

DM Lite™ 4K Multiformat Switch and Receiver, 3 DM Lite and 2 HDMI® Inputs, 1 HDMI Output

- 4K/60 4:2:0 capability
- Three DM Lite™ ports for interoperability with up to three DM Lite transmitters
- Two HDMI® inputs
- One HDMI output with 4K scaler
- Two stereo line level, two mono microphone, 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
- 100/1000 Mbps Ethernet LAN connection
- Automatic switching of inputs
- 6 x 2 audio mixing capability
- Enterprise-grade security using IEEE 802.1X authentication
- EDID management
- HDCP management including HDCP 2.2 support
- Built-in web interface for easy configuration and monitoring
- Compatibility with a Crestron® 3-Series® (or later) control systems
- .AV Framework™ technology support
- Compact surface- and rack-mount design

The Crestron® HD-RX-4K-510-C-E multiformat switch and receiver 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-510-C-E provides three DM Lite inputs for connection to up to three transmitters. A CAT5e (or higher) twisted pair cable connects a transmitter to the HD-RX-4K-510-C-E for the transmission of HDMI signals. For resolutions up to 2K, the maximum transmission distance is 230 feet (70 meters). For higher resolutions up to 4K, the maximum transmission distance is 130 feet (40 meters).¹

NOTE: Power is transmitted over the cable that connects the HD-RX-4K-510-C-E to a transmitter. The HD-RX-4K-510-C-E can power three transmitters simultaneously. When connected to an HD-RX-4K-510-C-E, DM Lite transmitters must not be connected to power.

In addition to three DM Lite inputs, the HD-RX-4K-510-C-E provides two HDMI inputs that can be connected to local AV sources. Automatic switching among the five inputs can occur based on the last connected input. Switching behavior is configurable using the web interface or programmable using a Crestron control system. Input selection push buttons on the front panel of the HD-RX-4K-510-C-E also allow the desired input to be selected manually.

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.

The HD-RX-4K-510-C-E provides enhanced audio capabilities. A built-in amplifier can drive a pair of 4- or 8-ohm stereo speakers (25 watts per channel). The HD-RX-4K-510-C-E also provides 6 x 2 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.

Equipped with onboard control ports, the HD-RX-4K-510-C-E 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 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. The LAN port connection to an Ethernet network 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 LAN ports cannot be used to extend signals over a DM Lite connection.

In addition to a built-in web interface and control system programming, the built-in .AV Framework™ technology of the MPC3-201 and MPC3-302 control systems and the Crestron Virtual Control platform (VC-4 Series) can be used to control the HD-RX-4K-510-C-E as a switcher. (For additional information about .AV Framework technology, visit <https://www.crestron.com/avframework>.)

Compact in design, the HD-RX-4K-510-C-E is intended to be installed at the location of the display device. The HD-RX-4K-510-C-E can be mounted onto a flat surface such as a wall or attached to the underside of a table. The HD-RX-4K-510-C-E also provides a 1 RU 3/4 rack width enclosure that can be easily installed into a rack. If rack mounting is desired, an optional rack-mount kit is available for purchase as an accessory.

Specifications

Video

Switcher: 5 x 1 auto-switching or manual, audio-follows-video, Crestron Auto-Locking® and QuickSwitch HD™ technologies

Scaler (HDMI Output): 4K video scaler with motion-adaptive deinterlacing, 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™ compatible²) on Inputs 1-2, DM Lite with Deep Color and 4K on Inputs 3-5

Output Signal Types: HDMI with Deep Color and 4K (DVI compatible³)

Copy Protection: HDCP 2.2

Maximum Resolutions: Common resolutions are shown below for the HDMI and DM Lite inputs. Other resolutions are supported at pixel clock rates up to 300 MHz.

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
Interlaced	1920x1080 HD 1080p	60 Hz	4:4:4	36 bit
		1920x1080 HD 1080i	30 Hz	4:4:4

Scaler Output Resolutions, HDMI:

Auto (EDID preferred), 720p50, 720p60, 1080i25, 1080i30, 1080p30, 1080p25, 1080p24, 1080p50, 1080p60, 3840x2160@24Hz, 3840x2160@25Hz, 3840x2160@30Hz, 4096x2160@24Hz, 4096x2160@25Hz, 4096x2160@30Hz, 3840x2160@50Hz, 3840x2160@60Hz, 4096x2160@50Hz, 4096x2160@60Hz

Audio, General

Switcher/Mixer: 6 x 2 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 stereo 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

Gain: -20 dB to +20 dB per input

Line Input Impedance: >10k ohms

Mute Control: Enable or disable per input

Audio, Auxiliary Input

One balanced 1-channel auxiliary input (AUX):

Input Signal Type: Mono analog

Balanced Line Input Level: 4 Vrms

Gain: -20 dB to +20 dB

Line Input Impedance: >10k ohms

Mute: Enable or disable

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Audio, Source Inputs

Two HDMI and three DM Lite inputs (HDMI 1-2 and DM Lite 3-5):

Input Signal Types: HDMI (Dual-Mode DisplayPort 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

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

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 compatible²

DM Lite INPUT 3-5: (3) 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 compatible³

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.

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

I/O 1-2: (2) 2-pin detachable terminal blocks; Comprises 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 volts, 2k ohms pull-up resistor per pin

RLY 1-2: (2) 2-pin detachable terminal blocks; Comprises 8 normally open, isolated relays; Rated 1 amp, 30 VAC/VDC; MOV arc suppression across contacts

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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.

LAN: (1) 8-pin RJ-45 connector, female; 100BASE-TX/1000BASE-T Ethernet port

100-240V - 2.0A 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-510-C-E and all connected DM Lite transmitters. When connected to the HD-RX-4K-510-C-E, DM Lite transmitters must not be connected to power.

SERVICE: (1) USB Type A connector, female; For firmware loading

Controls and Indicators

PWR: (1) LED, indicates that power is being applied to the HD-RX-4K-510-C-E. Amber indicates that the device is booting. Green indicates that the device is operational.

INPUT 1-5: (5) Push buttons for manual input selection and (5) LEDs. Green indicates that video is detected and 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. Right LED, green indicates that a DM Lite link is established. Left LED, flashing amber indicates non-HDCP video and solid amber indicates HDCP video.

LAN: (2) LEDs on RJ-45 connector. Left LED, green indicates that an Ethernet link is established. Right LED, flashing amber indicates Ethernet activity.

Power

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

NOTE: The AC mains power connection powers both the HD-RX-4K-510-C-E and all connected DM Lite transmitters. When connected to the HD-RX-4K-510-C-E, DM Lite transmitters must not be connected to power.

Enclosure

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

Mounting: Surface mount or 1 RU 3/4-width rack mount (rack-mount kit sold separately)

Dimensions

Height: 1.73 in (44 mm)

Width: 14.17 in (360 mm) with mounting flanges attached

Depth: 10.12 in (257 mm)

Weight

7.5 lb (3.4 kg) with mounting flanges attached

Models and Accessories

Available Models

HD-RX-4K-510-C-E

Available Accessories

HD-TX-101-C-1G-E-B-T: DM Lite—HDMI® over CATx Transmitter, Wall Plate, Black Textured

HD-TX-101-C-1G-E-W-T: DM Lite—HDMI® over CATx Transmitter, Wall Plate, White Textured

HD-TX-101-C-E: DM Lite—HDMI® over CATx Transmitter, Surface Mount

HD-TXC-101-C-E: DM Lite—HDMI® over CATx Transmitter with IR and RS-232, Surface Mount

HD-TXC-101-C-1G-E-B-T: DM Lite—HDMI® over CATx Transmitter with IR and RS-232, Wall Plate, Black Textured

HD-TXC-101-C-1G-E-W-T: DM Lite—HDMI® over CATx Transmitter with IR and RS-232, Wall Plate, White Textured

HD-TX-201-C-2G-E-B-T: DM Lite—HDMI® over CATx Transmitter and 2x1 Auto-Switcher with VGA and Analog Audio, Wall Plate, Black Textured

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HD-TX-201-C-2G-E-W-T: DM Lite—HDMI® over CATx Transmitter and 2x1 Auto-Switcher with VGA and Analog Audio, Wall Plate, White Textured

HD-TX-301-C-E: DM Lite—HDMI® over CATx Transmitter and 3x1 Auto-Switcher with 2x HDMI plus VGA and Analog Audio, Surface Mount

HDI-TX-301-C-2G-E-B-T: DM Lite—HDMI® over CATx Transmitter and 3x1 Auto-Switcher with 2x HDMI plus VGA and Analog Audio, UK/European Wall Plate, Black Textured

HDI-TX-301-C-2G-E-W-T: DM Lite—HDMI® over CATx Transmitter and 3x1 Auto-Switcher with 2x HDMI plus VGA and Analog Audio, UK/European Wall Plate, White Textured

AMP-1200-100: Single-Channel Modular Power Amplifier, 200 W, 100 V

AMP-1200-70: Single-Channel Modular Power Amplifier, 200 W, 70 V

AMP-150-100: Single-Channel Modular Power Amplifier, 50 W, 100 V

AMP-150-70: Single-Channel Modular Power Amplifier, 50 W, 70 V

AMP-2100: Dual-Channel Modular Power Amplifier, 100 W/Ch., 4/8Ω

AMP-2100-100: Dual-Channel Modular Power Amplifier, 100 W/Ch., 100 V

AMP-2100-70: Dual-Channel Modular Power Amplifier, 100 W/Ch., 70 V

AMP-225: Dual-Channel Modular Power Amplifier, 25 W/Ch., 4/8Ω

MP-AMP30: Media Presentation Audio Amplifier

SAROS SB-200-P-B: Saros® Sound Bar 200, Powered, Black

CNSP-XX: Custom Serial Interface Cable

IRP2: IR Emitter Probe with Terminal Block Connector

AM-200: AirMedia® Presentation System 200

CBL-HD-6: Crestron® Certified HDMI® Interface Cable, 18 Gbps, 6 ft (1.8 m)

CBL-HD-DVI-6: Crestron® Certified HDMI® to DVI Interface Cable, 6 ft (1.8 m)

CBL-HD-LOCK-8: Locking High-Speed HDMI® Cable, 10.2 Gbps, 8 ft (2.4 m)

DM-8G-CONN-WG-100: Connectors with Wire Guide for DM-CBL-8G DigitalMedia 8G™ Cable, 100-Pack

DM-8G-CRIMP-WG: Crimping Tool for DM-8G-CONN-WG

DM-CBL-8G-NP-SP1000: DigitalMedia 8G™ Cable, non-plenum, 1000 ft spool

DM-CBL-8G-P-SP1000: DigitalMedia 8G™ Cable, plenum, 1000 ft spool

DM-CBL-ULTRA-LSZH-SP1000: DigitalMedia™ Ultra Cable, Low Smoke Zero Halogen, 1000 ft spool (available only in Europe)

DM-CBL-ULTRA-NP-SP1000: DigitalMedia™ Ultra Cable, Non-Plenum Type CMR, 1000 ft spool

DM-CBL-ULTRA-PC-5: DigitalMedia™ Ultra Patch Cable, 5 ft (1.5 m)

DM-CBL-ULTRA-PC-50: DigitalMedia™ Ultra Patch Cable, 5 ft (1.5 m)

DM-CBL-ULTRA-P-SP1000: DigitalMedia™ Ultra Cable, Plenum Type CMP, 1000 ft spool

DM-CONN-20: DigitalMedia™ Ultra Cable, Plenum Type CMP, 1000 ft spool

DM-CONN-ULTRA-RECP-20: DigitalMedia™ Ultra Keystone RJ-45 Jack, 20-Pack with Termination Tool

DM-RPP-K24: DigitalMedia™ 24-Port Keystone Patch Panel

MPI-WP150-120: Media Presentation Wall Plate—International Version—HDMI® with Mini-TRS Stereo Audio, White

MP-WP152-W: Media Presentation Wall Plate—HDMI®, White

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 devices are not compatible with DigitalMedia 8G+®, HDBase™, 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 an authorized Crestron dealer. To find a dealer, please contact the Crestron sales representative for your area. A list of sales representatives is available online at <https://www.crestron.com/How-To-Buy/Find-a-Representative> or by calling 855-263-8754.

Additional resources can be accessed via the Crestron Commercial Lighting Consultants Partner Portal at <http://www.crestron.com/about/partner-info/commercial-lighting-consultants>. For assistance with incorporating this product into a design or specification, please contact the Commercial Lighting Consultant Hotline via email at clcdesign@crestron.com or by calling 888-330-1502.

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

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

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