

Crestron **QM-TX2-CC & QM-TX2-MC**  
QuickMedia<sup>®</sup> Transmitter  
Computer & Media Centers

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Operations 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 QM-TX2-CC/-MC has been tested and found to comply with specifications for CE marking and standards per EMC and Radiocommunications Compliance Labelling.



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### 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

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### 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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# Contents

## **QuickMedia® Transmitter Computer & Media Centers: QM-TX2-CC & QM-TX2-MC 1**

Introduction .....	1
Features and Functions .....	1
Applications.....	4
Internal Block Diagram .....	5
Specifications .....	6
Physical Description .....	7
Setup .....	13
Network Wiring.....	13
QuickMedia Wiring.....	13
Identity Code .....	14
Hardware Hookup .....	15
Programming Software .....	18
Earliest Version Software Requirements for the PC .....	18
Programming with Crestron SystemBuilder.....	18
Programming with SIMPL Windows .....	18
Example Program .....	20
Uploading and Upgrading.....	21
Establishing Communication.....	21
Programs and Firmware .....	21
Program Checks .....	22
QM Tools .....	22
Problem Solving .....	23
Troubleshooting.....	23
Check Network Wiring.....	24
Reference Documents.....	25
Further Inquiries .....	25
Future Updates .....	25
Return and Warranty Policies.....	26
Merchandise Returns / Repair Service .....	26
CRESTRON Limited Warranty.....	26



# QuickMedia<sup>®</sup> Transmitter Computer & Media Centers: QM-TX2-CC & QM-TX2-MC

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## Introduction

Crestron's MediaManager is a comprehensive family of affordable products fusing high performance AV signal distribution, device control and facility-wide system management. MediaManager simplifies the art of Pro AV system design and installation with complete hardware, software and low-cost wiring solutions. Whether installing a single boardroom or a campus-wide network of AV systems, MediaManager delivers power and value far beyond conventional products and designs.

For simplicity within this guide, QM-TX2-CC/MC is used except where noted.

## Features and Functions

- Portable or rack mount QuickMedia<sup>®</sup> interface
- Single cable transmission up to 450 feet (137 meters)
- Multi-format BNC video input (QM-TX2-MC)
- DB15HD RGB computer input\*
- Buffered RGB monitor pass-through\*
- Two balanced stereo audio inputs
- Video input signal sensing
- 2x1 input switching with audio breakaway
- Front panel switching controls
- IR output control port
- QuickMedia transport with Cresnet<sup>®</sup> communications
- Low-cost, quick and easy installation
- Performs Video signal format management via EDID
- Easy setup using Crestron SystemBuilder<sup>™</sup> software
- 1/2 space rack mountable using optional ST-RMK kit

\* One on QM-TX2-MC. Two on QM-TX2-CC.

## ***QuickMedia® Transmitter Computer Center (QM-TX2-CC)***

The QM-TX2-CC affords a portable or rack mounted computer interface solution for QuickMedia (QM) based MediaManager systems. The QM-TX2-CC can be used in a variety of applications to send computer signals to one or more displays using Crestron's exclusive single-wire QuickMedia transport.

## ***QuickMedia Transmitter Media Center (QM-TX2-MC)***

The QM-TX2-MC affords a portable or rack mounted multimedia interface solution for QuickMedia based MediaManager systems. The QM-TX2-MC can be used in a variety of applications to send audio, video and computer signals to one or more displays and audio amplifiers using Crestron's exclusive single-wire QuickMedia transport.

## ***Dual Computer Interface (QM-TX2-CC)***

The QM-TX2-CC is ideal for installation in a presentation podium, computer station or central equipment rack to transmit computer signals to a QM receiver or distribution center using just a single inexpensive CresCAT™QM cable. It is also perfect for portable use, requiring just one RJ-45 plus a 4-pin Cresnet® connection in any standard wall plate or floor box to provide an extremely simple yet versatile computer input anywhere in the room. Since it is powered by Cresnet, it does not even require a connection to AC power.

Two independent DB15HD computer inputs are provided on the QM-TX2-CC, each with corresponding stereo audio, to accept connections from two separate computer sources. Both inputs support RGBHV signals up to WUXGA 1920 x 1200. Buffered monitor pass-through connectors are also included to feed the input signals to local monitors.

## ***Versatile Multimedia Interface (QM-TX2-MC)***

Installed in a central equipment rack, the QM-TX2-MC is ideal for converting the output of a conventional AV source or switcher to QuickMedia for transmission to a QM receiver or distribution center using just a single inexpensive CresCAT-QM cable. It is also perfect for portable use, requiring just one RJ-45 plus a 4-pin Cresnet connection in any standard wall plate or floor box to provide an extremely simple yet versatile AV or computer input anywhere in the room. Since it is powered by Cresnet, it does not even require a connection to AC power.

Individual video and RGB inputs are provided, each with corresponding stereo audio, to accept connections from separate AV and computer sources. The multi-format BNC video input supports composite, S-video and component formats including 1080p HDTV. The DB15HD computer input supports RGBHV signals up to WUXGA 1920 x 1200. A buffered monitor pass-through connector is also included to feed the RGB input signal to a local monitor.

## ***Professional Balanced Audio***

Two balanced stereo line level audio inputs are provided. Audio breakaway capability allows the audio inputs to be switched independent of the video (QM-TX2-MC only) and RGB inputs or linked with them.

## ***Built-in 2x1 Switcher***

All video (QM-TX2-MC only), RGB and audio signal switching is performed onboard the QM-TX2-CC/MC. Switching can be controlled programmatically from any remote keypad or touchpanel or right from the front panel. Built-in signal sensing on each video/RGB input can be utilized to trigger automatic input selection, as well as other system functions such as device power control.

## ***IR Control Port***

A single IR output port is included in the QM-TX2-CC/MC to enable programmable control of a multimedia computer (for QM-TX2-CC), a local DVD player (for QM-TX2-MC) or other IR-controllable device.

## ***QuickMedia Transport***

Using Crestron's revolutionary QuickMedia transport, the selected input signals are transmitted from the QM-TX2-CC/MC to any QuickMedia receiver or distribution center over a single inexpensive CAT5e type cable\*. Computer resolutions up to 1920 x 1200 pixels at 60 Hz are supported over cable runs up to 450 feet (137 meters). Audio signals are transmitted digitally with high performance 24-bit resolution. QuickMedia dramatically simplifies system design and installation, affording a higher level of performance at a lower overall cost.

\* For QuickMedia wiring, use CresCAT-QM, CresCAT-IM or quality CAT5e/CAT6 cable with a delay skew of  $\leq 15$  ns per 100 meters; the maximum aggregate cable length and delay skew between any QM transmitter (origination point) and QM receiver (endpoint) is 450 feet (137 meters) and 22 ns; a maximum of two QM midpoint devices may be inserted in a given QM signal path; exceptions apply, refer to each respective product manual for details.

## ***MediaManager System Integration***

Whether using just one QM transmitter or several, complete system operation can be made transparent to the end user with all signal routing occurring smoothly under the command of the MediaManager control system. Complete MediaManager systems are easy to design, program and adjust from start to finish using Crestron® SystemBuilder™ software.

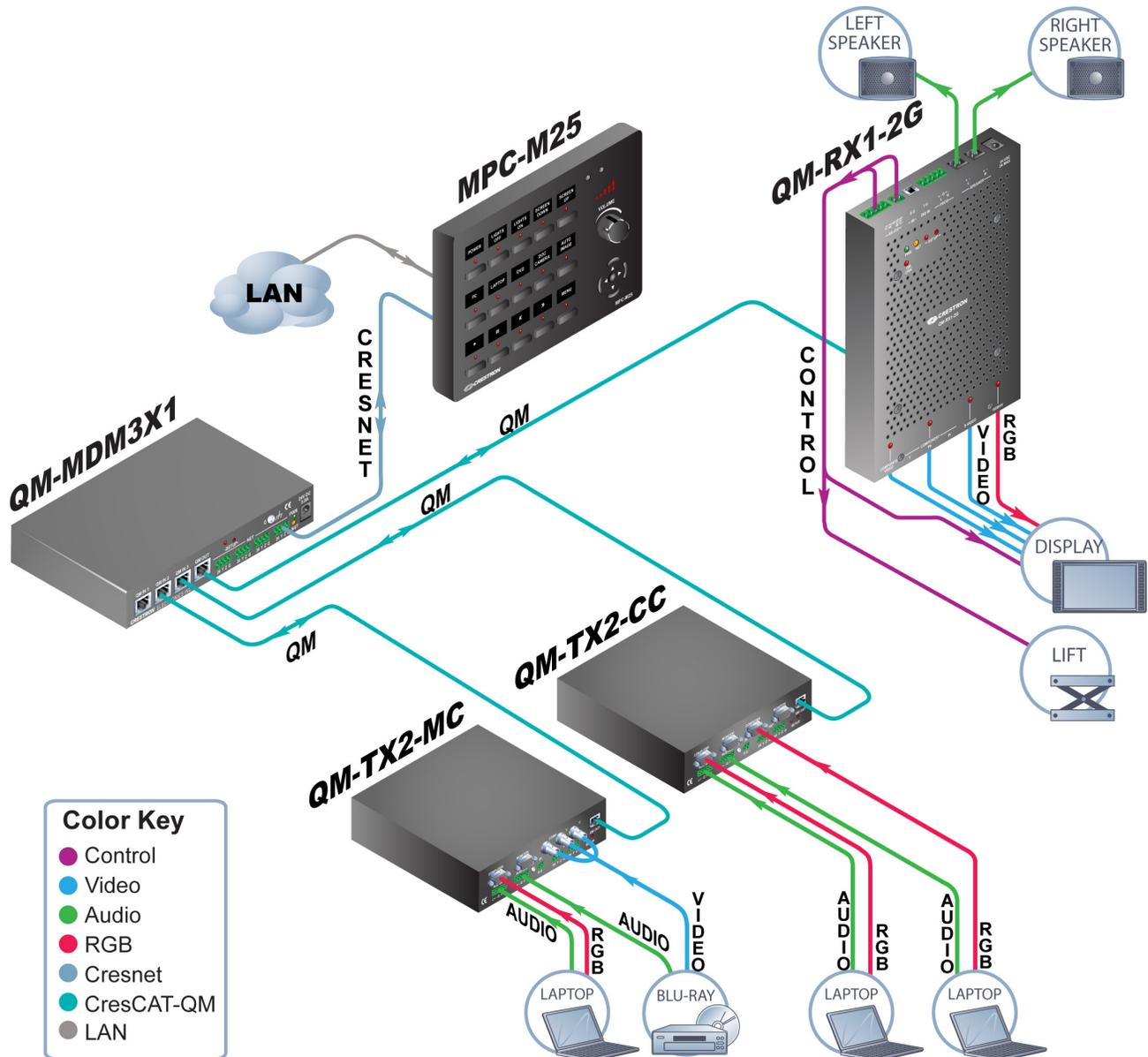
## ***EDID Format Management***

The QM-TX2-CC/MC allows for management of the EDID (Extended Display Identification Data) information sent to the connected source. Using Crestron Toolbox™ software, the format and resolution capabilities of each device can be assessed and managed through the QM-TX2-CC/MC, ensuring reliable operation by instructing sources to output only the resolutions and formats that can be handled by the displays and system wiring.

## Applications

The following diagram shows a QM-TX2-CC and QM-TX2-MC in a lecture hall application.

*QM-TX2-CC and QM-TX2-MC in a Lecture Hall Application*

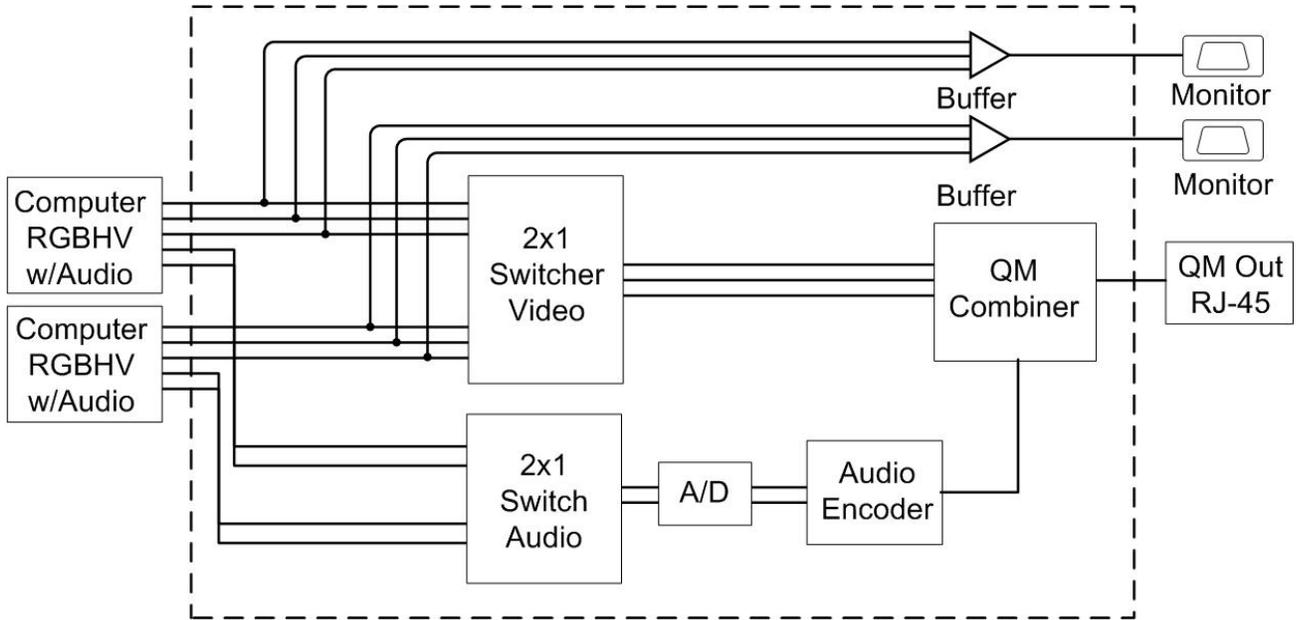


For more information on this and other QM applications, refer to the latest revision of the Crestron MediaManager Applications Guide (Doc. 6244), which is available from the Crestron website ([www.crestron.com/manuals](http://www.crestron.com/manuals)).

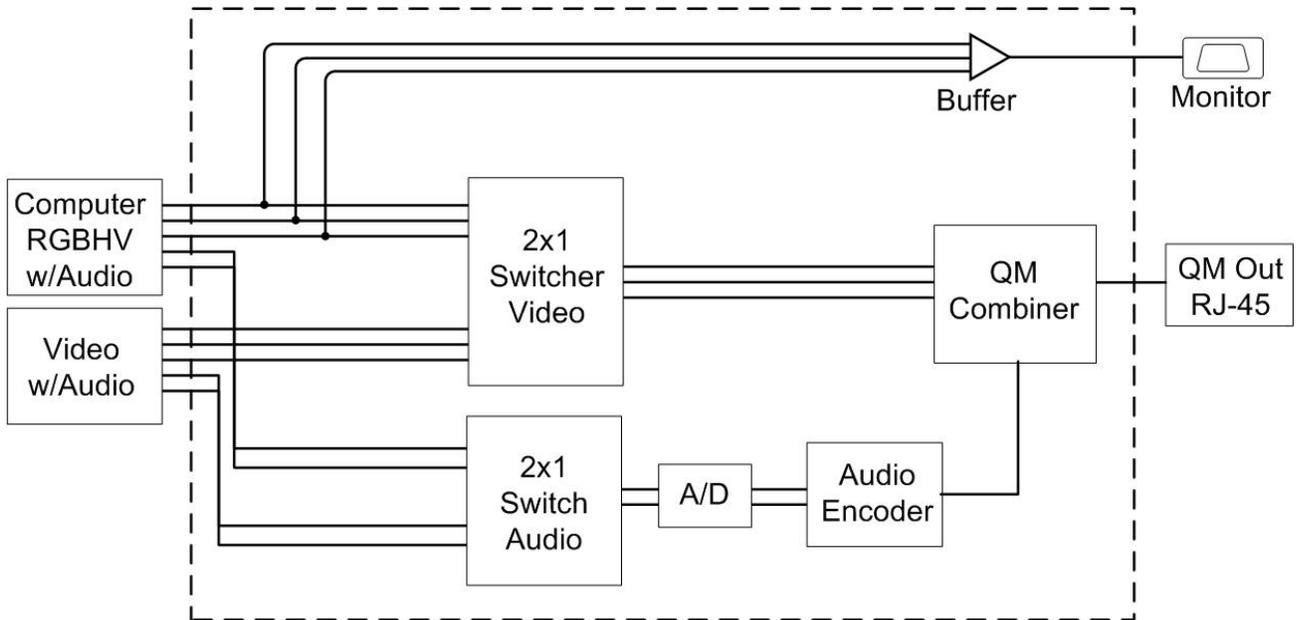
### Internal Block Diagram

The following diagrams represent the operational abilities of the QM-TX2-CC and QM-TX2-MC.

*Internal Block Diagram of the QM-TX2-CC*



*Internal Block Diagram of the QM-TX2-MC*



## Specifications

Specifications for the QM-TX2-CC/MC are listed in the following table.

### *QM-TX2-CC/MC Specifications*

SPECIFICATION	DETAILS
Video	
Signal Types <sup>1</sup>	RGB and composite, S-video or component video
Video/HDTV Formats <sup>1</sup>	NTSC or PAL, HDTV up to 1080i/1080p
RGB Formats	RGBHV, RGBS or RGsB
Gain	0 dB (75 ohms terminated)
Maximum Resolution	1920 x 1200 @ 60 Hz (at unity gain) with maximum cable length of 450 feet (137 meters) and maximum compensation at receiver
Audio	
A-D Conversion	24-bit, 48 kHz
Frequency Response	20 Hz to 20 kHz
Power Requirements	
Cresnet <sup>®</sup> Power Usage	
QM-TX2-CC	5 watts (0.21 Amp @ 24 Volts DC)
QM-TX2-MC	6 watts (0.25 Amp @ 24 Volts DC)
Default Net ID	
QM-TX2-CC	90
QM-TX2-MC	90
Minimum 2-Series Control System Update File <sup>2,3</sup>	Version 3.117 or later
Environmental	
Temperature	41° to 104° F (5° to 40° C)
Humidity	10% to 90% RH (non-condensing)
Heat Dissipation	
QM-TX2-CC	18 BTU/Hr
QM-TX2-MC	21 BTU/Hr
Enclosure	
Chassis	Steel, black matte powder coat finish
Faceplate	Extruded aluminum, black matte powder coat finish with polycarbonate label overlay
Mounting	Freestanding or 0.5U 19-inch rack mountable (adhesive feet included, ST-RMK rack kit sold separately)
Dimensions	
Height	1.80 in (46 mm)
Width	7.07 in (180 mm)
Depth	
QM-TX2-CC	6.55 in (166 mm)
QM-TX2-MC	7.14 in (181mm)

*Continued on following page*

# Crestron QM-TX2-CC & QM-TX2-MC Transmitter Computer & Media Centers

## QM-TX2-CC/MC Specifications (Continued)

SPECIFICATION	DETAILS
Weight	
QM-TX2-CC	2.14 lbs (0.97 kg)
QM-TX2-MC	2.23 lbs (1.01 kg)
Available Accessories	
IRP2	IR Emitter Probe
ST-RMK	Rack Mount Kit

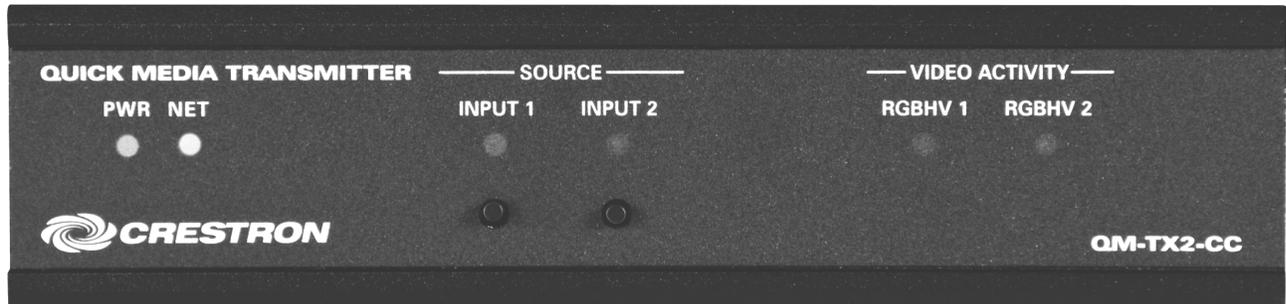
1. Composite, S-video and component video on QM-TX2-MC only.
2. The latest software versions can be obtained from the Crestron website. Refer to the NOTE following these footnotes.
3. Crestron 2-Series control systems include the AV2 and PRO2. Consult the latest Crestron Product Catalog for a complete list of 2-Series control systems.

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

## Physical Description

This section provides information on the connections, controls and indicators available on your QM-TX2-CC/MC.

### QM-TX2-CC Physical View (Front)

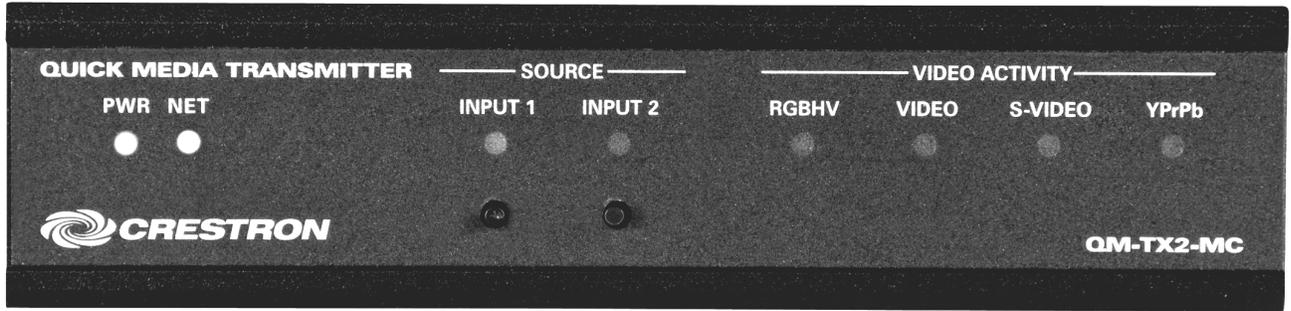


### QM-TX2-CC Physical View (Rear)



# Transmitter Computer & Media Centers Crestron QM-TX2-CC & QM-TX2-MC

*QM-TX2-MC Physical View (Front)*

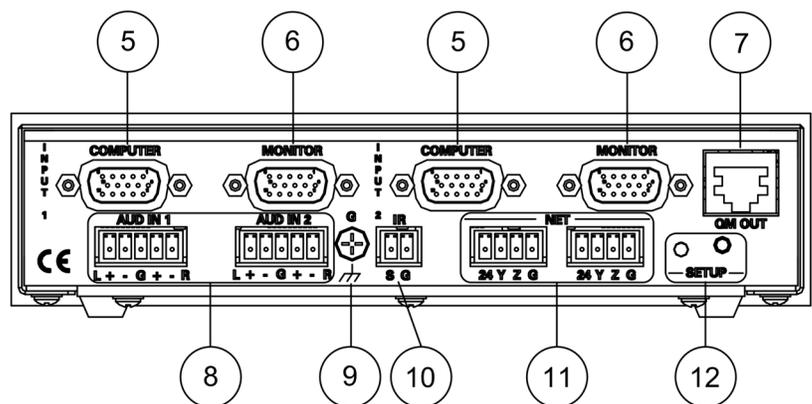
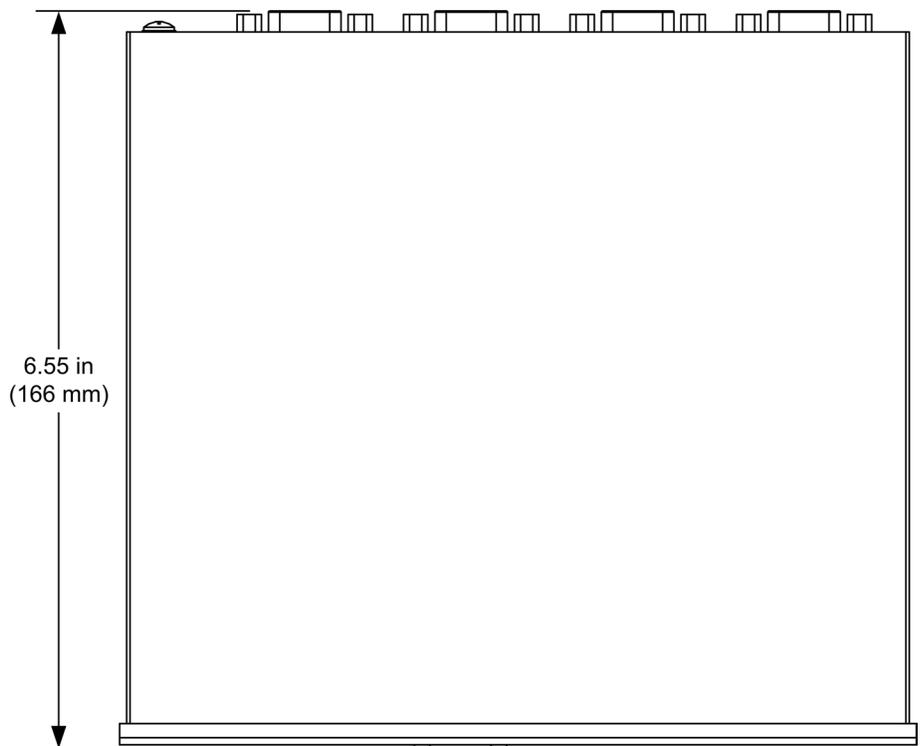
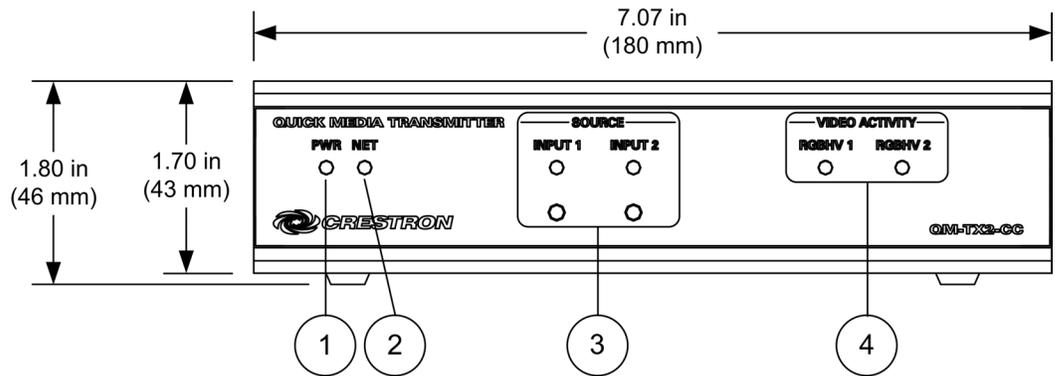


*QM-TX2-MC Physical View (Rear)*



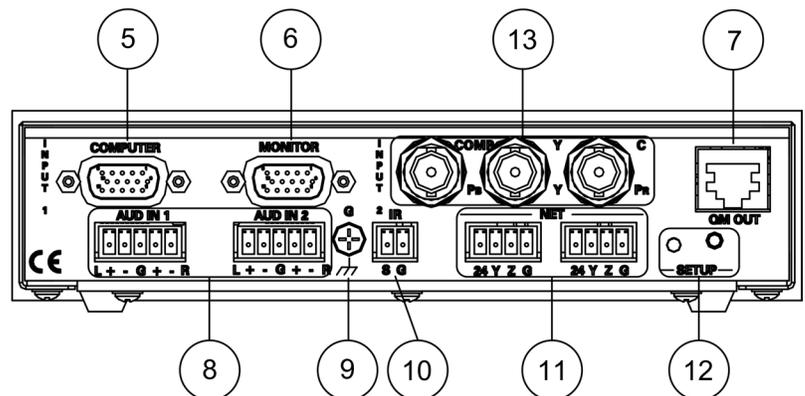
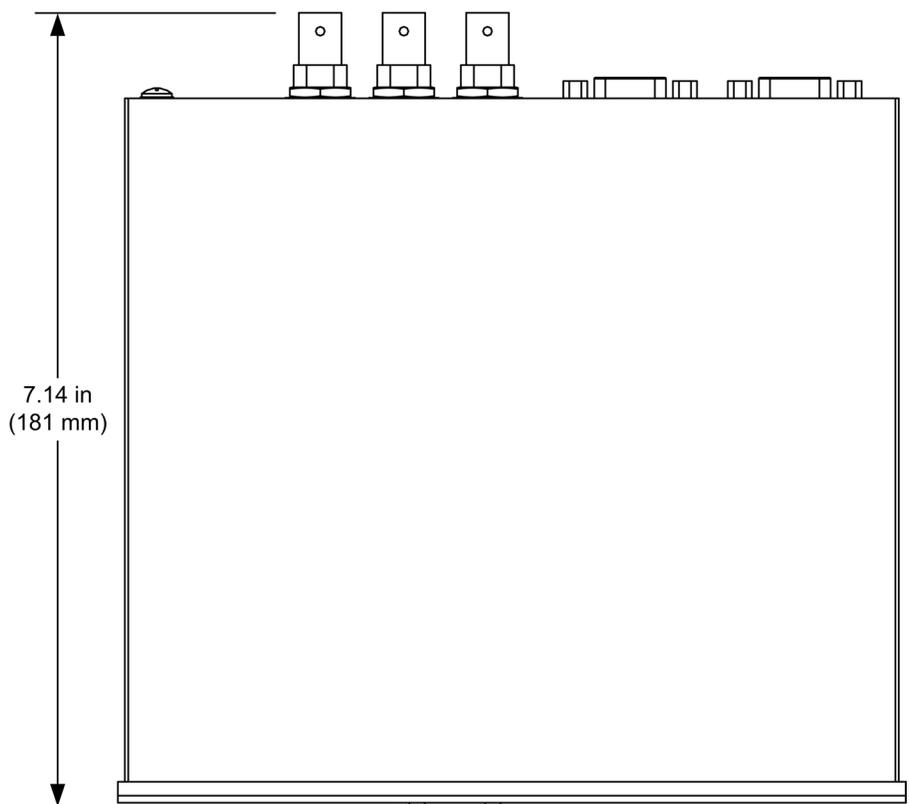
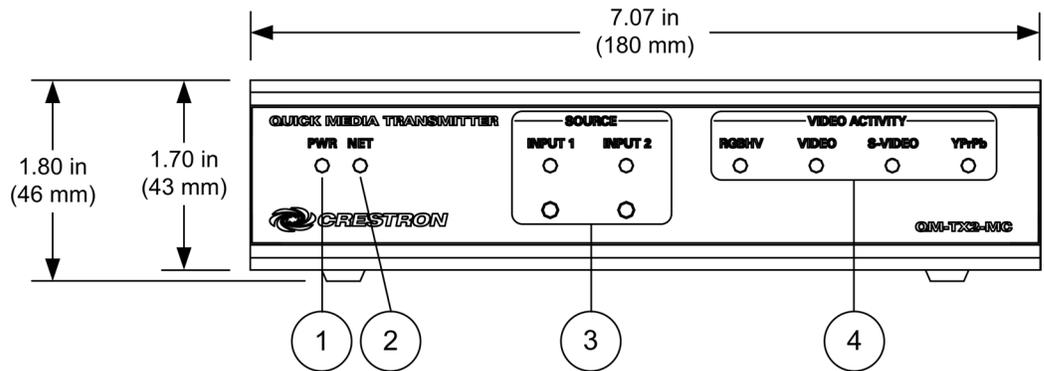
# Crestron **QM-TX2-CC & QM-TX2-MC** Transmitter Computer & Media Centers

*QM-TX2-CC Overall Dimensions (Front, Top and Rear Views)*



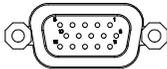
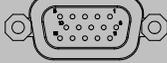
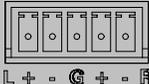
# Transmitter Computer & Media Centers Crestron **QM-TX2-CC & QM-TX2-MC**

*QM-TX2-MC Overall Dimensions (Front, Top and Rear Views)*



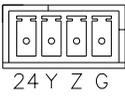
# Crestron QM-TX2-CC & QM-TX2-MC Transmitter Computer & Media Centers

## Connectors, Controls & Indicators

#	CONNECTORS <sup>1</sup> , CONTROLS & INDICATORS	DESCRIPTION
1	PWR LED	(1) Green LED, indicates 24 Volts DC power supplied from Cresnet control network
2	NET LED	(1) Yellow LED, indicates communication with Cresnet system
3	SOURCE (INPUT 1 & 2) LEDs and Buttons	(2) Pushbuttons and red LEDs, selects input for distribution
4	VIDEO ACTIVITY LEDs (RGBHV (1 & 2)/ VIDEO/ S-VIDEO/YPrPb) <sup>2</sup>	Red LEDs, indicate presence of <b>RGBHV (1 or 2)</b> , <b>VIDEO</b> , <b>S-VIDEO</b> or <b>YPbPr</b> input signals
5	COMPUTER <sup>3</sup> 	DB15HD female; RGB(VGA)/component video input; Formats: RGBHV, RGBS, RGsB; Input impedance: 75 Ω H sync impedance: 1 kΩ V sync impedance: 1 kΩ Maximum input level: 1 V <sub>p-p</sub> Maximum sync level: 5 V <sub>p-p</sub> Signal sensing on H sync only
6	MONITOR <sup>3</sup> 	DB15HD female; Buffered RGBHV pass-through
7	QM OUT <sup>4,5</sup> 	(1) 8-wire RJ-45 female, QuickMedia output port; Connects to QM input port of any QuickMedia device via CresCAT-QM or CresCAT-IM cable.
8	AUD IN (1 & 2)  L + - C + - R	(2) 5-pin 3.5 mm detachable terminal blocks; Balanced/unbalanced stereo line level inputs; Input impedance: 24 kΩ balanced/unbalanced Balanced input level: -20 to +12 dBV; 4 V <sub>rms</sub> maximum Unbalanced input level: -20 to +6 dBV, 2 V <sub>rms</sub> maximum
9	G 	(1) 6-32 screw, chassis ground lug
10	IR 	(1) 2-pin 3.5 mm detachable terminal block; IR output port; IR output up to 1.2 MHz (IRP2 IR Emitter sold separately)

(Continued on following page)

## Connectors, Controls & Indicators (Continued)

#	CONNECTORS <sup>1</sup> , CONTROLS & INDICATORS	DESCRIPTION
11	<p>NET</p>  <p>24 Y Z G</p>	<p>(2) 4-pin 3.5 mm detachable terminal blocks; Cresnet slave ports, paralleled; Connect to Cresnet control network via CresCAT-QM or Cresnet cable</p> <p><b>24:</b> Power (24 Volts DC)  <b>Y:</b> Data  <b>Z:</b> Data  <b>G:</b> Ground</p>
12	<p>SETUP (Button and LED)</p>	<p>(1) Miniature pushbutton and red LED, used for touch-settable ID (TSID)</p>
13	<p>COMP/Y/C/Pb/Y/Pr<sup>6</sup></p> 	<p>(3) BNC female video inputs, configurable as:</p> <ul style="list-style-type: none"> <li>(1) Component/HDTV (YPbPr) video input or</li> <li>(1) S-video (Y/C) input or</li> <li>(1) Composite input;</li> </ul> <p>Input impedance: 75 Ω nominal          Input level: 1 V<sub>p-p</sub> nominal          Sensing of video signal presence and type</p>

- Interface connectors for **AUD IN**, **IR** and **NET** ports are provided with the unit.
- One RGB input on QM-TX2-MC. Two RGB inputs on QM-TX2-CC. Video, S-video and YP<sub>b</sub>P<sub>r</sub> inputs on QM-TX2-MC only.
- One on QM-TX2-MC. Two on QM-TX2-CC.
- For QuickMedia wiring, use CresCAT-QM, CresCAT-IM or quality CAT5e/CAT6 cable with a delay skew of ≤ 15 ns per 100 meters; the maximum aggregate cable length and delay skew between any QM transmitter (origination point) and QM receiver (endpoint) is 450 feet (137 meters) and 22 ns; a maximum of two QM midpoint devices may be inserted in a given QM signal path; exceptions apply, refer to each respective product manual for details.
- The eight-pin RJ-45 QuickMedia transport port accepts CAT5E/CAT6 carrying audio, video and microphone signals. The QM input port conforms to the 568B wiring standard. Refer to the following table for connector pinouts.

RJ-45 PIN NUMBER	WIRE COLORS (EIA 568B)	QM ASSIGNMENT: RGB	QM ASSIGNMENT: COMPOSITE, S-VIDEO, COMPONENT AND AUDIO
1	WHITE/ORANGE	- RGB RED	- CHROMINANCE (- P <sub>r</sub> )
2	ORANGE	+ RGB RED	+ CHROMINANCE (+ P <sub>r</sub> )
3	WHITE/GREEN	- RGB GREEN	- LUMINANCE (- Y)
4	BLUE	+ DIGITAL AUDIO	+ DIGITAL AUDIO
5	WHITE/BLUE	- DIGITAL AUDIO	- DIGITAL AUDIO
6	GREEN	+ RGB GREEN	+ LUMINANCE (+ Y)
7	WHITE/BROWN	- RGB BLUE	- COMPOSITE (- P <sub>b</sub> )
8	BROWN	+ RGB BLUE	+ COMPOSITE (+ P <sub>b</sub> )

- QM-TX2-MC only.

## Setup

### Network Wiring

When wiring the Cresnet network, consider the following:

- Use Crestron Certified Wire.
- Use Crestron power supplies for Crestron equipment.
- Provide sufficient power to the system.

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**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](http://www.crestron.com/calculators)).

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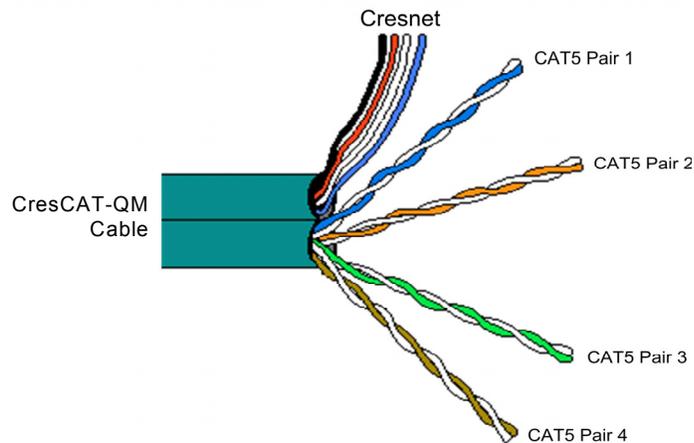
- For networks with 20 or more devices, use a Cresnet Hub/Repeater (CNXHUB) to maintain signal quality.

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

### QuickMedia Wiring

The Crestron QuickMedia cable (sold under the name “CresCAT-QM”) contains one CAT5E cable and one Cresnet cable in Siamese jackets. Installation of any QM device is as simple as installing CresCAT-QM wires from the output of one device to the input of another. Installations are flexible, affordable and fast. For more information, refer to the latest revision of the Crestron MediaManager Applications Guide (Doc. 6244), which is available for download from the Crestron website.

#### *CresCAT-QM Cable*



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**NOTE:** Do not untwist the two wires in a single pair for more than 1/3-1/2” (8 - 13 mm) when making a connection. The twists are critical to canceling out interference between the wires.

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The aggregate cable length of a signal path originating at a QM-TX2-CC/MC and terminating at a QM receiver must not exceed 450 feet (137 meters). Video signals may experience a loss of quality over very long lengths of cable. This phenomenon is due to the added resistance and capacitance of longer cable lengths and is not

peculiar to either Crestron and/or QuickMedia systems. To ensure sufficient bandwidth, the maximum aggregate cable length should not exceed 450 feet. The use of lower-resolution signals may allow increased cable length but must be tested by the installer with the sources to be used. The QM pin assignment is based on the EIA/TIA 568B RJ-45 Jack standard.

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**NOTE:** When transmitting S-video, luminance uses the green video pathway and chrominance uses the red video pathway. When transmitting composite video, the signal is carried on the blue video pathway.

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**NOTE:** When using CresCAT-QM wiring, four additional wires are included for making Cresnet connections.

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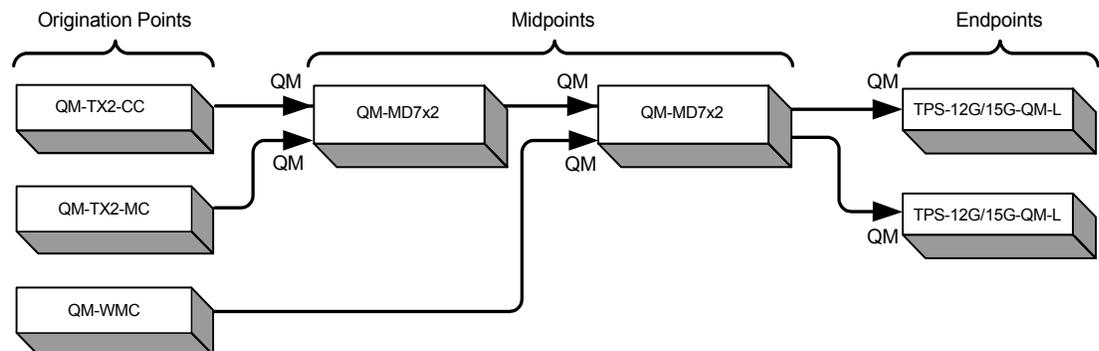
When connecting multiple QM devices, the route between a QM origination point (transmitter) and a QM endpoint (receiver) cannot have more than two midpoints (e.g. QM-MD7x2 or other QM switchers). Refer to the following diagram when configuring a QM network.

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**NOTE:** The aggregate length from transmitter to receiver cannot have a delay skew of more than 22 ns.

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## QM Network Topology



## Identity Code

The Net ID of the QM-TX2-CC/MC has been factory set to **90**. The Net IDs of multiple QM-TX2-CC/MC devices in the same system must be unique. Net IDs are changed from a personal computer (PC) via Crestron Toolbox™ (refer to “Establishing Communication” on page 21).

When setting the Net ID, consider the following:

- The Net ID of each unit must match an ID code specified in the SIMPL™ Windows program.
- Each network device must have a unique Net ID.

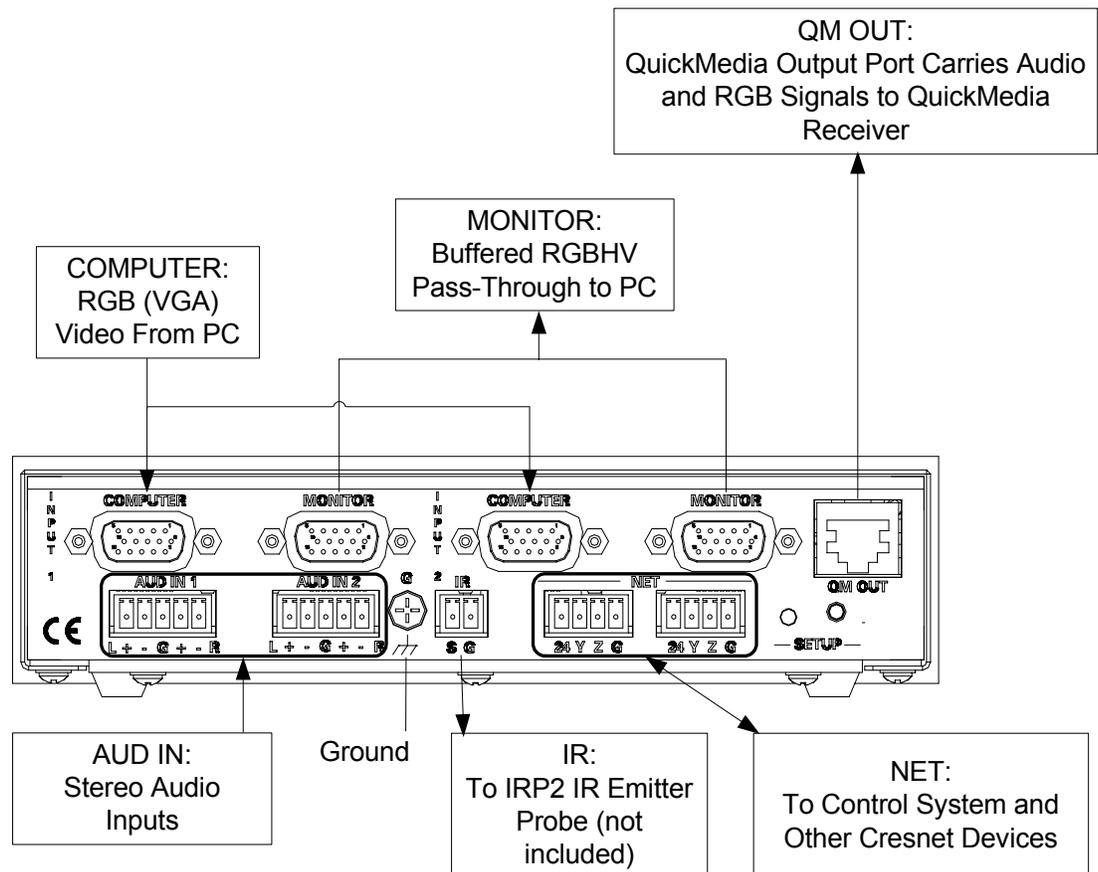
For more details, refer to the Crestron Toolbox help file.

## Hardware Hookup

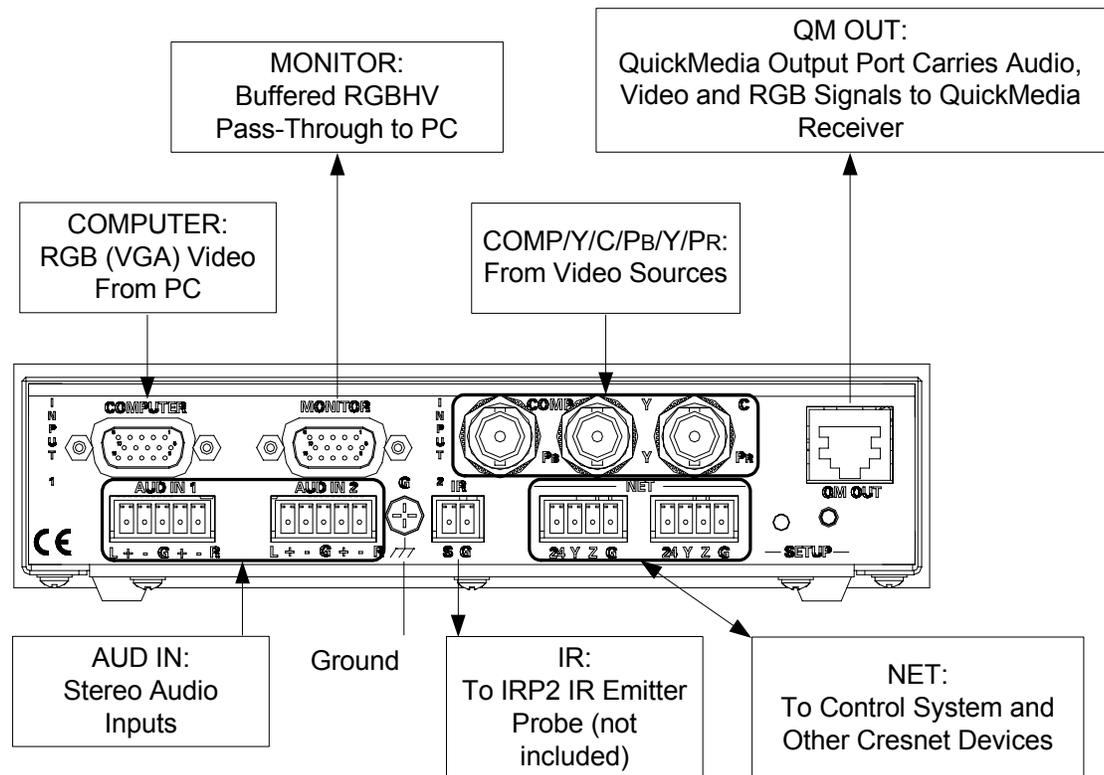
Make the necessary connections as called out in the illustrations on the following pages. Refer to “Network Wiring” on page 13 before attaching the 4-position terminal block connector. Apply power after all connections have been made.

When making connections to the QM-TX2-CC/MC, use Crestron power supplies for Crestron equipment:

### Hardware Connections for the QM-TX2-CC



## Hardware Connections for the QM-TX2-MC



**NOTE:** Ensure the unit is properly grounded.

**NOTE:** For optimum performance, Crestron strongly recommends using CresCAT-QM cable, available from Crestron. Other high-quality/low skew CAT5e/CAT6 wiring may also be used with varying performance.

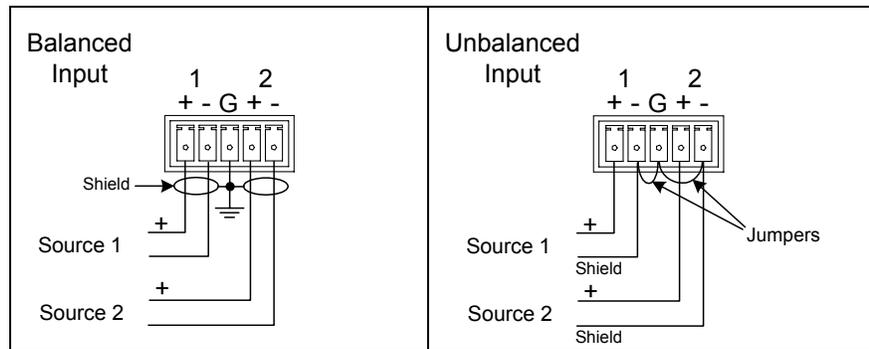
**NOTE:** The maximum continuous current from equipment under any external load conditions shall not exceed a current limit that is suitable for the minimum wire gauge used in interconnecting cables. The ratings on the connecting unit's supply input should be considered to prevent overloading the wiring.

Two balanced/unbalanced audio inputs are provided, utilizing five-pin terminal block connectors. For connection details, refer to the following table and diagrams.

### Audio Connections

SIGNAL NAME	BALANCED AUDIO INPUT	UNBALANCED AUDIO INPUT
+	1 +	1 + In
-	1 -	1 - signal return, jumper to GND
G	Shield/Ground	Ground
+	2 +	2 + In
-	2 -	2 - signal return jumper to GND

*Typical Balanced/Unbalanced Inputs*



## Programming Software

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### Have a question or comment about Crestron software?

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

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### Earliest Version Software Requirements for the PC

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

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

### 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 website and examine the extensive help file.

### Programming with SIMPL Windows

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**NOTE:** While SIMPL Windows can be used to program the QM-TX2-CC/MC, it is recommended to use SystemBuilder for configuring a QuickMedia system.

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

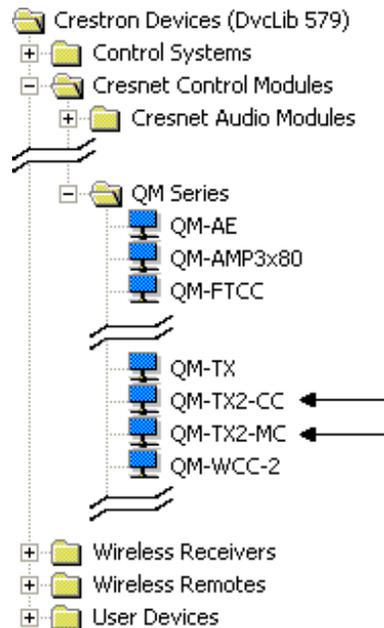
#### Configuration Manager

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

- To incorporate the QM-TX2-CC/MC into the system, drag the QM-TX2-CC/MC from the Cresnet Control Modules | QM Series folder of the *Device Library* and drop it in the *System Views*.

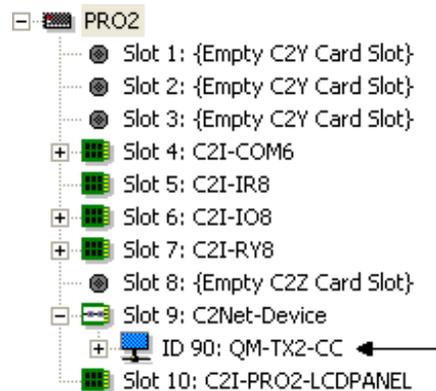
# Crestron QM-TX2-CC & QM-TX2-MC Transmitter Computer & Media Centers

## Locating the QM-TX2-CC/MC in the Device Library

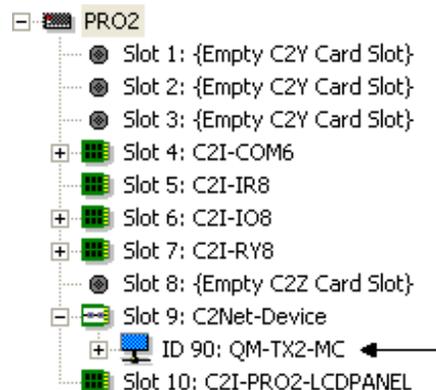


- The system tree of the control system displays the device in the appropriate slot with a default Net ID as shown in the following illustrations.

## C2Net Device, Slot 9 (QM-TX2-CC Shown)

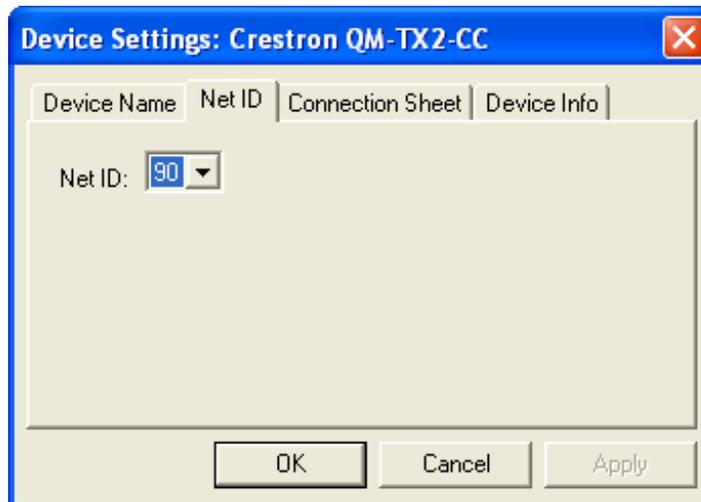


## C2Net Device, Slot 9 (QM-TX2-MC Shown)

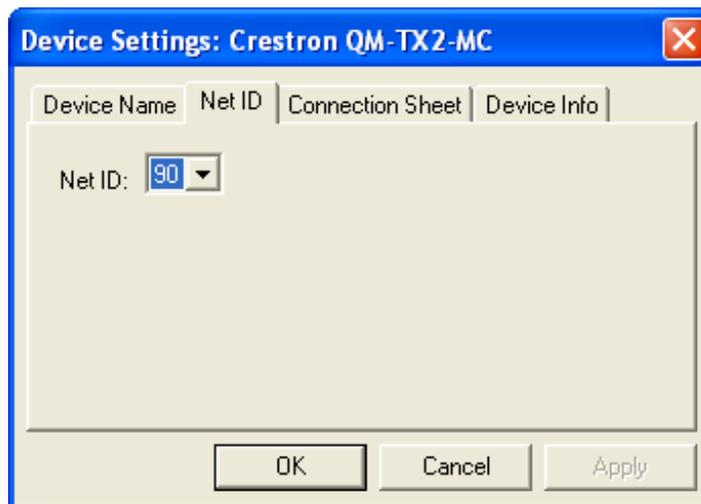


- Additional QM-TX2-CC/MC devices are assigned different Net ID numbers as they are added.
- If necessary, double click a device to open the “Device Settings” window and change the Net ID as shown in the following figure(s).

*“QM-TX2-CC Device Settings” Window*



*“QM-TX2-MC Device Settings” Window*



- The ID code specified in the SIMPL Windows program must match the Net ID of each unit. Refer to “Identity Code” on page 14.

## Program Manager

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

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

## Example Program

An example program for the QM-TX2-CC/MC is available from the Crestron website ([www.crestron.com/exampleprograms](http://www.crestron.com/exampleprograms)).

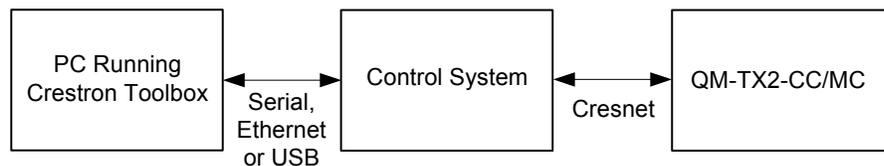
## Uploading and Upgrading

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

### Establishing Communication

Use Crestron Toolbox for communicating with the QM-TX2-CC/MC; refer to the Crestron Toolbox help file for details. There is a single method of communication: indirect communication.

#### *Indirect Communication*



- QM-TX2-CC/MC connects to control system via Cresnet.
- Establish communication between the PC and the control system as described in the latest version of the 2-Series Control Systems Reference Guide (Doc. 6256).
- Use the Address Book in Crestron Toolbox to create an entry for the QM-TX2-CC/MC using the expected communication protocol (Indirect). Select the Cresnet ID of the QM-TX2-CC/MC and the address book entry of the control system that is connected to the QM-TX2-CC/MC.
- Display the QM-TX2-CC/MC's "System Info" window (click the  icon); communications are confirmed when the device information is displayed.

### Programs and Firmware

Program or firmware files may be distributed from programmers to installers or from Crestron to dealers. Firmware upgrades are available from the Crestron website as new features are developed after product releases. One has the option to upload programs via the programming software or to upload and upgrade via the Crestron Toolbox. For details on uploading and upgrading, refer to the SIMPL Windows help file or the Crestron Toolbox help file.

#### **SIMPL Windows**

If a SIMPL Windows program is provided, it can be uploaded to the control system using SIMPL Windows or Crestron Toolbox.

## *Firmware*

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

Upgrade QM-TX2-CC/MC firmware via Crestron Toolbox.

- Establish communication with the QM-TX2-CC/MC and display the “System Info” window.
- Select **Functions | Firmware...** to upgrade the QM-TX2-CC/MC firmware.

## **Program Checks**

Using Cresnet connections, using Crestron Toolbox, display the network device tree (**Tools | Network Device Tree**) to show all network devices connected to the control system. Right-click on the QM-TX2-CC/MC to display actions that can be performed on the QM-TX2-CC/MC.

## **QM Tools**

In the Crestron Toolbox Address Book, select the QM-TX2-CC/MC. Then use the QM Tools to configure audio/video settings, including EDID. Refer to the help file for details.

## 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.

#### *QM-TX2-CC/MC 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.
	Device Net ID does not match Net ID in SIMPL Windows program.	Verify Net ID matches Net ID in SIMPL Windows program.
	Device Net ID is same as another device's Net ID.	Assign a different Net ID, to match the Net ID in SIMPL Windows program.
<b>PWR</b> LED does not illuminate.	Device is not receiving power.	Verify Cresnet is properly attached.
Source LEDs do not illuminate.	Sources are not transmitting signals.	Verify source operation.
Device is powered up and reporting to Cresnet but not switching signals.	Poor input connections, QM connections or not programmed in system.	Use QM Tools in Crestron Toolbox to bypass program and perform direct switching.
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, 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. Please use the Crestron Power Calculator to help calculate how much power is needed for the system ([www.crestron.com/calculators](http://www.crestron.com/calculators)).

When calculating the length of wire for a particular Cresnet run, the wire gauge and the Cresnet power usage of each network unit to be connected must be taken into consideration. Use Crestron Certified Wire only. If Cresnet units are to be daisy-chained on the run, the Cresnet power usage of each network unit to be daisy-chained must be added together to determine the Cresnet power usage of the entire chain. If the unit is home-run from a Crestron system power supply network port, the Cresnet power usage of that unit is the Cresnet power usage of the entire run. The wire gauge and the Cresnet power usage of the run should be used in the following equation to calculate the cable length value on the equation's left side.

### Cable Length Equation

$$L < \frac{40,000}{R \times P}$$

Where: L = Length of run (or chain) in feet  
 R = 6 Ohms (Crestron Certified Wire: 18 AWG (0.75 MM<sup>2</sup>))  
 or 1.6 Ohms (Cresnet HP: 12 AWG (4 MM<sup>2</sup>))  
 P = Cresnet power usage of entire run (or chain)

Make sure the cable length value is less than the value calculated on the right side of the equation. For example, a Cresnet run using 18 AWG Crestron Certified Wire and drawing 20 watts should not have a length of run more than 333 feet (101 meters). If Cresnet HP is used for the same run, its length could extend to 1250 feet (381 meters).

**NOTE:** All Crestron certified Cresnet 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 Y conductor and the Z conductor.

### Strip and Tin Wire

When daisy-chaining Cresnet units, strip the ends of the wires carefully to avoid nicking the conductors. Twist together the ends of the wires that share a pin on the network connector and tin the twisted connection. Apply solder only to the ends of the twisted wires. Avoid tinning too far up the wires or the end becomes brittle. Insert the tinned connection into the Cresnet connector and tighten the retaining screw. Repeat the procedure for the other three conductors.

### Add Hubs

Use of a Cresnet Hub/Repeater (CNXHUB) is advised whenever the number of Cresnet devices on a network exceeds 20 or when the combined total length of Cresnet cable exceeds 3000 feet (914 meters).

## Reference Documents

The latest version of all documents mentioned within the guide can be obtained from the Crestron website ([www.crestron.com/manuals](http://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
2-Series Control Systems Reference Guide
MediaManager Applications Guide

## Further Inquiries

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

You can also log onto the online help section of the Crestron website ([www.crestron.com/onlinehelp](http://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 QM-TX2-CC/MC, additional information may be made available as manual updates. These updates are solely electronic and serve as intermediary supplements prior to the release of a complete technical documentation revision.

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

## 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.

CRESTRON shall not be liable to honor the terms of this warranty if the product has been used in any application other than that for which it was intended or if it has been subjected to misuse, accidental damage, modification or improper installation procedures. Furthermore, this warranty does not cover any product that has had the serial number altered, defaced or removed.

This warranty shall be the sole and exclusive remedy to the original purchaser. In no event shall CRESTRON be liable for incidental or consequential damages of any kind (property or economic damages inclusive) arising from the sale or use of this equipment. CRESTRON is not liable for any claim made by a third party or made by the purchaser for a third party.

CRESTRON shall, at its option, repair or replace any product found defective, without charge for parts or labor. Repaired or replaced equipment and parts supplied under this warranty shall be covered only by the unexpired portion of the warranty.

Except as expressly set forth in this warranty, CRESTRON makes no other warranties, expressed or implied, nor authorizes any other party to offer any warranty, including any implied warranties of merchantability or fitness for a particular purpose. Any implied warranties that may be imposed by law are limited to the terms of this limited warranty. This warranty statement supersedes all previous warranties.

#### Trademark Information

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change without notice.