1. Application

 This document defines the communications method for control of the NEC LCD monitor, MultiSync X461UN
/X461HB /X431BT /P401 /P461 /P521 /P701 /S401 /S461 /S521 and MULTEOS M401 /M461 when using an external
controller.

2. Connectors and wiring

2.1 RS-232C Remote control
```
  Connector: 9-pin D-Sub
  Cable: Cross (reversed) cable or null modem cable
```

(Please refer "Controlling the LCD monitor via RS-232C Remote control" on User's manual.)

2.2 LAN control
```
  Connector: RJ-45 10/100 BASE-T
  Cable: Category 5 or higher LAN cable
```

(Please refer "Controlling the LCD monitor via LAN control" on User's manual.)

3. Communication Parameter

3.1 RS-232C Remote control
```
    (1) Communication system      Asynchronous
    (2) Interface                 RS-232C
    (3) Baud rate                 9600bps
    (4) Data length               8bits
    (5) Parity                    None
    (6) Stop bit                  1 bit
    (7) Communication code        ASCII
```

3.2 LAN control
```
    (1) Communication system      TCP/IP (Internet protocol suite)
    (2) Interface                 Ethernet (CSMA/CD)
    (3) Communication layer       Transport layer (TCP)
                                  * Using the payload of TCP segment.
    (4) IP address                (Default) 192.168.0.10
                                  * If you need to change,
                                  Please refer "Network settings" on User's manual.
    (5) Port No.                  7142 (Fixed)

    (Note)
  The monitor will disconnect the connection if no packet data is received for 15 minutes.
  And the controller (PC) has to re-connect to control the monitor again, after 15 minutes or more.
```
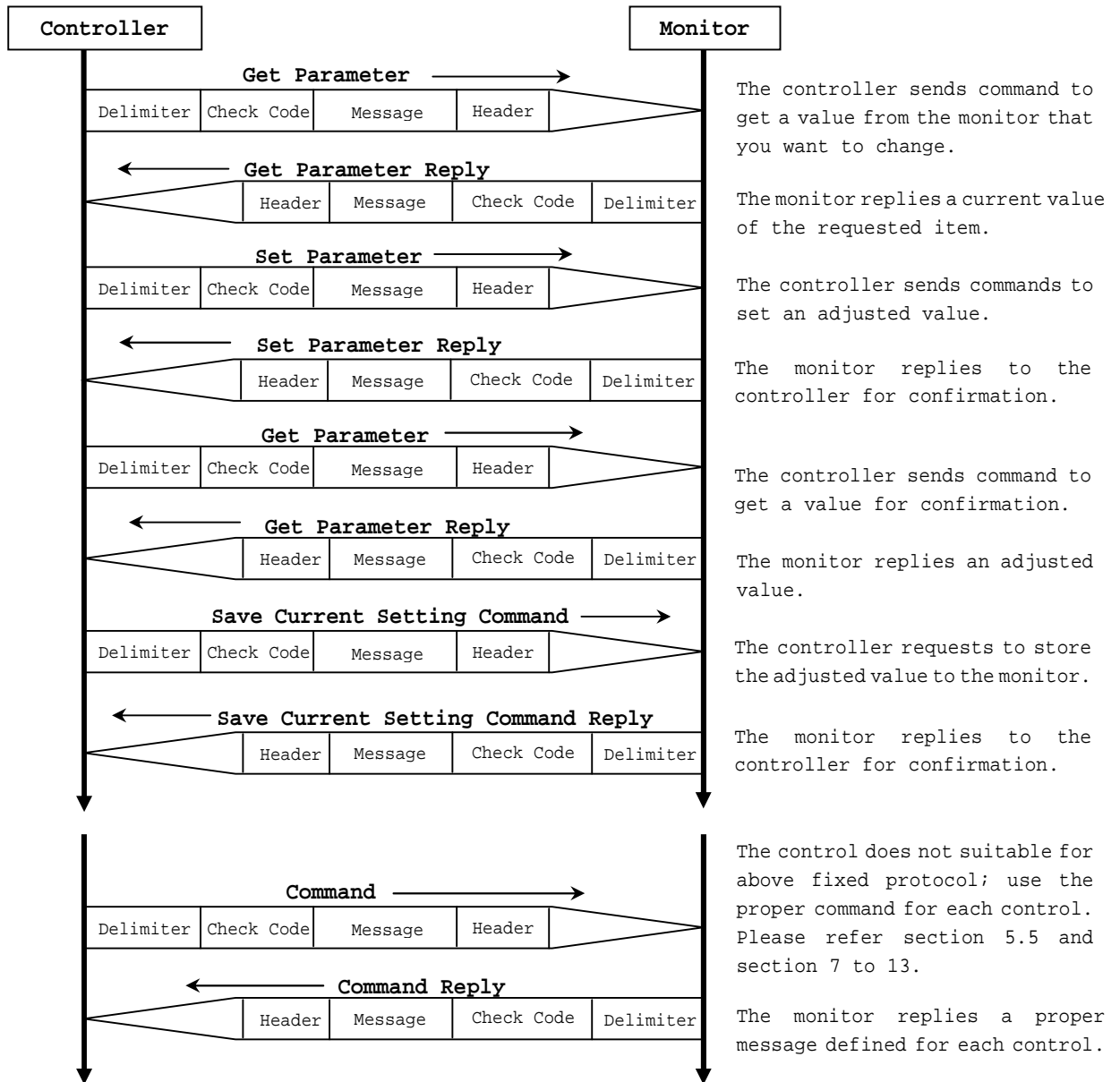
3.3 Communication timing
```
    The controller should wait for a packet interval before next command is sent.
    The packet interval needs to be longer than 600msec for the LCD monitor.
```

4. Communication Format

Header	Message	Check Code	Delimiter

The command packet consists of four parts, Header, Message, Check code and Delimiter.

Sequence of a typical procedure to control a monitor is as follows,
  [A controller and a monitor, two-way communication composition figure]

The controller sends command to get a value from the monitor that you want to change.

The monitor replies a current value of the requested item.

The controller sends commands to set an adjusted value.

The monitor replies to the controller for confirmation.

The controller sends command to get a value for confirmation.

The monitor replies an adjusted value.

The controller requests to store the adjusted value to the monitor.

The monitor replies to the controller for confirmation.

The control does not suitable for above fixed protocol; use the proper command for each control. Please refer section 5.5 and section 7 to 13.

The monitor replies a proper message defined for each control.

4.1 Header block format (fixed length)

Header	Message	Check code	Delimiter

SOH	Reserved '0'	Destination	Source	Message Type	Message Length
1st	2nd	3rd	4th	5th	6th –7th

1st byte) SOH: Start of Header
    ASCII SOH (01h)

2ndbyte) Reserved: Reserved for future extensions.

On this monitor, it must be ASCII '0'(30h).

3rdbyte) Destination: Destination equipment ID. (Receiver)

Specify a commands receiver's address.

The controller sets the "MONITOR ID" or "GROUP ID" of the monitor controlled in here.

On the reply, the monitor sets '0' (30h), always.

"MONITOR ID", "GROUP ID" to "Destination Address" conversion table is as follows,

Monitor ID	Destination Address	Monitor ID	Destination Address	Monitor ID	Destination Address	Monitor ID	Destination Address
1	41h('A')	26	5Ah('Z')	51	73h	76	8Ch
2	42h('B')	27	5Bh	52	74h	77	8Dh
3	43h('C')	28	5Ch	53	75h	78	8Eh
4	44h('D')	29	5Dh	54	76h	79	8Fh
5	45h('E')	30	5Eh	55	77h	80	90h
6	46h('F')	31	5Fh	56	78h	81	91h
7	47h('G')	32	60h	57	79h	82	92h
8	48h('H')	33	61h	58	7Ah	83	93h
9	49h('I')	34	62h	59	7Bh	84	94h
10	4Ah('J')	35	63h	60	7Ch	85	95h
11	4Bh('K')	36	64h	61	7Dh	86	96h
12	4Ch('L')	37	65h	62	7Eh	87	97h
13	4Dh('M')	38	66h	63	7Fh	88	98h
14	4Eh('N')	39	67h	64	80h	89	99h
15	4Fh('O')	40	68h	65	81h	90	9Ah
16	50h('P')	41	69h	66	82h	91	9Bh
17	51h('Q')	42	6Ah	67	83h	92	9Ch
18	52h('R')	43	6Bh	68	84h	93	9Dh
19	53h('S')	44	6Ch	69	85h	94	9Eh
20	54h('T')	45	6Dh	70	86h	95	9Fh
21	55h('U')	46	6Eh	71	87h	96	A0h
22	56h('V')	47	6Fh	72	88h	97	A1h
23	57h('W')	48	70h	73	89h	98	A2h
24	58h('X')	49	71h	74	8Ah	99	A3h
25	59h('Y')	50	72h	75	8Bh	100	A4h
ALL	2Ah('*')						

Group ID	Destination Address	Group ID	Destination Address	Group ID	Destination Address	Group ID	Destination Address
A	31h('1')	D	34h('4')	G	37h('7')	J	3Ah(':')
B	32h('2')	E	35h('5')	H	38h('8')		
C	33h('3')	F	36h('6')	I	39h('9')		

Ex.) If you want to control a monitor that has the "ID No." as '1', specify a destination address 'A'(41h). If you want to control all of the monitors which are connected by a daisy chain, specify a destination address ' '(2Ah).

4thbyte) Source: Source equipment ID. (Sender)

Specify a sender address.

The controller must be '0' (30h).

On the reply, the monitor sets the own MONITOR ID in here.

5thbyte) Message Type: (Case sensitive.)

Refer to section 4.2 "Message block format" for more details.

ASCII 'A' (41h): Command.

ASCII 'B' (42h): Command reply.

ASCII 'C' (43h): Get current parameter from a monitor.

ASCII 'D' (44h): "Get parameter" reply.

ASCII 'E' (45h): Set parameter.

ASCII 'F' (46h): "Set parameter" reply.

6th -7th bytes) Message Length:

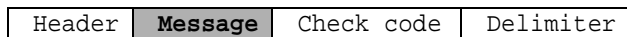Specify the length of the message (that follows the header) from STX to ETX.

This length includes STX and ETX.

The byte data must be encoded to ASCII characters.

Ex.) The byte data 3Ah must be encoded to ASCII characters '3' and 'A' (33h and 41h).

The byte data 0Bh must be encoded to ASCII characters '0' and 'B' (30h and 42h).

4.2 Message block format

Header	**Message**	Check code	Delimiter

"Message block format" is allied to the "Message Type" in the "Header".

Refer to the section 6 "Message format" for more detail.

1 Get current parameter

The controller sends this message when you want to get the status of the monitor.

For the status that you want to get, specify the "OP code page" and "OP code",

refer to "Appendix A. Operation code table".

"Message format" of the "Get current parameter" is as follows,

STX	OP code page		OP code		ETX
	Hi	Lo	Hi	Lo	

➢ Refer to section 5.1 "Get current parameter from a monitor." for more details.

2 Get Parameter reply

The monitor will reply with the status of the requested item specified by the controller

in the "Get parameter message".

"Message format" of the "Get parameter reply" is as follows,

STX	Result		OP code page		OP code		Type		Max value			Current Value			ETX
	Hi	Lo	Hi	Lo	Hi	Lo	Hi	Lo	MSB		LSB	MSB		LSB	

➢ Refer to section 5.2 "Get parameter reply" for more details.

3 Set parameter

The controller sends this message to change a setting of the monitor.

Message format of the "Set parameter" is as follows,

STX	OP code page		OP code		Set Value				ETX
	Hi	Lo	Hi	Lo	MSB			LSB	

➢ Refer to section 5.3 "Set parameter" for more details.

4 Set Parameter reply

The monitor replies with this message for a confirmation of the "Set parameter message".

Message format of the "Set parameter reply" is as follows,

STX	Result		OP code page		OP code		Type		Max value			Requested setting Value			ETX
	Hi	Lo	Hi	Lo	Hi	Lo	Hi	Lo	MSB		LSB	MSB		LSB	

➢ Refer to section 5.4 "Set parameter reply" for more details.

5 Command

"Command message" format depends on each command.

Usually, this "command message" is used for some non-slider controls and some special operations, such as "Save current settings", "Get timing report", "power control", "Schedule", etc. Refer to section 5.5 "Commands message" for more details.

6 Command reply

The monitor replies to a query from the controller.

"Command reply message" format depends on each command.

Refer to section 5.5 "Commands message" for more details.

4.5 Check code

Header	Message	**Check code**	Delimiter

Check code is the Block Check Code (BCC) between the Header and the End of Message except SOH.

		2^7	2^6	2^5	2^4	2^3	2^2	2^1	2^0
SOH	D_0								
Reserved	D_1								
Destination	D_2								
Source	D_3								
Type	D_4								
Length(H)	D_5								
Length(L)	D_6								
STX	D_7								
Data	D_8								
|	|								
|	|								
ETX	D_n								
Check code	D_{n+1}	P	P	P	P	P	P	P	P

$D_{n+1} = D_1$ XOR D_2 XOR D_3 XOR ,,, D_n

XOR: Exclusive OR

Following is an example of a Check code (BCC) calculation.

	Header						Message										Check code (BCC)	Delimiter
SOH	Reserved	Destination Address	Source Address	Message type	Message length		STX	OP code page		OP code		Set Value				ETX		
01	30	41	30	45	30	41	02	30	30	31	30	30	30	36	34	03	77	0D
D_0	D_1	D_2	D_3	D_4	D_5	D_6	D_7	D_8	D_9	D_{10}	D_{11}	D_{12}	D_{13}	D_{14}	D_{15}	D_{16}	D_{17}	D_{18}

$$\text{Check code (BCC) } D_{17} = D_1 \text{ xor } D_2 \text{ xor } D_3 \text{ xor } \ldots \text{ xor } D_{14} \text{ xor } D_{15} \text{ xor } D_{16}$$

$$= 30h \text{ xor } 41h \text{ xor } 30h \text{ xor } 45h \text{ xor } 30h \text{ xor } 41h$$

$$\text{xor } 02h \text{ xor } 30h \text{ xor } 30h \text{ xor } 31h \text{ xor } 30h \text{ xor } 30h$$

$$\text{xor } 30h \text{ xor } 36h \text{ xor } 34h \text{ xor } 03h$$

$$= 77h$$

4.6 Delimiter

Header	Message	Check code	**Delimiter**

Packet delimiter code; ASCII CR(0Dh).

5. Message type

5.1 Get current Parameter from a monitor.

STX	OP code page		OP code		ETX
	Hi	Lo	Hi	Lo	
1st	2nd-3rd		4th-5th		6th

Send this message when you want to get the status of a monitor.

For the status that you want to get, specify the "OP code page" the "OP code", refer to "Appendix

A. Operation code table".

1st byte) STX: Start of Message

    ASCII STX (02h)

2nd-3rd bytes) OP code page: Operation code page.

    Specify the "OP code page" for the control which you want to get the status.

    Refer to "Appendix A Operation code table" for each item.

    OP code page data must be encoded to ASCII characters.

    Ex.) The byte data 02h must be encoded to ASCII characters '0' and '2' (30h and 32h).

    OP code page 02h -> OP code page (Hi) = ASCII '0' (30h)

                         OP code page (Lo) = ASCII '2' (32h)

    Refer to Operation code table. (Appendix A)

4th-5th bytes) OP code: Operation code

    Refer to "Appendix A Operation code table" for each item.

    OP code data must be encoded to ASCII characters.

    Ex.) The byte data 3Ah must be encoded to ASCII characters '3' and 'A' (33h and 41h).

    OP code 3Ah ->   OP code (Hi) = ASCII '3' (33h)

                         OP code (Lo) = ASCII 'A' (41h)

    Refer to Operation code table.

6th byte) ETX: End of Message

    ASCII ETX (03h)

5.2 "Get parameter" reply

STX	Result		OP code page		OP code		Type		Max value			Current Value			ETX
	Hi	Lo	Hi	Lo	Hi	Lo	Hi	Lo	MSB		LSB	MSB		LSB	
1st	2nd-3rd		4th-5th		6th -7th		8th -9th		10th -13th			14th -17th			18th

The monitor replies with a current value and the status of the requested item (operation code).

1st byte) STX: Start of Message

    ASCII STX (02h)

2nd-3rd bytes) Result code.

These bytes indicate a result of the requested commands as follows,

    00h: No Error.

    01h: Unsupported operation with this monitor or unsupported operation under current condition.

This result code from the monitor is encoded to ASCII characters.

Ex.) The byte data 01h is encoded to ASCII character '0' and '1' (30h and 31h).

4th-5^{th}bytes) OP code page: Operation code page.

These bytes indicate a replying item's OP code page.

This returned value from the monitor is encoded to ASCII characters.

Ex.) The byte data 02h is encoded to ASCII character '0' and '2' (30h and 32h).

Refer to the operation code table.

6th -7^{th}bytes) OP code: Operation code

These bytes indicate a replying item's OP code.

This returned value from the monitor is encoded to ASCII characters.

Refer to the operation code table.

Ex.) The byte data 1Ah is encoded to ASCII character '1' and 'A' (31h and 41h).

8th -9^{th}bytes) Type: Operation type code

    00h: Set parameter

    01h: Momentary

    Like the Auto Setup function which automatically changes the parameter.

This returned value from the monitor is encoded to ASCII characters.

Ex.) The byte data 01h is encoded to ASCII character '0' and '1' (30h and 31h).

10th-13^{th}bytes) Max. value: Maximum value which monitor can accept. (16bits)

This returned value from the monitor is encoded to ASCII characters.

Ex.) '0','1','2' and '3' means 0123h (291)

14th -17^{th}bytes) Current Value: (16bits)

This returned value from the monitor is encoded to ASCII characters.

Ex.) '0','1','2' and '3' means 0123h (291)

18^{th}byte) ETX: End of Message

ASCII ETX (03h)

5.3 Set parameter

STX	OP code page		OP code		Set Value			ETX
	Hi	Lo	Hi	Lo	MSB		LSB	
1st	2nd-3rd		4th-5th		6th-9th			10th

Send this message to change monitor's adjustment and so on.

The controller requests a monitor to change value.

1^{st}byte) STX: Start of Message

ASCII STX (02h)

2nd-3^{rd}bytes) OP code page: Operation code page

This OP code page data must be encoded to ASCII characters.

Ex.) The byte data 02h must be encoded to ASCII '0' and '2' (30h and 32h).

Refer to the Operation code table.

4th-5thbytes) OP code: Operation code

This OP code data must be encoded to ASCII characters.

Ex.) OP code 1Ah ->   OP code (Hi) = ASCII '1' (31h)

OP code (Lo) = ASCII 'A' (41h)

Refer to the Operation code table.

6th-9thbytes) Set value:(16bit)

This data must be encoded to ASCII characters.

Ex.) 0123h ->   1st(MSB) = ASCII '0' (30h)

2nd = ASCII '1' (31h)

3rd = ASCII '2' (32h)

4th(LSB) = ASCII '3' (33h)

10thbyte) ETX: End of Message

ASCII ETX (03h)

5.4 "Set parameter" reply

STX	Result		OP code page		OP code		Type		Max value				Requested setting Value				ETX
	Hi	Lo	Hi	Lo	Hi	Lo	Hi	Lo	MSB			LSB	MSB			LSB	
1st	2nd-3rd		4th-5th		6th-7th		8th-9th		10th-13th				14th -17th				18th

The Monitor echoes back the parameter and status of the requested operation code.

1stbyte) STX: Start of Message

ASCII STX (02h)

2nd-3rdbytes) Result code

ASCII '0''0' (30h, 30h): No Error.

ASCII '0''1' (30h, 31h): Unsupported operation with this monitor or unsupported operation under

current condition.

4th-5thbytes) OP code page: Echoes back the Operation code page for confirmation.

Reply data from the monitor is encoded to ASCII characters.

Ex.) OP code page 02h ->   OP code page = ASCII '0' and '2' (30h and 32h)

Refer to Operation code table.

6th-7thbytes) OP code: Echoes back the Operation code for confirmation.

Reply data from the monitor is encoded to ASCII characters.

Ex.) OP code 1Ah ->   OP code (Hi) = ASCII '1' (31h)

OP code (Lo) = ASCII 'A' (41h)

Refer to Operation code table

8th-9thbytes) Type: Operation type code

ASCII '0''0' (30h, 30h): Set parameter

ASCII '0''1' (30h, 31h): Momentary

Like Auto Setup function, that automatically changes the parameter.

10th-13th bytes) Max. value: Maximum value that monitor can accept. (16bits)

Reply data from the monitor is encoded to ASCII characters.

Ex.) '0''1''2''3' means 0123h (291)

14th -17th bytes) Requested setting Value: Echoes back the parameter for confirmation. (16bits)

Reply data from the monitor is encoded to ASCII characters.

Ex.) '0''1''2''3' means 0123h (291)

18th byte) ETX: End of Message

ASCII ETX (03h)

5.5 Commands

"Command message format" depends on each command. Some commands are shown with usage. Refer to section 7 to 13.

5.5.1 Save Current Settings.

The controller requests for the monitor to store the adjusted value.

STX	Command code		ETX
	'0'	'C'	

➤   Send "OC"(30h, 43h) as Save current settings command.

➤   Complete "Save Current setting" command packet as follows;

ASCII: 01h-30h-41h-30h-41h-30h-34h-02h-30h-43h-03h-CHK-0Dh

SOH-'0'-'A'-'0'-'A'-'0'-'4'-STX-'0'-'C'-ETX-CHK- CR

The monitor replies the packet for confirmation as follows;

SOH-'0'-'0'-'A'-'B'-'0'-'6'-STX-'0'-'0'-'0'-'C'-ETX-CHK- CR

5.5.2 Get Timing Report and Timing reply.

The controller requests the monitor to report the displayed image timing.

STX	Command code		ETX
	'0'	'7'	

➤   Send "07"(30h, 37h) as Get Timing Report command.

➤   Complete "Get Timing Report" command packet as follows;

ASCII: 01h-30h-41h-30h-41h-30h-34h-02h-30h-37h-03h-CHK-0Dh

SOH-'0'-'A'-'0'-'A'-'0'-'4'-STX-'0'-'7'-ETX-CHK- CR

The monitor replies status as the following format;

STX	Command		SS		H Freq.				V Freq.				ETX
	'4'	'E'	Hi	Lo	MSB			LSB	MSB			LSB	

➤   SS: Timing status byte

Bit 7 = 1: Sync Frequency is out of range.
Bit 6 = 1: Unstable count

```
              Bit 5-2    Reserved (Don't care)
              Bit 1      1:Positive Horizontal sync polarity.
                         0:Negative Horizontal sync polarity.
              Bit 0      1:Positive Vertical sync polarity.
                         0:Negative Vertical sync polarity.
```

➢　　　H Freq: Horizontal Frequency in unit 0.01kHz

➢　　　V Freq: Vertical Frequency in unit 0.01Hz

```
       Ex.) When H Freq is '1''2''A''9' (31h, 32h, 41h, 39h), it means 47.77kHz.
```

5.5.3 NULL Message

STX	Command code		ETX
	'B'	'E'	

The NULL message returned from the monitor is used in the following cases;

➢　　　A timeout error has occurred. (The default timeout is 10sec.)

➢　　　The monitor receives an unsupported message type.

➢　　　The monitor detects a packet BCC (Block Check Code) error.

➢　　　To tell the controller that the monitor does not have any answer to give to the host (not
ready or not expected)

　　➢　　Following operations need a certain time for to execute, so the monitor will return
this message when another message is received during execution.

　　　✧　Power ON, Power OFF, Auto Setup, Input, PIP Input, Auto Setup and Factory reset.

➢　　Complete "NULL Message" command packet as follows;

```
01h-30h-30h-41h-42h-30h-34h-02h-42h-45h-03h-CHK-0Dh

SOH-'0'-'0'-'A'-'B'-'0'-'4'-STX-'B'-'E'-ETX-CHK- CR
```

6. Typical procedure example

The following is a sample of procedures to control the monitor, these are examples of "Get parameter",
"Set parameter" and "Save current settings".

6.1. How to change the "Brightness" setting.

Step 1. The controller requests the Monitor to reply with the current brightness setting and capability
to support this operation. (Get parameter)

Header	Message	Check code	Delimiter
SOH-'0'-Monitor ID-'0'-'C'-'0'-'6'	STX-'0'-'0'-'1'-'0'-ETX	BCC	CR

```
Header
  SOH (01h): Start Of Header
  '0' (30h): Reserved
  Monitor ID: Specify the Monitor ID from which you want to get a value.
            Ex.) If Monitor ID is '1', specify 'A'.
  '0' (30h): Message sender is the controller.
  'C' (43h): Message type is "Get parameter command".
  '0'-'6' (30h, 36h): Message length is 6 bytes.

Message
  STX (02h): Start of Message
  '0'-'0' (30h, 30h): Operation code page number is 0.
  '1'-'0' (31h, 30h): Operation code is 10h (in the OP code page 0).
  ETX (03h): End of Message
```

Check code
  BCC: Block Check Code
        Refer to the section 4.5 "Check code" for a BCC calculation.

Delimiter
  CR (0Dh): End of packet

Step 2. The monitor replies with current Brightness setting and capability to support this operation.

Header	Message	Check code	Delimiter
SOH-'0'-'0'-Monitor ID-'D'-'1'-'2'	STX-'0'-'0'-'0'-'0'-'1'-'0'-'0'-'0'-'0'-'0'-'6'-'4'-'0'-'0'-'3'-'2'-ETX	BCC	CR

Header
  SOH (01h): Start Of Header
  '0' (30h): Reserved
  '0' (30h): Message receiver is the controller.
  Monitor ID: Indicate a replying Monitor ID.
            Ex.) When this byte is set to 'A', the replying Monitor ID is '1'.
  'D' (44h): Message Type is "Get parameter reply".
  '1'-'2' (31h, 32h): Message length is 18 bytes.

Message
  STX (02h): Start of Message
  '0'-'0' (30h, 30h): Result code. No error.
  '0'-'0' (30h, 30h): Operation code page number is 0.
  '1'-'0' (31h, 30h): Operation code is 10h (in the page 0).
  '0'-'0' (30h, 30h): This operation is "Set parameter" type.
  '0'-'0'-'6'-'4' (30h, 30h, 36h, 34h): Brightness max value is 100(0064h).
  '0'-'0'-'3'-'2' (30h, 30h, 33h, 32h): Current Brightness setting is 50(0032h) .
  ETX (03h): End of Message

Check code
  BCC: Block Check Code
        Refer to the section 4.5 "Check code" for a BCC calculation.

Delimiter
  CR (0Dh): End of packet

Step 3. The controller request the monitor to change the Brightness setting

Header	Message	Check code	Delimiter
SOH-'0'-Monitor ID-'0'-'E'-'0'-'A'	STX-'0'-'0'-'1'-'0'-'0'-'0'-'5'-'0'-ETX	BCC	CR

Header
  SOH (01h): Start Of Header
  '0' (30h): Reserved
  Monitor ID: Specify the Monitor ID of which you want to change a setting.
            Ex.) If Monitor ID is '1', specify 'A'.
  '0' (30h): Message sender is the controller .
  'E' (45h): Message Type is "Set parameter command".
  '0'-'A' (30h, 41h): Message length is 10 bytes.

Message
  STX (02h): Start of Message
  '0'-'0' (30h, 30h): Operation code page number is 0.
  '1'-'0' (31h, 30h): Operation code is 10h (in the page 0).
  '0'-'0'-'5'-'0' (30h, 30h, 35h, 30h): Set Brightness setting 80(0050h).
  ETX (03h): End of Message

Check code
  BCC: Block Check Code
        Refer to the section 4.5 "Check code" for a BCC calculation.

Delimiter

CR (0Dh): End of packet

     Step 4. The monitor replies with a message for confirmation.

Header	Message	Check code	Delimiter
SOH-'0'-'0'- Monitor ID -'F'-'1'-'2'	STX-'0'-'0'-'0'-'0'-'1'-'0'—'0'-'0'-'0' -'0'-'6'-'4'-'0'-'0'-'5'-'0'-ETX	BCC	CR

       Header
         SOH (01h): Start Of Header
         '0' (30h): Reserved
         '0' (30h): Message receiver is the controller.
         Monitor ID: Indicate a replying Monitor ID.
                   Ex.) When this byte is set to 'A', the replying Monitor ID is '1'.
         'F' (46h): Message Type is "Set parameter reply".
         '1'-'2' (31h, 32h): Message length is 18 bytes.

       Message
         STX (02h): Start of Message
         '0'-'0' (30h, 30h): Result code. No error.
         '0'-'0' (30h, 30h): Operation code page number is 0.
         '1'-'0' (31h, 30h): Operation code is 10h (in the page 0).
         '0'-'0' (30h, 30h): This operation is "Set parameter" type.
         '0'-'0'-'6'-'4' (30h, 30h, 36h, 34h): Brightness max value is 100(0064h).
         '0'-'0'-'5'-'0' (30h, 30h, 35h, 30h): Received a Brightness setting was 80(0050h) .
         ETX (03h): End of Message

       Check code
         BCC: Block Check Code
             Refer to the section 4.5 "Check code" for a BCC calculation.

       Delimiter
         CR (0Dh): End of packet

     ➢   Repeat Step 1 and Step 2, if you need to check the Brightness setting. (Recommended)
     Step 5. Request the monitor to store the Brightness setting. (Save Current Settings Command)

Header	Message	Check code	Delimiter
SOH-'0'-Monitor ID-'0'-'A'-'0'-'4'	STX-'0-'C'-ETX	BCC	CR

       Header
         SOH (01h): Start Of Header
         '0' (30h): Reserved
         Monitor ID: Specify the Monitor ID which you want to store the setting.
                   Ex.) If Monitor ID is '1', specify 'A'.
         '0' (30h): Message sender is the controller.
         'A' (41h): Message type is "Command".
         '0'-'4' (30h, 34h): Message length is 4 bytes.

       Message
         STX (02h): Start of Message
         '0'-'C' (30h, 43h): Command code is 0Ch as "Save current settings".
         ETX (03h): End of Message

       Check code
         BCC: Block Check Code
             Refer to the section 4.5 "Check code" for a BCC calculation.

       Delimiter
         CR (0Dh): End of packet

6.2. How to read the measurement value of the built-in temperature sensors.

     MultiSync X461UN /X461HB /X431BT /P401 /P461 /P521 /P701 /S401 /S461 /S521 and MULTEOS M401 /M461

     have three built-in temperature sensors.

     The controller can monitor inside temperatures by using those sensors with external control.

The following shows the procedure for reading the temperatures from the sensors.

Step 1. Select a temperature sensor which you want to read.

Header	Message	Check code	Delimiter
SOH-'0'-Monitor ID-'0'-'E'-'0'-'A'	STX-'0'-'2'-'7'-'8'-'0'-'0'-'0'-'1'-ETX	BCC	CR

    Header
      SOH (01h): Start of Header
      '0' (30h): Reserved
      Monitor ID: Specify the Monitor ID which you want to get a value.
                Ex.) If Monitor ID is '1', specify 'A'.
      '0' (30h): Message sender is the controller.
      'E' (45h): Message Type is "Set parameter command".
      '0'-'A' (30h, 41h): Message length is 10 bytes.

    Message
      STX (02h): Start of Message
      '0'-'2' (30h, 32h): Operation code page number is 2.
      '7'-'8' (37h, 38h): Operation code is 78h (on page 2).
      '0'-'0'-'0'-'1' (30h, 30h, 30h, 31h): Select the temperature sensor #1 (01h).
              00h: No meaning
              01h: Sensor #1
              02h: Sensor #2
              03h: Sensor #3
      ETX (03h): End of Message

    Check code
      BCC: Block Check Code
          Refer to the section 4.5 "Check code" for a BCC calculation.

    Delimiter
      CR (0Dh): End of packet

Step 2. The monitor replies for confirmation.

Header	Message	Check code	Delimiter
SOH-'0'-'0'-Monitor ID-'F'-'1'-'2'	STX-'0'-'0'-'0'-'2'-'7'-'8'-'0'-'0'-'0'-'0'-'0'-'3'-'0'-'0'-'0'-'1'-ETX	BCC	CR

     Header
      SOH (01h): Start of Header
      '0' (30h): Reserved
      '0' (30h): Message receiver is the controller.
      Monitor ID: Indicates a replying Monitor ID.
                Ex.) When this byte is set to 'A', the replying Monitor ID is '1'.
      'F' (46h): Message Type is "Set parameter reply".
      '1'-'2' (31h, 32h): Message length is 18 bytes.

    Message
      STX (02h): Start of Message
      '0'-'0' (30h, 30h): Result code. No error.
      '0'-'2' (30h, 32h): Operation code page number is 2.
      '7'-'8' (37h, 38h): Operation code is 78h (in the page 2).
      '0'-'0' (30h, 30h): This operation is "Set parameter" type.
      '0'-'0'-'0'-'3' (30h, 30h, 30h, 33h): Number of temperature sensors are 3 (0003h).
      '0'-'0'-'0'-'1' (30h, 30h, 30h, 31h): temperature sensor is #1.
      ETX (03h): End of Message

    Check code
      BCC: Block Check Code
          Refer to the section 4.5 "Check code" for a BCC calculation.

Delimiter
  CR (0Dh): End of packet

Step 3. The controller requests the monitor to send the temperature from the selected sensor.

Header	Message	Check code	Delimiter
SOH-'0'-Monitor ID-'0'-'C'-'0'-'6'	STX-'0'-'2'-'7'-'9'-ETX	BCC	CR

 Header
  SOH (01h): Start of Header
  '0' (30h): Reserved
  Monitor ID: Specify the Monitor ID which you want to get a value.
            Ex.) If Monitor ID is '1', specify 'A'.
  '0' (30h): Message sender is the controller.
  'C' (43h): Message Type is "Get parameter".
  '0'-'6' (30h, 36h): Message length is 6 bytes.

 Message
  STX (02h): Start of Message
  '0'-'2' (30h, 32h): Operation code page number is 2.
  '7'-'9' (37h, 39h): Operation code is 79h (in the page 2).
  ETX (03h): End of Message

 Check code
  BCC: Block Check Code
        Refer to the section 4.5 "Check code" for a BCC calculation.

 Delimiter
  CR (0Dh): End of packet

Step 4. The monitor replies a temperature of selected sensor.

Header	Message	Check code	Delimiter
SOH-'0'-'0'-Monitor ID-'D'-'1'-'2'	STX-'0'-'0'-'0'-'2'-'7'-'9'-'0'-'0'-'F'-'F'-'F'-'F'-'0'-'0'-'3'-'2'-ETX	BCC	CR

 Header
  SOH (01h): Start of Header
  '0' (30h): Reserved
  '0' (30h): Message receiver is the controller.
  Monitor ID: Indicate a replying Monitor ID.
            Ex.) When this byte is set to 'A', the replying Monitor ID is '1'.
  'D' (44h): Message Type is "Get parameter reply".
  '1'-'2' (31h, 32h): Message length is 18 bytes.

 Message
  STX (02h): Start of Message
  '0'-'0' (30h, 30h): Result code. No error.
  '0'-'2' (30h, 32h): Operation code page number is 2.
  '7'-'9' (37h, 39h): Operation code is 79h (in the page 2).
  '0'-'0' (30h, 30h): This operation is "Set parameter" type.
  'F'-'F'-'F'-'F' (46h, 46h, 46h, 46h): Maximum value.
  '0'-'0'-'3'-'2' (30h, 30h, 33h, 32h): The temperature is 25 degrees Celsius.

                  Readout value is 2's complement.

Temperature[Celsius]	Readout value	
	Binary	Hexadecimal
+125.0	0000 0000 1111 1010	00FAh
+ 25.0	0000 0000 0011 0010	0032h
+ 0.5	0000 0000 0000 0001	0001h
0	0000 0000 0000 0000	0000h
- 0.5	1111 1111 1111 1111	FFFFh
- 25.0	1111 1111 1100 1110	FFCEh
- 55.0	1111 1111 1001 0010	FF92h

  ETX (03h): End of Message

```
Check code
  BCC: Block Check Code
        Refer to the section 4.5 "Check code" for a BCC calculation.

Delimiter
  CR (0Dh): End of packet
```

7. Power control procedure

7.1 Power status read

```
1) The controller requests the monitor to reply a current power status.
```

Header	Message	Check code	Delimiter
SOH-'0'-Monitor ID-'0'-'A'-'0'-'6'	STX-'0'-'1'-'D'-'6'-ETX	BCC	CR

```
    Header
      SOH (01h): Start Of Header
      '0' (30h): Reserved
      Monitor ID: Specify the Monitor ID from which you want to get status.
                  Ex.) If Monitor ID is '1', specify 'A'.
      '0' (30h): Message sender is the controller.
      'A' (41h): Message Type is "Command".
      '0'-'6' (30h, 36h): Message length is 6 bytes.

    Message
      STX (02h): Start of Message
      '0'-'1'-'D'-'6': Get power status command.
      ETX (03h): End of Message

    Check code
      BCC: Block Check Code
            Refer to the section 4.5 "Check code" for a BCC calculation.

    Delimiter
      CR (0Dh): End of packet

2) The monitor returns with the current power status.
```

Header	Message	Check code	Delimiter
SOH-'0'-'0'-Monitor ID-'B'-'1'-'2'	STX-'0'-'2'-'0'-'0'-'D'-'6'-'0'-'0'-'0'-'0'-'0'-'4'-'0'-'0'-'0'-'1'-ETX	BCC	CR

```
    Header
      SOH (01h): Start Of Header
      '0' (30h): Reserved
      '0' (30h): Message receiver is the controller.
      Monitor ID: Indicate a replying Monitor ID.
                  Ex.) When this byte is set to 'A', the replying Monitor ID is '1'.
      'B' (42h): Message Type is "Command reply".
      '1'-'2' (31h, 32h): Message length is 18 bytes.

    Message
      STX(02h):Start of Message
      '0'-'2' (30h, 32h): Reserved data
      '0'-'0' (30h, 30h): Result code
                      00: No Error.
                      01: Unsupported.
      'D'-'6'(44h, 36h): Display power mode code
      '0'-'0' (30h, 30h): Parameter type code is "Set parameter".
      '0'-'0'-'0'-'4' (30h, 30h, 30h, 34h): Power mode is 4 types.
      '0'-'0'-'0'-'1' (30h, 30h, 30h, 31h): Current power mode
                                    <Status>
```

```
                              0001: ON
                              0002: Stand-by (power save)
                              0003: Suspend (power save)
                              0004: OFF (same as IR power off)
     ETX (03h): End of Message

  Check code
    BCC: Block Check Code
         Refer to the section 4.5 "Check code" for a BCC calculation.

  Delimiter
    CR (0Dh): End of packet
```

7.2 Power control

```
1) The controller requests the monitor to control monitor power.
```

Header	Message	Check code	Delimiter
SOH-'0'-Monitor ID-'0'-'A'-'0'-'C'	STX-'C'-'2'-'0'-'3'-'D'-'6'-'0'-'0'-'0'-'1'-ETX	BCC	CR

```
  Header
    SOH (01h): Start Of Header
    '0' (30h): Reserved
    Monitor ID: Specify the Monitor ID which you want to change a setting.
               Ex.) If Monitor ID is '1', specify 'A'.
    '0' (30h): Message sender is the controller.
    'A' (41h): Message type is "Command".
    '0'-'C (30h, 43h): Message length is 12 bytes.

  Message
    STX (02h): Start of Message
    'C'-'2'-'0'-'3'-'D'-'6' (43h, 32h, 30h, 33h, 44h, 36h): power control command
    '0'-'0'-'0'-'1' (30h, 30h, 30h, 31h): Power mode
                                   0001: ON
                                   0002, 0003: Do not set.
                                   0004: OFF (same as the power off by IR)
    ETX (03h): End of Message


  Check code
    BCC: Block Check Code
         Refer to the section 4.5 "Check code" for a BCC calculation.

  Delimiter
    CR (0Dh): End of packet


2) The monitor replies a data for confirmation.
```

Header	Message	Check ode	Delimiter
SOH-'0'-'0'-Monitor ID-'B'-'0'-'E'	STX-'0'-'0'-'C'-'2'-'0'-'3'-'D'-'6'-'0'-'0'-'0'-'1'-ETX	BCC	CR

```
  Header
    SOH (01h): Start Of Header
    '0' (30h): Reserved
    '0' (30h): Message receiver is the controller.
    Monitor ID: Indicate a replying Monitor ID.
               Ex.) When this byte is set to 'A', the replying Monitor ID is '1'.
    'B' (42h): Message type is "Command reply".
    'N'-'N': Message length
               Note.) The maximum data length that can be written to the monitor at a time is 32bytes.
               Ex.) The byte data 20h is encoded as ASCII characters '2' and '0' (32h and 30h).

  Message
    STX (02h): Start of Message
```

'0'-'0' (30h, 30h): Result code. No error.
'C'-'2','0'-'3'-'D'-'6' (43h, 32h, 30h, 33h, 44h, 36h): power control reply command
       ➢   The monitor replies same as power control command to the controller.
'0'-'0'-'0'-'1' (30h, 30h, 30h, 31h): Power mode
                                      0001: ON
                                      0002, 0003: Do not set.
                                      0004: OFF (same as the power off by IR)
ETX (03h): End of Message

Check code
  BCC: Block Check Code
      Refer to the section 4.5 "Check code" for a BCC calculation.

Delimiter
  CR (0Dh): End of packet

8. Asset Data read and write

MultiSync X461UN /X461HB /X431BT /P401 /P461 /P521 /P701 /S401 /S461 /S521 and MULTEOS M401 /M461

have the area for to store user's asset data of up to 64bytes.

8.1 Asset Data Read Request and reply

This command is used in order to read Asset Data.

1) The controller requests the monitor to reply with Asset data.

Header	Message	Check code	Delimiter
SOH-'0'-Monitor ID-'0'-'A'-'0'-'A'	STX-'C'-'0'-'0'-'B'-'0'-'0'-'2'-'0'-ETX	BCC	CR

Header
  SOH (01h): Start Of Header
  '0' (30h): Reserved
  Monitor ID: Specify the Monitor ID from which you want to get data.
        Ex.) If Monitor ID is '1', specify 'A'.
  '0' (30h): Message sender is the controller.
  'A' (41h): Message type is "Command".
  '0'-'A' (30h, 41h): Message length is 10 bytes.

Message
  STX (02h): Start of Message
  'C'-'0'-'0'-'B' (43h, 30h, 30h, 42h): Asset read request command.
  '0'-'0' (30h, 30h): Offset data from top of the Asset data.
   At first set 00h: Read data from the top of Asset data area.
  '2'-'0' (32h, 30h): Read out data length is 32bytes.
   Secondly set 20h: Read data from the 32bytes offset point in the Asset data area.
                 Maximum readout length is 32bytes at a time.
  ETX (03h): End of Message

Check code
  BCC: Block Check Code
      Refer to the section 4.5 "Check code" for a BCC calculation.

Delimiter
  CR (0Dh): End of packet

2) The monitor replies Asset data to the controller.

Header	Message	Check code	Delimiter
SOH-'0'-'0'-Monitor ID-'B'-N-N	STX-'C'-'1'-'0'-'B'-Data(0)-Data(1)---Data(N)-ETX	BCC	CR

Header
  SOH (01h): Start of Header
  '0' (30h): Reserved
  '0' (30h): Message receiver is the controller.
  Monitor ID: Indicate a replying Monitor ID.
        Ex.) When this byte is set to 'A', the replying Monitor ID is '1'.

'B' (42h): Message type is "Command reply"
N-N: Message length
              Ex.) The byte data 20h is encoded to ASCII characters '2' and '0' (32h and 30h).
              Note.) This length includes STX and ETX.

Message
  STX (02h): Start of Message
  'C'-'1'-'0'-'B' (43h, 31h, 30h, 42h): Asset read reply command
  Data(0) – Data(N): Retuned Asset data
  ETX (03h): End of Message

Check code
  BCC: Block Check Code
      Refer to the section 4.5 "Check code" for a BCC calculation.

Delimiter
  CR (0Dh): End of packet

8.2 Asset Data write

This command is used in order to write Asset Data.

1) The controller requests the monitor to write Asset data.

Header	Message	Check code	Delimiter
SOH-'0'-Monitor ID-'0'-'A'-N-N	STX-'C'-'0'-'0'-'E'-'0'-'0'-Data(0)-Data(1)---Data(N)-ETX	BCC	CR

Header
  SOH (01h): Start Of Header
  '0' (30h): Reserved
  Monitor ID: Specify the Monitor ID in which you want to write data.
              Ex.) If Monitor ID is '1', specify 'A'.
  '0' (30h): Message sender is the controller.
  'A' (41h): Message type is "Command".
  N-N: Message length
              Note.) The maximum data length that can be written to the monitor at a time is 32bytes.
              Ex.) The byte data 20h is encoded as ASCII characters '2' and '0' (32h and 30h).

Message
  STX (02h): Start of Message
  'C'-'0'-'0'-'E' (43h, 30h, 30h, 45h): Asset Data writes command
  '0'-'0'(30h, 30h): Offset address from top of Asset data.
     00h : Write data from top of the Asset data area.
  Data(0) –- Data(N): Asset data. The data must be ASCII characters strings.
  ETX (03h): End of Message

Check code
  BCC: Block Check Code
      Refer to the section 4.5 "Check code" for a BCC calculation.

Delimiter
  CR (0Dh): End of packet

2) The monitor replies a data for confirmation.

Header	Message	Check code	Delimiter
SOH-'0'-'0'-Monitor ID-'B'-N-N	STX-'0'-'0'-'C'-'0'-'0'-'E'-'0'-'0'-Data(0)-Data(1)---Data(N)-ETX	BCC	CR

Header
  SOH (01h): Start Of Header
  '0' (30h): Reserved
  '0' (30h): Message receiver is the controller.
  Monitor ID: Indicate a replying Monitor ID.
              Ex.) When this byte is set to 'A', the replying Monitor ID is '1'.
  'B' (42h): Message type is "Command reply".
  N-N: Message length

Note.) The maximum data length that can be written to the monitor at a time is 32bytes.
                    Ex.) The byte data 20h is encoded as ASCII characters '2' and '0' (34h and 30h).

    Message
      STX (02h): Start of Message
      '0'-'0': Result code. No error.
      'C'-'0'-'0'-'E' (43h, 30h, 30h, 45h): Asset Data write command
      '0'-'0'(30h, 30h): Offset address from top of Asset data.
         00h : Write data into from top of the Asset data area.
      Data(0) -- Data(N): Asset data. The data must be ASCII characters strings.
      ETX (03h): End of Message

    Check code
      BCC: Block Check Code
            Refer to the section 4.5 "Check code" for a BCC calculation.

    Delimiter
      CR (0Dh): End of packet

9. Date & Time read and write

9.1 Date & Time Read

This command is used in order to read the setting of Date & Time.

1) The controller requests the monitor to reply with the Date & Time.

Header	Message	Check code	Delimiter
SOH-'0'-Monitor ID-'0'-'A'-'0'-'6'	STX-'C'-'2'-'1'-'1'-ETX	BCC	CR

    Header
      SOH (01h): Start Of Header
      '0' (30h): Reserved
      Monitor ID: Specify the Monitor ID of which you want to get status.
                Ex.) If Monitor ID is '1', specify 'A'.
      '0' (30h): Message sender is the controller.
      'A' (41h): Message type is "Command".
      '0'-'6'(30h, 36h): Message length

    Message
      STX (02h): Start of Message
      'C'-'2'-'1'-'1' (43h, 32h, 31h, 31h): Date & time read request command.
      ETX (03h): End of Message

    Check code
      BCC: Block Check Code
            Refer to the section 4.5 "Check code" for a BCC calculation.

    Delimiter
      CR (0Dh): End of packet

   2) The monitor replies Date & Time to the controller.

Header	Message	Check code	Delimiter
SOH-'0'-'0'-Monitor ID-'B'-'1'-'4'	STX-'C'-'3'-'1'-'1'-YY-MM-DD-WW-HH-MN-DS-ETX	BCC	CR

    Header
      SOH (01h): Start of Header
      '0' (30h): Reserved
      '0' (30h): Message receiver is the controller
      Monitor ID: Indicate a replying Monitor ID
                Ex.) When this byte is set to 'A', the replying Monitor ID is '1'.
      'B' (42h): Message type is "Command reply"
      '1'-'4'(31h, 34h): Message length

    Message
      STX (02h): Start of Message

'C'-'3'-'1'-'1' (43h, 33h, 31h, 31h): Date & Time read reply command
'YY'-'MM'-'DD'-'WW'-'HH'-'MN'-'DS': Date & Time data

        YY: Year (offset 2000)
            '0'-'0'(30h, 30h): 2000
                |
            '6'-'3'(36h, 33h): 2099 (99 = 63h)

        MM: Month
            '0'-'1'(30h, 31h): January
                |
            '0'-'C'(30h, 43h): December

        DD: Day
            '0'-'1'(30h, 31h): 1
                |
            '1'-'E'(31h, 45h): 30(=1Eh)
            '1'-'F'(31h, 46h): 31(=1Fh)

        WW: weekdays
            '0'-'0'(30h, 30h): Sunday
            '0'-'1'(30h, 31h): Monday
            '0'-'2'(30h, 32h): Tuesday
            '0'-'3'(30h, 33h): Wednesday
            '0'-'4'(30h, 34h): Thursday
            '0'-'5'(30h, 35h): Friday
            '0'-'6'(30h, 36h): Saturday

        HH: Hours
            '0'-'0'(30h, 30h): 0
                |
            '1'-'7'(31h, 37h): 23 (=17h)

        MN: Minutes
            '0'-'0'(30h, 30h): 0
                |
            '3'-'B' (33h, 42h): 59 (=3Bh)

        DS: Daylight saving (Summer time)
            '0'-'0'(30h, 30h): NO
            '0'-'1'(30h, 31h): YES

    ETX (03h): End of Message

 Check code
   BCC: Block Check Code
        Refer to the section 4.5 "Check code" for a BCC calculation.

 Delimiter
   CR (0Dh): End of packet

9.2 Date & Time Write

This command is used in order to write the setting of the Date & Time.

1) The controller requests the monitor to write Date & Time.

Header	Message	Check code	Delimiter
SOH-'0'-Monitor ID-'0'-'A'-'1'-'2'	STX-'C'-'2'-'1'-'2'-YY-MM-DD-WW-HH-MN-DS-ETX	BCC	CR

    Header
      SOH (01h): Start Of Header
      '0' (30h): Reserved
      Monitor ID: Specify the Monitor ID of which you want to change the setting.
                  Ex.) If Monitor ID is '1', specify 'A'.
      '0' (30h): Message sender is the controller.
      'A' (41h): Message type is "Command".
      '1'-'2'(31h, 32h): Message length

```
Message
  STX (02h): Start of Message
  'C'-'2'-'1'-'2'  (43h, 32h, 31h, 32h): Date & Time write command
  'YY'-'MM'-'DD'-'WW'-'HH'-'MN'-'DS': Date & Time data
        YY: Year (offset 2000)
            '0'-'0'(30h, 30h): 2000
                |
            '6'-'3'(36h, 33h): 2099 (99 = 63h)

        MM: Month
            '0'-'1'(30h, 31h): January
                |
            '0'-'C'(30h, 43h): December

        DD: Day
            '0'-'1'(30h, 31h): 1
                |
            '1'-'E'(31h, 45h): 30(=1Eh)
            '1'-'F'(31h, 46h): 31(=1Fh)

        WW: weekdays
            '0'-'0'(30h, 30h): Sunday
            '0'-'1'(30h, 31h): Monday
            '0'-'2'(30h, 32h): Tuesday
            '0'-'3'(30h, 33h): Wednesday
            '0'-'4'(30h, 34h): Thursday
            '0'-'5'(30h, 35h): Friday
            '0'-'6'(30h, 36h): Saturday

        HH: Hours
            '0'-'0'(30h, 30h): 0
                |
            '1'-'7'(31h, 37h): 23 (=17h)

        MN: Minutes
            '0'-'0'(30h, 30h): 0
                |
            '3'-'B' (33h, 42h): 59 (=3Bh)

        DS: Daylight saving (Summer time)
            '0'-'0'(30h, 30h): NO
            '0'-'1'(30h, 31h): YES

  ETX (03h): End of Message

Check code
  BCC: Block Check Code
        Refer to the section 4.5 "Check code" for a BCC calculation.

Delimiter
  CR (0Dh): End of packet

2) The monitor replies a data for confirmation.
```

Header	Message	Check code	Delimiter
SOH-'0'-'0'-Monitor ID-'B'-'1'-'6'	STX-'C'-'3'-'1'-'2'-ST-YY-MM-DD-WW-HH-MN -DS-ETX	BCC	CR

```
Header
  SOH (01h): Start Of Header
  '0' (30h): Reserved
  '0' (30h): Message receiver is the controller.
  Monitor ID: Indicate a replying Monitor ID.
            Ex.) When this byte is set to 'A', the replying Monitor ID is '1'.
  'B' (42h): Message type is "Command reply".
  '1'-'6'(31h, 36h): Message length

Message
  STX (02h): Start of Message
  'C'-'3'-'1'-'2' (43h, 33h, 31h, 32h): Date & Time write reply command
```

```
   ST: Date & Time Status command
         '0'-'0'(30h, 30h): No error
         '0'-'1'(30h, 31h): Error
   'YY'-'MM'-'DD'-'WW'-'HH'-'MN'-'DS': Date & Time data
         YY: Year (offset 2000)
             '0'-'0'(30h, 30h): 2000
                  |
             '6'-'3'(36h, 33h): 2099 (99 = 63h)

         MM: Month
              '0'-'1'(30h, 31h): January
                   |
              '0'-'C'(30h, 43h): December

         DD: Day
              '0'-'1'(30h, 31h): 1
                   |
              '1'-'E'(31h, 45h): 30(=1Eh)
              '1'-'F'(31h, 46h): 31(=1Fh)

         WW: weekdays
              '0'-'0'(30h, 30h): Sunday
              '0'-'1'(30h, 31h): Monday
              '0'-'2'(30h, 32h): Tuesday
              '0'-'3'(30h, 33h): Wednesday
              '0'-'4'(30h, 34h): Thursday
              '0'-'5'(30h, 35h): Friday
              '0'-'6'(30h, 36h): Saturday

         HH: Hours
              '0'-'0'(30h, 30h): 0
                   |
              '1'-'7'(31h, 37h): 23 (=17h)

          MN: Minutes
              '0'-'0'(30h, 30h): 0
                   |
              '3'-'B' (33h, 42h): 59 (=3Bh)

         DS: Daylight saving (Summer time)
              '0'-'0'(30h, 30h): NO
              '0'-'1'(30h, 31h): YES

   ETX (03h): End of Message

 Check code
   BCC: Block Check Code
         Refer to the section 4.5 "Check code" for a BCC calculation.

 Delimiter
   CR (0Dh): End of packet
```

10. Schedule read and write

10.1 Schedule Read
This command is used in order to read the setting of the Schedule.

1) The controller requests the monitor to read Schedule.

Header	Message	Check code	Delimiter
SOH-'0'-Monitor ID-'0'-'A'-'0'-'8'	STX-'C'-'2'-'2'-'1'-PG-ETX	BCC	CR

```
 Header
   SOH (01h): Start Of Header
   '0' (30h): Reserved
   Monitor ID: Specify the Monitor ID of which you want to get status.
             Ex.) If Monitor ID is '1', specify 'A'.
   '0' (30h): Message sender is the controller.
   'A' (41h): Message type is "Command".
```

```
               '0'-'8'(30h, 38h): Message length

       Message
         STX (02h): Start of Message
         'C'-'2'-'2'-'1' (43h, 32h, 32h, 31h): Schedule read request command.
         PG: Program No.
              ➢    The data must be ASCII characters strings.
         ETX (03h): End of Message

       Check code
         BCC: Block Check Code
              Refer to the section 4.5 "Check code" for a BCC calculation.

       Delimiter
         CR (0Dh): End of packet


     2) The monitor replies Schedule to the controller.
```

Header	Message	Check code	Delimiter
SOH-'0'-'0'-Monitor ID-'B'-'2'-'6'	STX-'C'-'3'-'2'-'1'-PG-ON HOUR-ON MIN-OFF HOUR-OFF MIN-INPUT-WD-FL-P MODE-EXT1-EXT2-EXT3-EXT4-EXT5-EXT6-EXT7-ETX	BCC	CR

```
       Header
         SOH (01h): Start of Header
         '0' (30h): Reserved
         '0' (30h): Message receiver is the controller.
         Monitor ID: Indicate a replying Monitor ID.
                  Ex.) When this byte is set to 'A', the replying Monitor ID is '1'.
         'B' (42h): Message type is "Command reply".
         '2'-'6'(32h, 36h): Message length

       Message
         STX (02h): Start of Message
         'C'-'3'-'2'-'1'  (43h, 33h, 32h, 31h): Schedule read reply command
         PG-ON HOURS-ON MIN-OFF HOURS-OFF MIN-INPUT-WD-FL-P MODE-
         EXT1-EXT2-EXT3-EXT4-EXT5-EXT6-EXT7: Schedule data
              PG: Program No.
                   '0'-'0'(30h, 30h): Program No.1
                       |
                   '0'-'6'(30h, 36h): Program No.7

              ON_HOUR: Turn on time (hour)
                   '0'-'0'(30h, 30h): 00
                       |
                   '1'-'7'(31h, 37h): 23 (=17h)
                   '1'-'8'(31h, 38h): ON timer isn't set.

              ON_MIN:  Turn on time (minute)
                   '0'-'0'(30h, 30h): 0
                       |
                   '3'-'B'(33h, 42h): 59
                   '3'-'C'(33h, 43h): On timer isn't set.

              OFF_HOUR: Turn off time (hour)
                   '0'-'0'(30h, 30h): 00
                       |
                   '1'-'7'(31h, 37h): 23 (=17h)
                   '1'-'8'(31h, 38h): Off timer isn't set.

              OFF_MIN:  Turn off time (minute)
                   '0'-'0'(30h, 30h): 0
                       |
                   '3'-'B'(33h, 42h): 59 (=3Bh)
                   '3'-'C'(33h, 43h): Off timer isn't set.

              INPUT: Timer input
                   '0'-'0'(30h,30h): No mean (works on last memory)
```

```
'0'-'1'(30h,31h): VGA
'0'-'2'(30h,32h): RGB/HV
'0'-'3'(30h,33h): DVI
'0'-'5'(30h,35h): Video1
'0'-'6'(30h,36h): Video2
'0'-'7'(30h,37h): S-Video
'0'-'A'(30h,41h): TV
'0'-'C'(30h,43h): DVD/HD1
'0'-'D'(30h,44h): Option
'0'-'E'(30h,45h): DVD/HD2
'0'-'F'(30h,46h): Display Port
'1'-'1'(31h,31h): HDMI


WD: Week setting
    bit 0: Monday
    bit 1: Tuesday
    bit 2: Wednesday
    bit 3: Thursday
    bit 4: Friday
    bit 5: Saturday
    bit 6: Sunday

    EX.
    '0'-'1'(30h, 31h): Monday
    '0'-'4'(30h, 34h): Wednesday
    '0'-'F'(30h, 46h): Monday, Tuesday, Wednesday and Thursday
    '7'-'F'(37h, 46h): Monday to Sunday


FL: Option
    bit 0: 0:once 1:Everyday
    bit 1: 0:once 1:Every week
    bit 2: 0:Disable 1:Enable

    EX.
    '0'-'1'(30h, 31h): Disable, Everyday
    '0'-'4'(30h, 34h): Enable, once


P MODE: Picture mode
    '0'-'0'(30h,30h): No mean (works on last memory)
    '0'-'1'(30h,31h): sRGB
    '0'-'3'(30h,33h): Hi-Bright
    '0'-'4'(30h,34h): Standard
    '0'-'5'(30h,34h): Cinema
    '0'-'6'(30h,36h): ISF-Day
    '0'-'7'(30h,37h): ISF-Night
    '0'-'B'(30h,42h): Ambient-1
    '0'-'C'(30h,43h): Ambient-2


EXT1: Extension1
    '0'-'0'(30h,30h): (On this monitor, it is always '00')

EXT2: Extension 2
    '0'-'0'(30h,30h): (On this monitor, it is always '00')

EXT3: Extension 3
    '0'-'0'(30h,30h): (On this monitor, it is always '00')

EXT4: Extension 4
    '0'-'0'(30h,30h): (On this monitor, it is always '00')

EXT5: Extension 5
    '0'-'0'(30h,30h): (On this monitor, it is always '00')

EXT6: Extension 6
    '0'-'0'(30h,30h): (On this monitor, it is always '00')

EXT7: Extension 7
    '0'-'0'(30h,30h): (On this monitor, it is always '00')

ETX (03h): End of Message
```

Check code
  BCC: Block Check Code
        Refer to the section 4.5 "Check code" for a BCC calculation.

 Delimiter
  CR (0Dh): End of packet

***Following command also can be used for to keep backward compatibility, in order to
read the setting of the Schedule.

1) The controller requests the monitor to read Schedule.

Header	Message	Check code	Delimiter
SOH-'0'-Monitor ID-'0'-'A'-'0'-'8'	STX-'C'-'2'-'1'-'3'-PG-ETX	BCC	CR

Header
  SOH (01h): Start Of Header
  '0' (30h): Reserved
  Monitor ID: Specify the Monitor ID of which you want to get status.
            Ex.) If Monitor ID is '1', specify 'A'.
  '0' (30h): Message sender is the controller.
  'A' (41h): Message type is "Command".
  '0'-'8'(30h, 38h): Message length

Message
  STX (02h): Start of Message
  'C'-'2'-'1'-'3' (43h, 32h, 31h, 33h): Schedule read request command.
  PG: Program No.
        ➢   The data must be ASCII characters strings.
  ETX (03h): End of Message

Check code
  BCC: Block Check Code
        Refer to the section 4.5 "Check code" for a BCC calculation.

Delimiter
  CR (0Dh): End of packet

 2) The monitor replies Schedule to the controller.

Header	Message	Check code	Delimiter
SOH-'0'-'0'-Monitor ID-'B'-'1'-'6'	STX-'C'-'3'-'1'-'3'-PG-ON HOUR-ON MIN-OFF HOUR-OFF MIN-INPUT-WD-FL-ETX	BCC	CR

Header
  SOH (01h): Start of Header
  '0' (30h): Reserved
  '0' (30h): Message receiver is the controller.
  Monitor ID: Indicate a replying Monitor ID.
            Ex.) When this byte is set to 'A', the replying Monitor ID is '1'.
  'B' (42h): Message type is "Command reply".
  '1'-'6'(31h, 36h): Message length

Message
  STX (02h): Start of Message
  'C'-'3'-'1'-'3' (43h, 33h, 31h, 33h): Schedule read reply command
  PG-ON HOURS-ON MIN-OFF HOURS-OFF MIN-INPUT-WD-FL: Schedule data
        PG: Program No.
            '0'-'0'(30h, 30h): Program No.1
               |
            '0'-'6'(30h, 36h): Program No.7

        ON_HOUR: Turn on time (hour)

```
            '0'-'0'(30h, 30h): 00
                |
            '1'-'7'(31h, 37h): 23 (=17h)
            '1'-'8'(31h, 38h): ON timer isn't set.

        ON_MIN:  Turn on time (minute)
            '0'-'0'(30h, 30h): 0
                |
            '3'-'B'(33h, 42h): 59
            '3'-'C'(33h, 43h): On timer isn't set.

        OFF_HOUR: Turn off time (hour)
            '0'-'0'(30h, 30h): 00
                |
            '1'-'7'(31h, 37h): 23 (=17h)
            '1'-'8'(31h, 38h): Off timer isn't set.

        OFF_MIN:  Turn off time (minute)
            '0'-'0'(30h, 30h): 0
                |
            '3'-'B'(33h, 42h): 59 (=3Bh)
            '3'-'C'(33h, 43h): Off timer isn't set.

        INPUT: Timer input
            '0'-'0'(30h, 30h): DVI
            '0'-'1'(30h, 31h): VGA
            '0'-'2'(30h, 32h): RGB/HV
            '0'-'3'(30h, 33h): DVD/HD1
            '0'-'4'(30h, 34h): VIDEO
            '0'-'5'(30h, 35h): S-VIDEO
            '0'-'7'(30h,30h): No mean (Works on last memory)


        WD: Week setting
            bit 0: Monday
            bit 1: Tuesday
            bit 2: Wednesday
            bit 3: Thursday
            bit 4: Friday
            bit 5: Saturday
            bit 6: Sunday

            EX.
            '0'-'1'(30h, 31h): Monday
            '0'-'4'(30h, 34h): Wednesday
            '0'-'F'(30h, 46h): Monday, Tuesday, Wednesday and Thursday
            '7'-'F'(37h, 46h): Monday to Sunday

        FL: Option
            bit 0: 0:once 1:Everyday
            bit 1: 0:once 1:Every week
            bit 2: 0:Disable 1:Enable

            EX.
            '0'-'1'(30h, 31h): Disable, Everyday
            '0'-'4'(30h, 34h): Enable, once

    ETX (03h): End of Message

 Check code
   BCC: Block Check Code
        Refer to the section 4.5 "Check code" for a BCC calculation.


 Delimiter
   CR (0Dh): End of packet
```

10.2 Schedule Write

This command is used in order to write the setting of the Schedule.

1) The controller requests the monitor to write Schedule.

Header	Message	Check code	Delimiter
SOH-'0'-Monitor ID-'0'-'A'-'2'-'6'	STX-'C'-'2'-'2'-'2'-PG-ON HOUR-ON MIN-OFF HOUR-OFF MIN-INPUT-WD-FL-P MODE-EXT1-EXT2-EXT3-EXT4-EXT5-EXT6-EXT7-ETX	BCC	CR

```
Header
  SOH (01h): Start Of Header
  '0' (30h): Reserved
  Monitor ID: Specify the Monitor ID of which you want to change a setting.
           Ex.) If Monitor ID is '1', specify 'A'.
  '0' (30h): Message sender is the controller.
  'A' (41h): Message type is "Command".
  '2'-'6'(32h, 36h): Message length.

Message
  STX (02h): Start of Message
  'C'-'2'-'2'-'2'  (43h, 32h, 32h, 32h): Schedule writes command
  PG-ON HOURS-ON MIN-OFF HOURS-OFF MIN-INPUT-WD-FL-P MODE
  EXT1-EXT2-EXT3-EXT4-EXT5-EXT6-EXT7: Schedule data
        PG: Program No.
             '0'-'0'(30h, 30h): Program No.1
                |
             '0'-'6'(30h, 36h): Program No.7

        ON_HOUR: Turn on time (hour)
             '0'-'0'(30h, 30h): 00
                |
             '1'-'7'(31h, 37h): 23 (=17h)
             '1'-'8'(31h, 38h): ON timer isn't set.

        ON_MIN:  Turn on time (minute)
             '0'-'0'(30h, 30h): 0
                |
             '3'-'B'(33h, 42h): 59
             '3'-'C'(33h, 43h): On timer isn't set.

        OFF_HOUR: Turn off time (hour)
             '0'-'0'(30h, 30h): 00
                |
             '1'-'7'(31h, 37h): 23 (=17h)
             '1'-'8'(31h, 38h): Off timer isn't set.

        OFF_MIN:  Turn off time (minute)
             '0'-'0'(30h, 30h): 0
                |
             '3'-'B'(33h, 42h): 59 (=3Bh)
             '3'-'C'(33h, 43h): Off timer isn't set.

        INPUT: Timer input
             '0'-'0'(30h,30h): No mean (works on last memory)
             '0'-'1'(30h,31h): VGA
             '0'-'2'(30h,32h): RGB/HV
             '0'-'3'(30h,33h): DVI
             '0'-'4'(30h,34h): HDMI (Set only)
             '0'-'5'(30h,35h): Video1
             '0'-'6'(30h,36h): Video2
             '0'-'7'(30h,37h): S-Video
             '0'-'A'(30h,41h): TV
             '0'-'C'(30h,43h): DVD/HD1
             '0'-'D'(30h,44h): Option
             '0'-'E'(30h,45h): DVD/HD2
             '0'-'F'(30h,46h): Display Port
             '1'-'1'(31h,31h): HDMI
             * Please select active input on your system (setting).
             * If you select inactive input here, the input change execution will be ignored.
```

```
       WD: Week setting
           bit 0: Monday
           bit 1: Tuesday
           bit 2: Wednesday
           bit 3: Thursday
           bit 4: Friday
           bit 5: Saturday
           bit 6: Sunday

           EX.
           '0'-'1'(30h, 31h): Monday
           '0'-'4'(30h, 34h): Wednesday
           '0'-'F'(30h, 46h): Monday, Tuesday, Wednesday and Thursday
           '7'-'F'(37h, 46h): Monday to Sunday

        FL: Option
           bit 0: 0:once 1:Everyday
           bit 1: 0:once 1:Every week
           bit 2: 0:Disable 1:Enable
            * When bit 0 and bit 1 are '1', it behaves as Everyday.

           EX.
           '0'-'1'(30h, 31h): Disable, Everyday
           '0'-'4'(30h, 34h): Enable, once

       P MODE: Picture mode
           '0'-'0'(30h,30h): No mean (Works on last memory)
           '0'-'1'(30h,31h): sRGB
           '0'-'3'(30h,33h): Hi-Bright
           '0'-'4'(30h,34h): Standard
           '0'-'5'(30h,34h): Cinema
           '0'-'6'(30h,36h): ISF-Day
           '0'-'7'(30h,37h): ISF-Night
           '0'-'B'(30h,42h): Ambient-1
           '0'-'C'(30h,43h): Ambient-2
           * Please select active picture mode on your system (setting).
           * If you select inactive picture mode here, the input change execution will be ignored.

       EXT1: Extension1
           '0'-'0'(30h,30h): (On this monitor, it is always '00')

       EXT2: Extension 2
           '0'-'0'(30h,30h): (On this monitor, it is always '00')

       EXT3: Extension 3
           '0'-'0'(30h,30h): (On this monitor, it is always '00')

       EXT4: Extension 4
           '0'-'0'(30h,30h): (On this monitor, it is always '00')

       EXT5: Extension 5
           '0'-'0'(30h,30h): (On this monitor, it is always '00')

       EXT6: Extension 6
           '0'-'0'(30h,30h): (On this monitor, it is always '00')

       EXT7: Extension 7
           '0'-'0'(30h,30h): (On this monitor, it is always '00')

   ETX (03h): End of Message

 Check code
   BCC: Block Check Code
        Refer to the section 4.5 "Check code" for a BCC calculation.

 Delimiter
   CR (0Dh): End of packet
```

2) The monitor replies a data for confirmation.

Header	Message	Check code	Delimiter
SOH-'0'-'0'-Monitor ID-'B'-'2'-'8'	STX-'C'-'3'-'2'-'2'-ST-PG-ON HOUR-ON MIN-OFF HOUR-OFF MIN-INPUT-WD-FL-P MODE-EXT1-EXT2-EXT3-EXT4-EXT5-EXT6-EXT7-ETX	BCC	CR

Header
  SOH (01h): Start Of Header
  '0' (30h): Reserved
  '0' (30h): Message receiver is the controller.
  Monitor ID: Indicate a replying Monitor ID.
          Ex.) When this byte is set to 'A', the replying Monitor ID is '1'.
  'B' (42h): Message type is "Command reply".
  '2'-'8'(32h, 38h): Message length

Message
  STX (02h): Start of Message
  'C'-'3'-'2'-'2' (43h, 33h, 32h, 32h): Schedule writes reply command
  ST: Schedule Status command
        '0'-'0'(30h, 30h): No error
        '0'-'1'(30h, 31h): Error
  PG-ON HOURS-ON MIN-OFF HOURS-OFF MIN-INPUT-WD-FL-P MODE
  EXT1-EXT2-EXT3-EXT4-EXT5-EXT6-EXT7: Schedule data
        PG: Program No.
            '0'-'0'(30h, 30h): Program No.1
                |
            '0'-'6'(30h, 36h): Program No.7

        ON_HOUR: Turn on time (hour)
            '0'-'0'(30h, 30h): 00
                |
            '1'-'7'(31h, 37h): 23 (=17h)
            '1'-'8'(31h, 38h): ON timer isn't set.

        ON_MIN: Turn on time (minute)
            '0'-'0'(30h, 30h): 0
                |
            '3'-'B'(33h, 42h): 59
            '3'-'C'(33h, 43h): On timer isn't set.

        OFF_HOUR: Turn off time (hour)
            '0'-'0'(30h, 30h): 00
                |
            '1'-'7'(31h, 37h): 23 (=17h)
            '1'-'8'(31h, 38h): Off timer isn't set.

        OFF_MIN: Turn off time (minute)
            '0'-'0'(30h, 30h): 0
                |
            '3'-'B'(33h, 42h): 59 (=3Bh)
            '3'-'C'(33h, 43h): Off timer isn't set.

        INPUT: Timer input
            '0'-'0'(30h,30h): No mean (works on last memory)
            '0'-'1'(30h,31h): VGA
            '0'-'2'(30h,32h): RGB/HV
            '0'-'3'(30h,33h): DVI
            '0'-'5'(30h,35h): Video1
            '0'-'6'(30h,36h): Video2
            '0'-'7'(30h,37h): S-Video
            '0'-'A'(30h,41h): TV
            '0'-'C'(30h,43h): DVD/HD1
            '0'-'D'(30h,44h): Option
            '0'-'E'(30h,45h): DVD/HD2
            '0'-'F'(30h,46h): Display Port
            '1'-'1'(31h,31h): HDMI

        WD: Week setting
            bit 0: Monday

```
            bit 1: Tuesday
            bit 2: Wednesday
            bit 3: Thursday
            bit 4: Friday
            bit 5: Saturday
            bit 6: Sunday

            EX.
            '0'-'1'(30h, 31h): Monday
            '0'-'4'(30h, 34h): Wednesday
            '0'-'F'(30h, 46h): Monday, Tuesday, Wednesday and Thursday
            '7'-'F'(37h, 46h): Monday to Sunday

        FL: Option
            bit 0: 0:once 1:Everyday
            bit 1: 0:once 1:Every week
            bit 2: 0:Disable 1:Enable
            * When bit 0 and bit 1 are '1', it behaves as Everyday.

            EX.
            '0'-'1'(30h, 31h): Disable, Everyday
            '0'-'4'(30h, 34h): Enable, once

        P MODE: Picture mode
            '0'-'0'(30h,30h): No mean (works on last memory)
            '0'-'1'(30h,31h): sRGB
            '0'-'3'(30h,33h): Hi-Bright
            '0'-'4'(30h,34h): Standard
            '0'-'5'(30h,34h): Cinema
            '0'-'6'(30h,36h): ISF-Day
            '0'-'7'(30h,37h): ISF-Night
            '0'-'B'(30h,42h): Ambient-1
            '0'-'C'(30h,43h): Ambient-2

        EXT1: Extension1
            '0'-'0'(30h,30h): (On this monitor, it is always '00')

        EXT2: Extension 2
            '0'-'0'(30h,30h): (On this monitor, it is always '00')

        EXT3: Extension 3
            '0'-'0'(30h,30h): (On this monitor, it is always '00')

        EXT4: Extension 4
            '0'-'0'(30h,30h): (On this monitor, it is always '00')

        EXT5: Extension 5
            '0'-'0'(30h,30h): (On this monitor, it is always '00')

        EXT6: Extension 6
            '0'-'0'(30h,30h): (On this monitor, it is always '00')

        EXT7: Extension 7
            '0'-'0'(30h,30h): (On this monitor, it is always '00')

    ETX (03h): End of Message

  Check code
    BCC: Block Check Code
        Refer to the section 4.5 "Check code" for a BCC calculation.

  Delimiter
    CR (0Dh): End of packet

3) The controller requests the monitor to write Enable/Disable Schedule.
```

Header	Message	Check code	Delimiter
SOH-'0'-Monitor ID-'0'-'A'-'0'-'A'	STX-'C'-'2'-'1'-'5'-PG-EN-ETX	BCC	CR

```
    Header
```

```
    SOH (01h): Start Of Header
    '0' (30h): Reserved
    Monitor ID: Specify the Monitor ID of which you want to change a setting.
               Ex.) If Monitor ID is '1', specify 'A'.
    '0' (30h): Message sender is the controller.
    'A' (41h): Message type is "Command".
    '0'-'A'(30h, 41h): Message length

  Message
    STX (02h): Start of Message
    'C'-'2'-'1'-'5' (43h, 32h, 31h, 35h): Enable/Disable Schedule writes command
    PG-EN: Enable/Disable Schedule data
          PG: Program No.
                '0'-'0'(30h, 30h): Program No.1
                    |
                '0'-'6'(30h, 36h): Program No.7

          EN: Enable /Disable
                '0'-'0'(30h, 30h): Disable
                '0'-'1'(30h, 31h): Enable

    ETX (03h): End of Message

  Check code
    BCC: Block Check Code
         Refer to the section 4.5 "Check code" for a BCC calculation.

  Delimiter
    CR (0Dh): End of packet

    4) The monitor replies a data for confirmation.
```

Header	Message	Check code	Delimiter
SOH-'0'-'0'-Monitor ID-'B'-'0'-'C'	STX-'C'-'3'-'1'-'5'-ST-PG-EN-ETX	BCC	CR

```
  Header
    SOH (01h): Start Of Header
    '0' (30h): Reserved
    '0' (30h): Message receiver is the controller.
    Monitor ID: Indicate a replying Monitor ID.
               Ex.)  When this byte is set to 'A', the replying Monitor ID is '1'.
    'B' (42h): Message type is "Command reply".
    '0'-'C' (30h, 43h): Message length

  Message
    STX (02h): Start of Message
    'C'-'3'-'1'-'5' (43h, 33h, 31h, 35h): Enable/Disable Schedule writes reply command
    ST: Enable/Disable Schedule Status command
          '0'-'0'(30h, 30h): No error
          '0'-'1'(30h, 31h): Error
    PG-EN: Enable/Disable Schedule data
          PG: Program No.
                '0'-'0'(30h, 30h): Program No.1
                    |
                '0'-'6'(30h, 36h): Program No.7

    EN: Enable /Disable
                '0'-'0'(30h, 30h): Disable
                '0'-'1'(30h, 31h): Enable

    ETX (03h): End of Message

  Check code
    BCC: Block Check Code
         Refer to the section 4.5 "Check code" for a BCC calculation.

  Delimiter
    CR (0Dh): End of packet
```

```
   ***Following command also can be used for to keep backward compatibility, in order to
   write the setting of the Schedule.


   1) The controller requests the monitor to write Schedule.
```

Header	Message	Check code	Delimiter
SOH-'0'-Monitor ID-'0'-'A'-'1'-'6'	STX-'C'-'2'-'1'-'4'-PG-ON HOUR-ON MIN- OFF HOUR-OFF MIN-INPUT-WD-FL-ETX	BCC	CR

```
        Header
          SOH (01h): Start Of Header
          '0' (30h): Reserved
          Monitor ID: Specify the Monitor ID of which you want to change a setting.
                    Ex.) If Monitor ID is '1', specify 'A'.
          '0' (30h): Message sender is the controller.
          'A' (41h): Message type is "Command".
          '1'-'6'(31h, 36h): Message length.

        Message
          STX (02h): Start of Message
          'C'-'2'-'1'-'4'  (43h, 32h, 31h, 34h): Schedule writes command
          PG-ON HOURS-ON MIN-OFF HOURS-OFF MIN-INPUT-WD-FL: Schedule data
               PG: Program No.
                    '0'-'0'(30h, 30h): Program No.1
                       |
                    '0'-'6'(30h, 36h): Program No.7

               ON_HOUR: Turn on time (hour)
                    '0'-'0'(30h, 30h): 00
                       |
                    '1'-'7'(31h, 37h): 23 (=17h)
                    '1'-'8'(31h, 38h): ON timer isn't set.

               ON_MIN:  Turn on time (minute)
                    '0'-'0'(30h, 30h): 0
                       |
                    '3'-'B'(33h, 42h): 59
                    '3'-'C'(33h, 43h): On timer isn't set.

               OFF_HOUR: Turn off time (hour)
                    '0'-'0'(30h, 30h): 00
                       |
                    '1'-'7'(31h, 37h): 23 (=17h)
                    '1'-'8'(31h, 38h): Off timer isn't set.

               OFF_MIN:  Turn off time (minute)
                    '0'-'0'(30h, 30h): 0
                       |
                    '3'-'B'(33h, 42h): 59 (=3Bh)
                    '3'-'C'(33h, 43h): Off timer isn't set.

               INPUT: Timer input
                    '0'-'0'(30h, 30h): DVI
                    '0'-'1'(30h, 31h): VGA
                    '0'-'2'(30h, 32h): RGB/HV
                    '0'-'3'(30h, 33h): DVD/HD1
                    '0'-'4'(30h, 34h): VIDEO
                    '0'-'5'(30h, 35h): S-VIDEO
                    '0'-'7'(30h, 37h): (Works on last memory)
                    * Please select active input on your system (setting).
                    * If you select inactive input here, the input change execution will be ignored.

               WD: Week setting
                    bit 0: Monday
                    bit 1: Tuesday
                    bit 2: Wednesday
                    bit 3: Thursday
```

```
                bit 4: Friday
                bit 5: Saturday
                bit 6: Sunday

                EX.
                '0'-'1'(30h, 31h): Monday
                '0'-'4'(30h, 34h): Wednesday
                '0'-'F'(30h, 46h): Monday, Tuesday, Wednesday and Thursday
                '7'-'F'(37h, 46h): Monday to Sunday

            FL: Option
                bit 0: 0:once 1:Everyday
                bit 1: 0:once 1:Every week
                bit 2: 0:Disable 1:Enable
                 * When bit 0 and bit 1 are '1', it behaves as Everyday.

                EX.
                '0'-'1'(30h, 31h): Disable, Everyday
                '0'-'4'(30h, 34h): Enable, once

      ETX (03h): End of Message

   Check code
     BCC: Block Check Code
           Refer to the section 4.5 "Check code" for a BCC calculation.

   Delimiter
     CR (0Dh): End of packet
```

2) The monitor replies a data for confirmation.

Header	Message	Check code	Delimiter
SOH-'0'-'0'-Monitor ID-'B'-'1'-'8'	STX-'C'-'3'-'1'-'4'-ST-PG-ON HOUR-ON MIN-OFF HOUR-OFF MIN-INPUT-WD-FL-ETX	BCC	CR

```
    Header
      SOH (01h): Start Of Header
      '0' (30h): Reserved
      '0' (30h): Message receiver is the controller.
      Monitor ID: Indicate a replying Monitor ID.
                Ex.) When this byte is set to 'A', the replying Monitor ID is '1'.
      'B' (42h): Message type is "Command reply".
      '1'-'8'(31h, 38h): Message length

    Message
      STX (02h): Start of Message
      'C'-'3'-'1'-'4' (43h, 33h, 31h, 34h): Schedule writes reply command
      ST: Schedule Status command
           '0'-'0'(30h, 30h): No error
           '0'-'1'(30h, 31h): Error
      PG-ON HOURS-ON MIN-OFF HOURS-OFF MIN-INPUT-WD-FL: Schedule data
           PG: Program No.
               '0'-'0'(30h, 30h): Program No.1
                  |
               '0'-'6'(30h, 36h): Program No.7

           ON_HOUR: Turn on time (hour)
               '0'-'0'(30h, 30h): 00
                  |
               '1'-'7'(31h, 37h): 23 (=17h)
               '1'-'8'(31h, 38h): ON timer isn't set.

           ON_MIN:  Turn on time (minute)
               '0'-'0'(30h, 30h): 0
                  |
               '3'-'B'(33h, 42h): 59
               '3'-'C'(33h, 43h): On timer isn't set.

           OFF_HOUR: Turn off time (hour)
               '0'-'0'(30h, 30h): 00
```

```
                |
                '1'-'7'(31h, 37h): 23 (=17h)
                '1'-'8'(31h, 38h): Off timer isn't set.

        OFF_MIN:  Turn off time (minute)
                '0'-'0'(30h, 30h): 0
                    |
                '3'-'B'(33h, 42h): 59 (=3Bh)
                '3'-'C'(33h, 43h): Off timer isn't set.

        INPUT: Timer input
                '0'-'0'(30h, 30h): DVI
                '0'-'1'(30h, 31h): VGA
                '0'-'2'(30h, 32h): RGB/HV
                '0'-'3'(30h, 33h): DVD/HD1
                '0'-'4'(30h, 34h): VIDEO
                '0'-'5'(30h, 35h): S-VIDEO
                '0'-'7'(30h,30h): No mean (Works on last memory)

        WD: Week setting
                bit 0: Monday
                bit 1: Tuesday
                bit 2: Wednesday
                bit 3: Thursday
                bit 4: Friday
                bit 5: Saturday
                bit 6: Sunday

                EX.
                '0'-'1'(30h, 31h): Monday
                '0'-'4'(30h, 34h): Wednesday
                '0'-'F'(30h, 46h): Monday, Tuesday, Wednesday and Thursday
                '7'-'F'(37h, 46h): Monday to Sunday

        FL: Option
                bit 0: 0:once 1:Everyday
                bit 1: 0:once 1:Every week
                bit 2: 0:Disable 1:Enable
                * When bit 0 and bit 1 are '1', it behaves as Everyday.

                EX.
                '0'-'1'(30h, 31h): Disable, Everyday
                '0'-'4'(30h, 34h): Enable, once

    ETX (03h): End of Message

  Check code
    BCC: Block Check Code
          Refer to the section 4.5 "Check code" for a BCC calculation.

  Delimiter
    CR (0Dh): End of packet

  3) The controller requests the monitor to write Enable/Disable Schedule.
```

Header	Message	Check code	Delimiter
SOH-'0'-Monitor ID-'0'-'A'-'0'-'A'	STX-'C'-'2'-'1'-'5'-PG-EN-ETX	BCC	CR

```
  Header
    SOH (01h): Start Of Header
    '0' (30h): Reserved
    Monitor ID: Specify the Monitor ID of which you want to change a setting.
              Ex.) If Monitor ID is '1', specify 'A'.
    '0' (30h): Message sender is the controller.
    'A' (41h): Message type is "Command".
    '0'-'A'(30h, 41h): Message length

  Message
    STX (02h): Start of Message
    'C'-'2'-'1'-'5' (43h, 32h, 31h, 35h): Enable/Disable Schedule writes command
```

```
   PG-EN: Enable/Disable Schedule data
         PG: Program No.
              '0'-'0'(30h, 30h): Program No.1
                  |
              '0'-'6'(30h, 36h): Program No.7

          EN: Enable /Disable
              '0'-'0'(30h, 30h): Disable
              '0'-'1'(30h, 31h): Enable


      ETX (03h): End of Message

   Check code
     BCC: Block Check Code
          Refer to the section 4.5 "Check code" for a BCC calculation.


   Delimiter
     CR (0Dh): End of packet


   4) The monitor replies a data for confirmation.
```

Header	Message	Check code	Delimiter
SOH-'0'-'0'-Monitor ID-'B'-'0'-'C'	STX-'C'-'3'-'1'-'5'-ST-PG-EN-ETX	BCC	CR

```
      Header
        SOH (01h): Start Of Header
        '0' (30h): Reserved
        '0' (30h): Message receiver is the controller.
        Monitor ID: Indicate a replying Monitor ID.
                   Ex.)  When this byte is set to 'A', the replying Monitor ID is '1'.
        'B' (42h): Message type is "Command reply".
        '0'-'C' (30h, 43h): Message length

      Message
        STX (02h): Start of Message
        'C'-'3'-'1'-'5' (43h, 33h, 31h, 35h): Enable/Disable Schedule writes reply command
        ST: Enable/Disable Schedule Status command
              '0'-'0'(30h, 30h): No error
              '0'-'1'(30h, 31h): Error
        PG-EN: Enable/Disable Schedule data
              PG: Program No.
                  '0'-'0'(30h, 30h): Program No.1
                      |
                  '0'-'6'(30h, 36h): Program No.7

        EN: Enable /Disable
                  '0'-'0'(30h, 30h): Disable
                  '0'-'1'(30h, 31h): Enable

      ETX (03h): End of Message

   Check code
     BCC: Block Check Code
          Refer to the section 4.5 "Check code" for a BCC calculation.

   Delimiter
     CR (0Dh): End of packet
```

11. Self diagnosis

11.1 Self-diagnosis status read
```
This command is used in order to read the Self-diagnosis status.

   1) The controller requests the monitor to read Self-diagnosis status.
```

Header	Message	Check code	Delimiter
SOH-'0'-Monitor ID-'0'-'A'-'0'-'4'	STX-'B'-'1'-ETX	BCC	CR

```
      Header
```

```
  SOH (01h): Start of Header
  '0' (30h): Reserved
  Monitor ID: Specify the Monitor ID which you want to get status.
            Ex.) If Monitor ID is '1', specify 'A'.
  '0' (30h): Message sender is the controller.
  'A' (41h): Message type is "Command".
  '0'-'4'(30h, 34h): Message length

Message
  STX (02h): Start of Message
  'B'-'1' (42h, 31h): Self-diagnosis command
  ETX (03h): End of Message

Check code
  BCC: Block Check Code
       Refer to the section 4.5 "Check code" for a BCC calculation.


Delimiter
  CR (0Dh): End of packet
```

2) The monitor replies a result of the self-diagnosis.

Header	Message	Check code	Delimiter
SOH-'0'-'0'-Monitor ID-'B'-N-N	STX-'A'-'1'- ST(0)-ST(1) --------ST(n)-ETX	BCC	CR

```
Header
  SOH (01h): Start Of Header
  '0' (30h): Reserved
  '0' (30h): Message receiver is the controller.
  Monitor ID: Indicate a replying Monitor ID.
            Ex.)  When this byte is set to 'A', the replying Monitor ID is '1'.
  'B' (42h): Message type is "Command reply".
  N-N: Message length
            Note.) The maximum data length that can be written to the monitor at a time is 32bytes.
            Ex.) The byte data 20h is encoded as ASCII characters '2' and '0' (34h and 30h).

Message
  STX (02h): Start of Message
  'A'-'1' (41h, 31h): Application Test Report reply command
  ST: Result of self-tests
       '0'-'0'(30h, 30h):00: Normal
       '7'-'0'(37h, 30h):70: Standby-power +3.3V abnormality
       '7'-'1'(37h, 31h):71: Standby-power +5V abnormality
       '7'-'2'(37h, 32h):72: Panel-power +12V abnormality
       '7'-'3'(37h, 33h):73: Main-power +2.5V abnormality
       '7'-'4'(37h, 34h):74: Main-power +1.8V abnormality
       '7'-'5'(37h, 35h):75: Main-power +5V abnormality
       '7'-'6'(37h, 36h):76: Sub-power +3.3V abnormality
       '7'-'7'(37h, 37h):77: Main-power +3.3V abnormality
       '8'-'0'(38h, 30h):80: Cooling fan-1 abnormality
       '8'-'1'(38h, 31h):81: Cooling fan-2 abnormality
        ('8'-'2'(38h, 32h):82: Cooling fan-3 abnormality)
       '9'-'0'(39h, 30h):90: Inverter abnormality
       'A'-'0'(41h, 30h):A0: Temperature abnormality – shutdown
       'A'-'1'(41h, 31h):A1: Temperature abnormality – half brightness

  ETX (03h): End of Message

Check code
  BCC: Block Check Code
       Refer to the section 4.5 "Check code" for a BCC calculation.

Delimiter
  CR (0Dh): End of packet
```

12. Serial No. & Model Name Read

12.1 Serial No. Read

This command is used in order to read a serial number.

1) The controller requests the monitor to read a serial number.

Header	Message	Check code	Delimiter
SOH-'0'-Monitor ID-'0'-'A'-'0'-'6'	STX-'C'-'2'-'1'-'6'-ETX	BCC	CR

Header
  SOH (01h): Start Of Header
  '0' (30h): Reserved
  Monitor ID: Specify the Monitor ID which you want to get serial number.
         Ex.) If Monitor ID is '1', specify 'A'.
  '0' (30h): Message sender is the controller.
  'A' (41h): Message type is "Command".
  '0'-'6'(30h, 36h): Message length

Message
  STX (02h): Start of Message
    'C'-'2'-'1'-'6' (43h, 32h, 31h, 36h): Serial No. command
 ETX (03h): End of Message

Check code
  BCC: Block Check Code
     Refer to the section 4.5 "Check code" for a BCC calculation.

Delimiter
  CR (0Dh): End of packet

2) The monitor replies the serial No. data to the controller.

Header	Message	Check code	Delimiter
SOH-'0'-'0'-Monitor ID-'B'-N-N	STX-'C'-'3'-'1'-'6'-Data(0)-Data(1)---Data(n)-ETX	BCC	CR

Header
  SOH (01h): Start Of Header
  '0' (30h): Reserved
  '0' (30h): Message receiver is the controller.
  Monitor ID: Indicate a replying Monitor ID.
        Ex.) When this byte is set to 'A', the replying Monitor ID is '1'.
 'B' (42h): Message type is "Command reply".
 N-N: Message length
        Note.) The maximum data length that can be returned from the monitor at a time is
           32bytes.
        Ex.) The byte data 20h is encoded as ASCII characters '2' and '0' (32h and 30h).

Message
  STX (02h): Start of Message
  'C'-'3'-'1'-'6' (41h, 33h, 31h, 36h): Serial No. reply command
  Data(0)-Data(1)----Data(n):Serial Number
  ➢   These data are encoded to ASCII characters strings.
 ETX (03h): End of Message

Check code
  BCC: Block Check Code
     Refer to the section 4.5 "Check code" for a BCC calculation.

Delimiter
  CR (0Dh): End of packet

12.2 Model Name Read

This command is used in order to read the Model Name.

1) The controller requests the monitor to read Model Name.

Header	Message	Check code	Delimiter

| SOH-'0'-Monitor ID-'0'-'A'-'0'-'6' | STX-'C'-'2'-'1'-'7'-ETX | BCC | CR |

Header
  SOH (01h): Start Of Header
  '0' (30h): Reserved
  Monitor ID: Specify the Monitor ID which you want to get Model Name.
              Ex.) If Monitor ID is '1', specify 'A'.
  '0' (30h): Message sender is the controller.
  'A' (41h): Message type is "Command".
  '0'-'6'(30h, 36h): Message length

Message
  STX (02h): Start of Message
    'C'-'2'-'1'-'7' (43h, 32h, 31h, 37h): Model Name command
  ETX (03h): End of Message

Check code
  BCC: Block Check Code
        Refer to the section 4.5 "Check code" for a BCC calculation.

Delimiter
  CR (0Dh): End of packet

2) The monitor replies the model name data to the controller.

Header	Message	Check code	Delimiter
SOH-'0'-'0'-Monitor ID-'B'-N-N	STX-'C'-'3'-'1'-'7'-Data(0) -Data(1)———-Data(n)-ETX	BCC	CR

Header
  SOH (01h): Start Of Header
  '0' (30h): Reserved
  '0' (30h): Message receiver is the controller.
  Monitor ID: Indicate a replying Monitor ID.
              Ex.) When this byte is set to 'A', the replying Monitor ID is '1'.
  'B' (42h): Message type is "Command reply".
  N-N: Message length
              Note.) The maximum data length that can be returned from the monitor at a time is
                     32bytes.
              Ex.) The byte data 20h is encoded as ASCII characters '2' and '0' (32h and 30h).

Message
  STX (02h): Start of Message
  'C'-'3'-'1'-'7' (43h, 33h, 31h, 37h): Model Name reply Command
  Data(0) -Data(1)----Data(n):Model name
  ➢   These data are encoded to ASCII characters strings.
  ETX (03h): End of Message

Check code
  BCC: Block Check Code
        Refer to the section 4.5 "Check code" for a BCC calculation.

Delimiter
  CR (0Dh): End of packet

13. Security Lock

13.1 Security Lock Control

This command sets the condition of security lock function to "LOCK" or "UNLOCK".

If security pass codes 1st to 4th are matched with monitor resisted pass codes, then this command is executed, and reply no error status and a new condition.
If codes aren't matched with them then setting isn't changed, and reply error status and a current condition.
If the monitor receives this command while waiting for Pass codes inputs, then it only checks Pass cords (and releases image muting if Pass codes are OK) and doesn't apply "EN" parameter.

1) The controller requests the monitor to set the condition of security lock.

Header	Message	Check code	Delimiter
SOH-'0'-MonitorID-'0'-'A'-'1'-'0'	STX-'C'-'2'-'1'-'D'-EN-P1-P2-P3-P4-ETX	BCC	CR

Header
  SOH (01h): Start Of Header
  '0' (30h): Reserved
  Monitor ID: Specify the Monitor ID of which you want to change a setting.
            Ex.) If Monitor ID is '1', specify 'A'.
  '0' (30h): Message sender is the controller.
  'A' (41h): Message type is "Command".
  '1'-'0'(31h, 30h): Message length

Message
  STX (02h): Start of Message
  'C'-'2'-'1'-'D' (43h, 32h, 31h, 44h): Security Lock Control command
  EN-P1-P2-P3-P4: Lock condition control data
        EN: Enable /Disable
            '0'-'0'(30h, 30h): Disable
            '0'-'1'(30h, 31h): Enable

        P1: Security Pass code 1st
            '0'-'0'(30h, 30h): "0"
               |
            '0'-'9'(30h, 39h): "9"

        P2: Security Pass code 2nd
            '0'-'0'(30h, 30h): "0"
               |
            '0'-'9'(30h, 39h): "9"

        P3: Security Pass code 3rd
            '0'-'0'(30h, 30h): "0"
               |
            '0'-'9'(30h, 39h): "9"

        P4: Security Pass code 4th
            '0'-'0'(30h, 30h): "0"
               |
            '0'-'9'(30h, 39h): "9"

   ETX (03h): End of Message

Check code
  BCC: Block Check Code
       Refer to the section 4.5 "Check code" for a BCC calculation.

Delimiter
  CR (0Dh): End of packet

2) The monitor replies the result to the controller.

Header	Message	Check code	Delimiter
SOH-'0'-'0'-Monitor ID-'B'-'0'-'A'	STX-'C'-'3'-'1'-'D'-ST-EN-ETX	BCC	CR

Header
  SOH (01h): Start of Header
  '0' (30h): Reserved
  '0' (30h): Message receiver is the controller.
  Monitor ID: Indicate a replying Monitor ID.
            Ex.) When this byte is set to 'A', the replying Monitor ID is '1'.
  'B' (42h): Message type is "Command reply".
  '0'-'A'(30h, 41h): Message length

Message
  STX (02h): Start of Message

'C'-'3'-'1'-'D' (43h, 33h, 31h, 44h): Security Lock Control reply command
ST-EN: Lock condition result data
      ST: Status
            '0'-'0'(30h, 30h): No error
            '0'-'1'(30h, 31h): Error

        EN: Enable /Disable (Current condition)
            '0'-'0'(30h, 30h): Disable
            '0'-'1'(30h, 31h): Enable

   ETX (03h): End of Message

Check code
  BCC: Block Check Code
       Refer to the section 4.5 "Check code" for a BCC calculation.

Delimiter
  CR (0Dh): End of packet

Appendix

A. Operation Code (OP code) Table

		Item	OP code page	OP code	Parameter	Remarks
PICTURE		Brightness	00h	10h	0: dark | 100(64h): bright	
		Contrast	00h	12h	0: low | 100(64h): high	
		Sharpness	00h	8Ch	0: dull | 82(52h): sharp	
		Black Level	00h	92h	0: dark | 63(3Fh): bright	
		Tint	00h	90h	0: purplish | 63(3Fh): greenish	
		Color	02h	1Fh	0: pale | 63(3Fh): deep	
		Color Temperature	00h	54h	0:2600K | 74(4Ah):10000K	100K/step X461HB's minimum is 4(04h):3000K
		Color control	00h	Red: 9Bh Yellow: 9Ch Green: 9Dh Cyan: 9Eh Blue: 9Fh Magenta: A0h	0: | 50(32h):(center) | 100(64h):	
				Saturation: 8Ah	0: pale | 10(0Ah): deep	
		Gamma Selection	02h	68h	Gamma Table Selection 1: Native Gamma 4: Gamma=2.2 8: Gamma=2.4 7: S Gamma 5: DICOM SIM. 6: Programmable	
	Movie Settings	Adaptive Contrast	02h	8Dh	0: None 1: Off 2: Low 3: Middle 4: High	
		Noise Reduction	02h	20h	0: Off | 16(10h) : High	
		Film Mode	02h	23h	1: Off 2: Auto	
		Picture mode	02h	1Ah	1: sRGB 3: Hi-Bright 4: Standard 5: Cinema 6: ISF-Day 7: ISF-Night 11: Ambient-1 12: Ambient-2	sRGB: PC mode only Cinema: A/V mode only ISF-Day: ISF-Night: Each needs an adjustment by ISF.

	Item		OP code page	OP code	Parameter	Remarks
	Ambient	Ambient Brightness Low	10h	33h	0: dark | 100(64h): bright	
		Ambient Brightness High	10h	34h	0: dark | 100(64h): bright	
		Get Current Illuminance	02h	B4h	0: | Max.	Read only
		Bright Sensor Read	02h	B5h	0: | 255(FFh)	Read only
	Menu tree reset (Picture)		02h	CBh	0: None 2: Reset Picture category	Momentary
ADJUST	Auto Setup		00h	1Eh	1: Execute	Momentary
	Auto Adjust				N/A	
	H Position		00h	20h	0: Left side | Max.: Right side	Depends on a display timing
	V Position		00h	30h	0: Bottom side | Max.: Top side	Depends on a display timing
	Clock		00h	0Eh	0: | Max. :	
	Clock Phase		00h	3Eh	0: | Max. :	
	H Resolution		02h	50h	0: Low | Max. : High	
	V Resolution		02h	51h	0: Low | Max.: High	
	Input Resolution		02h	DAh	1: Auto 2: 1024x768 3: 1280x768 4: 1360x768 5: 1366x768 6: 1400x1050 7: 1680x1050	
	Zoom Mode	Base Zoom	02h	CEh	3:16:9-ZOOM 4:14:9-ZOOM 5:Dynamic 1:Off (Real) 2:Custom	
		Zoom	02h	6Fh	1:100 2:101 | 201:300	
		Zoom H-Expansion	02h	6Ch	1:100 2:101 | 201:300	
		Zoom V-Expansion	02h	6Dh	1:100 2:101 | 201:300	
		Zoom H-Position	02h	CCh	0: Left side | Max.: Right side	

	Item	OP code page	OP code	Parameter	Remarks
	Zoom V-Position	02h	CDh	0: Down side | Max.: Up side	
	Aspect	02h	70h	1: Normal 2: Full 3: Wide 4: Zoom 5: Trim	Wide: A/V mode only (exc. X431BT) Not available (X431BT) Trim: X431BT only
	Menu tree reset (Adjust)	02h	CBh	0: None 3: Reset Adjust category	Momentary
AUDIO	Balance	00h	93h	O: Left | 50:(Center) | 100: Right	Not available on X461UN.
	Treble	00h	8Fh	O: Min. | 50:(Center) | 100: Max.	Not available on X461UN.
	Bass	00h	91h	0: Min. | 50:(Center) | 100: Max.	Not available on X461UN.
	PIP Audio			N/A	
	Line out			N/A	
	SURROUND	02h	34h	1: Off 2: Low (or On) 3: High (or On)	Not available on X461UN.
	Audio Input	02h	2Eh	1: Audio 1(PC) 2: Audio 2 3: Audio 3 4: HDMI 6: TV/Option 7: Display Port	
	Menu tree reset (Audio)	02h	CBh	0: None 4: Reset Audio category	Momentary
SCHDULE	Off Timer	02h	2Bh	0: Off 1: 1 hour | 24: 24 hours	1 hour/step
	Enable Schedule	02h	E5h	0: No Mean 1: No.1 Enable | 7: No.7 Enable	
	Disable Schedule	02h	E6h	0: No Mean 1: No.1 Disable | 7: No.7 Disable	
	Menu tree reset (Schedule)	02h	CBh	0: None 5: Reset Schedule category	Momentary
P	Keep PIP Mode			N/A	

	Item		OP code page	OP code	Parameter	Remarks
	PIP Mode		02h	72h	1: Off 2: PIP 3: POP (4: Still) 5: Side by side (aspect) 6: Side by side (Full) 7: POP aspect Main 8: POP aspect Sub	POP: Side by side (aspect): Not available on X431BT POP aspect Main: POP aspect Sub: X431BT only
	PIP Size		02h	71h	1: Small 2: Middle 3: Large	
	PIP H Position		02h	74h	0: left | 100(64h): right	
	PIP V Position		02h	75h	0: top | 100(64h): bottom	
	Aspect				N/A	
	Text Ticker	Mode	10h	08h	0: None 1: Off 2: Horizontal 3: Vertical	
		Position	10h	09h	0: Top/Left | 100: Bottom/Right	
		Size	10h	0Ah	0-1: Do not set. 2: Narrow(2/24) | 8: Wide(8/24)	
		Blend	10h	0Bh	1: 10% | 10: 100%	
		Detect	10h	0Ch	0: None 1: Auto 2: Off	
		Fade In	10h	0Dh	0: None 1: On 2: Off	
	PIP Input(Sub input)		02h	73h	0: No mean 1: VGA 2: RGB/HV 3: DVI 4: HDMI (Set only) 5: Video1 6: Video2 7: S-Video 10: TV 12: DVD/HD1 13: Option 14: DVD/HD2 15: Display Port 17: HDMI	This operation has limitation of selection. Please refer to the monitor instruction manual.
	Menu tree reset (PIP)		02h	CBh	0: None 6: Reset PIP category	Momentary
OSD	Language		00h	68h	1: English 2: German 3: French 4: Spanish 5: Japanese 6: Italian 7: Swedish 9: Russian	OSD Language

	Item		OP code page	OP code	Parameter	Remarks
	OSD Turn Off		00h	FCh	0-1: Do not set. 2: 10s 3: 15s | 48: 240s	5sec/step
	OSD Position	H Position	02h	38h	0: Left | MAX.: Right	
		V Position	02h	39h	0: Down | MAX.: Up	
	Information OSD		02h	3Dh	0:Disable information OSD 3-10: OSD timer [seconds]	
	OSD Transparency		02h	B8h	0: None 1: Off(Opaque) 2: TYPE1 3: TYPE2	
	Menu tree reset (OSD)		02h	CBh	0: None 7: Reset OSD category	Momentary
MULTI DISPLAY	Monitor ID		02h	3Eh	1-100:ID	
	IR Control		02h	3Fh	1: Normal 2: Primary 3: Secondary 4: Lock (Off)	
	Tile Matrix	H monitor	02h	D0h	1 | 10	Number of H-division
		V monitor	02h	D1h	1 | 10	Number of V-division
		Position	02h	D2h	1: Upper left | MAX.: Lower right	
		Tile comp	02h	D5h	1: Disable (Off) 2: Enable (On)	
		Mode	02h	D3h	1: Disable (Off) and display frame 2: Enable (On) 3: Disable (Off) and erase frame (Set only)	
	Power On Delay		02h	D8h	0: Off (0sec) 50:50sec	
	Power Indicator		02h	BEh	0: None 1: On 2: Off	
	External control		10h	3Eh	0: No mean 1: RS-232C 2: LAN	
	Setting copy				N/A	
	Menu tree reset (Multi Display)		02h	CBh	0: None 8: Reset Multi Display category	Momentary
DISPLAY PROTECTION	Power Save		00h	E1h	0: Off 1: On	
	Standby Mode		02h	9Ah	0: None 1: Standby 2: ECO Standby	

	Item		OP code page	OP code	Parameter	Remarks
	Fan Control		02h	7Dh	0: None 1: Auto(No offset) 2: Forced ON 3: Auto(offset -2) 4: Auto(offset -4) 5: Auto(offset -6) 6: Auto(offset -8) 7: Auto(offset -10)	Offset affects to a selected sensor.
	Fan Speed		10h	3Fh	0: None 1: High 2: Low	
	Screen Saver	Gamma	02h	DBh	1: normal 2:screen saving gamma	
		Brightness	02h	DCh	1:normal 2:decrease brightness	
		Motion	02h	DDh	0: 0s(Off) | 90: 900s	10s/step
	Side Border Color		02h	DFh	0: Black | 100: White	
	Auto Brightness		02h	2Dh	0: Off 1: On	
	Menu tree reset (Display Protection)		02h	CBh	0: None 9: Reset Display Protection category	Momentary
Advanced Option	Input Detect		02h	40h	0: First detect 1: Last detect 2: None 3: VIDEO detect 4: Custom detect	
	Custom Detect	Priority1	10h	2Eh	0: No mean 1: VGA 2: RGB/HV	
		Priority2	10h	2Fh	3: DVI 4: HDMI (Set only) 5: Video1	
		Priority3	10h	30h	6: Video2 7: S-Video 10: TV	
		Priority4	10h	31h	12: DVD/HD1 13: Option 14: DVD/HD2	
		Priority5	10h	32h	15: Display Port 17: HDMI	
	Input change				N/A	
	Long Cable Manual	Equalize	10h	3Dh	0: No mean 1: Off 2: On	
		Pole	10h	36h	0: | 255(FFh):	
		Peak	10h	37h	0: | 255(FFh):	
		Gain	10h	38h	0: | 255(FFh):	
		Offset	10h	39h	0: | 255(FFh):	

	Item		OP code page	OP code	Parameter	Remarks
		SYNC Terminate	02h	E1h	1: Hi(2.2kohm) 2: Lo(75ohm)	
	DVI Mode		02h	CFh	1: DVI-PC 2: DVI-HD	
	SCART Mode		02h	9Eh	0: Off 1: On	
	HDMI Signal		10h	40h	0: None 1: Expand 2: Raw	
	Scan Conversion		02h	25h	1: Off(INTERLACE) 2: Enable (IP ON/PROGRESSIVE)	
	Color System		02h	21h	1: NTSC 2: PAL 3: SECAM 4: Auto 5: 4.43NTSC 6: PAL-60	
	Scan Mode		02h	E3h	1: Under Scan 2: Over Scan	
	Menu tree reset (Advanced Option)		02h	CBh	0: None 10: Reset Advanced option category	Momentary
	Menu tree reset (Factory reset)		02h	CBh	0: None 1: Factory Reset	Momentary
	Input		00h	60h	0: No mean 1: VGA 2: RGB/HV 3: DVI 4: HDMI (Set only) 5: Video1 6: Video2 7: S-Video 10: TV 12: DVD/HD1 13: Option 14: DVD/HD2 15: Display Port 17: HDMI	
	Audio Input		02h	2Eh	1: Audio 1(PC) 2: Audio 2 3: Audio 3 4: HDMI 6: TV/Option 7: Display Port	
	Volume UP/Down		00h	62h	0: whisper | 100: loud	
	Mute		00h	8Dh	0,2: UNMUTE 1: MUTE	
	MTS		02h	2Ch	0: None 1: Main 2: Sub 3: Main + Sub	This operation requires supported option TV tuner.
	Sound		02h	34h	1: Off 2: Low (or On) 3: High (or On)	Not available on X461UN.

	Item	OP code page	OP code	Parameter	Remarks
	Picture Mode	02h	1Ah	1: sRGB 3: Hi-Bright 4: Standard 5: Cinema 6: ISF-Day 7: ISF-Night 11: Ambient-1 12: Ambient-2	sRGB: PC mode only Cinema: A/V mode only ISF-Day: ISF-Night: Each needs an adjustment by ISF.
	Aspect	02h	70h	1: Normal 2: Full 3: Wide 4: Zoom	Wide: A/V mode only
	PIP ON/OFF Still ON/OFF	02h	72h	1: Off 2: PIP 3: POP 4: Still 5:Side by side (aspect) 6: Side by side (Full)	
	PIP Input	02h	73h	0: No mean 1: VGA 2: RGB/HV 3: DVI 4: HDMI (Set only) 5: Video1 6: Video2 7: S-Video 10: TV 12: DVD/HD1 13: Option 14: DVD/HD2 15: Display Port 17: HDMI	This operation has limitation of selection. Please refer to the monitor instruction manual.
	Still Capture	02h	76h	0: Off 1: Capture	Momentary
	Signal Information	02h	EAh	0: No Action 1: Off (No indication) 2: On (Indication	
	Auto Setup	00h	1Eh	1: Execute	Momentary
	TV-Channel UP/DOWN	00h	8Bh	0: No Action 1: Up 2: Down	This operation requires supported option TV tuner.
Temperature sensor	Select Temperature sensor	02h	78h	1: Sensor #1 2: Sensor #2 3: Sensor #3	
	Readout a temperature	02h	79h	Returned value is 2's complement. Refer to section 6.2	Read only
Carbon footprint	Readout carbon footprint (g)	10h	10h	0: | 999:	Read only
	Readout carbon footprint (kg)	10h	11h	0: | 65535:	Read only

All data are subject to change without notice.