4K HDR

31" GRADE 1 True HDR 4K Monitor

OBM-X310

True HDR with 1000nits : PQ, HLG, S-Log3
True Black with 1,000,000:1 High Contrast ratio
3G-SDI Quad Link Square Division & 2-S.I. 4K
Custom 3D LUT File Import
Panel Resolution 4096 x 2160
12G-SDI Single Link 2-S.I. / Square 4K
6G-SDI Dual Link 2-S.I. 4K (SDI & SFP)
1.073 Billion Colors
Dual SFP Module Inputs
Wide Color Gamut
No Halo Effect / No Burn-in

The OBM-X310 is the GRADE 1 True HDR 4K monitor, designed for professional production and postproduction work.
This new monitor offers the outstanding performance and the unique and advanced features, including superb black.
It also supports various HDR gamma curves, such as PQ, HLG, S-Log3.
The OBM-X310 features wide viewing angle IPS panel, 4096X2160 17:9 aspect ratio, 1000cd/m² High Brightness, 1,000,000:1 High Contrast, wide color gamut, various HDR, which make it ideal for color grading in a mastering suite.

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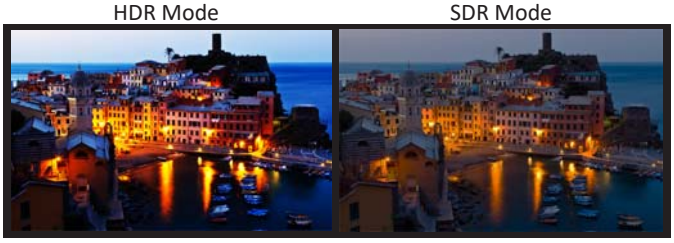
Product Highlights

- 12G/6G-SDI(4K) 2 Channel, 3G/HD-SDI (Level A/B) 2 Channel
- 6G-SDI Dual Link 2-S.I. 4K
- 3G-SDI Quad Link Square Division 4K
- 3G-SDI Quad Link 2-Sample Interleave (2-S.I.) 4K
- HDR(High Dynamic Range) Display supporting PQ (ST 2084), Hybrid Log Gamma, S-Log3
- 3D-LUT for Accurate Color Reproduction
- Wide Color Gamut Supporting ITU-R BT.709, SMPTE-C, EBU, Native, DCI-P3, ITU-R BT.2020
- 1.074 Billion Colors
- 1,000cd/m² High Brighthness
- 1,000,000:1 High Contrast ratio
- Gamut Error
- Black stretch
- Camera Log Conversion
- Custom 3D LUT file Import Through USB
- Gamma Selection (1.0 ~ 3.0)
- Color Temperature (3200K, 5500K, 6500K, 9300K, USER 1/2/3, D-CINEMA)
- Support 4096x2160 Aspect
- Monitor Control via Ethernet, RS-422
- Waveform, VectorScope (Wave + Vector, Position Selection)
- HDR Waveform
- Various Markers (EBU, 4:3, 16:9, 1.85:1, 2.35:1, Variable etc.)
- Scan
- Time Code Display
- De-embedded 8~16ch Audio Level Meter
- Dual SFP Module Inputs
- Internal Pattern Display for Color Test (Black ~ 100% White, Color Bar)
- Remote Control via GPI(RJ-45) Port
- False Color : Zebra, Color Pattern, ARRI
- Easy Firmware Update by USB
- Rack & VESA Mount (Option)
- Closed Caption (608, 708)
- System Data Copy
- Key Lock & Password Lock
- H/V Delay
- Blue/Mono Only
- Focus Assist
- 3 Color TALLY Lamp
- HDR Auto Setting
- HDMI 2.0 Support
- Aspect
- Freeze
- IMD

True HDR with 1000nits

The OBM-X310 achieves the 1000nits high brightness level, which enables the monitor to display the HDR content faithfully.
The OBM-X310 HDR function allows users to view both highlights and shadow details of screen at the same time, thus resulting in more natural and realistic images. The OBM-X310 support PQ(ST 2084), HLG(Hybrid Log Gamma), and S-Logs.

HDR Mode SDR Mode



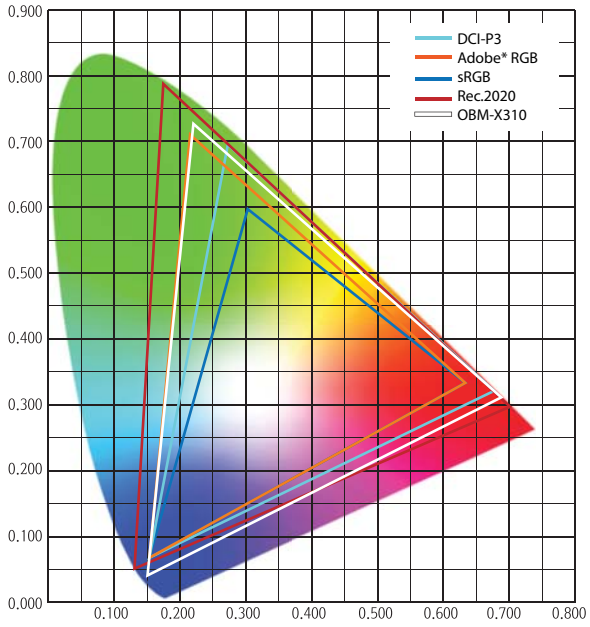
The OBM-X310 provides the function of dividing the picture side by side and comparing HDR and SDR between right half and left half.

HDR SDR

Accurate Color Reproduction with Wide Color Gamut

Fully Support DCI-P3 Color Space with PQ(ST 2084) 1000nit HDR

The OBM-X310 provides the industry-leading wide golor gamuts. This monitor complies with the DCI-P3 color space with gamut ratio 114% and gamut coverage 99%, and supports the BT.2020 color space. This ensures the colors are reproduced according to industry standards.

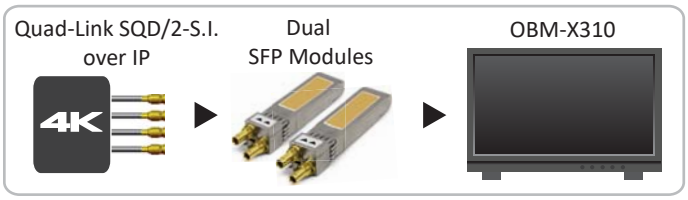


True Black with 1,000,000:1 High Contrast

The state-of-the-art LCD technology of the OBM-X310 enables deep blacks to be accurately displayed, and the black portion of an image is not degraded. The OBM-X310's amazing ability to express subtle details in the low-luminance area is equal to the OLED monitor.

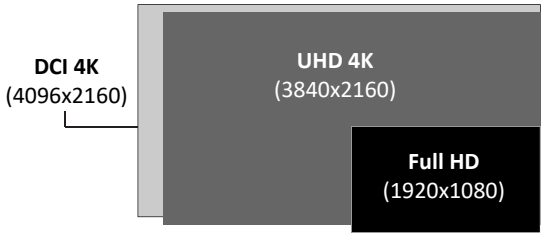
Dual SFP Module Inputs supporting Quad-Link 4K over IP

The OBM-X310 has the dual SFP Input cages, which enable the monitor to accept and display the Quad-Link square division and 2-Sample Interleave 4K signals over IP supporting SMPTE ST 2022-6.



DCI 4K 4096 x 2160 Resolution

The OBM-X310 incorporates a 31" true 4K panel with 4096 x 2160 pixel resolution. Thanks to aspect ratio is 17:9, the images are mapped without scaling processes, so it is ideal for editing, referencing, and color grading.



No Halo Effect

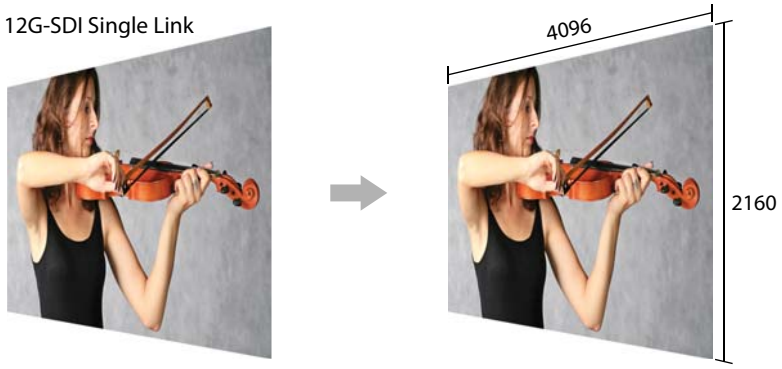
The OBM-X310 employs the state-of-the-art Dual Cell(Dual Layer) LCD panel. By stacking two LCD panels, the dual-layer LCDs modulate light emitted by the backlight at least twice prior to reaching a viewer's eyes. It makes blacks appear deeper and darker on those parts of the screen. The OBM-X310 offers a true HDR performance without the halo effect in order to ensure accurate colors and brightness in every pixel.

HDR mode with Local Dimming

No Halo Effect in OBM-X310

Various 4K/12G Display Modes

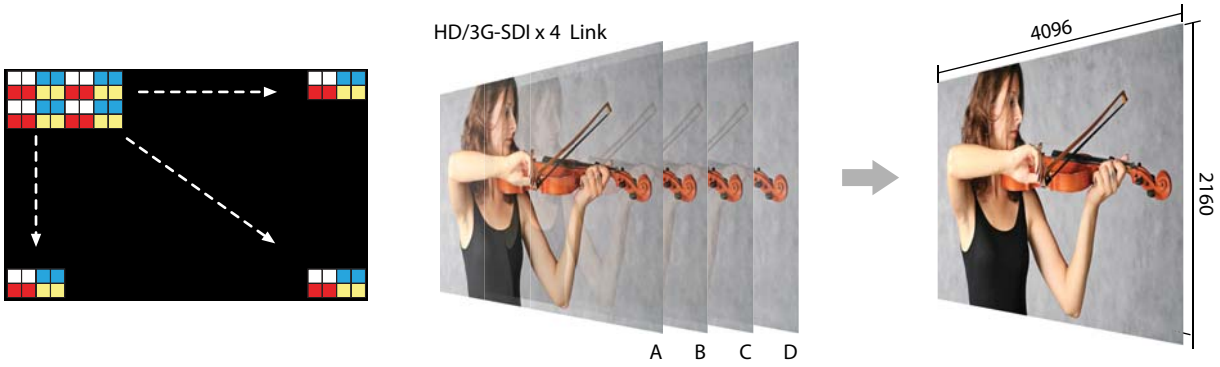
Single Link 12G-SDI



Dual Link 2-Sample Interleave(2-S.I.)

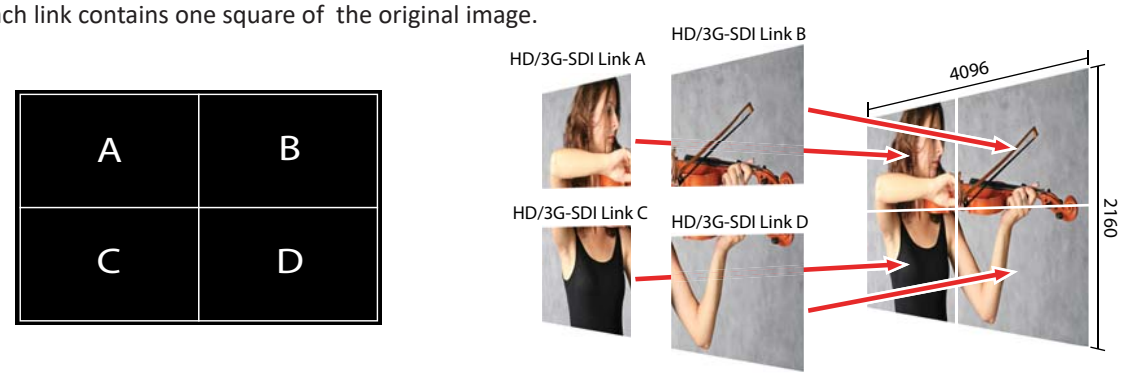
Quad Link 2 Sample Interleave (2-S.I.)

Each link contains a full image at 1/4 resolution. 2-S.I. mode uses four Sub-image and alternates the samples every two pixels and every line instead of slitting the image into four quadrants.



Quad Link Square Division

Each link contains one square of the original image.



No Burn-in

OLED monitors have the risk of "burn-in", which is an effect of the image sticking on a screen even when the content changes. It is due to the characteristics of the material used in the OLED panel.
The OBM-X310, which employs the state-of-the-art LCD panel, is free from the burn-in effect.

Black Stretch

The Black Stretch increases the visibility of subjects in dark areas, not degrading image quality in bright areas.
This mode can be used to increase shadow detail without changing the absolute black level, and without affecting mid-tones.

Black Stretch Off

Black Stretch On

False Color

This function evaluates the Luma(Y') level of the input image. If the certain Y' level is set, the pixels with the designated Luma(Y') level are displayed with the zebra pattern or the color pattern.
There are three modes in OBM False Color.

Zebra

This mode displays the Luma(Y') level of the input image in zebra pattern.

False Color Variable

This mode allows the user to adjust White clipping, Pink level, Green level, Black Clipping.

False Color ARRI

The color pattern is displayed with ARRI camera standard.

False Color Comparison

This function enables the user to divide the picture side by side, and compare the original image on the left half and the False Color image on the right half.

Gamut Error

The total range of the SDI 10bit signal is 0 to 1023. The range 0 to 3 and 1020 to 1023 are the reserved values for Sync, and the total video signal range is 4 to 1019.
In a video signal, each primary component should lie between 0 and 100% of the video range between black level and peak level (R and G and B). Ideally, video levels should lie within the specified limits so that programs can be distributed without adjustment.
100% White pattern: Y - 940, Cb - 512, Cr - 512
0% Black pattern: Y - 64, Cb - 512, Cr - 512
Expected Video Range: 64 to 940
In practice, it is difficult to avoid generating signals slightly out of range, and it is considered reasonable to allow a small tolerance. Therefore, the EBU recommends that the RGB components and the corresponding Luminance (Y) signal should not normally exceed the "preferred minimum/maximum" range of digital sample levels in the table below.

System Bit Depth	Range in Digital Sample (Code) Values		
	Expected Video Range	Preferred Min. / Max.	Total Video Signal Range
10 bit	64 - 940	20 - 984	4 - 1019

*References: EBU R 103 Version 2.0 page 4, Annex 1

Type 1: Black Zebra

When the targeted color space is selected as BT.709, the pixels outside of the targeted color space are displayed as Black Zebra. The pxels over Y Maximum, Chroma Maximum, RGB Maximum are displayed as Black Zebra, and the pixels below Y Minimum, Chroma Minimum, RGB Minimum are also displayed as Black Zebra.

Type 2: Black & White Zebra

When the targeted color space is selected as BT.709, the pixels outside of the targeted color space are displayed as Black or White Zebra. The pxels over Y Maximum, Chroma Maximum, RGB Maximum are displayed as Black Zebra, and the pixels below Y Minimum, ChromaMinimum, RGB Minimum are displayed as White Zebra.

Type 3: Mono

When the targeted color space is selected as BT.709, the pixels inside of the targeted color space are displayed as Mono, and the pixels outside of the targeted color space are displayed as the color. In this type, black and white area is not recognized.

*Simulated image

4K Waveform Monitor and Vector Scope Display

These features enable users to monitor sources using the internal Waveform and Vector Scope. Both Waveform and Vector Scope can be displayed simultaneously.

Focus Assist

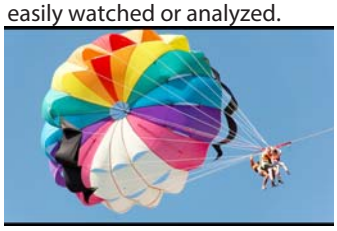
This function controls the aperture level of a video signal, and displays images on screen with sharpened edges to help camera focus operation.

Camera Log Selection

The OBM-X310 has the built-in camera LUT of the various camera manufacturers. It allows users to load the following camera logs.
Log-C, C-Log / S-Log2, S-Log3 / J-Log1
The more camera LUTs will be updated.

Adjustable Gamma

Gamma value is adjustable from 1.0 to 3.0 as user's preference to monitor in the dark area of the picture.
Any pictures taken in either light or dark environment can be easily watched or analyzed.



Gamma 1.8

Gamma 2.4

Remote Control via Ethernet

The OBM-X310 can be connected via Ethernet connection and controlled remotely on the network.

Closed Caption

The OBM OBM-X310 can display closed captions with an SDI input. It supports the CEA-708(HD-SDI closed captioning standard) and CEA-608(SD-SDI closed captioning standard).

Custom 3D LUT File Import

The OBM-X310 allows the user to import 3D Look-up Table for accurate and consistent color matching between indivisual displays as well as using customized 'looks' that have been created by 3rd party color-grading applications. $32^{\wedge 3}$, $33^{\wedge 3}$, $64^{\wedge 3}$ and $65^{\wedge 3}$ cube file is supported.

Supports 12G-SDI Single Link Square Division signal format

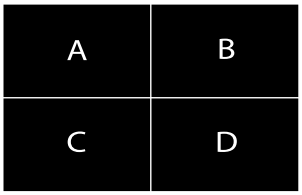
The OBM-X310 can display 12G-SDI Single Link 4K/UHD signals as well as 3G-SDI Quad Link signals. This is already a very useful feature, compared to competitors' monitors.
Most of the single link 12G-SDI signals are displayed as 2-S.I. format on the screen. But, the single link 12G-SDI signals with Square Division format are increasing. In order to meet this requirement in the location and studio, the OBM-X310 supports both 12G-SDI Single Link 2-S.I. mode and 12G-SDI Single Link Square Division mode.

Single Link
12G-SDI x 1

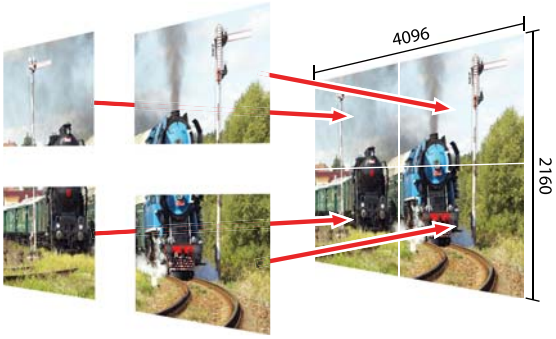
12G-SDI Single Link 2-Sample Interleave(2-S.I.) Mode

2-Sample Interleave(2-S.I.)

12G-SDI Single Link Square Division Mode

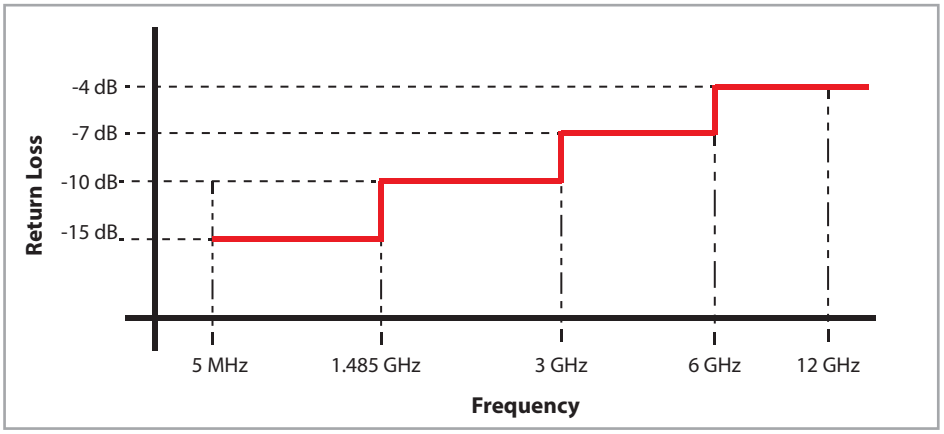


Square Division



Meets the Return Loss Standard, SMPTE ST 2082-1:2015

In the professional broadcasting video industry, Return Loss is an important parameter that measures the reflected signal that bounces back from a terminated device. If the broadcast monitor has the poor return loss, the level of reflected signal negatively impacts the signal integrity of the loop-out signal.
The OBM-X310 monitor meets the requirements of Return Loss specified in SMPTE ST 2081-1:2015, so that the OBM-X310 provides the high signal fidelity.

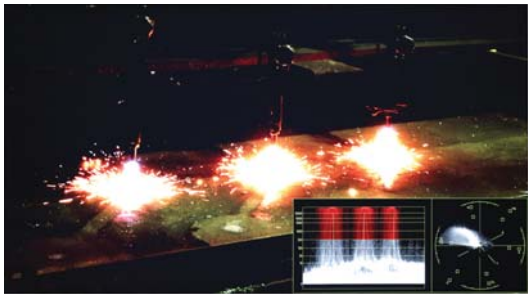


<SMPTE ST 2082-1:2015 Requirements>

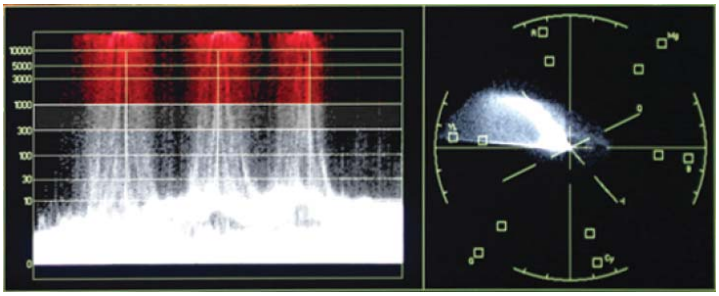
HDR Waveform

When HDR more is set on, HDR Waveform is displayed on screen.

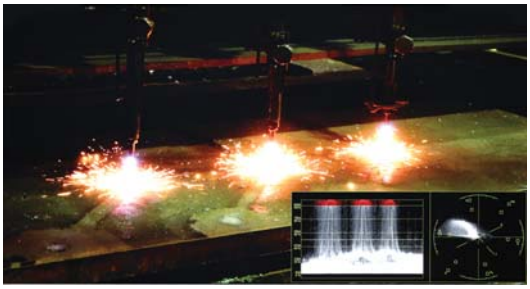
HDR Mode + HDR Waveform



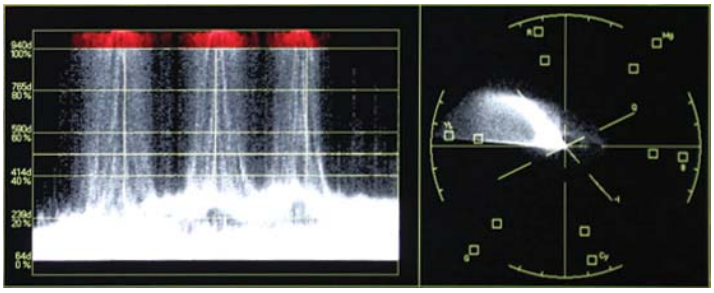
HDR Waveform



SDR Mode + SDR Waveform

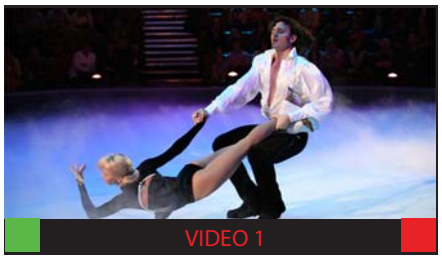


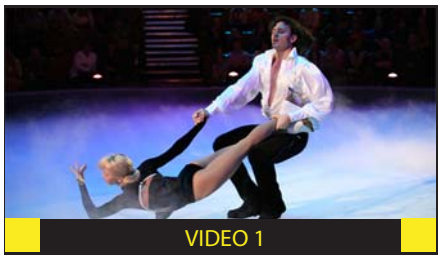
SDR Waveform

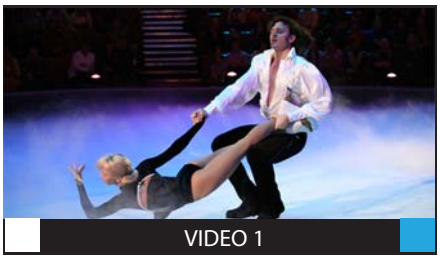


In-Monitor Display(IMD) Function

The image source names and tally information can be displayed on the screen, with an external remote function via Ethernet. The TSL system protocol is supported. The color of the source name and tally color can be selectable among White, Red, Green, Blue, Yellow, Cyan, Magenta.





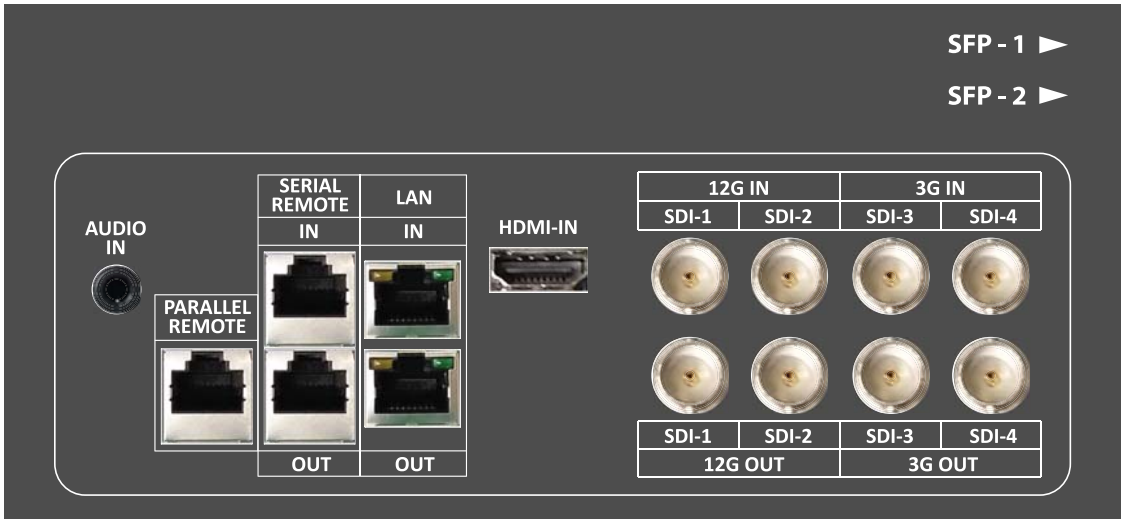


Specifications

ITEM		OBM-X310
Input	4 x BNC	12G/6G/3G/HD/SD-SDI-1/2, 3G/HD/SD-SDI-3/4
	1 x HDMI	HDMI 2.0
	2 x SFP	SFP
Output	4 x BNC	12G/6G/3G/HD/SD-SDI-1/2, 3G/HD/SD-SDI-3/4 Active Loop Output
Input Signal Format	SMPTE ST 2082	2160p(60/59.94/50)
	SMPTE ST 2081	2160p(30/29.97/25/24/23.98)
	SMPTE ST 425-AB	1080p(60/59.94/50/30/29.97/25/24/23.98/30sF/29.97sF/25sF/24sF/23.98sF) / 1080i (60/59.94/50)
	SMPTE ST 274	1080p(30/29.97/25/24/23.98/24sF/23.98sF)
		1080i (60/59.94/50)
	SMPTE ST 296	720p(60/59.94/50)
	SMPTE ST 260	1920 x 1035i(60/59.94)
	SMPTE ST 2048	2048 x 1080p(24/23.98/24sF/23.98sF)
	SMPTE ST 125	480i(59.94)
	ITU-R BT.656	576i(50)
	HDMI 2.0	~ 2160p(60)
	SFP	12Gbps, 6Gbps, 2.970Gbps, 1.485Gbps, 270Mbps
Audio In/Out	1 x Phone Jack In	Line In(Stereo)
	1 x Phone Jack Out	H/P Out(Front, Stereo)
	2 x Speaker Out	Stereo
Display	Size	31” LCD
	Resolution	4096 x 2160 (17:9)
	Pixel Pitch	0.1704mm
	Color	1.073B Colors(True 10bit)
	Viewing Angle	178(H), 178(V)
	Luminance of White	1000cd/m²
	Contrast	1,000,000 : 1
	Display Area (H x V)	698 x 368 (mm)
General	2 x Ethernet	Control/Update, RJ-45P Input / Output
	1 x GPIO	GPI-7 Port, RJ-45P Jack
	2 x Serial	RS-422 Jack, RJ-45P Input / Output
	1 x USB	For Firmware Update, Color Calibration
	Power Requirements	AC(100-240V, 50/60Hz) / DC 24V
	Power Consumption	TBD
	Operating Temperature	0°C ~ 40°C(32°F~104°F)
	Operating Humidity	20% ~ 80% RH
	Weight	TBD
	Dimensions (WxHxD)	Main Body : 782.9 x 489.4 x 151.2 mm (30.82 x 19.26 x 5.95 inch)
		With Stand : 782.9 x 519.7 x 260 mm (30.82 x 20.46 x 10.23 inch)
	Accessories	Power Cable
	Option	Carrying Case / Wall Mount Kit

* Specifications are subject to change without prior notice for the product quality improvement.

Parts and Controls



Dimensions (mm)