VX600

All-in-One Controller

Specifications

Change History

Document Version	Release Date	Description
V1.7.0	2024-07-08	• Added the description of the function limitations. • Updated the rated power consumption information.
V1.6.1	2024-01-29	• Updated the product rear panel picture. • Updated the current information.
V1.6.0	2023-11-09	Updated the certification information.
V1.5.1	2023-08-08	Updated the dimension picture.
V1.5.0	2023-05-06	Updated the rear panel picture.
V1.4.0	2022-12-15	Added a light sensor connector on the rear panel.
V1.3.1	2022-10-24	Optimized the descriptions of the DVI and HDMI connectors. Added descriptions for optical module selection.
V1.3.0	2022-07-30	Updated the rear panel picture.
V1.2.1	2022-02-18	• Updated the certifications. • Added the Notes and Cautions section.
V1.2.0	2021-09-16	Updated the packaging descriptions.
V1.1.0	2021-06-18	Updated the device rear panel silkscreen markings.
V1.0.0	2021-05-30	First release

Introduction

The VX600 is NovaStar's new all-in-one controller that integrates video processing and video control into one box. It features 6 Ethernet ports and supports video controller, fiber converter and Bypass working modes. A VX600 unit can drive up to 3.9 million pixels, with the maximum output width and height up to 10,240 pixels and 8192 pixels respectively, which is ideal for ultra-wide and ultra-high LED screens.

The VX600 is capable of receiving a variety of video signals and processing high-resolution images. In addition, the device features stepless output scaling, low latency, pixel-level brightness and chroma calibration and more, to present you with an excellent image display experience.

What's more, the VX600 can work with NovaStar's supreme software NovaLCT and V-Can to greatly facilitate your in-field operations and control, such as screen configuration, Ethernet port backup settings, layer management, preset management and firmware update.

Thanks to its powerful video processing and sending capabilities and other outstanding features, the VX600 can be widely used in applications such as medium and high-end rental, stage control systems and fine-pitch LED screens.

Certifications

CE, CB, UL, CMIM, EAC, FCC, IC, RCM, UKCA, KC

If the product does not have the relevant certifications required by the countries or regions where it is to be sold, please contact NovaStar to confirm or address the problem. Otherwise, the customer shall be responsible for the legal risks caused or NovaStar has the right to claim compensation.

Features

- Input connectors
    - 1x HDMI 1.3
    - 1x DVI (IN & LOOP)
    - 1x 3G-SDI (IN & LOOP)
    - 1x 10G optical fiber port (OPT1)
- Output connectors
    - 6x Gigabit Ethernet ports

        A single device unit drives up to 3.9 million pixels, with a maximum width of 10,240 pixels and a maximum height of 8192 pixels.
    - 2x Fiber outputs

        OPT 1 copies the output on 6 Ethernet ports.

        OPT 2 copies or backs up the output on 6 Ethernet ports.
    - 1x HDMI 1.3

        For monitoring or video output
- Self-adaptive OPT 1 for either video input or sending card output

    Thanks to the self-adaptive design, OPT 1 can be used as either an input or output connector, depending on its connected device.
- Audio input and output
    - Audio input accompanied with HDMI input source

    - Audio output via a multifunction card
    - Output volume adjustment supported
- Low latency

    Reduce the delay from the input to receiving card to 20 lines when the low latency function and Bypass mode are both enabled.
- 3x layers
    - Adjustable layer size and position
    - Adjustable layer priority
- Output synchronization

    An internal input source or external Genlock can be used as the sync source to ensure the output images of all cascaded units in sync.
- Powerful video processing
    - Based on SuperView III image quality processing technologies to provide stepless output scaling
    - One-click full screen display
    - Free input cropping
- Easy preset saving and loading
    - Up to 10 user-defined presets supported
    - Load a preset by simply pressing one button
- Multiple kinds of hot backup
    - Backup between devices
    - Backup between Ethernet ports
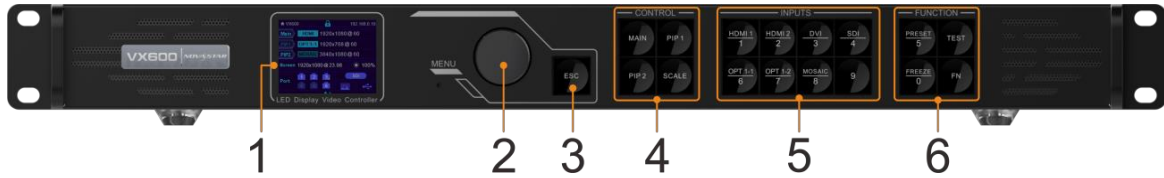   - Backup between input sources

- Mosaic input source supported

  The mosaic source is composed of two sources (2K×1K@60Hz) accessed to the OPT 1.

- Up to 4 units cascaded for image mosaic

- Three working modes

  - Video Controller

  - Fiber Converter

  - Bypass

- All-round color adjustment

  Input source and LED screen color adjustment supported, including brightness, contrast, saturation, hue and Gamma

- Pixel level brightness and chroma calibration

  Work with NovaLCT and NovaStar calibration software to support brightness and chroma calibration on each LED, effectively removing color discrepancies and greatly improving LED display brightness and chroma consistency, allowing for better image quality.

- Multiple operation modes

  Control the device as you wish via V-Can, NovaLCT or device front panel knob and buttons.

Table 1-1 Function limitations

Function	Limitation	Mutually Exclusive Function
Low Latency	All cabinets loaded by Ethernet ports must be aligned at the top of the circumscribed rectangle.	Genlock: When the device works as a video controller, the low latency and Genlock are not exclusive. When the device works in ByPass mode, the two functions cannot be enabled simultaneously.
Genlock	N/A	Low latency: When the device works as a video controller, the low latency and Genlock are not exclusive. When the device works in ByPass mode, the two functions cannot be enabled simultaneously.
Mosaic	• Only the main layer can use the mosaic source. • When the main layer uses the mosaic source, the PIP layers cannot be opened.	PIP layer
Image Mosaic	After the image mosaic function is turned on, the full screen scaling and pixel-to-pixel display of the layer are unavailable.	N/A
Main Layer Transition Effect	• When the PIP layer is opened, the fade effect is unavailable. • When the main layer uses the mosaic source, the fade effect is unavailable.	N/A
ByPass Mode	When the device works as an independent LED display controller, the video processing function is unavailable.	N/A

Appearance

Front Panel

No.	Area	Function
1	LCD screen	Display the device status, menus, submenus and messages.
2	Knob	• Rotate the knob to select a menu item or adjust the parameter value. • Press the knob to confirm the setting or operation.
3	ESC button	Exit the current menu or cancel an operation.
4	Control area	• Open or close a layer (main layer and PIP layers), and show the layer status. Status LEDs: – On (blue): The layer is opened. – Flashing (blue): The layer is being edited. – On (white): The layer is closed. • SCALE: A shortcut button for the full screen function. Press the button to make the layer of the lowest priority fill the entire screen. Status LEDs: – On (blue): Full screen scaling is turned on. – On (white): Full screen scaling is turned off.
5	Input source buttons	Show the input source status and switch the layer input source. Status LEDs: • On (blue): An input source is accessed. • Flashing (blue): The input source is not accessed but used by the layer. • On (white): The input source is not accessed or the input source is abnormal. **Notes:** • When a 4K video source is connected to OPT 1, OPT 1-1 has a signal but OPT 1-2 does not have a signal. • When two 2K video sources are connected to OPT 1, OPT 1-1 and OPT 1-2 both have a 2K signal.
6	Shortcut function	• PRESET: Access the preset settings menu.

No.	Area	Function
	buttons	• TEST: Access the test pattern menu. • Freeze: Freeze the output image. • FN: A customizable button

Note:

Hold down the knob and **ESC** button simultaneously for 3s or longer to lock or unlock the front panel buttons.

Rear Panel

| Input Connectors		
Connector	**Qty**	**Description**
3G-SDI	1	• ST-424 (3G), ST-292 (HD) and ST-259 (SD) standard video inputs supported • Max. input resolution: 1920×1080@60Hz • Deinterlacing processing supported • 3G-SDI loop through output supported • DOES NOT support input resolution and bit depth settings.

HDMI 1.3	2	• Max. input resolution: 1920×1200@60Hz
		• HDCP 1.4 compliant
		• Custom resolutions supported
		  – Max. width: 3840 (3840×648@60Hz)
		  – Max. height: 2784 (800×2784@60Hz)
		  – Forced inputs supported: 600×3840@60Hz
		• Loop through output supported on HDMI 1.3-1
		• DOES NOT support interlaced signal inputs

DVI	1	• Max. input resolution: 1920×1200@60Hz
		• HDCP 1.4 compliant
		• Custom resolutions supported
		  – Max. width: 3840 (3840×648@60Hz)
		  – Max. height: 2784 (800×2784@60Hz)
		  – Forced inputs supported: 600×3840@60Hz
		• Loop through output supported
		• DOES NOT support interlaced signal inputs

Output Connectors		
Connector	**Qty**	**Description**

Ethernet ports	6	Gigabit Ethernet ports
		
		• Max. loading capacity: 3.9 million pixels
		
		• Max. width: 10,240 pixels
		
		• Max. height: 8192 pixels
		
		Ethernet ports 1 and 2 support audio output. When you use a multifunction card to parse the audio, be sure to connect the card to Ethernet port 1 or 2.
		
		Status LEDs:
		
		• The top left one indicates the connection status.
		   – On: The port is well connected.
		   – Flashing: The port is not well connected, such as loose connection.
		   – Off: The port is not connected.
		• The top right one indicates the communication status.
		   – On: The Ethernet cable is short-circuited.
		   – Flashing: The communication is good and data is being transmitted.
		   – Off: No data transmission

HDMI 1.3	1	• Support monitor and video output modes. • The output resolution is adjustable.

Optical Fiber Ports		
Connector	**Qty**	**Description**

OPT	2	• OPT 1: Self-adaptive, either for video input or for output
		   – When the device is connected with a fiber converter, the port is used as an output connector.
		   – When the device is connected with a Pixelhue video processor, the port is used as an input connector.
		   – Max. capacity: 1x 4K×1K@60Hz or 2x 2K×1K@60Hz video inputs
		• OPT 2: For output only, with copy and backup modes
		   OPT 2 copies or backs up the output on 6 Ethernet ports.

		Single mode OPT module description:	OPT fiber selection:
		• Hot swappable	• Model: OS1/OS2
		• Transmission rate: 9.95 Gbit/s to 11.3 Gbit/s	• Transmission mode: Single-mode twin-core
		• Wavelength: 1310 nm	• Cable diameter: 9/125 µm

		• Connector type: LC
		• Insertion loss: ≤ 0.3 dB
		• Return loss: ≥ 45 dB

Multi-mode OPT module description:	OPT fiber selection:
• Hot swappable	• Model: OM3/OM4
• Transmission rate: 9.95 Gbit/s to 11.3 Gbit/s	• Transmission mode: Multi-mode twin-core
• Wavelength: 850 nm	• Cable diameter: 50/125 μm
• Transmission distance: 300 m	• Connector type: LC
	• Insertion loss: ≤ 0.2 dB
	• Return loss: ≥ 45 dB

Control Connectors

Connector	Qty	Description
ETHERNET	1	Connect to the control PC or router. Status LEDs: • The top left one indicates the connection status. − On: The port is well connected. − Flashing: The port is not well connected, such as loose connection. − Off: The port is not connected. • The top right one indicates the communication status. − On: The Ethernet cable is short-circuited. − Flashing: The communication is good and data is being transmitted. − Off: No data transmission
USB	2	• USB 2.0 (Type-B): − Connect to the control PC. − Input connector for device cascading • USB 2.0 (Type-A): Output connector for device cascading
GENLOCK IN-LOOP	1	Connect to an external sync signal. • IN: Accept the sync signal. • LOOP: Loop through the sync signal.
LIGHT SENSOR	1	Connect to a light sensor to collect the ambient brightness, allowing for automatic screen brightness adjustment.

> **Note:**
>
> Only the main layer can use the mosaic source. When the main layer uses the mosaic source, PIP 1 and 2 cannot be opened.
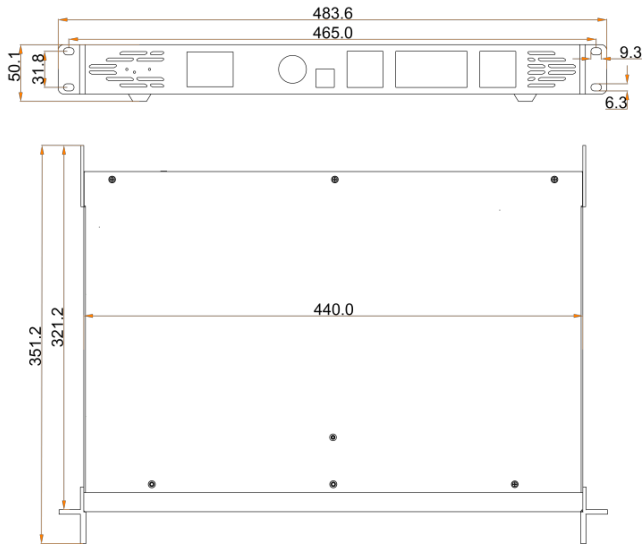
Applications
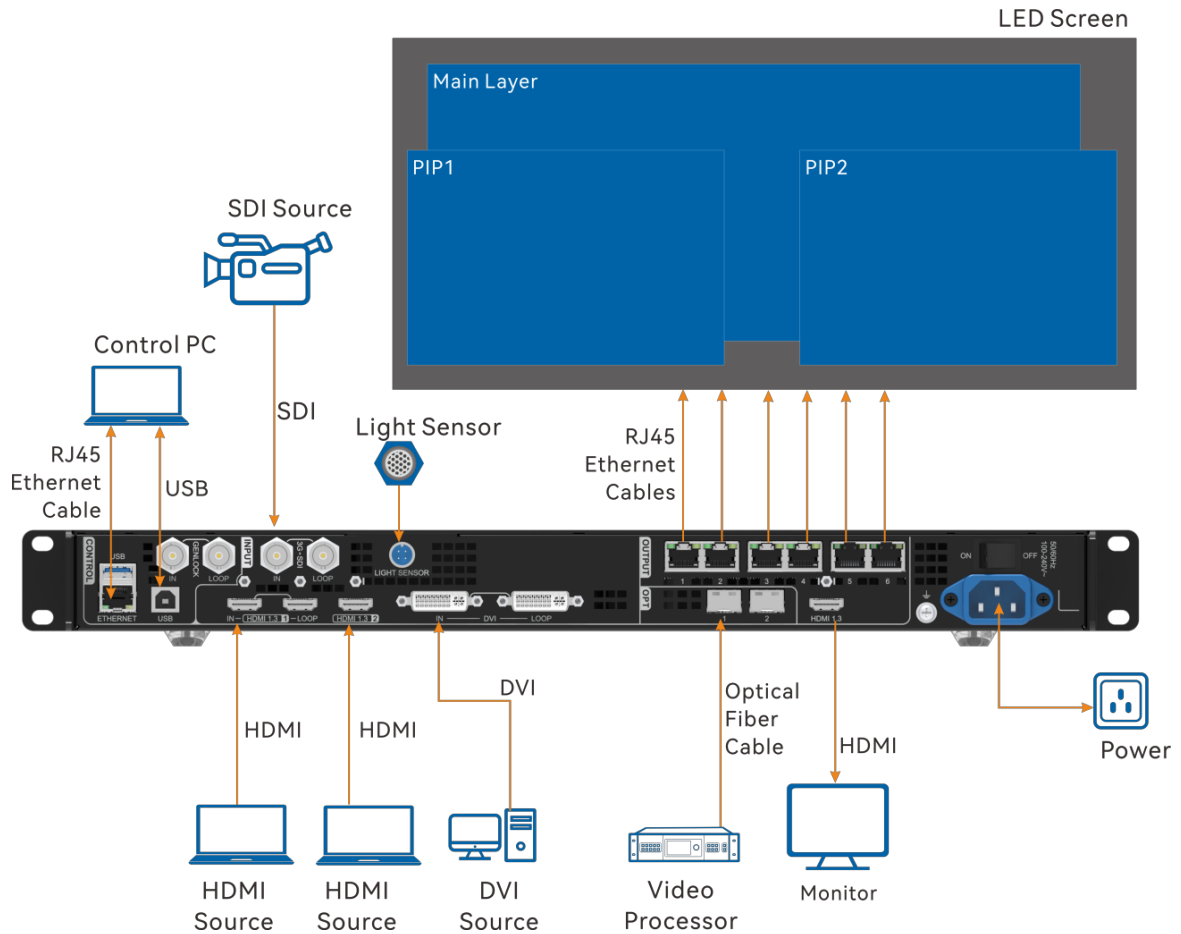
Dimensions

The VX600 provides the **flight case** or **carton** packaging. This section provides the dimensions of the device, flight case and carton, respectively.
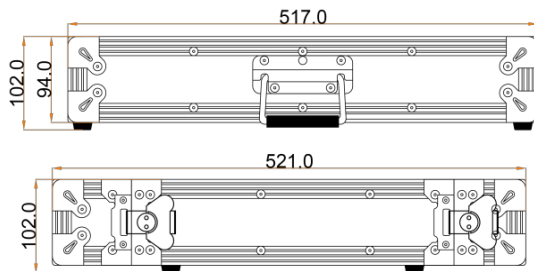
Device

Tolerance: ±0.3   Unit: mm

Packaging

Flight Case

Tolerance: ±5   Unit: mm

Note:

For the detailed flight case drawings, please contact NovaStar's technical support staff.

Carton

Tolerance: ±5   Unit: mm

Specifications

Electrical Parameters	Power connector	100–240V~, 1.5A, 50/60Hz	
	Rated power consumption	35 W	
Operating Environment	Temperature	−10°C to 45°C	
	Humidity	20% RH to 90% RH, non-condensing	
Storage Environment	Temperature	−20°C to +70°C	
	Humidity	10% RH to 95% RH, non-condensing	
Physical Specifications	Dimensions	483.6 mm × 351.2 mm × 50.1 mm	
	Net weight	4 kg	
Packing Information	Accessories	Flight Case	Carton
		1x Power cord	1x Power cord
		1x HDMI to DVI cable	1x HDMI to DVI cable
		1x USB cable	1x USB cable
		1x Ethernet cable	1x Ethernet cable
		1x HDMI cable	1x HDMI cable
		1x Quick Start Guide	1x Quick Start Guide
		1x Certificate of Approval	1x Certificate of Approval
		1x DAC cable	1x Safety Manual
			1x Customer Letter
	Packing size	521.0 mm × 102.0 mm × 517.0 mm	565.0 mm × 175.0 mm × 450.0 mm
	Gross weight	10.4 kg	6.8 kg
Noise Level (typical at 25°C/77°F)	45 dB (A)		

Video Source Features

Input Connectors	Bit Depth		Max. Input Resolution
• HDMI 1.3 • DVI • OPT 1	8-bit	RGB 4:4:4	1920×1200@60Hz (Standard) 3840×648@60Hz (Custom) 600×3840@60Hz (Forced)
		YCbCr 4:4:4	
		YCbCr 4:2:2	
		YCbCr 4:2:0	Not supported
	10-bit		Not supported
	12-bit		Not supported
3G-SDI	• Max. input resolution: 1920×1080@60Hz • DOES NOT support input resolution and bit depth settings. • Supports ST-424 (3G), ST-292 (HD) and ST-259 (SD) standard video inputs.		

Notes and Cautions

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.

Others

This is Class A product. In a domestic environment, this product may cause radio interference in which case the user may be required to take adequate measures.

Statement

Thank you for choosing NovaStar's product. This document is intended to help you understand and use the product. For accuracy and reliability, NovaStar may make improvements and/or changes to this document at any time and without notice. If you experience any problems in use or have any suggestions, please contact us via the contact information given in this document. We will do our best to solve any issues, as well as evaluate and implement any suggestions.

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