

External Control Manual

< Standard Command for *XP model* >

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This manual shows the communication system and control commands between the plasma monitors and the communications control equipments.

1. General information

This protocol is user menu control (fully control) used to RS-232C for plasma monitor.

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3. Connections

The following control sequence is used for a single and multiple monitors that are daisy-chained together please use the standard command. When using the following control commands, all of the daisy-chained monitors can be controlled at the same time from one monitor. Reply and status commands, however, will only pertain to the primary monitor, not secondary monitors.

1) Connector pin assignment

Connector on the plasma monitor side : EXTERNAL CONTROL connector.

Type of connector : D-Sub 9-pin male

Pin No.	Name
1	NC
2	RXD (Receiving data)
3	TXD (Transmit data)
4	NC
5	GND
6	NC
7	RTS (Ready to send)
8	CTS (Clear to send)
9	NC

2) Connector on the external equipment side (PC)

: Serial port (RS-232C) connector.

See the specifications of the equipment that is to be connected for the type of connector and the pin assignment.

3) Wiring

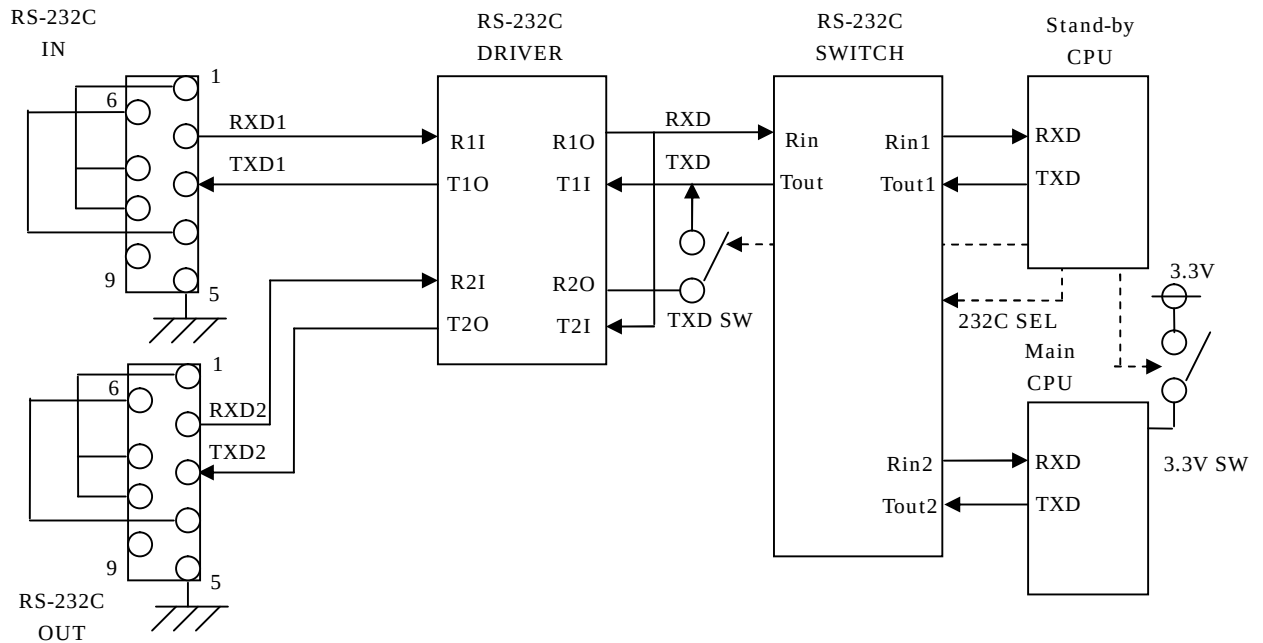
Use a crossed (reverse) cable.

Wire the cable so that each pair of data lines cross between the two devices.

These data line pairs are RXD and TXD, and RTS and CTS.

4) Hardware connection into the monitor

Please refer to the following block diagram.



TXD SW is normally “on” . When CPU send TXD data, SW is “off” .

If the “IR CONTROL” function is selected “SECANDARY” by the menu,
SW is fixed “off”.

This system has 2 kind of CPU, one is a Stand-by CPU, another is Main CPU.

When Stand-by state, Stand-by CPU works, but, Main CPU is dead.

The Stand-by CPU changes the setting when changing power status from Stand-by to ON.

- 1) the 3.3V SW is ON
- 2) RS232C lines is changed from Stand-by CPU to Main CPU

***note 1) The external equipment (ex. PC) should wait to send next command
at least 6 seconds after sending POWER ON command.**

***note 2) When Stand-by state, the Stand-by CPU can receive only following commands.**

- 1) POWER ON command
- 2) POWER Status read command

4. Communication Format

1) Interface

COMMUNICATION SYSTEM	ASYNCHRONOUS
PROTOCOL	RS-232C
BAUD RATE	9600 (bps)
DATA LENGTH	8 (bits)
PARITY BIT	NONE
STOP BIT	1 (bit)
FLOW CONTROL	NONE
COMMUNICATION CODE	ASCII

2) Control command diagram

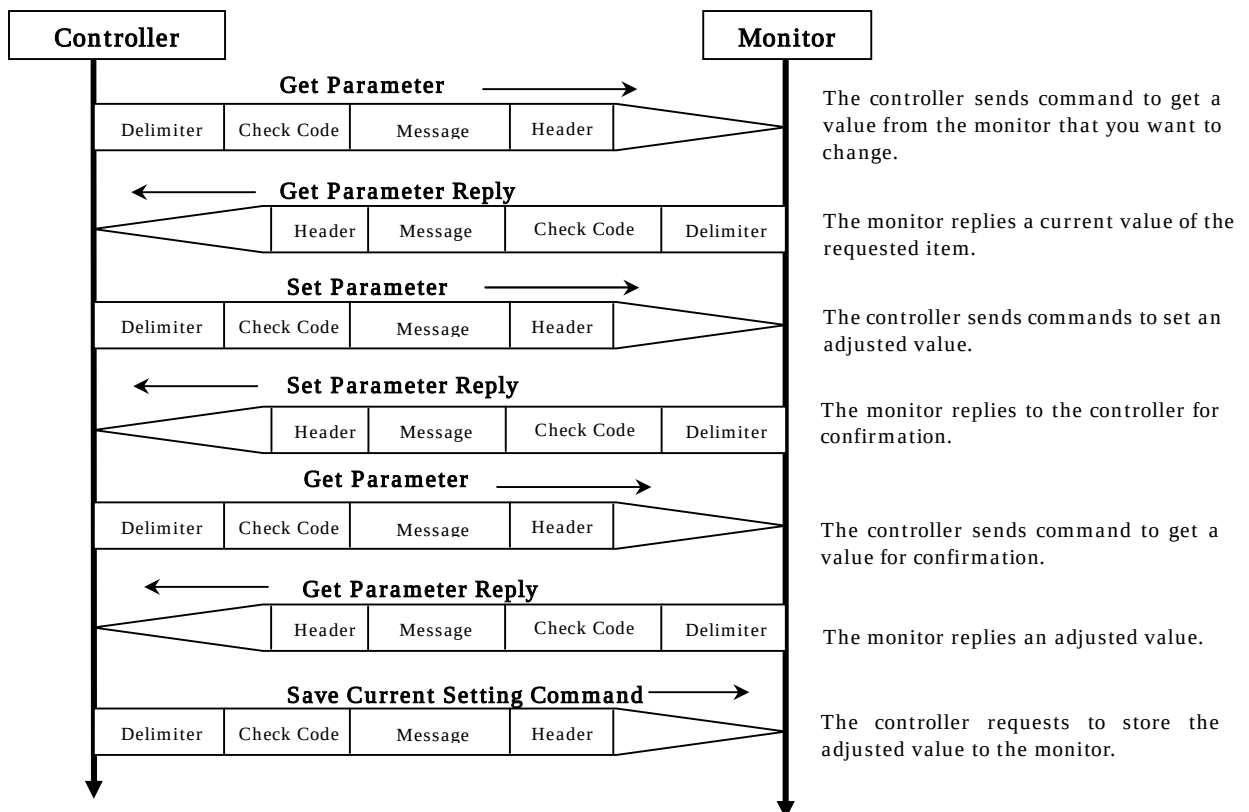
The command is structured by the Header, Message, Check code and Delimiter. The length of the command is different for each function.

Header	Message	Check code	Delimiter
--------	---------	------------	-----------

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

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

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



(1) Header block format (fixed length)

Header	Message	Check code	Delimiter
--------	---------	------------	-----------

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

1stbyte) SOH: Start of Header

ASCII SOH (01h)

2ndbyte) Reserved: Reserved for future extensions.

ASCII '0'(30h)

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

Specify a commands receiver's address.

This value must match the "Monitor ID No." set in the OSM.

"Monitor ID" to "Destination Address" conversion table is as follows,

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

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

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

Specify a sender address.

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

5thbyte) Message Type: (Case sensitive.)

Refer to section 4.2 “Message block format” for more details.

ASCII 'A' (41h): Command

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

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

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

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

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

6th -7th bytes) Message Length:

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

This length includes STX and ETX.

The byte data must be encoded to ASCII characters.

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

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

(2) Message block format

Header	Message	Check code	Delimiter
--------	---------	------------	-----------

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

Refer to the section 6 “Message format” for more detail.

<1> Get current parameter

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

For the status that you want to get, specify the “OP code page” and “OP code”, refer to “Table 5)-1 Operation code table”.

“Message format” of the “Get current parameter” is as follows,

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

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 “Table 5)-1 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)

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

OP code data must be encoded to ASCII characters.

Ex.) The byte data 1Fh must be encoded to ASCII characters '1' and 'F' (31h and 46h).

OP code 1Fh -> OP code (Hi) = ASCII '1' (31h)

OP code (Lo) = ASCII 'F' (46h)

6th byte) ETX: End of Message

ASCII ETX (03h)

<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	
1 st	2 nd -3 rd		4 th -5 th		6 th -7 th		8 th -9 th		10 th -13 th			14 th -17 th				18 th

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 codes 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 1Fh is encoded to ASCII character '1' and 'F' (31h and 46h).

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

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).

00h: Set parameter

01h: Momentary

Like the AutoSetup function which automatically changes the parameter.

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

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

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

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

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

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

18th byte) ETX: End of Message

ASCII ETX (03h)

<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	
1 st	2 nd -3 rd		4 th -5 th		6 th -9 th				10 th

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.

OP code 1Fh -> OP code (Hi) = ASCII '1' (31h)

OP code (Lo) = ASCII 'F' (46h)

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)

<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	
1 st	2 nd -3 rd		4 th -5 th		6 th -7 th		8 th -9 th		10 th -13 th				14 th -17 th				18 th

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 1Fh -> OP code (Hi) = ASCII '1' (31h)

OP code (Lo) = ASCII 'F' (46h)

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> 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.

<6> Command reply

The monitor replies to a query from the controller.

“Command reply message” format depends on each command.

(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	D ₅								
STX	D ₆								
Data	D ₇								
ETX	D _n								
Check code	D _{n+1}	P	P	P	P	P	P	P	P

$$D_{n+1} = D_1 \text{ XOR } D_2 \text{ XOR } D_3 \text{ XOR } \dots \text{ XOR } D_n$$

XOR: Exclusive OR

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

Header							Message										Check	Delimiter
SOH	Reserved	Destination Address	Source Address	Message type	Message length		STX	OP code page		OP code		Set Value				ETX	code (BCC)	
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

$$\begin{aligned}
 \text{Check code (BCC) } D_{17} &= D_1 \text{ xor } D_2 \text{ xor } D_3 \text{ xor } \dots \text{ xor } D_{14} \text{ xor } D_{15} \text{ xor } D_{16} \\
 &= 30\text{h xor } 41\text{h xor } 30\text{h xor } 45\text{h xor } 30\text{h xor } 41\text{h} \\
 &\quad \text{xor } 02\text{h xor } 30\text{h xor } 30\text{h xor } 31\text{h xor } 30\text{h xor } 30\text{h} \\
 &\quad \text{xor } 30\text{h xor } 36\text{h xor } 34\text{h xor } 03\text{h} \\
 &= 77\text{h}
 \end{aligned}$$

(4) Delimiter

Header	Message	Check code	Delimiter
--------	---------	------------	-----------

Packet delimiter code;

ASCII CR(0Dh).

3) Control sequence

- (1) The command from a personal computer to the plasma monitor will take 600msec.
- (2) The plasma monitor will send a return command 600msec(*) after it has received an encode. If the command isn't received correctly, the plasma monitor will not send the return command.
- (3) The personal computer checks the command and confirms if the command which has been sent has been executed or not.
- (4) This plasma monitor sends various codes other than the code. When sending a control sequence via RS-232C, other codes from personal computers will be ignored.

* : The sending time of the return command may be delayed depending on the monitor's current activity (changing of the input signal, etc.).

5. Operation Commands

1) Operation Commands

The operation commands execute the basic operation setting of this plasma monitor.

It may not operate when changing the signal :

(1) Power ON / Power OFF

<from PC to monitor>

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' (41h).

If Monitor ID is 'ALL', specify '*' (2Ah).

'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

0004: OFF (same as the power off by IR)

ETX (03h): End of Message

Check code

BCC: Block Check Code

Refer to the section 4-2)-(3) "Check code" for a BCC calculation.

Delimiter

CR (0Dh): End of packet.

<from monitor to PC : ACK>

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' (41h), the replying Monitor ID is '1'.

When this byte is set to '*' (2Ah), the replying Monitor ID is 'ALL'.

'B' (42h): Message type is "Command reply"

'0'-'E' (30h, 45h): Message length is 14 bytes

Message

STX (02h): Start of Message

'0'-'0' (30h, 30h): Result code.

00 : No error

01 : Unsupported

'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

0004: OFF (same as the power off by IR)

ETX (03h): End of Message

Check code

BCC: Block Check Code

Refer to the section 4-2)-(3) “ Check code ” for a BCC calculation.

Delimiter

CR (0Dh): End of packet.

- POWER ON command should not be used less than **6 seconds** after the power is turned off.
- POWER OFF command should not be used less than **6 seconds** after the power is turned on.

(2) Power status read

<from PC to monitor>

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 which you want to change a setting.

Ex.) If Monitor ID is '1', specify 'A' (41h).

If Monitor ID is 'ALL', specify '*' (2Ah).

'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' (30h, 31h, 44h, 36h) : Get power status command

ETX (03h): End of Message

Check code

BCC: Block Check Code

Refer to the section 4-2)-(3) “ Check code ” for a BCC calculation.

Delimiter

CR (0Dh): End of packet.

<from monitor to PC : ACK>

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'-'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' (41h), the replying Monitor ID is '1'.

When this byte is set to '*' (2Ah), the replying Monitor ID is 'ALL'.

'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) : max value is 4(0004h) <Power mode is 3 types>

'0'-'0'-'0'-'1' (30h, 30h, 30h, 31h): Current power mode

<Status>

0001: ON

0002: power management mode

0004: OFF (same as the power off by IR)

ETX (03h): End of Message

Check code

BCC: Block Check Code

Refer to the section 4-2)-(3) "Check code" for a BCC calculation.

Delimiter

CR (0Dh): End of packet.

(3) Input Switch Change

<from PC to monitor>

The controller requests the monitor to change input (ex. Change to VGA)

Header	Message	Check code	Delimiter
SOH-'0'-Monitor ID-'0'-'E'-'0'-'A'	STX-'0'-'0'-'6'-'0'-'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' (41h).

If Monitor ID is 'ALL', specify '*' (2Ah).

'0' (30h): Message sender is the controller

'E' (45h): Message type is "Set parameter"

'0'-'A' (30h, 41h): Message length is 10 bytes

Message

STX (02h): Start of Message

'0'-'0', '6'-'0' (30h, 30h, 36h, 30h): OP code page & OP code : INPUT

'0'-'0'-'0'-'1' (30h, 30h, 30h, 31h): Parameter

0001: VGA (SCART3)

0002: RGB/HV

0003: DVI

0005: VIDEO1

0006: VIDEO2

0007: S-VIDEO

000C: DVD/HD1

000D: DVD/HD2 (SCART1/SCART2)

ETX (03h): End of Message

Check code

BCC: Block Check Code

Refer to the section 4-2)-(3) " Check code " for a BCC calculation.

Delimiter

CR (0Dh): End of packet.

< from monitor to PC : ACK >

The monitor replies a data for confirmation (ex. Change to VGA)

Header	Message	Check code	Delimiter
SOH-'0'-'0'-Monitor ID-'F'-'1'-'2'	STX-'0'-'0'-'0'-'0'-'6'-'0'-'0'-'0'-'0'-'0'-'2'-'0'-'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' (41h), the replying Monitor ID is '1'.

When this byte is set to '*' (2Ah), the replying Monitor ID is 'ALL'.

'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.

00 : No error

01 : Unsupported

'0'-'0', '6'-'0' (30h, 30h, 36h, 30h): OP code page & OP code : INPUT

'0'-'0' (30h, 30h): TYPE : Set parameter

'0'-'0'-'2'-'0' (30h, 30h, 32h, 30h): Max. value

'0'-'0'-'0'-'1' (30h, 30h, 30h, 31h): Request setting value

0001: VGA (SCART3)

0002: RGB/HV

0003: DVI

0005: VIDEO1

0006: VIDEO2

0007: S-VIDEO

000C: DVD/HD1

000D: DVD/HD2 (SCART1/SCART2)

ETX (03h): End of Message

Check code

BCC: Block Check Code

Refer to the section 4-2)-(3) " Check code " for a BCC calculation.

Delimiter

CR (0Dh): End of packet.

(4) Input Source read

<from PC to monitor>

The controller requests the monitor to reply a current input source.

Header	Message	Check code	Delimiter
SOH-'0'-Monitor ID-'0'-'C'-'0'-'6'	STX-'0'-'0'-'6'-'0'-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' (41h).

If Monitor ID is 'ALL', specify '*' (2Ah).

'0' (30h): Message sender is the controller

'C' (43h): Message 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

'6'-'0' (36h, 30h): Operation code is 60h (in the OP code page 0)

ETX (03h): End of Message

Check code

BCC: Block Check Code

Refer to the section 4-2)-(3) "Check code" for a BCC calculation.

Delimiter

CR (0Dh): End of packet

< from monitor to PC : ACK >

The monitor returns with the current power status. (ex. VGA)

Header	Message	Check code	Delimiter
SOH-'0'-'0'-Monitor ID-'D'-'1'-'2'	STX-'0'-'0'-'0'-'0'-'6'-'0'-'0'-'0'-'0'-'2'-'0'-'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' (41h), the replying Monitor ID is '1'.

When this byte is set to '*' (2Ah), the replying Monitor ID is 'ALL'.

'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.

00 : No error

01 : Unsupported

'0'-'0' (30h, 30h): Operation code page number is 0

'6'-'0' (36h, 30h): Operation code is 60h (in the page 0)

'0'-'0' (30h, 30h): This operation is "Set parameter" type

'0'-'0'-'2'-'0' (30h, 30h, 32h, 30h): Input source max value is 32(0020h)

'0'-'0'-'0'-'1' (30h, 30h, 30h, 31h): Input source is VGA-0001(0001h)

0001: VGA (SCART3)

0002: RGB/HV

0003: DVI

0005: VIDEO1

0006: VIDEO2

0007: S-VIDEO

000C: DVD/HD1

000D: DVD/HD2 (SCART1/SCART2)

ETX (03h): End of Message

Check code

BCC: Block Check Code

Refer to the section 4-2)-(3) “ Check code ” for a BCC calculation.

Delimiter

CR (0Dh): End of packet.

(5) Self-diagnosis status read

<from PC to monitor>

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 change a setting.

Ex.) If Monitor ID is '1', specify 'A' (41h).

If Monitor ID is 'ALL', specify '*' (2Ah).

'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

'B'-'1' (42h, 31h): Self-diagnosis command

ETX (03h): End of Message

Check code

BCC: Block Check Code

Refer to the section 4-2)-(3) “ Check code ” for a BCC calculation.

Delimiter

CR (0Dh): End of packet.

< from monitor to PC : ACK >

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' (41h), the replying Monitor ID is '1'.

When this byte is set to '*' (2Ah), the replying Monitor ID is 'ALL'.

'B' (46h): 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 32 bytes.

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

Message

STX (02h): Start of Message

'A'-'1' (41h, 31h): Application Test Report reply command

ST : Result of self-tests

00: Normal

77: DC voltage abnormality

80: Cooling fan abnormality

Note.) Temperature limit and Temperature sensor error are no data.

(monitor does not send these data)

ETX (03h): End of Message

Check code

BCC: Block Check Code

Refer to the section 4-2)-(3) “ Check code ” for a BCC calculation.

Delimiter

CR (0Dh): End of packet.

(6) NULL Message

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

- A timeout error has occurred. (The default timeout is 10sec.)
- The monitor receives an unsupported message type (command).
Especially, when message type of Header is "Command" ('A' (41h)),
monitor returns NULL Message to PC.
- The monitor detects a packet BCC (Block Check Code) error.
- To tell the controller that the monitor does not have any answer to give to the host (not ready or not expected)

< from monitor to PC : NULL Message >

Header	Message	Check code	Delimiter
SOH-'0'-'0'-Monitor ID-'B'-'0'-'4'	STX-'B'-'E'-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' (41h), the replying Monitor ID is '1'.

When this byte is set to '*' (2Ah), the replying Monitor ID is 'ALL'.

'B' (42h): Message type is "Command reply"

'0'-'4' (30h, 34h): Message length is 4 bytes

Message

STX (02h): Start of Message

'B'-'E' (42h, 45h) : NULL Message

ETX (03h): End of Message

Check code

BCC: Block Check Code

Refer to the section 4-2)-(3) "Check code" for a BCC calculation.

Delimiter

CR (0Dh): End of packet.

(7) Product Name Read

<from PC to monitor>

The controller request the monitor to read the product name.(Command)

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 of which you want to change a setting.

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

If Monitor ID is 'ALL', specify '*' (2Ah).

'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

'C'-'2'-'1'-'7' (43h, 32h, 31h, 37h): product name read command

ETX (03h): End of Message

Check code

BCC: Block Check Code

Refer to the section 4-2)-(3) "Check code" for a BCC calculation.

Delimiter

CR (0Dh): End of packet

<from monitor to PC : ACK>

The monitor replies with a message for confirmation. .(Command reply)

Header	Message	Check code	Delimiter
SOH-'0'-'0'- Monitor ID -'B'-'0'-'D'	STX-'C'-'3'-'1'-'7'-Data(0)-Data(1)-Data(3) -----Data(6)-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'.

When this byte is set to '*' (2Ah), the replying Monitor ID is 'ALL'.

'B' (42h): Message Type is "Command reply"

'0'-'D' (30h, 44h): Message length is 13 bytes

Message

STX (02h): Start of Message

'C'-'3'-'1'-'7' (43h, 33h, 31h, 37h): product name read reply command

Data(0)-Data(1)-Data(3) -----Data(6) : product name

P42XP10 : (50h, 34h, 32h, 58h, 50h, 31h, 30h)

P50XP10 : (50h, 35h, 30h, 58h, 50h, 31h, 30h)

P60XP10 : (50h, 36h, 30h, 58h, 50h, 31h, 30h)

ETX (03h): End of Message

Check code

BCC: Block Check Code

Refer to the section 4-2)-(3) "Check code" for a BCC calculation.

Delimiter

CR (0Dh): End of packet

(8) Serial Number Read

<from PC to monitor>

The controller request the monitor to read the serial number.(Command)

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 of which you want to change a setting.

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

If Monitor ID is 'ALL', specify '*' (2Ah).

'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

'C'-'2'-'1'-'6' (43h, 32h, 31h, 36h): serial number read command

ETX (03h): End of Message

Check code

BCC: Block Check Code

Refer to the section 4-2)-(3) "Check code" for a BCC calculation.

Delimiter

CR (0Dh): End of packet

<from monitor to PC : ACK>

The monitor replies with a message for confirmation. .(Command reply)

Header	Message	Check code	Delimiter
SOH-'0'-'0'- Monitor ID -'B'-'1'-'0'	STX-'C'-'3'-'1'-'6'-Data(0)-Data(1)-Data(3) -----Data(9)-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'.

When this byte is set to '*' (2Ah), the replying Monitor ID is 'ALL'.

'B' (42h): Message Type is "Command reply"

'1'-'0' (31h, 36h): Message length is 16 bytes

Message

STX (02h): Start of Message

'C'-'3'-'1'-'6' (43h, 33h, 31h, 36h): serial number read reply command

Data(0)-Data(1)-Data(3) -----Data(9) : serial number by using ASCII character strings

ETX (03h): End of Message

Check code

BCC: Block Check Code

Refer to the section 4-2)-(3) "Check code" for a BCC calculation.

Delimiter

CR (0Dh): End of packet

(9) Present Time write

<from PC to monitor>

The controller request the monitor to write the Present Time.(Command)

Header	Message	Check code	Delimiter
SOH-'0'-Monitor ID-'0'-'A'-'0'-'E'	STX-'C'-'2'-'1'-'2'-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 a setting.

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

If Monitor ID is 'ALL', specify '*' (2Ah).

'0' (30h): Message sender is the controller

'A' (41h): Message Type is "Command"

'0'-'E' (30h, 45h): Message length is 14 bytes

Message

STX (02h): Start of Message

'C'-'2'-'1'-'2' (43h, 32h, 31h, 32h) : Present time write command

'WW'-'HH'-'MN'-'DS' : Present time

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) : OFF

'0'-'1' (30h, 31h) : ON

ETX (03h): End of Message

Check code

BCC: Block Check Code

Refer to the section 4-2)-(3) "Check code" for a BCC calculation.

Delimiter

CR (0Dh): End of packet

<from monitor to PC : ACK>

The monitor replies with a data for confirmation. .(Command reply)

Header	Message	Check code	Delimiter
SOH-'0'-'0'- Monitor ID -'B'-'1'-'0'	STX-'C'-'3'-'1'-'2'-ST-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'.

When this byte is set to '*' (2Ah), the replying Monitor ID is 'ALL'.

'B' (42h): Message Type is "Command reply"

'1'-'0' (31h, 30h): Message length is 16 bytes

Message

STX (02h): Start of Message

'C'-'3'-'1'-'2' (43h, 33h, 31h, 32h): Present time write reply command

ST : Present Time Status command

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

'0'-'1' (30h, 31h) : Error

'WW'-'HH'-'MN'-'DS' : Present time

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) : OFF

'0'-'1' (30h, 31h) : ON

ETX (03h): End of Message

Check code

BCC: Block Check Code

Refer to the section 4-2)-(3) "Check code" for a BCC calculation.

Delimiter

CR (0Dh): End of packet

(10) Present Time read

<from PC to monitor>

The controller request the monitor to reply with the Present Time.(Command)

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 change a setting.

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

If Monitor ID is 'ALL', specify '*' (2Ah).

'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

'C'-'2'-'1'-'1' (43h, 32h, 31h, 31h) : Present time read request command

ETX (03h): End of Message

Check code

BCC: Block Check Code

Refer to the section 4-2)-(3) "Check code" for a BCC calculation.

Delimiter

CR (0Dh): End of packet

<from monitor to PC : ACK>

The monitor replies with a data to the controller. .(Command reply)

Header	Message	Check code	Delimiter
SOH-'0'-'0'- Monitor ID -'B'-'0'-'E'	STX-'C'-'3'-'1'-'1'-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'.

When this byte is set to '*' (2Ah), the replying Monitor ID is 'ALL'.

'B' (42h): Message Type is "Command reply"

'0'-'E' (30h, 45h): Message length is 14 bytes

Message

STX (02h): Start of Message

'C'-'3'-'1'-'1' (43h, 33h, 31h, 31h): Present time read reply command

'WW'-'HH'-'MN'-'DS' : Present time

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) : OFF

'0'-'1' (30h, 31h) : ON

ETX (03h): End of Message

Check code

BCC: Block Check Code

Refer to the section 4-2)-(3) "Check code" for a BCC calculation.

Delimiter

CR (0Dh): End of packet

(11) Program Timer write

<from PC to monitor>

The controller request the monitor to write the Program Timer.(Command)

Header	Message	Check code	Delimiter
SOH-'0'-Monitor ID-'0'-'A'-'4'-'A'	STX-'C'-'2'-'1'-'4'-'PG'-'DAY'-'ON_HOURS'-'ON_MIN'-'OFF_HOURS'-'OFF_MIN'-'INPUT'-'MAIN'-'SUB'-'FUNC'-'ST1'-'MODE1'-'HOURS1'-'MIN1'-'MAIN1'-'SUB1'-'ST2'-'MODE2'-'HOURS2'-'MIN2'-'MAIN2'-'SUB2'-'ST3'-'MODE3'-'HOURS3'-'MIN3'-'MAIN3'-'SUB3'-'ST4'-'MODE4'-'HOURS4'-'MIN4'-'MAIN4'-'SUB4'-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'.

If Monitor ID is 'ALL', specify '*' (2Ah).

'0' (30h): Message sender is the controller

'A' (41h): Message Type is "Command"

'4'-'A' (34h, 41h): Message length is 74 bytes

Message

STX (02h): Start of Message

'C'-'2'-'1'-'4' (43h, 32h, 31h, 34h) : Program Timer write command

'PG'-'DAY'-'ON_HOURS'-'ON_MIN'-'OFF_HOURS'-'OFF_MIN'-'INPUT'-'MAIN'-'SUB'-'FUNC'-'ST1'-'MODE1'-'HOURS1'-'MIN1'-'MAIN1'-'SUB1'-'ST2'-'MODE2'-'HOURS2'-'MIN2'-'MAIN2'-'SUB2'-'ST3'-'MODE3'-'HOURS3'-'MIN3'-'MAIN3'-'SUB3'-'ST4'-'MODE4'-'HOURS4'-'MIN4'-'MAIN4'-'SUB4' : Program data

PG : Program No.

'0'-'1' (30h, 31h) : 1

|

'0'-'A' (30h, 41h) : 10 (=0Ah)

DAY : 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

'0'-'7' (30h, 37h) : Everyday

'0'-'8' (30h, 38h) : Every Sunday

'0'-'9' (30h, 39h) : Every Monday

'0'-'A' (30h, 41h) : Every Tuesday

'0'-'B' (30h, 42h) : Every Wednesday

'0'-'C' (30h, 43h) : Every Thursday

'0'-'D' (30h, 44h) : Every Friday

'0'-'E' (30h, 45h) : Every Saturday

'F'-'F' (46h, 46h) : - (no setting)

ON_HOURS : turn on time (hours)
 '0'-'0' (30h, 30h) : 0
 |
 '1'-'7' (31h, 37h) : 23 (=17h)
 'F'-'F' (46h, 46h) : - (no setting)

ON_MIN : turn on time (minutes)
 '0'-'0' (30h, 30h) : 0
 |
 '3'-'B' (33h, 42h) : 59 (=3Bh)
 'F'-'F' (46h, 46h) : - (no setting)

OFF_HOURS : turn off time (hours)
 '0'-'0' (30h, 30h) : 0
 |
 '1'-'7' (31h, 37h) : 23 (=17h)
 'F'-'F' (46h, 46h) : - (no setting)

OFF_MIN : turn off time (minutes)
 '0'-'0' (30h, 30h) : 0
 |
 '3'-'B' (33h, 42h) : 59 (=3Bh)
 'F'-'F' (46h, 46h) : - (no setting)

INPUT : input mode (single or split screen)
 '0'-'1' (30h, 31h) : SINGLE
 '0'-'2' (30h, 32h) : S BY S1
 '0'-'3' (30h, 33h) : S BY S2L
 '0'-'4' (30h, 34h) : S BY S2R
 '0'-'5' (30h, 35h) : BOTTOM LEFT
 '0'-'6' (30h, 36h) : BOTTOM RIGHT
 '0'-'7' (30h, 37h) : TOP RIGHT
 '0'-'8' (30h, 38h) : TOP LEFT
 'F'-'F' (46h, 46h) : - (no setting)

MAIN : single/main/left picture input source
 '0'-'1' (30h, 31h) : VGA (SCART3)
 '0'-'2' (30h, 32h) : RGB/HV
 '0'-'3' (30h, 33h) : DVI
 '0'-'5' (30h, 35h) : VIDEO1
 '0'-'6' (30h, 36h) : VIDEO2
 '0'-'7' (30h, 37h) : S-VIDEO
 '0'-'C' (30h, 43h) : DVD/HD1
 '0'-'D' (30h, 44h) : DVD/HD2 (SCART1/SCART2)
 'F'-'F' (46h, 46h) : - (no setting)

SUB : sub/right picture input source
 '0'-'1' (30h, 31h) : VGA (SCART3)
 '0'-'2' (30h, 32h) : RGB/HV
 '0'-'3' (30h, 33h) : DVI
 '0'-'5' (30h, 35h) : VIDEO1
 '0'-'6' (30h, 36h) : VIDEO2
 '0'-'7' (30h, 37h) : S-VIDEO
 '0'-'C' (30h, 43h) : DVD/HD1

'0'-'D' (30h, 44h) : DVD/HD2 (SCART1/SCART2)
'F'-'F' (46h, 46h) : - (no setting)

FUNC : function setting

'0'-'1' (30h, 31h) : ORBITER
'0'-'2' (30h, 32h) : INVERSE
'0'-'3' (30h, 33h) : WHITE
'0'-'4' (30h, 35h) : REPEAT1
'0'-'5' (30h, 36h) : REPEAT2
'0'-'6' (30h, 37h) : REPEAT3
'F'-'F' (46h, 46h) : - (no setting)

ST1 : State

'0'-'0' (30h, 30h) : OFF
'0'-'1' (30h, 31h) : ON

MODE1 : input mode (single or split screen)

'0'-'1' (30h, 31h) : SINGLE
'0'-'2' (30h, 32h) : S BY S1
'0'-'3' (30h, 33h) : S BY S2L
'0'-'4' (30h, 34h) : S BY S2R
'0'-'5' (30h, 35h) : BOTTOM LEFT
'0'-'6' (30h, 36h) : BOTTOM RIGHT
'0'-'7' (30h, 37h) : TOP RIGHT
'0'-'8' (30h, 38h) : TOP LEFT
'F'-'F' (46h, 46h) : - (no setting)

HOURS1 : working time (hours)

'0'-'0' (30h, 30h) : 0
|
'1'-'8' (31h, 38h) : 24 (=18h)
'F'-'F' (46h, 46h) : - (no setting)

MIN1 : working time (minutes)

'0'-'0' (30h, 30h) : 0
|
'3'-'B' (33h, 42h) : 59 (=3Bh)
'F'-'F' (46h, 46h) : - (no setting)

MAIN1 : single/main/left picture input source

'0'-'1' (30h, 31h) : VGA (SCART3)
'0'-'2' (30h, 32h) : RGB/HV
'0'-'3' (30h, 33h) : DVI
'0'-'5' (30h, 35h) : VIDEO1
'0'-'6' (30h, 36h) : VIDEO2
'0'-'7' (30h, 37h) : S-VIDEO
'0'-'C' (30h, 43h) : DVD/HD1
'0'-'D' (30h, 44h) : DVD/HD2 (SCART1/SCART2)
'F'-'F' (46h, 46h) : - (no setting)

SUB1 : sub/right picture input source

'0'-'1' (30h, 31h) : VGA (SCART3)
'0'-'2' (30h, 32h) : RGB/HV
'0'-'3' (30h, 33h) : DVI
'0'-'5' (30h, 35h) : VIDEO1
'0'-'6' (30h, 36h) : VIDEO2
'0'-'7' (30h, 37h) : S-VIDEO
'0'-'C' (30h, 43h) : DVD/HD1
'0'-'D' (30h, 44h) : DVD/HD2 (SCART1/SCART2)
'F'-'F' (46h, 46h) : - (no setting)

ST2 : State

'0'-'0' (30h, 30h) : OFF
'0'-'1' (30h, 31h) : ON

MODE2 : input mode (single or split screen)

'0'-'1' (30h, 31h) : SINGLE
'0'-'2' (30h, 32h) : S BY S1
'0'-'3' (30h, 33h) : S BY S2L
'0'-'4' (30h, 34h) : S BY S2R
'0'-'5' (30h, 35h) : BOTTOM LEFT
'0'-'6' (30h, 36h) : BOTTOM RIGHT
'0'-'7' (30h, 37h) : TOP RIGHT
'0'-'8' (30h, 38h) : TOP LEFT
'F'-'F' (46h, 46h) : - (no setting)

HOURS2 : working time (hours)

'0'-'0' (30h, 30h) : 0
|
'1'-'8' (31h, 38h) : 24 (=18h)
'F'-'F' (46h, 46h) : - (no setting)

MIN2 : working time (minutes)

'0'-'0' (30h, 30h) : 0
|
'3'-'B' (33h, 42h) : 59 (=3Bh)
'F'-'F' (46h, 46h) : - (no setting)

MAIN2 : single/main/left picture input source

'0'-'1' (30h, 31h) : VGA (SCART3)
'0'-'2' (30h, 32h) : RGB/HV
'0'-'3' (30h, 33h) : DVI
'0'-'5' (30h, 35h) : VIDEO1
'0'-'6' (30h, 36h) : VIDEO2
'0'-'7' (30h, 37h) : S-VIDEO
'0'-'C' (30h, 43h) : DVD/HD1
'0'-'D' (30h, 44h) : DVD/HD2 (SCART1/SCART2)
'F'-'F' (46h, 46h) : - (no setting)

SUB2 : sub/right picture input source

'0'-'1' (30h, 31h) : VGA (SCART3)
'0'-'2' (30h, 32h) : RGB/HV
'0'-'3' (30h, 33h) : DVI
'0'-'5' (30h, 35h) : VIDEO1
'0'-'6' (30h, 36h) : VIDEO2
'0'-'7' (30h, 37h) : S-VIDEO
'0'-'C' (30h, 43h) : DVD/HD1
'0'-'D' (30h, 44h) : DVD/HD2 (SCART1/SCART2)
'F'-'F' (46h, 46h) : - (no setting)

ST3 : State

'0'-'0' (30h, 30h) : OFF
'0'-'1' (30h, 31h) : ON

MODE3 : input mode (single or split screen)

'0'-'1' (30h, 31h) : SINGLE
'0'-'2' (30h, 32h) : S BY S1
'0'-'3' (30h, 33h) : S BY S2L
'0'-'4' (30h, 34h) : S BY S2R
'0'-'5' (30h, 35h) : BOTTOM LEFT
'0'-'6' (30h, 36h) : BOTTOM RIGHT
'0'-'7' (30h, 37h) : TOP RIGHT
'0'-'8' (30h, 38h) : TOP LEFT
'F'-'F' (46h, 46h) : - (no setting)

HOURS3 : working time (hours)

'0'-'0' (30h, 30h) : 0
|
'1'-'8' (31h, 38h) : 24 (=18h)
'F'-'F' (46h, 46h) : - (no setting)

MIN3 : working time (minutes)

'0'-'0' (30h, 30h) : 0
|
'3'-'B' (33h, 42h) : 59 (=3Bh)
'F'-'F' (46h, 46h) : - (no setting)

MAIN3 : single/main/left picture input source

'0'-'1' (30h, 31h) : VGA (SCART3)
'0'-'2' (30h, 32h) : RGB/HV
'0'-'3' (30h, 33h) : DVI
'0'-'5' (30h, 35h) : VIDEO1
'0'-'6' (30h, 36h) : VIDEO2
'0'-'7' (30h, 37h) : S-VIDEO
'0'-'C' (30h, 43h) : DVD/HD1
'0'-'D' (30h, 44h) : DVD/HD2 (SCART1/SCART2)
'F'-'F' (46h, 46h) : - (no setting)

SUB3 : sub/right picture input source

'0'-'1' (30h, 31h) : VGA (SCART3)
'0'-'2' (30h, 32h) : RGB/HV
'0'-'3' (30h, 33h) : DVI
'0'-'5' (30h, 35h) : VIDEO1
'0'-'6' (30h, 36h) : VIDEO2
'0'-'7' (30h, 37h) : S-VIDEO
'0'-'C' (30h, 43h) : DVD/HD1
'0'-'D' (30h, 44h) : DVD/HD2 (SCART1/SCART2)
'F'-'F' (46h, 46h) : - (no setting)

ST4 : State

'0'-'0' (30h, 30h) : OFF
'0'-'1' (30h, 31h) : ON

MODE4 : input mode (single or split screen)

'0'-'1' (30h, 31h) : SINGLE
'0'-'2' (30h, 32h) : S BY S1
'0'-'3' (30h, 33h) : S BY S2L
'0'-'4' (30h, 34h) : S BY S2R
'0'-'5' (30h, 35h) : BOTTOM LEFT
'0'-'6' (30h, 36h) : BOTTOM RIGHT
'0'-'7' (30h, 37h) : TOP RIGHT
'0'-'8' (30h, 38h) : TOP LEFT
'F'-'F' (46h, 46h) : - (no setting)

HOURS4 : working time (hours)

'0'-'0' (30h, 30h) : 0
|
'1'-'8' (31h, 38h) : 24 (=18h)
'F'-'F' (46h, 46h) : - (no setting)

MIN4 : working time (minutes)

'0'-'0' (30h, 30h) : 0
|
'3'-'B' (33h, 42h) : 59 (=3Bh)
'F'-'F' (46h, 46h) : - (no setting)

MAIN4 : single/main/left picture input source

'0'-'1' (30h, 31h) : VGA (SCART3)
'0'-'2' (30h, 32h) : RGB/HV
'0'-'3' (30h, 33h) : DVI
'0'-'5' (30h, 35h) : VIDEO1
'0'-'6' (30h, 36h) : VIDEO2
'0'-'7' (30h, 37h) : S-VIDEO
'0'-'C' (30h, 43h) : DVD/HD1
'0'-'D' (30h, 44h) : DVD/HD2 (SCART1/SCART2)
'F'-'F' (46h, 46h) : - (no setting)

SUB4 : sub/right picture input source

'0'-'1' (30h, 31h) : VGA (SCART3)

'0'-'2' (30h, 32h) : RGB/HV

'0'-'3' (30h, 33h) : DVI

'0'-'5' (30h, 35h) : VIDEO1

'0'-'6' (30h, 36h) : VIDEO2

'0'-'7' (30h, 37h) : S-VIDEO

'0'-'C' (30h, 43h) : DVD/HD1

'0'-'D' (30h, 44h) : DVD/HD2 (SCART1/SCART2)

'F'-'F' (46h, 46h) : - (no setting)

ETX (03h): End of Message

Check code

BCC: Block Check Code

Refer to the section 4-2)-(3) “Check code” for a BCC calculation.

Delimiter

CR (0Dh): End of packet

<from monitor to PC : ACK>

The monitor replies with a data for confirmation. .(Command reply)

Header	Message	Check code	Delimiter
SOH-'0'-'0'- Monitor ID - 'B'-'4'-'C'	STX-'C'-'3'-'1'-'4'-'ST'-'PG'-'DAY'-'ON_HOURS'-'ON_MIN'-'OFF_HOURS'-'OFF_MIN'-'INPUT'-'MAIN'-'SUB'-'FUNC'-'ST1'-'MODE1'-'HOURS1'-'MIN1'-'MAIN1'-'SUB1'-'ST2'-'MODE2'-'HOURS2'-'MIN2'-'MAIN2'-'SUB2'-'ST3'-'MODE3'-'HOURS3'-'MIN3'-'MAIN3'-'SUB3'-'ST4'-'MODE4'-'HOURS4'-'MIN4'-'MAIN4'-'SUB4'-'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'.

When this byte is set to '*' (2Ah), the replying Monitor ID is 'ALL'.

'B' (42h): Message Type is "Command reply"

'4'-'C' (34h, 43h): Message length is 76 bytes

Message

STX (02h): Start of Message

'C'-'3'-'1'-'4' (43h, 33h, 31h, 34h): Program timer write reply command

ST : Present Time Status command

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

'0'-'1' (30h, 31h) : Error

'PG'-'DAY'-'ON_HOURS'-'ON_MIN'-'OFF_HOURS'-'OFF_MIN'-'INPUT'-'MAIN'-'SUB'-'FUNC'-'ST1'-'MODE1'-'HOURS1'-'MIN1'-'MAIN1'-'SUB1'-'ST2'-'MODE2'-'HOURS2'-'MIN2'-'MAIN2'-'SUB2'-'ST3'-'MODE3'-'HOURS3'-'MIN3'-'MAIN3'-'SUB3'-'ST4'-'MODE4'-'HOURS4'-'MIN4'-'MAIN4'-'SUB4' : Program data

PG : Program No.

'0'-'1' (30h, 31h) : 1

|

'0'-'A' (30h, 41h) : 10 (=0Ah)

DAY : 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

'0'-'7' (30h, 37h) : Everyday

'0'-'8' (30h, 38h) : Every Sunday

'0'-'9' (30h, 39h) : Every Monday

'0'-'A' (30h, 41h) : Every Tuesday

'0'-'B' (30h, 42h) : Every Wednesday

'0'-'C' (30h, 43h) : Every Thursday

'0'-'D' (30h, 44h) : Every Friday

'0'-'E' (30h, 45h) : Every Saturday

'F'-'F' (46h, 46h) : - (no setting)

ON_HOURS : turn on time (hours)
 '0'-'0' (30h, 30h) : 0
 |
 '1'-'7' (31h, 37h) : 23 (=17h)
 'F'-'F' (46h, 46h) : - (no setting)

ON_MIN : turn on time (minutes)
 '0'-'0' (30h, 30h) : 0
 |
 '3'-'B' (33h, 42h) : 59 (=3Bh)
 'F'-'F' (46h, 46h) : - (no setting)

OFF_HOURS : turn off time (hours)
 '0'-'0' (30h, 30h) : 0
 |
 '1'-'7' (31h, 37h) : 23 (=17h)
 'F'-'F' (46h, 46h) : - (no setting)

OFF_MIN : turn off time (minutes)
 '0'-'0' (30h, 30h) : 0
 |
 '3'-'B' (33h, 42h) : 59 (=3Bh)
 'F'-'F' (46h, 46h) : - (no setting)

INPUT : input mode (single or split screen)
 '0'-'1' (30h, 31h) : SINGLE
 '0'-'2' (30h, 32h) : S BY S1
 '0'-'3' (30h, 33h) : S BY S2L
 '0'-'4' (30h, 34h) : S BY S2R
 '0'-'5' (30h, 35h) : BOTTOM LEFT
 '0'-'6' (30h, 36h) : BOTTOM RIGHT
 '0'-'7' (30h, 37h) : TOP RIGHT
 '0'-'8' (30h, 38h) : TOP LEFT
 'F'-'F' (46h, 46h) : - (no setting)

MAIN : single/main/left picture input source
 '0'-'1' (30h, 31h) : VGA (SCART3)
 '0'-'2' (30h, 32h) : RGB/HV
 '0'-'3' (30h, 33h) : DVI
 '0'-'5' (30h, 35h) : VIDEO1
 '0'-'6' (30h, 36h) : VIDEO2
 '0'-'7' (30h, 37h) : S-VIDEO
 '0'-'C' (30h, 43h) : DVD/HD1
 '0'-'D' (30h, 44h) : DVD/HD2 (SCART1/SCART2)
 'F'-'F' (46h, 46h) : - (no setting)

SUB : sub/right picture input source
 '0'-'1' (30h, 31h) : VGA (SCART3)
 '0'-'2' (30h, 32h) : RGB/HV
 '0'-'3' (30h, 33h) : DVI
 '0'-'5' (30h, 35h) : VIDEO1
 '0'-'6' (30h, 36h) : VIDEO2
 '0'-'7' (30h, 37h) : S-VIDEO
 '0'-'C' (30h, 43h) : DVD/HD1

'0'-'D' (30h, 44h) : DVD/HD2 (SCART1/SCART2)
'F'-'F' (46h, 46h) : - (no setting)

FUNC : function setting

'0'-'1' (30h, 31h) : ORBITER
'0'-'2' (30h, 32h) : INVERSE
'0'-'3' (30h, 33h) : WHITE
'0'-'4' (30h, 35h) : REPEAT1
'0'-'5' (30h, 36h) : REPEAT2
'0'-'6' (30h, 37h) : REPEAT3
'F'-'F' (46h, 46h) : - (no setting)

ST1 : State

'0'-'0' (30h, 30h) : OFF
'0'-'1' (30h, 31h) : ON

MODE1 : input mode (single or split screen)

'0'-'1' (30h, 31h) : SINGLE
'0'-'2' (30h, 32h) : S BY S1
'0'-'3' (30h, 33h) : S BY S2L
'0'-'4' (30h, 34h) : S BY S2R
'0'-'5' (30h, 35h) : BOTTOM LEFT
'0'-'6' (30h, 36h) : BOTTOM RIGHT
'0'-'7' (30h, 37h) : TOP RIGHT
'0'-'8' (30h, 38h) : TOP LEFT
'F'-'F' (46h, 46h) : - (no setting)

HOURS1 : working time (hours)

'0'-'0' (30h, 30h) : 0
|
'1'-'8' (31h, 38h) : 24 (=18h)
'F'-'F' (46h, 46h) : - (no setting)

MIN1 : working time (minutes)

'0'-'0' (30h, 30h) : 0
|
'3'-'B' (33h, 42h) : 59 (=3Bh)
'F'-'F' (46h, 46h) : - (no setting)

MAIN1 : single/main/left picture input source

'0'-'1' (30h, 31h) : VGA (SCART3)
'0'-'2' (30h, 32h) : RGB/HV
'0'-'3' (30h, 33h) : DVI
'0'-'5' (30h, 35h) : VIDEO1
'0'-'6' (30h, 36h) : VIDEO2
'0'-'7' (30h, 37h) : S-VIDEO
'0'-'C' (30h, 43h) : DVD/HD1
'0'-'D' (30h, 44h) : DVD/HD2 (SCART1/SCART2)
'F'-'F' (46h, 46h) : - (no setting)

SUB1 : sub/right picture input source

'0'-'1' (30h, 31h) : VGA (SCART3)
'0'-'2' (30h, 32h) : RGB/HV
'0'-'3' (30h, 33h) : DVI
'0'-'5' (30h, 35h) : VIDEO1
'0'-'6' (30h, 36h) : VIDEO2
'0'-'7' (30h, 37h) : S-VIDEO
'0'-'C' (30h, 43h) : DVD/HD1
'0'-'D' (30h, 44h) : DVD/HD2 (SCART1/SCART2)
'F'-'F' (46h, 46h) : - (no setting)

ST2 : State

'0'-'0' (30h, 30h) : OFF
'0'-'1' (30h, 31h) : ON

MODE2 : input mode (single or split screen)

'0'-'1' (30h, 31h) : SINGLE
'0'-'2' (30h, 32h) : S BY S1
'0'-'3' (30h, 33h) : S BY S2L
'0'-'4' (30h, 34h) : S BY S2R
'0'-'5' (30h, 35h) : BOTTOM LEFT
'0'-'6' (30h, 36h) : BOTTOM RIGHT
'0'-'7' (30h, 37h) : TOP RIGHT
'0'-'8' (30h, 38h) : TOP LEFT
'F'-'F' (46h, 46h) : - (no setting)

HOURS2 : working time (hours)

'0'-'0' (30h, 30h) : 0
|
'1'-'8' (31h, 38h) : 24 (=18h)
'F'-'F' (46h, 46h) : - (no setting)

MIN2 : working time (minutes)

'0'-'0' (30h, 30h) : 0
|
'3'-'B' (33h, 42h) : 59 (=3Bh)
'F'-'F' (46h, 46h) : - (no setting)

MAIN2 : single/main/left picture input source

'0'-'1' (30h, 31h) : VGA (SCART3)
'0'-'2' (30h, 32h) : RGB/HV
'0'-'3' (30h, 33h) : DVI
'0'-'5' (30h, 35h) : VIDEO1
'0'-'6' (30h, 36h) : VIDEO2
'0'-'7' (30h, 37h) : S-VIDEO
'0'-'C' (30h, 43h) : DVD/HD1
'0'-'D' (30h, 44h) : DVD/HD2 (SCART1/SCART2)
'F'-'F' (46h, 46h) : - (no setting)

SUB2 : sub/right picture input source

'0'-'1' (30h, 31h) : VGA (SCART3)
'0'-'2' (30h, 32h) : RGB/HV
'0'-'3' (30h, 33h) : DVI
'0'-'5' (30h, 35h) : VIDEO1
'0'-'6' (30h, 36h) : VIDEO2
'0'-'7' (30h, 37h) : S-VIDEO
'0'-'C' (30h, 43h) : DVD/HD1
'0'-'D' (30h, 44h) : DVD/HD2 (SCART1/SCART2)
'F'-'F' (46h, 46h) : - (no setting)

ST3 : State

'0'-'0' (30h, 30h) : OFF
'0'-'1' (30h, 31h) : ON

MODE3 : input mode (single or split screen)

'0'-'1' (30h, 31h) : SINGLE
'0'-'2' (30h, 32h) : S BY S1
'0'-'3' (30h, 33h) : S BY S2L
'0'-'4' (30h, 34h) : S BY S2R
'0'-'5' (30h, 35h) : BOTTOM LEFT
'0'-'6' (30h, 36h) : BOTTOM RIGHT
'0'-'7' (30h, 37h) : TOP RIGHT
'0'-'8' (30h, 38h) : TOP LEFT
'F'-'F' (46h, 46h) : - (no setting)

HOURS3 : working time (hours)

'0'-'0' (30h, 30h) : 0
|
'1'-'8' (31h, 38h) : 24 (=18h)
'F'-'F' (46h, 46h) : - (no setting)

MIN3 : working time (minutes)

'0'-'0' (30h, 30h) : 0
|
'3'-'B' (33h, 42h) : 59 (=3Bh)
'F'-'F' (46h, 46h) : - (no setting)

MAIN3 : single/main/left picture input source

'0'-'1' (30h, 31h) : VGA (SCART3)
'0'-'2' (30h, 32h) : RGB/HV
'0'-'3' (30h, 33h) : DVI
'0'-'5' (30h, 35h) : VIDEO1
'0'-'6' (30h, 36h) : VIDEO2
'0'-'7' (30h, 37h) : S-VIDEO
'0'-'C' (30h, 43h) : DVD/HD1
'0'-'D' (30h, 44h) : DVD/HD2 (SCART1/SCART2)
'F'-'F' (46h, 46h) : - (no setting)

SUB3 : sub/right picture input source

'0'-'1' (30h, 31h) : VGA (SCART3)
'0'-'2' (30h, 32h) : RGB/HV
'0'-'3' (30h, 33h) : DVI
'0'-'5' (30h, 35h) : VIDEO1
'0'-'6' (30h, 36h) : VIDEO2
'0'-'7' (30h, 37h) : S-VIDEO
'0'-'C' (30h, 43h) : DVD/HD1
'0'-'D' (30h, 44h) : DVD/HD2 (SCART1/SCART2)
'F'-'F' (46h, 46h) : - (no setting)

ST4 : State

'0'-'0' (30h, 30h) : OFF
'0'-'1' (30h, 31h) : ON

MODE4 : input mode (single or split screen)

'0'-'1' (30h, 31h) : SINGLE
'0'-'2' (30h, 32h) : S BY S1
'0'-'3' (30h, 33h) : S BY S2L
'0'-'4' (30h, 34h) : S BY S2R
'0'-'5' (30h, 35h) : BOTTOM LEFT
'0'-'6' (30h, 36h) : BOTTOM RIGHT
'0'-'7' (30h, 37h) : TOP RIGHT
'0'-'8' (30h, 38h) : TOP LEFT
'F'-'F' (46h, 46h) : - (no setting)

HOURS4 : working time (hours)

'0'-'0' (30h, 30h) : 0
|
'1'-'8' (31h, 38h) : 24 (=18h)
'F'-'F' (46h, 46h) : - (no setting)

MIN4 : working time (minutes)

'0'-'0' (30h, 30h) : 0
|
'3'-'B' (33h, 42h) : 59 (=3Bh)
'F'-'F' (46h, 46h) : - (no setting)

MAIN4 : single/main/left picture input source

'0'-'1' (30h, 31h) : VGA (SCART3)
'0'-'2' (30h, 32h) : RGB/HV
'0'-'3' (30h, 33h) : DVI
'0'-'5' (30h, 35h) : VIDEO1
'0'-'6' (30h, 36h) : VIDEO2
'0'-'7' (30h, 37h) : S-VIDEO
'0'-'C' (30h, 43h) : DVD/HD1
'0'-'D' (30h, 44h) : DVD/HD2 (SCART1/SCART2)
'F'-'F' (46h, 46h) : - (no setting)

SUB4 : sub/right picture input source

'0'-'1' (30h, 31h) : VGA (SCART3)

'0'-'2' (30h, 32h) : RGB/HV

'0'-'3' (30h, 33h) : DVI

'0'-'5' (30h, 35h) : VIDEO1

'0'-'6' (30h, 36h) : VIDEO2

'0'-'7' (30h, 37h) : S-VIDEO

'0'-'C' (30h, 43h) : DVD/HD1

'0'-'D' (30h, 44h) : DVD/HD2 (SCART1/SCART2)

'F'-'F' (46h, 46h) : - (no setting)

ETX (03h): End of Message

Check code

BCC: Block Check Code

Refer to the section 4-2)-(3) “Check code” for a BCC calculation.

Delimiter

CR (0Dh): End of packet

(12) Program Timer read

<from PC to monitor>

The controller request the monitor to reply with the Program Timer.(Command)

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

Header

SOH (01h): Start Of Header

'0' (30h): Reserved

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

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

If Monitor ID is 'ALL', specify '*' (2Ah).

'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'-'1'-'3' (43h, 32h, 31h, 33h) : Program Timer read request command

PG : Program No.

'0'-'1' (30h, 31h) : 1

|

'0'-'A' (30h, 41h) : 10 (=0Ah)

ETX (03h): End of Message

Check code

BCC: Block Check Code

Refer to the section 4-2)-(3) "Check code" for a BCC calculation.

Delimiter

CR (0Dh): End of packet

<from monitor to PC : ACK>

The monitor replies with a data to the controller. .(Command reply)

Header	Message	Check code	Delimiter
SOH-'0'-'0'- Monitor ID – 'B'-'4'-'A'	STX-'C'-'3'-'1'-'3'-'PG'-'DAY'-'ON_HOURS'-'ON_MIN'-'OFF_HOURS'-'OFF_MIN'-'INPUT'-'MAIN'-'SUB'-'FUNC'-'ST1'-'MODE1'-'HOURS1'-'MIN1'-'MAIN1'-'SUB1'-'ST2'-'MODE2'-'HOURS2'-'MIN2'-'MAIN2'-'SUB2'-'ST3'-'MODE3'-'HOURS3'-'MIN3'-'MAIN3'-'SUB3'-'ST4'-'MODE4'-'HOURS4'-'MIN4'-'MAIN4'-'SUB4'-'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'.

When this byte is set to '*' (2Ah), the replying Monitor ID is 'ALL'.

'B' (42h): Message Type is "Command reply"

'4'-'A' (34h, 41h): Message length is 74 bytes

Message

STX (02h): Start of Message

'C'-'3'-'1'-'3' (43h, 33h, 31h, 33h): Program Timer read reply command

'PG'-'DAY'-'ON_HOURS'-'ON_MIN'-'OFF_HOURS'-'OFF_MIN'-'INPUT'-'MAIN'-'SUB'-'FUNC'-'ST1'-'MODE1'-'HOURS1'-'MIN1'-'MAIN1'-'SUB1'-'ST2'-'MODE2'-'HOURS2'-'MIN2'-'MAIN2'-'SUB2'-'ST3'-'MODE3'-'HOURS3'-'MIN3'-'MAIN3'-'SUB3'-'ST4'-'MODE4'-'HOURS4'-'MIN4'-'MAIN4'-'SUB4': Program data

PG : Program No.

'0'-'1' (30h, 31h) : 1

|

'0'-'A' (30h, 41h) : 10 (=0Ah)

DAY : 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

'0'-'7' (30h, 37h) : Everyday

'0'-'8' (30h, 38h) : Every Sunday

'0'-'9' (30h, 39h) : Every Monday

'0'-'A' (30h, 41h) : Every Tuesday

'0'-'B' (30h, 42h) : Every Wednesday

'0'-'C' (30h, 43h) : Every Thursday

'0'-'D' (30h, 44h) : Every Friday

'0'-'E' (30h, 45h) : Every Saturday

'F'-'F' (46h, 46h) : - (no setting)

ON_HOURS : turn on time (hours)
 '0'-'0' (30h, 30h) : 0
 |
 '1'-'7' (31h, 37h) : 23 (=17h)
 'F'-'F' (46h, 46h) : - (no setting)

ON_MIN : turn on time (minutes)
 '0'-'0' (30h, 30h) : 0
 |
 '3'-'B' (33h, 42h) : 59 (=3Bh)
 'F'-'F' (46h, 46h) : - (no setting)

OFF_HOURS : turn off time (hours)
 '0'-'0' (30h, 30h) : 0
 |
 '1'-'7' (31h, 37h) : 23 (=17h)
 'F'-'F' (46h, 46h) : - (no setting)

OFF_MIN : turn off time (minutes)
 '0'-'0' (30h, 30h) : 0
 |
 '3'-'B' (33h, 42h) : 59 (=3Bh)
 'F'-'F' (46h, 46h) : - (no setting)

INPUT : input mode (single or split screen)
 '0'-'1' (30h, 31h) : SINGLE
 '0'-'2' (30h, 32h) : S BY S1
 '0'-'3' (30h, 33h) : S BY S2L
 '0'-'4' (30h, 34h) : S BY S2R
 '0'-'5' (30h, 35h) : BOTTOM LEFT
 '0'-'6' (30h, 36h) : BOTTOM RIGHT
 '0'-'7' (30h, 37h) : TOP RIGHT
 '0'-'8' (30h, 38h) : TOP LEFT
 'F'-'F' (46h, 46h) : - (no setting)

MAIN : single/main/left picture input source
 '0'-'1' (30h, 31h) : VGA (SCART3)
 '0'-'2' (30h, 32h) : RGB/HV
 '0'-'3' (30h, 33h) : DVI
 '0'-'5' (30h, 35h) : VIDEO1
 '0'-'6' (30h, 36h) : VIDEO2
 '0'-'7' (30h, 37h) : S-VIDEO
 '0'-'C' (30h, 43h) : DVD/HD1
 '0'-'D' (30h, 44h) : DVD/HD2 (SCART1/SCART2)
 'F'-'F' (46h, 46h) : - (no setting)

SUB : sub/right picture input source
 '0'-'1' (30h, 31h) : VGA (SCART3)
 '0'-'2' (30h, 32h) : RGB/HV
 '0'-'3' (30h, 33h) : DVI
 '0'-'5' (30h, 35h) : VIDEO1
 '0'-'6' (30h, 36h) : VIDEO2
 '0'-'7' (30h, 37h) : S-VIDEO
 '0'-'C' (30h, 43h) : DVD/HD1
 '0'-'D' (30h, 44h) : DVD/HD2 (SCART1/SCART2)
 'F'-'F' (46h, 46h) : - (no setting)

FUNC : function setting

'0'-'1' (30h, 31h) : ORBITER
'0'-'2' (30h, 32h) : INVERSE
'0'-'3' (30h, 33h) : WHITE
'0'-'4' (30h, 35h) : REPEAT1
'0'-'5' (30h, 36h) : REPEAT2
'0'-'6' (30h, 37h) : REPEAT3
'F'-'F' (46h, 46h) : - (no setting)

ST1 : State

'0'-'0' (30h, 30h) : OFF
'0'-'1' (30h, 31h) : ON

MODE1 : input mode (single or split screen)

'0'-'1' (30h, 31h) : SINGLE
'0'-'2' (30h, 32h) : S BY S1
'0'-'3' (30h, 33h) : S BY S2L
'0'-'4' (30h, 34h) : S BY S2R
'0'-'5' (30h, 35h) : BOTTOM LEFT
'0'-'6' (30h, 36h) : BOTTOM RIGHT
'0'-'7' (30h, 37h) : TOP RIGHT
'0'-'8' (30h, 38h) : TOP LEFT
'F'-'F' (46h, 46h) : - (no setting)

HOURS1 : working time (hours)

'0'-'0' (30h, 30h) : 0
|
'1'-'8' (31h, 38h) : 24 (=18h)
'F'-'F' (46h, 46h) : - (no setting)

MIN1 : working time (minutes)

'0'-'0' (30h, 30h) : 0
|
'3'-'B' (33h, 42h) : 59 (=3Bh)
'F'-'F' (46h, 46h) : - (no setting)

MAIN1 : single/main/left picture input source

'0'-'1' (30h, 31h) : VGA (SCART3)
'0'-'2' (30h, 32h) : RGB/HV
'0'-'3' (30h, 33h) : DVI
'0'-'5' (30h, 35h) : VIDEO1
'0'-'6' (30h, 36h) : VIDEO2
'0'-'7' (30h, 37h) : S-VIDEO
'0'-'C' (30h, 43h) : DVD/HD1
'0'-'D' (30h, 44h) : DVD/HD2 (SCART1/SCART2)
'F'-'F' (46h, 46h) : - (no setting)

SUB1 : sub/right picture input source

'0'-'1' (30h, 31h) : VGA (SCART3)
'0'-'2' (30h, 32h) : RGB/HV
'0'-'3' (30h, 33h) : DVI
'0'-'5' (30h, 35h) : VIDEO1
'0'-'6' (30h, 36h) : VIDEO2
'0'-'7' (30h, 37h) : S-VIDEO
'0'-'C' (30h, 43h) : DVD/HD1
'0'-'D' (30h, 44h) : DVD/HD2 (SCART1/SCART2)
'F'-'F' (46h, 46h) : - (no setting)

ST2 : State

'0'-'0' (30h, 30h) : OFF
'0'-'1' (30h, 31h) : ON

MODE2 : input mode (single or split screen)

'0'-'1' (30h, 31h) : SINGLE
'0'-'2' (30h, 32h) : S BY S1
'0'-'3' (30h, 33h) : S BY S2L
'0'-'4' (30h, 34h) : S BY S2R
'0'-'5' (30h, 35h) : BOTTOM LEFT
'0'-'6' (30h, 36h) : BOTTOM RIGHT
'0'-'7' (30h, 37h) : TOP RIGHT
'0'-'8' (30h, 38h) : TOP LEFT
'F'-'F' (46h, 46h) : - (no setting)

HOURS2 : working time (hours)

'0'-'0' (30h, 30h) : 0
|
'1'-'8' (31h, 38h) : 24 (=18h)
'F'-'F' (46h, 46h) : - (no setting)

MIN2 : working time (minutes)

'0'-'0' (30h, 30h) : 0
|
'3'-'B' (33h, 42h) : 59 (=3Bh)
'F'-'F' (46h, 46h) : - (no setting)

MAIN2 : single/main/left picture input source

'0'-'1' (30h, 31h) : VGA (SCART3)
'0'-'2' (30h, 32h) : RGB/HV
'0'-'3' (30h, 33h) : DVI
'0'-'5' (30h, 35h) : VIDEO1
'0'-'6' (30h, 36h) : VIDEO2
'0'-'7' (30h, 37h) : S-VIDEO
'0'-'C' (30h, 43h) : DVD/HD1
'0'-'D' (30h, 44h) : DVD/HD2 (SCART1/SCART2)
'F'-'F' (46h, 46h) : - (no setting)

SUB2 : sub/right picture input source

'0'-'1' (30h, 31h) : VGA (SCART3)
'0'-'2' (30h, 32h) : RGB/HV
'0'-'3' (30h, 33h) : DVI
'0'-'5' (30h, 35h) : VIDEO1
'0'-'6' (30h, 36h) : VIDEO2
'0'-'7' (30h, 37h) : S-VIDEO
'0'-'C' (30h, 43h) : DVD/HD1
'0'-'D' (30h, 44h) : DVD/HD2 (SCART1/SCART2)
'F'-'F' (46h, 46h) : - (no setting)

ST3 : State

'0'-'0' (30h, 30h) : OFF
'0'-'1' (30h, 31h) : ON

MODE3 : input mode (single or split screen)

'0'-'1' (30h, 31h) : SINGLE
'0'-'2' (30h, 32h) : S BY S1
'0'-'3' (30h, 33h) : S BY S2L
'0'-'4' (30h, 34h) : S BY S2R
'0'-'5' (30h, 35h) : BOTTOM LEFT
'0'-'6' (30h, 36h) : BOTTOM RIGHT
'0'-'7' (30h, 37h) : TOP RIGHT
'0'-'8' (30h, 38h) : TOP LEFT
'F'-'F' (46h, 46h) : - (no setting)

HOURS3 : working time (hours)

'0'-'0' (30h, 30h) : 0
|
'1'-'8' (31h, 38h) : 24 (=18h)
'F'-'F' (46h, 46h) : - (no setting)

MIN3 : working time (minutes)

'0'-'0' (30h, 30h) : 0
|
'3'-'B' (33h, 42h) : 59 (=3Bh)
'F'-'F' (46h, 46h) : - (no setting)

MAIN3 : single/main/left picture input source

'0'-'1' (30h, 31h) : VGA (SCART3)
'0'-'2' (30h, 32h) : RGB/HV
'0'-'3' (30h, 33h) : DVI
'0'-'5' (30h, 35h) : VIDEO1
'0'-'6' (30h, 36h) : VIDEO2
'0'-'7' (30h, 37h) : S-VIDEO
'0'-'C' (30h, 43h) : DVD/HD1
'0'-'D' (30h, 44h) : DVD/HD2 (SCART1/SCART2)
'F'-'F' (46h, 46h) : - (no setting)

SUB3 : sub/right picture input source

'0'-'1' (30h, 31h) : VGA (SCART3)
'0'-'2' (30h, 32h) : RGB/HV
'0'-'3' (30h, 33h) : DVI
'0'-'5' (30h, 35h) : VIDEO1
'0'-'6' (30h, 36h) : VIDEO2
'0'-'7' (30h, 37h) : S-VIDEO
'0'-'C' (30h, 43h) : DVD/HD1
'0'-'D' (30h, 44h) : DVD/HD2 (SCART1/SCART2)
'F'-'F' (46h, 46h) : - (no setting)

ST4 : State

'0'-'0' (30h, 30h) : OFF
'0'-'1' (30h, 31h) : ON

MODE4 : input mode (single or split screen)

'0'-'1' (30h, 31h) : SINGLE
'0'-'2' (30h, 32h) : S BY S1
'0'-'3' (30h, 33h) : S BY S2L
'0'-'4' (30h, 34h) : S BY S2R
'0'-'5' (30h, 35h) : BOTTOM LEFT
'0'-'6' (30h, 36h) : BOTTOM RIGHT
'0'-'7' (30h, 37h) : TOP RIGHT
'0'-'8' (30h, 38h) : TOP LEFT
'F'-'F' (46h, 46h) : - (no setting)

HOURS4 : working time (hours)

'0'-'0' (30h, 30h) : 0
|
'1'-'8' (31h, 38h) : 24 (=18h)
'F'-'F' (46h, 46h) : - (no setting)

MIN4 : working time (minutes)

'0'-'0' (30h, 30h) : 0
|
'3'-'B' (33h, 42h) : 59 (=3Bh)
'F'-'F' (46h, 46h) : - (no setting)

MAIN4 : single/main/left picture input source

'0'-'1' (30h, 31h) : VGA (SCART3)
'0'-'2' (30h, 32h) : RGB/HV
'0'-'3' (30h, 33h) : DVI
'0'-'5' (30h, 35h) : VIDEO1
'0'-'6' (30h, 36h) : VIDEO2
'0'-'7' (30h, 37h) : S-VIDEO
'0'-'C' (30h, 43h) : DVD/HD1
'0'-'D' (30h, 44h) : DVD/HD2 (SCART1/SCART2)
'F'-'F' (46h, 46h) : - (no setting)

SUB4 : sub/right picture input source

'0'-'1' (30h, 31h) : VGA (SCART3)

'0'-'2' (30h, 32h) : RGB/HV

'0'-'3' (30h, 33h) : DVI

'0'-'5' (30h, 35h) : VIDEO1

'0'-'6' (30h, 36h) : VIDEO2

'0'-'7' (30h, 37h) : S-VIDEO

'0'-'C' (30h, 43h) : DVD/HD1

'0'-'D' (30h, 44h) : DVD/HD2 (SCART1/SCART2)

'F'-'F' (46h, 46h) : - (no setting)

ETX (03h): End of Message

Check code

BCC: Block Check Code

Refer to the section 4-2)-(3) “Check code” for a BCC calculation.

Delimiter

CR (0Dh): End of packet

(13) Repeat Timer write

<from PC to monitor>

The controller request the monitor to write the Repeat Timer.(Command)

Header	Message	Check code	Delimiter
SOH-'0'-Monitor ID-'0'-A-'3'-6'	STX-'C'-'2'-'2'-'1'-'ST1'-'MODE1'-'HOURS1'-'MIN1'-'MAIN1'-'SUB1'-'ST2'-'MODE2'-'HOURS2'-'MIN2'-'MAIN2'-'SUB2'-'ST3'-'MODE3'-'HOURS3'-'MIN3'-'MAIN3'-'SUB3'-'ST4'-'MODE4'-'HOURS4'-'MIN4'-'MAIN4'-'SUB4'-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'.

If Monitor ID is 'ALL', specify '*' (2Ah).

'0' (30h): Message sender is the controller

'A' (41h): Message Type is "Command"

'3'-'6' (33h, 36h): Message length is 54 bytes

Message

STX (02h): Start of Message

'C'-'2'-'2'-'1' (43h, 32h, 32h, 31h) : Repeat Timer write command

'ST1'-'MODE1'-'HOURS1'-'MIN1'-'MAIN1'-'SUB1'-'ST2'-'MODE2'-'HOURS2'-'MIN2'-'MAIN2'-'SUB2'-'ST3'-'MODE3'-'HOURS3'-'MIN3'-'MAIN3'-'SUB3'-'ST4'-'MODE4'-'HOURS4'-'MIN4'-'MAIN4'-'SUB4' :
Repeat data

ST1 : State

'0'-'0' (30h, 30h) : OFF

'0'-'1' (30h, 31h) : ON

MODE1 : input mode (single or split screen)

'0'-'1' (30h, 31h) : SINGLE

'0'-'2' (30h, 32h) : S BY S1

'0'-'3' (30h, 33h) : S BY S2L

'0'-'4' (30h, 34h) : S BY S2R

'0'-'5' (30h, 35h) : BOTTOM LEFT

'0'-'6' (30h, 36h) : BOTTOM RIGHT

'0'-'7' (30h, 37h) : TOP RIGHT

'0'-'8' (30h, 38h) : TOP LEFT

'F'-'F' (46h, 46h) : - (no setting)

HOURS1 : working time (hours)

'0'-'0' (30h, 30h) : 0

|

'1'-'8' (31h, 38h) : 24 (=18h)

'F'-'F' (46h, 46h) : - (no setting)

MIN1 : working time (minutes)

'0'-'0' (30h, 30h) : 0

|

'3'-'B' (33h, 42h) : 59 (=3Bh)

'F'-'F' (46h, 46h) : - (no setting)

MAIN1 : single/main/left picture input source

'0'-'1' (30h, 31h) : VGA (SCART3)

'0'-'2' (30h, 32h) : RGB/HV

'0'-'3' (30h, 33h) : DVI

'0'-'5' (30h, 35h) : VIDEO1

'0'-'6' (30h, 36h) : VIDEO2

'0'-'7' (30h, 37h) : S-VIDEO

'0'-'C' (30h, 43h) : DVD/HD1

'0'-'D' (30h, 44h) : DVD/HD2 (SCART1/SCART2)

'F'-'F' (46h, 46h) : - (no setting)

SUB1 : sub/right picture input source

'0'-'1' (30h, 31h) : VGA (SCART3)

'0'-'2' (30h, 32h) : RGB/HV

'0'-'3' (30h, 33h) : DVI

'0'-'5' (30h, 35h) : VIDEO1

'0'-'6' (30h, 36h) : VIDEO2

'0'-'7' (30h, 37h) : S-VIDEO

'0'-'C' (30h, 43h) : DVD/HD1

'0'-'D' (30h, 44h) : DVD/HD2 (SCART1/SCART2)

'F'-'F' (46h, 46h) : - (no setting)

ST2 : State

'0'-'0' (30h, 30h) : OFF

'0'-'1' (30h, 31h) : ON

MODE2 : input mode (single or split screen)

'0'-'1' (30h, 31h) : SINGLE

'0'-'2' (30h, 32h) : S BY S1

'0'-'3' (30h, 33h) : S BY S2L

'0'-'4' (30h, 34h) : S BY S2R

'0'-'5' (30h, 35h) : BOTTOM LEFT

'0'-'6' (30h, 36h) : BOTTOM RIGHT

'0'-'7' (30h, 37h) : TOP RIGHT

'0'-'8' (30h, 38h) : TOP LEFT

'F'-'F' (46h, 46h) : - (no setting)

HOURS2 : working time (hours)

'0'-'0' (30h, 30h) : 0

|

'1'-'8' (31h, 38h) : 24 (=18h)

'F'-'F' (46h, 46h) : - (no setting)

MIN2 : working time (minutes)

'0'-'0' (30h, 30h) : 0

|

'3'-'B' (33h, 42h) : 59 (=3Bh)

'F'-'F' (46h, 46h) : - (no setting)

MAIN2 : single/main/left picture input source

'0'-'1' (30h, 31h) : VGA (SCART3)

'0'-'2' (30h, 32h) : RGB/HV

'0'-'3' (30h, 33h) : DVI

'0'-'5' (30h, 35h) : VIDEO1

'0'-'6' (30h, 36h) : VIDEO2

'0'-'7' (30h, 37h) : S-VIDEO

'0'-'C' (30h, 43h) : DVD/HD1

'0'-'D' (30h, 44h) : DVD/HD2 (SCART1/SCART2)

'F'-'F' (46h, 46h) : - (no setting)

SUB2 : sub/right picture input source

'0'-'1' (30h, 31h) : VGA (SCART3)

'0'-'2' (30h, 32h) : RGB/HV

'0'-'3' (30h, 33h) : DVI

'0'-'5' (30h, 35h) : VIDEO1

'0'-'6' (30h, 36h) : VIDEO2

'0'-'7' (30h, 37h) : S-VIDEO

'0'-'C' (30h, 43h) : DVD/HD1

'0'-'D' (30h, 44h) : DVD/HD2 (SCART1/SCART2)

'F'-'F' (46h, 46h) : - (no setting)

ST3 : State

'0'-'0' (30h, 30h) : OFF

'0'-'1' (30h, 31h) : ON

MODE3 : input mode (single or split screen)

'0'-'1' (30h, 31h) : SINGLE

'0'-'2' (30h, 32h) : S BY S1

'0'-'3' (30h, 33h) : S BY S2L

'0'-'4' (30h, 34h) : S BY S2R

'0'-'5' (30h, 35h) : BOTTOM LEFT

'0'-'6' (30h, 36h) : BOTTOM RIGHT

'0'-'7' (30h, 37h) : TOP RIGHT

'0'-'8' (30h, 38h) : TOP LEFT

'F'-'F' (46h, 46h) : - (no setting)

HOURS3 : working time (hours)

'0'-'0' (30h, 30h) : 0

|

'1'-'8' (31h, 38h) : 24 (=18h)

'F'-'F' (46h, 46h) : - (no setting)

MIN3 : working time (minutes)

'0'-'0' (30h, 30h) : 0

|

'3'-'B' (33h, 42h) : 59 (=3Bh)

'F'-'F' (46h, 46h) : - (no setting)

MAIN3 : single/main/left picture input source

'0'-'1' (30h, 31h) : VGA (SCART3)

'0'-'2' (30h, 32h) : RGB/HV

'0'-'3' (30h, 33h) : DVI

'0'-'5' (30h, 35h) : VIDEO1

'0'-'6' (30h, 36h) : VIDEO2

'0'-'7' (30h, 37h) : S-VIDEO

'0'-'C' (30h, 43h) : DVD/HD1

'0'-'D' (30h, 44h) : DVD/HD2 (SCART1/SCART2)

'F'-'F' (46h, 46h) : - (no setting)

SUB3 : sub/right picture input source

'0'-'1' (30h, 31h) : VGA (SCART3)

'0'-'2' (30h, 32h) : RGB/HV

'0'-'3' (30h, 33h) : DVI

'0'-'5' (30h, 35h) : VIDEO1

'0'-'6' (30h, 36h) : VIDEO2

'0'-'7' (30h, 37h) : S-VIDEO

'0'-'C' (30h, 43h) : DVD/HD1

'0'-'D' (30h, 44h) : DVD/HD2 (SCART1/SCART2)

'F'-'F' (46h, 46h) : - (no setting)

ST4 : State

'0'-'0' (30h, 30h) : OFF

'0'-'1' (30h, 31h) : ON

MODE4 : input mode (single or split screen)

'0'-'1' (30h, 31h) : SINGLE

'0'-'2' (30h, 32h) : S BY S1

'0'-'3' (30h, 33h) : S BY S2L

'0'-'4' (30h, 34h) : S BY S2R

'0'-'5' (30h, 35h) : BOTTOM LEFT

'0'-'6' (30h, 36h) : BOTTOM RIGHT

'0'-'7' (30h, 37h) : TOP RIGHT

'0'-'8' (30h, 38h) : TOP LEFT

'F'-'F' (46h, 46h) : - (no setting)

HOURS4 : working time (hours)

'0'-'0' (30h, 30h) : 0

|

'1'-'8' (31h, 38h) : 24 (=18h)

'F'-'F' (46h, 46h) : - (no setting)

MIN4 : working time (minutes)

'0'-'0' (30h, 30h) : 0

|

'3'-'B' (33h, 42h) : 59 (=3Bh)

'F'-'F' (46h, 46h) : - (no setting)

MAIN4 : single/main/left picture input source

'0'-'1' (30h, 31h) : VGA (SCART3)

'0'-'2' (30h, 32h) : RGB/HV

'0'-'3' (30h, 33h) : DVI

'0'-'5' (30h, 35h) : VIDEO1

'0'-'6' (30h, 36h) : VIDEO2

'0'-'7' (30h, 37h) : S-VIDEO

'0'-'C' (30h, 43h) : DVD/HD1

'0'-'D' (30h, 44h) : DVD/HD2 (SCART1/SCART2)

'F'-'F' (46h, 46h) : - (no setting)

SUB4 : sub/right picture input source

'0'-'1' (30h, 31h) : VGA (SCART3)

'0'-'2' (30h, 32h) : RGB/HV

'0'-'3' (30h, 33h) : DVI

'0'-'5' (30h, 35h) : VIDEO1

'0'-'6' (30h, 36h) : VIDEO2

'0'-'7' (30h, 37h) : S-VIDEO

'0'-'C' (30h, 43h) : DVD/HD1

'0'-'D' (30h, 44h) : DVD/HD2 (SCART1/SCART2)

'F'-'F' (46h, 46h) : - (no setting)

ETX (03h): End of Message

Check code

BCC: Block Check Code

Refer to the section 4-2)-(3) "Check code" for a BCC calculation.

Delimiter

CR (0Dh): End of packet

<from monitor to PC : ACK>

The monitor replies with a data for confirmation. .(Command reply)

Header	Message	Check code	Delimiter
SOH-'0'-'0'- Monitor ID - 'B'-'3'-'8'	STX-'C'-'3'-'2'-'1'-'ST'-' 'ST1'-'MODE1'-'HOURS1'-'MIN1'-'MAIN1'-'SUB1'-' 'ST2'-'MODE2'-'HOURS2'-'MIN2'-'MAIN2'-'SUB2'-' 'ST3'-'MODE3'-'HOURS3'-'MIN3'-'MAIN3'-'SUB3'-' 'ST4'-'MODE4'-'HOURS4'-'MIN4'-'MAIN4'-'SUB4'-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'.

When this byte is set to '*' (2Ah), the replying Monitor ID is 'ALL'.

'B' (42h): Message Type is "Command reply"

'3'-'8' (33h, 38h): Message length is 56 bytes

Message

STX (02h): Start of Message

'C'-'3'-'2'-'1' (43h, 33h, 32h, 31h): Repeat timer write reply command

ST : Present Time Status command

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

'0'-'1' (30h, 31h) : Error

'ST1'-'MODE1'-'HOURS1'-'MIN1'-'MAIN1'-'SUB1'-'ST2'-'MODE2'-'HOURS2'-'MIN2'-'MAIN2'-'SUB2'-'ST3'-'MODE3'-'HOURS3'-'MIN3'-'MAIN3'-'SUB3'-'ST4'-'MODE4'-'HOURS4'-'MIN4'-'MAIN4'-'SUB4' :

Repeat data

ST1 : State

'0'-'0' (30h, 30h) : OFF

'0'-'1' (30h, 31h) : ON

MODE1 : input mode (single or split screen)

'0'-'1' (30h, 31h) : SINGLE

'0'-'2' (30h, 32h) : S BY S1

'0'-'3' (30h, 33h) : S BY S2L

'0'-'4' (30h, 34h) : S BY S2R

'0'-'5' (30h, 35h) : BOTTOM LEFT

'0'-'6' (30h, 36h) : BOTTOM RIGHT

'0'-'7' (30h, 37h) : TOP RIGHT

'0'-'8' (30h, 38h) : TOP LEFT

'F'-'F' (46h, 46h) : - (no setting)

HOURS1 : working time (hours)

'0'-'0' (30h, 30h) : 0

|

'1'-'8' (31h, 38h) : 24 (=18h)

'F'-'F' (46h, 46h) : - (no setting)

MIN1 : working time (minutes)

'0'-'0' (30h, 30h) : 0

|

'3'-'B' (33h, 42h) : 59 (=3Bh)

'F'-'F' (46h, 46h) : - (no setting)

MAIN1 : single/main/left picture input source

'0'-'1' (30h, 31h) : VGA (SCART3)

'0'-'2' (30h, 32h) : RGB/HV

'0'-'3' (30h, 33h) : DVI

'0'-'5' (30h, 35h) : VIDEO1

'0'-'6' (30h, 36h) : VIDEO2

'0'-'7' (30h, 37h) : S-VIDEO

'0'-'C' (30h, 43h) : DVD/HD1

'0'-'D' (30h, 44h) : DVD/HD2 (SCART1/SCART2)

'F'-'F' (46h, 46h) : - (no setting)

SUB1 : sub/right picture input source

'0'-'1' (30h, 31h) : VGA (SCART3)

'0'-'2' (30h, 32h) : RGB/HV

'0'-'3' (30h, 33h) : DVI

'0'-'5' (30h, 35h) : VIDEO1

'0'-'6' (30h, 36h) : VIDEO2

'0'-'7' (30h, 37h) : S-VIDEO

'0'-'C' (30h, 43h) : DVD/HD1

'0'-'D' (30h, 44h) : DVD/HD2 (SCART1/SCART2)

'F'-'F' (46h, 46h) : - (no setting)

ST2 : State

'0'-'0' (30h, 30h) : OFF

'0'-'1' (30h, 31h) : ON

MODE2 : input mode (single or split screen)

'0'-'1' (30h, 31h) : SINGLE

'0'-'2' (30h, 32h) : S BY S1

'0'-'3' (30h, 33h) : S BY S2L

'0'-'4' (30h, 34h) : S BY S2R

'0'-'5' (30h, 35h) : BOTTOM LEFT

'0'-'6' (30h, 36h) : BOTTOM RIGHT

'0'-'7' (30h, 37h) : TOP RIGHT

'0'-'8' (30h, 38h) : TOP LEFT

'F'-'F' (46h, 46h) : - (no setting)

HOURS2 : working time (hours)

'0'-'0' (30h, 30h) : 0

|

'1'-'8' (31h, 38h) : 24 (=18h)

'F'-'F' (46h, 46h) : - (no setting)

MIN2 : working time (minutes)

'0'-'0' (30h, 30h) : 0

|

'3'-'B' (33h, 42h) : 59 (=3Bh)

'F'-'F' (46h, 46h) : - (no setting)

MAIN2 : single/main/left picture input source

'0'-'1' (30h, 31h) : VGA (SCART3)

'0'-'2' (30h, 32h) : RGB/HV

'0'-'3' (30h, 33h) : DVI

'0'-'5' (30h, 35h) : VIDEO1

'0'-'6' (30h, 36h) : VIDEO2

'0'-'7' (30h, 37h) : S-VIDEO

'0'-'C' (30h, 43h) : DVD/HD1

'0'-'D' (30h, 44h) : DVD/HD2 (SCART1/SCART2)

'F'-'F' (46h, 46h) : - (no setting)

SUB2 : sub/right picture input source

'0'-'1' (30h, 31h) : VGA (SCART3)

'0'-'2' (30h, 32h) : RGB/HV

'0'-'3' (30h, 33h) : DVI

'0'-'5' (30h, 35h) : VIDEO1

'0'-'6' (30h, 36h) : VIDEO2

'0'-'7' (30h, 37h) : S-VIDEO

'0'-'C' (30h, 43h) : DVD/HD1

'0'-'D' (30h, 44h) : DVD/HD2 (SCART1/SCART2)

'F'-'F' (46h, 46h) : - (no setting)

ST3 : State

'0'-'0' (30h, 30h) : OFF

'0'-'1' (30h, 31h) : ON

MODE3 : input mode (single or split screen)

'0'-'1' (30h, 31h) : SINGLE

'0'-'2' (30h, 32h) : S BY S1

'0'-'3' (30h, 33h) : S BY S2L

'0'-'4' (30h, 34h) : S BY S2R

'0'-'5' (30h, 35h) : BOTTOM LEFT

'0'-'6' (30h, 36h) : BOTTOM RIGHT

'0'-'7' (30h, 37h) : TOP RIGHT

'0'-'8' (30h, 38h) : TOP LEFT

'F'-'F' (46h, 46h) : - (no setting)

HOURS3 : working time (hours)

'0'-'0' (30h, 30h) : 0

|

'1'-'8' (31h, 38h) : 24 (=18h)

'F'-'F' (46h, 46h) : - (no setting)

MIN3 : working time (minutes)

'0'-'0' (30h, 30h) : 0

|

'3'-'B' (33h, 42h) : 59 (=3Bh)

'F'-'F' (46h, 46h) : - (no setting)

MAIN3 : single/main/left picture input source

'0'-'1' (30h, 31h) : VGA (SCART3)

'0'-'2' (30h, 32h) : RGB/HV

'0'-'3' (30h, 33h) : DVI

'0'-'5' (30h, 35h) : VIDEO1

'0'-'6' (30h, 36h) : VIDEO2

'0'-'7' (30h, 37h) : S-VIDEO

'0'-'C' (30h, 43h) : DVD/HD1

'0'-'D' (30h, 44h) : DVD/HD2 (SCART1/SCART2)

'F'-'F' (46h, 46h) : - (no setting)

SUB3 : sub/right picture input source

'0'-'1' (30h, 31h) : VGA (SCART3)

'0'-'2' (30h, 32h) : RGB/HV

'0'-'3' (30h, 33h) : DVI

'0'-'5' (30h, 35h) : VIDEO1

'0'-'6' (30h, 36h) : VIDEO2

'0'-'7' (30h, 37h) : S-VIDEO

'0'-'C' (30h, 43h) : DVD/HD1

'0'-'D' (30h, 44h) : DVD/HD2 (SCART1/SCART2)

'F'-'F' (46h, 46h) : - (no setting)

ST4 : State

'0'-'0' (30h, 30h) : OFF

'0'-'1' (30h, 31h) : ON

MODE4 : input mode (single or split screen)

'0'-'1' (30h, 31h) : SINGLE

'0'-'2' (30h, 32h) : S BY S1

'0'-'3' (30h, 33h) : S BY S2L

'0'-'4' (30h, 34h) : S BY S2R

'0'-'5' (30h, 35h) : BOTTOM LEFT

'0'-'6' (30h, 36h) : BOTTOM RIGHT

'0'-'7' (30h, 37h) : TOP RIGHT

'0'-'8' (30h, 38h) : TOP LEFT

'F'-'F' (46h, 46h) : - (no setting)

HOURS4 : working time (hours)

'0'-'0' (30h, 30h) : 0

|

'1'-'8' (31h, 38h) : 24 (=18h)

'F'-'F' (46h, 46h) : - (no setting)

MIN4 : working time (minutes)

'0'-'0' (30h, 30h) : 0

|

'3'-'B' (33h, 42h) : 59 (=3Bh)

'F'-'F' (46h, 46h) : - (no setting)

MAIN4 : single/main/left picture input source

'0'-'1' (30h, 31h) : VGA (SCART3)

'0'-'2' (30h, 32h) : RGB/HV

'0'-'3' (30h, 33h) : DVI

'0'-'5' (30h, 35h) : VIDEO1

'0'-'6' (30h, 36h) : VIDEO2

'0'-'7' (30h, 37h) : S-VIDEO

'0'-'C' (30h, 43h) : DVD/HD1

'0'-'D' (30h, 44h) : DVD/HD2 (SCART1/SCART2)

'F'-'F' (46h, 46h) : - (no setting)

SUB4 : sub/right picture input source

'0'-'1' (30h, 31h) : VGA (SCART3)

'0'-'2' (30h, 32h) : RGB/HV

'0'-'3' (30h, 33h) : DVI

'0'-'5' (30h, 35h) : VIDEO1

'0'-'6' (30h, 36h) : VIDEO2

'0'-'7' (30h, 37h) : S-VIDEO

'0'-'C' (30h, 43h) : DVD/HD1

'0'-'D' (30h, 44h) : DVD/HD2 (SCART1/SCART2)

'F'-'F' (46h, 46h) : - (no setting)

ETX (03h): End of Message

Check code

BCC: Block Check Code

Refer to the section 4-2)-(3) "Check code" for a BCC calculation.

Delimiter

CR (0Dh): End of packet

(14) Repeat Timer read

<from PC to monitor>

The controller request the monitor to reply with the Repeat Timer.(Command)

Header	Message	Check code	Delimiter
SOH-'0'-Monitor ID-'0'-'A'-'0'-'6'	STX-'C'-'2'-'2'-'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'.

If Monitor ID is 'ALL', specify '*' (2Ah).

'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

'C'-'2'-'2'-'0' (43h, 32h, 32h, 30h) : Repeat Timer read request command

ETX (03h): End of Message

Check code

BCC: Block Check Code

Refer to the section 4-2)-(3) "Check code" for a BCC calculation.

Delimiter

CR (0Dh): End of packet

<from monitor to PC : ACK>

The monitor replies with a data to the controller. .(Command reply)

Header	Message	Check code	Delimiter
SOH-'0'-'0'- Monitor ID – 'B'-'3'-'6'	STX-'C'-'3'-'2'-'0'- 'ST1'-'MODE1'-'HOURS1'-'MIN1'-'MAIN1'-'SUB1'- 'ST2'-'MODE2'-'HOURS2'-'MIN2'-'MAIN2'-'SUB2'- 'ST3'-'MODE3'-'HOURS3'-'MIN3'-'MAIN3'-'SUB3'- 'ST4'-'MODE4'-'HOURS4'-'MIN4'-'MAIN4'-'SUB4'-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'.

When this byte is set to '*' (2Ah), the replying Monitor ID is 'ALL'.

'B' (42h): Message Type is "Command reply"

'3'-'6' (33h, 36h): Message length is 54 bytes

Message

STX (02h): Start of Message

'C'-'3'-'2'-'0' (43h, 33h, 32h, 30h): Repeat Timer read reply command

'ST1'-'MODE1'-'HOURS1'-'MIN1'-'MAIN1'-'SUB1'-'ST2'-'MODE2'-'HOURS2'-'MIN2'-'MAIN2'-'SUB2'-'ST3'-'MODE3'-'HOURS3'-'MIN3'-'MAIN3'-'SUB3'-'ST4'-'MODE4'-'HOURS4'-'MIN4'-'MAIN4'-'SUB4' :
Repeat data

ST1 : State

'0'-'0' (30h, 30h) : OFF

'0'-'1' (30h, 31h) : ON

MODE1 : input mode (single or split screen)

'0'-'1' (30h, 31h) : SINGLE

'0'-'2' (30h, 32h) : S BY S1

'0'-'3' (30h, 33h) : S BY S2L

'0'-'4' (30h, 34h) : S BY S2R

'0'-'5' (30h, 35h) : BOTTOM LEFT

'0'-'6' (30h, 36h) : BOTTOM RIGHT

'0'-'7' (30h, 37h) : TOP RIGHT

'0'-'8' (30h, 38h) : TOP LEFT

'F'-'F' (46h, 46h) : - (no setting)

HOURS1 : working time (hours)

'0'-'0' (30h, 30h) : 0

|

'1'-'8' (31h, 38h) : 24 (=18h)

'F'-'F' (46h, 46h) : - (no setting)

MIN1 : working time (minutes)

'0'-'0' (30h, 30h) : 0

|

'3'-'B' (33h, 42h) : 59 (=3Bh)

'F'-'F' (46h, 46h) : - (no setting)

MAIN1 : single/main/left picture input source
'0'-'1' (30h, 31h) : VGA (SCART3)
'0'-'2' (30h, 32h) : RGB/HV
'0'-'3' (30h, 33h) : DVI
'0'-'5' (30h, 35h) : VIDEO1
'0'-'6' (30h, 36h) : VIDEO2
'0'-'7' (30h, 37h) : S-VIDEO
'0'-'C' (30h, 43h) : DVD/HD1
'0'-'D' (30h, 44h) : DVD/HD2 (SCART1/SCART2)
'F'-'F' (46h, 46h) : - (no setting)

SUB1 : sub/right picture input source
'0'-'1' (30h, 31h) : VGA (SCART3)
'0'-'2' (30h, 32h) : RGB/HV
'0'-'3' (30h, 33h) : DVI
'0'-'5' (30h, 35h) : VIDEO1
'0'-'6' (30h, 36h) : VIDEO2
'0'-'7' (30h, 37h) : S-VIDEO
'0'-'C' (30h, 43h) : DVD/HD1
'0'-'D' (30h, 44h) : DVD/HD2 (SCART1/SCART2)
'F'-'F' (46h, 46h) : - (no setting)

ST2 : State
'0'-'0' (30h, 30h) : OFF
'0'-'1' (30h, 31h) : ON

MODE2 : input mode (single or split screen)
'0'-'1' (30h, 31h) : SINGLE
'0'-'2' (30h, 32h) : S BY S1
'0'-'3' (30h, 33h) : S BY S2L
'0'-'4' (30h, 34h) : S BY S2R
'0'-'5' (30h, 35h) : BOTTOM LEFT
'0'-'6' (30h, 36h) : BOTTOM RIGHT
'0'-'7' (30h, 37h) : TOP RIGHT
'0'-'8' (30h, 38h) : TOP LEFT
'F'-'F' (46h, 46h) : - (no setting)

HOURS2 : working time (hours)
'0'-'0' (30h, 30h) : 0
|
'1'-'8' (31h, 38h) : 24 (=18h)
'F'-'F' (46h, 46h) : - (no setting)

MIN2 : working time (minutes)
'0'-'0' (30h, 30h) : 0
|
'3'-'B' (33h, 42h) : 59 (=3Bh)
'F'-'F' (46h, 46h) : - (no setting)

MAIN2 : single/main/left picture input source

'0'-'1' (30h, 31h) : VGA (SCART3)
'0'-'2' (30h, 32h) : RGB/HV
'0'-'3' (30h, 33h) : DVI
'0'-'5' (30h, 35h) : VIDEO1
'0'-'6' (30h, 36h) : VIDEO2
'0'-'7' (30h, 37h) : S-VIDEO
'0'-'C' (30h, 43h) : DVD/HD1
'0'-'D' (30h, 44h) : DVD/HD2 (SCART1/SCART2)
'F'-'F' (46h, 46h) : - (no setting)

SUB2 : sub/right picture input source

'0'-'1' (30h, 31h) : VGA (SCART3)
'0'-'2' (30h, 32h) : RGB/HV
'0'-'3' (30h, 33h) : DVI
'0'-'5' (30h, 35h) : VIDEO1
'0'-'6' (30h, 36h) : VIDEO2
'0'-'7' (30h, 37h) : S-VIDEO
'0'-'C' (30h, 43h) : DVD/HD1
'0'-'D' (30h, 44h) : DVD/HD2 (SCART1/SCART2)
'F'-'F' (46h, 46h) : - (no setting)

ST3 : State

'0'-'0' (30h, 30h) : OFF
'0'-'1' (30h, 31h) : ON

MODE3 : input mode (single or split screen)

'0'-'1' (30h, 31h) : SINGLE
'0'-'2' (30h, 32h) : S BY S1
'0'-'3' (30h, 33h) : S BY S2L
'0'-'4' (30h, 34h) : S BY S2R
'0'-'5' (30h, 35h) : BOTTOM LEFT
'0'-'6' (30h, 36h) : BOTTOM RIGHT
'0'-'7' (30h, 37h) : TOP RIGHT
'0'-'8' (30h, 38h) : TOP LEFT
'F'-'F' (46h, 46h) : - (no setting)

HOURS3 : working time (hours)

'0'-'0' (30h, 30h) : 0
|
'1'-'8' (31h, 38h) : 24 (=18h)
'F'-'F' (46h, 46h) : - (no setting)

MIN3 : working time (minutes)

'0'-'0' (30h, 30h) : 0
|
'3'-'B' (33h, 42h) : 59 (=3Bh)
'F'-'F' (46h, 46h) : - (no setting)

MAIN3 : single/main/left picture input source

'0'-'1' (30h, 31h) : VGA (SCART3)
'0'-'2' (30h, 32h) : RGB/HV
'0'-'3' (30h, 33h) : DVI
'0'-'5' (30h, 35h) : VIDEO1
'0'-'6' (30h, 36h) : VIDEO2
'0'-'7' (30h, 37h) : S-VIDEO
'0'-'C' (30h, 43h) : DVD/HD1
'0'-'D' (30h, 44h) : DVD/HD2 (SCART1/SCART2)
'F'-'F' (46h, 46h) : - (no setting)

SUB3 : sub/right picture input source

'0'-'1' (30h, 31h) : VGA (SCART3)
'0'-'2' (30h, 32h) : RGB/HV
'0'-'3' (30h, 33h) : DVI
'0'-'5' (30h, 35h) : VIDEO1
'0'-'6' (30h, 36h) : VIDEO2
'0'-'7' (30h, 37h) : S-VIDEO
'0'-'C' (30h, 43h) : DVD/HD1
'0'-'D' (30h, 44h) : DVD/HD2 (SCART1/SCART2)
'F'-'F' (46h, 46h) : - (no setting)

ST4 : State

'0'-'0' (30h, 30h) : OFF
'0'-'1' (30h, 31h) : ON

MODE4 : input mode (single or split screen)

'0'-'1' (30h, 31h) : SINGLE
'0'-'2' (30h, 32h) : S BY S1
'0'-'3' (30h, 33h) : S BY S2L
'0'-'4' (30h, 34h) : S BY S2R
'0'-'5' (30h, 35h) : BOTTOM LEFT
'0'-'6' (30h, 36h) : BOTTOM RIGHT
'0'-'7' (30h, 37h) : TOP RIGHT
'0'-'8' (30h, 38h) : TOP LEFT
'F'-'F' (46h, 46h) : - (no setting)

HOURS4 : working time (hours)

'0'-'0' (30h, 30h) : 0
|
'1'-'8' (31h, 38h) : 24 (=18h)
'F'-'F' (46h, 46h) : - (no setting)

MIN4 : working time (minutes)

'0'-'0' (30h, 30h) : 0
|
'3'-'B' (33h, 42h) : 59 (=3Bh)
'F'-'F' (46h, 46h) : - (no setting)

MAIN4 : single/main/left picture input source
'0'-'1' (30h, 31h) : VGA (SCART3)
'0'-'2' (30h, 32h) : RGB/HV
'0'-'3' (30h, 33h) : DVI
'0'-'5' (30h, 35h) : VIDEO1
'0'-'6' (30h, 36h) : VIDEO2
'0'-'7' (30h, 37h) : S-VIDEO
'0'-'C' (30h, 43h) : DVD/HD1
'0'-'D' (30h, 44h) : DVD/HD2 (SCART1/SCART2)
'F'-'F' (46h, 46h) : - (no setting)

SUB4 : sub/right picture input source
'0'-'1' (30h, 31h) : VGA (SCART3)
'0'-'2' (30h, 32h) : RGB/HV
'0'-'3' (30h, 33h) : DVI
'0'-'5' (30h, 35h) : VIDEO1
'0'-'6' (30h, 36h) : VIDEO2
'0'-'7' (30h, 37h) : S-VIDEO
'0'-'C' (30h, 43h) : DVD/HD1
'0'-'D' (30h, 44h) : DVD/HD2 (SCART1/SCART2)
'F'-'F' (46h, 46h) : - (no setting)

ETX (03h): End of Message

Check code

BCC: Block Check Code

Refer to the section 4-2)-(3) "Check code" for a BCC calculation.

Delimiter

CR (0Dh): End of packet

(15) FREQUENCY data reading

<from PC to monitor>

The controller request the monitor to read the FREQUENCY data of input signal.(Command)

Header	Message	Check code	Delimiter
SOH-'0'-Monitor ID-'0'-'A'-'0'-'4'	STX-'0'-'7'-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'.

If Monitor ID is 'ALL', specify '*' (2Ah).

'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'-'7' (30h, 37h): FREQUENCY data read command

ETX (03h): End of Message

Check code

BCC: Block Check Code

Refer to the section 4-2)-(3) "Check code" for a BCC calculation.

Delimiter

CR (0Dh): End of packet

<from monitor to PC : ACK>

The monitor replies with a message for confirmation. .(Command reply)

Header	Message	Check code	Delimiter
SOH-'0'-'0'- Monitor ID -'B'-'0'-'E'	STX-'4'-'E'-SS-HH-HL-VH-VL-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'.

When this byte is set to '*' (2Ah), the replying Monitor ID is 'ALL'.

'B' (42h): Message Type is "Command reply"

'0'-'E' (30h, 45h): Message length is 14 bytes

Message

STX (02h): Start of Message

'4'-'E' (34h, 45h): Timing message OP code

SS : Timing Status byte

Bit7 = 1 : Sync.Freq. out of range

0 : normal

Bit6 = 1 : Unstable count

0 : normal

Bit5-2 = 0 : Reserved must be 0

Bit1 = 1 : Positive Horizontal sync polarity

0 : Negative Horizontal sync polarity

Bit0 = 1 : Positive Vertical sync polarity

0 : Negative Vertical sync polarity

HH : Horizontal Frequency High byte

HL : Horizontal Frequency Low byte

VH : Vertical Frequency High byte

VL : Vertical Frequency Low byte

For example; Input signal is H : 65.28KHz and V : 59.95Hz.

-> HH & HL is '1'-'9'-'8'-'0' (31h, 39h, 38h, 30h)

VH & VL is '1'-'7'-'6'-'B' (31h, 37h, 36h, 42h) ----- need to change from DEC to HEX

ETX (03h): End of Message

Check code

BCC: Block Check Code

Refer to the section 4-2)-(3) "Check code" for a BCC calculation.

Delimiter

CR (0Dh): End of packet

(16) Remocon Code Control

<from PC to monitor>

The controller requests the monitor to support Remocon code.

Header	Message	Check code	Delimiter
SOH-'0'-Monitor ID-'0'-'A'-'0'-'C'	STX-'C'-'2'-'1'-'0'-CodeH-CodeL-Cnt-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' (41h).

If Monitor ID is 'ALL', specify '*' (2Ah).

'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', '1'-'0' (43h, 32h, 31h, 30h) : Remocon code control command

CodeH : Remocon code High byte, '0'-'0' (30h, 30h) ----FIX

CodeL : Remocon code Low byte;

'1'-'4' (31h, 34h) : cursol down

'1'-'5' (31h, 35h) : cursol up

'1'-'6' (31h, 36h) : volume down

'1'-'7' (31h, 37h) : volume up

'1'-'9' (31h, 39h) : display

'1'-'F' (31h, 46h) : exit

'2'-'0' (32h, 30h) : menu

'2'-'1' (32h, 31h) : cursol left (-)

'2'-'2' (32h, 32h) : cursol right (+)

'2'-'3' (32h, 33h) : set

'2'-'4' (32h, 34h) : pip

'2'-'6' (32h, 36h) : swap

'2'-'7' (32h, 37h) : select/freeze

'2'-'8' (32h, 38h) : capture

'4'-'F' (34h, 46h) : s by s

'5'-'0' (35h, 30h) : single

Cnt : repeat number ; normally '0'-'1' (30h, 31h)

ETX (03h): End of Message

Check code

BCC: Block Check Code

Refer to the section 4-2)-(3) “ Check code ” for a BCC calculation.

Delimiter

CR (0Dh): End of packet.

< from monitor to PC : ACK >

The monitor replies a data for confirmation (ex. Change to VGA)

Header	Message	Check code	Delimiter
SOH-'0'-'0'-Monitor ID-'B'-'0'-'E'	STX-'C'-'3'-'1'-'0'-ST-CodeH-CodeL-Cnt-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' (41h), the replying Monitor ID is '1'.

When this byte is set to '*' (2Ah), the replying Monitor ID is 'ALL'.

'B' (42h): Message type is " Command reply "

'0'-'E' (30h, 45h) : Message length is 14 bytes

Message

STX (02h): Start of Message

'C'-'3'-'1'-'0' (43h, 33h, 31h, 30h): Remocon code control reply command

ST : Information status command

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

'0'-'1' (30h, 31h) : Error

CodeH : Remocon code High byte, '0'-'0' (30h, 30h) ----FIX

CodeL : Remocon code Low byte;

'1'-'4' (31h, 34h) : cursol down

'1'-'5' (31h, 35h) : cursol up

'1'-'6' (31h, 36h) : volume down

'1'-'7' (31h, 37h) : volume up

'1'-'9' (31h, 39h) : display

'1'-'F' (31h, 46h) : exit

'2'-'0' (32h, 30h) : menu

'2'-'1' (32h, 31h) : cursol left (-)

'2'-'2' (32h, 32h) : cursol right (+)

'2'-'3' (32h, 33h) : set

'2'-'4' (32h, 34h) : pip

'2'-'6' (32h, 36h) : swap

'2'-'7' (32h, 37h) : select/freeze

'2'-'8' (32h, 38h) : capture

'4'-'F' (34h, 46h) : s by s

'5'-'0' (35h, 30h) : single

Cnt : repeat number ; normally '0'-'1' (30h, 31h)

ETX (03h): End of Message

Check code

BCC: Block Check Code

Refer to the section 4-2)-(3) " Check code " for a BCC calculation.

Delimiter

CR (0Dh): End of packet.

2) Menu Operation Commands (VCP commands)

(1) Operation code table

In case of Menu Operation commands, the OP code page and OP code are following table.

Table 1 Operation code table

	Item	OP code page	OP code	Parameter (dec)	Remark
PICTURE					
	CONTRAST	00h	12h	0 : low 100 : high	Center is 50.
	BRIGHTNESS	00h	10h	0 : dark 100 : bright	Center is 50.
	SHARPNESS	00h	8Ch	0 : dull 100 : sharp	Center is 50.
	COLOR	02h	1Fh	0 : pale 100 : deep	Center is 50.
	TINT	00h	90h	0 : reddish 100 : greenish	Center is 50.
	PICTURE MODE	02h	1Ah	3 : BRIGHT 4 : STANDARD 5 : CINEMA1 11 : CINEMA2 12 : DEFAULT	
	NR	02h	20h	0 : OFF 1 : NR-1 2 : NR-2 3 : NR-3 (max.)	
	COLOR TEMP.	00h	54h	47 : LOW 54 : MIDDLE LOW 69 : MIDDLE 84 : HIGH	
	WHITE BALANCE	00h	RED GAIN : 16h GREEN GAIN : 18h BLUE GAIN : 1Ah	0 : min. 100 : max.	Center is 50.
	GAMMA	02h	68h	9 : 2.1 4 : 2.2 10 : 2.3 8 : 2.4 7 : S	
	COLOR CONTROL	00h	RED : 9Bh GREEN : 9Dh BLUE : 9Fh YELLOW : 9Ch MAGENTA : A0h CYAN : 9Eh	0 : min. 100 : max.	Center is 50.
	COLOR CONTROL reset	02h	CBh	0 : no execute 11 : execute	

AUDIO					
	BASS	00h	91h	0 : min. 100 : max.	Center is 50.
	TREBLE	00h	8Fh	0 : min. 100 : max.	Center is 50.
	BALANCE	00h	93h	0 : left 100 : right	Center is 50.
	AUDIO INPUT1	10h	13h	1 : VGA 2 : RGBHV 3 : DVI 5 : VIDEO1 6 : VIDEO2 7 : S-VIDEO 12 : DVD/HD1 13 : DVD/HD2	
	AUDIO INPUT2	10h	14h	1 : VGA 2 : RGBHV 3 : DVI 5 : VIDEO1 6 : VIDEO2 7 : S-VIDEO 12 : DVD/HD1 13 : DVD/HD2	
	AUDIO INPUT3	10h	15h	1 : VGA 2 : RGBHV 3 : DVI 5 : VIDEO1 6 : VIDEO2 7 : S-VIDEO 12 : DVD/HD1 13 : DVD/HD2	
SCREEN					
	SIZE	02h	70h	1 : NORMAL 2 : FULL 3 : ZOOM 4 : DYNAMIC 11 : 2.35 : 1 12 : 14 : 9 13 : UNDER SCAN 14 : TRUE	
	V-POSITION	00h	30h	0 : left side 128 : right side	Center is 64. Depends on a display timing.
	H-POSITION	00h	20h	0 : bottom side 255 : right side	Center is 128. Depends on a display timing.
	V-HIGHT	02h	51h	0 : normal 64 : max.	

	H-WIDTH	02h	50h	0 : normal 64 : max.	
	CLOCK PHASE	00h	3Eh	0 : 63 :	
	CLOCK	00h	0Eh	0 : min. 64 : max.	Center is 32
	AUTO PICTURE	00h	1Eh	0 : OFF 1 : ON	
	UNDER SCAN	02h	E3h	2 : OFF 1 : ON	
OPTION					
	DISPLAY OSD	02h	3Dh	0 : OFF 1 : ON	
	OSD POSITION	02h	38h	1 : min. 6 : max.	
	OSD ORBITER	10h	1Bh	1 : ON 2 : OFF	
	OSD TRANSP.	02h	B8H	5 : 50% 6 : 60% 7 : 70% 8 : 80% 9 : 90% 10 : 100%	
	BNC INPUT	10h	17h	1 : RGB 2 : COMP 3 : SCART1 4 : SCART2	
	D-SUB INPUT	10h	18h	1 : RGB 4 : SCART2 5 : SCART3	
	RGB SELECT	02h	DAh	1 : AUTO 11 : type1 12 : type2 13 : type3 14 : type4 15 : type5	
	HD SELECT	10h	1Ah	1 : 1080I (1080B) 2 : 540P (1080A)	
	INPUT SKIP	10h	1Ch	1 : ON 2 : OFF	
	ALL RESET	02h	CBh	0 : no execute 1 : execute	
	POWER SAVE	00h	E1h	0 : OFF 1 : ON	
	FILM MODE	02h	23h	1 : OFF 2 : ON	

	PLE	02h	DCh	1 : AUTO / 100% 2 : LOCK1 / 75% 3 : LOCK2 / 50%	
	ORBITER	02h	DDh	0 : OFF 250 : AUTO1 251 : AUTO2 252 : RANDOM1 253 : RANDOM2 254 : MANUAL	
	ORBITER DOT	10h	1Dh	1 : min. (1dot) 20 : max. (20dots)	
	ORBITER LINE	10h	1Eh	1 : min. (1line) 20 : max. (20lines)	
	ORBITER INTERVAL	10h	1Fh	1 : min. (1minute) 5 : max. (5minutes)	
	INVERSE/WHITE	02h	C9h	0 : OFF 2 : WHITE 255 : INVERSE	
	INVERSE/WHITE working time	10h	20h	1 : ON 2 : 0h 03m 3 : 0h 06m 4 : 0h 09m 11 : 0h 30m 12 : 0h 33m 254 : 12h 39m 255 : 12h 42m 256 : 12h 45m (max)	
	INVERSE/WHITE waiting time	10h	21h	2 : 0h 03m 3 : 0h 06m 255 : 12h 42m 256 : 12h 45m (max)	
	COOLING FAN	02h	7Dh	1 : AUTO 2 : Forced	
	SIDE MASK	02h	DFh	0 : black 15 : gray	
	PICTURE SIZE	10h	22h	1 : ON 2 : OFF	
	DVI MODE (PLUG/PLAY)	02h	CFh	1 : DVI-PC 2 : DVI-HD	
	DVI MODE LEVEL	10h	23h	1 : LOW 2 : HIGH	
	PROTOCOL SET	10h	24h	1 : ON 2 : OFF	

	CLOSED CAPTION	10h	25h	1 : CC1 2 : CC2 3 : CC3 4 : CC4 5 : TEXT1 6 : TEXT2 7 : TEXT3 8 : TEXT4 9 : OFF	
	CAPTION CONT	10h	26h	1: NORMAL 2 : HIGH	
	TIMER	10h	31h	1 : PROGRAM 2 : REPEAT 3 : OFF	
	INPUT DETECT	02h	40h	0 : AUTO 1 : LAST 10 : MULTI 11 : VGA 12 : RGBHV 13 : DVI 15 : VIDEO1 16 : VIDEO2 17 : S-VIDEO 22 : DVD/HD1 23 : DVD/HD2	
	INPUT DETECT MAIN PICTURE INPUT	10h	27h	1 : VGA 2 : RGBHV 3 : DVI 5 : VIDEO1 6 : VIDEO2 7 : S-VIDEO 12 : DVD/HD1 13 : DVD/HD2	
	INPUT DETECT SUB PICTURE INPUT	10h	28h	1 : VGA 2 : RGBHV 3 : DVI 5 : VIDEO1 6 : VIDEO2 7 : S-VIDEO 12 : DVD/HD1 13 : DVD/HD2	
	INPUT DETECT VOLUME	10h	29h	0 : min. 100 : max. 101 : LAST	
	INPUT DETECT PRIORITY	10h	2Ah	1 : RGB 2 : VIDEO	
	CONTROL LOCK	00h	FBh	0 : ON 1 : OFF	
	IR REMOTE	02h	3Fh	1 : ON 4 : OFF	
	LOOP OUT	10h	2Bh	1 : ON 2 : OFF	

	MONITOR ID	02h	3Eh	0 : ALL 1-26 : ID	
	RS232C CONTROL	10h	34h	1 : NORMAL 3 : 2ND	
	VIDEO WALL DIVIDER	02h	D0h	0 : OFF 11 : 2X2 12 : 3X3 13 : 4X4 14 : 5X5 15 : 5X1 16 : 4X1 17 : 3X1 18 : 2X1 19 : 1X2 20 : 1X3 21 : 1X4 22 : 1X5	
	VIDEO WALL POSITION	02h	D2h	1 : No.1 56 :No.56.	
	VIDEO WALL DISP. MODE	02h	D5h	1 : SPLIT 2 : BLANK	
	Power ON DELAY	02h	D8h	0 : OFF 5 : 5SEC 10 : 10SEC 15 : 15SEC	
	SUB P. DETECT MODE	10h	03h	1 : AUTO 2 : OFF	
	SUB P. DISPLAY	10h	04h	1 : FADE 2 : NORMAL	
	SUB P. RATE	10h	05h	2 : 20% 3 : 30% 4 : 40% 5 : 50% 6 : 60% 7 : 70% 8 : 80% 9 : 90% 10 : 100%	
	ZOOM NAV	10h	06h	2 : S BY S2R 4 : BTM LEFT 5 : BTM RIGHT 6 : TOP RIGHT 7 : TOP LEFT 8 : OFF	
	PIC FREEZE	10h	07h	1 : S BY S1 3 : S BY S3 4 : BTM LEFT 5 : BTM RIGHT 6 : TOP RIGHT 7 : TOP LEFT 8 : OFF	

	QUICK SWAP	10h	10h	1 : ON 2 : OFF	
	QUICK SWAP SELECT1	10h	11h	1 : VGA 2 : RGBHV 3 : DVI 5 : VIDEO1 6 : VIDEO2 7 : S-VIDEO 12 : DVD/HD1 13 : DVD/HD2	
	QUICK SWAP SELECT2	10h	12h	1 : VGA 2 : RGBHV 3 : DVI 5 : VIDEO1 6 : VIDEO2 7 : S-VIDEO 12 : DVD/HD1 13 : DVD/HD2	
	TEXT INSERT MODE	10h	08h	1 : OFF 4 : BOTTOM1 5 : BOTTOM2 6 : BOTTOM3 7 : MIDDLE LOW 8 : MIDDLE HIGH 9 : TOP3 10 : TOP2 11 : TOP1 12 : LEFT 13 : RIGHT	
	TEXT INSERT INPUT	10h	0Eh	1 : VGA 2 : RGBHV 3 : DVI	
	TEXT INSERT DETECT	10h	0Ch	1 : AUTO 2 : OFF	
	TEXT INSERT DISPLAY	10h	0Dh	1 : FADE 2 : NORMAL	
	TEXT INSERT RATE	10h	0Bh	2 : 20% 3 : 30% 4 : 40% 5 : 50% 6 : 60% 7 : 70% 8 : 80% 9 : 90% 10 : 100%	

MAIN MENU					
	ADVANCED OSD	10h	0Fh	1 : ON 2 : OFF	
	LANGUAGE	00h	72h	1 : ENGLISH 2 : GERMAN 3 : FRENCH 4 : SPANISH 5 : JAPANESE 6 : ITALIAN 7 : SWEDISH 9 : RUSSIAN 12 : PORTUGUESE 22 : GREEK 23 : TURKISH	
	COLOR SYSTEM	02h	21h	1 : 3.58 NTSC 2 : PAL 3 : SECAM 4 : AUTO 5 : 4.43NTSC 6 : PAL60 7 : PAL-N 8 : PAL-M	
GENERAL					
	Volume control	00h	62h	0 : min. 100 : max.	
	Audio Mute	00h	8Dh	0,2: UNMUTE 1: MUTE	
	SPLIT SCREEN SELECT (PIP / S BY S)	02h	72h	1 : SINGLE screen 5 : S BY S1 6 : S BY S3 11 : S BY S2L 12 : S BY S2R 13 : S BY S4L 14 : S BY S4R 15 : PIP1(size1) 16 : PIP2(size1) 17 : PIP3(size1) 18 : PIP4(size1) 19 : PIP1(size2) 20 : PIP2(size2) 21 : PIP3(size2) 22 : PIP4(size2) 23 : PIP1(size3) 24 : PIP2(size3) 25 : PIP3(size3) 26 : PIP4(size3) 27 : PIP1(size4) 28 : PIP2(size4) 29 : PIP3(size4) 30 : PIP4(size4)	*PIP1 is BOTTOM LEFT sub screen. *PIP2 is BOTTOM RHIGHT sub screen. *PIP3 is TOP RHIGHT sub screen. *PIP4 is TOP LEFT sub screen. *size1 is smaller sub screen. *size4 is bigger Sub screen.
	ACTIVE SELECT	10h	30h	1 : MAIN(PIP) or LEFT(S BY S), 2 : SUB(PIP) or RIGHT(S BY S)	

	PIP Input switch change (Sub/Right picture)	02h	73h	1 : VGA 2 : RGBHV 3 : DVI 5 : VIDEO1 6 : VIDEO2 7 : S-VIDEO 12 : DVD/HD1 13 : DVD/HD2	
--	--	-----	-----	--	--

Note 1) :

When you want to adjust the setting value of AUDIO INPUT1, 2 & 3 in AUDIO menu,
please never choose the same input source among AUDIO1,2 and 3.

The default setting values of AUDIO INPUT are as follows,

AUDIO1 : VIDEO1

AUDIO2 : DVD/HD1

AUDIO3 : VGA

Note 2) :

When you want to adjust the setting value of PIP Input switch change,
please never choose the same input source between Main picture and Sub picture.

Note 3) :

When you want to adjust the setting value of PIP Input switch change,
please never choose VGA and RGBHV input at same time as Main picture and Sub picture.

(2) Typical procedure example (“Brightness” setting)

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

Step 1. Get parameter

The controller requests the Monitor to reply with the current brightness setting and capability to support this operation.

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'.

If Monitor ID is 'ALL', specify '*' (2Ah).

'0' (30h): Message sender is the controller

'C' (43h): Message 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 4-2)-(3) “Check code” for a BCC calculation.

Delimiter

CR (0Dh): End of packet

Step 2. Get parameter reply

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

Header	Message	Check code	Delimiter
SOH-'0'-'0'-Monitor ID-'D'-'1'-'2'	STX-'0'-'0'-'0'-'0'-'1'-'0'-'0'-'0'-'0'-'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'.

When this byte is set to '*' (2Ah), the replying Monitor ID is 'ALL'.

'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.

00 : No error

01 : Unsupported

'0'-'0' (30h, 30h): Operation code page number is 0

'1'-'0' (31h, 30h): Operation code is 10h (in the page 0)

'0'-'0' (30h, 30h): This operation is "Set parameter" type

'0'-'0'-'6'-'4' (30h, 30h, 36h, 34h): Brightness max value is 100(0064h)

'0'-'0'-'3'-'2' (30h, 30h, 33h, 32h): Current Brightness setting is 50(0032h)

ETX (03h): End of Message

Check code

BCC: Block Check Code

Refer to the section 4-2)-(3) "Check code" for a BCC calculation.

Delimiter

CR (0Dh): End of packet

Step 3. Set parameter

The controller request the monitor to change the Brightness setting

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

Header

SOH (01h): Start Of Header

'0' (30h): Reserved

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

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

If Monitor ID is 'ALL', specify '*' (2Ah).

'0' (30h): Message sender is the controller

'E' (45h): Message Type is "Set parameter command"

'0'-'A' (30h, 41h): Message length is 10 bytes

Message

STX (02h): Start of Message

'0'-'0' (30h, 30h): Operation code page number is 0

'1'-'0' (31h, 30h): Operation code is 10h (in the page 0)

'0'-'0'-'5'-'0' (30h, 30h, 35h, 30h): Set Brightness setting 80(0050h)

ETX (03h): End of Message

Check code

BCC: Block Check Code

Refer to the section 4-2)-(3) "Check code" for a BCC calculation.

Delimiter

CR (0Dh): End of packet

Step 4. Set parameter reply

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'.

When this byte is set to '*' (2Ah), the replying Monitor ID is 'ALL'.

'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.

00 : No error

01 : Unsupported

'0'-'0' (30h, 30h): Operation code page number is 0

'1'-'0' (31h, 30h): Operation code is 10h (in the page 0)

'0'-'0' (30h, 30h): This operation is "Set parameter" type

'0'-'0'-'6'-'4' (30h, 30h, 36h, 34h): Brightness max value is 100(0064h)

'0'-'0'-'5'-'0' (30h, 30h, 35h, 30h): Received a Brightness setting was 80(0050h)

ETX (03h): End of Message

Check code

BCC: Block Check Code

Refer to the section 4-2)-(3) "Check code" for a BCC calculation.

Delimiter

CR (0Dh): End of packet

Step 5. Confirmation

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

(3) Unsupported OP code or Parameter

When the plasma monitor receives unsupported OP code or parameter, the monitor execute by using the Result code of unsupported as follows.

ex 1. unsupported OP code (Get Parameter is “Black Level”)

<from PC to monitor>

Header	Message	Check code	Delimiter
SOH-'0'-Monitor ID-'0'-'C'-'0'-'6'	STX-'0'-'0'-'9'-'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 a value.

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

If Monitor ID is 'ALL', specify '*' (2Ah).

'0' (30h): Message sender is the controller

'C' (43h): Message 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

'9'-'2' (39h, 32h): Operation code is 92h (in the OP code page 0)

ETX (03h): End of Message

} ← unsupported OP code page and OP code

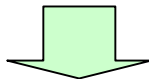
Check code

BCC: Block Check Code

Refer to the section 4-2)-(3) “Check code” for a BCC calculation.

Delimiter

CR (0Dh): End of packet



< from monitor to PC : **NACK** >

Header	Message	Check code	Delimiter
SOH-'0'-'0'-Monitor ID-'D'-'1'-'2'	STX-'0'-'1'-'0'-'0'-'9'-'2'-'0'-'0'-'F'-'F'-'F'-'F'-'0'-'0'-'0'-'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'.

When this byte is set to '*' (2Ah), the replying Monitor ID is 'ALL'.

'D' (44h): Message Type is "Get parameter reply"

'1'-'2' (31h, 32h): Message length is 18 bytes

Message

STX (02h): Start of Message

'0'-'1' (30h, 30h): Result code. 01 : Unsupported

result code is 01 fixed

'0'-'0' (30h, 30h): Operation code page number is 0

same as received OP code page and OP code

'9'-'2' (39h, 32h): Operation code is 92h (in the page 0)

'0'-'0' (30h, 30h): This operation is "Set parameter" type

type is 00 fixed

'F'-'F'-'F'-'F' (46h, 46h, 46h, 46h): Black Level max value is 65535(FFFFh)

max value is FFFFh fixed

'0'-'0'-'0'-'0' (30h, 30h, 30h, 30h): Current Brightness setting is 0(0000h)

setting is 0000h fixed

ETX (03h): End of Message

Check code

BCC: Block Check Code

Refer to the section 4-2)-(3) "Check code" for a BCC calculation.

Delimiter

CR (0Dh): End of packet

ex 2. unsupported Parameter (Set Parameter is “128d (80h)”)

<from PC to monitor>

Header	Message	Check code	Delimiter
SOH-'0'-'Monitor ID-'0'-'E'-'0'-'A'	STX-'0'-'0'-'1'-'0'-'0'-'0'-'8'-'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'.

If Monitor ID is 'ALL', specify '*' (2Ah).

'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'-'8'-'0' (30h, 30h, 35h, 30h): Set Brightness setting 128(0080h)



unsupported Parameter

ETX (03h): End of Message

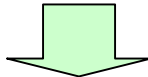
Check code

BCC: Block Check Code

Refer to the section 4-2)-(3) "Check code" for a BCC calculation.

Delimiter

CR (0Dh): End of packet

< from monitor to PC : **NACK** >

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'.

When this byte is set to '*' (2Ah), the replying Monitor ID is 'ALL'.

'F' (46h): Message Type is "Set parameter reply"

'1'-'2' (31h, 32h): Message length is 18 bytes

Message

STX (02h): Start of Message

'0'-'1' (30h, 30h): Result code. 01 : Unsupported  result code is 01 fixed

'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  type is 00 fixed

'F'-'F'-'F'-'F' (46h, 46h, 46h, 46h): Brightness max value is 65535(FFFFh)  max value is FFFFh fixed

'0'-'0'-'0'-'0' (30h, 30h, 30h, 30h): Received a Brightness setting was 0(0000h)  setting is 0000h fixed

ETX (03h): End of Message

Check code

BCC: Block Check Code

Refer to the section 4-2)-(3) "Check code" for a BCC calculation.

Delimiter

CR (0Dh): End of packet

[The changing item record]

Ver 1.0.0 22.Sep.2007

Ver 1.0.1 30.Jan.2008 Adds **5-1)-(4) Input Source read**
 Adds **5-1)-(9) Present Time write** and **5-1)-(10) Present Time read**
 Adds **5-1)-(11) Program Timer write** and **5-1)-(12) Program Timer read**
 Adds **5-1)-(13) Repeat Timer write** and **5-1)-(14) Repeat Timer read**
 Adds **5-1)-(15) Frequency data reading**
 Adds **5-1)-(16) Remocon Code Control**
 Increase many data in **5-2)-(1) Menu Operation Commands**
 Change the power on/off interval time from 1 min. to 6 sec.
 in **5-1)-(1) Power ON / Power OFF**

Ver 1.0.2 27.Feb.2008 Change the mistyping of **5-1)-(16) Remocon Code Control**
 from 'A' (45h) to 'A' (41h).
 Adds the Parameter of "INPUT DETECT" command
 in **5-2)-(1) Menu Operation Commands**
 Change the OP code page, OP code and Parameter of "RS232C
 CONTROL" command in **5-2)-(1) Menu Operation Commands**
 Adds "PIP Input switch change" command
 in **5-2)-(1) Menu Operation Commands**
 Adds Notes 1), 2) and 3) for **5-2)-(1) Menu Operation Commands**