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# **PDP-504CMX**

**Plasma Display Panel**

**RS-232C Commands**

## **COMMAND PROTOCOL MANUAL**

Manual Version 1.00

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Pioneer Corporation  
Pioneer Electronics (USA) Inc.  
Industrial Solutions Business Group

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## RS-232C Adjustment Mode

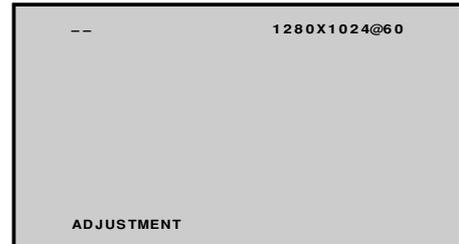
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### 5.5 RS-232C Adjustment Mode

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

#### 5.5.1 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').
- 2) Display screen in the RS-232C adjustment mode:
  - The screen is as shown in the figure on the right.  
The set ID is display in the '-- --' area at the upper left part of the screen.



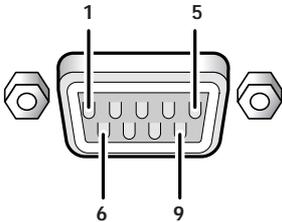
#### Notes

- (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'.**
- (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'.
- (3) Of the adjustment values and setting items set by RS-232C commands, there are some items that are stored in memory and some that are not. For details, refer to section 5.5.5, 'List of RS-232C Commands'. Also, when storing values in last memory, the conditions described in section 5.1.5, 'Last Memory', must be satisfied.
- (4) <DIN>/<DIY> (OSD display disable/enable setting)  
Regardless of the setting, the following items can be displayed.
  - 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) Before entering the RS-232C adjustment mode, be sure to cancel the integrator mode.
- (6) When performing control using the RS-232C commands, not only control the input signal, but also be sure to control the power. If the power is ON when there is no signal, the display continues to have a weak discharge, which could affect the life of the display.

5.5.2 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                 |         |                       |



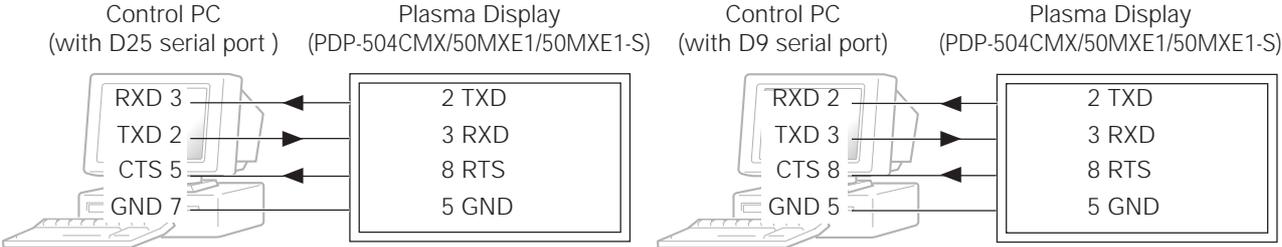
- 3) Baud Rate  
9600 bps (standard)  
(switch-able to 1200, 2400, 4800, 19200, 38400 bps)

**Note**

The baud rate of this display should be set to match the baud rate of the PC.  
Also, when the RS-232C cable is to be extended over a long distance, a slower baud rate is recommended.

- 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 non-corresponding command, 'ERR' is returned.

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

When it is determined that 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) |
|--------------|--------------|--------------|

## RS-232C Adjustment Mode

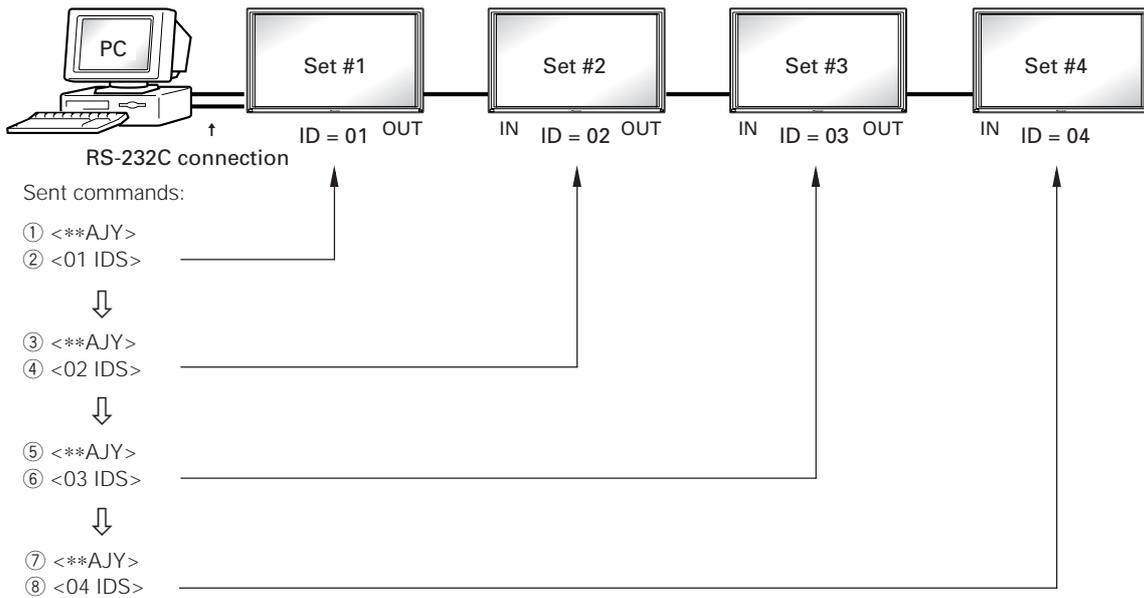
### 5.5.3 ID Assignment

After connecting to the PC, an ID is assigned. The ID is assigned from the PC.

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)

First, as shown in the example in the figure below, perform an RS-232C connection and combination connection. (Refer to section 5.5.4, 'Combination Connection'.)



By sending RS-232C commands in this order, it is possible to assign an ID for each set.

Sets for which an ID has been set can only receive commands with an ID attached. Attach an ID before sending a command.

Characters that can be used for assigning an ID include, 0 - 9 and A - F (there is not distinction between upper case and lower case alphabet characters).

An \* (asterisk) can be used as follows:

- <\*\*\*IDC>: Clear the IDs assigned for all sets.
- <\*1AJY>: Only a set for which the second digit is 1, enters the RS-232C adjustment mode.
- <2\*IN1>: The input of only a set for which the first digit is 2 is set to INPUT1.

### Precautions when assigning IDs

Sets that were connected after a set whose ID was cleared cannot be operated with RS-232C commands.

After performing setting as shown in the figure above, when <\*\*\*AJY> → <\*\*\*IDC> is performed, the IDs for all the sets from Set #1 to Set #4 are cleared, and only the one set (Set #1) that is directly connected to the PC can be controlled.

Furthermore, by performing <\*\*\*AJY> → <01 IDS>, it becomes possible to control the second set (Set #2). By setting IDs in the same way for the other sets, it becomes possible to control the sets connected in succession.

#### Note

When the IDs are set, and when one or both of the IDs before a command is sent from the PC is \*, there is no echo back. When sending more commands, wait 6 seconds before sending the next command.

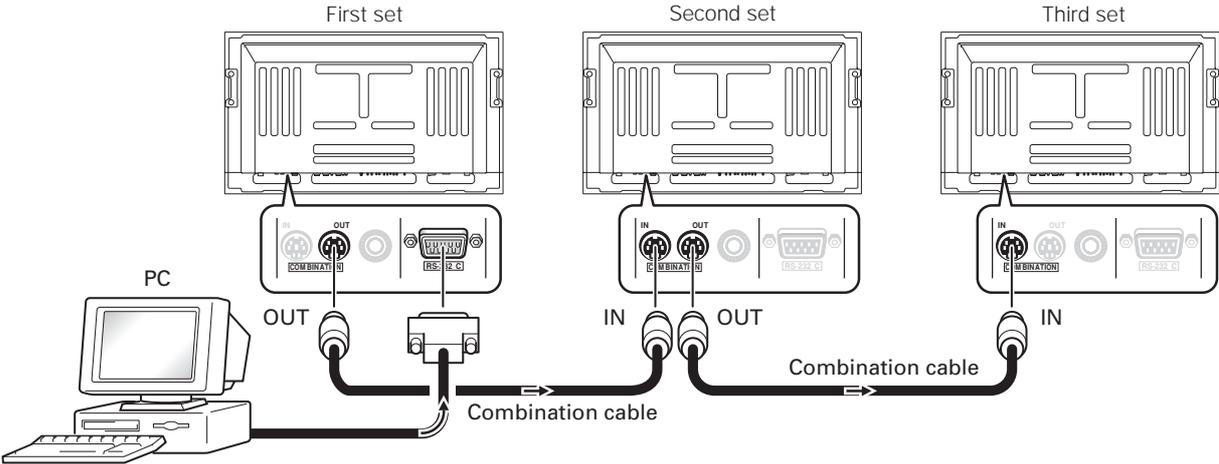
**Example)** When \*\*OOO and \*1OOO or 1\*OOO (OOO is the command) are sent from the PC, operation is performed, but there is no echo back.

5.5.4 Combination Connection

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

Connection method:

Connect the sets as shown in the figure below, and perform control and adjustment with the PC.



**Note**  
Only the combination IN terminal or RS-232C terminal can be used at the same time on one set. Connecting them at the same time could cause erroneous operation or be the cause of trouble, so do not connect them at the same time. Also, do not connect pair of combination IN terminals or combination OUT terminals. Doing so could cause trouble.

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

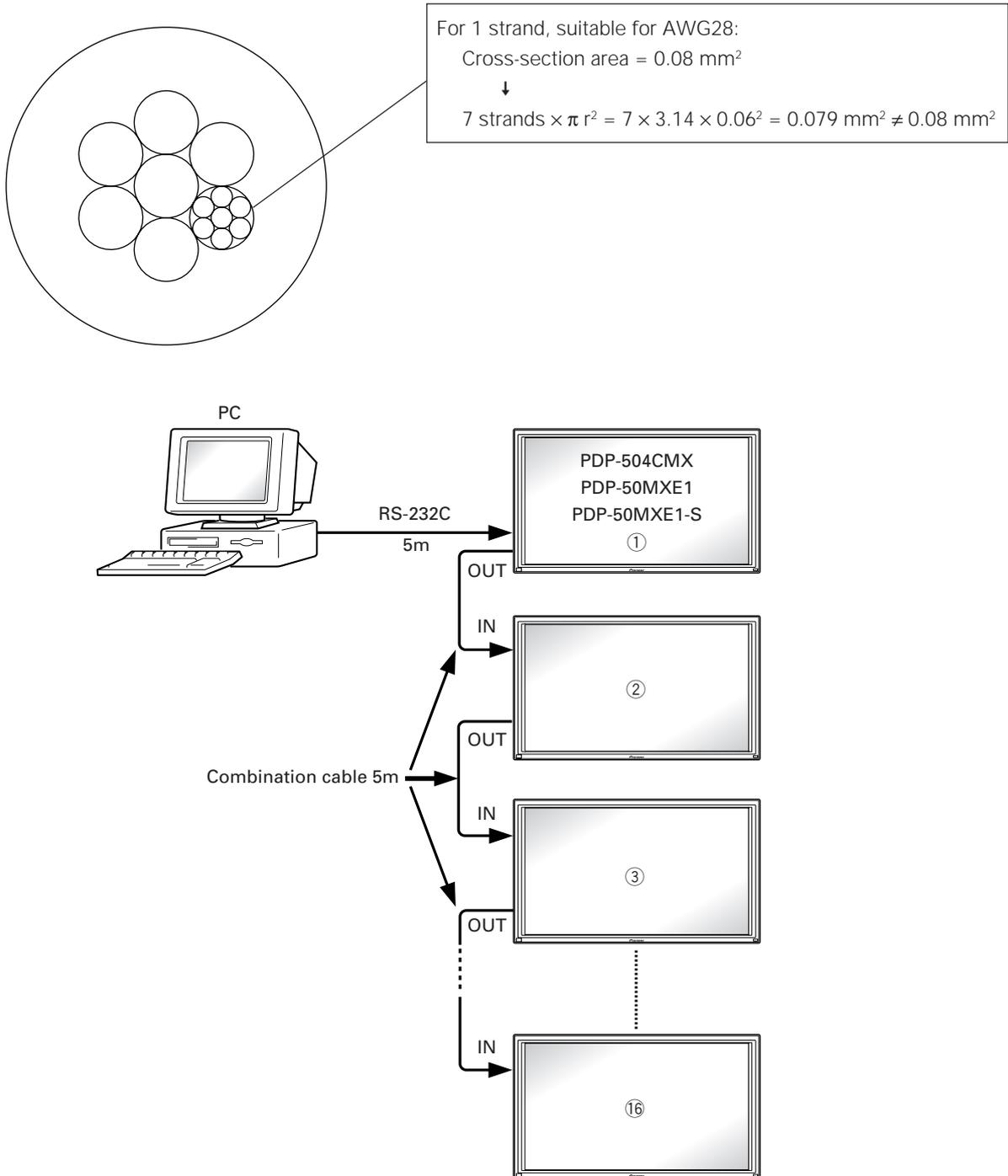
**Note**

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'.

## RS-232C Adjustment Mode

Under the connection conditions shown below, operation using a combination cable is assured up to 16 sets.

- Conditions:
- ① Length of RS-232C cable connecting PC to PDP-504CMX/PDP-50MXE1/PDP-50MXE1-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 on the number of displays that can be connected in series using the video OUT terminal (INPUT1, 4), refer to section 2.3, 'Part Names'.

5.5.5 List of RS-232C Commands

How to read this Table

- RS-232C adjustment validity : Indicates whether or not the RS-232C adjustment mode can be used.
- Normal validity : Indicates whether or not the normal-operation mode can be used.
- Numerical direct validity : When a number (3-digit number) is attached to the end of a command, the command can directly set that adjustment value.

• O 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 |
|--------------|-------------------------------|---|-----------------------------|-----------------|---------------------------|
| <b>[A]</b>   |                               |   |                             |                 |                           |
| 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>[B]</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.                     | ○                           |                 | ○                         |
| <b>[C]</b>   |                               |   |                             |                 |                           |
| 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.   | ○                           |                 |                           |
| <b>[D]</b>   |                               |   |                             |                 |                           |
| 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.                     | ○                           | ○               |                           |
| <b>[E]</b>   |                               |   |                             |                 |                           |
| 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.                               | ○                           |                 |                           |
| <b>[F]</b>   |                               |   |                             |                 |                           |
| 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.   | ○                           |                 |                           |
| <b>[G]</b> ## 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.  | ●                           | ●               |                           |

## RS-232C Adjustment Mode

| 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.                                   | ●                           | ●               |                           |
| <b>[H]</b>   |                               |   |                             |                 |                           |
| HPS          | H. POSITION: ***              | Adjusts the HORIZONTAL POSITION.                                      | ○                           |                 | ○                         |
| HSI          | H. SIZE:***                   | Adjusts the HORIZONTAL SIZE.  | ○                           |                 | ○                         |
| <b>[I]</b>   |                               |   |                             |                 |                           |
| 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.                                   | ○                           | ○               |                           |
| <b>[L]</b>   |                               |   |                             |                 |                           |
| 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.   | ○                           | ○               |                           |
| <b>[M]</b>   |                               |   |                             |                 |                           |
| 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 2-screen display operation ON/OFF.                          | ●                           | ●               |                           |
| MSCS00       | MULTISCREEN: OFF                           | Turns the 2-screen display operation OFF.                            | ○                           | ○               |                           |
| MSCS01       | MULTISCREEN: ON                            | Turns the 2-screen display operation ON.                             | ○                           | ○               |                           |
| MST          | #####                                      | Displays the current 2-screen operation type.                        | ●                           | ●               |                           |
| MSTS01       | 2SCREEN                                    | Sets 2-screen operation to 2 SCREEN.                                 | ○                           | ○               |                           |
| MSTS02       | PinP DOWN RIGHT                            | Sets 2-screen operation to PinP (lower right).                       | ○                           | ○               |                           |
| MSTS03       | PinP UP RIGHT                              | Sets 2-screen operation to PinP (upper right).                       | ○                           | ○               |                           |
| MSTS04       | PinP UP LEFT                               | Sets 2-screen operation to PinP (upper left).                        | ○                           | ○               |                           |
| MSTS05       | PinP DOWN LEFT                             | Sets 2-screen operation to PinP (lower left).                        | ○                           | ○               |                           |
| MSTS06       | PoutP                                      | Sets 2-screen operation to PoutP.                                    | ○                           | ○               |                           |
| MTN          | VIDEO MUTING: OFF                          | Turns OFF video muting.  | ●                           | ●               |                           |
| MTY          | VIDEO MUTING: ON                           | Turns ON video muting.   | ●                           | ●               |                           |
| <b>[O]</b>   |  |  |                             |                 |                           |
| OMN          | ORBITER: OFF                               | Turns ORBITER OFF.   | ○                           |                 |                           |
| OMY          | ORBITER: ON                                | Turns ORBITER ON.  | ○                           |                 |                           |
| <b>[P]</b>   |  |  |                             |                 |                           |
| 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.   | ○                           |                 |                           |
| <b>[R]</b>   |  |  |                             |                 |                           |
| RHI          | R HIGH: ***                                | Adjusts R. HIGH.   | ○                           |                 | ○                         |
| RLW          | R LOW: ***                                 | Adjusts R. LOW.  | ○                           |                 | ○                         |
| RSL          | R SIDE MASK LEVEL: ***                     | Adjusts the RED side mask.   | ○                           |                 | ○                         |
| <b>[S]</b>   |  |  |                             |                 |                           |
| SFT          | SIGNAL FORMAT: ####                        | Displays the current SIGNAL FORMAT.                                  | ●                           |                 |                           |
| SFTS01       | SIGNAL FORMAT:<br>VGAorXGAorSXGAor720PC    | Sets the SIGNAL FORMAT to PC FORMAT 1 (VGA or XGA or SXGA or 720PC). | ○                           |                 |                           |
| SFTS02       | SIGNAL FORMAT:<br>WVGAorWXGAorSXGA+        | Sets the SIGNAL FORMAT to PC FORMAT 2 (WVGA or WXGA or SXGA+).       | ○                           |                 |                           |
| SFTS03       | SIGNAL FORMAT:<br>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.                                       |                             | ○               |                           |

## RS-232C Adjustment Mode

| 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.  | ○                           |                 |                           |
| <b>[T]</b>   |                               |   |                             |                 |                           |
| TNT          | TINT: ***                     | Adjusts the TINT.   | ○                           |                 | ○                         |
| <b>[U]</b>   |                               |   |                             |                 |                           |
| 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.   | ○                           |                 |                           |
| <b>[V]</b>   |                               |   |                             |                 |                           |
| 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.  | ○                           |                 | ○                         |

# RS-232C Adjustment Mode

## 5.5.6 GET Commands

What are GET commands?

- They are commands for outputting TXD such as adjustment data from the internal microcomputer of the plasma display to a PC.
- Adjustment data and the like is output in 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 No. is assigned to the set.
- A GET command is invalid when a wildcard (\*) is used in the ID No. 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 <sup>Note 3)</sup><br>(INPUT 1 to 5 is displayed as IS1 to IS5.)                               |
| 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 <sup>Note 1)</sup>  |
| 10    | Temperature data 3         | 3 Byte  | (External temperature: Reference value) °C <sup>Note 1)</sup>  |
| 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 <sup>Note 2)</sup><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. In this case, wait a moment after the 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, dummy data (symbol) is output.

NOTE 3) During standby and during 1-screen display the values stored in memory for the product are output.

## 2) &lt;GPI&gt; (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) &lt;GWB&gt; (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) &lt;GPS&gt; (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.

## RS-232C Adjustment Mode

### 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 mounted.) |
|               | S02 ..... WVGA or WXGA or SXGA+   |
|               | S03 ..... 525p or 750p (Either one can be selected only when a video card is mounted.) or PC AUTO     |
|               | *** ..... Dummy data is output for signals other than those above.                                    |

- 13 and 14 output the same contents as GST items 3 and 5.
- Dummy data is output for setting data that cannot be output depending on 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.

# RS-232C Adjustment Mode

## Check Sum

This is data to which 2-Byte ASCII code is added to a data group 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) |

A detailed example will be given below.

**Example:** The Check Sum value that is added when the GET command GAA returned the following 6-Byte data.

| Data group (ASCII)<br>+ check sum | GET command | Data (6 Byte) | Check Sum               |
|-----------------------------------|-------------|---------------|-------------------------|
|                                   | GAA         | 100128        | XX (before calculation) |

The data group is put in to binary code one character at a time and 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 1F8 (hex)

As the data format, F5 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         | 100 (missing data) 28 | F5        | 03 (hex) |

Note: The returned data group will be in capital letters. Please keep this in mind when introducing it into the binary display.

## Example of Check Sum applications

Example 1: when the data is missing one Byte

| STX      | GET command | Data (6 Byte)         | Check Sum | ETX      |
|----------|-------------|-----------------------|-----------|----------|
| 02 (hex) | GAA         | 100 (missing data) 28 | F5        | 03 (hex) |

47 41 41 31 30 30 32 38

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

Here, the check sum [F5 (hex)] and the calculated [C4 (hex)] do not match.

Since they do not match, the PC application sends the GET command again and gets the data again.

Example 2: when one Byte of data is unreadable

| STX      | GET command | Data (6 Byte) | Check Sum | ETX      |
|----------|-------------|---------------|-----------|----------|
| 02 (hex) | GAA         | 100328        | F5        | 03 (hex) |

47 41 41 31 30 33 30 32 38

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

Here, the check sum [F5 (hex)] and the calculated [F7 (hex)] do not match.

Since they do not match, the PC application sends the GET command again and gets the data again.

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**PDP-504CMX**

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