DM-RMC-4KZ-SCALER-C

DigitalMedia™

DigitalMedia 8G+® 4K60 4:4:4 HDR Receiver and Room Controller with Scaler

- *DigitalMedia 8G+® receiver, audio extractor, and display controller*
- *Handles UHD and 4K video resolutions up to 4K60 4:4:4*
- *Handles HDR (High Dynamic Range) video (HDR10) and Deep Color*
- *Provides one DM 8G+® input for connection to a DM® switcher or transmitter via a single CAT 5e (or higher) twisted pair cable*
- *Compatible with the HDBaseT® standard*
- *Provides one HDMI® input*
- *Provides one HDMI output with 4K60 4:4:4 scaler*
- *Enables adjustable overscan or underscan up to 7.5%*
- *Provides a stereo analog line-level audio output*
- *Allows de-embedding of stereo 2-channel audio signals*
- *Handles Dolby® TrueHD, Dolby Atmos®, DTS-HD®, and uncompressed 7.1 linear PCM audio*
- *HDCP 2.2 compliant*
- *Supports video wall configurations of up to 8 x 8*
- *Supports cable lengths up to 330 ft (100 m) for all resolutions up to UHD and 4K using DM Ultra cable*
- *Supports cable lengths up to 330 ft (100 m) for 1080p, WUXGA, and 2K using DM 8G® cable or CAT5e*
- *Supports cable lengths up to 230 ft (70 m) for UHD and 4K using DM 8G cable, or 165 ft (50 m) using CAT5e*
- *Provides a 100 Mbps Ethernet LAN connection*
- *Enables device control via CEC, IR, RS-232, and Ethernet*
- *Compatible with Crestron® USB over Ethernet Extenders*
- *Provides two low-voltage relay control ports*
- *Powered via the DM connection or optional power pack (sold separately)*
- *Low-profile surface-mount design*

The DM-RMC-4KZ-SCALER-C provides an advanced one-box interface solution for a single display device as part of a complete Crestron® DigitalMedia™ system. Functioning as a DM 8G+® receiver, 4K60 4:4:4 HDR video scaler, and control interface, the DM-RMC-4KZ-SCALER-C provides DM 8G+ and HDMI® inputs, an HDMI output, and an analog audio output.[1, 2, 3] RS-232, IR, Ethernet, and relay control ports are also provided.

4K60 4:4:4 and HDR Support

The DM-RMC-4KZ-SCALER-C incorporates DM 4KZ technology, which uses VESA® Display Stream Compression (DSC) to handle the extreme bandwidth requirement of resolutions beyond 4K30 4:4:4 and 4K60 4:2:0. DSC is a lightweight, line-based 2:1 compression standard that delivers visually lossless performance for 4K60 4:4:4 and HDR signals.[4] DSC is applied only to 4K60 4:4:4 and HDR input signals. All other signals are transported uncompressed.

An existing 4K DigitalMedia system can be upgraded to handle 4K60 4:4:4 and HDR video with the installation of DM 4KZ cards, transmitters, and receivers. The upgrade can be accomplished without the need to replace wiring or switchers. The DM-RMC-4KZ-SCALER-C can replace a DM-RMC-4K-SCALER-C in an existing installation (additional programming may be required).

DM 8G+ Technology

Engineered for ultra high-bandwidth and ultimate scalability, Crestron® DM 8G+ technology transports high-definition video, audio, power, Ethernet, and control signals over twisted pair copper wire. Uncompressed Full HD 1080p, WUXGA, and 2K signals are supported at distances up to 330 feet (100 m) using Crestron DM® Ultra Cable, Crestron DM 8G® Cable, or third-party CAT5e (or higher). Higher resolution signals up to UHD and 4K are supported at distances up to 330 feet (100 m) using DM Ultra Cable, 230 feet (70 m) using DM 8G Cable, or 165 feet (50 m) using third-party CAT5e (or higher).[5]

Compatible with the HDBaseT Standard

DM 8G+ technology is designed using HDBaseT Alliance specifications, ensuring interoperability with other HDBaseT® certified products. Via the DM 8G+ input, the DM-RMC-4KZ-SCALER-C can be connected directly to an HDBaseT compliant source without requiring a DM transmitter.

Multimedia Display Interface

The DM-RMC-4KZ-SCALER-C provides simple switching between a DM input and an HDMI input. An input can be selected manually by using the INPUT SELECT push button on the device, programmatically through a control system, or automatically by connecting a source to an input.

A single HDMI output port is provided for connection to a display device. The HDMI output can also handle DVI signals using an appropriate adapter or interface cable.[2]

A single CAT5e (or higher) cable connects the DM-RMC-4KZ-SCALER-C to a DM switcher or transmitter or to an HDBaseT source, transporting video, audio, control, networking, and power signals through one simple RJ-45 connection. Multiple DM-RMC-4KZ-SCALER-C devices can be installed to handle each display in a multiroom distribution system—all fed from a central DM switcher. Alternatively, a single DM-RMC-4KZ-SCALER-C can be fed straight from a DM 8G+ or HDBaseT transmitter, providing a simple solution for extending a computer or AV signal to a single display.

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DigitalMedia 8G+® 4K60 4:4:4 HDR Receiver and Room Controller with Scaler

4K60 4:4:4 Scaler

The HDMI output of the DM-RMC-4KZ-SCALER-C feeds the decoded signal to the local display device. The built-in scaler ensures an optimal image, scaling the encoded source resolution up or down to match the native resolution of the display device.

Interlaced sources are converted to progressive scan using motion-adaptive deinterlacing. Intelligent frame rate conversion enables support for 24p and PAL format sources. Fully automatic operation eliminates any complicated setup by using the EDID (Extended Display Identification Data) of the display to configure the scaler.

Video Wall Processing

The DM-RMC-4KZ-SCALER-C provides zoom capability and bezel compensation on the HDMI output to display only a portion of the source image. Multiple DM-RMC-4KZ-SCALER-C devices can be combined to configure a video wall composed of up to 64 individual displays. Configurations of up to 8 wide by 8 high are supported, requiring a separate DM-RMC-4KZ-SCALER-C for each display and one or more DM switchers with sufficient DM 8G+ outputs.

Audio De-embedding

The DM-RMC-4KZ-SCALER-C is equipped with a balanced/unbalanced analog audio output, allowing stereo audio signals to be extracted from the digital stream and fed to a local amplifier, sound bar, or a pair of powered speakers.[3] The output volume is adjustable via a control system using a keypad, touch screen, handheld remote, or mobile device.

LAN Connectivity

In addition to high-definition AV and control, a DigitalMedia system integrates high-speed Ethernet networking for a total signal distribution solution. The DM-RMC-4KZ-SCALER-C includes a 100 Mbps Ethernet port, which can be used to provide a convenient LAN connection for a local network device.

Embedded Device Control

The DM-RMC-4KZ-SCALER-C includes built-in RS-232, IR, and Ethernet control ports to enable programmable control of the connected display device via a control system. When connected to a control system, the DM-RMC-4KZ-SCALER-C also provides a gateway for controlling the display device through CEC (Consumer Electronics Control) over the HDMI output, potentially eliminating the need for dedicated control wires or IR emitters. The DM-RMC-4KZ-SCALER-C also supports CEC over the HDBaseT connection, enabling control of an HDBaseT source connected to the DM 8G+ input.

Two low-voltage relay ports are also included on the DM-RMC-4KZ-SCALER-C for control of a projection screen or lift.

USB Signal Extension (Optional)

A DigitalMedia system allows for the routing of USB signals alongside video and audio. USB signal extension is enabled on the DM-RMC-4KZ-SCALER-C by adding a USB-EXT-DM USB over Ethernet Extender Module.[6]

Low-Profile Installation

The DM-RMC-4KZ-SCALER-C mounts conveniently to a wall, ceiling, or other flat surface. The device fits easily behind a flat panel display or above a ceiling-mounted projector. The unit can be powered by PoDM+, HDBaseT PoE+, or the optional PW-2412WU wall mount power pack (sold separately).[7, 8]

All connectors and LED indicators are positioned on the sides, ensuring optimal access and visibility for a clean, serviceable installation. An array of indicators is provided for easy setup and troubleshooting.

Refer to the DigitalMedia Resources web page at http://www.crestron.com/dmresources/ for additional design tools and reference documents.

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DigitalMedia 8G+® 4K60 4:4:4 HDR Receiver and Room Controller with Scaler

Specifications

Maximum Cable Lengths

Resolution	Cable Type		
	DM-CBL-ULTRA DM® Ultra Cable	DM-CBL-8G DM 8G® Cable	Third-Party CAT5e (or Higher)[5]
1920x1080 FHD 1080p	330 ft (100 m)	330 ft (100 m)	330 ft (100 m)
1920x1200 WUXGA			
1600x1200 UXGA			
2048x1080 DCI 2K			
2048x1152 QWXGA			
2560x1080 UWFHD			
2560x1440 WQHD		230 ft (70 m)	165 ft (50 m)
2560x1600 WQXGA			
3840x2160 4K UHD			
4096x2160 DCI 4K			

Video

Scaler: 4K60 4:4:4 video scaler with motion-adaptive deinterlacer, intelligent frame rate conversion, Deep Color support, HDR10 support, content-adaptive noise reduction, widescreen format selection (zoom, stretch, maintain aspect ratio, or 1:1), video wall processing up to 8 wide x 8 high[9]

Input Signal Types: DM 8G+, HDBaseT, and HDMI with HDR10, Deep Color, and 4K60 4:4:4 support[1]

Output Signal Types: HDMI with HDR10, Deep Color, and 4K60 4:4:4 support[2]

Copy Protection: HDCP 2.2

Maximum Scaler Input, Pass-Through, and Output Resolutions: Common resolutions are shown in the following table. Custom resolutions are supported at pixel clock rates up to 600 MHz.

Scan Type	Resolution	Frame Rate	Color Sampling	Color Depth
Progressive	4096x2160 DCI 4K and 3840x2160 4K UHD	24 Hz	4.4.4	36 bit
		30 Hz	4:4:4	36 bit
		60 Hz	4:2:2	36 bit
		60 Hz	4:4:4	24 bit
	2560x1600 WQXGA	60 Hz	4:4:4	36 bit
	1920x1080 HD 1080p	60 Hz	4:4:4	36 bit
Interlaced (input only)	1920x1080 HD 1080i	30 Hz	4:4:4	36 bit

Audio

Input Signal Types: DM 8G+, HDBaseT, HDMI

Output Signal Types: HDMI, analog stereo[3]

Digital Formats: Dolby Digital®, Dolby Digital EX, Dolby Digital Plus, Dolby® TrueHD, Dolby Atmos®, DTS®, DTS-ES, DTS 96/24, DTS-HD High Res, DTS-HD Master Audio™, LPCM up to 8 channels

Analog Formats: Stereo 2 channel[3]

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

Analog Performance:

Frequency Response: 20 Hz to 20 kHz ±0.5 dB
S/N Ratio: >95 dB 20 Hz to 20 kHz A-weighted
THD+N: <0.005% @ 1 kHz
Stereo Separation: >90 dB

Analog Volume Adjustment: -80 to 0 dB

Communications

Ethernet: 100 Mbps, auto-switching, auto-negotiating, auto-discovery, full/half duplex, DHCP

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

IR/Serial: 1-way device control via infrared up to 1.1 MHz or serial TTL/RS-232 (0-5 volts) up to 19.2k baud (via control system)

DigitalMedia: DM 8G+, HDCP 2.2, EDID, CEC, PoDM+, Ethernet

HDBaseT: HDCP 2.2, EDID, CEC, PoE+, Ethernet

HDMI: HDCP 2.2, EDID, CEC

NOTE: Supports management of HDCP and EDID. Also supports management of CEC between the connected HDMI and/or HDBaseT device(s) and a control system.

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Connectors

COM: (1) 5-pin 3.5 mm detachable terminal block
Bidirectional RS-232 port
Up to 115.2k baud, hardware and software handshaking support

IR 1-2: (1) 4-pin 3.5 mm detachable terminal block
Comprises (2) IR/Serial ports
IR output up to 1.1 MHz
1-way serial TTL/RS-232 (0-5 Volts) up to 19200 baud

AUDIO OUT L, R: (1) 5-pin 3.5 mm detachable terminal block
Balanced/unbalanced stereo line-level audio output[3]
Output Impedance: 200 Ohms balanced, 100 Ohms unbalanced
Maximum Output Level: 4 Vrms balanced, 2 Vrms unbalanced

RELAY 1-2: (1) 4-pin 3.5 mm detachable terminal block
Comprises (2) normally open, isolated relays
Rated 1 Amp, 30 Volts AC/DC
MOV arc suppression across contacts

Ground: (1) 6-32 screw
Chassis ground lug

24 V 1.25A MAX: (1) 2.1 x 5.5 mm DC power connector
24 Volt DC power input
PW-2412WU power pack sold separately

DM IN: (1) 8-pin RJ-45 female, shielded
DM 8G+ input, HDBaseT standard compliant
PoDM+ PD (Powered Device) port (HDBaseT PoE+ compatible)[7, 8]
Connects to the DM 8G+ output of a DM switcher, transmitter, or other DM device or to an HDBaseT device via CAT5e, Crestron DM-CBL-8G, or Crestron DM-CBL-ULTRA cable[5]

HDMI IN: (1) 19-pin Type A connector, female
HDMI digital video/audio input (DVI and Dual-Mode DisplayPort™ compatible[1])

HDMI OUT: (1) 19-pin Type A connector, female
HDMI digital video/audio output (DVI compatible[2])

LAN: (1) 8-pin RJ-45 female, shielded
100Base-TX Ethernet port

Controls and Indicators

RESET: (1) Recessed push button, for hardware reset

SETUP: (1) Red LED and (1) recessed push button, for Ethernet setup

LAN: (2) LEDs, green indicates Ethernet link is established, flashing amber indicates Ethernet activity

HDMI OUT: (1) Green LED, indicates video signal is detected at the HDMI output

HDMI IN: (1) LED, solid green indicates video signal is detected at the HDMI IN port and is the active input source, flashing green indicates video signal is detected at the HDMI IN port but is not the active input source

INPUT SELECT: (1) Push button for manual input selection

DM IN: (1) LED, solid green indicates video signal is detected at the DM IN port and is the active input source, flashing green indicates video signal is detected at the DM IN port but is not the active input source

DM IN (RJ-45): (2) LEDs, green indicates DM or HDBaseT link is established; solid amber indicates HDCP video is detected at the input, flashing amber indicates non-HDCP video is detected at the input

24 VDC: (1) Green LED, indicates operating power supplied via PoDM+, HDBaseT PoE+, or local power pack

Power

Power over DM: IEEE 802.3at Type 2 Class 4 (25.5 W) compliant PoDM+ PD (Powered Device), capable of being powered by PoDM+ PSE (Power Sourcing Equipment)[7]

Power over HDBaseT: IEEE 802.3at Type 2 Class 4 (25.5 W) compliant HDBaseT PoE+ PD (Powered Device), capable of being powered by HDBaseT PoE+ PSE (Power Sourcing Equipment)[8]

Power Pack (Optional): Input: 100-240 Volts AC, 50/60 Hz
Output: 1.25 Amps @ 24 Volts DC
Model: PW-2412WU (sold separately)

Power Consumption: 18.2 Watts

Environmental

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

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

Heat Dissipation: 62.1 BTU/hr

Enclosure

Chassis: Metal, black finish, with (2) integral mounting flanges, vented top and sides

Mounting: Freestanding, surface mount, or attachment to a single rack rail

Dimensions

Height: 9.18 in. (233 mm)

Width: 5.35 in. (136 mm)

Depth: 1.33 in. (34 mm)

Weight

1.25 lb (567 g)

CRESTRON®

Models and Accessories

Available Models

DM-RMC-4KZ-SCALER-C: DigitalMedia 8G+® 4K60 4:4:4 HDR Receiver and Room Controller with Scaler

Available Accessories

PW-2412WU: Wall-Mount Power Pack, 24 VDC, 1.25 A, 2.1 mm, Universal

DM-PSU-ULTRA-MIDSPAN: DigitalMedia™ Ultra Midspan PoDM++ Injector

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-P-SP1000: DigitalMedia™ Ultra Cable, Plenum Type CMP, 1000 ft Spool

DM-CBL-ULTRA-PC-10: DigitalMedia™ Ultra Patch Cable, 10 ft (3 m)

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-CONN-20: Connectors for DM-CBL DigitalMedia™ Cable and DM-CBL-ULTRA DigitalMedia Ultra Cable, 20-Pack

DM-CONN-ULTRA-RECP-50: DigitalMedia™ Ultra Keystone RJ-45 Jack, 50-Pack with Termination Tool

DM-8G-CONN-100: Connectors for DM-CBL-8G DigitalMedia 8G™ Cable, 100-Pack

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

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

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

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)

MP-AMP30: Media Presentation Audio Amplifier

MP-AMP40-70V: Media Presentation Audio Amplifier, 70 Volt

MP-AMP40-100V: Media Presentation Audio Amplifier, 100 Volt

MP-WP140-W: Media Presentation Wall Plate - DVI-I with Mini-TRS Stereo Audio, White

MP-WP150-W: Media Presentation Wall Plate - HDMI® with Mini-TRS Stereo Audio, White

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

MP-WP181-C-W: Media Presentation Wall Plate - Crestron DigitalMedia 8G+®, White

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

MPI-WP181-C-120: Media Presentation Wall Plate – International Version – Crestron DigitalMedia 8G+®, White

IRP-2: IR Emitter Probe with Terminal Block Connector

USB-EXT-DM-LOCAL: USB over Ethernet Extender with Routing, Host Module

USB-EXT-DM-REMOTE: USB over Ethernet Extender with Routing, 4-Port Device Module

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

Notes:

1. The HDMI input can accommodate a DVI or Dual-Mode DisplayPort signal using an appropriate adapter or interface cable. CBL-HD-DVI interface cables are available separately.

2. The HDMI output can accommodate a DVI signal using an appropriate adapter or interface cable. CBL-HD-DVI interface cables are available separately.

3. The analog stereo audio output is active only when the DM-RMC-4KZ-SCALER-C is receiving a 2-channel stereo signal. For applications using a multichannel surround sound source, use the DM-RMC-4K-SCALER-C-DSP, which provides a stereo downmix of the multichannel signal.

4. 4K60 4:4:4 performance and HDR support require the use of HDMI cables and couplers with a minimum TMDS bandwidth of 18 Gbps. If 4K60 4:2:0 or 4K30 4:4:4 performance is acceptable, cables and couplers with a minimum bandwidth of 10.2 Gbps can be used. Bandwidth loss is cumulative; therefore, performance may be reduced when inserting multiple cables and couplers inline.

5. The maximum cable length for DigitalMedia 8G+ (DM 8G+) or HDBaseT transmission is dependent upon the type of cable and resolution of the video signal. Refer to the "Maximum Cable Lengths" table for a detailed overview. Crestron legacy cable models DM-CBL and DM-CBL-D support the same resolutions and cable lengths as CAT5e. Shielded cable and connectors are recommended to safeguard against unpredictable environmental electrical noise that may impact performance at resolutions above 1080p. Refer to the Crestron DigitalMedia System Design Guide for additional guidelines. DM 8G+ technology is compatible with the HDBaseT Alliance specifications for connecting to HDBaseT compliant equipment. All wire and cables are sold separately.

6. USB-EXT-DM USB over Ethernet Extender Modules are sold separately. Refer to the USB-EXT-DM-LOCAL and USB-EXT-DM-REMOTE specification sheets for more information.

7. In order for the DM-RMC-4KZ-SCALER-C to receive PoDM+ (Power over DigitalMedia+), the device must connect to a DM switcher or other equipment that has a PoDM+ PSE port. Wiring that connects to a PoDM+ PSE port is for intrabuilding use only.

8. In order for the DM-RMC-4KZ-SCALER-C to receive HDBaseT PoE+, the device must connect to equipment that has an HDBaseT PoE+ PSE port. Wiring that connects to an HDBaseT PoE+ PSE port is for intrabuilding use only.

9. Video wall processing requires a separate DM-RMC-4KZ-SCALER-C for each display.

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.

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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5.35 in.
(136 mm)

5.15 in.
(131 mm)

1.33 in.
(34 mm)

1.25 in.
(32 mm)

9.18 in.
233 mm

8.51 in.
216 mm

3.33 in.
(85 mm)

1.30 in.
(33 mm)

COM
GND
TX
RX
RTS
CTS

IR
S 1
G
S 2
G

AUDIO OUT
+ L
G
+ R

RELAY
1
2

RESET
SETUP

COM
GRD
TX
RX
RTS
CTS

IR
S 1
G
S 2
G

AUDIO OUT
+ L
G
+ R

RELAY
1
2

RESET
SETUP

CRESTRON
DM-RMC-4KZ-SCALER-C
DM ROOM CONTROLLER

HDMI
(4) HDBT™

24 V
1.25A MAX

LAN
HDMI OUT
HDMI IN
INPUT SELECT
DM IN

LAN
HDMI OUT
HDMI IN
INPUT SELECT
DM IN

24 V
1.25A MAX

CRESTRON