



Programmable Video Signal Generator

VG-870/871

Instruction Manual

Ver.1.70



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2008.6

Ver.1.70

ASTRODESIGN,Inc

Contents

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BEFORE OPERATING THE GENERATOR

Introduction

Thank you very much for purchasing this model VG-870/871 video signal generator.

This manual contains details on the operation procedures to be followed when the VG-870/871 is used, the checkpoints and precautions to be observed, and so on. Improper handling may result in malfunctioning so before using the VG-870/871, please read through these instructions to ensure that you will operate the generator correctly. After reading through the manual, keep it in a safe place for future reference.

SAFETY PRECAUTIONS

WARNING

Concerning the generator

- Do not subject the generator to impact or throw it. Doing so may cause the generator to malfunction, explode or generate abnormally high levels of heat, possibly resulting in a fire.
- Do not use the generator where there is a danger of ignition or explosions.
- Do not place the generator inside a microwave oven or other heating kitchen appliance or inside a high pressure vessel. Doing so may heat up the generator to abnormally high levels, cause smoking, running the risk of the generator's catching fire and/or damaging the circuit components.
- This generator contains some high-voltage parts. If you touch them, you may receive an electric shock and burn yourself so do not attempt to disassemble, repair or remodel the generator.
- If there is a thunderstorm while the generator is being used outdoors, immediately turn off its power, disconnect the power cable from the main unit, and move the generator to a safe place.

Concerning the power cord

- Always take hold of the molded part of the plug when disconnecting the power cord.
- Do not use force to bend the power cord or bunch it up for use. Doing so may cause a fire.
- Do not place heavy objects on top of the power cord. Doing so may damage the cord, causing a fire or electrical shock.

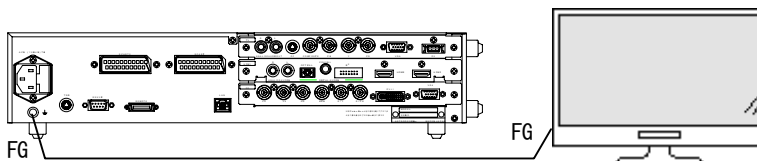
Concerning foreign matter

- Do not spill liquids inside the generator or drop inflammable objects or metal parts into it. Operating the generator under these conditions may cause a fire, electric shocks and/or malfunctioning.

⚠ CAUTION

Concerning the generator

- When connecting the generator to a display unit, use the FG cable provided to connect the frame ground (FG) terminal on the generator to the frame ground terminal on the display unit. If these terminals are not connected together, the generator may fail. Take special care when connecting the generator to a display unit which is under development.



- When disconnecting the VG-870/871 from the display unit, first disconnect the connecting cables, and then disconnect the FG cable.
- When the generator's power is to be turned ON or OFF, be absolutely sure to use the POWER switch on the front panel. Turning the power on and off by plugging in and unplugging the AC power cable may damage the PC card.
- Do not start using the generator straight away: instead, turn on the power of the VG-870/871 and allow it to warm up for about 10 to 15 minutes before use so as to ensure that the VG-870/871 will operate stably.
- It is forbidden to remove the video units from the generator main unit.

Concerning impact

- This is a precision instrument and, as such, subjecting it to impact may cause malfunctioning. Take special care when moving the generator.
- Do not drop the generator.

Concerning installation

- Install the generator in a stable location. Do not stand it on either of its side panels. Doing so may cause the generator's temperature to rise due to heat generation, possibly resulting in malfunctioning.

When trouble or malfunctioning has occurred

- In the unlikely event that trouble or malfunctioning should occur, disconnect the generator's power cable, and contact your dealer or an ASTRODESIGN sales representative.

What is packed with the generator

The generator comes with the following items.

Be absolutely sure to use only the genuine accessories which are supplied with this generator since the use of any non-designated items may cause malfunctioning.

■ Standard accessories

- VG-870/871 main unit
- CD with VG-870/871 instruction manual (what you are now reading): 1 disc
- CompactFlash (CF) card: 1 pc
- CompactFlash (CF) card case: 1 pc
- SP-8870 software installation CD (for Windows): 1 pc
- SP-8870 instruction manual: PDF version (packed with the SP-8870 software installation CD)
- Power cable: 1 pc^{*1}
- FG cable (1.5 meters long): 1 pc^{*1}

*1: These cables are designed to be used exclusively with the VG-870/871.

■ Optional accessories

- RB-1870:
Remote control box used exclusively^{*2} with the VG-870/871
- RB-1871:
Simplified remote control box used exclusively^{*2} with the VG-870/871
This remote control box is used exclusively for executing program data, timing data, pattern data and other operations so it cannot be used for setting operations.

*2: These remote control boxes are not compatible with the existing VG series

1

CONCERNING THE VG-870/871

1.1 General description

The VG-870/871 video signal generator supports applications in every field of display test and measuring. It features a high level of expandability which is achieved by the installing video output interface units.

1.2 Features

■ 16-bit high-speed imaging engine

This generator features a maximum 16-bit × RGB high-gradation imaging engine. It even draws full HD images in an instant.

■ Wide dot clock frequency range

The VG-870 supports dot clock frequencies up to 340 MHz. The VG-871 supports a maximum dot clock frequency of 250 MHz for analog outputs and a maximum dot clock frequency of 340 MHz for digital outputs.

■ Windows-compatible editing and registration software (SP-8870) provided as standard accessory

This software can be used to edit and register the program data and exercise control over the signals output from the PC connected to the RS-232C/LAN connector.

■ Full variety of sample data incorporated inside

A total of a thousand types of timing data and a thousand types of pattern data are registered inside the VG-870/871 as sample data. They are categorized by standard, application and other factors, and it is possible for the data required to be selected easily.

■ Registration of program data on PC cards

A total of a thousand program data can be registered on a PC card. PC screens or natural images can also be registered. On a PC equipped with a PC card slot, the data can be copied using Explorer provided with Windows 98SE, Windows 2000 or Windows XP.

■ Creation of user option patterns

In addition to the existing basic patterns (including character, crosshatch, color bar and gray scale) and optional patterns, a function that allows users to create their own optional patterns has been added. This function makes it possible to create the optional patterns which are useful for developing and evaluating the next-generation displays.

■ Selection and installation of up to three video units possible

In line with the operating environment, users can select up to three kinds of video units from the six kinds of output units available. In addition, a multiple number of video units of the same kind can be installed, and Astrodesign also provides units which are customized to the needs of the users.

* When units are to be added or replaced, please contact Astrodesign.

1.3 Data configuration

The data output by the VG-870/871 is managed by the program data.

The program data consists of the pattern data which is used to set the data relating to the output images and the timing data which is used to set the data relating to all other output timing data and output conditions.

The table below gives a breakdown of the data.

| Block | | Description |
|--------------|--------------|------------------|
| Timing data | Program Name | Program name |
| | Timing | Timing |
| | Output | Output condition |
| | AUDIO | Audio output |
| Pattern data | Pattern | Pattern |
| | Action | Pattern action |

A number of types of program data, optional patterns and user character patterns are contained as sample data inside the VG-870/871.

| | Number of data |
|-------------------------|--------------------------|
| Timing data | 1000 sets (1001 to 2000) |
| Pattern data | 1000 sets (1001 to 2000) |
| Optional patterns | 200 (1 to 200) |
| User character patterns | 16 (F0H to FFH) |

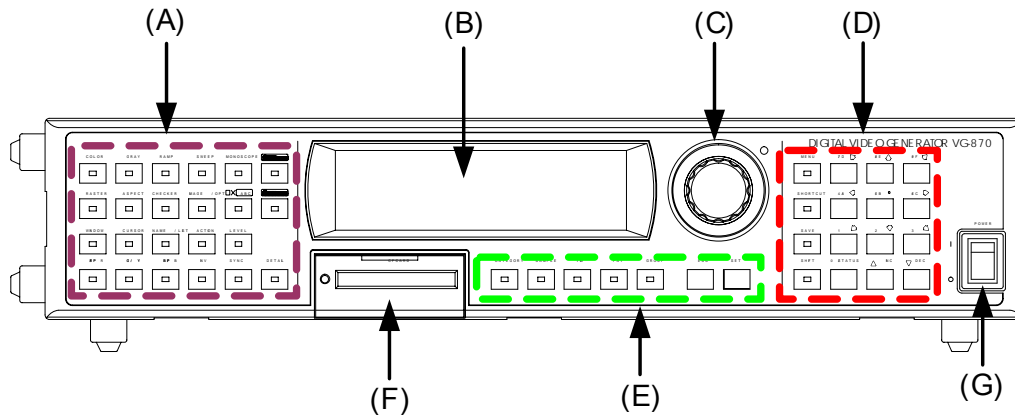
The various data can be registered in the internal memory of the VG-870/871 or on CF cards.

| | Number of data | |
|---------------------------------------|---|---|
| Program data | 1000 (1 to 1000) | |
| User option patterns | 200 (1 to 200) | |
| Images (image data) | 200 (1 to 200) * Number of data depends on the image data size, memory capacity and card capacity. | |
| User character patterns | 16 (E0H to EFH) | |
| Number of characters in program names | 20 characters | |
| Number of groups | 99 (1 to 99) | * For further details on groups, refer to "2.4 Groups." |
| Number of group data | 98 (1 to 98) | |
| Number of characters in group names | 20 characters | |

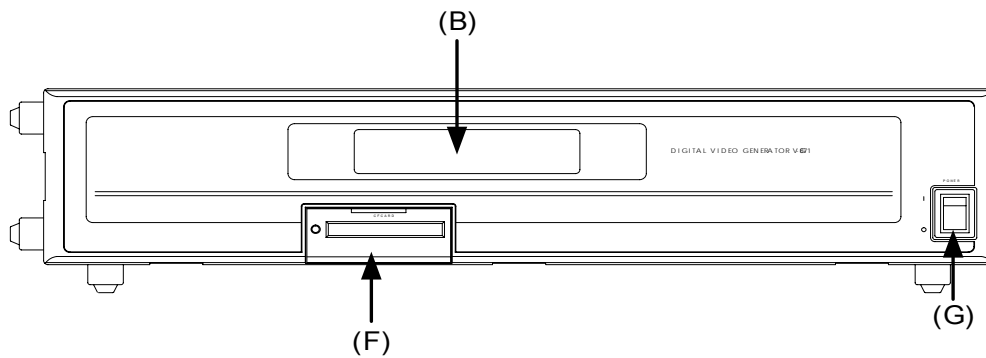
When a CF card has been inserted, the data registered on that card becomes valid, and the data registered in the internal memory becomes invalid. In the case of image data, both the data on a CF card and the data in the internal memory can be made valid. For further details, refer to "9.1.11 Image - priority settings."

1.4 Panel parts and their functions

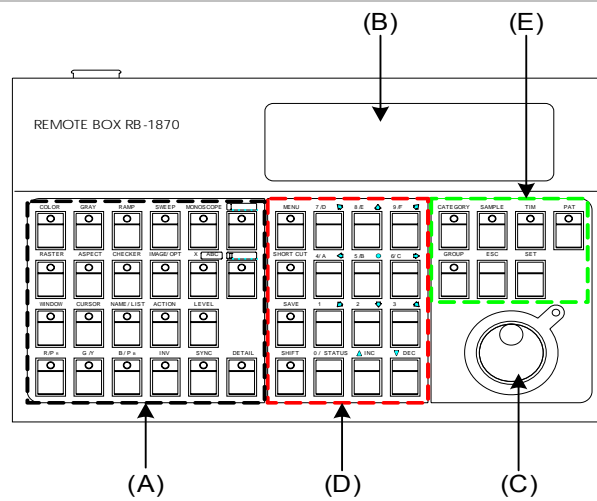
1.4.1 VG-870 front panel



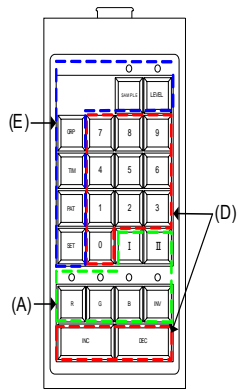
1.4.2 VG-871 front panel



1.4.3 RB-1870/RB-1871 panel



RB-1870






























RB-1871

Some restrictions apply to operating the RB-1871. The operable items are described below.

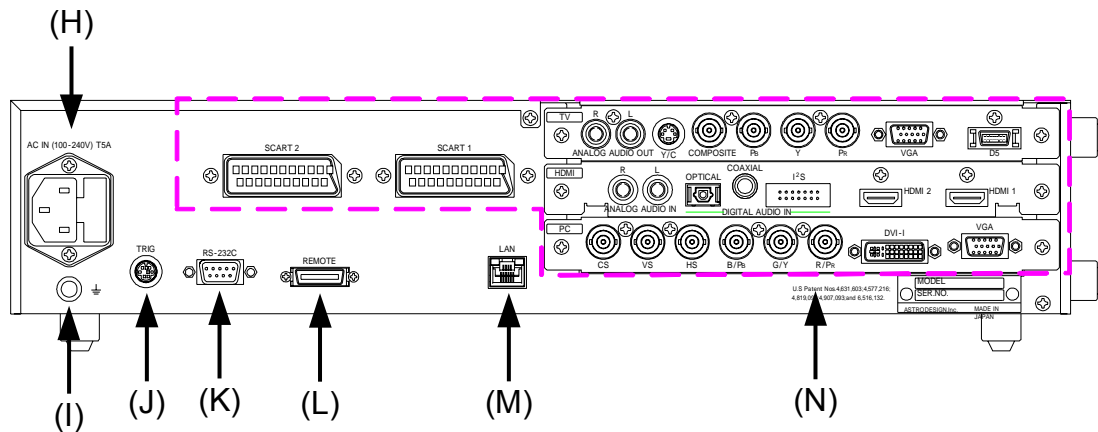
- Selecting and executing programs
 - Execution of grouped programs (but group editing is not possible)
 - ON/OFF operations of R, G, B and INV keys
 - ON/OFF operations of CUSTOM (I, II) keys (default = I: HDCP, II: MUTE)
 - Adjustment of levels (digital video levels only)

* For further details on the keys, refer to “1.4.4 Names of the keys and their functions.”

1.4.4 Names of the keys and their functions

| | | | |
|-----|------------------------|---|---|
| (A) | Pattern keys |   etc. | Used to display and edit the patterns. |
| | Action key |  | Used when setting the scroll, flicker and other functions. |
| | Level key |  | Used to set the digital video levels, analog video levels and audio levels. |
| | RGB channel on/off |  etc. | Used to set R, G and B on or off. |
| | INV key |  | Used to invert the black and white of the video levels. |
| | SYNC key |  | Used to set the sync on or off. |
| | Detail key |  | Used to perform the detailed settings of the pattern data, timing data, etc. |
| | HDCP key (custom key) |  | Used to set HDCP on or off. (HDCP is a system for protecting content used by HDMI and DVI.) |
| | MUTE key (custom key) |  | Used to set the audio on or off (muted). |
| (B) | Menu operation screens |  | The menu screens are used to set and check the items displayed on the fluorescent display tube. |
| (C) | Rotary switch |  | This is turned clockwise or counterclockwise to select the setting items or parameters, change the level settings, etc. |
| (D) | Number keys | 0/STATUS  to 9/F  | Used to input numerical values, select the menus, etc. |
| | INC/DEC |   | Used to select the setting items or parameters, change the level settings, change the program numbers, etc. |
| | Menu |  | Used to display the menu screens. When it is pressed while a menu screen is already displayed, the initial screen is restored. |
| | Short-cut key |  | Used to move to a user-registered menu screen using minimal key operations. |
| | Save key |  | Used to save the data which has been set. |
| | Shift key |  | Used to input letters of the alphabet with the number keys. |
| (E) | Category key |  | Used to select the internal sample data by category. |
| | Sample key |  | Used when the internal sample data is used. |
| | Timing key |  | Used to display changeable lists when only the output timing data is to be changed. |
| | Pattern key |  | Used to display changeable lists when only the output pattern data is to be changed. |
| | Group key |  | Used to display user-registered groups, etc. and create groups. |
| | Escape key |  | This key can be used in the following situations <ul style="list-style-type: none"> • When canceling parameter selections or numerical value settings • When returning the displayed menu screen to the previous hierarchical level |
| | Set key |  | Used to enter the setting items and parameters which have been set. |
| (F) | CF card slot | | Used for inserting a CF card or accessing the memory on a CF card. |
| (G) | Power switch | | Used to turn the power of the VG-870 or VG-871 on and off. |

1.4.5 VG-870/871 rear panel



1.4.6 Names of connectors and their applications

| | | | |
|-----|-------------------|--|---|
| (H) | AC power socket | | Connect the power cable here. Any voltage from 100 V to 240 V is supported. |
| (I) | Frame ground | | Connect this frame ground terminal to the frame ground terminal of the unit which is connected to the VG-870/871. |
| (J) | TRIG connector | | This is the trigger input/output connector. |
| (K) | RS-232C connector | | This is used to connect a personal computer using an RS-232C cable. |
| (L) | Remote connector | | This is used to connect the dedicated remote control box (RB-1870 or RB-1871) to operate the generator by remote control. |
| (M) | LAN port | | This port is used for connection to a LAN using the Ethernet cable. |
| (N) | Units | | These connectors enable up to three interface units (VM18XX series) to be installed. |

1.4.7 Tools used to operate the VG-870/871

The table below lists the operation tools of this generator and the restrictions on the operation of each of these tools.

| Operation tool | Restriction on operation | Remarks |
|------------------------------------|--|--|
| VG-870 front panel controls | These enable all the generator functions to be operated. | The controls can be used only by the VG-870 main unit. |
| RB-1870 | These enable all the generator functions to be operated. | This remote control box makes it possible to perform the same operations as the ones which are performed on the front panel of the VG-870. |
| RB-1871 | Programs can be read only. | This is a simplified remote control box which is intended for use on production lines. |
| SP-8870 | These enable all the generator functions to be operated. | This software program is intended for performing operations and editing using a PC. |

1.5 VG-870/871 video units

The VG-870/871 is constructed to allow video interface units to be installed. Video interface signals are output from these units. Up to three units can be installed.

* When one or more video units are to be replaced, please contact ASTRODESIGN.

1.5.1 HDMI unit

The diagram shows the rear panel of the HDMI unit with the following connectors labeled from right to left: HDMI 1, HDMI 2, I2S DIGITAL AUDIO IN, COAXIAL, OPTICAL, ANALOG AUDIO IN (R and L), and an HDMI input. Below the diagram, five numbered callouts (1) through (5) point to the HDMI output connectors, the I2S digital audio input connector, the COAXIAL digital audio input connector, the OPTICAL digital audio input connector, and the ANALOG AUDIO IN connectors respectively.

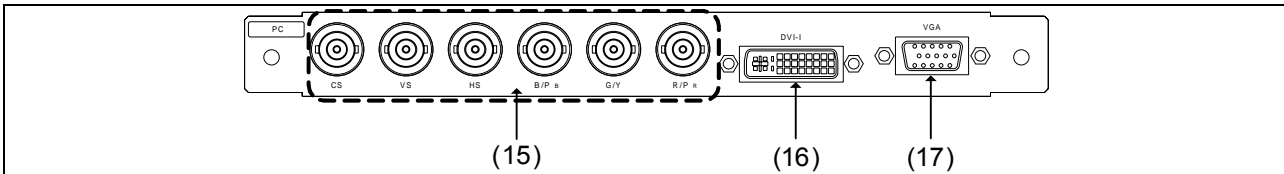
| | | |
|-----|---------------------------------------|--|
| (1) | HDMI output connectors | The same images are output simultaneously to two systems. (HDMI connectors) |
| (2) | I2S digital audio input connector | The I2S digital audio signals can be supplied here. The audio signals which have been input to this connector can be output as the embedded audio in the HDMI output. (Option) |
| (3) | COAX digital audio input connector | The signals supplied here can be output to the monitor as the HDMI embedded audio. |
| (4) | TOSLINK digital audio input connector | Digital audio signals can be input using an optical connection. The signals input here can be output to the monitor as the HDMI embedded audio. |
| (5) | Analog audio input connectors | Analog audio signals (L/R) can be supplied here. (RCA connectors) The signals supplied here can be output to the monitor as the HDMI embedded audio. |

1.5.2 TV encoder unit

The diagram shows the rear panel of the TV encoder unit with the following connectors labeled from right to left: D5, VGA, SCART 1, SCART 2, Y/C, COMPOSITE, ANALOG AUDIO OUT (R and L). Below the diagram, numbered callouts (8) through (14) point to the D5 output connector, the VGA output connector, the SCART output connectors (SCART 1 and SCART 2), the COMPOSITE output connector, the Y/C output connector, and the ANALOG AUDIO OUT connectors respectively.

| | | |
|------|------------------------------------|--|
| (8) | D5 output connector | Analog component signals can be output here. (D5 connector) |
| (9) | VGA output connector | The analog component signals (RGB) and H/V separate sync signals can be output here. (Shrink Dsub 15-pin connector) |
| (10) | Analog component output connectors | YPbPr analog component signals can be output here. (BNC connectors) |
| (11) | Composite output connector | NTSC, PAL or SECAM composite (VBS) signals can be output here. (BNC connector) |
| (12) | Y/C output connector | The Y/C signals can be output here (S connector) |
| (13) | Analog audio output connectors | Analog audio signals (L/R) can be output here. (RCA connectors) |
| (14) | SCART output connector | NTSC, PAL or SECAM composite (VBS) signals, Y/C signals and analog component signals (RGBHV) signals can be output here. |

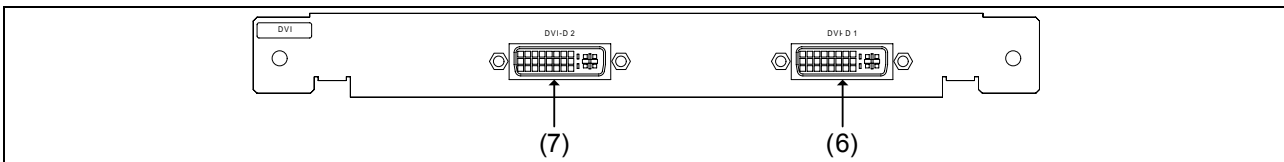
1.5.3 PC analog unit



For details on connectors (7) and (9), refer to the descriptions of the DVI unit and TV encoder unit, respectively.

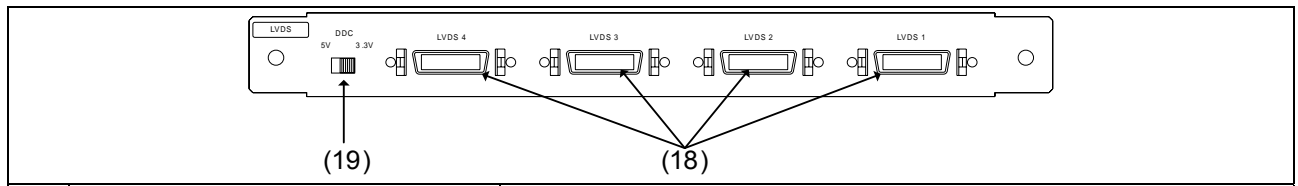
| | | |
|------|------------------------------------|---|
| (15) | Analog component output connectors | Either RGB signals or color difference signals (YPbPr/YCpCr) can be selected and output here. H/V separate sync and CS (composite sync) can be output. |
| (16) | DVI-I output connector | Digital or analog signals can be output from this connector. (DVI-I connector) HDCP is supported. (Dual-Link is not supported.) |
| (17) | VGA output connector | Analog component signals (RGBHV) can be output as separate H/V sync signals here. (Shrink Dsub 15-pin connector) |

1.5.4 DVI unit



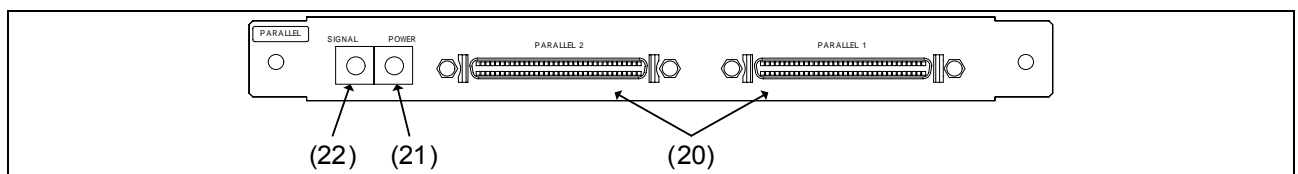
| | | |
|-----|------------------------|--|
| (6) | DVI-D output connector | Only digital signals can be output here. (DVI-D connector) Dual-Link is supported. (HDCP is not supported.) |
| (7) | DVI-D output connector | Digital signals can be output here. (DVI-D connector) HDCP is supported. (Dual-Link is not supported.) |

1.5.5 LVDS unit



| | | |
|------|------------------------------------|---|
| (18) | LVDS output connectors | The signals of four 10-bit systems can be output here. DISM or OpenLDI can be selected. |
| (19) | (DDC power supply selector switch) | This switch is not normally used. It can select the supply voltage when DDC is used. |

1.5.6 Parallel unit



| | | |
|------|----------------------------|--|
| (20) | Parallel output connectors | The signals of two 8-bit systems can be output here. |
| (21) | Supply voltage setting | This enables the supply voltage (1.8 V, 2.5 V, 3.3 V or 5 V) to be selected. |
| (22) | Signal level setting | This enables the signal level (1.8 V, 2.5 V, 3.3 V or 5 V) to be selected. |

CAUTION

Do not attempt to remove the video units from the main unit due to the risk of damaging them.
When units are to be added or replaced, please contact ASTRODESIGN.

2

OPERATION PROCEDURES

2.1 Flow of basic operations

2.1.1 Settings required for displays

The **timing data** and **pattern data** must be set in order for the test patterns to be displayed from the generator. The following items are set for these data.

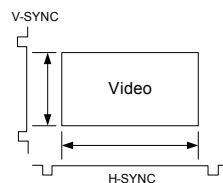
In the case of this generator, the **timing data** and **pattern data** are collectively referred to as the “**program data**.”

Program data

Timing data

Video timing data settings

- Horizontal timing
- Vertical timing



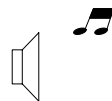
Output settings

- On or off for each interface
- Settings inherent to interfaces



Audio output settings

- Sound source, level
- Frequency
- On or off of channels



Pattern data

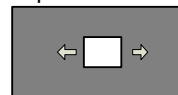
Pattern data settings

- Type, size, level and other settings



Action settings

- Scroll
- Flicker
- Level sweep

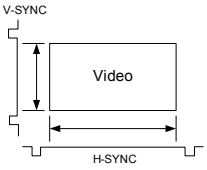


2.1.2 Selecting the timing data

There are two ways to select the timing data.

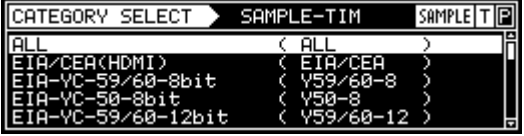

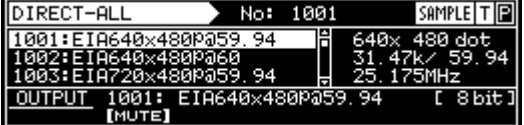

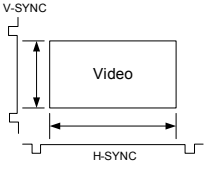
- 1) Input the timing data numbers directly.
- 2) Select the timing data from the categories.

1) Input the timing data numbers directly.

| | |
|--|---|
| <p>(1) Input the timing data number (1001 to 1999) using</p> <p>SAMPLE → TIM → number keys (<input type="text"/> to <input type="text"/>).</p> <p>9/F ↻ <input type="text"/></p> | <p>Video timing data output</p>  <p>The display patterns are not changed.</p> |
|--|---|

2) Select the timing data from the categories.

The timing data of the internal sample data is classified by category such as EIA or VESA (PC). Select the desired timing data from the category which contains it.

| | |
|--|---|
| <p>(1) CATEGORY → SAMPLE → TIM</p> <p><input type="text"/> → <input type="text"/> → <input type="text"/></p> |  |
| <p>(2) Select the category using  or <input type="text"/> INC <input type="text"/> DEC, and then press <input type="text"/> SET.</p> |  |
| <p>(3) Select the timing data using  or <input type="text"/> INC <input type="text"/> DEC, and then press <input type="text"/> SET.</p> | <p>Video timing data output</p>  <p>The display patterns are not changed.</p> |

2.1.3 Selecting the pattern data

There are four ways to select the pattern data.

- 1) Input the pattern data numbers directly.
- 2) Select the pattern data from the categories.
- 3) Select the pattern data using the pattern keys.
- 4) Select the patterns for each program data.

1) Inputting the pattern data numbers directly

| | |
|--|---|
| <p>(1) Input the pattern data number (1001 to 1999) using (to).</p> | <p>The corresponding pattern is displayed.</p> etc. |
|--|---|





















2) Selecting the pattern data from the categories

| | |
|--|---|
| <p>(1) </p> | <p>The pattern category is displayed.</p> |
| <p>(2) Select the category using or , and then press .</p> | <p></p> |
| <p>(3) Select the pattern using or , and then press .</p> | <p>The pattern is displayed.</p> etc. |

3) Selecting the pattern data using the pattern keys

| | |
|--|--|
| <p>(1) Select the key corresponding to the pattern, such as or , to be displayed.</p> | <p>The pattern of the selected type is displayed.</p> <p>Lighted: selected; off: deselected.</p> |
| <p>(2) When setting details for the pattern or changing the pattern type. Press .</p> | <p>The pattern selection screen is displayed.</p> |
| <p>(3) Select the pattern using or , and then press .</p> <p>Select the pattern directly using the number keys (to).</p> <p>Press to select .</p> | <p>The selected pattern is displayed.</p> |

4) Selecting the patterns for each program data


















| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|--|------------------|---|-------------------|--|-------------|--|--------------|---|------------------|---|---------------|--|---------------|---|----------------|--|------------------|---|------------------|---|--------------------|--|------------|---------------------------------------|--------------------------|---|---|---|---|---|---------------|--|--------------|--|---------------|--|---------------|--|------------------|--|-------------|--|------------|--|-------------|---|------------|---|
| <p>(1) Select Program Edit using  or  or  , and then press .</p> |  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>(2) Select Pattern (PAT) using  or  , and then press .</p> |  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>(3) Select Pattern/RGB/INV Select using  or  , and then press .</p> |  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>(4) Select the item using  or  , and then press .</p> <p>→ Selected or deselected is displayed.</p> | <p>The selected pattern is indicated by a check mark <input checked="" type="checkbox"/>.</p> <table border="1"> <tr> <td>Color Bar</td> <td>Check this to select the color bar pattern.</td> </tr> <tr> <td>Gray Scale</td> <td>Check this to select the gray scale pattern.</td> </tr> <tr> <td>Ramp</td> <td>Check this to select the ramp pattern.</td> </tr> <tr> <td>Sweep</td> <td>Check this to select the sweep (sine wave) pattern.</td> </tr> <tr> <td>Monoscope</td> <td>Check this to select the monoscope pattern.</td> </tr> <tr> <td>Raster</td> <td>Check this to select the raster pattern.</td> </tr> <tr> <td>Aspect</td> <td>Check this to select the pattern for checking the aspect ratio.</td> </tr> <tr> <td>Checker</td> <td>Check this to select the checkerboard pattern.</td> </tr> <tr> <td>Image/OPT</td> <td>Check this to select the bitmap image or an optional pattern.</td> </tr> <tr> <td>Character</td> <td>Check this to select the character pattern.</td> </tr> <tr> <td>Cross Hatch</td> <td>Check this to select the crosshatch pattern.</td> </tr> <tr> <td>Dot</td> <td>Check this to select the dot pattern.</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Check this to select the frame pattern.</td> </tr> <tr> <td>×</td> <td>Check this to select the cross pattern.</td> </tr> <tr> <td>+</td> <td>Check this to select the center marker pattern.</td> </tr> <tr> <td>Circle</td> <td>Check this to select the circle pattern.</td> </tr> <tr> <td>Burst</td> <td>Check this to select burst (continuous black and white).</td> </tr> <tr> <td>Window</td> <td>Check this to select the window pattern.</td> </tr> <tr> <td>Cursor</td> <td>Check this to select the cursor pattern.</td> </tr> <tr> <td>Name/List</td> <td>Check this to select the name/list function.</td> </tr> <tr> <td>R/Pr</td> <td>Check this to set the pattern R (red) or Pr output on or off. Normally, this is kept checked.</td> </tr> <tr> <td>G/Y</td> <td>Check this to set the pattern G (green) or Y (luminance) output on or off. Normally, this is kept checked.</td> </tr> <tr> <td>B/Pb</td> <td>Check this to set the pattern B (blue) or Pb output on or off. Normally, this is kept checked.</td> </tr> <tr> <td>INV</td> <td>Check this invert the black and white of the video level.</td> </tr> </table> | Color Bar | Check this to select the color bar pattern. | Gray Scale | Check this to select the gray scale pattern. | Ramp | Check this to select the ramp pattern. | Sweep | Check this to select the sweep (sine wave) pattern. | Monoscope | Check this to select the monoscope pattern. | Raster | Check this to select the raster pattern. | Aspect | Check this to select the pattern for checking the aspect ratio. | Checker | Check this to select the checkerboard pattern. | Image/OPT | Check this to select the bitmap image or an optional pattern. | Character | Check this to select the character pattern. | Cross Hatch | Check this to select the crosshatch pattern. | Dot | Check this to select the dot pattern. | <input type="checkbox"/> | Check this to select the frame pattern. | × | Check this to select the cross pattern. | + | Check this to select the center marker pattern. | Circle | Check this to select the circle pattern. | Burst | Check this to select burst (continuous black and white). | Window | Check this to select the window pattern. | Cursor | Check this to select the cursor pattern. | Name/List | Check this to select the name/list function. | R/Pr | Check this to set the pattern R (red) or Pr output on or off. Normally, this is kept checked. | G/Y | Check this to set the pattern G (green) or Y (luminance) output on or off. Normally, this is kept checked. | B/Pb | Check this to set the pattern B (blue) or Pb output on or off. Normally, this is kept checked. | INV | Check this invert the black and white of the video level. |
| Color Bar | Check this to select the color bar pattern. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Gray Scale | Check this to select the gray scale pattern. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Ramp | Check this to select the ramp pattern. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Sweep | Check this to select the sweep (sine wave) pattern. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Monoscope | Check this to select the monoscope pattern. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Raster | Check this to select the raster pattern. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Aspect | Check this to select the pattern for checking the aspect ratio. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Checker | Check this to select the checkerboard pattern. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Image/OPT | Check this to select the bitmap image or an optional pattern. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Character | Check this to select the character pattern. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Cross Hatch | Check this to select the crosshatch pattern. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Dot | Check this to select the dot pattern. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <input type="checkbox"/> | Check this to select the frame pattern. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| × | Check this to select the cross pattern. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| + | Check this to select the center marker pattern. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Circle | Check this to select the circle pattern. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Burst | Check this to select burst (continuous black and white). | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Window | Check this to select the window pattern. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Cursor | Check this to select the cursor pattern. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Name/List | Check this to select the name/list function. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| R/Pr | Check this to set the pattern R (red) or Pr output on or off. Normally, this is kept checked. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| G/Y | Check this to set the pattern G (green) or Y (luminance) output on or off. Normally, this is kept checked. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| B/Pb | Check this to set the pattern B (blue) or Pb output on or off. Normally, this is kept checked. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| INV | Check this invert the black and white of the video level. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |






2.1.4 Selecting the actions

There are two ways to select actions.












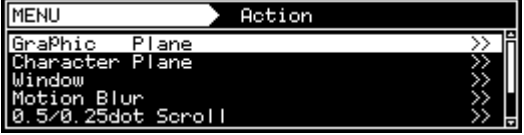




- 1) Select the action using the action key.
- 2) Select and set the action for each program data.

1) Selecting the action using the action key

| | | | | | | | | | | | | | | | | | | |
|-----------------|---|--|-----------------|---|-----------------|--|-----------------|--|-----------------|--|-----------------|-----------------------------------|----------------|--|----------------|--|---------------|------------------------------------|
| (1) | Press the  key. | The action selection screen is displayed.  | | | | | | | | | | | | | | | | |
| (2) | Select the action using  or   , and then press  . | The selected action is indicated by a check mark <input checked="" type="checkbox"/> .  To select the window action, the window pattern must be displayed first. <table border="1"> <tbody> <tr> <td>GC-SCROL</td> <td>Check this to scroll the pattern.</td> </tr> <tr> <td>G-SCROLL</td> <td>Check this to scroll the pattern.</td> </tr> <tr> <td>C-SCROLL</td> <td>Check this to scroll the pattern.</td> </tr> <tr> <td>W-SCROLL</td> <td>Check this to scroll the window.</td> </tr> <tr> <td>W-FLICKR</td> <td>Check this to flicker the window.</td> </tr> <tr> <td>W-LEVEL</td> <td>Check this to change the window level.</td> </tr> <tr> <td>W-L.SEQ</td> <td>Check this to execute the window level sequence.</td> </tr> <tr> <td>M-BLUR</td> <td>Check this to execute motion blur.</td> </tr> </tbody> </table> | GC-SCROL | Check this to scroll the pattern. | G-SCROLL | Check this to scroll the pattern. | C-SCROLL | Check this to scroll the pattern. | W-SCROLL | Check this to scroll the window. | W-FLICKR | Check this to flicker the window. | W-LEVEL | Check this to change the window level. | W-L.SEQ | Check this to execute the window level sequence. | M-BLUR | Check this to execute motion blur. |
| GC-SCROL | Check this to scroll the pattern. | | | | | | | | | | | | | | | | | |
| G-SCROLL | Check this to scroll the pattern. | | | | | | | | | | | | | | | | | |
| C-SCROLL | Check this to scroll the pattern. | | | | | | | | | | | | | | | | | |
| W-SCROLL | Check this to scroll the window. | | | | | | | | | | | | | | | | | |
| W-FLICKR | Check this to flicker the window. | | | | | | | | | | | | | | | | | |
| W-LEVEL | Check this to change the window level. | | | | | | | | | | | | | | | | | |
| W-L.SEQ | Check this to execute the window level sequence. | | | | | | | | | | | | | | | | | |
| M-BLUR | Check this to execute motion blur. | | | | | | | | | | | | | | | | | |
| (3) | Select the action using  or   , and then press  . |  On this screen, the scroll direction and number of steps are set when the GC-SCROLL , G-SCROLL or C-SCROLL action has been checked. <table border="1"> <tbody> <tr> <td>←, →, ↑, ↓</td> <td>Select these to scroll in the directions of the arrows.</td> </tr> <tr> <td>STEP+1</td> <td>Select this to increment the scroll step by 1.</td> </tr> <tr> <td>STEP-1</td> <td>Select this to decrement the scroll step by 1.</td> </tr> <tr> <td>EDIT</td> <td>Select this to perform the detailed scroll settings.</td> </tr> </tbody> </table> | ←, →, ↑, ↓ | Select these to scroll in the directions of the arrows. | STEP+1 | Select this to increment the scroll step by 1. | STEP-1 | Select this to decrement the scroll step by 1. | EDIT | Select this to perform the detailed scroll settings. | | | | | | | | |
| ←, →, ↑, ↓ | Select these to scroll in the directions of the arrows. | | | | | | | | | | | | | | | | | |
| STEP+1 | Select this to increment the scroll step by 1. | | | | | | | | | | | | | | | | | |
| STEP-1 | Select this to decrement the scroll step by 1. | | | | | | | | | | | | | | | | | |
| EDIT | Select this to perform the detailed scroll settings. | | | | | | | | | | | | | | | | | |
| (4) | Select the action using  or   , and then press  . |  On this screen, the scroll direction and number of steps are set when the W-SCROLL action has been checked. <table border="1"> <tbody> <tr> <td>←, →, ↑, ↓</td> <td>Select these to scroll in the directions of the arrows.</td> </tr> <tr> <td>STEP+1</td> <td>Select this to increment the scroll step by 1.</td> </tr> <tr> <td>STEP-1</td> <td>Select this to decrement the scroll step by 1.</td> </tr> <tr> <td>EDIT</td> <td>Select this to perform the detailed scroll settings.</td> </tr> </tbody> </table> | ←, →, ↑, ↓ | Select these to scroll in the directions of the arrows. | STEP+1 | Select this to increment the scroll step by 1. | STEP-1 | Select this to decrement the scroll step by 1. | EDIT | Select this to perform the detailed scroll settings. | | | | | | | | |
| ←, →, ↑, ↓ | Select these to scroll in the directions of the arrows. | | | | | | | | | | | | | | | | | |
| STEP+1 | Select this to increment the scroll step by 1. | | | | | | | | | | | | | | | | | |
| STEP-1 | Select this to decrement the scroll step by 1. | | | | | | | | | | | | | | | | | |
| EDIT | Select this to perform the detailed scroll settings. | | | | | | | | | | | | | | | | | |

| | | |
|--|--|--|
| <p>(5) Select the action using  or  , and then press .</p> |  | |
| | <p>On this screen, the level increment/decrement and direction as well as the number of steps are set when the W-LEVEL action has been checked.</p> | |
| | UP | Select this to increment the level. |
| | DOWN | Select this to decrement the level. |
| | STOP | Select this to temporarily stop the level change. |
| | STEP+1 | Select this to increment the level change step by 1. |
| | STEP-1 | Select this to decrement the level change step by 1. |
| EDIT | Select this to perform the detailed level settings. | |







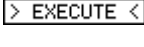




2) Select and set the action for each program data.

| | |
|--|--|
| <p>(1) Select Program Edit using   or  , and then press .</p> |  |
| <p>(2) Select Action (PAT) using   or  , and then press .</p> |  |
| <p>(3) Select the item using  or  , and then press .</p> | <p>One of the following actions is selected, and the detailed settings are performed. For details on the setting procedure, refer to “ACTION SETTINGS.”</p> <ul style="list-style-type: none"> • Graphic Plane • Character Plane • Window • Motion Blur • 0.5 / 0.25 Pixel Scroll • Lip Sync • Black Insertion |

2.2 Saving the program data

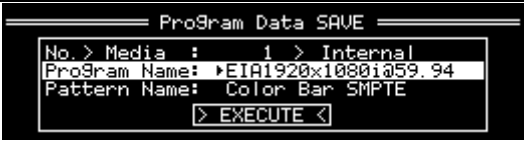



















Upon completion of program editing, save the data.

If the power is turned off without saving the data, the status before the changes were made will be restored.

| | | | | | | | | | | |
|--------------|--|---|-----|--|-------|--|--------------|---|--------------|---|
| (1) |  |  | | | | | | | | |
| (2) | Select the item using  or   , and then press  . | <table border="1"> <tr> <td>No.</td> <td>The program number is set here. (0001 to 1000)</td> </tr> <tr> <td>Media</td> <td>The internal memory or CF card is selected here.</td> </tr> <tr> <td>Program Name</td> <td>Any name (containing up to 20 characters) can be allocated as the program name.</td> </tr> <tr> <td>Pattern Name</td> <td>Any name (containing up to 20 characters) can be allocated as the pattern name.</td> </tr> </table> | No. | The program number is set here. (0001 to 1000) | Media | The internal memory or CF card is selected here. | Program Name | Any name (containing up to 20 characters) can be allocated as the program name. | Pattern Name | Any name (containing up to 20 characters) can be allocated as the pattern name. |
| No. | The program number is set here. (0001 to 1000) | | | | | | | | | |
| Media | The internal memory or CF card is selected here. | | | | | | | | | |
| Program Name | Any name (containing up to 20 characters) can be allocated as the program name. | | | | | | | | | |
| Pattern Name | Any name (containing up to 20 characters) can be allocated as the pattern name. | | | | | | | | | |
| (3) | Select  using  or  , and then press   . | The program data is saved. | | | | | | | | |

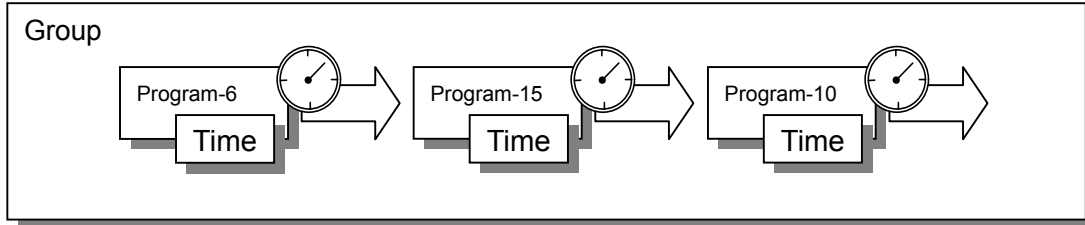
2.3 Setting the names

When timing or pattern data is edited and the edited data is to be saved, the name used for the program can be changed.

| | |
|---|--|
| <p>(1) </p> <p>Select Name using  or , and then press .</p> |  |
| <p>(2) To decide on the positions where the character changes are to be made:</p> <p> (when moving to the left)</p> <p> (when moving to the right)</p> | <p>The position where the character of the name is to be input changes.</p>  |
| <p>To delete all the characters:</p> <p></p> | <p>All the characters already input for the name are cleared.</p>  |
| <p>To delete one character:</p> <p></p> | <p>The character at the cursor position is deleted.</p>  |
| <p>To change character insert/overwrite:</p> <p> Use this to switch between inserting and overwriting the characters.</p> | <p>Insert is switched to overwrite or vice versa.</p>  |
| <p>To input characters:</p> <p>Select the characters using , and enter them using .</p> | <p>The characters are input.</p>  |
| <p>(3) To enter the program name:</p> <p>Select OK using   .</p> | <p>The name is changed.</p> |

2.4 Groups















Registering programs as “groups” is useful when specific programs are to be combined and used repeatedly. Examples include times on a TV set inspection process when specific timing and pattern data are combined for repeated use. It is possible to set not only the timing and pattern data execution sequence but the execution time of each program as well.



Up to 98 programs can be registered in a group. **Up to 99** groups can be registered.




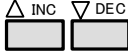



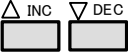


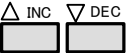

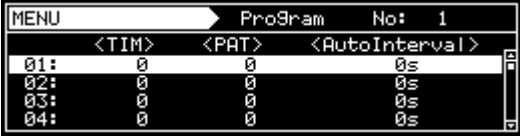
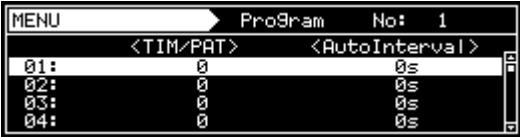



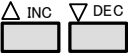

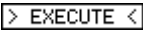



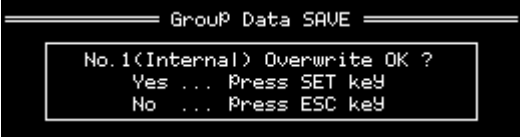
2.4.1 Executing groups

The combinations of programs and patterns which are used with a high frequency and which have been registered by the user can be executed.

| | | |
|-----|--|--|
| (1) | GROUP  |  |
| (2) | Select the groups using  or   , and then press  . |  <p>Only the programs registered as groups can be selected.</p> |
| (3) | Select the groups using  or   , and then press  . | <p>The programs in the group are executed.</p> <p>When  or  is used, the programs are executed in ascending or descending order without pressing .</p> |


















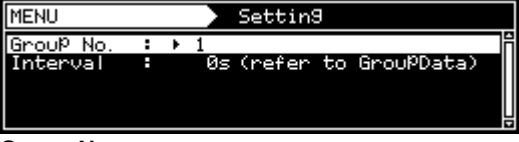






2.4.2 Setting and saving groups






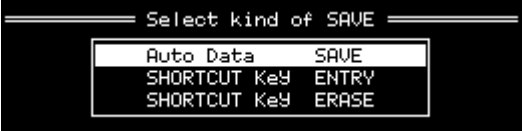








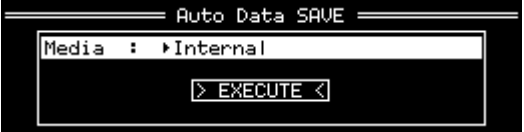
The combinations of programs and patterns which are used with a high frequency can be saved.

| | | | | | | | | | |
|---|---|---------|---|-------|---|-----------|---|--------------|--|
| <p>(1)</p>  |  | | | | | | | | |
| <p>(2)</p> <p>Select Group Edit using  or , and then press .</p> |  | | | | | | | | |
| <p>(3)</p> <p>Select the items using  or , and then press .</p> | <table border="1"> <tr> <td>No.</td> <td>The number of the desired group is set here. (01 to 99)</td> </tr> <tr> <td>Name</td> <td>Any name (consisting of up to 20 characters) can be allocated as the group name.</td> </tr> <tr> <td>Edit Mode</td> <td>TIM/PAT: The timing data and pattern data are set separately. Program: The number of the program is designated here.</td> </tr> <tr> <td>Program</td> <td>Depending on the Edit Mode setting, the display screen in (4) below will differ.</td> </tr> </table> | No. | The number of the desired group is set here. (01 to 99) | Name | Any name (consisting of up to 20 characters) can be allocated as the group name. | Edit Mode | TIM/PAT: The timing data and pattern data are set separately. Program: The number of the program is designated here. | Program | Depending on the Edit Mode setting, the display screen in (4) below will differ. |
| No. | The number of the desired group is set here. (01 to 99) | | | | | | | | |
| Name | Any name (consisting of up to 20 characters) can be allocated as the group name. | | | | | | | | |
| Edit Mode | TIM/PAT: The timing data and pattern data are set separately. Program: The number of the program is designated here. | | | | | | | | |
| Program | Depending on the Edit Mode setting, the display screen in (4) below will differ. | | | | | | | | |
| <p>(4)</p> <p>Select the numbers (01 to 98) of the TIM or PAT programs and AutoInterval using  or , and then press .</p> <p>The programs set in the group are executed in sequence from 01 up to 98.</p> <ul style="list-style-type: none"> • If 0 is set for both TIM and PAT • If 0 is set for Program <p>In both of the above cases, 0 is recognized as the end of the group.</p> | <p>When TIM/PAT is selected as the Edit Mode setting</p>  <p>When Program is selected as the Edit Mode setting</p>  <table border="1"> <tr> <td>TIM/PAT</td> <td>The program numbers are set in this column.</td> </tr> <tr> <td>TIM</td> <td>The timing data numbers are listed here.</td> </tr> <tr> <td>PAT</td> <td>The pattern data numbers are listed here.</td> </tr> <tr> <td>AutoInterval</td> <td>The execution times during Auto Display are set here (0 to 999 seconds).</td> </tr> </table> | TIM/PAT | The program numbers are set in this column. | TIM | The timing data numbers are listed here. | PAT | The pattern data numbers are listed here. | AutoInterval | The execution times during Auto Display are set here (0 to 999 seconds). |
| TIM/PAT | The program numbers are set in this column. | | | | | | | | |
| TIM | The timing data numbers are listed here. | | | | | | | | |
| PAT | The pattern data numbers are listed here. | | | | | | | | |
| AutoInterval | The execution times during Auto Display are set here (0 to 999 seconds). | | | | | | | | |
| <p>(5)</p> <p>This completes the setting operations. The group data is now saved.</p>  |  | | | | | | | | |
| <p>(6)</p> <p>Select the items using  or , and then press .</p> | <table border="1"> <tr> <td>No.</td> <td>The number of the group is set here. (01 to 99)</td> </tr> <tr> <td>Media</td> <td>Internal: The group data is saved in the internal memory. CF Card: The group data is saved on an external CF card.</td> </tr> <tr> <td>Name</td> <td>Any name (consisting of up to 20 characters) can be allocated.</td> </tr> </table> | No. | The number of the group is set here. (01 to 99) | Media | Internal: The group data is saved in the internal memory. CF Card: The group data is saved on an external CF card. | Name | Any name (consisting of up to 20 characters) can be allocated. | | |
| No. | The number of the group is set here. (01 to 99) | | | | | | | | |
| Media | Internal: The group data is saved in the internal memory. CF Card: The group data is saved on an external CF card. | | | | | | | | |
| Name | Any name (consisting of up to 20 characters) can be allocated. | | | | | | | | |
| <p>(7)</p> <p>Select  using  or , and then press .</p> <p>If previous data exists, a display appears prompting the user to confirm whether it is acceptable for the existing data to be overwritten.</p> |  <p>This completes the saving of the group data.</p> | | | | | | | | |

2.5 Automatic execution

The data in the selected groups and program numbers can be automatically output in accordance with the delay time which has been set.

| | |
|--|---|
| <p>(1) MENU</p>  |  |
| <p>(2) Select Auto Edit using  or  , and then press .</p> |  |
| <p>(3) Selecting the Mode setting</p> <p>Select Program or Group using  or  or  .</p> |  |
| <p>(4) Select Setting using  or  , and then press .</p> | <p><When Program has been selected as the Mode setting></p>  <p>Interval: The time during which each pattern is to be displayed is set here from 0 to 999 seconds.</p> <p>Program (Start-Stop): The start and end points of programs to be repeated are set here. The start and end point settings can be designated in three stages: Automatic execution is performed in the following sequence: Start point 1 → end point 1 → start point 2 → end point 2 → start point 3 → end point 3.</p> <p><When Group has been selected as the Mode setting></p>  <p>Group No.: The number of the group to be executed automatically is set here.</p> <p>Interval The time during which each pattern is to be displayed is set here from 0 to 999 seconds. When 0 is set, execution accords with the group data setting. If the interval is not set in the group data, 0 seconds will be set.</p> |
| <p>(5) For automatic execution, select EXECUTE using  or  , and then press .</p> <p>To cancel automatic execution at any time, press .</p> |  |

| | |
|--|---|
| <p>(6) Select Auto Data SAVE using    or  INC  DEC.</p> |  |
| <p>(7) Select the save destination (*) at Media using  or  INC  DEC, and then press  SET. Select EXECUTE using  or  INC  DEC, and then press  SET.</p> |  <p>* Internal: The data is saved on the internal hard disk. CF-card: The data is saved on the CF card.</p> |

2.6 Displays appearing on the VG-871 fluorescent display tube

The following information appears on the VG-871 fluorescent display tube.

| | |
|--|--|
| When selecting and executing programs | |
| Standard display | Name of program or pattern (max. 16 characters) (With TIM at OFF) |
| SAMPLE, TIM and PAT key statuses ON: S T P OFF: ■ | Program number |
| | |
| Pattern drawing bit length, horizontal sync frequency, vertical sync frequency | HDCP ON/FF ON: ■ ↔ ■ flashing |
| Group execution | |
| Group number | Number of program in group |
| Program name (max. 16 characters) | |
| | |
| When selecting groups | |
| Group name | Group number |
| | |
| When adjusting the digital video levels | |
| | |
| Digital video level | |

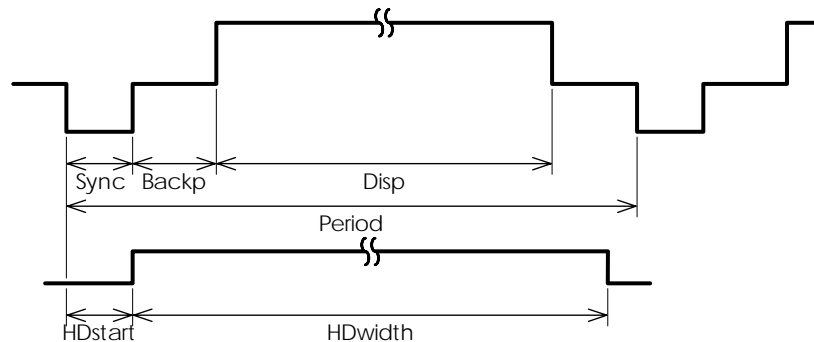
3

TIMING DATA SETTINGS

3.1 Horizontal timing data editing

3.1.1 Horizontal timing data

When making changes with the horizontal timing data, the parameters which can be set and the names of the parameters are indicated below.



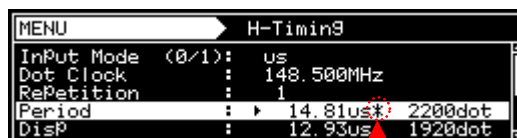
3.1.2 Restrictions on the horizontal timing parameters

The table below shows the restrictions on the parameters which can be changed with the horizontal timing data.

| Setting item | Setting range | Parameter fixing function |
|-------------------------|---|--|
| Dot Clock | 0.100 to 340.000 MHz (Restrictions apply depending on the number of bits outputs; refer to "11.1.1 Common specifications" for further details.) | |
| PrIOD | Time display: 0.00 to 999.999 μ s Dot display: 128 to 8192 dots | μ s setting fixed using SHIFT+2 dot setting fixed using SHIFT+3 |
| Disp | Time display: 0.00 to 999.999 μ s Dot display: 48 to 4096 dot | μ s setting fixed using SHIFT+0 dot setting fixed using SHIFT+1 |
| Backp, Sync | Time display: 0.00 to 999.999 μ s Dot display: 0 to 8192 dot | |
| HDstart, HDwidth | Time display: 0.00 to 999.999 μ s Dot display: 0 to 8190 dot | |

* When a parameter is fixed, it is accompanied by an asterisk (*). Even when values other than ones for parameters with an asterisk have been changed, the values of the parameters with the asterisks remain fixed.

Example: When a μ s setting has been fixed using SHIFT+2 for Period



An asterisk is displayed here when the value is fixed.














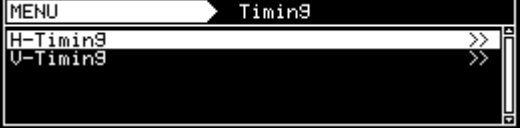




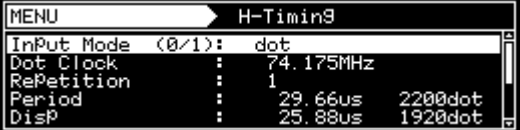







CAUTION When items are set in microseconds (μ s), restrictions apply to these settings depending on the dot clock frequency and other timing data used for drawing.

The values for the blanking and frontp items are calculated automatically on the basis of the data presented above.

| Item | Calculation formula | Setting range |
|-----------------|--|---|
| Blanking | Blanking = Period - Disp | Time display: 0.00 to 999.999 μ s Dot display: 40 to 8192 dots |
| Frontp | Frontp = Period - Disp - Sync - Backp | Time display: 0.00 to 999.999 μ s Dot display: 0 to 8192 dots |

3.1.3 Horizontal timing data setting procedure

Described below is the procedure used to set the parameters which can be changed with the horizontal timing data

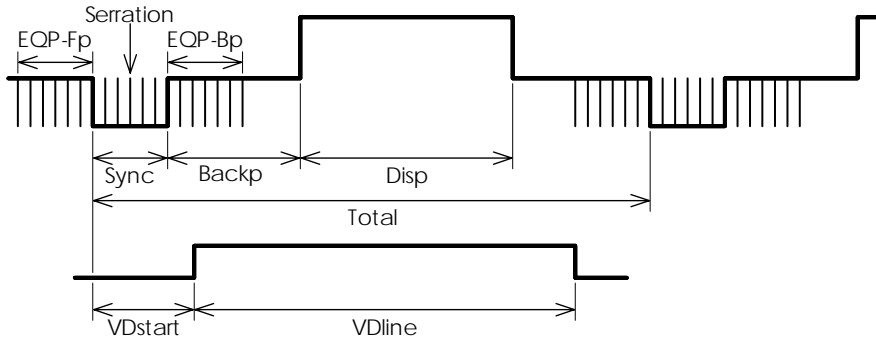
| | | | | | | | | | | | | | | | | | | |
|--|--|---|------------|---|-----------|--|------------|--|--------|--|------|---|------|--|-------|---|--------------------|---|
| (1) | <p>Select Program Edit using  or  or   , and then press .</p> |  | | | | | | | | | | | | | | | | |
| (2) | <p>Select Timing (TIM) using  or  , and then press .</p> |  | | | | | | | | | | | | | | | | |
| (3) | <p>Select H-Timing >> using  or  , and then press .</p> |  | | | | | | | | | | | | | | | | |
| <p><Setting the parameters></p> <p>Select the items using  or  , and then press .</p> <p>Alternatively: Select the parameter using the number keys  , and then press .</p> | | <p>Set the H-Timing parameters.</p> <table border="1"> <tbody> <tr> <td>Input Mode</td> <td>Select the input setting for the H-Timing parameters to μs: time [microseconds] or dot: number of dots [dots].</td> </tr> <tr> <td>Dot Clock</td> <td>The dot clock frequency (MHz) is set here.</td> </tr> <tr> <td>Repetition</td> <td>The number of repetitions is set here. The pixel configuration depends on the number which is set in Repetition. When 2 is set for Repetition and 1440 for Disp, the number of pixels will be 720.</td> </tr> <tr> <td>Period</td> <td>The total number of pixels in the horizontal direction is set here. <When μs: time (microseconds) has been selected as the Input Mode setting> It is possible to establish settings using both μs and dot parameters.</td> </tr> <tr> <td>Disp</td> <td>Set the Disp width in the horizontal direction here. <When μs: time (microseconds) has been selected as the Input Mode setting> It is possible to establish settings using both μs and dot parameters.</td> </tr> <tr> <td>Sync</td> <td>Set the Sync width in the horizontal direction here.</td> </tr> <tr> <td>BackP</td> <td>Set the BackP width in the horizontal direction here.</td> </tr> <tr> <td>HDStart HDWidth</td> <td>These parameters can be set only when the parallel unit has been installed.</td> </tr> </tbody> </table> | Input Mode | Select the input setting for the H-Timing parameters to μ s: time [microseconds] or dot: number of dots [dots]. | Dot Clock | The dot clock frequency (MHz) is set here. | Repetition | The number of repetitions is set here. The pixel configuration depends on the number which is set in Repetition. When 2 is set for Repetition and 1440 for Disp, the number of pixels will be 720. | Period | The total number of pixels in the horizontal direction is set here. <When μs: time (microseconds) has been selected as the Input Mode setting> It is possible to establish settings using both μ s and dot parameters. | Disp | Set the Disp width in the horizontal direction here. <When μs: time (microseconds) has been selected as the Input Mode setting> It is possible to establish settings using both μ s and dot parameters. | Sync | Set the Sync width in the horizontal direction here. | BackP | Set the BackP width in the horizontal direction here. | HDStart HDWidth | These parameters can be set only when the parallel unit has been installed. |
| Input Mode | Select the input setting for the H-Timing parameters to μ s: time [microseconds] or dot: number of dots [dots]. | | | | | | | | | | | | | | | | | |
| Dot Clock | The dot clock frequency (MHz) is set here. | | | | | | | | | | | | | | | | | |
| Repetition | The number of repetitions is set here. The pixel configuration depends on the number which is set in Repetition. When 2 is set for Repetition and 1440 for Disp, the number of pixels will be 720. | | | | | | | | | | | | | | | | | |
| Period | The total number of pixels in the horizontal direction is set here. <When μs: time (microseconds) has been selected as the Input Mode setting> It is possible to establish settings using both μ s and dot parameters. | | | | | | | | | | | | | | | | | |
| Disp | Set the Disp width in the horizontal direction here. <When μs: time (microseconds) has been selected as the Input Mode setting> It is possible to establish settings using both μ s and dot parameters. | | | | | | | | | | | | | | | | | |
| Sync | Set the Sync width in the horizontal direction here. | | | | | | | | | | | | | | | | | |
| BackP | Set the BackP width in the horizontal direction here. | | | | | | | | | | | | | | | | | |
| HDStart HDWidth | These parameters can be set only when the parallel unit has been installed. | | | | | | | | | | | | | | | | | |

3.2 Vertical timing data editing

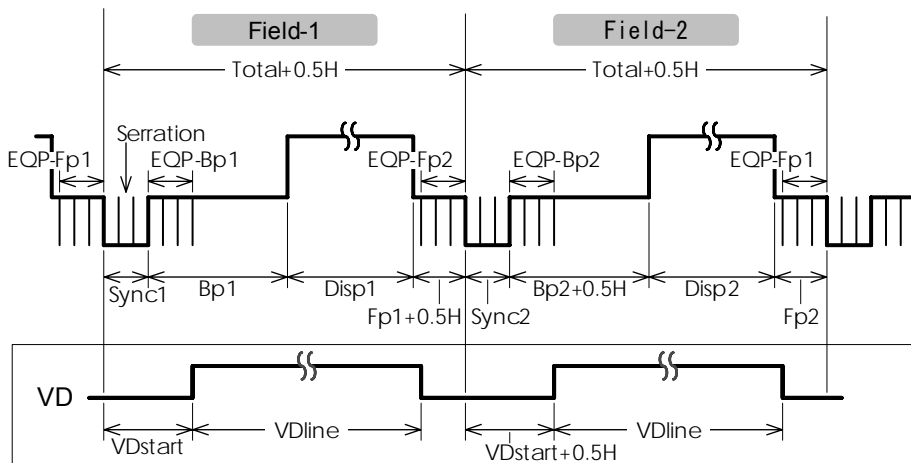
The vertical timing setting locations and names of the settings are indicated below.

3.2.1 Vertical timing data

[For progressive scanning]



[For interlaced scanning]



3.2.2 Restrictions on the vertical timing parameters

The table below shows the restrictions on the parameters which can be changed with the vertical timing data.

<For progressive scanning>

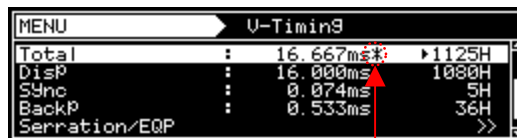
| Setting item | Setting range | Parameter fixing function |
|-------------------------|--|---|
| Total | Time display: 0.00 to 999.999 ms Dot display: 8 to 8192 H | ms setting fixed using SHIFT+2 H setting fixed using SHIFT+3 |
| Disp | Time display: 0.00 to 999.999 ms Dot display: 2 to 4096 H | ms setting fixed using SHIFT+0 H setting fixed using SHIFT+1 |
| Sync | Time display: 0.00 to 999.999 ms Dot display: 1 to 99 H | |
| Backp | Time display: 0.00 to 999.999 ms Dot display: 1 to 8192 H | |
| VDstart , VDline | Time display: 0.00 to 999.999 ms Dot display: 0 to 8190 H | |

<For interlaced scanning>

| Setting item | Setting range | Parameter fixing function |
|-----------------------|--|---|
| Field-1 Total1 | Time display: 0.00 to 999.999 ms Dot display: 4.0 to 4096.0 H (in 0.5H increments) | Fixed to ms setting using SHIFT+2 Fixed to H setting using SHIFT+3 |
| Disp1 | Time display: 0.00 to 999.999 ms Dot display: 1 to 2048 H | Fixed to ms setting using SHIFT+0 Fixed to H setting using SHIFT+1 |
| Sync1 | Time display: 0.00 to 999.999 ms Dot display: 1.0 to 99.0 H (in 0.5H increments) | |
| Backp1 | Time display: 0.00 to 999.999 ms Dot display: 0.0 to 4096.0 H (in 0.5H increments) | |
| VDstart1 | Time display: 0.00 to 999.999 ms Dot display: 0.0 to 4095.0 H (in 0.5H increments) | |
| VDline1 | Time display: 0.00 to 999.999 ms Dot display: 0.0 to 4095.0 H (in 0.5H increments) | |
| Field-2 Total2 | Same as Field-1 | Same as Field-1 |
| Disp2 | | |
| Sync2 | | |
| Backp2 | | |
| VDstart2 | | |
| VDline2 | | |

- * When a parameter is fixed, it is accompanied by an asterisk (*). Even when values other than ones for parameters with an asterisk have been changed, the values of the parameters with the asterisks remain fixed.

Example: When an ms setting has been fixed using SHIFT+2 for Total



An asterisk is displayed here when the value is fixed.



When the time display (ms) is set for the items, restrictions apply to these settings depending on the H-period and other timing data used for drawing.

The values for the blanking and frontp items are calculated automatically on the basis of the data presented above.

<For progressive scanning>























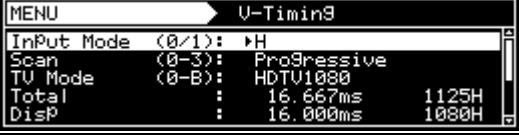
| Item | Calculation formula | Setting range |
|-----------------|---|--|
| Blanking | $\text{Blanking} = \text{Total} - \text{Disp}$ | Time display: 0.00 to 999.999 ms Dot display: 2 to 8192 H |
| Frontp | $\text{Frontp} = \text{Total} - \text{Disp} - \text{Sync} - \text{Backp}$ | Time display: 0.00 to 999.999 ms Dot display: 0 to 8192 H |

<For interlaced scanning>

| Item | Calculation formula | Setting range |
|----------------------------------|--|--|
| Frontp1 (Frontp2) | $\text{Frontp1} = \text{Total2} - \text{Disp2} - \text{Sync2} - \text{Backp2}$ $(\text{Frontp2} = \text{Total1} - \text{Disp1} - \text{Sync1} - \text{Backp1})$ | Time display: 0.00 to 999.999 ms Dot display: 0.0 to 4096.0 H |
| Blanking1 (Blanking2) | $\text{Blanking1} = \text{Frontp1} + \text{Sync1} + \text{Backp1}$ $(\text{Blanking2} = \text{Frontp2} + \text{Sync2} + \text{Backp2})$ | Time display: 0.00 to 999.999 ms Dot display: 2.0 to 4096.0 H |

3.2.3 Vertical timing data setting procedure

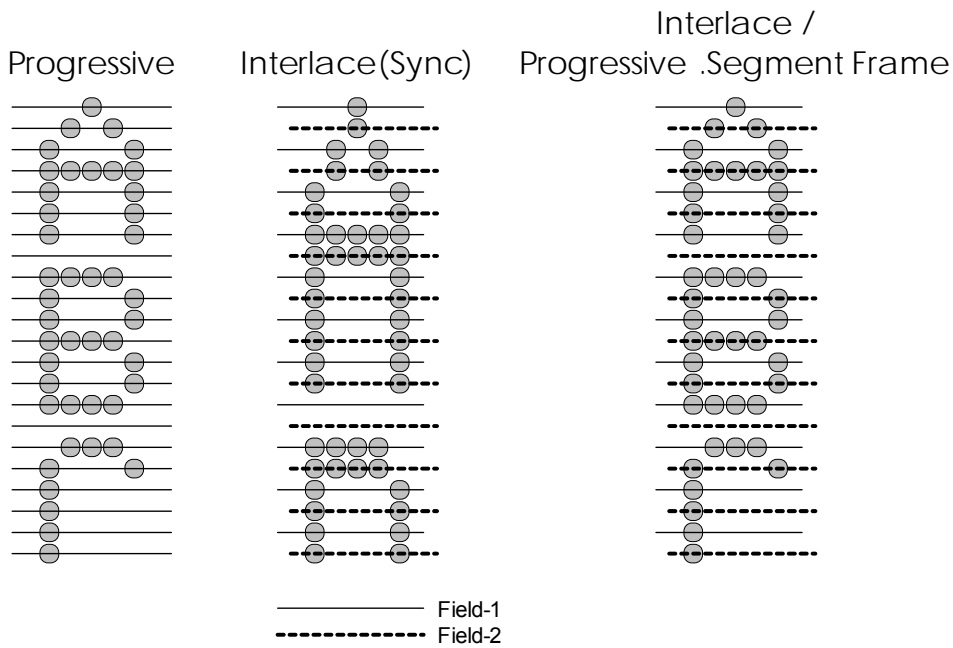
Described below is the procedure used to set the parameters which can be changed with the vertical timing data.

| (1) | <p>Select Program Edit using  or  or  or , and then press .</p> <p>Select Timing, and then press .</p> |  | | | | | | | | | | | | | | | | | | | | |
|------------------------------|---|--|------------------------------|--|------------|--|------|---|---------|---|-------|---|------|---|------|---|-------|--|---------------|--|----|---|
| (2) | <p>Select Timing (TIM) using  or , and then press .</p> |  | | | | | | | | | | | | | | | | | | | | |
| (3) | <p>Select V-Timing >> using  or , and then press .</p> <p>Select the items using  or , and then press .</p> <p>Select the parameter using the number keys   ( to ), and then press .</p> <p>* In the case of interlaced scanning outputs, Total, Disp, Sync and BackP are set for both Field1 and Field2.</p> |  <table border="1"> <thead> <tr> <th colspan="2">Set the V-Timing parameters.</th> </tr> </thead> <tbody> <tr> <td>Input Mode</td> <td>Select the input setting for the V-Timing parameters to ms: time [milliseconds] or H: number of lines [H].</td> </tr> <tr> <td>Scan</td> <td>Refer to "3.2.4 Concerning the scanning modes."</td> </tr> <tr> <td>TV Mode</td> <td>As a general rule, do not change this setting. For further details, refer to "3.2.5 Concerning the TV modes."</td> </tr> <tr> <td>Total</td> <td>The Total number in the vertical direction is set here.</td> </tr> <tr> <td>Disp</td> <td>The Disp width in the vertical direction is set here.</td> </tr> <tr> <td>Sync</td> <td>The Sync width in the vertical direction is set here.</td> </tr> <tr> <td>BackP</td> <td>The BackP width in the vertical direction is set here.</td> </tr> <tr> <td>Serration/EQP</td> <td>Refer to "3.2.6 Concerning Serration and EQP."</td> </tr> <tr> <td>VD</td> <td>Set VDStart and VDline here. This parameter can be set only when the parallel board has been installed.</td> </tr> </tbody> </table> | Set the V-Timing parameters. | | Input Mode | Select the input setting for the V-Timing parameters to ms: time [milliseconds] or H: number of lines [H]. | Scan | Refer to "3.2.4 Concerning the scanning modes." | TV Mode | As a general rule, do not change this setting. For further details, refer to "3.2.5 Concerning the TV modes." | Total | The Total number in the vertical direction is set here. | Disp | The Disp width in the vertical direction is set here. | Sync | The Sync width in the vertical direction is set here. | BackP | The BackP width in the vertical direction is set here. | Serration/EQP | Refer to "3.2.6 Concerning Serration and EQP." | VD | Set VDStart and VDline here. This parameter can be set only when the parallel board has been installed. |
| Set the V-Timing parameters. | | | | | | | | | | | | | | | | | | | | | | |
| Input Mode | Select the input setting for the V-Timing parameters to ms: time [milliseconds] or H: number of lines [H]. | | | | | | | | | | | | | | | | | | | | | |
| Scan | Refer to "3.2.4 Concerning the scanning modes." | | | | | | | | | | | | | | | | | | | | | |
| TV Mode | As a general rule, do not change this setting. For further details, refer to "3.2.5 Concerning the TV modes." | | | | | | | | | | | | | | | | | | | | | |
| Total | The Total number in the vertical direction is set here. | | | | | | | | | | | | | | | | | | | | | |
| Disp | The Disp width in the vertical direction is set here. | | | | | | | | | | | | | | | | | | | | | |
| Sync | The Sync width in the vertical direction is set here. | | | | | | | | | | | | | | | | | | | | | |
| BackP | The BackP width in the vertical direction is set here. | | | | | | | | | | | | | | | | | | | | | |
| Serration/EQP | Refer to "3.2.6 Concerning Serration and EQP." | | | | | | | | | | | | | | | | | | | | | |
| VD | Set VDStart and VDline here. This parameter can be set only when the parallel board has been installed. | | | | | | | | | | | | | | | | | | | | | |

3.2.4 Concerning the scanning modes

The table below lists the V-Timing scan settings as well as the operations for the scanning methods supported by the settings, imaging methods and action settings.

| Scan mode | System | Pixel imaging | Scroll and other actions |
|-----------------------------|----------------------|--|---|
| Progressive | Progressive scanning | Different pixels are drawn on each line. | Operation is performed for each frame. |
| Interlace | Interlaced scanning | Different pixels are drawn in the first field and second field. | Operation is performed for each field. |
| Prog.Segmented Frame | Interlaced scanning | Different pixels are drawn in the first field and second field. | Operation is performed for each frame (2 fields). |
| Interlace (Sync) | Interlaced scanning | The same image is repeatedly drawn in the first field and second field. | Operation is performed for each field. |



3.2.5 Concerning the TV modes

This parameter indicates the output of the TV standard signals (NTSC, NTSC-M, NTSC-443, PAL, PAL-M, PAL-60, PAL-N, PAL-Nc, SECAM, HDTV1080 or HDTV 720). Even when this parameter is changed, the timing data and other data will not be edited. For this reason, when it is changed, it will no longer be possible for the images to be drawn correctly on the monitor.

3.2.6 Concerning Serration and EQP

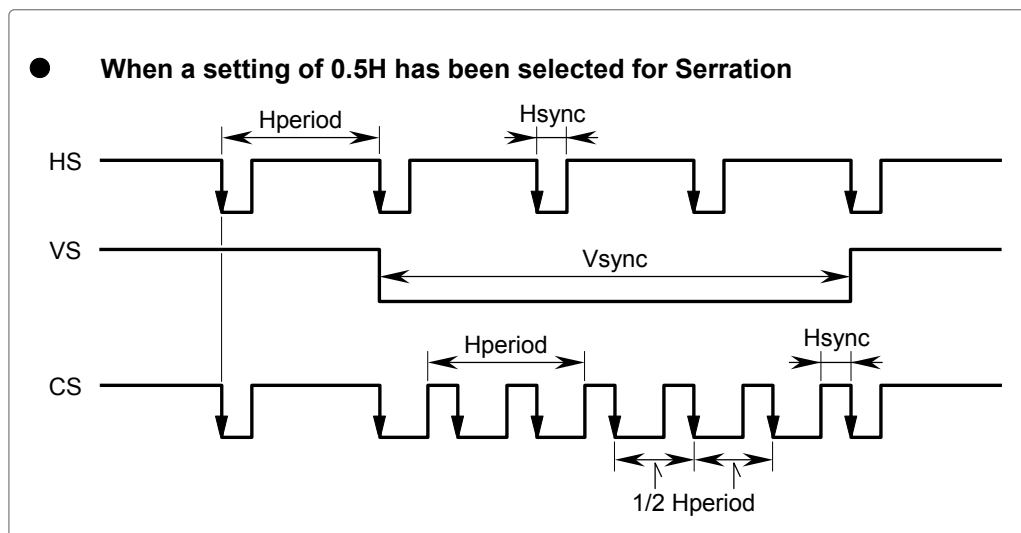
Serration and EQP can be selected on the V-Timing [MENU] screen, and various parameters can be set. The correspondences between the settings and operations are described using the table below.



Serration and EQP setting procedure

| Setting item | Key | LCD display | Description |
|--------------|-----|-------------|--|
| Serration | 0 | OFF | Serrated pulses are not inserted. |
| | 1 | 0.5H | Serrated pulses are inserted in increments of 0.5H. |
| | 2 | 1H | Serrated pulses are inserted in increments of 1H. |
| | 3 | EXOR | HS and VS EXORs are inserted as serrated pulses. |
| EQP | 0 | OFF | Equalizing pulses are not inserted into the EQPfp and EQPbp periods. |
| | 1 | ON | Equalizing pulses are inserted into the EQPfp and EQPbp periods. |

Shown below as an example is the phase relationship when a setting of 0.5H has been selected for Serration.



CAUTION

- The serration and EQP item settings are not reflected in the composite, Y/C and SCART signals.
- In the case of HDTV timing data, they are set to OFF when EXOR is selected as the serration setting item.

3.2.7 Concerning EQP-Fp and EQP-Bp

Equalizing pulses (EQP-Fp and EQP-Bp) can be selected on the V-Timing [MENU] screen, and various parameters can be set. The correspondences between the settings and operations are described using the table below.



EQP-Fp/EQP-Bp setting procedure

<For progressive scanning>

| Setting item | Details of setting |
|--------------|---|
| EQPfp | This sets the equalizing pulse inside the front porch. Setting range: 0.000 to 999.999 [ms], 0 to 99 [H] |
| EQPbp | This sets the equalizing pulse inside the back porch. Setting range: 0.000 to 999.999 [ms], 0 to 99 [H] |

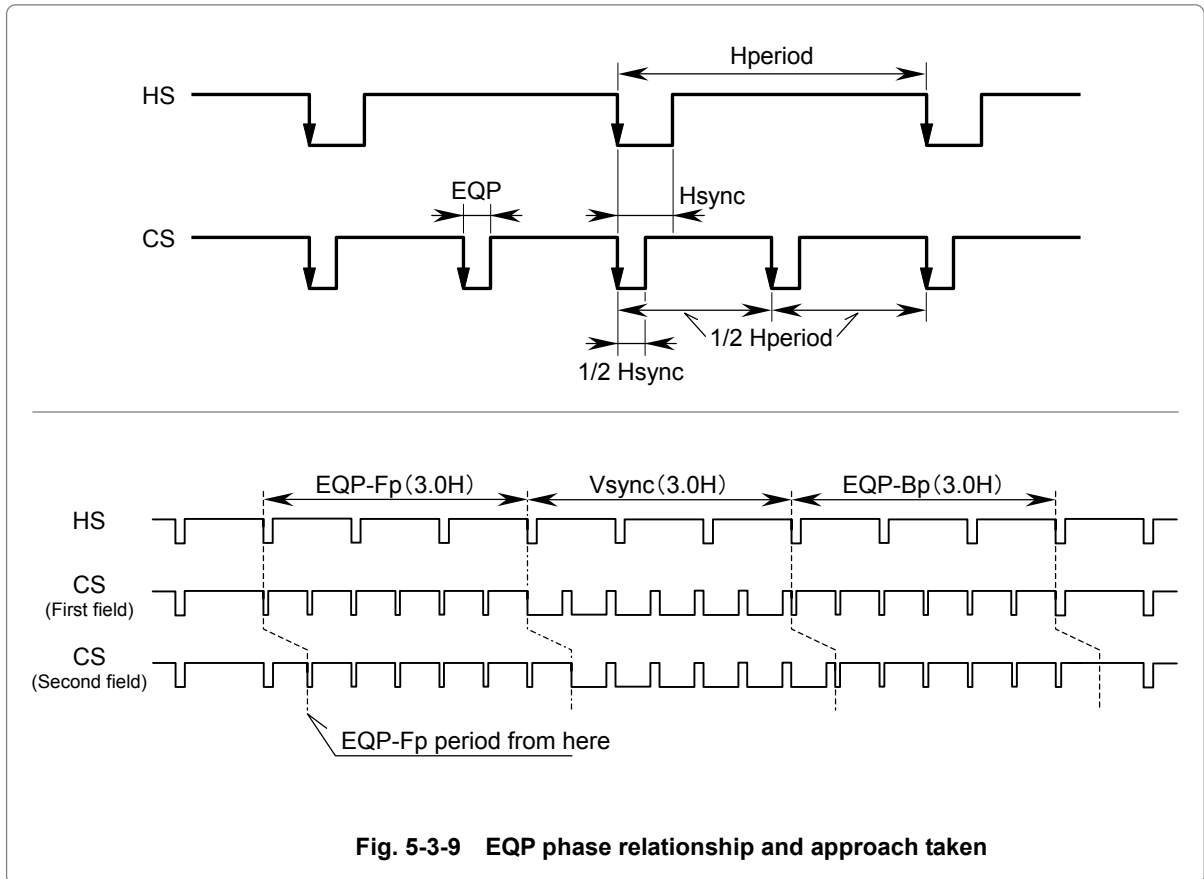
<For interlaced scanning>

| Setting item | Details of setting |
|----------------------|--|
| EQP-Fp1 (EQP-Fp2) | This sets the equalizing pulse inside the front porch. Setting range: 0.000 to 999.999 [ms], 0.0 to 99.0 [H] (in 0.5H increments) |
| EQP-Bp1 (EQP-Bp2) | This sets the equalizing pulse inside the back porch. Setting range: 0.000 to 999.999 [ms], 0.0 to 99.0 [H] (in 0.5H increments) |



- Set EQP-Fp 1 within the range of $[(EQP-Fp + 1H) \leq H_{frontp}]$ for tri-level sync signal outputs in the interlaced scanning mode.

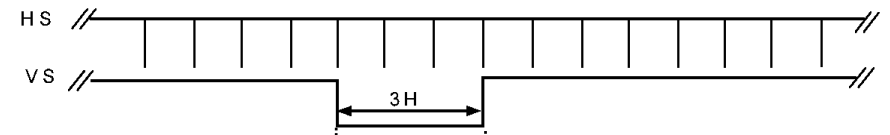
The figure below shows the EQP phase relationship and approach taken.



Example: Four examples of the EQP-Fp, EQP-Bp, EQP and Serration settings are shown below.

<Setting example 1>

| Setting item | Setting |
|--------------|---------|
| EQP-Fp | 0H |
| EQP-Bp | 0H |
| EQP | OFF |
| Serration | OFF |



<Setting example 2>

| Setting item | Setting |
|--------------|---------|
| EQP-Fp | 0H |
| EQP-Bp | 0H |
| EQP | OFF |
| Serration | 0.5H |



<Setting example 3>

| Setting item | Setting |
|--------------|---------|
| EQP-Fp | 3H |
| EQP-Bp | 3H |
| EQP | ON |
| Serration | 1H |



<Setting example 4>

| Setting item | Setting |
|--------------|---------|
| EQP-Fp | 3H |
| EQP-Bp | 0H |
| EQP | OFF |
| Serration | OFF |



4

INTERFACE SETTINGS

4.1 Output settings



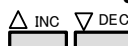







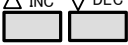








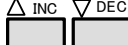

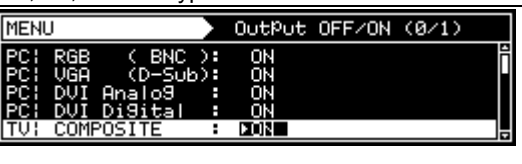
The following items are set as settings common to multiple video and audio output interfaces.

- Output interface on/off setting
- Sync signal on/off and polarity setting
- Level mode setting
- Aspect ratio setting
- Pattern drawing bit length (gray scale) setting
- RGB/YPbPr selection and color difference coefficient setting
- Analog level setting (temporary settings)
- Digital level setting (temporary settings)
- Audio sweep setting
- Audio level setting (temporary settings)






4.1.1 Setting the output interfaces to ON or OFF

“Output” (ON) or “not output” (OFF) can be selected for each output interface whether video or audio interface. It is set to ON for the internal sample timing data unless the ratings or specifications of the generator prevent this.






Example: In the case of EIA 1920 × 1080i@59.94, the COMPOSITE and Y/C signals are set to OFF, but the HDMI and analog component signals are set to ON.

| | |
|--|--|
| <p>(1) Select Program Edit using  or  or , and then press .</p> |  |
| <p>(2) Select Output using  or , and then press .</p> |  |
| <p>(3) Select All Output using  or , and then press .</p> |  |
| <p>(4) Select Output OFF/ON using  or , and then press  and .</p> |  |
| <p>(5) Select the interface whose settings are to be changed using  or , and then press .</p> |  |

PC, TV, etc. are types of interfaces.
















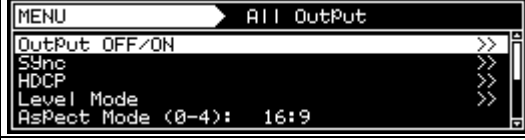














| | |
|---|--|
| <p>(6) Select OFF/ON using  or  , and then press .</p> |  |
|---|--|

<How to check the interfaces whose signals are output>

| | |
|--|--|
| <p>(1) On the initial screen, select  while holding down . Select  again while holding down  to exit from the OUTPUT STATUS screen.</p> |  |
|--|--|

4.1.2 Setting the sync signals to ON or OFF and setting the sync signal polarities

In this section, the sync signals are set to ON or OFF and the sync signal polarities are set for each output connector.

| | |
|--|--|
| <p>(1) Select Program Edit using   or  , and then press .</p> |  |
| <p>(2) Select Output using  or  , and then press .</p> |  |
| <p>(3) Select All Output using  or  , and then press .</p> |  |
| <p>(4) Select Sync using  or  , and then press .</p> |  |
| <p>(5) Select the items using  or  , and then press .</p> <p>Select the parameters using  or  , and then press .</p> | <p>HS/VS/CS and CV is set here. CV is a sync signal overlapping on analog video signal from RGB/YpbPr connectors and it denotes "Video-on-Sync" and this manual.</p> <p>For further details, refer to <Sync setting parameters> on the next page.</p> |
| <p></p> | <p>Display returns to the initial screen.</p> |

<Sync setting parameters>

| | | |
|-----------|---|--|
| HS | Used to set the HS connector output. | |
| | 0 | Off No output |
| | 1 | Nega The signal is output with a negative polarity. |
| | 2 | Posi The signal is output with a positive polarity. |
| VS | Used to set the VS connector output. | |
| | 0 | Off No output |
| | 1 | Nega The signal is output with a negative polarity. |
| | 2 | Posi The signal is output with a positive polarity. |
| CS | Used to set the CS connector output. | |
| | 0 | Off No output |
| | 1 | Nega The signal is output with a negative polarity. |
| | 2 | Posi The signal is output with a positive polarity. |
| CV | Used to set whether to superimpose Video-on-Sync onto the analog component signals. | |
| | 0 | Off Video-on-Sync is not superimposed. |
| | 1 | R Video-on-Sync is superimposed onto the R analog component signal. |
| | 2 | G Video-on-Sync is superimposed onto the G analog component signal. |
| | 3 | RG Video-on-Sync is superimposed onto the RG analog component signal. |
| | 4 | B Video-on-Sync is superimposed onto the B analog component signal. |
| | 5 | RB Video-on-Sync is superimposed onto the RB analog component signal. |
| | 6 | GB Video-on-Sync is superimposed onto the GB analog component signal. |
| 7 | RGB Video-on-Sync is superimposed onto the RGB analog component signal. | |











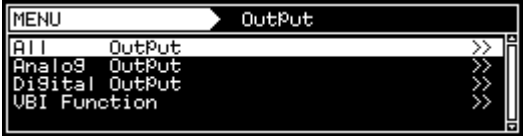






















- If the CS signal is a tri-level sync (HDTV timing) signals, its polarity cannot be changed.

4.1.3 Setting the level mode

Images can be output in the “limited” range of the HDMI standard. The output image range can be set for each unit. Similarly, the level setting can be established with interfaces other than HDMI (DVI, LVDS, parallel, analog) as well.

* With the analog interface, the gray scale of the video parts will change, but neither the pedestal level nor peak level will change from when the “full” range applies.

| | |
|---|--|
| <p>(1) Select Program Edit using  or , and then press   .</p> |  |
| <p>(2) Select Output using  or  , and then press .</p> |  |
| <p>(3) Select All Output using  or  , and then press .</p> |  |
| <p>(4) Select Level Mode using  or  , and then press .</p> |  |
| <p>(5) Select the unit using  or  , and then press .</p> <p>Select “limited” or “full” using  or  , and then press .</p> |  |
| <p>Select .</p> | <p>Display returns to the initial screen.</p> |

Video range when “full” is selected











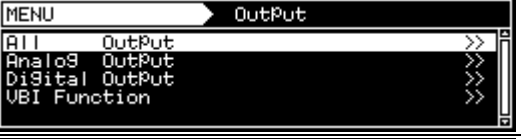






















| | 8 BIT | 10BIT | 12BIT | 16BIT |
|---------------|-------|--------|--------|---------|
| R/G/B/Y/Cb/Cr | 0-255 | 0-1023 | 0-4095 | 0-65535 |












Video range when “Limited” is selected

| | 8BIT | 10BIT | 12BIT | 16BIT |
|---------|--------|--------|----------|------------|
| R/G/B/Y | 16-235 | 64-940 | 256-3760 | 4096-60160 |
| Cb/Cr | 16-240 | 64-960 | 256-3840 | 4096-61440 |

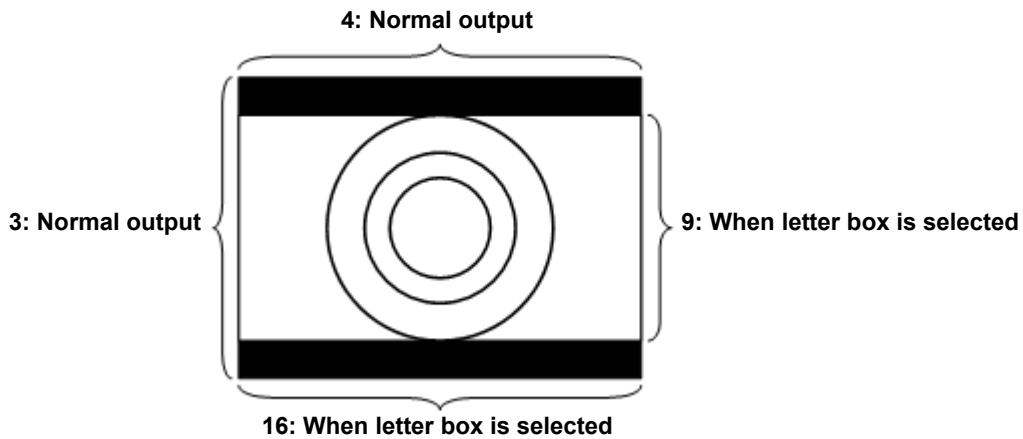
4.1.4 Setting the aspect ratio

In this section, the aspect ratio of the video signals is set.

| | | | | | | | | | | | | | | | | |
|--|---|--|-----|---------------------------------|---|----------------|--|---|------|----------------------------------|---|------------|--|---|------|---|
| <p>(1) Select Program Edit using  or  or  , and then press .</p> |  | | | | | | | | | | | | | | | |
| <p>(2) Select Output using  or  , and then press .</p> |  | | | | | | | | | | | | | | | |
| <p>(3) Select All Output using  or  , and then press .</p> |  | | | | | | | | | | | | | | | |
| <p>(4) Select Aspect Mode using  or  , and then press .</p> |  | | | | | | | | | | | | | | | |
| <p>(5) <Inputting the parameters> Select the parameters using  or  , and then press  Alternatively: Select the parameters using the number keys ( to ) , and then press .</p> | <p>Set the aspect ratio.</p> <table border="1"> <tr> <td>0</td> <td>4:3</td> <td>The aspect ratio is set to 4:3.</td> </tr> <tr> <td>1</td> <td>4:3 Letter Box</td> <td>The aspect ratio is set to 4:3 letter box.</td> </tr> <tr> <td>2</td> <td>16:9</td> <td>The aspect ratio is set to 16:9.</td> </tr> <tr> <td>3</td> <td>Resolution</td> <td>The aspect ratio is set to the same resolution as the screen resolution.</td> </tr> <tr> <td>4</td> <td>User</td> <td>The aspect ratio of the user's choice is set.</td> </tr> </table> <p>* The 4:3 letter box setting takes effect only with SDTV timing signals.</p> | 0 | 4:3 | The aspect ratio is set to 4:3. | 1 | 4:3 Letter Box | The aspect ratio is set to 4:3 letter box. | 2 | 16:9 | The aspect ratio is set to 16:9. | 3 | Resolution | The aspect ratio is set to the same resolution as the screen resolution. | 4 | User | The aspect ratio of the user's choice is set. |
| 0 | 4:3 | The aspect ratio is set to 4:3. | | | | | | | | | | | | | | |
| 1 | 4:3 Letter Box | The aspect ratio is set to 4:3 letter box. | | | | | | | | | | | | | | |
| 2 | 16:9 | The aspect ratio is set to 16:9. | | | | | | | | | | | | | | |
| 3 | Resolution | The aspect ratio is set to the same resolution as the screen resolution. | | | | | | | | | | | | | | |
| 4 | User | The aspect ratio of the user's choice is set. | | | | | | | | | | | | | | |
| <p>(6) If User was set in step (5), users can set the aspect ratio of their choice. Select UserAspect using  or  , and then press .</p> |  | | | | | | | | | | | | | | | |

| | | |
|---|-----------------------|---|
| (7) <Inputting the parameters> | Set the aspect ratio. | |
| | H | The aspect ratio is set in the horizontal direction. Setting range: 0 to 255 |
| Select the parameters using  or   , and then press  . Select the numerical value using  or   , and then press  . Alternatively: Select the parameters using the number keys  to  , and then press  . | V | The aspect ratio is set in the vertical direction. Setting range: 0 to 255 |

- * Although images are normally output with the 4:3 aspect ratio, the images which are output when 4:3 letter box has been selected will be in the 16:9 aspect ratio. For this reason, the top and bottom of the images are filled in with black and output. When 4:3 letter box has been selected as the aspect ratio, the images output will appear as shown below.



4.1.5 Setting the bit length (gray scale) for pattern drawing

































































































































































The bit length (gray scale) applying when drawing test patterns can be set.










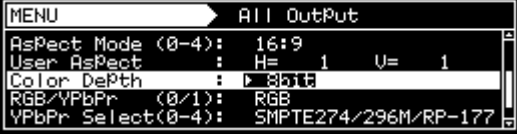





It can either be set either separately for each program or it can be fixed irrespective of the programs.

a) The same specific bit length is designated.

























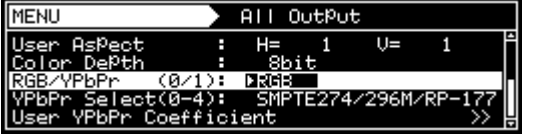












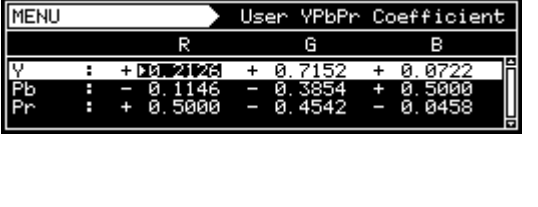
b) The bit length is set for each program.


















a) Designating the same specific bit length

| | |
|-----|--|
| (1) | Select Configuration using   or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or  or |
|-----|--|

| | | |
|-----|--|--|
| (3) | Select All Output using  or   , and then press  . |  |
| (4) | Select Color Depth using  or   , and then press  . |  |
| (5) | Select the bit length using  or   , and then press  . |  |



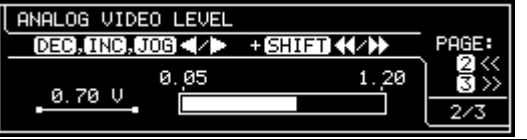








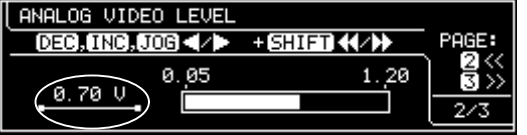
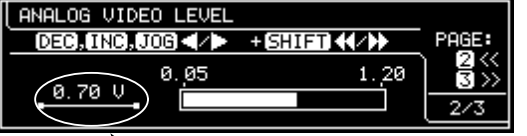


4.1.6 Selecting RGB or YPbPr and setting the color difference coefficients

| | | | | | | | | | | | | | | |
|-----|--|---|---|------------------------------|--|---|-------------------|--|-------------------|---|-------------------|--|---|-------------|
| (1) | <p>Select Program Edit using  or  or  INC  DEC, and then press .</p> |  <pre> MENU Program Edit Program Name : ▶EIA1920x1080P@60 Timing (TIM) >>> OutPut (TIM) >>> Audio (TIM) >>> Pattern (PAT) >>> </pre> | | | | | | | | | | | | |
| (2) | <p>Select Output using  or  INC  DEC, and then press .</p> |  <pre> MENU OutPut All OutPut >>> Analog OutPut >>> Digital OutPut >>> VBI Function >>> </pre> | | | | | | | | | | | | |
| (3) | <p>Select All Output using  or  INC  DEC, and then press .</p> |  <pre> MENU All OutPut OutPut OFF/ON >>> Sync >>> HDCP >>> Level Mode >>> Aspect Mode (0-4): 16:9 </pre> | | | | | | | | | | | | |
| (4) | <p>Select RGB/YPbPr using  or  INC  DEC, and then press .</p> <p>Select the parameters using  or  INC  DEC, and then press .</p> | <p>Select the color difference coefficients (YPbPr) or RGB.</p>  <pre> MENU All OutPut User Aspect : H= 1 U= 1 Color Depth : 8bit RGB/YPbPr (0/1): RGB YPbPr Select(0-4): SMPTE274/296M/RP-177 User YPbPr Coefficient >>> </pre> <table border="1"> <tr> <td>0</td> <td>RGB</td> <td>The signals are output as RGB signals.</td> </tr> <tr> <td>1</td> <td>YPbPr</td> <td>The signals are output as YPbPr signals.</td> </tr> </table> <p>* The RGB or YPbPr signals of the HDMI unit cannot be changed using this menu. For further details on how to change these signals, refer to "4.2.2 HDMI setting procedure."</p> | 0 | RGB | The signals are output as RGB signals. | 1 | YPbPr | The signals are output as YPbPr signals. | | | | | | |
| 0 | RGB | The signals are output as RGB signals. | | | | | | | | | | | | |
| 1 | YPbPr | The signals are output as YPbPr signals. | | | | | | | | | | | | |
| (5) | <p>When YPbPr was selected in step (4), select the color difference coefficients.</p> <p>Select YPbPr Select using  or  INC  DEC, and then press .</p> <p>Select the parameters using  or  INC  DEC, and then press .</p> | <p>Select the color difference coefficients.</p> <table border="1"> <tr> <td>0</td> <td>SMPTE274M/296M/RP-177</td> <td rowspan="3">The color difference coefficients of one of the standards on the left are set.</td> </tr> <tr> <td>1</td> <td>SMPTE-240M</td> </tr> <tr> <td>2</td> <td>SMPTE-293M</td> </tr> <tr> <td>3</td> <td>SMPTE-125M</td> <td rowspan="2">The coefficients of the user's choice are set.</td> </tr> <tr> <td>4</td> <td>User</td> </tr> </table> | 0 | SMPTE274M/296M/RP-177 | The color difference coefficients of one of the standards on the left are set. | 1 | SMPTE-240M | 2 | SMPTE-293M | 3 | SMPTE-125M | The coefficients of the user's choice are set. | 4 | User |
| 0 | SMPTE274M/296M/RP-177 | The color difference coefficients of one of the standards on the left are set. | | | | | | | | | | | | |
| 1 | SMPTE-240M | | | | | | | | | | | | | |
| 2 | SMPTE-293M | | | | | | | | | | | | | |
| 3 | SMPTE-125M | The coefficients of the user's choice are set. | | | | | | | | | | | | |
| 4 | User | | | | | | | | | | | | | |
| (6) | <p>If YPbPr was selected in step (4) and User in step (5), users can set the coefficient of their own choice.</p> <p>Select UserYPbPr Coefficient using  or  INC  DEC, and then press .</p> |  <pre> MENU User YPbPr Coefficient R G B Y : +0.2128 +0.7152 +0.0722 Pb : -0.1146 -0.3854 +0.5000 Pr : +0.5000 -0.4542 -0.0458 </pre> | | | | | | | | | | | | |

| | |
|---|---|
| <p>(7) Select the color matrix coefficients.</p> <p>Select the parameters using  or  , and then press  .</p> <p>Select the numerical value using  or    , and then press  .</p> <p>Alternatively: Select the parameters using the number keys ( to ), and then press  .</p> | <p>○ Caution for setting the coefficients</p> <ul style="list-style-type: none"> • The Y line must total 1.0000. • The sum of the coefficient for Pb and Pr respectively must be 0. |
| <p>Select .</p> | <p>Display returns to the initial screen.</p> |

4.1.7 Setting the analog level (temporary settings)

In this section, the video level of the analog component signals is set. The video signal gray scale remains unchanged, and only the level is changed.

| | | |
|-----|--|---|
| (1) | <p>Set the analog video level using  →</p> <p></p> |  |
| (2) | <p>Change the analog level using  or </p> <p></p> <p><When increasing the setting speed> Change the analog level (more quickly) using</p> <p> +  or  +  </p> |  <p style="text-align: center;">Analog level</p>  <p style="text-align: center;">Analog level</p> |
| (3) | <p>Select  or </p> | <p>Display returns to the initial screen.</p> |

Analog video level range

| When Video-on-Sync is not superimposed | When Video-on-Sync is superimposed |
|--|------------------------------------|
| 0.05 V to 1.2 V | 0.3 V to 1.2 V |


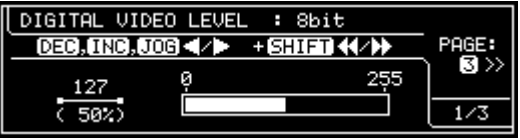








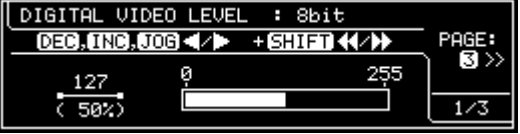


For the Video-on-Sync setting, refer to “4.1.2 Setting the sync signals to ON or OFF and setting the sync signal polarities.”

CAUTION

- The values set here are not saved as program data.
- They take effect only with the component output signals of the PC analog unit.

4.1.8 Setting the digital level (temporary settings)

In this section, the gray scale of the video signals is set.
For further details on setting the gray scale, refer to “4.1.5 Setting the bit length (gray scale) for pattern drawing.”

















| | |
|--|---|
| <p>(1) Select , and then set the digital video level.</p> |  |
| <p>(2) Change the digital level using  or  or .</p> <p><When increasing the setting speed> Change the digital level (more quickly) using  +  or  +  .</p> |  <p>0 to 1023 with 10 bits 0 to 4095 with 12 bits 0 to 65535 with 16 bits</p> |
| <p>(3) Select  or .</p> | <p>Display returns to the initial screen.</p> |














- The values set here are not saved as program data.

4.1.9 Audio sweep settings

The audio output frequency can be raised or lowered at the set interval.

| | |
|---|--|
| <p>(1) Select Program Edit using  →  or  , and then press .</p> |  |
| <p>(2) Select Audio using  or  , and then press .</p> |  |
| <p>(3) Select Audio Sweep using  or  , and then press .</p> |  |

| | | |
|-----|--|---|
| (4) | <p>Select the items using  or  ,</p> <p>and then press .</p> <p><Inputting the parameters></p> <p>Select the parameters using  or </p> <p>, and then press .</p> <p>Alternatively:</p> <p>Select the parameters using the number keys</p> <p> , and then press .</p> | <p>For further details, refer to <Audio sweep setting parameters>.</p> |
|-----|--|---|

<Audio sweep setting parameters>

| | | | |
|-----|----------------------|------|--|
| (1) | Sweep (0/1) | | Used to enable or disable the sweep function. |
| | | 0 | OFF Disable |
| | | 1 | ON Enable |
| (2) | Repeat (0-15) | | Used to set the number of repeats. |
| | | 0 | Infinity Repeated indefinitely. |
| | | 1-15 | Repeated for the set number of times only. |
| (3) | Frequency Min | | Used to set the minimum frequency. Setting range: 200 Hz to 20000 Hz |
| (4) | Frequency Max | | Used to set the maximum frequency. Setting range: 200 Hz to 20000 Hz |















CAUTION

- When using the function with HDMI, select **Internal PCM** as the **Digital Audio > Source** setting.

4.1.10 Setting the audio level (temporary settings)

In this section, the audio output level is set.

The level which was set in "4.11.2 Analog audio signals" for analog audio or which was set using <Internal PCM setting parameters> in "4.2.5 Embedded audio, high bit rate audio (option)" for HDMI is 0 dB.

| | | |
|-----|--|--|
| (1) | Select  ,  and then  . (PAGE: 3 of 3) |  |
| (2) | Change the audio level using  or  .  . <When increasing the setting speed> Use  +  or  +   . | |
| (3) | Select  or  . | Display returns to the initial screen. |

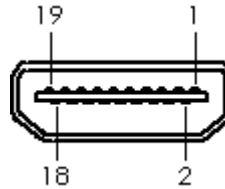


- The values set here are not saved as program data.
- When they are used with HDMI, select **Internal PCM** as the **Digital Audio > Source** setting.

4.2 HDMI

4.2.1 Connectors and pin assignments

■ HDMI

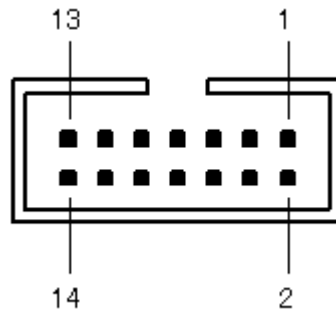


| Pin no. | Signal |
|---------|----------------------------|
| 1 | TMDS DATA2+ |
| 2 | TMDS DATA2 SHIELD |
| 3 | TMDS DATA2- |
| 4 | TMDS DATA1+ |
| 5 | TMDS DATA1 SHIELD |
| 6 | TMDS DATA1- |
| 7 | TMDS DATA0+ |
| 8 | TMDS DATA0 SHIELD |
| 9 | TMDS DATA0- |
| 10 | TMDS CLK+ |
| 11 | TMDS CLK SHIELD |
| 12 | TMDS CLK- |
| 13 | CEC |
| 14 | RESERVE |
| 15 | DDC CLK |
| 16 | DDC DATA |
| 17 | GROUND (for +5 V) |
| 18 | +5 V (DDC power supply *1) |
| 19 | HOT PLUG DETECT |
| Shell | FG |

*1: Restrictions apply to the supply current of the DDC power supply. Refer to “12.2 Concerning the maximum current consumption of the DDC power supply.”

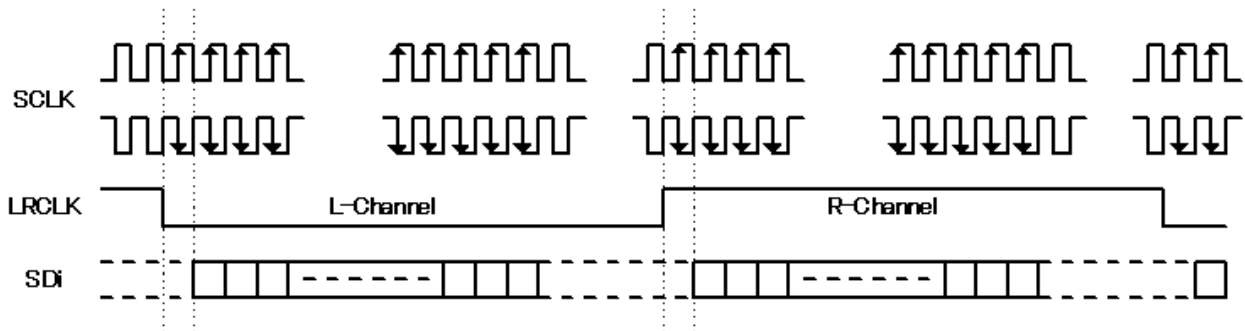
■ I2S (Option)

Connector: 7614-5002PL (made by 3M)

































| Pin no. | Signal | Description |
|---------|----------|---|
| 1 | MCLK IN | Input a clock signal with a frequency of 24.576 MHz or 22.5792 MHz. |
| 2 | GND | |
| 3 | SCLK IN | Input the I2S SCLK signal. |
| 4 | GND | |
| 5 | LRCLK IN | Input the I2S LRCLK signal. |
| 6 | GND | |
| 7 | SD0 IN | Input the I2S SD0 signal. |
| 8 | GND | |
| 9 | SD1 IN | Input the I2S SD1 signal. |
| 10 | GND | |
| 11 | SD2 IN | Input the I2S SD2 signal. |
| 12 | GND | |
| 13 | SD3 IN | Input the I2S SD3 signal. |
| 14 | GND | |

Input the signals at the following timing.



* For the SCLK and LRCLK signals, input signals which are synchronized with MCLK.
The leading edge of SCLK can be set using "4.2.5 Embedded audio, high bit rate audio (option)."

4.2.2 HDMI setting procedure

| | |
|---|--|
| <p>(1) Select Program Edit using  or  or  , and then press .</p> |  <pre> MENU Program Edit Program Name : ▶EIA1920x1080P@60 Timing (TIM) >>> OutPut (TIM) >>> Audio (TIM) >>> Pattern (PAT) >>> </pre> |
| <p>(2) Select Output using  or  , and then press .</p> |  <pre> MENU OutPut All OutPut >>> Analog OutPut >>> Digital OutPut >>> VBI Function >>> </pre> |
| <p>(3) Select Digital Output using  or , and then press .</p> |  <pre> MENU Digital OutPut General >>> DVI >>> HDMI >>> LVDS >>> Parallel >>> </pre> |
| <p>(4) Select HDMI using  or  , and then press .</p> |  <pre> MENU HDMI OutPut 1ch (0-1): ▶ON 2ch (0-1): ON HDMI or DVI (0-2): HDMI Video Format(0-2): YCbCr4:4:4 Width (0-3): Auto </pre> |
| <p>(5) Select the items using  or  , and then press .</p> <p><Inputting the parameters></p> <p>Select the parameters using  or , and then press .</p> <p>Alternatively: Select the parameters using the number keys ( to ) , and then press .</p> | <p>For further details on the parameters, refer to <HDMI unit setting parameters> on the next page.</p> |

<HDMI unit setting parameters>

| | | | | |
|-----|--|---|-------------------|---|
| (1) | Output 1ch (0/1) Output 2ch (0/1) | Set on or off for each channel here. The same settings as the ones described in "4.1.1 Setting the output interfaces to ON or OFF" can also be established. | | |
| | | 0 | Off | No signal output |
| | | 1 | On | Signal output |
| (2) | HDMI or DVI (0-2) | An HDMI connection can be made to DVI by cable conversion. Set the operations at this time here. | | |
| | | 0 | HDMI | The full functions of HDMI can be used. |
| | | 1 | DVI | This setting differs from HDMI in the following ways. Info Frame and Packet are not sent. Audio is not supported. Up to 8 bits are supported. Deep Color is not supported. |
| (3) | Video Format (0-2) | The color space of the images output from HDMI is set here. | | |
| | | 0 | RGB | The images are output using RGB signals. |
| | | 1 | YCbCr4:2:2 | The images are output using YCbCr4:2:2 signals. |
| (4) | Width (0-3) | The bit length of the images output from HDMI is set here. A setting independent of the bit length for pattern drawing can be selected or the same bit length can be selected automatically. * The portion by which the bit length for pattern drawing exceeds the bit length which has been set here is discarded. A deficient portion is filled with zeros. Refer to "4.1.5 Setting the bit length (gray scale) for pattern drawing." | | |
| | | 0 | Auto | 8, 10 or 12 bits are selected here automatically depending on the bit length for pattern drawing. |
| | | 1 | 8 bit | 8-bit output |
| | | 2 | 10 bit | 10-bit output |
| | | 3 | 12 bit | 12-bit output |
| (5) | Audio Output (0/1) | The embedded audio output is set here. * For the embedded audio settings, refer to "4.2.5 Embedded audio, high bit rate audio (option)." | | |
| | | 0 | Off | No embedded audio output |
| | | 1 | On | Embedded audio output |
| (6) | InfoFrame | When sending InfoFrame automatically in line with the color space and other settings, refer to " 4.2.3 InfoFrame/Packet. " When sending InfoFrame with the data of the user's choice, refer to " 4.2.3 InfoFrame/Packet. " | | |
















4.2.3 InfoFrame/Packet

InfoFrame can send the values which are optimal for the video and audio output conditions. In addition, it is possible to send InfoFrame using values differing from the output conditions to reproduce illegal operation conditions.

Use one of the following operations to send InfoFrame:

- a) Send the optimal values automatically.
- b) Set separate InfoFrame values, and send them.

a) Sending the optimal values automatically

| | | | | | | | | |
|-----|---|---|---|------------|--------------------------------|---|-----------|----------------------------|
| (1) | Select Configuration using  or  or  , and then press  . |  | | | | | | |
| (2) | Select HDMI using  or  , and then press  . |  | | | | | | |
| (3) | Select Auto Select using  or  or  , and then press  or  . | The values are now selected and sent automatically.  <table border="1"> <tr> <td>0</td> <td>OFF</td> <td>The optimal value is not sent.</td> </tr> <tr> <td>1</td> <td>ON</td> <td>The optimal value is sent.</td> </tr> </table> | 0 | OFF | The optimal value is not sent. | 1 | ON | The optimal value is sent. |
| 0 | OFF | The optimal value is not sent. | | | | | | |
| 1 | ON | The optimal value is sent. | | | | | | |









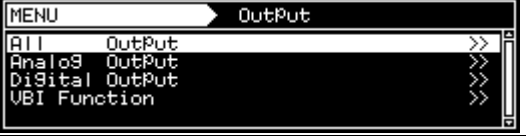





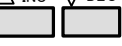



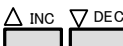








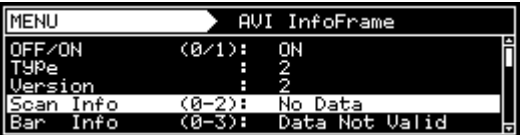
<List of automatically selected items>

- If program data has been saved when Auto Select is set to ON, the values which were set by automatic selection will be saved.
- A dash (“-”) denotes that the value of the original setting is used.

| Item | Setting/reference section | | | | | | | | | |
|---------------------------|--|-------------------|--|--|---|--------|--------------------|-----|----------|--|
| AVI InfoFrame | | | | | | | | | | |
| | AFD pattern (see “6.7 Aspect ratio patterns”) now displayed | | | Setting other than the one given on the left | | | | | | |
| Active Format Information | Valid | | | - | | | | | | |
| Active Format Aspect | The setting accords with the AFD > Type setting. | | | - | | | | | | |
| Top Bar | Value calculated from AFD, Timing setting | | | - | | | | | | |
| Bottom Bar | | | | | | | | | | |
| Left Bar | | | | | | | | | | |
| Right Bar | | | | | | | | | | |
| RGB or YCbCr | The setting accords with the HDMI > Video Format setting. | | | | | | | | | |
| Picture Aspect | The setting accords with the HDMI > AVI InfoFrame > Video Code setting. (EIA/CEA-861 standard met) | | | | | | | | | |
| Repetition | The setting accords with the H-Timing > Repetition setting. | | | | | | | | | |
| Audio InfoFrame | | | | | | | | | | |
| | The setting accords with the Digital Audio > Source setting. | | | | | | | | | |
| | Ext.ANALOG to L-PCM Int.L-PCM | Ext.ANALOG to DSD | Int.DSD (Option) | Setting other than the one given on the left | | | | | | |
| Sampling Frequency | - | 44.1 kHz | The DSD File information is used. | - | | | | | | |
| Channel Count | The setting accords with the number of channels set to ON by Digital Audio > Output Channel . | | | - | | | | | | |
| | <table border="1"> <tr> <td>0</td> <td>1</td> <td>2 to 8</td> </tr> <tr> <td>Refer StreamHeader</td> <td>2ch</td> <td>2 to 8ch</td> </tr> </table> | | | 0 | 1 | 2 to 8 | Refer StreamHeader | 2ch | 2 to 8ch | |
| 0 | 1 | 2 to 8 | | | | | | | | |
| Refer StreamHeader | 2ch | 2 to 8ch | | | | | | | | |
| ACP Packet | | | | | | | | | | |
| | The setting accords with the ACP Packet > ACP_Type setting. | | | | | | | | | |
| | DVD-Audio | | Setting other than the one given on the left | | | | | | | |
| DVD-Audio_Type | 1 | | 0 | | | | | | | |
| Copy_Permission | - | | 0 (Copy Freely) | | | | | | | |
| Copy_Number | - | | 0 (1 copies) | | | | | | | |
| Quality | - | | 0 | | | | | | | |
| Transaction | - | | 0 (Not Present) | | | | | | | |
| ISRC Packet | | | | | | | | | | |
| | A The setting accords with the ACP Packet > ACP_Type setting. | | | | | | | | | |
| | DVD-Audio | | Setting other than the one given on the left | | | | | | | |
| OFF/ON ISRC1 | - | | OFF | | | | | | | |
| ISRC2 | The setting accords with the ISRC Packet > ISRC_Cont setting. | | | OFF | | | | | | |
| | <table border="1"> <tr> <td>0</td> <td>1</td> </tr> <tr> <td>OFF</td> <td>-</td> </tr> </table> | | | 0 | 1 | OFF | - | | | |
| 0 | 1 | | | | | | | | | |
| OFF | - | | | | | | | | | |

b) Setting separate InfoFrame and Packet values and sending them

This setting can be performed when “off” has been selected for Auto Select in a) **Sending the optimal values automatically.**

| | | |
|-----|---|---|
| (1) | Select Program Edit using  or  or  , and then press  . |  <pre> MENU Program Edit Program Name : ▶EIA1920x1080P@60 Timing (TIM) >>> Output (TIM) >>> Audio (TIM) >>> Pattern (PAT) >>> </pre> |
| (2) | Select Output using  or  , and then press  . |  <pre> MENU Output All Output >>> Analog Output >>> Digital Output >>> VBI Function >>> </pre> |
| (3) | Select Digital Output using  or  , and then press  . |  <pre> MENU Digital Output General >>> DVI >>> HDMI >>> LVDS >>> Parallel >>> </pre> |
| (4) | Select HDMI using  or  , and then press  . |  <pre> MENU HDMI Output 1ch (0/1): ▶ON 2ch (0/1): ON HDMI or DVI (0-2): HDMI Video Format(0-2): YCbCr4:4:4 Width (0-3): Auto </pre> |
| (5) | Select the Info Frame and Packet to be set. Select Info Frame/Packet using  or  , and then press  . |  <pre> MENU InfoFrame/Packet AVI InfoFrame >>> SPD InfoFrame >>> Audio InfoFrame >>> MPEG InfoFrame >>> ACP Packet >>> </pre> |
| (6) | <Inputting the parameters> Select the parameters using  or  , and then press  . Alternatively: Select the parameters using the number keys ( to ) , and then press  . | Example: When AVI-Info Frame is selected  <pre> MENU AVI InfoFrame OFF/ON (0/1): ON Type : 2 Version : 2 Scan Info (0-2): No Data Bar Info (0-3): Data Not Valid </pre> For further details on InfoFrame and Packet, refer to <InfoFrame and Packet setting parameters> . |

<InfoFrame and Packet setting parameters>

Listed below are the 7 InfoFrame and Packet setting parameters.

- AVI InfoFrame
- SPD InfoFrame
- Audio InfoFrame
- MPEG InfoFrame
- ACP Packet
- ISRC Packet
- Gamut Metadata Packet

■ AVI InfoFrame

“AVI InfoFrame” stands for Auxiliary Video Information InfoFrame. The information (including the color space and aspect ratio) of the transmission images is stored in it, and sent.

| | | | | |
|--|-----------------------|---|---|---------------------------------------|
| (1) | OFF/ON | This setting determines whether the AVI InfoFrame is to be sent. | | |
| | | 0 | OFF | The AVI InfoFrame is not sent. |
| | | 1 | ON | The AVI InfoFrame is sent. |
| Listed below are the AVI InfoFrame settings. * These settings are not related to the video and audio output settings. | | | | |
| (2) | Type | This is the AVI InfoFrame type setting. | | |
| | | 2 | * “Type” is displayed only. It cannot be changed. | |
| (3) | Version | This is the AVI InfoFrame version setting. | | |
| | | 1 | Version 1 | |
| | | 2 | Version 2 | |
| (4) | Scan Info | This sets the Scan Information. (It sets whether processing is required for the transmitted images.) | | |
| | | 0 | No Data | No Data |
| | | 1 | Overscanned | Composed for an overscanned display. |
| | | 2 | Underscanned | Composed for an underscanned display. |
| (5) | Bar Info | This sets the Bar Info (valid/invalid for the Bar Information described later). | | |
| | | 0 | Data Not Valid | Bar Data not valid |
| | | 1 | Vertical Valid | Vert.Bar info valid |
| | | 2 | Horizontal Valid | Horiz.Bar info Valid |
| | | 3 | Vert. & Horiz. Valid | Vert. And Horiz. Bar Info valid |
| (6) | ActiveF Info | This is the Active Format Information Present setting (valid/invalid for the Active Format Aspect Ratio described later). | | |
| | | 0 | No Data | No Data |
| | | 1 | Valid | Active Format Information Valid |
| (7) | RGB or YCbCr | This is the RGB or YCbCr (color space of transmitted images) setting. | | |
| | | 0 | RGB | |
| | | 1 | YCbCr 4:2:2 | |
| | | 2 | YCbCr 4:4:4 | |
| (8) | ActiveF Aspect | This is the Active Format Aspect Ratio (aspect ratio of the video parts (excluding Bar of letter box, etc.)) setting. | | |
| | | 0 | Same Picture | |
| | | 1 | 4:3 (center) | |
| | | 2 | 16:9 (center) | |
| | | 3 | 14:9 (center) | |
| | | 4 | Box 16:9 (top) | |
| | | 5 | Box 14:9 (top) | |
| | | 6 | Box > 16:9 (center) | |
| | | 7 | 4:3 (14:9 center) | |
| | | 8 | 16:9 (14:9 center) | |
| | | 9 | 16:9 (4:3 center) | |
| (9) | Picture Aspect | This is the Picture Aspect Ratio (aspect ratio of the video parts including Bar of letter box, etc.) setting. | | |
| | | 0 | No Data | No Data |
| | | 1 | 4:3 | 4:3 |

| | | | | |
|------|-----------------------|--|--|---|
| | | 2 | 16:9 | 16:9 |
| (10) | Scaling | This is the Non-Uniform Picture Scaling (direction in which transmitted images have been scaled) setting. | | |
| | | 0 | No Known | No Known non-uniform Scaling |
| | | 1 | Horizontal | Picture has been scaled horizontally |
| | | 2 | Vertical | Picture has been scaled vertically |
| | | 3 | Horiz. & Vert. | Picture has been scaled horizontally and vertically |
| (11) | Colorimetry | This is the Colorimetry (the standard whose coefficients were used for conversion into color difference signals) setting. | | |
| | | 0 | No Data | No Data |
| | | 1 | SMPTE170M ITU601 | SMPTE170M/ITU601 |
| | | 2 | ITU709 | ITU709 |
| | | 3 | Extended Valid | Extended Colorimetry Information Valid |
| (12) | Video Code | This is the Video Format Identification Code setting. | | |
| | | 0 - 59 | For further details on the timings indicated by Code, refer to CEA-861-D. | |
| (13) | Repetition | 1 - 10 | This is the Pixel Repetition Factor setting. | |
| (14) | Top Bar | 0 - 65535 | This is the Line Number of End of Top Bar setting (letter box top bar size setting). | |
| (15) | Bottom Bar | 0 - 65535 | This is the Line Number of Start of Bottom Bar setting (letter box bottom bar size setting). | |
| (16) | Left Bar | 0 - 65535 | This is the Pixel Number of End of Left Bar setting (pillar box left bar size setting). | |
| (17) | Right Bar | 0 - 65535 | This is the Pixel Number of Start of Right Bar setting (pillar box right bar size setting). | |
| (18) | Quantization | This is the RGB Quantization Range setting (quantization range when RGB images apply for Colorimetry). | | |
| | | 0 | Default | |
| | | 1 | Limited Range | |
| | | 2 | Full Range | |
| (19) | Extended Colo. | This is the Extended Colorimetry setting. (This is referenced when Extended Valid has been set as the Colorimetry setting.) | | |
| | | 0 | XvYCC601 | |
| | | 1 | XvYCC709 | |
| (20) | IT content | This is the IT Content (whether the transmitted images are IT content) setting. | | |
| | | 0 | No Data | |
| | | 1 | IT content | |

■ SPD InfoFrame

“SPD InfoFrame” stands for Source Product Description InfoFrame. The information of the transmission device is stored in it, and sent.

| | | | |
|--|----------------------------|--|---|
| (1) | OFF/ON | This setting determines whether the SPD InfoFrame is to be sent. | |
| | | 0 | OFF The SPD InfoFrame is not sent. |
| | | 1 | ON The SPD InfoFrame is sent. |
| Listed below are the SPD InfoFrame settings. * These settings are not related to the video and audio output settings. | | | |
| (2) | Type | This is the SPD InfoFrame type setting. | |
| | | 3 | * “Type” is displayed only. It cannot be changed. |
| (3) | Version | This is the SPD InfoFrame version setting. | |
| | | 1 | Version1 * “Version” is displayed only. It cannot be changed. |
| (4) | Vendor Name | This is the Vendor Name (name of the transmission device vendor) setting. | |
| | | Maximum 8 characters | For further details on the input method, refer to steps (2) and following in section “2.3 Setting the names.” |
| (5) | Product Description | This the Product Description (name of the transmission device (model name, etc.)) setting. | |
| | | Maximum 16 characters | For further details on the input method, refer to steps (2) and following in section “2.3 Setting the names.” |
| (6) | Source Device | This is the Source Device Information (the type of transmission device) setting. | |
| | | 0 | Unknown |
| | | 1 | Digital STB |
| | | 2 | DVD Player |
| | | 3 | D-VHS |
| | | 4 | HDD Video recorder |
| | | 5 | DVC |
| | | 6 | DSC |
| | | 7 | Video CD |
| | | 8 | Game |
| | | 9 | PC general |
| A | Blue-Ray Disc | | |
| B | Super Audio CD | | |

■ Audio InfoFrame

The transmission audio information is stored in the Audio InfoFrame, and sent.

| | | | |
|--|--------------------------|--|--|
| (1) | OFF/ON | This setting determines whether the Audio InfoFrame is to be sent. | |
| | | 0 | OFF The Audio InfoFrame is not sent. |
| | | 1 | ON The Audio InfoFrame is sent. |
| Listed below are the Audio InfoFrame settings. * These settings are not related to the video and audio output settings. | | | |
| (2) | Type | This is the AVI Audio InfoFrame type setting. | |
| | | 4 | * "Type" is displayed only. It cannot be changed. |
| (3) | Version | This is the Audio InfoFrame version setting. | |
| | | 1 | * "Version" is displayed only. It cannot be changed. |
| (4) | Coding Type | This is the Audio Coding Type setting. | |
| | | 0 | Refer StreamHeader Refer to Stream Header |
| | | 1 | IEC60958 PCM |
| | | 2 | AC-3 |
| | | 3 | MPEG1 (Layers 1&2) |
| | | 4 | MP3 (MPEG1 Layer 3) |
| | | 5 | MPEG2 (multi ch.) |
| | | 6 | AAC |
| | | 7 | DTS |
| | | 8 | ATRAC |
| | | 9 | One Bit Audio |
| | | A | Dolby Digital + |
| | | B | DTS-HD |
| C | MLP | | |
| D | DST | | |
| E | WMA Pro | | |
| (5) | Channel Count | This is the Audio Channel Count setting. | |
| | | 0 | Refer StreamHeader Refer to Stream Header |
| | | 1 | 2 ch |
| | | ↓ | ↓ |
| | | 7 | 8 ch |
| (6) | Sampling Freq | This is the Sampling Frequency setting. | |
| | | 0 | Refer StreamHeader Refer to Stream Header |
| | | 1 | 32 kHz |
| | | 2 | 44.1 kHz |
| | | 3 | 48 kHz |
| | | 4 | 88.2 kHz |
| | | 5 | 96 kHz |
| | | 6 | 176.4 kHz |
| 7 | 192 kHz | | |
| (7) | Sample Size | This is the Sample Size setting. | |
| | | 0 | Refer StreamHeader Refer to Stream Header |
| | | 1 | 16 bit |
| | | 2 | 20 bit |
| 3 | 24 bit | | |
| (8) | Speaker Placement | This is the Channel/Speaker Allocation setting. | |

| | | 8ch | 7ch | 6ch | 5ch | 4ch | 3ch | 2ch | 1ch | |
|-----------|--------------------------|---|-------------------------------------|-----|-----|---|-----|-----|-----|--|
| 0 | | | - | - | - | - | - | FR | FL | |
| 1 | | | - | - | - | - | LFE | FR | FL | |
| 2 | | | - | - | - | FC | - | FR | FL | |
| 3 | | | - | - | - | FC | LFE | FR | FL | |
| 4 | | | - | - | RC | - | - | FR | FL | |
| 5 | | | - | - | RC | - | LFE | FR | FL | |
| 6 | | | - | - | RC | FC | - | FR | FL | |
| 7 | | | - | - | RC | FC | LFE | FR | FL | |
| 8 | | | - | RR | RL | - | - | FR | FL | |
| 9 | | | - | RR | RL | - | LFE | FR | FL | |
| 10 | | | - | RR | RL | FC | - | FR | FL | |
| 11 | | | - | RR | RL | FC | LFE | FR | FL | |
| 12 | | | RC | RR | RL | - | - | FR | FL | |
| 13 | | | RC | RR | RL | - | LFE | FR | FL | |
| 14 | | | RC | RR | RL | FC | - | FR | FL | |
| 15 | | | RC | RR | RL | FC | LFE | FR | FL | |
| 16 | RRC | RLC | RR | RL | - | - | - | FR | FL | |
| 17 | RRC | RLC | RR | RL | - | - | LFE | FR | FL | |
| 18 | RRC | RLC | RR | RL | FC | - | - | FR | FL | |
| 19 | RRC | RLC | RR | RL | FC | - | LFE | FR | FL | |
| 20 | FRC | FLC | - | - | - | - | - | FR | FL | |
| 21 | FRC | FLC | - | - | - | - | LFE | FR | FL | |
| 22 | FRC | FLC | - | - | FC | - | - | FR | FL | |
| 23 | FRC | FLC | - | - | FC | - | LFE | FR | FL | |
| 24 | FRC | FLC | - | RC | - | - | - | FR | FL | |
| 25 | FRC | FLC | - | RC | - | - | LFE | FR | FL | |
| 26 | FRC | FLC | - | RC | FC | - | - | FR | FL | |
| 27 | FRC | FLC | - | RC | FC | - | LFE | FR | FL | |
| 28 | FRC | FLC | RR | RL | - | - | - | FR | FL | |
| 29 | FRC | FLC | RR | RL | - | - | LFE | FR | FL | |
| 30 | FRC | FLC | RR | RL | FC | - | - | FR | FL | |
| 31 | FRC | FLC | RR | RL | FC | - | LFE | FR | FL | |
| (9) | Level Shift Value | This is the Level Shift Value setting. | | | | | | | | |
| | | 0 -15 | The decibel (dB) level is set here. | | | | | | | |
| (10) | Down-mix | This is the Down –mix Inhibit Flag setting. | | | | | | | | |
| | | 0 | Permitted / No Info | | | Permitted or no information about any assertion of this | | | | |
| | | 1 | Prohibited | | | Prohibited | | | | |

■ MPEG InfoFrame

If the original source of the data prior to its conversion to HDMI is MPEG data, its information is stored in MPEG InfoFrame, and sent.

| | | | |
|---|---------------------|---|--|
| (1) | OFF/ON | This setting determines whether the MPEG InfoFrame is to be sent. | |
| | | 0 | OFF The MPEG InfoFrame is not sent. |
| | | 1 | ON The MPEG InfoFrame is sent. |
| Listed below are the MPEG InfoFrame settings. * These settings are not related to the video and audio output settings. | | | |
| (2) | Type | This is the MPEG InfoFrame type setting. | |
| | | 5 | * "Type" is displayed only. It cannot be changed. |
| (3) | Version | This is the MPEG InfoFrame version setting. | |
| | | 1 | * "Version" is displayed only. It cannot be changed. |
| (4) | Bit Rate | 0 - 4294 M 967 k 295 Hz | This is the MPEG bit rate setting. |
| (5) | Field Repeat | This is the Field Repeat setting. | |
| | | 0 | New Field(picture) |
| | | 1 | Repeated Field |
| (6) | Frame | This is the MPEG Frame setting. | |
| | | 0 | Unknown(No Data) |
| | | 1 | I Picture |
| | | 2 | B Picture |
| | | 3 | P Picture |

■ ACP Packet

"ACP Packet" stands for Audio Content Protection Packet. The copyright protection information added to DVD-Audio and Super Audio CD contents is stored in it, and sent.

| | | | |
|---|-----------------------|--|---|
| (1) | OFF/ON | This setting determines whether the ACP Packet is to be sent. | |
| | | 0 | OFF The ACP Packet is not sent. |
| | | 1 | ON The ACP Packet is sent. |
| Listed below are the ACP Packet settings. * These settings are not related to the video and audio output settings. | | | |
| (2) | ACP_Type | This is the ACP Type setting. | |
| | | 0 | Generic Audio |
| | | 1 | IEC60958 Audio |
| | | 2 | DVD-Audio |
| | | 3 | Super Audio CD |
| (3) | DVD-Audio Type | This is the DVD-Audio_Type_Dependent_Generation setting. | |
| | | 0 | * This must be set to 1 when "DVD-Audio" has been selected as the ACP_Type setting. |
| (4) | CopyPermission | Audio_Copy_permission (the information concerning the permission to copy DVD-Audio content) is set here. | |
| | | 0 | Copy Freely |
| | | 1 | (reserved) |
| | | 2 | Specify CopyNumber |
| | | 3 | No More Copies |
| (5) | Copy_Number | Audio_copy_number (the number of times DVD-Audio content may be copied) is set here. | |
| | | 0 | 1 copies |

| | | | | |
|------|-------------------------|--|------------------------------|--|
| | | 1 | 2 copies | |
| | | 2 | 4 copies | |
| | | 3 | 6 copies | |
| | | 4 | 8 copies | |
| | | 5 | 10 copies | |
| | | 6 | 3 copies | |
| | | 7 | Copy OneGeneration | |
| (6) | Quality | Audio_Quality (the quality in which DVD-Audio content is to be copied) is set here. | | |
| | | | No. of channels | Sampling frequency |
| | | 0 | 2 channels or less | Lower than 48 kHz |
| | | 1 | 2 channels or less | No restrictions |
| | | 2 | No restrictions | No restrictions |
| | | 3 | No restrictions | Lower than 48 kHz |
| | | | | 16 bits or less |
| (7) | Transaction | Audio_Transaction (whether the status of optional access control is contained in the DVD-Audio data) is set here. | | |
| | | 0 | Not Present | not present |
| | | 1 | (reserved) | Reserved for copyright management system use |
| (8) | Count_A | Count_A (the number of times the Super Audio CD contents can be copied by an approved secure recorder) is set here. | | |
| | | 0 | Prohibited | |
| | | 1 - 254 | Allowed from 1 to 254 times | |
| | | 255 | No restrictions | |
| (9) | Count_S | Count_S (the number of times the Super Audio CD contents can be copied by a secure recorder) is set here. | | |
| | | 0 | Prohibited | |
| | | 1 - 254 | Allowed from 1 to 254 times | |
| | | 255 | No restrictions | |
| (10) | Count_U | Count_U (the number of times the Super Audio CD contents can be copied by an unlisted recorder) is set here. | | |
| | | 0 | Prohibited | |
| | | 1 - 254 | Allowed from 1 to 254 times | |
| | | 255 | No restrictions | |
| (11) | CCI_Flags_Q_A | CCI_Flags_Q_A (the quality in which Super Audio content is to be copied by an approved secure recorder) is set here. | | |
| | | 0 | CD Quality | |
| | | 1 | Unlimited DSD Quality | |
| (12) | CCI_Flags_Q_S | CCI_Flags_Q_S (the quality in which Super Audio content is to be copied by a secure recorder) is set here. | | |
| | | 0 | CD Quality | |
| | | 1 | Unlimited DSD Quality | |
| (13) | CCI_Flags_Q_U | CCI_Flags_Q_U (the quality in which Super Audio content is to be copied by an unlisted recorder) is set here. | | |
| | | 0 | CD Quality | |
| | | 1 | Unlimited DSD Quality | |
| (14) | CCI_Flags_Move_A | CCI_Flags_Move_A (whether copying of Super Audio content by individual track onto an approved secure recorder is allowed) is set here. | | |
| | | 0 | Not Allowed | |

| | | | |
|------|-------------------------|---|--------------------|
| | | 1 | Allowed |
| (15) | CCI_Flags_Move_S | CCI_Flags_Move_S (whether copying of Super Audio content by individual track onto a secure recorder is allowed) is set here. | |
| | | 0 | Not Allowed |
| | | 1 | Allowed |
| (16) | CCI_Flags_Move_U | CCI_Flags_Move_U (whether copying of Super Audio content by individual track onto an unlisted recorder is allowed) is set here. | |
| | | 0 | Not Allowed |
| | | 1 | Allowed |

■ ISRC Packet

“ISRC Packet” stands for International Standard Recording Code Packet. The sound source identification codes and other information are stored in it, and sent.

| | | | |
|--|--------------------------|---|--|
| (1) | OFF/ON ISRC1 | Whether to send the ISRC1 Packet is set here. | |
| | | 0 | OFF The ISRC1 Packet is not sent. |
| | | 1 | ON The ISRC1 Packet is sent. |
| (2) | OFF/ON ISRC2 | Whether to send the ISRC2 Packet is set here. | |
| | | 0 | OFF The ISRC2 Packet is not sent. |
| | | 1 | ON The ISRC2 Packet is sent. |
| Listed below are the ISRC Packet settings. * These settings are not related to the video and audio output settings. | | | |
| (3) | ISRC_Cont | This is the ISRC Continued setting. | |
| | | 0 | ISRC2 is not sent. |
| | | 1 | ISRC2 is sent. |
| (4) | ISRC_Valid | This is the ISRC Valid setting. (ISRC Valid indicates whether data has been set to the ISRC_Status in the ISRC Packet and whether the UPC_EAN_ISRC_XX field is valid.) | |
| | | 0 | Invalid |
| | | 1 | Valid |
| (5) | ISRC_Status | This is the ISRC_Status setting. (ISRC_Status indicates the position on the current track.) | |
| | | 0 | Starting |
| | | 1 | Intermediate |
| | | 2 | Ending |
| (6) | Validity Info | This is the Validity information setting. (This indicates whether the ISRC and UPC/EAN data is valid or invalid.) | |
| | | 0 | Vo Validity |
| | | 1 | ISRC |
| | | 2 | UPC/EAN |
| | | 3 | UPC/EAN and ISRC |
| (7) | Catalogue Code | This is the Catalogue Code (UPC/EAN #1 - 13) setting. Number consisting of 13 digits | |
| (8) | Country Code | This is the Country Code (ISRC #1 - 2) setting. Character string consisting of 2 letters | |
| (9) | First Owner Code | This is the First Owner Code (ISRC #3 - 5) setting. Character string consisting of 3 alphanumerics | |
| (10) | Year of Rec. Code | This is the Year-of-recording code (ISRC #6 - 7) setting. | |

| | | |
|------|----------------------------|---|
| | | Number consisting of 2 digits |
| (11) | Recording-item Code | This is the Recording code / Recording-item code (ISRC #8 -12) setting. |
| | | Number consisting of 5 digits |

■ Gamut Metadata Packet

If the transmission images have been sent by xvYCC, their color space information (range, etc.) is stored in the Gamut Metadata Packet, and sent.

| | | | | |
|--|----------------------------|--|--|--|
| (1) | OFF/ON | This setting determines whether the Gamut Metadata Packet is to be sent. | | |
| | | 0 | OFF | The Gamut Metadata Packet is not sent. |
| | | 1 | ON | The Gamut Metadata Packet is sent. |
| Listed below are the Gamut Metadata Packet settings. * These settings are not related to the video and audio output settings. | | | | |
| (2) | Next-Field | This is the Next_Field setting. (This indicates whether GBD (Gamut Boundary Description) sent in this Gamut Metadata Packet is applicable to the next video field.) | | |
| | | 0 | Not applicable | |
| | | 1 | Applicable | |
| (3) | No_Current_GBD | This is the No_Current_GBD setting. (This indicates whether GBD sent in this Gamut Metadata Packet is valid or invalid.) | | |
| | | 0 | Invalid | |
| | | 1 | Valid | |
| (4) | GBD_Profile | This is the GBD_Profile setting. | | |
| | | 0 | P0 | |
| | | 1 | P1 | |
| | | 2 | P2 | |
| | | 3 | P3 | |
| (5) | AffectedGamutSeqNum | 0 - 15 | This is the Affected_Gamut_Seq_Num setting. (This indicates the number of GBD (Gamut boundary description) sent in this Gamut Metadata Packet.) | |
| (6) | Current_GamutSeqNum | 0 - 15 | This is the Current_Gamut_Seq_Num setting. (This indicates the number of the GBD that applies to the current video field.) | |
| (7) | Packet_Seq | This is the Packet_Seq setting. (This identifies what this Gamut Metadata Packet is in the Gamut Metadata Packet Sequence.) | | |
| | | 0 | Intermediate | Intermediate packet in sequence |
| | | 1 | First | First packet in sequence |
| | | 2 | Last | Last packet in sequence |
| | | 3 | Only | Only packet in sequence |
| (8) | Format_Flag | This is the Format_Flag setting. (This indicates the format of the GBD sent.) | | |
| | | 0 | Vertices/Facets | Vertices/Facets description |
| | | 1 | Range | Range description |
| (9) | Colorprecision | This is the GBD_Color_Precision setting. (This indicates the precision (bit width) of the vertex and range data in GBD.) | | |
| | | 0 | 8 bit | |

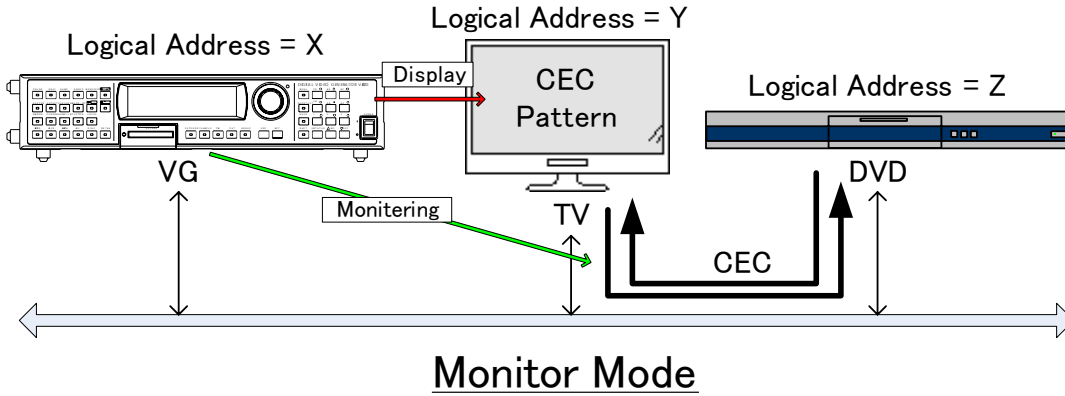
| | | | | |
|------|---------------------------------|--|--|--|
| | | 1 | 10 bit | |
| | | 2 | 12 bit | |
| (10) | Color_Space | This is the GBD_Color_Space setting. ■ When Vertices/facets (0) has been selected as the Format_Flag setting | | |
| | | 0 | ITU-R BT.709 | ITU-R BT.709 (using RGB) |
| | | 1 | xvYCC601 | xvYCC601 (IEC61966-2-4-SD) (using YCbCr) |
| | | 2 | xvYCC709 | xvYCC709 (IEC61966-2-4-HD) (using YCbCr) |
| | | 3 | XYZ | XYZ |
| | | ■ When Range (1) has been selected as the Format_Flag setting | | |
| | | 0 | Reserved | Reserved |
| | | 1 | xvYCC601 | RGB expression of xvYCC601 coordinates |
| | | 2 | xvYCC709 | RGB expression of xvYCC709 coordinates |
| | | 3 | Reserved | Reserved |
| (11) | Number_Vertices | This is the Number_Vertices setting. * This is displayed only when Vertices/facets (0) has been selected as the Format_Flag setting. | | |
| | | Colorprecision = 8 bit: 4 - 8 10 bit: 4 - 6 12 bit: 4 - 5 | | |
| (12) | Packed_GBD_Vertices_Data | This is the Packed_GBD_Vertices_Data setting. * This is displayed only when Vertices/facets (0) has been selected as the Format_Flag setting. | | |
| | Data1 | Colorprecision = 8 bit: 0 - 255 10 bit: 0 - 1023 12 bit: 0 - 4095 | The Y, Cb and Cr values of the colors (Data) are set here. | |
| | Data2 | | | |
| | Data3 | | | |
| | Data4 | | | |
| (13) | Packed_Range_Data | This is the Packed_Range_Data setting. * This is displayed only when Range (1) has been selected as the Format_Flag setting. | | |
| | Min_Red | Colorprecision = 8 bit: -3.96875 - +3.96875 10 bit: -3.9921875 - +3.9921875 12 bit: -3.998046875 - +3.998046875 | The Range Data of the colors (Red, Green and Blue) are set here. | |
| | Max_Red | | | |
| | Min_Green | | | |
| | Max_Green | | | |
| | Min_Blue | | | |
| | Max_Blue | | | |

4.2.4 CEC function

HDMI can send and receive the CEC commands, and display them on the screen. The CEC function has three operation modes.

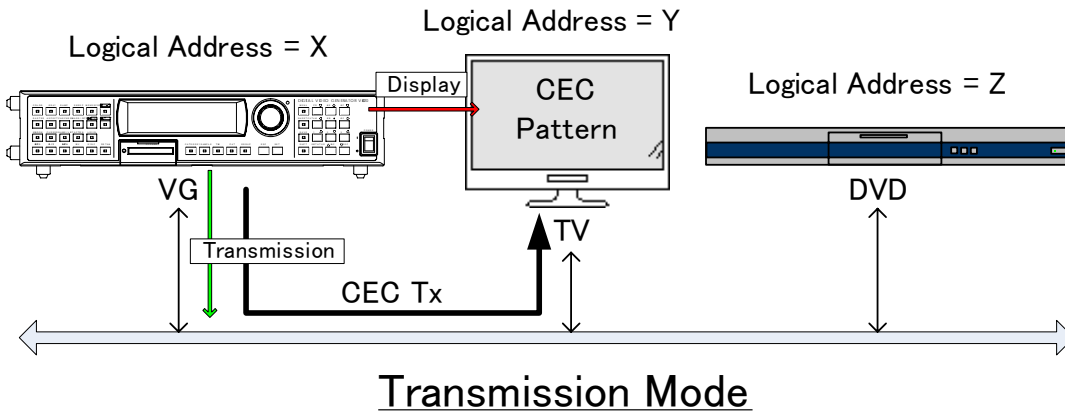
a) Monitor mode (Monitor)

In this mode, the sending and receiving of the commands generated between the equipment connected to CEC are displayed on the screen.



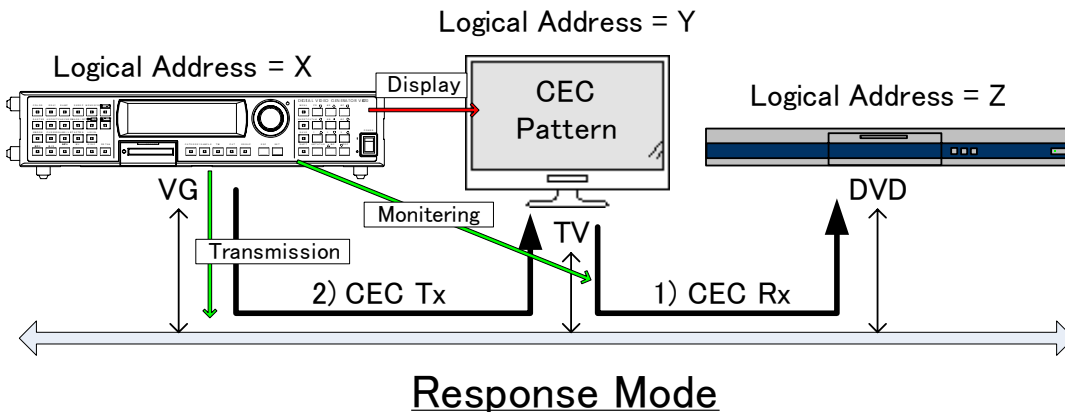
b) Transmission mode (Transmission)

In this mode, the commands are sent from the generator to the designated logical address.

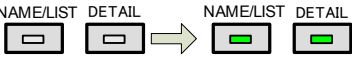











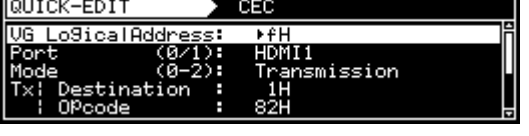


c) Response mode (Response)

In this mode, the commands are sent as responses when the designated commands have been transmitted.

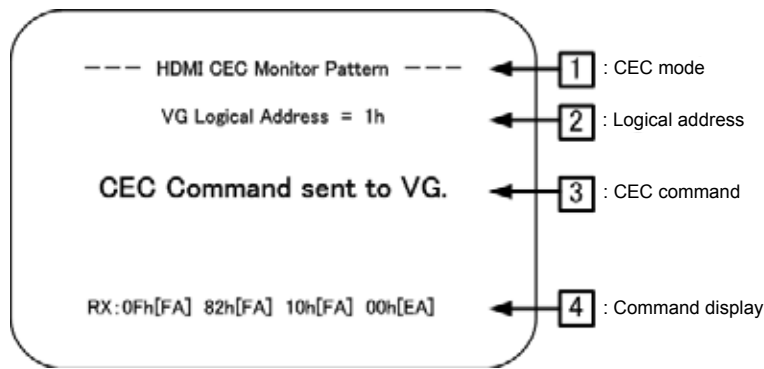


<CEC display procedure>

| | | |
|-----|--|--|
| (1) |  |  |
| (2) | <p><Selecting the CEC></p> <p>Select the CEC using  or  , and then press .</p> |  |
| (3) | <p><Detailed setting: Selecting EDIT></p> <p>Select EDIT using  or  , and then press .</p> <p>Alternatively, select EDIT using .</p> |  |
















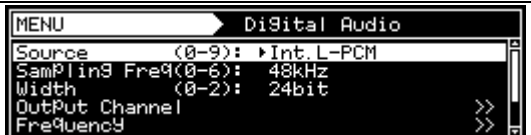











<Table of CEC setting items>

| | | | | | | |
|--|---|---|--|------------------------------|---|--------------|
| (1) | VG Logical Address | This sets the logical address of the VG generator. (0 to F) | | | | |
| (2) | Port (0-1) | This sets the port used for CEC execution. | | | | |
| | <table border="1"> <tr> <td>0</td> <td>HDMI1</td> <td>CEC is executed using HDMI1.</td> </tr> <tr> <td>1</td> <td>HDMI2</td> <td>CEC is executed using HDMI2.</td> </tr> </table> | 0 | HDMI1 | CEC is executed using HDMI1. | 1 | HDMI2 |
| 0 | HDMI1 | CEC is executed using HDMI1. | | | | |
| 1 | HDMI2 | CEC is executed using HDMI2. | | | | |
| (3) | Mode (0-2) | This sets the operation mode. | | | | |
| | 0 | Monitor | The CEC commands are monitored. | | | |
| | 1 | Transmission | The CEC commands set using items (4) to (7) are transmitted. | | | |
| 2 | Response | When commands have been received under conditions (8) to (12), the CEC commands set using items (4) to (7) are transmitted. | | | | |
| Set here the CEC commands to be sent from the VG-870/871. | | | | | | |
| The following items are set when Transmission or Response has been selected as the Mode setting . | | | | | | |
| (4) | Tx Destination | - | This sets the address of the destination (transmission destination of CEC commands). | | | |
| (5) | Tx Opcode | - | This sets the OPCode. | | | |
| (6) | Tx Data Length | 0 to 14 | This sets the length of the Tx data . | | | |
| (7) | Tx Data [H] 1-6 /7-12/13-14 | - | This sets the CEC command data. | | | |
| Set here the CEC commands to be received from the VG-870/871. | | | | | | |
| The following items are set when Response has been selected as the Mode setting . | | | | | | |
| (8) | Rx Initiator | 0 to E | This sets the address of the initiator. | | | |
| (9) | Rx Destination | 0 to F | This sets the address of the destination . This can also be set using a logical address other than the one set using item (1). | | | |
| (10) | Rx Opcode | - | This sets the OPCode. | | | |
| (11) | Rx Data Length | 0 to 14 | This sets the length of the Rx data . | | | |
| (12) | Rx Data [H] 1-6 /7-12/13-14 | - | This sets the CEC command data. | | | |



| | | |
|-----|--|--|
| (1) | CEC mode | <p>“HDMI CEC Monitor Pattern”: Monitor mode</p> <p>“HDMI CEC Transmission Pattern”: Command transmission mode</p> <p>“HDMI CEC Response Pattern”: Command response mode</p> |
| (2) | Logical Address | VG logical address which has been set |
| (3) | Display of CEC command transmission/reception status | <p>“CEC Command send to Device Xh” : The command has been transmitted to the unit (Destination Logical Address Xh) which has been set.</p> <p>“CEC Command sent to VG” : The generator has received a command. (Command destined to the VG logical address which has been set.)</p> <p>“CEC Command sent to Other Devices” : A command has been transferred to a unit other than the generator. (A command to a VG logical address other than the one which has been set)</p> <p>“Waiting Command ...” : Command wait status (which is established when a command is not transmitted or received for 5 or more seconds)</p> |
| (4) | Command display | <p>When the corresponding command has been transmitted or received, it is displayed.</p> <div style="border: 1px solid black; padding: 5px; margin: 10px auto; width: fit-content;"> <p>XXh[FA] XXh[FA] XXh[FA] XXh[EA]</p> </div> <ul style="list-style-type: none"> └─ Acknowledge A: Provided N: Not provided └─ End of Message E: Yes F: No └─ Data portion <p>TX is a command which is transmitted by the generator; RX is a command which is received by the generator.</p> <p>* Commands sent to the destination address of Fh are judged to be broadcast messages and indicated using the polarity which is the reverse of regular ACK polarity.</p> |


b) Setting the sound source, frequency, level, etc.

| | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|--|--|------------|------------|---|---------------------|--|---|---------------------|--|---|-----------------------------|---|---|---------------------------|---|---|-------------------|---|---|-----------------------|--|---|-----------------|--|
| <p>(1) Select Program Edit using  or  or  , and then press .</p> |  <pre> MENU Program Edit Program Name : ▶EIA1920x1080P@60 Timin9 < TIM > OutPut < TIM > Audio < TIM > Pattern < PAT > </pre> | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>(2) Select Audio using  or  , and then press .</p> |  <pre> MENU Audio Analog Audio >> Digital Audio >> Audio Sweep >> </pre> | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>(3) Select Digital Audio using  or  , and then press .</p> |  <pre> MENU Digital Audio Source (0-9): ▶Int. L-PCM Sampling Freq(0-6): 48kHz Width (0-2): 24bit Output Channel >> Frequency >> </pre> | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>(4) Select Source using  or  , and then press .</p> | <p>Source: Select the sound source. The setting parameters accompanying the sound source differ depending on the sound source which has been selected.</p> | | | | | | | | | | | | | | | | | | | | | | | | |
| <p><Inputting the parameters></p> <p>Select the parameters using  or  , and then press .</p> <p>Alternatively: Select the parameters using the number keys ( to ) , and then press .</p> | <table border="1"> <tr> <td>0</td> <td>OFF</td> <td>No output.</td> </tr> <tr> <td>1</td> <td>Ext. Optical</td> <td>Digital input (optical) signals are output. There are no parameters.</td> </tr> <tr> <td>2</td> <td>Ext. COAXIAL</td> <td>Digital input (coaxial) signals are output. There are no parameters.</td> </tr> <tr> <td>3</td> <td>Ext. Analog to L-PCM</td> <td>The analog input signals are converted into L-PCM signals, and output. For further details, refer to <Ext. Analog to L-PCM setting parameters>.</td> </tr> <tr> <td>4</td> <td>Ext. Analog to DSD</td> <td>The analog input signals are converted into DSD signals, and output. For further details, refer to <Ext. Analog to DSD setting parameters>.</td> </tr> <tr> <td>5</td> <td>Int. L-PCM</td> <td>Sinusoidal waves are output by the internal L-PCM. For further details, refer to <Int. L-PCM setting parameters>.</td> </tr> <tr> <td>6</td> <td>Int. Non L-PCM</td> <td>The non L-PCM sound saved in the internal memory is output. For further details, refer to <Int. Non L-PCM setting parameters>. Int. Non L-PCM is an option.</td> </tr> <tr> <td>7</td> <td>Int. DSD</td> <td>The DSD sound saved in the internal memory is output. For further details, refer to <Int. DSD setting parameters>. Int. DSD is an option.</td> </tr> </table> | 0 | OFF | No output. | 1 | Ext. Optical | Digital input (optical) signals are output. There are no parameters. | 2 | Ext. COAXIAL | Digital input (coaxial) signals are output. There are no parameters. | 3 | Ext. Analog to L-PCM | The analog input signals are converted into L-PCM signals, and output. For further details, refer to <Ext. Analog to L-PCM setting parameters> . | 4 | Ext. Analog to DSD | The analog input signals are converted into DSD signals, and output. For further details, refer to <Ext. Analog to DSD setting parameters> . | 5 | Int. L-PCM | Sinusoidal waves are output by the internal L-PCM. For further details, refer to <Int. L-PCM setting parameters> . | 6 | Int. Non L-PCM | The non L-PCM sound saved in the internal memory is output. For further details, refer to <Int. Non L-PCM setting parameters> . Int. Non L-PCM is an option. | 7 | Int. DSD | The DSD sound saved in the internal memory is output. For further details, refer to <Int. DSD setting parameters> . Int. DSD is an option. |
| 0 | OFF | No output. | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | Ext. Optical | Digital input (optical) signals are output. There are no parameters. | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | Ext. COAXIAL | Digital input (coaxial) signals are output. There are no parameters. | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | Ext. Analog to L-PCM | The analog input signals are converted into L-PCM signals, and output. For further details, refer to <Ext. Analog to L-PCM setting parameters> . | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | Ext. Analog to DSD | The analog input signals are converted into DSD signals, and output. For further details, refer to <Ext. Analog to DSD setting parameters> . | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | Int. L-PCM | Sinusoidal waves are output by the internal L-PCM. For further details, refer to <Int. L-PCM setting parameters> . | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | Int. Non L-PCM | The non L-PCM sound saved in the internal memory is output. For further details, refer to <Int. Non L-PCM setting parameters> . Int. Non L-PCM is an option. | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | Int. DSD | The DSD sound saved in the internal memory is output. For further details, refer to <Int. DSD setting parameters> . Int. DSD is an option. | | | | | | | | | | | | | | | | | | | | | | | |


| | | | | |
|--|--|---|---------------------------|---|
| | | 8 | Ext. I2S L-PCM | The L-PCM input signals from the I2S connector are output. For further details, refer to <Ext. I2S L-PCM setting parameters> . Ext. I2S L-PCM is an option. |
| | | 9 | Ext. I2S Non L-PCM | The Non L-PCM input signals from the I2S connector are output. For further details, refer to <Ext. I2S Non L-PCM setting parameters> . Ext. I2S Non L-PCM is an option. |

- * When selecting **Ext.Optical** or **Ext.Coaxial** as the **sound source setting**, select the setting after inputting stable signals. (Check the sampling frequency of the input audio signals only after selecting the setting.)

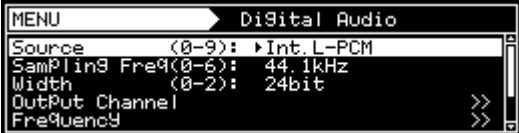
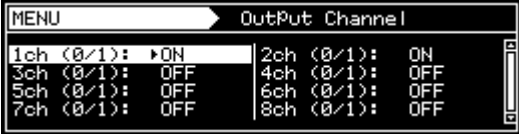
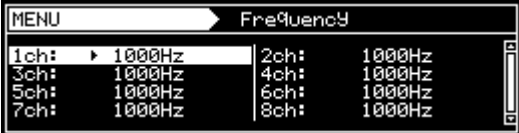


<Ext. Analog to L-PCM setting parameters>





| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|------------|---------------------------------|---|-----|------|---------------|---|---|-----------------|---|------------|---------------|---|-----|-----------------|---|------------|---------------|---|-----|------------------|--|------------|----------------|--|------------|------------|---|-----------|---|
| | Setting menu display |  | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (1) | Sampling Frequency (0-6) | Set the sampling frequency. <table border="1"> <tr><td>0</td><td>32 KHz</td><td>This is for sampling at a 32 kHz frequency.</td></tr> <tr><td>1</td><td>44.1 KHz</td><td>This is for sampling at a 44.1 kHz frequency.</td></tr> <tr><td>2</td><td>48 KHz</td><td>This is for sampling at a 48 kHz frequency.</td></tr> <tr><td>3</td><td>88.2 KHz</td><td>This is for sampling at a 88.2 kHz frequency.</td></tr> <tr><td>4</td><td>96 KHz</td><td>This is for sampling at a 96 kHz frequency.</td></tr> <tr><td>5</td><td>176.4 KHz</td><td>This is for sampling at a 176.4 kHz frequency.</td></tr> <tr><td>6</td><td>192 KHz</td><td>This is for sampling at a 192 kHz frequency.</td></tr> </table> | | 0 | 32 KHz | This is for sampling at a 32 kHz frequency. | 1 | 44.1 KHz | This is for sampling at a 44.1 kHz frequency. | 2 | 48 KHz | This is for sampling at a 48 kHz frequency. | 3 | 88.2 KHz | This is for sampling at a 88.2 kHz frequency. | 4 | 96 KHz | This is for sampling at a 96 kHz frequency. | 5 | 176.4 KHz | This is for sampling at a 176.4 kHz frequency. | 6 | 192 KHz | This is for sampling at a 192 kHz frequency. | | | | | |
| 0 | 32 KHz | This is for sampling at a 32 kHz frequency. | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 44.1 KHz | This is for sampling at a 44.1 kHz frequency. | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | 48 KHz | This is for sampling at a 48 kHz frequency. | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | 88.2 KHz | This is for sampling at a 88.2 kHz frequency. | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | 96 KHz | This is for sampling at a 96 kHz frequency. | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 176.4 KHz | This is for sampling at a 176.4 kHz frequency. | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | 192 KHz | This is for sampling at a 192 kHz frequency. | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (2) | Output Channel | Whether to set ON or OFF for channel 1 to 8 of the embedded audio is set here. <table border="1"> <tr><td colspan="2">MENU</td><td colspan="2">OutPut Channel</td></tr> <tr><td>1ch (0/1):</td><td>ON</td><td>2ch (0/1):</td><td>ON</td></tr> <tr><td>3ch (0/1):</td><td>OFF</td><td>4ch (0/1):</td><td>OFF</td></tr> <tr><td>5ch (0/1):</td><td>OFF</td><td>6ch (0/1):</td><td>OFF</td></tr> <tr><td>7ch (0/1):</td><td>OFF</td><td>8ch (0/1):</td><td>OFF</td></tr> </table> <table border="1"> <tr><td>0</td><td>OFF</td><td>No output.</td></tr> <tr><td>1</td><td>ON</td><td>With channels 1, 3, 5 and 7: The left-channel input is output. With channels 2, 4, 6 and 8: The right-channel input is output.</td></tr> </table> | | MENU | | OutPut Channel | | 1ch (0/1): | ON | 2ch (0/1): | ON | 3ch (0/1): | OFF | 4ch (0/1): | OFF | 5ch (0/1): | OFF | 6ch (0/1): | OFF | 7ch (0/1): | OFF | 8ch (0/1): | OFF | 0 | OFF | No output. | 1 | ON | With channels 1, 3, 5 and 7: The left-channel input is output. With channels 2, 4, 6 and 8: The right-channel input is output. |
| MENU | | OutPut Channel | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1ch (0/1): | ON | 2ch (0/1): | ON | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3ch (0/1): | OFF | 4ch (0/1): | OFF | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5ch (0/1): | OFF | 6ch (0/1): | OFF | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7ch (0/1): | OFF | 8ch (0/1): | OFF | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | OFF | No output. | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | ON | With channels 1, 3, 5 and 7: The left-channel input is output. With channels 2, 4, 6 and 8: The right-channel input is output. | | | | | | | | | | | | | | | | | | | | | | | | | | | |

<Ext. Analog to DSD setting parameters>


| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|------------|-----------------------|---|-----|------|--|----------------|--|------------|----|------------|----|------------|-----|------------|-----|------------|-----|------------|-----|------------|-----|------------|-----|---|------------|------------|---|-----------|---|
| | Setting menu display |  | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (1) | Output Channel | Whether to set ON or OFF for channel 1 to 8 of the embedded audio is set here. <table border="1"> <tr><td colspan="2">MENU</td><td colspan="2">OutPut Channel</td></tr> <tr><td>1ch (0/1):</td><td>ON</td><td>2ch (0/1):</td><td>ON</td></tr> <tr><td>3ch (0/1):</td><td>OFF</td><td>4ch (0/1):</td><td>OFF</td></tr> <tr><td>5ch (0/1):</td><td>OFF</td><td>6ch (0/1):</td><td>OFF</td></tr> <tr><td>7ch (0/1):</td><td>OFF</td><td>8ch (0/1):</td><td>OFF</td></tr> </table> <table border="1"> <tr><td>0</td><td>OFF</td><td>No output.</td></tr> <tr><td>1</td><td>ON</td><td>With channels 1, 3, 5 and 7: The left-channel input is output. With channels 2, 4, 6 and 8: The right-channel input is output.</td></tr> </table> | | MENU | | OutPut Channel | | 1ch (0/1): | ON | 2ch (0/1): | ON | 3ch (0/1): | OFF | 4ch (0/1): | OFF | 5ch (0/1): | OFF | 6ch (0/1): | OFF | 7ch (0/1): | OFF | 8ch (0/1): | OFF | 0 | OFF | No output. | 1 | ON | With channels 1, 3, 5 and 7: The left-channel input is output. With channels 2, 4, 6 and 8: The right-channel input is output. |
| MENU | | OutPut Channel | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1ch (0/1): | ON | 2ch (0/1): | ON | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3ch (0/1): | OFF | 4ch (0/1): | OFF | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5ch (0/1): | OFF | 6ch (0/1): | OFF | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7ch (0/1): | OFF | 8ch (0/1): | OFF | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | OFF | No output. | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | ON | With channels 1, 3, 5 and 7: The left-channel input is output. With channels 2, 4, 6 and 8: The right-channel input is output. | | | | | | | | | | | | | | | | | | | | | | | | | | | |

<Int. L-PCM setting parameters>


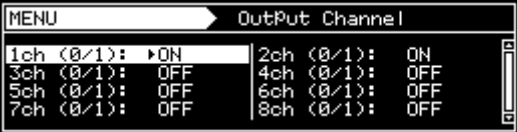
| | | | |
|-----|---------------------------------|--|--|
| | Setting menu display |  | |
| (1) | Sampling Frequency (0-6) | This sets the sampling frequency. | |
| | 0 | 32 KHz | This outputs the signals at a 32 kHz sampling frequency. |
| | 1 | 44.1 KHz | This outputs the signals at a 44.1 kHz sampling frequency. |
| | 2 | 48 KHz | This outputs the signals at a 48 kHz sampling frequency. |
| | 3 | 88.2 KHz | This outputs the signals at a 88.2 kHz sampling frequency. |
| | 4 | 96 KHz | This outputs the signals at a 96 kHz sampling frequency. |
| | 5 | 176.4 KHz | This outputs the signals at a 176.4 kHz sampling frequency. |
| | 6 | 192 KHz | This outputs the signals at a 192 kHz sampling frequency. |
| (2) | Width | This sets the bit length of the audio data. | |
| | 0 | 16 BIT | The audio data is output with 16 bits. |
| | 1 | 20 BIT | The audio data is output with 20 bits. |
| | 2 | 24 BIT | The audio data is output with 24 bits. |
| (3) | Output Channel | Whether to set ON or OFF for channels 1 to 8 of the embedded audio is set here. | |
| | |  | |
| | 0 | OFF | No output. |
| | 1 | ON | Output. |
| (4) | Frequency | This sets the frequency (sine wave) of the audio signals to be output. | |
| | |  | |
| | | 20 to 24000 | This sets the frequency in the 20 Hz to 24 kHz range. |
| (5) | Level InpMode | This sets the level input method. | |
| | 0 | dB (1-8ch All) | This sets all the channels 1 to 8 as a dB display. Setting range: -138.48 to 0.00 [dB] |
| | |  | |
| | 1 | BIT (1-8ch All) | This sets all the channels 1 to 8 as a bit display. Setting range: 0 to 7FFFFFFh |
| | |  | |

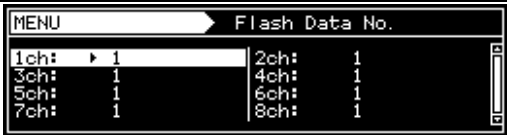
| | | | | |
|--|--|---|-----------------------------|--|
| | | 2 | db (1-8ch Separate) | <p>This sets channels 1 to 8 separately as a dB display. Setting range: -138.48 to 0.00 [dB]</p>  <p>Select the level here.</p>  |
| | | 3 | bit (1-8ch Separate) | <p>This sets channels 1 to 8 separately as a bit display. Setting range: 0 to 7FFFFFFh</p>  <p>Select the level here.</p>  |

<Int. Non L-PCM setting parameters> (Option)

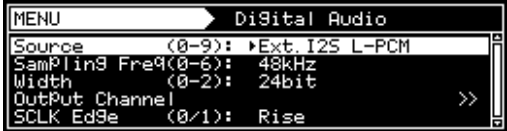
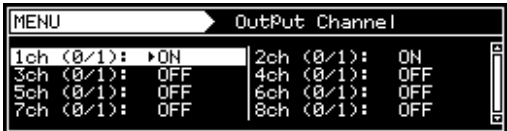
| | | |
|-----|-----------------------|--|
| | Setting menu display |  |
| (1) | Flash Data No. | <p>Set the audio data here. Setting range: 0 to 99 Set the registered audio data. * For further details on registering the audio data, refer to “4.2.7 Flash data entry.”</p> |

<Int. DSD setting parameters>


| | | | | | | | | |
|-----|-----------------------|--|---|------------|------------|---|-----------|---------|
| | Setting menu display |  | | | | | | |
| (1) | Output Channel | <p>This sets ON or OFF for channels 1 to 8 of the embedded audio.</p>  <table border="1"> <tr> <td>0</td> <td>OFF</td> <td>No output.</td> </tr> <tr> <td>1</td> <td>ON</td> <td>Output.</td> </tr> </table> | 0 | OFF | No output. | 1 | ON | Output. |
| 0 | OFF | No output. | | | | | | |
| 1 | ON | Output. | | | | | | |
| (2) | Flash Data No. | <p>Whether to set the audio data to be output in each channel is set here. Setting range: 1 to 99</p> | | | | | | |

| | | |
|--|--|--|
| | |  |
| | | <p>Register the audio data which has been registered.</p> <p>* For further details on registering the audio data, refer to “4.2.7 Flash data entry.”</p> |

<Ext. I2S L-PCM setting parameters> (Option)

| | | | | | | | | | | | | | | | | | | | | | | | |
|-----|---------------------------------|---|---|---------------|--|---|-----------------|--|---|---------------|--|---|-----------------|--|---|---------------|--|---|------------------|---|---|----------------|---|
| | Setting menu display |  | | | | | | | | | | | | | | | | | | | | | |
| (1) | Sampling Frequency (0-6) | <p>Set the sampling frequency of the audio signals which are input here.</p> <table border="1"> <tr> <td>0</td> <td>32 KHz</td> <td>The signals are input/output with a 32 kHz sampling frequency.</td> </tr> <tr> <td>1</td> <td>44.1 KHz</td> <td>The signals are input/output with a 44.1 kHz sampling frequency.</td> </tr> <tr> <td>2</td> <td>48 KHz</td> <td>The signals are input/output with a 48 kHz sampling frequency.</td> </tr> <tr> <td>3</td> <td>88.2 KHz</td> <td>The signals are input/output with a 88.2 kHz sampling frequency.</td> </tr> <tr> <td>4</td> <td>96 KHz</td> <td>The signals are input/output with a 96 kHz sampling frequency.</td> </tr> <tr> <td>5</td> <td>176.4 KHz</td> <td>The signals are input/output with a 176.4 kHz sampling frequency.</td> </tr> <tr> <td>6</td> <td>192 KHz</td> <td>The signals are input/output with a 192 kHz sampling frequency.</td> </tr> </table> | 0 | 32 KHz | The signals are input/output with a 32 kHz sampling frequency. | 1 | 44.1 KHz | The signals are input/output with a 44.1 kHz sampling frequency. | 2 | 48 KHz | The signals are input/output with a 48 kHz sampling frequency. | 3 | 88.2 KHz | The signals are input/output with a 88.2 kHz sampling frequency. | 4 | 96 KHz | The signals are input/output with a 96 kHz sampling frequency. | 5 | 176.4 KHz | The signals are input/output with a 176.4 kHz sampling frequency. | 6 | 192 KHz | The signals are input/output with a 192 kHz sampling frequency. |
| 0 | 32 KHz | The signals are input/output with a 32 kHz sampling frequency. | | | | | | | | | | | | | | | | | | | | | |
| 1 | 44.1 KHz | The signals are input/output with a 44.1 kHz sampling frequency. | | | | | | | | | | | | | | | | | | | | | |
| 2 | 48 KHz | The signals are input/output with a 48 kHz sampling frequency. | | | | | | | | | | | | | | | | | | | | | |
| 3 | 88.2 KHz | The signals are input/output with a 88.2 kHz sampling frequency. | | | | | | | | | | | | | | | | | | | | | |
| 4 | 96 KHz | The signals are input/output with a 96 kHz sampling frequency. | | | | | | | | | | | | | | | | | | | | | |
| 5 | 176.4 KHz | The signals are input/output with a 176.4 kHz sampling frequency. | | | | | | | | | | | | | | | | | | | | | |
| 6 | 192 KHz | The signals are input/output with a 192 kHz sampling frequency. | | | | | | | | | | | | | | | | | | | | | |
| (2) | Width | <p>This sets the bit length of the audio data which is input. (Only the channel status bits are set.)</p> <table border="1"> <tr> <td>0</td> <td>16 BIT</td> <td>The data is input/output as 16 bits.</td> </tr> <tr> <td>1</td> <td>20 BIT</td> <td>The data is input/output as 20 bits.</td> </tr> <tr> <td>2</td> <td>24 BIT</td> <td>The data is input/output as 24 bits.</td> </tr> </table> | 0 | 16 BIT | The data is input/output as 16 bits. | 1 | 20 BIT | The data is input/output as 20 bits. | 2 | 24 BIT | The data is input/output as 24 bits. | | | | | | | | | | | | |
| 0 | 16 BIT | The data is input/output as 16 bits. | | | | | | | | | | | | | | | | | | | | | |
| 1 | 20 BIT | The data is input/output as 20 bits. | | | | | | | | | | | | | | | | | | | | | |
| 2 | 24 BIT | The data is input/output as 24 bits. | | | | | | | | | | | | | | | | | | | | | |
| (3) | Output Channel | <p>Whether to set the audio data which is input to channels 1 to 8 to ON or OFF is set here.</p>  <table border="1"> <tr> <td>0</td> <td>OFF</td> <td>The data is not input/output.</td> </tr> <tr> <td>1</td> <td>ON</td> <td>The data is input/output.</td> </tr> </table> | 0 | OFF | The data is not input/output. | 1 | ON | The data is input/output. | | | | | | | | | | | | | | | |
| 0 | OFF | The data is not input/output. | | | | | | | | | | | | | | | | | | | | | |
| 1 | ON | The data is input/output. | | | | | | | | | | | | | | | | | | | | | |
| (5) | SCLK Edge | <p>The SCLK edge at which the I2S data is to be captured is set here.</p> <table border="1"> <tr> <td>0</td> <td>Rise</td> <td>The data is captured at the SCLK rising edge.</td> </tr> <tr> <td>1</td> <td>Fall</td> <td>The data is captured at the SCLK falling edge.</td> </tr> </table> | 0 | Rise | The data is captured at the SCLK rising edge. | 1 | Fall | The data is captured at the SCLK falling edge. | | | | | | | | | | | | | | | |
| 0 | Rise | The data is captured at the SCLK rising edge. | | | | | | | | | | | | | | | | | | | | | |
| 1 | Fall | The data is captured at the SCLK falling edge. | | | | | | | | | | | | | | | | | | | | | |

<Ext. I2S Non L-PCM setting parameters> (Option)

| | | | | | | | | | | | |
|-----|---------------------------------|--|---|---------------|--|---|-----------------|--|---|---------------|--|
| | Setting menu display |  | | | | | | | | | |
| (1) | Sampling Frequency (0-A) | <p>The sampling frequency of the audio signals which are input is set here.</p> <table border="1"> <tr> <td>0</td> <td>32 KHz</td> <td>The signals are input/output with a 32 kHz sampling frequency.</td> </tr> <tr> <td>1</td> <td>44.1 KHz</td> <td>The signals are input/output with a 44.1 kHz sampling frequency.</td> </tr> <tr> <td>2</td> <td>48 KHz</td> <td>The signals are input/output with a 48 kHz sampling frequency.</td> </tr> </table> | 0 | 32 KHz | The signals are input/output with a 32 kHz sampling frequency. | 1 | 44.1 KHz | The signals are input/output with a 44.1 kHz sampling frequency. | 2 | 48 KHz | The signals are input/output with a 48 kHz sampling frequency. |
| 0 | 32 KHz | The signals are input/output with a 32 kHz sampling frequency. | | | | | | | | | |
| 1 | 44.1 KHz | The signals are input/output with a 44.1 kHz sampling frequency. | | | | | | | | | |
| 2 | 48 KHz | The signals are input/output with a 48 kHz sampling frequency. | | | | | | | | | |

















| | | | | |
|-----|------------------|--|------------------|---|
| | | 3 | 88.2 KHz | The signals are input/output with a 88.2 kHz sampling frequency. |
| | | 4 | 96 KHz | The signals are input/output with a 96 kHz sampling frequency. |
| | | 5 | 176.4 KHz | The signals are input/output with a 176.4 kHz sampling frequency. |
| | | 6 | 192 KHz | The signals are input/output with a 192 kHz sampling frequency. |
| | | 7 | 352.8 KHz | The signals are input/output with a 352.8 kHz sampling frequency. |
| | | 8 | 384 KHz | The signals are input/output with a 384 kHz sampling frequency. |
| | | 9 | 705.6 KHz | The signals are input/output with a 705.6 kHz sampling frequency. |
| | | A | 768 KHz | The signals are input/output with a 768 kHz sampling frequency. |
| (5) | SCLK Edge | The SCLK edge at which the I2S data is to be captured is set here. | | |
| | | 0 | Rise | The data is captured at the SCLK rising edge. |
| | | 1 | Fall | The data is captured at the SCLK falling edge. |

4.2.6 Audio sweep settings

When **Internal PCM** has been selected by the **Digital Audio > Source** setting, the audio sweep function can be used, and the audio output frequency is incremented at the specified interval. For further details on the audio sweep settings, refer to “4.1.9 Audio sweep settings.”

4.2.7 Flash data entry (option)

Groups of audio data created by the SP-8870 software and consisting of up to 64 megabytes can be stored in the VG-870/871.

| | | |
|-----|---|--|
| (1) | Save the audio data created using SP-8870 on a CF card, and insert the card into the VG-870/871. | |
| (2) | Select Audio Flash Data Entry using  or  or   , and then press  . |  |
| (3) | Select the parameters using  or   , and then press  . |  Set the number of the audio data group to be saved. |
| (4) | Select EXECUTE using  or   , and then press  to store the data. |  Note: Do not eject the CF card or turn off the power of the VG-870/871 until “Complete” has appeared on the screen. |

The audio data and sample programs are stored on VT-8500-0006 (CD). For further details, refer to the files on the CD.

4.2.8 EDID

For further details on the setting procedure, refer to “6.13.3 EDID.”

Note: DDC_CLK of DVI (1CH) is fixed at 40 kHz. EDID does not exist in DDC_CLK of Configuration. DDC_CLK of DVI (2CH) changes in tandem with DDC_CLK of Configuration.

4.2.9 HDCP

For further details on the setting procedure, refer to “8.1 HDCP settings.”

4.2.10 DDC/CI

For further details on the setting procedure, refer to “6.13.4 DDC/CI.”

4.2.11 LipSync

For further details on the setting procedure, refer to “7.7 LipSync.”

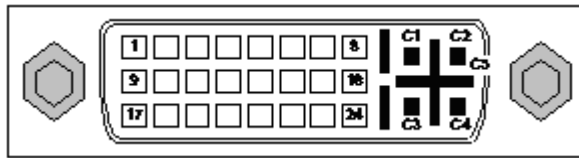
4.3 DVI

DVI output connectors are provided on the PC analog unit and DVI unit. The specifications differ for each of the connectors so refer to the table below.

| Unit/connector | Dual-Link | HDCP | Analog |
|----------------|-----------|------|--------|
| PC analog unit | - | ○ | ○ |
| DVI unit DVI1 | ○ | - | - |
| DVI unit DVI2 | - | ○ | - |

4.3.1 Connectors and pin assignments

- Connector: DVI-I (74320-1004) made by Morex
- Output: TMDS

















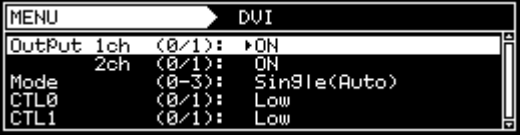










| Pin no. | Signal | Pin no. | Signal | Pin no. | Signal |
|---------|----------------|---------|----------------------------|---------|----------------|
| 1 | TMDS DATA2- | 9 | TMDS DATA1- | 17 | TMDS DATA0- |
| 2 | TMDS DATA2+ | 10 | TMDS DATA1+ | 18 | TMDS DATA0+ |
| 3 | TMDS DATA2/4 G | 11 | TMDS DATA1/3 G | 19 | TMDS DATA0/5 G |
| 4 | TMDS DATA4- | 12 | TMDS DATA3- | 20 | TMDS DATA5- |
| 5 | TMDS DATA4+ | 13 | TMDS DATA3+ | 21 | TMDS DATA5+ |
| 6 | DDC CLK | 14 | +5 V (DDC power supply *1) | 22 | TMDS CLK G |
| 7 | DDC DATA | 15 | Ground | 23 | TMDS CLK+ |
| 8 | Analog Vsync | 16 | SENSE | 24 | TMDS CLK- |
| C1 | Analog Red | | | | |
| C2 | Analog Green | | | | |
| C3 | Analog Blue | | | | |
| C4 | Analog Hsync | | | | |
| C5 | Analog Ground | | | | |

*1: Restrictions apply to the supply current of the DDC power supply. Refer to “12.2 Concerning the maximum current consumption of the DDC power supply.”

4.3.2 DVI unit setting procedure











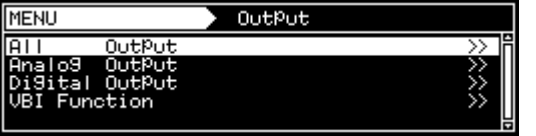





















<DVI unit setting procedure>

| | |
|---|--|
| <p>(1) Select Program Edit using  or  or , and then press .</p> |  <pre> MENU Program Edit Program Name : ▶EIA1920x1080P@60 Timing (TIM) >>> OutPut (TIM) >>> Audio (TIM) >>> Pattern (PAT) >>> </pre> |
| <p>(2) Select Output using  or , and then press .</p> |  <pre> MENU OutPut All OutPut >>> Analog OutPut >>> Digital OutPut >>> VBI Function >>> </pre> |
| <p>(3) Select Digital Output using  or , and then press .</p> |  <pre> MENU Digital OutPut General >>> DVI >>> HDMI >>> LVDS >>> Parallel >>> </pre> |
| <p>(4) Select DVI using  or , and then press .</p> |  <pre> MENU DVI OutPut 1ch (0/1): ▶ON 2ch (0/1): ON Mode (0-3): Single(Auto) CTL0 (0/1): Low CTL1 (0/1): Low </pre> |
| <p>(5) Select the items using  or , and then press .</p> <p><Inputting the parameters></p> <p>Select the parameters using  or , and then press .</p> <p>Alternatively: Select the parameters using the number keys 0/STATUS 9/F , and then press .</p> | <p>For further details on the parameters, refer to the table below.</p> |

<DVI unit setting parameters>

| | | | |
|-----|--|---|--|
| (1) | Output 1ch (0/1) Output 2ch (0/1) | This sets On or Off for each channel. The same settings as the ones described in “4.1.1 Setting the output interfaces to ON or OFF” can also be established. | |
| | | 0 | Off No output. |
| | | 1 | On Output. |
| (2) | Mode (0/1) | This sets the bit length and link format of the images to be output from DVI. A setting which is independent of the bit length for pattern drawing can be selected. It is also possible to select the bit length automatically. The portion by which the bit length for pattern drawing exceeds the bit length which has been set here is discarded. A deficient portion is filled with zeros. “ Single ” can be selected when the dot clock frequency ranges from 25 MHz to 165 MHz, and data can be output from output channels 1 and 2. “ Dual ” can be selected when the dot clock frequency ranges from 50 MHz to 330 MHz, and data can be output from output channel 1. Data is not output from channel 2. 4.1.5 Setting the bit length (gray scale) for pattern drawing | |
| | | 0 | Single (8 bits) The data is output by Single Link from output channels 1 and 2. The portion by which the bit length for pattern drawing exceeds 8 bits is discarded. |
| | | 1 | Dual (8 bits) The data is output by Dual Link from output channel 1. The portion by which the bit length for pattern drawing exceeds 8 bits is discarded. Data is not output from channel 2. |
| | | 2 | Single (16 bits) Up to 16 bits are output by Single Link using the two links of output channel 1. The portion by which the bit length for pattern drawing is deficient from the bit length which has been set here is filled with zeros. The data is output by Single Link from output channels 2. The portion by which the bit length for pattern drawing exceeds 8 bits is discarded. |
| | | 3 | Single (Auto) The data is output by Single Link from output channels 1 and 2. Single (8 bits) or Single (16 bits) is automatically selected depending on the bit length for pattern drawing. |
| (3) | CTL0/CTL1 | This is not normally used. Keep it at the low setting. | |

4.3.3 PC analog unit (DVI) setting procedure

| | | | | | | | | |
|---|--|--|---|------------|------------|---|-----------|---------|
| (1) | <p>Select Program Edit using  or  or  , and then press .</p> |  <pre> MENU Program Edit Program Name : ▶EIA1920x1080P@60 Timing (TIM) >>> OutPut (TIM) >>> Audio (TIM) >>> Pattern (PAT) >>> </pre> | | | | | | |
| (2) | <p>Select Output using  or  , and then press .</p> |  <pre> MENU OutPut All OutPut >>> Analog OutPut >>> Digital OutPut >>> VBI Function >>> </pre> | | | | | | |
| (3) | <p>Select Analog Output using  or  , and then press .</p> |  <pre> MENU Analog OutPut General >>> PC! RGB (BNC) >>> PC! VGA (D-Sub) >>> PC! DVI >>> TV! COMPOSITE >>> </pre> | | | | | | |
| (4) | <p>Select DVI using  or  , and then press .</p> |  <pre> MENU PC-DVI OutPut Analog (0/1): ▶ON Digital(0/1): ON </pre> | | | | | | |
| (5) | <p>Select Output Analog using  or  , and then press .</p> | <p>The same settings as the ones described in "4.1.1 Setting the output interfaces to ON or OFF" can also be established.</p> <table border="1"> <tr> <td>0</td> <td>Off</td> <td>No output.</td> </tr> <tr> <td>1</td> <td>On</td> <td>Output.</td> </tr> </table> | 0 | Off | No output. | 1 | On | Output. |
| 0 | Off | No output. | | | | | | |
| 1 | On | Output. | | | | | | |
| <p><Inputting the parameters></p> <p>Select the parameters using  or  , and then press .</p> <p>Alternatively: Select the parameters using the number keys  , and then press .</p> | | | | | | | | |

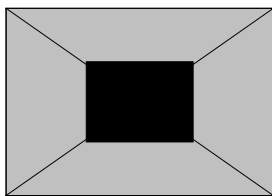
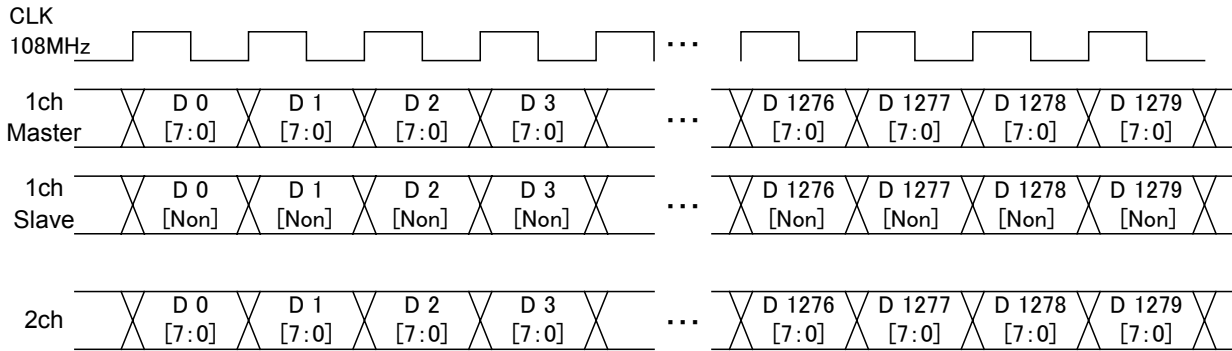
4.3.4 DVI data transfer systems

<Specifications with 8-bit output>

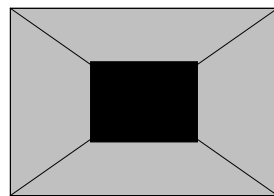
[Single (8 bit)]

The same images are output to all channels 1 and 2. The output gray scale is 8 bits.

Given here as an example for explanatory purposes is a case where the resolution is 1280 × 1024, the dot clock frequency is 108 MHz and the output gray scale is 8 bits.



1CH Master



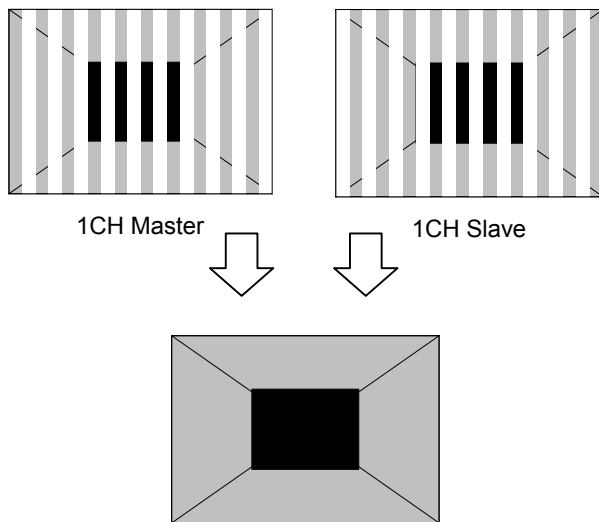
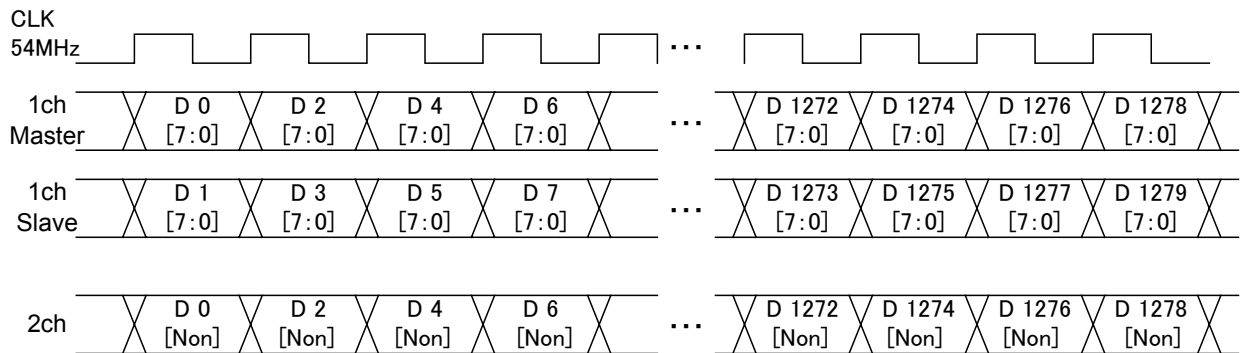
2CH

[Dual (8 bit)]

The images are output with channel 1 master and channel 1 slave making a pair. Eight bits are used for the output gray scale.

During dual output, the channel 2 output goes OFF.

Given here as an example for explanatory purposes is a case where the resolution is 1280×1024 , the dot clock frequency is 108 MHz and the output gray scale is 8 bits.



<Specifications with 16-bit output>

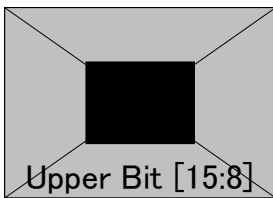
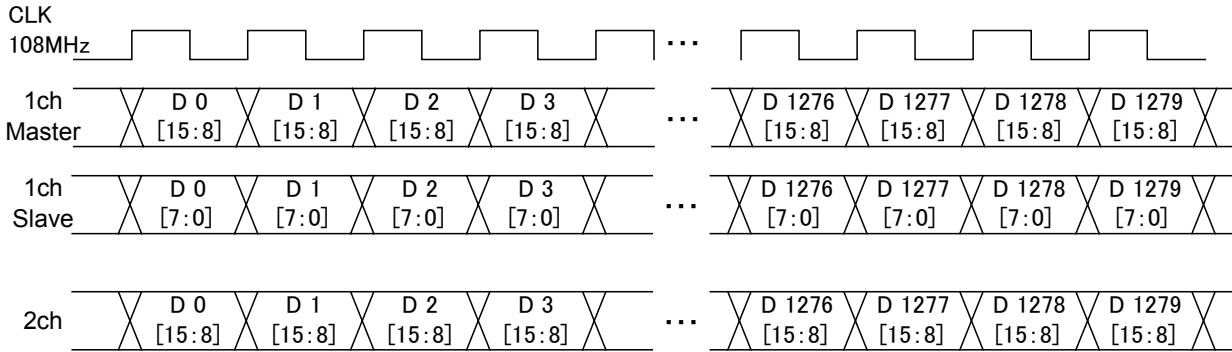
[Single (16bit)]

The 16-bit images are output with channel 1 master and channel 1 slave making a pair.

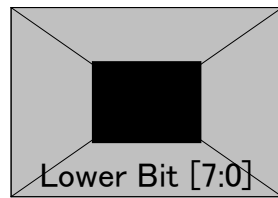
The higher 8 bits are output to the channel 1 master and the lower 8 bits to the channel 1 slave.

With channel 2, the higher 8 bits are output, and the lower bits are discarded.

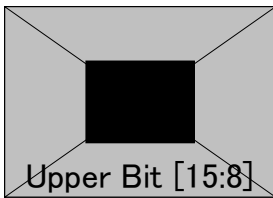
Given here as an example for explanatory purposes is a case where the resolution is 1280×1024 , the dot clock frequency is 108 MHz and the output gray scale is 16 bits consisting of 8 bits for channel 1 and 8 bits for channel 2.



1CH Master



1CH Slave



2CH

4.3.5 Sync signal polarity setting

For further details on the setting procedure, refer to “4.1.2 Setting the sync signals to ON or OFF and setting the sync signal polarities.” The same settings are established for both the DVI analog and digital signals.

4.3.6 EDID

For further details on the setting procedure, refer to “6.13.3 EDID.”

Note: The DDC_CLK frequency of DVI (channel 1) is fixed at 40 kHz. It does not exist in DDC_CLK of Configuration. Also, the DDC_CLK frequency of DVI (channel 2) changes in tandem with DDC_CLK of Configuration.

4.3.7 HDCP

For further details on the setting procedure, refer to “8.1 HDCP settings.”

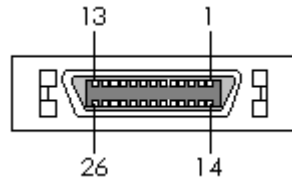
4.3.8 DDC/CI

For further details on the setting procedure, refer to “6.13.4 DDC/CI.”

4.4 LVDS

4.4.1 Connectors and pin assignments

- Connector: MDR 10226-1210-VE made by 3M





































| Pin no. | Signal | Pin no. | Signal |
|---------|-----------------------------------|---------|-----------------------------------|
| 1 | GND | 14 | TA- |
| 2 | TAG | 15 | TA+ |
| 3 | Reserve (leave this unconnected) | 16 | GND |
| 4 | TB- | 17 | TBG |
| 5 | TB+ | 18 | Reserve (leave this unconnected) |
| 6 | TC- | 19 | TCG |
| 7 | TC+ | 20 | TE- |
| 8 | TEG | 21 | TE+ |
| 9 | Reserve (leave this unconnected) | 22 | TCLK- |
| 10 | TCLKG | 23 | TCLK+ |
| 11 | +5 V/+3.3 V (DDC power supply *1) | 24 | +5 V/+3.3 V (DDC power supply *1) |
| 12 | TD- | 25 | TDG |
| 13 | TD+ | 26 | GND |

*1: Restrictions apply to the supply current of the DDC power supply. Refer to “12.2 Concerning the maximum current consumption of the DDC power supply.”

4.4.2 LVDS setting procedure

<LVDS setting procedure>

























| | |
|--|--|
| <p>(1) Select Program Edit using  or  or  , and then press .</p> |  |
| <p>(2) Select Output using  or  , and then press .</p> |  |
| <p>(3) Select Digital Output using  or  , and then press .</p> |  |
| <p>(4) Select LVDS using  or  , and then press .</p> |  |
| <p>(5) Select the items using  or  , and then press .</p> <p><Inputting the parameters></p> <p>Select the parameters using  or  , and then press .</p> <p>Alternatively: Select the parameters using the number keys   ( to ), and then press .</p> | <p>For further details on the parameters, refer to the table below.</p> |

<LVDS setting parameters>

| | | | | | | | |
|--|---|------------|-----|------------|---|----|---------|
| <p>(1) Output 1,2ch (0/1) Output 3,4ch (0/1)</p> | <p>This sets On or Off for each channel. The same settings as the ones described in “4.1.1 Setting the output interfaces to ON or OFF” can also be established.</p> <table border="1"> <tr> <td>0</td> <td>Off</td> <td>No output.</td> </tr> <tr> <td>1</td> <td>On</td> <td>Output.</td> </tr> </table> | 0 | Off | No output. | 1 | On | Output. |
| 0 | Off | No output. | | | | | |
| 1 | On | Output. | | | | | |
| <p>(2) Mode (0/1)</p> | <p>This sets the bit length and link format of the images to be output from LVDS. A setting which is independent of the bit length for pattern drawing can be selected. It is also possible to select the bit length automatically. The portion by which the bit length for pattern drawing exceeds the bit length which has been set here is discarded. A deficient portion is filled with zeros.</p> <p>“Quad” can be selected when the dot clock frequency ranges from 80 MHz to 340 MHz, and data can be output.</p> <p>“Dual” can be selected when the dot clock frequency ranges from 40 MHz to 270 MHz, and data can be output.</p> <p>“Single” can be selected when the dot clock frequency ranges from 20 MHz to 135 MHz, and data can be output.</p> <p>4.1.5 Setting the bit length (gray scale) for pattern drawing</p> | | | | | | |

| | | | | |
|-----|-------------------|---|------------------|---|
| | | 0 | Single (10 bits) | The data is output by Single Link from output channel 1. The portion by which the bit length for pattern drawing exceeds 10 bits is discarded. The same data as for output channel 1 is output from output channels 2, 3 and 4. |
| | | 1 | Dual (10 bits) | The data is output by Dual Link from output channels 1 and 2. The portion by which the bit length for pattern drawing exceeds 10 bits is discarded. The same data as for output channels 1 and 2 is output from output channels 3 and 4. |
| | | 2 | Quad (10 bits) | The data is output by Quad Link from output channels 1, 2, 3 and 4. The portion by which the bit length for pattern drawing exceeds 10 bits is discarded. |
| | | 3 | Single (16 bits) | The data is output by Single Link from output channels 1 and 2. The portion by which the bit length for pattern drawing is deficient from 16 bits length is filled with zeros. The same data as for output channels 1 and 2 is output from output channels 3 and 4. |
| | | 4 | Dual (16 bits) | The data is output by Quad Link from output channels 1, 2, 3 and 4. The portion by which the bit length for pattern drawing is deficient from 16 bits length is filled with zeros. |
| | | 5 | Single (Auto) | The data is output by Single Link. Single (10 bits) or Single (16 bits) is automatically selected depending on the bit length for pattern drawing. |
| | | 6 | Dual (Auto) | The data is output by Dual Link. Dual (10 bits) or Dual (16 bits) is automatically selected depending on the bit length for pattern drawing. |
| (3) | Split | This splits the images to be output, and sets channels 1, 2, 3 and 4 as the output channels. When a setting other than Normal is selected, all other outputs are shut down. | | |
| | | The setting below can be selected only when the Single (10 bits) mode has been set. | | |
| | | 0 | Normal | |
| | | The setting below can be selected only when the Single (16 bits) mode has been set. | | |
| | | 0 | Normal | |
| | | The setting below can be selected only when the Single (Auto) mode has been set. | | |
| | | 0 | Normal | |
| | | The setting below can be selected only when the Dual (10 bits) mode has been set. | | |
| | | 0 | Normal | |
| | | 1 | 2Split | |
| | | The setting below can be selected only when the Dual (16 bits) mode has been set. | | |
| | | 0 | Normal | |
| | | 1 | 2Split | |
| | | The setting below can be selected only when the Dual (Auto) mode has been set. | | |
| | | 0 | Normal | |
| | | 1 | 2Split | |
| | | The setting below can be selected only when the Quad (10 bits) mode has been set. | | |
| | | 0 | Normal | |
| | | 1 | 2Split | |
| | | 2 | 4Split | |
| (4) | CTL1 1,2ch | This is not normally used. Keep it at the low setting. | | |
| (5) | CTL2 1,2ch | This is not normally used. Keep it at the low setting. | | |
| (6) | CTL1 3,4ch | This is not normally used. Keep it at the low setting. | | |
| (7) | CTL2 3,4ch | This is not normally used. Keep it at the low setting. | | |

The LVDS settings can be performed here.

| | | |
|------------|---|---|
| <p>(1)</p> | <p>Select Configuration using  or  or  or  or  , and then press  .</p> |  |
| <p>(2)</p> | <p>Select LVDS using  or  or  or  , and then press  .</p> |  |
| <p>(3)</p> | <p>Select the parameters using  or  or  or  , and then press  .</p> <p>Alternatively: Select the parameters using the number keys  ( to ), and then press  .</p> <p><Details of items> Bit Assign: Bit Assign can be selected here.</p> <p>User Bit Assign: User Bit Assign can be verified here.</p> <p>Multi Bit Mode: The multi-bit channel 1 and channel 2 allocation can be set here.</p> <p>After completing the settings, press  to exit the setting screen.</p> |  <p>Any of the following settings can be selected for Bit Assign. SAMPLE1 (DISM) SAMPLE2 (OpenLDI) USER1 USER2 USER3</p> <p>User Bit Assign Bit Assign cannot be set using the VG generator. Use the SP-8870 software provided, and edit it.</p> <p>Multi Bit Mode Either of the following settings can be selected for the bit allocation. 8 + 8 bit 10 + 6 bit</p> |

4.4.3 Data transfer system

Settings (1) to (6) in the table below are available as the data transfer system settings.

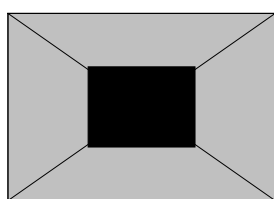
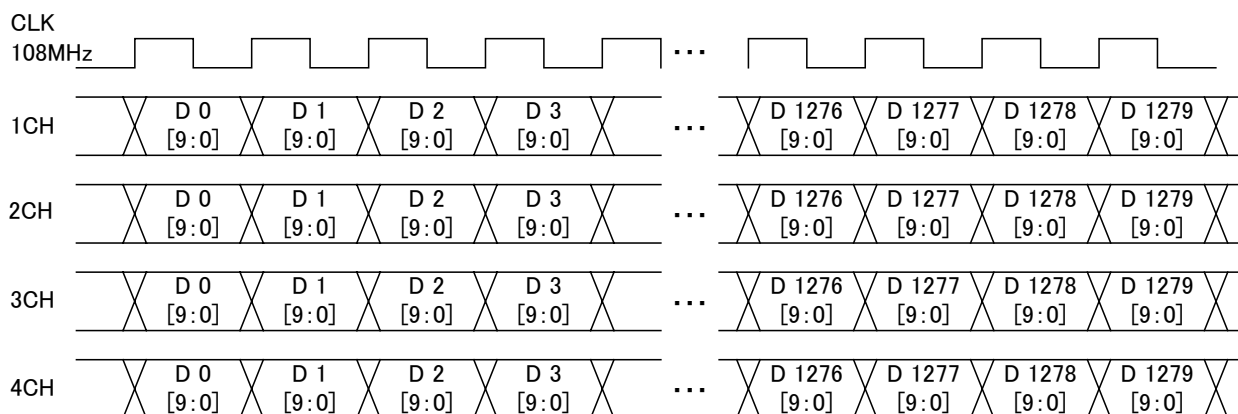
| Item | Description | Output from other units |
|-------------|---|-------------------------|
| Setting (1) | What is drawn is output as is. (Same output for channels 1 to 4) | ON |
| Setting (2) | The data is output dot by dot to channels 1 and 2. (Same output for channels 3 and 4) | ON |
| Setting (3) | The data is output dot by dot to channels 1, 3, 2 and 4. | ON |
| Setting (4) | The left half of the screen is output to channel 1, and the right half of the screen is output to channel 2. (Same output for channels 3 and 4) | OFF |
| Setting (5) | One-fourth of the screen each is output to channels 1, 3, 2 and 4 in this order. | OFF |
| Setting (6) | The left half of the screen is output to channels 1 and 3, and the right half of the screen is output to channels 2 and 4. | OFF |

<Specifications for outputs of 8 to 10 bits>

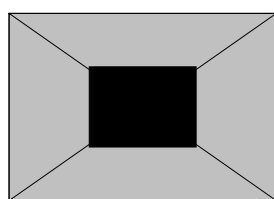
Setting (1) [Single (10 bits)], [Normal]

The same image is output to all four channels. The output gray scale is 8 to 10 bits.

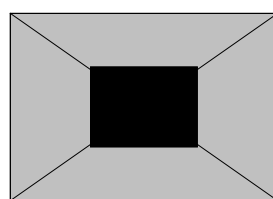
The example given here describes a case where the resolution is 1280 × 1024, the dot clock frequency is 108 MHz, and 10 bits apply for the gray scale.



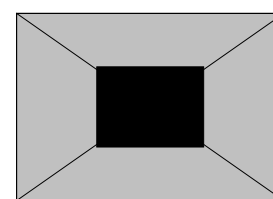
1CH



2CH



3CH



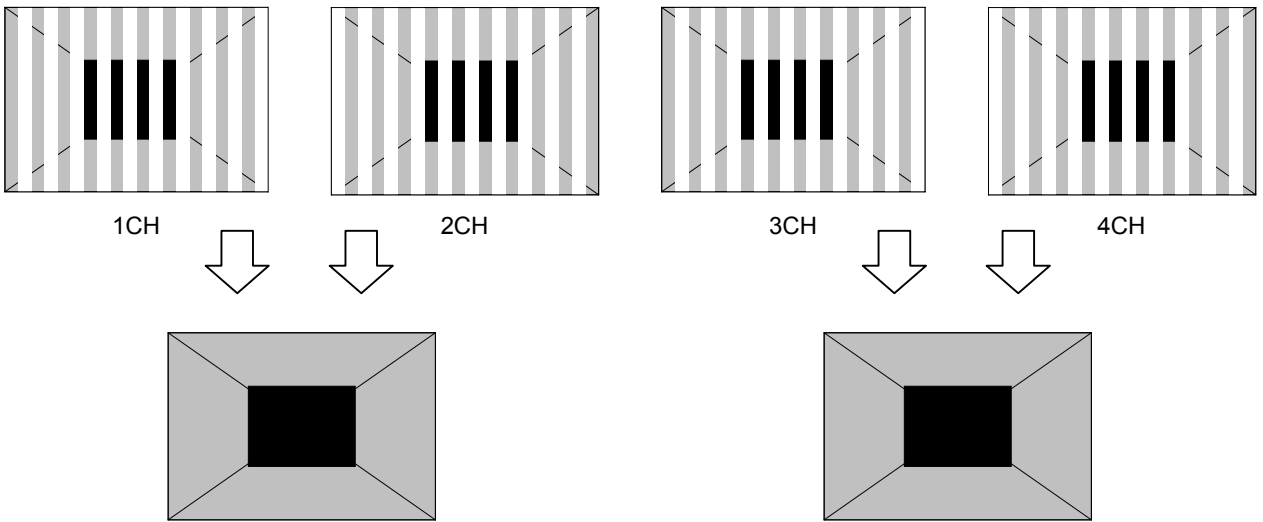
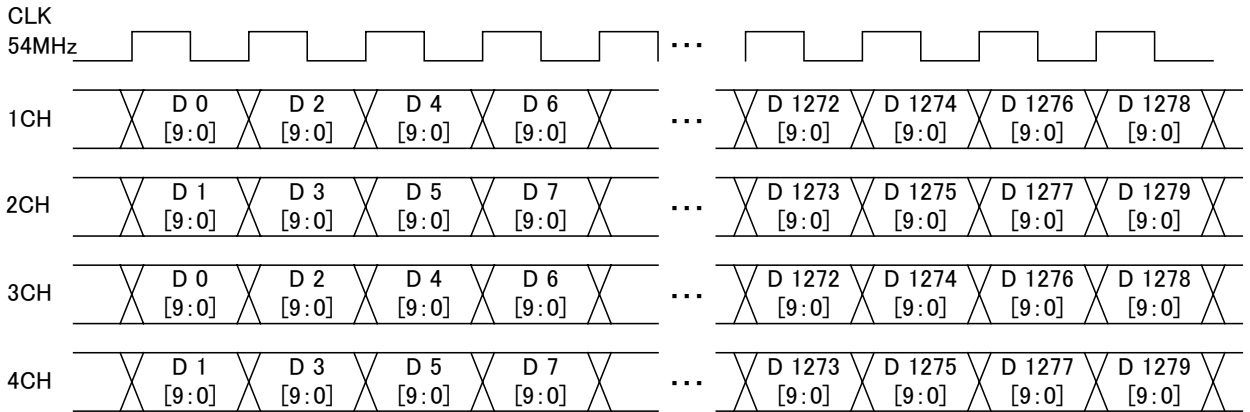
4CH

Setting (2) [Dual (10 bits)], [Normal]

The images are output with channels 1 and 2 forming one set and channels 3 and 4 forming another set.

The output gray scale is 8 to 10 bits.

The example given here describes a case where the resolution is 1280 × 1024, the dot clock frequency is 108 MHz, and 10 bits apply for the gray scale.

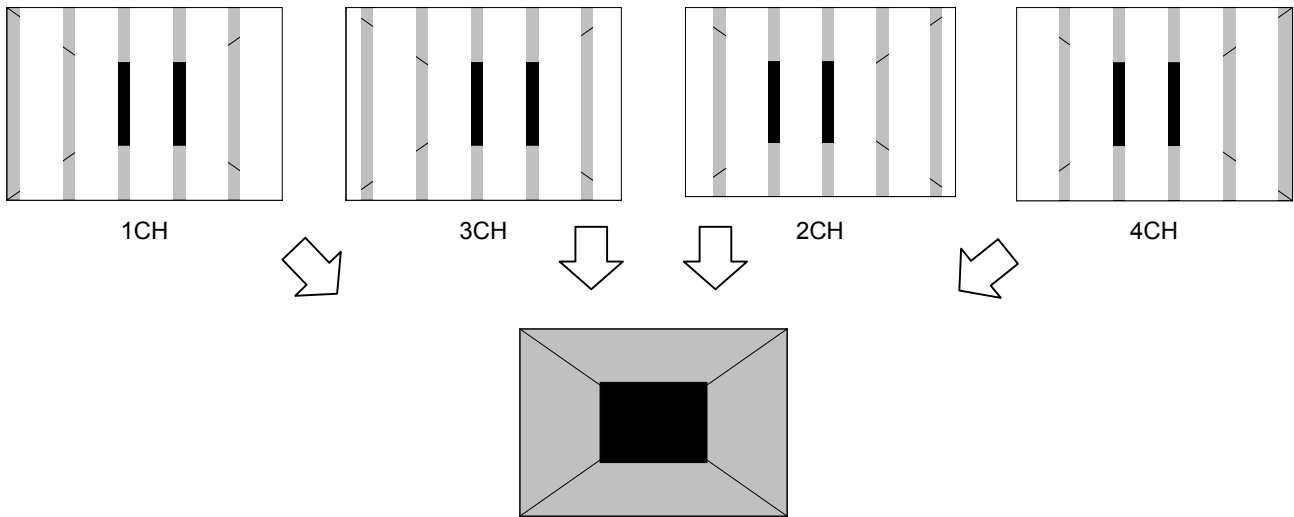
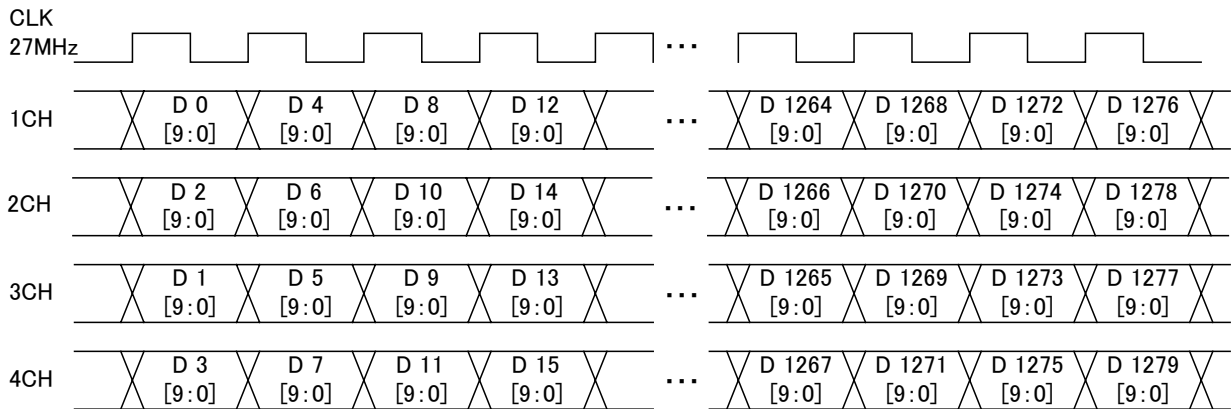


Setting (3) [Quad (10 bits)], [Normal]

The images are output to channels 1, 2, 3 and 4 in this order.

The output gray scale is 8 to 10 bits.

The example given here describes a case where the resolution is 1280×1024 , the dot clock frequency is 108 MHz, and 10 bits apply for the gray scale.

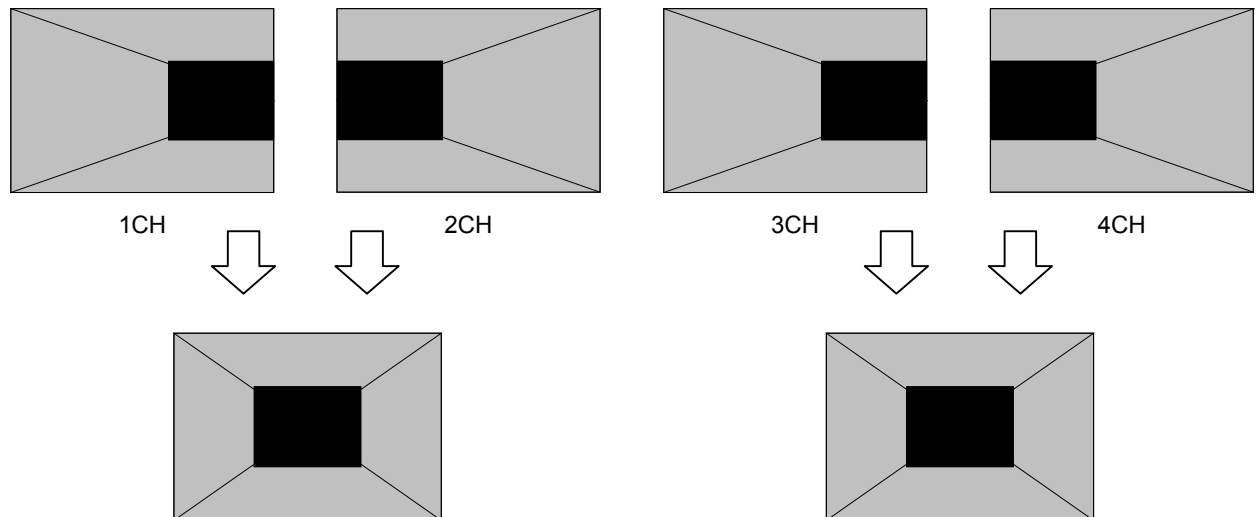
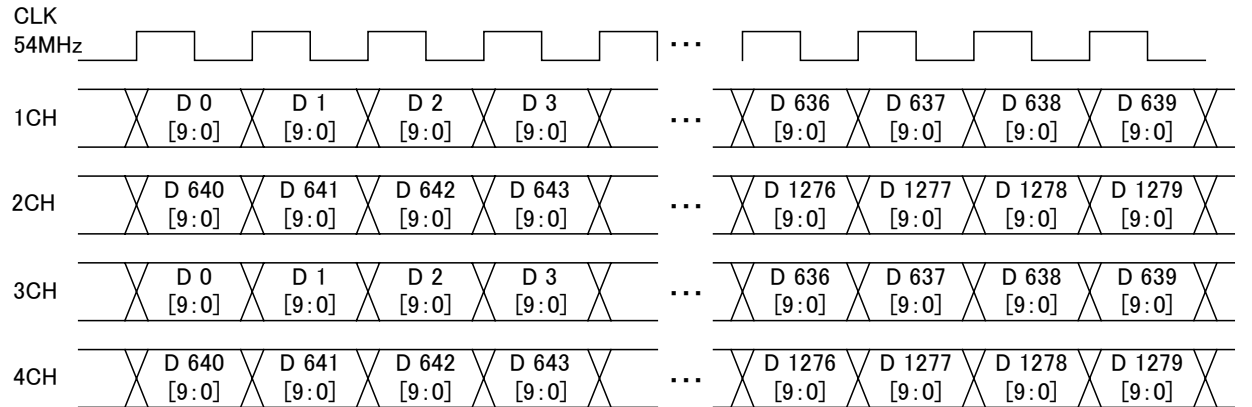


Setting (4) [Dual (10 bits)], [2 split]

The images are output with channels 1 and 2 forming one set and channels 3 and 4 forming another set. If this is described with the channel 1 and 2 set used as an example, the left half of the image is allocated and output to channel 1, and the right half of the image is allocated and output to channel 2.

The output gray scale is 8 to 10 bits.

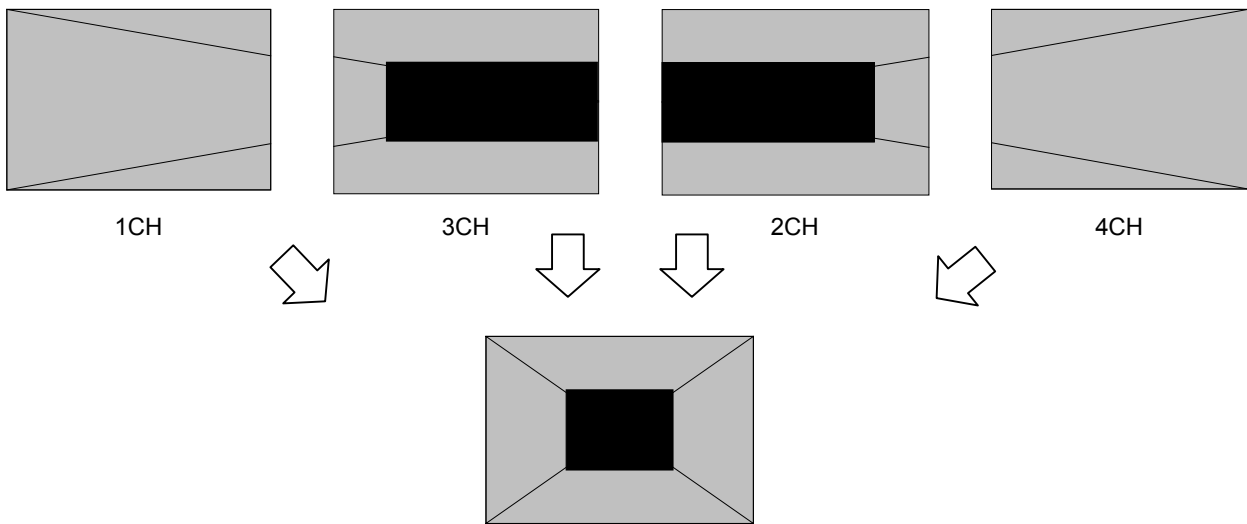
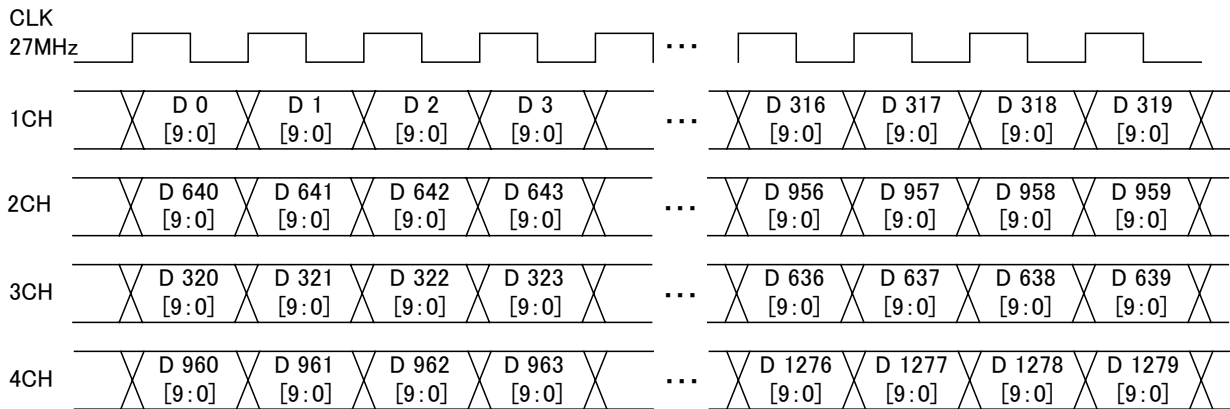
The example given here describes a case where the resolution is 1280×1024 , the dot clock frequency is 108 MHz, and 10 bits apply for the gray scale.



Setting (5) [Quad (10 bits)], [4 split]

The images are split into four parts horizontally, and allocated from the left to channels 1, 3, 2 and 4 in this order. The output gray scale is 8 to 10 bits.

The example given here describes a case where the resolution is 1280×1024 , the dot clock frequency is 108 MHz, and 10 bits apply for the gray scale.

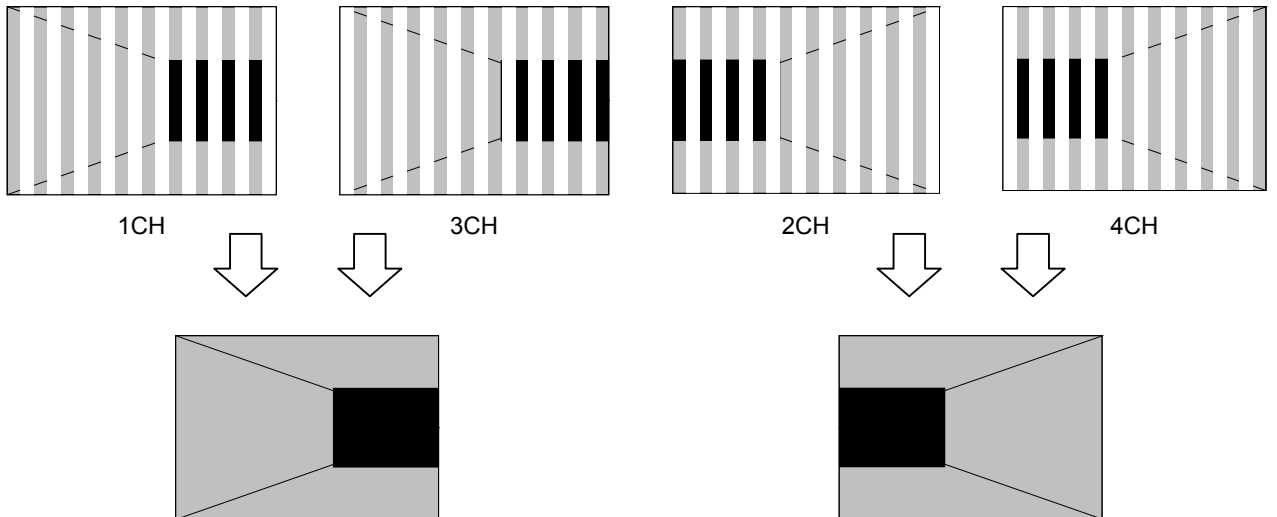
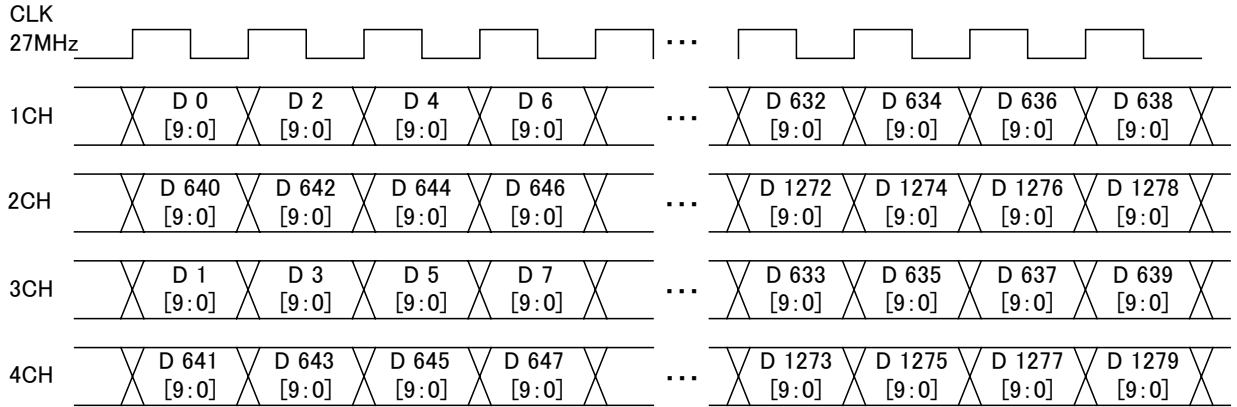


Setting (6) [Quad (10 bits)], [2 split]

The images are output with channels 1 and 3 forming one set and channels 2 and 4 forming another set. The left half of the image is allocated and output to the channel 1 and 3 set, and the right half of the image is allocated to the channel 2 and 4 set.

The output gray scale is 8 to 10 bits.

The example given here describes a case where the resolution is 1280 × 1024, the dot clock frequency is 108 MHz, and 10 bits apply for the gray scale.



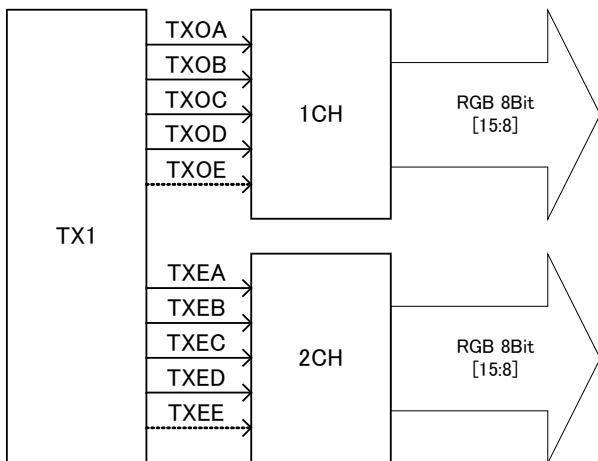
<Specifications for outputs of 11 to 16 bits>

With outputs of 11 to 16 bits, 8 to 10 bits are treated as one output by the channel 1 and 2 set. The bits can be allocated in two ways as shown below. However, when Single (Auto) or Dual (Auto) has been set as the LVDS setting parameter mode, automatic switching is initiated to the channel 1 output for bits 8 to 10 and to the channel 2 output for bits 11 to 16.

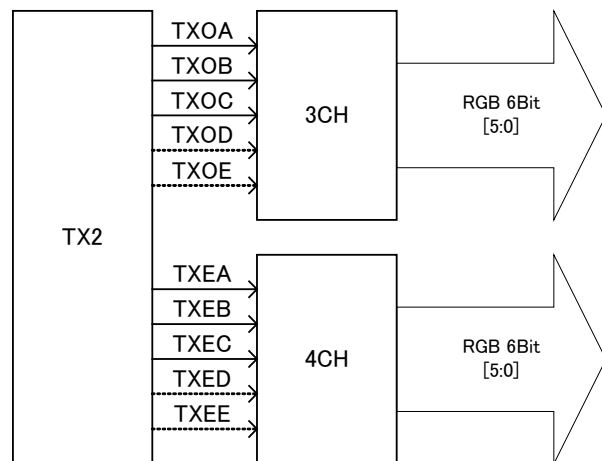
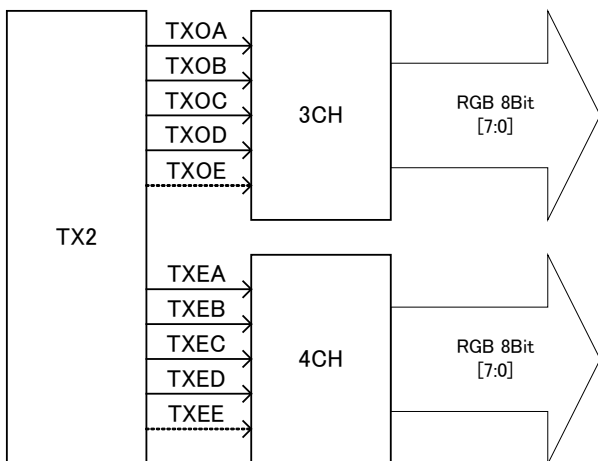
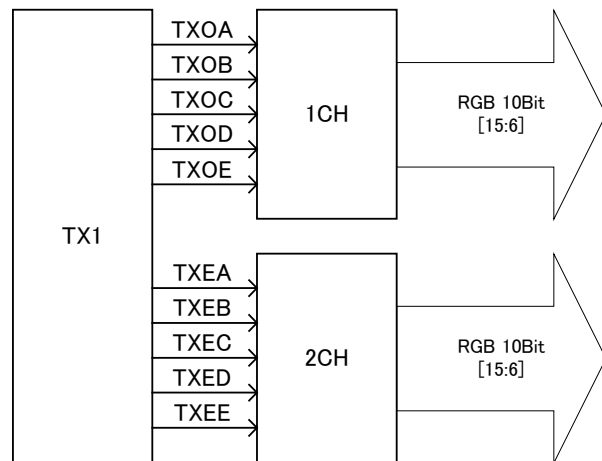
When Single (10 bits), Dual (10 bits) or Quad (10 bits) has been set as the setting parameter mode, output is fixed from channel 1.

When Single (16 bits) or Dual (16 bits) has been set as the setting parameter mode, output is fixed from channel 2.

[8 + 8 bits output]



[10 + 6 bits output]



*1: The signal lines indicated by the dotted lines in the above figure are not used.

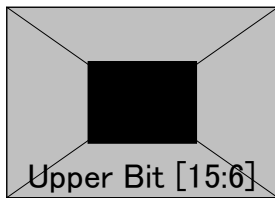
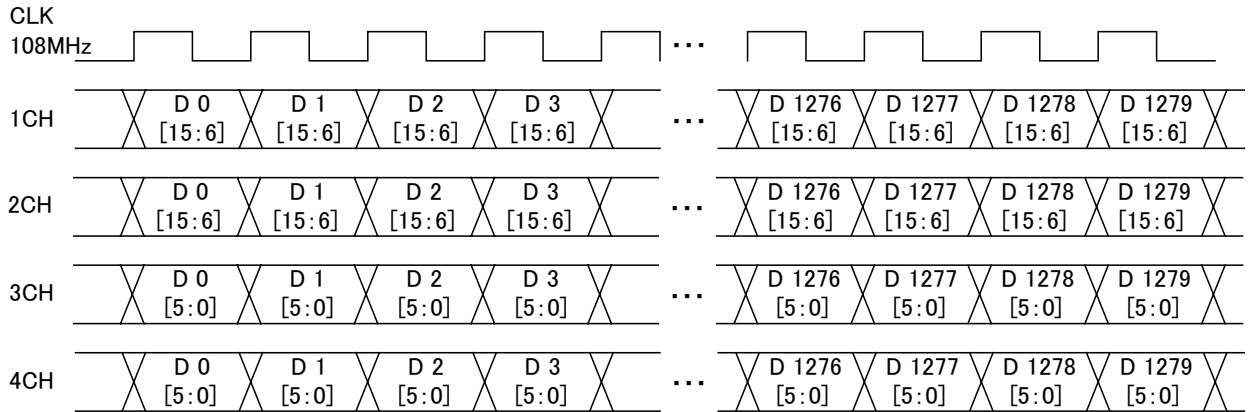
*2: The specification for 8 + 8 bits output is the default setting.

Setting (1) [Single (16 bits)], [Normal], configuration [10 + 6 bits]

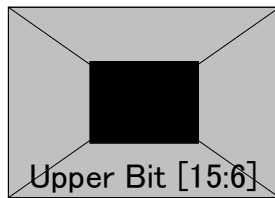
The 16-bit images are output with channels 1 and 3 forming one set and channels 2 and 4 forming another set.

The 10 upper bits are output to channels 1 and 2, and the 6 lower bits are output to channels 3 and 4.

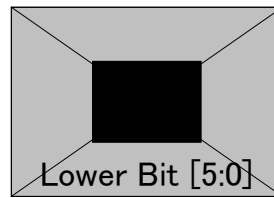
The example given here describes a case where the resolution is 1280×1024 , the dot clock frequency is 108 MHz, 16 bits apply for the gray scale, 10 bits are output to channel 1 and 6 bits are output to channel 2.



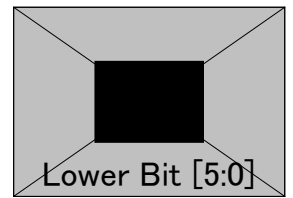
1CH



2CH



3CH



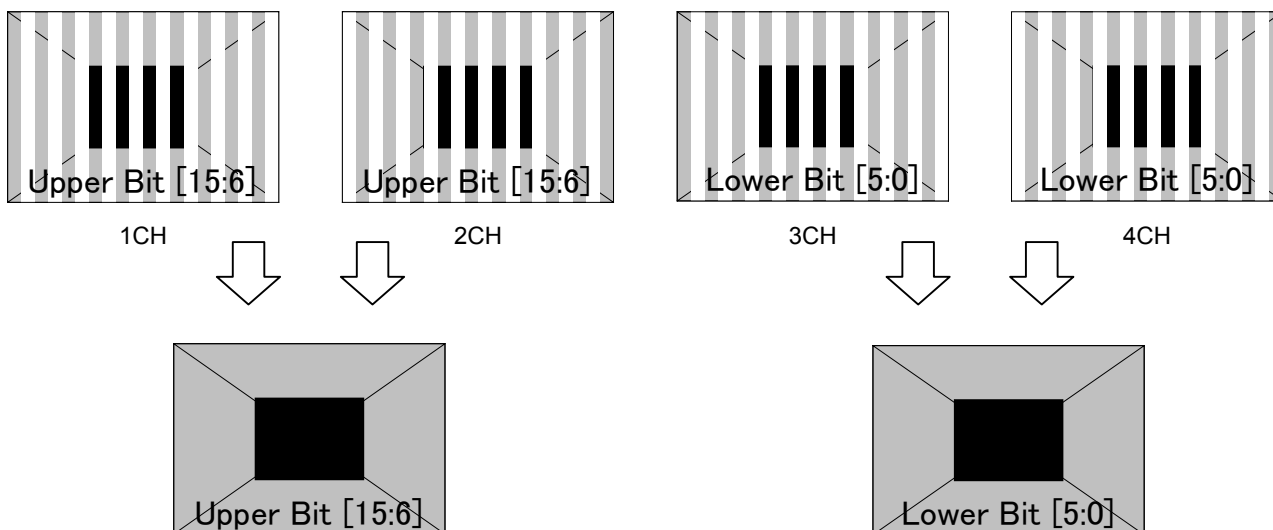
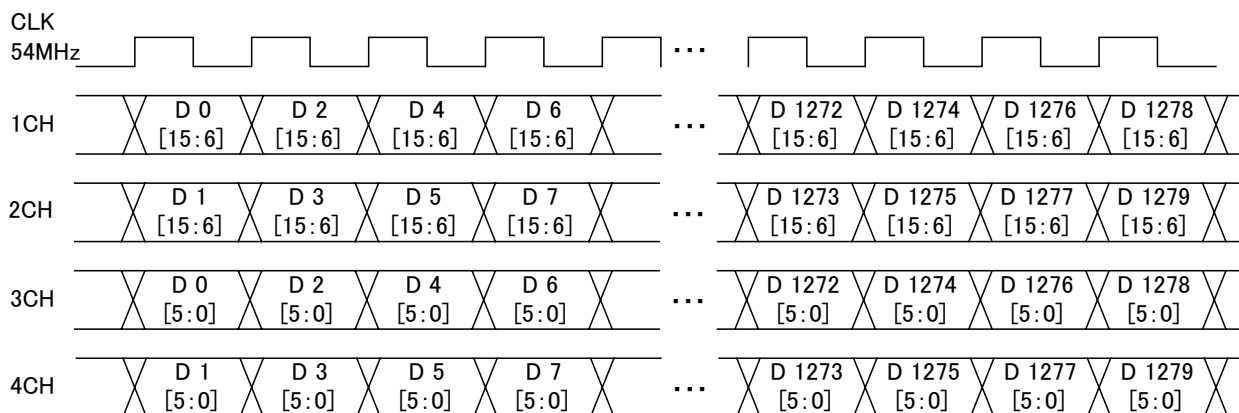
4CH

Setting (2) [Dual (16 bits)], [Normal], configuration [10 + 6 bits]

With channels 1 and 3 forming one set and channels 2 and 4 forming another set, odd-numbered fields are output using one set and even-numbered fields are output using the other set.

The 10 upper bits are output to channels 1 and 2, and the remaining 6 lower bits are output to channels 3 and 4.

The example given here describes a case where the resolution is 1280 × 1024, the dot clock frequency is 108 MHz, 16 bits apply for the gray scale, 10 bits are output to channel 1 and 6 bits are output to channel 2.

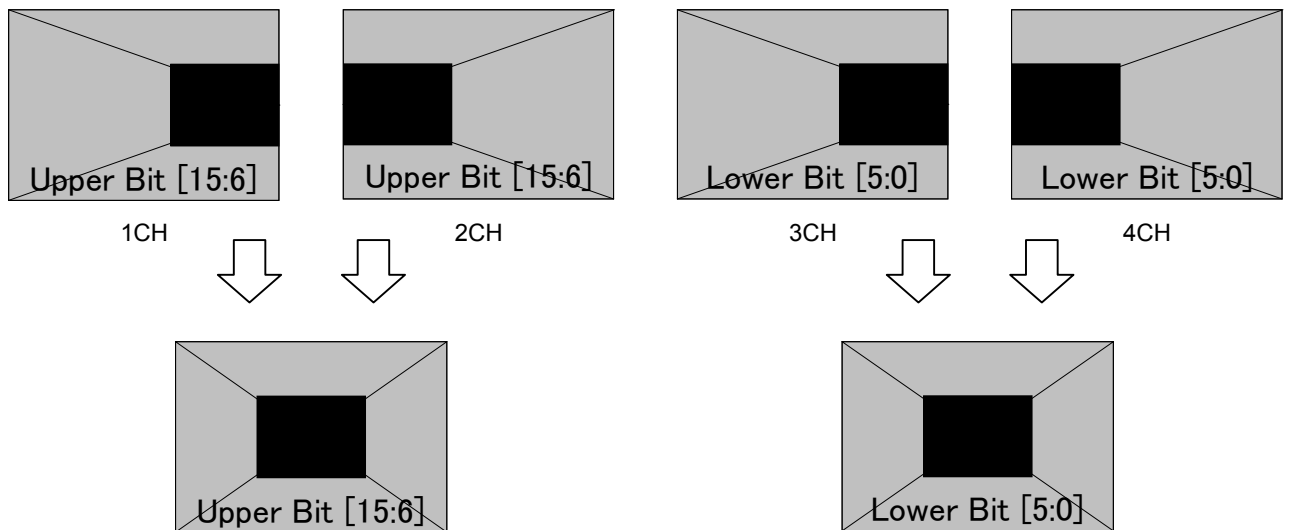
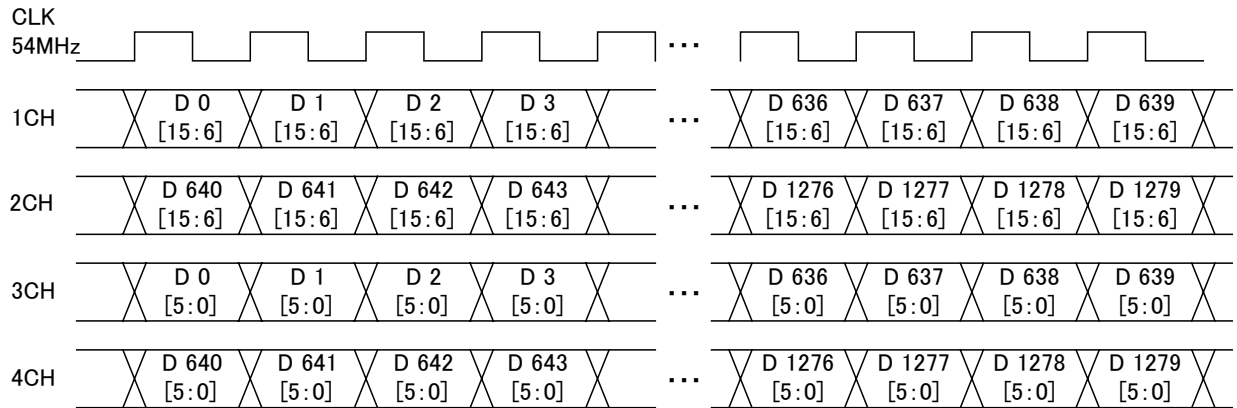


Setting (3) [Dual (16 bits)], [2 split], configuration [10 + 6 bits]

With channels 1 and 3 forming one set and channels 2 and 4 forming another set, the left half of the image is output using one set and the right half of the image is output using the other set.

The 10 upper bits are output to channels 1 and 2, and the remaining 6 lower bits are output to channels 3 and 4.

The example given here describes a case where the resolution is 1280×1024 , the dot clock frequency is 108 MHz, 16 bits apply for the gray scale, 10 bits are output to channel 1 and 6 bits are output to channel 2.

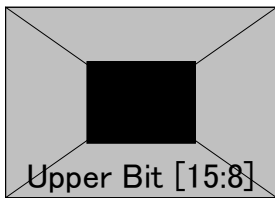
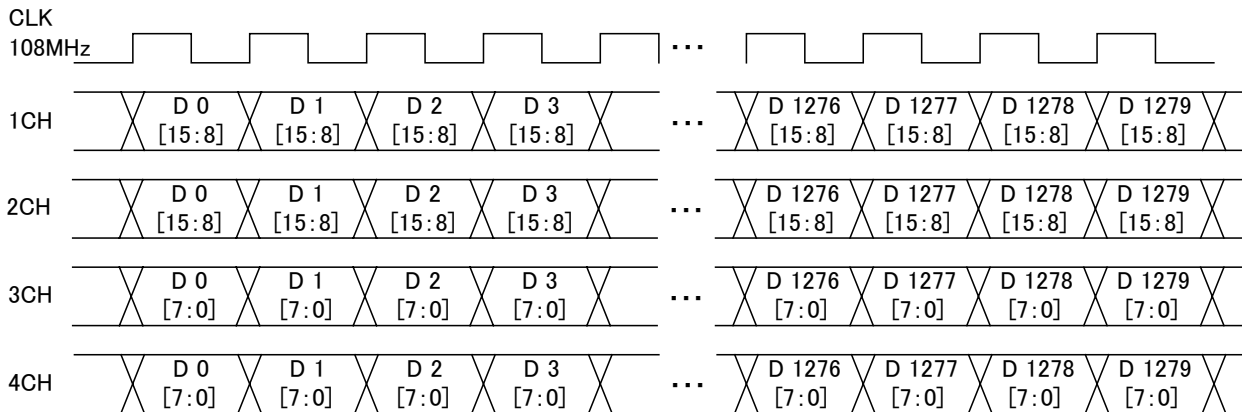


Setting (4) [Single (16 bits)], [Normal], configuration [8 + 8 bits]

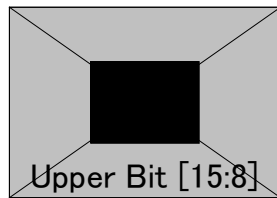
The 16-bit images are output with channels 1 and 3 forming one set and channels 2 and 4 forming another set.

The 8 upper bits are output to channels 1 and 2, and the 8 lower bits are output to channels 3 and 4.

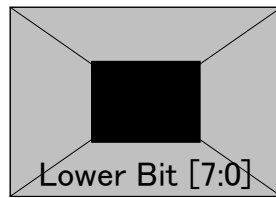
The example given here describes a case where the resolution is 1280 × 1024, the dot clock frequency is 108 MHz, 16 bits apply for the gray scale, 8 bits are output to channel 1 and 8 bits are output to channel 2.



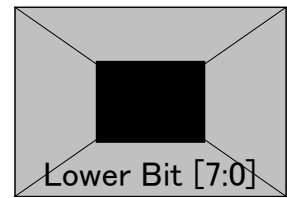
1CH



2CH



3CH



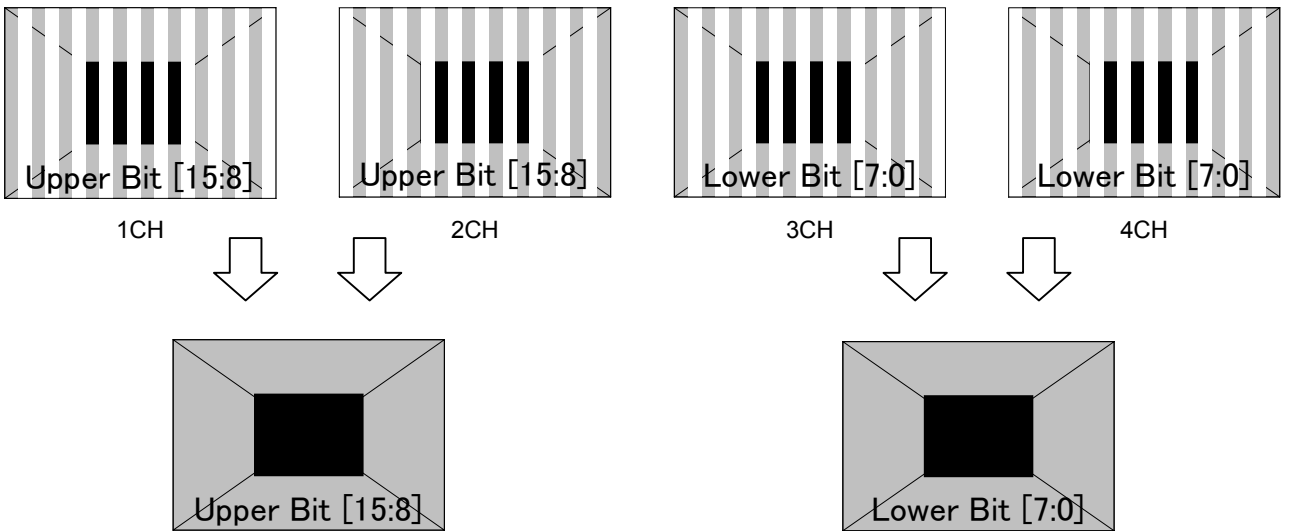
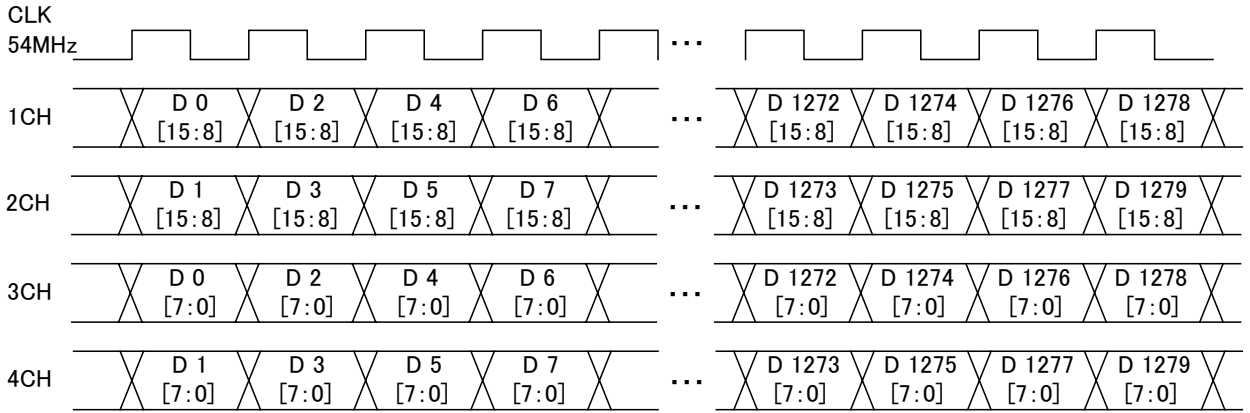
4CH

Setting (5) [Dual (16 bits)], [Normal], configuration [8 + 8 bits]

With channels 1 and 3 forming one set and channels 2 and 4 forming another set, odd-numbered fields are output using one set and even-numbered fields are output using the other set.

The 8 upper bits are output to channels 1 and 2, and the 8 lower bits are output to channels 3 and 4.

The example given here describes a case where the resolution is 1280 × 1024, the dot clock frequency is 108 MHz, 16 bits apply for the gray scale, 8 bits are output to channel 1 and 8 bits are output to channel 2.

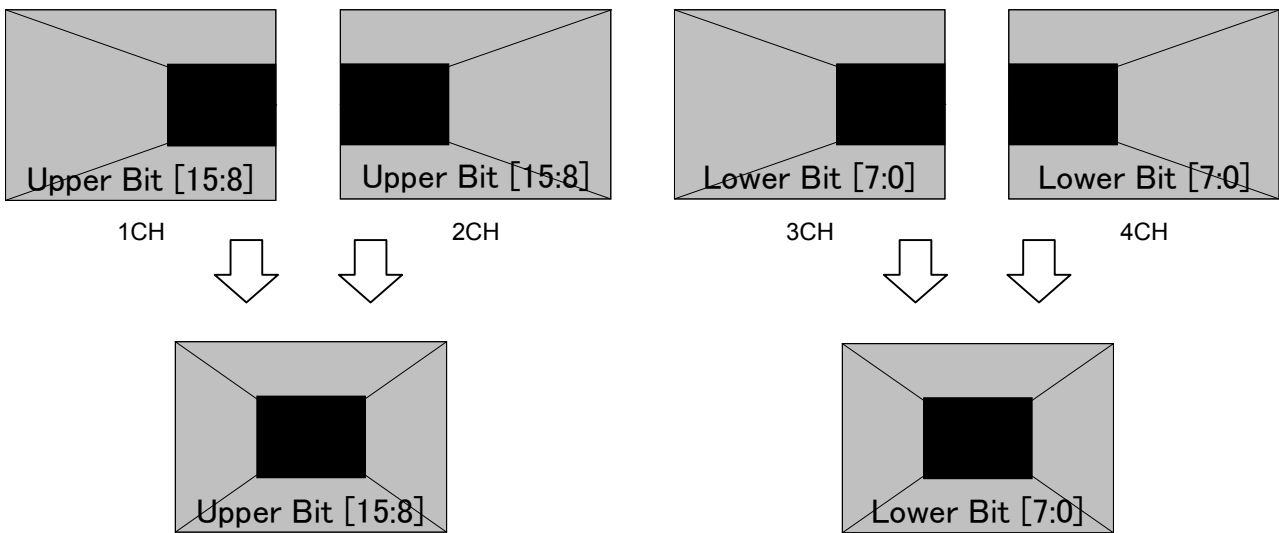
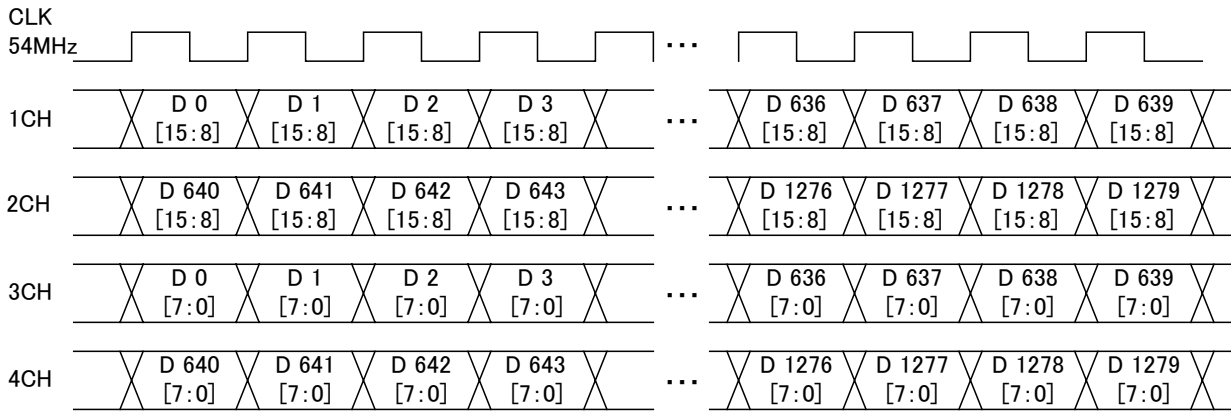


Setting (6) [Dual (16 bits)], [2 split], configuration [8 + 8 bits]

With channels 1 and 3 forming one set and channels 2 and 4 forming another set, the left half of the image is output using one set and the right half of the image is output using the other set.

The 8 upper bits are output to channels 1 and 2, and the remaining 8 lower bits are output to channels 3 and 4.

The example given here describes a case where the resolution is 1280 × 1024, the dot clock frequency is 108 MHz, 16 bits apply for the gray scale, 8 bits are output to channel 1 and 8 bits are output to channel 2.



4.4.4 Bit arrays

Included among the bit arrays are DEF1 (DISM standard type), DEF2 (OpenLDI standard type) and USER (1 to 3) which can be set as desired by users.

For the setting procedure, refer to “4.4.2 LVDS setting procedure.”

● Bit arrays for 8 to 10 bits when using one output connector

| Operation signal | Data No. | 8-bit mode | | | 10-bit mode | | |
|------------------|----------|-------------|----------------|-------|-------------|----------------|-------|
| | | DEF1 (DISM) | DEF2 (OpenLDI) | USER | DEF1 (DISM) | DEF2 (OpenLDI) | USER |
| TA | TA0 | R2 | R0 | R (X) | R4 | R0 | R (X) |
| | TA1 | R3 | R1 | R (X) | R5 | R1 | R (X) |
| | TA2 | R4 | R2 | R (X) | R6 | R2 | R (X) |
| | TA3 | R5 | R3 | R (X) | R7 | R3 | R (X) |
| | TA4 | R6 | R4 | R (X) | R8 | R4 | R (X) |
| | TA5 | R7 | R5 | R (X) | R9 | R5 | R (X) |
| | TA6 | G2 | G0 | G (X) | G4 | G0 | G (X) |
| TB | TB0 | G3 | G1 | G (X) | G5 | G1 | G (X) |
| | TB1 | G4 | G2 | G (X) | G6 | G2 | G (X) |
| | TB2 | G5 | G3 | G (X) | G7 | G3 | G (X) |
| | TB3 | G6 | G4 | G (X) | G8 | G4 | G (X) |
| | TB4 | G7 | G5 | G (X) | G9 | G5 | G (X) |
| | TB5 | B2 | B0 | B (X) | B4 | B0 | B (X) |
| | TB6 | B3 | B1 | B (X) | B5 | B1 | B (X) |
| TC | TC0 | B4 | B2 | B (X) | B6 | B2 | B (X) |
| | TC1 | B5 | B3 | B (X) | B7 | B3 | B (X) |
| | TC2 | B6 | B4 | B (X) | B8 | B4 | B (X) |
| | TC3 | B7 | B5 | B (X) | B9 | B5 | B (X) |
| | TC4 | HS | HS | HS | HS | HS | HS |
| | TC5 | VS | VS | VS | VS | VS | VS |
| | TC6 | DE | DE | DE | DE | DE | DE |
| TD | TD0 | R0 | R6 | R (X) | R2 | R6 | R (X) |
| | TD1 | R1 | R7 | R (X) | R3 | R7 | R (X) |
| | TD2 | G0 | G6 | G (X) | G2 | G6 | G (X) |
| | TD3 | G1 | G7 | G (X) | G3 | G7 | G (X) |
| | TD4 | B0 | B6 | B (X) | B2 | B6 | B (X) |
| | TD5 | B1 | B7 | B (X) | B3 | B7 | B (X) |
| | TD6 | L | L | L | L | L | L |
| TE | TE0 | L | L | L | R0 | R8 | R (X) |
| | TE1 | L | L | L | R1 | R9 | R (X) |
| | TE2 | L | L | L | G0 | G8 | G (X) |
| | TE3 | L | L | L | G1 | G9 | G (X) |
| | TE4 | L | L | L | B0 | B8 | B (X) |
| | TE5 | L | L | L | B1 | B9 | B (X) |
| | TE6 | L | L | L | L | L | L |

* In the 9-bit mode, the nine bits are positioned with the least significant bit applying in the 10-bit mode discarded and the bits justified upward.

● Bit arrays for 8 to 16 bits when using two output connector

Config setting: MultiBitMode/8+8 Bit

| Operation signal | Data No. | 8- to 16-bit mode | | | | | |
|------------------|----------|-------------------|---------|-------------------|---------|---------|---------|
| | | DEF1 (DISM) | | DEF2 (OpenLDI) | | USER | |
| | | CH1,CH2 | CH3,CH4 | CH1,CH2 | CH3,CH4 | CH1,CH2 | CH3,CH4 |
| TA | TA0 | R10 | R2 | R8 | R0 | R (X) | R (X) |
| | TA1 | R11 | R3 | R9 | R1 | R (X) | R (X) |
| | TA2 | R12 | R4 | R10 | R2 | R (X) | R (X) |
| | TA3 | R13 | R5 | R11 | R3 | R (X) | R (X) |
| | TA4 | R14 | R6 | R12 | R4 | R (X) | R (X) |
| | TA5 | R15 | R7 | R13 | R5 | R (X) | R (X) |
| | TA6 | G10 | G2 | G8 | G0 | G (X) | G (X) |
| TB | TB0 | G11 | G3 | G9 | G1 | G (X) | G (X) |
| | TB1 | G12 | G4 | G10 | G2 | G (X) | G (X) |
| | TB2 | G13 | G5 | G11 | G3 | G (X) | G (X) |
| | TB3 | G14 | G6 | G12 | G4 | G (X) | G (X) |
| | TB4 | G15 | G7 | G13 | G5 | G (X) | G (X) |
| | TB5 | B10 | B2 | B8 | B0 | B (X) | B (X) |
| | TB6 | B11 | B3 | B9 | B1 | B (X) | B (X) |
| TC | TC0 | B12 | B4 | B10 | B2 | B (X) | B (X) |
| | TC1 | B13 | B5 | B11 | B3 | B (X) | B (X) |
| | TC2 | B14 | B6 | B12 | B4 | B (X) | B (X) |
| | TC3 | B15 | B7 | B13 | B5 | B (X) | B (X) |
| | TC4 | HS | HS | HS | HS | HS | HS |
| | TC5 | VS | VS | VS | VS | VS | VS |
| | TC6 | DE | DE | DE | DE | DE | DE |
| TD | TD0 | R8 | R0 | R14 | R6 | R (X) | R (X) |
| | TD1 | R9 | R1 | R15 | R7 | R (X) | R (X) |
| | TD2 | G8 | G0 | G14 | G6 | G (X) | G (X) |
| | TD3 | G9 | G1 | G15 | G7 | G (X) | G (X) |
| | TD4 | B8 | B0 | B14 | B6 | B (X) | B (X) |
| | TD5 | B9 | B1 | B15 | B7 | B (X) | B (X) |
| | TD6 | L | L | L | L | L | L |
| TE | TE0 | L | L | L | L | L | L |
| | TE1 | L | L | L | L | L | L |
| | TE2 | L | L | L | L | L | L |
| | TE3 | L | L | L | L | L | L |
| | TE4 | L | L | L | L | L | L |
| | TE5 | L | L | L | L | L | L |
| | TE6 | L | L | L | L | L | L |

* With a bit width less than a 16-bit width, the bits are positioned with the less significant bits discarded and the bits justified upward.

- Bit arrays for 8 to 16 bits when using two output connector

Config setting: MultiBitMode/10+6 Bit

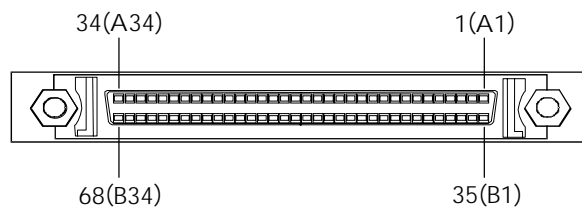
| Operation signal | Data No. | 8- to 16-bit mode | | | | | |
|------------------|----------|-------------------|---------|----------------|---------|---------|---------|
| | | DEF1 (DISM) | | DEF1 (OpenLDI) | | USER | |
| | | CH1,CH2 | CH3,CH4 | CH1,CH2 | CH3,CH4 | CH1,CH2 | CH3,CH4 |
| TA | TA0 | R10 | R0 | R6 | R0 | R (X) | R (X) |
| | TA1 | R11 | R1 | R7 | R1 | R (X) | R (X) |
| | TA2 | R12 | R2 | R8 | R2 | R (X) | R (X) |
| | TA3 | R13 | R3 | R9 | R3 | R (X) | R (X) |
| | TA4 | R14 | R4 | R10 | R4 | R (X) | R (X) |
| | TA5 | R15 | R5 | R11 | R5 | R (X) | R (X) |
| | TA6 | G10 | G0 | G6 | G0 | G (X) | G (X) |
| TB | TB0 | G11 | G1 | G7 | G1 | G (X) | G (X) |
| | TB1 | G12 | G2 | G8 | G2 | G (X) | G (X) |
| | TB2 | G13 | G3 | G9 | G3 | G (X) | G (X) |
| | TB3 | G14 | G4 | G10 | G4 | G (X) | G (X) |
| | TB4 | G15 | G5 | G11 | G5 | G (X) | G (X) |
| | TB5 | B10 | B0 | B6 | B0 | B (X) | B (X) |
| | TB6 | B11 | B1 | B7 | B1 | B (X) | B (X) |
| TC | TC0 | B12 | B2 | B8 | B2 | B (X) | B (X) |
| | TC1 | B13 | B3 | B9 | B3 | B (X) | B (X) |
| | TC2 | B14 | B4 | B10 | B4 | B (X) | B (X) |
| | TC3 | B15 | B5 | B11 | B5 | B (X) | B (X) |
| | TC4 | HS | HS | HS | HS | HS | HS |
| | TC5 | VS | VS | VS | VS | VS | VS |
| | TC6 | DE | DE | DE | DE | DE | DE |
| TD | TD0 | R8 | L | R12 | L | R (X) | L |
| | TD1 | R9 | L | R13 | L | R (X) | L |
| | TD2 | G8 | L | G12 | L | G (X) | L |
| | TD3 | G9 | L | G13 | L | G (X) | L |
| | TD4 | B8 | L | B12 | L | B (X) | L |
| | TD5 | B9 | L | B13 | L | B (X) | L |
| | TD6 | L | L | L | L | L | L |
| TE | TE0 | R6 | L | R14 | L | R (X) | L |
| | TE1 | R7 | L | R15 | L | R (X) | L |
| | TE2 | G6 | L | G14 | L | G (X) | L |
| | TE3 | G7 | L | G15 | L | G (X) | L |
| | TE4 | B6 | L | B14 | L | B (X) | L |
| | TE5 | B7 | L | B15 | L | B (X) | L |
| | TE6 | L | L | L | L | L | L |

* With a bit width less than a 16-bit width, the bits are positioned with the less significant bits discarded and the bits justified upward.

4.5 Parallel

4.5.1 Connectors and pin assignments



































- Connector: 68-pin MINI D (half-pitch pin type)



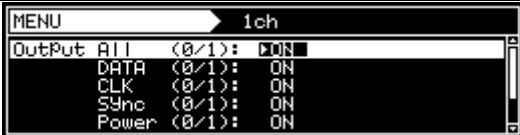
| CH1 | | | | | | | | CH2 | | | | | | | |
|-----|--------|-----|--------|-----|--------|-----|--------|-----|--------|-----|--------|-----|--------|-----|--------|
| No. | Signal | No. | Signal | No. | Signal | No. | Signal | No. | Signal | No. | Signal | No. | Signal | No. | Signal |
| 1 | (GND) | 18 | VCC | 35 | RA0 | 52 | VCC | 1 | (GND) | 18 | VCC | 35 | RB0 | 52 | VCC |
| 2 | (GND) | 19 | GND | 36 | RA1 | 53 | GND | 2 | (GND) | 19 | GND | 36 | RB1 | 53 | GND |
| 3 | (GND) | 20 | GND | 37 | RA2 | 54 | GND | 3 | (GND) | 20 | GND | 37 | RB2 | 54 | GND |
| 4 | (GND) | 21 | (GND) | 38 | RA3 | 55 | HS0 | 4 | (GND) | 21 | (GND) | 38 | RB3 | 55 | SW2 |
| 5 | (GND) | 22 | (GND) | 39 | RA4 | 56 | VS0 | 5 | (GND) | 22 | (GND) | 39 | RB4 | 56 | SW3 |
| 6 | (GND) | 23 | (GND) | 40 | RA5 | 57 | DISP0 | 6 | (GND) | 23 | (GND) | 40 | RB5 | 57 | DISP1 |
| 7 | (GND) | 24 | (GND) | 41 | RA6 | 58 | SW0 | 7 | (GND) | 24 | (GND) | 41 | RB6 | 58 | SW1 |
| 8 | (GND) | 25 | (GND) | 42 | RA7 | 59 | BA0 | 8 | (GND) | 25 | (GND) | 42 | RB7 | 59 | BB0 |
| 9 | (GND) | 26 | (GND) | 43 | GA0 | 60 | BA1 | 9 | (GND) | 26 | (GND) | 43 | GB0 | 60 | BB1 |
| 10 | (GND) | 27 | (GND) | 44 | GA1 | 61 | BA2 | 10 | (GND) | 27 | (GND) | 44 | GB1 | 61 | BB2 |
| 11 | (GND) | 28 | (GND) | 45 | GA2 | 62 | BA3 | 11 | (GND) | 28 | (GND) | 45 | GB2 | 62 | BB3 |
| 12 | (GND) | 29 | (GND) | 46 | GA3 | 63 | BA4 | 12 | (GND) | 29 | (GND) | 46 | GB3 | 63 | BB4 |
| 13 | (GND) | 30 | (GND) | 47 | GA4 | 64 | BA5 | 13 | (GND) | 30 | (GND) | 47 | GB4 | 64 | BB5 |
| 14 | (GND) | 31 | (GND) | 48 | GA5 | 65 | BA6 | 14 | (GND) | 31 | (GND) | 48 | GB5 | 65 | BB6 |
| 15 | (GND) | 32 | (GND) | 49 | GA6 | 66 | BA7 | 15 | (GND) | 32 | (GND) | 49 | GB6 | 66 | BB7 |
| 16 | (GND) | 33 | GND | 50 | GA7 | 67 | GND | 16 | (GND) | 33 | GND | 50 | GB7 | 67 | GND |
| 17 | VCC | 34 | (GND) | 51 | VCC | 68 | CLK | 17 | VCC | 34 | (GND) | 51 | VCC | 68 | CLK |

4.5.2 Parallel data setting procedure

Parallel data setting procedure

| | |
|---|--|
| <p>(1) Select Program Edit using  or  or  or  INC  DEC, and then press .</p> |  <pre> MENU Program Edit Program Name : ▶EIA1920x1080P@60 Timing (TIM) >>> OutPut (TIM) >>> Audio (TIM) >>> Pattern (PAT) >>> </pre> |
| <p>(2) Select Output using  or  INC  DEC, and then press .</p> |  <pre> MENU OutPut All OutPut >>> Analog OutPut >>> Digital OutPut >>> VBI Function >>> </pre> |
| <p>(3) Select Digital Output using  or  INC  DEC, and then press .</p> |  <pre> MENU Digital OutPut General >>> DUI >>> HDMI >>> LVDS >>> Parallel >>> </pre> |
| <p>(4) Select Parallel using  or  INC  DEC, and then press .</p> |  <pre> MENU Parallel 1ch >>> 2ch >>> Mode (0-3): Single(Auto) Polarity CLK (0/1): Posi HD (0/1): NegA </pre> |
| <p>(5) Select the items using  or  INC  DEC, and then press .</p> <p><Inputting the parameters></p> <p>Select the parameters using  or  INC  DEC, and then press .</p> <p>Alternatively: Select the parameters using the number keys  STATUS  F , and then press .</p> | <p>For further details on the parameters, refer to the table below.</p> |

Parallel data setting parameters

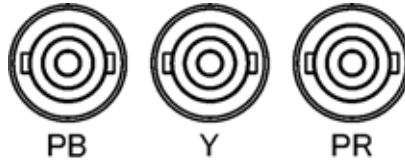
| (1) | 1ch |  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|------------|------|--|------------|--|--|---|-----|--------------------|---|----|--------------------|------|----|--------------------|---|-----|--|---|------|---------------------------------|-----|--|--|---|-----|---|---|----|---|------|----|--------------------|---|-----|--|---|------|---|-------|--|--|---|-----|--|---|----|--|----|----|--------------------|---|-----|-------------------|---|------|-------------------|---|----|-------------------|---|-----|---------------|---|
| | | <table border="1"> <thead> <tr> <th colspan="3">Output All</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>OFF</td> <td></td> </tr> <tr> <td>1</td> <td>ON</td> <td></td> </tr> <tr> <th colspan="3">DATA</th> </tr> <tr> <td>0</td> <td>Hiz</td> <td>This sets the parallel data to the high-impedance (HiZ) state.</td> </tr> <tr> <td>1</td> <td>ON</td> <td>This outputs the parallel data.</td> </tr> <tr> <th colspan="3">CLK</th> </tr> <tr> <td>0</td> <td>Hiz</td> <td>This sets the CLK signal to the high-impedance (HiZ) state.</td> </tr> <tr> <td>1</td> <td>ON</td> <td>This outputs the parallel clock signal.</td> </tr> <tr> <th colspan="3">Sync</th> </tr> <tr> <td>0</td> <td>Hiz</td> <td>This sets the parallel clock signal to the high-impedance (HiZ) state.</td> </tr> <tr> <td>1</td> <td>ON</td> <td>This outputs the parallel clock signal.</td> </tr> <tr> <th colspan="3">Power</th> </tr> <tr> <td>0</td> <td>Hiz</td> <td>This sets the parallel power supply to the high-impedance (HiZ) state.</td> </tr> <tr> <td>1</td> <td>ON</td> <td>This outputs the parallel power. For further details on the settings, refer to "1.5.6 Parallel unit."</td> </tr> <tr> <th colspan="3">SW</th> </tr> <tr> <td>0</td> <td>CS</td> <td>CS output from SW</td> </tr> <tr> <td>1</td> <td>VD</td> <td>VD output from SW</td> </tr> <tr> <td>2</td> <td>HD</td> <td>HD output from SW</td> </tr> <tr> <td>3</td> <td>Low</td> <td>Fix SW to Low</td> </tr> <tr> <td>4</td> <td>High</td> <td>Fix SW to High</td> </tr> </tbody> </table> | Output All | | | 0 | OFF | | 1 | ON | | DATA | | | 0 | Hiz | This sets the parallel data to the high-impedance (HiZ) state. | 1 | ON | This outputs the parallel data. | CLK | | | 0 | Hiz | This sets the CLK signal to the high-impedance (HiZ) state. | 1 | ON | This outputs the parallel clock signal. | Sync | | | 0 | Hiz | This sets the parallel clock signal to the high-impedance (HiZ) state. | 1 | ON | This outputs the parallel clock signal. | Power | | | 0 | Hiz | This sets the parallel power supply to the high-impedance (HiZ) state. | 1 | ON | This outputs the parallel power. For further details on the settings, refer to "1.5.6 Parallel unit." | SW | | | 0 | CS | CS output from SW | 1 | VD | VD output from SW | 2 | HD | HD output from SW | 3 | Low | Fix SW to Low | 4 |
| Output All | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | OFF | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | ON | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| DATA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | Hiz | This sets the parallel data to the high-impedance (HiZ) state. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | ON | This outputs the parallel data. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CLK | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | Hiz | This sets the CLK signal to the high-impedance (HiZ) state. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | ON | This outputs the parallel clock signal. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Sync | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | Hiz | This sets the parallel clock signal to the high-impedance (HiZ) state. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | ON | This outputs the parallel clock signal. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Power | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | Hiz | This sets the parallel power supply to the high-impedance (HiZ) state. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | ON | This outputs the parallel power. For further details on the settings, refer to "1.5.6 Parallel unit." | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SW | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | CS | CS output from SW | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | VD | VD output from SW | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | HD | HD output from SW | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | Low | Fix SW to Low | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | High | Fix SW to High | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (2) | 2ch | The settings from Output to Power are the same as for channel 1. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | <table border="1"> <thead> <tr> <th colspan="3">SW1</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>CS</td> <td>CS output from SW1</td> </tr> <tr> <td>1</td> <td>VD</td> <td>VD output from SW1</td> </tr> <tr> <td>2</td> <td>HD</td> <td>HD output from SW1</td> </tr> <tr> <td>3</td> <td>Low</td> <td>Fix SW1 to Low</td> </tr> <tr> <td>4</td> <td>High</td> <td>Fix SW1 to High</td> </tr> <tr> <th colspan="3">SW2</th> </tr> <tr> <td>0</td> <td>HS</td> <td>HS output from SW2</td> </tr> <tr> <td>1</td> <td>VD</td> <td>VD output from SW2</td> </tr> <tr> <td>2</td> <td>HD</td> <td>HD output from SW2</td> </tr> <tr> <td>3</td> <td>Low</td> <td>Fix SW2 to Low</td> </tr> <tr> <td>4</td> <td>High</td> <td>Fix SW2 to High</td> </tr> <tr> <th colspan="3">SW3</th> </tr> <tr> <td>0</td> <td>VS</td> <td>VS output from SW3</td> </tr> <tr> <td>1</td> <td>VD</td> <td>VD output from SW3</td> </tr> <tr> <td>2</td> <td>HD</td> <td>HD output from SW3</td> </tr> <tr> <td>3</td> <td>Low</td> <td>Fix SW3 to Low</td> </tr> <tr> <td>4</td> <td>High</td> <td>Fix SW3 to High</td> </tr> </tbody> </table> | SW1 | | | 0 | CS | CS output from SW1 | 1 | VD | VD output from SW1 | 2 | HD | HD output from SW1 | 3 | Low | Fix SW1 to Low | 4 | High | Fix SW1 to High | SW2 | | | 0 | HS | HS output from SW2 | 1 | VD | VD output from SW2 | 2 | HD | HD output from SW2 | 3 | Low | Fix SW2 to Low | 4 | High | Fix SW2 to High | SW3 | | | 0 | VS | VS output from SW3 | 1 | VD | VD output from SW3 | 2 | HD | HD output from SW3 | 3 | Low | Fix SW3 to Low | 4 | High | Fix SW3 to High | | | | | | | |
| SW1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | CS | CS output from SW1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | VD | VD output from SW1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | HD | HD output from SW1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | Low | Fix SW1 to Low | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | High | Fix SW1 to High | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SW2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | HS | HS output from SW2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | VD | VD output from SW2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | HD | HD output from SW2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | Low | Fix SW2 to Low | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | High | Fix SW2 to High | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SW3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | VS | VS output from SW3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | VD | VD output from SW3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | HD | HD output from SW3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | Low | Fix SW3 to Low | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | High | Fix SW3 to High | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| | | | | |
|-----|---------------------------|--|-------------------------|--|
| (3) | Mode (0/1) | This sets the bit length and link format of the images to be output from the parallel connector. A setting which is independent of the bit length for pattern drawing can be selected. It is also possible to select the bit length automatically. The portion by which the bit length for pattern drawing exceeds the bit length which has been set here is discarded. A deficient portion is filled with zeros. “Single” can be selected when the dot clock frequency ranges from 0.1 MHz to 100 MHz, and the data can be output. “Dual” can be selected when the dot clock frequency ranges from 0.2 MHz to 200 MHz, and the data can be output. 4.1.5 Setting the bit length (gray scale) for pattern drawing | | |
| | | 0 | Single (8 bits) | The data is output by Single Link from output channel 1. The portion by which the bit length for pattern drawing exceeds 8 bits is discarded. The same data as for output channel 1 is output for channel 2. |
| | | 1 | Dual (8 bits) | The data is output by Dual Link from output channels 1 and 2. The portion by which the bit length for pattern drawing exceeds 8 bits is discarded. |
| | | 2 | Single (16 bits) | The data is output by Single Link from output channels 1 and 2. The portion by which the bit length for pattern drawing is deficient from 16 bits is discarded. |
| | | 3 | Single (Auto) | The data is output by Single Link. Single (10 bits) or Single (16 bits) is automatically selected depending on the bit length for pattern drawing. |
| (4) | Polarity CLK (0/1) | This selects whether to reverse the polarity of the parallel clock signal. | | |
| | | 0 | Nega | This outputs the clock signal with a reversed polarity. |
| | | 1 | Posi | This outputs the clock signal with a non-reversed polarity. |
| (5) | HD (0/1) | This selects whether to reverse the polarity of the parallel HD. For further details of the setting procedure, refer to “3.2 Vertical timing data editing.” | | |
| | | 0 | Nega | This outputs the clock signal with a reversed polarity. |
| | | 1 | Posi | This outputs the clock signal with a non-reversed polarity. |
| (6) | VD (0/1) | This selects whether to reverse the polarity of the parallel VD. For further details of the setting procedure, refer to “3.2 Vertical timing data editing.” | | |
| | | 0 | Nega | This outputs the clock signal with a reversed polarity. |
| | | 1 | Posi | This outputs the clock signal with a non-reversed polarity. |
| (7) | CS (0/1) | This selects whether to reverse the polarity of the parallel CS. | | |
| | | 0 | Nega | This outputs the clock signal with a reversed polarity. |
| | | 1 | Posi | This outputs the clock signal with a non-reversed polarity. |
| (8) | DISP (0/1) | This selects whether to reverse the polarity of the parallel DISP. | | |
| | | 0 | Nega | This outputs the clock signal with a reversed polarity. |
| | | 1 | Posi | This outputs the clock signal with a non-reversed polarity. |

4.6 Analog component signals

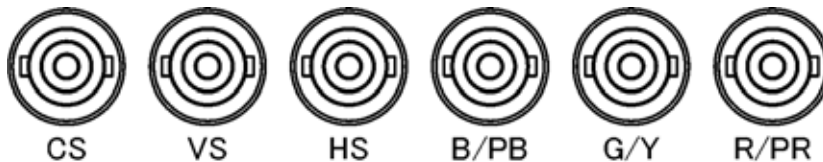
4.6.1 Connectors and output signals

- TV encoder board component outputs (BNC)



| Connector | Signal |
|-----------|--------|
| PB | Pb |
| Y | Y |
| PR | Pr |












- PC unit board component outputs (BNC)
























| Connector | Signal |
|-----------|---------|
| CS | CS |
| VS | VS |
| HS | HS |
| B/PB | B or Pb |
| G/Y | G or Y |
| R/PR | R or Pr |

4.6.2 Setting the analog output connectors

The analog component signals and output signals from the HS and CS connectors can be set for each program.

| | | |
|-----|---|---|
| (1) | Select Program Edit using  or  or   , and then press  . |  <pre> MENU Program Edit Program Name : EIA1920x1080P60 Timin9 < TIM > >>> OutPut < TIM > >>> Audio < TIM > >>> Pattern < PAT > >>> </pre> |
| (2) | Select Output using  or   , and then press  . |  <pre> MENU OutPut All OutPut >>> Analog OutPut >>> Digital OutPut >>> UBI Function >>> </pre> |

| | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|--|---|--|------------|------------------------------------|--|------------|-----------------------------------|-------------|----------------|--|------------------|---|----|---|---|----|------------------|---|----|---|---|----|---|----|
| <p>(3) Select Analog Output using  or  INC, and then press  SET.</p> |  | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>(4) Select General using  or  INC  DEC, and then press  SET.</p> |  | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>(5) Select the items using  or  INC  DEC, and then press  SET.</p> <p>Set the numerical values using  or  INC  DEC, and then press  SET.</p> <p>Alternatively: Make the selections using the number keys  , and then press  SET.</p> | <p>The parameters are set here.</p> <table border="1"> <tr> <td rowspan="2">Video</td> <td colspan="2">The video level is set here.</td> </tr> <tr> <td>0.05-1.20V</td> <td>Video-On-Sync is in the off state.</td> </tr> <tr> <td></td> <td>0.30-1.20V</td> <td>Video-On-Sync is in the on state.</td> </tr> <tr> <td>Sync</td> <td>0.00 to 0.60 V</td> <td>The sync signal (Video-On-Sync) level is set here.</td> </tr> <tr> <td rowspan="2">HS Select</td> <td>0</td> <td>HS</td> <td rowspan="2">The signal to be output from the HS connector is selected here.</td> </tr> <tr> <td>1</td> <td>CS</td> </tr> <tr> <td rowspan="3">CS Select</td> <td>0</td> <td>CS</td> <td rowspan="3">The signal to be output from the CS connector is selected here.</td> </tr> <tr> <td>1</td> <td>HS</td> </tr> <tr> <td>2</td> <td>VS</td> </tr> </table> | Video | The video level is set here. | | 0.05-1.20V | Video-On-Sync is in the off state. | | 0.30-1.20V | Video-On-Sync is in the on state. | Sync | 0.00 to 0.60 V | The sync signal (Video-On-Sync) level is set here. | HS Select | 0 | HS | The signal to be output from the HS connector is selected here. | 1 | CS | CS Select | 0 | CS | The signal to be output from the CS connector is selected here. | 1 | HS | 2 | VS |
| Video | The video level is set here. | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 0.05-1.20V | Video-On-Sync is in the off state. | | | | | | | | | | | | | | | | | | | | | | | | |
| | 0.30-1.20V | Video-On-Sync is in the on state. | | | | | | | | | | | | | | | | | | | | | | | | |
| Sync | 0.00 to 0.60 V | The sync signal (Video-On-Sync) level is set here. | | | | | | | | | | | | | | | | | | | | | | | | |
| HS Select | 0 | HS | The signal to be output from the HS connector is selected here. | | | | | | | | | | | | | | | | | | | | | | | |
| | 1 | CS | | | | | | | | | | | | | | | | | | | | | | | | |
| CS Select | 0 | CS | The signal to be output from the CS connector is selected here. | | | | | | | | | | | | | | | | | | | | | | | |
| | 1 | HS | | | | | | | | | | | | | | | | | | | | | | | | |
| | 2 | VS | | | | | | | | | | | | | | | | | | | | | | | | |
| <p></p> | <p>Display returns to the initial screen.</p> | | | | | | | | | | | | | | | | | | | | | | | | | |

4.6.3 Setting the analog video level

For details on changing the analog video level, refer to “4.1.7 Setting the analog level (temporary settings).”

4.6.4 Sync signal settings

For further details on the sync signal ON/OFF settings and polarity settings, refer to “4.1.2 Setting the sync signals to ON or OFF and setting the sync signal polarities.”

4.7 Composite connector and Y/C connector (S connector)

4.7.1 Connectors and output signals

■ Composite connector



| Connector | Signal |
|-----------|-----------------|
| COMPOSITE | Composite video |

■ Y/C connector (S connector)

· INCLUDEPICTURE "VG-870/connector/TV-Sterminal.bmp" ¥* MERGEFORMAT ¥d



| Pin no. | Signal |
|---------|--------|
| 1 | GND |
| 2 | GND |
| 3 | Y |
| 4 | C |

■ Concerning the output signals

The following video signals can be output from the composite connector and Y/C connector of the TV encoder unit.

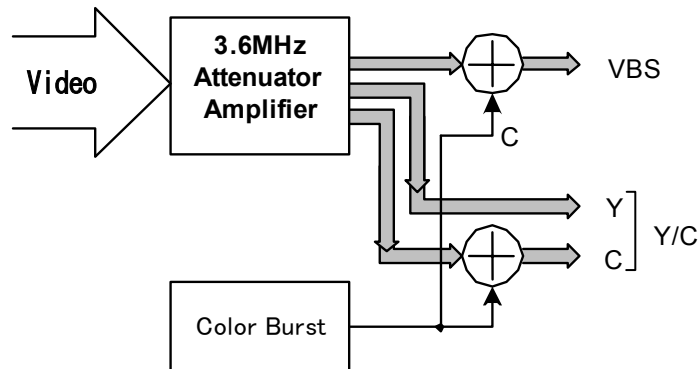
- NTSC-M, NTSC-J, NTSC-443
- PAL-60, PAL, PAL-M, PAL-N, PAL-Nc
- SECAM

CAUTION

- If the timing of the composite and Y/C signals (such as the period and sync width data) has been changed from that in the internal program, it may no longer be possible to draw the patterns on the monitor correctly.

4.7.2 Composite signal filter settings

The amount of attenuation (or gain) in the 3.6 MHz frequency of the composite and Y/C signals can be set. This setting is processed before the chrominance is added to the video signals so that the color burst is not affected.



Setting procedure







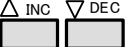





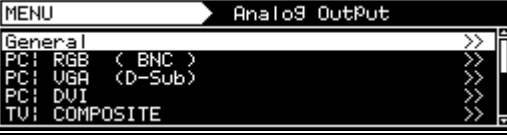



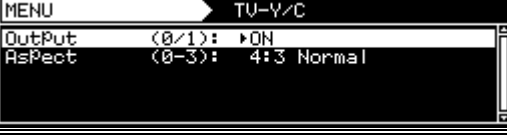

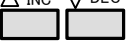



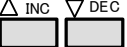





| | | | | | | | | | | | | | | | | | | | | |
|-----|---|---|---|--------------------|-------------------------|---|--------------------|------------|---|----------------|-------------------------|---|----------------|------------|---|----------------|---------------------------------|---|-------------------|--|
| (1) | <p>Select Configuration using or or , and then press .</p> | | | | | | | | | | | | | | | | | | | |
| (2) | <p>Select General using or , and then press .</p> | | | | | | | | | | | | | | | | | | | |
| (3) | <p>Select TV-COMPOSITE Filter using or , and then press .</p> | | | | | | | | | | | | | | | | | | | |
| (4) | <p><Inputting the parameters></p> <p>Select the parameters using or or , and then press .</p> <p>Alternatively: Select the parameters using the number keys (to), and then press .</p> | <p>The edges are enhanced or smoothed by the TV-COMPOSITE Filter setting.</p> <table border="1"> <tbody> <tr> <td>0</td> <td>3.5 dB gain</td> <td>The edges are enhanced.</td> </tr> <tr> <td>1</td> <td>1.0 dB gain</td> <td>See above.</td> </tr> <tr> <td>2</td> <td>-1.0 dB</td> <td>The edges are smoothed.</td> </tr> <tr> <td>3</td> <td>-3.0 dB</td> <td>See above.</td> </tr> <tr> <td>4</td> <td>-7.0 dB</td> <td>See above. (Factory setting)</td> </tr> <tr> <td>5</td> <td>-7.0 dB *1</td> <td>3 pixels are smoothed in addition to the setting of 4.</td> </tr> </tbody> </table> | 0 | 3.5 dB gain | The edges are enhanced. | 1 | 1.0 dB gain | See above. | 2 | -1.0 dB | The edges are smoothed. | 3 | -3.0 dB | See above. | 4 | -7.0 dB | See above. (Factory setting) | 5 | -7.0 dB *1 | 3 pixels are smoothed in addition to the setting of 4. |
| 0 | 3.5 dB gain | The edges are enhanced. | | | | | | | | | | | | | | | | | | |
| 1 | 1.0 dB gain | See above. | | | | | | | | | | | | | | | | | | |
| 2 | -1.0 dB | The edges are smoothed. | | | | | | | | | | | | | | | | | | |
| 3 | -3.0 dB | See above. | | | | | | | | | | | | | | | | | | |
| 4 | -7.0 dB | See above. (Factory setting) | | | | | | | | | | | | | | | | | | |
| 5 | -7.0 dB *1 | 3 pixels are smoothed in addition to the setting of 4. | | | | | | | | | | | | | | | | | | |

* The filter settings are shared by the Y/C and SCART outputs.

4.7.3 Setting the ID signals (Y/C)

With the Y/C signals, identification of the aspect ratio is enabled by superimposing the ID DC signal onto the C signal.

Setting procedure

| | | | | | | | | | | | | | |
|---|--|---|-------------------|-----------|---|-----------------------|------------------------|---|---------------------|----------------------|---|-------------|---|
| <p>(1) Select Program Edit using  or  or , and then press .</p> |  | | | | | | | | | | | | |
| <p>(2) Select Output using  or , and then press .</p> |  | | | | | | | | | | | | |
| <p>(3) Select Analog Output using  or , and then press .</p> |  | | | | | | | | | | | | |
| <p>(4) Select TV Y/C using  or , and then press .</p> |  | | | | | | | | | | | | |
| <p>(5) Select Aspect using  or , and then press .</p> |  | | | | | | | | | | | | |
| <p>(6) Select the setting using  or , and then press .</p> <p>Alternatively: Select the setting using the number keys ( to ) and then press .</p> | <p>Set the DC voltage of the C signal.</p> <table border="1"> <tbody> <tr> <td>0</td> <td>4:3 Normal</td> <td>4.3 (0 V)</td> </tr> <tr> <td>1</td> <td>4:3 Letter Box</td> <td>4:3 letter box (2.2 V)</td> </tr> <tr> <td>2</td> <td>16:9 Squeeze</td> <td>16:9 squeeze (5.0 V)</td> </tr> <tr> <td>3</td> <td>Auto</td> <td>The setting accords with the aspect ratio setting in the program.</td> </tr> </tbody> </table> | 0 | 4:3 Normal | 4.3 (0 V) | 1 | 4:3 Letter Box | 4:3 letter box (2.2 V) | 2 | 16:9 Squeeze | 16:9 squeeze (5.0 V) | 3 | Auto | The setting accords with the aspect ratio setting in the program. |
| 0 | 4:3 Normal | 4.3 (0 V) | | | | | | | | | | | |
| 1 | 4:3 Letter Box | 4:3 letter box (2.2 V) | | | | | | | | | | | |
| 2 | 16:9 Squeeze | 16:9 squeeze (5.0 V) | | | | | | | | | | | |
| 3 | Auto | The setting accords with the aspect ratio setting in the program. | | | | | | | | | | | |
| <p>Upon completion of the settings: Press .</p> | <p>Display returns to the initial screen.</p> | | | | | | | | | | | | |

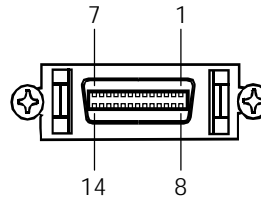
4.7.4 Functions available with TV standard signals

Microvision, closed caption, V-Chip, Teletext, WSS and CGMS-A/ID-1 can be multiplexed with the composite signals and Y signal.

For details on the setting procedure, refer to "5. FUNCTIONS AVAILABLE WITH TV STANDARD SIGNALS."

4.8 D5 (D connector)

4.8.1 Connectors and pin assignments














| Pin no. | Signal | Pin no. | Signal |
|---------|----------|---------|--------|
| 1 | Y | 8 | Line 1 |
| 2 | GND (Y) | 9 | Line 2 |
| 3 | Pb | 10 | NC |
| 4 | GND (Pb) | 11 | Line 3 |
| 5 | Pr | 12 | NC |
| 6 | GND (Pr) | 13 | NC |
| 7 | NC | 14 | NC |

4.8.2 ID signals

ID signals indicating the resolution, scanning system and aspect ratio can be output from the D connector. The ID signals are DC signals, and they identify the formats using three lines. These lines are referred to as line 1, line 2 and line 3.

Setting procedure

| | | |
|-----|---|--|
| (1) | Select Program Edit using or or , and then press . | |
| (2) | Select Output using or , and then press . | |
| (3) | Select Analog Output using or , and then press . | |
| (4) | Select TV D5 using or , and then press . | |

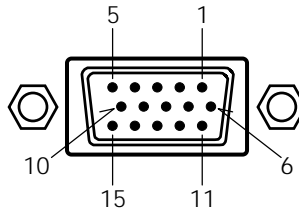
| | | |
|-----|--|---|
| (5) | <p><Selecting the items></p> <p>Select the items using  or  , and then press .</p> | For further details on the setting items and parameters, refer to <Table of D5 setting items> below. |
| | <p><Setting the parameters></p> <p>Select the parameters using  or , and then press .</p> <p>Alternatively: Select the parameters using the number keys  , and then press .</p> | |
| | <p>Upon completion of the settings:</p> <p>Press .</p> | Display returns to the initial screen. |

<Table of D5 setting items>

| | | | |
|-----|--------------------|---------------------------------------|---|
| (1) | Line1 (0-2) | Line1: This sets the resolution. | |
| | | 0 | 480 720 × 480 |
| | | 1 | 720 1280 × 720 |
| | | 2 | 1080 1920 × 1080 |
| | | 3 | Auto The setting accords with the program setting. |
| (2) | Line2 (0/1) | Line2: This sets the scanning system. | |
| | | 0 | Interlace Interlaced |
| | | 1 | Progressive Progressive |
| | | 2 | Auto The setting accords with the program setting. |
| (3) | Line3 (0-2) | Line3: This sets the aspect ratio. | |
| | | 0 | 4:3 4:3 |
| | | 1 | 4:3 Letter Box 4:3 letter box |
| | | 2 | 16:9 16:9 |
| | | 3 | Auto The setting accords with the program setting. |

4.9 VGA (D-Sub)

4.9.1 Connectors and pin assignments



| Pin no. | Signal | Pin no. | Signal |
|---------|---------|---------|----------------------------|
| 1 | R | 9 | +5 V (DDC power supply *1) |
| 2 | G | 10 | GND |
| 3 | B | 11 | GND |
| 4 | NC | 12 | DDC DATA |
| 5 | NC | 13 | HS |
| 6 | GND (R) | 14 | VS |
| 7 | GND (G) | 15 | DDC CLK |
| 8 | GND (B) | | |

*1: Restrictions apply to the supply current of the DDC power supply. Refer to “12.2 Concerning the maximum current consumption of the DDC power supply.”

4.9.2 Video level settings

The setting procedure is the same as for the analog component signals. Refer to “4.1.7 Setting the analog level (temporary settings)” and “4.6.2 Setting the analog output connectors.”

4.9.3 Sync signal settings

The setting procedure is the same as for the analog component signals. Refer to “4.1.2 Setting the sync signals to ON or OFF and setting the sync signal polarities.”

4.9.4 EDID

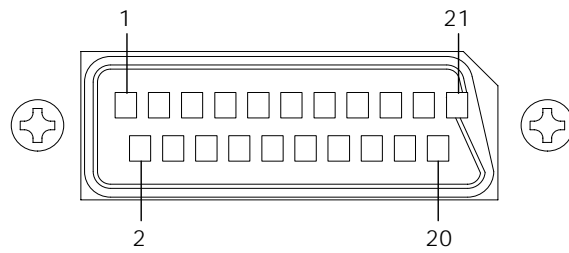
The operation procedure is the same as for HDMI. Refer to “6.13.3 EDID.”

4.9.5 DDC/CI

The operation procedure is the same as for DVI. Refer to “6.13.4 DDC/CI.”

4.10 SCART


































4.10.1 Connectors and pin assignments



| Pin no. | Signal | Pin no. | Signal |
|---------|----------------------------|---------|-----------------------------|
| 1 | Audio right channel output | 11 | Component G output |
| 2 | N.C. | 12 | N.C. |
| 3 | Audio left channel output | 13 | GND |
| 4 | GND | 14 | GND |
| 5 | GND | 15 | Component R output/C output |
| 6 | GND | 16 | RGB status |
| 7 | Component B output | 17 | GND |
| 8 | Video Status | 18 | GND |
| 9 | GND | 19 | Composite/Y output/CS |
| 10 | N.C. | 20 | N.C |
| | | 21 | GND |

4.10.2 SCART setting procedure

<SCART setting procedure>

| | |
|---|--|
| <p>(1) Select Program Edit using  or  or  or  INC  DEC, and then press .</p> |  <pre> MENU Program Edit Program Name : ▶EIA1920x1080P@60 Timing (TIM) >>> OutPut (TIM) >>> Audio (TIM) >>> Pattern (PAT) >>> </pre> |
| <p>(2) Select Output using  or  INC  DEC, and then press .</p> |  <pre> MENU OutPut All OutPut >>> Analog OutPut >>> Digital OutPut >>> VBI Function >>> </pre> |
| <p>(3) Select Analog Output using  or  INC  DEC, and then press .</p> |  <pre> MENU Analog OutPut General >>> PC: RGB (BNC) >>> PC: UGA (D-Sub) >>> PC: DVI >>> TV: COMPOSITE >>> </pre> |
| <p>(4) Select SCART using  or  INC  DEC, and then press .</p> |  <pre> MENU TV-SCART OutPut 1ch (0/1): ▶ON 2ch (0/1): ON OutPut Select(0-2): COMPOSITE Video Status (0-3): Auto RGB Status (0-3): Auto </pre> |
| <p>(5) Select the items using  or  INC  DEC, and then press .</p> <p><Inputting the parameters></p> <p>Select the parameters using  or  INC  DEC, and then press .</p> <p>Alternatively: Select the parameters using the number keys ( to ) , and then press .</p> | <p>For further details on the parameters, refer to <SCART setting parameters>.</p> |

<SCART setting parameters>

| | | | | |
|-----|--|---|---|--|
| (1) | Output 1ch (0/1) Output 2ch (0/1) | This sets On or Off for each channel. The same settings as the ones described in “4.1.1 Setting the output interfaces to ON or OFF” can also be established. | | |
| | | 0 | Off | No output. |
| | | 1 | On | Output. |
| (2) | Output Select (0-2) | This sets the format of the video signals which are output from the SCART connector. | | |
| | | 0 | COMPOSITE | Composite signals are output. |
| | | 1 | Y/C | Y/C signals are output. |
| (3) | Video Status (0-3) | This sets the video status signal which is output from the SCART connector. | | |
| | | 0 | Auto | The setting accords with the program setting. |
| | | 1 | 4:3 | 4:3 (identified voltage: 12 V) |
| | | 2 | 16:9 | 16:9 (identified voltage: 5 V) |
| | | 3 | No Signal | No output. (identified voltage: 0 V) |
| (4) | RGB Status (0-3) | This sets the RGB status signal which is output from the SCART connector. | | |
| | | 0 | Auto | The signal is set automatically by Output Select. |
| | | 1 | VBS | Composite or Y/C signals (identified voltage: 0 V) |
| | | 2 | RGB | RGB (identified voltage: 5 V) |
| (5) | Fast Blanking Area | This sets the output range of the fast blanking signal. | | |
| | | H | The horizontal output range is set from 0% to 100%. | |
| | | V | The vertical output range is set from 0% to 100%. | |
| (6) | Audio Out1ch (0/1) | This sets on or off for each channel. | | |
| | | 0 | OFF | No output. |
| | | 1 | ON | Output. |
| (7) | Audio Out2ch (0/1) | This setting is the same as for the Audio Out1ch setting. | | |

4.10.3 Functions available with TV standard signals

Microvision, closed caption, V-Chip, Teletext, WSS and CGMS-A/ID-1 can be multiplexed with the composite signals and Y signal.

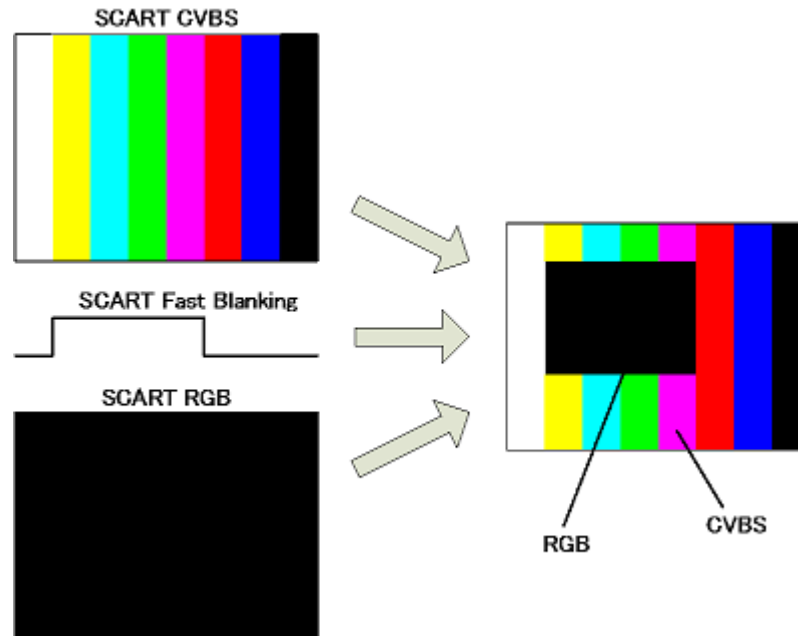
For details on the setting procedure, refer to “5. FUNCTIONS AVAILABLE WITH TV STANDARD SIGNALS.”

4.10.4 Filter settings

For further details on the setting procedure, refer to “4.7.2 Composite signal filter settings.”

4.10.5 Concerning the fast blanking signal

The fast blanking signal is a control signal for selecting the composite output and RGB output video signals which are output from the 16-pin SCART connector, and displaying them. By using it, displays can be shown as with on-screen displays. When the fast blanking signal level is low (0 V), the CVBS video signals are displayed on the monitor; when it is high (5 V), the RGB video signals are displayed.



CAUTION




























With the VG-870/871, different images other than black-filled images cannot be output from the composite and RGB output pins of the SCART connector.

If COMPOSITE or Y/C has been set for Output Select among the SCART setting, a black-filled image is output to the RGB output pins of the SCART connector; if RGB has been set, the same image as the composite pin is output.

4.10.6 Audio settings

For details on the setting procedure, refer to “4.11 Analog audio settings.”

b) Setting the sound source, frequency, level, etc.

| | | |
|-----|---|---|
| (1) | Select Program Edit using  or  or  INC  DEC , and then press  . |  <p>MENU Program Edit Program Name : ▶EIA1920x1080P@60 Timing (TIM) >>> OutPut (TIM) >>> Audio (TIM) >>> Pattern (PAT) >>></p> |
| (2) | Select Audio using  or  INC  DEC , and then press  . |  <p>MENU Audio Analog Audio >>> Digital Audio >>> Audio Sweep >>></p> |
| (3) | Select Analog Audio using  or  INC  DEC , and then press  . |  <p>MENU Analog Audio Frequency L : ▶ 1000Hz Level L : 0mV Level R : 0mV</p> |
| (5) | Select the items using  or  INC  DEC , and then press  . | Set the frequency and level. Frequency L The left channel frequency is set. Setting range: 20 Hz to 20,000 KHz (20 Hz Step) |
| | <Inputting the parameters> Select the parameters using  or  INC  DEC , and then press  . | Frequency R The right channel frequency is set. Setting range: 20 Hz to 20,000 KHz (20 Hz Step) |
| | Alternatively: Select the parameters using the number keys   , and then press  . | Level L The left channel level is set. Setting range: 0 to 2,000 [mV] (50 mV Step) |
| | | Level R The right channel level is set. Setting range: 0 to 2,000 [mV] (50 mV Step) |

4.11.3 Audio sweep setting

For details on the audio sweep settings, refer to “4.1.9 Audio sweep settings.”

5

FUNCTIONS AVAILABLE WITH TV STANDARD SIGNALS

Text, data, copy prevention information and other data are superimposed in the vertical blanking interval (VBI) of the NTSC, PAL and SECAM TV standard signals, and transmitted as multiplexed broadcasts.

The VG-870 supports the following functions.

- (1) Macrovision (Option)
- (2) Closed caption/V-Chip
- (3) Teletext
- (4) WSS
- (5) CGMS-A/ID-1

The TV standard signals and functions supported are summarized in the table below.

| | Macrovision | Closed caption V-chip | Teletext | WSS | CGMS-A ID-1 |
|--------------|-------------|-----------------------|----------|-----|-------------|
| NTSC-J | ○ | ○ | - | - | ○ |
| NTSC-M | ○ | ○ | - | - | ○ |
| NTSC-443 | ○ | ○ | - | - | ○ |
| PAL-M | ○ | ○ | - | - | ○ |
| PAL-60 | ○ | ○ | - | - | ○ |
| PAL(-BDGHIK) | ○ | ○ | ○ | ○ | - |
| PAL-N | ○ | ○ | - | ○ | - |
| PAL-Nc | ○ | ○ | - | ○ | - |
| SECAM | ○ | - | - | ○ | - |

* Macrovision, closed caption (V-Chip) and Teletext cannot be executed concurrently.

5.1 Macrovision

5.1.1 Description and specifications

■ What is “Macrovision”?

Macrovision is a copy prevention system developed by Macrovision Corporation.

Widely used by video sources such as VHS and DVD-Video on the market and by satellite broadcasts, for instance, the system ensures that, by causing the automatic gain control (AGC) of the video decks to malfunction, users will not be able to record properly the video output sources which are protected by the system.

The AGC circuit is designed to adjust the gain of the input signals automatically and maintain the appropriate sensitivity, and almost all consumer-use VTRs now feature it. It serves to make dark images a little brighter and excessively light images darker and keep them this way.

While keeping the luminance and chrominance signal components of the video signals unchanged, Macrovision's copy prevention signals cause the AGC to malfunction by mixing signals with non-standard levels in the vertical blanking interval. This is why the brightness of the images will fluctuate even when the images are recorded. These signals also have the effect of causing trouble for the sync signals and disturbances in the images.

The trouble caused ensures that content is unwatchable even when it has been copied.

■ **What does the “color stripe” function do?**

This function is part of the Macrovision standard, and it provides color stripes to overlap with the regular Macrovision signals.

It constitutes a method of superimposing the modulated color burst signal onto the video signals, and it is also referred to as a means of color burst copy prevention.

The color stripe function inserts thin horizontal lines into the copied images and, like the Macrovision system, it makes the images unwatchable.

* The color stripes are provided only in the Type 2 and 3 modes of the NTSC-M and J systems.

■ **Macrovision specifications**

Macrovision supports the TV signals of the following systems.


























Its signals are superimposed onto the composite signals and Y/C signals.


- NTSC-M, NTSC-J, NTSC-443
- PAL-60, PAL, PAL-M, PAL-N, PAL-Nc
- SECAM



- Macrovision is an option. Contact an Astrodesign sales representative or your dealer.
- The Macrovision signals have different effects depending on the type of VHS or DVD player used. When using the system, be absolutely sure to check the terms and conditions of the agreement with Macrovision Corporation.

5.1.2 Setting procedure

| (1) | <p>Select Program Edit using  or  or  , and then press .</p> |  | | | | | | |
|--------|--|---|--------|--|---|-----|---|------------------|
| (2) | <p>Select Output using  or  , and then press .</p> |  | | | | | | |
| (3) | <p>Select VBI Function using  or  , and then press .</p> |  | | | | | | |
| (4) | <p>Select Macrovision using  or  , and then press .</p> |  | | | | | | |
| (5) | <p>Select Mode using  or  , and then press .</p> | <p>The selection options for Mode differ depending on the TV signals. (OFF is set for any timing format not listed below.)</p> <table border="1"> <tr> <th colspan="2">NTSC-M</th> </tr> <tr> <td>0</td> <td>OFF</td> </tr> <tr> <td>1</td> <td>Type1 (AGC only)</td> </tr> </table> | NTSC-M | | 0 | OFF | 1 | Type1 (AGC only) |
| NTSC-M | | | | | | | | |
| 0 | OFF | | | | | | | |
| 1 | Type1 (AGC only) | | | | | | | |

| | | |
|--|--|---------------------------------|
| <p>Alternatively: Make the selections using the number keys 0/STATUS 9/F ↗ SET</p> <p>(<input type="text"/> to <input type="text"/>) , and then press <input type="text"/>.</p> | 2 | Type2 (AGC + 2Line Colorstripe) |
| | 3 | Type3 (AGC + 4Line Colorstripe) |
| | 4 | VHS USA |
| | 5 | VHS US obs. |
| | NTSC-J | |
| | 0 | OFF |
| | 1 | Type1 (AGC only) |
| | 2 | Type2 (AGC + 2Line Colorstripe) |
| | 3 | Type3 (AGC + 4Line Colorstripe) |
| | 4 | VHS Japan1 |
| | 5 | VHS Japan2 |
| | NTSC-443, PAL-60, PAL-M | |
| | 0 | OFF |
| | 1 | Type1,2,3 (AGC only) |
| | PAL, PAL-N, PAL-Nc, SECAM | |
| 0 | OFF | |
| 1 | Type1,2,3 (AGC only) | |
| 2 | VHS | |
| <p>MENU</p>  | Display returns to the initial screen. | |

5.2 Closed captions/V-Chip

5.2.1 Description and specifications

■ What does the closed caption (CC) function do?

Closed captioning was developed in the United States, and it provides broadcasts with subtitles for the hearing impaired so that people who are deaf or hard of hearing can enjoy movies and news programs.

The captions are “closed” in the sense that they are not displayed on the screen during normal playback. Conversely, the Japanese-language subtitles and other such characters used with video content which are “burned into” the images from the start are referred to as “open captions.”

Although closed captioning was originally developed as a technology for the hearing impaired, it is currently attracting the attention of educators and language learners as a tool which helps develop “listening.”

The CC subtitle data is superimposed onto line 21 (first field) and line 284 (second field) of the NTSC output signals, and output. The subtitle data has two modes, captions and text. Another available service is the Extended Data Service (EDS) which transmits titles, ratings and other program information using line 284 (second field). The V-Chip described below uses the EDS function.

A total of 32 characters can be displayed per line by CC. There are 15 lines, but the maximum number of lines is limited to 4 in the caption mode (CC1 to 4). All 15 lines can be displayed in the text mode (T1 to 4).

■ What does the V-Chip do?

The V-Chip refers to a semiconductor chip that blocks out TV programs containing violence, bad language and sex situations. “V” refers to violence, and the viewing of programs is blocked out according to the ratings which are categorized by the extremity of the program content. Once the ratings are set in a receiver (TV set) which incorporates the V-Chip function, the rating information of EDS is decoded, and whether the programs are to be output to the screen is automatically determined.

■ Specifications of closed caption/V-Chip

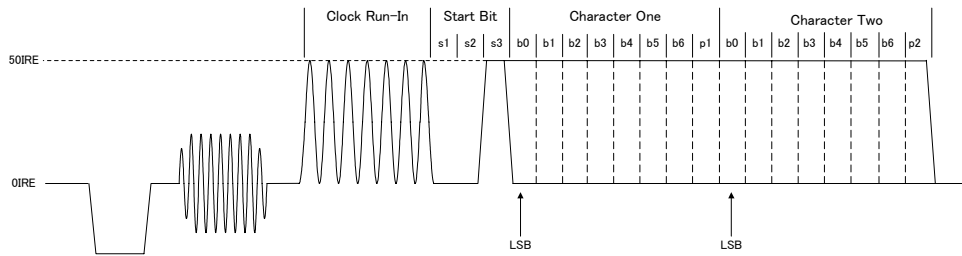
Closed caption/V-Chip supports the TV signals of the following systems.

Closed caption/V-Chip [Macrovision??] is superimposed onto the composite signals and Y/C signals.

- NTSC-M, NTSC-J, NTSC-443
- PAL-60, PAL, PAL-M, PAL-N, PAL-Nc

* With the 625 line systems (PAL, PAL-N and PAL-Nc), the caption data is superimposed onto line 23 (line 335).









The closed caption/V-Chip waveform is shown below. Following the color burst come a sine wave known as Clock Run-In and then the start bit. The start bit is always "001." Two bytes of data (Char1, Char2) are sent for each line. Char1 and Char2 are decoded from LSB, and an odd parity is usually added to MSB (bit 8).



Closed Caption / V-Chip (21Line System)

5.2.2 Closed caption settings

| | |
|---|---|
| <p>(1) Select Program Edit using or or , and then press .</p> | |
| <p>(2) Select Output using or , and then press .</p> | |
| <p>(3) Select VBI Function using or , and then press .</p> | |
| <p>(4) Select Closed Caption using or , and then press .</p> | |
| <p>(5) <Selecting the setting items from the table> Select the parameters using or or , and then press .</p> | <p>For details on the setting items and parameters, refer to <Table of closed caption setting items> provided below.</p> |

| | | |
|-----|---|--|
| (6) | <p><Setting the parameters></p> <p>Select the parameters using  or  , and then press .</p> <p>Alternatively: Select the parameters using the number keys  to , and then press .</p> | |
| | <p>Upon completion of the settings:</p> <p>Press .</p> | Display returns to the initial screen. |

<Table of closed caption setting items>

| | | | | |
|-----|----------------------|------------------------------|------------------|--|
| (1) | Mode (0-9) | The mode is set here. | | |
| | | 0 | OFF | The captions are set to OFF. |
| | | 1 | CC1 | Closed caption mode 1 is selected here. |
| | | 2 | CC2 | Closed caption mode 2 is selected here. |
| | | 3 | CC3 | Closed caption mode 3 is selected here. |
| | | 4 | CC4 | Closed caption mode 4 is selected here. |
| | | 5 | T1 | Text data mode 1 is selected here. |
| | | 6 | T2 | Text data mode 2 is selected here. |
| | | 7 | T3 | Text data mode 3 is selected here. |
| | | 8 | T4 | Text data mode 4 is selected here. |
| | | 9 | USER Data | The user data is selected here. Up to 20 user data can be registered using SP-8870. |
| (2) | Interval | 0 to 60 | Interval | The interval at which the closed caption data is transmitted is set. (in 1-second increments) |
| (3) | USER Data No. | 1 to 20 | | The user data number is set. This is valid when USER Data has been selected as the Mode setting in (1). |

Listed below are the types of closed caption services available.

- CC1** - Primary Synchronous Caption Service
(caption service for primary language)
- CC2** - Special Non-Synchronous Use Caption
(service which does not need to be synchronized with the sound, etc.)
- CC3** - Secondary Synchronous Caption Service
(caption service for secondary language)
- CC4** - Special Non-Synchronous Use Caption
(service which does not need to be synchronized with the sound, etc.)
- T1** - First Text service (text service)
- T2** - Second Text service (text service)
- T3** - Third Text service (text service)
- T4** - Fourth Text service (text service)

■ The content of Closed caption internal data (1/3)

| Service | Caption style, Line, Color, Option setting, etc | Character |
|-------------|--|--|
| CC1~ CC4 | Roll-up2 ROW2 Background: black transparence Text: white | Primary Synchronous Caption Service -- CC1 (CC1) Secondary Synchronous Caption Service -- CC2 (CC2) Special Non-Synchronous Use Captions -- CC3 (CC3) Special Non-Synchronous Use Captions -- CC4 (CC4) |
| | Roll-up3 ROW10 Background: blue transparence Text: yellow | Roll-up Style characters are always displayed immediately. Each time a Carriage Return is received, the text is scrolled up one row. |
| | Roll-up4 ROW15, indent Background: cyan transparence Text: Red | Standard characters 0123456789 ABCDEFGHIJ áâãäåæçèéêëìíîïñóôú ! , . ; : ' " # % & @ / () [] +- ÷ < = > ? Music note, solid block, Transparent space, solid block, Music note, solid block, Transparent space |
| | Pop-on ROW1,ROW2,ROW3 Background: red, half transparence Text: cyan | Pop-on Style Caption data are loaded into a non-displayed memory. |
| | Pop-on ROW4,ROW5,ROW6 Background: green, half transparence Text: blue, flash | End of Caption command (EOC) "flips" displayed and non displayed memory. |
| | Pop-on ROW7 indent ROW8 indent ROW9 indent Background: magenta, non transparence Text: green, italic | ABCDEFGHIJ 0123456789 Å å Ø ø □ ▭ |













































■ The content of Closed caption internal data (2/3)

| Service | Caption style, Line, Color, Option setting, etc | Character |
|-------------|---|---|
| CC1~ CC4 | Pop-on ROW12 indent ROW13 indent ROW14 indent ROW15 indent Background: white , non transparence Test: red, underline | ÁÉÓÚú, opening single quote, inverted exclamation mark ÀÂÇÈÉÊËÏÏÏÒÙú«» Ãäíîïðóôõ {} \ ^ _ ~ Ääöøß¥□ |
| | Paint-on ROW1 ROW3 ROW4 ROW6 ROW7 ROW9 Background: yellow, half transparence Text: blue | Paint-on Style Characters are always displayed immediately. Characters on next row will be erased by Backspase. ABCDEFGH (A~H is deleted by Backspase) |
| | Paint-on ROW5 ROW6 ROW7 ROW8 ROW9 ROW10 ROW12, indent ROW14, indent Background: yellow, half transparence Text: blue | Once the cursor reaches the 32nd column position on any row, all subsequent characters will be displayed In thet column replacing any previous character. ABCDEFGHIJKLMNQRSTUWXYZ (S~Y are replaced by Z) Abcdefghijklmnopqrstuvwxyz (n~y are replaced by z) |
| T1 | -- | First Text Service -- T1 Text Mode is a data service, generally not program related, which may be transmitted using either field of line21. Text Mode data are always displayed as soon as they are received and are intended to be displayed in a manner which isolates them from the video program used to transmit the data. Once the display window is filled these data are always scrolled upward through the display window provided by the decoder. |
| T2 | -- | Second Text Service -- T2 ABCDEFGHIJKLMNQRSTUWXYZ abcdefghijklmnopqrstuvwxyz 012345678901234567890 ! " # \$ % & ' () á + , - . / : ; < = > ? @ [é] í ó ú * . - © SM . " " ¥ |

■ The contents of Closed caption internal data (3/3)

| Service | Caption style, Line, Color, Option setting, etc | Character |
|---------|---|--|
| T3 | -- | <p>Third Text Service -- T3</p> <p>A Text Mode may be used that consists of data formatted to fill a box which in height is not less than 7 rows and not more than 15 rows (all of which should be contiguous), and in width is not less than 32 columns. Text should be displayed over a solid background to isolate it from the unrelated program video. Each row of text contains maximum of 32 characters.</p> |
| T4 | -- | <p>Fourth Text Service -- T4</p> <p>ABCDEFGHIJKLMNOPQRSTUVWXYZ abcdefghijklmnopqrstuvwxyz 012345678901234567890 ! " # \$ % & ' () * + , - . / : ; < = > ? @ [\] ^ _ ` { } ~ ¡ ¢ £ ¤ ¥ * . - © ™ . " " ¥</p> |

5.2.3 V-Chip settings

| | | |
|-----|---|--|
| (1) | Select Program Edit using    or  INC  DEC   , and then press  . |  <pre> MENU Program Edit Program Name : ▶NTSC-M Timing (TIM) >>> OutPut (TIM) >>> Audio (TIM) >>> Pattern (PAT) >>> </pre> |
| (2) | Select Output using  or  INC  DEC  , and then press  . |  <pre> MENU OutPut All OutPut >>> Analog OutPut >>> Digital OutPut >>> VBI Function >>> </pre> |
| (3) | Select VBI Function using  or  INC  DEC  , and then press  . |  <pre> MENU VBI Function Macrovision >>> Closed Caption >>> U-Chip >>> Teletext >>> WSS >>> </pre> |
| (4) | Select V-chip using  or  INC  DEC  , and then press  . |  <pre> MENU U-Chip System (0-4): ▶OFF MPAA (0-7): 6 USTU (0-7): TU-Y USTU Extension >>> English (0-6): E </pre> |
| (5) | <Selecting the setting items from the table> Select the parameters using    or  INC  DEC   , and then press  . | For further details on the setting items and parameters, refer to <Table of V-Chip setting items> below. |
| (6) | <Setting the parameters> Set the numerical values using  or  INC  DEC  , and then press  . Alternatively: Make the selections using the number keys ( to ), and then press  . | |
| | Upon completion of the settings: Press  . | Display returns to the initial screen. |

<Table of V-Chip setting items>

| | | | | |
|-----|---------------------|-------------------------------------|----------------|--------------------------------|
| (1) | System (0-4) | The rating system is selected here. | | |
| | | 0 | OFF | The V-Chip is set to OFF here. |
| | | 1 | MPAA | MPAA is set here. |
| | | 2 | U.S.TV | U.S.TV is set here. |
| | | 3 | English | Canadian English is set here. |
| | | 4 | French | Canadian French is set here. |

The names of the rating systems and a brief description of each are presented below.

MPAA: Motion Picture Association of America

This organization was set up in order to promote the spread of American movies. It is active in many fields such as promoting exports overseas and cracking down on pirated movies. On the U.S. domestic front, it helps viewers exercise voluntary controls by establishing a rating system for violence, sexual content and discriminatory content, for example. Its rating standards are strict and its screening targets images and language that would hardly raise an eyebrow in Japan.

U.S.TV: U.S. TV Parental Guideline Rating System

This rating system is incorporated in ordinary TV sets installed in American homes.

English: Canadian English Language Rating System

This rating system targets Canadian English.

French: Canadian French Language Rating System

This rating system targets Canadian French.

| | | | | |
|-----|-------------|--|------------------|--|
| (2) | MPAA | These ratings which apply when MPAA has been selected as the System setting in (1) above are set here. | | |
| | | 0 | G | "General Audience" is set as the MPAA rating. |
| | | 1 | PG | "Parental Guidance" is set as the MPAA rating. |
| | | 2 | PG-13 | "Parents Strongly Cautioned" is set as the MPAA rating. |
| | | 3 | R | "Restricted" is set as the MPAA rating. |
| | | 4 | NC-17 | "No One 17 and Under Admitted" is set as the MPAA rating. |
| | | 5 | X | "Adult Movie" is set as the MPAA rating. |
| | | 6 | Not Rated | "Not Submitted For MPAA Review" is set as the MPAA rating. |
| | | 7 | N/A | "N/A" is set as the MPAA rating. |

The names and descriptions of the MPAA ratings are presented below.

G: General Audience

For general audiences.

PG: Parental Guidance

Contains scenes unsuitable for young children.

PG-13: Parents Strongly Cautioned

Contains scenes unsuitable for children aged 13 and under.

R: Restricted

Permission of a parent or guardian required for children up to 17 years of age.

NC-17: No One 17 and Under Admitted

Cannot be viewed by anyone aged 17 years and under.

X: Adult Movie

For adults only.

Not Rated

Not Submitted For MPAA Review

N/A

No applicable restrictions

| | | | | |
|-----|-----------------------|---|---|--|
| (3) | U.S.TV | These ratings which apply when U.S.TV has been selected as the System setting in (1) above are set here. | | |
| | | 0 | TV-Y | "All children" is set as the U.S.TV rating. |
| | | 1 | TV-Y7 | "Directed to older children" is set as the U.S.TV rating. |
| | | 2 | TV-G | "General Audience" is set as the U.S.TV rating. |
| | | 3 | TV-PG | "Parental Guidance Suggested" is set as the U.S.TV rating. |
| | | 4 | TV-14 | "Parents Strongly Cautioned" is set as the U.S.TV rating. |
| | | 5 | TV-MA | "Mature Audience Only" is set as the U.S.TV rating. |
| | | 6 | Not Rated 1 | "Not Rated" is set as the U.S.TV rating. (Code = 000) |
| | 7 | Not Rated 2 | "Not Rated" is set as the U.S.TV rating. (Code = 111) | |
| (4) | USTV Extension | The extension bits for U.S. TV are set. The bits which can be set differ depending on the U.S. TV ratings. For further details, refer to " U.S. TV rating system extension bit settings. " | | |

The names of the U.S. TV ratings and a description of each are presented below.

TV-Y: All children

Suitable for all children.

TV-Y7: Directed to older children

Suitable for children aged 7 and above.

TV-G: General Audience

Suitable for audiences of all ages (must not contain violent scenes, objectionable language or sexual content).

TV-PG: Parental Guidance Suggested

Contains scenes involving some violence and sexual content unsuitable for young children or situations that may induce foul language or incite delinquency.

TV-14: Parents Strongly Cautioned

Contains scenes involving violence and sexual content unsuitable for children aged 14 or below or situations that may induce foul language or incite delinquency.

TV-MA: Mature Audience Only

For adults only; programs with this rating are hardly ever broadcast.

Not Rated1/2

No applicable restrictions

[U.S. TV rating system extension bit settings]

| | FV | V | S | L | D |
|--------------------|----------------|----------------|-------------|-------------|----------------|
| TV-Y | Cannot be set. | | | | |
| TV-Y7 | 0: - / 1: * | Cannot be set. | | | |
| TV-G | Cannot be set. | | | | |
| TV-PG | Cannot be set. | 0: - / 1: * | 0: - / 1: * | 0: - / 1: * | 0: - / 1: * |
| TV-14 | Cannot be set. | 0: - / 1: * | 0: - / 1: * | 0: - / 1: * | 0: - / 1: * |
| TV-MA | Cannot be set. | 0: - / 1: * | 0: - / 1: * | 0: - / 1: * | Cannot be set. |
| Not Rated 1 | Cannot be set. | | | | |
| Not Rated 2 | Cannot be set. | | | | |

* "-" denotes OFF, and "*" ON.

The names of the U.S. TV rating extension service ratings and a description of each are presented below.

FV: Fantasy Violence

Acts of fantasy violence = violence in animated features and comics.

V: Violence

Violence

S: Sexual Situations

Sexual content

L: Adult Language

Foul language

D: Sexually Suggestive Dialog

Sexually suggestive dialog

| | | | | |
|-----|----------------|---|------------|---|
| (5) | English | These ratings which apply when English has been selected as the System setting in (1) above are set here. | | |
| | | 0 | E | "Exempt" is set as the English rating. |
| | | 1 | C | "Children" is set as the English rating. |
| | | 2 | C8+ | "Children eight years and older" is set as the English rating. |
| | | 3 | G | "General Programming, suitable for all audiences" is set as the English rating. |
| | | 4 | PG | "Parental Guidance" is set as the English rating. |
| | | 5 | 14+ | "Viewers 14 years and older" is set as the English rating. |
| | | 6 | 18+ | "Adult Programming" is set as the English rating. |

The names of the Canadian English ratings and a description of each are presented below.

E: Exempt

No age restrictions apply.

C: Children

Programming may be viewed by all children.

C8+: Children eight years and older

Programming may be viewed by children aged 8 and above.

G: General Programming, suitable for all audiences

General programming

PG: Parental Guidance

Permission of a parent required to view programming.

14+: Viewers 14 years and older

Programming may be viewed by children 14 years and older.

18+: Adult Programming

Programming for adults only.

| | | | | |
|-----|---------------|--|---------------|--|
| (6) | French | These ratings which apply when French has been selected as the System setting in (1) above are set here. | | |
| | | 0 | E | "Exempt" is set as the French rating. |
| | | 1 | G | "General" is set as the French rating. |
| | | 2 | 8ans+ | "Not recommended for young children" is set as the French rating. |
| | | 3 | 13ans+ | "Programming may not be suitable for children under 13" is set as the French rating. |
| | | 4 | 16ans+ | "Programming is not suitable for children under 16" is set as the French rating. |
| | | 5 | 18ans+ | "Programming restricted to adults" is set as the French rating. |

The names of the Canadian French ratings and a description of each are presented below.

E: Exempt

No age restrictions apply.

G: General

General programming.

8ans+: Not recommended for young children

Programming unsuitable for young children

13ans+: Programming may not be suitable for children under 13

Programming unsuitable for children aged 13 and under

16ans+: Programming is not suitable for children under 16

Programming unsuitable for children aged 16 and under

18ans+: Programming restricted to adults

Programming for adults only.

| | | | | |
|-----|-----------------|---------|-----------------|---|
| (7) | Interval | 0 to 60 | Interval | The interval at which the V-chip data is transmitted is set. (in 1-second increments) |
|-----|-----------------|---------|-----------------|---|

5.3 Teletext

5.3.1 Description and specifications

■ What is “Teletext”?

Teletext is the name of a system used to send still picture program data of text and graphics after multiplexing it in the vertical sync blanking interval of the TV signals. Programs broadcast in Teletext include subtitled broadcasts, news broadcasts, weather forecasts and stock market information. Teletext has achieved a high penetration rate in various countries in Europe and Southeast Asia where the 625/50i system is used.

With Teletext, a total of 40 characters × 25 lines can be contained on a page (per screen), and between 100 and 899 pages of information can be displayed.

■ Teletext specifications

Teletext supports the following TV signals.

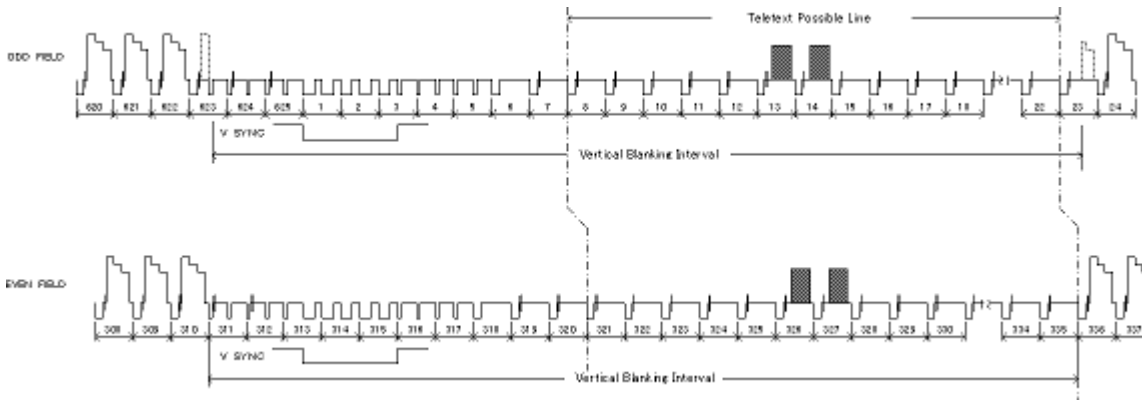
Teletext is superimposed onto the composite signals and Y/C signals.

- PAL (but not PAL-60, PAL-N and PAL-Nc)

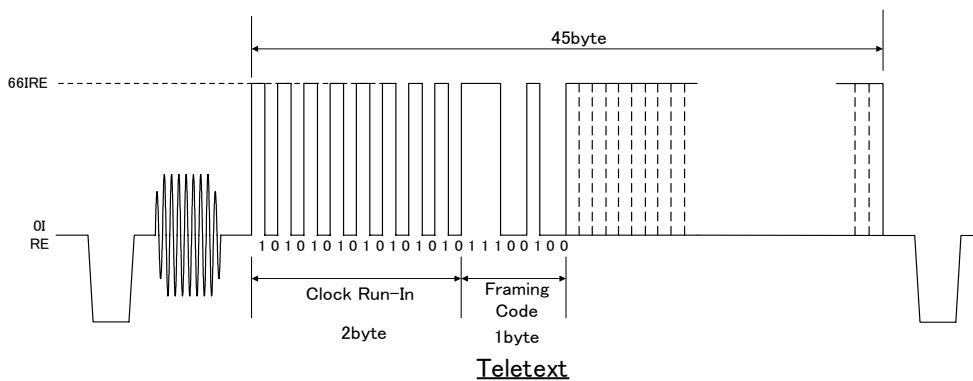
The vertical sync blanking interval (VBI) and Teletext waveforms are shown below.

The Teletext data can be output in lines 8 to 22 (first field) and lines 321 to 335 (second field) in the vertical sync blanking interval of the PAL signals.

A total of 45 bytes consisting of the Clock Run-In, Framing Code and data bytes (42 bytes) are superimposed in one line.













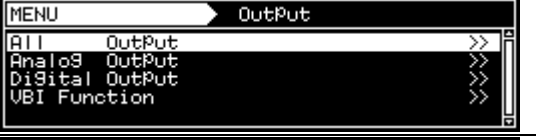























VBI waveforms




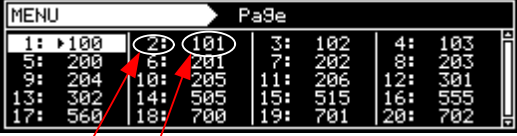
Teletext

Teletext waveforms



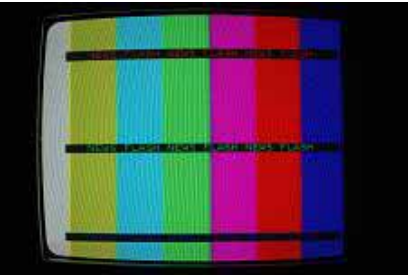
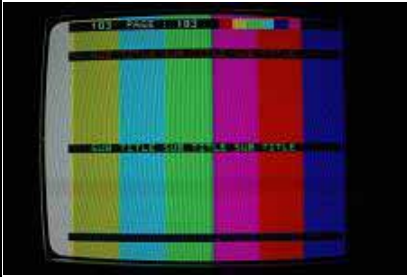






5.3.2 Setting procedure

| | | |
|-----|---|--|
| (1) | Select Program Edit using  or  or   , and then press  . |  <pre> MENU Program Edit Program Name : PAL 4:3 Timing (TIM) OutPut (TIM) Audio (TIM) Pattern (PAT) </pre> |
| (2) | Select Output using  or   , and then press  . |  <pre> MENU Output All Output Analog Output Digital Output VBI Function </pre> |
| (3) | Select VBI Function using  or   , and then press  . |  <pre> MENU VBI Function Macrovision Closed Caption U-ChIP Teletext WSS </pre> |
| (4) | Select Teletext using  or   , and then press  . |  <pre> MENU Teletext Mode (0-2): OFF Page Line 8,321 (0/1): Disable Line 9,322 (0/1): Disable Line 10,323 (0/1): Disable </pre> |
| (5) | <Selecting the setting items from the table> Select the parameters using  or  or   , and then press  . | For further details on the setting items and parameters, refer to <Table of teletext setting items> below. |
| (6) | <Setting the parameters> Select the parameters using  or   , and then press  . Alternatively: Select the parameters using the number keys ( to ) and then press  . | |
| | Upon completion of the settings: Press  . | Display returns to the initial screen. |


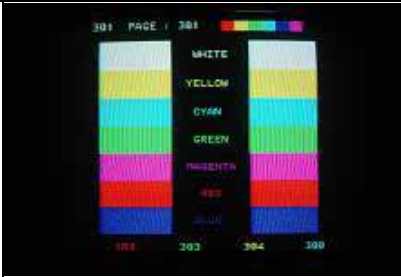

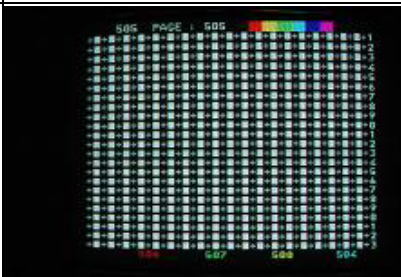


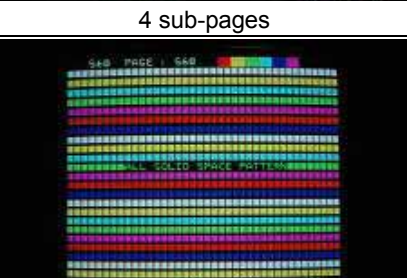

<Table of teletext setting items>

| | | | | | |
|-----|---|---|------------------------|---|--|
| (1) | Mode (0-2) | The Teletext operation mode is selected here. | | | |
| | | 0 | Off | Teletext OFF. | |
| | | 1 | Default | The default pages are output. For further details, refer to the teletext default on next pages | |
| | | 2 | Page Select | The pages selected by page in (2) below is output here. | |
| (2) | Page Press  to display the setting menu. |  | | | |
| | | Page Data This generator enables up to 20 pages of teletext screens to be registered. Numbers for the internal data are set on each page. | | | |
| (3) | Line | The lines in which the Teletext data is to be output are set here. The figure indicate the line numbers in the first field and second field. | | | |
| | | 8,321 | 0 | Disable | The data is not output in line 8 and line 321. |
| | | | 1 | Enable | The data is output in line 8 and line 321. |
| | | 9,322 | Same setting as above. | | |
| | | 10,323 | Same setting as above. | | |
| | | | • • | | |
| | | 22,335 | Same setting as above. | | |

■ Teletext default pages (page 1 of 2)

| Page No. | Description | Screen | Page No. | Description | Screen |
|----------|---|---|----------|---------------------------------|---|
| 100 | Index Page |  A teletext screen titled 'INDEX' with 'ASTRODESIGN, INC. PRESENTS VIDEO GENERATOR' at the top. It lists contents information for pages 100-104, including 'THIS PAGE', 'TEST PAGE', 'NEWSFLASH', 'SUBTITLE', 'CHARACTER PAGE', 'COLOURS', and 'WHITE FLAT'. | 101 | Test Page |  A teletext screen titled 'ASTRODESIGN' with 'VIDEO GENERATOR' and 'TELETEXT SIGNAL GENERATOR' below. It contains technical text about test signal transmission and a color bar at the bottom. |
| | | | | | Including FLASH, CONCEAL |
| 102 | Newsflash |  A teletext screen showing a newsflash with a background of vertical color bars (yellow, cyan, magenta, red, blue). | 103 | Subtitle |  A teletext screen showing a subtitle with a background of vertical color bars (yellow, cyan, magenta, red, blue). |
| 200 | Character (English) |  A teletext screen titled 'CHARACTER' with 'English' in red. It shows a grid of characters from the English alphabet and numbers. | 201 | Character (German) |  A teletext screen titled 'CHARACTER' with 'German' in red. It shows a grid of characters from the German alphabet and numbers. |
| 202 | Character (Swedish /Finnish /Hungarian) |  A teletext screen titled 'CHARACTER' with 'Swedish/Finnish/Hungarian' in red. It shows a grid of characters from the Swedish, Finnish, and Hungarian alphabets and numbers. | 203 | Character (Italian) |  A teletext screen titled 'CHARACTER' with 'Italian' in red. It shows a grid of characters from the Italian alphabet and numbers. |
| 204 | Character (French) |  A teletext screen titled 'CHARACTER' with 'French' in red. It shows a grid of characters from the French alphabet and numbers. | 205 | Character (Portuguese /Spanish) |  A teletext screen titled 'CHARACTER' with 'Portuguese/Spanish' in red. It shows a grid of characters from the Portuguese and Spanish alphabets and numbers. |

■ Teletext default pages (page 2 of 2)

| Page No. | Description | Screen | Page No. | Description | Screen |
|----------|---------------------------|---|----------|---------------|---|
| 206 | Character (Czech /Slovak) |  | 301 | Colours |  |
| 302 | White Flat |  | 505 | Clock Cracker |  |
| 515 | Multi Page |  <p>4 sub-pages</p> | 555 | Test Pattern1 |  |
| 560 | Test Pattern2 |  | - | Other pages |  <p>Screen which appears for page 700</p> |

5.4 WSS

5.4.1 Description and specifications

■ What is WSS (Wide Screen Signaling)?

“WSS (Wide Screen Signaling)” is a system for multiplexing the aspect ratio information of the images in the vertical sync blanking interval, and sending it.

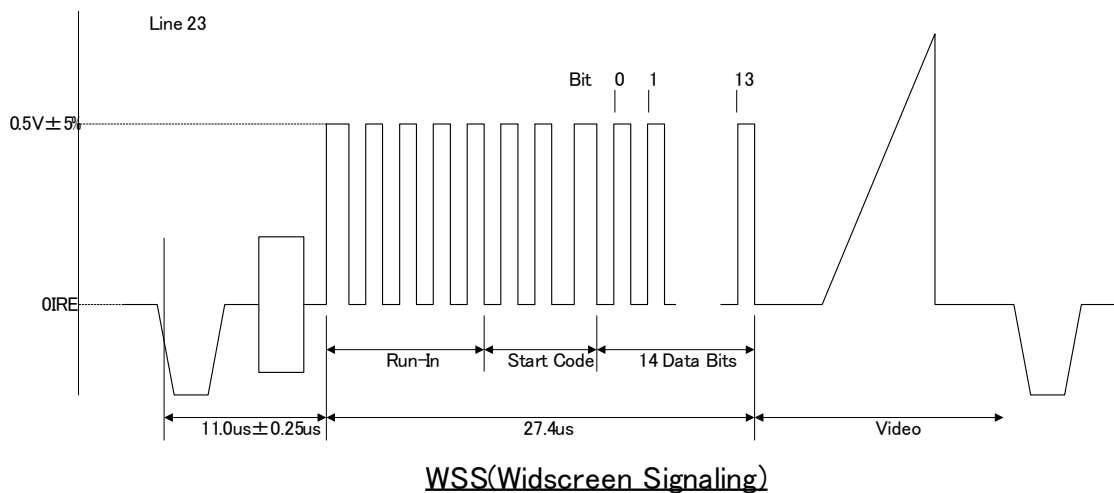
■ WSS specifications

WSS supports the following TV signals.

WSS is superimposed onto the composite signals and Y/C signals.

- PAL, PAL-N, PAL-Nc
- SECAM

The aspect ratio information of WSS is superimposed on line 23 of the first field. The WSS waveform consists of Run-In, Start Code and the 14-bit data. This waveform and the bit allocation are shown below.





































- Bit3-0: Aspect

| Bit | | Aspect Ratio | Full format or Letterbox | Position |
|-------|---|--------------|--------------------------|----------------|
| 0 1 2 | 3 | | | |
| 0 0 0 | 1 | 4:3 | Full format | Not applicable |
| 1 0 0 | 0 | 14:9 | Letterbox | Center |
| 0 1 0 | 0 | 14:9 | Letterbox | Top |
| 1 1 0 | 1 | 16:9 | Letterbox | Center |
| 0 0 1 | 0 | 16:9 | Letterbox | Top |
| 1 0 1 | 1 | >16:9 | Letterbox | Center |
| 0 1 1 | 1 | 14:9 | Full format | Center |
| 1 1 1 | 0 | 16:9 | Full format | Not applicable |

Bit 3 is the parity bit.

- Bit4-13: Other service information (not supported by the VG-870/871)

5.4.2 Setting procedure

| | |
|---|---|
| <p>(1) Select Program Edit using  or  or   , and then press .</p> |  |
| <p>(2) Select Output using  or   , and then press .</p> |  |
| <p>(3) Select VBI Function using  or   , and then press .</p> |  |
| <p>(4) Select WSS using  or   , and then press .</p> |  |
| <p>(5) <Selecting the setting items from the table> Select the parameters using  or  or   , and then press .</p> | <p>For further details on the setting items and parameters, refer to <Table of WSS setting items> below.</p> |
| <p>(6) <Setting the parameters> Select the parameters using  or   , and then press .</p> <p>Alternatively: Select the parameters using the number keys ( to ), and then press .</p> | |
| <p>Upon completion of the settings: Press .</p> | <p>Display returns to the initial screen.</p> |

<Table of WSS setting items>

| | | | |
|-----|--|--|--|
| (1) | OFF/ON (0/1) | Whether the WSS information is to be output is set here. | |
| | | 0 | OFF The WSS information is not output. |
| | | 1 | ON The WSS information is output. |
| (2) | Aspect Ratio (0-7) | The aspect ratio is set here. | |
| | | 0 | The aspect ratio is set to Full Format 4:3 . |
| | | 1 | The aspect ratio is set to LB 14:9 center . |
| | | 2 | The aspect ratio is set to LB 14:9 top . |
| | | 3 | The aspect ratio is set to LB 16:9 center . |
| | | 4 | The aspect ratio is set to LB 16:9 top . |
| | | 5 | The aspect ratio is set to LB >16:9 center . |
| | | 6 | The aspect ratio is set to Full Format 14:9 . |
| 7 | The aspect ratio is set to Full Format 16:9 . | | |

5.5 CGMS -A/ID-1

5.5.1 Description and specifications

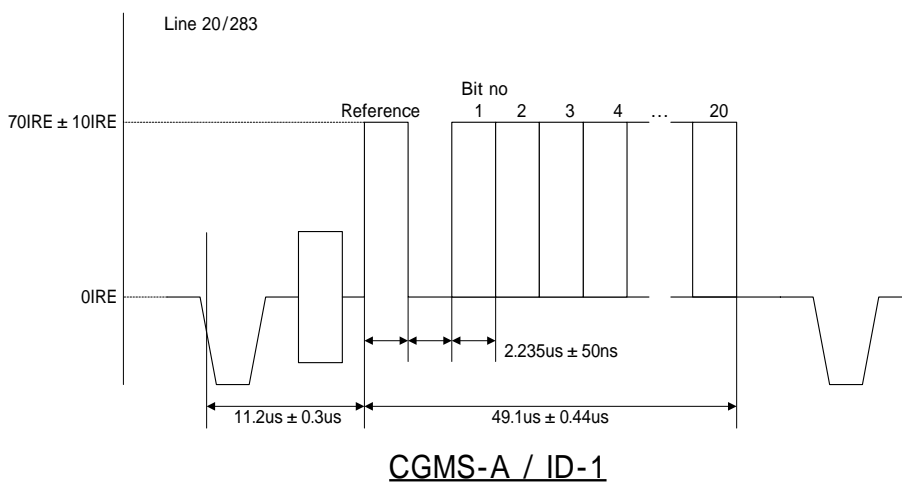
■ What is CGMS-A (Copy Generation Management System)?

CGMS-A is a system of multiplexing the copy control information in the vertical sync blanking intervals, and sending it.

■ What is ID-1?

ID-1 is a system of multiplexing the aspect ratio information in the vertical sync blanking intervals, and sending it.

- NTSC, NTSC-M, NTSC-443
- PAL-60, PAL-M



CGMS-A and ID-1 are superimposed onto line 20 (first field) and line 283 (second field). The CGMS-A and ID-1 waveform consists of the reference bit and 20-bit data. This waveform and the bit allocation are shown below.

- Bit1-0: Aspect (ID1)

| Bit | | Applications | |
|-----|---|--------------|------------------------|
| 1 | 2 | Aspect ratio | Picture display format |
| 0 | 0 | 4:3 | Normal |
| 1 | 0 | 16:9 | Normal |
| 0 | 1 | 4:3 | Letter Box |
| 1 | 1 | Not Defined | |






















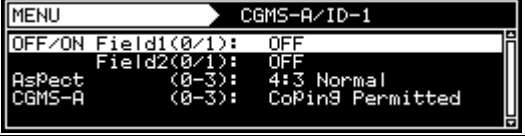














- Bit6-2: Fixed at "0000"

- Bit8-7: CGMS-A

| Bit | | Application |
|-----|---|---------------------------------------|
| 7 | 8 | |
| 0 | 0 | Copy is permitted without restriction |
| 1 | 0 | Condition not to be used |
| 0 | 1 | One generation of copies may be made |
| 1 | 1 | No copying is permitted |

- Bit14-9: Other service information (not supported by the VG-870/871)
- Bit20-15: CRC

5.5.2 Setting procedure

| | | |
|-----|--|---|
| (1) | <p>Select Program Edit using  →  or  or  , and then press .</p> |  |
| (2) | <p>Select Output using  or  , and then press .</p> |  |
| (3) | <p>Select VBI Function using  or  , and then press .</p> |  |
| (4) | <p>Select CGMS-A/ID-1 using  or  , and then press .</p> |  |
| (5) | <p><Selecting the setting items from the table></p> <p>Select the parameters using  →  or  or  , and then press .</p> | <p>For further details on the setting items and parameters, refer to <Table of the CGMS-A and ID-1 setting items> below.</p> |
| (6) | <p><Setting the parameters></p> <p>Select the parameters using  or  , and then press .</p> <p>Alternatively: Select the parameters using the number keys ( to ) , and then press .</p> | |
| | <p>Upon completion of the settings:</p> <p>Press .</p> | <p>Display returns to the initial screen.</p> |

<Table of the CGMS-A and ID-1 setting items>

| | | | | |
|-----|----------------------------|---|----------------------------|--|
| (1) | OFF/ON Field1 (0/1) | Whether to output the data to line 20 of the first field is set here. | | |
| | | 0 | OFF | The data is not output. |
| | | 1 | ON | The data is output. |
| (2) | OFF/ON Field2 (0/1) | Whether to output the data to line 283 of the second field is set here. | | |
| | | 0 | OFF | The data is not output. |
| | | 1 | ON | The data is output. |
| (3) | Aspect | The aspect ratio setting is selected here. | | |
| | | 0 | 4:3 Normal | The aspect ratio is set to 4:3. |
| | | 1 | 16:9 Normal | The aspect ratio is set to 16:9. |
| | | 2 | 4:3 Letter Box | The aspect ratio is set to 4:3 letter box. |
| | | 3 | Not Defined | The aspect ratio is left undefined. |
| (4) | CGMS-A | Copy protection is set here. | | |
| | | 0 | Coping Permitted | Copying is permitted. |
| | | 1 | Not Used Condition | The CGMS-A is left undefined. |
| | | 2 | Copy Once | Copy-once is set. |
| | | 3 | No Coping Permitted | Copying is not permitted. |

* The same data is superimposed onto line 20 and line 283.

6

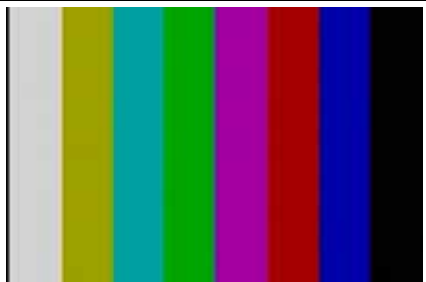
PATTERN SETTINGS


6.1 Color bar patterns

6.1.1 Types of color bar patterns

When color bars have been selected using the pattern key, for instance, color bar patterns can be selected from among the types listed below.

For further details on pattern selection, refer to “2.1.3 Selecting the pattern data.”

| | | | |
|---|------------------|-----------------------|---|
| 0 | CUSTOM | Customized pattern |  75%/75% color bars |
| 1 | 100/100-H | 100%/100% color bars | |
| 2 | 100/75-H | 100%/75% color bars | |
| 3 | 75/75-H | 75%/75% color bars | |
| 4 | SMPTE | SMPTE color bars | |
| 5 | RGBW-V | Horizontal color bars | |
| 6 | xvYCC 4% | xvYCC 4% color bars | |
| 7 | xvYCC 8% | xvYCC 8% color bars | |
| 8 | xvYCC 12% | xvYCC 12% color bars | |


SMPTE color bars





















































CAUTION

The xvYCC color bars are turned off in the SCART output (RGB) of the TV encoder unit.xvYCC Patterns from other output than HDMI is not displayed correctly.

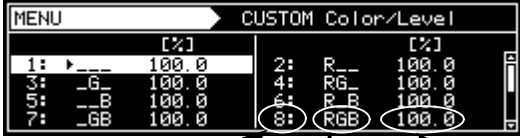
6.1.2 Color bar pattern customizing

Described below is the procedure for selecting the color bar pattern types and for performing the settings when **CUSTOM** has been selected as the color bar pattern.

(If **CUSTOM** is selected, the color bar patterns can be displayed with any width and color.)

| | |
|--|--|
| <p>(1) Select Program Edit using   or  or  INC  DEC , and then press .</p> |  <pre> MENU Program Edit Program Name : ▶EIA1920x1080P60 Timing (TIM) >>> Output (TIM) >>> Audio (TIM) >>> Pattern (PAT)>>> </pre> |
| <p>(2) Select Pattern (PAT)>> using  or  INC  DEC , and then press .</p> |  <pre> MENU Pattern Pattern/RGB/INU Select >>> Color Bar >>> Gray Scale >>> Ramp >>> Sweep >>> </pre> |
| <p>(3) Select Color Bar>> using  or  INC  DEC , and then press .</p> |  <pre> MENU Color Bar Type (0-8): ▶CUSTOM >> CUSTOM </pre> |
| <p>(4) <Selecting the items> Select Type using  or  INC  DEC , and then press .</p> <p><Setting the parameters> Select the parameters using  or  INC  DEC , and then press .</p> <p>Alternatively: Select the parameters using the number keys ( to ), and then press .</p> <p><Detailed settings of customized patterns> Select CUSTOM>> using  or  INC  DEC , and then press .</p> | <p>For further details on the patterns, refer to “6.1.1 Types of color bar patterns.”</p>  <pre> MENU CUSTOM Format (0-3): ▶H direction Repeat : 16 Input Mode (0/1): % Width [%]: H= 6.3 V= 6.3 >> Color/Level </pre> |
| <p>(5) When CUSTOM has been selected as the Type setting</p> <p><Selecting the items> Select the items using  or  INC  DEC , and then press .</p> <p><Inputting the parameters> Select the parameters using  or  INC  DEC , and then press .</p> <p>Alternatively: Select the parameters using the number keys ( to ), and then press .</p> | <p>For further details on the settings, refer to <Table of customized color bar pattern setting items> below.</p> |

<Table of customized color bar pattern setting items>

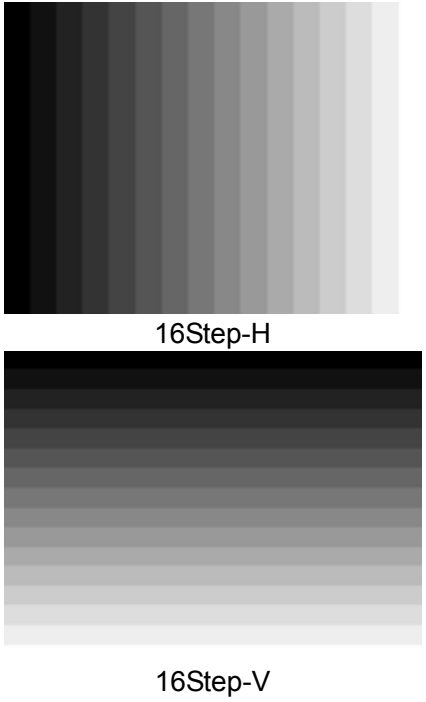
| | | | | |
|--------------|---|--|---|---|
| (1) | Format (0-3) | The drawing direction of the color bars is set here. | | |
| | | 0 | H Direction | Horizontal direction |
| | | 1 | V Direction | Vertical direction |
| | | 2 | H Direction&div.V | Horizontal direction (loopback by Repeat) |
| | | 3 | V Direction&div.H | Vertical direction (loopback by Repeat) |
| (2) | Repeat | One or more of the 1 to 16 data set by Color/Level>> are set here. The value set here becomes the number of colors which are displayed. Range: 1 to 16 | | |
| (3) | Input Mode (0/1) | The method of specifying the display size per color is set here. | | |
| | | 0 | % | The size is set as a percentage of the entire screen. |
| | | 1 | dot | The size is set in 1-dot increments. |
| (4) | Width [%] Width [dot] | The display size per color is set here. | | |
| | | When a percentage is used for Input Mode | | Set any width from 0.0% to 100.0%. |
| | | When dots are used for Input Mode | | Set the width in 1-dot increments. |
| (5) | Color/Level >> | The display color and level are set here. | | |
| | |  | | |
| | | Number | The colors from 1 to the Repeat setting are used for the display. | |
| | | Color | The display colors are selected here. | |
| | | | 0 | ___ |
| 1 | R__ | | Red | |
| 2 | _G_ | | Green | |
| 3 | R G _ | | Yellow | |
| 4 | __B | | Blue | |
| 5 | R_B | | Magenta | |
| 6 | _GB | | Cyan | |
| 7 | RGB | White | | |
| Level | The level as a percentage of the peak brightness is set here. Setting range: 0.0 to 100.0% | | | |

6.2 Gray scale patterns

6.2.1 Types of gray scale patterns

When gray scale has been selected using the pattern key, for instance, gray scale patterns can be selected from among the types listed below.







































For further details on pattern selection, refer to “2.1.3 Selecting the pattern data.”

| | | | |
|---|-----------------|-----------------------|---|
| 0 | CUSTOM | Customized pattern |  |
| 1 | 8Step-H | 8 steps (horizontal) | |
| 2 | 16Step-H | 16 steps (horizontal) | |
| 3 | 32Step-H | 32 steps (horizontal) | |
| 4 | 8Step-V | 8 steps (vertical) | |
| 5 | 16Step-V | 16 steps (vertical) | |
| 6 | 32Step-V | 32 steps (vertical) | |

6.2.2 Gray scale pattern customizing

Described below is the procedure for selecting the types of gray scale patterns and for performing the settings when **CUSTOM** has been selected as the gray scale pattern.

(If **CUSTOM** is selected, the color bar patterns can be displayed with any width and level.)

| | | |
|-----|--|--|
| (1) | Select Program Edit using  or  or  INC  DEC , and then press  . |  |
| (2) | Select Pattern (PAT)>> using  or  INC , and then press  . |  |
| (3) | Select Gray Scale>> using  or  INC , and then press  . |  |
| (4) | <p><Selecting the items></p> Select Type using  or  INC  DEC , and then press  . <p><Setting the parameters></p> Select the parameters using  or  INC , and then press  . Alternatively: Select the parameters using the number keys ( to ) , and then press  . | For further details on the patterns, refer to “6.2.1 Types of gray scale patterns.” |
| (5) | <p>When CUSTOM has been selected as the Type setting</p> <p><Detailed settings of customized patterns></p> Select CUSTOM>> using  or  INC , and then press  . <p><Selecting the items></p> Select the items using  or  INC  DEC , and then press  . <p><Inputting the parameters></p> Select the parameters using  or  INC , and then press  . Alternatively: Select the parameters using the number keys ( to ) , and then press  . |  <p>For further details on the settings, refer to <Table of customized gray scale pattern setting items> below.</p> |

<Table of customized gray scale pattern setting items>

| | | | |
|--------|--------------------------------|---|---|
| (1) | Format (0-3) | The drawing direction of the gray scale is set here. | |
| | | 0 | H Direction Horizontal direction |
| | | 1 | V Direction Vertical direction |
| | | 2 | H Direction & div.V Horizontal direction (loopback by Repeat) |
| | | 3 | V Direction & div.H Vertical direction (loopback by Repeat) |
| (2) | Repeat | One or more of the 1 to 16 data set by Level>> are set here. The value set here becomes the number of steps which are displayed. Range: 1 to 16 | |
| (3) | Input Mode (0/1) | The method of specifying the display size per step is set here. | |
| | | 0 | % The size is set as a percentage of the entire screen. |
| | | 1 | dot The size is set in 1-dot increments. |
| (4) | Width[%] Width[dot] | The display size per step is set here. | |
| | | When a percentage is used for Input Mode | Set any size from 0.0% to 100.0%. |
| | | When dots are used for Input Mode | Set the size in 1-dot increments. |
| (5) | Level>> | The display level is set here. | |
| | | <p style="text-align: center;">Bit Length →</p> <p style="text-align: center;">← Number ← Level</p> | |
| | | Number | The steps from 1 to the Repeat setting are used for the display. |
| | | Level | The level is set here. The setting range differs depending on the color depth . |
| | | 8 BIT | 0 to 255 |
| | | 9 BIT | 0 to 511 |
| | | 10 BIT | 0 to 1023 |
| | | 11 BIT | 0 to 2047 |
| | | 12 BIT | 0 to 4095 |
| | | 13 BIT | 0 to 8191 |
| 14 BIT | 0 to 16383 | | |
| 15 BIT | 0 to 32767 | | |
| 16 BIT | 0 to 65535 | | |



6.3 Ramp patterns

6.3.1 Types of ramp patterns

When ramp has been selected using the pattern key, for instance, ramp patterns can be selected from among the types listed below.

For further details on pattern selection, refer to “2.1.3 Selecting the pattern data.”

| | | |
|---|-------------------|--|
| 0 | CUSTOM | |
| 1 | Linear-H | |
| 2 | Linear-V | |
| 3 | Linear-256 | |
| 4 | RGB1 | |
| 5 | RGB2 | |
| 6 | RGB3 | |
| 7 | Turn-H | |
| 8 | Linear-GR | |
| 9 | Linear-BR | |
| A | Linear-BG | |
| B | Linear-RG | |
| C | Linear-RB | |
| D | Linear-GB | |
| E | Linear-HV | |
| F | Limited-H | |
| - | Limited-V | |





















































※1.Limited-V is selectable only by  or  .

※2.The luminance level of Limited-H/V is 16-232 and color-difference level is 16-240.

6.3.2 Ramp pattern type settings and customizing

Described below is the procedure for selecting the types of ramp patterns and for performing the settings when **CUSTOM** has been selected as the ramp pattern type.

(If **CUSTOM** is selected, the ramp patterns can be displayed with any level and steps.)

| | |
|--|--|
| <p>(1) Select Program Edit using    or  INC  DEC  , and then press .</p> |  <pre> MENU Program Edit Program Name : ▶EIA1920x1080P60 Timing (TIM) : >>> OutPut (TIM) : >>> Audio (TIM) : >>> Pattern (PAT): >>> </pre> |
| <p>(2) Select Pattern (PAT)>> using  or  INC  DEC  , and then press .</p> |  <pre> MENU Pattern Pattern/RGB/INU Select: >>> Color Bar : >>> Gray Scale : >>> Ramp : >>> Sweep : >>> </pre> |
| <p>(3) Select Ramp>> using  or  INC  DEC  , and then press .</p> |  <pre> MENU Ramp Type (0-E): ▶Linear-HV CUSTOM </pre> |
| <p>(4) <Setting the type> Select Type using  or  INC  DEC  , and then press .</p> <p><Setting the parameters> Select the parameters using  or  INC  DEC  , and then press .</p> <p>Alternatively: Select the parameters using the number keys ( to ), and then press .</p> | <p>For further details on the patterns, refer to “6.3.1 Types of ramp patterns.”</p> |
| <p>(5) When CUSTOM has been selected as the Type setting</p> <p><Detailed settings of customized patterns> Select CUSTOM>> using  or  INC  DEC  , and then press .</p> <p>Select the items using  or  INC  DEC  , and then press .</p> <p><Inputting the parameters> Select the parameters using  or  INC  DEC  , and then press .</p> <p>Alternatively: Select the parameters using the number keys ( to ), and then press .</p> |  <pre> MENU CUSTOM : 8bit Direction(0/1): ▶H H-Line : 1 Level Line1 : 0 255 16 Level Line2 : 0 255 32 (Start) (End) (Step) </pre> <p>For further details on the settings, refer to <Table of ramp pattern setting items> below.</p> |

<Table of ramp pattern setting items>


| | | | | |
|--------|------------------------|---|---|-----------------|
| (1) | Direction (0/1) | The resolution is set here. | | |
| | | 0 | H | Horizontal ramp |
| | | 1 | V | Vertical ramp |
| (2) | H-Line | Up to four ramp patterns with different levels and steps can be displayed on one screen. Range: 1 to 4 types. These types are used in sequence from line 1. | | |
| (3) | Line1 to Line4 | The start level, end level and step are set here. | | |
| | | | | |
| | | (Start) | The start level is set here. | |
| | | (End) | The end level is set here. | |
| | | (Step) | The number of display steps from the start level to end level is set here. Setting range: $1 \leq \text{setting} \leq (\text{End}) - (\text{Start}) + 1$ | |
| | | The setting range for the above levels differs depending on the color depth . | | |
| | | 8 BIT | 0 to 255 | |
| | | 9 BIT | 0 to 511 | |
| | | 10 BIT | 0 to 1023 | |
| | | 11 BIT | 0 to 2047 | |
| 12 BIT | 0 to 4095 | | | |
| 13 BIT | 0 to 8191 | | | |
| 14 BIT | 0 to 16383 | | | |
| 15 BIT | 0 to 32767 | | | |
| 16 BIT | 0 to 65535 | | | |

6.4 Sweep patterns

6.4.1 Types of sweep patterns

























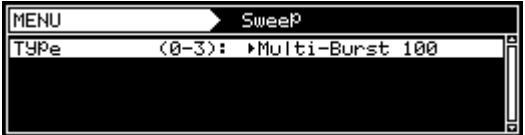















When sweep has been selected using the pattern key, for instance, sweep patterns can be selected from among the types listed below.

For further details on pattern selection, refer to “2.1.3 Selecting the pattern data.”

| | | | |
|---|------------------------|-------------|---|
| 0 | Multi-Burst 100 | Multi-burst |  <p>Multi-burst</p> |
| 1 | Multi-Burst 50 | Multi-burst | |
| 2 | Sweep | Sweep | |

6.4.2 Sweep pattern selection

The types of sweep patterns can be set using the procedure below.

| | | |
|-----|---|---|
| (1) | <p>Select Program Edit using   or  or  or .</p> <p> INC  DEC  SET, and then press .</p> |  |
| (2) | <p>Select Pattern (PAT)>> using  or  or .</p> <p> DEC  SET, and then press .</p> |  |
| (3) | <p>Select Sweep>> using  or  or .</p> <p> INC  DEC  SET, and then press .</p> |  |
| (4) | <p><Selecting the items></p> <p>Select Type using  or  or .</p> <p> INC  DEC  SET, and then press .</p> <p><Setting the parameters></p> <p>Select the parameters using  or .</p> <p> DEC  SET, and then press .</p> <p>Alternatively: Select the parameters using the number keys ( to ), and then press .</p> | <p>For further details on the patterns, refer to “6.4.1 Types of sweep patterns.”</p> |

6.6 Raster patterns

6.6.1 Types of raster patterns




























When raster has been selected using the pattern key, for instance, raster patterns can be selected from among the types listed below.













For further details on pattern selection, refer to “2.1.3 Selecting the pattern data.”

| | | |
|---|-----------------|--|
| 0 | CUSTOM |  |
| 1 | White | |
| 2 | Red | |
| 3 | Green | |
| 4 | Blue | |
| 5 | Black | |
| 6 | 50%-Gray | |
| | | Raster pattern |

6.6.2 Raster pattern type settings and customizing

Described below is the procedure for selecting the types of raster patterns and for performing the settings when CUSTOM has been selected as the raster pattern type. (The rasters can be displayed with any level.)

| | |
|---|---|
| <p>(1) Select Program Edit using  or  or  or , and then press .</p> |  |
| <p>(2) Select Pattern (PAT)>> using  or  or , and then press .</p> |  |
| <p>(3) Select Raster>> using  or  or , and then press .</p> |  |
| <p>(4) <Setting the type> Select Type using  or  or , and then press .</p> <p><Setting the parameters> Select the parameters using  or  or , and then press .</p> <p>Alternatively: Select the parameters using the number keys  to , and then press .</p> | <p>For further details on the types of patterns, refer to “6.6.1 Types of raster patterns.”</p> |



| | | | | | | | | | | | | | | | | | | | |
|--------|--|--|-------|-----------------|-------|-----------------|--------|------------------|--------|------------------|--------|------------------|--------|------------------|--------|-------------------|--------|-------------------|--------|
| (5) | <p>When CUSTOM has been selected as the Type setting</p> <p><Detailed settings of customized patterns></p> <p>Select CUSTOM>> using  or  , and then press .</p> | <p style="text-align: right;">Bit Length</p>  <p style="text-align: center;">Level</p> | | | | | | | | | | | | | | | | | |
| | <p>Select the items using  or  , and then press .</p> <p>Alternatively Select the parameters using the number keys  to , and then press .</p> | <p>R,G,B</p> <p>The setting range for the above levels differs depending on the color depth.</p> <table border="1"> <tr> <td>8 BIT</td> <td>0 to 255</td> </tr> <tr> <td>9 BIT</td> <td>0 to 511</td> </tr> <tr> <td>10 BIT</td> <td>0 to 1023</td> </tr> <tr> <td>11 BIT</td> <td>0 to 2047</td> </tr> <tr> <td>12 BIT</td> <td>0 to 4095</td> </tr> <tr> <td>13 BIT</td> <td>0 to 8191</td> </tr> <tr> <td>14 BIT</td> <td>0 to 16383</td> </tr> <tr> <td>15 BIT</td> <td>0 to 32767</td> </tr> <tr> <td>16 BIT</td> <td>0 to 65535</td> </tr> </table> | 8 BIT | 0 to 255 | 9 BIT | 0 to 511 | 10 BIT | 0 to 1023 | 11 BIT | 0 to 2047 | 12 BIT | 0 to 4095 | 13 BIT | 0 to 8191 | 14 BIT | 0 to 16383 | 15 BIT | 0 to 32767 | 16 BIT |
| 8 BIT | 0 to 255 | | | | | | | | | | | | | | | | | | |
| 9 BIT | 0 to 511 | | | | | | | | | | | | | | | | | | |
| 10 BIT | 0 to 1023 | | | | | | | | | | | | | | | | | | |
| 11 BIT | 0 to 2047 | | | | | | | | | | | | | | | | | | |
| 12 BIT | 0 to 4095 | | | | | | | | | | | | | | | | | | |
| 13 BIT | 0 to 8191 | | | | | | | | | | | | | | | | | | |
| 14 BIT | 0 to 16383 | | | | | | | | | | | | | | | | | | |
| 15 BIT | 0 to 32767 | | | | | | | | | | | | | | | | | | |
| 16 BIT | 0 to 65535 | | | | | | | | | | | | | | | | | | |

6.7 Aspect ratio patterns

6.7.1 Types of aspect ratio patterns

When aspect ratio has been selected using the pattern key, for instance, aspect ratio patterns can be selected from among the types listed below.









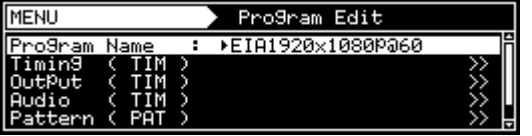













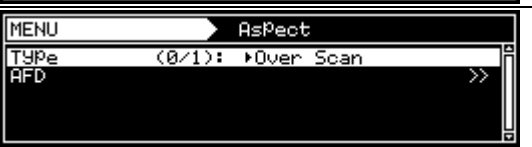



































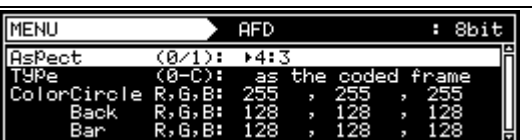
For further details on pattern selection, refer to "2.1.3 Selecting the pattern data."

| | | | |
|---|--------------------------|---------------------------|---|
| 0 | Over Scan | |  |
| | AFD | | |
| | 0 | As the coded frame | |
| | 1 | 4:3 (center) | |
| | 2 | 16:9 (center) | |
| | 3 | 14:9 (center) | |
| | 4 | box 16:9 (top) | |
| | 5 | box 14:9 (top) | |
| | 6 | box 13:7 (center) | |
| | 7 | box 2:1 (center) | |
| | 8 | box 11:5 (center) | |
| | 9 | box 12:5 (center) | |
| | A | 4:3 (14:9 center) | |
| | B | 16:9 (14:9 center) | |
| C | 16:9 (4:3 center) | | |
| 1 | | |  |
| | | Over Scan | |
| | | AFD pattern | |

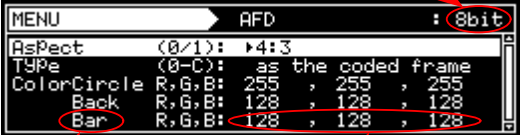
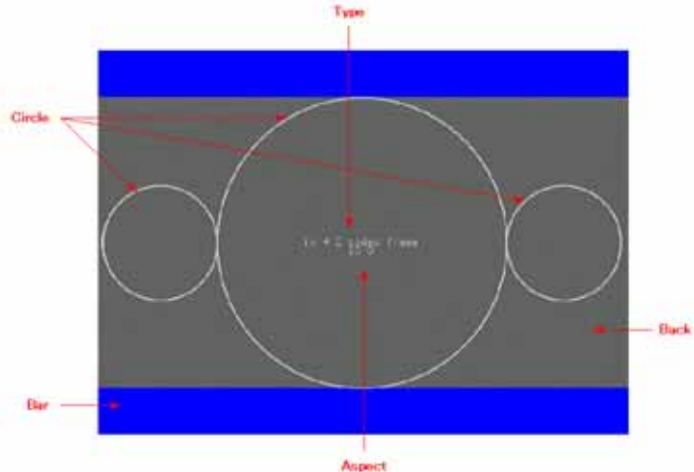
6.7.2 Aspect ratio pattern type settings and customizing

Described below is the procedure for selecting the types of aspect ratio patterns and for performing the settings when **CUSTOM** has been selected as the aspect ratio pattern type.

(If **CUSTOM** is selected, the aspect ratio patterns can be displayed with any level.)

| | | |
|-----|---|--|
| (1) | <p>Select Program Edit using   or  or  or .</p> <p> , and then press .</p> |  |
| (2) | <p>Select Pattern (PAT)>> using  or  or  or .</p> <p>, and then press .</p> |  |
| (3) | <p>Select Aspect>> using  or  or  or  or .</p> <p>and then press .</p> |  |
| (4) | <p><Setting the type></p> <p>Select Type using  or  or  or  or .</p> <p>then press .</p> <p><Setting the parameters></p> <p>Select the parameters using  or  or  or .</p> <p>, and then press .</p> <p>Alternatively: Select the parameters using the number keys 0/STATUS 9/F  , and then press .</p> | <p>For further details on the types of patterns, refer to "6.7.1 Types of aspect ratio patterns."</p> |
| (5) | <p>When AFD has been selected as the Type setting</p> <p><Detailed settings of AFD patterns></p> <p>Select AFD>> using  or  or  or  or .</p> <p>then press .</p> <p>Select the items using  or  or  or .</p> <p>and then press .</p> <p><Inputting the parameters></p> <p>Select the parameters using  or  or  or .</p> <p>, and then press .</p> <p>Alternatively: Select the parameters using the number keys 0/STATUS 9/F  , and then press .</p> |  <p>For further details on the settings, refer to <Table of AFD pattern setting items> below.</p> |

<Table of AFD pattern setting items>

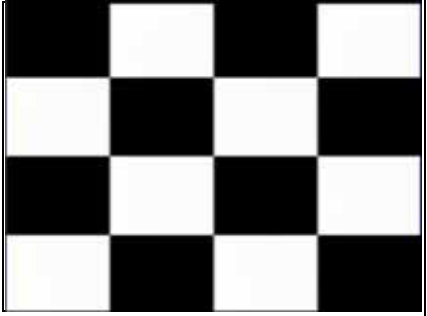
| | | | | | | | | | | | | | | | | | | | |
|--------|-------------------|--|---|-------|-----------------|-------|-----------------|--------|------------------|--------|------------------|--------|------------------|--------|------------------|--------|-------------------|--------|-------------------|
| (1) | Aspect (0/1) | The aspect ratio of the screen is set here. | | | | | | | | | | | | | | | | | |
| | | 0 | 4:3 The images are displayed on the screen with a 4:3 aspect ratio. | | | | | | | | | | | | | | | | |
| | 1 | 16:9 The images are displayed on the screen with a 16:9 aspect ratio. | | | | | | | | | | | | | | | | | |
| (3) | Type | For details on the types of patterns, refer to “6.7.1 Types of aspect ratio patterns.” | | | | | | | | | | | | | | | | | |
| (4) | Color | <div style="text-align: center;">Bit Length</div>  <div style="display: flex; justify-content: space-around; margin-top: 10px;"> Part Level </div>  | | | | | | | | | | | | | | | | | |
| | | Circle | <p>Display the circle level. The R, G and B levels are displayed in sequence from the left. The setting range for the above level differs depending on the color depth.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td>8 BIT</td><td>0 to 255</td></tr> <tr><td>9 BIT</td><td>0 to 511</td></tr> <tr><td>10 BIT</td><td>0 to 1023</td></tr> <tr><td>11 BIT</td><td>0 to 2047</td></tr> <tr><td>12 BIT</td><td>0 to 4095</td></tr> <tr><td>13 BIT</td><td>0 to 8191</td></tr> <tr><td>14 BIT</td><td>0 to 16383</td></tr> <tr><td>15 BIT</td><td>0 to 32767</td></tr> <tr><td>16 BIT</td><td>0 to 65535</td></tr> </table> | 8 BIT | 0 to 255 | 9 BIT | 0 to 511 | 10 BIT | 0 to 1023 | 11 BIT | 0 to 2047 | 12 BIT | 0 to 4095 | 13 BIT | 0 to 8191 | 14 BIT | 0 to 16383 | 15 BIT | 0 to 32767 |
| 8 BIT | 0 to 255 | | | | | | | | | | | | | | | | | | |
| 9 BIT | 0 to 511 | | | | | | | | | | | | | | | | | | |
| 10 BIT | 0 to 1023 | | | | | | | | | | | | | | | | | | |
| 11 BIT | 0 to 2047 | | | | | | | | | | | | | | | | | | |
| 12 BIT | 0 to 4095 | | | | | | | | | | | | | | | | | | |
| 13 BIT | 0 to 8191 | | | | | | | | | | | | | | | | | | |
| 14 BIT | 0 to 16383 | | | | | | | | | | | | | | | | | | |
| 15 BIT | 0 to 32767 | | | | | | | | | | | | | | | | | | |
| 16 BIT | 0 to 65535 | | | | | | | | | | | | | | | | | | |
| | Back | Set the background level. (Details are the same as for Color Circle .) | | | | | | | | | | | | | | | | | |
| | Bar | Set the bar level. (Details are the same as for Color Circle .) | | | | | | | | | | | | | | | | | |

6.8 Checkerboard patterns

6.8.1 Types of checkerboard patterns

When checkerboard has been selected using the pattern key, for instance, checkerboard patterns can be selected from among the types listed below.
















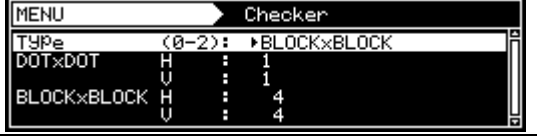






















For further details on pattern selection, refer to “2.1.3 Selecting the pattern data.”

| | | | |
|---|----------------------|-----------|---|
| 0 | DOT × DOT | Dot |  |
| 1 | BLOCK × BLOCK | Block | |
| 2 | SubPixel | Sub-pixel | |

Checkerboard pattern

6.8.2 Checkerboard pattern customizing

The types of checkerboard patterns are selected and their intervals are set using the procedure below.



| | | | | | | | | | |
|--|---|--------------------|---|----------|---|------------------------|--|----------|--|
| <p>(1) Select Program Edit using  or  or   , and then press .</p> |  | | | | | | | | |
| <p>(2) Select Pattern (PAT)>> using  or   , and then press .</p> |  | | | | | | | | |
| <p>(3) Select Checker>> using  or   , and then press .</p> |  | | | | | | | | |
| <p>(4) <Selecting the items> Select Type using  or   , and then press .</p> <p><Setting the parameters> Select the parameters using  or   , and then press .</p> <p>Alternatively: Select the parameters using the number keys ( to ), and then press .</p> | <p>For further details on the patterns, refer to “6.8.1 Types of checkerboard patterns.”</p> | | | | | | | | |
| <p>(5) <Selecting the items> Select the items using  or   , and then press .</p> <p><Inputting the parameters> Select the parameters using  or   , and then press .</p> <p>Alternatively: Select the parameters using the number keys ( to ), and then press .</p> | <p>When DOT × DOT has been selected as the Type setting The DOT × DOT H and V settings take effect.</p> <table border="1"> <tbody> <tr> <td>DOT × DOT H</td> <td>The horizontal direction return interval is set here. Setting range: 1 to 8 [Pixel]</td> </tr> <tr> <td>V</td> <td>The vertical direction return interval is set here. Setting range: 1 to 8 [Pixel]</td> </tr> </tbody> </table> <p>When BLOCK × BLOCK has been selected as the Type setting The BLOCK × BLOCK H and V settings take effect.</p> <table border="1"> <tbody> <tr> <td>BLOCK × BLOCK H</td> <td>The number of blocks in the horizontal direction is set here. (2 blocks, white and black) Setting range: 2 to 16</td> </tr> <tr> <td>V</td> <td>The number of blocks in the vertical direction is set here. (2 blocks, white and black) Setting range: 2 to 16</td> </tr> </tbody> </table> <p>For sub-pixel patterns: There are no setting parameters.</p> | DOT × DOT H | The horizontal direction return interval is set here. Setting range: 1 to 8 [Pixel] | V | The vertical direction return interval is set here. Setting range: 1 to 8 [Pixel] | BLOCK × BLOCK H | The number of blocks in the horizontal direction is set here. (2 blocks, white and black) Setting range: 2 to 16 | V | The number of blocks in the vertical direction is set here. (2 blocks, white and black) Setting range: 2 to 16 |
| DOT × DOT H | The horizontal direction return interval is set here. Setting range: 1 to 8 [Pixel] | | | | | | | | |
| V | The vertical direction return interval is set here. Setting range: 1 to 8 [Pixel] | | | | | | | | |
| BLOCK × BLOCK H | The number of blocks in the horizontal direction is set here. (2 blocks, white and black) Setting range: 2 to 16 | | | | | | | | |
| V | The number of blocks in the vertical direction is set here. (2 blocks, white and black) Setting range: 2 to 16 | | | | | | | | |

6.9 OPT/Image (Option and image patterns)

6.9.1 Types of option and image patterns



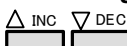









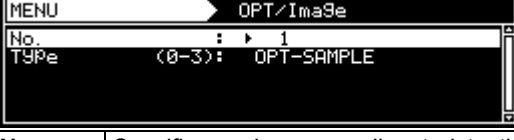









When OPT/image has been selected using the pattern key, for instance, optional and image patterns can be selected from among the types listed below.

For further details on pattern selection, refer to “2.1.3 Selecting the pattern data.”

| | | | |
|---|-------------------|-----------------------|--|
| 0 | IMAGE | Image pattern |  <p>IMAGE A still image registered as the default can be used or any still image can be registered by the user and used.</p> |
| 1 | OPT-SAMPLE | Sample option pattern |  <p>OPT-SAMPLE</p> |
| 2 | OPT-USER | User option pattern | <p>Option pattern registered by the user Any test pattern can be described using a programming language.</p> |

6.9.2 Option and image patterns setting

The procedure for setting optional and image patterns is described below.

| | | |
|--|--|---|
| <p>(1) Select Program Edit using  or  or , and then press .</p> |  | |
| <p>(2) Select Pattern (PAT)>> using  or , and then press .</p> |  | |
| <p>(3) Select Image/OPT>> using  or , and then press .</p> |  | |
| <p>(4) <Setting the Type> Select the items using  or , and then press .</p> <p><Setting the parameters> Select the parameters using  or , and then press .</p> <p>Alternatively: Select the parameters using the number keys ( to ) , and then press .</p> | <p>No.</p> | <p>Specific numbers are allocated to the option and image patterns. The number of the pattern to be displayed is set in No. Setting range: 1 to 999</p> |
| | <p>Type</p> | <p>For further details on the patterns, refer to "6.9.1 Types of option and image patterns."</p> |

6.10 × ABC patterns



The following patterns are available as × ABC patterns. Select them using the key.

All the patterns can be superimposed onto one another, and displayed.



















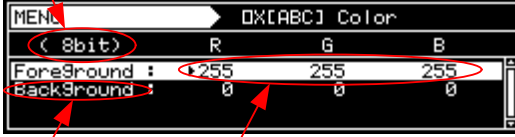











For further details on pattern selection, refer to “2.1.3 Selecting the pattern data.”

| | | | |
|--------------------------|------------|--|--------------------------|
| Character | Character | | |
| Cross Hatch | Crosshatch | | |
| Dot | Dot | | Cross Hatch |
| Circle | Circle | | |
| Burst | Burst | | Circle |
| <input type="checkbox"/> | | | |
| × | | | <input type="checkbox"/> |
| + | | | |
| | | | + |

* There are no items to be set in , × and + patterns.

6.10.1 Color settings




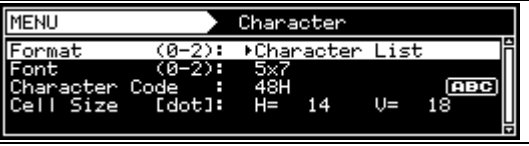









The colors of the □ × [ABC] patterns themselves and their background colors can be set.

| | |
|---|---|
| <p>(1) Select Program Edit using  or  or  , and then press .</p> |  |
| <p>(2) Select Pattern (PAT)>> using  or , and then press .</p> |  |
| <p>(3) Select □ × [ABC] >> using  or , and then press .</p> |  |
| <p>(4) Select Color>> using  or  , and then press .</p> | <p>Bit Length</p>  <p>Part Level</p> |
| <p>(4) <Setting the items> Select the items using  or  , and then press .</p> <p><Setting the parameters> Select the parameters using  or  , and then press .</p> <p>Alternatively: Select the parameters using the number keys ( to ) , and then press .</p> | <p>Foreground The colors of the □ × [ABC] pattern are set here (in the order of RGB from the left). The setting range differs depending on the color depth.</p> <p>Background The background color is set here (in the order of RGB from the left). The setting range differs depending on the color depth.</p> |

Setting ranges by bit length

| | |
|--------|------------|
| 8 BIT | 0 to 255 |
| 9 BIT | 0 to 511 |
| 10 BIT | 0 to 1023 |
| 11 BIT | 0 to 2047 |
| 12 BIT | 0 to 4095 |
| 13 BIT | 0 to 8191 |
| 14 BIT | 0 to 16383 |
| 15 BIT | 0 to 32767 |
| 16 BIT | 0 to 65535 |

6.10.2 Character patterns



















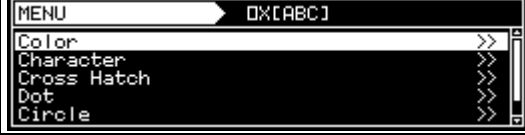





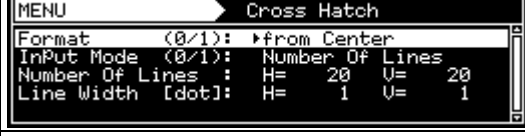





| | |
|-----|---|
| (1) |  |
| (2) |  |
| (3) |  |
| (4) |  |
| (4) | <p><Setting the items></p> <p>Select the items using  or , and then press .</p> <p><Setting the parameters></p> <p>Select the parameters using  or , and then press .</p> <p>Alternatively: Select the parameters using the number keys  to , and then press .</p> <p>For further details, refer to <Table of character setting items> below.</p> |








<Table of character setting items>

| | | | |
|-----|------------------------|---|--|
| (1) | Format (0-2) | The format is selected here. | |
| | | 0 | Character List |
| | | 1 | All 1-Character |
| | | 2 | Corner&Center |
| (2) | Font (0-2) | The font size is set here. | |
| | | 0 | 5 × 7 |
| | | 1 | 7 × 9 |
| | | 2 | 16 × 16 |
| (3) | Character Code | The character code is selected here. Setting range: 20h to FFh When characters are selected directly, select ABC . For details on the operation procedure, refer to “2.3 Setting the names.” | |
| (4) | Cell Size [dot] | The size of each character is set here. | |
| | | H | Set the size of the character in the horizontal direction. |
| | | V | Set the size of the character in the vertical direction. |

6.10.3 Crosshatch patterns

The crosshatch pattern settings are described below.

| | | |
|-----|---|--|
| (1) | Select Program Edit using  or  or  INC  DEC  , and then press  . |  |
| (2) | Select Pattern (PAT)>> using  or  INC  DEC  , and then press  . |  |
| (3) | Select □ × [ABC] >> using  or  INC  DEC  , and then press  . |  |
| (4) | Select Cross Hatch>> using  or  INC  DEC  , and then press  . |  |
| (4) | <Setting the items> Select the items using  or  INC  DEC  , and then press  . | For further details, refer to <Table of crosshatch setting items> below. |






















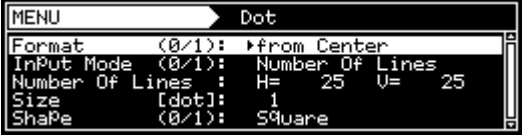
| | |
|---|--|
| <p><Setting the parameters></p> <p>Select the parameters using  or  INC</p> <p> DEC, and then press  SET.</p> <p>Alternatively: Select the parameters using the number keys  0/STATUS to  9/F, and then press  SET.</p> | |
|---|--|


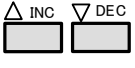







<Table of crosshatch setting items>

| | | | | |
|-------|--|--|------------------------------|--|
| (1) | Format (0-2) | The origin point of the pattern drawing is set here. | | |
| | | 0 | From Center | The pattern is drawn using the screen center as the origin point. |
| | | 1 | From Top-Left | The pattern is drawn using the top left of the screen as the origin point. |
| (2) | InputMode (0/1) | The input mode is selected here. | | |
| | | 0 | Number Of Line | This sets the number of lines to be displayed on the screen. |
| | | 1 | Interval (dot) | This sets the interval between the blocks. |
| (3)-a | When Number of Lines has been selected as the Input Mode setting | The number of lines to be displayed on the screen is set here. | | |
| | | | Number Of Lines: H = | Set the number of lines in the horizontal direction. |
| (3)-b | When Interval (dot) has been selected as the Input Mode setting | The interval between the blocks is set here. | | |
| | | | Interval [dot]: H = | Set the number of lines in the horizontal direction. |
| (4) | Line Width [dot] | The line width is set here. | | |
| | | | Line Width [dot]: H = | Set the number of lines in the horizontal direction. |
| | | | Line Width [dot]: V = | Set the number of lines in the vertical direction. |

6.10.4 Dot patterns

The dot pattern settings are described below.

| | | |
|-----|---|--|
| (1) | Select Program Edit using  MENU   or  INC  DEC , and then press  SET . |  |
| (2) | Select Pattern (PAT)>> using  or  INC  DEC , and then press  SET . |  |
| (3) | Select □ × [ABC] >> using  or  INC  DEC , and then press  SET . |  |
| (4) | Select Dot>> using  or  INC  DEC , and then press  SET . |  |



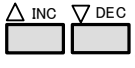









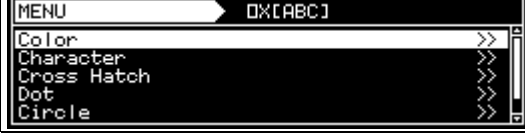
| | | |
|-----|--|---|
| (4) | <p><Setting the items></p> <p>Select the items using  or , and then press .</p> | <p>For further details, refer to <Table of dot setting items> below.</p> |
| | <p><Setting the parameters></p> <p>Select the parameters using  or , and then press .</p> <p>Alternatively: Select the parameters using the number keys ( to ) and then press .</p> | |





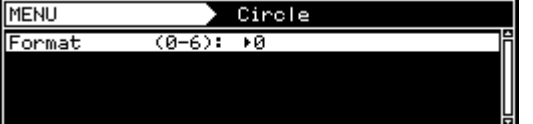











<Table of dot setting items>

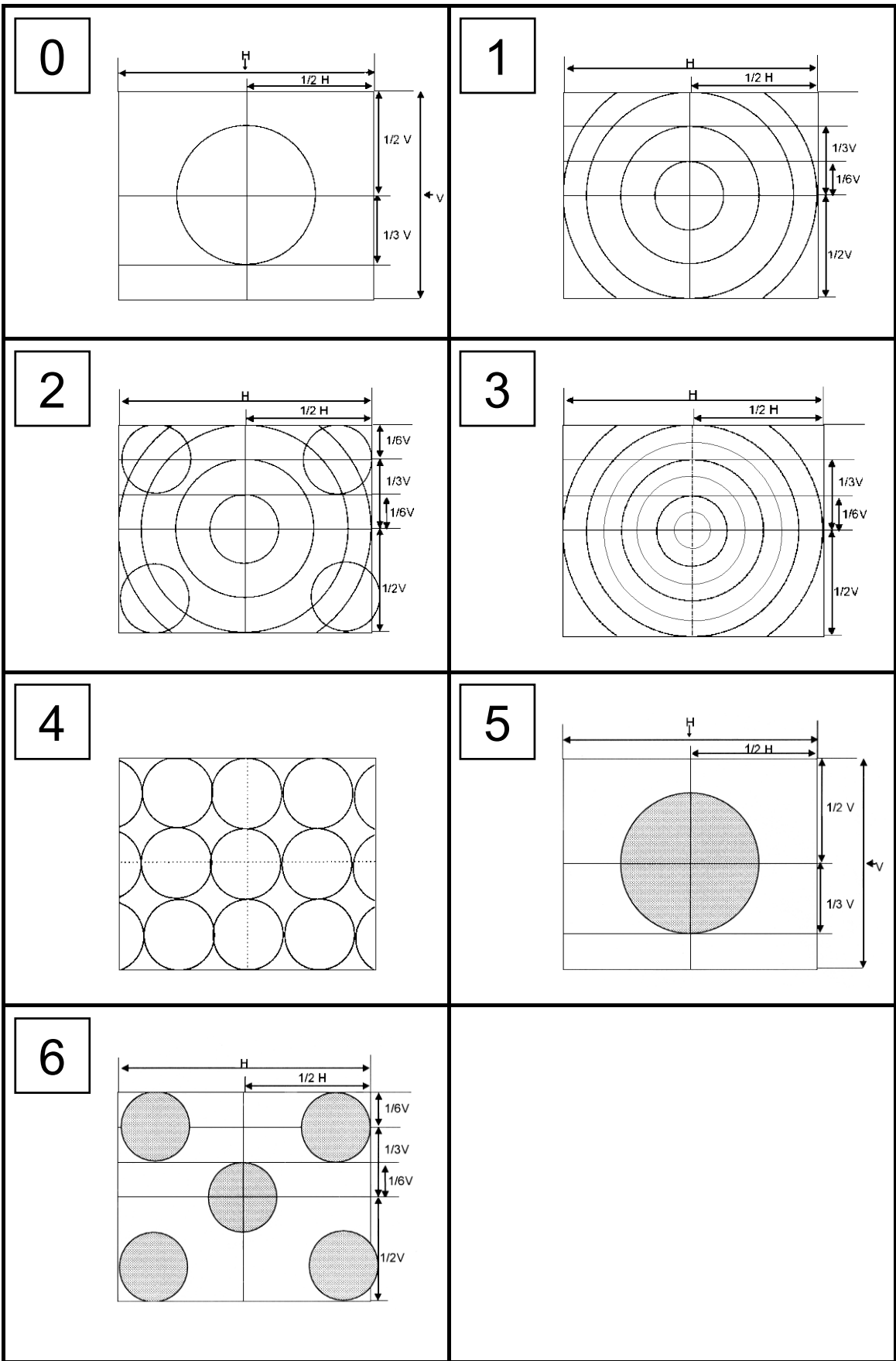
| | | | |
|-------|--|--|--|
| (1) | Format (0-2) | The origin point of the pattern drawing is set here. | |
| | | 0 | From Center The pattern is drawn using the screen center as the origin point. |
| | | 1 | From Top-Left The pattern is drawn using the top left of the screen as the origin point. |
| (2) | InputMode (0/1) | The input mode is selected here. | |
| | | 0 | Number Of Line This sets the number of lines to be displayed on the screen. |
| | | 1 | Interval (dot) This sets the interval between the dots. |
| (3)-a | When Number of Lines has been selected as the Input Mode setting | The number of lines to be displayed on the screen is set here. | |
| | | | Number Of Lines: H = Set the number of lines in the horizontal direction. |
| | | | Number Of Lines: V = Set the number of lines in the vertical direction. |
| (4)-b | When Interval (dot) has been selected as the Input Mode setting | The interval between the blocks is set here. | |
| | | | Interval [dot]: H = Set the number of lines in the horizontal direction. |
| | | | Interval [dot]: V = Set the number of lines in the vertical direction. |
| (5) | Size [dot] | The size is set here. Setting range: 1 to 15 [Dot] | |
| (6) | Shape | The shape is set here. | |
| | | 0 | Circle The dots are drawn in the form of circles. |
| | | 1 | Square The dots are drawn in the form of squares. |

6.10.5 Circle patterns

The circle pattern settings are described below.

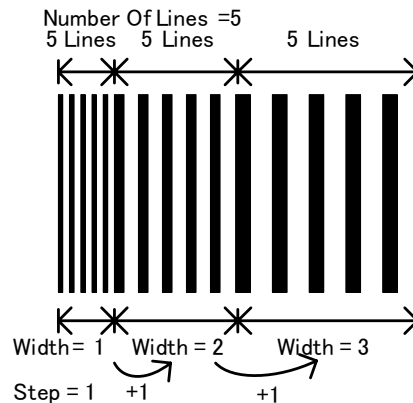
| | | |
|-----|---|--|
| (1) | <p>Select Program Edit using   or , and then press .</p> |  |
| (2) | <p>Select Pattern (PAT)>> using  or , and then press .</p> |  |
| (3) | <p>Select □ × [ABC] >> using  or , and then press .</p> |  |

| | | |
|-----|---|--|
| (4) | <p>Select Circle>> using  or  , and then press .</p> |  |
| (5) | <p><Setting the items></p> <p>Select Format using  or  , and then press .</p> | <p>Select the shapes of the circles from the options below.</p> <p>Format 0</p> <ul style="list-style-type: none"> • Single circle • Center: 1/2H, 1/2V • Radius: 1/3V <p>Format 1</p> <ul style="list-style-type: none"> • Concentric circles 1 • Center: 1/2H, 1/2V • Radius (from the center): 1/6V, 1/3V, 1/2V, 1/2H <p>Format 2</p> <ul style="list-style-type: none"> • Format 1 + (circles with radius 1/6V × 4) <p>Format 3</p> <ul style="list-style-type: none"> • Concentric circles 2 • Center: 1/2H, 1/2V • Radius (from the center): One circle added inside the 1/6V, 1/3V and 1/2 circles, 1/2 radius added <p>Format 4</p> <ul style="list-style-type: none"> • Consecutive circles with radius 1/6V • Top/bottom and left/right symmetry with center (1/2H, 1/2V) as the reference <p>Format 5</p> <ul style="list-style-type: none"> • Single filled-in circle • Center: 1/2H, 1/2V • Radius: 1/3V <p>Format 6</p> <ul style="list-style-type: none"> • Filled-in circles with radius 1/6V × 5 |
| | <p><Setting the parameters></p> <p>Select the parameters using  or , , and then press .</p> <p>Alternatively: Select the parameters using the number keys  , and then press .</p> | |










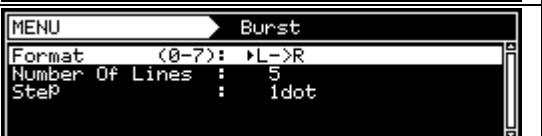




6.10.6 Burst patterns

In burst patterns, the line width increases gradually.



The burst pattern settings are described below.

| | | |
|-----|---|--|
| (1) | Select Program Edit using  or  or  . Δ INC ∇ DEC <input type="text"/> <input type="text"/> , and then press <input type="text"/> . |  |
| (2) | Select Pattern (PAT)>> using  or Δ INC ∇ DEC <input type="text"/> , and then press <input type="text"/> . |  |
| (3) | Select <input type="checkbox"/> × [ABC] >> using  or Δ INC ∇ DEC <input type="text"/> , and then press <input type="text"/> . |  |
| (4) | Select Burst>> using  or Δ INC ∇ DEC <input type="text"/> , and then press <input type="text"/> . |  |
| (4) | <p><Setting the items></p> Select the items using  or Δ INC ∇ DEC <input type="text"/> , and then press <input type="text"/> . <p><Setting the parameters></p> Select the parameters using  or Δ INC ∇ DEC <input type="text"/> , and then press <input type="text"/> . Alternatively: Select the parameters using the number keys $\frac{0}{\text{STATUS}}$ $\frac{9}{\text{F}}$ $\frac{\text{↔}}$ (<input type="text"/> to <input type="text"/>), and then press <input type="text"/> . | For further details, refer to <Table of burst setting items> below. |

<Table of burst setting items>

| | | | | |
|-----|-----------------------|---|----------------------|--|
| (1) | Format (0-2) | The origin point of the pattern drawing is set here. | | |
| | | 0 | L->R | The line width increases from left to right. |
| | | 1 | L<-R | The line width increases from right to left. |
| | | 2 | L<-C->R | The line width increases from the center to the left edge and from the center to the right edge. |
| | | 3 | L->C<-R | The line width increases from the left edge to the center and from the right edge to the center. |
| | | 4 | T->B | The line width increases from top to bottom. |
| | | 5 | T<-B | The line width increases from bottom to top. |
| | | 6 | T<-C->B | The line width increases from the center to the top edge and from the center to the bottom edge. |
| 7 | T->C<-B | The line width increases from the top edge to the center and from the bottom edge to the center. | | |
| (2) | Number of Line | The number of lines set here are repeatedly drawn with the same thickness. After the set number of lines have been drawn, the thickness is increased by an amount equivalent to the Step setting , and this is repeated. Setting range: 1 to 99 [Dot] | | |
| (3) | Step | The step is set here. | | |

6.11 Window patterns

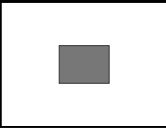
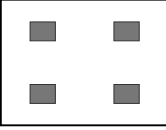
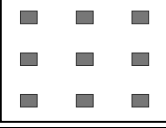
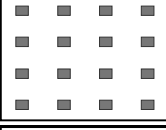
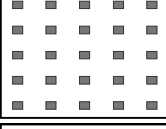
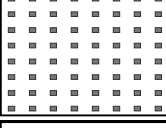


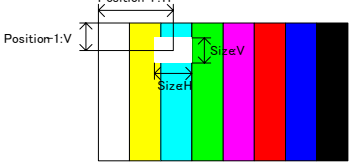
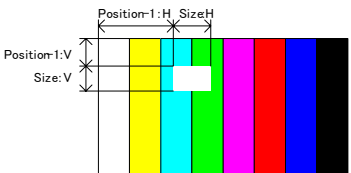
Mono-color rectangles can be displayed as the window patterns.

The window patterns can also be used to check moving images using the action function described later (refer to the action settings).

6.11.1 Types of window patterns



























When window has been selected using the pattern key, for instance, window patterns can be selected from among the types listed below.

For further details on pattern selection, refer to “2.1.3 Selecting the pattern data.”

| | | | |
|---|--------------------------|--|---|
| 0 | 1 Window | 1 window displayed |  |
| 1 | 4 Window | 4 windows displayed |  |
| 2 | 9 Window | 9 windows displayed |  |
| 3 | 16 Window | 16 windows displayed |  |
| 4 | 25 Window | 25 windows displayed |  |
| 5 | 64 Window | 64 windows displayed |  |
| 6 | 3 Window In V Row | 3 windows in a vertical row displayed |  |
| 7 | 3 Window In H Row | 3 windows in a horizontal row displayed |  |
| 8 | User Pos Center | Window displayed at the position of the user's choice * The coordinates of the window center are specified as the origin point of the display. |  |
| 9 | User Pos Corner | Window displayed at the position of the user's choice * The coordinates of the top left of the window are specified as the origin point of the display. |  |

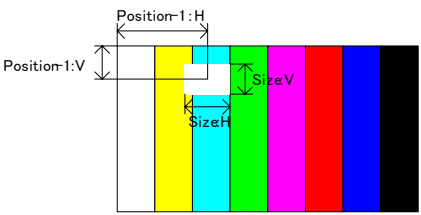
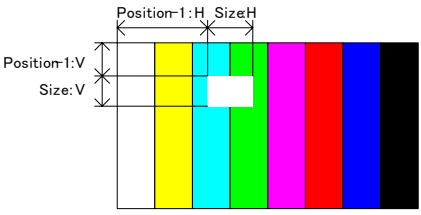
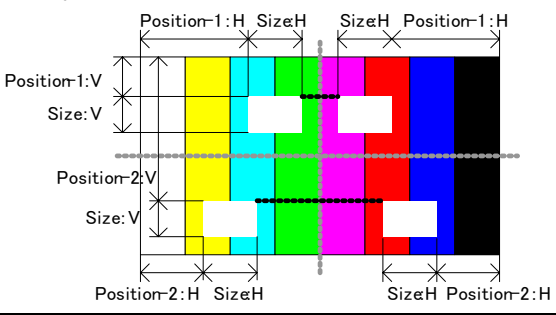
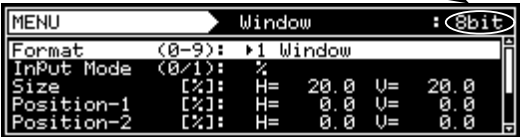
6.11.2 Window pattern settings

The types of window patterns can be selected using the procedure below.

| | | |
|-----|---|--|
| (1) | <p>Select Program Edit using  →  or  INC  DEC, and then press .</p> |  <pre> MENU → Program Edit Program Name : ▶EIA1920x1080P60 Timing (TIM) >> Output (TIM) >> Audio (TIM) >> Pattern (PAT) >> </pre> |
| (2) | <p>Select Pattern (PAT)>> using  or  INC, and then press .</p> |  <pre> MENU → Pattern Pattern/RGB/INU Select >> Color Bar >> Gray Scale >> Ramp >> Sweep >> </pre> |
| (3) | <p>Select Window>> using  or  INC  DEC, and then press .</p> |  <pre> MENU → Window : 8bit Format (0-9): ▶1 Window Input Mode (0/1): % Size [%]: H= 20.0 U= 20.0 Position-1 [%]: H= 0.0 U= 0.0 Position-2 [%]: H= 0.0 U= 0.0 </pre> |
| (4) | <p><Selecting the items> Select the items using  or  INC  DEC, and then press .</p> <p><Setting the parameters> Select the parameters using  or  INC  DEC, and then press .</p> <p>Alternatively: Select the parameters using the number keys  to , and then press .</p> | <p>For further details on the parameters, refer to <Table of window setting items> below.</p> |

<Table of window setting items>

| | | | | | | | | | | | | | | | | | | | | | | | |
|-----|----------------------------|--|---|-----------------|--|---|-----------------|--|---|-----------------|--|---|------------------|---|---|------------------|--|---|------------------|--|---|--------------------------|---|
| (1) | <p>Format (0-9)</p> | <p>The window display format is set here.</p> <table border="1"> <tr> <td>0</td> <td>1 Window</td> <td>One window is displayed at the center of the screen.</td> </tr> <tr> <td>1</td> <td>4 Window</td> <td>The screen is divided into four areas, and each of the four windows is displayed in the center of its respective area. The window size is set using the area divided into the four areas as 100%.</td> </tr> <tr> <td>2</td> <td>9 Window</td> <td>The screen is divided into four areas, and each of the nine windows is displayed in the center of its respective area.</td> </tr> <tr> <td>3</td> <td>16 Window</td> <td>The screen is divided into four areas, and each of the sixteen windows is displayed in the center of its respective area.</td> </tr> <tr> <td>4</td> <td>25 Window</td> <td>The screen is divided into four areas, and each of the thirty-two windows is displayed in the center of its respective area.</td> </tr> <tr> <td>5</td> <td>64 Window</td> <td>The screen is divided into four areas, and each of the sixty-four windows is displayed in the center of its respective area.</td> </tr> <tr> <td>6</td> <td>3 Window In V Row</td> <td>The screen is divided vertically into three areas, and each of the three windows is displayed in the center of its respective area.</td> </tr> </table> | 0 | 1 Window | One window is displayed at the center of the screen. | 1 | 4 Window | The screen is divided into four areas, and each of the four windows is displayed in the center of its respective area. The window size is set using the area divided into the four areas as 100%. | 2 | 9 Window | The screen is divided into four areas, and each of the nine windows is displayed in the center of its respective area. | 3 | 16 Window | The screen is divided into four areas, and each of the sixteen windows is displayed in the center of its respective area. | 4 | 25 Window | The screen is divided into four areas, and each of the thirty-two windows is displayed in the center of its respective area. | 5 | 64 Window | The screen is divided into four areas, and each of the sixty-four windows is displayed in the center of its respective area. | 6 | 3 Window In V Row | The screen is divided vertically into three areas, and each of the three windows is displayed in the center of its respective area. |
| 0 | 1 Window | One window is displayed at the center of the screen. | | | | | | | | | | | | | | | | | | | | | |
| 1 | 4 Window | The screen is divided into four areas, and each of the four windows is displayed in the center of its respective area. The window size is set using the area divided into the four areas as 100%. | | | | | | | | | | | | | | | | | | | | | |
| 2 | 9 Window | The screen is divided into four areas, and each of the nine windows is displayed in the center of its respective area. | | | | | | | | | | | | | | | | | | | | | |
| 3 | 16 Window | The screen is divided into four areas, and each of the sixteen windows is displayed in the center of its respective area. | | | | | | | | | | | | | | | | | | | | | |
| 4 | 25 Window | The screen is divided into four areas, and each of the thirty-two windows is displayed in the center of its respective area. | | | | | | | | | | | | | | | | | | | | | |
| 5 | 64 Window | The screen is divided into four areas, and each of the sixty-four windows is displayed in the center of its respective area. | | | | | | | | | | | | | | | | | | | | | |
| 6 | 3 Window In V Row | The screen is divided vertically into three areas, and each of the three windows is displayed in the center of its respective area. | | | | | | | | | | | | | | | | | | | | | |

















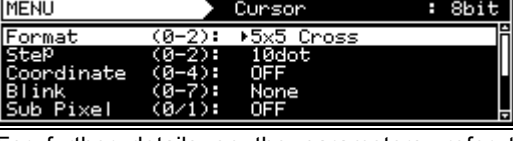











| | | 7 | 3 Window In H Row | The screen is divided horizontally into three areas, and each of the three windows is displayed in the center of its respective area. | | | | | | | | | | | | | | | | | | | |
|-------------------------------|---|--|--|---|-----|---|---|---|----------|--|-----------|--------|-----------|--------|-----------|--------|-----------|--------|------------|--------|------------|--------|------------|
| | | 8 | User Pos Center | <p>The window can be displayed at any position. The coordinates of the window center are specified as the origin point of the window display.</p>  | | | | | | | | | | | | | | | | | | | |
| | | 9 | User Pos Corner | <p>The window can be displayed at any position. The coordinates of the top left of the window are specified as the origin point of the window display.</p>  | | | | | | | | | | | | | | | | | | | |
| (2) | Input Mode | <p>The input mode for the window size and display position is specified here.</p> <table border="1"> <tr> <td>0</td> <td>%</td> <td>The size and position are set as a percentage of the entire screen.</td> </tr> <tr> <td>1</td> <td>dot</td> <td>The size and position are set in 1-dot increments.</td> </tr> </table> | | | 0 | % | The size and position are set as a percentage of the entire screen. | 1 | dot | The size and position are set in 1-dot increments. | | | | | | | | | | | | | |
| 0 | % | The size and position are set as a percentage of the entire screen. | | | | | | | | | | | | | | | | | | | | | |
| 1 | dot | The size and position are set in 1-dot increments. | | | | | | | | | | | | | | | | | | | | | |
| (3) | Size | <p>The window size is set here. The setting procedure differs depending on the Input Mode setting.</p> | | | | | | | | | | | | | | | | | | | | | |
| (4) | Position-1 Position-2 | <p>Specify the coordinates of the window when format 8 (User Pos Center) or format 9 (User Pos Corner) has been selected. When Position-2 is set, the window is displayed at the reverse mirror positions of Position-1 and Position-2. In other words, when Position-2 is set, four windows are displayed at the same time.</p>  <table border="1"> <tr> <td>H =</td> <td>The window center position or horizontal direction of its start position is set here.</td> </tr> <tr> <td>V =</td> <td>The window center position or vertical direction of its start position is set here.</td> </tr> </table> | | | H = | The window center position or horizontal direction of its start position is set here. | V = | The window center position or vertical direction of its start position is set here. | | | | | | | | | | | | | | | |
| H = | The window center position or horizontal direction of its start position is set here. | | | | | | | | | | | | | | | | | | | | | | |
| V = | The window center position or vertical direction of its start position is set here. | | | | | | | | | | | | | | | | | | | | | | |
| (3) | Color R G B | <p>The window colors and level are set here.</p>  <p>The setting range differs depending on the color depth.</p> | <table border="1"> <thead> <tr> <th colspan="2">Setting ranges by color depth</th> </tr> </thead> <tbody> <tr> <td>8 BIT</td> <td>0 to 255</td> </tr> <tr> <td>9 BIT</td> <td>0 to 511</td> </tr> <tr> <td>10 BIT</td> <td>0 to 1023</td> </tr> <tr> <td>11 BIT</td> <td>0 to 2047</td> </tr> <tr> <td>12 BIT</td> <td>0 to 4095</td> </tr> <tr> <td>13 BIT</td> <td>0 to 8191</td> </tr> <tr> <td>14 BIT</td> <td>0 to 16383</td> </tr> <tr> <td>15 BIT</td> <td>0 to 32767</td> </tr> <tr> <td>16 BIT</td> <td>0 to 65535</td> </tr> </tbody> </table> | Setting ranges by color depth | | 8 BIT | 0 to 255 | 9 BIT | 0 to 511 | 10 BIT | 0 to 1023 | 11 BIT | 0 to 2047 | 12 BIT | 0 to 4095 | 13 BIT | 0 to 8191 | 14 BIT | 0 to 16383 | 15 BIT | 0 to 32767 | 16 BIT | 0 to 65535 |
| Setting ranges by color depth | | | | | | | | | | | | | | | | | | | | | | | |
| 8 BIT | 0 to 255 | | | | | | | | | | | | | | | | | | | | | | |
| 9 BIT | 0 to 511 | | | | | | | | | | | | | | | | | | | | | | |
| 10 BIT | 0 to 1023 | | | | | | | | | | | | | | | | | | | | | | |
| 11 BIT | 0 to 2047 | | | | | | | | | | | | | | | | | | | | | | |
| 12 BIT | 0 to 4095 | | | | | | | | | | | | | | | | | | | | | | |
| 13 BIT | 0 to 8191 | | | | | | | | | | | | | | | | | | | | | | |
| 14 BIT | 0 to 16383 | | | | | | | | | | | | | | | | | | | | | | |
| 15 BIT | 0 to 32767 | | | | | | | | | | | | | | | | | | | | | | |
| 16 BIT | 0 to 65535 | | | | | | | | | | | | | | | | | | | | | | |

6.12 Cursor patterns

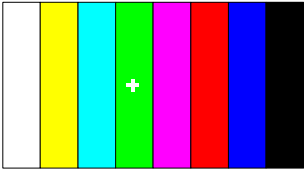
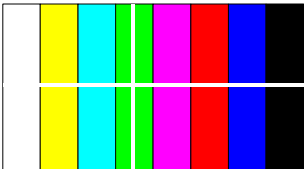
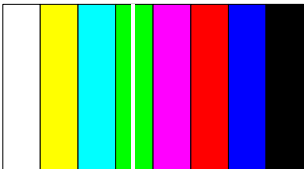
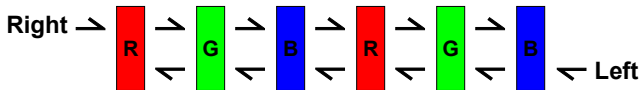
A cursor can be displayed on screens which show pattern displays. The cursor can be moved to any point, and its position on the screen can be displayed.

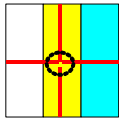
6.12.1 Cursor settings

The cursor can be selected by following the operation procedure below. For further details on pattern selection, refer to "2.1.3 Selecting the pattern data."

| | |
|---|---|
| <p>(1) Select Program Edit using  →  or  or   , and then press .</p> |  <pre> MENU Program Edit Program Name : ▶EIA1920x1080P60 Timing (TIM) >>> OutPut (TIM) >>> Audio (TIM) >>> Pattern (PAT) >>> </pre> |
| <p>(2) Select Pattern (PAT)>> using  or   , and then press .</p> |  <pre> MENU Pattern Pattern/RGB/INV Select >>> Color Bar >>> Gray Scale >>> Ramp >>> Sweep >>> </pre> |
| <p>(3) Select Cursor>> using  or   , and then press .</p> |  <pre> MENU Cursor : 8bit Format (0-2): ▶5x5 Cross Step (0-2): 10dot Coordinate (0-4): OFF Blink (0-7): None Sub Pixel (0/1): OFF </pre> |
| <p>(4) <Selecting the items> Select the items using  or   , and then press .</p> <p><Setting the parameters> Select the parameters using  or   , and then press .</p> <p>Alternatively: Select the parameters using the number keys ( to ), and then press .</p> | <p>For further details on the parameters, refer to <Table of cursor setting items> below.</p> |











<Table of cursor setting items>

| | | | | |
|--------|---|---|--------------------|--|
| (1) | Format (0-2) | The shape of the cursor is set here. | | |
| | | 0 | 5 × 5 Cross | The cursor is displayed as a 5-pixel × 5-pixel cross.  |
| | | 1 | HV-Line | The cursor is displayed as a cross whose horizontal and vertical dimensions extend to the edges of the screen.  |
| 2 | V-Line | The cursor is displayed as a vertical line.  | | |
| (2) | Step | The amount of cursor movement when the cursor is to be moved is set here. 0 to 2 1 dot/10 dot/100 dot | | |
| (3) | Coordinate | The coordinate display method is set here. | | |
| | | 0 | OFF | No coordinates are displayed. |
| | | 1 | Normal-1 | The horizontal and vertical coordinates and step are displayed in 1-pixel increments. |
| | | 2 | Normal-2 | The horizontal and vertical coordinates are displayed in sub-pixel increments, and the step is displayed in 1-pixel increments. |
| | | 3 | Reverse-1 | Normal-1 is inverted at the top and bottom, and displayed. |
| 4 | Reverse-2 | Normal-2 is inverted at the top and bottom, and displayed. | | |
| (4) | Blink | Whether the cursor is to blink and the blink interval are set here. | | |
| | | 0 | None | The cursor does not blink. |
| 1 to 7 | 1 V / 2 V / 4 V / 8 V / 16 V / 32 V / 64 V | The cursor blinks for each 1 V (vertical sync period) to 64 V and then goes off, and this is repeated. | | |
| (4) | Sub Pixel | Whether the cursor is to be moved in 1-pixel increments or sub-pixel increments is set here. [Operation in sub-pixel increments]  | | |
| | | 0 | OFF | The cursor is moved in 1-pixel increments. |
| | | 1 | ON | The cursor is moved in sub-pixel increments. |
| (5) | Overlay | Whether the cursor is to be displayed on top of the test pattern or on top of the background color set using the Color Back R G B item is set here. | | |
| | | 0 | OFF | The cursor is displayed on top of the background color set by the Color Back R G B item. |
| 1 | ON | The cursor is displayed on top of the test pattern. | | |
| (6) | Intersection | The shape of the intersection is set here. | | |
| | | 0 | Normal | The intersection is filled in as a cross. |

| | | 1 | Space | <p>The cursor is not displayed in the pixels of the intersection and sub-pixels below it, but the original background is displayed instead.</p>  | | | | | | | | | | | | | | | | | | | | |
|-------------------------------|---------------------------|---|-------|--|-------------------------------|--|-------|----------|-------|----------|--------|-----------|--------|-----------|--------|-----------|--------|-----------|--------|------------|--------|------------|--------|------------|
| (7) | Color Cursor R G B | <p>The cursor color and level are set here. The setting range differs depending on the color depth.</p> | | <table border="1"> <thead> <tr> <th colspan="2">Setting ranges by color depth</th> </tr> </thead> <tbody> <tr> <td>8 BIT</td> <td>0 to 255</td> </tr> <tr> <td>9 BIT</td> <td>0 to 511</td> </tr> <tr> <td>10 BIT</td> <td>0 to 1023</td> </tr> <tr> <td>11 BIT</td> <td>0 to 2047</td> </tr> <tr> <td>12 BIT</td> <td>0 to 4095</td> </tr> <tr> <td>13 BIT</td> <td>0 to 8191</td> </tr> <tr> <td>14 BIT</td> <td>0 to 16383</td> </tr> <tr> <td>15 BIT</td> <td>0 to 32767</td> </tr> <tr> <td>16 BIT</td> <td>0 to 65535</td> </tr> </tbody> </table> | Setting ranges by color depth | | 8 BIT | 0 to 255 | 9 BIT | 0 to 511 | 10 BIT | 0 to 1023 | 11 BIT | 0 to 2047 | 12 BIT | 0 to 4095 | 13 BIT | 0 to 8191 | 14 BIT | 0 to 16383 | 15 BIT | 0 to 32767 | 16 BIT | 0 to 65535 |
| Setting ranges by color depth | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 BIT | 0 to 255 | | | | | | | | | | | | | | | | | | | | | | | |
| 9 BIT | 0 to 511 | | | | | | | | | | | | | | | | | | | | | | | |
| 10 BIT | 0 to 1023 | | | | | | | | | | | | | | | | | | | | | | | |
| 11 BIT | 0 to 2047 | | | | | | | | | | | | | | | | | | | | | | | |
| 12 BIT | 0 to 4095 | | | | | | | | | | | | | | | | | | | | | | | |
| 13 BIT | 0 to 8191 | | | | | | | | | | | | | | | | | | | | | | | |
| 14 BIT | 0 to 16383 | | | | | | | | | | | | | | | | | | | | | | | |
| 15 BIT | 0 to 32767 | | | | | | | | | | | | | | | | | | | | | | | |
| 16 BIT | 0 to 65535 | | | | | | | | | | | | | | | | | | | | | | | |
| (8) | Color Back R G B | <p>The setting procedure is the same as for the Color Cursor R G B item. However, when On has been selected as the Overlay item setting, the test pattern becomes the background so that this setting is canceled.</p> | | | | | | | | | | | | | | | | | | | | | | |

6.12.2 Cursor movement procedure

The way in which the cursor is moved can be set.

| | | | | | | | | | | |
|-----|--|---|---|-----------------------------------|---|------------------------------------|---|----------------------------|---|--------------------------|
| (1) | <p>Displaying the menu:</p> <p>CURSOR DETAIL</p>  |  | | | | | | | | |
| (2) | <p>Moving the cursor (when the number keys are used):</p> <p>4/A ← 6/C ⇄ 2 ↓ 8/E ⇄</p>  | <p>When one of the following number keys is pressed, the cursor moves in the corresponding manner.</p> <table border="1"> <tr> <td>4</td> <td>The cursor moves toward the left.</td> </tr> <tr> <td>6</td> <td>The cursor moves toward the right.</td> </tr> <tr> <td>2</td> <td>The cursor moves downward.</td> </tr> <tr> <td>8</td> <td>The cursor moves upward.</td> </tr> </table> | 4 | The cursor moves toward the left. | 6 | The cursor moves toward the right. | 2 | The cursor moves downward. | 8 | The cursor moves upward. |
| 4 | The cursor moves toward the left. | | | | | | | | | |
| 6 | The cursor moves toward the right. | | | | | | | | | |
| 2 | The cursor moves downward. | | | | | | | | | |
| 8 | The cursor moves upward. | | | | | | | | | |
| (3) | <p>Moving the cursor (when the JOG dial are used):</p>  | <p>When  or  is pressed and the jog dial is turned, the cursor moves to the left or right.</p> <p>When  or  is pressed and the jog dial is turned, the cursor moves downward or upward.</p> | | | | | | | | |
| (4) | <p>Reversing the cursor color:</p> <p>9/F ⇄</p>  | <p>The cursor color is reversed.</p> | | | | | | | | |
| (5) | <p>Switching the background color:</p> <p>7/D ↻</p>  | <p>The background color is switched in the following sequence: white → red → green → blue → black → Color Back R G B item setting. (Refer to the table of cursor setting items.)</p> | | | | | | | | |

6.13 Name/List

The information to be displayed on the monitor can be selected from among the items listed below using the NAME/LIST pattern key.

| NAME/LIST | NAME | Program name display | The name of the program can be displayed. |
|-----------|----------|---------------------------------------|--|
| | EDID | EDID setting data display | For further details, refer to "6.13.3 EDID." |
| | DDC/CI | DDC-CI setting data display | For further details, refer to "6.13.4 DDC/CI." |
| | HDCP | HDCP authentication screen display. | For further details, refer to "6.13.5 HDCP (High-bandwidth Digital Content Protection)." |
| | CEC | CEC setting data display | For further details, refer to "4.2.4 CEC function." |
| | HDMI | HDMI setting data display | For further details, refer to "6.13.6 HDMI list." |
| | TIMING | Timing data (parameter, etc.) display | For further details, refer to "6.13.7 Timing data list." |
| | IMAGE | Image pattern list display | For further details, refer to "6.13.8 Image pattern list." |
| | OPT-USER | User optional pattern list display | For further details, refer to "6.13.9 OPT-USER pattern list." |



















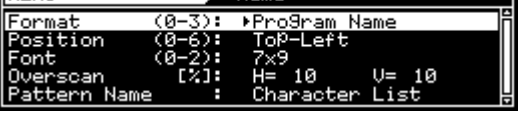










6.13.1 Name/List display

The Name/List functions can be selected by the operations described below.

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-----|---|---|---|-------------|--|---|-------------|--------------------------------|---|-------------------|--|---|---------------|-----------------|---|-------------|--|---|---------------|--|---|--------------|---|---|------------------|---|---|------------|--------------------------------------|---|-------------|---|
| (1) | <p>Select Program Edit using or or or , and then press .</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (2) | <p>Select Pattern (PAT)>> using or or , and then press .</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (3) | <p>Select Name/List>> using or or , and then press .</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (4) | <p><Selecting the Type></p> <p>Select Type using or or , and then press .</p> <p><Setting the parameters></p> <p>Select the parameters using or or , and then press .</p> <p>Alternatively: Select the parameters using the number keys to , and then press .</p> | <p>Select the Name/List pattern function.</p> <table border="1"> <tbody> <tr> <td>0</td> <td>NAME</td> <td>The names of the programs are displayed.</td> </tr> <tr> <td>1</td> <td>EDID</td> <td>The EDID is displayed as text.</td> </tr> <tr> <td>2</td> <td>EDID (HEX)</td> <td>The EDID is displayed in the hexadecimal (HEX) format.</td> </tr> <tr> <td>3</td> <td>DDC/CI</td> <td>DDC/CI is used.</td> </tr> <tr> <td>4</td> <td>HDCP</td> <td>The HDCP authentication screen is displayed.</td> </tr> <tr> <td>5</td> <td>Timing</td> <td>A list of the timing data being output is displayed.</td> </tr> <tr> <td>6</td> <td>Image</td> <td>Information of the image patterns registered in the internal memory or on the CF card is displayed.</td> </tr> <tr> <td>7</td> <td>OPT-US ER</td> <td>The names and sizes of the user optional patterns registered in the internal memory or on the CF card is displayed.</td> </tr> <tr> <td>8</td> <td>CEC</td> <td>The CEC execution list is displayed.</td> </tr> <tr> <td>9</td> <td>HDMI</td> <td>A list of the HDMI-related data is displayed.</td> </tr> </tbody> </table> | 0 | NAME | The names of the programs are displayed. | 1 | EDID | The EDID is displayed as text. | 2 | EDID (HEX) | The EDID is displayed in the hexadecimal (HEX) format. | 3 | DDC/CI | DDC/CI is used. | 4 | HDCP | The HDCP authentication screen is displayed. | 5 | Timing | A list of the timing data being output is displayed. | 6 | Image | Information of the image patterns registered in the internal memory or on the CF card is displayed. | 7 | OPT-US ER | The names and sizes of the user optional patterns registered in the internal memory or on the CF card is displayed. | 8 | CEC | The CEC execution list is displayed. | 9 | HDMI | A list of the HDMI-related data is displayed. |
| 0 | NAME | The names of the programs are displayed. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | EDID | The EDID is displayed as text. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | EDID (HEX) | The EDID is displayed in the hexadecimal (HEX) format. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | DDC/CI | DDC/CI is used. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | HDCP | The HDCP authentication screen is displayed. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | Timing | A list of the timing data being output is displayed. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | Image | Information of the image patterns registered in the internal memory or on the CF card is displayed. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | OPT-US ER | The names and sizes of the user optional patterns registered in the internal memory or on the CF card is displayed. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | CEC | The CEC execution list is displayed. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | HDMI | A list of the HDMI-related data is displayed. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

6.13.2 Name

The display method can be set when Name has been selected as the Type setting.

| | |
|--|--|
| <p>(1) Select Program Edit using   or  or , and then press .</p> |  |
| <p>(2) Select Pattern (PAT)>> using  or , and then press .</p> |  |
| <p>(3) Select Name/List>> using  or , and then press .</p> |  |
| <p>(4) Select Name>> using  or  , and then press .</p> |  |
| <p>(5) <Selecting the items> Select the items using  or  , and then press .</p> <p><Setting the parameters> Select the parameters using  or , and then press .</p> <p>Alternatively: Select the parameters using the number keys  , and then press .</p> | <p>For further details, refer to <Table of name setting items> below.</p> |

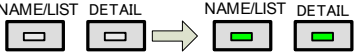
















<Table of name setting items>

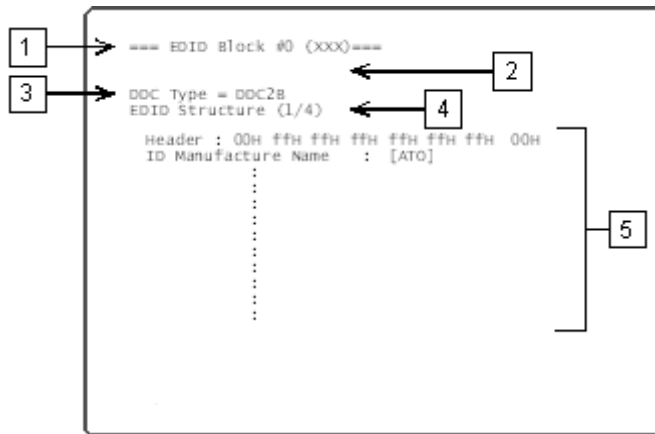
| | | | | |
|-----|---------------------|--|--|---|
| (1) | Format (0-3) | The display contents of Name are set here. | | |
| | | 0 | Program Name | The program names are displayed. |
| | | 1 | Pattern Name | The pattern names are displayed. |
| | | 2 | Program & Pattern Name | The program names and pattern names are displayed at the same time. |
| | | 3 | Program Name, Freq | The program names and video timing signal frequencies are displayed at the same time. |
| (2) | Position | The display position of the name is set here. | | |
| | | 0 | Center | The name is displayed at the screen center. |
| | | 1 | Top-Left | The name is displayed at the top left of the screen. |
| | | 2 | Bottom-Left | The name is displayed at the bottom left of the screen. |
| | | 3 | Top-Right | The name is displayed at the top right of the screen. |
| | | 4 | Bottom-Right | The name is displayed at the bottom right of the screen. |
| | | 5 | Top-Center | The name is displayed at the upper center of the screen. |
| | | 6 | Bottom Center | The name is displayed at the lower center of the screen. |
| (3) | Font | The font size is set here. | | |
| | | 0 | 5 × 7 | 5 × 7 is set as the font size. |
| | | 1 | 7 × 9 | 7 × 9 is set as the font size. |
| | | 2 | 16 × 16 | 16 × 16 is set as the font size. |
| (4) | Overscan [%] | The display position can be adjusted in such a way that the display is not hidden to simulate an overscanning monitor. | | |
| | | H = | Set the horizontal overscanning ratio. | |
| | | V = | Set the vertical overscanning ratio. | |
| (5) | Pattern Name | The pattern names are edited here. For details on the editing procedure, refer to "2.3 Setting the names." | | |

6.13.3 EDID

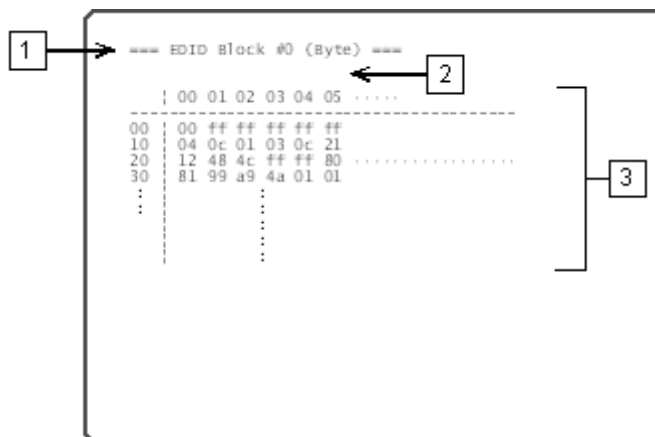
The EDID of the connected display can be displayed on the screen.

a) EDID display method

| | |
|--|--|
| <p>(1)</p>  |  |
| <p>(2) <Displaying the EDID></p> <p>Select EDID using  or  , and then press .</p> <p>Alternatively, select  for the GUI display format or  for the HEX display format.</p> | <p>The EDID is displayed as shown in the figure below.</p>  |
| <p>(3) <Selecting the pages></p> <p>Select  (previous page) or  (next page) using  or  , and then press .</p> <p>Alternatively, select the page using  (previous page) or  (next page).</p> | <p>When the display extends over several pages, it is divided up on the fluorescent display tube, and shown. (Switch from one page to another to display all the information.)</p> |

**With the GUI display format**

- 1) Block number of EDID
- 2) Error display when an error has occurred
- 3) DDC type
- 4) EDID block now displayed
- 5) Content of EDID

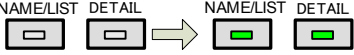


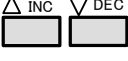




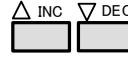

**With the HEX display format**

- 1) Block number of EDID
- 2) Error display when an error has occurred
- 3) Content of EDID

b) Port selection method

The EDID is displayed by only one video interface at a time, and it is necessary to set the video interface which is to display the EDID.

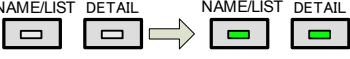












In addition to HDMI, EDID can be also displayed using the DVI or VGA interface.

| | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|-------------|--|---|-------------|--|---|--------------|---|---|--------------|---|---|---------------|--|---|---------------|--|---|------------------------|---|
| <p>(1) </p> <p>Establish the state in which EDID or EDID (HEX) is selected.</p> |  | | | | | | | | | | | | | | | | | | | | | |
| <p>(2) Select EDIT using  or , and then press .</p> <p>Alternatively, select EDIT using .</p> |  | | | | | | | | | | | | | | | | | | | | | |
| <p>(3) <Selecting the port></p> <p>Select the port using  or , and then press .</p> | <p>Select the video interface which is to display the EDID. (Depending on the unit configuration, not all the following parameters will be displayed.)</p> <table border="1"> <tr> <td>0</td> <td>DVI1</td> <td>Channel 1 of the DVI unit is selected.</td> </tr> <tr> <td>1</td> <td>DVI2</td> <td>Channel 2 of the DVI unit is selected.</td> </tr> <tr> <td>2</td> <td>HDMI1</td> <td>Channel 1 of the HDMI unit is selected.</td> </tr> <tr> <td>3</td> <td>HDMI2</td> <td>Channel 2 of the HDMI unit is selected.</td> </tr> <tr> <td>4</td> <td>PC-DVI</td> <td>DVI of the PC analog unit is selected.</td> </tr> <tr> <td>5</td> <td>PC-VGA</td> <td>VGA of the PC analog unit is selected.</td> </tr> <tr> <td>6</td> <td>TV-VGA/ DVI</td> <td>VGA of the TV encoder unit is selected.</td> </tr> </table> | 0 | DVI1 | Channel 1 of the DVI unit is selected. | 1 | DVI2 | Channel 2 of the DVI unit is selected. | 2 | HDMI1 | Channel 1 of the HDMI unit is selected. | 3 | HDMI2 | Channel 2 of the HDMI unit is selected. | 4 | PC-DVI | DVI of the PC analog unit is selected. | 5 | PC-VGA | VGA of the PC analog unit is selected. | 6 | TV-VGA/ DVI | VGA of the TV encoder unit is selected. |
| 0 | DVI1 | Channel 1 of the DVI unit is selected. | | | | | | | | | | | | | | | | | | | | |
| 1 | DVI2 | Channel 2 of the DVI unit is selected. | | | | | | | | | | | | | | | | | | | | |
| 2 | HDMI1 | Channel 1 of the HDMI unit is selected. | | | | | | | | | | | | | | | | | | | | |
| 3 | HDMI2 | Channel 2 of the HDMI unit is selected. | | | | | | | | | | | | | | | | | | | | |
| 4 | PC-DVI | DVI of the PC analog unit is selected. | | | | | | | | | | | | | | | | | | | | |
| 5 | PC-VGA | VGA of the PC analog unit is selected. | | | | | | | | | | | | | | | | | | | | |
| 6 | TV-VGA/ DVI | VGA of the TV encoder unit is selected. | | | | | | | | | | | | | | | | | | | | |

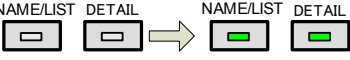







6.13.4 DDC/CI

Using the DVI and VGA connectors, the DDC/CI commands can be sent and received, and shown on the display. Two modes are available for DVI/CI: the **Get (Get VCP Feature)** mode in which the setting data is loaded from the information set in the display at the connection destination, and the **Set (Set VCP Feature)** mode in which the data of the user's choice is set.

<Setting DDC/CI>

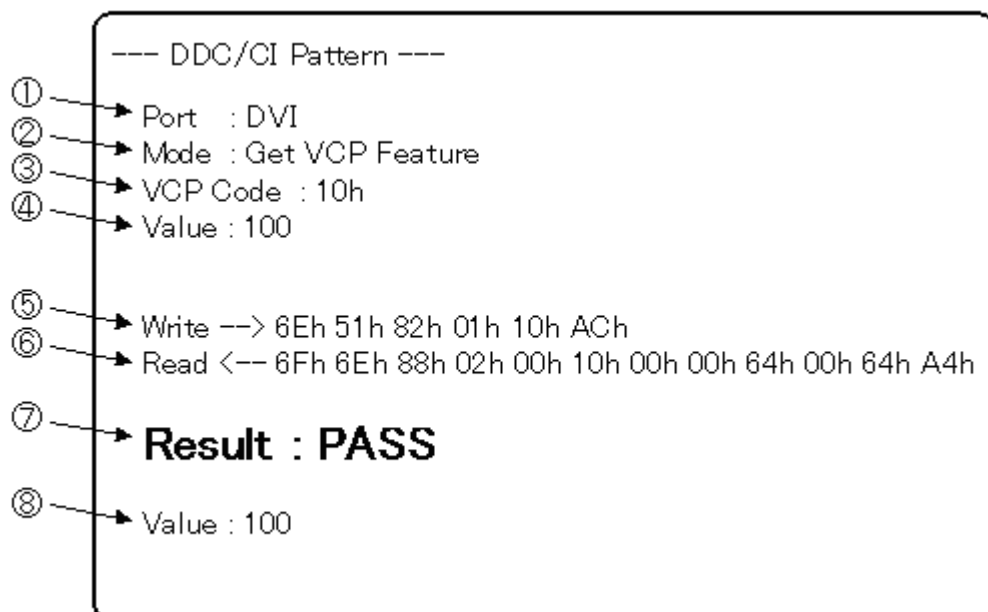
| | |
|---|--|
| (1)  |  |
| (2) <Selecting CEC> Select DDC/CI using  or   , and then press  . |  |
| (3) <Detailed setting: EDIT> Select EDIT using  or   , and then press  Alternatively, select EDIT using  . |  |

<Re-executing DDC/CI>

| | |
|--|--|
| (1)  |  |
| (2) Select RE-EXECUTE using  or   , and then press  Alternatively, select RE-EXECUTE using  . |  |

<Table of DDC/CI setting items>

| | | |
|-----------------------|--|--|
| (1) Port (0-6) | The port for using DDC/CI is set here. | |
| | 0 | DVI1 DDC/CI is used by the DVI1 port. |
| | 1 | DVI2 DDC/CI is used by the DVI2 port. |
| | 2 | HDMI1 DDC/CI is used by the HDMI1 port. |
| | 3 | HDMI2 DDC/CI is used by the HDMI2 port. |
| | 4 | PC-DVI DDC/CI is used by the DVI port of the PC analog unit. |
| | 5 | PC-VGA DDC/CI is used by the VGA port of the PC analog unit. |
| | 6 | TV-VGA/DVI DDC/CI is used by the DVI port of the TV encoder unit. |
| (2) Mode (0/1) | The operating mode is set here. | |
| | 0 | Get VCP Feature The status of the connection destination is checked. |
| | 1 | Set VCP Feature The control commands are sent to the connection destination. |
| (3) VCP Code | 00H-FFH | The VCP code is set. |
| (4) Value | 0-65535 | A value is set only when Set VCP Feature has been selected as the Mode setting. |



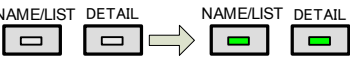















| | | | |
|---|----------|---|--|
| 1 | Port | Output port from which DDC/CI is transferred DVI or Dsub | Items to be set by the generator |
| 2 | Mode | DDC/CI transfer mode Get VCP Feature: The status of the connection destination is received. Set VCP Feature: Control commands are sent to the connection destination. | |
| 3 | VCP Code | Transfer command (set using the hexadecimal format) | |
| 4 | Value | (Displayed only when Set VCP Feature has been selected as the Mode setting.) Parameter value to be transferred from the generator to the connection destination | |
| 5 | Write | Data sent from the generator | Items which display the receiving or sending results |
| 6 | Read | Data received by the generator | |
| 7 | Result | Transfer result PASS: Data was transferred successfully. NG: Transfer failed. | |
| 8 | Value | (Displayed only when Get VCP Feature has been selected as the Mode setting.) Parameter value received by the VG-870 or 871 from the connection destination | |

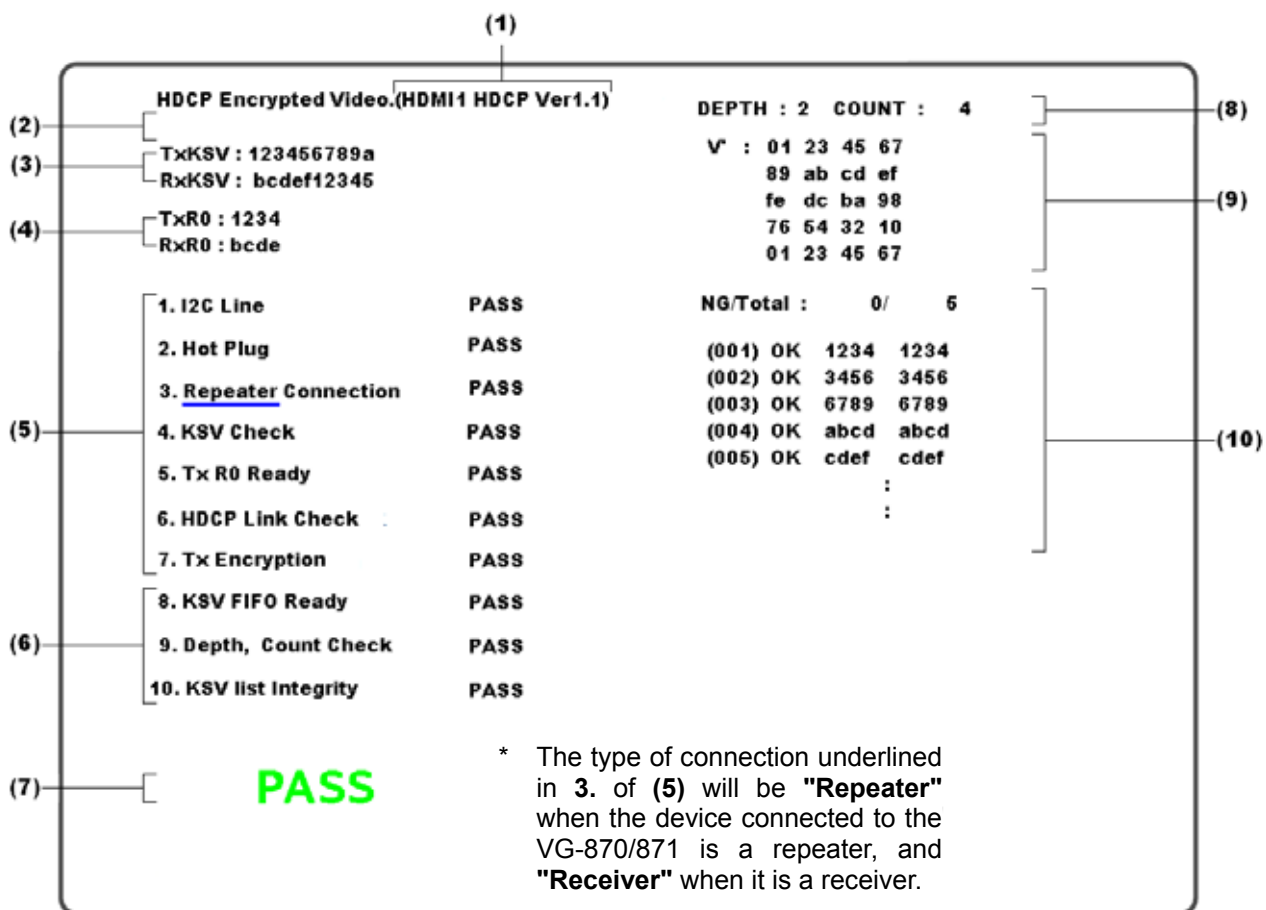
6.13.5 HDCP (High-bandwidth Digital Content Protection)

The HDCP authentication results can be shown on the display.

(For details on the HDCP settings and execution refer to “8. HDCP SETTINGS AND EXECUTION”)

<Displaying the HDCP authentication screen>

| | | | | | | | | | | | | | | | | | | | | |
|-----|---|---|---|----------------|------------------------------|---|--------------|--|---|--------------|--|---|-------------|---|---|---------------|--|---|---------------|---|
| (1) |  |  | | | | | | | | | | | | | | | | | | |
| (2) | <p><Selecting HDCP></p> <p>Select HDCP using  or  , and then press .</p> |  | | | | | | | | | | | | | | | | | | |
| (3) | <p><Detailed setting: EDIT></p> <p>Select EDIT using  or  , and then press .</p> <p>Alternatively, select EDIT using .</p> |  | | | | | | | | | | | | | | | | | | |
| (4) | <p><Selecting the display port></p> <p>Select Display Select using  or , and then press .</p> | <p>Display Select (0-5) The HDCP authentication status can be shown using one video interface only.</p> <table border="1"> <tbody> <tr> <td>0</td> <td>Disable</td> <td>The status is not displayed.</td> </tr> <tr> <td>1</td> <td>HDMI1</td> <td>The status of channel 1 of the HDMI unit is displayed.</td> </tr> <tr> <td>2</td> <td>HDMI2</td> <td>The status of channel 2 of the HDMI unit is displayed.</td> </tr> <tr> <td>3</td> <td>DVI2</td> <td>The status of channel 2 of the DVI unit is displayed.</td> </tr> <tr> <td>4</td> <td>PC-DVI</td> <td>The status of DVI of the PC unit is displayed.</td> </tr> <tr> <td>5</td> <td>TV-DVI</td> <td>The status of DVI of the TV encode unit is displayed.</td> </tr> </tbody> </table> | 0 | Disable | The status is not displayed. | 1 | HDMI1 | The status of channel 1 of the HDMI unit is displayed. | 2 | HDMI2 | The status of channel 2 of the HDMI unit is displayed. | 3 | DVI2 | The status of channel 2 of the DVI unit is displayed. | 4 | PC-DVI | The status of DVI of the PC unit is displayed. | 5 | TV-DVI | The status of DVI of the TV encode unit is displayed. |
| 0 | Disable | The status is not displayed. | | | | | | | | | | | | | | | | | | |
| 1 | HDMI1 | The status of channel 1 of the HDMI unit is displayed. | | | | | | | | | | | | | | | | | | |
| 2 | HDMI2 | The status of channel 2 of the HDMI unit is displayed. | | | | | | | | | | | | | | | | | | |
| 3 | DVI2 | The status of channel 2 of the DVI unit is displayed. | | | | | | | | | | | | | | | | | | |
| 4 | PC-DVI | The status of DVI of the PC unit is displayed. | | | | | | | | | | | | | | | | | | |
| 5 | TV-DVI | The status of DVI of the TV encode unit is displayed. | | | | | | | | | | | | | | | | | | |



Details of the information shown on the screen are given below.

<HDCP authentication screen display data>

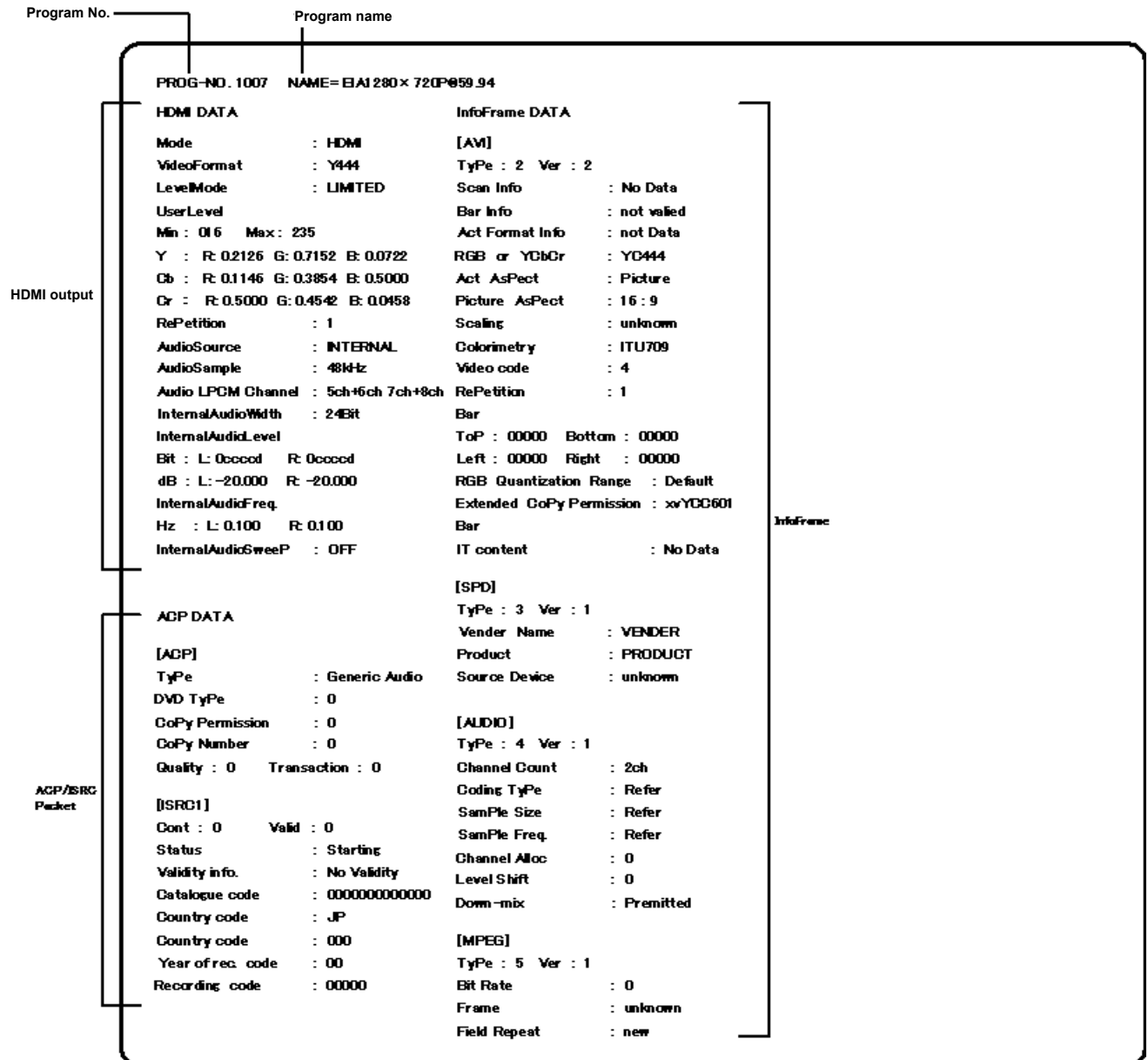
| | | |
|------|--|---|
| (1) | This indicates the port selected in c) Display Select of "8.2.1 Execution method." (When the HDCP authentication is successful, the HDCP version is displayed beside the port; when it has failed, an error message is displayed beside the port.) | |
| (2) | The EDID reading results are indicated here. (The results are displayed only when AUTO has been selected as the HDMI or DVI setting in "4.2.2 HDMI setting procedure" or when "EDID Check" has been selected as the Version setting in "8.1 HDCP settings.") | |
| (3) | The Key Selection Vectors are displayed here among the HDCP keys. "TxKSV" is the key selection vector of the transmitter; "RxKSV" is the key selection vector of the receiver. | |
| (4) | The Synchronization Verification Values calculated by the initial authentication are displayed here. "TxR0" is the value calculated for the transmitter; "RxR0" is the value calculated for the receiver. | |
| (5) | The authentication status of the initial authentication is displayed here. | An item with "PASS" denotes an item that has been successfully authenticated. |
| (6)* | The authentication status of the second authentication for a repeater is displayed here. | |
| (7) | If all the authentications have been carried out successfully, "PASS (green)" appears; otherwise, "NG (red)" appears. | |
| (8)* | The DEPTH (number of stages) and COUNT (total number of connections) of the devices connected beyond the receiver which in turn is connected to the VG-870/871 are shown here. | |
| (9)* | The value (V') shown here is for verifying the adequacy of the KSV list of the devices connected beyond of the receiver which in turn is connected to the VG-870/871. | |
| (10) | Shown here are the Synchronization Verification Values (Ri, Ri') for checking the adequacy of the link. Ri is the value calculated for the transmitter; Ri' is the value calculated for the receiver. "OK" is displayed when the transmitter and receiver values match. (If OK resulted from a retry, "OK2" is displayed instead.) | |

* This information is displayed only when the device connected to the VG-870/871 is a repeater.

6.13.6 HDMI list

The HDMI list display can be selected by pressing the NAME/LIST pattern key while the output from the HDMI connector is connected to the display. Information on the signals which are input to the display from the HDMI connector is shown on the display.

Example: HDMI list when EIA 1280 × 720 and 59.94 Hz output signals are supplied to the display



6.13.7 Timing data list

The timing data list display can be selected by pressing the NAME/LIST pattern key while the generator output is connected to the display. The timing data (such as the parameters) of the signals which are input to the display from the output connector is shown on the display.

Example: Timing list when EIA 1280 × 720 and 59.94 Hz output signals are supplied to the display

| Program No. | Program name | Horizontal sync frequency | Vertical sync frequency | Program data enable/disable |
|---------------|----------------------------|---------------------------|-------------------------|-----------------------------|
| PROG-NO. 1007 | NAME= EIA1280 × 720P@59.94 | H= 44.96KHz | V= 59.94Hz | ENABLE |
| Mode | : dot | Mode | : H | |
| CLOCK | : 74.176MHz | SCAN | : Progressive | |
| HPERIOD | : 22.24us | 1650dot | SERRATION : 1H | |
| HDISP | : 17.26us | 1280dot | EQP : OFF | |
| HSYNC | : 0.54us | 40dot | VTOTAL1 : 16.683ms | 750.0H |
| HBACKP | : 2.97us | 220dot | VTOTAL2 : 16.016ms | 720.0H |
| Hd_strt | : 0.00us | 0dot | VSYNC1 : 0.111ms | 5.0H |
| Hd_width | : 0.00us | 0dot | VBACKP1 : 0.445ms | 20.0H |
| | | | EQP FP1 : 0.000ms | 0.0H |
| | | | EQP BP1 : 0.022ms | 1.0H |
| HS | : POSI | TV-MODE | : HDTV720 | |
| VS | : POSI | | | |
| CS | : NEGA | | | |
| SYNC ON | | Freq L/R | : 1000Hz | 1000Hz |
| VIDEO | : 0.70 V | Level L/R | : 2000mV | 2000mV |
| SYNC | : 0.30 V | SWEEP | : OFF | |
| SETUP | : 0.00 V | STEP | : 40 msec | |
| RGB/YPbPr | : YPbPr | Times | : 0 | |
| YPbPr No. | : 0 | Freq Min | : 200 Hz | |
| | | Freq Max | : 20000 Hz | |
| | | FreqSteP | : 200 Hz | |
| PC BNC | : ON | SamPFreq | : 48KHz | |
| PC DSUB | : ON | Digi CH0 | : 0ccccdH | 1000 Hz |
| PC DVI-I | : ON | Digi CH1 | : 0ccccdH | 1000 Hz |
| PC DVI-D | : ON | Digi CH2 | : 0ccccdH | 1000 Hz |
| TV VBS | : OFF | Digi CH3 | : 0ccccdH | 1000 Hz |
| TV BNC | : ON | Digi CH4 | : 0ccccdH | 1000 Hz |
| TV SCON | : OFF | Digi CH5 | : 0ccccdH | 1000 Hz |
| TV DCON | : ON | Digi CH6 | : 0ccccdH | 1000 Hz |
| TV DSUB | : ON | Digi CH7 | : 0ccccdH | 1000 Hz |
| TV SCART1 | : OFF | | | |
| TV SCART2 | : OFF | | | |
| HDMI 1/2 | : ON ON | | | |

Horizontal timing data

Vertical timing data

Output conditions

Audio output


6.13.8 Image pattern list

When the image list display is selected by pressing the NAME/LIST key while the generator output is connected to the display, the information on the image patterns registered in the internal memory or on the CF card is shown on the display.

If the CF card has been inserted, the information on the CF card is displayed; otherwise, the information in the internal memory is displayed.

| Internal memory or CF card | | Free space [KB] | | Page number/total number of pages | |
|--|---------------|-----------------|------------------|-----------------------------------|--|
| Image Data List (Internal: 12345KB free) ... 1/1 | | | | | |
| NO. | H, V-SIZE | COLOR | NAME | LI CENSE | |
| 1 | (1024, 768) | 24bi t | owl | - | |
| 101 | (712, 484) | 24bi t | chi na Monoscope | avai labl e | |
| 102 | (1920, 1080) | 24bi t | carnati on gi rl | mi ssi ng | |
| | ⋮ | | | | |

NO.: Image number
 H, V-SIZE: Image size (width [dots], height [dots])
 COLOR: Number of bits per dot
 NAME: Image name
 LICENSE: - No license required (standard)
 available The license has been registered so the image list can be used. (option)
 missing The license has not been registered so the image list cannot be used by this generator. (option)

If the total number of pages exceeds 2, the pages can be selected using .


6.13.9 OPT-USER pattern list

When the OPT-USER pattern list display is selected by pressing the NAME/LIST key while the generator output is connected to the display, the names and sizes of the user optional patterns registered in the internal memory or on the CF card are shown on the display.

If the CF card has been inserted, the names and sizes of the patterns on the CF card are displayed; otherwise, the names and sizes of the patterns in the internal memory are displayed.

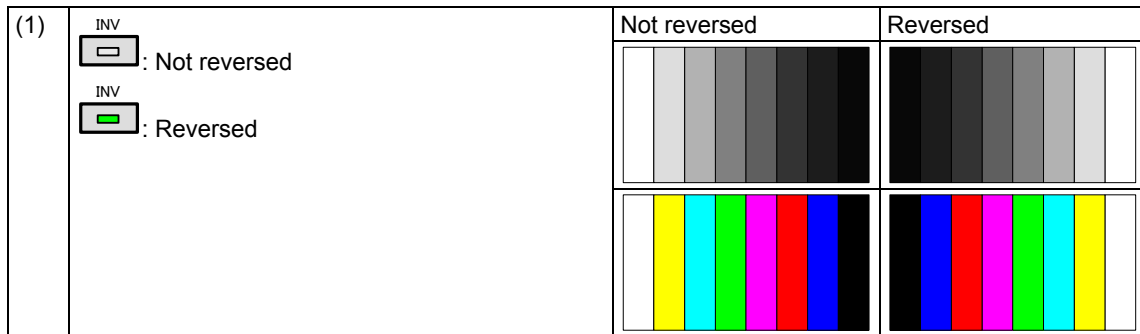
| Internal memory or CF card | | Free space [KB] | | Page number/total number of pages | |
|---|------|------------------------|--|-----------------------------------|--|
| USER OPT Data List (Internal: 12345KB free) ... 1/1 | | | | | |
| NO. | SIZE | NAME | | | |
| 1 | 578 | RGBW Color Bar | | | |
| 100 | 676 | 10Step & 1/10MHz | | | |
| 200 | 2549 | Di spl ayPosi ti onAdj | | | |
| | | ⋮ | | | |

NO.: Pattern number
 SIZE: Pattern size [bytes]
 NAME: Pattern name

If the total number of pages exceeds 2, the pages can be selected using .

6.14 Video black/white reversal

The video levels can be reversed.



6.15 Simple animation

Simple animation sequences can be displayed by drawing a multiple number of images in the drawing area and moving the display start coordinates. The display method is described here uses an example of a simple animation sequence consisting of 640×480 images in nine frames.

6.15.1 Creating and registering the images

(1) Create the images.

The 640×480 images in nine frames are created as a 1920×1440 image which is three frames wide and three frames high. (See Fig. 6-15-1.)

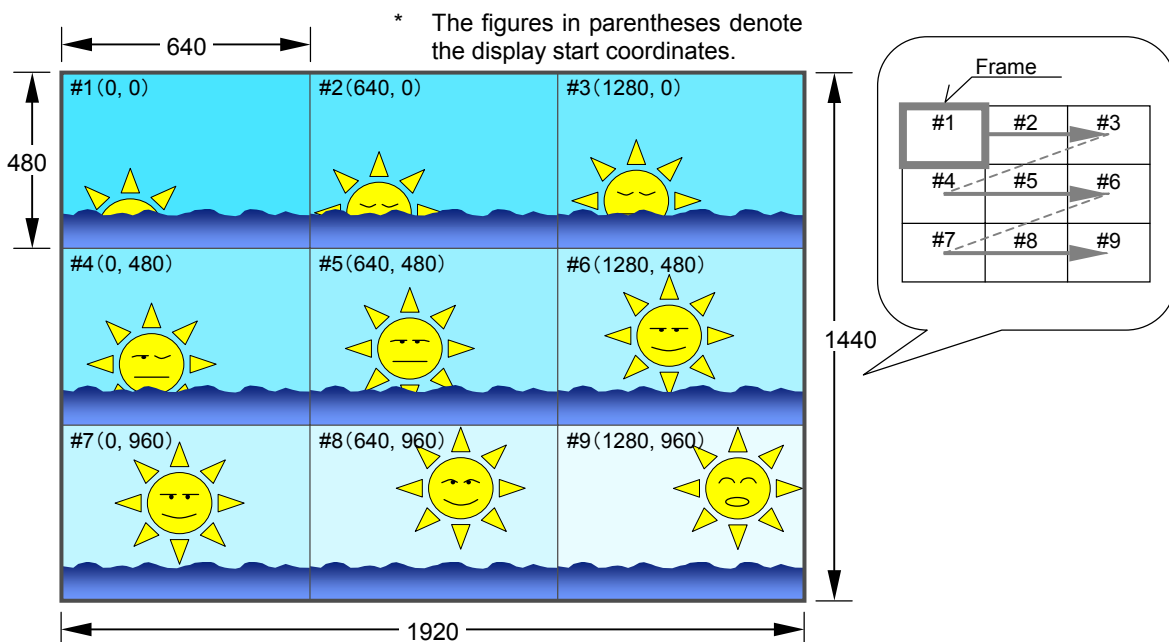





























Fig. 6-15-1 Example of the images used for simple animation

* The display shows images #1 to #9 with a 640×480 frame size in the sequence of #1, #2 and so on up to #9.

(2) Register the created images as image data (No.1 to 200) on the CF card using the Windows software (SP-8870) provided.

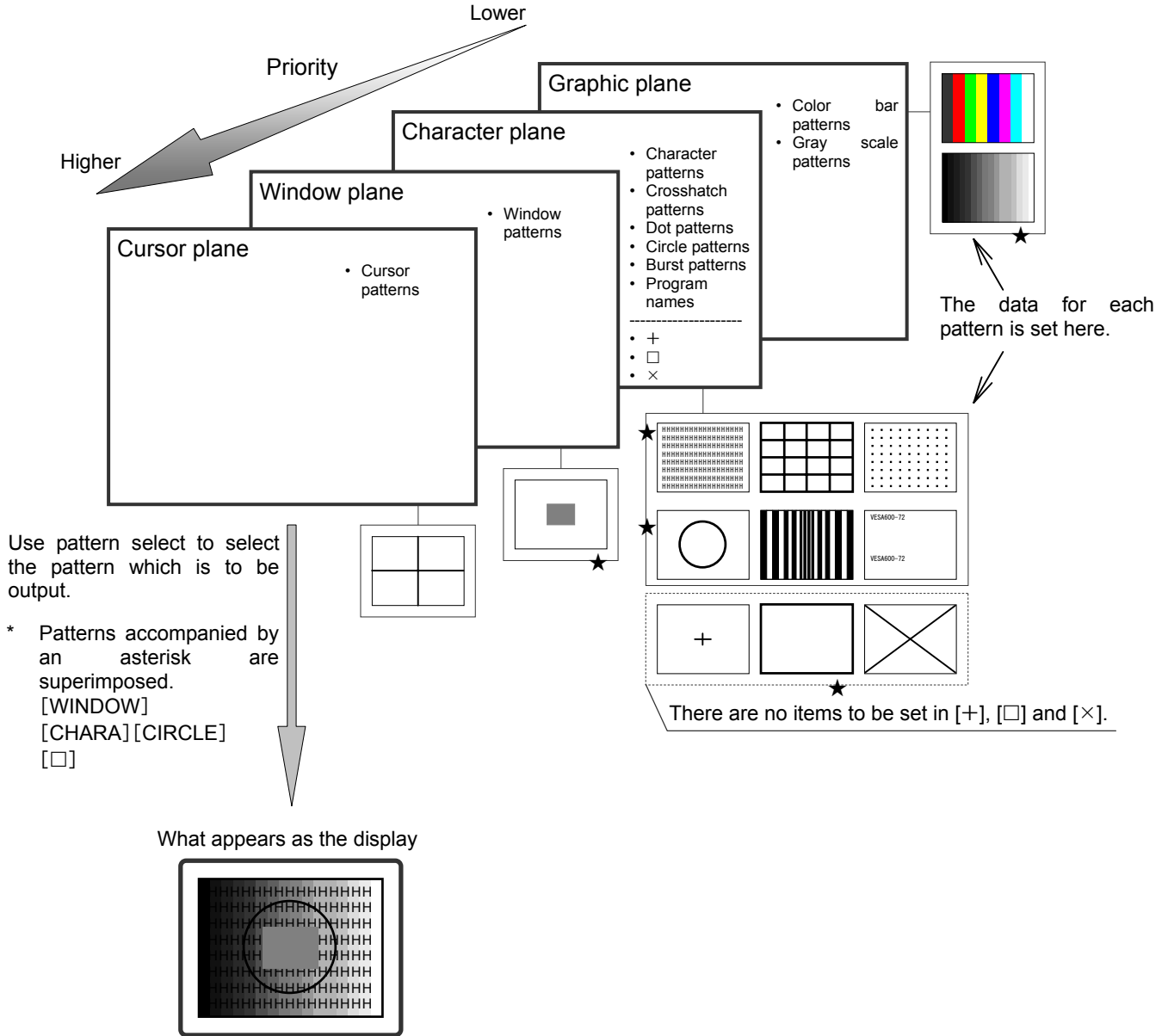
6.15.2 Simple animation settings

| | | | | | | | | | | |
|-----------|--|--|--------|--------|-----------|----------------------|-----------|--------------|--------|---|
| (1) | Insert the CF card containing the registered images. * At this point, check that  has not been pressed. | | | | | | | | | |
| (2) | Select the program No. using  or   , and then press  . |  | | | | | | | | |
| (3) | <Setting Action> Select G-SCROLL using  and  , and then select EDIT using  . |  | | | | | | | | |
| (3) | Select Graphic Plane using  or   , and then press  . |  | | | | | | | | |
| (4) | <Selecting the items> Select the items using  or   , and then press  . <Setting the parameters> Select the parameters using  or   , and then press  . Alternatively: Select the parameters using the number keys   , and then press  . |  Set only the items below. <table border="1"> <tbody> <tr> <td>Scroll</td> <td>ON (1)</td> </tr> <tr> <td>Direction</td> <td>Simple Animation (8)</td> </tr> <tr> <td>Interval1</td> <td>1 V to 255 V</td> </tr> <tr> <td>Repeat</td> <td>H = 3, V = 3 * This setting is for a 3 x 3 9-frame animation</td> </tr> </tbody> </table> * For details of the parameter settings, refer to “7.3 Graphic plane scrolling actions.” * Do not change any parameters not listed in the above table from their initial values. | Scroll | ON (1) | Direction | Simple Animation (8) | Interval1 | 1 V to 255 V | Repeat | H = 3, V = 3 * This setting is for a 3 x 3 9-frame animation |
| Scroll | ON (1) | | | | | | | | | |
| Direction | Simple Animation (8) | | | | | | | | | |
| Interval1 | 1 V to 255 V | | | | | | | | | |
| Repeat | H = 3, V = 3 * This setting is for a 3 x 3 9-frame animation | | | | | | | | | |

7

ACTION SETTINGS










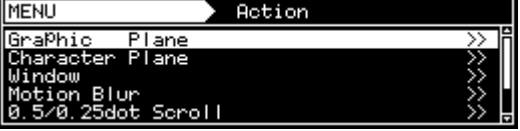





















7.1 Concerning the planes



7.2 Window actions

7.2.1 Scrolling

For details on the action selection procedure, refer to “2.1.4 Selecting the actions.”











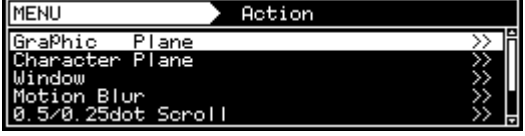





















| | |
|---|---|
| <p>(1) Select Program Edit using  →  or  INC  DEC, and then press .</p> |  <pre> MENU → Program Edit Program Name : ▶EIA1920x1080P60 Timing < TIM > >> Output < TIM > >> Audio < TIM > >> Pattern < PAT > >> </pre> |
| <p>(2) Select Action (PAT) using  or  INC, and then press .</p> |  <pre> MENU → Action Graphic Plane >> Character Plane >> Window >> Motion Blur >> 0.5/0.25dot Scroll >> </pre> |
| <p>(3) Select Window using  or  INC  DEC, and then press .</p> |  <pre> MENU → Window Scroll/Flicker >> Level UP/Down >> Level Sequence >> </pre> |
| <p>(4) Select Scroll/Flicker using  or  INC  DEC, and then press .</p> |  <pre> MENU → Window Scroll/Flicker Scroll <0/1>: ▶00 Flicker <0/1>: OFF Direction <0-A>: Right Mode <0-4>: User Interval 1 : 1U </pre> |
| <p>(5) <Selecting the items> Select the items using  or  INC  DEC, and then press .</p> <p><Setting the parameters> Select the parameters using  or  INC  DEC, and then press .</p> <p>Alternatively: Select the parameters using the number keys <small>0/STATUS</small> <small>9/F ↻</small> ( to ), and then press .</p> | <p>For further details, refer to <Table of scroll setting items>.</p> |

<Table of scroll setting items>

| | | | | |
|---|------------------------------|--|---|--|
| (1) | OFF/ON (0/1) | On or Off is set for window scrolling here. | | |
| | | 0 | OFF | Window scrolling is set to Off. |
| | | 1 | ON | Window scrolling is set to On. |
| (2) | Direction (0-A) | The direction of scrolling is set here. | | |
| | | 0 | Left | The window is scrolled toward the left. |
| | | 1 | Right | The window is scrolled toward the right. |
| | | 2 | Up | The window is scrolled upward. |
| | | 3 | Down | The window is scrolled downward. |
| | | 4 | Left Up | The window is scrolled toward the top left. |
| | | 5 | Left Down | The window is scrolled toward the bottom left. |
| | | 6 | Right Up | The window is scrolled toward the top right. |
| | | 7 | Right Down | The window is scrolled toward the bottom right. |
| | | 8 | Left<->Right | The window is scrolled toward the left and right. |
| | | 9 | Up<->Down | The window is scrolled toward the top and bottom. |
| A | Random | The window is scrolled at random. | | |
| (3) | Mode (0-4) | The interval (execution interval) mode for window scrolling is set here. | | |
| | | 0 | User | The window is scrolled as per the Interval 1-4 setting . |
| | | 1 | 60i->60i | The interval (execution interval) is set to 1 V. |
| | | 2 | 24p->60i 2-3PullDown | The interval (execution interval) is set to 2 V and 3 V, and repeated. |
| | | 3 | 25p->50i | The interval (execution interval) is set to 2 V. |
| 4 | 30p->60i | The interval (execution interval) is set to 2 V. | | |
| (4) | Interval (Interval 1) | The interval (execution interval) is set here. Setting range: 1 V to 255 V This setting takes effect only when User has been selected as the Mode setting . | | |
| (5) | Step (Step 1) | The amount of movement per interval (execution interval) is set here. | | |
| | | H | Setting range: 1 dot to 255 dots This setting takes effect only when Left or Right has been selected as the Direction setting . | |
| | | V | Setting range: 1H to 255H This setting takes effect only when Up or Down has been selected as the Direction setting . | |
| The following items are selected only when User has been selected as the Mode setting . | | | | |
| (6) | Interval 2 to 4 | The interval (execution interval) is set here. Setting range: 0 V to 255 V When a setting other than "0" has been selected, the conditions which have been set are repeated in sequence starting with Interval 1 . Example: Interval 1 → Interval 2 → Interval 3 → Interval 1 → ... | | |
| (7) | Step 2 to 4 | The amount of movement per interval (execution interval) is set here. The amount of movement corresponding to the Interval 2-4 setting is set. | | |
| | | H | Setting range: 0 dot to 255 dots This setting takes effect only when Left or Right has been selected as the Direction setting . | |
| | | V | Setting range: 0H to 255H This setting takes effect only when Up or Down has been selected as the Direction setting . | |

7.2.2 Flickering

For details on the action selection procedure, refer to “2.1.4 selecting the actions”


































| | |
|---|---|
| <p>① Select Program Edit using  →</p> <p> or  , and then press  →</p> |  |
| <p>② Select Action(PAT) using  or  →</p> <p>, and then press  →</p> |  |
| <p>③ Select Window using  or  ,</p> <p>and then press  →</p> |  |
| <p>④ Select Flicker using  or  ,</p> <p>and then press  →</p> |  |
| <p>⑤ 《Selecting the items》</p> <p>Select the items using  or  →</p> <p>,</p> <p>and then press  →</p> <p>《Setting the parameters》</p> <p>Select the parameters  or  →</p> <p>, and then press , alternatively,</p> <p>Select the parameters using the number keys   → </p> | <p>For further details , refer to 《Table of Flicker setting items》</p> |

《Table of Flicker setting items》

| | | | |
|--------------------------------|---|-------------------|------------------------------|
| <p>(1) OFF/ON (0/1)</p> | <p>On or Off is set for window flicker</p> | | |
| | <p>0</p> | <p>OFF</p> | <p>Flicker is set to OFF</p> |
| | <p>1</p> | <p>ON</p> | <p>Flicker is set to ON</p> |
| <p>(2) Interval</p> | <p>The interval (execution interval) is set here. Setting range: 1V to 255V</p> | | |

7.2.3 Level up/down actions

For details on the action selection procedure, refer to “2.1.4 Selecting the actions.”











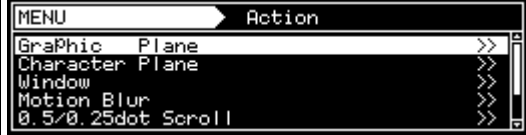
























| | |
|---|---|
| <p>(1) Select Program Edit using  or  or  , and then press .</p> |  |
| <p>(2) Select Action (PAT) using  or  , and then press .</p> |  |
| <p>(3) Select Window using  or  , and then press .</p> |  |
| <p>(4) Select Level Up/Down using  or  , and then press .</p> |  |
| <p>(5) <Selecting the items> Select the items using  or  , and then press .</p> <p><Setting the parameters> Select the parameters using  or  , and then press .</p> <p>Alternatively: Select the parameters using the number keys   , and then press .</p> | <p>For further details, refer to <Table of level up/down setting items>.</p> |

<Table of level up/down setting items>

| | | | | |
|-----|------------------------|--|-------------|------------------------------|
| (1) | OFF/ON (0/1) | On or Off is set for level up/down here. | | |
| | | 0 | OFF | Level up/down is set to Off. |
| | | 1 | ON | Level up/down is set to On. |
| (2) | Direction (0/1) | Whether the level is to be increased or reduced is set here. | | |
| | | 0 | Up | The level is increased. |
| | | 1 | Down | The level is reduced. |
| (3) | Interval | The interval (execution interval) is set here. Setting range: 1 V to 255 V | | |
| (4) | Step | The amount of increase or reduction per interval (execution interval) is set here. Setting range: 1 to 255 | | |

7.2.4 Level sequence action

For details on the action selection procedure, refer to “2.1.4 Selecting the actions.”

















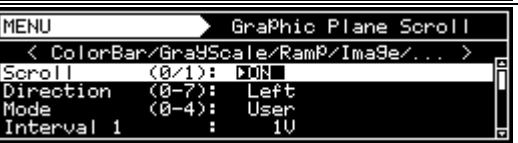











| | | |
|-----|---|--|
| (1) | <p>Select Program Edit using  or  or   , and then press .</p> |  |
| (2) | <p>Select Action (PAT) using  or   , and then press .</p> |  |
| (3) | <p>Select Window using  or   , and then press .</p> |  |
| (4) | <p>Select Level Sequence using  or   , and then press .</p> |  |
| (5) | <p><Selecting the items></p> <p>Select the items using  or   , and then press .</p> <p><Setting the parameters></p> <p>Select the parameters using  or   , and then press .</p> <p>Alternatively: Select the parameters using the number keys    ( to ), and then press .</p> | <p>For further details, refer to <Table of level sequence setting items>.</p> |

<Table of level sequence setting items>

| | | | |
|-----|---------------------|--|--|
| (1) | OFF/ON (0/1) | On or Off is set for level sequence here. | |
| | | 0 | OFF Level sequence is set to Off. |
| | | 1 | ON Level sequence is set to On. |
| (2) | Number | The number of level sequences is set here. Setting range: 1 to 16 The sequences are repeated in order for the number of times set here. | |
| (3) | 1 to 16 | The RGB levels and interval (execution interval) in each sequence are set here. | |
| | | (R) | Set the R, G and B levels. 8-bit setting range:0 to 255 9-bit setting range:0 to 511 |
| | | (G) | 10-bit setting range:0 to 1023 11-bit setting range:0 to 2047 12-bit setting range:0 to 4095 13-bit setting range:0 to 8191 |
| | | (B) | 14-bit setting range:0 to 16383 15-bit setting range:0 to 32767 16-bit setting range:0 to 65535 |
| | | (Time) | The interval (execution interval) is set here. Setting range: 1 V to 999 V |

7.3 Graphic plane scrolling actions

For details on the action selection procedure, refer to “2.1.4 Selecting the actions.”

















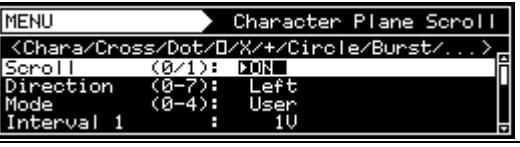













| | |
|--|---|
| <p>(1) Select Program Edit using   or  or   , and then press .</p> |  |
| <p>(2) Select Action (PAT) using  or   , and then press .</p> |  |
| <p>(3) Select Graphic Plane using  or   , and then press .</p> |  |
| <p>(4) <Selecting the items> Select the items using  or   , and then press .</p> <p><Setting the parameters> Select the parameters using  or   , and then press .</p> <p>Alternatively: Select the parameters using the number keys   , and then press .</p> | <p>For further details, refer to <Table of graphic plane setting items>.</p> |

<Table of graphic plane setting items>

| | | | | |
|---|------------------------------|--|--|--|
| (1) | Scroll (0/1) | On or Off is set for scrolling here. | | |
| | | 0 | OFF | Scrolling is set to Off. |
| | | 1 | ON | Scrolling is set to On. |
| (2) | Direction (0-8) | The direction of scrolling is set here. | | |
| | | 0 | Left | The window is scrolled toward the left. |
| | | 1 | Right | The window is scrolled toward the right. |
| | | 2 | Up | The window is scrolled upward. |
| | | 3 | Down | The window is scrolled downward. |
| | | 4 | Left Up | The window is scrolled toward the top left. |
| | | 5 | Left Down | The window is scrolled toward the bottom left. |
| | | 6 | Right Up | The window is scrolled toward the top right. |
| | | 7 | Right Down | The window is scrolled toward the bottom right. |
| 8 | Simple Animation | Simple animation For details, refer to “6.15.2 Simple animation settings.” | | |
| (3) | Mode (0-4) | The interval (execution interval) mode for scrolling is set here. | | |
| | | 0 | User | The window is scrolled as per the Interval 1-4 setting . |
| | | 1 | 60i->60i | The interval (execution interval) is set to 1 V. |
| | | 2 | 24p->60i 2-3PullDown | The interval (execution interval) is set to 2 V and 3 V, and repeated. |
| | | 3 | 25p->50i | The interval (execution interval) is set to 2 V. |
| 4 | 30p->60i | The interval (execution interval) is set to 2 V. | | |
| (4) | Interval (Interval 1) | The interval (execution interval) is set here. Setting range: 1 V to 255 V This setting takes effect only when User has been selected as the Mode setting . | | |
| (5) | Step (Step 1) | The amount of movement per interval (execution interval) is set here. | | |
| | | H | Setting range: 1 dot to 4095 dots This setting takes effect only when Left or Right has been selected as the Direction setting . | |
| | | V | Setting range: 1H to 4095H This setting takes effect only when Up or Down has been selected as the Direction setting . | |
| The following items are selected only when User has been selected as the Mode setting . | | | | |
| (6) | Interval 2 to 4 | The interval (execution interval) is set here. Setting range: 0 V to 255 V When a setting other than “0” has been selected, the conditions which have been set are repeated in sequence starting with Interval 1 . Example: Interval 1 → Interval 2 → Interval 3 → Interval 1 → ... | | |
| (7) | Step 2 to 4 | The amount of movement per interval (execution interval) is set here. The amount of movement corresponding to the Interval 2-4 setting is set. | | |
| | | H | Setting range: 0 dot to 4095 dots This setting takes effect only when Left or Right has been selected as the Direction setting . | |
| | | V | Setting range: 0H to 4095H This setting takes effect only when Up or Down has been selected as the Direction setting . | |
| (8) | Repeat | The number of images in the width and height dimensions to be used for the simple animation is specified here. For details, refer to “6.15.2 Simple animation settings.” | | |
| | | H | Setting range: 1 to 15 The number of images arranged horizontally is specified here. | |
| | | V | Setting range: 1 to 15 The number of images arranged vertically is specified here. | |

7.4 Character plane scrolling actions

For details on the action selection procedure, refer to “2.1.4 Selecting the actions.”

| | |
|--|---|
| <p>(1) Select Program Edit using   or  or   , and then press .</p> |  |
| <p>(2) Select Action (PAT) using  or   , and then press .</p> |  |
| <p>(3) Select Character Plane using  or   , and then press .</p> |  |
| <p>(4) <Selecting the items> Select the items using  or   , and then press .</p> <p><Setting the parameters> Select the parameters using  or   , and then press .</p> <p>Alternatively: Select the parameters using the number keys   ( to ), and then press .</p> | <p>For further details, refer to <Table of character plane setting items>.</p> |

<Table of character plane setting items>

| | | | | |
|---|------------------------------|--|--|--|
| (1) | Scroll (0/1) | On or Off is set for scrolling here. | | |
| | | 0 | OFF | Scrolling is set to Off. |
| | | 1 | ON | Scrolling is set to On. |
| (2) | Direction (0-7) | The direction of scrolling is set here. | | |
| | | 0 | Left | The window is scrolled toward the left. |
| | | 1 | Right | The window is scrolled toward the right. |
| | | 2 | Up | The window is scrolled upward. |
| | | 3 | Down | The window is scrolled downward. |
| | | 4 | Left Up | The window is scrolled toward the top left. |
| | | 5 | Left Down | The window is scrolled toward the bottom left. |
| | | 6 | Right Up | The window is scrolled toward the top right. |
| 7 | Right Down | The window is scrolled toward the bottom right. | | |
| (3) | Mode (0-4) | The interval (execution interval) mode for scrolling is set here. | | |
| | | 0 | User | The window is scrolled as per the Interval 1-4 setting . |
| | | 1 | 60i->60i | The interval (execution interval) is set to 1 V. |
| | | 2 | 24p->60i 2-3PullDown | The interval (execution interval) is set to 2 V and 3 V, and repeated. |
| | | 3 | 25p->50i | The interval (execution interval) is set to 2 V. |
| 4 | 30p->60i | The interval (execution interval) is set to 2 V. | | |
| (4) | Interval (Interval 1) | The interval (execution interval) is set here. Setting range: 1 V to 255 V This setting takes effect only when User has been selected as the Mode setting . | | |
| (5) | Step (Step 1) | The amount of movement per interval (execution interval) is set here. | | |
| | | H | Setting range: 1 dot to 4095 dots This setting takes effect only when Left or Right has been selected as the Direction setting . | |
| | | V | Setting range: 1H to 4095H This setting takes effect only when Up or Down has been selected as the Direction setting . | |
| The following items are selected only when User has been selected as the Mode setting . | | | | |
| (6) | Interval 2 to 4 | The interval (execution interval) is set here. Setting range: 0 V to 255 V When a setting other than "0" has been selected, the conditions which have been set are repeated in sequence starting with Interval 1 . Example: Interval 1 → Interval 2 → Interval 3 → Interval 1 → ... | | |
| (7) | Step 2 to 4 | The amount of movement per interval (execution interval) is set here. The amount of movement corresponding to the Interval 2-4 setting is set. | | |
| | | H | Setting range: 0 dot to 4095 dots This setting takes effect only when Left or Right has been selected as the Direction setting . | |
| | | V | Setting range: 0H to 4095H This setting takes effect only when Up or Down has been selected as the Direction setting . | |

7.5 0.5- and 0.25-dot scrolling actions (option)

0.5-dot and 0.25-dot scrolling can be set. This function is optional. Contact your dealer or an ASTRODESIGN sales representative.

- Concerning 0.5- and 0.25-dot scrolling

The setting increments used by the regular scrolling function are interval 1 V increments (frames for progressive scanning and fields for interlaced scanning), and 1-dot increments are used for the movement amounts.

In order to achieve even smoother scrolling, the VG-870/871 provides two patterns offset by 0.5 dot (or 4 patterns offset by 0.25 dot).

<Example>

When scrolling horizontally for one round at a 1920 × 1080p @ 60p timing of approximately 5 seconds

About 13 dots are required per 2 V and about 6.5 dots (*1) per 1 V.

$$*1: \text{Amount of movement per 1 V} = 1920 / (60 \times 5) = 6.4 \approx 6.5 \text{ [dot]}$$

Standard setting (1)

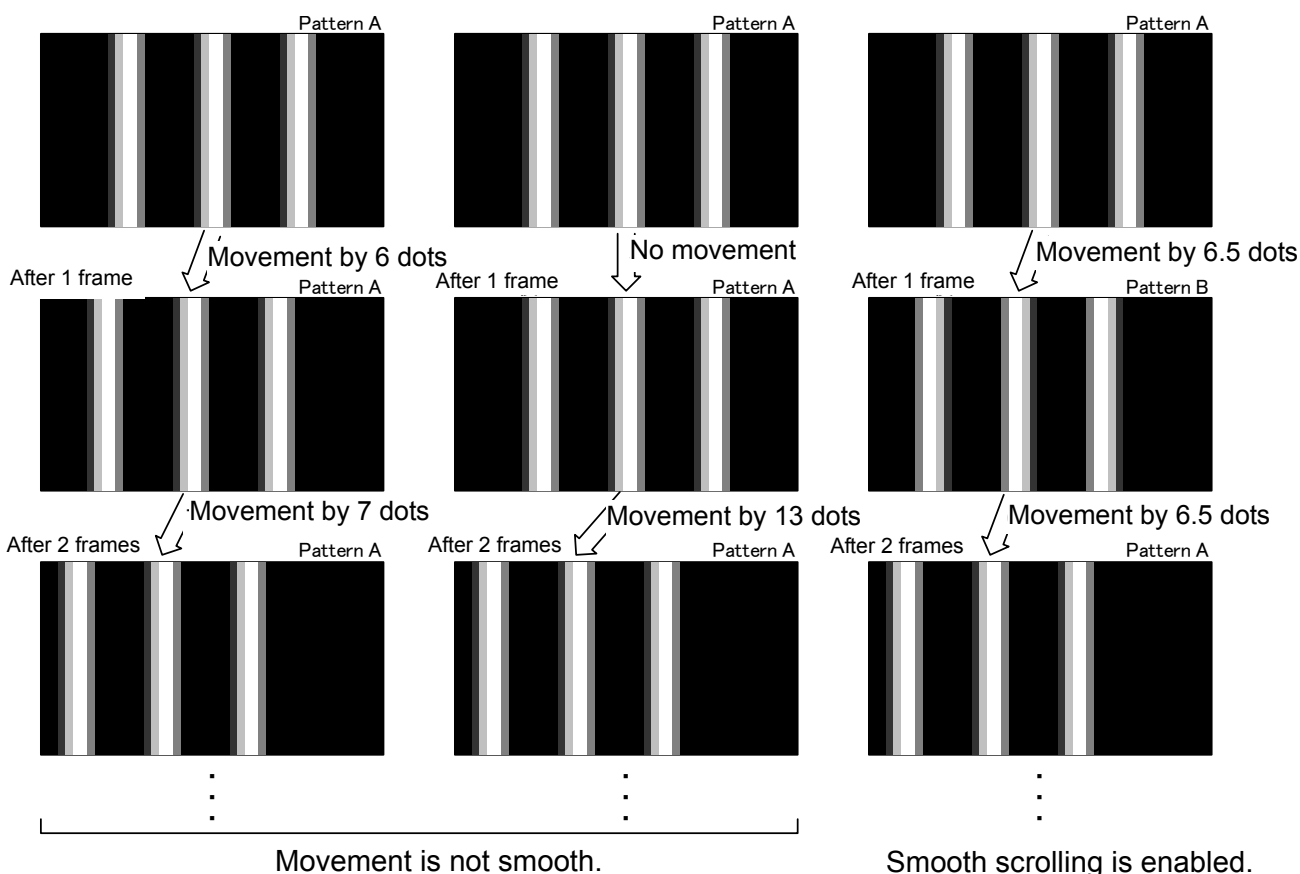
Amount of movement in 6, 7, 6, 7
..... dots per frame

Standard setting (2)

Movement by 13 dots per 2
frames

0.5-dot scrolling

Movement by 6.5 dots per frame



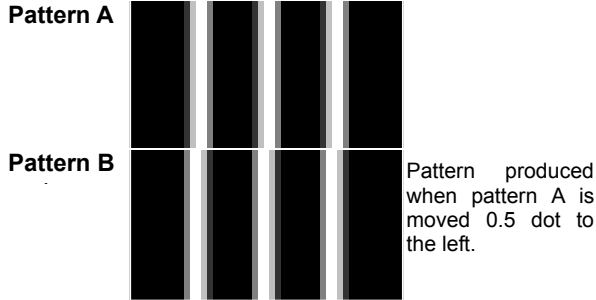
Pattern A: Pattern serving as the reference

Pattern B: Pattern produced when pattern A is moved by 0.5 dot.

CAUTION The 0.5-/0.25-dot scrolling function takes effect only for the image data created by the user.

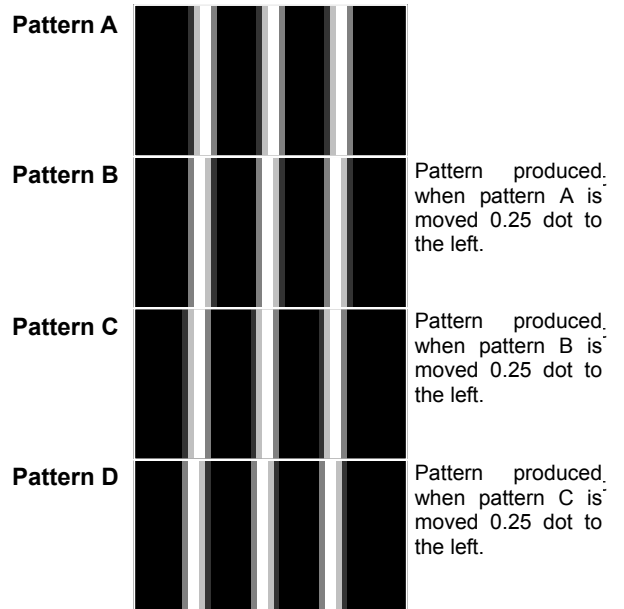
With 0.5-dot scrolling

Two patterns, with one offset by 0.5 dot from the other, are created.



With 0.25-dot scrolling

Four patterns, each offset by 0.25 dot from the others, are created.










● 0.5-/0.25-dot scrolling settings

For details on the action selection procedure, refer to “2.1.4 Selecting the actions.”

| | |
|---|--|
| <p>(1) Select Program Edit using or or or , and then press .</p> | |
| <p>(2) Select Action (PAT) using or or , and then press .</p> | |
| <p>(3) Select 0.5/0.25dot scroll using or or , and then press .</p> | |
| <p>(4) <Selecting the items> Select the items using or or , and then press .</p> | <p>For further details, refer to <Table of 0.5-/0.25-dot scrolling setting items>.</p> |

<Setting the parameters>

Select the parameters using  or  , and then press .

Alternatively:
Select the parameters using the number keys  to , and then press .

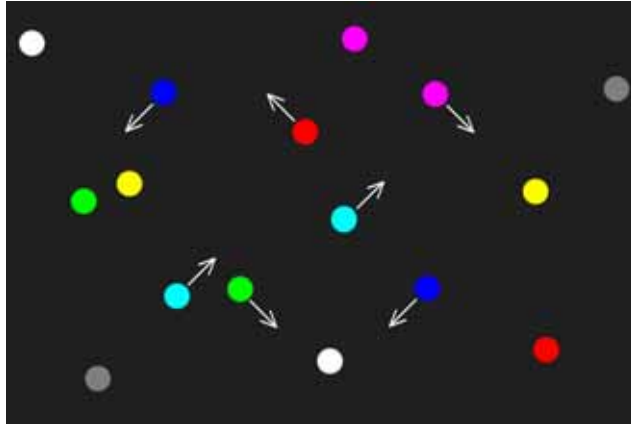
0.5/0.25dot scroll 設定項目一覽

| | | | | |
|-----|------------------------|--|--------------|--|
| (1) | OFF/ON (0/1) | On or Off for 0.5-/0.25-dot scrolling is set here. | | |
| | | 0 | OFF | 0.5-/0.25-dot scrolling is set to Off. |
| | | 1 | ON | 0.5-/0.25-dot scrolling is set to On. |
| (2) | Direction (0/1) | The direction of 0.5-/0.25-dot scrolling is set here. | | |
| | | 0 | Left | Scrolling moves to the left. |
| | | 1 | Right | Scrolling moves to the right. |
| (3) | Step | The amount of movement per 1 V is set here. Setting range: 0.00 dot to 254.75 dots | | |
| (4) | V-offset | The value of V-offset is set here. Setting range: 0-100.0dot (Step: 0.1dot) | | |

7.6 Motion blur

Motion blur is a function for displaying up to 16 of the specified patterns described later, and moving them. The patterns to be displayed using this function can be combined with other patterns (excluding the cursor), and displayed.

<Display example: Random movement direction>



The setting procedure is described below.

For details on the action selection procedure, refer to “2.1.4 Selecting the actions.”











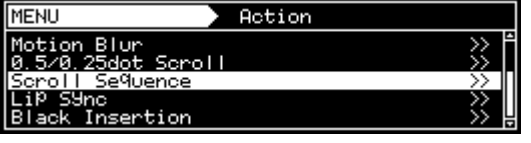




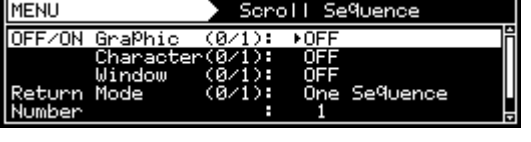












| | |
|--|--|
| <p>(1) Select Program Edit using or or , and then press .</p> | |
| <p>(2) Select Action (PAT) using or , and then press .</p> | |
| <p>(3) Select Motion Blur using or , and then press .</p> | |
| <p>(4) <Selecting the items> Select the items using or , and then press .</p> <p><Setting the parameters> Select the parameters using or , and then press .</p> <p>Alternatively: Select the parameters using the number keys (to), and then press .</p> | <p>For further details, refer to <Table of motion blur setting items>.</p> |

<Table of motion blur setting items>

| | | | |
|------|----------------------------|--|---|
| (1) | OFF/ON (0/1) | This is used to set the motion blur function to ON or OFF. | |
| | | 0 | OFF |
| | | 1 | ON |
| (2) | Direction (0-3) | The direction of the pattern movement is specified here. | |
| | | 0 | Top-L<->Bottom-R Top left ↔ bottom right |
| | | 1 | Left<->Right Left ↔ right |
| | | 2 | 2:Up<->Down Up ↔ down |
| | | 3 | Random Random |
| (3) | Pattern Type (0-2) | The shape of the pattern is specified here. | |
| | | 0 | Circle Circle |
| | | 1 | Square Square |
| | | 2 | USER Character User character Setting range: E0h - FFh |
| (4) | Pattern Size (0-3) | The size of the pattern is specified here. (dot) | |
| | | 0 | 8 × 8 |
| | | 1 | 16 × 16 |
| | | 2 | 32 × 32 |
| | | 3 | 64 × 64 |
| (5) | Pattern Number | The number of patterns to be displayed is set here. Setting range: 1 - 16 | |
| (6) | Step InpMode (0/1) | The step setting method is specified here. | |
| | | 0 | All All the patterns are set together. |
| | | 1 | Separate The patterns are set individually. |
| (7) | Step (/1 V) | The amount of pattern movement per 1 V (progressive scanning: frame; interlaced scanning: field) is set here. Setting range: 1 - 255 [dot] | |
| (8) | Color InpMode (0/1) | The color setting method is specified here. | |
| | | 0 | All All the patterns are set together. |
| | | 1 | Separate The patterns are set individually. |
| (9) | Color | The pattern colors (R/G/B levels) are set here. The setting range differs depending on the pattern drawing bit length (Color Depth). | |
| | | <u>Color Depth</u> | <u>Setting range</u> |
| | | 8bit: | 0 - 255 |
| | | 9bit: | 0 - 511 |
| | | 10bit: | 0 - 1023 |
| | | 11bit: | 0 - 2047 |
| | | 12bit: | 0 - 4095 |
| | | 13bit: | 0 - 8191 |
| | | 14bit: | 0 - 16383 |
| | | 15bit: | 0 - 32767 |
| | | 16bit: | 0 - 65535 |
| (10) | Area H/V | The pattern movement range is set as a percentage of H/V-Timing Disp. Setting range: 0 - 100 [%] | |

7.7 Scroll Sequence

Sequence numbers for each plane can set up to 16 by scroll sequence setting

| | |
|---|---|
| <p>① Select Program Edit using  →  or  INC  DEC, and then press .</p> |  <pre> MENU Program Edit Program Name : ▶EIA1920x1080P60 Timing (TIM) Output (TIM) Audio (TIM) Pattern (PAT) </pre> |
| <p>② Select Action using  or  INC  DEC, and then press .</p> |  <pre> MENU Action Motion Blur 0.5/0.25dot Scroll Scroll Sequence LiP Sync Black Insertion </pre> |
| <p>③ Select Scroll Sequence using  or  INC  DEC, and then press .</p> |  <pre> MENU Scroll Sequence OFF/ON Graphic (0/1): ▶OFF Character(0/1): OFF Window (0/1): OFF Return Mode (0/1): One Sequence Number : 1 </pre> |
| <p>④ Select the items using  or  INC  DEC, and then press .</p> <p><Setting the parameters></p> <p>Select the parameters using  or  INC  DEC, and then press .</p> <p>Alternatively: Select the parameters using the number keys  /STATUS  /F , and then press .</p> | <p>For further details, refer to 《table of Scroll Sequence setting items》.</p> |





























《The table of Scroll Sequence setting items》

| | | | |
|------------------|--------------------------|---|---|
| (1) | OFF/ON (0/1) | On or Off is set for graphic/character/window plane here. | |
| | | 0 | OFF |
| | | 1 | ON |
| (2) | Return mode (0/1) | The mode to restore the scroll position is set here. | |
| | | 0 | One Sequence Restore per sequence scroll position |
| | | 1 | All Sequence Restore entire sequence scroll positions. |
| (3) | Number | Set the number of sequence Setting range : 1-16 | |
| Parameter | | | |
| (1) | Direction | The direction of scrolling is set here | |
| | | 0 | L The window is scrolled toward the left. |
| | | 1 | R The window is scrolled toward the right. |
| | | 2 | U The window is scrolled upward. |
| | | 3 | D The window is scrolled downward. |
| | | 4 | L-U The window is scrolled toward the top left. |
| | | 5 | L-D The window is scrolled toward the bottom left. |
| | | 6 | R-U The window is scrolled toward the top right. |
| | | 7 | R-D The window is scrolled toward the bottom right. |
| (2) | Interval | The interval (execution interval) is set here. Setting range: 1 - 255 V | |
| (3) | H Step | The amount of horizontal movement per interval (execution interval) movement is set here. Setting range: 1 - 255 dot | |
| (4) | V Step | The amount of vertical movement per interval (execution interval) movement is set here Setting range: 1 - 255 H | |
| (5) | Time | Execution time per sequence is set here. Setting range: 1 - 999 V | |

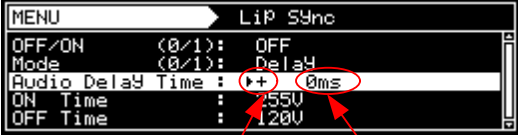

7.8 LipSync

For details on the action selection procedure, refer to “2.1.4 Selecting the actions.”

The lip sync function can be used to set a difference between the audio phase and video phase.










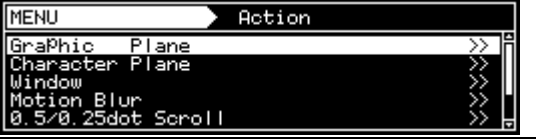
















| | | |
|-----|---|---|
| (1) | <p>Select Program Edit using  or  or  , and then press .</p> |  <pre> MENU Program Edit Program Name : ▶EIA1920x1080P60 Timing (TIM) >> OutPut (TIM) >> Audio (TIM) >> Pattern (PAT) >> </pre> |
| (2) | <p>Select Action (PAT) using  or  , and then press .</p> |  <pre> MENU Action Graphic Plane >> Character Plane >> Window >> Motion Blur >> 0.5/0.25dot Scroll >> </pre> |
| (3) | <p>Select Lip Sync using  or  , and then press .</p> |  <pre> MENU Lip Sync OFF/ON (0/1): ▶OFF Mode (0/1): Delay Audio Delay Time : + 0ms ON Time : 120U OFF Time : 120U </pre> |
| (5) | <p>Select the items using  or  , and then press .</p> <p><Setting the parameters></p> <p>Select the parameters using  or  , and then press .</p> <p>Alternatively: Select the parameters using the number keys ( /STATUS  /F ), and then press .</p> | <p>For further details, refer to <Table of lip sync setting items>.</p> |

《Table of LipSync setting items》

| | | | |
|---|--|--|---|
| (1) | OFF/ON(0/1) | Whether to set the lip sync function on or off is set here. | |
| | | 0 | OFF Disabled |
| | | 1 | ON Enabled |
| (2) | Mode(0/1) | The method used to set the delay amount (time) is set here. | |
| | | 0 | Delay The delay amount of the user's choice is set. |
| | | 1 | EDID The delay amount accords with the EDID of the connection destination. (Automatically set) |
| (3) | When Delay has been selected as the Mode setting Audio Delay Time | The delay amount is set here as a time. | |
| | |  | |
| | | Sign: Indicates behind or ahead. | |
| | | 0 | + The audio is behind the video. |
| | 1 | - The audio is ahead of the video. | |
| | Time: The time is set here. | | |
| | When EDID has been selected as the Mode setting EDID Port | The port used to read the EDID is set here. Operation is initiated using the amount of delay defined in the EDID concerned. | |
|  | | | |
| 0 | | HDMI1 The EDID is read from HDMI1. | |
| 1 | HDMI2 The EDID is read from HDMI2. | | |
| (4) | On Time | The audio output time and raster (white) display time are set using the vertical sync signal (in 1-frame increments). Setting range: 1 V to 255 V | |
| (5) | OFF Time | The audio no output time and display OFF (black) time are set using the vertical sync signal (in 1-frame increments). Setting range: 1 V to 255 V | |

7.9 Black insertion action

For details on the action selection procedure, refer to “2.1.4 Selecting the actions.”

| | | |
|------------|--|---|
| <p>(1)</p> | <p>Select Program Edit using  or  or  , and then press .</p> |  |
| <p>(2)</p> | <p>Select Action (PAT) using  or , and then press .</p> |  |
| <p>(3)</p> | <p>Select Black Insertion using  or , and then press .</p> |  |
| <p>(4)</p> | <p><Selecting the items> Select the items using  or  , and then press .</p> <p><Setting the parameters> Select the parameters using  or , and then press .</p> <p>Alternatively: Select the parameters using the number keys 0/STATUS   ( to ), and then press .</p> | <p>For further details, refer to <Table of black insertion setting items>.</p> |

<Table of black insertion setting items>






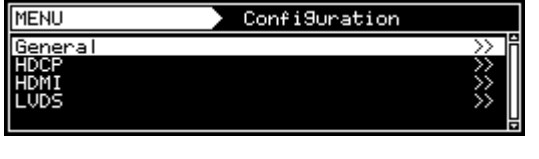




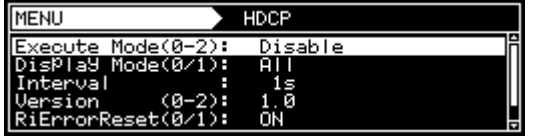
| | | | | |
|-----|-----------------------------|--|-------------------|---|
| (1) | Insertion (0/1) | On or Off for black insertion is set here. | | |
| | | 0 | OFF | Black insertion is set to Off. |
| | | 1 | ON | Black insertion is set to On. |
| (2) | Position (0-2) | The black insertion position is set here. | | |
| | | 0 | All | The entire screen is subject to the black insertion. |
| | | 1 | Left Half | The left half of the screen is subject to the black insertion. |
| | | 2 | Right Half | The right half of the screen is subject to the black insertion. |
| (3) | Pattern Display Time | The time during which the pattern is to be displayed is set here. Setting range: 0 V to 255 V | | |
| (4) | Black Insertion Time | The time during which black insertion is to take effect is set here. Setting range: 0 V to 255 V | | |

8

HDCP SETTINGS AND EXECUTION

8.1 HDCP settings

<HDCP setting procedure>

| | | |
|-----|---|--|
| (1) | Select Configuration using  followed by  or  INC  DEC , and then press  . |  |
| (2) | Select HDCP using  or  INC  DEC , and then press  . |  |

<List of HDCP setting items>

| | | |
|-----|---------------------------|--|
| (1) | Execute Mode (0-2) | The HDCP execution mode is set here. 0 Disable HDCP execution is disabled. 1 Enable HDCP execution is enabled. 2 Program HDCP execution enable/disable is set for each program. |
| (2) | Display Mode (0-1) | The HDCP authentication screen display mode is set here. 0 All All the authentication values are displayed. 1 NG Only The authentication values are displayed only with an NG result. |
| (3) | Interval | The interval for performing the authentication is set here. 1s-10s An interval from 1 second to 10 seconds is set. |
| (4) | Version (0-2) | The HDCP version is set here. 0 1.0 HDCP version 1.0 is used for execution. 1 1.1 HDCP version 1.1 is used for execution. 2 EDID Check The version is determined after checking EDID. |
| (5) | RiErrorReset (0/1) | Whether to proceed with re-authentication when errors have occurred in HDCP authentication is set here. 0 OFF Re-authentication is not undertaken when errors have occurred. 1 ON Re-authentication is undertaken when errors have occurred. |
| (6) | FIFO Ready (0-8) | The limit on the time to wait until "FIFO Ready" is returned when the connected device is a repeater is set here. 0 OFF 30 seconds 1-7 600 ms to 4,200 ms Increased in increments of 600 ms 8 5,000 ms 5 seconds |

8.2 HDCP execution


8.2.1 Execution procedure

One of the following three steps can be taken for HDCP execution.






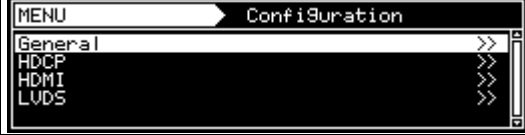




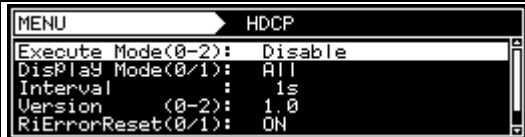




- Set enable or disable using the On/Off customize key.
- Set enable or disable using Configuration.**
- Set enable or disable for each program.

a) Setting enable or disable using the On/Off customize key

This setting is canceled when the program is changed, and **b) Setting enable or disable always using Configuration** and **c) Setting enable or disable for each program** take effect.











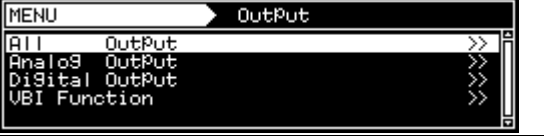























| | | |
|-----|---|---|
| (1) |  | HDCP is executed, and the authentication results screen appears above the test pattern. |
|-----|---|---|

b) Setting enable or disable using Configuration

| | | | | | | | | | | | |
|-----|---|---|---|----------------|-----------------------------|---|---------------|----------------------------|---|----------------|--|
| (1) | Select Configuration using  followed by  or   , and then press  . |  | | | | | | | | | |
| (2) | Select HDCP using  or   , and then press  . |  | | | | | | | | | |
| (3) | Select Execute Mode using  or   , and then press  . | <p>The HDCP execution mode is set here.</p> <table border="1"> <tr> <td>0</td> <td>Disable</td> <td>HDCP execution is disabled.</td> </tr> <tr> <td>1</td> <td>Enable</td> <td>HDCP execution is enabled.</td> </tr> <tr> <td>2</td> <td>Program</td> <td>HDCP execution enable/disable is set for each program.</td> </tr> </table> | 0 | Disable | HDCP execution is disabled. | 1 | Enable | HDCP execution is enabled. | 2 | Program | HDCP execution enable/disable is set for each program. |
| 0 | Disable | HDCP execution is disabled. | | | | | | | | | |
| 1 | Enable | HDCP execution is enabled. | | | | | | | | | |
| 2 | Program | HDCP execution enable/disable is set for each program. | | | | | | | | | |

c) Setting enable or disable for each program

This setting takes effect when “Program” was selected as the HDCP mode setting in b) Setting enable or disable using Configuration.

| | | | | | | | | | | | | | | | | | |
|-----|--|---|---|----------------|------------------------------|---|---------------|---|---|--------------|---|---|-------------|--|---|---------------|---|
| (1) | <p>Select Program Edit using  or  or  , and then press .</p> |  | | | | | | | | | | | | | | | |
| (2) | <p>Select Output using  or  , and then press .</p> |  | | | | | | | | | | | | | | | |
| (3) | <p>Select All Output using  or  , and then press .</p> |  | | | | | | | | | | | | | | | |
| (4) | <p>Select HDCP using  or  , and then press .</p> |  | | | | | | | | | | | | | | | |
| (5) | <p>Select the items using  or  , and then press .</p> | <p>Execute Enable (0/1) This selects whether HDCP is to be executed. It covers all the video interfaces capable of executing HDCP. HDCP is executed at the same time.</p> <table border="1"> <tr> <td>0</td> <td>Disable</td> <td>HDCP is not executed.</td> </tr> <tr> <td>1</td> <td>Enable</td> <td>HDCP is executed.</td> </tr> </table> | 0 | Disable | HDCP is not executed. | 1 | Enable | HDCP is executed. | | | | | | | | | |
| 0 | Disable | HDCP is not executed. | | | | | | | | | | | | | | | |
| 1 | Enable | HDCP is executed. | | | | | | | | | | | | | | | |
| | <p><Inputting the parameters> Select the parameters using  or  , and then press .</p> <p>Alternatively: Select the parameters using the number keys   ( to ), and then press .</p> | <p>Display Select (0-4) This item allows the HDCP authentication status to be displayed for one video interface system only.</p> <table border="1"> <tr> <td>0</td> <td>Disable</td> <td>The status is not displayed.</td> </tr> <tr> <td>1</td> <td>HDMI1</td> <td>The status of HDMI unit channel 1 is displayed.</td> </tr> <tr> <td>2</td> <td>HDMI2</td> <td>The status of HDMI unit channel 2 is displayed.</td> </tr> <tr> <td>3</td> <td>DVI2</td> <td>The status of DVI unit channel 2 is displayed.</td> </tr> <tr> <td>4</td> <td>PC-DVI</td> <td>The status of PC unit DVI is displayed.</td> </tr> </table> | 0 | Disable | The status is not displayed. | 1 | HDMI1 | The status of HDMI unit channel 1 is displayed. | 2 | HDMI2 | The status of HDMI unit channel 2 is displayed. | 3 | DVI2 | The status of DVI unit channel 2 is displayed. | 4 | PC-DVI | The status of PC unit DVI is displayed. |
| 0 | Disable | The status is not displayed. | | | | | | | | | | | | | | | |
| 1 | HDMI1 | The status of HDMI unit channel 1 is displayed. | | | | | | | | | | | | | | | |
| 2 | HDMI2 | The status of HDMI unit channel 2 is displayed. | | | | | | | | | | | | | | | |
| 3 | DVI2 | The status of DVI unit channel 2 is displayed. | | | | | | | | | | | | | | | |
| 4 | PC-DVI | The status of PC unit DVI is displayed. | | | | | | | | | | | | | | | |

8.2.2 Screen displays during HDCP execution

The authentication results and other information are displayed on the screen during HDCP execution.

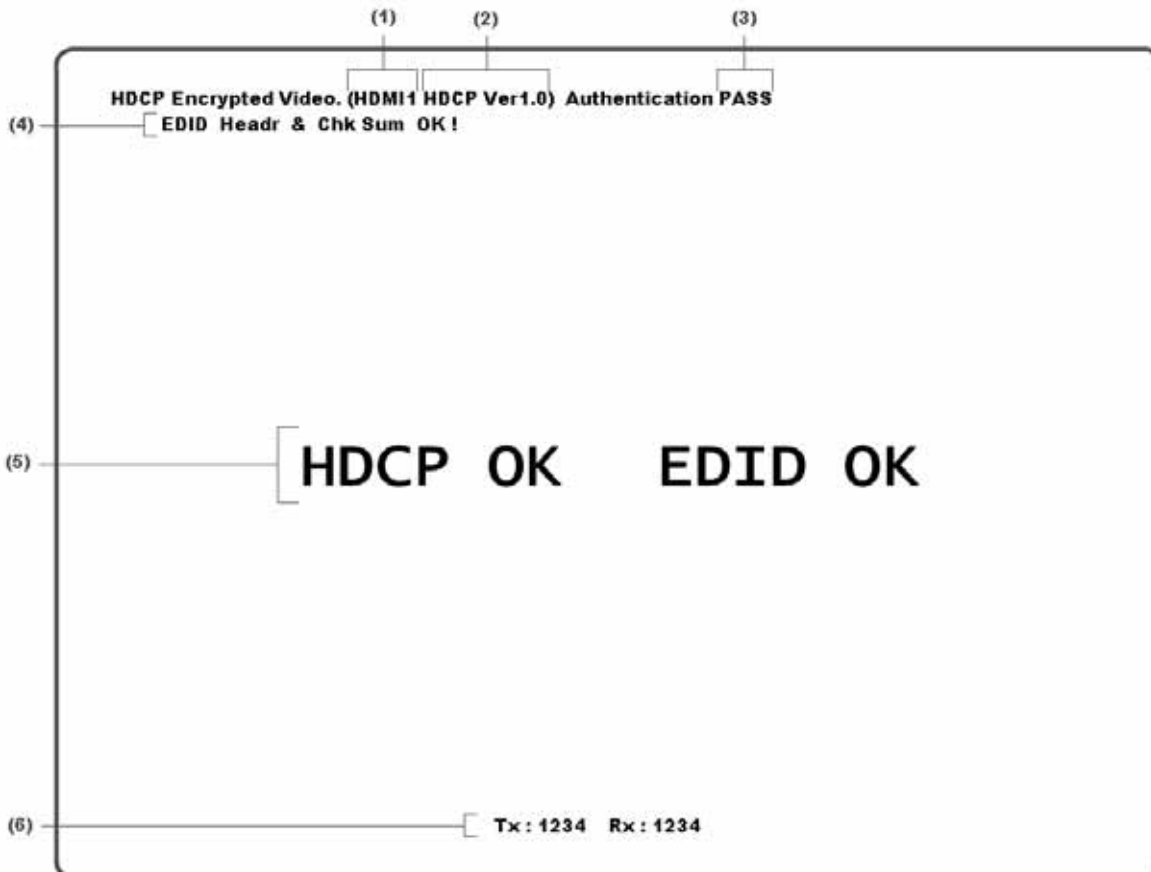
(If other patterns are already displayed, the information will be displayed on top of the patterns.)

(1) When HDCP is selected as the NAME/LIST pattern.

For details on the screen and what is displayed on the screen, refer to “6.13.5 HDCP (High-Bandwidth Digital Content Protection).”

(2) At all other times

A screen such as the one shown below is displayed.



Details of the information shown on the screen are given below.

<HDCP authentication screen (simplified version) display data>

| | |
|-----|---|
| (1) | This indicates the port selected in c) Display Select of “8.2.1 Execution procedure.” |
| (2) | The HDCP version is displayed here. (When the HDCP authentication has failed, an error message is displayed.) |
| (3) | The HDCP authentication results are displayed here. (If authentication is successful, “PASS” appears; it is has failed, “NG” appears.) |
| (4) | The check results for the EDID header and checksum are indicated here. (These results are displayed only when “ AUTO ” has been selected as the HDMI or DVI setting in “4.2.2 HDMI setting procedure” or when “ EDID Check ” has been selected as the Version setting in “8.1 HDCP settings.”) |

| | |
|-----|--|
| (5) | The HDCP authentication status (OK or NG) as well as the check result (OK or NG) for the EDID header and checksum are indicated here. (These results are displayed only when “ AUTO ” has been selected as the HDMI or DVI setting in “ 4.2.2 HDMI setting procedure ” or when “ EDID Check ” has been selected as the Version setting in “ 8.1 HDCP settings. ”) |
| (6) | The Synchronization Verification Values for checking the adequacy of the link are displayed here. “Tx” is the value calculated for the transmitter; “Rx” is the value calculated for the receiver. The display is updated each time HDCP authentication and encryption are completed. |















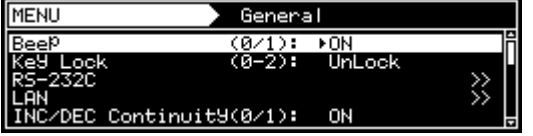





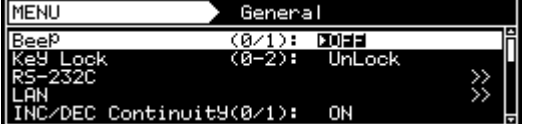








9

VG-870/871 SYSTEM SETTINGS

9.1 System settings

9.1.1 Beep setting












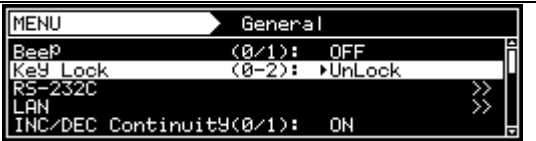














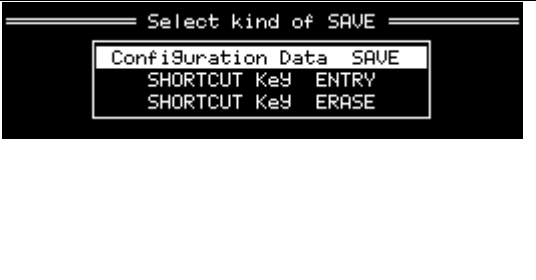
The buzzer which sounds when any of the keys on the front panel of the VG-870 (or on the RB-1870 or RB-1871) are pressed can be turned on or off.

| | | | | | | | |
|---|--|---------------------------|-----|---------------------------|---|----|--------------------------|
| <p>(1) Select Configuration using  →  or  or  INC  DEC  or  SET .</p> |  | | | | | | |
| <p>(2) Select General using  or  INC  DEC , and then press .</p> |  | | | | | | |
| <p>Select Beep using  or  INC  DEC , and then press .</p> |  | | | | | | |
| <p><Inputting the parameters></p> <p>Select the parameters using  or  INC  DEC , and then press .</p> <p>Alternatively: Select the parameters using the number keys  to , and then press .</p> | <p>Whether the buzzer is to beep is set here.</p> <table border="1"> <tbody> <tr> <td>0</td> <td>OFF</td> <td>The buzzer is turned off.</td> </tr> <tr> <td>1</td> <td>ON</td> <td>The buzzer is turned on.</td> </tr> </tbody> </table> | 0 | OFF | The buzzer is turned off. | 1 | ON | The buzzer is turned on. |
| 0 | OFF | The buzzer is turned off. | | | | | |
| 1 | ON | The buzzer is turned on. | | | | | |


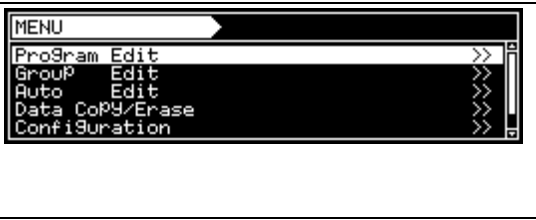
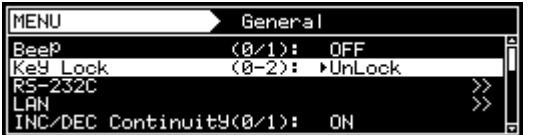
9.1.2 Key lock setting

The keys on the VG-870/871 main unit can be locked.

<Key lock setting>

| | |
|---|---|
| <p>(1) Select Configuration using  or  or  or  , and then press .</p> |  |
| <p>(2) Select General using  or  , and then press .</p> |  |
| <p>(3) Select Key Lock using  or  , Select the setting using  or  , and then press .</p> <p>Alternatively: Select the setting using the number keys ( to ).</p> | <p>UnLock: Key lock is not set.</p> <p>Lock: The keys set by the SP-8870 are locked. * For details on the settings, refer to the instruction manual of the SP-8870 software.</p> <p>ALL Lock: All the keys are locked.</p> |
| <p>(4) Call the SAVE menu using .</p> <p>Select Configuration Data SAVE using  or  , and then press .</p> <p>After saving the data, the key lock setting takes effect when the power is turned off and then turned back on.</p> |  |


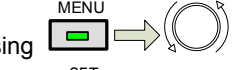



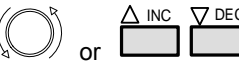
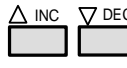

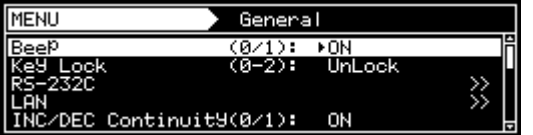
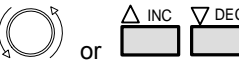
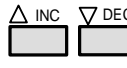

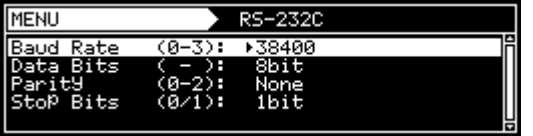






<Key lock release and unlock settings>

| | |
|--|--|
| <p>(1) After performing the key lock setting, the setting takes effect when the power of the generator is turned on. To release the key lock setting: Press  for about 5 seconds. Key lock is released, and MENU is opened.</p> |  |
| <p>(2) Save the Unlock setting by following steps (1) to (4) for the key lock setting.</p> |  |

* Unless the Unlock setting is saved, the key lock setting will take effect when the generator is turned on.











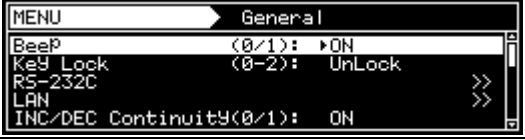




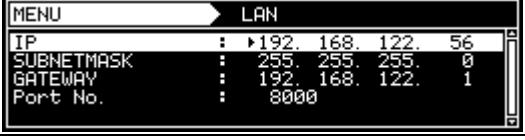







9.1.3 RS-232C settings












These settings are performed when connection to the terminal is established from the RS-232C port.

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|--|------------------------------------|------|-----------------------------------|---|-------|------------------------------------|---|-------|------------------------------------|---|-------|------------------------------------|---|-------|---------------------|---|-------|---------------------|---|------|------------------------|---|------|------------------------|---|-----|-----------------------|---|-------|--------------------|---|-------|----------------------|
| <p>(1) Select Configuration using  or  or , and then press .</p> |  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>(2) Select General using  or , and then press .</p> |  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>(3) Select RS232C using  or , and then press .</p> |  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>(4) <Inputting the parameters> Select the parameters using  or , and then press  Alternatively: Select the parameters using the number keys  , and then press .</p> | <p>The baud rate is set here.</p> <table border="1"> <tr> <td>0</td> <td>9600</td> <td>The baud rate is set to 9600 bps.</td> </tr> <tr> <td>1</td> <td>19200</td> <td>The baud rate is set to 19200 bps.</td> </tr> <tr> <td>2</td> <td>38400</td> <td>The baud rate is set to 38400 bps.</td> </tr> <tr> <td>3</td> <td>57600</td> <td>The baud rate is set to 57600 bps.</td> </tr> </table> <p>The number of data bits is set here.</p> <table border="1"> <tr> <td>0</td> <td>7 bit</td> <td>7 data bits are set</td> </tr> <tr> <td>1</td> <td>8 bit</td> <td>8 data bits are set</td> </tr> </table> <p>The parity is set here.</p> <table border="1"> <tr> <td>0</td> <td>None</td> <td>Parity is set to none.</td> </tr> <tr> <td>1</td> <td>Even</td> <td>Parity is set to even.</td> </tr> <tr> <td>2</td> <td>Odd</td> <td>Parity is set to odd.</td> </tr> </table> <p>The number of stop bits is set here.</p> <table border="1"> <tr> <td>0</td> <td>1 bit</td> <td>1 stop bit is set.</td> </tr> <tr> <td>1</td> <td>2 bit</td> <td>2 stop bits are set.</td> </tr> </table> | 0 | 9600 | The baud rate is set to 9600 bps. | 1 | 19200 | The baud rate is set to 19200 bps. | 2 | 38400 | The baud rate is set to 38400 bps. | 3 | 57600 | The baud rate is set to 57600 bps. | 0 | 7 bit | 7 data bits are set | 1 | 8 bit | 8 data bits are set | 0 | None | Parity is set to none. | 1 | Even | Parity is set to even. | 2 | Odd | Parity is set to odd. | 0 | 1 bit | 1 stop bit is set. | 1 | 2 bit | 2 stop bits are set. |
| 0 | 9600 | The baud rate is set to 9600 bps. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 19200 | The baud rate is set to 19200 bps. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | 38400 | The baud rate is set to 38400 bps. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | 57600 | The baud rate is set to 57600 bps. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | 7 bit | 7 data bits are set | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 8 bit | 8 data bits are set | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | None | Parity is set to none. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | Even | Parity is set to even. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | Odd | Parity is set to odd. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | 1 bit | 1 stop bit is set. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 2 bit | 2 stop bits are set. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

9.1.4 LAN settings

These settings are performed when connection to the terminal is established from the LAN port.

| | | | | | | | | | | |
|-----------------|---|---|-----------------|--|-----------------|--|-----------------|---|------|---|
| (1) | <p>Select Configuration using  or , or  , and then press .</p> |  <pre> MENU Configuration General >> HDCP >> HDMI >> LVDS >> </pre> | | | | | | | | |
| (2) | <p>Select General using  or  , and then press .</p> |  <pre> MENU General Beep (0/1): ON Key Lock (0-2): UnLock RS-232C >> LAN >> INC/DEC Continuity(0/1): ON </pre> | | | | | | | | |
| (3) | <p>Select LAN using  or  , and then press .</p> |  <pre> MENU LAN IP : 192.168.122.56 SUBNETMASK : 255.255.255.0 GATEWAY : 192.168.122.1 Port No. : 8000 </pre> | | | | | | | | |
| (4) | <p><Inputting the parameters></p> <p>Select the parameters using  or  , and then press .</p> <p>Alternatively: Select the parameters using the number keys ( to ) , and then press .</p> | <p>The IP is set here.</p> <table border="1"> <tr> <td>xxx.xxx.xxx.xxx</td> <td>Set the IP address. The factory setting is 192.168.0.2.</td> </tr> </table> <p>The SUBNETMASK is set here.</p> <table border="1"> <tr> <td>xxx.xxx.xxx.xxx</td> <td>Set the subnetmask address. The factory setting is 255.255.255.0.</td> </tr> </table> <p>The GATEWAY is set here.</p> <table border="1"> <tr> <td>xxx.xxx.xxx.xxx</td> <td>Set the gateway address. The factory setting is 192.168.122.1.</td> </tr> </table> <p>The Port No. is set here.</p> <table border="1"> <tr> <td>xxxx</td> <td>Set the number of the port to be used by the terminal commands. The factory setting is 8000.</td> </tr> </table> | xxx.xxx.xxx.xxx | Set the IP address. The factory setting is 192.168.0.2. | xxx.xxx.xxx.xxx | Set the subnetmask address. The factory setting is 255.255.255.0. | xxx.xxx.xxx.xxx | Set the gateway address. The factory setting is 192.168.122.1. | xxxx | Set the number of the port to be used by the terminal commands. The factory setting is 8000. |
| xxx.xxx.xxx.xxx | Set the IP address. The factory setting is 192.168.0.2. | | | | | | | | | |
| xxx.xxx.xxx.xxx | Set the subnetmask address. The factory setting is 255.255.255.0. | | | | | | | | | |
| xxx.xxx.xxx.xxx | Set the gateway address. The factory setting is 192.168.122.1. | | | | | | | | | |
| xxxx | Set the number of the port to be used by the terminal commands. The factory setting is 8000. | | | | | | | | | |

| | | |
|-----|---|--|
| (3) | <p>Select INC/DEC Interval using  or  .</p> <p>Select the value using  or  ,</p> <p>and then press .</p> <p>Alternatively, select the value using the number   keys ( to ).</p> | <p>Set using a value from 0 s to 10 s. The lower the value, the faster the switching speed.</p> |
|-----|---|--|











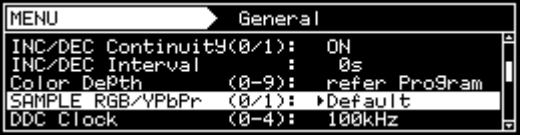









9.1.7 Color depth setting

This setting makes it possible to specify whether the number of color gray scale bits for the output images is to accord with the program data or whether it is to be fixed.

For details, refer to “4.1.5 Setting the bit length (gray scale) for pattern drawing.”











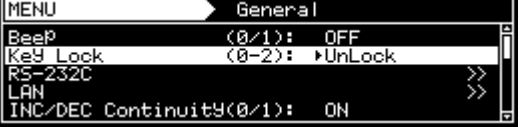











9.1.8 SAMPLE RGB/YPbPr setting

This setting makes it possible to specify whether the color space of the output images is to accord with the sample program data or whether it is to be fixed to RGB.

| | | |
|-----|--|---|
| (1) | <p>Select Configuration using  or  or  , and then press .</p> |  |
| (2) | <p>Select General using  or  , and then press .</p> |  |
| (3) | <p>Select SAMPLE RGB/YPbPr using  or  .</p> <p>Select the value using  or  , and then press .</p> <p>Alternatively, select the value using the number keys ( to ).</p> | <p>Default: Default: RGB/YPbPr is changed in accordance with the color space registered in the sample program data.</p> <p>RGB: The color space is fixed to RGB. Due to the stipulations of the DVI and other standards, the color difference signals are output at the “Default” setting in the event that the EIA timing or other such data of the sample program has been selected for outputs with no color difference signals. However, by selecting “RGB” to fix the color space to RGB, the RGB output can be selected without having to edit the program.</p> |

9.1.9 DDC clock setting

The DDC clock can be set.

| | |
|---|---|
| <p>(1) Select Configuration using  or  or  , and then press .</p> |  |
| <p>(2) Select General using  or  , and then press .</p> |  |
| <p>(3) Select DDC Clock using  or  . Select the value using  or  , and then press . Alternatively, select the value using the number   keys ( to ).</p> | <p>Select 20, 40, 60, 80 or 100 kHz. The factory setting is 100 kHz.</p> |

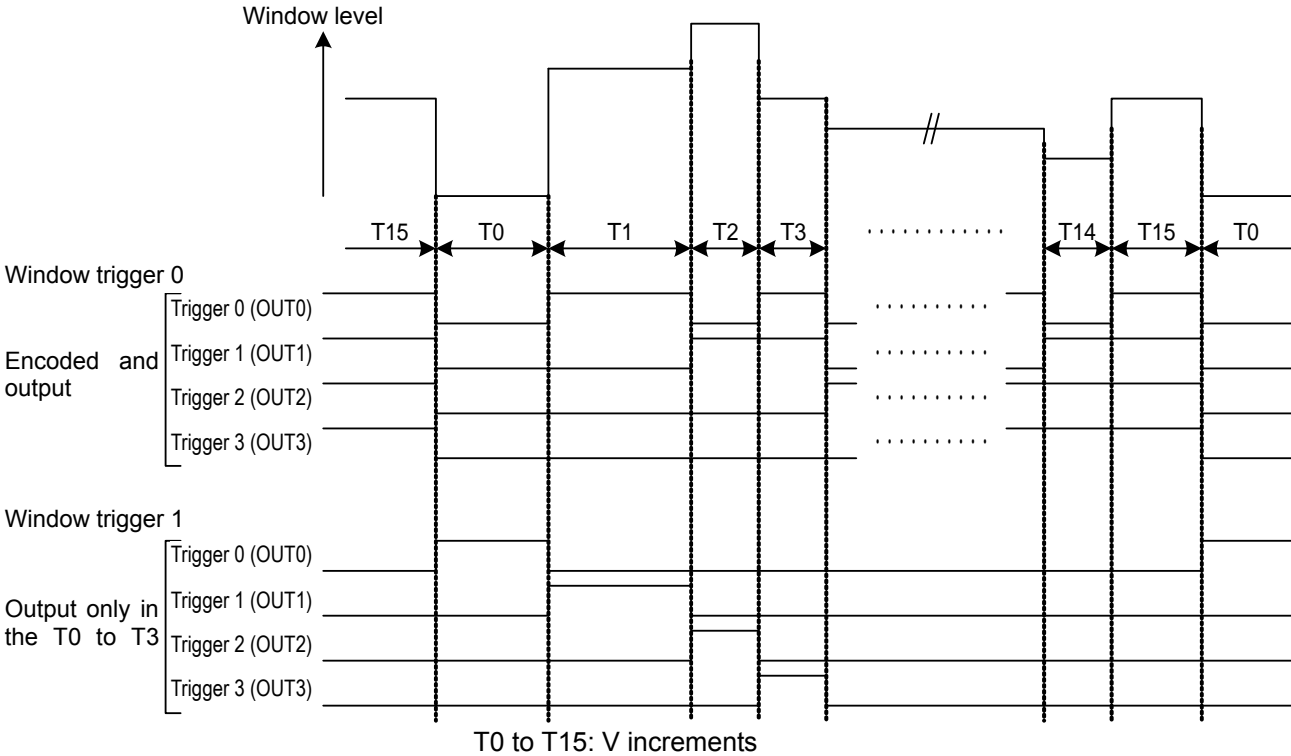
9.1.10 Trigger mode settings

● Concerning the trigger function

The trigger function outputs trigger in accordance with the patterns in order to evaluate the moving picture response speed and other factors. The following kinds of triggers are provided.

(1) Window triggers

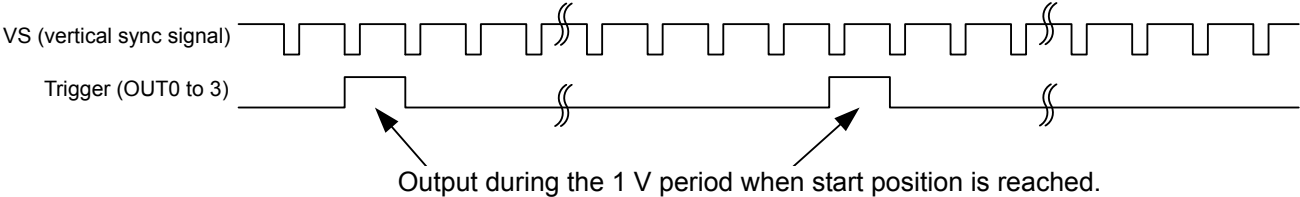
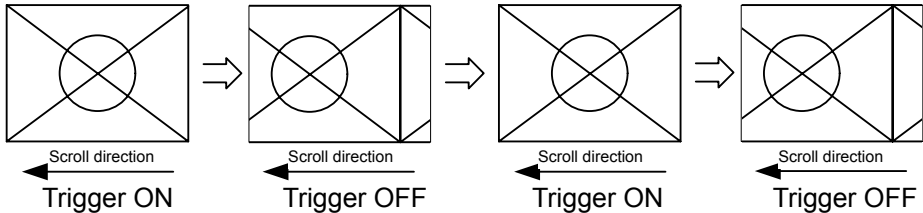
When, on the window patterns, 4 or 16 levels are set and displayed for the format, these triggers are output in accordance with the level sequence.



(2) Scroll triggers (optional)

When a pattern is being scrolled, the trigger is output when the pattern has reached the start position.

When scrolling toward the left





- When there is a multiple number of scroll ON planes (graphic, character and window planes), trigger ON is not output when the scroll settings (step and direction) differ.
- When there is one scroll ON plane, the trigger ON is output in accordance with the settings of that plane.
- Trigger ON can be output with both horizontal direction (left/right) scrolling and vertical direction (up/down) scrolling, but when scrolling in both of these directions (top right, for instance), it is output in accordance with the horizontal direction.

Select the trigger function.

| | |
|--|---|
| <p>(1) Select Configuration using or or , and then press .</p> | |
| <p>(2) Select General using or , and then press .</p> | |
| <p>(3) Select Trigger Mode using or , and then press .</p> <p>Select the value using or , and then press .</p> <p>Alternatively, select the value using the number keys (to).</p> | <p>For further details of the settings, refer to the table below.</p> |

| Key | LCD display | Description |
|-----|-------------------------|--|
| 0 | OFF | The trigger output is set to OFF. |
| 1 | TriggerA | Window trigger 0 is output. The trigger is encoded and output in accordance with the setting time. |
| 2 | TriggerB | Window trigger 1 is output. The trigger is output only during the T0 to T3 periods in accordance with the setting time. |
| 3 | Scroll Trigger (option) | The scroll trigger is output. The trigger is output in accordance with the scroll settings. |

* The scroll trigger function is an option. Contact your dealer or an ASTRODESIGN sales representative.










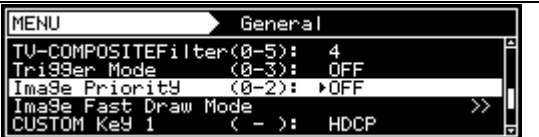







9.1.11 Image - priority settings

Image priority settings can be performed.

Data can be saved both in the internal memory of the VG-870/871 or on CF cards.

This setting is used to set the priority when both sets of image data have been made valid.












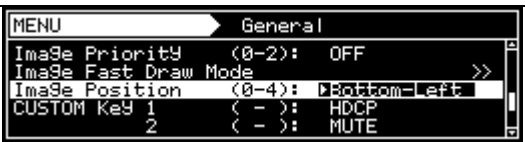









Utilizing it brings some advantages such as increasing the drawing speed and dispersing the data to the internal memory and CF card and then calling the saved data.

| | | |
|-----|---|---|
| (1) | <p>Select Configuration using  or  or  or  , and then press .</p> |  |
| (2) | <p>Select General using  or  , and then press .</p> |  |
| (3) | <p>Select Image Priority using  or  .</p> <p>Select the setting using  or  , and then press .</p> <p>Alternatively, select the setting using the number keys ( to ).</p> | <p>OFF: When a CF card is inserted, only the image data on the CF card is valid. The image data in the internal memory is invalid.</p> <p>Internal > CF: The image data both in the internal memory and on the CF card are valid. In this mode, reading of the image data in the internal memory takes priority. An increase in the drawing speed can be expected.</p> <p>CF > Internal: The image data both in the internal memory and on the CF card are valid. In this mode, reading of the image data on the CF card takes priority.</p> |

9.1.12 Image Position Setting

Image Position setting can change Bitmap's display position.

Bitmap resolution can be set only when its resolution is lower than display resolution.










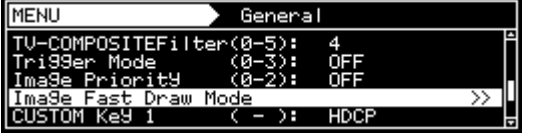









| | |
|--|--|
| <p>Select Configuration using   </p> <p>or  , and then press .</p> |  |
| <p>Select General using  or  ,</p> <p>and then press .</p> |  |
| <p>Select Image Position using  or  .</p> <p>Select the setting using  or  ,</p> <p>and then press .</p> <p>Alternatively, select the setting using the number keys ( to .</p> | <p>For further details of the settings, refer to the table below</p> |

| キー | LCD 表示 | 概要 |
|----|--------------|--|
| 0 | Center | The image is displayed at the center of the screen. |
| 1 | Top-Left | The image is displayed at the top left.of the screen |
| 2 | Bottom-Left | The image is displayed at the bottom left.of the screen |
| 3 | Top-Right | The image is displayed at the top right.of the screen |
| 3 | Bottom-Right | The image is displayed at the bottom right.of the screen |

9.1.13 High-speed drawing mode setting

This function allows high-speed drawing to be set.

With the VG-870/871, the high-speed drawing mode in which the specified patterns are selected at high speed can be executed.

| (1) | Select Configuration using  or  or  or  , and then press  . |  | | | | | | | | | | | | | |
|--------------------------|--|--|--------------------------|--|--|---|-----|--|---|----|--|-------------|--|-----------|--|
| (2) | Select General using  or  , and then press  . |  | | | | | | | | | | | | | |
| (3) | Select Image Fast Draw Mode using  or  , and then press  . |  | | | | | | | | | | | | | |
| | Make the selections using  or  , and then press  . Alternatively, make the selection using  through  (number keys). | <table border="1"> <thead> <tr> <th colspan="3">Select either ON or OFF.</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>OFF</td> <td>The high-speed drawing mode is not executed.</td> </tr> <tr> <td>1</td> <td>ON</td> <td>The high-speed drawing mode is executed.</td> </tr> </tbody> </table> <p>Specify the data numbers of the points at which high-speed drawing is to start and end.</p> <table border="1"> <tbody> <tr> <td>Start point</td> <td>Specify a data number from 1 to 200. * If a number higher than the end point is set for the start point, the start point value will be also applied to the end point.</td> </tr> <tr> <td>End point</td> <td></td> </tr> </tbody> </table> | Select either ON or OFF. | | | 0 | OFF | The high-speed drawing mode is not executed. | 1 | ON | The high-speed drawing mode is executed. | Start point | Specify a data number from 1 to 200. * If a number higher than the end point is set for the start point, the start point value will be also applied to the end point. | End point | |
| Select either ON or OFF. | | | | | | | | | | | | | | | |
| 0 | OFF | The high-speed drawing mode is not executed. | | | | | | | | | | | | | |
| 1 | ON | The high-speed drawing mode is executed. | | | | | | | | | | | | | |
| Start point | Specify a data number from 1 to 200. * If a number higher than the end point is set for the start point, the start point value will be also applied to the end point. | | | | | | | | | | | | | | |
| End point | | | | | | | | | | | | | | | |

CAUTION

- Video memory capacity restrictions
The total volume of data which can be developed in the high-speed pattern selection mode in the image files of the video memory is approximately 174 MB although this figure differs slightly depending on the image data size and other factors. In the high-speed pattern selection mode, it is not possible to load image data exceeding this total.
- When the CF card has been ejected
When the high-speed pattern selection mode has been set to ON and image data has been developed from the card into the video memory, all the image data developed from the CF card will be cleared if the card is ejected.


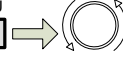








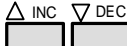

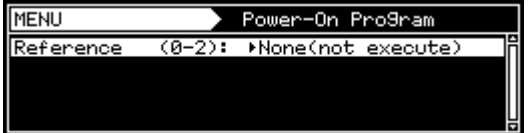
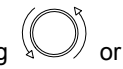






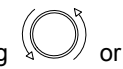






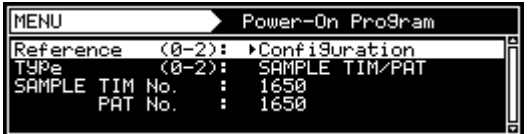
9.1.14 CUUSTOM Key1, 2, RB-1871 CUSTOM Key

The functions set in the custom keys can be checked.

The custom key settings cannot be changed.

9.1.15 Operation mode at power-on

The timing data and pattern data to be drawn immediately after the power of the VG-870/871 is turned on can be set.

| | |
|--|---|
| <p>(1) Select Configuration using  or  or , and then press .</p> |  |
| <p>(2) Select General using  or , and then press .</p> |  |
| <p>(3) Select Power-On-Program using  or , and then press .</p> |  |
| <p>(4) Select the setting using  or , and then press . Alternatively: Select the setting using the number keys ( ^{0/STATUS} to  ^{9/F ↻}), and then press . After selecting Reference, None or Last Memory, press  to exit the setting screen.</p> | <p>None (not execute): Nothing is drawn when the power is turned on.</p> <p>Configuration: The pattern data and timing data which have been set are drawn. * Refer to (5) for more details of the settings.</p> <p>Last Memory: The pattern data and timing data which were set last are drawn. If the data is not reflected, refer to the note below.</p> |
| <p>(5) <When Configuration has been selected> Select the setting using  or , and then press . Alternatively: Select the setting using the number keys ( ^{0/STATUS} to  ^{9/F ↻}), and then press . Upon completion of the input, press  to exit the setting screen.</p> |  <p>See below for further details on Type.</p> <p>SAMPLE TIM/PAT: This setting draws the timing data and pattern data selected from among the internal data.</p> <p>USER Program: This setting draws the programs which have been prepared and registered by the user.</p> <p>Group: This setting draws the group which has been prepared by the user.</p> |

Note: To enable the Last Memory function, the power must be turned off after both the timing data and pattern data have been set. If only the timing or pattern data has been set, the drawing will take place in the status in which both the timing data and pattern data were previously set.

10

























OTHER FUNCTIONS






10.1 Copying and erasing data

The data stored in the internal flash memory or on CF cards can be copied or erased.

10.1.1 Copying programs



















Various methods can be used to copy programs.

| | | |
|-----|---|--|
| (1) | Select Data Copy/Erase using  →  or  INC  DEC  , and then press  . |  |
| (2) | Select Copy: Program using  or  INC  DEC  , and then press  . |  |
| (3) | Select the programs using  or  INC  DEC  , and then press  . Alternatively: Select the programs using the number keys   ( to ), and then press  . |  <p><Difference in settings selected for Type></p> <p>1-Program: Select the numbers of the source and destination programs and the media on which the programs are stored.</p> <p>1-SAMPLE TIM&PAT->Program: Set the internal TIM and PAT data at the source, select the number of the destination program and the media.</p> <p>1-TIM (Timing/Output/Audio): Set the number of the source program with the timing, output and audio data to be used, and set the number of the destination pattern program to be used.</p> <p>1-PAT (Pattern/Action): Set the number of the source program with the pattern and action data to be used, and set the number of the destination timing program to be used.</p> |

| | |
|---|--|
| <p><Program categories for Type></p> <p>1-Program: Select this when copying stored programs in their original form.</p> <p>1-SAMPLE TIM&PAT->Program: Select this when specifying combinations of internal timing and pattern data to create patterns.</p> <p>1-TIM (Timing/Output/Audio): Select this to combine the timing, output and audio data of a source program with the patterns of the destination.</p> <p>* This setting cannot be used when the program does not exist at the destination end.</p> <p>1-PAT (Pattern/Action): Select this to combine the pattern and action data of a source program with the timing of the destination.</p> <p>* This setting cannot be used when the program does not exist at the destination end.</p> <p>Multiple-Program: Select this when copying a multiple number of programs.</p> | <p>1-Multiple-Program: Select the start and end source and destination programs, respectively, and select the media onto which the programs will be stored.</p> |
| <p>(4) Select EXECUTE using  or  , and then press  to complete the copying.</p> |  |




























10.1.2 Copying user characters

Characters which have been stored can be copied.

| | |
|---|---|
| <p>(1) Select Data Copy/Erase using  or , and then press .</p> |  |
| <p>(2) Select COPY: USER Character using  or , and then press .</p> |  |
| <p>(3) Select the characters using  or . Alternatively: Select the characters using the number keys  to , and then press .</p> |  <p>Source: Select the code (such as e0H) of the character to be stored and the storage source media.</p> <p>Destination: Select the storage destination of the character code (such as e0H) and the storage destination media.</p> |
| <p>(4) Select EXECUTE using  or , and then press  to complete the copying.</p> |  |

























10.1.3 Copying user optional patterns

Optional patterns which have been stored can be copied.

| | |
|---|---|
| <p>(1) Select Data Copy/Erase using  →   or  , and then press .</p> |  |
| <p>(2) Select COPY: USER OPT Pattern using  or  , and then press .</p> |  |
| <p>(3) Select the patterns using  or  , and then press . Alternatively: Select the patterns using the number keys   ( to ), and then press .</p> |  <p>Source: Select the current pattern number from among the stored patterns, and select the media on which the pattern is stored.</p> <p>Destination: Select the pattern number to be stored from among the stored pattern, and select the media on which the pattern is stored.</p> |
| <p>(4) Select EXECUTE using  or  , and then press  to complete the copying.</p> |  |


























10.1.4 Copying images

Images which have been stored can be copied.

| | |
|--|---|
| <p>(1) Select Data Copy/Erase using  or  , and then press .</p> |  |
| <p>(2) Select COPY: Image using  or  , and then press .</p> |  |
| <p>(3) Select the images using  or  , and then press .</p> <p>Alternatively: Select the images using the number keys (  to ), and then press .</p> |  <p>Source: Select the current image number from among the stored images, and select the media on which the image is stored.</p> <p>Destination: Select the image number to be stored from among the stored image, and select the media on which the image is stored.</p> |
| <p>(4) Select EXECUTE using  or  , and then press  to complete the copying.</p> |  |











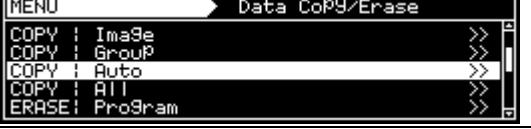
















10.1.5 Copying groups

Groups which have been stored can be copied.

| | |
|---|---|
| <p>(1) Select Data Copy/Erase using  →   or  , and then press .</p> |  |
| <p>(2) Select COPY: Group using  or  , and then press .</p> |  |
| <p>(3) Select the groups using  or  , and then press . Alternatively: Select the groups using the number keys ( to ), and then press .</p> |  <p>Source: Select the current group number from among the stored groups, and select the media on which the group is stored.</p> <p>Destination: Select the group number to be stored from among the stored group, and select the media on which the group is stored.</p> |
| <p>(4) Select EXECUTE using  or  , and then press  to complete the copying.</p> |  |











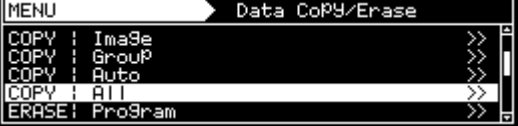













10.1.6 Copying auto executions

Auto executions which have been stored can be copied.

| | |
|---|--|
| <p>(1) Select Data Copy/Erase using  →  or  INC  DEC, and then press .</p> |  |
| <p>(2) Select COPY: Auto using  or  INC  DEC, and then press .</p> |  |
| <p>(3) Select the auto executions using  or  INC  DEC, and then press .</p> <p>Alternatively: Select the auto executions using the number keys  0/STATUS  9/F  SET ( to ) , and then press .</p> |  <p>Source: Select the media containing the currently stored auto execution which is to be stored at the destination. (Destination is automatically selected when Source is changed.)</p> |
| <p>(4) Select EXECUTE using  or  INC  DEC, and then press  to complete the copying.</p> |  |

























10.1.7 Copying all data

All the data which has been stored can be copied.

| | |
|---|--|
| <p>(1) Select Data Copy/Erase using  →  or  , and then press .</p> |  |
| <p>(2) Select COPY: All using  or  , and then press .</p> |  |
| <p>(3) Select the all data using  or  , and then press . Alternatively: Select the all data using the number keys ( to ), and then press .</p> |  <p>Source: Select the media containing the currently stored data which is to be stored at the destination. (Destination is automatically selected when Source is changed.)</p> |
| <p>(4) Select EXECUTE using  or  , and then press  to complete the copying.</p> |  |











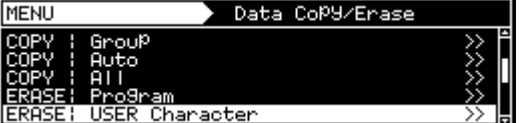













10.1.8 Erasing programs

Programs which have been stored can be erased. At the same time, multiple numbers of programs can be erased.

| | |
|---|---|
| <p>(1) Select Data Copy/Erase using   or  , and then press .</p> |  |
| <p>(2) Select ERASE: Program using  or  , and then press .</p> |  |
| <p>(3) Select the program numbers using  or  , and then press .</p> <p>Alternatively: Select the program numbers using the number keys ( to ) , and then press .</p> |  <p>Select the start and end numbers of the programs to be erased, and select the media on which they are stored.</p> |
| <p>(4) Select EXECUTE using  or  , and then press .</p> |  |

























10.1.9 Erasing user characters

User characters which have been stored can be erased.

| | |
|---|--|
| <p>(1) Select Data Copy/Erase using   or  , and then press .</p> |  |
| <p>(2) Select ERASE: USER Character using  or  , and then press .</p> |  |
| <p>(3) Select the user character number using  or  , and then press .</p> <p>Alternatively: Select the user character number using the number keys ( to ) , and then press .</p> |  <p>Select the media on which are stored the number of the character to be erased.</p> |
| <p>(4) Select EXECUTE using  or  , and then press .</p> |  |

























10.1.10 Erasing user optional patterns

User optional patterns which have been stored can be erased.

| | |
|---|--|
| <p>(1) Select Data Copy/Erase using  →  or  INC  DEC, and then press .</p> |  |
| <p>(2) Select ERASE: USER OPT Pattern using  or  INC  DEC, and then press .</p> |  |
| <p>(3) Select the user optional pattern number using  or  INC  DEC, and then press .</p> <p>Alternatively: Select the user optional pattern number using the number keys ( to ) , and then press .</p> |  <p>Select the media on which are stored the number of the user optional pattern to be erased.</p> |
| <p>(4) Select EXECUTE using  or  INC  DEC, and then press  to erase the user optional pattern.</p> |  |



























10.1.11 Erasing images

Images which have been stored can be erased.

| | |
|---|--|
| <p>(1) Select Data Copy/Erase using  →  or  INC  DEC, and then press .</p> |  |
| <p>(2) Select ERASE: Image using  or  INC  DEC, and then press .</p> |  |
| <p>(3) Select the image number using  or  INC  DEC, and then press .</p> <p>Alternatively: Select the image number using the number keys ( to ) , and then press .</p> |  <p>Select the media on which are stored the numbers of the images to be erased.</p> |
| <p>(4) Select EXECUTE using  or  INC  DEC, and then press .</p> |  |



























10.1.12 Erasing groups

Groups which have been stored can be erased.

| | |
|--|--|
| <p>(1) Select Data Copy/Erase using  →  or  , and then press .</p> |  |
| <p>(2) Select ERASE: Group using  or  , and then press .</p> |  |
| <p>(3) Select the group number using  or  , and then press .</p> <p>Alternatively: Select the group number using the number keys   ( to ), and then press .</p> |  <p>Multiple groups can be erased. Select the start and end numbers of the groups to be erased, and select the media on which the groups are stored.</p> |
| <p>(4) Select EXECUTE using  or  , and then press  to erase the group.</p> |  |

























10.1.13 Erasing automatic executions

Automatic executions which have been stored can be erased.

| | |
|--|---|
| <p>(1) Select Data Copy/Erase using  →  or  , and then press .</p> |  |
| <p>(2) Select ERASE: Auto using  or  , and then press .</p> |  |
| <p>(3) Select the media using  or  , and then press .</p> <p>Alternatively: Select the media with the automatic executions using the number keys   ( to ), and then press .</p> |  <p>Select the media on which are stored the automatic executions to be erased.</p> |
| <p>(4) Select EXECUTE using  or  , and then press  to erase the automatic executions.</p> |  |











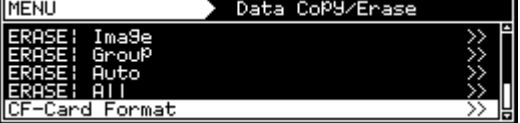


10.1.14 Erasing all data

All the data which has been stored can be erased.

| | |
|--|--|
| <p>(1) Select Data Copy/Erase using  →  or  INC  DEC, and then press .</p> |  |
| <p>(2) Select ERASE: All using  or  INC  DEC, and then press .</p> |  |
| <p>(3) Select the media with the data using  or  INC  DEC, and then press .</p> <p>Alternatively: Select the media with the data using the number keys ( to ), and then press .</p> |  <p>Select the media on which is stored the data to be erased.</p> |
| <p>(4) Select EXECUTE using  or  INC  DEC, and then press  to erase all the data.</p> |  |




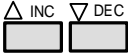


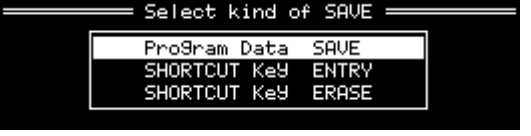

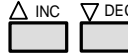

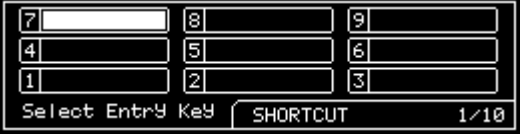










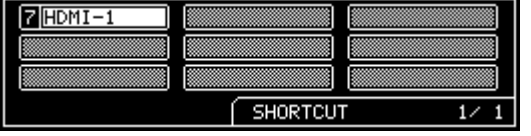
10.1.15 Formatting CF cards

CF cards can be initialized (formatted).

| | |
|--|--|
| <p>(1) Select Data Copy/Erase using  →  or  INC  DEC, and then press .</p> |  |
| <p>(2) Select CF-Card Format using  or  INC  DEC, and then press .</p> |  |
| <p>(3) Press  to complete the initializing.</p> |  |

10.2 Short-cut keys














It is possible to set up to any of 10 frequently used screens so that they can be called by pressing the short-cut keys.

| | |
|---|---|
| <p>(1) Display the screen which is to be registered as a short-cut. In the example given here, the HDMI setting screen is registered. With the screen to be registered now displayed: Press .</p> |  |
| <p>(2) Select ShortCUT Key ENTRY using  or , and then press .</p> <p>To erase the selection, select SHORTCUT Key ERASE, and then press .</p> |  |
| <p>(3) Select the position where the screen is to be registered using  or , and then press .</p> <p>In this example, the screen is saved in 7.</p> |  |
| <p>(4) Set the name of the screen registered. If the name already displayed is acceptable, select OK, and then press .</p> <p>To change the name: Change the name using    .</p> <p>If the name is acceptable, select OK, and then press .</p> <p>The new name in this example is HDMI-1.</p> <p>When  is pressed, the setting is saved, and the registered screen is returned to the display.</p> |   |
| <p>(5) When  is pressed, the SHORTCUT screen is displayed. HDMI-1, which is the registered screen, is now registered in shortcut 7.</p> |  |

* The shortcut key function may be disabled on some display screens. Use ESC to return to the previous screen, and press the keys again.

10.3 Information

The main unit's version, serial number and other information can be displayed.

| | | |
|-----|---|--|
| (1) | <p>Select Maintenance using   or  or  INC  DEC, and then press .</p> |  |
| (2) | <p>Select Information, and then press .</p> |  |
| (3) | <p>Scroll the display up or down using  or  INC  DEC.</p> |  |

<Table of items displays>

| Example of display | Description |
|--|---|
| <pre>TYPE: VG-870 (0000) SERIAL: 1234567 (0000000) MAC: 00 02 de 00 00 00 LICENSE: 0.5/0.25dot Scroll Macrovision H/W Ver.: 00 S00-00 FPGA M01.00/S01.00/R01.00 F/W Ver.: 01.00 (0000)</pre> | <p>Product name Serial number MAC address Usable option functions Hardware version Firmware version</p> |
| <pre>- UNIT ----- SLOT0) TYPE: VM-1811 SERIAL: 0000000 H/W Ver.: 01(V) S00-00 FPGA01.00 F/W Ver.: 01.00 USER ADJUSTMENT VALUE: R/G/B = +0/+0/+0</pre> | <p>(Listed below is the output unit information.) Unit type Serial number Hardware version Firmware version User adjustment values (dependent on type of unit)</p> <p>* The 'SLOT' number is given in the sequence (0 → 1 → 2) of the slots on the rear panel of the main unit.</p> |
| <pre>- DISK SPACE ----- FSystem Used Available Mounted rom0a 13360 (12%) 96998 c:</pre> | <p>(Listed below is the amount of the device's memory which has been used.) Mounted c: Internal memory d: CF card</p> |

10.4 Data initialization













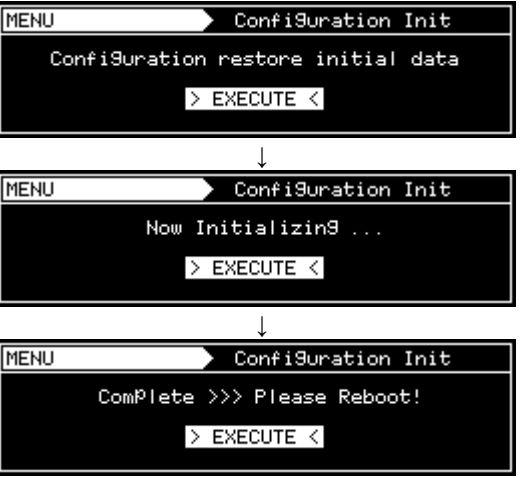
Initialization restores the system settings and short-cut data to the factory settings.



- Performing this operation initialized all the data stored in the internal memory.
- The generator must be re-started after initialization.












10.4.1 Initializing the system settings

This operation restores the system settings to the factory settings.

| | |
|---|--|
| <p>(1) Select Maintenance using  or  or  , and then press .</p> |  |
| <p>(2) Select INITIALIZE: Configuration using  or  , and then press .</p> |  |
| <p>(3) Press  to execute initialization.</p> <p style="text-align: center;">:</p> <p style="text-align: center;">:</p> <p style="text-align: center;">:</p> <p style="text-align: center;">:</p> <p style="text-align: center;">:</p> <p style="text-align: center;">:</p> <p style="text-align: center;">:</p> <p style="text-align: center;">:</p> <p style="text-align: center;">:</p> <p style="text-align: center;">:</p> <p>Initialization is completed.</p> |  |
| <p>(4) Turn off the generator's power, and restart the generator.</p> | |

10.4.2 Initializing the short-cut data

This operation restores the short-cut data to the factory settings.






















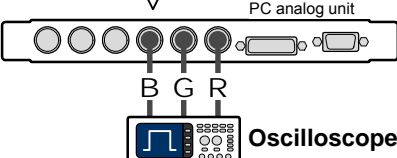


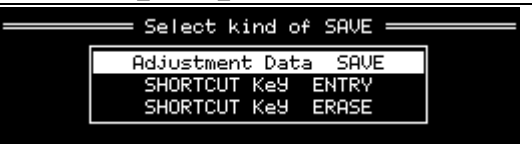
| | | |
|-----|--|---|
| (1) | <p>Select Maintenance using  or  or  or .</p> |  |
| (2) | <p>Select INITIALIZE: SHORTCUT using  or  or .</p> |  |
| (3) | <p>Press  to execute initialization.</p> <p>⋮</p> <p>Initialization is completed.</p> |  |
| (4) | <p>Turn off the generator's power, and restart the generator.</p> | |

10.5 Adjustments

10.5.1 Adjusting the RGB video levels of the PC analog unit

The RGB video levels of the PC analog unit will be adjusted in this section.















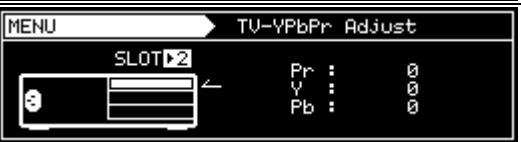



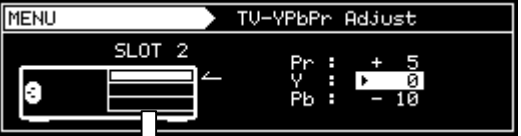
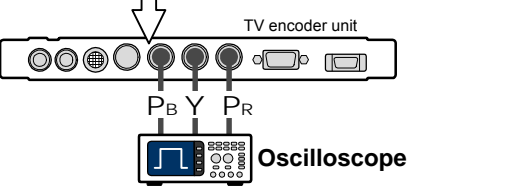


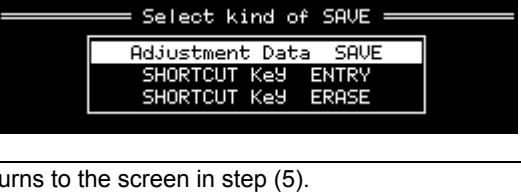
After adjusting the levels, save the data.

| | | |
|-----|---|--|
| (1) | <ul style="list-style-type: none"> • Display the raster 'white' pattern (No.1121) using any timing data. • Check that the digital levels are the maximum values. (Refer to "4.1.8 Setting the digital level (temporary settings).") • Set the analog levels to the desired values. (Refer to "4.6.2 setting the analog output connector") | |
| (2) | Select Maintenance using  →  or  or  or  , and then press  . |  |
| (3) | Select ADJUST: PC-RGB using  or  or  or  , and then press  . |  |
| (4) | <p><Where there is a multiple number of PC analog units></p> <p>Use  to select "SLOT."</p> <p>Then use  or  to select the number of the slot which contains the unit whose levels are to be adjusted.</p> |  <p style="text-align: center;">↑ Display representing generator's rear panel</p> |
| (5) | Select "R," "G" and "B" using  . While monitoring the actual level on an oscilloscope or other measuring device, adjust to the value set in step (1) using  (to increase the level) or  (to reduce the level). * Perform the step for "R," "G" and "B." |  <p style="text-align: center;">↓</p>  |
| (6) | Press  . Then select "Adjustment Data SAVE" followed by  . After 'Save Completed' has appeared, operation returns to the screen in step (5). |  |

10.5.2 Adjusting the YPbPr video levels of the TV encoder unit

The YPbPr video levels of the TV encoder unit will be adjusted in this section.




















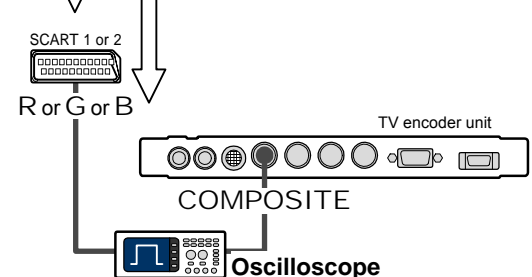


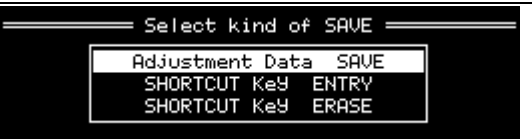
After adjusting the levels, save the data.

| | | |
|-----|---|--|
| (1) | <ul style="list-style-type: none"> • Display the raster 'white' pattern (No.1121) using any timing data. • Check that the digital levels are the maximum values. (Refer to "4.1.8 Setting the digital level (temporary settings).") • Set the analog levels to the desired values. (Refer to "4.6.2 setting the analog output connector ") | |
| (2) | Select Maintenance using  or  or   , and then press  . |  |
| (3) | Select ADJUST TV-YPbPr using  or   , and then press  . |  |
| (4) | <When there is a multiple number of TV encoder units> Use  to select "SLOT." Then use   to select the number of the slot which contains the unit whose levels are to be adjusted. |  ↑ Display representing generator's rear panel |
| (5) | Select " Pr ," " Y " and " Pb " using  . While monitoring the actual level on an oscilloscope or other measuring device, adjust to the value set in step (1) using  (to increase the level) or  (to reduce the level). * Perform the step for "Pr," "Y" and "Pb." |   |
| (6) | Press  . Then select " Adjustment Data SAVE " followed by  . After 'Save Completed' has appeared, operation returns to the screen in step (5). |  |

10.5.3 Adjusting the COMPOSITE/SCART video levels of the TV encoder unit

The COMPOSITE/SCART video levels of the TV encoder unit will be adjusted in this section.

After adjusting the levels, save the data.

| | | |
|-----|---|--|
| (1) | <ul style="list-style-type: none"> • Display the raster 'white' pattern (No.1121) using any timing data (NTSC, PAL, SECAM, etc.). • Check that the digital levels are the maximum values. (Refer to "4.1.8 Setting the digital level (temporary settings).") | |
| (2) | Select Maintenance using  or  or   , and then press  . |  |
| (3) | Select ADJUST: TV-COMPOSITE/SCART using  or   , and then press  . |  |
| (4) | <p><When there is a multiple number of TV encoder units></p> Use  to select "SLOT." Then use   to select the number of the slot which contains the unit whose levels are to be adjusted. * Only SLOT '2' is used for SCART. * For the standard timing data values, refer to "11.3.4 Tables of standard signals." |  <p>↑ Display representing generator's rear panel</p> |
| (5) | Select " COMPOSITE " or " RGB (SCART) " using  . Then, while monitoring the actual level on an oscilloscope or other measuring device, adjust the level using  (to increase the level) or  (to reduce the level). |  <p>↓</p>  |
| (6) | Press  . Then select " Adjustment Data SAVE " followed by  . After 'Save Completed' has appeared, operation returns to the screen in step (5). |  |

11

SPECIFICATIONS

11.1 Main specifications

11.1.1 Common specifications

| | | | |
|-----------------------------------|--------|---------|--|
| Dot clock frequencies | VG-870 | Analog | 8 - 10 bit: 0.100 - 340.000 MHz 11 - 12 bit: 0.100 - 330.000 MHz 13 - 14 bit: 0.100 - 280.000 MHz 15 - 16 bit: 0.100 - 240.000 MHz |
| | | Digital | 8 - 10 bit: 0.100 - 340.000 MHz 11 - 12 bit: 0.100 - 330.000 MHz 13 - 14 bit: 0.100 - 280.000 MHz 15 - 16 bit: 0.100 - 240.000 MHz |
| | VG-871 | Analog | 8 to 10 bit: 0.100 - 250.000 MHz 11 - 12 bit: 0.100 - 250.000 MHz 13 - 14 bit: 0.100 - 250.000 MHz 15 - 16 bit: 0.100 - 240.000 MHz |
| | | Digital | 8 - 10 bit: 0.100 - 340.000 MHz 11 - 12 bit: 0.100 - 330.000 MHz 13 - 14 bit: 0.100 - 280.000 MHz 15 - 16 bit: 0.100 - 240.000 MHz |
| Horizontal frequency | | | Max. 300 kHz, 8192 dots |
| Number of vertical scanning lines | | | Max. 8192 lines |
| Video memory | | | 4096 dots × 4096 dots |
| Serration pulse (Serration) | | | OFF, 0.5H, 1H or EXOR selectable |
| Scanning | | | Progressive (non-interlaced), interlaced, segmented frame, interlace (sync) |

11.1.2 HDMI unit

| | | | | | | |
|----------------------|-------------------------|-----------------------------------|--|--------------------------------------|-------------|--|
| HDMI1 HDMI2 | Version supported | | HDMI1.3a | | | |
| | Connectors | | HDMI × 2 | | | |
| | DotCLK | | 8-bit output | 25 to 165 MHz (TMDS CLK:165 MHz) | | |
| | | | 10-bit output | 25 to 165 MHz (TMDS CLK:206.25 MHz) | | |
| | | | 12-bit output | 25 to 150 MHz (TMDS CLK:225 MHz) | | |
| | No. of colors generated | | 8, 10 or 12 bits each for R, G, B (RGB, YCbCr444 and YCbCr422 supported) | | | |
| | Audio output | L-PCM | Sampling frequency: 32, 44.1, 48, 88.2, 96, 176.4, 192 kHz Output frequency: 100 to one-half of sampling frequency (Hz) No. of bits: 16, 20 or 24 bits | | | |
| | | Options | Next-generation audio technologies supported DSD, Dolby Digital Plus, Dolby True HD, DTS HD (High Resolution Audio), DTS HD (Master Audio), etc. | | | |
| | Audio input | RCA | Input format | Analog L/R | | |
| | | COAXIAL | Input format | S/PDIF format | | |
| | | Optical | sampling frequency | Fs = 32 to 192 kHz | | |
| | | I2S IN (option) | MCLK frequency | Fs = 48 kHz system | 24.576 MHz | |
| | | | | Fs = 44.1 kHz system | 22.5792 MHz | |
| | | Input format | Next-generation audio technologies supported (I2S format) | | | |
| sampling frequency | Fs = 32 to 768 kHz | | | | | |
| Copy protection | | HDCP Ver1.1 | | | | |
| Additional functions | | E-EDID Ver1.3 (DDC2B), xvYCC, CEC | | | | |

11.1.3 TV encoder unit

| | | |
|------------------|-------------------------|---|
| VGA | DotCLK | 5 to 165 MHz |
| | No. of colors generated | 8 bits each for R, G, B |
| | Connector | Dsub × 1 |
| D5 | DotCLK | HDTV (1920 × 1080i/1080p/720p), SDTV (720 × 480p/480i) |
| | No. of colors generated | 8 bits each for R, G, B |
| | Connector | D connector × 1 (D5 output supported) |
| YPbPr | DotCLK | HDTV (1920 × 1080i/1080p/720p), SDTV (720 × 480p/480i) |
| | No. of colors generated | 8 bits each for R, G, B |
| | Connector | BNC × 3 |
| COMPOSITE Y/C | DotCLK | NTSC-M/J/443, PAL (B/D/G/H/I)/M/N/Nc/60, SECAM |
| | No. of colors generated | 8 bits each for R, G, B |
| | Connector | COMPOSITE × 1, Y/C (S-VIDEO) × 1 |
| | Additional functions | Teletext, Closed Caption, V-Chip, Macrovision (options) |
| SCART1 SCART2 | DotCLK | NTSC-M/J/443, PAL (B/D/G/H/I)/M/N/Nc/60, SECAM |
| | No. of colors generated | 8 bits each for R, G, B |
| | Connector | SCART × 2 |
| | Additional functions | Teletext, Closed Caption, V-Chip, Macrovision (options) |
| AUDIO L/R | Audio output | RCA × 2 |
| | Output frequency | 20 to 20 KHz |
| | Output level | 0 to 2000 mV |

11.1.4 PC analog unit

| | | |
|---|-------------------------|--|
| VGA RGB/HS/VS DVI-I (analog unit) | DotCLK | 5 to 300 MHz |
| | No. of colors generated | 10 bits each for R, G, B |
| | Video level | 300 to 1200 mV (with OnSync ON) 50 to 1200 mV (with OnSync OFF) |
| | Sync level | HS/VS: TTL OnSync: 0 to 600 mV (2-level), 0 to ±600 mV (tri-level) |
| | Connector | BNC × 3 (RGB), BNC × 2 (HS/VS), Dsub × 1 |
| CS | Sync level | CS: 300 mV (2-level), 600 mV (tri-level) |
| | Connector | BNC × 1 |
| DVI-I (digital unit) | DotCLK | 25 to 165 MHz |
| | No. of colors generated | 8 bits each for R, G, B |
| | Copy protection | HDCP Ver1.0 |
| | Additional functions | E-EDID Ver1.3 (DDC2B) |
| | Connector | DVI-I × 1 (HDCP supported) |

11.1.5 DVI unit

| | | | |
|-----------|-------------------------|---------------------------------|----------------------------|
| DVI1 | DotCLK | Single Link | 25 to 165 MHz (to 8 bits) |
| | | | 25 to 165 MHz (to 16 bits) |
| | | Dual Link | 50 to 330 MHz (to 8 bits) |
| | No. of colors generated | | 16 bits each for R, G, B |
| | Copy protection | | None |
| | Additional functions | | E-EDID Ver1.3 (DDC2B) |
| Connector | | DVI-D × 1 (Dual Link supported) | |
| DVI2 | DotCLK | | 25 to 165 MHz (to 8 bits) |
| | No. of colors generated | | 8 bits each for R, G, B |
| | Copy protection | | HDCP Ver1.0 |
| | Additional functions | | E-EDID Ver1.3 (DDC2B) |
| | Connector | | DVI-D × 1 (HDCP supported) |

11.1.6 LVDS unit

| | | | |
|----------------------------------|-------------------------|-------------|----------------------------|
| LVDS1 LVDS2 LVDS3 LVDS4 | DotCLK | Single Link | 20 to 135 MHz (to 16 bits) |
| | | Dual Link | 40 to 270 MHz (to 14 bits) |
| | | | 40 to 240 MHz (to 16 bits) |
| | | Quad Link | 80 to 340 MHz (to 10 bits) |
| | No. of colors generated | | 16 bits each for R, G, B |
| Connector | | LVDS × 4 | |

11.1.7 PARALLEL unit

| | | | | |
|------------------------|-------------------------|-------------|-----------------------------|--|
| PARALLEL1 PARALLEL2 | DotCLK | Single Link | 0.1 to 100 MHz (to 16 bits) | |
| | | Dual Link | 0.2 to 200 MHz (to 8 bits) | |
| | No. of colors generated | | 16 bits each for R, G, B | |
| | Output level | | 1.8/2.5/3.3/5 V | |
| | Connector | | PARALLEL × 2 | |

11.1.8 External control

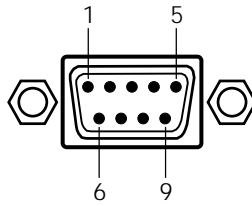
| | |
|------------------------------|------------------|
| Dedicated remote controllers | RB-1870, RB-1871 |
| Serial control | RS-232C |
| LAN | 10/100BASE-T |

11.1.9 General specifications

| | |
|-----------------------------|---|
| Supply voltage | AC100 to 240 V |
| Power line frequency | 50/60 Hz |
| Power consumption | 80 VA MAX |
| Dimensions | 430 (W) × 88 (H) × 370 (D)mm (excluding protrusions) |
| Weight | Approx. 6.85 kg (when 3 output units have been installed) |
| Operating temperature range | 5 to 40°C |
| Operating humidity range | 30 to 80%RH (no condensation) |

11.2 Connector specifications

11.2.1 RS232C-Connector



| Pin no. | I/O | Signal |
|---------|-----|------------------------|
| 1 | - | NC |
| 2 | O | TXD (transmitted data) |
| 3 | I | RXD (received data) |
| 4 | - | Shorted with pin 6 |
| 5 | - | FG (frame ground) |
| 6 | - | Shorted with pin 4 |
| 7 | I | CTS (clear to send) |
| 8 | O | RTS (request to send) |
| 9 | - | NC |

11.2.2 Trigger-Connector



| Pin no. | I/O | Signal |
|---------|-----|-----------|
| 1 | O | TRIG_OUT3 |
| 2 | O | TRIG_OUT2 |
| 3 | O | TRIG_OUT1 |
| 4 | - | GND |
| 5 | O | TRIG_OUT0 |
| 6 | - | GND |
| 7 | I | RESEARVE |
| 8 | - | GND |

The output of trigger is an open-collector output. It is pulled up by 10 , 5V internally.

11.3 Internal data

11.3.1 Program data

| Program No. | Horizontal frequency [KHz] | Vertical frequency [Hz] | Dot clock frequency [MHz] | No. of display dots (H × V) | Int / Prog | Sync polarity | | SyncType | Color difference | Timing data name | Pattern data | Pattern data name |
|-------------|----------------------------|-------------------------|---------------------------|-----------------------------|------------|---------------|---|----------|------------------|-----------------------|--|----------------------|
| | | | | | | H | V | | | | | |
| 1001 | 31.47 | 59.94 | 25.175 | 640 × 480 | Prog | N | N | ANALOG | RGB | EIA640 × 480p@59.94 | 100%/100% color bars, horizontal direction | Color Bar 100/100-H |
| 1002 | 31.50 | 60.00 | 25.200 | 640 × 480 | Prog | N | N | ANALOG | RGB | EIA640 × 480p@60 | 100%/75% color bars, horizontal direction | Color Bar 100/75-H |
| 1003 | 31.47 | 59.94 | 27.000 | 720 × 480 | Prog | N | N | ANALOG | YPbPr | EIA720 × 480p@59.94 | 75%/75% color bars, horizontal direction | Color Bar 75/75-H |
| 1004 | 31.50 | 60.00 | 27.027 | 720 × 480 | Prog | N | N | ANALOG | YPbPr | EIA720 × 480p@60 | SMPTE color bars | Color Bar SMPTE |
| 1005 | 31.47 | 59.94 | 27.000 | 720 × 480 | Prog | N | N | ANALOG | YPbPr | EIA720 × 480pW@59.94 | RGBW color bars, vertical direction | Color Bar RGBW-V |
| 1006 | 31.50 | 60.00 | 27.027 | 720 × 480 | Prog | N | N | ANALOG | YPbPr | EIA720 × 480pW@60 | xvYCC 4% color bars | Color Bar xvYCC 4% |
| 1007 | 44.96 | 59.94 | 74.176 | 1280 × 720 | Prog | P | P | HDTV720 | YPbPr | EIA1280 × 720p@59.94 | xvYCC 8% color bars | Color Bar xvYCC 8% |
| 1008 | 45.00 | 60.00 | 74.250 | 1280 × 720 | Prog | P | P | HDTV720 | YPbPr | EIA1280 × 720p@60 | xvYCC 12% color bars | Color Bar xvYCC 12% |
| 1009 | 33.72 | 59.94 | 74.176 | 1920 × 1080 | Int | P | P | HDTV1080 | YPbPr | EIA1920 × 1080i@59.94 | 100%/100% color bars, horizontal direction 2 | Color Bar 100/100-H2 |
| 1010 | 33.75 | 60.00 | 74.250 | 1920 × 1080 | Int | P | P | HDTV1080 | YPbPr | EIA1920 × 1080i@60 | | |
| 1011 | 15.73 | 59.94 | 27.000 | 1440 × 480 | Int | N | N | ANALOG | YPbPr | EIA1440 × 480i@59.94 | | |
| 1012 | 15.75 | 60.00 | 27.028 | 1440 × 480 | Int | N | N | ANALOG | YPbPr | EIA1440 × 480i@60 | | |
| 1013 | 15.73 | 59.94 | 27.000 | 1440 × 480 | Int | N | N | ANALOG | YPbPr | EIA1440 × 480iW@59.94 | | |
| 1014 | 15.75 | 60.00 | 27.028 | 1440 × 480 | Int | N | N | ANALOG | YPbPr | EIA1440 × 480iW@60 | | |
| 1015 | 15.73 | 60.05 | 27.000 | 1440 × 240 | Prog | N | N | ANALOG | YPbPr | EIA1440 × 240p@59.94 | | |
| 1016 | 15.75 | 60.12 | 27.028 | 1440 × 240 | Prog | N | N | ANALOG | YPbPr | EIA1440 × 240p@60 | | |
| 1017 | 15.73 | 59.83 | 27.000 | 1440 × 240 | Prog | N | N | ANALOG | YPbPr | EIA1440 × 240p@59.94 | | |
| 1018 | 15.75 | 59.89 | 27.028 | 1440 × 240 | Prog | N | N | ANALOG | YPbPr | EIA1440 × 240p@60 | | |
| 1019 | 15.73 | 60.05 | 27.000 | 1440 × 240 | Prog | N | N | ANALOG | YPbPr | EIA1440 × 240pW@59.94 | | |
| 1020 | 15.75 | 60.12 | 27.028 | 1440 × 240 | Prog | N | N | ANALOG | YPbPr | EIA1440 × 240pW@60 | | |

Internal program data: No. 1001 to 1020

| Program No. | Horizontal frequency [KHz] | Vertical frequency [Hz] | Dot clock frequency [MHz] | No. of display dots (H × V) | Int / Prog | Sync polarity | | SyncType | Color difference | Timing data name | Pattern data | Pattern data name |
|-------------|----------------------------|-------------------------|---------------------------|-----------------------------|------------|---------------|---|----------|------------------|-----------------------|--|----------------------|
| | | | | | | H | V | | | | | |
| 1021 | 15.73 | 59.83 | 27.000 | 1440 × 240 | Prog | N | N | ANALOG | YPbPr | EIA1440 × 240pW@59.94 | | |
| 1022 | 15.75 | 59.89 | 27.028 | 1440 × 240 | Prog | N | N | ANALOG | YPbPr | EIA1440 × 240pW@60 | | |
| 1023 | 15.73 | 59.94 | 54.000 | 2880 × 480 | Int | N | N | ANALOG | YPbPr | EIA2880 × 480i@59.94 | | |
| 1024 | 15.75 | 60.00 | 54.054 | 2880 × 480 | Int | N | N | ANALOG | YPbPr | EIA2880 × 480i@60 | | |
| 1025 | 15.73 | 59.94 | 54.000 | 2880 × 480 | Int | N | N | ANALOG | YPbPr | EIA2880 × 480iW@59.94 | | |
| 1026 | 15.75 | 60.00 | 54.054 | 2880 × 480 | Int | N | N | ANALOG | YPbPr | EIA2880 × 480iW@60 | | |
| 1027 | 15.73 | 60.05 | 54.000 | 2880 × 240 | Prog | N | N | ANALOG | YPbPr | EIA2880 × 240p@59.94 | | |
| 1028 | 15.75 | 60.11 | 54.054 | 2880 × 240 | Prog | N | N | ANALOG | YPbPr | EIA2880 × 240p@60 | | |
| 1029 | 15.73 | 59.83 | 54.000 | 2880 × 240 | Prog | N | N | ANALOG | YPbPr | EIA2880 × 240p@59.94 | | |
| 1030 | 15.75 | 59.89 | 54.054 | 2880 × 240 | Prog | N | N | ANALOG | YPbPr | EIA2880 × 240p@59.94 | | |
| 1031 | 15.73 | 60.05 | 54.000 | 2880 × 240 | Prog | N | N | ANALOG | YPbPr | EIA2880 × 240pW@59.94 | Gray scale, horizontal direction (4 steps) | Gray Scale H-4step |
| 1032 | 15.75 | 60.11 | 54.054 | 2880 × 240 | Prog | N | N | ANALOG | YPbPr | EIA2880 × 240pW@60 | Gray scale, horizontal direction (8 steps) | Gray Scale H-8step |
| 1033 | 15.73 | 59.83 | 54.000 | 2880 × 240 | Prog | N | N | ANALOG | YPbPr | EIA2880 × 240pW@59.94 | Gray scale, horizontal direction (16 steps) | Gray Scale H-16step |
| 1034 | 15.75 | 59.89 | 54.054 | 2880 × 240 | Prog | N | N | ANALOG | YPbPr | EIA2880 × 240pW@60 | Gray scale, horizontal direction (32 steps) | Gray Scale H-32step |
| 1035 | 31.47 | 59.94 | 54.000 | 1440 × 480 | Prog | N | N | ANALOG | YPbPr | EIA1440 × 480p@59.94 | Gray scale, horizontal direction (64 steps) | Gray Scale H-64step |
| 1036 | 31.50 | 60.00 | 54.054 | 1440 × 480 | Prog | N | N | ANALOG | YPbPr | EIA1440 × 480p@60 | Gray scale, horizontal direction (128 steps) | Gray Scale H-128step |
| 1037 | 31.47 | 59.94 | 54.000 | 1440 × 480 | Prog | N | N | ANALOG | YPbPr | EIA1440 × 480pW@59.94 | Gray scale, horizontal direction (256 steps) | Gray Scale H-256step |
| 1038 | 31.50 | 60.00 | 54.054 | 1440 × 480 | Prog | N | N | ANALOG | YPbPr | EIA1440 × 480pW@60 | Gray scale, vertical direction (4 steps) | Gray Scale V-4step |
| 1039 | 67.43 | 59.94 | 148.352 | 1920 × 1080 | Prog | P | P | HDTV1080 | YPbPr | EIA1920 × 1080p@59.94 | Gray scale, vertical direction (8 steps) | Gray Scale V-8step |
| 1040 | 67.50 | 60.00 | 148.500 | 1920 × 1080 | Prog | P | P | HDTV1080 | YPbPr | EIA1920 × 1080p@60 | Gray scale, vertical direction (16 steps) | Gray Scale V-16step |

Internal program data: No. 1021 to 1040

| Program No. | Horizontal frequency [KHz] | Vertical frequency [Hz] | Dot clock frequency [MHz] | No. of display dots (H × V) | Int / Prog | Sync polarity | | SyncType | Color difference | Timing data name | Pattern data | Pattern data name |
|-------------|----------------------------|-------------------------|---------------------------|-----------------------------|------------|---------------|---|----------|------------------|--------------------|--|-------------------------|
| | | | | | | H | V | | | | | |
| 1041 | 31.25 | 50.00 | 27.000 | 720 × 576 | Prog | N | N | ANALOG | YPbPr | EIA720 × 576p@50 | Gray scale, vertical direction (32 steps) | Gray Scale V-32step |
| 1042 | 31.25 | 50.00 | 27.000 | 720 × 576 | Prog | N | N | ANALOG | YPbPr | EIA720 × 576pW@50 | Gray scale, vertical direction (64 steps) | Gray Scale V-64step |
| 1043 | 37.50 | 50.00 | 74.250 | 1280 × 720 | Prog | P | P | HDTV720 | YPbPr | EIA1280 × 720p@50 | Gray scale, vertical direction (128 steps) | Gray Scale V-128step |
| 1044 | 28.13 | 50.00 | 74.250 | 1920 × 1080 | Int | P | P | HDTV1080 | YPbPr | EIA1920 × 1080i@50 | Gray scale, vertical direction (256 steps) | Gray Scale V-256step |
| 1045 | 15.63 | 50.00 | 27.000 | 1440 × 576 | Int | N | N | ANALOG | YPbPr | EIA1440 × 576i@50 | Linear ramp, horizontal direction | Ramp Linear-H |
| 1046 | 15.63 | 50.00 | 27.000 | 1440 × 576 | Int | N | N | ANALOG | YPbPr | EIA1440 × 576iW@50 | Linear ramp, vertical direction | Ramp Linear-V |
| 1047 | 15.63 | 50.08 | 27.000 | 1440 × 288 | Prog | N | N | ANALOG | YPbPr | EIA1440 × 288p@50 | Linear ramp, horizontal and vertical directions | Ramp Linear-HV |
| 1048 | 15.63 | 49.92 | 27.000 | 1440 × 288 | Prog | N | N | ANALOG | YPbPr | EIA1440 × 288p@50 | | Ramp Linear-H RGBW-H |
| 1049 | 15.63 | 49.76 | 27.000 | 1440 × 288 | Prog | N | N | ANALOG | YPbPr | EIA1440 × 288p@50 | | Ramp Linear-V RGBW-V |
| 1050 | 15.63 | 50.08 | 27.000 | 1440 × 288 | Prog | N | N | ANALOG | YPbPr | EIA1440 × 288pW@50 | | Ramp Linear-H RGBW-V |
| 1051 | 15.63 | 49.92 | 27.000 | 1440 × 288 | Prog | N | N | ANALOG | YPbPr | EIA1440 × 288pW@50 | Turn ramp | Ramp-H 1Level/dot |
| 1052 | 15.63 | 49.76 | 27.000 | 1440 × 288 | Prog | N | N | ANALOG | YPbPr | EIA1440 × 288pW@50 | | |
| 1053 | 15.63 | 50.00 | 54.000 | 2880 × 576 | Int | N | N | ANALOG | YPbPr | EIA2880 × 576i@50 | | Ramp Linear H:G V:R |
| 1054 | 15.63 | 50.00 | 54.000 | 2880 × 576 | Int | N | N | ANALOG | YPbPr | EIA2880 × 576iW@50 | | Ramp Linear H:B V:R |
| 1055 | 15.63 | 50.08 | 54.000 | 2880 × 288 | Prog | N | N | ANALOG | YPbPr | EIA2880 × 288p@50 | | Ramp Linear H:B V:G |
| 1056 | 15.63 | 49.92 | 54.000 | 2880 × 288 | Prog | N | N | ANALOG | YPbPr | EIA2880 × 288p@50 | | Ramp Linear H:R V:G |
| 1057 | 15.63 | 49.76 | 54.000 | 2880 × 288 | Prog | N | N | ANALOG | YPbPr | EIA2880 × 288p@50 | | Ramp Linear H:R V:B |
| 1058 | 15.63 | 50.08 | 54.000 | 2880 × 288 | Prog | N | N | ANALOG | YPbPr | EIA2880 × 288pW@50 | | Ramp Linear H:G V:B |
| 1059 | 15.63 | 49.92 | 54.000 | 2880 × 288 | Prog | N | N | ANALOG | YPbPr | EIA2880 × 288pW@50 | 128-step gray scale ramp (top: R L, bottom: R L) | Ramp 128 R->L L->R |
| 1060 | 15.63 | 49.76 | 54.000 | 2880 × 288 | Prog | N | N | ANALOG | YPbPr | EIA2880 × 288pW@50 | 256-step gray scale ramp (top: R L, bottom: R L) | Ramp 256 R->L L->R |

Internal program data: No. 1041 to 1060

| Program No. | Horizontal frequency [KHz] | Vertical frequency [Hz] | Dot clock frequency [MHz] | No. of display dots (H × V) | Int / Prog | Sync polarity | | SyncType | Color difference | Timing data name | Pattern data | Pattern data name |
|-------------|----------------------------|-------------------------|---------------------------|-----------------------------|------------|---------------|---|----------------|------------------|-----------------------|--|-----------------------|
| | | | | | | H | V | | | | | |
| 1061 | 31.25 | 50.00 | 54.000 | 1440 × 576 | Prog | N | N | ANALOG | YPbPr | EIA1440 × 576p@50 | | |
| 1062 | 31.25 | 50.00 | 54.000 | 1440 × 576 | Prog | N | N | ANALOG | YPbPr | EIA1440 × 576pW@50 | | |
| 1063 | 56.25 | 50.00 | 148.500 | 1920 × 1080 | Prog | P | P | HDTV1080 | YPbPr | EIA1920 × 1080p@50 | | |
| 1064 | 26.97 | 23.98 | 74.176 | 1920 × 1080 | Prog | P | P | HDTV1080 | YPbPr | EIA1920 × 1080p@23.97 | | |
| 1065 | 27.00 | 24.00 | 74.250 | 1920 × 1080 | Prog | P | P | HDTV1080 | YPbPr | EIA1920 × 1080p@24 | | |
| 1066 | 28.13 | 25.00 | 74.250 | 1920 × 1080 | Prog | P | P | HDTV1080 | YPbPr | EIA1920 × 1080p@25 | | |
| 1067 | 33.72 | 29.97 | 74.176 | 1920 × 1080 | Prog | P | P | HDTV1080 | YPbPr | EIA1920 × 1080p@29.97 | | |
| 1068 | 33.75 | 30.00 | 74.250 | 1920 × 1080 | Prog | P | P | HDTV1080 | YPbPr | EIA1920 × 1080p@30 | | |
| 1069 | 31.47 | 59.94 | 108.000 | 2880 × 480 | Prog | N | N | ANALOG | YPbPr | EIA2880 × 480p@59.94 | | |
| 1070 | 31.50 | 60.00 | 108.108 | 2880 × 480 | Prog | N | N | ANALOG | YPbPr | EIA2880 × 480p@60 | | |
| 1071 | 31.47 | 59.94 | 108.000 | 2880 × 480 | Prog | N | N | ANALOG | YPbPr | EIA2880 × 480pW@59.94 | Linear ramp, horizontal direction + scroll | Ramp Linear-H Scroll |
| 1072 | 31.50 | 60.00 | 108.108 | 2880 × 480 | Prog | N | N | ANALOG | YPbPr | EIA2880 × 480pW@60 | Linear ramp, vertical direction + scroll | Ramp Linear-V Scroll |
| 1073 | 31.25 | 50.00 | 108.000 | 2880 × 576 | Prog | N | N | ANALOG | YPbPr | EIA2880 × 576p@50 | Linear ramp, horizontal and vertical directions + scroll | Ramp Linear-HV Scroll |
| 1074 | 31.25 | 50.00 | 108.000 | 2880 × 576 | Prog | N | N | ANALOG | YPbPr | EIA2880 × 576pW@50 | | |
| 1075 | 31.25 | 50.00 | 72.000 | 1920 × 1080 | Int | P | N | HDTV1250 (AUS) | YPbPr | EIA1920 × 1080i@50 | | |
| 1076 | 56.25 | 100.00 | 148.500 | 1920 × 1080 | Int | P | P | HDTV1080 | YPbPr | EIA1920 × 1080i@100 | | |
| 1077 | 75.00 | 100.00 | 148.500 | 1280 × 720 | Prog | P | P | HDTV720 | YPbPr | EIA1280 × 720p@100 | | |
| 1078 | 62.50 | 100.00 | 54.000 | 720 × 576 | Prog | N | N | ANALOG | YPbPr | EIA720 × 576p@100 | | |
| 1079 | 62.50 | 100.00 | 54.000 | 720 × 576 | Prog | N | N | ANALOG | YPbPr | EIA720 × 576pW@100 | | |
| 1080 | 31.25 | 100.00 | 54.000 | 1440 × 576 | Int | N | N | ANALOG | YPbPr | EIA1440 × 576i@100 | | |

Internal program data: No. 1061 to 1080

| Program No. | Horizontal frequency [KHz] | Vertical frequency [Hz] | Dot clock frequency [MHz] | No. of display dots (H × V) | Int / Prog | Sync polarity | | SyncType | Color difference | Timing data name | Pattern data | Pattern data name |
|-------------|----------------------------|-------------------------|---------------------------|-----------------------------|------------|---------------|---|----------|------------------|------------------------|--------------|-------------------|
| | | | | | | H | V | | | | | |
| 1081 | 31.25 | 100.00 | 54.000 | 1440 × 576 | Int | N | N | ANALOG | YPbPr | EIA1440 × 576iW@100 | | |
| 1082 | 67.43 | 119.88 | 148.352 | 1920 × 1080 | Int | P | P | HDTV1080 | YPbPr | EIA1920 × 1080i@119.88 | | |
| 1083 | 67.50 | 120.00 | 148.500 | 1920 × 1080 | Int | P | P | HDTV1080 | YPbPr | EIA1920 × 1080i@120 | | |
| 1084 | 89.91 | 119.88 | 148.352 | 1280 × 720 | Prog | P | P | HDTV720 | YPbPr | EIA1280 × 720p@119.88 | | |
| 1085 | 90.00 | 120.00 | 148.500 | 1280 × 720 | Prog | P | P | HDTV720 | YPbPr | EIA1280 × 720p@120 | | |
| 1086 | 62.94 | 119.88 | 54.000 | 720 × 480 | Prog | N | N | ANALOG | YPbPr | EIA720 × 480p@119.88 | | |
| 1087 | 63.00 | 120.00 | 54.054 | 720 × 480 | Prog | N | N | ANALOG | YPbPr | EIA720 × 480p@120 | | |
| 1088 | 62.94 | 119.88 | 54.000 | 720 × 480 | Prog | N | N | ANALOG | YPbPr | EIA720 × 480pW@119.88 | | |
| 1089 | 63.00 | 120.00 | 54.054 | 720 × 480 | Prog | N | N | ANALOG | YPbPr | EIA720 × 480pW@120 | | |
| 1090 | 31.47 | 119.88 | 54.000 | 1440 × 480 | Int | N | N | ANALOG | YPbPr | EIA1440 × 480i@119.88 | | |
| 1091 | 31.50 | 120.00 | 54.054 | 1440 × 480 | Int | N | N | ANALOG | YPbPr | EIA1440 × 480i@120 | | |
| 1092 | 31.47 | 119.88 | 54.000 | 1440 × 480 | Int | N | N | ANALOG | YPbPr | EIA1440 × 480iW@119.88 | | |
| 1093 | 31.50 | 120.00 | 54.054 | 1440 × 480 | Int | N | N | ANALOG | YPbPr | EIA1440 × 480iW@120 | | |
| 1094 | 125.00 | 200.00 | 108.000 | 720 × 576 | Prog | N | N | ANALOG | YPbPr | EIA720 × 576p@200 | | |
| 1095 | 125.00 | 200.00 | 108.000 | 720 × 576 | Prog | N | N | ANALOG | YPbPr | EIA720 × 576pW@200 | | |
| 1096 | 62.50 | 200.00 | 108.000 | 1440 × 576 | Int | N | N | ANALOG | YPbPr | EIA1440 × 576i@200 | | |
| 1097 | 62.50 | 200.00 | 108.000 | 1440 × 576 | Int | N | N | ANALOG | YPbPr | EIA1440 × 576iW@200 | | |
| 1098 | 125.87 | 239.76 | 108.000 | 720 × 480 | Prog | N | N | ANALOG | YPbPr | EIA720 × 480p@239.76 | | |
| 1099 | 126.00 | 240.00 | 108.108 | 720 × 480 | Prog | N | N | ANALOG | YPbPr | EIA720 × 480p@240 | | |
| 1100 | 125.87 | 239.76 | 108.000 | 720 × 480 | Prog | N | N | ANALOG | YPbPr | EIA720 × 480pW@239.76 | | |

Internal program data: No. 1081 to 1100



| Program No. | Horizontal frequency [KHz] | Vertical frequency [Hz] | Dot clock frequency [MHz] | No. of display dots (H × V) | Int / Prog | Sync polarity | | SyncType | Color difference | Timing data name | Pattern data | Pattern data name |
|-------------|----------------------------|-------------------------|---------------------------|-----------------------------|------------|---------------|---|----------|------------------|------------------------|-----------------------------|--------------------|
| | | | | | | H | V | | | | | |
| 1101 | 126.00 | 240.00 | 108.108 | 720 × 480 | Prog | N | N | ANALOG | YPbPr | EIA720 × 480pW@240 | Multi burst 100% | Multi Burst 100% |
| 1102 | 62.94 | 239.76 | 108.000 | 1440 × 480 | Int | N | N | ANALOG | YPbPr | EIA1440 × 480i@239.76 | Multi burst 50% | Multi Burst 50% |
| 1103 | 63.00 | 240.00 | 108.108 | 1440 × 480 | Int | N | N | ANALOG | YPbPr | EIA1440 × 480i@240 | Sweep pattern | Sweep |
| 1104 | 62.94 | 239.76 | 108.000 | 1440 × 480 | Int | N | N | ANALOG | YPbPr | EIA1440 × 480iW@239.76 | APDC pattern | APDC |
| 1105 | 63.00 | 240.00 | 108.108 | 1440 × 480 | Int | N | N | ANALOG | YPbPr | EIA1440 × 480iW@240 | | |
| 1106 | | | | | | | | | | | | |
| 1107 | | | | | | | | | | | | |
| 1108 | | | | | | | | | | | | |
| 1109 | | | | | | | | | | | | |
| 1110 | | | | | | | | | | | | |
| 1111 | | | | | | | | | | | OPT38 (SMPTE RP-133) | SMPTE RP-133 |
| 1112 | | | | | | | | | | | OPT39 (SMPTE color version) | SMPTE RP-133+Color |
| 1113 | | | | | | | | | | | Monoscope | Monoscope |
| 1114 | | | | | | | | | | | Philips pattern | Philips |
| 1115 | | | | | | | | | | | Chinese monoscope | China Monoscope |
| 1116 | | | | | | | | | | | APDC1 | |
| 1117 | | | | | | | | | | | APDC2 | |
| 1118 | | | | | | | | | | | | |
| 1119 | | | | | | | | | | | | |
| 1120 | | | | | | | | | | | | |

Internal program data: No. 1101 to 1120

| Program No. | Horizontal frequency [KHz] | Vertical frequency [Hz] | Dot clock frequency [MHz] | No. of display dots (H × V) | Int / Prog | Sync polarity | | SyncType | Color difference | Timing data name | Pattern data | Pattern data name |
|-------------|----------------------------|-------------------------|---------------------------|-----------------------------|------------|---------------|---|----------|------------------|------------------|----------------|-------------------|
| | | | | | | H | V | | | | | |
| 1121 | | | | | | | | | | | White solid | Raster White |
| 1122 | | | | | | | | | | | Red solid | Raster Red |
| 1123 | | | | | | | | | | | Green solid | Raster Green |
| 1124 | | | | | | | | | | | Blue solid | Raster Blue |
| 1125 | | | | | | | | | | | Black solid | Raster Black |
| 1126 | | | | | | | | | | | 50% solid gray | Raster 50%Gray |
| 1127 | | | | | | | | | | | Magenta solid | Raster Magenta |
| 1128 | | | | | | | | | | | Cyan solid | Raster Cyan |
| 1129 | | | | | | | | | | | Yellow solid | Raster Yellow |
| 1130 | | | | | | | | | | | | |
| 1131 | | | | | | | | | | | | |
| 1132 | | | | | | | | | | | | |
| 1133 | | | | | | | | | | | | |
| 1134 | | | | | | | | | | | | |
| 1135 | | | | | | | | | | | | |
| 1136 | | | | | | | | | | | | |
| 1137 | | | | | | | | | | | | |
| 1138 | | | | | | | | | | | | |
| 1139 | | | | | | | | | | | | |
| 1140 | | | | | | | | | | | | |

Internal program data: No. 1121 to 1140



| Program No. | Horizontal frequency [KHz] | Vertical frequency [Hz] | Dot clock frequency [MHz] | No. of display dots (H × V) | Int / Prog | Sync polarity | | SyncType | Color difference | Timing data name | Pattern data | Pattern data name |
|-------------|----------------------------|-------------------------|---------------------------|-----------------------------|------------|---------------|---|----------|------------------|-------------------|-------------------------|-------------------|
| | | | | | | H | V | | | | | |
| 1141 | | | | | | | | | | | Overscan pattern | Over Scan |
| 1142 | | | | | | | | | | | AFD pattern 4:3 Type 0 | AFD 4:3 Type0 |
| 1143 | | | | | | | | | | | AFD pattern 4:3 Type 1 | AFD 4:3 Type1 |
| 1144 | | | | | | | | | | | AFD pattern 4:3 Type 2 | AFD 4:3 Type2 |
| 1145 | | | | | | | | | | | AFD pattern 4:3 Type 3 | AFD 4:3 Type3 |
| 1146 | | | | | | | | | | | AFD pattern 4:3 Type 4 | AFD 4:3 Type4 |
| 1147 | | | | | | | | | | | AFD pattern 4:3 Type 5 | AFD 4:3 Type5 |
| 1148 | | | | | | | | | | | AFD pattern 4:3 Type 6 | AFD 4:3 Type6 |
| 1149 | | | | | | | | | | | AFD pattern 4:3 Type 7 | AFD 4:3 Type7 |
| 1150 | | | | | | | | | | | AFD pattern 4:3 Type 8 | AFD 4:3 Type8 |
| 1151 | 31.47 | 59.94 | 27.000 | 720 × 480 | Prog | N | N | ANALOG | YPbPr | EIA480p59-YCC-12 | AFD pattern 4:3 Type 9 | AFD 4:3 Type9 |
| 1152 | 33.72 | 59.94 | 74.176 | 1920 × 1080 | Int | P | P | HDTV1080 | YPbPr | EIA1080i59-YCC-12 | AFD pattern 4:3 Type 10 | AFD 4:3 Type10 |
| 1153 | 44.96 | 59.94 | 74.176 | 1280 × 720 | Prog | P | P | HDTV720 | YPbPr | EIA720p59-YCC-12 | AFD pattern 4:3 Type 11 | AFD 4:3 Type11 |
| 1154 | 31.47 | 59.94 | 25.175 | 640 × 480 | Prog | N | N | ANALOG | RGB | EIA480p59-YCC-12 | AFD pattern 4:3 Type 12 | AFD 4:3 Type12 |
| 1155 | 67.43 | 59.94 | 148.352 | 1920 × 1080 | Prog | P | P | HDTV1080 | YPbPr | EIA1080p59-YCC-12 | AFD pattern 16:9 Type 0 | AFD 16:9 Type0 |
| 1156 | 15.73 | 59.94 | 27.000 | 1440 × 480 | Int | N | N | ANALOG | YPbPr | EIA480i59-YCC-12 | AFD pattern 16:9 Type 1 | AFD 16:9 Type1 |
| 1157 | 27.00 | 24.00 | 74.250 | 1920 × 1080 | Prog | P | P | HDTV1080 | YPbPr | EIA1080p24-YCC-12 | AFD pattern 16:9 Type 2 | AFD 16:9 Type2 |
| 1158 | 31.25 | 50.00 | 27.000 | 720 × 576 | Prog | N | N | ANALOG | YPbPr | EIA576p50-YCC-12 | AFD pattern 16:9 Type 3 | AFD 16:9 Type3 |
| 1159 | 28.13 | 50.00 | 74.250 | 1920 × 1080 | Int | P | P | HDTV1080 | YPbPr | EIA1080i50-YCC-12 | AFD pattern 16:9 Type 4 | AFD 16:9 Type4 |
| 1160 | 37.50 | 50.00 | 74.250 | 1280 × 720 | Prog | P | P | HDTV720 | YPbPr | EIA720p50-YCC-12 | AFD pattern 16:9 Type 5 | AFD 16:9 Type5 |

Internal program data: No. 1141 to 1160

| Program No. | Horizontal frequency [KHz] | Vertical frequency [Hz] | Dot clock frequency [MHz] | No. of display dots (H × V) | Int / Prog | Sync polarity | | SyncType | Color difference | Timing data name | Pattern data | Pattern data name |
|-------------|----------------------------|-------------------------|---------------------------|-----------------------------|------------|---------------|---|----------|------------------|-------------------|--------------------------|-------------------|
| | | | | | | H | V | | | | | |
| 1161 | 56.25 | 50.00 | 148.500 | 1920 × 1080 | Prog | P | P | HDTV1080 | YPbPr | EIA1080p50-YCC-12 | AFD pattern 16:9 Type 6 | AFD 16:9 Type6 |
| 1162 | 15.63 | 50.00 | 27.000 | 1440 × 576 | Int | N | N | ANALOG | YPbPr | EIA576i50-YCC-12 | AFD pattern 16:9 Type 7 | AFD 16:9 Type7 |
| 1163 | 28.13 | 25.00 | 74.250 | 1920 × 1080 | Prog | P | P | HDTV1080 | YPbPr | EIA1080p25-YCC-12 | AFD pattern 16:9 Type 8 | AFD 16:9 Type8 |
| 1164 | | | | | | | | | | | AFD pattern 16:9 Type 9 | AFD 16:9 Type9 |
| 1165 | | | | | | | | | | | AFD pattern 16:9 Type 10 | AFD 16:9 Type10 |
| 1166 | | | | | | | | | | | AFD pattern 16:9 Type 11 | AFD 16:9 Type11 |
| 1167 | | | | | | | | | | | AFD pattern 16:9 Type 12 | AFD 16:9 Type12 |
| 1168 | | | | | | | | | | | | |
| 1169 | | | | | | | | | | | | |
| 1170 | | | | | | | | | | | | |
| 1171 | 31.47 | 59.94 | 27.000 | 720 × 480 | Prog | N | N | ANALOG | YPbPr | EIA480p59-RGB-12 | | |
| 1172 | 33.72 | 59.94 | 74.176 | 1920 × 1080 | Int | P | P | HDTV1080 | YPbPr | EIA1080i59-RGB-12 | | |
| 1173 | 44.96 | 59.94 | 74.176 | 1280 × 720 | Prog | P | P | HDTV720 | YPbPr | EIA720p59-RGB-12 | | |
| 1174 | 31.47 | 59.94 | 25.175 | 640 × 480 | Prog | N | N | ANALOG | RGB | EIA480p59-RGB-12 | | |
| 1175 | 67.43 | 59.94 | 148.352 | 1920 × 1080 | Prog | P | P | HDTV1080 | YPbPr | EIA1080p59-RGB-12 | | |
| 1176 | 15.73 | 59.94 | 27.000 | 1440 × 480 | Int | N | N | ANALOG | YPbPr | EIA480i59-RGB-12 | | |
| 1177 | 27.00 | 24.00 | 74.250 | 1920 × 1080 | Prog | P | P | HDTV1080 | YPbPr | EIA1080p24-RGB-12 | | |
| 1178 | 31.25 | 50.00 | 27.000 | 720 × 576 | Prog | N | N | ANALOG | YPbPr | EIA576p50-RGB-12 | | |
| 1179 | 28.13 | 50.00 | 74.250 | 1920 × 1080 | Int | P | P | HDTV1080 | YPbPr | EIA1080i50-RGB-12 | | |
| 1180 | 37.50 | 50.00 | 74.250 | 1280 × 720 | Prog | P | P | HDTV720 | YPbPr | EIA720p50-RGB-12 | | |

Internal program data: No. 1161 to 1180



| Program No. | Horizontal frequency [KHz] | Vertical frequency [Hz] | Dot clock frequency [MHz] | No. of display dots (H × V) | Int / Prog | Sync polarity | | SyncType | Color difference | Timing data name | Pattern data | Pattern data name |
|-------------|----------------------------|-------------------------|---------------------------|-----------------------------|------------|---------------|---|----------|------------------|----------------------|--------------|-------------------|
| | | | | | | H | V | | | | | |
| 1181 | 56.25 | 50.00 | 148.500 | 1920 × 1080 | Prog | P | P | HDTV1080 | YPbPr | EIA1080p50-RGB-12 | | |
| 1182 | 15.63 | 50.00 | 27.000 | 1440 × 576 | Int | N | N | ANALOG | YPbPr | EIA576i50-RGB-12 | | |
| 1183 | 28.13 | 25.00 | 74.250 | 1920 × 1080 | Prog | P | P | HDTV1080 | YPbPr | EIA1080p25-RGB-12 | | |
| 1184 | | | | | | | | | | | | |
| 1185 | | | | | | | | | | | | |
| 1186 | | | | | | | | | | | | |
| 1187 | | | | | | | | | | | | |
| 1188 | | | | | | | | | | | | |
| 1189 | | | | | | | | | | | | |
| 1190 | | | | | | | | | | | | |
| 1191 | 33.72 | 59.94 | 74.176 | 1920 × 1080 | Int | P | P | HDTV1080 | YPbPr | EIA1080i59-YCC-12-xv | | |
| 1192 | 44.96 | 59.94 | 74.176 | 1280 × 720 | Prog | P | P | HDTV720 | YPbPr | EIA720p59-YCC-12-xv | | |
| 1193 | 67.43 | 59.94 | 148.352 | 1920 × 1080 | Prog | P | P | HDTV1080 | YPbPr | EIA1080p59-YCC-12-xv | | |
| 1194 | 27.00 | 24.00 | 74.250 | 1920 × 1080 | Prog | P | P | HDTV1080 | YPbPr | EIA1080p24-YCC-12-xv | | |
| 1195 | 28.13 | 50.00 | 74.250 | 1920 × 1080 | Int | P | P | HDTV1080 | YPbPr | EIA1080i50-YCC-12-xv | | |
| 1196 | 37.50 | 50.00 | 74.250 | 1280 × 720 | Prog | P | P | HDTV720 | YPbPr | EIA720p50-YCC-12-xv | | |
| 1197 | 56.25 | 50.00 | 148.500 | 1920 × 1080 | Prog | P | P | HDTV1080 | YPbPr | EIA1080p50-YCC-12-xv | | |
| 1198 | 28.13 | 25.00 | 74.250 | 1920 × 1080 | Prog | P | P | HDTV1080 | YPbPr | EIA1080p25-YCC-12-xv | | |
| 1199 | | | | | | | | | | | | |
| 1200 | | | | | | | | | | | | |

Internal program data: No. 1181 to 1200

| Program No. | Horizontal frequency [KHz] | Vertical frequency [Hz] | Dot clock frequency [MHz] | No. of display dots (H × V) | Int / Prog | Sync polarity | | SyncType | Color difference | Timing data name | Pattern data | Pattern data name |
|-------------|----------------------------|-------------------------|---------------------------|-----------------------------|------------|---------------|---|----------|------------------|------------------|-----------------------|-------------------|
| | | | | | | H | V | | | | | |
| 1201 | | | | | | | | | | | 1-dot × 1-dot checker | Checker 1dot*1dot |
| 1202 | | | | | | | | | | | 2-dot × 1-dot checker | Checker 2dot*1dot |
| 1203 | | | | | | | | | | | 4-dot × 1-dot checker | Checker 4dot*1dot |
| 1204 | | | | | | | | | | | 4 × 4 checker | Checker 4*4 |
| 1205 | | | | | | | | | | | 8 × 8 checker | Checker 8*8 |
| 1206 | | | | | | | | | | | Sub-pixel checker | SubPixel |
| 1207 | | | | | | | | | | | | |
| 1208 | | | | | | | | | | | | |
| 1209 | | | | | | | | | | | | |
| 1210 | | | | | | | | | | | | |
| 1211 | | | | | | | | | | | | |
| 1212 | | | | | | | | | | | | |
| 1213 | | | | | | | | | | | | |
| 1214 | | | | | | | | | | | | |
| 1215 | | | | | | | | | | | | |
| 1216 | | | | | | | | | | | | |
| 1217 | | | | | | | | | | | | |
| 1218 | | | | | | | | | | | | |
| 1219 | | | | | | | | | | | | |
| 1220 | | | | | | | | | | | | |

Internal program data: No. 1201 to 1220



| Program No. | Horizontal frequency [KHz] | Vertical frequency [Hz] | Dot clock frequency [MHz] | No. of display dots (H × V) | Int / Prog | Sync polarity | | SyncType | Color difference | Timing data name | Pattern data | Pattern data name |
|-------------|----------------------------|-------------------------|---------------------------|-----------------------------|------------|---------------|---|----------|------------------|------------------|---|----------------------|
| | | | | | | H | V | | | | | |
| 1221 | | | | | | | | | | | Character list 7 × 9 | Character List 7*9 |
| 1222 | | | | | | | | | | | Character H (5 × 7 / 10 × 14) | Character all H5*7 |
| 1223 | | | | | | | | | | | Character H (7 × 9 / 14 × 18) | Character all H7*9 |
| 1224 | | | | | | | | | | | Character H (16 × 16 / 32 × 32) | Character all H16*16 |
| 1225 | | | | | | | | | | | Corner & center character H (5 × 7 / 10 × 14) | Chara Cor&Cen H5*7 |
| 1226 | | | | | | | | | | | Corner & center character H (7 × 9 / 14 × 18) | Chara Cor&Cen H7*9 |
| 1227 | | | | | | | | | | | Corner & center character H (16 × 16 / 32 × 32) | Chara Cor&Cen H16*16 |
| 1228 | | | | | | | | | | | Chinese character "BI" (7 × 9 / 64 × 64) | Chara all Chinese |
| 1229 | | | | | | | | | | | Character "me" 18 × 18 | Chara all me |
| 1230 | | | | | | | | | | | Character "me" 18 × 18 (VESA specifications) | Chara all me (VESA) |
| 1231 | | | | | | | | | | | | |
| 1232 | | | | | | | | | | | | |
| 1233 | | | | | | | | | | | | |
| 1234 | | | | | | | | | | | | |
| 1235 | | | | | | | | | | | | |
| 1236 | | | | | | | | | | | | |
| 1237 | | | | | | | | | | | | |
| 1238 | | | | | | | | | | | | |
| 1239 | | | | | | | | | | | | |
| 1240 | | | | | | | | | | | | |

Internal program data: No. 1221 to 1240

| Program No. | Horizontal frequency [KHz] | Vertical frequency [Hz] | Dot clock frequency [MHz] | No. of display dots (H × V) | Int / Prog | Sync polarity | | SyncType | Color difference | Timing data name | Pattern data | Pattern data name |
|-------------|----------------------------|-------------------------|---------------------------|-----------------------------|------------|---------------|---|----------|------------------|------------------|------------------------|-------------------|
| | | | | | | H | V | | | | | |
| 1241 | | | | | | | | | | | Crosshatch pattern | Cross Hatch |
| 1242 | | | | | | | | | | | | |
| 1243 | | | | | | | | | | | | |
| 1244 | | | | | | | | | | | | |
| 1245 | | | | | | | | | | | | |
| 1246 | | | | | | | | | | | | |
| 1247 | | | | | | | | | | | | |
| 1248 | | | | | | | | | | | | |
| 1249 | | | | | | | | | | | | |
| 1250 | | | | | | | | | | | | |
| 1251 | | | | | | | | | | | H=20, V=20 dot pattern | Dot H=20,V=20 |
| 1252 | | | | | | | | | | | H=60, V=60 dot pattern | Dot H=60,V=60 |
| 1253 | | | | | | | | | | | | |
| 1254 | | | | | | | | | | | | |
| 1255 | | | | | | | | | | | | |
| 1256 | | | | | | | | | | | | |
| 1257 | | | | | | | | | | | | |
| 1258 | | | | | | | | | | | | |
| 1259 | | | | | | | | | | | | |
| 1260 | | | | | | | | | | | | |

Internal program data: No. 1241 to 1260



| Program No. | Horizontal frequency [KHz] | Vertical frequency [Hz] | Dot clock frequency [MHz] | No. of display dots (H × V) | Int / Prog | Sync polarity | | SyncType | Color difference | Timing data name | Pattern data | Pattern data name |
|-------------|----------------------------|-------------------------|---------------------------|-----------------------------|------------|---------------|---|----------|------------------|------------------|-----------------------|-------------------|
| | | | | | | H | V | | | | | |
| 1261 | | | | | | | | | | | Edge marker pattern | Edge Marker |
| 1262 | | | | | | | | | | | Diagonal line pattern | Diagonal Line |
| 1263 | | | | | | | | | | | Center marker pattern | Center Marker |
| 1264 | | | | | | | | | | | | |
| 1265 | | | | | | | | | | | | |
| 1266 | | | | | | | | | | | | |
| 1267 | | | | | | | | | | | | |
| 1268 | | | | | | | | | | | | |
| 1269 | | | | | | | | | | | | |
| 1270 | | | | | | | | | | | | |
| 1271 | | | | | | | | | | | Circle (Format 0) | Circle Format0 |
| 1272 | | | | | | | | | | | Circle (Format 1) | Circle Format1 |
| 1273 | | | | | | | | | | | Circle (Format 2) | Circle Format2 |
| 1274 | | | | | | | | | | | Circle (Format 3) | Circle Format3 |
| 1275 | | | | | | | | | | | Circle (Format 4) | Circle Format4 |
| 1276 | | | | | | | | | | | Circle (Format 5) | Circle Format5 |
| 1277 | | | | | | | | | | | Circle (Format 6) | Circle Format6 |
| 1278 | | | | | | | | | | | | |
| 1279 | | | | | | | | | | | | |
| 1280 | | | | | | | | | | | | |

Internal program data: No. 1261 to 1280

| Program No. | Horizontal frequency [KHz] | Vertical frequency [Hz] | Dot clock frequency [MHz] | No. of display dots (H × V) | Int / Prog | Sync polarity | | SyncType | Color difference | Timing data name | Pattern data | Pattern data name |
|-------------|----------------------------|-------------------------|---------------------------|-----------------------------|------------|---------------|---|----------|------------------|------------------|-----------------|-------------------|
| | | | | | | H | V | | | | | |
| 1281 | | | | | | | | | | | Burst L → R | Burst L->R |
| 1282 | | | | | | | | | | | Burst L ← R | Burst L<-R |
| 1283 | | | | | | | | | | | Burst L ← C → R | Burst L<-C->R |
| 1284 | | | | | | | | | | | Burst L → C ← R | Burst L->C<-R |
| 1285 | | | | | | | | | | | Burst T → B | Burst T->B |
| 1286 | | | | | | | | | | | Burst T ← B | Burst T<-B |
| 1287 | | | | | | | | | | | Burst T ← C → B | Burst T<-C->B |
| 1288 | | | | | | | | | | | Burst T → C ← B | Burst T->C<-B |
| 1289 | | | | | | | | | | | | |
| 1290 | | | | | | | | | | | | |
| 1291 | | | | | | | | | | | | |
| 1292 | | | | | | | | | | | | |
| 1293 | | | | | | | | | | | | |
| 1294 | | | | | | | | | | | | |
| 1295 | | | | | | | | | | | | |
| 1296 | | | | | | | | | | | | |
| 1297 | | | | | | | | | | | | |
| 1298 | | | | | | | | | | | | |
| 1299 | | | | | | | | | | | | |
| 1300 | | | | | | | | | | | | |

Internal program data: No. 1281 to 1300



| Program No. | Horizontal frequency [KHz] | Vertical frequency [Hz] | Dot clock frequency [MHz] | No. of display dots (H × V) | Int / Prog | Sync polarity | | SyncType | Color difference | Timing data name | Pattern data | Pattern data name |
|-------------|----------------------------|-------------------------|---------------------------|-----------------------------|------------|---------------|---|----------|------------------|------------------|---------------------------------|----------------------|
| | | | | | | H | V | | | | | |
| 1301 | | | | | | | | | | | 1 window | 1 Window |
| 1302 | | | | | | | | | | | 4 windows | 4 Window |
| 1303 | | | | | | | | | | | 9 windows | 9 Window |
| 1304 | | | | | | | | | | | 16 windows | 16 Window |
| 1305 | | | | | | | | | | | 25 windows | 25 Window |
| 1306 | | | | | | | | | | | 64 windows | 64 Window |
| 1307 | | | | | | | | | | | 3 windows, vertical direction | 3 Window in V Row |
| 1308 | | | | | | | | | | | 3 windows, horizontal direction | 3 Window in H Row |
| 1309 | | | | | | | | | | | Window user position/center | User pos-Center |
| 1310 | | | | | | | | | | | Window user position/corner | User pos-Corner |
| 1311 | | | | | | | | | | | Window scroll: Left | Window Scroll:Left |
| 1312 | | | | | | | | | | | Window scroll: Right | Window Scroll:Right |
| 1313 | | | | | | | | | | | Window scroll: Up | Window Scroll:Up |
| 1314 | | | | | | | | | | | Window scroll: Down | Window Scroll:Down |
| 1315 | | | | | | | | | | | Window scroll: Top left | Window Scroll:L Up |
| 1316 | | | | | | | | | | | Window scroll: Bottom left | Window Scroll:L Down |
| 1317 | | | | | | | | | | | Window scroll: Top right | Window Scroll:R Up |
| 1318 | | | | | | | | | | | Window scroll: Bottom right | Window Scroll:R Down |
| 1319 | | | | | | | | | | | Window scroll L ↔ R | Window Scroll:L<->R |
| 1320 | | | | | | | | | | | Window scroll: Up ↔ down | Window Scroll:Up<->D |

Internal program data: No. 1301 to 1320

| Program No. | Horizontal frequency [KHz] | Vertical frequency [Hz] | Dot clock frequency [MHz] | No. of display dots (H × V) | Int / Prog | Sync polarity | | SyncType | Color difference | Timing data name | Pattern data | Pattern data name |
|-------------|----------------------------|-------------------------|---------------------------|-----------------------------|------------|---------------|---|----------|------------------|------------------|-----------------------|----------------------|
| | | | | | | H | V | | | | | |
| 1321 | | | | | | | | | | | Window scroll: Random | Window Scroll:Random |
| 1322 | | | | | | | | | | | Window + monoscope | Window & Monoscope |
| 1323 | | | | | | | | | | | Window: 2-3 pull-down | Window 2-3pull down |
| 1324 | | | | | | | | | | | 0% window | Window HV Size 0% |
| 1325 | | | | | | | | | | | 5% window | Window HV Size 5% |
| 1326 | | | | | | | | | | | 10% window | Window HV Size 10% |
| 1327 | | | | | | | | | | | 20% window | Window HV Size 20% |
| 1328 | | | | | | | | | | | 30% window | Window HV Size 30% |
| 1329 | | | | | | | | | | | 40% window | Window HV Size 40% |
| 1330 | | | | | | | | | | | 50% window | Window HV Size 50% |
| 1331 | | | | | | | | | | | 60% window | Window HV Size 60% |
| 1332 | | | | | | | | | | | 70% window | Window HV Size 70% |
| 1333 | | | | | | | | | | | 80% window | Window HV Size 80% |
| 1334 | | | | | | | | | | | 90% window | Window HV Size 90% |
| 1335 | | | | | | | | | | | 100% window | Window HV Size 100% |
| 1336 | | | | | | | | | | | Window: Flicker 1 V | Window Flicker 1 V |
| 1337 | | | | | | | | | | | Window: Flicker 2 V | Window Flicker 2 V |
| 1338 | | | | | | | | | | | Window: Flicker 3 V | Window Flicker 3 V |
| 1339 | | | | | | | | | | | Window: Flicker 4 V | Window Flicker 4 V |
| 1340 | | | | | | | | | | | Window: Level Up | Window Auto Level |
| 1341 | | | | | | | | | | | Bar: L → R | Moving Bar |

* Program numbers 1342 to 1400 are not registered.

Internal program data: No. 1321 to 1341

| Program No. | Horizontal frequency [KHz] | Vertical frequency [Hz] | Dot clock frequency [MHz] | No. of display dots (H × V) | Int / Prog | Sync polarity | | SyncType | Color difference | Timing data name | Pattern data | Pattern data name |
|-------------|----------------------------|-------------------------|---------------------------|-----------------------------|------------|---------------|---|----------|------------------|--------------------|---|--------------------------|
| | | | | | | H | V | | | | | |
| 1401 | 31.47 | 59.94 | 27.000 | 720 × 483 | Prog | N | N | ANALOG | YPbPr | NTSC PROG. | 256-block color | 256-Color Block |
| 1402 | 31.47 | 59.94 | 27.000 | 720 × 483 | Prog | N | N | ANALOG | YPbPr | NTSC PROG. W | 64-gradation block gray (white → black) | 64Gray Block White-> |
| 1403 | 31.47 | 59.94 | 27.000 | 720 × 483 | Prog | N | N | ANALOG | YPbPr | NTSC PROG. LB | 64-gradation block gray (black → white) | 64Gray Block Black-> |
| 1404 | 33.72 | 59.94 | 74.176 | 1920 × 1080 | Int | P | P | HDTV1080 | YPbPr | 1920 × 1080@59.94i | 8 color bars & 16 gray scale | 8-Color & 16-Gray |
| 1405 | 33.75 | 60.00 | 74.250 | 1920 × 1080 | Int | P | P | HDTV1080 | YPbPr | 1920 × 1080@60i | Gray scale & crosshatch | Gray & Cross Hatch |
| 1406 | 67.43 | 59.94 | 148.352 | 1920 × 1080 | Prog | P | P | HDTV1080 | YPbPr | 1920 × 1080@59.94p | Color bar & crosshatch | Color & Cross Hatch |
| 1407 | 67.50 | 60.00 | 148.500 | 1920 × 1080 | Prog | P | P | HDTV1080 | YPbPr | 1920 × 1080@60p | Color temperature | Color Temperature |
| 1408 | 44.96 | 59.94 | 74.176 | 1280 × 720 | Prog | P | P | HDTV720 | YPbPr | 1280 × 720@59.94p | Pairing | Pairing |
| 1409 | 45.00 | 60.00 | 74.250 | 1280 × 720 | Prog | P | P | HDTV720 | YPbPr | 1280 × 720@60p | Crosshatch & circle & gray | Cross&Circle&Gray |
| 1410 | 15.73 | 59.94 | 13.500 | 712 × 484 | Int | N | N | NTSC | YPbPr | NTSC-J 4:3 | Crosshatch & circle & color bar & character | Cross&Circle&Color&H |
| 1411 | | | | | | | | | | | Circle & line | Circle & Line |
| 1412 | | | | | | | | | | | Character edge (H) | H-Character Line |
| 1413 | | | | | | | | | | | Character edge (O) | O-Character Line |
| 1414 | | | | | | | | | | | Crosstalk (width 90%) | Cross Talk W=90% |
| 1415 | | | | | | | | | | | Sine wave scroll | Sign Wave Scroll |
| 1416 | 31.25 | 50.00 | 27.000 | 720 × 576 | Prog | N | N | ANALOG | YPbPr | PAL PROG. | 10 steps & 1/10 MHz | 1/10 MHz × 10step |
| 1417 | 31.25 | 50.00 | 27.000 | 720 × 576 | Prog | N | N | ANALOG | YPbPr | PAL PROG. W | Gamma correction ramp $w\gamma = 2.5$ | Gamma Ramp $w\gamma=2.5$ |
| 1418 | 31.25 | 50.00 | 27.000 | 720 × 576 | Prog | N | N | ANALOG | YPbPr | PAL PROG. LB | Gamma correction ramp $\gamma = 2.0$ | Gamma Ramp $r=2.0$ |
| 1419 | 28.13 | 50.00 | 74.250 | 1920 × 1080 | Int | P | P | HDTV1080 | YPbPr | 1920 × 1080@50i | Gamma correction ramp $\gamma = 0.5$ | Gamma Ramp $r=0.5$ |
| 1420 | 56.25 | 50.00 | 148.500 | 1920 × 1080 | Prog | P | P | HDTV1080 | YPbPr | 1920 × 1080@50p | SMPTE RP-27.1 | SMPTE RP-27.1 |

Internal program data: No. 1401 to 1420

| Program No. | Horizontal frequency [KHz] | Vertical frequency [Hz] | Dot clock frequency [MHz] | No. of display dots (H × V) | Int / Prog | Sync polarity | | SyncType | Color difference | Timing data name | Pattern data | Pattern data name |
|-------------|----------------------------|-------------------------|---------------------------|-----------------------------|------------|---------------|---|----------|------------------|---------------------|--|----------------------|
| | | | | | | H | V | | | | | |
| 1421 | 37.50 | 50.00 | 74.250 | 1280 × 720 | Prog | P | P | HDTV720 | YPbPr | 1280 × 720@50p | ITC pattern 9 windows | ITC 9-Window |
| 1422 | 15.63 | 50.00 | 13.500 | 702 × 574 | Int | N | N | PAL | YPbPr | PAL 4:3 | ITC pattern crosshatch & marker | ITC Cross & Marker |
| 1423 | | | | | | | | | | | ITC pattern H character | ITC H-Character |
| 1424 | | | | | | | | | | | 64 gray + RGBW color bars superimposed | 64-Gray & RGBW-Color |
| 1425 | | | | | | | | | | | Gray scale + circle | Gray & Circle |
| 1426 | 33.72 | 29.97 | 74.176 | 1920 × 1080 | Prog | P | P | HDTV1080 | YPbPr | 1920 × 1080@29.97p | Corner & center point marker | Corner&Center Marker |
| 1427 | 33.75 | 30.00 | 74.250 | 1920 × 1080 | Prog | P | P | HDTV1080 | YPbPr | 1920 × 1080@30p | Crosstalk (width 60%) | Cross Talk W=60% |
| 1428 | 26.97 | 23.98 | 74.176 | 1920 × 1080 | Prog | P | P | HDTV1080 | YPbPr | 1920 × 1080@23.98p | Song of Youth | SpeakerCheck / Youth |
| 1429 | 27.00 | 24.00 | 74.250 | 1920 × 1080 | Prog | P | P | HDTV1080 | YPbPr | 1920 × 1080@24p | Crosshatch & marker | Cross & Marker 1 |
| 1430 | 28.13 | 25.00 | 74.250 | 1920 × 1080 | Prog | P | P | HDTV1080 | YPbPr | 1920 × 1080@25p | 256-color block color "Color" letters | 256-Color <Color> |
| 1431 | 33.72 | 59.94 | 74.176 | 1920 × 1080 | Int | P | P | HDTV1080 | YPbPr | 1920 × 1080@29.97sf | Random 256-color color bar | 256-Color Random |
| 1432 | 33.75 | 60.00 | 74.250 | 1920 × 1080 | Int | P | P | HDTV1080 | YPbPr | 1920 × 1080@30sf | 256-step gray scale & 7 color bars | 256-Gray & 7-Color |
| 1433 | 26.97 | 47.96 | 74.176 | 1920 × 1080 | Int | P | P | HDTV1080 | YPbPr | 1920 × 1080@23.98sf | Center, corner window & edge marker | Corner&Center Window |
| 1434 | 27.00 | 48.00 | 74.250 | 1920 × 1080 | Int | P | P | HDTV1080 | YPbPr | 1920 × 1080@24sf | 3-step gray scale window | 3gray-Window |
| 1435 | 28.13 | 50.00 | 74.250 | 1920 × 1080 | Int | P | P | HDTV1080 | YPbPr | 1920 × 1080@25sf | 19 × 15 crosshatch & marker | Cross & Marker 2 |
| 1436 | 22.48 | 29.97 | 74.176 | 1280 × 720 | Prog | P | P | HDTV720 | YPbPr | 1280 × 720@29.97p | Crosshatch & circle | Circle & Cross Hatch |
| 1437 | 22.50 | 30.00 | 74.250 | 1280 × 720 | Prog | P | P | HDTV720 | YPbPr | 1280 × 720@30p | Checkerboard & window | 1dotChecker & Window |
| 1438 | 17.98 | 23.98 | 74.176 | 1280 × 720 | Prog | P | P | HDTV720 | YPbPr | 1280 × 720@23.98p | ANSI pattern (Setup) | ANSI Setup |
| 1439 | 18.00 | 24.00 | 74.250 | 1280 × 720 | Prog | P | P | HDTV720 | YPbPr | 1280 × 720@24p | ANSI pattern (Contrast) | ANSI Contrast |
| 1440 | 18.75 | 25.00 | 74.250 | 1280 × 720 | Prog | P | P | HDTV720 | YPbPr | 1280 × 720@25p | ANSI pattern (9Point) | ANSI 9-Point |

Internal program data: No. 1421 to 1440



| Program No. | Horizontal frequency [KHz] | Vertical frequency [Hz] | Dot clock frequency [MHz] | No. of display dots (H × V) | Int / Prog | Sync polarity | | SyncType | Color difference | Timing data name | Pattern data | Pattern data name |
|-------------|----------------------------|-------------------------|---------------------------|-----------------------------|------------|---------------|---|----------------|------------------|--------------------|---------------------------------------|---------------------|
| | | | | | | H | V | | | | | |
| 1441 | | | | | | | | | | | ANSI pattern (Hor Reso) | ANSI H-Resolution |
| 1442 | | | | | | | | | | | ANSI pattern (Ver Reso) | ANSI V-Resolution |
| 1443 | | | | | | | | | | | Gamma correction ramp $\gamma = 2.2$ | Gamma Ramp $r=2.2$ |
| 1444 | | | | | | | | | | | Gamma correction ramp $\gamma = 0.45$ | Gamma Ramp $r=0.45$ |
| 1445 | | | | | | | | | | | Limited ramp in horizontal direction | |
| 1446 | | | | | | | | | | | Limited ramp in vertical direction | |
| 1447 | | | | | | | | | | | | |
| 1448 | | | | | | | | | | | | |
| 1449 | | | | | | | | | | | | |
| 1450 | | | | | | | | | | | | |
| 1451 | 33.72 | 59.94 | 74.176 | 1920 × 1035 | Int | P | P | HDTV1080 | YPbPr | 1920 × 1035@59.94i | | |
| 1452 | 33.75 | 60.00 | 74.250 | 1920 × 1035 | Int | P | P | HDTV1080 | YPbPr | 1920 × 1035@60i | | |
| 1453 | 31.25 | 50.00 | 74.250 | 1920 × 1080 | Int | N | N | HDTV1250 | YPbPr | SMPTE295Mi | | |
| 1454 | 62.50 | 50.00 | 148.500 | 1920 × 1080 | Prog | N | N | HDTV1250 | YPbPr | SMPTE295Mp | | |
| 1455 | 31.25 | 50.00 | 48.000 | 1280 × 1152 | Int | P | P | HDTV1152 (AUS) | YPbPr | AUS 1152i | | |
| 1456 | 31.25 | 50.00 | 72.000 | 1920 × 1080 | Int | P | N | HDTV1250 (AUS) | YPbPr | AUS 1080i | | |
| 1457 | | | | | | | | | | | | |
| 1458 | | | | | | | | | | | | |
| 1459 | | | | | | | | | | | | |
| 1460 | | | | | | | | | | | | |

* Program numbers 1461 to 1480 are not registered.

Internal program data: No. 1441 to 1460

| Program No. | Horizontal frequency [KHz] | Vertical frequency [Hz] | Dot clock frequency [MHz] | No. of display dots (HxV) | Int / Prog | Sync polarity | | SyncType | Color difference | Timing data name | Pattern data | Pattern data name |
|-------------|----------------------------|-------------------------|---------------------------|---------------------------|------------|---------------|---|----------|------------------|------------------|----------------|-------------------|
| | | | | | | H | V | | | | | |
| 1481 | | | | | | | | | | | Motion blur 1 | Motion Blur1 |
| 1482 | | | | | | | | | | | Motion blur 2 | Motion Blur2 |
| 1483 | | | | | | | | | | | Motion blur 3 | Motion Blur3 |
| 1484 | | | | | | | | | | | Motion blur 4 | Motion Blur4 |
| 1485 | | | | | | | | | | | Motion blur 5 | Motion Blur5 |
| 1486 | | | | | | | | | | | Motion blur 6 | Motion Blur6 |
| 1487 | | | | | | | | | | | Motion blur 7 | Motion Blur7 |
| 1488 | | | | | | | | | | | Motion blur 8 | Motion Blur8 |
| 1489 | | | | | | | | | | | Motion blur 9 | Motion Blur9 |
| 1490 | | | | | | | | | | | Motion blur 10 | Motion Blur10 |
| 1491 | | | | | | | | | | | Motion blur 11 | Motion Blur11 |
| 1492 | | | | | | | | | | | Motion blur 12 | Motion Blur12 |
| 1493 | | | | | | | | | | | | |
| 1494 | | | | | | | | | | | | |
| 1495 | | | | | | | | | | | | |
| 1496 | | | | | | | | | | | | |
| 1497 | | | | | | | | | | | | |
| 1498 | | | | | | | | | | | | |
| 1499 | | | | | | | | | | | | |
| 1500 | | | | | | | | | | | | |

Internal program data. No. 1481 to 1500



| Program No. | Horizontal frequency [KHz] | Vertical frequency [Hz] | Dot clock frequency [MHz] | No. of display dots (H × V) | Int / Prog | Sync polarity | | SyncType | Color difference | Timing data name | Pattern data | Pattern data name |
|-------------|----------------------------|-------------------------|---------------------------|-----------------------------|------------|---------------|---|----------|------------------|------------------|--------------|-------------------|
| | | | | | | H | V | | | | | |
| 1501 | 15.73 | 59.94 | 13.500 | 712 × 484 | Int | N | N | NTSC | YPbPr | NTSC-J 4:3 | Timing data | Timing Data |
| 1502 | 15.73 | 59.94 | 13.500 | 712 × 484 | Int | N | N | NTSC | YPbPr | NTSC-J 16:9 | | |
| 1503 | 15.73 | 59.94 | 13.500 | 712 × 484 | Int | N | N | NTSC | YPbPr | NTSC-J LB | | |
| 1504 | 15.63 | 50.00 | 13.500 | 702 × 574 | Int | N | N | PAL | YPbPr | PAL 4:3 | | |
| 1505 | 15.63 | 50.00 | 13.500 | 702 × 574 | Int | N | N | PAL | YPbPr | PAL 16:9 | | |
| 1506 | 15.63 | 50.00 | 13.500 | 702 × 574 | Int | N | N | PAL | YPbPr | PAL LB | | |
| 1507 | 15.63 | 50.00 | 13.500 | 702 × 574 | Int | N | N | SECAM | YPbPr | SECAM 4:3 | | |
| 1508 | 15.63 | 50.00 | 13.500 | 702 × 574 | Int | N | N | SECAM | YPbPr | SECAM 16:9 | | |
| 1509 | 15.63 | 50.00 | 13.500 | 702 × 574 | Int | N | N | SECAM | YPbPr | SECAM LB | | |
| 1510 | 15.73 | 59.94 | 13.500 | 712 × 484 | Int | N | N | NTSC-M | YPbPr | NTSC-M | | |
| 1511 | 15.73 | 59.94 | 13.500 | 712 × 484 | Int | N | N | NTSC-443 | YPbPr | NTSC-443 | | HDCP On Screen |
| 1512 | 15.73 | 59.94 | 13.500 | 712 × 484 | Int | N | N | PAL-M | YPbPr | PAL-M | | |
| 1513 | 15.73 | 59.94 | 13.500 | 712 × 484 | Int | N | N | PAL-60 | YPbPr | PAL-60 | | |
| 1514 | 15.63 | 50.00 | 13.500 | 718 × 572 | Int | N | N | PAL-N | YPbPr | PAL-N | | |
| 1515 | 15.63 | 50.00 | 13.500 | 702 × 574 | Int | N | N | PAL-Nc | YPbPr | PAL-Nc | | |
| 1516 | | | | | | | | | | | | |
| 1517 | | | | | | | | | | | | |
| 1518 | | | | | | | | | | | | |
| 1519 | | | | | | | | | | | | |
| 1520 | | | | | | | | | | | | |

Internal program data: No. 1501 to 1520

| Program No. | Horizontal frequency [KHz] | Vertical frequency [Hz] | Dot clock frequency [MHz] | No. of display dots (H × V) | Int / Prog | Sync polarity | | SyncType | Color difference | Timing data name | Pattern data | Pattern data name |
|-------------|----------------------------|-------------------------|---------------------------|-----------------------------|------------|---------------|---|----------|------------------|----------------------|---------------------------|-------------------|
| | | | | | | H | V | | | | | |
| 1521 | 15.73 | 59.94 | 13.500 | 712 × 484 | Int | N | N | NTSC-M | YPbPr | Closed Caption CC1 | | HDMI Packet Data |
| 1522 | 15.73 | 59.94 | 13.500 | 712 × 484 | Int | N | N | NTSC-M | YPbPr | Closed Caption CC2 | | |
| 1523 | 15.73 | 59.94 | 13.500 | 712 × 484 | Int | N | N | NTSC-M | YPbPr | Closed Caption Text1 | | |
| 1524 | 15.73 | 59.94 | 13.500 | 712 × 484 | Int | N | N | NTSC-M | YPbPr | Closed Caption Text2 | | |
| 1525 | 15.73 | 59.94 | 13.500 | 712 × 484 | Int | N | N | NTSC-M | YPbPr | V Chip MPAA G | | |
| 1526 | 15.73 | 59.94 | 13.500 | 712 × 484 | Int | N | N | NTSC-M | YPbPr | V Chip MPAA X | | |
| 1527 | 15.73 | 59.94 | 13.500 | 712 × 484 | Int | N | N | NTSC-M | YPbPr | V Chip US TV-Y | | |
| 1528 | 15.73 | 59.94 | 13.500 | 712 × 484 | Int | N | N | NTSC-M | YPbPr | V Chip US TV-MA-VSL | | |
| 1529 | | | | | | | | | | | | |
| 1530 | | | | | | | | | | | | |
| 1531 | 15.63 | 50.00 | 13.500 | 702 × 574 | Int | N | N | PAL | YPbPr | PAL TELETEXT | EDID pattern DVI-1 | EDID DVI1 |
| 1532 | | | | | | | | | | | EDID pattern DVI-1 (HEX) | EDID DVI1 (HEX) |
| 1533 | | | | | | | | | | | EDID pattern DVI-2 | EDID DVI2 |
| 1534 | | | | | | | | | | | EDID pattern DVI-2 (HEX) | EDID DVI2 (HEX) |
| 1535 | | | | | | | | | | | EDID pattern HDMI1 | EDID HDMI1 |
| 1536 | | | | | | | | | | | EDID pattern HDMI1 (HEX) | EDID HDMI1 (HEX) |
| 1537 | | | | | | | | | | | EDID pattern HDMI2 | EDID HDMI2 |
| 1538 | | | | | | | | | | | EDID pattern HDMI2 (HEX) | EDID HDMI2 (HEX) |
| 1539 | | | | | | | | | | | EDID pattern PC-DVI | EDID PC-DVI |
| 1540 | | | | | | | | | | | EDID pattern PC-DVI (HEX) | EDID PC-DVI (HEX) |

Internal program data: No. 1521 to 1540

| Program No. | Horizontal frequency [KHz] | Vertical frequency [Hz] | Dot clock frequency [MHz] | No. of display dots (H × V) | Int / Prog | Sync polarity | | SyncType | Color difference | Timing data name | Pattern data | Pattern data name |
|-------------|----------------------------|-------------------------|---------------------------|-----------------------------|------------|---------------|---|----------|------------------|----------------------|---------------------------|-------------------|
| | | | | | | H | V | | | | | |
| 1541 | 15.73 | 59.94 | 13.500 | 712 × 484 | Int | N | N | NTSC | YPbPr | Mac NTSC-J DVD Type1 | EDID pattern PC-VGA | EDID PC-VGA |
| 1542 | 15.73 | 59.94 | 13.500 | 712 × 484 | Int | N | N | NTSC | YPbPr | Mac NTSC-J DVD Type2 | EDID pattern PC-VGA (HEX) | EDID PC-VGA (HEX) |
| 1543 | 15.73 | 59.94 | 13.500 | 712 × 484 | Int | N | N | NTSC | YPbPr | Mac NTSC-J DVD Type3 | EDID pattern TV-VGA | EDID TV-VGA |
| 1544 | 15.63 | 50.00 | 13.500 | 702 × 574 | Int | N | N | PAL | YPbPr | Mac PAL DVD | EDID pattern TV-VGA (HEX) | EDID TV-VGA (HEX) |
| 1545 | | | | | | | | | | | | |
| 1546 | | | | | | | | | | | | |
| 1547 | | | | | | | | | | | | |
| 1548 | | | | | | | | | | | | |
| 1549 | | | | | | | | | | | | |
| 1550 | | | | | | | | | | | | |
| 1551 | 15.63 | 50.00 | 13.500 | 702 × 574 | Int | N | N | PAL | YPbPr | SCART PAL VBS 4:3 | | |
| 1552 | 15.63 | 50.00 | 13.500 | 702 × 574 | Int | N | N | PAL | YPbPr | SCART PAL Y/C 4:3 | | |
| 1553 | 15.63 | 50.00 | 13.500 | 702 × 574 | Int | N | N | PAL | YPbPr | SCART PAL RGB 4:3 | | |
| 1554 | 15.63 | 50.00 | 13.500 | 702 × 574 | Int | N | N | PAL | YPbPr | SCART PAL VBS 16:9 | | |
| 1555 | 15.63 | 50.00 | 13.500 | 702 × 574 | Int | N | N | PAL | YPbPr | SCART PAL TELETEXT | | |
| 1556 | | | | | | | | | | | | |
| 1557 | | | | | | | | | | | | |
| 1558 | | | | | | | | | | | | |
| 1559 | | | | | | | | | | | | |
| 1560 | | | | | | | | | | | | |

Internal program data: No. 1541 to 1560

| Program No. | Horizontal frequency [KHz] | Vertical frequency [Hz] | Dot clock frequency [MHz] | No. of display dots (H × V) | Int / Prog | Sync polarity | | SyncType | Color difference | Timing data name | Pattern data | Pattern data name |
|-------------|----------------------------|-------------------------|---------------------------|-----------------------------|------------|---------------|---|----------|------------------|------------------|-----------------------------|--------------------|
| | | | | | | H | V | | | | | |
| 1561 | | | | | | | | | | | DDC/CI pattern DVI-1 L-0 | DDC/CI DVI1 L-0 |
| 1562 | | | | | | | | | | | DDC/CI pattern DVI-1 L-100 | DDC/CI DVI1 L-100 |
| 1563 | | | | | | | | | | | DDC/CI pattern DVI-1 L-200 | DDC/CI DVI1 L-200 |
| 1564 | | | | | | | | | | | DDC/CI pattern DVI-2 L-0 | DDC/CI DVI2 L-0 |
| 1565 | | | | | | | | | | | DDC/CI pattern DVI-2 L-100 | DDC/CI DVI2 L-100 |
| 1566 | | | | | | | | | | | DDC/CI pattern DVI-2 L-200 | DDC/CI DVI2 L-200 |
| 1567 | | | | | | | | | | | DDC/CI pattern HDMI1 L-0 | DDC/CI HDMI1 L-0 |
| 1568 | | | | | | | | | | | DDC/CI pattern HDMI1 L-100 | DDC/CI HDMI1 L-100 |
| 1569 | | | | | | | | | | | DDC/CI pattern HDMI1 L-200 | DDC/CI HDMI1 L-200 |
| 1570 | | | | | | | | | | | DDC/CI pattern HDMI2 L-0 | DDC/CI HDMI2 L-0 |
| 1571 | | | | | | | | | | | DDC/CI pattern HDMI2 L-100 | DDC/CI HDMI2 L-100 |
| 1572 | | | | | | | | | | | DDC/CI pattern HDMI2 L-200 | DDC/CI HDMI2 L-200 |
| 1573 | | | | | | | | | | | DDC/CI pattern PC-DVI L-0 | DDC/CI pcDVI L-0 |
| 1574 | | | | | | | | | | | DDC/CI pattern PC-DVI L-100 | DDC/CI pcDVI L-100 |
| 1575 | | | | | | | | | | | DDC/CI pattern PC-DVI L-200 | DDC/CI pcDVI L-200 |
| 1576 | | | | | | | | | | | DDC/CI pattern PC-VGA L-0 | DDC/CI pcVGA L-0 |
| 1577 | | | | | | | | | | | DDC/CI pattern PC-VGA L-100 | DDC/CI pcVGA L-100 |
| 1578 | | | | | | | | | | | DDC/CI pattern PC-VGA L-200 | DDC/CI pcVGA L-200 |
| 1579 | | | | | | | | | | | DDC/CI pattern TV-VGA L-0 | DDC/CI tvVGA L-0 |
| 1580 | | | | | | | | | | | DDC/CI pattern TV-VGA L-100 | DDC/CI tvVGA L-100 |
| 1581 | | | | | | | | | | | DDC/CI pattern TV-VGA L-200 | DDC/CI tvVGA L-200 |

* Program numbers 1582 to 1600 are not registered.

Internal program data: No. 1561 to 1581

| Program No. | Horizontal frequency [KHz] | Vertical frequency [Hz] | Dot clock frequency [MHz] | No. of display dots (H × V) | Int / Prog | Sync polarity | | SyncType | Color difference | Timing data name | Pattern data | Pattern data name |
|-------------|----------------------------|-------------------------|---------------------------|-----------------------------|------------|---------------|---|----------|------------------|-----------------------|--------------|-------------------|
| | | | | | | H | V | | | | | |
| 1601 | 37.86 | 85.08 | 31.500 | 640 × 350 | Prog | P | N | ANALOG | RGB | VESA640 × 350@85 | | |
| 1602 | 37.86 | 85.08 | 31.500 | 640 × 400 | Prog | N | P | ANALOG | RGB | VESA640 × 400@85 | | |
| 1603 | 37.93 | 85.04 | 35.500 | 720 × 400 | Prog | N | P | ANALOG | RGB | VESA720 × 400@85 | | |
| 1604 | 31.47 | 59.94 | 25.175 | 640 × 480 | Prog | N | N | ANALOG | RGB | VESA640 × 480@60 | | |
| 1605 | 37.86 | 72.81 | 31.500 | 640 × 480 | Prog | N | N | ANALOG | RGB | VESA640 × 480@72 | | |
| 1606 | 37.50 | 75.00 | 31.500 | 640 × 480 | Prog | N | N | ANALOG | RGB | VESA640 × 480@75 | | |
| 1607 | 43.27 | 85.01 | 36.000 | 640 × 480 | Prog | N | N | ANALOG | RGB | VESA640 × 480@85 | | |
| 1608 | 35.16 | 56.25 | 36.000 | 800 × 600 | Prog | P | P | ANALOG | RGB | VESA800 × 600@56 | | |
| 1609 | 37.88 | 60.32 | 40.000 | 800 × 600 | Prog | P | P | ANALOG | RGB | VESA800 × 600@60 | | |
| 1610 | 48.08 | 72.19 | 50.000 | 800 × 600 | Prog | P | P | ANALOG | RGB | VESA800 × 600@72 | | |
| 1611 | 46.88 | 75.00 | 49.500 | 800 × 600 | Prog | P | P | ANALOG | RGB | VESA800 × 600@75 | | |
| 1612 | 53.67 | 85.06 | 56.250 | 800 × 600 | Prog | P | P | ANALOG | RGB | VESA800 × 600@85 | | |
| 1613 | 76.30 | 119.97 | 73.250 | 800 × 600 | Prog | P | N | ANALOG | RGB | VESA800 × 600@120CVT | | |
| 1614 | 31.02 | 60.00 | 33.750 | 848 × 480 | Prog | P | P | ANALOG | RGB | VESA848 × 480@60 | | |
| 1615 | 35.52 | 86.96 | 44.900 | 1024 × 768 | Int | P | P | ANALOG | RGB | VESA1024 × 768@43 | | |
| 1616 | 48.36 | 60.00 | 65.000 | 1024 × 768 | Prog | N | N | ANALOG | RGB | VESA1024 × 768@60 | | |
| 1617 | 56.48 | 70.07 | 75.000 | 1024 × 768 | Prog | N | N | ANALOG | RGB | VESA1024 × 768@70 | | |
| 1618 | 60.02 | 75.03 | 78.750 | 1024 × 768 | Prog | P | P | ANALOG | RGB | VESA1024 × 768@75 | | |
| 1619 | 68.68 | 85.00 | 94.500 | 1024 × 768 | Prog | P | P | ANALOG | RGB | VESA1024 × 768@85 | | |
| 1620 | 97.55 | 119.99 | 115.500 | 1024 × 768 | Prog | P | N | ANALOG | RGB | VESA1024 × 768@120CVT | | |

Internal program data: No. 1601 to 1620

| Program No. | Horizontal frequency [KHz] | Vertical frequency [Hz] | Dot clock frequency [MHz] | No. of display dots (H × V) | Int / Prog | Sync polarity | | SyncType | Color difference | Timing data name | Pattern data | Pattern data name |
|-------------|----------------------------|-------------------------|---------------------------|-----------------------------|------------|---------------|---|----------|------------------|------------------------|------------------------------|----------------------|
| | | | | | | H | V | | | | | |
| 1621 | 67.50 | 75.00 | 108.000 | 1152 × 864 | Prog | P | P | ANALOG | RGB | VESA1152 × 864@75 | CEC pattern HDMI1 Standby | CEC HDMI1 Standby |
| 1622 | 47.40 | 59.99 | 68.250 | 1280 × 768 | Prog | P | N | ANALOG | RGB | VESA1280 × 768@60 | CEC pattern HDMI1 Im View On | CEC HDMI1 Im View On |
| 1623 | 47.78 | 59.87 | 79.500 | 1280 × 768 | Prog | N | P | ANALOG | RGB | VESA1280 × 768@60 | CEC pattern HDMI1 Set OSD Nm | CEC HDMI1 Set OSD Nm |
| 1624 | 60.29 | 74.89 | 102.250 | 1280 × 768 | Prog | N | P | ANALOG | RGB | VESA1280 × 768@75 | CEC pattern HDMI2 Standby | CEC HDMI2 Standby |
| 1625 | 68.63 | 84.84 | 117.500 | 1280 × 768 | Prog | N | P | ANALOG | RGB | VESA1280 × 768@85 | CEC pattern HDMI2 Im View On | CEC HDMI2 Im View On |
| 1626 | 97.40 | 119.80 | 140.250 | 1280 × 768 | Prog | P | N | ANALOG | RGB | VESA1280 × 768@120CVT | CEC pattern HDMI2 Set OSD Nm | CEC HDMI2 Set OSD Nm |
| 1627 | 49.31 | 59.91 | 71.000 | 1280 × 800 | Prog | P | N | ANALOG | RGB | VESA1280 × 800@60CVT | | |
| 1628 | 49.70 | 59.81 | 83.500 | 1280 × 800 | Prog | N | P | ANALOG | RGB | VESA1280 × 800@60 | | |
| 1629 | 62.79 | 74.93 | 106.500 | 1280 × 800 | Prog | N | P | ANALOG | RGB | VESA1280 × 800@75 | | |
| 1630 | 71.55 | 84.88 | 122.500 | 1280 × 800 | Prog | N | P | ANALOG | RGB | VESA1280 × 800@85 | | |
| 1631 | 101.56 | 119.91 | 146.250 | 1280 × 800 | Prog | P | N | ANALOG | RGB | VESA1280 × 800@120CVT | | |
| 1632 | 60.00 | 60.00 | 108.000 | 1280 × 960 | Prog | P | P | ANALOG | RGB | VESA1280 × 960@60 | | |
| 1633 | 85.94 | 85.00 | 148.500 | 1280 × 960 | Prog | P | P | ANALOG | RGB | VESA1280 × 960@85 | | |
| 1634 | 121.88 | 119.84 | 175.500 | 1280 × 960 | Prog | P | N | ANALOG | RGB | VESA1280 × 960@120CVT | | |
| 1635 | 63.98 | 60.02 | 108.000 | 1280 × 1024 | Prog | P | P | ANALOG | RGB | VESA1280 × 1024@60 | | |
| 1636 | 79.98 | 75.02 | 135.000 | 1280 × 1024 | Prog | P | P | ANALOG | RGB | VESA1280 × 1024@75 | | |
| 1637 | 91.15 | 85.02 | 157.500 | 1280 × 1024 | Prog | P | P | ANALOG | RGB | VESA1280 × 1024@85 | | |
| 1638 | 130.03 | 119.96 | 187.250 | 1280 × 1024 | Prog | P | N | ANALOG | RGB | VESA1280 × 1024@120CVT | | |
| 1639 | 47.71 | 60.02 | 85.500 | 1360 × 768 | Prog | P | P | ANALOG | RGB | VESA1360 × 768@60 | | |
| 1640 | 97.53 | 119.97 | 148.250 | 1360 × 768 | Prog | P | N | ANALOG | RGB | VESA1360 × 768@120CVT | | |

Internal program data: No. 1621 to 1640

| Program No. | Horizontal frequency [KHz] | Vertical frequency [Hz] | Dot clock frequency [MHz] | No. of display dots (H × V) | Int / Prog | Sync polarity | | SyncType | Color difference | Timing data name | Pattern data | Pattern data name |
|-------------|----------------------------|-------------------------|---------------------------|-----------------------------|------------|---------------|---|----------|------------------|------------------------|--------------|-------------------|
| | | | | | | H | V | | | | | |
| 1641 | 64.74 | 59.95 | 101.000 | 1400 × 1050 | Prog | P | N | ANALOG | RGB | VESA1400 × 1050@60 | | |
| 1642 | 65.32 | 59.98 | 121.750 | 1400 × 1050 | Prog | N | P | ANALOG | RGB | VESA1400 × 1050@60 | | |
| 1643 | 82.28 | 74.87 | 156.000 | 1400 × 1050 | Prog | N | P | ANALOG | RGB | VESA1400 × 1050@75 | | |
| 1644 | 93.88 | 84.96 | 179.500 | 1400 × 1050 | Prog | N | P | ANALOG | RGB | VESA1400 × 1050@85 | | |
| 1645 | 133.33 | 119.90 | 208.000 | 1400 × 1050 | Prog | P | N | ANALOG | RGB | VESA1400 × 1050@120CVT | | |
| 1646 | 55.47 | 59.90 | 88.750 | 1440 × 900 | Prog | P | N | ANALOG | RGB | VESA1440 × 900@60CVT | | |
| 1647 | 55.93 | 59.89 | 106.500 | 1440 × 900 | Prog | P | N | ANALOG | RGB | VESA1440 × 900@60 | | |
| 1648 | 70.64 | 74.98 | 136.750 | 1440 × 900 | Prog | N | P | ANALOG | RGB | VESA1440 × 900@75 | | |
| 1649 | 80.43 | 84.84 | 157.000 | 1440 × 900 | Prog | N | P | ANALOG | RGB | VESA1440 × 900@85 | | |
| 1650 | 114.22 | 119.85 | 182.750 | 1440 × 900 | Prog | P | N | ANALOG | RGB | VESA1440 × 900@120CVT | | |
| 1651 | 75.00 | 60.00 | 162.000 | 1600 × 1200 | Prog | P | P | ANALOG | RGB | VESA1600 × 1200@60 | | |
| 1652 | 81.25 | 65.00 | 175.500 | 1600 × 1200 | Prog | P | P | ANALOG | RGB | VESA1600 × 1200@65 | | |
| 1653 | 87.50 | 70.00 | 189.000 | 1600 × 1200 | Prog | P | P | ANALOG | RGB | VESA1600 × 1200@70 | | |
| 1654 | 93.75 | 75.00 | 202.500 | 1600 × 1200 | Prog | P | P | ANALOG | RGB | VESA1600 × 1200@75 | | |
| 1655 | 106.25 | 85.00 | 229.500 | 1600 × 1200 | Prog | P | P | ANALOG | RGB | VESA1600 × 1200@85 | | |
| 1656 | 152.41 | 119.92 | 268.250 | 1600 × 1200 | Prog | P | N | ANALOG | RGB | VESA1600 × 1200@120CVT | | |
| 1657 | 64.67 | 59.88 | 119.000 | 1680 × 1050 | Prog | P | N | ANALOG | RGB | VESA1680 × 1050@60CVT | | |
| 1658 | 65.29 | 59.95 | 146.250 | 1680 × 1050 | Prog | N | P | ANALOG | RGB | VESA1680 × 1050@60 | | |
| 1659 | 82.31 | 74.89 | 187.000 | 1680 × 1050 | Prog | N | P | ANALOG | RGB | VESA1680 × 1050@75 | | |
| 1660 | 93.86 | 84.94 | 214.750 | 1680 × 1050 | Prog | N | P | ANALOG | RGB | VESA1680 × 1050@85 | | |

Internal program data: No. 1641 to 1660

| Program No. | Horizontal frequency [KHz] | Vertical frequency [Hz] | Dot clock frequency [MHz] | No. of display dots (H × V) | Int / Prog | Sync polarity | | SyncType | Color difference | Timing data name | Pattern data | Pattern data name |
|-------------|----------------------------|-------------------------|---------------------------|-----------------------------|------------|---------------|---|----------|------------------|------------------------|--------------|-------------------|
| | | | | | | H | V | | | | | |
| 1661 | 133.42 | 119.99 | 245.500 | 1680 × 1050 | Prog | P | N | ANALOG | RGB | VESA1680 × 1050@120CVT | | |
| 1662 | 83.64 | 60.00 | 204.750 | 1792 × 1344 | Prog | N | P | ANALOG | RGB | VESA1792 × 1344@60 | | |
| 1663 | 106.27 | 75.00 | 261.000 | 1792 × 1344 | Prog | N | P | ANALOG | RGB | VESA1792 × 1344@75 | | |
| 1664 | 170.72 | 119.97 | 333.250 | 1792 × 1344 | Prog | P | N | ANALOG | RGB | VESA1792 × 1344@120CVT | | |
| 1665 | 86.33 | 60.00 | 218.250 | 1856 × 1392 | Prog | N | P | ANALOG | RGB | VESA1856 × 1392@60 | | |
| 1666 | 112.50 | 75.00 | 288.000 | 1856 × 1392 | Prog | N | P | ANALOG | RGB | VESA1856 × 1392@75 | | |
| 1667 | | | | | | | | | | | | |
| 1668 | 74.04 | 59.95 | 154.000 | 1920 × 1200 | Prog | P | N | ANALOG | RGB | VESA1920 × 1200@60 | | |
| 1669 | 74.56 | 59.88 | 193.250 | 1920 × 1200 | Prog | N | P | ANALOG | RGB | VESA1920 × 1200@60 | | |
| 1670 | 94.04 | 74.93 | 245.250 | 1920 × 1200 | Prog | N | P | ANALOG | RGB | VESA1920 × 1200@75 | | |
| 1671 | 107.18 | 84.93 | 281.250 | 1920 × 1200 | Prog | N | P | ANALOG | RGB | VESA1920 × 1200@85 | | |
| 1672 | 152.40 | 119.91 | 317.000 | 1920 × 1200 | Prog | P | N | ANALOG | RGB | VESA1920 × 1200@120CVT | | |
| 1673 | 90.00 | 60.00 | 234.000 | 1920 × 1440 | Prog | N | P | ANALOG | RGB | VESA1920 × 1440@60 | | |
| 1674 | 112.50 | 75.00 | 297.000 | 1920 × 1440 | Prog | N | P | ANALOG | RGB | VESA1920 × 1440@75 | | |
| 1675 | | | | | | | | | | | | |
| 1676 | 98.71 | 59.97 | 268.500 | 2560 × 1600 | Prog | P | N | ANALOG | RGB | VESA2560 × 1600@60CVT | | |
| 1677 | 47.71 | 59.79 | 85.500 | 1366 × 768 | Prog | P | P | ANALOG | RGB | VESA1366 × 768@60 | | |
| 1678 | | | | | | | | | | | | |
| 1679 | | | | | | | | | | | | |
| 1680 | | | | | | | | | | | | |

Internal program data: No. 1661 to 1680

* Program numbers 1681 to 1849 are not registered.

| Program No. | Horizontal frequency [KHz] | Vertical frequency [Hz] | Dot clock frequency [MHz] | No. of display dots (H × V) | Int / Prog | Sync polarity | | SyncType | Color difference | Timing data name | Pattern data | Pattern data name |
|-------------|----------------------------|-------------------------|---------------------------|-----------------------------|------------|---------------|---|----------|------------------|------------------|--------------|-------------------|
| | | | | | | H | V | | | | | |
| 1850 | 37.86 | 85.08 | 31.500 | 640 × 400 | Prog | N | P | ANALOG | RGB | VESA400-85 | | |
| 1851 | 37.86 | 72.81 | 31.500 | 640 × 480 | Prog | N | N | ANALOG | RGB | VESA480-72 | | |
| 1852 | 37.50 | 75.00 | 31.500 | 640 × 480 | Prog | N | N | ANALOG | RGB | VESA480-75 | | |
| 1853 | 35.16 | 56.25 | 36.000 | 800 × 600 | Prog | P | P | ANALOG | RGB | VESA600-56 | | |
| 1854 | 37.88 | 60.32 | 40.000 | 800 × 600 | Prog | P | P | ANALOG | RGB | VESA600-60 | | |
| 1855 | 48.08 | 72.19 | 50.000 | 800 × 600 | Prog | P | P | ANALOG | RGB | VESA600-72 | | |
| 1856 | 48.36 | 60.00 | 65.000 | 1024 × 768 | Prog | N | N | ANALOG | RGB | VESA768-60 | | |
| 1857 | 56.48 | 70.07 | 75.000 | 1024 × 768 | Prog | N | N | ANALOG | RGB | VESA768-70 | | |
| 1858 | 60.02 | 75.03 | 78.750 | 1024 × 768 | Prog | P | P | ANALOG | RGB | VESA768-75 | | |
| 1859 | 79.98 | 75.02 | 135.000 | 1280 × 1024 | Prog | P | P | ANALOG | RGB | VESA1024-75 | | |
| 1860 | 91.15 | 85.02 | 157.500 | 1280 × 1024 | Prog | P | P | ANALOG | RGB | VESA1024-85 | | |
| 1861 | 75.00 | 60.00 | 162.000 | 1600 × 1200 | Prog | P | P | ANALOG | RGB | VESA1200-60 | | |
| 1862 | 81.25 | 65.00 | 175.500 | 1600 × 1200 | Prog | P | P | ANALOG | RGB | VESA1200-65 | | |
| 1863 | 87.50 | 70.00 | 189.000 | 1600 × 1200 | Prog | P | P | ANALOG | RGB | VESA1200-70 | | |
| 1864 | 93.75 | 75.00 | 202.500 | 1600 × 1200 | Prog | P | P | ANALOG | RGB | VESA1200-75 | | |
| 1865 | 100.00 | 80.00 | 216.000 | 1600 × 1200 | Prog | P | P | ANALOG | RGB | VESA1200-80 | | |
| 1866 | 106.25 | 85.00 | 229.500 | 1600 × 1200 | Prog | P | P | ANALOG | RGB | VESA1200-85 | | |
| 1867 | 98.21 | 70.05 | 236.500 | 1800 × 1350 | Prog | N | P | ANALOG | RGB | VESA1350-70 | | |
| 1868 | 18.44 | 49.83 | 16.260 | 720 × 350 | Prog | N | N | ANALOG | RGB | MDA | | |
| 1869 | 15.75 | 60.10 | 14.360 | 640 × 200 | Prog | N | N | ANALOG | RGB | CGA | | |
| 1870 | 21.85 | 59.71 | 16.260 | 640 × 350 | Prog | N | N | ANALOG | RGB | EGA | | |

Internal program data: No. 1850 to 1870

| Program No. | Horizontal frequency [KHz] | Vertical frequency [Hz] | Dot clock frequency [MHz] | No. of display dots (H × V) | Int / Prog | Sync polarity | | SyncType | Color difference | Timing data name | Pattern data | Pattern data name |
|-------------|----------------------------|-------------------------|---------------------------|-----------------------------|------------|---------------|---|----------|------------------|------------------|--------------|-------------------|
| | | | | | | H | V | | | | | |
| 1871 | 30.48 | 60.00 | 24.870 | 640 × 400 | Prog | N | N | ANALOG | RGB | PGA | | |
| 1872 | 31.47 | 50.03 | 28.320 | 720 × 350 | Prog | N | N | ANALOG | RGB | VGA-TEXT350-50 | | |
| 1873 | 31.47 | 59.94 | 28.320 | 720 × 350 | Prog | N | N | ANALOG | RGB | VGA-TEXT350-60 | | |
| 1874 | 31.47 | 70.08 | 28.320 | 720 × 350 | Prog | N | N | ANALOG | RGB | VGA-TEXT350-70 | | |
| 1875 | 31.47 | 50.03 | 28.320 | 720 × 400 | Prog | N | N | ANALOG | RGB | VGA-TEXT400-50 | | |
| 1876 | 31.47 | 59.94 | 28.320 | 720 × 400 | Prog | N | N | ANALOG | RGB | VGA-TEXT400-60 | | |
| 1877 | 31.47 | 70.08 | 28.320 | 720 × 400 | Prog | N | N | ANALOG | RGB | VGA-TEXT400-70 | | |
| 1878 | 31.47 | 50.03 | 25.175 | 640 × 350 | Prog | N | N | ANALOG | RGB | VGA350-50 | | |
| 1879 | 31.47 | 59.94 | 25.175 | 640 × 350 | Prog | N | N | ANALOG | RGB | VGA350-60 | | |
| 1880 | 31.47 | 70.09 | 25.175 | 640 × 350 | Prog | N | N | ANALOG | RGB | VGA350-70 | | |
| 1881 | 31.47 | 50.03 | 25.175 | 640 × 400 | Prog | N | N | ANALOG | RGB | VGA400-50 | | |
| 1882 | 31.47 | 59.94 | 25.175 | 640 × 400 | Prog | N | N | ANALOG | RGB | VGA400-60 | | |
| 1883 | 31.47 | 70.09 | 25.175 | 640 × 400 | Prog | N | N | ANALOG | RGB | VGA400-70 | | |
| 1884 | 31.47 | 50.03 | 25.175 | 640 × 480 | Prog | N | N | ANALOG | RGB | VGA480-50 | | |
| 1885 | 31.47 | 59.94 | 25.175 | 640 × 480 | Prog | N | N | ANALOG | RGB | VGA480-60 | | |
| 1886 | 35.16 | 56.16 | 36.000 | 800 × 600 | Prog | N | N | ANALOG | RGB | S-VGA-56 | | |
| 1887 | 48.08 | 72.19 | 50.000 | 800 × 600 | Prog | N | N | ANALOG | RGB | S-VGA-72 | | |
| 1888 | 46.88 | 75.00 | 49.500 | 800 × 600 | Prog | N | N | ANALOG | RGB | S-VGA-75 | | |
| 1889 | 48.08 | 59.80 | 65.000 | 1024 × 768 | Prog | N | N | ANALOG | RGB | XGA-60 | | |
| 1890 | 53.95 | 66.11 | 71.640 | 1024 × 768 | Prog | N | N | ANALOG | RGB | XGA-66 | | |

Internal program data: No. 1871 to 1890

| Program No. | Horizontal frequency [KHz] | Vertical frequency [Hz] | Dot clock frequency [MHz] | No. of display dots (H × V) | Int / Prog | Sync polarity | | SyncType | Color difference | Timing data name | Pattern data | Pattern data name |
|-------------|----------------------------|-------------------------|---------------------------|-----------------------------|------------|---------------|---|----------|------------------|------------------|--------------|-------------------|
| | | | | | | H | V | | | | | |
| 1891 | 56.48 | 70.07 | 75.000 | 1024 × 768 | Prog | N | N | ANALOG | RGB | XGA-70 | | |
| 1892 | 60.68 | 57.03 | 100.000 | 1280 × 1024 | Prog | N | N | ANALOG | RGB | SXGA-57 | | |
| 1893 | 63.5 | 59.68 | 106.930 | 1280 × 1024 | Prog | N | N | ANALOG | RGB | SXGA-60A | | |
| 1894 | 63.75 | 59.75 | 110.160 | 1280 × 1024 | Prog | N | N | ANALOG | RGB | SXGA-60B | | |
| 1895 | 63.72 | 60.00 | 109.470 | 1280 × 1024 | Prog | N | N | ANALOG | RGB | SXGA-60C | | |
| 1896 | 78.91 | 74.16 | 132.880 | 1280 × 1024 | Prog | N | N | ANALOG | RGB | SXGA-70 | | |
| 1897 | 74.63 | 59.94 | 160.000 | 1600 × 1200 | Prog | N | N | ANALOG | RGB | UXGA1200-60 | | |
| 1898 | 107.42 | 85.05 | 220.000 | 1600 × 1200 | Prog | N | N | ANALOG | RGB | UXGA1200-85A | | |
| 1899 | 106.48 | 85.05 | 230.000 | 1600 × 1200 | Prog | N | N | ANALOG | RGB | UXGA1200-85B | | |
| 1900 | 107.42 | 80.05 | 220.000 | 1600 × 1280 | Prog | N | N | ANALOG | RGB | UXGA1280-80A | | |
| 1901 | 106.48 | 80.06 | 230.000 | 1600 × 1280 | Prog | N | N | ANALOG | RGB | UXGA1280-80B | | |
| 1902 | 106.4 | 80.00 | 238.340 | 1600 × 1280 | Prog | N | N | ANALOG | RGB | UXGA1280-80C | | |
| 1903 | 109.82 | 80.40 | 246.000 | 1600 × 1280 | Prog | N | N | ANALOG | RGB | UXGA1280-82 | | |
| 1904 | 35.52 | 86.96 | 44.900 | 1024 × 768 | Int | N | N | ANALOG | RGB | IBM 8514A | | |
| 1905 | 63.36 | 60.00 | 89.210 | 1024 × 1024 | Prog | N | N | ANALOG | RGB | IBM 5080 | | |
| 1906 | 29.58 | 73.14 | 24.020 | 640 × 754 | Int | N | N | ANALOG | RGB | IBM 5550 | | |
| 1907 | 63.36 | 60.00 | 111.520 | 1280 × 1024 | Prog | N | N | ANALOG | RGB | IBM 6000 | | |
| 1908 | 15.71 | 59.98 | 6.380 | 323 × 246 | Prog | N | N | ANALOG | RGB | NAVIGATION | | |
| 1909 | 35 | 66.67 | 30.240 | 640 × 480 | Prog | N | N | ANALOG | RGB | Mac 480-66A | | |
| 1910 | 34.97 | 66.60 | 31.330 | 640 × 480 | Prog | N | N | ANALOG | RGB | Mac 480-66B | | |

Internal program data: No. 1891 to 1910

| Program No. | Horizontal frequency [KHz] | Vertical frequency [Hz] | Dot clock frequency [MHz] | No. of display dots (H × V) | Int / Prog | Sync polarity | | SyncType | Color difference | Timing data name | Pattern data | Pattern data name |
|-------------|----------------------------|-------------------------|---------------------------|-----------------------------|------------|---------------|---|----------|------------------|------------------|--------------|-------------------|
| | | | | | | H | V | | | | | |
| 1911 | 48.83 | 66.89 | 50.000 | 800 × 600 | Prog | N | N | ANALOG | RGB | Mac 600-66 | | |
| 1912 | 49.72 | 74.55 | 57.280 | 832 × 624 | Prog | N | N | ANALOG | RGB | Mac 624-57 | | |
| 1913 | 48.78 | 59.56 | 64.000 | 1024 × 768 | Prog | N | N | ANALOG | RGB | Mac 768-60 | | |
| 1914 | 60.24 | 74.93 | 80.000 | 1024 × 768 | Prog | N | N | ANALOG | RGB | Mac 768-75 | | |
| 1915 | 68.68 | 75.06 | 100.000 | 1152 × 870 | Prog | N | N | ANALOG | RGB | Mac 870-75 | | |
| 1916 | 24.82 | 56.42 | 21.050 | 640 × 400 | Prog | N | N | ANALOG | RGB | NEC PC9801 | | |
| 1917 | 32.86 | 79.84 | 47.840 | 1120 × 750 | Int | N | N | ANALOG | RGB | NEC PC9801XL | | |
| 1918 | 50.02 | 60.05 | 78.430 | 1120 × 750 | Prog | N | N | ANALOG | RGB | NEC 768-60A | | |
| 1919 | 56.48 | 70.07 | 75.000 | 1024 × 768 | Prog | N | N | ANALOG | RGB | NEC 768-70 | | |
| 1920 | 64.6 | 59.93 | 107.500 | 1280 × 1024 | Prog | N | N | ANALOG | RGB | NEC 1024-60 | | |
| 1921 | 74.88 | 69.85 | 127.000 | 1280 × 1024 | Prog | N | N | ANALOG | RGB | NEC 1024-70 | | |
| 1922 | 78.86 | 74.11 | 135.000 | 1280 × 1024 | Prog | N | N | ANALOG | RGB | NEC 1024-75 | | |
| 1923 | 48.36 | 60.08 | 65.000 | 1024 × 768 | Prog | N | N | ANALOG | RGB | NEC 768-60B | | |
| 1924 | 61.8 | 65.95 | 92.940 | 1152 × 900 | Prog | N | N | ANALOG | RGB | SUN 900-66 | | |
| 1925 | 71.73 | 76.07 | 105.590 | 1152 × 900 | Prog | N | N | ANALOG | RGB | SUN 900-76 | | |
| 1926 | 70.84 | 84.03 | 92.940 | 1024 × 800 | Prog | N | N | ANALOG | RGB | SUN 800-84 | | |
| 1927 | 81.13 | 76.11 | 135.000 | 1280 × 1024 | Prog | N | N | ANALOG | RGB | SUN 1024-76 | | |
| 1928 | 63.38 | 60.02 | 107.500 | 1280 × 1024 | Prog | N | N | ANALOG | RGB | SONY NEWS | | |
| 1929 | 78.86 | 74.11 | 135.000 | 1280 × 1024 | Prog | N | N | ANALOG | RGB | SONY 1024-74 | | |
| 1930 | 78.86 | 74.11 | 135.000 | 1280 × 1024 | Prog | N | N | ANALOG | RGB | SONY 1024-74 | | |

Internal program data: No. 1911 to 1930

| Program No. | Horizontal frequency [KHz] | Vertical frequency [Hz] | Dot clock frequency [MHz] | No. of display dots (H × V) | Int / Prog | Sync polarity | | SyncType | Color difference | Timing data name | Pattern data | Pattern data name |
|-------------|----------------------------|-------------------------|---------------------------|-----------------------------|------------|---------------|---|----------|------------------|----------------------|--------------|-------------------|
| | | | | | | H | V | | | | | |
| 1931 | 48.48 | 59.64 | 64.000 | 1024 × 768 | Prog | N | N | ANALOG | RGB | SGI Indigo768-60 | | |
| 1932 | 77.01 | 72.38 | 130.000 | 1280 × 1024 | Prog | N | N | ANALOG | RGB | SGI Indigo1024-72 | | |
| 1933 | 63.9 | 60.00 | 107.350 | 1280 × 1024 | Prog | N | N | ANALOG | RGB | SGI IRIS4D | | |
| 1934 | 63.33 | 59.97 | 108.170 | 1280 × 1024 | Prog | N | N | ANALOG | RGB | HP 9000t1 | | |
| 1935 | 78.13 | 72.00 | 135.000 | 1280 × 1024 | Prog | N | N | ANALOG | RGB | HP 9000t2 | | |
| 1936 | 54 | 60.00 | 69.120 | 1024 × 864 | Prog | N | N | ANALOG | RGB | VAX 768-60 | | |
| 1937 | 70.66 | 66.47 | 119.840 | 1280 × 1024 | Prog | N | N | ANALOG | RGB | VAX 1024-66 | | |
| 1938 | 60.05 | 75.06 | 78.780 | 1024 × 768 | Prog | N | N | ANALOG | RGB | Fujitsu FMV 1024-75 | | |
| 1939 | 80.66 | 100.83 | 108.410 | 1024 × 768 | Prog | N | N | ANALOG | RGB | Fujitsu FMV 1024-100 | | |
| 1940 | 79.7 | 74.83 | 134.370 | 1280 × 1024 | Prog | N | N | ANALOG | RGB | Fujitsu FMV5166 | | |
| 1941 | 80.38 | 75.12 | 135.040 | 1280 × 1024 | Prog | N | N | ANALOG | RGB | Fujitsu FMV5133 | | |
| 1942 | 63.74 | 60.02 | 108.100 | 1280 × 1024 | Prog | N | N | ANALOG | RGB | Fujitsu SIGMA | | |
| 1943 | 78.16 | 71.64 | 135.060 | 1280 × 1024 | Prog | N | N | ANALOG | RGB | HITACHI SXGA | | |
| 1944 | 26.35 | 59.90 | 22.770 | 640 × 400 | Prog | N | N | ANALOG | RGB | Panasonic M550 | | |
| 1945 | 46.88 | 75.00 | 49.500 | 800 × 600 | Prog | P | P | ANALOG | RGB | VESA600-75 | | |
| 1946 | 31.47 | 59.94 | 25.175 | 640 × 480 | Prog | N | N | ANALOG | RGB | VGA480-60 | | |
| 1947 | 31.47 | 59.95 | 28.640 | 746 × 471 | Prog | N | N | ANALOG | RGB | ASTRO SC-2025 | | |
| 1948 | 64 | 59.98 | 115.200 | 1400 × 1050 | Prog | N | N | ANALOG | RGB | SXGA+ | | |
| 1949 | 94.64 | 59.60 | 265.000 | 2048 × 1536 | Prog | N | N | ANALOG | RGB | QXGA | | |
| 1950 | 15.73 | 59.94 | 13.500 | 712 × 484 | Int | N | N | NTSC | YPbPr | NTSC | | |

Internal program data: No. 1931 to 1950

| Program No. | Horizontal frequency [KHz] | Vertical frequency [Hz] | Dot clock frequency [MHz] | No. of display dots (H × V) | Int / Prog | Sync polarity | | SyncType | Color difference | Timing data name | Pattern data | Pattern data name |
|-------------|----------------------------|-------------------------|---------------------------|-----------------------------|------------|---------------|---|----------|------------------|------------------|--------------|-------------------|
| | | | | | | H | V | | | | | |
| 1951 | 33.75 | 60.00 | 74.250 | 1920 × 1080 | Int | N | N | HDTV1080 | YPbPr | 1080i | | |
| 1952 | 31.47 | 59.94 | 25.175 | 640 × 480 | Prog | N | N | ANALOG | RGB | VGA480-60 | | |
| 1953 | 31.47 | 59.94 | 25.175 | 640 × 480 | Prog | N | N | ANALOG | RGB | VGA480-60 | | |
| 1954 | 31.47 | 59.94 | 25.175 | 640 × 480 | Prog | N | N | ANALOG | RGB | VGA480-60 | | |
| 1955 | 31.47 | 59.94 | 25.175 | 640 × 480 | Prog | N | N | ANALOG | RGB | VGA480-60 | | |
| 1956 | 31.22 | 49.98 | 46.200 | 1170 × 1168 | Int | N | N | ANALOG | RGB | MEDICAL-1I | | |
| 1957 | 31.22 | 50.03 | 46.200 | 1170 × 584 | Prog | N | N | ANALOG | RGB | MEDICAL-1N | | |
| 1958 | 30.69 | 60.00 | 36.830 | 947 × 946 | Int | N | N | ANALOG | RGB | MEDICAL-2I | | |
| 1959 | 30.69 | 60.06 | 36.830 | 947 × 473 | Prog | N | N | ANALOG | RGB | MEDICAL-2N | | |
| 1960 | 37.93 | 85.04 | 35.500 | 720 × 400 | Prog | N | P | ANALOG | RGB | VESA400-88 | | |
| 1961 | 112.5 | 90.00 | 243.000 | 1600 × 1200 | Prog | N | N | ANALOG | RGB | 1200-90 | | |
| 1962 | 31.47 | 59.94 | 25.175 | 640 × 480 | Prog | N | N | ANALOG | RGB | VGA480-60 | | |
| 1963 | 63.98 | 60.02 | 108.000 | 1280 × 1024 | Prog | P | P | ANALOG | RGB | VESA1024-60 | | |
| 1964 | 15.63 | 50.00 | 13.500 | 702 × 574 | Int | N | N | SECAM | YPbPr | SECAM | | |
| 1965 | 31.47 | 59.94 | 34.240 | 864 × 480 | Prog | N | N | ANALOG | RGB | W-VGA | | |
| 1966 | 37.88 | 60.32 | 53.940 | 1072 × 600 | Prog | N | N | ANALOG | RGB | W-SVGA | | |
| 1967 | 48.36 | 60.00 | 87.440 | 1376 × 768 | Prog | N | N | ANALOG | RGB | W-XGA | | |
| 1968 | 15.73 | 59.94 | 13.500 | 712 × 484 | Int | N | N | NTSC | YPbPr | NTSC | | |
| 1969 | 15.63 | 50.00 | 13.500 | 702 × 574 | Int | N | N | PAL | YPbPr | PAL | | |
| 1970 | 67.5 | 60.00 | 148.500 | 1920 × 1080 | Prog | N | N | HDTV1080 | YPbPr | 1080P | | |

Internal program data: No. 1951 to 1970

| Program No. | Horizontal frequency [KHz] | Vertical frequency [Hz] | Dot clock frequency [MHz] | No. of display dots (H × V) | Int / Prog | Sync polarity | | SyncType | Color difference | Timing data name | Pattern data | Pattern data name |
|-------------|----------------------------|-------------------------|---------------------------|-----------------------------|------------|---------------|---|----------|------------------|------------------|--------------|-------------------|
| | | | | | | H | V | | | | | |
| 1971 | 67.43 | 59.94 | 148.352 | 1920 × 1080 | Prog | N | N | HDTV1080 | YPbPr | 1080P | | |
| 1972 | 33.75 | 60.00 | 74.250 | 1920 × 1080 | Int | N | N | HDTV1080 | YPbPr | 1080i | | |
| 1973 | 33.72 | 59.94 | 74.176 | 1920 × 1080 | Int | N | N | HDTV1080 | YPbPr | 1080i | | |
| 1974 | 33.75 | 60.00 | 74.250 | 1920 × 1035 | Int | N | N | HDTV1080 | YPbPr | 1035i | | |
| 1975 | 33.72 | 59.94 | 74.176 | 1920 × 1035 | Int | N | N | HDTV1080 | YPbPr | 1035i | | |
| 1976 | 45 | 60.00 | 74.250 | 1280 × 720 | Prog | N | N | HDTV720 | YPbPr | 720P | | |
| 1977 | 44.96 | 59.94 | 74.176 | 1280 × 720 | Prog | N | N | HDTV720 | YPbPr | 720P | | |
| 1978 | 31.47 | 59.94 | 27.000 | 720 × 483 | Prog | N | N | ANALOG | YPbPr | 483P | | |
| 1979 | 31.25 | 50.00 | 27.000 | 720 × 576 | Prog | N | N | ANALOG | YPbPr | PAL*2 | | |
| 1980 | 83.64 | 60.00 | 204.750 | 1792 × 1344 | Prog | N | P | ANALOG | RGB | VESA1344-60 | | |
| 1981 | 83.64 | 60.00 | 204.750 | 1792 × 1344 | Prog | N | P | ANALOG | RGB | VESA1344-60 | | |
| 1982 | 86.33 | 60.00 | 218.250 | 1856 × 1392 | Prog | N | P | ANALOG | RGB | VESA1392-60 | | |
| 1983 | 86.33 | 60.00 | 218.250 | 1856 × 1392 | Prog | N | P | ANALOG | RGB | VESA1392-60 | | |
| 1984 | 90 | 60.00 | 234.000 | 1920 × 1440 | Prog | N | P | ANALOG | RGB | VESA1440-60 | | |
| 1985 | 90 | 60.00 | 234.000 | 1920 × 1440 | Prog | N | P | ANALOG | RGB | VESA1440-60 | | |
| 1986 | 31.47 | 59.94 | 25.175 | 640 × 480 | Prog | N | N | ANALOG | RGB | VGA480-60 | | |
| 1987 | 31.47 | 59.94 | 25.175 | 640 × 480 | Prog | N | N | ANALOG | RGB | VGA480-60 | | |
| 1988 | 31.47 | 59.94 | 25.175 | 640 × 480 | Prog | N | N | ANALOG | RGB | VGA480-60 | | |
| 1989 | 31.47 | 59.94 | 25.175 | 640 × 480 | Prog | N | N | ANALOG | RGB | VGA480-60 | | |
| 1990 | 31.47 | 59.94 | 25.175 | 640 × 480 | Prog | N | N | ANALOG | RGB | VGA480-60 | | |

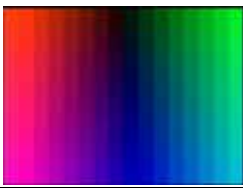
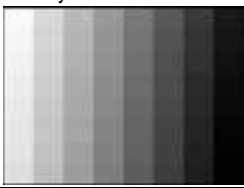
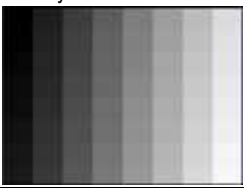
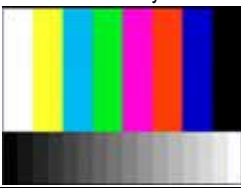
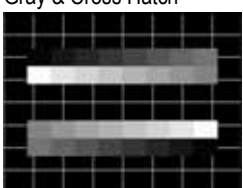
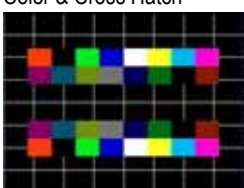
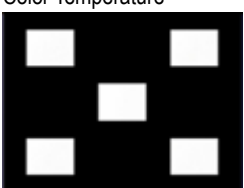
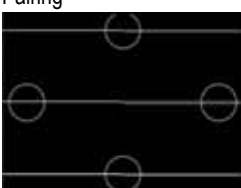
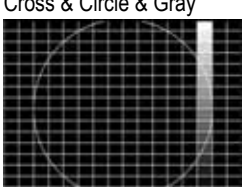

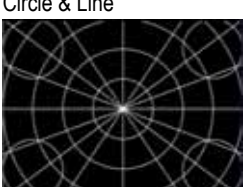
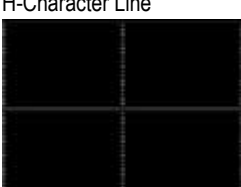
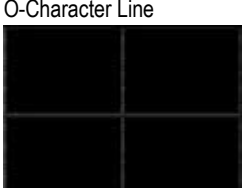
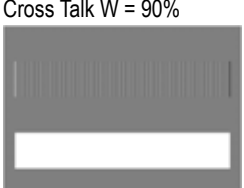
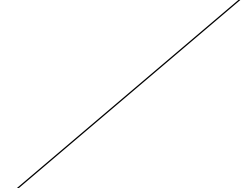

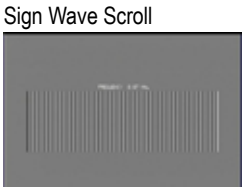

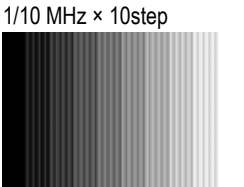
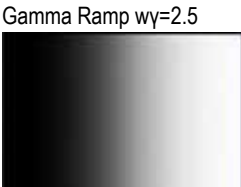
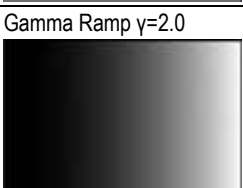
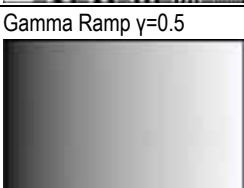

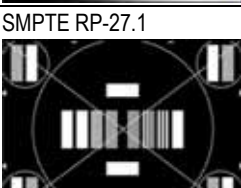
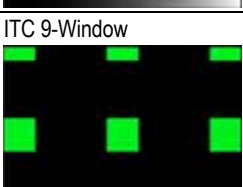
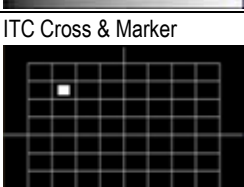
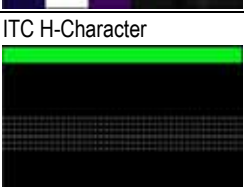

Internal program data: No. 1971 to 1990



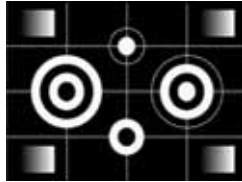

| Program No. | Horizontal frequency [KHz] | Vertical frequency [Hz] | Dot clock frequency [MHz] | No. of display dots (H × V) | Int / Prog | Sync polarity | | SyncType | Color difference | Timing data name | Pattern data | Pattern data name |
|-------------|----------------------------|-------------------------|---------------------------|-----------------------------|------------|---------------|---|----------|------------------|------------------|--------------|-------------------|
| | | | | | | H | V | | | | | |
| 1991 | 31.47 | 59.94 | 25.175 | 640 × 480 | Prog | N | N | ANALOG | RGB | VGA480-60 | | |
| 1992 | 31.47 | 59.94 | 25.175 | 640 × 480 | Prog | N | N | ANALOG | RGB | VGA480-60 | | |
| 1993 | 31.47 | 59.94 | 25.175 | 640 × 480 | Prog | N | N | ANALOG | RGB | VGA480-60 | | |
| 1994 | 15.73 | 59.94 | 13.500 | 712 × 484 | Int | N | N | NTSC-M | YPbPr | NTSC-M | | |
| 1995 | 31.47 | 59.94 | 25.175 | 640 × 480 | Prog | N | N | ANALOG | RGB | VGA480-60 | | |
| 1996 | 31.47 | 59.94 | 25.175 | 640 × 480 | Prog | N | N | ANALOG | RGB | VGA480-60 | | |
| 1997 | 48.08 | 72.19 | 50.000 | 800 × 600 | Prog | P | P | ANALOG | RGB | VESA600-72 | | |
| 1998 | 56.48 | 70.07 | 75.000 | 1024 × 768 | Prog | N | N | ANALOG | RGB | VESA768-70 | | |
| 1999 | 79.98 | 75.02 | 135.000 | 1280 × 1024 | Prog | P | P | ANALOG | RGB | VESA1024-75 | | |





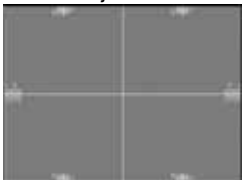
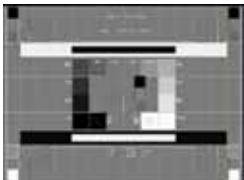
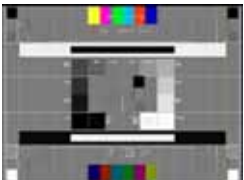

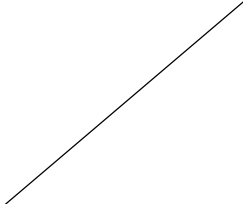
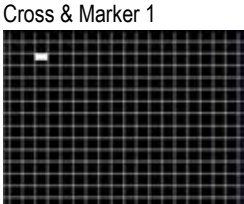
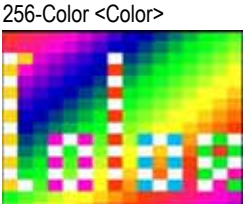
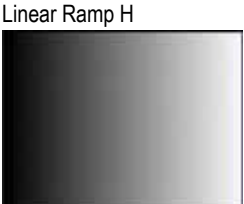
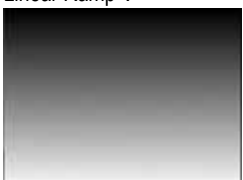

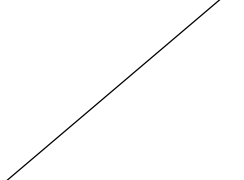

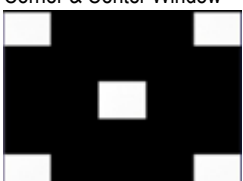

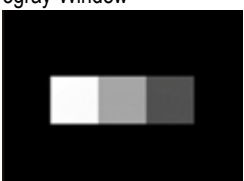
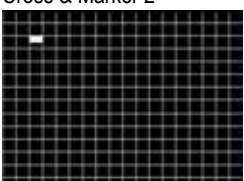


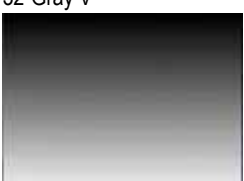
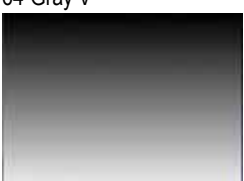
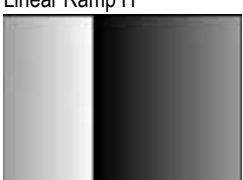
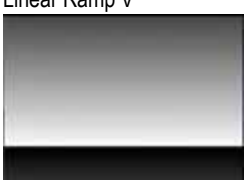

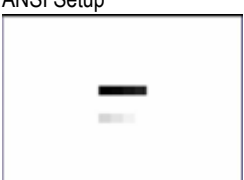
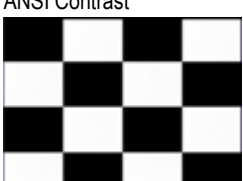
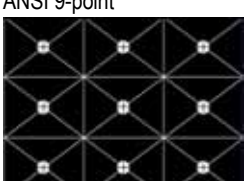

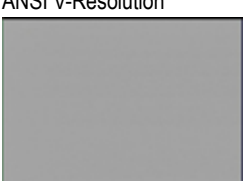
Internal program data: No. 1991 to 1999


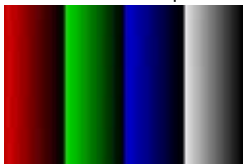
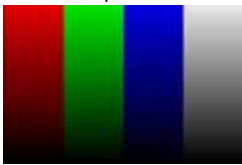



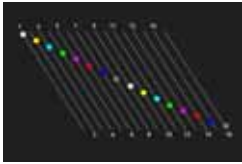
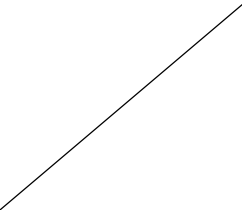
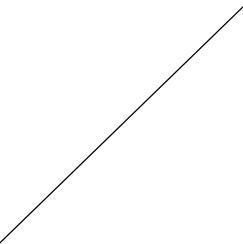


11.3.2 Optional pattern data

The internal optional pattern data (No.1 to No.70) of the VG-870/871 is as shown below.

| No. | Pattern Name | No. | Pattern Name | No. | Pattern Name | No. | Pattern Name |
|-----|--|-----|---|-----|--|-----|--|
| 1 | 256-Color Block  | 2 | 64Gray Block White->  | 3 | 64Gray Block Black->  | 4 | 8-Color & 16-Gray  |
| 5 | Gray & Cross Hatch  | 6 | Color & Cross Hatch  | 7 | Color Temperature  | 8 | Pairing  |
| 9 | Cross & Circle & Gray  | 10 | Cross & Circle & Color & H  | 11 | Circle & Line  | 12 | H-Character Line  |
| 13 | O-Character Line  | 14 | Cross Talk W = 90%  | 15 |  | 16 | NTSC Color  |
| 17 | Sign Wave Scroll  | 18 | Multi Burst 100%  | 19 | 1/10 MHz × 10step  | 20 | Gamma Ramp wy=2.5  |
| 21 | Gamma Ramp $\gamma=2.0$  | 22 | Gamma Ramp $\gamma=0.5$  | 23 | SMPTE Color  | 24 | SMPTE RP-27.1  |
| 25 | ITC 9-Window  | 26 | ITC Cross & Marker  | 27 | ITC H-Character  | 28 | 32-Gray H  |

| | | | | | | | |
|----|---|----|---|----|--|----|---|
| 29 | 64-Gray H | 30 | 64-Gray H & RGBW-Color | 31 | Gray & Circle | 32 | AFD |
| |  | |  | |  | |  |

| | | | | | | | |
|----|---|----|---|----|---|----|---|
| 33 | Corner & Center Marker  | 34 | Cross Talk W = 60%  | 35 | Gamma Ramp $\gamma = 2.2$  | 36 | Gamma Ramp $\gamma = 0.45$  |
| 37 | Position Adjuster  | 38 | SMPTE RP-133  | 39 | SMPTE RP-133 Color  | 40 | SpeakerCheck / Youth  |
| 41 |  | 42 | Cross & Marker 1  | 43 | 256-Color <Color>  | 44 | Linear Ramp H  |
| 45 | Linear Ramp V  | 46 | 256-Color Random  | 47 |  | 48 | 256-Gray & 7-Color  |
| 49 | Corner & Center Window  | 50 | 32-Gray H2  | 51 | 3gray-Window  | 52 | Cross & Marker 2  |
| 53 | Circle & Cross Hatch  | 54 | 1dotChecker & Window  | 55 | 32-Gray V  | 56 | 64-Gray V  |
| 57 | Linear Ramp H  | 58 | Linear Ramp V  | 59 | Linear Ramp HV  | 60 | ANSI Setup  |
| 61 | ANSI Contrast  | 62 | ANSI 9-point  | 63 | ANSI H-Resolution  | 64 | ANSI V-Resolution  |

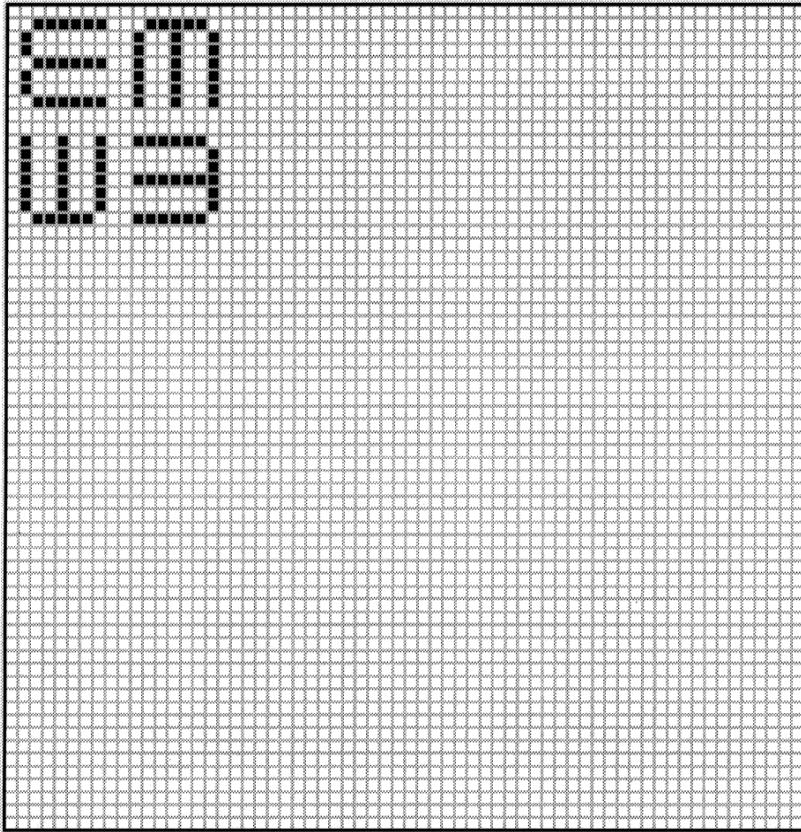
| | | | | | | | |
|----|--|----|---|----|--|----|---|
| 65 | 128-Gray H  | 66 | RGBW Linear Ramp H  | 67 | Linear Ramp & RGBW V  | 68 | Linear Ramp & RGBW H  |
| 69 | Multi-Color Ramp HV  | 70 | Linear/256 Ramp H  | 71 | Motion Blur Line  | 72 |  |
| 73 |  | 74 | Ramp Limited-H  | 75 | Ramp Limited-V  | | |

11.3.3 User character pattern data

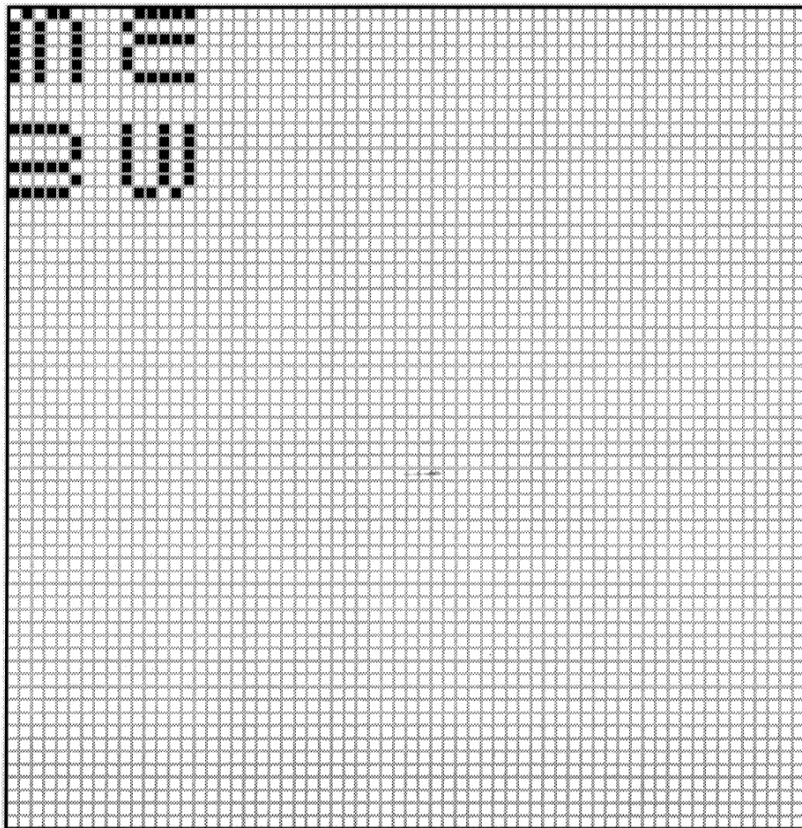
| Code (H) | Description | Cell size | Reference page |
|----------|---------------------------------------|-----------|----------------|
| F0 | Letters "me" #1 | 18 × 18 | p.308 |
| F1 | Letters "me" #2 (VESA specifications) | 18 × 18 | p.308 |
| F2 | Chinese character "AI" | 64 × 64 | p.309 |
| F3 | Chinese character "BI" | 64 × 64 | p.309 |
| F4 | Chinese character "TAKA" | 32 × 32 | p.310 |
| F5 | Chinese character "KIRI" | 32 × 32 | p.310 |
| F6 | Chinese character "KEN" | 32 × 32 | p.311 |
| F7 | Burst | 64 × 64 | p.311 |
| F8 | | | |
| F9 | | | |
| FA | | | |
| FB | | | |
| FC | | | |
| FD | | | |
| FE | | | |
| FF | | | |

■ F0H [letters “me” #1]/F1H [letters “me” #2 (VESA specifications)]

F0H

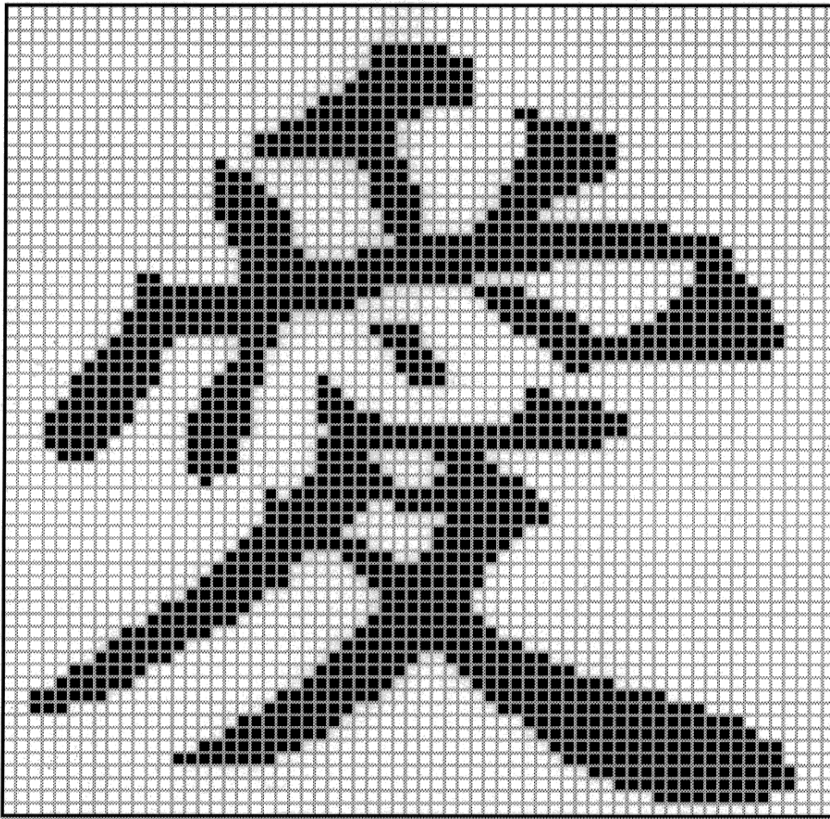


F1H

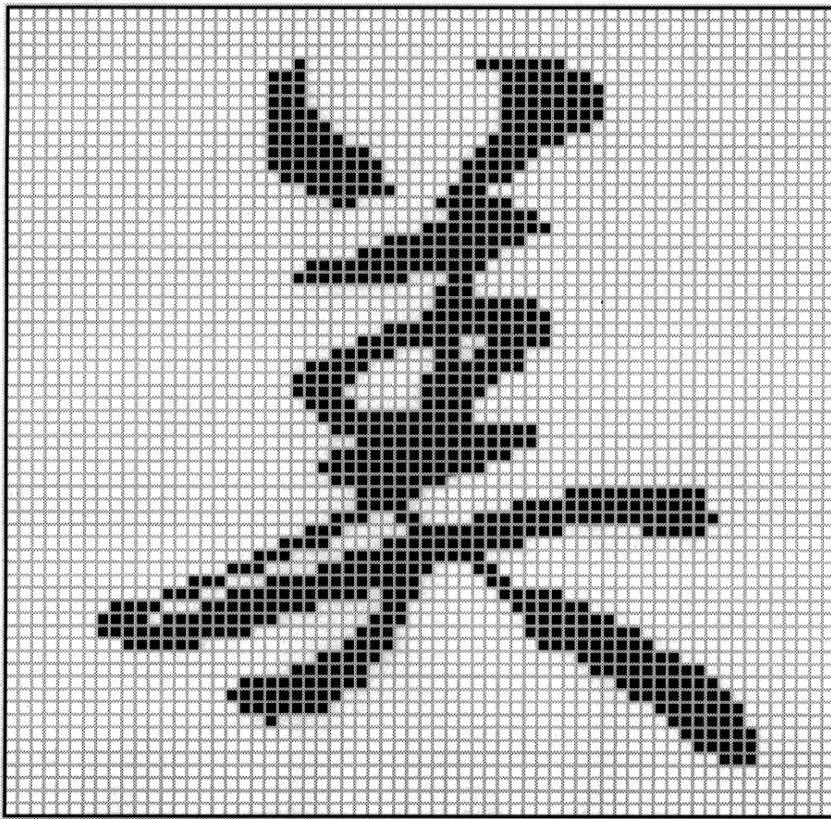


■ F2H [Chinese character “AI”]/F3H [Chinese character “BI”]

F2H

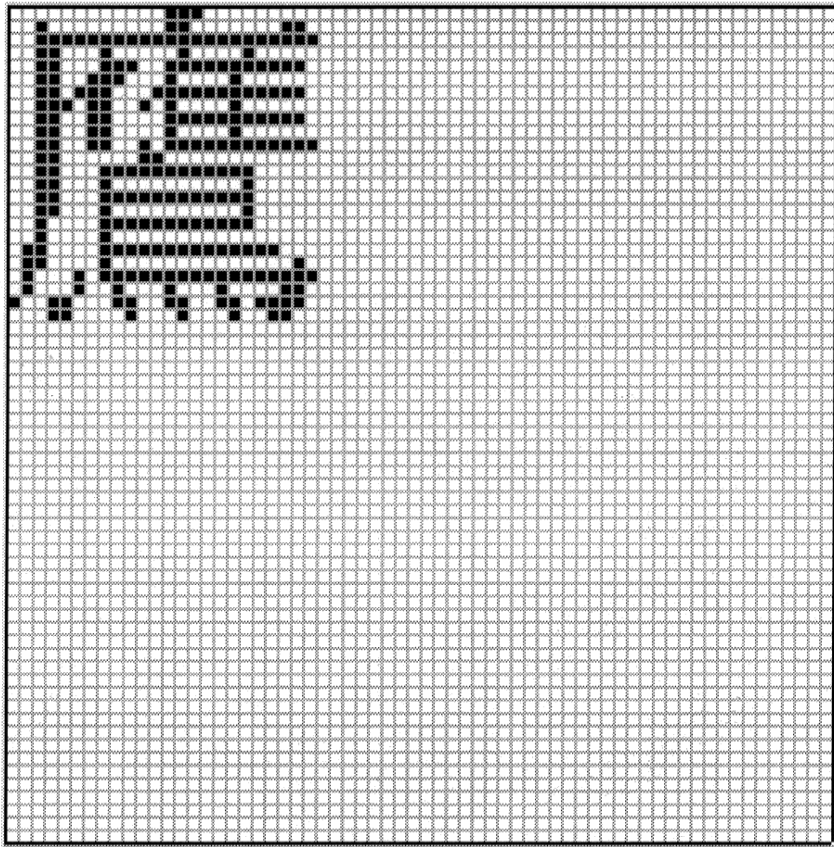


F3H

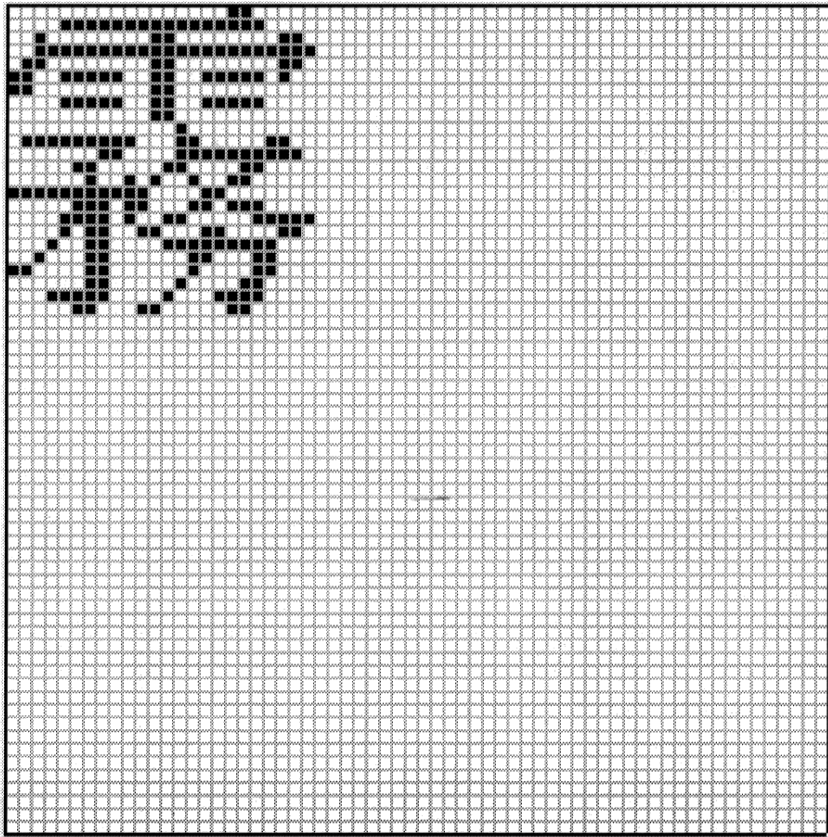


■ F4H [Chinese character “TAKA”]/F5H [Chinese character “KIRI”]

F4H

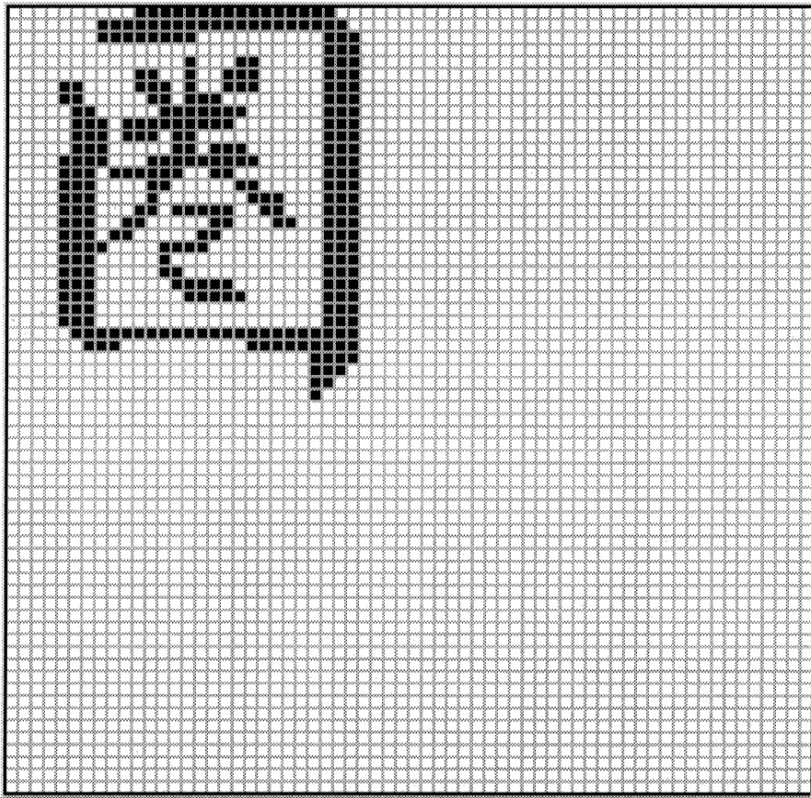


F5H

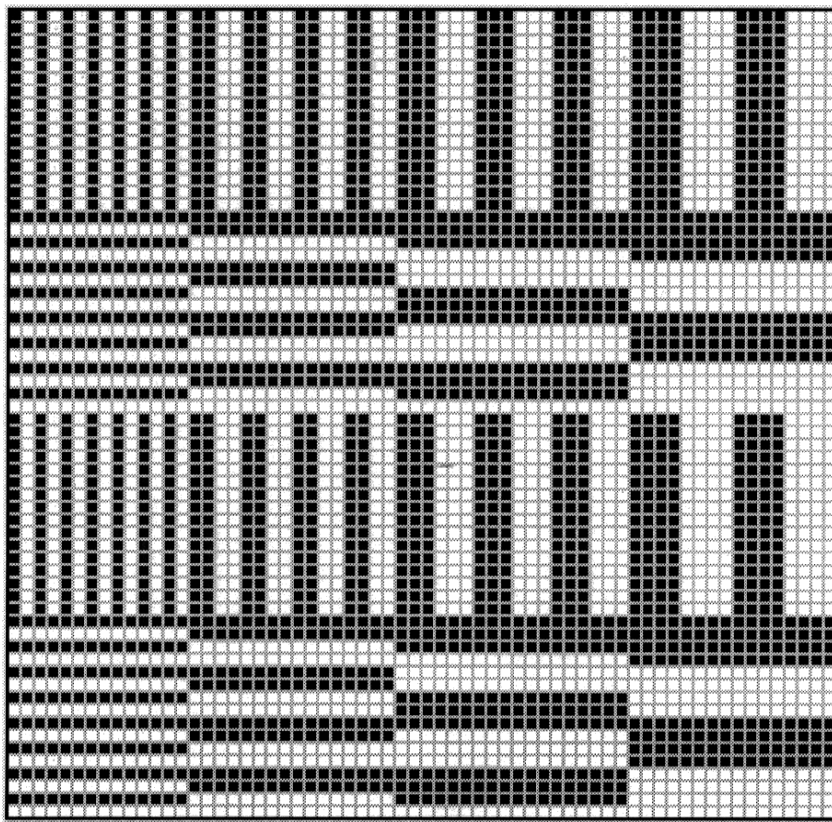


■ F6H [Chinese character “KEN”]/F7H [Burst]

F6H



F7H



11.3.4 Character pattern data

■ 5 × 7 character pattern table (1 of 2)

| | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|
| 20H | 21H | 22H | 23H | 24H | 25H | 26H | 27H |
| 28H | 29H | 2AH | 2BH | 2CH | 2DH | 2EH | 2FH |
| 30H | 31H | 32H | 33H | 34H | 35H | 36H | 37H |
| 38H | 39H | 3AH | 3BH | 3CH | 3DH | 3EH | 3FH |
| 40H | 41H | 42H | 43H | 44H | 45H | 46H | 47H |
| 48H | 49H | 4AH | 4BH | 4CH | 4DH | 4EH | 4FH |
| 50H | 51H | 52H | 53H | 54H | 55H | 56H | 57H |
| 58H | 59H | 5AH | 5BH | 5CH | 5DH | 5EH | 5FH |
| 60H | 61H | 62H | 63H | 64H | 65H | 66H | 67H |
| 68H | 69H | 6AH | 6BH | 6CH | 6DH | 6EH | 6FH |
| 70H | 71H | 72H | 73H | 74H | 75H | 76H | 77H |
| 78H | 79H | 7AH | 7BH | 7CH | 7DH | 7EH | 7FH |

■ 5 × 7 character pattern table (2 of 2)

| | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|
| 80H | 81H | 82H | 83H | 84H | 85H | 86H | 87H |
| 88H | 89H | 8AH | 8BH | 8CH | 8DH | 8EH | 8FH |
| 90H | 91H | 92H | 93H | 94H | 95H | 96H | 97H |
| 98H | 99H | 9AH | 9BH | 9CH | 9DH | 9EH | 9FH |
| A0H | A1H | A2H | A3H | A4H | A5H | A6H | A7H |
| A8H | A9H | AAH | ABH | ACH | ADH | AEH | AFH |
| B0H | B1H | B2H | B3H | B4H | B5H | B6H | B7H |
| B8H | B9H | BAH | BBH | BCH | BDH | BEH | BFH |
| C0H | C1H | C2H | C3H | C4H | C5H | C6H | C7H |
| C8H | C9H | CAH | CBH | CCH | CDH | CEH | CFH |
| D0H | D1H | D2H | D3H | D4H | D5H | D6H | D7H |
| D8H | D9H | DAH | DBH | DCH | DDH | DEH | DFH |

■ 7 × 9 character pattern table (1 of 2)

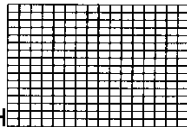
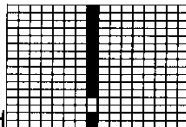
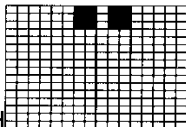
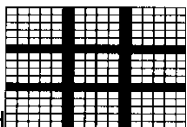
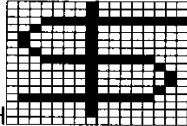
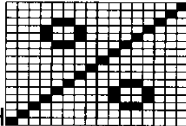
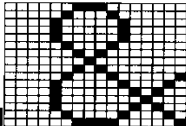
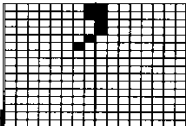
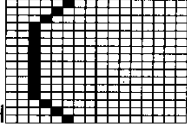
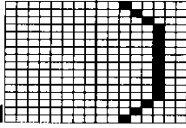
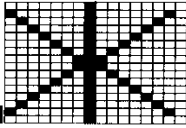
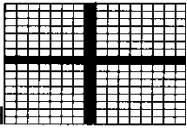
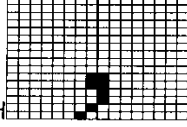
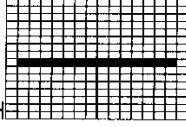
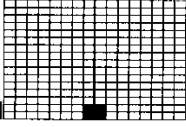
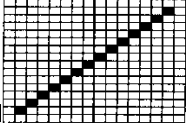
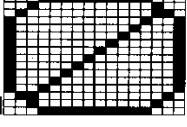
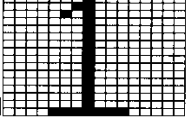
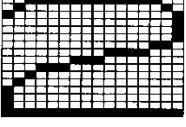
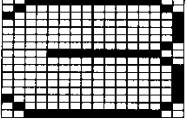
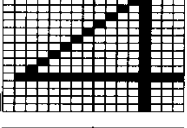
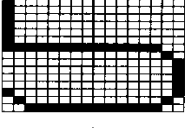
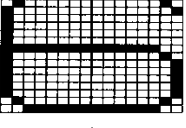
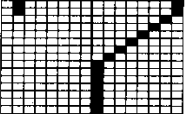
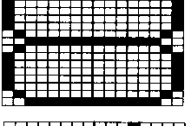
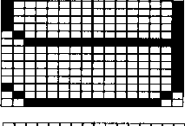
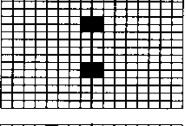
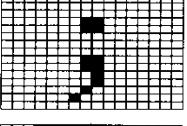
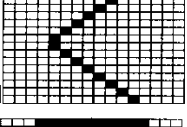
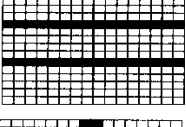
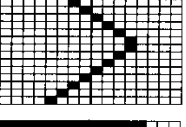
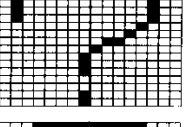
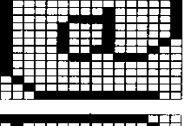
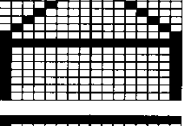
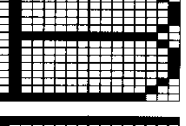
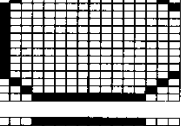
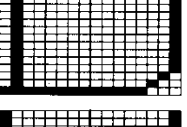
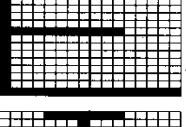
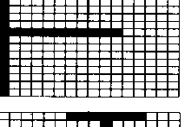
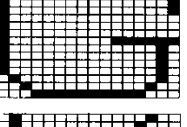
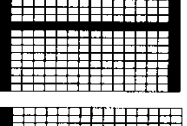
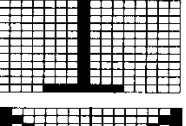
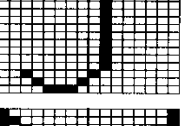
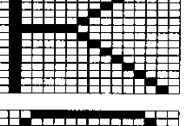

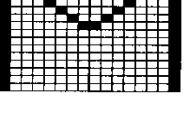


| | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|
| 20H | 21H | 22H | 23H | 24H | 25H | 26H | 27H |
| 28H | 29H | 2AH | 2BH | 2CH | 2DH | 2EH | 2FH |
| 30H | 31H | 32H | 33H | 34H | 35H | 36H | 37H |
| 38H | 39H | 3AH | 3BH | 3CH | 3DH | 3EH | 3FH |
| 40H | 41H | 42H | 43H | 44H | 45H | 46H | 47H |
| 48H | 49H | 4AH | 4BH | 4CH | 4DH | 4EH | 4FH |
| 50H | 51H | 52H | 53H | 54H | 55H | 56H | 57H |
| 58H | 59H | 5AH | 5BH | 5CH | 5DH | 5EH | 5FH |
| 60H | 61H | 62H | 63H | 64H | 65H | 66H | 67H |
| 68H | 69H | 6AH | 6BH | 6CH | 6DH | 6EH | 6FH |
| 70H | 71H | 72H | 73H | 74H | 75H | 76H | 77H |
| 78H | 79H | 7AH | 7BH | 7CH | 7DH | 7EH | 7FH |

■ 7 × 9 character pattern table (2 of 2)

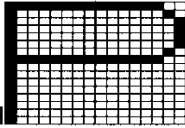
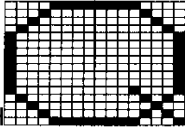
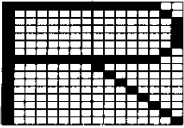
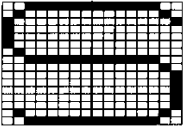
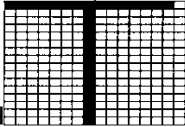
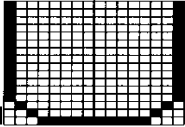
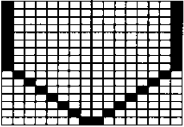
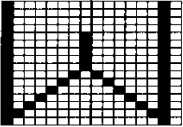
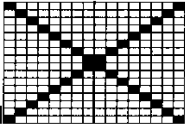
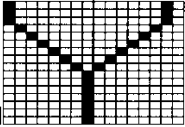
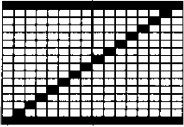
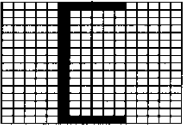
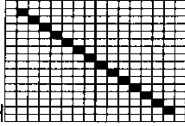
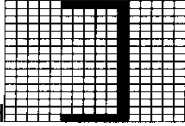
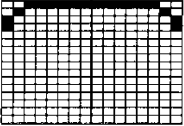
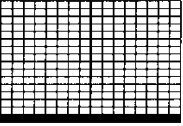
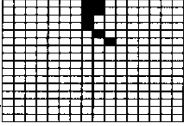
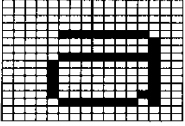
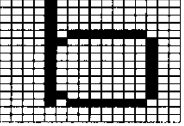
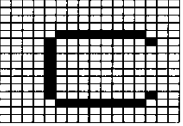
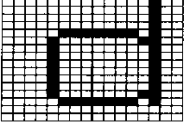
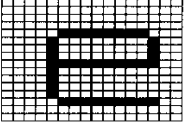
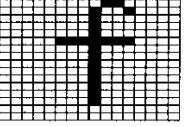
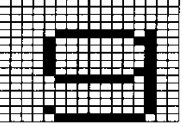
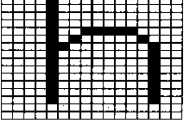
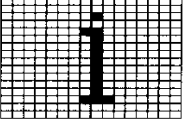
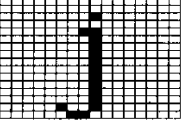
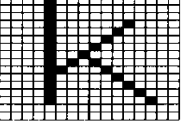
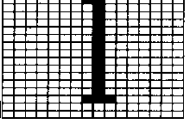
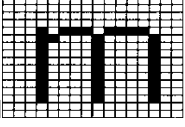
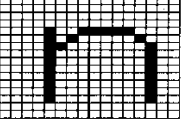
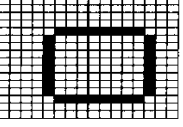
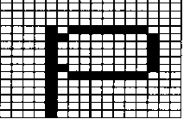
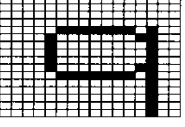
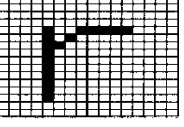
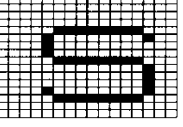
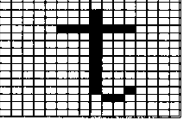
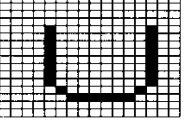
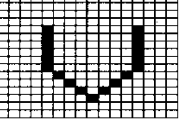
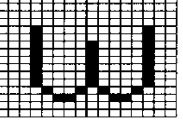
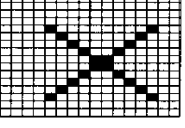
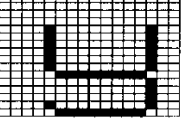
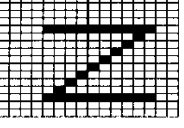
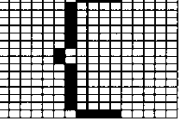
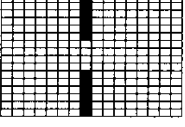
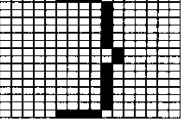
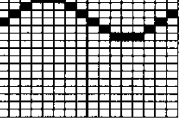
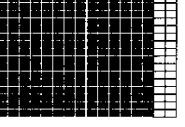
* 8 × 9 dots are used for 80H to 8FH.

| | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|
| 80H | 81H | 82H | 83H | 84H | 85H | 86H | 87H |
| 88H | 89H | 8AH | 8BH | 8CH | 8DH | 8EH | 8FH |
| 90H | 91H | 92H | 93H | 94H | 95H | 96H | 97H |
| 98H | 99H | 9AH | 9BH | 9CH | 9DH | 9EH | 9FH |
| A0H | A1H | A2H | A3H | A4H | A5H | A6H | A7H |
| A8H | A9H | AAH | ABH | ACH | ADH | AEH | AFH |
| B0H | B1H | B2H | B3H | B4H | B5H | B6H | B7H |
| B8H | B9H | BAH | BBH | BCH | BDH | BEH | BFH |
| C0H | C1H | C2H | C3H | C4H | C5H | C6H | C7H |
| C8H | C9H | CAH | CBH | CCH | CDH | CEH | CFH |
| D0H | D1H | D2H | D3H | D4H | D5H | D6H | D7H |
| D8H | D9H | DAH | DBH | DCH | DDH | DEH | DFH |
| | | | | | | | |

■ 16 × 16 character pattern table (1 of 4)

| | | | | | | | |
|-----|---|-----|---|-----|--|-----|---|
| 20H |  | 21H |  | 22H |  | 23H |  |
| 24H |  | 25H |  | 26H |  | 27H |  |
| 28H |  | 29H |  | 2AH |  | 2BH |  |
| 2CH |  | 2DH |  | 2EH |  | 2FH |  |
| 30H |  | 31H |  | 32H |  | 33H |  |
| 34H |  | 35H |  | 36H |  | 37H |  |
| 38H |  | 39H |  | 3AH |  | 3BH |  |
| 3CH |  | 3DH |  | 3EH |  | 3FH |  |
| 40H |  | 41H |  | 42H |  | 43H |  |
| 44H |  | 45H |  | 46H |  | 47H |  |
| 48H |  | 49H |  | 4AH |  | 4BH |  |
| 4CH |  | 4DH |  | 4EH |  | 4FH |  |

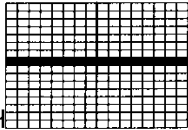
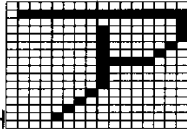
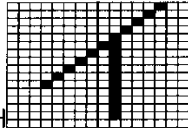
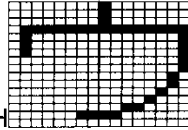
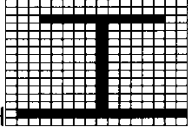
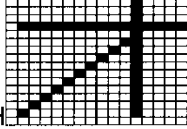
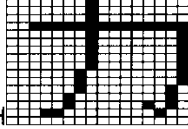
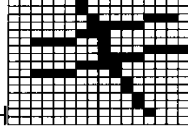
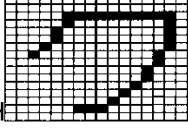
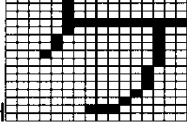
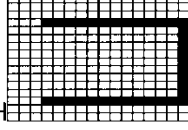
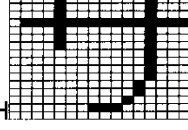
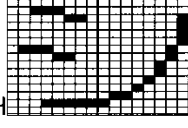
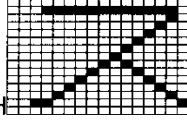
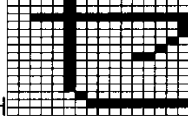
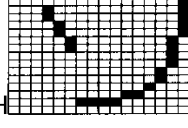
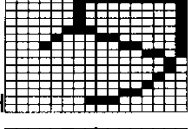
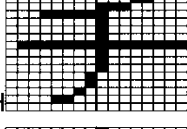
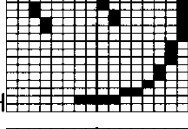
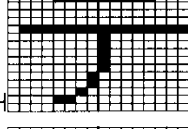
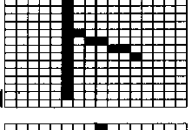
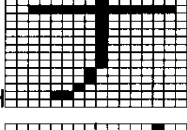
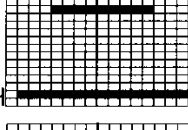
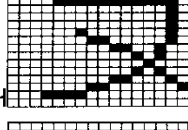
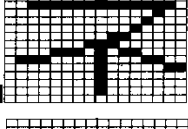
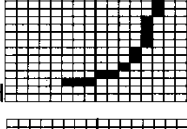
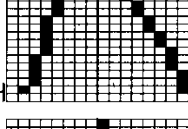
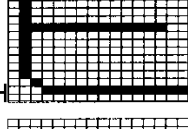
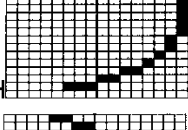
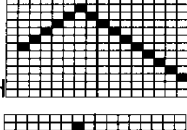
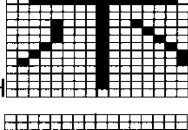
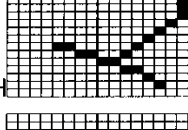
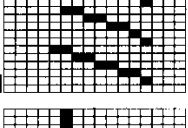
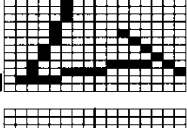
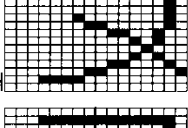
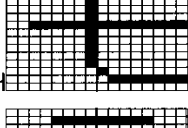
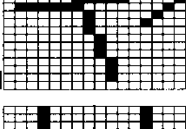
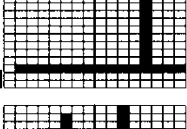
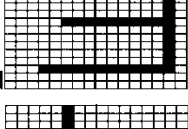
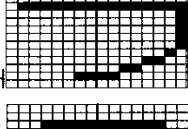
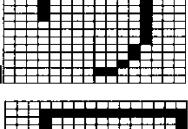
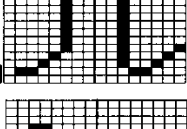
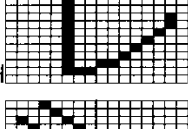
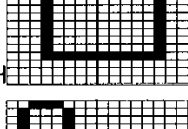
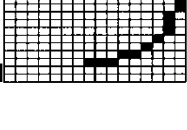
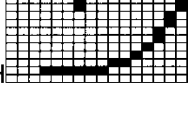


■ 16 × 16 character pattern table (2 of 4)

| | | | |
|---|---|---|---|
| 50H  | 51H  | 52H  | 53H  |
| 54H  | 55H  | 56H  | 57H  |
| 58H  | 59H  | 5AH  | 5BH  |
| 5CH  | 5DH  | 5EH  | 5FH  |
| 60H  | 61H  | 62H  | 63H  |
| 64H  | 65H  | 66H  | 67H  |
| 68H  | 69H  | 6AH  | 6BH  |
| 6CH  | 6DH  | 6EH  | 6FH  |
| 70H  | 71H  | 72H  | 73H  |
| 74H  | 75H  | 76H  | 77H  |
| 78H  | 79H  | 7AH  | 7BH  |
| 7CH  | 7DH  | 7EH  | 7FH  |

■ 16 × 16 character pattern table (3 of 4)

| | | | | | | | |
|-----|--|-----|--|-----|--|-----|--|
| 80H | | 81H | | 82H | | 83H | |
| 84H | | 85H | | 86H | | 87H | |
| 88H | | 89H | | 8AH | | 8BH | |
| 8CH | | 8DH | | 8EH | | 8FH | |
| 90H | | 91H | | 92H | | 93H | |
| 94H | | 95H | | 96H | | 97H | |
| 98H | | 99H | | 9AH | | 9BH | |
| 9CH | | 9DH | | 9EH | | 9FH | |
| A0H | | A1H | | A2H | | A3H | |
| A4H | | A5H | | A6H | | A7H | |
| A8H | | A9H | | AAH | | ABH | |
| ACH | | ADH | | AEH | | AFH | |

■ 16 × 16 character pattern table (4 of 4)

| | | | | | | | |
|-----|---|-----|---|-----|---|-----|---|
| B0H |  | B1H |  | B2H |  | B3H |  |
| B4H |  | B5H |  | B6H |  | B7H |  |
| B8H |  | B9H |  | BAH |  | BBH |  |
| BCH |  | BDH |  | BEH |  | BFH |  |
| C0H |  | C1H |  | C2H |  | C3H |  |
| C4H |  | C5H |  | C6H |  | C7H |  |
| C8H |  | C9H |  | CAH |  | CBH |  |
| CCH |  | CDH |  | CEH |  | CFH |  |
| D0H |  | D1H |  | D2H |  | D3H |  |
| D4H |  | D5H |  | D6H |  | D7H |  |
| D8H |  | D9H |  | DAH |  | DBH |  |
| DCH |  | DDH |  | DEH |  | DFH |  |

11.3.5 Tables of standard signals

■ Table of TV standard signals (1 of 2)

| Signal format | Total no. of samples | Total no. of samples | Total no. of samples | Frame rate [Hz] | Scanning system | Subcarrier frequency [MHz] | Aspect ratio | Video level [mV] | Sync level [mV] | SETUP | Main countries where used |
|-------------------|----------------------|----------------------|----------------------|-----------------|-----------------|----------------------------------|--------------|------------------|-----------------|-------|---------------------------|
| NTSC-J (Japan) | NTSC (RS-170A) | 712 × 484 | 858 × 525 | 60/1.001 | Interlaced | 3.579545 | 4:3 | 714 | 286 | No | Japan |
| NTSC-M | NTSC | 712 × 484 | 858 × 525 | 60/1.001 | Interlaced | 3.579545 | 4:3 | 714 | 286 | Yes | USA |
| NTSC-443 | NTSC | 712 × 484 | 858 × 525 | 60/1.001 | Interlaced | 4.43361875 | 4:3 | 714 | 286 | Yes | |
| PAL-60 | PAL | 712 × 484 | 858 × 525 | 60/1.001 | Interlaced | 4.43361875 | 4:3 | 700 | 300 | No | |
| PAL-M | PAL | 712 × 484 | 858 × 525 | 60/1.001 | Interlaced | 3.57561189 | 4:3 | 714 | 286 | Yes | Brazil |
| PAL (B/D/G/H/I/K) | PAL (BT.470-6) | 702 × 574 | 864 × 625 | 50 | Interlaced | 4.43361875 | 4:3 | 700 | 300 | No | U.K, Germany |
| PAL-N | PAL | 718 × 574 | 864 × 625 | 50 | Interlaced | 4.43361875 | 4:3 | 714 | 286 | Yes | Uruguay |
| PAL-Nc | PAL | 702 × 574 | 864 × 625 | 50 | Interlaced | 3.58205625 | 4:3 | 700 | 300 | No | Argentina |
| SECAM | SECAM | 702 × 574 | 864 × 625 | 50 | Interlaced | for = 4.406250 fob = 4.250000 | 4:3 | 700 | 300 | No | France, Russia |
| 483p (NTSC-PROG) | SMPTE293M | 720 × 483 | 848 × 525 | 60/1.001 | Progressive | - | 4:3 | 700 | 300 | - | - |
| 576p (PAL-PROG) | BT.1358 | 720 × 574 | 864 × 625 | 50 | Progressive | - | 4:3 | 700 | 300 | - | - |

■ Table of TV standard signals (2 of 2)

| Signal format | Total no. of samples | Total no. of samples | Total no. of samples | Frame rate [Hz] | Scanning system | Subcarrier frequency [MHz] | Aspect ratio | Video level [mV] | Sync level [mV] | SETUP | Main countries where used |
|---------------|----------------------|----------------------|----------------------|-----------------|-----------------|----------------------------|--------------|------------------|-----------------|-------|---------------------------|
| 720p | SMPTE296M | 1280 × 720 | 1650 × 750 | 60 | Progressive | - | 16:9 | 700 | 300 | - | - |
| | | | 1650 × 750 | 60/1.001 | | | | | | | |
| | | | 1980 × 750 | 50 | | | | | | | |
| | | | 3300 × 750 | 30 | | | | | | | |
| | | | 3300 × 750 | 30/1.001 | | | | | | | |
| | | | 3960 × 750 | 25 | | | | | | | |
| | | | 4125 × 750 | 24 | | | | | | | |
| | | | 4125 × 750 | 24/1.001 | | | | | | | |
| 1035i | BTA S-001A | 1920 × 1035 | 2200 × 1125 | 60 | Interlaced | - | 16:9 | 700 | 300 | - | - |
| | | | | 60/1.001 | | | | | | | |
| 1080i | SMPTE274M | 1920 × 1080 | 2200 × 1125 | 60 | Interlaced | - | 16:9 | 700 | 300 | | |
| | | | 2200 × 1125 | 60/1.001 | | | | | | | |
| | | | 2640 × 1125 | 50 | | | | | | | |
| 1080p | SMPTE274M | 1920 × 1080 | 2200 × 1125 | 60 | Progressive | - | 16:9 | 700 | 300 | | |
| | | | 2200 × 1125 | 60/1.001 | | | | | | | |
| | | | 2640 × 1125 | 50 | | | | | | | |
| | | | 2200 × 1125 | 30 | | | | | | | |
| | | | 2200 × 1125 | 30/1.001 | | | | | | | |
| | | | 2640 × 1125 | 25 | | | | | | | |
| | | | 2750 × 1125 | 24 | | | | | | | |
| | | | 2750 × 1125 | 24/1.001 | | | | | | | |

■ Table of TV standard signal timing waveforms (1 of 3)

| 信号 | 同期信号波形 | アクティブライン | 垂直プランキング T: 1dot幅 |
|--|-----------------------------|-----------------------------------|----------------------|
| NTSC-J PG1:950,968 PG2:918,919,930 PG3:980 NTSC-M PG1:994 PG2:924 NTSC-443 PG2:925 PAL-M PG2:926 PAL-60 PG2:927 | ODD FIELD EVEN FIELD | $1/T=13.5\text{MHz}$ HSYNC | $1H=858T$ |
| PAL-B/D/G/H/I/K PG1:969 PG2:920,921,931 PG3:981 PAL-Nc PG2:929 SECAM PG1:964 PG2:922,923,932 PG3:982 | ODD FIELD EVEN FIELD | $1/T=13.5\text{MHz}$ HSYNC | $1H=864T$ |
| PAL-N PG2:928 | ODD FIELD EVEN FIELD | $1/T=13.5\text{MHz}$ HSYNC | $1H=864T$ |

■ Table of TV standard signal timing waveforms (2 of 3)

| 信号 | 同期信号波形 | アクティブライン | 垂直ブランキング | | | | | | | | | | | |
|---|---|--|-----------------------------|----|----------|-------|------|----------|--|-----|----|------|------|---|
| 1080i PG1: 951, 972, 973 PG2: 933, 938, 939 PG3: 985, 986 1035i PG1: 974, 975 PG2: 934 | ODD FIELD EVEN FIELD 注) 1920×1035iの40LINEは映像信号はありません。 | $1/T = 74.25\text{MHz}$ or 74.138MHz <table border="1"> <tr> <th>Frame Rate</th> <th>AT</th> </tr> <tr> <td>60/59.94</td> <td>44T</td> </tr> <tr> <td>50</td> <td>484T</td> </tr> </table> | Frame Rate | AT | 60/59.94 | 44T | 50 | 484T | $1H$ $1H$ 6LINE 1~5,564~567LINE 563LINE 568LINE | | | | | |
| Frame Rate | AT | | | | | | | | | | | | | |
| 60/59.94 | 44T | | | | | | | | | | | | | |
| 50 | 484T | | | | | | | | | | | | | |
| 1080p PG1: 970, 971 PG2: 935, 936, 937 PG3: 983, 984 720p PG1: 976, 977 PG2: 940, 941, 942 PG3: 987, 988 | 注) ()内の数値は280×720pのライン番号です。 | $1/T = 74.25\text{MHz}$ or 74.138MHz <table border="1"> <tr> <th rowspan="2">Frame Rate</th> <th colspan="2">AT</th> </tr> <tr> <th>1080p</th> <th>720p</th> </tr> <tr> <td>60/59.94</td> <td>44T</td> <td>70T</td> </tr> <tr> <td>50</td> <td>484T</td> <td>400T</td> </tr> </table> | Frame Rate | AT | | 1080p | 720p | 60/59.94 | 44T | 70T | 50 | 484T | 400T | $1H$ $132T(260)$ $1012T(1540)$ 1~5LINE |
| Frame Rate | AT | | | | | | | | | | | | | |
| | 1080p | 720p | | | | | | | | | | | | |
| 60/59.94 | 44T | 70T | | | | | | | | | | | | |
| 50 | 484T | 400T | | | | | | | | | | | | |
| 720x483p (NTSC-P) PG1: 978 PG2: 946, 947 | | $1/T = 27\text{MHz}$ | $1H = 858T$ 7~12LINE | | | | | | | | | | | |
| 720x576p (PAL-P) PG1: 979 PG2: 948, 949 | 注) ()内の数値は920×1035iのライン番号です。 | $1/T = 27\text{MHz}$ | $1H = 858T$ 1~5LINE | | | | | | | | | | | |

■ Table of TV standard signal timing waveforms (3 of 3)

| 信号 | 同期信号波形 | アクティブライン | 垂直ブランキング T: 1dot幅 |
|---|---------------------------------|--------------------------------------|----------------------|
| 1080i SMPTE-295M (中国) FIG: 998 | ODD FIELD EVEN FIELD | $1/T = 74.25\text{MHz}$ HSYNC | |
| 1080p SMPTE-295M FIG: 999 アナログ出力 のみ対応 | | $1/T = 74.25\text{MHz}$ HSYNC | |
| 1152i (Australian) FIG: 944 | ODD FIELD EVEN FIELD | $1/T = 13.5\text{MHz}$ HSYNC | |
| 1080i (1250) (Australian) FIG: 945 | ODD FIELD EVEN FIELD | $1/T = 13.5\text{MHz}$ HSYNC | |



12

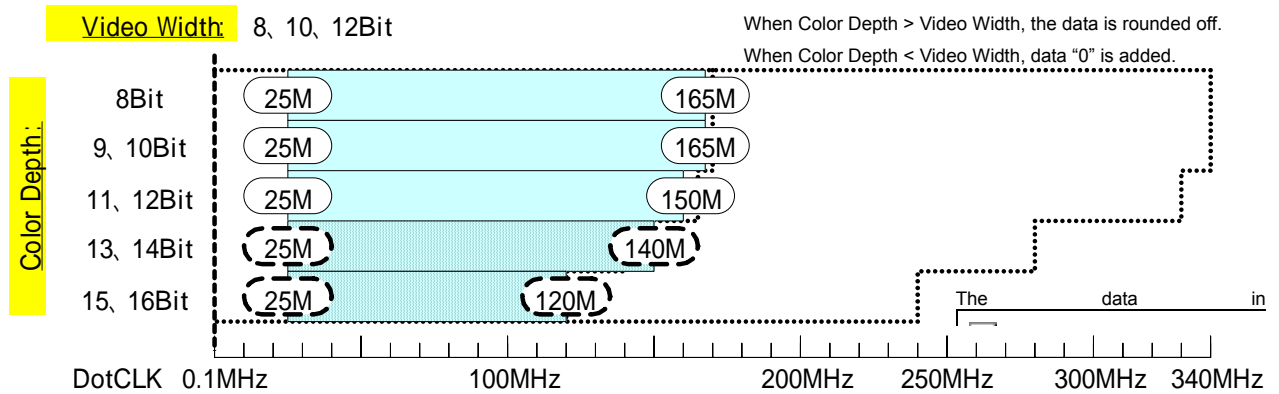
PRECAUTIONARY ITEMS

12.1 Relationships between pattern drawing bit length and dot clock frequency

The pattern drawing bit length stands in relationships of dependency on the dot clock frequency. Pattern drawing bit lengths and dot clock frequencies outside the bounds of these relationships cannot be set. These relationships also differ depending on the output video bit length of each unit. They are shown in the following figures.

12.1.1 HDMI unit

The dot clock frequency is restricted by the pattern drawing bit length (Color Depth) shown in the figure below. Data skipping occurs when the output video bit length (Video Width) at this time is less than the pattern drawing bit length (Color Depth).



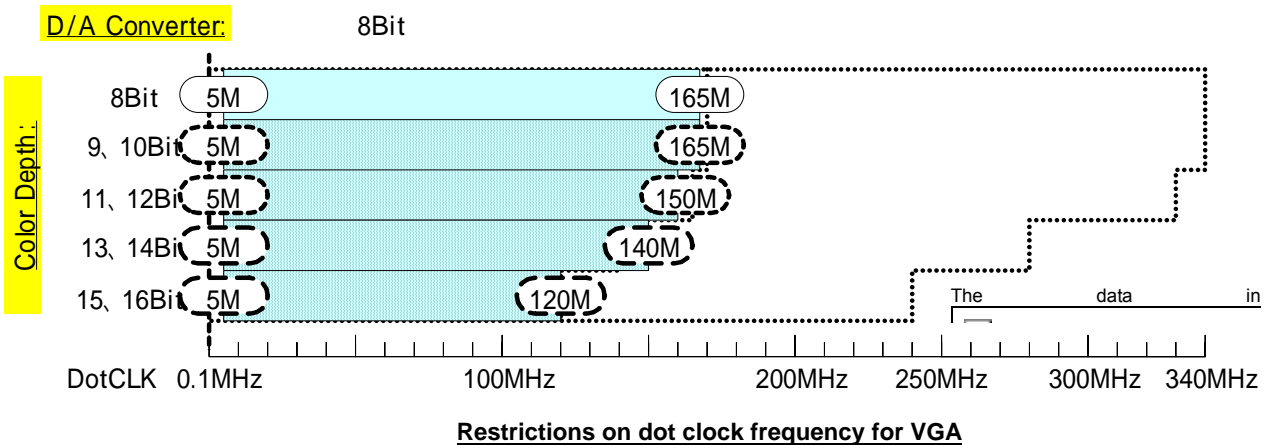
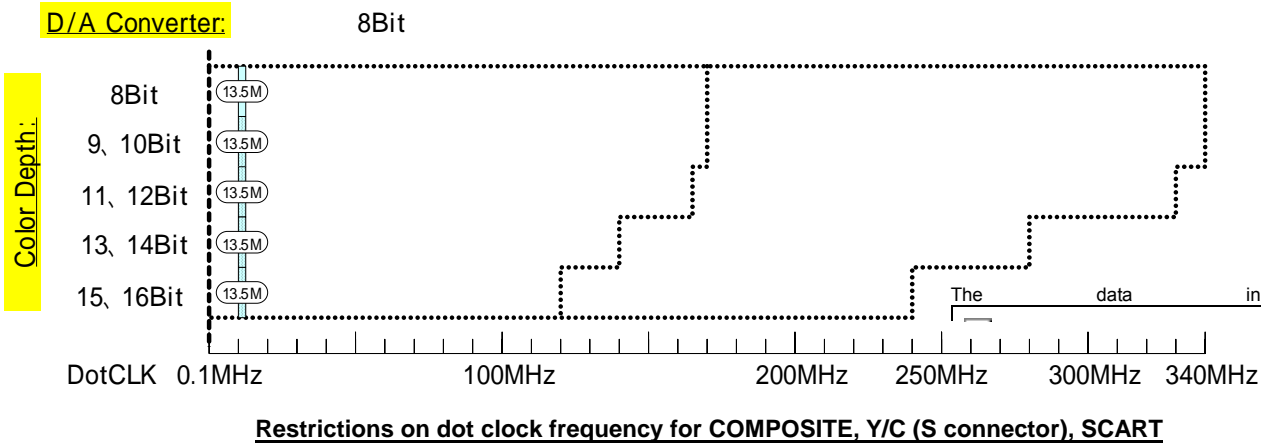
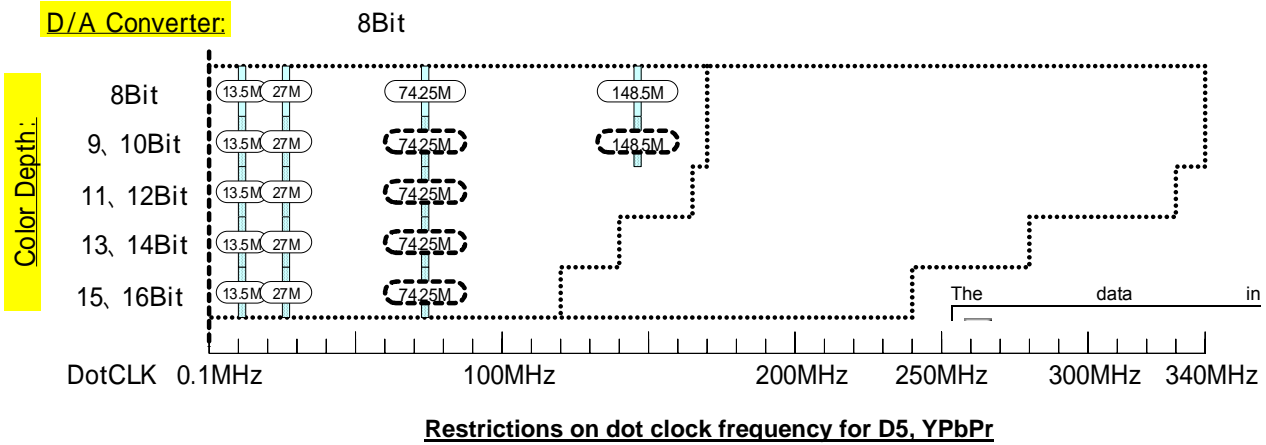
Restrictions on dot clock frequency for HDMI1, HDMI2

For details on the pattern drawing bit length (Color Depth), refer to "4.1.5 Setting the bit length (gray scale) for pattern drawing."

For details on the pattern drawing bit length (Color Depth), refer to "4.2.2 HDMI setting procedure."

12.1.2 TV encoder unit

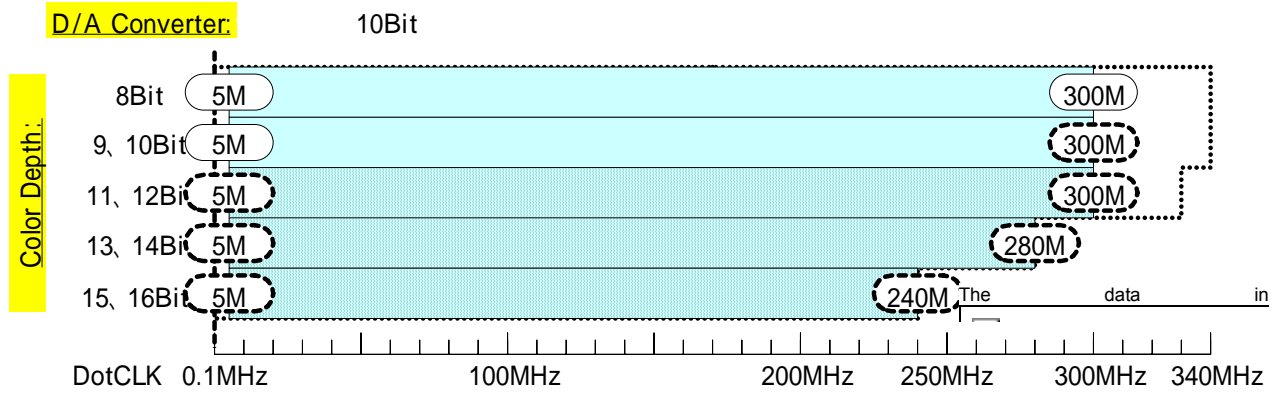
The dot clock frequency is restricted by the pattern drawing bit length (Color Depth) shown in the figures below. An 8-bit D/A converter is installed in the TV encoder unit, and data skipping occurs when the pattern drawing bit length (Color Depth) is more than 8 bits.



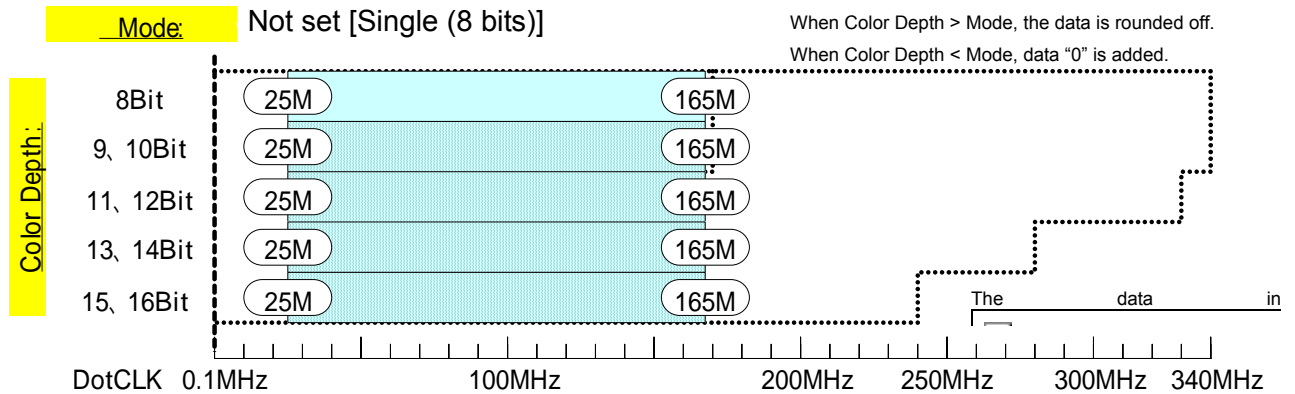
For details on the pattern drawing bit length (Color Depth), refer to “4.1.5 Setting the bit length (gray scale) for pattern drawing.”

12.1.3 PC analog unit

The dot clock frequency is restricted by the pattern drawing bit length (Color Depth) shown in the figures below. A 10-bit D/A converter is installed in the PC analog unit, and data skipping occurs when the pattern drawing bit length (Color Depth) is more than 10 bits. A DVI-I (Single Link) unit is also installed, and the data skipping occurs when the pattern drawing bit length (Color Depth) is more than 8 bits.



Restrictions on dot clock frequency for RGB, Dsub15, DVI (analog)

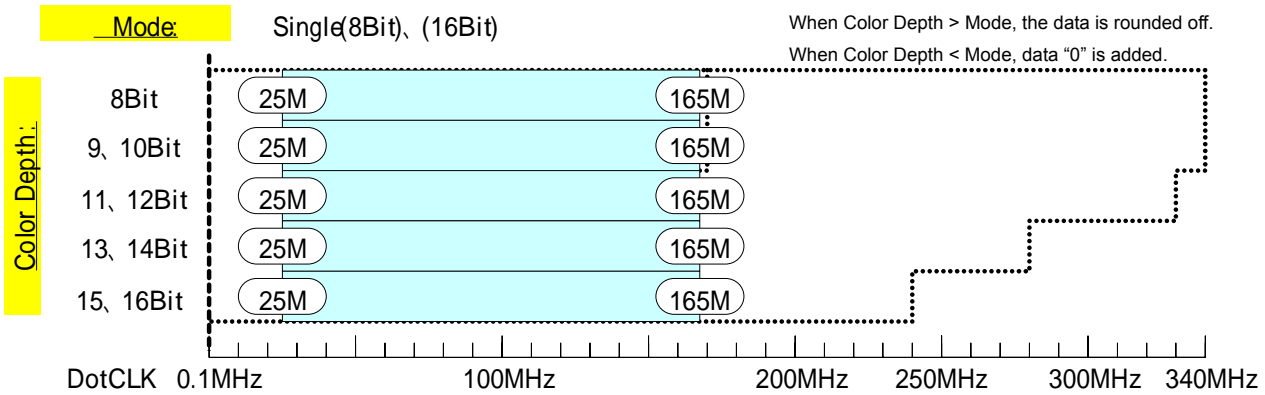


Restrictions on dot clock frequency for DVI (digital)

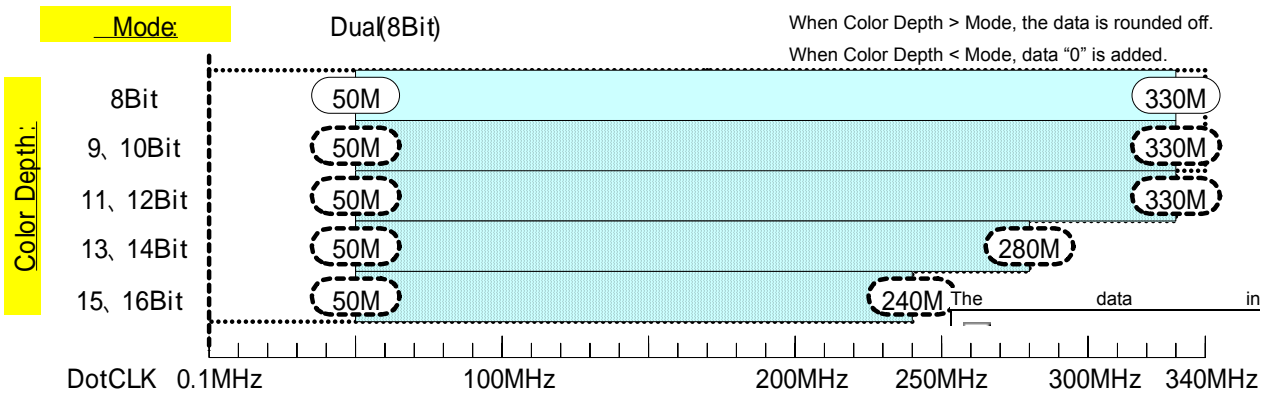
For details on the pattern drawing bit length (Color Depth), refer to "4.1.5 Setting the bit length (gray scale) for pattern drawing."

12.1.4 DVI unit

The dot clock frequency is restricted by the pattern drawing bit length (Color Depth) shown in the figures below. Data skipping occurs when the output video bit length (Video Width) at this time is less than the pattern drawing bit length (Color Depth).



Restrictions on dot clock frequency for DVI (Single Link)



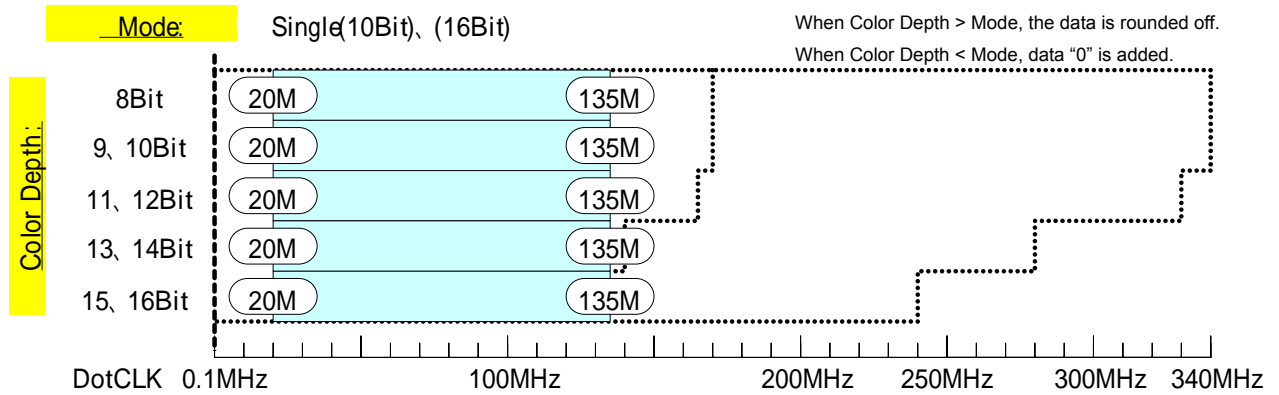
Restrictions on dot clock frequency for DVI (Dual Link)

For details on the pattern drawing bit length (Color Depth), refer to "4.1.5 Setting the bit length (gray scale) for pattern drawing."

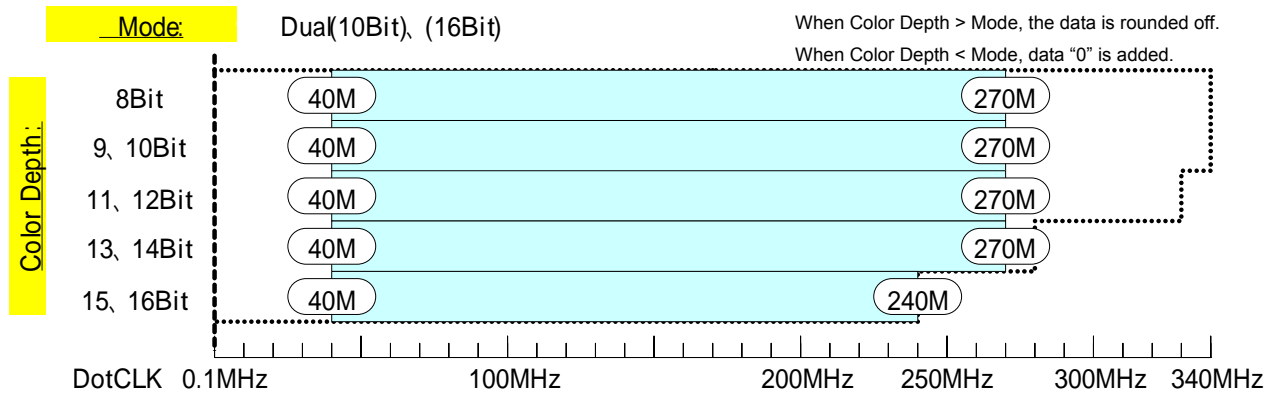
For details on the output video bit length (Mode), refer to "4.3.2 DVI unit setting procedure."

12.1.5 LVDS unit

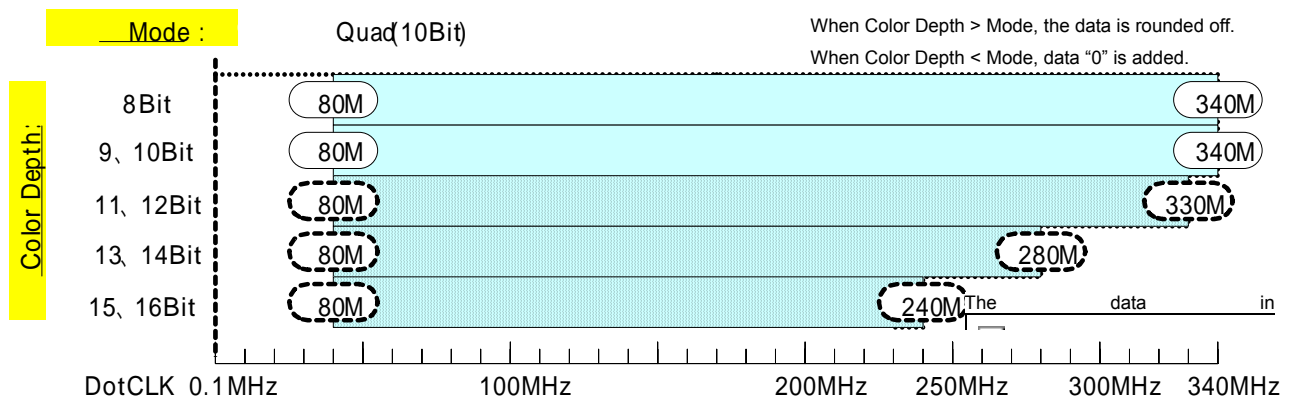
The dot clock frequency is restricted by the pattern drawing bit length (Color Depth) shown in the figures below. Data skipping occurs when the output video bit length (Video Width) at this time is less than the pattern drawing bit length (Color Depth).



Restrictions on dot clock frequency for LVDS (Single Link)



Restrictions on dot clock frequency for LVDS (Dual Link)



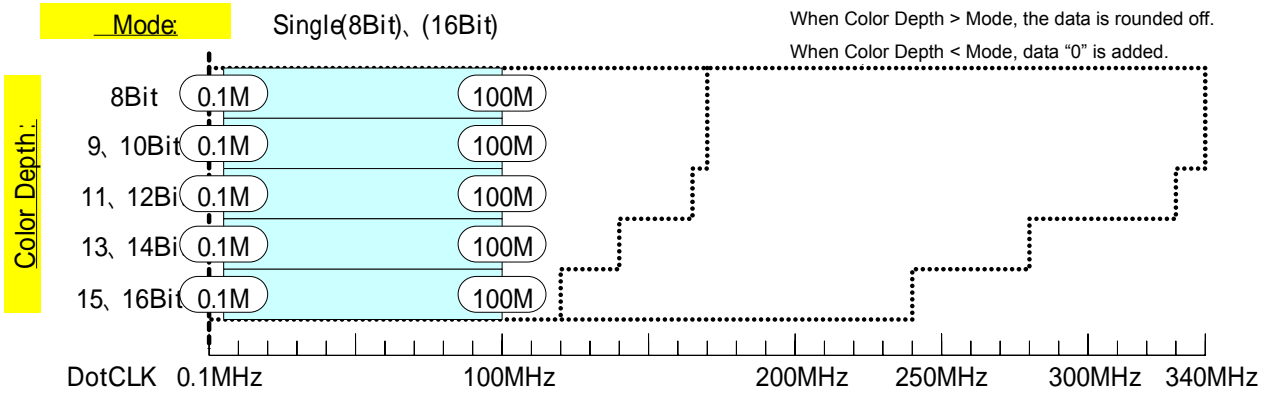
Restrictions on dot clock frequency for LVDS (Quad Link)

For details on the pattern drawing bit length (Color Depth), refer to "4.1.5 Setting the bit length (gray scale) for pattern drawing."

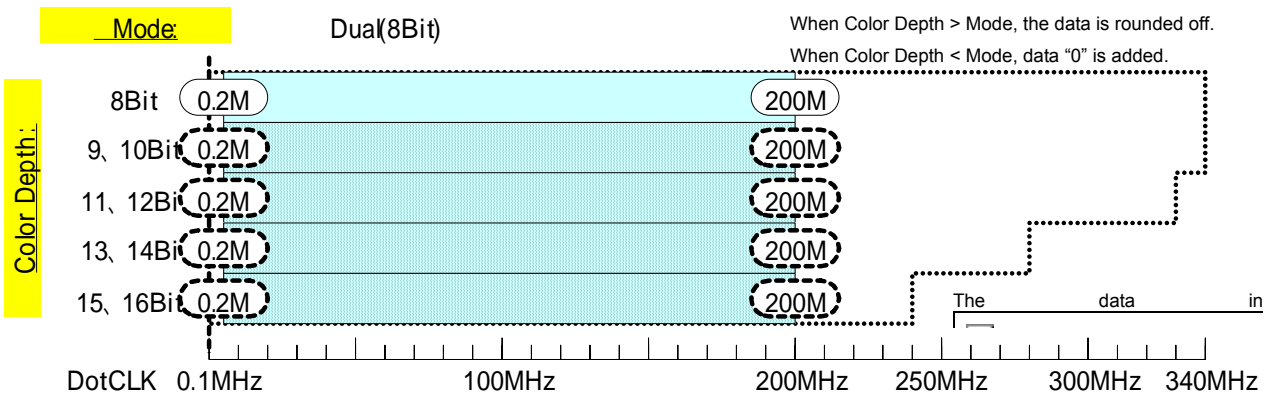
For details on the output video bit length (Mode), refer to "4.4.2 LVDS setting procedure."

12.1.6 Parallel unit

The dot clock frequency is restricted by the pattern drawing bit length (Color Depth) shown in the figures below. Data skipping occurs when the output video bit length (Video Width) at this time is less than the pattern drawing bit length (Color Depth).



Restriction on parallel (Single Link) dot clock frequency



Restriction on parallel (Dual Link) dot clock frequency

For details on the pattern drawing bit length (Color Depth), refer to "4.1.5 Setting the bit length (gray scale) for pattern drawing."

For details on the output video bit length (Mode), refer to "4.5.2 Parallel data setting procedure."

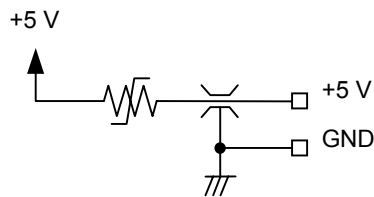
12.2 Concerning the maximum current consumption of the DDC power supply

DDC power is supplied to the outputs of the VG-870/871.

The maximum currents supplied by the DDC power supply are as listed below.

- HDMI output: 0.050 A for each channels
- DVI output: 0.5 A total for 2 channels
- LVDS 4-channel output: 0.5 A total for channels 1 to 4, and max. 0.5 A per channel
- Parallel output (2 channels): 0.5 A total for channels 1 and 2, and max. 0.5 A per channel
- TV encoder output: 0.5 A total for all channels
- PC analog output: 0.5 A total for all channels

1) The DDC supply voltage is output as shown in the figure below.



DDC power supply output circuit

2) The supply voltage differs depending on the output connector.

- HDMI output: Fixed at 5 V.
- DVI output: Fixed at 5 V.
- LVDS output: Can be switched between 5 V and 3.3 V using a rear panel switch.
- Parallel output: Can be switched between 5 V, 3.3 V, 2.5 V and 1.8 V using a rear panel switch.
- TV encoder output: Fixed at 5 V.
- PC analog output: Fixed at 5 V.

CAUTION

- The DDC power supply incorporates an overcurrent protection device, but do not use a current which exceeds the rating.
- Do NOT supply power to the DDC power supply from the device connected to the VG-870/871. If such the voltage of such a power supply is connected, both the VG-870/871 and the connected device may fail.



13

LIST OF ERROR MESSAGES

13.1 Media-related error

| Code (HEX) | Error message | Description |
|------------|--------------------------------|---|
| 217 | Flash ROM(User) Full | There is not enough free space in the internal memory. |
| 228 | No CF-Card | The CF card has not been inserted. |
| 229 | CF-Card Unformatted | The CF card has not been formatted. |
| 22A | CF-Card Full | There is not enough free space on the CF card. |
| 22C | OPT Data File Error | Error in the optional pattern data. |
| 22F | Image Data File Error | Error in the image data. |
| 233 | Audio Flash Data Already Exist | The audio data has already been registered. |
| 235 | Audio Flash File Error | Error in the audio data. |
| 236 | Audio Flash Data Full | The maximum amount of audio data which can be registered has been exceeded. |

13.2 General error

| Code (HEX) | Error message | Description |
|------------|--------------------------------|---|
| 302 | 'H-Timing DotClock' Over Limit | Dot clock in the horizontal timing data is outside the setting range. |
| 303 | 'H-Timing Frontp' Over Limit | Frontp in the horizontal timing data is outside the setting range. |
| 305 | 'H-Timing HD' Over Limit | HDstart+HDwidth in the horizontal timing data is outside the setting range. |
| 307 | 'H-Timing Period' Over Limit | Period in the horizontal timing data is outside the setting range. |
| 308 | 'H-Timing Disp' Over Limit | Disp in the horizontal timing data is outside the setting range. |
| 309 | 'H-Timing Sync' Over Limit | Sync in the horizontal timing data is outside the setting range. |
| 30A | 'H-Timing Backp' Over Limit | Backp in the horizontal timing data is outside the setting range. |
| 30B | 'H-Timing Blanking' Over Limit | Blanking in the horizontal timing data is outside the setting range. |
| 30C | H-Frequency Over Limit | The horizontal sync frequency in the horizontal timing data is outside the setting range. |
| 30D | 'H-Timing' Data Error | Error other than those described above in the horizontal timing data. |
| 310 | 'Output' Data Error" | Error in the output condition data. |
| 311 | 'Character' Data Error" | Error in the character pattern data. |
| 312 | 'Cross Hatch' Data Error" | Error in the crosshatch pattern data. |
| 313 | 'Dot' Data Error" | Error in the dot pattern data. |
| 314 | 'Circle' Data Error" | Error in the circle pattern data. |

| Code (HEX) | Error message | Description |
|------------|---------------------------------|---|
| 315 | 'Burst' Data Error" | Error in the burst pattern data. |
| 316 | 'Window' Data Error" | Error in the window pattern data. |
| 317 | 'Color Bar' Data Error" | Error in the color bar pattern data. |
| 318 | TERMINAL) Parameter Error | Error in a parameter in the terminal mode. |
| 319 | TERMINAL) Data Error | Error in the data in the terminal mode. |
| 31E | TERMINAL) Communication Timeout | Time-out has occurred in the data during communication in the terminal mode. |
| 31F | TERMINAL) Undefined Command | An undefined command was received in the terminal mode. |
| 321 | 'Program No.' Error" | Error in the program number. |
| 322 | 'Group No.' Error" | Error in the group number. |
| 323 | 'Character Code' Error" | Error in a user character code. |
| 32B | 'OPT No.' Error" | Error in the optional pattern number. |
| 32D | OPT Data File Not Found" | The optional pattern has not been registered. |
| 32E | 'Image No.' Error" | Error in the image pattern number. |
| 330 | Image Data File Not Found" | The image pattern has not been registered. |
| 333 | CURSOR Not Selected | The cursor pattern has not been selected (when SP-8870 CurTool is used). |
| 334 | EDID Read Port Not Found | The EDID read port is not found. (The unit has not been installed.) |
| 338 | 'Gray Scale' Data Error | Error in the gray scale pattern data. |
| 339 | 'OPT/Image' Data Error" | Error in the optional pattern or image pattern data. |
| 33B | 'Cursor' Data Error | Error in the cursor pattern data. |
| 33C | 'Program Name' Data Error | Error in the program name data. |
| 33D | '□×[ABC] Color' Data Error | Error in the □ × [ABC] color data. |
| 33E | 'Action' Data Error" | Error in the action data. |
| 340 | 'V-Timing Total' Over Limit | Total in the vertical timing data is outside the setting range. |
| 341 | 'V-Timing Disp' Over Limit" | Disp in the vertical timing data is outside the setting range. |
| 342 | 'V-Timing Sync' Over Limit | Sync in the vertical timing data is outside the setting range. |
| 343 | 'V-Timing Backp' Over Limit | Backp in the vertical timing data is outside the setting range. |
| 344 | 'V-Timing Frontp' Over Limit | Frontp in the vertical timing data is outside the setting range. |
| 345 | 'V-Timing Blanking' Over Limit | Blanking in the vertical timing data is outside the setting range. |
| 346 | V-Frequency Over Limit | The vertical sync frequency in the vertical timing data is outside the setting range. |
| 347 | 'V-Timing VD' Over Limit | VDstart+VDwidth in the vertical timing data is outside the setting range. |
| 348 | 'V-Timing EQP-Fp' Over Limit | EQP-FP in the vertical timing data is outside the setting range. |
| 349 | 'V-Timing EQP-Bp' Over Limit | EQP-BP in the vertical timing data is outside the setting range. |

NOTICE

An incorrectly collated manual or a manual with missing pages will be replaced.

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