

Crestron **DM-RX1-1G**

Wall Plate DigitalMedia™ CAT Receiver

Operations & Installation Guide



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



Crestron Electronics, Inc.
15 Volvo Drive
Rockleigh, NJ 07647
1-888-CRESTRON

Regulatory Compliance

As of the date of manufacture, the DM-RX1-1G 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 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

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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Wall Plate DigitalMedia™ CAT Receiver: DM-RX1-1G

Introduction

The DM-RX1-1G which is part of the Crestron® DM® product line, is a DigitalMedia™ CAT receiver that installs in a single-gang electrical box or floor box. It provides one HDMI® output to feed a high definition display or audio processor as part of a complete DigitalMedia system.

Features and Functions

- DigitalMedia receiver and HDMI display interface
- DM CAT input supports up to 425 feet (~130 meters) cable length¹
- Compact 1-gang wall mount design
- Available colors include black or white
- Fits in a floor box
- Provides a single HDMI/DVI display output²
- Affords single-wire connection from a DM switcher (sold separately)
- Supports 3D HDTV signals

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 Crestron DigitalMedia Design Guide (Doc. 4789) for complete wiring guidelines. It is available from the Crestron Web site (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.

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 several hundred feet using DM cable¹. 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.

Multimedia Display Interface

A single HDMI digital AV output port is provided on the DM-RX1-1G, handling 1080p60 HDTV with HDCP and multi-channel HD lossless audio, all through a single connection. The HDMI output can also handle WUXGA computer resolutions, and supports DVI signals using an appropriate adapter or interface cable².

The DM-RX1-1G connects to the DM CAT output of a DM-MD series switcher to feed a high-definition display device or other equipment up to 425 feet (~130 meters)¹ away. Multiple DM-RX1-1Gs may be installed to feed multiple displays, all fed from a central DM-MD series switcher.

Simple Wall Mount Design

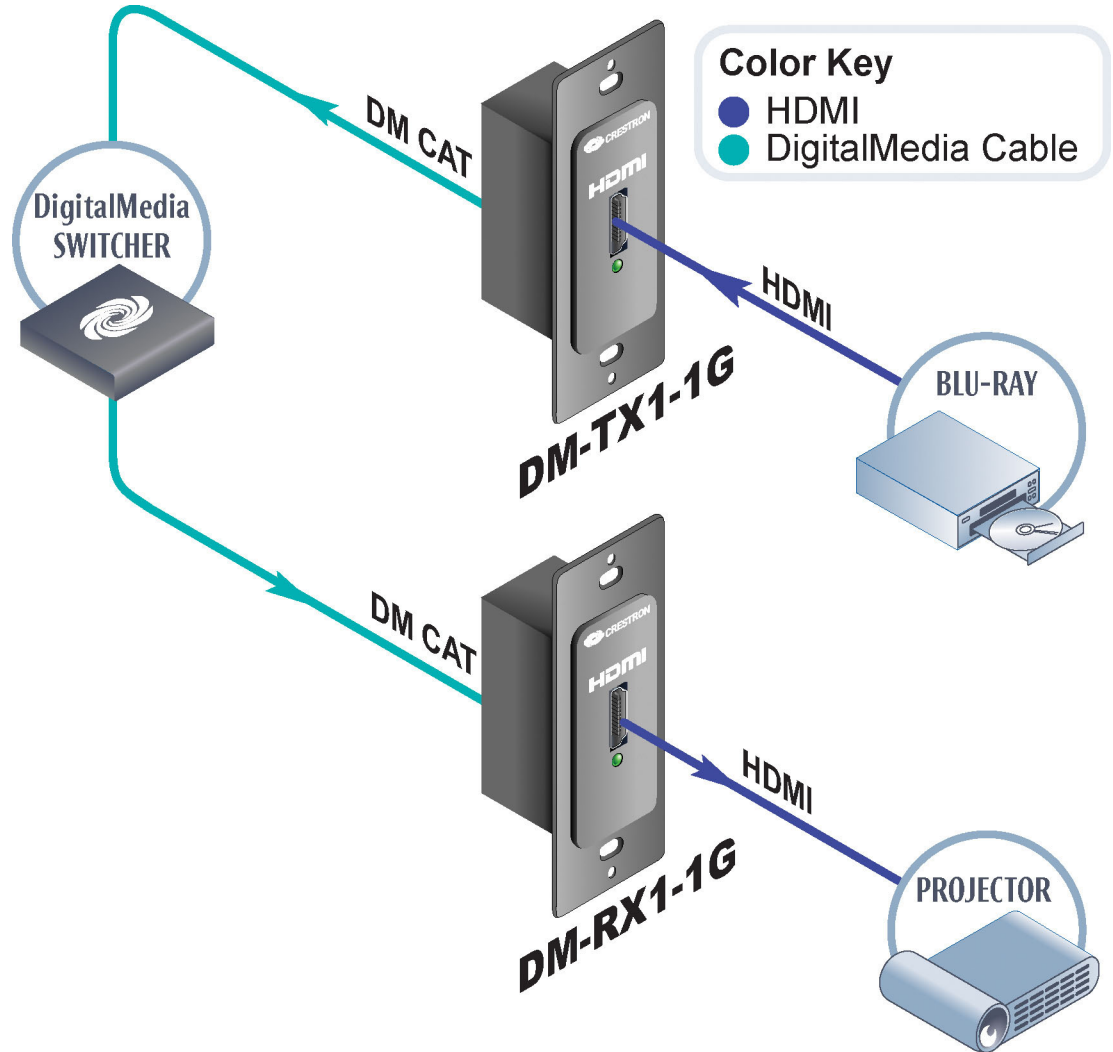
The DM-RX1-1G is designed to be wall mounted using a standard electrical box or plaster ring, or attached to a rack rail in the back of an equipment cabinet. It also fits select floor boxes. The DM cable is terminated to the rear of the receiver using screw terminals.

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 Crestron DigitalMedia Design Guide (Doc. 4789) for complete wiring guidelines.
2. HDMI requires an appropriate adapter or interface cable to accommodate a DVI signal. CBL-HD-DVI interface cable available separately.

Applications

The following diagram shows a DM-RX1-1G in a classroom application.

DM-RX1-1G in a Classroom Application



Specifications

Specifications for the DM-RX1-1G are listed in the following table.

DM-RX1-1G Specifications

SPECIFICATION	DETAILS
Video Input Signal Types Output Signal Types Formats Input Resolutions Progressive	DM CAT (DigitalMedia over twisted-pair copper wire) HDMI, DVI* HDMI, DVI, HDCP content protection support, 3D 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 @ 60Hz 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

(Continued on following page)

DM-RX1-1G Specifications (Continued)

SPECIFICATION	DETAILS
Input Resolutions Progressive (Continued)	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 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

(Continued on following page)

DM-RX1-1G Specifications (Continued)

SPECIFICATION	DETAILS
Audio Input Signal Types Output Signal Types Formats	DM CAT HDMI Dolby Digital®, Dolby Digital EX, Dolby Digital Plus, Dolby® TrueHD, DTS®, DTS-ES, DTS 96/24, DTS-HD High Res, DTS-HD Master Audio™, up to 8ch PCM
Power Requirements DMNet Power Usage	5 Watts (0.21 Amps @ 24 Volts DC)
Environmental Temperature Humidity Heat Dissipation	32° to 104° F (0° to 40° C) 10% to 90% RH (non-condensing) 17 BTU/Hr
Enclosure Construction	Metal with black or white finish, includes metal decorator style insert
Flush Wall Mount	1-gang mountable in a standard electrical box (2 1/2 inch (64 mm) deep minimum) Requires decorator style faceplate (not included)
Rack Mount	Mountable to a single 19-inch EIA rack rail

(Continued on following page)

DM-RX1-1G Specifications (Continued)

SPECIFICATION	DETAILS
Dimensions	
Height	4.12 in (105 mm)
Width	1.72 in (44 mm)
Depth	2.09 in (53 mm)
Weight	6 oz (166 grams)
Available Models	
DM-RX1-1G	Wall Plate DigitalMedia CAT Receiver, Matte Black
DM-RX1-1G-W-T	Wall Plate DigitalMedia CAT Receiver, Matte White
Available Accessories	
CBL-HD	Crestron Certified HDMI Interface Cable
CBL-HD-DVI	Crestron Certified HDMI to DVI Interface Cable
DM-CBL	DigitalMedia Cable
DM-DR	DigitalMedia CAT Repeater

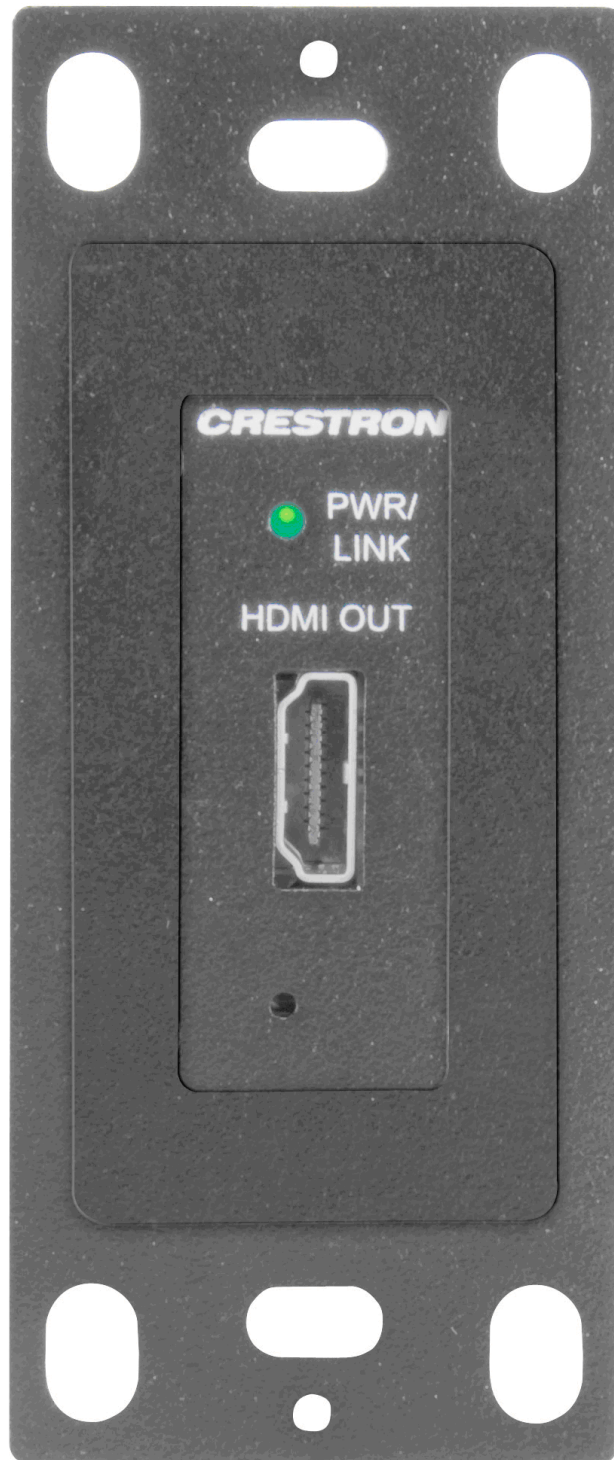
* HDMI requires an appropriate adapter or interface cable to accommodate a DVI signal. CBL-HD-DVI interface cable available separately.

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).

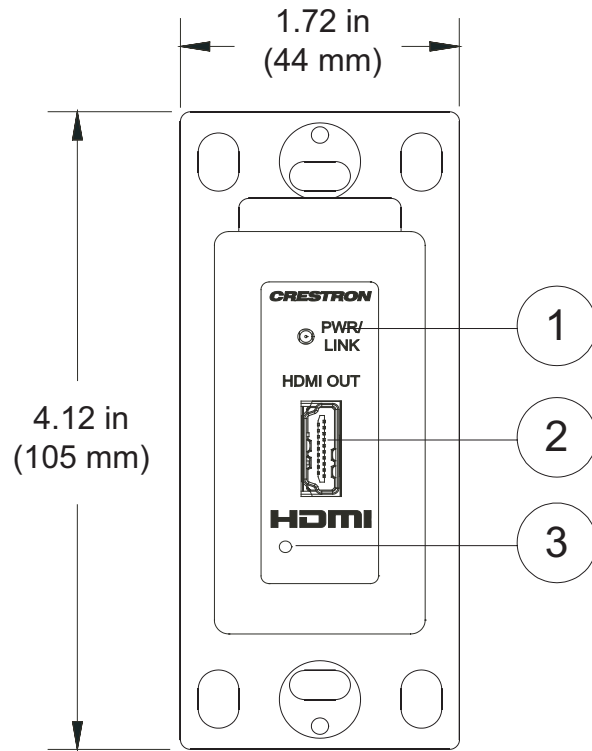
Physical Description

This section provides information on the connections, controls and indicators available on your DM-RX1-1G.

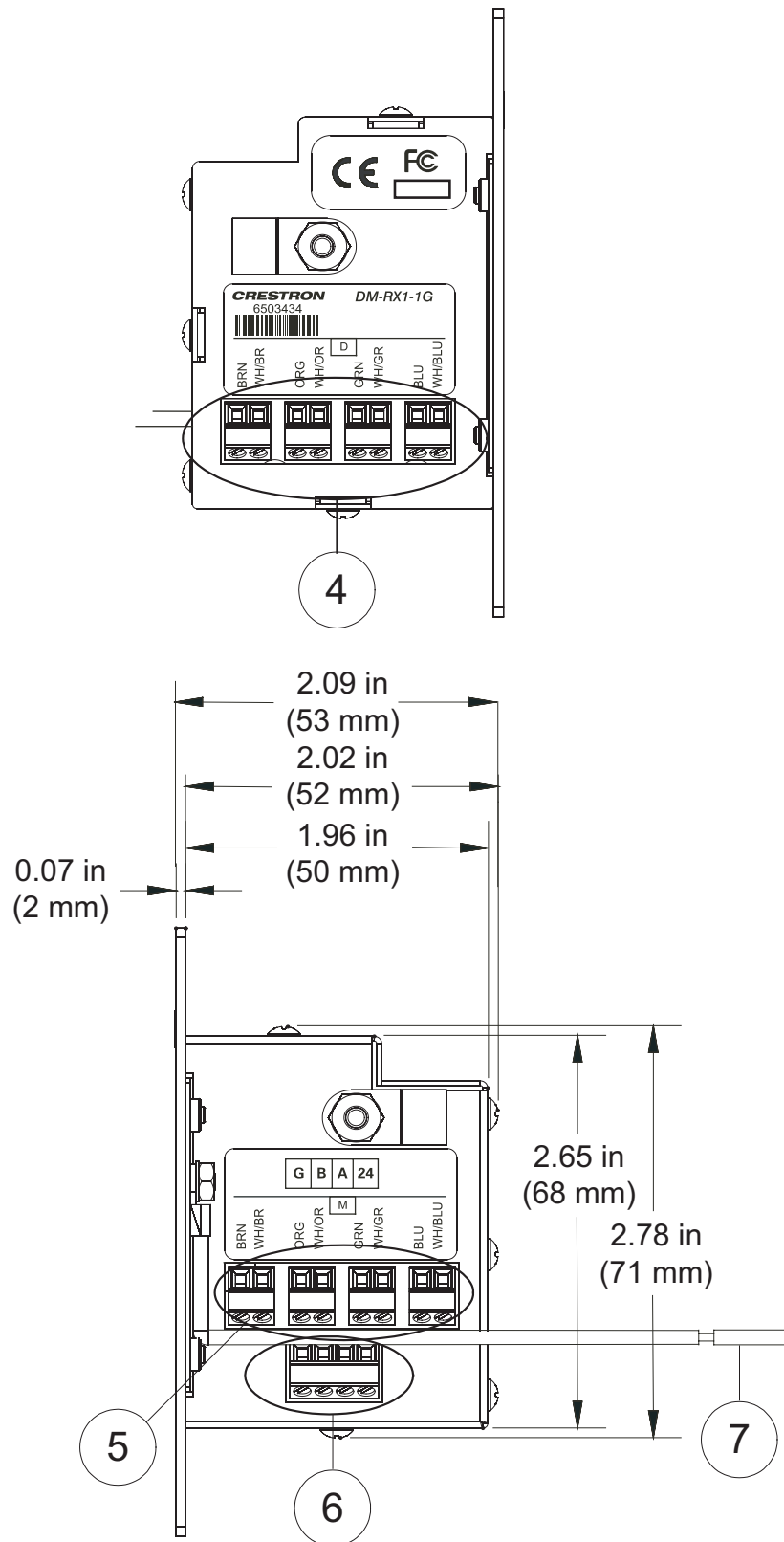
DM-RX1-1G Physical View



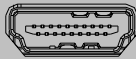

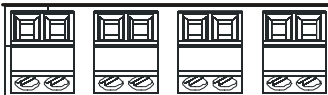
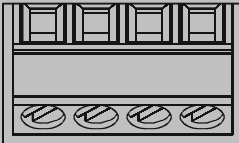
DM-RX1-1G Overall Dimensions (Front View)



DM-RX1-1G Overall Dimensions (Left and Right Views)



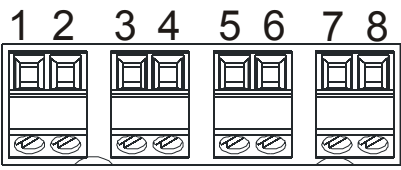
Connectors, Controls & Indicators

#	CONNECTORS, CONTROLS & INDICATORS	DESCRIPTION
1	PWR / LINK LED	(1) Dual-color amber/green LED Amber - indicates operating power supplied via DMNet Green - indicates DM input signal presence/lock status
2	HDMI OUT 	(1) 19-pin Type A HDMI female HDMI digital video/audio output Also supports DVI ¹
3	RESET BUTTON	(1) Miniature recessed push button for hardware reset
4	D ² 	(1) DM CAT input composed of (8) captive screw terminals with (1) grounded strain relief Connects to DM CAT output of a DM switcher via DM-CBL cable ³
5	M ² 	(1) DM CAT input composed of (8) captive screw terminals with (1) grounded strain relief Connects to DM CAT output of a DM switcher via DM-CBL cable ³
6	G B A 24 ^{4, 5} 	(1) DMNet port composed of (4) captive screw terminals Connects to DMNet port of a DM switcher, transmitter, or other DM device via DM-CBL cable ³
7	GROUNDING WIRE	(1) Flying lead, chassis ground connection ⁶

1. HDMI requires an appropriate adapter or interface cable to accommodate a DVI signal. CBL-HD-DVI interface cable sold separately.

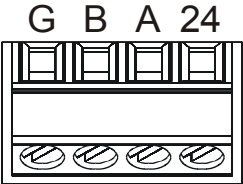
2. Refer to the following table for the D and M terminal block pinouts.

D and M Terminal Block(s)

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

3. 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.
4. Refer to the following table for the G B A 24 connector pinouts.

G B A 24 Terminal Block

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

5. DMNet wiring is not compatible with Cresnet wiring. DMNet wiring cannot be daisy chained.
6. A grounding lead is provided for connection to earth ground (building steel). This ground connection is recommended to provide a common ground reference for signals provided to the DM-RX1-1G, and to reduce the incidence of possible damage to the unit from static discharge.

Setup

Network Wiring

When wiring the DM 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.

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

- For DigitalMedia CAT wiring, use DM-CBL DigitalMedia Cable. Refer to the latest version of the Crestron DigitalMedia Design Guide (Doc. 4789) for complete wiring guidelines.

For more details, refer to “Check Network Wiring”, which starts on page 24.

Supplied Hardware

The hardware supplied with the DM-RX1-1G is listed in the following table.

Supplied Hardware for the DM-RX1-1G

DESCRIPTION	PART NUMBER	QUANTITY
Assy, Insert, with Tape	Black - 4510566	1
	White - 4512253	1
Screw, #06-32 X 3/4", Oval, Slot	2009684	2

Installation

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

To install the DM-RX1-1G, the following tools and accessories are required:

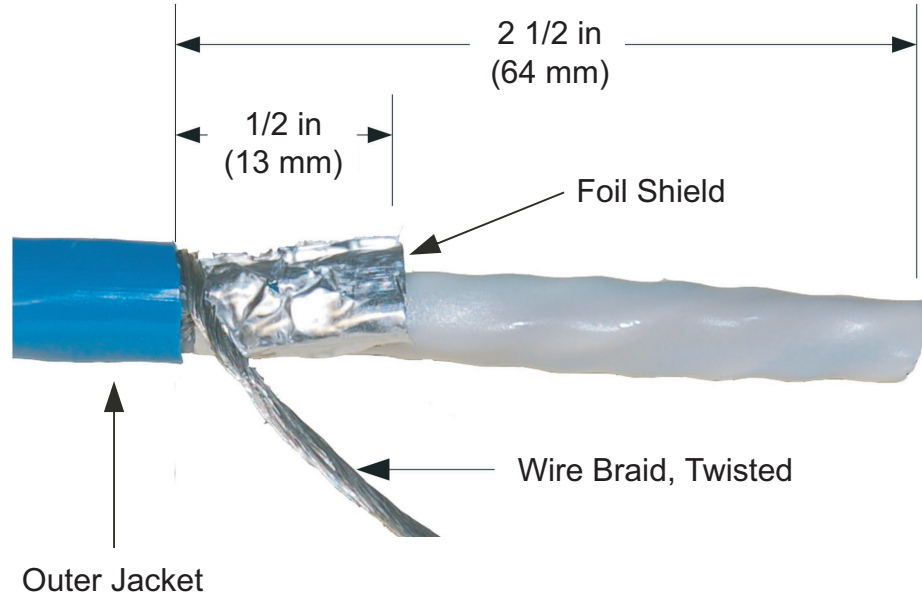
- DM-CBL DigitalMedia Cable (sold separately.) Refer to “Network Wiring” on page 13.
- Phillips screwdriver (not supplied)
- Adjustable wrench (not supplied)
- Miniature flat head screwdriver (not supplied)
- Two #06-32 x 3/4" oval head slotted screws (included)
- Decorative style faceplate (not supplied)
- Insert (included)

The DM-RX1-1G can be installed in either a 1-gang electrical box or rack mounted.

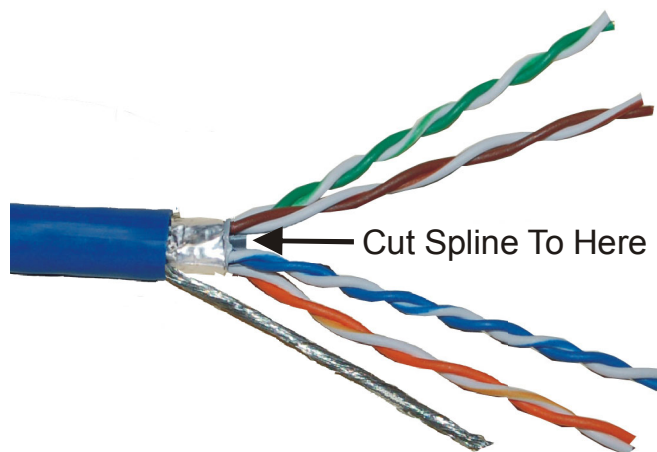
Installing in a 1-Gang Box

An extra-deep box is recommended (2 1/2 inch (64 mm) deep minimum). It is assumed that the required cable has been fed through an installed 1-gang electrical box (not supplied), and wiring has been verified. Use the following procedure to install the DM-RX1-1G.

1. Confirm that DMNet system power is OFF.
2. Strip 3 3/4 inches (96 mm) of the DigitalMedia Cable to expose the three inner cables.
3. Strip the outer jacket of the blue “D” cable 2 1/2 inch (64 mm) from end. Gather and twist the wire braid. Refer to the illustration on the following page.

“D” Cable (Stripping the Outer Jacket)

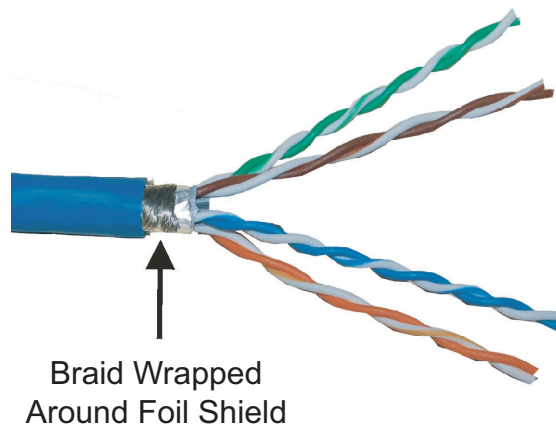
4. Trim foil shield to 1/2 inch (13 mm).
5. Remove the white neoprene sheath and separate the twisted pairs to expose the spline. Cut the spline so that it is near flush with the foil shield as shown in the following illustration. Return twisted pairs to original position.

“D” Cable (Cutting the Spline)

6. Neatly wrap the twisted braid around the foil shield as shown in the following illustration. Only the silver side of foil shield is conductive.

NOTE: Braid should wind neatly around foil shield. Loose braid may cause shorts.

“D” Cable (Wrapping the Twisted Braid)



7. Strip the insulation from the ends of each wire, exposing approximately 3/16 inch (5 mm) of bare copper.

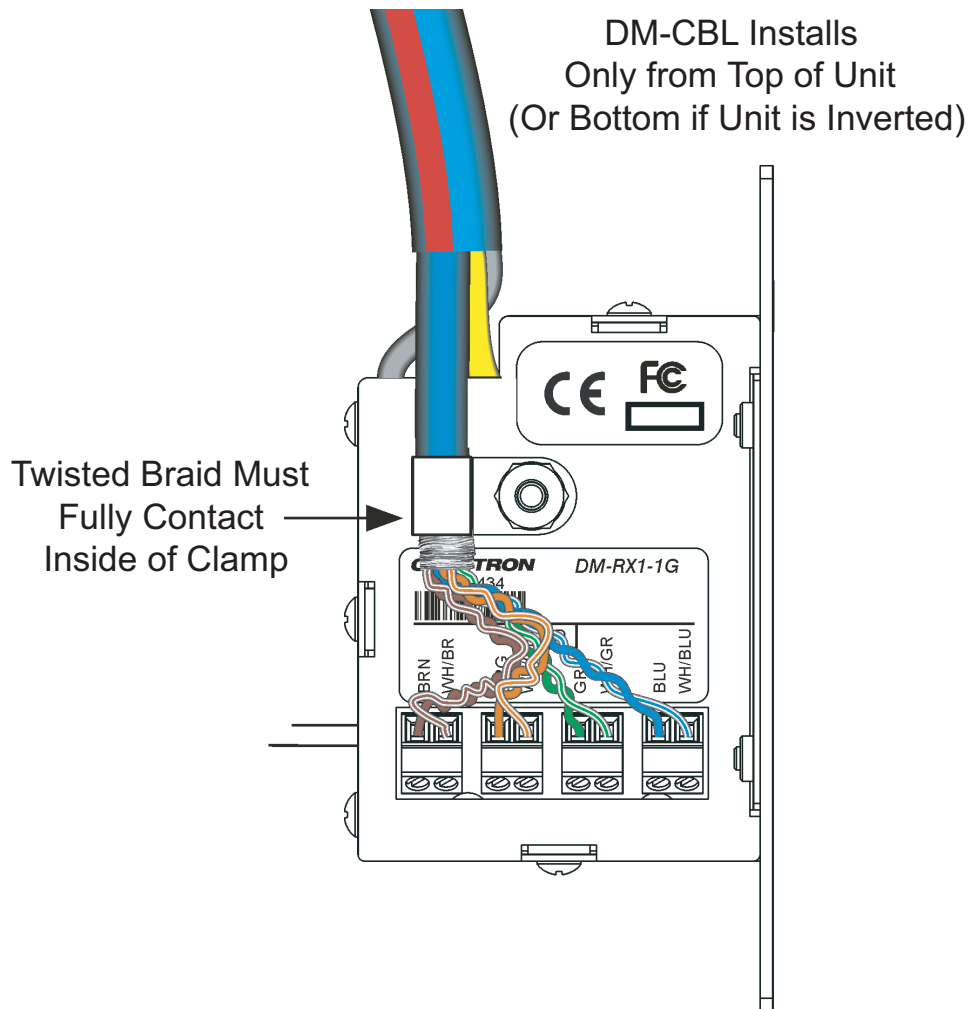
NOTE: Do not allow the twisted pairs to untwist for more than 1/2 inch (13 mm).

NOTE: Maintain equal wire lengths within 1/8 inch (3 mm).

8. Using an adjustable wrench, clamp the prepared cable to the unit as shown in the following illustration.

NOTE: Twisted braid and foil shield must be in full contact with inside of clamp.

Clamping the Cable to the Unit

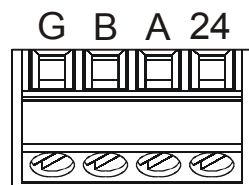


9. Strip the outer jacket of the yellow “M” cable 2 inch (51 mm) from end.
10. Strip the insulation from the ends of each wire, exposing approximately 3/16 inch (5 mm) of bare copper.
11. Using an adjustable wrench, clamp the prepared “M” cable to the unit so that the yellow jacket is secured by the clamp.

NOTE: The clamp should fully cover the jacket of the yellow “M” cable.

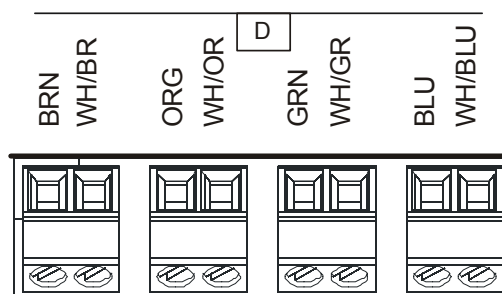
12. Using a miniature flat head screwdriver (not supplied), make the connections as specified, using the labels on the unit as a guide.
- Insert the twisted pairs of the gray DMNet cable into the **G B A 24** terminal block and tighten each screw base. Refer to footnote 4 on page 12 for details.

G B A 24 Terminal Block



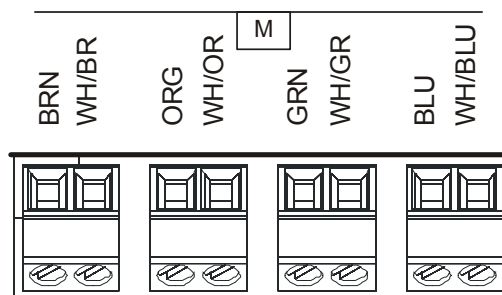
- Insert the twisted pairs of the blue, shielded cable into the **D** terminal block and tighten each screw base. Refer to footnote 2 on page 12 for details.

D Terminal Block



- Insert the twisted pairs of the yellow, unshielded cable into the **M** terminal block and tighten each screw base. Refer to footnote 2 on page 12 for details.

M Terminal Block

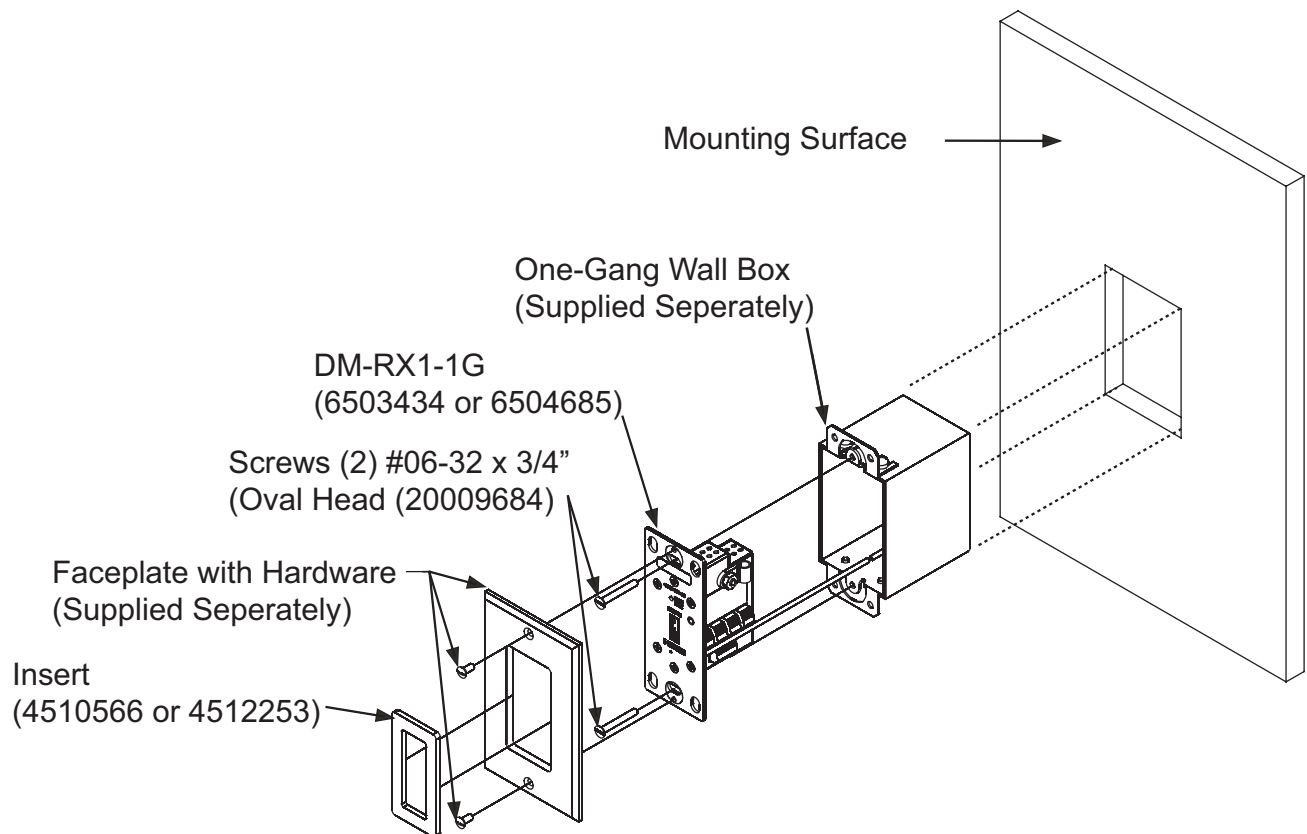


13. Remove the pre-cut insulation from the grounding wire and connect it to the electrical box or a ground wire in the electrical box (the electrical box must be earth grounded).
14. Attach the unit to the electrical box using the two included #06-32 x 3/4" oval head slotted screws as shown in the illustration below.

CAUTION: Excess wire pinched between the unit and electrical box could cause a short. Make sure that all excess wire is completely inside the electrical box and not between the box and the side of the unit.

15. Attach an appropriate decorative style faceplate (not supplied).
16. Remove the backing from the tape on the back of the included insert. Affix the insert plate into its proper opening in the faceplate.

DM-RX1-1G in 1-Gang Box (Exploded View)



**Rack
Mounting**

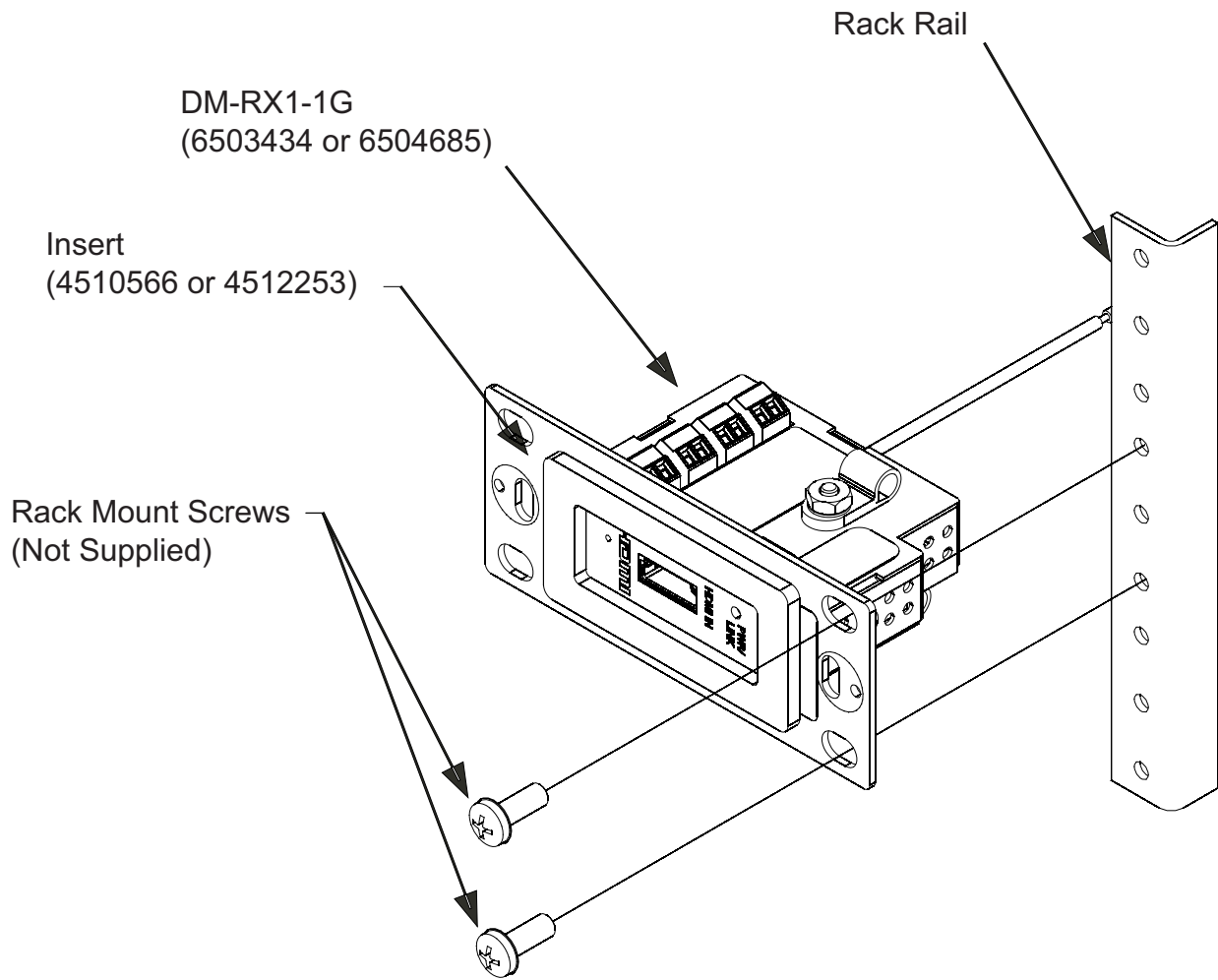
The DM-RX1-1G can be mounted in a rack with other equipment using the two mounting holes on either corner of the unit. It is assumed the required cable has been installed and wiring has been verified.

WARNING: To prevent bodily injury when mounting or servicing this unit in a rack, take special precautions to ensure that the system remains stable. The following guidelines are provided to ensure your safety:

- When mounting this unit in a partially filled rack, load the rack from the bottom to the top with the heaviest component at the bottom of the rack.
- If the rack is provided with stabilizing devices, install the stabilizers before mounting or servicing the unit in the rack.

-
1. Follow steps 1 through 12 in “Installing in a 1-Gang Box”, which starts on page 14.
 2. Attach the unit to the rack using two rack mount screws (not supplied) as shown in the following illustration.
 3. Remove the pre-cut insulation from the grounding wire and connect it to an appropriate earth ground.
 4. Remove the backing from the tape on the back of the included insert. Affix the insert plate onto the unit as shown. Refer to the following illustration.

DM-RX1-1G Rack Mount (Exploded View)

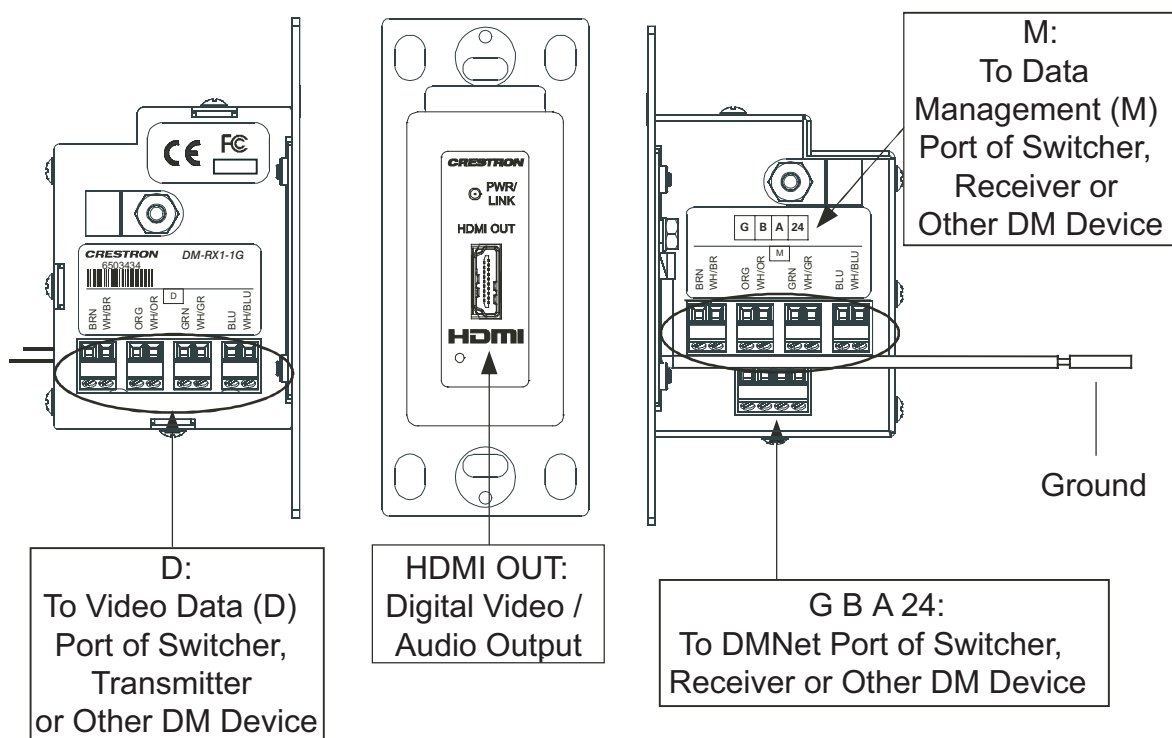


Hardware Hookup

Make the necessary connections as called out in the illustration that follows this paragraph. Refer to “Network Wiring” on page 13 before attaching the DMNet cable. Apply power after all connections have been made.

When making connections to the DM-RX1-1G, use Crestron power supplies for Crestron equipment.

Hardware Connections for the DM-RX1-1G



NOTE: Ensure the unit is properly grounded by connecting the chassis ground lead to an earth ground (building steel).

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

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-RX1-1G 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 power from a Crestron power source.	Use the provided Crestron power source. Verify connections.
	Device is not receiving sufficient power.	Use the Crestron Power Calculator to help calculate how much power is needed for the system.
PWR / LINK LED does not illuminate green or amber.	Device is not receiving power.	Verify that power connections are properly attached.

(Continued on following page)

DM-RX1-1G Troubleshooting (Continued)

TROUBLE	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
PWR / LINK LED does not illuminate amber.	Device is not receiving/ transmitting DMNet signal.	Verify that D and M connections are properly attached.
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

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 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 commonly used resolutions and maximum DM-CBL cable lengths.

Maximum DM Cable Length

CABLE TYPE:	DM-CBL DIGITALMEDIA CABLE		
Resolution:	Maximum length without repeaters or after last repeater	Maximum length between or before repeaters	Maximum total length using up to 2 repeaters
720p, 1080i, 1080p24	175 ft (53 m)	200 ft (60 m)	425 ft (130 m)
1024 x 768 @ 75 Hz	175 ft (53 m)	200 ft (60 m)	425 ft (130 m)
1080p60	125 ft (38 m)	150 ft (45 m)	425 ft (130 m)
1280 x 1024 @ 75 Hz	125 ft (38 m)	150 ft (45 m)	425 ft (130 m)
1920 x 1200 @ 60 Hz	125 ft (38 m)	150 ft (45 m)	425 ft (130 m)
1600 x 1200 @ 60 Hz	100 ft (30 m)	125 ft (38 m)	350 ft (106 m)
1080p60 Deep Color	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 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

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-RX1-1G, 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.

Return and Warranty Policies

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.
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Crestron Electronics, Inc.
15 Volvo Drive Rockleigh, NJ 07647
Tel: 888.CRESTRON
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