Crestron **DM-RMC-100**
DigitalMedia™ Room Controller & DM CAT Receiver

Operations & Installation Guide

CRESTRON®

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CRESTRON®

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Industry Compliance

As of the date of manufacture, the DM-RMC-100 has been tested and found to comply with specifications for CE marking and standards per EMC and Radiocommunications Compliance Labelling.

CE C

Federal Communications Commission (FCC) Compliance Statement

This device complies with part 15 of the FCC rules. Operation is subject to the following conditions: (1) this device may not cause harmful interference and (2) this device must accept any interference received, including interference that may cause undesired operation.

CAUTION: Changes or modifications not expressly approved by the manufacturer responsible for compliance could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase separation between the equipment and the receiver
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected
- Consult the dealer or an experienced radio/TV technician for help

Contents

DigitalMedia™ Room Controller & DM CAT Receiver: DM-RMC-100

Introduction

The DM-RMC-100 provides a convenient one-box interface solution to support a single display device as part of a complete DigitalMedia™ system. It functions as a DM CAT receiver and control interface, providing a single HDMI output along with a variety of control ports. Its compact, low-profile design allows the DM-RMC-100 to be installed discreetly behind a flat panel display or above a ceiling mounted projector.

Features and Functions

- DigitalMedia receiver and display controller
- DM CAT input supports up to 450 foot (137 meters) cable length[1]
- Low-profile design
- Mounts to a 2-gang, 4" square, or UK electrical box
- Provides an HDMI/DVI[2] display output
- Includes USB HID keyboard/mouse port

(Continued on following page)

1. For DigitalMedia CAT wiring, use DM-CBL DigitalMedia Cable, CresCAT®D, or quality CAT5e/CAT6 cable. Do NOT use low-skew cable. The maximum allowable cable length depends on multiple factors. One or more DM Repeaters (model DM-DR, sold separately) may be required. Refer to the latest version of the Creston DigitalMedia Design Guide (Doc. 4789) for complete wiring guidelines. It is available from the Crestron website at www.crestron.com/digitalmedia.
2. HDMI requires an appropriate adapter or interface cable to accommodate a DVI signal. CBL-HD-DVI interface cable available separately.

Features and Functions
(Continued)

- Enables device control via CEC, RS-232, IR, or Ethernet
- Provides relay screen/lift control
- Supports a power current sensor or contact closure
- Affords single-wire connection from a DM switcher or transmitter
- Provides 10/100 Ethernet connection for display device or control system
- Easy setup and diagnostics

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 meters) using DM cable, or shorter distances using standard CAT5e/6*. 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 scaling or compression. Every signal is preserved in its native video resolution and audio format, ensuring a pure, lossless signal path throughout.

*   For DigitalMedia CAT wiring, use DM-CBL DigitalMedia Cable, CresCAT®D, or quality CAT5e/CAT6 cable. Do NOT use low-skew cable. The maximum allowable cable length depends on multiple factors. One or more DM Repeaters (model DM-DR, sold separately) may be required. Refer to the latest version of the Creston DigitalMedia Design Guide (Doc. 4789) for complete wiring guidelines.

Multimedia Display Interface

A single HDMI digital AV output port is provided on the DM-RMC-100, supporting HDMI 1.3a with Deep Color and HDCP, handling WUXGA computer resolutions and 1080p60 HDTV with multi-channel HD lossless audio—all through a single connection. The HDMI output can also handle DVI signals using an appropriate adapter or interface cable[1]. In addition, there are RS-232, IR, and Ethernet control ports provided for controlling the display device, plus two relays for screen and lift control, and a **SENS** input for connection of an optional current sensor or contact closure.

Multiple DM-RMC-100s may be installed to handle each display in a multi-room distribution system, all fed from a central DM series switcher (sold separately). Or, a single DM-RMC-100 can be fed straight from a DM-TX-100 or other DM CAT transmitter (sold separately) to provide a simple solution for extending a computer or AV signal to feed a single display. The connection to the switcher or transmitter requires just one DigitalMedia cable, with a potential cable length up to 450 feet (137 meters)[2]. In lieu of a central DM switcher, the DM-RMC-100's **LAN** port may be used to connect over Ethernet to a 2-Series control system if needed.

1. HDMI requires an appropriate adapter or interface cable to accommodate a DVI signal. CBL-HD-DVI interface cable available separately.
2. For DigitalMedia CAT wiring, use DM-CBL DigitalMedia Cable, CresCAT-D, or quality CAT5e/CAT6 cable. Do NOT use low-skew cable. The maximum allowable cable length depends on multiple factors. One or more DM Repeaters (model DM-DR, sold separately) may be required. Refer to the latest version of the Creston DigitalMedia Design Guide (Doc. 4789) for complete wiring guidelines.

Keyboard/Mouse Extender

When connected to a DM series switcher or DM-TX-100 (both sold separately) transmitter, the DM-RMC-100 functions as a keyboard/mouse extender, allowing a USB HID (Human Interface Device) compliant keyboard and/or mouse to be connected at the display location, and used to control a computer or other host device located at the central equipment rack or some other remote location.

HID devices include mice, keyboards, trackballs and composite devices (e.g. combination keyboard/trackball devices). These devices do not require driver installation on most common operating systems (Windows XP/Vista and Mac OS).

Embedded Device Control

The primary objective of every Crestron system is to enable precisely the control desired for a seamless user experience. The DM-RMC-100 includes built-in RS-232, IR, and Ethernet control ports to allow programmable control of the display device connected to it. It can also provide an alternative to these conventional control methods by harnessing the CEC (Consumer Electronics Control) signal embedded in HDMI. Through its connection to the control system, the DM-RMC-100 provides a gateway for controlling the display device right through the HDMI connection, potentially eliminating the need for any dedicated control wires or IR probes.

Low-Profile Installation

The DM-RMC-100 mounts to a standard 2-gang, 4" square, or UK electrical box, and sticks out only one inch from the wall surface. Connections to the display are all positioned along the bottom edge of the receiver, allowing cables to be dressed neatly without obstruction. The **DM** and **LAN** connection are made behind the unit within the electrical box. An array of indicators on the front of the DM-RMC-100 provides for easy setup and troubleshooting, verifying the status of connections and signal activity at a glance.

Applications

The diagram below shows a DM-RMC-100 in a classroom application.

DM-RMC-100 in a Classroom Application
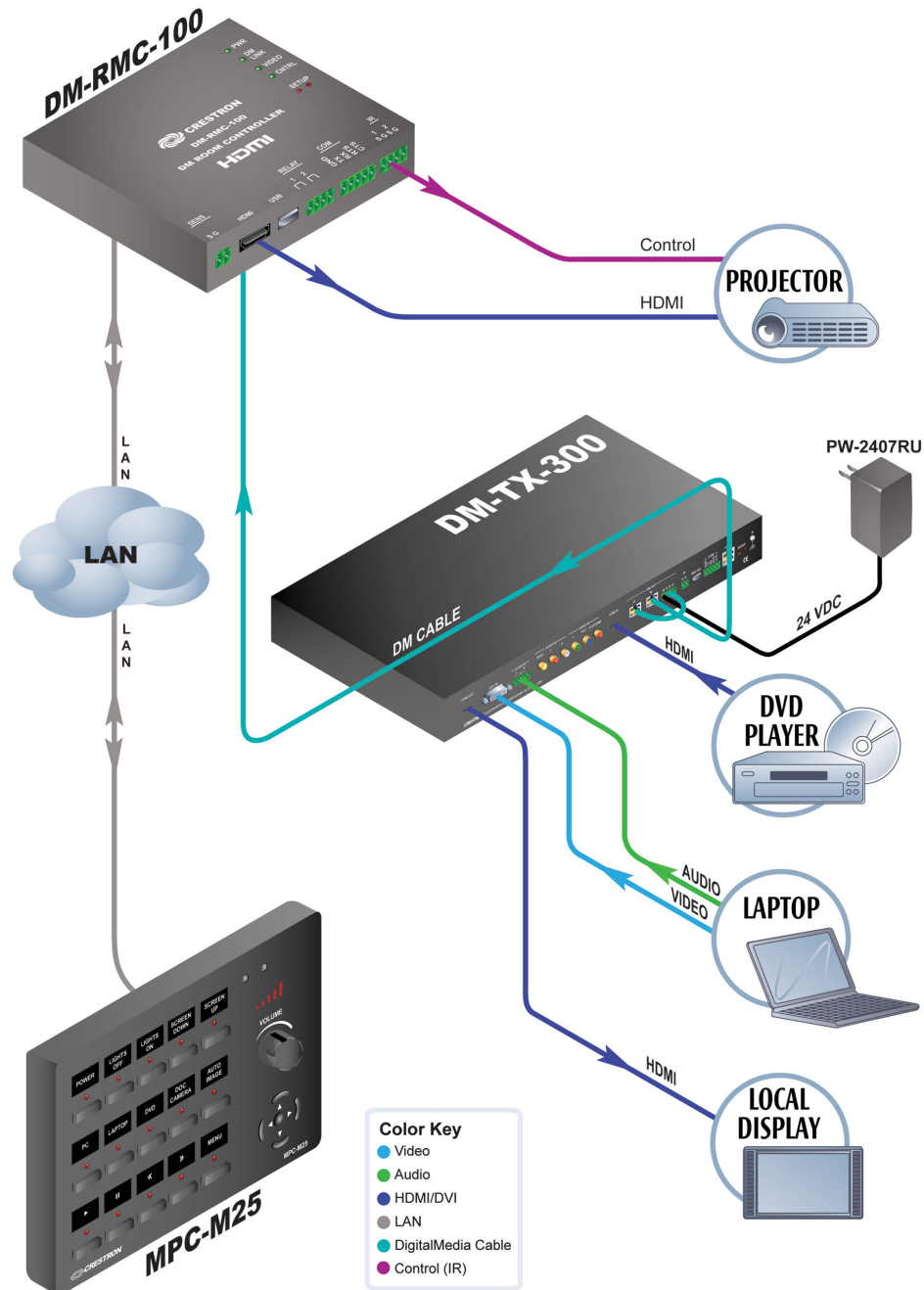
For more information on this and other DM-RMC-100 applications, refer to the latest revision of the Crestron DigitalMedia Design Guide (Doc. 4789).

Specifications

Specifications for the DM-RMC-100 are listed in the following table.

DM-RMC-100 Specifications

SPECIFICATION	DETAILS
Video	
Input Signal Type	DM CAT (DigitalMedia over twisted-pair copper wire)
Output Signal Types	HDMI, DVI[1]
Formats	HDMI v.1.3a with Deep Color, DVI v.1.0, HDCP v.1.2 content protection support
Input Resolutions	
Progressive	640 x 480 @ 60 Hz, 720 x 480 @ 60 Hz (480p), 720 x 576 @ 50 Hz (576p), 800 x 600 @ 60 Hz, 848 x 480 @ 60 Hz, 852 x 480 @ 60 Hz, 854 x 480 @ 60 Hz, 1024 x 768 @ 60 Hz, 1024 x 852 @ 60 Hz, 1024 x 1024 @ 60 Hz, 1280 x 720 @ 50 Hz (720p50), 1280 x 720 @ 60 Hz (720p60), 1280 x 768 @ 60 Hz, 1280 x 800 @ 60 Hz, 1280 x 960 @ 60 Hz, 1280 x 1024 @ 60 Hz, 1360 x 768 @ 60 Hz, 1365 x 1024 @ 60 Hz, 1366 x 768 @ 60 Hz, 1400 x 1050 @ 60 Hz, 1440 x 900 @ 60 Hz,

(Continued on following page)

DM-RMC-100 Specifications (Continued)

SPECIFICATION	DETAILS
Input Resolutions	
Progressive (Continued)	1600 x 900 @ 60 Hz, 1600 x 1200 @ 60 Hz, 1680 x 1050 @ 60 Hz, 1920 x 1080 @ 24 Hz (1080p24), 1920 x 1080 @ 25 Hz (1080p25), 1920 x 1080 @ 50 Hz (1080p50), 1920 x 1080 @ 60 Hz (1080p60), 1920 x 1200 @ 60 Hz, 2048 x 1080 @ 24 Hz, 2048 x 1152 @ 60 Hz, plus any other resolution allowed by HDMI v.1.3a up to 165 MHz pixel clock
Interlaced	720 x 480 @ 30 Hz (480i), 720 x 576 @ 25 Hz (576i), 1920 x 1080 @ 25 Hz (1080i25), 1920 x 1080 @ 30 Hz (1080i30), plus any other resolution allowed by HDMI v.1.3a up to 165 MHz pixel clock
Output Resolutions	Matched to input
Audio	
Input Signal Type	DM CAT
Output Signal Type	HDMI v.1.3a
Formats	Dolby® TrueHD 7.1, Dolby Digital Plus 7.1, Dolby Digital AC3 5.1, Dolby Digital EX 5.1, DTS-HD Master Audio™ 7.1, DTS-HD High Res 7.1, DTS 5.1, DTS-ES Matrix 5.1, DTS-ES Discrete 6.1, DTS 96/24 5.1, up to 8ch PCM

(Continued on following page)

DM-RMC-100 Specifications (Continued)

SPECIFICATION	DETAILS
USB	
Protocols	Supports USB HID class devices
Power	
DMNet Power Usage	6 Watts (0.25 Amps @ 24 Volts DC)
Minimum 2-Series Control System Update File[2, 3]	Version 4.001.112.CUZ or later
Environmental	
Temperature	41º to 104º F (5º to 40º C)
Humidity	10% to 90% RH (non-condensing)
Heat Dissipation	21 BTU/Hr
Enclosure	
Chassis	Steel, black matte powder coat finish
Mounting	2-gang, 4" square, or 1-gang UK (BS 4662) electrical box mountable
Dimensions	
Height	4.54 in (11.52 cm)
Width	5.15 in (13.08 cm)
Depth	1.41 in (3.58 cm)
Weight	14 oz (392 g)

DM-RMC-100 Specifications (Continued)

SPECIFICATION	DETAILS
Available Accessories	
CBL-HD	Crestron® Certified HDMI™ Interface Cable
CBL-HD-DVI	Crestron® Certified HDMI™ to DVI Interface Cable
CNSP-XX	Custom Serial Interface Cable
CNXRMCS	Current Sensor
DM-CBL	DigitalMedia™ Cable
DM-CONN	DigitalMedia™ Cable Connector
IRP2	IR Emitter Probe
MP-WP140	Media Presentation Wall Plate – DVI with Mini-TRS Stereo Audio
MP-WP152	Media Presentation Wall Plate – HDMI™
MP-WP185	Media Presentation Wall Plate - Crestron DigitalMedia™ CAT with DMNet

1. HDMI requires an appropriate adapter or interface cable to accommodate a DVI signal. CBL-HD-DVI interface cable available separately.
2. The latest software versions can be obtained from the Crestron website. Refer to the NOTE following these footnotes.
3. Crestron 2-Series control systems include the AV2 and PRO2. Consult the latest Crestron Product Catalog for a complete list of 2-Series control systems.

NOTE: Crestron software and any files on the website are for authorized Crestron dealers and Crestron Authorized Independent Programmers (CAIP) only. New users may be required to register to obtain access to certain areas of the site (including the FTP site).
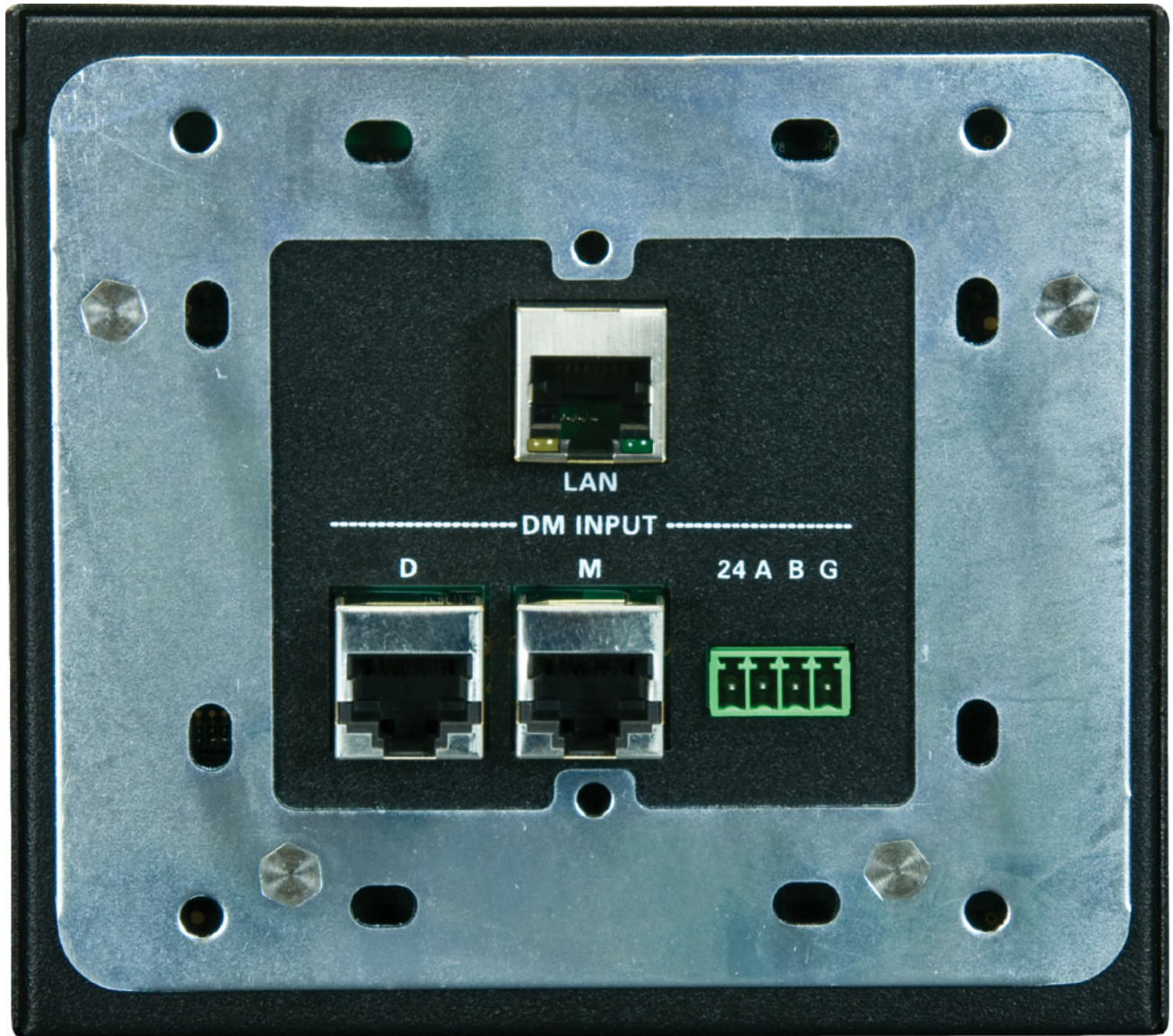
Physical Description

This section provides information on the connections, controls and indicators available on your DM-RMC-100.

DM-RMC-100 Physical View (Front)

DM-RMC-100 Physical View (Back)

DM-RMC-100 Overall Dimensions (Front View)

5.15 in
(13.08 cm)

4.54 in
(11.52 cm)

1

2

3

4

5

PWR

DM
LINK

VIDEO

CNTRL

SETUP

CRESTRON

DM-RMC-100

DM ROOM CONTROLLER

HDMI

SENS   RELAY   COM   IR

1   2   1   2

S G   HDMI   USB   GND TX RX RTS CTS   S G S G
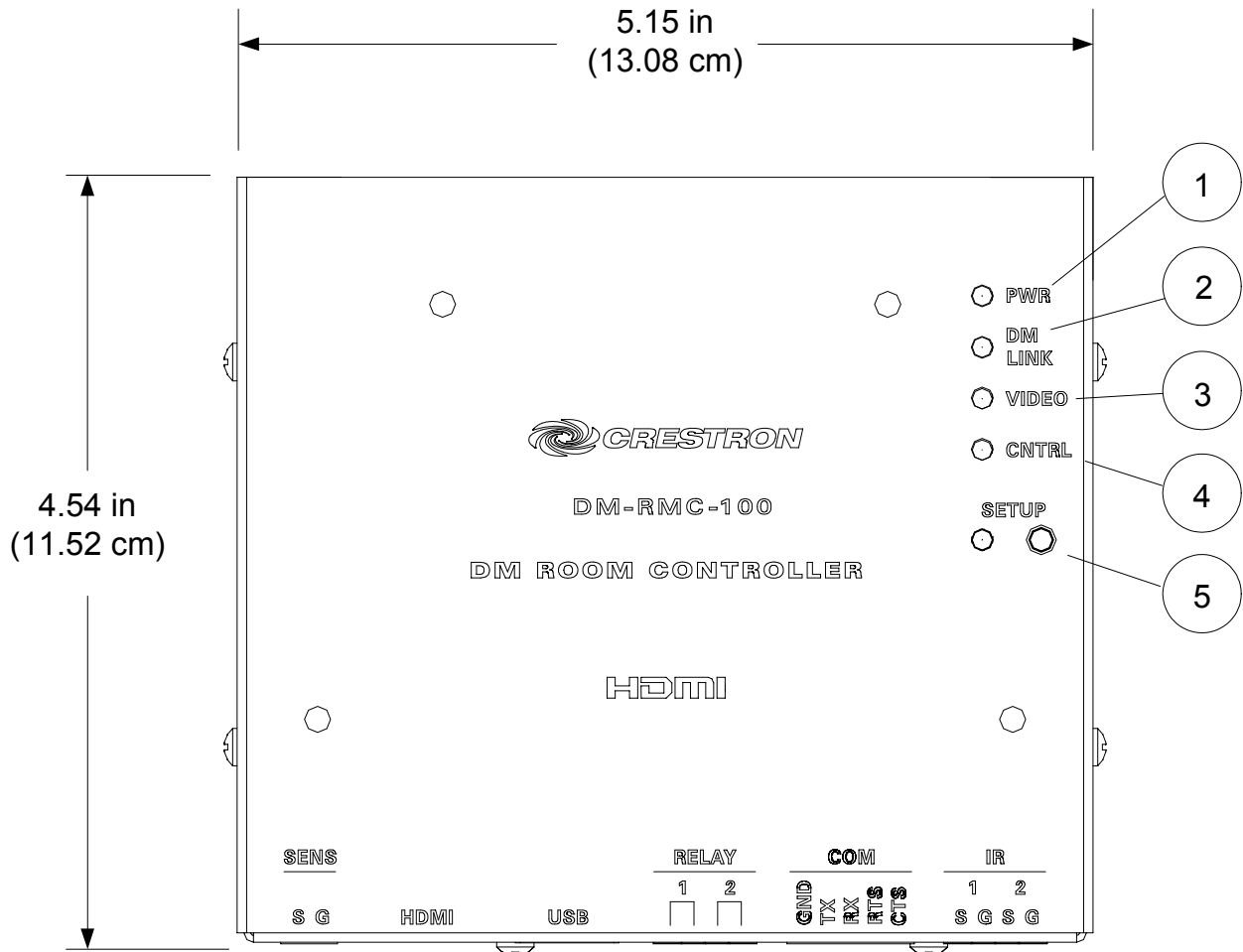
DM-RMC-100 Overall Dimensions (Bottom View)

6   7   8   9   10   11

1.41 in
(3.58 cm)
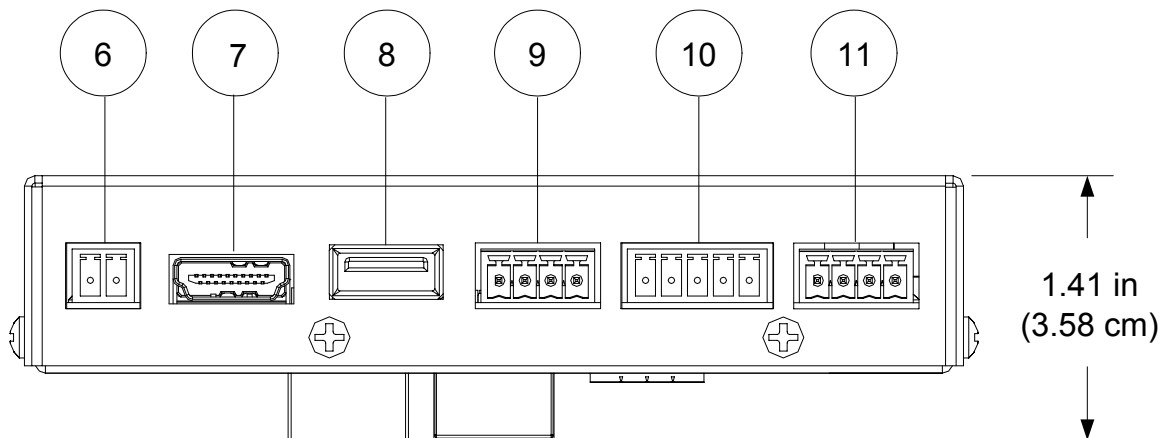
DM-RMC-100 Overall Dimensions (Rear View)
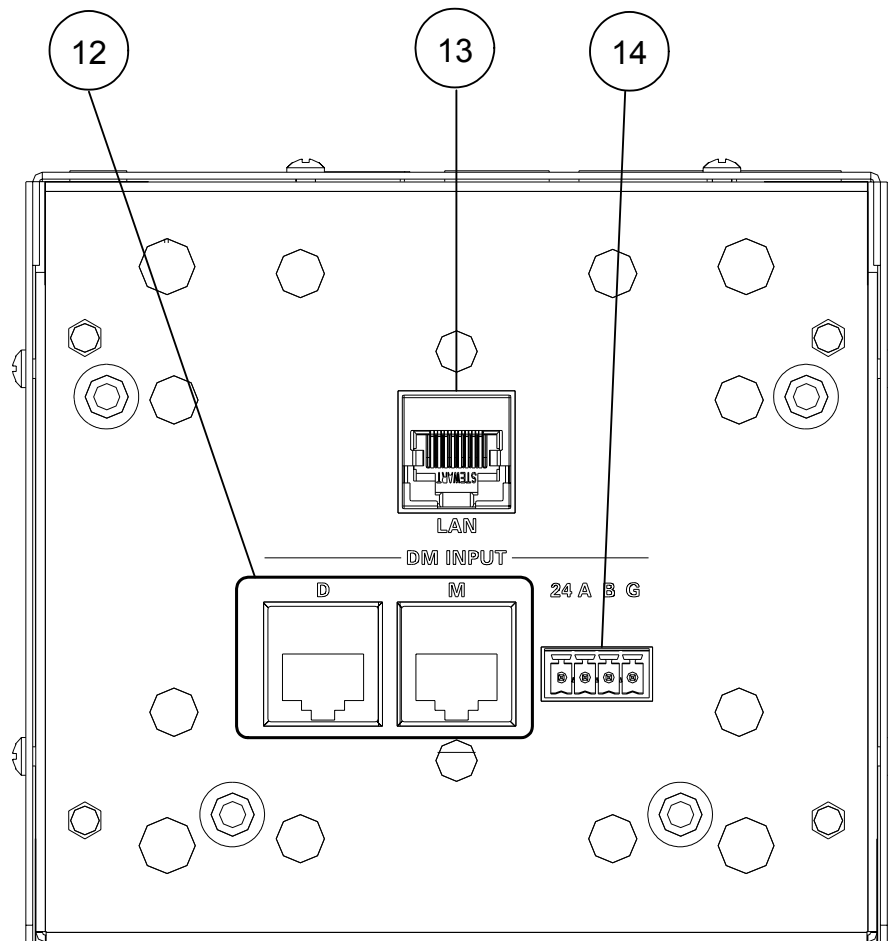
Connectors, Controls & Indicators

#	CONNECTORS[1], CONTROLS & INDICATORS	DESCRIPTION
1	PWR LED	(1) Green LED, indicates operating power supplied via DMNet
2	DM LINK LED	(1) Green LED, indicates connection to an upstream DM device

(Continued on following page)

Connectors, Controls & Indicators (Continued)

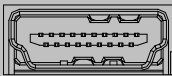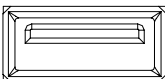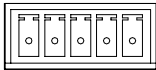| #	CONNECTORS[1], CONTROLS & INDICATORS	DESCRIPTION
3	VIDEO LED	(1) Red/green dual color LED, indicates video signal presence and lock status: **Red** – indicates no video **Green** – indicates the device is receiving video **Blinking Red/Green** – indicates errors in the video stream
4	CNTRL LED	(1) Red/green dual color LED, indicates Ethernet connection and control system communication status: **Red** – indicates no Ethernet link **Green** – indicates Ethernet link and connection to control system **Blinking Red/Green** – indicates Ethernet link but no connection to control system **Blinking Green** - The LED goes out momentarily every time a control command is sent or received (i.e. IR, RS-232, Relay, Sens)
5	SETUP (LED and Button)	(1) Red LED and (1) miniature recessed pushbutton, for Ethernet auto-discovery and default IP address

(Continued on following page)

Connectors, Controls & Indicators (Continued)

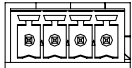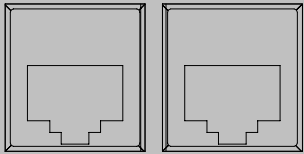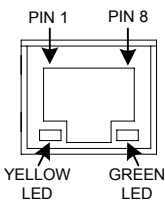| #	CONNECTORS[1], CONTROLS & INDICATORS	DESCRIPTION
6	SENS	(1) 2-pin 3.5mm detachable terminal block; Digital/contact closure sensing input; Rated for 0-24 Volts DC, referenced to ground; Input impedance: 2.2k ohms pulled up to 5 Volts DC; Logic threshold: 2.5 Volts DC nominal with 1 Volt hysteresis band
7	HDMI	(1) 19-pin Type A HDMI female; HDMI digital video/audio output Also supports DVI[2]
8	USB	(1) USB Type A female; USB 1.1 device port for mouse, keyboard, game controller, or other USB HID-compliant device
9	RELAY (1-2)	(1) 4-pin 3.5mm detachable terminal block comprising two normally open, isolated relays; Rated 1 Amp, 30 Volts AC/DC; MOV arc suppression across contacts
10	COM	(1) 5-pin 3.5mm detachable terminal block, bidirectional RS-232 port; Up to 115.2k baud, hardware and software handshaking support

(Continued on following page)

Connectors, Controls & Indicators (Continued)

#	CONNECTORS[1], CONTROLS & INDICATORS	DESCRIPTION
11	IR (1-2)	(1) 4-pin 3.5mm detachable terminal block comprising two IR/Serial ports; IR output up to 1.1 MHz; 1-way serial TTL/RS-232 (0-5 Volts) up to 19200 baud[3]
12	DM INPUT[4] D M	(1) DM CAT input composed of two 8-pin RJ-45 female, shielded; Connects to DM CAT output of a DM switcher, transmitter, or other DM device via DM-CBL or CresCAT-D cable[5, 6]
13	LAN[4] PIN 1 PIN 8 YELLOW LED GREEN LED	(1) 8-wire RJ-45 with two LED indicators; 10BASE-T/100BASE-TX Ethernet port, Green LED indicates link status; Yellow LED indicates Ethernet activity
14	24 A B G[8] 24 A B G	(1) 4-pin 3.5mm detachable terminal block, DMNet port; Connects to DMNet port of a DM switcher, transmitter, or other DM device via DM-CBL or CresCAT-D cable[7]

Table within row 13:

PIN	SIGNAL	PIN	SIGNAL
1	TX +	5	N/C
2	TX -	6	RX -
3	RX +	7	N/C
4	N/C	8	N/C

1. Interface connectors for **SENS**, **RELAY**, **COM**, **IR** and **24 A B G** ports are provided with the unit.
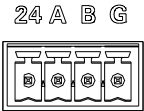
2. HDMI requires an appropriate adapter or interface cable to accommodate a DVI signal. CBL-HD-DVI interface cable sold separately.

3. Maximum string length for **IR** commands should be no greater than 40 characters.

4. To determine which is pin 1 on the cable, hold the cable so that the end of the eight pin modular plug is facing away from you, with the clip down and copper side up. Pin 1 is on the far left.

5. For DigitalMedia wiring, use DM-CBL DigitalMedia Cable, CresCAT-D, or quality CAT5e/CAT6 cable. Do NOT use low-skew cable. Refer to the latest version of the Crestron DigitalMedia Design Guide (Doc. 4789) for complete wiring guidelines.

6. The **DM INPUT** port consists of two separate RJ-45 connectors, labeled **D** and **M**. The **D** port carries HDMI signal. The **M** port carries data. Refer to the following table for the connector pinouts.

D and M Ports

PIN #	WIRE COLOR	Pin #	Wire Color
1	Orange/White	5	Blue/White
2	Orange	6	Green
3	Green/White	7	Brown/White
4	Blue	8	Brown

7. DMNet wiring is not compatible with Cresnet® wiring. DMNet wiring cannot be daisy chained.

8. Refer to the following table for the **24 A B G** port connector pinouts.

24 A B G Port

PIN #	SIGNAL	Description	Wire Color
24	24V DC	DC Power	Red
A	DMNet+	DMNet	Orange
B	DMNet-	DMNet	Grey
G	Ground	DC Ground	Black

Setup

Network Wiring

When wiring the DMNet network, consider the following:

NOTE: DMNet wiring and Cresnet® wiring are not compatible.

- Use Crestron Certified Wire.
- Use Crestron power supplies for Crestron equipment.
- Provide sufficient power to the system.
- For DigitalMedia wiring, use DM-CBL DigitalMedia Cable, CresCAT-D, or quality CAT5e/CAT6 cable. Do NOT use low-skew cable. Refer to the latest revision of the Crestron DigitalMedia Design Guide (Doc. 4789) for complete wiring guidelines.

  CAUTION: Insufficient power can lead to unpredictable results or damage to the equipment. Please use the Crestron Power Calculator to help calculate how much power is needed for the system (www.crestron.com/calculators).

For more details, refer to "Check Network Wiring" which starts on page 33.

For information on connecting Ethernet devices in a Crestron system, refer to the latest version of the Crestron e-Control® Reference Guide (Doc. 6052), which is available from the Crestron website (www.crestron.com/manuals).

Identity Code

NOTE: In the SIMPL™ Windows program, when the DM-RMC-100 is dropped onto an output card of a DM switcher, its IP ID is assigned automatically and does not require additional programming. Use the information below when the DM-RMC-100 is dropped directly into an Ethernet slot on the control system in SIMPL Windows, without a DM switcher.

The IP ID is set within the DM-RMC-100's table using Crestron Toolbox™. For information on setting an IP table, refer to the Crestron Toolbox help file. The IP IDs of multiple DM-RMC-100 devices in the same system must be unique.

When setting the IP ID, consider the following:

- The IP ID of each unit must match an IP ID specified in the SIMPL Windows program.

- Each device using IP to communicate with a control system must have a unique IP ID.

Installation

To prevent overheating, do not operate this product in an area that exceeds the environmental temperature range listed in the table of specifications.

The following tools and accessories are required for installation of a DM-RMC-100:

- DigitalMedia cable or CresCAT-D cable (not supplied) terminated with shielded RJ-45 connectors (DM-CONN, not supplied) for media signals and mini-phoenix connector for DMNet signals. Refer to "Network Wiring" on page 18.

- Phillips screwdriver (not supplied)

- Four #06-32 x 1/4" pan head Phillips screws (included)

- Metal mounting plate (included)

- 2-, 4- and 5-pin connector plugs (included)

It is assumed that DigitalMedia cable (DM-CBL) has been fed through an installed two-gang electrical box, 4" square, or UK electrical box (not supplied), terminated with the appropriate connectors, and wiring has been verified. Use the following procedure to install the DM-RMC-100.

1. Confirm that DMNet system power is OFF.

2. Attach supplied connector plugs to the appropriate cables. Connect terminated cables as shown in the "Hardware Hookup" section on pages 22 and 23.

3. Attach metal mounting plate to electrical box using two Phillips screws (not supplied).

4. Make **DM-INPUT** connections using DM-CBL.

   - Connect the RJ-45 terminated blue shielded DigitalMedia cable to the **DM-INPUT D** port.

   - Connect the yellow RJ-45 terminated CAT5e/CAT6 cable to the **DM-INPUT M** port.

   - Connect the DMNet cable with the supplied connector plug to the DM-RMC-100's **24 A B G** port.

5. Make the **LAN** connection to the DM-RMC-100's **LAN** port using an Ethernet cable terminated with an RJ-45 connector.

6. Attach the DM-RMC-100 to the mounting plate using the four included #06-32 x 1/4" Phillips screws (2007215), as shown in the illustration on the following page.

Mounting DM-RMC-100 into Electrical Box

METAL MOUNTING PLATE
(2019091)

DM-RMC-100

DRYWALL

SCREWS (4) #06-32 X 1/4"
(2007215)
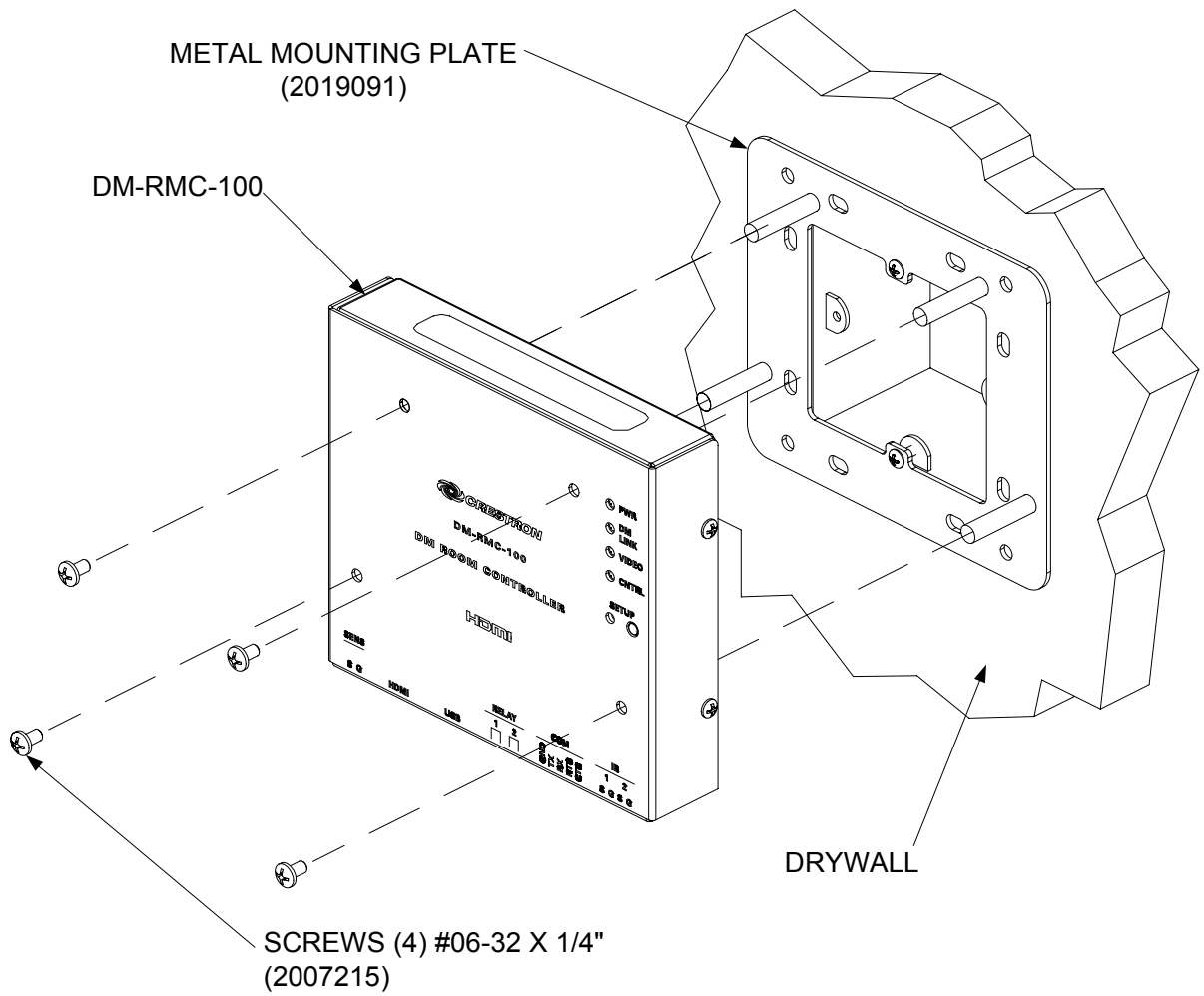
Hardware Hookup

Make the necessary connections as called out in the illustration that follows this paragraph. Refer to "Network Wiring" on page 18. Apply power after all connections have been made.

When making connections to the DM-RMC-100, use Crestron power supplies for Crestron equipment.

Hardware Connections for the DM-RMC-100 (Bottom View)

HDMI:
DIGITAL VIDEO/
AUDIO OUTPUT

IR:
TO IR DEVICE
(E.G. PROJECTOR)
OR DEVICES WITHOUT
RS-232

SENS:
FROM DIGITAL/CONTACT
CLOSURE

RELAY:
TO CONTROLLABLE
DEVICES

USB:
FOR 3RD PARTY USB-HID
PERIPHERALS
(E.G. KEYBOARD OR MOUSE)

COM:
TO ANY RS-232 DEVICES
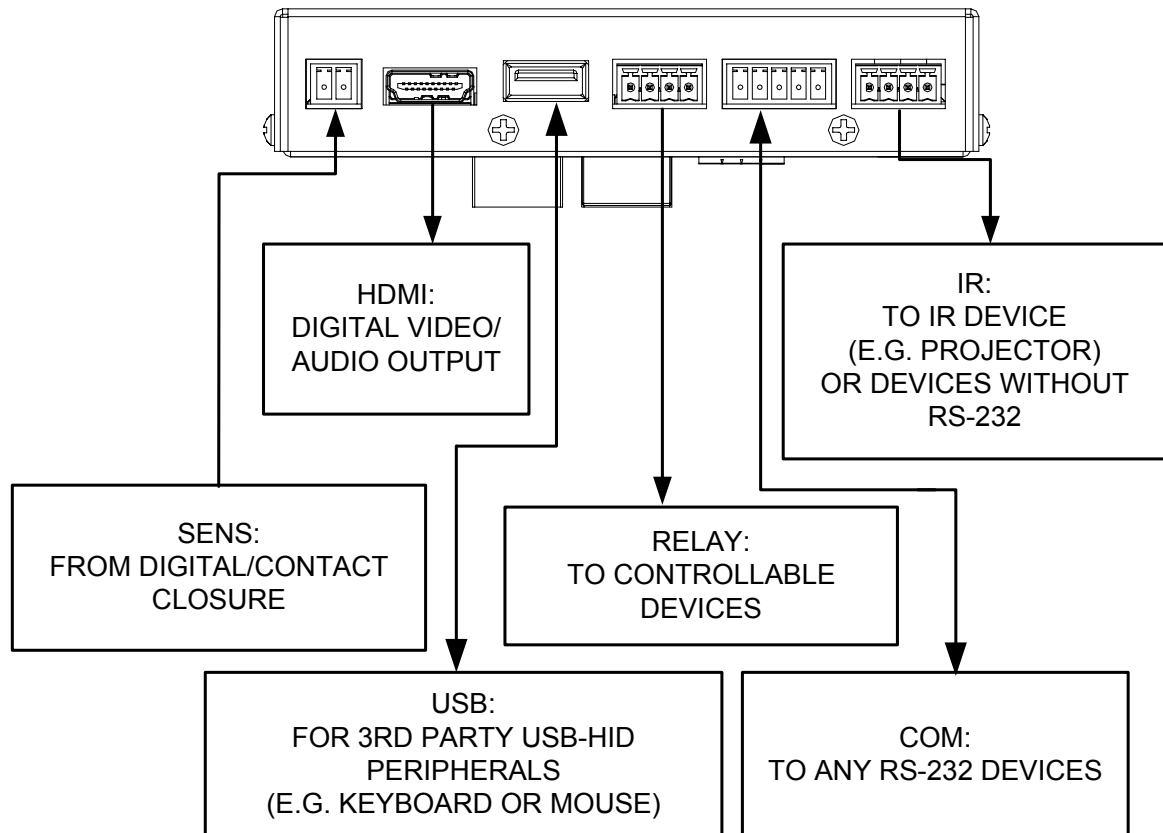
Hardware Connections for the DM-RMC-100 (Rear View)

```
┌─────────────────────────────┐
│          LAN:               │
│   10/100 BASE-T ETHERNET     │
│        TO LAN               │
└─────────────────────────────┘
```

LAN

─── DM INPUT ───

D   M   24 A B G

┌──────────────────┐   ┌─────────────┐
│   DM INPUT: │   │   DMNet   │
│ FROM SWITCHER   │   └─────────────┘
│ OR TRANSMITTER   │
└──────────────────┘
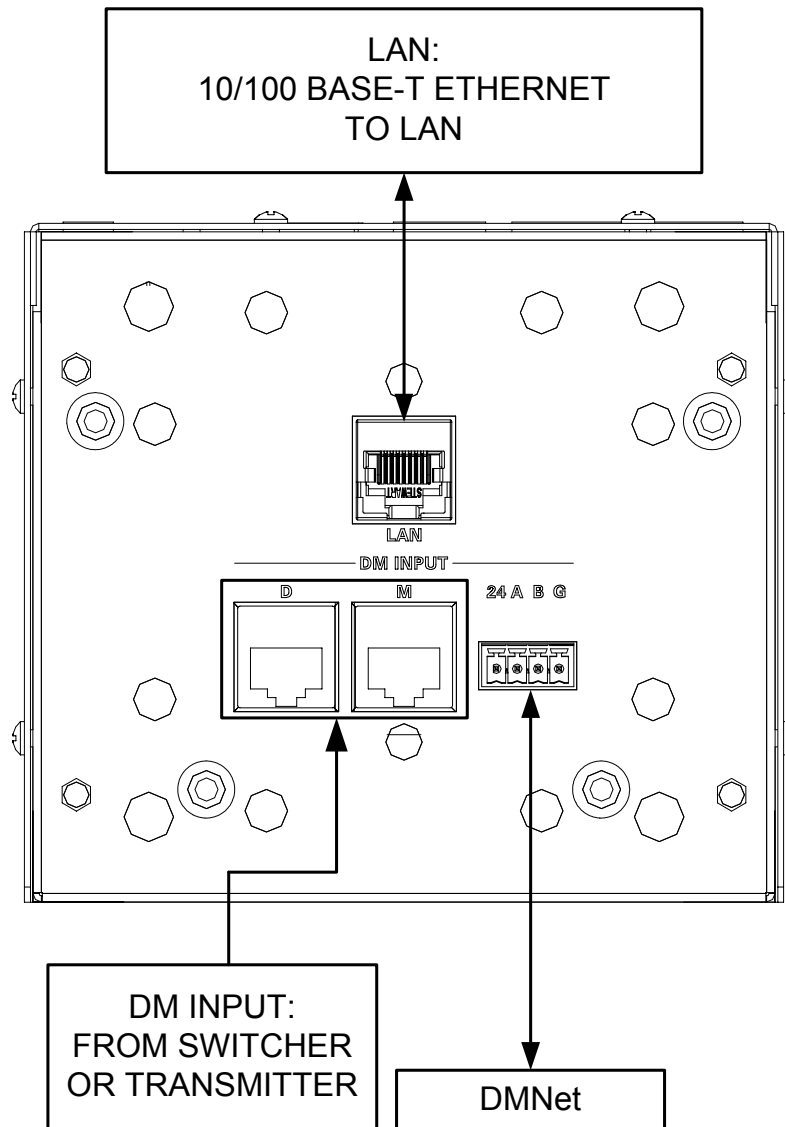
NOTE: Ensure the unit is properly grounded.

NOTE: For optimum performance, Crestron strongly recommends using DM-CBL DigitalMedia cable, available from Crestron. CresCAT-D or high-quality CAT5e/CAT6 wiring may also be used with varying performance. Do NOT use low-skew cable.

NOTE: Minimum recommended length for DM-CBL DigitalMedia cable is 15 feet (~4.6 meters).

Programming Software

Have a question or comment about Crestron software?

Answers to frequently asked questions (FAQs) can be viewed in the Online Help section of the Crestron website. To post a question or view questions you have submitted to Crestron's True Blue Support, log in at http://support.crestron.com. First-time users will need to establish a user account.

Earliest Version Software Requirements for the PC

NOTE: Crestron recommends that you use the latest software to take advantage of the most recently released features. The latest software is available from the Crestron website.

Crestron has developed an assortment of Windows®-based software tools to develop a controlled DigitalMedia system. For the minimum recommended software versions, visit the Version Tracker page of the Crestron website (www.crestron.com/versiontracker).

Programming with SIMPL Windows

SIMPL Windows is Crestron's premier software for programming Crestron control systems. It is organized into two separate but equally important "Managers".

Configuration Manager

Configuration Manager is the view where programmers "build" a Crestron control system by selecting hardware from the *Device Library*.

In the example that follows, the DM-RMC-100 is being used in a DigitalMedia system with a DM-MD8X8 Switcher. For details, refer to the latest version of the DigitalMedia Switchers Operations Guide (Doc. 6755).

1. To incorporate the DM-RMC-100 into the system, drag the DM-RMC-100 from the DigitalMedia | DM Receivers folder of the Device Library and drop it in the System Views.

Locating the DM-RMC-100 in the Device Library

Crestron Devices (DvcLib 593.029)
- Control Systems
- Cresnet Control Modules
- DigitalMedia
  - DM Input Cards
  - DM Midpoints
  - DM Output Cards
  - DM Receivers
    - DM-RMC-100 ◄
- Wireless Receivers
- Wireless Remotes
- User Devices
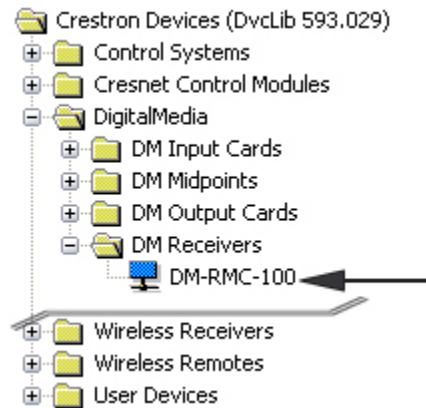
2. The system tree of the control system displays the device in the appropriate slot with a default IP ID as shown in the following illustrations.

C2Net Device, Slot 8 (Using Output Card in DM Switcher)

PRO2
- Slot 1: {Empty C2Y Card Slot}
- Slot 2: {Empty C2Y Card Slot}
- Slot 3: {Empty C2Y Card Slot}
- Slot 4: C2I-COM6
- Slot 5: C2I-IR8
- Slot 6: C2I-IO8
- Slot 7: C2I-RY8
- Slot 8: C2ENET-2
  - IP-ID 03: DM-MD8x8
    - Slot 1: {Empty DM Input Card Expansion Slot}
    - Slot 2: {Empty DM Input Card Expansion Slot}
    - Slot 3: {Empty DM Input Card Expansion Slot}
    - Slot 4: {Empty DM Input Card Expansion Slot}
    - Slot 5: {Empty DM Input Card Expansion Slot}
    - Slot 6: {Empty DM Input Card Expansion Slot}
    - Slot 7: {Empty DM Input Card Expansion Slot}
    - Slot 8: {Empty DM Input Card Expansion Slot}
    - Slot 17: DMC-CATO
      - Slot 1: DMC-CATO Output 1
        - IP-ID 04: DM-RMC-100 ◄
      - Slot 2: DMC-CATO Output 2
      - Slot 3: DMC-CATO Output 3
      - Slot 4: DMC-CATO Output 4
      - Slot 21: {Empty DM Output Card Expansion Slot}
  - IP-ID 04: In Use By Slot-08.IP-ID-03.Slot-17.Slot-01 : DM-RMC-100
  - IP-ID 05: {EMPTY}
  - IP-ID 06: {EMPTY}
  - IP-ID FE: {EMPTY}
- Slot 9: C2Net-Device
- Slot 10: C2I-PRO2-LCDPANEL

C2Net Device, Slot 8 (Using Ethernet Slot on Control System)
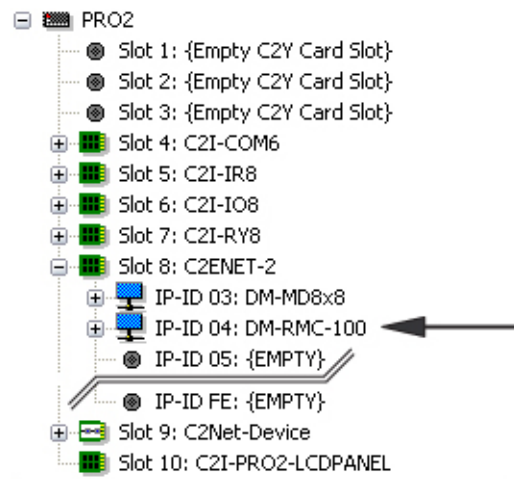
3. Additional DM-RMC-100 devices are assigned different IP ID numbers as they are added.

4. If necessary, double click a device to open the "Device Settings" window and change the IP ID, as shown in the following figure.

"Device Settings: Crestron DM-RMC-100" Window
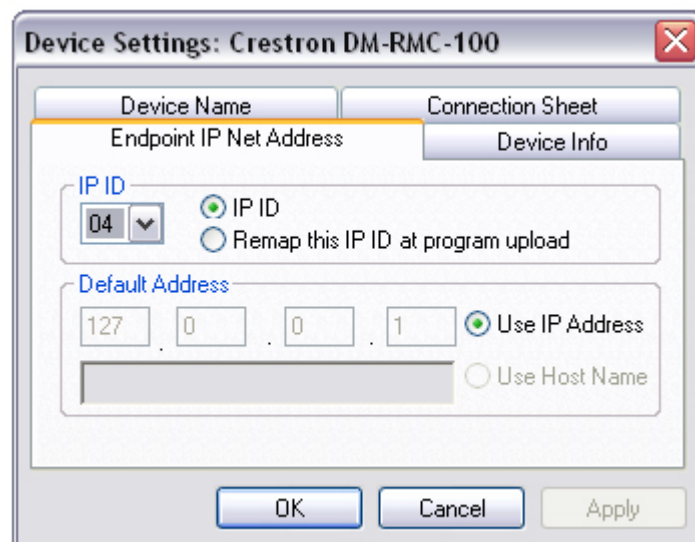
5. The ID code specified in the SIMPL Windows program must match the IP ID of each unit. Refer to "Identity Code" which starts on page 19.

Program Manager

Program Manager is the view where programmers "program" a Crestron control system by assigning signals to symbols.

The symbol can be viewed by double clicking on the icon or dragging it into *Detail View*. Each signal in the symbol is described in the SIMPL Windows help file (**F1**).

Example Program

An example program for the DM-RMC-100 is available from the Crestron website (www.crestron.com/exampleprograms).

Uploading and Upgrading

Crestron recommends using the latest programming software and that each device contains the latest firmware to take advantage of the most recently released features. However, before attempting to upload or upgrade it is necessary to establish communication. Once communication has been established, files (for example, firmware) can be transferred to the device. Finally, program checks can be performed (such as changing the device ID) to ensure proper functioning.

Establishing Communication

Use Crestron Toolbox for communicating with the DM-RMC-100; refer to the Crestron Toolbox help file for details. There are two methods of communication.

Indirect

Indirect Communication
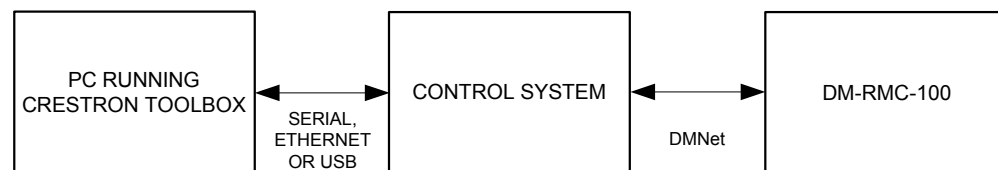
DM-RMC-100 connects to DigitalMedia switcher via DM network:

1. Establish communication between the PC and the DM switcher as described in the latest version of the DigitalMedia Switchers Operations Guide (Doc. 6755).

2. Use the Address Book in Crestron Toolbox to create an entry for the DM-RMC-100 using the expected communication protocol (Indirect). Select the IP Address of the DM-RMC-100 and the address book entry of the control system that is connected to the DM-RMC-100.

3. Display the DM-RMC-100's "System Info" window (click the 🛈 icon); communications are confirmed when the device information is displayed.

NOTE: Required for operation with a Crestron control system.

Ethernet Communication

```
┌─────────────────────┐                              ┌─────────────────────┐
│                     │                              │                     │
│   PC RUNNING        │ ◄──────── ETHERNET ────────► │    DM-RMC-100       │
│   CRESTRON TOOLBOX  │                              │                     │
│                     │                              │                     │
└─────────────────────┘                              └─────────────────────┘
```

The DM-RMC-100 connects to PC via Ethernet:

1. Enter the IP address, IP mask, and default router of the DM-RMC-100 via Crestron Toolbox (**Functions | Ethernet Addressing**); otherwise enable DHCP.

    NOTE: Use the Device Discovery Tool in Crestron Toolbox to detect all Ethernet devices on the network and their IP configuration. The tool is available in Toolbox version 1.15.143 or later.

2. Confirm Ethernet connection between DM-RMC-100 and PC. If connecting through a hub or router, use CAT5 straight through cables with 8-pin RJ-45 connectors. Alternatively, use a CAT5 crossover cable to connect the two **LAN** ports directly without using a hub or router.

3. Use the Address Book in Crestron Toolbox to create an entry for the DM-RMC-100 with the DM-RMC-100's TCP/IP communication parameters.

4. Display the "System Info" window (click the 🛈 icon) and select the DM-RMC-100 entry.

    NOTE: If the DM-RMC-100 is in a non-DHCP environment, a default IP address (192.168.1.241) can be assigned by holding down its **SETUP** button while applying power. This IP address will overwrite any previous settings and will remain until it is changed.

Firmware

Firmware files may be distributed from programmers to installers or from Crestron to dealers. Firmware upgrades are available from the Crestron website as new features are developed after product releases. For details on upgrading, refer to the Crestron Toolbox help file.

Check the Crestron website to find the latest firmware. (New users may be required to register to obtain access to certain areas of the site, including the FTP site.)

Upgrade DM-RMC-100 firmware via Crestron Toolbox.

1. Establish communication with the DM-RMC-100 and display the "System Info" window.

2. Select **Tools | Package Update Tool** to upgrade the DM-RMC-100 firmware.

Program Checks

Actions that can be performed on the DM-RMC-100 vary depending on whether it is connected via DMNet or Ethernet.

DMNet Connections

For DMNet connections, using Crestron Toolbox, display the network device tree (**Tools | Network Device Tree**) to show all network devices connected to the control system. Right-click on the DM-RMC-100 to display actions that can be performed on the DM-RMC-100.

Ethernet Connections

For Ethernet connections, display the "System Info window (click the **i** icon) and select the **Functions** menu to display actions that can be performed on the DM-RMC-100.

Be sure to use Crestron Toolbox to create the DM-RMC-100 IP table.

1. Select **Functions | IP Table Setup**.

2. Add, modify or delete entries in the IP table. The DM-RMC-100 can have only one IP table entry.

3. A defined IP table can be saved to a file or sent to the device.

Edit the control system's IP table to include an entry for the DM-RMC-100. The entry should list the DM-RMC-100's IP ID (specified on the DM-RMC-100's IP table) and the internal gateway IP address 127.0.0.1.

Problem Solving

Troubleshooting

The following table provides corrective action for possible trouble situations. If further assistance is required, please contact a Crestron customer service representative.

DM-RMC-100 Troubleshooting

TROUBLE	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
Device does not function.	Device is not communicating with the network.	Use Crestron Toolbox to poll the network. Verify network connection to the device.
	Device is not receiving sufficient power.	Use the Crestron Power Calculator to help calculate how much power is needed for the system.
PWR LED does not illuminate.	Device is not receiving power.	Verify DMNet connections are properly attached.
DM LINK LED does not illuminate.	Device is not receiving DMNet signal.	Verify DMNet connections are properly attached.
VIDEO LED is red.	Device is not receiving video signal.	Ensure proper video signal is routed to device.
VIDEO LED blinks red and green.	Device is receiving video but unable to lock onto it.	Verify 'D' cable connection and that the cable length can support the video data rate.

(Continued on following page)

DM-RMC-100 Troubleshooting (Continued)

TROUBLE	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
VIDEO LED is green but video on connected display is black.	HDCP is blanking the video output.	Verify 'M' cable connection.
		If source is routed through DM Switcher, verify that there are enough HDCP keys to support all destinations.
CNTRL LED is red.	Device is not communicating with an Ethernet device.	Verify 'M' cable connections.
		If the device is in a non-DHCP environment, a default IP address (192.168.1.241) can be assigned by holding down its **SETUP** button while applying power. This IP address will overwrite any previous settings and will remain until it is changed.
CNTRL LED flashes red/green.	Device has Ethernet link but is not communicating with control system.	Verify IP table entries match control system.
Loss of functionality due to electrostatic discharge.	Improper grounding.	Check that all ground connections have been made properly.

NOTE: For more advanced diagnostics, use the DM tool in Crestron Toolbox.

Check Network Wiring

Use the Right Wire

In order to ensure optimum performance over the full range of your installation topology, Crestron Certified Wire and only Crestron Certified Wire may be used. Failure to do so may incur additional charges if support is required to identify performance deficiencies because of using improper wire.

Calculate Power

CAUTION: Use only Crestron power supplies for Crestron equipment. Failure to do so could cause equipment damage or void the Crestron warranty.

CAUTION: Provide sufficient power to the system. Insufficient power can lead to unpredictable results or damage to the equipment. The **EIG** connector on the DM switcher is used to jumper in external power. Additional power is rarely required; switchers provide enough power for their maximum configuration of room controllers and repeaters. Please use the DMNet Power Calculator to help calculate how much power is needed for the system (www.crestron.com/calculators).

Refer to the following table for maximum cable lengths for various cables.

Maximum Cable Length by Type

Cable Type:	DM-CBL DigitalMedia Cable		CresCAT-D Crestron Home® CAT5 AV Cable	
Resolution:	Maximum length between, before, or after repeaters	Maximum total length using up to 3 repeaters	Maximum length between, before, or after repeaters	Maximum total length using up to 3 repeaters
720p, 1080i, 1080p24	200 ft (60 m)	450 ft (137 m)	150 ft (45 m)	400 ft (120 m)
1024x768 @ 75Hz	200 ft (60 m)	450 ft (137 m)	150 ft (45 m)	400 ft (120 m)
1080p60	150 ft (45 m)	450 ft (137 m)	100 ft (30 m)	400 ft (120 m)
1280x1024 @ 75Hz	150 ft (45 m)	450 ft (137 m)	100 ft (30 m)	400 ft (120 m)
1920x1200 @ 60Hz	150 ft (45 m)	450 ft (137 m)	100 ft (30 m)	400 ft (120 m)
1600x1200 @ 60Hz	125 ft (38 m)	450 ft (137 m)	75 ft (23 m)	400 ft (120 m)
1080p60 Deep Color	100 ft (30 m)	400 ft (120 m)	Not Supported	

NOTE: All Crestron certified DMNet wiring must consist of two twisted pairs. One twisted pair is the +24V conductor and the GND conductor and the other twisted pair is the A conductor and the B conductor.

Reference Documents

The latest version of all documents mentioned within the guide can be obtained from the Crestron website (www.crestron.com/manuals). This link will provide a list of product manuals arranged in alphabetical order by model number.

List of Related Reference Documents

DOCUMENT TITLE
Crestron DigitalMedia Design Guide
Crestron e-Control Reference Guide
DigitalMedia Switchers Operations Guide

Further Inquiries

If you cannot locate specific information or have questions after reviewing this guide, please take advantage of Crestron's award winning customer service team by calling Crestron at 1-888-CRESTRON [1-888-273-7876].

You can also log onto the online help section of the Crestron website (www.crestron.com/onlinehelp) to ask questions about Crestron products. First-time users will need to establish a user account to fully benefit from all available features.

Future Updates

As Crestron improves functions, adds new features and extends the capabilities of the DM-RMC-100, additional information may be made available as manual updates. These updates are solely electronic and serve as intermediary supplements prior to the release of a complete technical documentation revision.

Check the Crestron website periodically for manual update availability and its relevance. Updates are identified as an "Addendum" in the Download column.

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3. Return freight charges following repair of items under warranty shall be paid by CRESTRON, shipping by standard ground carrier. In the event repairs are found to be non-warranty, return freight costs shall be paid by the purchaser.

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