

# VG-870B/871B · VG-873/874

Programmable Video Signal Generator



## Uncompressed 10-bit Moving Picture Function (VM-1819)

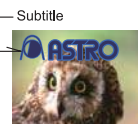
The sequential uncompressed pictures (2D or 3D) are output from all interfaces. This is useful for evaluating picture quality. Maximum 4 scenes are selectable from VT-7001 (2D, HD picture) video library as option.

Recording type	Uncompressed				
Color space	RGB / YPbPr				
Bit length	10-bit				
Resolution	1920x1080				
Color format	4:4:4 / 4:2:2				
Frame rate	60i	50i	24p	24PsF	
MAX play time	4:4:4	16sec	19sec	20sec	20sec
	4:2:2	24sec	29sec	30sec	30sec



## Subtitle Scrolling

Subtitle character scrolling functions supported. Users own bitmap(256 colors) character of various languages with edge created by Photoshop or other software is scrolled by different speed and direction.

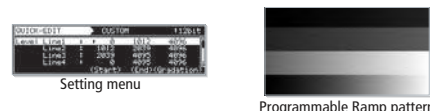


## Sub-pixel patterns

Various types of sub-pixels test patterns enable users to test the flat panel performance more accurately.

## Programmable Ramp patterns

Linear Ramp patterns can be set by the designated range of level. This is useful for testing the middle-range level of flat panels.



## Options

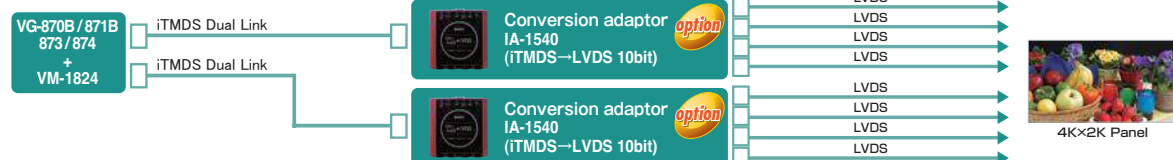
### MPRT testing with APDC patterns

MPRT(Moving Picture Response Time) patterns developed by APDC (Advanced PDP Development Center Corporation) with 0.5 dot scrolling supported. About the auto measurement system, please ask ASTRODESIGN for more details.



## DVI / iTMDS to LVDS conversion adaptor

LVDS (with IA-1540) MAX 12bit(LVDSx8ch)



Remote BOX		Optional Pattern Library		
RB-1870	RB-1871	VT-8001	VT-8500-0004	VT-8500-0007
"Full Key" type with Edit Functions (R&D application)	"Limited Key" type without Edit Functions (Production application)	8,10,12-bit Natural Pictures of "Skin tone chart" and "Yacht harbor" pictures  Flesh Color Chart (Woman with Carnations) * *The copyright belongs to Association of Radio Industries and Businesses	Chinese TV Test Patterns including China Monoscope.  8 Gray-Scale	TV Evaluation Patterns including Circular Zone Plate, 8-bit Natural Pictures like "Skin tone chart" and "Yacht harbor", etc.  Monoscope  Circular Zone

Optional Functions					Conversion BOX		Software	
VT-8500-0006	VT-8500-0008				IA-1540	IA-1542	SP-8010	
HBR(High Bit Rate) / OB(One Bit) Audio Data	AAC / AC3(Dolby Digital) Audio Data	HBR / OB Audio Compliance Test Software License	Macrovision Copy Protection	Otsuka Electronics MPRT2000 support (with Trigger cable)	MPRT 0.25 / 0.125 dot scroll option	Converter which converts 4Kx2K iTMDS x 1ch to LVDS 10bit x 4ch	HEAC Adaptor	Image Format Converter which converts MAX 16-bit users TIFF format image to VBM (for VG) format image.

## Specifications

Storage Media	ATA Compact Flash Card x 1 (MAX 1000 Programs)	
External Interface	RS-232C, LAN, Remote	
General Specifications	Voltage	AC100 to 120V, AC200 to 240V, 50/60Hz
	Operating Temperature Range	+5 to 40°C
	Operating Humidity Range	30 to 80% (no condensation)
Dimensions	430(W) x 88(H) x 370(D)mm (excluding projected parts)	

Dimensions, specifications etc. in this catalog may change without notice for improvement.

## ASTRODESIGN, Inc.

URL <http://www.astrodesign.co.jp>

● For more information, please contact us :

Test & Measurement Company

TEL +81-(0)3-5734-6320 FAX +81-(0)3-5734-6104  
1-5-2 Minami-yukigaya, Ota-ku, Tokyo, Japan 145-0066

USA OFFICE

TEL +1-408-235-2322 FAX +1-408-235-2324  
2700 Augustine Drive Suite 101 Santa Clara CA 95054 U.S.A.

VG870B/871B-873/874-IB3707E-2

# VG-870B/871B VG-873/874

Programmable Video Signal Generator



VG-870B : 3 modules are selectable.  
VG-873 : HDMI 4Kx2K module pre-installed. 2 modules are selectable.



VG-871B : 3 modules are selectable.  
VG-874 : HDMI 4Kx2K module pre-installed. 2 modules are selectable.



- HDMI "4Kx2K/30p" and "3D(Side-by-Side Full, etc.)" supported by VG-873/874
- 4Kx2K/120p, 1080/240p timing supported by iTMDS, DisplayPort and V-by-One HS
- Various digital interfaces (DisplayPort, eDP, 4Kx2K iTMDS, V-by-One HS, SDI)
- High Bit Rate / One-Bit Audio (optional)
- Uncompressed 10-bit moving picture playing function (optional)

# VG-870B/871B · VG-873/874

## Programmable Video Signal Generator

VG-870B and VG-873 perform front button operation. VG-871B and VG-874 needs remote box or software operation.  
 VG-870B / 871B : maximum 3 modules are selectable.  
 VG-873 / 874 : maximum 2 modules are selectable.

### PC Analog Unit (VM-1811)



Video Output	Analog	BNC, D-Sub 15pin VG-870 : 5 to 300MHz VG-871 : 5 to 250MHz 0.3 to 1.2V 0 to 250mV RGB each 10bit HS / VS TTL CS(Bi-level) 300mV ※on Sync : 0 to 600mV CS(Tri-level) ±300mV ※on Sync : 0 to ±600mV
	Dot Clock	DVI-I (Single Link, HDCP supported) 25 to 165MHz RGB each 8bit HDCP supported
Digital	Dot Clock	25 to 165MHz
	Colors(MAX)	RGB each 8bit
Copy Protect		HDCP supported

### TV Encoder Unit (VM-1812)



Video Output	Analog	BNC, S-Video, Composite, D-Terminal, D-Sub 15pin, SCARTx2
	Color	RGB / YPbPr
Dot Clock	Color	5 to 165MHz
	Colors(MAX)	RGB each 8bit
HDTV	SDTV	1080p / 1080i / 720p
	PC	NTSC / PAL / SECAM
Functions	Standard	Programmable / Internal Timing
	Signal	Teletext, Closed Caption, V-chip, Macrovision (Option)
SCART	Standard	PAL / SECAM
	Signal	(RGB / VBS / S-Video)
Audio	Frequency	RCA (L/R)
	Channel	20 to 20KHz (100Hz Step)
Output Level	Channel	2ch (L/R)
	Output Level	0 to 2000mv

### DVI Unit (VM-1814)



Video Output	Digital	DVI-Dx2ch ch1 : Dual Link ch2 : Single Link (HDCP)
	Dot Clock	25 to 165MHz : Single Link 50 to 330MHz : Dual Link
Colors(MAX)		RGB each 16bit (10 to 16bit : MAX 165MHz)

### LVDS Unit (VM-1815)



Video Output	Digital	LVDSx4 (MDR 26pin)
	Dot Clock	20 to *135MHz : Single Link 40 to 270MHz : Dual Link 80 to 340MHz : Quad Link
Colors(MAX)		RGB each 16bit (16bit : MAX 240MHz)

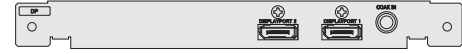
\* 150MHz supported by Option

### 4Kx2K Unit (VM-1824)



Video Output	Digital	DVI-I (Digital only)
	Dot Clock	Dual Linkx2 (HDCP supported in Single Link) DVI Mode 8bit 25 to 165MHz : Single Link 50 to 330MHz : Dual Link 12bit 25 to 150MHz : Single Link 50 to 300MHz : Dual Link Multi ch Mode 10 to 16bit 25 to 165MHz : Dual Link 50 to 330MHz : Quad Link 4Kx2K Mode (Full HD 240Hz) 8 to 12bit 297 to 660MHz : Quad Link
Timing Setting	Setting accuracy	Cross split mode : 4-dot, 2-line setting Vertical 4-split mode : 8-dot, 1-line setting
	Video Format	RGB / YCbCr 4:4:4 Ver.1.3 (DCC2B)

### DisplayPort Unit (VM-1820A)



Video Output	Digital	DisplayPortx2
	Version	VESA DisplayPort Ver.1.1a
Dot Clock	Version	MAX 270MHz (1 port), MAX 340MHz (2 ports)
	Lane	1, 2, 4 Lanes
Colors(MAX)	Output	Each 10bit (RGB, YCbCr 4:4:4)
	Input	L-PCM
Audio	Output	COAXIAL
	Input	HDCP, DPCD (Read), EDID (Read / Write), DDC / CI
Control Function		HDCP, DPCD (Read), EDID (Read / Write), DDC / CI

### DisplayPort, eDP Unit (VM-1826)



Video Output	Digital	DisplayPortx2
	Version	VESA DisplayPort Ver.1.1a, eDP
Dot Clock	Version	MAX 330MHz (1 port), MAX 660MHz (2 ports)
	Lane	1, 2, 4 lanes per port
Colors(MAX)	Output	Each 10bit (RGB, YCbCr 4:4:4)
	Input	L-PCM
Audio	Output	COAXIAL
	Input	8 lines
eDP	Control signal	4 lines (5V / 3.3V / external inputx2)
	Power supply output	

### SDI Unit (VM-1821)



Video Output	Video Format	SDx4 lines NTSC, PAL : (SMPTE-259M)
	Video Format	HDx4 lines 1080p30, 1080i60 etc. : (SMPTE-274M/SMPTE-296M / SMPTE-260M)
Audio	Video Format	3Gx4 lines 1080p60, 720p60 etc. : (SMPTE-425M)
	Video Format	DUALx2 lines 1080p60 etc. : (SMPTE-372M)
Audio		48K sampling 8ch supported

### V-by-One HS Unit (VM-1825)



Video Output	Digital	2ch (1ch supports 4 lanes.)* MDR 26-pin connector
	Dot Clock	Normal MODE 8 to 10bit 20 to 75MHz (1Lane) 40 to 150MHz (2Lane) 80 to 300MHz (4Lane)
Video Format	Video Format	4Kx2K MOE 8 to 10bit 297MHz to *600MHz (8Lane)
	Video Format	RGB / YCbCr 4:4:4

\* 680MHz supported by Option

### Parallel Unit (VM-1816)



Video Output	Digital	Parallelx2 (Half-pitch 68-pin)
	Dot Clock	0.1 to 100MHz : Single Link 0.2 to 200MHz : Dual Link
Colors(MAX)	Colors(MAX)	RGB each 16bit (16bit : MAX 100MHz)
	Signal Level	+1.8 / +2.5 / +3.3 / +5V

### 4Kx2K Unit (VM-1824-A)



Video Output	Digital	DVI-I (Digital only)
	Dot Clock	Single Linkx4 (HDCP supported) DVI Mode 8bit 25 to 165MHz : Single Link 50 to 330MHz : Single Linkx2 12bit 25 to 150MHz : Single Link 50 to 300MHz : Single Linkx2 Multi ch Mode 10 to 16bit 25 to 165MHz : Single Linkx2 50 to 330MHz : Single Linkx4 4Kx2K Mode (Full HD 240Hz) 8 to 12bit 297 to 660MHz : Single Linkx4
Timing Setting	Setting accuracy	Cross split mode : 4-dot, 2-line setting Vertical 4-split mode : 8-dot, 1-line setting
	Video Format	RGB / YCbCr 4:4:4 Ver.1.3 (DCC2B)

## HDMI Units

### HDMI 300MHz Video Signal Generator VG-873 / 874

#### HDMI Unit



- Main Features**
- HDMI TMDS Clock 300MHz supported.
  - 4Kx2K (3840x2160/24p, 25p, 30p and 4096x2160/24p) and 1080/120p timings
  - 1080/60p of 3D format (Side-by-Side Full and Frame Packing)
  - HDMI 16-bit video output (within limited dot clock frequency)
  - HEAC (HDMI Ethernet and ARC) Test function

Video Output	Digital	Function	HDMIx2
	Dot Clock	Function	4Kx2K, 3D, HEAC, ARC, CEC
Colors(MAX)	Colors(MAX)	Dot Clock	25-300MHz (8bit)
	Colors(MAX)	Dot Clock	TMDS Clock : MAX 300MHz *MAX 150MHz for 16bit RGB each 16bit
Digital Sampling Frequency	Digital Sampling Frequency	Colors(MAX)	32 / 44.1 / 48 / 88.2 / 96 / 176.4 / 192KHz
	Digital Sampling Frequency	Colors(MAX)	HBR / One Bit audio (option)
Audio Output	Audio Output	Input	HDMI, COAXIAL (for ARC test)
	Audio Output	Input	COAXIAL, I2S (Option)

Note: VG-873 and VG-874 are equipped with HDMI output unit as default. 2 more modules are selectable.

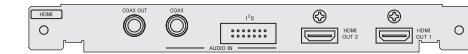
### Other HDMI Units

#### HDMI Unit (VM-1817)



Video Output	Digital	Function	HDMIx2
	Dot Clock	Function	CEC
Colors(MAX)	Colors(MAX)	Dot Clock	25 to 165MHz (TMDS clock : 25 to 225MHz)
	Colors(MAX)	Dot Clock	RGB each 12bit
Digital Sampling Frequency	Digital Sampling Frequency	Colors(MAX)	32 / 44.1 / 48 / 88.2 / 96 / 176.4 / 192KHz
	Digital Sampling Frequency	Colors(MAX)	HBR / OB audio (option)
Audio Output	Audio Output	Input	RCA (L/R)
	Audio Output	Input	RCA x1 (COAXIAL), TOSLINK, I2S (Option)

#### HDMI Unit (VM-1822)



Video Output	Digital	Function	HDMIx2
	Dot Clock	Function	3D, ARC, CEC
Colors(MAX)	Colors(MAX)	Dot Clock	25 to 165MHz (TMDS clock : 25 to 225MHz)
	Colors(MAX)	Dot Clock	*MAX 150MHz for 12bit RGB each 12bit
Digital Sampling Frequency	Digital Sampling Frequency	Colors(MAX)	32 / 44.1 / 48 / 88.2 / 96 / 176.4 / 192KHz
	Digital Sampling Frequency	Colors(MAX)	HBR / OB audio (option)
Audio Output	Audio Output	Input	HDMI, COAXIAL (for ARC testing)
	Audio Output	Input	COAXIAL, I2S (option)

## Features

### HDMI

#### 3D (supported by VM-1822 and VG-873 / 874)

Test patterns of 3D format specified in HDMI standard are supported. By using the software "3D Image Editor" in SP-8870-3DT, users own Left and Right separate 2D image can be converted to 3D image format. Various 3D test patterns are pre-installed, and they are displayed with 3D InfoFrame setting.

#### 3D Image Type

- Frame packing
- Frame packing for interlaced format
- Field alternative
- Line alternative
- Side-by-Side(Full)
- Side-by-Side(Half-Horizontal)
- Side-by-Side(Half-Quincunx)
- Others



#### CEC (Consumer Electronics Control) commands communication test

#### ARC (Audio Return Channel) test function

#### AAC / AC3 Option

AAC(Dolby Digital) and AC3 digital audio that are supported by the latest flat panel display is supported.

#### HBR / OB Full Audio Option

In addition to AAC and AC3, HBR(High-Bit-Rate) and OB(One-Bit) audio that is defined in the HDMI standard is supported.

By using the I2S interface, audio is embedded and output. Compatible with the VG-849C-A "HBR/OB Audio Compliance Tester" and compliance test software is available as option.

Audio Signal standard	AAC/AC3 option	Next generation audio full option	I2S support
AC3 (Dolby Digital)	YES	YES	-
AAC	YES	YES	-
Dolby Digital Plus	-	YES	YES
Dolby TrueHD	-	YES	YES
DTS Digital Surround	-	YES	YES
DTS-HD High Resolution Audio	-	YES	YES
DTS-HD Master Audio	-	YES	YES
DTS Express (DTS-HD LBR)	-	YES	YES
DSD (One Bit Audio)	-	YES	-

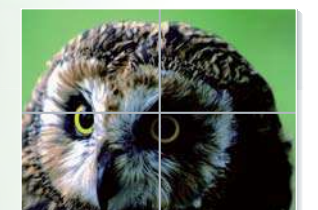
### 4Kx2K/60p, 1080/240p timings supported (VM-1824 / VM-1824A / VM-1825 / VM-1826)

- Digital interfaces, such as iTMDS / DVI, V-by-One HS and DisplayPort, support 4Kx2K/60p and 1080/240p timings.
- By using two VM-1824, VM-1824A, VM-1825 or VM-1826, 4Kx2K/120p timing is supported.

Note) some action functions like Motion Blur, Sinewave / Ramp / Window scroll and Window flicker patterns are not supported.



Vertical split mode



Cross split mode