# *External Control*       *NEC LCD Monitor*

**Rev.2.4 (G2)**

## INDEX

# I. Application

 This document defines the communications method for control of the NEC LCD monitor, MultiSync P403/ P463 /P553 /P703 /P801 /X464UN /X554UN /X464UNV /X554UNS /X474HB /X464UNS /X554UNV /X555UNS /X555UNV when using an external controller.

# II. Preparation

## 2. Connectors and wiring

### 2.1 RS-232C Remote control

Connector: 9-pin D-Sub
Cable: Cross (reversed) cable or null modem cable
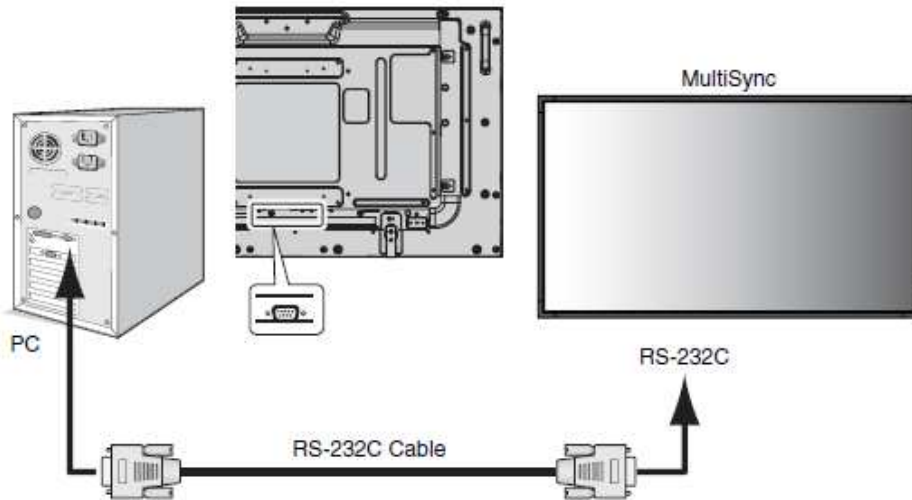


(Please refer "Controlling the LCD monitor via RS-232C Remote control" on User's manual.)

### 2.2 LAN control

Connector: RJ-45 10/100 BASE-T
Cable: Category 5 or higher LAN cable
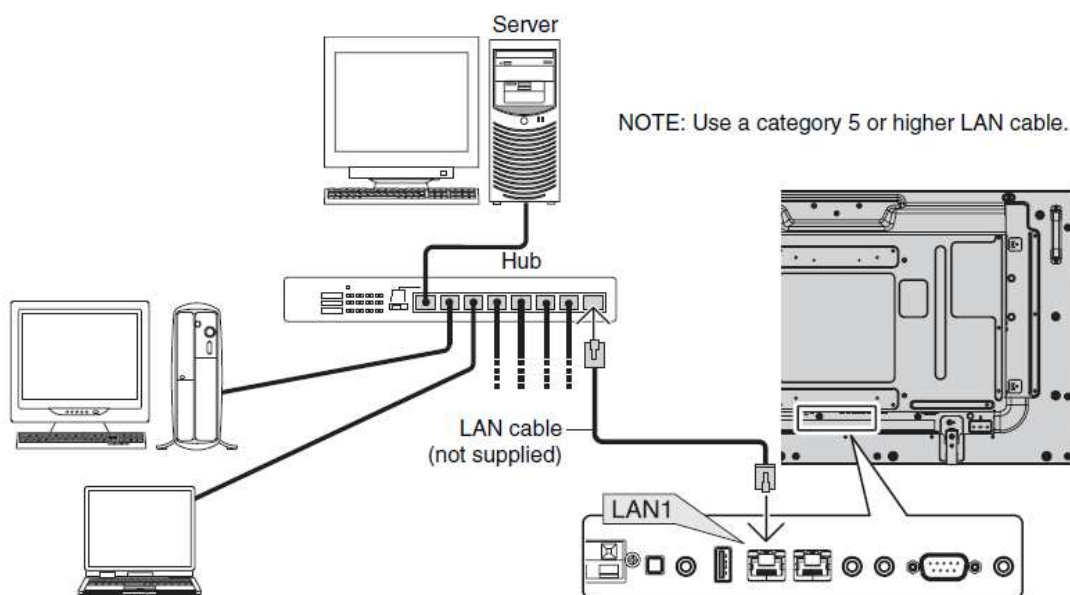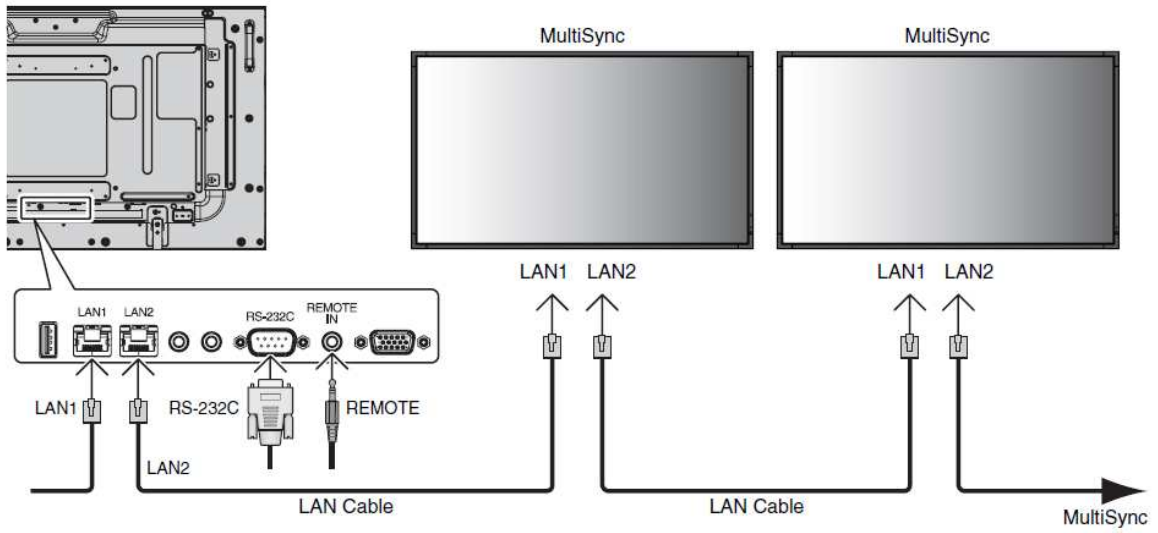
(Please refer "Controlling the LCD monitor via LAN control" on User's manual.)

# III. Communication specification

# 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) Automatic setup
                              * 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 reply packet before the next command is sent.
(Note)
When the following commands are sent, a controller should wait for specified period after receiving the reply command before sending the next command.
- Power On, Power Off: 15 seconds
- Input, PIP Input, Auto Setup, Factory Reset: 10 seconds

# 4. Communication Format

| Header | Message | Check Code | Delimiter |
|---|---|---|---|

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

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

■ For the general command (see the part "6.3. Operation Code (OP code) Table")



| **Controller** | | | **Monitor** |
|---|---|---|---|

**Get Parameter**

| Header | Message | Check Code | Delimiter |
|---|---|---|---|

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

**Get Parameter Reply**

| Header | Message | Check Code | Delimiter |
|---|---|---|---|

The monitor replies a current value of the requested item.

**Set Parameter**

| Header | Message | Check Code | Delimiter |
|---|---|---|---|

The controller sends commands to set an adjusted value.

**Set Parameter Reply**

| Header | Message | Check Code | Delimiter |
|---|---|---|---|

The monitor replies to the controller for confirmation.

**Get Parameter**

| Header | Message | Check Code | Delimiter |
|---|---|---|---|

The controller sends command to get a value for confirmation.

**Get Parameter Reply**

| Header | Message | Check Code | Delimiter |
|---|---|---|---|

The monitor replies an adjusted value.

**Save Current Setting Command**

| Header | Message | Check Code | Delimiter |
|---|---|---|---|

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

**Save Current Setting Command Reply**

| Header | Message | Check Code | Delimiter |
|---|---|---|---|

The monitor replies to the controller for confirmation.

■ For the special command (see the part 7 to 24. and 5.5.2)

| **Controller** | | | **Monitor** |
|---|---|---|---|

**Command**

| Header | Message | Check Code | Delimiter |
|---|---|---|---|

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 24.

**Command Reply**

| Header | Message | Check Code | Delimiter |
|---|---|---|---|

The monitor replies a proper message defined for each control.
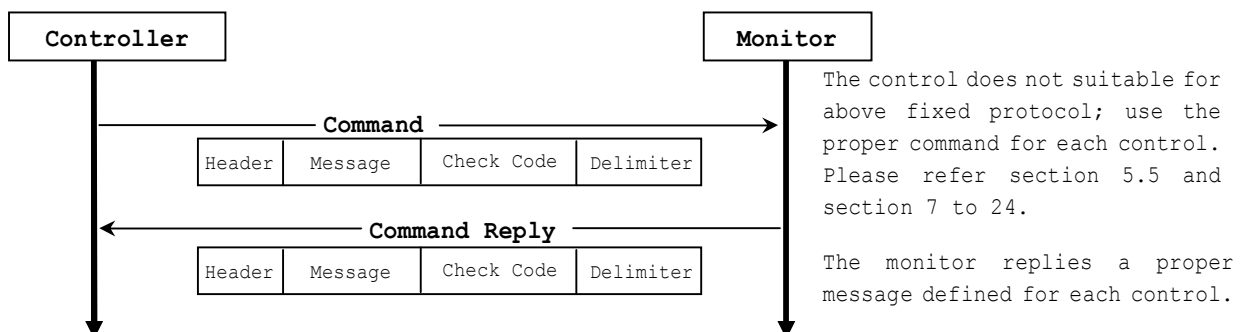
## 4.1 Header block format (fixed length)

| **Header** | Message | Check code | Delimiter |
|---|---|---|---|

| SOH | Reserved '0' | Destination | Source | Message Type | Message Length |
|---|---|---|---|---|---|
| 1$^{st}$ | 2$^{nd}$ | 3$^{rd}$ | 4$^{th}$ | 5$^{th}$ | 6$^{th}$ -7$^{th}$ |

1$^{st}$byte) SOH: Start of Header
   ASCII SOH (01h)

2$^{nd}$byte) Reserved: Reserved for future extensions.

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

3$^{rd}$byte) 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).

$4^{th}$byte) 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.

$5^{th}$byte) 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.

$6^{th}$ -$7^{th}$ 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

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

Refer to the section 4.1 "Header block 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.

## 4.3 Check code

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 |
| $D_0$ | $D_1$ | $D_2$ | $D_3$ | $D_4$ | $D_5$ | $D_6$ | $D_7$ | $D_8$ | $D_9$ | $D_{10}$ | $D_{11}$ | $D_{12}$ | $D_{13}$ | $D_{14}$ | $D_{15}$ | $D_{16}$ | $D_{17}$ | $D_{18}$ |

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

$\qquad$ = 30h xor 41h xor 30h xor 45h xor 30h xor 41h

$\qquad$ xor 02h xor 30h xor 30h xor 31h xor 30h xor 30h

$\qquad$ xor 30h xor 36h xor 34h xor 03h

$\qquad$ = 77h

## 4.4 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-5th 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-7th 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-9th 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-13th 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-17th 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<sup>th</sup>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 | |
| 1$^{st}$ | 2$^{nd}$-3$^{rd}$ | | 4$^{th}$-5$^{th}$ | | 6$^{th}$-9$^{th}$ | | | 10$^{th}$ |

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)

2$^{nd}$-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.

4$^{th}$-5$^{th}$bytes) 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.

6$^{th}$-9$^{th}$bytes) Set value: (16bit)

    This data must be encoded to ASCII characters.

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

                         2$^{nd}$ = ASCII '1' (31h)

                         3$^{rd}$ = ASCII '2' (32h)

                         4$^{th}$(LSB) = ASCII '3' (33h)

10$^{th}$byte) 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.

1st byte) STX: Start of Message

    ASCII STX (02h)

2nd-3rd bytes) 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-5th bytes) 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-7th bytes) 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-9th bytes) 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;

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

- ➢ A null message will be returned by the monitor if the "Start Proof of Play" command is sent and the monitor has already started Proof of Play.

- ➢ A null message will be returned by the monitor if the "Stop Proof of Play" command is sent and the monitor has not started Proof of Play.

- ➢ 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

# IV. Control Commands

# 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 "Backlight" 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-<br>'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 4.3 "Check code" for a BCC calculation.

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

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

| Header | Message | Check code | Delimiter |
|---|---|---|---|
| SOH-'0'-'0'-Monitor ID-<br>'D'-'1'-'2' | STX-'0'-'0'-'0'-'0'-'1'-'0'-'0'-'0'<br>-'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): Backlight max value is 100(0064h).
  '0'-'0'-'3'-'2' (30h, 30h, 33h, 32h): Current Backlight setting is 50(0032h) .
  ETX (03h): End of Message

Check code
  BCC: Block Check Code
       Refer to the section 4.3 "Check code" for a BCC calculation.
```

Delimiter
  CR (0Dh): End of packet


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

| Header | Message | Check code | Delimiter |
|---|---|---|---|
| SOH-'0'-Monitor ID-<br>'0'-'E'-'0'-'A' | STX-'0'-'0'-'1'-'0'-<br>'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 Backlight setting 80(0050h).
  ETX (03h): End of Message

Check code
  BCC: Block Check Code
       Refer to the section 4.3 "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 –<br>'F'-'1'-'2' | STX-'0'-'0'-'0'-'0'-'1'-'0'–'0'-'0'-<br>'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): Backlight max value is 100(0064h).
  '0'-'0'-'5'-'0' (30h, 30h, 35h, 30h): Received a Backlight setting was 80(0050h) .
  ETX (03h): End of Message

Check code
  BCC: Block Check Code
       Refer to the section 4.3 "Check code" for a BCC calculation.

Delimiter
  CR (0Dh): End of packet

> Repeat Step 1 and Step 2, if you need to check the Backlight setting. (Recommended)

Step 5. Request the monitor to store the Backlight setting. (Save Current Settings Command)

| Header | Message | Check code | Delimiter |
|---|---|---|---|
| SOH-'0'-Monitor ID-<br>'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 4.3 "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 P403/ P463 /P553 /P703 /P801 /X464UN /X554UN /X464UNV /X554UNS /X474HB /X464UNS /X554UNV

/X555UNS /X555UNV 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-<br>'0'-'E'-'0'-'A' | STX-'0'-'2'-'7'-'8'-<br>'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 4.3 "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-<br>'F'-'1'-'2' | STX-'0'-'0'-'0'-'2'-'7'-'8'-'0'-'0'-<br>'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 4.3 "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-<br>'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 4.3 "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-<br>'D'-'1'-'2' | STX-'0'-'0'-'0'-'2'-'7'-'9'-'0'-'0'<br>-'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 4.3 "Check code" for a BCC calculation.

Delimiter
  CR (0Dh): End of packet

## 6.3. Operation Code (OP code) Table

| | Item | | OP code page | OP code | Parameter | Remarks |
|---|---|---|---|---|---|---|
| PICTURE | BACKLIGHT | | 00h | 10h | 0: dark<br>\|<br>100(64h): bright | |
| | CONTRAST | | 00h | 12h | 0: low<br>\|<br>100(64h): high | |
| | SHARPNESS | | 00h | 8Ch | 0: dull<br>\|<br>24(18h): sharp | |
| | BRIGHTNESS | | 00h | 92h | 0: dark<br>\|<br>100(64h): bright | |
| | HUE | | 00h | 90h | 0: purplish<br>\|<br>100(64h): greenish | |
| | COLOR | | 02h | 1Fh | 0: pale<br>\|<br>100(64h): deep | |
| | COLOR TEMPERATURE | | 00h | 54h | 0:2600K<br>\|<br>74(4Ah):10000K | 100K/step |
| | COLOR TEMPERATURE (CUSTOM) | | 00h | 14h | 9: 10000K<br>11(0Bh): CUSTOM | |
| | R GAIN | | 00h | 16h | 0: Dark<br>\|<br>255(FFh): Bright | |
| | B GAIN | | 00h | 18h | 0: Dark<br>\|<br>255(FFh): Bright | |
| | G GAIN | | 00h | 1Ah | 0: Dark<br>\|<br>255(FFh): Bright | |
| | COLOR CONTROL | | 00h | RED:<br>9Bh<br>YELLOW:<br>9Ch<br>GREEN:<br>9Dh<br>CYAN:<br>9Eh<br>BLUE:<br>9Fh<br>MAGENTA:<br>A0h | 0:<br>\|<br>100(64h):(center)<br>\|<br>200(C8h): | |
| | GAMMA CORRECTION | | 02h | 68h | 0: No mean<br>1: NATIVE<br>4: 2.2<br>8: 2.4<br>7: S GAMMA<br>5: DICOM SIM.<br>6: PROGRAMABLE1<br>13(0Bh): PROGRAMABLE2<br>14(0Ch): PROGRAMABLE3 | |
| | MOVIE SETTINGS | ADAPTIVE CONTRAST | 02h | 8Dh | 0: No mean<br>1: Off<br>2: LOW<br>4: High | |
| | | NOISE REDUCTION | 02h | 26h | 0: Off<br>\|<br>7: High | Page02 OPcode20h also works as same. |

| | Item | OP code page | OP code | Parameter | Remarks |
|---|---|---|---|---|---|
| | TELECINE | 02h | 23h | 0: No mean<br>1: Off<br>2: Auto | |
| | PICTURE MODE | 02h | 1Ah | 0: No mean<br>1: sRGB<br>3: HIGHBRIGHT<br>4: STANDARD<br>5: CINEMA<br>8: CUSTOM1<br>9: CUSTOM2 | sRGB:<br>  PC mode only<br>CINEMA:<br>  A/V mode only |
| | RESET (PICTURE) | 02h | CBh | 0: No mean<br>2: Reset<br> Picture category | Momentary |
| ADJUST | AUTO SETUP | 00h | 1Eh | 0: No mean<br>1: Execute | Momentary |
| | AUTO ADJUST | 10h | B7h | 0: No mean<br>1: OFF<br>2: ON | |
| | H POSITION | 00h | 20h | 0: Left side<br>\|<br>Max.: Right side | Depends on a display timing |
| | V POSITION | 00h | 30h | 0: Bottom side<br>\|<br>Max.: Top side | Depends on a display timing |
| | CLOCK | 00h | 0Eh | 0:<br>\|<br>Max. : | |
| | PHASE | 00h | 3Eh | 0:<br>\|<br>Max. : | |
| | H RESOLUTION | 02h | 50h | 0: Low<br>\|<br>Max. : High | |
| | V RESOLUTION | 02h | 51h | 0: Low<br>\|<br>Max.: High | |

| | Item | | OP code page | OP code | Parameter | Remarks |
|---|---|---|---|---|---|---|
| | INPUT RESOLUTION | | 02h | DAh | Input Resolution select<br><br>0:No mean<br>1:Item 1(always Auto)<br>2:Item 2<br>3:Item 3<br>4:Item 4<br>5:Item 5<br><br>Ex)<br> Item 1= AUTO<br> Item 2= -- /<br>      1024x768 /<br>      1400x1050 /<br>      800x600 /<br>      1280x960<br> Item 3= -- /<br>      1280x768 /<br>      1680x1050 /<br>      1024x576 /<br>      1600x900 /<br> Item 4= -- /<br>      1360x768 /<br>      -- /<br>      -- /<br>      --<br> Item 5= -- /<br>      1366x768<br>      -- /<br>      -- /<br>      -- | |
| | ASPECT | | 02h | 70h | 0: No mean<br>1: NORMAL<br>2: FULL<br>3: WIDE<br>4: ZOOM<br>6: DYNAMIC<br>7: 1:1 | Wide:<br>Dynamic<br>A/V mode only |
| | Zoom Control | ZOOM | 11h | 2Ch | 0-89(59h): No mean<br>90(5Ah): 90%<br>91(5Bh): 91%<br>\|<br>100(64h): 100%<br>\|<br>300(12Ch): 300% | The following commands can also be used.<br>OP code page 02h<br>OP code 6Fh<br>Parameter<br>0: No mean<br>1: 100%<br>2: 101%<br>\|<br>201(C9h): 300% |
| | | H ZOOM | 11h | 2Dh | 0-89(59h): No mean<br>90(5Ah): 90%<br>91(5Bh): 91%<br>\|<br>100(64h): 100%<br>\|<br>300(12Ch): 300% | The following commands can also be used.<br>OP code page 02h<br>OP code 6Ch<br>Parameter<br>0: No mean<br>1: 100%<br>2: 101%<br>\|<br>201(C9h): 300% |

| | Item | | OP code page | OP code | Parameter | Remarks |
|---|---|---|---|---|---|---|
| | | V ZOOM | 11h | 2Eh | 0-89(59h): No mean<br>90(5Ah): 90%<br>91(5Bh): 91%<br>\|<br>100(64h): 100%<br>\|<br>300(12Ch): 300% | The following commands can also be used.<br>OP code page 02h<br>OP code 6Dh<br>Parameter<br>0: No mean<br>1: 100%<br>2: 101%<br>\|<br>201(C9h): 300% |
| | | H POS | 02h | CCh | 0: Left side<br>\|<br>200(C8h): Right side | |
| | | V POS | 02h | CDh | 0: Down side<br>\|<br>200(C8h): Up side | |
| | IMAGE FLIP | | 02h | D7h | 0: No mean<br>1: NONE<br>2: H FLIP<br>3: V FLIP<br>4: 180 ROTATE | |
| | OSD FLIP | | 10h | B8h | 0: No mean<br>1: OFF<br>2: ON | |
| | RESET (ADJUST) | | 02h | CBh | 0: No mean<br>3: Reset<br> Adjust category | Momentary |
| AUDIO | VOLUME | | 00h | 62h | 0: whisper<br>\|<br>100(64h): loud | |
| | BALANCE | | 00h | 93h | O: Left<br>\|<br>30(1Eh):(Center)<br>\|<br>60(3Ch): Right | |
| | | | 00h | 94h | 0: No mean<br>1: MONAURAL<br>2: STEREO | |
| | TREBLE | | 00h | 8Fh | O: Min.<br>\|<br>6:(Center)<br>\|<br>12(0Ch): Max. | |
| | BASS | | 00h | 91h | 0: Min.<br>\|<br>6:(Center)<br>\|<br>12(0Ch): Max. | |
| | PIP AUDIO | | 10h | 80h | 0: No mean<br>1: MAIN AUDIO<br>2: PIP AUDIO | |
| | LINE OUT | | 10h | 81h | 0: No mean<br>1: FIXED<br>2: VARIABLE | |
| | SURROUND | | 02h | 34h | 0: No mean<br>1: OFF<br>2: ON | |

| | Item | | OP code page | OP code | Parameter | Remarks |
|---|---|---|---|---|---|---|
| | AUDIO INPUT | | 02h | 2Eh | 0: No mean<br>1: IN1<br>2: IN2<br>3: IN3<br>4: HDMI<br>6: OPTION<br>7: DPORT<br>8: DPORT2<br>9: DPORT3<br>10(0Ah): HDMI2 | |
| | AUDIO DELAY | | 10h | CAh | 0: No mean<br>1: OFF<br>2: ON | |
| | DELAY TIME | | 10h | CBh | 0: (small)<br>\|<br>100(64h): (large) | |
| | RESET<br>(AUDIO) | | 02h | CBh | 0: No mean<br>4: Reset<br> Audio category | Momentary |
| SCHDULE | OFF TIMER | | 02h | 2Bh | 0: Off<br>1: 1 hour<br>\|<br>24(18h): 24 hours | 1 hour/step |
| | SCHEDULE | ENABLE | 02h | E5h | 0: No mean<br>1: No.1 Enable<br>\|<br>7: No.7 Enable | |
| | | DISABLE | 02h | E6h | 0: No mean<br>1: No.1 Disable<br>\|<br>7: No.7 Disable | |
| | SCHEDULE SETTINGS | | Refer to chapter 10 | | | |
| | DATE & TIME | | Refer to chapter 9 | | | |
| | DAYLIGHT SAVING | | Refer to chapter 9 and 15 | | | |
| | RESET<br>(SCHEDULE) | | 02h | CBh | 0: No mean<br>5: Reset<br> Schedule category | Momentary |
| PIP | KEEP PIP MODE | | 10h | 82h | 0: No mean<br>1: OFF<br>2: ON | |
| | PIP MODE | | 02h | 72h | 0: No mean<br>1: OFF<br>2: PIP<br>3: POP<br>(4: STILL)<br>5: PICTURE BY PICTURE<br> - ASPECT<br>6: PICTURE BY PICTURE<br> - Full | |
| | PIP SIZE | | 10h | B9h | 0(small)<br>\|<br>80(large) | |
| | PIP POSITION | X | 02h | 74h | 0: left<br>\|<br>100(64h): right | |
| | | Y | 02h | 75h | 0: top<br>\|<br>100(64h): bottom | |
| | ASPECT | | 10h | 83h | 0: No mean<br>1: NORMAL<br>2: FULL<br>3: WIDE<br>4: ZOOM | |

| | Item | | OP code page | OP code | Parameter | Remarks |
|---|---|---|---|---|---|---|
| | TEXT TICKER | MODE | 10h | 08h | 0: No mean<br>1: OFF<br>2: HORIZONTAL<br>3: VERTICAL | |
| | | POSITION | 10h | 09h | 0: Top/Left<br>\|<br>100(64h): Bottom/Right | |
| | | SIZE | 10h | 0Ah | 0-1: Do not set.<br>2: Narrow(2/24)<br>\|<br>8: Wide(8/24) | |
| | | BLEND | 10h | 0Bh | 0: No mean<br>1: 10%<br>\|<br>10(0Ah): 100% | |
| | | DETECT | 10h | 0Ch | 0: No mean<br>1: AUTO<br>2: OFF | |
| | | FADE IN | 10h | 0Dh | 0: No mean<br>1: ON<br>2: OFF | |
| | PIP INPUT(SUB INPUT) | | 02h | 73h | 0: No mean<br>1: VGA<br>2: RGB/HV<br>3: DVI<br>4: HDMI (Set only)<br>5: VIDEO<br>7: S-VIDEO<br>12(0Ch): Y/Pb/Pr<br>13(0Dh): OPTION<br>14(0Eh): Y/Pb/Pr2<br>　　　　　(SCART)<br>15(0Fh): DPORT<br>16(10h): DPORT2<br>17(11h): HDMI<br>18(12h): HDMI2<br>128(80h): DPORT3 | This operation has limitation of selection. Please refer to the monitor instruction manual. |
| | RESET<br>(PIP) | | 02h | CBh | 0: No mean<br>6: Reset PIP<br>　　Category | Momentary |
| OSD | LANGUAGE | | 00h | 68h | 0: No mean<br>1: ENGLISH<br>2: GERMAN<br>3: FRENCH<br>4: SPANISH<br>5: JAPANESE<br>6: ITALIAN<br>7: SWEDISH<br>9: RUSSIAN<br>14(0Eh): CHINESE | OSD Language |
| | MENU DISPLAY TIME | | 00h | FCh | 0-1: Do not set.<br>2: 10s<br>3: 15s<br>\|<br>48(30h): 240s | 5sec/step |
| | OSD POSITION | X | 02h | 38h | 0: Left<br>\|<br>255(FFh): Right | |
| | | Y | 02h | 39h | 0: Down<br>\|<br>255(FFh): Up | |

| | Item | | OP code page | OP code | Parameter | Remarks |
|---|---|---|---|---|---|---|
| | INFORMATION OSD | | 02h | 3Dh | 0:Disable information OSD<br>3-10(0Ah):<br>OSD timer [seconds] | |
| | MONITOR INFORMATION | MODEL NAME | Refer to chapter 12 | | | |
| | | SERIAL | Refer to chapter 12 | | | |
| | | FIRMWARE1 | Refer to chapter 16 | | | |
| | | FIRMWARE2 | Refer to chapter 16 | | | |
| | | CARBON SAVINGS | 10h | 10h (g) /11h (kg) | 0 – 999(3E7h)(g)<br>0 – 65535(FFFFh)(kg) | Read Only |
| | | CARBON USAGE | 10h | 26h (g) /27h (kg) | 0 – 999(3E7h)(g)<br>0 – 65535(FFFFh)(kg) | Read Only |
| | OSD TRANSPARENCY | | 02h | B8h | 0: No mean<br>1: OFF<br>2: ON | |
| | OSD ROTATION | | 02h | 41h | 0: Landscape<br>1: Rotated | |
| | INPUT NAME | | Refer to chapter 18 | | | |
| | NAME RESET | | | | | |
| | MEMO | | 10h | BAh | 0: No mean<br>1: Display a Memo<br>2: Undisplay a Memo | |
| | RESET (OSD) | | 02h | CBh | 0: No mean<br>7: Reset OSD category | Momentary |
| MULTI DISPLAY | MONITOR ID | | 02h | 3Eh | 1-100:ID | |
| | GROUP ID | | 10h | 7Fh | 0: No assignment<br>1: Group A<br>2: Group B<br>3: Group AB<br>4: Group C<br>5: Group AC<br>\|<br>1023(3FFh):Group ABCDEFGHIJ | Bit0:Group A<br>Bit1:Group B<br>Bit2:Group C<br>Bit3:Group D<br>Bit4:Group E<br>Bit5:Group F<br>Bit6:Group G<br>Bit7:Group H<br>Bit8:Group I<br>Bit9:Group J |
| | AUTO ID | | Refer to chapter 17 | | | |
| | AUTO ID RESET | | Refer to chapter 17 | | | |
| | IR LOCK SETTING | MODE SELECT | 10h | D4h | 0: No mean<br>1: UNLOCK<br>2: ALL LOCK<br>3: CUSTOM LOCK | The following commands can also be used.<br>OP code page 02h<br>OP code 3Fh<br>Parameter<br>0: No mean<br>1: NORMAL<br>4: LOCK |
| | | POWER | 10h | D5h | 0: No mean<br>1: UNLOCK<br>2: LOCK | |
| | | VOLUME | 10h | D6h | 0: No mean<br>1: UNLOCK<br>2: LOCK | |
| | | MIN VOL | 10h | D7h | 0 (whisper)<br>\|<br>100(64h) (laud) | |

| | Item | | OP code page | OP code | Parameter | Remarks |
|---|---|---|---|---|---|---|
| | | MAX VOL | 10h | D8h | 0 (whisper)<br>\|<br>100(64h) (laud) | |
| | | INPUT | 10h | D9h | 0: No mean<br>1: UNLOCK<br>2: LOCK | |
| | | UNLOCK SELECT | 10h | DAh | 0: No mean<br>1: VGA<br>2: RGB/HV<br>3: DVI<br>4: HDMI (Set only) | |
| | | | 10h | DBh | 5: VIDEO<br>6: VIDEO2<br>7: S-VIDEO<br>12(0Ch): Y/Pb/Pr<br>13(0Dh): OPTION | |
| | | | 10h | DCh | 14(0Eh): Y/Pb/Pr2<br>         (SCART)<br>15(0Fh): DPORT<br>16(10h): DPORT2<br>17(11h): HDMI<br>128(80h): DPORT3 | |
| | TILE MATRIX | H MONITOR | 02h | D0h | 0: No mean<br>1<br>\|<br>10(0Ah) | Number<br>of H-division |
| | | V MONITOR | 02h | D1h | 0: No mean<br>1<br>\|<br>10(0Ah) | Number<br>of V-division |
| | | POSITION | 02h | D2h | 0: No mean<br>1<br>\|<br>100(64h) | |
| | | TILE COMP | 02h | D5h | 0: No mean<br>1: NO<br>2: YES | |
| | | ENABLE | 02h | D3h | 0: No mean<br>1: NO<br>2: YES | |
| | | FRAME COMP | 11h | 01h | 0: No mean<br>1: NONE<br>2: AUTO<br>3: MANUAL | Available on<br>X464UN, X554UN,<br>X464UNV, X554UNS |
| | | AUTO | 11h | 02h | 0: No mean<br>50(32h): 0.5F<br>100(64h): 1.0F<br>150(96h): 1.5F<br>200(C8h): 2.0F | Available on<br>X464UN, X554UN,<br>X464UNV, X554UNS<br><br>This command is<br>used when FRAME<br>COMP is set as<br>"AUTO". |
| | | MANUAL | 11h | 03h | 0: No mean<br>25(19h): 0.25F<br>50(32h): 0.50F<br>75(4Bh): 0.75F<br>100(64h): 1.00F<br>125(7Dh): 1.25F<br>150(96h): 1.50F<br>175(Afh): 1.75F<br>200(C8h): 2.00F | Available on<br>X464UN, X554UN,<br>X464UNV, X554UNS<br><br>This command is<br>used when FRAME<br>COMP is set as<br>"MANUAL". |

| | Item | | OP code page | OP code | Parameter | Remarks |
|---|---|---|---|---|---|---|
| | | V SCAN REVERSE | 11h | 04h | 0: No mean<br>1: NONE<br>2: AUTO<br>3: MANUAL | Available on X464UN, X554UN, X464UNV, X554UNS |
| | | MANUAL | 11h | 05h | 0: No mean<br>1: NON REVERSE<br>2: REVERSE | Available on X464UN, X554UN, X464UNV, X554UNS<br><br>This command is used when V SCAN REVERSE is set as "MANUAL". |
| | TILE MATRIX MEM | | 10h | 4Ah | 0: No mean<br>1: COMMON<br>2: INPUT | |
| | AUTO TILE MATRIX SETIP | | Refer to chapter 19 | | | |
| | POWER ON DELAY | | 02h | D8h | 0: Off (0sec)<br>\|<br>50(32h): 50sec | |
| | LINK TO ID | | 10h | BCh | 0: No mean<br>1: OFF<br>2: ON | |
| | VIDEO OUT SETTING | | 10h | EAh | 0: No mean<br>1: ON<br>2: OFF | |
| | POWER INDICATOR | | 02h | BEh | 0: No mean<br>1: ON<br>2: OFF | |
| | SETTING COPY | | Refer to Chapter 21 | | | |
| | RESET (MULTI DISPLAY) | | 02h | CBh | 0: No mean<br>8: Reset<br>   Multi Display<br>   Category | Momentary |
| DISPLAY PROTECTION | POWER SAVE | | Refer to Chapter 20 | | | |
| | HEAT STATUS | FAN1/2/3 | 02h | 7Ah /7Bh | Select target FAN. (7Ah)<br>0: No mean<br>1: FAN#1<br>2: FAN#2<br>3: FAN#3<br>Read status of target FAN.(7Bh)<br>0: OFF<br>1: ON<br>2: ERROR | Read Only |
| | | BACKLIGHT | Refer to Chapter 11 (Self-diagnosis status read) | | | |
| | | TEMPERATURE SENSOR1/2/3 | 02h | 79h | Return value is 2's complement.<br>(0.5°C step) | Offset affects to a selected sensor.<br>Select sensor<br>(Page02h<br>    OPcode78h)<br>1 : SENSOR #1<br>2 : SENSOR #2<br>3 : SENSOR #3 |
| | FAN CONTROL | COOLING FAN | 02h | 7Dh | 0: No mean<br>1: AUTO<br>2: ON | |
| | | FAN SPEED | 10h | 3Fh | 0: No mean<br>1: HIGH<br>2: LOW | |

| | Item | | | OP code page | OP code | Parameter | Remarks |
|---|---|---|---|---|---|---|---|
| | | SENSOR1 | | 10h | E0h/E1h | E0h: Set centigrade<br>0 – 65535(FFFFh)<br>E1h: Set offset from max.<br>value<br>0 – 10(0Ah) | |
| | | SENSOR2 | | 10h | E2h/E3h | E2h: Set centigrade<br>0 – 65535(FFFFh)<br>E3h: Set offset from max.<br>value<br>0 – 10(0Ah) | |
| | | SENSOR3 | | 10h | E4h/E5h | E4h: Set centigrade<br>0 – 65535(FFFFh)<br>E5h: Set offset from max.<br>value<br>0 – 10(0Ah) | |
| | SCREEN SAVER | GAMMA | | 02h | DBh | 0: No mean<br>1: OFF<br>2: ON | |
| | | BACKLIGHT | | 02h | DCh | 0: No mean<br>1: OFF<br>2: ON | |
| | | MOTION | INTER VAL | 02h | DDh | 0: OFF(0s)<br>\|<br>90(5Ah): 900s | 10s/step |
| | | | ZOOM | 10h | 35h | 0 : 95%<br>\|<br>5 : 100%<br>\|<br>10(0Ah) : 105% | |
| | SIDE BORDER COLOR | | | 02h | DFh | 0: Black<br>\|<br>100(64h): White | |
| | CHANGE PASSWORD | | | | | N/A | |
| | SECURITY | | | Refer to Chapter 22 | | | |
| | RESET<br>(DISPLAY PROTECTION) | | | 02h | CBh | 0: No mean<br>9: Reset<br>Display Protection<br>category | Momentary |
| EXTERNAL CONTROL | IP ADDRESS SETTING | | | | | N/A | |
| | MAC ADDRESS | | | Refer to Chapter 23 | | | |
| | LAN POWER | | | 10h | D3h | 0: No mean<br>1: OFF<br>2: ON | |
| | DDC/CI | | | 10h | BEh | 0: No mean<br>1: OFF<br>2: ON | |
| | PING | | | | | N/A | |
| | IP ADDRESS RESET | | | | | N/A | |
| | RESET<br>(EXTERNAL CONTROL) | | | 02h | CBh | 0: No mean<br>12(0Ch): Reset External<br>Control Category | Momentary |
| ADVANCED OPTION1 | INPUT DETECT | | | 02h | 40h | 0: FIRST DETECT<br>1: LAST DETECT<br>2: NONE<br>3: VIDEO DETECT<br>4: CUSTOM DETECT | |
| | CUSTOM DETECT | PRIORITY1 | | 10h | 2Eh | 0: No mean<br>1: VGA<br>2: RGB/HV<br>3: DVI<br>4: HDMI (Set only) | |

| | Item | OP code page | OP code | Parameter | Remarks |
|---|---|---|---|---|---|
| | PRIORITY2 | 10h | 2Fh | 5: VIDEO<br>7: S-VIDEO<br>12(0Ch): Y/Pb/Pr<br>13(0Dh): OPTION<br>14(0Eh): Y/Pb/Pr2 | |
| | PRIORITY3 | 10h | 30h | (SCART)<br>15(0Fh): DPORT<br>16(10h): DPORT2<br>17(11h): HDMI<br>18(12h): HDMI2<br>128(80h): DPORT3: | |
| LONG CABLE COMP | ON/OFF | 10h | 3Dh | 0: No mean<br>1: OFF<br>2: ON | |
| | SOG PEAK | 10h | 37h | 0 – 32(20h) | |
| | GAIN | 10h | 38h | 0 – 32(20h) | |
| | R-H. POSITION | 02h | 58h | 0 - 7 | |
| | G-H. POSITION | 02h | 59h | 0 - 7 | |
| | B-H. POSITION | 02h | 5Ah | 0 - 7 | |
| | SYNC TERMINATION | 02h | E1h | 0: No mean<br>1: HIGH<br>2: LOW | |
| INPUT CHANGE | INPUT CHANGE | 10h | 86h | 0: No mean<br>1: NORMAL<br>2: QUICK<br>3: SUPER | When you set up "SUPER", please set up INPUT1 and INPUT2 first. |
| | INPUT1 | 10h | CEh | 0: No mean<br>1: VGA<br>2: RGB/HV<br>3: DVI<br>4: HDMI (Set only)<br>5: VIDEO<br>7: S-VIDEO | |
| | INPUT2 | 10h | CFh | 12(0Ch): Y/Pb/Pr<br>13(0Dh): OPTION<br>14(0Eh): Y/Pb/Pr2<br>15(0Fh): DPORT<br>16(10h): DPORT2<br>17(11h): HDMI<br>18(12h): HDMI2<br>128(80h): DPORT3 | |
| TERMINAL SETTING | DVI MODE | 02h | CFh | 0: No mean<br>1: DVI-PC<br>2: DVI-HD | |
| | BNC MODE | 10h | 7Eh | 0: No mean<br>1: RGB<br>2: COMPONENT | |
| | D-SUB MODE | 10h | 8Eh | 0: No mean<br>1: RGB<br>2: COMPONENT | |
| | SCART MODE | 02h | 9Eh | 0: OFF<br>1: ON | |

| | Item | | | OP code page | OP code | Parameter | Remarks |
|---|---|---|---|---|---|---|---|
| | DisplayPort | | | 10h | F1h/F2h | Select target DPORT. (F1h)<br>0: No mean<br>1: DPORT<br>2: DPORT2<br>3: DPORT3<br>Read / Write status of target DPORT.(F2h)<br>0: No mean<br>1: 1.1a<br>2: 1.2 | |
| | HDMI SIGNAL | | | 10h | 40h | 0: No mean<br>1: EXPAND<br>2: RAW | |
| | DEINTERLACE | | | 02h | 25h | 0: No mean<br>1: Off<br>2: ON | |
| | COLOR SYSTEM | | | 02h | 21h | 0: No mean<br>1: NTSC<br>2: PAL<br>3: SECAM<br>4: AUTO<br>5: 4.43NTSC<br>6: PAL-60 | |
| | OVER SCAN | | | 02h | E3h | 0: No mean<br>1: OFF<br>2: ON | |
| | OPTION SETTING | OPTION POWER | | 10h | 41h | 0: OFF<br>1: ON | |
| | | AUDIO | | 10h | B0h | 0: No mean<br>1: ANALOG<br>2: DIGITAL | |
| | | INTERNAL PC | OFF WARNING | 10h | C0h | 0: No mean<br>1: OFF<br>2: ON | |
| | | | AUTO OFF | 10h | C1h | 0: No mean<br>1: OFF<br>2: ON | |
| | | | START UP PC | 10h | C2h | 0: No mean<br>1: Execute | |
| | | | FORCE QUIT | 10h | C3h | 0: No mean<br>1: Execute | |
| | 120Hz | | | 10h | 87h | 0: No mean<br>1: ON<br>2: OFF | |
| | TOUCH PANEL | STANDBY | | 10h | C4h | 0: No mean<br>1: OFF<br>2: ON | |
| | | PC SOURCE | | 10h | C5h | 0: No mean<br>1: AUTO<br>2: EXTERNAL PC | |
| | RESET (ADVANCED OPTION1) | | | 02h | CBh | 0: No mean<br>10(0Ah): Reset Advanced option1 category | Momentary |
| ADVAN CED | AUTO DIMMING | AUTO BRIGHTNESS | | 02h | 2Dh | 0: OFF<br>1: ON | |
| | | ROOM LIGHT SENSING | | 10h | C8h | 0: No mean<br>1: OFF<br>2: MODE1<br>3: MODE2 | |
| | | BACKLIGHT SETTING | MAX LIMIT | 10h | C9h | 0 – 100(64h) | |

| | Item | | OP code page | OP code | Parameter | Remarks |
|---|---|---|---|---|---|---|
| | | IN BRIGHT | 10h | 33h | 0 - 100(64h) | |
| | | IN DARK | 10h | 34h | 0 - 100(64h) | |
| | | SENSING LUX | 02h | B4h | Current Illuminance read | Read only |
| | HUMAN SENSING | HUMAN SENSING MODE | 10h | 75h | 0: No mean<br>1: DISABLE<br>2: AUTO OFF<br>4: CUSTOM | |
| | | BACKLIGHT ON/OFF | 10h | DDh | 0: No mean<br>1: Off<br>2: On | |
| | | BACKLIGHT | 10h | C6h | 0: dark<br>\|<br>100(64h): light | |
| | | VOLUME ON/OFF | 10h | DEh | 0: No mean<br>1: Off<br>2: On | |
| | | VOLUME | 10h | C7h | 0: whisper<br>\|<br>100(64h): loud | |
| | | INPUT SELECT ON/OFF | 10h | DFh/D0h | 0: No mean<br>1: Off<br>2: On | |
| | | INPUT | 10h | D0h | 0: No mean<br>1: VGA<br>2: RGB/HV<br>3: DVI<br>4: HDMI (Set only)<br>5: VIDEO<br>7: S-VIDEO<br>12(0Ch): Y/Pb/Pr<br>13(0Dh): OPTION<br>14(0Eh): Y/Pb/Pr2<br>        (SCART)<br>15(0Fh): DPORT<br>16(10h): DPORT2<br>17(11h): HDMI<br>18(12h): HDMI2<br>128(80h): DPORT3 | |
| | | WAITING TIME | 10h | 78h | 30(1Eh): short<br>\|<br>600(258h): long<br>*1step: 1sec. | |
| | INTELLI WIRELESS DATA | | 10h | ECh | 0: No mean<br>1: OFF<br>2: ON | |
| | RESET (ADVANCED OPTION2) | | 02h | CBh | 0: No mean<br>11(0Bh): Reset Advanced option category | Momentary |
| | FACTORY RESET | | 02h | CBh | 0: No mean<br>1: Factory Reset | Momentary |

| Item | OP code page | OP code | Parameter | Remarks |
|---|---|---|---|---|
| INPUT | 00h | 60h | 0: No mean<br>1: VGA<br>2: RGB/HV<br>3: DVI<br>4: HDMI (Set only)<br>5: VIDEO<br>7: S-VIDEO<br>12(0Ch): Y/Pb/Pr<br>13(0Dh): OPTION<br>14(0Eh): Y/Pb/Pr2<br>          (SCART)<br>15(0Fh): DPORT<br>16(10h): DPORT2<br>17(11h): HDMI<br>18(12h): HDMI2<br>128(80h): DPORT3 | |
| AUDIO INPUT | 02h | 2Eh | 0: No mean<br>1: IN1<br>2: IN2<br>3: IN3<br>4: HDMI<br>6: OPTION<br>7: DPORT<br>8: DPORT2<br>9: DPORT3<br>10(0Ah): HDMI2 | |
| VOLUME UP/DOWN | 00h | 62h | 0: whisper<br>\|<br>100(64h): loud | |
| MUTE | 00h | 8Dh | 0: UNMUTE(Set only)<br>1: MUTE<br>2: UNMUTE | |
| SCREEN MUTE | 10h | B6h | 0: No mean<br>1: SCREEN MUTE ON<br>2: SCREEN MUTE OFF | |
| MTS | 02h | 2Ch | 0: No mean<br>1: Main<br>2: Sub<br>3: Main + Sub | This operation requires supported option TV tuner. |
| SOUND | 02h | 34h | 0: No mean<br>1: Off<br>2: ON | Same as 'SURROUND' |
| PICTURE MODE | 02h | 1Ah | 0: No mean<br>1: sRGB<br>3: HIGHBRIGHT<br>4: STANDARD<br>5: CINEMA<br>8: CUSTOM1<br>9: CUSTOM2 | sRGB:<br>  PC mode only<br>CINEMA:<br>  A/V mode only |
| ASPECT | 02h | 70h | 0: No mean<br>1: NORMAL<br>2: FULL<br>3: WIDE<br>4: ZOOM<br>6: DYNAMIC<br>7: 1:1 (Off/dot by dot) | WIDE:<br>A/V mode only |

| Item | OP code page | OP code | Parameter | Remarks |
|---|---|---|---|---|
| PIP ON/OFF<br>STILL ON/OFF | 02h | 72h | 0: No mean<br>1: Off<br>2: PIP<br>3: POP<br>4: STILL<br>5: PICTURE BY PICTURE<br>   - ASPECT<br>6: PICTURE BY PICTURE<br>   - FULL | |
| PIP INPUT | 02h | 73h | 0: No mean<br>1: VGA<br>2: RGB/HV<br>3: DVI<br>4: HDMI (Set only)<br>5: VIDEO<br>7: S-VIDEO<br>12(0Ch): Y/Pb/Pr<br>13(0Dh): OPTION<br>14(0Eh): Y/Pb/Pr2<br>       (SCART)<br>15(0Fh): DPORT<br>16(10h): DPORT2<br>17(11h): HDMI<br>18(12h): HDMI2<br>128(80h): DPORT3 | This operation has limitation of selection. Please refer to the monitor instruction manual. |
| STILL CAPTURE | 02h | 76h | 0: OFF<br>1: CAPTURE | Momentary |
| SIGNAL INFORMATION | 02h | EAh | 0: No mean<br>1: OFF<br>2: ON | |
| AUTO SETUP | 00h | 1Eh | 0: No mean<br>1: Execute | Momentary |
| TV-CHANNEL UP/DOWN | 00h | 8Bh | 0: No mean<br>1: UP<br>2: DOWN | This operation requires supported option TV tuner. |
| SELECT TEMPERATURE SENSOR | 02h | 78h | 0: No mean<br>1: SENSOR #1<br>2: SENSOR #2<br>3: SENSOR #3 | |
| READOUT A TEMPERATURE | 02h | 79h | Returned value is 2's complement.<br>Refer to section 6.2 | Read only |
| READOUT CARBON FOOTPRINT (g) | 10h | 10h | 0:<br>\|<br>999(3E7h): | Read only |
| READOUT CARBON FOOTPRINT (kg) | 10h | 11h | 0:<br>\|<br>65535(FFFFh): | Read only |
| READOUT CARBON USAGE (g) | 10h | 26h | 0:<br>\|<br>999(3E7h): | Read only |
| READOUT CARBON USAGE (kg) | 10h | 27h | 0:<br>\|<br>65535(FFFFh): | Read only |

Left side vertical labels: TEMPERATURE SENSOR (SELECT TEMPERATURE SENSOR, READOUT A TEMPERATURE); CARBON FOOTPRINT (READOUT CARBON FOOTPRINT / USAGE rows).

# 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-<br>'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 4.3 "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-<br>'B'-'1'-'2' | STX-'0'-'2'-'0'-'0'-'D'-'6'-'0'-'0'-<br>'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
                     &lt;Status&gt;
                     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 4.3 "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-<br>'0'-'A'-'0'-'C' | STX-'C'-'2'-'0'-'3'-'D'-'6'-<br>'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 4.3 "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-<br>'B'-'0'-'E' | STX-'0'-'0'-'C'-'2'-'0'-'3'-'D'-'6'-<br>'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 4.3 "Check code" for a BCC calculation.

Delimiter
  CR (0Dh): End of packet

# 8. Asset Data read and write

MultiSync P403/ P463 /P553 /P703 /P801 /X464UN /X554UN /X464UNV /X554UNS /X474HB /X464UNS /X554UNV

/X555UNS /X555UNV 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-<br>'0'-'A'-'0'-'A' | STX-'C'-'0'-'0'-'B'-<br>'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 4.3 "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-<br>'B'-N-N | STX-'C'-'1'-'0'-'B'-<br>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.) 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
       Ex.) When Data(n) is 1234h, replying data is (31h 32h, 33h, 34h).
  ETX (03h): End of Message
```

Check code
  BCC: Block Check Code
        Refer to the section 4.3 "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.

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 4.3 "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.

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 4.3 "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-<br>'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 4.3 "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-<br>'B'-'1'-'4' | STX-'C'-'3'-'1'-'1'-<br>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 4.3 "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-<br>'0'-'A'-'1'-'2' | STX-'C'-'2'-'1'-'2'-<br>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 4.3 "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-<br>'B'-'1'-'6' | STX-'C'-'3'-'1'-'2'-ST-<br>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 4.3 "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 4.3 "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): VIDEO
    '0'-'7'(30h,37h): S-VIDEO
    '0'-'C'(30h,43h): Y/Pb/Pr
    '0'-'D'(30h,44h): OPTION
    '0'-'E'(30h,45h): Y/Pb/Pr2(SCART)
    '0'-'F'(30h,46h): DPORT
    '1'-'0'(31h,30h): DPORT2
    '1'-'1'(31h,31h): HDMI
    '1'-'2'(31h,32h): HDMI2
    '8'-'0'(38h,30h): DPORT3


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): TUESDAY
    '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): HIGHBRIGHT
    '0'-'4'(30h,34h): STANDARD
    '0'-'5'(30h,34h): CINEMA
    '0'-'D'(30h,44h): CUSTOM1
    '0'-'E'(30h,45h): CUSTOM2
```

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 4.3 "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 4.3 "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): Y/Pb/Pr
            '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): TUESDAY
            '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 4.3 "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-<br>'0'-'A'-'2'-'6' | STX-'C'-'2'-'2'-'2'-PG-ON HOUR-ON MIN-<br>OFF HOUR-OFF MIN-INPUT-WD-FL-P MODE-<br>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.

        Note:
        * The same time as ON time and OFF time cannot be set.
        * Set '1'-'8' to ON/OFF_HOUR and '3'-'C' to ON/OFF_MIN, when ON/OFF time is deleted.

        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): VIDEO
            '0'-'7'(30h,37h): S-VIDEO
            '0'-'C'(30h,43h): Y/Pb/Pr
            '0'-'D'(30h,44h): OPTION
```

```
        '0'-'E'(30h,45h): Y/Pb/Pr2(SCART)
        '0'-'F'(30h,46h): DPORT
        '1'-'0'(31h,30h): DPORT2
        '1'-'1'(31h,31h): HDMI
        '1'-'2'(31h,32h): HDMI2
        '8'-'0'(38h,30h): DPORT3
        * 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): TUESDAY
        '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): HiGHBRIGHT
        '0'-'4'(30h,34h): STANDARD
        '0'-'5'(30h,34h): CINEMA
        '0'-'D'(30h,44h): CUSTOM1
        '0'-'E'(30h,45h): CUSTOM2
        * 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 4.3 "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): VIDEO
            '0'-'7'(30h,37h): S-VIDEO
            '0'-'C'(30h,43h): Y/Pb/Pr

```
                '0'-'D'(30h,44h): OPTION
                '0'-'E'(30h,45h): Y/Pb/Pr2(SCART)
                '0'-'F'(30h,46h): DPORT
                '1'-'0'(31h,30h): DPORT2
                '1'-'1'(31h,31h): HDMI
                '1'-'2'(31h,32h): HDMI2
                '8'-'0'(38h,30h): DPORT3

        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): TUESDAY
                '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): HIGHBRIGHT
                '0'-'4'(30h,34h): STANDARD
                '0'-'5'(30h,34h): CINEMA
                '0'-'D'(30h,44h): CUSTOM1
                '0'-'E'(30h,45h): CUSTOM2

        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 4.3 "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 4.3 "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 4.3 "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): Y/Pb/Pr
        '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): TUESDAY
                '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 4.3 "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): Y/Pb/Pr
            '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): TUESDAY
            '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 4.3 "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-<br>'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 4.3 "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 4.3 "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 4.3 "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'-'8'(37h, 38h):78: Inverter power/Option slot2 power +24V 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'-'1'(39h, 31h):91: LED Backlight abnormality
        'A'-'0'(41h, 30h):A0: Temperature abnormality – shutdown
        'A'-'1'(41h, 31h):A1: Temperature abnormality – half brightness
        'A'-'2'(41h, 32h):A2: SENSOR reached at the temperature that the user had specified.
        'B'-'0'(42h, 30h):B0: No signal

```
          'D'-'0'(44h, 30h):D0: PROOF OF PLAY buffer reduction
          'E'-'0'(45h, 30h):E0: System error

    ETX (03h): End of Message

 Check code
   BCC: Block Check Code
        Refer to the section 4.3 "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-<br>'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 4.3 "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-<br>'B'-N-N | STX-'C'-'3'-'1'-'6'-<br>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
  ➢      The byte data 20h is encoded as ASCII characters '2' and '0' (32h and 30h).
        Ex.) Foe example when receiveing Serial Number data 33h 31h 33h 32h 33h 33h 33h 34h
            Step1: Serial Number data is encoded as character string.
                Example:
                  33h 31h 33h 32h 33h 33h 33h 34h -> '3','1','3','2','3','3','3','4'
            Step2: Decode pairs of ASCII characters to hexadecimal values.
                Example:
                  '3','1','3','2','3','3','3','4' -> 31h 32h 33h 34h
            Step3: Byte data represents the ASCII string data.
                Example:
                  31h 32h 33h 34h -> "1234"
            Result: Serial Number is "1234".

Note: No null termination character is sent.

ETX (03h): End of Message


Check code
  BCC: Block Check Code
        Refer to the section 4.3 "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 4.3 "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
  ➢      The byte data 20h is encoded as ASCII characters '2' and '0' (32h and 30h).
         Ex.) Foe example when receiving Model Name data 35h 30h 33h 34h 33h 30h 33h 33h
              Step1: Model Name data is encoded character string.
                     Example:
                       35h 30h 33h 34h 33h 30h 33h 33h -> '5','0','3','4','3','0','3','3'
              Step2: Decode pairs of ASCII characters to hexadecimal values.
                     Example:
                       '5','0','3','4','3','0','3','3' -> 50h 34h 30h 33h
              Step3: Byte data represents the ASCII string data.
                     Example:
                       50h 34h 30h 33h -> "P403"
              Result: Model Name is "P403".
              Note: No null termination character is sent.
  ETX (03h): End of Message

Check code
  BCC: Block Check Code

Refer to the section 4.3 "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 4.3 "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-<br>'B'-'0'-'A' | STX-'C'-'3'-'1'-'D'-<br>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): START-UP LOCK (Enable)
            '0'-'2'(30h, 32h): CONTROL LOCK
            '0'-'3'(30h, 33h): BOTH LOCK

  ETX (03h): End of Message

Check code
  BCC: Block Check Code
        Refer to the section 4.3 "Check code" for a BCC calculation.

Delimiter
  CR (0Dh): End of packet

## 14. Direct TV Chanel Read & Write

When DTV unit (Option unit) is installed, channel settings is read and write directly.

### 14.1 Direct TV Chanel Read & Reply

1) The controller requests the monitor to read channel information.

| Header | Message | Check code | Delimiter |
|---|---|---|---|
| SOH-'0'-Monitor ID-<br>'0'-'A'-'0'-'6' | STX-'C'-'2'-'2'-'C'-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'-'2'-'C' (43h, 32h, 32h, 43h): Direct TV Channel Read command
  ETX (03h): End of Message

Check code
  BCC: Block Check Code
       Refer to the section 4.3 "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-<br>'B'-'1'-'2' | STX-'C'-'3'-'2'-'C'-<br>MajorCH-MinorCH-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 = 18bytes

Message
  STX (02h): Start of Message
  'C'-'3'-'2'-'C'  (43h, 33h, 32h, 43h): Direct TV Channel read reply command
  MajorCH: Major Channel (00000000h – FFFFFFFFh),
           '0'-'0'-'0'-'0'-'0'-'0'-'0'-'0' – 'F'-'F'-'F'-'F'-'F'-'F'-'F'-'F'
  MinorCH: Minor Channel (0000h – FFFFh),
           '0'-'0'-'0'-'0' – 'F'-'F'-'F'-'F'
  ETX (03h): End of Message

Check code
  BCC: Block Check Code
       Refer to the section 4.3 "Check code" for a BCC calculation.

Delimiter
  CR (0Dh): End of packet

## 14.2 Direct TV Chanel Write & Reply

1) The controller requests the monitor to write channel information.

| Header | Message | Check code | Delimiter |
|---|---|---|---|
| SOH-'0'-Monitor ID-<br>'0'-'A'-'1'-'2' | STX-'C'-'2'-'2'-'D'-<br>MajorCH-MinorCH-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".
  '1'-'2'(31h, 32h): Message length = 18bytes

Message
  STX (02h): Start of Message
    'C'-'2'-'2'-'D' (43h, 32h, 32h, 44h): Direct TV Channel write command
  MajorCH: Major Channel (00000000h – FFFFFFFFh),
           '0'-'0'-'0'-'0'-'0'-'0'-'0'-'0' – 'F'-'F'-'F'-'F'-'F'-'F'-'F'-'F'
  MinorCH: Minor Channel (0000h – FFFFh),
           '0'-'0'-'0'-'0' – 'F'-'F'-'F'-'F'
  ETX (03h): End of Message

Check code
  BCC: Block Check Code
       Refer to the section 4.3 "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-<br>'B'-'1'-'2' | STX-'C'-'3'-'2'-'D'-<br>MajorCH-MinorCH-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 = 18bytes

Message
  STX (02h): Start of Message
  'C'-'3'-'2'-'D'  (43h, 33h, 32h, 43h): Direct TV Channel write reply command
  MajorCH: Major Channel (00000000h – FFFFFFFFh),
           '0'-'0'-'0'-'0'-'0'-'0'-'0'-'0' – 'F'-'F'-'F'-'F'-'F'-'F'-'F'-'F'
  MinorCH: Minor Channel (0000h – FFFFh),
           '0'-'0'-'0'-'0' – 'F'-'F'-'F'-'F'
  ETX (03h): End of Message

Check code
  BCC: Block Check Code
       Refer to the section 4.3 "Check code" for a BCC calculation.

Delimiter
  CR (0Dh): End of packet

## 15. Daylight Saving read & write

### 15.1 Daylight Saving Read

This command is used in order to read the setting of Daylight Saving.

1) The controller requests the monitor to reply a Daylight Saving setting.

| Header | Message | Check code | Delimiter |
|---|---|---|---|
| SOH-'0'-Monitor ID-<br>'0'-'A'-'0'-'8' | STX-'C'-'A'-'0'-'1'-'0'-'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.
  'A' (41h): Message type is "Command".
  '0'-'8'(30h, 38h): Message length (8bytes)

Message
  STX (02h): Start of Message
  'C'-'A'-'0'-'1' (43h, 41h, 30h, 31h): Daylight Saving Command
  '0'-'0' (30h. 30h): Read
  ETX (03h): End of Message

Check code
  BCC: Block Check Code
        Refer to the section 4.3 "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-<br>'B'-'2'-'0' | STX-'C'-'B'-'0'-'1'-'0'-'0'-ST-BM-BD1-BD<br>-BT1-BT2-EM-ED1-ED2-ET1-ET2-TD-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', replying monitor's ID is '1'.
  'B' (42h): Message type is "Command reply".
  '2'-'0'(32h, 30h): Message length (32bytes)

Message
  STX (02h): Start of Message
  'C'-'B'-'0'-'1' (43h, 42h, 30h, 31h): Daylight Saving Setting reply command
  '0'-'0' (30h, 30h): Read
  ST: Error Status
      No Error : 00h (30h, 30h)
      Error    : 01h (30h, 31h)
  BM: BEGIN MONTH
      JANUARY – DECEMBER: 01h (30h, 31h) - 12h (31h, 32h)
  BD1: BEGIN DAY1
      FIRST   : 01h (30h, 31h)
      SECOND  : 02h (30h, 32h)
      THIRD   : 03h (30h, 33h)
      FOUR    : 04h (30h, 34h)

```
        LAST    : 05h (30h, 35h)
   BD2: BEGIN DAY2 (Day of the week)
        SUNDAY     : 01h (30h, 31h)
        MONDAY     : 02h (30h, 32h)
        TUESDAY    : 03h (30h, 33h)
        WEDNESDAY  : 04h (30h, 34h)
        THURSDAY   : 05h (30h, 35h)
        FRIDAY     : 06h (30h, 36h)
        SATURDAY   : 07h (30h, 37h)
   BT1: BEGIN TIME1 (Hour)
        00h (30h, 30h) – 23 (32h, 33h)
   BT2: BEGIN TIME2 (Minute)
        00h (30h, 30h) – 59 (35h, 39h)
   EM: END MONTH
        JANUARY – DECEMBER: 01h (30h, 31h) - 12h (31h, 32h)
   ED1: END DAY1
        FIRST   : 01h (30h, 31h)
        SECOND  : 02h (30h, 32h)
        THIRD   : 03h (30h, 33h)
        FOUR    : 04h (30h, 34h)
        LAST    : 05h (30h, 35h)
   ED2: END DAY2 (Day of the week)
        SUNDAY     : 01h (30h, 31h)
        MONDAY     : 02h (30h, 32h)
        TUESDAY    : 03h (30h, 33h)
        WEDNESDAY  : 04h (30h, 34h)
        THURSDAY   : 05h (30h, 35h)
        FRIDAY     : 06h (30h, 36h)
        SATURDAY   : 07h (30h, 37h)
   ET1: END TIME1 (Hour)
        00h (30h, 30h) – 23 (32h, 33h)
   ET2: END TIME2 (Minute)
        00h (30h, 30h) – 59 (35h, 39h)
   TD: TIME DIFFERENCE
        +01:00  : 00h (30h, 30h)
        +00:30  : 01h (30h, 31h)
        -00:30  : 02h (30h, 32h)
        -01:00  : 03h (30h, 33h)
   ETX (03h): End of Message
```

Check code

  BCC: Block Check Code
     Refer to the section 4.3 "Check code" for a BCC calculation.

Delimiter

  CR (0Dh): End of packet

## 15.2 Daylight Saving Write

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

1) The controller requests the monitor to write Daylight Saving.

| Header | Message | Check code | Delimiter |
|---|---|---|---|
| SOH-'0'-Monitor ID-<br>'0'-'A'-'1'-'E' | STX-'C'-'A'-'0'-'1'-'0'-'1'-BM-BD1-BD2-<br>BT1-BT2-EM-ED1-ED2-ET1-ET2-TD-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'-'E'(31h, 45h): Message length (30bytes)

Message

  STX (02h): Start of Message
  'C'-'A'-'0'-'1' (43h, 41h, 30h, 31h): Daylight Saving Setting Command
  '0'-'1' (30h, 31h): Write
  BM: BEGIN MONTH
    JANUARY – DECEMBER: 01h (30h, 31h) - 12h (31h, 32h)
  BD1: BEGIN DAY1
    FIRST    : 01h (30h, 31h)
    SECOND   : 02h (30h, 32h)
    THIRD    : 03h (30h, 33h)
    FOUR     : 04h (30h, 34h)
    LAST     : 05h (30h, 35h)
  BD2: BEGIN DAY2 (Day of the week)
    SUNDAY      : 01h (30h, 31h)
    MONDAY      : 02h (30h, 32h)
    TUESDAY     : 03h (30h, 33h)
    WEDNESDAY   : 04h (30h, 34h)
    THURSDAY    : 05h (30h, 35h)
    FRIDAY      : 06h (30h, 36h)
    SATURDAY    : 07h (30h, 37h)
  BT1: BEGIN TIME1 (Hour)
    00h (30h, 30h) – 23 (32h, 33h)
  BT2: BEGIN TIME2 (Minute)
    00h (30h, 30h) - 59 (35h, 39h)
  EM: END MONTH
    JANUARY – DECEMBER: 01h (30h, 31h) - 12h (31h, 32h)
  ED1: END DAY1
    FIRST    : 01h (30h, 31h)
    SECOND   : 02h (30h, 32h)
    THIRD    : 03h (30h, 33h)
    FOUR     : 04h (30h, 34h)
    LAST     : 05h (30h, 35h)
  ED2: END DAY2 (Day of the week)
    SUNDAY      : 01h (30h, 31h)
    MONDAY      : 02h (30h, 32h)
    TUESDAY     : 03h (30h, 33h)
    WEDNESDAY   : 04h (30h, 34h)
    THURSDAY    : 05h (30h, 35h)
    FRIDAY      : 06h (30h, 36h)
    SATURDAY    : 07h (30h, 37h)
  ET1: END TIME1 (Hour)
    00h (30h, 30h) – 23 (32h, 33h)
  ET2: END TIME2 (Minute)
    00h (30h, 30h) - 59 (35h, 39h)
  TD: TIME DIFFERENCE

```
        +01:00  : 00h (30h, 30h)
        +00:30  : 01h (30h, 31h)
        -00:30  : 02h (30h, 32h)
        -01:00  : 03h (30h, 33h)
  ETX (03h): End of Message

  Check code
    BCC: Block Check Code
         Refer to the section 4.3 "Check code" for a BCC calculation.

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

2) The monitor replies a written in result.

| Header | Message | Check code | Delimiter |
|---|---|---|---|
| SOH-'0'-'0'-Monitor ID-<br>'B'-'0'-'A' | STX-'C'-'B'-'0'-'1'-'0'-'1'-ST-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', replying monitor's ID is '1'.
    'B' (42h): Message type is "Command reply".
    '0'-'A'(30h, 41h): Message length (10bytes)

  Message

    STX (02h): Start of Message
    'C'-'B'-'0'-'1' (43h, 42h, 30h, 31h): Daylight Saving Setting Command
    '0'-'1' (30h, 31h): Write
    ST: Error Status
       No Error : 00h (30h, 30h)
       Error    : 01h (30h, 31h)
    ETX (03h): End of Message


  Check code

    BCC: Block Check Code
       Refer to the section 4.3 "Check code" for a BCC calculation.

  Delimiter

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

## 16. Firmware Version

### 16.1 Firmware Version Read

This command is used in order to read a firmware version.

1) The controller requests the monitor to reply a firmware version.

| Header | Message | Check code | Delimiter |
|---|---|---|---|
| SOH-'0'-Monitor ID-<br>'0'-'A'-'0'-'8' | STX-'C'-'A'-'0'-'2'-TY-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'-'8'(30h, 38h): Message length (8bytes)

  Message

    STX (02h): Start of Message
    'C'-'A'-'0'-'2' (43h, 41h, 30h, 32h): Firmware Version Command
    TY: Firmware Type
       Firmware1: 00h (30h, 30h)
       Firmware2: 01h (30h, 31h)
       Firmware3: 02h (30h, 32h)
       Firmware4: 03h (30h, 33h)
    ETX (03h): End of Message

  Check code
    BCC: Block Check Code
       Refer to the section 4.3 "Check code" for a BCC calculation.

  Delimiter
    CR (0Dh): End of packet

 

2) The monitor replies a firmware version to the controller.

| Header | Message | Check code | Delimiter |
|---|---|---|---|
| SOH-'0'-Monitor ID-<br>'0'-'B'-'1'-'1' | STX-'C'-'B'-'0'-'2'-ST-TY-MV-<br>PP-BV1-BV2-BV3-BR1-BR2-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', replying monitor's ID is '1'.
    'B' (42h): Message type is "Command reply".
    '1'-'1'(31h, 31h): Message length (17bytes)

  Message

    STX (02h): Start of Message
    'C'-'B'-'0'-'2' (43h, 42h, 30h, 32h): Firmware Version Read reply
    ST: Error Status
       No Error : 00h (30h, 30h)
       Error    : 01h (30h, 31h)
    TY: Firmware Type
       Firmware1: 00h (30h, 30h)
       Firmware2: 01h (30h, 31h)
    MV: Major Version:

00h (30h, 30h) – 09h (30h, 39h)
  PP: Period:
        2Eh (32h, 45h) (fixed)
  BV1: Minor (Basic) Version1:
        00h (30h, 30h) – 09h (30h, 39h)
  BV2: Minor (Basic) Version2:
        00h (30h, 30h) – 09h (30h, 39h)
  BV3: Minor (Basic) Version3:
        00h (30h, 30h) – 09h (30h, 39h)
  BR1: Branch Version1:
        A:41h (34h, 31h) – Z:5Ah (35h, 41h)
  BR2: Branch Version1:
        A:41h (34h, 31h) – Z:5Ah (35h, 41h)


Check code

  BCC: Block Check Code
        Refer to the section 4.3 "Check code" for a BCC calculation.


Delimiter

  CR (0Dh): End of packet

## 17. Auto ID

### 17.1 Auto ID Execute

This command is used in order to execute Auto ID function.

1) The controller requests the monitor to execute Auto ID function.

| Header | Message | Check code | Delimiter |
|---|---|---|---|
| SOH-'0'-Monitor ID-<br>  '0'-'A'-'0'-'8' | STX-'C'-'A'-'0'-'A'-'0'-'1'-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'-'8'(30h, 38h): Message length (8byte)

　　Message

　　　STX (02h): Start of Message
　　　'C'-'A'-'0'-'A' (43h, 41h, 30h, 41h, 30h, 31h): Auto ID Command
　　　'0'-'1' (30h, 30h): Execute
　　　ETX (03h): End of Message

　　Check code
　　　BCC: Block Check Code
　　　　　Refer to the section 4.3 "Check code" for a BCC calculation.

　　Delimiter
　　　CR (0Dh): End of packet


2) The monitor replies receipt result.

| Header | Message | Check code | Delimiter |
|---|---|---|---|
| SOH-'0'-'0'-Monitor ID-<br>  'B'-'0'-'A' | STX-'C'-'B'-'0'-'A'-'0'-'1'-ST-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', replying monitor's ID is '1'.
　　　'B' (42h): Message type is "Command reply".
　　　'0'-'A'(30h,41h): Message length (10byte)

　　Message
　　　STX (02h): Start of Message
　　　'C'-'B'-'0'-'A' (43h, 42h, 30h, 41h, 30h, 31h): Auto ID Reply Command
　　　'0'-'1' (30h, 30h): Execute
　　　ST: Error Status
　　　　　No Error : 00h (30h, 30h)
　　　　　Error    : 01h (30h, 31h)
　　　ETX (03h): End of Message


　　Check code

　　　BCC: Block Check Code
　　　　　Refer to the section 4.3 "Check code" for a BCC calculation.

---

Delimiter
  CR (0Dh): End of packet

## 17.2 Auto ID Complete

This command is used in order to notify complete status of Auto ID.

1) The monitor sends the controller to complete status of Auto ID.

| Header | Message | Check code | Delimiter |
|---|---|---|---|
| SOH-'0'-Monitor ID-<br>'0'-'A'-'0'-'C' | STX-'C'-'A'-'0'-'A'-'0'-'2'-ST-MON-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'-'C'(30h,43h): Message length (12byte)

Message

  STX (02h): Start of Message
  'C'-'A'-'0'-'A'-'0'-'2' (43h, 41h, 30h, 41h, 30h, 32h): Auto ID
  '0'-'2' (30h,32h): Complete
  ST: Error Status
     No Error : 00h (30h, 30h)
     Error    : 01h (30h, 31h)
  MON: DETECTED MONITORS
     01h (30h, 31h) - 64h (36h, 34h)
  ETX (03h): End of Message

Check code
  BCC: Block Check Code
        Refer to the section 4.3 "Check code" for a BCC calculation.

Delimiter
  CR (0Dh): End of packet

2) The controller replies to the monitor.

| Header | Message | Check code | Delimiter |
|---|---|---|---|
| SOH-'0'-'0'-Monitor ID-<br>'B'-'0'-'A' | STX-'C'-'B'-'0'-'A'-'0'-'2'-ST-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', replying monitor's ID is '1'.
  'B' (42h): Message type is "Command reply".
  '0'-'A'(30h,41h): Message length (10byte)

Message

  STX (02h): Start of Message
  'C'-'B'-'0'-'A' (43h, 42h, 30h, 41h): Auto ID Reply Command
  '0'-'2' (30h,32h): Complete
  ST : Error Status
     No Error : 00h (30h, 30h) *Fixed
  ETX (03h): End of Message

Check code

  BCC: Block Check Code
      Refer to the section 4.3 "Check code" for a BCC calculation.

Delimiter

  CR (0Dh): End of packet

## 17.3 Auto ID Reset

This command is used in order to reset Auto ID.

1) The controller requests the monitor to reset Auto ID.

| Header | Message | Check code | Delimiter |
|---|---|---|---|
| SOH-'0'-Monitor ID-'0'-'A'-'0'-'8' | STX-'C'-'A'-'0'-'A'-'0'-'3'-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'-'8'(30h, 38h): Message length (8byte)

Message

  STX (02h): Start of Message
  'C'-'A'-'0'-'A' (43h, 41h, 30h, 41h): Auto ID Command
  '0'-'3' (30h, 33h): Reset
  ETX (03h): End of Message

Check code

  BCC: Block Check Code
    Refer to the section 4.3 "Check code" for a BCC calculation.

Delimiter

  CR (0Dh): End of packet

2) The monitor replies to the controller.

| Header | Message | Check code | Delimiter |
|---|---|---|---|
| SOH-'0'-'0'-Monitor ID-'B'-'0'-'A' | STX-'C'-'B'-'0'-'A'-'0'-'3'-ST-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', replying monitor's ID is '1'.
  'B' (42h): Message type is "Command reply".
  '0'-'A'(30h,41h): Message length (10byte)

Message

  STX (02h): Start of Message
  'C'-'B'-'0'-'A' (43h, 42h, 30h, 41h): Auto ID Reply
  '0'-'3' (30h, 33h): Reset
  ST: Error Status
    No Error : 00h (30h, 30h)
    Error    : 01h (30h, 31h)
  ETX (03h): End of Message

Check code

  BCC: Block Check Code
    Refer to the section 4.3 "Check code" for a BCC calculation.

Delimiter

  CR (0Dh): End of packet

## 18. Input Name

### 18.1 Input Name Read

This command is used in order to read the setting of Input Name.

1) The controller requests the monitor to reply Input Name setting.

| Header | Message | Check code | Delimiter |
|---|---|---|---|
| SOH-'0'-Monitor ID-<br>'0'-'A'-'0'-'8' | STX-'C'-'A'-'0'-'4'-'0'-'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.
    'A' (41h): Message type is "Command".
    '0'-'8'(30h, 38h): Message length (8bytes)

  Message

    STX (02h): Start of Message
    'C'-'A'-'0'-'4' (43h, 41h, 30h, 34h): Input Name Command
    '0'-'0' (30h. 30h): Read
    ETX (03h): End of Message

  Check code
    BCC: Block Check Code
       Refer to the section 4.3 "Check code" for a BCC calculation.

  Delimiter
    CR (0Dh): End of packet

2) The monitor replies Input Name to the controller.

| Header | Message | Check code | Delimiter |
|---|---|---|---|
| SOH-'0'-'0'-Monitor ID-<br>'B'-LN(H)-LN(L) | STX-'C'-'B'-'0'-'4'-'0'-'0'-<br>Data(0)-Data(1)-Data(2)- --- -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', replying monitor's ID is '1'.
    'B' (42h): Message type is "Command reply".
    LN(H)-LN(L): Message length (byte length), from STX to ETX
         Ex.) The byte data 20h is encoded as ASCII characters '2' and '0' (32h and 30h).

  Message

    STX (02h): Start of Message
    'C'-'B'-'0'-'4' (43h, 42h, 30h, 34h): Input Name command reply
    '0'-'0' (30h, 30h): Read
    Data(n) : Input name *n = Max 14
  ➢    The byte data 20h is encoded as ASCII characters '2' and '0' (32h and 30h).
      Ex.) For example when receiving Data(n) of 35h 36h 34h 37h 34h 31h
        Step1: Input Name data is encoded as character code.
            Example:
              35h 36h 34h 37h 34h 31h -> '5'-'6'-'4'-'7'-'4'-'1'
        Step2: Decode pairs of ASCII characters to hexadecimal values.
            Example:
              '5'-'6'-'4'-'7'-'4'-'1' -> 56h 47h 41h
        Step3: Byte data represents the ASCII string data.

Example:
                         56h 47h 41h -> "VGA"
                    Result: Input Name is "VGA".
                    Note: No null termination character is sent.
    ETX (03h): End of Message


Check code
  BCC: Block Check Code
       Refer to the section 4.3 "Check code" for a BCC calculation.


Delimiter
  CR (0Dh): End of packet

## 18.2 Input Name Write

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

1) The controller requests the monitor to write Input Name.

| Header | Message | Check code | Delimiter |
|---|---|---|---|
| SOH-'0'-Monitor ID-<br>'0'-'A'- LN(H)-LN(L) | STX-'C'-'A'-'0'-'4'-'0'-1'-<br>Data(0)-Data(1)-Data(2)- --- -Data(n)-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".
  LN(H)-LN(L): Message length (byte length), from STX to ETX
        Ex.) The byte data 20h is encoded as ASCII characters '2' and '0' (32h and 30h).

Message

  STX (02h): Start of Message
  'C'-'A'-'0'-'4' (43h, 41h, 30h, 34h): Input name Command
  '0'-'1' (30h, 31h): Write
  Data(n) : Input name *n = Max 14
 &#10148;    The byte data 20h is encoded as ASCII characters '2' and '0' (32h and 30h).
      Ex.) In the case of Input Name "VGA"
        Step1: Input Name data is handled as character code.
            Example:
             "VGA" -> 56h 47h 41h (ASCII)
        Step2: The hexadecimal value of each original character is encoded as two ASCII
            characters representing the value.
            Example:
            56h 47h 41h -> '5'-'6'-'4'-'7'-'4'-'1'
        Result: The following data is assigned to Data(n).
            35h 36h 34h 37h 34h 31h
  ETX (03h): End of Message

Check code
  BCC: Block Check Code
     Refer to the section 4.3 "Check code" for a BCC calculation.

Delimiter
  CR (0Dh): End of packet

2) The monitor replies a written in result.

| Header | Message | Check code | Delimiter |
|---|---|---|---|
| SOH-'0'-'0'-Monitor ID-<br>'B'-'0'-'A' | STX-'C'-'B'-'0'-'0'-'0'-'1'-ST-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', replying monitor's ID is '1'.
  'B' (42h): Message type is "Command reply".
  '0'-'A'(30h, 41h): Message length (10bytes)

Message

  STX (02h): Start of Message
  'C'-'B'-'0'-'4' (43h, 42h, 30h, 34h): Input name Command
  '0'-'1' (30h, 31h): Write

ST: Status
  00h (30h, 30h): No Error
  01h (30h, 31h): Error
ETX (03h): End of Message


Check code
  BCC: Block Check Code
     Refer to the section 4.3 "Check code" for a BCC calculation.

Delimiter
  CR (0Dh): End of packet

## 18.3 Input Name Reset

This command is used in order to reset the Input Name.

1) The controller requests the monitor to reset Input Name.

| Header | Message | Check code | Delimiter |
|---|---|---|---|
| SOH-'0'-Monitor ID-'0'-'A'-'0'-'8' | STX-'C'-'A'-'0'-'4'-'0'-'2'-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'-'8'(30h, 38h): Message length (8bytes)

   Message

     STX (02h): Start of Message
     'C'-'A'-'0'-'4' (43h, 41h, 30h, 34h): Input Name Command
     '0'-'2' (30h. 32h): Reset
     ETX (03h): End of Message

   Check code
     BCC: Block Check Code
         Refer to the section 4.3 "Check code" for a BCC calculation.

   Delimiter
     CR (0Dh): End of packet


2) The monitor replies result.

| Header | Message | Check code | Delimiter |
|---|---|---|---|
| SOH-'0'-'0'-Monitor ID-'B'-'0'-'A' | STX-'C'-'B'-'0'-'0'-'0'-'2'-ST-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', replying monitor's ID is '1'.
     'B' (42h): Message type is "Command reply".
     '0'-'A'(30h, 41h): Message length (10bytes)

   Message

     STX (02h): Start of Message
     'C'-'B'-'0'-'4' (43h, 42h, 30h, 34h): Input name Command
     '0'-'2' (30h, 32h): Reset
     ST: Status
       00h (30h, 30h): No Error
       01h (30h, 31h): Error
     ETX (03h): End of Message


   Check code

     BCC: Block Check Code
         Refer to the section 4.3 "Check code" for a BCC calculation.

Delimiter
  CR (0Dh): End of packet

# 19. Auto Tile Matrix

## 19.1 Auto Tile Matrix Execute

This command is used in order to activate the Auto Tile Matrix Setup.

1) The controller requests the monitor to execute Auto Tile Matrix

| Header | Message | Check code | Delimiter |
|---|---|---|---|
| SOH-'0'-Monitor ID-<br>'0'-'A'-'1'-'2' | STX-'C'-'A'-'0'-'3'-'0'-'1'-<br>HM-VM-PID-SEL-TMEM-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'-'2'(31h, 32h): Message length (18bytes)

  *Message*

    STX (02h): Start of Message
    'C'-'A'-'0'-'3' (43h, 41h, 30h, 33h): Auto Tile Matrix Command
    '0'-'1' (30h, 31h): Execution
    HM: HORIZONTAL MONITORS
        01h (30h, 31h) - 10h (31h, 30h)
    VM: VERTICAL MONITORS
        01h (30h, 31h) - 10h (31h, 30h)
    PID: PETTERN ID
        01h (30h, 31h) *Fixed
    SEL: CURRENT INPUT SELECT
        VGA      : 01h (30h, 31h)
        DVI      : 03h (30h, 33h)
        VIDEO    : 05h (30h, 35h)
        S-VIDEO  : 07h (30h, 37h)
        Y/Pb/Pr  : 0Ch (30h, 43h)
        OPTION   : 0Dh (30h, 44h)
        Y/Pb/Pr2 : 0Eh (30h, 45h)
        DPORT    : 0Fh (30h, 46h)
        DPORT2   : 10h (31h, 30h)
        HDMI     : 11h (31h, 31h)
        HDMI2    : 12h (31h, 32h)
        DPORT3   : 80h (38h, 30h)
    TMEM: TILE MATRIX MEM
        COMMON   : 00h (30h, 30h)
        INPUT    : 01h (30h, 31h)
    ETX (03h): End of Message

  Check code
    BCC: Block Check Code
        Refer to the section 4.3 "Check code" for a BCC calculation.

  Delimiter
    CR (0Dh): End of packet

2) The monitor replies receipt result.

| Header | Message | Check code | Delimiter |
|---|---|---|---|
| SOH-'0'-'0'-Monitor ID-<br>'B'-'0'-'A' | STX-'C'-'B'-'0'-'3'-'0'-'1'-ST-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', replying monitor's ID is '1'.
  'B' (42h): Message type is "Command reply".
  '0'-'A'(30h, 41h): Message length (10bytes)


Message

  STX (02h): Start of Message
  'C'-'B'-'0'-'3' (43h, 42h, 30h, 33h): Auto Tile Matrix Command
  '0'-'1' (30h, 31h): Execution
  ST: Error Status
     No Error : 00h (30h, 30h)
     Error    : 01h (30h, 31h)
  ETX (03h): End of Message


Check code

  BCC: Block Check Code
     Refer to the section 4.3 "Check code" for a BCC calculation.


Delimiter

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

## 19.2 Auto Tile Matrix Complete

This command is used in order to notify complete status of Auto Tile Matrix Setup.

1) The monitor notifies that Auto Tile Matrix completed to controller.

| Header | Message | Check code | Delimiter |
|---|---|---|---|
| SOH-'0'-Monitor ID-<br>'0'-'A'-'0'-'A' | STX-'C'-'A'-'0'-'3'-'0'-'2'-ST-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 (10bytes)

Message

  STX (02h): Start of Message
  'C'-'A'-'0'-'3'-'0'-'2' (43h, 41h, 30h, 33h, 30h, 32h): Auto Tile Matrix Complete
  '0'-'2' (30h, 32h): Notify
  ST: Error Status
     No Error : 00h (30h, 30h)
     Error    : 01h (30h, 31h)
  ETX (03h): End of Message

Check code
  BCC: Block Check Code
        Refer to the section 4.3 "Check code" for a BCC calculation.

Delimiter
  CR (0Dh): End of packet

2) The controller replies to the monitor.

| Header | Message | Check code | Delimiter |
|---|---|---|---|
| SOH-'0'-'0'-Monitor ID-<br>'B'-'0'-'A' | STX-'C'-'B'-'0'-'3'-'0'-'2'-ST-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', replying monitor's ID is '1'.
  'B' (42h): Message type is "Command reply".
  '0'-'A'(30h, 41h): Message length (10bytes)

Message

  STX (02h): Start of Message
  'C'-'B'-'0'-'3' (43h, 42h, 30h, 33h): Auto Tile Matrix Command
  '0'-'2' (30h, 32h): Notify
  ST: Error Status
     No Error : 00h (30h, 30h) *Fixed
  ETX (03h): End of Message

Check code

  BCC: Block Check Code
     Refer to the section 4.3 "Check code" for a BCC calculation.

Delimiter
  CR (0Dh): End of packet

## 19.3 Auto Tile Matrix Monitors Read

This command is used in order to read the setting of H/V Monitors.

1) The controller requests the monitor to reply H/V Monitors setting.

| Header | Message | Check code | Delimiter |
|---|---|---|---|
| SOH-'0'-Monitor ID-<br>'0'-'A'-'0'-'8' | STX-'C'-'A'-'0'-'3'-'0'-'4'-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'-'8'(30h, 38h): Message length (8bytes)

  Message

    STX (02h): Start of Message
    'C'-'A'-'0'-'3' (43h, 41h, 30h, 33h): Auto Tile Matrix Command
    '0'-'4' (30h. 34h): Monitors Read
    ETX (03h): End of Message

  Check code
    BCC: Block Check Code
       Refer to the section 4.3 "Check code" for a BCC calculation.

  Delimiter
    CR (0Dh): End of packet

2) The monitor replies H/V Monitors to the controller.

| Header | Message | Check code | Delimiter |
|---|---|---|---|
| SOH-'0'-'0'-Monitor ID-<br>'B'-'0'-'E' | STX-'C'-'B'-'0'-'3'-'0'-'4'-<br>ST-HM-VM-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', replying monitor's ID is '1'.
    'B' (42h): Message type is "Command reply".
    '0'-'E'(30h, 45h): Message length (14bytes)

  Message

    STX (02h): Start of Message
    'C'-'B'-'0'-'3' (43h, 42h, 30h, 33h): Auto Tile Matrix reply
    '0'-'4' (30h, 34h): Monitors Read
    ST: Error Status
       No Error : 00h (30h, 30h)
       Error    : 01h (30h, 31h)
    HM: H MONITORS
       00h – 0Ah (30h, 30h – 30h, 41h)
    VM: V MONITORS
       00h – 0Ah (30h, 30h – 30h, 41h)
    ETX (03h): End of Message

  Check code

    BCC: Block Check Code

Refer to the section 4.3 "Check code" for a BCC calculation.

Delimiter
  CR (0Dh): End of packet

## 19.4 Auto Tile Matrix Monitors Write

This command is used in order to write the setting of H/V Monitors.

1) The controller requests the monitor to write H/V Monitors.

| Header | Message | Check code | Delimiter |
|---|---|---|---|
| SOH-'0'-Monitor ID-'0'-'A'-'0'-'C' | STX-'C'-'A'-'0'-'3'-'0'-'5'-HM-VM-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'-'C'(30h, 43h): Message length (12bytes)

Message
  STX (02h): Start of Message
  'C'-'A'-'0'-'3' (43h, 41h, 30h, 33h): Auto Tile Matrix Command
  '0'-'5' (30h. 34h): Monitors Write
  HM: H MONITORS
      00h – 0Ah (30h, 30h – 30h, 41h)
  VM: V MONITORS
      00h – 0Ah (30h, 30h – 30h, 41h)
  ETX (03h): End of Message

Check code
  BCC: Block Check Code
      Refer to the section 4.3 "Check code" for a BCC calculation.

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

2) The monitor replies a written in result.

| Header | Message | Check code | Delimiter |
|---|---|---|---|
| SOH-'0'-'0'-Monitor ID-'B'-'0'-'A' | STX-'C'-'B'-'0'-'3'-'0'-'5'-ST-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', replying monitor's ID is '1'.
  'B' (42h): Message type is "Command reply".
  '0'-'A'(30h, 41h): Message length (14bytes)

Message
  STX (02h): Start of Message
  'C'-'B'-'0'-'3' (43h, 42h, 30h, 33h): Auto Tile Matrix reply
  '0'-'5' (30h, 34h): Monitors Write
  ST: Error Status
      No Error : 00h (30h, 30h)
      Error    : 01h (30h, 31h)
  ETX (03h): End of Message


Check code
  BCC: Block Check Code
      Refer to the section 4.3 "Check code" for a BCC calculation.
```

Delimiter
  CR (0Dh): End of packet

## 19.5 Auto Tile Matrix Reset

This command is used in order to deactivate the Auto Tile Matrix Setup.

1) The controller requests the monitor to reset Auto Tile Matrix

| Header | Message | Check code | Delimiter |
|---|---|---|---|
| SOH-'0'-Monitor ID-<br>'0'-'A'-'0'-'8' | STX-'C'-'A'-'0'-'3'-'0'-'6'-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'-'8'(30h, 38h): Message length (8bytes)

Message

  STX (02h): Start of Message
  'C'-'A'-'0'-'3' (43h, 41h, 30h, 33h, 30h, 33h): Auto Tile Matrix
  '0'-'6' (30h, 36h): Off
  ETX (03h): End of Message

Check code
  BCC: Block Check Code
        Refer to the section 4.3 "Check code" for a BCC calculation.

Delimiter
  CR (0Dh): End of packet


2) The monitor replies receipt result.

| Header | Message | Check code | Delimiter |
|---|---|---|---|
| SOH-'0'-'0'-Monitor ID-<br>'B'-'0'-'A' | STX-'C'-'B'-'0'-'3'-'0'-'6'-ST-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', replying monitor's ID is '1'.
  'B' (42h): Message type is "Command reply".
  '0'-'A'(30h, 41h): Message length (10bytes)

Message

  STX (02h): Start of Message
  'C'-'B'-'0'-'3' (43h, 42h, 30h, 33h) : Auto Tile Matrix
  '0'-'6' (30h, 36h): Off
  ST: Error Status
      No Error : 00h (30h, 30h)
      Error    : 01h (30h, 31h)
  ETX (03h): End of Message


Check code

  BCC: Block Check Code
      Refer to the section 4.3 "Check code" for a BCC calculation.

Delimiter
  CR (0Dh): End of packet

## 20. Power Save Mode

### 20.1 Power Save Mode Read

This command is used in order to read the Power Save Mode.

1) The controller requests the monitor to read Power Save Mode

| Header | Message | Check code | Delimiter |
|---|---|---|---|
| SOH-'0'-Monitor ID-<br>'0'-'A'-'0'-'8' | STX-'C'-'A'-'0'-'B'-0-'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.
  'A' (41h): Message type is "Command".
  '0'-'8'(30h,38h): Message length (8byte)

Message

  STX (02h): Start of Message
  'C'-'A'-'0'-'B' (43h, 41h, 30h, 42h): Power Save Mode command
  '0'-'0' (30h, 30h): Read
  ETX (03h): End of Message

Check code

   BCC: Block Check Code
      Refer to the section 4.3 "Check code" for a BCC calculation.

Delimiter

   CR (0Dh): End of packet

2) The monitor replies Power Save Mode to the controller.

| Header | Message | Check code | Delimiter |
|---|---|---|---|
| SOH-'0'-'0'-Monitor ID-<br>'B'-'0'-'A' | STX-'C'-'B'-'0'-'B'-'0'-'0'-MODE-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', replying monitor's ID is '1'.
  'B' (42h): Message type is "Command reply".
  '0'-'A'(30h,41h): Message length (10byte)

Message

  STX (02h): Start of Message
  'C'-'B'-'0'-'B' (43h, 42h, 30h, 42h): Power Save Mode Reply
  '0'-'0' (30h, 30h): Read
  MODE: POWER SAVE MODE
    00h (30h, 30h): AUTO POWER SAVE
    01h (30h, 31h): AUTO STANDBY
    02h (30h, 32h): POWER SAVE OFF
  ETX (03h): End of Message

Check code

  BCC: Block Check Code
    Refer to the section 4.3 "Check code" for a BCC calculation.

Delimiter
  CR (0Dh): End of packet

## 20.2 Power Save Mode Write

This command is used in order to write the setting of Power Save Mode.

1) The controller requests the monitor to write Power Save Mode.

| Header | Message | Check code | Delimiter |
|---|---|---|---|
| SOH-'0'-Monitor ID-'0'-'A'-'0'-'A' | STX-'C'-'A'-'0'-'B'-0'-'1'-MODE-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 (10byte)

    Message

      STX (02h): Start of Message
      'C'-'A'-'0'-'B' (43h, 41h, 30h, 42h): Power Save Mode command
      '0'-'1' (30h, 31h): Write
      MODE: POWER SAVE MODE
        00h (30h, 30h): AUTO POWER SAVE
        01h (30h, 31h): AUTO STANDBY
        02h (30h, 32h): POWER SAVE OFF
      ETX (03h): End of Message

    Check code
        BCC: Block Check Code
            Refer to the section 4.3 "Check code" for a BCC calculation.

    Delimiter
        CR (0Dh): End of packet

2) The monitor replies a written in result.

| Header | Message | Check code | Delimiter |
|---|---|---|---|
| SOH-'0'-'0'-Monitor ID-'B'-'0'-'A' | STX-'C'-'B'-'0'-'B'-'0'-'1'-ST-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', replying monitor's ID is '1'.
      'B' (42h): Message type is "Command reply".
      '0'-'A'(30h,41h): Message length (10byte)

    Message

      STX (02h): Start of Message
      'C'-'B'-'0'-'B' (43h, 42h, 30h, 42h): Power Save Mode Reply
      '0'-'1' (30h, 31h): Write
      ST: Error Status
        No Error : 00h (30h, 30h)
        Error    : 01h (30h, 31h)
      ETX (03h): End of Message

    Check code

      BCC: Block Check Code
        Refer to the section 4.3 "Check code" for a BCC calculation.

Delimiter
  CR (0Dh): End of packet

## 20.3 Auto Power Save Time Read

This command is used in order to read the setting of Auto Power Save Time.

1) The controller requests the monitor to reply Time setting.

| Header | Message | Check code | Delimiter |
|---|---|---|---|
| SOH-'0'-Monitor ID-<br>'0'-'A'-'0'-'8' | STX-'C'-'A'-'0'-'B'-'0'-'2'-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'-'8'(30h,38h): Message length (8byte)

Message

  STX (02h): Start of Message
  'C'-'A'-'0'-'B' (43h, 41h, 30h, 42h): Power Save Mode command
  '0'-'2' (30h, 30h): Auto Power Save Read
  ETX (03h): End of Message

Check code
   BCC: Block Check Code
      Refer to the section 4.3 "Check code" for a BCC calculation.

Delimiter
   CR (0Dh): End of packet

2) The monitor replies Time to the controller.

| Header | Message | Check code | Delimiter |
|---|---|---|---|
| SOH-'0'-'0'-Monitor ID-<br>'B'-'0'-'A' | STX-'C'-'B'-'0'-'B'-'0'-'2'-TIME-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', replying monitor's ID is '1'.
  'B' (42h): Message type is "Command reply".
  '0'-'A'(30h,41h): Message length (10byte)

Message

  STX (02h): Start of Message
  'C'-'B'-'0'-'B' (43h, 42h, 30h, 42h): Power Save Mode Reply
  '0'-'2' (30h, 32h): Auto Power Save Time Read
  TIME: AUTO POWER SAVE TIME (sec.)
    00h (30h, 30h) – 78h (37h, 38h): 1 (5dec.) – 120 (600sec.)
  ETX (03h): End of Message

Check code

  BCC: Block Check Code
    Refer to the section 4.3 "Check code" for a BCC calculation.

Delimiter

  CR (0Dh): End of packet

## 20.4 Auto Power Save Time Write

This command is used in order to write the setting of Auto Power Save Time.

1) The controller requests the monitor to write Time.

| Header | Message | Check code | Delimiter |
|---|---|---|---|
| SOH-'0'-Monitor ID-<br>'0'-'A'-'0'-'A' | STX-'C'-'A'-'0'-'B'-0-'3'-TIME-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 (10byte)

Message
  STX (02h): Start of Message
  'C'-'A'-'0'-'B' (43h, 41h, 30h, 42h): Power Save Mode command
  '0'-'3' (30h, 33h): Auto Power Save Time Write
  TIME: AUTO POWER SAVE TIME (sec.)
    00h (30h, 30h) – 78h (37h, 38h): 1 (5dec.) – 120 (600sec.)
  ETX (03h): End of Message

Check code
    BCC: Block Check Code
          Refer to the section 4.3 "Check code" for a BCC calculation.

Delimiter
    CR (0Dh): End of packet

2) The monitor replies a written in result.

| Header | Message | Check code | Delimiter |
|---|---|---|---|
| SOH-'0'-'0'-Monitor ID-<br>'B'-'0'-'8' | STX-'C'-'B'-'0'-'B'-'0'-'3'-ST-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', replying monitor's ID is '1'.
  'B' (42h): Message type is "Command reply".
  '0'-'8'(30h,38h): Message length (8byte)

Message
  STX (02h): Start of Message
  'C'-'B'-'0'-'B' (43h, 42h, 30h, 42h): Power Save Mode Reply
  '0'-'3' (30h, 33h): Auto Power Save Time Write
  ST: Error Status
    No Error : 00h (30h, 30h)
    Error    : 01h (30h, 31h)
  ETX (03h): End of Message

Check code
  BCC: Block Check Code
    Refer to the section 4.3 "Check code" for a BCC calculation.

Delimiter

CR (0Dh): End of packet

### 20.5 Auto Standby Time Read

This command is used in order to read the setting of Auto Standby Time.

1) The controller requests the monitor to reply Time setting.

| Header | Message | Check code | Delimiter |
|---|---|---|---|
| SOH-'0'-Monitor ID-'0'-'A'-'0'-'8' | STX-'C'-'A'-'0'-'B'-'0'-'4'-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'-'8'(30h,38h): Message length (8byte)

  Message

    STX (02h): Start of Message
    'C'-'A'-'0'-'B' (43h, 41h, 30h, 42h): Power Save Mode command
    '0'-'4' (30h, 30h): Auto Standby Time Read
    ETX (03h): End of Message

  Check code
    BCC: Block Check Code
      Refer to the section 4.3 "Check code" for a BCC calculation.

  Delimiter
    CR (0Dh): End of packet

2) The monitor replies Time to the controller.

| Header | Message | Check code | Delimiter |
|---|---|---|---|
| SOH-'0'-'0'-Monitor ID-'B'-'0'-'A' | STX-'C'-'B'-'0'-'B'-'0'-'4'-TIME-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', replying monitor's ID is '1'.
    'B' (42h): Message type is "Command reply".
    '0'-'A'(30h,41h): Message length (10byte)

  Message

    STX (02h): Start of Message
    'C'-'B'-'0'-'B' (43h, 42h, 30h, 42h): Power Save Mode Reply
    '0'-'4' (30h, 34h): Auto Standby Time Read
    TIME: AUTO STANDBY TIME (sec.)
      00h (30h, 30h) – 78h (37h, 38h): 1 (5dec.) – 120 (600sec.)
    ETX (03h): End of Message

  Check code

    BCC: Block Check Code
      Refer to the section 4.3 "Check code" for a BCC calculation.

  Delimiter

    CR (0Dh): End of packet

## 20.6 Auto Standby Time Write

This command is used in order to write the setting of Auto Standby Time.

1) The controller requests the monitor to write Time.

| Header | Message | Check code | Delimiter |
|---|---|---|---|
| SOH-'0'-Monitor ID-'0'-<br>'A'-'0'-'A' | STX-'C'-'A'-'0'-'B'-0'-'5'-TIME-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 (10byte)

   Message

     STX (02h): Start of Message
     'C'-'A'-'0'-'B' (43h, 41h, 30h, 42h): Power Save Mode command
     '0'-'5' (30h, 35h): Auto Standby Time Write
     TIME: AUTO STANDBY TIME (sec.)
       00h (30h, 30h) – 78h (37h, 38h): 1 (5dec.) – 120 (600sec.)
     ETX (03h): End of Message

   Check code
     BCC: Block Check Code
       Refer to the section 4.3 "Check code" for a BCC calculation.

   Delimiter
     CR (0Dh): End of packet

2) The monitor replies a written in result.

| Header | Message | Check code | Delimiter |
|---|---|---|---|
| SOH-'0'-'0'-Monitor ID-<br>'B'-'0'-'A' | STX-'C'-'B'-'0'-'B'-'0'-'5'-ST-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', replying monitor's ID is '1'.
     'B' (42h): Message type is "Command reply".
     '0'-'A'(30h,41h): Message length (10byte)

   Message

     STX (02h): Start of Message
     'C'-'B'-'0'-'B' (43h, 42h, 30h, 42h): Power Save Mode Reply
     '0'-'5' (30h, 35h): Auto Standby Time Write
     ST: Error Status
       No Error : 00h (30h, 30h)
       Error    : 01h (30h, 31h)
     ETX (03h): End of Message

   Check code

     BCC: Block Check Code
       Refer to the section 4.3 "Check code" for a BCC calculation.

Delimiter
    CR (0Dh): End of packet

# 21. Setting Copy

## 21.1 Setting Copy Read

This command is used in order to read the Setting Copy.

1) The controller requests the monitor to read Setting Copy

| Header | Message | Check code | Delimiter |
|---|---|---|---|
| SOH-'0'-Monitor ID-<br>'0'-'A'-'0'-'8' | STX-'C'-'A'-'0'-'9'-0'-'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.
  'A' (41h): Message type is "Command".
  '0'-'8'(30h, 38h): Message length (8byte)

Message

  STX (02h): Start of Message
  'C'-'A'-'0'-'9' (43h,41h,30h,39h): Setting Copy command
  '0'-'0' (30h,30h): Target Read
  ETX (03h): End of Message

Check code
    BCC: Block Check Code
        Refer to the section 4.3 "Check code" for a BCC calculation.

Delimiter
    CR (0Dh): End of packet

2) The monitor replies Setting Copy to the controller.

| Header | Message | Check code | Delimiter |
|---|---|---|---|
| SOH-'0'-'0'-Monitor ID-<br>'B'-'1'-'0' | STX-'C'-'B'-'0'-'9'-'0'-'0'-<br>T4-T3-T2-T1-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', replying monitor's ID is '1'.
  'B' (42h): Message type is "Command reply".
  '1'-'0'(31h,30h): Message length (16byte)

Message

  STX (02h): Start of Message
  'C'-'B'-'0'-'9' (43h, 42h, 30h, 39h): Setting Copy Reply
  '0'-'0' (30h, 30h): Target Read
  T1 – T4 : 00h (30h, 30h) – FFh (46h, 46h)
    T1 : Setting Copy Target 4 (Bit12-Bit15)
    T2 : Setting Copy Target 3 (Bit8-Bit11)
    T3 : Setting Copy Target 2 (Bit4-Bit7)
    T4 : Setting Copy Target 1 (Bit0-Bit3)
      Bit0: ALL INPUT
      Bit1: PICTURE
      Bit2: ADJUST
      Bit3: AUDIO
      Bit4: SCHEDULE
      Bit5: PIP

```
        Bit6: OSD
        Bit7: MULTI DISP
        Bit8: PROTECT
        Bit9: EXT-CTRL
        Bit10: ADVANCED
        Bit11: ADVANCED2
        Bit12: HTTP
        Bit13: Reserve
        Bit14: Reserve
        Bit15: Reserve
    Ex.) Setting the following value for T4
        Bit0: ALL INPUT is OFF (0).
        Bit1: PICTURE is OFF (0).
        Bit2: ADJUST is ON (1).
        Bit3: AUDIO is ON (1).
        Step 1: Put above bit in following order.
                Bit3-Bit2-Bit1-Bit0
                Value: 1100
        Step 2: Write the value of Step 1 by a hexadecimal number.
                Value: 0Ch
        Step 3: Encode the value of Step 2 to ASCII characters.
                Value: '0' and 'C' (30h and 43h)
  ETX (03h): End of Message
```

*Check code*

  BCC: Block Check Code
      Refer to the section 4.3 "Check code" for a BCC calculation.

**Delimiter**

  CR (0Dh): End of packet

## 21.2 Setting Copy Write

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

1) The controller requests the monitor to write Setting Copy.

| Header | Message | Check code | Delimiter |
|---|---|---|---|
| SOH-'0'-Monitor ID-<br>'0'-'A'-'1'-'0' | STX-'C'-'A'-'0'-'9'-0'-'1'-<br>T4-T3-T2-T1-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'-'A'-'0'-'9' (43h,41h,30h,39h): Setting Copy command
  '0'-'1' (30h,31h): Target Write
  T1 – T4 : 00h (30h, 30h) – FFh (46h, 46h)
    T1 : Setting Copy Target 4 (Bit12-Bit15)
    T2 : Setting Copy Target 3 (Bit8-Bit11)
    T3 : Setting Copy Target 2 (Bit4-Bit7)
    T4 : Setting Copy Target 1 (Bit0-Bit3)
      Bit0: ALL INPUT
      Bit1: PICTURE
      Bit2: ADJUST
      Bit3: AUDIO
      Bit4: SCHEDULE
      Bit5: PIP
      Bit6: OSD
      Bit7: MULTI DISP
      Bit8: PROTECT
      Bit9: EXT-CTRL
      Bit10: ADVANCED
      Bit11: ADVANCED2
      Bit12: HTTP
      Bit13: Reserve
      Bit14: Reserve
      Bit15: Reserve
    Ex.) Setting the following value for T4
      Bit0: ALL INPUT is OFF (0).
      Bit1: PICTURE is OFF (0).
      Bit2: ADJUST is ON (1).
      Bit3: AUDIO is ON (1).
      Step 1: Put above bit in following order.
        Bit3-Bit2-Bit1-Bit0
        Value: 1100
      Step 2: Write the value of Step 1 by a hexadecimal number.
        Value: 0Ch
      Step 3: Encode the value of Step 2 to ASCII characters.
        Value: '0' and 'C' (30h and 43h)
  ETX (03h): End of Message

Check code
   BCC: Block Check Code
     Refer to the section 4.3 "Check code" for a BCC calculation.

Delimiter
   CR (0Dh): End of packet

2) The monitor replies a written in result.

| Header | Message | Check code | Delimiter |
|---|---|---|---|
| SOH-'0'-'0'-Monitor ID-<br>  'B'-'0'-'A' | STX-'C'-'B'-'0'-'9'-'0'-'1'-ST-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', replying monitor's ID is '1'.
  'B' (42h): Message type is "Command reply".
  '0'-'A'(30h,41h): Message length (10byte)

Message

  STX (02h): Start of Message
  'C'-'B'-'0'-'9' (43h, 42h, 30h, 39h): Setting Copy Reply
  '0'-'1' (30h, 30h): Target Write
  ST: Status
   No Error  : 00h (30h, 30h)
   Error     : 01h (30h, 31h)
  ETX (03h): End of Message

Check code

    BCC: Block Check Code
      Refer to the section 4.3 "Check code" for a BCC calculation.

Delimiter

    CR (0Dh): End of packet

## 21.3 Setting Copy Start

This command is used in order to start Setting Copy.

1) The controller requests the monitor to write Setting Copy Start.

| Header | Message | Check code | Delimiter |
|---|---|---|---|
| SOH-'0'-Monitor ID-'0'-'A'-'0'-'8' | STX-'C'-'A'-'0'-'9'-0'-'2'-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'-'8'(30h, 38h): Message length (8byte)

Message

  STX (02h): Start of Message
  'C'-'A'-'0'-'9' (43h,41h,30h,39h): Setting Copy command
  '0'-'2' (30h,32h): Start
  ETX (03h): End of Message

Check code
    BCC: Block Check Code
      Refer to the section 4.3 "Check code" for a BCC calculation.

Delimiter
    CR (0Dh): End of packet

2) The monitor replies to the controller.

| Header | Message | Check code | Delimiter |
|---|---|---|---|
| SOH-'0'-'0'-Monitor ID-'B'-'0'-'A' | STX-'C'-'B'-'0'-'9'-'0'-'2'-ST-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', replying monitor's ID is '1'.
  'B' (42h): Message type is "Command reply".
  '0'-'A'(30h,41h): Message length (10byte)

Message

  STX (02h): Start of Message
  'C'-'B'-'0'-'9' (43h, 42h, 30h, 39h): Setting Copy Reply
  '0'-'2' (30h, 30h): Start
  ST: Status
    No Error : 00h (30h, 30h)
    Error   : 01h (30h, 31h)
  ETX (03h): End of Message

Check code
  BCC: Block Check Code
    Refer to the section 4.3 "Check code" for a BCC calculation.

Delimiter
 CR (0Dh): End of packet

## 22. Security Enable

### 22.1 Security Enable Read

This command is used in order to read the Security Enable.

1) The controller requests the monitor to read Security Enable

| Header | Message | Check code | Delimiter |
|---|---|---|---|
| SOH-'0'-Monitor ID-<br>'0'-'A'-'0'-'8' | STX-'C'-'A'-'0'-'C'-'0'-'2'-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'-'8'(30h, 38h): Message length (8byte)

  Message
    STX (02h): Start of Message
    'C'-'A'-'0'-'C' (43h, 41h, 30h, 43h): Security password Command
    '0'-'2' (30h, 32h): Enable Read
    ETX (03h): End of Message

  Check code
    BCC: Block Check Code
        Refer to the section 4.3 "Check code" for a BCC calculation.

  Delimiter
    CR (0Dh): End of packet

2) The monitor replies Security Enable to the controller.

| Header | Message | Check code | Delimiter |
|---|---|---|---|
| SOH-'0'-'0'-Monitor ID-<br>'B'-'0'-'A' | STX-'C'-'B'-'0'-'C'-'0'-'2'-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', replying monitor's ID is '1'.
    'B' (42h): Message type is "Command reply".
    '0'-'A'(30h,41h): Message length (10byte)

  Message
    STX (02h): Start of Message
    'C'-'B'-'0'-'C'-'0'-'2' (43h, 42h, 30h, 41h, 30h, 32h): Get Security Enable Disable Reply
    EN: Status
        00h: Disable
        01h: Enable
    ETX (03h): End of Message

  Check code
    BCC: Block Check Code
        Refer to the section 4.3 "Check code" for a BCC calculation.

Delimiter
  CR (0Dh): End of packet

## 22.2 Security Enable Write

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

1) The controller requests the monitor to set Security password.

| Header | Message | Check code | Delimiter |
|---|---|---|---|
| SOH-'0'-Monitor ID-<br>'0'-'A'-'1'-'C' | STX-'C'-'A'-'0'-'C'-'0'-'1'-<br>ENA-'0'-'0'-PWD1-…-PWD16-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'-'C'(31h,43h): Message length (28byte)

Message

STX (02h): Start of Message
'C'-'A'-'0'-'C' (43h, 41h, 30h, 43h): Security Password Command
'0'-'1' (30h, 31h): Enable Write
ENA: Enable/Disable
   00h (30h, 30h): Disable
   01h (30h, 31h): Enable
'0'-'0' (30h, 30h): Reserved
PWD1 – PWD16: Password data
  ➢     The password data is encoded as the following procedure.
         Ex.) In the case of password data "1234"
            Step1: Password data is handled as character code.
                Example:
                 "1234" -> 31h 32h 33h 34h (ASCII)
            Step2: The hexadecimal value of each original character is encoded as two ASCII
                characters representing the hex value.
                Example:
                 31h 32h 33h 34h -> '3'-'1'-'3'-'2'-'3'-'3'-'3'-'4'
            Step3: Password data is handled as character code once again.
                Example:
                 '3'-'1'-'3'-'2'-'3'-'3'-'3'-'4' -> 33h 31h 33h 32h 33h 33h 33h 34h (ASCII)
            Step4: The hexadecimal value of each original character is encoded as two ASCII
                characters representing the value.
                Example:
                 33h 31h 33h 32h 33h 33h 33h 34h
                 -> '3'-'3'-'3'-'1'-'3'-'3'-'3'-'2'-'3'-'3'-'3'-'3'-'3'-'3'-'3'-'4'
            Result: The following data is assigned to PWD1-PWD16.
                33h 33h 33h 31h 33h 33h 33h 32h 33h 33h 33h 33h 33h 33h 33h 34h
ETX (03h): End of Message

Check code
  BCC: Block Check Code
     Refer to the section 4.3 "Check code" for a BCC calculation.

Delimiter
  CR (0Dh): End of packet

2) The monitor replies a written in result.

| Header | Message | Check code | Delimiter |
|---|---|---|---|
| SOH-'0'-'0'-Monitor ID-<br>'B'-'0'-'A' | STX-'C'-'B'-'0'-'C'-'0'-'1'-ST-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', replying monitor's ID is '1'.
  'B' (42h): Message type is "Command reply".
  '0'-'A'(30h,41h): Message length (10byte)


Message

  STX (02h): Start of Message
  'C'-'B'-'0'-'C' (43h, 42h, 30h, 43h): Security password Reply Command
  '0'-'1' (30h, 31h): Enable Write
  ST: Error Status
      00h: No Error
      01h: Error
  ETX (03h): End of Message


Check code

  BCC: Block Check Code
      Refer to the section 4.3 "Check code" for a BCC calculation.


Delimiter

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

## 23. LAN MAC Address

### 23.1 LAN MAC Address Read

This command is used in order to read the MAC Address.

1) The controller requests the monitor to read MAC Address

| Header | Message | Check code | Delimiter |
|---|---|---|---|
| SOH-'0'-Monitor ID-<br>'0'-'A'-'0'-'8' | STX-'C'-'2'-'2'-'A'-'0'-'2'-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'-'8' (30h, 38h)  : Message length is 8 bytes.

Message

  STX (02h): Start of Message
  'C'-'2'-'2'-'A': LAN read command.
  '0'-'2': MAC Address
  ETX (03h): End of Message

Check code

  BCC: Block Check Code
  Refer to the section 4.3 "Check code" for a BCC calculation.

Delimiter

  CR (0Dh): End of packet

2) The monitor replies MAC Address to the controller.

| Header | Message | Check code | Delimiter |
|---|---|---|---|
| SOH-'0'-'0'-Monitor ID-<br>'B'-LN(H)-LN(L) | STX-'C'-'3'-'2'-'A'-RC-'0'-'2'-<br>IPV-MAC(0)-....-MAC(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".
  LN(H)-LN(L): Message length (byte length), from STX to ETX

Message

  STX(02h):Start of Message
  'C'-'3'-'2'-'A': LAN read reply command.
  RC: Reply result Code
    '0'-'0' (30h, 30h): Normal
    'F'-'F' (46h, 46h): Abnormal
  '0'-'2': MAC Address
  IPV: IPv4 or IPv6
    '0'-'4' (30h, 34h): IPv4
    '0'-'6' (30h, 36h): IPv6
  MAC(0-n): MAC Address
    In the case of IPv4 -> n = 4

In the case of IPv6 -> n = 7
  ETX (03h): End of Message


Check code
  BCC: Block Check Code
        Refer to the section 4.3 "Check code" for a BCC calculation.

Delimiter
  CR (0Dh): End of packet

## 24. Proof of Play

### 24.1 Set Proof of Play Operation Mode

This command is used in order to set Operation mode of Proof of Play.

1) The controller requests the monitor to set Operation mode of Proof of Play.

| Header | Message | Check code | Delimiter |
|---|---|---|---|
| SOH-'0'-Monitor ID-<br>'0'-'A'-'0'-'A' | STX-'C'-'A'-'1'-'5'-'0'-'0'-MD-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'-'A' (30h, 41h)  : Message length is 10 bytes.
```

Message

```
STX (02h): Start of Message
'C'-'A'-'1'-'5': Proof of Play command
'0'-'0' (30h,30h): Set Proof of Play Operation Mode command
MD : Mode of Proof of Play.
  '0'-'0'(30h, 30h): Stop
  '0'-'1'(30h, 31h): Start
  '0'-'2'(30h, 32h): Clear Log data
ETX (03h): End of Message
```

Check code

```
BCC: Block Check Code
Refer to the section 4.3 "Check code" for a BCC calculation.
```

Delimiter

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

2) The monitor replies the result of set Operation mode to the controller.

| Header | Message | Check code | Delimiter |
|---|---|---|---|
| SOH-'0'-Monitor ID-<br>'0'-'B'-'0'-'A' | STX-'C'-'B'-'1'-'5'-'0'-'0'-ST-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'-'A' (30h, 41h)  : Message length is 10 bytes.
```

Message

```
STX (02h): Start of Message
'C'-'B'-'1'-'5': Proof of Play reply command
'0'-'0' (30h,30h): Set Proof of Play Operation Mode command
ST: Status
  '0'-'0'(30h, 30h): No Error
  '0'-'1'(30h, 31h): Error
  '0'-'2'(30h, 32h): Already Start/Stop/Clear
```

ETX (03h): End of Message

(132/132)

Check code

  BCC: Block Check Code
  Refer to the section 4.3 "Check code" for a BCC calculation.

Delimiter

  CR (0Dh): End of packet

## 24.2 Get Proof of Play Current

This command is used in order to get Current log data of Proof of Play.

Note : Proof of Play information cannot be read from the display when it is in OFF state. The display
must be fully powered on to read Proof of Play information. Also the display does not continue
to create any new logs while it is in OFF state.

1) The controller requests the monitor to get Current log data of Proof of Play.

| Header | Message | Check code | Delimiter |
|---|---|---|---|
| SOH-'0'-Monitor ID-<br>'0'-'A'-'0'-'8' | STX-'C'-'A'-'1'-'5'-'0'-'1'-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'-'8' (30h, 38h) : Message length is 8 bytes.

Message

STX (02h): Start of Message
'C'-'A'-'1'-'5': Proof of Play command
'0'-'1' (30h,31h): Get Current log of Proof of Play command
ETX (03h): End of Message

Check code

BCC: Block Check Code
Refer to the section 4.3 "Check code" for a BCC calculation.

Delimiter

CR (0Dh): End of packet

2) The monitor replies the result of Current log data to the controller.

| Header | Message | Check code | Delimiter |
|---|---|---|---|
| SOH-'0'-Monitor ID-<br>'0'-'B'-'3'-'4' | STX-'C'-'B'-'1'-'5'-'0'-'1'-ST-CNH-<br>CNL-Data(0)-Data(1)-Data(2)---<br>Data(18)-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".
'3'-'4' (33h, 34h) : Message length is 52 bytes.

Message

STX (02h): Start of Message
'C'-'B'-'1'-'5': Proof of Play reply command
'0'-'1' (30h,31h): Get Current log of Proof of Play command
ST: Status
  No Error : 00h (30h, 30h)
  Error: 01h (30h, 31h)
CNH: Current log data Number (High byte)

```
  CNL: Current log data Number (Low byte)
    '0','0','0','1' -'F','F','F','F' (30h, 30h, 30h, 31h - 46h, 46h, 46h, 46h) :1 - 65535
  Data(0)-Data(18): Data of Proof of Play
  ------------------------------------------
 ※Log Data of Proof of Play : Data(0)-Data(18)
  Data(0): Check INPUT PITURE
  ※Same as VCP(Page11 06H Input source) reply parameter.
    Refer to Item "INPUT" on page 41.
  Data(1)-Data(4) : Check Input Signal
   '0'-'0'-'0'-'0'-'0'-'0'-'0'-'0' (30h,30h,30h,30h,30h,30h,30h,30h):No signal
   'F'-'F'-'F'-'F'-'F'-'F'-'F'-'F' (46h,46h,46h,46h,46h,46h,46h,46h):Invalid signal
   '*'-'*'-'*'-'*'-'*'-'*'-'*'-'*' (**h,**h,**h,**h,**h,**h,**h,**h):Input signal
     Ex ) 1920 x 1080
       '0'-'7'-'8'-'0'-'0'-'4'-'3'-'8' : 1920(0768h) x 1080(0438h)
  Data(5) : Check INPUT AUDIO
    ※Same as VCP(Page2 2EH Select Sound Input) reply parameter.
      Refer to Item "AUDIO INPUT" on page 33.
  Data(6) : Check with or without  Audio
   '0'-'0'(30h,30h): Audio in
   '0'-'1'(30h,31h): No Audio in
   '0'-'2'(30h,32h): N/A
  Data(7) : Check status (Picture)
   '0'-'0'(30h,30h): Normal Picture
   '0'-'1'(30h,31h): No Picture
  Data(8) : Check status (Audio)
   '0'-'0'(30h,30h): Normal Audio
   '0'-'1'(30h,31h): No Audio
  Data(9)-Data(10) : Year
    '*'-'*'-'*'-'*' (**h,**h,**h,**h):0～65535(0000h～FFFFh)
    Ex ) 2014
      '0'-'7'-'D'-'E' : 2014(07DEh)
  Data(11) : month
      '0'-'1' (30h,31h): January
      '0'-'2' (30h,31h): February
       |
      '0'-'B' (30h,31h): November
      '0'-'C' (30h,31h): December
  Data(12) : day
    '*'-'*' (**h,**h):1～31(01h～1Fh)
  Date(13) : hour
    '*'-'*' (**h,**h):0～23(00h～17h)
  Date(14) :min
    '*'-'*' (**h,**h):0～59(00h～3Bh)
  Data(15) : sec
    '*'-'*' (**h,**h):0～59(00h～3Bh)
  Data(16)-Data(18) : Reserve(future use : always '0'-0'-0'-0'-0'-0')
  ------------------------------------------
  ETX (03h): End of Message


Check code

  BCC: Block Check Code
  Refer to the section 4.3 "Check code" for a BCC calculation.


Delimiter

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

## 24.3 Get Proof of Play Status

This command is used in order to get Proof of Play Status.

1) The controller requests the monitor to get status of Proof of Play.

| Header | Message | Check code | Delimiter |
|---|---|---|---|
| SOH-'0'-Monitor ID-<br>'0'-'A'-'0'-'8' | STX-'C'-'A'-'1'-'5'-'0'-'2'-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'-'8' (30h, 38h)  : Message length is 8 bytes.

Message

  STX (02h): Start of Message
  'C'-'A'-'1'-'5
  6': Proof of Play command
  '0'-'2' (30h,32h): Get Proof of Play Status command
  ETX (03h): End of Message

Check code

  BCC: Block Check Code
  Refer to the section 4.3 "Check code" for a BCC calculation.

Delimiter

  CR (0Dh): End of packet

2) The monitor replies the status of Proof of Play to the controller.

| Header | Message | Check code | Delimiter |
|---|---|---|---|
| SOH-'0'-Monitor ID-<br>'0'-'B'-'1'-'4' | STX-'C'-'B'-'1'-'5'-'0'-'2'-ST1-ST2-<br>ST3-ST4-ST5-ST6-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".
  '1'-'4' (31h, 34h)  : Message length is 20 bytes.

Message

  STX (02h): Start of Message
  'C'-'B'-'1'-'5': Proof of Play reply command
  '0'-'2' (30h,32h): Get Proof of Play status command
  ST1: Error status
   00h (30h, 30h): No Error
   01h (30h, 30h): Memory full (some date has been lost)
   02h (30h, 30h): other error (other error has priority ver 01h error)
  ST2: Total Number-High byte (How many log data items are currently used.)
  ST3: Total Number-Low byte (How many log data items are currently used.)
   '0','0','0','0' - 'F','F','F','F' (30h,30h,30h,30h - 46h,46h,46h,46h): 0-65535

ST4: Maximum Number-High byte (Maximum possible number of log data items)
ST5: Maximum Number-Low byte (Maximum possible number of log data items)
  '0','0','0','0' - 'F','F','F','F' (30h,30h,30h,30h - 46h,46h,46h,46h): 0 - 65535
ST6: Current Proof of Play status.
  Stop: 00h (30h, 30h)
  Start: 01h (30h, 31h)
ETX (03h): End of Message


Check code
  BCC: Block Check Code
  Refer to the section 4.3 "Check code" for a BCC calculation.


Delimiter
  CR (0Dh): End of packet

## 24.4 Get Proof of Play Number to Number

 This command is used in order to get Proof of Play number to number log.

1) The controller requests the monitor to get Number to Number log of Proof of Play.

| Header | Message | Check code | Delimiter |
|---|---|---|---|
| SOH-'0'-Monitor ID-'0'-'A'-'1'-'0' | STX-'C'-'A'-'1'-'5'-'0'-'3'-BNS(H)-BNS(L)-BNE(H)-BNE(L)-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".
   '1'-'0' (31h, 30h)  : Message length is 16 bytes.

  Message

   STX (02h): Start of Message
   'C'-'A'-'1'-'5': Proof of Play command
   '0'-'3' (30h,33h): Get Proof of Play Number to Number log command
   BNS(H): Block Number of Start (High byte)
   BNS(L): Block Number of Start (Low byte)
   BNE(H): Block Number of Stop (High byte)
   BNE(L): Block Number of Stop (Low byte)
   ETX (03h): End of Message

  Check code

   BCC: Block Check Code
   Refer to the section 4.3 "Check code" for a BCC calculation.
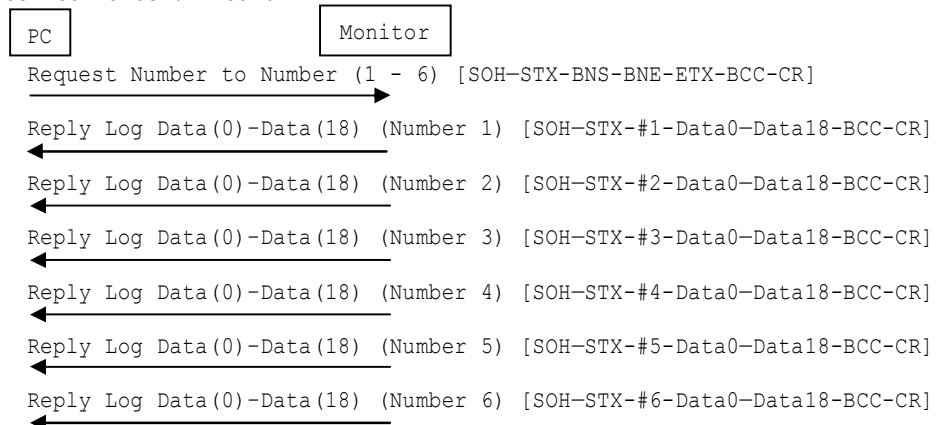
  Delimiter

   CR (0Dh): End of packet

2) The monitor replies the number to number log of Proof of Play to the controller.

| Header | Message | Check code | Delimiter |
|---|---|---|---|
| SOH-'0'-Monitor ID-'0'-'B'-'3'-'4' | STX-'C'-'B'-'1'-'5'-'0'-'3'- LNR(H)-LNR(L)-Data(0)-Data(1)-Data(2) ---Data(18) -ETX | BCC | CR |

* **A reply returns data in order from specified Number to specified Number.**

   Ex) Number to Number: 1 to 6

    ┌──────┐        ┌──────────┐
    │ PC │        │ Monitor │
    └──────┘        └──────────┘

    Request Number to Number (1 - 6) [SOH—STX-BNS-BNE-ETX-BCC-CR]
              ────────────────────▶

    Reply Log Data(0)-Data(18) (Number 1) [SOH—STX-#1-Data0—Data18-BCC-CR]
         ◀────────────────────

    Reply Log Data(0)-Data(18) (Number 2) [SOH—STX-#2-Data0—Data18-BCC-CR]
         ◀────────────────────

    Reply Log Data(0)-Data(18) (Number 3) [SOH—STX-#3-Data0—Data18-BCC-CR]
         ◀────────────────────

    Reply Log Data(0)-Data(18) (Number 4) [SOH—STX-#4-Data0—Data18-BCC-CR]
         ◀────────────────────

    Reply Log Data(0)-Data(18) (Number 5) [SOH—STX-#5-Data0—Data18-BCC-CR]
         ◀────────────────────

    Reply Log Data(0)-Data(18) (Number 6) [SOH—STX-#6-Data0—Data18-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".
'3'-'4' (33h, 36h)  : Message length is 38 bytes.


Message

STX (02h): Start of Message
'C'-'B'-'1'-'5': Proof of Play reply command
'0'-'3' (30h,33h): Get Proof of Play Number to Number log command
LNR (H): log number being returned (High byte)
LNR (L): log number being returned (Low byte)
Data(0)-Data(12): Log Data of Proof of Play of STOP (26byte) : Same as "Get Proof of Play Current"
 * Refer to "Get Proof of Play Current"
ETX (03h): End of Message


Check code

BCC: Block Check Code
Refer to the section 4.3 "Check code" for a BCC calculation.


Delimiter

CR (0Dh): End of packet

**All data are subject to change without notice.**