摩西尔 Mooncell

M24

ALL-IN-ONE LED VIDEO PROCESSOR

Integrated 4K video processing and high-density LED display control

24 x 1 GbE	15.6 MP	4K60	16,384
LED DATA OUTPUTS	MAX. DEVICE CAPACITY	DUAL-INPUT CAPABILITY	MAX. WIDTH / HEIGHT

PRODUCT SPECIFICATION

Professional LED Display Control Systems

SECTION 01

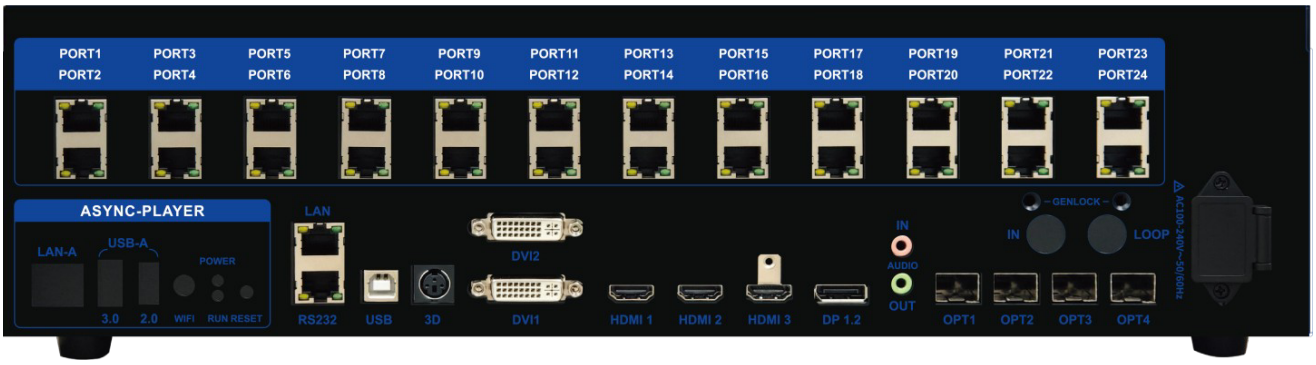
PRODUCT OVERVIEW

Integrated 4K video processing and 24-port LED control for high-pixel-count display systems.

The M24 is an all-in-one LED video processor that integrates multi-format video processing, LED display control and 24 Gigabit Ethernet outputs in a single chassis. One unit drives up to 15.6 million pixels, with a maximum canvas width or height of 16,384 pixels for ultra-wide and ultra-tall LED displays.

It accepts up to two simultaneous 4K x 2K @ 60 Hz sources and provides six 4K x 1K layer resources. Arbitrary output scaling, input cropping, OSD text, pixel-level brightness and chromaticity calibration, 1:1 pixel mapping and up to 128 scene presets are supported.

The 480 x 320 front-panel LCD supports smart LED screen configuration, output-port redundancy testing, layer settings, synchronization and scene management without a PC. AutoLED, front-panel controls and RS-232 provide flexible local or integrated system control.



M24 rear panel. Interface availability is based on hardware revision V2.0.0.

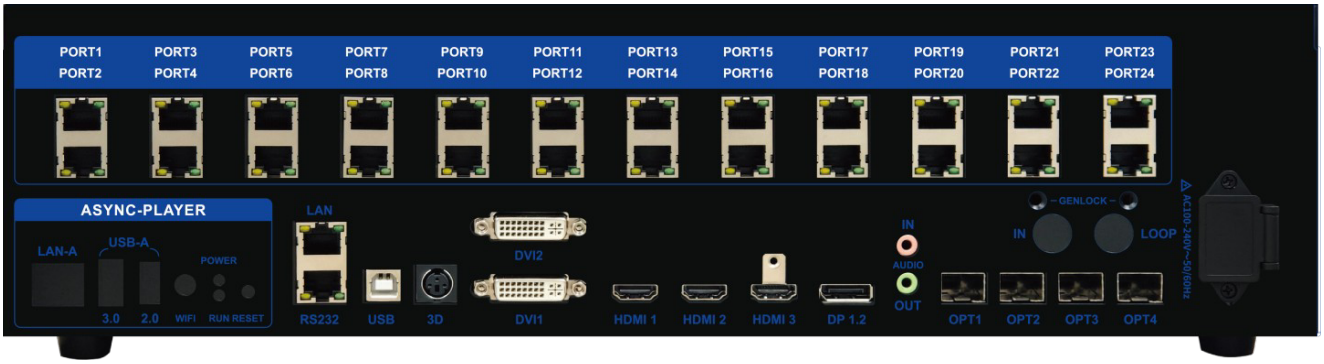
15.6	24	2	6
MILLION PIXELS	1 GbE OUTPUTS	4K60 INPUTS	LAYER RESOURCES
Maximum device capacity	655,360 pixels per port	Maximum simultaneous inputs	Each resource: 4K x 1K

DEPLOYMENT FIT Suitable for retail, hospitality, exhibition, broadcast-studio and other LED display installations requiring high pixel capacity and integrated video processing.

SECTION 02

INTERFACE ARCHITECTURE

Multi-format video input, high-density LED data output, optical extension, audio and control in one chassis.



Rear-panel interface layout. Optional modules and Genlock are configuration-dependent.

VIDEO INPUT PATHS

INTERFACE	QUANTITY	MAXIMUM INPUT	KEY CAPABILITIES
DVI	2	2K x 1K @ 60 Hz	Custom raster, 8-bit, EDID, progressive input
HDMI 1.3	2	2K x 1K @ 60 Hz	Custom raster, 8-bit, EDID, embedded audio
HDMI 2.0	1	4K x 2K @ 60 Hz / 8K x 1K @ 60 Hz	Custom raster, 8/10-bit, EDID, embedded audio
DisplayPort 1.2	1	4K x 2K @ 60 Hz / 8K x 1K @ 60 Hz	Custom raster, 8/10-bit, EDID, embedded audio

LED DATA, AUDIO AND CONTROL

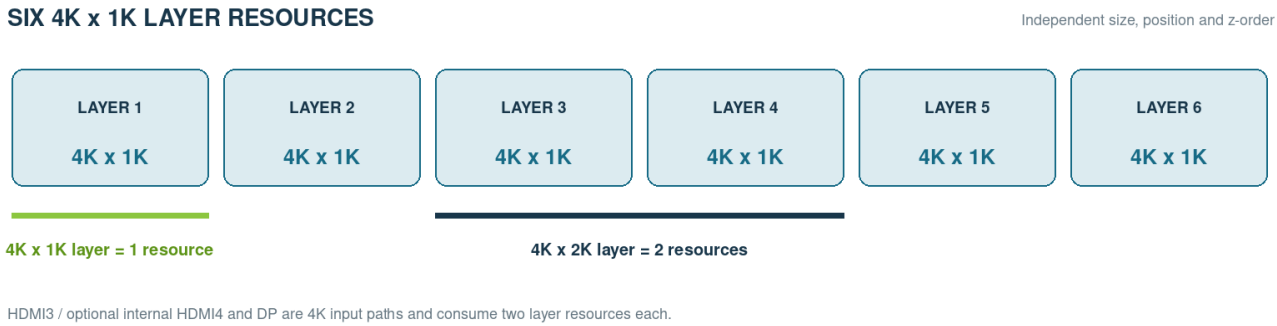
PATH	INTERFACES	FUNCTION
LED data	24 x 1 GbE RJ45	Up to 655,360 pixels per output; 15.6 million pixels per device
Optical	4 x 10 Gb/s	OPT1: ports 1-8; OPT2: ports 9-16; OPT3: ports 17-24; OPT4 reserved
Audio	3.5 mm IN / OUT	Analog audio input and output; embedded audio on HDMI / DP
Control	100M LAN, USB-B, RS-232	AutoLED, network control, direct PC connection and central control
Expansion / sync	3D, optional Genlock IN / LOOP	Active 3D synchronization and external reference synchronization

INPUT NOTE HDMI3 and the optional internal HDMI4 source are mutually selectable on the 4K HDMI input path.

SECTION 03

VIDEO PROCESSING & DISPLAY

Flexible layer composition, scaling, calibration, OSD and reusable scene control.



HDMI3 / optional internal HDMI4 and DP are 4K input paths and consume two layer resources each.

LAYER COMPOSITION

- Up to six 4K x 1K layer resources, with independently adjustable size, position and z-order.
- A 4K x 1K layer uses one resource; a 4K x 2K layer uses two resources.
- The HDMI3 / optional internal HDMI4 and DP input paths are 4K-class inputs and use two layer resources each.

SCALING, MAPPING AND CROPPING

- One-touch full-screen scaling, 1:1 pixel mapping and custom display mode.
- Arbitrary input cropping and continuous output scaling for non-standard LED canvases.
- Flexible Ethernet-port mapping; each output is not restricted to a rectangular load area.

DISPLAY ENHANCEMENT AND OPERATION

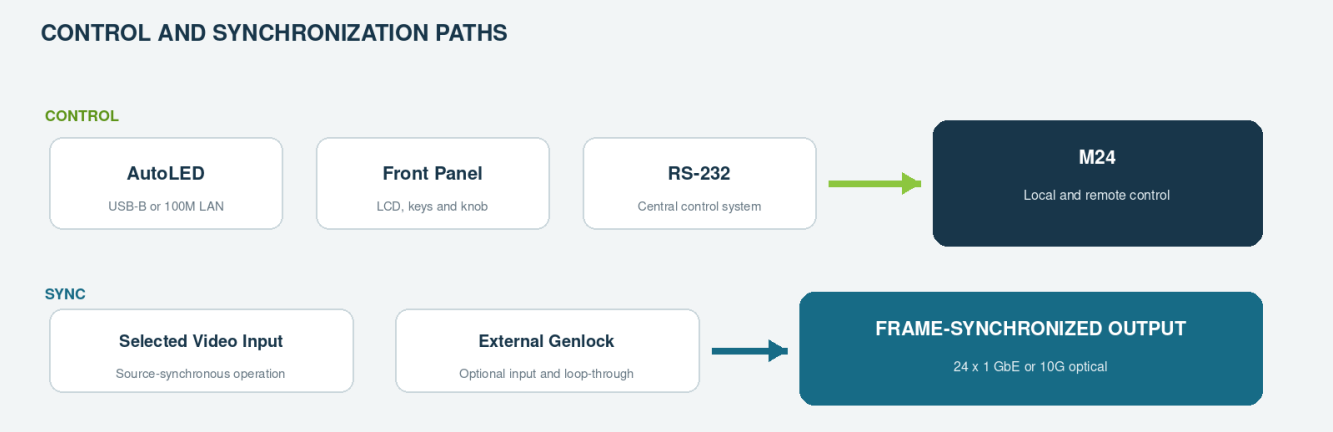
- Pixel-level brightness and chromaticity calibration.
- Custom OSD text content, font, color, size, background color and background opacity.
- Up to 128 scene presets, offline brightness adjustment, one-key black screen and assignable freeze function.

3D MODE Use a compatible 3D sync emitter and active 3D glasses. For side-by-side or top-and-bottom 3D input formats, the available output capacity is reduced by half.

SECTION 04

CONTROL, SYNC & RELIABILITY

Multiple control paths, source-locked or Genlock synchronization, and backup-oriented operation.



CONTROL METHODS

- AutoLED software through USB-B or the 100M LAN interface.
- Standalone operation from the front-panel LCD, menu knob and illuminated keys.
- RS-232 serial control for third-party central control systems.

SYNCHRONIZATION

- Use the selected video input as the synchronization source for source-synchronous output.
- Use an external Genlock source through the optional Genlock input; loop-through is provided for multi-device synchronization.

RELIABILITY AND PROTECTION

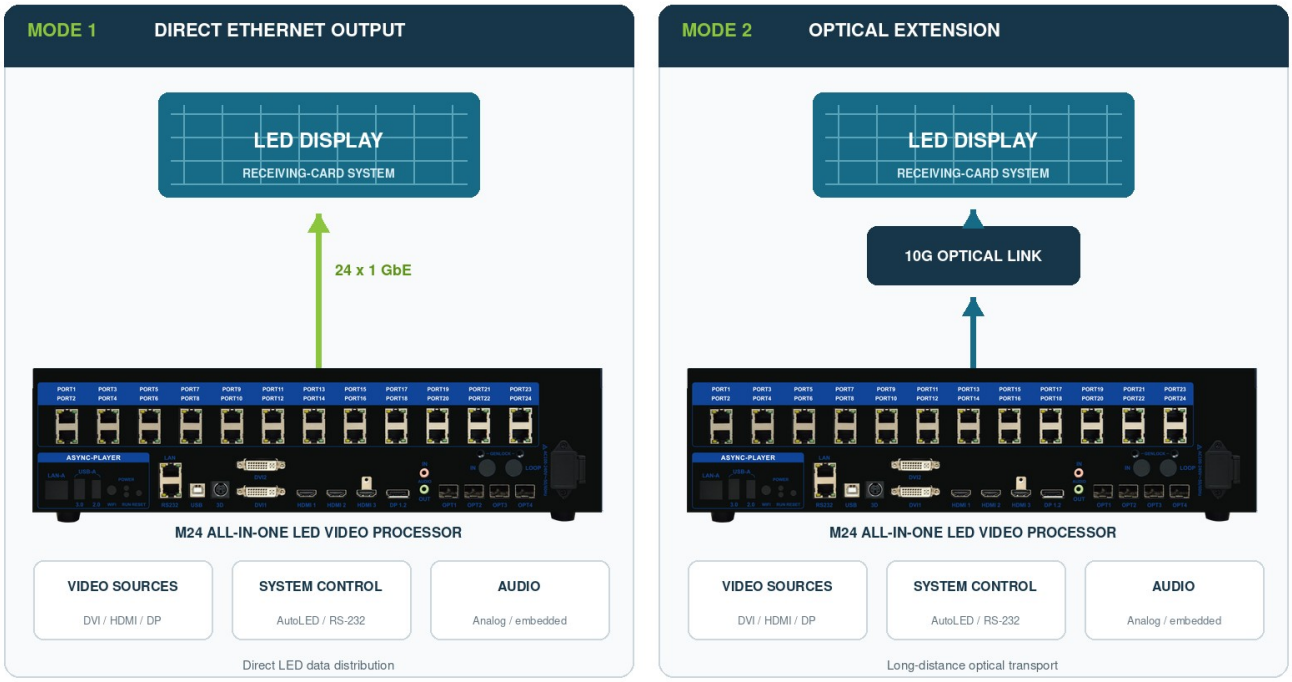
- Device-level hot backup and output-port redundancy testing.
- Front-panel key lock to prevent accidental operation during live events.
- Clear LCD status feedback and illuminated source-key status indication.

OPTIONAL ITEM The Genlock interface is optional and must be confirmed when ordering.

SECTION 05

CONNECTION MODES

Direct Ethernet distribution or optical extension for different system topologies and transmission distances.



MODE 1 - DIRECT ETHERNET OUTPUT

Connect the 24 Gigabit Ethernet outputs directly to Mooncell receiving cards. Video sources connect through DVI, HDMI or DisplayPort; AutoLED connects through USB-B or LAN.

MODE 2 - OPTICAL EXTENSION

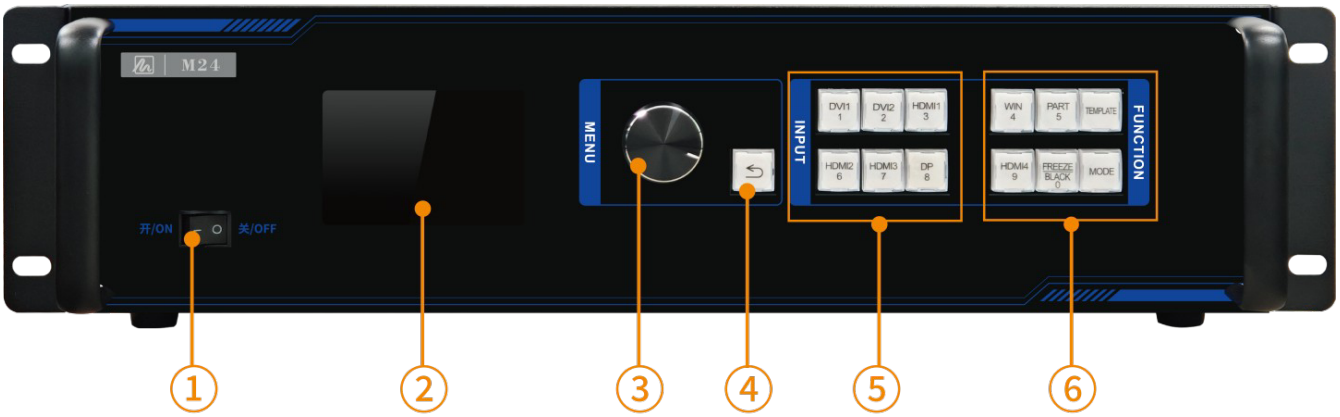
Use the 10 Gb/s optical output groups with compatible optical transmission equipment when longer cable runs, electrical isolation or distributed LED display deployment is required.

OPTICAL MAPPING OPT1 carries ports 1-8, OPT2 carries ports 9-16 and OPT3 carries ports 17-24. OPT4 is reserved. Optical modules are not included as standard.

SECTION 06

FRONT PANEL OVERVIEW

A 480 x 320 LCD, menu control and illuminated shortcut keys support complete standalone operation.



Front-panel reference. Product appearance may vary slightly by production batch.

REF.	CONTROL	FUNCTION
1	Power switch	Turns the M24 on or off.
2	LCD	Displays operating status and setup menus. Resolution: 480 x 320.
3	Menu knob	Press to enter or confirm; rotate to select or adjust; long-press to unlock the menu.
4	ESC	Returns to the previous level or cancels the current operation.
5	Input keys	Select DVI1, DVI2, HDMI1, HDMI2, HDMI3 or DP; key LEDs show source state.
6	Function keys	WIN, PART, TEMPLATE, HDMI4, FREEZE / BLACK and MODE shortcuts.

MENU WORKFLOW From the home screen, press the knob to open the menu. Rotate to navigate or adjust a value, then press again to confirm the setting.

SECTION 07

FRONT PANEL OPERATION

Source selection, layer control, display mode, templates, scenes and black / freeze operation from the front panel.

INPUT-KEY LEDS Off: source not selected. Flashing: source selected but no valid signal. Steady on: source selected and a valid signal is present.

INPUT SOURCE KEYS

KEY	SHORTCUT	FUNCTION
DVI1	1	Select DVI input 1.
DVI2	2	Select DVI input 2.
HDMI1	3	Select HDMI 1.3 input 1.
HDMI2	6	Select HDMI 1.3 input 2.
HDMI3	7	Select the external HDMI 2.0 input.
DP	8	Select the DisplayPort 1.2 input.

FUNCTION KEYS

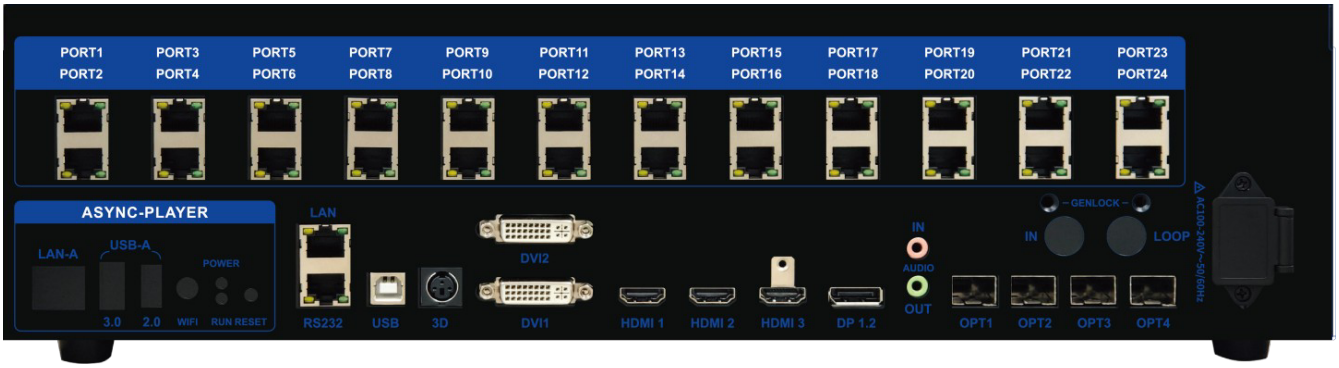
KEY	SHORTCUT	FUNCTION
WIN	4	Select or cycle through active layers when multiple layers are open.
PART	5	Bottom layer only: switch among full screen, 1:1 pixel mapping and custom mode. LED steady / flashing / off indicates the three modes.
TEMPLATE	-	Open the multi-view template shortcut.
HDMI4	9	Select the optional internal Android-source input.
FREEZE / BLACK	0	Assignable freeze or black-screen key; black screen is the default function.
MODE	-	Load a stored scene preset.

KEY LOCK Use the panel-lock function to prevent accidental key presses during live operation.

SECTION 08

REAR PANEL INTERFACES

Video, LED data, optical, audio, control, synchronization, expansion and power connections.



M24 rear-panel interface map. The asynchronous-player bay and Genlock are configuration-dependent.

GROUP	INTERFACES	QTY.	ROLE
LED data	PORT1-PORT24	24	Gigabit Ethernet output to LED receiving cards
Optical	OPT1-OPT4	4	10 Gb/s optical output groups; OPT4 reserved
Video input	DVI1/2, HDMI1/2/3, DP1.2	6	Video input from a media source, PC or other playback device
Audio	AUDIO IN / OUT	2	3.5 mm analog input and output
Control	LAN, RS-232, USB-B	3	Network, central-control and direct AutoLED connection
3D	3D	1	Compatible 3D sync emitter connection
Genlock	IN / LOOP	2	Optional external reference input and loop-through
Power	AC input	1	AC 100-240 V, 50/60 Hz

ASYNCHRONOUS-PLAYER BAY The rear-panel expansion bay supports configuration-dependent internal playback hardware. Confirm the installed option before system design.

SECTION 09

VIDEO INPUT SPECIFICATIONS

Custom raster support, EDID management and progressive-scan input across DVI, HDMI and DisplayPort.

2K INPUTS

INTERFACE	STANDARD / QTY.	MAXIMUM INPUT	CUSTOM RASTER LIMITS	FEATURES
DVI1 / DVI2	DVI / 2	2K x 1K @ 60 Hz	Width: 4096 at 4096 x 640 @ 60 Hz Height: 3840 at 640 x 3840 @ 60 Hz	8-bit; EDID; presets; video only
HDMI1 / HDMI2	HDMI 1.3 / 2	2K x 1K @ 60 Hz	Width: 4096 at 4096 x 640 @ 60 Hz Height: 3840 at 640 x 3840 @ 60 Hz	8-bit; EDID; presets; embedded audio

4K INPUTS

INTERFACE	STANDARD / QTY.	MAXIMUM INPUT	CUSTOM RASTER LIMITS	FEATURES
HDMI3 / HDMI4	HDMI 2.0 / 1 path	4K x 2K @ 60 Hz 8K x 1K @ 60 Hz	Width: 8192 at 8192 x 1080 @ 60 Hz Height: 8188 at 1080 x 8188 @ 60 Hz	8/10-bit; EDID; presets; embedded audio
DP	DP 1.2 / 1	4K x 2K @ 60 Hz 8K x 1K @ 60 Hz	Width: 8192 at 8192 x 1080 @ 60 Hz Height: 7680 at 1080 x 7680 @ 60 Hz	8/10-bit; EDID; presets; embedded audio

INPUT RULES Interlaced input is not supported. HDMI and DisplayPort support embedded audio; DVI inputs are video-only. HDMI3 and the optional internal HDMI4 source are mutually selectable.

EDID AND SOURCE SYNCHRONIZATION

- Custom EDID and preset resolutions are supported on all video inputs.
- The selected video source can be used as the output synchronization reference; optional external Genlock can be selected when installed.

SECTION 10

OUTPUT & CONTROL INTERFACES

Twenty-four Gigabit Ethernet outputs, three active 10G optical groups, audio, control, 3D and optional Genlock.

LED DATA OUTPUTS

INTERFACE	QTY.	CAPACITY / MAPPING	DESCRIPTION
PORT1-PORT24	24	655,360 pixels per output	1 GbE LED data outputs to receiving cards; 15.6 million pixels total
OPT1	1	PORT1-PORT8	10 Gb/s optical output group
OPT2	1	PORT9-PORT16	10 Gb/s optical output group
OPT3	1	PORT17-PORT24	10 Gb/s optical output group
OPT4	1	Reserved	Reserved optical port

RJ45 STATUS LEDS Both LEDs steady: power present but no receiving card detected. Both LEDs off: no power. Green steady and yellow flashing: signal and communication are normal.

AUDIO, CONTROL, EXPANSION AND POWER

INTERFACE	QTY.	FUNCTION
AUDIO IN	1	3.5 mm analog audio input
AUDIO OUT	1	3.5 mm analog audio output
LAN	1	100 Mbps network control interface
RS-232	1	Serial interface for third-party central control
USB-B	1	Direct PC connection for AutoLED configuration and debugging
3D	1	Compatible 3D sync emitter connection
Genlock IN / LOOP	1 set	Optional external synchronization input and loop-through
AC input	1	AC 100-240 V, 50/60 Hz

OPTICAL MODULES Optical modules are not included as standard and must be selected separately for the required link.

SECTION 11

LOADING CAPACITY

Flexible per-port mapping with up to 15.6 million pixels and a maximum canvas width or height of 16,384 pixels.

24	655,360	15.6 M	16,384
1 GbE OUTPUTS	PIXELS PER OUTPUT	PIXELS PER DEVICE	MAX. WIDTH / HEIGHT

OPT1 -> PORT1-8	OPT2 -> PORT9-16	OPT3 -> PORT17-24	OPT4 -> RESERVED

SCOPE	MAXIMUM CAPACITY	REFERENCE / LIMIT
Per 1 GbE output	655,360 pixels	Reference load: 1280 x 512 pixels
24-port device total	15.6 million pixels	Aggregate across all Gigabit Ethernet outputs
Optical output total	15.6 million pixels	OPT1-OPT3 transport all 24 Ethernet outputs
Maximum canvas width	16,384 pixels	Subject to total device capacity
Maximum canvas height	16,384 pixels	Capacity derating applies above 8192 pixels

MAPPING RULES

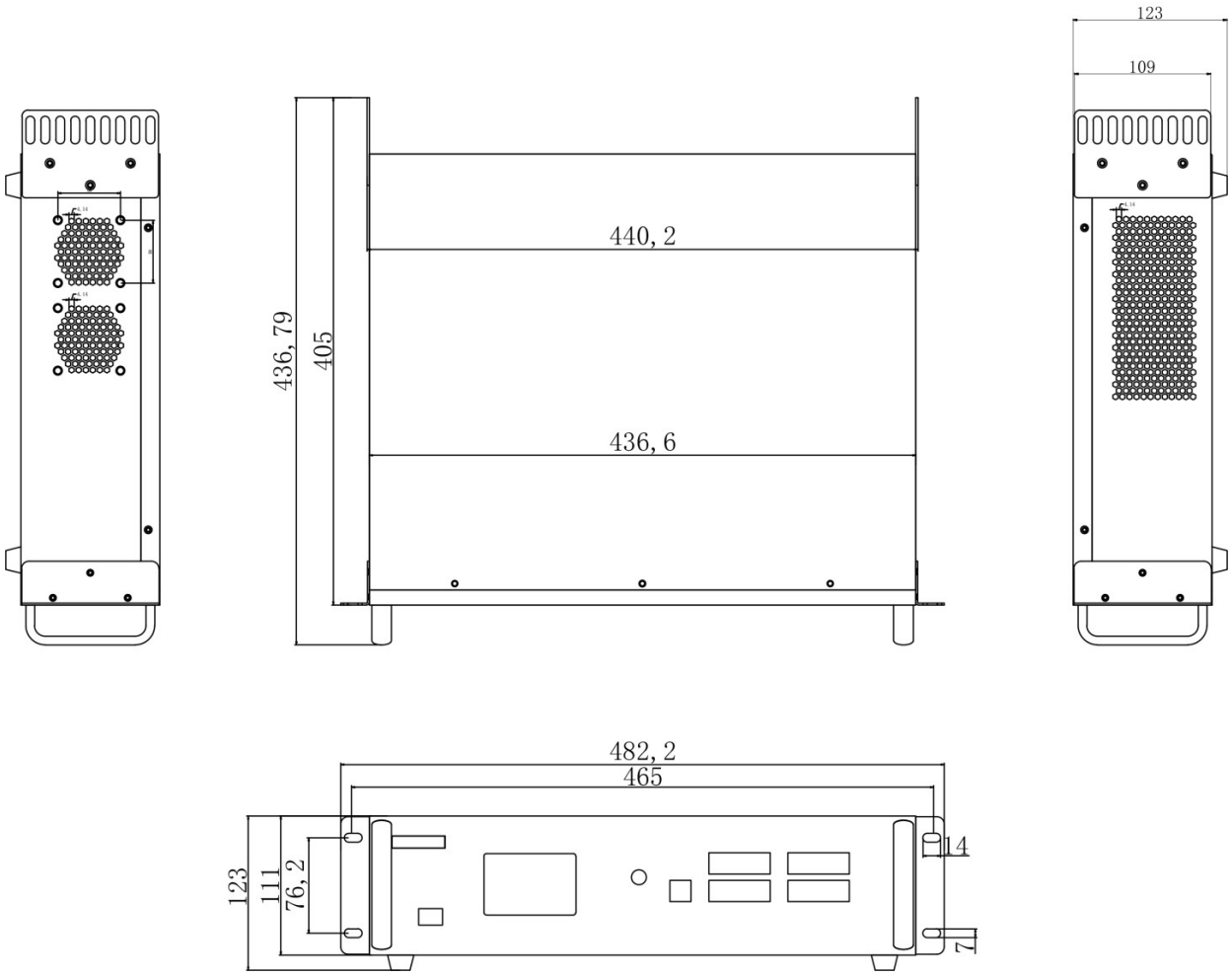
- A single Ethernet output is not restricted to a rectangular load area; map pixels flexibly within the assigned sending area.
- The maximum outer bounding rectangle of the complete LED display must remain within the device loading limits.
- When output height exceeds 8192 pixels, total capacity decreases progressively but does not fall below 11.98 million pixels.
- For side-by-side or top-and-bottom 3D input formats, available output capacity is reduced by half.

ENGINEERING NOTE Final loading depends on raster shape, receiving-card configuration and synchronization mode.

SECTION 12

MECHANICAL DIMENSIONS

Rack-mount chassis dimensions, weight and installation reference for system integration.



Mechanical dimensions. Units: mm. Drawing tolerance: +/-0.3 mm.

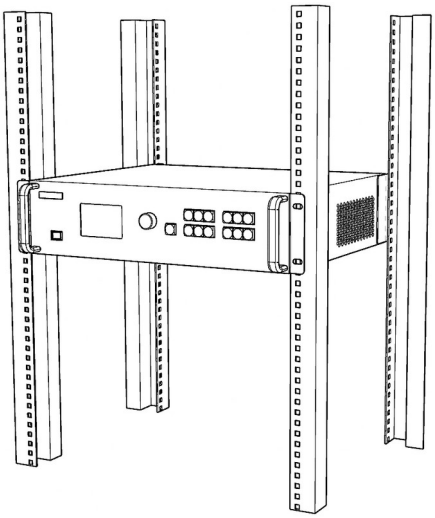
PARAMETER	SPECIFICATION
Chassis dimensions	482.2 mm (W) x 436.79 mm (D) x 123 mm (H)
Net weight	6.21 kg
Drawing tolerance	+/-0.3 mm

REFERENCE ONLY Mechanical details and product appearance are subject to the actual delivered unit.

SECTION 13

RACK INSTALLATION & SAFETY

Secure mounting, unobstructed airflow, balanced loading, circuit protection and reliable grounding.



Rack installation reference.

MOUNTING REQUIREMENTS

- Use eight M5 x 8 screws when installing the product on rack supports.
- The rack and support structure must be rated to carry at least 28 kg.

RACK-MOUNT SAFETY

- Elevated ambient temperature: an enclosed or multi-unit rack may operate above room temperature. Keep the rack environment within the specified 0-50°C operating range.
- Reduced airflow: do not obstruct the airflow required for safe operation.
- Mechanical loading: distribute weight evenly and avoid hazardous loading conditions.
- Circuit overloading: consider the nameplate rating, branch-circuit capacity, overcurrent protection and power wiring.
- Reliable grounding: connect the power cord only to a properly grounded outlet.

AC POWER WARNING The M24 operates from AC 100-240 V, 50/60 Hz. Disconnect AC power before installation, servicing or changing rack connections.

SECTION 14

GENERAL SPECIFICATIONS

Electrical, environmental, physical, packaging and document-control information for M24 V4.3.

CATEGORY	PARAMETER	SPECIFICATION
Electrical	Input voltage	AC 100-240 V, 50/60 Hz
Electrical	Rated power	36 W
Operating environment	Temperature	0°C to 50°C
Operating environment	Humidity	5% to 85% RH, non-condensing
Storage	Temperature	-10°C to 60°C
Mechanical	Chassis / net weight	482.2 x 436.79 x 123 mm / 6.21 kg
Packaging	Carton / shipping weight	560 x 470 x 225 mm / 8.09 kg including packaging and accessories
Packaging	Packing method	1 unit per carton

STANDARD PACKAGE CONTENTS 1 x power cord, 1 x USB cable, 1 x DVI cable, 1 x HDMI 2.0 cable, 1 x DP cable, 1 x DP-to-HDMI cable, 1 x certificate of conformity and 1 x packing list.

DOCUMENT CONTROL

VERSION	HARDWARE	RELEASE DATE	CHANGE DESCRIPTION
V4.0	V1.0.0	2025-06-13	First release of the updated document.
V4.1	V1.0.0	2025-12-12	Updated the rear-panel product image.
V4.2	V1.0.0	2026-05-14	Corrected HDMI 2.0 and DP parameters.
V4.3	V2.0.0	2026-07-09	Renamed the product, updated appearance and parameters, and added the installation statement.

POWER NOTE Actual current and power consumption may vary with operating conditions, environment and configuration.

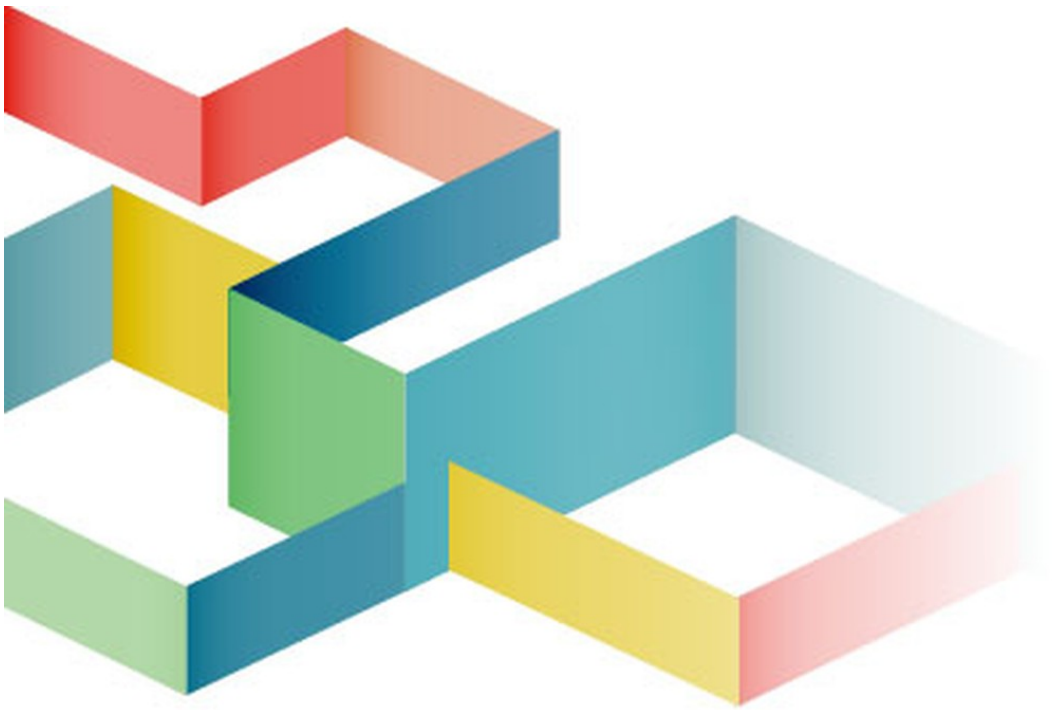
SECTION 15

SUPPORTED INPUT FORMATS

Common progressive-scan input formats, color spaces, chroma sampling, bit depths and integer frame rates.

INPUT	FORMAT	RASTER	COLOR SPACE	SAMPLING	BIT DEPTH	INTEGER FRAME RATES (Hz)
DP1.2 / HDMI2.0	4K x 2K	4096 x 2160	RGB / YCbCr	4:4:4	10-bit	24/25/30/48/50
DP1.2 / HDMI2.0	4K x 2K	4096 x 2160	RGB / YCbCr	4:4:4	8-bit	24/25/30/48/50/60
DP1.2 / HDMI2.0	4K x 2K	4096 x 2160	YCbCr	4:2:2	8/10-bit	24/25/30/48/50/60
DP1.2 / HDMI2.0	4K x 2K	4096 x 2160	YCbCr	4:2:0	8/10-bit	24/25/30/48/50/60
DP1.2 / HDMI2.0	4K x 1K	3840 x 1080	RGB / YCbCr	4:4:4	10-bit	24/25/30/48/50/60/72/120
DP1.2 / HDMI2.0	4K x 1K	3840 x 1080	RGB / YCbCr	4:4:4	8-bit	24/25/30/48/50/60/72/120
DP1.2 / HDMI2.0	4K x 1K	3840 x 1080	YCbCr	4:2:2	8/10-bit	24/25/30/48/50/60/72/120
DP1.2 / HDMI2.0	4K x 1K	3840 x 1080	YCbCr	4:2:0	8/10-bit	24/25/30/48/50/60/72/120
DP1.2 / HDMI2.0	2K x 1K	1920 x 1080	RGB / YCbCr	4:4:4	10-bit	24/25/30/48/50/60/72/120
DP1.2 / HDMI2.0	2K x 1K	1920 x 1080	RGB / YCbCr	4:4:4	8-bit	24/25/30/48/50/60/72/120
DP1.2 / HDMI2.0	2K x 1K	1920 x 1080	YCbCr	4:2:2	8/10-bit	24/25/30/48/50/60/72/120
DP1.2 / HDMI2.0	2K x 1K	1920 x 1080	YCbCr	4:2:0	8/10-bit	24/25/30/48/50/60/72/120
DP1.2 / HDMI2.0	720p	1280 x 720	RGB	4:4:4	8-bit	24/25/30/48/50/60/72/120
HDMI 1.3 / DVI	2K x 1K	1920 x 1080	RGB / YCbCr	4:4:4	8-bit	24/25/30/48/50/60/72/120
HDMI 1.3 / DVI	2K x 1K	1920 x 1080	YCbCr	4:2:2	8-bit	24/25/30/48/50/60/72/120
HDMI 1.3 / DVI	2K x 1K	1920 x 1080	YCbCr	4:2:0	8-bit	24/25/30/48/50/60/72/120
HDMI 1.3 / DVI	720p	1280 x 720	RGB	4:4:4	8-bit	24/25/30/48/50/60/72/120

FORMAT NOTE The table lists common integer-frame-rate formats from the V4.3 source specification. Interlaced video is not supported. Custom EDID and non-standard progressive rasters are also supported within the interface limits stated in Section 09.



摩西尔
Mooncell

After-Sales Service Hotline: 400-881-3531

Website: www.mooncell.com.cn

Address: Mooncell Building, Third Industrial Zone,

Baoshi South Road, Shiyan Subdistrict, Bao'an District,

Shenzhen, China