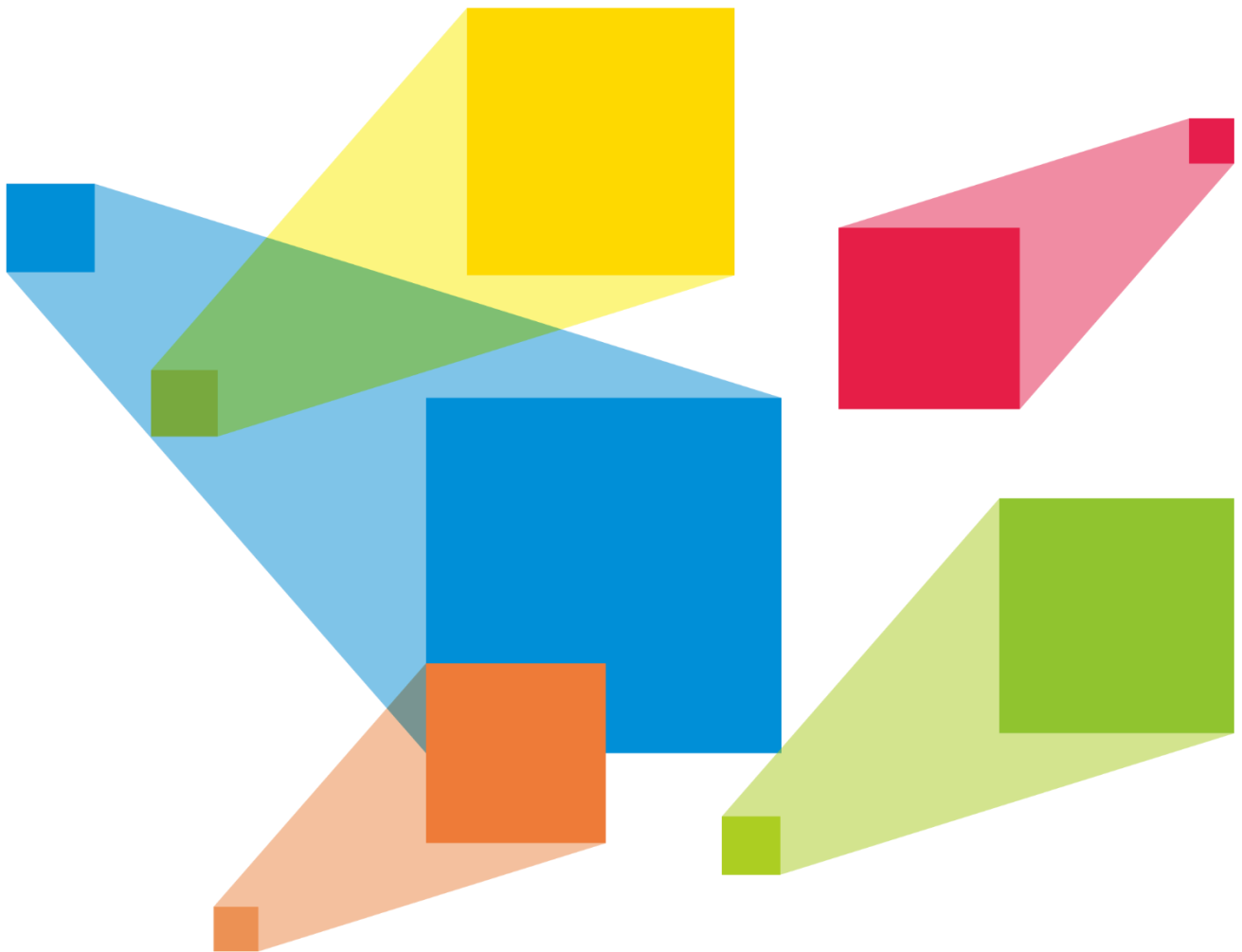# MG Series

4K Distributed Processors

AV over IP System

Specifications

Introduction

The MG series AV over IP system is a digitized distributed image processing and control system based on network. In the system, the encoders collect multiple audio and video signal sources scattered in different locations and transcode them into IP streams. The decoders receive the streams and display the corresponding information on the display devices to realize network sharing of audio and videos.

Adopting the H.264 and H.265 transmission protocols, the MG series system utilizes low network bandwidth and provides low-latency and high quality audio and video experience. Breaking the limitations of the traditional centralized deployment, the system is suitable for the decentralized deployment of audio and video interconnection applications across regions and networks.

The MG series system integrates long-distance digital audio and video transmission, signal switching, KVM operator and screen management. Working with the distributed visual management system and distributed KVM collaboration system, the MG series system can be applied in various visual application scenarios, such as control rooms, large conference communication centers, monitoring centers, data centers and dispatch centers.

Certifications

CCC

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.

Key Features

High Image Quality, Low Latency

Adopting NovaStar's high-performance image processing technologies, the system has the characteristics of low bandwidth, low latency, high definition and high stability. The support for H.264 and H.265 video encoding helps achieve well balanced color sampling, processing and transmission of videos up to 4K×2K@60Hz 4:2:2. The video transmission quality is extremely high, with the image transmission free of distortion and the original color saturation well maintained. The system latency is as low as 60 ms or less, realizing "what you see is what you get".
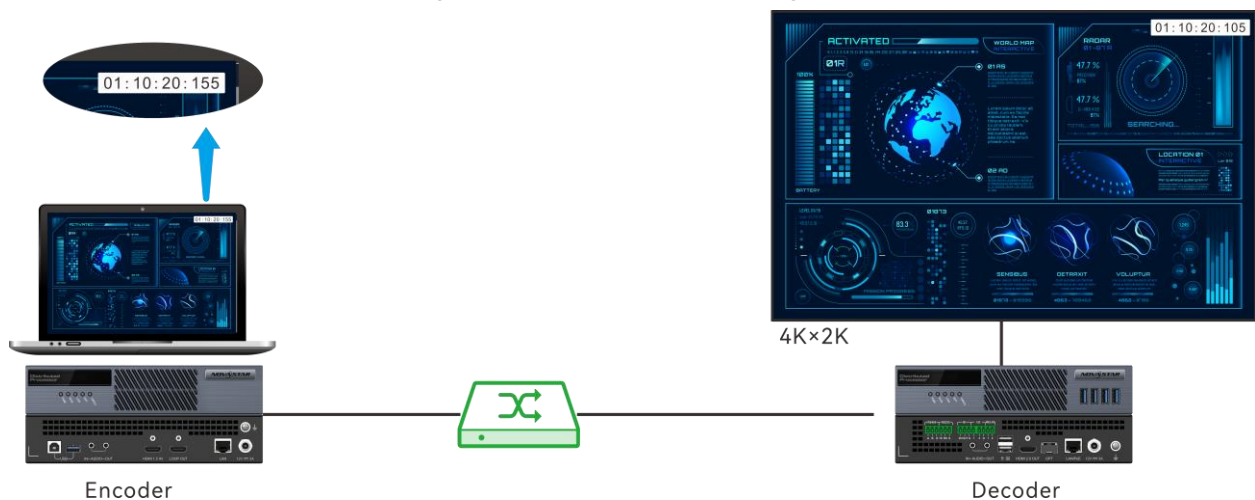
Output Mosaic from Multiple Decoders, Accurately Synchronized

The MG series decoders use unique synchronization technology to achieve full synchronization of output images of all decoders, which fundamentally eliminates the phenomena of asynchronization of mosaic images from different decoders or tearing when playing high speed moving videos.

Image Mosaic by Other Decoders


Image Mosaic by MG Series Decoders

KVM Control, Cross-Platform Roaming

The KVM management and cross-screen mouse roaming are supported. All operations can be done from the mouse, and the mouse cursor can move across windows and monitors, realizing simultaneous preview of multiple signal sources. In addition, different platforms (Windows, Linux and Mac OS) can be controlled from only one set of keyboard and mouse at the node.

Signal Pushing and Capturing, Easy Collaboration

The MG series system supports signal pushing between operators or between the operators and LED screen, allowing the problems or images that need to be decided to be pushed to others or the LED screen. Through collaboration, the decision can be made timely and problems can be handled efficiently.

Push to LED Screens

Collaboration

KVM Operator

KVM Operator
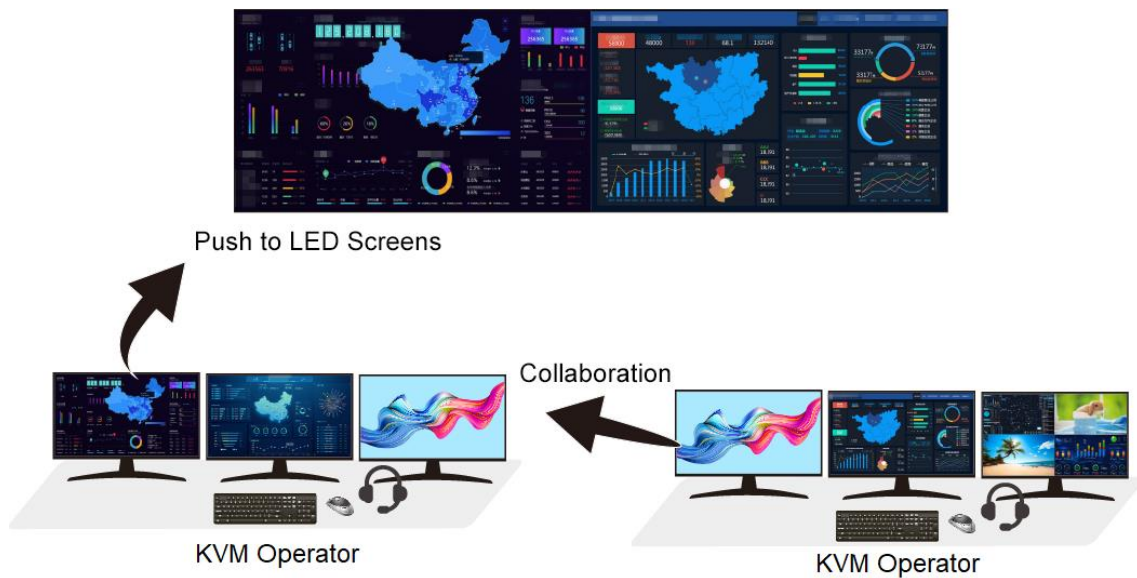
Web Control, Convenient Operation and Configuration

The management system supports configuration management through the Web, providing users with a simple and fast operation method and enabling cross-terminal operations. The web control includes device management, accurate permission assignment, input and output resolution management of encoders and decoders, LED screen management, firmware update and log management.

Switch

Decoders

Product Features

- Discrete deployment, unified management

  Multiple geographically scattered signal nodes can be quickly connected to the system for unified signal data control and management.

- Mass access, unlimited expansion

  Thanks to its IP-based architecture, system nodes can be quickly increased based on the network and each node can access the network as long as an IP address is specified.

- Hierarchical permissions, secure management

  The system supports role-based hierarchical user permission management. The administrator can configure different permissions for users, so that the operation permissions can be divided into the most detailed. In this way, different operators with

different roles can perform different operations, which greatly improves work efficiency and security.

- Stable, secure and reliable

  The decentralized design allows a single node to be used as an independent control center. Each node works independently and the control failure of a single node will not affect the operation of the entire system. Only the faulty node needs to be repaired. This ensures the stability of the entire system operation and facilitates system maintenance.

- Convenient implementation and easy maintenance

  Encoders and decoders can be added directly to the system network to quickly expand the system, and the system automatically synchronizes system parameters without manual reconfiguration. Remote update and batch update are also supported.

- Man-device separation, tidy and efficient

  The distributed processors are placed in the computer room for management, leaving space for the command and control center and avoiding a messy workspace and noise pollution in the past. It not only realizes man-device separation and allows one person to operate multiple devices, but also improves the processor data security.

- Visualized management and precise arrangement

  The output images on the screens are fully visualized. Real-time preview of signal source images, screen layout and images are available to realize precise screen display arrangement, avoiding signal switching errors and thus improving the switching efficiency and realizing "what you see is what you get".

- Mouse roaming, one KVM operator with multiple screens, multiple signals on one screen

  Each KVM operator can control multiple screens and each screen supports preview and control of up to 4 signal images. The operations on multiple monitors can be done from only one set of keyboard and mouse, greatly simplifying the desktop environment. While the operator is operating the local monitor data, the data and operation can also be displayed in real time on the LED screen or other display terminals.

- Multiple audio and video access

  - Supports access of signals in various formats, including HDMI, DP, IP, audio and more.
  - Supports access of 4K ultra HD videos and is backward compatible with multiple resolutions.
  - Supports access of IP cameras using the ONVIF protocol and streaming media data using the RTSP protocol.

- Secure KVM operator management

  The KVM operator can set permissions for different KVM groups, allowing KVMs in different groups to display specified data information and operators to operate the specified data information. This ensures system data security and meets the management requirements of high-security-level mission-critical projects.

- Flexible loading of LED screens

  - A single MGT1000 drives up to 6.5 million pixels, with the width up to 10240 pixels and height up to 8192 pixels.
  - A single MGT2000 drives up to 13 million pixels, with the width up to 16384 pixels and height up to 8192 pixels.

- Free layout of multiple layers

  The screen loaded by a single device supports free layout of 8x 2K×1K layers to achieve flexible and excellent visual effects.

- Scrolling OSD text

  - Supports display of the static or scrolling OSD text on the LED screen.
  - Supports customized content, font, color, size and background color of the OSD text.
  - Supports configurations of the text scrolling direction, initial position and speed.

- Customized presets and preset playlist playbacks

  - Supports management of multiple screens and presets.
  - Supports two preset playback modes. The options include loop and scheduled playback.

- Input source management

  - Supports customized group management of input sources.
  - Supports EDID settings for input sources.
  - Supports setting a logo for each input source.
  - Supports input source cropping.
  - Supports configurations of input source audio.

- Flexible audio options

  - Supports accompanied and independent audio inputs.
  - Supports output of audio that comes with the layer. The audio output can be the accompanied audio or independent audio.
  - Supports output volume adjustment.

- PoE/DC12V power supply

  It supports two redundant power supplies, PoE and power adapter, and they can be used simultaneously or independently based on the on-site deployment method.

- Switch and use local signals on the OSD menu of the KVM operator system.

- Device IP displayed on the front panel screen

- System call for quick device locating

  When the device is called, the indicators will flash.

- Firmware update on Web page

- Device backup

- OPT port and Ethernet port design

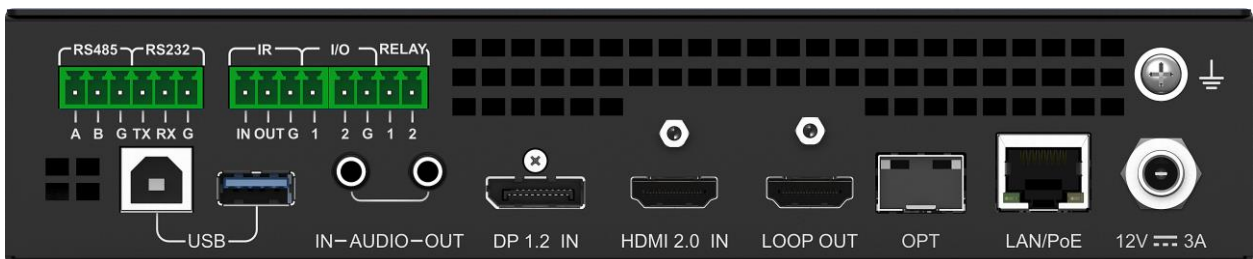 The two ports can work in backup mode to ensure the device connection never fails.

Appearance

MG420 Encoder

Front Panel

No.	Area	Function
1	OLED screen	Displays the device IP address
2	Indicators	• PWR: Power indicator – On: The power supply is normal. – Off: The power supply is abnormal. • RUN: Running status indicator – Flashing: The device is functioning normally. – On/Off: The device is functioning abnormally. • LAN: Ethernet port connection status indicator – Flashing: The Ethernet port connection is normal. – Off: The Ethernet port connection is abnormal. • OPT: OPT port connection status indicator – Flashing: The OPT port connection is normal. – Off: The OPT port connection is abnormal. • VIDEO: Video transmission and processing status indicator – On: The video stream processing is normal. – Off: The video stream processing is abnormal or there is no video stream. **📄 Note** When the device is called, the RUN, LAN, OPT and VIDEO indicators will flash simultaneously.

Rear Panel

Input Connectors		
Connector	**Qty**	**Description**

DP 1.2	1	● Input resolutions up to 4K×2K@60Hz ● Up to 10bit 4:4:4 video input and processing ● HDCP 1.3 compliant ● EDID management supported 　－　Width: 800 to 8192 pixels 　－　Height: 600 to 7680 pixels ● Accompanied audio supported **Note** Only one of the HDMI and DP inputs is supported at a time. The DP cable must be capable of supporting 4K×2K@60Hz stable transmission.
HDMI 2.0	1	● Input resolutions up to 4K×2K@60Hz ● Up to 10bit 4:4:4 video input and processing ● HDCP 1.4 and HDCP 2.2 compliant ● EDID management supported 　－　Width: 800 to 8192 pixels 　－　Height: 600 to 7680 pixels ● Accompanied audio supported **Note** Only one of the HDMI and DP inputs is supported at a time. The HDMI cable must be capable of supporting 4K×2K@60Hz stable transmission.
Audio Connectors		
AUDIO	2	1x AUDIO input, 1x AUDIO output ● 3.5 mm standard analog audio connectors ● Audio sampling rate up to 48 kHz ● Dual channels with depth up to 16bit
Output Connectors		
LAN/PoE	1	Gigabit Ethernet ports It can be used for the transmission of the streaming media, control instructions and more. It supports PoE802.3AT power supply with the consumption up to 30 W. **Note** CAT5E and above standard wires are recommended.
OPT	1	1G optical port, 1.25G optical modules supported It can be used for the transmission of the streaming media, control instructions and more, and can be used as a backup port of the LAN port. **Note** When OPT is used as a backup port for transmission, an external DC 12V power supply must be used to prevent the device from being powered off after the Ethernet port is disconnected.
LOOP OUT	1	Loop through of the DP 1.2 or HDMI 2.0 input
Control		
USB		● 1x Type-B USB 2.0: Connected to the input computer for keyboard, mouse and USB drive data transmission ● 1x Type-A USB 3.0: Reserved
RS485		1x RS485 and 1x RS232 programmable connector

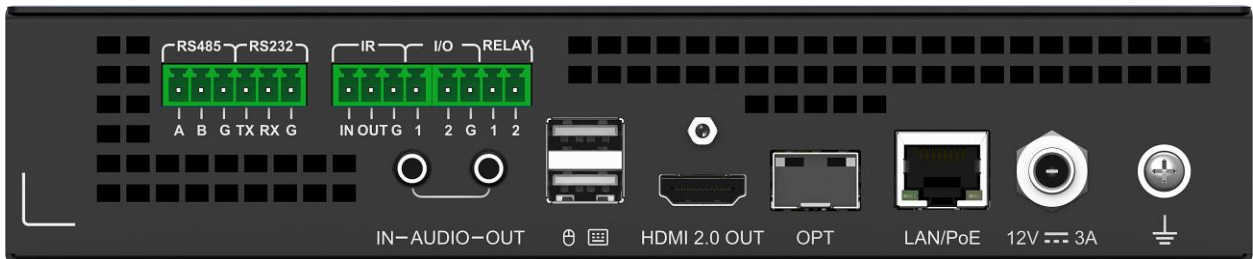| RS232	Supports the central control signal input or output.
IR	● 1x IR IN connector Supports the learning of the infrared control instructions. ● 1x IR OUT connector Supports the programmable infrared control. ● 1x GND connector A common grounding connector
I/O	● 2x I/O connector ‒ Supports the programming to trigger the execution of various functional requirements. ‒ Supports the input and output modes. ‒ Input and output I/O voltage: 3.3V ● 1x GND connector A grounding connector
RELAY	● 1x RELAY connector ‒ Connect to a relay to control the switch on and off of the connected device. ‒ Voltage: 30V DC; maximum current: 3A
Power connector	DC 12V 3A Connects to the external power outlet.

MG421 Decoder

Front Panel

No.	Area	Function
1	OLED screen	Displays the device IP address

2	Indicators	● PWR: Power indicator
		   ‒ On: The power supply is normal.
		   ‒ Off: The power supply is abnormal.
		● RUN: Running status indicator
		   ‒ On/Off: The device is functioning abnormally.
		   ‒ Flashing: The device is functioning normally.
		● LAN: Ethernet port connection status indicator
		   ‒ Flashing: The Ethernet port connection is normal.
		   ‒ Off: The Ethernet port connection is abnormal.
		● OPT: OPT port connection status indicator
		   ‒ Flashing: The OPT port connection is normal.
		   ‒ Off: The OPT port connection is abnormal
		● VIDEO: Video output indicator
		   ‒ On: The video output is normal.
		   ‒ Off: The video output is abnormal or there is no video output.

No.	Area	Function
		Note When the device is called, the RUN, LAN, OPT and VIDEO indicators will flash simultaneously.
3	USB	4× USB 3.0 connectors Connects to the mouse or keyboard.

Rear Panel

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

HDMI 2.0	1	• Output resolutions up to 4K×2K@60Hz
		• Up to 10bit 4:4:4 video input and processing
		• HDCP 1.4 and HDCP 2.2 compliant
		• Accompanied audio output supported
		• EDID management supported
		
		   – Width: 800 to 8192 pixels
		   – Height: 600 to 7680 pixels
		
		Note
		
		The HDMI cable must be capable of supporting 4K×2K@60Hz stable transmission.

Audio Connectors		
AUDIO	2	1x AUDIO input, 1x AUDIO output • 3.5 mm standard analog audio connectors • Audio sampling rate up to 48 kHz. • Dual channels with depth up to 16bit
Transmission Connectors		
LAN/PoE	1	Gigabit Ethernet port It can be used for receiving the streaming media, control instructions and more. It supports PoE802.3AT power supply with the consumption up to 30 W. **Note** CAT5E and above standard wires are recommended.
OPT	1	1G optical port, 1.25G optical modules supported It can be used for receiving the streaming media, control instructions and more, and can be used as a backup port of the LAN port. **Note** When OPT is used as a backup port for transmission, an external DC 12V power supply must be used to prevent the device from being powered off after the Ethernet port is disconnected.

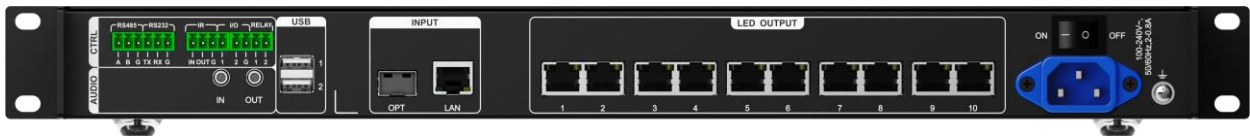| Control	
RS485 RS232	1x RS485 and 1x RS232 programmable connector Supports the central control signal input or output.

IR	• 1x IR IN connector
	   Supports the learning of the infrared control instructions.
	• 1x IR OUT connector
	   Supports the programmable infrared control.
	• 1x GND connector
	   A common grounding connector

I/O	• 2x I/O connector
	   – Supports the programming to trigger the execution of various functional requirements.
	   – Supports the input and output modes.
	   – Input and output I/O voltage: 3.3V
	• 1x GND connector
	   A grounding connector

RELAY	• 1x RELAY connector
	   – Connect to a relay to control the switch on and off of the connected device.
	   – Voltage: 30V DC; maximum current: 3A

USB	2x USB 2.0 connectors Connect to the mouse and keyboard.
Power connector	1	DC 12V 3A Connects to the external power outlet.

MGT1000 All-in-One Decoder

Front Panel

No.	Area	Function
1	OLED screen	Displays the device IP address.

2	Indicators	• PWR: Power indicator
		   – On: The power supply is normal.
		   – Off: The power supply is abnormal.
		• RUN: Running status indicator
		   – Flashing: The device is functioning normally.
		   – On/Off: The device is functioning abnormally.
		• LAN: Ethernet port connection status indicator
		   – Flashing: The Ethernet port connection is normal.
		   – Off: The Ethernet port connection is abnormal.
		• OPT: OPT port connection status indicator
		   – Flashing: The OPT port connection is normal.
		   – Off: The OPT port connection is abnormal.
		• VIDEO: Video out indicator

No.	Area	Function
		– On: The video output is normal.
		– Off: The video output is abnormal or there is no video output.
		📄Note
		When the device is called, the RUN, LAN, OPT and VIDEO indicators will flash simultaneously.

Rear Panel

Area	Connector	Description
CTRL	RS485 RS232	1x RS485 and 1x RS232 programmable connector Supports the central control signal input or output.
	IR	• 1x IR IN connector Supports the learning of the infrared control instructions. • 1x IR OUT connector Supports the programmable infrared control. • 1x GND connector A common grounding connector
	I/O	• 2x I/O connector – Supports the programming to trigger the execution of various functional requirements. – Supports the input and output modes. – Input and output I/O voltage: 3.3V • 1x GND connector A grounding connector
	RELAY	• 1x RELAY connector – Connect to a relay to control the switch on and off of the connected device. – Voltage: 30V DC; maximum current: 3A
AUDIO	IN	3.5 mm analog audio input connector
	OUT	3.5 mm analog audio output connector
USB	USB	2x USB 2.0 ports Reserved
INPUT	OPT	1G OPT connector, 1.25G OPT module supported It can be used for receiving the streaming media, control instructions and more, and can be used as a backup port of the LAN port.
	LAN	Gigabit Ethernet port It can be is used for receiving the streaming media, control instructions and more. It can be used for screen configuration with NovaLCT.
LED OUTPUT	Ethernet port	10x Gigabit Ethernet ports for LED screen loading It can drive up to 6.5 million pixels, with the width up to 10240 pixels

Area	Connector	Description
		and height up to 8192 pixels.

MGT2000 All-in-One Decoder

Front Panel

| No.	Area	Function
1	OLED screen	Displays the device IP address.

2	Indicators	• PWR: Power indicator
		  − On: The power supply is normal.
		  − Off: The power supply is abnormal.
		• RUN: Running status indicator
		  − Flashing: The device is functioning normally.
		  − On/Off: The device is functioning abnormally.
		• LAN: Ethernet port connection status indicator
		  − Flashing: The Ethernet port connection is normal.
		  − Off: The Ethernet port connection is abnormal.
		• OPT: OPT port connection status indicator
		  − Flashing: The OPT port connection is normal.
		  − Off: The OPT port connection is abnormal.
		• VIDEO: Video out indicator
		  − On: The video output is normal.
		  − Off: The video output is abnormal or there is no video output.
		Note
		When the device is called, the RUN, LAN, OPT and VIDEO indicators will flash simultaneously.

Rear Panel

Area	Connector	Description
CTRL	RS485 RS232	1x RS485 and 1x RS232 programmable connector Supports the central control signal input or output.

	IR	• 1x IR IN connector
		  Supports the learning of the infrared control instructions.
		• 1x IR OUT connector
		  Supports the programmable infrared control.
		• 1x GND connector
		  A common grounding connector

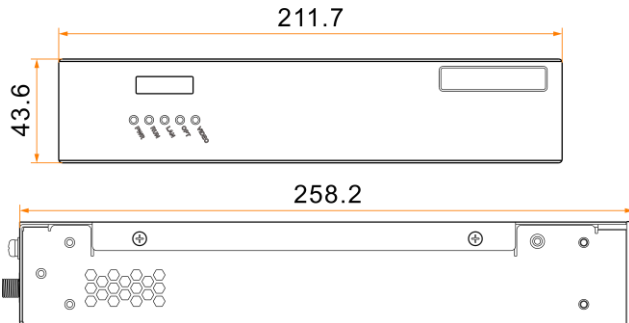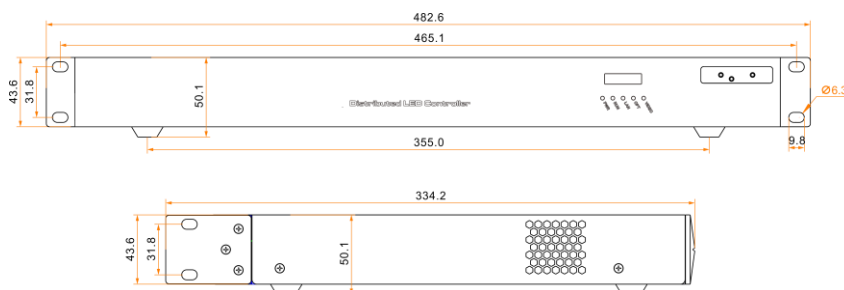| Area	Connector	Description
	I/O	• 2x I/O connector – Supports the programming to trigger the execution of various functional requirements. – Supports the input and output modes. – Input and output I/O voltage: 3.3V • 1x GND connector A grounding connector
	RELAY	• 1x RELAY connector – Connect to a relay to control the switch on and off of the connected device. – Voltage: 30V DC; maximum current: 3A
AUDIO	IN	3.5 mm analog audio input connector
	OUT	3.5 mm analog audio output connector
USB	USB	2x USB 2.0 ports Reserved
INPUT	OPT	1G OPT connector, 1.25G OPT module supported It can be used for receiving the streaming media, control instructions and more, and can be used as a backup port of the LAN port.
	LAN	Gigabit Ethernet port It can be is used for receiving the streaming media, control instructions and more. It can be used for screen configuration with NovaLCT.
	HDMI 2.0	• 1x HDMI 2.0 IN – Input resolutions up to 4K×2K@60Hz – Up to 10bit 4:4:4 video input and processing – HDCP 2.2 supported, HDCP 1.4 and HDCP 1.3 compliant – EDID management supported Width: 800 to 8192 pixels Height: 600 to 7680 pixels – Accompanied audio supported • 1x HDMI 2.0 LOOP Loop through of the HDMI 2.0 input
LED OUTPUT	Ethernet port	20x Gigabit Ethernet ports for LED screen loading It can drive up to 13 million pixels, with the width up to 16384 pixels and height up to 8192 pixels.

Applications
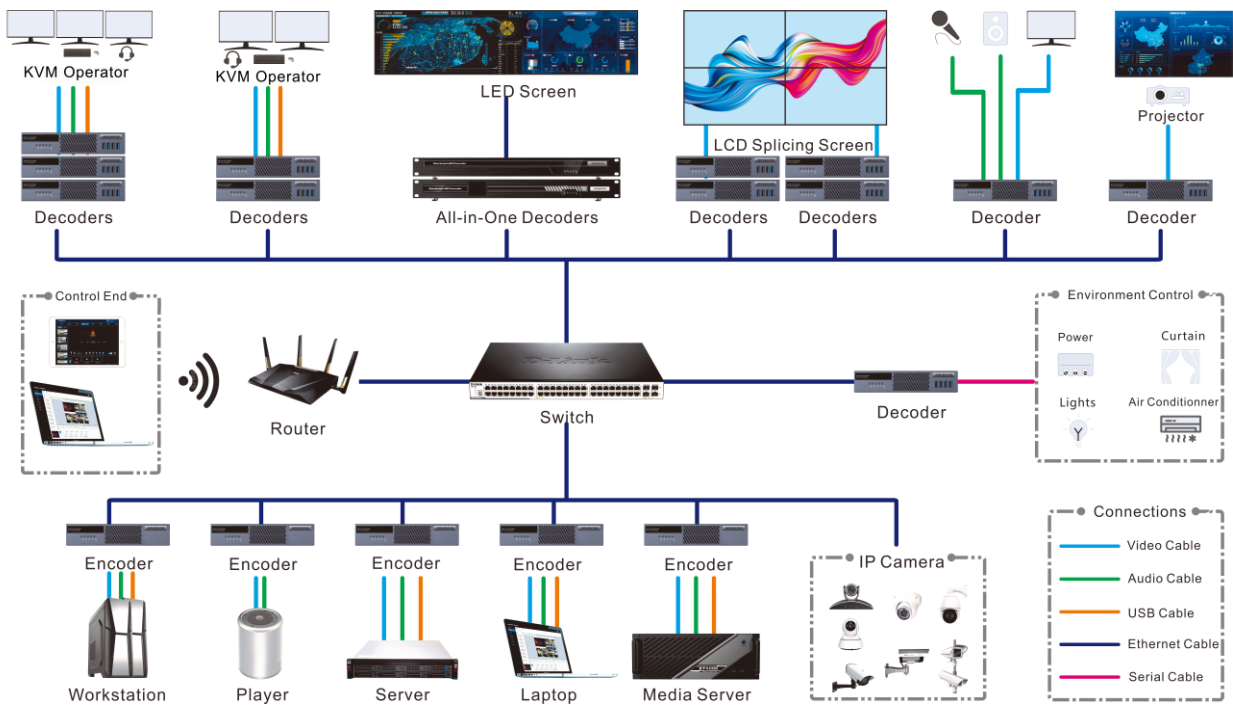
Dimensions

MG420 & MG421
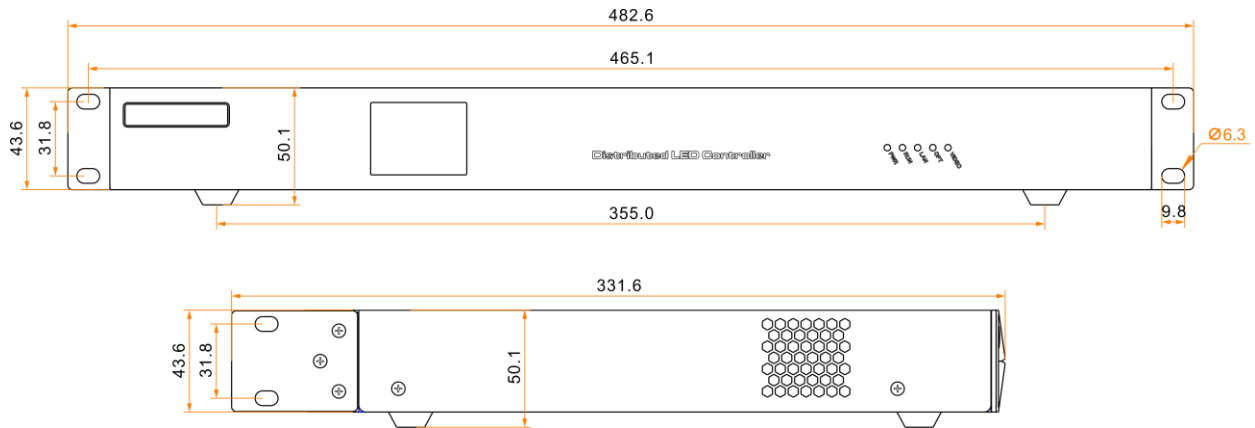
The MG420 and MG421 devices have the same size.

211.7

43.6

258.2

Tolerance: ±0.3   Unit: mm

MGT1000

482.6

465.1

43.6
31.8

50.1

Distributed LED Controller

Ø6.3

355.0

9.8

334.2

43.6
31.8

50.1

Tolerance: ±0.3   Unit: mm

MGT2000

Tolerance: ±0.3   Unit: mm

Specifications

Overall Specifications					
Model		MG420	MG421	MGT1000	MGT2000
Electrical Specifications	Power connector	DC12V 3A		100-240V~, 50/60Hz, 2A~0.8A	
	Max power consumption	20 W		35 W	42 W
Operating Environment	Temperature	−10°C to +60°C			
	Humidity	0% RH to 80% RH, non-condensing			
Storage Environment	Temperature	−20°C to +70°C			
	Humidity	0% RH to 95% RH, non-condensing			
Physical Specifications	Dimensions	211.7 mm × 226.0 mm × 45.0 mm		482.6 mm × 334.2 mm × 50.1 mm	482.6 mm × 331.6 mm × 50.1 mm
Packing Information	Accessories	3x Phoenix terminal, 1x Plug, 1x Flathead Screwdriver 1x Certificate of Approval, 1x Safety Manual			
		10x Phillips screws, 1x hanging bracket, 1x connecting piece, 4x foot pads, 1x power adapter, 1x HDMI cable, 1x assembly instructions		1x Power cord	
		-	1x USB cable		
	Net weight	1.9 kg	1.9 kg	4 kg	4.2 kg
	Gross weight	2.9 kg	2.8 kg	6.3 kg	6.6 kg
	Packing box	695 mm × 458 mm × 385 mm		565 mm × 450 mm × 175 mm	

Overall Specifications			
	dimensions	**Note** Each box contains up to 6 devices.	

Video Source Features

Input Connector	Bit Depth		Max Input Resolution
● DP 1.2 ● HDMI 2.0	8bit	RGB4:4:4	4096×2160@60Hz 8192×1080@60Hz
		YCbCr4:4:4	
		YCbCr4:2:2	
	10bit	RGB4:4:4	4096×2160@30Hz 4096×1080@60Hz
		YCbCr4:4:4	
		YCbCr4:2:2	4096×2160@60Hz

Input and Output Resolutions

Input Resolutions

Standard Resolutions		Input Connector	
Resolution	Frame Rate (Hz)	HDMI 2.0	DP 1.2
8192×1080p	60	Forced	Forced
4096×2160p	30/60	Forced	Forced
3840×2160p	30/60	√	√
3840×1080p	30/50/59.94/60/120	√	√
2560×1600p	50/59.94/60/120	√	√
2560×1400p	50/59.94/60	√	√
2560×1080p	50/59.94/60	√	√
2304×1152p	60	√	√
2048×1152p	30/60	√	√
2048×1080p	30/48/50/59.94/60	√	√

Standard Resolutions		Input Connector	
Resolution	Frame Rate (Hz)	HDMI 2.0	DP 1.2
1920×1200p	50/59.94/60	√	√
1920×1080p	30/48/50/59.94/60	√	√
1792×1280p	60	√	√
1680×1050p	60	×	×
1600×1200p	48/50/59.94/60	√	√
1600×900p	48/50/59.94/60	×	×
1440×900p	60/75/85	×	×
1400×1050p	48/50/59.94/60/75	×	×
1360×768p	60	×	×
1280×1024p	48/50/59.94/60/75/85	×	×
1280×960p	50/59.94/60/85	×	×
1280×800p	50/59.94/60	×	×
1280×768p	48/50/59.94/60/75	√	√
1280×720p	48/50/59.94/60	√	√
1152×864p	75	√	√
1024×768p	48/50/59.94/60/75/85	√	√
800×600p	59.94/60/75/85	√	√

- √: The current connector supports the standard resolution and frame rate settings.
- ×: The current connector does not support the standard resolution and frame rate settings.

Output Resolutions

Standard Resolutions		HDMI 2.0
Resolution	Frame Rate (Hz)	Default: 3840×2160@60Hz
8192×1080p	30/60	√
4096×2160p	30/60	√
3840×2160p	30/60	√
3840×1080p	30/50/59.94/60/120	√
2560×1600p	50/59.94/60/120	√
2560×1400p	50/59.94/60	√
2560×1080p	50/59.94/60	√
2304×1152p	60	√
2048×1152p	30/60	√
2048×1080p	30/48/50/59.94/60	√
1920×1200p	50/59.94/60	√
1920×1080p	30/48/50/59.94/60	√
1792×1280p	60	√
1680×1050p	60	√
1600×1200p	48/50/59.94/60	√
1600×900p	48/50/59.94/60	√
1440×900p	60/75/85	√
1400×1050p	48/50/59.94/60/75	√
1364×768p	50/59.94/60	√

Standard Resolutions		HDMI 2.0
Resolution	Frame Rate (Hz)	Default: 3840×2160@60Hz
1364×1024p	48/50/59.94/85	√
1360×768p	60	√
1280×1024p	48/50/59.94/60/75/85	√
1280×960p	50/59.94/60/85	√
1280×800p	50/59.94/60	√
1280×768p	48/50/59.94/60/75	√
1280×720p	48/50/59.94/60	√
1152×864p	75	√
1024×768p	48/50/59.94/60/75/85	√
800×600p	59.94/60/75/85	√

- √: The current connector supports the standard resolution and frame rate settings.
- ✘: The current connector does not support the standard resolution and frame rate settings.

Notes and Cautions

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.

Official website
www.novastar.tech

Technical support
support@novastar.tech