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PDP-504CMX

Plasma Display Panel

RS-232C Commands

COMMAND PROTOCOL MANUAL

Manual Version 1.00

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Pioneer Electronics (USA) Inc.
Industrial Solutions Business Group

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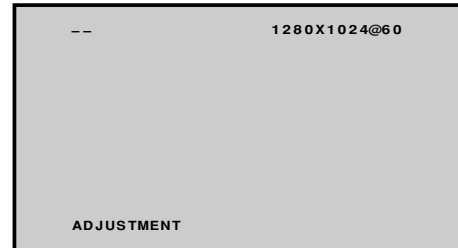
RS-232C Adjustment Mode

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.



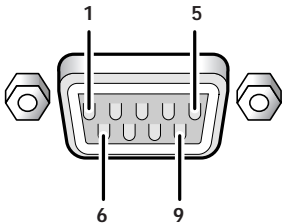
Notes

- (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		



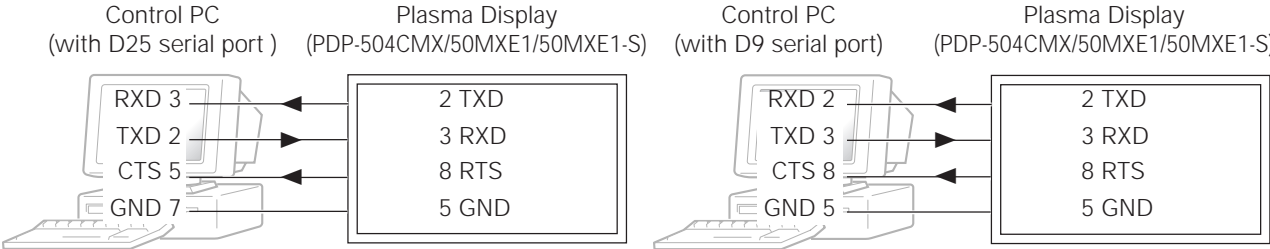
- 3) Baud Rate
9600 bps (standard)
(switch-able to 1200, 2400, 4800, 19200, 38400 bps)

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

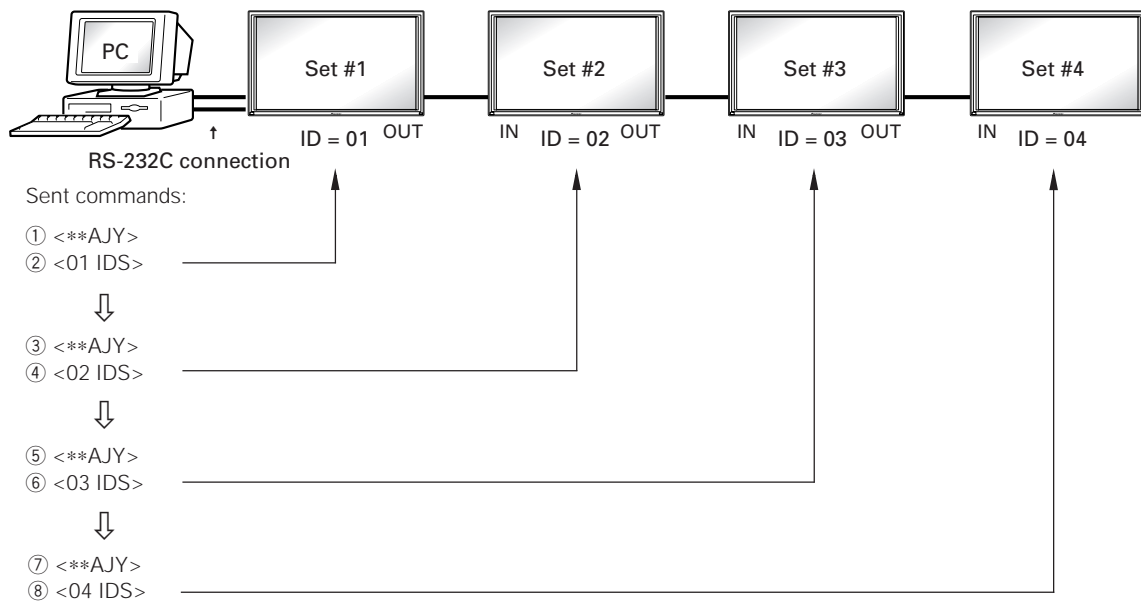
5.5.3 ID Assignment

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.

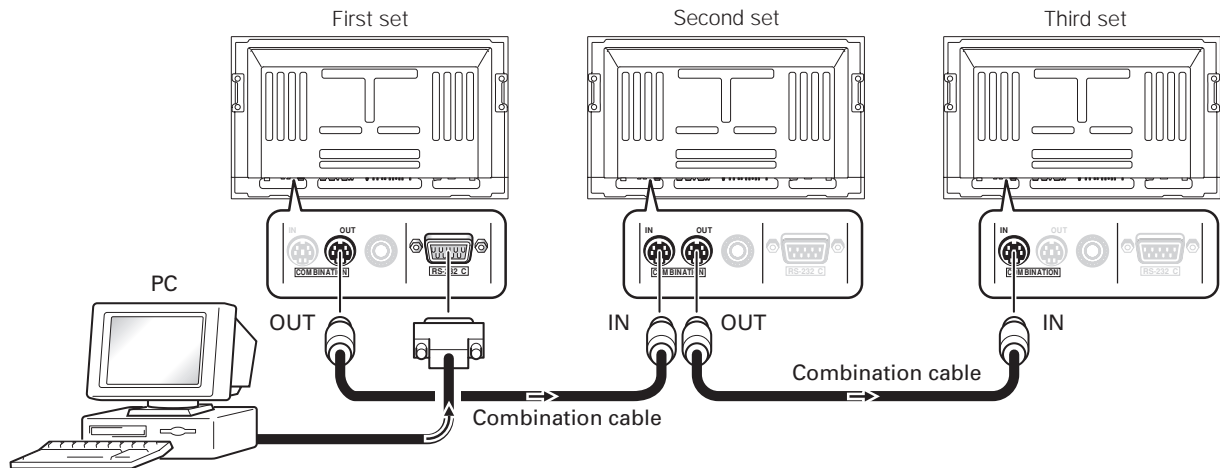
5.5.4 Combination Connection

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.

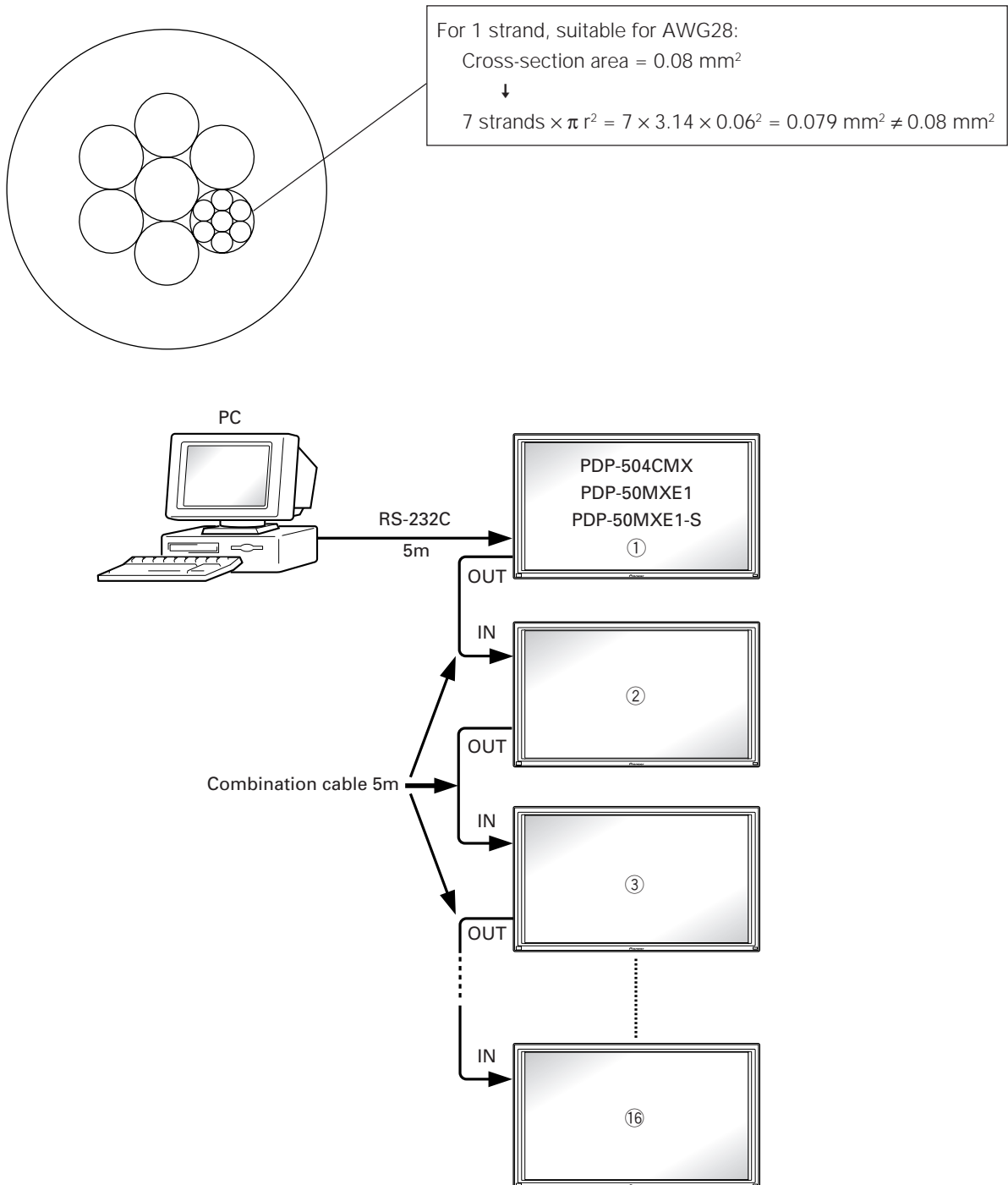
Note

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
[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]					
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.	●	●	

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.	●	●	
[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 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.	●	●	
[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.		○	

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.	○		
[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.	○		○

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)
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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 ^{Note 3)} (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) 3: PinP (upper right) 4: PinP (upper left) 5: PinP (lower left) 6: PoutP
7	FUNCTIONAL LOCK data	1 Byte	0: LOCK OFF 1: BUTTONS LOCK 2: IR LOCK 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) PL (POWER ON & no input) PO (POWER ON & OUT OF RANGE signal input) SN (Normal standby) SW (Standby by POWER MANAGMENT) SS (Standby by SD or PD)
	Third character	Sub input signal state during multi-screen display ^{Note 2)} N (Normal signal input) L (No input) O (OUT OF RANGE signal input)
Screen size data	First character	0: Dot by Dot or PARTIAL 1; 4 : 3 2; FULL or FULL1080i 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) <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.

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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 3: GAMMA 2.2 4: DRE MID 5: DRE HIGH 6: DRE LOW 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 3: MIDDLE 4: MID HIGH 5: HIGH	#
5	DNR	1 Byte	0: OFF 1: LOW 2: MIDDLE 3: HIGH	#
6	MPEG NR	1 Byte	0: OFF 1: LOW 2: MIDDLE 3: HIGH	#
7	CTI	1 Byte	0: OFF 1: ON	#
8	PURECINEMA	1 Byte	0: OFF 1: STANDARD 2: ADVANCE	#
9	COLOR DECODING	1 Byte	1: RGB 2: COMPONENT1 3: COMPONENT2	#
10	COLOR SYSTEM	1 Byte	1: AUTO 2: NTSC 3: PAL 4: SECAM 5: 4.43NTSC 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 (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 3: MODE 2 4: MODE 3 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 2: INVERSE 3: WHITE 4: RED 5: GREEN 6: BLUE 7: YELLOW	
6	SIDE MASK MODE	1 Byte	1: NORMAL 2: OVERLAY1 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 2: NORMAL&DOWN LEFT 3: NORMAL&UP RIGHT 4: NORMAL&DOWN RIGHT 5: ADJUSTED&UP LEFT 6: ADJUSTED&DOWN LEFT 7: ADJUSTED&UP RIGHT 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 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.

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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) + 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

RS-232C Command Protocol Manual

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