

Crestron **DM-TX-200-2G/400-3G**
Wall Plate DigitalMedia™ CAT
Transmitters

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-TX-200-2G and DM-TX-400-3G have 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.

This device includes an aggregation of separate independent works that are each generally copyrighted by Crestron Electronics, Inc., with all rights reserved. One of those independent works, Linux Bridge Project, is copyrighted under the GNU GENERAL PUBLIC LICENSE, Version 2, reproduced in "GNU General Public License" on page 37, where the corresponding source code is available at: <ftp://ftp.crestron.com/gpl>.

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Wall Plate DigitalMedia™ CAT Transmitter 200/400: DM-TX-200-2G/400-3G

Introduction

The DM-TX-200-2G and the DM-TX-400-3G are DM® CAT transmitters and switchers that install in a double-gang or a triple-gang electrical box (respectively) to provide a convenient interface for computers and high-definition AV sources as part of a complete DigitalMedia™ system.

With both HDMI® and RGB inputs, the DM-TX-200-2G and DM-TX-400-3G are ideal for wall, lectern, and floor box applications in a boardroom, classroom, or residence to provide an input for a laptop computer or similar source. The DM-TX-400-3G includes additional input connections for SPDIF and analog AV sources. Both transmitters connect to any DM-MD series DigitalMedia switcher or DM-RMC-100 Room Controller (all sold separately) via a single DM cable.

Features and Functions

- DigitalMedia transmitter and multimedia interface
- Built-in 2x1 (DM-TX-200-2G) or 4x1 (DM-TX-400-3G) AV switcher
- DM CAT output supports up to 450 foot (137 meter) cable length¹
- 2-gang (DM-TX-200-2G) or 3-gang (DM-TX-400-3G) wall mount design
- Available colors include black or white
- Provides HDMI, RGB, component, and composite video inputs²
- Supports DVI and DisplayPort Multimode sources³
- Includes S/PDIF, RCA, and mini-TRS audio inputs⁴

(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. Composite video inputs only available on DM-TX-400-3G.
3. HDMI requires an appropriate adapter or interface cable to accommodate a DVI or DisplayPort Multimode signal. CBL-HD-DVI and CBL-DP-HD interface cables available separately.
4. S/PDIF and RCA audio inputs only available on DM-TX-400-3G.

Features and Functions

(Continued)

- Provides onboard auto-switching capability
- Includes USB HID (human interface device) keyboard/mouse port
- Affords single-wire connection to a DM-RMC-100 or DM-MD switcher (both sold separately)
- Detects and reports detailed video and audio input information
- Performs automatic AV signal format management via EDID
- Enables device control via CEC
- Easy setup and diagnostics tools via software
- Extends the life of analog-based AV systems

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 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 Computer/AV Interface

The DM-TX-200-2G provides simple switching between two inputs. The DM-TX-400-3G provides versatile switching between four different video and audio inputs. The HDMI input supports HDCP and handles WUXGA computer resolutions and 1080p60 HDTV with multi-channel lossless audio. The HDMI input can also handle DVI and DisplayPort Multimode signals using an appropriate adapter or dongle². The RGB input handles all analog RGB signals up to WUXGA 1920x1200 pixels, as well as component video up to 1080p60³. A mini-TRS stereo audio input is also provided to accept analog audio signals from an unbalanced line-level or headphone output. On the DM-TX-400-3G, both digital and analog audio signals are supported via HDMI, S/PDIF, and RCA inputs.

Used with a single DM-RMC-100 Room Controller and optional Crestron Control System (both sold separately), the DM-TX-300-2G and DM-TX-400-3G afford very simple solutions for extending a multimedia computer or AV signal to a single display up to 450 feet (137 m) away¹. As part of a larger system using a DM-MD series switcher, multiple DM-TX-200-2G and DM-TX-400-3Gs may be installed to enable the distribution of several sources at different locations to feed multiple displays throughout any room or larger facility.

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.
2. HDMI requires an appropriate adapter or interface cable to accommodate a DVI or DisplayPort Multimode signal. CBL-HD-DVI and CBL-DP-HD interface cables available separately.
3. The RGB input can accept component, composite, and S-video signals via direct interface to Crestron MPS Series products, or through an appropriate adapter (not included). Input sync detection is not provided for composite or S-video signal types through the RGB connection.

Keyboard/Mouse Extender

When connected to a DM-MD series switcher, the DM-TX-200-2G and DM-TX-400-3G function as keyboard/mouse extenders, allowing a USB HID (Human Interface Device) compliant keyboard and/or mouse at the podium or conference table to control a computer or other host device located at the central equipment rack.

EDID Format Management

The DM-TX-200-2G and DM-TX-400-3G allow for management of the EDID (Extended Display Identification Data) information that passes between the display devices and input sources in the system. Using Crestron Toolbox™ software, the format and resolution capabilities of each device can be assessed and managed through the DM-TX-200-2G or DM-TX-400-3G, ensuring reliable operation by instructing sources to output only the resolutions and formats that can be handled by the displays and system wiring.

CEC Embedded Device Control

The primary objective of every Crestron system is to enable precisely the control desired for a seamless user experience. DigitalMedia provides an alternative to conventional IR and RS-232 device control by harnessing the CEC (Consumer Electronics Control) signal embedded in HDMI. Through its connection to the control system, the DM-TX-200-2G or DM-TX-400-3G provides a gateway for controlling the connected source device right through the HDMI connection, potentially eliminating the need for any dedicated control wires or IR probes. Through proper CEC signal management, DigitalMedia allows you to take control of each device in the system as you like.

Simple Wall Mount Design

The DM-TX-200-2G and DM-TX-400-3G are designed to be wall mounted using a standard electrical box or plaster ring. The DM cable is terminated at the rear of the transmitter using screw terminals. An array of indicators on the front of the DM-TX-200-2G and DM-TX-400-3G provide for easy setup and troubleshooting, verifying the status of connections and signal activity at a glance. Advanced configuration is enabled through Crestron Toolbox software.

A Digital Upgrade for Legacy Systems

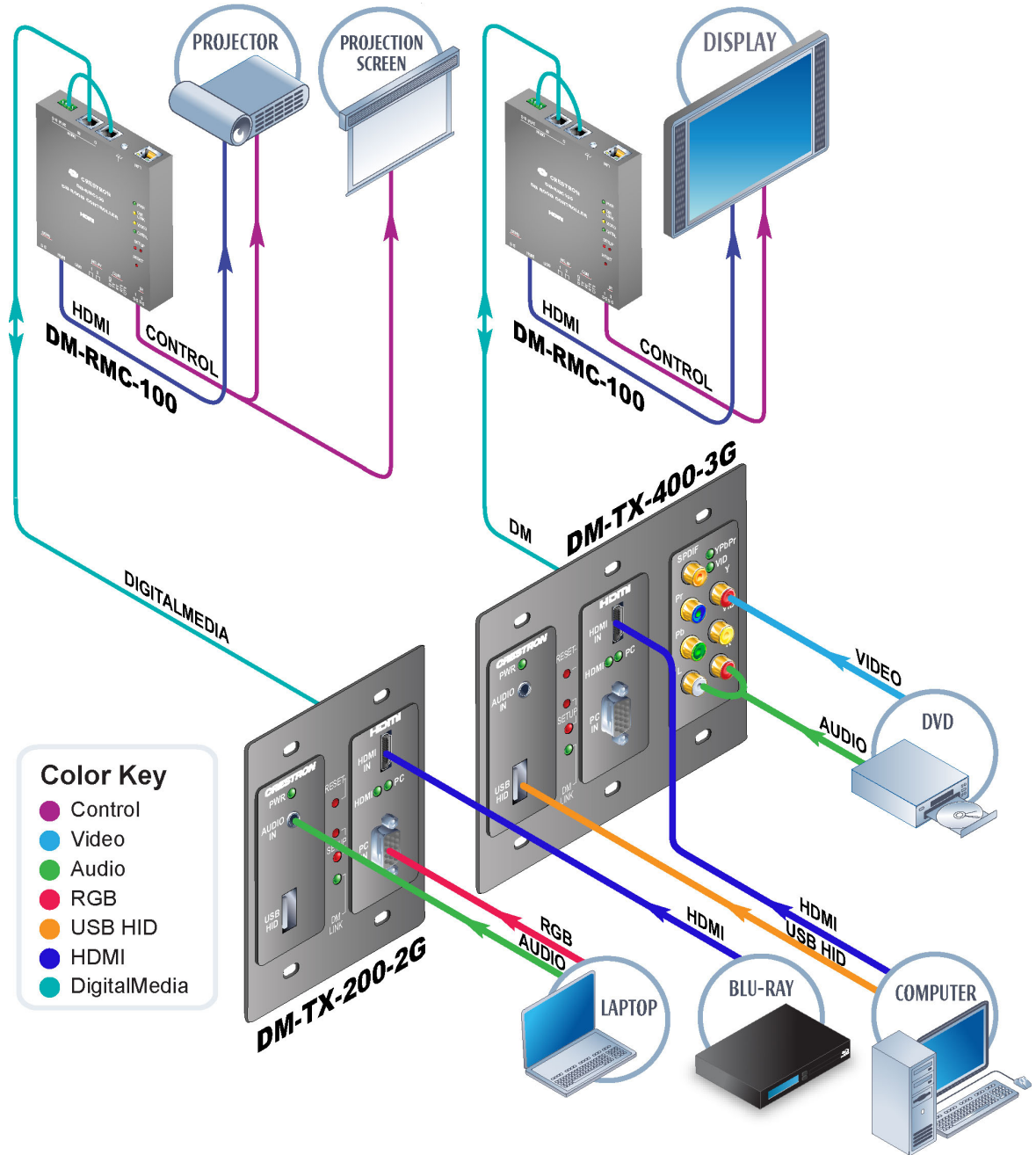
The DM-TX-200-2G and DM-TX-400-3G also afford perfect signal converters for integrating DigitalMedia with analog-based systems like Crestron MPS, QuickMedia®, and the CEN-RGBHV Series (all sold separately). A simple HD15 VGA cable connected between the output of an MPS system and the input of the DM-TX-200-2G or DM-TX-400-3G allows every RGB, component, S-video, and composite video input on the MPS to be converted to DigitalMedia*. Analog audio is converted similarly through a simple unbalanced stereo audio cable. The HDMI input may also be used to expand the input capabilities of the MPS system to handle digital AV sources.

* The RGB input can accept component, composite, and S-video signals via direct interface to Crestron MPS Series products, or through an appropriate adapter (not included). Input sync detection is not provided for composite or S-video signal types through the RGB connection.

Applications

The following diagram shows a DM-TX-200-2G and a DM-TX-400-3G in a typical application.

DM-TX-200-2G and DM-TX-400-3G in a Typical Application



Specifications

Specifications for the DM-TX-200-2G and DM-TX-400-3G are listed in the following table.

DM-TX-200-2G and DM-TX-400-3G Specifications

SPECIFICATION	DETAILS
Video	
Switcher	
DM-TX-200-2G	2x1 combination digital/analog switch, Crestron QuickSwitch HD®
DM-TX-400-3G	4x1 combination digital/analog switch, Crestron QuickSwitch HD
Input Signal Types	HDMI, DVI ¹ , DisplayPort Multimode ¹ , RGB, component (YPbPr) ² , S-video (Y/C) ² , composite ²
Output Signal Type	DM CAT (DigitalMedia over twisted-pair copper wire)
Formats	HDMI, DVI, HDCP content protection support, RGBHV up to UXGA/WUXGA, HDTV up to 1080p60, NTSC or PAL
Input Resolutions	
HDMI & DVI, 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 1366 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 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

(Continued on following page)

DM-TX-200-2G and DM-TX-400-3G Specifications (Continued)

SPECIFICATION	DETAILS
Video	
Input Resolutions (Continued)	
HDMI & DVI, 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
RGB	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 1024 x 768 @ 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 1366 x 768 @ 60 Hz 1400 x 1050 @ 60 Hz 1440 x 900 @ 60 Hz 1600 x 1200 @ 60 Hz 1680 x 1050 @ 60 Hz 1920 x 1080 @ 24 Hz (1080p24) 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
Component ²	480i 576i 480p 576p 720p50 720p60 1080i25 (1125 lines) 1080i30 1080p30 1080p50 (1125 lines) 1080p60
Composite and S-video ²	480i 576i
Output Resolutions	Matched to inputs
Analog-To-Digital Conversion	10-bit 165 MHz per each of 3 channels

(Continued on following page)

DM-TX-200-2G and DM-TX-400-3G Specifications (Continued)

SPECIFICATION	DETAILS
Audio	
Switcher	
DM-TX-200-2G	2x1 combination digital/analog switch
DM-TX-400-3G	4x1 combination digital/analog switch, limited audio breakaway
Input Signal Types	HDMI, DisplayPort Multimode ¹ , S/PDIF coaxial ³ , analog stereo
Output Signal Type	DM CAT
Formats	
HDMI	Dolby® Digital, Dolby Digital EX, DTS®, DTS-ES, DTS 96/24, Up to 8ch PCM
SPDIF ³	Dolby Digital, Dolby Digital EX, DTS, DTS-ES, DTS 96/24, 2ch PCM
Analog	Stereo 2-channel
Analog-To-Digital Conversion	24-bit 48 kHz
Performance (Analog)	
Frequency Response	20 Hz to 20 kHz ±0.75 dB
S/N Ratio	>90 dB, 20 Hz to 20 kHz A-weighted
THD+N	<0.05% @ 1 kHz
Stereo Separation	>90 dB
Communication	
DigitalMedia	DM CAT, DMNet, HDCP management, EDID format management, CEC
USB	Supports USB HID class devices
Power Requirements	
DMNet Power Usage	
DM-TX-200-2G	10 Watts (0.42 Amps @ 24 Volts DC)
DM-TX-400-3G	12 Watts (0.5 Amps @ 24 Volts DC)
Environmental	
Temperature	32° to 104° F (0° to 40° C)
Humidity	10% to 90% RH (non-condensing)
Heat Dissipation	
DM-TX-200-2G	35 BTU/Hr
DM-TX-400-3G	40 BTU/Hr
Enclosure	
Construction	Metal with black or white finish

(Continued on following page)

DM-TX-200-2G and DM-TX-400-3G Specifications (Continued)

SPECIFICATION	DETAILS
Enclosure (continued) Flush Wall Mount DM-TX-200-2G	2-gang mountable in a standard electrical box (2 1/2 inch (64 mm) deep minimum); Requires decorator style faceplate (not included)
DM-TX-400-3G	3-gang mountable in a standard electrical box (2 1/2 inch (64 mm) deep minimum); Requires decorator style faceplate (not included)
Dimensions	
DM-TX-200-2G	
Height	4.12 in (105 mm)
Width	3.50 in (89 mm)
Depth	2.53 in (64 mm)
DM-TX-400-3G	
Height	4.12 in (105 mm)
Width	5.30 in (135 mm)
Depth	2.53 in (64 mm)
Weight	
DM-TX-200-2G	11 oz (285 g)
DM-TX-400-3G	15 oz (408 g)
Available Accessories	
CBL-AUDIO	Crestron Certified Mini-TRS Stereo Audio Interface Cable
CBL-DP-HD	Crestron Certified DisplayPort to HDMI Interface Cable
CBL-HD	Crestron Certified HDMI Interface Cable
CBL-HD-DVI	Crestron Certified HDMI to DVI Interface Cable
CBL-RCA ³	Crestron Certified RCA Composite Video Interface Cable
CBL-RCA2 ³	Crestron Certified RCA Stereo Audio Interface Cable
CBL-RCA3 ³	Crestron Certified RCA Component Video Interface Cable
CBL-VGA	Crestron Certified Computer VGA Interface Cable
CBL-VGA-AUD	Crestron Certified Computer VGA Interface Cable with Audio
DM-CBL	DigitalMedia Cable
DM-CONN	DigitalMedia Cable Connectors
DM-DR	DigitalMedia Repeater

1. HDMI requires an appropriate adapter or interface cable to accommodate a DVI or DisplayPort Multimode signal. CBL-HD-DVI and CBL-DP-HD interface cables available separately.

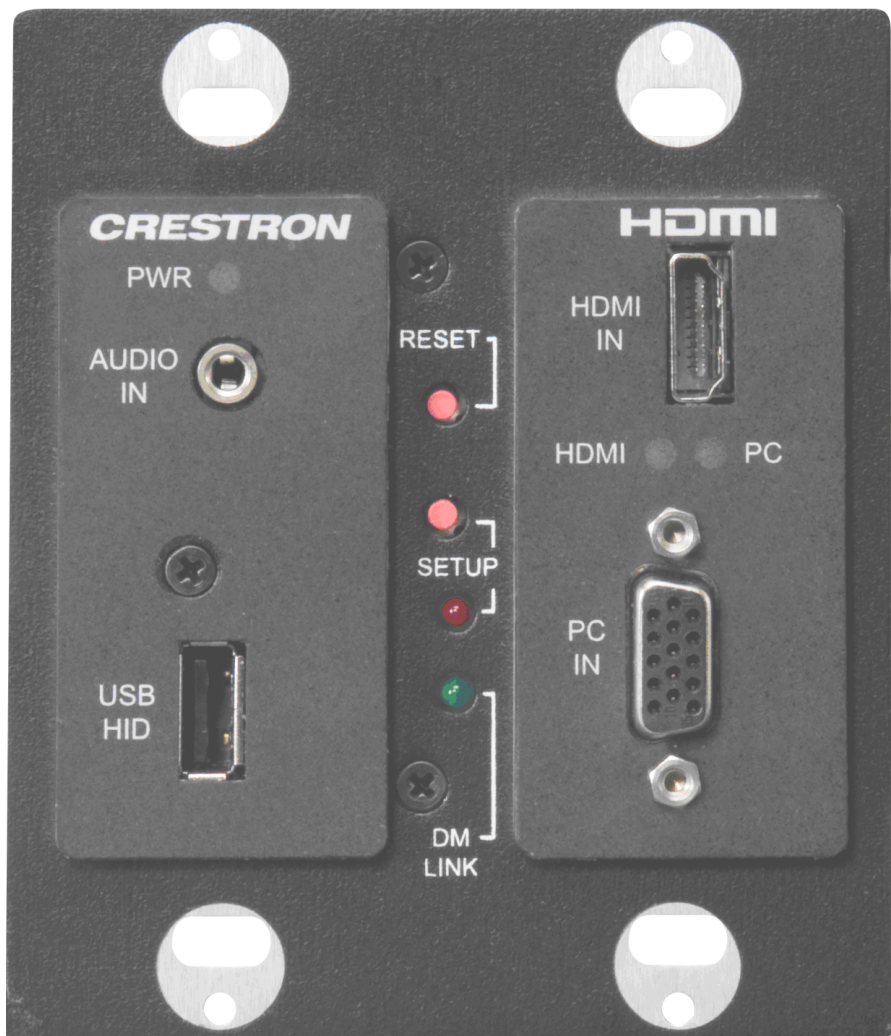
2. The RGB input can accept component, composite, and S-video signals via direct interface to Crestron MPS Series products, or through an appropriate adapter (not included). Input sync detection is not provided for composite or S-video signal types through the RGB connection.
3. DM-TX-400-3G only.

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).

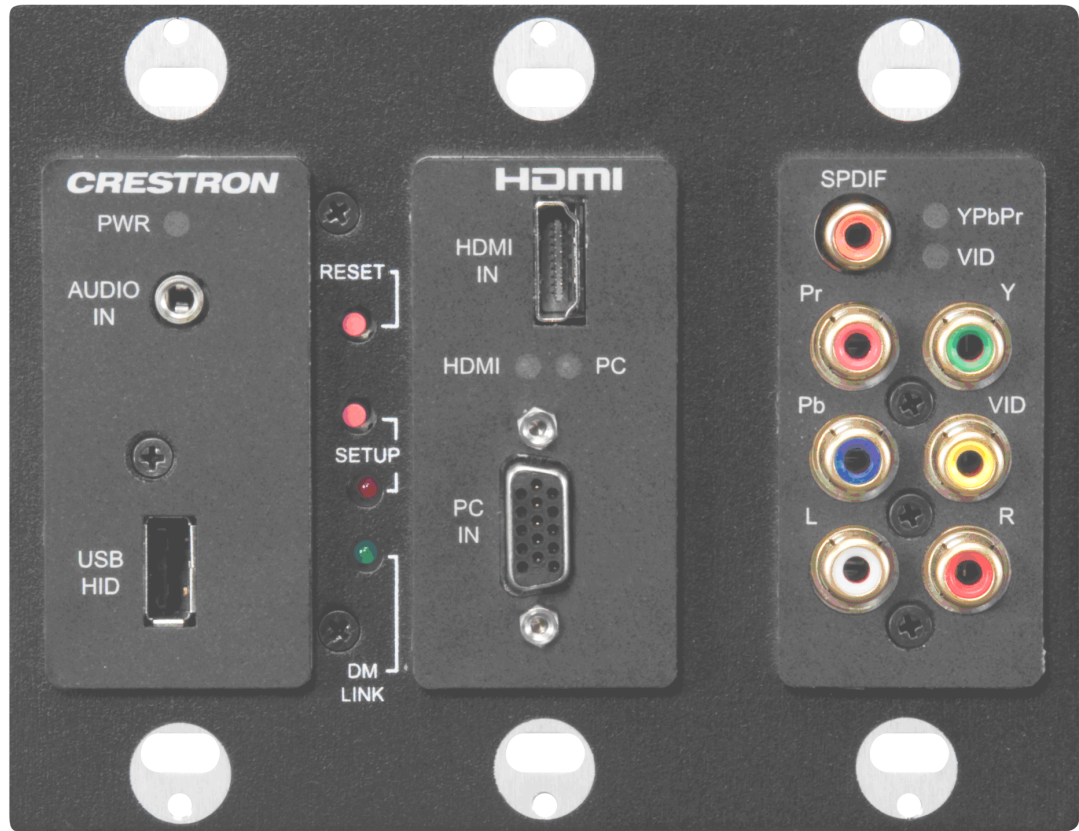
Physical Description

This section provides information on the connections, controls and indicators available on your DM-TX-200-2G and DM-TX-400-3G.

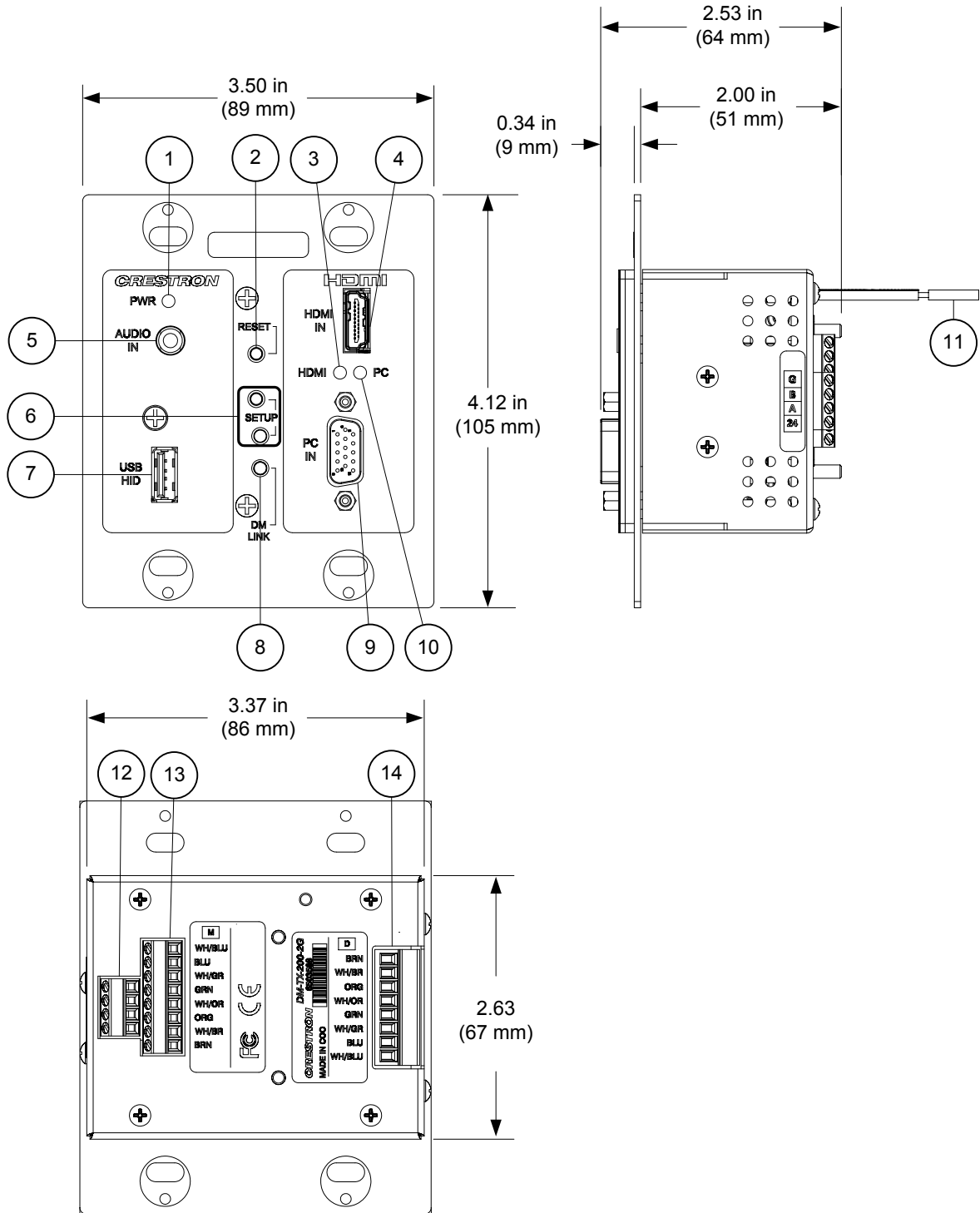
DM-TX-200-2G Physical View



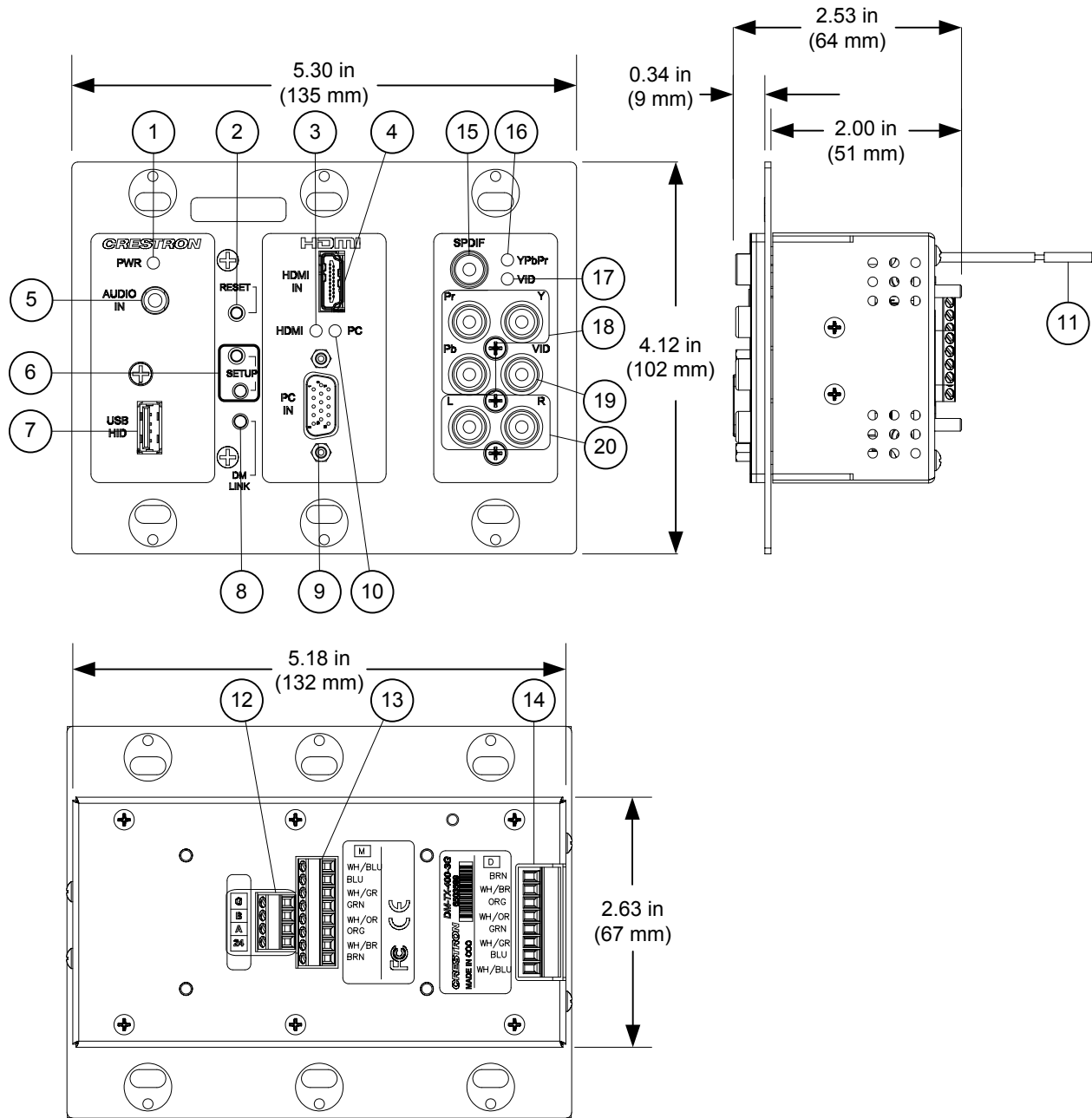
DM-TX-400-3G Physical View






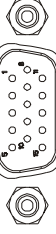
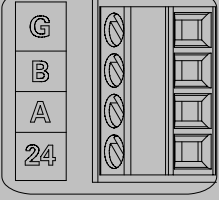
DM-TX-200-2G Overall Dimensions (Front, Right & Rear Views)



DM-TX-400-3G Overall Dimensions (Front, Right & Rear Views)

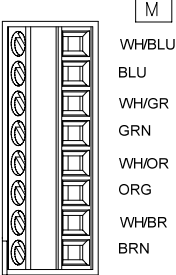
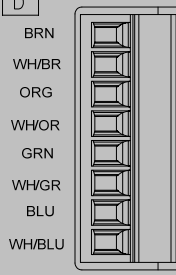

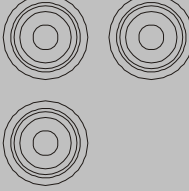




Connectors, Controls & Indicators

#	CONNECTORS, CONTROLS & INDICATORS	DESCRIPTION
1	PWR LED	(1) Green LED, indicates operating power supplied via DMNet
2	RESET	(1) Miniature recessed push button for hardware reset
3	HDMI LED	(1) Green LED, indicates HDMI input is selected
4	HDMI IN 	(1) 19-pin Type A HDMI female; HDMI digital video/audio input; Also supports DVI and DisplayPort Multimode ¹
5	AUDIO IN 	(1) 3.5 mm TRS mini phone jack; Unbalanced stereo line-level audio input; Input Impedance: 10k Ω; Input Level: 2 V _{rms} maximum
6	SETUP (LED and BUTTON)	(1) Red LED and (1) miniature recessed push button for Ethernet auto-discovery
7	USB HID 	(1) USB Type A female; USB 1.1 host port for connection of a mouse/keyboard or other USB HID-compliant device
8	DM LINK LED	(1) Green LED, indicates connection to a downstream DM device
9	PC IN 	(1) DB15HD female, RGB (VGA) or component (YP _b P _r) video input ² ; Formats: RGBHV, RGBS, RG _s B, YP _b P _r ; Input Levels: 0.5 to 1.5 V _{p-p} with built-in DC restoration; Input Impedance: 75 Ω; Sync Input Type: Autodetect RGBHV, RGBS, RG _s B, YP _b P _r ; Sync Input Level: 3 to 5 V _{p-p} ; Sync Input Impedance: 1k Ω
10	PC LED	(1) Green LED, indicates PC input is selected
11	GROUNDING WIRE	(1) Flying lead, chassis ground connection ³
12	G B A 24 ⁴ 	(1) DMNet port composed of (4) captive screw terminals; Connects to DMNet port of a DM switcher, receiver/room controller, or other DM device via DM-CBL cable ^{5,6}

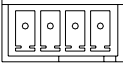
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Connectors, Controls & Indicators (Continued)

#	CONNECTORS, CONTROLS & INDICATORS	DESCRIPTION
13	<p style="text-align: center;">M</p> 	<p>(1) DM CAT output composed of (8) captive screw terminals with (1) grounded strain relief; Connects to DM CAT input of a DM switcher, receiver/room controller or other DM device via the yellow “M” cable of DM-CBL cable⁵; Uses the 568-B wiring standard.</p>
14	<p style="text-align: center;">D</p> 	<p>(1) DM CAT output composed of (8) captive screw terminals with (1) grounded strain relief; Connects to “D” DM CAT input of a DM switcher, receiver/room controller or other DM device via the blue “D” cable of DM-CBL cable⁵; Uses the 568-B wiring standard.</p>
15	<p style="text-align: center;">SPDIF⁷</p> 	<p>(1) RCA female; S/PDIF coaxial digital audio input; Input Impedance: 75 Ω</p>
16	<p style="text-align: center;">YP_bP_r LED⁷</p>	<p>(1) Green LED, indicates YP_bP_r input is selected</p>
17	<p style="text-align: center;">VID LED⁷</p>	<p>(1) Green LED, indicates VID input is selected</p>
18	<p style="text-align: center;">Y, P_b, P_r⁷</p> 	<p>(3) RCA female comprising (1) component (YP_bP_r) video input; Input Level: 1 V_{P-P} nominal; Input Impedance: 75 Ω nominal</p>
19	<p style="text-align: center;">VID⁷</p> 	<p>(1) RCA female, composite video input; Input Level: 1 V_{P-P} nominal; Input Impedance: 75 Ω nominal</p>
20	<p style="text-align: center;">L, R⁷</p> 	<p>(2) RCA female; Unbalanced stereo line-level audio input; Maximum Input: 2 V_{rms}; Input Impedance: 15k Ω</p>

1. HDMI requires an appropriate adapter or interface cable to accommodate a DVI or DisplayPort Multimode signal. CBL-HD-DVI and CBL-DP-HD interface cables available separately.
2. The RGB input can accept component, composite, and S-video signals via direct interface to Crestron MPS Series products, or through an appropriate adapter (not included). Input sync detection is not provided for composite or S-video signal types through the RGB connection.

3. 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-TX-200-2G and DM-TX-400-3G, and to reduce the incidence of possible damage to the unit from static discharge.
4. Refer to the following table for the G B A 24 connector pinouts.

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

5. 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.
6. DMNet wiring is not compatible with Cresnet wiring. DMNet wiring cannot be daisy chained.
7. DM-TX-400-3G only.

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. Please 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. 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.

For more details, refer to “Check Network Wiring” on page 34.

Identity Code

NOTE: In the SIMPL™ Windows program, when a DM-TX-200-2G or DM-TX-400-3G is dropped onto an input card of a DM switcher, its IP ID is assigned automatically and does not require additional programming. Use the information below when a DM-TX-200-2G or DM-TX-400-3G 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-TX-200-2G’s and DM-TX-400-3G’s IP table using Crestron Toolbox. For information on setting an IP table, refer to the Crestron Toolbox help file. The IP IDs of multiple DM-TX-200-2G and DM-TX-400-3G 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.

Auto-Detect Switching

The DM-TX-200-2G and DM-TX-400-3G can transmit a single audio and video source from a variety of inputs to the DM-CAT output.

By default, the DM-TX-200-2G and DM-TX-400-3G will auto-detect the highest priority active audio and video signal and route them to the DM-CAT output. The highest priority audio and video signal will be transmitted together, with the only exception being that HDMI audio cannot be broken away from HDMI video. Refer to the chart below for default the A/V signal priority order.

NOTE: This configuration can be changed via Ethernet using Crestron Toolbox.

PRIORITY	VIDEO	AUDIO
1	HDMI In	HDMI in
2	PC In	Audio In ¹ (1x 3.5 mm mini-TRS phone jack, analog input)
3	Y, Pb, Pr (Component) ²	S/PDIF ² (1x RCA jack, coaxial digital input)
4	Vid (Composite) ²	L, R ^{2, 3} (2x RCA analog input)

1. Audio will be transmitted from the 3.5 mm mini-TRS phone input based on the presence of a connector in the jack.
2. DM-TX-400-3G only.
3. If no audio signal is present, the default audio source will be the RCA analog inputs.

Supplied Hardware

The hardware supplied with the DM-TX-200-2G and DM-TX-400-3G is listed in the following tables.

Supplied Hardware for the DM-TX-200-2G

DESCRIPTION	PART NUMBER	QUANTITY
Cable Clamp, Alum, 3/16" ID, 0.813" x 0.375" x 0.250"	2020120	1
Cable Clamp, Alum, 1/4" ID, 0.843" x 0.375" x 0.313"	2026460	1
Nut, Keps, #06-32, External, Hex, Steel, Zinc	2004883	2
Screw, #06-32 x 3/4", Steel, Truss, Combo Head, Pilot .06", Zinc	2009211	4

Supplied Hardware for the DM-TX-400-3G

DESCRIPTION	PART NUMBER	QUANTITY
Cable Clamp, Alum, 3/16" ID, 0.813" x 0.375" x 0.250"	2020120	2
Cable Clamp, Alum, 1/4" ID, 0.843" x 0.375" x 0.313"	2026460	2
Nut, Keps, #06-32, External, Hex, Steel, Zinc	2004883	4
Screw, #06-32 x 3/4", Steel, Truss, Combo Head, Pilot .06", Zinc	2009211	6

Installation

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

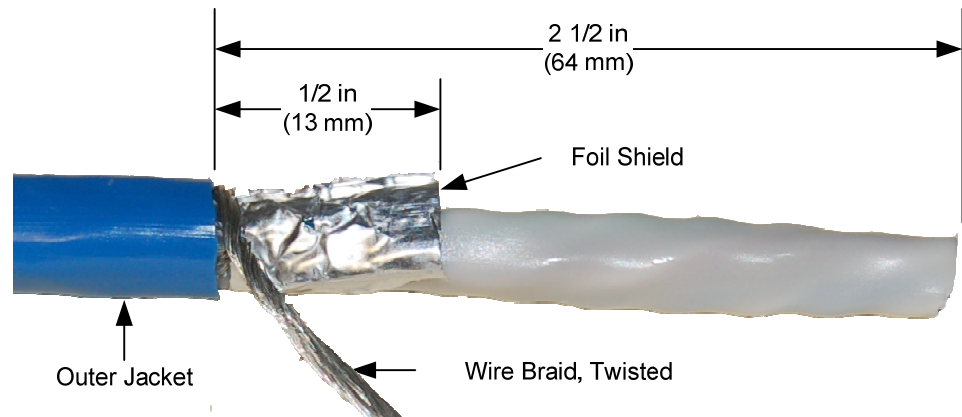
To install the DM-TX-200-2G or DM-TX-400-3G, the following tools and accessories are required:

- DM-CBL DigitalMedia Cable (sold separately). Refer to “Network Wiring” on page 16.
- Phillips screwdriver (not supplied)
- Adjustable wrench (not supplied)
- Miniature flat head screwdriver (not supplied)
- #06-32 x 3/4" oval head slotted screws (included)
- Decorative style faceplate (not supplied)

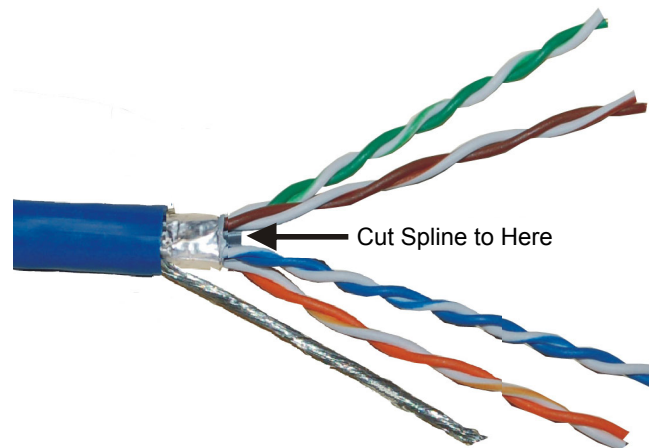
An extra-deep electrical box is recommended (2 1/2 inches (64 mm) deep minimum). It is assumed that the required cable has been fed through an installed 2-gang or 3-gang electrical box (not supplied), and wiring has been verified.

1. Confirm that DMNet system power is OFF.
2. Strip 3/4 inches (95 mm) of the DigitalMedia Cable to expose the three inner cables.
3. Strip the outer jacket of the blue “D” cable 2 1/2 inches (64 mm) from end. Gather and twist the wire braid. Refer to the following illustration.

“D” Cable (Stripping the Outer Jacket)

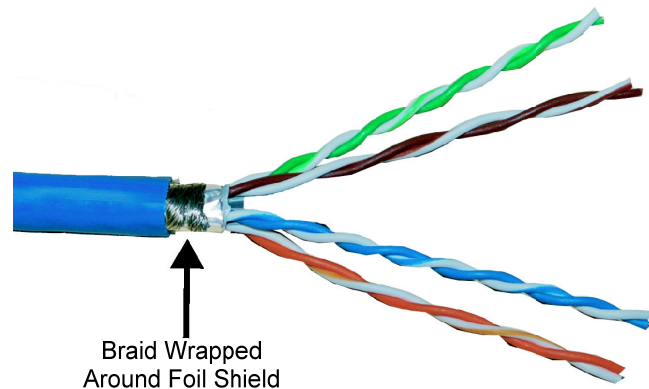


4. Trim foil shield to 1/2 inch (13 mm).
5. Remove the white neoprene sheath and separate the twisted pairs to expose the spline. Cut the spline so it is near flush with the foil shield as shown in the following illustration. Return twisted pairs to original position.

“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).

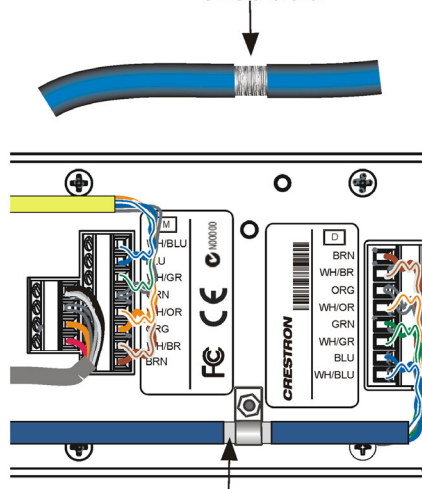
NOTE: Maintain equal wire lengths within 1/8 inch (3 mm).

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.

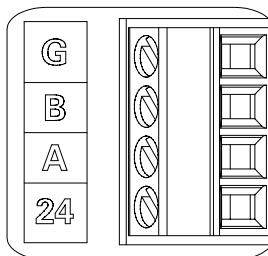
Clamping the Cable to the Unit

Remove approximately 1/2" (13 mm) of the outer jacket to expose the shield braid.

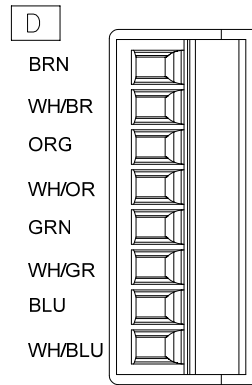


Use strain relief clamp to establish chassis ground.

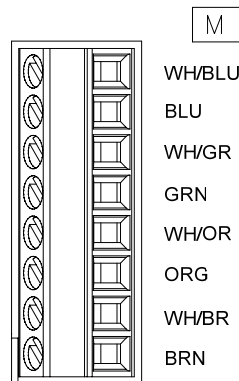
9. Strip the outer jacket of the yellow "M" cable 2 inches (51 mm) from end.
10. Strip the insulation from the ends of each wire, exposing approximately 3/16 inch (5 mm) of bare copper.
11. Using a miniature flat head screwdriver (not supplied), make the connections as specified, using the labels on the unit as a guide.
 - a. 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 15 for details.

G B A 24 Terminal Block

- b. Insert the twisted pairs of the blue, shielded cable into the D terminal block and tighten each screw base. Use the 568-B wiring standard.

D Terminal Block

- c. Insert the twisted pairs of the yellow, unshielded cable into the M terminal block and tighten each screw base. Use the 568-B wiring standard.

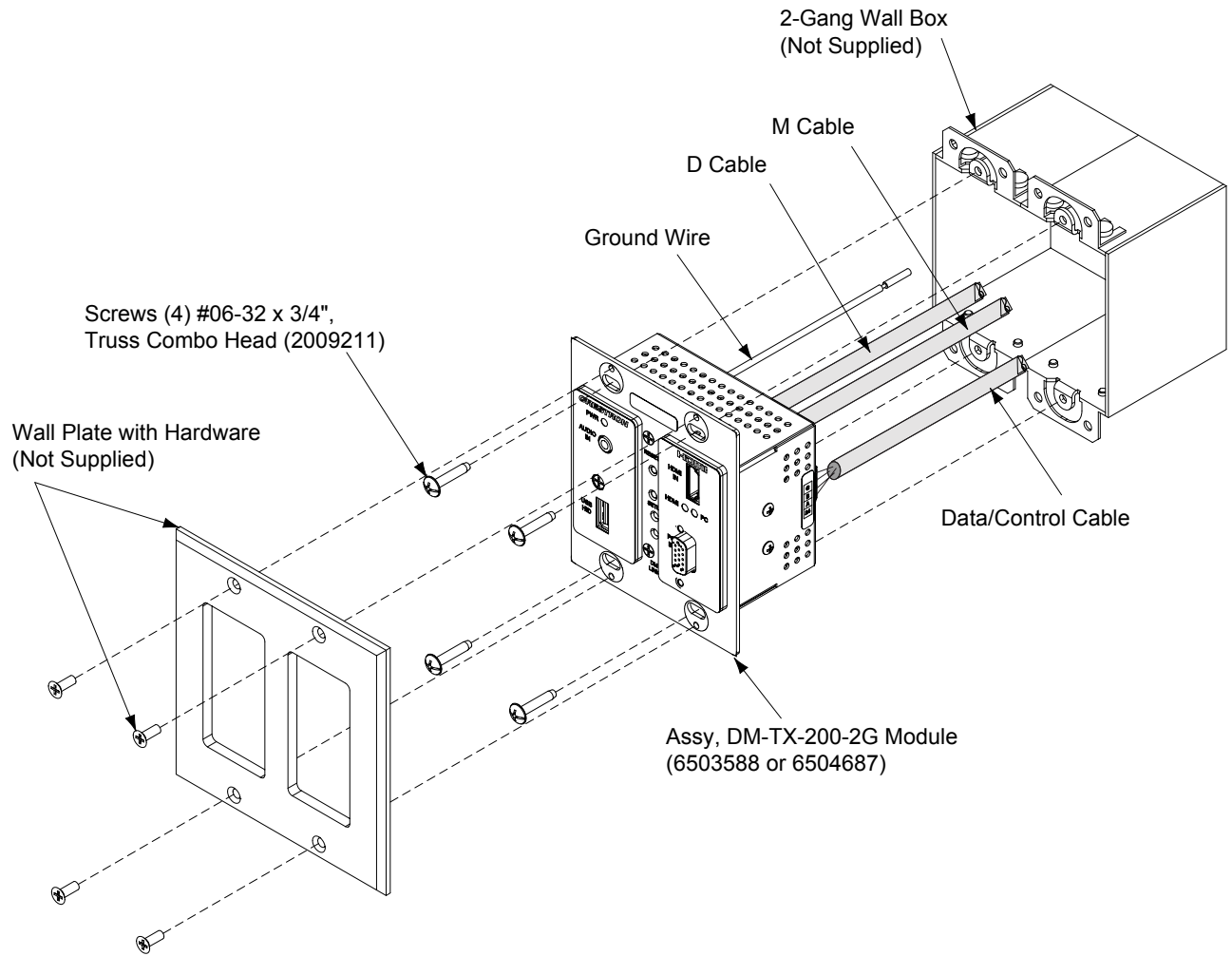
M Terminal Block

12. 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).
13. Attach the unit to the electrical box using the included #06-32 x 3/4" oval head slotted screws as shown in the illustration on the following two pages.

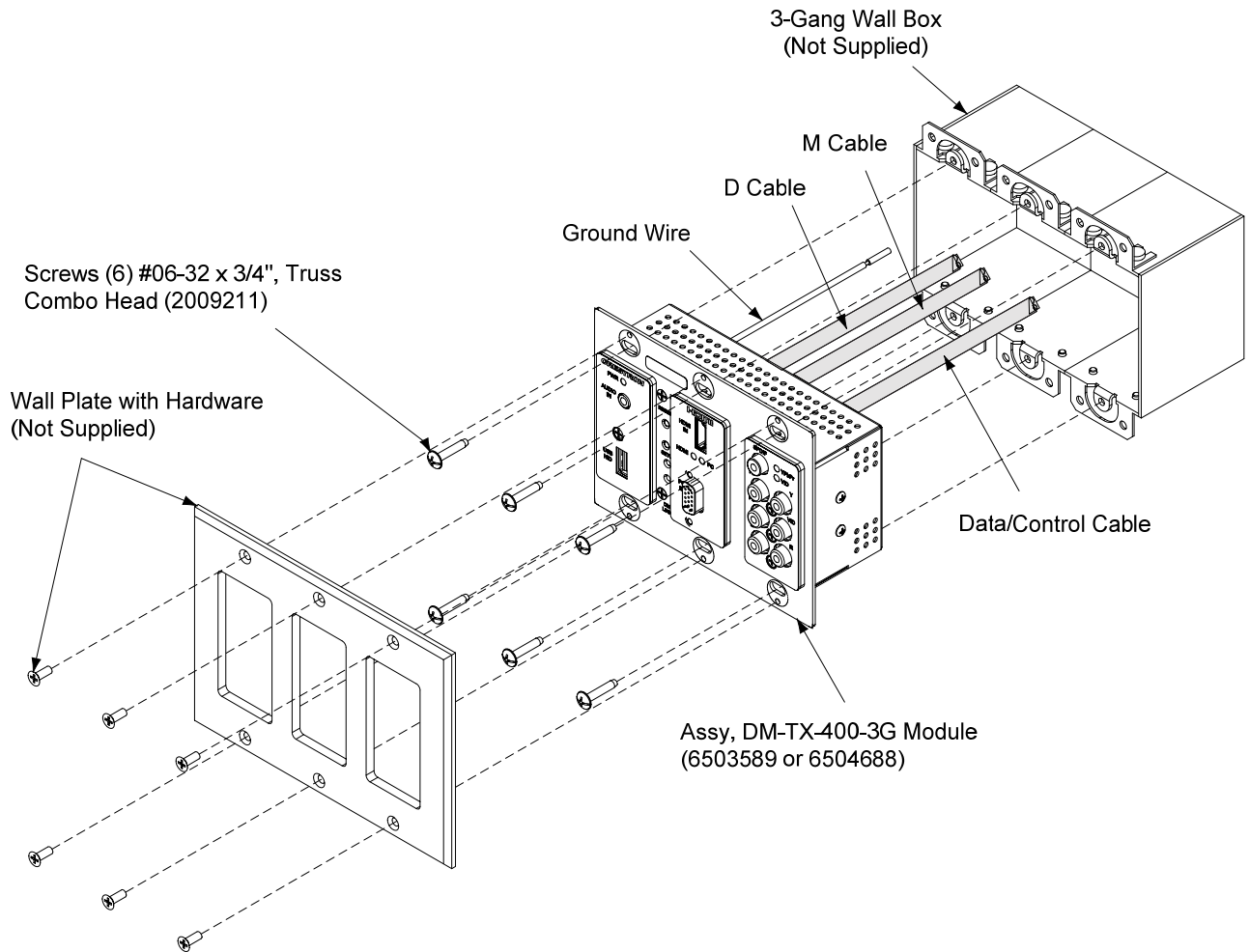
CAUTION: Excess wire pinched between the unit and electrical box could cause a short. Make sure that all excess wire is completely inside the electrical box and not between the box and the side of the unit.

14. Attach an appropriate decorative style faceplate (not supplied).

DM-TX-200-2G in a 2-Gang Box (Exploded View)



DM-TX-400-3G in a 3-Gang Box (Exploded View)



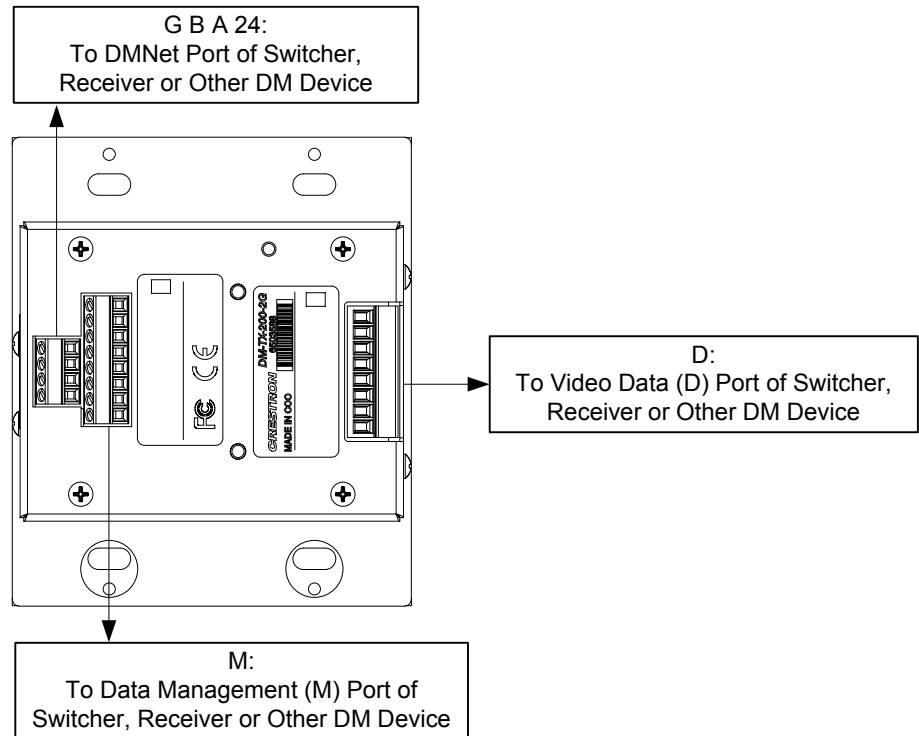
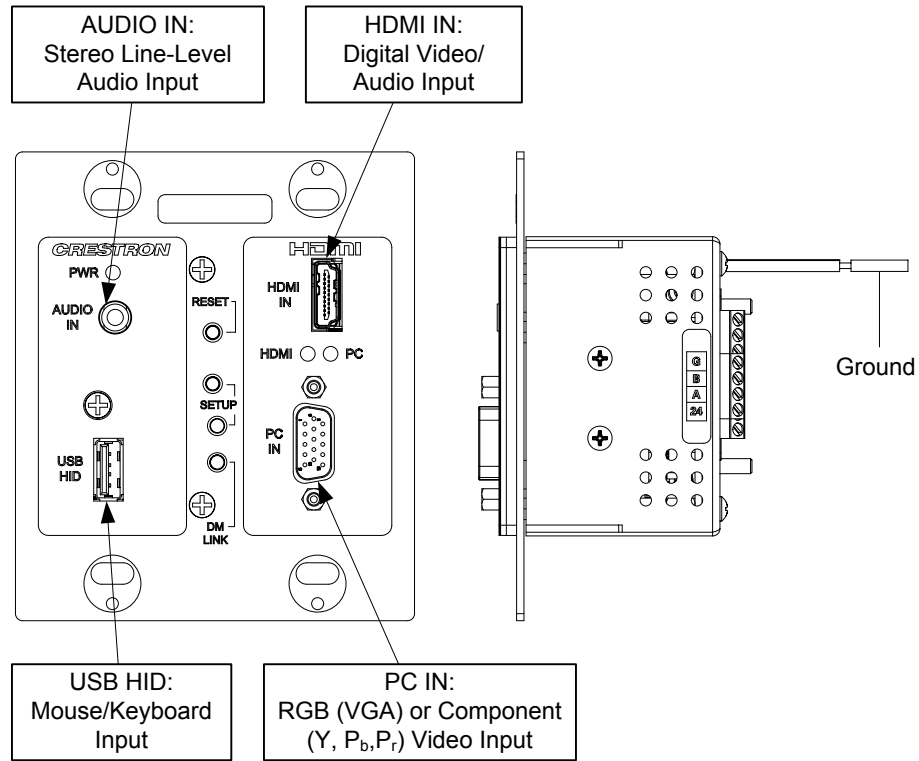
Hardware Hookup

Connect the Device

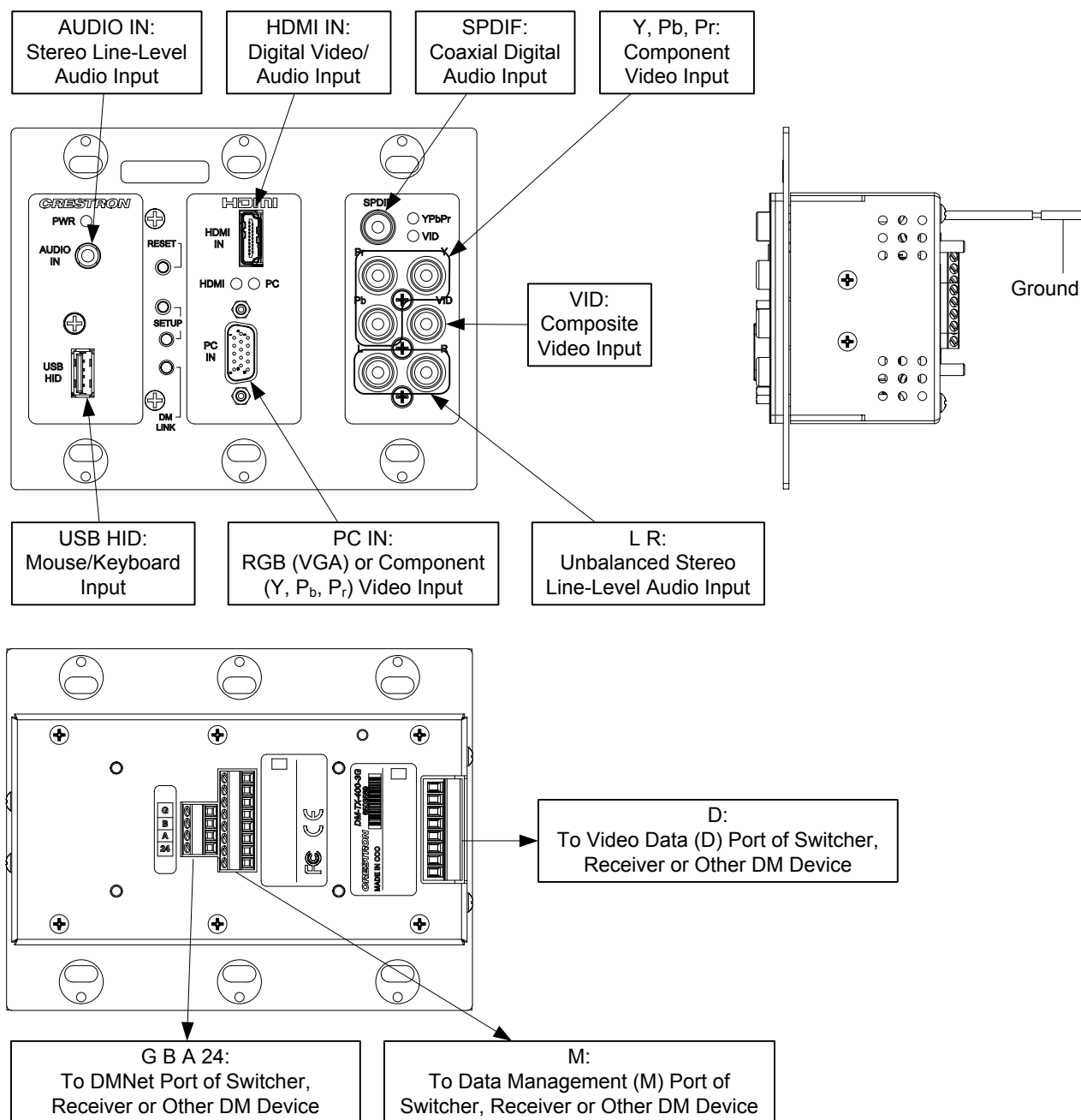
Make the necessary connections as called out in the illustration that follows this paragraph. Refer to “Network Wiring” on page 16 before attaching the DMNet Cable. Apply power after all connections have been made.

When making connections to the DM-TX-200-2G and DM-TX-400-3G, use Crestron power supplies for Crestron equipment.

Hardware Connections for the DM-TX-200-2G



Hardware Connections for the DM-TX-400-3G



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

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

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

NOTE: The minimum cable length required 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 www.crestron.com/support. 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 provides 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-TX-200-2G or DM-TX-400-3G.

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-TX-200-2G or DM-TX-400-3G, it is recommended to use SystemBuilder for configuring a system.

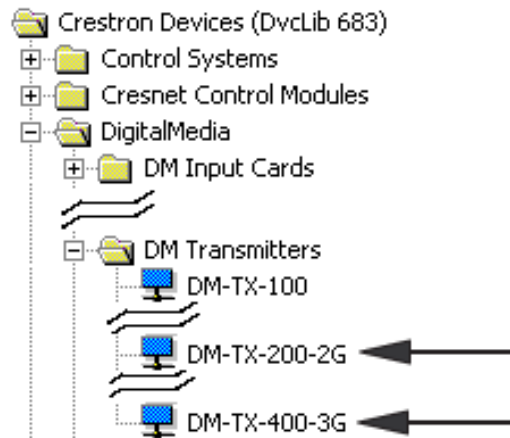
SIMPL Windows is Crestron's premier software for programming Crestron control systems. It is organized into two separate but equally important "Managers": Configuration and Program.

Configuration Manager

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

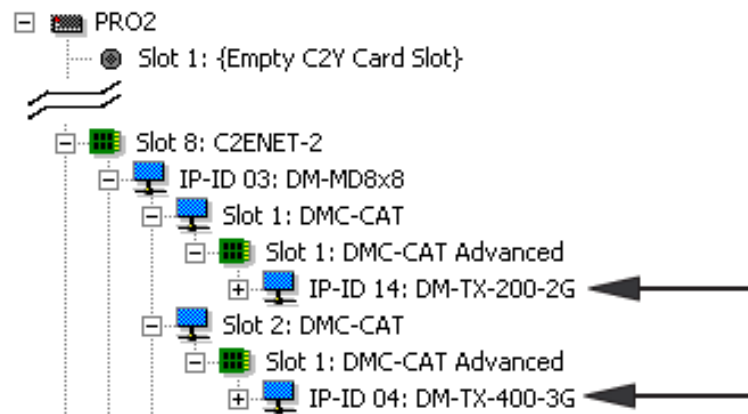
1. To incorporate the DM-TX-200-2G or DM-TX-400-3G into the system, drag the DM-TX-200-2G or DM-TX-400-3G from the DigitalMedia | DM Transmitters folder of the *Device Library* and drop it into either of the following *System Views*:
 - A compatible input card of a DM switcher
 - Directly to a card in the Ethernet slot of the control system (used without a DM switcher)

Locating the DM-TX-200-2G and DM-TX-400-3G in the Device Library

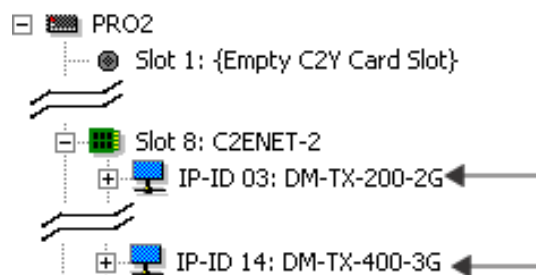


The system tree of the control system displays the DM-TX-200-2G and DM-TX-400-3G in the appropriate slot with a default IP ID as shown in the following illustrations. In the first example, the DM-TX-200-2G and DM-TX-400-3G is used with the DMC-CAT input card in a DM-MD8X8 switcher (both sold separately). In the second example, the DM-TX-200-2G and DM-TX-400-3G is used with the C2ENET-2 card (sold separately) in an Ethernet slot on the control system.

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



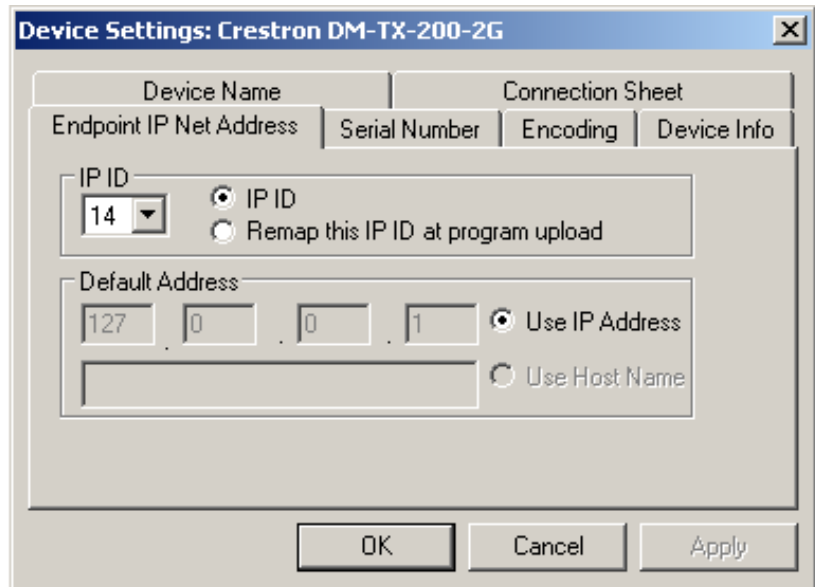
C2ENET-2 Device, Slot 8 (Using Ethernet Slot on Control System)



2. If additional DM-TX-200-2G or DM-TX-400-3G devices are to be added, repeat step 1 for each device. Each DM-TX-200-2G and DM-TX-400-3G device is assigned a different IP ID.

3. If necessary, double click a device to open the “Device Settings” dialog box and change the IP ID as shown in the following figure (DM-TX-200-2G shown).

“Device Settings: Crestron DM-TX-200-2G” Dialog Box



NOTE: The ID code specified in the SIMPL Windows program must match the IP ID of each unit. Refer to “Identity Code” on page 16.

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-TX-200-2G or DM-TX-400-3G refer to the Crestron Toolbox help file for details.

A PC running Crestron Toolbox communicates with the DM-TX-200-2G or DM-TX-400-3G 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 a DM-RMC-100 using TCP/IP communication.

Via DM Switcher

TCP/IP Communication via DM Switcher



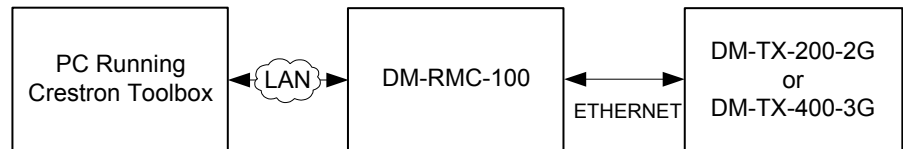
To establish TCP/IP communication between the PC and the DM-TX-200-2G or DM-TX-400-3G via a DM switcher:

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-TX-200-2G or DM-TX-400-3G. 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-TX-200-2G or DM-TX-400-3G using the *TCP* connection type and enter the IP address of the DM-TX-200-2G or DM-TX-400-3G.
4. Display the DM-TX-200-2G or DM-TX-400-3G'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-TX-200-2G or DM-TX-400-3G 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-TX-200-2G or DM-TX-400-3G’s “System Info” window (click the **i** icon); communications are confirmed when the device information is displayed.

*Via DM-RMC-100**TCP/IP Communication via DM-RMC-100*

The DM-TX-200-2G or DM-TX-400-3G connects to PC via Ethernet:

1. 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.
2. By default, DHCP is enabled. Use the Device Discovery Tool in Crestron Toolbox to find the IP address of the DM-TX-200-2G or DM-TX-400-3G. To change the IP configuration, from Crestron Toolbox, display the “System Info” window (click the **i** icon) and select the DM-TX-200-2G or DM-TX-400-3G entry from the Address Book. Select **Functions | Ethernet Addressing** and enter the new IP address, IP mask and default router of the DM-TX-200-2G or DM-TX-400-3G.

NOTE: If the DM-TX-200-2G is in a non-DHCP environment, a default IP address (192.168.1.232) can be assigned by holding down its **SETUP** button while applying power. If the DM-TX-400-3G is in a non-DHCP environment, a default IP address (192.168.1.235) 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.

3. Use the Address Book in Crestron Toolbox to create an entry for the DM-TX-200-2G or DM-TX-400-3G with the DM-TX-200-2G’s or DM-TX-400-3G’s TCP/IP communication parameters.
4. Display the “System Info” window (click the **i** icon) and select the DM-TX-200-2G or DM-TX-400-3G entry from the Address Book.

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 the DM-TX-200-2G or DM-TX-400-3G's firmware:

1. Do either of the following
 - If the DM-TX-200-2G or DM-TX-400-3G 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-TX-200-2G or DM-TX-400-3G 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-TX-200-2G or DM-TX-400-3G.
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 opens.
5. From the list in the Address Book, select the DM switcher (if the DM-TX-200-2G or DM-TX-400-3G is connected to a switcher) or the DM-TX-200-2G or DM-TX-400-3G (if the DM-TX-200-2G or DM-TX-400-3G is used in a standalone configuration), and 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-TX-200-2G or DM-TX-400-3G was selected, a DM device list is displayed that allows upgrading of the DM-TX-200-2G or DM-TX-400-3G 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-TX-200-2G or DM-TX-400-3G is used in a standalone configuration (i.e., without a DM switcher), use Crestron Toolbox to create the IP table entry for the DM-TX-200-2G or DM-TX-400-3G.

NOTE: If the DM-TX-200-2G or DM-TX-400-3G is connected directly to a DM switcher, the IP table entry for the DM-TX-200-2G or DM-TX-400-3G is created automatically.

1. Use the Device Discovery Tool in Crestron Toolbox to find the IP address of the DM-TX-200-2G or DM-TX-400-3G. Then, display the “System Info” window (click the **i** icon) and select the DM-TX-200-2G or DM-TX-400-3G entry from the Address Book.
2. Select **Functions | IP Table Setup**.
3. Add, modify or delete entries in the IP table. The DM-TX-200-2G or DM-TX-400-3G can have only one IP table entry.
4. A defined IP table can be saved to a file or sent to the device.

DMTool

In the Crestron Toolbox Address Book, select the DM-TX-200-2G or DM-TX-400-3G. Then use the DMTool to configure EDID, HDCP or to troubleshoot AV on the DM-TX-200-2G or DM-TX-400-3G. Refer to the help file for additional information.

DMTool



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-TX-200-2G and DM-TX-400-3G 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 LED does not illuminate.	Device is not receiving power.	Verify that DMNet is properly attached.
DM LINK LED does not illuminate.	Device is not transmitting DMNet signal.	Verify that DM connections are properly attached.
Source LED's do not illuminate.	Sources are not transmitting signals.	Verify source operation.
Intermittent or no audio output.	Poor cable connection.	Verify all cable connections.
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 DMTool 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 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.

Commonly Used Resolutions and Maximum DM Cable Length

RESOLUTION	DM-CBL CABLE LENGTH	
	Maximum length without, between, before, or after repeaters	Maximum total length using up to 2 repeaters
720p, 1080i, 1080p/24	200 ft (60 m)	450 ft (137 m)
1024 x 768 @75 Hz	200 ft (60 m)	450 ft (137 m)
1080p/60	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)
1080p/60 Deep Color	Not Supported	

NOTE: 1080p @ 60 Hz 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.

List of Related Reference Documents

DOCUMENT TITLE
Crestron DigitalMedia Design Guide (www.crestron.com/dmresources)
Crestron DigitalMedia Switchers Operations Guide (www.crestron.com/manuals)

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-TX-200-2G and DM-TX-400-3G, 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.
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.

CRESTRON Limited Warranty

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.

This warranty extends to products purchased directly from CRESTRON or an authorized CRESTRON dealer. Purchasers should inquire of the dealer regarding the nature and extent of the dealer's warranty, if any.

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