

# INSTRUCTION MANUAL

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## COLOR PATTERN GENERATOR CG-971

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# USING THE PRODUCT SAFELY

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## ■ Preface

To use the product safely, read this instruction manual to the end. Before using this product, understand how to correctly use it.

If you read this manual but you do not understand how to use it, ask us or your local dealer.

After you read this manual, save it so that you can read it anytime as required.

## ■ Notes on reading this instruction manual

The contents of this instruction manual include technical terms in part of their explanation.

If you do not understand those terms, do not hesitate to ask us or your local dealer.

## ■ Pictorial indication and warning character indication

This instruction manual and product show the warning and caution items required to safely use the product. The following pictorial indication and warning character indication are provided.

<p>&lt;Pictorial indication&gt;</p> 	<p>Some part of this product or the instruction manual may show this pictorial indication. In this case, if the product is incorrectly used in that part, a serious danger may be brought about on the user's body or the product.</p> <p>To use the part with this pictorial indication, be sure to refer to this instruction manual.</p>
<p>&lt; Warning character indication &gt;</p>  <b>WARNING</b>	<p>If you use the product, ignoring this indication, you may get killed or seriously injured. This indication shows that the warning item to avoid the danger is provided.</p>
 <b>CAUTION</b>	<p>If you incorrectly use the product, ignoring this indication, you may get slightly injured or the product may be damaged. This indication shows that the caution item to avoid the danger is provided.</p>

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# USING THE PRODUCT SAFELY

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## WARNING

### ■ Do not remove the product's covers and panels

Never remove the product's covers and panels for any purpose.

Otherwise, the user's electric shock or a fire may be incurred.

### ■ Warning on using the product

The warning items given below are to avoid danger to the user's body and life and avoid the damage and deterioration of the product.

Use the product, observing the following warning and caution items.

### ■ Warning items on power supply

#### ● Power supply voltage

As the rated power supply voltage of the product, the range from 100 to 240 VAC can be used without being switched.

#### ● Power cord

Important: The attached power cord set can be used for this device only.

#### ● Protection fuse

If an input protection fuse is blown, the product does not operate. When the fuse is blown, the user can replace it. However, replace it correctly, observing the warning and caution items that are provided in the section of the instruction manual where the fuse replacement is explained.

If the fuse is incorrectly replaced, a fire may occur.

#### ● Changing the power supply voltage

The rated power supply voltage cannot be changed. Use the product only at the rated power supply voltage indicated on the product. Otherwise, a fire may occur. The product's rated power supply voltage is from 100 to 240 VAC. Use the product in this range.

(For use at a voltage higher than 125 VAC, the power cord must be changed.)

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# USING THE PRODUCT SAFELY

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## WARNING

### ■ Warning item on grounding

The product has the GND terminal on the panel surface to protect the user from electric shock and protect the product. Be sure to ground the product to safely use it.

### ■ Warning item on installation environment

#### ● Operating temperature

Use the product within the operating temperature indicated in the rating column. If the product is used with the vents of the product blocked or in high ambient temperatures, a fire may occur.

#### ● Operating humidity

Use the product within the operating humidity indicated in the rating column. Watch out for condensation by a sharp humidity change such as transfer to a room with a different humidity. Also, do not operate the product with wet hands. Otherwise, an electric shock or fire may occur.

#### ● Use in a gas

Use in and around a place where an inflammable or explosive gas or steam is generated or stored may result in an explosion and fire. Do not operate the product in such an environment.

Also, use in and around a place where a corrosive gas is generated or spreading causes a serious damage to the product. Do not use the product in such an environment.

#### ● Do not let foreign matter in

Do not insert metal and flammable materials into the product from its vent and spill water on it. Otherwise, an electric shock and fire may occur.

### ■ Warning item on abnormality while in use

If smoke or fire is generated from the product while in use, stop using the product, turn off the switch, and remove the power cord plug from the outlet. After confirming that no other devices catch fire, call the company or each sales office.

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## USING THE PRODUCT SAFELY

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### CAUTION

#### ■ Input/output terminal

Maximum input to the input terminals is specified to prevent the product from being damaged.

Do not supply input, exceeding the specifications that are indicated in the "Rating" or "Caution on use" column in the instruction manual of the product. Otherwise, a product failure is caused.

Also, do not supply power to the output terminals from the outside. Otherwise, a product failure is caused.

#### ■ When the product is left unused for a long time

Be sure to remove the power plug from the outlet.

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#### (Calibration)

Although the performance and specifications of the product are checked under strict quality control during shipment from the factory, they may aging rate because of aging rate in its parts. It is recommended to periodically calibrate the product so that it is used with its performance and specifications stable. For consultation about the product calibration, call the dealer or the company or each sales office where you bought the product.

#### (Daily maintenance)

When you clean off the dirt of the product covers, panels, and knobs, avoid solvents such as thinner and benzene. Otherwise, paint may peel off or the resin surface may be affected.

To wipe off the covers, panels, and knobs, use a soft cloth with neutral detergent in it.

During cleaning, be careful that water, detergents, and other foreign matters do not get into the product.

If a liquid or metal gets into the product, an electric shock and fire are caused.

During cleaning, remove the power cord plug from the outlet.

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Use the product correctly and safely, observing the above warning and caution items.

Because the instruction manual indicates caution items even in individual items, observe those caution items to correctly use the product.

If you have questions or comments about the content of the instruction manual, ask us or E-Mail us.

# 1. GENERAL

The Color Pattern Generator CG-971 is designed as a signal source for analog TV monitors.

Output video and audio patterns can be replaced using the CF(Compact Flash) card.

The user may create a patterns using a PC with the attached application software, write them in CF cards and install them into the CG-971 for user-friendly operations.

# 2. FEATURES

- (1) Outputs CVBS (Composit), S-VIDEO and analog RGB signals through the connectors.
- (2) The output formats are compatible with the NTSC and PAL systems.  
PAL-M and NTSC-4.43 are also available. (Not compatible with PAL-N or 60.)
- (3) Output patterns depend on the system files installed in the CG-971.  
Any pattern alterations are enabled by rewriting the system files using a PC and the application software.
- (4) The CVBS output synchronization level may be set independently for each pattern. The SYNC output polarity may be changed independently for each system file.
- (5) Has a monoscope pattern as the standard feature.
- (6) Outputs natural images. It is possible to load natural image data (of the BMP format) prepared in CF cards by the user into the CG-971.  
(A single natural image may be used for each system file.)
- (7) Stores a maximum of twenty-four display patterns, which are selected with the UP and DOWN keys.
- (8) It is possible to display specified patterns in a specified order at a specified interval using the automatic sequence mode.  
(The pattern switching interval may be set up to 60 seconds in 1 second steps.)
- (9) Capable of remote control through the GP-IB, RS-232C or digital interface.
- (10) Two units may be installed side by side in the EIA 2U space (88.1 mm) of the 19-inch rack.

**※ We uses 2GB or smaller-capacity CF cards made by San Disk Corporation to check operations of the CG-971. It will not warrant the performances if the user uses other CF cards.**



## [Audio]

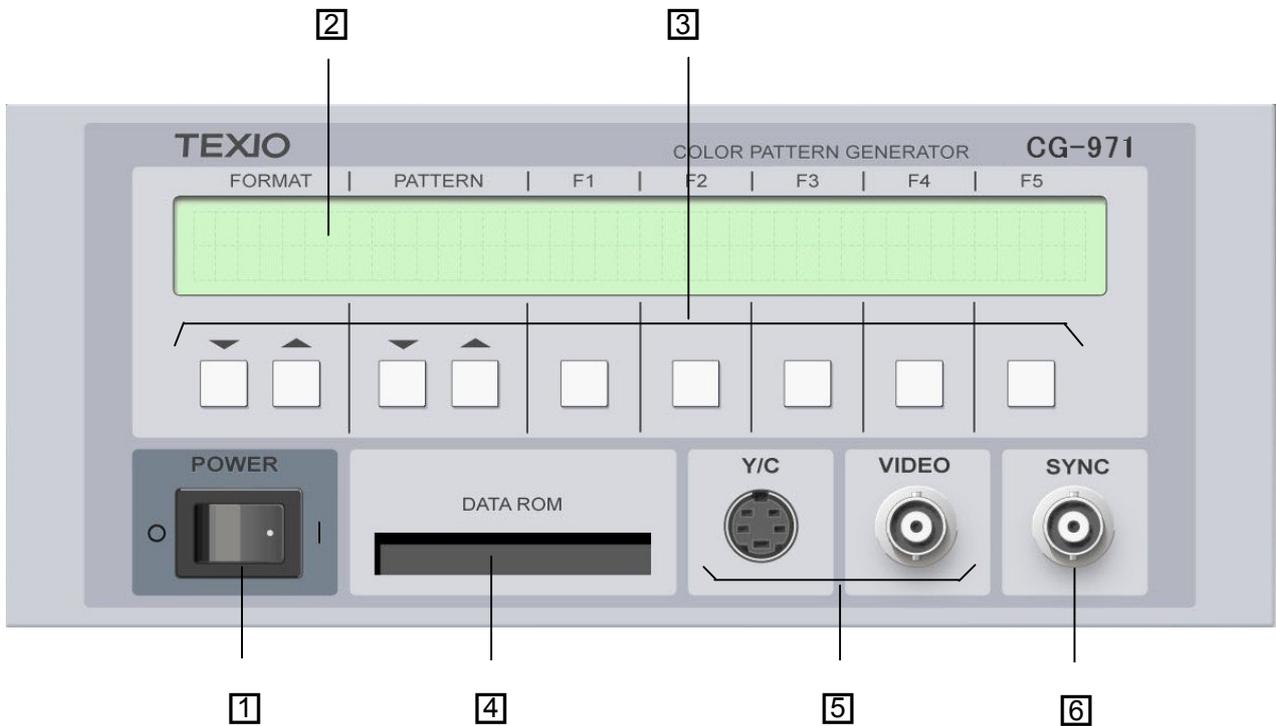
- Output connectors : RCA pin jacks, 2-channel (stereo), unbalance, 600  $\Omega$
- Audio level : 0.1V to 2.0V (R and L may be set independently in 0.1V steps),  
accuracy,  $\pm 10\%$  (with no termination)
- Audio frequency : 100Hz to 20kHz (R and L may be set independently in 100Hz steps),  
accuracy,  $\pm 10\%$  (open end at full scale)

## [Others]

- Sequence : 24 steps max. May be changed up to a maximum of 60 seconds in units of  
1 second per step. Automatic and step operation are selectable.
- Compatible CF cards : FAT12, FAT16 and FAT32 only. Not compatible with NTFS.  
Capacity is 2GB or less.  
**※ We uses 2GB or smaller-capacity CF cards made by San Disk Corporation to check operations. It will not warrant the performances if the user uses other CF cards.**
- Setup application software : Compatible with MS Windows 98/ME and Windows 2000/XP/VISTA.
- LCD display : 2-line, 40-digit LCD (with LED backlight)
- External control : RS-232C, GP-IB and digital interface (TTL level, parallel) are selectable.
- Operating temp./humid. range : 0° to 40°, 85% RH or less (No dew condensations)
- Spec. temp./humid. range : 10°C to 35°C RH85% or less.
- Power source : AC 100V to 240V, 50Hz or 60Hz, 30VA max.
- Maximum dimensions : 210mm(W)  $\times$  98mm(H)  $\times$  315mm(D)  
(Height includes rubber shoe height. Frame height is 2U size of 88 mm.)
- Weight : Approx. 2.5kg
- Accessories : Instruction manual, power cord, and application disc.  
**※ No CF cards are supplied with the product.**

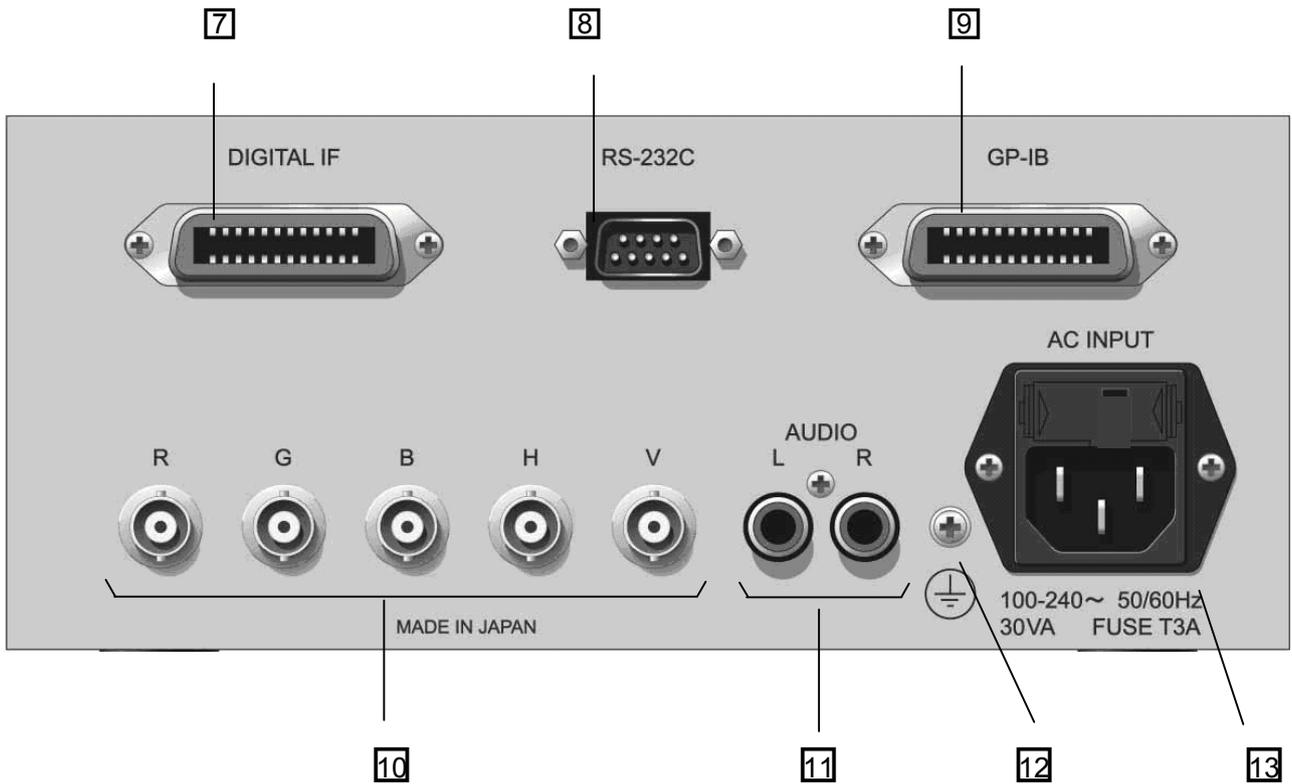
## 4. PANELS

### 4-1. Front Panel



- 1** Power switch  
Turns on power when set to the (I) side. Turns it off when set to the (O) side.
- 2** LCD panel  
Displays the switch functions.
- 3** Key switches  
Changes various functions.
- 4** Data ROM socket  
Receives a CF card that stores the set conditions and/or display patterns.
- 5** Image output connectors  
Two output connectors: Video (CVBS) and S (Y/C).
- 6** SYNC output connector  
Outputs C-SYNC or V-SYNC signals.

## 4-2. Rear Panel



**7** Connector for controlling the CG-971 with digital (TTL) signals.

**8** RS-232C connector for remote control.

**9** GP-IB connector for remote control.

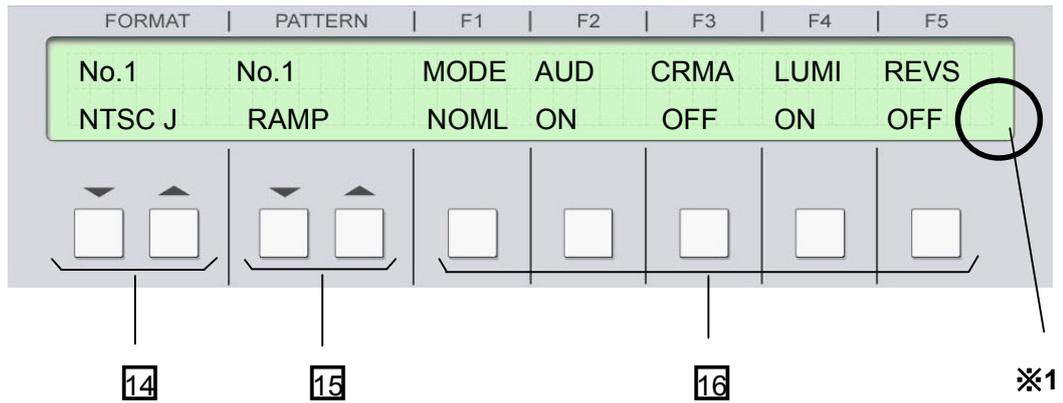
**10** Analog RGB output connectors.

**11** Audio signal output connectors.

**12** GND terminal.

**13** Power plug receptacle with a built-in fuse.

### 4-3. LCD display functions



**14** Format changing switches

Changes the format of output signals (i.e., applicable standard of output signals).  
The output format number is changed with the UP and DOWN keys.

**15** Pattern changing switches

Changes the display pattern. The display number is a pattern number.

**16** Function changing switches

Changes a maximum of four functions, which may be set for each pattern.  
Changeable functions depend on patterns.

**※1 All keys are not operable when the remote mode is selected through the interface.  
The character R blinks in the lower right part of the LCD panel in the remote mode.**

Table 4-1 Format Nos. and Signal Types

Format No.	Signal types
No.1	NTSC-M
No.2	PAL (other than M/N/60)
No.3	NTSC-J (Setup level : 0 IRE)
No.4	NTSC-4.43
No.5	PAL-M

**※ The CG-971 is not compatible with PAL-N or 60.**

#### 4-4. F1 to F5 keys and operation modes

Every time the F1 key is pressed, three operation modes change in sequence. They are the normal mode, sequence mode and system file name display mode. Functions of the F2 to F5 keys change in these modes.

It is possible, using the application software, to select the sequence mode first after turning on power.

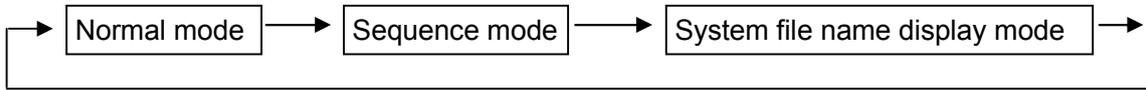


Fig. 4-1 Mode Transition with F1 Key

##### ① Normal mode

Audio, chroma, luminance and reverse display of the display pattern are turned on and off in this mode. The setting done in the normal mode will not change even though the format and pattern are changed. However, it is initialized to the default setting if power is turned off.

F1	F2	F3	F4	F5
MODE	AUD	CRMA	LUMI	REVS
NOML	ON	OFF	ON	OFF

F1 key : Proceeds to the next sequence mode.

F2 key : Turns on or off AUDIO. (Default setting: Off)

F3 key : Turns on or off CHROMA.

Chromatic components are zeroed when CHROMA is set to Off.

(Default setting: On)

F4 key : Turns on or off LUMINANCE.

Luminance components are zeroed when LUMINANCE is set to Off.

(Default setting: On)

F5 key : Reverses the RGB level. If this button is pressed in the condition where the reverse function is turned on in pattern setting, the reversed function is changed into the basic function, since pressing this button reverses the preset condition.

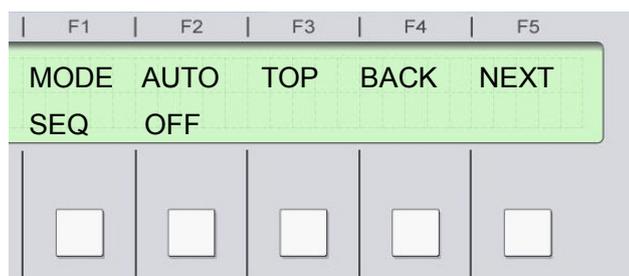
(Default setting: Off)

## ② Sequence mode

Preset formats and patterns are changed in sequentially in the sequence mode. It is possible to select two pattern changing methods: “Step” pattern changing, and “automatic” pattern changing. Formats and patterns to be changed in this mode are set with the application software.

Patterns set continuously from No. 1 are repeated in sequence. If preset pattern numbers have a blank, pattern No. 1 to the pattern before the blank are repeated.

The contents of the currently-displayed format and pattern are displayed on the LCD even in the sequence mode.



F1 key : Proceeds to the next system file name display mode.

F2 key : Changes the sequence continuously at the preset time interval automatically. Every press of the F2 key turns on or off automatic sequence operation. However, if automatic sequence operation is stopped once during execution and restarted then, it always restarts from the beginning. The other keys will not work during automatic sequence operation. In operation, the F3 to F5 keys are not displayed on the LCD and ON is displayed in the F2 key area.

F3 key : Returns to the first step of the sequence.

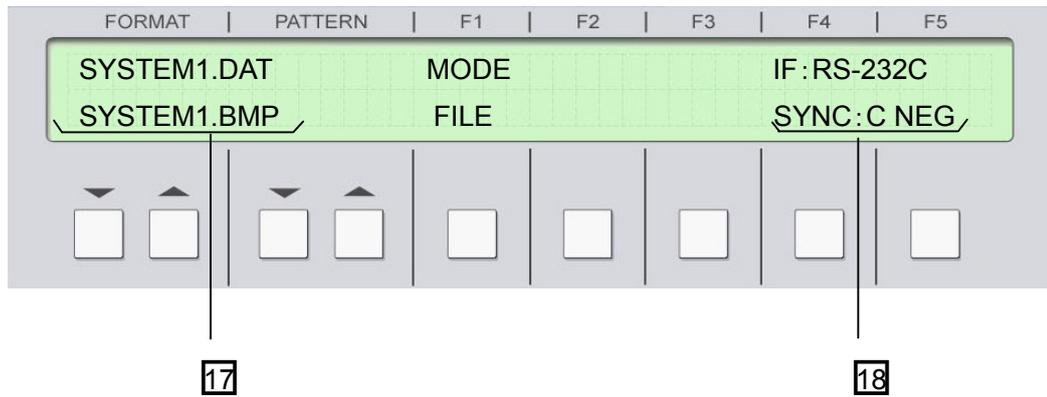
F4 key : Returns to the previous step of the sequence.

F5 key : Moves to the next step of the sequence.

※ **When the normal mode is changed into the sequence mode and the sequence mode is changed into the normal mode then, the previous condition set in the normal mode is restored.**

### ③ System file name display mode

The currently selected system file name, natural image file name, interface and SYNC connector output type are displayed in this mode. They are displayed on the LCD as shown below.



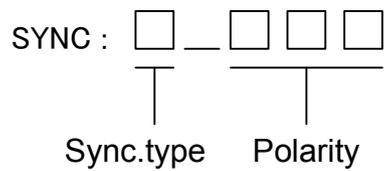
F1 key : Moves to the normal mode.

**17** The system file name is displayed on the first line.

The natural image file name is displayed on the second line, if it is the same as the system file name.

**18** The interface type is displayed on the first line.

The type of the SYNC connector on the front panel is displayed on the second line.



## 5. APPLICATION SOFTWARE

The whole system setting is written in the flash memory built in the CG-971.

The CG-971 is supplied with special software for rewriting these set data on a PC. It is possible to change the patterns, sound, sequence, interface and other conditions using this software.

This software runs on MS Windows 98, Windows XP and Windows VISTA.

The setting changed on a PC and written in a CF card may be loaded into the PC by inserting the CF card. The default setting may be changed like this.

※ **The CG-971 is supplied with no CF cards.**

※ **We uses 2GB or smaller-capacity CF cards made by San Disk Corporation to check operations of the CG-971. It will not warrant the performances if the user uses other CF cards.**

### 5-1. Starting application software

Copy PatternSetting.exe stored on the application disc supplied with the CG-971 into the PC in use.

The application software runs independently. Thus, installation is not required.

(1) Double-click on PatternSetting.exe to activate it.

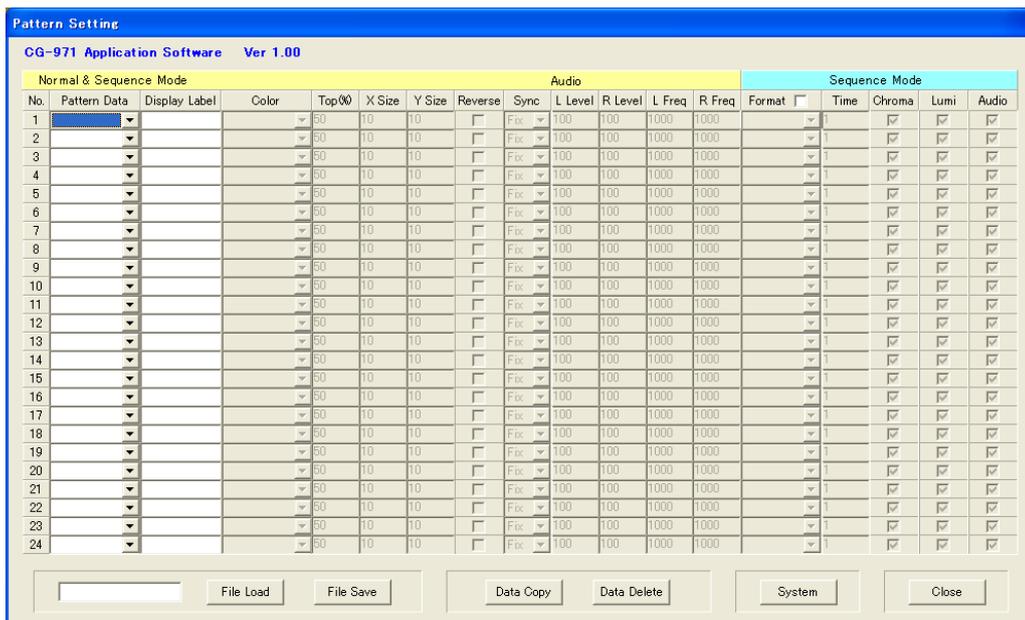


(2) The following window may be displayed when Windows XP runs on the PC.

Click the “Execute (R)” button.



(3) The application software starts up.



(4) The application software has the following sections.

Display pattern setting  
See Section 5-3.

Audio setting  
See Section 5-4.

Sequence setting  
See Section 5-5.

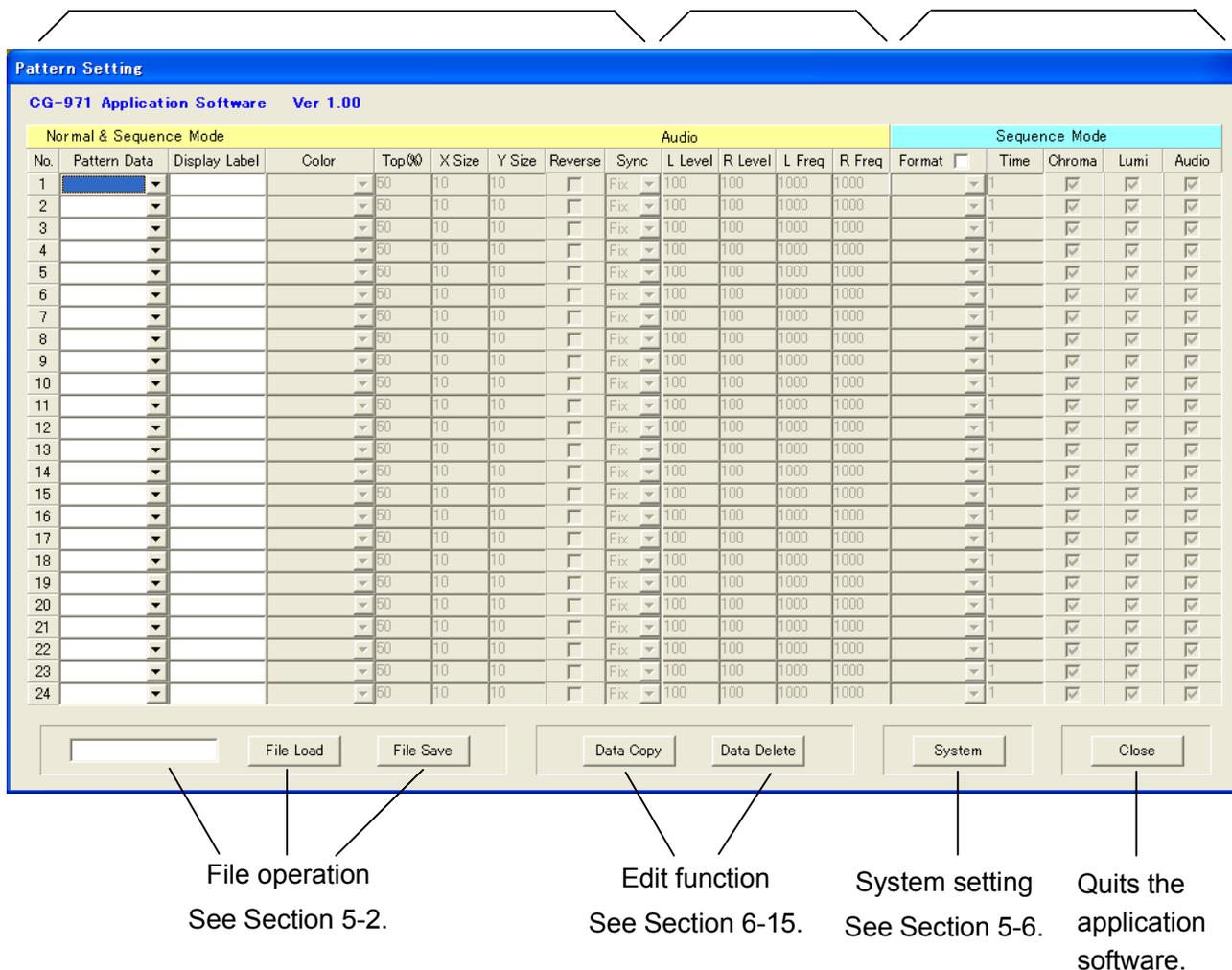


Fig. 5-1 Application Software

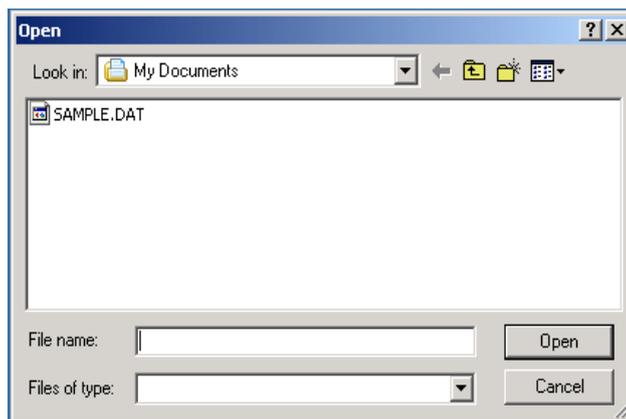
## 5-2. File operation of setup files

Press the File Load or File Save button in the lower part of the application software screen to load a setup system file or save it.

※ **Be sure to give a file name in eight or less alphanumeric characters to the file.**

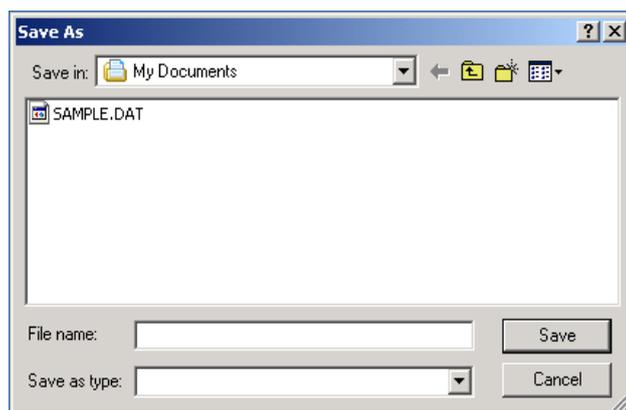
### Loading Setup File

Press the File Load button. The following window is displayed. Select a setup file (with .DAT extension) and press the “Open (O)” button.



### Saving setup file

Press the File Save button. The following window is displayed. Specify the name of a file to be saved, and press the “Save (S)” button. The extension of the saved file must be .DAT. Created set data are saved in a CF card. When the CG-971 starts up, data saved in the CF card are loaded and fed back to the system.



### 5-3. Video pattern setting

Set patterns to be displayed.

See Section 6 “DISPLAY PATTERNS” for details of the set parameters.

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	
No.	Pattern Data	Display Label	Color	Top(%)	X Size	Y Size	Reverse	Sync
1	Color Bar	COLR BAR	WHITE 75%	50	10	10	<input type="checkbox"/>	Fix
2	Color Bar	COLR BAR	WHITE 100%	50	10	10	<input type="checkbox"/>	Fix
3	Raster	RASTER	RED	50	10	10	<input type="checkbox"/>	Fix
4	Raster	RASTER	GREEN	50	10	10	<input type="checkbox"/>	Fix
5	Raster	RASTER	BLUE	50	10	10	<input type="checkbox"/>	Fix
6	Window	WINDOW	WHITE 100%	50	50	50	<input type="checkbox"/>	Fix
7	Cross Hatch	X HATCH		50	10	10	<input type="checkbox"/>	Fix
8	Dot	DOT		50	10	10	<input type="checkbox"/>	Fix
9	Cross&Dot	CROS D		50	10	10	<input type="checkbox"/>	Fix
10	Checker	CHECKER	WHITE 100%	50	10	10	<input type="checkbox"/>	Fix
11	Step1	STEP1	WHITE 75%	75	10	10	<input type="checkbox"/>	Fix
12	Step2	STEP2	8-Step	50	10	10	<input type="checkbox"/>	Fix
13	Ramp	RAMP		75	10	10	<input type="checkbox"/>	Fix
14	Character	CHAR	RED	50	5	7	<input type="checkbox"/>	Fix
15	SMPTE	SMPTE		50	10	10	<input type="checkbox"/>	Fix
16	MonoScope	MONO SCP		50	10	10	<input type="checkbox"/>	Fix
17	Picture	PICTURE		50	10	10	<input type="checkbox"/>	Fix
18				50	10	10	<input type="checkbox"/>	Fix
19				50	10	10	<input type="checkbox"/>	Fix
20				50	10	10	<input type="checkbox"/>	Fix
21				50	10	10	<input type="checkbox"/>	Fix
22				50	10	10	<input type="checkbox"/>	Fix
23				50	10	10	<input type="checkbox"/>	Fix
24				50	10	10	<input type="checkbox"/>	Fix

**1** Pattern No.

A maximum of 24 patterns may be registered. The pattern numbers are displayed on the line above the pattern on the LCD.

**2** Pattern Data

Select existing patterns.

**3** Display Label

Set pattern names to be displayed on the LCD of the CG-971.

**4** Color

Specify color for each pattern.

**5** Top luminance level

Set the top level of luminance.

**6** X/Y Size

Set the sizes of a figure to be displayed.

**7** Reverse ON/OFF

Set the reverse function. It is on when a tick mark is displayed in the box.

**8** Sync. level

Set the synchronization level of the video output. Fix means the standard level.

### 5-4. Audio pattern setting

Set an audio signal to be assigned to each pattern.

The audio signals are sin waves. Set the L and R signals independently in the 0 to 1V voltage range in units of 100mV and 100Hz to 20kHz frequency range in units of 100Hz.

L Level	R Level	L Freq	R Freq
100	100	1000	1000
100	100	1000	1000
100	100	1000	1000
100	100	1000	1000
100	100	1000	1000
100	100	1000	1000
100	100	1000	1000
100	100	1000	1000
100	100	1000	1000
100	100	1000	1000
100	100	1000	1000
100	100	1000	1000

Set the L and R levels and frequencies of the audio signal output for each pattern.

### 5-5. Sequence setting

Set the automatic sequence operation that changes patterns automatically and the sequences of step operation.

Both the automatic sequence operation and the step operation repeat continuously registered patterns from pattern No. 1.

Enable or disable sequence format specification. Format switching is enabled when a tick mark is put in the box.

**Chroma ON/OFF**  
Activate or deactivate Chroma. It is active when a tick mark is put in the box.

**Luminance ON/OFF**  
Activate or deactivate Luminance. It is active when a tick mark is put in the box.

**Audio ON/OFF**  
Activate or deactivate Audio. It is active when a tick mark is put in the box.

Normal & Sequ		Sequence				
No.	Pattern Dat	Format	Time	Chroma	Lumi	Audio
1	Color Bar	<input checked="" type="checkbox"/>	1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
2	Color Bar	<input checked="" type="checkbox"/>	1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
3	Raster	<input checked="" type="checkbox"/>	1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
4	Raster	<input checked="" type="checkbox"/>	1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
5	Raster	<input checked="" type="checkbox"/>	1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
6	Window	<input checked="" type="checkbox"/>	1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
7		<input type="checkbox"/>	1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
8	Cross Hatch	<input checked="" type="checkbox"/>	1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
9	Dot	<input checked="" type="checkbox"/>	1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
10	Cross&Dot	<input checked="" type="checkbox"/>	1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
11	Checker	<input checked="" type="checkbox"/>	1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

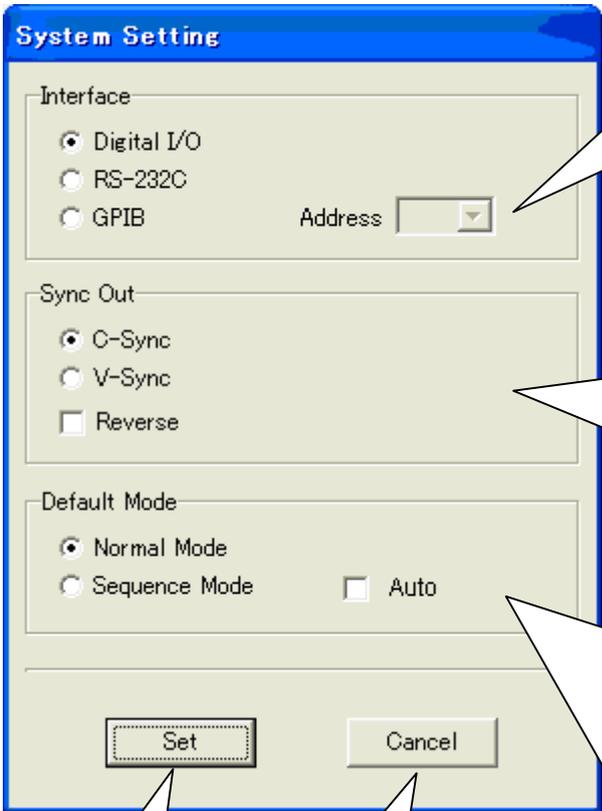
<Example>  
These patterns are repeated if "7" is blank.

**Automatic sequence format**  
Select patterns to be displayed in automatic sequence operation. When no tick mark is put in the "Format" check box, format switching is disabled and signals are output in a format selected at that time.

**Automatic sequence switching time**  
Set the time of displaying a pattern in automatic sequence operation in units of 1 second. The maximum value is 60 seconds. Steps with 0 or no set values are not displayed.

## 5-6. System set items

When the System click button in the lower part of the application software screen is clicked, the following window opens, allowing various system settings.



The screenshot shows a dialog box titled "System Setting" with three main sections: "Interface", "Sync Out", and "Default Mode".

- Interface section:** Contains radio buttons for "Digital I/O" (selected), "RS-232C", and "GP-IB". To the right of "GP-IB" is an "Address" dropdown menu.
- Sync Out section:** Contains radio buttons for "C-Sync" (selected), "V-Sync", and a "Reverse" checkbox.
- Default Mode section:** Contains radio buttons for "Normal Mode" (selected) and "Sequence Mode", along with an "Auto" checkbox.

At the bottom of the dialog are "Set" and "Cancel" buttons.

**Interface selection**  
Select an interface for external control.  
The address (0 to 30) need be set when GP-IB is selected.

**Sync. output selection**  
Select a sync. output type to be output from the front panel.  
The sync. polarity is reversed when a tick mark is put in the Reverse check box.

**Default mode selection**  
Select a mode that is established after turning on power.  
Normally, select either mode: Normal mode where signals are switched with the keys on the front panel, and Sequence mode where signals are output according to patterns and timing decided in sequence setting.  
When the Sequence mode is selected, automatic sequence operation is executed after starting up if a tick mark is put in the Auto check box.

Reflects setting and closes this window.

Cancels setting and closes this window.

## 6. DISPLAY PATTERNS

Display patterns are set by registering the pattern types and parameter of each pattern with the pattern setting function of the application software. This section describes the pattern types and the parameters.

### Relationship between pattern set items and parameters

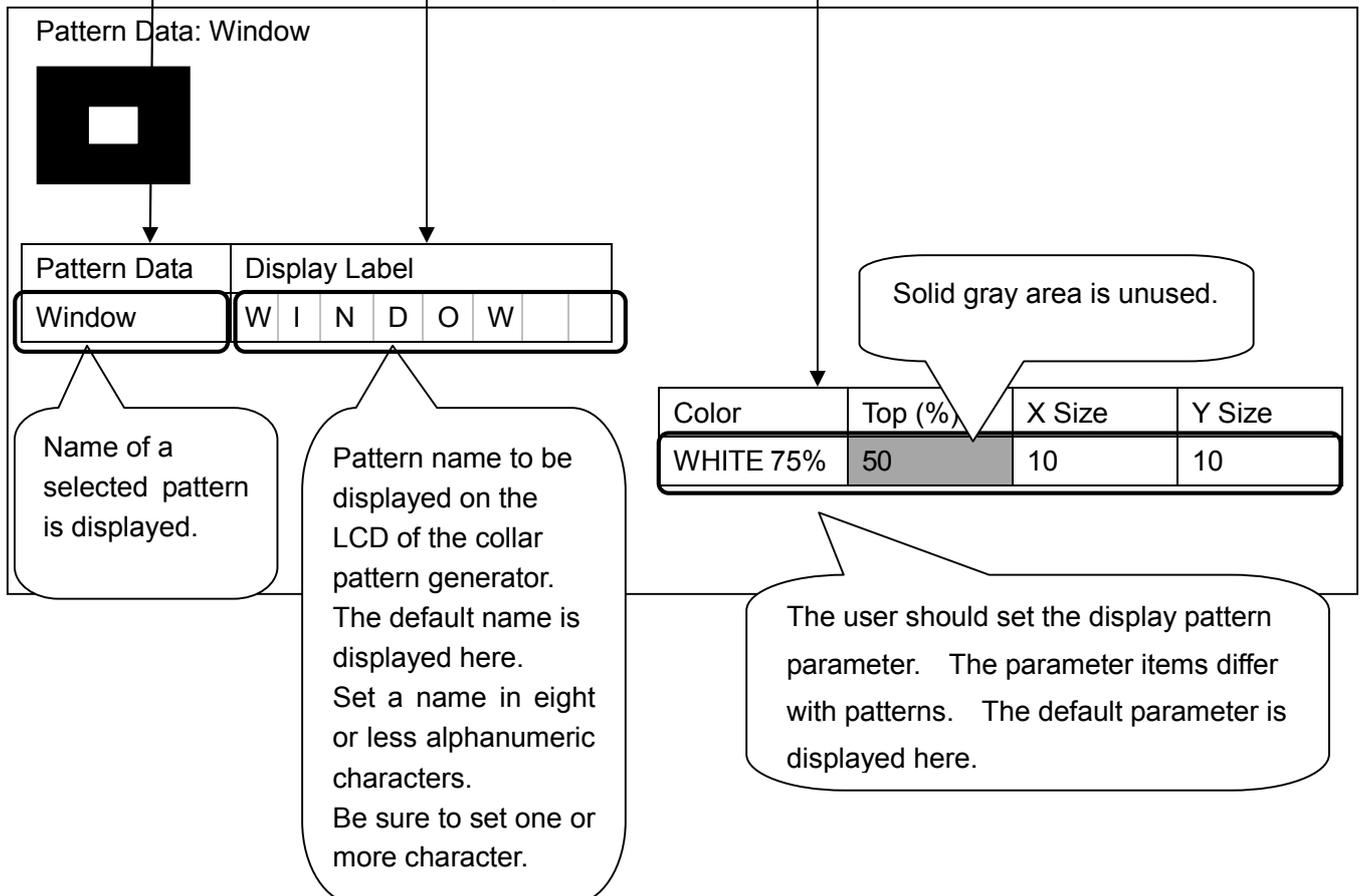
<Example> Setting a window in pattern No. 2

Table 7-1 Application Setup Screen

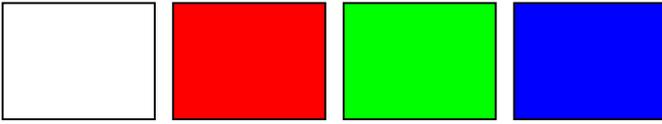
No.	Pattern Data	Display Label	Color	Top(%)	X Size	Y Size	Reverse
1	Cross&Dot	CROS D		50	10	10	<input checked="" type="checkbox"/>
2	Window	WINDOW	WHITE 75%	50	10	10	<input type="checkbox"/>
3	Character	CHAR		50	10	10	<input checked="" type="checkbox"/>
4	Raster	RASTER	RED	50	10	10	<input type="checkbox"/>
5	Raster	RASTER	GREEN	50	10	10	<input type="checkbox"/>
6	Raster	RASTER	BLUE	50	10	10	<input type="checkbox"/>
7	Raster	RASTER	WHITE 100%	50	10	10	<input type="checkbox"/>
8	Raster	RASTER	WHITE 75%	50	10	10	<input type="checkbox"/>
9				50	10	10	<input type="checkbox"/>
10				50	10	10	<input type="checkbox"/>
11				50	10	10	<input type="checkbox"/>
12				50	10	10	<input type="checkbox"/>

Reverse On/Off setting of each pattern. Put a tick mark in the box to activate.

Fig. 7-2 Details of Pattern



## 6-1. Pattern Data: Raster



The whole screen is painted over in the same color. Select one of the specified colors.

Pattern Data	Display Label						
Raster	R	A	S	T	E	R	

Pattern name (fixed)

Set a maximum of eight alphanumeric characters to be displayed on the LCD when the pattern is selected. (It should not be blank.)

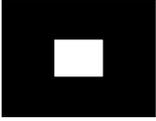
Color	Top (%)	X Size	Y Size
	(Unused)	(Unused)	(Unused)

Select one color from the following table.

Specified color	Display in list
Red	RED
Green	GREEN
Blue	BLUE
Yellow	YELLOW
Magenta	MAGENTA
Cyan	CYAN
20% white	WHITE20%
50% white	WHITE50%
75% white	WHITE75%
100% white	WHITE100%

※ Black may be specified by reversing 100% white.

## 6-2. Pattern Data: Window



The base color is black. A rectangular box is always displayed in the center.

Specify the box size in percentage based on the height and width. Select one of the specified colors.

Pattern Data	Display Label							
Window	W	I	N	D	O	W		

Pattern name (fixed)      Set a maximum of eight alphanumeric characters to be displayed on the LCD when the pattern is selected. (It should not be blank.)

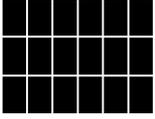
Color	Top (%)	X Size	Y Size
	(Unused)	50	50

Select one color from the following table.

Specify the box size in the range from 2% to 100% in a number with no decimal places.

Specified color	Display in list
Red	RED
Green	GREEN
Blue	BLUE
Yellow	YELLOW
Magenta	MAGENTA
Cyan	CYAN
20% white	WHITE20%
50% white	WHITE50%
75% white	WHITE75%
100% white	WHITE100%

### 6-3. Pattern Data: Cross Hatch



Input the numbers of vertical and horizontal divisions. When the height and width are divided into two each, cross lines are displayed in the center.

The base color and line color are fixed to black and white, respectively. Lines are also displayed along the outer periphery.

Pattern Data	Display Label					
Cross Hatch	X	H	A	T	C	H

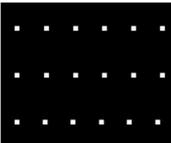
Pattern name (fixed)

Set a maximum of eight alphanumeric characters to be displayed on the LCD when the pattern is selected. (It should not be blank.)

Color	Top (%)	X Size	Y Size
(Unused)	(Unused)	12	12

Specify the numbers of X and Y divisions independently in the range from 2 to 100.

### 6-4. Pattern Data: Dots



The screen is divided into specified parts vertically and horizontally, which are indicated with dots.

The base color and dot color are fixed to black and white, respectively.

Pattern Data	Display Label					
Dot	D	O	T			

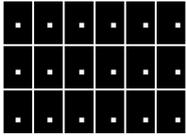
Pattern name (fixed)

Set a maximum of eight alphanumeric characters to be displayed on the LCD when the pattern is selected. (It should not be blank.)

Color	Top (%)	X Size	Y Size
(Unused)	(Unused)	12	12

Specify the numbers of X and Y divisions independently in the range from 2 to 100.

## 6-5. Pattern Data: Cross and Dot



This pattern has lines among dots. The positions are specified with dots. The screen is divided into specified parts vertically and horizontally, and dots are displayed at the specified positions. The number of divisions must be an even number to display the dot in the center. The base color is fixed to black. The dot and line color is fixed to white. Lines are also displayed along the outer periphery.

Pattern Data	Display Label								
Cross & Dot	C	R	O	S		D			



Pattern name (fixed)



Set a maximum of eight alphanumeric characters to be displayed on the LCD when the pattern is selected. (It should not be blank.)

Color	Top (%)	X Size	Y Size
(Unused)	(Unused)	12	12



Specify the numbers of X and Y divisions independently in even numbers in the range from 2 to 100.

## 6-6. Pattern Data: Checker and Stripe



A single basic pattern produces two patterns; checker pattern and stripe pattern. In either pattern, the vertical or horizontal black and white stripes are displayed at the same interval. Specify the size in the number of the vertical or horizontal divisions.

The base color is fixed to black. The color of the white parts may be selected from the list.

Pattern Data	Display Label
Checker	C H E C K E R

Pattern name (fixed)

Set a maximum of eight alphanumeric characters to be displayed on the LCD when the pattern is selected. (It should not be blank.)

Color	Top (%)	X Size	Y Size
	(Unused)	10	10

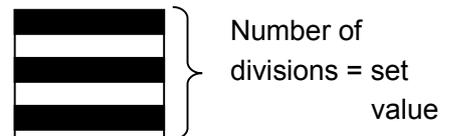
Select one color from the following table.

Specify the numbers of X and Y divisions independently in 0 or from 2 to 100.

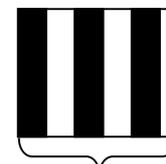
Specified color	Display in list
Red	RED
Green	GREEN
Blue	BLUE
Yellow	YELLOW
Magenta	MAGENTA
Cyan	CYAN
20% white	WHITE20%
50% white	WHITE50%
75% white	WHITE75%
100% white	WHITE100%

If 0 is input in X or Y, a stripe pattern is selected. Otherwise, a checker pattern is selected.

X, Y Size = (0, set value)

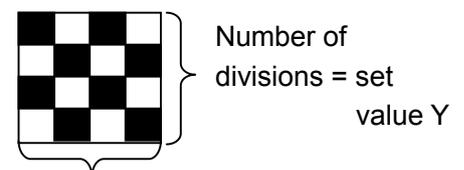


X, Y Size = (0, set value)



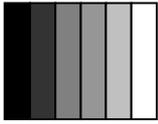
Number of divisions = set value

X, Y Size = (set value X, set value Y)



Number of divisions = set value X

### 6-7. Pattern Data: Step 1A/1B (Resolution input)



※ The difference between the steps 1A and 1B is presence or absence of the chromatic signals. The 1B step contains burst level chromatic signals at every 180° phase.

Specify the brightness of the brightest part at the right end and the number of divisions.

The step pattern with the specified brightest part and specified divisions is displayed.

The darkest part at the left end is fixed to 0 IRE.

Pattern Data	Display Label				
Step1	S	T	E	P	1

Pattern name (fixed)

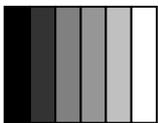
Set a maximum of eight alphanumeric characters to be displayed on the LCD when the pattern is selected. (It should not be blank.)

Color	Top (%)	X Size	Y Size
(Unused)	100	10	(Unused)

Specify the brightness of the brightest part at the right end in percentage in a number with no decimal places in the range from 2% to 100%.

Specify the numbers of divisions in the range from 2 to 100.

### 6-8. Original pattern: Step2 (Level input)



The screen is divided vertically into specified divisions evenly. Specify the levels of these divisions in actual voltages (mV). The input voltage range is in the range from 0 to 714 mV, and the number of divisions is in the range from 4 to 16. In this pattern, reverse setting and burst setting are invalid. When the item "Color" is selected after setting, the set data may be checked.

Pattern Data	Display Label				
Step2	S	T	E	P	2

Pattern name (fixed)

Set a maximum of eight alphanumeric characters to be displayed on the LCD when the pattern is selected. (It should not be blank.)

※ When this pattern is selected, the window shown on the left opens. Specify the number of divisions in the range from 4 to 16. Then, set the voltage level of each step from "1" in sequence, and press the Set button.

### 6-9. Pattern Data: Ramp A/B



※ The difference between the ramps A and B is presence or absence of the chromatic signals. The ramp B contains burst level chromatic signals at every 180° phase.

A pattern that changes from a specified top level to 0 IRE continuously is displayed.

Specify the top level in %.

Pattern Data	Display Label							
Ramp	R	A	M	P				

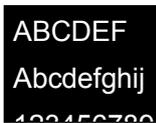
Pattern name (fixed)

Set a maximum of eight alphanumeric characters to be displayed on the LCD when the pattern is selected. (It should not be blank.)

Color	Top (%)	X Size	Y Size
(Unused)	100	(Unused)	(Unused)

Specify the top level percentage in a number with no decimal places in the range from 2% to 100%.

### 6-10. Pattern Data: Character



Alphanumeric characters are displayed. Select the character size from three: 5 dots x 7 dots, 7 dots x 9 dots and 9 dots x 11 dots. The displayed characters are 0 to 9 and A to Z capital letters, which cannot be changed into small letters. The base color and font color are fixed to black and white, respectively. It is possible to display the character in reverse colors by using the reverse function.

Pattern Data	Display Label							
Character	C	H	A	R				

Pattern name (fixed)

Set a maximum of eight alphanumeric characters to be displayed on the LCD when the pattern is selected. (It should not be blank.)

Color	Top (%)	X Size	Y Size
(Unused)	(Unused)	5	7(Display only)

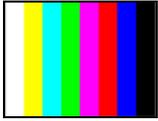
Select a character size from the following:

5-dot x 7-dot font → Input 5.

7-dot x 9-dot font → Input 7.

9-dot x 11-dot font → Input 9.

### 6-11. Pattern Data: Color bar



This is the standard color bar. It is possible to select the white color from 100% white and 75% white.

Pattern Data	Display Label							
Color Bar	C	O	L	R		B	A	R

Pattern name (fixed)

Set a maximum of eight alphanumeric characters to be displayed on the LCD when the pattern is selected. (It should not be blank.)

Color	Top (%)	X Size	Y Size
75	(Unused)	(Unused)	(Unused)

Select the white color from 100% white and 75% white.

Specified color	Display in list
75% white	75
100% white	100

### 6-12. Pattern Data: SMPTE color bar



This is the standard SMPTE color bar.

Pattern Data	Display Label							
SMPTE	S	M	P	T	E			

Pattern name (fixed)

Set a maximum of eight alphanumeric characters to be displayed on the LCD when the pattern is selected. (It should not be blank.)

Color	Top (%)	X Size	Y Size
(Unused)	(Unused)	(Unused)	(Unused)

### 6-13. Pattern Data: MonoScope



This is the standard MonoScope pattern. It is possible to reverse the black and white parts by using the reverse function.

Pattern Data	Display Label							
MonoScope	M	O	N	O		S	C	P

Pattern name (fixed)

Set a maximum of eight alphanumeric characters to be displayed on the LCD when the pattern is selected. (It should not be blank.)

Color	Top (%)	X Size	Y Size
(Unused)	(Unused)	(Unused)	(Unused)

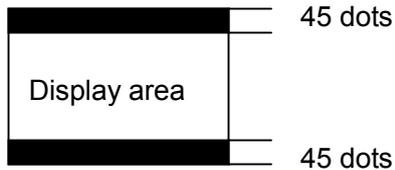
### 6-14. Pattern Data: Natural image



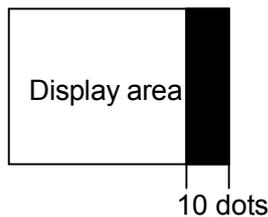
Size: 712 x 574 dots  
Color: 1-, 4-, 8-, 24- or 32-bit color

An image in a ".BMP" file prepared by the user is displayed. One image per system file may be displayed. It is used commonly to several signal formats (PAL, NTSC and so forth). In the NTSC format, forty-five dots each at the top and bottom are not displayed. In the PAL format, ten dots on the right of the image are not displayed. The ".BMP" file should conform to the 712 x 574 dots, 1-, 4-, 8-, 24- or 32-bit color .BMP file format (that is not compatible to RLE compression). If the size is smaller than this, the image is displayed in the center in a smaller size than the screen size.

[NTSC]



[PAL]



Pattern Data	Display Label							
Picture	P	I	C	T	U	R	E	

Pattern name (fixed)

Set a maximum of eight alphanumeric characters to be displayed on the LCD when the pattern is selected. (It should not be blank.)

Color	Top (%)	X Size	Y Size
(Unused)	(Unused)	(Unused)	(Unused)

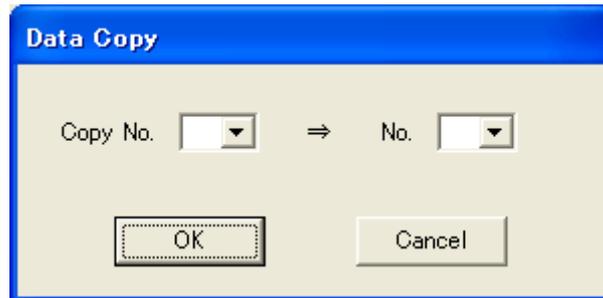
## 7. EDITING FUNCTIONS (PATTERN COPY AND DELETE)

It is possible to copy or delete set data in units of lines using the Data Copy and Data Delete buttons in the lower part of the application software screen.

### Data copy

When the Data Copy button is pressed, the following window opens. Specify the original line to be copied and the destination line.

Press the OK button to copy the specified line. If the Cancel button is pressed, the window closes without copying the line.



When the line is copied, the pattern numbers following the destination line are incremented. If the number of lines exceeds 24 after increment, the excess line is deleted automatically.

<Example> Copying the 4th line on the 2nd line

No.	Pattern Data	Display Label	Color	Top(%)	X Size	Y Size	Reverse
1	Cross&Dot	CROS D		50	10	10	<input checked="" type="checkbox"/>
2	Window	WINDOW	WHITE 75%	50	10	10	<input type="checkbox"/>
3	Character	CHAR		50	10	10	<input checked="" type="checkbox"/>
4	Raster	RASTER	RED	50	10	10	<input type="checkbox"/>

↓

No.	Pattern Data	Display Label	Color	Top(%)	X Size	Y Size	Reverse
1	Cross&Dot	CROS D		50	10	10	<input checked="" type="checkbox"/>
2	Raster	RASTER	RED	50	10	10	<input type="checkbox"/>
3	Window	WINDOW	WHITE 75%	50	10	10	<input type="checkbox"/>
4	Character	CHAR		50	10	10	<input checked="" type="checkbox"/>
5	Raster	RASTER	RED	50	10	10	<input type="checkbox"/>

Increments.

### Data delete

When the Data Delete button is pressed, the following window opens. Specify the line to be deleted.

Press the OK button to delete the specified line. If the Cancel button is pressed, the window closes without deleting the line.



When the line is deleted, the pattern numbers following the deleted line are carried up automatically.

<Example> Deleting the 2nd line

Deleted →

No.	Pattern Data	Display Label
1	Cross&Dot	CROS D
2	Raster	RASTER
3	Window	WINDOW
4	Character	CHAR
5	Raster	RASTER

↑

Carried up.

No.	Pattern Data	Display Label	Color	Top(%)	X Size	Y Size	Reverse
1	Cross&Dot	CROS D		50	10	10	<input checked="" type="checkbox"/>
2	Window	WINDOW	WHITE 75%	50	10	10	<input type="checkbox"/>
3	Character	CHAR		50	10	10	<input checked="" type="checkbox"/>
4	Raster	RASTER	RED	50	10	10	<input type="checkbox"/>

## 8. SYSTEM FILES

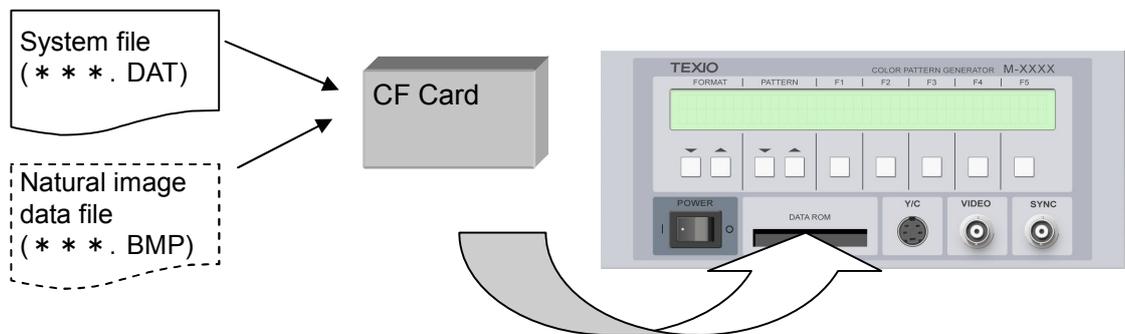
Data set with the application software are stored in system files with “.DAT” extensions and reflected upon the CG-971 as shown below.

Natural image data used in the allowable condition by the user are stored in files with .BMP extensions, which have the same file names as the system file names. A set of the system file and natural image file having the same names are stored in a CF card. It is unnecessary to create a .BMP file if the pattern setting of the system file has no natural image pattern.

Insert the CF card into the CG-971 in the power off condition and turn on power. The files are loaded into the CG-971. Once the system file is loaded, it is unnecessary to insert the CF card then.

※ **Always give the same file name within eight half-size capital alphanumeric letters to both files. The CF card format should be FAT12, FAT16 or FAT32.**

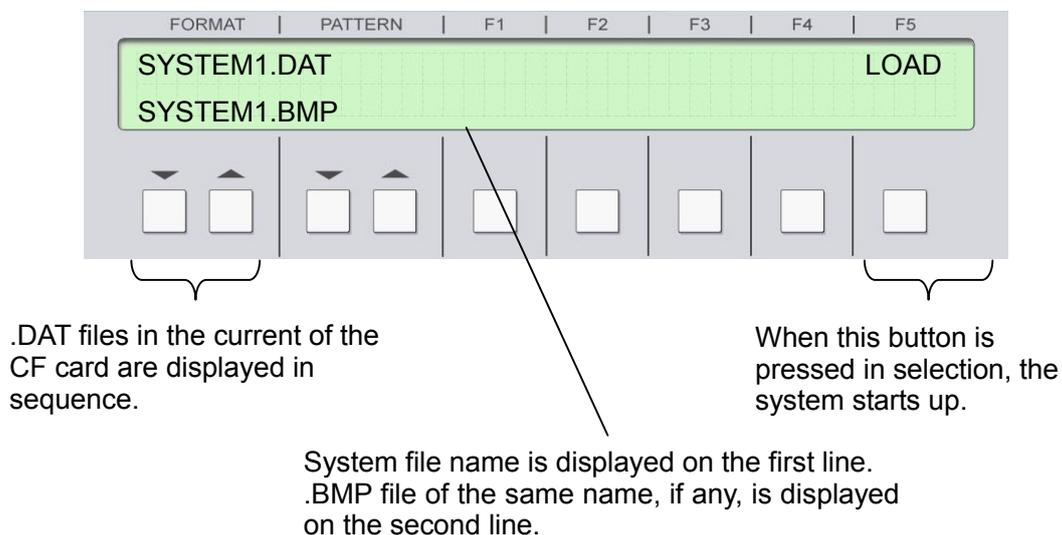
※ **We uses 2GB or smaller-capacity CF cards made by San Disk Corporation to check operations of the CG-971. It will not warrant the performances if the user uses other CF cards.**



### 8-1. System file selection

When a CF card is inserted into the CG-971 in the power off condition and power is turned on then, the system file selection screen appears and the user may select an intended system file. If the CF card contains a single system file, the system file selection screen does not appear and the system starts up. If it is necessary to change the system file, turn off power once and turn it on then or send the system file selection (FSEL) command through the interface.

#### System file selection screen



### Selecting system file through interface

It is possible to select a system file through the RS-232C or GP-IB interface when the system file selection screen is displayed.

Even after the system has started up, if another system file name is specified using the system file selection (FSEL) command, the system starts up again using the specified system file.

[Interface Selection (for selecting system file immediately after turning on power)]

It is necessary to select an interface only in the case where a system file is selected immediately after turning on power. If the system file need be changed after the system has started up, an interface has already been specified and interface selection is not needed.

The RS-232C interface is normally selected. If a file with a name "GP-IB (address No.).INI" is stored in a CF card the GP-IB interface is selected. This file name must be written in capital alphanumeric letters. If there are several files, the file with the smallest address number is selected. The file size may be 0 bytes, since data written in the file are ignored.

When selecting RS-232C	: No specification is needed, in particular.
When selecting GP-IB	: Store a file with a name "GPIB (number.).INI" in a CF card. <Example> File name GPIB5.INI ⇒ Selects GPIB address 5.

[System File Selection]

Sending the MFILE? command outputs the names of all system files contained in the CF card in a list. When the system file selection command (FSEL\_file name) is sent then, the system starts up again using the selected system file.

※ \_ (The under-bar shows a space.)

<Example> When system files SAMPLE1 to SAMPLE3 are stored in the CF card and SAMPLE2 is selected

<b>Sending MFILE?</b> (command) SAMPLE1, SAMPLE2, SAMPLE3	----- System file names in CF card are displayed.
<b>Sending FSEL SAMPLE2</b> (command) (System restarts using SAMPLE2)	----- System file SAMPLE2 is selected.

## 9. EXTERNAL CONTROL

The interfaces shown below are used to control the CG971 from outside. The front panel functions and the functions equivalent to the key operations may be controlled externally. Changing system file setting and so forth cannot be controlled externally. The RS-232C, GP-IB and digital interface are selectable.

### 9-1. RS-232C

Use a cross cable or interlink cable obtainable on the market may be used for the RS-232C interface.

Connector: D-sub 9-pin (male)

1Pin – Unconnected	6Pin – Unconnected
2Pin – RXD	7Pin – Unconnected
3Pin – TXD	8Pin – Unconnected
4Pin – Unconnected	9Pin – Unconnected
5Pin – GND	

#### **Communication specifications**

RS-232C	: Compliant
Flow control	: None
Baud rate	: Fixed to 38,400 bps
Start bit	: 1 bit
Data bit	: 8bit
Stop bit	: 1bit
Parity	: None
Delimiter	: LF (0x0A, reception), CR.LF (transmission: issued by the CG-971)

#### **Command list**

Pattern Nos.1 to 24	⇒ PT01 to 24
Format Nos.1 to 5	⇒ FMT1 to 5
Communication mode	⇒ NOMD
Sequence mode	⇒ SQMD
Sequence stop	⇒ SQTP
Sequence down	⇒ SQDN
Sequence up	⇒ SQUP
Auto sequence ON	⇒ SQA1
Auto sequence OFF	⇒ SQA0
Format up	⇒ FMUP
Format down	⇒ FMDW
Pattern up	⇒ PTUP
Pattern down	⇒ PTDW
Audio ON	⇒ AUD1
Audio OFF	⇒ AUD0
Chroma ON	⇒ CRM1
Chroma OFF	⇒ CRM0
Luminance ON	⇒ LUM1

Luminance OFF ⇒ LUM0  
 Reverse ON ⇒ REV1  
 Reverse OFF ⇒ REV0  
 Reading names of system files stored inside currently ⇒ FILE ?  
 Reading names of system files in CF card ⇒ MFILE ?

※ After receiving this command, the CG-971 sends file names in the following format:

(File name), (file name), (file name) (delimiter)

↑ Comma

↑ Differs with GP-IB and RS-232C.

Selecting system file ⇒ FSEL\_ (system file name): The system starts up again using the selected system file.

※ \_ (The under-bar shows a space.)

Local ⇒ LOCAL

## 9-2. GP-IB

Electrical & mechanical specifications : Compliant with the IEEE 488-1978.

Interface functions : SH1, AH1, T8, L4, SR0, RL2, PP0, DC1, DT0, C0, and E2

Address setting : Set in the exclusive application software.

Delimiter : LF or EOI (reception), CR.LF + EOI  
 (Transmission: issued by the CG-971)

### Command list

Same as the RS-232C commands.

※ \* When the \* IDN? Command is issued, the CG-971 returns TEXIO CG-971.

## 9-3. Digital interface

Connector: 24-pin Amphenol connector

1Pin – A	13Pin – E
2Pin – B	14Pin – F
3Pin – C	15Pin – G (No change at L level)
4Pin – D	16Pin – Unconnected
5Pin – Unconnected	17Pin – Unconnected
6Pin – Unconnected	18Pin – Unconnected
7Pin – Unconnected	19Pin – Unconnected
8Pin – Unconnected	20Pin – Unconnected
9Pin – Unconnected	21Pin – Unconnected
10Pin – PANEL/REMOTE	22Pin – Unconnected
11Pin – GND	23Pin – GND
12Pin – +5V(出力)	24Pin – Unconnected

### PANEL/REMOTE Connector

This pin is used to change remote control through the digital interface and operation with the front panel keys. In the remote control mode, panel key operations are disabled, with the only exception of the power switch. In the remote mode, the character R blinks in the lower right part of the LCD.

H (2.4 – 5 V) or open

L (0 to 0.7 V)

Panel key operation

: Remote mode

Pins A to G and Corresponding Functions in Remote Mode

Remote Function (Pattern) Correspondence Table 1/2

Control signal							Pattern
G	F	E	D	C	B	A	
H	H	H	H	H	H	H	Pattern No.1
H	H	H	H	H	H	L	Pattern No.2
H	H	H	H	H	L	H	Pattern No.3
H	H	H	H	H	L	L	Pattern No.4
H	H	H	H	L	H	H	Pattern No.5
H	H	H	H	L	H	L	Pattern No.6
H	H	H	H	L	L	H	Pattern No.7
H	H	H	H	L	L	L	Pattern No.8
H	H	H	L	H	H	H	Pattern No.9
H	H	H	L	H	H	L	Pattern No.10
H	H	H	L	H	L	H	Pattern No.11
H	H	H	L	H	L	L	Pattern No.12
H	H	H	L	L	H	H	Pattern No.13
H	H	H	L	L	H	L	Pattern No.14
H	H	H	L	L	L	H	Pattern No.15
H	H	H	L	L	L	L	Pattern No.16
H	H	L	H	H	H	H	Pattern No.17
H	H	L	H	H	H	L	Pattern No.18
H	H	L	H	H	L	H	Pattern No.19
H	H	L	H	H	L	L	Pattern No.20
H	H	L	H	L	H	H	Pattern No.21
H	H	L	H	L	H	L	Pattern No.22
H	H	L	H	L	L	H	Pattern No.23
H	H	L	H	L	L	L	Pattern No.24
H	H	L	L	H	H	H	Format No.1 (NTSC-M)
H	H	L	L	H	H	L	Format No.2 (PAL)
H	H	L	L	H	L	H	Format No.3 (NTSC-J)
H	H	L	L	H	L	L	Format No.4 (NTSC-4.43)
H	H	L	L	L	H	H	Format No.5 (PAL-M)
H	H	L	L	L	H	L	(Reserved)
H	H	L	L	L	L	H	(Reserved)
H	H	L	L	L	L	L	(Reserved)

Remote Function (Pattern) Correspondence Table 2/2

Control signal							Pattern
G	F	E	D	C	B	A	
H	L	H	H	H	H	H	Normal mode
H	L	H	H	H	H	L	Sequence mode
H	L	H	H	H	L	H	Sequence top
H	L	H	H	H	L	L	Sequence down
H	L	H	H	L	H	H	Sequence up
H	L	H	H	L	H	L	Auto sequence ON
H	L	H	H	L	L	H	Auto sequence OFF
H	L	H	H	L	L	L	FORMAT UP
H	L	H	L	H	H	H	FORMAT DOWN
H	L	H	L	H	H	L	PATTERN UP
H	L	H	L	H	L	H	PATTERN DOWN
H	L	H	L	H	L	L	AUDIO ON
H	L	H	L	L	H	H	AUDIO OFF
H	L	H	L	L	H	L	CHROMA ON
H	L	H	L	L	L	H	CHROMA OFF
H	L	H	L	L	L	L	LUMINANCE ON
H	L	L	H	H	H	H	LUMINANCE OFF
H	L	L	H	H	H	L	REVERSE ON
H	L	L	H	H	L	H	REVERSE OFF
H	L	L	H	H	L	L	(Reserved)
H	L	L	H	L	H	H	(Reserved)
H	L	L	H	L	H	L	(Reserved)
H	L	L	H	L	L	H	(Reserved)
H	L	L	H	L	L	L	(Reserved)
H	L	L	L	H	H	H	(Reserved)
H	L	L	L	H	H	L	(Reserved)
H	L	L	L	H	L	H	(Reserved)
H	L	L	L	H	L	L	(Reserved)
H	L	L	L	L	H	H	(Reserved)
H	L	L	L	L	H	L	(Reserved)
H	L	L	L	L	L	H	(Reserved)
H	L	L	L	L	L	L	(Reserved)
H	L	L	L	L	L	L	NO CHANGE
L	(Any)	(Any)	(Any)	(Any)	(Any)	(Any)	

## 10. MAINTENANCE



### **WARNING**

**Be sure to disconnect the power cord from the AC outlet to avoid electric shocks and other accidents before replacing the fuse.**

#### 10-1. Replacing fuse

Hold the knob on the cover of the fuse case in the upper part of the AC inlet with fingers and pull it out.

Replace the blown fuse with a new fuse of the rating shown below. Undo the cover.

#### 10-2. Fuse rating

The fuse rating is T3A 250V

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