External Control   NEC LCD Monitor

INDEX

I. Application

This document defines the communications method for control of the NEC LCD monitor, MultiSync C431 /C501 /C551 when using an external controller.

II. Preparation

2. Connectors and wiring

2.1 RS-232C Remote control

Connector: 9-pin D-Sub
Cable: Cross (reversed) cable or null modem cable
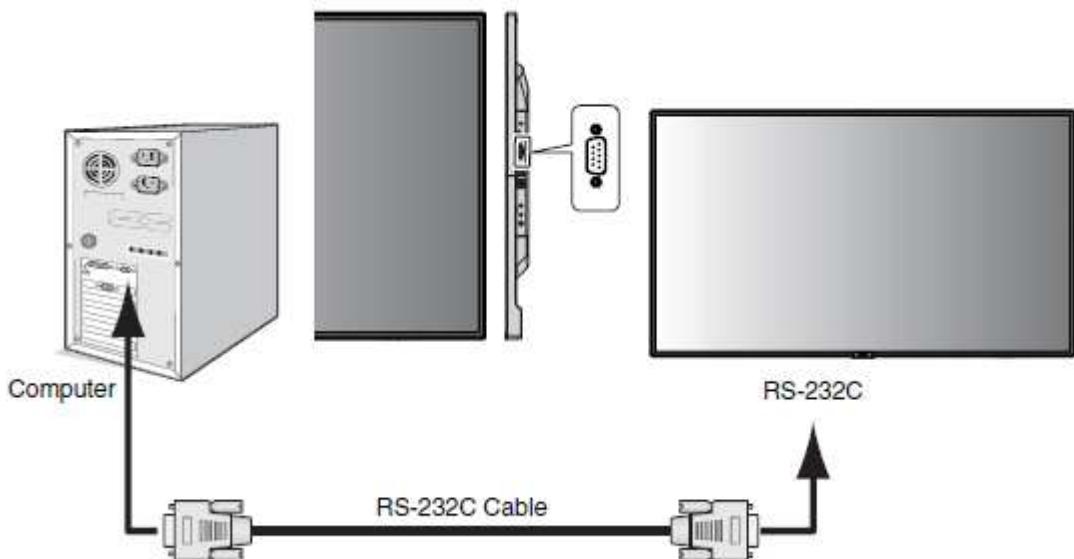
(Please refer "Controlling the LCD monitor via RS-232C Remote control" on User's manual.)

2.2 LAN control

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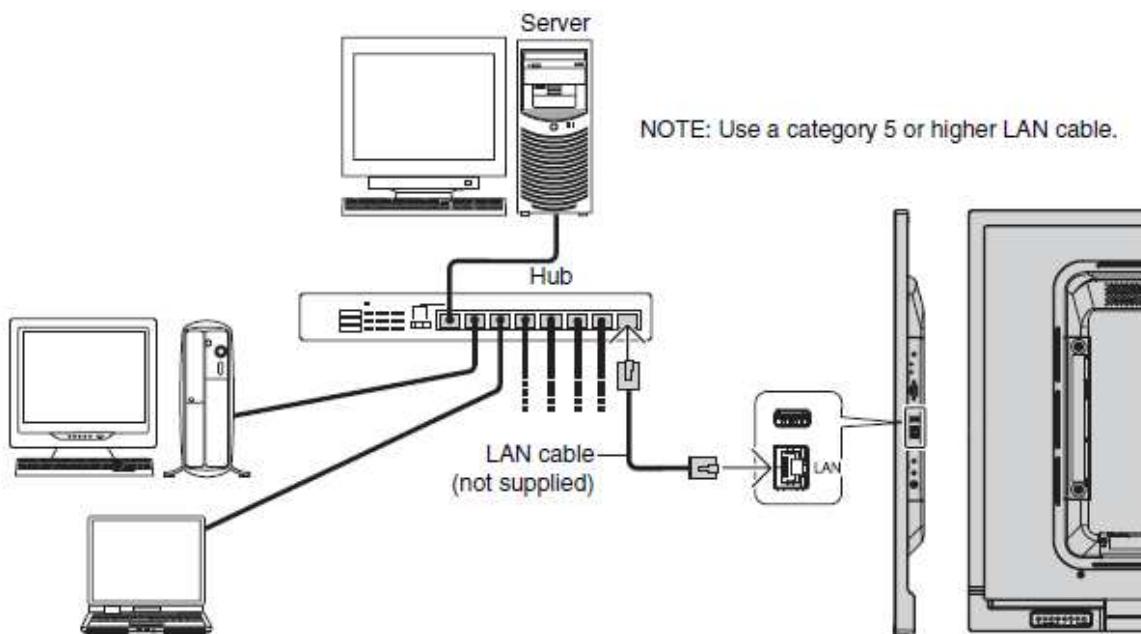
(Please refer "Controlling the LCD monitor via LAN control" on User's manual.)

III. Communication specification

3. Communication Parameter

3.1 RS-232C Remote control

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

3.2 LAN control

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

(Note)
The monitor will disconnect the connection if no packet data is received for 15 minutes.
And the controller (PC) has to re-connect to control the monitor again, after 15 minutes or more.

3.3 Communication timing

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

4. Communication Format

Header	Message	Check Code	Delimiter

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

Header	Message	Check Code	Delimiter

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

The monitor replies a current value of the requested item.

The controller sends commands to set an adjusted value.

The monitor replies to the controller for confirmation.

The controller sends command to get a value for confirmation.

The monitor replies an adjusted value.

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

The monitor replies to the controller for confirmation.

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

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
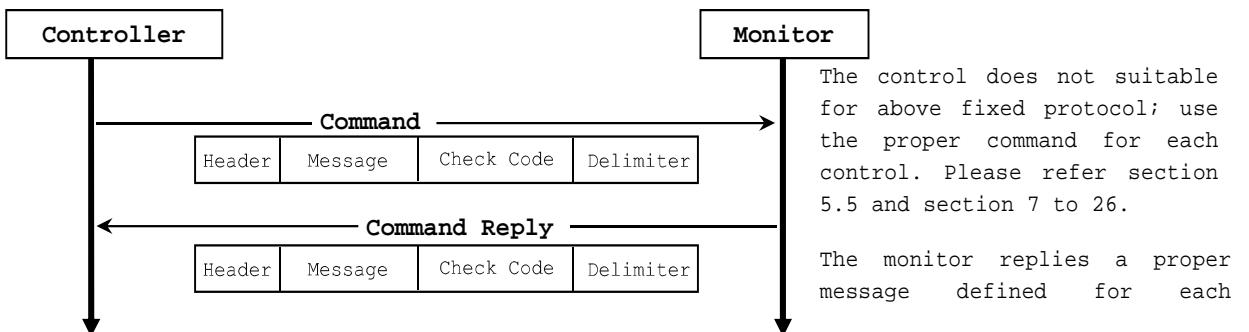
4.1 Header block format (fixed length)

Header	Message	Check code	Delimiter

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

1st byte) SOH: Start of Header

    ASCII SOH (01h)

2nd byte) Reserved: Reserved for future extensions.

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

3rd byte) Destination: Destination equipment ID. (Receiver)

    Specify a commands receiver's address.

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

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

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

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

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

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

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

Header	**Message**	Check code	Delimiter

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

Refer to the section 4.1 "Header block format" for more detail.

1)Get current parameter

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

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

refer to "Appendix A. Operation code table".

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

STX	OP code page		OP code		ETX
	Hi	Lo	Hi	Lo	

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

2)Get Parameter reply

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

in the "Get parameter message".

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

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

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

3)Set parameter

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

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

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

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

4)Set Parameter reply

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

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

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

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

5)Command

"Command message" format depends on each command.

Usually, this "command message" is used for some non-slider controls and some special operations,

such as "Save current settings", "Get timing report", "power control", "Schedule", etc. Refer

to section 5.5 "Commands message" for more details.

(11/104)

6)Command reply

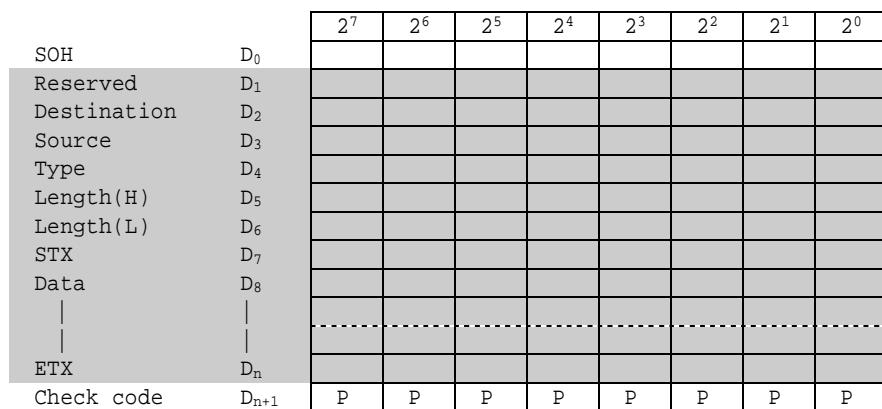The monitor replies to a query from the controller.

"Command reply message" format depends on each command.

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

4.3 Check code

Header	Message	**Check code**	Delimiter

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

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

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

XOR: Exclusive OR

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

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

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

= 30h xor 41h xor 30h xor 45h xor 30h xor 41h

xor 02h xor 30h xor 30h xor 31h xor 30h xor 30h

xor 30h xor 36h xor 34h xor 03h

= 77h

4.4 Delimiter

Packet delimiter code;

Header	Message	Check code	**Delimiter**

ASCII CR(0Dh).

5. Message type

5.1 Get current Parameter from a monitor.

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

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

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

1st byte) STX: Start of Message

    ASCII STX (02h)

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

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

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

    OP code page data must be encoded to ASCII characters.

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

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

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

    Refer to Operation code table. (Appendix A)

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

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

    OP code data must be encoded to ASCII characters.

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

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

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

    Refer to Operation code table.

6th byte) ETX: End of Message

    ASCII ETX (03h)

5.2 "Get parameter" reply

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

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

1st byte) STX: Start of Message

    ASCII STX (02h)

2nd-3rd bytes) Result code.

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

        00h: No Error.

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

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

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

4th–5th bytes) OP code page: Operation code page.

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

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

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

    Refer to the operation code table.

6th –7th bytes) OP code: Operation code

    These bytes indicate a replying item's OP code.

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

    Refer to the operation code table.

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

8th –9th bytes) Type: Operation type code

        00h: Set parameter

        01h: Momentary

        Like the Auto Setup function which automatically changes the parameter.

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

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

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

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

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

14th –17th bytes) Current Value: (16bits)

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

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

18thbyte) ETX: End of Message

   ASCII ETX (03h)

5.3 Set parameter

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

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

The controller requests a monitor to change value.

1st byte) STX: Start of Message

    ASCII STX (02h)

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

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

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

    Refer to the Operation code table.

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

    This OP code data must be encoded to ASCII characters.

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

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

    Refer to the Operation code table.

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

    This data must be encoded to ASCII characters.

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

               2nd = ASCII '1' (31h)

               3rd = ASCII '2' (32h)

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

10th byte) ETX: End of Message

    ASCII ETX (03h)

5.4 "Set parameter" reply

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

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

1st byte) STX: Start of Message

    ASCII STX (02h)

2nd–3rd bytes) Result code

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

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

    under current condition.

4th–5th bytes) OP code page: Echoes back the Operation code page for confirmation.

    Reply data from the monitor is encoded to ASCII characters.

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

    Refer to Operation code table.

6th–7th bytes) OP code: Echoes back the Operation code for confirmation.

    Reply data from the monitor is encoded to ASCII characters.

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

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

    Refer to Operation code table

8th–9th bytes) Type: Operation type code

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

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

    Like Auto Setup function, that automatically changes the parameter.

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

    Reply data from the monitor is encoded to ASCII characters.

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

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

    Reply data from the monitor is encoded to ASCII characters.

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

18th byte) ETX: End of Message

    ASCII ETX (03h)

5.5 Commands

"Command message format" depends on each command. Some commands are shown with usage. Refer to section 7 to 25.

5.5.1 Save Current Settings.

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

STX	Command code		ETX
	'0'	'C'	

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

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

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

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

The monitor replies the packet for confirmation as follows;

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

5.5.2 Get Timing Report and Timing reply.

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

STX	Command code		ETX
	'0'	'7'	

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

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

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

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

The monitor replies status as the following format;

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

➢   SS: Timing status byte

    Bit 7 = 1: Sync Frequency is out of range.
    Bit 6 = 1: Unstable count
    Bit 5-2   Reserved (Don't care)
    Bit 1   1:Positive Horizontal sync polarity
            0:Negative Horizontal sync polarity.
    Bit 0   1:Positive Vertical sync polarity.
            0:Negative Vertical sync polarity.

➢   H Freq: Horizontal Frequency in unit 0.01kHz

➢   V Freq: Vertical Frequency in unit 0.01Hz

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

5.5.3 NULL Message

STX	Command code		ETX
	'B'	'E'	

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

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

➢ Complete "NULL Message" command packet as follows;

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

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

IV. Control Commands

6. Typical procedure example

The following is a sample of procedures to control the monitor, these are examples of "Get

parameter", "Set parameter" and "Save current settings".

6.1. How to change the "Backlight" setting.

Step 1. The controller requests the Monitor to reply with the current brightness setting and

capability to support this operation. (Get parameter)

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

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

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

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

Delimiter
  CR (0Dh): End of packet

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

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

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

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

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

Delimiter
  CR (0Dh): End of packet

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

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

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

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

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

Delimiter
  CR (0Dh): End of packet

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

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

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

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

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

Delimiter
  CR (0Dh): End of packet

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

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

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

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

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

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

Delimiter
  CR (0Dh): End of packet

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

MultiSync C431/ C501/ C551 have three built-in temperature sensors.
The controller can monitor inside temperatures by using those sensors with external control.

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

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

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

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

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

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

Delimiter
  CR (0Dh): End of packet

Step 2. The monitor replies for confirmation.

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

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

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

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

Delimiter
  CR (0Dh): End of packet

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

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

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

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

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

Delimiter
  CR (0Dh): End of packet

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

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

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

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

Readout value is 2's complement.

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

ETX (03h): End of Message

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

Delimiter
  CR (0Dh): End of packet

6.3. Operation Code (OP code) Table

	Item	OP code page	OP code	Parameter	Remarks
INPUT	INPUT	00h	60h	0: No mean 1: VGA(RGB) 5: VIDEO 12(0Ch): YGA(YPbPr) 15(0Fh): DisplayPort 17(11h): HDMI1 18(12h): HDMI2 130(82h): HDMI3 135(87h): MP	OP code page 11h, OP code 06h operation is same.
PICTURE	PICTURE MODE	02h	1Ah	0: No mean 1: sRGB 3: HIGHBRIGHT 4: STANDARD 5: CINEMA 8: CUSTOM1 9: CUSTOM2	sRGB: PC mode only CINEMA: A/V mode only
PICTURE / BRIGTNESS	BACKLIGHT	00h	10h	0: dark | 100(64h): bright	
PICTURE / BRIGTNESS	BRIGHTNESS	00h	92h	0: dark | 100(64h): bright	
PICTURE	GAMMA CORRECTION	02h	68h	0: No mean 1: NATIVE 4: 2.2 8: 2.4	
PICTURE / COLOR	COLOR	02h	1Fh	0: pale | 100(64h): deep	
PICTURE / COLOR	COLOR TEMPERATURE	00h	54h	0:2600K | 74(4Ah):10000K	100K/step
PICTURE / COLOR	COLOR TEMPERATURE (CUSTOM)	00h	14h	9: 10000K 11(0Bh): CUSTOM	Select "CUSTOM" to adjust the R G B gain.
PICTURE / COLOR	R GAIN	00h	16h	0: Dark | 255(FFh): Bright	
PICTURE / COLOR	B GAIN	00h	18h	0: Dark | 255(FFh): Bright	
PICTURE / COLOR	G GAIN	00h	1Ah	0: Dark | 255(FFh): Bright	
PICTURE / COLOR	COLOR CONTROL	00h	RED: 9Bh YELLOW: 9Ch GREEN: 9Dh CYAN: 9Eh BLUE: 9Fh MAGENTA: A0h	0: | 100(64h):(center) | 200(C8h):	
PICTURE / COLOR	HUE	00h	90h	0: purplish | 100(64h): greenish	
PICTURE	CONTRAST	00h	12h	0: low | 100(64h): high	

	Item	OP code page	OP code	Parameter	Remarks
	SHARPNESS	00h	8Ch	0: dull | 24(18h): sharp	
ADJUST	AUTO SETUP	00h	1Eh	0: No mean 1: Execute	Momentary
ADJUST	AUTO ADJUST	10h	B7h	0: No mean 1: OFF 2: ON	
ADJUST	H POSITION	00h	20h	0: Left side | 200: Right side	Depends on a display timing
ADJUST	V POSITION	00h	30h	0: Bottom side | 200: Top side	Depends on a display timing
ADJUST	CLOCK	00h	0Eh	0 | 10	
ADJUST	PHASE	00h	3Eh	0 | 30	
	COLOR SYSTEM	02h	21h	0: No mean 1: NTSC 2: PAL 3: SECAM 4: AUTO 5: 4.43NTSC 6: PAL-60	
	INPUT RESOLUTION	02h	DAh	0: No mean 1: Auto 2: 1024x768 3: 1280x768 4: 1360x768	
ASPECT	ASPECT	02h	70h	0: No mean 1: NORMAL 2: FULL 3: WIDE 4: ZOOM 6: DYNAMIC 7: 1:1	Wide: Dynamic A/V mode only
ASPECT	ZOOM	11h	2Ch	0-89(59h): No mean 90(5Ah): 90% 91(5Bh): 91% | 100(64h): 100% | 300(12Ch): 300%	The following commands can also be used. OP code page 02h OP code 6Fh Parameter 0: No mean 1: 100% 2: 101% | 201(C9h): 300%

	Item	OP code page	OP code	Parameter	Remarks
	H ZOOM	11h	2Dh	0-89(59h): No mean 90(5Ah): 90% 91(5Bh): 91% | 100(64h): 100% | 300(12Ch): 300%	The following commands can also be used. OP code page 02h OP code 6Ch Parameter 0: No mean 1: 100% 2: 101% | 201(C9h): 300%
	V ZOOM	11h	2Eh	0-89(59h): No mean 90(5Ah): 90% 91(5Bh): 91% | 100(64h): 100% | 300(12Ch): 300%	The following commands can also be used. OP code page 02h OP code 6Dh Parameter 0: No mean 1: 100% 2: 101% | 201(C9h): 300%
	H POS	02h	CCh	0: Left side | 200(C8h): Right side	
	V POS	02h	CDh	0: Down side | 200(C8h): Up side	
ADVANCED	OVER SCAN	02h	E3h	0: No mean 1: OFF 2: ON	
ADVANCED	NOISE REDUCTION	02h	26h	0: Off | 3: High	Page02 OPcode20h also works as same.
ADVANCED	TELECINE	02h	23h	0: No mean 1: Off 2: Auto	
ADVANCED	ADAPTIVE CONTRAST	02h	8Dh	0: No mean 1: Off 2: LOW 4: High	
	RESET (PICTURE)	02h	CBh	0: No mean 2: Reset Picture category	Momentary
AUDIO	VOLUME	00h	62h	0: whisper | 100(64h): loud	
AUDIO / BALANCE	BALANCE	00h	93h	O: Left | 30(1Eh):(Center) | 60(3Ch): Right	
AUDIO / BALANCE		00h	94h	0: No mean 1: MONAURAL 2: STEREO	

	Item		OP code page	OP code	Parameter	Remarks
		SURROUND	02h	34h	0: No mean 1: OFF 2: ON	
	EQULIZER	TREBLE	00h	8Fh	O: Min. | 6:(Center) | 12(0Ch): Max.	
		BASS	00h	91h	0: Min. | 6:(Center) | 12(0Ch): Max.	
	AUDIO INPUT		02h	2Eh	0: No mean 1: IN1 2: IN2 4: HDMI1 7: DisplayPort 10(0Ah): HDMI2 11(0Bh): HDMI3 13(0Dh): MP	
	LINE OUT		10h	81h	0: No mean 1: FIXED 2: VARIABLE	
	AUDIO DELAY	AUDIO DELAY	10h	CAh	0: No mean 1: OFF 2: ON	
		DELAY TIME	10h	CBh	0: (small) | 100(64h): (large)	
	RESET (AUDIO)		02h	CBh	0: No mean 4: Reset Audio category	Momentary
SCHDULE	SCHEDULE	ENABLE	02h	E5h	0: No mean 1: No.1 Enable | 30(1Eh): No.30 Enable	
		DISABLE	02h	E6h	0: No mean 1: No.1 Disable | 30(1Eh): No.30 Disable	
	SCHEDULE SETTINGS		Refer to chapter 10			
	HOLIDAY SETTINGS		Refer to chapter 11			
	WEEKEND SETTINGS		Refer to chapter 12			
	DATE & TIME		Refer to chapter 9			
	DAYLIGHT SAVING		Refer to chapter 16			
	OFF TIMER		02h	2Bh	0: Off 1: 1 hour | 24(18h): 24 hour	1 hour/step
	RESET (SCHEDULE)		02h	CBh	0: No mean 5: Reset Schedule category	Momentary

	Item		OP code page	OP code	Parameter	Remarks
MULTI INPUT	INPUT DETECT		02h	40h	0: FIRST DETECT 1: LAST DETECT 2: NONE 3: VIDEO DETECT 4: CUSTOM DETECT	
	CUSTOM DETECT	PRIORITY1	10h	2Eh	0: No mean 1: VGA(RGB) 5: VIDEO 12(0Ch): YGA(YPbPr) 15(0Fh): DisplayPort 17(11h): HDMI1 18(12h): HDMI2 130(82h): HDMI3 135(87h): MP	
		PRIORITY2	10h	2Fh		
		PRIORITY3	10h	30h		
	TERMINAL SETTING	VGA MODE	10h	8Eh	0: No mean 1: RGB 2: YPbPr	
		DisplayPort BITRATE	11h	19h	0: No mean 1: RBR 2: HBR	
		VIDEO LEVEL	10h	40h	0: No mean 1: EXPAND 2: NORMAL	
		HDMI / DisplayPort MODE	11h	B1h	0: No mean 1: RGB 2: YUV 3: AUTO	
	RESET (MULTI INPUT)		02h	CBh	0: No mean 6: Reset MULTI INPUT Category	Momentary
OSD	LANGUAGE		00h	68h	0: No mean 1: ENGLISH 2: GERMAN 3: FRENCH 4: SPANISH 5: JAPANESE 6: ITALIAN 7: SWEDISH 9: RUSSIAN 14(0Eh): CHINESE	OSD Language
	MENU DISPLAY TIME		00h	FCh	0-1: Do not set. 2: 10s 3: 15s | 48(30h): 240s	5sec/step
	OSD POSITION		00h	EFh	0: CENTER 1: UP LEFT 2: UP RIGHT 3: DOWN LEFT 4: DOWN RIGHT	
	INFORMATION OSD		02h	3Dh	0:Disable information OSD 3-10(0Ah): OSD timer [seconds]	
	OSD ROTATION		02h	41h	0: Landscape 1: Rotated	
	KEY GUIDE		11h	7Ah	0: No mean 1: OFF 2: ON	
	MEMO		10h	BAh	0: No mean 1: Display a Memo 2: Undisplay a Memo	
	INPUT NAME		Refer to chapter 18			
	NAME RESET					

	Item		OP code page	OP code	Parameter	Remarks
	CLOSED CAPTION		10h	84h	0: No mean 1: OFF 2: CC1 3: CC2 4: CC3 5: CC4 6: TT1 7: TT2 8: TT3 9: TT4	
	RESET (OSD)		02h	CBh	0: No mean 7: Reset OSD category	Momentary
MULTI DISPLAY	TILE MATRIX	H MONITOR	02h	D0h	0: No mean 1 | 10(0Ah)	Number of H-division
		V MONITOR	02h	D1h	0: No mean 1 | 10(0Ah)	Number of V-division
		POSITION	02h	D2h	0: No mean 1 | 100(64h)	
		TILE COMP	02h	D5h	0: No mean 1: NO 2: YES	
		H SIZE	11h	96h	0: Small | 200(C8h): Large	
		V SIZE	11h	97h	0: Small | 200(C8h): Large	
		H ADJUSTMENT	11h	98h	0: Left | 200(C8h): Right	
		V ADJUSTMENT	11h	99h	0: Down | 200(C8h): Up	
		ENABLE	02h	D3h	0: No mean 1: NO 2: YES	
	TILE MATRIX MEM		10h	4Ah	0: No mean 1: COMMON 2: INPUT	
	MONITOR ID		02h	3Eh	1-100:ID	
	GROUP ID		10h	7Fh	0: No assignment 1: Group A 2: Group B 3: Group AB 4: Group C 5: Group AC | 1023(3FFh):Group ABCDEFGHIJ	Bit0:Group A Bit1:Group B Bit2:Group C Bit3:Group D Bit4:Group E Bit5:Group F Bit6:Group G Bit7:Group H Bit8:Group I Bit9:Group J
	RESET (MULTI DISPLAY)		02h	CBh	0: No mean 8: Reset Multi Display Category	Momentary

	Item		OP code page	OP code	Parameter	Remarks
DISPLAY PROTECTION	POWER SAVE		Refer to Chapter 22			
	QUICK TURN ON		10h	41h	0: No Mean 1: DISABLE 2: ENABLE	
	STANDBY USB POWER		10h	B1h	0: No Mean 1: DISABLE 2: ENABLE	
	POWER SAVE MESSAGE		11h	7Bh	0: No Mean 1: OFF 2: ON	
	HEAT STATUS	BACKLIGHT	Refer to Chapter 13 (Self-diagnosis status read)			
		TEMPERATURE SENSOR1/2/3	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
	SCREEN SAVER	BACKLIGHT	02h	DCh	0: No mean 1: OFF 2: ON	
		MOTION INTERVAL	02h	DDh	0: OFF(0s) | 90(5Ah): 900s	10s/step
		MOTION ZOOM	10h	35h	0 : 95% | 5 : 100% | 10(0Ah) : 105%	
	SIDE BORDER COLOR		02h	DFh	0: Black | 100(64h): White	
	POWER ON DELAY	DELAY TIME	10h	CBh	0: (small) | 100(64h): (large)	
		LINK TO ID	10h	BCh	0: No mean 1: OFF 2: ON	
	RESET (DISPLAY PROTECTION)		02h	CBh	0: No mean 9: Reset Display Protection category	Momentary
CONTROL	IP ADDRESS SETTING				N/A	
	CHANGE PASSWORD				N/A	
	SECURITY		Refer to Chapter 20			
	IR LOCK SETTING	MODE SELECT	10h	D4h	0: No mean 1: UNLOCK 2: ALL LOCK 3: CUSTOM LOCK	The following commands can also be used. OP code page 02h OP code 3Fh Parameter 0: No mean 1: NORMAL 4: LOCK

	Item	OP code page	OP code	Parameter	Remarks
	POWER	10h	D5h	0: No mean 1: UNLOCK 2: LOCK	
	VOLUME	10h	D6h	0: No mean 1: UNLOCK 2: LOCK	
	MIN VOL	10h	D7h	0 (whisper) | 100(64h) (laud)	
	MAX VOL	10h	D8h	0 (whisper) | 100(64h) (laud)	
	INPUT	10h	D9h	0: No mean 1: UNLOCK 2: LOCK	
	UNLOCK SELECT	10h	DAh	0: No mean 1: VGA(RGB) 5: VIDEO 12(0Ch): YGA(YPbPr)	
		10h	DBh	15(0Fh): DisplayPort1 17(11h): HDMI1 18(12h): HDMI2 130(82h): HDMI3	
		10h	DCh	135(87h): MP 136(88h): COMPUTE MODULE	
KEY LOCK SETTING	MODE SELECT	11h	6Ah	0: No mean 1: UNLOCK 2: ALL LOCK 3: CUSTOM LOCK	
	POWER	11h	6Bh	0: No mean 1: UNLOCK 2: LOCK	
	VOLUME	11h	6Ch	0: No mean 1: UNLOCK 2: LOCK	
	MIN VOL	11h	6Dh	0 (whisper) | 100(64h) (laud)	
	MAX VOL	11h	6Eh	0 (whisper) | 100(64h) (laud)	
	INPUT	11h	6Fh	0: No mean 1: UNLOCK 2: LOCK	
	CHANNEL	10h	D9h	0: No mean 1: UNLOCK 2: LOCK	
DDC/CI		10h	BEh	0: No mean 1: OFF 2: ON	
PING				N/A	
IP ADDRESS RESET				N/A	

	Item			OP code page	OP code	Parameter	Remarks
AUTO DIMMING	ROOM LIGHT SENSING	BACKLIGHT SETTING	MODE	10h	C8h	0: No mean 1: OFF 2: MODE1 3: MODE2	
			MAX LIMIT	10h	C9h	0 - 100(64h)	
			IN BRIGHT	10h	33h	0 - 100(64h)	
			IN DARK	10h	34h	0 - 100(64h)	
			SENSING LUX	02h	B4h	Current Illuminance read	Read only
	POWER INDICATOR	POWER INDICATOR		02	BEh	0: No mean 1: Off 2: On	
		SCHEDULE INDICATOR		11h	71h	0: No mean 1: Off 2: On	
	CEC	CEC		11h	76h	0: No mean 1: OFF 2: ON	
		AUTO TURN OFF		11h	77h	0: No mean 1: NO 2: YES	
		AUDIO RECEIVER		11h	78h	0: No mean 1: NO 2: YES	
		SEARCH DEVICE		11h	79h	0: No mean 1: NO 2: YES	
	RESET (CONTROL)			02h	CBh	0: No mean 12(0Ch): Reset Control Category	Momentary
SYSTEM	MONITOR INFORMATION	MODEL NAME		Refer to chapter 14			
		SERIAL		Refer to chapter 14			
		CARBON SAVINGS		10h	10h (g) /11h (kg)	0 - 999(3E7h)(g) 0 - 65535(FFFF)(kg)	Read Only
		CARBON USAGE		10h	26h (g) /27h (kg)	0 - 999(3E7)(g) 0 - 65535(FFFF)(kg)	Read Only
	FIRMWARE			Refer to chapter 17			
	MAC ADDRESS			Refer to Chapter 21			
	FACTORY RESET			02h	CBh	0: No mean 1: Factory Reset	Momentary

	Item	OP code page	OP code	Parameter	Remarks
Other	MUTE	00h	8Dh	0: UNMUTE (Set only) 1: MUTE 2: UNMUTE	
	SCREEN MUTE	10h	B6h	0: No mean 1: SCREEN MUTE ON 2: SCREEN MUTE OFF	
	SOUND	02h	34h	0: No mean 1: Off 2: ON	Same as 'SURROUND'
	STILL CAPTURE	02h	76h	0: OFF 1: CAPTURE	Momentary
	SIGNAL INFORMATION	02h	EAh	0: No mean 1: OFF 2: ON	

7. Power control procedure

7.1 Power status read

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

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

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

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

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

Delimiter
  CR (0Dh): End of packet

2) The monitor returns with the current power status.

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

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

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

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

Delimiter
  CR (0Dh): End of packet

7.2 Power control

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

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

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

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

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

Delimiter
  CR (0Dh): End of packet

2) The monitor replies a data for confirmation.

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

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

Message
  STX (02h): Start of Message
  '0'-'0' (30h, 30h): Result code. No error.
  'C'-'2'','0'-'3'-'D'-'6' (43h, 32h, 30h, 33h, 44h, 36h): power control reply command
          ➢   The monitor replies same as power control command to the controller.
  '0'-'0'-'0'-'1' (30h, 30h, 30h, 31h): Power mode
                                   0001: ON
                                   0002, 0003: Do not set.
                                   0004: OFF (same as the power off by IR)
  ETX (03h): End of Message

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

Delimiter
  CR (0Dh): End of packet

8. Asset Data read and write

MultiSync C431/ C501/ C551 have the area for to store user's asset data of up to 64bytes.

8.1 Asset Data Read Request and reply

This command is used in order to read Asset Data.

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

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

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

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

Check code
  BCC: Block Check Code
       Refer to the section 4.3 "Check code" for a BCC calculation.
Delimiter
  CR (0Dh): End of packet

2) The monitor replies Asset data to the controller.

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

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

 Message
  STX (02h): Start of Message
  'C'-'1'-'0'-'B' (43h, 31h, 30h, 42h): Asset read reply command
  Data(0) – Data(N): Retuned Asset data
       Ex.) When Data(n) is 1234h, replying data is (31h 32h, 33h, 34h).
  ETX (03h): End of Message

Check code
  BCC: Block Check Code
       Refer to the section 4.3 "Check code" for a BCC calculation.
Delimiter
  CR (0Dh): End of packet

8.2 Asset Data write

This command is used in order to write Asset Data.

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

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

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

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

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

Delimiter
  CR (0Dh): End of packet

2) The monitor replies a data for confirmation.

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

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

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

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

Delimiter
  CR (0Dh): End of packet

9. Date & Time read and write

9.1 Date & Time Read

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

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

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

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

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

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

Delimiter
    CR (0Dh): End of packet

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

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

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

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

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

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

```
                    '1'-'F'(31h, 46h): 31(=1Fh)

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

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

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

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

      ETX (03h): End of Message

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

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

9.2 Date & Time Write

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

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

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

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

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

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

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

       WW: weekdays
           '0'-'0'(30h, 30h): SUNDAY
           '0'-'1'(30h, 31h): MONDAY
           '0'-'2'(30h, 32h): TUESDAY
           '0'-'3'(30h, 33h): WEDNESDAY
           '0'-'4'(30h, 34h): THURSDAY
           '0'-'5'(30h, 35h): FRIDAY
           '0'-'6'(30h, 36h): SATURDAY

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

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

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

  ETX (03h): End of Message

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

Delimiter
  CR (0Dh): End of packet

2) The monitor replies a data for confirmation.

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

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

Message
  STX (02h): Start of Message
  'C'-'3'-'1'-'2' (43h, 33h, 31h, 32h): Date & Time write reply command
  ST: Date & Time Status command
        '0'-'0'(30h, 30h): No error
        '0'-'1'(30h, 31h): Error
  'YY'-'MM'-'DD'-'WW'-'HH'-'MN'-'DS': Date & Time data
        YY: Year (offset 2000)
            '0'-'0'(30h, 30h): 2000
               |
            '6'-'3'(36h, 33h): 2099 (99 = 63h)

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

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

        WW: weekdays
            '0'-'0'(30h, 30h): SUNDAY
            '0'-'1'(30h, 31h): MONDAY
            '0'-'2'(30h, 32h): TUESDAY
            '0'-'3'(30h, 33h): WEDNESDAY
            '0'-'4'(30h, 34h): THURSDAY
            '0'-'5'(30h, 35h): FRIDAY
            '0'-'6'(30h, 36h): SATURDAY

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

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

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

  ETX (03h): End of Message

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

Delimiter
  CR (0Dh): End of packet

10. Schedule read and write

10.1 Schedule Read

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

1) The controller requests the monitor to read Schedule.

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

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

Message
  STX (02h): Start of Message
  'C'-'2'-'3'-'D' (43h, 32h, 33h, 44h): Schedule read request command.
  PG: Program No.
        ➢   The data must be ASCII characters strings.
  ETX (03h): End of Message

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

Delimiter
  CR (0Dh): End of packet

2) The monitor replies Schedule to the controller.

Header	Message	Check code	Delimiter
SOH-'0'-'0'-Monitor ID- 'B'-'2'-'4'	STX-'C'-'3'-'3'-'D'-PG-EVENT-HOUR-MIN- INPUT-WEEK-TYPE-PMODE-YEAR-MONTH-DAY- ORDER-EXT1-EXT2-EXT3-ETX	BCC	CR

Header
  SOH (01h): Start of Header
  '0' (30h): Reserved
  '0' (30h): Message receiver is the controller.
  Monitor ID: Indicate a replying Monitor ID.
            Ex.) When this byte is set to 'A', the replying Monitor ID is '1'.
  'B' (42h): Message type is "Command reply".
  '2'-'4'(32h, 34h): Message length

Message
  STX (02h): Start of Message
  'C'-'3'-'3'-'D' (43h, 33h, 33h, 44h): Schedule read reply command
  PG: Program No.
      '0'-'0'(30h, 30h): Program No.1
          |
      '1'-'D'(31h, 44h): Program No.30

  EVENT: Schedule event
      '0'-'1'(30h, 31h): Power ON
      '0'-'2'(30h, 32h): Power OFF

  HOUR: Time (hour)
      '0'-'0'(30h, 30h): 00
          |

```
    '1'-'7'(31h, 37h): 23 (=17h)
    '1'-'8'(31h, 38h): Delete hour

MIN: Time (minute)
    '0'-'0'(30h, 30h): 0
       |
    '3'-'B'(33h, 42h): 59
    '3'-'C'(33h, 43h): Delete minute

INPUT: Input terminal
    '0'-'0'(30h,30h): No mean (works on last memory)
    '0'-'1'(30h,31h): VGA(RGB)
    '0'-'3'(30h,33h): DVI
    '0'-'5'(30h,35h): VIDEO
    '0'-'C'(30h,43h): VGA(YPbPr)
    '0'-'D'(30h,44h): OPTION
    '0'-'F'(30h,46h): DisplayPort1
    '1'-'0'(31h,30h): DisplayPort2
    '1'-'1'(31h,31h): HDMI1
    '1'-'2'(31h,32h): HDMI2
    '8'-'7'(38h,37h): MP
    '8'-'8'(38h,38h): COMPUTE MODULE

WEEK: Week setting
    bit 0: MONDAY
    bit 1: TUESDAY
    bit 2: WEDNESDAY
    bit 3: THURSDAY
    bit 4: FRIDAY
    bit 5: SATURDAY
    bit 6: SUNDAY

    EX.
    '0'-'1'(30h, 31h): MONDAY
    '0'-'4'(30h, 34h): TUESDAY
    '0'-'F'(30h, 46h): MONDAY, TUESDAY, WEDNESDAY and THURSDAY
    '7'-'F'(37h, 46h): MONDAY to SUNDAY

TYPE: Schedule type
    bit 7: Fixed 0
    bit 6: 1: Date
    bit 5: 1: Holiday
    bit 4: 1: Weekend
    bit 3: 1: Weekday
    bit 2: 0:Disable 1:Enable
    bit 1: 1:Every week
    bit 0: 1:Every day

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

PMODE: Picture mode
    '0'-'0'(30h,30h): No mean (works on last memory)
    '0'-'1'(30h,31h): sRGB
    '0'-'3'(30h,33h): HIGHBRIGHT
    '0'-'4'(30h,34h): STANDARD
    '0'-'5'(30h,34h): CINEMA
    '0'-'D'(30h,44h): CUSTOM1
    '0'-'E'(30h,45h): CUSTOM2

YEAR: Date (year)
    '0'-'0'(30h, 30h): 2000
       |
    '6'-'3'(36h, 33h): 2099
    '6'-'4'(36h, 34h): Delete year
```

```
MONTH: Date (month)
    '0'-'1'(30h, 31h): January
        |
    '0'-'C'(30h, 43h): December
    '0'-'D'(30h, 44h): Delete month

DAY: Date (day)
    '0'-'1'(30h, 31h): 1
        |
    '1'-'F'(31h, 46h): 31
    '2'-'0'(32h, 30h): Delete day

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

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

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

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

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

Delimiter
  CR (0Dh): End of packet

10.2 Schedule Write

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

1) The controller requests the monitor to write Schedule.

Header	Message	Check code	Delimiter
SOH-'0'-Monitor ID-'0'-'A'-'2'-'2'	STX-'C'-'2'-'3'-'E'-PG-EVENT-HOUR-MIN-INPUT-WEEK-TYPE-PMODE-YEAR-MONTH-DAY-EXT1-EXT2-EXT3-ETX	BCC	CR

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

  Message
  STX (02h): Start of Message
  PG: Program No.
     '0'-'0'(30h, 30h): Program No.1
       |
     '1'-'D'(31h, 44h): Program No.30

  EVENT: Schedule event
     '0'-'1'(30h, 31h): Power ON
     '0'-'2'(30h, 32h): Power OFF

  HOUR: Time (hour)
     '0'-'0'(30h, 30h): 00
       |
     '1'-'7'(31h, 37h): 23 (=17h)
     '1'-'8'(31h, 38h): Delete hour

  MIN: Time (minute)
     '0'-'0'(30h, 30h): 0
       |
     '3'-'B'(33h, 42h): 59
     '3'-'C'(33h, 43h): Delete minute

  INPUT: Input terminal
     '0'-'0'(30h,30h): No mean (works on last memory)
     '0'-'1'(30h,31h): VGA(RGB)
     '0'-'3'(30h,33h): DVI
     '0'-'5'(30h,35h): VIDEO
     '0'-'C'(30h,43h): VGA(YPbPr)
     '0'-'D'(30h,44h): OPTION
     '0'-'F'(30h,46h): DisplayPort1
     '1'-'0'(31h,30h): DisplayPort2
     '1'-'1'(31h,31h): HDMI1
     '1'-'2'(31h,32h): HDMI2
     '8'-'7'(38h,37h): MP
     '8'-'8'(38h,38h): COMPUTE MODULE

  WEEK: Week setting
     bit 0: MONDAY
     bit 1: TUESDAY
     bit 2: WEDNESDAY
     bit 3: THURSDAY
     bit 4: FRIDAY
     bit 5: SATURDAY
     bit 6: SUNDAY

     EX.
     '0'-'1'(30h, 31h): MONDAY
```

```
         '0'-'4'(30h, 34h): TUESDAY
         '0'-'F'(30h, 46h): MONDAY, TUESDAY, WEDNESDAY and THURSDAY
         '7'-'F'(37h, 46h): MONDAY to SUNDAY

   TYPE: Schedule type
      bit 7: Fixed 0
      bit 6: 1: Date
      bit 5: 1: Holiday
      bit 4: 1: Weekend
      bit 3: 1: Weekday
      bit 2: 0:Disable 1:Enable
      bit 1: 1:Every week
      bit 0: 1:Every day

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

   PMODE: Picture mode
      '0'-'0'(30h,30h): No mean (works on last memory)
      '0'-'1'(30h,31h): sRGB
      '0'-'3'(30h,33h): HIGHBRIGHT
      '0'-'4'(30h,34h): STANDARD
      '0'-'5'(30h,34h): CINEMA
      '0'-'D'(30h,44h): CUSTOM1
      '0'-'E'(30h,45h): CUSTOM2

   YEAR: Date (year)
      '0'-'0'(30h, 30h): 2000
          |
      '6'-'3'(36h, 33h): 2099
      '6'-'4'(36h, 34h): Delete year
         ➢  If TYPE = date, this parameter is needed.

   MONTH: Date (month)
      '0'-'1'(30h, 31h): January
          |
      '0'-'C'(30h, 43h): December
      '0'-'D'(30h, 44h): Delete month
         ➢  If TYPE = date, this parameter is needed.

   DAY: Date (day)
      '0'-'1'(30h, 31h): 1
          |
      '1'-'F'(31h, 46h): 31
      '2'-'0'(32h, 30h): Delete day
         ➢  If TYPE = date, this parameter is needed.

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

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

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

   ETX (03h): End of Message


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

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

2) The monitor replies a data for confirmation.

Header	Message	Check code	Delimiter
SOH-'0'-'0'-Monitor ID-'B'-'2'-'4'	STX-'C'-'3'-'3'-'E'-ST-PG-EVENT-HOUR-MIN-INPUT-WEEK-TYPE-PMODE-YEAR-MONTH-DAY-EXT1-EXT2-EXT3-ETX	BCC	CR

```
Header
  SOH (01h): Start of Header
  '0' (30h): Reserved
  '0' (30h): Message receiver is the controller.
  Monitor ID: Indicate a replying Monitor ID.
             Ex.) When this byte is set to 'A', the replying Monitor ID is '1'.
  'B' (42h): Message type is "Command reply".
  '2'-'4'(32h, 34h): Message length

Message
  STX (02h): Start of Message
  'C'-'3'-'2'-'2' (43h, 33h, 32h, 32h): Schedule writes reply command
  ST: Error status
       '0'-'0'(30h, 30h): No error
       '0'-'1'(30h, 31h): Error
  STX (02h): Start of Message
  PG: Program No.
     '0'-'0'(30h, 30h): Program No.1
        |
     '1'-'D'(31h, 44h): Program No.30

  EVENT: Schedule event
     '0'-'1'(30h, 31h): Power ON
     '0'-'2'(30h, 32h): Power OFF

  HOUR: Time (hour)
     '0'-'0'(30h, 30h): 00
        |
     '1'-'7'(31h, 37h): 23 (=17h)
     '1'-'8'(31h, 38h): Delete hour

  MIN: Time (minute)
     '0'-'0'(30h, 30h): 0
        |
     '3'-'B'(33h, 42h): 59
     '3'-'C'(33h, 43h): Delete minute

  INPUT: Input terminal
     '0'-'0'(30h,30h): No mean (works on last memory)
     '0'-'1'(30h,31h): VGA(RGB)
     '0'-'3'(30h,33h): DVI
     '0'-'5'(30h,35h): VIDEO
     '0'-'C'(30h,43h): VGA(YPbPr)
     '0'-'D'(30h,44h): OPTION
     '0'-'F'(30h,46h): DisplayPort1
     '1'-'0'(31h,30h): DisplayPort2
     '1'-'1'(31h,31h): HDMI1
     '1'-'2'(31h,32h): HDMI2
     '8'-'7'(38h,37h): MP
     '8'-'8'(38h,38h): COMPUTE MODULE

  WEEK: Week setting
     bit 0: MONDAY
     bit 1: TUESDAY
     bit 2: WEDNESDAY
     bit 3: THURSDAY
     bit 4: FRIDAY
     bit 5: SATURDAY
     bit 6: SUNDAY

     EX.
```

```
      '0'-'1'(30h, 31h): MONDAY
      '0'-'4'(30h, 34h): TUESDAY
      '0'-'F'(30h, 46h): MONDAY, TUESDAY, WEDNESDAY and THURSDAY
      '7'-'F'(37h, 46h): MONDAY to SUNDAY

   TYPE: Schedule type
      bit 7: Fixed 0
      bit 6: 1: Date
      bit 5: 1: Holiday
      bit 4: 1: Weekend
      bit 3: 1: Weekday
      bit 2: 0:Disable 1:Enable
      bit 1: 1:Every week
      bit 0: 1:Every day

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

   PMODE: Picture mode
      '0'-'0'(30h,30h): No mean (works on last memory)
      '0'-'1'(30h,31h): sRGB
      '0'-'3'(30h,33h): HIGHBRIGHT
      '0'-'4'(30h,34h): STANDARD
      '0'-'5'(30h,34h): CINEMA
      '0'-'D'(30h,44h): CUSTOM1
      '0'-'E'(30h,45h): CUSTOM2

   YEAR: Date (year)
      '0'-'0'(30h, 30h): 2000
            |
      '6'-'3'(36h, 33h): 2099
      '6'-'4'(36h, 34h): Delete year

   MONTH: Date (month)
      '0'-'1'(30h, 31h): January
            |
      '0'-'C'(30h, 43h): December
      '0'-'D'(30h, 44h): Delete month

   DAY: Date (day)
      '0'-'1'(30h, 31h): 1
            |
      '1'-'F'(31h, 46h): 31
      '2'-'0'(32h, 30h): Delete day

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

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

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


   ETX (03h): End of Message

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

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

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

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

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

Message
  STX (02h): Start of Message
  'C'-'2'-'3'-'F' (43h, 32h, 33h, 46h): Enable/Disable Schedule writes command
  PG: Program No.
      '0'-'0'(30h, 30h): Program No.1
         |
      '1'-'D'(31h, 44h): Program No.30
  EN: Enable /Disable
      '0'-'0'(30h, 30h): Disable
      '0'-'1'(30h, 31h): Enable

  ETX (03h): End of Message

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

Delimiter
  CR (0Dh): End of packet

4) The monitor replies a data for confirmation.

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

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

Message
  STX (02h): Start of Message
  'C'-'3'-'3'-'F' (43h, 33h, 33h, 46h): Enable/Disable Schedule writes reply command
  ST: Error status
      '0'-'0'(30h, 30h): No error
      '0'-'1'(30h, 31h): Error
  PG: Program No.
      '0'-'0'(30h, 30h): Program No.1
         |
      '1'-'D'(31h, 44h): Program No.30
  EN: Enable /Disable
      '0'-'0'(30h, 30h): Disable
      '0'-'1'(30h, 31h): Enable

  ETX (03h): End of Message

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

Delimiter
  CR (0Dh): End of packet

11. Holiday read and write

11.1 Holiday Read

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

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

Header	Message	Check code	Delimiter
SOH-'0'-Monitor ID-'0'-'A'-'0'-'A'	STX-'C'-'A'-'1'-'9'-'0'-'0'-PG-ETX	BCC	CR

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

Message
  STX (02h): Start of Message
  'C'-'A'-'1'-'9' (43h, 41h, 31h, 39h):"Holiday" command
  '0'-'0' (30h, 30h): read request
  PG: Program No.
      '0'-'0'(30h, 30h): Program No.1
        |
      '3'-'1'(33h, 31h): Program No.50
  ETX (03h): End of Message

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

Delimiter
  CR (0Dh): End of packet

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

Header	Message	Check code	Delimiter
SOH-'0'-'0'-Monitor ID-'B'-'1'-'A'	STX-'C'-'B'-'1'-'9'-'0'-'0'-ST-PG-TP-YEAR-MONTH-DAY-WEEK NO-WEEK-EMON-EDAY-ETX	BCC	CR

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

Message
  STX (02h): Start of Message
  'C'-'B'-'1'-'9' (43h, 42h, 31h, 39h):"Holiday reply" command
  '0'-'0' (30h, 30h): read request
  ST: Status
      '0'-'0'(30h, 30h): No error
      '0'-'1'(30h, 31h): Error
  PG: Program No.
      '0'-'0'(30h, 30h): Program No.1
        |
      '3'-'1'(33h, 31h): Program No.50

```
TP: Type
     bit 0: End day
     bit 1: Day
     bit 2: Week
     bit 3: Reserved
     bit 4: Reserved
     bit 5: Reserved
     bit 6: Reserved
     bit 7: Reserved

YEAR: Year
     '0'-'0'(30h,30h): No mean
     '0'-'F'(30h,46h): 2015
         |
     '6'-'3'(36h,33h): 2099

MONTH: Month
     '0'-'0'(30h,30h): No mean
     '0'-'1'(30h,31h): Janualy
         |
     '0'-'C'(31h,43h): December

WEEK NO: Week No.
     '0'-'0'(30h,30h): No mean
     '0'-'1'(30h,31h): 1st week
     '0'-'2'(30h,32h): 2nd week
         |
     '0'-'5'(30h,35h): Last week

WEEK: Week
     '0'-'0'(30h,30h): No mean
     '0'-'1'(30h,31h): Monday
     '0'-'2'(30h,32h): Tuesday
         |
     '0'-'7'(30h,37h): Sunday

DAY: Day
     '0'-'0'(30h,30h): No mean
     '0'-'1'(30h,31h): 1st
         |
     '1'-'F'(31h,46h): 31th

EMON: End month
     '0'-'0'(30h,30h): No mean
     '0'-'1'(30h,31h): Janualy
         |
     '0'-'C'(31h,43h): December

EDAY: End day
     '0'-'0'(30h,30h): No mean
     '0'-'1'(30h,31h): 1st
         |
     '1'-'F'(31h,46h): 31th

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 Holiday Write

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

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

Header	Message	Check code	Delimiter
SOH-'0'-Monitor ID- '0'-'A'-'1'-'2'	STX-'C'-'A'-'1'-'9'-'0'-'1'- PG-TP-YEAR-MON-DAY-EMON-EDAY-ETX	BCC	CR

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

 Message
  STX (02h): Start of Message
  'C'-'A'-'1'-'9' (43h, 41h, 31h, 39h):"Holiday" command
  '0'-'1' (30h, 30h): write request

  PG: Program No.
      '0'-'0'(30h, 30h): Program No.1
        |
      '3'-'1'(33h, 31h): Program No.50

  TP: Type
      bit 0: End day
      bit 1: Day
      bit 2: Week
      bit 3: Reserved
      bit 4: Reserved
      bit 5: Reserved
      bit 6: Reserved
      bit 7: Reserved

  YEAR: Year
      '0'-'0'(30h,30h): No mean
      '1'-'5'(31h,35h): 2015
         |
      '6'-'3'(36h,33h): 2099

  MONTH: Month
      '0'-'0'(30h,30h): No mean
      '0'-'1'(30h,31h): Janualy
         |
      '0'-'C'(31h,43h): December

  WEEK NO: Week No.
      '0'-'0'(30h,30h): No mean
      '0'-'1'(30h,31h): 1st week
      '0'-'2'(30h,32h): 2nd week
         |
      '0'-'5'(30h,35h): Last week

  WEEK: Week
      '0'-'0'(30h,30h): No mean
      '0'-'1'(30h,31h): Monday
      '0'-'2'(30h,32h): Tuesday
         |
      '0'-'7'(30h,37h): Sunday

  DAY: Day
      '0'-'0'(30h,30h): No mean
```

```
        '0'-'1'(30h,31h): 1st
             |
        '1'-'F'(31h,46h): 31th

  EMON: End month
        '0'-'0'(30h,30h): No mean
        '0'-'1'(30h,31h): Janualy
             |
        '0'-'C'(31h,43h): December

  EDAY: End day
        '0'-'0'(30h,30h): No mean
        '0'-'1'(30h,31h): 1st
             |
        '1'-'F'(31h,46h): 31th

  ETX (03h): End of Message

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


Delimiter
  CR (0Dh): End of packet


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

Header	Message	Check code	Delimiter
SOH-'0'-'0'-Monitor ID-'B'-'1'-'C'	STX-'C'-'B'-'1'-'9'-'0'-'1'-ST-PG-TP-YEAR-MONTH-DAY-WEEK NO-WEEK-EMON-EDAY-ETX	BCC	CR

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

Message
  STX (02h): Start of Message
  'C'-'B'-'1'-'9' (43h, 33h, 31h, 39h): Holiday reply command
  '0'-'1' (30h, 30h): write request

  ST: Status command
        '0'-'0'(30h, 30h): No error
        '0'-'1'(30h, 31h): Error

  PG: Program No.
        '0'-'0'(30h, 30h): Program No.1
           |
        '3'-'1'(33h, 31h): Program No.50

  TP: Type
        bit 0: End day
        bit 1: Day
        bit 2: Week
        bit 3: Reserved
        bit 4: Reserved
        bit 5: Reserved
        bit 6: Reserved
        bit 7: Reserved

  YEAR: Year
        '0'-'0'(30h,30h): No mean
        '0'-'F'(30h,46h): 2015
```

```
                |
           '6'-'3'(36h,33h): 2099

    MONTH: Month
           '0'-'0'(30h,30h): No mean
           '0'-'1'(30h,31h): Januanly
                |
           '0'-'C'(31h,43h): December

    WEEK NO: Week No.
           '0'-'0'(30h,30h): No mean
           '0'-'1'(30h,31h): 1st week
           '0'-'2'(30h,32h): 2nd week
                |
           '0'-'5'(30h,35h): Last week

    WEEK: Week
           '0'-'0'(30h,30h): No mean
           '0'-'1'(30h,31h): Monday
           '0'-'2'(30h,32h): Tuesday
                |
           '0'-'7'(30h,37h): Sunday

    DAY: Day
           '0'-'0'(30h,30h): No mean
           '0'-'1'(30h,31h): 1st
                |
           '1'-'F'(31h,46h): 31th

    EMON: End month
           '0'-'0'(30h,30h): No mean
           '0'-'1'(30h,31h): Januanly
                |
           '0'-'C'(31h,43h): December

    EDAY: End day
           '0'-'0'(30h,30h): No mean
           '0'-'1'(30h,31h): 1st
                |
           '1'-'F'(31h,46h): 31th

    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. Weekend read and write

12.1 Weekend Read

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

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

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

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

Message
  STX (02h): Start of Message
  'C'-'A'-'1'-'A' (43h, 41h, 31h, 41h):" Weekend" command
  '0'-'0' (30h, 30h): read request
  ETX (03h): End of Message

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

Delimiter
  CR (0Dh): End of packet

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

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

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

Message
  STX (02h): Start of Message
  'C'-'B'-'1'-'A' (43h, 42h, 31h, 41h):" Weekend reply" command
  '0'-'0' (30h, 30h): read request
  ST: Status
     '0'-'0'(30h, 30h): No error
     '0'-'1'(30h, 31h): Error
  WEEK: Weekend
     '0'-'0'(30h, 30h): None
     bit assignment of a day of the week.
     bit0: Monday
     bit1: Tuesday
     bit2: Wednesday
     bit3: Thursday
     bit4: Friday
     bit5: Saturday
     bit6: Sunday

```
        Example:
         Weekend setting is "Saturday" and "Sunday".
         '2'-'0' OR '4'-'0' = '6'-'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
```

12.2 Weekend Write

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

1) The controller requests the monitor to write the setting of Weekend.

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

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

 Message
  STX (02h): Start of Message
  'C'-'A'-'1'-'A' (43h, 41h, 31h, 41h):" Weekend" command
  '0'-'1' (30h, 30h): write request
  WEEK: Weekend
     '0'-'0'(30h, 30h): None
     bit assignment of a day of the week.
     bit0: Monday
     bit1: Tuesday
     bit2: Wednesday
     bit3: Thursday
     bit4: Friday
     bit5: Saturday
     bit6: Sunday
     Example:
     Weekend setting is "Saturday" and "Sunday".
     '2'-'0' OR '4'-'0' = '6'-'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 a data for confirmation.

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

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

 Message
  STX (02h): Start of Message
  'C'-'B'-'1'-'A' (43h, 33h, 31h, 41h): Weekend reply command
  '0'-'1' (30h, 30h): write request

  ST: Status
     '0'-'0'(30h, 30h): No error

```
            '0'-'1'(30h, 31h): Error
     WEEK: Weekend
           '0'-'0'(30h, 30h): None
           bit assignment of a day of the week.
           bit0: Monday
           bit1: Tuesday
           bit2: Wednesday
           bit3: Thursday
           bit4: Friday
           bit5: Saturday
           bit6: Sunday
           Example:
            Weekend setting is "Saturday" and "Sunday".
            '2'-'0' OR '4'-'0' = '6'-'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
```

13. Self diagnosis

13.1 Self-diagnosis status read

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

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

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

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

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

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

Delimiter
  CR (0Dh): End of packet

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

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

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

Message
  STX (02h): Start of Message
  'A'-'1' (41h, 31h): Application Test Report reply command
  ST: Result of self-tests
       '0'-'0'(30h, 30h):00: Normal
       '7'-'0'(37h, 30h):70: Standby-power +3.3V abnormality
       '7'-'1'(37h, 31h):71: Standby-power +5V abnormality
       '7'-'2'(37h, 32h):72: Panel-power +12V abnormality
       '7'-'8'(37h, 38h):78: Inverter power/Option slot2 power +24V Abnormality
       '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
       '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

14. Serial No. & Model Name Read

14.1 Serial No. Read

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

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

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

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

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

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

Delimiter
  CR (0Dh): End of packet

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

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

Header
  SOH (01h): Start of Header
  '0' (30h): Reserved
  '0' (30h): Message receiver is the controller.
  Monitor ID: Indicate a replying Monitor ID.
             Ex.) When this byte is set to 'A', the replying Monitor ID is '1'.
'B' (42h): Message type is "Command reply".
N-N: Message length
             Note.) The maximum data length that can be returned from the monitor at a time is
                    32bytes.
             Ex.) The byte data 20h is encoded as ASCII characters '2' and '0' (32h and 30h).
Message
  STX (02h): Start of Message
  'C'-'3'-'1'-'6' (41h, 33h, 31h, 36h): Serial No. reply command
  Data(0)-Data(1)----Data(n):Serial Number
  ➢   The byte data 20h is encoded as ASCII characters '2' and '0' (32h and 30h).
        Ex.) Foe example when receiveing Serial Number data 33h 31h 33h 32h 33h 33h 33h 34h
            Step1: Serial Number data is encoded as character string.
                   Example:
                     33h 31h 33h 32h 33h 33h 33h 34h -> '3','1','3','2','3','3','3','4'
            Step2: Decode pairs of ASCII characters to hexadecimal values.
                   Example:
                     '3','1','3','2','3','3','3','4' -> 31h 32h 33h 34h
            Step3: Byte data represents the ASCII string data.
                   Example:
                     31h 32h 33h 34h -> "1234"
            Result: Serial Number is "1234".

Note: No null termination character is sent.
  ETX (03h): End of Message

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

Delimiter
  CR (0Dh): End of packet

14.2 Model Name Read

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

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

Header	Message	Check code	Delimiter
SOH-'0'-Monitor ID- '0'-'A'-'0'-'6'	STX-'C'-'2'-'1'-'7'-ETX	BCC	CR

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

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

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

Delimiter
  CR (0Dh): End of packet

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

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

Header
  SOH (01h): Start of Header
  '0' (30h): Reserved
  '0' (30h): Message receiver is the controller.
  Monitor ID: Indicate a replying Monitor ID.
            Ex.) When this byte is set to 'A', the replying Monitor ID is '1'.
  'B' (42h): Message type is "Command reply".
  N-N: Message length
            Note.) The maximum data length that can be returned from the monitor at a time is
                  32bytes.
            Ex.) The byte data 20h is encoded as ASCII characters '2' and '0' (32h and 30h).
Message
  STX (02h): Start of Message
  'C'-'3'-'1'-'7' (43h, 33h, 31h, 37h): Model Name reply Command
  Data(0) -Data(1)----Data(n):Model name
  ➢   The byte data 20h is encoded as ASCII characters '2' and '0' (32h and 30h).
         Ex.) Foe example when receiving Model Name data 35h 30h 33h 34h 33h 30h 33h 33h
            Step1: Model Name data is encoded character string.
                  Example:
                    35h 30h 33h 34h 33h 30h 33h 33h -> '5','0','3','4','3','0','3','3'
            Step2: Decode pairs of ASCII characters to hexadecimal values.
                  Example:
                    '5','0','3','4','3','0','3','3' -> 50h 34h 30h 33h
            Step3: Byte data represents the ASCII string data.
                  Example:
                    50h 34h 30h 33h -> "P403"
            Result: Model Name is "P403".
            Note: No null termination character is sent.
  ETX (03h): End of Message

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

Delimiter
  CR (0Dh): End of packet

15. Security Lock

15.1 Security Lock Control

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

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

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

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

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

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

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

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

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

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

  ETX (03h): End of Message

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

Delimiter
  CR (0Dh): End of packet

2) The monitor replies the result to the controller.

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

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

Message
  STX (02h): Start of Message
  'C'-'3'-'1'-'D' (43h, 33h, 31h, 44h): Security Lock Control reply command
  ST-EN: Lock condition result data
        ST: Status
            '0'-'0'(30h, 30h): No error
            '0'-'1'(30h, 31h): Error

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

17. Daylight Saving read & write

17.1 Daylight Saving Read

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

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

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

Header

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

Message

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

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

Delimiter
  CR (0Dh): End of packet

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

Header	Message	Check code	Delimiter
SOH-'0'-'0'-Monitor ID-'B'-'2'-'0'	STX-'C'-'B'-'0'-'1'-'0'-'0'-ST-BM-BD1-BD-BT1-BT2-EM-ED1-ED2-ET1-ET2-TD-ETX	BCC	CR

Header

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

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

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

Check code

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

Delimiter

  CR (0Dh): End of packet

17.2 Daylight Saving Write

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

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

Header	Message	Check code	Delimiter
SOH-'0'-Monitor ID- '0'-'A'-'1'-'E'	STX-'C'-'A'-'0'-'1'-'0'-'1'-BM-BD1-BD2- BT1-BT2-EM-ED1-ED2-ET1-ET2-TD-ETX	BCC	CR

Header

  SOH (01h): Start of Header
  '0' (30h): Reserved
  Monitor ID: Specify the Monitor ID of which you want to change a setting.
    Ex.) If Monitor ID is '1', specify 'A'.
  '0' (30h): Message sender is the controller.
  'A' (41h): Message type is "Command".
  '1'-'E'(31h, 45h): Message length (30bytes)

Message

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

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

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

    Delimiter
      CR (0Dh): End of packet


2) The monitor replies a written in result.
```

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

```
    Header

      SOH (01h): Start of Header
      '0' (30h): Reserved
      '0' (30h): Message receiver is the controller.
      Monitor ID: Indicate a replying Monitor ID.
          Ex.) When this byte is set to 'A', replying monitor's ID is '1'.
      'B' (42h): Message type is "Command reply".
      '0'-'A'(30h, 41h): Message length (10bytes)

    Message

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


    Check code

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

    Delimiter

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

18. Firmware Version

18.1 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.

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

    Header

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

    Message

      STX (02h): Start of Message
      'C'-'A'-'0'-'2' (43h, 41h, 30h, 32h): Firmware Version Command
      TY: Firmware Type
          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.

Header	Message	Check code	Delimiter
SOH-'0'-Monitor ID-'0'-'B'-'1'-'1'	STX-'C'-'B'-'0'-'2'-ST-TY-MV-PP-BV1-BV2-BV3-BR1-BR2-ETX	BCC	CR

    Header

      SOH (01h): Start of Header
      '0' (30h): Reserved
      '0' (30h): Message receiver is the controller.
      Monitor ID: Indicate a replying Monitor ID.
          Ex.) When this byte is set to 'A', replying monitor's ID is '1'.
      'B' (42h): Message type is "Command reply".
      '1'-'1'(31h, 31h): Message length (17bytes)

    Message

      STX (02h): Start of Message
      'C'-'B'-'0'-'2' (43h, 42h, 30h, 32h): Firmware Version Read reply
      ST: Error Status
          No Error : 00h (30h, 30h)
          Error   : 01h (30h, 31h)
      TY: Firmware Type
          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) Version2:
        00h (30h, 30h) - 09h (30h, 39h)
  BV3: Minor (Basic) Version3:
        00h (30h, 30h) - 09h (30h, 39h)
  BR1: Branch Version1:
        A:41h (34h, 31h) - Z:5Ah (35h, 41h)
  BR2: Branch Version2:
        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
```

19. Input Name

19.1 Input Name Read

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

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

Header	Message	Check code	Delimiter
SOH-'0'-Monitor ID- '0'-'A'-'0'-'8'	STX-'C'-'A'-'0'-'4'-'0'-'0'-ETX	BCC	CR

Header

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

Message

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

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

Delimiter
  CR (0Dh): End of packet

2) The monitor replies Input Name to the controller.

Header	Message	Check code	Delimiter
SOH-'0'-'0'-Monitor ID- 'B'-LN(H)-LN(L)	STX-'C'-'B'-'0'-'4'-'0'-'0'- Data(0)-Data(1)-Data(2)- --- -Data(n)-ETX	BCC	CR

Header

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

Message

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

Step3: Byte data represents the ASCII string data.
      Example:
        56h 47h 41h -> "VGA"
      Result: Input Name is "VGA".
      Note: No null termination character is sent.
  ETX (03h): End of Message

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

Delimiter
  CR (0Dh): End of packet

19.2 Input Name Write

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

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

Header	Message	Check code	Delimiter
SOH-'0'-Monitor ID- '0'-'A'- LN(H)-LN(L)	STX-'C'-'A'-'0'-'4'-'0'-'1'- Data(0)-Data(1)-Data(2)- --- -Data(n)-ETX	BCC	CR

Header

  SOH (01h): Start of Header
  '0' (30h): Reserved
  Monitor ID: Specify the Monitor ID of which you want to change a setting.
     Ex.) If Monitor ID is '1', specify 'A'.
  '0' (30h): Message sender is the controller.
  'A' (41h): Message type is "Command".
  LN(H)-LN(L): Message length (byte length), from STX to ETX
     Ex.) The byte data 20h is encoded as ASCII characters '2' and '0' (32h and 30h).

Message

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

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

Delimiter
  CR (0Dh): End of packet

2) The monitor replies a written in result.

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

Header

  SOH (01h): Start of Header
  '0' (30h): Reserved
  '0' (30h): Message receiver is the controller.
  Monitor ID: Indicate a replying Monitor ID.
    Ex.) When this byte is set to 'A', replying monitor's ID is '1'.
  'B' (42h): Message type is "Command reply".
  '0'-'A'(30h, 41h): Message length (10bytes)

Message

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

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

Check code

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

Delimiter

  CR (0Dh): End of packet

19.3 Input Name Reset

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

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

Header	Message	Check code	Delimiter
SOH-'0'-Monitor ID-'0'-'A'-'0'-'8'	STX-'C'-'A'-'0'-'4'-'0'-'2'-ETX	BCC	CR

Header

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

Message

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

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

Delimiter
  CR (0Dh): End of packet

2) The monitor replies result.

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

Header

  SOH (01h): Start of Header
  '0' (30h): Reserved
  '0' (30h): Message receiver is the controller.
  Monitor ID: Indicate a replying Monitor ID.
      Ex.) When this byte is set to 'A', replying monitor's ID is '1'.
  'B' (42h): Message type is "Command reply".
  '0'-'A'(30h, 41h): Message length (10bytes)

Message

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

Check code

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

Delimiter

  CR (0Dh): End of packet

21. Power Save Mode

21.1 Power Save Mode Read

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

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

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

```
Header

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

Message

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

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

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

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

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

```
Header

  SOH (01h): Start of Header
  '0' (30h): Reserved
  '0' (30h): Message receiver is the controller.
  Monitor ID: Indicate a replying Monitor ID.
     Ex.) When this byte is set to 'A', replying monitor's ID is '1'.
  'B' (42h): Message type is "Command reply".
  '0'-'A'(30h,41h): Message length (10byte)

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

Check code

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

Delimiter

  CR (0Dh): End of packet

21.2 Power Save Mode Write

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

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

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

    Header

      SOH (01h): Start of Header
      '0' (30h): Reserved
      Monitor ID: Specify the Monitor ID of which you want to change a setting.
            Ex.) If Monitor ID is '1', specify 'A'.
      '0' (30h): Message sender is the controller.
      'A' (41h): Message type is "Command".
      '0'-'A'(30h, 41h): Message length (10byte)

    Message

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

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

    Delimiter
      CR (0Dh): End of packet

2) The monitor replies a written in result.

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

    Header

      SOH (01h): Start of Header
      '0' (30h): Reserved
      '0' (30h): Message receiver is the controller.
      Monitor ID: Indicate a replying Monitor ID.
        Ex.) When this byte is set to 'A', replying monitor's ID is '1'.
      'B' (42h): Message type is "Command reply".
      '0'-'A'(30h,41h): Message length (10byte)

    Message

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

Check code

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

Delimiter

  CR (0Dh): End of packet

21.3 Auto Power Save Time Read

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

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

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

Header

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

Message

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

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

Delimiter
  CR (0Dh): End of packet

2) The monitor replies Time to the controller.

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

Header

  SOH (01h): Start of Header
  '0' (30h): Reserved
  '0' (30h): Message receiver is the controller.
  Monitor ID: Indicate a replying Monitor ID.
    Ex.) When this byte is set to 'A', replying monitor's ID is '1'.
  'B' (42h): Message type is "Command reply".
  '0'-'A'(30h,41h): Message length (10byte)

Message

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

Check code

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

Delimiter

  CR (0Dh): End of packet

21.4 Auto Power Save Time Write

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

1) The controller requests the monitor to write Time.

Header	Message	Check code	Delimiter
SOH-'0'-Monitor ID-'0'-'A'-'0'-'A'	STX-'C'-'A'-'0'-'B'-'0'-'3'-TIME-ETX	BCC	CR

Header

  SOH (01h): Start of Header
  '0' (30h): Reserved
  Monitor ID: Specify the Monitor ID of which you want to change a setting.
    Ex.) If Monitor ID is '1', specify 'A'.
  '0' (30h): Message sender is the controller.
  'A' (41h): Message type is "Command".
  '0'-'A'(30h,41h): Message length (10byte)

  Message

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

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

  Delimiter
    CR (0Dh): End of packet

2) The monitor replies a written in result.

Header	Message	Check code	Delimiter
SOH-'0'-'0'-Monitor ID-'B'-'0'-'8'	STX-'C'-'B'-'0'-'B'-'0'-'3'-ST-ETX	BCC	CR

Header

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

Message

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

  Check code

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

  Delimiter

  CR (0Dh): End of packet

22. Security Enable

22.1 Security Enable Read

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

1) The controller requests the monitor to read Security Enable

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

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

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

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

  Delimiter
    CR (0Dh): End of packet

 2) The monitor replies Security Enable to the controller.

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

  Header
    SOH (01h): Start of Header
    '0' (30h): Reserved
    '0' (30h): Message receiver is the controller.
    Monitor ID: Indicate a replying Monitor ID.
      Ex.) When this byte is set to 'A', replying monitor's ID is '1'.
    'B' (42h): Message type is "Command reply".
    '0'-'A'(30h,41h): Message length (10byte)

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

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

  Delimiter
    CR (0Dh): End of packet

22.2 Security Enable Write

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

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

Header	Message	Check code	Delimiter
SOH-'0'-Monitor ID- '0'-'A'-'1'-'C'	STX-'C'-'A'-'0'-'C'-'0'-'1'- ENA-'0'-'0'-PWD1-…-PWD16-ETX	BCC	CR

Header

  SOH (01h): Start of Header
  '0' (30h): Reserved
  Monitor ID: Specify the Monitor ID of which you want to change a setting.
    Ex.) If Monitor ID is '1', specify 'A'.
  '0' (30h): Message sender is the controller.
  'A' (41h): Message type is "Command".
  '1'-'C'(31h,43h): Message length (28byte)

Message

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

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

Delimiter
  CR (0Dh): End of packet

2) The monitor replies a written in result.

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

Header

SOH (01h): Start of Header
    '0' (30h): Reserved
    '0' (30h): Message receiver is the controller.
    Monitor ID: Indicate a replying Monitor ID.
        Ex.) When this byte is set to 'A', replying monitor's ID is '1'.
    'B' (42h): Message type is "Command reply".
    '0'-'A'(30h,41h): Message length (10byte)

Message

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

Check code

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

Delimiter

    CR (0Dh): End of packet

23. LAN MAC Address

23.1 LAN MAC Address Read

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

1) The controller requests the monitor to read MAC Address

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

    Header

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

    Message

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

    Check code

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

    Delimiter

      CR (0Dh): End of packet

2) The monitor replies MAC Address to the controller.

Header	Message	Check code	Delimiter
SOH-'0'-'0'-Monitor ID- 'B'-LN(H)-LN(L)	STX-'C'-'3'-'2'-'A'-RC-'0'-'2'- IPV-MAC(0)-.....-MAC(n)-ETX	BCC	CR

Header

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

    Message

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

This function which plays files in the EMRGENCY CONTENTS folder in the root folder on SD card 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.

24.1 Emergency Contents Display

This command is used in order to display Emergency Contents.

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

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

  Header

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

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

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

  Header

    SOH (01h): Start of Header
    '0' (30h): Reserved
    '0' (30h): Message receiver is the controller.
    Monitor ID: Indicate a replying Monitor ID.
        Ex.) When this byte is set to 'A', replying monitor's ID is '1'.
    'B' (42h): Message type is "Command reply".
    '0'-'A'(30h,41h): Message length (10byte)

  Message

    STX (02h): Start of Message
    'C'-'B'-'1'-'F' (43h, 42h, 31h, 46h): Emergency Contents Reply Command
    '0'-'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

24.2 Emergency Contents Delete

This command is used in order to stop Emergency Contents.

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

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

Header

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

  Message

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

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

Header

  SOH (01h): Start of Header
  '0' (30h): Reserved
  '0' (30h): Message receiver is the controller.
  Monitor ID: Indicate a replying Monitor ID.
    Ex.) When this byte is set to 'A', replying monitor's ID is '1'.
  'B' (42h): Message type is "Command reply".
  '0'-'A'(30h,41h): Message length (10byte)

  Message

  STX (02h): Start of Message
  'C'-'B'-'1'-'F' (43h, 42h, 31h, 46h): Emergency Contents Reply Command
  '0'-'0' (30h, 31h): 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.

(August 24, 2017)