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I. Application

This document defines the communications method for control of the NEC LCD monitor, MultiSync P404/P484/P554/V404/V484/V554 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

NOTE: Use a 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

The command packet consists of four parts, Header, Message, Check code and Delimiter.
Note: Don't add extra data (Example: padding data) after 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")

- **Set Parameter**
  - The controller sends command to set an adjusted value.
  - The monitor replies to the controller for confirmation.

- **Get Parameter**
  - The controller sends command to get a value from the monitor that you want to change.
  - The monitor replies a current value of the requested item.

- **Command**
  - 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 26.
  - The monitor replies a proper message defined for each control.

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

- **Save Current Setting Command**
  - The controller requests to store the adjusted value to the monitor.
  - The monitor replies to the controller for confirmation.

- **Get Parameter Reply**
  - The controller sends command to get a value for confirmation.
  - The monitor replies an adjusted value.

- **Set Parameter Reply**
  - The controller sends commands to set an adjusted value.
  - The monitor replies to the controller for confirmation.

- **Get Parameter**
  - The controller sends command to get a value from the monitor that you want to change.
  - The monitor replies a current value of the requested item.

- **Command Reply**
  - The controller sends command to get a value for confirmation.
  - The monitor replies an adjusted value.

- **Save Current Setting Command Reply**
  - The controller requests to store the adjusted value to the monitor.
  - The monitor replies to the controller for confirmation.
4.1 Header block format (fixed length)

<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>
</tbody>
</table>

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,

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

Group ID | Destination Address | Group ID | Destination Address | Group ID | Destination Address | Group ID | Destination Address |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>31h('1')</td>
<td>D</td>
<td>34h('4')</td>
<td>G</td>
<td>37h('7')</td>
<td>J</td>
<td>3Ah('10')</td>
</tr>
<tr>
<td>B</td>
<td>32h('2')</td>
<td>E</td>
<td>35h('5')</td>
<td>H</td>
<td>38h('8')</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>33h('3')</td>
<td>F</td>
<td>36h('6')</td>
<td>I</td>
<td>39h('9')</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(9/135)
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).
On the reply, the monitor sets the own MONITOR ID in here.

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 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,

<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>

➢ 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>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>

➢ 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>Hi</td>
<td>Lo</td>
<td>Hi</td>
<td>Lo</td>
<td>MSB</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>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>

➢ 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.

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

XOR: Exclusive OR

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

<table>
<thead>
<tr>
<th>SOH</th>
<th>Reserved</th>
<th>Destination Address</th>
<th>Source Address</th>
<th>Message type</th>
<th>Message length</th>
<th>STX</th>
<th>OP code page</th>
<th>OP code</th>
<th>Set Value</th>
<th>ETX</th>
<th>Check code (BCC)</th>
<th>Delimiter</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>30</td>
<td>41</td>
<td>30</td>
<td>45</td>
<td>30</td>
<td>41</td>
<td>02</td>
<td>30</td>
<td>30</td>
<td>31</td>
<td>30</td>
<td>30</td>
</tr>
</tbody>
</table>

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

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

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

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

\[ = 77h \]
4.4 Delimiter

| Header | Message | Check code | 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>1st</td>
<td>2nd-3rd</td>
<td>4th-5th</td>
<td>6th</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

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

1\textsuperscript{st} byte) STX: Start of Message
   ASCII STX (02h)

2\textsuperscript{nd}-3\textsuperscript{rd} 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).

4\textsuperscript{th}-5\textsuperscript{th} bytes) OP code page: Operation code page.
   These bytes indicate a replying item's OP code page.
   This returned value from the monitor is encoded to ASCII characters.
   Ex.) The byte data 02h is encoded to ASCII character '0' and '2' (30h and 32h).
   Refer to the operation code table.

6\textsuperscript{th}-7\textsuperscript{th} bytes) OP code: Operation code
   These bytes indicate a replying item's OP code.
   This returned value from the monitor is encoded to ASCII characters.
   Refer to the operation code table.
   Ex.) The byte data 1Ah is encoded to ASCII character '1' and 'A' (31h and 41h).

8\textsuperscript{th}-9\textsuperscript{th} bytes) Type: Operation type code
   00h: Set parameter
   01h: Momentary
   Like the Auto Setup function which automatically changes the parameter.
   This returned value from the monitor is encoded to ASCII characters.
   Ex.) The byte data 01h is encoded to ASCII character '0' and '1' (30h and 31h).

10\textsuperscript{th}-13\textsuperscript{th} bytes) Max. value: Maximum value which monitor can accept. (16bits)
   This returned value from the monitor is encoded to ASCII characters.
   Ex.) '0','1','2' and '3' means 0123h (291)

14\textsuperscript{th}-17\textsuperscript{th} bytes) Current Value: (16bits)
   This returned value from the monitor is encoded to ASCII characters.
   Ex.) '0','1','2' and '3' means 0123h (291)
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>1&quot;</td>
<td>2&quot;-3&quot;</td>
<td>4&quot;-5&quot;</td>
<td>6&quot;-9&quot;</td>
<td>10&quot;</td>
</tr>
</tbody>
</table>

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

The controller requests a monitor to change value.

1\textsuperscript{st} byte) STX: Start of Message

ASCII STX (02h)

2\textsuperscript{nd}-3\textsuperscript{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\textsuperscript{th}-5\textsuperscript{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\textsuperscript{th}-9\textsuperscript{th} bytes) Set value: (16bit)

This data must be encoded to ASCII characters.

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

2\textsuperscript{nd} = ASCII '1' (31h)

3\textsuperscript{rd} = ASCII '2' (32h)

4\textsuperscript{th}(LSB) = ASCII '3' (33h)

10\textsuperscript{th} 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 Value</th>
<th>ETX</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hi</td>
<td>Lo</td>
<td>Hi Lo Hi Lo</td>
<td>Hi Lo</td>
<td>Hi Lo</td>
<td>MSB</td>
<td>LSB</td>
<td>MSB LSB</td>
</tr>
<tr>
<td>1</td>
<td>2&quot;-3&quot;</td>
<td>4&quot;-5&quot; 6&quot;-7&quot;</td>
<td>8&quot;-9&quot;</td>
<td>10&quot;-13</td>
<td>14&quot;-17&quot;</td>
<td>18&quot;</td>
<td></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 25.

5.5.1 Save Current Settings.

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

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

STX-'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.

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;

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

- 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: Positive Horizontal sync polarity
    - 0: Negative Horizontal sync polarity.
  - Bit 0: 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:

- 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

<table>
<thead>
<tr>
<th>STX</th>
<th>Command code</th>
<th>ETX</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>'B'</td>
<td>'E'</td>
</tr>
</tbody>
</table>

STX Command code ETX
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)

<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-'0'-C-'0'-6</td>
<td>STX-'0'-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 4.3 “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.

<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'-0'-0'-0'-1'-0'-0'-0'-0'-0'</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): 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.
Step 3. The controller requests the monitor to change the Backlight setting.

<table>
<thead>
<tr>
<th>Header</th>
<th>Message</th>
<th>Check code</th>
<th>Delimiter</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOH-'0'-'0'</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 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.

<table>
<thead>
<tr>
<th>Header</th>
<th>Message</th>
<th>Check code</th>
<th>Delimiter</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOH-'0'-'0'</td>
<td>STX-'0'-'0'-'1'-'0'-'0'-'0'-'0'-'0'-'6'-'4'-'0'-'0'-'5'-'0'-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'.
- '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)

<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-</td>
<td>STX-'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 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

(25/135)
6.2. How to read the measurement value of the built-in temperature sensors.

MultiSync P404/ P484/ P554/ V404/ V484/ V554 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.

<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'-'E'- '0'- 'A'</td>
<td>STX-'0'- '2'- '7'- '8'- '0'- '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 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.

<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'- '2'- '7'- '8'- '0'- '0'- '0'- '3'- '0'- '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'- '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

(26/135)
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.

<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- (^*)'-'C'-07-6'</td>
<td>STX-'0'-2-7-9-00-CR</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'.

'C' (43h): Message sender is the controller.

'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.

<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- (^*)'-1-2'</td>
<td>STX-0'-0'-0'-7-9-0'-0'-F'-F'-F'-F'-0'-3'-2'-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'.

'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.

'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>
<th>Binary</th>
<th>Hexadecimal</th>
</tr>
</thead>
<tbody>
<tr>
<td>+125.0</td>
<td>0000 0000 1111 1010</td>
<td>00FAh</td>
<td></td>
</tr>
<tr>
<td>+ 25.0</td>
<td>0000 0000 0011 0010</td>
<td>0032h</td>
<td></td>
</tr>
</tbody>
</table>

(27/135)
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

<p>| | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>+ 0.5</td>
<td>0000 0000 0000 0001</td>
<td>0001h</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>0000 0000 0000 0000</td>
<td>0000h</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- 0.5</td>
<td>1111 1111 1111 1111</td>
<td>FFFFh</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- 25.0</td>
<td>1111 1111 1100 1110</td>
<td>FFCEh</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- 55.0</td>
<td>1111 1111 1001 0010</td>
<td>FF92h</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### 6.3. Operation Code (OP code) Table

#### 1) SPECTRAVIEW ENGINE Setting = OFF

<table>
<thead>
<tr>
<th>Item</th>
<th>OP code page</th>
<th>OP code</th>
<th>Parameter</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>INPUT</td>
<td>00h 60h</td>
<td>OP code</td>
<td>Parameter</td>
<td>Remarks</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0: No mean</td>
<td>OP code page</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1: VGA(RGB)</td>
<td>11h, OP code</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3: DVI</td>
<td>06h operation is same.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>5: VIDEO</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>12(0Ch): YGA(YPbPr)</td>
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<td>2: LOW</td>
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<td>3: High</td>
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<td>NOISE REDUCTION</td>
<td>02h</td>
<td>26h</td>
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<td>TELECINE</td>
<td>02h</td>
<td>23h</td>
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<td>2: Auto</td>
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<td>IMAGE FLIP</td>
<td>02h</td>
<td>D7h</td>
<td>0: No mean</td>
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<td>1: NONE</td>
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<td>3: V FLIP</td>
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<td>4: 180 ROTATE</td>
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<td>OSD FLIP</td>
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<td>B8h</td>
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<tr>
<td>SPECTRAVIEW ENGINE</td>
<td>11h</td>
<td>47h</td>
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<tr>
<td>RESET (PICTURE)</td>
<td>02h</td>
<td>CBh</td>
<td>0: No mean</td>
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<td>2: Reset</td>
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<td>VOLUME</td>
<td>00h</td>
<td>62h</td>
<td>0: whisper</td>
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<td>100(64h): loud</td>
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<tr>
<td>BALANCE</td>
<td>00h</td>
<td>93h</td>
<td>0: Left</td>
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<td>30(1Eh):(Center)</td>
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<td>60(3Ch): Right</td>
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<td>BALANCE</td>
<td>00h</td>
<td>94h</td>
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<td>02h</td>
<td>34h</td>
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<td><strong>EQULIZER</strong></td>
<td>00h</td>
<td>8Fh</td>
<td>0: Min.</td>
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<td>6: (Center)</td>
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<td>12(OCh): Max.</td>
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<td><strong>BASS</strong></td>
<td>00h</td>
<td>91h</td>
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<td>6: (Center)</td>
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<td>12(OCh): Max.</td>
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<td>1: IN1</td>
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<td>4: HDMI1</td>
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<td>6: OPTION</td>
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<td>7: DisplayPort1</td>
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<td>8: DisplayPort2</td>
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<td>10(OAh): HDMI2</td>
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<td>80h</td>
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<td>10h</td>
<td>81h</td>
<td>0: No mean</td>
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<td>2: VARIABLE</td>
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<td><strong>AUDIO DELAY</strong></td>
<td>10h</td>
<td>CAh</td>
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<td>1: OFF</td>
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<td>2: ON</td>
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<tr>
<td><strong>DELAY TIME</strong></td>
<td>10h</td>
<td>CBh</td>
<td>0: (small)</td>
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<td></td>
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<td>100(64h): (large)</td>
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</tr>
<tr>
<td><strong>RESET (AUDIO)</strong></td>
<td>02h</td>
<td>CBh</td>
<td>0: No mean</td>
<td>Momentary</td>
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<td>4: Reset</td>
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<td>02h</td>
<td>E5h</td>
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<td>1: No.1 Enable</td>
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<td>30(1Eh): No.30 Enable</td>
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<tr>
<td><strong>DISABLE</strong></td>
<td>02h</td>
<td>E6h</td>
<td>0: No mean</td>
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<td>1: No.1 Disable</td>
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<td>30(1Eh): No.30 Disable</td>
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<td><strong>DATE &amp; TIME</strong></td>
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<td>Refer to chapter 9</td>
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<td><strong>DAYLIGHT SAVING</strong></td>
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<td>Refer to chapter 14</td>
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<tr>
<td><strong>OFF TIMER</strong></td>
<td>02h</td>
<td>2Bh</td>
<td>0: Off</td>
<td>1 hour/step</td>
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<td></td>
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<td>1: 1 hour</td>
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<td>24(18h): 24 hour</td>
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<td><strong>RESET (SCHEDULE)</strong></td>
<td>02h</td>
<td>CBh</td>
<td>0: No mean</td>
<td>Momentary</td>
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<td></td>
<td>5: Reset</td>
<td>Schedule category</td>
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<tr>
<td>Item</td>
<td>OP code</td>
<td>Parameter</td>
<td>Remarks</td>
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<td>KEEP MULTI PICTURE MODE</td>
<td>10h</td>
<td>82h</td>
<td>0: No mean 1: OFF 2: ON</td>
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<td>MULTI PICTURE MODE</td>
<td>02h</td>
<td>72h</td>
<td>0: No mean 1: OFF 2: PIP 5: PBP</td>
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<tr>
<td>ACTIVE</td>
<td>11h</td>
<td>08h</td>
<td>0: No mean 1: PICTURE1 2: PICTURE2</td>
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<tr>
<td>ACTIVE FRAME</td>
<td>11h</td>
<td>00h</td>
<td>0: No mean 1: OFF 2: ON</td>
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<tr>
<td>ACTIVE PICTURE</td>
<td></td>
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<tr>
<td>PICTURE1</td>
<td>11h</td>
<td>0Eh</td>
<td>0: No mean 1: VGA(RGB) 3: DVI 5: VIDEO 12(0Ch): YGA(YPbPr) 13(0Dh): OPTION</td>
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<tr>
<td>PICTURE2</td>
<td>11h</td>
<td>0Fh</td>
<td>0: No mean 15(0Fh): DisplayPort1 16(10h): DisplayPort2 17(11h): HDMI1 18(12h): HDMI2 135(87h): MP 136(88h): COMPUTE MODULE</td>
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<tr>
<td>PICTURE SIZE</td>
<td>10h</td>
<td>B9h</td>
<td>0(small) 80(large)</td>
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<tr>
<td>X</td>
<td>02h</td>
<td>74h</td>
<td>0: left 100(64h): right</td>
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<tr>
<td>Y</td>
<td>02h</td>
<td>75h</td>
<td>0: top 100(64h): bottom</td>
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<tr>
<td>ASPECT</td>
<td>10h</td>
<td>83h</td>
<td>0: No mean 1: NORMAL 2: FULL 6: EXPAND</td>
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<td>10h</td>
<td>08h</td>
<td>0: No mean 1: OFF 2: HORIZONTAL 3: VERTICAL</td>
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<tr>
<td>POSITION</td>
<td>10h</td>
<td>09h</td>
<td>0: Top/Left 100(64h): Bottom/Right</td>
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<tr>
<td>SIZE</td>
<td>10h</td>
<td>0Ah</td>
<td>0: Do not set. 2: Narrow(2/24) 8: Wide(8/24)</td>
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<tr>
<td>DETECT</td>
<td>10h</td>
<td>0Ch</td>
<td>0: No mean 1: AUTO 2: OFF</td>
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<tr>
<td>TEXT TICKER</td>
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<td>PICTURE1</td>
<td>11h</td>
<td>2Ah</td>
<td>0: No mean 1: VGA(RGB) 3: DVI 5: VIDEO 12(0Ch): YGA(YPbPr)</td>
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</tr>
<tr>
<td>Item</td>
<td>OP code</td>
<td>OP code</td>
<td>Parameter</td>
<td>Remarks</td>
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<td>PICTURE2</td>
<td>11h</td>
<td>2Bh</td>
<td>13(0Dh): OPTION</td>
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<td>15(0Fh): DisplayPort1</td>
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<td>16(10h): DisplayPort2</td>
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<td>17(11h): HDMI1</td>
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<td>18(12h): HDMI2</td>
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<td>135(87h): MP</td>
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<td>136(88h): COMPUTE MODULE</td>
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<tr>
<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>2Eh</td>
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<td>1: VGA(RGB)</td>
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<td>3: DVI</td>
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<td>5: VIDEO</td>
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<td>PRIORITY2</td>
<td>10h</td>
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<td>12(0Ch): YGA(YPbPr)</td>
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<td>13(0Dh): OPTION</td>
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<td>15(0Fh): DisplayPort1</td>
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<td>16(10h): DisplayPort2</td>
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<td>30h</td>
<td>17(11h): HDMI1</td>
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<td>18(12h): HDMI2</td>
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<td>10h</td>
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<td>CFh</td>
<td>12(0Ch): YGA(YPbPr)</td>
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<td>02h</td>
<td>CFh</td>
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<td>VGA MODE</td>
<td>10h</td>
<td>8Eh</td>
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<td>1: RGB</td>
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<td>DisplayPort</td>
<td>10h</td>
<td>F1h/F2h</td>
<td>Select target DPORT.</td>
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<td>(F1h)</td>
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<td>HDMI SIGNAL</td>
<td>10h</td>
<td>40h</td>
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<td>1: EXPAND</td>
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<th>Remarks</th>
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</table>
| SENSOR1      | 10h          | E0h/E1h | E0h: Set centigrade 0 – 65535(FFFFh)  
E1h: Set offset from max. value 0 – 10(0Ah)  |                                  |
| SENSOR2      | 10h          | E2h/E3h | E2h: Set centigrade 0 – 65535(FFFFh)  
E3h: Set offset from max. value 0 – 10(0Ah)  |                                  |
| SENSOR3      | 10h          | E4h/E5h | E4h: Set centigrade 0 – 65535(FFFFh)  
E5h: Set offset from max. value 0 – 10(0Ah)  |                                  |
| FAN1/2/3     | 02h          | 7Ah/7Bh | Select target FAN. (7Ah)  
0: No mean  
1: FAN#1  
2: FAN#2  
3: FAN#3  
Read status of target FAN. (7Bh)  
0: OFF  
1: ON  
2: ERROR  | Read Only  |
| TEMPERATURE  | 02h          | 79h     | Return value is 2’s complement. (0.5°C step)  | Offset affects to a selected sensor. Select sensor (Page02h OPcode78h)  
1 : SENSOR #1  
2 : SENSOR #2  
3 : SENSOR #3  |
| GAMMA        | 02h          | DBh     | 0: No mean  
1: OFF  
2: ON  |                                  |
| BACKLIGHT    | 02h          | DCh     | 0: No mean  
1: OFF  
2: ON  |                                  |
| INTERVAL     | 02h          | DDh     | 0: OFF(0s)  
| 90(5Ah): 900s  | 10s/step  |
| ZOOM         | 10h          | 35h     | 0 : 95%  
| 5 : 100%  
| 10(0Ah) : 105%  |                                  |
| SIDE BORDER COLOR | 02h   | DPh     | 0: Black  
| 100(64h): White  |                                  |
| DELAY TIME   | 10h          | CBh     | 0: (small)  
| 100(64h): (large)  |                                  |
| LINK TO ID   | 10h          | BCh     | 0: No mean  
1: OFF  
2: ON  |                                  |
| RESET        | 02h          | CBh     | 0: No mean  
9: Reset Display Protection category  | Momentary  |
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<td>CHANNEL</td>
<td>10h</td>
<td>D9h</td>
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<td>DDC/CI</td>
<td>10h</td>
<td>B Eh</td>
<td>0: No mean 1: OFF 2: ON</td>
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<td>PING</td>
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<td>AUTO BRIGHTNESS</td>
<td>02h</td>
<td>2Dh</td>
<td>0: OFF 1: ON</td>
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<tr>
<td>WORK MODE</td>
<td>10h</td>
<td>C 6h</td>
<td>0: No mean 1: OFF 2: MODE1 3: MODE2</td>
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<tr>
<td>MAX LIMIT</td>
<td>10h</td>
<td>C 9h</td>
<td>0 - 100(64h)</td>
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<tr>
<td>IN BRIGHT</td>
<td>10h</td>
<td>33h</td>
<td>0 - 100(64h)</td>
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<tr>
<td>IN DARK</td>
<td>10h</td>
<td>34h</td>
<td>0 - 100(64h)</td>
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<td>SENSING LUX</td>
<td>02h</td>
<td>B 4h</td>
<td>Current Illuminance read Read only</td>
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<td>AUTO BRIGHTNESS</td>
<td>02h</td>
<td>2Dh</td>
<td>0: OFF 1: ON</td>
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<tr>
<td>MODE</td>
<td>10h</td>
<td>75h</td>
<td>0: No mean 1: DISABLE 2: AUTO OFF 4: CUSTOM</td>
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<tr>
<td>ON/OFF</td>
<td>10h</td>
<td>DDh</td>
<td>0: No mean 1: Off 2: On</td>
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</tr>
<tr>
<td>BACKLIGHT</td>
<td>10h</td>
<td>C 6h</td>
<td>0: dark 100(64h): light</td>
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</tr>
<tr>
<td>VOLUME</td>
<td>10h</td>
<td>DEh</td>
<td>0: No mean 1: Off 2: On</td>
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<tr>
<td>VOLUME</td>
<td>10h</td>
<td>C 7h</td>
<td>0: whisper 100(64h): loud</td>
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<tr>
<td>ON/OFF</td>
<td>10h</td>
<td>DFh/D 0h</td>
<td>0: No mean 1: Off 2: On</td>
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<td>INPUT</td>
<td>10h</td>
<td>D 0h</td>
<td>0: No mean 1: VGA(RGB) 2: DVI 3: DVI 5: VIDEO 12(0Ch): YGA(YPbPr) 13(0Dh): OPTION 15(0Fh): DisplayPort1 16(10h): DisplayPort2 17(11h): HDMI1 18(12h): HDMI2 135(87h): MP 136(88h): COMPUTE MODULE</td>
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<td>INPUT SELECT</td>
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<td>WAITING TIME</td>
<td>10h</td>
<td>78h</td>
<td>30(1Eh): short 600(258h): long</td>
<td>1step: 1sec.</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>POWER INDICATOR</td>
<td>02</td>
<td>BEh</td>
<td>0: No mean 1: Off 2: On</td>
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<tr>
<td>SCHEDULE INDICATOR</td>
<td>11h</td>
<td>71h</td>
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<td>INTELLI WIRELESS DATA</td>
<td>10h</td>
<td>ECh</td>
<td>0: No mean 1: OFF 2: ON</td>
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<tr>
<td>TOUCH POWER</td>
<td>11h</td>
<td>72h</td>
<td>0: No mean 1: OFF 2: ON</td>
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<td>EXTERNAL CONTROL</td>
<td>11h</td>
<td>73h</td>
<td>0: No mean 1: OFF 2: ON</td>
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<td>PC SOURCE</td>
<td>11h</td>
<td>74h</td>
<td>0: No mean 1: AUTO 2: EXTERNAL PC 3: OPTION 4: C MODULE</td>
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<tr>
<td>USB POWER</td>
<td>11h</td>
<td>75h</td>
<td>0: No mean 1: ON 2: AUTO</td>
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<tr>
<td>CEC</td>
<td>11h</td>
<td>76h</td>
<td>0: No mean 1: OFF 2: ON</td>
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<tr>
<td>AUTO TURN OFF</td>
<td>11h</td>
<td>77h</td>
<td>0: No mean 1: NO 2: YES</td>
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<tr>
<td>AUDIO RECEIVER</td>
<td>11h</td>
<td>78h</td>
<td>0: No mean 1: NO 2: YES</td>
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<td>SEARCH DEVICE</td>
<td>11h</td>
<td>79h</td>
<td>0: No mean 1: NO 2: YES</td>
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<tr>
<td>RESET (CONTROL)</td>
<td>02h</td>
<td>CBh</td>
<td>0: No mean 12(0Ch): Reset Control</td>
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<td>10h</td>
<td>C1h</td>
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<td>START UP PC</td>
<td>10h</td>
<td>C2h</td>
<td>0: No mean 1: Execute</td>
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<td>10h</td>
<td>C3h</td>
<td>0: No mean 1: Execute</td>
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<td>SLOT2 CH SETTING</td>
<td>11h</td>
<td>62h</td>
<td>0: No mean 1: AUTO 2: CH1 3: CH2</td>
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<td>OP code page</td>
<td>OP code</td>
<td>Parameter</td>
<td>Remarks</td>
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<td>SLOT2 CH SELECT</td>
<td>11h</td>
<td>63h</td>
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<td>2: DisplayPort</td>
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<td>RESET (OPTION)</td>
<td>02h</td>
<td>CBh</td>
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<td>CARBON SAVINGS</td>
<td>10h</td>
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<td>0 - 999(3E7h)(g)</td>
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<td>0 - 65535(FFFFh)(kg)</td>
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<td>26h</td>
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<td>FACTORY RESET</td>
<td>02h</td>
<td>CBh</td>
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<td>1: Factory Reset</td>
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<td>POWER SUPPLY</td>
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<td>7Ch</td>
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<tr>
<td>AUTO POWER ON</td>
<td>11h</td>
<td>7Dh</td>
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<td>7Eh</td>
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<td>IR SIGNAL</td>
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<td>7Fh</td>
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<td>1: DISABLE</td>
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<td>81h</td>
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<tr>
<td>POWER OFF DELAY</td>
<td>11h</td>
<td>82h</td>
<td>30(1Eh): short</td>
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<td>600(258h): long</td>
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<td>*1step: 1sec.</td>
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<td>MUTE</td>
<td>00h</td>
<td>8Dh</td>
<td>0: UNMUTE (Set only)</td>
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<td>1: MUTE</td>
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<td>B6h</td>
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<td>3: Main + Sub</td>
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<td>SOUND</td>
<td>02h</td>
<td>34h</td>
<td>0: No mean</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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<td>1: OFF</td>
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<td>2: ON</td>
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<td>TV-CHANNEL UP/DOWN</td>
<td>00h</td>
<td>8Bh</td>
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<td>1: UP</td>
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<td>2) SPECTRAVIEW ENGINE Setting = ON</td>
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<td>13(0Dh): SVE-1 SETTING</td>
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<td>14(0Eh): SVE-2 SETTING</td>
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<td>17(11h): SVE-5 SETTING</td>
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<td>6: FULL</td>
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<td>7: DICOM SIM</td>
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<td>8: PROGRAMMABLE1</td>
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<td>9: PROGRAMMABLE2</td>
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<td>10(0Ah): PROGRAMMABLE3</td>
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<td>13(0Dh): eciRGB v2</td>
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<tr>
<td>LUMINANCE</td>
<td>02h</td>
<td>B3h</td>
<td>0(0%): Dark</td>
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<td>600(0258h)(100%): Bright</td>
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<td>Note: Conversion equation</td>
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<td>Value = (OSD Value/100)</td>
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<td>*600-40)+40</td>
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<tr>
<td>BLACK</td>
<td>10h</td>
<td>54h</td>
<td>1: 0.1(MIN)</td>
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<td>50(32h): 5.0(MAX)</td>
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<td>02h</td>
<td>68h</td>
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<td>5: DICOM SIM.</td>
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<td>9: CST</td>
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<td>11(0Bh): sRGB</td>
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<td>12(0Ch): L STAR</td>
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<td>02h</td>
<td>E8h</td>
<td>0: 0.5(MIN)</td>
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<td>WHITE</td>
<td>00h</td>
<td>54h</td>
<td>0:2600K</td>
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<td>74(4Ah):10000K</td>
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<td>00h</td>
<td>14h</td>
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<td>11(0Bh): CUSTOM</td>
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<td>WHITE x</td>
<td>10h</td>
<td>52h</td>
<td>250(00FAh): 0.250</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>480(01E0h): 0.480</td>
<td></td>
</tr>
</tbody>
</table>

(43/135)
<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>WHITE y</td>
<td>10h</td>
<td>53h</td>
<td>250 (00FAh): 0.250</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>480 (01E0h): 0.480</td>
<td></td>
</tr>
<tr>
<td>RED x</td>
<td>10h</td>
<td>55h</td>
<td>550 (0226h): 0.550</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>800 (0120h): 0.800</td>
<td></td>
</tr>
<tr>
<td>RED y</td>
<td>10h</td>
<td>56h</td>
<td>200 (00C8h): 0.200</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>400 (0190h): 0.400</td>
<td></td>
</tr>
<tr>
<td>GREEN x</td>
<td>10h</td>
<td>57h</td>
<td>100 (0064h): 0.100</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>350 (0158h): 0.350</td>
<td></td>
</tr>
<tr>
<td>GREEN y</td>
<td>10h</td>
<td>58h</td>
<td>500 (01F4h): 0.500</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>900 (0384h): 0.900</td>
<td></td>
</tr>
<tr>
<td>BLUE x</td>
<td>10h</td>
<td>59h</td>
<td>0: 0.000</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>250 (00FAh): 0.250</td>
<td></td>
</tr>
<tr>
<td>BLUE y</td>
<td>10h</td>
<td>5Ah</td>
<td>0: 0.000</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>150 (0096h): 0.150</td>
<td></td>
</tr>
<tr>
<td>COLOR VISION EMU</td>
<td>10h</td>
<td>5Bh</td>
<td>0: No mean</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: P</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3: D</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>4: T</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>5: GRAY</td>
<td></td>
</tr>
<tr>
<td>UNIFORMITY</td>
<td>02h</td>
<td>FFh</td>
<td>0: OFF</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>METAMERISM</td>
<td>10h</td>
<td>5Ch</td>
<td>0: No mean</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: ON</td>
<td></td>
</tr>
</tbody>
</table>
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'-Monitor ID-'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 4.3 "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-Monitor ID-B-1-2</td>
<td>STX-'0'-2-0-0-0-0-0-0-0-0-0-0-0-0-1-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".
- '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 4.3 "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.

<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'-C</td>
<td>STX-'C'-2-'0'-3-'D'-6- '0'-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 4.3 “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-'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): 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 P404/ P484/ P554/ V404/ V484/ V554 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.

<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-'0'-A-'0'-A</td>
<td>STX-'C'-0-'0'-B-'0'-2-'0'-ETX</td>
<td>BCC CR</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-'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.
  - 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.

<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'-1-'0'-B-Data(0)-Data(1)--Data(N)-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
  - 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.

<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'-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.

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.

<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-0'-0'-C'-0'-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: 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.

<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-</td>
<td>STX-'C'-'2'-'1'-'1'-ETX</td>
<td>BCC</td>
<td>CR</td>
</tr>
<tr>
<td>'0'-Monitor ID-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>'A'-Monitor ID-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>'0'-Monitor ID-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>'6'-Monitor ID-</td>
<td></td>
<td></td>
<td></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 4.3 "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'-Monitor ID-</td>
<td>STX-'C'-'3'-'1'-'1'-YY-MM-DD-WW-HH-MN-DS-ETX</td>
<td>BCC</td>
<td>CR</td>
</tr>
<tr>
<td>'B'-Monitor ID-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>'1'-Monitor ID-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>'4'-Monitor ID-</td>
<td></td>
<td></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"
'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.

<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 CR</td>
<td></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'-'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.

<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-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. Self diagnosis

10.1 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 4.3 "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'- '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
  - **'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
11. Serial No. & Model Name Read

11.1 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 4.3 "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'- 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
'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.) For example when receiving Serial Number data 33h 31h 33h 32h 33h 32h 33h 33h
   33h 34h:
   Step1: Serial Number data is encoded as character string.
   Example:
   33h 31h 33h 32h 33h 32h 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
11.2 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 4.3 "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'-'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
'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.) For 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 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
12. Security Lock

12.1 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-'0'-EN-P1-P2-P3-P4-ETX</td>
<td>BCC CR</td>
<td></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'-0' (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.

<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-</td>
<td>STX-'C'-'3'-'1'-'D'-</td>
<td>BCC</td>
<td>CR</td>
</tr>
<tr>
<td>'B'- '0'- 'A'</td>
<td>ST-EN-ETX</td>
<td></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".
'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
13. Direct TV Channel Read & Write

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

13.1 Direct TV Channel Read & Reply

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

<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- '0'-'A'-'0'-'6'</td>
<td>STX-'C'-'2'-'2'-'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 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.

<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'-'2'</td>
<td>STX-'C'-'3'-'2'-'C'-MajorCH-MinorCH-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 = 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'-'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
### 13.2 Direct TV Channel Write & Reply

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

<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-</td>
<td>STX-'C'-'2'-'2'-'D'-</td>
<td>BCC</td>
<td>CR</td>
</tr>
<tr>
<td>'0'- 'A'-'1'-'2'</td>
<td>MajorCH-MinorCH-ETX</td>
<td></td>
<td></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".
- **'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 – FFFFFFh),**
  - '0'-'0'-'0'-'0'-'0'-'0'- '0'-'0'-'0'-'0'-'0'-'0'-'0'-'0'
- **MinorCH: Minor Channel (0000h – FFFFh),**
  - '0'-'0'-'0'- '0'-'0'-'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

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-</td>
<td>STX-'C'-'3'-'2'-'D'-</td>
<td>BCC</td>
<td>CR</td>
</tr>
<tr>
<td>'B'-'1'-'2'</td>
<td>MajorCH-MinorCH-ETX</td>
<td></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".
- **'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 – FFFFFFh),**
  - '0'-'0'-'0'- '0'-'0'- '0'- '0'- '0'- '0'- '0'
- **MinorCH: Minor Channel (0000h – FFFFh),**
  - '0'-'0'- '0'- '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
14. Daylight Saving read & write

14.1 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.

<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-</td>
<td>STX-'C'-A-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 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.

<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-</td>
<td>STX-C-B-0-1-0-0-ST-BM-BD1-BD2-BT1-BT2-EM-ED1-ED2-ET1-ET2-TD-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', 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)
BDI: BEGIN DAY1
FIRST : 01h (30h, 31h)
SECOND : 02h (30h, 32h)
THIRD : 03h (30h, 33h)
FOUR : 04h (30h, 34h)
LAST : 05h (30h, 35h)

ED2: 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) – 23h (32h, 33h)

BT2: BEGIN TIME2 (Minute)
00h (30h, 30h) – 59h (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) – 23h (32h, 33h)

ET2: END TIME2 (Minute)
00h (30h, 30h) – 59h (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
14.2 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.

<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'-'E'</td>
<td>STX-'C'-'A'-0'-0'-1'-BM-BD1-BD2-BT1-BT2-EM-ED1-ED2-ET1-ET2-TD-ETX</td>
<td>BCC CR</td>
<td></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'-'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.

<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'-B'-0'-1'-0'-1'-ST-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', 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
15. Firmware Version

15.1 Firmware Version Read

This command is used in order to read a firmware version (FIRMWARE REVISION).

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

<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'-A'-0'-2'-TY-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'-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

Firmware: 00h (30h, 30h)

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.

<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'-B'-1'-1'</td>
<td>STX-'C'-B'-0'-2'-ST-TY-MV- PP-BV1-BV2-BV3-BR1-BR2-ETX</td>
<td>BCC</td>
<td>CR</td>
</tr>
</tbody>
</table>

**Header**

SOH (01h): Start of Header

'0' (30h): Reserved

'M' (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

Firmware: 00h (30h, 30h)

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) Version 2:
00h (30h, 30h) – 09h (30h, 39h)
BV3: Minor (Basic) Version 3:
00h (30h, 30h) – 09h (30h, 39h)
BR1: Branch Version 1:
A: 41h (34h, 31h) – Z: 5Ah (35h, 41h)
BR2: Branch Version 2:
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
16. Auto ID
16.1 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.

<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'-A'-0'-A'-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 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.

<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'</td>
<td>STX='C'-B'-0'-A'-0'-1'-ST-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', 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
### 16.2 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.

<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'-C'</td>
<td>STX-'C'-A'-0'-A'-0'-2'-ST-MON-ETX</td>
<td>BCC CR</td>
<td></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'-'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.

<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'-A'</td>
<td>STX-'C'-B'-0'-A'-0'-2'-ST-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', 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
**16.3 Auto ID Reset**

This command is used in order to reset Auto ID.

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

- **Message**
  
  - **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.

- **Message**
  
  - **SOH** (01h): Start of Header
  - **'0'** (30h): Reserved
  - **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
17. Input Name

17.1 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.

```
<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-08'</td>
<td>STX='C'-A'-0'-4'-0'-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.

'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.

```
<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'-LN(H)-LN(L)</td>
<td>STX='C'-B'-0'-4'-0'-0'-</td>
<td>BCC</td>
<td>CR</td>
</tr>
</tbody>
</table>

Data(0)-Data(1)-Data(2)- --- -Data(n)-ETX |
```

**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
17.2 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.

<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'-LN(H)-LN(L)</td>
<td>STX-'C'-'A'-'0'-4'-'0'-1' Data(0)-Data(1)-Data(2)-----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 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
  - 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 result.

<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'-LN(H)-LN(L)</td>
<td>STX-'C'-'B'-'0'-4'-'0'-1'-STX-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', 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
17.3 Input Name Reset

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

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

<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'- 'A'- '0'- '4'- '0'- '2'- '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'- '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.

<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'- 'B'- '0'- '0'- '0'- '2'- 'ST-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', 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
18. Auto Tile Matrix

18.1 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

<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'-Monitor ID='1'-Monitor ID='2'</td>
<td>STX='C'-'A'-'0'-'0'-'3'-'0'-'1'-</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'-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: PATTERN ID
  - 01h (30h, 31h) *Fixed
- SEL: CURRENT INPUT SELECT
  - VGA(RGB) : 01h (30h, 31h)
  - DVI : 03h (30h, 33h)
  - VIDEO : 05h (30h, 35h)
  - VGA(YPbPr) : 0Ch (30h, 43h)
  - OPTION : 0Dh (30h, 44h)
  - DisplayPort1 : 0Fh (30h, 46h)
  - DisplayPort2 : 10h (31h, 30h)
  - HDMI1 : 11h (31h, 31h)
  - HDMI2 : 12h (31h, 32h)
  - MP : 87h (38h, 37h)
  - COMPUTE MODULE : 87h (38h, 37h)
- TMEM: TILE MATRIX MEM
  - COMMON : 00h (30h, 30h)
  - INPUT : 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 receipt result.

<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'-Monitor ID='0'-Monitor ID='A'</td>
<td>STX='C'-'B'-0'-3'-0'-0'-1'-ST-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', 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'-F'-'0'-I' (43h, 42h, 30h, 31h): Auto Tile Matrix Command
'0'-I' (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
18.2 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.

<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'-&quot;A&quot;-'0'-&quot;A&quot;</td>
<td>STX-'C'-&quot;A&quot;-'0'-&quot;0&quot;-&quot;2&quot;-ST-ETX</td>
<td>BCC</td>
<td>CR</td>
</tr>
</tbody>
</table>

Header
- SOH (01h): Start of Header
- 'O' (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.

<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'-&quot;0&quot;-&quot;A&quot;</td>
<td>STX-'C'-&quot;B&quot;-'0'-&quot;0&quot;-&quot;2&quot;-ST-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', 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)
  - 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
18.3 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.

<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'-8'</td>
<td>STX- 'C'- 'A'-3'-4'-ETX</td>
<td>BCC</td>
<td>CR</td>
</tr>
</tbody>
</table>

**Header**

SOH (01h): Start of Header

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'-3'-4' (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.

<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'</td>
<td>STX- 'C'- 'B'-3'-4'-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', 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'-3'-4' (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
18.4 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.

<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'-C'</td>
<td>STX-'C'-A'-0'-3'-0'-5'-HM-VM-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'-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.

<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'-A'</td>
<td>STX-'C'-B'-0'-3'-0'-5'-ST-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', 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 1: 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
18.5 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

<table>
<thead>
<tr>
<th>Header</th>
<th>Message</th>
<th>Check code</th>
<th>Delimiter</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOH-'0'-'A'-'0'-'8'</td>
<td>STX-'C'-'A'-'0'-'3'-'0'-'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 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
- '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.

<table>
<thead>
<tr>
<th>Header</th>
<th>Message</th>
<th>Check code</th>
<th>Delimiter</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOH-'0'-'B'-'A'</td>
<td>STX-'C'-'B'-'0'-'3'-'0'-'6'-ST-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', 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
19. Power Save Mode
19.1 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.

<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'-Monitor ID-</td>
<td>STX-'C'-'A'-'0'-STX-'C'-'A'-'0'-</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'- '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.

<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'-Monitor ID-</td>
<td>STX-'C'-'B'-'0'-TIME-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', 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
19.2 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.

<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'-A'-0'-B'-0'-3'-TIME-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 (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.

<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'-8'</td>
<td>STX='C'-B'-0'-B'-0'-3'-ST-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', 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
19.3 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.

<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'-'A'-0'-B'-0'-4'-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'-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.

<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'-B'-0'-B'-0'-4'-TIME-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', 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
19.4 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.

<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='0'- 'A'-'0'- 'A'</td>
<td>STX='C'- 'A'- '0'- 'B'-'0'- '5'- TIME-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 (10byte)

Message

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

<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'- 'B'- '0'- '5'-ST-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', 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
'O'- '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
20. Setting Copy

20.1 Setting Copy Read

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

1) The controller requests the monitor to read Setting Copy

<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'-ETX</td>
<td>STX-'C'-A-0-9-0-0-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.
'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.

<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'-1-0-ETX</td>
<td>STX-'C'-B-0-9-0-0-0-ETX</td>
<td>T4-T3-T2-T1-ETX</td>
<td>BCC</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', 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
20.2 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.

<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'- '0'</td>
<td>STX='C'- 'A'- '0'- '9'- '0'- '1'-T4-T3-T2-T1-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'- '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.

<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'-'B'-'0'-'9'-'0'-'1'-ST-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', 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
20.3 Setting Copy Start

This command is used in order to start Setting Copy.

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

<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'-'A'-'0'-'9'-'0'-'2'-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'-'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.

<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'-'B'-'0'-'9'-'0'-'2'-ST-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', 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
21. Security Enable

21.1 Security Enable Read

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

1) The controller requests the monitor to read Security Enable

<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'-0-8</td>
<td>STX-'C'-'A'-0-2-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'-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.

<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'</td>
<td>STX-'C'-B-0-2-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', 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, 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
21.2 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.

<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- 'O'-'A'-'1'-'C'</td>
<td>STX='C'='A'='0'-'C'='0'-'1'-'ENA='0'='0'='PWD1-...='PWD16-ETX</td>
<td>BCC</td>
<td>CR</td>
</tr>
</tbody>
</table>

**Header**

SOH (01h): Start of Header

'O' (30h): Reserved

Monitor ID: Specify the Monitor ID of which you want to change a setting.

Ex.) If Monitor ID is '1', specify 'A'.

'O' (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

'O'-'1' (30h, 31h): Enable Write

ENA: Enable/Disable

00h (30h, 30h): Disable

01h (30h, 31h): Enable

'O'-'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 33h 34h 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 33h 34h 32h 33h 33h 33h 33h 33h 33h 33h 34h 34h

Result: The following data is assigned to PWD1-PWD16.

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.

<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'-'A'</td>
<td>STX='C'='B'='0'='C'='0'-'1'-'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', 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
22. LAN MAC Address

22.1 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

<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'-Monitor ID- '0'-8</td>
<td>STX-'C'-2-2-'A'-0-2-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'-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.

<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'-LN(H)-LN(L)</td>
<td>STX-'C'-3-2-'A'-RC-'0'-2-IPV-MAC(0)-....-MAC(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".
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
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. Proof of Play

23.1 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.

<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'</td>
<td>STX='C'-'A'-1'-5'-0'-0'-MD-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'-'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.

<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'</td>
<td>STX='C'-'B'-1'-5'-0'-0'-ST-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'-'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

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

Delimiter
  CR (0Dh): End of packet
23.2 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.

<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'-'A'=1'-'5'=0'-'1'=ETX 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 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.

<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'-'B'=3'-'4'</td>
<td>STX='C'=B=1'=5'=0'=1'=ST-CNHN-CN1=Data(0)=Data(1)=Data(2)=---Data(18)=ETX</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 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)
- CNHN: 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 PICTURE**
- 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)

Data(13): hour
- '*'-'*' (***h,**h):0-23(00h-17h)

Data(14): min
- '*'-'*' (***h,**h):0-59(00h-3Bh)

Data(15): sec
- '*'-'*' (***h,**h):0-59(00h-3Bh)

Data(16): Extension parameter
- '0'-'0' (30h,30h): Normal Proof of Play event
- '0'-'1' (30h,31h): Proof of Play event is "last power on time" *1
- '0'-'2' (30h,32h): Reserved
- '1'-'0' (31h,30h): MEDIA PLAYER is stop
- '1'-'1' (31h,31h): MEDIA PLAYER is start
- '1'-'2' (31h,32h): MEDIA PLAYER is pause
- '1'-'3' (31h,33h): MEDIA PLAYER error occur
- '1'-'4' (31h,34h) - '1'-'F'(31h,46h): Reserved
- '2'-'0' (32h,30h): Contents Copy from USB
- '2'-'1' (32h,31h): Contents Copy form network folder
- '2'-'2' (32h,32h) - '2'-'F'(32h,46h): Reserved
'3'-'0'(33h,30h): Contents Copy Success

'3'-'1'(33h,31h): Contents Copy Error (No media)

'3'-'2'(33h,32h): Contents Copy Error (Connect error)

'3'-'3'(33h,33h): Contents Copy Error (Out of disk space)

'3'-'4'(33h,34h): Contents Copy Error (Read/Write error)

'3'-'5'(32h,35h) – '3'-'F'(33h,46h): Reserved

'4'-'0'(34h,30h): Human detected (Human sensor Status) *2)

'4'-'1'(34h,31h): Human detect cleared (Human Sensor Status) *2)

'4'-'2'(34h,32h) – '4'-'F'(34h,46h): Reserved

*1: After Power ON, the first log is "Data16=01h".

*2: Save the Human Sensor status every 30 minutes.

Data(17)-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
23.3 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.

<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'- 'A'- '1'- '5'- '0'- '2'- 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'- '8' (30h, 38h) : Message length is 8 bytes.

Message

STX (02h): Start of Message
'C'- 'A'- '1'- '5': 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.

<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'- 'B'- '1'- '4'</td>
<td>STX-'C'- 'B'- '1'- '5'- '0'- '2'-ST1-ST2- ST3-ST4-ST5-ST6-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".
'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
    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
23.4 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.

<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-</td>
<td>'0'-'A'-1'-'0'</td>
<td>STX='C'-A'-1'-5'-0'-3'-BNS(H)-</td>
<td>BNS(L)-BNE(H)-BNE(L)-ETX</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".
'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.

<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-</td>
<td>'0'- 'B'-3'- '4'</td>
<td>STX='C'-B'-1'-5'-0'-3'-</td>
<td>LNR(H)-LNR(L)-Data(0)-Data(1)-Data(2) ---</td>
</tr>
</tbody>
</table>

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

Ex) Number to Number: 1 to 6

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
24. Setting Lock of COMPUTE MODULE

24.1 Setting Lock Control

This command sets the condition of setting lock function of COMPUTE MODULE to "ON" or "OFF". If setting lock password 1st to 4th are matched with monitor resisted password, then this command is executed, and reply no error status. If codes aren't matched with them then setting isn't changed, and reply error status.

1) The controller requests the monitor to set the condition of setting 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'-MonitorID- '0'-MonitorID-</td>
<td>STX-'C'-MonitorID-'A'-MonitorID-'1'-MonitorID-'B'-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'-MonitorID (31h, MonitorID): Message length

Message:
- STX (02h): Start of Message
- 'C'-MonitorID-'A'-MonitorID-'1'-MonitorID-'B' (43h, MonitorID, 31h, 42h): Service Lock Control command
- EN: Enable / Disable
  - '0'-MonitorID (30h, MonitorID): OFF
  - '1'-MonitorID (30h, MonitorID): ON
- P1-P2-P3-P4: Lock condition control data
  - P1: Security Pass code 1st
    - '0'-MonitorID (30h, MonitorID): "0"
      | '0'-MonitorID (30h, MonitorID): "9"
  - P2: Security Pass code 2nd
    - '0'-MonitorID (30h, MonitorID): "0"
      | '0'-MonitorID (30h, MonitorID): "9"
  - P3: Security Pass code 3rd
    - '0'-MonitorID (30h, MonitorID): "0"
      | '0'-MonitorID (30h, MonitorID): "9"
  - P4: Security Pass code 4th
    - '0'-MonitorID (30h, MonitorID): "0"
      | '0'-MonitorID (30h, MonitorID): "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.

<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'-'B'-'1'-'B'-ST-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'-'A'(30h, 41h): Message length

**Message**
- STX (02h): Start of Message
- 'C'-'B'-'1'-'B' (43h, 42h, 31h, 42h): Security Lock Control reply command
- ST: Status
  - '0'-'0'(30h, 30h): No error
  - '0'-'1'(30h, 31h): Error
- EN: Enable /Disable
  - '0'-'0'(30h, 30h): OFF
  - '0'-'1'(30h, 31h): ON
- 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
25. Emergency Contents
This function which plays files in the EMERGENCY CONTENTS folder automatically using MEDIA PLAYER function.
During playing, a display prohibits operation except power off.
Create "EMERGENCY CONTENTS" folder in a route folder.
"Display command" starts playing, and "Delete command" stops playing.

25.1 Emergency Contents Display
This command is used in order to display Emergency Contents.

1) The controller requests the monitor to display Emergency Contents.

<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-</td>
<td>STX='C'-A'-1'-F'-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 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'-1'-F' (43h, 41h, 31h, 46h): Emergency Contents Command
'0'-1' (30h, 32h): Display
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.

<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-</td>
<td>STX='C'-B'-1'-F'-0'-1'-ETX</td>
<td>BCC</td>
<td>CR</td>
</tr>
</tbody>
</table>

Header
SOH (01h): Start of Header
'B' (42h): 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".
'B'-A'(30h,41h): Message length (10byte)

Message
STX (02h): Start of Message
'C'-B'-1'-F' (43h, 42h, 31h, 46h): Emergency Contents Reply Command
'B'-1' (30h, 32h): Display
ST: 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
26.2 Emergency Contents Delete

This command is used in order to stop Emergency Contents.

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

<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'-'A'-'1'-'F'-'0'-'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.
- **'A' (41h):** Message type is "Command".
- **'0'-'8' (30h, 38h):** Message length (8byte)

**Message**

- **STX (02h):** Start of Message
- **'C'-'A'-'1'-'F' (43h, 41h, 31h, 46h):** Emergency Contents Command
- **'0'-'0' (30h, 30h):** Delete
- **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.

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<tbody>
<tr>
<td>SOH-'0'-'0'-Monitor ID- 'B'- '0'-'A'</td>
<td>STX-'C'-'B'-'1'-'F'-'0'-'0'-ST-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', 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'-'1'-'F' (43h, 42h, 31h, 46h):** Emergency Contents Reply Command
- **'0'-'0' (30h, 30h):** Delete
- **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
All data are subject to change without notice.

(November 16, 2016)