

1. Application Range

This specification applies to the control of Wide Plasma Display Panel [with optional VIDEOBOARD] (Hereafter, referred to as PDP) with DTE terminal (Personal computer, etc., and hereafter, referred to as PC).
 Refer to the "6-1.Adapted PDP" for adapted PDP.
 Refer to User's Manual for the details of the function.

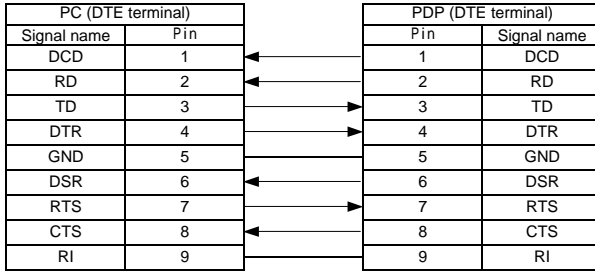
2. Communication Specification

The control of PDP with PC uses the RS-232C interface.
 PC sends each control command to PDP, and PDP can execute the function described in the function list.
 Basically, procedure structure is 'Handshake' in which it starts with @G and terminates with @Q'.
 As a rule, the time-sharing by which the answering from PDP is monitored is used.

- >Communication parameter
 - Baud rate 4800bps
 - Data length 8 bits
 - Parity None
 - Stop bit 1 bit
 - Flow control RTS/ CTS
 - Communication code ASCII code
 - Reception time out **8 seconds**
- When status is not returned after sending the command, wait for the time out 8 seconds and send the command again.**

3. Connection with PC

When using the DOS/V compatible machine, connect with it by the straight D-SUB 9 pins cable.



4. Communication Procedure

The handshake system is used for the communication between PC and PDP, and the status is returned against the command sending.
 Moreover, PC sends the communication start command and the communication termination command at the start and termination of the communication.
 The key of the remote control and the main unit becomes a disabling condition (does not function) because the communication has the priority when the communication starts after the @Q communication mode terminates.

4-1. Control format

The command and the reception status consist of ASCII code, and this specification describes it by the character string.

4-1-1. Communication start command

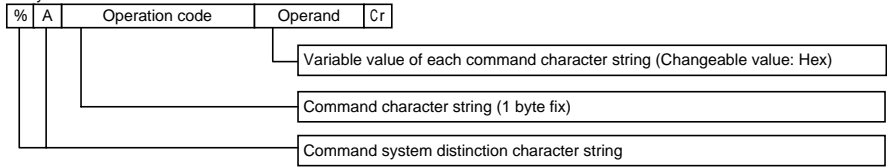
The communication starts.

@ G Cr

When this command is sent a text communication mode start, and the communication command described in "5.Function list" in clause 5 can be accepted. Wait for the normal reception status after sending this command. However, resend it even if reception status is not received for 8 seconds. Resend it until returning the normal reception status because irregular data or 'irregular data + reception status' might return after sending the start command. Cr means Carriage Return.

4-1-2. Communication command

Command system



4-1-3. Status

Normal termination

@ S Cr

PDP returns the status to PC after PDP normally execute the command sent by PC.

Normal termination with condition data

@ S DT Cr

PDP sends the operating condition to PC after PC sends the condition reading command. (Refer to 'Function list' in clause 5 for details of a reading command and above-mentioned DT value character string.)

Abnormal termination

@ E ST Cr

PDP sends it to PC if PDP does not normally execute the command sent by PC. Above-mentioned ST value character string:
 01: Communication error (For example, the cable is not correctly connected.)
 02: Setting error (For example, the command is not correctly sent. [A non-corresponded command etc.])
 03: Function execute error (For example, PDP fails in the execute of the command.)

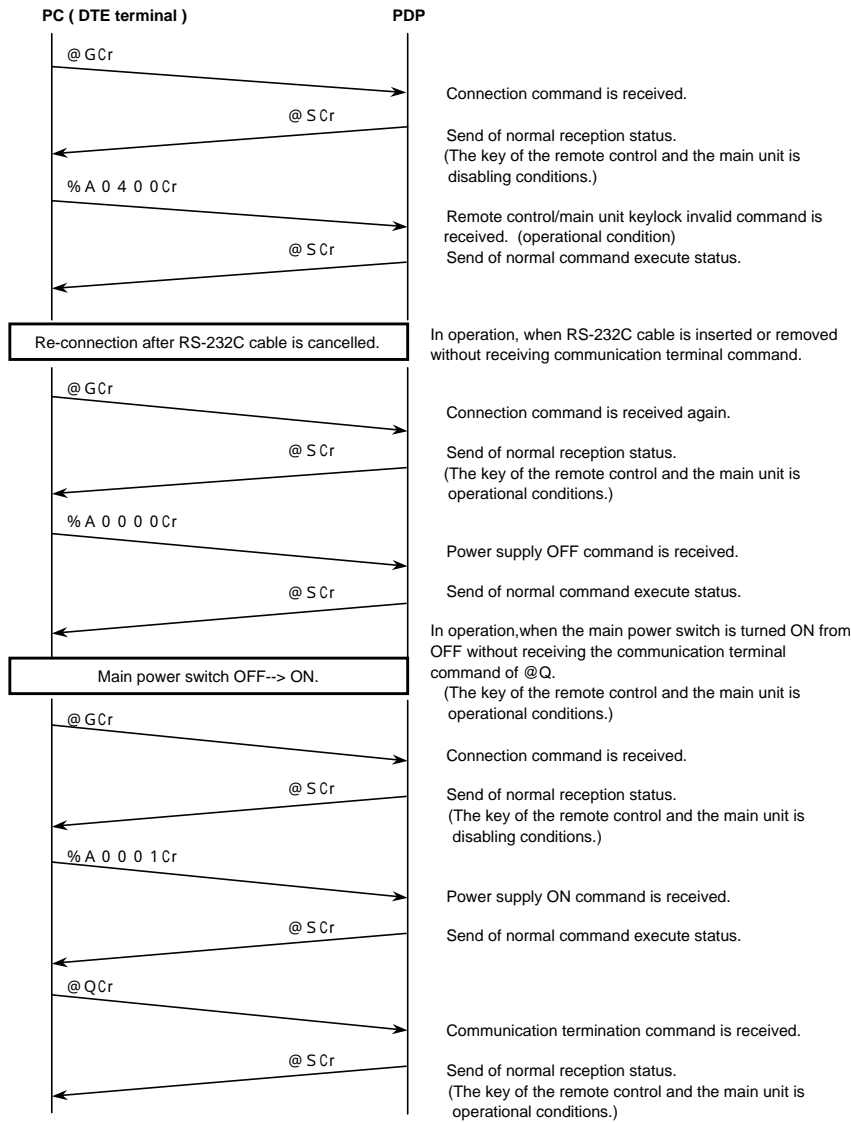
4-1-4. Communication termination command

The communication mode terminates.

@ Q Cr

4-2. Protocol procedure example

The protocol procedure example is as follows.



Communication code(hexadecimal) of protocol procedure example.

@GCr	= 40 47 0D	@SCr	= 40 53 0D
%A0400Cr	= 25 41 30 34 30 30 0D		
%A0000Cr	= 25 41 30 30 30 30 0D	%A0001Cr	= 25 41 30 30 30 31 0D
@QCr	= 40 51 0D		

5. Function List

'Cr' is added at the end of all communication commands. Moreover, variable value means the he
 And only the command of "Power supply On/Off setting" and "Power supply condition readin:
 is controllable by the power supply standby stat

A power supply standby state shows the state of "Power supply condition Off: @S0(

Function	Communication command	consumer models (W/A models)	consumer models (U model)	consumer models (E model)	consumer models (R model)	commercial models	Note
System operation							
1	Power supply ON / OFF setting	Power supply OFF: %A0000 Power supply ON: %A0001					
	Power supply condition reading	%A0080 【Return Code】 @S00 : Power supply condition OFF @S01 : Power supply condition ON					
2	On screen automatic display ON / OFF setting	Automatic display OFF: %A0100 Automatic display ON: %A0101 Automatic display ON(Dark): %A0102 %A0180	(Bright)	(Bright)	(Bright)	(Bright)	OSD display setting x
	On screen automatic display ON/OFF set condition reading	【Return Code】 @S00 : Automatic display condition OFF @S01 : Automatic display condition ON @S02 : Automatic display condition ON(Dark)					
3	Setting of remote control/main unit keylock function	Remote control keylock is invalid and main unit keylock is invalid. : %A0400 Remote control keylock is invalid and main unit keylock is valid. : %A0401 Remote control keylock is valid and main unit keylock is invalid.: %A0402 Remote control keylock is valid and main unit keylock is valid.: %A0403					Note) When the communication is started again after the termination of the communication, the remote control key and the main unit key become a disabling condition (does not function) for the priority of the communication.
	Confirmation of remote control/main unit keylock setting	%A0480 【Return Code】 @S00 : Remote control keylock invalid / Main unit keylock invalid. @S01 : Remote control keylock invalid / Main unit keylock valid. @S02 : Remote control keylock valid / Main unit keylock invalid. @S03 : Remote control keylock valid / Main unit keylock valid.					
4	Initialization of user adjustable value	%A05					FACTORY DEFAULT

Function	Communication command	consumer models (W/A models)	consumer models (U model)	consumer models (E model)	consumer models (R model)	commercial models	Note
Video adjustment							
5	Video input selection	RGB_D-SUB input: %A1000	(RGB2)	(RGB2)	(RGB1)	(RGB1)	(RGB1)
		RGB_BNC input: %A1001	x	x	x	x	(RGB2 or C-VIDEO)
		DVI input: %A1002	(RGB1)	(RGB1)	x	x	x
		C-VIDEO_RCA or BNC input: %A1010	(VIDEO3)	(VIDEO3)	(VIDEO3)	(VIDEO3)	x
		C-VIDEO_RCA or BNC or D input: %A1011	(VIDEO4)	(VIDEO4)	x	(VIDEO4)	x
		VIDEO_RCA or BNC or SCART input: %A1012	(VIDEO1) (RCA)	(VIDEO1) (RCA)	(VIDEO1) (RCA)	(VIDEO1) (RCA)	(VIDEO) (BNC)
		S-VIDEO_Mini-DIN input: %A1014	(VIDEO2)	(VIDEO2)	(VIDEO2)	(VIDEO2)	(S VIDEO)
		HDMI input: %A1016	x	(VIDEO5)	x	x	x
	Video input select condition reading	%A1080 【Return Code】 @S00 : RGB_D-SUB input @S01 : RGB_BNC input @S02 : DVI input @S10 : C-VIDEO_RCA or BNC input @S11 : C-VIDEO_RCA or D input @S12 : VIDEO_RCA or BNC or SCART input @S14 : S-VIDEO_Mini-DIN input @S16 :HDMI input					
	6	Display aspect selection	NORMAL: %A1100				
WIDE1: %A1101							
WIDE2: %A1102							
ZOOM1: %A1103							
ZOOM2: %A1104							
Display aspect select condition reading		%A1180 【Return Code】 @S00 : NORMAL @S01 : WIDE1 @S02 : WIDE2 @S03 : ZOOM1 @S04 : ZOOM2					

Function	Communication command	consumer models (W/A models)	consumer models (U model)	consumer models (E model)	consumer models (R model)	commercial models	Note
7	Picture mode setting	%A130F00	Natural	Natural	Natural	Natural	Dynamic
		%A130F01	Fine	Fine	Fine	Fine	x
		%A130F02	Effective	Effective	Effective	Effective	Real
		%A130F03	Conventional	Conventional	Conventional	Conventional	x
	Picture mode setting Condition reading	%A130F04	Still	Still	Still	Still	Static
	%A138F						
	【Return Code】 @S00 - @S04 : (Code details are referring to [which is a Picture mode setting command] the lower 2 figure)						
8	Picture memory setting	【Picture setting SAVE】 %A150000 - %A150007 (Memory1 - 8)					x
		【Picture setting LOAD】 %A150100 - %A150107 (Memory1 - 8)					x
Audio							
9	Volume setting	【Audio mute OFF】 %A2200 (Volume Low) - %A2228 (Volume High)					PDP adjustable range: 0 - 40
	Volume setting condition reading	【Audio mute ON】 %A2240					
		%A2280					
		【Return Code】 @S00 (Volume Low) - @S28 (Volume High) @S40 - @S68 : Audio mute					
10	Tone balance setting	【Balance】 %A23006 (Left) - %A2301A (Right) (Reference value:%A23010)					PDP adjustable range: -10 ~ +10
		【Bass】 %A2310A (Down) - %A23116 (Up) (Reference value:%A23110)					PDP adjustable range: -6 ~ +6
		【Treble】 %A220A (Down) - %A23216 (Up) (Reference value:%A23210)					PDP adjustable range: -6 ~ +6
		【Loudness】 %A23300 (OFF) %A23301 (ON)					
			%A2380				
	Tone balance settingcondition reading	【Return Code】 @S06 (Left) - @S1A (Right) : Balance					
%A2381							
【Return Code】 @S0A (Down) - @S16 (UP) : Bass							
%A2382							
		【Return Code】 @S0A (Down) - @S16 (UP) : Treble					
		%A2383					
		【Return Code】 @S00: Loudness OFF @S01: Loudness ON					

Function	Communication command	consumer models (W/A models)	consumer models (U model)	consumer models (E model)	consumer models (R model)	commercial models	Note
Extended features							
11	White screen display	White screen display OFF: %A310300					
		White screen display ON: %A310301					
12	White screen display condition reading	%A3183 【Return Code】 @S00 : White screen display OFF @S01 : White screen display ON					
	Screen orbiter setting (Only RGB)	Screen orbiter OFF: %A310401					About 5dots orbiter
		Minimum turn at constant intervals: %A310410					About 10dots orbiter
		Standard turn at constant intervals: %A310411					About 15dots orbiter
		Maximum turn at constant intervals: %A310412					About 5dots orbiter
		Minimum turn at each mode change: %A310420					About 10dots orbiter
		Standard turn at each mode change: %A310421					About 15dots orbiter
		Maximum turn at each mode change: %A310422					About 15dots orbiter
	Screen orbiter condition reading	%A3184 【Return Code】 @S01: Screen orbiter OFF @S10: Minimum turn at constant intervals @S11: Standard turn at constant intervals @S12: Maximum turn at constant intervals @S20: Minimum turn at each mode change @S21: Standard turn at each mode change @S22: Maximum turn at each mode change					
13	Exhibition mode setting	OFF: %A310C00					
		ON: %A310C01					
	Exhibition mode settingcondition reading	%A318C 【Return Code】 @S00 : OFF @S01 : ON					

Function	Communication command	consumer models (W/A models)	consumer models (U model)	consumer models (E model)	consumer models (R model)	commercial models	Note
REMOTE CONTROL FUNCTION							It does not function when remote control is prohibited.
14 Power turns On/Off	%A3200	x	x	x	x		
15 Power On	%A3201	x	x	x	x		
16 Power Off	%A3202	x	x	x	x		
17 Input toggle	%A3203	x	x	x	x		
18 Video input toggle	%A3205	x	x	x	x		
19 Video1	%A3206	x	x	x	x		
20 RGB input toggle	%A3208	x	x	x	x		
21 RGB1	%A3209	x	x	x	x		
22 RGB2	%A320A	x	x	x	x		
23 Video2	%A320B	x	x	x	x		
24 Volume up	%A3220	x	x	x	x		
25 Volume down	%A3221	x	x	x	x		
26 Mute ON/OFF	%A3222	x	x	x	x		
27 Mute ON	%A3223	x	x	x	x		
28 Mute OFF	%A3224	x	x	x	x		
29 Menu cursor	%A323E	x	x	x	x		
30 Menu cursor	%A323F	x	x	x	x		
31 Menu button	%A3240	x	x	x	x		
32 Menu cursor	%A3241	x	x	x	x		
33 Menu cursor	%A3242	x	x	x	x		
34 Enter	%A325B	x	x	x	x		
35 Aspect Normal	%A3282	x	x	x	x		
36 Aspect Wide 1	%A3283	x	x	x	x		
37 Aspect Wide 2	%A3284	x	x	x	x		
38 Aspect Zoom 1	%A3285	x	x	x	x		
39 Aspect Zoom 2	%A3286	x	x	x	x		
40 Power turns On/Off	%A328A00					x	
41 Audio Mute On/Off	%A328C12					x	
42 OSD Display On/Off	%A328A08					x	
43 Picture Mode	%A328A44					x	
44 Picture Memory	%A328A48					x	
45 Wide button	%A328A10					x	
46 RGB1	%A328B68					x	
47 RGB2	%A328B69					x	
48 Video1	%A328B40					x	
49 Video2	%A328B41					x	
50 Video3	%A328B42					x	
51 Video4	%A328B43					x	
52 Video5	%A328B44	x		x	x	x	
53 Volume up	%A328C10					x	
54 Volume down	%A328C11					x	
55 Menu button	%A328A22					x	
56 Menu cursor	%A328A23					x	
57 Menu cursor	%A328A20					x	
58 Menu cursor	%A328A21					x	
59 Menu cursor	%A328A24					x	
60 Enter	%A328A26					x	

6. Supplement
6-1.Adapted PDP

【 consumer models 】

P63XHA40WS	P63XHA40US	P63XHA40ES	P63XHA40RS	P63XHA40AS		
P55XHA40WS	P55XHA40US			P55XHA40AS		
P50XHA40WS	P50XHA40US			P50XHA40AS		
P42HHA40WS	P42HHA40US			P42HHA40AS		
P42VHA40WS	P42VHA40US	P42VHA40ES	P42VHA40RS	P42VHA40AS		

【 commercial models 】

P50XCA40WH		P50XCA40EH				
P42HCA40WH		P42HCA40EH				
P42VCA40WH		P42VCA40EH				