

Colorlight

DS420

Distributed Controller

Specification v1.2



1 Overview



As a 2-in-1 KVM over IP controller, the DS420 integrates video wall splicing and signal transmission into a unified device. It loads up to 13 million pixels, with a maximum width and height of 8192 pixels — delivering impressive video input and output at 4K@60Hz.

With 20 Ethernet output ports, the DS420 is built to meet the demands of ultra-large LED displays. It also features integrated control ports for infrared devices and relay systems, supporting RS-232 and RS-485 protocols — making it an ideal fit for IoT-connected environments.

2 Features

Input

- 1x HDMI 2.0
- 2x USB 3.0
- 1x 1G LAN (RJ45), 1x 1G FIBER
- 1x 3.5mm AUDIO IN
- Color depth: 8-/10-bit
- HDCP compliance: 2.3/1.4
- Frame rates: 24Hz to 60Hz
- Max. input/output resolution: 4096x2160@60Hz

Output

- 20x 1G LAN (RJ45)
- 1x 3.5mm AUDIO OUT
- 1x HDMI 2.0 LOOP
- Loads up to 13 million pixels (max. width/height: 8192 pixels)

Video & Display

- EDID management
- Image processing
 - HDR support
 - YUV444 10-bit
- LED display calibration
 - Pixel-by-pixel calibration
 - Virtual pixel technology
 - Standard/advanced seam correction

- Color adjustment
 - Independent RGB gamma adjustment
 - Brightness and chroma adjustment
 - Better grayscale at low brightness (preserves details and prevents grayscale loss)
 - Precise color management
- Screen configuration
 - Topology (configurable and savable for Ethernet ports)
 - Blackout and Freeze
- Audio
 - Independent audio input and output
- Device control
 - USB cascading control
 - RS-232 serial control

Audio

- Audio input and output via HDMI ports
- 3.5mm audio input and output
- Max. sampling rate/bit depth: 192kHz/24-bit
- 2-channel stereo

Device Control

- Serial control: RS-232/RS-485
- Remote control: IR/IO/Relay
- Cascading control: USB
- Network control: TCP/IP via LAN port

3 Appearance

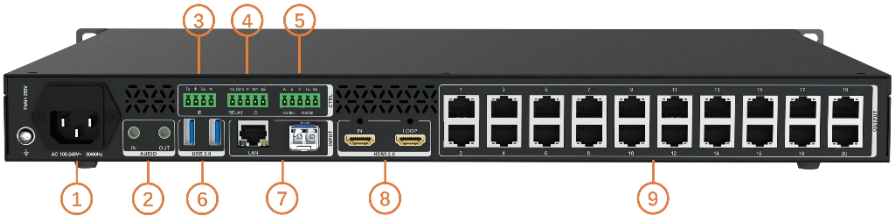
Front Panel



No.	Name	Description
1	2.0-inch LCD display	• Shows device name, IP address, and connection status (LAN/FIBER input and FIBER output). - Green: Normal connection - Gray: Abnormal or no connection
2	Knob	• Rotate the knob to navigate between the menu items. • Press the knob to confirm your selection.

3	ESC button	- Cancel the current input or operation - Return to the previous menu
4	Rocker switch	- Powers the device on/off: - I: ON - O: OFF

Rear Panel



No.	Name	Description
1	Power connector	1x C14 inlet, 100~240V, 50/60Hz
2	Audio connector	- Standard 3.5mm audio jacks: - IN: Audio input - OUT: Audio output
3	4-pin phoenix connector	- IR TX: Infrared output, 5V/10mA - IR RX: Infrared input, 5V/10mA
4	5-pin phoenix connector	- RELAY: Relay control, supports DC 30V/1A or AC 125V/0.5A - IO: 2x GPIO, 1x GND
5	5-pin phoenix connector	- RS485: Half-duplex, 2-pin - RS232: Full-duplex, 3-pin
6	USB	2x USB 3.0 ports: For control signal transmission or device cascading
7	ETH	- LAN port: 1xRJ45, 1000Mbps, PoE not supported - FIBER port: 1G SFP port, compatible with 1G/2.5G/5G/10G optical modules
8	HDMI	- HDMI 2.0 ports: - IN: Video input (HDCP 2.3/1.4), with embedded audio support - LOOP: Loop output of the video input
9	Ethernet output	20x RJ45 output ports

4 Signal Specifications

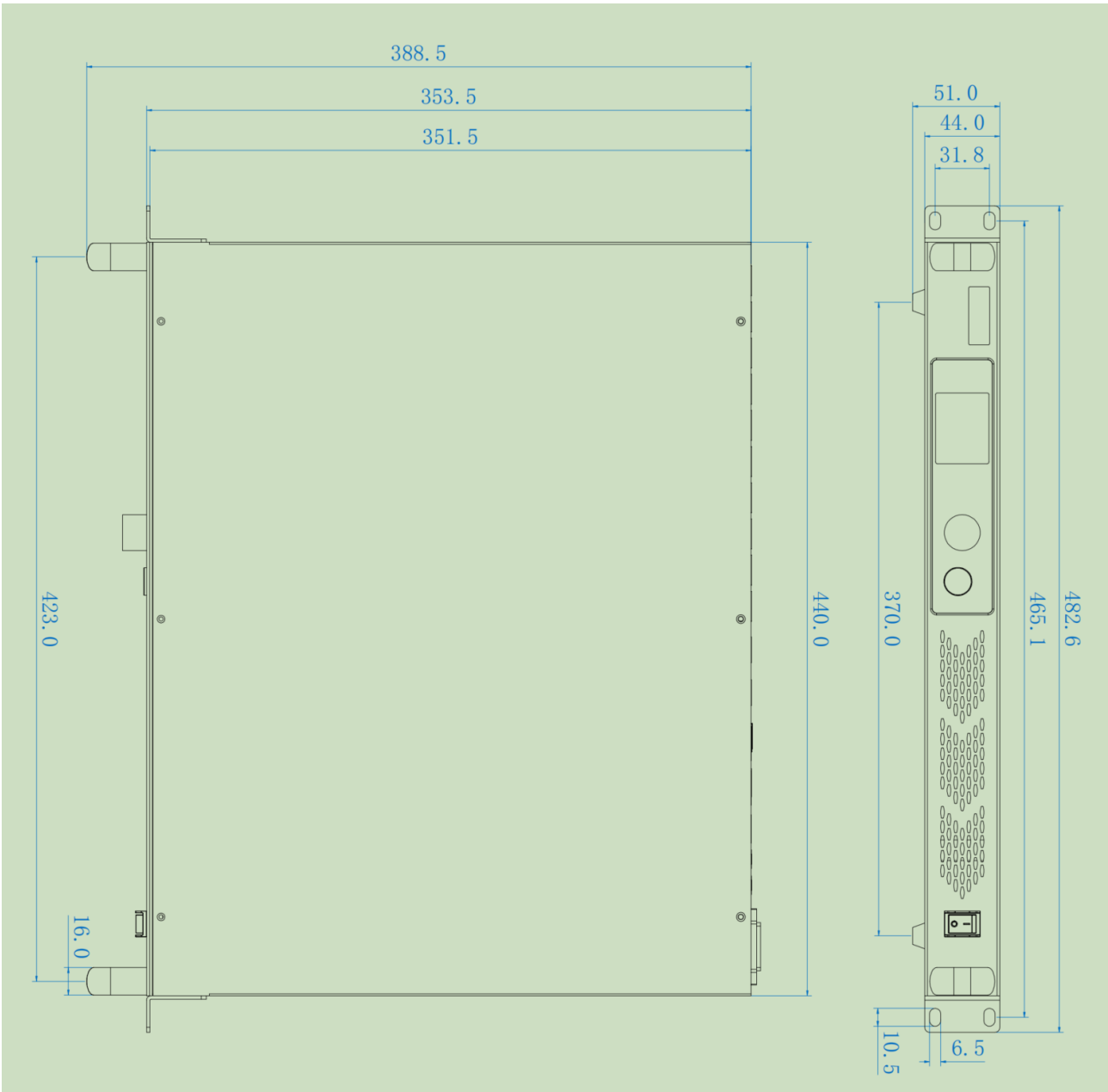
HDMI 2.0					
Input	Color Space	Sampling	Color Depth	Max. Resolution	Frame Rate
4K	YCbCr	4:2:0	8-/10-bit	4096x2160@60Hz	24, 25, 30, 50, 59.94, 60
	YCbCr	4:2:2	8-/10-bit	4096x2160@60Hz	
	YCbCr/RGB	4:4:4	8-bit	4096x2160@60Hz	
	YCbCr/RGB	4:4:4	10-bit	4096x2160@30Hz	
2K	YCbCr	4:2:0	8-/10-bit	1920x1200@60Hz	24, 25, 30, 50, 59.94, 60
	YCbCr	4:2:2	8-/10-bit	1920x1200@60Hz	
	YCbCr/RGB	4:4:4	8-/10-bit	1920x1200@60Hz	
Note: Only common resolutions are listed above.					
3.5mm Audio Jack					
Input/Output		Max. Sampling Rate/Bit Depth		Codec Standard	Channel
Analog signal		192kHz, 24bit		AAC, G.711A, G.711U, G.726	2-chanel stereo

5 Specifications

Video Decoding	Standard	H.264/H.265
Audio Codec	Standard	AAC/G.711A/G.711U/G.726
Protocol	Streaming	RTSP/SIP/RTP/ONVIF
	Network	TCP/IP
	Transmission	TCP/UDP
Electrical Specifications	Power supply	AC100~240V, 50/60Hz
	Power consumption	50W
Operating Environment	Temperature	-20°C~60°C (-4°F~140°F)
	Humidity	0%~90%, non-condensing
Storage Environment	Temperature	-20°C~60°C (-4°F~140°F)
	Humidity	0%~90%, non-condensing
Physical Specifications	Dimensions	482.6mm (19.00") x 388.5mm (15.30") x 51mm (2.01")
	Net weight	4.5kg (9.92lb)
Packaging	Box dimensions	610mm (24.02") x 490mm (19.29") x 120mm (4.72")
Noise Level (Typical at 25°C/77°F)		49dB (A)

6 Reference Dimensions

Unit: mm



7 Statements

7.1 Certifications

CQC, CE, FCC, IC, UKCA



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

7.2 Legal Statement

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Colorlight

Official Website



Colorlight Cloud Tech Ltd

Service Phone: 4008 770 775

Official Website: www.colorlightinside.com

Head Office Address: 37F-39F, Block A, Building 8, Zone C, Phase III,
Vanke Cloud City, Xili Street, Nanshan District, Shenzhen, China