

MX6000 Pro

LED Display Controller



Specifications

Change History

| Document Version | Release Date | Description |
|------------------|--------------|--|
| V1.1.1 | 2023-10-13 | Updated input cards information |
| V1.1.0 | 2023-09-28 | Added information for HDMI 2.1 and 12G-SDI input cards |
| V1.0.1 | 2023-09-08 | <ul style="list-style-type: none"> • Added accessory information • Deleted dynamic booster description |
| V1.0.0 | 2023-08-03 | First release |

Introduction

The MX6000 Pro is a large professional 8K LED display controller from Xi'an NovaStar Tech Co., Ltd. (hereinafter referred to as NovaStar), designed as part of the COEX control system series. Its remarkable features include 12-bit color depth, 360 Hz capability, real-time multi-screen scaling, 0-frame latency, and HDR supportability, providing precise brightness control, true-to-life color fidelity, and an excellent image quality. Its card-based modular design is specifically tailored for future LED displays, allowing for flexible input and output card configurations that are stable and easy to maintain. With a compact 6U size, it supports up to 32x 4K or 8x 8K video inputs, with a maximum load capacity of 141 million pixels, making it ideal for large-screen configurations.

The MX6000 Pro offers a wide range of options with up to six different input cards supporting 8K, 4K, and VoIP. For output, it supports two types of output cards: 4x 10G fiber and 1x 40G fiber. These cards can be configured flexibly to accommodate either 1G or 5G bandwidth for the control system, catering to different requirements. Additionally, it supports seamless backup and automatic switching between devices and cards. In case of any malfunction, it promptly switches over while issuing automatic alerts, ensuring stable output on-site. To further enhance the user experience, it is complemented by the advanced control software, VMP, enabling users to have better control and management capabilities.

The MX6000 Pro offers many advantages such as highly integrated design, premium image quality, powerful performance, tremendous load capacity, and easy control. It is widely used in rental services for large events, xR/VP studios, large fixed installation applications, TV production, e-sports events, exhibition halls, and other application scenarios.

Certifications

CE, UKCA, FCC, IC.

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

Inputs and Outputs

- 8x input card slots, users may choose input cards of the following 6 types:
 - 4K input cards
4x HDMI 2.0, 4x DP1.2, 4x 12G-SDI
 - 8K input cards
2x HDMI 2.1, 2x DP 1.4
 - VoIP cards (Video over IP)
1x SMPTE ST 2110 (25G)
- Authentic 12bit video input
12-bit/10-bit/8-bit supported
- 8x output card slots, users may choose output cards of the following 2 types:
 - CX_1x40G_Fiber output card
Work with CVT8-5G fiber converter to achieve 5G transmission (capable of loading 2,600,000 pixels in a single Ethernet cable).
 - MX_4x10G_Fiber output card
Work with CVT10 fiber converter to achieve 1G transmission (capable of loading 650,000 pixels in a single Ethernet cable).
- Supports real-time previewing and monitoring of the video source input and LED screen display status.
- Supports frame rates of up to 360 Hz (max frame rate is decided by the screen's hardware configuration).

Screen Management

- **Card-based Screen**
To cope with multi-screen application scenarios with ease and to achieve flexible configuration, this feature allows user to configure LED screen based on output cards.
- **Synchronized Output Splicing**
With the help of frame synchronization, the output images on the same screen are completely synchronized. This enables the output to deliver smooth playback and perfect image without issues such as picture stutter, frame loss, image tearing, and noticeable cut lines.
- **No rectangle restriction**
No rectangle restriction for irregular screens. This means when calculating resolutions, blank pixels do not count towards the total capacity. The used load capacity of Ethernet ports is the sum of the resolutions of all cabinets with load.
- **Preset**
For optimal display in various scenarios, users can adjust display parameters such as layers, brightness, color temperature, and gamma ahead of time and save them as presets. Users can save up to 128 customizable presets which can be easily applied or switched with just one click.

Advanced Features

- **Multi-Layer**
A single output card supports up to 4x layers or the entire device supports up to 32x 4K layers.
Each layer supports 4 scaling mode: custom, pixel to pixel, snap to canvas, and fill screen.
- **Layer Roaming**
Supports cross-card output of layers within the screen.
- **Color Replacement**
Replace any color in the image with another color without affecting other colors. It is recommended to choose color with higher saturation for replacement to achieve better outcome.
- **14Ch Color Correction**
Supports precise adjustment to the hue, saturation, and brightness of black and white, and the 12 standard colors derived from the three primary colors (RGB).
- **Color Curves**
Supports adjustment to the RGBW mapping curves of the screen.
- **3D LUT**
Use the 3D LUT file (.cube) with an accuracy of 17x17x17 to adjust the colors of the video source.
- **Full-Grayscale Calibration**
Work with NovaStar's high-precision calibration system and the C3200 scientific grade camera to generate unique calibration coefficients for each grayscale, ensuring uniformity of each grayscale and dramatically improving the image quality.
- **3D**
Work with the receiving card that supports 3D function, the 3D emitter and 3D glasses to bring a fascinating and immersive 3D viewing experience.
- **HDR**
 - Support HDR10 and comply with the SMPTE ST 2084 and SMPTE ST 2086 standards.
 - Support HLG.
- **Latency**
 - Different layers can have different latency settings. The minimum processing latency of the LED display controller is reduced to 0-frame (less than 1 ms), achieving low latency without reducing the load.
 - Support additional latency. Users can choose to add zero to two frames of latency.
- **Frame Rate Adaptive**
Adjusts the display effects for varying frame rates range from 23.98 Hz to 360 Hz, ensuring that the max brightness and color temperature remain consistent at different frame rates.
- **Shutter Fit**
Automatically adjusts the driver IC parameters according to the camera shutter angle to fix problems of black lines, grayscale addition, and grayscale loss during camera shooting in xR scenarios.
- **Frame Multiplication**
 - Frame interpolation: Outputs images that are captured from multiple shooting angles with different backgrounds at the same time. Solid green backgrounds can also be inserted to allow for easy post-production adjustments.
 - Frequency multiplication: Supports high frame rates of up to 360 Hz. This feature is to accommodate multi-angle camera shooting to improve the screen performance under the camera.

Device Controls

- LCD touch panel
Equipped with a 7-inch touch screen, which is responsive, sturdy and durable. Users can easily give commands with a gentle touch, making the operation effortless.
- VMP software control
The device can be connected to the VMP software to provide easy and convenient operations and smart device management.
- Supports the SNMP and Art-Net protocols.
- Cascading control via Ethernet
The Gigabit Ethernet control ports support TCP/IP protocol and star topology. No switch or router is needed to deploy multiple devices on the same LAN via device cascading as the network switching function is already built in.
- Automated system monitoring and alarm
Hardware monitoring capabilities that encompass fan speed, module temperatures, voltage levels, and operational status. It automatically detects and reports any device faults or alarm information, ensuring the stable and secure operation of the LED display system.
- Device backup
 - Hot backup between devices.
 - Hot backup between output cards.
 - Hot backup between Ethernet ports.
- Dual power supply backup to ensure the system stability.

Table 1-1 Function Limitations

| Function | Limitation | |
|----------------------------|--|---|
| | 1G solution (MX_4x10G_Fiber output card) | 5G solution (CX_1x40G_Fiber output card) |
| Frame Rate Adaptive | To use this function, it is required to work with the A10s Pro receiving card and currently supported driver ICs include: ICND2055, ICND2065, ICND2069, MBI5253A, MBI5253B, MBI5754B, MBI5264, MBI5264B, MBI5264C, and CFD555A. In addition, the .ncp file generated by the Cabinet Tool from NovaStar must be used. | Currently supported driver ICs include: ICND2055, ICND2065, ICND2069, ICND2076, MBI5264, MBI5264B, and MBI5264C. In addition, the .ncp file generated by the Cabinet Tool from NovaStar must be used. |
| Full-Grayscale Calibration | It is required to work with the A10s Pro receiving card and users need to use a C3200 camera to perform the full-grayscale calibration. | It is required to work with the CA50E, CA50C, or XA50 receiving cards and users need to use a C3200 camera to perform the full-grayscale calibration. |
| 3D | To use the 3D function, specified 3D glasses are needed. For details, please contact NovaStar technical support. | |
| HDR | Supports automatic parsing and manual setting of HDR. For 12G-SDI, DP1.2, and non-standard HDR sources, they can only be set to HDR properties manually. | |

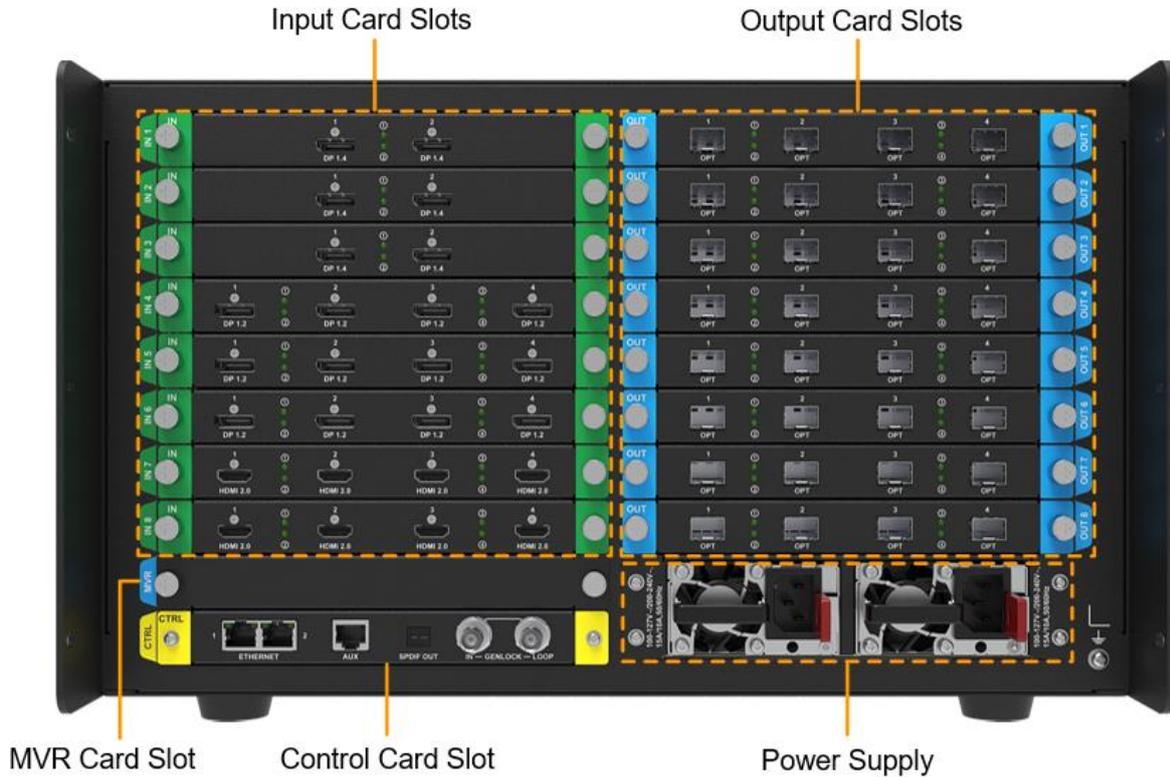
Appearance

Front Panel



| Name | Function |
|-------------------|--|
| Running indicator | <ul style="list-style-type: none"> • Solid red: Standby • Solid blue: The device is being powered on. • Solid green: The device is running normally. • Flashing red: The device is running abnormally. |
| Standby button | <ul style="list-style-type: none"> • Press the button to power on or power off the device. • Hold down the button for 5s to 10s to restart the device. |
| USB 2.0 | <ul style="list-style-type: none"> • Connect to a USB drive only to export the device diagnostic result. • Only the NTFS and FAT32 file systems are supported. Others are not supported. |
| IPS touchscreen | A 7-inch screen that is for displaying the device status, setting parameters, and sending commands. |
| Knob | <ul style="list-style-type: none"> • On the home screen, press the knob to enter the main menu screen. • On the main menu screen, rotate the knob to select a menu item or adjust the parameter value. Press the knob to confirm the operation. • Hold down the knob and BACK button simultaneously for 5s or longer to lock or unlock the buttons and screen. |
| BACK | Go back to the previous menu or cancel the current operation. |

Rear Panel



All product pictures shown in this document are for illustration purpose only. Actual product may vary.

Note:

Markings on the rear panel card slot:

- The card slot marked with "IN x" only supports the installation of input cards, where x is the slot number. For example, IN 1 indicates the first input card slot.
- The card slot marked with "OUT x" only supports the installation of output cards, where x is the slot number. For example, OUT 6 indicates the sixth output card slot.
- The card slot marked with "MVR" only supports the installation of MVR output card.
- The card slot marked with "CTRL" only supports the installation of control cards.

| Input Card | | | |
|--------------------------|-----|---------------------------|--|
| MX_4xHDMI 2.0 input card | | | |
| | | | |
| Type | Qty | Description | |
| HDMI 2.0 | 4 | Resolution | Max resolution: 4096×2160@60Hz or 8192×1080@60Hz (Forced) Min resolution: 800×600@60Hz |
| | | Max width/height (Forced) | Max width: 8192 pixels (8192×1080@60Hz) Max height: 7680 pixels (1080×7680@60Hz) |
| | | Frame rate | 23.98 / 24 / 25 / 29.97 / 30 / 47.95 / 48 / 50 / 59.94 / 60 / 71.93 / 72 / 75 / 100 / 119.88 / 120 / 143.86 / 144 / 240 Hz |
| | | HDR | Support HDR10 and comply with the SMPTE ST 2084 and SMPTE ST 2086 standards. Support HLG. |

| | | | |
|--|--|--------------------------|--|
| | | EDID management | Support standard resolutions, up to 3840×2160@60Hz. Support custom input resolutions. |
| | | HDCP | HDCP 2.2 compliant, backwards compatible with HDCP 1.4/HDCP 1.3. |
| | | Interlaced signal inputs | Not supported. |

MX_2xHDMI 2.1 input card

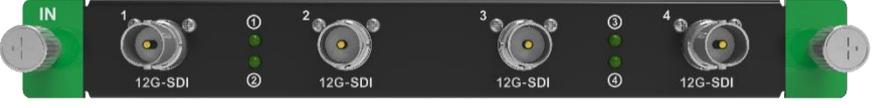


| Type | Qty | Description | |
|----------|-----|---------------------------|--|
| HDMI 2.1 | 2 | Resolution | Max resolution: 8192×4320@30Hz (Forced) Min resolution: 800×600@60Hz |
| | | Max width/height (Forced) | Max width: 8192 pixels (8192×4320@30Hz) Max height: 8192 pixels (4320×8192@30Hz) |
| | | Frame rates | 23.98 / 24 / 25 / 29.97 / 30 / 47.95 / 48 / 50 / 59.94 / 60 / 71.93 / 72 / 75 / 100 / 119.88 / 120 / 143.86 / 144 / 240 Hz |
| | | HDR | Support HDR10 and comply with the SMPTE ST 2084 and SMPTE ST 2086 standards. Support HLG. |
| | | EDID management | Support standard resolutions, up to 3840×2160@60Hz. Support custom input resolutions. |
| | | HDCP | HDCP 2.3 compliant, backwards compatible with HDCP 2.2/HDCP 1.4/HDCP 1.3. |
| | | Interlaced signal inputs | Not supported |

MX_4xDP 1.2 input card



| Type | Qty | Description | |
|--------|-----|---------------------------|--|
| DP 1.2 | 4 | Resolution | Max resolution: 4096×2160@60Hz or 8192×1080@60Hz (Forced) Min resolution: 800×600@60Hz |
| | | Max width/height (Forced) | Max width: 8192 pixels (8192×1080@60Hz) Max height: 8192 pixels (1080×8192@60Hz) |
| | | Frame rate | 23.98 / 24 / 25 / 29.97 / 30 / 47.95 / 48 / 50 / 59.94 / 60 / 71.93 / 72 / 75 / 100 / 119.88 / 120 / 143.86 / 144 / 240 Hz |
| | | HDR | Support HDR10 and comply with the SMPTE ST 2084 and SMPTE ST 2086 standards. Support HLG. |
| | | EDID management | Support standard resolutions, up to 3840×2160@60Hz. Support custom input resolutions. |
| | | HDCP | HDCP 1.3 compliant |
| | | Interlaced signal inputs | Not supported. |

| | | | |
|--|-----|---|--|
| MX_2xDP 1.4 input card | | | |
|  | | | |
| DP1.4 | 2 | Resolution | Max resolution: 7680x4320@30Hz (Forced) Min resolution: 1920x1080@60Hz |
| | | Max width/height (Forced) | Max width: 7680 pixels (7680x4320@30Hz) Max height: 7680 pixels (4320x7680@30Hz) |
| | | Frame rate | 23.98 / 24 / 25 / 29.97 / 30 / 47.95 / 48 / 50 / 59.94 / 60 / 71.93 / 72 / 75 / 100 / 119.88 / 120 / 143.86 / 144 / 240 Hz |
| | | HDR | Support HDR10 and comply with the SMPTE ST 2084 and SMPTE ST 2086 standards. Support HLG. |
| | | EDID management | Support standard resolutions, up to 3840x2160@60Hz. Support custom input resolutions. |
| | | HDCP | Support HDCP 2.3, backwards compatible with HDCP 2.2/HDCP 1.4/HDCP 1.3. |
| | | Interlaced signal inputs | Not supported. |
| MX_4x12G-SDI input card | | | |
|  | | | |
| Type | Qty | Description | |
| 12G-SDI | 4 | Standards | Support ST-2082 (12G), ST-2081 (6G), ST-424 (3G) and ST-292 (HD) standard video inputs. Support 3G-Level A/Level B (DS mode). |
| | | Resolution | Max resolution: 4096x2160@60Hz |
| | | Frame rate | Support frame rates up to 60Hz. |
| | | HDR | Support HDR10 and comply with the SMPTE ST 2084 and SMPTE ST 2086 standards. Support HLG. |
| | | Interlaced signal inputs | Support converting interlaced signals to progressive signals. |
| | | Others | Belden 12G SDI standard cables are recommended. Cables up to 50 meters are supported. |
| Output Card | | | |
| MX_4x10G_Fiber output card | | | |
|  | | | |
| Type | Qty | Description | |
| OPT 1-4 | 4 | 10G optical port <ul style="list-style-type: none"> Support single-mode and multi-mode optical fiber modules, with a maximum transmission distance of 10 km. | |

| | | <ul style="list-style-type: none"> • A single optical port has the same load capacity of 10x 1G Ethernet ports, and a single card supports up to 40x Ethernet port outputs. • The maximum load of a single 1G Ethernet port is as follows. Please refer to Ethernet Port Load Capacity for more details: <ul style="list-style-type: none"> – 8bit@60Hz: 659,722 pixels – 10bit@60Hz: 494,791 pixels (available only with the A10s Pro receiving card) – 10/12bit@60Hz: 329,861 pixels |
|---|-----|---|
| MX_1x40G_Fiber output card | | |
| Type | Qty | Description |
| OPT 1 | 1 | <p>40G optical port</p> <ul style="list-style-type: none"> • Support single-mode and multi-mode optical fiber modules, with a maximum transmission distance of 10 km. • A single optical port/A single card can load up to 8x 5G Ethernet ports. • The maximum load of a single 5G Ethernet port is as follows. Please refer to Ethernet Port Load Capacity for more details: <ul style="list-style-type: none"> – 8bit@60Hz: 2,592,000 pixels – 10bit@60Hz: 2,073,000 pixels – 12bit@60Hz: 1,728,000 pixels |
| Control Card | | |
|  | | |
| Type | Qty | Description |
| ETHERNET | 2 | <p>Gigabit Ethernet control ports. Support TCP/IP protocol and star topology. They have the same functions without priority and order, and can be connected to VMP software. No switch or router is needed to deploy multiple devices on the same LAN via device cascading as the network switching function is already built in. Up to 20 MX6000 Pro can be cascaded.</p> |
| GENLOCK | 1 | <p>A pair of Genlock signal connectors. Support Bi-Level and Tri-Level.</p> <ul style="list-style-type: none"> • IN: Accept the sync signal. • LOOP: Loop the sync signal. <p>For standard Genlock signal generators, up to 20 MX6000 Pro can be cascaded.</p> |
| AUX | 1 | An auxiliary connector that connects to the central control device (RS232). (Reserved) |
| SPDIF | 1 | A digital audio output. (Reserved) |
| MX_MVR output card | | |
| Power | | |
| Type | Qty | Description |
| 100-127V~/200-240V~, 15A/10A, 50/60Hz | 2 | AC power input connector and switch |

Applications

Solution Build

Based on the installed output cards (MX_4x10G_Fiber output card/CX_1x40G_Fiber output card), users can build 1G/5G solutions with different models of fiber converters and receiving cards. 1G/5G refers to the output bandwidth of a single Ethernet port. For more detailed information, please refer to [Ethernet Port Load Capacity](#).

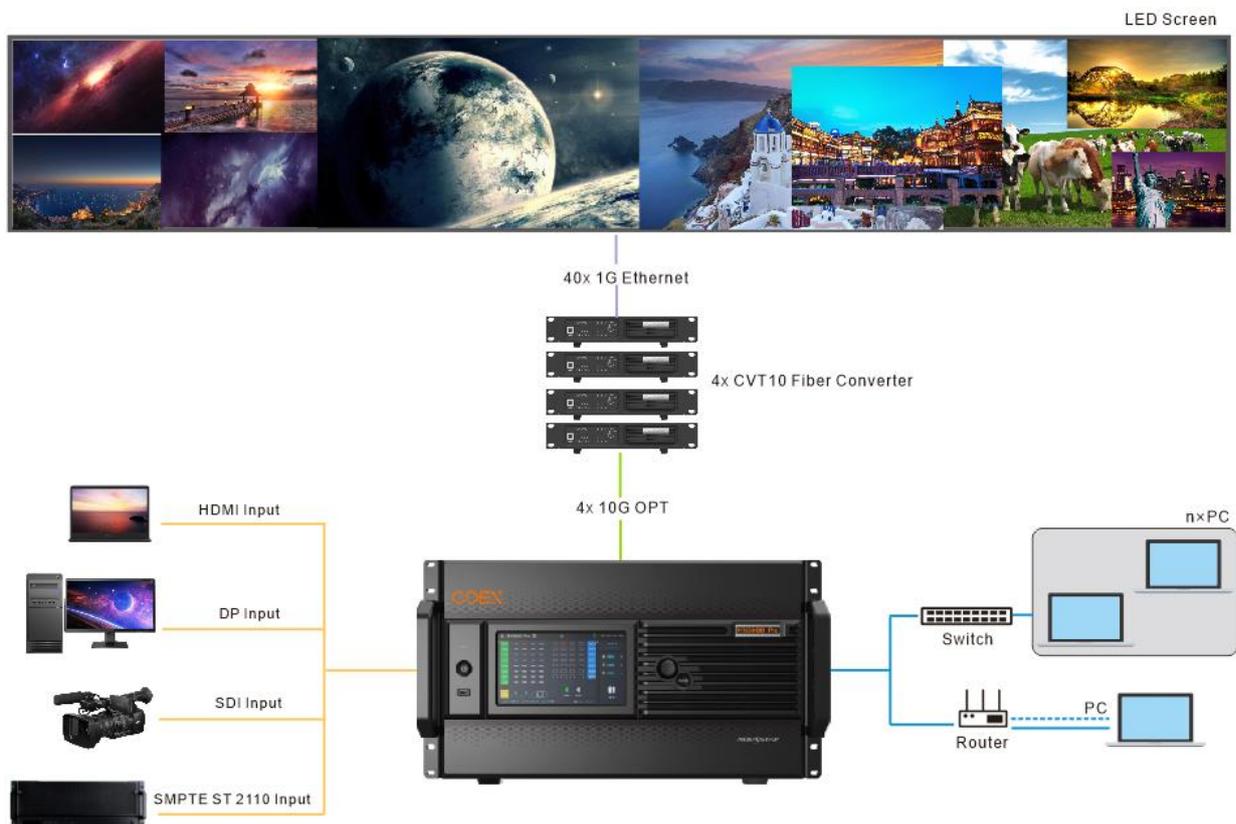
Table 1-2 COEX system build

| Solution | Output Card | Fiber Converter | Receiving Card |
|-------------|----------------------------|------------------|---|
| 1G Solution | MX_4x10G_Fiber output card | CVT10, CVT10 Pro | Armor series 1G receiving cards such as A10s Pro, A10 Plus-N, A8s-N, A7s Plus, A5s Plus |
| 5G Solution | CX_1x40G_Fiber output card | CVT8-5G | 5G receiving cards such as CA50E, CA50C, XA50 |

Note:

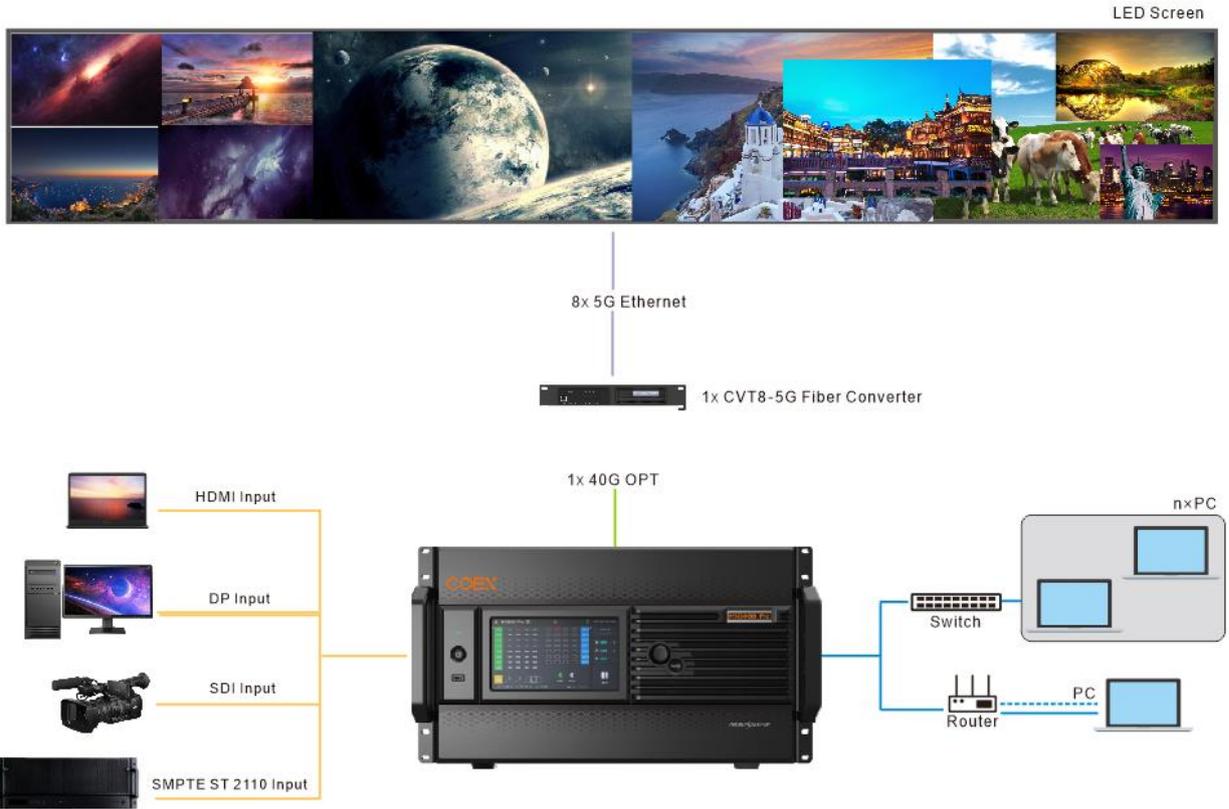
It would not be possible to build both 1G and 5G solutions with an MX6000 Pro at the same time.

1G Solution (MX_4x10G_Fiber Output Card)



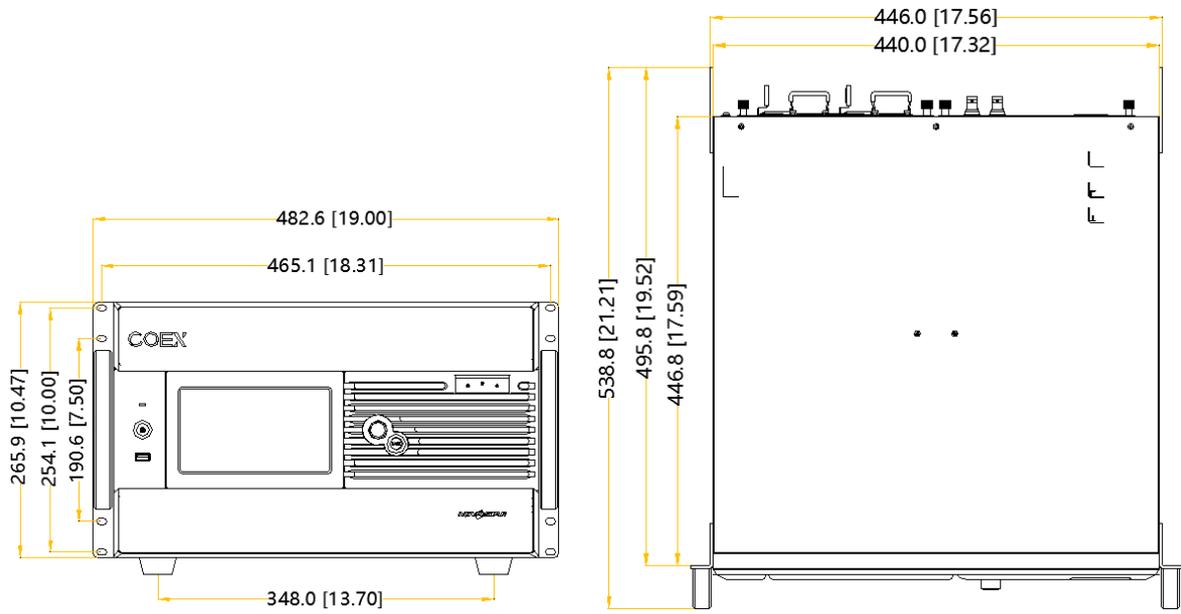
This diagram is an example of four input cards and one MX_4x10G_Fiber output card installed on an MX6000 Pro. The actual application may vary.

5G Solution (CX_1x40G_Fiber Output Card)



This diagram is an example of four input cards and one CX_1x40G_Fiber output card installed on an MX6000 Pro. The actual application may vary.

Dimensions



Tolerance: ±0.3 Unit: mm

Specifications

| | | |
|------------------------------------|-------------------|---|
| Electrical Specifications | Power supply | 100-127V~/200-240V~,15A/10A,50/60Hz |
| | Power Consumption | 625 W |
| Operating Environment | Temperature | -10°C to +45°C |
| | Humidity | 0% RH to 80% RH, non-condensing |
| Storage Environment | Temperature | -10°C to +60°C |
| | Humidity | 0% RH to 90% RH, non-condensing |
| Physical Specifications | Dimensions | 482.6 mm × 282.9 mm × 538.8 mm (Height includes foot pads) |
| | Net weight | 31 kg (without cards) |
| Packing Information | Packing box | 725.0mm × 635.0mm × 410.0mm, kraft paper box |
| | Accessories | 1x Power cord, 1x Ethernet cable 1x Quick Start Guide, 1x Customer Letter, 1x Safety Manual, 1x Certificate of Approval |
| IP Rating | | IP20 Please prevent the product from water intrusion and do not wet or wash the product. |
| Noise Level (typical at 25°C/77°F) | | 53 dB (A) |

The amount of power consumption may vary depending on various factors such as product settings, usage, and environment.

Video Source Specifications

| Input | Bit Depth | Sampling Format | Max Input Resolution |
|----------|------------------|-----------------|----------------------|
| HDMI 2.0 | 8bit | RGB 4:4:4 | 4096×2160@60Hz |
| | | YCbCr 4:4:4 | |
| | | YCbCr 4:2:2 | |
| | 10bit | RGB 4:4:4 | 4096×2160@48Hz |
| | | YCbCr 4:4:4 | |
| | | YCbCr 4:2:2 | |
| | 12bit | RGB 4:4:4 | 4096×2160@30Hz |
| | | YCbCr 4:4:4 | |
| | | YCbCr 4:2:2 | |
| HDMI 2.1 | 8bit/10bit/12bit | RGB4:4:4 | 8192×4320@30Hz |
| | | YCbCr4:4:4 | |
| | | YCbCr4:2:2 | |
| DP 1.2 | 8bit | RGB 4:4:4 | 4096×2160@60Hz |
| | | YCbCr 4:4:4 | |
| | | YCbCr 4:2:2 | |
| | 10bit | RGB 4:4:4 | |

| Input | Bit Depth | Sampling Format | Max Input Resolution |
|------------|-------------|-----------------|----------------------|
| | | YCbCr 4:4:4 | 4096×2160@60Hz |
| | | YCbCr 4:2:2 | |
| | | 12bit | RGB 4:4:4 |
| | YCbCr 4:4:4 | | |
| | YCbCr 4:2:2 | | 4096×2160@60Hz |
| | DP 1.4 | 8bit | RGB4:4:4 |
| YCbCr4:4:4 | | | |
| YCbCr4:2:2 | | | |
| 10bit | | RGB4:4:4 | 7680×4320@24Hz |
| | | YCbCr4:4:4 | |
| | | YCbCr4:2:2 | 7680×4320@30Hz |
| 12bit | | RGB4:4:4 | 5120×2160@60Hz |
| | | YCbCr4:4:4 | |
| | | YCbCr4:2:2 | 7680×4320@30Hz |
| 12G-SDI | 10bit | YCbCr4:2:2 | 4096×2160@60Hz |

Ethernet Port Load Capacity

1G Solution (MX_4x10G_Fiber Output Card)

[When Working with the A10s Pro Receiving Card](#)

When working with the A10s Pro receiving card, the formula of calculating the load capacity per Ethernet port and the detailed parameters are as follows:

- 8bit: Load capacity × 24 × Frame rate < 1000 × 1000 × 1000 × 0.95
- 10bit: Load capacity × 32 × Frame rate < 1000 × 1000 × 1000 × 0.95
- 12bit: Load capacity × 48 × Frame rate < 1000 × 1000 × 1000 × 0.95

| Max Load Capacity per Ethernet Port (Pixels) | | | |
|--|-----------|-----------|---------|
| Frame Rate / Bit Depth | 8bit | 10bit | 12bit |
| 24 Hz | 1,649,306 | 1,236,979 | 824,653 |
| 25 Hz | 1,583,333 | 1,187,500 | 791,667 |
| 30 Hz | 1,319,444 | 989,583 | 659,722 |
| 50 Hz | 791,667 | 593,750 | 395,833 |
| 60 Hz | 659,722 | 494,792 | 329,861 |
| 120 Hz | 329,861 | 247,396 | 164,931 |
| 144 Hz | 274,884 | 206,163 | 137,442 |
| 240 Hz | 164,931 | 123,698 | 82,465 |

[When Working with Other Armor Series Receiving Cards](#)

When working with other receiving cards, the formula of calculating the load capacity per Ethernet port and the detailed parameters are as follows:

- 8bit: Load capacity × 24 × Frame rate < 1000 × 1000 × 1000 × 0.95
- 10bit: Load capacity × 48 × Frame rate < 1000 × 1000 × 1000 × 0.95

- 12bit: Load capacity $\times 48 \times \text{Frame rate} < 1000 \times 1000 \times 1000 \times 0.95$

| Max Load Capacity per Ethernet Port (Pixels) | | | |
|--|-----------|---------|---------|
| Frame Rate / Bit Depth | 8bit | 10bit | 12bit |
| 24 Hz | 1,649,306 | 824,653 | 824,653 |
| 25 Hz | 1,583,333 | 791,667 | 791,667 |
| 30 Hz | 1,319,444 | 659,722 | 659,722 |
| 50 Hz | 791,667 | 395,833 | 395,833 |
| 60 Hz | 659,722 | 329,861 | 329,861 |
| 120 Hz | 329,861 | 164,931 | 164,931 |
| 144 Hz | 274,884 | 137,442 | 137,442 |
| 240 Hz | 164,931 | 82,465 | 82,465 |

5G Solution (CX_1x40G_Fiber Output Card)

When working with the CA50E, CA50C, or XA50 receiving cards, the formula of calculating the load capacity per Ethernet port and the detailed parameters are as follows:

- 8bit: Load capacity $\times 24 \times \text{Frame rate} < 5G \times 0.75$
- 10bit: Load capacity $\times 30 \times \text{Frame rate} < 5G \times 0.95$
- 12bit: Load capacity $\times 36 \times \text{Frame rate} < 5G \times 0.95$

| Max Load Capacity per Ethernet Port (Pixels) | | | |
|--|-----------|-----------|-----------|
| Frame Rate / Bit Depth | 8bit | 10bit | 12bit |
| 24 Hz | 6,480,000 | 5,182,500 | 4,320,000 |
| 25 Hz | 6,220,800 | 4,975,200 | 4,147,200 |
| 30 Hz | 5,184,000 | 4,146,000 | 3,456,000 |
| 50 Hz | 3,110,400 | 2,487,600 | 2,073,600 |
| 60 Hz | 2,592,000 | 2,073,000 | 1,728,000 |
| 120 Hz | 1,296,000 | 1,036,500 | 864,000 |
| 144 Hz | 1,080,864 | 864,441 | 720,576 |
| 240 Hz | 648,000 | 518,250 | 432,000 |

Notes and Cautions

Notes for Battery

- The battery is not intended to be replaced.
- Disposal of a battery into fire or a hot oven, or mechanically crushing or cutting of a battery can result in an explosion.
- Leaving a battery in an extremely high temperature surrounding environment can result in an explosion or the leakage of flammable liquid or gas.
- A battery subjected to extremely low air pressure may result in an explosion or the leakage of flammable liquid or gas.

Notes for Installation

The product can be mounted in a standard 19-inch rack capable of withstanding at least four times the total weight of the mounted equipment. Eight M5 screws are required to fix the product.

- Elevated Operating Ambient - If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient. Therefore, consideration should be given to installing the equipment in an environment compatible with the maximum ambient temperature (Tma) specified by the manufacturer.
- Reduced Air Flow – Installation of the equipment in a rack should be such that the amount of air flow required for safe operation of the equipment is not compromised.
- Mechanical Loading – Mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to uneven mechanical loading.
- Circuit Overloading – Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of the circuits might have on overcurrent protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.
- Reliable Earthing – Reliable earthing of rack-mounted equipment should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuit (e.g. use of power strips).

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 product can only be placed horizontally. Do not mount vertically or upside-down.
- 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.

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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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