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# RS-232 Command Reference Manual

For **PIONEER PDP-505CMX** Plasma Display Panel

January 2006

Document Version 1.0

Product specifications and functions subject to change.

Please check with your authorized Pioneer dealer or distributor.

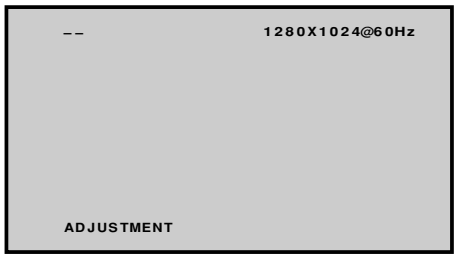
# 1.0 RS-232C Adjustment Mode

This display panel has an RS-232C terminal. It is possible to use a PC to make adjustments and settings.

## 1.1 About the RS-232C Adjustment Mode

1) Adjustments in the RS-232C adjustment mode:
   - The adjustments are written to the same memory area as for the integrator mode. Refer to section 5.4.4, “PICTURE, White Balance and SCREEN Position Adjustment Values Memory Area Tables" (pg. 211).

2) Display screen in the RS-232C adjustment mode:
   - The screen appears as shown to the right.
     The set ID is display in the ‘– –’ area in the upper left corner of the screen.




**Notes**

(1) Always assign an ID before using the RS-232C adjustment mode. Also, include the ID for the set to be controlled or adjusted in the RS-232C command. For details, refer to section 5.5.2, “Interface" (pg. 217).

(2) There are some RS-232C commands that can be used in the normal-operation mode.
For details refer to section, 5.5.5, “List of RS-232C Commands" (pg. 221).

(3) Some adjustment values and items set by RS-232C commands are stored in memory while other values sand settings are not. For details, refer to section 5.5.5, “List of RS-232C Commands" (pg. 221).
Also, when storing final values in memory, the conditions described in section 5.1.5, “Last Memory" (pg. 152), must be satisfied.

(4) <DIN>/<DIY> (OSD display disable/enable setting)
The following items can be displayed regardless of the setting:
   - Menu display (menu mode, integrator mode)
   - Warnings before Auto Power OFF or Power Management operation
   - Warning of high temperature inside the set
   - Display announcing that the FUNCTIONAL LOCK is set, and the FUNCTIONAL LOCK setting display
   - Display call (including holding a button down)

(5) The RS-232C adjustment mode is automatically cancelled in the following cases:
   - When the [STANDBY/ON] or [MENU] button is pressed

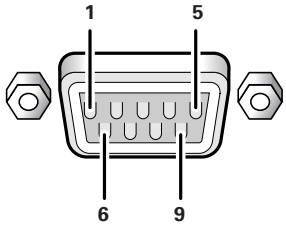
(6) Cancel the Integrator mode before entering the RS-232C adjustment mode.

(6) When controling the panel using RS-232C commands, control both the input signal and the power. If the power is ON when there is no signal, the display continues to have a weak discharge. A discharge could affect the life of the display.

## 1.2 Interface

1) Connector
   D-sub 9 pins (male)
2) Pin layout

| Pin No. | Signal | Pin No. | Signal |
|---|---|---|---|
| 1 | NC (not connected) | 6 | NC (not connected) |
| 2 | TxD (Transmit Data) | 7 | NC (not connected) |
| 3 | RxD (Receive Data) | 8 | RTS (Request To Send) |
| 4 | NC (not connected) | 9 | NC (not connected) |
| 5 | GND | | |



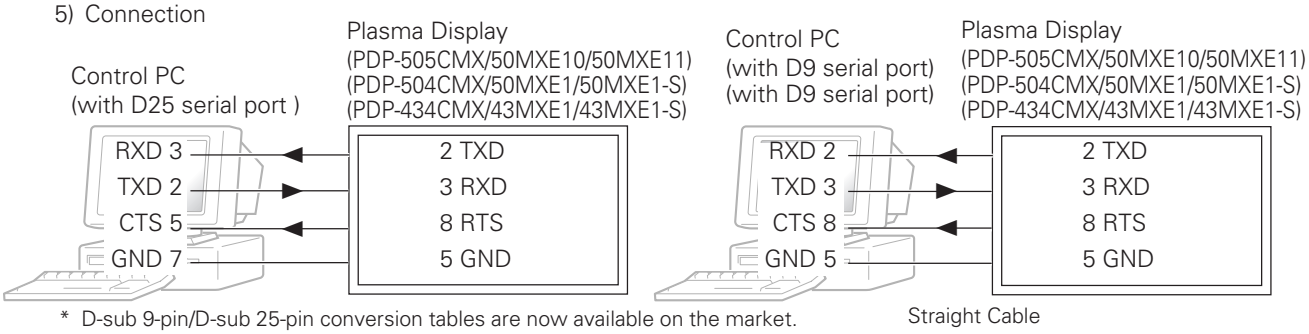

3) Baud Rate
   9600 bps (standard)
   (switch-able to 1200, 2400, 4800, 19200, 38400 bps)

**Note**

The panel's baud rate should be set to match the computer's baud rate.
Also, when extending the RS-232C cable over a long distance, lower the baud rate.

4) Data format
   Start: 1 bit
   Data: 8 bit
   Parity: 0 (no parity)
   Stop: 1 bit

5) Connection




* D-sub 9-pin/D-sub 25-pin conversion tables are now available on the market.

6) Protocol
   From the computer to the display
   (1) When sending one command at a time:

| | | | |
|---|---|---|---|
| STX (02 hex) | ID (2 Byte) | COMMAND (3 Byte or 6 Byte) | ETX (03 hex) |

   (2) When numerical direct commands are possible:

| | | | | |
|---|---|---|---|---|
| STX (02 hex) | ID (2 Byte) | COMMAND (3 Byte) | ARGUMENT (3 Byte) | ETX (03 hex) |

   COMMAND: 3 Byte (ASCII)
   ARGUMERNT: 3 Byte (ASCII)

   (3) Echo back

| | | |
|---|---|---|
| STX (02 hex) | COMMAND (3 Byte or 6 Byte) | ETX (03 hex) |

   When the received command is a numerical direct effect command, numerical data is returned.

| | | | |
|---|---|---|---|
| STX (02 hex) | COMMAND (3 Byte) | ARGUMENT (3 Byte) | ETX (03 hex) |

   When the received command is invalid, 'ERR' is returned.

| | | |
|---|---|---|
| STX (02 hex) | ERR (3 Byte) | ETX (03 hex) |

   When the received command cannot be processed (when PON is received, when the power is already ON, etc.), 'XXX' is returned.

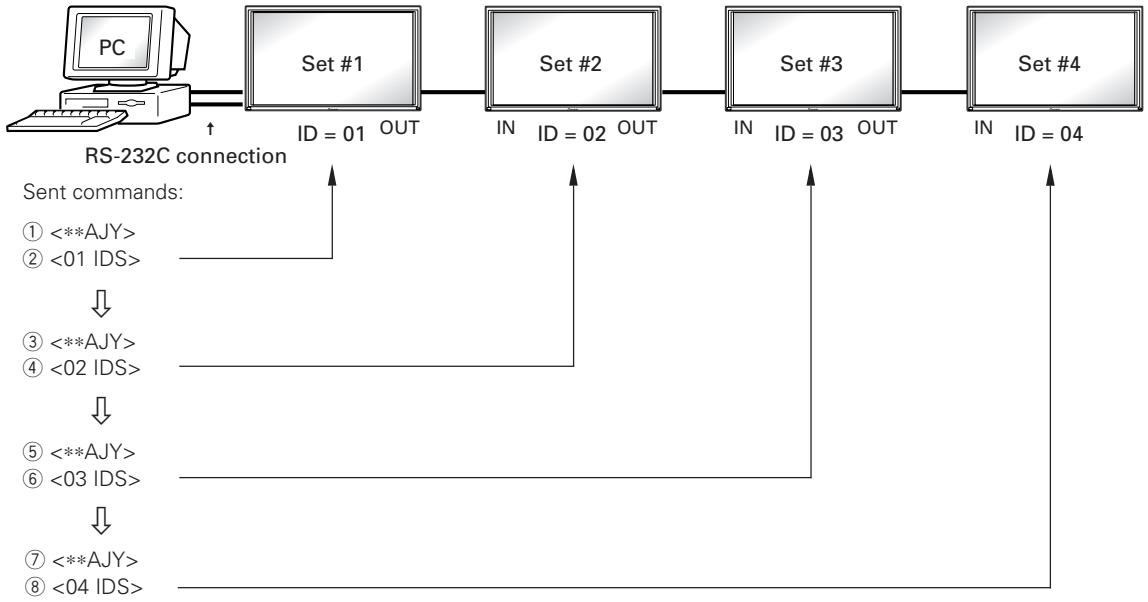
| | | |
|---|---|---|
| STX (02 hex) | XXX (3 Byte) | ETX (03 hex) |

### 1.3 ID Assignment

After connecting to a computer, the PC can assign an ID for each plasma display panel.

Commands: <IDC> (ID CLEAR) ..... Clears the assigned ID
<IDS> (ID SET) ..... Assigns an ID
IDS is only effective when an ID is not assigned.
Also, IDs are set starting from the set closest to the PC.

Example: Case of 4 displays (assigning IDs with the PC for the first time)
Connect each unit as shown below.
Refer to section 5.5.4, “Combination Connection" (pg. 219).




By sending RS-232C commands in this order, it is possible to assign an ID for each unit.
Units for which an ID has been set can only receive commands with an ID attached. Attach an ID before sending a command.

ID characters can include 0 - 9 and A - F (there is no distinction between upper and lower case letters).

An ∗ (asterisk) can be used as follows:
<**IDC>: Clear the IDs assigned for all sets
<∗1AJY>: Only a set with the second digit as 1 enters the RS-232C adjustment mode
<2∗IN1>: Only input of a set with the first digit as 2 is set to INPUT1

### Precautions when assigning IDs

Units that were connected after a set whose ID was cleared cannot be operated with RS-232C commands.
After assigning a setting as shown in the figure above and <**AJY> → <**IDC> is performed, the IDs for all the sets from Set #1 to Set #4 are cleared. Only the one set (Set #1) that is directly connected to the PC can be controlled. Furthermore, by performing <** AJY> → <01 IDS>, it again becomes possible to control the second set (Set #2). By setting IDs in the same way for the other sets, it again becomes possible to control the sets connected in succession.

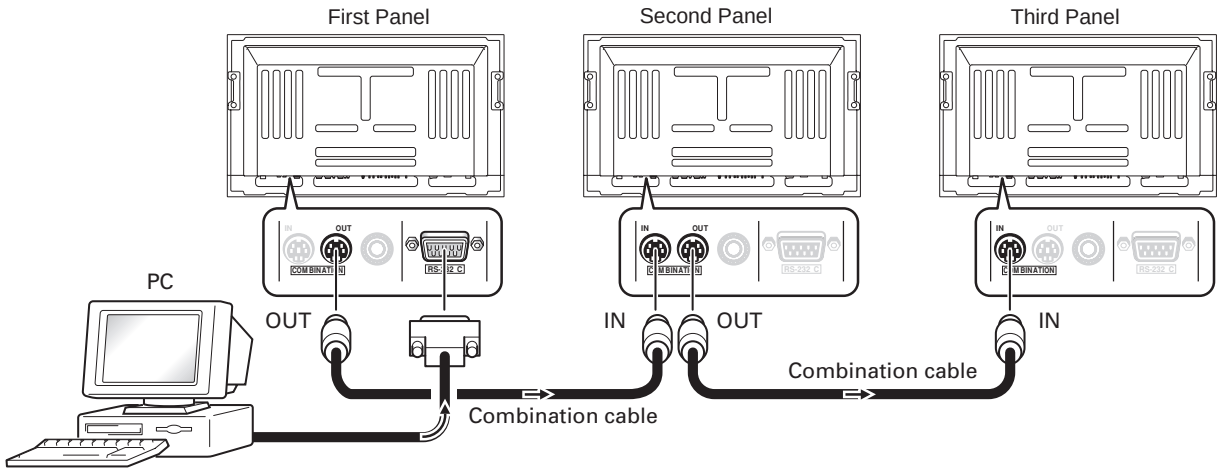
**Note**

When the IDs are set and one or both of the IDs before a command are sent from the PC as a ∗, there is no echo back. When sending more commands, wait 6 seconds before sending the next command.
Example) When **OOO and ∗1OOO or 1∗OOO (OOO is the command) are sent from the PC, operation is performed but there is no echo back.

### 1.4 Combination Connection

When performing control and adjustment, it is easiest to connect several panels to one PC.
By performing a combination connection and assigning IDs to the displays, it is possible to control and adjust several panels at the same time or separately.

**Connection method:**
Connect the panels as shown below. Control and adjust the units with the PC.




**Note**

Only the combination IN terminal or RS-232C terminal can be used at the same time on one panel. Connecting them at the same time could cause errors or cause other problems so do not connect them at the same time. Also, do not connect pairs of combination IN terminals or combination OUT terminals. Doing so could cause errors or other problems.

It is possible to use a general-purpose mini DIN 6-pin (straight) cable for the combination cable.

**Note**

To output RS-232C signals from the combination OUT terminal, an ID must be assigned.
For details, refer to section, 5.5.3, “ID Assignment" (pg. 218).

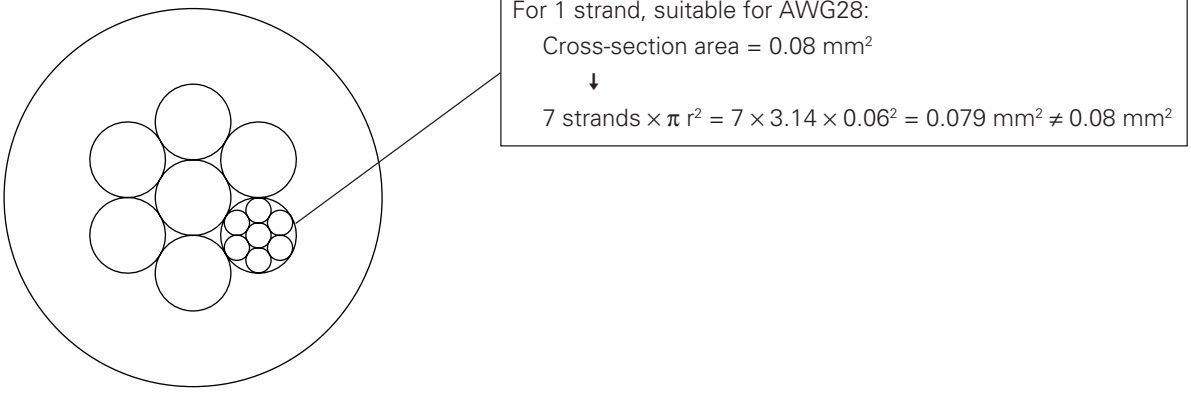
## RS-232C Adjustment Mode

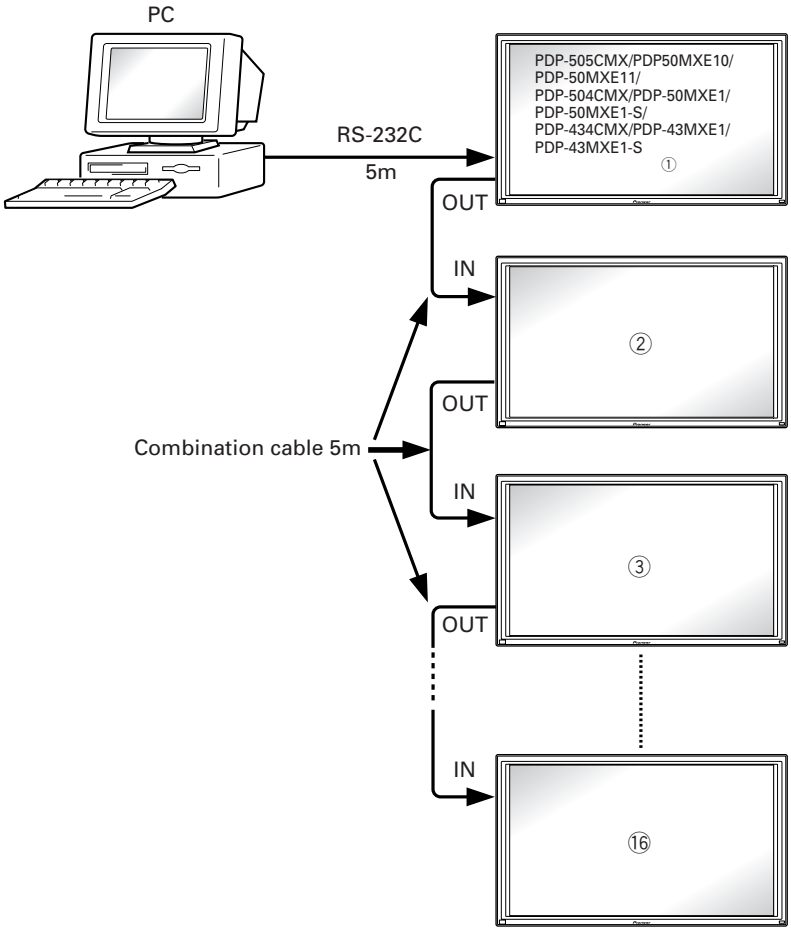
Under the connection conditions shown below, up to 16 panels can be controlled and operated.

Conditions: ① Length of RS-232C cable connecting PC to PDP-505CMX/PDP-50MXE10/PDP-50MXE11/PDP-504CMX/PDP-50MXE1/PDP-50MXE1-S/PDP-434CMX/PDP-43MXE1/PDP-43MXE1-S: 5 m

② Combination cable length: 5 m each

③ Wire specifications for linking cable: Mini Din 6-pin straight (7 strand cable)




**Note**

For details about the number of displays that can be connected in series using the video OUT terminal (INPUT1, 4), refer to section 2.3, “Controls and Connectors" (pg. 16).

## 1.5 List of RS-232C Commands

**How to read this Table**

- RS-232C adjustment validity : Indicates whether the RS-232C adjustment mode can be used
- Normal validity : Indicates whether the normal-operation mode can be used
- Numerical direct validity : With a 3-digit number attached to the end of a command, the command directly sets that adjustment value
- ○ or ●: Valid, No mark: Invalid

(NOTE) ● values are not stored in the last memory.

| Command name | AJY (232C integrator) Display | Remarks | RS-232C Adjustment Validity | Normal Validity | Numerical Direct Validity |
|---|---|---|---|---|---|
| **[A]** | | | | | |
| AJN | – | Terminates the 232C integrator adjustment mode. | ● | | |
| AJY | ADJUST: ON | Starts the 232C integrator adjustment mode. | | ● | |
| AMN | AUDIO MUTING: OFF | Turns OFF the audio mute. | ● | ● | |
| AMY | AUDIO MUTING: ON | Turns ON the audio mute. | ● | ● | |
| AST | AUTO SET UP | Executes AUTO SETUP. | | ○ | |
| **[B]** | | | | | |
| BHI | B HIGH: *** | Adjusts B. HIGH. | ○ | | ○ |
| BLW | B LOW: *** | Adjusts B. LOW. | ○ | | ○ |
| BRA | BAUD RATE: #####-232C | Displays the current baud rate. | ● | | |
| BRAS01 | BAUD RATE: 1200-232C | Sets the UART setting to 232C (1200BPS). | ○ | | |
| BRAS02 | BAUD RATE: 2400-232C | Sets the UART setting to 232C (2400BPS). | ○ | | |
| BRAS03 | BAUD RATE: 4800-232C | Sets the UART setting to 232C (4800BPS). | ○ | | |
| BRAS04 | BAUD RATE: 9600-232C | Sets the UART setting to 232C (9600BPS). | ○ | | |
| BRAS05 | BAUD RATE: 19200-232C | Sets the UART setting to 232C (19200BPS). | ○ | | |
| BRAS06 | BAUD RATE: 38400-232C | Sets the UART setting to 232C (38400BPS). | ○ | | |
| BRT | BRIGHTNESS: *** | Adjusts the brightness. | ○ | | ○ |
| BSL | B SIDE MASK LEVEL: *** | Adjusts the BLUE side mask. | ○ | | ○ |
| **[C]** | | | | | |
| CFR | CLOCK: *** | Adjusts the CLOCK (PLL frequency). | ○ | | ○ |
| CGB | COLOR DETAIL BLUE: *** | Adjusts color detail BLUE. | ○ | | ○ |
| CGC | COLOR DETAIL CYAN: *** | Adjusts color detail CIAN. | ○ | | ○ |
| CGG | COLOR DETAIL GREEN: *** | Adjusts color detail GREEN. | ○ | | ○ |
| CGM | COLOR DETAIL MAGENTA: *** | Adjusts color detail MAGENTA. | ○ | | ○ |
| CGR | COLOR DETAIL RED: *** | Adjusts color detail RED. | ○ | | ○ |
| CGY | COLOR DETAIL YELLOW: *** | Adjusts color detail YELLOW. | ○ | | ○ |
| CLS | COLOR SYSTEM: ##### | Displays the current color system. | ● | | |
| CLSS01 | COLOR SYSTEM: AUTO | Sets the color system to AUTO. | ○ | | |
| CLSS02 | COLOR SYSTEM: NTSC | Sets the color system to NTSC. | ○ | | |
| CLSS03 | COLOR SYSTEM: PAL | Sets the color system to PAL. | ○ | | |
| CLSS04 | COLOR SYSTEM: SECAM | Sets the color system to SECAM. | ○ | | |
| CLSS05 | COLOR SYSTEM: 4.43NTSC | Sets the color system to 4.43NTSC | ○ | | |
| CLSS06 | COLOR SYSTEM: PAL M | Sets the color system to PAL M. | ○ | | |
| CLSS07 | COLOR SYSTEM: PAL N | Sets the color system to PAL N. | ○ | | |
| CM1 | COLOR MODE: NORMAL | Sets the color mode to NORMAL. | ○ | ○ | |
| CM2 | COLOR MODE: STUDIO | Sets the color mode to STUDIO. | ○ | ○ | |
| CNT | CONTRAST: *** | Adjusts the CONTRAST. | ○ | | ○ |
| COF | COLOR OFF: ******** | Displays the current COLOR OFF setting. | ● | | |
| COFS00 | COLOR OFF: DISABLE | Disables COLOR OFF. | ○ | | |
| COFS01 | COLOR OFF: ENABLE | Enables COLOR OFF. | ○ | | |
| COL | COLOR: *** | Adjusts the COLOR. | ○ | | ○ |
| CPH | PHASE: *** | Adjusts the PHASE (PLL phase). | ○ | | ○ |
| CTP | COLOR TEMP.: ******** | Displays the current COLOR TEMP. | ● | | |
| CTPS01 | COLOR TEMP.: LOW | Sets the COLOR TEMP. to LOW. | ○ | | |
| CTPS02 | COLOR TEMP.: MID LOW | Sets the COLOR TEMP. to MID LOW. | ○ | | |
| CTPS03 | COLOR TEMP.: MIDDLE | Sets the COLOR TEMP. to MIDDLE. | ○ | | |
| CTPS04 | COLOR TEMP.: MID HIGH | Sets the COLOR TEMP. to MID HIGH. | ○ | | |
| CTPS05 | COLOR TEMP.: HIGH | Sets the COLOR TEMP. to HIGH. | ○ | | |

## RS-232C Adjustment Mode

| Command name | AJY (232C integrator) Display | Remarks | RS-232C Adjustment Validity | Normal Validity | Numerical Direct Validity |
|---|---|---|---|---|---|
| CTR | CTI: ### | Displays the current CTI setting. | ● | | |
| CTRS00 | CTI: OFF | Sets CTI to OFF. | ○ | | |
| CTRS01 | CTI: ON | Sets CTI to ON. | ○ | | |
| **[D]** | | | | | |
| DIN | | Turns OFF the OSD display. | ○ | ○ | |
| DIY | OSD: ON | Turns ON the OSD display. | ○ | ○ | |
| DNR | DNR: ###### | Displays the current DNR setting. | ● | | |
| DNRS00 | DNR: OFF | Sets digital NR to ON. | ○ | | |
| DNRS01 | DNR: LOW | Sets digital NR to LOW. | ○ | | |
| DNRS02 | DNR: MIDDLE | Sets digital NR to MIDDLE. | ○ | | |
| DNRS03 | DNR: HIGH | Sets digital NR to HIGH. | ○ | | |
| DOF | – | Clears the currently displayed OSD display. | ○ | ○ | |
| DPR | DPR | Resets the still image repeat function. | ○ | ○ | |
| DW0 | # | Reduces the adjustment value by 10. | ○ | ○ | |
| DWn | # | Reduces the adjustment value by n (n = 1 to 9). | ○ | ○ | |
| DWF | # | Sets the adjustment value to the minimum value. | ○ | ○ | |
| **[E]** | | | | | |
| EDIS01 | DVI SELECT:PC | Sets the DVI SELECT setting to PC. | ○ | | |
| EDIS02 | DVI SELECT:VIDEO | Sets the DVI SELECT setting to VIDEO. | ○ | | |
| ENH | H. ENHANCE: *** | Adjusts H ENHANCE. | ○ | | ○ |
| ENV | V. ENHANCE: *** | Adjusts V ENHANCE. | ○ | | ○ |
| ESV | ENERGY SAVE: ******** | Displays the current ENERGY SAVE setting. | ● | | |
| ESVS00 | ENERGY SAVE: STANDARD | Sets the ENERGY SAVE setting to STANDARD. | ○ | | |
| ESVS01 | ENERGY SAVE: MODE1 | Sets the ENERGY SAVE setting to MODE 1 (energy saving). | ○ | | |
| ESVS02 | ENERGY SAVE: MODE2 | Sets the ENERGY SAVE setting to MODE 2 (energy saving). | ○ | | |
| ESVS03 | ENERGY SAVE: MODE3 | Sets the ENERGY SAVE setting to MODE 3 (long life). | ○ | | |
| ESVS04 | ENERGY SAVE: AUTO | Sets the ENERGY SAVE setting to AUTO. | ○ | | |
| **[F]** | | | | | |
| FCA | FAN: AUTO | Sets the fan rpm control to AUTO. | ○ | | |
| FCL | ######### | Displays the current FUNCTIONAL LOCK setting. | ● | | |
| FCLS00 | LOCK OFF | Clears the FUNCTIONAL LOCK. | ○ | | |
| FCLS01 | BUTTONS LOCK | Inhibits the main-control panel button control. | ○ | | |
| FCLS02 | IR LOCK | Inhibits remote-control button control. | ○ | | |
| FCLS03 | BUTTONS&IR LOCK | Inhibits both main-control panel and remote-control button control. | ○ | | |
| FCLS04 | MEMORY LOCK | Sets the MEMORY LOCK. | ○ | | |
| FCM | FAN: MAX | Sets the fan rpm control to maximum. | ○ | | |
| FDT | FUNCTION DEFAULT | Executes FUCNTION DEFAULT. | ● | | |
| FMK | SCREEN MASK: ##### | Displays the current SCREEN MASK setting. | ● | | |
| FMKS00 | SCREEN MASK: OFF | Sets the SCREEN MASK to OFF. | ○ | | |
| FMKS02 | SCREEN MASK: INVERSE | Sets the SCREEN MASK to INVERSE (negative-positive inversion). | ○ | | |
| FMKS03 | SCREEN MASK: WHITE | Turns ON the WHITE mask. | ○ | | |
| FMKS04 | SCREEN MASK: RED | Turns ON the RED mask. | ○ | | |
| FMKS05 | SCREEN MASK: GREEN | Turns ON the GREEN mask. | ○ | | |
| FMKS06 | SCREEN MASK: BLUE | Turns ON the BLUE mask. | ○ | | |
| FMKS07 | SCREEN MASK: YELLOW | Turns ON the YELLOW mask. | ○ | | |
| FRC | FRC: ##### | Displays the current FRC setting. | ● | | |
| FRCS01 | FRC: MODE1 | Sets FRC to MODE 1. | ○ | | |
| FRCS02 | FRC: MODE2 | Sets FRC to MODE 2. | ○ | | |
| FRCS03 | FRC: MODE3 | Sets FRC to MODE 3. | ○ | | |
| FRP | FRESH POSITION | Initializes the integrator and SCREEN adjustment values. | ○ | | |
| FXO | AUDIO OUT: FIX | Selects fixed audio output. | ○ | | |
| **[G]** | ## GET commands are valid in any state including STB (except for [GPI], [GPS], [GSS], [GWB]). | | | | |
| GHI | G HIGH: *** | Adjusts G HIGH. | ○ | | ○ |
| GLW | G LOW: *** | Adjusts G LOW. | ○ | | ○ |
| GPI | (GET PICTURE DATA) | Gets integrator PICTURE data. | ● | ● | |
| GPS | (GET POSITION DATA) | Gets integrator SCREEN data. | ● | ● | |

| Command name | AJY (232C integrator) Display | Remarks | RS-232C Adjustment Validity | Normal Validity | Numerical Direct Validity |
|---|---|---|---|---|---|
| GRA | GRADATION: ####### | Displays the current GRADATION setting | ● | | |
| GRAS01 | GRADATION: GAMMA 2.0 | Sets GRADATION to 'GAMMA 2.0'. | ○ | | |
| GRAS02 | GRADATION: GAMMA 1.8 | Sets GRADATION to 'GAMMA 1.8'. | ○ | | |
| GRAS03 | GRADATION: GAMMA 2.2 | Sets GRADATION to 'GAMMA 2.2'. | ○ | | |
| GRAS04 | GRADATION: DRE MID | Sets GRADATION to 'DRE MID'. | ○ | | |
| GRAS05 | GRADATION: DRE HIGH | Sets GRADATION to 'DRE HIGH'. | ○ | | |
| GRAS06 | GRADATION: DRE LOW | Sets GRADATION to 'DRE LOW'. | ○ | | |
| GRAS07 | GRADATION: HIGH CNT. | Sets GRADATION to 'HIGH CONTRAST'. | ○ | | |
| GSL | G SIDE MASK LEVEL: *** | Adjusts the GREEN side mask. | ○ | | ○ |
| GSO | (GET STATUS OPTIONDATA) | Gets OPTION data. | ● | ● | |
| GSS | (GET STATUS SETUP DATA) | Gets SETUP data. | ● | ● | |
| GST | (GET STATUS) | Gets STATUS. | ● | ● | |
| GWB | (GET WHITE BAL.DATA) | Gets integrator WHITE BALANCE data. | ● | ● | |
| **[H]** | | | | | |
| HPS | H. POSITION: *** | Adjusts the HORIZONTAL POSITION. | ○ | | ○ |
| HSI | H. SIZE:*** | Adjusts the HORIZONTAL SIZE. | ○ | | ○ |
| **[ I ]** | | | | | |
| IDC | ID CLEAR | Clears the ID. | ○ | | |
| DS | ID No.: ** | Sets the ID. | ○ | | ○ |
| IN1 | INPUT1 | Switches the main screen to INPUT1. | ○ | ○ | |
| IN2 | INPUT2 | Switches the main screen to INPUT2. | ○ | ○ | |
| IN3 | INPUT3 | Switches the main screen to INPUT3. | ○ | ○ | |
| IN4 | INPUT4 | Switches the main screen to INPUT4. | ○ | ○ | |
| IN5 | INPUT5 | Switches the main screen to INPUT5. | ○ | ○ | |
| INP | INPUT# | Displays the current input function for the main screen. | ● | ● | |
| INPS01 | INPUT1 | Switches the main screen to INPUT1. | ○ | ○ | |
| INPS02 | INPUT2 | Switches the main screen to INPUT2. | ○ | ○ | |
| INPS03 | INPUT3 | Switches the main screen to INPUT3. | ○ | ○ | |
| INPS04 | INPUT4 | Switches the main screen to INPUT4. | ○ | ○ | |
| INPS05 | INPUT5 | Switches the main screen to INPUT5. | ○ | ○ | |
| **[L]** | | | | | |
| LEN | FRONT INDICATOR: OFF | Turns OFF the front indicator. | ○ | | |
| LEY | FRONT INDICATOR: ON | Turns ON the front indicator. | ○ | | |
| LNN | LOUDNESS: OFF | Disables LOUDNESS. | ○ | ○ | |
| LNY | LOUDNESS: ON | Enables LOUDNESS. | ○ | ○ | |
| **[M]** | | | | | |
| MCD | COLOR DECODING: ****** | Displays the current COLOR DECODING. | ● | | |
| MCDS01 | COLOR DECODING: RGB | Sets COLOR DECODING to RGB (VIDEO). | ○ | | |
| MCDS02 | COLOR DECODING: COMPONENT1 | Sets COLOR DECODING to COMPONENT1 (Y CbCr). | ○ | | |
| MCDS03 | COLOR DECODING: COMPONENT2 | Sets COLOR DECODING to COMPONENT2 (Y PbPr). | ○ | | |
| MCN | MASK CONTROL: OFF | Turns OFF MASK CONTROL. | ○ | | |
| MCY | MASK CONTROL: ON | Turns ON MASK CONTROL. | ○ | | |
| MGF | ############## | Displays the 2 x 2 ON/OFF status. | ● | ● | |
| MGFS00 | 2 x 2: OFF | Turns OFF 2 x 2 (4-screen multi). | ○ | ○ | |
| MGFS01 | 2 x 2: ON | Turns ON 2 x 2 (4-screen multi). | ○ | ○ | |
| MGP | ############## | Displays the current 2 x 2 seam-consideration/magnification position. | ● | | |
| MGPS01 | 2 x 2 NORMAL UP LEFT | Sets 2 x 2 to upper left (no seam consideration). | ○ | | |
| MGPS02 | 2 x 2 NORMAL DOWN LEFT | Sets 2 x 2 to lower left (no seam consideration). | ○ | | |
| MGPS03 | 2 x 2 NORMAL UP RIGHT | Sets 2 x 2 to upper right (no seam consideration). | ○ | | |
| MGPS04 | 2 x 2 NORMAL DOWN RIGHT | Sets 2 x 2 to lower right (no seam consideration). | ○ | | |
| MGPS05 | 2 x 2 ADJUSTED UP LEFT | Sets 2 x 2 to upper left (seam consideration). | ○ | | |
| MGPS06 | 2 x 2 ADJUSTED DOWN LEFT | Sets 2 x 2 to lower left (seam consideration). | ○ | | |
| MGPS07 | 2 x 2 ADJUSTED UP RIGHT | Sets 2 x 2 to upper right (seam consideration). | ○ | | |
| MGPS08 | 2 x 2 ADJUSTED DOWN RIGHT | Sets 2 x 2 to lower right (seam consideration). | ○ | | |

## RS-232C Adjustment Mode

| Command name | AJY (232C integrator) Display | Remarks | RS-232C Adjustment Validity | Normal Validity | Numerical Direct Validity |
|---|---|---|---|---|---|
| MIR | MIRROR MODE: ### | Displays the current MIRROR MODE setting. | ● | | |
| MIRS00 | MIRROR MODE: OFF | Turns the MIRROR MODE OFF (normal display). | ○ | | |
| MIRS01 | MIRROR MODE: X | Sets the MIRROR MODE to left-right reversal. | ○ | | |
| MIRS02 | MIRROR MODE: Y | Sets the MIRROR MODE to up-down reversal. | ○ | | |
| MIRS03 | MIRROR MODE: XY | Sets the MIRROR MODE to up-down, left-right reversal. | ○ | | |
| MNR | MPEG NR: ###### | Displays the current MPEG NR setting. | ● | | |
| MNRS00 | MPEG NR: OFF | Turns MPEG NR OFF. | ○ | | |
| MNRS01 | MPEG NR: LOW | Sets MPEG NR to LOW. | ○ | | |
| MNRS02 | MPEG NR: MIDDLE | Sets MPEG NR to MIDDLE. | ○ | | |
| MNRS03 | MPEG NR: HIGH | Sets MPEG NR to HIGH. | ○ | | |
| MSC | ########## | Displays multi-screen ON/OFF. | ● | ● | |
| MSCS00 | MULTISCREEN: OFF | Turns the multi-screen OFF. | ○ | ○ | |
| MSCS01 | MULTISCREEN: ON | Turns the multi-screen ON. | ○ | ○ | |
| MST | ########## | Displays the current multi-screen type. | ● | ● | |
| MSTS01 | 2-SCREEN | Sets multi-screen to 2-SCREEN. | ○ | ○ | |
| MSTS02 | PinP DOWN RIGHT | Sets multi-screen to PinP (lower right). | ○ | ○ | |
| MSTS03 | PinP UP RIGHT | Sets multi-screen to PinP (upper right). | ○ | ○ | |
| MSTS04 | PinP UP LEFT | Sets multi-screen to PinP (upper left). | ○ | ○ | |
| MSTS05 | PinP DOWN LEFT | Sets multi-screen to PinP (lower left). | ○ | ○ | |
| MSTS06 | PoutP | Sets multi-screen to PoutP. | ○ | ○ | |
| MTN | VIDEO MUTING: OFF | Turns OFF video muting. | ● | ● | |
| MTY | VIDEO MUTING: ON | Turns ON video muting. | ● | ● | |
| **[O]** | | | | | |
| OMN | ORBITER: OFF | Turns ORBITER OFF. | ○ | | |
| OMY | ORBITER: ON | Turns ORBITER ON. | ○ | | |
| **[P]** | | | | | |
| PLN | BRIGHT ENHANCE: OFF | Turns the center brightness enhancement OFF. | ○ | | |
| PLY | BRIGHT ENHANCE: ON | Turns the center brightness enhancement ON. | ○ | | |
| POF | – | Power OFF | ○ | ○ | |
| PON | – | Power ON | | ○ | |
| PUC | PURECINEMA: ###### | Displays the current PURECINEMA setting. | ● | | |
| PUCS00 | PURECINEMA: OFF | Turns PURECINEMA OFF. | ○ | | |
| PUCS01 | PURECINEMA: STANDARD | Sets PURECINEMA to STANDARD. | ○ | | |
| PUCS02 | PURECINEMA: ADVANCE | Sets PURECINEMA to ADVANCED. | ○ | | |
| **[R]** | | | | | |
| RHI | R HIGH: *** | Adjusts R. HIGH. | ○ | | ○ |
| RLW | R LOW: *** | Adjusts R. LOW. | ○ | | ○ |
| RSL | R SIDE MASK LEVEL: *** | Adjusts the RED side mask. | ○ | | ○ |
| **[S]** | | | | | |
| SFT | SIGNAL FORMAT: #### | Displays the current SIGNAL FORMAT. | ● | | |
| SFTS01 | SIGNAL FORMAT: VGAorXGAorSXGAor720PC | Sets the SIGNAL FORMAT to PC FORMAT 1 (VGA or XGA or SXGA or 720PC). | ○ | | |
| SFTS02 | SIGNAL FORMAT: WVGAorWXGAorSXGA+ | Sets the SIGNAL FORMAT to PC FORMAT 2 (WVGA or WXGA or SXGA+). | ○ | | |
| SFTS03 | SIGNAL FORMAT: VIDEO 525p or VIDEO 750p | Sets the SIGNAL FORMAT to VIDEO 525p or VIDEO 750p. | ○ | | |
| SFTS04 | SIGNAL FORMAT: PC AUTO | Sets the SIGNAL FORMAT to PC AUTO. | ○ | | |
| SHP | SHARPNESS: *** | Adjusts the SHARPNESS. | ○ | | ○ |
| SIM | SIDE MASK MODE: ###### | Displays the current side mask setting. | ● | | |
| SIMS01 | SIDE MASK MODE: NORMAL | Sets the side mask setting to normal. | ○ | | |
| SIMS02 | SIDE MASK MODE: OVERLAY1 | Sets the side mask setting to OVERLAY1. | ○ | | |
| SIMS03 | SIDE MASK MODE: OVERLAY2 | Sets the side mask setting to OVERLAY2. | ○ | | |
| SLN | – | Turns the STILL setting to OFF. | | ○ | |
| SLY | STILL | Turns the STILL setting to ON. | | ○ | |

| Command name | AJY (232C integrator) Display | Remarks | RS-232C Adjustment Validity | Normal Validity | Numerical Direct Validity |
|---|---|---|---|---|---|
| SSI | ######### | Displays the current sub screen input function. | ● | ● | |
| SSIS01 | INPUT1(SUB) | Switches the sub screen to INPUT1. | ○ | ○ | |
| SSIS02 | INPUT2(SUB) | Switches the sub screen to INPUT2. | ○ | ○ | |
| SSIS03 | INPUT3(SUB) | Switches the sub screen to INPUT3. | ○ | ○ | |
| SSIS04 | INPUT4(SUB) | Switches the sub screen to INPUT4. | ○ | ○ | |
| SSIS05 | INPUT5(SUB) | Switches the sub screen to INPUT5. | ○ | ○ | |
| STD | STANDARD W/B | Returns the integrator PICTURE and WHITE BALANCE to the factory settings. | ○ | | |
| SVL | SUB VOLUME: *** | Adjusts the sub volume. | ○ | | ○ |
| SZM | ######## | Displays the current screen size setting. | ● | ● | |
| SZMS00 | Dot by Dot or PARTIAL | Sets the screen size to Dot by Dot or PARTIAL. | ○ | ○ | |
| SZMS01 | 4 : 3 | Sets the screen size to 4:3. | ○ | ○ | |
| SZMS02 | FULL or FULL1080i | Sets the screen size to FULL or FULL1080i. | ○ | ○ | |
| SZMS03 | ZOOM | Sets the screen size to ZOOM. | ○ | ○ | |
| SZMS04 | CINEMA | Sets the screen size to CINEMA. | ○ | ○ | |
| SZMS05 | WIDE | Sets the screen size to WIDE. | ○ | ○ | |
| SZMS08 | FULL1035i | Sets the screen size to FULL1035i. | ○ | ○ | |
| SZMS09 | UNDERSCAN | Sets the screen size to UNDERSCAN. | ○ | | |
| **[T]** | | | | | |
| TNT | TINT: *** | Adjusts the TINT. | ○ | | ○ |
| **[U]** | | | | | |
| UP0 | # | Adds 10 to the adjustment value. | ○ | ○ | |
| UPn | # | Adds n to the adjustment value (n = 1 to 9). | ○ | ○ | |
| UPF | # | Sets the adjustment value to maximum. | ○ | ○ | |
| USC | UNDERSCAN: *** | Displays the current UNDERSCAN setting. | ○ | | |
| USCS00 | UNDERSCAN: OFF | Turns the UNDERSCAN setting OFF. | ○ | | |
| USCS01 | UNDERSCAN: ON | Turns the UNDERSCAN setting ON. | ○ | | |
| **[V]** | | | | | |
| VOL | VOLUME: *** | Adjusts the audio volume. | ○ | ○ | ○ |
| VPS | V. POSITION: *** | Adjusts the V POSITION. | ○ | | ○ |
| VRO | AUDIO OUT VARIABLE | Selects variable audio output. | ○ | | |
| VSI | V. SIZE: *** | Adjusts V. SIZE. | ○ | | ○ |

### 1.6 GET Commands

What are GET commands?

- GET commands are for outputting TXD such as adjustment data from the internal microcomputer of the plasma display to a PC.
- Adjustment data and other information is output as ASCII code.

**Note** Command names are given inside brackets < >.

- Data output format

| STX (02hex) | Data | Data | .... | Data | Checksum | ETX (03hex) |
|---|---|---|---|---|---|---|

**Notes**

- A GET command is invalid when no ID is assigned to the set.
- A GET command is invalid when a wildcard (*) is used as par of the ID when sending the command.

**1) <GST> (GET STATUS)**

| Order | Data Contents | Size | Remarks |
|---|---|---|---|
| 1 | Display data | 3 Byte | See below |
| 2 | Power data | 3 Byte | See below (The third character is sub input.) |
| 3 | Input function data (main) | 3 Byte | Input data when GST is received (INPUT1 to 5 is displayed as IN1 to 5.) |
| 4 | Input function data (sub) | 3 Byte | Sub input data when GST is received Note 3)<br>(INPUT 1 to 5 is displayed as IN1 to 5.) |
| 5 | Screen size data | 1 Byte | See below |
| 6 | 2-screen display | 1 Byte | 0: OFF (1 screen) 1: 2-SCREEN 2: PinP (lower right)<br>3: PinP (upper right) 4: PinP (upper left) 5: PinP (lower left)<br>6: PoutP |
| 7 | FUNCTIONAL LOCK data | 1 Byte | 0: LOCK OFF 1: BUTTONS LOCK 2: IR LOCK<br>3: IR&BUTTONS LOCK 4: MEMORY LOCK |
| 8 | Dummy data | 3 Byte | (3-digit number) |
| 9 | Temperature data 2 | 3 Byte | (Internal temperature: Reference value) °C Note 1) |
| 10 | Temperature data 3 | 3 Byte | (External temperature: Reference value) °C Note 1) |
| 11 | Serial | 15 Byte | |
| 12 | Dummy data | 3 Byte | (3-digit number) |
| 13 | Dummy data | 3 Byte | |
| 14 | HOURMETER | 5 Byte | Displays the time. |
| 15 | Check sum | 2 Byte | |

| | | |
|---|---|---|
| Display data | First character | Generation data: 4 (fixed) |
| | Second character | Inch data: 4 (43 inch), 5 (50 inch) |
| | Third character | Destination data: M (fixed) |
| Power data | First character | Power state & signal state |
| | Second character | PN (POWER ON & normal signal input)<br>PL (POWER ON & no input)<br>PO (POWER ON & OUT OF RANGE signal input)<br>SN (Normal standby)<br>SW (Standby by POWER MANAGMENT)<br>SS (Standby by SD or PD) |
| | Third character | Sub input signal state during multi-screen display Note 2)<br>N (Normal signal input) L (No input)<br>O (OUT OF RANGE signal input) |
| Screen size data | First character | 0; Dot by Dot or PARTIAL 1; 4 : 3 2; FULL or FULL1080i<br>3; ZOOM 4;CINEMA 5;WIDE 8;FULL1035i 9; UNDERSCAN |

NOTE 1) During Standby and immediately after POWER ON, the proper value is not output. If this occurs, wait a moment after POWER ON then 'get' the data. The temperature data is output as a reference (the values are not guaranteed values). Normally, refer to temperature data 3.

NOTE 2) During Standby and during 1-screen display, the unit outputs dummy data (symbol).

NOTE 3) During Standby and during 1-screen display the unit outputs values stored in the product's memory.

**2) <GPI> (GET PICTURE DATA: Gets integrator/PICTURE data.)**

| Order | Data contents | Size | Remarks |
|---|---|---|---|
| 1 | CONTRAST | 3 Byte | # |
| 2 | BRIGHTNESS | 3 Byte | # |
| 3 | C. DETAIL R (RED) | 3 Byte | # |
| 4 | C. DETAIL Y (YELLOW) | 3 Byte | # |
| 5 | C. DETAIL G (GREEN) | 3 Byte | # |
| 6 | C. DETAIL C (CYAN) | 3 Byte | # |
| 7 | C. DETAIL B (BLUE) | 3 Byte | # |
| 8 | C. DETAIL M (MAGENTA) | 3 Byte | # |
| 9 | H.ENHANCE | 3 Byte | Outputs dummy data for a video signal. # |
| 10 | V.ENHANCE | 3 Byte | Outputs dummy data for a video signal. # |
| 11 | COLOR | 3 Byte | Outputs dummy data for a PC signal. # |
| 12 | TINT | 3 Byte | Outputs dummy data for a PC signal. # |
| 13 | SHARPNESS | 3 Byte | Outputs dummy data for a PC signal. # |
| 14 | Input function data (main) | 3 Byte | |
| 15 | Screen size data | 1 Byte | |
| 16 | Check sum | 2 Byte | |

• 7 and 8 output the same contents as GST items 3 and 5.
• When the type of # signal is not set, dummy data is output.

**3) <GWB> (GET WHITE BAL. DATA: Gets integrator/WHITE BAL. data.)**

| Order | Data contents | Size | Remarks |
|---|---|---|---|
| 1 | R.HIGH | 3 Byte | # |
| 2 | G.HIGH | 3 Byte | # |
| 3 | B.HIGH | 3 Byte | # |
| 4 | R.LOW | 3 Byte | # |
| 5 | G.LOW | 3 Byte | # |
| 6 | B.LOW | 3 Byte | # |
| 7 | Input function data (main) | 3 Byte | |
| 8 | Screen size data | 1 Byte | |
| 9 | Check sum | 2 Byte | |

• 7 and 8 output the same contents as GST items 3 and 5.
• When the type of # signal is not set, dummy data is output.

**4) <GPS> (GET POSITION DATA: Gets integrator/SCREEN data.)**

| Order | Data contents | Size | Remarks |
|---|---|---|---|
| 1 | H.POSITION | 3 Byte | # |
| 2 | V.POSITION | 3 Byte | # |
| 3 | H.SIZE | 3 Byte | # |
| 4 | V.SIZE | 3 Byte | # |
| 5 | CLOCK | 3 Byte | Outputs dummy data for PC digital and Video signal. # |
| 6 | PHASE | 3 Byte | Outputs dummy data for PC digital and Video signal. # |
| 7 | Input function data (main) | 3 Byte | |
| 8 | Screen size data | 1 Byte | |
| 9 | Check sum | 2 Byte | |

• 7 and 8 output the same contents as GST items 3 and 5.
• When the type of # signal is not set, dummy data is output.

**5) <GSS> (GET STATUS SETUP: Gets menu and integrator SETUP data.)**

| Order | Data contents | Size | Output | Remarks |
|---|---|---|---|---|
| 1 | GRADATION | 1 Byte | 1: GAMMA 2.0 2: GAMMA 1.8<br>3: GAMMA 2.2 4: DRE MID<br>5: DRE HIGH 6: DRE LOW<br>7: HIGH CNT. | # |
| 2 | BRT.ENHANCE | 1 Byte | 0: OFF 1: ON | # |
| 3 | SUB VOLUME | 2 Byte | 00 to 20 | |
| 4 | COLOR TEMP. | 1 Byte | 1: LOW 2: MID LOW<br>3: MIDDLE 4: MID HIGH<br>5: HIGH | # |
| 5 | DNR | 1 Byte | 0: OFF 1: LOW<br>2: MIDDLE 3: HIGH | # |
| 6 | MPEG NR | 1 Byte | 0: OFF 1: LOW<br>2: MIDDLE 3: HIGH | # |
| 7 | CTI | 1 Byte | 0: OFF 1: ON | # |
| 8 | PURECINEMA | 1 Byte | 0: OFF 1: STANDARD<br>2: ADVANCE | # |
| 9 | COLOR DECODING | 1 Byte | 1: RGB 2: COMPONENT1<br>3: COMPONENT2 | # |
| 10 | COLOR SYSTEM | 1 Byte | 1: AUTO 2: NTSC 3: PAL<br>4: SECAM 5: 4.43NTSC<br>6: PAL M 7: PAL N | # |
| 11 | SIGNAL FORMAT | 3 Byte | | # See below |
| 12 | Dummy data | 3 Byte | | |
| 13 | Input function data (main) | 3 Byte | | |
| 14 | Screen size data | 1 Byte | | |
| 15 | Check sum | 2 Byte | | |

| | | |
|---|---|---|
| SIGNAL FORMAT | S01 ..... | VGA or XGA or SXGA or 720-PC<br>(720-PC can be selected only when a video card is installed) |
| | S02 ..... | WVGA or WXGA or SXGA+ |
| | S03 ..... | 525p or 750p (either can be selected when a video card is installed) or PC AUTO |
| | *** ..... | Dummy data is output if other than those above. |

- 13 and 14 output the same contents as GST items 3 and 5.
- Dummy data is sent if the signal type is incorrect. This command depends upon the type of # signal.

**6) <GSO> (GET STATUS OPTION: Gets menu and integrator OPTION data.)**

| Order | Data contents | Size | Output | Remarks |
|---|---|---|---|---|
| 1 | ENERGY SAVE | 1 Byte | 1: STANDARD 2: MODE 1<br>3: MODE 2 4: MODE 3<br>5: AUTO | |
| 2 | ORBITER | 1 Byte | 0: OFF 1: ON | |
| 3 | MASK CONTROL | 1 Byte | 0: OFF 1: ON | |
| 4 | AUDIO OUT | 1 Byte | 1: FIXED 2: VARIABLE | |
| 5 | SCREEN MASK | 1 Byte | 0: OFF<br>2: INVERSE 3: WHITE<br>4: RED 5: GREEN<br>6: BLUE 7: YELLOW | |
| 6 | SIDE MASK MODE | 1 Byte | 1: NORMAL 2: OVERLAY1<br>3: OVERLAY2 | |
| 7 | R SIDE MASK LEVEL | 3 Byte | 000 to 255 | |
| 8 | G SIDE MASK LEVEL | 3 Byte | 000 to 255 | |
| 9 | B SIDE MASK LEVEL | 3 Byte | 000 to 255 | |
| 10 | 2 x 2 | 1 Byte | 0: OFF 1: ON | |
| 11 | 2 x 2 LAYOUT & TYPE | 1 Byte | 1: NORMAL&UP LEFT<br>2: NORMAL&DOWN LEFT<br>3: NORMAL&UP RIGHT<br>4: NORMAL&DOWN RIGHT<br>5: ADJUSTED&UP LEFT<br>6: ADJUSTED&DOWN LEFT<br>7: ADJUSTED&UP RIGHT<br>8: ADJUSTED&DOWN RIGHT | |
| 12 | MIRROR MODE | 1 Byte | 0: OFF 1: X 2: Y 3: XY | |
| 13 | OSD | 1 Byte | 0: OFF 1: ON | |
| 14 | FRONT INDICATOR | 1 Byte | 0: OFF 1: ON | |
| 15 | FAN CONTROL | 1 Byte | 1: AUTO 2: MAX | |
| 16 | COLOR MODE | 1 Byte | 1: NORMAL 2: STUDIO | |
| 17 | PRO USE UNDERSCAN | 1 Byte | 0: OFF 1: ON | |
| 18 | PRO USE COLOR OFF | 1 Byte | 0: DISABLE 1: ENABLE | |
| 19 | FRC | 1 Byte | 1: MODE1 2: MODE2<br>3: MODE3 | |
| 20 | Dummy data | 3 Byte | | |
| 21 | Input function data (main) | 3 Byte | | |
| 22 | Screen size data | 1 Byte | | |
| 23 | Check sum | 2 Byte | | |
| | Total | 34 Byte | | |

• 21 and 22 output the same contents as GST items 3 and 5.

### ■ Check Sum

The Check Sum is data to which 2-Byte ASCII code is added to a data group that is returned by a GET command.

PC side

| STX | ID | GET command | ETX |
|---|---|---|---|
| 02 (hex) | 2 Byte | 3 Byte | 03 (hex) |

Set side

| STX | GET command | Data | Check sum | ETX |
|---|---|---|---|---|
| 02 (hex) | 3 Byte | *Byte | 2 Byte | 03 (hex) |

Example) Check Sum value that is added when the GET command [GAA] returns the following 6-Byte data

Data group (ASCII) + check sum

| GET command | Data (6 Byte) | Check sum |
|---|---|---|
| GAA | 100128 | xx (before calculation) |

↓

The data group is put into binary code one character at a time then displayed. Only the last two digits are displayed.

47 41 41 31 30 30 31 32 38

when these values are added the result is 1F5 (hex)

↓

xx, where xx is 0B (hex), is added to 1F5 so the last two digits are 00 (in this case 200)

↓

as the data format, OB is converted to ASCII code and sent

↓

The following data is output from the plasma display side.

| STX | GET command | Data | Check sum | ETX |
|---|---|---|---|---|
| 02 (hex) | GAA | 100128 | 0B | 03 (hex) |

***The returned data group is in capital English letters. Please keep this in mind when introducing it into the binary code.***

### ■ Examples of check sum applications

Example 1) When the data is missing 1 Byte

| STX | GET command | Data | Check sum | ETX |
|---|---|---|---|---|
| 02 (hex) | GAA | 100 (missing data) 28 | 0B | 03 (hex) |

47 41 31 30 30 32 38

data group is calculated according to rules set by a PC application when these values are added, the result is 1C4 (hex)

↓

value xx, where xx is 3C (hex), is added to 1C4 such that the last two digits are 00 (in this case 200)

↓

check sum [OB (hex)] and the calculated [3C (hex)] do not match

↓

Since they do not match, the PC application repeats the GET command and retrieves the data again.

Example 2) When 1 Byte of data in the data is unreadable

| STX | GET command | Data | Check sum | ETX |
|---|---|---|---|---|
| 02 (hex) | GAA | 100328 | 0B | 03 (hex) |

47 41 31 30 33 30 32 38

data group is calculated according to rules by a PC application when these values are added, the result is 1F7 (hex)

↓

value xx, where xx is 09 (hex), is added to 1F7 such that the last two digits are 00 (in this case 200)

↓

check sum [OB (hex)] and the calculated [09 (hex)] do not match.

↓

Since they do not match, the PC application repeats the GET command and retrieves the data again.

## 2.0 Screen Burning

When the same image is shown for a long time (still image, telop, etc.), the image is burned into to screen and may not be able to be removed. Manage this situation by making necessary changes in the video software, projection method, system configuration, etc.
This display panel has a function to reduce and/or prevent this issue.

■ **Menu mode**

① Mask Control Setting (refer to section 5.3.4, “Adjustment and setting in the Menu Mode; 15) Mask Control Setting" (pg. 174).
When the power is turned ON, the internal microcomputer moves the screen border or screen display position horizontally and vertically.

**Note** Limited to 4:3 screen mode, DOT BY DOT mode, or multi-screen (2-screen mode, PinP mode, PoutP mode).

② ENERGY SAVE setting (Refer to section 5.3.4, “Adjustment and setting in the Menu Mode; 12) Energy saving Setting" (pg. 170).
The screen brightness is controlled by a combination of the input signal and the brightness of the room.

③ ORBITER Setting (Refer to section 5.3.4, “Adjustment and setting in the Menu Mode; 14) Orbiter Setting" (pg. 174).
The display position of the screen is moved horizontally and vertically approximately every eight (8) minutes.

■ **Integrator Mode**

① SCREEN MASK Setting (refer to section 5.4.3, “Adjustment and setting in the Integrator Mode; 8) SCREEN MASK Setting" (pg. 193).
An inverse or full mask signal is display on the screen.
When edging is properly performed beforehand using a full mask, it becomes more difficult for the screen to eperience burning.
Using an inverse signal may be an emergency measure when the screen is burned while displaying a still image; however, it is not possible to remove the burned image completely.

② SIDE MASK Setting (refer to section 5.4.3, “Adjustment and setting in the Integrator Mode; 9) SIDE MASK Setting" (pg. 194).
This setting adjusts the displaying method and the signal level of the SIDE MASK signal

■ **Menu Mode and Integrator Mode**

① SCREEN MANAGEMENT Setting (refer to section 5.3.4, “Adjustment and setting in the Menu Mode; 13) Screen Management Setting" (pg. 172) and section 5.4.3, “Adjustment and setting in the Integrator Mode; 7) SCREEN MANAGEMENT Setting" (pg. 190).
The content of the screen display changes on a 24-hour cycle, according to the conditions.

■ **Standard Functions (Settings cannot be changed)**

① Auto Brightness Adjustment (still image detection)
When an image that has little or no motion, such as a photograph or computer screen, is displayed for a long time, the screen may seem to dim. This is a function to protect the plasma panel display. The dsplay automatically adjusts the brightness and protects the screen when an image with little motion is detected. This adjustment triggers after an image with little to no motion has been detected for three (3) minutes.

**Note** The setting is a built-in feature and is not found in the menu. The setting cannot be changed.

## 3.0 Precautions on Connecting Camera Images

Connecting and using moving images that are nearly still, such as images from a surveillance camera, could damage the panel, reduce the life, or be the cause of other malfunctions.
In this case, it is necessary to set the image quality beforehand.
For instructions on setting the image quality, contact your PIONEER representative.
Pioneer recommends that the ‘ENERGY SAVE’ mode be set to ‘MODE2’ or ‘MODE3’.

## 4.0 Precautions

1) If the power shuts down and stays OFF for a long period of time, an internal problem may have occurred (broken part, etc.).
   Turn OFF the main power switch on the plasma display then wait 1 to 2 minutes and try turning the power ON again.
   If the power goes OFF again, the display requires service.
   If the display operates normally, continue to use it.

2) When an image (still image, telop, etc.) is shown on the screen for a long period, there is a possibility that the image could be burned in (not able to be removed). Manage this situation by making necessary changes in the video software, projection method, system configuration, etc.

3) The following kinds of input signals could cause inferior image quality.
   - Video signal that has been dubbed (copied) repeatedly
   - Copyright-protected video signals
   - Scrambled cable TV signals
   - Signals with a sync signal and video signal that are extremely out of phase

4) The fan starts operating when the surrounding temperature is greater than 35 °C. The fan's rpm becomes faster as the temperature increases; this is normal.

5) Screen-saver function (still image detection)
   When an image having little to no motion such as a photograph or PC screen is displayed continuously, the brightness slightly drops. To protect the plasma panel, the screen-saver function detects images with little to no motion then automatically adjusts the brightness. This dimming is not an indication that the panel is failing.
   Time until the screen-saver function operates:
   - Normal-operation mode/menu mode: Approximate 3 minutes after the power is turned ON or after the input is switched.

### ■ Self-diagnosis Function

When there is an connection or operation error, a message displays on the screen. After reading the contents of the error message, refer to the chart below before checking the unit.

| Error Message | Remedy |
|---|---|
| CAUTION<br>OUT OF RANGE or<br>CAUTION<br>UNSUPPORTED SIGNAL or<br>SIGNAL NG | ● The current signal input is not supported by the unit. Check the table of supported input signals on pages 140 - 145 and change the output signal setting.<br>● The current signal input is not supported when FRC is set to MODE2 or MODE3. Check the FRC settings on page 208. |
| WARNING<br>THERMAL ALERT<br>SHUT DOWN (**) | ● Turn OFF the main power.<br>● Check whether the surrounding temperature is high.<br>● If the cooling vents on the display are blocked, remove the obstacles blocking the vents. |
| WARNING<br>FAN FAILURE<br>SHUT DOWN (**) | ● There is a problem with the fan. Immediately turn OFF the power and contact the Pioneer service center or dealer. |
| ERROR<br>INVALID KEY ENTRY | ● An invalid operation was attempted. Check the input signals, connections and settings. |
| SHUT DOWN (**) | ● Turn the main power OFF, wait 1 or 2 minutes and turn the power ON again. If the problem still persists, remove the power plug from the outlet and contact a Pioneer service center or dealer. |

(**): Numbers are displayed here.

# Maintenance

**1) Always unplug the power cord from the power outlet before performing maintenance.**

**2) Cabinet and Remote-control Unit**

Never use solvents such as benzene or thinner to clean the unit. Using such solvents could cause the cabinet and remote control coating to degrade and peal.

Wipe the cabinet and remote control with a soft cloth. If there is heavy soiling, dip a soft cloth in clean water mixed with a mild detergent. Ring out the water well then wipe soiled areas. Finish by absorbing any moisture with a soft, dry cloth.

**3) Screen (front protection panel)**

The screen (front protection panel) is treated with a special coating to prevent glare and is very delicate. To clean it, gently wipe with a soft cloth to remove any dust. Do not clean the front screen with a tissue or rough cloth. Also, absolutely do NOT use solvents such as benzene or thinner to clean the screen. The front panel could become transparent or discolored.

The following cleaning cloths and cleaning liquid are recommended.

| Name | Part Number |
|---|---|
| Cleaning cloth: Wiping cloth | AED1197 |
| Cleaning cloth: Minimax | GED-009 |
| Cleaning liquid: B4 | GEM1004 |

In the case of light soiling, remove the dust then gently wipe with a Minimax cloth. In the case of heavy soiling, remove the dust then apply a small amount of B4 cleaning liquid to a small area of the Minimax cloth and clean again. If the B4 is left on the screen, the surface may become uneven. After the B4 has dried, wipe the screen with a dry Minimax cloth.

**4) Vents**

Dust should be removed from the cooling vents on the sides and rear of the unit and in the fan installation area once a month with a vacuum cleaner set on LOW. The main power switch must be turned OFF before cleaning the vents. Using the unit with accumulated dust causes the internal temperature to rise and could cause fire or other electrical problems.

**5) Readjustment of the White Balance**

This unit uses phosphor elements as in a CRT display. Phosphor degrades over time, reducing the brightness. Since, green and blue phosphor elements degrade faster than red, Pioneer recommends readjusting the white balance every 1000 hours.

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Pioneer sound.vision.soul

# RS-232 Command Reference Manual

For **PIONEER PDP-505CMX** Plasma Display Panel

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