HD-RX-4K-410-C-E-SW4

DigitalMedia™

DMPS Lite™ 4K Multiformat 4x1 AV Switch and Receiver with 4-Port Ethernet Switch

- *4K/60 4:2:0 capability*
- *Two DM Lite® ports for interoperability with up to two DM Lite transmitters*
- *Two HDMI® inputs*
- *One HDMI output with 4K scaler*
- *4-port Gigabit Ethernet switch with two PoE+ ports*
- *Two stereo line level inputs, two mono microphone inputs, and one mono auxiliary audio input*
- *Built-in amplifier with 25 W per channel for 4- or 8-ohm stereo speakers*
- *Two stereo auxiliary outputs*
- *IR, RS-232, relay, and I/O control ports*
- *CEC (Consumer Electronics Control) capability*
- *Automatic switching of inputs*
- *6x2 audio mixing capability*
- *EDID management*
- *HDCP management including HDCP 2.2 support*
- *Built-in web interface for easy configuration and monitoring*
- *Compatibility with Crestron® 3-Series® or later control systems*
- *.AV Framework™ technology support*
- *Native integration with Cisco Webex® and Touch 10 devices*
- *Compact surface-mountable design*

The Crestron HD-RX-4K-410-C-E-SW4 is a DMPS Lite™ multiformat AV switch and receiver that provides enhanced HDMI® video switching and audio presentation capabilities in areas such as conference rooms and classrooms. Compatible with all DM Lite® transmitters, the HD-RX-4K-410-C-E-SW4 provides two DM Lite inputs for connection to up to two transmitters. A CATx (CAT5e or higher) twisted pair cable connects a transmitter to the HD-RX-4K-410-C-E-SW4 for the transmission of HDMI signals. For resolutions up to 2K, the maximum transmission distance is 230 ft (70 m). For higher resolutions up to 4K, the maximum transmission distance is 130 ft (40 m).[1]

> **NOTE:** Power is transmitted over the CATx cable that connects the HD-RX-4K-410-C-E-SW4 to a DM Essentials transmitter. The HD-RX-4K-410-C-E-SW4 can power two transmitters simultaneously.

In addition to two DM Essentials inputs, the HD-RX-4K-410-C-E-SW4 provides two HDMI inputs that can be connected to local AV sources or to optional Crestron® media presentation wall plates (MP-WP152 or MPI-WP150 Series, sold separately).

Automatic Switching of Inputs

Automatic switching among the DM Essentials and HDMI inputs can occur based on the last connected input or on the routing priority assigned to each input. Switching behavior is configurable using the web interface or programmable using a Crestron control system. In addition, input selection push buttons on the front panel of the HD-RX-4K-410-C-E-SW4 enable the desired input to be selected manually.

HDMI Output with 4K Scaler

A single HDMI output with a built-in scaler connects to a display or other device with an HDMI input. Input resolutions are automatically scaled to match the native resolution of the display device, resulting in optimal image quality. For applications requiring comprehensive EDID management, the web interface can be used to ensure that every input is displayed at its optimal resolution and format. Input resolutions up to 4K60 4:2:0 are supported.

4-Port Gigabit Ethernet Switch with Two PoE+ Ports

The HD-RX-4K-410-C-E-SW4 includes a 4-port Gigabit Ethernet switch. Two of the ports (Ports 3 and 4) are PoE+ power sourcing equipment (PSE) ports that can be connected to two PoE+ powered devices (PDs) simultaneously.

> **NOTE:** The Ethernet switch functions as a simple unmanaged switch that does not support configuration and administrative settings. The Ethernet ports on the HD-RX-4K-410-C-E-SW4 are not recommended for

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streaming video content using Crestron DM NVX® or third-party AV-over-IP products.

Enhanced Audio Capabilities

The HD-RX-4K-410-C-E-SW4 includes a built-in amplifier that can drive a pair of 4- or 8-ohm stereo speakers (25 W per channel). The HD-RX-4K-410-C-E-SW4 also provides 6x2 audio mixing capability. Embedded HDMI 2-channel LPCM audio can be extracted from the selected DM Lite or HDMI input and combined with the five analog audio inputs (LINE 1, LINE 2, MIC 1, MIC 2, and AUX). Gain and mute sound adjustments can be made to each of the six inputs being mixed. The mixed audio is then transmitted as two audio outputs: one mirrored AUX 1, SPEAKER, HDMI mixer output and one AUX 2 output. Audio mixer settings such as volume and mute control are configurable for each of the two outputs independently.

Device Control

Equipped with onboard control ports, the HD-RX-4K-410-C-E-SW4 can control various devices in a room. The COM (RS-232) port and CEC over the HDMI output can enable the display device to be turned on or off automatically without the use of a control system. With the use of a control system, the IR port can also control the display device. Two relay ports are provided for controlling a projection screen and other low-voltage contact-closure activated equipment. Two Versiport I/O ports enable the integration of devices such as power sensors and motion detectors. An Ethernet port connection to a LAN also provides control by enabling use of the built-in web interface as well as connection to a control system.

NOTE: The IR, COM, and Ethernet ports cannot be used to extend signals over a DM Essentials connection.

Native Integration with Cisco Webex® and Touch 10 Devices

Native integration of the Cisco API enables source inputs of the HD-RX-4K-410-C-E-SW4 to be added to a compatible Cisco Webex video conference system that is controlled by a Cisco Touch 10 control unit. Eliminating the need for control system programming, integration with Cisco® devices is accomplished by using the Crestron Configuration tool, which is hosted on the Crestron website at configuration.crestron.com. Configuration includes the selection of the desired Crestron and Cisco hardware models and the assignment of HD-RX-4K-410-C-E-SW4 input names and icons for use on the Cisco Touch 10 screen. The resulting configuration file is then downloaded from the website and loaded to the HD-RX-4K-410-C-E-SW4 using the HD-RX-4K-410-C-E-SW4 web interface. Communication is established between the HD-RX-4K-410-C-E-SW4 and Cisco devices, enabling the Cisco Touch 10 to display and control the additional HD-RX-4K-410-C-E-SW4 inputs.

Compact Design

Compact in design, the HD-RX-4K-410-C-E-SW4 can be mounted onto a flat surface such as a wall or attached to the underside of a table.

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Specifications

Video

Switcher: 4x1 auto-switching or manual, audio-follows-video, Crestron Auto-Locking® and QuickSwitch HD™ technologies

Scaler (HDMI Output): 4K video scaler with intelligent frame rate conversion, Deep Color support, content-adaptive noise reduction, 3:2/2:2 pull-down detection and recovery

Input Signal Types: HDMI with Deep Color and 4K (DVI and Dual-Mode DisplayPort™ interface compatible[2]) on Inputs 1-2, DM Lite with Deep Color and 4K on Inputs 3-4

Output Signal Types: HDMI with Deep Color and 4K (DVI compatible[3])

Copy Protection: HDCP 2.2

Maximum Resolutions: Common resolutions are listed below for the HDMI and DM Lite inputs.

Scan Type	Resolution	Frame Rate	Color Sampling	Color Depth
Progressive	4096x2160 DCI 4K and 3840x2160 4K UHD	24 Hz	4:4:4	30 bit
		30 Hz	4:4:4	24 bit
		30 Hz	4:2:2	36 bit
		60 Hz	4:2:0	24 bit
	2560x1600 WQXGA	60 Hz	4:4:4	36 bit
	1920x1080 HD 1080p	60 Hz	4:4:4	36 bit

NOTES:

- Custom resolutions are supported at pixel clock rates up to 300 MHz.
- Interlaced video sources are not supported.

Scaler Output Resolutions, HDMI:

Auto (EDID preferred), 1280x720p@50Hz (720p50), 1280x720p@60Hz (720p60), 1920x1080i@25Hz (1080i25), 1920x1080i@30Hz (1080i30), 1920x1080p@30Hz (1080p30), 1920x1080p@25Hz (1080p25), 1920x1080p@24Hz (1080p24), 1920x1080p@50Hz (1080p50), 1920x1080p@60Hz (1080p60), 3840x2160p@24Hz, 3840x2160p@25Hz, 3840x2160p@30Hz, 4096x2160p@24Hz, 4096x2160p@25Hz, 4096x2160p@30Hz, 3840x2160p@50Hz, 3840x2160p@60Hz, 4096x2160p@50Hz, 4096x2160p@60Hz

Audio, General

Switcher/Mixer: 6x2 audio mixer:

Audio Inputs:
Two stereo 2-channel LINE inputs
Two mono 1-channel MIC inputs
One mono 1-channel AUX input
One stereo 2-channel LPCM audio extracted from the selected HDMI or DM Lite input source

Audio Outputs:
One mirrored AUX 1, SPEAKER, and HDMI mixer output, stereo 2-channel
One AUX 2 output, stereo 2-channel

Analog-to-Digital Conversion: 24-bit 48 kHz

Digital-to-Analog Conversion: 24-bit 48 kHz

Frequency Response, Analog Audio Outputs:
20 Hz to 20 kHz ±0.5 dB (AUX outputs)
20 Hz to 20 kHz @ full power ±3 dB (speaker output)

S/N Ratio, Analog Audio Outputs:
>95 dB @ 10 dBV, 20 Hz to 20 kHz, A-weighted (AUX outputs)
>90 dB @ 10 dBV, 20 Hz to 20 kHz, A-weighted (speaker output)

THD+N, Analog Audio Outputs:
<0.005% @ 1 kHz and 10 dBV (AUX outputs)
<0.3% @ 1 kHz and 10 dBV (speaker output)

Stereo Separation, Analog Audio Outputs:
20 Hz to 20 kHz ≤80 dB (AUX outputs)
20 Hz to 20 kHz ≤60 dB (speaker output)

Audio, Microphone Inputs

Two balanced 1-channel microphone inputs (MIC 1 and MIC 2):

Input Signal Type: Mono analog

Phantom Power: +48 VDC, 12 mA, enable or disable per channel

Gain: 0 dB to +60 dB per channel in 1 dB increments

Mute: Enable or disable per channel

Audio, Line Inputs

Two balanced/unbalanced 2-channel line inputs (LINE 1 and LINE 2):

Input Signal Type: Stereo analog

Balanced Line Input Level: 4 Vrms

Unbalanced Line Input Level: 2 Vrms

Line Input Impedance: >10k ohms

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Audio, Auxiliary Input

One balanced 1-channel auxiliary input (AUX):

Input Signal Type: Mono analog

Balanced Line Input Level: 4 Vrms

Line Input Impedance: >10k ohms

Audio, Source Inputs

Two HDMI and two DM Lite inputs (HDMI 1-2 and DM Lite 3-4):

Input Signal Types: HDMI (Dual-Mode DisplayPort interface compatible), DM Lite

Digital Formats: 2-channel LPCM

Audio Outputs

One mirrored SPEAKER, HDMI, and balanced/unbalanced AUX 1 mixer output:

Output Signal Type/Format: Stereo 2-channel

AUX 1 Output Impedance: 200 ohms balanced, 100 ohms unbalanced

AUX 1 Maximum Output Level: 4 Vrms balanced, 2 Vrms unbalanced

Selected Source: -80 dB to +20 dB level adjustment range plus Mute

MIC 1-2: -80 dB to +20 dB level adjustment range plus Mute

LINE 1-2: -80 dB to +20 dB level adjustment range plus Mute

AUX: -80 dB to +20 dB level adjustment range plus Mute

Master Volume: -80 dB to +20 dB level adjustment range plus Mono

Amplifier Output Power: 25 W RMS per channel @ 8 ohms, 4 ohms tolerant

Amplifier Power: On or off

Mute: Enable or disable independently for AUX 1, SPEAKER, and HDMI mixer output

One balanced/unbalanced AUX 2 output:

Output Signal Type/Format: Stereo 2-channel

Output Impedance: 200 ohms balanced, 100 ohms unbalanced

Maximum Output Level: 4 Vrms balanced, 2 Vrms unbalanced

Selected Source: -80 dB to +20 dB level adjustment range plus Mute

MIC 1-2: -80 dB to +20 dB level adjustment range plus Mute

LINE 1-2: -80 dB to +20 dB level adjustment range plus Mute

AUX: -80 dB to +20 dB level adjustment range plus Mute

Master Volume: -80 dB to +20 dB level adjustment range plus Mono

Mute: Enable or disable for AUX 2

Communications

Ethernet: 100/1000 Mbps, auto-switching, auto-negotiating, auto-discovery, full/half duplex, CIP, DHCP, web browser setup and control

RS-232: 2-way device control and monitoring up to 115.2k baud with hardware and software handshaking

IR: 1-way device control via infrared up to 60 kHz

HDMI: HDCP 2.2, EDID, CEC

DM Lite: HDCP 2.2, EDID

Connectors

L/R, LINE INPUT 1-2: (2) 5-pin 3.5 mm detachable terminal blocks

MIC INPUT 1-2: (2) 3-pin 3.5 mm detachable terminal blocks

AUX INPUT: (1) 3-pin 3.5 mm detachable terminal block

HDMI INPUT 1-2: (2) HDMI Type A connectors, female;
HDMI digital video/audio inputs;
DVI and Dual-Mode DisplayPort interface compatible[2]

DM Lite INPUT 3-4: (2) 8-pin RJ-45 yellow connectors, female, shielded;
DM Lite input ports for connection to DM Lite transmitters

L/R, AUX OUT 1-2: (2) 5-pin 3.5 mm detachable terminal blocks

HDMI OUTPUT: (1) HDMI Type A connector, female;
HDMI digital video/audio output;
DVI compatible[3]

> **NOTE:** CEC over the HDMI output provides Power On/Off control of the display device without a control system or full programmable control of any device with a control system.

Ethernet 1-4: (4) 8-pin RJ-45 connector, female;
100BASE-TX/1000BASE-T Ethernet ports;
Ports 3-4: PoE+ Power Sourcing Equipment (PSE) outputs, IEEE 802.3at Type 2 PoE+ Class 4 (25.5 W) compliant

SPEAKER OUTPUT: (2) 2-pin 7.62 mm reversed gender 20 A detachable terminal blocks, power amplifier outputs;
Wire Size: Terminals accept up to 12 AWG (3.31 mm);
Output is direct-coupled—not transformer isolated

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I/O 1-2: (2) 2-pin detachable terminal blocks;
Comprised of 2 Versiport digital input/output or analog input ports (referenced to GND);
Digital Input: Rated to 0-24 VDC, input impedance 20k ohms, logic threshold >3.125 V low/0 and <1.875 V high/1;
Digital Output: 250 mA sink from maximum 24 VDC, catch diodes for use with real world loads;
Analog Input: Rated for 0-10 VDC, protected to 24 VDC maximum, input impedance 21k ohms with pull-up resistor disabled;
Programmable 5 V, 2k ohms pull-up resistor per pin

RLY 1-2: (2) 2-pin detachable terminal blocks;
Comprised of 2 normally open, isolated relays;
Rated 1 A, 30 VAC/VDC;
MOV arc suppression across contacts

IR: (1) 2-pin 3.5 mm detachable terminal block;
IR output control port; supports IR up to 60 kHz;
IRP2 emitter sold separately

> **NOTE:** The IR port provides Power On/Off control of the display device with the use of a control system.

COM: (1) 5-pin 3.5 mm detachable terminal block;
Bidirectional RS-232 port;
Supports RS-232 up to 115.2k baud with hardware and software handshaking

> **NOTE:** The COM port provides Power On/Off control of the display device without a control system or full programmable control of any device with a control system.

100-240V 4A-2A 50/60 Hz: (1) IEC 60320 C14 mains power inlet;
Mates with removable power cord, included

> **NOTE:** This power connection powers both the HD-RX-4K-410-C-E-SW4 and all connected DM Lite transmitters. When connected to the HD-RX-4K-410-C-E-SW4, DM Lite transmitters must not be connected to power.

SERVICE: (1) USB Type A connector, female;
For factory use only

Controls and Indicators

PWR: (1) LED, indicates that power is being applied to the HD-RX-4K-410-C-E-SW4. Amber indicates that the device is booting. Green indicates that the device is operational.

INPUT 1-4: (4) Push buttons for manual input selection and (4) LEDs. Green indicates that video is switched. Amber indicates that video is detected but is not switched.

AUTO: (1) Push button to enable or disable automatic switching, and (1) green LED to indicate that automatic switching is enabled

SETUP: (1) Red LED and (1) push button for display of IP address on the HDMI output

DM Lite: (2) LEDs on RJ-45 connector. Green indicates that a DM Lite link is established. Flashing amber indicates non-HDCP video and solid amber indicates HDCP video.

Ethernet: (2) LEDs on RJ-45 connector. Green indicates that an Ethernet link is established. Flashing amber indicates Ethernet activity.

Power

Mains Power: 4 A - 2 A @ 100-240 VAC, 50/60 Hz

> **NOTE:** The AC mains power connection powers both the HD-RX-4K-410-C-E-SW4 and all connected DM Lite transmitters. When connected to the HD-RX-4K-410-C-E-SW4, DM Lite transmitters must not be connected to power.

Environmental

Temperature: 32° to 104° F (0° to 40° C)

Humidity: 10% to 90% RH (non-condensing)

Enclosure

Chassis: Metal, black finish, vented sides, 2 mounting flanges attached

Mounting: Surface mount

Dimensions

Height: 10.22 in. (260 mm)

Width: 14.18 in. (361 mm) with mounting flanges attached

Depth: 1.74 in. (45 mm)

Compliance

Regulatory Model: M1845002
UL® Listed for US and Canada, CE, IC, FCC Part 15 Class B digital device

Model

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Accessories

For a list of accessories, visit the HD-RX-4K-410-C-E-SW4 product page.

Notes:

1. For DM Lite connections, use Crestron DM-CBL-8G, Crestron DM-CBL-ULTRA, or third-party CAT5e or higher cable. To safeguard against unpredictable environmental electrical noise that may impact performance at resolutions above 1080p, shielded cable and connectors are recommended for all applications and are required when bundling multiple cables in a wire run. Wire and cables sold separately. DM Lite ports are not compatible with DigitalMedia 8G+®, HDBaseT®, PoE, or PoDM technology or any other type of CATx based interface or network.
2. The HDMI input requires an appropriate adapter or interface cable to accommodate a DVI or Dual-Mode DisplayPort signal. CBL-HDI-DVI interface cables are available separately.
3. The HDMI output requires an appropriate adapter or interface cable to accommodate a DVI signal. CBL-HDI-DVI interface cables are available separately.

This product may be purchased from select authorized Crestron dealers and distributors. To find a dealer or distributor, please contact the Crestron sales representative for your area. A list of sales representatives is available online at www.crestron.com/How-To-Buy/Find-a-Representative or by calling 855-263-8754.

This product is covered under the Crestron standard limited warranty. Refer to www.crestron.com/warranty for full details.

The specific patents that cover Crestron products are listed online at patents.crestron.com.

Certain Crestron products contain open source software. For specific information, please visit www.crestron.com/opensource.

HDMI

Specifications are subject to change without notice.

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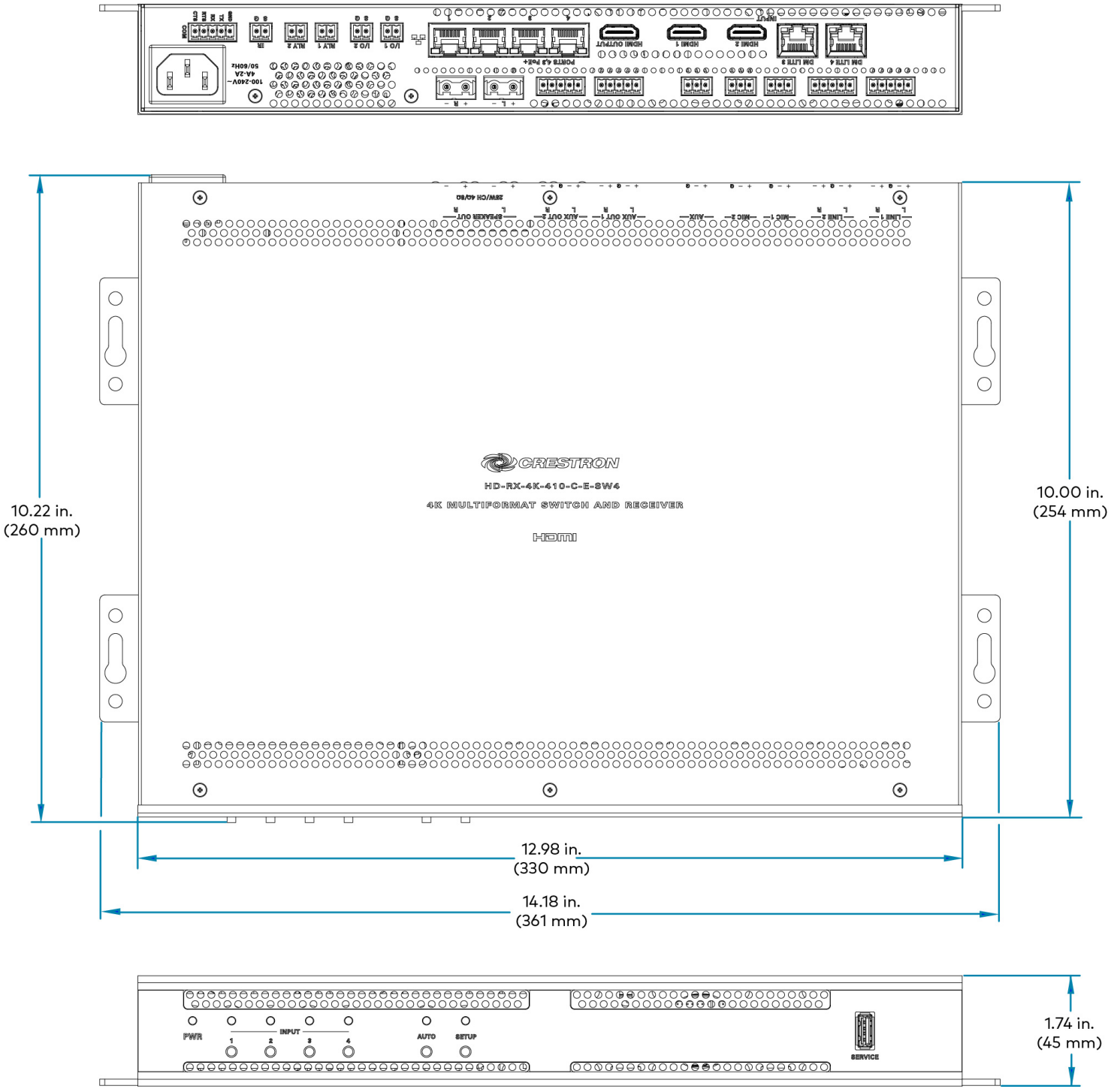

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