

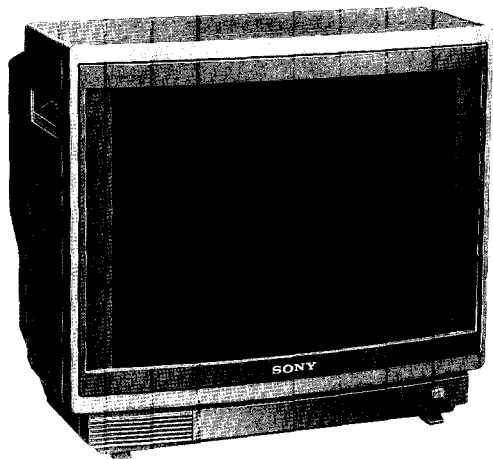
Trinitron® Color Video Monitor

GVM-2020**Operating Instructions page 2**

Before operating the unit, please read this manual thoroughly and retain it for future reference.

Mode d'emploi page 12

Avant la mise en service de cet appareil, prière de lire attentivement ce mode d'emploi que l'on conservera pour toute référence ultérieure.



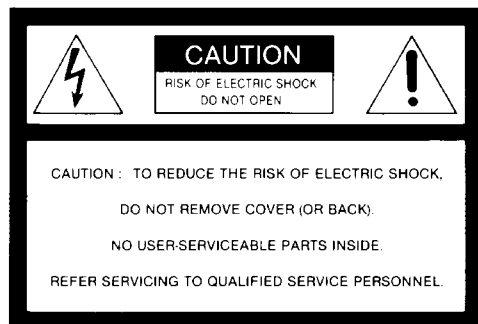
Owner's Record

The model and serial numbers are located at the rear.
Record the serial number in the space provided below.
Refer to these numbers whenever you call upon your Sony dealer regarding this product.

Model No. GVM-2020 Serial No. _____

WARNING

To prevent fire or shock hazard, do not expose the unit to rain or moisture.



This symbol is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

For the Customers in the USA

WARNING

This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instructions manual, may cause interference to radio communications. It has been tested and found to comply with the limits for Class A computing devices pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

THIS APPARATUS COMPLIES WITH THE CLASS B LIMITS FOR RADIO NOISE EMISSIONS SET OUT IN RADIO INTERFERENCE REGULATIONS OF CANADA.

You are cautioned that any changes or modifications not expressly approved in this manual could void your authority to operate this equipment.

Table of Contents

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Precautions

On safety

- Operate the unit only on 120 V AC.
- Should any solid object or liquid fall into the cabinet, unplug the unit and have it checked by qualified personnel before operating it any further.
- Unplug the unit from the wall outlet if it is not to be used for several days or more.
- To disconnect the AC power cord, pull it out by grasping the plug. Never pull the cord itself.

On installation

- Allow adequate air circulation to prevent internal heat build-up.
Do not place the unit on surfaces (rugs, blankets, etc.) or near materials (curtains, draperies) that may block the ventilation holes.
- Do not install the unit in a location near heat sources such as radiators or air ducts, or in a place subject to direct sunlight, excessive dust, mechanical vibration or shock.

On cleaning

To keep the unit looking brand-new, periodically clean it with a soft cloth. Stubborn stains may be removed with a cloth lightly dampened with a mild detergent solution. Never use strong solvents such as thinner or benzine, or abrasive cleansers since these will damage the cabinet. As a safety precaution, unplug the unit before cleaning it.

On repacking

Do not throw away the carton and packing materials. They make an ideal container in which to transport the unit. When shipping the unit to another location, repack it as illustrated on the carton.

If you have any questions about this unit, contact your authorized Sony dealer.

Note on equipment to be connected

A good-quality picture can be obtained when the GVM-2020 is connected to equipment with the timing indicated in the "Timing Chart" on page 10. If the monitor is connected to equipment with the timing not indicated in the chart, the picture quality may not be assured.

Features

The GVM-2020 is a high-resolution color video monitor for use with video or RGB video equipment. Monitoring RGB signals of 15 kHz to 36 kHz horizontal scanning frequencies and 50 Hz to 100 Hz vertical scanning frequencies, and NTSC video signals is possible with one unit.

Multiscan color monitor

The monitor, which accepts 15 kHz to 36 kHz horizontal scanning frequencies and 50 Hz to 100 Hz vertical scanning frequencies, and detects the frequencies automatically, is compatible with a wide range of video equipment.

Analog/digital RGB multi connector

Analog and digital RGB input signals can be fed through the D-sub 9-pin multi connector.

Analog RGB BNC connector

Analog RGB signal of video equipment can be fed through this connector.

Compatible with RGB equipment using 64 colors

The monitor allows reproduction of 8, 16 or 64 color for digital RGB input signals with the 16/64 or 8 COLOR selector and by sync polarity.

RGB A SELECT connector

Input signals fed through the RGB A connector can be selected with external equipment.

Automatic termination of the BNC-type video input connector

The BNC-type video input connector is automatically terminated at 75 ohms when no cable is connected to the output connector. When a cable is connected to the output connector, the signal input through the corresponding IN connector is output from the output connector.

CONTROL S input connector

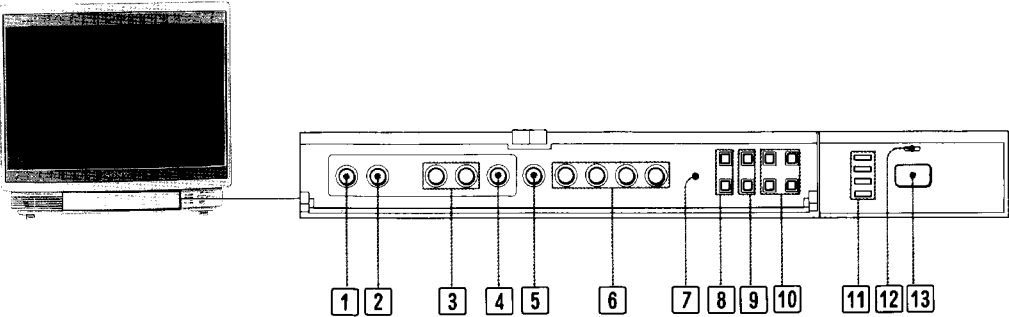
Connecting this connector to the CONTROL S output of video equipment enables remote control operations of the power on/off, input select, volume and picture settings through the video equipment.

Y/C connector

A video signal split into the chrominance (C) signal and the luminance (Y) signal can be input through this connector, eliminating the interference between the two signals, which tends to occur in a composite video signal, and also assuring the picture quality.

Location and Function of Parts and Controls

Front panel



1 RGB V HOLD (vertical hold) control

When the picture from the RGB input rolls vertically, turn this control to stabilize it.

2 RGB H SHIFT (horizontal shift) control

Turn to adjust the horizontal position of the RGB input picture, if it is off center. Turn it clockwise to shift the picture toward the right and counterclockwise to shift the picture toward the left.

Note

If this control is not set to the center detent position, the picture may disappear from the display or good color may not be obtained on some input sources. Be sure to display the picture with the control set to the center detent position, and then adjust the horizontal position.

3 RGB H/V SIZE (horizontal/vertical size) controls

Turn the H-SIZE control to adjust the horizontal size. Turn the V-SIZE control to adjust the vertical size.

4 RGB sub picture control

Adjust this control if the picture level of RGB inputs differs significantly from that of video inputs. Turn this control clockwise to make the contrast and color intensity of the RGB input picture stronger, or counterclockwise to make them weaker.

Note

Controls **1** to **4** function only for RGB input pictures.

5 V HOLD (vertical hold) control

If the video input picture rolls vertically, use this control to stabilize it.

6 Picture adjustment controls

SHARP (sharpness) control

Normally keep this control at the center detent position. Turn it clockwise to obtain a sharper picture or counterclockwise to obtain a softer picture.

BRIGHT (brightness) control

Normally keep this control at the center detent position. Turn it clockwise to make the picture brighter or counterclockwise to make it darker.

COLOR control

Turn this control clockwise to make the picture more vivid or counterclockwise to make it paler.

HUE control

Use this control to obtain the most natural skin tones. Turn it clockwise to add green to the skin tones or counterclockwise to add purple/red hues.

7 Response lamp

Blinks when the VOL or PICTURE buttons are pressed. Lights steadily at the highest or lowest volume or picture level.

8 PICTURE UP/DOWN buttons

Press the UP button to make the contrast and color intensity stronger or press the DOWN button to make them weaker.

Note

Controls **5** and **6** do not function for RGB input pictures.

9 VOL UP/DOWN buttons

Press the UP button for more volume or press the DOWN button for less volume.

10 Input select buttons

Press to select the input source to be monitored.

LINE A: for input signals fed through the LINE A connectors

LINE B: for input signals fed through the LINE B connectors

RGB A: for input signals fed through the RGB A connector and the RGB A AUDIO jack

RGB B: for input signals fed through the RGB B connectors and the RGB B AUDIO jack

11 Input select indicators

LINE A/LINE B/RGB A/RGB B

When the input source is selected, the corresponding indicator lights.

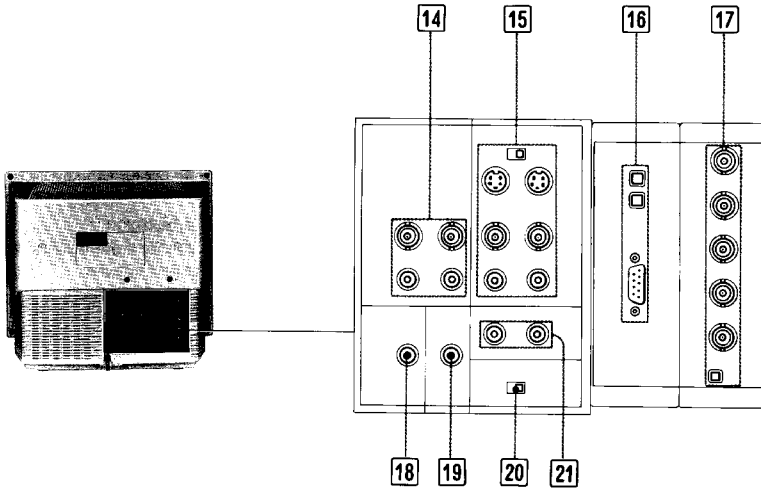
12 STANDBY indicator

Lights when the power is turned off by remote control through control S signal.

13 POWER switch

Depress to turn on the monitor. Press again to turn it off.

Rear



14 LINE A

To monitor the input signal fed through this line input, press the LINE A input select button on the front panel.

VIDEO IN connector (BNC type)

AUDIO IN jack (monaural) (phono type)

Connect to the video and audio outputs of video equipment such as VCRs or video disc players.

For a loop-through connection, connect to the video and audio outputs of another monitor.

VIDEO OUT connector (BNC type)

AUDIO OUT jack (monaural) (phono type)

For a loop-through connection, connect to the video and audio inputs of another monitor.

When a connecting cord is connected to the VIDEO OUT connector, the 75-ohm termination of the input is automatically released and the signal input to the VIDEO IN connector is output from this connector.

15 LINE B

To monitor the input signal fed through this line input, press the LINE B input select button.

Y/C 75Ω termination switch

When only the Y/C IN connector is connected (i.e. nothing is connected to the Y/C OUT connector), set this switch to ON.

When both Y/C IN and OUT connectors are connected together for a loop-through connection, set this switch to OFF.

Y/C IN connector(4-pin mini-DIN)

Connect to the Y/C output of video equipment.

VIDEO IN connector(BNC type)

AUDIO IN jack(monaural)(phono type)

Note

When both the Y/C IN and VIDEO IN connectors are connected, the input signal fed through the VIDEO IN connector cannot be monitored.

Y/C OUT connector(4-pin mini-DIN)

For a loop-through connection, connect to the Y/C input of another monitor.

VIDEO OUT connector(BNC type)

AUDIO OUT jack(monaural)(phono type)

16 RGB A interface unit

16, 64 COLOR/8 COLOR selector

Depress this selector when digital RGB equipment having 16- or 64-color mode is connected to the RGB A connector. The 16- or 64-color mode is automatically selected by sync polarity. Keep the selector released for digital RGB equipment having the 8-color mode.

DIGITAL/ANALOG selector

Depress this selector when video equipment having digital RGB output is connected to the RGB A connector. Release the selector for equipment having analog RGB output.

RGB A connector (D-sub 9-pin)

Connect to video equipment having either digital or analog RGB output.

To monitor the input signal fed through this connector, press the RGB A input select button.

17 RGB B interface unit

R/G/B connectors (BNC type)

Connect to the analog R/G/B outputs of video equipment. To monitor the input signal fed through these connectors, press the RGB B input select button.

HVD/HD input connector (BNC type)

When video equipment is connected to the R/G/B connectors and does not provide sync signal on G-signal, connect it to the composite sync or horizontal sync output of the equipment.

VD input connector (BNC type)

Connect to the vertical sync output of video equipment. For video equipment with H/V separate sync signal, connect it to both the HVD/HD and VD connectors.

Notes

- For video equipment with H/V composite sync and V sync, use only the composite sync connection.
- If horizontal sync signal has serration pulses*, the monitored picture may be distorted. Input the horizontal sync signal without serration pulses.

* A pulse occurring at periods of twice the horizontal frequency between horizontal-sync pulses

SYNC ON GREEN selector

When video equipment is connected to the R/G/B connectors;

Depress this selector to operate the monitor on the sync signal on G-signal. To operate on the H/V separate sync signal or composite sync signal fed through the HVD/HD and/or VD input connector(s), keep the selector released.

Note

Be sure to depress the selector (ON) when video equipment providing sync signal on G-signal is connected. Otherwise, color reproduction may not be correct.

18 RGB A SELECT connector (minijack)

When ground potential is applied to this connector, signal input from the RGB A connector will be monitored regardless of the setting of the input select buttons on the front panel. If a power supply of 5 V is applied to the connector or the circuit is open, the input signal selected with the input select buttons will be monitored.

This connector allows the input source monitored to be selected with external equipment.

19 CONTROL S input connector (minijack)

Connect to the CONTROL S output of video equipment. The power on/off, input select, volume and picture settings can be remotely controlled through the equipment connected.

20 RGB AUTOMATIC WHITE BALANCE switch

Normally set this switch to ON. The white balance is adjusted by current feedback circuit. When the vertical picture size of RGB input is reduced with the V SIZE control, a white stripe may appear on the top of the screen. To delete the stripe, set the selector to OFF.

The white balance adjustment level in the OFF position is preset at the factory, but there may be some changes in the level over time.

21 RGB A/RGB B AUDIO input jacks (phono type)

Connect to the audio outputs of the RGB equipment connected to the RGB A/RGB B connectors.

Note

Mutual interference of deflection may occur when several monitors are ranged side by side for a loop-through connection, as this unit is compatible with the signals of high horizontal frequencies. In such a situation, allow adequate space between each unit.

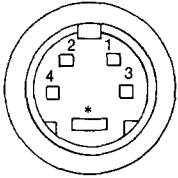
Specifications

Color system	NTSC system	Inputs	VIDEO IN (LINE A/LINE B): BNC connectors(2) composite video, 1Vp-p ± 6 dB, sync negative, automatic termination at 75 ohms Y/C IN (LINE B): 4-pin, mini-DIN (1) Y(luminance signal): 1Vp-p, sync negative, 75-ohm termination switchable C (chrominance signal): 0.286 Vp-p (burst signal), 75-ohm termination switchable RGB A: D-sub 9-pin connector (1) Analog RGB: 0.7 Vp-p, 75 ohm terminated Digital RGB : TTL level RGB B: BNC connector (3) Analog RGB: 0.7 Vp-p, 75 ohm terminated HVD/HD/VD: BNC connector (2) composite sync: 1 Vp-p negative TTL level: negative and positive available, 0.3 Vp-p negative sync on green available AUDIO IN (LINE A/LINE B/RGB A/RGB B): phono jack (4) -5 dBs, high impedance CONTROL S: minijack (1) RGB A SELECT: minijack (1)
Picture tube	Trinitron tube Approx. 54.5 cm (21 inches) Approx. 50.6 cm (20 inches) picture measured diagonally, 100-degree deflection AG Pitch 0.55 mm (center 0.5 mm)	Outputs	VIDEO OUT (LINE A/LINE B): BNC connector (2) Y/C OUT: 4-pin mini-DIN (1) AUDIO OUT (LINE A/LINE B): phono jack (2)
Resolution	Video inputs: 560 TV lines RGB inputs: 720 dots \times 480 lines	Power requirements	120 V AC, 50/60 Hz
Color temperature	9300° K + 8MPCD	Power consumption	180 W Max.
Frequency response	7 MHz (-6 dB, composite video) 20 MHz (-6 dB, RGB)	Operating temperature range	0°C - 35°C (32°F - 95°F)
Linearity	Horizontal: less than $\pm 5\%$ Vertical: less than $\pm 5\%$	Dimensions	Approx. 517 \times 476 \times 498 mm (w/h/d) (20 ³ / ₈ \times 18 ³ / ₄ \times 19 ⁵ / ₈ inches)
Line full range	Composite video input Horizontal: 15.734 kHz \pm 500 Hz Vertical: 52 to 60 Hz RGB input Horizontal: 15.0 to 36 kHz Vertical: 50 to 100 Hz	Weight	Approx. 30 kg (66 lb 2 oz)
Overscan of the picture	Composite video input less than +7% RGB input Horizontal: -7% to +5% variable Vertical: -7% to +5% variable		
Audio	2 W Monaural		

Design and specifications subject to change without notice.

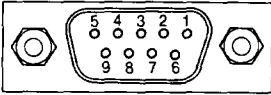
Pin assignment

Y/C (Y/C separate) INPUT connector



Pin No.	Signal	Description
1	Y-input	1 Vp-p, sync negative, 75 ohms
2	CHROMA sub-carrier-input	300 mVp-p, burst Delay time between Y and C: within 0 ± 100 nsec., 75 ohms
3	GND for Y-input	Ground
4	GND for CHROMA-input	Ground
*	Slot for internal switch	Press the switch inside this slot. The signal from S-INPUT connector has priority over the one from LINE B VIDEO IN (BNC type) connector.

RGB multi connector (9-pin)



Pin No.	Signal				
	Analog	Digital 8-color	Digital 16-color	Digital 64-color	Digital monochrome
1	GND	GND	GND	GND	(GND)
2	(NC)	(NC)	(NC)	r	(NC)
3	R	R	R	R	(NC)
4	G	G	G	G	(NC)
5	B	B	B	B	(NC)
6	(NC)	(NC)	I	g	(NC)
7	(NC)	(NC)	(NC)	b	I
8	H/HV	H/HV	H/HV	H/HV	H/HV
9	V	V	V	V	V
Sync level	HV: 1Vp-p (Negative) H,V: TTL level (Positive or Negative)	TTL level (Positive or Negative)	TTL level (H: Positive V: Positive)	TTL level (H: Positive V: Negative)	TTL level (H: Negative V: Negative)

GND: Ground R: Red G: Green B: Blue

(NC): No connection

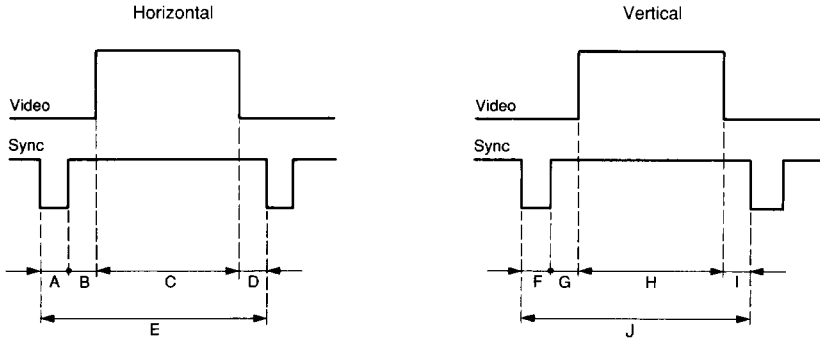
H: Horizontal sync V: Vertical sync

HV: Composite sync I: Intensity

r: Secondary red g: Secondary green b: Secondary blue

Design and specifications subject to change without notice.

Timing Chart



	VGA compatible			CGA compatible	EGA compatible
fH	31.47 kHz			15.68 kHz	21.86 kHz
A (μs)	3.81			4.45	4.9
B (μs)	1.91			8.03	1.6
C (μs)	25.42			44.83	39.3
D (μs)	0.64			6.47	0
E (μs)	31.78			63.78	45.8
fV	70 Hz		60 Hz	60 Hz	60 Hz
F (ms)	0.064	0.064	0.064	0.19	0.6
G (ms)	1.08	1.87	1.017	2.11	0
H (ms)	12.71	11.13	15.26	12.74	16.0
I (ms)	0.416	1.206	0.349	1.64	0.05
J (ms)	14.27	14.27	16.69	16.68	16.7
Sync	H	-	+	-	+
Polarity	V	+	-	-	+