Color Pattern Generators

CG-960 SERIES

NTSC Color Pattern Generator

CG-961 (NTSC)

PAL Color Pattern Generator

CG-962 (PAL)

※ **GP-IB option (Factory option)**

OUTLINE

The CG-961 (NTSC) and CG-962 (PAL) are video signal generators, especially suitable to the needs of the audio/visual area which requires a large-sized screen and higher resolutions. The test signal provides a total of 23 types of patterns including a monoscope pattern all of which are generated by the 8-bit digital data. Furthermore, they are equipped with not only the monoscope pattern or color-bar signal, but also other special patterns such as pulse & bar signal,a 5-step modulation staircase signal, H sweep signal and bounce signal, etc. to be used to evaluate the video circuit characteristics -- ready to be used in a wide variety of applications.

GP-IB OPTION

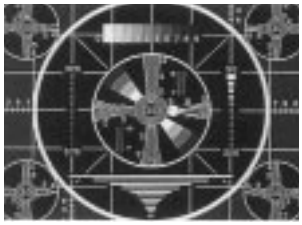
CG-961/CG-962

FEATURES

Monoscope Pattern

The monoscope pattern provides an horizontal resolution of 1,000 TV lines. It can be used for evaluation of a high-resolution TV monitor.

● Monoscope pattern



● Negative-inverted mono-scope pattern

Y/C-Separated Output supplied as standard

In addition to the composite video output, S-Video output with luminance/chrominance separated terminals are also provided as standard.

Amplitude accuracy of ± 3%, Phase accuracy of 3°

Since the digital data is generated in 8 bits, it features extremely high accuracy. The resulting amplitude accuracy is maintained to within ± 3% or 10 mV, and the phase accuracy is maintained within ± 3°.

Video noise evaluation signal

The 50% D-white signal (luminance noise) or 100% chroma signal (chroma noise) are also provided for evaluation of the video noise.

Bounce signal

The bounce signal to be used for evaluation of the DC clamp is also supplied. It alternates between white and black every second.

Enriched built-in patterns

An H Sweep signal for evaluation of frequency response, and a 5-step modulated staircase wave for DG/DP measurement are also provided. The pulse & bar signal for evaluation of the quality of circuit characteristics. At the same time, two types of color-bar signals – full-field and split – are also built in.

Setup 0%

In answer to market trends, the CG-961 (NTSC) is equipped with the setup 75% design.

RF Output

As an RF output, 1 kHz audio signal is also added. The frequency can be varied from the front panel control.

EEPROM backup

EEPROM is employed for backup of the panel setting status. You don't have to worry about exhaustion of the backup battery.

GP-IB option (Factory option)

As a factory set option, the CG-961/962 can be installed the GP-IB interface, for accommodating an automated system.

COLOR PATTERN GENERATORS

EXAMPLE OF PATTERNS

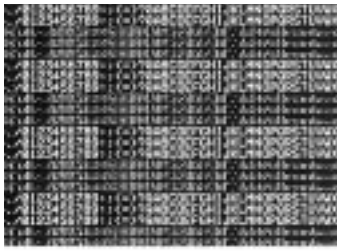
Monoscope Pattern

- Screen size, Position
- Resolution
- Streaking
- Total evaluation

Monoscope Pattern

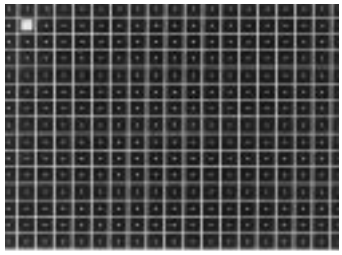
(Inverted, negative)

Characters



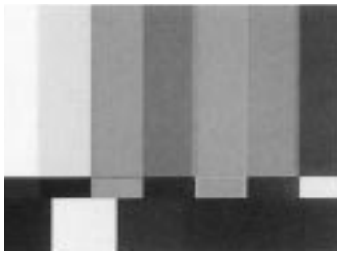
- Focus
- Blur

Cross & Dot



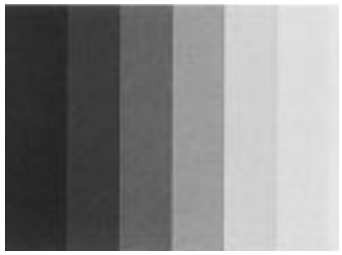
- Convergence
- Alignment
- Deflection yoke polarity check

SMPTE Color-Bar



- Color reproduction
- Saturation
- Brightness

5-Step

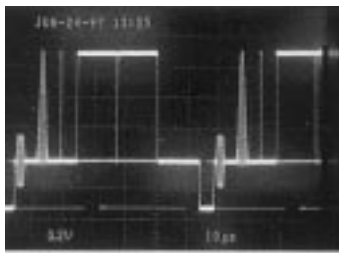


- DG/DP
- Linearity

Magenta

- Color irregular (unevenness) check

Pulse & Bar



- Y/C delay
- Y/C gain difference

50% White

- Brightness noise

SPECIFICATIONS

Model		CG-961	CG-962
Patterns			
Pattern type	Monoscope	Horizontal resolution of 1,000 TV lines	
	Cross & Dot	Cross hatch: 20 × 16, Dot: 19 × 15	
	Window	0.5 × 0.5	
	Characters	94 × 24 characters or 47 × 24 characters	
	Raster	100% white, 50% white, 100% chroma, R, G, B, Mg	
	Bounce	Alternates between white and black in once per second (approx.)	
	H Sweep	250 kHz - 5 MHz, with marker	250 kHz - 6 MHz, with marker
	Pulse & Bar	12.5T modulation pulse, 2T pulse, Bar	
	Split Color Bar	Conforming SMPTE	Dividing rate same as SMPTE
	Full-field Color Bar	Color bar in brightness order	
	5-Step	Chroma ON/OFF selectable	
Reverse		Negative inversion of Mono-Scope, Cross & Dot, Wind, Characters	
Chroma		ON/OFF selectable for Color Bar, 5-Step	
Video Output: Y/C Output			
Output Level		1 Vp-p± 3% (Sync tip -- 100% white), Color saturation 75%, Setup 0%	
Output Accuracy		± 3% or within 10 mV, ±3°	
Output Impedance		75 Ω ± 10%	
Sub-Carrier Frequency		3.579545 MHz ± 100 Hz	4.433619 MHz ± 100 Hz
Horizontal Scanning Frequency		15.734 kHz	15.625 kHz
Vertical Scanning Frequency		59.94 Hz interlaced	50.00 Hz interlaced
RF Output			
Output Level		60 dBμ or more (75Ω loaded)	
Frequency Variable Range		45 MHz -- 104 MHz	40 MHz -- 104 MHz
Audio Signal		Approx. 1 kHz	
Audio Carrier Frequency		4.5 MHz	5.5 MHz
Power Requirements			
Power Voltage		AC 90 V -- 250 V, 50/60 Hz	
Power Consumption		Approx. 15 W	
Environmental Conditions			
Operate Temperature Range		0 – 40°C, RH 85% or less	
Specification of Guaranteed Temperature Range		10 – 35°C, RH 85% or less	
Others			
Dimensions		212 (W) × 133 (H) × 272 (D) mm	
Weight		Approx. 3.8 kg	
Option		GP-IB : Factory option	

Video output signal level

CG-961

	75% White	Yellow	Cyan	Green	Magenta	Red	Blue	−I	100%White	Q	Burst	Black	Synced signal level
Luminance component (mVp-p)	536	477	375	316	220	161	59	0	714	0	0	0	286
Chroma level (mVp-p)	—	480	681	636	636	681	480	286	—	286	286	—	—
Chroma phase (deg) °	—	167	283	241	61	103	347	303	—	33	180	—	—

CG-962

		75% White	Yellow	Cyan	Green	Magenta	Red	Blue	U	100%White	V	Burst	Black	Synced signal level
Luminance component (mVp-p)		525	465	368	308	217	157	60	0	700	0	0	0	300
Chroma level (mVp-p)		—	470	664	620	620	664	470	300	—	300	300	—	—
Chroma phase (deg)	+V	—	167	283	241	61	103	347	0	—	90	135	—	—
	−V	—	193	77	119	299	257	13	0	—	270	225	—	—

Color Pattern Generators

CG-950 SERIES

NTSC Color Pattern Generator

CG-951 (NTSC)

PAL Color Pattern Generator

CG-952 (PAL)

※ **Remote Control Option (Factory Option)**
RF Output Option (Factory Option)

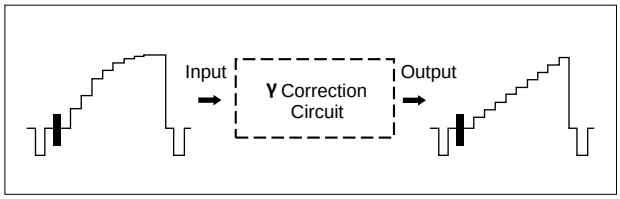
OUTLINE

The CG-951 (NTSC)/CG-952(PAL) are color pattern generator incorporating a 10-step staircase signal generator featuring variation of the luminance level of each step, in addition to the generator of color bar, crosshatch, raster and other patterns required for adjustments and inspections of video equipment and color TV. Based on the CG-930 Series of color pattern generators highly approved with excellent cost efficiency, the CG-951/CG-952 are provided with additional new functions such as a variable 10-step staircase signal generator, RGB output and Y/C separate outputs. With its improved resolution, the CG-951/CG-952 are also compatible with a wide range of modified patterns.

FEATURES

Variable 10-Step Staircase Generator Making For Easy Adjustment of the Gamma-Corrector Circuit of LCD Displays

With both CRT and LED, the display brightness is not linearly proportional with the input signal but there is a curve for each type of display. Since the current video signal has been corrected for the curve of CRT, the color hue may be altered slightly if it is displayed on a LCD without correction. To prevent this, a very complicated adjustment using color bar signals or staircase signals with equal level intervals has been required for the gamma corrector- circuit of LCD displays. However, the CG-950 series incorporates a variable 10-step staircase signal generator which can simulate the curves. By applying a staircase signal with simulated curve, the output from the correction circuit of LCD displays can be made linear, facilitating the adjustment and reducing the adjustment process as well. The variable 10-step staircase generator can be preset to output up to 5 kinds of staircase signals.



RGB Output and Y/C Separate Outputs Provided as Standard In Addition to Composite Video Output

In addition to the composite video output for video equipment and a large variety of monitor equipment, an RGB output and Y/C separate outputs are provided as standard. An RF output can also be added optionally.

Burst Signal ON/OFF with Any Pattern

To facilitate checking of the color killer circuitry, the burst signal ON/OFF function can be used with all patterns.

Selection of 9 Raster Patterns

The raster patterns for use in the purity adjustment allow selection of intermediate colors (yellow, cyan, magenta) by combining R, G and B. As a result, 9 kinds of outputs including 100% white, 75% white, yellow, cyan, green, magenta, red, blue and black are available. The luminance and chrominance signals can additionally be switched ON/OFF.

Two Color Bar Patterns

Split color bars (SMPTE) and full-field color bars are built in. The full-field color bars are available in 8 colors including black (100% white, 75% white, yellow, cyan, green, magenta, red, blur or black). In addition to the luminance and chrominance ON/OFF switching, R, G and B can also be switched ON/OFF independently.

Setup 0%

While conventional NTSC equipment used 7.5% setup level, a 0% setup level which is becoming the new mainstream is provided.

EEPROM Memory

The panel setups and the 10-step staircase setups are stored in EEPROM so that they will not be cleared even after the power is turned off. As the EEPROM does not need a battery for back-up, there is no need to worry about battery exhaustion.

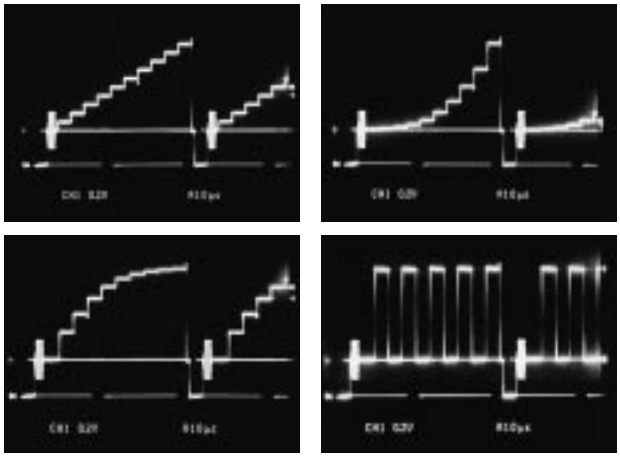
Composite Sync and Vertical Sync Outputs Provided as Standard

The sync signal output can be switched to the composite sync and vertical sync, which is convenient for waveform observation on an oscilloscope.

Example of Modified Patterns

●Horizontal color bars.●10-Step MOD. ●Oblique color bars. ●Circle .●Checkers.●Center-cross.●Scroll.
※ Please consult us for the modification costs.

Examples of 10-Step Staircase Output Settings



SPECIFICATIONS

Patterns

Cross-hatch ..... 20 (V) ×16 (H), white on black background, dot on the center, corner marker on the top left of screen

Dot ..... 20(V) ×16(H), white on black background, corner marker on the top left of screen.

Window ..... 0.5 ×0.5, white on black background.

Raster ..... 100% white, 75% white, yellow, cyan, green, magenta, red, blue, black.

Color ..... Split-field color bars x 7 colors.

Full-field ..... Full-field color bars in order of luminance x 8 colors.

10-step ..... Full-field 10-step bars. Level resolution 100, up to 5 patterns can be preset.

R/G/B ..... Independent ON/OFF of R, G and B in color signals.

R	G	B	COLOR
OFF	OFF	OFF	BLACK
OFF	OFF	ON	BLUE
OFF	ON	OFF	GREEN
OFF	ON	ON	CYAN
ON	OFF	OFF	RED
ON	OFF	ON	MAGENTA
ON	ON	OFF	YELLOW
ON	ON	ON	75%WHITE

LUMI ..... ON/OFF of luminance component in color signals.

CHROMA ..... ON/OFF of chrominance component in color signals.

100% WHITE ..... Switching of white part in raster and color-bar patterns between 100% white and 75% white. (White in IQW (UVW) part is fixed at 100%.)

Burst ..... ON/OFF of color burst component in all patterns.

Video Output

Output level ..... CAL: 1.0 Vp-p (75Ω load)
VAR: 0 to 1.5 Vp-p (75Ω load)

Output impedance 75Ω

Polarity ..... Positive (Sync signals are negative.)

S Output

Output level ..... Y+S (SYNC - 100% white): 1.0 Vp-p (75Ω load)
C (Burst): 286 (300) mVp-p (75Ω load)

Output impedance 75Ω

RGB Outputs

RGB: Output level ..... 0.7 Vp-p (75Ω)
Output impedance ... 75Ω

HD, VD: Output level ..... Approx. 4 Vp-p (open end)
Output impedance ... 75Ω
Logic ..... Negative logic

Sync Output

Frequency (signal format) ... H/V composite and vertical frequencies

Output level ..... Approx. 1 Vp-p (open end)

Output impedance 75Ω

Subcarrier Output

Frequency ..... (CG-951) 3.579545 MHz (100 Hz)
(CG-952) 4.433619 MHz (100 Hz)

Output level ..... Approx. 1 Vp-p (open end)

Output impedance 75Ω

Sync Signals

H scanning frequency ..... (CG-951) 15.734 kHz
(CG-952) 15.625 kHz

V scanning frequency ..... (CG-951) 59.94 Hz
(CG-952) 50.00 Hz

Color Burst

Min. 8 cycles at the back porch of H sync signal (ON/OFF switchable).

Remote Control (Optional)

Input connector ..... 24-pin Amphenol

Input level ..... TTL level (H: 2.5 V or more or open. L: 0.8 V or less.)

Panel/remote switching 1 bit (negative logic)

Pattern and other control 7 bits

RF Output (Optional)

Output connector ..... (CG-951) F connector
(CG-952) PAL connector

Modulation system ..... Negative modulation

Output level ..... 60dBμ or more

Output impedance 75Ω

Video frequency

CH		A		B	
CG-951	JAPAN CH	CH1	91.25MHz	CH3	97.25MHz
	USA CH	CH3	61.25MHz	CH4	67.25MHz
CG-952	EUROPE CH	CH2	48.25MHz	CH3	55.25MHz
	ITALY CH	CHA	53.75MHz	CHB	62.25MHz
	AUSTRALIA CH	CH1	57.25MHz	CH2	64.25MHz
	NEW ZEALAND CH	CH2	55.25MHz	CH3	62.25MHz
	U.K. CH	CH71	495.25MHz	CH77	543.25MHz

Temperature/humidity for operation ..... 0 to 40℃, RH 85% max.

Temperature/humidity for characteristics in spec. ..... 10 to 35℃, RH 85% max.

Power source ..... 100, 120, 220, 230V AC ±10% (max. 250V) 50/60Hz

Power consumption ..... Approx. 28W

Case dimensions ..... 212 (W)×133 (H)×272 (D) mm

Maximum dimensions ..... 212 (W) ×156 (H)×298 (D) mm

Weight ..... Approx. 5.3kg

Accessories ..... Instruction manual (1), power cord (1)

Video output signal level

CG-951

Allowable value		75% White	Yellow	Cyan	Green	Magenta	Red	Blue	−I	100%White	Q	Burst	Black	Synced signal level
Luminance component (mVp-p)	±4%	536	477	375	316	220	161	59	0	714	0	0	0	286
Chroma level (mVp-p)	±5%	—	480	681	636	636	681	480	286	—	286	286	—	—
Chroma phase (deg)	±5 °	—	167	283	241	61	103	347	303	—	33	180	—	—

CG-952

Allowable value		75% White	Yellow	Cyan	Green	Magenta	Red	Blue	U	100%White	V	Burst	Black	Synced signal level
Luminance component (mVp-p)	±4%	525	465	368	308	217	157	60	0	700	0	0	0	300
Chroma level (mVp-p)	±5%	—	470	664	620	620	664	470	300	—	300	300	—	—
Chroma phase (deg) ±5 °	+V	—	167	283	241	61	103	347	0	—	90	135	—	—
	−V	—	193	77	119	299	257	13	0	—	270	225	—	—

Color Pattern Generators

CG-930 SERIES

NTSC Color Pattern Generator

CG-931 (NTSC)

PAL Color Pattern Generator

CG-932 (PAL)

※ Remote Control Option (Factory Option)

OUTLINE

The CG-931 (NTSC) and CG-932 (PAL) are color pattern generators for the NTSC and PAL color systems, respectively. In addition to the split-field color bar required for the adjustment and inspection of video equipment and color TVs, they are provided with a variety of standard pattern signals including the dot, cross-hatching, center-cross and window patterns as well as blue, green, red and white color raster patterns. With S-output provided as standard, they are indispensable equipment for the new multimedia era.

FEATURES

CG-931: NTSC Color Pattern Generator in compliance with EIA (RS-189A) and SMPTE (ECR-1-1978) Standards

The CG-931 can output color-bar signals in compliance with both RS-189A and ECR-1-1978 standards. In addition to the field color bar signals, it can provide patterns including I/Q/W ON/OFF switching, color bar signals without luminance component and gray scale signals without chrominance component instantaneously.

CG-932: PAL Standard Color Pattern Generator

The CG-932 can provide 2 kinds (2-split, 3-split) of spilt-field color bar signals as well as U/V/W ON/OFF switching, color bar signals without luminance component and gray scale signals without chrominance component instantaneously.

※ The following are common features for the 2 models.

S-Output

An S-output is provided as standard. In addition, Y+S and C outputs are provided at the rear panel (BNC connectors), and the output levels of each are variable individually.

Variable Setting Levels
The setup, chrominance and luminance levels are arbitrarily settable and a calibration signal is provided for each, as a convenience in making simple adjustments and repairs to color TV receivers.

Individual Rasters for Purity Adjustments
Red, blue, green and white rasters are provided for use in verification of purity and in adjustment and inspection of white balance.

Dot and Cross-Hatch Patterns for Adjustments of Linearity and Convergence
A central dot can be used for adjustment of picture tube static convergence, and a cross-hatch pattern can be used for adjustment of dynamic convergence, these being provided as a convenience in adjusting vertical/horizontal amplitude and linearity.

Center Cross and Dot for Convergence Adjustment
A center cross and dot are provided to enable adjustment and inspection of raster alignment and convergence.

High-Voltage Testing
A white window on a black background enables testing high-voltage stability.

Video and RF Outputs
A video output for monitor TVs (75Ω) and RF output for TV receivers (75Ω) are provided as standard.

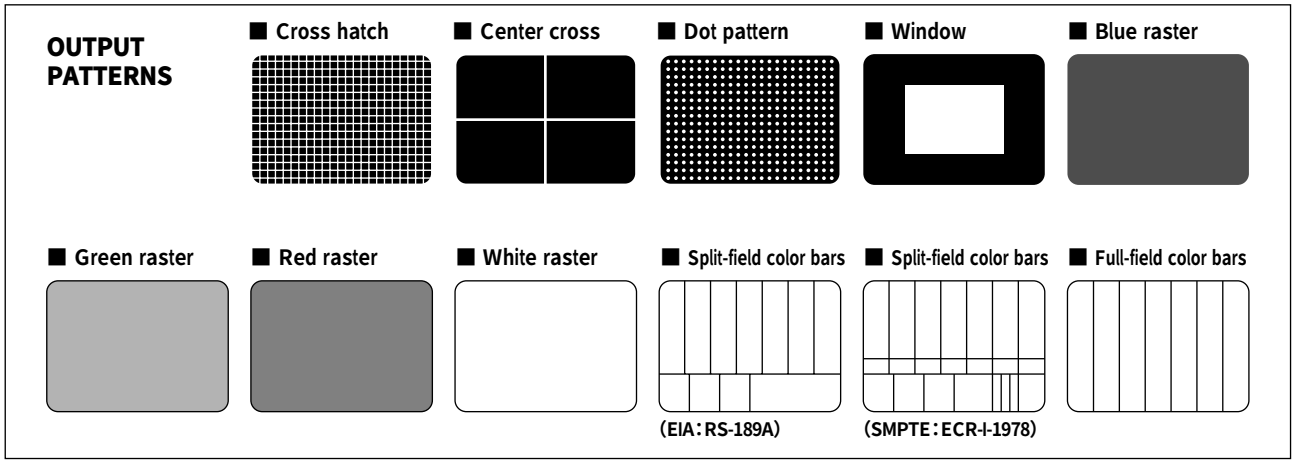
Sync Signal Output
To simplify the task of observing the video signal on an oscilloscope, the vertical and horizontal sync signals are provided as outputs. In addition, the sync signals include equivalent pulses and their phase is locked to the subcarrier frequency.

Interlaced and Progressive Scanning
In addition to the normally-used interlaced scanning, progressive scanning is also possible, thereby reducing jitter in the horizontal lines of the center cross and cross-hatch patterns.

RF Output ON/OFF Switching
When using only the video output or when it is desirable to eliminate interference, the unwanted RF output can be switched off.

RF Channel Switching
While the standard RF channels of the CG-931 are Japanese channels and those of the CG-932 are European channels, they can be switched to the frequencies of other major countries, such as the US channels with the CG-931 and the Italian, Australian, New Zealand and UK channels with the CG-932.

Remote Control Capability
With each model, the remote switching of patterns using an optional remote control unit (RT-62A) is available as a factory option (made to order.)



COLOR PATTERN GENERATORS

SPECIFICATIONS

Pattern

Cross hatch ..... 16×20 (white on black background including one dot at the center of the screen)
Center cross ..... 1×1 (white on black background with cross at the center of the screen)
Dots ..... 15×19 (white on black background)
Window ..... 0.5×0.5 (white on black background)
Rasters ..... Red, blue, green, white
Color bars NTSC ..... EIR: Conforms to RS-189A
SMPTE: Conforms to EIR-1-1978
PAL ..... 75% intensity sequential PAL color bars; bar 1 (divided in two) & bar 2 (divided in three)
I, Q, W off ..... For the color signal, Q and I (U, V for PAL) at the bottom of the screen.
PAL: (U, V, W off) ..... Instead of 100% white and black, a full-field color bar is inserted at the top of the screen.
CHROMA off ..... The chrominance component is eliminated from the color bar signal and the pattern is provided with luminance only.
LUMMI off ..... The luminance component is eliminated from the color bar signal and the pattern is provided with chrominance only.

Video output

Output level ..... CAL: 1.0Vp-p (75Ω load)
VAR: 0 to 1.5Vp-p (75Ω load)

S output
Output level ..... CAL: Y+S, 1Vp-p (SYNC to 100% white), C 286mVp-p (burst), 300mVp-p (PAL only)
VAR: ±10% (both Y+S and C)

RF out
Modulation type ..... Negative
Output voltage ..... 60dBμ min.
Output impedance 75Ω
Picture frequencies

		A	B
CG-931	JAPAN CH	CH2 97.25MHz	CH3 103.25MHz
	USA CH	CH5 77.25MHz	CH6 83.25MHz
CG-932	EUROPE CH	CH3 55.25MHz	CH4 62.25MHz
	ITALY CH	CHA 53.75MHz	CHB 62.25MHz
	AUSTRALIA CH	CH1 57.25MHz	CH2 64.25MHz
	NEW ZEALAND CH	CH2 55.25MHz	CH3 62.25MHz
	U.K. CH	CH71 495.25MHz	CH77 543.25MHz

Sync signal output
Frequency ..... Horizontal and vertical frequencies
Output voltage ..... Approx. 1Vp-p (open output)
Output impedance 75Ω

Subcarrier

Subcarrier frequency ..... NTSC: 3.579545MHz
PAL: 4.433619MHz
Frequency ..... Center frequency ±100Hz (adjustable ±5Hz)
Output voltage ..... Approx. 1Vp-p (open output)
Output impedance 75Ω
Color burst ..... Minimum of 8 cycle at the back porch of the horizontal sync signal

Level control

Chroma level ..... The color bar or raster chrominance level is adjustable approximately ± 20%. However, the yellow and cyan color bar signal amplitude maximum value can be preset to the same level as the 100% white signal.
Luminance level ..... The luminance level of patterns is adjustable approximately 20%. However, presetting of the white signal level for the raster to 100% is possible.
Setup level ..... The setup level of patterns is variable 0 to 10%. However, presetting of the black level to 7.5% is possible.

Sync signals

		CG-931	CG-932
Horizontal scan frequency		15.734kHz	15.625kHz
Vertical scan frequency	Interlaced	59.94Hz	50.00Hz
	Progressive	60.05Hz	50.08Hz

Temperature/humidity for operation ..... 0℃ to 40℃ RH85% or less
Temperature/humidity for characteristics in spec. ..... 10℃ to 35℃ RH85% or less
Power source ..... 100/120/220V AC±10%, 216 to 250V AC, 50/60Hz, Approx. 15W
Case dimensions ..... 212 (W)×133 (H)×272 (D) mm
Maximum dimensions ..... 212 (W) ×156 (H) ×298 (D) mm
Weight ..... Approx. 3.5kg
Accessories ..... Instruction manual (1), accessory cable (model: CA-41)(1), power cord (1)

Video output signal level

CG-931

Allowable value		75% White	Yellow	Cyan	Green	Magenta	Red	Blue	Q	−I	Burst	Black	Synced signal level
Luminance component (IRE)	±5%	77	69	56	48	36	28	15	7.5	7.5	0	7.5	40
Chroma level (IRE)	±5%	—	62	88	82	82	88	62	40	40	40	—	—
Chroma phase (deg)	±5 °	—	167	283	241	261	103	347	33	303	180	—	—

CG-932

Allowable value		100% White	75%White	Yellow	Cyan	Green	Magenta	Red	Blue	U	V	Burst	Black	Synced signal level
Luminance component (mVp-p)	±5%	700	525	465	368	308	217	157	60	0	0	0	0	300
Chroma level (mVp-p)	±5%	—	—	470	664	620	620	664	470	300	300	300	—	—
Chroma phase (deg) ±5 °	+V	—	—	167	283	241	61	103	347	0	90	135	—	—
	−V	—	—	193	77	119	299	257	13	0	270	315	—	—