

NEC plasma display

External Control Manual

(for PX-42VR5/42XR3/50XR4/61XR3)

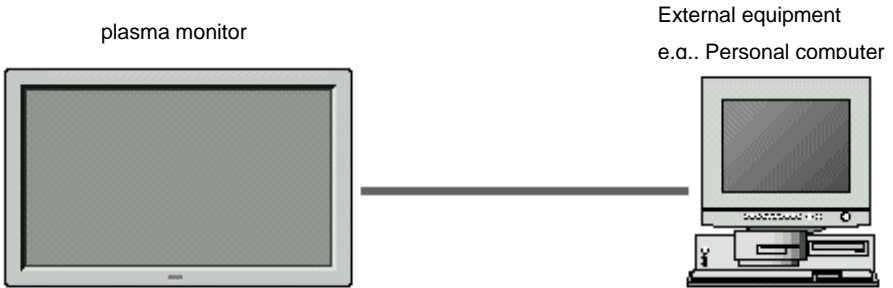
# Application

These specifications are applicable to NEC plasma monitors and communications control from external equipment.

"Please also support the command of VP series and refer to the manual of the conventional model about specification."

# Connections

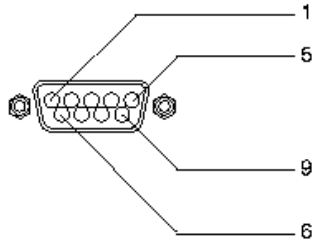
Connections should be made as described below.



1) Connector on the plasma monitor side: EXTERNAL CONTROL connector.

Type of connector: D-Sub 9-pin male

No.	Pin Name
1	No Connection
2	RXD (Receive data)
3	TXD (Transmit data)
4	DTR (DTE side ready)
5	GND
6	DSR (DCE side ready)
7	RTS (Ready to send)
8	CTS (Clear to send)
9	No Connection



2) Connector on the external equipment side: 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

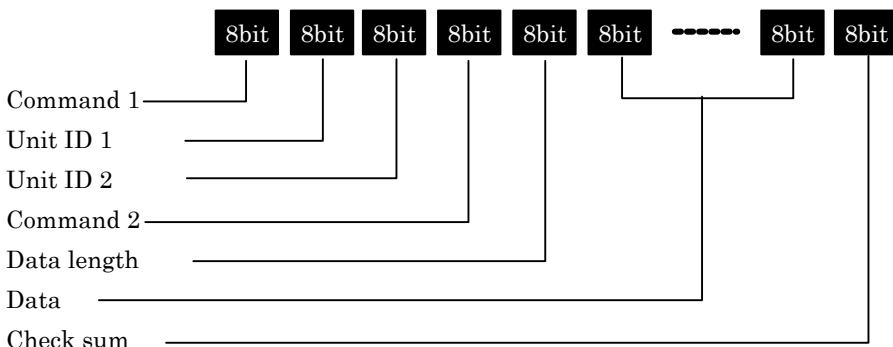
Use a crossed (reverse) cable.

Wire the cable so that each pair of data lines cross between the two devices. These data line pairs are RXD (Receive data) and TXD (Transmit data), DTR (DTE side ready) and DSR (DCE side ready), and RTS (Ready to send) and CTS (Clear to send).

## Communication Parameters

(1) Communication system	Asynchronous
(2) Interface	RS-232C
(3) Baud rate	9600 bps
(4) Data length	8 bits
(5) Parity	Odd
(6) Stop bit	1 bit
(7) Communication code	Hex

## Communication Format



## Command1

Command 1, along with command 2, is a number used to distinguish each command.

When making it operate using ID, bit1 and bit0 are set up as follows.

Bit1, Bit0 Unit ID distinction bit

11B	: Usually, a form (with no ID)
10B	: Usually, a form (with no ID)
01B	: Set ID
00B	: Video wall ID

In the case of ACK, when the lower order 4 bits is FH (as in 3FH and 7FH), this indicates that the commands and data of the supported equipment have been received. When the lower order 4 bits is BH (as in 3BH and 7BH), this indicates that unsupported commands and data have been received.

## Unit ID1,2 (UA1,UA2)

Unit ID 1 and unit ID 2 are numbers used to identify the equipment that is to be connected.

60H is used for the plasma monitor and 80H is used for external control equipment such as a personal computer.

- 1) Unit ID 1: Indicates the equipment sending the signal. When supporting Set ID by the command 1, 4 bits of low ranks of Set ID are set up.
  - 2) Unit ID 2: Indicates the equipment receiving the signal. When supporting Set ID by the command 1, 4 bits of higher ranks of Set ID are set up.
- \* Set ID : it is the apparatus number assigned to each plasma monitor.

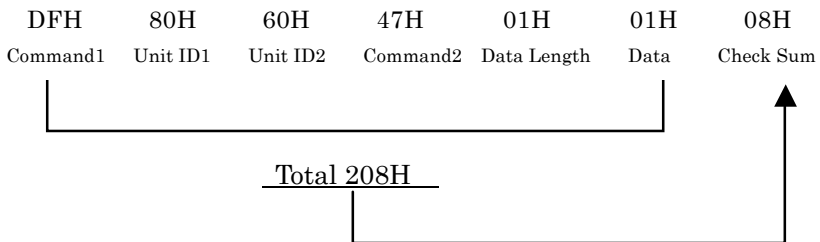
## Command 2

Command 2, along with command 1, is a number used to distinguish each command.

## Check Sum (CKS), Error Processing, and ACK

1) The check sum described below and RS-232C odd parity are used together for a check of the received data. The check sum is the lower order 8 bits of one frame of sent or received data comprising the sum total of Command 1, Unit ID 1 and 2, Command 2, Data Length, and Data.

### Check Sum Example



### 2) Error Processing

- When the communication interval is vacant for more than 4 ms, thereafter a received Command 1 will be recognized. If, at this time, meaningful data cannot be recognized, that data will not be recognized (as valid data).
- An ACK will not be returned unless the receive data error, the check sum error, and the receive data are all taken in.

The control method of the set by Set ID

When controlling two or more sets of plasma monitors, if the command using Set ID is used, it will become controllable individually.

The example of the POWER ON command to the plasma monitor which set ID as "5" is shown below.

It is not based on ID but is the POWER ON command to all sets.

```
9F 80 60 4E 00 CD
```

In ID= "5", the value of ID-1=4 is set up.

```
9D 84 60 4E 00 CF
```

The example of a change in the single mode of a 4th page multi-system configuration and the multi-mode is shown below.

ID of the set used as a master(etc PC) is set to 50, and it assumes that ID is shaken by AUTO ID to each set. ID shaken at each set is as follows.

Upper left set (master) ID = 50 = 32h

Upper right set ID = 51 = 33h

Lower right set ID = 52 = 34h

Lower left set ID = 53 = 35h

#### Transmission Data

```
DD 81 63 03 03 03 01 00 CB
```

```
DD 82 63 03 03 03 02 00 CD
```

```
DD 83 63 03 03 03 03 00 CF
```

```
DD 84 63 03 03 03 04 00 D1
```

Transmission of the above command performs a 4th page multi SPLIT display. Moreover, the following commands are published in order to change a 4th page multi-display into a single mode display.

```
DF 80 60 03 03 01 01 00 C7
```

All sets become a single mode display by the above-mentioned command. Since this command does not specify Set ID, all sets execute it.

\*:Control by ID may not be able to be performed depending on connection with external control apparatus.

## Command Reference List

		CMD1	CMD2	LEN
01	Power ON	9FH	4EH	00H
02	Power OFF	9FH	4FH	00H
03	Input Switch Change	DFH	47H	01H
04	VOLUME Gain Data	DFH	7FH	03H
05	AUDIO Mute ON	9FH	3EH	00H
06	AUDIO Mute OFF	9FH	3FH	00H
07	CONTRAST Gain Data	DFH	7FH	03H
08	BRIGHT Gain Data	DFH	7FH	03H
09	SHARPNESS Gain Data	DFH	7FH	03H
10	Color Gain Data	DFH	7FH	03H
11	TINT Gain Data	DFH	7FH	03H
12	PICTURE MODE Select	DFH	0AH	01H
13	COLOR TEMP SELECT	DFH	00H	01H
14	RED Gain Data	DFH	7FH	04H
15	GREEN Gain Data	DFH	7FH	04H
16	BLUE Gain Data	DFH	7FH	04H
17	NR MODE Set	DFH	C0H	01H
18	BASS Gain Data	DFH	7FH	03H
19	TREBLE Gain Data	DFH	7FH	03H
20	BALANCE Gain Data	DFH	7FH	03H
21	SCREEN MODE Select	DFH	51H	01H
22	V.POSITION Gain Data	DFH	7FH	03H
23	H.POSITION Gain Data	DFH	7FH	03H
24	V-HEIGHT Gain Data	DFH	7FH	03H
25	H-WIDTH Gain Data	DFH	7FH	03H
26	AUTO PICTURE Select	DFH	7FH	03H
27	PHASE Gain Data (FINE PICTURE Set)	DFH	7FH	03H
28	CLOCK Gain Data (PICTURE ADJUST Set)	DFH	7FH	03H
29	OSM ADJ. position Data	DFH	1AH	02H
30	POWER MGT Select	DFH	1AH	02H
31	GRAY LEVEL Set	DFH	C6H	01H
32	CINEMA MODE Set	DFH	C1H	01H
33	LONG LIFE Set (PDP SAVER Set)	DFH	6BH	03H
34	SCREEN WIPER Set	DFH	C8H	04H
35	ALL RESET	1FH	54H	00H
36	Audio Select Set	DFH	70H	02H
37	BNC INPUT	DFH	8CH	01H
38	RGB Select	DFH	8BH	01H
39	HD Select	DFH	8AH	01H



40	LANGUAGE Select	DFH	5BH	01H
41	COLOR SYSTEM Select	DFH	5CH	01H
42	FREQUENCY Request	1FH	26H	00H
43	Input MODE Request	1FH	41H	00H
44	VIDEO ADJ Request	1FH	45H	00H
45	Audio Select Request	1FH	6FH	00H
46	Failure Mode Request	1FH	3FH	00H
47	MODEL NAME Request	1FH	17H	00H
48	D-SUB INPUT	DFH	8DH	01H
49	LOW TONE	DFH	0CH	01H
50	COLOR TUNE	DFH	0DH	08H
51	GAMMA Gain Data	DFH	13H	04H
52	Running Sense	1FH	88H	00H
53	OSM OBITER	DFH	5FH	01H
54	Input Skip	5FH	61H	01H
55	SERIAL No. Request	1FH	15H	00H
56	S1/S2 SELECT	DFH	89H	01H
57	SOFT FOCUS	DFH	65H	01H
58	PLUG and PLAY	DFH	8EH	01H
59	BLACK LEVEL (DIGITAL SIGNAL LEVEL)	DFH	8FH	01H
60*1	MULTI(SPRIT) SCREEN Select	DFH	07H	01H
61*1	SUB.P DETECT	DFH	7AH	01H
62*1	ZOOM NAV	DFH	7BH	01H
63*1	PICTURE FREEZE	DFH	7CH	01H
64*1	PAUSE COMMAND	DFH	7DH	01H
65	OSM CONTRAST	DFH	37H	01H
66*2	CLOSED CAPTION	DFH	3CH	01H
67*2	CAPTION CONTRAST	DFH	3DH	01H
68	PICTURE MEMORY Select	DFH	38H	01H
69	PICTURE MEMORY Set	DFH	25H	02H
70	PICTURE MEMORY NOTE WRITE	DFH	2DH	0CH
71	SET UP LEVEL	DFH	35H	01H
72	BACK GROUND	DFH	36H	01H
73	PDP SAVER AUTO select	DFH	2CH	01H

\*1:This function is only 50 or 61 inch model

\*2:This function is only A version

## 01. Power ON

### Function

The external control equipment switches on the power of the plasma monitor.

### Transmission Data

9FH 80H 60H 4EH 00H CKS

### ACK

The plasma monitor returns the following ACK when the power is switched on.

3FH 60H 80H 4EH 00H CKS

NOTE: Do not set the Power ON or Power OFF command continuously.

## 02. Power OFF

### Function

The external control equipment switches off the power of the plasma monitor.

### Transmission Data

9FH 80H 60H 4FH 00H CKS

### ACK

The plasma monitor returns the following ACK when the power is switched off.

3FH 60H 80H 4FH 00H CKS

NOTE: Do not set the Power ON or Power OFF command continuously.

### 03. Input Switch Change

#### Function

The external control equipment switches the input of the plasma monitor.

#### Transmission Data

**DFH 80H 60H 47H 01H DATA00 CKS**

DATA00 : Input Select

01H : Video1

02H : Video2

03H : Video3

05H : HD (HD1 or DTV or DTV1)

06H : HD2(DTV2 or SCART1/SCART2)

07H : RGB1 / PC1

08H : RGB2 / PC2

0CH : RGB3 / PC3

0EH : HD/DVD3

#### ACK

The plasma monitor returns the following ACK when the input is switched.

**3FH 60H 80H 47H 00H CKS**

#### 04. VOLUME Gain Data

##### Function

The external control equipment changes the VOLUME gain data of the plasma monitor.

##### Transmission Data

DFH 80H 60H 7FH 03H DATA00 DATA01 DATA02 CKS

DATA00: USER SOUND Gain Flag 05H

DATA01: VOLUME Gain Flag 01H

DATA02: VOLUME Gain 00H: Step0

:

0AH: Step10 (Default)

:

2AH: Step42

##### ACK

7FH 60H 80H 7FH 02H DATA00 DATA01 CKS

DATA00: USER SOUND Gain Flag 05H

DATA01: VOLUME Gain Flag 01H

#### 05. AUDIO Mute ON

##### Function

The external control equipment switches on AUDIO Mute of the plasma monitor.

##### Transmission Data

9FH 80H 60H 3EH 00H CKS

##### ACK

3FH 60H 80H 3EH 00H CKS

#### 06. AUDIO Mute OFF

##### Function

The external control equipment switches off AUDIO Mute of the plasma monitor.

##### Transmission Data

9FH 80H 60H 3FH 00H CKS

##### ACK

3FH 60H 80H 3FH 00H CKS

## 07. CONTRAST Gain Data

### Function

The external control equipment changes the CONTRAST gain data of the plasma c

### Transmission Data

DFH	80H	60H	7FH	03H	DATA00	DATA01	DATA02	CKS
					DATA00 : USER PICTURE Gain Flag	01H		
					DATA01 : CONTRAST Gain Flag	07H		
					DATA02 : CONTRAST Gain	CCH : -52		
						:		
						FFH : -01		
						00H : 0		
						01H : +01		
						:		
						14H : +20		

### ACK

7FH	60H	80H	7FH	02H	DATA00	DATA01	CKS
					DATA00: USER PICTURE Gain Flag	01H	
					DATA01: CONTRAST Gain Flag	07H	

## 08. BRIGHT Gain Data

### Function

The external control equipment changes the BRIGHT gain data of the plasma monitor.

### Transmission Data

DFH	80H	60H	7FH	03H	DATA00	DATA01	DATA02	CKS
					DATA00 : USER PICTURE Gain Flag	01H		
					DATA01 : BRIGHT Gain Flag	08H		
					DATA02 : BRIGHT Gain	E0H : -32		
						:		
						FFH : -01		
						00H : 0		
						01H : +01		
						:		
						20H : +32		

### ACK

7FH	60H	80H	7FH	02H	DATA00	DATA01	CKS
-----	-----	-----	-----	-----	--------	--------	-----

DATA00 : USER PICTURE Gain Flag	01H
DATA01 : BRIGHT Gain Flag	08H

## 09. SHARPNESS Gain Data

### Function

The external control equipment changes the SHARPNESS gain data of the plasma monitor.

### Transmission Data

DFH 80H 60H 7FH 03H DATA00 DATA01 DATA02 CKS
--

DATA00 : USER PICTURE Gain Flag	01H
DATA01 : SHARPNESS Gain Flag	06H
DATA02 : SHARPNESS Gain	F0H : -16
	:
	FFH : -01
	00H : 0
	01H : +01
	:
	10H : +16

Only when a RGB signal is connected

DATA02 : SHARPNESS Gain	01H : 1
	02H : 2
	03H : 3
	04H : 4

### ACK

7FH 60H 80H 7FH 02H DATA00 DATA01 CKS
---------------------------------------

DATA00 : USER PICTURE Gain Flag	01H
DATA01 : SHARPNESS Gain Flag	06H

## 10. COLOR Gain Data

### Function

The external control equipment changes the COLOR gain data of the plasma monitor.

### Transmission Data

DFH	80H	60H	7FH	03H	DATA00	DATA01	DATA02	CKS
					DATA00 : USER PICTURE Gain Flag	01H		
					DATA01 : COLOR Gain Flag	04H		
					DATA02 : COLOR Gain	E0H : -32		
						:		
						FFH : -01		
						00H : 0		
						01H : +01		
						:		
						20H : +32		

\* COLOR Gain is from -22 (EAH) to +22 (16H) only during video.

### ACK

7FH	60H	80H	7FH	02H	DATA00	DATA01	CKS
					DATA00 : USER PICTURE Gain Flag	01H	
					DATA01 : COLOR Gain Flag	04H	

## 11. TINT Gain Data

### Function

The external control equipment changes the TINT gain data of the plasma monitor.

### Transmission Data

DFH	80H	60H	7FH	03H	DATA00	DATA01	DATA02	CKS
					DATA00 : USER PICTURE Gain Flag	01H		
					DATA01 : TINT Gain Flag	05H		
					DATA02 : TINT Gain	E0H : -32		
						:		
					* TINT Gain is from -22 (EAH) to	FFH : -01		
					+22 (16H) only during video.	00H : 0		
						01H : +01		
						:		
						20H : +32		

ACK

7FH 60H 80H 7FH 02H DATA00 DATA01 CKS  
DATA00 : USER PICTURE Gain Flag 01H  
DATA01 : TINT Gain Flag 05H

## 12. PICTURE MODE Select

Function

The external control equipment sets the picture mode of the plasma monitor.

Transmission Data

DFH 80H 60H 0AH 01H DATA00 CKS

DATA00: 01H : NORMAL  
02H : THEATER1(It cannot choose in the still picture input of a  
personal computer.)  
03H : THEATER2(It cannot choose in the still picture input of a  
personal computer.)  
04H : Default  
05H : Bright

ACK

7FH 60H 80H 0AH 01H DATA00 CKS

DATA00: 01H : NORMAL  
02H : THEATER1  
03H : THEATER2  
04H : Default  
05H : Bright

## 13. COLOR TEMP SELECT

Function

The external control equipment changes the COLOR TEMP of the plasma monitor.

Transmission Data

DFH 80H 60H 00H 01H DATA00 CKS

DATA00 : 00H: low  
01H: middle  
02H: high  
03H: middle low



ACK

7FH 60H 80H 00H 01H DATA00 CKS

DATA00 : 00H: low  
          01H: middle  
          02H: high  
          03H: middle low

#### 14. RED Gain Data

Function

The external control equipment changes the RED Gain Data of the plasma monitor.

Transmission Data

DFH 80H 60H 7FH 04H DATA00 to DATA03 CKS

DATA00 : USER PICTURE Gain Flag	01H
DATA01 : RED Gain Flag	01H
DATA02 : RED Gain1(Bias)	D8H : -40 : FFH : -01 00H : 0 01H : +01 : 1EH : +30
DATA03: RED Gain2(Drive)	D8H : -40 : FFH : -01 00H : 0 01H : +01 : 1EH : +30

ACK

7FH 60H 80H 7FH 02H DATA00 DATA01 CKS

DATA00 : USER PICTURE Gain Flag 01H  
DATA01 : RED Gain Flag 01H

## 15. GREEN Gain Data

### Function

The external control equipment changes the GREEN Gain Data of the plasma monitor.

### Transmission Data

DFH	80H	60H	7FH	04H	DATA00 to DATA03	CKS
					DATA00 : USER PICTURE Gain Flag	01H
					DATA01 : GREEN Gain Flag	02H
					DATA02 : GREEN Gain1(Bias)	D8H : -40
						:
						FFH : -01
						00H : 0
						01H : +01
						:
						1EH : +30
					DATA03: GREEN Gain2(Drive)	D8H : -40
						:
						FFH : -01
						00H : 0
						01H : +01
						:
						1EH : +30

### ACK

7FH	60H	80H	7FH	02H	DATA00	DATA01	CKS
					DATA00: USER PICTURE Gain Flag	01H	
					DATA01: GREEN Gain Flag	02H	

## 16. BLUE Gain Data

### Function

The external control equipment changes the BLUE Gain Data of the plasma monitor.

### Transmission Data

DFH 80H 60H 7FH 04H DATA00 to DATA03 CKS

DATA00 : USER PICTURE Gain Flag	01H
DATA01 : BLUE Gain Flag	03H
DATA02 : BLUE Gain1(Bias)	D8H :-40
	:
	FFH :-01
	00H : 0
	01H : +01
	:
	1EH : +30
DATA03: BLUE Gain2(Drive)	D8H :-40
	:
	FFH :-01
	00H : 0
	01H : +01
	:
	1EH : +30

### ACK

7FH 60H 80H 7FH 02H DATA00 DATA01 CKS

DATA00: USER PICTURE Gain Flag	01H
DATA01: BLUE Gain Flag	03H

## 17. NR MODE Set

### Function

The external control equipment sets the NR (Noise Reduction) mode of the plasma monitor.

### Transmission Data

DFH 80H 60H C0H 01H DATA00 CKS

DATA00: 01H : NR OFF

02H : NR-1

03H : NR-2

04H : NR-3

### ACK

7FH 60H 80H C0H 01H DATA00 CKS

DATA00: 01H : NR OFF

02H : NR-1

03H : NR-2

04H : NR-3

## 18. BASS Gain Data

### Function

The external control equipment changes the BASS gain data of the plasma monitor.

### Transmission Data

DFH 80H 60H 7FH 03H DATA00 DATA01 DATA02 CKS

DATA00 : USER PICTURE Gain Flag 05H

DATA01 : BASS Gain Flag 03H

DATA02 : BASS Gain F3H : -13

:

FFH : -01

00H : 0

01H : +01

:

0DH : +13

### ACK

7FH 60H 80H 7FH 02H DATA00 DATA01 CKS

DATA00 : USER PICTURE Gain Flag 05H

DATA01 : BASS Gain Flag 03H

## 19. TREBLE Gain Data

### Function

The external control equipment changes the TREBLE gain data of the plasma monitor.

### Transmission Data

DFH	80H	60H	7FH	03H	DATA00	DATA01	DATA02	CKS
					DATA00 : USER PICTURE Gain Flag	05H		
					DATA01 : TREBLE Gain Flag	04H		
					DATA02 : TREBLE Gain	F3H : -13		
						:		
						FFH : -01		
						00H : 0		
						01H : +01		
						:		
						0DH : +13		

### ACK

7FH	60H	80H	7FH	02H	DATA00	DATA01	CKS
					DATA00: USER PICTURE Gain Flag	05H	
					DATA01: TREBLE Gain Flag	04H	

## 20. BALANCE Gain Data

### Function

The external control equipment changes the BALANCE gain data of the plasma monitor.

### Transmission Data

DFH	80H	60H	7FH	03H	DATA00	DATA01	DATA02	CKS
					DATA00 : USER PICTURE Gain Flag	05H		
					DATA01 : BALANCE Gain Flag	02H		
					DATA02 : BALANCE Gain	EAH : -22		
						:		
						FFH : -01		
						00H : 0		
						01H : +01		
						:		
						16H : +22		

### ACK

7FH	60H	80H	7FH	02H	DATA00	DATA01	CKS
					DATA00: USER PICTURE Gain Flag	05H	

DATA01: BALANCE Gain Flag

02H

## 21.SCREEN MODE Select

### Function

The external control equipment switches the screen mode of the plasma monitor.

### Transmission Data

**DFH 80H 60H 51H 01H DATA00 CKS**

DATA00 02H : STADIUM

03H : ZOOM

04H : NORMAL

05H : ANAMORHIC(FULL)

06H : REAL

08H : UNDERSCAN

09H : 14:9

0AH : 2.35:1

### ACK

**7FH 60H 80H 51H 01H DATA00 CKS**

DATA00 02H : STADIUM

03H : ZOOM

04H : NORMAL

05H : ANAMORHIC(FULL)

06H : REAL

08H : UNDERSCAN

09H : 14:9

0AH : 2.35:1

## 22. V.POSITION Gain Data

### Function

The external control equipment changes the V. POSITION gain data of the plasma monitor.

### Transmission Data

DFH	80H	60H	7FH	03H	DATA00	DATA01	DATA02	CKS
					DATA00 : USER PICTURE Gain Flag	03H		
					DATA01 : V.POSITION Gain Flag	01H		
					DATA02 : V.POSITION Gain	C0H : -64		
						:		
						FFH : -01		
						00H : 0		
						01H : +01		
						:		
						40H : +64		

### ACK

7FH	60H	80H	7FH	02H	DATA00	DATA01	CKS
					DATA00: USER PICTURE Gain Flag	03H	
					DATA01: V.POSITION Gain Flag	01H	

### 23. H.POSITION Gain Data

#### Function

The external control equipment changes the H. POSITION gain data of the plasma monitor.

#### Transmission Data

DFH	80H	60H	7FH	03H	DATA00	DATA01	DATA02	CKS
					DATA00 : USER PICTURE Gain Flag	03H		
					DATA01 : H.POSITION Gain Flag	02H		
					DATA02 : H.POSITION Gain	80H : -128		
						:		
						FFH : -01		
						00H : 0		
						01H : +01		
						:		
						7FH : +127		

#### ACK

7FH	60H	80H	7FH	02H	DATA00	DATA01	CKS
					DATA00: USER PICTURE Gain Flag	03H	
					DATA01: H.POSITION Gain Flag	02H	

### 24. V.HEIGHT Gain Data

#### Function

The external control equipment changes the V-HEIGHT gain data of the plasma monitor.

#### Transmission Data

DFH	80H	60H	7FH	03H	DATA00	DATA01	DATA02	CKS
					DATA00 : USER PICTURE Gain Flag	03H		
					DATA01 : V-HEIGHT Gain Flag	07H		
					DATA02 : V-HEIGHT Gain	00H : 0		
						:		
						40H : +64		

#### ACK

7FH	60H	80H	7FH	02H	DATA00	DATA01	CKS
					DATA00: USER PICTURE Gain Flag	03H	
					DATA01: V-HEIGHT Gain Flag		07H



## 25. H.WIDTH Gain Data

### Function

The external control equipment changes the H-WIDTH gain data of the plasma monitor.

### Transmission Data

DFH	80H	60H	7FH	03H	DATA00	DATA01	DATA02	CKS
					DATA00 : USER PICTURE Gain Flag	03H		
					DATA01 : H-WIDTH Gain Flag	08H		
					DATA02 : H-WIDTH Gain	00H : 0		
						:		
						40H : +64		

### ACK

7FH	60H	80H	7FH	02H	DATA00	DATA01	CKS
					DATA00: USER PICTURE Gain Flag	03H	
					DATA01: H-WIDTH Gain Flag	08H	

## 26. AUTO PICTURE Select

### Function

The external control equipment switches on or off the AUTO PICTURE of the plasma monitor.

### Transmission Data

DFH	80H	60H	7FH	03H	DATA00	DATA01	DATA02	CKS
					DATA00 : USER PICTURE Gain Flag	03H		
					DATA01 : AUTO PICTURE Select Flag	09H		
					DATA02	00H : ON		
						01H : OFF		

### ACK

7FH	60H	80H	7FH	03H	DATA00	DATA01	DATA02	CKS
					DATA00 : USER PICTURE Gain Flag	03H		
					DATA01 : AUTO PICTURE Select Flag	09H		
					DATA02	00H : ON		
						01H : OFF		

## 27. PHASE(FINE PICTURE) Gain Data

### Function

The external control equipment changes the PHASE gain data (Phase) of the plasma monitor.

### Transmission Data

DFH	80H	60H	7FH	03H	DATA00	DATA01	DATA02	CKS
					DATA00 : USER PICTURE Gain Flag	03H		
					DATA01 : PHASE Gain Flag	03H		
					DATA02 : PHASE Gain	00H : 0		
						:		
						40H : +64 :		

### ACK

7FH	60H	80H	7FH	02H	DATA00	DATA01	CKS
					DATA00: USER PICTURE Gain Flag	03H	
					DATA01: PHASE Gain Flag	03H	

## 28. CLOCK(PICTURE ADJUST) Gain Data

### Function

The external control equipment changes the CLOCK gain data (ratio of frequency division) of the plasma monitor.

### Transmission Data

DFH	80H	60H	7FH	03H	DATA00	DATA01	DATA02	CKS
					DATA00 : USER PICTURE Gain Flag	03H		
					DATA01 : CLOCK Gain Flag	04H		
					DATA02 : CLOCK Gain	C0H : -64		
						:		
						FFH : -01		
						00H : 0		
						01H : +01		
						:		
						40H : +64		

### ACK

7FH	60H	80H	7FH	02H	DATA00	DATA01	CKS
					DATA00: USER PICTURE Gain Flag	03H	
					DATA01: CLOCK Gain Flag	04H	

## 29. OSM ADJ. POSITION Data

### Function

The external control equipment sets the position of the OSM menu of the plasma monitor.

### Transmission Data

DFH	80H	60H	1AH	02H	DATA00	DATA01	CKS
					DATA00 : OSM ADJ. Gain Flag	02H	
					DATA01	01H : 1(TOP LEFT)	
						02H : 2(TOP CENTER)	
						03H : 3(TOP RIGHT)	
						04H : 4(BOTTOM LEFT)	
						05H : 5(BOTTOM CENTER)	
						06H : 6(BOTTOM RIGHT)	

### ACK

7FH	60H	80H	1AH	01H	DATA00	CKS
					DATA00 : OSM ADJ. Gain Flag	02H

## 30. POWER MGT Select

### Function

The external control equipment switches on or off the POWER MANAGEMENT of the plasma monitor.

### Transmission Data

DFH	80H	60H	1AH	02H	DATA00	DATA01	CKS
					DATA00 : POWER MGT Select	03H	
					DATA01	01H : ON	
						02H : OFF	

### ACK

7FH	60H	80H	1AH	02H	DATA00	DATA01	CKS
					DATA00 : POWER MGT Select	03H	
					DATA01	01H : ON	
						02H : OFF	

## 31. GRAY LEVEL Set

### Function

The external control equipment sets the GRAY LEVEL of the plasma monitor.



### 33. LONG LIFE Set(PDP SAVER Set)

#### Function

The external control equipment sets the PLE, ORBITER, and INVERSE (inverse of image brightness) or WHITE of the plasma monitor.

#### Transmission Data

DFH	80H	60H	6BH	03H	DATA00	DATA01	DATA02	CKS
DATA00	:	PLE				01H	:	100%(AUTO)
						02H	:	75%(LOCK1)
						03H	:	50%(LOCK2)
						04H	:	25%(LOCK3)
DATA01	:	INVERSE/WHITE				01H	:	INVERSE
						02H	:	OFF
						03H	:	WHITE
DATA02	:	ORBITER (PICTURE SHIFT)				01H	:	AUTO1
						02H	:	OFF
						03H	:	AUTO2

#### ACK

The plasma monitor returns the following ACK when setting the PLE, ORBITER, and INVERSE (inverse of image brightness) or WHITE:

3FH 60H 80H 6BH 00H CKS

### 34. SCREEN WIPER Set

#### Function

The external control equipment sets the SCREEN WIPER of the plasma monitor.

#### Transmission Data

DFH 80H 60H C8H 04H DATA00 to DATA03 CKS

DATA00 : SCREEN WIPER                    00H : No operation

01H : ON

02H : OFF

DATA01 :                                    00H : fixed

DATA02 :                                    FFH : fixed

DATA03 :                                    01H : fixed

#### ACK

3FH 60H 80H C8H 00H CKS

### 35. ALL RESET

#### Function

The external control equipment resets the user adjustment of the plasma monitor.

#### Transmission Data

1FH 80H 60H 54H 00H CKS

#### ACK

3FH 60H 80H 54H 00H CKS

### 36. Audio Select Set

#### Function

The external control equipment sets combinations of audio and video inputs for the plasma monitor.

#### Transmission Data

DFH	80H	60H	70H	02H	DATA00	DATA01	CKS
DATA00 : AUDIO INPUT					01H : AUDIO1		
					02H : AUDIO2		
					03H : AUDIO3		
DATA01 : VISUAL INPUT					01H : VIDEO1		
					02H : VIDEO2		
					03H : VIDEO3		
					05H : HD(HD1orDTVorDTV1)		
					06H : HD2(DTV2)		
					07H : RGB1/PC1		
					08H : RGB2/PC2		
					0CH : RGB3/PC3		
					0DH : SCART3		
					0EH : HD/DVD3		

#### ACK

The plasma monitor returns the following ACK when the input is switched.

3FH 60H 80H 70H 00H CKS

\* The plasma monitor returns “Not Available” when selecting the video input same as the one set at one of the AUDIO 1 to 3.

#### Example:

The plasma monitor returns “Not Available” when selecting the VIDEO1 for AUDIO2 or VIDEO3 after VIDEO1 has been set to AUDIO1.

## 37. BNC INPUT

### Function

The external control equipment sets the BNC SELECT of the plasma monitor.

### Transmission Data

**DFH 80H 60H 8CH 01H DATA00 CKS**

DATA00 : BNC SELECT    01H : RGB  
                          02H : Component  
                          04H : SCART1(\*:Only Europe can be chosen.)  
                          05H : SCART2(\*:Only Europe can be chosen.)

### ACK

The plasma monitor returns the following ACK when setting the BNC SELECT:

**7FH 60H 80H 8CH 01H DATA00 CKS**

DATA00 : BNC SELECT    01H : RGB  
                          02H : Component  
                          04H : SCART1(\*:Only Europe can be chosen.)  
                          05H : SCART2(\*:Only Europe can be chosen.)

## 38. RGB Select

### Function

The external control equipment sets the RGB SELECT of the plasma monitor.

### Transmission Data

**DFH 80H 60H 8BH 01H DATA00 CKS**

DATA00                01H : AUTO  
                          02H : STILL  
                          03H : MOTION  
                          04H : WIDE1  
                          05H : WIDE2  
                          06H : DTV  
                          07H : WIDE3  
                          08H : WIDE4

### ACK

**7FH 60H 80H 8BH 01H DATA00 CKS**

DATA00                01H : AUTO  
                          02H : STILL  
                          03H : MOTION  
                          04H : WIDE1



05H : WIDE2  
06H : DTV  
07H : WIDE3  
08H : WIDE4

### 39. HD Select

#### Function

The external control equipment sets the HD SELECT of the plasma monitor.

#### Transmission Data

DFH 80H 60H 8AH 01H DATA00 CKS

DATA00 01H : 1035I  
02H : 540P(1080A)  
03H : 1080I(1080B)

#### ACK

7FH 60H 80H 8AH 01H DATA00 CKS

DATA00 01H : 1035I  
02H : 540P(1080A)  
03H : 1080I(1080B)

### 40. LANGUAGE Select

#### Function

The external control equipment sets the LANGUAGE SELECT of the plasma monitor.

#### Transmission Data

DFH 80H 60H 5BH 01H DATA00 CKS

DATA00: 01H : ENGLISH  
02H : GERMAN  
03H : FRENCH  
04H : SPANISH  
05H : ITALIAN  
06H : SWEDISH  
0AH : CHINESE  
0BH : RUSSIAN

#### ACK

7FH 60H 80H 5BH 01H DATA00 CKS

DATA00: 01H : ENGLISH  
02H : GERMAN  
03H : FRENCH  
04H : SPANISH  
05H : ITALIAN  
06H : SWEDISH  
0AH : CHINESE  
0BH : RUSSIAN

#### 41. COLOR SYSTEM Select

##### Function

The external control equipment sets the COLOR SYSTEM of the plasma monitor.

##### Transmission Data

**DFH 80H 60H 5CH 01H DATA00 CKS**

DATA00: 01H : 3.58NTSC  
02H : 4.43NTSC  
03H : PAL  
04H : SECAM  
0AH : AUTO  
0BH : PAL60  
0DH : PAL-M  
0EH : PAL-N

##### ACK

**7FH 60H 80H 5CH 01H DATA00 CKS**

DATA00: 01H : 3.58NTSC  
02H : 4.43NTSC  
03H : PAL  
04H : SECAM  
0AH : AUTO  
0BH : PAL60  
0DH : PAL-M  
0EH : PAL-N

## 42. FREQUENCY Request(SIGNAL INFORMATION)

### Function

The external control equipment inquires the Horizontal frequency, Vertical frequency, Horizontal sync polarity, Vertical sync polarity, Mode, and Resolution of the plasma monitor.

### Transmission Data

1FH 80H 60H 26H 00H CKS

### ACK

7FH 60H 80H 26H 0BH DATA00 to DATA0A CKS

### Horizontal frequency

DATA00: Integer part            00H: 0 (No signal: 00H)

:

FFH : 255

DATA01: One decimal place    00H: 0 (No signal: 00H)

:

09H : 9

### Vertical frequency

DATA02: Integer part            00H: 0 (No signal: 00H)

:

FFH : 255

DATA03: One decimal place    00H: 0 (No signal: 00H)

:

09H : 9

### Horizontal sync polarity

DATA04    00H : -

01H : Positive

02H : Negative

### Vertical sync polarity

DATA05    00H : -

01H : Positive

02H : Negative

MODE

DATA06	00H	: No signal	-
	01H to 80H	: RGB signal	Identification number of PC mode
	81H	: Video signal	3.58NTSC
	82H	:	4.43NTSC
	83H	:	PAL
	84H	:	PAL-M
	85H	:	PAL-N
	86H	:	PAL60
	87H	:	SECAM
	88H	:	B/W60
	89H	:	B/W50
	A0H	: HD/DVD/DTV signal	480I
	A1H	:	480P
	A2H	:	576I
	A3H	:	576P
	A4H	:	720P
	A5H	:	1035I
	A6H	:	1080I

RESOLUTION

DATA07: Dots (Low-order byte)	00H: 0 (No signal: 00H)
	:
	FFH 255
DATA08: Dots (High-order byte)	00H: 257 (No signal: 00H)
	:
	FFH
DATA09: Lines (Low-order byte)	00H: 0 (No signal: 00H)
	:
	FFH 255
DATA10: Lines (High-order byte)	00H: 257 (No signal: 00H)
	:
	FFH

### 43. Input MODE Request

#### Function

The display returns the current input information by the external control equipment's request.

#### Transmission Data

1FH 80H 60H 41H 00H CKS

#### ACK

7FH 60H 80H 41H 01H DATA00 CKS

DATA00 : Input Select	01H : Video
	02H : Video2
	03H : Video3
	04H : HD (HD1 or DTV or DTV1)
	05H : PC1
	06H : PC2
	0AH : DVD (DVD1)
	0CH : HD2 (DTV2),SCART1 or 2
	0DH : DVD2
	0EH : PC3
	0FH : DVD3(SCART3)
	10H : HD/DVD3

### 44. VIDEO ADJ. Request

#### Function

The display returns the video adjustments information by the external control equipment's request.

#### Transmission Data

1FH 80H 60H 45H 00H CKS

#### ACK

7FH 60H 80H 45H 0CH DATA00 to DATA0B CKS

DATA00: RED Gain (Bias)	D8H : -40
	:
	FFH : -01
	00H : 0
	01H : +01
	:
	1EH : +30

DATA01: GREEN Gain (Bias)      D8H : -40  
  :  
  FFH : -01  
  00H : 0  
  01H : +01  
  :  
  1EH : +30

DATA02: BLUE Gain (Bias)      D8H : -40  
  :  
  FFH : -01  
  00H : 0  
  01H : +01  
  :  
  1EH : +30

DATA03: COLOR Gain            E0H : -32  
  :  
\* COLOR Gain is from -22 (EAH) to FFH : -01  
  +22 (16H) only during video.      00H : 0  
  01H : +01  
  :  
  20H : +32

DATA04: TINT Gain             E0H : -32  
  :  
\* TINT Gain is from -22 (EAH) to FFH : -01  
  +22 (16H) only during video.      00H : 0  
  01H : +01  
  :  
  20H : +32

DATA05: SHARPNESS Gain      F0H : -16  
  :  
  FFH : -01  
  00H : 0  
  01H : +01  
  :  
  10H : +16

DATA06: CONTRAST Gain        CCH : -52

	:
	FFH : -01
	00H : 0
	01H : +01
	:
	14H : +20
DATA07: BRIGHT Gain	E0H : -32
	:
	FFH : -01
	00H : 0
	01H : +01
	:
	20H : +32
DATA08: RED Gain (Drive)	D8H : -40
	:
	FFH : -01
	00H : 0
	01H : +01
	:
	1EH : +30
DATA09: GREEN Gain (Drive)	D8H : -40
	:
	FFH : -01
	00H : 0
	01H : +01
	:
	1EH : +30
DATA0A: BLUE Gain (Drive)	D8H : -40
	:
	FFH : -01
	00H : 0
	01H : +01
	:

1EH : +30

DATA0B: COLOR TEMP SELECT    00H: low  
                                  01H: middle  
                                  02H: high  
                                  03H: middle low

#### 45. Audio Select Request

##### Function

The external control equipment inquires the current combinations of audio and video inputs for the plasma monitor.

##### Transmission Data

1FH 80H 60H 6FH 00H CKS

##### ACK

The plasma monitor returns the following ACK:

7FH 60H 80H 6FH 03H DATA00 DATA01 DATA02 CKS

DATA00 : AUDIO1

01H-0CH : VISUAL INPUT DATA

DATA01 : AUDIO2

01H-0CH : VISUAL INPUT DATA

DATA02 : AUDIO3

01H-0CH : VISUAL INPUT DATA

##### <VISUAL INPUT DATA>

01H : VIDEO1

02H : VIDEO2

03H : VIDEO3

05H : HD(HD1ORDTVORDTV1)

06H : HD2(DTV2),SCART1,SCART2

07H : RGB1/PC1

08H : RGB2/PC2

0CH : RGB3/PC3

0DH : SCART3

0EH : HD/DVD3



## 46. Failure Mode Request

### Function

The external control equipment inquires the detection of failures of the plasma monitor.

### Transmission Data

1FH 80H 60H 3FH 00H CKS

### ACK

The plasma monitor returns the following ACK:

7FH 60H 80H 3FH 02H DATA00 DATA01 CKS

DATA00: FAILURE MODE 1

Bit 0 : PDP MODULE

0: Abnormal

1: Normal

Bit 1 : 1: fixed (backup)

Bit 2 : TEMPERATURE

0: Abnormal

1: Normal

Bit 3 : FAN

0: Abnormal

1: Normal

Bit 4 : TEMPERATURE SENSOR

0: Abnormal

1: Normal

Bit 5 : 1: fixed (backup)

Bit 6 : 1: fixed (backup)

Bit 7 : 1: fixed (backup)

DATA01: FAILURE MODE 2

Bit 0-7 : 1: fixed (backup)

Note) When 42 inch, "FAN" of DATA00-Bit3 is fixed "1".

## 47. MODEL NAME Request

### Function

The external control equipment inquires the product code of the plasma monitor.

### Transmission Data

1FH 80H 60H 17H 00H CKS

### ACK

The plasma monitor returns the following ACK:

7FH 60H 80H 17H 0CH DATA00 to DATA11 CKS

DATA00 : 1st character of the product code

DATA01 : 2nd character of the product code

:

DATA11 : 12th character of the product code

Received data	00H-09H	: 0-9
	80H	: - (Hyphen)
	81H	: +
	82H	: ×
	83H	: /
	84H	: (
	85H	: )
	86H	: .
	87H	: ‘
	96H	: Blank

10H-29H : A-Z

Corresponding character	A	B	C	D	E	F	G	H	I	J
Received data (H)	10	11	12	13	14	15	16	17	18	19

Corresponding character	K	L	M	N	O	P	Q	R	S	T
Received data (H)	1A	1B	1C	1D	1E	1F	20	21	22	23

Corresponding character	U	V	W	X	Y	Z
Received data (H)	24	25	26	27	28	29

If there are fewer than 12 characters in the product code, product code would be padded right with blanks.

Example: If the product code of your plasma monitor is “PX-50XR4A”, the returned codes would be as follows.

DATA00:1FH, DATA01:27H, DATA02:80H, DATA03:05H, DATA04:00H,  
DATA05:27H, DATA06:21H, DATA07:04H, DATA08:10H, DATA09:96H,  
DATA10:96H, DATA11:96H

## 48. D-SUB INPUT

### Function

The external control equipment sets the D-SUB SELECT of the plasma monitor.

### Transmission Data

**DFH 80H 60H 8DH 01H DATA00 CKS**

DATA00 : D-SUB INPUT 01H : RGB

02H : SCART3(\*:Only Europe can be chosen.)

### ACK

The plasma monitor returns the following ACK when setting the D-SUB SELECT:

**7FH 60H 80H 8DH 01H DATA00 CKS**

DATA00 : D-SUB INPUT 01H : RGB

02H : SCART3(\*:Only Europe can be chosen.)

## 49. LOW TONE

### Function

The external control equipment sets the dithering processing or error diffusion processing of the plasma monitor.

### Transmission Data

**DFH 80H 60H 0CH 01H DATA00 CKS**

DATA00: 00H:AUTO

01H: dithering processing(MOTION)

02H: dithering processing (STILL)

03H: error diffusion processing

### ACK

**7FH 60H 80H 0CH 01H DATA00 CKS**

DATA00: 00H:AUTO

01H: dithering processing (MOTION)

02H: dithering processing (STILL)

03H: error diffusion processing

## 50. COLOR TUNE

### Function

External control equipment can adjust RGB each color which a plasma monitor wants to emphasize.

### Transmission Data

DFH	80H	60H	0DH	07H	DATA00 to DATA06	CKS
DATA00:RED			00H	:	-32	
				:		
			20H	:	0	
				:		
			40H	:	+32	
DATA01:GREEN			00H	:	-32	
				:		
			20H	:	0	
				:		
			40H	:	+32	
DATA02:BLUE			00H	:	-32	
				:		
			20H	:	0	
				:		
			40H	:	+32	
DATA03:YELLOW			00H	:	-32	
				:		
			20H	:	0	
				:		
			40H	:	+32	
DATA04:MAZENTA			00H	:	-32	
				:		
			20H	:	0	
				:		
			40H	:	+32	
DATA05:CYAN			00H	:	-32	
				:		
			20H	:	0	
				:		
			40H	:	+32	

DATA06:RESET            00H : OFF  
                             01H : ON

ACK

7FH 60H 80H 0DH 00H CKS

## 51.GAMMA GAIN Data

Function

External control apparatus changes Gamma of a plasma monitor.

Transmission Data

DFH 80H 60H 13H 02H DATA00 DATA01 CKS

DATA00: GAMMA FLAG      01H : Gamma change  
DATA01: GAMMA            00H :1(GAMMA2.1)  
                             01H :2(GAMMA2.2)  
                             02H :3(GAMMA2.3)  
                             03H :4(GAMMA2.4)

ACK

7FH 60H 80H 13H 01H DATA00 CKS

DATA00: GAMMA FLAG      01H : Gamma change

## 52. Running Sense

### Function

External control apparatus grasps the power supply state of a plasma monitor.

A plasma monitor is made to recognize connection of PC CONTROL.

### Transmission Data

1FH 80H 60H 88H 00H CKS

### ACK

7FH 60H 80H 88H 01H DATA CKS

DATA: Bit0: Connect Condition

0: No connection

1: Connected

Bit1 0: Fixed

1:-

Bit2: Power Status

0: POWER ON

1: POWER OFF (STANBY)

Bit3 0: Fixed

Bit4 0: Fixed

Bit5 0: Fixed

Bit6 0: Fixed

Bit7 0: Fixed

### 53. OSM OBITER

#### Function

In order to decrease printing of a screen by OSM display, whenever it displays OSM, shift operation of the OSM is carried out.

#### Transmission Data

DFH	80H	60H	5FH	01H	DATA00	CKS
DATA00					01H : OBITER ON	
					02H : OBITER OFF	

#### ACK

7FH	60H	80H	5FH	01H	DATA00	CKS
DATA00					01H : OBITER ON	
					02H : OBITER OFF	

### 54. Input Skip

#### Function

In a monitor's key "an input change", when there is no signal, it flies and shifts to the following channel.

#### Transmission Data

DFH	80H	60H	61H	01H	DATA00	CKS
DATA00					01H : ON	
					02H : OFF	

#### ACK

7FH	60H	80H	61H	01H	DATA00	CKS
DATA00					01H : ON	
					02H : OFF	



## 55. SERIAL No. Request

### Function

External control apparatus read the serial number of the set recorded by EEPROM of a plasma display.

### Transmission Data

1FH 80H 60H 15H 00H CKS

### ACK

7FH 60H 80H 15H 0CH DATA00 to DATA11 CKS

Even DATA00-DATA11 is set up as follows.

Setting value	00H-09H	:	0 - 9
	96H	:	Blank
	10H-29H	:	A-Z of Alphabet

## 56.S1/S2 SELECT

### Function

External control apparatus sets up the S1/S2 detection of a plasma monitor.

### Transmission Data

DFH 80H 60H 89H 01H DATA00 CKS

DATA00 01H : AUTO  
02H : OFF

### ACK

7FH 60H 80H 89H 01H DATA00 CKS

DATA00 01H : AUTO  
02H : OFF

## 57.SOFT FOCUS

### Function

External control apparatus sets up the Soft Focus of a plasma monitor.

### Transmission Data

DFH 80H 60H 65H 01H DATA00 CKS

DATA00 01H : OFF  
02H : LEVEL1  
03H : LEVEL2  
04H : LEVEL3  
05H : LEVEL4

### ACK

7FH 60H 80H 65H 01H DATA00 CKS

DATA00 01H : OFF  
02H : LEVEL1  
03H : LEVEL2  
04H : LEVEL3  
05H : LEVEL4

## 58.PLUG and PLAY

### Function

External control apparatus sets up the Plug and Play of a plasma monitor.

### Transmission Data

DFH 80H 60H 8EH 01H DATA00 CKS

DATA00 01H : PC  
02H : STB/DVD

### ACK

7FH 60H 80H 8EH 01H DATA00 CKS

DATA00 01H : PC  
02H : STB/DVD

## 59.BLACK LEVEL SELECT

### Function

External control apparatus sets up the black level (digital signal level) of a plasma monitor.

### Transmission Data

**DFH 80H 60H 8FH 01H DATA00 CKS**

DATA00 01H : LOW  
02H : HIGH

### ACK

**7FH 60H 80H 8FH 01H DATA00 CKS**

DATA00 01H : LOW  
02H : HIGH

## 60.MULTI(SPRIT) SCREEN Select

### Function

External control apparatus selects a screen mode from alternatives mentioned below, such as single mode, side by side, picture in picture, etc., of Plasma Monitor.

### Transmission Data

**DFH 80H 60H 07H 01H DATA00 CKS**

DATA00: 00H: Single Screen  
01H: Side by Side 1 (Same Size Screen)  
02H: Side by Side 2R (Left Screen smaller)  
03H: Picture in Picture 1 (sub screen Bottom Left) with size1  
04H: Picturein Picture 2(sub screen Bottom Right) with size1  
05H: Side by Side 2L (Left Screen Bigger)  
06H: Picturein Picture 1(sub screen Bottom Left) with size2  
07H: Picturein Picture 2(sub screen Bottom Right) with size2  
08H: Picturein Picture 1(sub screen Bottom Left) with size3  
09H: Picturein Picture 2(sub screen Bottom Righ) with size3  
0AH: Picturein Picture 1(sub screen Bottom Left) with size4  
0BH: Picturein Picture 2(sub screen Bottom Right) withsize4  
41H: Picturein Picture 3(sub screen Top Right) with size1  
42H: Picturein Picture 3(sub screen Top Right) with size2

43H: Picturein Picture 3(sub screen Top Right) with size3  
 44H: Picturein Picture 3(sub screen Top Right) with size4  
 45H: Picturein Picture 4(sub screen Top Left) with size1  
 46H: Picturein Picture 4(sub screen Top Left) with size2  
 47H: Picturein Picture 4(sub screen Top Left) with size3  
 48H: Picturein Picture 4(sub screen Top Left) with size4  
 49H: Side by Side 3 (Same Size Screen vertical expand)  
 4AH: Side by Side 4R (Left Screen smaller vertical expand)  
 4BH: Side by Side 4L (Left Screen Bigger vertical expand)

In case of Side by Side mode;

20H: Active Left  
 21H: Active Right

In case of Picture in picture mode;

30H: Active Main  
 31H: Active Sub

ACK

7FH 60H 80H 07H 01H DATA00 CKS

DATA00: 00H: Single Screen  
 01H: Side by Side 1 (Same Size Screen)  
 02H: Side by Side 2R (Left Screen smaller)  
 03H: Picture in Picture 1 (sub screen Bottom Left) with size1  
 04H: Picturein Picture 2(sub screen Bottom Right) with size1  
 05H: Side by Side 2L (Left Screen Bigger)  
 06H: Picturein Picture 1(sub screen Bottom Left) with size2  
 07H: Picturein Picture 2(sub screen Bottom Right) with size2  
 08H: Picturein Picture 1(sub screen Bottom Left) with size3  
 09H: Picturein Picture 2(sub screen Bottom Righ) with size3  
 0AH: Picturein Picture 1(sub screen Bottom Left) with size4  
 0BH: Picturein Picture 2(sub screen Bottom Right) withsize4  
 41H: Picturein Picture 3(sub screen Top Right) with size1  
 42H: Picturein Picture 3(sub screen Top Right) with size2  
 43H: Picturein Picture 3(sub screen Top Right) with size3  
 44H: Picturein Picture 3(sub screen Top Right) with size4  
 45H: Picturein Picture 4(sub screen Top Left) with size1  
 46H: Picturein Picture 4(sub screen Top Left) with size2  
 47H: Picturein Picture 4(sub screen Top Left) with size3  
 48H: Picturein Picture 4(sub screen Top Left) with size4

- 49H: Side by Side 3 (Same Size Screen vertical expand)
- 4AH: Side by Side 4R (Left Screen smaller vertical expand)
- 4BH: Side by Side 4L (Left Screen Bigger vertical expand)

In case of Side by Side mode;

- 20H: Active Left
- 21H: Active Right

In case of Picture in picture mode;

- 30H: Active Main
- 31H: Active Sub

## 61. SUB PICTURE DETECT SELECT

Function

External control apparatus selects whether to display the sub picture or not, under picture in picture mode, of plasma monitor.

Transmission Data

```
DFH 80H 60H 7AH 01H DATA00 CKS
DATA00 01H : OFF
        02H : AUTO
```

ACK

```
7FH 60H 80H 7AH 01H DATA00 CKS
DATA00 01H : OFF
        02H : AUTO
```

## 62.ZOOM NAVIGATION SELECT

Function

External control apparatus selects digital zoom display of a plasma monitor, from the alternatives mentioned below;

Transmission Data

```
DFH 80H 60H 7BH 01H DATA00 CKS
DATA00 01H : OFF(single screen)
        02H : Side By Side(Left Screen smaller)
        03H : Picture in Picture1(Sub Screen Bottom Left)
        04H : Picture in Picture2(Sub Screen Bottom Right)
        05H : Picture in Picture3(Sub Screen Top Right)
        06H : Picture in Picture4(Sub Screen Top Left)
```

ACK

```
7FH 60H 80H 7BH 01H DATA00 CKS
```

DATA00 01H : OFF(single screen)  
02H : Side By Side2R (Left Screen smaller)  
03H : Picture in Picture1(Sub Screen Bottom Left)  
04H : Picture in Picture2(Sub Screen Bottom Right)  
05H : Picture in Picture3(Sub Screen Top Right)  
06H : Picture in Picture4(Sub Screen Top Left)

### 63. PICTURE FREEZE SELECT

#### Function

External control apparatus selects the picture freeze function of a plasma monitor.

#### Transmission Data

DFH 80H 60H 7CH 01H DATA00 CKS  
DATA00 01H : OFF(single screen)  
02H : Side By Side1(Same Size Screen)  
03H : Picture in Picture1(Sub Screen Bottom Left)  
04H : Picture in Picture2(Sub Screen Bottom Right)  
05H : Picture in Picture3(Sub Screen Top Right)  
06H : Picture in Picture4(Sub Screen Top Left)  
07H : Side by Side 2 (Same Size Screen vertical expand)

#### ACK

7FH 60H 80H 7CH 01H DATA00 CKS  
DATA00 01H : OFF(single screen)  
02H : Side By Side1(Same Size Screen)  
03H : Picture in Picture1(Sub Screen Bottom Left)  
04H : Picture in Picture2(Sub Screen Bottom Right)  
05H : Picture in Picture3(Sub Screen Top Right)  
06H : Picture in Picture4(Sub Screen Top Left)  
07H : Side by Side 2(Same Size Screen vertical expand)

### 64. PICTURE FREEZE(Pause) Command

#### Function

External control apparatus sets picture freeze or remove picture freeze of a plasma monitor.

#### Transmission Data

DFH 80H 60H 7DH 01H DATA00 CKS  
DATA00 01H : FREEZE

02H : FREEZE OFF

ACK

7FH 60H 80H 7DH 01H DATA00 CKS

DATA00 01H : FREEZE

02H : FREEZE OFF

## 65.OSM CONTRAST SELECT

Function

External control apparatus selects the OSM contrast function of a plasma monitor.

Transmission Data

DFH 80H 60H 37H 01H DATA00 CKS

DATA00 01H : NORMAL

02H : LOW

ACK

7FH 60H 80H 37H 01H DATA00 CKS

DATA00 01H : NORMAL

02H : LOW

## 66.CC (Closed caption) SELECT

### Function

External control apparatus selects the Closed Caption function of a plasma monitor.

### Transmission Data

DFH	80H	60H	3CH	01H	DATA00	CKS
-----	-----	-----	-----	-----	--------	-----

DATA00	00H : OFF
	01H : CC1 (closed caption1 )
	02H : CC2 (closed caption2 )
	03H : CC3 (closed caption3 )
	04H : CC4 (closed caption4 )
	05H : TEXT1
	06H : TEXT2
	07H : TEXT3
	08H : TEXT4

### ACK

7FH	60H	80H	3CH	01H	DATA00	CKS
-----	-----	-----	-----	-----	--------	-----

DATA00	00H : OFF
	01H : CC1 (closed caption1 )
	02H : CC2 (closed caption2 )
	03H : CC3 (closed caption3 )
	04H : CC4 (closed caption4 )
	05H : TEXT1
	06H : TEXT2
	07H : TEXT3
	08H : TEXT4



## 67. CC (Closed caption) CONTRAST SELECT

### Function

External control apparatus selects the Closed Caption Contrast function of a plasma monitor.

### Transmission Data

DFH 80H 60H 3DH 01H DATA00 CKS

DATA00 01H : NORMAL

02H : LOW

### ACK

7FH 60H 80H 3DH 01H DATA00 CKS

DATA00 01H : NORMAL

02H : LOW

## 68. PICTURE MEMORY Select

### Function

The external control equipment selects the Picture Memory function of a plasma monitor.

### Transmission Data

DFH 80H 60H 38H 01H DATA00 CKS

DATA00 : MEMORY select 00H : OFF

01H : MEMORY1

02H : MEMORY2

03H : MEMORY3

04H : MEMORY4

05H : MEMORY5

06H : MEMORY6

### ACK

The plasma monitor returns the following ACK when the input is switched.

7FH 60H 80H 38H 01H CKS

DATA00 : 00H : OFF

01H : MEMORY1

02H : MEMORY2

03H : MEMORY3

04H : MEMORY4

05H : MEMORY5

06H : MEMORY6

## 69. PICTURE MEMORY Set

### Function

The external control equipment set and reset the Picture Memory function of a plasma monitor.

### Transmission Data

DFH 80H 60H 25H 02H DATA00 DATA01 CKS

DATA00 : 01H : SET

02H : RESET

DATA01 : MEMORY select 00H : OFF

01H : MEMORY1

02H : MEMORY2

03H : MEMORY3

04H : MEMORY4

05H : MEMORY5

06H : MEMORY6

### ACK

The plasma monitor returns the following ACK when the input is switched.

7FH 60H 80H 25H 01H CKS

DATA00 : 01H : SET

02H : RESET

NOTE: When "PICTURE MEMORY" selects "OFF",  
this command is no support.

## 70. PICTURE MEMORY NOTE WRITE Set

### Function

External control apparatus writes to NOTE of PICTURE MEMORY of a plasma display.

### Transmission Data

DFH 80H 60H 2DH 0FH DATA00 to DATA14 CKS

Even DATA00-DATA14 is set up as follows.

Setting value 00H-09H: 0 - 9

80H : - (Hyphen)  
 81H : +  
 82H : ×  
 83H : /  
 84H : (  
 85H : )  
 86H : .  
 87H : ‘  
 96H : Blank  
 10H-29H : A-Z of Alphabet

Corresponding character	A	B	C	D	E	F	G	H	I	J
Received data (H)	10	11	12	13	14	15	16	17	18	19

Corresponding character	K	L	M	N	O	P	Q	R	S	T
Received data (H)	1A	1B	1C	1D	1E	1F	20	21	22	23

Corresponding character	U	V	W	X	Y	Z
Received data (H)	24	25	26	27	28	29

ACK

3FH 60H 80H 2DH 00H CKS

NOTE) Please select the memory you like to write by “68.PICTURE MEMORY Select” before setting “PICTURE MEMORY NOTE WRITE”

## 71.SET UP LEVEL SELECT

Function

External control apparatus selects the Set up level function of a plasma monitor.

Transmission Data

DFH 80H 60H 35H 01H DATA00 CKS

DATA00 01H : 0%  
 02H : 3.75%  
 03H : 7.5%

ACK

7FH 60H 80H 35H 01H DATA00 CKS

DATA00 01H : 0%  
02H : 3.75%  
03H : 7.5%

## 72.BACK GROUND SELECT

Function

External control apparatus selects the Back ground function of a plasma monitor.

Transmission Data

DFH 80H 60H 36H 01H DATA00 CKS

DATA00 01H : Black  
02H : Gray

ACK

7FH 60H 80H 36H 01H DATA00 CKS

DATA00 01H : Black  
02H : Gray

## 73.PDP SAVER AUTO Select

Function

External control apparatus selects automatic or manual of the PDP saver function of a plasma monitor.

Transmission Data

DFH 80H 60H 2CH 01H DATA00 CKS

DATA00 01H : MANUAL  
02H : AUTO

ACK

7FH 60H 80H 2CH 01H DATA00 CKS

DATA00 01H : MANUAL  
02H : AUTO