruments contain a programmable ID (see specific user's manual) in the range of 10 to 99.

- 00 → Broadcast message (Message for all devices on the bus).
- 01 - 09 → Reserved for special use.
- 10 - 19 → Identifier for **Marathon** autosamplers.
- 20 - 29 → Identifier for **Triathlon** autosamplers.
- 30 - 39 → Identifier for **Prospekt** units.
- 50 - 59 → Identifier for **Mistral** column thermostat.
- 60 - 69 → Identifier for **Midas** and **ALIAS** autosamplers.
- 70 - 99 → Reserved for future use.

- AI** (yy) Additional information (two bytes). Range 00-FF. **AI is always hexadecimal.** In the AI field **no spaces** are allowed. The additional information is used to indicate different lines in a program with the same Protocol Function Code. In case of an autosampler it could be used to indicate a repetitive injection from one vial. E.g. an AI-value of 05 indicates the fifth injection from a vial. In case of a time-program, the AI parameter could be used to indicate a program line.

- PFC** (zzzz) Protocol Function Code (4 bytes). Range 0000-9999. In the PFC-field **no spaces** are allowed. The Protocol Function Code is used to indicate programmable parameters, executable commands and measurable parameters. PFC's are device specific and are in detail described in chapter 7 of this document.

- Value** (qqqqqq) The value for a programmable parameter (6 bytes). Range 000000-999999. **Preceding** spaces are allowed. In case of a non-six-digit value, the unused digits are padded with spaces. It's also possible to pad with zeros. If no value is required, the value field is filled with spaces. A value can also consist of a Protocol Function Code (e.g. when a programmed- or actual value of a parameter is requested). See also the detailed description of the Protocol Function Codes 1000 (Send programmed value) and 1001 (Send actual value) in chapter 7.

## 4. RESPONSE DESCRIPTION

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Acknowledge and not acknowledge responses don't need a STX and an ETX at the beginning and at the end of a transmission.

**ACK** (06Hex)                      Acknowledge. The received message was correct and understood.

**NACK** (15Hex)                      Not Acknowledge. The received message was incorrect and/or not understood.

Probable causes are:

- Transmission error: parity-, overrun- or framing error.
- Incorrect AI value.
- Non-existing Protocol Function Code for this device.
- Incorrect value (value out of range).
- Message length is not correct.
- Unexpected characters between STX and ETX.

**NACK0** (18Hex)                      Not Acknowledge-0. Device cannot execute the command at this moment (try again). See also device specific commands and Protocol Function Codes in chapter 7.



*The device will first check if the received message was correct and/or understood before checking if the message is executable (e.g. in case an option is not available). Therefore a **NACK** response has a higher priority than a **NACK0** response.*



*A **NACK0** response occurs when for instance access to a PCB or a special mode has been made by means of a command, and it is not possible because the PCB or unit is not available or it is not legal to issue such mode command because the system is not in such a mode (e.g. service mode).*

## ***5. HARDWARE AND PORT SETTINGS***

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For hardware description of the serial port of a device, please refer to the user's manual or service manual for that device. In general a 3-wire communication link is sufficient for data-transfer between a computer and a Spark Holland instrument. Exceptions are described in the user's manual and in the device specific requirements in chapter 7 of this document.

Baudrate	=	9600 Baud	(Fixed setting).
Parity	=	None	(Fixed setting).
Data	=	8 bits	(Fixed setting).
Stopbits	=	1 bit	(Fixed setting).

### **Connector and pin assignments:**

The cable connector must be 9 pin male D-connector. For EMC requirements use shielded and twisted pair cable only.

Connections for 9 pin connector:

pin 2	→	TD	Transmitted data to the computer.
pin 3	→	RD	Received data from the computer.
pin 5	→	SG	Signal ground (Also indicated as GND in some devices)

## 6. ASCII TABLE

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Relevant part of ASCII-table for SparkLink protocol.

HEX	ASCII	KEY
02	STX	CNTR/B
03	ETX	CNTR/C
06	ACK	
15	NACK	
18	NACK0	
20	SP	Space
30	0	0
31	1	1
32	2	2
33	3	3
34	4	4
35	5	5
36	6	6
37	7	7
38	8	8
39	9	9



## 7. ALIAS PROTOCOL

### 7.1 SUMMARY OF ALIAS PROTOCOL FUNCTION CODES

#### Cases

0100 - ANALYSIS TIME (P-SP-SA)	12
0107 - LOOPVOLUME (P-SP)	14
0108 - FIRST SAMPLE POSITION (P-SP)	15
0109 - LAST SAMPLE POSITION (P-SP)	16
0111 - FLUSHVOLUME (P-SP)	17
0112 - NUMBER OF INJECTIONS / SAMPLE (P-SP-SA)	18
0122 - TRAY COOLING/HEATER ON/OFF (P-SP)	20
0124 - INJECTION MODE (P-SP)	21
0125 - SYRINGE VOLUME (P-SP)	22
0126 - TUBING VOLUME (NEEDLE $\leftrightarrow$ Valve) (P-SP)	23
0128 - FIRST TRANSPORT VIAL (P-SP)	24
0129 - LAST TRANSPORT VIAL (P-SP)	25
0130 - SAMPLE NEEDLE HEIGHT (P-SP)	26
0131 - SYRINGE SPEED (P-SP)	27
0132 - SYRINGE SCALE FACTOR (P-SP)	28
0134 - BUFFER VOLUME (P-SP)	29
0150 - ACTUAL SAMPLE NUMBER (SA)	30
0151 - TRAY TEMPERATURE (P-SP-SA)	31
0152 - STATUS (SA)	33
0154 - SOFTWARE REVISION (SA)	34
0155 - ERROR CODE (SA)	35
0156 - RESET ERRORS (C)	35
0158 - CONFIGURATION (SA)	36
0159 - CONFIGURATION 2 (SA)	37
0160 - MULTIPLE AUXILIARY COMMAND (C-SA)	38
0161 - AUXILIARY 1 DIRECT CONTROL (C-SA)	39
0169 - EXTERNAL I/O INPUTS (SA)	40
0178 - PROTOCOL VERSION (SA)	41
0179 - PCB PART NUMBER (P-SP)	44
0181 - PCB REVISION NUMBER (P-SP)	45
0182 - SYSTEM BOOT ID PART NUMBER (SA)	46
0183 - SOFTWARE PART NUMBER (SA)	46
0184 - SYSTEM BOOT ID (SA)	47
0185 - SOFTWARE REVISION XL (SA)	48
0186 - INSTRUMENT TYPE (SA)	49
0187 - INJECT MARKER PULSE (P-SP)	50
0188 - NEXT INJECTION ACTIVE EDGE (P-SP)	51
0189 - PROGRAMMABLE INPUTS / OUTPUTS (P-SP)	52
0192 - AIR SEGMENT (P-SP)	53
0193 - SKIP MISSING SAMPLE POSITION (P-SP)	54
0194 - HEAD SPACE PRESSURE (P-SP)	55
0195 - RESET OUTPUT AFTER LAST SERIES (P-SP)	56
0196 - RESET TRANSPORT AND REAGENT VOLUMES (P-SP)	57
0198 - USE PREP MODE (P-SP)	58
0200 - TRAY SEGMENT SETTINGS (P-SP)	59
0201 - PROCESS PLATE IN ROW OR COLUMN (P-SP)	61
0202 - FREEZE INPUT ACTIVE LEVEL (P-SP)	62
0208 - SYNC CONDITION (P-SP)	63
0209 - SYNC COMMAND (C)	64
0210 - INJECTION VOLUME (P-SP)	65
0220 - TIME AUXILIARY 1 ON (P-SP)	66
0221 - TIME AUXILIARY 1 OFF (P-SP)	67

0230 - TIME ISS-A 6-1 (P-SP)	68
0231 - TIME ISS-A 1-2 (P-SP)	69
0237 - TIME FOR SSV (P-SP)	70
0238 - SSV (P-SP)	71
0239 - END TIME FOR TIMEBASE METHOD (P-SP)	72
0400 - FIRST DESTINATION POSITION (P-SP)	73
0401 - REAGENT A POSITION (P-SP)	74
0402 - REAGENT B POSITION (P-SP)	75
0403 - REAGENT C POSITION (P-SP)	76
0404 - REAGENT D POSITION (P-SP)	77
0410 - MIX: ACTION END (P)	78
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0412 - MIX: DELETE STEP (P)	79
0413 - MIX: INSERT STEP (P-SP)	80
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0416 - MIX: STEP VALUE (SP)	83
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0426 - MIX: ACTION ASPIRATE FROM REAGENT B (P)	87
0427 - USER PROG: ACTION ASPIRATE FROM REAGENT C (P)	87
0428 - USER PROG: ACTION ASPIRATE FROM REAGENT D (P)	88
0429 - USER PROG: ACTION ASPIRATE FROM SYRINGE VALVE WASH PORT 1 (P)	88
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0465 - MIX: ACTION NEEDLE WASH FROM SSV PORT 2B (P)	96
0466 - MIX: ACTION NEEDLE WASH FROM SSV PORT 2C (P)	97
0467 - MIX: ACTION NEEDLE WASH FROM SSV PORT 2D (P)	97
0468 - MIX: ACTION NEEDLE WASH FROM SSV PORT 2E (P)	98
0469 - MIX: ACTION NEEDLE WASH FROM SSV PORT 2F (P)	98
0470 - USER PROG: ACTION VALVE (P)	99
0471 - USER PROG: ACTION SYRINGE VALVE (P)	100
0472 - USER PROG: ACTION COMPRESSOR (P)	100
0473 - USER PROG: ACTION AUXILIARY (P)	101
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( P ) PROGRAM  
 ( SP ) SEND PROGRAMMED (TO PC)  
 ( SA ) SEND ACTUAL (TO PC)  
 ( C ) RECEIVE COMMAND

## 7.2 ALIAS STANDARD FUNCTION CODES

### 0100 – ANALYSIS TIME (P-SP-SA)

PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	1	0	0	SP	q4	q3	q2	q1	q0	ETX
HEX	02	36	31	30	31	30	31	30	30	20						03

Range of value:      **q4**            →    hours (0-9)  
                              **q3/q2**        →    minutes (00 - 59)  
                              **q1/q0**        →    seconds (00 - 59)

RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

SEND PROGRAMMED:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	1	0	0	0	SP	SP	0	1	0	0	ETX
HEX	02	36	31	30	31	31	30	30	30	20	20	30	31	30	30	03

RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	1	0	0	0	q4	q3	q2	q1	q0	ETX

PC←Dev.	NACK
---------	------

0100 - ANALYSIS TIME (Continued)

SEND ACTUAL:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	1	0	0	1	SP	SP	0	1	0	0	ETX
HEX	02	36	31	30	31	31	30	30	31	20	20	30	31	30	30	03

RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	1	0	0	0	q4	q3	q2	q1	q0	ETX

Value:

<b>q4</b>	→	hours (0-9)
<b>q3/q2</b>	→	minutes (00 - 59)
<b>q1/q0</b>	→	seconds (00 - 59)

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*Analysis timer not running*

## 0107 – LOOPVOLUME (P-SP)

PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	1	0	7	SP	SP	q3	q2	q1	q0	ETX
HEX	02	36	31	30	31	30	31	30	37	20	20					03

Range of value: **q3/q2/q1/q0** → 0000 - 5000 µL

RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*Device is in RUN mode, it's not legal to change value during RUN.*

SEND PROGRAMMED:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	1	0	0	0	SP	SP	0	1	0	7	ETX
HEX	02	36	31	30	31	31	30	30	30	20	20	30	31	30	37	03

RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	1	0	7	0	q4	q3	q2	q1	q0	ETX

PC←Dev.	NACK
---------	------



*During Prep Mode the loop volume is fixed at 10000µL. Loop volume ranges other than 10000µL will result in Nack response.*

# 0108 – FIRST SAMPLE POSITION (P-SP)

PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	1	0	8	SP	q4	q3	q2	q1	q0	ETX
HEX	02	36	31	30	31	30	31	30	38	20						03

Range of value: **q4** → PLATE NUMBER:  
 Left plate: 1  
 Right plate: 2  
 Single plate: 3

If Left or Right plate (**q4** = 1 or 2)  
**q3/q2** → COLUMN NUMBER: A=0, B=1... P=15  
 384 WELL PLATE: 00-15  
 96 WELL PLATE: 00-07  
 48 VIAL TYPE: 00-05  
 12 VIAL TYPE: 00-02

**q1/q0** → ROW NUMBER:  
 384 WELL PLATE: 01-24  
 96 WELL PLATE: 01-12  
 48 VIAL TYPE: 01-08  
 12 VIAL TYPE: 01-04

If Single plate (**q4** = 3)  
**q3/q2/q1/q0** → VIAL NUMBER:  
 84+3 VIAL TYPE: 0001 – 0084  
 108 VIAL TYPE: 0001 – 0108  
 30 VIAL TYPE: 0001 – 0030

RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

SEND PROGRAMMED:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	1	0	0	0	SP	SP	0	1	0	8	ETX
HEX	02	36	31	30	31	31	30	30	30	20	20	30	31	30	38	03

RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	1	0	8	0	q4	q3	q2	q1	q0	ETX

PC←Dev.	NACK
---------	------



A single plate is positioned on the left and right tray holder. The sample position is not programmed by left or right indication but by means of a numerical sample position range. For example: value 30051 = sample position 51 on the 84+3 tray



## 0109 – LAST SAMPLE POSITION (P-SP)

PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	1	0	9	SP	q4	q3	q2	q1	q0	ETX
HEX	02	36	31	30	31	30	31	30	39	20						03

Range of value: **q4** → PLATE NUMBER:  
 Left plate: 1  
 Right plate: 2  
 Single plate: 3

If Left or Right plate (**q4** = 1 or 2)  
**q3/q2** → COLUMN NUMBER: A=0, B=1... P=15  
 384 WELL PLATE: 00-15  
 96 WELL PLATE: 00-07  
 48 VIAL TYPE: 00-05  
 12 VIAL TYPE: 00-02

**q1/q0** → ROW NUMBER:  
 384 WELL PLATE: 01-24  
 96 WELL PLATE: 01-12  
 48 VIAL TYPE: 01-08  
 12 VIAL TYPE: 01-04

If Single plate (**q4** = 3)  
**q3/q2/q1/q0** → VIAL NUMBER:  
 84+3 VIAL TYPE: 0001 – 0084  
 108 VIAL TYPE: 0001 – 0108  
 30 VIAL TYPE: 0001 – 0030

RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

SEND PROGRAMMED:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	1	0	0	0	SP	SP	0	1	0	9	ETX
HEX	02	36	31	30	31	31	30	30	30	20	20	30	31	30	39	03

RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	1	0	9	0	q4	q3	q2	q1	q0	ETX

PC←Dev.	NACK
---------	------



A single plate is positioned on the left and right tray holder. The sample position is not programmed by left or right indication but by means of a numerical sample position range. For example: value 30051 = sample position 51 on the 84+3 tray

## 0111 – FLUSHVOLUME (P-SP)

### PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	1	1	1	SP	SP	q3	q2	q1	q0	ETX
HEX	02	36	31	30	31	30	31	31	31	20	20					03

Range of value: **q3/q2/q1/q0** → 0000 - 9999 µL

### RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

### SEND PROGRAMMED:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	1	0	0	0	SP	SP	0	1	1	1	ETX
HEX	02	36	31	30	31	31	30	30	30	20	20	30	31	31	31	03

### RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	1	1	1	0	0	q3	q2	q1	q0	ETX

PC←Dev.	NACK
---------	------



*It is possible to program and send programmed flush volume while the device is in prep mode. The flush volume although is not used during prep mode.*



*The default value of flush volume depends on the tubing volume. At power up or when a method is cleared the default flush volume is set to 2 \* tubing volume.*

## 0112 – NUMBER OF INJECTIONS / SAMPLE (P-SP-SA)

PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	1	1	2	SP	SP	SP	SP	SP	q0	ETX
HEX	02	36	31	30	31	30	31	31	32	20	20	20	20	20		03

Range of value:      **q0**      →      1 - 9

RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

SEND PROGRAMMED:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	1	0	0	0	SP	SP	0	1	1	2	ETX
HEX	02	36	31	30	31	31	30	30	30	20	20	30	31	31	32	03

RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	1	1	2	0	0	0	0	0	q0	ETX

PC←Dev.	NACK
---------	------

0112 - NUMBER OF INJECTIONS / SAMPLE (Continued)

SEND ACTUAL:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	1	0	0	1	SP	SP	0	1	1	2	ETX
HEX	02	36	31	30	31	31	30	30	31	20	20	30	31	31	32	03

RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	1	1	2	0	0	0	0	0	q0	ETX

Value:                      **q0**                      →      1 - 9

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*Device is not in RUN mode*

## 0122 – TRAY COOLING/HEATER ON/OFF (P-SP)

PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	1	2	2	SP	SP	SP	SP	SP	q0	ETX
HEX	02	36	31	30	31	30	31	32	32	20	20	20	20	20		03

Range of value: **q0** → 1 = ON  
0 = OFF

RESPONSES:

PC ← Dev.	ACK
-----------	-----

PC ← Dev.	NACK
-----------	------

PC ← Dev.	NACK0
-----------	-------

No temperature control available or temperature control is already ON/OFF

SEND PROGRAMMED:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	1	0	0	0	SP	SP	0	1	2	2	ETX
HEX	02	36	31	30	31	31	30	30	30	20	20	30	31	32	32	03

RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value					ETX	
ASCII	STX	6	1	0	1	0	1	2	2	0	0	0	0	0	q0	ETX

PC ← Dev.	NACK
-----------	------

PC ← Dev.	NACK0
-----------	-------

*No temperature control available.*

## 0124 – INJECTION MODE (P-SP)

### PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	1	2	4	SP	SP	SP	SP	SP	q0	ETX
HEX	02	36	31	30	31	30	31	32	34	20	20	20	20	20		03

Range of value: **q0** →

- 0 = None
- 1 = Partial loopfill injection mode
- 2 = Full loop injection mode
- 3 =  $\mu$ L pick up injection mode

### RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*Device is in RUN mode.*

### SEND PROGRAMMED:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	1	0	0	0	SP	SP	0	1	2	4	ETX
HEX	02	36	31	30	31	31	30	30	30	20	20	30	31	32	34	03

### RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	1	2	4	0	0	0	0	q1	q0	ETX

PC←Dev.	NACK
---------	------

Range of value: **q0** →

- 0 = None
- 1 = Partial loopfill injection mode
- 2 = Full loop injection mode
- 3 =  $\mu$ L pick up injection mode

**q1** →

- 0 = Standard Partial loopfill injection mode
- 1 = Push-Partial loopfill injection mode



*Value q1 will only return '1' if ALIAS has Push-Partial loopfill inject mode enabled.*



*During Prep Mode it is only possible to program injection mode to Partial Loopfill. Other injection modes will result in Nack response.*

## 0125 – SYRINGE VOLUME (P-SP)

### PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	1	2	5	SP	q4	q3	q2	q1	q0	ETX
HEX	02	36	31	30	31	30	31	32	35	20	-					03

Range of value: **q3/q2/q1/q0** → 00050 µL, 00100 µL, 00250 µL, 00500 µL (default), 01000 µL and 02500 µL

### RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*Device is in RUN mode or is in prep mode.*

### SEND PROGRAMMED:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	1	0	0	0	SP	SP	0	1	2	5	ETX
HEX	02	36	31	30	31	31	30	30	30	20	20	30	31	32	35	03

### RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	1	2	5	SP	q4	q3	q2	q1	q0	ETX

PC←Dev.	NACK
---------	------



*During Prep Mode the syringe volume is fixed at 2500µL. Syringe volumes other than 2500µL will result in NACK response.*



*2500µL syringe can be programmed when in Prep Mode or when the option “2500 µL enabled for all modes” is enabled see PFC 0178 Protocol Version.*



*50µL and 100µL syringes are firmware fixed options and can be programmed if the options are enabled see PFC 0178 Protocol Version.*

## 0126 – TUBING VOLUME (NEEDLE ↔ VALVE) (P-SP)

PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	1	2	6	SP	SP	SP	q2	q1	q0	ETX
HEX	02	36	31	30	31	30	31	32	36	20	20	20				03

Range of value: **q2/q1/q0** → 000 - 999 µL

RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*Device is in RUN mode.*

SEND PROGRAMMED:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	1	0	0	0	SP	SP	0	1	2	6	ETX
HEX	02	36	31	30	31	31	30	30	30	20	20	30	31	32	36	03

RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	1	2	6	SP	SP	SP	q2	q1	q0	ETX

PC←Dev.	NACK
---------	------



*The default value of flush volume depends on the tubing volume. At power up or when a method is cleared the default flush volume is set to 2 \* tubing volume.*



## 0128 – FIRST TRANSPORT VIAL (P-SP)

PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	1	2	8	SP	q4	q3	q2	q1	q0	ETX
HEX	02	36	31	30	31	30	31	32	38	20						03

Range of value: **q4** → PLATE NUMBER:  
Single plate: 3  
**q3/q2/q1/q0** → First transport vial:  
84+3 VIAL TYPE: 0085, 0086, 0087

RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*Device is in RUN mode.*

SEND PROGRAMMED:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	1	0	0	0	SP	SP	0	1	2	8	ETX
HEX	02	36	31	30	31	31	30	30	30	20	20	30	31	32	38	03

RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	1	2	8	SP	q4	q3	q2	q1	q0	ETX

PC←Dev.	NACK
---------	------



When tray type is programmed as an 84+3 tray transport vials are used to withdraw transport liquid during  $\mu$ L Pickup mode.  
When tray type is programmed to any other tray the needle transport position is used to withdraw transport liquid during  $\mu$ L Pickup mode. Programming of the transport vials will be ignored.

## 0129 – LAST TRANSPORT VIAL (P-SP)

### PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	1	2	9	SP	q4	q3	q2	q1	q0	ETX
HEX	02	36	31	30	31	30	31	32	39	20						03

Range of value: **q4** → PLATE NUMBER:  
 Single plate: 3  
**q3/q2/q1/q0** → Last transport vial:  
 84+3 VIAL TYPE: 0085, 0086, 0087

### RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*Device is in RUN mode.*

### SEND PROGRAMMED:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	1	0	0	0	SP	SP	0	1	2	9	ETX
HEX	02	36	31	30	31	31	30	30	30	20	20	30	31	32	39	03

### RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	1	2	9	SP	q4	q3	q2	q1	q0	ETX

PC←Dev.	NACK
---------	------



When tray type is programmed as an 84+3 tray transport vials are used to withdraw transport liquid during  $\mu$ L Pickup mode.  
 When tray type is programmed to any other tray the needle transport position is used to withdraw transport liquid during  $\mu$ L Pickup mode. Programming of the transport vials will be ignored.

## 0130 – SAMPLE NEEDLE HEIGHT (P-SP)

PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	1	3	0	SP	SP	SP	SP	q1	q0	ETX
HEX	02	36	31	30	31	30	31	33	30	20	20	20	20			03

Range of value: **q1/q0** → 2.0-6.0 mm with increments of 0.5 mm.

RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*Device is in RUN mode.*

SEND PROGRAMMED:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	1	0	0	0	SP	SP	0	1	3	0	ETX
HEX	02	36	31	30	31	31	30	30	30	20	20	30	31	33	30	03

RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	1	3	0	0	0	0	0	q1	q0	ETX

PC←Dev.	NACK
---------	------

## 0131 – SYRINGE SPEED (P-SP)

PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value					ETX	
ASCII	STX	6	1	0	1	0	1	3	1	SP	SP	SP	SP	SP	q0	ETX
HEX	02	36	31	30	31	30	31	33	31	20	20	20	20	20		03

Range of value:

<b>q0</b>	→	1 = LOW
		2 = NORMAL
		3 = HIGH

RESPONSES:

PC ← Dev.	ACK
-----------	-----

PC ← Dev.	NACK
-----------	------

PC ← Dev.	NACK0
-----------	-------

*Device is in RUN mode.*

SEND PROGRAMMED:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	1	0	0	0	SP	SP	0	1	3	1	ETX
HEX	02	36	31	30	31	31	30	30	30	20	20	30	31	33	31	03

RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	1	3	1	SP	SP	SP	SP	SP	q0	ETX

PC ← Dev.	NACK
-----------	------

## 0132 – SYRINGE SPEED SCALE FACTOR (P-SP)

PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	1	3	2	SP	SP	SP	SP	q1	q0	ETX
HEX	02	36	31	30	31	30	31	33	32	20	20	20	20			03

Range of value:      **q1/q0**      →      Scale factor (01 - 10)

RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*Device is in RUN mode.*

SEND PROGRAMMED:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	1	0	0	0	SP	SP	0	1	3	2	ETX
HEX	02	36	31	30	31	31	30	30	30	20	20	30	31	33	32	03

RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	1	3	2	0	0	0	0	q1	q0	ETX

PC←Dev.	NACK
---------	------

## 0134 – BUFFER VOLUME (P-SP)

PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	1	3	4	SP	SP	q3	q2	q1	q0	ETX
HEX	02	36	31	30	31	30	31	33	34	20	20					03

Range of value: **q3/q2/q1/q0** → 0000 – 9999 µL (default 500 µL)

RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*Device is in RUN mode.*

SEND PROGRAMMED:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	1	0	0	0	SP	SP	0	1	3	4	ETX
HEX	02	36	31	30	31	31	30	30	30	20	20	30	31	33	34	03

RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	1	3	4	SP	SP	q3	q2	q1	q0	ETX

PC←Dev.	NACK
---------	------



*When the command, PFC 5579 – SERVICE: SETTINGS TO DEFAULT, is sent, the default value of the buffer tubing volume is set to 500 µL.*

## 0150 – ACTUAL SAMPLE NUMBER (SA)

SEND ACTUAL:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	1	0	0	1	SP	SP	0	1	5	0	ETX
HEX	02	36	31	30	31	31	30	30	31	20	20	30	31	35	30	03

RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	1	5	0	0	q4	q3	q2	q1	q0	ETX

Range of value:	<b>q4</b>	→	PLATE NUMBER:	
			Left plate:	1
			Right plate:	2
			Single plate:	3
			If Left or Right plate ( <b>q4</b> = 1 or 2)	
	<b>q3/q2</b>	→	COLUMN NUMBER:	A=0, B=1... P=15
			384 WELL PLATE:	00-15
			96 WELL PLATE:	00-07
			48 VIAL TYPE:	00-05
			12 VIAL TYPE:	00-02
	<b>q1/q0</b>	→	ROW NUMBER:	
			384 WELL PLATE:	01-24
			96 WELL PLATE:	01-12
			48 VIAL TYPE:	01-08
			12 VIAL TYPE:	01-04
			If Single plate ( <b>q4</b> = 3)	
	<b>q3/q2/q1/q0</b>	→	VIAL NUMBER:	
			84+3 VIAL TYPE	0001 – 0084
			108 VIAL TYPE:	0001 – 0108
			30 VIAL TYPE:	0001 – 0030

PC ← Dev.	NACK
-----------	------

PC ← Dev.	NACK0
-----------	-------

*Device is not in RUN mode.*

## 0151 – TRAY TEMPERATURE (P-SP-SA)

### PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	1	5	1	SP	SP	SP	SP	q1	q0	ETX
HEX	02	36	31	30	31	30	31	35	31	20	20	20	20			03

Range of value: **q1/q0** → Temperature range:  
 04 – 40 °C ( when tray cooling / heater option available)  
 04 – 22 °C ( when tray cooling option available)

### RESPONSES:

PC←Dev.	ACK
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PC←Dev.	NACK
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PC←Dev.	NACK0
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*No temperature control available.*

### SEND PROGRAMMED:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	1	0	0	0	SP	SP	0	1	5	1	ETX
HEX	02	36	31	30	31	31	30	30	30	20	20	30	31	35	31	03

### RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	1	5	1	0	0	0	0	q1	q0	ETX

PC←Dev.	NACK
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PC←Dev.	NACK0
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*No temperature control available.*



0151 - TRAY TEMPERATURE (Continued)

SEND ACTUAL:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	1	0	0	1	SP	SP	0	1	5	1	ETX
HEX	02	36	31	30	31	31	30	30	31	20	20	30	31	35	31	03

RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	1	5	1	0	0	0	0	q1	q0	ETX

Range of value: **q1/q0** → Actual temperature in °C (maximum responded temperature is 99°C)

PC←Dev.	NACK
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PC←Dev.	NACK0
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*No temperature control available.*

## 0152 – STATUS (SA)

SEND ACTUAL:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	1	0	0	1	SP	SP	0	1	5	2	ETX
HEX	02	36	31	30	31	31	30	30	31	20	20	30	31	35	32	03

RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	1	5	2	q5	q4	q3	q2	q1	q0	ETX

Range of value:

- q5** → Always zero, reserved for future use
- q4** → Always zero, reserved for future use
- q3** → 1 = Error (Ask for error code)
- q2/q1/q0** → Run status:

### Run Status:

000 = Not running	173 = Syringe LOAD, Userprog
010 = Running	174 = Syringe UNLOAD, Userprog
020 = Searching vial	175 = Syringe HOME, Userprog
030 = Flushing	176 = Move Tray, Userprog
040 = Analysis time running	177 = Move Needle Horizontal, Userprog
050 = Filling sample loop	178 = Move Needle Vertical, Userprog
051 = Freeze active	180 = Wait for input, Userprog
055 = SparkLink inject marker	181 = Wait for event 1, Userprog
060 = Washing	182 = Wait for event 2, Userprog
080 = Missing vial	183 = Wait for event 3, Userprog
090 = Rinsing, µL pick-up	184 = Wait for event 4, Userprog
110 = Withdraw transport solvent, µL pick-up	185 = Wait for event 5, Userprog
111 = Fill transport	186 = Wait for event 6, Userprog
120 = Rinse buffer	187 = Wait for event 7, Userprog
130 = Dispensing, in mix	188 = Wait for event 8, Userprog
140 = Aspirating, in mix	189 = Wait for event 9, Userprog
150 = Pulling air before aspirate sample in mix	191 = Wait for event 10, Userprog
151 = Waiting for Prospekt-2 Load command	192 = Wait for event 11, Userprog
152 = Waiting for next inject command	193 = Wait for event 12, Userprog
153 = Waiting for Next Inject Sync command	194 = Wait for event 13, Userprog
154 = Waiting for Load Sync command	195 = Wait for event 14, Userprog
155 = Waiting for Inject Sync command	196 = Wait for event 15, Userprog
156 = Waiting for Valve Wash Sync command	200 = Tray running
157 = Waiting for door to close	201 = Syringe or Syringe Valve running
159 = Waiting time during mix	202 = Needle running
160 = Mixing	203 = Injection Valve running
170 = Injector valve to INJECT, Userprog	204 = ISS-A running
171 = Injector valve to LOAD, Userprog	310 = Initializing motors
172 = Syringe valve to NEEDLE, WASTE or WASH, Userprog	900 = Processing stop
	910 = Initial wash from ready
	920 = Prime solvent selection valve
	921 = Moving syringe to home position
	922 = Moving syringe to end position
	928 = Moving syringe to exchange position

PC←Dev.	NACK
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## 0154 – SOFTWARE REVISION (SA)

SEND ACTUAL:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	1	0	0	1	SP	SP	0	1	5	4	ETX
HEX	02	36	31	30	31	31	30	30	31	20	20	30	31	35	34	03

RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	1	5	4	0	0	0	q2	q1	q0	ETX

Range of value: **q2/q1/q0** → Software revision number  
999 = Test version

PC←Dev.	NACK
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## 0155 – ERROR CODE (SA)

SEND ACTUAL:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	1	0	0	1	SP	SP	0	1	5	5	ETX
HEX	02	36	31	30	31	31	30	30	31	20	20	30	31	35	35	03

RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	1	5	5	0	0	0	q2	q1	q0	ETX

Range of value: **q2/q1/q0** → Value (000-999)  
See ALIAS user's manual for error codes.  
000 = No errors

PC←Dev.	NACK
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## 0156 – RESET ERRORS (C)

RECEIVE COMMAND:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	1	5	6	SP	SP	SP	SP	SP	q0	ETX
HEX	02	36	31	30	31	30	31	35	36	20	20	20	20	20		03

Range of value: **q0** → 1 = Reset all possible errors

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
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## 0158 – CONFIGURATION (SA)

SEND ACTUAL:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	1	0	0	1	SP	SP	0	1	5	8	ETX
HEX	02	36	31	30	31	31	30	30	31	20	20	30	31	35	38	03

RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	1	5	8	q5	q4	q3	q2	q1	q0	ETX

Range of value:

- q5** → Always zero, reserved for future use
- q4** → 1 = 1 out 6 Valve available  
0 = No 1 out 6 Valve available
- q3** → 1 = ISS-A available  
0 = No ISS-A available
- q2** → 1 = Syringe Valve Wash Port 2 available  
0 = No Syringe Valve Wash Port 2 available
- q1** → 1 = SSV option available  
0 = No SSV option available
- q0** → 3 = Tray cooling and heating available  
2 = Reserved for future use  
1 = Tray cooling available  
0 = No temperature control available

PC←Dev.	NACK
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## 0159 – CONFIGURATION 2 (SA)

SEND ACTUAL:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	1	0	0	1	SP	SP	0	1	5	9	ETX
HEX	02	36	31	30	31	31	30	30	31	20	20	30	31	35	39	03

RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	1	5	9	q5	q4	q3	q2	q1	q0	ETX

Value:

<b>q5</b>	→	Always zero, reserved for future use
<b>q4</b>	→	Always zero, reserved for future use
<b>q3</b>	→	Always zero, reserved for future use
<b>q2</b>	→	1 = User Program available 0 = No User Program available
<b>q1</b>	→	Always zero, reserved for future use
<b>q0</b>	→	1 = Mix&Dilute available 0 = No Mix&Dilute available

PC←Dev.	NACK
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## 0160 – MULTIPLE AUXILIARY COMMAND (C-SA)

PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	1	6	0	SP	SP	SP	SP	SP	q0	ETX
HEX	02	36	31	30	31	30	31	36	30	20	20	20	20	20		03

Range of value: **q0** → AUX1: 2 = NO CHANGE  
1 = ON  
0 = OFF

PC ← Dev.	ACK
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PC ← Dev.	NACK
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SEND ACTUAL:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	1	0	0	1	SP	SP	0	1	6	0	ETX
HEX	02	36	31	30	31	31	30	30	31	20	20	30	31	36	30	03

RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value					ETX	
ASCII	STX	6	1	0	1	0	1	6	0	SP	SP	SP	SP	SP	q0	ETX

[illegible]

PC ← Dev.	NACK
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## 0161 - AUXILIARY 1 DIRECT CONTROL (C-SA)

PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value					ETX	
ASCII	STX	6	1	0	1	0	1	6	1	SP	SP	SP	SP	SP	q0	ETX
HEX	02	36	31	30	31	30	31	36	31	20	20	20	20	20		03

Range of value: **q0** → 1 = ON  
0 = OFF

PC ← Dev.	ACK
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PC ← Dev.	NACK
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SEND ACTUAL:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	1	0	0	1	SP	SP	0	1	6	1	ETX
HEX	02	36	31	30	31	31	30	30	31	20	20	30	31	36	31	03

RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value					ETX	
ASCII	STX	6	1	0	1	0	1	6	1	SP	SP	SP	SP	SP	q0	ETX

PC ← Dev.	NACK
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## 0169 – EXTERNAL I/O INPUTS (SA)

SEND ACTUAL:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	1	0	0	1	SP	SP	0	1	6	9	ETX
HEX	02	36	31	30	31	31	30	30	31	20	20	30	31	36	39	03

RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	1	6	9	SP	SP	SP	SP	q1	q0	ETX

Range of value:

<b>q1</b>	→ IN2:	0 = LOW LEVEL 1 = HIGH LEVEL
<b>q0</b>	→ IN1:	0 = LOW LEVEL 1 = HIGH LEVEL

PC←Dev.	NACK
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PC ← Dev.	NACK0
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## 0178 – PROTOCOL VERSION (SA)

SEND ACTUAL:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	y1	y0	1	0	0	1	SP	SP	0	1	7	8	ETX
HEX	02	36	31			31	30	30	31	20	20	30	31	37	38	03

RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	y1	y0	0	1	7	8	q5	q4	q3	q2	q1	q0	ETX

- Range of AI: **y1/y0** → 01 to 09  
When AI = 01:
- Range of Value: **q1/q0** → 10 = Added PFC 5104 and run status 151  
20 = Added run status 157and 250µL syringe
- q2** → 0 = 2500 µL Prep Mode only  
1 = 2500 µL enabled for all modes
- q3** → 0 = PFC LOADED VOLUME not available  
1 = PFC LOADED VOLUME available
- q4** → 0 = PFC MAX PRESSURE not available  
1 = PFC MAX PRESSURE available
- q5** → 0 = Next AI not available  
1 = Next AI available
- When AI = 02:
- Range of Value: **q0** → 0 = 108 VIAL TYPE tray not available  
1 = 108 VIAL TYPE tray available
- q1** → 0 = 30 VIAL TYPE tray not available  
1 = 30 VIAL TYPE tray available
- q2** → 0 = 84+3 VIAL TYPE tray not available  
1 = 84+3 VIAL TYPE tray available
- q3** → 0 = MAX1452 programming not available  
1 = MAX1452 programming available
- q4** → 0 = PRE-SEQUENCE FLUSH not available  
1 = PRE-SEQUENCE FLUSH available
- q5** → 0 = Next AI not available  
1 = Next AI available
- When AI = 03:
- Range of Value: **q0** → 0 = TRAY DETECTION not available  
1 = TRAY DETECTION available
- q1** → 0 = OVEN not available  
1 = OVEN available  
(includes PFCs:  
114, 116,218, 302 and 303)
- q2** → Reserved for future use
- q3** → Reserved for future use
- q4** → 0 = TRAY TOLERANCE not available  
1 = TRAY TOLERANCE available
- q5** → 0 = Next AI not available  
1 = Next AI available
- When AI = 04
- Range of Value: **q0** → 0 = IDENTIFICATION LED not available  
1 = IDENTIFICATION LED available
- q1** → 0 = 25 vial not available  
1 = 25 vial available
- q2** → 0 = 80 vial + tank not available  
1 = 80 vial + tank available
- q3** → 0 = 85 vial not available

		1 = 85 vial available
	<b>q4</b>	→ 0 = 100 vial not available
		1 = 100 vial available
	<b>q5</b>	→ 0 = Next AI not available
		1 = Next AI available
	When AI = 05	
Range of Value:	<b>q0</b>	→ 0 = 205 vial not available
		1 = 205 vial available
	<b>q1</b>	→ 0 = 96 low well double tray not available
		1 = 96 low well double tray available
	<b>q2</b>	→ 0 = 96 high well double tray not available
		1 = 96 high well double tray available
	<b>q3</b>	→ 0 = 384 low well double tray not available
		1 = 384 low well double tray available
	<b>q4</b>	→ 0 = PFC 5921 not available
		1 = PFC 5921 available
	<b>q5</b>	→ 0 = Next AI not available
		1 = Next AI available
	When AI = 06	
Range of Value:	<b>q0</b>	→ 0 = 96 low well plate not available
		1 = 96 low well plate available (also when AI=5 q5 = 0)
	<b>q1</b>	→ 0 = 96 high well plate not available
		1 = 96 high well plate available (also when AI=5 q5 = 0)
	<b>q2</b>	→ 0 = 384 low well plate not available
		1 = 384 low well plate available (also when AI=5 q5 = 0)
	<b>q3</b>	→ 0 = 48 vial not available
		1 = 48 vial available (also when AI=5 q5 = 0)
	<b>q4</b>	→ 0 = 12 vial not available
		1 = 12 vial available (also when AI=5 q5 = 0)
	<b>q5</b>	→ 0 = Next AI not available
		1 = Next AI available
	When AI = 07	
Range of Value:	<b>q0</b>	→ 0 = PFC 152 AI 3 not available
		1 = PFC 152 AI 3 available
	<b>q1</b>	→ 0 = MIX VIAL POSITION not available
		1 = MIX VIAL POSITION available
		Includes PFC 0407 and PFC 0413.
	<b>q2</b>	→ 0 = PFC 0310 AIR SEGMENT VOLUME not available
		1 = PFC 0310 AIR SEGMENT VOLUME available
	<b>q3</b>	→ 0 = PFC 5655 DISPLAY ON/OFF not available
		1 = PFC 5655 DISPLAY ON/OFF available
	<b>q4</b>	→ 0 = MECHANICAL LOG COUNTERS not available
		1 = MECHANICAL LOG COUNTERS available
		Includes PFC 5723, 5724, 5726, 5727 and 5728.
	<b>q5</b>	→ 0 = Next AI not available
		1 = Next AI available
	When AI = 08	
Range of Value:	<b>q0</b>	→ 0 = PFC4563 not available
		1 = PFC4563 available
	<b>q1</b>	→ 0 = PFC5646 not available
		1 = PFC5646 available
	<b>q2</b>	→ 0 = 100 µL syringe not available
		1 = 100 µL syringe available
	<b>q3</b>	→ 0 = 50 µL syringe not available
		1 = 50 µL syringe available
	<b>q4</b>	→ 0 = Transport Volume not available
		1 = Transport Volume available
	<b>q5</b>	→ 0 = Next AI not available
		1 = Next AI available

Range of Value:	When AI = 09	
	<b>q0</b>	→ 0 = Inject volume $\mu$ L Pickup 50% of loop not available 1 = Inject volume $\mu$ L Pickup 50% of loop available
	<b>q1</b>	→ 0 = Reserved for future use
	<b>q2</b>	→ 0 = Reserved for future use
	<b>q3</b>	→ 0 = Reserved for future use
	<b>q4</b>	→ 0 = Reserved for future use
	<b>q5</b>	→ 0 = Next AI not available 1 = Next AI available

PC←Dev.	NACK
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*PFC 0178 Protocol Version supported from embedded firmware version 1.26.*

## 0179 – PCB PART NUMBER (P-SP)

PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	1	7	9	q5	q4	q3	q2	q1	q0	ETX
HEX	02	36	31	30	31	30	31	37	39							03

Range of value: **q5/q4/q3/q2/q1/q0** → Printed circuit board part number  
Example:  
840601 represents pcb part number 0840.601

RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

SEND PROGRAMMED:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	1	0	0	0	SP	SP	0	1	7	9	ETX
HEX	02	36	31	30	31	31	30	30	30	20	20	30	31	37	39	03

RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	1	7	9	q5	q4	q3	q2	q1	q0	ETX

PC←Dev.	NACK
---------	------

## 0181 – PCB REVISION NUMBER (P-SP)

PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	1	8	1	SP	SP	SP	SP	q1	q0	ETX
HEX	02	36	31	30	31	30	31	38	31	20	20	20	20			03

Range of value: **q1/q0** → Printed circuit board revision number

RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

SEND PROGRAMMED:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	1	0	0	0	SP	SP	0	1	8	1	ETX
HEX	02	36	31	30	31	31	30	30	30	20	20	30	31	38	31	03

RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	1	8	1	SP	SP	SP	SP	q1	q0	ETX

PC←Dev.	NACK
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## 0182 – SYSTEM BOOT ID PART NUMBER (SA)

SEND ACTUAL:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	1	0	0	1	SP	SP	0	1	8	2	ETX
HEX	02	36	31	30	31	31	30	30	31	20	20	30	31	38	33	03

RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	1	8	2	q5	q4	q3	q2	q1	q0	ETX

Range of Value: **q5/q4/q3/q2/q1/q0** → System Boot ID part number.  
 Example:  
 840101 represents System Boot ID part number  
 0840.101

PC←Dev.	NACK
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## 0183 – SOFTWARE PART NUMBER (SA)

SEND ACTUAL:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	1	0	0	1	SP	SP	0	1	8	3	ETX
HEX	02	36	31	30	31	31	30	30	31	20	20	30	31	38	33	03

RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	1	8	3	q5	q4	q3	q2	q1	q0	ETX

Range of Value: **q5/q4/q3/q2/q1/q0** → Software part number.  
 Example:  
 840100 represents software part number  
 0840.100

PC←Dev.	NACK
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## 0184 – SYSTEM BOOT ID (SA)

SEND ACTUAL:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	1	0	0	1	SP	SP	0	1	8	4	ETX
HEX	02	36	31	30	31	31	30	30	31	20	20	30	31	38	34	03

RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	1	8	4	q5	q4	q3	q2	q1	q0	ETX

Range of Value:

**q5**

- 0 = Normal hardware  
1 = T (Test hardware)  
2 = P (Proto hardware)

**q4/q3/q2/q1/q0**

- Hardware revision number.

Example:

Value field	Hardware version
0103xx	1.03
110301	T1.03-01
2003xx	P0.03

(xx = don't care)

PC←Dev.	NACK
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## 0185 – SOFTWARE REVISION XL (SA)

SEND ACTUAL:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	1	0	0	1	SP	SP	0	1	8	5	ETX
HEX	02	36	31	30	31	31	30	30	31	20	20	30	31	38	35	03

RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	1	8	5	q5	q4	q3	q2	q1	q0	ETX

Range of Value:

**q5**

→ 0 = Normal software  
1 = T (Test Software)  
2 = P (Proto Software)

**q4/q3/q2/q1/q0**

→ Software revision number.

Example:

Value field	Software version
0103xx	1.03
110301	T1.03-01
2003xx	P0.03

(xx = don't care)

PC←Dev.	NACK
---------	------

## 0186 - INSTRUMENT TYPE [SA)

SEND ACTUAL:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	1	0	0	1	SP	SP	0	1	8	6	ETX
HEX	02	36	31	30	31	31	30	30	31	20	20	30	31	38	36	03

RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	1	8	6	SP	SP	SP	SP	q1	q0	ETX

Value:

<b>q1/q0</b>	→	01 = Mistral 02 = Marathon Autosampler 03 = Basic Marathon Autosampler 04 = Triathlon Autosampler 05 = Endurance Autosampler 06 = Reliance Autosampler 07 = LC Pump 08 = ACE 09 = HPD 10 = Midas Autosampler 11 = Micro Endurance Autosampler 12 = ALIAS Autosampler 13 = SINEAS Autosampler
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PC ← Dev.	NACK
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## 0187 – INJECT MARKER PULSE (P-SP)

PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	1	8	7	SP	SP	SP	SP	q1	q0	ETX
HEX	02	36	31	30	31	30	31	38	37	20	20	20	20			03

Range of value: **q1/q0** → 0,1 – 2,0s (1,0s default)

RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*Device is in RUN mode.*

SEND PROGRAMMED:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	1	0	0	0	SP	SP	0	1	8	7	ETX
HEX	02	36	31	30	31	31	30	30	30	20	20	30	31	38	37	03

RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	1	8	7	SP	SP	SP	SP	q1	q0	ETX

PC←Dev.	NACK
---------	------

## 0188 – NEXT INJECTION ACTIVE EDGE (P-SP)

PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	1	8	8	SP	SP	SP	SP	SP	q0	ETX
HEX	02	36	31	30	31	30	31	38	38	20	20	20	20			03

Range of value: **q0** → Active edge:  
0 = FALLING EDGE  
1 = RISING EDGE

RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*Device is in RUN mode.*

SEND PROGRAMMED:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	1	0	0	0	SP	SP	0	1	8	8	ETX
HEX	02	36	31	30	31	31	30	30	30	20	20	30	31	38	38	03

RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	1	8	8	SP	SP	SP	SP	SP	q0	ETX

PC←Dev.	NACK
---------	------

## 0189 – PROGRAMMABLE INPUTS / OUTPUTS (P-SP)

PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	1	8	9	SP	SP	SP	q2	q1	q0	ETX
HEX	02	36	31	30	31	30	31	38	39	20	20	20				03

Range of value:	<b>q0</b>	→	Programmable relay 0 = Relay used as INJECT MARKER (default) 1 = Relay used as AUX(ILIARY) 1 2 = Relay used as ALARM
	<b>q1</b>	→	Programmable input 1 0 = Input 1 used as Next Injection input (default) 1 = Input 1 used as Freeze input 2 = Input 1 used as Stop input
	<b>q2</b>	→	Programmable input 2 0 = Input 2 used as Next Injection input (default) 1 = Input 2 used as Freeze input 2 = Input 2 used as Stop input

RESPONSES:

PC ← Dev.	ACK
-----------	-----

PC ← Dev.	NACK
-----------	------

PC ← Dev.	NACK0
-----------	-------

*Device is in RUN mode.*

SEND PROGRAMMED:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	1	0	0	0	SP	SP	0	1	8	9	ETX
HEX	02	36	31	30	31	31	30	30	30	20	20	30	31	38	39	03

RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	1	8	9	SP	SP	SP	q2	q1	q0	ETX

PC ← Dev.	NACK
-----------	------

## 0192 – AIR SEGMENT (P-SP)

### PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	1	9	2	SP	SP	SP	SP	SP	q0	ETX
HEX	02	36	31	30	31	30	31	39	32	20	20	20	20	20		03

Range of value: **q0** → 0 = Use air segment: NO  
1 = Use air segment: YES

### RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*Device is in RUN mode.*

### SEND PROGRAMMED:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	1	0	0	0	SP	SP	0	1	9	2	ETX
HEX	02	36	31	30	31	31	30	30	30	20	20	30	31	39	32	03

### RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	1	9	2	SP	SP	SP	SP	SP	q0	ETX

PC←Dev.	NACK
---------	------

## 0193 – SKIP MISSING SAMPLE POSITION (P-SP)

### PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	1	9	3	SP	SP	SP	SP	SP	q0	ETX
HEX	02	36	31	30	31	30	31	39	33	20	20	20	20	20		03

Range of value: **q0** → 0 = Skip missing sample position: NO  
1 = Skip missing sample position: YES

### RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*Device is in RUN mode.*

### SEND PROGRAMMED:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	1	0	0	0	SP	SP	0	1	9	3	ETX
HEX	02	36	31	30	31	31	30	30	30	20	20	30	31	39	33	03

### RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	1	9	3	SP	SP	SP	SP	SP	q0	ETX

PC←Dev.	NACK
---------	------



*When Skip Missing Sample Position is set to yes and tray segment settings (PFC 0200) is set to 48 VIALS or 12 VIALS the missing vials are skipped and the next vial will be processed.  
In case the tray segment settings is set to 96 LOW, 96 HIGH or 384 LOW the Skip Missing Sample Position setting is ignored. Always resulting in an error when tray isn't present.*

## 0194 – HEAD SPACE PRESSURE (P-SP)

PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	1	9	4	SP	SP	SP	SP	SP	q0	ETX
HEX	02	36	31	30	31	30	31	39	34	20	20	20	20	20		03

Range of value: **q0** → 0 = Head space pressure: NO  
1 = Head space pressure: YES

RESPONSES:

PC ← Dev.	ACK
-----------	-----

PC ← Dev.	NACK
-----------	------

PC ← Dev.	NACK0
-----------	-------

*Device is in RUN mode.*

SEND PROGRAMMED:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	1	0	0	0	SP	SP	0	1	9	4	ETX
HEX	02	36	31	30	31	31	30	30	30	20	20	30	31	39	34	03

RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	1	9	4	SP	SP	SP	SP	SP	q0	ETX

PC ← Dev.	NACK
-----------	------



## 0195 – RESET OUTPUTS AFTER LAST SERIES (P-SP)

PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	1	9	5	SP	SP	SP	SP	SP	q0	ETX
HEX	02	36	31	30	31	30	31	39	35	20	20	20	20	20		03

Range of value: **q0** → 0 = Reset outputs after last series: NO  
1 = Reset outputs after last series: YES

RESPONSES:

PC ← Dev.	ACK
-----------	-----

PC ← Dev.	NACK
-----------	------

PC ← Dev.	NACK0
-----------	-------

*Device is in RUN mode.*

SEND PROGRAMMED:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	1	0	0	0	SP	SP	0	1	9	5	ETX
HEX	02	36	31	30	31	31	30	30	30	20	20	30	31	39	35	03

RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value					ETX	
ASCII	STX	6	1	0	1	0	1	9	5	SP	SP	SP	SP	SP	q0	ETX

PC ← Dev.	NACK
-----------	------

## 0196 – RESET TRANSPORT AND REAGENT VOLUMES (P-SP)

### PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	1	9	6	SP	SP	SP	SP	SP	q0	ETX
HEX	02	36	31	30	31	30	31	39	36	20	20	20	20	20		03

Range of value:      **q0**      →      0 = Reset transport and reagent volumes: NO  
Exit mode; this means that the transport and/or reagent vials are no longer programmable and at every series, that will be started, the volume (fluid level) of the transport and reagent vials will be reset. (8000 µL)

1 = Reset transport and reagent volumes: YES  
Set transport and reagent volumes and enter the mode in which the system will not reset the remaining volumes of the transport and reagent vials. The transport and reagent vials are only programmable in this mode.

### RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*Device is in RUN mode.*

### SEND PROGRAMMED:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	1	0	0	0	SP	SP	0	1	9	6	ETX
HEX	02	36	31	30	31	31	30	30	30	20	20	30	31	39	36	03

### RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	1	9	6	SP	SP	SP	SP	SP	q0	ETX

PC←Dev.	NACK
---------	------



*Both modes are only valid when the 84+3 tray is selected.*

## 0198 – USE PREP MODE (P-SP)

PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	1	9	8	SP	SP	SP	SP	SP	q0	ETX
HEX	02	36	31	30	31	30	31	39	38	20	20	20	20	20		03

Range of value: **q0** → 0 = Use prep mode: NO  
1 = Use prep mode: YES

RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*Device is in RUN mode.*

SEND PROGRAMMED:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	1	0	0	0	SP	SP	0	1	9	8	ETX
HEX	02	36	31	30	31	31	30	30	30	20	20	30	31	39	38	03

RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	1	9	8	SP	SP	SP	SP	SP	q0	ETX

PC←Dev.	NACK
---------	------



*When the prep mode is changed series are set to default.*

## 0200 – TRAY SEGMENT SETTINGS (P-SP)

PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	2	0	0	SP	SP	q3	q2	q1	q0	ETX
HEX	02	36	31	30	31	30	32	30	30	20	20					03

Range of value:

**q3** → Tray type set left tray:  
0 = Spark separate left plate  
1 = Reserved  
2 = Reserved  
3 = Spark single plate

**q2** → Tray type set right tray:  
0 = Spark separate right plate  
1 = Reserved  
2 = Reserved  
3 = Spark single plate

If Spark separate plates (**q3/q2** = 00)

**q1** → Left tray type:  
0 = 96 LOW  
1 = 96 HIGH  
2 = 384 LOW  
3 = 48 VIALS  
4 = 12 VIALS

**q0** → Right tray type:  
0 = 96 LOW  
1 = 96 HIGH  
2 = 384 LOW  
3 = 48 VIALS  
4 = 12 VIALS

If Spark single plate (**q3/q2** = 33)

**q1/q0** → Tray type:  
00 = 84+3 VIALS  
11 = 108 VIALS  
22 = 30 VIALS

RESPONSES:

PC ← Dev.	ACK
-----------	-----

PC ← Dev.	NACK
-----------	------

PC ← Dev.	NACK0
-----------	-------

*Device is in RUN mode or device is in prep mode.*



*During Prep Mode the tray setting is fixed at 12 VIALS. Tray setting other than 12 VIALS will result in NACK response.*



*The combination Left plate 384 LOW and right plate 96 HIGH is not possible and will result in NACK response.*



*In case of a single plate q3/q2 must both be programmed as 33.*

## 0200 - TRAY SEGMENT SETTINGS (Continued)

SEND PROGRAMMED:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	1	0	0	0	SP	SP	0	2	0	0	ETX
HEX	02	36	31	30	31	31	30	30	30	20	20	30	32	30	30	03

RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	2	0	0	0	0	q3	q2	q1	q0	ETX

Range of value:

**q3** → Tray type set left tray:  
0 = Spark separate left plate  
1 = Reserved  
2 = Reserved  
3 = Spark single plate

**q2** → Tray type set left tray:  
0 = Spark separate right plate  
1 = Reserved  
2 = Reserved  
3 = Spark single plate

If Spark separate plates (**q3/q2** = 00)

**q1** → Left tray type:  
0 = 96 LOW  
1 = 96 HIGH  
2 = 384 LOW  
3 = 48 VIALS  
4 = 12 VIALS

**q0** → Right tray type:  
0 = 96 LOW  
1 = 96 HIGH  
2 = 384 LOW  
3 = 48 VIALS  
4 = 12 VIALS

If Spark single plate (**q3/q2** = 33)

**q1/q0** → Tray type:  
00 = 84+3 VIALS  
11 = 108 VIALS  
22 = 30 VIALS

PC←Dev.	NACK
---------	------

## 0201 – PROCESS PLATE IN ROW OR COLUMN (P-SP)

PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	2	0	1	SP	SP	SP	SP	SP	q0	ETX
HEX	02	36	31	30	31	30	32	30	31	20	20	20	20	20		03

Range of value: **q0**

→ PROCESS TYPE:  
1 = ROW  
2 = COLUMN

RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*Device is in RUN mode.*

SEND PROGRAMMED:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	1	0	0	0	SP	SP	0	2	0	1	ETX
HEX	02	36	31	30	31	31	30	30	30	20	20	30	32	30	31	03

RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	2	0	1	0	0	0	0	0	q0	ETX

PC←Dev.	NACK
---------	------



*When tray type is programmed as an 84+3 VIALS, 108 VIALS or 30 VIALS tray the Process Plate in Row or Column setting is ignored. The 84+3 VIALS, 108 VIALS and 30 VIALS tray always processes the sample positions in numerical order (1 to 2 to 3 etc.).*

## 0202 – FREEZE INPUT ACTIVE LEVEL (P-SP)

PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	2	0	2	SP	SP	SP	SP	SP	q0	ETX
HEX	02	36	31	30	31	30	32	30	32	20	20	20	20	20		03

Range of value: **q0**

→ ACTIVE LEVEL:  
0 = LOW LEVEL  
1 = HIGH LEVEL

RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*Device is in RUN mode.*

SEND PROGRAMMED:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	1	0	0	0	SP	SP	0	2	0	2	ETX
HEX	02	36	31	30	31	31	30	30	30	20	20	30	32	30	32	03

RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	2	0	2	0	0	0	0	0	q0	ETX

PC←Dev.	NACK
---------	------

## 0208 – SYNC CONDITION (P-SP)

PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	2	0	8	SP	SP	q3	q2	q1	q0	ETX
HEX	02	36	31	30	31	30	32	30	38	20	20					03

Range of value: **q0** → 0 = No Sync with Next Injection  
1 = Sync with Next injection  
**q1** → 0 = No Sync with Load  
1 = Sync with Load  
**q2** → 0 = No Sync with Inject  
1 = Sync with Inject  
**q3** → 0 = No Sync with Valve Wash  
1 = Sync with Valve Wash

RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*Device is in RUN mode.*

SEND PROGRAMMED:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	1	0	0	0	SP	SP	0	2	0	8	ETX
HEX	02	36	31	30	31	31	30	30	30	20	20	30	32	30	38	03

RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	2	0	8	SP	SP	q3	q2	q1	q0	ETX

PC←Dev.	NACK
---------	------



## 0209 – SYNC COMMAND (C)

### RECEIVE COMMAND:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	2	0	9	SP	SP	q3	q2	q1	q0	ETX
HEX	02	36	31	30	31	30	32	30	39	20	20					03

Range of value:

<b>q0</b>	→	0 = No Action 1 = Start Next Injection
<b>q1</b>	→	0 = No Action 1 = Start Load
<b>q2</b>	→	0 = No Action 1 = Start Inject
<b>q3</b>	→	0 = No Action 1 = Start Valve Wash

### RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*Device is not running or the received Sync Command is not valid at this time.*



**Only one of the q-values (q4-q0) may be 1 corresponding with the synchronization function programmed with PFC 0208. Other values will result in a NACK0 response.**

## 0210 – INJECTION VOLUME (P-SP)

PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	2	1	0	SP	q4	q3	q2	q1	q0	ETX
HEX	02	36	31	30	31	30	32	31	30	20						03

Range of value: **q4/q3/q2/q1/q0** → 00000 - 09999 μL (volume depends on injection mode, loop volume and/or tubing volume)  
00000 - 19999 μL (in prep mode)

RESPONSES:

PC ← Dev.	ACK
-----------	-----

PC ← Dev.	NACK
-----------	------

PC ← Dev.	NACK0
-----------	-------

*Injection mode is full loop or NONE.*

SEND PROGRAMMED:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	1	0	0	0	SP	SP	0	2	1	0	ETX
HEX	02	36	31	30	31	31	30	30	30	20	20	30	32	31	30	03

RESPONSES:

PC ← Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	2	1	0	0	q4	q3	q2	q1	q0	ETX

PC ← Dev.	NACK
-----------	------

## 0220 – TIME AUXILIARY 1 ON (P-SP)

### PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	y0	0	2	2	0	q5	q4	q3	q2	q1	q0	ETX
HEX	02	36	31	30		30	32	32	30							03

Range of value:      **q5/q4**      →      hours (00-09)  
                              **q3/q2**      →      minutes (00 - 59)  
                              **q1/q0**      →      seconds (00 - 59)  
    900000 = NONE

Range of AI:            **y0**            →      1 - 4: ON times

### RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

### SEND PROGRAMMED:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	y0	1	0	0	0	SP	SP	0	2	2	0	ETX
HEX	02	36	31	30		31	30	30	30	20	20	30	32	32	30	03

### RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	y0	0	2	2	0	q5	q4	q3	q2	q1	q0	ETX

PC←Dev.	NACK
---------	------

## 0221 – TIME AUXILIARY 1 OFF (P-SP)

### PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	y0	0	2	2	1	q5	q4	q3	q2	q1	q0	ETX
HEX	02	36	31	30		30	32	32	31							03

Range of value:      **q5/q4**      →      hours (00-09)  
                              **q3/q2**      →      minutes (00 - 59)  
                              **q1/q0**      →      seconds (00 - 59)  
    900000 = NONE  
 Range of AI:            **y0**            →      1 - 4: OFF times

### RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

### SEND PROGRAMMED:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	y0	1	0	0	0	SP	SP	0	2	2	1	ETX
HEX	02	36	31	30		31	30	30	30	20	20	30	32	32	31	03

### RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	y0	0	2	2	1	q5	q4	q3	q2	q1	q0	ETX

PC←Dev.	NACK
---------	------

## 0230 – TIME ISS-A 6- 1 (P-SP)

### PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	y0	0	2	3	0	q5	q4	q3	q2	q1	q0	ETX
HEX	02	36	31	30		30	32	33	30							03

Range of value:      **q5/q4**      →      hours (00-09)  
                              **q3/q2**      →      minutes (00 - 59)  
                              **q1/q0**      →      seconds (00 - 59)  
    900000 = NONE

Range of AI:            **y0**            →      1 - 4 times

### RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*No ISS-A option available.*

### SEND PROGRAMMED:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	y0	1	0	0	0	SP	SP	0	2	3	0	ETX
HEX	02	36	31	30		31	30	30	30	20	20	30	32	33	30	03

### RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	y0	0	2	3	0	q5	q4	q3	q2	q1	q0	ETX

PC←Dev.	NACK
---------	------

## 0231 – TIME ISS-A 1-2 (P-SP)

### PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	y0	0	2	3	1	q5	q4	q3	q2	q1	q0	ETX
HEX	02	36	31	30		30	32	33	31							03

Range of value:      **q5/q4**      →      hours (00-09)  
                              **q3/q2**      →      minutes (00 - 59)  
                              **q1/q0**      →      seconds (00 - 59)  
    900000 = NONE

Range of AI:            **y0**            →      1 - 4 times

### RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*No ISS-A option available.*

### SEND PROGRAMMED:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	y0	1	0	0	0	SP	SP	0	2	3	1	ETX
HEX	02	36	31	30		31	30	30	30	20	20	30	32	33	31	03

### RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	y0	0	2	3	1	q5	q4	q3	q2	q1	q0	ETX

PC←Dev.	NACK
---------	------

## 0237 – TIME FOR SSV (P-SP)

### PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	y0	0	2	3	7	q5	q4	q3	q2	q1	q0	ETX
HEX	02	36	31	30		30	32	33	37							03

Range of value: **q5/q4** → hours (00 - 09)  
**q3/q2** → minutes (00 -59)  
**q1/q0** → seconds (00- 59)  
900000 = NONE

Range of AI: **y0** → 1 - 8 times

### RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*No SSV available.*

### SEND PROGRAMMED:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	y0	1	0	0	0	SP	SP	0	2	3	7	ETX
HEX	02	36	31	30		31	30	30	30	20	20	30	32	33	37	03

### RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	y0	0	2	3	7	q5	q4	q3	q2	q1	q0	ETX

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*No SSV available.*

## 0238 – SSV (P-SP)

### PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	y0	0	2	3	8	SP	SP	SP	SP	SP	q0	ETX
HEX	02	36	31	30		30	32	33	38	20	20	20	20	20		03

Range of value: **q0**

→ 1-6 = solvent 1-6 ON

Range of AI: **y0**

→ 1-8 times

### RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*No SSV available.*

### SEND PROGRAMMED:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	y0	1	0	0	0	SP	SP	0	2	3	8	ETX
HEX	02	36	31	30		31	30	30	30	20	20	30	32	33	38	03

### RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	y0	0	2	3	8	0	0	0	0	0	q0	ETX

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*No SSV available.*



## 0239 – END TIME FOR TIMEBASE METHOD (P-SP)

PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	2	3	9	q5	q4	q3	q2	q1	q0	ETX
HEX	02	36	31	30	31	30	32	33	39							03

Range of value:

<b>q5/q4</b>	→	hours (00-09)
<b>q3/q2</b>	→	minutes (00 - 59)
<b>q1/q0</b>	→	seconds (00 - 59)
		900000 = NONE

RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

SEND PROGRAMMED:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	1	0	0	0	SP	SP	0	2	3	9	ETX
HEX	02	36	31	30	31	31	30	30	30	20	20	30	32	33	39	03

RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	2	3	9	q5	q4	q3	q2	q1	q0	ETX

PC←Dev.	NACK
---------	------

## 0400 – FIRST DESTINATION POSITION (P-SP)

PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	4	0	0	SP	q4	q3	q2	q1	q0	ETX
HEX	02	36	31	30	31	30	34	30	30	20						03

Range of value: **q4** → PLATE NUMBER:  
 Left plate: 1  
 Right plate: 2  
 Single plate: 3

If Left or Right plate (**q4** = 1 or 2)  
**q3/q2** → COLUMN NUMBER: A=0, B=1... P=15  
 384 WELL PLATE: 00-15  
 96 WELL PLATE: 00-07  
 48 VIAL TYPE: 00-05  
 12 VIAL TYPE: 00-02

**q1/q0** → ROW NUMBER:  
 384 WELL PLATE: 01-24  
 96 WELL PLATE: 01-12  
 48 VIAL TYPE: 01-08  
 12 VIAL TYPE: 01-04

If Single plate (**q4** = 3)  
**q3/q2/q1/q0** → VIAL NUMBER:  
 84+3 VIAL TYPE: 0001 – 0084  
 108 VIAL TYPE: 0001 – 0108  
 30 VIAL TYPE: 0001 – 0030

RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*Device is in RUN mode.*

SEND PROGRAMMED:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	1	0	0	0	SP	SP	0	4	0	0	ETX
HEX	02	36	31	30	31	31	30	30	30	20	20	30	34	30	30	03

RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	4	0	0	0	q4	q3	q2	q1	q0	ETX

PC←Dev.	NACK
---------	------

## 0401 – REAGENT A POSITION (P-SP)

### PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	4	0	1	SP	q4	q3	q2	q1	q0	ETX
HEX	02	36	31	30	31	30	34	30	31	20						03

Range of value: **q4** → PLATE NUMBER:  
 Left plate: 1  
 Right plate: 2  
 Single plate: 3

If Left or Right plate (**q4** = 1 or 2)  
**q3/q2** → COLUMN NUMBER: A=0, B=1... P=15  
 384 WELL PLATE: 00-15  
 96 WELL PLATE: 00-07  
 48 VIAL TYPE: 00-05  
 12 VIAL TYPE: 00-02

**q1/q0** → ROW NUMBER:  
 384 WELL PLATE: 01-24  
 96 WELL PLATE: 01-12  
 48 VIAL TYPE: 01-08  
 12 VIAL TYPE: 01-04

If Single plate (**q4** = 3)  
**q3/q2/q1/q0** → VIAL NUMBER:  
 84+3 VIAL TYPE: 0085 – 0087  
 108 VIAL TYPE: 0001 – 0108  
 30 VIAL TYPE: 0001 – 0030

### RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*Device is in RUN mode.*

### SEND PROGRAMMED:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	1	0	0	0	SP	SP	0	4	0	1	ETX
HEX	02	36	31	30	31	31	30	30	30	20	20	30	34	30	31	03

### RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	4	0	1	0	q4	q3	q2	q1	q0	ETX

PC←Dev.	NACK
---------	------



*Reagent position is only programmable when Reset Transport/Reagent Volume is set to YES (PFC 0196).*

## 0402 – REAGENT B POSITION (P-SP)

### PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	4	0	2	SP	q4	q3	q2	q1	q0	ETX
HEX	02	36	31	30	31	30	34	30	32	20						03

Range of value: **q4** → PLATE NUMBER:  
 Left plate: 1  
 Right plate: 2  
 Single plate: 3

If Left or Right plate (**q4** = 1 or 2)  
**q3/q2** → COLUMN NUMBER: A=0, B=1... P=15  
 384 WELL PLATE: 00-15  
 96 WELL PLATE: 00-07  
 48 VIAL TYPE: 00-05  
 12 VIAL TYPE: 00-02

**q1/q0** → ROW NUMBER:  
 384 WELL PLATE: 01-24  
 96 WELL PLATE: 01-12  
 48 VIAL TYPE: 01-08  
 12 VIAL TYPE: 01-04

If Single plate (**q4** = 3)  
**q3/q2/q1/q0** → VIAL NUMBER:  
 84+3 VIAL TYPE: 0085 – 0087  
 108 VIAL TYPE: 0001 – 0108  
 30 VIAL TYPE: 0001 – 0030

### RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*Device is in RUN mode.*

### SEND PROGRAMMED:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	1	0	0	0	SP	SP	0	4	0	2	ETX
HEX	02	36	31	30	31	31	30	30	30	20	20	30	34	30	32	03

### RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	4	0	2	0	q4	q3	q2	q1	q0	ETX

PC←Dev.	NACK
---------	------



*Reagent position is only programmable when Reset Transport/Reagent Volume is set to YES (PFC 0196).*

## 0403 – REAGENT C POSITION (P-SP)

### PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	4	0	3	SP	q4	q3	q2	q1	q0	ETX
HEX	02	36	31	30	31	30	34	30	33	20						03

Range of value: **q4** → PLATE NUMBER:  
 Left plate: 1  
 Right plate: 2  
 Single plate: 3

If Left or Right plate (**q4** = 1 or 2)  
**q3/q2** → COLUMN NUMBER: A=0, B=1... P=15  
 384 WELL PLATE: 00-15  
 96 WELL PLATE: 00-07  
 48 VIAL TYPE: 00-05  
 12 VIAL TYPE: 00-02

**q1/q0** → ROW NUMBER:  
 384 WELL PLATE: 01-24  
 96 WELL PLATE: 01-12  
 48 VIAL TYPE: 01-08  
 12 VIAL TYPE: 01-04

If Single plate (**q4** = 3)  
**q3/q2/q1/q0** → VIAL NUMBER:  
 108 VIAL TYPE: 0001 – 0108  
 30 VIAL TYPE: 0001 – 0030

### RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*Device is in RUN mode.*

### SEND PROGRAMMED:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	1	0	0	0	SP	SP	0	4	0	3	ETX
HEX	02	36	31	30	31	31	30	30	30	20	20	30	34	30	33	03

### RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	4	0	3	0	q4	q3	q2	q1	q0	ETX

PC←Dev.	NACK
---------	------



*Reagent C is only supported in User Program.*

## 0404 – REAGENT D POSITION (P-SP)

### PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	4	0	4	SP	q4	q3	q2	q1	q0	ETX
HEX	02	36	31	30	31	30	34	30	34	20						03

Range of value: **q4** → PLATE NUMBER:  
 Left plate: 1  
 Right plate: 2  
 Single plate: 3

If Left or Right plate (**q4** = 1 or 2)  
**q3/q2** → COLUMN NUMBER: A=0, B=1... P=15  
 384 WELL PLATE: 00-15  
 96 WELL PLATE: 00-07  
 48 VIAL TYPE: 00-05  
 12 VIAL TYPE: 00-02

**q1/q0** → ROW NUMBER:  
 384 WELL PLATE: 01-24  
 96 WELL PLATE: 01-12  
 48 VIAL TYPE: 01-08  
 12 VIAL TYPE: 01-04

If Single plate (**q4** = 3)  
**q3/q2/q1/q0** → VIAL NUMBER:  
 108 VIAL TYPE: 0001 – 0108  
 30 VIAL TYPE: 0001 – 0030

### RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*Device is in RUN mode.*

### SEND PROGRAMMED:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	1	0	0	0	SP	SP	0	4	0	4	ETX
HEX	02	36	31	30	31	31	30	30	30	20	20	30	34	30	34	03

### RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	4	0	4	0	q4	q3	q2	q1	q0	ETX

PC←Dev.	NACK
---------	------



*Reagent D is only supported in User Program.*

## 0410 – MIX: ACTION END (P)

PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	y1	y0	0	4	1	0	SP	SP	SP	SP	SP	q0	ETX
HEX	02	36	31	30		30	34	31	30	20	20	20	20	20		03

Range of value: **q0** → Always zero, reserved for future use.  
 Range of AI: **y1/y0** → **Hexadecimal** step number (01-EF, hexadecimal)

RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*Don't change during RUN.*

## 0411 – MIX: ACTION NONE (P)

PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	y1	y0	0	4	1	1	SP	SP	SP	SP	SP	q0	ETX
HEX	02	36	31	30		30	34	31	31	20	20	20	20	20		03

Range of value: **q0** → Always zero, reserved for future use.  
 Range of AI: **y1/y0** → **Hexadecimal** step number (01-EF, hexadecimal)

RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*Don't change during RUN.*

## 0412 – MIX – DELETE STEP (P)

PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value					ETX	
ASCII	STX	6	1	y1	y0	0	4	1	2	SP	SP	SP	SP	SP	q0	ETX
HEX	02	36	31			30	34	31	32	20	20	20	20	20		03

Range of value: **q0** → Delete step, always zero  
 Range of AI: **y1/y0** → **Hexadecimal** step number:  
 01-0E  
 01-EF (when User Program available)

RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*Don't change during RUN.*



## 0413 – MIX – INSERT STEP (P-SP)

PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	y1	y0	0	4	1	3	q5	q4	q3	q2	q1	q0	ETX
HEX	02	36	31			30	34	31	33							03

Value: **q5/q4/q3/q2/q1/q0** → q5/q4/q3/q2/q1 = SP or 0 and q0 = 0  
Insert empty step.  
(Only valid when USER PROGRAM available)

**q5** → 1 = ACTION ADD  
2 = ACTION MIX  
3 = ACTION WAIT

If ACTION ADD (**q5** = 1):

**q4** → 0 = FROM SAMPLE  
1 = FROM REAGENT A  
2 = FROM REAGENT B  
3 = FROM WASH

**q3** → 0 = TO SAMPLE  
1 = TO DESTINATION

**q2/q1/q0** → Volume (000 – syringe volume)

If ACTION MIX (**q5** = 2):

**q4** → 0 = Reserved, always zero

**q3** → 1 - 9 times

**q2/q1/q0** → Volume (000 – syringe volume)

If ACTION WAIT (**q5** = 3):

**q4** → hours (0 - 9)

**q3/q2** → minutes (00 - 59)

**q1/q0** → seconds (00 - 59)

Range of AI: **y1/y0** → **Hexadecimal** step number:  
01-0E  
01-EF (when User Program available)

RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*Don't change during RUN*



*Inserting lines after END OF MIX is not possible and will result in a NACK0 response.*

## 0413 - MIX; INSERT STEP (Continued)

SEND PROGRAMMED:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	y1	y0	1	0	0	0	SP	SP	0	4	1	3	ETX
HEX	02	36	31			31	30	30	30	20	20	30	34	31	33	03

RESPONSES:

PC ← Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	y1	y0	0	4	1	3	q5	q4	q3	q2	q1	q0	ETX

Value:	<b>q5</b>	→	1 = ACTION ADD	
			2 = ACTION MIX	
			3 = ACTION WAIT	
			4 = END OF MIX	(q4/q3/q2/q1/q0 = 00000)
			0 = EMPTY STEP	(q4/q3/q2/q1/q0 = 00000)

If ACTION ADD (**q5** = 1):

q4 → 0 = FROM SAMPLE  
1 = FROM REAGENT A  
2 = FROM REAGENT B  
3 = FROM WASH

**q3** → 0 = TO SAMPLE  
1 = TO DESTINATION

**q2/q1/q0** → Volume (000 – syringe volume)

If ACTION MIX (**q5** = 2):

**q4** → 0 = Reserved, always zero

q3 → 1 - 9 times

**q2/q1/q0** → Volume (000 – syringe volume)

If ACTION WAIT (**q5** = 3):

**q4** → hours (0 - 9)

**q3/q2** → minutes (00 - 59)

q1/q0 → seconds (00 - 59)

Range of AI:            y1/y0       →     Hexadecimal step number:  
01-0E  
01-EF (when User Program available)

PC ← Dev.	NACK
-----------	------

## 0414 – MIX: SYRINGE SPEED AND NEEDLE HEIGHT (P-SP)

PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	y1	y0	0	4	1	4	SP	SP	SP	q2	q1	q0	ETX
HEX	02	36	31			30	34	31	34	20	20	20				03

Range of value: **q2** → syringe speed (1-9)  
**q1/q0** → sample needle height (2.0-6.0 mm with 0.5mm increments). The value should be **00**, in case of the following actions;

ASPIRATE AIR (PFC 0422)  
ASPIRATE FROM SYRINGE VALVE WASH PORT 1 (PFC 0429)  
ASPIRATE FROM SYRINGE VALVE WASH PORT 2 (PFC 0800)  
ASPIRATE FROM SSV 2A (PFC 0801)  
ASPIRATE FROM SSV 2B (PFC 0802)  
ASPIRATE FROM SSV 2C (PFC 0803)  
ASPIRATE FROM SSV 2D (PFC 0804)  
ASPIRATE FROM SSV 2E (PFC 0805)  
ASPIRATE FROM SSV 2F (PFC 0806)  
DISPENSE TO WASTE (PFC 0433)  
DISPENSE TO SYRINGE VALVE WASH PORT 1 (PFC 0439)  
DISPENSE TO SYRINGE VALVE WASH PORT 2 (PFC 0810)  
DISPENSE TO SSV 2A (PFC 0811)  
DISPENSE TO SSV 2B (PFC 0812)  
DISPENSE TO SSV 2C (PFC 0813)  
DISPENSE TO SSV 2D (PFC 0814)  
DISPENSE TO SSV 2E (PFC 0815)  
DISPENSE TO SSV 2F (PFC 0816)  
SYRINGE LOAD (PFC 0480)  
SYRINGE UNLOAD (PFC 0481)

Range of AI: **y1/y0** → **hexadecimal** step number (01 -EF;hexadecimal)

RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*Not an ASPIRATE, DISPENSE, SYRINGE LOAD or SYRINGE UNLOAD action.*

SEND PROGRAMMED:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	y1	y0	1	0	0	0	SP	SP	0	4	1	4	ETX
HEX	02	36	31			31	30	30	30	20	20	30	34	31	34	03

RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	y1	y0	0	4	1	4	0	0	0	q2	q1	q0	ETX

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*Not an ASPIRATE, DISPENSE, SYRINGE LOAD or SYRINGE UNLOAD action.*

## 0415 – MIX: STEP ACTION (SP)

### SEND PROGRAMMED:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	y1	y0	1	0	0	0	SP	SP	0	4	1	5	ETX
HEX	02	36	31			31	30	30	30	20	20	30	34	31	35	03

Range of AI: **y1/y0** → **Hexadecimal** step number:  
01-0E  
01-EF (when User Program available)

### RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	y1	y0	0	4	1	5	0	0	q3	q2	q1	q0	ETX

Range of value: **q3/q2/q1/q0** → PFC-number (range see table below)  
Range of AI: **y1/y0** → **Hexadecimal** step number:  
01-0E  
01-EF (when User Program available)

PC←Dev.	NACK
---------	------

Table: Range of PFC's

0410 - MIX: ACTION END	0473 - USER PROG: ACTION AUXILIARY
0411 - MIX: ACTION NONE	0474 - USER PROG: ACTION WAIT FOR INPUT
0421 - MIX: ACTION ASPIRATE FROM SAMPLE	0475 - USER PROG: ACTION OUTPUT NUMBER
0422 - MIX: ACTION ASPIRATE AIR	0477 - USER PROG: ACTION SSV
0424 - MIX: ACTION ASPIRATE FROM DESTINATION	0478 - USER PROG: ACTION MARKER
0425 - MIX: ACTION ASPIRATE FROM REAGENT A	0480 - USER PROG: ACTION SYRINGE LOAD
0426 - MIX: ACTION ASPIRATE FROM REAGENT B	0481 - USER PROG: ACTION SYRINGE UNLOAD
0427 - USERPROG: ACTION ASPIRATE FROM REAGENT C	0482 - USER PROG: ACTION SYRINGE HOME
0428 - USERPROG: ACTION ASPIRATE FROM REAGENT D	0490 - USER PROG: ACTION EVENT
0429 - USERPROG: ACTION ASPIRATE FROM SYRINGE VALVE WASH PORT 1	0800 - USERPROG: ACTION ASPIRATE FROM SYRINGE VALVE WASH PORT 2
0431 - MIX: ACTION DISPENSE TO SAMPLE	0801 - USERPROG: ACTION ASPIRATE FROM SSV 2A
0433 - MIX: ACTION DISPENSE TO WASTE	0802 - USERPROG: ACTION ASPIRATE FROM SSV 2B
0434 - MIX: ACTION DISPENSE TO DESTINATION	0803 - USERPROG: ACTION ASPIRATE FROM SSV 2C
0435 - MIX: ACTION DISPENSE TO REAGENT A	0804 - USERPROG: ACTION ASPIRATE FROM SSV 2D
0436 - MIX: ACTION DISPENSE TO REAGENT B	0805 - USERPROG: ACTION ASPIRATE FROM SSV 2E
0437 - USERPROG: ACTION DISPENSE TO REAGENT C	0806 - USERPROG: ACTION ASPIRATE FROM SSV 2F
0438 - USERPROG: ACTION DISPENSE TO REAGENT D	0810 - USERPROG: ACTION DISPENSE TO SYRINGE VALVE WASH PORT 2
0439 - USERPROG: ACTION DISPENSE TO SYRINGE VALVE WASH PORT 1	0811 - USERPROG: ACTION DISPENSE TO SSV 2A
0440 - MIX: ACTION WAIT	0812 - USERPROG: ACTION DISPENSE TO SSV 2B
0450 - MIX: ACTION REPEAT	0813 - USERPROG: ACTION DISPENSE TO SSV 2C
0460 - MIX: ACTION NEEDLE WASH FROM SYRINGE VALVE WASH PORT 1	0814 - USERPROG: ACTION DISPENSE TO SSV 2D
0461 - USERPROG: ACTION NEEDLE WASH FROM SYRINGE VALVE NEEDLE	0815 - USERPROG: ACTION DISPENSE TO SSV 2E
0462 - USERPROG: ACTION NEEDLE WASH FROM SYRINGE VALVE WASTE	0816 - USERPROG: ACTION DISPENSE TO SSV 2F
0463 - MIX: ACTION NEEDLE WASH FROM SYRINGE VALVE WASH PORT 2	0818 - USERPROG: ACTION DISPENSE TO SYRINGE VALVE WASTE PORT
0464 - MIX: ACTION NEEDLE WASH FROM SSV 2A	0830 - USER PROG: ACTION TRAY
0465 - MIX: ACTION NEEDLE WASH FROM SSV 2B	0831 - USER PROG: ACTION TRAY ABSOLUTE POSITION
0466 - MIX: ACTION NEEDLE WASH FROM SSV 2C	0840 - USER PROG: ACTION NEEDLE VERTICAL
0467 - MIX: ACTION NEEDLE WASH FROM SSV 2D	0841 - USER PROG: ACTION NEEDLE VERTICAL ABSOLUTE POSITION
0468 - MIX: ACTION NEEDLE WASH FROM SSV 2E	0850 - USER PROG: ACTION NEEDLE HORIZONTAL
0469 - MIX: ACTION NEEDLE WASH FROM SSV 2F	0851 - USER PROG: ACTION NEEDLE HORIZONTAL ABSOLUTE POSITION
0470 - USER PROG: ACTION VALVE	
0471 - USER PROG: ACTION SYRINGE VALVE	
0472 - USER PROG: ACTION COMPRESSOR	

## 0416 – MIX: STEP VALUE (SP)

### SEND PROGRAMMED:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	y1	y0	1	0	0	0	SP	SP	0	4	1	6	ETX

HEX	02	36	31			31	30	30	30	20	20	30	34	31	36	03
-----	----	----	----	--	--	----	----	----	----	----	----	----	----	----	----	----

Range of AI: **y1/y0** → **Hexadecimal** step number:  
 01-0E  
 01-EF (when User Program available)

RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	y1	y1	0	4	1	6	0	0	q3	q2	q1	q0	ETX

Range of value: **q3/q2/q1/q0** → value of mix step action (see PFC 0415)  
 Range of AI: **y1/y0** → **Hexadecimal** step number:  
 01-0E  
 01-EF (when User Program available)

PC←Dev.	NACK
---------	------

## 0417 – ACTUAL MIX STEP DURING RUN (SA)

SEND ACTUAL:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	1	0	0	1	SP	SP	0	4	1	7	ETX
HEX	02	36	31	30	31	31	30	30	31	20	20	30	34	31	37	03

RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	4	1	7	0	0	0	q2	q1	q0	ETX

Range of value: **q2/q1/q0** → Actual step number:  
 001 – 015  
 001 – 240 (when User Program is available)

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*Device is not in RUN mode*

## 0421 – MIX: ACTION ASPIRATE FROM SAMPLE (P)

PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	y1	y0	0	4	2	1	SP	SP	q3	q2	q1	q0	ETX
HEX	02	36	31			30	34	32	31	20	20					03

Range of value: **q3/q2/q1/q0** → 0000 – **syringe volume**, with 1 µL increments  
 Range of AI: **y1/y0** → **hexadecimal** step number (01 - EF; hexadecimal)



*The syringe speed and the sample needle height are automatically set to their default values.*

RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

## 0422 – MIX: ACTION ASPIRATE AIR (P)

PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	y1	y0	0	4	2	2	SP	SP	q3	q2	q1	q0	ETX
HEX	02	36	31			30	34	32	32	20	20					03

Range of value: **q3/q2/q1/q0** → 0000 – **syringe volume**, with 1 µL increments  
 Range of AI: **y1/y0** → **hexadecimal** step number (01 - EF; hexadecimal)

RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------



*The syringe speed is automatically set to its default value. The value for sample needle height must be 00.*

## 0424 – MIX: ACTION ASPIRATE FROM DESTINATION (P)

### PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	y1	y0	0	4	2	4	SP	SP	q3	q2	q1	q0	ETX
HEX	02	36	31			30	34	32	34	20	20					03

Range of value: **q3/q2/q1/q0**

→ 0000 – **syringe volume**, with 1 µL increments

Range of AI: **y1/y0**

→ **hexadecimal** step number (01 - EF; hexadecimal)

### RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------



*The syringe speed and the sample needle height are automatically set to their default values.*

## 0425 – MIX: ACTION ASPIRATE FROM REAGENT A (P)

### PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	y1	y0	0	4	2	5	SP	SP	q3	q2	q1	q0	ETX
HEX	02	36	31			30	34	32	35	20	20					03

Range of value: **q3/q2/q1/q0**

→ 0000 – **syringe volume**, with 1 µL increments

Range of AI: **y1/y0**

→ **hexadecimal** step number (01 - EF; hexadecimal)

### RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------



*The syringe speed and the sample needle height are automatically set to their default values.*

## 0426 – MIX: ACTION ASPIRATE FROM REAGENT B (P)

### PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	y1	y0	0	4	2	6	SP	SP	q3	q2	q1	q0	ETX
HEX	02	36	31			30	34	32	36	20	20					03

Range of value: **q3/q2/q1/q0**

→ 0000 – **syringe volume**, with 1 µL increments

Range of AI: **y1/y0**

→ **hexadecimal** step number (01 - EF; hexadecimal)

### RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------



*The syringe speed and the sample needle height are automatically set to their default values.*

## 0427 – USER PROG: ACTION ASPIRATE FROM REAGENT C (P)

### PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	y1	y0	0	4	2	7	SP	SP	q3	q2	q1	q0	ETX
HEX	02	36	31			30	34	32	37	20	20					03

Range of value: **q3/q2/q1/q0**

→ 0000 – **syringe volume**, with 1 µL increments

Range of AI: **y1/y0**

→ **hexadecimal** step number (01 - EF; hexadecimal)

### RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------



*The syringe speed and the sample needle height are automatically set to their default values.*



## 0428 – USER PROG: ACTION ASPIRATE FROM REAGENT D (P)

### PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	y1	y0	0	4	2	8	SP	SP	q3	q2	q1	q0	ETX
HEX	02	36	31			30	34	32	38	20	20					03

Range of value: **q3/q2/q1/q0**

→ 0000 – **syringe volume**, with 1 µL increments

Range of AI: **y1/y0**

→ **hexadecimal** step number (01 - EF; hexadecimal)

### RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------



*The syringe speed and the sample needle height are automatically set to their default values.*

## 0429 – USER PROG: ACTION ASPIRATE FROM SYRINGE VALVE WASH PORT 1 (P)

### PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	y1	y0	0	4	2	9	SP	SP	q3	q2	q1	q0	ETX
HEX	02	36	31			30	34	32	39	20	20					03

Range of value: **q3/q2/q1/q0**

→ 0000 – **syringe volume**, with 1 µL increments

Range of AI: **y1/y0**

→ **hexadecimal** step number (01 - EF; hexadecimal)

### RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------



*The syringe speed and the sample needle height are automatically set to their default values.*

## 0431 – MIX: ACTION DISPENSE TO SAMPLE (P)

### PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	y1	y0	0	4	3	1	SP	SP	q3	q2	q1	q0	ETX
HEX	02	36	31			30	34	33	31	20	20					03

Range of value: **q3/q2/q1/q0**

→ 0000 – **total aspirated volume**, with 1 µL increments

Range of AI: **y1/y0**

→ **hexadecimal** step number (01 - EF; hexadecimal)

### RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------



*The syringe speed and the sample needle height are automatically set to their default values.*

## 0433 – MIX: ACTION DISPENSE TO WASTE (P)

### PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	y1	y0	0	4	3	3	SP	SP	q3	q2	q1	q0	ETX
HEX	02	36	31			30	34	33	33	20	20					03

Range of value: **q3/q2/q1/q0**

→ 0000 – **total aspirated volume**, with 1 µL increments

Range of AI: **y1/y0**

→ **hexadecimal** step number (01 - EF; hexadecimal)

### RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------



*The syringe speed and the sample needle height are automatically set to their default values.*

## 0434 – MIX: ACTION DISPENSE TO DESTINATION (P)

PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	y1	y0	0	4	3	4	SP	SP	q3	q2	q1	q0	ETX
HEX	02	36	31			30	34	33	34	20	20					03

Range of value: **q3/q2/q1/q0**

→ 0000 – **total aspirated volume**, with 1 µL increments

Range of AI: **y1/y0**

→ **hexadecimal** step number (01 - EF; hexadecimal)

RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------



*The syringe speed and the sample needle height are automatically set to their default values.*

## 0435 – MIX: ACTION DISPENSE TO REAGENT A (P)

PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	y1	y0	0	4	3	5	SP	SP	q3	q2	q1	q0	ETX
HEX	02	36	31			30	34	33	35	20	20					03

Range of value: **q3/q2/q1/q0**

→ 0000 – **total aspirated volume**, with 1 µL increments

Range of AI: **y1/y0**

→ **hexadecimal** step number (01 - EF; hexadecimal)

RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------



*The syringe speed and the sample needle height are automatically set to their default values.*

## 0436 – MIX: ACTION DISPENSE TO REAGENT B (P)

### PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	y1	y0	0	4	3	6	SP	SP	q3	q2	q1	q0	ETX
HEX	02	36	31			30	34	33	36	20	20					03

Range of value: **q3/q2/q1/q0**

→ 0000 – **total aspirated volume**, with 1 µL increments

Range of AI: **y1/y0**

→ **hexadecimal** step number (01 - EF; hexadecimal)

### RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------



*The syringe speed and the sample needle height are automatically set to their default values.*

## 0437 – USER PROG: ACTION DISPENSE TO REAGENT C (P)

### PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	y1	y0	0	4	3	7	SP	SP	q3	q2	q1	q0	ETX
HEX	02	36	31			30	34	33	37	20	20					03

Range of value: **q3/q2/q1/q0**

→ 0000 – **total aspirated volume**, with 1 µL increments

Range of AI: **y1/y0**

→ **hexadecimal** step number (01 - EF; hexadecimal)

### RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------



*The syringe speed and the sample needle height are automatically set to their default values.*

## 0438 – USER PROG: ACTION DISPENSE TO REAGENT D (P)

### PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	y1	y0	0	4	3	8	SP	SP	q3	q2	q1	q0	ETX
HEX	02	36	31			30	34	33	38	20	20					03

Range of value: **q3/q2/q1/q0**

→ 0000 – **total aspirated volume**, with 1 µL increments

Range of AI: **y1/y0**

→ **hexadecimal** step number (01 - EF; hexadecimal)

### RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------



*The syringe speed and the sample needle height are automatically set to their default values.*

## 0439 – USER PROG: ACTION DISPENSE TO SYRINGE VALVE WASH PORT 1 (P)

### PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	y1	y0	0	4	3	9	SP	SP	q3	q2	q1	q0	ETX
HEX	02	36	31			30	34	33	39	20	20					03

Range of value: **q3/q2/q1/q0**

→ 0000 – **total aspirated volume**, with 1 µL increments

Range of AI: **y1/y0**

→ **hexadecimal** step number (01 - EF; hexadecimal)

### RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------



*The syringe speed and the sample needle height are automatically set to their default values.*

## 0440 – MIX: ACTION WAIT (P)

### PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	y1	y0	0	4	4	0	SP	q4	q3	q2	q1	q0	ETX
HEX	02	36	31			30	34	34	30	20						03

Range of value: **q4** → hours (0 - 9)  
**q3/q2** → minutes (00 - 59)  
**q1/q0** → seconds (00 - 59)  
Range of AI: **y1/y0** → **hexadecimal** step number (01 - EF; hexadecimal)

### RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

## 0450 – MIX: ACTION REPEAT (P)

### PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value					ETX	
ASCII	STX	6	1	y1	y0	0	4	5	0	SP	SP	SP	q2	q1	q0	ETX
HEX	02	36	31			30	34	35	30	20	20	20				03

Range of value: **q2/q1** → Number of steps to repeat (00 - 99).  
**q0** → Number of times (0-9)  
Range of AI: **y1/y0** → **hexadecimal** step number (01 - EF; hexadecimal)

### RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

## 0460 – MIX: ACTION NEEDLE WASH FROM SYRINGE VALVE WASH PORT 1 (P)

### PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	y1	y0	0	4	6	0	SP	SP	q3	q2	q1	q0	ETX
HEX	02	36	31			30	34	36	30	20	20					03

Range of value: **q3/q2/q1/q0**

Range of AI: **y1/y0**

→ Volume in  $\mu\text{L}$ : (0000 – 9999, with 1  $\mu\text{L}$  increments)

→ **hexadecimal** step number (01 - EF; hexadecimal)

### RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

## 0461 – USER PROG: ACTION NEEDLE WASH FROM SYRINGE VALVE NEEDLE (P)

### PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	y1	y0	0	4	6	1	SP	SP	q3	q2	q1	q0	ETX
HEX	02	36	31			30	34	36	31	20	20					03

Range of value: **q3/q2/q1/q0**

Range of AI: **y1/y0**

→ Volume in  $\mu\text{L}$ : (0000 – 9999, with 1  $\mu\text{L}$  increments)

→ **hexadecimal** step number (01 - EF; hexadecimal)

### RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

## 0462 – USER PROG: ACTION NEEDLE WASH FROM SYRINGE VALVE WASTE (P)

### PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	y1	y0	0	4	6	2	SP	SP	q3	q2	q1	q0	ETX
HEX	02	36	31			30	34	36	32	20	20					03

Range of value: **q3/q2/q1/q0**  
Range of AI: **y1/y0**

→ Volume in  $\mu\text{L}$ : (0000 – 9999, with 1  $\mu\text{L}$  increments)  
→ **hexadecimal** step number (01 - EF; hexadecimal)

### RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

## 0463 – MIX: ACTION NEEDLE WASH FROM SYRINGE VALVE WASH PORT 2 (P)

### PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	y1	y0	0	4	6	3	SP	SP	q3	q2	q1	q0	ETX
HEX	02	36	31			30	34	36	33	20	20					03

Range of value: **q3/q2/q1/q0**  
Range of AI: **y1/y0**

→ Volume in  $\mu\text{L}$ : (0000 – 9999, with 1  $\mu\text{L}$  increments)  
→ **hexadecimal** step number (01 - EF; hexadecimal)

### RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*No SYRINGE VALVE WASH PORT 2 available.*



## 0464 – MIX: ACTION NEEDLE WASH FROM SSV PORT 2A (P)

### PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	y1	y0	0	4	6	4	SP	SP	q3	q2	q1	q0	ETX
HEX	02	36	31			30	34	36	34	20	20					03

Range of value: **q3/q2/q1/q0**

→ Volume in  $\mu\text{L}$ : (0000 – 9999, with 1  $\mu\text{L}$  increments)

Range of AI: **y1/y0**

→ **hexadecimal** step number (01 - EF; hexadecimal)

### RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*No SSV available*

## 0465 – MIX: ACTION NEEDLE WASH FROM SSV PORT 2B (P)

### PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	y1	y0	0	4	6	5	SP	SP	q3	q2	q1	q0	ETX
HEX	02	36	31			30	34	36	35	20	20					03

Range of value: **q3/q2/q1/q0**

→ Volume in  $\mu\text{L}$ : (0000 – 9999, with 1  $\mu\text{L}$  increments)

Range of AI: **y1/y0**

→ **hexadecimal** step number (01 - EF; hexadecimal)

### RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*No SSV available*

## 0466 – MIX: ACTION NEEDLE WASH FROM SSV PORT 2C (P)

### PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	y1	y0	0	4	6	6	SP	SP	q3	q2	q1	q0	ETX
HEX	02	36	31			30	34	36	36	20	20					03

Range of value: **q3/q2/q1/q0**

Range of AI:

**y1/y0**

→ Volume in  $\mu\text{L}$ : (0000 – 9999, with 1  $\mu\text{L}$  increments)

→ **hexadecimal** step number (01 - EF; hexadecimal)

### RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*No SSV available*

## 0467 – MIX: ACTION NEEDLE WASH FROM SSV PORT 2D (P)

### PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	y1	y0	0	4	6	7	SP	SP	q3	q2	q1	q0	ETX
HEX	02	36	31			30	34	36	37	20	20					03

Range of value: **q3/q2/q1/q0**

Range of AI:

**y1/y0**

→ Volume in  $\mu\text{L}$ : (0000 – 9999, with 1  $\mu\text{L}$  increments)

→ **hexadecimal** step number (01 - EF; hexadecimal)

### RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*No SSV available*

## 0468 – MIX: ACTION NEEDLE WASH FROM SSV PORT 2E (P)

PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	y1	y0	0	4	6	8	SP	SP	q3	q2	q1	q0	ETX
HEX	02	36	31			30	34	36	38	20	20					03

Range of value: **q3/q2/q1/q0**

Range of AI: **y1/y0**

→ Volume in  $\mu\text{L}$ : (0000 – 9999, with 1  $\mu\text{L}$  increments)

→ **hexadecimal** step number (01 - EF; hexadecimal)

RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*No SSV available*

## 0469 – MIX: ACTION NEEDLE WASH FROM SSV PORT 2F (P)

PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	y1	y0	0	4	6	9	SP	SP	q3	q2	q1	q0	ETX
HEX	02	36	31			30	34	36	39	20	20					03

Range of value: **q3/q2/q1/q0**

Range of AI: **y1/y0**

→ Volume in  $\mu\text{L}$ : (0000 – 9999, with 1  $\mu\text{L}$  increments)

→ **hexadecimal** step number (01 - EF; hexadecimal)

RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*No SSV available*

## 0470 – USER PROG: ACTION VALVE (P)

### PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	y1	y0	0	4	7	0	SP	SP	SP	SP	q1	q0	ETX
HEX	02	36	31			30	34	37	30	20	20	20	20			03

Range of value: **q1**

→ VALVE:  
1 = injector valve  
2 = ISS-A

**q0**

→ POSITION:  
1 = LOAD or 6-1 ( injection valve or ISS valve)  
0 = INJECT or 1-2 (injection valve or ISS valve)

Range of AI: **y1/y0**

→ **hexadecimal** step number (01 -EF; hexadecimal)

### RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*ISS A option is not available.*

## 0471 – USER PROG: ACTION SYRINGE VALVE (P)

PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value					ETX	
ASCII	STX	6	1	y1	y0	0	4	7	1	SP	SP	SP	SP	SP	q0	ETX
HEX	02	36	31			30	34	37	31	20	20	20	20	20		03

Range of value: **q0**

→ POSITION:

0 = NEEDLE

1 = WASH PORT 1

2 = WASTE

3 = WASH PORT 2 (Optional)

Range of AI: **y1/y0**

→ **hexadecimal** step number (01 - EF; hexadecimal)

RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*No SYRINGE VALVE WASH PORT 2 available.*

## 0472 – USER PROG: ACTION COMPRESSOR (P)

PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value					ETX	
ASCII	STX	6	1	y1	y0	0	4	7	2	SP	SP	SP	SP	SP	q0	ETX
HEX	02	36	31			30	34	37	32	20	20	20	20	20		03

Range of value: **q0**

→ 0 = COMPRESSOR: OFF

1 = COMPRESSOR: ON

Range of AI: **y1/y0**

→ **hexadecimal** step number (01 - EF; hexadecimal)

RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

## 0473 – USER PROG: ACTION AUXILIARY (P)

PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	y1	y0	0	4	7	3	SP	SP	SP	SP	q1	q0	ETX
HEX	02	36	31			30	34	37	33	20	20	20	20			03

Range of value: **q1** → AUXILIARY 1  
**q0** → 0 = OFF  
1 = ON  
Range of AI: **y1/y0** → **hexadecimal** step number (01 - EF; hexadecimal)

RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*Programmable relay output not set to auxiliary. See PFC 0189.*

## 0474 – USER PROG: ACTION WAIT FOR INPUT (P)

PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	y1	y0	0	4	7	4	SP	SP	SP	SP	q1	q0	ETX
HEX	02	36	31			30	34	37	34	20	20	20	20			03

Range of value: **q1** → INPUT NUMBER: 1-2  
**q0** → 0 = WAIT FOR INPUT TO BECOME: LOW LEVEL  
1 = WAIT FOR INPUT TO BECOME: HIGH LEVEL  
Range of AI: **y1/y0** → **hexadecimal** step number (01 - EF; hexadecimal)

RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------



*It is only possible to use a WAIT FOR INPUT action when the corresponding input is programmed as a FREEZE input. See PFC 0189 for further details.*

## 0475 – USERPROG: ACTION OUTPUT NUMBER: (P)

PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	y1	y0	0	4	7	5	SP	SP	SP	SP	q1	q0	ETX
HEX	02	36	31			30	34	37	35	20	20	20	20			03

Range of value: **q1** → OUTPUT NUMBER:  
1 = OUT1  
**q0** → 0 = OFF  
1 = ON  
Range of AI: **y1/y0** → **hexadecimal** step number (01 - EF; hexadecimal)

RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

## 0477 – USER PROG: ACTION SSV (P)

PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	y1	y0	0	4	7	7	SP	SP	SP	SP	SP	q0	ETX
HEX	02	36	31			30	34	37	37	20	20	20	20	20		03

Range of value: **q0** → 1-6 = solvent 1-6  
Range of AI: **y1/y0** → **hexadecimal** step number (01 - EF; hexadecimal)

RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*No SSV option available.*

## 0478 – USER PROG: ACTION MARKER (P)

### PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value					ETX	
ASCII	STX	6	1	y1	y0	0	4	7	8	SP	SP	SP	SP	SP	q0	ETX
HEX	02	36	31			30	34	37	38	20	20	20	20	20		03

Range of value: **q0**

→ **MARKER:**

0 = INJECT MARKER

1 = reserved

2 = reserved

3 = INJECT MARKER STATUS

Range of AI: **y1/y0**

→ **hexadecimal** step number (01 - EF; hexadecimal)

### RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*Programmable relay output not set to inject marker.  
See PFC 0189.*



*Action Marker depends on the programmed inject marker pulse.*



*Action Marker Inject Marker Status does not depend on the programmable relay output (PFC 0189) setting. Can be used at all times to change the status to Inject Marker (status 55) without switching the Inject Marker relay.*



## 480 – USER PROG: ACTION SYRINGE LOAD (P)

### PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	y1	y0	0	4	8	0	SP	SP	q3	q2	q1	q0	ETX
HEX	02	36	31			30	34	38	30	20	20					03

Range of value: **q3/q2/q1/q0**

→ volume in  $\mu\text{L}$  (0000 - max. syringe volume),  
with 1  $\mu\text{L}$  increments.  
(maximum volume is the volume of the syringe  
programmed in PFC 0125; SYRINGE VOLUME)  
→ **hexadecimal** step number (01 - EF; hexadecimal)

Range of AI: **y1/y0**

### RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------



*The syringe speed and the sample needle height are automatically set to their default values.*

## 0481 – USER PROG: ACTION SYRINGE UNLOAD (P)

PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	y1	y0	0	4	8	1	SP	SP	q3	q2	q1	q0	ETX
HEX	02	36	31			30	34	38	31	20	20					03

Range of value: **q3/q2/q1/q0** → volume in  $\mu\text{L}$  (0000 - max. syringe load), with 1  $\mu\text{L}$  increments.  
(maximum syringe load is the volume programmed in PFC 0480; USER PROG: SYRINGE LOAD))

Range of AI: **y1/y0** → **hexadecimal** step number (01 - EF; hexadecimal)

RESPONSES:

PC←Dev.	ACK
PC←Dev.	NACK
PC←Dev.	NACK0



*The syringe speed and the sample needle height are automatically set to their default values.*

## 0482 – USER PROG: ACTION SYRINGE HOME (P)

PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	y1	y0	0	4	8	2	SP	SP	SP	SP	SP	q0	ETX
HEX	02	36	31			30	34	38	32	20	20	20	20	20		03

Range of value: **q0** → 0

Range of AI: **y1/y0** → **hexadecimal** step number (01 - EF; hexadecimal)

RESPONSES:

PC←Dev.	ACK
PC←Dev.	NACK

## 0490 – USER PROG: ACTION EVENT (P)

PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	y1	y0	0	4	9	0	SP	SP	SP	SP	q1	q0	ETX
HEX	02	36	31			30	34	39	30	20	20	20	20			03

Range of value: **q0**

→ Event:  
1-15 = Waiting for event 1 to 15

Range of AI: **y1/y0**

→ **hexadecimal** step number (01 - EF; hexadecimal)

RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

## 0491 – USER PROG: EVENT TRIGGER (P)

PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	4	9	1	SP	SP	SP	SP	q1	q0	ETX
HEX	02	36	31	30	31	30	34	39	31	20	20	20	20			03

Range of value: **q0**

→ Event trigger:  
1 - 15 = Event trigger 1 to 15

RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

## 0500 – WASH BETWEEN (P-SP)

PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	5	0	0	SP	SP	SP	SP	SP	q0	ETX
HEX	02	36	31	30	31	30	35	30	30	20	20	20	20	20		03

Range of value:

<b>q0</b>	→	0 = NONE 2 = BETWEEN VIALS 3 = BETWEEN INJECTIONS
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RESPONSES:

PC ← Dev.	ACK
-----------	-----

PC ← Dev.	NACK
-----------	------

SEND PROGRAMMED:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	1	0	0	0	SP	SP	0	5	0	0	ETX
HEX	02	36	31	30	31	31	30	30	30	20	20	30	35	30	30	03

RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value					ETX
ASCII	STX	6	1	0	1	0	5	0	0	0	0	0	0	q0	ETX

PC ← Dev.	NACK
-----------	------

## 0501 – WASH TIMES (P-SP)

### PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	y0	0	5	0	1	SP	SP	SP	SP	SP	q0	ETX
HEX	02	36	31	30		30	35	30	31	20	20	20	20	20		03

Range of value: **q0** → 1 - 9 times the syringe volume  
 Range of AI: **y0** → 1 - 9 wash steps (when SSV available)  
 1 wash step (when no SSV available)

### RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*No SSV available or device is in RUN mode.*

### SEND PROGRAMMED:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	y0	1	0	0	0	SP	SP	0	5	0	1	ETX
HEX	02	36	31	30		31	30	30	30	20	20	30	35	30	31	03

### RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	y0	0	5	0	1	0	0	0	0	0	q0	ETX

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*No SSV available*



*When no SSV available and AI is set to 02 up to 09, device will respond with Nack0.*

## 0502 – WASH SYRINGE VALVE SOLVENT PORT (P-SP)

### PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	y0	0	5	0	2	SP	SP	SP	SP	SP	q0	ETX
HEX	02	36	31	30		30	35	30	32	20	20	20	20	20		03

Range of value: **q0** → 1 = WASH port 1  
 2 = NEEDLE port  
 3 = WASTE port  
 4 = WASH port 2 (optionally connected to SSV)

Range of AI: **y0** → 1-9 wash step

### RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

### SEND PROGRAMMED:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	y0	1	0	0	0	SP	SP	0	5	0	2	ETX
HEX	02	36	31	30		31	30	30	30	20	20	30	35	30	32	03

### RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	y0	0	5	0	2	SP	SP	SP	SP	SP	q0	ETX

PC←Dev.	NACK
---------	------



*This WASH SYRINGE VALVE SOLVENT PORT works with wash steps and can only be programmed in combination with PFC 0507-WASH VOLUME.*

## 0503 – WASH SSV SELECTION (P-SP)

### PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	y0	0	5	0	3	SP	SP	SP	SP	SP	q0	ETX
HEX	02	36	31	30		30	35	30	33	20	20	20	20	20		03

Range of value: **q0** → 1 – 6 = solvent 1 – 6 ON  
 Range of AI: **y0** → 1 - 9 wash steps

### RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*No SSV available.*

### SEND PROGRAMMED:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	y0	1	0	0	0	SP	SP	0	5	0	3	ETX
HEX	02	36	31	30		31	30	30	30	20	20	30	35	30	33	03

### RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	y0	0	5	0	3	0	0	0	0	0	q0	ETX

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*No SSV available.*

## 0504 – VALVE WASH VOLUME (P-SP)

### PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	Y0	0	5	0	4	SP	SP	q3	q2	q1	q0	ETX
HEX	02	36	31	30		30	35	30	34	20	20					03

Range of value: **q3/q2/q1/q0** → Volume in  $\mu\text{L}$  (0000 to max. wash volume)  
(maximum wash volume is the wash volume programmed in PFC 0507)

Range of AI: **y0** → 2-9 wash step

### RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

### SEND PROGRAMMED:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	Y0	1	0	0	0	SP	SP	0	5	0	4	ETX
HEX	02	36	31	30		31	30	30	30	20	20	30	35	30	34	03

### RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	Y0	0	5	0	4	SP	SP	q3	q2	q1	q0	ETX

PC←Dev.	NACK
---------	------



*This VALVE WASH VOLUME functions in combination with wash steps and can only be programmed in combination with PFC 0507-WASH VOLUME.*



## 0505 – FILL TRANSPORT POSITION TIMES (P-SP)

### PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	5	0	5	SP	SP	SP	q2	q1	q0	ETX
HEX	02	36	31	30	31	30	35	30	35	20	20	20				03

Range of value:

- q0** → 1 - 9 times the syringe volume
- q1** → 0 = Reserved, always zero
- q2** → Transport liquid selection:  
0 = Syringe Valve WASH port (default)  
1 = Syringe Valve 4<sup>th</sup> port (optional)

### RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*Device is in RUN mode or syringe valve 4<sup>th</sup> port option not available.*

### SEND PROGRAMMED:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	1	0	0	0	SP	SP	0	5	0	5	ETX
HEX	02	36	31	30	31	31	30	30	30	20	20	30	35	30	35	03

### RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	5	0	5	0	0	0	q2	q1	q0	ETX

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*Syringe valve 4<sup>th</sup> port option not available.*

## 0506 – WASH TRANSPORT POSITION TIMES (P-SP)

### PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	5	0	6	SP	SP	SP	SP	SP	q0	ETX
HEX	02	36	31	30	31	30	35	30	36	20	20	20	20	20		03

Range of value: **q0** → 1 - 9 times the syringe volume

### RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

### SEND PROGRAMMED:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	1	0	0	0	SP	SP	0	5	0	6	ETX
HEX	02	36	31	30	31	31	30	30	30	20	20	30	35	30	36	03

### RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	5	0	6	0	0	0	0	0	q0	ETX

PC←Dev.	NACK
---------	------

## 0507 – WASH VOLUME (P-SP)

### PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	y0	0	5	0	7	SP	SP	q3	q2	q1	q0	ETX
HEX	02	36	31	30		30	35	30	37	20	20					03

Range of value: **q3/q2/q1/q0** → 0000 – 9999 µL, with 1 µL increments  
 Range of AI: **y0** → 1 - 9 wash step

### RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

### SEND PROGRAMMED:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	y0	1	0	0	0	SP	SP	0	5	0	7	ETX
HEX	02	36	31	30		31	30	30	30	20	20	30	35	30	37	03

### RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	y0	0	5	0	1	SP	SP	q3	q2	q1	q0	ETX

PC←Dev.	NACK
---------	------



*This WASH VOLUME works with wash steps.*

*When this PFC is programmed, it overwrites the wash volume set with PFC 0501-WASH TIMES.*

*The default wash solvent used at a wash is set on the Syringe Valve Wash port 1.*

*If another wash solvent is required, the PFC 0502 - WASH SOLVENT PORT should be programmed using the same wash step number as this WASH VOLUME PFC.*

*If the Solvent Selection Valve is installed, it is possible to use a specific solvent by setting the Syringe Valve to 'WASH port 2' with PFC 0502 – WASH SYRINGE VALVE SOLVENT PORT and set the desired Solvent Selection Valve port with PFC 0503 – WASH SSV SELECTION using the same wash step number.*

## 0510 – RINSE VOLUME (P-SP)

PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	5	1	0	SP	SP	q3	q2	q1	q0	ETX
HEX	02	36	31	30	31	30	35	31	30	20	20					03

Range of value: **q5/q4/q3/q2/q1/q0** → 0000 – 9999 µL, with 1 µL increments

RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*It's not possible to change value at this moment.*

SEND PROGRAMMED:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	1	0	0	0	SP	SP	0	5	1	0	ETX
HEX	02	36	31	30	31	31	30	30	30	20	20	30	35	31	30	03

RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	36	31	0	1	0	5	1	0	SP	SP	q3	q2	q1	q0	ETX

PC←Dev.	NACK
---------	------



*The programmed rinse volume is only used when a rinse buffer is performed after running a User Program method.*

## 0511 – INJECTOR VALVE POSITION DURING RINSE BUFFER (P-SP)

PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	5	1	1	SP	SP	SP	SP	SP	q0	ETX
HEX	02	36	31	30	31	30	35	31	31	20	20	20	20	20		03

Range of value: **q0**

→ 1 = Injector valve in load position  
0 = Injector valve in inject position

RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*It's not possible to change value at this moment.*

SEND PROGRAMMED:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	1	0	0	0	SP	SP	0	5	1	1	ETX
HEX	02	36	31	30	31	31	30	30	30	20	20	30	35	31	31	03

RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	36	31	0	1	0	5	1	1	0	0	0	0	0	q0	ETX

PC←Dev.	NACK
---------	------



*The programmed injector valve position is only used when a rinse buffer is performed after stopping a User Program method.*

## 0540 – USE IN METHOD (P-SP)

PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	5	4	0	SP	SP	SP	SP	q1	q0	ETX
HEX	02	36	31	30	31	30	35	34	30	20	20	20	20			03

Range of value:

<b>q0</b>	→	0 = Use timed events in method: NO 1 = Use timed events in method: YES
<b>q1</b>	→	0 = Use mix in method: NO 1 = Use mix in method: YES

RESPONSES:

PC ← Dev.	ACK
-----------	-----

PC ← Dev.	NACK
-----------	------

PC ← Dev.	NACK0
-----------	-------

*Device is in RUN mode.*

SEND PROGRAMMED:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	1	0	0	0	SP	SP	0	5	4	0	ETX
HEX	02	36	31	30	31	31	30	30	30	20	20	30	35	34	30	03

RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	5	4	0	0	0	0	0	q1	q0	ETX

PC ← Dev.	NACK
-----------	------

## 0600 – COUNTLOG INJECTOR VALVE (SA)

SEND ACTUAL:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	1	0	0	1	SP	SP	0	6	0	0	ETX
HEX	02	36	31	30	31	31	30	30	31	20	20	30	36	30	30	03

RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	6	0	0	q5	q4	q3	q2	q1	q0	ETX

Range of value: **q5/q4/q3/q2/q1/q0** → number of counts (max. 999999)

PC←Dev.	NACK
---------	------

## 0601 – COUNTLOG ISS-A / 1 OUT 6 VALVE (SA)

SEND ACTUAL:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	1	0	0	1	SP	SP	0	6	0	1	ETX
HEX	02	36	31	30	31	31	30	30	31	20	20	30	36	30	31	03

RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	6	0	1	q5	q4	q3	q2	q1	q0	ETX

Range of value: **q5/q4/q3/q2/q1/q0** → number of counts (max. 999999)

PC←Dev.	NACK
---------	------

## 0603 – COUNTLOG SYRINGE VALVE (SA)

SEND ACTUAL:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	1	0	0	1	SP	SP	0	6	0	3	ETX
HEX	02	36	31	30	31	31	30	30	31	20	20	30	36	30	33	03

RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	6	0	3	q5	q4	q3	q2	q1	q0	ETX

Range of value: **q5/q4/q3/q2/q1/q0** → number of counts (max. 999999)

PC←Dev.	NACK
---------	------

## 0604 – COUNTLOG SYRINGE (SA)

SEND ACTUAL:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	1	0	0	1	SP	SP	0	6	0	4	ETX
HEX	02	36	31	30	31	31	30	30	31	20	20	30	36	30	34	03

RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	6	0	4	q5	q4	q3	q2	q1	q0	ETX

Range of value: **q5/q4/q3/q2/q1/q0** → number of counts (max. 999999)

PC←Dev.	NACK
---------	------



## 0640 – RESET LOG COUNTERS (C)

### RECEIVE COMMAND:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	6	4	0	SP	SP	q3	q2	q1	q0	ETX
HEX	02	36	31	30	31	30	36	34	30	20	20					03

Range of value:

- q3** → LOG ISS-A / 1 OUT 6 VALVE: 2 = NO CHANGE  
0 = CLEAR
- q2** → LOG INJECTOR VALVE: 2 = NO CHANGE  
0 = CLEAR
- q1** → LOG SYRINGE VALVE: 2 = NO CHANGE  
0 = CLEAR
- q0** → LOG SYRINGE: 2 = NO CHANGE  
0 = CLEAR

### RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*Device is in RUN mode.*

## 0700 - DE-ICING ON/OFF (P-SP)

PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	7	0	0	SP	SP	SP	SP	SP	q0	ETX
HEX	02	36	31	30	31	30	37	30	30	20	20	20	20	20		03

Range of value: **q0** → 1 = ON  
0 = OFF

RESPONSES:

PC ← Dev.	ACK
-----------	-----

PC ← Dev.	NACK
-----------	------

PC ← Dev.	NACK0
-----------	-------

*No de-icing available.*

SEND PROGRAMMED:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	1	0	0	0	SP	SP	0	7	0	0	ETX
HEX	02	36	31	30	31	31	30	30	30	20	20	32	35	31	36	03

RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	7	0	0	SP	SP	SP	SP	SP	q0	ETX

PC ← Dev.	NACK
-----------	------

PC ← Dev.	NACK0
-----------	-------

*No de-icing available.*

Range of value:      **q0**          →    1 = ON  
   0 = OFF

## 0701 – CHECK DOOR ON/OFF (P-SP)

### RECEIVE COMMAND:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	0	7	0	1	SP	SP	SP	SP	SP	q0	ETX
HEX	02	36	31	30	31	30	37	30	31	20	20	20	20	20		03

Range of value: **q0**

→ 1 = Check door open/closed ON  
 0 = Check door open/closed OFF

### RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*It's not possible to change value at this moment.*

### SEND PROGRAMMED:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	1	0	0	0	SP	SP	0	7	0	1	ETX
HEX	02	36	31	30	31	31	30	30	30	20	20	30	37	30	31	03

### RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	36	31	0	1	0	7	0	1	0	0	0	0	0	q0	ETX

PC←Dev.	NACK
---------	------



*Check Door is default set to OFF.*



*Check Door ON/OFF is stored in volatile memory. After power up Check Door is set to default again.*



*When Check Door is set to ON the needle moves to its home position and the tray moves to front when the door is opened. This is the case when the device is ready, performing initial wash, during fill transport or prime SSV. When the door is opened during run the needle moves home and tray to front after completing the injection.*

## 0800 – USER PROG: ACTION ASPIRATE FROM SYRINGE VALVE WASH PORT 2 (P)

### PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	y1	y0	0	8	0	0	SP	SP	q3	q2	q1	q0	ETX
HEX	02	36	31			30	38	30	30	20	20					03

Range of value: **q3/q2/q1/q0**

Range of AI: **y1/y0**

→ 0000 – **syringe volume**, with 1 µL increments

→ **hexadecimal** step number (01 - EF; hexadecimal)

### RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*No SYRINGE VALVE WASH PORT 2 available.*



*The syringe speed and the sample needle height are automatically set to their default values.*

## 0801 – USER PROG: ACTION ASPIRATE FROM SSV PORT 2A (P)

### PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	y1	y0	0	8	0	1	SP	SP	q3	q2	q1	q0	ETX
HEX	02	36	31			30	38	30	31	20	20					03

Range of value: **q3/q2/q1/q0**

Range of AI: **y1/y0**

→ 0000 – **syringe volume**, with 1 µL increments

→ **hexadecimal** step number (01 - EF; hexadecimal)

### RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*No SSV and SYRINGE VALVE WASH PORT 2 available.*



*The syringe speed and the sample needle height are automatically set to their default values.*

## 0802 – USER PROG: ACTION ASPIRATE FROM SSV PORT 2B (P)

PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	y1	y0	0	8	0	2	SP	SP	q3	q2	q1	q0	ETX
HEX	02	36	31			30	38	30	32	20	20					03

Range of value: **q3/q2/q1/q0**

→ 0000 – **syringe volume**, with 1 µL increments

Range of AI: **y1/y0**

→ **hexadecimal** step number (01 - EF; hexadecimal)

RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*No SSV and SYRINGE VALVE WASH PORT 2 available.*



*The syringe speed and the sample needle height are automatically set to their default values.*

0803 – USER PROG: ACTION ASPIRATE FROM SSV PORT 2C (P)

PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	y1	y0	0	8	0	3	SP	SP	q3	q2	q1	q0	ETX
HEX	02	36	31			30	38	30	33	20	20					03

Range of value: **q3/q2/q1/q0**

→ 0000 – **syringe volume**, with 1 µL increments

Range of AI: **y1/y0**

→ **hexadecimal** step number (01 - EF; hexadecimal)

RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*No SSV and SYRINGE VALVE WASH PORT 2 available.*



*The syringe speed and the sample needle height are automatically set to their default values.*

0804 – USER PROG: ACTION ASPIRATE FROM SSV PORT 2D (P)

PROGRAM:

PC→Dev.	STX	ID	AI	PFC	Value	ETX
---------	-----	----	----	-----	-------	-----

ASCII	STX	6	1	y1	y0	0	8	0	4	SP	SP	q3	q2	q1	q0	ETX
HEX	02	36	31			30	38	30	34	20	20					03

Range of value: **q3/q2/q1/q0**  
Range of AI: **y1/y0**

→ 0000 – **syringe volume**, with 1 µL increments  
→ **hexadecimal** step number (01 - EF; hexadecimal)

RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*No SSV and SYRINGE VALVE WASH PORT 2 available.*



*The syringe speed and the sample needle height are automatically set to their default values.*

## 0805 – USER PROG: ACTION ASPIRATE FROM SSV PORT 2E (P)

PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	y1	y0	0	8	0	5	SP	SP	q3	q2	q1	q0	ETX
HEX	02	36	31			30	38	30	35	20	20					03

Range of value: **q3/q2/q1/q0**  
Range of AI: **y1/y0**

→ 0000 – **syringe volume**, with 1 µL increments  
→ **hexadecimal** step number (01 - EF; hexadecimal)

RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*No SSV and SYRINGE VALVE WASH PORT 2 available.*



*The syringe speed and the sample needle height are automatically set to their default values.*

## 0806 – USER PROG: ACTION ASPIRATE FROM SSV PORT 2F (P)

PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	y1	y0	0	8	0	6	SP	SP	q3	q2	q1	q0	ETX
HEX	02	36	31			30	38	30	36	20	20					03

Range of value: **q3/q2/q1/q0**  
Range of AI: **y1/y0**

→ 0000 – **syringe volume**, with 1 µL increments  
→ **hexadecimal** step number (01 - EF; hexadecimal)

RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*No SSV and SYRINGE VALVE WASH PORT 2 available.*



*The syringe speed and the sample needle height are automatically set to their default values.*

## 0810 – USER PROG: ACTION DISPENSE TO SYRINGE VALVE WASH PORT 2 (P)

PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	y1	y0	0	8	1	0	SP	SP	q3	q2	q1	q0	ETX
HEX	02	36	31			30	38	31	30	20	20					03

Range of value: **q3/q2/q1/q0**

→ 0000 – **total aspirated volume**, with 1 µL increments

Range of AI: **y1/y0**

→ **hexadecimal** step number (01 - EF; hexadecimal)

RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*No SYRINGE VALVE WASH PORT 2 available.*



*The syringe speed and the sample needle height are automatically set to their default values.*

## 0811 – USER PROG: ACTION DISPENSE TO SSV PORT 2A (P)

PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	y1	y0	0	8	1	1	SP	SP	q3	q2	q1	q0	ETX
HEX	02	36	31			30	38	31	31	20	20					03

Range of value: **q3/q2/q1/q0**

→ 0000 – **total aspirated volume**, with 1 µL increments

Range of AI: **y1/y0**

→ **hexadecimal** step number (01 - EF; hexadecimal)

RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

No SSV and SYRINGE VALVE WASH PORT 2 available.



The syringe speed and the sample needle height are automatically set to their default values.

## 0812 – USER PROG: ACTION DISPENSE TO SSV PORT 2B (P)

PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	y1	y0	0	8	1	2	SP	SP	q3	q2	q1	q0	ETX
HEX	02	36	31			30	38	31	32	20	20					03

Range of value: **q3/q2/q1/q0**

→ 0000 – **total aspirated volume**, with 1 µL increments

Range of AI: **y1/y0**

→ **hexadecimal** step number (01 - EF; hexadecimal)

RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

No SSV and SYRINGE VALVE WASH PORT 2 available.



The syringe speed and the sample needle height are automatically set to their default values.

## 0813 – USER PROG: ACTION DISPENSE TO SSV PORT 2C (P)

PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	y1	y0	0	8	1	3	SP	SP	q3	q2	q1	q0	ETX
HEX	02	36	31			30	38	31	33	20	20					03

Range of value: **q3/q2/q1/q0**

→ 0000 – **total aspirated volume**, with 1 µL increments

Range of AI: **y1/y0**

→ **hexadecimal** step number (01 - EF; hexadecimal)



RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

No SSV and SYRINGE VALVE WASH PORT 2 available.



The syringe speed and the sample needle height are automatically set to their default values.

## 0814 – USER PROG: ACTION DISPENSE TO SSV PORT 2D (P)

PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	y1	y0	0	8	1	4	SP	SP	q3	q2	q1	q0	ETX
HEX	02	36	31			30	38	31	34	20	20					03

Range of value: **q3/q2/q1/q0**

→ 0000 – **total aspirated volume**, with 1 µL increments

Range of AI: **y1/y0**

→ **hexadecimal** step number (01 - EF; hexadecimal)

RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

No SSV and SYRINGE VALVE WASH PORT 2 available.



The syringe speed and the sample needle height are automatically set to their default values.

## 0815 – USER PROG: ACTION DISPENSE TO SSV PORT 2E (P)

PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	y1	y0	0	8	1	5	SP	SP	q3	q2	q1	q0	ETX
HEX	02	36	31			30	38	31	35	20	20					03

Range of value: **q3/q2/q1/q0**

→ 0000 – **total aspirated volume**, with 1 µL increments

Range of AI: **y1/y0**

→ **hexadecimal** step number (01 - EF; hexadecimal)

RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

No SSV and SYRINGE VALVE WASH PORT 2 available.



The syringe speed and the sample needle height are automatically set to their default values.

## 0816 – USER PROG: ACTION DISPENSE TO SSV PORT 2F (P)

PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	y1	y0	0	8	1	6	SP	SP	q3	q2	q1	q0	ETX
HEX	02	36	31			30	38	31	36	20	20					03

Range of value: **q3/q2/q1/q0** → 0000 – **total aspirated volume**, with 1 µL increments

Range of AI: **y1/y0** → **hexadecimal** step number (01 - EF; hexadecimal)

RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

No SSV and SYRINGE VALVE WASH PORT 2 available.



The syringe speed and the sample needle height are automatically set to their default values.

## 0818 – USER PROG: ACTION DISPENSE TO SYRINGE VALVE WASTE PORT (P)

PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	y1	y0	0	8	1	8	SP	SP	q3	q2	q1	q0	ETX
HEX	02	36	31			30	38	31	38	20	20					03

Range of value: **q3/q2/q1/q0** → 0000 – **total aspirated volume**, with 1 µL increments

Range of AI: **y1/y0** → **hexadecimal** step number (01 - EF; hexadecimal)

RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------



The syringe speed and the sample needle height are automatically set to their default values.

## 0830 – USER PROG: ACTION TRAY (P)

### PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value					ETX	
ASCII	STX	6	1	y1	y0	0	8	3	0	SP	SP	SP	SP	SP	q0	ETX
HEX	02	36	31			30	38	33	30	20	20	20	20	20		03

Range of value: **q0**

→ POSITION:  
0 = HOME  
1 = FRONT

Range of AI: **y1/y0**

→ **hexadecimal** step number (01 - EF; hexadecimal)

### RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

## 0831 – USER PROG: ACTION TRAY ABSOLUTE POSITION (P)

PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	y1	y0	0	8	3	1	q5	q4	q3	q2	q1	q0	ETX
HEX	02	36	31			30	38	33	31							03

Range of value: **q5/q4/q3/q2/q1/q0** → 000000-012000 (0000.00-0120.00 mm)  
Absolute position with 0.01 mm increments

Range of AI: **y1/y0** → **hexadecimal** step number (01 - EF; hexadecimal)

RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------



*Resolution of Tray is 0.0254 mm. Input value is in 0.01 mm increments, but the smallest movement is 0.05 mm. Position is rounded to nearest position.*

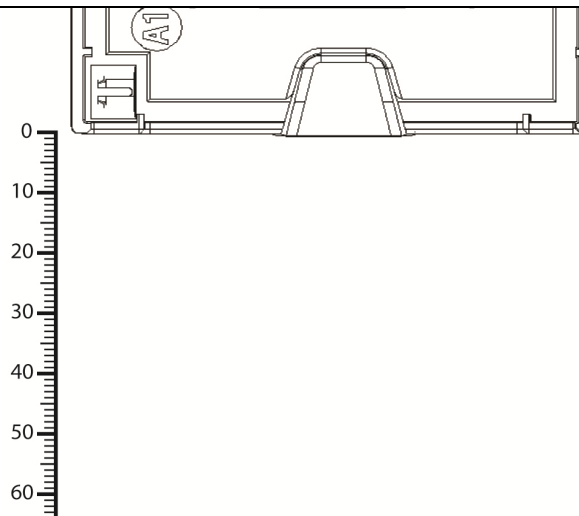
### Examples Action Tray Absolute Position:

step	action	value	remarks
1	Tray Absolute Position	005000	Tray moves to position 0050.00 mm from home
2	Tray Absolute Position	005001	No movement difference is 0.01 compared to current position (0050.00 mm). 0.01 < 0.05 (smallest movement)
3	Tray Absolute Position	005004	No movement difference is 0.04 compared to current position (0050.00 mm). 0.04 < 0.05 (smallest movement)
4	Tray Absolute Position	005005	Tray moves to position 0050.05 mm.
5	End		

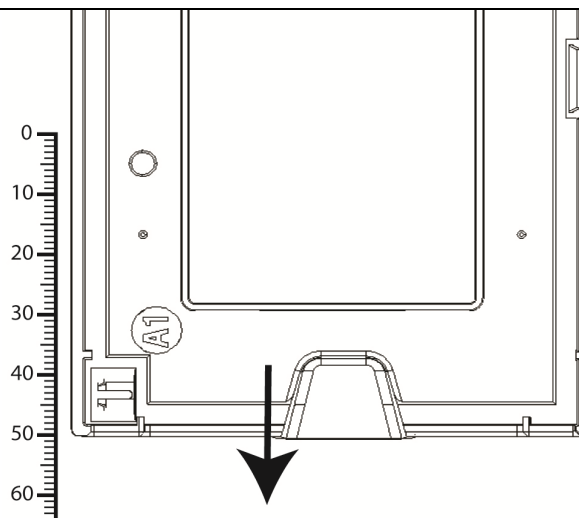
step	action	value
1	Tray Absolute Position	000000
2	Tray Absolute Position	005000
3	Tray Absolute Position	004500
4	End	

See next page for a detailed description of these tray actions.

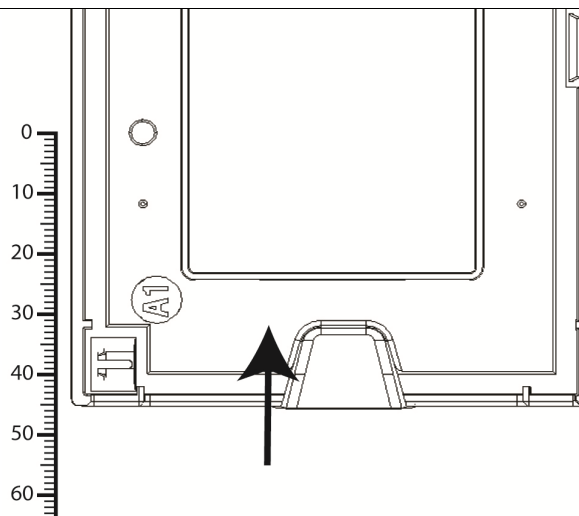
In step 01:  
PFC 0831 value 000000  
  
Tray to position 0000.00 mm (HOME)



In step 02:  
PFC 0831 value 005000  
  
Tray moves to position 0050.00 mm



In step 03:  
PFC 0831 value 004500  
  
Tray moves to position 0045.00 mm



## 0840 – USER PROG: ACTION NEEDLE VERTICAL (P)

PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value					ETX	
ASCII	STX	6	1	y1	y0	0	8	4	0	SP	SP	SP	SP	SP	q0	ETX
HEX	02	36	31			30	38	34	30	20	20	20	20	20		03

Range of value: **q0**

→ POSITIONS:

0 = HOME

1 = DOWN

Range of AI: **y1/y0**

→ **hexadecimal** step number (01 - EF; hexadecimal)

RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

## 0841 – USER PROG: ACTION NEEDLE VERTICAL ABSOLUTE POSITION (P)

PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	y1	y0	0	8	4	1	q5	q4	q3	q2	q1	q0	ETX
HEX	02	36	31			30	38	34	31							03

Range of value: **q5/q4/q3/q2/q1/q0** → 000000-005000 (0000.00-0050.00)  
Absolute position with 0.01 mm increments

Range of AI: **y1/y0** → **hexadecimal** step number (01 - EF; hexadecimal)

RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------



*Resolution of Needle Vertical is 0.085 mm. Input vale is in 0.01 mm increments, but smallest movement is 0.17 mm. Position is rounded to nearest position.*

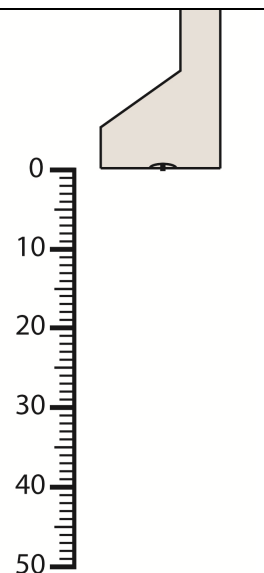
### Examples Action Needle Vertical Absolute Position:

step	action	value
1	Needle Vertical Absolute Position	000000
2	Needle Vertical Absolute Position	002500
3	Needle Vertical Absolute Position	001500
4	End	

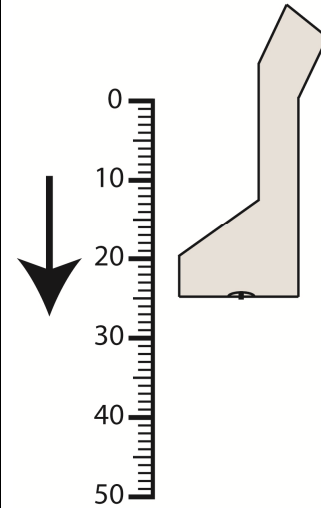
In step 01:

PFC 0841 value 000000

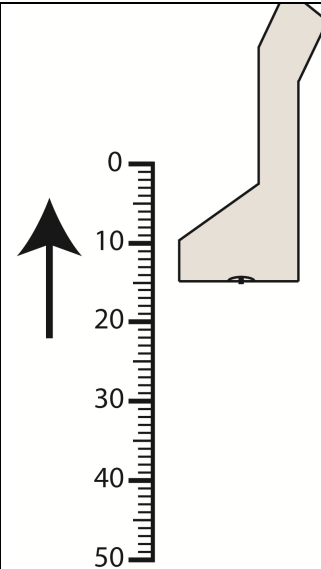
Needle Vertical to position 0000.00 mm (HOME)



In step 02:  
PFC 0841 value 002500  
  
Needle Vertical to vertical position 0025.00 mm



In step 03:  
PFC 0841 value 001500  
  
Needle moves to vertical position 0015.00 mm





## 0850 – USER PROG: ACTION NEEDLE HORIZONTAL (P)

PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value					ETX	
ASCII	STX	6	1	y1	y0	0	8	5	0	SP	SP	SP	SP	SP	q0	ETX
HEX	02	36	31			30	38	35	30	20	20	20	20	20		03

Range of value: **q0** → POSITION  
 0 = HOME/WASTE  
 1 = WASH  
 2 = TRANSPORT (optional)

Range of AI: **y1/y0** → **hexadecimal** step number (01 - EF; hexadecimal)

RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

## 0851 – USER PROG: ACTION NEEDLE HORIZONTAL ABSOLUTE POSITION (P)

PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	y1	y0	0	8	5	1	q5	q4	q3	q2	q1	q0	ETX
HEX	02	36	31			30	38	35	31							03

Range of value: **q5/q4/q3/q2/q1/q0** → 000000-018000 (0000.00-0180.00 mm)  
Absolute position with 0.01 mm increments

Range of AI: **y1/y0** → **hexadecimal** step number (01 - EF; hexadecimal)

RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

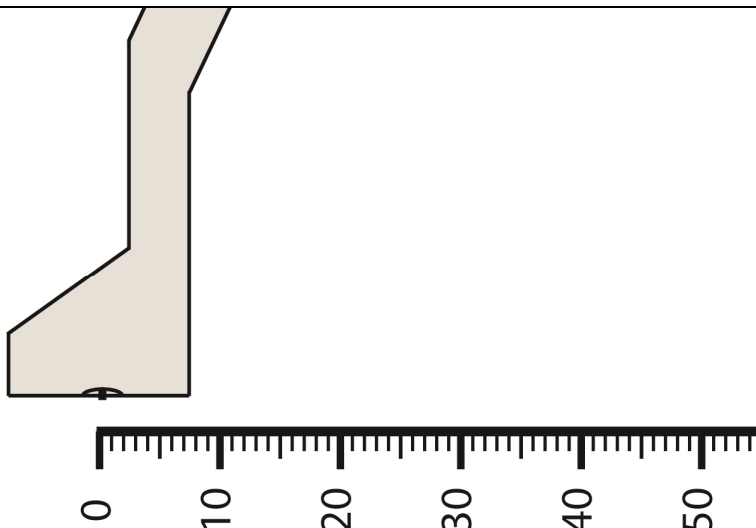
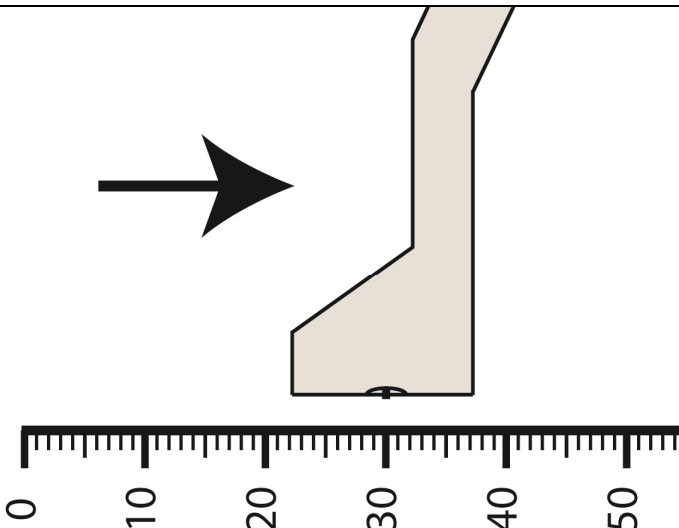
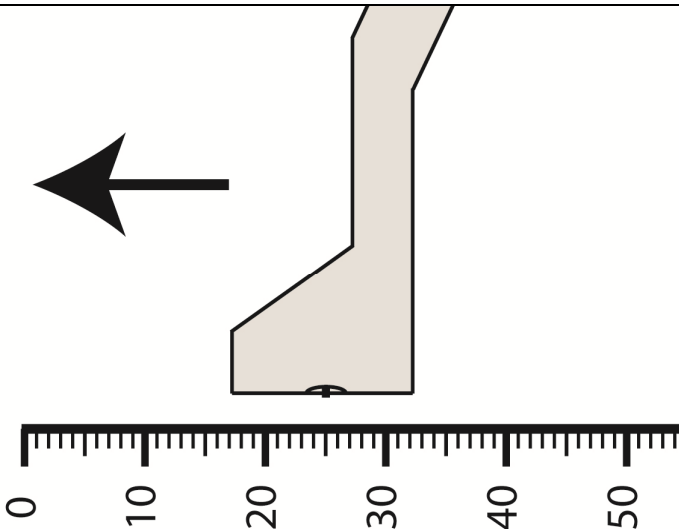
PC←Dev.	NACK0
---------	-------



*Resolution of Needle Horizontal is 0.025 mm. Input value is in 0.01 mm increments, but smallest movement is 0.05 mm.*

### Examples Action Needle Horizontal Absolute Position:

step	action	value
1	Needle Horizontal Absolute Position	000000
2	Needle Horizontal Absolute Position	005000
3	Needle Horizontal Absolute Position	004500
4	End	

<p>In step 01: PFC 0851 value 000000</p> <p>Needle to Horizontal position: 0.00 mm (HOME)</p>	 <p>The diagram shows a cross-section of a needle assembly positioned at the 0.00 mm mark on a horizontal scale. The needle is in a vertical, retracted position. The scale is marked from 0 to 50 mm with major ticks every 10 mm and minor ticks every 1 mm.</p>
<p>In step 02: PFC 0851 value 003000</p> <p>Needle moves to horizontal position: 0030.00 mm</p>	 <p>The diagram shows the needle assembly moved to the 0030.00 mm mark on the scale. A large black arrow points to the right, indicating the direction of movement. The needle is now in a horizontal position, ready for measurement.</p>
<p>In step 03: PFC 0851 value 002500</p> <p>Needle moves to horizontal position: 0025.00 mm</p>	 <p>The diagram shows the needle assembly moved to the 0025.00 mm mark on the scale. A large black arrow points to the left, indicating the direction of movement. The needle is now in a horizontal position, ready for measurement.</p>

## 1 000 – SEND PROGRAMMED VALUE (SP)

PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	1	0	0	0	SP	SP	q3	q2	q1	q0	ETX
HEX	02	36	31	30	31	31	30	30	30	20	20					03

Range of value: **q3/q2/q1/q0** → PFC number: 0000-9999

RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	p3	p2	p1	p0	q5	q4	q3	q2	q1	q0	ETX

Range of value: **q5/q4/q3/q2/q1/q0** → Depends on PFC, see the PFC for more information.

Range of PFC value: **p3/p2/p1/p0** → PFC number: 0000-9999

PC←Dev.	NACK
---------	------

*Depends on PFC, see PFC for information*

PC←Dev.	NACK0
---------	-------

*Depends on PFC, see PFC for information*

## 1 001 – SEND ACTUAL VALUE (SP)

PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	1	0	0	1	SP	SP	q3	q2	q1	q0	ETX
HEX	02	36	31	30	31	31	30	30	31	20	20					03

Range of value: **q3/q2/q1/q0** → PFC number: 0000-9999

RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	p3	p2	p1	p0	q5	q4	q3	q2	q1	q0	ETX

Range of value: **q5/q4/q3/q2/q1/q0** → Depends on PFC, see the PFC for more information.

Range of PFC value: **p3/p2/p1/p0** → PFC number: 0000-9999

PC←Dev.	NACK
---------	------

*Depends on PFC, see PFC for information*

PC←Dev.	NACK0
---------	-------

*Depends on PFC, see PFC for information*

## 2016 – SYRINGE LOADED VOLUME (SA)

SEND ACTUAL:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	1	0	0	1	SP	SP	2	0	1	6	ETX
HEX	02	36	31	30	31	31	30	30	31	20	20	32	30	31	36	03

RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	2	0	1	6	0	0	q3	q2	q1	q0	ETX

Range of value: **q3/q2/q1/q0** → Volume (0000 – syringe volume) in  $\mu\text{L}$ .

PC←Dev.	NACK
---------	------

## 2509 – SERIAL NUMBER (P-SP)

PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	2	5	0	9	q5	q4	q3	q2	q1	q0	ETX
HEX	02	36	31	30	31	32	35	30	39							03

Range of value: **q5/q4/q3/q2/q1/q0** → Serial number

RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

SEND PROGRAMMED:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	1	0	0	0	SP	SP	2	5	0	9	ETX
HEX	02	36	31	30	31	31	30	30	30	20	20	32	35	30	39	03

RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	2	5	0	9	q5	q4	q3	q2	q1	q0	ETX

PC←Dev.	NACK
---------	------

## 4005 – CLEAR MIX/USERPROG (P)

RECEIVE COMMAND:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	4	0	0	5	SP	SP	SP	SP	SP	q0	ETX
HEX	02	36	31	30	31	34	30	30	35	20	20	20	20	20		03

Range of value: **q0** → 1 = All values default

RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

## 4008 – CLEAR METHOD (P)

RECEIVE COMMAND:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	4	0	0	8	SP	SP	SP	SP	SP	q0	ETX
HEX	02	36	31	30	31	34	30	30	38	20	20	20	20	20		03

Range of value: **q0** → 1 = All values default, clear SparkLink method

RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------



*When the Prep Mode is set the default injection mode is Partial loopfill. Otherwise the default injection mode is Full loop.*

## 4020 – SET VALIDATION TEST PROCEDURE (P)

RECEIVE COMMAND:

PC→Dev.	STX	ID		AI		PFC				Value					ETX	
ASCII	STX	6	1	0	1	4	0	2	0	SP	SP	SP	SP	SP	q0	ETX
HEX	02	36	31	30	31	34	30	32	30	20	20	20	20	20		03

Range of value:      **q0**          →    1 = Set method and settings test procedure 1  
   2 = Set method and settings test procedure 2  
   3 = Set method and settings test procedure 3  
   4 = Set method and settings test procedure 4

---

---

RESPONSES:

PC ← Dev.	ACK
-----------	-----

PC ← Dev.	NACK
-----------	------



*When starting a validation method all settings are set to default. The method parameters are set to the started test procedure values.*



## 5100 – START/STOP (C)

### RECEIVE COMMAND:

PC→Dev.	STX	ID		AI		PFC				Value					ETX	
ASCII	STX	6	1	y1	y0	5	1	0	0	q5	SP	SP	SP	SP	q0	ETX
HEX	02	36	31			35	31	30	30		20	20	20	20		03

Range of value:      When AI = 01:

q5	→	1 = Start User Program method
q4	→	Reserved, always 0
q3	→	Reserved, always 0
q2	→	Reserved, always 0
q1	→	Reserved, always 0
q0	→	1 = Start SparkLink method
q5/q4/q3/q2/q1/q0	→	000000 = Stop Run or Initialize when Ready

When AI = 02:

q5/q4/q3/q2/q1/q0	→	000000 = Stop Run without switching ISS-A and SSV or Initialize when Ready
-------------------	---	--

Range of AI:      y1/y0      →      01 or 02

### RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*Illegal to start or stop the device at this moment.*



*When q5/q4/q3/q2/q1/q0 are all 0, then stop when running or initialize when ready.*

## 5101 – HOLD/CONTINUE (C)

### RECEIVE COMMAND:

PC→Dev.	STX	ID		AI		PFC				Value					ETX	
ASCII	STX	6	1	0	1	5	1	0	1	SP	SP	SP	SP	SP	q0	ETX
HEX	02	36	31	30	31	35	31	30	31	20	20	20	20	20		03

Range of value:      q0      →      1 = Hold  
0 = Continue.

### RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*Analysis timer is not running.*

## 5102 – REMOTE CONTROL COMMAND (C)

RECEIVE COMMAND:

PC→Dev.	STX	ID		AI		PFC				Value					ETX	
ASCII	STX	6	1	0	1	5	1	0	2	SP	SP	SP	SP	SP	q0	ETX
HEX	02	36	31	30	31	35	31	30	32	20	20	20	20	20		03

Range of value:      **q0**      →      1 = Next injection

RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*Analysis timer is not running.*

## 5103 – PROSPEKT RUN CYCLE (C) (FOR PROSPEKT USE ONLY)

PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value					ETX	
ASCII	STX	6	1	0	1	5	1	0	3	SP	SP	SP	SP	SP	q0	ETX
HEX	02	36	31	30	31	35	31	30	33	20	20	20	20	20		03

Range of value:      When AI = 01:

- q5**      →      1 = Start User Program method
- q4**      →      Reserved, always 0
- q3**      →      Reserved, always 0
- q2**      →      Reserved, always 0
- q1**      →      Reserved, always 0
- q0**      →      1 = Start SparkLink method
- q5/q4/q3/q2/q1/q0**      →      000000 = Stop Run or Initialize when Ready

When AI = 02:

- q5/q4/q3/q2/q1/q0**      →      000000 = Stop Run without switching ISS-A and SSV or Initialize when Ready

Range of AI:      **y1/y0**      →      01 or 02

RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*Illegal to start or stop the device at this moment.*

## 5104 – START/STOP PROSPEKT 2 MODE (C)

### PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	y0	5	1	0	4	SP	SP	SP	SP	SP	q0	ETX
HEX	02	36	31	30		35	31	30	34	20	20	20	20	20		03

Range of value:

When AI = 01:

- q5 → 1 = Start User Program method
- q4 → Reserved, always 0
- q3 → Reserved, always 0
- q2 → Reserved, always 0
- q1 → Reserved, always 0
- q0 → 1 = Start SparkLink method
- q5/q4/q3/q2/q1/q0 → 000000 = Stop Run or Initialize when Ready

When AI = 02:

- q5/q4/q3/q2/q1/q0 → 000000 = Stop Run without switching ISS-A and SSV or Initialize when Ready

Range of AI: y0 → 1 or 2

### RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*Illegal to start or stop the device at this moment.*



When **q5/q4/q3/q2/q1/q0** are all 0, then stop when running or initialize when ready.



The Prospekt 2 Mode is implemented for use with the Multilink communication interface to external Prospekt 2 apparatus.

## 5105 – INJECTOR VALVE SWITCHING (C-SA)

PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	5	1	0	5	SP	SP	SP	SP	SP	q0	ETX
HEX	02	36	31	30	31	35	31	30	35	20	20	20	20	20		03

Range of value: **q0** → 1 = LOAD  
0 = INJECT

RESPONSES:

PC ← Dev.	ACK
-----------	-----

PC ← Dev.	NACK
-----------	------

PC ← Dev.	NACK0
-----------	-------

*Valve is BUSY*

SEND ACTUAL:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	1	0	0	1	SP	SP	5	1	0	5	ETX
HEX	02	36	31	30	31	31	30	30	30	20	20	35	31	30	35	03

RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value					ETX	
ASCII	STX	6	1	0	1	5	1	0	5	0	0	0	0	0	q0	ETX

Range of value:

<b>q0</b>	→	2 = Illegal position 1 = LOAD 0 = INJECT
-----------	---	--

PC ← Dev.	NACK
-----------	------

PC ← Dev.	NACK0
-----------	-------

*Valve is BUSY.*

## 5106 – ISS-A / 1 OUT 6 VALVE SWITCHING (C-SA)

### PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	5	1	0	6	SP	SP	SP	SP	SP	q0	ETX
HEX	02	36	31	30	31	35	31	30	36	20	20	20	20	20		03

Range of value:

**q0**

→

**ISS-A:**

1 = 6\_1

0 = 1\_2

→

**1 out 6 Valve:**

1 = Port 1

2 = Port 2

3 = Port 3

4 = Port 4

5 = Port 5

6 = Port 6

### RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*No ISS-A /1 out 6 Valve option or ISS-A/1 out 6 Valve is BUSY*

### SEND ACTUAL:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	1	0	0	1	SP	SP	5	1	0	6	ETX
HEX	02	36	31	30	31	31	30	30	30	20	20	35	31	30	36	03

### RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	5	1	0	6	0	0	0	0	0	q0	ETX

Range of value:

**q0**

→

**ISS-A:**

2 = Illegal position

1 = 6\_1

0 = 1\_2

→

**1 out 6 Valve:**

0 = Unknown or Illegal position

1 = Port 1

2 = Port 2

3 = Port 3

4 = Port 4

5 = Port 5

6 = Port 6

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*No ISS-A /1 out 6 Valve option or ISS-A/1 out 6 Valve is BUSY*

## 5108 – SSV SWITCHING (C-SA)

### RECEIVE COMMAND:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	5	1	0	8	SP	SP	SP	SP	SP	q0	ETX
HEX	02	36	31	30	31	35	31	30	38	20	20	20	20	20		03

Range of value: **q0**

→ 0 = OFF  
1-6 = solvent 1-6

### RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*No SSV option available.*

### SEND ACTUAL:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	1	0	0	1	SP	SP	5	1	0	8	ETX
HEX	02	36	31	30	31	31	30	30	31	20	20	35	31	30	38	03

### RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	5	1	0	8	0	0	0	0	0	q0	ETX

Range of value: **q0**

→ 0 = OFF  
1-6 = solvent 1-6

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*No SSV option available.*

## 5111 – SEARCH SAMPLE POSITION (C)

PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	5	1	1	1	SP	q4	q3	q2	q1	q0	ETX
HEX	02	36	31	30	31	35	31	31	31	20						03

Range of value:

**q4**

→

PLATE NUMBER:

No plate: 0

Left plate: 1

Right plate: 2

Single plate: 3

If No plate (**q4** = 0):

**q3/q2/q1/q0**

SPECIAL POSITIONS:

0107 = Tray Home

0108 = Exchange needle position

0109 = Tray Front (exchange tray position)

If Left or Right plate (**q4** = 1 or 2):

**q3/q2/q1/q0**

→

PLATE POSITION (Depends on tray type):

384 WELL PLATE: 0001-0024

96 WELL PLATE: 0001-0012

48 VIAL TYPE: 0001-0008

12 VIAL TYPE: 0001-0004

If Single plate (**q4** = 3):

**q3/q2/q1/q0**

→

PLATE POSITION (Depends on tray type):

84+3 VIAL TYPE: 0001 – 0087

108 VIAL TYPE: 0001 – 0108

30 VIAL TYPE: 0001 – 0030

RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*Device is in RUN mode.*



A single plate is positioned on the left and right tray holder. The sample position is not programmed by row indication but by means of a numerical sample position range. For example: value 30051 = move tray to sample position 51 on the 84+3 tray

## 5130 – INITIAL WASH (C)

PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	5	1	3	0	SP	SP	SP	SP	q1	q0	ETX
HEX	02	36	31	30	31	35	31	33	30	20	20	20	20			03

Range of value:	<b>q1</b>	→	0 = WASH port 1
			1 = NEEDLE port
			2 = WASTE port
			3 = WASH port 2 (optionally connected to SSV)
			1 = START INITIAL WASH
	<b>q0</b>	→	0 = STOP INITIAL WASH

RESPONSES:

PC ← Dev.	ACK
-----------	-----

PC ← Dev.	NACK
-----------	------

PC ← Dev.	NACK0
-----------	-------

*Device is in RUN mode.*

## 5131 – SSV PRIME (C)

PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value					ETX	
ASCII	STX	6	1	0	1	5	1	3	1	SP	SP	SP	SP	SP	q0	ETX
HEX	02	36	31	30	31	35	31	33	31	20	20	20	20	20		03

[illegible]

RESPONSES:

PC ← Dev.	ACK
-----------	-----

PC ← Dev.	NACK
-----------	------

PC ← Dev.	NACK0
-----------	-------

*Device is in RUN mode.*



### 5134 – COMPRESSOR ON/OFF (C)

PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	5	1	3	4	SP	SP	SP	SP	SP	q0	ETX
HEX	02	36	31	30	31	35	31	33	34	20	20	20	20	20		03

[illegible]

RESPONSES:

PC ← Dev.	ACK
-----------	-----

PC ← Dev.	NACK
-----------	------

PC ← Dev.	NACK0
-----------	-------

*Device is in RUN mode.*

SEND ACTUAL:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	1	0	0	1	SP	SP	5	1	3	4	ETX
HEX	02	36	31	30	31	31	30	30	31	20	20	35	31	33	34	03

RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	5	1	3	4	0	0	0	0	0	q0	ETX

Range of value: **q0** → 1 = ON  
0 = OFF

PC←Dev.	NACK
---------	------

PROGRAM:

Range of value: **q0** → 2 = DOWN WITHOUT VIAL OR PLATE DETECTION  
1 = DOWN  
0 = UP

RESPONSES:

PC ← Dev.	NACK0
-----------	-------

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## 5136 – NEEDLE HORIZONTAL MOVEMENT (C)

### PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	y0	5	1	3	6	q5	q4	q3	q2	q1	q0	ETX
HEX	02	36	31	30		35	31	33	36							03

Range of AI: **y0** → 1 or 2

Range of value:

When AI = 01:

**q5** → 0 = Reserved, always zero

**q4** → POSITION:

Wash: 1 (q3/q2/q1/q0 = 0000)

Waste: 2 (q3/q2/q1/q0 = 0000)

Plate: 3

Exchange: 4 (q3/q2/q1/q0 = 0000)

Transport: 5 (q3/q2/q1/q0 = 0000)

**q3/q2** → PLATE NUMBER:

Left plate: 01

Right plate: 02

Single plate: 03

If Left or Right plate (**q4** = 3 and **q3/q2** = 01 or 02)

**q1/q0** → PLATE POSITION (Depends on tray type):

384 WELL PLATE: 01 – 16

96 WELL PLATE: 01 – 08

48 VIAL TYPE: 01 – 06

12 VIAL TYPE: 01 – 03

If Single plate (**q4** = 3 and **q3/q2** = 03)

**q1/q0** → PLATE POSITION (Depends on tray type):

84+3 VIAL TYPE: 01 – 87

30 VIAL TYPE: 01 – 30

When AI = 02:

**q5** → POSITION:

Plate: 3

**q4/q3** → PLATE NUMBER:

Single plate: 03

**q2/q1/q0** → PLATE POSITION (Depends on tray type):

108 VIAL TYPE: 001 – 108

### RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*Device is in RUN mode.*



A single plate is positioned on the left and right tray holder. The sample position is not programmed by column indication but by means of a numerical sample position range. For example: value 30351 = move needle to sample position 51 on the 84+3 tray

## 5137 – SYRINGE VALVE SWITCHING (C)

### PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	5	1	3	7	SP	SP	SP	SP	SP	q0	ETX
HEX	02	36	31	30	31	35	31	33	37	20	20	20	20	20		03

Range of value: **q0** → 1 = WASH PORT 1  
2 = NEEDLE  
3 = WASTE  
4 = WASH PORT 2

### RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*Device is in RUN mode.*

### SEND ACTUAL:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	1	0	0	1	SP	SP	5	1	3	7	ETX
HEX	02	36	31	30	31	31	30	30	31	20	20	35	31	33	37	03

### RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	5	1	3	7	0	0	0	0	0	q0	ETX

Range of value: **q0** → 1 = WASH PORT 1  
2 = NEEDLE  
3 = WASTE  
4 = WASH PORT 2

PC←Dev.	NACK
---------	------



*The WASH PORT 2 position is only available when the syringe valve WASH PORT 2 option is programmed / installed.*

## 5138 – ASPIRATE XXX µL (C)

PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	5	1	3	8	SP	SP	SP	q2	q1	q0	ETX
HEX	02	36	31	30	31	35	31	33	38	20	20	20				03

Range of value: **q2/q1/q0** → Volume (000 – 999 µL)

RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*Device is in RUN mode.*



*The total amount of volume to aspirate equals the syringe volume –the remaining volume in the syringe. Values larger than the total amount of volume to aspirate result in Nack response.*

## 5139 – DISPENSE XXX µL (C)

PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	5	1	3	9	SP	SP	SP	q2	q1	q0	ETX
HEX	02	36	31	30	31	35	31	33	39	20	20	20				03

Range of value: **q2/q1/q0** → Volume (000 – 999 µL)

RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*Device is in RUN mode.*



*The total amount of volume to dispense equals the remaining volume in the syringe. Values larger than the total amount of volume to dispense result in Nack response.*

## 5140 – MOVE SYRINGE (C)

PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value					ETX	
ASCII	STX	6	1	0	1	5	1	4	0	SP	SP	SP	SP	SP	q0	ETX
HEX	02	36	31	30	31	35	31	34	30	20	20	20	20	20		03

Range of value:

<b>q0</b>	→	0 = HOME POSITION
		1 = END POSITION
		2 = EXCHANGE POSITION

RESPONSES:

PC ← Dev.	ACK
-----------	-----

PC ← Dev.	NACK
-----------	------

PC ← Dev.	NACK0
-----------	-------

*Device is in RUN mode.*

### 5141 – FILL TRANSPORT RESERVOIR (C)

PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	5	1	4	1	SP	SP	SP	q2	q1	q0	ETX
HEX	02	36	31	30	31	35	31	34	31	20	20	20				03

Range of value:	<b>q0</b>	→	1 - 9 times the syringe volume
	<b>q1</b>	→	0 = Reserved, always zero
	<b>q2</b>	→	Transport liquid selection:
			0 = Syringe Valve WASH port (default)
			1 = Syringe Valve 4 <sup>th</sup> port (optional)

RESPONSES:

PC ← Dev.	ACK
-----------	-----

PC ← Dev.	NACK
-----------	------

PC ← Dev.	NACK0
-----------	-------

*Device is in RUN mode or syringe valve 4<sup>th</sup> port option not available.*

## 5160 – UPLOAD MODE (C)

### RECEIVE COMMAND:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	5	1	6	0	SP	SP	SP	SP	SP	q0	ETX
HEX	02	36	31	30	31	35	31	36	30	20	20	20	20	20		03

Range of value: **q0** → 1 = upload mode

### RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*Device is not in ready mode.*



*Upload is aborted when the first download string does not match with the device code in FPGA.*

## 5170 – ADJUSTMENTS: MOVE NEEDLE HORIZONTAL (C-SP)

### RECEIVE COMMAND:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	5	1	7	0	SP	SP	SP	SP	SP	q0	ETX
HEX	02	36	31	30	31	35	31	37	30	20	20	20	20	20		03

Range of value: **q0**

→ 0 = Move needle horizontal 0.05 mm to the right  
1 = Move needle horizontal 0.05 mm to the left

### RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*Device is running.*



*The needle horizontal can be adjusted  $\pm 1.00\text{mm}$  with a resolution of  $0.05\text{mm}$  depending on the needle horizontal adjustment parameter set in advanced adjustments.*

### SEND PROGRAMMED:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	1	0	0	0	SP	SP	5	1	7	0	ETX
HEX	02	36	31	30	31	31	30	30	30	20	20	35	31	37	30	03

### RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	5	1	7	0	0	q4	q3	q2	q1	q0	ETX

Range of value: **q4**

→ 0 = Adjustment value within limits  
1 = Lower limit reached  
2 = Upper limit reached

**q3**

→ 0 = Positive (Needle Right movement)  
1 = Negative (Needle Left movement)

**q2/q1/q0**

→ 000-100 (0.00-1.00mm) in steps of 0.05mm

PC←Dev.	NACK
---------	------



## 5171 – ADJUSTMENTS: MOVE TRAY (C-SP)

### RECEIVE COMMAND:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	5	1	7	1	SP	SP	SP	SP	SP	q0	ETX
HEX	02	36	31	30	31	35	31	37	31	20	20	20	20	20		03

Range of value: **q0** → 0 = Move tray 0.05 mm to the front.  
1 = Move tray 0.05 mm to the rear.

### RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*Device is running.*



*The tray can be adjusted  $\pm 1.00\text{mm}$  with a resolution of  $0.05\text{mm}$  depending on the tray adjustment parameter set in advanced adjustments.*

### SEND PROGRAMMED:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	1	0	0	0	SP	SP	5	1	7	1	ETX
HEX	02	36	31	30	31	31	30	30	30	20	20	35	31	37	31	03

### RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	5	1	7	1	0	q4	q3	q2	q1	q0	ETX

Range of value: **q4** → 0 = Adjustment value within limits  
1 = Lower limit reached  
2 = Upper limit reached  
**q3** → 0 = Positive (Tray Front movement)  
1 = Negative (Tray Rear movement)  
**q2/q1/q0** → 000-100 (0.00-1.00mm) in steps of 0.05mm

PC←Dev.	NACK
---------	------

## 5172 – ADJUSTMENTS: SAVE NEEDLE/TRAY PARAMETERS (C)

### RECEIVE COMMAND:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	5	1	7	2	SP	SP	SP	SP	SP	q0	ETX
HEX	02	36	31	30	31	35	31	37	32	20	20	20	20	20		03

Range of value: **q0**

- 0 = Cancel. Changed parameters are ignored and restored to the EEPROM needle/tray parameter value.
- 1 = Save. Needle and Tray adjustment parameters are stored in EEPROM.
- 2 = Restore Factory Settings

### RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*Device is running.*



*Save the adjustments corrections made by means of PFC 5170 and PFC 5171.*



*When Factory Settings are restored only the user adjustment parameters for needle and tray are set to 0.*

## 5173 – ADJUSTMENTS: NEEDLE PARAMETER IN EEPROM (P-SA)

PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	5	1	7	3	SP	SP	q3	q2	q1	q0	ETX
HEX	02	36	31	30	31	35	31	37	33	20	20					03

Range of value: **q3** → 0 = Positive (Tray Front movement)  
1 = Negative (Tray Rear movement)  
**q2/q1/q0** → 000-100 (0.00-1.00mm) in steps of 0.05mm

RESPONSES:

PC ← Dev.	ACK
-----------	-----

PC ← Dev.	NACK
-----------	------

SEND ACTUAL:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	1	0	0	1	SP	SP	5	1	7	3	ETX
HEX	02	36	31	30	31	31	30	30	31	20	20	35	31	37	33	03

RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	5	1	7	3	0	0	q3	q2	q1	q0	ETX

PC ← Dev.	NACK
-----------	------

## 5174 – ADJUSTMENTS: TRAY PARAMETER IN EEPROM (P-SA)

PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	5	1	7	4	SP	SP	q3	q2	q1	q0	ETX
HEX	02	36	31	30	31	35	31	37	34	20	20					03

Range of value: **q3** → 0 = Positive (Needle Right movement)  
1 = Negative (Needle Left movement)  
**q2/q1/q0** → 000-100 (0.00-1.00mm) in steps of 0.05mm

RESPONSES:

PC ← Dev.	ACK
-----------	-----

PC ← Dev.	NACK
-----------	------

SEND ACTUAL:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	1	0	0	1	SP	SP	5	1	7	4	ETX
HEX	02	36	31	30	31	31	30	30	31	20	20	35	31	37	34	03

RESPONSES:

PC ← Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	5	1	7	4	0	0	q3	q2	q1	q0	ETX

PC ← Dev.	NACK
-----------	------

## 5175 – ADJUSTMENTS: MOVE SYRINGE (C-SP)

### RECEIVE COMMAND:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	5	1	7	5	SP	SP	SP	SP	SP	q0	ETX
HEX	02	36	31	30	31	35	31	37	35	20	20	20	20	20		03

Range of value: **q0** → 0 = Move syringe 0.25 mm up.  
1 = Move syringe 0.25 mm down.

### RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*Device is running.*

### SEND PROGRAMMED:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	1	0	0	0	SP	SP	5	1	7	5	ETX
HEX	02	36	31	30	31	31	30	30	30	20	20	35	31	37	35	03

### RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	5	1	7	5	0	q4	q3	q2	q1	q0	ETX

Range of value: **q4** → 0 = adjustment value within limits  
1 = lower limit reached  
2 = upper limit reached  
**q3** → 0 = Positive (Syringe Up movement)  
1 = Negative (Syringe Down movement)  
**q2/q1/q0** → 000-200 (0.00-2.00mm) in steps of 0.25mm

PC←Dev.	NACK
---------	------

## 5176 – ADJUSTMENTS: SAVE/CANCEL SYRINGE PARAMETER (C)

### RECEIVE COMMAND:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	5	1	7	6	SP	SP	SP	SP	SP	q0	ETX
HEX	02	36	31	30	31	35	31	37	36	20	20	20	20	20		03

Range of value: **q0**

- 0 = Cancel. Changed parameter will be ignored and restored to the EEPROM Syringe parameter value.
- 1 = Save. Syringe adjustment parameter is stored in EEPROM.

### RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*Device is running.*



*Save the adjustment corrections made by means of PFC 5175*

## 5177 – ADJUSTMENTS: SYRINGE PARAMETER IN EEPROM (P-SA)

PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	5	1	7	7	SP	SP	q3	q2	q1	q0	ETX
HEX	02	36	31	30	31	35	31	37	37	20	20					03

Range of value:	<b>q3</b>	→ 0 = Positive (Syringe Up movement) 1 = Negative (Syringe Down movement)
	<b>q2/q1/q0</b>	→ 000-200 (0.00-2.00mm) in steps of 0.25mm

RESPONSES:

PC ← Dev.	ACK
-----------	-----

PC ← Dev.	NACK
-----------	------

SEND ACTUAL:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	1	0	0	1	SP	SP	5	1	7	7	ETX
HEX	02	36	31	30	31	31	30	30	31	20	20	35	31	37	37	03

RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	5	1	7	7	0	0	q3	q2	q1	q0	ETX

PC ← Dev.	NACK
-----------	------

## 5300 – DOOR SENSOR (SA)

SEND ACTUAL:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	1	0	0	1	SP	SP	5	3	0	0	ETX
HEX	02	36	31	30	31	31	30	30	31	20	20	35	33	30	30	03

RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	5	3	0	0	SP	SP	SP	SP	SP	q0	ETX

Range of value: **q0** → Level of DOOR sensor: 1 = INTERRUPTED  
0 = NOT INTERRUPTED

PC←Dev.	NACK
---------	------

## 5500 – SERVICE: MODE CODE (C)

RECEIVE COMMAND:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	5	5	0	0	q5	q4	q3	q2	q1	q0	ETX
HEX	02	36	31	30	31	35	35	30	30							03

Range of value: **q5/q4/q3/q2/q1/q0** → service code  
 250896 : to enter service mode  
 010466: to enter service mode  
 101163: to enter service mode  
 000000 : to exit service mode

RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*Not possible to enter or exit service mode at this moment.*



## 5510 – SERVICE: SEARCH SAMPLE POSITION (C)

### PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	5	5	1	0	SP	q4	q3	q2	q1	q0	ETX
HEX	02	36	31	30	31	35	31	31	30	20						03

Range of value:

**q4**

→

PLATE NUMBER:

No plate: 0

Left plate: 1

Right plate: 2

Single plate: 3

If No plate (**q4** = 0):

**q3/q2/q1/q0**

SPECIAL POSITIONS:

0107 = Tray Home

0108 = Exchange needle position

0109 = Tray Front (exchange tray position)

If Left or Right plate (**q4** = 1 or 2):

**q3/q2/q1/q0**

→

PLATE POSITION (Depends on tray type):

384 WELL PLATE: 0001-0024

96 WELL PLATE: 0001-0012

48 VIAL TYPE: 0001-0008

12 VIAL TYPE: 0001-0004

If Single plate (**q4** = 3):

**q3/q2/q1/q0**

→

PLATE POSITION (Depends on tray type):

84+3 VIAL TYPE: 0001 – 0087

108 VIAL TYPE: 0001 – 0108

30 VIAL TYPE: 0001 – 0030

### RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*Device is busy or not in service mode.*

*Tray is already searching. Illegal to move.*



A single plate is positioned on the left and right tray holder. The sample position is not programmed by row indication but by means of a numerical sample position range. For example: value 30051 = move tray to sample position 51 on the 84+3 tray

## 5515 – SERVICE: TRAY UNIT SENSORS (SA)

### SEND ACTUAL:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	1	0	0	1	SP	SP	5	5	1	5	ETX
HEX	02	36	31	30	31	31	30	30	31	20	20	35	35	31	35	03

### RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	5	5	1	5	0	0	0	0	0	q0	ETX

Range of value: **q0**

→ Level of home sensor:  
1 = INTERRUPTED  
0 = NOT INTERRUPTED

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*Device is not in service mode.*

## 5520 – SERVICE: MOVE SYRINGE (C)

### RECEIVE COMMAND:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	5	5	2	0	SP	SP	SP	SP	SP	q0	ETX
HEX	02	36	31	30	31	35	35	32	30	20	20	20	20	20		03

Range of value: **q0**

→ 0 = HOME POSITION  
1 = END POSITION  
2 = EXCHANGE POSITION

### RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*Device is busy or not in service mode.  
Syringe is already moving or not home when receiving END command. Illegal to move.*

## 5521 – SERVICE: SYRINGE VALVE (C)

### RECEIVE COMMAND:

PC→Dev.	STX	ID		AI		PFC				Value					ETX	
ASCII	STX	6	1	0	1	5	5	2	1	SP	SP	SP	SP	SP	q0	ETX
HEX	02	36	31	30	31	35	35	32	31	20	20	20	20	20		03

Range of value: **q0**

→ 1 = WASH PORT 1  
2 = NEEDLE  
3 = WASTE  
4 = WASH PORT 2

### RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*Device is busy or not in service mode.  
Valve is already moving. Illegal to move.*

### SEND ACTUAL:

PC→Dev.	STX	ID		AI		PFC				Value					ETX	
ASCII	STX	6	1	0	1	1	0	0	1	SP	SP	5	5	2	1	ETX
HEX	02	36	31	30	31	31	30	30	31	20	20	35	35	32	31	03

### RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value					ETX	
ASCII	STX	6	1	0	1	5	5	2	1	0	0	0	0	0	q0	ETX

Range of value: **q0**

→ 1 = WASH PORT 1  
2 = NEEDLE  
3 = WASTE  
4 = WASH PORT 2

PC←Dev.	NACK
---------	------



*The WASH PORT 2 position is only available when the syringe valve WASH PORT 2 option is programmed/installed.*

## 5525 – SERVICE: SYRINGE UNIT SENSORS (SA)

SEND ACTUAL:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	1	0	0	1	SP	SP	5	5	2	5	ETX
HEX	02	36	31	30	31	31	30	30	31	20	20	35	35	32	35	03

RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	5	5	2	5	0	q4	q3	q2	q1	q0	ETX

- Range of value: **q4:** → Level of Syringe valve middle sensor  
1 = INTERRUPTED  
0 = NOT INTERRUPTED
- q3** → Level of Syringe home sensors:  
1 = INTERRUPTED  
0 = NOT INTERRUPTED
- q2** → Level of Syringe rotation sensor:  
1 = INTERRUPTED  
0 = NOT INTERRUPTED
- q1** → Level of Syringe valve left sensor:  
1 = INTERRUPTED  
0 = NOT INTERRUPTED
- q0** → Level of Syringe valve right sensor:  
1 = INTERRUPTED  
0 = NOT INTERRUPTED

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*Device is not in service mode.*



*Syringe valve left/right sensor viewed from the valve axis.*

## 5530 – SERVICE: MOVE NEEDLE UNIT VERTICAL (C)

### RECEIVE COMMAND:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	5	5	3	0	SP	SP	SP	SP	SP	q0	ETX
HEX	02	36	31	30	31	35	35	33	30	20	20	20	20	20		03

Range of value: **q0** → 2 = DOWN WITHOUT VIAL OR PLATE DETECTION  
1 = DOWN POSITION  
0 = HOME POSITION

### RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*Device is busy or not in service mode.  
Needle unit is already moving. Illegal move.*

## 5531 – SERVICE: MOVE NEEDLE UNIT HORIZONTAL (C)

### RECEIVE COMMAND:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	y0	5	5	3	1	q5	q4	q3	q2	q1	q0	ETX
HEX	02	36	31	30		35	35	33	31							03

Range of AI: **y0** → 1 or 2  
 Range of value: When AI = 01:  
**q5** → 0 = Reserved, always zero  
**q4** → POSITION:  
     Wash: 1 (q3/q2/q1/q0 = 0000)  
     Waste: 2 (q3/q2/q1/q0 = 0000)  
     Plate: 3  
     Exchange: 4 (q3/q2/q1/q0 = 0000)  
     Transport: 5 (q3/q2/q1/q0 = 0000)  
**q3/q2** → PLATE NUMBER:  
     Left plate: 01  
     Right plate: 02  
     Single plate: 03  
 If Left or Right plate (**q4** = 3 and **q3/q2** = 01 or 02)  
**q1/q0** → PLATE POSITION (Depends on tray type):  
     384 WELL PLATE: 01 – 16  
     96 WELL PLATE: 01 – 08  
     48 VIAL TYPE: 01 – 06  
     12 VIAL TYPE: 01 – 03  
 If Single plate (**q4** = 3 and **q3/q2** = 03)  
**q1/q0** → PLATE POSITION (Depends on tray type):  
     84+3 VIAL TYPE: 01 – 87  
     30 VIAL TYPE: 01 – 30  
 When AI = 02:  
**q5** → POSITION:  
     Plate: 3  
**q4/q3** → PLATE NUMBER:  
     Single plate: 03  
**q2/q1/q0** → PLATE POSITION (Depends on tray type):  
     108 VIAL TYPE: 001 – 108

### RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*Device is busy or not in service mode.  
 Needle unit is already moving. Illegal to move.*



A single plate is positioned on the left and right tray holder. The sample position is not programmed by column indication but by means of a numerical sample position range. For example: value 30351 = move needle to sample position 51 on the 84+3 tray

## 5534 – SERVICE: COMPRESSOR (C)

### RECEIVE COMMAND:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	5	5	3	4	SP	SP	SP	SP	SP	q0	ETX
HEX	02	36	31	30	31	35	35	33	34	20	20	20	20	20		03

Range of value: **q0** → 1 = ON  
0 = OFF

### RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*Device is not in service mode.*

### SEND ACTUAL:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	1	0	0	1	SP	SP	5	5	3	4	ETX
HEX	02	36	31	30	31	31	30	30	31	20	20	35	35	33	34	03

### RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	5	5	3	4	0	0	0	0	0	q0	ETX

Range of value: **q0** → 1 = ON  
0 = OFF

PC←Dev.	NACK
---------	------

## 5535 – SERVICE: NEEDLE UNIT SENSORS (SA)

SEND ACTUAL:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	1	0	0	1	SP	SP	5	5	3	5	ETX
HEX	02	36	31	30	31	31	30	30	31	20	20	35	35	33	35	03

RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	5	5	3	5	0	0	0	q2	q1	q0	ETX

- Range of value: **q2** → Level of needle vertical vial sensor:  
1 = INTERRUPTED  
0 = NOT INTERRUPTED
- q1** → Level of needle vertical home sensor:  
1 = INTERRUPTED  
0 = NOT INTERRUPTED
- q0** → Level of needle horizontal home sensor:  
1 = INTERRUPTED  
0 = NOT INTERRUPTED

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*Device is not in service mode.*



## 5540 – SERVICE: INJECTOR VALVE (C-SA)

### RECEIVE COMMAND:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	5	5	4	0	SP	SP	SP	SP	SP	q0	ETX
HEX	02	36	31	30	31	35	35	34	30	20	20	20	20	20		03

Range of value: **q0**

→ 1 = LOAD  
0 = INJECT

### RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*Device is not in service mode or valve is already moving.*

### SEND ACTUAL:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	1	0	0	1	SP	SP	5	5	4	0	ETX
HEX	02	36	31	30	31	31	30	30	31	20	20	35	35	34	30	03

### RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	5	5	4	0	0	0	0	0	0	q0	ETX

Range of value: **q0**

→ 2 = Illegal position  
1 = LOAD  
0 = INJECT

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*Device is not in service mode or valve is already moving.*

## 5541 – SERVICE: ISS-A / 1 OUT 6 VALVE (C-SA)

### RECEIVE COMMAND:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	5	5	4	1	SP	SP	SP	SP	SP	q0	ETX
HEX	02	36	31	30	31	35	35	34	31	20	20	20	20	20		03

Range of value: **q0**

→ **ISS-A:**

1 = 6\_1

0 = 1\_2

→ **1 out 6 Valve:**

1 = Port 1

2 = Port 2

3 = Port 3

4 = Port 4

5 = Port 5

6 = Port 6

### RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*Device is not in service mode, No ISS-A / 1 out 6 Valve available or ISS-A / 1 out 6 Valve is already moving.*

### SEND ACTUAL:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	1	0	0	1	SP	SP	5	5	4	1	ETX
HEX	02	36	31	30	31	31	30	30	31	20	20	35	35	34	31	03

### RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	5	5	4	1	0	0	0	0	0	q0	ETX

Range of value: **q0**

→ **ISS-A:**

2 = Illegal position

1 = 6\_1

0 = 1\_2

→ **1 out 6 Valve:**

1 = Port 1

2 = Port 2

3 = Port 3

4 = Port 4

5 = Port 5

6 = Port 6

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*Device is not in service mode, No ISS-A / 1 out 6 Valve available or ISS-A / 1 out 6 Valve is already moving.*

## 5543 – SERVICE: SSV VALVE (C)

### RECEIVE COMMAND:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	5	5	4	3	SP	SP	SP	SP	SP	q0	ETX
HEX	02	36	31	30	31	35	35	34	33	20	20	20	20	20		03

Range of value: **q0**

→ 0 = OFF  
1-6 = SOLVENT 1-6

### RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*Device is busy or not in service mode or SSV option not available.*

### SEND ACTUAL:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	1	0	0	1	SP	SP	5	5	4	3	ETX
HEX	02	36	31	30	31	31	30	30	31	20	20	35	35	34	33	03

### RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	5	5	4	3	0	0	0	0	0	q0	ETX

Value: **q0**

→ 0 = OFF  
1-6 = solvent 1-6

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*No SSV option available.*

## 5544 – SERVICE: SSV CURRENT (C)

### RECEIVE COMMAND:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	5	5	4	4	SP	SP	SP	SP	SP	q0	ETX
HEX	02	36	31	30	31	35	35	34	34	20	20	20	20	20		03

Range of value: **q0**

→ 1 = MAX CURRENT  
0 = LOW CURRENT

### RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*Device is busy or not in service mode or SSV option not available.*

### SEND ACTUAL:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	1	0	0	1	SP	SP	5	5	4	4	ETX
HEX	02	36	31	30	31	31	30	30	31	20	20	35	35	34	34	03

### RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	5	5	4	4	0	0	0	0	0	q0	ETX

Range of value: **q0**

→ 1 = MAX CURRENT  
0 = LOW CURRENT

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*No SSV option available.*

## 5545 – SERVICE: INJECTOR VALVE SENSORS (SA)

SEND ACTUAL:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	1	0	0	1	SP	SP	5	5	4	5	ETX
HEX	02	36	31	30	31	31	30	30	31	20	20	35	35	34	35	03

RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	5	5	4	5	0	0	0	0	q1	q0	ETX

Range of value: **q1** → Level of LOAD sensor: 1 = INTERRUPTED  
0 = NOT INTERRUPTED  
**q0** → Level of INJECT sensor: 1 = INTERRUPTED  
0 = NOT INTERRUPTED

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*Device is not in service mode.*

## 5546 – SERVICE: ISS-A / 1 OUT 6 VALVE SENSORS (SA)

SEND ACTUAL:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	1	0	0	1	SP	SP	5	5	4	6	ETX
HEX	02	36	31	30	31	31	30	30	31	20	20	35	35	34	36	03

RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	5	5	4	6	0	0	0	0	q1	q0	ETX

Range of value: **q1** → Level of 6\_1 / Legal sensor: 1 = INTERRUPTED  
0 = NOT INTERRUPTED  
**q0** → Level of 1\_2 / Home sensor: 1 = INTERRUPTED  
0 = NOT INTERRUPTED

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*Device is not in service mode or No ISS-A / 1 out 6 Valve available.*

## 5551 – SERVICE: MARKERS (C)

### RECEIVE COMMAND:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	5	5	5	1	SP	SP	SP	SP	SP	q0	ETX
HEX	02	36	31	30	31	35	35	35	31	20	20	20	20	20		03

Range of value: **q0** → INJECT MARKER: 2 = NO CHANGE  
1 = ON  
0 = OFF

### RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*Device is not in service mode.*

## 5553 – SERVICE: AUXILIARIES (C)

### RECEIVE COMMAND:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	5	5	5	3	SP	SP	SP	SP	q1	q0	ETX
HEX	02	36	31	30	31	35	35	35	33	20	20	20	20			03

Range of value: **q0** → AUX1: 2 = NO CHANGE  
1 = ON  
0 = OFF

### RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*Device is not in service mode.*

## 5556 – SERVICE: PROGRAMMABLE OUTPUTS (C)

### RECEIVE COMMAND:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	5	5	5	6	SP	SP	SP	SP	SP	q0	ETX
HEX	02	36	31	30	31	35	35	35	36	20	20	20	20	20		03

Range of value: **q0** → ALARM: 2 = NO CHANGE  
1 = ON  
0 = OFF

### RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*Device is not in service mode.*

## 5558 – SERVICE: REMOTE CONTROL INPUTS (SA)

### SEND ACTUAL:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	1	0	0	1	SP	SP	5	5	5	8	ETX
HEX	02	36	31	30	31	31	30	30	31	20	20	35	35	35	38	03

### RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	5	5	5	8	0	0	0	0	q1	q0	ETX

Range of value: **q1** → INPUT 2: 1 = HIGH LEVEL  
0 = LOW LEVEL  
**q0** → INPUT 1: 1 = HIGH LEVEL  
0 = LOW LEVEL

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*Device is not in service mode.*



Functionality of q1 and q0 depend on how the inputs are programmed by means of PFC 0189.

## 5570 – SERVICE: TRAY TEMPERATURE (P-SP-SA)

### PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	5	5	7	0	SP	SP	SP	SP	q1	q0	ETX
HEX	02	36	31	30	31	35	35	37	30	20	20	20	20			03

Range of value: **q1/q0** → Temperature range:  
 04 – 40 °C ( when tray cooling / heater option available)  
 04 – 22 °C ( when tray cooling option available)

### RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*Device is not in service mode or no temperature control available.*

### SEND PROGRAMMED:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	1	0	0	0	SP	SP	5	5	7	0	ETX
HEX	02	36	31	30	31	31	30	30	30	20	20	35	35	37	30	03

### RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	5	5	7	0	SP	SP	SP	SP	q1	q0	ETX

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*Device is not in service mode or no temperature control available.*



5570 - SERVICE: TRAY TEMPERATURE (Continued)

SEND ACTUAL:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	1	0	0	1	SP	SP	5	5	7	0	ETX
HEX	02	36	31	30	31	31	30	30	31	20	20	35	35	37	30	03

RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	5	5	7	0	0	0	0	0	q1	q0	ETX

Range of value: **q1/q0** → Actual temperature in °C.

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*Device is not in service mode or no temperature control available.*

## 5571 – SERVICE: TRAY COOLING/HEATER (P-SP)

### PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	5	5	7	1	SP	SP	SP	SP	SP	q0	ETX
HEX	02	36	31	30	31	35	35	37	31	20	20	20	20	20		03

Range of value: **q0** → 1 = ON  
0 = OFF

### RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*Device is not in service mode or no temperature control available.*

### SEND PROGRAMMED:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	1	0	0	0	SP	SP	5	5	7	1	ETX
HEX	02	36	31	30	31	31	30	30	30	20	20	35	35	37	31	03

### RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	5	5	7	1	0	0	0	0	0	q0	ETX

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*Device is not in service mode or no temperature control available.*

## 5573 – SERVICE: PELTIER FANS (C)

### RECEIVE COMMAND:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	5	5	7	3	SP	SP	SP	SP	SP	q0	ETX
HEX	02	36	31	30	31	35	35	37	33	20	20	20	20	20		03

Range of value: **q0** → 1 = ON  
0 = OFF

### RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*Device is not in service mode or no temperature control available.*

### SEND ACTUAL:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	1	0	0	1	SP	SP	5	5	7	3	ETX
HEX	02	36	31	30	31	31	30	30	31	20	20	35	35	37	33	03

### RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	5	5	7	3	0	0	0	0	0	q0	ETX

Range of value: **q0** → 1 = ON  
0 = OFF

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*Device is not in service mode or no temperature control available.*



*Peltier fans are automatically set to ON when the temperature control is turned ON.*



*Peltier fans cannot be turned OFF when the temperature control is ON.*

## 5576 – SERVICE: NUMBER OF COUNTS ADC (SA)

SEND ACTUAL:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	1	0	0	1	SP	SP	5	5	7	6	ETX
HEX	02	36	31	30	31	31	30	30	31	20	20	35	35	37	36	03

RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	5	5	7	6	0	0	q3	q2	q1	q0	ETX

Range of value: **q2/q1/q0** → VALUE: 0000 - 4095

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*Device is not in service mode or no temperature control available.*

## 5577 – SERVICE: POWER (SA)

SEND ACTUAL:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	1	0	0	1	SP	SP	5	5	7	7	ETX
HEX	02	36	31	30	31	31	30	30	31	20	20	35	35	37	37	03

RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	5	5	7	7	0	0	q3	q2	q1	q0	ETX

Range of value: **q3** → Sign Bit:  
 1 = - (negative)  
 0 = + (positive)  
**q2/q1/q0** → VALUE: 000 – 100

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*Device is not in service mode or no temperature control available.*

## 5579 – SERVICE: SETTINGS TO DEFAULT (C)

RECEIVE COMMAND:

PC→Dev.	STX	ID		AI		PFC				Value					ETX	
ASCII	STX	6	1	0	1	5	5	7	9	SP	SP	SP	SP	SP	q0	ETX
HEX	02	36	31	30	31	35	35	37	39	20	20	20	20	20		03

Range of value: **q0** → 0 = Settings to default

RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*Device is not in service mode or device is not ready.*

## 5580 – SERVICE: RESET LOG COUNTERS 1 (C)

### RECEIVE COMMAND:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	5	5	8	0	SP	SP	q3	q2	q1	q0	ETX
HEX	02	36	31	30	31	35	35	38	30	20	20					03

Range of value: **q3** → LOG ISS-A / 1 OUT 6 VALVE: 2 = NO CHANGE  
0 = CLEAR  
**q2** → LOG INJECTOR VALVE: 2 = NO CHANGE  
0 = CLEAR  
**q1** → LOG SYRINGE VALVE: 2 = NO CHANGE  
0 = CLEAR  
**q0** → LOG SYRINGE: 2 = NO CHANGE  
0 = CLEAR

### RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*Device is not in service mode.*

## 5581 – SERVICE: RESET LOG COUNTERS 2 (C)

### RECEIVE COMMAND:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	5	5	8	1	SP	SP	SP	SP	q1	q0	ETX
HEX	02	36	31	30	31	35	35	38	31	20	20	20	20			03

Range of value: **q1** → COUNTLOG NEEDLE VERTICAL TEST: 2 = NO CHANGE  
0 = CLEAR  
**q0** → COUNTLOG NEEDLE TRAY TEST: 2 = NO CHANGE  
0 = CLEAR

### RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*Device is not in service mode.*

## 5590 – SERVICE: CONTROL LED 1 (C)

### RECEIVE COMMAND:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	5	5	9	0	SP	SP	SP	SP	SP	q0	ETX
HEX	02	36	31	30	31	35	35	39	30	20	20	20	20	20		03

Range of value: **q0** → 2 = RED LED ON  
1 = GREEN LED ON  
0 = LED OFF

### RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*Device is not in service mode.*

## 5700 – SERVICE: LIFE TEST NEEDLE TRAY (C)

### PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	5	7	0	0	SP	SP	SP	SP	SP	q0	ETX
HEX	02	36	31	30	31	35	37	30	30	20	20	20	20	20		03

Range of value: **q0** → Start/stop life test  
0 = Stop  
1 = Start

### RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*Device is busy or device is not in service mode.*

## 5701 – SERVICE: LIFE TEST NEEDLE VERTICAL MOVEMENT (C)

### PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	5	7	0	1	SP	SP	SP	SP	SP	q0	ETX
HEX	02	36	31	30	31	35	37	30	31	20	20	20	20	20		03

Range of value: **q0** → Start/stop life test  
0 = Stop  
1 = Start

### RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*Device is busy or device is not in service mode.*



## 5702 – SERVICE: LIFE TEST SYRINGE (C)

### PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value					ETX	
ASCII	STX	6	1	0	1	5	7	0	2	SP	SP	SP	SP	SP	q0	ETX
HEX	02	36	31	30	31	35	37	30	32	20	20	20	20	20		03

Range of value: **q0** → Start/stop life test  
0 = Stop  
1 = Start

### RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*Device is busy or device is not in service mode.*

## 5703 – SERVICE: LIFE TEST INJECTOR VALVE (C)

### PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value					ETX	
ASCII	STX	6	1	0	1	5	7	0	3	SP	SP	SP	SP	SP	q0	ETX
HEX	02	36	31	30	31	35	37	30	33	20	20	20	20	20		03

Range of value: **q0** → Start/stop life test  
0 = Stop  
1 = Start

### RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*Device is busy or device is not in service mode.*

## 5704 – SERVICE: COUNTLOG NEEDLE TRAY TEST CYCLE (SA)

SEND ACTUAL:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	1	0	0	1	SP	SP	5	7	0	4	ETX
HEX	02	36	31	30	31	31	30	30	31	20	20	35	37	30	34	03

RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	5	7	0	4	q5	q4	q3	q2	q1	q0	ETX

Range of value: **q5/q4/q3/q2/q1/q0** → number of counts (max. 999999)

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*Device is not in service mode.*

## 5705 – SERVICE: COUNTLOG NEEDLE VERTICAL TEST CYCLE (SA)

SEND ACTUAL:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	1	0	0	1	SP	SP	5	7	0	5	ETX
HEX	02	36	31	30	31	31	30	30	31	20	20	35	37	30	35	03

RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	5	7	0	5	q5	q4	q3	q2	q1	q0	ETX

Range of value: **q5/q4/q3/q2/q1/q0** → number of counts (max. 999999)

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*Device is not in service mode.*

## 5706 – SERVICE: LIFE TEST ISS-A VALVE (C)

### PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	5	7	0	6	SP	SP	SP	SP	SP	q0	ETX
HEX	02	36	31	30	31	35	37	30	36	20	20	20	20	20		03

Range of value: **q0** → Start/stop life test  
0 = Stop  
1 = Start

### RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*Device is busy or device is not in service mode..*

## 5707 – SERVICE: LIFE TEST PRODUCTION (C)

### PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	5	7	0	7	q5	q4	q3	q2	q1	q0	ETX
HEX	02	36	31	30	31	35	37	30	37							03

Range of value: **q5/q4/q3/q2/q1/q0** → Start/stop Production life test  
000000 = Stop  
000001 -999999 = Start  
(where 1 to 999999 represents the number of life test cycles)

### RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*Device is busy or device is not in service mode..*

## 5900 – SERVICE: ADJUSTMENTS POSITION (C-SP)

PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value					ETX	
ASCII	STX	6	1	0	y0	5	9	0	0	SP	SP	SP	SP	SP	q0	ETX
HEX	02	36	31	30		35	39	30	30	20	20	20	20	20		03

Range of value: **q0**

- 0 = Move 0.05 mm to the right or front
- 1 = Move 0.50 mm to the right or front
- 2 = Move 0.05 mm to the left or rear
- 3 = Move 0.50 mm to the left or rear

- 0 = Move 0.25 mm for down
- 1 = Move 1.00 mm for down
- 2 = Move 0.25 mm for up
- 3 = Move 1.00 mm for up

Range of AI **y0**

- 1 = Wash Position Adjustment
- 2 = Needle Vertical Adjustment
- 3 = Needle Horizontal Adjustment
- 4 = Tray Adjustment (First Spot)
- 5 = Tray Adjustment (Second Spot)
- 6 = Tray Adjustment (Third Spot)



*The movement direction described for q0 depends on the chosen adjustment.*

RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*Device is busy or not in service mode.*

5900 - SERVICE: ADJUSTMENTS POSITION (Continued)

SEND PROGRAMMED:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	y0	1	0	0	0	SP	SP	5	9	0	0	ETX
HEX	02	36	31	30		31	30	30	30	20	20	35	39	30	30	03

RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	y0	5	9	0	0	0	0	q3	q2	q1	q0	ETX

Range of value: **q2/q1/q0** → 050-450 (0.50 – 4.50 mm)  
(format **y.zz**)

**q3** → 0 = adjustment value within limits  
1 = lower limit reached  
2 = upper limit reached

Range of AI **y0** → 1 = Wash Position Adjustment  
2 = Needle Vertical Adjustment  
3 = Needle Horizontal Adjustment  
4 = Tray Adjustment (First Spot)  
5 = Tray Adjustment (Second Spot)  
6 = Tray Adjustment (Third Spot)

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*Device is not in service mode.*

## 5901 – SERVICE: ADJUSTMENTS SAVE/CANCEL PARAMETER (C)

### RECEIVE COMMAND:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	y0	5	9	0	1	SP	SP	SP	SP	SP	q0	ETX
HEX	02	36	31	30		35	39	30	31	20	20	20	20	20		03

Range of value: **q0**

→ 0 = Cancel. Changed parameter will be ignored and restored to the EEPROM value.

→ 1 = Save. Adjustment parameter is stored in EEPROM.

Range of AI **y0**

- 1 = Wash Position Adjustment
- 2 = Needle Vertical Adjustment
- 3 = Needle Horizontal Adjustment
- 4 = Tray Adjustment (First Spot)
- 5 = Tray Adjustment (Second Spot)
- 6 = Tray Adjustment (Third Spot)

### RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*Device is running.*



*Save the adjustment corrections made by means of PFC 5900 in EEPROM.*

## 5902 – SERVICE: ADJUSTMENTS– READ PARAMETER FROM EEPROM (P-SA)

### PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	y0	5	9	0	2	SP	SP	SP	q2	q1	q0	ETX
HEX	02	36	31	30		35	39	30	32	20	20	20				03

- Range of value: **q2/q1/q0** → 050-450 (0.50-4.50mm)  
0.05mm increments for Wash Position, Needle Horizontal, Tray First, Second and Third Spot.  
0.25mm increments for Needle Vertical.
- Range of AI **y0** → 1 = Wash Position Adjustment  
2 = Needle Vertical Adjustment  
3 = Needle Horizontal Adjustment  
4 = Tray Adjustment (First Spot)  
5 = Tray Adjustment (Second Spot)  
6 = Tray Adjustment (Third Spot)

### RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*Device is not in service mode.*

### SEND ACTUAL:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	y0	1	0	0	1	SP	SP	5	9	0	2	ETX
HEX	02	36	31	30		31	30	30	31	20	20	35	39	30	32	03

### RESPONSES:

PC←Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	y0	5	9	0	2	0	0	0	q2	q1	q0	ETX

PC←Dev.	NACK
---------	------

## 5903 – SERVICE: ADJUSTMENTS MOVE NEEDLE VERTICAL (C)

### PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	5	9	0	3	SP	SP	SP	SP	SP	q0	ETX
HEX	02	36	31	30	31	35	39	30	33	20	20	20	20	20		03

Range of value: **q0**

→ 0 = Up to save adjustment position.  
1 = Down to adjust needle vertical  
2 = Down to adjust tray positions



*The needle vertical movement for adjustment moves the needle down just above the needle vertical adjustment spot and without checking the stripper. By means of PFC 5900 needle vertical can be adjusted to the correct position.*



*The needle vertical movement Up moves the needle slightly in the upper direction just enough so that the tray and needle (horizontal) can be moved without causing damage. The needle cannot be moved to the vertical home position because of the use of a specific tool that is used during adjustments.*

### RESPONSES:

PC←Dev.	ACK
PC←Dev.	NACK
PC←Dev.	NACK0

*Device is busy or not in service mode.*



## 5904 – SERVICE: ADJUSTMENTS MOVE TO ADJUSTMENT SPOT (C)

PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value					ETX	
ASCII	STX	6	1	0	1	5	9	0	4	SP	SP	SP	SP	SP	q0	ETX
HEX	02	36	31	30	31	35	39	30	34	20	20	20	20	20		03

Range of value: **q0**

→ Adjustment position:  
 0 = Needle Vertical Adjustment Spot  
 1 = First Tray Adjustment Spot  
 2 = Second Tray Adjustment Spot  
 3 = Third Tray Adjustment Spot



*The tray and needle (horizontal) will be moved to the corresponding positions of the adjustment spots. By means of PFC 5900 needle vertical and tray can be adjusted to the correct positions.*

RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*Device is busy or not in service mode.*

## 5920 – SERVICE: OPTIONS (C)

PROGRAM:

PC→Dev.	STX	ID		AI		PFC				Value						ETX
ASCII	STX	6	1	0	1	5	9	2	0	q5	q4	q3	q2	q1	q0	ETX
HEX	02	36	31	30	31	35	39	32	30							03

Range of value:

- q5** → Reserved always zero.
- q4** → 0 = No 1 out 6 Valve installed.  
1 = 1 out 6 Valve installed.
- q3** → 0 = No ISS-A installed.  
1 = ISS-A installed.
- q2** → 0 = No Syringe Valve Wash Port 2 installed.  
1 = Syringe Valve Wash Port 2 installed.
- q1** → 0 = No SSV option installed.  
1 = SSV option installed.
- q0** → 0 = No Temperature control option installed  
1 = Tray cooling option installed  
2 = Reserved for future use  
3 = Tray cooling and heating option installed

RESPONSES:

PC←Dev.	ACK
---------	-----

PC←Dev.	NACK
---------	------

PC←Dev.	NACK0
---------	-------

*Device is busy or not in service mode.*

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