VX2000 Pro

All-in-One Controller

Specifications

Change History

Document Version	Release Date	Description
V1.0.0	2024-12-10	First release

Introduction

The VX2000 Pro is an all-in-one controller combining video processing and video control functionalities into a single device. Equipped with 20 Ethernet ports, it supports three working modes: video controller, fiber converter, and ByPass. Capable of managing up to 13 million pixels, the VX2000 Pro can output at a maximum width of 16,384 pixels and a height of 8,192 pixels, making it perfectly suited for controlling ultra-wide and ultra-high LED screens on-site.

The VX2000 Pro boasts powerful video signal reception and processing capabilities, supporting a maximum resolution of 4K×2K@60Hz for video input. It can handle multiple video signal inputs and includes features like 12 layers, output scaling, low latency and pixel-level brightness and chroma calibration. These functions combine to deliver outstanding image display quality.

With various control options available, the VX2000 Pro can be operated via the front panel knob, NovaLCT, Unico and VICP app, providing you with a convenient and effortless control experience.

The VX2000 Pro is housed in an industrial-grade casing, which, combined with its powerful video processing and transmission capabilities, makes it robust and well-suited for complex operational environments. The VX2000 Pro is a perfect fit for medium and high-end rental, stage control systems and fine-pitch LED screens.

Certifications

CE, FCC, IC, RCM, EAC, UL, CB, KC, RoHS

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

Multiple connectors, free input and output

- A comprehensive range of input connectors
  - 1x DP 1.2
  - 2x HDMI 2.0
  - 4x HDMI 1.3
  - 2x 10G optical fiber port (OPT 1 & OPT 2)
  - 1x 12G-SDI (IN & LOOP)
  - 1x USB 3.0 (Play images or videos saved in a USB drive.)
- Output connectors
  - 20x Gigabit Ethernet ports

    A single device supports up to 13 million pixels, delivering a maximum width of 16,384 pixels and a maximum height of 8192 pixels.
  - 4x Fiber outputs

    OPT 1 and OPT 2 send the output on Ethernet ports 1~10 and 11~20 respectively.

    OPT 3 and OPT 4 copy or back up the output on Ethernet ports 1~10 and 11~20 respectively.
  - 1x HDMI 1.3

    For monitoring display.
  - 1x 3D connector

    Directly connect a third-party 3D emitter.
- Self-adaptive OPT 1/2 for either video input or sending card output

  Thanks to the self-adaptive design, OPT 1/2 can be used as either an input or output connector, depending on its connected device.
- HDMI mosaic
  - Supports mosaicing of two HDMI 2.0 inputs or four HDMI 1.3 inputs.
  - Max. mosaicing resolution: 4K×2K
- Fiber input mosaic

The input source connected through OPT 1/2 can be used either independently or combined to create a mosaic input source.

- Audio input and output
  - Audio input accompanied with HDMI and DP sources
  - 3.5 mm independent audio input and output
  - Adjustable output volume
- Free topology

  The maximum resolution of the circumscribed rectangles loaded by the VX2000 Pro is up to 13 million pixels.

  Flexible screen configuration without worrying about unused blank areas when calculating Ethernet port load capacity, allowing for optimal use of port bandwidth.

  *Specific receiving cards are required.
- Low latency

  By enabling the low latency feature and ByPass mode, the device delay can be reduced to 0 frame.
- 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.
- EDID management

  Import and export EDID files.

Diverse display possibilities for flexible configuration

- Easy preset saving and loading
  - Up to 256 user-defined presets supported
  - Load a preset by simply pressing one button.
  - Save, overwrite and delete a preset.
  - Preview the layer layout saved in the preset. (Unico)
- Multiple layer display
  - Supports 12*2K×1K layer resources.

Users can create layers in three different specifications - 4K×2K, 4K×1K, and 2K×1K. These layers will use 4x, 2x, and 1x 2K layer resources respectively, depending on the capacity of the input source connector used to open the layers.

- Adjustable layer size and position
- Adjustable layer priority
- Adjustable aspect ratio

- 3D function
  - Traditional solution: Connect the EMT200 3D emitter to the device's Ethernet port, and use the compatible 3D glasses to enjoy a 3D visual experience.
  - New solution: Connect the third-party 3D emitter to the device 3D connector and use the compatible 3D glasses to enjoy a 3D visual experience.

  Note: Enabling 3D function will halve the device output capacity.
- Personalized image scaling

  Supports three kinds of image scaling modes, including full screen, pixel to pixel and custom.
- Powerful video processing
  - Based on SuperView III image quality processing technologies to provide stepless output scaling.
  - One-click full screen display
  - Free input cropping
- Color adjustment

  Supports output color management, including brightness, saturation, contrast and hue.
- Pixel level brightness and chroma calibration

  Work with NovaLCT and NovaStar calibration software to support brightness and chroma calibration on each LED, which can effectively remove color discrepancies and greatly improve LED display brightness and chroma consistency, allowing for better image quality. The function of displaying image on screen for test is also supported.

USB playback, timesaving and effortless

- Supports USB playback for instant plug-and-play convenience.

Multiple device modes and operation modes, convenient and efficient

- Three working modes

  - Video Controller
  - Fiber Converter
  - Bypass
- Multiple control options
  - Device front panel knob
  - NovaLCT
  - Unico
  - VICP app
  - Web page control

Data saving after power failure and backup design, stable and reliable

- End-to-End backup
  - Backup between devices
  - Backup between input sources
  - Backup between Ethernet ports
  - Backup between optical fiber ports
- Ethernet port backup test

  Test whether the pre-stored images, backup Ethernet ports and devices take effect without plugging and unplugging the Ethernet cables.
- Data saving after power failure

  After a normal shutdown or unexpected power outage, reconnecting the power will automatically restore the previously saved settings on the device.
- 24/7 rigorous stability test under extreme high and low temperatures proved robust stability and reliability.

Table 3-1 Function limitations

Function	Limitation	Mutually Exclusive Function
3D	• Work with the matched 3D glasses. • Enabling 3D function will halve the device output capacity.	Input crop
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,

Function	Limitation	Mutually Exclusive Function
		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.
ByPass Mode	When the device works as an independent LED display controller, the video processing function is unavailable.	N/A

Table 3-2 Latency at the all-in-one controller

Working Mode	Low Latency	Non-Low Latency
Video controller	1~2	2~3
ByPass	0	1
Fiber converter	0	

Appearance

Front Panel

*The picture shown is for illustration purpose only. Actual product may vary due to product enhancement.

No.	Area	Function
1	Input source buttons	• Show the input source status and switch the layer input source. • Button indicators are used to indicate the working status of the input source signal. – White, always on: Input source is not used, and no input signal is accessed. – Blue, fast flashing: Input source is used, but no input signal is accessed. – Blue, slow flashing: Input source is not used, but input signal is accessed. – Blue, always on: Input source is used, and input signal is accessed. • U-DISK: USB playback button Hold down the button to enter the media playback control screen, while press the button to switch the layer input source. Note On the home screen, when layer 1 is opened, you can press the input source button to quickly switch the input source for layer 1.
2	LCD screen	Display the device status, menus, submenus and messages.
3	Knob	• Rotate the knob to select a menu item or adjust the parameter value. • Press the knob to confirm the setting or operation.
4	Back button	Exit the current menu or cancel the operation.
5	Layer buttons	Layer button description: • LAYER 1~3: Open or close a layer, and show the layer status. – On (blue): The layer is opened. – Flashing (blue): The layer is being edited. – On (white): The layer is closed. • When you play media files saved in a USB drive, the layer buttons are used to control the playback. – LAYER-1: This button is used to play or pause the files. – LAYER-2: This button is used to stop the playback. – LAYER-3: This button is used to play the previous file.
		• SCALE: A shortcut button for the full screen function. Press the button to make the layer of the lowest priority fill the entire screen. – On (blue): Full screen scaling is turned on.

No.	Area	Function
		– On (white): Full screen scaling is turned off. • When you play media files saved in a USB drive, this button is used to play the next file.
6	Function buttons	• PRESET: PRESET: Access the preset settings menu. • TEST: Access the test pattern menu. • FREEZE: Freeze/unfreeze the output image. • FN: A custom function button
7	USB	Connect to the PC installed with NovaLCT for device control.
8	U-DISK	1x USB 3.0 • Supports USB playback. – Single-partition USB drive supported – File system: NTFS, FAT32 and exFAT – Max. width and height of media files Width: 3840 pixels, height: 2160 pixels – Picture format: jpg, jpeg, png and bmp – Decoded image resolution: 3840×2160 or lower – Video format: mp4 – Video coding: H.264, H.265 – Max. video frame rate: H.264: 3840×2160@30fps, H.265: 3840×2160@60fps – Audio coding: AAC-LC – Audio sampling rate: 8kHz, 16kHz, 44.1kHz, 48kHz – Transition effect of image switching: Ripple, zoom in, push, flip, blinds, H wipe, V wipe, cube, dissolve, grid, swapping, scroll, fade in/out, twirl, heart trans, curtains, perspective triangle, disappear, bounce, star rotation • Update the firmware via the USB drive. Note The resolution of a USB source is fixed at 3840×2160@60Hz.

Note

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

Rear Panel

*The picture shown is for illustration purpose only. Actual product may vary due to product enhancement.

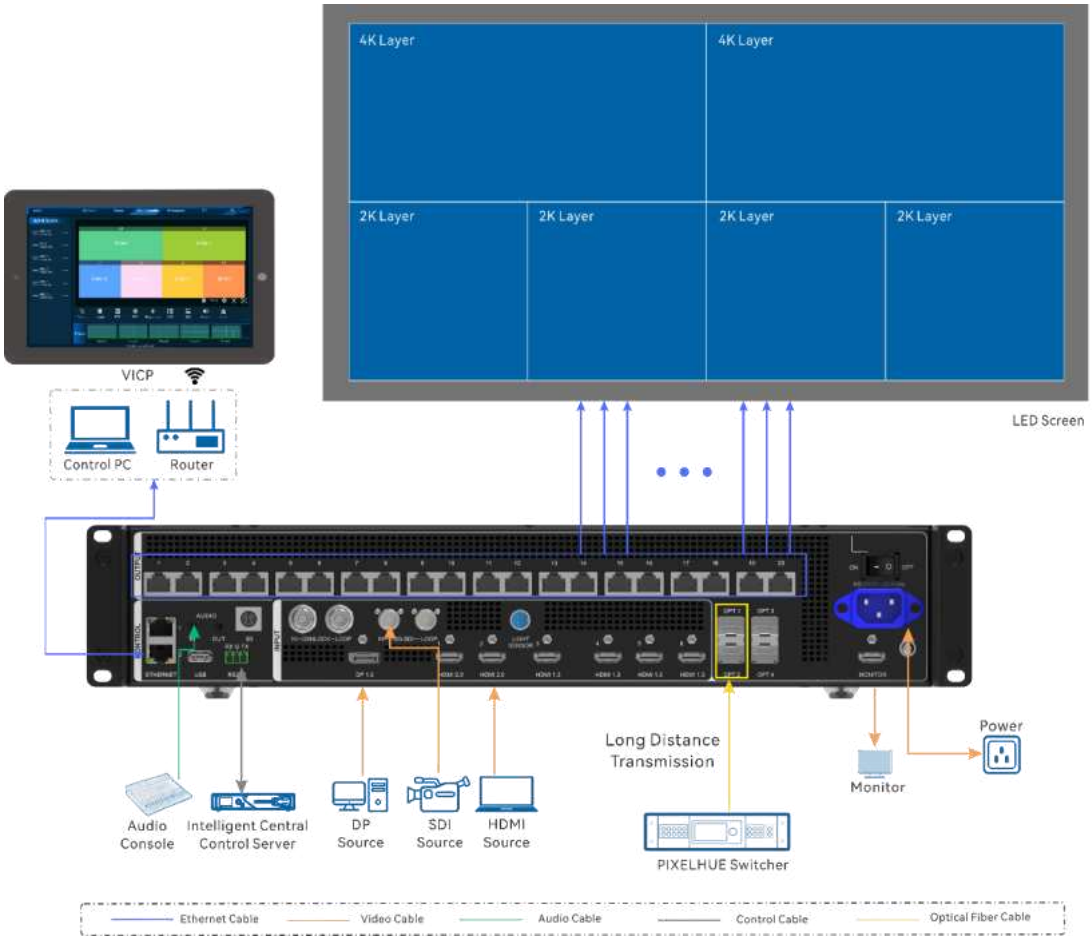
Input Connectors		
Connector	Qty	Description
DP 1.2	1	1x DP 1.2 • Max. input resolution: 4096×2160@60Hz • Supported frame rate: 23.98/24/25/29.97/30/47.95/48/50/56/59.94/60/70/71.93/72/75/85/100/119.88/120/144 • Custom resolutions supported – Max. width: 8192 pixels (8192×1080@60Hz) – Max. height: 8188 pixels (1080×8188@60Hz) • Supports 8-bit/10-bit/12-bit video inputs. • Supported color space/sampling rate: RGB 4:4:4/YCbCr 4:4:4/YCbCr 4:2:2。 • HDCP 1.3 supported • Accompanied audio supported • Does not support interlaced signal inputs.
HDMI 2.0	2	2x HDMI 2.0 • Max. input resolution: 4096×2160@60Hz • Supported frame rate: 23.98/24/25/29.97/30/47.95/48/50/56/59.94/60/70/71.93/72/75/85/100/119.88/120/144 • Compatible with HDMI 1.4 and HDMI 1.3 video inputs • Custom resolutions supported – Max. width: 8192 pixels (8192×1080@60Hz) – Max. height: 8188 pixels (1080×8188@60Hz) • Supports 8-bit/10-bit/12-bit video inputs. • Supported color space/sampling rate: RGB 4:4:4/YCbCr 4:4:4/YCbCr 4:2:2 • HDCP 1.4 and HDCP 2.2 supported

		• Accompanied audio supported • Does not support interlaced signal inputs.
HDMI 1.3	4	4x HDMI 1.3 • Max. input resolution: 1920×1080@60Hz • Supported frame rate: 23.98/24/25/29.97/30/47.95/48/50/56/59.94/60/70/71.93/72/75/85/100/119.88/120 • Custom resolutions supported – Max. width: 2048 pixels: 2048 pixels (2048×1080@60Hz) – Max. height: 2048 pixels 2048pixels (1080×2048@60Hz) • Supports 8-bit video inputs. • HDCP 1.4 supported • Supported color space/sampling rate:: RGB 4:4:4/YCbCr 4:4:4/YCbCr 4:2:2。 • Accompanied audio supported • Does not support interlaced signal inputs.
12G-SDI	1	1x 12G-SDI • ST-2082 (12G), ST-2081 (6G), ST-424 (3G), ST-292 (HD) and ST-259 (SD) standard video inputs supported • Max. input resolution: 4096×2160@60Hz • 12G-SDI loop output supported • Deinterlacing processing supported • Does not support input resolution and bit depth settings.
Output Connectors		
Connector	Qty	Description
Ethernet ports	20	20x Gigabit Ethernet ports • Max. loading capacity: 13 million pixels • Max. width: 16,384 pixels, max. height: 8192 pixels • A single port loading capacity: 650,000 pixels (input bit depth: 8bit) • Supported frame rate: 23.98/24/25/29.97/30/47/48/50/59.94/60/71.93/72/75/85/95/100/119.88/120/144 Hz
OPT	4	4x 10G optical fiber ports • The function of the optical fiber port is different depending on the device working mode. – OPT 1/2: Self-adaptive, either for video input or for output – OPT 3/4: For output

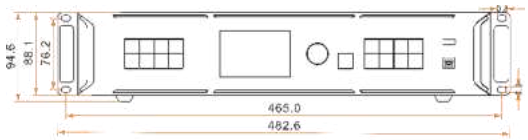
		OPT 3 sends the output on Ethernet ports 1~10. OPT 4 sends the output on Ethernet ports 11~20. • Supports the following three modes: – Input+output: OPT 1/2 for video input, while OPT 3/4 copies or backs up the output on Ethernet ports – Input+loop+output: OPT 1 for video input, OPT 2 for loop output, while OPT 3/4 copies or backs up the output on Ethernet ports – Output: OPT 1/2 sends the output on Ethernet ports, while OPT 3/4 copies or backs up the output on Ethernet ports.
HDMI 1.3	1	For monitoring display Output resolution: 1920×1080@60Hz (fixed)
3D	1	1x 3D connector Connect the 3D emitter and use the compatible 3D glasses to enjoy a 3D visual experience. Note Enabling 3D function will halve the device output capacity.
Audio Connectors		
Connector	Qty	Description
AUDIO	2	1x AUDIO input, 1×AUDIO output • 3.5 mm standard audio input and output connectors • Audio sampling rate up to 48 kHz
Control Connectors		
Connector	Qty	Description
ETHERNET	2	• Connect to the PC installed with Unico for device control. • Input or output connector for device cascading Status LEDs: • The top left one indicates the connection status. – On: The port is properly connected. – Flashing: The port is not properly connected, such as loose connection. – Off: The port is not connected. • The top right one indicates the communication status. – On: No data communication. – Flashing: The communication is good and data is being transmitted. – Off: No data transmission

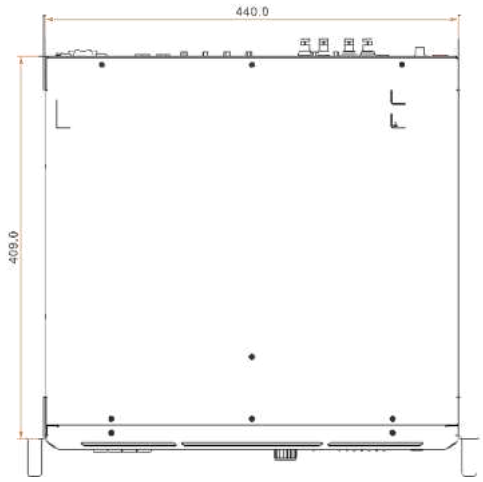
USB	1	1x USB 2.0 • Update the firmware via the USB drive. • Import or export device logs and EDID files.
RS232	1	3-pin connectors • RX: Receive signals. • TX: Send signals. • G: Ground
GENLOCK IN-LOOP	1	Connect to an external sync signal. Accepts bi-level and tri-level signals. • IN: Accept the sync signal. • LOOP: Loop the sync signal.
LIGHT SENSOR	1	Connect to a light sensor to collect the ambient brightness, allowing for automatic screen brightness adjustment.

Applications



Dimensions





Tolerance: ±0.3 Unit: mm

Specifications

Electrical Parameters	Power connector	100–240V~, 50/60Hz
	Rated power consumption	82W
Operating Environment	Temperature	0°C to 50°C
	Humidity	5% RH to 85% RH, non-condensing
Storage Environment	Temperature	–10°C to +60°C
	Humidity	5% RH to 95% RH, non-condensing
Physical Specifications	Dimensions	482.6 mm × 409.0 mm × 94.6 mm
	Net weight	7 kg
	Total weight	10 kg
Packing Information	Carrying Case	625 mm × 560 mm × 195 mm
	Accessories	1x Power cord, 1x Ethernet cable, 1x HDMI cable, 4x

		Silicone dustproof plugs, 1x USB cable, 1x Phoenix connector, 1x Quick Start Guide, 1x Certificate of Approval
	Packing Box	645 mm × 580 mm × 215 mm
Noise Level (typical at 25℃/77℉)	45 dB (A)	

Video Source Features

Input Connectors	Common Resolutions		Color Space	Sampling Rate	Bit Depth	Integer Frame Rates (Hz)
HDMI 2.0/DP 1.2	4K×2K	3840×2160	RGB / YCbCr	4:4:4	12-bit	24/25/30
					10-bit	24/25/30
					8-bit	24/25/30/48/50/60
			YCbCr	4:2:2	8/10/12-bit	
	4K×1K	3840×1080	RGB / YCbCr	4:4:4	12-bit	24/25/30
					10-bit	24/25/30/48/50
					8-bit	24/25/30/48/50/60/72/75
			YCbCr	4:2:2	8/10/12-bit	
	2K×1K	1920×1080	RGB / YCbCr	4:4:4	12-bit	24/25/30
					10-bit	24/25/30/48/50
					8-bit	24/25/30/48/50/60/72/75
			YCbCr	4:2:2	8/10/12-bit	
HDMI 1.3	2K×1K	1920×1080	RGB / YCbCr	4:4:4	12-bit	24/25/30
					10-bit	24/25/30/48/50
					8-bit	24/25/30/48/50/60/72/75
			YCbCr	4:2:2	8/10/12-bit	
12G-SDI	4K×2K	3840×2160	YCbCr	4:2:2	10-bit	24/25/30/48/50/60
	4K×1K	3840×1080	YCbCr	4:2:2	10-bit	
	2K×1K	1920×1080	YCbCr	4:2:2	10-bit	

Note

The table above shows some common resolutions and integer frame rates only. The adaptation to decimal frame rates is also supported, including 23.98/29.97/59.94/71.93/119.88Hz.

Copyright

Copyright © 2024 Xi'an NovaStar Tech Co., Ltd. All Rights Reserved.

No part of this document may be copied, reproduced, extracted or transmitted in any form or by any means without the prior written consent of Xi'an NovaStar Tech Co., Ltd.

Trademark

NOVASTAR is a trademark of Xi'an NovaStar Tech Co., Ltd.

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.

Official website
www.novastar.tech

Technical support
support@novastar.tech