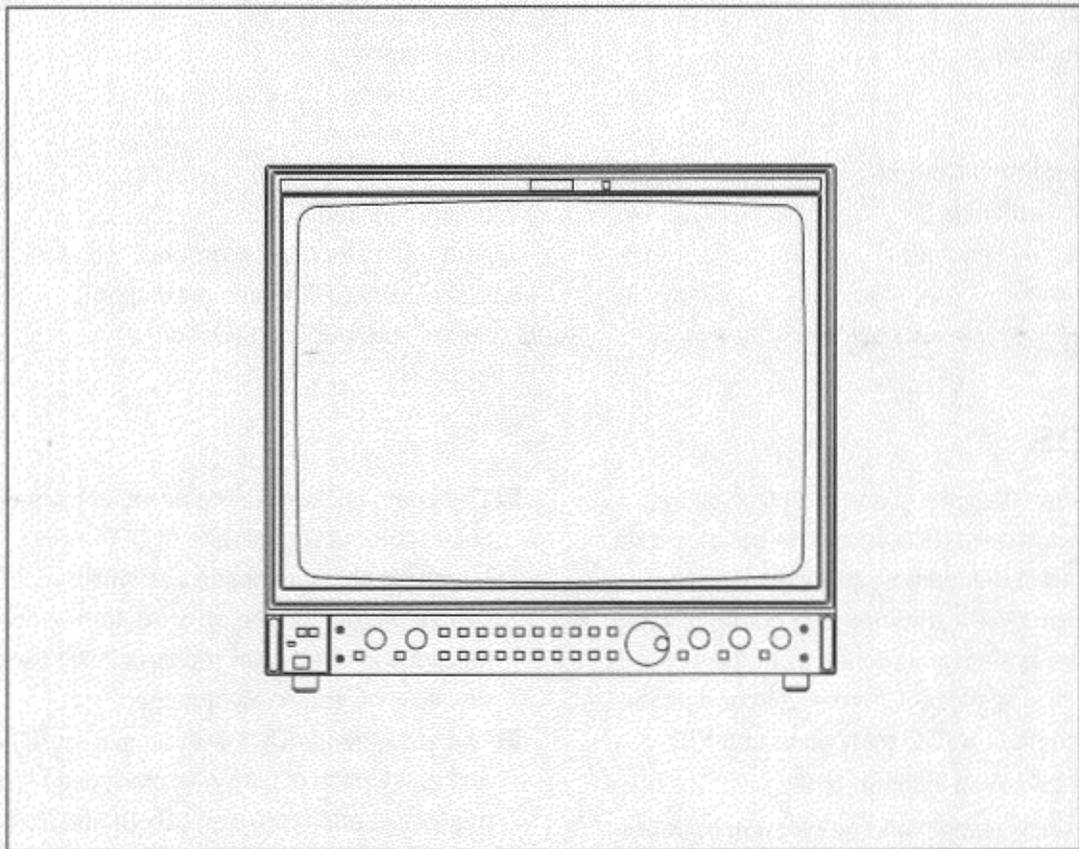# Operating Instructions

Broadcast Color Monitor

Model No. AT-H1915DA

Panasonic®

Read these instructions completely before operating this unit.

Dear Panasonic Customer:

This instruction booklet provides all the necessary operating information. We hope it will help you to get the most performance out of your new product, and that you will be pleased with your Panasonic Broadcast Color Monitor. Used as a monitor for observing color video signals, this product offers excellent functions, performance and stability.

The serial number may be found on its back. You should note it in the space provided and retain the booklet. If service is required, it will be helpful.

Model number: **AT-H1915DA**   Serial number:

Contents

Features

■ In each of the 1080i, 480p and 480i television systems, picture size data and white balance data can be saved in the memory for optimal usage.

■ Matrix ratio of YPBPR automatically changes when the television system is switched from the 1080i to 480p/480i, or vice versa. Chroma gain and phase adjustment data of NTSC composite and Y/C signals can be saved independently.

■ Safe title, center, aspect and crosshatch markers are internally generated appropriate for each signal type.

■ When the 480p/480i television mode is selected, aspect ratio can be switched from 16:9 to 4:3, or vice versa.

■ The beam current feedback circuit assures stable color reproduction despite of CRT aging. Moreover, in combination use with the optional sensor probe, correlation of white-balance data reproduction and color reproducibility between monitors can be easily obtained.

■ The in-line stripe CRT with an aspect ratio of 4:3 and mask pitch of 0.28 mm produces high brightness and resolution (about 900 lines).

■ Two sets of input signals for all signals (analog component, HD/sync, VD, and optional NTSC video composite signals, 601 component serial, NTSC composite serial) can be fed into this color monitor.

IMPORTANT SAFETY NOTICE

WARNING: To prevent damage which may result in fire or shock hazard, do not expose this appliance to rain or moisture.

Power Supply: This Broadcast Color Monitor is designed to operate on 120 volts 50 to 60 Hz, AC house current only.
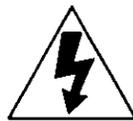
CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN

CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK,
DO NOT REMOVE COVER (OR BACK).
NO USER-SERVICEABLE PARTS INSIDE.
REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

The lightning flash with arrowhead within a triangle is intended to tell the user that parts inside the product are a risk of electric shock to persons.

The exclamation point within a triangle is intended to tell the user that important operating and servicing instructions are in the papers with the appliance.

CAUTION: This equipment is equipped with a three-pin grounding-type power plug.
Do not remove the grounding pin on the power plug.
This plug will only fit a grounding-type power outlet. This is a safety feature.
If you are unable to insert the plug into the outlet, contact an electrician.
Do not defeat the purpose of the grounding plug.

WARNING: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.
CAUTION: Any unauthorized changes or modifications to this equipment would void the users authority to operate.

Specifications

■ Television systems and input signals

- 1080i

- 480p/480i

■ Input signals

Analog inputs

(1) Input signals

• RGB or YP_BP_R input :	2
• HD or sync input :	2
• VD input:	2
• NTSC video input (option) :	2
• NTSC chroma input (option) :	1

(2) Input level

- RGB and Y inputs

  Composite : 1 Vp-p, positive polarity

  Non composite : 0.7 Vp-p, positive polarity

- P_B and P_R inputs : ±0.35 Vp-p, positive polarity

- HD/sync inputs

  3-value sync : ±0.3 Vp-p

  2-value sync : 0.3 ~ 8 Vp-p, negative polarity

  HD : 0.3 ~ 8 Vp-p, negative polarity

- VD input : 0.3 ~ 8 Vp-p, negative polarity

- NTSC video input (option)

  Composite : 1 Vp-p, positive polarity

  Non composite : 0.7 Vp-p, positive polarity

- NTSC chroma input (option) : 0.286 Vp-p (burst)

(3) Input impedance

- All input connectors : Switch selection of 75Ω termination or high impedance, bridge connection

Digital inputs (option)

601	Serial input	2	(with buffer out ※1)	75Ω	BNC
NTSC	Serial input	2	(with buffer out ※1)	75Ω	BNC
	Parallel input	1		50Ω	25-pin D-SUB
	Analog output	2	Video signals	75Ω	BNC

※1 : Valid only when 601 or NTSC input channel is selected.

Digital inputs (option)

HD   Serial input   1   (with buffer out ※2) 75Ω   BNC

             Analog output   1 YP_BP_R 75Ω   · BNC

             Audio output   1   L/R (2 channel)   600Ω   pin jack

※2 : Always valid.

■ Characteristics of video circuit

- Input return loss: 40 dB or more (5 MHz)/26 dB or more (30 MHz)

- Max. gain: 37 dB or more in red amplifying circuit

- Frequency response (100 kHz reference)

  Total characteristics from RGB input connectors to RGB cathodes

  (measured when, video amplitude at cathodes is set to "30 Vp-p".)

60 Hz ~ 20 MHz	within ±0.5 dB
20 MHz ~ 30 MHz	within ±3 dB
More than 30 MHz	roll-off

- Waveform distortion

  Characteristics at RGB cathodes when a square wave having a rise time of 50 ns is applied at RGB input connectors.

Rise time	250 kHz	less than 100 ns
Overshoot	250 kHz	less than 10%
Streaking	60 Hz	less than 1%
Sag	60 Hz	less than 2%

- Linearity (differential gain = DG)

  Total characteristics from RGB input connectors to RGB cathodes.

  Less than 3%

- Noise

  Measured at RGB cathodes with contrast set to maximum and 75Ω resistors terminating RGB inputs.

  A sync signal is supplied from the external signal source.

Synchronous noise :	less than −45 dB (p-p/p-p) (within effective picture)
Asynchronous noise :	less than −55 dB (rms/p-p) (within effective picture)
Hum noise :	less than −55 dB (p-p/p-p) (within effective picture)
Unity chroma deviation :	within ±3%

Color temperature :   D93, D65 (selectable)

	x	y (co-ordinates)
D93	0.281	0.301
D65	0.313	0.329

■ Deflection and high voltage

Sync input return loss :   more than 40 dB, 5 MHz

Sync stability :   Stable operation is assured when input signals are in the following range.

Internal sync	Variatuon of video input level(for rated value)	-6 ~ +6dB
	When sync component of video input is kept constant at -6dB for the rated value and video component is rapidly changed by the value shown right.	0 ~ 0.7Vp-p
External sync	Negative-polarity voltage supplied to the external sync input connector.	0.3 ~ 8.0Vp-p

Horizontal sync :   Pull-in range   fh ± 300 Hz or more

                            Holding range   fh ± 800 Hz or more

Deflection distortion :   Vertical direction   less than 3%

                               Horizontal direction   less than 2%

Raster size :   Normal   3% overscan of CRT effective screen area

                       Under   92% of picture frame

Interlace quality :   55 : 45 or better

Blanking time :   Vertical:1080i   20.0 H minimum

                              480p   30.0 H minimum

                              480i   15.0 H minimum

                         Horizontal: 1080i or 480p :   4µs minimum

                                       480i :   10µs minimum

Hum disturbance :   Picture displacement caused by hum noise.

                           Less than 0.2 mm peak-to-peak(weaving)amplitude.

High voltage :   24 kV ± 500 V

High voltage fluctuation: Within ±1% over a range of 0 ~ 900 µA, measured with respect to 500 µA reference

Factory setting brightness :   More than 120 cd/m² for white signal at center of screen(When under scanning)

Max. brightness :   At least 150 cd/m² full-screen white before the ABL causes limiting.

Convergence :	Color mis-registration at various points in the screen	
	In the center of screen:	within 0.2 mm
	In the corners of screen:	within 0.5 mm
Inclination of picture :		within ±1.5 mm

■ Characteristics of CRT

Type :	19-inch, 90° deflection, in-line gun, shadow mask type	
	Mask pitch:	0.28 mm
	Resolution:	approx. 900 lines
Warm up time :	About 30 min.	
Chromaticity :	SMPTE-C phosphors	

	x	y
R	0.630	0.340
G	0.310	0.595
B	0.155	0.070

X Ray radiation :   0.1 mR/H or less (in any direction, at 50 mm distant from the surface of the monitor)

■ Internally generated signals

- PLUGE signal :   ∗100% whitewith window plus PLUGE
- Step signal :   ∗White 25/75%
- Safe title signal :   95/90/85/80% areas

    (with center cross hatch ON/OFF function)

- Cross hatch :

    (1) When picture aspect ratio is 16 : 9

        Crosshatch consisting of 21 vertical lines and 13 horizontal lines

    (2) When picture aspect ratio is 4 : 3

        Crosshatch consisting of 17 vertical lines and 13 horizontal lines

- Aspect :

    (1) When picture aspect ratio is 16 : 9

        Displays the 4:3 picture area on the 16:9 picture.

    (2) When picture aspect ratio is 4 : 3

        Displays the 16:9 picture area on the 4:3 picture.

    ∗ See page 30.

■ Remote control

- Wired remote controller :   D-SUB 25-pin connector

■ Other specifications

Memory backup .... Approx. six years with fresh lithium battery (Preset data is maintained.)

Operating temperature range .... 32 ~ 104°F (0 ~ 40°C)

Guaranteed temperature

    for electrical performance .... 50 ~ 95°F (10 ~ 35°C)

Relative humidity .... 30 ~ 90%RH (no dew condensation)

AC power voltage .... AC 120 V ± 10%, 50/60 Hz

Power consumption .... Max. 450 VA

Connectors: YP$_B$P$_R$/RGB input .... BNC

               HD/SYNC input .... BNC

               VD input .... BNC

               Video input .... BNC

               Remote input .... D-SUB 25-pin

Dimensions (W x H x D) .... 17^5/$_8$" x 15^7/$_{10}$" x 20^7/$_{16}$"(448 x 399 x 520 mm)

Weight .... Approx. 105.8 lb (48 kg)

Standard accessories .... Power cord   1

                                        16 : 9 CRT Mask kit   1

                                        Operating Instruction manual   1

■ Options

NTSC decoder board :	ET-NTB1915
601 component digital interface board :	ET-D1B1915
NTSC composite digital interface board :	ET-D3B1915
HD component digital interface board :	ET-HDB1915
Rack-mount kit :	TY-SK1915

◆ Design and Specifications are subject to change without notice.
Weight and Dimensions shown are approximate.

Precautions

1. Repair and maintenance adjustments of this monitor should only be performed by color-TV technicians.

2. This monitor does not use forced air cooling. Do not block the ventilation holes and avoid placing the monitor close to objects that produce a lot of heat.
Provide good ventilation when this monitor is rack-mounted.

3. Locate this monitor in a place where it will not be directly subjected to steam or smoke.

4. Set the monitor in a level, stable condition.
Placing the monitor on its side, facing upward, or upside down will make it impossible to guarantee performance; furthermore, this will have a damaging influence on the internal parts and could be the cause of fire or breakdown.

5. Do not allow the CRT screen to be in the path of direct sunlight or high ambient illumination.
A clear picture cannot be obtained when light reflects on the CRT screen.

6. Items that produce magnetic fields such as magnets and speaker systems should not be brought close to this monitor.

7. Do not subject the monitor to strong vibration or impact.
This can damage the CRT.

8. To obtain the best performance from the monitor, allow at least 30 minute warm-up time.
Also make adjustments after at least 30 minute warm-up.

9. The brightness of this unit is automatically limited to prevent color bleeding and doming, and to improve the resolution.

Operations: Front Panel Controls
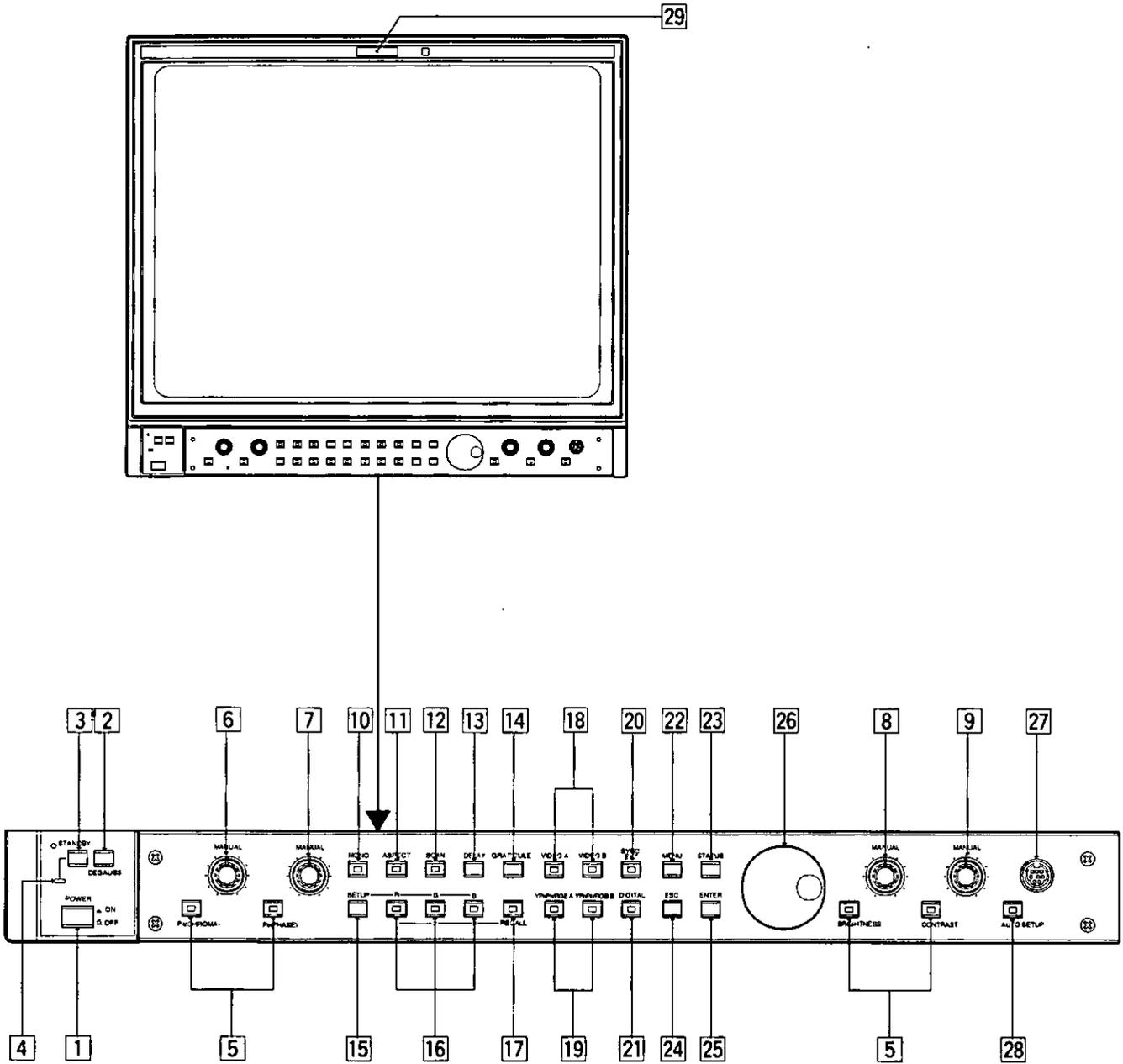
1 POWER

Power ON/OFF switch. Depress the button (▰) for power on. Push it again to release (▮) for power off.

If the picture is not displayed after turning on this switch (▰), check if the LEDs of STAND-BY and VARIABLE (contrast and brightness) switches are lit. If these LEDs are lit, push their switches to establish the standard status (not lit).

2 DEGAUSS

Push this switch to energize the degaussing coil to degauss the color CRT shadow mask, which may have become magnetized. With a single push, degaussing lasts for five seconds. (Picture may sway while the degaussing coil is in action.) Even if it is pushed again immediately-after, it does not work. Therefore, if the more degaussing is necessary, push it again in 5 minutes.

3 STANDBY

This switch cuts off the high-voltage circuits of the color monitor. Push this switch when the power switch 1 is turned on, and only the high voltage circuits are shut off, rendering the color monitor in stand-by status. (LED goes out and the picture disappears from the screen.)
In the stand-by status, heating of low voltage the electrical circuits and CRT cathodes are still normal, so pushing the switch again re-starts only the high voltage, the result is that the picture will re-appear quickly, and with a stabilized white balance.

CAUTION!

Since the internal circuits are active even in the stand-by status, you must treat the color monitor with the same operating care and caution as it is in the normal operating status.

4 LED

It lights up in the STAND-BY mode.

5 VARIABLE

The switch to select the preset or variable mode. This switch is provided for each of the contrast, brightness, PR (CHROMA) and PB (PHASE) controls.

Set this switch to off for the preset mode, and to on (LED lights up) for the variable mode.

6 PR (CHROMA)

This is the gain adjuster for PR signal when YPBPR signals are input. This also functions as the control to adjust color saturation (chroma) when the NTSC decoder (optional) is active.

7 PB (PHASE)

This is the gain adjuster for PB signal when YPBPR signals are input. This also functions as the control to adjust demodulation phase of the color demodulation circuit when the NTSC decoder (optional) is active.

8 BRIGHTNESS

For adjusting brightness of the picture.

9 CONTRAST

For picture contrast adjustment.

CAUTION!

If both of the BRIGHTNESS and CONTRAST controls are used near its maximum position, picture colors might change. This is called the Doming Phenomenon, therefore, it's not a malfunction of the color monitor.This phenomenon disappears when either control is lowered.

10 MONO

For selecting color picture or black & white picture (monochrome). Setting it to the MONO position (LED lights up) is convenient for white balance adjustment.

11 ASPECT

For switching the screen aspect ratio from 4:3 to 16:9 or vice versa. Screen aspect switching functions when the 480i signal or 480p signal is input. (Only when 1080i signal is input, the screen aspect is fixed to 16:9.) Also when the TEST signal is selected, screen aspect ratio is not switchable. To confirm whether is fixed to 4:3 or 16:9, push the 23 STATUS switch.
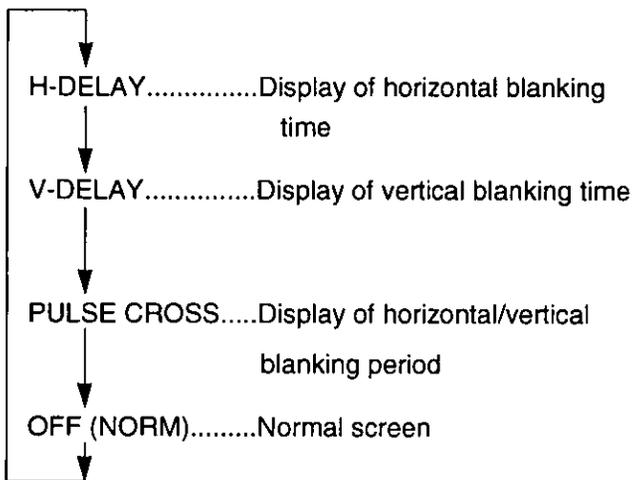
⑫ SCAN

The switch to select the scan size. It is turned off (LED goes out) to select the normal scan size (in edges of picture contact the top, bottom, left and right margins of the CRT).

In the UNDER scan mode (LED lights up), only the corners of the effective picture contact the four corners of the CRT (approx. 92% of the normal scan picture size is obtained).

⑬ DELAY

Delay screen selection switch. The screen changes in cyclic manner as shown below by pushing this switch.

```
┌──┐
│  ▼
│  H-DELAY...............Display of horizontal blanking
│  │                     time
│  ▼
│  V-DELAY...............Display of vertical blanking time
│  │
│  ▼
│  PULSE CROSS.....Display of horizontal/vertical
│  │                     blanking period
│  ▼
│  OFF (NORM).........Normal screen
└──▼
```

CAUTION!

When the DELAY screen select switch is turned on,㉒ MENU and ㉓ STATUS are not displayed, and a safe title is also not output.

⑭ GRATICULE

Graticule title on/off switch.

CAUTION!

If the "GRATICULE off" condition has been selected on the MENU

screen, safe title is not displayed even if the GRATICULE switch is "on".

⑮ SETUP

With the SETUP position, vertical deflection and video amplification stop and a horizontal single line appears on the CRT. This is convenient for setting CRT cut-off, when adjusting each R, G and B cathode voltage adjuster (RGB BIAS).

⑯ R/G/B

These switches independently turn on or off each beam of the R, G and B electron guns. Push the R, G or B switches and their LED light up, and the screen color corresponding to the "color" of the switch depressed disappears. Push the switch again, to extinguish the LED, and that color will appear again.With the use of these switches, purity and demodulated phase can be confirmed via the "single color method".

⑰ RECALL

The mode switch to recall the RECALL memory. After having turned it on (LED lights up) a of "1", "2" or "3" switch and the content of the corresponding memory is recalled and set on the panel display.

⑱ VIDEO A / VIDEO B

Switches to select VIDEO A channel or VIDEO B channel. This switch functions only when the optional NTSC decoder is set up.

⑲ YPBPR/RGB A / YPBPR/RGB B

Switches to select YPBPR/RGB A channel or YPBPR/RGB B channel.

⑳ SYNC EXT

Sync signal input select switch.

OFF (LED goes out)
(1) In the YPBPR/RGB A or YPBPR/RGB B mode
   When G/Y input signals contains a sync signal, sync component of those signals are separated and scanned.
(2) In the VIDEO A or VIDEO B mode
   When VIDEO input signal contains a sync signal, sync component of that signal is separated and scanned.

ON (LED lights up)
(1) In the YPBPR/RGB A or YPBPR/RGB B mode
   When G/Y input signals do not contain a sync signal, or scanning by an external sync signal is required, use this control.
(2) In the VIDEO A or VIDEO B mode
   When VIDEO input signal do not contain a sync signal, or scanning by an external sync signal is required, use this control.

21 DIGITAL

For digital interface selection. This select switch functions only when 601, NTSC or HD digital interface (optional) has been set up.
Select "601", "NTSC" or "HD" in the INPUT menu.

22 MENU

This switch displays or hides the setup menu. The menu is not displayed under the DELAY ON status.

23 STATUS

The switch for outline display of the currently set values. Display is not made under the DELAY ON status.

24 ESC

Use this switch to interrupt the menu operation or adjustment.

25 ENTER

Push this switch to set up and memorize the menu items and adjustment values selected by the rotary encoder 26.

26 Rotary encoder

Use this knob to change cursor operation and values when selecting the menu or performing adjustment.

27 PROBE

Connector for the sensor probe which is used for auto setup operation.

Note: If your application requires AUTO SETUP, please contact your Panasonic sales office regarding the sensor probe.

28 AUTO SETUP

The switch to start the auto setup operation.

Note: If your application requires AUTO SETUP, please contact your Panasonic sales office regarding the sensor probe.

29 Tally lamp

When the power switch is turned on, this LED lights in green color. It lights up in red color when the No.13 and No.19 pins of the remote connector are interconnected (contact-point supply).

Subset marker function

In addition to preset functions to keep the standard setting values of the CONTRAST, BRIGHTNESS, PR (CHROMA) and PB (PHASE) controls, this color monitor has the subset marker function that allows to easily re-establish any desired set value. Rotate the larger coaxial knob which is located behind each adjuster knob such as the CONTRAST. By coinciding that marker (A) with the marker (B) of the adjustment knob, make its value equal to the set value. Even if the adjustment knob is turned after this setting has been completed, the adjuster knob can be returned to the set position easily since the subset marker remained fixed. This function is convenient for picture comparison as required in experiment or study.
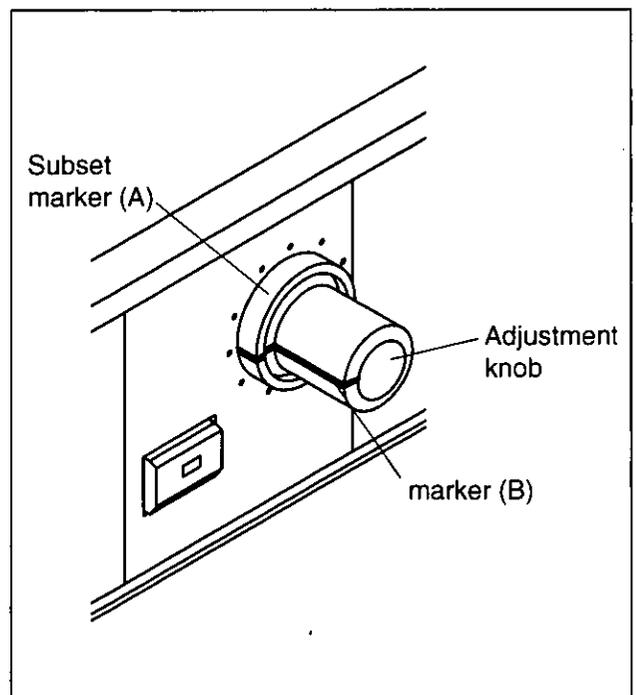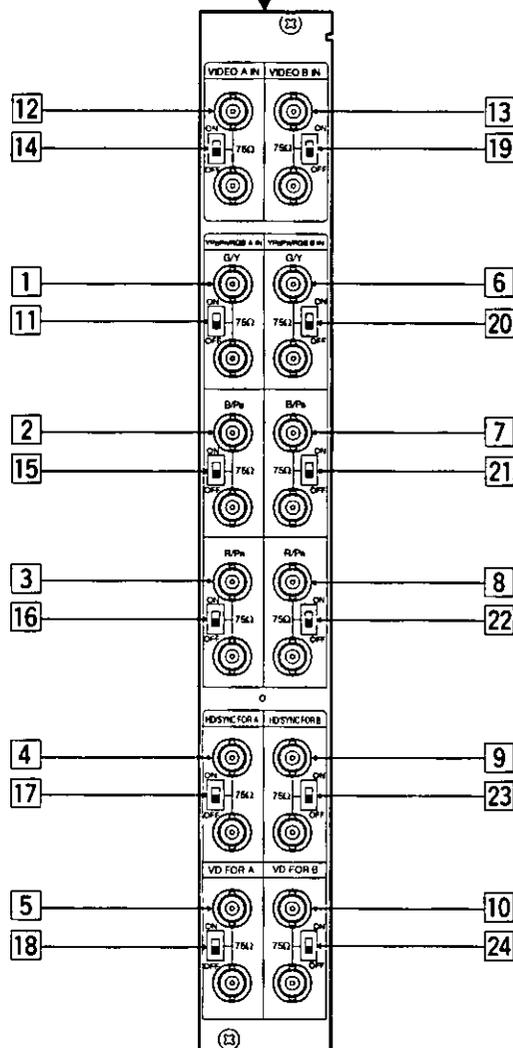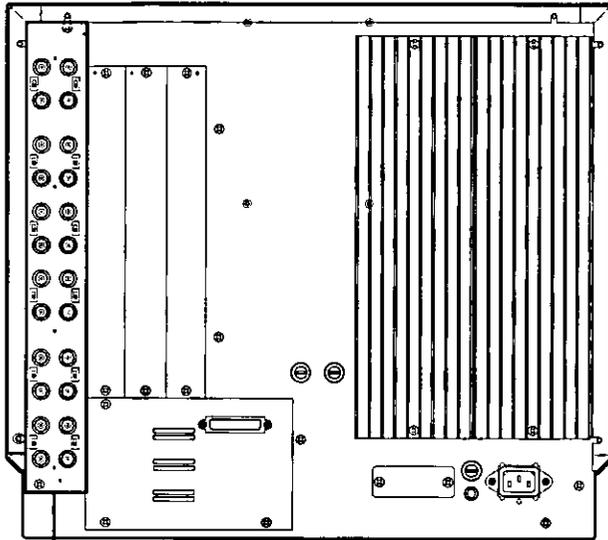
1 YPʙPʀ/RGB A G/Y

Input connector for YPʙPʀ/RGB A channel signal. Supply G signal of RGB signals or Y signal of YPʙPʀ signals to this input connector. Since it has a bridge connection function, corresponding input impedance must be selected by the "75Ω ON/OFF" switch 11.

- When a sync signal is not part of the G (or Y) signal, proceeded to either (1) or (2) operation shown below.

(1) Input a composite sync signal to the HD/SYNC A 4 connector on the rear panel, and turn on the SYNC EXT switch (its LED lights up) on the front control panel.

(2) Input a horizontal sync signal to the HD/SYNC A 4 connector on the rear panel, and a VD (vertical sync signal) to the VD A 5, then turn on the SYNC EXT switch (its LED lights up) on the front control panel.

- When a sync signal is part of the G (orY) signal, check that the SYNC EXT switch on the front panel is turned off (its LED goes out).

2 YPʙPʀ/RGB A B/Pʙ

Input connector for YPʙPʀ/RGB A channel. Supply B signal of RGB signals or PB signal of YPʙPʀ signals to this input connector. Since it has a bridge connection function, corresponding input impedance must be selected by the "75Ω ON/OFF" switch 15.

3 YPʙPʀ/RGB A R/Pʀ

Input connector for YPʙPʀ/RGB A channel. Supply R signal of RGB signals or PR signal of YPʙPʀ signals to this input connector. Since it has a bridge connection function, corresponding input impedance must be selected by the "75Ω ON/OFF" switch 16.

4 HD/SYNC A

Input connector for YPʙPʀ/RGB A channel and VIDEO A channel (optional). Supply HD (horizontal sync signal) or sync (composite sync signal) to this connector. Since it has a bridge connection function, corresponding input impedance must be selected by the "75Ω ON/OFF" switch 17.

5 VD A

Input connector for YPʙPʀ/RGB A channel and VIDEO A channel (optional). Supply VD (vertical sync signal) to this connector. Since it has a bridge connection function, corresponding input impedance must be selected by the "75Ω ON/OFF" switch 18.

When a sync signal is input to the HD/SYNC A 4 and a VD is supplied to this connector, vertical deflection of the color monitor operates by making the VD which is input to this connector the reference.

6 YPʙPʀ/RGB B G/Y

Input connector for YPʙPʀ/RGB B channel signal. Supply G signal of RGB signals or Y signal of YPʙPʀ signals to this input connector. Since it has a bridge connection function, corresponding input impedance must be selected by the "75Ω ON/OFF" switch 20.

- When a sync signal is not part of the G (or Y) signal, proceeded either (1) or (2) operation shown below.

(1) Input a composite sync signal to the HD/SYNC B 9 connector on the rear panel, and turn on the SYNC EXT switch (its LED lights up) on the front control panel.

(2) Input a horizontal sync signal to the HD/SYNC B 9 connector on the rear panel, and a VD (vertical sync signal) to the VD B 10, then turn on the SYNC EXT switch (its LED lights up) on the front control panel.

- When a sync signal is part of the G (or Y) signal, check that the SYNC EXT switch on the front panel is turned off (its LED goes out).

7 YPʙPʀ/RGB B B/Pʙ

Input connector for YPʙPʀ/RGB B channel. Supply B signal of RGB signals or PB signal of YPʙPʀ signals to this input connector. Since it has a bridge connection function, corresponding input impedance must be selected by the "75Ω ON/OFF" switch 21.

8 YPвPн/RGB B R/Pн

Input connector for YPвPн/RGB B channel. Supply R signal of RGB signals or PR signal of YPвPн signals to this input connector. Since it has a bridge connection function, corresponding input impedance must be selected by the "75Ω ON/OFF" switch 22.

9 HD/SYNC B

Input connector for YPвPн/RGB A channel and VIDEO A channel (optional). Supply HD (horizontal sync signal) or sync (composite sync signal) to this connector. Since it has a bridge connection function, corresponding input impedance must be selected by the "75Ω ON/OFF" switch 23.

10 VD B

Input connector for YPвPн/RGB B channel and VIDEO A channel (optional). Supply a VD (vertical sync signal) to this connector. Since it has a bridge connection function, corresponding input impedance must be selected by the "75Ω ON/OFF" switch 24.

When a sync signal is input to the HD/SYNC B 9 and a VD is supplied to this connector, vertical deflection of the color monitor operates by making the VD which is input to this connector as reference.

11 14~24 75Ω ON/OFF

This is the switch to turn on or off the 75Ω terminating resistor of the input connector.

12 VIDEO A

Input connector for VIDEO A channel. The signal input to this connector becomes effective only when the optional NTSC decoder is set up. Supply a NTSC video signal or Y signal of Y/C separation signal. Since it is a bridging connection, corresponding input impedance must be selected by the "75Ω ON/OFF" switch 14.
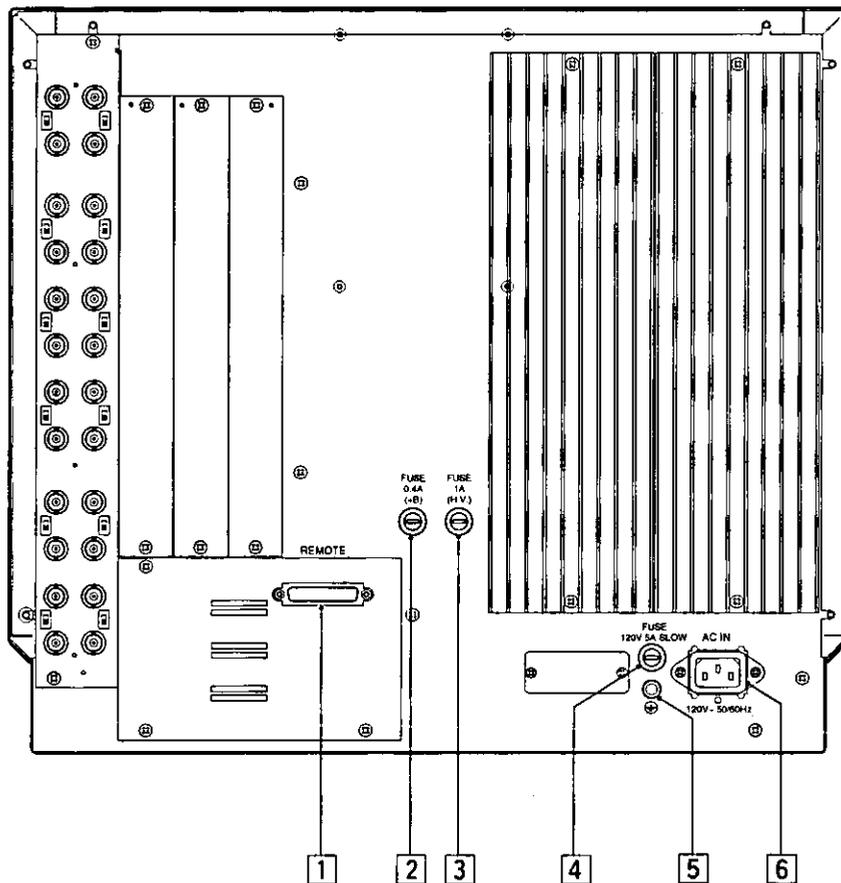
13 VIDEO B

Input connector for VIDEO B channel. The signal input to this connector becomes effective only when the optional NTSC decoder is set up. Supply a NTSC video signal or Y signal of Y/C separation signal. Since it is a bridging connection, corresponding input impedance must be selected by the "75Ω ON/OFF" switch 19.

Operation: Rear Terminals (2)

[1] REMOTE

The connector to which an equipment that remotely controls this color monitor is connected. Regarding the remote-controlling function, refer to table 17-1: "Remote controlling."

[2] FUSE for +140 V

Fuse for DC+140 V regulator circuit. Fuse amperage is 0.4 A.

[3] FUSE for HV

Fuse for the power supply line of the high-voltage circuit. Fuse amperage is 1 A.

[4] FUSE

A fuse for the AC power input.

AC 120 V ....5 A SLOW-BLOW

[5] ⏚ GROUNDING TERMINAL

Protective grounding terminal. For operating safety, it must be grounded before starting to use this color monitor.
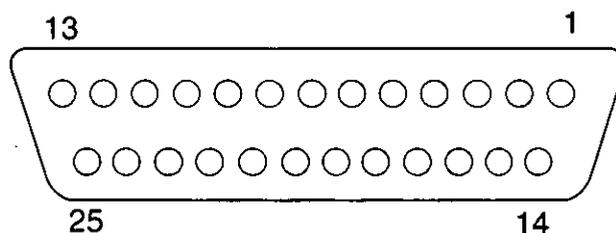
[6] AC IN

Power inlet for AC line voltage. Connect it to the wall outlet using the standard power cord. For increased safety, the power cord must be plugged to the color monitor after having confirmed that the POWER switch is turned off (▌). Next, connect the power plug to the AC line outlet.

Remote connection

Contact No.	Contact function
1	The input YPвPн/RGB A is selected by short-circuiting this contact to contact No. 13.
2	The input YPвPн/RGB B is selected by short-circuiting this contact to contact No. 13.
3	The input VIDEO A is selected by short-circuiting this contact to contact No. 13.
4	The input VIDEO B is selected by short-circuiting this contact to contact No. 13.
5	The input 601 is selected by short-circuiting this contact to contact No. 13.
6	The input NTSC is selected by short-circuiting this contact to contact No. 13.
7	The SYNC EXT is selected by short-circuiting this contact to contact No. 13.
8	STAND BY ON is selected by short-circuiting this contact to contact No. 13.
9	Color screen is switched to black-and-white screen by short-circuiting this contact to contact No. 13.
10	4:3 aspect ratio is selected by short-circuiting this contact to contact No. 13.
11	Raster size is switched to under scan by short-circuiting this contact to contact No.13.
12	H DELAY is selected by short-circuiting this contact to contact No. 13.
13	GND
14	V DELAY is selected by short-circuiting this contact to contact No. 13.
15	The safety area is displyed on the screen by short-circuiting this contact to contactNo. 13.
16	GBR signals are switched to YPBPR signals by short-circuiting this contact to contact No. 13.
17	Serial (signal) is switched to Parallel (signal) by short-circuiting this contact to contact No.13.(When NTSC composite mode is in use.)
18	SERIAL A is switched to SERIAL B by short-circuiting this contact to contact No. 13 (When 601 component or NTSC composite mode is in use).
19	Tally lamp's illumination color is changed from green to red by short-circuiting this contact to contact No. 13.
20	Input is switched to HD SDI by short-circuiting this contact to contact No. 13.
21	NC
22	NC
23	NC
24	NC
25	NC

Table 17-1

Remote connector on the rear panel

Operation: Optional Board (1)
NTSC Decoder Board
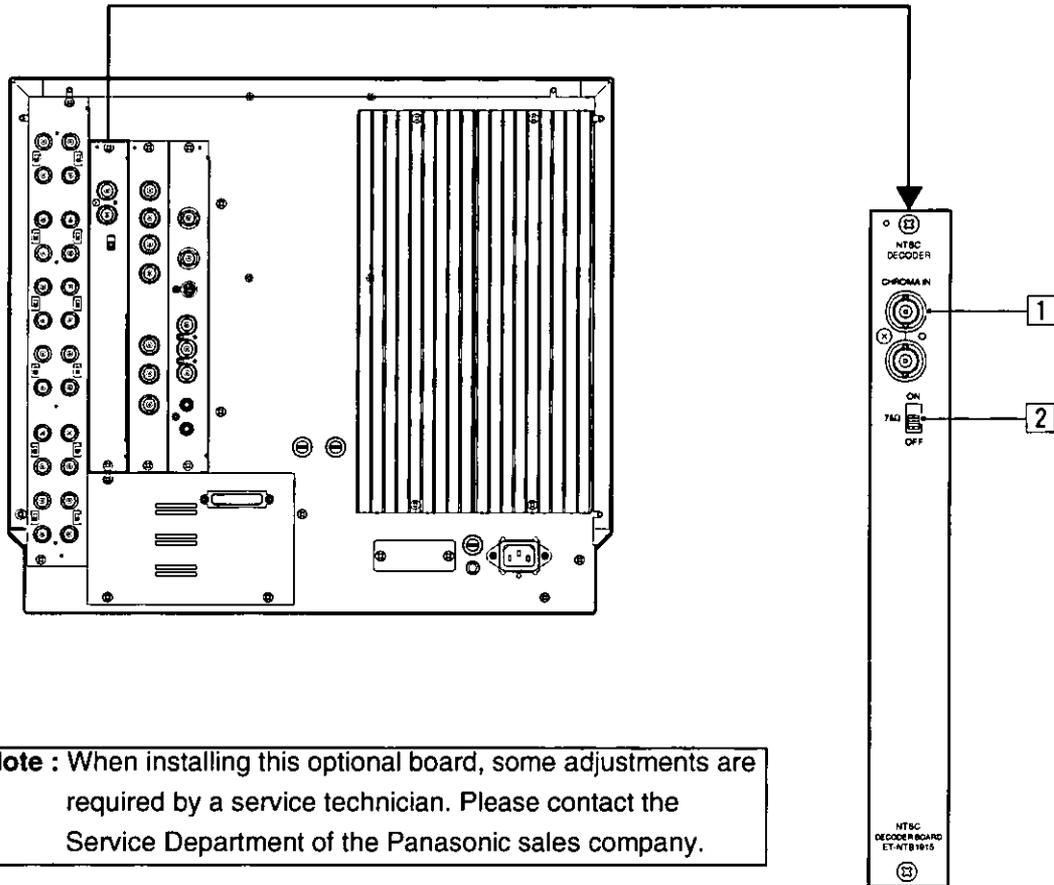
> **Note :** When installing this optional board, some adjustments are required by a service technician. Please contact the Service Department of the Panasonic sales company.

1 CHROMA IN
BNC connector to which a chroma signal is input.
Input impedance is 75Ω.

2 75Ω ON/OFF
This is the switch to turn on or off the 75Ω terminating resistor of the input connector.

Operation: Optional Board (2)
601 Component Digital I/F Board
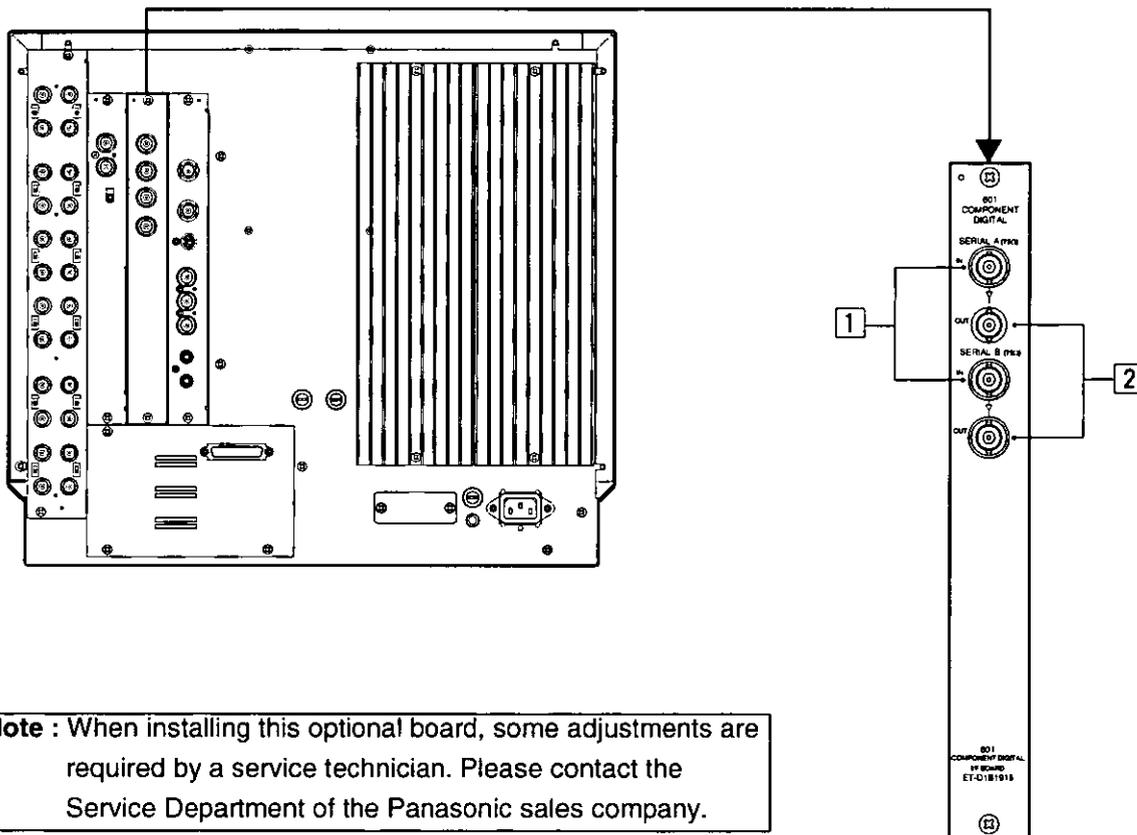
Note : When installing this optional board, some adjustments are required by a service technician. Please contact the Service Department of the Panasonic sales company.

1 SERIAL IN

BNC connector to which a 601 serial digital signal is input. Input impedance is 75Ω.

2 BUFF OUT

BNC connectors with an impedance of 75Ω. The signal which is input from the SERIAL IN connectors are output after it has passed through the buffer. Signal loss caused by cable loss and other reasons is compensated for.

Note : SDI(Serial composite, Serial component) signal has "Sound Digital Data" during the horizontal blanking period, however the "Sound Digital Data" can not be seen on the screen.

Operation: Optional Board (3)
NTSC Composite Digital I/F Board

Note : 1.When installing this optional board, some adjustments are required by a service technician. Please contact the Service Department of the Panasonic sales company.

2.This optional board can only be used in conjunction with the NTSC decoder board, which is also an option-board.

[1] SERIAL IN
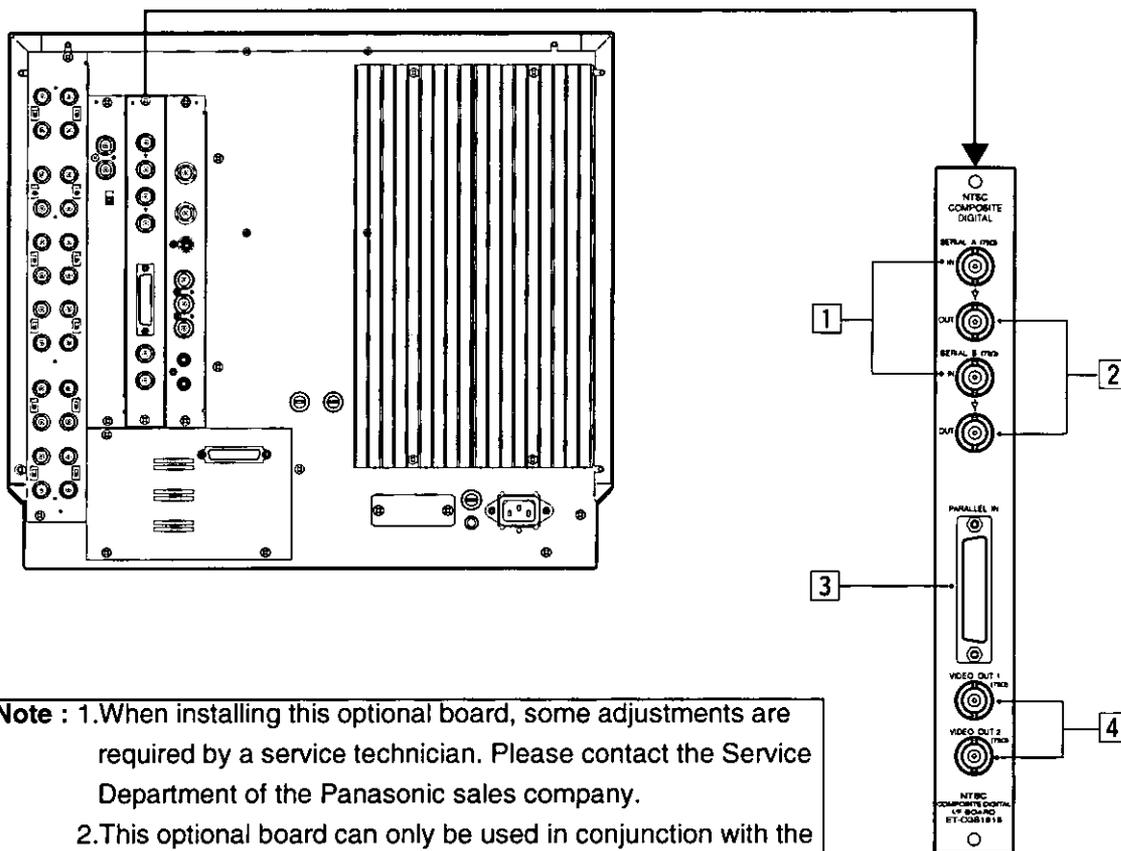BNC connector to which an NTSC serial digital signal is input. Input impedance is 75Ω.

[2] OUT(Buffer out)
BNC connectors with an impedance of 75Ω. The signal which is input to the SERIAL IN connectors are output after it has passed through the buffer. Signal loss caused by cable loss and other reasons is compensated for.

[3] PARALLEL INPUT
D-sub connector to which NTSC parallel digital siganal is input (ECL level).

[4] VIDEO OUTPUT
BNC connectors with an impedance of 75Ω. The signal which is input to the SERIAL IN connectors or PARALLEL IN connector, is converted to composite video signal, and then output from these connectors.

Note : SDI(Serial composite, Serial component) signal has "Sound Digital Data" during the horizontal blanking period, however the "Sound Digital Data" can not be seen on the screen.

Note : When a digital signal is input via this NTSC Composite Digital I/F Board, the menu nevertheless contains a selection for "Y/C signal". If "YC" is selected the signal will be displayed, but without chrominance.

Operation: Optional Board (4)
HD Component Digital I/F Board
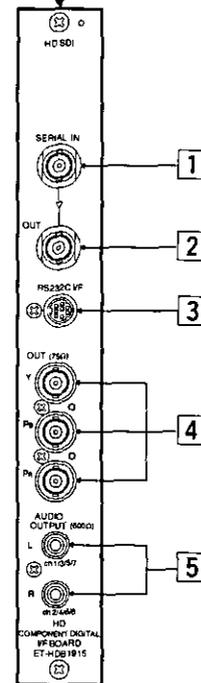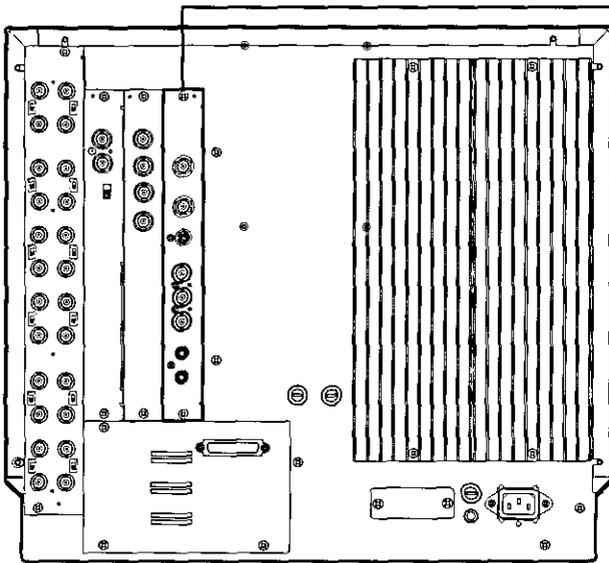
Note : When installing this optional board, some modifications are required by a service technician. Please contact the Service Department of the Panasonic sales company.

[1] **SERIAL IN**

BNC connector to which an HD serial digital signal is input. Input impedance is 75Ω.

[2] **OUT(Buffer out)**

BNC connector that outputs the signal input from the SERIAL IN via a buffer amplifier. Output impedance is 75Ω.

[3] **RS232C I/F**

CPU interface connector for servicing use.

[4] **VIDEO OUTPUT**

BNC connector from which analog-converted Y, PB and PR signals are output. Output impedance is 75Ω.

[5] **AUDIO OUTPUT**

RCA pin jack from which analog-converted audio signals are output. Output impedance is 600Ω. Output channel is set by the selector switch provided inside the board.

Note : SDI(Serial composite, Serial component) signal has "Sound Digital Data" during the horizontal blanking period, however the "Sound Digital Data" can not be seen on the screen.

Standard setting status when this color monitor is delivered

INPUT SIGNAL

→ SYSTEM   RGB

GRATICULE

→ SAFE TITLE   90%

   CENTER CROSS   ON

MODE SET

→ H-AFC   SLOW

   C-KILLER   AUTO

   APT   OFF

   RES SC   OFF

   SPLIT   OFF

   CHROMA UP   OFF

WHITE BALANCE

→ COLOR TEMP

   1. (D93 16:9) .... Color temperature when a 480i signal is input and aspect ratio is 16:9.

   2. (D65 16:9) .... Color temperature when a 1080i signal is input or a 480p signal is input.

   3. (D93 4:3) .... Color temperature when a 480i signal is input and aspect ratio is 4:3.

   4. (D65 4:3) .... Color temperature when a 480p signal is input and aspect ratio is 4:3.

PROTECT

   * WHITE BAL

   * PRESET VR

   * PRESET DEF

   * SAVE/RECALL

PANEL

   MESSAGE   ON

   LED   ON

   SAVE NO.

   REMOTE NO.   1 (Remote control transmitter is not provided)

Screen Menus

■ General description

This color monitor employs the on-screen-display setting/adjustment system, in which setting and adjustment are made by controlling the displayed menu screens. Settled values and adjusted values are saved in the backup memory (The memory is powered by a lithium battery having a life of about six years) and re-established every when the power switch is turned on.

Each setting operation on the menu screen is basically performed in the following steps.

(1) Push the MENU key to display the menu.

(2) Select the required item by turning the ROTARY ENCODER knob and determine the item by pushing the ENTER key.

(3) Select the setting of that item by turning the ROTARY ENCODER knob and set the operating content by pushing the ENTER key.

(4) Depending on needs, repeat the steps (2) and (3).

(5) Push the MENU or ESC key for to go out of the menu screen. Now, setting has been completed.

> By turning the rotary encoder knob, setting and selection of each item is displayed one after another cyclically.

Example: MODE SET menu

```
MODE SET

 ⇨ H-AFC          FAST      SLOW                    ① FAST/SLOW
   C-KILLER        AUTO      AUTO                    ② AUTO/ON/OFF
   APT             OFF       OFF                     ③ ON/OFF/ADJ
   RES. SC         ON        OFF                     ④ ON
   SPLIT           OFF       OFF                     ⑤ ON/OFF
   CHROMA UP       ON        OFF                     ⑥ ON/OFF

      └───┬───┘    └────┬────┘   └────┬────┘
        item       Mode setting   Currently set mode
```
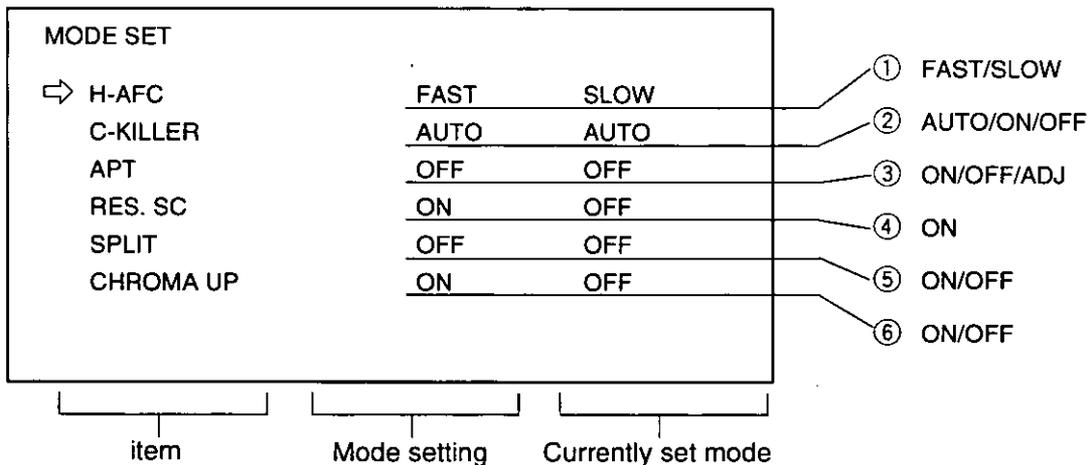
In this way, by turning the ROTARY ENCODER knob, the next item appears with the content selected in each item (① ~ ⑥) displayed. When the desired setting is displayed, select it by pushing the ENTER key. If the MENU or ESC key is pushed after this operation is being performed, the processing is interrupted and the contents that have been selected become effective.

When ADJ is selected and the ENTER key is pushed in this mode setting, The currently selected value is shown in ADJ and it is adjustable by turning the ROTARY ENCODER knob. If the ESC key is pressed on the way, that set value is canceled and the previous value is reset.

The adjusted value is determined (altered) by pushing the ENTER key.

Menus displaying the ">" mark means that they have a sub menu. Turn the ENTER key by selecting the ">" mark and the screen displays the sub menu.(see WHITE BALANCE of page 27 and 28)

■ Menu hierarchy

```
MAIN MENU
        ├─ INPUT SIGNAL
        ├─ WHITE BALANCE
        │       ├─ COLOR TEMP
        │       ├─ STORE DATA
        │       ├─ TITLE EDIT
        │       └─ GAIN/BIAS ADJ
        │
        ├─ GRATICULE
        ├─ MODE SET
        ├─ PRESET
        ├─ PROTECT
        └─ PANEL
```

■ Menu screens

1. Main menu

```
MAIN MENU
  ⇨     INPUT SIGNAL
        WHITE BALANCE
        GRATICULE
        MODE SET
        PRESET
        PROTECT
        PANEL
```
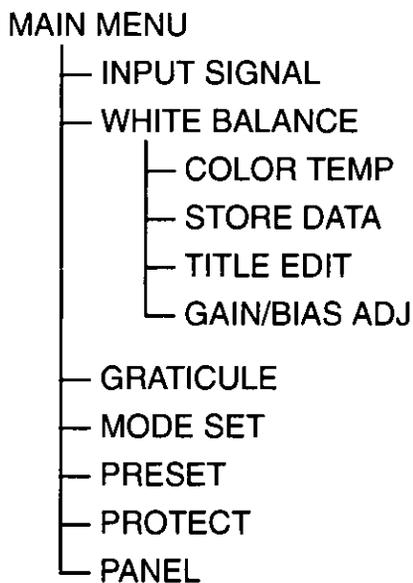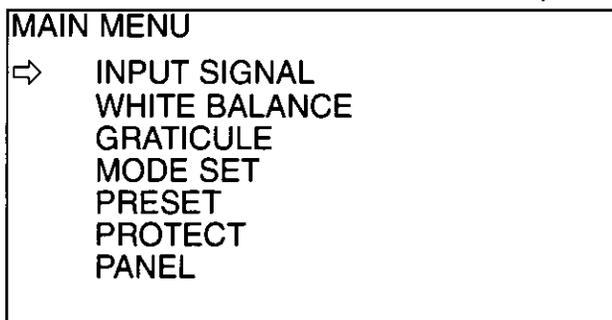
This is the top hierarchy menu. With this main menu, select the necessary sub menu.

2. INPUT SIGNAL

(1) When YPʙPʀ/RGB A ch or YPʙPʀ/RGB B ch is input

```
┌─────────────────────────────────────────────┐
│  INPUT SIGNAL                                 │
│                                               │
│  ⇨  SYSTEM           RGB          RGB         │
│                                               │
│                                               │
│                                               │
│                                               │
│                                               │
│                                               │
└─────────────────────────────────────────────┘
```

• SYSTEM .... RGB/YPʙPʀ

For switching the mode of the operating status to function as a

display driven by YPʙPʀ or RGB signals. Correctly set this in

accordance with the input signals.

Note : When set the input signal, cannot be set A channel and B channel in separate

input signals so that recommend to use function of saving and calling of panel

setting data (refer to page 45).

(2) When VIDEO A ch or VIDEO B ch signal is input

```
┌─────────────────────────────────────────────┐
│  INPUT SIGNAL                                 │
│                                               │
│  ⇨  NTSC           VIDEO        VIDEO         │
│     COMB                        2 LINE        │
│                                               │
│                                               │
│                                               │
│                                               │
│                                               │
└─────────────────────────────────────────────┘
```
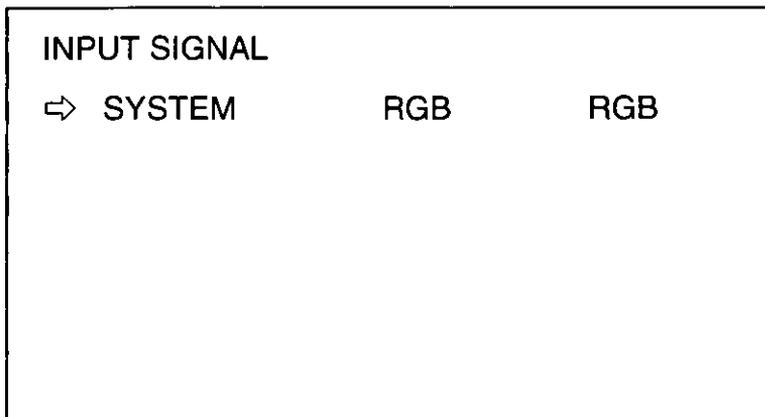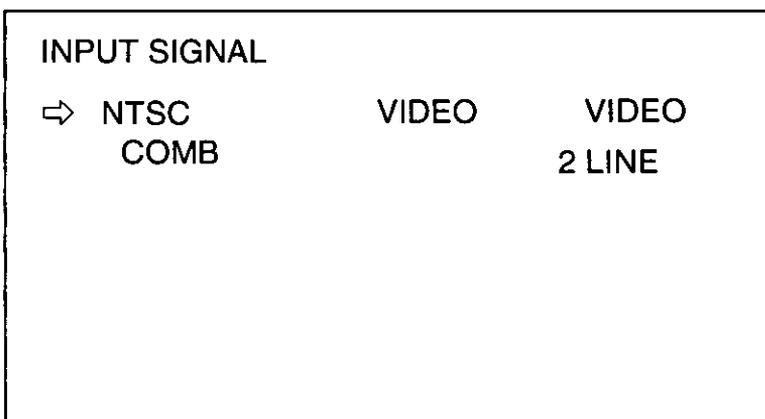
• SYSTEM .... VIDEO / YC

For selecting either composite or YC input signal.

Note : If selecting YC on the INPUT SIGNAL menu, a color signal will be displayed

only if the chrominance signal is connected to the CHROMA IN BNC

connector located on the (optional) NTSC decoder.

• COMB .... 2 LINE / 3 LINE / OFF

For selecting a comb filter for NTSC decoder. When this is set to OFF, trap

operation is established.

(3) When digital input (601, NTSC or HD) mode is selected

```
INPUT SIGNAL

⇨   SYSTEM          601        601
    CHANNEL                    A
    INPUT                      SERI
```

• SYSTEM	601/NTSC/HD
	For selecting 601, NTSC or HD decoder.

• CHANNEL	A/B
	For selecting the SERIAL input channel of the 601 or NTSC decoder.
	In case of HD, channel A is fixed.

• INPUT	SERI/PARA
	For selecting the status of input signal (serial or parallel). 601 and
	HD are limited to serial mode.

Note : When set the input signal, cannot be set A channel and B channel in separate input signals so that recommend to use function of saving and calling of panel setting data (refer to page 45).

3. WHITE BALANCE

```
WHITE BALANCE

⇨   COLOR TEMP         >
    STORE DATA         >
    SENSOR READ
    TITLE EDIT         >

    TEST SIG           ·
    AUTO CHROMA
    GAIN/BIAS ADJ      >
```

(1) COLOR TEMP

Shown here is the currently selected status

```
COLOR TEMP          (480I  16:9)

⇨ 1. *    < D93      16:9 >
   2.     < D65      16:9 >
   3.     < D93      4:3 >
   4.     < D65      4:3 >
   5.     < USER 1        >
   6.     < USER 2        >
   7.     < USER 3        >
   8.     < USER 4        >
```

└─Memory No.

This sub menu is for recalling the white balance data stored in the memories No. 1 ~ 8. Since the white balance data selected for each input signal type and screen aspect ratio are memorized, the corresponding data is automatically read from the memory whenever input signal and aspect ratio change. Asterisk (*) moves to the selected memory number.

Example:

① Input a 480I signal, select aspect ratio 16:9 and select memory No. 1 (D93).

② Next, input a 480P signal and select the memory No. 2 (D63).

③ Again, input a 480I signal and the white balance data that was set up in the process ① is read from memory No. 1 (Data is adopted by memory No.3).

Also, all RGB GAIN/BIAS, BRIGHTNESS and CONTRAST values are renewed by the selected data, and the front panel setting reverts to the preset status (VARIABLE OFF / LED goes out).

CAUTION!

When the white balance data that was adjusted with screen aspect ratio of 16:9 is reproduced on the 4:3 screen, white balance will mismatch and colors cannot be reproduced correctly. (Also same in the case of reproduced on the 16:9 screen after having adjusted on the 4:3 screen.)

When this color monitor is shipped from the plant, memory No. 1 and No. 2 are set in the screen aspect of 16:9, while memory No. 3 and No. 4 are set in 4:3. In 5. [USER 1] ~ 8.[USER 4], the data same as in the memory No. 1 is input.

---

(2) STORE DATA

```
STORE DATA
⇨ 1.      < D93        16:9 >
   2.      < D65        16:9 >
   3.      < D93        4:3 >
   4.      < D65        4:3 >
   5.      < USER 1         >
   6.      < USER 2         >
   7.      < USER 3         >
   8.      < USER 4         >
  PROTECT  ON / OFF
```

When adjusting the RGB gain/bias, contrast/brightness and storing the resulting white-balance data, select the memory on this screen. Copying the white balance data is made in this way; first, recall the data which is to be copied using the process (1) COLOR TEMP, then move the cursor onto the memory in which to be copied and push the ENTER key.

> • PROTECT ON/OFF 1 ~ 8
>
>   For setting/releasing the protect for each data. Move the cursor to select the data No. and push the ENTER key. When the ENTER key is pushed, setting/releasing is performed (toggle operation). When protected, ✱ mark is displayed.

(3) TITLE EDIT

```
TITLE EDIT
⇨ 1. ✱   < D93        16:9 >
   2.      < D65        16:9 >
   3.      < D93        4:3 >
   4.      < D65        4:3 >
   5.      < USER 1         >
   6.      < USER 2         >
   7.      < USER 3         >
   8.      < USER 4         >
```

For editing the title of each white balance data memory. Select the memory number and push the ENTER key, then the cursor moves onto the first character of the title. Next, turn the ROTARY ENCODER knob and characters change in order. The character is determined by pushing the ENTER key. Then having been determined, the cursor moves to the next character. In this way cursor movement and determination are repeated.
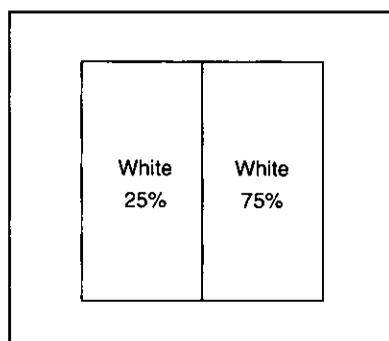
When the ENTER key is pushed at the final character position, the cursor returns to the position for selecting the memory No. Number of characters are limited to "8". If the ESC key is pushed during input operation is being made, all eight characters are canceled and the title before editing is re-established. Delete unnecessary characters by using the space key, edit up to the 8th character, then push the ENTER key for determination. If the WHITE BAL is protected in the PROTECT menu, editing is inhibited.

(4) TEST SIG .... For outputting the PLUGE/STEP/WHITE/OFF test signals on the screen.
Internal/Test signals are 525-line, interlaced.

PLUGE (with white 100% window)..................	Suitable for adjusting contrast and brightness.
STEP (25%, 75%)	Suitable for adjusting white balance and others.
WHITE (white 100%)	Suitable for checking purity, etc.
OFF	Returns to the original external input signal. Also when the input signal select switch on the front panel is pushed during the TEST SIG is being output, the original external input signal is selected in the same way.
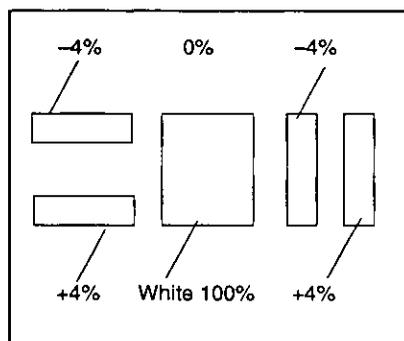
PLUGE (white 100% with windows)   STEP (25%, 75%)

Attention!: It is impossible to switch screen aspect ratio while the test signal is being displayed.

(5) AUTO CHROMA .... For automatic adjustment of chroma gain and phase of the optional NTSC decoder. After adjustment is complete, the new setting is memorized as the preset value.

(6) GAIN/BIAS ADJ

```
GAIN / BIAS        R     G     B
⇨  GAIN  R  ADJ  771   772   764
   BIAS           670   667   773
```

• Gain .... R/G/B
• Bias .... R/G/B

Select one of R, G and B adjusters and push the ENTER switch to display the numeric value display menu. Now it is possible to adjust the value by turning the ROTARY ENCODER knob. If the ESC key is pushed while adjustment is being made, the set value is canceled and the previous value is re-established. After adjustment has been completed, the adjusted value is determined by pressing the ENTER switch. This means that the adjustment will immediately take effect, but will be lost if power isrized shut off, ie: it is not memorized.

Note : The adjustment can be memorized by using the STORE DATA process in the WHITE BALANCE menu. Refer to page 43, especially the paragraph titled "Saving··".

4. GRATICULE

```
GRATICULE
⇨  SAFE TITLE        85%     85%
   CENTER CROSS              O N
   ASPECT
   CROSS HATCH
```

The GRATICULE switch on the front panel will overlay the selected on the picture. However, note that the front panel switch is disable if "GRATICULE" is set to off else where in the menu hierarchy.

(1) SAFE TITLE 80/85/90/95%/OFF

For safe title selection. Safe title setting can be made in combination with a center cross.

SAFE TITLE

CRT picture frame
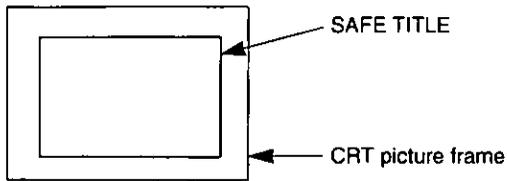
(2) CENTER CROSS .... ON/OFF

For center cross ON/OFF selection. This can be set in combination with a safe title.
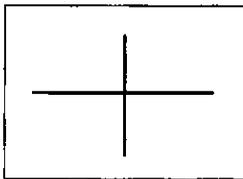
(3) ASPECT .... ON/OFF

In 16:9 screen aspect mode............ Markers appears on the positions of the 4:3 picture screen width.
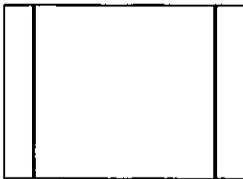
In 4:3 screen aspect mode.............. markers on the positions of the 16:9 picture screen width.

Video   Marker
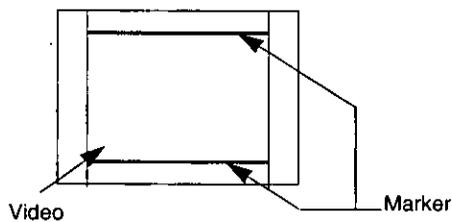
(4) CROSS HATCH ....ON/OFF

This marker is convenient as the positioning
indicator when designing the picture layout.

When the 16:9 aspect screen is selected
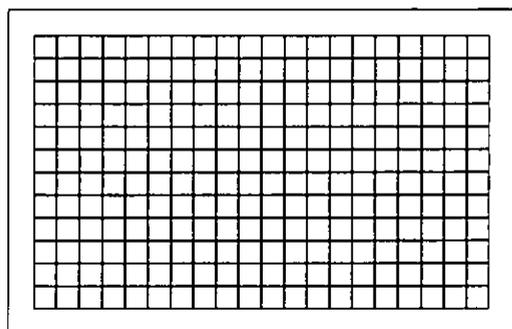
When the 4:3 aspect screen is selected
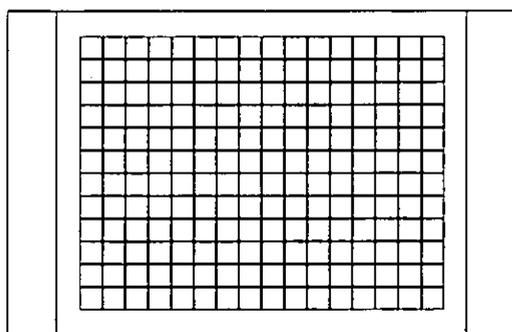
5. MODE SET

```
MODE SET

⇨  H-AFC          SLOW      SLOW
   C-KILLER                 AUTO
   APT                      OFF
   RES. SC                  OFF
   SPLIT                    OFF
   CHROMA UP                OFF
```

On this screen, following setting operations can be made.

(1) H AFC   .... SLOW/FAST

For switching AFC time constant for the horizontal deflection
circuit.

SLOW .... With the SLOW setting, AFC time constant is approx.
2 ms. For inspecting a broadcasting-quality-VTR, the time constant
must be slow (long) set larger to monitor the servo circuits.

FAST .... With the FAST setting, AFC time constant is approx. 0.5 ms. For
inspecting a simplified (consumer) VTR, select the FAST setting. This
will allow the AFC to compensate for VTR instability, so that it does not
disturb the picture.

(2) C-KILLER .... AUTO/ON/OFF (This function is exclusive for the optional NTSC
decoder.)
For setting the color-killer circuit operation.

AUTO .... In the AUTO mode, the color killer circuit is automatically turned on or
off by the burst level of input signal.

ON .... The circuits are forced into the forced-monochrome mode.

OFF .... The color killer circuit stops operation and the forced-color mode is
established. The color circuits will always try to reproduce the picture in
color.

(3) APT .... ON/OFF/ADJ (This function is exclusive for the optional NTSC
decoder.)
Allows adjustment of the high-frequency emphasis circuit in the
luminance channel. 10 dB of enhancement is possible.

(4) RES. SC .... ON (This function is exclusive for the optional NTSC decoder.)
This function enables to quick detection of residual subcarrier in the
input signal. After turn-on, it automatically returns to off in about 3
seconds. When no residual subcarrier is present, no changes appear
on the picture even if this switch is turned on.

(5) SPLIT .... ON/OFF (This function is exclusive for the optional NTSC decoder.)
Turn on this function, and the picture screen is divided into three: the
upper and lower areas are displayed in color, while the center area is in
monochrome. This enables simultaneous checking of decoded
accuracy and white balance adjustment. This function is also
convenient for white balance adjustment and inspection of a TV camera
signal.

(6) CHROMA UP .... ON/OFF (This function is exclusive for the optional

NTSC decoder.)

Gain of the chroma decoder increases about 10 dB by turning this

switch on. This is convenient for checking subcarrier leakage of a

TV camera signal.

CAUTION!
Before turning on this switch, confirm that the chroma level control on the front panel is set to the preset status (LED off).

6. PRESET

(a) When YPʙPʀ/RGB A ch, YPʙPʀ/RGB B ch, 601 and HD digital signals are input

```
PRESET

⇨ PB GAIN          ADJ      235
  PR GAIN                   450
  CONTRAST                  781
  BRIGHT                    564
  V-POSI                    743
  H-POSI                    670
  V-SIZE                    788
  H-SIZE                    142
```

For setting the preset value for control knobs on the panel and for picture screen size, etc. Preset values for the adjusters on the panel cannot be adjusted unless the variable switch is turned off.

PB GAIN .... Larger values increse the amplification of the Pʙ input signal.

PR GAIN .... Larger values increse the amplification of the Pʀ input signal.

CONTRAST .... Larger values raise contrast.

BRIGHT .... Larger values increase the brightness.

V-POSI .... For shifting the raster in the vertical direction.

H-POSI .... For shifting the raster in the horizontal direction.

V-SIZE .... For adjusting the raster-size in the vertical direction.

H-SIZE .... For adjusting the raster-size in the horizontal direction.

(b) When VIDEO A ch, VIDEO B ch and NTSC digital signal are input

```
PRESET

⇨ PHASE         ADJ    235
   CHROMA              450
   CONTRAST            781
   BRIGHT              564
   V-POSI              743
   H-POSI              670
   V-SIZE              788
   H-SIZE              142
```

For setting the preset value for control knobs on the panel and for picture screen size, etc. Preset values for the control knobs on the panel cannot be adjusted unless the variable switch is turned off.

PHASE .... Larger value is, phase shifts to the + direction.

CHROMA .... Larger values, raise the chroma gain.

CONTRAST .... Larger values, increase the contrast.

BRIGHT .... Larger values, increase the brightness.

V-POSI .... For shifting the raster in the vertical direction.

H-POSI .... For shifting the raster in the horizontal direction.

V-SIZE .... For adjusting the raster-size in the vertical direction.

H-SIZE .... For adjusting the raster-size in the horizontal direction.

7. PROTECT

```
┌─────────────────────────────────────┐
│  PROTECT                            │
│                                     │
│  ⇨ *WHITE BAL                       │
│     * PRESET VR                     │
│     * PRESET DEF                    │
│     * SAVE/RECALL                   │
│                                     │
│                                     │
│                                     │
└─────────────────────────────────────┘
```

For protecting the data of an item. When protection is ON, change is prevented.

When (*) is displayed on the left of the item: Protect ON

When (*) is not displayed on the left of the item: Protect OFF

WHITE BAL .... For protecting the white balance data, white balance setup and their associated titles.

PRESET VR .... For protecting the preset value of Pʀ (PHASE), Pʙ (CHROMA), CONTRAST and BRIGHTNESS.

(It is necessary to set PROTECT of WHITE BALANCE to OFF for memorize the adjusted value of contrast and brightness)

PRESET DEF .... For protecting the value of V-POSI, H-POSI, V-SIZE and H-SIZE.

SAVE/RECALL .... For protecting the recall memory from writing.

8. PANEL

```
┌─────────────────────────────────────┐
│  PRESET                             │
│                                     │
│  ⇨ MESSAGE          ON      ON      │
│     LED                     ON      │
│     SAVE NO.                        │
│     REMOTE ID               1       │
│                                     │
│                                     │
│                                     │
│                                     │
└─────────────────────────────────────┘
```

• MESSAGE .... ON/OFF

For turning on or off the display of NO SYNC message.

• LED .... ON/OFF

For setting the panel LED to continuously turn on or to automatically turn off after the lapse of the predetermined time.

• SAVE No. .... 1 / 2 / 3

For saving the operation setting data of the monitor in the recall memory. Three sets of data-settings can be saved.

• REMOTE ID .... 1 ~ 9

For setting the ID No. of the infrared remote controller.
(Infrared remote controller is not provided.)
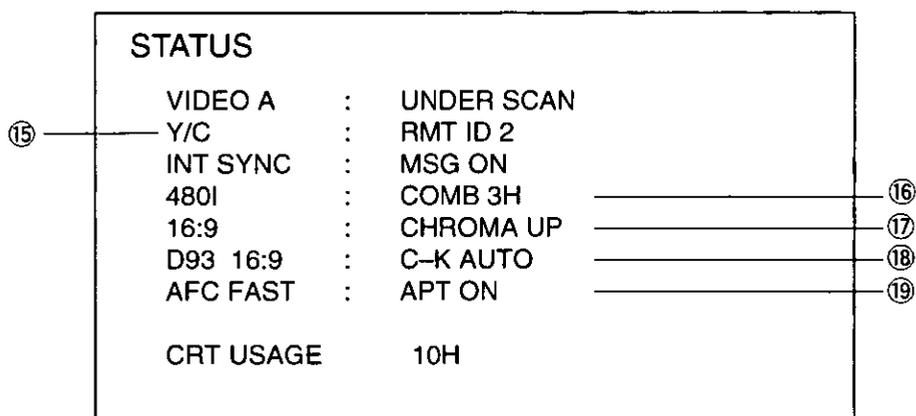
■ STATUS screen

Push the STATUS button on the front panel to display the current input signal and setting status.

(1) When YPʙPʀ/RGB A ch or YPʙPʀ/RGB B ch signal is input

```
┌─────────────────────────────────────────────────┐
│  STATUS                                           │
│① ────┬──── YPʙPʀ/RGB A :   UNDER SCAN ──────────⑧ │
│② ────┼──── YPʙPʀ       :   RMT ID 2   ──────────⑨ │
│③ ────┼──── INT SYNC    :   MSG      ON ─────────⑩ │
│④ ────┼──── 480P        :                          │
│⑤ ────┼──── 16:9        :                          │
│⑥ ────┼──── D93 16:9    :                          │
│⑦ ────┼──── AFC FAST    :                          │
│                                                   │
│⑪ ────┴──── CRT USAGE       10H                    │
│                                                   │
└─────────────────────────────────────────────────┘
```
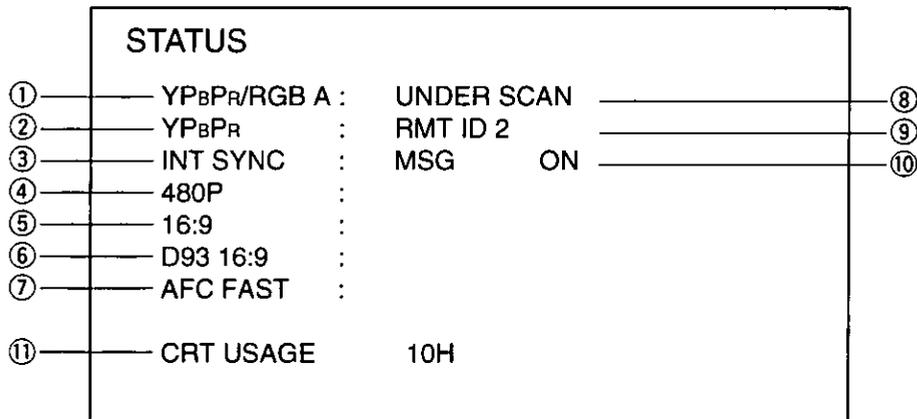
① Displays the input channel.

② Displays RGB or YPʙPʀ.

③ Displays INT SYNC or EXT SYNC.

④ Displays the type of input signal.

　　　480I　→　525-line interlaced signal

　　　480P　→　525-line non-interlaced signal

　　　1080I　→　1125-line interlaced signal

⑤ Displays aspect ratio of the picture screen.

⑥ Displays the title of the present color temperature.

⑦ Displays whether AFC is SLOW or FAST.

⑧ This is displayed when the picture screen size is UNDER SCAN.

⑨ Shows ID No. for the infrared remote controller. (Infrared remote controller is not provided.)

⑩ Displays whether NO SYNC message is displayed on the screen or not.

⑪ Displays the used time of CRT. When the color monitor is in the standby status, time counting is not performed. This is useful in the maintenance of the monitor.

(2) When VIDEO A ch or VIDEO B ch signal is input

```
┌─────────────────────────────────────────────────────┐
│  STATUS                                              │
│                                                      │
│         VIDEO A    :   UNDER SCAN                     │
⑮────────── Y/C      :   RMT ID 2                       │
│         INT SYNC   :   MSG ON                         │
│         480I       :   COMB 3H   ───────────────── ⑯ │
│         16:9       :   CHROMA UP ───────────────── ⑰ │
│         D93  16:9  :   C-K AUTO  ───────────────── ⑱ │
│         AFC FAST   :   APT ON    ───────────────── ⑲ │
│                                                      │
│         CRT USAGE      10H                           │
│                                                      │
└─────────────────────────────────────────────────────┘
```

⑮ Displays VIDEO or Y/C.

⑯ Displays the type of comb filter.

        3H →   3-line comb filter ON

        2H →   2-line comb filter ON

        OFF →   Comb filter OFF (in trap operating mode)

⑰ This is displayed when CHROMA UP switch is set to ON, and not displayed when it is set to OFF.

⑱ Displays whether the color killer circuit is set to ON, OFF or AUTO.

⑲ Displays whether APT is set to ON or OFF.

(3) When digital (601, NTSC or HD) signal is input

```
┌─────────────────────────────────────────────────────┐
│  STATUS                                              │
│                                                      │
⑳────────── 601      :   UNDER SCAN                    │
㉑────────── SERIAL A :   RMT ID 2                      │
│         INT SYNC   :   MSG ON                         │
│         480I       :   COMB 3H                        │
│         16:9       :   CHROMA UP                      │
│         D93  16:9  :   C-K AUTO                       │
│         AFC FAST   :   APT ON                         │
│                                                      │
│         CRT USAGE      10H                           │
│                                                      │
└─────────────────────────────────────────────────────┘
```
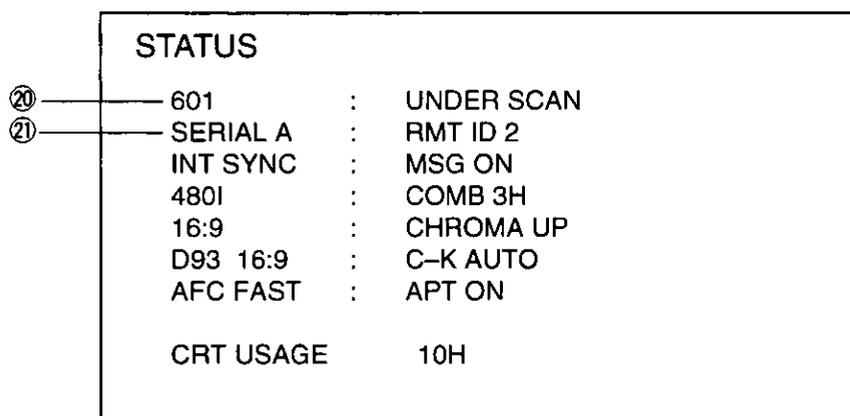
⑳ Displays 601, NTSC or HD.

㉑ Displays SERIAL A, SERIAL B or PARALLEL.

■ Message output

1. NO SYNC message

When level of the input sync signal level falls about -6 dB, NO SYNC message is displayed on the right bottom of the picture screen. This is usable for judgment of sync signal existence/non-existence and sync signal excess/insufficiency.

2. 16:9 ONLY

When 1080i (1125-line interlace) signal is input, push the ASPECT button on the front panel and this message is displayed for several seconds.

■ Memory function

This color monitor memorizes picture-size data and various setting functions for each input signal type (horizontal frequency), therefore, memory data is automatically switched in accordance with the type of input signal.

1. Contents of memories

• ○ mark in tables below shows that a single-type possesses its own adjusting data and setting conditions.

2. About memory

When the ENTER key is pushed after various setup status and adjustment data have been changed on the menu screen, the content of memory is automatically renewed (altered).

(1) Picture size data

For each input signal type, picture aspect and scan size memory is provided.

Type of input signal		1080i	
Picture aspect		16:9 only	
Scan size		NORM	UNDER
Item	H-SIZE	○	○
	V-SIZE	○	○

Type of input signal		480i (including NTSC, 601 and NTSC comp.)			
Picture aspect		16:9		4:3	
Scan size		NORM	UNDER	NORM	UNDER
Item	H-SIZE	○	○	○	○
	V-SIZE	○	○	○	○

(1) Picture size data (Continue)

For each input signal type, picture aspect and scan size memory is provided.

Type of input signal		480p (including NTSC, 601 and NTSC comp.)			
Picture aspect		16:9		4:3	
Scan size		NORM	UNDER	NORM	UNDER
Item	H-SIZE	○	○	○	○
	V-SIZE	○	○	○	○

(2) Position data

Position data memory is provided for each type of signal.

Type of input signal		1080i (1125-line interlace)		480p (525-line non-interlace)		480i (525-line interlace)	
System		RGB	YPBPR	RGB	YPBPR	RGB	YPBPR
Item	H-POSI	○	○	○	○	○	○
	V-POSI	○	○	○	○	○	○

Type of input signal		NTSC	601 Component	NTSC Composite
Item	H-POSI	○	○	○
	V-POSI	○	○	○

(3) PB (PHASE) and PR (CHROMA) data

Memory is provided for of Y,PB,PR, NTSC and NTSC composite signals.

Type of input signal		When Y,PB,PR is input	When NTSC or NTSC comp. is input
Item	PB (PHASE)	○	○
	PR (CHROMA)	○	○

(4) Setup of picture aspect

Type of input signal	1080i (1125-line interlace)	480i / 480p (525-line interlace and non interlace,including NTSC ,601 and NTSC comp.)
Aspect	Fixed to 16:9	Either 16:9 or 4:3 can be switched

(5) White-balance call-up data

White-balance data can be call-up for each of input signal type and picture aspect.

The data of contrast and bright are contained in white-balance memory.

Type of input signal	1080i (1125-line interlace)	480i (525-line interlace)		480p (525-line non interlace)	
Picture aspect	16:9 only	16:9	4:3	16:9	4:3
White balance	O	O	O	O	O

■ Operating method in accordance with function

1. Adjustment, saving and recalling of white balance data

A maximum eight sets of white balance data can be stored. Adjusting, saving and recalling any particular set of data is possible. So, by memorizing the adjusted values in accordance with the operating environment, the required values can be re-established by simple data recalling operation.

Adjustment .... Value of each color is adjusted using the GAIN/BIAS ADJ control in the WHITE BALANCE menu. Since the value of the CONTRAST BRIGHT on the front panel is also memorized, adjust it if necessary.

Saving .... Select the STORE DATA item in the WHITE BALANCE menu and push the ENTER switch. Shift the cursor onto the No. in which you want to save the data, push the ENTER switch and the current white balance data is saved in that memory.
A Memory number with an asterisk (*) is independently protected. If you wish to release the protection and alter the data, select that memory No. in the PROTECT ON/OFF item of the same menu and press the ENTER switch. The (*) mark disappears and the protection is released, so you can save the new data in that memory by performing described above data storing operation.

Data recall .... Place the cursor onto the COLOR TEMP item of the WHITE BALANCE menu and push the ENTER switch. Then, move the cursor onto the memory number in the COLOR TEMP menu from which you want to recall the data and push the ENTER switch.

> **Caution! When the data recall operation is made without memorizing the adjusted white balance data, the new white balance data is erased.**

2. Title editing (TITLE EDIT)

Title consisting of max. 8 characters can be saved in each white balance memory. This title is used as the index for each stored data set.

Display the TITLE menu, move the cursor onto the No. that you want to edit and push the ENTER switch. The cursor shifts onto the first character and blinks. Select the character by turning the rotary encoder knob, push the ENTER switch and the cursor moves onto the second character. In case the character need not be changed, do not turn the rotary encoder knob but simply push the ENTER switch. Then the cursor advances to the next character. Repeat these setting procedures. When the ENTER switch is pushed with the eighth character, the new title is saved to the memory and the cursor automatically returns in the "memory No." selection position. If the ESC (ESCAPE) key is pushed midway, all settings are cleared and the previous title before editing is re-established. In this case, you must start the setting operation from the beginning.

3. Data protect function (PROTECT)

This function protects the selected data such as preset value, white balance, picture size, position and other setup data so that they cannot be changed easily.

White balance value is double protected; by memory number protection and the entire white balance value protection.

Data protection can be set for each item in the PROTECT menu. Move the cursor onto the item which you want to set or release the protect, push the ENTER switch, and the setting data is displayed in inverted status. Asterisk (* mark meaning "data protected") is displayed in front of each item. If asterisk is not shown, that item is not protected. Protected contents for each item are as follows:

- **WHITE BAL** .... Memories 1 ~ 8, memory protect, title

- **PRESET VR** .... Preset value for each of P$_B$ GAIN (PHASE), P$_R$ GAIN (CHROMA),
CONTRAST and BRIGHT items in the PRESET menu.
(It is necessary to set PROTECT of WHITE BALANCE to OFF for memorize the adjusted value of contrast and brightness)

- **PRESET DEF** .... V-POSI, H-POSI, V-SIZE and H-SIZE values in the PRESET menu.

- **SAVE/RECALL** .... For recalling operation of the front panel and saving operation of the panel menu.

CAUTION!   Since white-balance data can be protected using the item in the STORE DATA of the WHITE BALANCE menu, double protection of data is possible.

---

4. Auto white balance adjustment

Since white balance is adjusted by the optical data using the sensor probe, CRT deterioration can also be compensated for.

Note:If your application requires AUTO SETUP,,please contact your Panasonic sales office regarding the sensor probe.

Saving optical data

Connect the sensor probe to the sensor probe connector on the front panel, move the cursor onto the SENSOR READ item in the WHITE BALANCE menu. The screen for white balance adjustment appears. Attach the sensor probe on the CRT screen. Next, push the ENTER switch on the front panel. The sensor probe reads the optical data displayed on the screen and ends the operation. Now, the data is saved in the color monitor's memory.

Re-establishing optical data

As for white balance adjustment using a sensor, connect the probe in the same manner and push the AUTO SETUP switch on the front panel. The ADJUST screen is displayed. Attach the probe on that screen and push the AUTO SETUP or ENTER switch on the front panel to start adjustment.

5. Adjustment of auto chroma and phase

Automatically adjusts decoded gain and phase of the optional NTSC decoder. Adjustment is performed by using the calibration signal in this color unit as the reference.

6. Saving and recalling of panel setting data (SAVE/RECALL)

Three contents of panel setting and menu setting can be saved in and freely recalled from the memories.

Since this function allows the operator to easily establish the predetermined settings, it is very useful at the adjustment and inspection lines of video-related equipment manufacturing plants.

Setting save .... For setting items on the front panel and in each menu. Setting data is stored in the memory by selecting the SAVE item in the PANEL menu. Place the cursor onto the desired memory No. and push the ENTER switch to save the data.

Recall .... Push the RECALL switch on the front panel and the RECALL LED lights up. Push the necessary memory No. (1, 2 or 3) and the saved setting data is established again. Simultaneously the RECALL LED goes out and the RECALL mode is released.
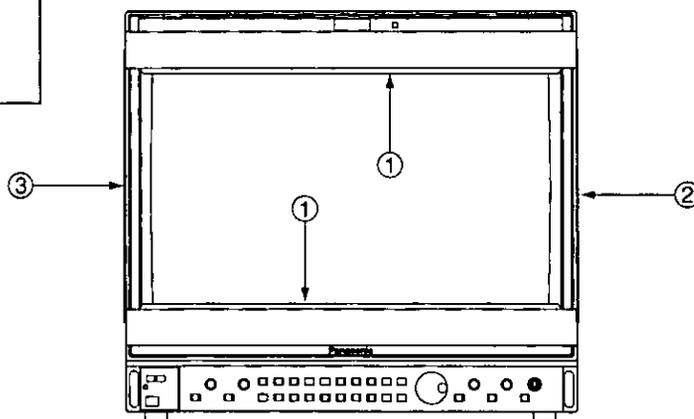
Method of 16:9 CRT Mask Installation

■ When attaching the included 16:9 CRT mask, please refer to the following diagram.

When installing in a rack simultaneously with installing the 16:9 CRT mask, please use rack mount fittings (R),(L) of the optional rack mount kit instead of CRT mask fitting (R)② and CRT mask fitting (L)③.

①: 16:9 CRT Mask
②: CRT Mask fitting (R)
③: CRT Mask fitting (L)
④: Sems screws
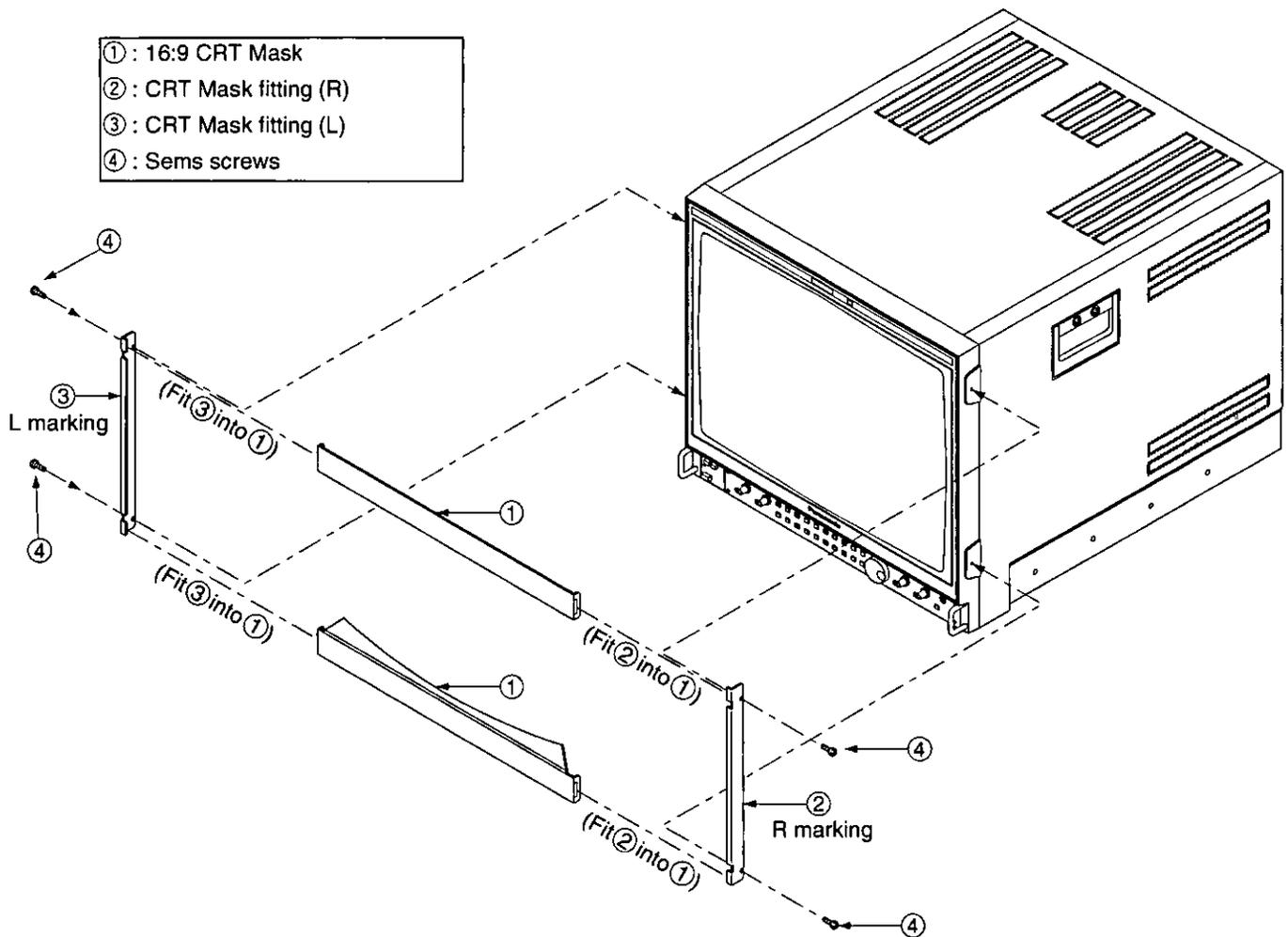
■ When the 16:9 CRT Mask is installed

①: 16:9 CRT Mask
②: CRT Mask fitting (R)
③: CRT Mask fitting (L)

Method of Rack Mounting (Option)

■ **Installing method** (When simultaneously installing with 16:9 CRT mask, please refer to page 46.)

1. Main unit (color monitor) side

a : Install ① and ② as illustrated. In case of installing the inch rack, fit the screw ⑪ into the hole for installing the inch rack.(④ is incorprated in ① and ②.)

b : Draw out ⑩" from ⑩, and install it as illustrated (both left and right).

c : Remove four legs from the bottom panel.

2. Rack side

d : ⑤,⑦,⑨ and ⑩ have already been assembled. Confirm that screws ⑤ and ⑩ are securely tightened.

Loosen screws ⑦ and ⑩ for adjusting the mounting depth.

Install ⑤ and ⑦ on the front and rear of the rack, respectively. Then, tighten screws ⑦ and ⑩.

e : Perform same process for ⑥ , ⑧ , ⑨ and ⑩.

3. Assembly

f : Insert ⑩" on the color monitor's side into the side bar ⑩' on the rack side, and push it all way.

(On the way, push the stopper of the side bar.)

g : Insert the screw ⑪ into the rack.

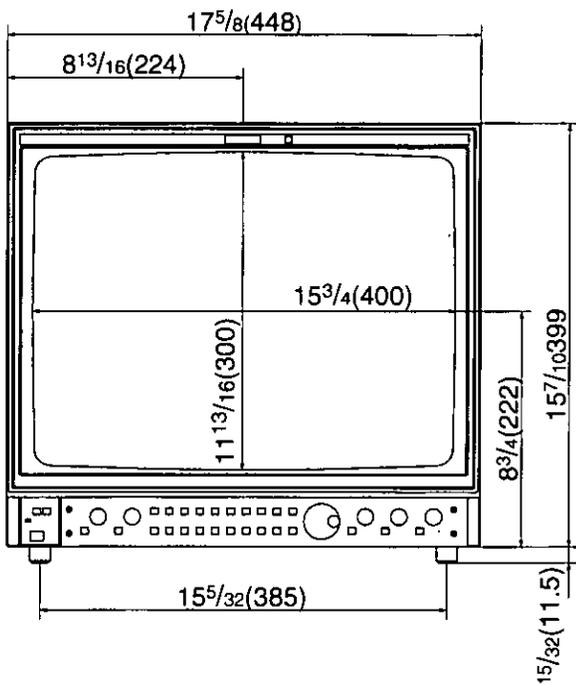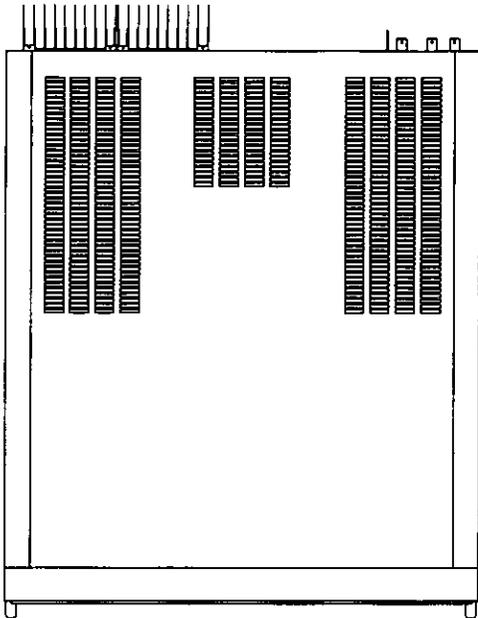•Parts table and illustration of the completed assembly are on next page.

Screw to adjust the insertion depth

This component is mounted onto the rear of rack.

This component is mounted onto the front of rack.

Reference measure for installation: 444

Screw to fix the bar to the cabinet ⑪⑫⑮⑰

Holes for mounting the inch-rack
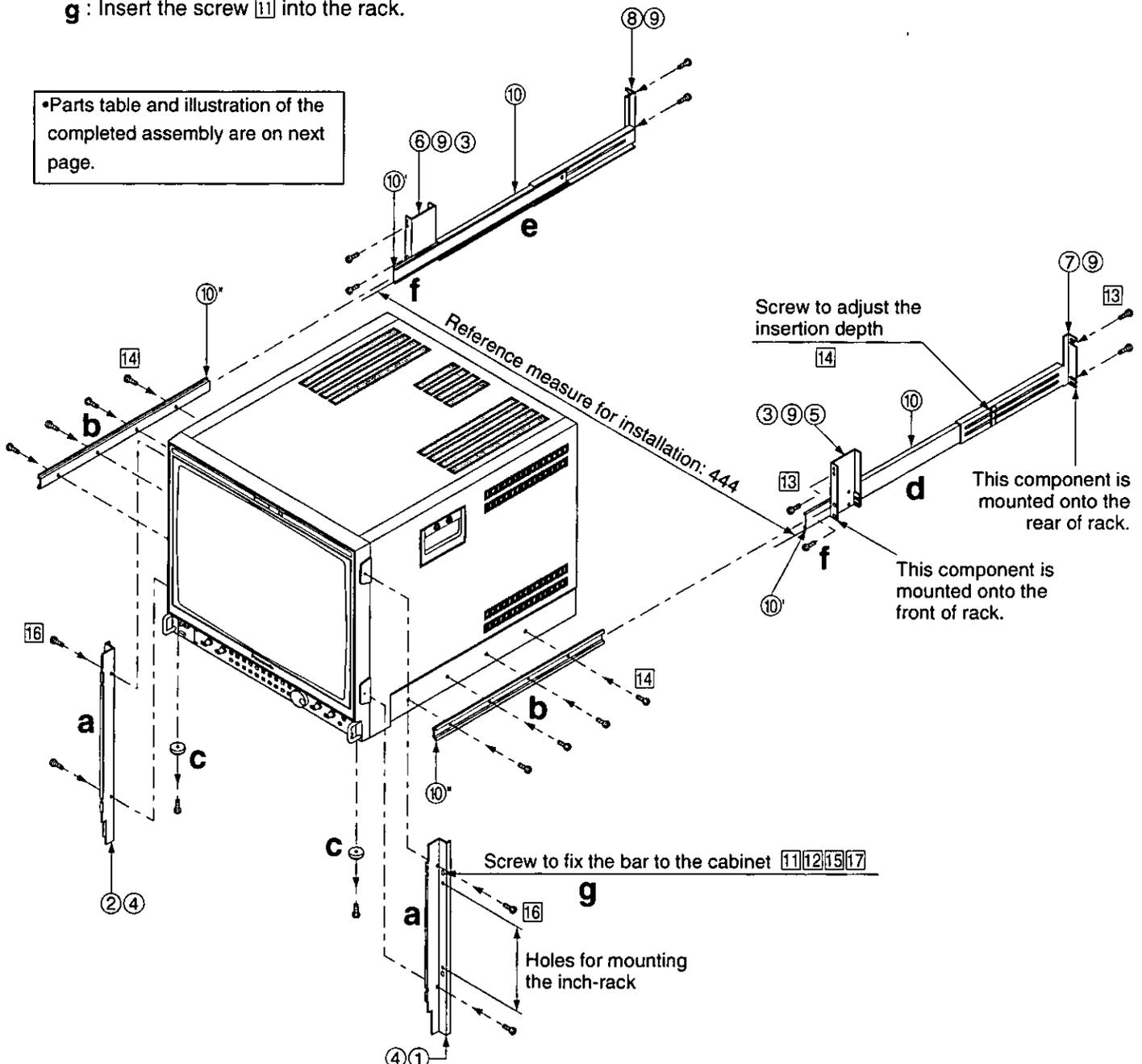
■ Parts table of rack mounting (optional)

No.	Part Name	Quantity
①	Rack mount fitting (R)	1
②	Rack mount fitting (L)	1
③	Support board	2
④	Domed plug	4
⑤	slide bar mount fitting F (R)	1
⑥	slide bar mount fitting F (L)	1
⑦	slide bar mount fitting B (R)	1
⑧	slide bar mount fitting B (L)	1
⑨	Sheet nut	4
⑩	Slide bar	2
⑪	Round countersunk bolt (M5x20)	4
⑫	Angular washer for M5 bolt	4
⑬	Sems bolt MS-M5x12	8
⑭	Sems bolt SW-M5x10	16
⑮	Stopper washer	4
⑯	Sems bolt KS-M4x8	4
⑰	Nylon washer 5xD12xT0.8	4

■ Illustration below shows the status that the assembly is completed
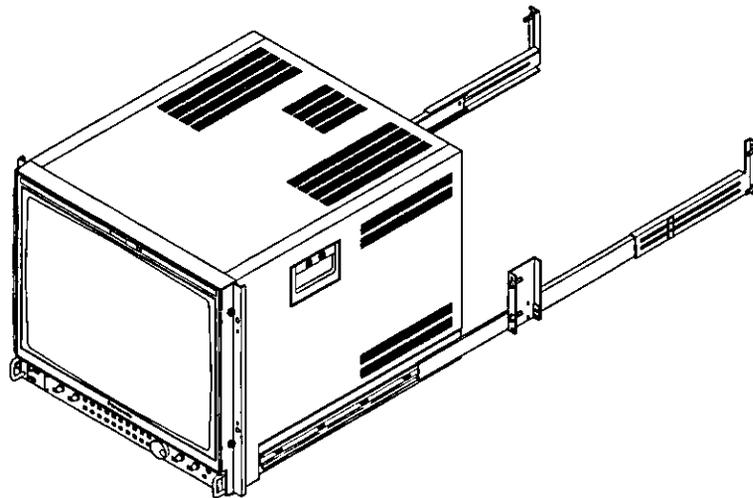
Dimensions Units:inches (mm)

17⁵/₈(448)

8¹³/₁₆(224)

15³/₄(400)

11¹³/₁₆(300)

15⁷/₁₀399

8³/₄(222)

15⁵/₃₂(385)

¹⁵/₃₂(11.5)

20⁷/₁₆(520)

15⁷/₈(403)

2⁷/₈(73)   1²³/₃₂(44) 1²³/₃₂(43.5)

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