DM-MD6X1

6x1 DigitalMediaâ„¢ Switcher

The DM-MD6X1 delivers an incredibly versatile and cost-effective solution for managing a complete range of digital and analog AV sources in a small conference room or classroom, or as part of a larger **DigitalMedia** distribution system. High-resolution computer signals, standard and high-definition video, stereo analog and digital multi-channel audio sources are all handled by the DM-MD6X1, providing a perfect standalone switcher or multi-format interface for installation in an equipment rack or presentation lectern.

Additional DigitalMedia (DM) inputs and output allow the DM-MD6X1 to work with the full line of Crestron® DM transmitters, switchers, receivers, and room controllers, affording extensive capabilities for routing and distributing all of today's multimedia AV signal types throughout a single room or larger facility. Combining DM technology with a full complement of analog connections affords a perfect signal converter for integrating DigitalMedia into any analog-based system like Crestron **MPS**, **QuickMedia®** , and the CEN-RGBHV Series.

Multimedia Computer/AV Switcher

Inputs on the DM-MD6X1 include multi-format BNC video, RGB, HDMI®, balanced line-level and SPDIF digital audio. The HDMI input supports HDMI with HDCP, handling WUXGA computer resolutions and 1080p60 HDTV with multi-channel lossless audio. The HDMI input can also handle DVI and DisplayPort Multimode signals using an appropriate adapter or dongle[1]. The RGB input handles analog RGB signals up to WUXGA 1920x1200 pixels, as well as component video up to 1080p60[2]. The multi-format BNC input also accepts component HDTV signals up to 1080p60, as well as standard definition NTSC/PAL composite and S-Video. Dedicated audio inputs include two stereo balanced line-level analog and one SPDIF coaxial digital.

Additional inputs are easily added at locations up to 450 feet (137 m) away[3] using DM Transmitters. Three CAT-type DM inputs are provided on the DM-MD6X1, accepting inputs from individual DM Transmitters as well as other DM switchers. A single DM CAT output is provided to drive a DM Receiver/ Room Controller at the display location, or to feed another DM switcher. HDMI and analog audio outputs are also included to feed a local video display and audio system. The analog stereo output includes professional balanced terminals and programmable volume control.

DigitalMedia?

As the leader in HDMI and control system technologies, Crestron has developed DigitalMedia, the first complete HD AV distribution system that takes HDMI to a higher level, and allows virtually any mix of AV sources to be distributed throughout the home, office, school, or virtually any other facility.

DigitalMedia distributes uncompressed digital video and audio signals up to 450 feet (137 m) using DM cable[3]. DigitalMedia thoughtfully manages all of the different signals and devices, matching each source's output to the capabilities of the selected display(s) without using

lossless signal path throughout.

QuickSwitch HD® Technology

Crestron exclusive QuickSwitch HD technology minimizes the annoying switching latency that plagues typical HDMI switchers. QuickSwitch HD achieves very fast switching of HDMI signals by maintaining a constant HDCP connection with each HDMI device in the system, eliminating the need to re-authenticate each time a different source is selected.

Keyboard/Mouse Extender

The DM-MD6X1 also functions as a keyboard/mouse extender and
switcher, allowing a computer or other USB HID-compliant host device connected to the DM-MD6X1 to be controlled by a keyboard and mouse at the display location using a **DM-RMC-100-1** room controller, or at a presenter's location using select DM transmitters.

EDID Format Management

The DM-MD6X1 allows for management of the EDID (Extended Display Identification Data) information that passes between the display devices and input sources in the system. Using **Crestron Toolbox?** software, the format and resolution capabilities of each device can be assessed and managed through the DM-MD6X1, ensuring reliable operation by instructing sources to output only the resolutions and formats that can be handled by the displays and system wiring.

CEC Embedded Device Control

The primary objective of every Crestron system is to enable precisely the control desired for a seamless user experience. DigitalMedia provides an alternative to conventional IR and RS-232 device control by harnessing the CEC (Consumer Electronics Control) signal embedded in HDMI. Through its connection to the control system, the DM-MD6X1 provides a gateway for controlling AV devices right through their HDMI connections, potentially eliminating the need for any dedicated control wires or IR probes. Through proper CEC signal management, DigitalMedia allows you to take control of
each device in the system as you like.

Easy Setup

The DM-MD6X1 is designed to be placed on a shelf or mounted
in an equipment rack or lectern. The front panel provides basic operation right out of the box. User-friendly setup and troubleshooting tools are provided via **Crestron Toolbox?** software, performing automatic input and output configuration
while letting the installer make intelligent design decisions along the way. The switcher even tests and measures
the length of each DM cable, automatically making the appropriate calibrations for optimal signal transmission to each DM device.

A Digital Upgrade for Legacy Systems

The DM-MD6X1 also affords a perfect signal converter for integrating DigitalMedia with analog-based systems like Crestron **MPS**, **QuickMedia®** , and the CEN-RGBHV Series. A simple HD15 VGA cable connected between the output of an MPS
system and the input of the DM-MD6X1 allows every RGB, component, S-Video, and composite video input on the MPS to
be converted to DigitalMedia[2]. Analog audio is converted similarly through a simple balanced stereo audio cable. The DM-MD6X1's HDMI and DM inputs may also be used to expand
the input capabilities of the MPS system to handle digital AV sources, and its analog audio output can easily be fed into any spare input on the MPS to allow the digital audio signals to be amplified and controlled through the MPS system.

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6x1 DigitalMediaâ„¢ Switcher

SPECIFICATIONS

Video

Switcher: 6x1 combination digital/analog switch, Crestron QuickSwitch HD®

Input Signal Types: DM CAT (DigitalMedia over shielded twisted-pair copper wire), HDMI®, DVI [1], DisplayPort Multimode [1], RGB, component (YPbPr) [2], S-Video (Y/C) [2], composite [2]

Output Signal Types: DM CAT, HDMI, DVI [1]

Formats: HDMI, DVI, HDCP content protection support, 3D (via DM only), RGBHV up to UXGA/WUXGA, HDTV up to 1080p60, NTSC or PAL

Input Resolutions, HDMI, Progressive: 640x480@60Hz, 720x480@60Hz (480p), 720x576@50Hz (576p), 800x600@60Hz, 848x480@60Hz, 852x480@60Hz, 854x480@60Hz, 1024x768@60Hz, 1024x852@60Hz, 1024x1024@60Hz, 1280x720@50Hz (720p50), 1280x720@60Hz (720p60), 1280x768@60Hz, 1280x800@60Hz, 1280x960@60Hz, 1280x1024@60Hz, 1360x768@60Hz, 1365x1024@60Hz, 1366x768@60Hz, 1400x1050@60Hz, 1440x900@60Hz, 1600x900@60Hz, 1600x1200@60Hz, 1680x1050@60Hz, 1920x1080@24Hz (1080p24), 1920x1080@25Hz (1080p25), 1920x1080@50Hz (1080p50), 1920x1080@60Hz (1080p60), 1920x1200@60Hz, 2048x1080@24Hz, 2048x1152@60Hz, plus any other resolution allowed by HDMI up to 165MHz pixel clock

Input Resolutions, HDMI, Interlaced: 720x480@30Hz (480i), 720x576@25Hz (576i), 1920x1080@25Hz (1080i25), 1920x1080@30Hz (1080i30), plus any other resolution allowed by HDMI up to 165MHz pixel clock

Input Resolutions, RGB: 640x480@60Hz, 720x480@60Hz (480p), 720x576@50Hz (576p), 800x600@60Hz, 848x480@60Hz, 1024x768@60Hz, 1280x720@50Hz (720p50), 1280x720@60Hz (720p60), 1280x768@60Hz, 1280x800@60Hz, 1280x960@60Hz, 1280x1024@60Hz, 1360x768@60Hz, 1366x768@60Hz, 1400x1050@60Hz, 1440x900@60Hz, 1600x1200@60Hz, (1080p50), 1920x1080@60Hz (1080p60), 1920x1200@60Hz, 2048x1080@24Hz, 2048x1152@60Hz

Input Resolutions, Component: 480i, 576i, 480p, 576p, 720p50, 720p60, 1080i25 (1125 lines), 1080i30, 1080p30, 1080p50 (1125 lines), 1080p60

Input Resolutions, Composite and S-Video: 480i, 576i

Output Resolutions: Matched to inputs

Analog-To-Digital Conversion: 10-bit 165 MHz per each of 3 channels

Audio

Switcher: 6x1 combination digital/analog switch, limited audio breakaway [4]

Input Signal Types: DM CAT, HDMI, DisplayPort Multimode [1]

Output Signal Types: DM CAT, HDMI, analog stereo

Formats, HDMI and SPDIF: Dolby Digital®, Dolby Digital EX, DTS®, DTS-ES, DTS 96/24, 2ch PCM

Formats, HDMI only: Up to 8ch PCM

Formats, Analog: Stereo 2-Channel

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

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

Volume Gain Range (analog out): -80dB to 0dB, adjustable from 0% to 100%

Input Compensation (analog out): ±10dB per input

Performance (analog): **Frequency Response:** 20Hz to 20kHz ±0.75dB;

S/N Ratio: >90dB, 20Hz to 20kHz A-weighted;

THD+N: <0.05% @ 1kHz;

Stereo Separation:

Communications

DigitalMedia: DM CAT, DMNet, HDCP management, EDID format

management, CEC

Ethernet: 10BaseT/100BaseTX, auto-switching, auto-negotiating, auto-discovery, full/half duplex, TCP/IP, UDP/IP, CIP, DHCP, RSTP

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USB: Supports USB HID class devices

Ethernet Switch

Provides (1) onboard 10BaseT/100BaseTX Ethernet port, (1) internal 10BaseT/100BaseTX Ethernet port for the switcher, and (4) remote 10BaseT/100BaseTX Ethernet ports via select outboard devices

Connectors

VIDEO IN 1: (3) BNC female comprising (1) auto-sensing multi-format analog video input;
Signal Types: Component (YPbPr), S-Video (Y/C), or composite input;
Input Level: 1 Vp-p nominal;
RGB IN 2: (1) DB15HD female, RGB (VGA) or component (YPbPr) video input [2] ;
Formats: RGBHV, RGBS, RGsB, YPbPr;
Input Levels: 0.5 to 1.5 Vp-p with built-in DC restoration;
Input Impedance: 75 Ohms;
Sync Input Type: Autodetect RGBHV, RGBS, RGsB, YPbPr;
Sync Input Level: 3 to 5 Vp-p;
AUDIO IN 1 - 2: (2) 5-pin 3.5mm detachable terminal blocks;
Balanced/unbalanced stereo line-level inputs;
AUDIO IN 1 and SPDIF IN 1 inputs are mutually exclusive;
Input Impedance: 24k Ohms balanced/unbalanced;
Balanced Input Level: 4 Vrms maximum;
HDMI IN 3: (1) 19-pin Type A HDMI female;
SPDIF IN 1: (1) RCA female, S/PDIF coaxial digital audio input;
SPDIF IN 1 and AUDIO IN 1 inputs are mutually exclusive;
AUDIO OUT: (1) 5-pin 3.5mm detachable terminal block;
Balanced/unbalanced stereo line-level output, variable level;
Output Impedance: 200 Ohms balanced, 100 Ohms unbalanced;
DM IN D/M 4 - 6: (3) DM CAT inputs, each composed of (2) 8-pin RJ45 female, shielded;
Connect to DM CAT outputs of DM transmitters or other DM devices via DM-CBL cable [3]
DM IN 24ABG: (3) 4-pin 3.5mm detachable terminal blocks, DMNet ports;
Connect to DMNet ports of DM transmitters or other DM devices via DM-CBL cable [3]
DM OUT D/M: (1) DM CAT output composed of (2) 8-pin RJ45 female, shielded;
Connects to DM CAT input of a DM receiver/room controller, switcher, or other DM device via DM-CBL cable [3]
DM OUT 24ABG: (1) 4-pin 3.5mm detachable terminal block, DMNet port;
Connects to DMNet port of a DM receiver/room controller, switcher, or other DM device via DM-CBL cable [3]
EXT PWR: (1) 3-pin 3.5mm detachable terminal block, power selection port;
Connects to an external power supply [5] , or to the internal power source via a jumper, to power the DM devices connected to DM IN 4 - 6 and DM OUT;
Maximum Load: 75 Watts (3.13 Amps @ 24 Volts DC) total for all ports when connected to external power supply [5]
HDMI OUT: (1) 19-pin Type A HDMI female;
HDMI digital video/audio output;
USB HID: (1) USB Type B female;
LAN: (1) 8-wire RJ45 female w/2 LED indicators;
10BaseT/100BaseTX Ethernet port;
Green LED indicates link status;
100-240V ~2.3A 50/60Hz: (1) IEC C14 male chassis plug, main power input;
G: (1) 6-32 screw, chassis ground lug
COMPUTER (front): (1) USB Type B female;

DM Cable Length

Cable Type:
DM-CBL DigitalMedia Cable:
Maximum length per port without,
between, before, or after repeaters:

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•200 ft (60 m) for 720p, 1080i, 1080p24 •200 ft (60 m) for 1024x768 @75Hz •150 ft (45 m) for 1080p60 •150 ft (45 m) for 1280x1024 @75Hz •150 ft (45 m) for 1920x1200 @60Hz •125 ft (38 m) for 1600x1200 @60Hz

Maximum total length per port using up to 2 repeaters:

•450 ft (137 m) for 720p, 1080i, 1080p24 •450 ft (137 m) for 1024x768 @75Hz •450 ft (137 m) for 1080p60 •450 ft (137 m) for 1280x1024 @75Hz •450 ft (137 m) for 1920x1200 @60Hz •375 ft (114 m) for 1600x1200 @60Hz

Controls and Indicators

PWR: (1) green LED, indicates operating power supplied via Main Power Input

USB HID DISABLED: (1) red LED, indicates the COMPUTER port is in use causing USB HID to be disabled

RESET: (1) recessed miniature pushbutton for hardware reset, reboots the switcher

SYNC: (1) pushbutton and red LED, selects SYNC mode so the INPUTS LEDs indicate input signal presence

ROUTE: (1) pushbutton and red LED, selects ROUTE mode to allow routing changes

INPUTS 1 - 6: (6) pushbuttons and red LEDs, select input for routing

SETUP (rear): (1) red LED and (1) miniature recessed pushbutton for Ethernet auto-discovery

Power Requirements

Main Power: 90 Watts @ 100-240 Volts AC, 50/60 Hz

Available DMNet Power: 30 Watts (1.25 Amps @ 24 Volts DC) from internal power supply

Environmental

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

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

Heat Dissipation: 307 BTU/Hr

Enclosure

Chassis: Metal with black finish, vented sides, fan-cooled

Faceplate: Extruded aluminum, black finish with polycarbonate label overlay

Mounting: Freestanding or 2U 19-inch rack-mountable (adhesive feet and rack ears included)

Dimensions

Height: 3.47 in (89 mm) without feet

Width: 17.03 in (433 mm), 19.00 in (483 mm) with ears

Depth: 12.21 in (310 mm)

Weight

7.5 lb (3.4 kg)

ACCESSORIES

MP-WP152-B:

CBL-HD-20:

CBL-HD-30:

CBL-HD-DVI-12:

CBL-HD-DVI-6:

MP-WP152-W:

Notes:

1. HDMI requires an appropriate adapter or interface cable to accommodate a DVI or DisplayPort Multimode signal. **CBL-HD-DVI** and **CBL-DP-HD** interface cables available separately.
2. The RGB input can accept component, composite, and S-Video signals via direct interface to Crestron MPS Series products, or through an appropriate adapter (not included). Input sync detection is not provided for composite or S-Video signal types through the RGB connection.
3. For DigitalMedia CAT wiring, use **DM-CBL** DigitalMedia Cable. Up to two DM Repeaters (Model **DM-DR**) may be required. Refer to the Crestron DigitalMedia Design Guide, Doc. #4789 for complete wiring guidelines.
4. Audio breakaway capabilities and limitations: AUDIO/SPDIF IN 1 and AUDIO IN 2 may each be switched freely regardless which video input is selected; HDMI IN 3 audio may be switched freely only when HDMI IN 3 video, or any DM IN video input, is selected; HDMI IN 3 audio cannot be selected when

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VIDEO IN 1 or RGB IN 2 video inputs are selected; DM IN 4, DM IN 5, and DM IN 6 audio may each be switched freely except when any other numbered DM IN video input is selected; AUDIO IN 1 and SPDIF IN 1 inputs are mutually exclusive.

5. For external DMNet power, use a Crestron **CNPWS-75**, **C2N-SPWS300**, or other Cresnet power supply as required. Do not interconnect DMNet with Cresnet.

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 **www.crestron.** com/salesreps or by calling 800-237-2041.

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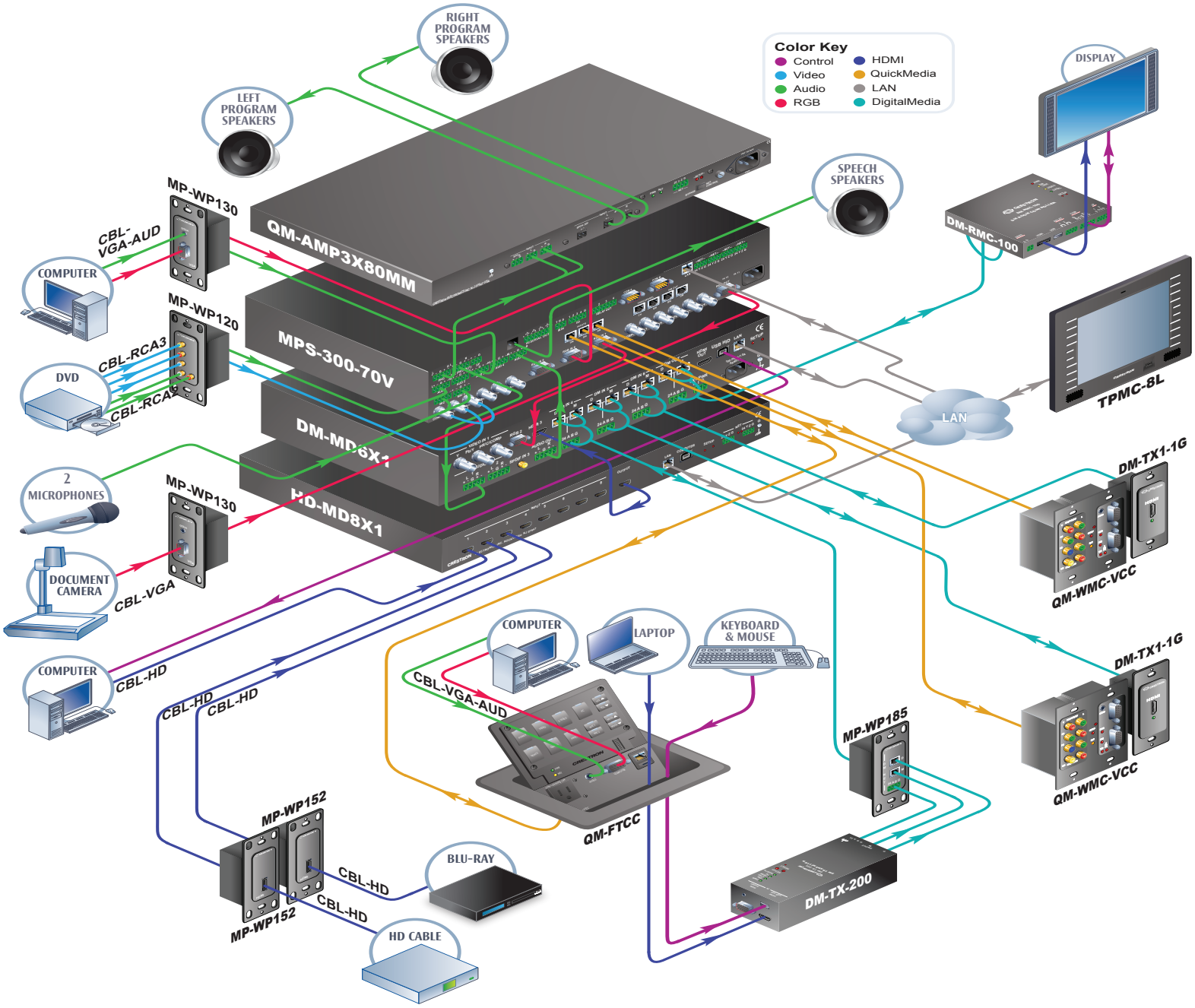
Commercial Conference Room with MPS, QM and DM Components



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CRESTRON

DM-MD6X1

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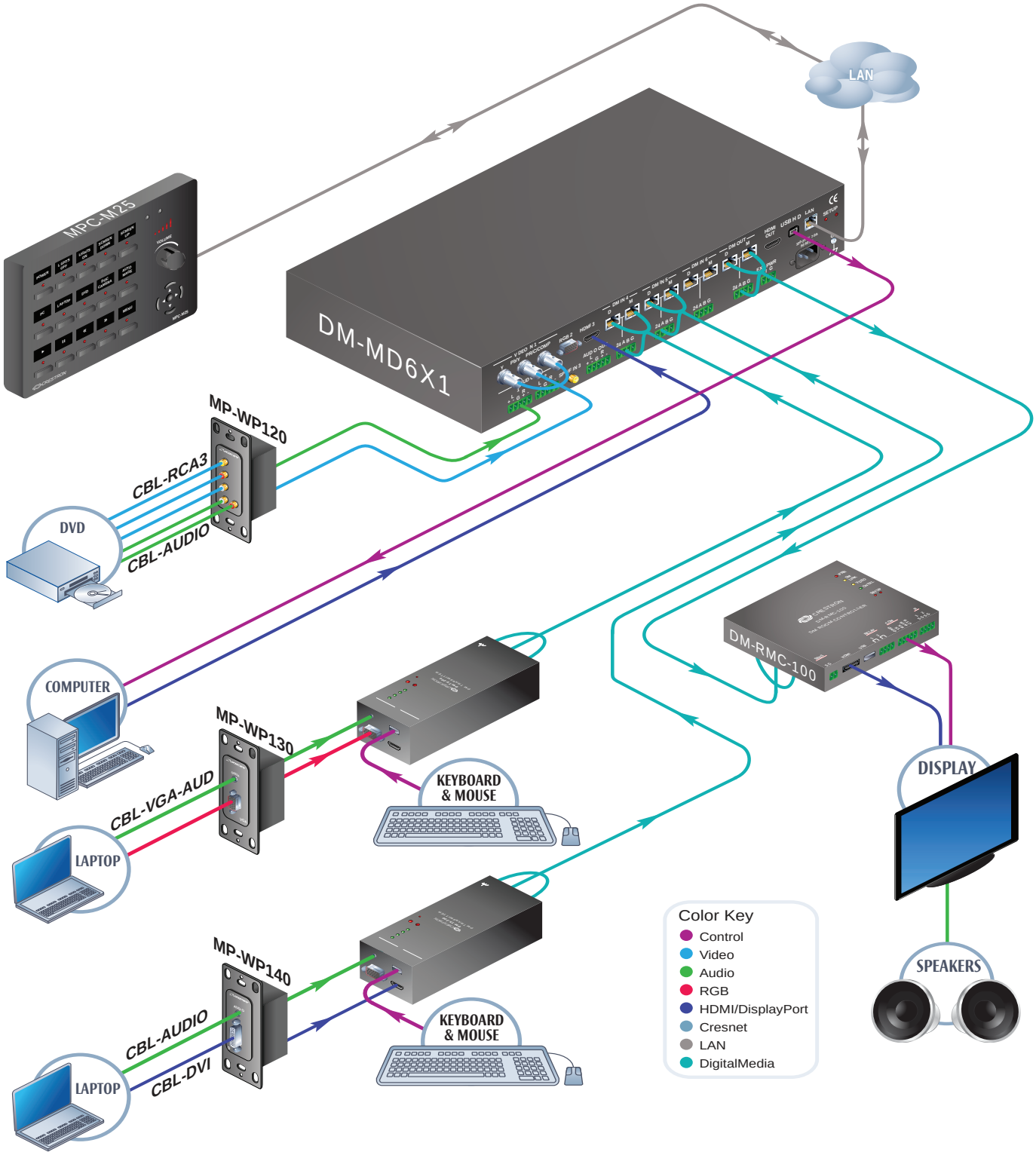
DM-MD6X1 Application



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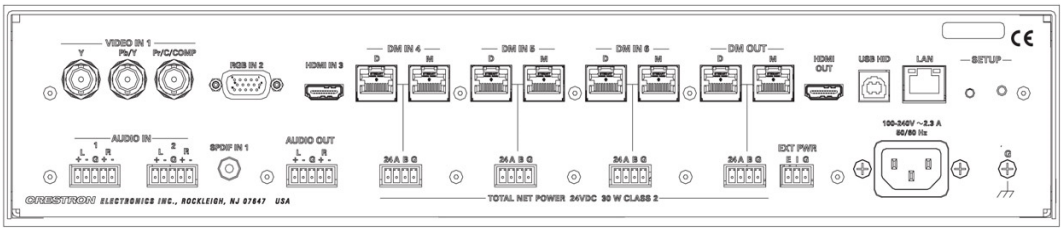

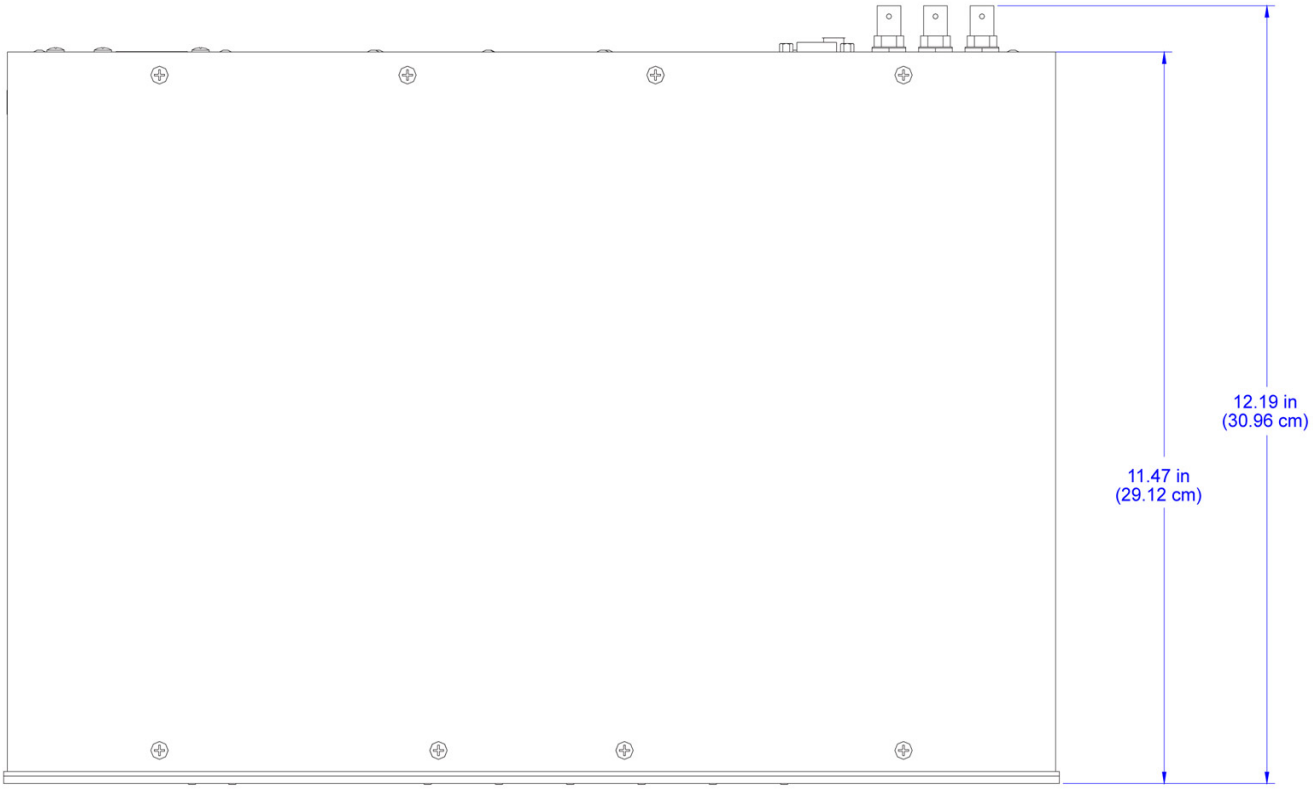

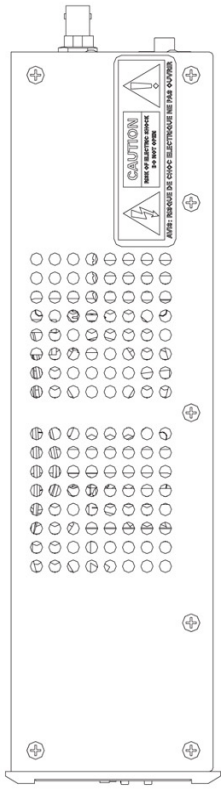

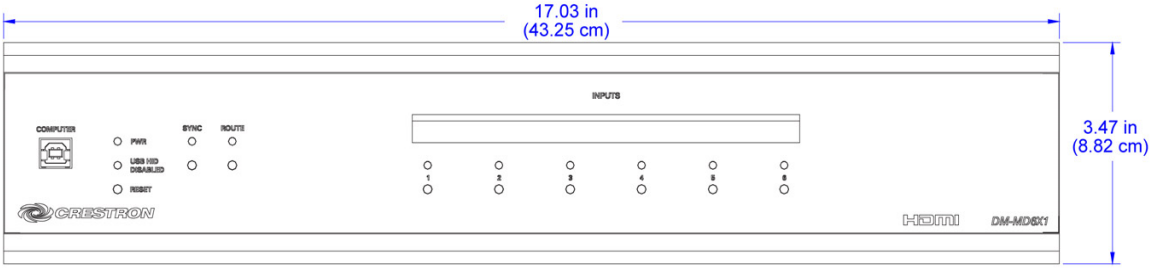

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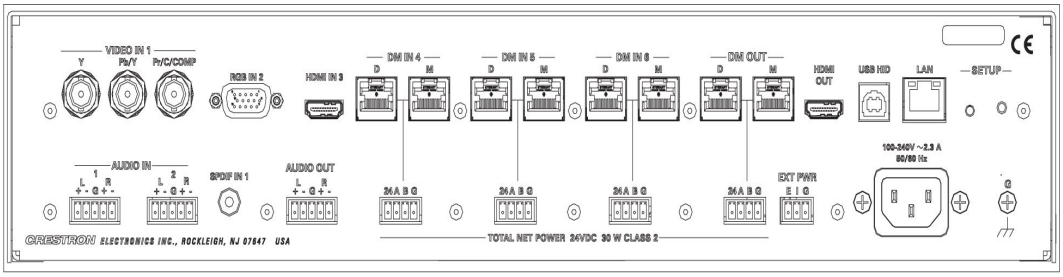

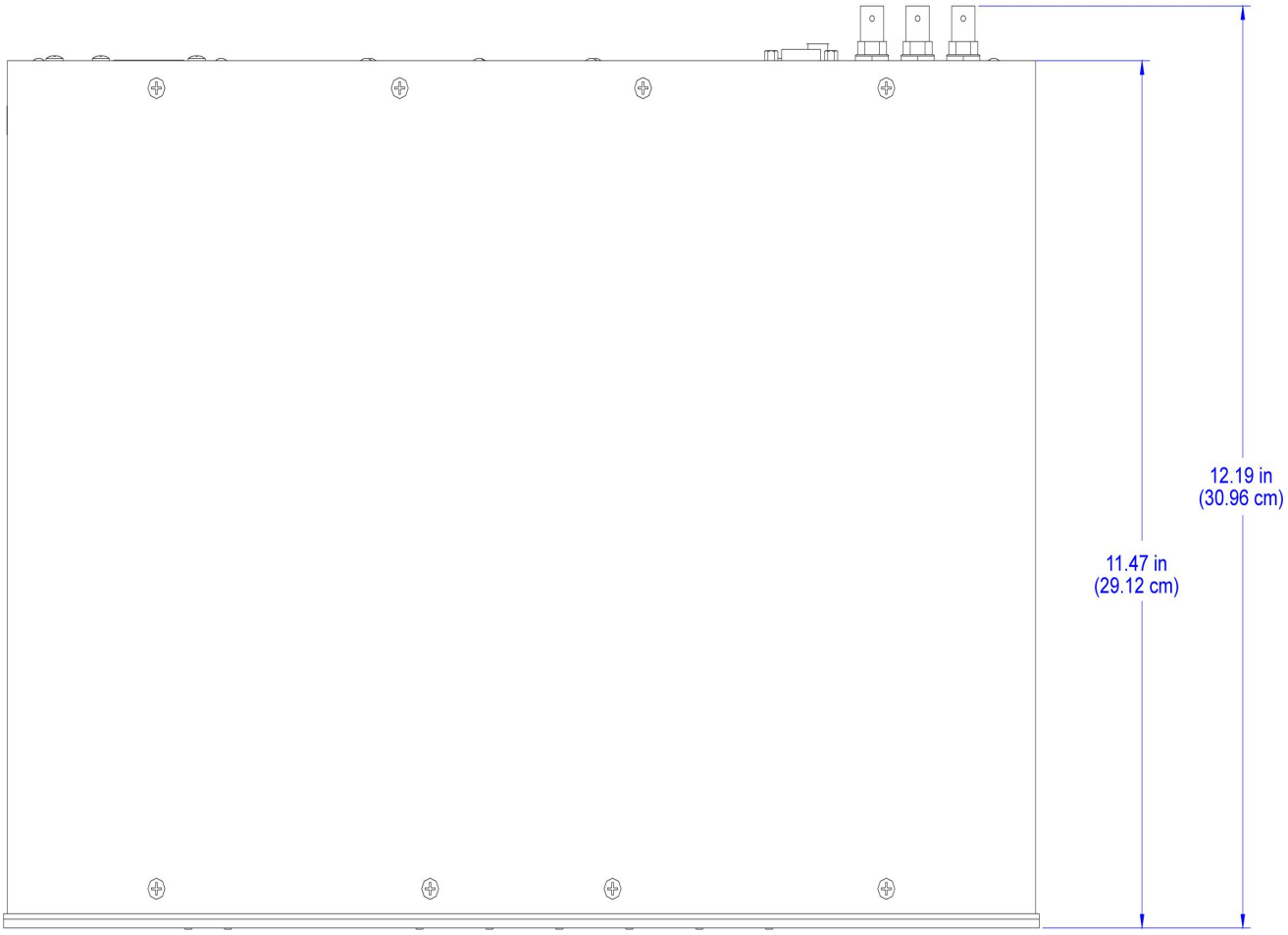

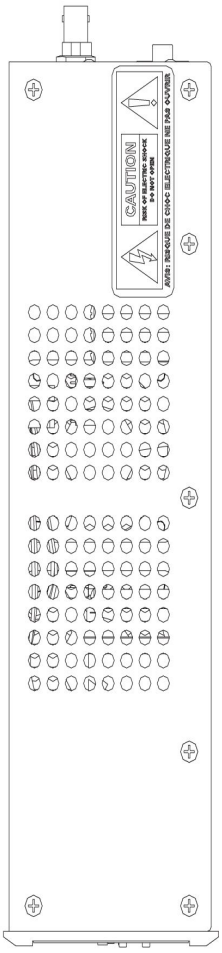

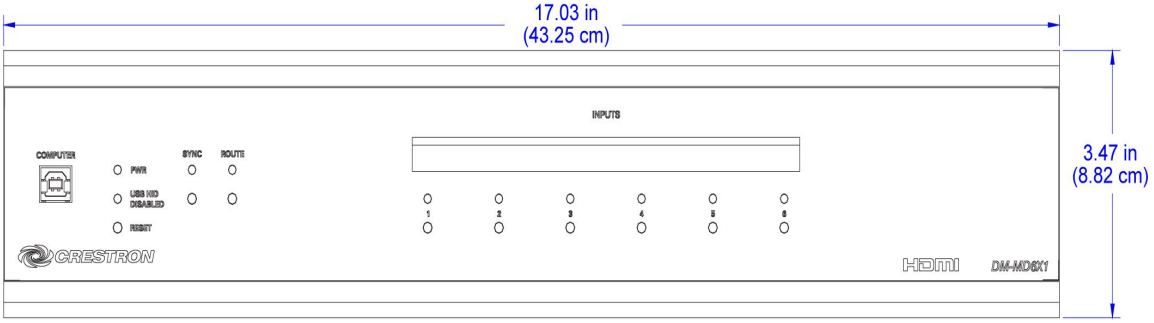

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