

Crestron **QM-RX**
QuickMedia™ Receiver

Operations Guide



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



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

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QuickMedia™ Receiver: QM-RX

Introduction

Features and Functions

The QM-RX is a QuickMedia™ (QM) receiver designed to provide cost-effective RGB and video signal routing and control as part of a complete MediaManager A/V presentation system. Using Crestron's exclusive QuickMedia transport, the QM-RX receives RGB and video signals over a single inexpensive CAT5E or CAT6 cable from any QuickMedia Wall Plate, FlipTop Box, QM-TX transmitter, QM Processor, or QM Distribution Center.

Mounted at the projector or plasma display location, the QM-RX breaks out composite video, S-video, and RGBHV or component signals to feed the respective inputs on the display device. All signal routing occurs automatically under the command of the control system based upon the input source type selected.

The QuickMedia transport supports the transmission of RGB signals with resolutions up to 1600 x 1200 pixels at 60 Hz. Software-controllable frequency, bandwidth, and skew compensation adjustments are provided to maximize image quality with up to 22 nanoseconds (ns) of delay skew.

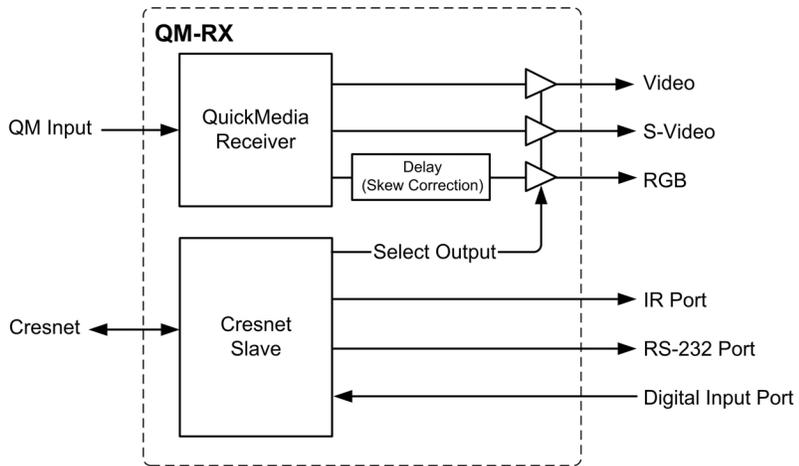
Functional Summary

- Programmable logic via SIMPL Windows, including SIMPL+®
- One bi-directional COM port with programmable serial drivers for controlling devices over RS-232.
- One IR port - compatible with Crestron® ST-SPL IR Splitter, for IR-control of up to five different devices, programmable via the hundreds of IR device drivers available in the Crestron databases.
- One digital input port for direct connection of power sensor, pressure sensor, door sensor, room occupancy sensor, etc.
- When used with Crestron RoomView™, provides remote power control and management of A/V devices, including: monitoring lamp life of projectors, device status to ensure proper equipment operations, room occupancy, equipment use log, and device and room security.
- Composite, S-video and RGBHV output ports.

The QM-RX includes one bidirectional RS-232 port and one IR/serial port for control of the display device. A digital input port is also included to enable direct connection of a room occupancy sensor, power sensor, or any contact closure device.

Wiring for the QM-RX is extremely simple requiring just one CAT5E or CAT6 cable and one Cresnet® control cable (available together as CresCAT-QM, sold separately). Complete MediaManager systems can be configured easily to suit a variety of applications using Crestron SystemBuilder™ software.

Block Diagram of the QM-RX



NOTE: The QM-RX is compatible with 2-Series control systems only.

QuickMedia Transport System

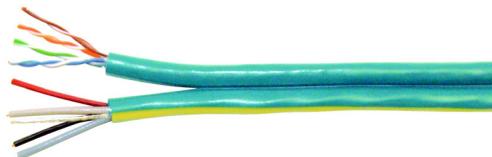
Using a new, proprietary signal routing solution, signals such as composite video, S-video, RGBHV, audios, and microphone, are all transported using a single cable solution called QuickMedia (QM).

The QM transport system port is capable of managing computer, video, and audio signals simultaneously through one CAT5E or CAT6 UTP (unshielded twisted pair) wire, simplifying installations.

Routing CAT5E or CAT6 UTP cable is less expensive and much simpler than routing multi-colored, multi-conductor coax cable. All Crestron products using the QM transport system are capable of sending and receiving QM signals via standard CAT5E or CAT6 cable. Installation of any QM device is as simple as installing one set of QM wires from output to input. Installations are flexible, affordable, and fast.

The Crestron QuickMedia cable “CRESCAT-QM” contains one CAT5E cable and one Cresnet® cable in siamese jackets.

CRESCAT-QM Cable



NOTE: Do not untwist the two wires in a single pair for more than 1/3-1/2" (0.84 – 1.27 cm) when making a connection. The twists are critical to canceling out interference between the wires.

The QuickMedia transport mechanism performs delay compensation on each video input to compensate for signal skew, and frequency/bandwidth compensation for cable length. Signal skew occurs when part of the signal is delayed with respect to other signal components. The amount of skew largely depends on the length and the design of the wire. Because CAT5 consists of twisted pairs that are twisted together in the cable, unequal wire lengths are created.

The maximum aggregate cable length from QM transmitter to QM receiver is limited by the loss of bandwidth over long distances and the amount of available skew compensation. A cable rated at 15 ns of skew per 100 meters (328 ft.) means that a cable will have no more than a 15 ns difference between the fastest and slowest RGB signals over 100 meters of cable.

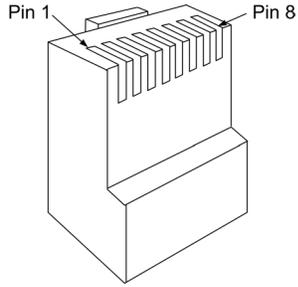
The QM-RX can compensate for a maximum of 22 ns (nanoseconds) of skew.

To determine the allowable maximum length of installed cable, the installer must first perform a calculation based on the skew rating of the cable.

Skew compensation is primarily relevant to RGB sources; however, any/all video or VGA 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 particular to either Crestron and/or QuickMedia systems. To ensure sufficient bandwidth to support signal resolutions up to 1600 x 1200, the maximum aggregate cable length should not exceed 328 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. Refer to page 12 for additional QuickMedia network wiring information.

The pin assignment is based on the EIA/TIA 568B RJ-45 Jack standard. The following table illustrates how composite, S-video, and RGB video signals are transmitted over the CAT5E wire.

RJ-45 QuickMedia Connector Pin and Pair Assignment

	RJ-45 PIN NUMBER	WIRE COLORS (EIA 568B)	QM ASSIGNMENT RGB AND AUDIO	QM ASSIGNMENT COMPOSITE, S-VIDEO AND AUDIO
	1	WHITE/ORANGE	- RGB RED	- CHROMINANCE
	2	ORANGE	+ RGB RED	+ CHROMINANCE
	3	WHITE/GREEN	- RGB GREEN	- LUMINANCE
	4	BLUE	+ AUDIO	+ AUDIO
	5	WHITE/BLUE	- AUDIO	- AUDIO
	6	GREEN	+ RGB GREEN	+ LUMINANCE
	7	WHITE/BROWN	- RGB BLUE	- COMPOSITE
	8	BROWN	+ RGB BLUE	+ COMPOSITE

Part Number Compatibility

Due to production changes, some earlier QM-WMC devices are not compatible with QM-RX devices.

To ensure compatibility between a QM-RX and QM-WMC, the QM-WMC Part Number must be 6002423 or above.

NOTE: Part numbers can be found on the silver label affixed to each device.

If you have a part that is not compatible with your existing equipment, contact a Crestron customer service representative for replacement information.

Specifications

Specifications for the QM-RX are given in the following table.

QM-RX Specifications

SPECIFICATION	DETAILS
Cresnet Power Usage	8 W (0.33 A @ 24 VDC)
Default Cresnet ID	05
Firmware Version	2.17 or later
2-Series Control System Update Files ^{1,2}	Version 3.125.CUZ or later
Ports/Connectors	
QM	One QuickMedia 8-wire RJ-45 input port Connects via CAT5E or CAT6 to a QM output port of another QuickMedia device (Refer to the note following the specifications table)
Cresnet	One 4-pin 3.5 mm detachable terminal block. Connects to Cresnet control network
Computer Video	One female DB15HD connector for RGB (VGA)/Component video output Supported formats: RGBHV, RGBS, RGsB, YP _b P _r . EDTV/HDTV: 480p, 720p, 1080i Nominal Output Voltage: 0.7 V _{p-p} (RGB, P _B P _R), 1 V _{p-p} (G _S , Y) H and V Sync: 5.0 V _{p-p} nominal Output Impedance: 75 ohms (R/G/B), 100 ohms (H/V)
S-Video	One mini-DIN connector for Y/C S-video output. Nominal Output Voltage: 1.0 V _{p-p} (luma), 0.7 V _{p-p} (chroma). Output Impedance: 75 ohms
Composite	One BNC connector for composite video output Nominal Output Voltage: 1.0 V _{p-p} Output Impedance: 75 ohms
COM	One DB9 bidirectional male serial port (RS-232) baud rate up to 9600. Hardware and software handshaking support
Infrared – Serial Input	One 2-pin 3.5 mm detachable terminal block. IR output up to 1.2 MHz. 1-way serial TTL/RS-232 (0-5 V) up to 115k baud Expandable via ST-SPL to control multiple disparate devices
INPUT	One 2-pin 3.5mm detachable terminal block digital input port (referenced to GND). Rated for 0-24 VDC. Input Impedance: 20 K ohms; Logic Threshold: 2.5 VDC nominal
RGB	
Gain	0 dB (75 ohm termination)
Maximum Resolution and Refresh Rate	1600 x 1200 @ 60 Hz (at unity gain) With cable length of 100 meters and maximum compensation
Maximum CAT5E/6 Cable Delay Skew	22 ns per 100 meters
Bandwidth Compensation (Peak)	Digital control, 10-bit D/A
Low Frequency Compensation (Boost)	Digital control, 10-bit D/A
Propagation Delay Compensation (Skew)	Digitally controlled delay line, 4-bit, 0-22 ns (independently for R, G, and B)

Continued on the following page

QM-RX Specifications (continued)

SPECIFICATION	DETAILS
Video	
Gain	0 dB (75 ohm termination)
Crosstalk	-60 dB
Environmental Temperature	41° to 104°F (5° to 40°C)
Environmental Humidity	10% to 90% RH (non-condensing)
Dimensions & Weight	Height: 1.71 in (4.34 cm) Width: 6.81 in (17.30 cm) Depth: 5.83 in (14.81 cm) Weight: 1.10 lb (0.50 kg)
Available Accessories	MK-QM-RMCRX Pole Mounting Kit CNSP-XX Custom Serial Interface Cable IRP2 IR Probe ST-SPL Infrared (IR) Splitter (requires CNSP-112) ST-MB "Master Blaster" Infrared (IR) Sprayer (requires CNSP-112)

1. The latest software versions can be obtained from the Downloads | Software Updates section of the Crestron website. Refer to the NOTE following these footnotes.
2. 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).

NOTE: The CAT5E or CAT6 cable must have a delay skew of less than 22 ns per 100 meters for use with the QuickMedia transport. Purchase CresCAT-QM for the most cost-effective cabling solution. For plenum applications, use CresCAT-QM-P. Maximum aggregate cable length is approximately 300 feet from QM transmitter to QM receiver. A maximum of two QM distribution centers may be inserted in-line (refer to page 12).

Physical Description

The QM-RX is housed in a black enclosure with labels on the front and rear panels. There are three LEDs on the front of the unit for indicating the unit's current status. All connections, except for the Cresnet and QuickMedia connections, are made on the back of the unit. There are four rubber feet on the base of the unit for stability and to prevent slippage. Refer to the following physical views.

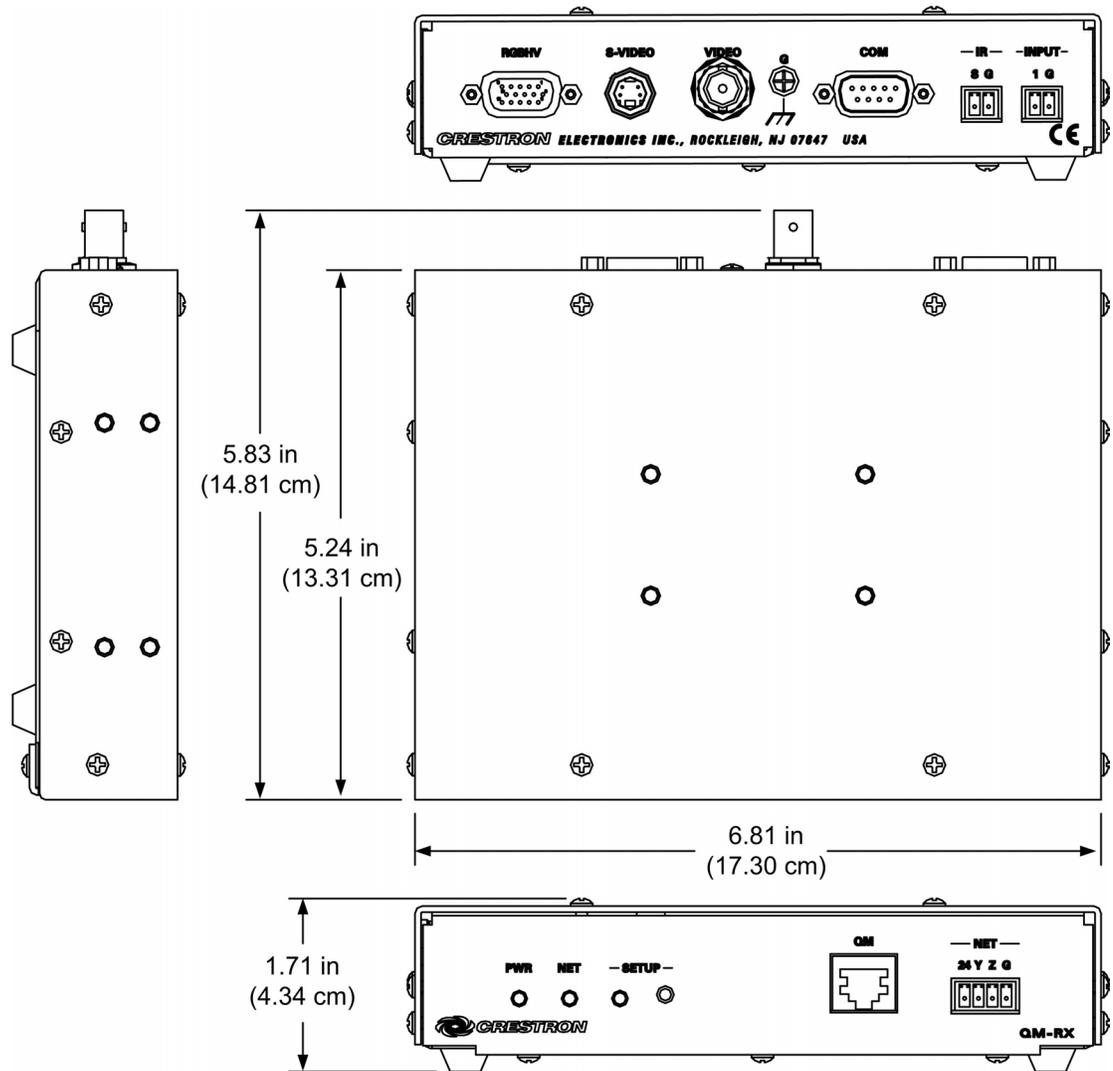
Front View



Rear View



QM-RX Physical Dimensions



Indicators

The QM-RX front panel indicators are described as follows.

PWR (Power)

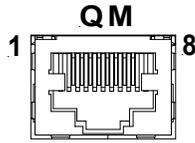
This green LED illuminates when the unit is connected to Cresnet and receives 24 VDC.

NET

This yellow LED illuminates when the QM-RX communicates with any device on the network.

Front Panel Ports

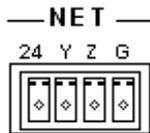
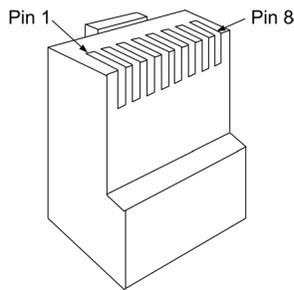
The QM-RX front panel ports are illustrated and described as follows.



QM (Input)

The 8-pin RJ-45 QuickMedia transport port accepts CAT5E or CAT6 video and control signals. The QM input port conforms to the 568B wiring standard. Refer to page 2 and page 12 for additional QuickMedia wiring information.

NOTE: To determine the location of pin 1 on an RJ-45 male connector, hold the connector with the cable down and the clip facing away from you. Pin 1 is on the far left.



NET

The four-pin 5 mm detachable terminal block NET connector is used for connection to Cresnet and expansion to other peripherals.

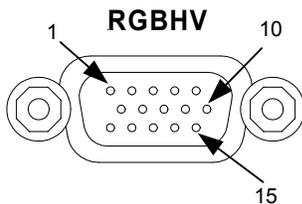
Pins 24 and G provide 24 VDC and ground.

Pins Y and Z provide communications (data).

Power to the unit (8 W) is supplied through this connector.

Rear Panel Ports

The QM-RX rear panel ports are illustrated and described as follows.



RGBHV

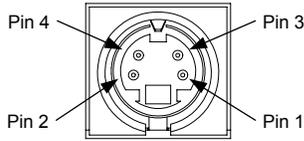
One DB15HD female connector is provided for RGB video output.

DB15HD Connector Pinout

PIN	DESCRIPTION	PIN	DESCRIPTION
1	Red Signal	9	N/C
2	Green Signal	10	Sync Ground
3	Blue Signal	11	N.C.
4	Reserved	12	Pullup
5	Ground	13	Horizontal Sync
6	Red Ground	14	Vertical Sync
7	Green Ground	15	Pullup
8	Blue Ground		

RGBHV is a computer signal that uses the standard High Density (HD-15) 15-pin connector. It is comprised of three analog video signals: red, green, blue and separate horizontal and vertical syncs. Most computer monitors use RGB (usually called VGA, SVGA, XVGA, etc.).

S-VIDEO



S-VIDEO

One DIN type connector for S-video output.

S-Video Connector Pinout

PIN	DESCRIPTION
1	Ground
2	Ground
3	Luminance
4	Chrominance

S-video contains two separate components, luminance and chrominance (also known as Y and C signals respectively). The luminance signal contains brightness, intensity, and signal timing information. This signal contains all picture information except for color. The chrominance signal contains only the color information. You can see the complete black and white image, without the chrominance, by only feeding the luminance signal into a monitor.

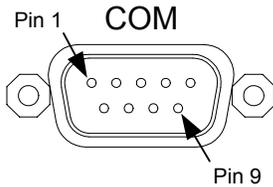
VIDEO



VIDEO (Composite)

One BNC type connector for composite video output.

Composite video is a type of video signal in which all information – the red, green, and blue (horizontal and vertical sync) signals are mixed together.



COM

This DB9 (male) software programmable, bidirectional serial port is available for RS-232 communication, with hardware and software handshaking and modem control. Speeds are rated up to 9600 bps.

A null modem cable is required to connect to a computer. Refer to the following table for pinout designations.

Standard COM DB9 Pinout

PIN	DIRECTION	DESCRIPTION
2	To QM-RX	(RXD) Receive Data
3	From QM-RX	(TXD) Transmit Data
4	From QM-RX	(DTR) Data Terminal Ready
5	Common	(SG) Signal Ground
6	To QM-RX	(DSR) Data Set Ready
7	From QM-RX	(RTS) Request To Send
8	To QM-RX	(CTS) Clear To Send

— IR —

S G

***IR***

A 2-position terminal block connector is a mini-implementation of a single PRO2 IR port. The output is labeled S (signal) and G (ground). Infrared output is rated up to 1.2 MHz, at data rates up to 115k baud. Serial protocols include one-way RS-232.

-INPUT-

1 G

***INPUT***

This 2-pin terminal block connector provides one software programmable digital input. The input is a Schmidt trigger type (nominal 2.5 V threshold) with 24 V input tolerance.

The digital input is rated 0 – 24 VDC, 20 K ohms input impedance.

SETUP LED and Pushbutton

The QM-RX is TouchSettable ID (TSID) ready. The **SETUP** pushbutton and its associated LED are located on the front of the unit and are used for setup of the QM-RX network ID during the initial configuration of a Cresnet system or when the device is being added or replaced.

Industry Compliance

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



NOTE: This device complies with part 15 of the FCC rules. Operation is subject to the following two 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.

Setup**Network Wiring**

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

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 (<http://www.crestron.com/calculators>).

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

NOTE: When installing network wiring, refer to the latest revision of the wiring diagram(s) appropriate for your specific system configuration, available from the Crestron website.

When calculating the wire gauge for a particular Cresnet run, the length of the run and the Cresnet power usage of each network unit to be connected must be taken into consideration. If Cresnet units are to be daisy-chained on the run, the Cresnet power usage of each unit to be daisy-chained must be added together to determine the Cresnet power usage of the entire chain. If the unit is a 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 length of the run in feet and the Cresnet power usage of the run should be used in the resistance equation below to calculate the value on the right side of the equation.

Resistance Equation

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

Where: R = Resistance (refer to the following table).
 L = Length of run (or chain) in feet.
 P = Cresnet power usage of entire run (or chain).

The required wire gauge should be chosen such that the resistance value is less than the value calculated in the resistance equation. Refer to the following table.

Wire Gauge Values

RESISTANCE	WIRE GAUGE
4	16
6	18
10	20
15	22
13	Doubled CAT5
8.7	Tripled CAT5

NOTE: All 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.

NOTE: 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.

NOTE: For additional information on video connections over CAT5, refer to the latest version of the Crestron CAT5 Wiring Reference Guide (Doc. 6137) which is available from Crestron website (<http://www.crestron.com/manuals>).

NOTE: For larger networks (i.e., greater than 28 network devices), it may be necessary to add a Cresnet Hub/Repeater (CNXHUB) to maintain signal quality throughout the network. Also, for networks with lengthy cable runs or varying types of network devices, it may be desirable to add a hub/repeater after only 20 network devices.

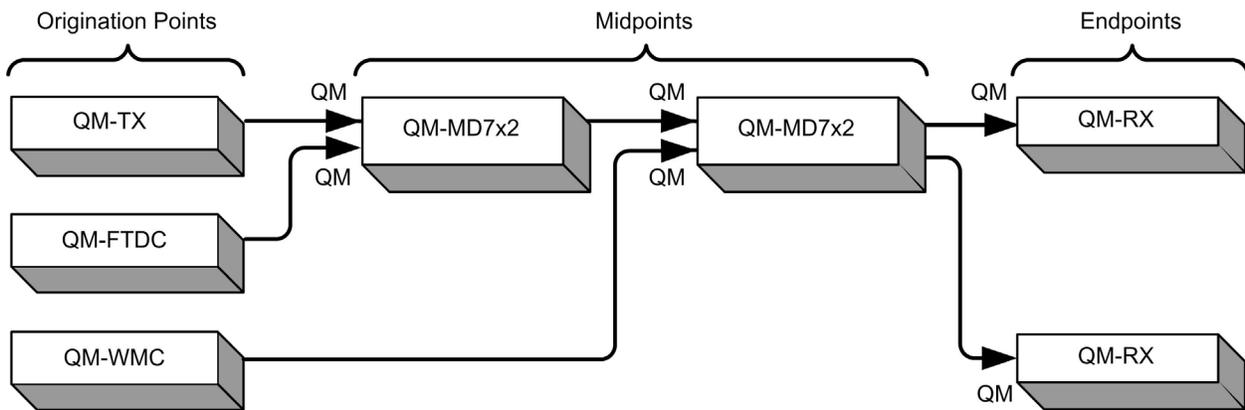
QM Network Wiring

For the QuickMedia transport, use CRESCAT-QM.

The aggregate cable length from transmitter to receiver cannot have a delay skew of more than 22 ns for a given signal path originating at a QM transmitter and terminating at a QM receiver. The aggregate cable length must not exceed 328 feet.

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 switches). Refer to the following diagram when configuring a QM network.

QM Network Topology



Installer's Toolbox

The Installer's Toolbox (replacement for Crestron Viewport, you may continue use Viewport if desired) is a broad-based software package that accomplishes multiple system tasks, primarily using an RS-232 or TCP/IP connection between a PC and one or more Crestron control systems.

You can use the Installer's Toolbox to:

- Observe system processes.
- Upload operating systems and firmware.
- Upload programs and touchpanel projects.
- Set or change device Network IDs.
- Change serial numbers.
- Run scripts to automate tasks.
- Perform system diagnostics, and much more.

The Installer's Toolbox allows you to perform these functions using simple graphical views and click and drag methods.

Identity Code

Every equipment and user interface within the network requires a unique identity code (Net ID). These codes are two-digit hexadecimal numbers from 03 to FE. The Net ID of each unit must match an ID code specified in the SIMPL Windows program. Refer to “Setting the Net ID in Device Settings” on page 26 for details of the SIMPL Windows procedure.

The Net ID of the QM-RX has been factory set to **05**. The Net IDs of multiple QM-RXs in the same system must be unique. Net IDs are changed from a personal computer (PC) via the Crestron Installer’s Toolbox.

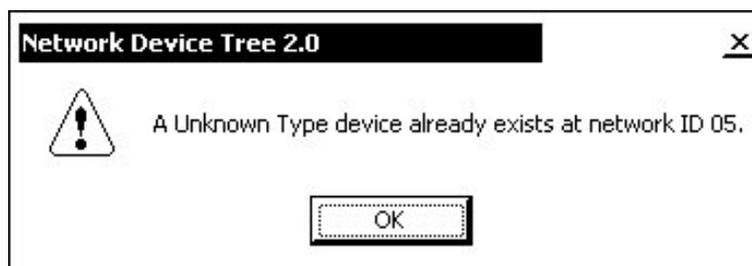
NOTE: For detailed information on establishing communication between the PC, control system, and the QM-RX, refer to “Communication Settings” on page 33. If communication cannot be established, refer to the “Troubleshooting Communications” section in the latest version of the 2-Series Control System Reference Guide (Doc. 6256), which is available from the Crestron website.

The Installer's Toolbox provides several methods to easily set or change device Net IDs for any device on the network. The following method permits you to change the Net ID of any device in the network through the “Network Device Tree” window.

NOTE: This method prevents you from setting duplicate IDs.

This method permits you to manually set the Net ID for any device in the network, can be used to set any known Net IDs that may require changing, and may also be used for non-TSID equipment. This method will not permit you to choose an ID already in use by another device. A warning message will appear if you attempt to use an ID that is already in use.

Duplicate Net ID Warning Message

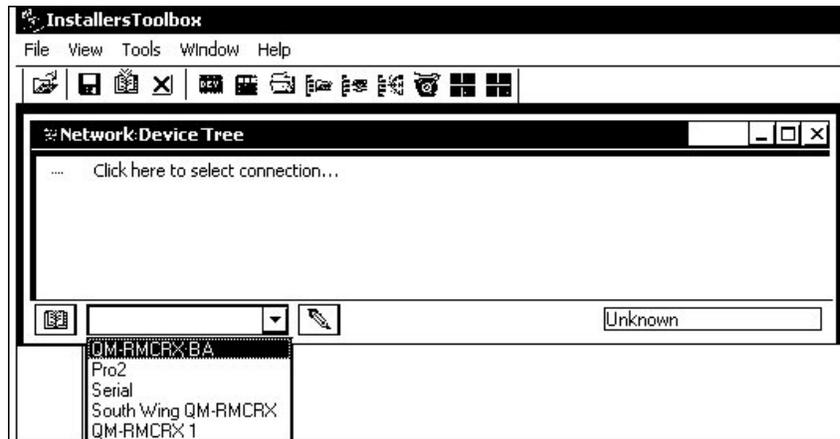


This method does not change the Net ID as assigned in SIMPL windows.

NOTE: You may also use SystemBuilder to perform Network ID setup. Refer to page 24 for Net ID setup details using SystemBuilder.

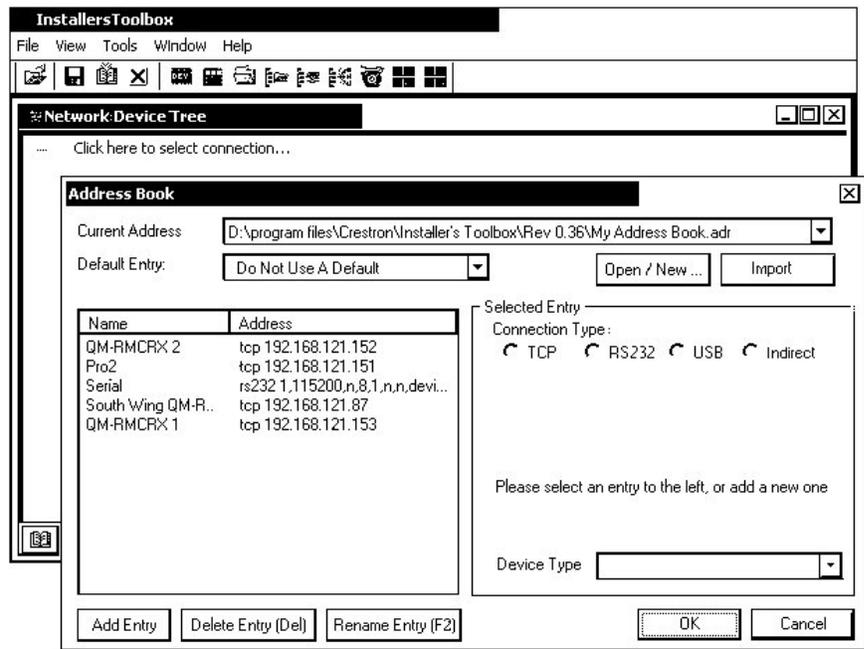
1. Ensure that all network devices are connected to the control system.
2. Open Installer’s Toolbox and select the Network Device Tree  icon, or select **Tools | Network Device Tree**.
3. Select the connection using the pull down list or click “Click here to select connection...” to open the address book.

Network Device Tree – Pull Down Connection List



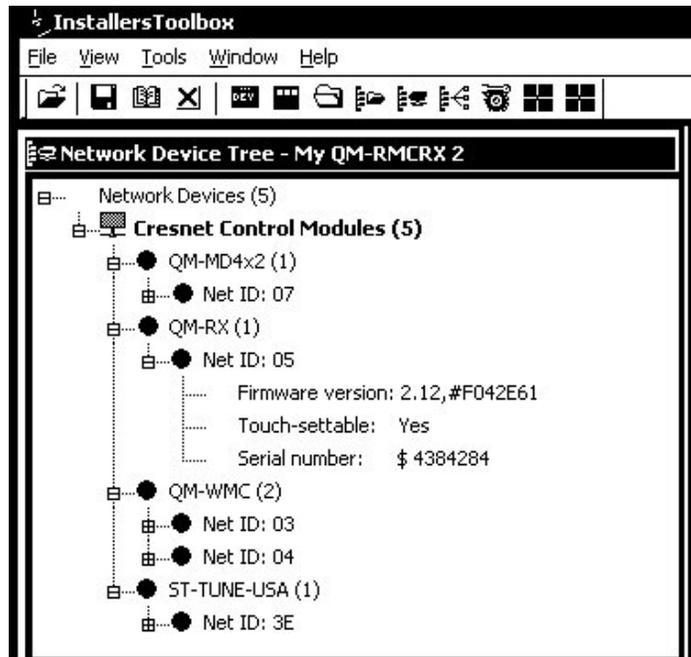
4. Select the connection (TCP or serial) and click **OK**.

Network Device Tree – Address Book



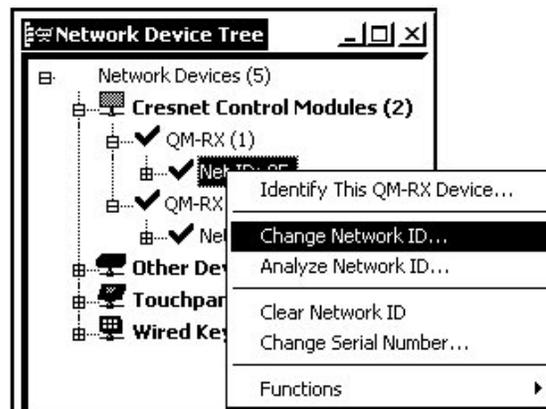
5. The Network Device Tree displays all devices on the current network.

Installer's Toolbox – Network Device Tree



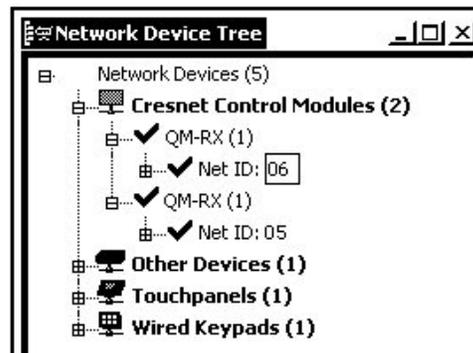
- 6. Right-click on the device Net ID, and when the sub-menu appears, select **Change Network ID** from the sub-menu.

Network Device Tree – Sub-Menu



- 7. Enter a new Net ID and press **Enter**.

Enter New Net ID

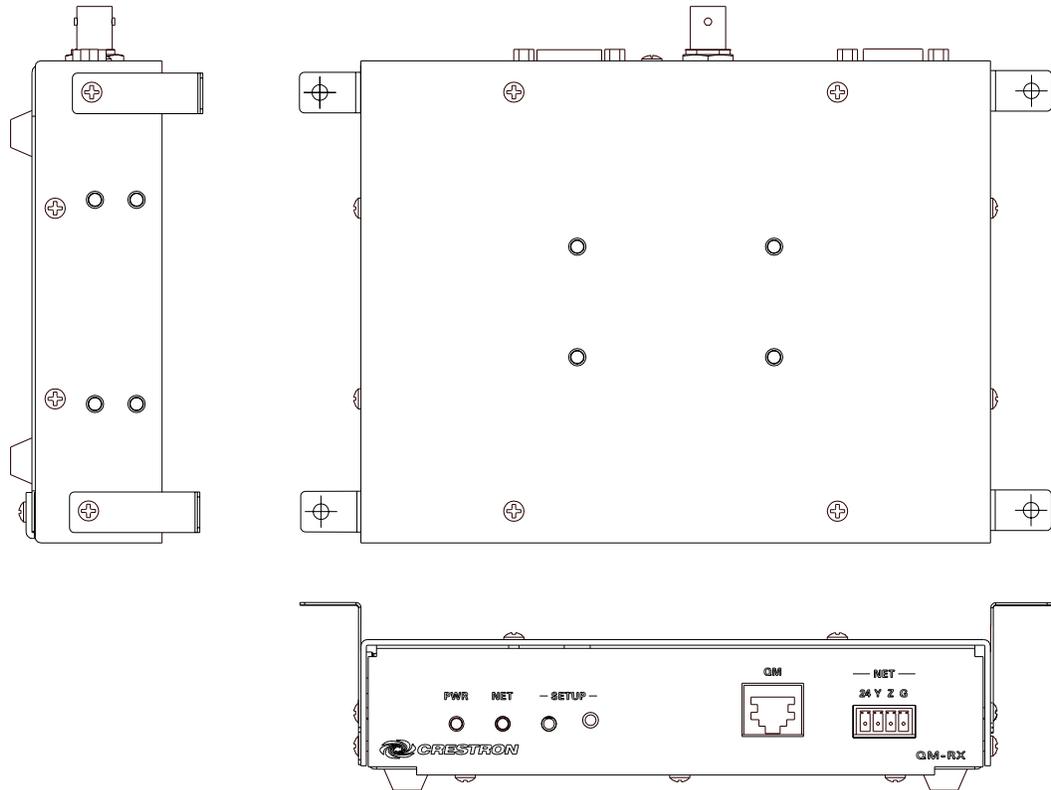


Repeat this procedure for each additional network device requiring a Net ID change.

Mounting

The QM-RX can be mounted using the included four mounting brackets. Each bracket measures 1.6 in long, 0.5 in wide and 0.75 in high. Attach the included four brackets using the existing cover screws located on the sides of the QM-RX as shown in the following diagram.

Mounting Positions of the Four Included Mounting Brackets



NOTE: The MK-QM-RMCRX mounting kit is available for mounting the QM-RX to a pipe. Details can be found in the latest version of the MK-QM-RMCRX Installation Guide (Doc. 6247), available from the Crestron website.

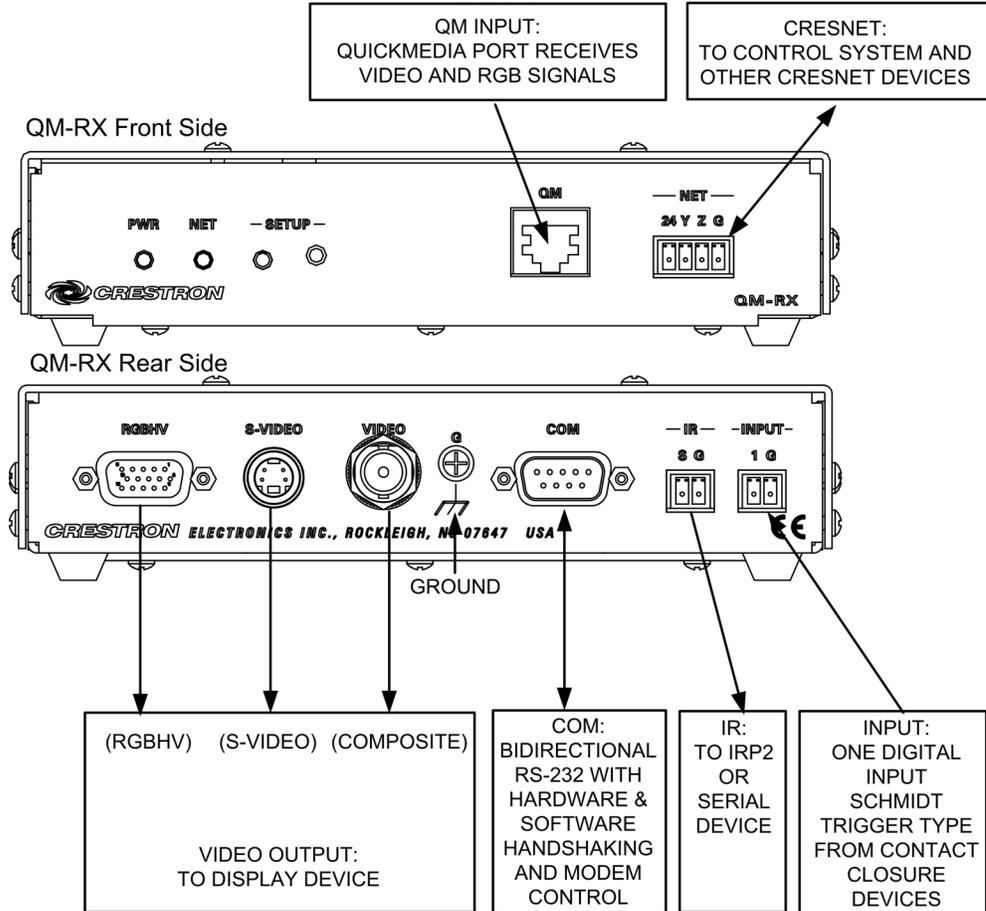
Hardware Hookup

Refer to the following hookup diagram and, aside from attaching power last, complete the connections in any order.

NOTE: To prevent overheating, do not operate this product in an area that exceeds the environmental temperature range listed in the specifications table. Consideration must be given if installed in a closed or multi-unit rack assembly since the operating ambient temperature of the rack environment may be greater than the room ambient. Contact with thermal insulating materials should be avoided on all sides of the unit.

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.

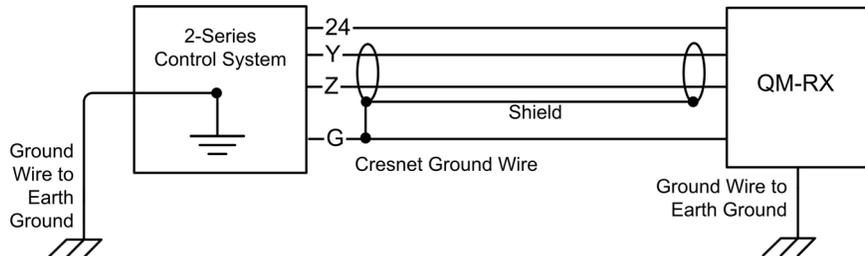
QM-RX Hookup



Ground Wire Connections

Proper grounding is required. Connect the ground from the QM-RX to earth ground. Connect the Cresnet shield lead at the control processor to the ground lead. The control processor chassis must also be connected to an earth ground (building steel). Refer to the following grounding diagram.

Ground Wire Connections



NOTE: Do not connect the shield to earth ground at the QM-RX

Configuration Software

Have a question or comment about Crestron software?

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

Configuration is easy thanks to Crestron's Windows-based programming software. Crestron SystemBuilder software creates a complete project, with no special programming required. SystemBuilder completes all necessary programming for a base system including all touchpanel screens and the control system program. The program output of SystemBuilder is a SIMPL Windows program with much of the functionality encapsulated in macros and templates. Once SystemBuilder creates the project, the system interfaces and program logic can be customized in SystemBuilder or can be easily modified with Crestron development tools, i.e., SIMPL Windows and Crestron VisionTools Pro-e (VT Pro-e) software packages.

SystemBuilder comes with templates for all supported interfaces. If a user wishes to create a touchpanel project using templates with a different look-and-feel, this can be accomplished by making a custom template. This custom template can then be used by SystemBuilder to create the final project files to be loaded into the panels. Alternatively, VT Pro-e can be used to tweak projects created with the SystemBuilder or develop original touchpanel screen designs.

Earliest Version Software Requirements for the PC

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

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

The following are the earliest useable software version requirements for the PC:

- SIMPL Windows version 2.06 or later, Library 322 and SIMPL+ Cross Compiler version 1.1.
- Crestron Database version 16.4.0 or later. Required by SIMPL Windows.
- Installer's Toolbox version 1.0 or later.
- (Optional but highly recommended) SystemBuilder version 2.0. SystemBuilder 2.0 will require later versions of the following software programs: SIMPL Windows, Library, VT Pro-e, Crestron database, and Crestron Engraver.

The easiest method of programming, but does not offer as much flexibility as SIMPL Windows.

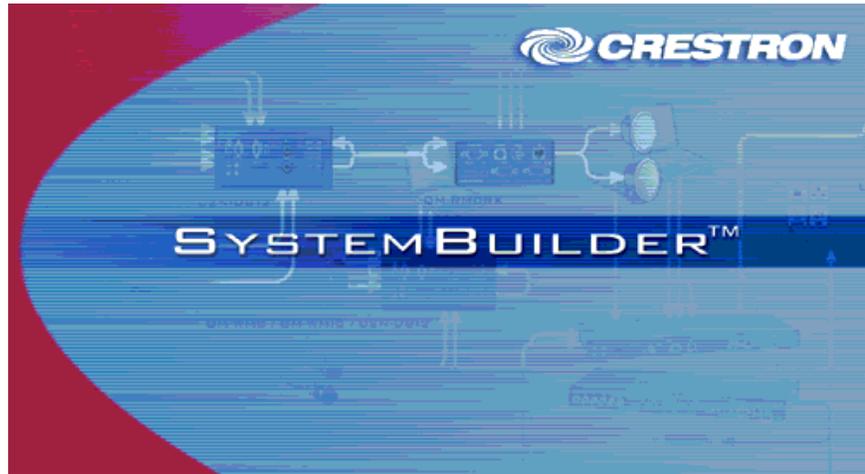
Programming with Crestron SystemBuilder™

Crestron SystemBuilder offers automatic programming for such residential and commercial applications as audio distribution, home theater, video conferencing, and lighting. The interface of this tool guides you through a few basic steps for designating rooms and specifying the control system, touchpanels, devices, and functionality. Crestron System Builder then programs the system, including all touchpanel projects and control system logic.

Crestron SystemBuilder is fully integrated with Crestron's suite of software development tools, including SIMPL Windows, VT Pro-e, Crestron Database, User IR Database, and User Modules Directory. Crestron System Builder accesses these tools behind the scenes, enabling you to easily create robust systems.

NOTE: Modifications to the program that are made outside of SystemBuilder (for example, in VT Pro-e or SIMPL Windows) are not preserved when you reenter SystemBuilder.

SystemBuilder



After entering the appropriate information in each step, SystemBuilder creates the control system logic and touchpanel pages, ready to upload to the controller.

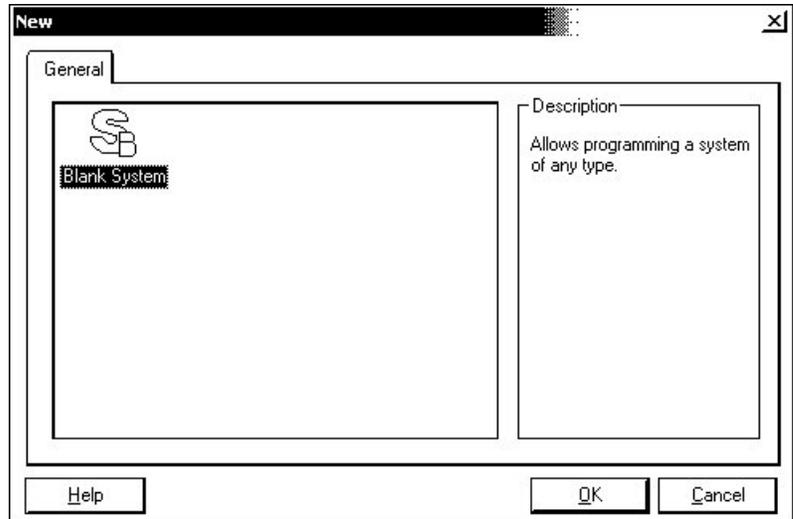
NOTE: Crestron SystemBuilder version 2.0 or higher is required.

The following information is a general procedure for setting up a QuickMedia system using SystemBuilder. Refer to the SystemBuilder help file for more detailed instructions.

Creating a QuickMedia System in SystemBuilder

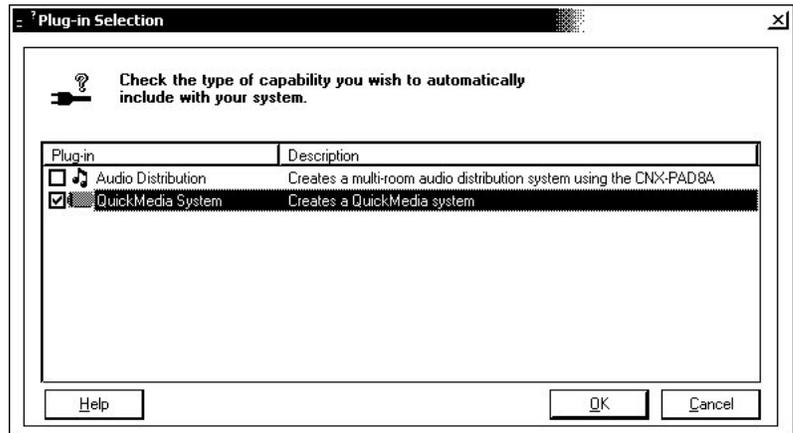
1. Open SystemBuilder and select **File | New**. Select a **Blank System**.

SystemBuilder – New Blank System



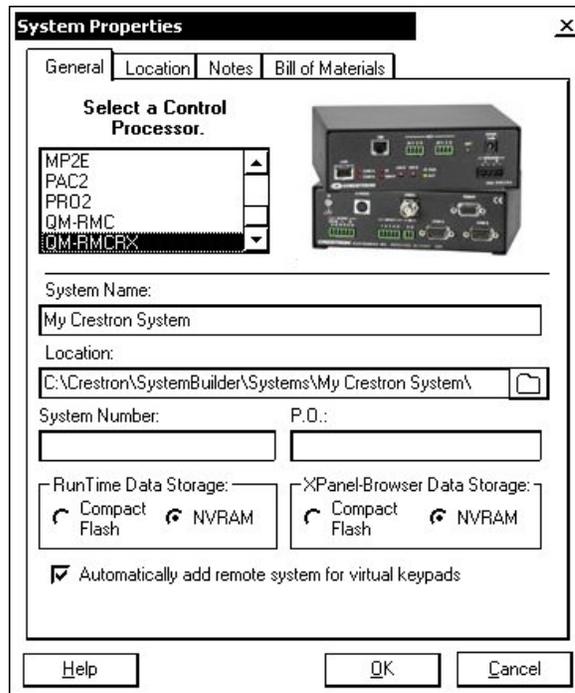
2. Select the plug-in for a QuickMedia system.

SystemBuilder – Plug-in Selection



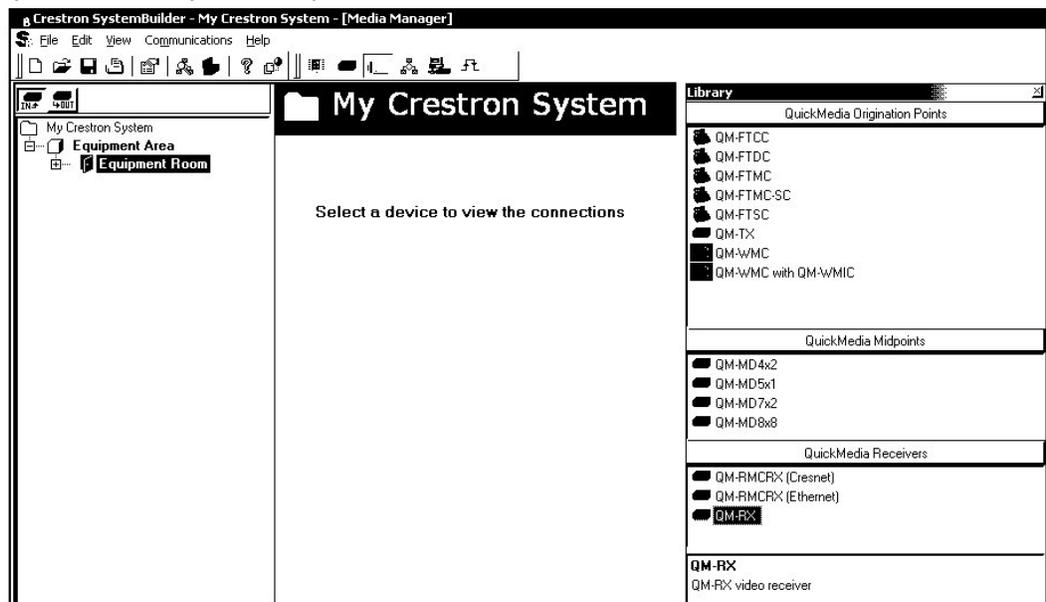
3. Select the control processor.

SystemBuilder – Select a Control Processor



4. Specify the audio configuration.
5. Add RoomView™ if desired.
6. Click the **Assign QuickMedia Devices and Routing** button  and drag the QM-RX from the library on the right side, to the QM system on the left side.

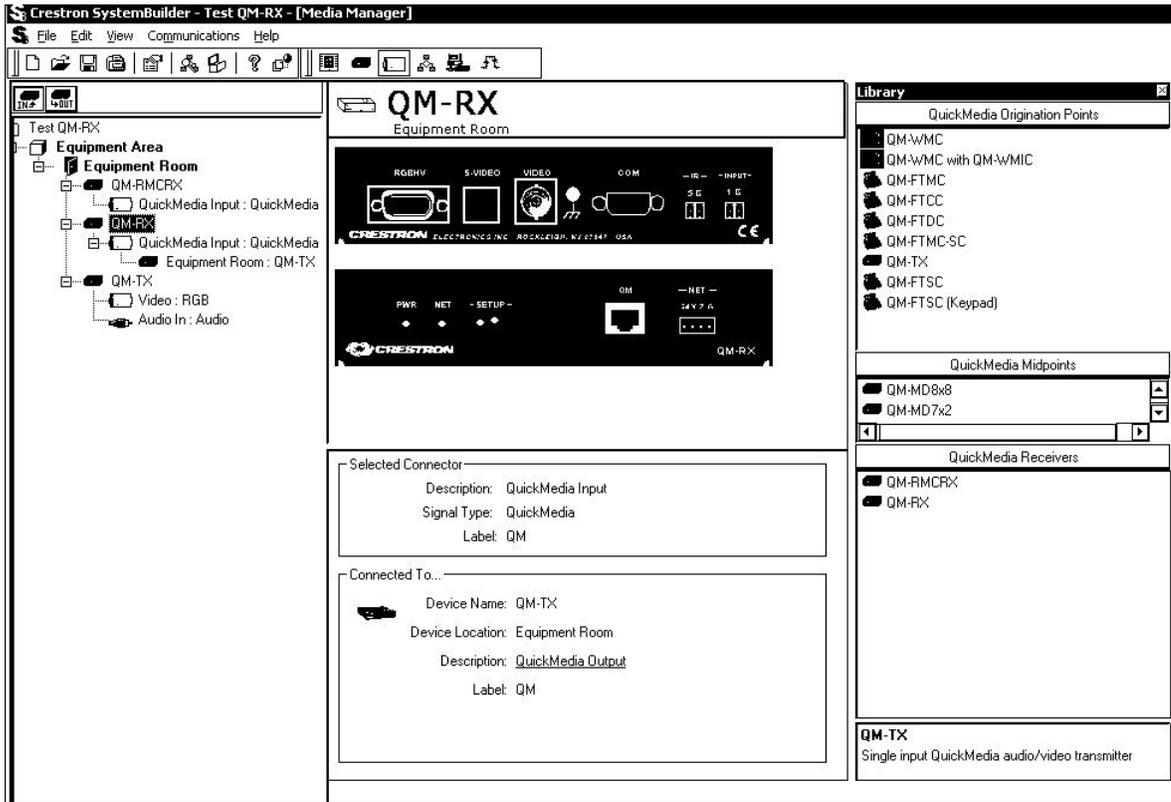
SystemBuilder – My Crestron System



7. Setup QM network cable routing.
8. Build the program.
9. Upload the program to the control processor.

10. Use the Realtime view to perform the video adjustments.

SystemBuilder – System View

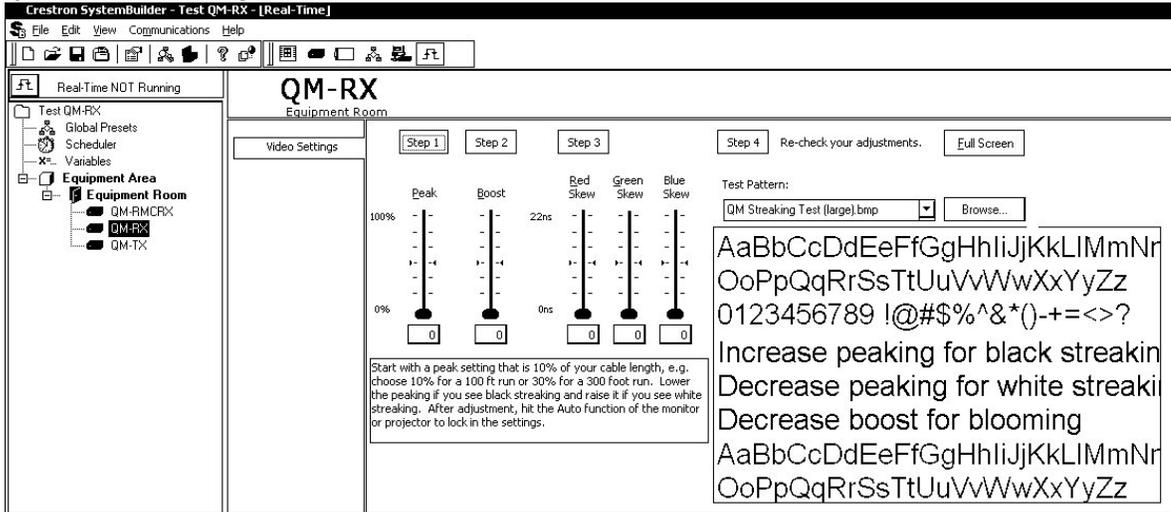


Video Adjustments

NOTE: The use of SIMPL Windows to setup video is not recommended.

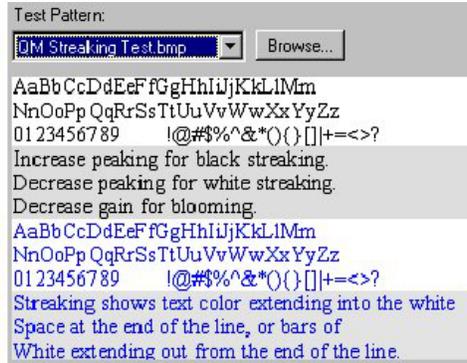
SystemBuilder software is also used to adjust the video peaking, boost, and skew of a QM system.

SystemBuilder Video Adjustments



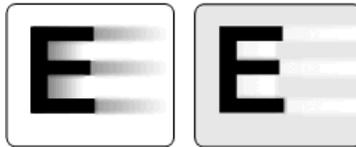
The first bitmap (for Steps 1 and 2) consists of lines of black text on gray and white backgrounds, and lines of blue text on gray and white backgrounds. You may also browse for your own bitmap test image.

Text Test Pattern



Step 1 – If the text is blurred and the text color persists (smears) into the blank space after the text, this is "black streaking" and you need to increase the peaking value. If you see white bands persisting after the text or you see small white areas after the text, you have "white streaking" and you need to decrease the peaking value.

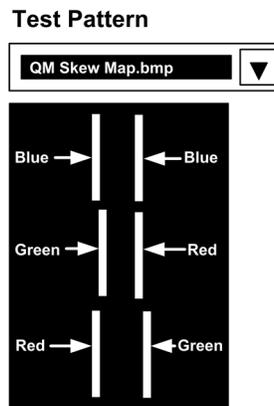
Black and White Streaking



Step 2 – If you see "blooming" or pixel areas that appear larger than normal, you need to decrease the boost.

Step 3 – The QM skew bitmap consists of two sets of three vertical lines of red, green and blue positioned directly over one another. The amount of skew is determined by observing which line is shifted farthest to the right. The line farthest to the right has the most skew delay. Adjust the other two lines by increasing their skew so that they all line up. In the following example, increase red and blue to match green.

Skew Test Pattern



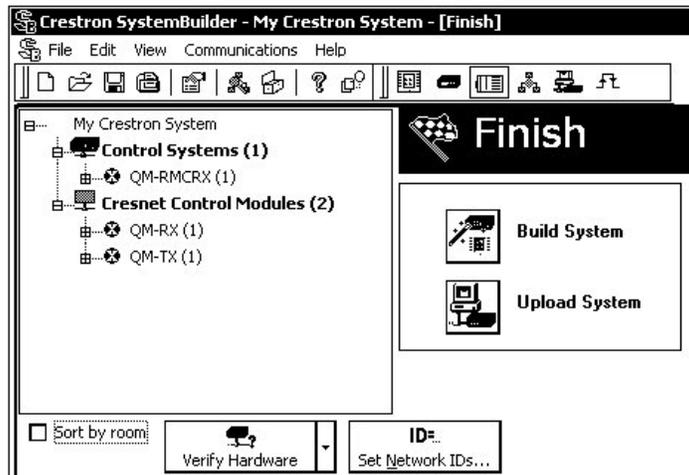
For additional details, download SystemBuilder from the Crestron website and examine the extensive help file.

Setting Net IDs in SystemBuilder

SystemBuilder provides a convenient method of selecting and assigning Net IDs to devices.

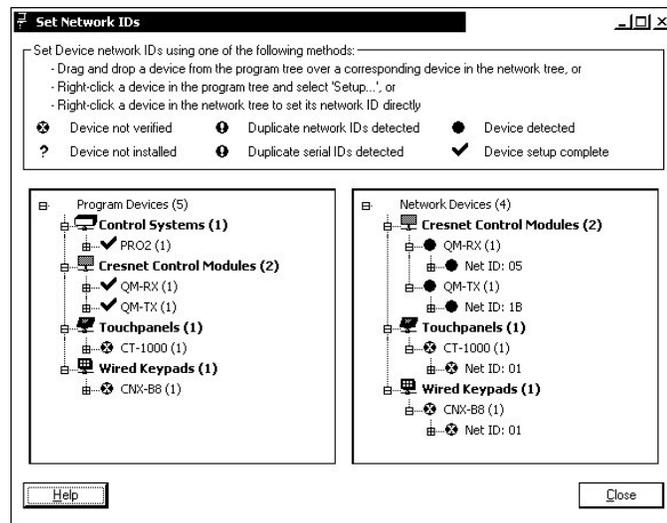
1. Ensure that all network devices are connected to the control system.
2. After completing your SystemBuilder program, click the **Build and Upload** button .

SystemBuilder – Finish Window



3. On the *Finish* window, click the **Set Network IDs...** button to assign the network IDs. SystemBuilder provides three methods for assigning Net IDs.
 - Drag and drop a device from the program tree on the left onto the device in the network tree on the right.
 - Right-click a device in the program tree on the left and select **Setup** from the sub-menu.
 - Right-click on a device in the network tree on the right and set the Net ID directly.

SystemBuilder – Set Network ID Window



Configuring with SIMPL Windows

NOTE: The following are acceptable file extensions for programs that include a QM-RX, developed for specific control system types:

- .smw *projectname.smw* (source file)
- .spz *projectname.spz* (compiled file for 2-Series)
- .usp *projectname.usp* (source code module for SIMPL+)
- .ir *projectname.ir* (user IR)
- .umc *projectname.umc* (user macro)
- .ush *projectname.ush* (completed SIMPL+)

SIMPL Windows is the Crestron graphical, Windows®-based development tool for programming control systems. The SIMPL Windows interface provides two workspaces: the Configuration Manager, for configuring the control system, touchpanels, and controlled network devices; and Program Manager, for designing the logic and functionality of the control system.

In addition, you can use the powerful Installer’s Toolbox utility to accomplish multiple system tasks, such as uploading the program to the control system and performing diagnostic functions.

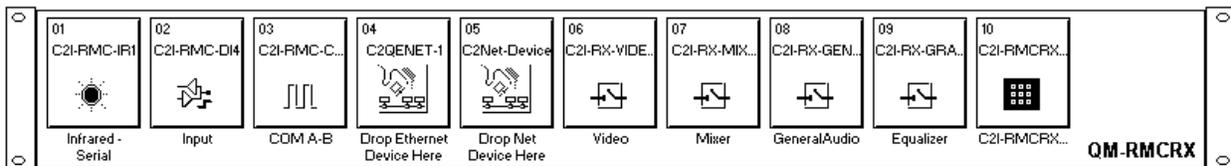
NOTE: The information in this section assumes that the reader has knowledge of SIMPL Windows. If not, refer to the extensive help information provided with the software.

NOTE: The QM-RMCRX control system is used in the following descriptions.

This section describes a sample SIMPL Windows program that includes a QM-RX.

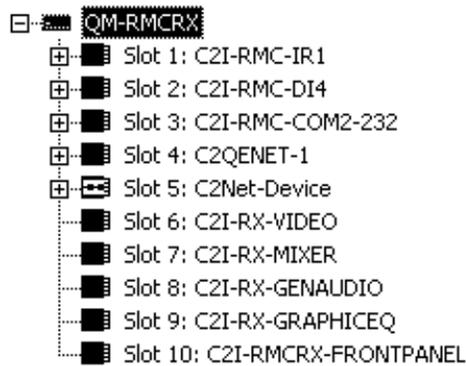
Configuration Manager is where programmers “build” a Crestron control system by selecting hardware from the *Device Library*. In Configuration manager, drag the QM-RMCRX from the Control Systems folder of the *Device Library* and drop it in the upper pane of the *System Views*. The QM-RMCRX with its associated communication ports is displayed in the *System Views* upper pane.

QM-RMCRX System View



The *System Views* lower pane displays the QM-RMCRX system tree (refer to the following graphic). This tree can be expanded to display and configure the communication ports.

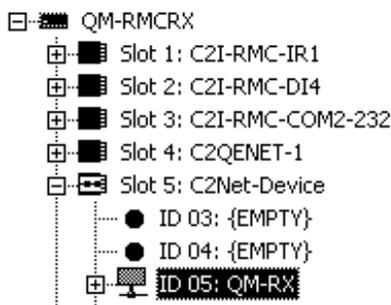
Expanded QM-RMCRX System Tree



C2Net-Device Slot in Configuration Manager

To incorporate a QM-RX into the system, drag the QM-RX from the Cresnet Control Modules | QM Series folder of the *Device Library* and drop it in *System Views*. The QM-RMCRX system tree displays the QM-RX in Slot 5, with a default Net ID of 05 as shown in the following illustration.

QM-RX in Slot 5 of the QM-RMCRX

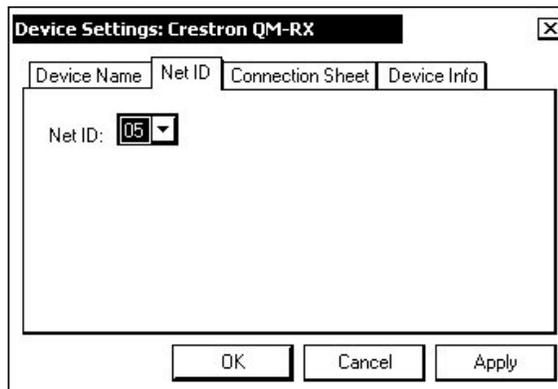


NOTE: The first QM-RX in a system is preset with a Net ID of 05 when its symbol is dragged into the upper pane of *System Views*. Additional units are assigned different Net ID numbers as they are added.

Setting the Net ID in Device Settings

Double-click the QM-RX icon in the upper pane to open the “Device Settings” window. This window displays QM-RX device information. The Net ID can be changed in this window using the *Net ID* tab, as shown in the following figure.

“Device Settings” Window

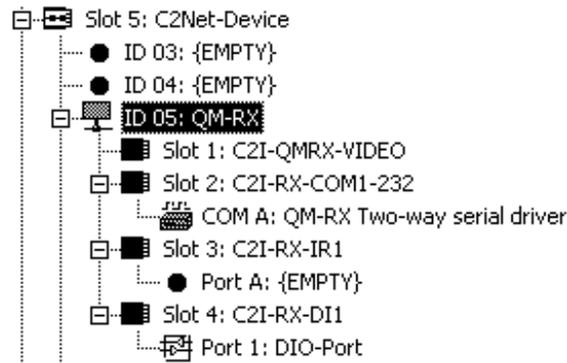


NOTE: This procedure sets the Net ID for the QM-RX in the program only. It does not automatically set the Net ID for the QM-RX itself. SIMPL Windows automatically changes Net ID values of a device added to a program if a duplicate device or a device with the same Net ID already exists in the program. Always ensure that the hardware and software settings of the Net ID match. For Net ID hardware setting details, refer to “Identity Code” on page 12.

QM-RX Symbol in Programming Manager

Programming Manager is where programmers “program” a Crestron control system by assigning signals to symbols. Click the plus sign of the QM-RX to reveal the two available slots, each with its own symbol. In Program Manager, expand the QM-RX to view the individual sub-slots; then drag the desired symbol to *Detail View*. The QM-RX sub-slots and corresponding symbols are described in the following paragraphs. Table defining the input and output signals follow each section.

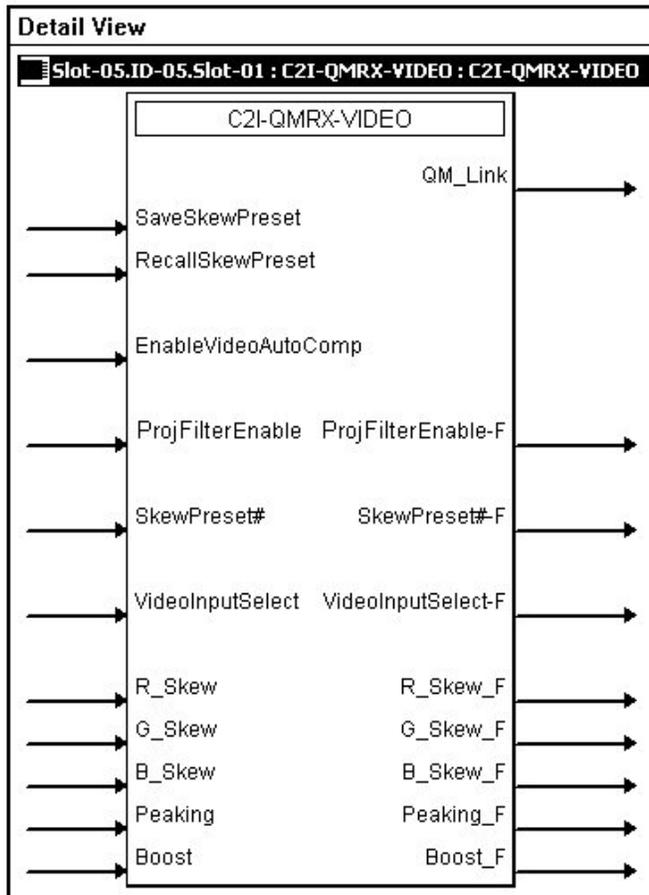
QM-RX Slots



Slot 1: C2I-QMRX-VIDEO

The first slot contains the video control module. The video module selects the video source, sends it to the proper output, saves and recalls skew presets, and adjusts peaking and boost.

Detail View of Video Output Control



The QM-RX provides integrated skew compensation, which corrects problems such as color separation that can occur when CAT5 cables have variations in the pair lengths. Delay skew is the difference in time (measured in nanoseconds) between the fastest and slowest pairs of a cable for a signal to travel from one end of the cable to the other. To correct delay skew, the red, green and blue skew presets inputs add delay to the faster pairs, allowing the video signals to be presented in synchronization.

NOTE: The skew, peaking and boost signals should be set through SystemBuilder software while viewing the video test patterns. The explanations presented here are for completeness of information.

Video Source Relationships

RGB	COMPONENT	S-VIDEO	COMPOSITE
Red	P _R	(C) Chrominance	-
Green	Y	(Y) Luminance	-
Blue	P _B	-	Composite

QM-RX Sub-Slot 01: Video Control Module Signals

SIGNAL TYPE AND NAME	DESCRIPTION
Digital output <QM_Link>	Indicates that the connection with the transmitter is present and valid. The output will remain high for as long as the connection to the input is valid. This signal will indicate a failure if, for example, the QM cable is disconnected or damaged. High/1 = Connection valid at the input Low/0 = Connection broken at the input
Digital input <SaveSkewPreset>*	Saves the three R/G/B skew values, together with the peak and boost values, into the preset number given by <SkewPreset#_F> when the input is held high. If the save is asserted at the same time as a recall, the recall operation takes precedence and the save is ignored. High/1 (level sensitive) = Save skew preset Low/0 = No preset save All save and recall inputs are level sensitive, not edge-triggered.
Digital input <RecallSkewPreset>*	[*This signal is operative only if automatic video compensation is NOT enabled.] Recalls the R/G/B skew values and peak/boost values stored in the preset given by <SkewPreset#> when the input is held high. High/1 (level sensitive) = Recall skew preset Low/0 = No preset recall
Digital Output <SkewPreset#_F>	Reports the Skew Preset Number.
NOTE: When <SaveSkewPreset> is high and <RecallSkewPreset> is high, then a change in <SkewPreset#> will trigger a recall action.	
Digital input <EnableVideoAutoComp>	The <EnableVideoAutoComp> digital signal enables automatic video compensation for as long as the input is high. Refer to the Appendix on page 42 for additional information about QM Auto Compensation. High/1 (level sensitive) = Enable auto-compensation Low/0 = Disable auto-compensation
Digital input <ProjFilterEnable>	The <ProjFilterEnable> enables the projector filter for as long as the input is high. This turns on a built-in out-of-band noise filter module, which improves performance when connected to certain DLP displays. This setting is not recommended for high-resolution monitors; for example UXGA 1600 x1200 or 1080p.
Digital output <ProjFilterEnable-F>	Reports the status of the projector filter feature. High/1 = Filter enabled Low/0 = Filter not enabled
Analog input <SkewPreset#>*	[*This signal is operative only if automatic video compensation is NOT enabled.] Sets the skew preset number where the R/G/B/ skew values and peak/boost values will be saved or recalled. Valid values range from 1d to 254d. Out of range values are ignored.

Continued on the following page

QM-RX Sub-Slot 01: Video Control Module Signals (continued)

SIGNAL TYPE AND NAME	DESCRIPTION
Analog input <VideoInputSelect>	Selects the video source that will be switched to the corresponding video output. Valid analog values range from 0d to 5d as follows: 0d = No source 1d = Switch RGB video to RGBHV output 2d = Switch composite video to VIDEO output 3d = Switch S-video to S-VIDEO output 4d = Displays both composite and S-video output 5d = Not used for programming. Refer to the Tech Support database for details. A value of 0 denotes no current video source and disables all video outputs. No other values are valid for <VideoInputSelect> .
Analog output <VideoInputSelect_F>	Reports the active video source.
Analog input <R_Skew> <G_Skew> <B_Skew>	Sets the skew compensation, in nanoseconds for the red, green and blue twisted pairs. These values can be applied directly or saved into a skew preset. Skew compensation adjusts for timing delays between twisted pairs that can occur over long CAT5 cable lengths. The skew adds delay to the faster pairs, allowing the video signals to be presented in synchronization. Valid analog values range from 0d (0ns) to 15d (22.5ns), where 1d = 1.5ns. Values below 0d will set the skew to 0ns; values above 15d will set the skew to 22.5ns.
Analog outputs <R_Skew_F> <G_Skew_F> <B_Skew_F>	Reports the skew compensation at the red, green and blue twisted pair.
Analog input <Peaking>	Applies peaking at the QM input. This value can be applied directly or saved into a skew preset. Peaking adjusts for high frequency attenuation that can occur over long cable lengths. Valid peaking values range from 0% to 100%. Recommended peak/boost values for varying cable lengths:
Analog output <Peaking_F>	Reports the peaking being applied at the QM input.
Analog input <Boost>	Applies boost at the QM input. This value can be applied directly or saved into a skew preset. Boost compensates for overall signal loss that can occur over long cable lengths. Valid boost values range from 0% to 100%.
Analog output <Boost_F>	Reports the boost being applied at the QM input.

Slot 2: C2I-RX-COM1-232

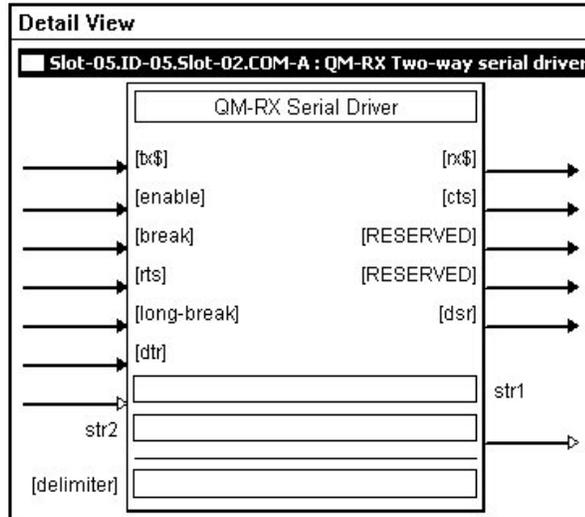
The C2I-RX-COM1-232 provides one two-way serial driver COM port for controlling serial devices over RS-232.

NOTE: This port does not support RS-422 or RS-485.

NOTE: C2N-NPA8 is not supported.

NOTE: The [RESERVED] fields are left blank.

Detail View of Two-Way Serial Driver



Two-way serial driver signals include:

- Serial input for one-way and two-way serial drivers: <tx\$> (transmit)
- Serial output for two-way serial drivers: <rx\$> (receive)
- Digital inputs for two-way serial drivers: <rts> (request to send), <dtr> (data terminal ready), <long-break> and <break>
- Digital outputs for two-way serial drivers: <cts> (clear to send), and <dsr> (data set ready).
- Digital input: <enable>
- Parameters: <str1>, <str2>, <delimiter>

The <tx\$> (transmit) and <rx\$> (receive) signals send and receive serial strings using whichever communication format, or protocol, the serial device requires. This protocol is usually described in the manufacturer's documentation and includes the transmission speed (baud rate), error checking (parity), number of data bits and stop bits, and any hardware or software handshaking that may be required to control the flow of data.

Slot 3: C2I-RX-IR1

The C2I-RX-IR1 provides one IR output port for controlling devices via IR or one-way RS-232. Depending on the control format, additional equipment such as IR emitters, splitters, receivers, and remote control transmitters may be required. This symbol is not visible because no detail is required.

To add an IR device, drag the device from the Crestron, Project, or User IR Database to the C2I-RX-IR1. The Crestron database contains hundreds of IR driver files, covering most IR devices on the market today. The IR port requires one IRP2 (infrared emitter probe) installed on each IR device. One end of the emitter is installed on or near the IR sensor window of the controlled device while the other end plugs into the port.

The ST-MB (master blaster) IR sprayer can "spray" IR signals 90 degrees. It eliminates the need for IR probes and resistors, and can be positioned to reach all devices. It is designed to handle multiple IR codes so that only one sprayer is needed for many devices.

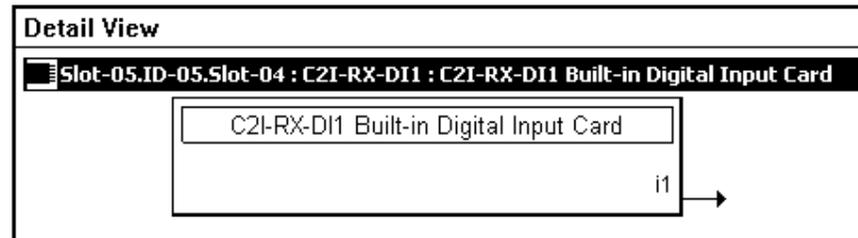
NOTE: The C2I-RX-IR1 does not support simultaneous IR and RS-232 control. That is, an IR driver cannot be stacked on the port together with a one-way serial driver. The control format must be of one type. Use only one IR driver or one-way serial driver.

In addition, the IR port does not have negative voltage and thus may not provide the full voltage range required by some RS-232 devices (although nearly all RS-232 devices will operate properly).

Slot 4: C2I-RX-DI1

Slot 4: C2I-RX-DI1 provides one digital input port for connection of an external sensor or other contact closure device.

Detail view of the Digital Input Card



The C2I-RX-DI1 provides one digital input port for connection of an external sensor or other contact closure device.

The signal indicates a drop in voltage to less than 1.1 V. The output remains high for as long as the voltage reads less than 1.1 V. The input voltage must change by at least 0.3V in either direction to register a new logic state, which prevents jitter.

An internal 2K ohm pull-up resistor forces the port to read 5.0V if there is no external sensor connected.

- High/1 = Voltage less than 1.1 V
- Low/0 = Voltage more than 1.1 V or no device connected

Example Programming

An example program for the QM-RX is available from the "Example Program" section of the Crestron website (<http://www.crestron.com/exampleprograms>).

Uploading and Upgrading

NOTE: Crestron recommends that you use the latest software and that each device contains the latest firmware to take advantage of the most recently released features. Please check the Crestron website (<http://www.crestron.com/updates>) for the latest versions of software and firmware. New users are required to register to obtain access to this site.

Assuming a PC is properly connected to the entire system, Crestron programming software allows the programmer to upload programs, projects and firmware to the system and touchpanels after their development. However, there are times when the files for the program and projects are compiled and not uploaded. Instead, compiled files may be distributed from programmers to installers, from Crestron to dealers, etc. Even firmware upgrades are available from the Crestron website as new features are developed after product releases. In those instances, one has the option to upload via the programming software or to upload and upgrade via the Crestron Installer's Toolbox.

The following sections define how one would upload a SIMPL Windows program to the control system or upgrade the firmware of the QM-RX. However, before attempting to upload or upgrade, it is necessary to establish communications.

Communication Settings

NOTE: For laptops and other PCs without a built-in RS-232 port, Crestron recommends the use of PCMCIA cards, rather than USB-to-serial adapters. If a USB-to-serial adapter must be used, Crestron has tested the following devices with good results:

Belkin (large model) F5U103

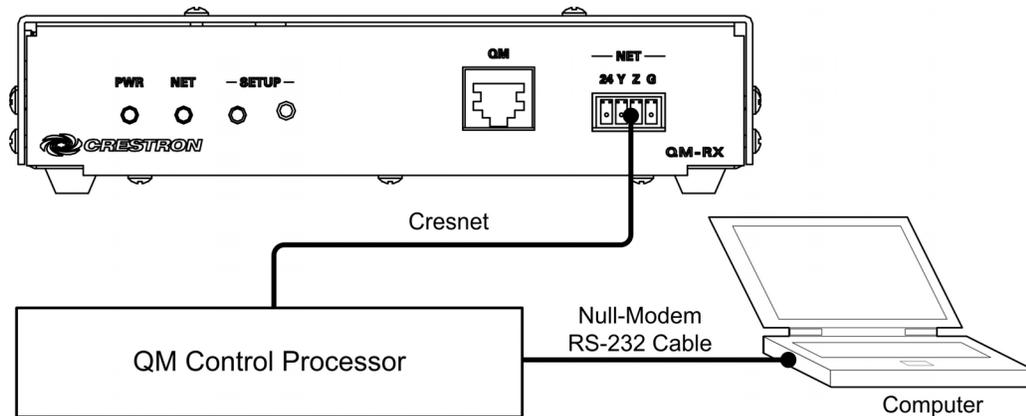
I/O Gear GUC232A (discontinued)

Keyspan USA-19QW (discontinued)

Other models, even from the same manufacturer, may not yield the same results.

NOTE: Even with these recommended models, results may vary on the computer being used.

The procedure in this section provides details for RS-232 communication between the PC and the control system. If TCP/IP communication is preferred, consult the latest version of the Crestron e-Control Reference Guide (Doc. 6052) or the respective Operations Guide for the control system. These documents are available from the Crestron website. Refer to the following figure for a typical connection diagram when uploading files.

Typical Connection Diagram when Uploading

NOTE: Use a standard DB9 “Null-Modem” RS-232 cable for communication with a QuickMedia processor. Use a straight-through cable for communication with a 2-Series processor.

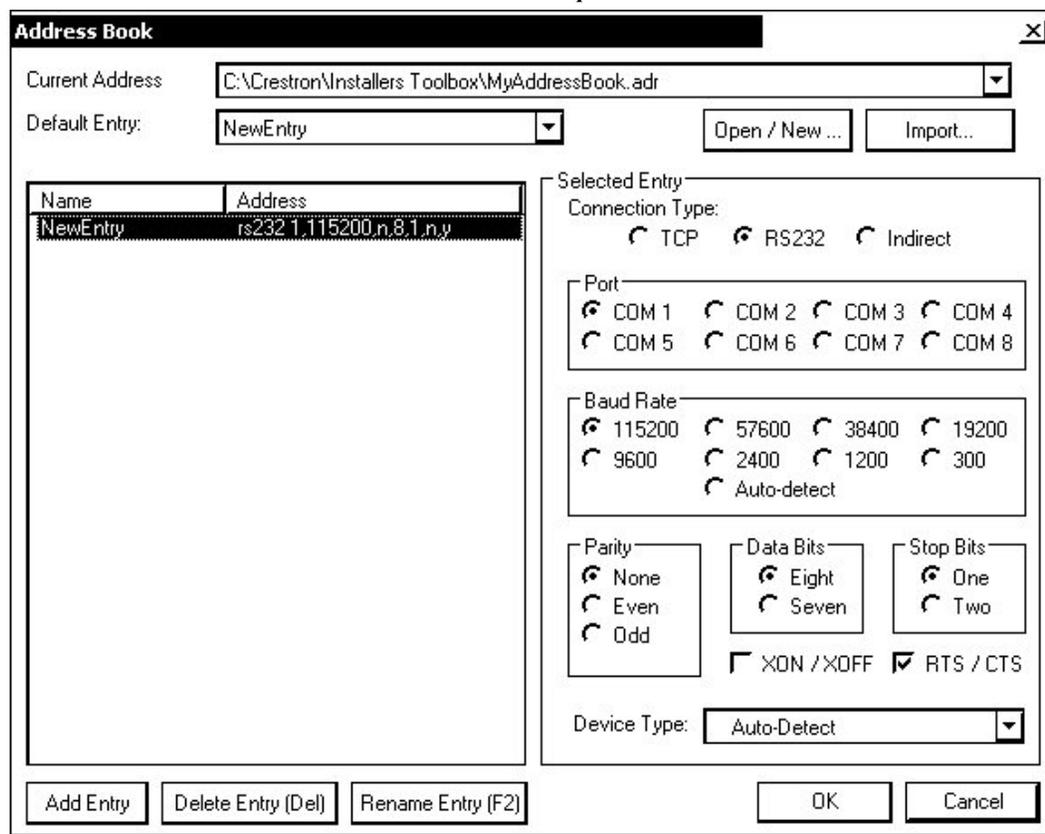
Serial Connection to the Control Processor

1. Ensure that all devices are connected to the control processor and the control processor is connected via serial cable to the PC.
2. Open Installer’s Toolbox and click **Tools | Manage Address Book** to display the communications settings. Enter the new address name, and then click **RS-232** as the connection type.

The PC communication settings specified here should match the protocol that the control processor expects. The usual settings are as follows:

- Port = COM 1 through COM 8. Select the correct COM port on the PC.
- Baud rate = 115200.
- Parity = None.
- Number of data bits = 8.
- Number of stop bits = 1.
- Hardware handshaking (RTS/CTS) enabled.
- Software handshaking (XON/XOFF) not enabled.

Installer's Toolbox "Address Book" Window – Serial Setup



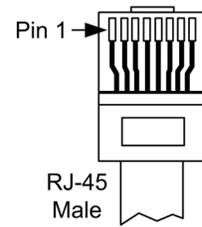
3. After setting the correct parameters, click **OK** to return to the Installer's Toolbox main window.
4. Click **Tools | Network Device Tree** to display the devices in the system.

TCPIP Connection to Control Processor

1. Ensure that all devices are connected to the control processor. For TCP/IP, use CAT5 straight through cables with 8-pin RJ-45 connectors to connect the LAN port on the control processor and the LAN port on the PC to the Ethernet hub. Alternatively, you can use a CAT5 crossover cable to connect the two LAN ports directly, without using a hub. The following table illustrates pinouts for straight through and crossover RJ-45 cables. Pins 4, 5, 7, and 8 are not used.

RJ-45 Straight Through Cable

FROM PIN	COLOR	SIGNAL	TO PIN	SIGNAL
1	White/Orange	Tx+	1	Tx+
2	Orange	Tx-	2	Tx-
3	White/Green	Rc+	3	Rc+
6	Green	Rc-	6	Rc-

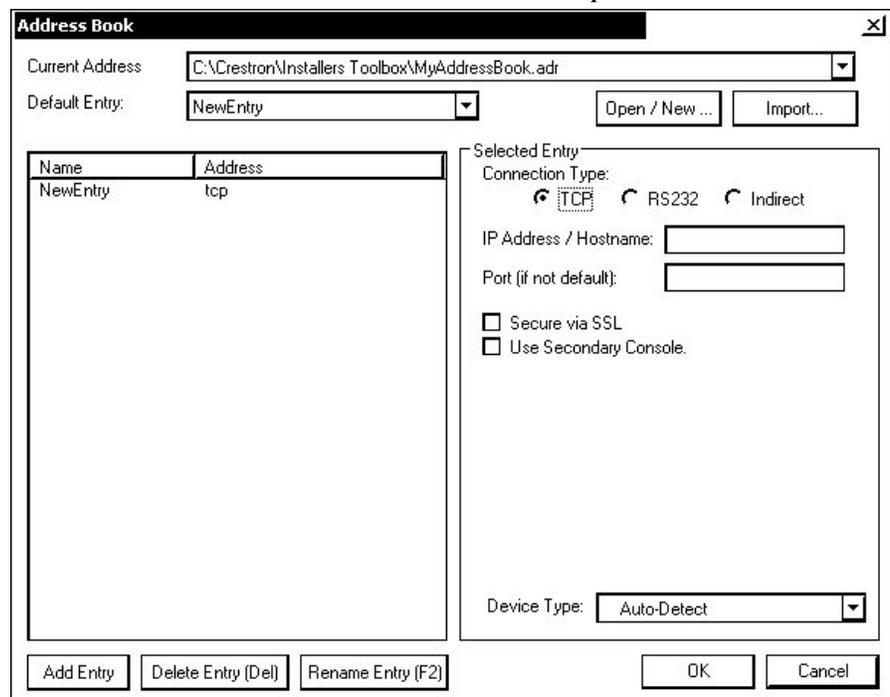


RJ-45 Crossover Cable

FROM PIN	COLOR	SIGNAL	TO PIN	SIGNAL
1	White/Orange	Rc+	3	Tx+
2	Orange	Rc-	6	Tx-
3	White/Green	Tx+	1	Rc+
6	Green	Tx-	2	Rc-

- Once the cable connections are made, open Installer’s Toolbox. Click **Tools | Manage Address book** to display the “Address Book” window and enter the new address name. Then click **TCP/IP** as the connection type. Enter the IP address or hostname of the control processor.

Installer’s Toolbox “Address Book” Window – TCP/IP Setup



- After setting the correct parameters, click **OK** to return to the Installer’s Toolbox main window.
- Click **Tools | Network Device Tree** to display the devices in the system.

Troubleshooting Communications

Use the following checklist if communication cannot be established with the control processor.

1. Verify that you are using the correct cables. As described previously, an RS-232 connection requires a null modem RS-232 cable. TCP/IP connection requires a CAT5 cable with 8-pin RJ-45 connectors.
2. With a serial connection, verify that the correct COM port on the PC has been selected. Some computers have more than one COM port; some may be internal (e.g., for a modem). Consult the manufacturer’s documentation for further information about the COM ports on your PC.
3. Remove and reapply power to the control system.
4. If communication still cannot be established, contact Crestron customer service.

A control system source file has the extension .smw. A compiled SIMPL Windows file has the extension .spz for a 2-Series control system.

Uploading a SIMPL Windows Program

The SIMPL Windows file can be uploaded to the control system using SIMPL Windows or via Installer’s Toolbox.

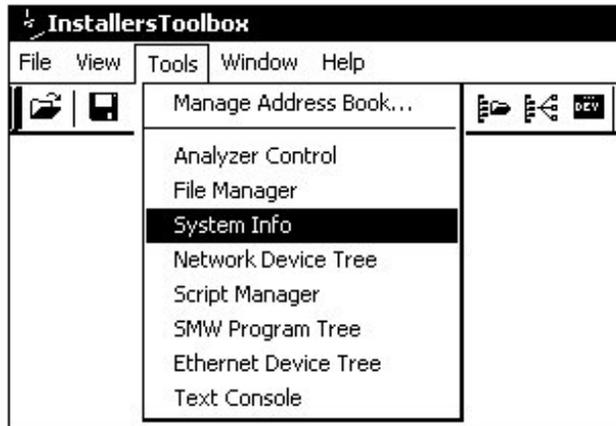
Upload via SIMPL Windows

1. Start SIMPL Windows.
2. Select **File | Open** to view the “Open” window, navigate to the SIMPL Window file (.smw), and click **Open**.
3. Select **Project | Transfer Program**.

Upload via Installer’s Toolbox

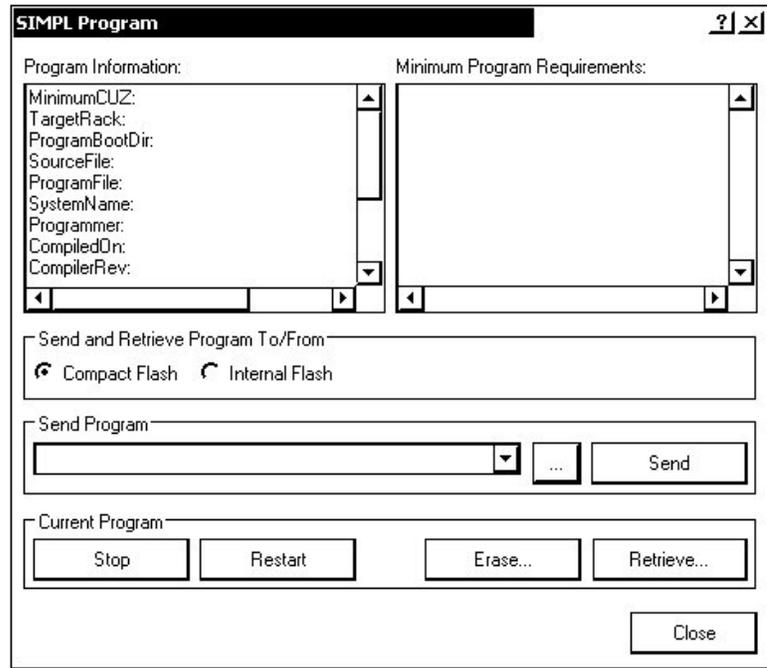
1. Verify that the procedure for “Communication Settings” that begins on page 33 has been performed.
2. Open Installer’s Toolbox.
3. Select **Tools | System Info**.

Installer’s Toolbox – Tools | System Info



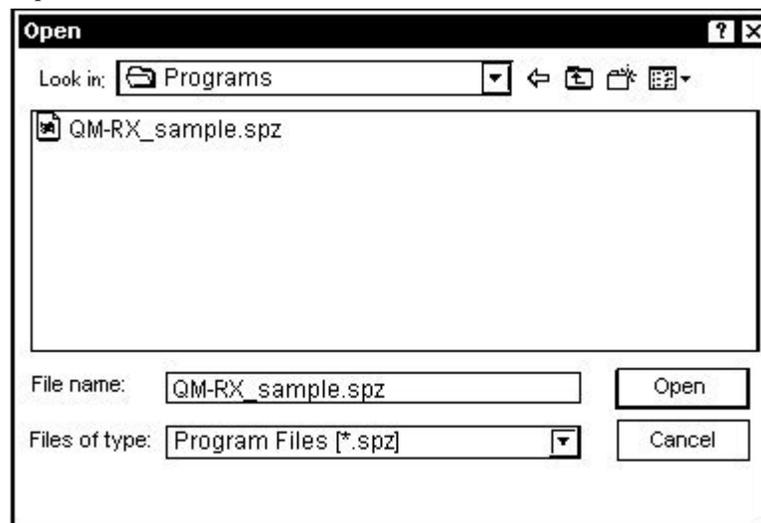
- When the “System Info” window appears, the Functions option becomes available from the menu bar.
- Select **Functions | SIMPL Program**.
- The “SIMPL Program” window contains information about the currently loaded SIMPL program (if any), and permits you to stop, start, erase, retrieve, and upload a SIMPL program. This menu also permits you to upload to compact flash or internal flash.

“SIMPL Program” Window



- Click the  button to browse for a new compiled (.spz) program.

“Open” Window



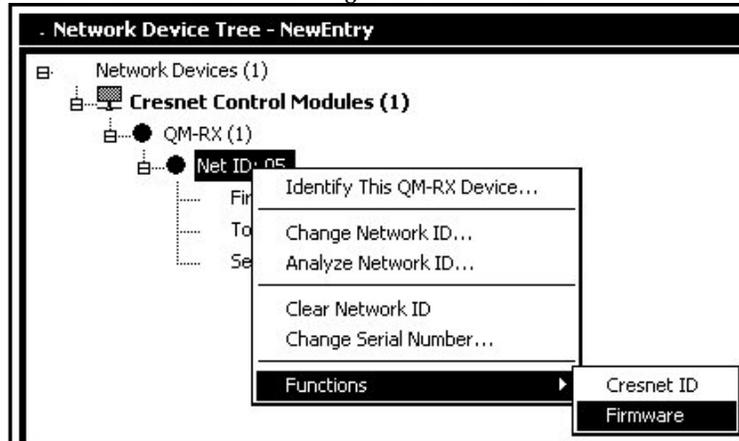
- Select a file and click **Open**. When the SIMPL Program window re-opens click **Send**.

Firmware Upgrade via Installer's Toolbox

To take advantage of all the QM-RX features, it is important that the unit contains the latest firmware available. Please check the Crestron website for the latest version of firmware. Not every product has a firmware upgrade, but as Crestron improves functions, adds new features, and extends the capabilities of its products, firmware upgrades are posted. To upgrade the firmware, complete the following steps.

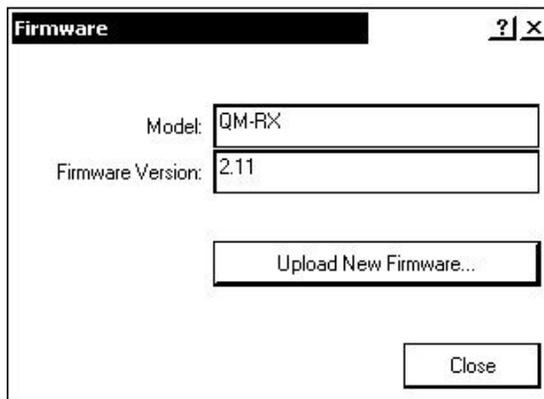
1. Make sure that “Communication Settings,” which begins on page 33, has been performed.
2. Open Installer's Toolbox.
3. Open the Network Device Tree (the firmware upgrade function is also available in the SMW Program Tree window).
4. Right-click on the device and select **Functions | Firmware**.

Network Device Tree Window – Right-Click Sub Menu



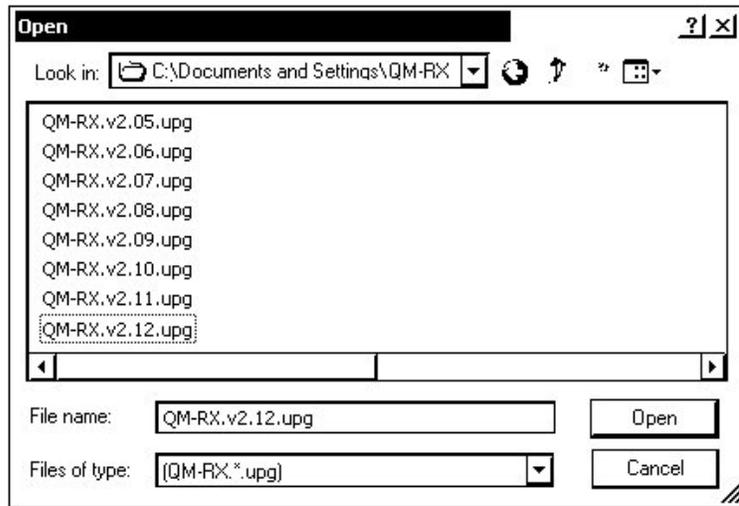
5. The “Firmware” window displays the model and current firmware version. Click **Upload New Firmware**.

“Firmware” Window



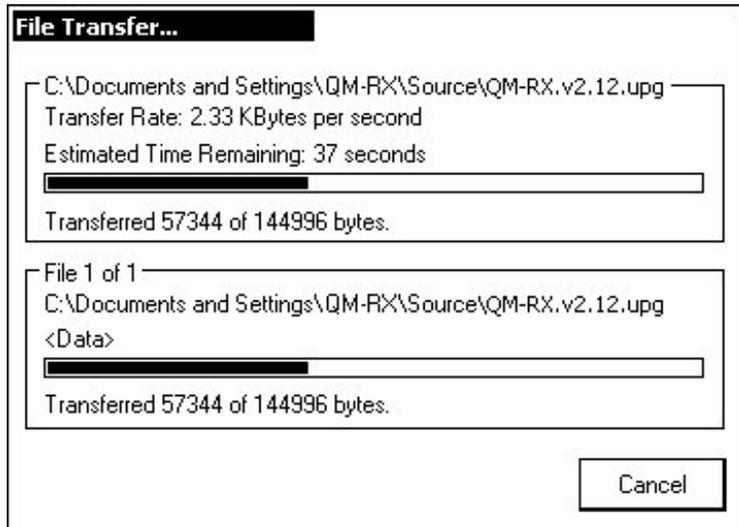
6. When the following screen appears, browse to locate the firmware (.upg) file.

Locate Firmware in the “Open” Window



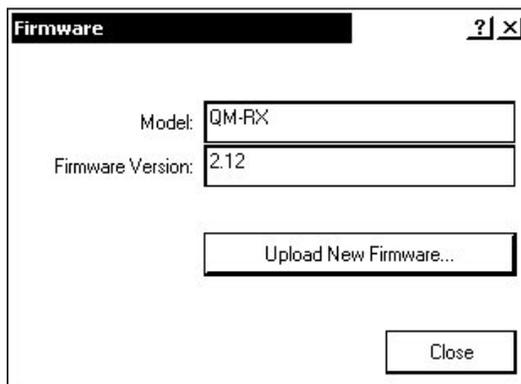
- 7. Click **Open** and the file transfers to the unit.

“File Transfer” Window



- 8. The “Firmware” window indicates the new firmware version. Click **Close** after the QM-RX automatically reboots.

“Firmware” Window with New Version



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-RX Troubleshooting

TROUBLE	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
PWR LED does not illuminate.	The QM-RX is not receiving power.	Verify that Cresnet is properly attached. Use only Crestron power supplies for Crestron equipment.
No video output displayed.	The cable connection is incorrect.	Verify RGB, video, S-video output cable connection to unit and video display.
		Verify QM input cable connection is secure.
Wrong source or video displayed.	Wrong SystemBuilder or SIMPL Windows program.	Verify and upload correct programs.
	SystemBuilder project not set up correctly.	Verify proper video set up for each video input.
Video from RGB source is garbled or no output.	The cable connections are incorrect.	Verify 15-pin output cable connection. Verify QM input cable connections.
	Signal skew due to long cable length or unequal pair length.	Verify maximum QM cable length. Verify maximum of two midpoint switching or distribution devices. Verify compensation for skew.
Poor RGB or video image quality.	Incorrect peak and/or boost setting.	Adjust peak and/or boost controls until image quality is improved.
	Incorrect skew compensation.	Adjust skew compensation as required.
A/V system device does not respond.	IR or serial port not connected properly.	Verify connections and tighten serial cable.
	Serial cable is miswired	Verify that serial cable is wired correctly for RS-232.

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 the Crestron corporate headquarters at 1-888-CRESTRON [1-888-273-7876]. For assistance in your local time zone, refer to the Crestron website (www.crestron.com) for a listing of Crestron worldwide offices.

You can also log onto the online help section of the Crestron website 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-RX, 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.

Appendix - QM Auto Compensation

Each QM transmitter sends an ID number to identify itself to the QM receiver. The ID number enables the QM receiver to recall the appropriate preset cable compensation for the incoming signal received from a variety of sources. Each preset recalls five parameters: three skew numbers for RGB, one for Peak, and one for Boost. The QM receiver stores 254 presets.

At the transmitter, the ID number can be either the transmitter's Cresnet ID or an arbitrary transmit ID number.

The console command for the transmitter's ID is `xmitid`, and the default is off, which means that the Cresnet ID is used. Normally, the command is `xmitid` is followed by the ID number, or by the word “OFF”. If no parameter is supplied, the device returns to the current state.

On the receiving end, the ID number selects the presets for that source (RGB skew, peaking, boost, and microphone parameters, when applicable).

NOTE: The QM cable compensation is disabled if auto compensation on the receiver is disabled.

When auto compensation is enabled, the receiving device is allowed to use the auto compensation data received from the transmitter. There is a digital join `EnableVideoAutoComp` on each receiver, and a corresponding console command `QMDATARX ON/OFF`.

NOTE: Because video auto compensation travels on the audio line, it does not function when audio is split up from video as in the QM-MD4X2 or any QM switcher with audio breakaway.

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 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. 07647, 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 supercedes all previous warranties.

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Crestron Electronics, Inc.
15 Volvo Drive Rockleigh, NJ 07647
Tel: 888.CRESTRON
Fax: 201.767.7576
www.crestron.com

Operations Guide – DOC. 6333
03.05

Specifications subject to
change without notice.