Prominent Error Display

Errors can be indicated by full-screen display, a flashing border, error icon, or error message. This identifies the relevant frame prominently.

Error Display

■ Video: Video loss, frozen frames, incorrect
    luminance/black levels, and CRC errors
■ Audio: Audio loss, silence, and excessive audio levels
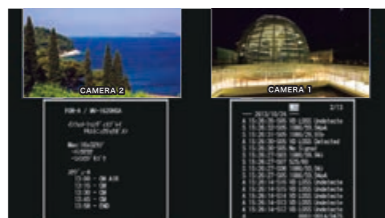■ Loss of closed captioning

Tally/Title/Timecode/Safety Area

■ Tally: Choose frame tally or marker tally for display
■ Titles: Identify each source channel with a title. Supports display of alphanumeric characters, symbols, and Korean characters (up to 16 letters), which can be displayed within or outside the picture
■ Timecode: Ancillary Timecode in 3G/HD/SD-SDI signals can be displayed
■ Safety Area: Safety Area can be displayed for each channel

Time, Timer, and Information Display

Correct clock time is ensured by SNTP server sync. Four clocks can be displayed, in analog or digital format. Date display is also available. If not used as a clock display, this feature can be used as a count up/down timer, remaining time counter, or information display.

Information Display Function

Choose from 13 types of information—error logs from each window and multi-viewer information—for display in a single, separate window. Error logs can be downloaded using a web browser.

Example of error log/information display

AFD-Compatible Cropping

Active Format Description (AFD) in source signals is detected, and window sizes are automatically cropped to the requested aspect ratio.

Detection of Closed Captioning

Closed captioning can be detected for each channel.

Logo/Background

Register up to eight logos and four background images. Add two logos and one background per output, as required.

Logo/Background Registry screen

Additional Features

■ MV-1620DO option: Reference input, analog audio/AES input, HD-SDI, HDMI, analog audio monitoring output, and background input/output
■ MV-1620IF option: Enables a variety of control interfaces using RS-232C/422/485 or GPIO
■ Rotated image output (90/180/270°)
■ SNMP-based monitoring: Remote monitoring of source signals or fan alarm status
■ Redundant power supply

Specifications

Video Formats	3G: 1080/60p, 1080/59.94p, 1080/50p (Level A/B) Level-B: At 1920 × 1080 only HD: 1080/60i, 1080/59.94i, 1080/50i, 720/60p, 720/59.94p, 720/50p, 1080/30p, 1080/29.97p, 1080/25p, 1080/24p, 1080/23.98p, 720/24p, 720/23.98p, 1080/30PsF, 1080/29.97PsF, 1080/25PsF, 1080/24PsF, 1080/23.98PsF, 1035/60i, 1035/59.94i SD: 525/60 (NTSC), 625/50 (PAL)	**I/O Delay**	1 frame or less for asynchronous input 0.5 frame or less for synchronous input
Video Inputs	Accepts the following signals. (Mix input, asynchronous acceptable) 75Ω BNC × 16 SDI/analog composite switching	**Video Windows**	Up to 20 (*with output option: up to 20 windows in all on 2 screens)
3G/HD/SD-SDI	3G-SDI (Level A/B): 3 Gbps HD-SDI: 1.5 Gbps SD-SDI: 270 Mbps	**Clock Windows**	Up to 4 (with output option, up to 4 windows in all on 2 screens.) Internal clock or LTC time code selectable. Time correction via GPI or SNTP. Internal clock accuracy: within ±15 sec/month (at 25°C)
Analog composite	Analog composite: 1.0 Vp-p Quantization: Y: 8-bit, C: 8-bit	**Count up/down Timer, Remaining Time Counter**	Can be displayed in clock window. (Internal clock or LTC is selectable for remaining time counter.) *Stopwatch/timer uses an internal crystal oscillator: ±50 ppm within operating temperature (0°C to 40°C)
Background (MV-1620DO)	3G-SDI (Level A): 3 Gbps 1080/59.94p, 1080/50p HD-SDI: 1.5 Gbps 720/59.94p 720/50p *Only used for MV-1620HS/HSA background output	**Information Display**	Clock window can be used for information display. Displays error logs, multi-viewer information, or entered text.
Audio Input		**Background Display**	Memory: 4 / Display: 1 per output Max. size: 1920 × 1080
Embedded	Sampling frequency: 48 kHz (sync to input video signals) Quantization: 16 to 24-bit 16 channels per 3G/HD/SD-SDI input signal (4 groups, 8 stereo pairs)	**Logo Display**	Memory: 8 / Display: Max. 2 per output Max. size: 1024 × 512
		Screen Layout	User customized layout Up to 16 layout patterns can be saved.
Analog (MV-1620DO)	Analog audio: Balanced or unbalanced D-sub 37-pin (female), inch screw *For unbalanced input, short Cold-Shield externally Input impedance: 600Ω/Hi-Z Input level: −10 dBV/−3 dBu/0 dBu/+4 dBu, Maximum input level (with +4 dBu input level): +24 dBu (balanced), +18 dBu (unbalanced) Rated input power (with 600Ω termination): +24 dBm Sampling frequency: 48 kHz Quantization: 24-bit; 8 channels (4 stereo pairs)	**Title Display**	Character limit: Max. 16 characters x 2 lines for each input channel Supported characters: Letters, numbers, symbols, Korean characters and Japanese kana/kanji (JIS 1 and 2)
		Tally Display	Indicated as a frame (red/green/orange) or marker (red/green) on each input window. Colors are adjustable.
		Audio Level Display	Up to 16 audio channels of audio level metering per input
AES (MV-1620DO)	AES audio: Unbalanced, 75Ω, D-sub 37-pin (female), inch screw *Short Cold-Shield externally Sampling frequency: 32/44.1/48 kHz Quantization: 16 to 24-bit; 8 channels (4 stereo pairs)	**Time Code Display**	Display for 3G/HD/SD-SDI Ancillary Timecode (ATC) Reader mode: *Ancillary Timecode (ATC) is not passed through. *Timecode input in LTC connector is not displayed.
LTC input (MV-1620IF)	1 input, SMPTE time code 1.0 Vp-p within ±6 dB	**Video Monitoring**	Detects video loss, frozen frames, incorrect luminance/black level, and CRC error. *Detected by calculating the active picture CRC for input signals to check whether this value remains the same for each frame.
Video Outputs		**Safety Area Marker**	Displays safety areas on each window.
HDMI (digital output)	HDMI: 1 (with MV-1620DO: 2 (2 pairs)) Quantization: R: 8-bit, G: 8-bit, B: 8-bit Resolution: 1920 × 1080i/p, 1280 × 720p Frequency: 59.94 Hz, 50 Hz *Interlaced output also available at 1920×1080i/p *No input/output frame rate conversion. *Unmatched frame rates may cause repeated or dropped frames.	**Audio Monitoring**	Detects audio loss, silence, and excessive audio levels.
		Closed Captioning Monitoring	Detects loss of closed captioning.

		Interfaces	Interfaces other than Ethernet require installation of the MV-1620IF option.
			RS-232C/RS-422/RS-485: D-sub 9-pin (male) × 1
			  Baud rate: 9,600/19,200/38,400/57,600/115,200 bps
			  Data length: 8-bit, stop bit 1-bit
			  Parity: none/odd/even
			GPIO: D-sub 50-pin (female) × 1; 18-pin used for both input and output
			  Max. 48 inputs/18 outputs
			  *I/O selectable
			LAN: 100BASE-TX/1000BASE-T
			RJ-45 × 1 (CAT 5e-compliant)

SDI	75Ω BNC: 1 (2 with MV-1620DO) SDI 1 and 2 output matches the screen for HDMI 1 and 2 output. 3G-SDI (Level A): 3 Gbps HD-SDI: 1.5 Gbps		
Background (MV-1620IO)	3G-SDI (Level A): 3 Gbps 1080/59.94p, 1080/50p HD-SDI: 1.5 Gbps 720/59.94p 720/50p *Only used for MV-1620HS/HSA background input	**Layout Manager (Windows Software)**	Window size and position settings (Layout Editor screen) Switching output video and audio (Remote Controller screen) Editing and registering logos and backgrounds (Logo Registry screen)
Audio Output		**Live Viewer**	Software for video streaming (Windows software)
Analog	Ports: 1 (with MV-1620DO: 2 (2 pairs)) RCA pin jacks: 2 (1 stereo pair), unbalanced Output impedance: 100 Ω or less Output level: −10 dBV Maximum input level: +5 dBV Sampling frequency: 48 kHz Quantization: 24-bit	**Data Backup**	Stores settings internally to the memory (rewrite capacity: approx. 100,000). *Frequent setting changes may impair data retention.
		Temperature/Humidity	0°C to 40°C / 30% to 90% (no condensation)
		Backup Battery	Internal lithium battery (to maintain time)
		Power	100 V AC to 240 V AC ±10% 50Hz/60Hz
Embedded (SDI)	4 groups (8 stereo pairs) Sampling frequency: 48 kHz Quantization: 24-bit	**Power Consumption**	88 VA (86 W) (at 100 V AC to 120 V AC) 107 VA (85 W) (at 200 V AC to 240 V AC)
		Dimensions/Weight	EIA 1 RU 430 (W) × 44 (H) × 475 (D) mm / 6.9 kg
Embedded (HDMI)	4 stereo pairs Sampling frequency: 48 kHz Quantization: 24-bit	**Accessories**	Quick Setup Guide, AC cord, Rack mount brackets, CD-ROM (Layout Manager, Live Viewer, Operation Manuals)
Genlock Input (MV-1620DO)	BB: NTSC 0.429 Vp-p/PAL 0.45 Vp-p, Tri-level sync: 0.6 Vp-p	**Options** MV-1620PS	Redundant power supply
		MV-1620IF	Interfaces (GPIO/RS-232C/422/485/LTC)
		MV-1620DO	Dual Output Output: SDI/HDMI/Audio/Background Input: Analog/AES Audio/Genlock/Background
		MV-1620RT	90/180/270° rotation display
		MV-1620SNMP	SNMP support
		PC3323-1	D-sub 37-pin breakout cable (XLR × 8, BNC × 4)

3G/HD/SD/ANALOG MIXED HIGH RESOLUTION MULTI VIEWER
MV-1620HSA

Lines shown for reference only

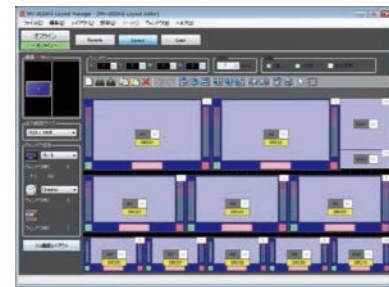## 4K-input Support, 16 Channels of Input, Dual-Screen Output High Performance With Better Energy Efficiency

The MV-1620HSA is a compact (1U) multi-viewer that accepts up to 16 channels of mixed 3G/HD/SD-SDI or analog composite signals for monitoring on one or two screens. It can be cascaded with other units to display up to 64 sources at once. Full-featured, the unit offers a customizable window layout. View audio levels and use AFD-compatible cropping or information display as needed.

Versatile Mixed-Source Environment
Supports mixed signals as required, from 3G-SDI (Level A/B), HD-SDI, SD-SDI, or analog composite sources. Asynchronous input is also supported. The viewer accepts an array of formats and frame rates including NTSC, PAL, 1080/59.94i and 1080/50i.
(No frame rate conversion.)

Layout Manager
Includes a Windows application for managing the layout. Customize the layout on a computer by registering or changing layout patterns, adjusting title display, and configuring other settings as needed. Store up to 16 layout patterns on the viewer. Saved layouts can be applied directly from the front panel control.
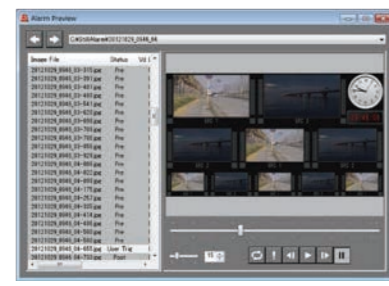
Layout Manager

Video Streaming
In addition to computer-based layout management, you can also stream video from the viewer over Ethernet. The streaming video can be used for additional local computer display or for remote monitoring.

Video streaming (Live Viewer)

Record Streamed Video
Take streaming a step further by capturing the video. Frames before and after errors or your specified triggers are captured and can be saved on a Windows computer. (Video is saved as a sequence of still-image files.)

Applicable errors: video loss, frozen frames, incorrect luminance/black levels, CRC errors, audio loss, silence, excessive audio levels, and loss of closed captioning

Recording streams (Alarm Preview)

HD Output of Source Signals
Sources can be displayed on one or two (option) screens, with HDMI and SDI interfaces available for both screens to support HD monitoring.

Audio Level
Monitor audio levels of up to 16 channels embedded in each 3G/HD/SD-SDI signal. Use Layout Manager to customize displays for positions, the number of channels shown, and the display groups.

Vertical/Horizontal Level Meter
View level meters not only horizontally but also vertically, as needed. Choose a layout for easier checking with the type of windows selected.

Audio Monitoring Output
Audio from any channel can be monitored via HD-SDI, HDMI, or analog audio output.

View up to 64 sources at once by cascading four units (4 × 16), with negligible sync signal latency.
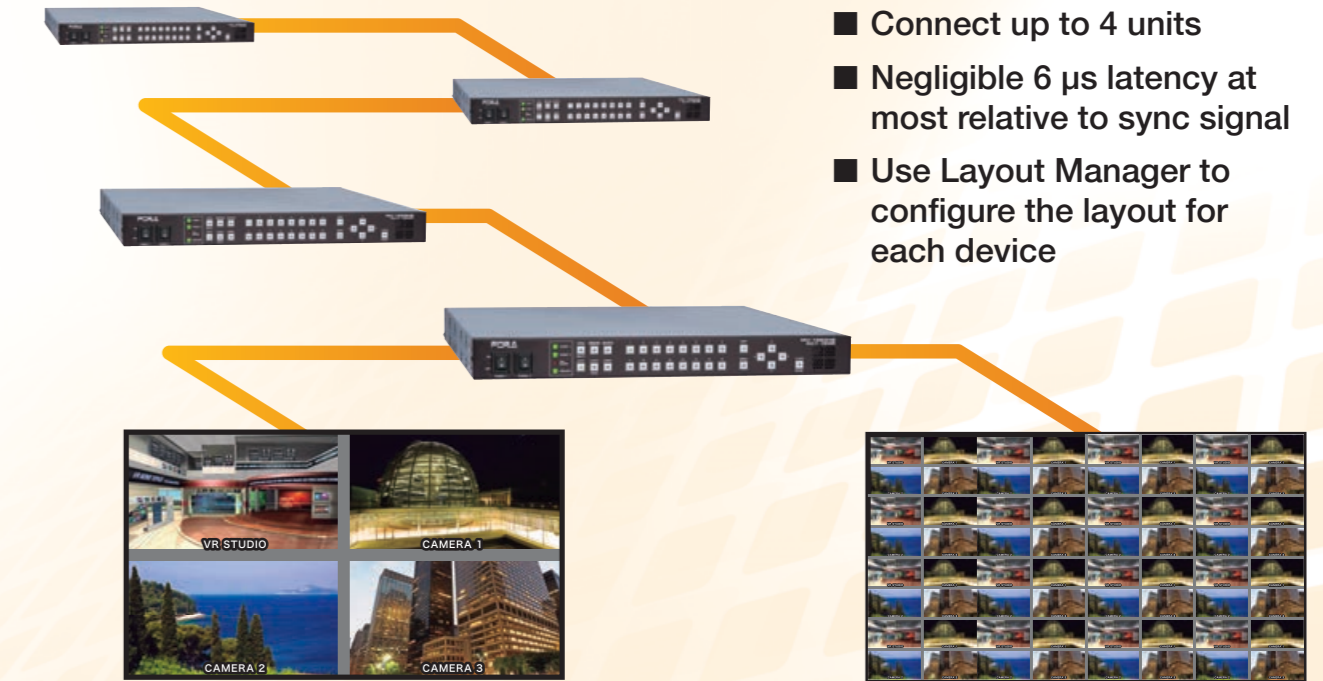
Using One Unit

Monitor 1

Monitor 2*1

- View two channels in different layouts
- View up to 20 windows for two channels
- View up to 4 clocks for two channels
- View up to 2 logos and 1 background per output

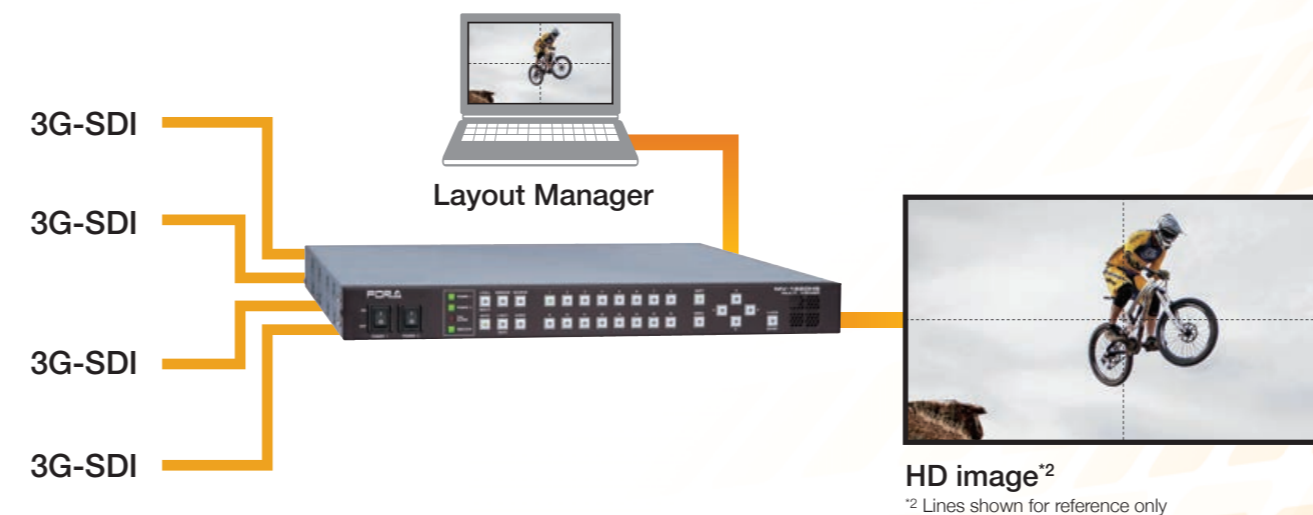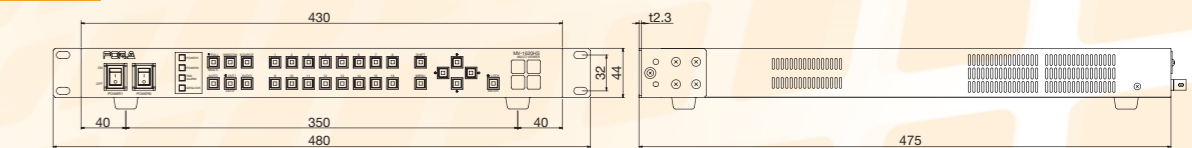### Edit a single 4K image from four 3G-SDI inputs

3G-SDI
3G-SDI
3G-SDI
3G-SDI

Layout Manager

HD image*2
*2 Lines shown for reference only

- Layout Manager enables easy layout of 4K video in a seamless display

Cascaded Connection*1

- Connect up to 4 units
- Negligible 6 µs latency at most relative to sync signal
- Use Layout Manager to configure the layout for each device

Monitor 1

Monitor 2
*1 Using an optional MV-1620DO for dual output

External Dimensions

430
12.3
40   350   40
480
475

Rear Panel

Interface option
Dual output option
Video output 1 (HDMI x 1 and SDI x 1)

Appearance without optional units

HD-SD/3G-SDI/COMPOSITE INPUT

Analog audio output 1

Serial interface control
GPIO
Genlock input (for cascaded connection)
Analog audio output 2
Background input/output (for cascaded connection)

Appearance with all optional units

HD-SD/3G-SDI/COMPOSITE INPUT

LTC input (for clock display)
Analog audio input (8 channels) and digital (AES) audio input (8 channels)
Video output 2 (HDMI x 1 and SDI x 1)