BVM-E / BVM-F / PVM Series OLED Monitor

BVM-E250 / BVM-E170
Professional OLED Master Monitor

BVM-F250 / BVM-F170
Professional OLED Master Monitor

PVM-2541 / PVM-1741 / PMV-740
Professional OLED Picture Monitor
Sony OLED – Re-defining the Master Monitor and Picture Monitor

Sony is proud to introduce its latest lineup of OLED (organic light emitting diode) monitors. These include three separate series to fit most any need in your production process. The BVM E series offers performance and features for work with extremely critical technical needs. The BVM F series offers features and performance for production and post production applications where content will deliver to a broadcaster, and the PVM series offers features and performance for general usages.

Only Sony has the capability to develop products such as these, as the company builds on over 30 years of CRT and LCD master monitor experience in the production industry, and has created its own sophisticated OLED display devices and signal processing engines.

Sony has developed these 24.5-inch and 16.5-inch professional OLED display panels for critical professional use. The OLED is a self-emitting device, and can deliver deep blacks, high-contrast, accurate color reproduction, and quick response with virtually no motion blur. And yet it features a wide color gamut, meeting ITU-R BT.709, EBU, and SMPTE-C broadcast standards, and conforming to the wider DCI-P3 color gamut.*3

Furthermore, the newly developed OLED processor with cutting-edge technology offers quality consistency, superb uniformity, and long-term reliability.

Sony optimizes the potential of the OLED panel using unique Super Top Emission™ OLED technology along with the dedicated OLED processor. The combination of these technological developments elevate the BVM-E, BVM-F, and PVM Series to a new level of next-generation master monitors and picture monitors, re-setting the industry’s ultimate reference point.

With Sony OLED fully unleashed, Sony starts a new and important chapter in professional monitor history.

*1 24.5-inch (623.4 mm), measured diagonally.
*2 16.5-inch (419.7 mm), measured diagonally.
*3 The color gamut described in SMPTE RP 431-2-2007. The chromaticity of the green-red region is not covered in full. BVM E Series Only.
TRIMASTER™ Technology is a design architecture used to elicit the full performance capabilities of professional flat-panel displays. It comprises the core technologies that enable the highest level of color accuracy, precision imaging, and picture-quality consistency.

EL (Electro-Luminescence) is an ideal self-emission display device with a wide dynamic range and high picture accuracy. By refining TRIMASTER technology with the new EL device, Sony effectively boosts the performance expectations of the professional industry.

Sony Unique OLED Technology

— 24.5-inch / 16.5-inch “Full HD 10bit”
— Sony’s “Super Top Emission”
— High Accuracy OLED Processor

Sony Super Top Emission OLED Panel

• Accurate black reproduction
• Accurate color reproduction
• Wide dynamic range
• Fast response time

Sony Original OLED Processor

• Designed specifically for the Sony OLED panel
• Accurate gamma control of extreme black details
• Superb picture uniformity and reliability
OLED Master Monitor

BVM-E Series

The groundbreaking BVM-E250 and BVM-E170 are top of the line Sony OLED reference monitors, incorporating leading-edge technologies to bring out the full performance capabilities required for critical picture evaluation, where accuracy, stability, and consistency are everything.

BVM-F Series

The BVM-F250 and BVM-F170 inherit the same technology and performance of BVM-E Series master monitors, and are optimized for TV production and broadcasting applications.

OLED Picture Monitor

PVM Series

The PVM-2541 and PVM-1741, as well as the PVM-740, are all-in-one OLED picture monitors for a wide range of applications, delivering unparalleled picture quality with the performance features and functions found in more expensive monitors, all contained in a compact, robust, one piece design.
Quality / Performance

PVM Series

- Standard Panel
  - Stunning OLED performance
  - Full HD (1920 x 1080)*1
  - RGB 10bit Driver

- Standard Engine
  - 10-bit engine

Professional Display Engine

- 12-bit engine
- Accurate gamma control of extreme black details
- Cutting-edge I/P conversion with extremely low process delay
- Sophisticated non-linear cubic conversion color management

Standard Features

- 3G-SDI (x 2)*1
- RGB 4:4:4*1
- HDMI
- Option port x 4 (BKM x 6 selection)
- Interlace display
- Pixel zoom
- HD frame capture
- 24P/PsF@72 Hz display
- 3D analysis*3

BVM Advanced Functions

- Option port x 4 (BKM x 6 selection)
- Option port x 4 (BKM x 6 selection)
- DisplayPort (x1)
- Interlace display
- Digital Cinema Features

- 2K (2048 x 1080 RGB/XYZ) input
- ASC CDL*2
- User LUT*2
- P&P (Wipe, Butterfly, Blending)

*1 Not applicable for PVM-740.
*2 Supported by firmware V1.1 or later.
*3 Option board required for BVM.

BVM E Series

- BVM E Panel
  - Designed as the highest Sony performance panel.
  - Used for the most critical picture evaluation needs.

BVM F Series

- BVM F Panel
  - Strictly controlled tolerance in addition to the standard panel performance.

Standard Features

- Auto White Balance*2
- Time code*1
- Audio Level Meter*3
- DC operation (17")

BVM Advanced Functions

- Option port x 4 (BKM x 6 selection)
- Option port x 4 (BKM x 6 selection)
- DisplayPort (x1)
- Interlace display
- Pixel zoom
- HD frame capture
- 24P/PsF@72 Hz display
- 3D analysis*3

Digital Cinema Features

- 2K (2048 x 1080 RGB/XYZ) input
- ASC CDL*2
- User LUT*2
- P&P (Wipe, Butterfly, Blending)
Advantages of the Sony OLED Technology

Sony OLED – RGB 10-bit, Full HD

- Sony unique Super Top Emission technology
- Deep blacks with wide dynamic range
- Quick response with virtually no motion blur
- Wide color gamut and accurate color reproduction

* 623.4 mm, and 419.7 mm (respectively), measured diagonally.

Sony OLED – Self-emitting Display Device

Sony OLED creates light by recombining an electron and a hole within certain organic materials. The process of emitting light is extremely efficient when compared to other technologies currently used for display. Its organic materials react to the control of the electrical current immediately, and do not emit light in the absence of an electrical current. In this way, the OLED display panel features superb black performance and quick response to fast-motion pictures. In addition, the Sony OLED display panel delivers a wider color gamut.

Super Top Emission Technology

The Sony Super Top Emission OLED panel is designed to deliver light emission with the TFT layer on the rear side of the panel. Therefore, the top emission structure offers more efficient light emission than is typical with bottom emission structures where TFT layers are placed on the front side of the panel, limiting the light-emission aperture.

This Super Top Emission technology has a micro-cavity structure which incorporates color filters. This cavity structure uses an optical resonance effect to enhance color purity and improve light-emission efficiency. In addition, the color filter of each RGB also enhances the color purity of emitted light, and reduces ambient light reflection.

The Sony Super Top Emission OLED panel is completely sealed by a glass substrate, and the electroluminescent layer is fully isolated from outside air and moisture. This contributes to stability and reliability.

The diagram on the right shows how the Sony micro-cavity structure takes out of band light that doesn’t contribute to the correct colors and combines it with the in-band color so that a more saturated and accurate color can be displayed.
Advantages of the Sony OLED Technology

The OLED processor
- Dedicated to eliciting full performance.

- Accurate signal processing across all signal levels
- Accurate gamma control
- Superb uniformity control

Dedicated Sony OLED Processor*

The BVM-E, BVM-F and PVM Series of OLED monitors incorporate newly developed OLED-dedicated signal processors to elicit and maximize OLED panel performance. This technology allows these TRIMASTER EL™ monitors to provide the level of performance required for critical imaging. These processors accurately control gamma and uniformity, and deliver precision stability control.

* The PVM-740 is equipped with a different processing technology (ChromaTRU™).

Accurate gamma control
Since the Sony OLED panel can display a deeper black than any other display device, the TRIMASTER EL OLED processor controls gamma accuracy (black reproduction) by increased signal processing bit depth.

Superb uniformity control
The Sony OLED processor offers superb uniformity across all signal levels at every point of the screen. At the factory, OLED-panel uniformity is precisely measured and corrected using a proprietary RGB LUT (look-up table) adjustment system.
Accurate Black Reproduction
A key advantage of the Sony OLED is the fact that each pixel can be turned completely off. No other display technology is able to offer this. LCD either raises black luminance due to intrinsic light leakage, or reduces black luminance with artificial local dimming technologies. CRT always applies a bias voltage to place the gun at the proper operating level. All of these display devices have some limitation in accuracy of black reproduction. In comparison, Sony OLED is capable of reproducing accurate black with each individual pixel, enabling users to evaluate each picture image faithfully to the signal.

Accurate Color Reproduction
Sony Super Top Emission technology not only offers a wide color gamut with its purity of the three primary colors, but also maintains this wide color gamut throughout the entire luminance range. While all other display devices have limitations in reproducing accurate colors, especially in the low signal levels, the Sony OLED system is truly an ideal display device for picture evaluation. With OLED, users see the details in the blacks, and see the colors as well.
Advantages of the Sony OLED Technology

Quick Response with Virtually No Motion Blur

The Sony OLED gray-to-gray switching speed (measured in microseconds, μs) is much faster than that of the LCD (measured in milliseconds, ms).* This fast response benefits a variety of applications and uses. For example, in sports broadcasting, when camera pans would become blurred with an LCD, they remain sharp and clear with OLED. And with moving titles or graphics, when text can be difficult to read on an LCD, OLED displays clear text, regardless of speed or direction.

* Sony’s test results.

Wide Dynamic Range

Sony OLED technology has the ability to control each individual pixel from an absolute black to peak white. Each pixel can display the entire dynamic range of the image with no interference to the adjacent pixels.

* Simulated images
The groundbreaking BVM E series and BVM F series are reference monitors, using the Sony OLED system and incorporating leading-edge technologies to bring out the full performance capabilities required for critical picture evaluation, where accuracy is everything.

- The Sony OLED panel uses the Sony Super Top Emission technology with 10-bit RGB drive and OLED processing
- Professional display engine
  - Nonlinear Cubic Conversion color management system
  - Cutting-edge interlaced to progressive conversion technology with extremely low process delay
  - 12-bit output accuracy signal processing
- Input versatility
  - Standard Input: 3G/HD/SD-SDI (x2) (selectable input), HDMI™ (HDCP) (x1), DisplayPort (x1)*
  - Four option slots for input expansion: Six optional BKM boards are available for different needs
- Leading-edge features
  - Interlace Display, HD Frame Capture, Pixel Zoom, P&P (Side-by-side, Butterfly*2, Wipe*2, Blending*2)
- Cinema features (BVM-E Series only)
  - Wide color gamut: D-Cine conforming to DCI-P3, BVM Native offering the widest color gamut
  - High frame rate: 24P/PsF, 25P/PsF are displayed at 72 Hz and 75 Hz respectively
  - 2K Cinema formats with multiple display modes
    (Full image display, or Native pixel-to-pixel display with an Image-slide function)
  - ASC CDL (American Society of Cinematographers Color Decision List)*1 and User LUT*1
- Auto white balance with PC application software*1
- 3D signal analysis (as a 2D monitor) with optional BKM-250TG 3G-SDI input adaptor
- Closed caption display with optional BKM-244CC HD/SD-SDI closed caption adaptor

*1 Available from firmware V1.1 or later.
*2 BVM-E Series only.
Professional Display Engine
(BVM-E / BVM-F Series)

- Nonlinear Cubic Conversion color management system
- Cutting-edge I/P conversion technology with extremely low process delay
- 12-bit output accuracy signal processing

### Professional Display Engine

The high-precision signal processing engine has been developed to fulfill the master monitor criteria and is designed to maximize OLED panel performance. This engine incorporates 12-bit output accuracy at each process, and provides both a high quality interlaced to progressive conversion algorithm and a highly accurate color management system.

#### Nonlinear Cubic Conversion color management

The nonlinear cubic conversion color management system in the BVM-E and BVM-F Series master monitors use a unique 3D LUT (look-up table) to accurately reproduce the color gamuts of each broadcast standard such as ITU-R BT.709, EBU, and SMPTE-C phosphor standards. In addition, the OLED’s wide color gamut enables D-Cine emulation for digital intermediate work.*

* D-Cine is a color gamut emulating the color gamut described in SMPTE RP 431-2-2007. The chromaticity of the green-red region is not covered in full. This feature is supported by the BVM-E Series only.

#### Cutting-edge interlaced to progressive conversion with low process delay

The Sony original interlaced to progressive conversion technology used in the BVM Series minimizes processing artifacts found in typical up-conversion processes. This has been improved in the BVM-E and BVM-F Series so that an interlaced image is displayed accurately and faithfully.

#### 12-bit output accuracy signal processing

The BVM-E and BVM-F Series use a 12-bit per color display engine, which allows images to be reproduced with high precision for display accuracy.
**BVM-E Series Digital Cinema Features**

The BVM-E Series – comprising BVM-E250 and BVM-E170 master monitors – offer digital cinema features which are indispensable and ideal for high-quality creative digital cinema onset and post-production workflow.

**2K (2048 x 1080, RGB/XYZ) Input**

BVM-E250 and BVM-E170 master monitors are capable of 2K (2048 x 1080 resolution, RGB/XYZ) input. The 2K signal is displayed in two ways – as a full 2K image scaled within a full-HD (1920 x 1080) screen, or as a 2K native display with an image-slide function.

**2048 Image-slide**

The 2048 Image-slide function of the BVM-E250 and BVM-E170 allows 2K resolution (2048 x 1080 pixels) images to be mapped, pixel-to-pixel, on the full-HD (1920 x 1080 pixels) panel without picture degradation. When the user needs to view the left or right edge of the picture frame, they can scroll the image in a horizontal direction.

**ASC CDL and User LUT Functions**

BVM-E Series monitors support the ASC CDL (American Society of Cinematographers Color Decision List) and User LUT (Look-up Table) to modify monitor colorimetry. Live images from a camera onset can be altered after importing an ASC CDL format, or previewed using a film print emulation applied to the monitor using a User LUT function. These features help with creative decisions and improve workflow between onset and post-production.

*Requires BVM-E firmware V1.1 or later, and third-party software supporting the BVM-E ASC CDL and User LUT functions.*

**S-LOG Gamma**

BVM-E250 and BVM-E170 master monitors incorporate gamma tables to reproduce images captured using S-LOG Gamma technology. S-LOG gamma is a technique used in Sony’s digital cinematography cameras that allows the full latitude of the camera CCD to be maintained throughout the production chain. Unlike conventional systems, in which highlight contrast is compressed, S-LOG Gamma logarithmically converts the video signal using characteristics similar to film negatives. This keeps the camera CCD dynamic range intact, even in extreme highlight areas. Both the BVM-E250 and BVM-E170 allow reproduction as an inverse function of the camera’s S-LOG gamma signals. Two display modes are offered:

1) **S-LOG Full**

   This mode displays the full dynamic range of the video signal captured from Sony’s digital cinematography cameras.

2) **S-LOG Standard**

   This mode displays image exposure levels at the lower part of the S-LOG gamma signal dynamic range, allowing image areas of regular brightness to be viewed clearly. Higher exposure levels are clipped in this mode.

**Gamut Error Display**

BVM-E250 and BVM-E170 master monitors incorporate a Gamut Error Display function that detects irregular signal input. When an irregular signal is detected, these master monitors indicate this with a zebra pattern over the relevant area of the picture. Irregular signal data can include non-standard input signals and video signals exceeding the video level (selectable); these are generated during signal conversion from HD component to RGB. Gamut Error Display is a convenient feature that instantly alerts viewers to such signals without requiring the use of a waveform monitor.
BVM Advanced Features

Input Versatility

Multi-format signal support
BVM-E and BVM-F Series monitors support various input signals ranging from 720 x 576/50i to 1920 x 1080/50P, 60P digital cinema (D-Cine) 2048 x 1080/24P*, and numerous computer signals up to 1920 x 1080.

* 2048 x 1080/p signals are supported by the BVM-E Series only.

Standard 3G-SDI inputs plus versatile optional ports
These monitors are equipped with two standard 3G/HD/SD-SDI inputs and an HDMI (HDCP compliant) input. In addition, four option ports are available. This increases system versatility and allows users to add decoders for signal formats not supported by the supplied inputs, including extra 3G-SDI, HD-SDI, or SD-SDI, and Dual-link HD-SDI, RGB, Y/C, Y, and composite signal inputs.

DisplayPort*
These monitors are also equipped with a standard DisplayPort for future expansion.

* This will be supported by monitor firmware in V1.1 or later.

Signal-interface Options

BVM-E250 Input ports
BVM-E170 Input ports

Standard 3G-SDI interface

VMM-4SNY, Integrated Test and Measurement Module
• Two HDSDI/SDI inputs
• Waveform monitor, Vectorscope, Gamut Error, and Audio display

VMM-4SNY-3GB, Integrated Test and Measurement Module
• Two 3G/HDSDI/SDI inputs
• Waveform monitor, Vectorscope, Gamut Error, and Audio display
Signal Analyzing Functions

Picture & Picture
The unique Picture & Picture function of the BVM-E and BVM-F Series allows simultaneous display of two input signals on the monitor’s screen. This function is extremely convenient for making instant adjustments to two input sources, because there is no need to individually adjust the different characteristics of two monitors. This function comes in handy for adjustments between two cameras, special-effects creation, time-lapse shooting, and computer graphics (CG) work. The BVM-E Series offers four Picture & Picture modes and the BVM-F Series offers a side-by-side mode:

- **Side-by-side**
  The two picture images are downscaled using a digital filter and displayed side-by-side. This feature is convenient when making white balance adjustments or determining shooting angles between two cameras.

- **WIPE (BVM-E Series only)**
  The area of the two pictures to be displayed is selected using a vertical WIPE pattern, which is controlled from the BKM-16R. This function is useful when picture detail of the two images must be examined on a pixel basis. This is normally used to review still images.

- **Butterfly (BVM-E Series only)**
  The two inputs are displayed as line-symmetric images on the left and right halves of the screen. By adjusting the H-position controller, the two images can be moved inward to the middle of the screen. An instant comparison of the moving images can then be made easily and accurately, without the user having to move their eyes.

- **Blending (BVM-E Series only)**
  The two picture images are overlapped for display, and the mix ratio is adjustable. This function is useful to verify whether a foreground signal is accurately keyed into the background signal, or when combining shoots with live action and computer-generated effects.

Pixel Zoom
Pixel Zoom is a function for magnifying images. A selected area of the displayed picture can be enlarged on a pixel basis, up to eight times in size both vertically and horizontally. Because this function does not use scaling, the desired picture content is magnified and displayed faithfully to the raw input signal. This function is useful when evaluating precise picture edges, such as for chroma keying.

* This function is effective when the input signal is displayed in “Native Scan” mode.
3D Signal Analyzing Functions

By installing the optional BKM-250TG 3G/HD-SDI input adaptor*, the BVM-E and BVM-F Series monitors can support a variety of 3D signal analyses. The 3D signals are displayed in 2D mode.

* “Difference display” function require the BKM-250TG serial No. 7300001 or higher, and other functions require the BKM-250TG serial No. 7100001 or higher.

Difference Display
This function displays the difference between the luminance signal of the left (L) and right (R) images of the 3D signal. When the luminance levels of the two signals are the same, the signals are displayed in gray. When they are different, a monochrome image is displayed according to the variation in luminance. This function is useful for checking the amount of parallax.

L/R Switch
Left and right signals can be swapped in a moment without inserting black frames, simply by manually pushing a function key. This instant-swap capability enables users to compare the entire images and check for any sense of incongruity or for unnatural images.

Horopter Check
This function helps users to perceive the subtle difference of depth between different objects placed on the 3D screen surface.

Horizontal Flip
When a half-mirror type of rig is used, either the left or right signal may be reversed horizontally. The Horizontal flip function turns the reversed image to the normal view.

* A delay in signal processing occurs, and both the left and right signals synchronize to the delayed signal.

(checker board image)

(Simulated display image)

(Simulated images)
BVM Series

Leading-edge Features

Interlace Display
BVM-E and BVM-F Series monitors offer an Interlace Display feature for 1080i and SD inputs. This lets each BVM-E and BVM-F monitor display these inputs as a true interlace display. As with the Native Scan function, Interlace Display mode offers faithful reproduction of the input signal, and the displayed interlace fields are free from the picture degradation that can occur as a result of typical I/P conversion processes.

Scan Switch
The Scan Switch function allows switching between under scan (-3%), normal scan (0%), and over scan (mask of the 5% over scan portion in the normal scan).

Native Scan (pixel-to-pixel display)
Conventional flat-panel monitors reproduce images using scaling and I/P conversion due to their fixed pixel counts and progressive scanning processes. The Native Scan function is a unique display mode that reproduces images without changing the input signal’s pixel count.
For example, when an SD signal is input, the BVM-E and BVM-F Series monitors will reproduce the image at a picture size of 720 x 487* pixels. For SD inputs the Native Scan function also allows the displayed image size to be doubled to 1440 x 974* by duplicating and doubling each pixel both horizontally and vertically.
* The 525/59.94i signal specified by Rec. ITU-R BT.601.

HD Frame Capture
The HD Frame Capture function of the BVM-E and BVM-F Series allow a picture frame from the 3G-SDI and HD-SDI input to be captured and saved as a picture file on Memory Stick™ media.* This picture file can be used as a reference for various purposes, such as for picture-tone adjustments between past images and for camera-framing adjustments.
* Memory Stick PRO™ (High-Speed) / Memory Stick PRO Duo™ (High-Speed) can be used.

Aspect Correction Mode
PAL and NTSC video systems are all based on rectangular pixels. Display of these formats on a square pixel panel typically distorts the image. The BVM-E and BVM-F Series use a unique process called Aspect Correction which, while still offering native pixel performance, continues to display image geometry correctly. This scaling technique used in BVM-E and BVM-F Series monitors corrects horizontal distortion while keeping the vertical pixel count correctly displayed.

Normal Scan Native Scan (x2) Aspect Correction
SD 4:3
SD 16:9 (Squeeze)
Example of NTSC signal on the 16:9 aspect panel – BVM-E250

720 x 487 Native Scan

1440 x 974 Native Scan (720 x 487) x 2

(Simulated images)
Marker settings
BVM-E and BVM-F Series monitors can display various markers, including an aspect marker, safe area marker, and center marker. In addition to this flexible selection of marker types, detailed display settings of each marker are offered. For example, the color, brightness, horizontal/vertical position, and width of aspect markers can all be controlled, while the height and width of safe area markers can be adjusted. What’s more, users can also choose to display two safe area markers, each selectable between three marker variations. These flexible marker controls, together with the choice of many different marker types such as aspect marker types (lines or aspect blanking) and center marker types (long or short), make BVM-E and BVM-F Series monitors the perfect all-round display device for a variety of shooting scenarios – from SD/HD video acquisition to digital cinematography.

Marker Variation

<table>
<thead>
<tr>
<th>Safe Area Marker</th>
<th>Aspect Marker*</th>
</tr>
</thead>
<tbody>
<tr>
<td>% Dot (Pixel)</td>
<td></td>
</tr>
<tr>
<td>Selectable</td>
<td>16:9, 15:9, 14:9, 13.9:4.3, 2.39:1, 2.35:1, 1.896:1, 1.85:1, or 1.66:1</td>
</tr>
<tr>
<td>Markers</td>
<td>Flexible</td>
</tr>
<tr>
<td>Line Colors</td>
<td>White, Red, Green, Blue, Yellow, Cyan, or Magenta</td>
</tr>
<tr>
<td>Line Width</td>
<td>1 to 5 dots (factory preset at 2 dots)</td>
</tr>
<tr>
<td>Line Luminance</td>
<td>High (bright) or Low (dark)</td>
</tr>
<tr>
<td>Blanking</td>
<td>Off: Blanking is released Black: Blanking Half: Half blanking</td>
</tr>
</tbody>
</table>

* The BVM-F Series monitors support Aspect Markers of 16:9 and 4:3 only.

Marker Examples

1. Screen Size: 16:9, Aspect Mode: 2.35:1, Aspect Marker Color: Magenta, Marker Bright: High (bright), Width: 5 dots, Safe Area: Shape A, Area Size: 80%, Center Marker: Short, Aspect Blanking: Off


(Simulated images)
Modular Monitor Control Unit (BKM-16R)

BVM-E and BVM-F Series monitors and their control panels are provided as separate units, allowing greater flexibility for system integration. The BVM-E and BVM-F Series monitors incorporate a monitor control unit, the BKM-16R as an option. This BKM-16R control unit can be attached beneath the monitor using the optional controller attachment stand*, or connected remotely via an Ethernet cable.

* The BVM-E250 and BVM-F250 use the BKM-37H and BKM-38H Attachment Stands. The BVM-E170 and BVM-F170 use the BKM-39H Attachment Stand.

Copy function for monitor setup and adjustment data
The optional BKM-16R control unit has a Memory Stick® slot*1 to save and load monitor setup and adjustment data. This is useful for multiple monitor systems, allowing the same setup and adjustment data to be loaded onto each unit. *2 This data can also be transferred via the BVM’s Ethernet connection. Media sold separately.

*1 Memory Stick, Memory Stick PRO, Memory Stick Duo™, Memory Stick PRO Duo™, and Memory Stick Micro™ (an optional adaptor is required) can be used.

*2 Data can be moved between BVM-L, PVM-L, and BVM-E/-F Series monitors.

“+12dB Chroma UP” function
A "Chroma UP" button located on the front panel of the BKM-16R allows the chroma level to be boosted by +12 dB. This is a convenient feature for adjusting camera white balance with a higher degree of accuracy.

Ethernet-based remote control
The BVM-E and BVM-F Series monitors and the BKM-16R Monitor Control Unit are equipped with an Ethernet port, allowing remote control of display parameters across a standard Ethernet connection. One BKM-16R Monitor Control Unit can control up to thirty-two (32) BVM* monitors.


“Character Off” button
To facilitate parameter adjustments, the On-Screen Menu indication can be taken off the screen, while in Menu mode. The On-Screen Menu indication can be toggled on or off with a simple press of a button on the BKM-16R’s front panel.
**Easy Setup and Adjustment**

**Auto White Balance**

The color temperature and white balance of BVM-E and BVM-F Series monitors can be automatically adjusted by the Auto White Balance function using specified color temperature probes*2, such as the Konica Minolta CA-210, CA-310, CS-200, DK-Technologies PM5639/06, and X-Rite i1 (Eye-One) Pro.

*1 Supported with version 1.1 or later.

*2 A USB connector is required for each color analyzer.

**Auto Chroma / Phase adjustment**

An Auto Chroma / Phase / Matrix setup function is provided on BVM-E and BVM-F Series monitors, which automatically adjusts the monitor’s chroma, phase, and matrix using external color bars.

* Supports analog signal inputs only.

**Other features**

- VESA™ Mounting (200 x 100 mm pitch)**1
- EIA 19-inch Standard Rack-mountable**2
- Blue Only
- Mono
- H Delay / V Delay
- NTSC Setup Level (0%, 7.5%)
- Component Level (SMPTE / EBU-N10 or Betacam)
- Aperture
- Serial Remote (Ethernet)
- Parallel Remote (D-sub 9-pin)
- Tally Lamp (Amber)
- EXT Sync (for RGB / YUV)
- Remote Maintenance

**Internal test signal and SMPTE color bars**

BVM-E and BVM-F Series monitors incorporate a built-in test signal generator for: 100% white signal, 20% gray signal, 0% black signal, PLUGE (Picture Line Up Generating Equipment) signal, color bar signals, 5-step grayscale signal, and ramp signal.

**Aspect switch**

The aspect ratio can be switched between 4:3, 16:9, 2.39:1, and 1.896:1 depending on the input signal.

* The BVM-F Series monitors support 16:9 and 4:3 only.

**DC operation**

The BVM-E170 and BVM-F170 can be DC operated. Due to their lightweight and small-size design, with a comparable height to the former 14-inch BVM-CRT monitors, the BVM-E170 and BVM-F170 are ideal for field and OB van applications.
OLED Picture Monitor

For Your Production Workflow

The PVM-2541 and PVM-1741 as well as the PVM-740 are all-in-one OLED picture monitors, delivering unparalleled picture quality with the performance features and functions found in more expensive monitors, all contained in a compact, robust, one piece design.

- Sony Super Top Emission OLED display panel with 10-bit RGB drivers:
  - 24.5-inch\(^1\) and 16.5-inch\(^1\) (Full HD 1920 x 1080 pixels)
  - 7.4-inch\(^1\) (Quarter HD 960 x 540 pixels)
- Wide dynamic range display
- New compact metal chassis
  - Lightweight and robust metal body
- Standard inputs
  - 3G/HD/SD-SDI input (x2)\(^2\), HDMI (HDCP) (x1), and Composite (x1)
- Built-in tools
  - Waveform monitor, audio level meter, timecode\(^3\)
- Easy-to-use control panel
  - Rotary-type switch for quick menu access
  - Seven function-assignable buttons for direct and quick access
- DC 12V operations (PVM-1741 and PVM-740)
- Auto white balance with PC application software
- External remote control function (parallel and serial remote)

\(^1\) 623.4 mm, 419.7 mm, and 188.0 mm (respectively), Viewable area measured diagonally.
\(^2\) The PVM-740 is equipped with one 3G/HDSDI input connector.
\(^3\) The PVM-740 does not support timecode display.
Groundbreaking Picture Performance with Sony OLED Technologies

The Sony 24.5*3-inch, 16.5*3-inch, and 7.4*3-inch Super Top Emission OLED display panels provide unparalleled black performance, a wide color gamut, and quick pixel response with virtually no motion blur. By combining the Sony OLED display panel (Full HD*1, 10-bit driver) and the Sony OLED processing technologies*2, the PVM Series of OLED monitors deliver exceptional picture quality never before seen in conventional picture monitors.

*1 The PVM-740 delivers Quarter HD (960 x 540) resolution.
*2 The PVM-740 is equipped with the ChromaTRU processing technology.
*3 Viewable area measured diagonally.

Main Features

Sony OLED with Full HD* and 10-bit RGB Drivers

The PVM-2541 and PVM-1741 OLED panel with Full HD resolution (1920 x 1080) and a 10-bit RGB driver, together with the Sony Super Top Emission OLED display panel, creates lifelike and smoother-than-ever gradation from dark to bright portions of a scene such as in a sunrise or sunset.

* The PVM-740 delivers Quarter HD (960 x 540) resolution.

Wide Color Gamut and High-purity Deep Color Reproduction

The Sony OLED technology shows the largest color range of any Sony monitor ever offered. Color standards such as ITU-R BT.709, EBU, and SMPTE-C are displayed more accurately and, if desired, the OLED panel’s native color gamut can be displayed. The Sony micro-cavity structure uses an optical resonance effect in combination with accurate color filters to calibrate and stabilize RGB color accuracy. This combination is also effective in reducing ambient light reflection, and consequently deep color reproduction can be achieved without degradation, particularly in bright environments.

Superb Black Performance

Thanks to the Sony OLED system, deep blacks can be accurately displayed and the black portion of an image is not degraded.
Quick Response with virtually Blur-free Motion

Because the OLED electroluminescent layer inherently responds to any electrical current input, it emits light immediately. By this mechanism, excellent quick response characteristics can be achieved on fast-motion images. This efficient blur-free, fast response benefits a variety of applications and scenes, e.g., in sports broadcasting, monitoring of camera panning, and text scrolling.

Superb Uniformity

The PVM-2541 and PVM-1741 monitors incorporate a newly developed OLED process to bring out the full performance of the Sony OLED panels. This OLED processor offers superb uniformity across all signal levels at every point of the screen. At the factory, the OLED panel uniformity is precisely measured and corrected using a sophisticated RGB LUT (look-up table) adjustment system.

I/P Mode Selection

The PVM-2541 and PVM-1741 monitors provide four I/P modes so that users can select the most suitable mode for each purpose:

- **INTER-FIELD:**
  This mode interpolates images between fields. This is used for picture quality precedence (e.g., to reduce the jagged effect on moving pictures).

- **INTRA-FIELD:**
  This mode interpolates images within the field, and delivers naturally reproduced images and quick picture processing. This mode is available only for 1920 x 1080 SDI signal input.

- **FIELD MERGE:**
  This mode combines lines alternately in odd and even fields, regardless of picture movements. This is used for PsF (Progressive Segmented Frame) processing and still image monitoring.

- **LINE DOUBLER:**
  This mode interpolates by repeating each line. This is used for editing and monitoring fast-moving images, and checking line flicker. The minimum processing time is less than one field (0.5 frames).
Lightweight Compact Design
- Flexible Mounting For Picture Monitoring

The PVM-2541 and PVM-1741 incorporate a lightweight, compact metal body. Their design offers flexibility, and can be adapted according to the application: a desktop unit with standard table feet, or used with an optional SU-561 stand, or without the stand for wall applications.

These monitors support VESA mounting with a 100 mm pitch, and EIA 19-inch standard racks.* This allows the monitors to be used for all types of application – desktop editing, office viewing, on a studio monitor wall, or installed in OB vans.

* The PVM-1741 includes standard rack-mount brackets.

Easy-to-use Control Panel

A rotary-type switch and seven function-assignable buttons allow users quick and intuitive operation. Operation buttons with LED indicators enable error-free operation, even in dark environments.*

* LED lights can be switched on/off. A menu setting is available to dim the lights.

Input Versatility

The PVM-2541 and PVM-1741 monitors are equipped with built-in standard input interfaces: 3G/HD/SD-SDI (x2), HDMI (HDCP) input (x1) and composite (x1).
Waveform Monitor, Audio Level Meter, and Time Code Display

Input signal waveform with a 2-channel audio level meter can be displayed on screen. When an HDSDI or SDI input is connected, the embedded audio level can be displayed on screen with an 8-channel audio level meter. Time code embedded on SDI signals can be displayed on screen. Users can select either LTC or VITC.

* The Audio Level Meter function works only when receiving SDI-embedded audio signals.

External Remote Control Function

The PVM-2541 and PVM-1741 have an external remote control capability for input/output signal selection and adjustment of various items via an Ethernet (10BASE-T/100BASE-TX) connection. Up to 32 monitors and up to four control units can be connected via Ethernet connection and controlled remotely on the network. Also these monitors support some functions of the BKM-16R – an optional remote control unit for BVM-E/BVM-F/BVM-L/PVM-L Series monitors – such as the power on/off switch and the Input Select function.*

* The PVM-2541 and PVM-1741 do not support all BKM-16R functions.

Auto White Balance

The PVM-2541 and PVM-1741 as well as PVM-740 monitors employ a software-based white balance calibration function, which is called “AutoWhiteBalance”. Combined with a Windows® PC and commercially available calibration tool*, this function enables simple adjustment of the monitor’s white balance.

* The X-Rite i1 (Eye-one) Pro. In addition, the PVM-2541 and PVM-1741 will support Konica Minolta CA-210/CS-200, and DK-Technologies PM5639/06.

PVM-2541 / PVM-1741 DVI Input Signals

<table>
<thead>
<tr>
<th>Resolution</th>
<th>Dot clock (MHz)</th>
<th>Hf (kHz)</th>
<th>Vf (Hz)</th>
</tr>
</thead>
<tbody>
<tr>
<td>640 x 480</td>
<td>25.175</td>
<td>31.5</td>
<td></td>
</tr>
<tr>
<td>1280 x 768</td>
<td>68.250</td>
<td>47.4</td>
<td></td>
</tr>
<tr>
<td>1280 x 1024</td>
<td>108.000</td>
<td>64.0</td>
<td></td>
</tr>
<tr>
<td>1360 x 768</td>
<td>85.500</td>
<td>47.7</td>
<td></td>
</tr>
<tr>
<td>1440 x 900</td>
<td>88.750</td>
<td>55.5</td>
<td></td>
</tr>
<tr>
<td>1680 x 1050</td>
<td>119.000</td>
<td>64.7</td>
<td></td>
</tr>
</tbody>
</table>

* When a DVI signal is input to the HDMI IN connector using a DVI conversion cable.
* Sides of the displayed picture may be hidden depending on the input signal.
**OLED Portable Picture Monitor – PVM-740**

The PVM-740 is a portable monitor in the PVM Series of OLED monitors. It packs high performance and a variety of features and functions in its robust and compact body.

- Sony Super Top Emission OLED panel with a 10-bit RGB driver
- Deep black and high contrast, high-purity deep color reproduction, and quick response with virtually no motion blur
- Wide color gamut and accurate gamma supporting broadcast standards (SMPTE-C, EBU, and ITU-R BT.709)
- Audio level meter and waveform monitor
- Screen saver function
- Silent mode
- External remote function

**Robust, light-weight, and compact body**

incorporating a light-weight and compact aluminum-diecast body with a detachable AR-coated protection panel, this model is flexible enough to change style according to user requirements: with or without stand (which is easily detachable), tilted on a stand (15-degree slant), rack-mounted, or set on a camera pedestal.

**Camera focus function**

The PVM-740 can control and increase the aperture level of a video signal, and display images on the screen with sharpened edges to help camera focus operation. This camera focus function can even be enhanced when combined with native scan mode.

**Flip function**

The PVM-740 monitor has a feature to flip a picture without frame delay, horizontally, vertically, or horizontally and vertically. This feature is useful and beneficial - for example, when using a 3D image acquisition system with a 3D rig camera. This allows for much simpler system integration and greater cost efficiency.

**Screw holes for camera pedestal**

With 3/8-inch and 1/4-inch screw holes on its base, the PVM-740 can be installed in a camera pedestal.

**Detachable AR (anti-reflection) -coated protection panel**

AR-coated protection panel helps to keep the OLED panel surface from scratching and helps to keep reflection from ambient light to a minimum.

**Hood Kit VF-510**

For use in the field, the optional VF-510 hood kit provides a viewing hood, carrying handle, and connector protector.

**Input versatility**

The PVM-740 is equipped with built-in standard input interfaces: 3G/HD/SD-SDI (x1), composite (x1), and HDMI input (x1).
## BVM-E / BVM-F Series Signal Formats / Input Adaptors

<table>
<thead>
<tr>
<th>Input signal</th>
<th>Signal system</th>
<th>Signal format</th>
<th>Standard SDI input</th>
<th>BKM-220D</th>
<th>BKM-227W</th>
<th>BKM-229X</th>
<th>BKM-243HS</th>
<th>BKM-244CC</th>
<th>BKM-250TG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analog composite</td>
<td>487/59.94i, 576/60i, 487/59.94i</td>
<td>NTSC</td>
<td>O</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>PAL/SECAM</td>
<td>O</td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td></td>
<td>PAL-M</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Analog Y/C</td>
<td>487/59.94i, 576/60i, 487/59.94i</td>
<td>NTSC</td>
<td>O</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>PAL/SECAM</td>
<td>O</td>
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<tr>
<td></td>
<td></td>
<td>PAL-M</td>
<td>O</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Analog component, RGB</td>
<td>1080/60i, 1080/50i, 1080/24p, 1080/23p, 1080/24p, 1080/23p, 2048 x 1080/24p, 2048 x 1080/24p</td>
<td>Y/Pb/Pr, RGB</td>
<td>O</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SD-SDI</td>
<td>720 x 487/59.94i, 720 x 576/60i</td>
<td>4:2:2 Y/CbCr</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>10 bit 4:2:2 Y/CbCr</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>12 bit 4:4:4 RGB</td>
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<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
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<tr>
<td></td>
<td></td>
<td>12 bit 4:4:4 XYZ</td>
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<td>O</td>
<td>O</td>
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<td>O</td>
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<td></td>
<td></td>
<td>10 bit 12 bit 4:4:4 RGB</td>
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<td>O</td>
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<td>O</td>
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<tr>
<td></td>
<td></td>
<td>12 bit 4:4:4 Xyz</td>
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<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td></td>
</tr>
</tbody>
</table>

*1 Also compatible with 1/1.001 frame rates. *2 Two BKM-243HS or BKM-244CC are used.
*3 Supported with the BVM-E250 and BVM-E170 only. *4 Untested.
### BVM-E / BVM-F Series HDMI Input Signal Formats

<table>
<thead>
<tr>
<th>System</th>
<th>Interface sampling freq (MHz)</th>
<th>Aspect Ratio</th>
<th>Standard</th>
<th>HDMI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Video Signals</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>640 x 480/60p*</td>
<td>25.200*</td>
<td>4:3</td>
<td></td>
<td>O</td>
</tr>
<tr>
<td>720 x 480/60p*</td>
<td>27.027*</td>
<td>4:3/16:9</td>
<td>CEA-861</td>
<td>O</td>
</tr>
<tr>
<td>1280 x 720/60p**</td>
<td>74.250*</td>
<td>16:9</td>
<td></td>
<td>O</td>
</tr>
<tr>
<td>1080 x 1080/60*</td>
<td>74.250*</td>
<td>16:9</td>
<td>CEA-861</td>
<td>O</td>
</tr>
<tr>
<td>1280 x 720/50p</td>
<td>74.250</td>
<td>16:9</td>
<td>CEA-861</td>
<td>O</td>
</tr>
<tr>
<td>1920 x 1080/50</td>
<td>74.250</td>
<td>16:9</td>
<td>CEA-861</td>
<td>O</td>
</tr>
<tr>
<td>720 (1440) x 576/60i</td>
<td>27.000</td>
<td>4:3/16:9</td>
<td>CEA-861</td>
<td>O</td>
</tr>
<tr>
<td>1920 x 1080/60p*</td>
<td>148.500*</td>
<td>2.39:1</td>
<td>CEA-861</td>
<td>O</td>
</tr>
<tr>
<td>1920 x 1080/50p</td>
<td>148.500</td>
<td>16:9</td>
<td>CEA-861</td>
<td>O</td>
</tr>
<tr>
<td>1920 x 1080/24p*</td>
<td>74.250*</td>
<td>2.39:1</td>
<td>CEA-861</td>
<td>O</td>
</tr>
<tr>
<td>1920 x 1080/25p</td>
<td>74.250</td>
<td>16:9</td>
<td>CEA-861</td>
<td>O</td>
</tr>
<tr>
<td>1920 x 1080/30p*</td>
<td>74.250*</td>
<td>2.39:1</td>
<td>CEA-861</td>
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<td>Video Signals</td>
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<td>Computer Signals</td>
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</tr>
<tr>
<td>800 x 600/60p</td>
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<td>4:3</td>
<td>VESA</td>
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<tr>
<td>1024 x 768/60p</td>
<td>65.000</td>
<td>4:3</td>
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<td>O</td>
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<tr>
<td>1280 x 960/60p</td>
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<td>4:3</td>
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<tr>
<td>1280 x 1024/60p</td>
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<tr>
<td>1400 x 1050/60p</td>
<td>121.750</td>
<td>4:3</td>
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<td>O</td>
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<tr>
<td>Max. res.: 1920 x 1080/60p</td>
<td>25.000-162.000</td>
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<td></td>
</tr>
</tbody>
</table>

* Also compatible with 1/1.001 frame rates.

### PVM-2541 / PVM-1741 / PVM-740 Signal Formats

<table>
<thead>
<tr>
<th>System</th>
<th>Analog composite</th>
<th>SDI (3G/HD/SD)</th>
<th>PVM-2541 / PVM-1741</th>
<th>PVM-740</th>
<th>HDMI</th>
</tr>
</thead>
<tbody>
<tr>
<td>575/50 (PAL)</td>
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<td>☑️</td>
<td>☑️</td>
<td>☑️</td>
<td></td>
</tr>
<tr>
<td>480/60 (NTSC) **</td>
<td>☑️</td>
<td>☑️</td>
<td>☑️</td>
<td>☑️</td>
<td></td>
</tr>
<tr>
<td>576/50</td>
<td>☑️</td>
<td>☑️</td>
<td>☑️</td>
<td>☑️</td>
<td></td>
</tr>
<tr>
<td>480/48**</td>
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<td>☑️</td>
<td>☑️</td>
<td>☑️</td>
<td></td>
</tr>
<tr>
<td>640 x 480/60**</td>
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<td>1080/50i</td>
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<td>1080/60i**</td>
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<td>☑️</td>
<td>☑️</td>
<td>☑️</td>
<td></td>
</tr>
<tr>
<td>720/24p*</td>
<td>☑️</td>
<td>☑️</td>
<td>☑️</td>
<td>☑️</td>
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</tr>
<tr>
<td>720/25p</td>
<td>☑️</td>
<td>☑️</td>
<td>☑️</td>
<td>☑️</td>
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<tr>
<td>720/30p**</td>
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<td>☑️</td>
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<tr>
<td>720/50p</td>
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<td>☑️</td>
<td>☑️</td>
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<td></td>
</tr>
<tr>
<td>720/50i**</td>
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<td>☑️</td>
<td>☑️</td>
<td>☑️</td>
<td></td>
</tr>
</tbody>
</table>

*1 Compatible with 1/1.001 frame rates.
*2 1080/24PsF, 25PsF, and 30PsF are displayed as 1080/48i, 50i, and 60i on the screen, respectively.
*3 10-bit 4:4:4 Y/Ca/Cc and 4:4:4 RGB of 3G-SDI signals are supported.
*4 10-bit 4:2:2 Y/Ca/Cc of 3G-SDI signal is supported.
*5 10-bit 4:4:4 Y/Ca/Cc of 3G-SDI signal is supported.
*6 PVM-2541 and PVM-1741 can accept DVI signals via the HDMI interface using a conversion cable.
### Specifications

#### BVM-E Series

<table>
<thead>
<tr>
<th>BVM-E250</th>
<th>BVM-E170</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Panel</strong></td>
<td>OLED panel</td>
</tr>
<tr>
<td><strong>Picture size (diagonal)</strong></td>
<td>24 5/8 inches 623.4 mm</td>
</tr>
<tr>
<td><strong>Effective picture size (H x V)</strong></td>
<td>21 1/2 x 12 1/8 inches 543.4 x 305.6 mm</td>
</tr>
<tr>
<td><strong>Resolution (H x V)</strong></td>
<td>1920 x 1080 pixels (Full HD)</td>
</tr>
<tr>
<td><strong>Aspect</strong></td>
<td>16:9</td>
</tr>
<tr>
<td><strong>Panel efficiency</strong></td>
<td>99.99%</td>
</tr>
<tr>
<td><strong>Panel drive</strong></td>
<td>RGB 10-bit</td>
</tr>
<tr>
<td><strong>Panel frame rate</strong></td>
<td>48 Hz / 50 Hz / 60 Hz / 72 Hz / 75 Hz (48 Hz, 60 Hz, and 72 Hz are also compatible with 1/1.001 frame rates)</td>
</tr>
<tr>
<td><strong>Viewing angle (panel specification)</strong></td>
<td>89°/89°/89°/89° (typical) (up/down/left/right contrast &gt; 10:1)</td>
</tr>
<tr>
<td><strong>Color temperature</strong></td>
<td>D55, D65, D69, D-Cine, and user</td>
</tr>
<tr>
<td><strong>Standard luminance</strong></td>
<td>100 cd/m² (preset1 to preset5)</td>
</tr>
<tr>
<td><strong>Color space (color gamut)</strong></td>
<td>ITU-R BT.709, EBU, SMPTE-C, D-Cine**, E250 / E170 Native**, S-GAMUT**</td>
</tr>
<tr>
<td><strong>Input</strong></td>
<td>SDI BNC (x2)</td>
</tr>
<tr>
<td><strong>DisplayPort</strong></td>
<td>DisplayPort connector (x1)**</td>
</tr>
<tr>
<td><strong>Option port</strong></td>
<td>4 ports</td>
</tr>
<tr>
<td><strong>Parallel remote</strong></td>
<td>D-sub 9-pin (female) (x1)</td>
</tr>
<tr>
<td><strong>Serial remote (LAN)</strong></td>
<td>Ethernet (10BASE-T/100BASE-TX), RJ-45 (x1)</td>
</tr>
<tr>
<td><strong>Output</strong></td>
<td>SDI BNC (x1)</td>
</tr>
<tr>
<td><strong>Power requirement</strong></td>
<td>AC 100 V to 240 V, 1.6 A to 0.8 A, 50/60 Hz</td>
</tr>
<tr>
<td><strong>Power consumption</strong></td>
<td>Approx. 145 W (max.)</td>
</tr>
<tr>
<td><strong>(average power consumption in the default status)</strong></td>
<td>Approx. 72 W</td>
</tr>
<tr>
<td><strong>Operating temperature</strong></td>
<td>32°F to 95°F (0°C to 35°C)</td>
</tr>
<tr>
<td><strong>(average power consumption in the default status)</strong></td>
<td>(0% to 90%) (no condensation)</td>
</tr>
<tr>
<td><strong>Storage and transport temperature</strong></td>
<td>-4°F to +140°F (-20°C to +60°C)</td>
</tr>
<tr>
<td><strong>Storage and transport humidity</strong></td>
<td>0% to 90%</td>
</tr>
<tr>
<td><strong>Operating, storage, and transport pressure</strong></td>
<td>700 hPa to 1060 hPa</td>
</tr>
<tr>
<td><strong>Dimensions (W x H x D)</strong></td>
<td>22 3/4 x 16 3/4 x 5 7/8 inches 576.0 x 424.0 x 148.0 mm</td>
</tr>
<tr>
<td><strong>Weight</strong></td>
<td>28 lb 11 oz 13.0 kg</td>
</tr>
<tr>
<td><strong>Supplied accessories</strong></td>
<td>AC power cord (1), AC plug holder (1), Bracket (1), Operation Manual (Japanese, English, each 1), CD-ROM (1), Using the CD-ROM Manual (1)</td>
</tr>
</tbody>
</table>

*1 Chromaticity point of SMPTE RP431-2 is not covered in full.
*2 The widest color space setting of the signal reproduced by the BVM-E250 and BVM-E170.
*3 S-GAMUT is available for displaying the color gamut of the wide color space mode S-GAMUT, which is offered with the F23 and F35 Digital cinematography cameras.
*4 DisplayPort will be supported from the monitor firmware version 1.1 or later.
*5 Height without legs.
### Picture Performance

<table>
<thead>
<tr>
<th>Feature</th>
<th>BVM-F250</th>
<th>BVM-F170</th>
</tr>
</thead>
<tbody>
<tr>
<td>Panel</td>
<td>OLED panel</td>
<td></td>
</tr>
<tr>
<td>Picture size (diagonal)</td>
<td>24 5/8 inches</td>
<td>16 1/2 inches</td>
</tr>
<tr>
<td></td>
<td>623.4 mm</td>
<td>419.7 mm</td>
</tr>
<tr>
<td>Effective picture size (H x V)</td>
<td>21 1/2 x 12 1/8 inches</td>
<td>14 1/2 x 8 1/8 inches</td>
</tr>
<tr>
<td></td>
<td>543.4 x 305.6 mm</td>
<td>365.8 x 205.7 mm</td>
</tr>
<tr>
<td>Resolution (H x V)</td>
<td>1920 x 1080 pixels (Full HD)</td>
<td></td>
</tr>
<tr>
<td>Aspect</td>
<td>16:9</td>
<td></td>
</tr>
<tr>
<td>Pixel efficiency</td>
<td>99.99%</td>
<td></td>
</tr>
<tr>
<td>Panel drive</td>
<td>RGB 10-bit</td>
<td></td>
</tr>
<tr>
<td>Panel frame rate</td>
<td>48 Hz / 50 Hz / 60 Hz / 72 Hz / 75 Hz (48 Hz, 60 Hz, and 72 Hz are also compatible with 1/1001 frame rates)</td>
<td></td>
</tr>
<tr>
<td>Viewing angle (panel specification)</td>
<td>BVP/YP/YBP/YP/BYP (typical) (up/down/left/right contrast &gt; 10:1)</td>
<td></td>
</tr>
<tr>
<td>Color temperature</td>
<td>D65, D93, and user</td>
<td></td>
</tr>
<tr>
<td>Standard luminance</td>
<td>100 cd/m² (Preset1 to Preset5) (100% white signal input)</td>
<td></td>
</tr>
<tr>
<td>Color space (color gamut)</td>
<td>ITU-R BT.709, EBU, SMPTE-C, F250 / F170 Native*</td>
<td>The BVM-F250 / BVM-F170 individual chromaticity points: R (x = 0.681, y = 0.319) / G (x = 0.189, y = 0.724) / B (x = 0.141, y = 0.051) (typical)</td>
</tr>
</tbody>
</table>

### Input

<table>
<thead>
<tr>
<th>Feature</th>
<th>BVM-F250</th>
<th>BVM-F170</th>
</tr>
</thead>
<tbody>
<tr>
<td>SDI</td>
<td>BNC (x2)</td>
<td></td>
</tr>
<tr>
<td>HDMI</td>
<td>HDMI (x1) (HDCP correspondence, Deep Color correspondence)</td>
<td></td>
</tr>
<tr>
<td>DisplayPort</td>
<td>DisplayPort connector (x1)*</td>
<td></td>
</tr>
<tr>
<td>Option port</td>
<td>4 ports</td>
<td></td>
</tr>
<tr>
<td>Parallel remote</td>
<td>D-sub 9-pin (female) (x1)</td>
<td></td>
</tr>
<tr>
<td>Serial remote (LAN)</td>
<td>Ethernet (10BASE-T/100BASE-TX, RJ-45 (x1))</td>
<td></td>
</tr>
</tbody>
</table>

### Output

<table>
<thead>
<tr>
<th>Feature</th>
<th>BVM-F250</th>
<th>BVM-F170</th>
</tr>
</thead>
<tbody>
<tr>
<td>SDI</td>
<td>BNC (x1)</td>
<td></td>
</tr>
<tr>
<td>DC 5 V out</td>
<td>Circle 4-pin (female) (x1)</td>
<td></td>
</tr>
</tbody>
</table>

### General

<table>
<thead>
<tr>
<th>Feature</th>
<th>BVM-F250</th>
<th>BVM-F170</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power requirement</td>
<td>AC 100 V to 240 V, 1.6 A to 0.8 A, 50/60 Hz</td>
<td>AC 100 V to 240 V, 1.2 A to 0.7 A, 50/60 Hz</td>
</tr>
<tr>
<td>Power consumption</td>
<td>Approx. 145 W (max.) (average power consumption in the default status)</td>
<td>Approx. 110 W (AC), 100 W (DC) (max.) (average power consumption in the default status)</td>
</tr>
<tr>
<td>Operating temperature</td>
<td>32°F to 95°F (8°C to 35°C)</td>
<td>Recommended: 68°F to 86°F (20°C to 30°C)</td>
</tr>
<tr>
<td>Operating humidity</td>
<td>0% to 90% (no condensation)</td>
<td></td>
</tr>
<tr>
<td>Storage and transport temperature</td>
<td>-4°F to +140°F (-20°C to +60°C)</td>
<td></td>
</tr>
<tr>
<td>Storage and transport humidity</td>
<td>0% to 90%</td>
<td></td>
</tr>
<tr>
<td>Operating, storage, and transport</td>
<td>700 hPa to 1060 hPa</td>
<td></td>
</tr>
<tr>
<td>Dimensions (W x H x D)</td>
<td>22 3/4 x 16 3/4 x 5 7/8 inches</td>
<td>17 1/4 x 11 1/4 (10 1/2)* x 8 1/2 inches</td>
</tr>
<tr>
<td>Weight</td>
<td>28 lbs 11 oz</td>
<td>18 lbs 13 oz</td>
</tr>
<tr>
<td>Supplied accessories</td>
<td>AC power cord (1), AC plug holder (1), Bracket (1), Operation Manual (Japanese, English, each 1), CD-ROM (1), Using the CD-ROM Manual (1)</td>
<td>AC power cord (1), AC plug holder (1), Rack mount bracket (left, right, each 1), Rack mount attachment screws (4), Operation Manual (Japanese, English, each 1), CD-ROM (1), Using the CD-ROM Manual (1)</td>
</tr>
</tbody>
</table>

*1 The widest color space setting of the signal reproduced by the BVM-F250 and BVM-F170.
*2 DisplayPort will be supported from the monitor firmware version 1.1 or later.
*3 Height without legs.
## PVM Series

<table>
<thead>
<tr>
<th>PVM-2541</th>
<th>PVM-1741</th>
<th>PVM-740</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Picture Performance</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Panel</td>
<td>OLED panel</td>
<td></td>
</tr>
<tr>
<td>Picture size (diagonal)</td>
<td>24 5/8 inches</td>
<td>16 1/2 inches</td>
</tr>
<tr>
<td>Effective picture size (H x V)</td>
<td>623.4 mm</td>
<td>419.7 mm</td>
</tr>
<tr>
<td>Resolution (H x V)</td>
<td>21 1/2 x 12 1/8 inches</td>
<td>14 1/2 x 8 3/8 inches</td>
</tr>
<tr>
<td>Effective picture size (H x V)</td>
<td>543.4 x 305.6 mm</td>
<td>365.8 x 205.7 mm</td>
</tr>
<tr>
<td>Aspect</td>
<td>16:9</td>
<td></td>
</tr>
<tr>
<td>Viewing angle (panel specification)</td>
<td>89°/89°/89°/89° (typical)</td>
<td></td>
</tr>
</tbody>
</table>

### Input

<table>
<thead>
<tr>
<th></th>
<th>PVM-2541</th>
<th>PVM-1741</th>
<th>PVM-740</th>
</tr>
</thead>
<tbody>
<tr>
<td>Composite</td>
<td>BNC (x1), 1.0 Vp-p ±3 dB sync negative</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SDI</td>
<td>BNC (x2)</td>
<td>BNC (x1)</td>
<td></td>
</tr>
<tr>
<td>HDMI</td>
<td></td>
<td>HDMI (x1)</td>
<td></td>
</tr>
<tr>
<td>Audio</td>
<td></td>
<td>Stereo mini jack (x1), -5 dBu 47 kilohms or higher</td>
<td></td>
</tr>
<tr>
<td>Serial remote (LAN)</td>
<td></td>
<td>RJ-45 modular connector (Ethernet) (x1) (10BASE-T/100BASE-Tx)</td>
<td></td>
</tr>
<tr>
<td>DC IN connector</td>
<td></td>
<td>–</td>
<td>XLR-type 4-pin (male) (x1), 12 V DC (output impedance 0.05 ohms or less)</td>
</tr>
</tbody>
</table>

### Output

<table>
<thead>
<tr>
<th></th>
<th>PVM-2541</th>
<th>PVM-1741</th>
<th>PVM-740</th>
</tr>
</thead>
<tbody>
<tr>
<td>Composite</td>
<td></td>
<td></td>
<td>BNC (x1); loop-through, with 75 ohms automatic termination</td>
</tr>
<tr>
<td>SDI</td>
<td></td>
<td>BNC (x1), output signal amplitude: 800 mVp-p ±10%, output impedance: 75 ohms unbalanced</td>
<td></td>
</tr>
<tr>
<td>Audio monitor out</td>
<td></td>
<td>Stereo mini jack (x1)</td>
<td></td>
</tr>
<tr>
<td>Speaker (Built-in)</td>
<td>1.0 W (mono)</td>
<td>0.5 W (mono)</td>
<td></td>
</tr>
<tr>
<td>Headphones output</td>
<td></td>
<td>Stereo mini jack (x1)</td>
<td></td>
</tr>
</tbody>
</table>

### General

<table>
<thead>
<tr>
<th></th>
<th>PVM-2541</th>
<th>PVM-1741</th>
<th>PVM-740</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power requirement</td>
<td>AC 100 V to 240 V, 50/60 Hz, 1.4 A to 0.6 A</td>
<td>AC 100 V to 240 V, 50/60 Hz, 0.5 A to 0.3 A, DC 12 V, 7.0 A</td>
<td>AC 100 V to 240 V, 50/60 Hz, 0.5 A to 0.3 A, DC 12 V, 7.0 A</td>
</tr>
<tr>
<td>Power consumption</td>
<td>Approx. 130 W (max.)</td>
<td>Approx. 90 W (AC power supply) (max.)</td>
<td>Approx. 70 W (AC power supply) (average power consumption in the default status)</td>
</tr>
<tr>
<td>Operating temperature</td>
<td>32°F to 95°F (0°C to 35°C)</td>
<td>32°F to 104°F (0°C to 40°C)</td>
<td>32°F to 95°F (0°C to 35°C)</td>
</tr>
<tr>
<td>Recommended: 68°F to 86°F (20°C to 30°C)</td>
<td>Recommended: 68°F to 86°F (20°C to 30°C)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Storage and transport temperature</td>
<td>-4°F to +140°F (-20°C to +60°C)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Storage and transport humidity</td>
<td>0% to 90%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating, storage, and transport pressure</td>
<td>700 hPa to 1060 hPa</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dimensions (W x H x D) (with stand)</td>
<td>22 3/4 x 16 3/4 x 6 3/4 inches 576.0 x 424.8 x 171.4 mm</td>
<td>17 1/4 x 12 1/8 x 6 3/8 inches 436.0 x 305.6 x 161.0 mm</td>
<td>8 7/8 x 6 5/8 x 2 7/8 inches 222.4 x 166 x 70 mm (when AC adaptor is detached)</td>
</tr>
<tr>
<td>Dimensions (W x H x D) (without stand)</td>
<td>22 3/4 x 16 3/8 x 4 3/8 inches 576.0 x 408.8 x 110.0 mm</td>
<td>17 1/4 x 11 1/2 x 4 3/4 inches 436.0 x 289.6 x 120.0 mm</td>
<td>8 7/8 x 6 5/8 x 2 7/8 inches 222.4 x 166 x 70 mm (when AC adaptor is detached)</td>
</tr>
<tr>
<td>Weight</td>
<td>23 lb 5.9 oz (10.6 kg)</td>
<td>15 lb 14 oz (7.2 kg)</td>
<td>4 lb 6 oz (2.0 kg)</td>
</tr>
<tr>
<td>(with an optional SU-561 monitor stand)</td>
<td>27 lb 16 oz (12.7 kg)</td>
<td>20 lb 8 oz (9.3 kg)</td>
<td>5 lb 12 oz (2.6 kg)</td>
</tr>
<tr>
<td>(With When AC adaptor is installed)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Optional Accessories

**BKM-250TG**

<table>
<thead>
<tr>
<th>INPUT/OUTPUT</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Serial digital interface</strong></td>
<td>BNC (x2), Digital component signals sampling frequency: 3G-SDI Y/Cb/Cr: 145.5 MHz/74.25 MHz/74.25 MHz, G/R: 148.5 MHz/148.5 MHz/148.5 MHz, HD-SDI Y/Cb/Cr: 74.25 MHz/125 MHz/125 MHz/125 MHz, SD-SDI Y/Cb/Cr: 13.5 MHz/75 MHz/75 MHz</td>
</tr>
<tr>
<td><strong>Monitor out</strong></td>
<td>BNC (x2), Output signal amplitude: 800 mVp-p ±10%, Output impedance: 75 ohms unbalanced</td>
</tr>
<tr>
<td><strong>Transmission distance</strong></td>
<td>3G-SDI: 70 m (approx. 230 ft) max. (When using SC-FB coaxial cables (Fujikura) or equivalent.)</td>
</tr>
<tr>
<td><strong>GENERAL</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Voltage</strong></td>
<td>+3.3 V, +5 V (supplied from the main unit)</td>
</tr>
<tr>
<td><strong>Power consumption</strong></td>
<td>Approx. 4 W</td>
</tr>
<tr>
<td><strong>Operating temperature</strong></td>
<td>32°F to 95°F (0°C to 35°C)</td>
</tr>
<tr>
<td><strong>Recommended</strong></td>
<td>68°F to 86°F (20°C to 30°C)</td>
</tr>
<tr>
<td><strong>Operating humidity</strong></td>
<td>0% to 90% (no condensation)</td>
</tr>
<tr>
<td><strong>Operating pressure</strong></td>
<td>700 hPa to 1060 hPa</td>
</tr>
<tr>
<td><strong>Storage and trans. temperature</strong></td>
<td>-4°F to +140°F (-20°C to +60°C)</td>
</tr>
<tr>
<td><strong>Storage and trans. humidity</strong></td>
<td>0% to 90%</td>
</tr>
<tr>
<td><strong>Dimensions (W x H x D)</strong></td>
<td>4 x 13/16 x 6 1/2 inches (100 x 20 x 162 mm)</td>
</tr>
<tr>
<td><strong>Weight</strong></td>
<td>9.5 oz (270 g)</td>
</tr>
<tr>
<td><strong>Supplied accessories</strong></td>
<td>Operating Instructions (1)</td>
</tr>
</tbody>
</table>

**BKM-244CC**

<table>
<thead>
<tr>
<th>INPUT/OUTPUT</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Serial digital interface</strong></td>
<td>BNC (x2), Digital component signals sampling frequency: SD-SDI Y/R-Y/B-Y: 13.5 MHz, HD-SDI Y/Cb/Cr: 74.25 MHz, Quantization: 10 bits/sample</td>
</tr>
<tr>
<td><strong>Monitor out</strong></td>
<td>Output signal amplitude: 800 mVp-p ±10%, Output impedance: 75 ohms unbalanced</td>
</tr>
<tr>
<td><strong>Transmission distance</strong></td>
<td>SD-SDI: 200 m (approx. 656 ft) max. (when using SC-2V coaxial cables (Fujikura) or equivalent.)</td>
</tr>
<tr>
<td><strong>GENERAL</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Voltage</strong></td>
<td>+3.3 V, +5 V (supplied from the main unit)</td>
</tr>
<tr>
<td><strong>Power consumption</strong></td>
<td>Approx. 4 W</td>
</tr>
<tr>
<td><strong>Operating temperature</strong></td>
<td>32°F to 95°F (0°C to 35°C)</td>
</tr>
<tr>
<td><strong>Recommended</strong></td>
<td>68°F to 86°F (20°C to 30°C)</td>
</tr>
<tr>
<td><strong>Operating humidity</strong></td>
<td>0% to 90% (no condensation)</td>
</tr>
<tr>
<td><strong>Operating pressure</strong></td>
<td>700 hPa to 1060 hPa</td>
</tr>
<tr>
<td><strong>Storage and trans. temperature</strong></td>
<td>-14°F to 104°F (-10°C to +40°C)</td>
</tr>
<tr>
<td><strong>Storage and trans. humidity</strong></td>
<td>0% to 90%</td>
</tr>
<tr>
<td><strong>Dimensions (W x H x D)</strong></td>
<td>4 x 13/16 x 6 1/2 inches (100 x 20 x 162 mm)</td>
</tr>
<tr>
<td><strong>Weight</strong></td>
<td>9 oz (250 g)</td>
</tr>
<tr>
<td><strong>Supplied accessories</strong></td>
<td>Operating Instructions (1)</td>
</tr>
</tbody>
</table>

**BKM-243HS**

<table>
<thead>
<tr>
<th>INPUT/OUTPUT</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Serial digital interface</strong></td>
<td>BNC (x2), Digital component signals sampling frequency: SD-SDI Y/Cb/Cr: 13.5 MHz, HD-SDI Y/Cb/Cr: 74.25 MHz, Quantization: 10 bits/sample</td>
</tr>
<tr>
<td><strong>Monitor out</strong></td>
<td>BNC (x1), Output signal amplitude: 800 mVp-p ±10%, Output impedance: 75 ohms unbalanced</td>
</tr>
<tr>
<td><strong>Transmission distance</strong></td>
<td>SD-SDI: 200 m (approx. 656 ft) max. (when using SC-2V coaxial cables (Fujikura) or equivalent.)</td>
</tr>
<tr>
<td><strong>GENERAL</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Voltage</strong></td>
<td>+3.3 V, +5 V (supplied from the main unit)</td>
</tr>
<tr>
<td><strong>Power consumption</strong></td>
<td>Approx. 2 W</td>
</tr>
<tr>
<td><strong>Operating temperature</strong></td>
<td>32°F to 95°F (0°C to 35°C)</td>
</tr>
<tr>
<td><strong>Recommended</strong></td>
<td>68°F to 86°F (20°C to 30°C)</td>
</tr>
<tr>
<td><strong>Operating humidity</strong></td>
<td>0% to 90% (no condensation)</td>
</tr>
<tr>
<td><strong>Operating pressure</strong></td>
<td>700 hPa to 1060 hPa</td>
</tr>
<tr>
<td><strong>Storage and trans. temperature</strong></td>
<td>-4°F to +140°F (-20°C to +60°C)</td>
</tr>
<tr>
<td><strong>Storage and trans. humidity</strong></td>
<td>0% to 90%</td>
</tr>
<tr>
<td><strong>Dimensions (W x H x D)</strong></td>
<td>4 x 13/16 x 6 1/2 inches (100 x 20 x 162 mm)</td>
</tr>
<tr>
<td><strong>Weight</strong></td>
<td>Approx. 9 oz (250 g)</td>
</tr>
<tr>
<td><strong>Supplied accessories</strong></td>
<td>Operating Instructions (1)</td>
</tr>
</tbody>
</table>

**BKM-229X**

<table>
<thead>
<tr>
<th>INPUT/OUTPUT</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>RGB / Component</strong></td>
<td>BNC (x3), RGB: 0.7 Vp-p ±3 dB (Sync on Green), 0.3 Vp-p sync negative, Component: 0.7 Vp-p ±3 dB</td>
</tr>
<tr>
<td><strong>External sync input</strong></td>
<td>BNC (x1), 0.3 Vp-p to 4 Vp-p ± bipolarity ternary or negative polarity binary, Mini DIN 4-pin (x1), Loop-through, with 75 ohms automatic termination</td>
</tr>
<tr>
<td><strong>GENERAL</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Voltage</strong></td>
<td>+3.3 V, +5 V (supplied from the main unit)</td>
</tr>
<tr>
<td><strong>Power consumption</strong></td>
<td>Approx. 4 W</td>
</tr>
<tr>
<td><strong>Operating temperature</strong></td>
<td>32°F to 95°F (0°C to 35°C)</td>
</tr>
<tr>
<td><strong>Recommended</strong></td>
<td>68°F to 86°F (20°C to 30°C)</td>
</tr>
<tr>
<td><strong>Operating humidity</strong></td>
<td>0% to 90% (no condensation)</td>
</tr>
<tr>
<td><strong>Operating pressure</strong></td>
<td>700 hPa to 1060 hPa</td>
</tr>
<tr>
<td><strong>Storage and trans. temperature</strong></td>
<td>-4°F to +140°F (-20°C to +60°C)</td>
</tr>
<tr>
<td><strong>Storage and trans. humidity</strong></td>
<td>0% to 90%</td>
</tr>
<tr>
<td><strong>Storage and trans. pressure</strong></td>
<td>700 hPa to 1060 hPa</td>
</tr>
<tr>
<td><strong>Dimensions (W x H x D)</strong></td>
<td>4 x 13/16 x 6 1/2 inches (100 x 20 x 162 mm)</td>
</tr>
<tr>
<td><strong>Weight</strong></td>
<td>9 oz (250 g)</td>
</tr>
<tr>
<td><strong>Supplied accessories</strong></td>
<td>Operating Instructions (1)</td>
</tr>
</tbody>
</table>
BKM-227W

**INPUT/OUTPUT**
- **Composite input**: BNC (x1), 1 Vp-p ±3 dB sync negative
- **Y/C input**: Mini DIN 4-pin (x1), Y 1 Vp-p ±3 dB sync negative C 0.286 Vp-p ±3 dB (NTSC burst signal level), 0.3 Vp-p ±3 dB (PAL, PAL-M burst signal level)
- **Monitor out**: Loop-through, with 75 ohms automatic termination Mini DIN 4-pin (x1)

**GENERAL**
- **Voltage**: +3.3V, +5V (supplied from the main unit)
- **Power consumption**: Approx. 1.8W
- **Operating temperature**: 32°F to 95°F (0°C to 35°C), Recommended: 68°F to 86°F (20°C to 30°C)
- **Operating humidity**: 0% to 90% (no condensation)
- **Operating pressure**: 700 hPa to 1060 hPa
- **Storage and trans. temperature**: -4°F to +140°F (-20°C to +60°C)
- **Storage and trans. humidity**: 0% to 90%
- **Dimensions (W x H x D)**: 4 x 1 3/16 x 6 1/2 inches (100 x 20 x 162 mm)
- **Weight**: 8 oz (240 g)
- **Supplied accessories**: Operating instructions (1)

BKM-220D

**INPUT/OUTPUT**
- **Serial digital interface**: BNC (x2), Digital component signals sampling frequency: Y/R-Y/B-Y: 13.5 MHz Quantization: 10 bits/sample
- **Monitor out**: BNC (x1), Output signal amplitude: 800 mVp-p ±10% Output impedance: 75 ohms unbalanced
- **Transmission distance**: 200 m (approx. 656 ft) max. (when using 5C-2V coaxial cables (Fujikura) or equivalent)

**GENERAL**
- **Voltage**: +5V (supplied from the main unit)
- **Power consumption**: Approx. 1.5 W
- **Operating temperature**: 32°F to 95°F (0°C to 35°C), Recommended: 68°F to 86°F (20°C to 30°C)
- **Operating humidity**: 0% to 90% (no condensation)
- **Operating pressure**: 700 hPa to 1060 hPa
- **Storage and trans. temperature**: -4°F to +140°F (-20°C to +60°C)
- **Storage and trans. humidity**: 0% to 90%
- **Storage and trans. pressure**: 700 hPa to 1060 hPa
- **Dimensions (W x H x D)**: 4 x 1 3/16 x 6 1/2 inches (100 x 20 x 162 mm)
- **Weight**: 9 oz (250 g)
- **Supplied accessories**: Operating instructions (1)

BKM-16R

**INPUT/OUTPUT**
- **LAN**: 10BASE-T/100BASE-TX connector: RJ-45 (x1)
- **DC 5 V / 12 V IN**: Circle 4-pin (male) (x1)

**GENERAL**
- **Power requirements**: DC IN: 5 V, 1.1 A (supplied by the connected monitor)
  DC IN: 12 V, 0.5 A (supplied by the connected AC adaptor)
  AC adaptor: AC IN: 100 V to 240 V, 50/60 Hz, DC OUT: 12 V, 3 A
- **Current consumption**: 5 V DC, 1.1 A / 12 V DC 0.5 A
- **Power consumption**: Approx. 6 W
- **Operating temperature**: 32°F to 95°F (0°C to 35°C), Recommended: 68°F to 86°F (20°C to 30°C)
- **Operating humidity**: 0% to 90% (no condensation)
- **Operating pressure**: 700 hPa to 1060 hPa
- **Storage and trans. temperature**: 14°F to 104°F (-10°C to +40°C)
- **Storage and trans. humidity**: 0% to 90%
- **Storage and trans. pressure**: 700 hPa to 1060 hPa
- **Dimensions (W x H x D)**: 16 3/4 x 2 3/8 x 7 inches (424 x 58.8 x 174.9 mm)
- **Weight**: 4 lb 10 oz (.21 kg)
- **Supplied accessories**: CD with operating instructions

VMM 4SNY-3GB

**Analysis Functions**
- **Waveform monitor**: Includes cursors, vertical and horizontal sweeps, line select, bowtie, and lowpass filters
- **Vectorscope**: 75% and 100% display, Line select, gain, zoom, and cursors
- **Gamut display**: As composite or RGB grids, line select, upper and lower alarms
- **Picture display**: With line select
- **Audio display**: 16 channel display as bar, lissajous, .5.1 or 7.1 displays, phase, and selection of levels
- **Alarms**: Alarm log

**INPUT/OUTPUT**
- **Serial digital interface**: BNC (x1) terminating 75Ω
  SD-SDI: Y/R-Y/B-Y: 13.5MHz/6.75MHz/6.75MHz
  HD-SDI: Y/Cb/Cr: 74.25MHz/37.125MHz/37.125MHz
  3G-SDI: Y/Cb/Cr: 148.5MHz/74.25MHz/74.25MHz
  G/B/R: 148.5MHz/148.5MHz/148.5MHz
- **AES/EBU**: BNC (x1) terminating 75Ω
  32kHz, 44.1kHz, 48kHz, 88.2kHz, 96kHz
- **Reference**: BNC (x1) terminating 75Ω
  Analog Black Burst as NTSC or PAL

**GENERAL**
- **Voltage**: +3.3V, +5V (supplied from main unit)
- **Power consumption**: Approx. 12W
- **Operating temperature**: 0° to +35° C
- **Operating humidity**: 30% to 80% non-condensing
- **Operation pressure**: 700 hPa to 1060 hPa
- **Storage and trans. temperature**: -20° to +60° C
- **Storage and trans. humidity**: 5% to 90% non-condensing
- **Dimensions (W x H x D)**: 7.9 x 0.77 x 6.32 in (200.1 x 19.6 x 160.8mm)
- **Weight**: 1.30 lbs. (0.59kg)
- **Supplied Accessories**: CD with operating instructions

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Optional Accessories

For BVM-E250, BVM-E170, BVM-F250, and BVM-F170

- **BKM-16R**
  Monitor Control Unit

- **BKM-250TG**
  3G/HD/SD-SDI Input Adaptor

- **BKM-244CC**
  HD/SD-SDI Closed Caption Adaptor

- **BKM-243HS**
  HD/SD-SDI Input Adaptor

- **BKM-220D**
  SD-SDI 4:2:2 Input Adaptor

- **BKM-229X**
  Analog Component Adaptor

- **BKM-227W**
  NTSC/PAL Input Adaptor

- **PRK-37PM**
  Table Top Mounting Attachment Kit  
  (for attaching the BKM 16R and RCU-CMS to a BVM-E250 or BVM-F250)

- **PRK-2500PM**
  Rack Kit  
  (for BVM-E250 and BVM-F250)

- **PRK-25PM**
  Protection Panel  
  (for BVM-E250 and BVM-F250)

- **BKM-39H**
  Controller Attachment Stand  
  (for BVM-E170 / BVM-F170)

- **SMF-700**
  Monitor Interface Cable

- **EOPRHWK**
  X-Rite i1PRO Light Probe

- **RCU-CMS**
  Control panel for VMM-4SNY

- **VMM-4SNY**
  Integrated Test and Measurement Module

- **PRK-25PM**
  Protection Panel  
  (for BVM-E250 and BVM-F250)

- **BKM-39H**
  Controller Attachment Stand  
  (for BVM-E170 / BVM-F170)

For PVM-740

- **PVMLMDFIELDKT**
  Field Kit consists of case, arm, hood and quick release  
  (for PVM-740 / LMD-940W)  
  Monitor not included.

- **QR-A200**
  Anton Bauer Gold Mount Battery Plate  
  (mounts onto Sony editing decks DNW-A25/A220/A225/DS70 and Sony field monitors.)

- **MB-531**
  Mounting Bracket

- **MB-532**
  Mounting Panel

For PVM-2541 and PVM-1741

- **VF-510**
  ENG Kit (Viewing Hood, Carrying Handle and Connector Protector)

- **SU-561**
  Monitor Stand
Dimensions

BVM-E Series

- **BVM-E250 / BVM-F250**
  - Front
  - Rear
  - Side

- **BVM-E250 / BVM-F250 with the optional BKM-16R and BKM-37H with a tilt**
  - Front
  - Bottom
  - Side

- **BVM-E250 / BVM-F250 with the optional BKM-16R and BKM-38H**
  - Front
  - Bottom
  - Side

- **BVM-E170 / BVM-F170**
  - Front
  - Rear
  - Side

- **BVM-E170 / BVM-F170 with the optional BKM-16R and BKM-39H**
  - Front
  - Bottom
  - Side

Unit: inches (mm)
The BVM-E250, BVM-E170, BVM-F250, and BVM-F170 are produced at Sony EMCS Corporation Tokai Tec, which has received ISO 14001 Environmental Management System certification. The PVM-2541, PVM-1741, and PVM-740 are produced under control of the Sony EMCS Corporation Tokai Tec.