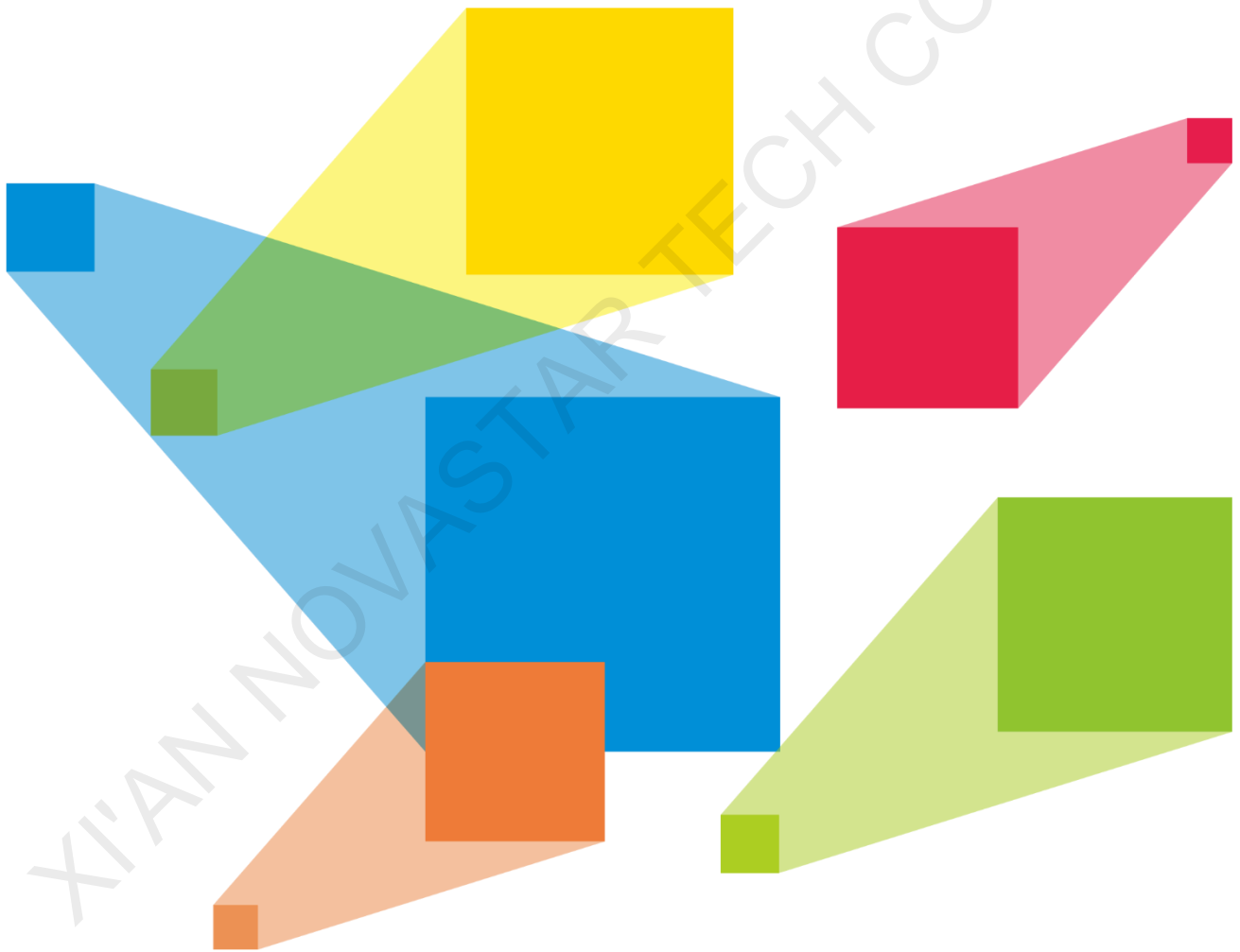# HDR Master 4K

Video Processor

Specifications

Introduction

The award-winning HDR Master 4K is NovaStar's first 4K HDR video processor converting SDR content into HDR format. Engineered with the optimal SDR to HDR converting algorithm and outstanding scaling technology, the unit empowers great processing performance, superior image quality, remarkable input and output density in a highly-compact box. Making the world HDR has never been easier.

4K HDR for impressive visual experience

With full 4K input and output connectors and SDR to HDR converting capability, the HDR Master 4K enables a wider color gamut, larger dynamic range and deeper color depth, thus displaying more details of the bright and dark areas of an image and giving you a super clear and immersive visual experience. Furthermore, the unit empowers free converting between SDT and HDR10/HLG, perfectly solving the problem of the absence of an HDR source.

High-grade scaling technology, reproducing every exquisite pixel

Equipped with SuperView III scaling algorithm, a content-adaptive scaling engine, the HDR Master 4K effectively eliminates the problems of data loss, rough edges and edge blurring. Therefore, every image is restored to its original look.

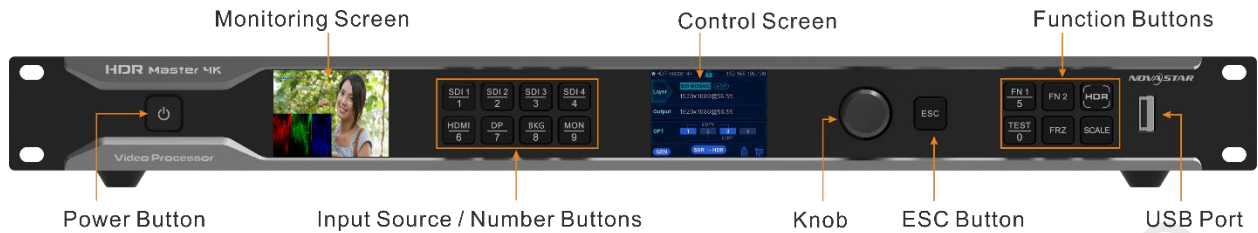### Abundant 4K connectors perfectly for most demanding users

The well-designed HDR Master 4K provides a variety of input and output connectors within a small footprint, including 1x HDMI 2.0, 1x DP 1.2 and 4x 12G-SDI via a swappable input card, 2x HDMI 2.0, 4x OPT and 4x 12G-SDI via two swappable output cards. The high amount of connectors meet all your needs in the field.

Features

- 1x pluggable input card
    - 1x DP 1.2, 1x HDMI 2.0 and 4x 12G-SDI
    - 3G-SDI mosaic input
    - Up to six 4K×2K@60Hz video inputs simultaneously
- 2x pluggable output cards that output the same content synchronously
    - One with 1x HDMI 2.0 and 4x 10G optical fiber ports
    - The other one with 1x HDMI 2.0 and 4x 12G-SDI output connectors
    - 3G-SDI mosaic output
- Free conversion between SDR and HDR10/HLG
    - Convert SDR content to HDR10/HLG format
    - Convert HDR10/HLG content to SDR format
- BKG and LOGO file importing via a USB drive
    - Up to 10 BKG images, each width or height up to 8192 pixels
    - Up to 10 LOGO images, each width or height up to 512 pixels
- Image mosaic supported
- Adjustable contrast gain and low grayscale gain of the output image
- Input source black level settings for better image effect
- An LCD screen dedicated to monitoring
- Self-test and status monitoring
- Input hot backup function
- High-quality adaptive scaling of the output image
- Adjustable output color space, sampling rate and bit depth
- Layer image flipping, input crop and layer mask

Appearance

Front Panel

Area	Description
Power button	Power on or power off the device.
Monitoring screen	An LCD screen for displaying the monitoring information and input source RGB parade.
Input source and number buttons	Press the buttons to switch the layer input source or enter numbers. • Status LEDs for input source buttons: − On (green): The input source is accessed and used by the layer. − Flashing (red): The input source is not accessed but used by the layer. − On (yellow): The input source is accessed but not used by the layer. − Off: No input source is accessed or the input source is abnormal. • Status LEDs for number buttons: − On (green): The number button is active and can be used to enter a number.
Control screen	An LCD screen for displaying the device statuses, menus, submenus and messages.
Knob	• Rotate the knob to select a menu item or adjust a parameter value. • Press the knob to confirm the selection or enter the submenu screen.
ESC button	Exit the current menu or cancel the operation.
Function buttons	• FN 1: A reserved button for a custom function, or used as a number button to enter 5 • FN 2: A reserved button for a custom function • HDR: Turn on or turn off the SDR to HDR converting function. − On: SDR to HDR converting function turned on − Off: SDR to HDR converting turned off • TEST: Enter the test pattern menu, or used as a number button to enter 5 − On: Test pattern opened − Off: Test pattern closed • FRZ: Freeze the output image. − On: Freeze function turned on − Off: Freeze function turned off • SCALE: Make the layer size equal to the output resolution. − On: Scaling function turned on (default) − Off: Scaling function turned off
USB port	1x USB 2.0 (Type-A) • Insert a USB drive to update the device. • Insert a USB drive to import the BKG or LOGO files.

Rear Panel

Input Card

R_4x12G SDI+1xHDMI2.0+1xDP1.2 Input Card

Connector	Qty	Standard	Description
HDMI 2.0	1	HDMI 2.0 Backward compatible with HDMI 1.4 and HDMI 1.3	• Up to 4K×2K@60Hz input resolution • 1080i/576i/480i deinterlacing • HDCP 2.2 and HDCP 1.4 compliant • HDR10 and HLG supported • Max. width: 4092 pixels (4092×2263@60Hz) • Max. height: 4095 pixels (2188×4095@60Hz)
DP 1.2	1	DP 1.2 Backwards compatible with DP 1.1	• Up to 4K×2K@60Hz input resolution • 1080i/576i/480i deinterlacing • HDCP 1.3 compliant • Max. width: 4092 pixels (4092×2263@60Hz) • Max. height: 4095 pixels (2188×4095@60Hz)
12G-SDI	4	12G-SDI Backward compatible with 6G-SDI, 3G-SDI, HD-SDI and SD-SDI	• Supports ST-2082-1 (12G), ST-2081-1 (6G), ST-424 (3G), ST-292 (HD) and SMPTE 259 (SD). • Up to 4K×2K@60Hz input resolution • 1080i/576i/480i deinterlacing • For 3G-SDI, HD-SDI or SD-SDI inputs, SDI mosaic input is supported. **Note:** When the input source is a 12G-SDI signal, you must use CANARE / L-4.5CHD+ / UHDTV-SDI SDI cables and the cable length should be less than 50 m.

Output Card

R_1×HDMI2.0+4×Fiber Output Card

Connector	Qty	Standard	Description
HDMI 2.0	1	HDMI 2.0 Backward compatible with HDMI 1.4 and HDMI 1.3	• SDR, HDR10 and HLG supported • Up to 4K×2K@60Hz or 8K×1K@60Hz output resolution • Max. width: 8192 pixels (8192×1080@60Hz) • Max. height: 7680 pixels (1092×7680@60Hz)

| 10G optical fiber port | 4 | 10G | OPT 1 and OPT 2 copy the output on HDMI 2.0. OPT 3 copies the output on OPT 1. OPT 4 copies the output on OPT 2. |

R_4×12G SDI+1×HDMI2.0 Process Card

Connector	Qty	Standard	Description
HDMI 2.0	1	HDMI 2.0 Backward compatible with HDMI 1.4 and HDMI 1.3	- SDR, HDR10 and HLG supported - Up to 4K×2K@60Hz or 8K×1K@60Hz output resolution - Max. width: 8192 pixels (8192×1080@60Hz) - Max. height: 7680 pixels (1092×7680@60Hz)
12G-SDI	4	12G-SDI Backward compatible with 6G-SDI, 3G-SDI, HD-SDI and SD-SDI	- Up to 4K×2K@60Hz output resolution on each connector - For 3G-SDI, HD-SDI or SD-SDI outputs, SDI mosaic output is supported.

R_Control Card

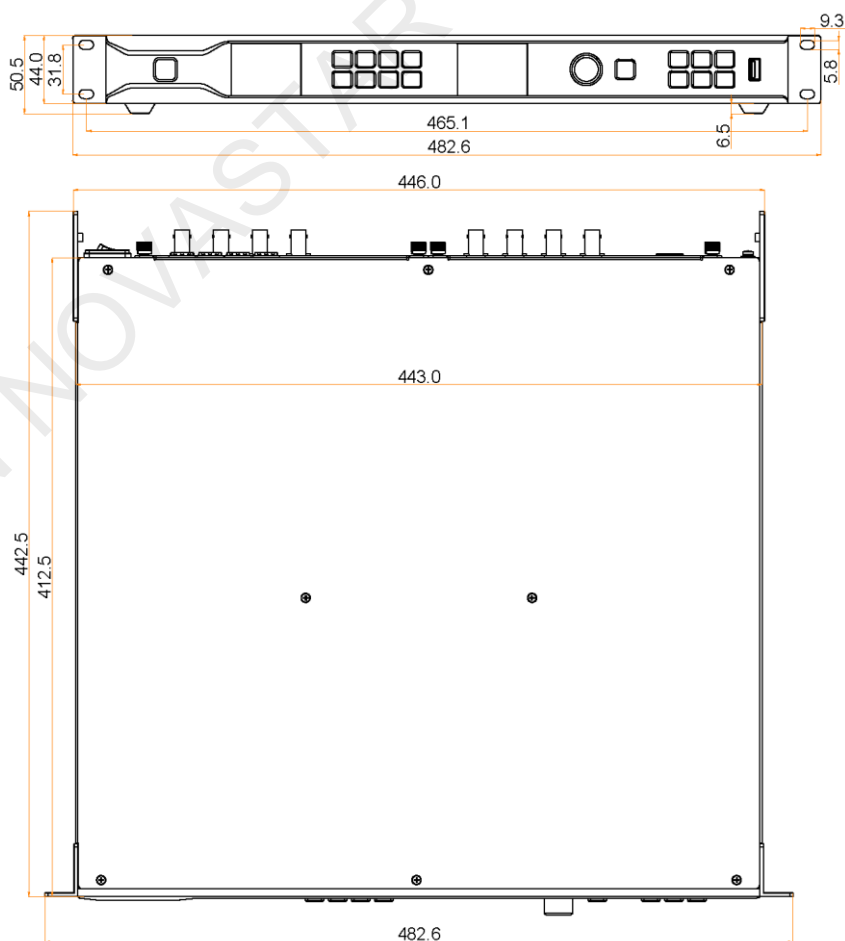| ETHERNET	Gigabit Ethernet port Connect to the control PC.
USB	2x USB 2.0 (Type-A) - Insert a USB drive to update the device. - Insert a USB drive to import the BKG or LOGO files.
CONTROL UI	A reserved connector
GENLOCK	Connect to a synchronization signal. Supports bi-level and tri-level. - IN: Accept the sync signal. - LOOP: Loop the sync signal.

Note:

The R_1xHDMI2.0+4xfiber output card and 4x12G SDI+1xHDMI2.0 process card output the same content.

Applications

Dimensions

Tolerance: ±0.3   Unit: mm

Specifications

Overall Specifications		
Operating Environment	Temperature	0°C to 45°C
	Humidity	10% to 85%, non-condensing
Storage Environment	Temperature	–20°C to +60°C
	Humidity	10% to 90%, non-condensing
Electrical Parameters	Power supply	100–240V~, 3A, 50/60Hz
	Max. power consumption	120 W
Physical Specifications	Dimensions	482.6 mm × 442.5 mm × 50.5 mm
	Net weight	7.5 kg
	Gross weight	12.1 kg
Packing Information	Carrying case	582 mm × 185 mm × 555 mm
	Packing box	612 mm × 225 mm × 595 mm
	Accessory box	2x HDMI cables 1x Mini DP to DP cable 1x DP cable 1x Ethernet cable 1x Power cord (EU) 1x Power cord (UK) 1x Power cord (US) 1x Power cord (CN) 1x Cable clip 1x Cable tie 1x Quick Start Guide 1x Safety Manual 1x Customer Letter 1x Certificate of Approval
Certifications		CE, FCC, IC, RoHS **Note:** If the product does not have the relevant certifications required by the countries or regions where it is to be sold, please apply for the certifications yourself or contact NovaStar to apply for them.
Noise Level (typical at 25°C/77°F)		50 dB (A)

Input and Output Features

Connector	Bit Depth		Max. Input and Output Resolutions
• HDMI 2.0 • DP 1.2	8-bit	RGB 4:4:4	4096×2160@60Hz 8192×1080@60Hz
		YCbCr 4:4:4	
		YCbCr 4:2:2	
		YCbCr 4:2:0	Not supported
	10-bit	RGB 4:4:4	2560×1600@60Hz
		YCbCr 4:4:4	
		YCbCr 4:2:2	3840×2160@60Hz
		YCbCr 4:2:0	Not supported
	12-bit	RGB 4:4:4	2560×1600@60Hz
		YCbCr 4:4:4	
		YCbCr 4:2:2	3840×2160@60Hz
		YCbCr 4:2:0	Not supported
12G-SDI	• Supports ST-2082-1 (12G), ST-2081-1 (6G), ST-424 (3G), ST-292 (HD) and SMPTE 259 SD. • Up to 4096×2160@60Hz inputs and outputs • The input resolution and bit depth settings are not supported.		

Input and Output Resolutions

Resolution and Frame Rate		Input Connector		Output Connector	
Standard Resolution	Standard Frame Rate (Hz)	HDMI 2.0	DP 1.2	HDMI 2.0/OPT	12G-SDI
720×480i	59.94	√	√	×	√
720×576i	50	√	√	×	√
1024×768	48/50/59.94/60/75/85	√	√	√	×
1280×720	23.98/24/25/29.97/30/50/59.94/60	√	√	√	√
1280×720	48	√	√	√	×
1280×1024	48/50/59.94/60/75/85	√	√	√	×
1440×900	60/75/85	√	√	√	×
1600×1200	48/50/59.94/60	√	√	√	×
1680×1050	60	√	√	√	×
1920×1080	23.98/24/25/29.97/30/50/59.94/60	√	√	√	√
1920×1080	48	√	√	√	×
1920×1080i	50/59.94/60	√	√	×	√
1920×1200	50/59.94/60	√	√	√	×
2048×1080	48	√	√	√	×
2048×1080	23.98/24/25/29.97/30/50/59.94/60	√	√	√	√
2048×1152	30/60	√	√	√	×
2560×1080	50/59.94/60	√	√	√	×
2560×1600	50/59.94/60/120	√	√	√	×
3840×1080	30/50/59.94/60/120	√	√	√	×
3840×2160	23.98/24/25/29.97/30/60	√	√	√	×
3840×2160	50/59.94	×	×	×	√
4096×2160	23.98/24/25/29.97/50/59.94	×	×	×	√
4096×2160	30/60	×	×	√	√
7680×1080	30/60	×	×	√	×
8192×1080	30/60	×	×	√	×

- √: The connector supports this resolution and frame rate.

- ×: The connector does not support this resolution and frame rate.

- The SDI connectors do not support input resolution settings.

FCC Caution

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

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Technical support
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