ASTRO

Video Signal Generator

VG-877

Instruction Manual

Ver.1.00

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VG-877

Instruction Manual

2014.10

Ver.1.00

ASTRODESIGN,Inc

CONTENTS

BEFORE USE

Introduction

Thank you for purchasing VG-877 digital video signal generator.
This manual explains the procedures to be taken for operation of VG-877. Please observe the checkpoints as well as other information that is disclosed in this manual. Handling of the unit improperly may result in malfunction so please take your time to review this manual.
Please keep this manual in a safe place for easy access in case it is necessary.

Thank you for choosing ASTRODESIGN!

Safety Precautions

⚠ WARNING

Concerning the unit

- **Do not subject the unit to strong impacts. Doing so may cause the unit to malfunction, damage, or in rare circumstances generate heat which can result in a fire.**
- **Do not use the unit in a location where there is a risk of ignition or explosion.**
- **Do not place the unit inside a microwave oven or any other appliances used to cook food with heat or inside pressure vessels. Doing so may cause malfunction where the unit may generate heat, smoke, or ignite, as well as cause damage to internal circuit componentry.**
- **This unit contains high-voltage areas. Refrain from disassembly, self repair, and remodeling of the unit since it does pose a risk of electric shock and burns that may cause unit malfunction.**
- **If thunder is heard while the unit is being used outdoors: Immediately turn off the unit, disconnect the power cable, and move the unit to a safe location.**

Concerning the Power Cable

- **When disconnecting the power cable, always remove by holding molded part of the plug. Avoid pulling on the cable to remove.**
- **Do not bend the power cable at unreasonable tight angles or use with cables bundled up. Doing so may result in fire.**
- **Do not place heavy objects on top of the power cable. Doing so may damage the cable resulting in fire and or electric shock.**

Concerning Unit Body

- **Do not spill liquids inside the unit.**
- **Do not drop combustible items or metal objects onto or into the unit. Using the unit in such conditions may result in a fire and or electric shock resulting to unit malfunction.**

⚠ CAUTION

Concerning the unit

- **When connecting the unit to a display, connect it using the accessory FG cable. This will establish a common Frame Ground connection with the display. If the unit is used without establishing the common frame ground there is a risk of malfunction. Please be aware of this especially when testing displays that are under development.**
- **When the unit is to be disconnected from a display, first disconnect the connecting cables, and then disconnect the FG cable.**
- **To turn the unit on or off, always use the POWER switch that is located on the front panel. Switching unit on or off by pulling the power cable may cause malfunction and can result in USB memory damage.**
- **After turning on the power, wait 10 -15 minutes to ensure unit stability. Only after unit stability should you proceed to operate the unit.**
- **THERE IS NO SIDE PANEL OPENING IN VG-877 PLEASE RETRACT FROM MANUAL!!!**

Concerning Impact

- **VG-877 is a precision instrument and it may be subject to malfunction if it is subjected to impact. Please take special care when transporting the unit from location to location.**
- **Do not drop the unit.**

Concerning Installation

- **Install the unit in a stable location.**
- **Do not install or operate unit on its side. Doing so will generate heat, causing the temperature in the chassis to rise which can lead to malfunction.**

When trouble or problems occurr

- **In the unlikely event that the unit has developed a problem or malfunction, disconnect the power unit and contact your Astrodesign sales representative.**

What is included

The following items are included in the package as part of VG-877.
Be sure to use the accessories included in this package and avoid third party accessories. The use of third party accessories may result in a malfunction of the unit.

■ Standard parts

- VG-877 main unit
- VG-877 instruction manual CD (PDF you are currently reading): 1 pc
- USB memory: 1 pc
- SP-8870 software installation CD (compatible with Windows): 1 pc
- SP-8870 instruction manual: PDF version (provided with the SP-8870 installation CD)
- Power cable: 1 pc (*1)
- FG cable (1.5 m): 1 pc (*1)

(*1) These parts are to be used only with this product.

■ Optional accessories

- RB-1870:

  This remote control box can be used with VG-877 as well as older Astrodesign VG series generators.
- RB-1871:
  A more simplified type of remote control box that is used to execute pre-installed program, timing and pattern data. Note: This remote control box does not have the ability to adjust custom settings.
- 10-key Standard USB hub:
  Compatible third party 10-key USB hubs with VG-877:
  iBuffalo BSTKH03
  Sanwa Supply NT-18UH2
  If the user desires to use a third party 10-key USB hub, please refer to section 1.5.2 “10-key standard USB hub,” to check compatibility. The USB hub can only execute and select preprogrammed program, timing, and patterns. User will not have the capability of creating custom settings with this remote box.

1 CONCERNING THE UNIT

1.1. Overview

The VG-877 is a video signal generator designed to be used in all kinds of display measurement fields. It offers a high expandability by providing video output interfaces in the form of modules which can be installed in the VG-877.

1.2. Features

■ 16-bit high-speed image delineation engine

The unit incorporates a maximum 16bits x RGB high-gradation image engine; it can delineate Full Hi-Vision images instantly.

■ Clock Frequencies in a wide frequency band

VG-877 supports dot clock frequencies up to 600MHz. This item is module dependant.

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

Using a personal computer with RS-232C, LAN, or USB connection, this software allows program data to be edited and registered with signal outputs that can be controlled from a personal computer.

■ Wide range of internal sample data

Thousands of preprogrammed timing and pattern data is included with VG-877. This data is categorized by standard specification, application, etc. Users can easily select these preprogrammed timing and pattern data.

■ Registration of program data in USB memory

It is possible to register one thousand customized program data in USB memory. It is also possible to register personal images and natural images. Data can be copied using windows 98SE, 2000, XP, 7 etc. by personal computer.

■ Creation of user OPT patterns

Users have the ability to use preinstalled pattern data or create their own custom OPT patterns of their choice. Users have the ability to customize basic patterns (character, crosshatch, color bar and grey scale). This makes it possible for users to customize patterns they wish to display during new product development testing.

1.3. Data configuration

The program data is used to manage the data which is output by the VG-877.
The Program Data consists of the pattern data used to set the data relating to the output images and the Timing Data used to set the data relating to all other output timing data, output conditions, and so on.
The table below gives a breakdown of this data.

Block		Description
Timing Data	Program Name	Program Name
	Timing	Timing
	Output	Output conditions
	Audio	Audio outputs
Pattern Data	Pattern	Pattern
	Action	Pattern actions

The VG-877 incorporates several kinds of program data, OPT patterns and user character pattern as sample data.

	No. of data
Timing Data	999 data (1001 to 1999)
Pattern Data	999 data (1001 to 1999)
OPT Pattern	200 data (1 to 200)
User Character Pattern	16 data (F0h to FFh)

The VG-877 allows the various data to be registered in its **internal memory (approx. 100MB)** and a USB memory.

	No. of data	
Program Data	1000 data (1 to 1000)	
User OPT Pattern	999 data (1 to 999)	
Image (image data)	999 data (1 to 999) (*) This number is dependent on the image data size, memory capacity and card capacity.	
User Character Pattern	16 data (E0h to EFh)	
No. of program name characters	20 characters (*) When the characters are displayed on the RB-1870 (*) A maximum of 16 characters only are indicated on the VG-877.	
No. of groups	99 groups (1 to 99)	(*) For details on groups, refer to section 2.4 "Groups" in the instruction manual of the VG-876.
No. of group data	98 data (1 to 98)	
No. of characters in group name	20 characters	

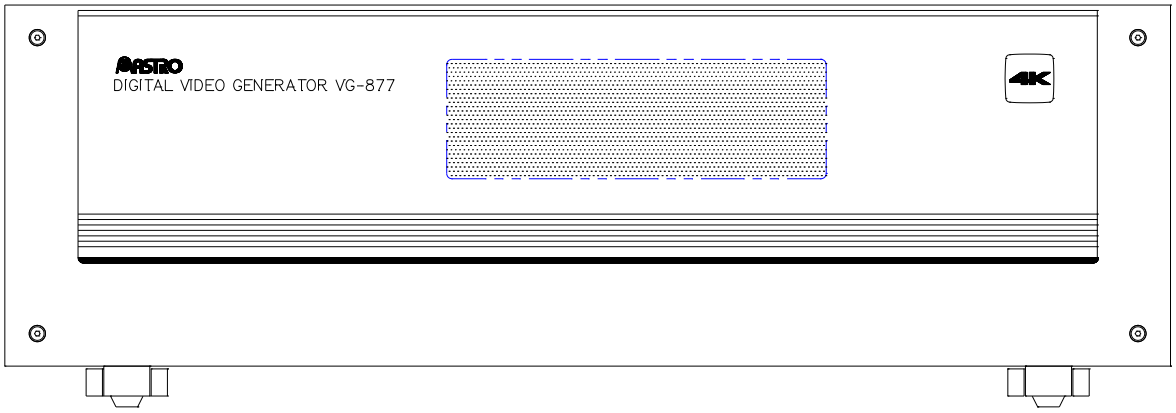
CAUTION

If a USB memory has been plugged in, the data registered in this memory will be enabled, and the data registered in the internal memory of the VG-877 will be disabled.
In regard to image data, both the USB memory data and internal memory data can be enabled.(*)

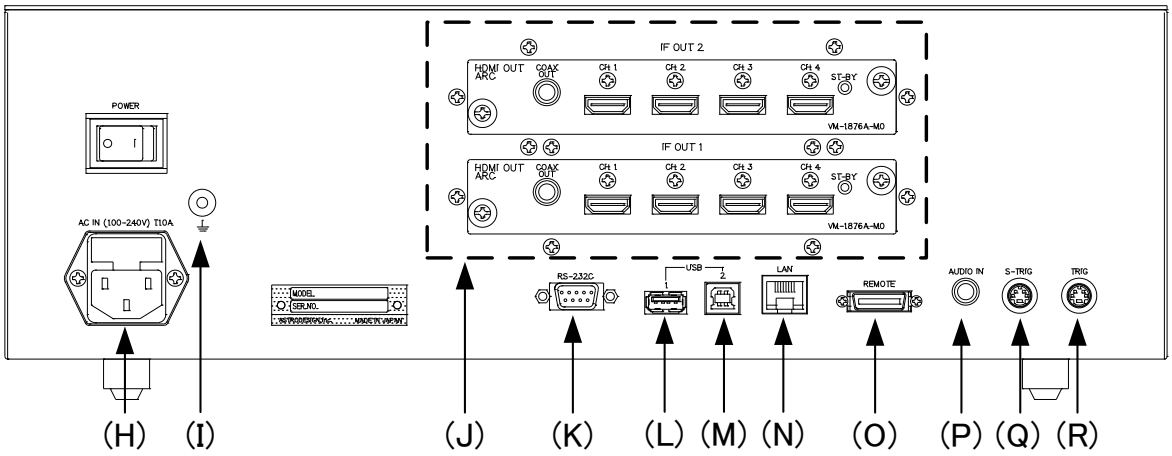
(*) For further details, refer to section 7.1.11 "Image – Priority" in the instruction manual of the VG-876.

1.4. Names and functions of the parts

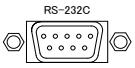
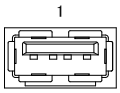
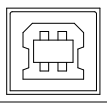
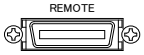
1.4.1. VG-877 front panel



1.4.2. VG-877 rear panel



1.4.3. Names and applications of connectors

(H)	AC power socket		The power cable is connected here. Voltages ranging from 100V to 240V are supported.
(I)	Frame ground		The common connection between the frame ground of the VG-877 and frame ground of a unit connected to the VG-877 is established here.
(J)	Modules		Up to four output modules (VM1876-Mx series) can be connected to these connectors.
(K)	RS-232C connector		Connection is made with a personal computer using this RS-232C interface.
(L)	USB(1)		The USB memory is plugged into this connector, enabling data to be registered in or acquired from the memory. The connector supports a generally available USB mouse. (*) When the cursor is displayed: Using the USB mouse, the cursor pointer which has been output to the monitor can be operated and the cursor position adjusted. A ten-key standard USB hub is supported. (*) Program execution and group execution are supported. Use a hub when a multiple number of units are to be connected. (*) One USB memory, mouse and 10-key standard USB hub each are supported.
(M)	USB(2)		Using the USB interface, this connector is connected to a personal computer, enabling the VG-877 to be operated using the SP-8870 software, etc. For further details, refer to the instruction manual of the SP-8870.
(N)	LAN port		This is used to connect the unit to a LAN using an Ethernet cable.
(O)	Remote connector		This is used to connect the unit to a dedicated remote control box (RB-1870 or RB-1871).
(P)	AUDIO IN connector		This supports digital input (L-PCM) audio signals.
(Q)	S-TRIG connector		The video sync signals are output here.
(R)	TRIG connector		This is the trigger input/output connector.

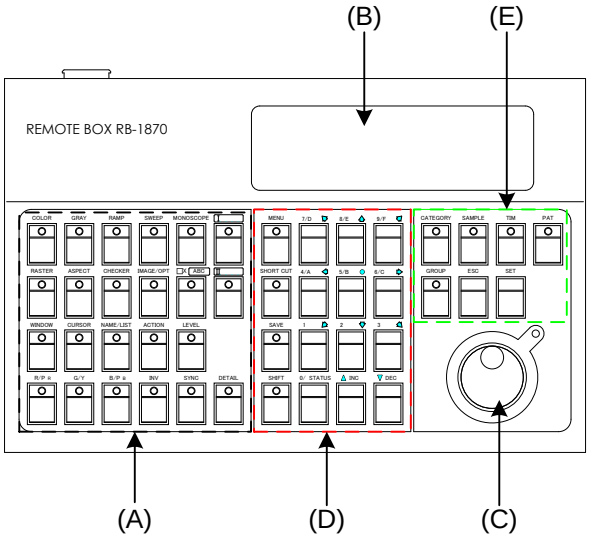
1.5. Tools to operate VG-877

The table below lists the tools used to operate the unit and the restrictions placed on the operations which can be performed by each of these tools.

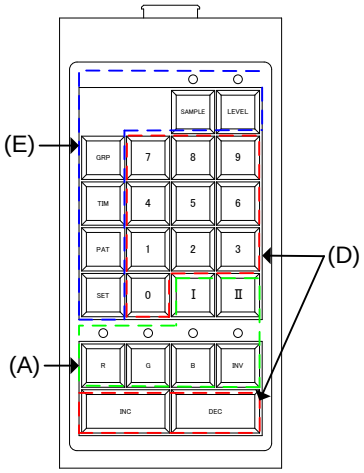
Operation tool	Operation restriction	Remarks
RB-1870	All the functions of the unit can be operated.	This remote control provides the same functions as the controls on the front panel of the VG-876. For details of the operations performed using this product, refer to the instruction manual of the VG-876.
RB-1871	It is possible only to load programs.	It is assumed that this simple remote control will be used on production lines.
10-key standard USB hub	It is possible only to load programs.	Use a hub which is available on the market. Astrodesign has verified that the following products will work: iBUFFALO BSTKH03 SANWA SUPPLY NT-18UH2 * If the user desires to use a product made by any other manufacturer, refer to section 1.5.2 “10-key standard USB hub,” and check that the unit can be operated as described.
SP-8870	All the functions of the unit can be operated.	It is expected that this tool will be used for operations and editing performed using a personal computer.

(*) For further details on each of these tools, refer to the instruction manual of the VG-876.

1.5.1. RB-1870/RB-1871 Remote box



RB-1870



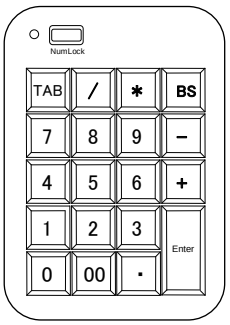
RB-1871

Some restrictions apply to the operation capability of the RB-1871. The items which can be operated using this unit are listed below.

- Selection and execution of programs
- Execution of programs organized into groups (group editing is not possible)
- ON/OFF settings of R, G, B and INV keys
- ON/OFF settings of CUSTOM (I, II) keys (defaults = I: HDCP, II: MUTE)
- Variation of level (digital video level only)

(*) For a more detailed description of the keys, refer to section 1.5.3 “Key names and operations.”

1.5.2. 10-key Standard USB hub



10-key standard USB hub

This hub is connected to the USB connector on the rear panel.

Use of a unit with hub functions is recommended.

(It is possible to connect a USB memory or USB mouse to the USB connector of the 10-key standard USB hub.)

Some restrictions apply to the operability of the 10-key standard USB hub. The items which can be operated using this hub are listed below.

- Selection and execution of programs
- Execution of programs organized into groups (group editing is not possible)
- ON/OFF settings of CUSTOM (I) key (default = HDCP)

The keys on the 10-key standard USB hub support the functions shown below.

Enabled only when NumLock is ON.

TAB :	**GROUP**
/ :	**For toggling between TIM, PAT and TIM+PAT.**
* :	**HDCP（CUSTOM-I）**
BS :	**ESC**
0～9 :	**For inputting numbers.**
+ :	**INC**
– :	**DEC**
Enter :	**SET**
· :	**SAMPLE**
00 :	**CATEGORY**
NumLock :	**Use this key in the ON status.**

(*) For a more detailed description of the keys, refer to section 1.5.3 “Key names and operations.”

1.5.3. Key Name and Operation

(A)	Pattern key	This is used to display and edit patterns.
	Action key	This is used to select the scroll, flicker and other such functions.
	Level key	This is used to select the digital video level and audio level settings.
	RGB channel ON/OFF	This used to set RGB to ON or OFF.
	INV key	This is used to invert the video signals.
	SYNC key	This is used to set the sync signals to ON or OFF.
	Detail key	This is used to establish the pattern, timing and other detailed settings.
	HDCP key (custom key)	This is used to set HDCP (content protection system used by HDMI) to ON or OFF.
	MUTE key (custom key)	This is used to set the audio to ON or OFF (MUTE). (*) When HDMI AV-MUTE has been set: Operating this key sets HDMI AV-MUTE to ON or OFF. (Refer to the instruction manual of the VG-876.)
(B)	Menu operation screen	This is used when setting or checking the items which are displayed on the fluorescent display tube.
(C)	Rotary switch	This is rotated clockwise or counterclockwise to select the setting items or parameters and to change the level settings, etc.
(D)	Number keys	These are used to input the numerical values, the select menus, etc.
	INC/DEC	These are used to select the setting items or parameters, change the level settings, change the program numbers, etc.
	Menu	This is used to display the menu screen. If it is pressed while a menu screen is already displayed, the display is returned to the initial screen. (*) When the menu key is lighted: All the other keys can no longer be used.
	Shortcut key	By operating this key which represents a series of one or more keys that invoke a particular operation, this moves to a menu screen registered by the user.
	Save key	This is used to save the data which has been set.
	Shift key	This is used to input letters of the alphabet using the number keys.

(E)	Category key	This is used to extract the internal sample key by category.
	Sample key	This is used when outputting the internal sample data. (*) When the Sample key lamp is off: Data inside the USB memory and internally saved data can be used.
	Timing key	This is used to display lists that can be changed when only the output timing data is to be changed.
	Pattern key	This is used to display lists that can be changed when only the output pattern data is to be changed.
	Group key	This is used to display groups registered by the user, for example, and to create groups.
	Escape key	This is used as follows: • To cancel a parameter selection or numerical value setting • To return the menu screen now displayed to the hierarchical level before
	Set key	This is used to enter the setting items and parameter settings.
(F)	USB	This is used, when a USB memory is plugged in, to access the data inside the USB memory.
(G)	Power switch	This is used to turn the power of the VG-877 to ON or OFF.

1.6. Concerning the VM-1876 series modules

1.6.1. Overview

The VM-1876 series consists of circuit boards which configure different video interfaces for VG-877. These modules are divided by standards specifications and are plug and play. This allows the VG-877 chassis to be upgraded to the newest standards in digital video allowing for an upgrade path for users.

For details of the products offered in the VM-1876 series, please refer to 10.1 "VG-876 video units" in VG-876 instruction manual.

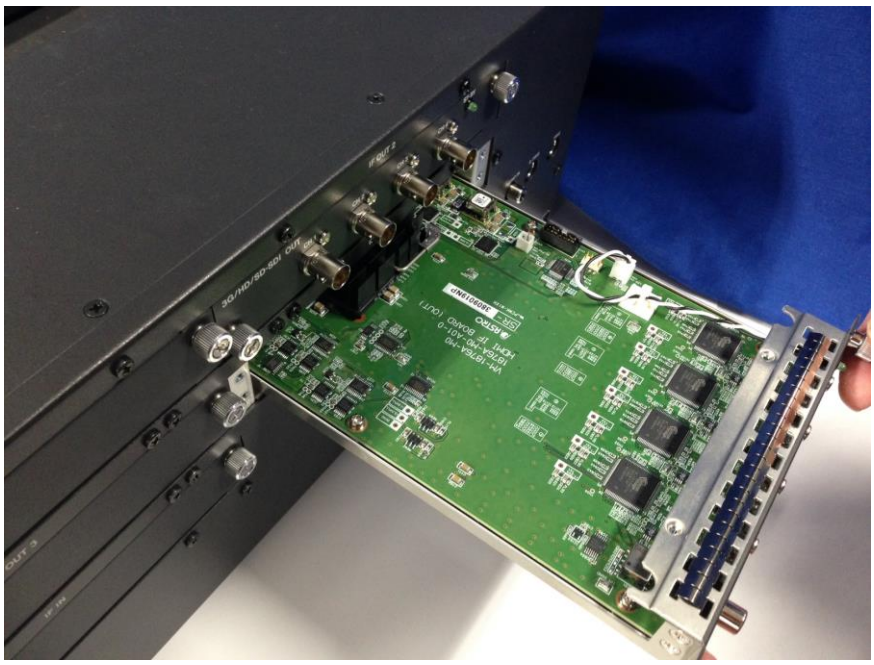
1.6.2. Concerning installation and removal of modules

The modules in VM-1876 series can be installed and removed by user as they see fit. Users can swap modules for other VM-1876 series modules to allow for greater flexibility in testing.

When installing one or more modules in VG-877, be sure to install in sequence IF OUT1 first. A maximum of two modules can be installed in VG-877.

CAUTION

Install the boards in sequence starting with IF OUT1. If a VM-1876 series board is installed in IF OUT2 while leaving IF OUT1 empty, the board will not function properly.



(*) The photo shows the VG-876: Use what is shown here as a reference.

CAUTION

The boards of the VM-1876 series are inserted and removed using the two anchoring screws on the rear panel. Take care to ensure that the electronic components on the board will not be brought into contact with the chassis of the VG-877.

1.6.3. Concerning Firmware upgrading

When installing a new module in the VM-1876 series, be sure to contact your Astrodesign representative to check if the VG-877 firmware is up to date.

1.6.4. Method to verify operation status

The ST-BY LED on the back panel of the VM-1876 series lights up green during trouble-free operation. When a new board in the VM-1876 series has been added or when a board has been inserted or removed, check that the [ST-BY] LED has lighted up green before proceeding.

(*) The photo shows the VG-876: Use what is shown here as a reference.

1.7. Concerning the Menu and Sub-menus

The following menu items are displayed by pressing the [MENU] key.

Menu	Description
Program Edit	Program data editing
Group Edit	Group data editing
Auto Edit	Automatic execution editing
Data Copy/Erase	Data copying and erasure
Configuration	System setting editing
Audio Flash Data Entry	Compressed audio data registration screen
Maintenance	VG maintenance screen

(*) The characters which are printed in bold indicate the names of the hierarchical levels; the characters which are not printed in bold indicate the names of setting items.

1.7.1. “Program Edit” menu list

Program Edit

- **Program Name**
- **Timing**
  - **H-Timing**
  - **V-Timing**
- **Output**
  - **All Output**
    - **Output ON/OFF**
      - **HDMI**
      - **SDI**
      - **V-by-One HS**
  - **Digital Output**
    - **General**
    - **HDMI**
      - **Output ON/OFF**
      - **InfoFram/Packet**
        - **Vendor Specific InfoFrame**
        - **AVI InfoFrame**
        - **SPD InfoFrame**
        - **Audio InfoFrame**
        - **MPEG InfoFrame**
        - **NTSC VBI InfoFrame**
        - **ACP Packet**
        - **ISRC Packet**
        - **Gamut Metadata Packet**
    - **V-by-One HS**
      - **Output ON/OFF**
    - **SDI**
      - **Output ON/OFF**
      - **Payload**
- **Audio**
  - **Digital Audio**
  - **Audio Sweep**
- **Pattern**
  - **Pattern/RGB/INV Select**

(*) Only the names of the hierarchical levels are indicated on the Program Edit menu list. Since only the principal names are given, it means that there may be hierarchical levels that are not indicated.

- **Color Bar**
- **Gray Scale**
- **Ramp**
- **Sweep**
- **Monoscpe**
- **Raster**
- **Aspect**
  - **AFD**
- **Checker**
- **Image/OPT**
  - **9 Marker**
  - **3D Image**
  - **3D Pattern**
- **□×[ABC]**
  - **Color**
  - **Character**
  - **Cross Hatch**
  - **Dot**
  - **Circle**
  - **Burst**
- **Window**
- **Cursor**
- **Name/List**
  - **NAME**
  - **Subtitle**
  - **HDCP**
  - **EDID**
  - **DDC/CI**
  - **CEC**
  - **HDMI ARC**

- **Action**
  - **Graphic Plane**
  - **Character Plane**
  - **Window**
  - **Subtitle**
  - **Motion Blur**
  - **0.125dot Scroll (* Option)**
  - **Scroll Sequence**
  - **Lip sync**
  - **Black Insertion**

1.7.2. “Group Edit” menu list

Group Edit

- No
- Name
- Edit Mode
- **Program**
  - TIM
  - PAT
  - Auto Interval

(*) Only Program is indicated as the hierarchical level on the Group Edit menu list.

1.7.3. “Audio Edit” menu list

Auto Edit

- Mode
- **Setting ※Mode : When Program has been selected**
  - Interval
  - Program（Start-Stop）1
  - Program（Start-Stop）2
  - Program（Start-Stop）3
- **Setting ※Mode : When Group has been selected**
  - Group No
  - Interval

(*) Only Setting is indicated as the hierarchical level on the Auto Edit menu list. What is actually displayed differs depending on the Mode setting.

1.7.4. “Data copy/erase” menu list

Data Copy/Erase

- **COPY : Program**
- **COPY : USER Character**
- **COPY : USER OPT Pattern**
- **COPY : Image**
- **COPY : Subtitle**
- **COPY : Group**
- **COPY : Auto**
- **COPY : All**
- **ERASE : Program**
- **ERASE : USER Character**
- **ERASE : USER OPT Pattern**
- **ERASE : Image**
- **ERASE : Subtitle**
- **ERASE : Group**
- **ERASE : Auto**
- **ERASE : All**

(*) Only the hierarchical levels displayed are indicated on the Data Copy/Erase menu list.

1.7.5. “Configuration” menu list

Configuration

- **General**
  - **RS-232C**
  - **LAN**
  - **Trigger**
  - **Image Fast Draw Mode**
  - **Power-On Program**
- **HDCP**
- **HDMI**
- **HDCP/EDID/CEC Check**
  - **Item Selcet**
    - **HDCP**
    - **EDID**
    - **CEC**

(*) Only the names of the hierarchical levels are indicated on the Configuration menu list.

1.7.6. “Audio Flash Data Entry” menu list

Audio Flash Data Entry
- └ Group No

(*) Only the hierarchical levels displayed are indicated on the Audio Flash Data Entry menu list.

1.7.7. “Maintenance” menu list

Maintenance
- ├ **Infomation**
- ├ **INITIAIZE : Configuration**
- ├ **INITIAIZE : SHORTCUT**
- ├ **UNMOUNT : USB**
- ├ **FORMAT : Internal Memory**
- └ **INSTALL : Initial Data**

(*) Only the hierarchical levels displayed are indicated on the Maintenance menu list.

2 DETAILED DOCUMENTATION

For details on this product's operation and its internal sample data, please refer to the documents below.

- VG-876 instruction manual
  This is the manual for VG-876 which is the flagship model of VG-877. Operations between VG-876 and VG-877 are the same. Ask your Astrodesign representative for this document.
- VG series sample data collection manual (VG-876 supplement manual)
  This contains information regarding preprogrammed timing and pattern data
- VG series Terminal command instruction manual
  This manual contains details concerning communication control of VG-877.

If you do not have these documents, please contact your Astrodesign sales representative.

VG-877 Instruction Manual

NOTICE

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- **All copyrights pertaining to this product are the property of ASTRODESIGN.**
- **This manual may not be copied in whole or in part without written permission.**
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- **All inquiries concerning this product should be addressed to your dealer or to the manufacturer at the contact numbers given below.**
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T0263

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