### 1. Application

This document defines the communications method for control of the NEC LCD monitor, MultiSync LCD4020/4620/5220/6520 and MULTEOS M40/46 when using an external controller.

### 2. Connectors and wiring

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

(Please refer “Using the LCD with RS-232C” on each User’s manual.)

### 3. Communication Parameter

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

#### 3.1 Communication timing

The controller should wait for a packet interval before next command is sent. The packet interval needs to be longer than 600msec for the LCD monitor.
4. Communication Format

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

Sequence of a typical procedure to control a monitor is as follows,

[A controller and a monitor, two-way communication composition figure]

4.1 Header block format (fixed length)

<table>
<thead>
<tr>
<th>SOH</th>
<th>Reserved</th>
<th>Destination</th>
<th>Source</th>
<th>Message Type</th>
<th>Message Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>1&lt;sup&gt;st&lt;/sup&gt; byte</td>
<td>2&lt;sup&gt;nd&lt;/sup&gt; byte</td>
<td>3&lt;sup&gt;rd&lt;/sup&gt; byte</td>
<td>4&lt;sup&gt;th&lt;/sup&gt; byte</td>
<td>5&lt;sup&gt;th&lt;/sup&gt; byte</td>
<td>6&lt;sup&gt;th&lt;/sup&gt; - 7&lt;sup&gt;th&lt;/sup&gt; byte</td>
</tr>
</tbody>
</table>

1<sup>st</sup> byte) SOH: Start of Header
   ASCII SOH (01h)

2<sup>nd</sup> byte) Reserved: Reserved for future extensions.
   On this monitor, it must be ASCII '0'(30h).

3<sup>rd</sup> byte) Destination: Destination equipment ID. (Receiver)
   Specify a commands receiver’s address.
   This value must match the "Monitor ID No." set in the OSD.
“Monitor ID” to “Destination Address” conversion table is as follows,

<table>
<thead>
<tr>
<th>Monitor ID</th>
<th>Destination Address (ASCII)</th>
<th>Monitor ID</th>
<th>Destination Address (ASCII)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>'A' (41h)</td>
<td>14</td>
<td>'W' (57h)</td>
</tr>
<tr>
<td>2</td>
<td>'B' (42h)</td>
<td>15</td>
<td>'O' (59h)</td>
</tr>
<tr>
<td>3</td>
<td>'C' (43h)</td>
<td>16</td>
<td>'P' (50h)</td>
</tr>
<tr>
<td>4</td>
<td>'D' (44h)</td>
<td>17</td>
<td>'Q' (51h)</td>
</tr>
<tr>
<td>5</td>
<td>'E' (45h)</td>
<td>18</td>
<td>'R' (52h)</td>
</tr>
<tr>
<td>6</td>
<td>'F' (46h)</td>
<td>19</td>
<td>'S' (53h)</td>
</tr>
<tr>
<td>7</td>
<td>'G' (47h)</td>
<td>20</td>
<td>'T' (54h)</td>
</tr>
<tr>
<td>8</td>
<td>'H' (48h)</td>
<td>21</td>
<td>'U' (55h)</td>
</tr>
<tr>
<td>9</td>
<td>'I' (49h)</td>
<td>22</td>
<td>'V' (56h)</td>
</tr>
<tr>
<td>10</td>
<td>'J' (4Ah)</td>
<td>23</td>
<td>'W' (57h)</td>
</tr>
<tr>
<td>11</td>
<td>'K' (4Bh)</td>
<td>24</td>
<td>'X' (58h)</td>
</tr>
<tr>
<td>12</td>
<td>'L' (4Ch)</td>
<td>25</td>
<td>'Y' (59h)</td>
</tr>
<tr>
<td>13</td>
<td>'M' (4Dh)</td>
<td>26</td>
<td>'Z' (5Ah)</td>
</tr>
<tr>
<td>ALL</td>
<td><strong>'</strong> (2Ah)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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).

4th byte) Source: Source equipment ID. (Sender)

Specify a sender address.

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

5th 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.

6th -7th bytes) Message Length:

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

This length includes STX and ETX.

The byte data must be encoded to ASCII characters.

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

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

4.2 Message block format

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

Refer to the section 6 “Message format” for more detail.
1) Get current parameter
The controller sends this message when you want to get the status of the monitor.
For the status that you want to get, specify the "OP code page" and "OP code", refer to "Appendix A. Operation code table".

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

<table>
<thead>
<tr>
<th>STX</th>
<th>OP code page</th>
<th>OP code</th>
<th>ETX</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Hi</td>
<td>Lo</td>
<td></td>
</tr>
</tbody>
</table>

➢ 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,

<table>
<thead>
<tr>
<th>STX</th>
<th>Result</th>
<th>OP code page</th>
<th>OP code</th>
<th>Type</th>
<th>Max value</th>
<th>Current Value</th>
<th>ETX</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Hi</td>
<td>Lo</td>
<td>Hi</td>
<td>Lo</td>
<td>Hi</td>
<td>Lo</td>
<td></td>
</tr>
</tbody>
</table>

➢ 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,

<table>
<thead>
<tr>
<th>STX</th>
<th>OP code page</th>
<th>OP code</th>
<th>Set Value</th>
<th>ETX</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Hi</td>
<td>Lo</td>
<td>Hi</td>
<td>Lo</td>
</tr>
</tbody>
</table>

➢ 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,

<table>
<thead>
<tr>
<th>STX</th>
<th>Result</th>
<th>OP code page</th>
<th>OP code</th>
<th>Type</th>
<th>Max value</th>
<th>Requested setting Value</th>
<th>ETX</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Hi</td>
<td>Lo</td>
<td>Hi</td>
<td>Lo</td>
<td>Hi</td>
<td>Lo</td>
<td></td>
</tr>
</tbody>
</table>

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

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

6) Command reply
The monitor replies to a query from the controller.
"Command reply message" format depends on each command.
Refer to section 5.5 "Commands message" for more details.

4.5 Check code

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

\[
D_{n+1} = D_1 \text{ XOR } D_2 \text{ XOR } D_3 \text{ XOR } \ldots \text{ XOR } D_n
\]

XOR: Exclusive OR

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

<table>
<thead>
<tr>
<th>Header</th>
<th>Message</th>
<th>Check code</th>
<th>Delimiter</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOH</td>
<td>Reserved</td>
<td>Destination</td>
<td>Source</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Message type</td>
<td>Message length</td>
</tr>
<tr>
<td>01</td>
<td>30</td>
<td>41</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>D_0</td>
<td>D_1</td>
<td>D_2</td>
</tr>
</tbody>
</table>

Check code (BCC) \( D_7 \) = \( D_1 \text{ XOR } D_2 \text{ XOR } D_3 \text{ XOR } \ldots \text{ XOR } D_{14} \text{ XOR } D_{15} \text{ XOR } D_{16} 

= 30h \text{ XOR } 41h \text{ XOR } 30h \text{ XOR } 30h \text{ XOR } 45h \text{ XOR } 30h \text{ XOR } 41h 

\text{ XOR } 02h \text{ XOR } 30h \text{ XOR } 30h \text{ XOR } 31h \text{ XOR } 30h \text{ XOR } 30h 

\text{ XOR } 30h \text{ XOR } 36h \text{ XOR } 34h \text{ XOR } 03h 

= 77h

4.6 Delimiter

Packet delimiter code; ASCII CR(0Dh).
5. Message type
5.1 Get current Parameter from a monitor.

<table>
<thead>
<tr>
<th>STX</th>
<th>OP code page</th>
<th>OP code</th>
<th>ETX</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hi</td>
<td>Lo</td>
<td>Hi</td>
<td>Lo</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>STX</th>
<th>Result</th>
<th>OP code page</th>
<th>OP code</th>
<th>Type</th>
<th>Max value</th>
<th>Current Value</th>
<th>ETX</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hi</td>
<td>Lo</td>
<td>Hi</td>
<td>Lo</td>
<td>Hi</td>
<td>Lo</td>
<td>MSB</td>
<td>LSB</td>
</tr>
</tbody>
</table>

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)

18th byte) ETX: End of Message

ASCII ETX (03h)

5.3 Set parameter

<table>
<thead>
<tr>
<th>STX</th>
<th>OP code page</th>
<th>OP code</th>
<th>Set Value</th>
<th>ETX</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>HI</td>
<td>Lo</td>
<td>HI</td>
<td>Lo</td>
</tr>
<tr>
<td>1st</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

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

The controller requests a monitor to change value.

1st byte) STX: Start of Message

ASCII STX (02h)

2nd-3rd bytes) OP code page: Operation code page
This OP code page data must be encoded to ASCII characters.
Ex.) The byte data 02h must be encoded to ASCII '0' and '2' (30h and 32h).
Refer to the Operation code table.

4th-5th 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.

6th-9th bytes) Set value: (16bit)
This data must be encoded to ASCII characters.
Ex.) 0123h -> 1st (MSB) = ASCII '0' (30h)
    2nd = ASCII '1' (31h)
    3rd = ASCII '2' (32h)
    4th (LSB) = ASCII '3' (33h)

10th byte) ETX: End of Message
ASCII ETX (03h)

### 5.4 "Set parameter" reply

<table>
<thead>
<tr>
<th>STX</th>
<th>Result</th>
<th>OP code page</th>
<th>OP code</th>
<th>Type</th>
<th>Max value</th>
<th>Requested setting</th>
<th>ETX</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STX</td>
<td>Hi</td>
<td>Lo</td>
<td>Hi</td>
<td>Lo</td>
<td>Hi</td>
<td>Lo</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1st</td>
<td>2nd-3rd</td>
<td>4th-5th</td>
<td>6th-7th</td>
<td>8th-9th</td>
<td>10th-13th</td>
<td>14th-17th</td>
</tr>
</tbody>
</table>

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 10.

5.5.1 Save Current Settings.
The controller requests for the monitor to store the adjusted value.

<table>
<thead>
<tr>
<th>STX</th>
<th>Command code</th>
<th>ETX</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>'0'</td>
<td>'C'</td>
</tr>
</tbody>
</table>

➢ Send "OC" (30h, 43h) as Save current settings command.
➢ Complete "Save Current setting" command packet as follows;
ASCII: 01h-30h-41h-30h-41h-30h-43h-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'-'C'-ETX-CHK- CR

5.5.2 Get Timing Report and Timing reply.
The controller requests the monitor to report the displayed image timing.

<table>
<thead>
<tr>
<th>STX</th>
<th>Command code</th>
<th>ETX</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>'0'</td>
<td>'7'</td>
</tr>
</tbody>
</table>

➢ Send "07" (30h, 37h) as Get Timing Report command.
➢ Complete "Get Timing Report" command packet as follows;
ASCII: 01h-30h-41h-30h-41h-30h-37h-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;

<table>
<thead>
<tr>
<th>STX</th>
<th>Command</th>
<th>SS</th>
<th>H Freq.</th>
<th>V Freq.</th>
<th>ETX</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>'4'</td>
<td>'8'</td>
<td>Hi Lo</td>
<td>MSB LSB</td>
<td>MSB LSB</td>
</tr>
</tbody>
</table>

➢ SS: Timing status byte
  Bit 7 = 1: Sync Frequency is out of range.
  Bit 6 = 1: Unstable count

(9/40)
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

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

➤ A timeout error has occurred. (The default timeout is 10sec.)
➤ The monitor receives an unsupported message type.
➤ The monitor detects a packet BCC (Block Check Code) error.
➤ To tell the controller that the monitor does not have any answer to give to the host (not ready or not expected)
➤ Complete "NULL Message" command packet as follows;
01h-30h-30h-41h-41h-30h-34h
—
02h-42h-45h-03h-CHK-0Dh
SOH-'0'-'0'-'A'-'A'-'0'-'4'-STX-'B'-'E'-ETX-CHK- CR

6. Typical procedure example

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

6.1. How to change the "Brightness" setting.

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

<table>
<thead>
<tr>
<th>Header</th>
<th>Message</th>
<th>Check code</th>
<th>Delimiter</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOH-'0'-'Monitor ID-'0'-'C'-'0'-'6'</td>
<td>STX-'0'- '0'- '1'- '0'- ETX</td>
<td>BCC</td>
<td>CR</td>
</tr>
</tbody>
</table>

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

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

Check code
BCC: Block Check Code
Refer to the section 4.5 "Check code" for a BCC calculation.
Step 2. The monitor replies with current Brightness setting and capability to support this operation.

```
+---------------------------------+----------------+----------------+----------------+----------------+
<table>
<thead>
<tr>
<th>Header</th>
<th>Message</th>
<th>Check code</th>
<th>Delimiter</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOH-'0'-0-Monitor ID-'D'-1-'2'</td>
<td>STX-'0'-0-'1'-0-'0'-0-0-'0'-0-0-'6'-4-'0'-0-3-'2'-ETX</td>
<td>BCC</td>
<td>CR</td>
</tr>
</tbody>
</table>
```

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

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

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

**Delimiter**
- CR (0Dh): End of packet

---

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

```
+---------------------------------+----------------+----------------+----------------+
<table>
<thead>
<tr>
<th>Header</th>
<th>Message</th>
<th>Check code</th>
<th>Delimiter</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOH-'0'-Monitor ID-'E'-0-'A'</td>
<td>STX-'0'-0-'1'-0-'0'-0-5'-0'-ETX</td>
<td>BCC</td>
<td>CR</td>
</tr>
</tbody>
</table>
```

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

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

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

**Delimiter**
- CR (0Dh): End of packet

---

Step 4. The monitor replies with a message for confirmation.
6. How to read the measurement value of the built-in temperature sensors.

MultiSync LCD4020/4620/5220/6520 has three, or MULTISOS M40/46 has two built-in temperature sensors. The controller can monitor inside temperatures by using those sensors through RS-232C.

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

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

```plaintext
<table>
<thead>
<tr>
<th>Header</th>
<th>Message</th>
<th>Check code</th>
<th>Delimiter</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOH='0' Monitor ID='A'='0'='F'='1'='2'</td>
<td>STX='0'='0'='0'='0'='1'='0'='0'='E'='6'='4'='0'='5'='0' ETX</td>
<td>BCC</td>
<td>CR</td>
</tr>
</tbody>
</table>
```

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

MultiSync LCD4020/4620/5220/6520 has three, or MULTISOS M40/46 has two built-in temperature sensors. The controller can monitor inside temperatures by using those sensors through RS-232C.

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

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

```plaintext
<table>
<thead>
<tr>
<th>Header</th>
<th>Message</th>
<th>Check code</th>
<th>Delimiter</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOH='0' Monitor ID='E'='0'='A'='4'</td>
<td>STX='0'='0'='0'='0'='1'='0'='0'='C' ETX</td>
<td>BCC</td>
<td>CR</td>
</tr>
</tbody>
</table>
```

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

MultiSync LCD4020/4620/5220/6520 has three, or MULTISOS M40/46 has two built-in temperature sensors. The controller can monitor inside temperatures by using those sensors through RS-232C.

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

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

```plaintext
<table>
<thead>
<tr>
<th>Header</th>
<th>Message</th>
<th>Check code</th>
<th>Delimiter</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOH='0' Monitor ID='0'='1'='A'='4'</td>
<td>STX='0'='0'='0'='0'='1'='0'='0'='C' ETX</td>
<td>BCC</td>
<td>CR</td>
</tr>
</tbody>
</table>
```
Header
SOH (01h): Start of Header
'0' (30h): Reserved
Monitor ID: Specify the Monitor ID which you want to get a value.
Ex.) If Monitor ID is '1', specify 'A'.
'0' (30h): Message sender is the controller.
'E' (45h): Message Type is "Set parameter command".
'0'-'A' (30h, 41h): Message length is 10 bytes.

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

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

Delimiter
CR (0Dh): End of packet

Step 2. The monitor replies for confirmation.

<table>
<thead>
<tr>
<th>Header</th>
<th>Message</th>
<th>Check code</th>
<th>Delimiter</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOH-'0'-'0'-Monitor ID-'F'-'1'-2'</td>
<td>STX-'0'-'0'-0'-7'-'8'-'0'-'0'-'0'-'0'-'0'-'0'-'3'-'0'-'0'-'1'-ETX</td>
<td>BCC</td>
<td>CR</td>
</tr>
</tbody>
</table>

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'-'0'-'3' (30h, 30h, 30h, 30h, 31h): Number of temperature sensors are 3 (0003h).
'0'-'0'-'0'-'0'-'1' (30h, 30h, 30h, 31h): temperature sensor is #1.
ETX (03h): End of Message

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

Delimiter
CR (0Dh): End of packet

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

<table>
<thead>
<tr>
<th>Header</th>
<th>Message</th>
<th>Check code</th>
<th>Delimiter</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOH-'0'-Monitor ID-'0'-'C'-0'-6'</td>
<td>STX-'0'-'2'-'7'-'9'-ETX</td>
<td>BCC</td>
<td>CR</td>
</tr>
</tbody>
</table>

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

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

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

Delimiter
CR (0Dh): End of packet

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

<table>
<thead>
<tr>
<th>Header</th>
<th>Message</th>
<th>Check code</th>
<th>Delimiter</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOH-'0'-'0'-Monitor ID-'D'- '1'- '2'</td>
<td>STX-'0'- '0'- '0'- '2'- '7'- '9'- '0'- '0'- 'F'- 'F'- 'F'- 'F'- '0'- '0'- '3'- '2'-ETX</td>
<td>BCC</td>
<td>CR</td>
</tr>
</tbody>
</table>

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.

<table>
<thead>
<tr>
<th>Temperature [Celsius]</th>
<th>Readout value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Binary</td>
</tr>
<tr>
<td>+125.0</td>
<td>0000 0000 1111 1010</td>
</tr>
<tr>
<td>+ 25.0</td>
<td>0000 0000 0011 0010</td>
</tr>
<tr>
<td>+ 0.5</td>
<td>0000 0000 0000 0001</td>
</tr>
<tr>
<td>0</td>
<td>0000 0000 0000 0000</td>
</tr>
<tr>
<td>- 0.5</td>
<td>1111 1111 1111 1111</td>
</tr>
<tr>
<td>- 25.0</td>
<td>1111 1111 1100 1110</td>
</tr>
<tr>
<td>- 55.0</td>
<td>1111 1111 1001 0010</td>
</tr>
</tbody>
</table>

ETX (03h): End of Message

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

Delimiter
CR (0Dh): End of packet
7. Power control procedure

7.1 Power status read

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

<table>
<thead>
<tr>
<th>Header</th>
<th>Message</th>
<th>Check code</th>
<th>Delimiter</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOH-'0'-'0'-'A'-'0'-'6'</td>
<td>STX-'0'-'1'-'D'-'6'-ETX</td>
<td>BCC</td>
<td>CR</td>
</tr>
</tbody>
</table>

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

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

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

**Delimiter**
- CR (0Dh): End of packet

2) The monitor returns with the current power status.

<table>
<thead>
<tr>
<th>Header</th>
<th>Message</th>
<th>Check code</th>
<th>Delimiter</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOH-'0'-'0'-'B'-'1'-'2'</td>
<td>STX-'0'-'2'-'0'-'0'-'D'-'6'-ETX</td>
<td>BCC</td>
<td>CR</td>
</tr>
</tbody>
</table>

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

**Message**
- STX(02h): Start of Message
- '0'-'2' (30h, 32h): Reserved data
- '0'-'0' (30h, 30h): Result code
  - 00: No Error.
  - 01: Unsupported.
- 'D'-'6' (44h, 36h): Display power mode code
- '0'-'0' (30h, 30h): Parameter type code is "Set parameter".
- '0'-'0'-'0'-'4' (30h, 30h, 30h, 34h): Power mode is 4 types.
- '0'-'0'-'0'-'1' (30h, 30h, 30h, 31h): Current power mode
  - <Status>
    - 0001: ON
    - 0002: Stand-by (power save)
    - 0003: Suspend (power save)
    - 0004: OFF (same as IR power off)
- ETX (03h): End of Message

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

**Delimiter**
- CR (0Dh): End of packet
CR (0Dh): End of packet

7.2 Power control

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

<table>
<thead>
<tr>
<th>Header</th>
<th>Message</th>
<th>Check code</th>
<th>Delimiter</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOH-'0'-Monitor ID-'A'-'0'-C'</td>
<td>STX-'C'-2'-0'-3'-D'-6'-0'-0'-1'-ETX</td>
<td>BCC</td>
<td>CR</td>
</tr>
</tbody>
</table>

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

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

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

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

2) The monitor replies a data for confirmation.

<table>
<thead>
<tr>
<th>Header</th>
<th>Message</th>
<th>Check code</th>
<th>Delimiter</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOH-'0'-Monitor ID-'B'-0'-E'</td>
<td>STX-'0'-0'-C'-2'-0'-3'-D'-6'-0'-0'-1'-ETX</td>
<td>BCC</td>
<td>CR</td>
</tr>
</tbody>
</table>

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

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

Delimiter
CR (0Dh): End of packet

8. Asset Data read and write

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.

<table>
<thead>
<tr>
<th>Header</th>
<th>Message</th>
<th>Check code</th>
<th>Delimiter</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOH-'0'-Monitor ID-'A'-STX-ETX</td>
<td>BCC CR</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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'-B' (43h, 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.
'S'-'2'-0' (32h, 30h): Read out data length is 32bytes.
Secondly set 20h: Read data from the 32bytes offset point in the Asset data area.
Maximum readout length is 32bytes at a time.
ETX (03h): End of Message

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

Delimiter
CR (0Dh): End of packet

2) The monitor replies Asset data to the controller.

<table>
<thead>
<tr>
<th>Header</th>
<th>Message</th>
<th>Check code</th>
<th>Delimiter</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOH-'0'-Monitor ID-'B'-N-N</td>
<td>STX-'C'-ETX</td>
<td>BCC CR</td>
<td></td>
</tr>
</tbody>
</table>

Header
SOH (01h): Start of Header
'0' (30h): Reserved
'0' (30h): Message receiver is the controller.
Monitor ID: Indicate a replying Monitor ID.
Ex.) When this byte is set to 'A', the replying Monitor ID is '1'.
'B' (42h): Message type is "Command reply"
N-N: Message length
Ex.) The byte data 20h is encoded to ASCII characters '2' and '0' (32h and 30h).
Note.) This length includes STX and ETX.

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

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

<table>
<thead>
<tr>
<th>Header</th>
<th>Message</th>
<th>Check code</th>
<th>Delimiter</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOH-'0'-Monitor ID-'0'-A'-N-N</td>
<td>STX-'C'-0'-E'-0'-0'- Data(0)-Data(1)-...-Data(N)-ETX</td>
<td>BCC</td>
<td>CR</td>
</tr>
</tbody>
</table>

Header

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

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

Message

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

Check code

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

Delimiter

CR (0Dh): End of packet

2) The monitor replies a data for confirmation.

<table>
<thead>
<tr>
<th>Header</th>
<th>Message</th>
<th>Check code</th>
<th>Delimiter</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOH-'0'-Monitor ID-'B'-N-N</td>
<td>STX-'0'-0'-C'-E'-0'-0'- Data(0)-Data(1)-...-Data(N)-ETX</td>
<td>BCC</td>
<td>CR</td>
</tr>
</tbody>
</table>

Header

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

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

Message

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

Check code

BCC: Block Check Code
Refer to the section 4.5 “Check code” for a BCC calculation.
### 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.

<table>
<thead>
<tr>
<th>Header</th>
<th>Message</th>
<th>Check code</th>
<th>Delimiter</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOH-'0'-Monitor ID-'0'-'A'-'0'-'6'</td>
<td>STX-'C'-'2'-'1'-'1'-ETX</td>
<td>BCC</td>
<td>CR</td>
</tr>
</tbody>
</table>

**Header**

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

**Message**

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

**Check code**

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

**Delimiter**

- **CR (0Dh):** End of packet

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

<table>
<thead>
<tr>
<th>Header</th>
<th>Message</th>
<th>Check code</th>
<th>Delimiter</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOH-'0'-'0'-Monitor ID-'B'-'1'-'4'</td>
<td>STX-'C'-'3'-'1'-'1'-YY-MM-DD-WW-HH-MM-DS-ETX</td>
<td>BCC</td>
<td>CR</td>
</tr>
</tbody>
</table>

**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

---

(19/40)
WW: weekdays
'0'-'0'(30h, 30h): Sunday
'0'-'1'(30h, 31h): Monday
'0'-'2'(30h, 32h): Tuesday
'0'-'3'(30h, 33h): Wednesday
'0'-'4'(30h, 34h): Thursday
'0'-'5'(30h, 35h): Friday
'0'-'6'(30h, 36h): Saturday

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

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

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

ETX (03h): End of Message

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

Delimiter
CR (0Dh): End of packet

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

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

<table>
<thead>
<tr>
<th>Header</th>
<th>Message</th>
<th>Check code</th>
<th>Delimiter</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOH-'0'-Monitor ID-'0'-'A'-'1'-'2'</td>
<td>STX-'C'-'2'-'1'-'2'-YY-MM-DD-WW-HH-MN-DS-ETX</td>
<td>BCC</td>
<td>CR</td>
</tr>
</tbody>
</table>

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'-'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, 30h): YES

ETX (03h): End of Message

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

Delimiter
CR (0Dh): End of packet

2) The monitor replies a data for confirmation.

<table>
<thead>
<tr>
<th>Header</th>
<th>Message</th>
<th>Check code</th>
<th>Delimiter</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOH='0'-'0'-Monitor ID='B'-'1'-'6'</td>
<td>STX='C'-'3'-'1'-'2'-ST-YY-MM-DD-WW-HH-MN-DS-ETX</td>
<td>BCC</td>
<td>CR</td>
</tr>
</tbody>
</table>

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='W'-MM='WW'=HH='HH'=DS': Date & Time data
YY: Year (offset 2000)
'0'-'0'(30h, 30h): 2000
| '6'-'3'(36h, 33h): 2099 (99 = 63h)

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

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

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

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

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

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

ETX (03h): End of Message

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

Delimiter
CR (0Dh): End of packet

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

1) The controller requests the monitor to read Schedule.

<table>
<thead>
<tr>
<th>Header</th>
<th>Message</th>
<th>Check code</th>
<th>Delimiter</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOH-'0'-Monitor ID-'0'-'A'-'0'-'8'</td>
<td>STX-'C'-'2'-'1'-'3'-PG-ETX</td>
<td>BCC</td>
<td>CR</td>
</tr>
</tbody>
</table>

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

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

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

Delimiter
CR (0Dh): End of packet
2) The monitor replies Schedule to the controller.

<table>
<thead>
<tr>
<th>Header</th>
<th>Message</th>
<th>Check code</th>
<th>Delimiter</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOH-'0'-'0'-Monitor ID-'B'-'1'-'6'</td>
<td>STX-'C'-'3'-'1'-'3'-PG-ON HOURS-ON MIN-OFF HOURS-OFF MIN-INPUT-WD-FL-ETX</td>
<td>BCC</td>
<td>CR</td>
</tr>
</tbody>
</table>

**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): HDMI
'0'-'4'(30h, 34h): DVD/HD
'0'-'5'(30h, 35h): VIDEO
'0'-'6'(30h, 36h): S-VIDEO
'0'-'7'(30h, 37h): TV (A)
'0'-'8'(30h, 38h): TV (D)
'0'-'9'(30h, 39h): Option

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

(23/40)
'0'-1'(30h, 31h): Monday
'0'-4'(30h, 34h): Wednesday
'0'-F'(30h, 46h): Monday, Tuesday, Wednesday and Thursday
'7'-F'(37h, 46h): Monday to Sunday

EX.
bit 0: 0: once 1: Everyday
bit 1: 0: once 1: Every week
bit 2: 0: Disable 1: Enable

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

ETX (03h): End of Message

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

Delimiter
CR (0Dh): End of packet

10.2 Schedule Write

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

1) The controller requests the monitor to write Schedule.

<table>
<thead>
<tr>
<th>Header</th>
<th>Message</th>
<th>Check code</th>
<th>Delimiter</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOH-'0'-Monitor ID-'0'-'A'-'1'-'6'</td>
<td>STX-'C'-'2'-'1'-'4'-PG-ON HOURS-ON MIN-OFF HOURS-OFF MIN-INPUT-WD-FL-ETX</td>
<td>BCC</td>
<td>CR</td>
</tr>
</tbody>
</table>

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)

ON_MIN: Turn on time (minute)
'0'-'0'(30h, 30h): 0
'3'-'B'(33h, 42h): 59
'3'-'C'(33h, 34h): 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): HDMI
'0'-'4'(30h, 34h): DVD/HD
'0'-'5'(30h, 35h): VIDEO
'0'-'6'(30h, 36h): S-VIDEO
'0'-'7'(30h, 37h): TV (A)
'0'-'8'(30h, 38h): TV (D)
'0'-'9'(30h, 39h): Option

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

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

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

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

ETX (03h): End of Message

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

Delimiter
CR (0Dh): End of packet

2) The monitor replies a data for confirmation.

<table>
<thead>
<tr>
<th>Header</th>
<th>Message</th>
<th>Check code</th>
<th>Delimiter</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOH-'0'-'0'-'Monitor ID-'B'-'1'-'8'</td>
<td>STX-'C'-3'-1'-4'-ST-PG-ON HOURS-ON MIN-OFF HOURS-OFF MIN-INPUT-WD-FL-ETX</td>
<td>BCC</td>
<td>CR</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th><strong>ON_HOUR</strong></th>
<th><strong>ON_MIN</strong></th>
<th><strong>OFF_HOUR</strong></th>
<th><strong>OFF_MIN</strong></th>
<th><strong>INPUT</strong></th>
<th><strong>WD</strong></th>
<th><strong>FL</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>'0'-'0'(30h, 30h): 00</td>
<td>'0'-'0'(30h, 30h): 0</td>
<td>'0'-'0'(30h, 30h): 00</td>
<td>'0'-'0'(30h, 30h): 00</td>
<td>'0'-'0'(30h, 30h): DVI</td>
<td>bit 0: Monday</td>
<td></td>
</tr>
<tr>
<td>'1'-'7'(31h, 37h): 23 (=17h)</td>
<td>'3'-'B'(33h, 42h): 59</td>
<td>'3'-'C'(33h, 43h): On timer isn't set.</td>
<td>'3'-'C'(33h, 43h): On timer isn't set.</td>
<td>'0'-'0'(30h, 30h): VGA</td>
<td>bit 1: Tuesday</td>
<td></td>
</tr>
<tr>
<td>'1'-'8'(31h, 38h): ON timer isn't set.</td>
<td>'3'-'C'(33h, 43h): On timer isn't set.</td>
<td>'3'-'C'(33h, 43h): On timer isn't set.</td>
<td>'3'-'C'(33h, 43h): On timer isn't set.</td>
<td>'0'-'1'(30h, 31h): RGB/HV</td>
<td>bit 2: Wednesday</td>
<td></td>
</tr>
<tr>
<td>'1'-'8'(31h, 38h): OFF timer isn't set.</td>
<td>'3'-'C'(33h, 43h): On timer isn't set.</td>
<td>'3'-'C'(33h, 43h): On timer isn't set.</td>
<td>'3'-'C'(33h, 43h): On timer isn't set.</td>
<td>'0'-'2'(30h, 32h): HDMI</td>
<td>bit 3: Thursday</td>
<td></td>
</tr>
<tr>
<td>'1'-'8'(31h, 38h): OFF timer isn't set.</td>
<td>'3'-'C'(33h, 43h): On timer isn't set.</td>
<td>'3'-'C'(33h, 43h): On timer isn't set.</td>
<td>'3'-'C'(33h, 43h): On timer isn't set.</td>
<td>'0'-'3'(30h, 33h): HDMI</td>
<td>bit 4: Friday</td>
<td></td>
</tr>
<tr>
<td>'1'-'8'(31h, 38h): OFF timer isn't set.</td>
<td>'3'-'C'(33h, 43h): On timer isn't set.</td>
<td>'3'-'C'(33h, 43h): On timer isn't set.</td>
<td>'3'-'C'(33h, 43h): On timer isn't set.</td>
<td>'0'-'4'(30h, 34h): DV/HD</td>
<td>bit 5: Saturday</td>
<td></td>
</tr>
<tr>
<td>'1'-'8'(31h, 38h): OFF timer isn't set.</td>
<td>'3'-'C'(33h, 43h): On timer isn't set.</td>
<td>'3'-'C'(33h, 43h): On timer isn't set.</td>
<td>'3'-'C'(33h, 43h): On timer isn't set.</td>
<td>'0'-'5'(30h, 35h): VIDEO</td>
<td>bit 6: Sunday</td>
<td></td>
</tr>
<tr>
<td>'1'-'8'(31h, 38h): OFF timer isn't set.</td>
<td>'3'-'C'(33h, 43h): On timer isn't set.</td>
<td>'3'-'C'(33h, 43h): On timer isn't set.</td>
<td>'3'-'C'(33h, 43h): On timer isn't set.</td>
<td>'0'-'6'(30h, 36h): S-VIDEO</td>
<td></td>
<td></td>
</tr>
<tr>
<td>'1'-'8'(31h, 38h): OFF timer isn't set.</td>
<td>'3'-'C'(33h, 43h): On timer isn't set.</td>
<td>'3'-'C'(33h, 43h): On timer isn't set.</td>
<td>'3'-'C'(33h, 43h): On timer isn't set.</td>
<td>'0'-'7'(30h, 37h): TV (A)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>'1'-'8'(31h, 38h): OFF timer isn't set.</td>
<td>'3'-'C'(33h, 43h): On timer isn't set.</td>
<td>'3'-'C'(33h, 43h): On timer isn't set.</td>
<td>'3'-'C'(33h, 43h): On timer isn't set.</td>
<td>'0'-'8'(30h, 38h): TV (D)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>'1'-'8'(31h, 38h): OFF timer isn't set.</td>
<td>'3'-'C'(33h, 43h): On timer isn't set.</td>
<td>'3'-'C'(33h, 43h): On timer isn't set.</td>
<td>'3'-'C'(33h, 43h): On timer isn't set.</td>
<td>'0'-'9'(30h, 39h): Option</td>
<td></td>
<td></td>
</tr>
<tr>
<td>'1'-'8'(31h, 38h): OFF timer isn't set.</td>
<td>'3'-'C'(33h, 43h): On timer isn't set.</td>
<td>'3'-'C'(33h, 43h): On timer isn't set.</td>
<td>'3'-'C'(33h, 43h): On timer isn't set.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>'1'-'8'(31h, 38h): OFF timer isn't set.</td>
<td>'3'-'C'(33h, 43h): On timer isn't set.</td>
<td>'3'-'C'(33h, 43h): On timer isn't set.</td>
<td>'3'-'C'(33h, 43h): On timer isn't set.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>'1'-'8'(31h, 38h): OFF timer isn't set.</td>
<td>'3'-'C'(33h, 43h): On timer isn't set.</td>
<td>'3'-'C'(33h, 43h): On timer isn't set.</td>
<td>'3'-'C'(33h, 43h): On timer isn't set.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>'1'-'8'(31h, 38h): OFF timer isn't set.</td>
<td>'3'-'C'(33h, 43h): On timer isn't set.</td>
<td>'3'-'C'(33h, 43h): On timer isn't set.</td>
<td>'3'-'C'(33h, 43h): On timer isn't set.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>'1'-'8'(31h, 38h): OFF timer isn't set.</td>
<td>'3'-'C'(33h, 43h): On timer isn't set.</td>
<td>'3'-'C'(33h, 43h): On timer isn't set.</td>
<td>'3'-'C'(33h, 43h): On timer isn't set.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>'1'-'8'(31h, 38h): OFF timer isn't set.</td>
<td>'3'-'C'(33h, 43h): On timer isn't set.</td>
<td>'3'-'C'(33h, 43h): On timer isn't set.</td>
<td>'3'-'C'(33h, 43h): On timer isn't set.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

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

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

ETX (03h): End of Message

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

Delimiter
CR (00d): End of packet

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

<table>
<thead>
<tr>
<th>Header</th>
<th>Message</th>
<th>Check code</th>
<th>Delimiter</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOH-'0'-Monitor ID-'0'-'A'- '0'-'A'</td>
<td>STX-'C'- '2'- '1'- '5'-PG-EN-ETX</td>
<td>BCC</td>
<td>CR</td>
</tr>
</tbody>
</table>

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

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

ETX (03h): End of Message

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

Delimiter
CR (00d): End of packet

4) The monitor replies a data for confirmation.

<table>
<thead>
<tr>
<th>Header</th>
<th>Message</th>
<th>Check code</th>
<th>Delimiter</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOH-'0'-Monitor ID-'B'- '0'-'C'</td>
<td>STX-'C'- '3'- '1'- '5'-ST-PG-EN-ETX</td>
<td>BCC</td>
<td>CR</td>
</tr>
</tbody>
</table>

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

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

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

ETX (03h): End of Message

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

Delimiter
CR (0Dh): End of packet

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

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

<table>
<thead>
<tr>
<th>Header</th>
<th>Message</th>
<th>Check code</th>
<th>Delimiter</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOH-'0'-Monitor ID-'0'-A-'0'-4'</td>
<td>STX-'B'-1'-ETX</td>
<td>BCC</td>
<td>CR</td>
</tr>
</tbody>
</table>

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

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

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

Delimiter
CR (0Dh): End of packet

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

<table>
<thead>
<tr>
<th>Header</th>
<th>Message</th>
<th>Check code</th>
<th>Delimiter</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOH-'0'-Monitor ID-'B'-N-N</td>
<td>STX-'A'-1'-ST(0)-ST(1)-...-ST(n)-ETX</td>
<td>BCC</td>
<td>CR</td>
</tr>
</tbody>
</table>

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
00: Normal
70: Standby-power digital +3.3V abnormality
71: Standby-power +5V abnormality
72: Main-power panel +12V abnormality
73: Main-power +2.5V abnormality
74: Main-power +1.8V abnormality
75: Standby-power analog +3.3V abnormality
76: Main-power analog +3.3V abnormality
77: Main-power digital +3.3V abnormality
78: Power-good signal +4.2V abnormality
80: Cooling fan-1 abnormality
81: Cooling fan-2 abnormality
82: Cooling fan-3 abnormality
90: Inverter abnormality

The byte data 70 is encoded as ASCII characters '7' and '0' (37h and 30h).

ETX (03h): End of Message

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

Delimiter
CR (0Dh): End of packet

12. Serial No. & Model Name Read

12.1 Serial No. Read

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

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

<table>
<thead>
<tr>
<th>Header</th>
<th>Message</th>
<th>Check code</th>
<th>Delimiter</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOH-'0'-Monitor ID-'0'-A-'0'-6'</td>
<td>STX-'C'-2'-1'-6'-ETX</td>
<td>BCC</td>
<td>CR</td>
</tr>
</tbody>
</table>

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

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

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

Delimiter
CR (0Dh): End of packet

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

<table>
<thead>
<tr>
<th>Header</th>
<th>Message</th>
<th>Check code</th>
<th>Delimiter</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOH-'0'-0-Monitor ID-B-N-N</td>
<td>STX-'C'-3'-1'-6'-</td>
<td>BCC</td>
<td>CR</td>
</tr>
</tbody>
</table>

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 32 bytes.
Ex.) The byte data 20h is encoded as ASCII characters '2' and '0' (32h and 30h).

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

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

Delimiter
CR (0Dh): End of packet

**12.2 Model Name Read**

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

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

<table>
<thead>
<tr>
<th>Header</th>
<th>Message</th>
<th>Check code</th>
<th>Delimiter</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOH-'0'-Monitor ID-'0'-'A'-0-'6'</td>
<td>STX-'C'-'2'-'1'-'7'-ETX</td>
<td>BCC</td>
<td>CR</td>
</tr>
</tbody>
</table>

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

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

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

Delimiter
CR (0Dh): End of packet

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

<table>
<thead>
<tr>
<th>Header</th>
<th>Message</th>
<th>Check code</th>
<th>Delimiter</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOH-'0'-Monitor ID-'B'-N-N</td>
<td>STX-'C'-'3'-'1'-'7'-Data(0) -Data(1)---- -Data(n)-ETX</td>
<td>BCC</td>
<td>CR</td>
</tr>
</tbody>
</table>

Header
SOH (01h): Start Of Header
'0' (30h): Reserved
'B' (42h): 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'.
'N-N': Message length

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

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

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

Delimiter
CR (0Dh): End of packet

13. Security Lock
13.1 Security Lock Control

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

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

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

<table>
<thead>
<tr>
<th>Header</th>
<th>Message</th>
<th>Check code</th>
<th>Delimiter</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOH-'0'-MonitorID-'0'-'A'-1-'0'</td>
<td>STX-'C'-2-'1'-D'-EN-P1-P2-P3-P4-ETX</td>
<td>BCC</td>
<td>CR</td>
</tr>
</tbody>
</table>

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, 30h): Enable

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

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

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

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

ETX (03h): End of Message

Check code
BCC: Block Check Code
Refer to the section 4.5 "Check code" for a BCC calculation.
Delimiter
CR (0Dh): End of packet

2) The monitor replies the result to the controller.

<table>
<thead>
<tr>
<th>Header</th>
<th>Message</th>
<th>Check code</th>
<th>Delimiter</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOH-'0'-'0'-Monitor ID-'B'-0-'A'</td>
<td>STX-'C'-3'-1'-D'-ST-EN-ETX</td>
<td>BCC</td>
<td>CR</td>
</tr>
</tbody>
</table>

Header
SOH (01h): Start of Header
'0' (30h): Reserved
'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
'0'-3'-1'-D' (30h, 33h, 31h, 44h): Security Lock Control reply command
ST-EN: Lock condition result data
ST: Status
'0'-'0'(30h, 30h): No error
'0'-'1'(30h, 31h): Error

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

ETX (03h): End of Message

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

Delimiter
CR (0Dh): End of packet
## Appendix

### A. Operation Code (OP code) Table

<table>
<thead>
<tr>
<th>Item</th>
<th>OP code</th>
<th>OP code</th>
<th>Parameter</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brightness</td>
<td>00h</td>
<td>10h</td>
<td>0: dark</td>
<td>MAX.: bright</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contrast</td>
<td>00h</td>
<td>12h</td>
<td>0: low</td>
<td>MAX.: high</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sharpness</td>
<td>00h</td>
<td>8Ch</td>
<td>0: dull</td>
<td>MAX.: high</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black Level</td>
<td>00h</td>
<td>92h</td>
<td>0: dark</td>
<td>MAX.: high</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tint</td>
<td>00h</td>
<td>90h</td>
<td>0:</td>
<td>MAX.: high</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Color</td>
<td>02h</td>
<td>1Fh</td>
<td>0: pale</td>
<td>MAX.: high</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Color Temperature</td>
<td>00h</td>
<td>54h</td>
<td>0: 2600K</td>
<td>100K/step</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>74: 10000K</td>
<td></td>
</tr>
<tr>
<td>Color control</td>
<td>00h</td>
<td>9Bh</td>
<td>Red: 9Bh</td>
<td>32:(center)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>9Ch</td>
<td>Yellow: 9Ch</td>
<td>64:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>9Dh</td>
<td>Green: 9Dh</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>9 Eh</td>
<td>Cyan: 9Eh</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>9Fh</td>
<td>Blue: 9Fh</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>A0h</td>
<td>Magenta: A0h</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>0:</td>
<td>Saturation:</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>32:</td>
<td>8Ah</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gamma Selection</td>
<td>02h</td>
<td>68h</td>
<td>Gamma Table Selection</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1: Native Gamma</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>4: Gamma=2.2</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>8: Gamma=2.4</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>7: S Gamma</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>5: DICOM SIM.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>6: Programmable</td>
<td></td>
</tr>
<tr>
<td>Adaptive Contrast</td>
<td>02h</td>
<td>8Dh</td>
<td>0: None</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1: Off</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2: Low</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3: Middle</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>4: High</td>
<td></td>
</tr>
<tr>
<td>Movie Settings</td>
<td>02h</td>
<td>20h</td>
<td>0: Off</td>
<td></td>
</tr>
<tr>
<td>Noise Reduction</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>MAX.</td>
<td></td>
</tr>
<tr>
<td>Film Mode</td>
<td>02h</td>
<td>23h</td>
<td>1: Off</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2: Auto</td>
<td></td>
</tr>
<tr>
<td>Menu tree reset</td>
<td>02h</td>
<td>CBh</td>
<td>0: None</td>
<td>Momentary</td>
</tr>
<tr>
<td>Picture</td>
<td></td>
<td></td>
<td>2: Reset</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Picture category</td>
<td></td>
</tr>
<tr>
<td>Auto Setup</td>
<td>00h</td>
<td>1 Eh</td>
<td>1: Execute</td>
<td>Momentary</td>
</tr>
<tr>
<td>Auto Adjust</td>
<td></td>
<td></td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>H Position</td>
<td>00h</td>
<td>20h</td>
<td>0: Left side</td>
<td>Depends on a display timing</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Max.: Right side</td>
<td></td>
</tr>
<tr>
<td>V Position</td>
<td>00h</td>
<td>30h</td>
<td>0: Bottom side</td>
<td>Depends on a display timing</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Max.: Top side</td>
<td></td>
</tr>
<tr>
<td>Item</td>
<td>OP code</td>
<td>OP code</td>
<td>Parameter</td>
<td>Remarks</td>
</tr>
<tr>
<td>----------------------</td>
<td>---------</td>
<td>---------</td>
<td>-----------</td>
<td>---------</td>
</tr>
<tr>
<td>Clock</td>
<td>00h</td>
<td>0Eh</td>
<td>0: Max.</td>
<td></td>
</tr>
<tr>
<td>Clock Phase</td>
<td>00h</td>
<td>3Eh</td>
<td>0: Max.</td>
<td></td>
</tr>
<tr>
<td>H Resolution</td>
<td>02h</td>
<td>50h</td>
<td>0: Max.</td>
<td></td>
</tr>
<tr>
<td>V Resolution</td>
<td>02h</td>
<td>51h</td>
<td>0: Max.</td>
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<tr>
<td>Zoom Mode</td>
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<tr>
<td>Base Zoom</td>
<td>02h</td>
<td>CEh</td>
<td>3:16:9-ZOOM 4:14:9-ZOOM 5:Dynamic 1:Off (Real) 2:Custom</td>
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<tr>
<td>Zoom</td>
<td>02h</td>
<td>6Fh</td>
<td>1:100% 2:101%</td>
<td>201:300%</td>
</tr>
<tr>
<td>Zoom H-Expansion</td>
<td>02h</td>
<td>6Ch</td>
<td>1:100% 2:101%</td>
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<td>Zoom V-Expansion</td>
<td>02h</td>
<td>6Dh</td>
<td>1:100% 2:101%</td>
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</tr>
<tr>
<td>Zoom H-Position</td>
<td>02h</td>
<td>CCh</td>
<td>0: Left side Max.: Right side</td>
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<tr>
<td>Zoom V-Position</td>
<td>02h</td>
<td>CDh</td>
<td>0: Down side Max.: Up side</td>
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<td>Input Resolution</td>
<td>02h</td>
<td>DAh</td>
<td>1: Auto 2: 1024x768 3: 1280x768 4: 1360x768 5: 1366x768 6: 1400x1050 7: 1680x1050</td>
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<td>Menu tree reset</td>
<td>02h</td>
<td>CBh</td>
<td>0: None 3: Reset Adjust category Momentary</td>
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<tr>
<td>Balance</td>
<td>00h</td>
<td>93h</td>
<td>0: Left 50:(Center) 100: Right</td>
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<tr>
<td>Treble</td>
<td>00h</td>
<td>8Fh</td>
<td>0: Min. 50:(Center) 100: Max.</td>
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<td>Bass</td>
<td>00h</td>
<td>91h</td>
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<td>CBh</td>
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<td>Item</td>
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<td>OP code</td>
<td>Parameter</td>
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<tr>
<td>Off Timer</td>
<td>02h</td>
<td>2Bh</td>
<td>0: Off</td>
<td>1 hour/step</td>
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<td>1: 1 hour</td>
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<td>24: 24 hours</td>
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<td>Enable Schedule</td>
<td>02h</td>
<td>E5h</td>
<td>0: No Mean</td>
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<td>1: No.1 Enable</td>
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<td>02h</td>
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<td>Menu tree reset (Schedule)</td>
<td>02h</td>
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<td>5: Reset</td>
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<td>PIP Mode</td>
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<td>72h</td>
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<td>(5: Side by side</td>
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<td>(6: Side by side</td>
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<td>71h</td>
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<td>10h</td>
<td>08h</td>
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<td>2: Horizontal</td>
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<td>Position</td>
<td>10h</td>
<td>09h</td>
<td>0: Top/Left</td>
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<td>100: Bottom/Right</td>
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<td>10h</td>
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<td>0-1: Do not set.</td>
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<td>2: Narrow(2/24)</td>
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<td>8: Wide(8/24)</td>
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<td>10h</td>
<td>0Ch</td>
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<td>0Dh</td>
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<td>Menu tree reset (PIP)</td>
<td>02h</td>
<td>CBh</td>
<td>0: None</td>
<td>Momentary</td>
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<td>6: Reset</td>
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<td>9: Russian</td>
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<td>OSD Turn Off</td>
<td>00h</td>
<td>FCh</td>
<td>0-1: Do not set.</td>
<td>5sec/step</td>
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<td>2: 10s</td>
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<td>3: 15s</td>
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<td>48: 240s</td>
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<td>OSD Position</td>
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<td>0:</td>
<td>MAX.:</td>
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<td>H Position</td>
<td>02h</td>
<td>38h</td>
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<td>Item</td>
<td>OP code</td>
<td>OP code</td>
<td>Parameter</td>
<td>Remarks</td>
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<td>V Position</td>
<td>02h</td>
<td>39h</td>
<td>0:</td>
<td>MAX.:</td>
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<td>Information OSD</td>
<td>02h</td>
<td>3Dh</td>
<td>0:Disable info OSD</td>
<td>info OSD 3-10: OSD timer [seconds]</td>
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<td>OSD Transparency</td>
<td>02h</td>
<td>B8h</td>
<td>0: None</td>
<td>1: Off (Opaque) 2: TYPE1 3: TYPE2</td>
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<td>Menu tree reset (OSD)</td>
<td>02h</td>
<td>CBh</td>
<td>0: None</td>
<td>7: Reset OSD category Momentary</td>
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<tr>
<td>Monitor ID</td>
<td>02h</td>
<td>3Eh</td>
<td>1-26:ID</td>
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<tr>
<td>IR Control</td>
<td>02h</td>
<td>3Fh</td>
<td>1: Normal</td>
<td>2: Primary 3: Secondary 4: Lock (Off)</td>
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<td>Tile Matrix</td>
<td>N monitor</td>
<td>02h</td>
<td>D0h</td>
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<tr>
<td>V monitor</td>
<td>02h</td>
<td>D1h</td>
<td>1</td>
<td>Number of V-division</td>
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<tr>
<td>Position</td>
<td>02h</td>
<td>D2h</td>
<td>1: Upper left</td>
<td>MAX.: Lower right</td>
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<tr>
<td>Tile comp</td>
<td>02h</td>
<td>D5h</td>
<td>1: Disable (Off)</td>
<td>2: Enable (On)</td>
</tr>
<tr>
<td>Mode</td>
<td>02h</td>
<td>D3h</td>
<td>1: Disable (Off) and display frame</td>
<td>2: Enable (On) 3: Disable (Off) and erase frame</td>
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<tr>
<td>Power On Delay</td>
<td>02h</td>
<td>D8h</td>
<td>0: Off (0sec)</td>
<td>50:50sec</td>
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<td>Power Indicator</td>
<td>02h</td>
<td>BEh</td>
<td>0: None</td>
<td>1: Off 2: On</td>
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<td>Menu tree reset (Multi Display)</td>
<td>02h</td>
<td>CBh</td>
<td>0: None</td>
<td>8: Reset Multi Display category Momentary</td>
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<tr>
<td>Power Save</td>
<td>00h</td>
<td>E1h</td>
<td>0: Off</td>
<td>1: On</td>
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<td>Standby Mode</td>
<td>02h</td>
<td>9Ah</td>
<td>0: None</td>
<td>1: Standby 2: ECO Standby</td>
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<tr>
<td>Fan Control</td>
<td>02h</td>
<td>7Dh</td>
<td>0: None</td>
<td>1: Auto (No offset) 2: Forced ON 3: Auto (offset = -2) 4: Auto (offset = -4) 5: Auto (offset = -6) 6: Auto (offset = -8) 7: Auto (offset = -10)</td>
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<td>Screen Saver</td>
<td>Gamma</td>
<td>02h</td>
<td>DBh</td>
<td>1: normal 2: screen saving gamma</td>
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<td>Brightness</td>
<td>02h</td>
<td>DCh</td>
<td>1: normal 2: decrease brightness</td>
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<tr>
<td>Item</td>
<td>OP code</td>
<td>OP code</td>
<td>Parameter</td>
<td>Remarks</td>
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<td>Motion</td>
<td>02h</td>
<td>DDh</td>
<td>0: 0s(Off)</td>
<td>10s/step</td>
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<td>90: 900s</td>
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<td>Side Border Color</td>
<td>02h</td>
<td>DFh</td>
<td>0:Black</td>
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<td>MAX.:White</td>
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<td>Auto Brightness</td>
<td>02h</td>
<td>2Dh</td>
<td>0: Off</td>
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<td>1: On</td>
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<td>Menu tree reset</td>
<td>02h</td>
<td>CBh</td>
<td>0: None</td>
<td>Momentary</td>
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<td>9: Reset Display Protection category</td>
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<td>Input Detect</td>
<td>02h</td>
<td>40h</td>
<td>0: First detect</td>
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<td>1: Last detect</td>
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<td>3: VIDEO detect</td>
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<td>Long Cable ON/OFF</td>
<td>02h</td>
<td>69h</td>
<td>1: Off</td>
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<td>2: On</td>
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<td>R,G,B Delay</td>
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<td>DVI Mode</td>
<td>02h</td>
<td>CFh</td>
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<td>Scan Conversion</td>
<td>02h</td>
<td>25h</td>
<td>1: Off(INTERLACE)</td>
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<td>2: Enable (IP ON/PROGRESSIVE)</td>
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<td>02h</td>
<td>9Eh</td>
<td>0: Off</td>
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<td>1: On</td>
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<td>02h</td>
<td>E2h</td>
<td>1: Priority</td>
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<td>02h</td>
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<td>1: NTSC</td>
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<td>3: SECAM</td>
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<td>02h</td>
<td>E3h</td>
<td>1: Under Scan</td>
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<td>CBh</td>
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<td>Momentary</td>
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<td>10: Reset Advanced option category</td>
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<td>5: Video(Composite)</td>
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<td>7: S-Video</td>
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<td>9: TV(A)</td>
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<td>10: TV(D)</td>
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<td></td>
<td>13: Option</td>
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<tr>
<td>Item</td>
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<td>OP code</td>
<td>Parameter</td>
<td>Remarks</td>
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<tr>
<td>Audio Input</td>
<td>02h</td>
<td>2Eh</td>
<td>1: Audio 1(PC)</td>
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<td></td>
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<td>2: Audio 2</td>
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<td>3: Audio 3</td>
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<td>4: HDMI</td>
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<td>5: TV(A)</td>
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<td>6: TV(D)/Option</td>
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<tr>
<td>Volume UP/Down</td>
<td>00h</td>
<td>62h</td>
<td>0: whisper</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>100: loud</td>
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</tr>
<tr>
<td>Mute</td>
<td>00h</td>
<td>8Dh</td>
<td>0,2: UNMUTE</td>
<td>1: MUTE</td>
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<tr>
<td>MTS</td>
<td>02h</td>
<td>2Ch</td>
<td>0: None</td>
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<td></td>
<td></td>
<td></td>
<td>1: Main</td>
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<td></td>
<td>2: Sub</td>
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<td>3: Main + Sub</td>
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</tr>
<tr>
<td>Sound</td>
<td>02h</td>
<td>34h</td>
<td>1: Off</td>
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<td></td>
<td></td>
<td></td>
<td>2: Low</td>
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<td>3: High</td>
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<tr>
<td>Picture Mode</td>
<td>02h</td>
<td>1Ah</td>
<td>1: sRGB</td>
<td>sRGB: PC mode only</td>
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<td></td>
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<td></td>
<td>3: Hi-Bright</td>
<td>Cinema: A/V mode only</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>4: Standard</td>
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<td>5: Cinema</td>
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<tr>
<td>Size</td>
<td>02h</td>
<td>70h</td>
<td>1: Normal</td>
<td>Wide: A/V mode only</td>
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<td>2: Full</td>
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<td></td>
<td>3: Wide</td>
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<td></td>
<td></td>
<td>4: Zoom</td>
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<tr>
<td>PIP ON/OFF</td>
<td>02h</td>
<td>72h</td>
<td>1: Off</td>
<td>This operation has limitation of selection.</td>
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<td>Still ON/OFF</td>
<td></td>
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<td>2: PIP</td>
<td>Please refer to the monitor instruction</td>
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<td>4: Still</td>
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<td>5: Side by side (aspect)</td>
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<td>6: Side by side (Full)</td>
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<tr>
<td>PIP Input</td>
<td>02h</td>
<td>73h</td>
<td>0: No mean</td>
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<td></td>
<td>3: DVI</td>
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<td></td>
<td>1: VGA</td>
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<td>2: RGB/HV</td>
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<td>12: DVD/HD</td>
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<td>5: VIDEO(Composite)</td>
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<td>9: TV(A)</td>
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<td></td>
<td>13: Option</td>
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<td>Still Capture</td>
<td>02h</td>
<td>76h</td>
<td>0: Off</td>
<td>Momentary</td>
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<td>1: Capture</td>
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<tr>
<td>PIP H Position</td>
<td>02h</td>
<td>74h</td>
<td>0: left side</td>
<td></td>
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<td></td>
<td></td>
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<td>64: right side</td>
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<tr>
<td>PIP V Position</td>
<td>02h</td>
<td>75h</td>
<td>0: top side</td>
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<tr>
<td></td>
<td></td>
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<td>64: bottom side</td>
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<tr>
<td>Signal Information</td>
<td>02h</td>
<td>EAh</td>
<td>0: No Action</td>
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<td></td>
<td>1: Off</td>
<td>(No indication)</td>
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<td>2: On</td>
<td>(Indication)</td>
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<tr>
<td>TV-Channel UP/DOWN</td>
<td>00h</td>
<td>8Bh</td>
<td>0: No Action</td>
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<td></td>
<td></td>
<td></td>
<td>1: Up</td>
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<td>2: Down</td>
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<td>OP code page</td>
<td>OP code</td>
<td>Parameter</td>
<td>Remarks</td>
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<tr>
<td>Select Temperature</td>
<td>02h</td>
<td>78h</td>
<td>1: Sensor #1</td>
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</tr>
<tr>
<td>sensor</td>
<td></td>
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<td>2: Sensor #2</td>
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<td>3: Sensor #3</td>
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</tr>
<tr>
<td>Readout a temperature</td>
<td>02h</td>
<td>79h</td>
<td>Returned value is 2’s complement.</td>
<td>Read only</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Refer to section 6.2</td>
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All data are subject to change without notice.