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PIONEER PDP-40 PLASMA DISPLAY. OPERATION AND SERIAL CONTROL MANUAL.

PRE-RELEASE DOCUMENT.

The information in this manual is *PRE-RELEASE*, and may have changed or possibly be incorrect!

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Josh Kairoff
Pioneer New Media Technology.
October 27, 1997.

SECTION 5 ADJUSTMENT

5-1. Before adjustment

This Display can be adjusted using the following three devices:

- Control panel of the Display
- Remote control unit
- Personal computer (RS232C control)

Before beginning adjustments, read and understand this section, and then begin adjusting.

(1)Operation mode

This unit has four basic operation modes as mentioned below. Mode shift is described on the 41 page.

① Normal operation mode

This mode plays images when the power is turned on.

The following can be performed in this mode.

- STANDBY/ON
- Input switching
- Color mode 1/2 switching (RS232C only)
- KEY LOCK/UNLOCK switching (Only button of Display)
- Shift to the MENU mode and RS232C Adjust mode

(Adjustments and settings are not possible in this mode.)

② MENU mode

This mode is used to adjust picture quality and phase.

Operations can be performed using the following:

- Control panel of the Display, or
- Remote control unit

Note that the method of operation differ partially between the two devices above.

See **Adjusting Images** on pages 14 through 17 of the instruction manual for details.

This mode allows the operator to modify adjusting data within a certain range based on the values adjusted in the Integrator mode or RS232C Adjust mode, which are described later.

③ **Integrator Mode**

This mode provides adjusting functions for the integrator. In terms of the contents, the integrator mode contains all items of the MENU mode plus white balancing and various mode setting items

This mode is set only when power is turned on within 3 seconds of pressing the MENU button. As soon as the integrator mode is set, all the data adjusted in the MENU mode are automatically reset to the center values except CLK and PHS.

Use the following buttons to select a particular adjustment mode. This applies to all integrator adjustment modes.

i) MENU Button

Remote control unit	: Brings back the normal operation mode irrespective of which MENU mode currently set.
Display main unit	Brings back the normal operation mode irrespective of which MENU mode currently set.

ii) SET Button

Remote control unit	Allows you to set an item in the menu, and go back one step through the hierarchy.
Display main unit	Allows you to set an item in the menu, and go back one step through the hierarchy.

iii) UP/DOWN Buttons

Remote control unit	Allows you to select an item in the menu.
Display main unit	Not available.

iv) LEFT/RIGHT Buttons

Remote control unit	: Allows you to adjust or switch the setting of an item.
Display main unit	: Allows you to adjust or switch the setting of an item.

v) + and – Buttons

Remote control unit	: Not available
Display main unit	: Allows you to adjust or switch the setting of an item.

The following buttons, in addition to the above, are accepted by the unit in the integrator mode.

vi) STANDBY/ON Buttons

Remote control unit	: Terminates the integrator mode and then turns the power off. The data currently being adjusted are stored as the last memory.
Display main unit	Terminates the integrator mode and then turns the power off. The data currently being adjusted are stored as the last memory.

vii) AJY and POF Commands of RS232C Command

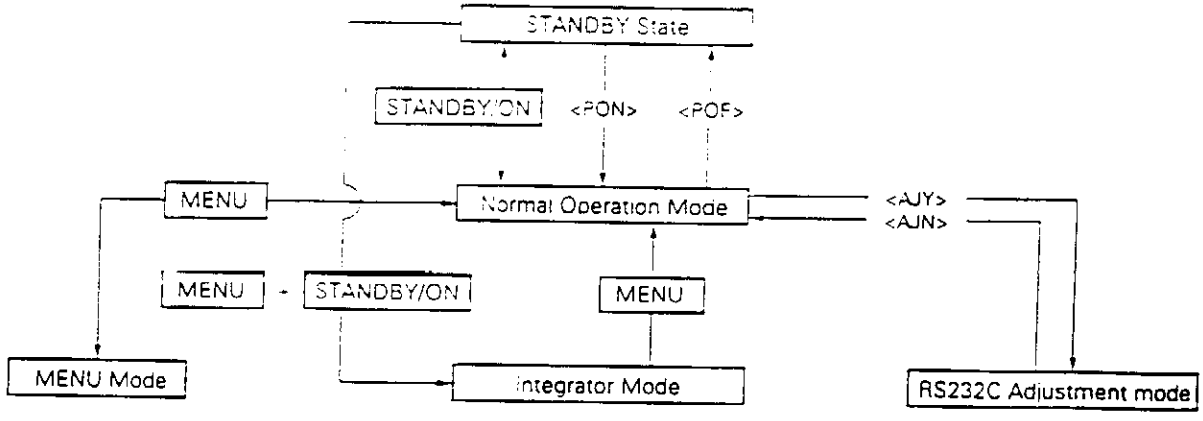
AJY Command	: Terminates the Integrator mode and then sets the RS232C Adjust mode. The data being adjusted is stored as the last memory
POF command	Terminates the Integrator mode and then turns the power off. The data being adjusted is stored as the last memory.

④ **RS232C Adjust** Mode

This mode allows you to adjust picture quality, white balance and phase, and also set various modes, on your personal computer. This mode includes some items which are unique to this mode. Refer to the section "S-3. External control by RS232C" in this manual for details.

Caution:

- When you enter the integrator mode or the RS232C Adjust mode, all the adjust values in the MENU mode (see the instruction manual), except CLK and PHS, are set to the center values.
- The CLK and PHS adjust values are commonly used in the MENU, Integrator, and RS232C Adjust mode.



PICTURE PARAMETER

CONTRAST
BRIGHT
COLOR Note 1)
TINT Note 1)
SHARPNESS Note 1)
CLK.FRQ. Note 2)
CLK.PHS. Note 2)
HOR.POS. Note 2)
VER.POS. Note 2)
INIT.

PICTURE PARAMETER

CONTRAST
BRIGHT.
COLOR Note 1)
TINT Note 1)
SHARPNESS Note 1)
CLK.FRQ. Note 2)
CLK.PHS. Note 2)
HOR.POS. Note 2)
VER.POS. Note 2)
INIT.

WHITE BALANCE
R HIGH
G HIGH
B HIGH
R LOW
G LOW
B LOW

ADDITIONAL SET UP

COLOR MODE
1
2
BAUD RATE
1200 BPS
2400 BPS
4800 BPS
6900 BPS
19200 BPS
HOUR METER Note 3)

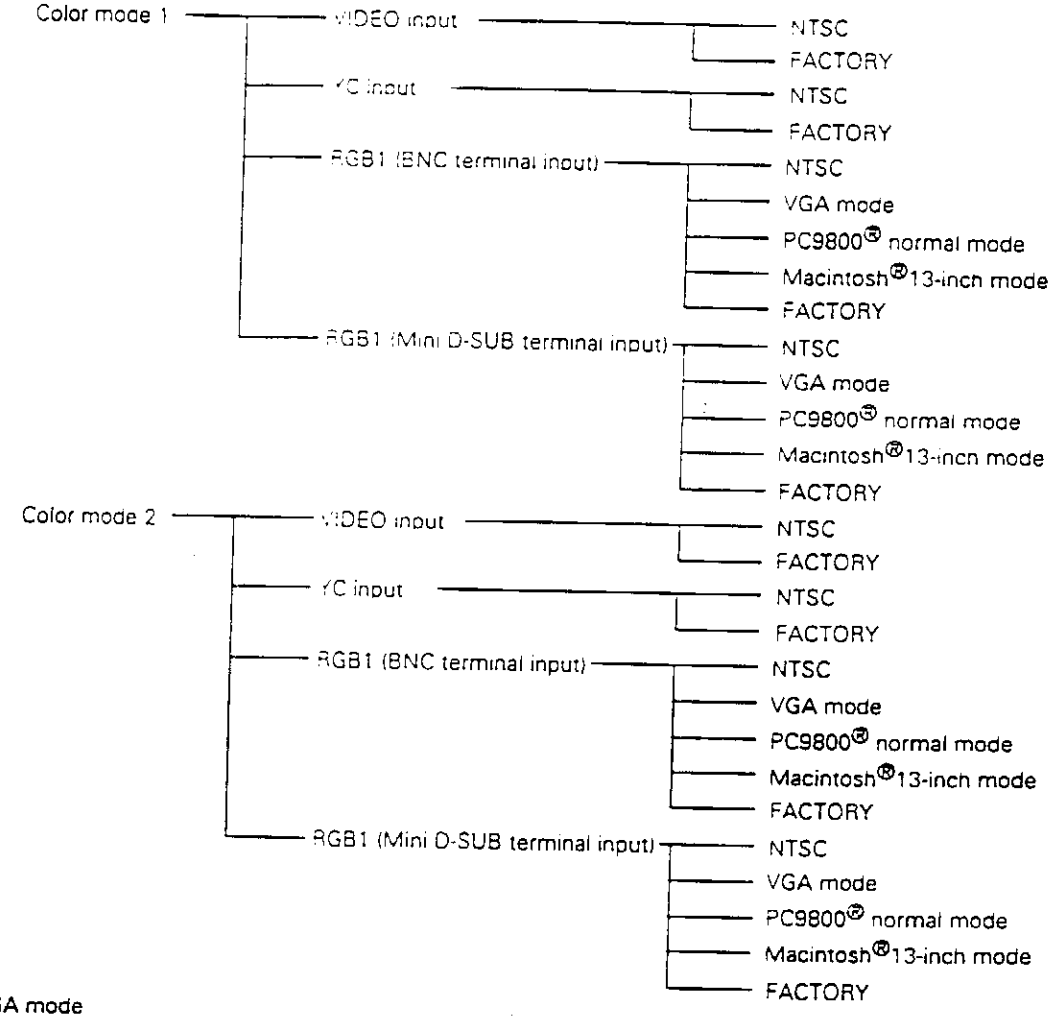
TOTAL INITIALIZE

Note 1) Only for VIDEO, Y/C inputs
Note 2) Only for RGB1, RGB2 inputs
Note 3) Display only

(2)Picture quality and white balance adjustment memory

This Display has the following twenty-eight memory areas.

But as the FACTORY areas are intended for reading only, there are actually twenty adjustable areas.



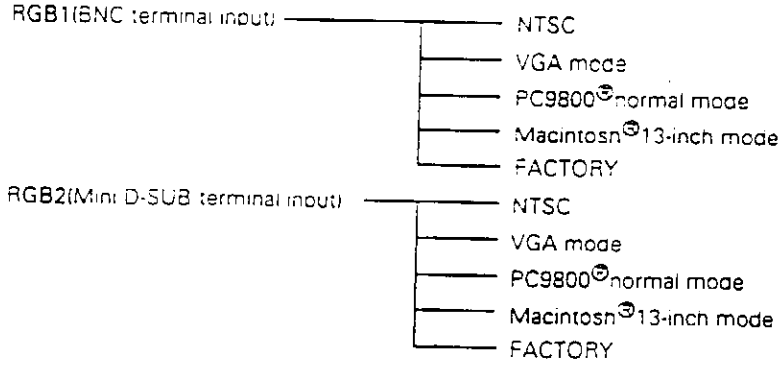
- VGA mode
  640 dots x 480 lines/horizontal scanning frequency 31.47 kHz/vertical scanning frequency 59.94 kHz
- PC9800® normal mode
  640 dots x 400 lines/horizontal scanning frequency 24.83 kHz/vertical scanning frequency 56.42 kHz
- Macintosh® 13-inch mode
  640 dots x 480 lines/horizontal scanning frequency 35.00 kHz/vertical scanning frequency 66.67 kHz

The picture quality and white balance adjustment data here consists of the following ten data.
CONTRAST, BRIGHT., COLOR, TINT, SHARPNESS, R HIGH, G HIGH, B HIGH, R LOW, G LOW, B LOW
However, COLOR, TINT, SHARPNESS cannot be used for RGB1 and 2 inputs.
The memory for these data synchronize with the input functions and input signals so that the white balance adjustment data can be switched.
If it is necessary to switch between color mode 1 and 2 according to the input function, connect a personal computer and switch the mode using the CM1 and CM2 commands.
Note: The NTSC memory area is selected automatically when no signals or non-corresponding signals are input.

(3) Phase adjustment memory

This Display has the following ten memory areas.

But as the FACTORY areas are intended for reading only, there are actually eight adjustable areas.



- VGA mode
  640 dots x 480 lines/horizontal scanning frequency 31.47 kHz/vertical scanning frequency 59.94 kHz
- PC9800® normal mode
  640 dots x 400 lines/horizontal scanning frequency 24.83 kHz/vertical scanning frequency 56.42 kHz
- Macintosh® 13-inch mode
  640 dots x 480 lines/horizontal scanning frequency 35.00 kHz/vertical scanning frequency 66.67 kHz

The phase adjustment data here consists of the following four data.
CLK.FRQ., CLK.PHS., HOR.POS., VER.POS.
However these data cannot be used when VIDEO or the Y/C input is selected.
The memory for these data is automatically selected according to the input function and input signal.
Note: The NTSC memory area is automatically selected when no signals or non-corresponding signals are input.

(4) Using the control panel and remote control unit and personal computer together

Adjustments cannot be carried out using the control panel of the Display, remote control unit, and personal computer together.
When used together, the last device operated will have effect.

Example) Operation	Effect
MENU button of remote control unit	Shifts to MENU mode
	Only accepting the following personal computer commands:AJY, POF
⇩	⇩
Personal computer <AHY> Command	Exits the MENU mode and shifts to the RS232C adjustment mode
	Only accepting the following remote control unit buttons:STANDBY/ON, MENU
⇩	⇩
INPUT button of Display control panel	Returns to the normal operation mode and performs the input switching operation.

(5) **Last Memory**

The Display stores the items mentioned below as the last memory.

The last memory function will not work when the following operation is performed with the specified memory timing conditions not met.

- Main power switch is turned off
- The power cord is unplugged from the receptacle
- The breaker for the receptacle is turned off

No.	Item	Memory timing
1	STANDBY/ON	Approx. 4 sec after operation
2	Input function	When operated from the control panel of the Display or remote control unit: Approx. 4 sec after operation When operated with the RS232C commands: Switched in the RS232C Adjust mode and then: a) the system entered the standby state b) the no-operation time lasted for approx. 30 sec and the OSD display went off c) the system shifted to the normal operation mode as the <AJN> command was set d) the system shifted to the normal operation mode as the button on the control panel of the Display was pressed e) the system shifted to the normal operation mode as the input signals were switched externally f) the system shifted to the MENU mode as the MENU button was pressed g) the system shifted to the normal operation mode as the button on the control panel of the Display or remote control unit was pressed in the key lock state. Note: The last memory function is not effective when switching is performed in the normal operation mode.
3	Color mode	When operated from the control panel of the Display or remote control unit: Approx. 4 sec after confirming with the SET button When operated with the RS232C commands: Switched in the RS232C Adjust mode and then: a) the system entered the standby state b) the no-operation time lasted for approx. 30 sec and the OSD display went off c) the system shifted to the normal operation mode as the <AJN> command was set d) the system shifted to the normal operation mode as the button on the control panel of the Display was pressed e) the system shifted to the normal operation mode as the input signals were switched externally f) the system shifted to the MENU mode as the MENU button was pressed g) the system shifted to the normal operation mode as the button on the control panel of the Display or remote control unit was pressed in the key lock state. Note: The last memory function is not effective when switching is performed in the normal operation mode.

No.	Item	Memory timing
4	Baud rate	When operated from the control panel of the Display or remote control unit: Approx. 4 sec after confirming with the SET button When operated with the RS232C command: Approx. 4 sec after operation
5	Hour meter counts	At any time and when the system entered the standby state
6	KEY LOCK/UNLOCK	Approx. 4 sec after operation
7	Mask color for PC-9800	Approx. 4 sec after operation
8	Mask on/off for NTSC	Approx. 4 sec after operation
9	Contrast adjust data	When adjusting from the control panel of the Display or remote control unit: a) the system entered the standby state b) the no-operation time lasted for approx. 180 sec and shifted to the normal operation mode c) the system shifted to the normal operation mode as the MENU button was pressed d) the system shifted to the normal operation mode as the KEY LOCK button on the Display was pressed e) the system shifted to the normal operation mode as the input signals were switched externally f) the system shifted to the RS232C Adjust mode as the <AJY> command was set g) you moved backward through the hierarchy with the SET button When adjusting with the RS232C commands: a) the system entered the standby state b) the no-operation time lasted for approx. 30 sec and the OSD display went off c) the system shifted to the normal operation mode as the <AJN> command was set d) the system shifted to the normal operation mode as the button on the control panel of the Display was pressed e) the system shifted to the normal operation mode as the input signals were switched externally f) the system shifted to the MENU mode as the MENU button was pressed g) the system shifted to the normal operation mode as the button on the control panel of the Display or remote control unit was pressed in the KEY LOCK state h) the adjust item was changed
10	Bright. adjust data	
11	COLOR adjust data	
12	TINT adjust data	
13	SHARPNESS adjust data	
14	R HIGH adjust data	
15	G HIGH adjust data	
16	B HIGH adjust data	
17	R LOW adjust data	
18	G LOW adjust data	
19	B LOW adjust data	
20	CLK.FRQ. adjust data	
21	CLK.FHS. adjust data	
22	HOR.POS. adjust data	
23	VER.POS. adjust data	

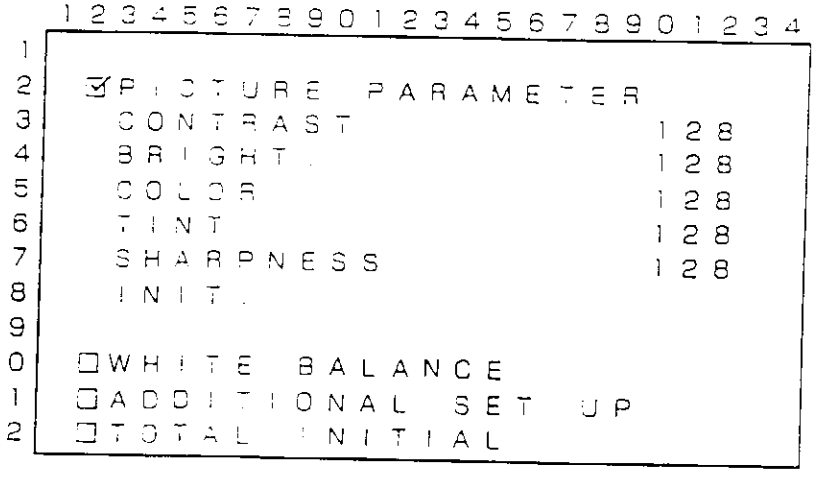
- When the entire system is started or stopped with the breaker turned on and off in a permanent object, etc., be sure to set the last memory to the above timing. Note that the counts of the hour meter are subject to errors when the system is used in the above operation method.

(6) Aging

- After turning ON the power, input the 100% white signal or LD live images, etc. which will not cause sticking, and perform aging until the Display stabilizes (about 30 minutes). Adjustments can be carried out more smoothly and accurately after aging.

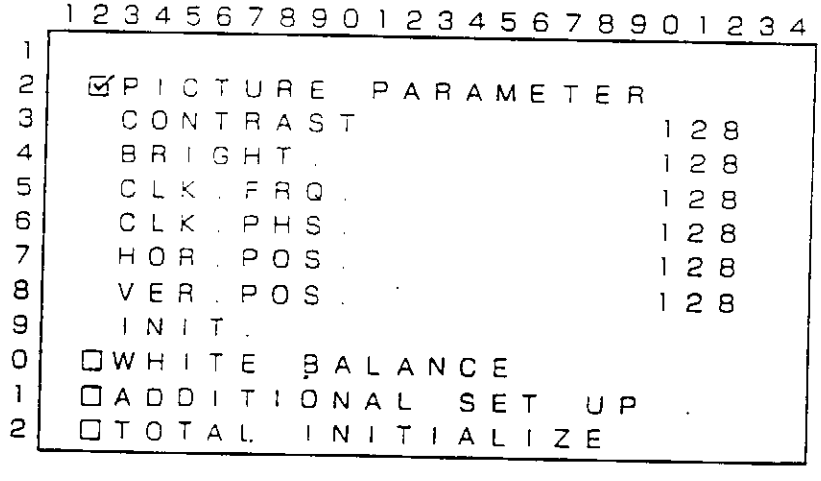
(2) Integrator mode

① Integrator Mode Main Menu (for VIDEO, Y/C input)



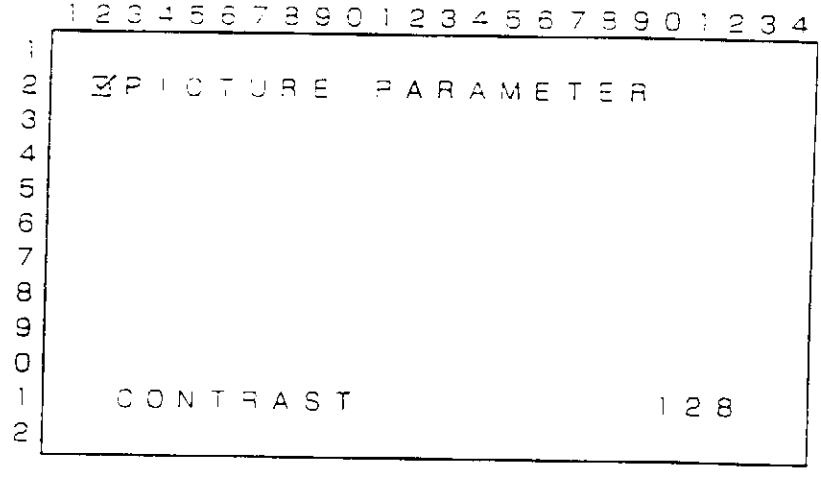
This mode is set when you press the MENU button in the standby state followed by pressing the Power button within 3 seconds. When operating from the remote control unit, select an adjust item with the ▲ and ▼ buttons and confirm the item with the SET button. When operating from the control panel of the Display, select an adjust item with the + and – buttons and confirm the item with the SET button.

② Integrator Mode Main Menu (for RGB1, 2 input)



This mode is set when you press the MENU button in the standby state followed by pressing the Power button within 3 seconds. When operating from the remote control unit, select an adjust item with the ▲ and ▼ buttons and confirm your selection with the SET button. When operating from the control panel of the Display, select an adjust item with the + and – buttons and confirm the item with the SET button.

① Picture Quality and Phase Adjust Mode



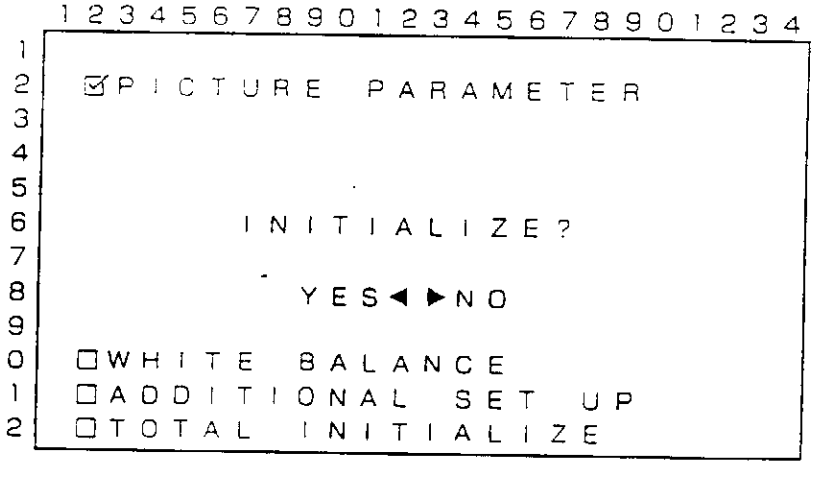
Use the ◄ and ► buttons to adjust from the remote control unit. Use the + and – buttons to adjust from the control panel of the Display. The adjustable range is 000 to 255. The value set on this screen becomes the center adjust value in the MENU mode.

The following parameters are adjustable in this item:

For VIDEO, Y/C input:CONTRAST, BRIGHT., COLOR, TINT, SHARPNESS

For RGB1, 2 input:CONTRAST, BRIGHT., CLK.FRQ., CLK.PHS., HOR.POS., VER.POS.

② Picture Quality and Phase Adjust Mode (Reset Adjusting)



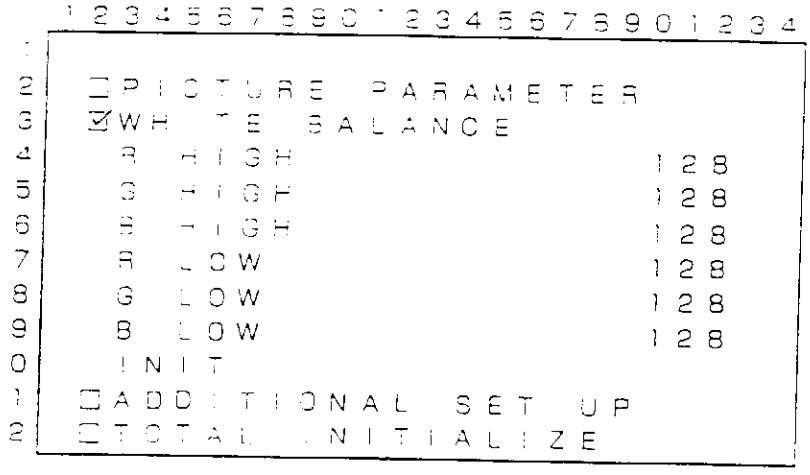
This is the function to reset the adjusted values to the factory defaults. Note that this is limited to the data present in the memory area which is currently selected. Select Yes with the ◄ button on the remote control unit or with the + button on the control panel of the Display to default the parameter to the factory set values. Select No with the ► button on the remote control unit or with the – button on the control panel of the Display to reproduce the current state.

Select Yes and confirm your selection by pressing the SET button when you wish to return to the factory set data.

Select No and confirm your selection by pressing the SET button when you do not wish to return to the factory set data.

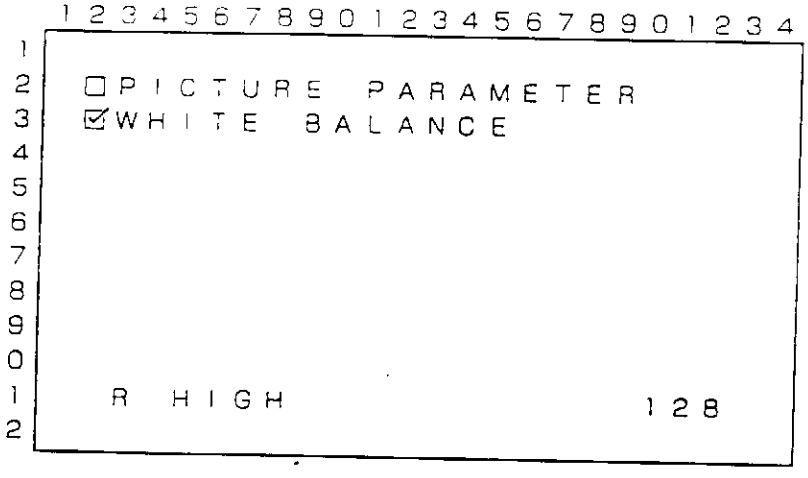
In either case, you will then return to the above Adjust mode.

⑤ White Balance Adjust Menu Select Mode



When operating from the remote control unit, select an adjust item with the ▲ and ▼ buttons and confirm the item with the SET button. When operating from the control panel of the Display, select an adjust item with the + and – buttons and confirm the item with the SET button.

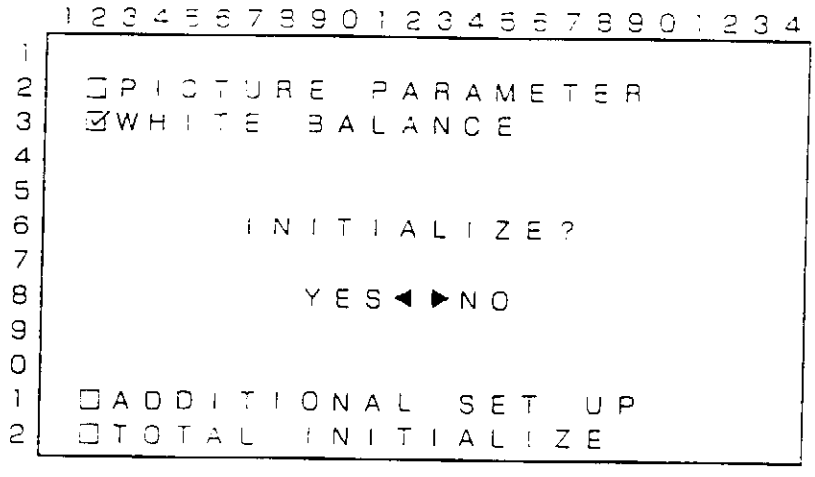
⑥ White Balance Adjust Mode



When operating from the remote control unit, perform the adjustment with the ◄ and ► buttons. When operating from the control panel of the Display, perform the adjustment with the + and – buttons. The adjustable range is 000 to 255. The value set on this screen becomes the center adjust value in the MENU mode.
The following parameters are adjustable in this item:

RED HIGH	red of a high brightness
GREEN HIGH	green of a high brightness
BLUE HIGH	blue of a high brightness
RED LOW	red of a low brightness
GREEN LOW	green of a low brightness
BLUE LOW	blue of a low brightness\\

⑦ Integrator White Balance Adjust Mode (Reset Adjusting)



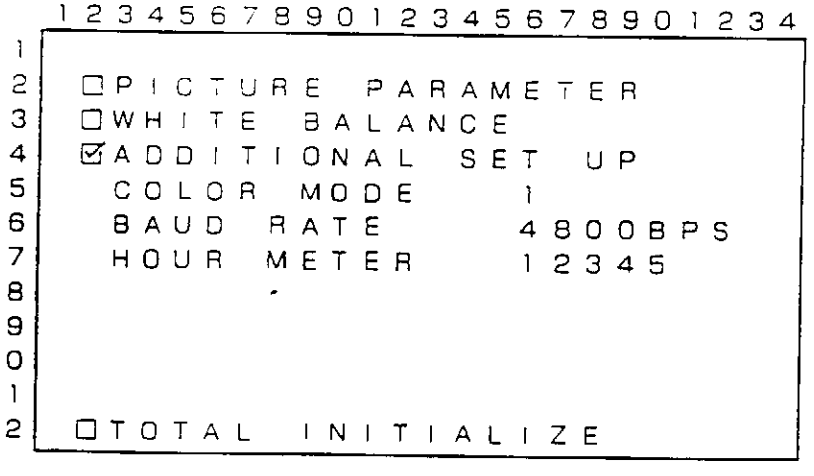
This is the function to reset the adjusted values to the factory defaults. Note that this is limited to the data present in the memory area which is currently selected. Select Yes with the ◄ button on the remote control unit or with the + button on the control panel of the Display to default to the factory set values. Select No with the ► button on the remote control unit or with the – button on the control panel of the Display to reproduce the current state.

Select Yes and confirm your selection by pressing the SET button when you wish to return to the factory set data.

Select No and confirm your selection by pressing the SET button when you do not wish to return to the factory set data.

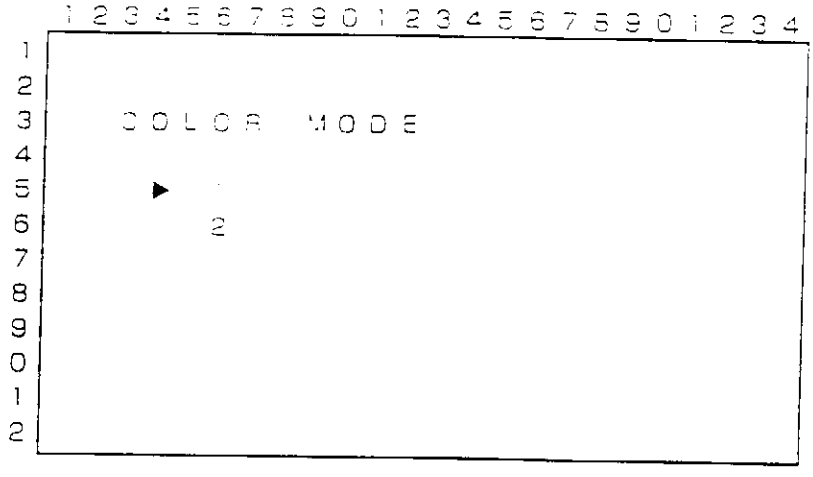
In either case, you will then return to the above Adjust mode.

⑧ Mode Setting Menu Mode



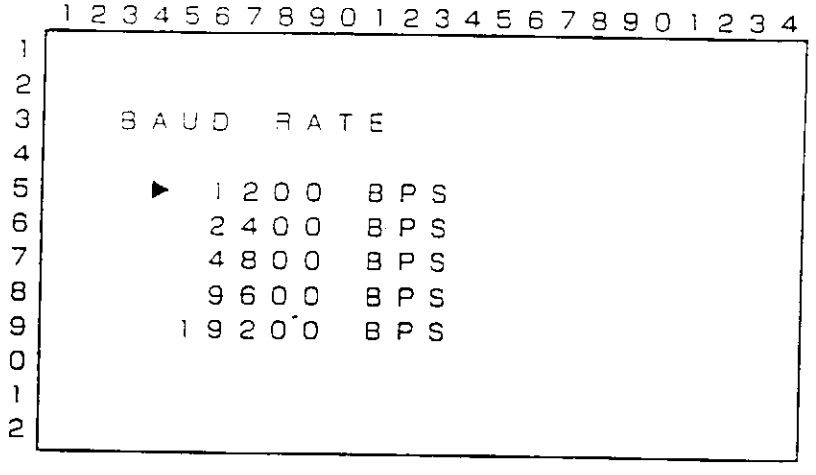
This is common for all input functions. When operating from the remote control unit, select the item to set with the ▲ and ▼ buttons and confirm with the SET button. When operating from the control panel of the Display, select with the + and – buttons and confirm with the SET button.

⑨ Color Mode Setting Mode



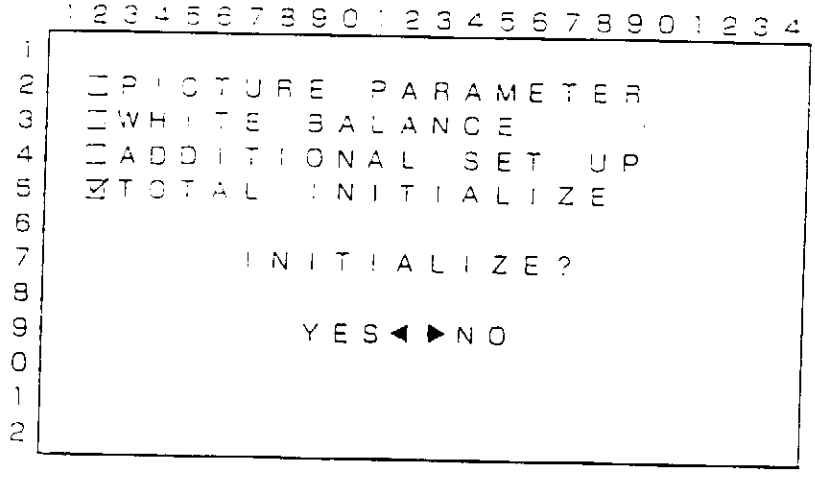
This is common for all input functions. When operating from the remote control unit, select the mode to set with the ▲ and ▼ buttons and confirm with the SET button. When operating from the control panel of the Display, select with the + and – buttons and confirm with the SET button. By performing this operation, you can switch between picture quality and white balance adjust data. Selecting Color Mode 1 provides normal picture quality and white balance. Selecting Color Mode 2 provides optimum picture quality and white balance for re-shooting.
Color Mode 1 was set at the factory.

⑩ Baud Rate Setting Mode



This is common for all input functions. When operating from the remote control unit, select the item to set with the ▲ and ▼ buttons and confirm with the SET button. When operating from the control panel of the Display, select with the + and – buttons and confirm with the SET button. By performing this operation, you can switch the baud rate of the RS232C external control.
The display is set to 4800 bps at shipment.

① Initial Reset Setting Mode (All Adjust Resetting)



This function resets values adjusted for the Picture Parameters and White Balance back to the factory defaults. Note that this is limited to the data present in the memory area which is currently selected. Select Yes with the ◄ button on the remote control unit or with the + button on the control panel of the Display to default to the factory set values. Select No with the ► button on the remote control unit or with the – button on the control panel of the Display to reproduce the current state.

Select Yes and confirm your selection by pressing the SET button when you wish to return to the factory set data.

Select No and confirm your selection by pressing the SET button when you do not wish to return to the factory set data.

In either case, you will then return to the above Set mode.

(3) Precautions

- You may not switch the inputs in the MENU mode and the Integrator Mode. First select an input to adjust and then shift to the MENU or Integrator mode.
- The MENU mode and the Integrator mode are automatically canceled in one of the following cases:

a) The main power switch is turned off (an AL OFF state is entered).
b) The STANDBY state is entered.
c) No-operation time lasted about 180 sec.
d) The KEY LOCK button on the Display is pressed.
e) Input signals are switched externally, or no signal condition is entered.
f) The system shifted to the RS232C Adjust mode with the <AJY> command set.
g) The protective (P.D.) circuit is activated.

Note: The items currently being adjusted will not be stored as the last memory in a) and g) above.

5-3. External control by RS-232C

This Display is equipped with a RS-232C port which enables various controls and adjustments of the picture quality, white balance and phase from an external computer.

(1) Interface

① Connector

D-sub 9 pin

② Pin assignment

PIN NO.	Symbol	Signal NAME
2	RXD	Recieved Data
3	TXD	Transmitted Data
8	CTS	Clear To Send
5	GND	Signal Ground

③ Baud rate

4800 bps (1200, 2400, 9600, and 19200 can also be selected)

Note: Set the same baud rate for the Display and personal computer.

When drawing a long RS-232C cable, it is recommended that a slower baud rate be used.

④ Data default

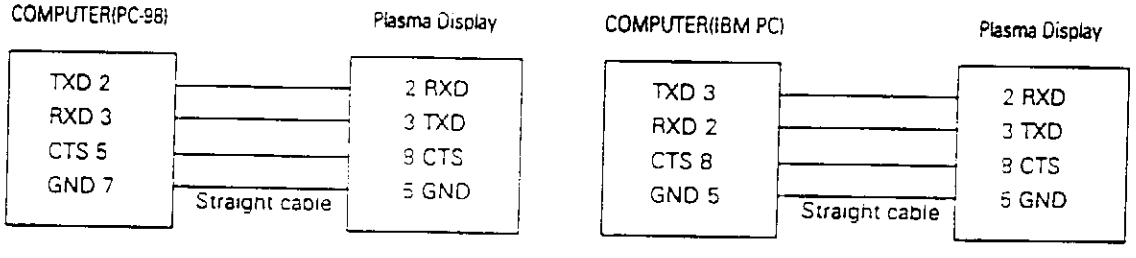
Start : 1-bit

Data : 8-bit

Parity : 0 (No parity)

Stop : 1-bit

⑤ Connection



⑥ Protocol

From computer to Display

i) When sending the commands one at a time

STX	COMMAND	ETX

STX=02h ETX=03h COMMAND 3-Byte (ASCII)

ii) When sending the commands at one time

STX	COMMAND	COMMAND	COMMAND	ETX

Maximum 3 commands

iii) When sending numerical direct commands

STX	COMMAND	ARGUMENT	ETX

ARGUMENT : 3-Byte (ASCII)

Note) However, in the following cases, only the first command is effective and the other commands are ignored.

E.g. 1) | STX | PON | AJY | CNT | ETX |

E.g. 2) | STX | POF | PON | ETX |

— Select the PON or POF command.

E.g. 3) | STX | IN2 | AJY | CNT | ETX |

Send the input switching commands (IN1 to 4) and AJY command seperately.

(2) **RS232C command list**

@@@@@@@ 作製中

- Normal valid

  Command which can be used even if the mode is not RS232C adjustment mode (after sending the <AJY>).
- Numerical direct

  Command which when numbers between 000 to 255 (000 to 999 for the <HMS> command only) are attached after the command and sent, can set the adjustment value directly.
- UP/DOWN command

  Command which when the UPn/DWn (n is any number between 0 to 9) is attached after the command, can increase or decrease the adjustment value for the amount attached.

	Command	Name	Validity in normal mode	Validity of numerical direct command	Validity of UP/ DOWN command	Function
A	AJN	ADJUST NO	×	×	×	Releases the adjustment mode (Shifts to normal operation mode)
	AJY	ADJUST YES	○	×	×	Starts the RS232C adjustment mode
B	BRT	BRIGHTNESS	×	○	○	Adjusts BRIGHTNESS
	BHI	BLUE HIGH	×	○	○	Adjusts BLUE HIGH-LIGHT
	BLW	BLUE LOW	×	○	○	Adjusts BLUE LOW-LIGHT
	BR1	BAUD RATE 1	×	×	×	Sets the RS232C baud rate to 1200 bps
	BR2	BAUD RATE 2	×	×	×	Sets the RS232C baud rate to 2400 bps
	BR3	BAUD RATE 3	×	×	×	Sets the RS232C baud rate to 4800 bps
	BR4	BAUD RATE 4	×	×	×	Sets the RS232C baud rate to 9600 bps
	BR5	BAUD RATE 5	×	×	×	Sets the RS232C baud rate to 19200 bps
C	CM1	COLOR MODE 1	○	×	×	Sets the white balance adjustment data to mode 1
	CM2	COLOR MODE 2	○	×	×	Sets the white balance adjustment data to mode 2
	CNT	CONTRAST	×	○	○	Adjusts CONTRAST
	COL	COLOR	×	○	○	Adjusts COLOR (Excluding RGB1, 2 inputs)
	CFR	CLOCK FREQ.	×	○	○	Adjusts the PLL frequency (Valid only for RGB1, 2 inputs)
	CPH	CLOCK PHASE	×	○	○	Adjusts the PLL phase (Valid only for RGB1, 2 inputs)
D	DIN	DISP NO	○	×	×	Prohibits the OSD display
	DIY	DISP YES	○	×	×	Prohibits the OSD display
	DOF	DISPLAY OFF	×	×	×	Turns OFF the OSD display
	DW0	DOWN 10	×	–	–	Sets the adjustment value to 10 DOWN
	DWn	DOWN n	×	–	–	Sets the adjustment value to nDOWN
	DWF	DOWN FULL	×	–	–	Sets the adjustment value to minimum
F	FRW	FRESH WHITE BAL.	×	×	×	Sets all the picture quality and white balance adjustment data in the memory area selected to 128.
	FRP	FRESH POSITION	×	×	×	Sets all the phase adjustment data in the memory area selected to 128. (Valid only for RGB1 and 2 inputs)

ADJUSTMENT

	Command	Name	Validity in normal mode	Validity of numerical direct command	Validity of UP/ DOWN command	Function
G	GHI	GREEN HIGH	×	○	○	Adjusts the GREEN HIGH-LIGHT
	GLW	GREEN LOW	×	○	○	Adjusts the GREEN LOW-LIGHT
	GWB	GET W/B DATA	×	×	×	Outputs the picture quality, white balance adjustment data
	GPS	GET POSI. DATA	×	×	×	Outputs the phase adjustment data (Valid only for RGB1 and 2 inputs)
	GST	GET STATUS	×	×	×	Outputs various setting data
H	HPS	H POSITION	×	○	○	Adjusts the horizontal phase
	HMD	HOUR METER DISP.	×	×	×	Displays the reading of the hour meter
I	IN1	INPUT1	○	×	×	Selects the VIDEO input
	IN2	INPUT2	○	×	×	Selects the Y/C input
	IN3	INPUT3	○	×	×	Selects the RGB1 input (BNC terminal)
	IN4	INPUT4	○	×	×	Selects the RGB2 input (D-SUB terminal)
K	KLN	KEY LOCK NO	×	×	×	Permits the inputs of the Display control panel and remote control unit
	KLY	KEY LOCK YES	×	×	×	Prohibits the inputs of the Display control panel and remote control unit
M	MKB	MASK BLACK	×	×	×	Sets the top and bottom masks for PC-9800 inputs to black (Valid only for PC-9800 inputs)
	MKG	MASK GRAY	×	×	×	Sets the top and bottom masks for PC-9800 inputs to gray (Valid only for PC-9800 inputs)
	MKY	MASK ON	×	×	×	Sets the top and bottom masks for NTSC inputs to ON
	MKN	MASK OFF	×	×	×	Sets the top and bottom masks for NTSC inputs to OFF
P	POF	POWER OFF	○	×	×	Turns OFF the power
	PON	POWER ON	○	×	×	Turns ON the power
R	RHI	RED HIGH	×	○	○	Adjusts the RED HIGH-LIGHT
	RLW	RED LOW	×	○	○	Adjusts the RED LOW-LIGHT
S	STD	STD. W/B DATA	×	×	×	Returns the white balance adjustment data to the factory defaults
	STP	STD. POSI. DATA	×	×	×	Returns the phase adjustment data to the factory defaults (Valid only for RGB1 and 2 inputs)
	SHP	SHARPNESS	×	○	○	Adjusts SHARPNESS (Excluding the RGB1 and 2 input)
T	TNT	TINT	×	○	○	Adjusts TINT (Excluding the RGB1 and 2 inputs)
U	UP0	UP 10	×	–	–	Sets the adjustment value to 10 UP
	UPn	UP n	×	–	–	Sets the adjustment value to nUP
	UPF	UP FULL	×	–	–	Sets the adjustment value to maximum
V	VPS	V POSITION	×	○	○	Adjusts the vertical phase (Valid only for RGB1 and 2 inputs)

(3) List of GET commands

What is the GET command?

- Command which outputs adjustment data from the Display microprocessor to the personal computer.
- The adjustment data is output for every input function, input mode, and mode.
- The adjustment data is output by ASCII code.

Note) < > shows the command name.

① **<GPS> (GET POSITION DATA) - Outputs the phase adjustment data in the following format.**

i) STX (02H)
ii) <CFR>/CLOCK FREQ. adjustment data (3 bytes)
iii) <CPH>/CLOCK PHASE adjustment data (3 bytes)
iv) <HPS>/HOR.POSITION adjustment data (3 bytes)
v) <VPS>/VER.POSITION adjustment data (3 bytes)
vi) ETX (03H)

Note) Invalid for VIDEO and Y/C inputs

② **<GWB> (GET W/B DATA) - Outputs the picture quality and white balance adjustment data in the following format.**

i) STX (02H)
ii) <CNT>/CONTRAST adjustment data (3 bytes)
iii) <BRT>/BRIGHTNESS adjustment data (3 bytes)
iv) <COL>/COLOR adjustment data (3 bytes) Note1)
v) <TNT>/TINT adjustment data (3 bytes) Note1)
vi) <SHP>/SHARPNESS adjustment data (3 bytes) Note1)
vii) <RHI>/RED HIGH-LIGHT adjustment data (3 bytes)
viii) <GHI>/GREEN HIGH-LIGHT adjustment data (3 bytes)
ix) <BHI>/BLUE HIGH-LIGHT adjustment data (3 bytes)
x) <RLW>/RED LOW-LIGHT adjustment data (3 bytes)
xi) <GLW>/GREEN LOW-LIGHT adjustment data (3 bytes)
xii) <BLW>/BLUE LOW-LIGHT adjustment data (3 bytes)
xiii) ETX (03H)

Note 1) Dummy data is output when the input function is RGB1 or 2.

③ **<GST> (GET STATUS) - Outputs the setting status in the following format.**

i) STX (02H)
ii) Version of microprocessor software (5 bytes)
E.g.) V1.00:Indicates Version 1.00
iii) Input function status (3 bytes):Output by command name
E.g.) IN1:Indicates VIDEO input
iv) COLOR MODE status (3 bytes):Output by command name
E.g.) CM1:Indicates COLOR MODE=1
v) OSD display permit/prohibit setting status (3 byte):Output by command name
E.g.) DIY:Indicates OSD display permit
vi) Remote control unit, Display control panel permit/prohibit status (3 bytes):Output by command name
E.g.) KLY:Indicates operation is prohibited
vii) ETX (03H)

ADJUSTMENT

④ Precautions

- The adjusted contents are stored as last memory by the <AJN> command.
  After completing adjustments, be sure to perform <AJN>. When AJN is performed, the display for adjusting on the screen will also be erased.
- The RS232C adjustment mode is automatically canceled in one of the following cases:
  a) The main power switch is turned OFF
  b) The standby state is entered
  c) A button on the control panel of the Display is pressed
  d) Input signals are switched externally or no-signal condition is entered
  e) The system shifted to the MENU mode using the MENU button
  f) A button on the control panel of the Display or remote control unit is pressed in the KEY LOCK state
  g) The protection (P.D.) is activated

  Note: The items currently being adjusted will not be stored as the last memory in a) and g) above.
- The buffer for RS-232C communication in the unit has a limitation.
  If many commands are sent together at one time, operations may not be carried out properly or some commands may be ignored.

CHAPTER 6 FUNCTIONS AND PRECAUTIONS ON USE

6-1. KEY LOCK/UNLOCK

(1)Function

"KEY LOCK" disables operations of the Display control panel and remote control unit to prevent unintended operations after installation. (The RS232C command is valid.)

When operations are carried out on the Display control panel or remote control unit in this state, "KEY LOCK" is displayed at the top right of the screen.

At shipment, the "KEY UNLOCK" state is set, thereby enabling operations by the Display control panel and remote control unit.

(2)How to set

This function can be set using the following two methods.

① Display control panel (Hidden button)

Press the KEY LOCK/UNLOCK button in the hole between the STANDBY/ON button and INPUT button on the Display control panel.

Each time the button is pressed, the state changes between "KEY LOCK" and "KEY UNLOCK" cyclically.

② RS232C command

Start the RS232C adjustment mode and sets as follows

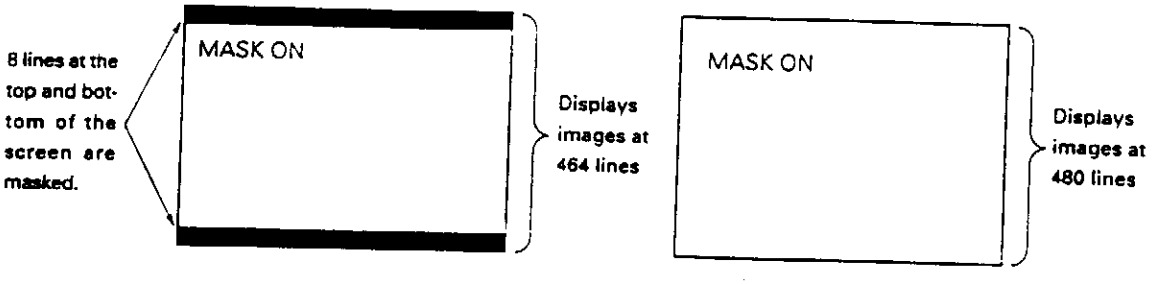
When the <KLY> command is sent, KEY LOCK is set.

When the <KLN> command is sent, KEY UNLOCK is set.

6-2. Mask ON/OFF during NTSC input

(1)Function

Function which switches whether to mask the eight lines at the top and bottom of the screen (MASK ON), or play images on the whole screen (480 lines) (MSK OFF) when the NTSC signal is input regardless of the input function. At shipment, the MASK ON state is set.



(2)How to set

This function can be set using only RS232C commands.

Start the RS232C adjustment mode and set as follows.

When the <MKY> command is sent, the MASK ON state is set.

When the <MKN> command is sent, the MASK OFF state is set.

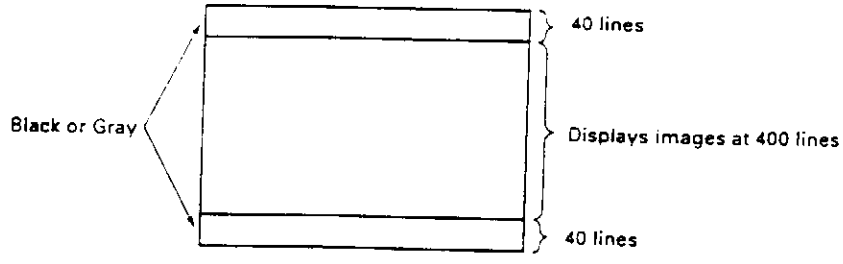
(3)Precautions

- Extended use in the MASK ON state may cause a difference in the deterioration rate of the fluorescent materials between the unmasked 464 lines and the masked 8 lines at the top and bottom of the screen.
- When set to the MASK OFF state, screen problems such as twisting of the top part of the screen may occur according to the input source.

6-3. Mask color switching for PC-9800 inputs

(1)Function

Switches the mask of each of the 40 lines at the top and bottom of the screen for PC-9800 outputs during RGB1 and RGB2 of the input function.



At shipment, it is set as follows.

(2)Setting

This function can be set using only RS232C commands.

Start the RS232C adjustment mode and set as follows.

When the <MKB> command is sent, the mask color becomes black.

When the <MKG> command is sent, the mask color becomes gray.

(3)Precautions

The deterioration rates of the fluorescent materials of unmasked lines and masked lines may differ due to the input signal.

6-4. Precautions

- If the power goes off when turned on, malfunction of internal parts can be suspected. (For malfunctions of parts), turn OFF the main power switch of the Display, and turn it ON again after several seconds. If the power goes OFF again, it means that the Display has malfunctioned. If the Display operates normally, use can be continued without any problems.

- If images (still images, telop, etc.) are run for a long time, the images may stick onto the screen and be unerasable. Resolve this problem through software contents, display method, system configuration, etc.

- Take note that input of the following signals may affect the display of images.
  - VTR signal dubbed (copied) several times
  - VTR signal with copy protect
  - Scrambled CATV signal
  - Signal whose sync signal and video signal phases have deviated considerably

  Images will black out in the following during switching of inputs.

  Normally: Approx. 0.7s

  Max.: Approx. 1.5s