

Crestron **DM-RMC-100-1**
DigitalMedia™ Room Controller
& DM® CAT Receiver

Operations & Installation Guide



This document was prepared and written by the Technical Documentation department at:



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Regulatory Compliance

As of the date of manufacture, the DM-RMC-100-1 has been tested and found to comply with specifications for CE marking and standards per EMC and Radiocommunications Compliance Labelling.



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 the separation between the equipment and 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

Industry Canada (IC) Compliance Statement

This Class B digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

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DigitalMedia™ Room Controller & DM® CAT Receiver: DM-RMC-100-1

Introduction

The DM-RMC-100-1 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-100-1 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 meter) cable length¹
- Low-profile surface mount design
- Provides one HDMI® or DVI display output²
- Handles HD video with Deep Color and 3D
- Includes USB HID keyboard/mouse port
- Enables device control via CEC, RS-232, IR, or Ethernet

(Continued on following page)

1. For DigitalMedia CAT wiring, use DM-CBL DigitalMedia Cable. Up to two DM Repeaters (model DM-DR, sold separately) may be required. Refer to the latest version of the Crestron DigitalMedia Design Guide (Doc. 4789) for complete wiring guidelines. It is available from the Crestron Web site (www.crestron.com/dmresources).
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)

- 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*. 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. Up to two 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-100-1, supporting HDMI with HDCP, Deep Color and 3D, 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 cable¹. 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-100-1s may be installed to handle each display in a multiroom distribution system, all fed from a central DM series switcher (sold separately). Or, a single DM-RMC-100-1 can be fed straight from a DM-TX-100 or other DM CAT transmitter (all 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-100-1'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. Up to two 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 transmitter (both sold separately), the DM-RMC-100-1 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 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-100-1 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-100-1 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.

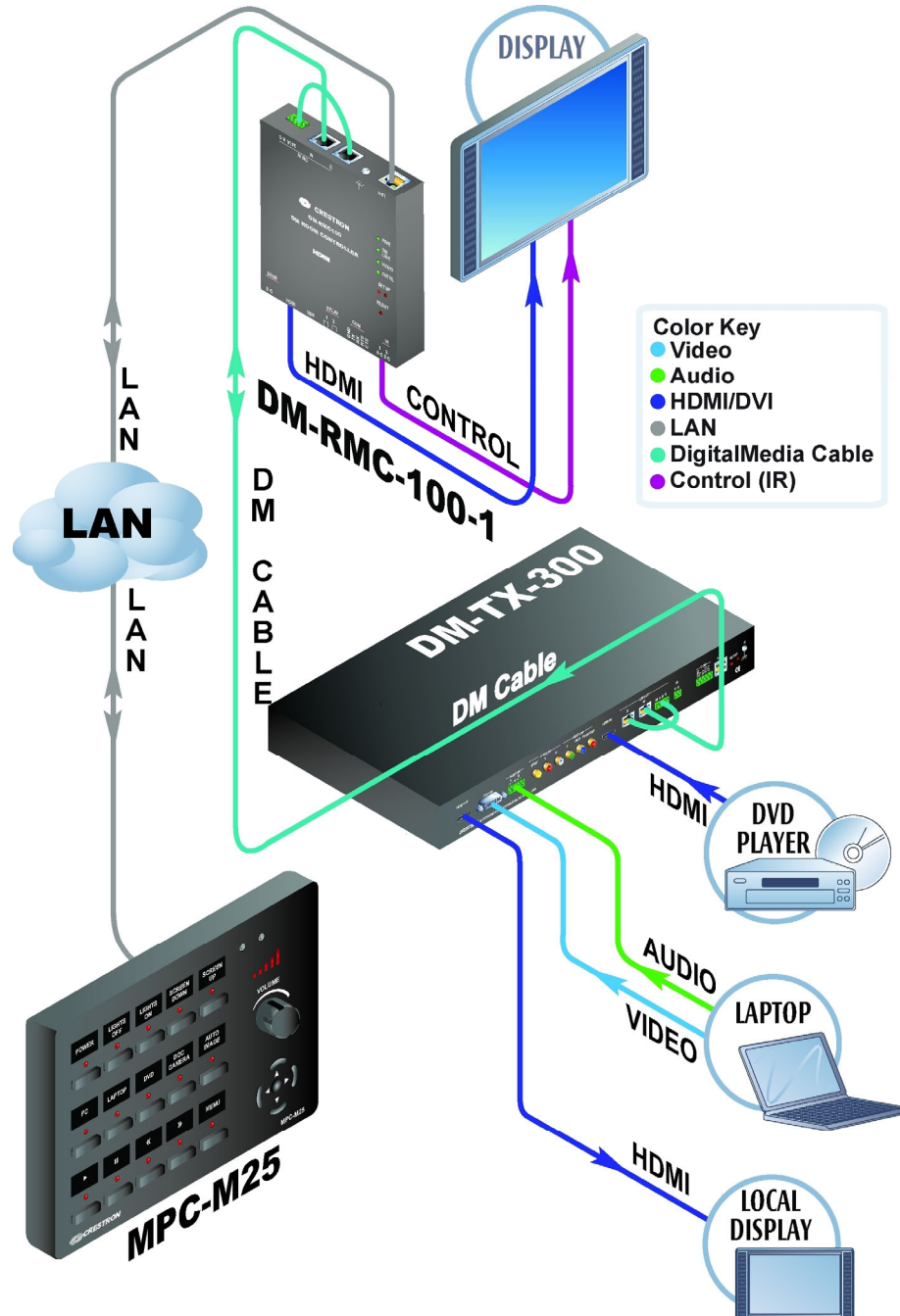
Low-Profile Installation

The DM-RMC-100-1 measures less than 1.3 inches (33 mm) deep and mounts to wall, ceiling or other flat surface. All connections are positioned along the top and bottom edges of the receiver, allowing cables to be dressed neatly without obstruction. An array of indicators 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-100-1 in a classroom application.

DM-RMC-100-1 in a Classroom Application



For more information on this and other DM-RMC-100-1 applications, refer to the latest revision of the Crestron DigitalMedia Design Guide (Doc. 4789).

Specifications

Specifications for the DM-RMC-100-1 are listed in the following table.

DM-RMC-100-1 Specifications

| SPECIFICATION | DETAILS |
|--|---|
| Video Input Signal Type Output Signal Types Formats Input Resolutions Progressive | DM CAT (DigitalMedia over twisted-pair copper wire) HDMI, DVI ¹ HDMI with Deep Color & 3D, DVI, HDCP content protection support 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 1600 x 900 @ 60 Hz 1600 x 1200 @ 60 Hz 1680 x 1050 @ 60 Hz |

(Continued on following page)

DM-RMC-100-1 Specifications (Continued)

| SPECIFICATION | DETAILS |
|----------------------------|--|
| Video | |
| Input Resolutions | |
| Progressive (Continued) | 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 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 up to 165 MHz pixel clock |
| Output Resolutions | Matched to input |
| Audio | |
| Input Signal Type | DM CAT |
| Output Signal Type | HDMI |
| Formats | Dolby® Digital, Dolby Digital EX, Dolby Digital Plus, Dolby True HD, DTS®, DTS-ES, DTS 96/24, DTS- HD High Res, DTS HD Master Audio™, up to 8ch PCM |
| Communications | |
| DigitalMedia | DM CAT, DMNet, HDCP management, EDID format management, CEC |

(Continued on following page)

DM-RMC-100-1 Specifications (Continued)

| SPECIFICATION | DETAILS |
|--|--|
| Communications (Continued) | |
| Ethernet | 10BASE-T/100BASE-TX, auto-switching, auto-negotiating, auto-discovery, full/half duplex, TCP/IP, UDP/IP, CIP, DHCP, RSTP |
| USB | Supports USB HID class devices |
| Power Requirements | |
| DMNet Power Usage | 6 Watts (0.25 Amps @ 24 Volts DC) |
| Minimum 2-Series Control System Update File ^{2, 3} | Version 4.001.112 or later |
| Environmental | |
| Temperature | 41° to 104° F (5° to 40° C) |
| Humidity | 10% to 90% RH (non-condensing) |
| Heat Dissipation | 21 BTU/Hr |
| Enclosure | |
| Chassis | Metal, matte black finish |
| Mounting | Surface mount (mounting bracket included) |
| Dimensions | |
| Height | 5.66 in (144 mm) |
| Width | 5.15 in (131 mm) |
| Depth | 1.14 in (29 mm) 1.29 in (33 mm) with mounting bracket |
| Weight | 14 oz (392 g) |

(Continued on following page)

DM-RMC-100-1 Specifications (Continued)

| SPECIFICATION | DETAILS |
|-----------------------|--|
| Available Accessories | |
| CBL-HD | Crestron Certified HDMI Interface Cable |
| CBL-HD-DVI | Crestron Certified HDMI to DVI Interface Cable |
| CNXP-XX | Custom Serial Interface Cable |
| CNXRMCS | Current Sensor |
| DM-CBL | DigitalMedia Cable |
| DM-CONN | DigitalMedia Cable Connector |
| DM-DR | DigitalMedia CAT Repeater |
| 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 Web site. 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 Web site 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-100-1.

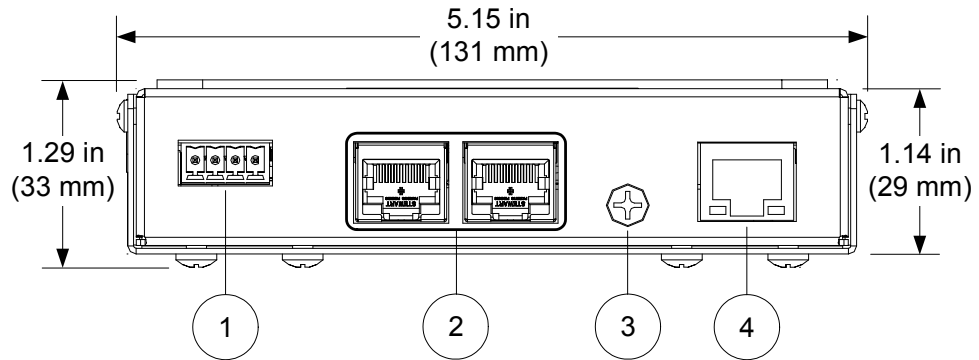
DM-RMC-100-1 Physical View (Bottom Ports Shown)



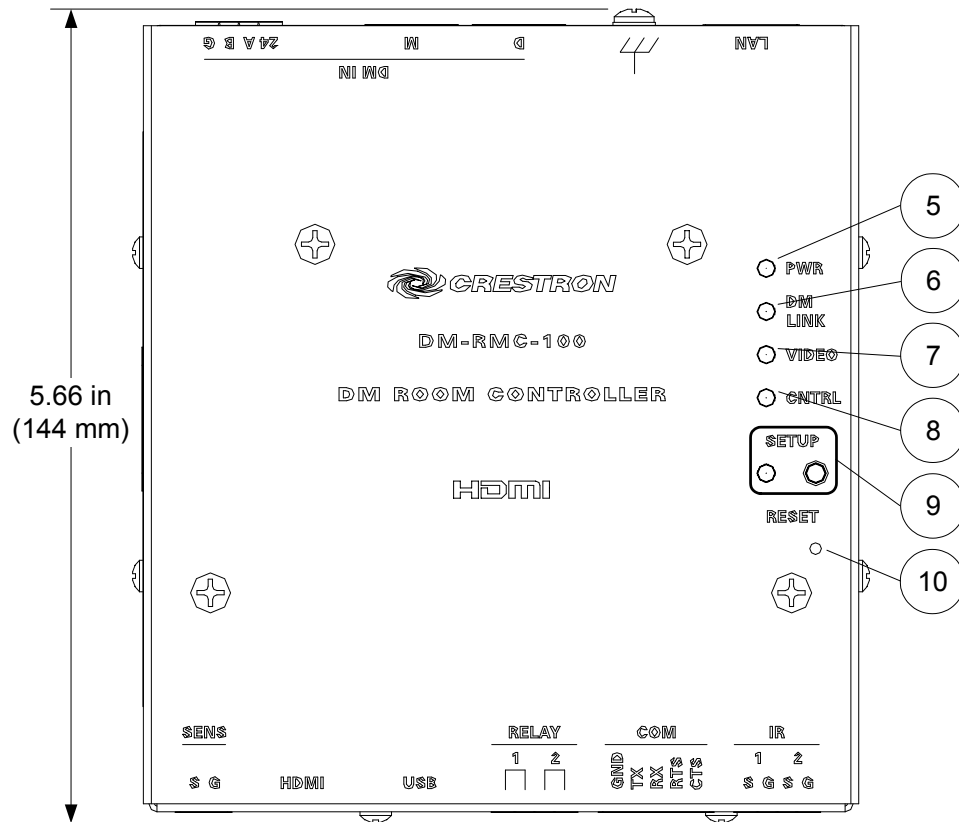
DM-RMC-100-1 Physical View (Top Ports Shown)



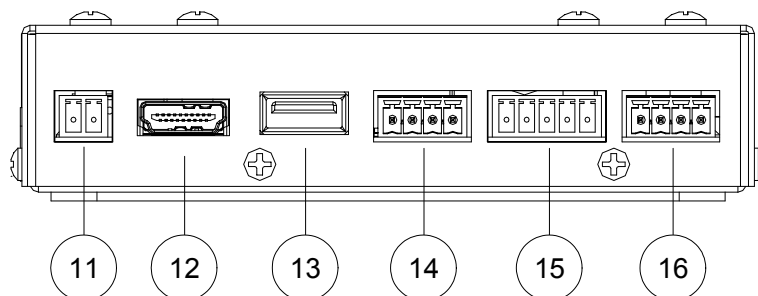
DM-RMC-100-1 Overall Dimensions (Top View)



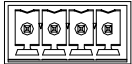
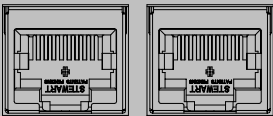

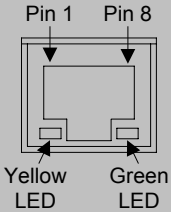
DM-RMC-100-1 Overall Dimensions (Front View)



DM-RMC-100-1 Overall Dimensions (Bottom View)



Connectors, Controls & Indicators

| # | CONNECTORS ¹ , CONTROLS & INDICATORS | DESCRIPTION | | | | | | | | | | | | | | | | | | | | |
|-----|---|--|--------|--------|-----|--------|---|------|---|-----|---|------|---|------|---|------|---|-----|---|-----|---|-----|
| 1 | 24 A B G ^{2, 3}  | (1) 4-pin 3.5 mm detachable terminal block, DMNet port; Connects to DMNet port of a DM switcher, transmitter, or other DM device via DM-CBL cable ⁴ | | | | | | | | | | | | | | | | | | | | |
| 2 | DM IN ^{5, 6}  | (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 cable ⁴ | | | | | | | | | | | | | | | | | | | | |
| 3 | GROUND  | (1) 6/32 screw, chassis ground lug | | | | | | | | | | | | | | | | | | | | |
| 4 | LAN ⁵  | (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 | | | | | | | | | | | | | | | | | | | | |
| | | <table border="1"> <thead> <tr> <th>PIN</th> <th>SIGNAL</th> <th>PIN</th> <th>SIGNAL</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>TX +</td> <td>5</td> <td>N/C</td> </tr> <tr> <td>2</td> <td>TX -</td> <td>6</td> <td>RX -</td> </tr> <tr> <td>3</td> <td>RX +</td> <td>7</td> <td>N/C</td> </tr> <tr> <td>4</td> <td>N/C</td> <td>8</td> <td>N/C</td> </tr> </tbody> </table> | PIN | SIGNAL | PIN | SIGNAL | 1 | TX + | 5 | N/C | 2 | TX - | 6 | RX - | 3 | RX + | 7 | N/C | 4 | N/C | 8 | N/C |
| PIN | SIGNAL | PIN | SIGNAL | | | | | | | | | | | | | | | | | | | |
| 1 | TX + | 5 | N/C | | | | | | | | | | | | | | | | | | | |
| 2 | TX - | 6 | RX - | | | | | | | | | | | | | | | | | | | |
| 3 | RX + | 7 | N/C | | | | | | | | | | | | | | | | | | | |
| 4 | N/C | 8 | N/C | | | | | | | | | | | | | | | | | | | |
| 5 | PWR LED | (1) Green LED, indicates operating power supplied via DMNet | | | | | | | | | | | | | | | | | | | | |


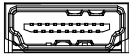


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Connectors, Controls & Indicators (Continued)

| # | CONNECTORS ¹ , CONTROLS & INDICATORS | DESCRIPTION |
|---|---|---|
| 6 | DM LINK LED | (1) Green LED, indicates connection to an upstream DM device |
| 7 | 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 |
| 8 | 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) |
| 9 | SETUP (LED and Button) | (1) Red LED and (1) miniature recessed push button, for Ethernet auto-discovery and default IP address |

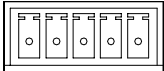

(Continued on following page)

Connectors, Controls & Indicators (Continued)


| # | CONNECTORS ¹ , CONTROLS & INDICATORS | DESCRIPTION |
|----|--|---|
| 10 | RESET | (1) miniature recessed pushbutton, for hardware reset |
| 11 | SENS  | (1) 2-pin 3.5 mm 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 |
| 12 | HDMI  | (1) 19-pin Type A HDMI female; HDMI digital video/audio output; Also supports DVI ⁷ |
| 13 | USB  | (1) USB Type A female; USB 1.1 host port for connection of a mouse, keyboard or other USB HID-compliant device |
| 14 | RELAY (1-2)  | (1) 4-pin 3.5 mm detachable terminal block comprising two normally open, isolated relays; Rated 1 Amp, 30 Volts AC/DC; MOV arc suppression across contacts |

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Connectors, Controls & Indicators (Continued)


| # | CONNECTORS ¹ , CONTROLS & INDICATORS | DESCRIPTION |
|----|---|---|
| 15 | COM  | (1) 5-pin 3.5 mm detachable terminal block, bidirectional RS-232 port; Up to 115.2k baud, hardware and software handshaking support |
| 16 | IR (1-2)  | (1) 4-pin 3.5 mm 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 ⁸ |

- Interface connectors for **24 A B G**, **SENS**, **RELAY**, **COM** and **IR** ports are provided with the unit.
- Refer to the following table for the **24 A B G** port connector pinouts.

| 24 A B G  | | | |
|---|--------|-------------|------------|
| PIN # | SIGNAL | DESCRIPTION | WIRE COLOR |
| 24 | 24V DC | DC Power | Red |
| A | DMNet+ | DMNet | Orange |
| B | DMNet- | DMNet | Grey |
| G | Ground | DC Ground | Black |

- DMNet wiring is not compatible with Cresnet[®] wiring. DMNet wiring cannot be daisy chained.
- For DigitalMedia CAT wiring, use DM-CBL DigitalMedia Cable. Up to two DM Repeaters (model DM-DR, sold separately) may be required. Refer to the latest version of the Crestron DigitalMedia Design Guide (Doc. 4789) for complete wiring guidelines.
- 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.

6. The **DM IN** 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.

|  | | | |
|---|--------------|-------|-------------|
| 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. HDMI requires an appropriate adapter or interface cable to accommodate a DVI signal. CBL-HD-DVI interface cable sold separately.
8. Maximum string length for IR commands should be no greater than 40 characters.

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 CAT wiring, use DM-CBL DigitalMedia Cable. Up to two DM Repeaters (model DM-DR, sold separately) may be required. 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 34.

The DM-RMC-100-1 can also use high-speed Ethernet for communications between the device and a control system, computer, media server and other IP-based devices.

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 Web site (www.crestron.com/manuals).

Identity Code

NOTE: In the SIMPL™ Windows program, when the DM-RMC-100-1 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-100-1 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-100-1'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-100-1 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.

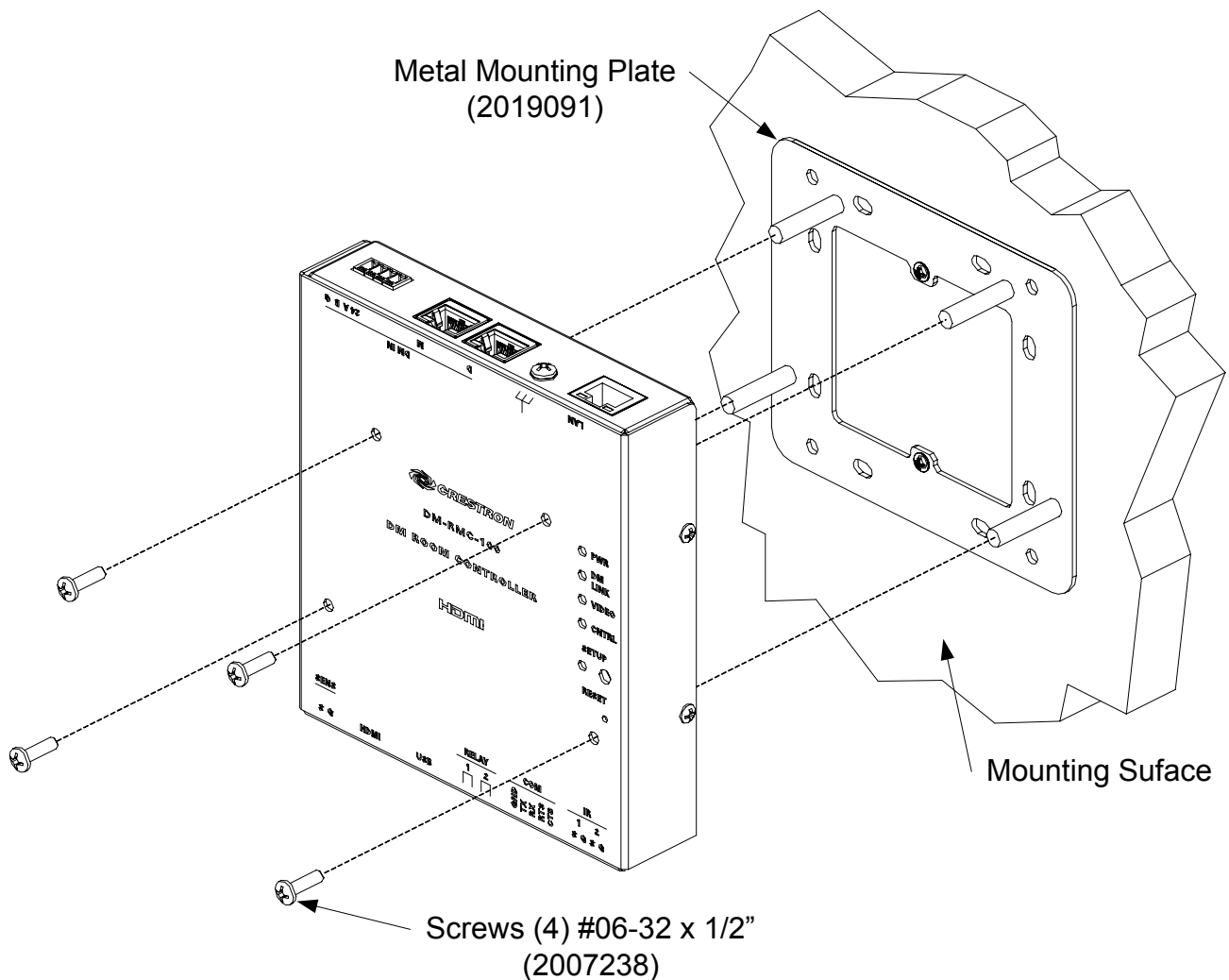
The following tools and accessories are required for installation of a DM-RMC-100-1:

- DigitalMedia cable (sold separately) terminated with shielded RJ-45 connectors (DM-CONN, sold separately) 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 1/2" pan head Phillips screws (included)
- Metal mounting plate (included)
- 2-, 4- and 5-pin connector plugs (included)

Use the following procedure to install the DM-RMC-100-1:

1. Attach supplied connector plugs to the appropriate cables. Refer to “Hardware Hookup” which starts on page 21.
2. Attach the included metal mounting plate (2019091) to the mounting surface using four screws (not supplied).
3. Attach the DM-RMC-100-1 to the mounting plate using the four included #06-32 x 1/2" Phillips screws (2007238), as shown in the illustration below.

Mounting DM-RMC-100-1 to a Flat Surface

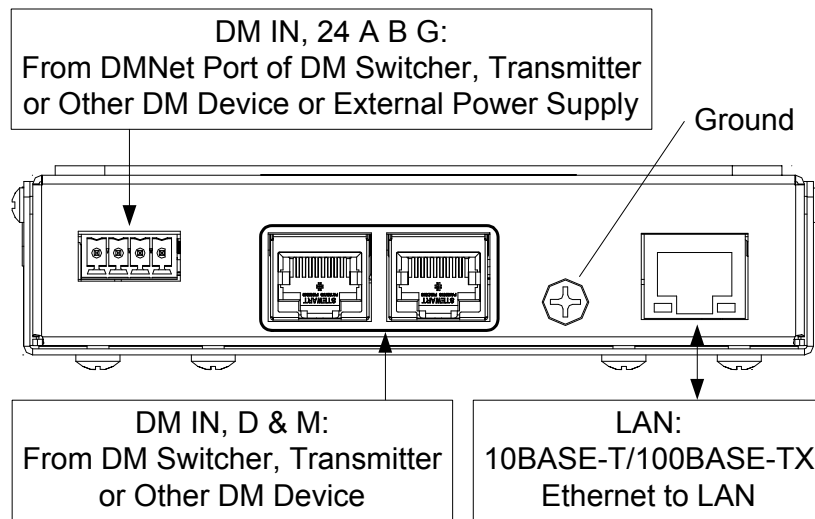


Hardware Hookup

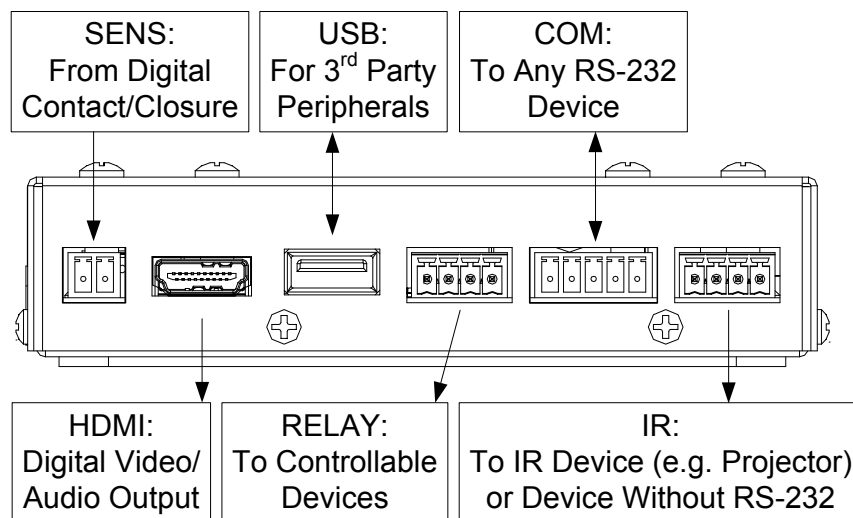
Make the necessary connections as called out in the illustration that follows this paragraph. Refer to “Network Wiring” on page 18. Apply power after all connections have been made.

When making connections to the DM-RMC-100-1, use Crestron power supplies for Crestron equipment.

Hardware Connections for the DM-RMC-100-1 (Top View)



Hardware Connections for the DM-RMC-100-1 (Bottom View)



NOTE: Ensure the unit is properly grounded by mounting it to a metal electrical box or connecting a wire from the unit’s ground screw to building/earth ground.

NOTE: For optimum performance, Crestron strongly recommends using DM-CBL DigitalMedia cable, available from Crestron.

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 Web site. 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 Web site (www.crestron.com/software).

Crestron has developed an assortment of Windows®-based software tools to develop a customized system. Use Crestron SystemBuilder™ or SIMPL Windows to create a program to control the DM-RMC-100-1.

Programming with Crestron SystemBuilder

Crestron SystemBuilder is the easiest method of programming but does not offer as much flexibility as SIMPL Windows. For additional details, download SystemBuilder from the Crestron Web site and examine the extensive help file.

Programming with SIMPL Windows

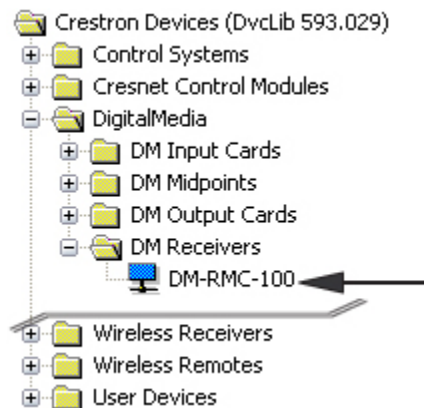
NOTE: While SIMPL Windows can be used to program the DM-RMC-100-1, it is recommended to use SystemBuilder for configuring a system.

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

Configuration Manager

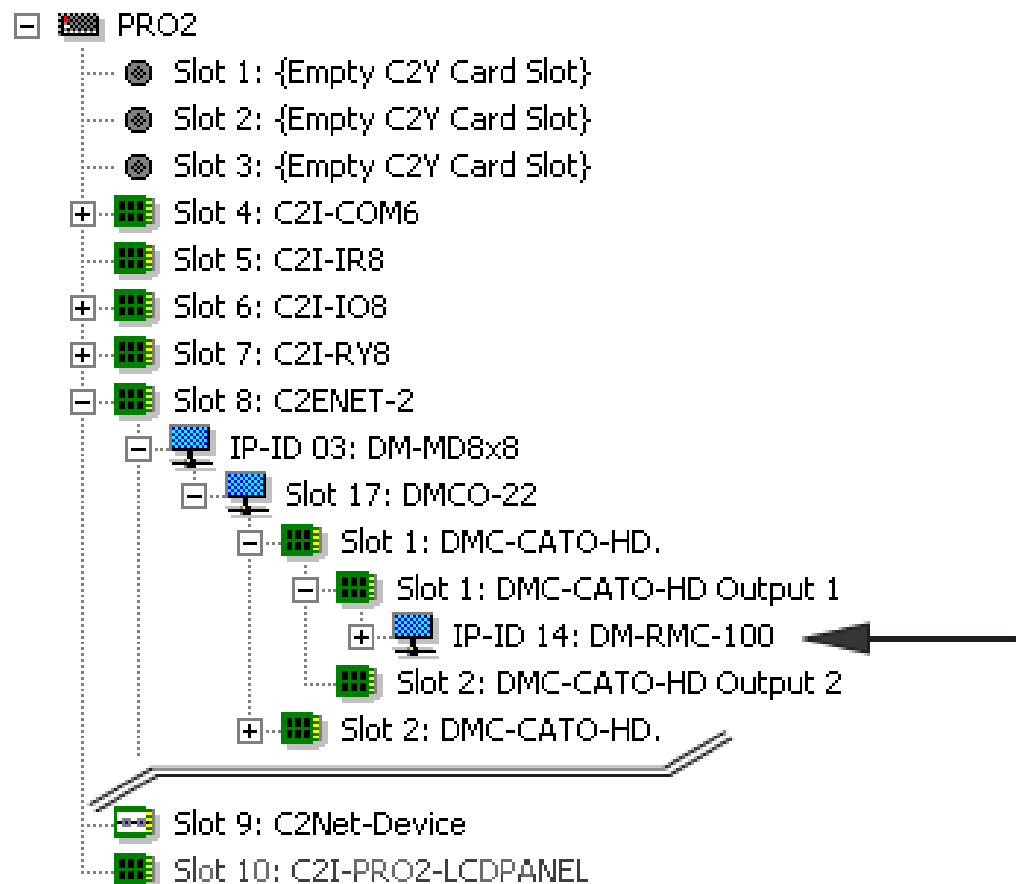
Configuration Manager is the view where programmers “build” a Crestron control system by selecting hardware from the *Device Library*.

1. To incorporate the DM-RMC-100-1 into the system, drag the DM-RMC-100-1 from the DigitalMedia | DM Receivers folder of the *Device Library* and drop it into either of the following *System Views*:
 - A compatible output card of a DM switcher
 - Directly to a card in the Ethernet slot of the control system (used without a DM switcher)

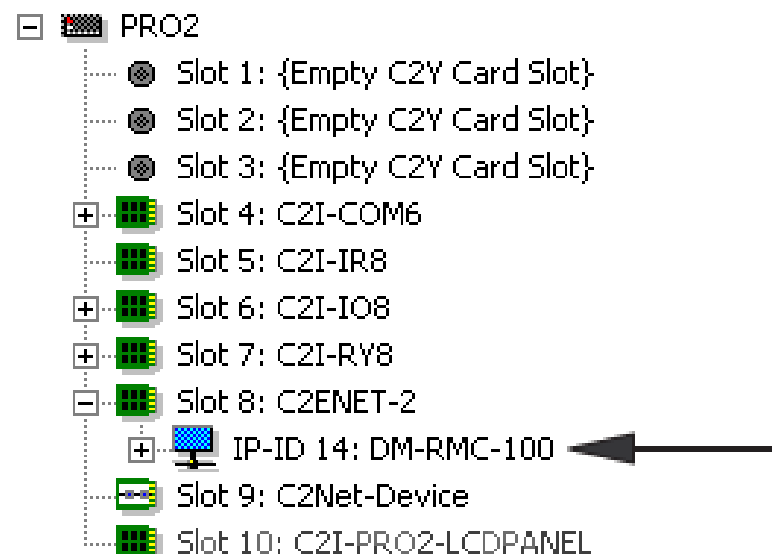
Locating the DM-RMC-100-1 in the Device Library

The system tree of the control system displays the DM-RMC-100-1 in the appropriate slot with a default IP ID or IP ID as shown in the following illustrations. In the first example, the DM-RMC-100-1 is used with the DMCO-22 output card in a DM-MD8X8 switcher (both sold separately). In the second example, the DM-RMC-100-1 is used with the C2ENET-2 card (sold separately) in an Ethernet slot on the control system.

***C2ENET-2 Device, Slot 8
(Using Output Card in a DM Switcher)***

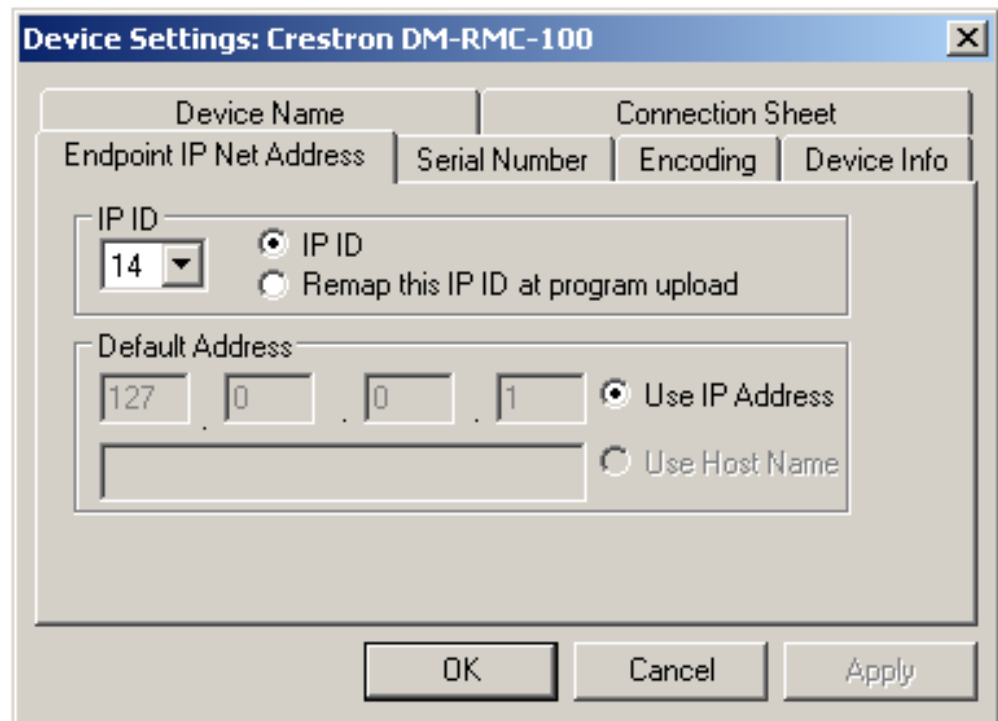


***C2ENET-2 Device, Slot 8
(Using Ethernet Slot on Control System)***



2. If additional DM-RMC-100-1 devices are to be added, repeat step 1 for each device. Each DM-RMC-100 is assigned a different IP ID number as it is added.
3. 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



NOTE: The ID code specified in the SIMPL Windows program must match the IP ID of each unit. Refer to “Identity Code” 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**).

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 control system (and/or device). In addition, the IP table of the device can be configured.

Establishing Communication

Use Crestron Toolbox for communicating with the DM-RMC-100-1; refer to the Crestron Toolbox help file for details.

A PC running Crestron Toolbox communicates with the DM-RMC-100-1 in the following ways:

- Via a DM switcher using TCP/IP or USB communication. TCP/IP provides a faster method of communication than USB.
- Via the LAN port of the DM-RMC-100-1 using TCP/IP communication. In this scenario, the DM-RMC-100-1 is used in a standalone configuration (i.e. a DM switcher is not used).

Via DM
Switcher

TCP/IP Communication via DM Switcher

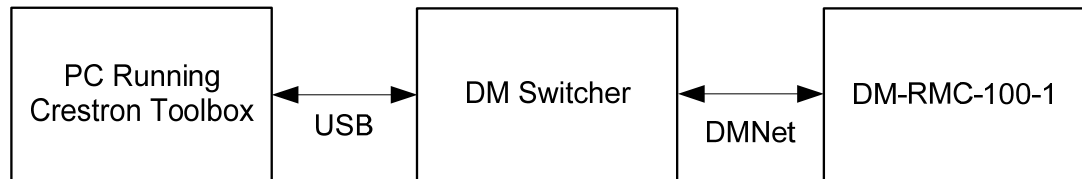


To establish TCP/IP communication between the PC and the DM-RMC-100-1 via a DM switcher:

1. Establish communication between the PC and the DM switcher as described in the latest version of the Digital Media Switchers Operations Guide (Doc. 6755).
2. Use the Device Discovery Tool in Crestron Toolbox to find the IP address of the DM-RMC-100-1. The tool is available in Toolbox version 1.15.143 or later.

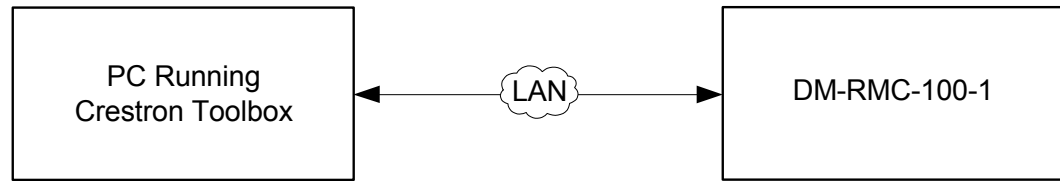
3. Use the Address Book in Crestron Toolbox to create an entry for the DM-RMC-100-1 using the *TCP* connection type and enter the IP address of the DM-RMC-100-1.
4. Display the DM-RMC-100-1's "System Info" window (click the **i** icon); communications are confirmed when the device information is displayed.

USB Communication via DM Switcher



To establish USB communication between the PC and the DM-RMC-100-1 via a DM switcher:

1. Use the Address Book in Crestron Toolbox to create an entry using the expected communication protocol (USB). When multiple USB devices are connected, identify the DM switcher by entering "DM-MD8X8", "DM-MD16X16" or "DM-MD32X32" in the *Model* textbox, the unit's serial number in the *Serial* textbox or the unit's hostname in the *Hostname* textbox. The hostname can be found in the "System Info" window in the *Ethernet* section of the window, however, communication must be established in order to see this information in the "System Info" window.
2. Display the DM-RMC-100-1's "System Info" window (click the **i** icon); communications are confirmed when the device information is displayed.

Via LAN Port**TCP/IP Communication via LAN Port of DM-RMC-100-1**

To establish TCP/IP communication between the PC and the DM-RMC-100-1 via the **LAN** port of the DM-RMC-100-1:

1. Use the Device Discovery Tool in Crestron Toolbox to find the IP address of the DM-RMC-100-1. The tool is available in Toolbox version 1.15.143 or later.

NOTE: When the DM-RMC-100-1 is used in a standalone configuration (i.e. without a DM switcher), DHCP is enabled by default. If desired, a default IP address (192.168.1.241) can be assigned by holding down its **SETUP** button while applying power. This IP address overwrites any previous settings and remains until it is changed manually.

2. Use the Address Book in Crestron Toolbox to create an entry for the DM-RMC-100-1 using the *TCP* connection type and enter the IP address of the DM-RMC-100-1.
3. Display the DM-RMC-100-1's "System Info" window (click the **i** icon); communications are confirmed when the device information is displayed.
4. (Optional) If additional changes to TCP/IP settings are desired, do the following:
 - a. Assign an IP address, IP mask and default router for the DM-RMC-100-1 via Crestron Toolbox (**Functions | Ethernet Addressing**).
 - b. Close the "System Info" window.
 - c. In Crestron Toolbox, change the Address Book entry for the DM-RMC-100-1 so that it uses the IP address assigned in step 4a.
 - d. Display the DM-RMC-100-1's "System Info" window (click the **i** icon); communications are confirmed when the device information is displayed.

Firmware

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

Check the Crestron Web site 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.)

To upgrade DM-RMC-100-1 firmware:

1. Do either of the following:
 - If the DM-RMC-100-1 is connected to a DM switcher, use the Device Discovery Tool in Crestron Toolbox to find the IP address of the switcher.
 - If the DM-RMC-100-1 is being used in standalone configuration (i.e. without a DM switcher), use the Device Discovery Tool to find the IP address of the DM-RMC-100-1.
2. Add the IP address to the Address Book in Toolbox.
3. Download the appropriate .puf file from the Crestron Web site to your PC.
4. Double-click the .puf file. The Toolbox Address Book will open.
5. From the list in the Address Book, select the DM switcher (if the DM-RMC-100-1 is connected to a switcher) or the DM-RMC-100-1 (if the DM-RMC-100-1 is used in a standalone configuration), then click **OK**.

Either of the following occurs:

- If the DM switcher was selected, a DM device list is displayed that allows upgrading all DM devices connected to the switcher.
- If the DM-RMC-100-1 was selected, a DM device list is displayed that allows upgrading of the DM-RMC-100-1 only.


In the DM device lists that are displayed, the checkbox of any item that needs to be upgraded is automatically selected.

6. Click **Update**.
7. After the process is complete, click **Recheck** to verify the upgrade.

IP Configuration

If the DM-RMC-100-1 is used in a standalone configuration (i.e. without a DM switcher), use Crestron Toolbox to create the IP table entry for the DM-RMC-100-1.

NOTE: If the DM-RMC-100-1 is connected directly to a DM switcher, the IP table entry for the DM-RMC-100-1 is created automatically.

1. Use the Device Discovery Tool in Crestron Toolbox to find the IP address of the DM-RMC-100-1. Then, display the “System Info” window (click the  icon) and select the DM-RMC-100-1 entry from the Address Book.
2. Select **Functions | IP Table Setup**.
3. Add, modify or delete entries in the IP table. The DM-RMC-100-1 can have only one IP table entry.
4. A defined IP table can be saved to a file or sent to the device.

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-100-1 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-100-1 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. |

Check Network Wiring

Use the Right Wire

In order to ensure optimum performance over the full range of your installation topology, use Crestron Certified Wire only. 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 bring in external power. Additional power is rarely required as switchers provide enough power for most typical configurations. 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 commonly used resolutions and maximum DM-CBL cable lengths.

Commonly Used Resolutions and Maximum DM-CBL Cable Lengths

| RESOLUTION: | DM-CBL CABLE LENGTH | |
|----------------------|--|--|
| | Maximum length without, between, before or after repeaters | Maximum total length using up to 2 repeaters |
| 720p, 1080i, 1080p24 | 200 ft (60 m) | 450 ft (137 m) |
| 1024 x 768 @ 75 Hz | 200 ft (60 m) | 450 ft (137 m) |
| 1080p60 | 150 ft (45 m) | 450 ft (137 m) |
| 1280 x 1024 @ 75 Hz | 150 ft (45 m) | 450 ft (137 m) |
| 1920 x 1200 @ 60 Hz | 150 ft (45 m) | 450 ft (137 m) |
| 1600 x 1200 @ 60 Hz | 125 ft (38 m) | 375 ft (114 m) |
| 1080p60 Deep Color | 50 ft (15 m) | 150 ft (45 m) |

NOTE: 1080p60 is the most common resolution used in residential installations.

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 Web site (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 Web site (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-100-1, 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 Web site periodically for manual update availability and its relevance. Updates are identified as an “Addendum” in the Download column.

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Merchandise Returns / Repair Service

1. No merchandise may be returned for credit, exchange or service without prior authorization from CRESTRON. To obtain warranty service for CRESTRON products, contact an authorized CRESTRON dealer. Only authorized CRESTRON dealers may contact the factory and request an RMA (Return Merchandise Authorization) number. Enclose a note specifying the nature of the problem, name and phone number of contact person, RMA number and return address.
2. Products may be returned for credit, exchange or service with a CRESTRON Return Merchandise Authorization (RMA) number. Authorized returns must be shipped freight prepaid to CRESTRON, 6 Volvo Drive, Rockleigh, N.J. or its authorized subsidiaries, with RMA number clearly marked on the outside of all cartons. Shipments arriving freight collect or without an RMA number shall be subject to refusal. CRESTRON reserves the right in its sole and absolute discretion to charge a 15% restocking fee plus shipping costs on any products returned with an RMA.
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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CRESTRON ELECTRONICS, Inc. warrants its products to be free from manufacturing defects in materials and workmanship under normal use for a period of three (3) years from the date of purchase from CRESTRON, with the following exceptions: disk drives and any other moving or rotating mechanical parts, pan/tilt heads and power supplies are covered for a period of one (1) year; touchscreen display and overlay components are covered for 90 days; batteries and incandescent lamps are not covered.

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Version 2, June 1991

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PREAMBLE

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12.10

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