

FUJITSU GENERAL LIMITED

42 inch Wide Plasma Display Monitor

Model : PDS4203E-H (Enhanced Model / European Version)
PDS4204E-H (PC Card Viewer Model / European Version)
PDS4203W-H (Enhanced Model)
PDS4204W-H (PC Card Viewer Model)

Communication Specifications (For Customers)

***Caution**

Use of functions not mentioned in this Specification may result in damage.
Please handle with care.

E Version: Video related applications only usable with up-grade kits.

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1. Range of Application

This specification applies to the control of the 42inch Wide Plasma Display Monitor by connection to the PC. (Hereafter referred to as PDP monitor)

2. Communication Specification

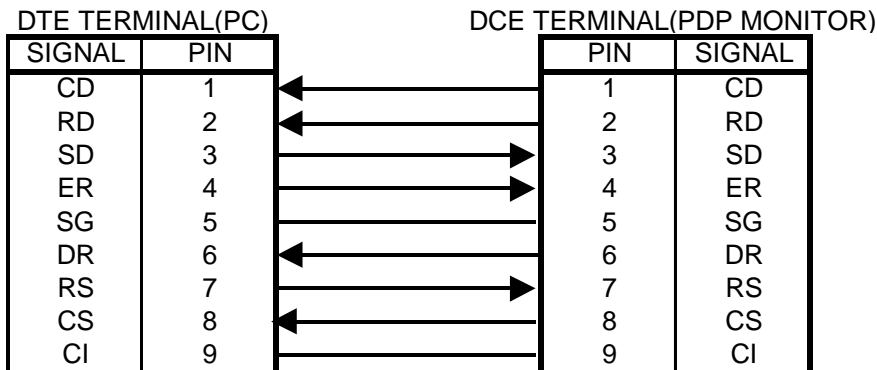
The control command from the Personal Computer is issued through the RS-232C interface by connecting the PDP monitor and the personal computer through the RS-232C cable.

-Communication Parameter

Baud Rate	4800 bps
Data Length	8 bit
Parity	none
Stop Bit	1 bit
Flow control	RTS/CTS Control
Communication Code	ASCII Code

3. PC Connection

The PDP is connected to an IBM compatible PC with a straight cable D-sub 9 pin. (Enhanced model/PC Card Viewer Model)

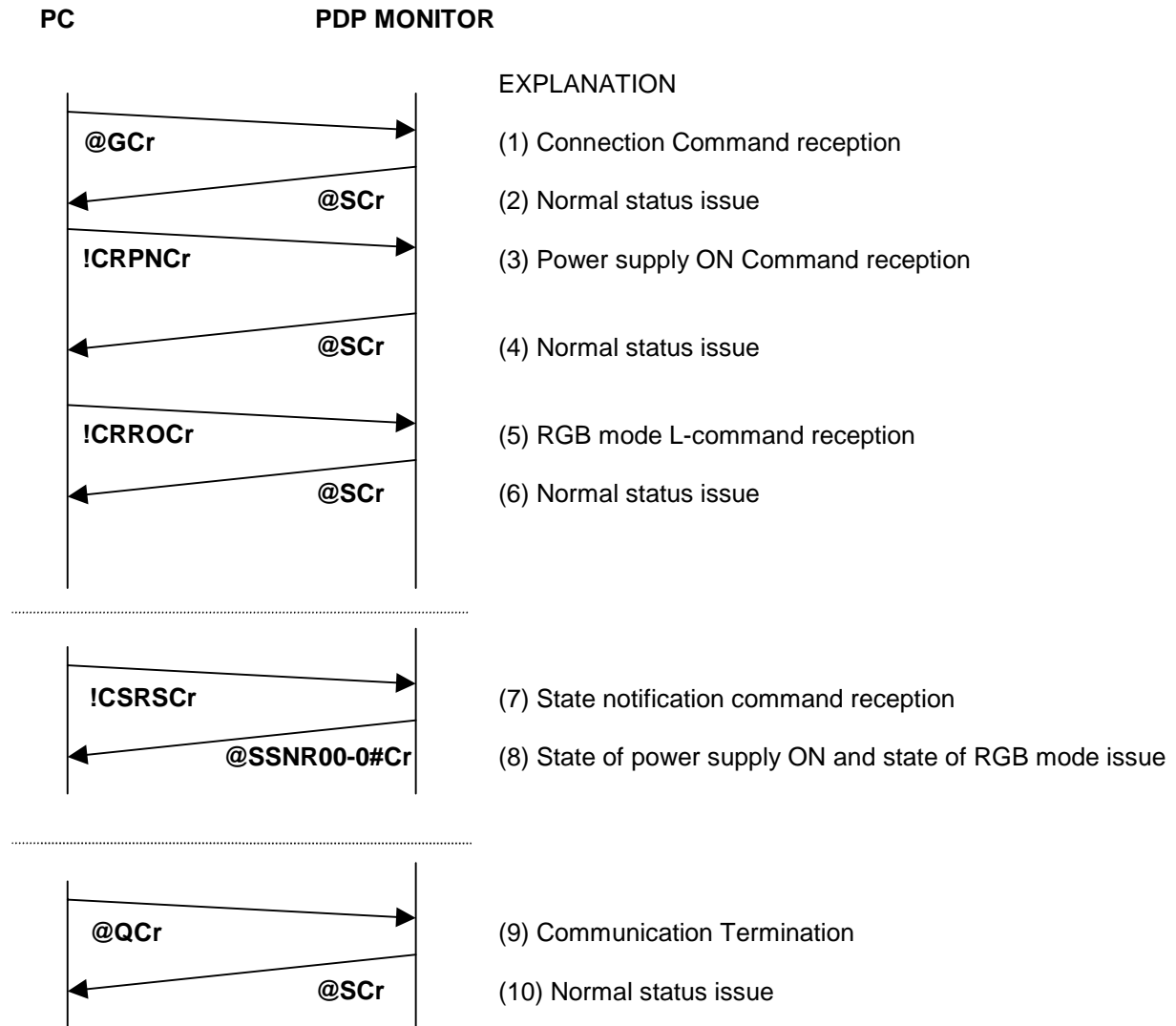


4. Communication Procedure

Easy operation immediately after connecting the PDP monitor and the PC is not possible. Therefore, there is a communication mode in order to have control of the PDP monitor by the PC. This mode is called the TEXT COMMUNICATION MODE. In order to go into the TEXT COMMUNICATION MODE, a connection command needs to be issued. Furthermore, after the connection command is issued, the use of the Remote Control and Main Body Key control is cut off.

5. Example of Protocol

The example of protocol is as shown below.



6. List of Commands

Command / Status	Contents	Availability(per model)	
		Enhanced	PC Card Viewer
@GCr	Connection Command	Yes	Yes
@SCr	Normal Reception Status 1 (no return value)	Yes	Yes
@SXXXXCr	Normal Reception Status 2 (with return value)	Yes	Yes
@Ecr	Abnormal Reception Status	Yes	Yes
!CRPNCr	Power Supply ON	Yes	Yes
!CRPFcr	Power Supply OFF	Yes	Yes
!CRVOCr	Video ON	Yes	Yes
!CRROCr	RGB ON	Yes	Yes
!CRSOCr	S-Video ON	Yes	Yes
!CRCOCr	Component Video AUTO input, ON	Yes	Yes
!CRPOCr	PC Card ON	No	Yes
!CRPACr	PC Card AUTO	No	Yes
!CRTMcr	PC Card MANUAL	No	Yes
!CPCRCr	PC Card RESET	No	Yes
!CPCFCr	PC Card FORWARD	No	Yes
!CPCBCr	PC Card REVERSE	No	Yes
!CSERCr	Remote Control and Main Body Key USE	Yes	Yes
!CSDRCr	Remote Control and Main Body Key DISABLE	Yes	Yes
!CSETRCr	Communicating Remote Control and Main Body Key USE	Yes	Yes
!CSDTRCr	Communicating Remote Control and Main Body Key DISABLE	Yes	Yes
!CSRScr	Current Report Demand	Yes	Yes
@SSNFVRVMCMCMBASCr	Normal Reception Status and Current Report Demand	Yes	Yes
!COSDCONCr	To make the OSCD mode EFFECTIVE	Yes	Yes
!COSDCOFFCr	To make the OSCD mode INVALID	Yes	Yes
!CLEd00Cr	LED Compulsory OFF Cancellation	Yes	Yes
!CLEd05Cr	LED Compulsory OFF	Yes	Yes
!CDI01HiLoCr	Aspect	Yes	Yes
!CDI02HiLoCr	Speaker Volume	Yes	Yes
!CDI03HiLoCr	Video Mode (NTSC, PAL, SECAM, etc.)	Yes	Yes
!CSCHKONCr	Transition of Mode (with check sum)	Yes	Yes
@S93Cr	Transition of Mode (with check sum) Normal Status	Yes	Yes
!CSCHKOFF68Cr	Transition of Mode (without check sum)	Yes	Yes
@QCr	Termination of Communication	Yes	Yes

7. Explanation of Commands

7-1 Communication Control

The communication is done by the handshake method, and the status is returned each a command is issued.

The command and reception status consists of the ASCII code and there are three reception status which is as follows:

NORMAL RECEPTION STATUS 1

@	S	Cr
---	---	----

“Cr” means carriage return which is “ODH” of the ASCII code.

At normal status, this normal reception status is returned unless otherwise mentioned.

NORMAL RECEPTION STATUS 2

@	S	-----	Cr
---	---	-------	----

This is returned when the Current Status Command/Post figures Read Command is issued.

ABNORMAL RECEPTION STATUS

@	E	Cr
---	---	----

7-1-1 Connection Commands

START OF COMMUNICATION

@	G	Cr
---	---	----

By issuing this command, the mode is changed to text mode which makes the command mentioned in 7-2 onwards active.

After this command is issued, wait for the Normal Reception Status (@SCr).

Retry this command when there is no response within 4 seconds.

After the connection “@G” is issued, garbage or garbage + “@S” may return.

Retry until only “@S” returns.

7-2 System Control

7-2-1 Power Supply ON

The power supply is turned ON.

!	C	R	R	N	Cr
---	---	---	---	---	----

After this command is issued, wait for 7 seconds before issuing the Power Supply OFF command. If there is no 7 second interval, the power will not be turned off and “@S” will return.

7-2-2 Power Supply OFF

The power supply is turned OFF.

!	C	R	P	F	Cr
---	---	---	---	---	----

After this command is issued, wait for 5 seconds before issuing the commands: !CPRN, !CRVO, !CRRO, !CRSO, !CRCO, !CRPO.

When there is no 5 second interval, the power will not be turned on, and “@S” will return.

7-2-3 Video ON

The mode is changed to Video.

!	C	R	V	O	Cr
---	---	---	---	---	----

*1 After this command is issued, wait for 7 seconds before issuing the Power Supply OFF command. If there is no 7 second interval, the power will not be turned off, and "@S" will return.

7-2-4 RGB ON

The mode is changed to RGB mode.

!	C	R	R	O	Cr
---	---	---	---	---	----

*1 As above.

7-2-5 S-Video ON

The mode is changed to S-Video input.

!	C	R	S	O	Cr
---	---	---	---	---	----

*1 As above.

7-2-6 Component Video AUTO input ON

The mode is changed to Component Video AUTO.

!	C	R	C	O	Cr
---	---	---	---	---	----

*1 As above.

7-2-7 PC Card ON

The mode is changed to PC Card mode. (Only used with the PC Card Viewer model)
The initial output is the last picture in the memory.

!	C	R	P	O	Cr
---	---	---	---	---	----

*1 As above.

7-2-8 PC Card AUTO

The mode is changed to PC Card AUTO mode. (Only used with the PC Card Viewer model)

!	C	R	P	A	Cr
---	---	---	---	---	----

*1 As above.

7-2-9 PC Card MANUAL

The mode is changed to PC Card MANUAL mode. (Only used with the PC Card Viewer model)

!	C	R	P	M	Cr
---	---	---	---	---	----

7-2-10 PC Card RESET

The PC Card image is reset to initial status. (Only used with the PC Card Viewer model)

!	C	P	C	R	Cr
---	---	---	---	---	----

7-2-11 PC Card FORWARD

Goes to the next image. (Only used with the PC Card Viewer model)

!	C	P	C	F	Cr
---	---	---	---	---	----

7-2-12 PC Card REVERSE

Goes back to the previous image. (Only used with the PC Card Viewer model)

!	C	P	C	B	Cr
---	---	---	---	---	----

7-2-13 Remote Control and Main Body Key Use

- 1) Use of the Remote Control and Main Body Keys are permitted. (Default)
This command is permanent, and will be in effect even after the communication is terminated.

!	C	S	E	R	Cr
---	---	---	---	---	----

- 2) Use of the Remote Control and Main Body Keys are prohibited.
This command is permanent, and will be in effect even after the communication is terminated.
Then this command is issued, Remote Control and the Main Body Key cannot be used until the command "!CSERCr" is issued.

!	C	S	D	R	Kr
---	---	---	---	---	----

- 3) Communicating Remote Control and Main Body Keys are permitted.

!	C	S	E	T	R	Cr
---	---	---	---	---	---	----

- 4) Communicating Remote Control and Main Body Keys are prohibited. (Default)

!	C	S	D	T	R	Cr
---	---	---	---	---	---	----

After the main Power Supply is turned off, 1), 2), 3), 4) will return to default.
After termination of communication, 3), 4), will return to default.

7-2-14 Current Status Report

The current status is reported.

!	C	S	R	S	Cr
---	---	---	---	---	----

At normal status, the following is returned.

!	S	S	N	V	V	R	C	S	A	-	Cr
			F	R	M	M	M	B	S		

NF: Power supply

N: Power Supply ON
F: Power Supply OFF
S: Power Supply Stand-by (DPMS is status OFF)

VR: Mode

V: Video
R: RGB
S: S-Video
5: Component Video DVD 50Hz
6: Component Video DVD 60Hz
H: Component Video HDTV
E: Component Video ELSE
A: PC Card AUTO mode
M: PC Card MANUAL mode

- VM: VIDEO/S mode details 0: Auto
 1: NTSC
 2: PAL
 3: SECAM
 4: NTSC 4.43
 5: MPAL
 6: NPAL
- RM: RGB mode 0: MODE 1
 ~
 F: MODE 16
- CM: PC Card Status I: Interface Malfunction
 F: Format Error
 C: No PC Card
 -: Status Normal
 (Only applicable to for PC Card model at Power Supply ON)
- AS: Current Aspect 0: Normal
 1: AUTO
 2: Wide 1
 3: Wide 2
 4: Zoom 1
 5: Zoom 2

7-2-15 Display Control Command

- 1) OSDC Display is effective.

!	C	O	S	D	C	O	N	Cr
---	---	---	---	---	---	---	---	----

- 2) OSDC Display is invalid. Information such as signal sources will not be displayed on the panel.

!	C	O	S	D	C	O	F	F	Cr
---	---	---	---	---	---	---	---	---	----

Caution! Do not terminate the RS communication while the OSDC is invalid. Proper operation cannot be guaranteed when this is done.

7-2-16 LED Control Command

LED Compulsory OFF Cancellation.

!	C	L	E	D	0	0	Cr
---	---	---	---	---	---	---	----

LED Compulsory OFF. When this command is issued, the LED display will be turned off.

!	C	L	E	D	0	5	Cr
---	---	---	---	---	---	---	----

7-2-17 Aspect Command

The display is compulsorily changed to Wide / Zoom. It is not effective when using the PC Card.

!	C	D	I	I	1	Hi	Lo	Cr
---	---	---	---	---	---	----	----	----

- Hi: Lo hexadecimal number value
 00: Normal Display
 01: Auto (Ineffective at RGB / Component Video mode)
 02: WIDE 1 (Ineffective at RGB mode)
 03: WIDE (2)
 04: ZOOM 1 (Ineffective at RGB mode)
 05: ZOOM 2 (Ineffective at RGB mode)

7-2-18 Speaker Volume Command

The volume of the built-in speaker is adjusted.

!	C	D	I	0	2	Hi	Lo	Cr
---	---	---	---	---	---	----	----	----

Hi: Lo hexadecimal number value

00: Minimum Volume

~

3F: Maximum Volume

7-2-19 Video Mode Command

The video mode is compulsorily switched regardless of the state of the signal.

!	C	D	I	0	3	Hi	Lo	Cr
---	---	---	---	---	---	----	----	----

Hi: Lo hexadecimal number value

00: AUTO

01: Compulsory NTSC 3

02: Compulsory PAL

03: Compulsory SECAM

04: Compulsory NTSC 4.43

05: Compulsory MPAL

06: Compulsory NPAL

Change to video mode before using this command.

7-2-20 Transition of Mode (with check sum)

!	C	S	C	H	K	O	N	Cr
---	---	---	---	---	---	---	---	----

By issuing this command, check sum will be added.

The check sum is to be the added figure of the ASCII code and to have converted the subordinate 8 bits into a 2 figure hexadecimal number. (Carriage return is not included)

At normal status, the following is returned.

@	S	9	3	Cr
---	---	---	---	----

7-2-21 Transition of Mode (without check sum)

!	C	S	C	H	K	O	F	F	6	8	Cr
---	---	---	---	---	---	---	---	---	---	---	----

$$21 + 43 + 53 + 43 + 48 + 4B + 4F + 46 + 46 = 268$$

┌
└─> Check sum
(subordinate 8 bits of 268=68)

At normal status, the following is returned.

@	S	Cr
---	---	----

7-2-22 Termination of Communication

The text mode is terminated.

!	Q	Cr
---	---	----