

PDxx01

RS-232C Control Specification

Category : *Plasma Display*

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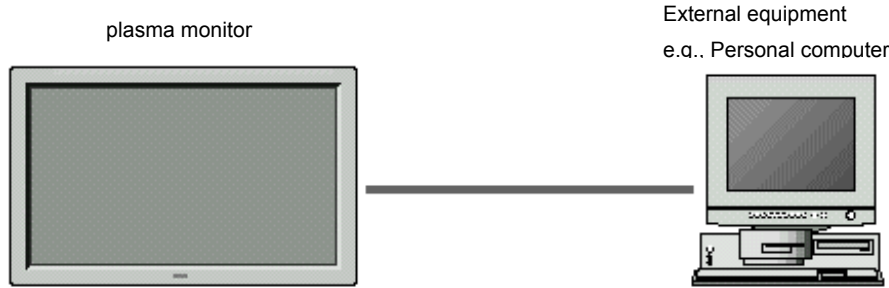
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1. Application

These specifications are applicable to 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."

2. Connections

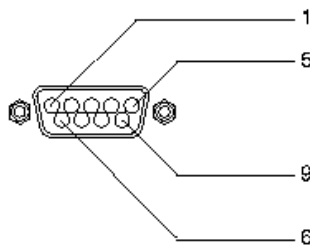
Connections should be made as described below.



2-1. 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



2-2. 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 pin assignment.

2-3. Wiring

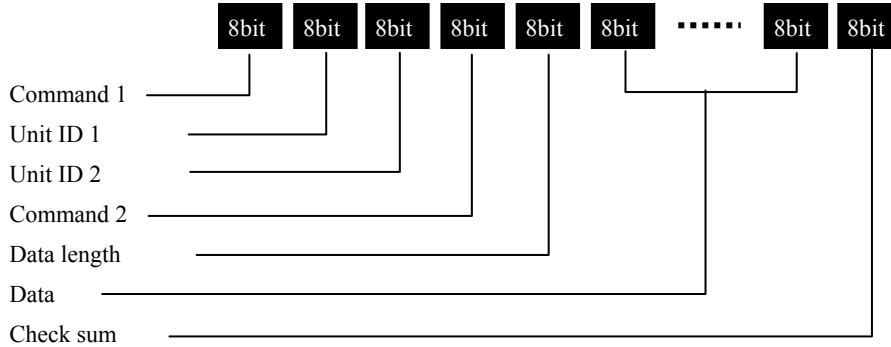
Use a crossed (reverse) cable.

Wire the cable so that each pair of data lines crosses 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).

2-4. 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

3. Communication Format



3-1. Command1

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

Bit1, Bit0: 11B or 10B : Usually, a form

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.

3-2. 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.

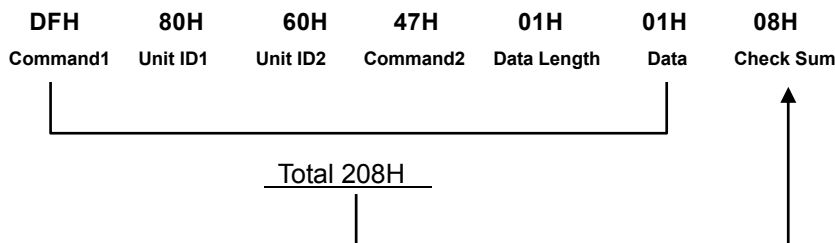
3-3. Command 2

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

3-4. 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.

4. 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	RGB Select	DFH	8BH	01H
38	HD Select	DFH	8AH	01H
39	LANGUAGE Select	DFH	5BH	01H
40	COLOR SYSTEM Select	DFH	5CH	01H
41	FREQUENCY Request	1FH	26H	00H
42	Input MODE Request	1FH	41H	00H
43	VIDEO ADJ Request	1FH	45H	00H
44	Audio Select Request	1FH	6FH	00H
45	Failure Mode Request	1FH	3FH	00H
46	MODEL NAME Request	1FH	17H	00H
47	LOW TONE	DFH	0CH	01H
48	COLOR TUNE	DFH	0DH	08H
49	GAMMA Gain Data	DFH	13H	04H
50	Running Sense	1FH	88H	00H
51	OSM OBITER	DFH	5FH	01H
52	Input Skip	5FH	61H	01H
53	SERIAL No. Request	1FH	15H	00H
54	S1/S2 SELECT	DFH	89H	01H
55	SOFT FOCUS	DFH	65H	01H
56	BLACK LEVEL (DIGITAL SIGNAL LEVEL)	DFH	8FH	01H
57	MULTI(SPRIT) SCREEN Select	DFH	07H	01H
58	SUB.P DETECT	DFH	7AH	01H
59	ZOOM NAV	DFH	7BH	01H

60	PICTURE FREEZE	DFH	7CH	01H
61	PAUSE COMMAND	DFH	7DH	01H
62	OSM CONTRAST	DFH	37H	01H
63	CLOSED CAPTION	DFH	3CH	01H
64	CAPTION CONTRAST	DFH	3DH	01H
65	PICTURE MEMORY Select	DFH	38H	01H
66	PICTURE MEMORY Set	DFH	25H	02H
67	PICTURE MEMORY NOTE WRITE	DFH	2DH	0CH
68	SET UP LEVEL	DFH	35H	01H
69	BACK GROUND	DFH	36H	01H
70	PDP SAVER AUTO select	DFH	2CH	01H
71	Audio HDMI Request	1FH	3AH	00H
72	POWER ON MODE (INPUT)	DFH	63H	04H
73	POWER ON MODE (VOLUME)	DFH	0FH	01H
74	SUB PICTURE RATE set	DFH	DAH	02H
75	MULTI (SPRIT) SCREEN POWER ON MODE SET	DFH	33H	04H
76	REMOTE ID CODE SETTING	DFH	2BH	01H
77	VOLUME Gain Request	1FH	0EH	00H
78	UNDER SCAN SETTING	DFH	22H	01H

5. Command

5-1. 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.

5-2. 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.

5-3. 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

05H : DVD/HD1

06H : DVD/HD2

07H : PC/RGB

0EH : DVD/HD3(HDMI)

1AH : DVD/HD4(HDMI)

ACK

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

3FH 60H 80H 47H 00H CKS

5-4. 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

5-5. 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

5-6. 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

5-7. CONTRAST Gain Data

Function

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

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

5-8. 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

5-9. 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	

5-10. 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	

ACK

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

5-11. 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

5-12. 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	

5-13. 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

5-14. 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 Gain 1(Bias)	D8H : -40
	:
	FFH : -01
	00H : 0
	01H : +01
	:
	1EH : +30
DATA03: RED Gain 2(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

5-15. 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	

5-16. 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	

5-17. 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

5-18. 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

5-19. 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	DATA0	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	

5-20. 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	

5-21. 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

*If it selects DATA00 "08: UNDERSCAN", it need to set No.78 UNDERSCAN setting ON.

5-22. 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

5-23. 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	

5-24. 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	

5-25. 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	

5-26. 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		

5-27. 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

5-28. 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	

5-29. 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

5-30. 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	

5-31. GRAY LEVEL Set**Function**

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

Transmission Data

DFH	80H	60H	C6H	01H	DATA00	CKS	
					DATA00: GRAY LEVEL		00H: 0
							:
							0FH: 15

ACK

7FH	60H	80H	C6H	01H	DATA00	CKS	
					DATA00: GRAY LEVEL		00H: 0
							:
							0FH: 15

5-32. CINEMA MODE Set**Function**

The external control equipment switches on or off the CINEMA MODE of the plasma monitor.

Transmission Data

DFH	80H	60H	C1H	01H	DATA00	CKS	
					DATA00: CINEMA MODE Set		01H: ON
							02H: OFF

ACK

7FH	60H	80H	C1H	01H	DATA00	CKS	
					DATA00: CINEMA MODE Set		01H: ON
							02H: OFF

5-33. 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
-----	-----	-----	-----	-----	-----

5-34. 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

5-35. 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

5-36. 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 04H: DVD/HD3 INPUT1 05H: DVD/HD4 INPUT1
					DATA01: VISUAL INPUT		01H: VIDEO1 02H: VIDEO2 05H: DVD/HD1 06H: DVD/HD2 07H: PC/RGB 0EH: DVD/HD 3 1AH: DVD/HD 4 20H: DVD/HD INPUT HDMI 21H: DVD/HD INPUT AUDIO INPUT1-3

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 VIDEO2 after VIDEO1 has been set to AUDIO1.

* When selected 04H or 05H of Data00, it can be selected 20H or 21H of Data01.

5-37. 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
						11H: type1
						12H: type2
						13H: type3
						14H: type4
						15H: type5
						16H: type6
						17H: type7
						18H: type8
						19H: type9
						1AH: type10

ACK

7FH	60H	80H	8BH	01H	DATA00	CKS
					DATA00	
						01H: AUTO
						11H: type1
						12H: type2
						13H: type3
						14H: type4
						15H: type5
						16H: type6
						17H: type7
						18H: type8
						19H: type9
						1AH: type10

Correspond to Analog RGB.

The type is following as below.

HD_MODE1 :10KHz 以下	VD_MODE1:15.00~24.50Hz
HD_MODE2 :14.0~20.9KHz	VD_MODE2:24.60~27.50Hz
HD_MODE3 :21.0~26.4KHz	VD_MODE3:27.60~40.00Hz
HD_MODE4 :26.5~32.7KHz	VD_MODE4:40.01~48.50Hz
HD_MODE5 :32.8~36.6KHz	VD_MODE5:48.60~55.00Hz
HD_MODE6 :36.7~38.5KHz	VD_MODE6:55.01~61.76Hz
HD_MODE7 :38.6~45.9KHz	VD_MODE7:61.77~73.50Hz
HD_MODE8 :46.0~49.0KHz	VD_MODE8:73.51~79.50Hz
HD_MODE9 :49.1~55.0KHz	VD_MODE9:79.51~92.50Hz
HD_MODE10:55.1~76.9KHz	VD_MODE10:92.51~110.00Hz
HD_MODE11:77.0~83.5KHz	VD_MODE11:110.01~131.00Hz
HD_MODE12:83.6~115.0KHz	VD_MODE12: other
HD_MODE13: other	

	Type1	Type2	Type3	Type4	Type5	Type6	Type7	Type8	Type9	Type10
H mode:3 V mode:5	848x480 @50	640x480 @50								
H mode:4 V mode:5	768x576 @50	1920x1080 @50								
H mode:4 V mode:6	640x480 @60_1	852x480 @60	848x480 @60	640x480 @60_2	640x480 @60_3					
H mode:4 V mode:7	720x400 @70	720x350 @70								
H mode:5 V mode:6	800x600 @56	1920x1035 @60 (1035I)								
		1920x1080 @60 (1080A)								
		1920x1080 @60 (1080B)								
H mode:7 V mode:6	1280x768@5 6.2	1280x768 @60	1280x720 @60							
H mode:8 V mode:6	1024x768 @60_1	1360x765 @60	1376x768 @60	1280x768 @60_1	1280x768 @60_2	1024x768 @60_2 Only DVI(PC)				
H mode:9 V mode:6	1152x864 @60_1	1280*800 @60	1280*854 @60	1152x864 @60_2						
	1024x768 @60									
H mode : 10 V mode : 5	1080P @50	1250P @50	1920x1080 @50							
H mode : 10 V mode : 6	1280x1024 @60	1400x1050 @60_1	1920*1200 @60	1920*1200RB @60	1600x1200 @60	1400x1050 @60_2	1680*1050 @60	1080P @60	1920x1080 @60	1366x768 @60
H mode : 10 V mode : 7	1024x768 @70	1024x768 @72	1280x768 @70	1280x768 @72				"1920*1200RB@60" is Reduce blanking signal.		
H mode : 10 V mode : 8	1024x768 @75	1152x864								

5-38. 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)			

5-39. 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			
		0BH:	RUSSIAN			
		0DH:	PORTUGUESE			

ACK

7FH	60H	80H	5BH	01H	DATA00	CKS
DATA00:		01H:	ENGLISH			
		02H:	GERMAN			
		03H:	FRENCH			
		04H:	SPANISH			
		05H:	ITALIAN			
		06H:	SWEDISH			
		0BH:	RUSSIAN			
		0DH:	PORTUGUESE			

5-40. 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

5-41. 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

5-42. 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: Video1
	02H: Video2
	05H: DVD/HD1
	06H: DVD/HD2
	07H: PC/RGB
	0EH: DVD/HD3 (HDMI)
	1AH: DVD/HD4 (HDMI)

5-43. 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 : FFH: -01 00H: 0 01H: +01 : 20H: +32
DATA04: TINT Gain	E0H: -32 : FFH: -01 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

5-44. 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

05H: DVD/HD1

06H: DVD/HD2

07H: PC/RGB

0EH: DVD/HD3

1AH: DVD/HD4

5-45. 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".

5-46. 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 : X
- 83H : /
- 84H : (
- 85H :)
- 86H : .
- 87H : ‘
- 96H : Blank

10H-29H Corresponding: A-Z 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-50XR5A", the returned codes would be as follows.

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

5-47. LOW TONE (50inch only)**Function**

The external control equipment sets the Low toned of the plasma monitor.

Transmission Data

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

DATA00:	01H: Mode1
	02H: Mode2

ACK

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

DATA00:	01H: Mode1
	02H: Mode2

5-48. 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

5-49. 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

5-50. 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

5-51. OSM ORBITER**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: ORBITER ON
 02H: ORBITER OFF

ACK

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

5-52. 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

5-53. 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

5-54. 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			

5-55. 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			

5-56. 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			

5-57. 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:	Picture in Picture 2 (sub screen Bottom Right) with size1
	05H:	Side by Side 2L (Left Screen Bigger)
	06H:	Picture in Picture 1 (sub screen Bottom Left) with size2
	07H:	Picture in Picture 2 (sub screen Bottom Right) with size2
	08H:	Picture in Picture 1 (sub screen Bottom Left) with size3
	09H:	Picture in Picture 2 (sub screen Bottom Right) with size3
	0AH:	Picture in Picture 1 (sub screen Bottom Left) with size4
	0BH:	Picture in Picture 2 (sub screen Bottom Right) with size4
	41H:	Picture in Picture 3 (sub screen Top Right) with size1
	42H:	Picture in Picture 3 (sub screen Top Right) with size2
	43H:	Picture in Picture 3 (sub screen Top Right) with size3
	44H:	Picture in Picture 3 (sub screen Top Right) with size4
	45H:	Picture in Picture 4 (sub screen Top Left) with size1
	46H:	Picture in Picture 4 (sub screen Top Left) with size2
	47H:	Picture in Picture 4 (sub screen Top Left) with size3
	48H:	Picture in 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)
	10H:	SWAP
	A0H:	PIP OFF
	A1H:	PIP ON

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: Picture in Picture 2 (sub screen Bottom Right) with size1
 05H: Side by Side 2L (Left Screen Bigger)
 06H: Picture in Picture 1 (sub screen Bottom Left) with size2
 07H: Picture in Picture 2 (sub screen Bottom Right) with size2
 08H: Picture in Picture 1 (sub screen Bottom Left) with size3
 09H: Picture in Picture 2 (sub screen Bottom Right) with size3
 0AH: Picture in Picture 1 (sub screen Bottom Left) with size4
 0BH: Picture in Picture 2 (sub screen Bottom Right) with size4
 41H: Picture in Picture 3 (sub screen Top Right) with size1
 42H: Picture in Picture 3 (sub screen Top Right) with size2
 43H: Picture in Picture 3 (sub screen Top Right) with size3
 44H: Picture in Picture 3 (sub screen Top Right) with size4
 45H: Picture in Picture 4 (sub screen Top Left) with size1
 46H: Picture in Picture 4 (sub screen Top Left) with size2
 47H: Picture in Picture 4 (sub screen Top Left) with size3
 48H: Picture in 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)
 10H: SWAP
 A0H: PIP OFF
 A1H: PIP ON

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

5-58. 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

5-59. 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)		

5-60. 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 Side2	(Same Size Screen vertical expand)		

5-61. 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				

5-62. 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				

5-63. 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
--	------------

5-64. 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
--	----------

5-65. 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
--	--------------

5-66. 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.
--

5-67. 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"

5-68. 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%

5-69. 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

5-70. 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

5-71. Audio HDMI Request**Function**

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

Transmission Data

1FH 80H 60H 3AH 00H CKS

ACK

The plasma monitor returns the following ACK:

7FH 60H 80H 6FH 02H DATA00 DATA01 CKS
 DATA00: DVD/HD3 INPUT 01H: HDMI
 02H: AUDIO INPUT1-3
 DATA01: DVD/HD4 INPUT 01H: HDMI
 02H: AUDIO INPUT1-3

5-72. POWER ON MODE (INPUT)**Function**

Power-on modes (input) are set up.

Transmission Data

DFH 80H 60H 63H 04H DATA00 to DATA03 CKS
 DATA00: Power ON mode(INPUT) 00H: LAST
 01H: Video1
 02H: Video2
 05H: DVD/HD1
 06H: DVD/HD2
 07H: PC/RGB
 0EH: DVD/HD3 (HDMI)
 1AH: DVD/HD4 (HDMI)
 DATA01: FIX 00H
 DATA02: FIX 01H
 DATA03: FIX 00H

ACK

7FH 60H 80H 63H 00H CKS

5-73. POWER ON MODE (VOLUME)**Function**

Power-on modes (Volume) are set up.

Transmission Data

DFH 80H 60H 0FH 01H DATA00 CKS

DATA00: Power ON mode (VOLUME)

A0H: LAST

00H: volume0

:

2A H: volume42

ACK

7FH 60H 80H 0FH 00H CKS

5-74. 74. SUB PICTURE RATE set**Function**

Sub screen rate of PIP are set up.

Transmission Data

DFH 80H 60H DAH 02H DATA00 DATA01 CKS

DATA00: Sub screen rate Gain flag 01H

DATA01: Sub screen rate Gain 00H: 20%

01H: 30%

02H: 40%

03H: 50%

04H: 60%

05H: 70%

06H: 80%

07H: 90%

08H: 100%

DATA02: FADE 00H: NORMAL

01H: FADE

ACK

7FH 60H 80H DAH 01H DATA00 CKS

DATA00: Sub screen rate Gain flag 01H

5-75. MULTI (SPRIT) SCREEN POWER ON MODE SET**Function**

Power-on modes (Input) for sprit screen are set up.

Transmission Data

DFH	80H	60H	33H	04H	DATA00 to DATA03	CKS
DATA00	POWER ON MODE	01H: LAST				
		02H: MULTI				
DATA01	MULTI MODE	01H: Side By Side1 (Same Size Screen)				
		02H: Side By Side2 (Left Screen Smaller)				
		03H: Side By Side2 (Left Screen Bigger)				
		04H: Picture in Picture1 (Sub screen bottom left)				
		05H: Picture in Picture2 (Sub screen bottom right)				
		06H: Picture in Picture3 (Sub screen top right)				
		07H: Picture in Picture4 (Sub screen top left)				
DATA02	INPUT1 (Left or main)	01H: Video1				
		02H: Video2				
		05H: DVD/HD1				
		06H: DVD/HD2				
		07H: PC/RGB				
		0EH: DVD/HD3				
		1AH: DVD/HD4				
DATA03	INPUT2 (Right or Sub)	01H: Video1				
		01H: Video1				
		02H: Video2				
		05H: DVD/HD1				
		06H: DVD/HD2				
		07H: PC/RGB				
		0EH: DVD/HD3				
		1AH: DVD/HD4				

ACK

7FH 0H 80H 33H 00H CKS

5-76. REMOTE CODE SETTING**Function**

Remotecontroller codes are set.

Transmission Data

DFH	80H	60H	2BH	01H	DATA00	CKS
	DATA00		00H:	ALL		
			01H:	CODE1		
			02H:	CODE2		
			03H:	CODE3		
			04H:	CODE4		

ACK

7FH	60H	80H	2BH	01H	DATA00	CKS
	DATA00		00H:	ALL		
			01H:	CODE1		
			02H:	CODE2		
			03H:	CODE3		
			04H:	CODE4		

5-77. VOLUME Gain Data REQUEST**Function**

The external control equipment inquires the volume gain for Plasma display.

Transmission Data

1FH	80H	60H	0EH	00H	CKS
-----	-----	-----	-----	-----	-----

ACK

DFH	60H	80H	0EH	01H	DATA00	CKS
	DATA00:	VOLUME Gain				
						: 00H~2AH
						(00H: 0, 0FH:15, 10H:16, 1FH, 31···2AH:42)
						: FFH: MUTE

5-78. UNDER SCAN SETTING**Function**

Under scan are set up.

Transmission Data

DFH	80H	60H	22H	01H	DATA00	CKS
	DATA00:		00H		OFF	
			01H		ON	

ACK

7FH	60H	80H	22H	01H	DATA00	CKS
	DATA00:		00H		OFF	
			01H		ON	

6. Revision history

Rev.	Date	Owner	Change description
1.0	12/06/06	Marantz America, Inc.	Issued Revision1.0