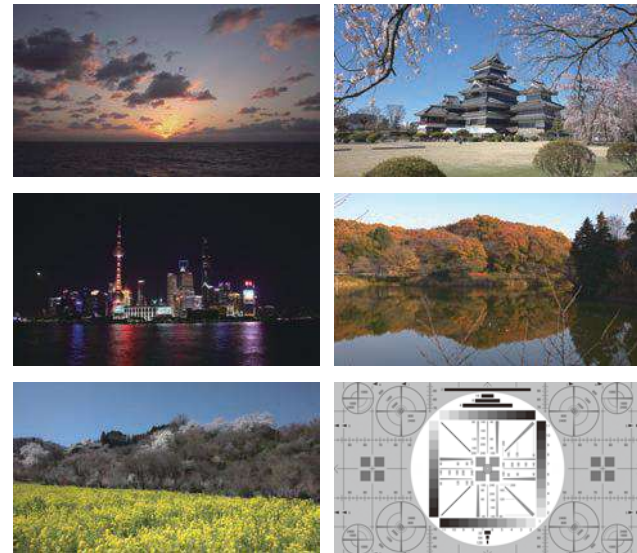


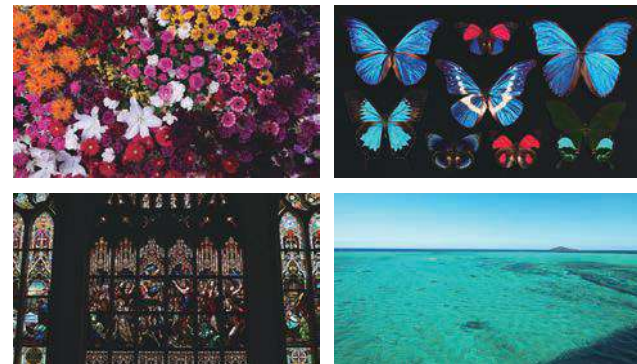
8K/4K Evaluation Image Library VT-7010 New

- 8, 10 and 12-bit versions of 8K (7680 × 4320) and 4K (3840 × 2160) natural images (10 images).
- 8K Monoscope and China Monoscope (7680 × 4320 and 8192 × 4320) are supported.
- HDR : HLG/1000 nits and 4000 nits of SMPTE ST 2084.
- HDMI FRL/TMDS timings and SDI timings are supported.



Ultra-high definition/ wide-color-gamut standard test images VT-7007

- 8K (7680 × 4320) and 4K (3840 × 2160) with ITU-R BT.2020 compliant (12-bit)
- 2K (1920 × 1080) with ITU-R BT.709 compliant (10-bit)
- 10 images available.



■ Copyright: Institute of Image Information & TV Engineers · Association of Radio Industries & Businesses
 ■ Source: Institute of Image Information & TV Engineers
 ■ It is necessary to obtain permission from ITE before using VT-7007 in exhibitions, etc.
<http://www.ite.or.jp/content/mta>

HDR10+ Test Evaluation Contents Library VT-7013 (for HDMI units) HDR10+

- Sample programs compliant with the HDR10+ test spec are provided. The samples are based on 350cd luminance, and users can edit them according to their desired luminance value.
- Programs contain HDMI InfoFrames that support HDR10+.
- VG-876/VG-879 with VT-7013 is an approved test product.

What is HDR10+?

Founded by 20th Century Studios, Panasonic Corporation and Samsung Electronics in 2018. It is an upgraded version of HDR10 that adds dynamic metadata to each frame. This optimal HDR data enables creation of a true-to-life picture across a wider range of displays.

8K and 4K HDR Image Library VT-7009

- 10 and 12-bit versions of 8K (7680 × 4320) and 4K (3840 × 2160) natural images (14 images).
- ASTRO original HDR scale patterns are available in the build-in sample patterns.
- SDR and HDR (HLG/1000 nits and 4000 nits of SMPTE ST 2084) are supported.
- HDMI FRL/TMDS timings and SDI timings are supported.

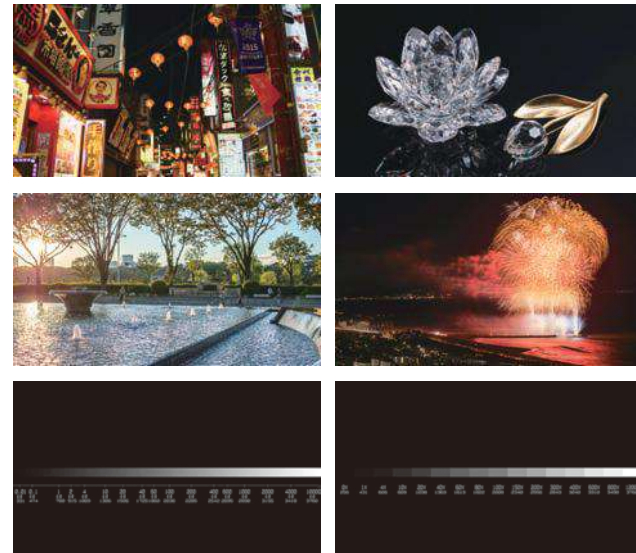
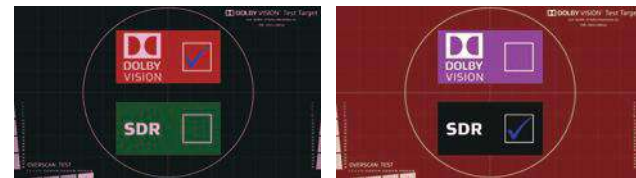


Image Libraries Comparison List

	Resolution	HDR	HDR scale patterns	HDMI 2.1 FRL	8K Monoscope	ITU-R BT.2020	ASTRO Original
VT-7010	4K, 8K	✓		✓	✓	✓	✓
VT-7009	4K, 8K	✓	✓	✓		✓	✓
VT-7007	2K, 4K, 8K					✓	

Dolby Vision Evaluation Contents Library VT-7012 (for HDMI units)

- 4K and 2K test patterns (still image) with Dolby Vision metadata are output.
- Program data has Vendor Specific InfoFrame that supports Dolby Vision.
- Users will evaluate these patterns by verifying the information box indicated with a check mark and its color.



MPEG-4 AAC Audio VT-8500-0021 (for HDMI units: VM-1876A-M0, VM-1876-M8/MD) New

Audio Format	Contents	Channels
MPEG-4 AAC LC	1kHz Sine Wave	2ch, 5.1ch and 22.2ch
	Channel Check	
	Music (Swan Lake)	
Video Data	2K, 4K (TMDS), 4K (FRL), 8K (TMDS), 8K (FRL)	

What is MPEG-4 AAC?

It is an audio coding standard to achieve high quality sound and is used in audio player or game machines. Japanese 4K & 8K satellite broadcasting sends 22.2ch audio that is compressed and encoded by this standard. The CTA-861.5 standard defined the transmission of MPEG-4 AAC through HDMI.

HDMI High-Bit-Rate Audio HDMI Compliance Test VT-8500-0006 (for HDMI units: VM-1876A-M0, VM-1876-M7/M8/MD)

The compressed audio of high bit rate and one-bit audio is output. Note) Dolby Digital (AC3) and MPEG-2 AAC are supported as the standard functions.

Format List

Sampling Frequency (kHz)	44.1		48			96			192		
	5.1	7.1	2.0	5.1	6.1	7.1	5.1	6.1	7.1	2.0	5.1
ch											
Audio standard	DTS-HD Master Audio										
	DTS-HD High Resolution Audio										
	Dolby Digital Plus										
	DTS Digital Surround										
	DSD (One Bit Audio)										
	DTS Express (DTS-HD LBR)										
	Dolby TrueHD										

Brightness Measuring Tool SP-8870-BM New

By connecting VG-879 with CS-2000 Spectroradiometer (by KONICA MINOLTA, INC.), this software automatically outputs the desired test pattern from VG-879 and the test result of CS-2000 is sent to the PC. It helps to reduce working time of operators who are now controlling both products manually.

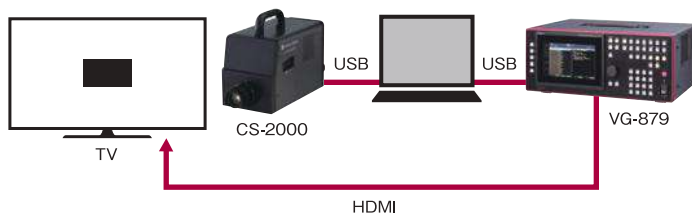
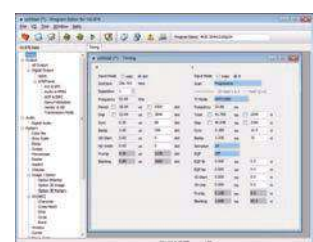


Image Conversion Tool SP-8871

- For converting 10 or 12-bit still image, this software is necessary. It converts BMP, JPEG and TIFF files to VGD format (VG readable file).
- For simple animation function, this software saves sequential image files to one image file. By using it, VG-879 can play one second of 4K/60p and 4 seconds of 1080/60p video.



Application Software SP-8870



This is a standard accessory for timing and pattern editing and program execution. It gives the user the ability to make their own 3D data using BMP pictures.

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Power Requirements	AC 100-240V (50 / 60Hz)
Power Consumption	260W MAX
Operating Temperature Range	5 to 40°C
Operating Humidity Range	20 to 80%RH (No Condensation)
Dimensions	430 (W) × 177 (H) × 310 (D) mm (Excluding Protrusions)
Weights	Approx. 9.3kg (full interface)

ASTRODESIGN, Inc.

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 URL <http://www.astro-americas.com>

VG879-IB4512E-2000-1

DIGITAL VIDEO GENERATOR VG-879

HDMI 2.1 COMPLIANCE TEST



Select from HDMI 2.1, V-by-One® HS, 12G-SDI, DisplayPort 1.2a and analog interfaces.

Supports 8K/120p, 4K/120p and 1080/240p timings.

Maximum 4 slot-type interface units can be installed.

HDMI 2.1 test functions for FRL, DSC, Link Training, HDR and HDCP 2.3 are supported.

VG-879 | DIGITAL VIDEO GENERATOR

Simple operation by selecting pre-installed timings and patterns.
7-inch display allows viewing of the menu and other program information.
The user can customize and save original timings and patterns.

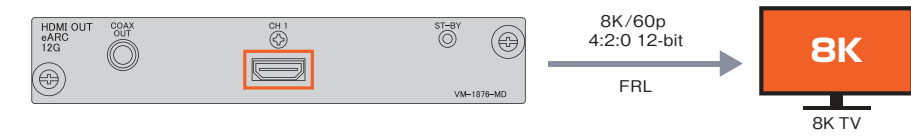


Interfaces

Maximum 4 slot-type interface units can be installed.

HDMI 2.1 Unit (VM-1876-MD) **HDCP 2.3** **HDR** **New**

An HDMI 2.1 based module supporting uncompressed FRL 8K/60p YCbCr 4:2:0 (12-bit) and 4K/120p YCbCr 4:4:4. DSC1.2 can be selected as well.

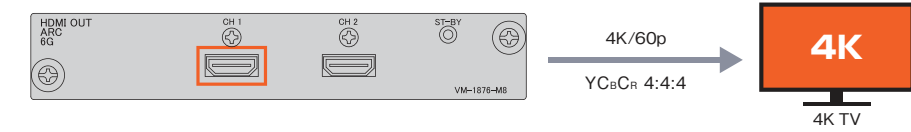


Video Out	Interface	HDMI 2.1 × 1ch
Dot Clock		Max. 1360MHz
Data Rate		48Gbps, FRL (Max. 12Gbps / 4 Lane)
Video Timing		CTA-861-G
Video Format		RGB, YCbCr 4:4:4 / 4:2:2 / 4:2:0
Color Depth		8, 10, 12-bit
HDCP		Ver. 2.3 / 1.4 *
Audio Out		L-PCM 8ch, Option: compressed audio

* Only HDCP 2.3 is available in FRL timings.

HDMI 6G Unit (VM-1876-M8) **HDCP 2.3** **HDR**

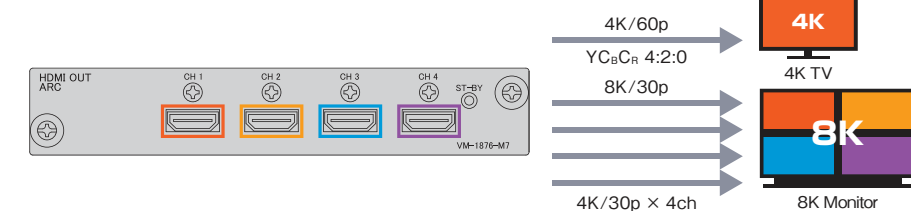
HDMI 2.0b based module. 4K/60p YCbCr 4:4:4 output is available. HDCP 2.3 and 1.4 are selectable.



Video Out	Interface	HDMI × 2ch (CEC, 3D, ARC)
Dot Clock		25-600MHz
Data Rate		18Gbps (TMDS)
Video Timing		CTA-861-G
Video Format		RGB, YCbCr 4:4:4 / 4:2:2 / 4:2:0
Color Depth		8, 10, 12-bit
HDCP		Ver. 2.3 / 1.4
Audio Out		L-PCM 8ch, Option: compressed audio

HDMI Unit (VM-1876-M7) **HDCP 2.3** / VM-1876A-M0) **HDR**

HDMI 2.0b based modules. 4K/60p YCbCr 4:2:0 output is available. M7 supports HDCP 2.3 and 1.4 (Following sink capability). M0 support HDCP 1.4 only.

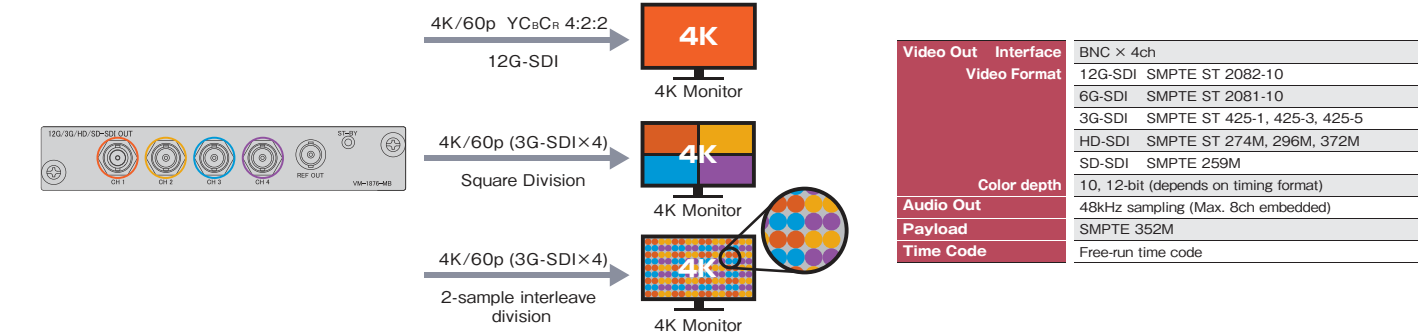


Video Out	Interface	HDMI × 4ch (CEC, 3D, ARC)
Dot Clock		25-300MHz (M7 outputs fixed timings only)
Data Rate		9Gbps (TMDS)
Video Timing		CTA-861-G
Video Format		RGB, YCbCr 4:4:4 / 4:2:2 / 4:2:0
Color Depth		8, 10, 12-bit
HDCP		M7: Ver. 2.3 / 1.4 M0: Ver. 1.4
Audio Out		L-PCM 8ch, Option: compressed audio

Interfaces

12G-SDI Unit (VM-1876-MB) To be installed in VG-879 only

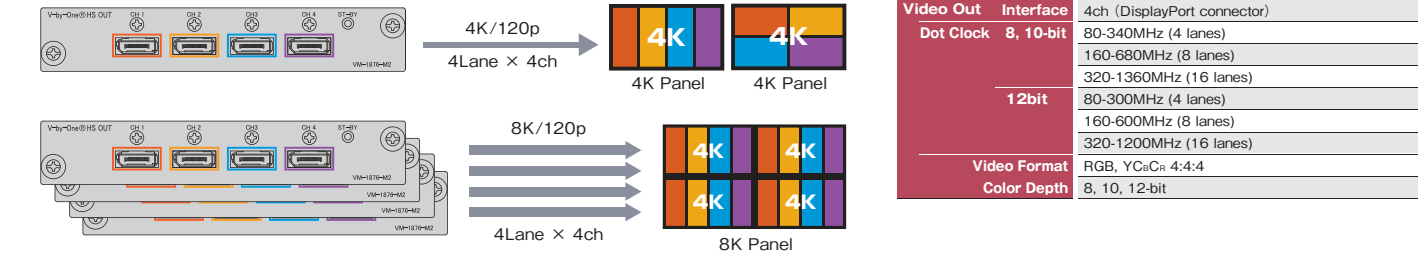
4K/60p is transmitted by one channel of 12G-SDI, two channels of 6G-SDI or four channels of 3G-SDI. The Payload is editable. Eight channels of audio and time code packet can be embedded.



Video Out	Interface	BNC × 4ch
Video Format		12G-SDI SMPTE ST 2082-10 6G-SDI SMPTE ST 2081-10 3G-SDI SMPTE ST 425-1, 425-3, 425-5 HD-SDI SMPTE ST 274M, 296M, 372M SD-SDI SMPTE 259M
Color depth		10, 12-bit (depends on timing format)
Audio Out		48kHz sampling (Max. 8ch embedded)
Payload		SMPTE 352M
Time Code		Free-run time code

V-by-One® HS Unit (VM-1876-M2)

4K/120p and 8K/30p are transmitted by one unit. 8K/120p (4 pcs of 4K/120p) is transmitted by 4 slot units in one VG-879. This unit requires custom cables, please contact your local agent for details.

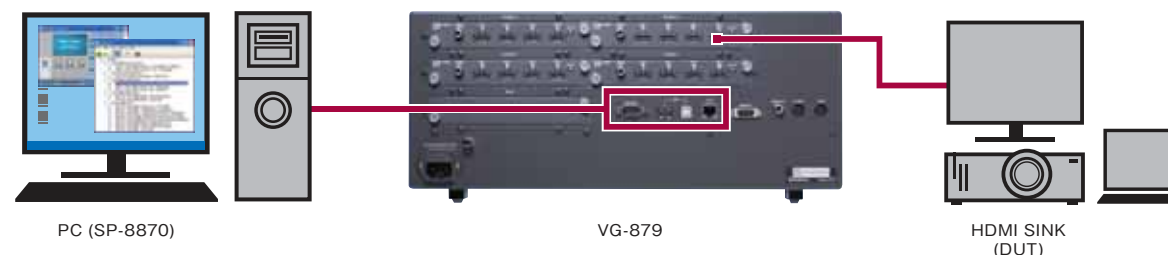


Video Out	Interface	4ch (DisplayPort connector)
Dot Clock		80-340MHz (4 lanes) 160-680MHz (8 lanes) 320-1360MHz (16 lanes)
12bit		80-300MHz (4 lanes) 160-600MHz (8 lanes) 320-1200MHz (16 lanes)
Video Format		RGB, YCbCr 4:4:4
Color Depth		8, 10, 12-bit

HDMI Useful Functions

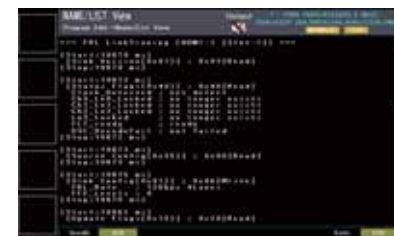
HDMI 2.1 Compliance Test Tool **Option**

By using PC software (SP-8870), HDMI 2.1 CTS sink test is available. (for VM-1876-MD)



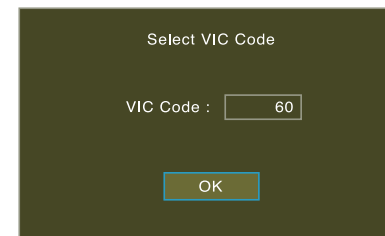
Link Training

Link Training processing is confirmed on the front display.



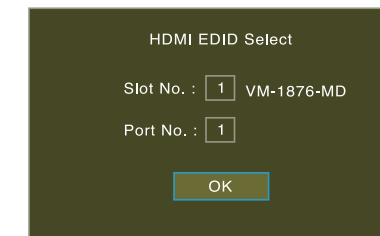
Timing select by VIC (Video Code)

By designating desired VIC, users can execute the corresponding timing.



Timing select by EDID

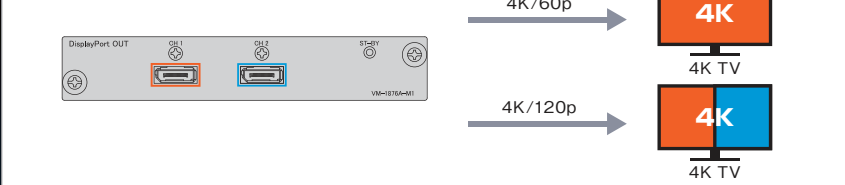
VG-879 reads EDID of the Sink and shows the list of supported timings (HDMI ports only).



Interfaces

DisplayPort Unit (VM-1876A-M1)

DisplayPort Ver.1.2a based module. 4K/60p is transmitted by a single channel. SST (Single Stream Transport) and MST (Multi Stream Transport) are supported. 4K/120p output is available by using 2 ports.

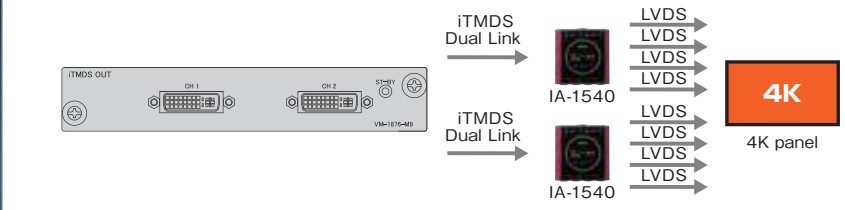


Video Out	Interface	DisplayPort × 2ch
Version		VESA DisplayPort Standard Ver.1.2a
Dot Clock		Max. 600MHz
Link rate		HBR2 (5.4Gbps)
Video Format		RGB, YCbCr 4:4:4 / 4:2:2
Color Depth		8,10,12-bit *
Audio Out		DisplayPort (8ch)

* Only YCbCr 4:2:2 is available on 12-bit output

iTMDS Unit (VM-1876-M9)

Able to support 4K/60p by one unit, 4K/120p (Cross split, Vertical 4-Split) by two units. LVDS output is possible by using IA-1540.



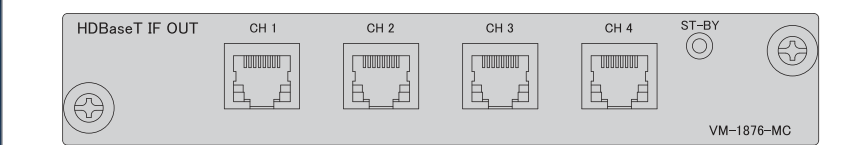
Video Out	Interface	DVI-I (Digital output only)
Dual Link		× 2
Dot Clock		8-bit 25-165MHz: Single Link 50-330MHz: Dual Link
ITMDS Mode		8 to 10-bit 25-165MHz: Single Link 50-330MHz: Dual Link 12-bit 25-150MHz: Single Link 50-330MHz: Dual Link
Multi channel Mode		10 to 16-bit 25-165MHz: Dual Link 50-330MHz: Quad Link
4K × 2K		8 to 12-bit 297-660MHz: Quad Link (Full HD 240MHz mode)
Timing Setting		Limitation Cross split: setting unit 4 dot, 2 line Vertical 4-Split: setting unit 8 dot, 1 line
Video Format		RGB / YCbCr 4:4:4
E-EDID		Ver.1.3 (DDC2B)

DVI/iTMDS to LVDS convertor IA-1540 **Option**

This option will convert VM-1876-M9 output (DVI/iTMDS) to LVDS. DVI single input to LVDS quad output.

HDBaseT Unit (VM-1876-MC)

HDBaseT 2.0 (HDMI1.4) based module. 4K/30p and 1080p signal can be transmitte by single LAN cable.

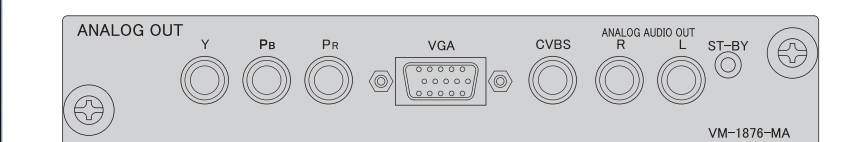


Video Out	Interface	RJ45 × 4ch
Dot Clock		25~300MHz *
Video Timing		CEA-861-E
Video Format		RGB, YCbCr 4:4:4 / 4:2:2 / 4:2:0
Color Depth		8, 10, 12-bit
HDCP		Ver.1.4
Audio Out		2ch

* 10-bit supports up to 240MHz. 12-bit supports up to 200MHz.

Analog Unit (VM-1876-MA)

VGA, COMPOSITE, COMPONENT and Analog Audio output are available. Supports NTSC/PAL (COMPOSITE only) output.



Video Out	Interface	Component, Composite, VGA, Analog Audio
Color		RGB, YPbPr 8-bit
Dot Clock		5-165MHz
HDTV		1080p / 1080i / 720p
SDTV		NTSC / PAL
PC		VESA
Functions		Teletext, Closed Caption, V-chip, Option: Macrovision

Synchronizing Unit (VM-1876-MX)

8K/120p timing is output by synchronizing four units of VG-879. Please install one video interface and one synchronizing unit in each VG-879.

