

PVM-X2400 V2

24-inch 4K HDR TRIMASTER high grade picture monitor



Overview

4K HDR picture monitor colour-matched with BVM-HX310 master monitor, ideal for various 4K productions

The PVM-X2400 is a 24-inch 4K HDR high grade picture monitor, incorporating a Sony-specified premium LCD panel that offers 1000 cd/m² luminance and colour matching with the BVM-HX310 4K HDR master monitor. This makes group monitoring easy in on-set, studio and OB van walls, and in 19" EIA racks for editing, audio mixing etc.

TRIMASTER assures accurate colour reproduction, precise imaging and consistent picture quality

Sony's acclaimed TRIMASTER architecture delivers accurate picture reproduction, precise imaging and quality picture consistency. There are many advantages in the panel control and signal processing system such as fast processing, accurate linearizing of an input signal with Optical Electrical Transfer Function, accurate colour reproduction, etc.

HDR-SDR conversion support

With V2.0 firmware and optional PVML-HSX1 HDR-SDR conversion license, the PVM-X2400 supports HDR-SDR conversion in live production environments. The license activates 4K to HD down-conversion, colour space conversion and OETF conversion. It also allows output of converted pictures to another 4K or HD monitor from the Enhanced Monitor Output. This function can be used at a remote sites fed only by an HDR signal.

Live production metadata*

The PVM-X2400 offers support for live production metadata, allowing confirmation if input source settings and monitor settings are matched.

* Supported with V2.0. Live production metadata includes SR Live metadata.

Dynamic Contrast Drive and Black Detail High / Mid / Low

Dynamic contrast drive adapts backlight luminance to suit the scene, achieving a 1,000,000:1 dynamic contrast ratio. Total balance of highlights and low lights can be confirmed at a glance. Due to the mechanism of LCD panels, backlight leaking from the panel surface is unavoidable. Black Detail mode provides more accurate monitoring of black details in dark, low-APL (average picture level) images.

Inputs for 12G-SDI and Quad-Link 3G-SDI to HD-SDI as well as HDMI

The PVM-X2400 can accept 12G-SDI from latest sources, and can input quad-link 3G-SDI and a single HD-SDI from traditional devices. This input utility is HDMI supports from 640x480/60P PC signal to 4096 x 2160/60P 4:2:2 YCBCR 12bit.

Various scopes

Waveform monitor and vector scope can be simultaneously displayed with scales for both HDR and SDR, allowing conveniently checking of both input signal level and output luminance by the HDR scales of the waveform monitor. There are three different displays for luminance, RGB/YCBCR parade or RGB overlay with the gamut error display. The waveform of a specified line can also be displayed.

Unique quad view display with User 3D LUT

The PVM-X2400 provides a quad view display, with individual settings for EOTF (SDR/HDR), colour space, transfer matrix, colour temperature, contrast, brightness, SDI/HDMI, RGB/YCBCR, as well as User 3D LUTs for each display view.

Enhanced user interface and channel select button

The monitor's OSD has been significantly enhanced to make operation even quicker and more intuitive. Design of the menu allow review and quick adjustment of settings. The Channel select button protects users from making inadvertent setting errors.

Optimised features for field operation

DC 24V operation allows field-based operation, despite the monitor's large 24" screen size and very high 1000 cd/m² luminance. An optional protection panel* protects the premium LCD screen from inadvertent shocks. User 3D LUTs and yoke-mounting are also supported. Dynamic Contrast Drive is particularly valuable when shooting night scenes. Field operation is further enhanced by false colour and camera focus function**.

* Optional protection panel cannot be used during monitor operation to protect screen from backlight heat.

** Supported with V2.0.

Various mount capabilities

Despite its large 24-inch screen size, the PVM-X2400 can be installed to 19-inch EIA standard rack in studio and OB van environments. Yoke-mount and VESA mount options are also convenient for installation in a C stand for field use, or on a desktop arm for editing.

Powerful stereo sound with audio muting

The PVM-X2400 incorporates stereo speakers (2W+2W) with audio muting.

Features

24-inch 4K premium LCD panel for faithful colour matching with BVM-HX310

The PVM-X2400 features a 24-inch 4K premium LCD panel (3840 x 2160 pixel resolution) with a wide colour gamut, high luminance, high contrast, fine grey scale, wide viewing angle and excellent uniformity. The Sony-specified panel achieves 1000 cd/m² luminance and 100% colour gamut, corresponding to the industry-leading Sony BVM-HX310 Master Monitor. This provides an accurate colour matching value in the entire production workflow from camera shooting to finishing in applications including live productions, TV programmes, documentaries, music videos, movies, drama and commercials. All personnel working on a project can reliably share the same accurate view of colours and tones, even if they are working at different locations and times.

TRIMASTER assures accurate colour reproduction, precise imaging and consistent picture quality

Sony's TRIMASTER architecture offers accurate picture reproduction, precise imaging and quality picture consistency. The panel's control and signal processing system offers significant advantages including fast processing, accurate colour reproduction and accurate linearising of input signals with Optical Electrical Transfer Function.

HDR-SDR Conversion support*

With V2.0 firmware and the optional PVML-HSX1 HDR-SDR conversion license**, the PVM-X2400 supports HDR-SDR conversion in a Live production system. The HDR license activates 4K to HD down-conversion, colour space conversion from ITU-R BT.2020 to ITU-R BT.709, and OETF conversion from HDR EOTF S-Log3(HDR), ITU-R BT.2100(HLG), SMPTE ST2084 to SDR EOTF 2.4. It also allows output of converted pictures to another 4K or HD monitor from the Enhanced Monitor Output that supports 12G or 3G-SDI, even though an original 4K source is Quad link 3G-SDI. This function can be used at a remote site that can only be fed an HDR signal.

* Supported with V2.0.

** PVML-HSX1 HDR-SDR conversion license available separately. Monitor must be updated to v2.0 firmware or later. HDR-SDR conversion is activated via the USB port on the front control panel of the monitor.

Live production metadata*

The PVM-X2400 offers support for live production metadata, allowing easy comparison if settings of an input source and monitor settings are matched to each other. This feature enables faster, smoother on-site preparation of live production projects.

* Supported with V2.0. Live production metadata includes SR Live metadata. [V2 firmware will be available at a later date. V1 firmware is updatable via the monitor's USB port].

Dynamic Contrast Drive

Sony's Dynamic Contrast Drive backlight driving system dynamically changes backlight luminance according to the scene to achieve a dynamic 1,000,000:1 contrast ratio. This allows at-a-glance checking of the total balance of highlights and low lights. As a further advantage there is no artificial halo effect caused, and each signal level is displayed as the same display luminance.

Black Detail High/Mid/Low

Backlight leaking from the panel surface is a consequence of LCD panel designs. Black Detail mode provides more accurate monitoring of black details in dark, low-APL (average picture level) images. Black level is reduced, but gamma is maintained for correct colour and grey scale. However, high luminance areas are clipped due to the dynamic range of the monitor. The portions to be clipped can be displayed either by zebra patterns or clipped image.

Versatile 4K video input capability

The PVM-X2400 is equipped with built-in standard input interfaces: (12G/6G/3G/HD-SDI) BNC (x2), (3G/HD-SDI) BNC (x2) and HDMI (HDCP2.3/1.4) (x1). 12G simplifies wiring, from simple to large-scale field systems. Quad-link 3G-SDI is highly convenient for systems configured with 'traditional' devices. HDMI simplifies interfacing with devices including rasterizer, multi-viewer, digital camera, set top box, UHD Blu-ray, PC etc.

Various signal settings and automatic setting by Video payload ID

Manual signal settings include ITU-R BT.2020, ITU-R BT.709, DCI-P3, S-Gamut/S-Gamut3, S-Gamut3.Cine as colour space and ITU-R BT.2100(HLG), SMPTE ST 2084, S-Log3 and S-Log3(Live HDR) as EOTF. In addition, support for VPID (Video Payload ID) can identify EOTF, colour space and RGB source information embedded in the SDI signal. Monitor settings are adjusted automatically, cutting the risk of human error in pressured live production environments.

Enhanced user interface

The OSD (On Screen Display) menu structure is significantly enhanced from existing

Sony 4K monitors. It features a shallow layered structure for quick, easy review and adjustment of setting values. Status menu position is changed from the monitor's top to lower side. 4K/2K settings and input settings/user presets are integrated to a single channel. 30 channels can be created and renamed as desired. There's a new channel button on the front control panel – simply select a channel from the list showing the channel name, colour space, EOTF and input etc. Channels can also be assigned to a Fn key. When multiple users share the same monitor, each user can memorise their own setting data to a channel and retrieve whenever required, thus reducing consuming and repetitive setting tasks. When multiple users share the same monitor, all monitor data can be saved and locked by a password. Users can freely change stored values, but data cannot be overwritten or saved to memory by a user who do not know the password. For improving speed of Fn key configuration, users can take a short-cut to the settings menu screen by simply pressing the Fn key repeatedly. Function key preset allows creation, storage and quick recall of different key combinations. Channel, function key preset, colour temperature and marker name can also be named from the monitor's OSD keyboard.

4K/HD scopes with HDR/SDR scale and audio level meter display

Both waveform monitor and vector scope can simultaneously be displayed with scales for either HDR or SDR. Scales are automatically changed according to a selected EOTF setting of the monitor. You can conveniently check both input signal level and output luminance by the HDR scale of the WFM. Various modes include a zoom function (in an area of either 0 - 20% or 0 - 30%) with the waveform monitor, and a zoom function in the central black area with the vector scope, for adjusting camera white balance. The waveform has three different displays of either luminance, RGB/YCBCR parade or RGB/YCBCR overlay with the gamut error display. The waveform of a specified line can also be displayed. In addition, an audio level meter can display embedded audio signals from the SDI or HDMI input. It can display on screen either Ch1-8 or Ch9-16.

User 3D LUT

User 3D LUT files can be loaded to internal memory via USB port on the monitor's front. Either 33 grid points or 17 grid points .cube files are supported. Different user LUTs can be easily selected and compared in Quad View display.

Unique Quad View display

The PVM-X2400 provides a Quad View display mode with individual settings of EOTF (SDR/HDR), colour space, transfer matrix, colour temperature, contrast, brightness, user LUT, SDI/HDMI and RGB/YCBCR for each display view. Different HD input sources can be compared as a part of an HD wall system.

False colour function*

The monitor can display false colour according to the camera's signal level. As the whole picture is changed, it is easy to see levels for over-, under- or appropriate exposure.

* Supported with V2.0.

Camera focus function*

The monitor can control the aperture level of a video signal, and display images on the screen with sharpened edges to help camera focus operation. The sharpened edges can be displayed in user-selectable colours (white, red, green, blue, and yellow) for more precise focusing.

* Supported with V2.0.

DC operation

The PVM-X2400 can be powered by a DC 22 V - 32 V source, providing more flexibility and mobility for users who want a larger size screen for on-set and field applications.

High reliable mechanical design, optional protection panel and 19-inch EIA standard rack-mount capability

For long term reliability, Sony made multiple thermal simulations to find the most efficient cooling system and mechanical structure. Long-term heat load tests were also conducted to meet stringent specifications.

The optional PVMK-PX24 protection panel safeguards the screen of PVM-X2400 from inadvertent scratches and impacts during transportation and preparation*. It can be easily and quickly attached or detached without tools. This protection panel can be mounted together with the rack-mount bracket PVMK-RX24, and it can be used with the PVM-X2400 installed in a 19-inch EIA standard rack.

* Optional protection panel cannot be used with the monitor in operation to protect screen from LCD backlight heat.

Yoke-mount and wall-mount capability

The PVM-X2400 has screw holes on its side bezels for yoke-mounting. This type of mounting is convenient when installing a monitor on a camera crane or monitor stand in the field. There are also wall-mount 100-mm pitch holes on the monitor's rear panel.

Room clearance connector panel design

The rear connector panel allows adequate cord clearance. This design allows protecting connectors, space saving and cabling flexibility with easy identification of the connectors for system integration and maintenance.

4K (4096 x 2160) and 2K (2048 x 1080) input

The PVM-X2400 can display 4K and 2K input signals. The 4K/2K signal is displayed in two ways: as a full 4K/2K image scaled into a QFHD (3840 x 2160) screen, or as a 4K/2K native display with side cut.

Flexible and variable area markers, aspect marker and center marker

It's easy to set two flexible area markers or variable area markers, and aspect marker on the screen. Line colours and thickness can be changed for easy identification. This second marker enables easier checking of the centre portion's focus. Flexible area marker can be used for a guide of a screen layout for shopping programs.

Power-on setting

Ideal for rental applications, power-on setting quickly loads data at start-up including last memory, user preset factory preset settings.

Optimised low-latency I/P conversion

The monitor's low latency I/P conversion system optimises signal processing according to input signals. This helps with editing and monitoring fast-moving images, and with synchronising audio with lip sync.

Zoom function

The PVM-X2400 can magnify a centre of the screen for checking camera focus.

Stereo speakers (2W+2W) with audio muting

Use on-set or in a machine room requires high sound pressure levels due to environmental noise. 2W+2W front stereo speakers offer powerful sound with a true stereophonic effect. Press an assigned Function key instantly mutes audio when required.

Extensive basic functions

The monitor has basic functions such as contrast, brightness, chroma, aperture, audio volume, blue only, mono, scan, marker, timecode display, RGB cut off, on-screen tally, BKM-17R control and parallel remote (Fixed pin assignment).

Specifications

Picture Performance	
Panel	α-Si TFT Active Matrix LCD
Picture Size (Diagonal)	609.6 mm (24 inches)
Effective Picture Size (H x V)	531.6 x 299.1 mm (21 x 11 7/8 inches)
Resolution (H x V)	3840 x 2160 pixels
Aspect	16:9
Display colours	Approx. 1.07 billion colours
Panel frame rate	48 Hz / 50 Hz / 60 Hz (48 Hz and 60 Hz are also compatible with 1/1.001 frame rates)
Viewing angle (panel specification)	89°/89°/89°/89° (up/down/left/right contrast > 10:1)
Colour temperature	D60, D65, D93, DCI*1, and user 1-10 (5,000 K to 10,000 K adjustable)
Luminance (panel specification) (typical)	1000 cd/m2
Colour space (Colour gamut)	ITU-R BT.2020*2, ITU-R BT.709, DCI-P3*2, S-GAMUT3*2, S-GAMUT3.Cine*2
Transmission Matrix	ITU-R BT.2020 (Non-constant luminance is supported), ITU-R BT.709
EOTF	2.2, 2.4, 2.6, 2.4 (HDR), S-Log3, S-Log3 (Live HDR), SMPTE ST 2084, ITU-R BT.2100 (HLG)
Input	
SDI	(12G/6G/3G/HD-SDI) BNC (x2), (3G/HD-SDI) BNC (x2), Input impedance: 75 Ω unbalanced
HDMI Input	HDMI (HDCP2.3/1.4) (x1)
Parallel Remote	RJ-45 8-pin (x1) (Fixed pin assignment)
Serial Remote (LAN)	Ethernet, 10BASE-T/100BASE-TX RJ-45 (x1)
DC Input	XLR-type 3-pin (male) (x1), DC 22 V to 32 V (output impedance 0.05 Ω or less)
Output	
SDI Output	(12G/6G/3G/HD-SDI) BNC (x2) , (3G/HD-SDI) BNC (x2) , Output impedance: 75 Ω unbalanced

Audio Monitor Output	Stereo mini jack (x1)
Speaker (Built-in) Output	2.0 W+2.0W (Stereo)
Headphone Output	Stereo mini jack (x1)

General

Power Requirements	AC 100 V to 240 V, 2.6 A to 1.0 A, 50/60 Hz DC 22 V to 32 V, 9.9 A to 6.3 A
Power consumption	Approx. 225 W (Maximum at AC operation) Approx. 205 W (Maximum at DC operation)
Operating Temperature	0°C to 35°C (32°F to 95°F) Recommended: 20°C to 30°C (68°F to 86°F)
Operating Humidity	30% to 85% (no condensation)
Storage / Transport Temperature	-20°C to +60°C (-4°F to +140°F)
Storage / Transport Humidity	0% to 90%
Operating / Storage / Transport Pressure	700 hPa to 1060 hPa
Dimensions (W x H x D)	568 x 382 x 158.5 mm*3 (22 3/8 x 15 1/8 x 6 1/4 inches) (without monitor stand) 568 x 403.5 x 178.5 mm*3 (22 3/8 x 16 x 7 1/8 inches) (with monitor stand)
Mass	Approx. 10.5 kg (23 lb 2 oz)
Supplied Accessories	AC power cord (1), AC plug holder (1), CD-ROM (1), Before Using This Unit (1)
Optional Accessories	PVMK-RX24 Rack-mounting bracket PVMK-PX24 Protection Panel BKM-17R

Notes

*1	DCI: x=0.314, y=0.351
*2	The PVM-X2400 does not cover selected colour space in full.
*3	Without projection parts.

Related products



PVML-HSX1

Gallery

