

Crestron **QM-WMC, QM-WMC-VCC & QM-WCC-2**

Wall Plate Media & Computer Centers

Operations & Installation Guide



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



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Regulatory Compliance

As of the date of manufacture, the QM-WMC/WMC-VCC/WCC-2 has been tested and found to comply with specifications for CE marking and standards per EMC and Radiocommunications Compliance Labelling.



Federal Communications Commission (FCC) Compliance Statement

This device complies with part 15 of the FCC Rules. Operation is subject to the following conditions:

(1) This device may not cause harmful interference and (2) this device must accept any interference received, including interference that may cause undesired operation.

CAUTION: Changes or modifications not expressly approved by the manufacturer responsible for compliance could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and receiver
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected
- Consult the dealer or an experienced radio/TV technician for help

Industry Canada (IC) Compliance Statement

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

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

Contents

Wall Plate Media & Computer Centers: QM-WMC, QM-WMC-VCC & QM-WCC-2 1

| | |
|---|----|
| Introduction | 1 |
| Features and Functions | 2 |
| Applications..... | 5 |
| Internal Block Diagram | 7 |
| Specifications | 9 |
| Physical Description | 11 |
| Setup | 21 |
| Network Wiring..... | 21 |
| QuickMedia Wiring..... | 21 |
| Identity Code | 23 |
| Installation | 24 |
| Hardware Hookup | 28 |
| Programming Software | 31 |
| Earliest Version Software Requirements for the PC | 31 |
| Programming with Crestron SystemBuilder..... | 31 |
| Programming with SIMPL Windows | 31 |
| Uploading and Upgrading..... | 34 |
| Establishing Communication..... | 34 |
| Programs and Firmware | 35 |
| Program Checks | 35 |
| QM Tools | 35 |
| Problem Solving | 36 |
| Troubleshooting..... | 36 |
| Check Network Wiring..... | 38 |
| Reference Documents..... | 39 |
| Further Inquiries | 39 |
| Future Updates | 40 |
| Return and Warranty Policies..... | 41 |
| Merchandise Returns / Repair Service | 41 |
| CRESTRON Limited Warranty..... | 41 |

Wall Plate Media & Computer Centers: QM-WMC, QM-WMC-VCC & QM-WCC-2

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.

The Crestron® QM-WMC, QM-WMC-VCC QuickMedia® Wall Centers and QM-WCC-2 QuickMedia Computer Center provide elegant, wall mount multimedia and computer interface solutions for any MediaManager system, including applications ranging from small conference rooms to large banquet halls and auditoriums.

For simplicity within this guide, QM-WMC/WMC-VCC/WCC-2 is used except where noted.

Features and Functions

- Stylish wall mount QuickMedia multimedia or computer interface
- Single cable signal transmission up to 450 feet (137 meters)
- Video input signal sensing with auto-switching
- Compatible with QM-WMIC Mic Input Module
- QuickMedia Transport
- Cresnet[®] communications
- Low-cost, quick and easy installation
- Integrates with Crestron C2N-DB Series Decorator Keypads
- Installs alongside third-party LAN jacks and other devices
- Performs Video signal format management via EDID (QM-WMC-VCC and QM-WCC-2 only)
- Easy setup using Crestron SystemBuilder™ software

QM-WMC and QM-WMC-VCC:

- Composite, S-video and RGB/component video inputs on QM-WMC; composite and RGB/component inputs on QM-WMC-VCC
- DB15HC RGB computer input
- Buffered RGB monitor pass-through
- Three stereo audio inputs plus optional two gated mic/line inputs
- 3x1 input switching with audio breakaway

QM-WCC-2:

- Two DB15HD RGB computer inputs
- Two buffered RGB monitor pass-throughs
- Two stereo audio inputs
- 2x1 input switching with audio breakaway

Wall Mount Multimedia Interface (QM-WMC & QM-WMC-VCC only)

The QM-WMC and QM-WMC-VCC install cleanly in a standard two-gang electrical box using a decorator style faceplate (not supplied). Individual video inputs are provided for composite, S-video* and RGB/component signals, each with corresponding stereo audio, to accept connections from portable AV devices and computers. A buffered monitor pass-through connector is also provided to feed the RGB input signal to a local monitor.

Connectivity for LAN and other signals can easily be added by ganging the QM-WMC or QM-WMC-VCC together with other third-party wall plate devices. A Crestron C2N-DB series Decorator Keypad may also be installed for a truly complete multimedia interface and control solution. Wiring for the QM-WMC and QM-WMC-VCC is extremely simple requiring just a single CresCAT™QM cable (sold separately).

* S-video (Y/C) on QM-WMC-VCC may require an appropriate adapter or breakout cable (not included) to connect to the **COMPONENT** input.

Wall Mount Computer Interface (QM-WCC-2 only)

The QM-WCC-2 installs cleanly in a standard two-gang electrical box using a decorator style faceplate (not supplied). Dual RGB and stereo audio inputs are provided to accept connections from two separate computers or other RGB sources. Buffered monitor pass-through connectors are also provided, allowing RGB input signals to be fed to local monitors.

Connectivity for LAN and other signals can easily be added by ganging the QM-WCC-2 together with other third-party wall plate devices. A Crestron C2N-DB series Decorator Keypad may also be installed for a truly complete multimedia interface and control solution. Wiring for the QM-WCC-2 is extremely simple requiring just a single CresCAT-QM cable (sold separately).

AV Switcher

The built-in 3x1 switcher in the QM-WMC and QM-WMC-VCC includes audio breakaway to allow the three program audio inputs to be switched independent of the video and RGB inputs or linked with them. Built-in video sensing on every video/RGB input can be utilized to trigger automatic input selection and power control.

The built-in 2x1 switcher in the QM-WCC-2 includes audio breakaway to allow two PC audio inputs to be switched independent of their corresponding RGB inputs or linked with them. Built-in video sensing on each RGB input can be utilized to trigger automatic input selection and power control.

Gated Mic Preamp (Optional)

Two gated microphone inputs may be added using the QM-WMIC Microphone Input Module (sold separately). Via two Neutrik® Combo connectors, the QM-WMIC supports both dynamic and condenser type microphones with software switchable 48V phantom power available at both XLR inputs. Balanced or unbalanced line level sources can also be accommodated using 1/4" TRS connections. Input gain and gating controls for each microphone/line input are fully adjustable at setup and can also be controlled in real time from a keypad or touchpanel.

QuickMedia® Transport

Using Crestron's revolutionary QuickMedia (QM) transport, all input signals are transmitted from the QM-WMC/WMC-VCC/WCC-2 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.

NOTE: 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.

MediaManager System Integration

Whether using just one Wall Plate Media or Computer Center 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.

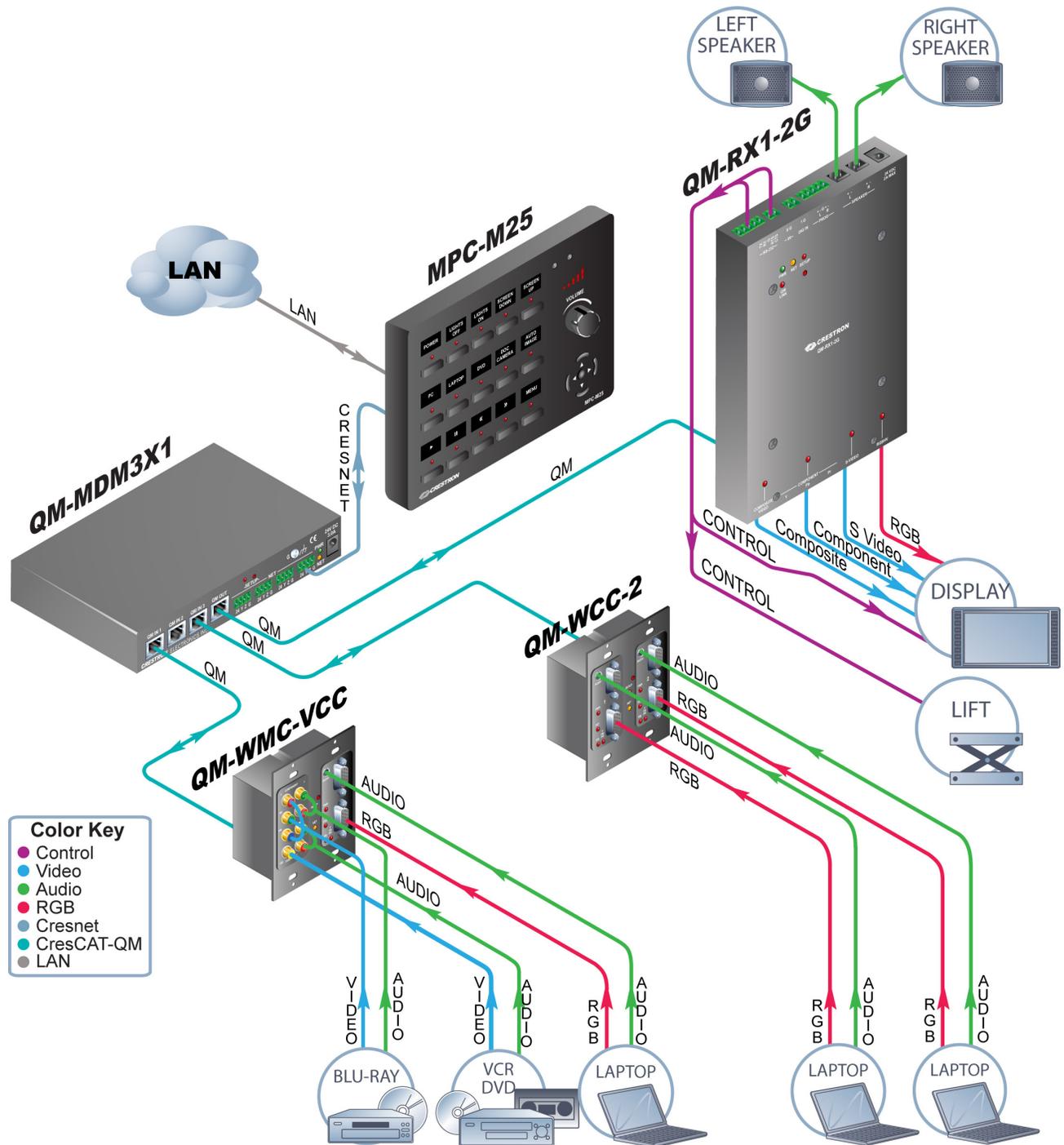
EDID Format Management (QM-WMC-VCC and QM-WCC-2 only)

The QM-WMC-VCC and the QM-WCC-2 allow 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-WMC-VCC and the QM-WCC-2, 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-WMC-VCC and QM-WCC-2 in a lecture hall application.

QM-WMC-VCC and QM-WCC-2 in a Lecture Hall Application

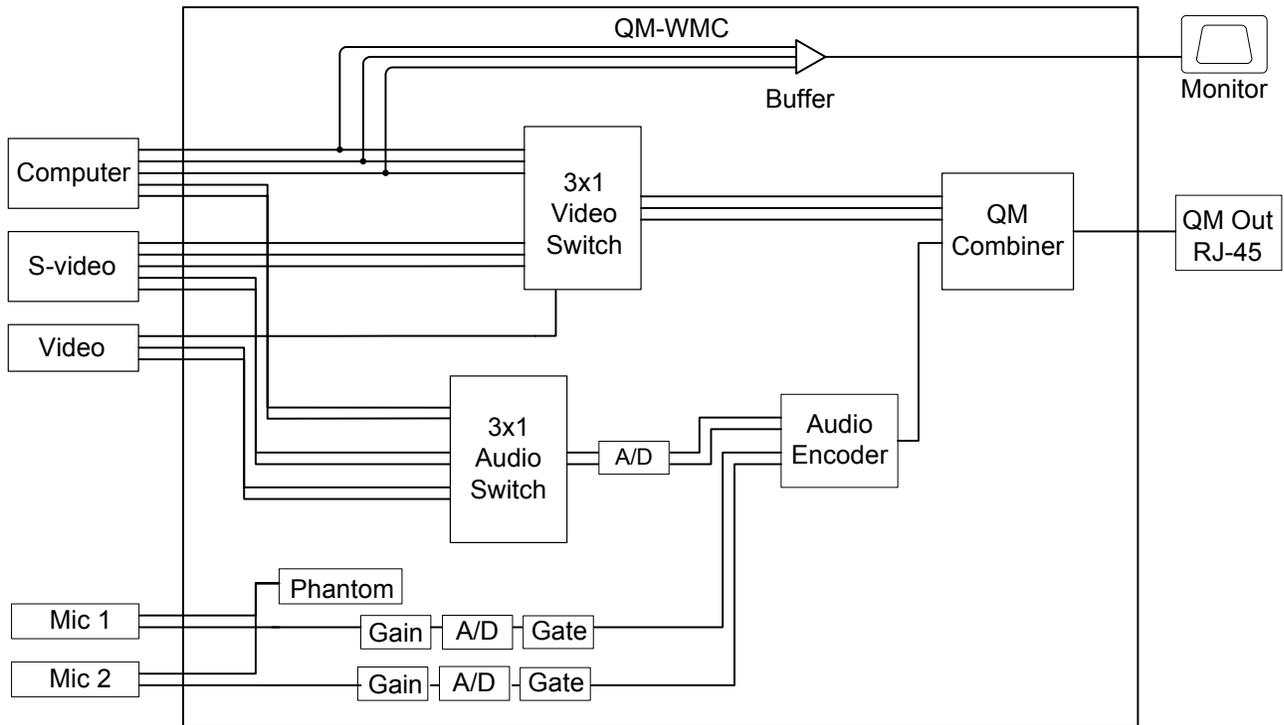


For more information on this and other QM applications, refer to the latest revision of the Crestron MediaManager Applications Guide (Doc. 6244), which is available from the Crestron website (www.crestron.com/manuals).

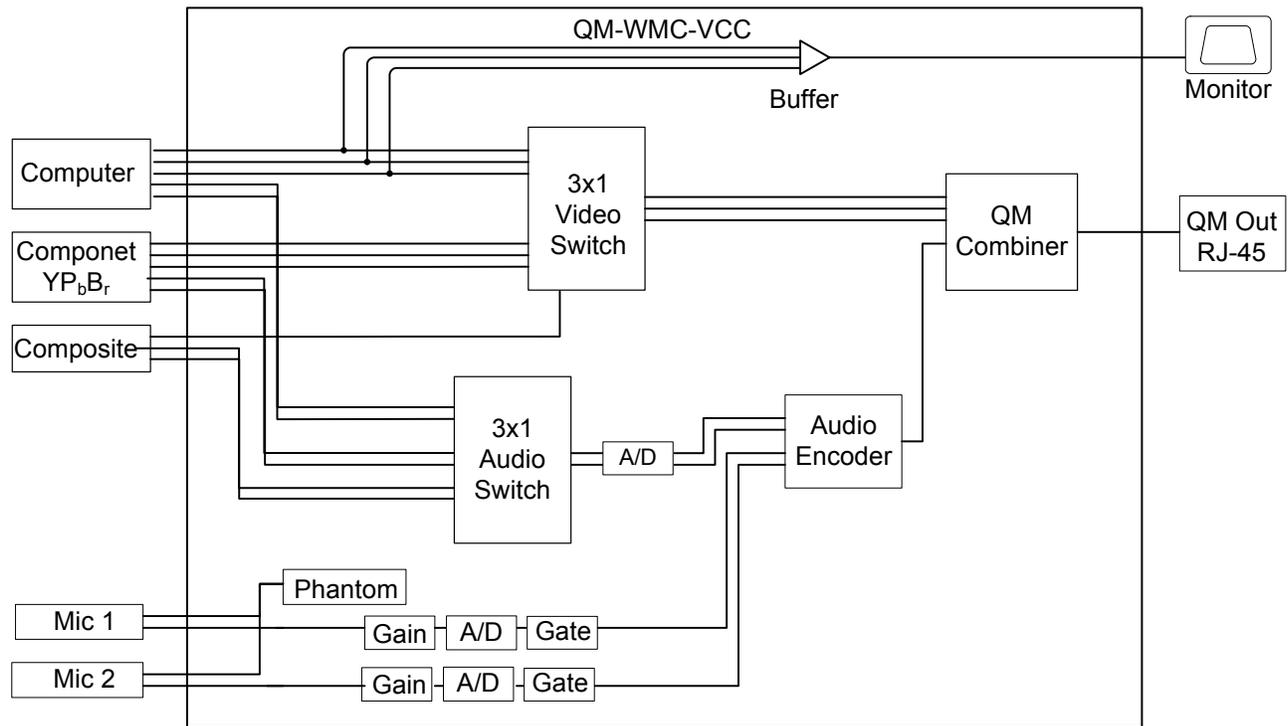
Internal Block Diagram

The following diagrams represent the operational abilities of the QM-WMC, QM-WMC-VCC and QM-WCC-2 with the optional QM-WMIC.

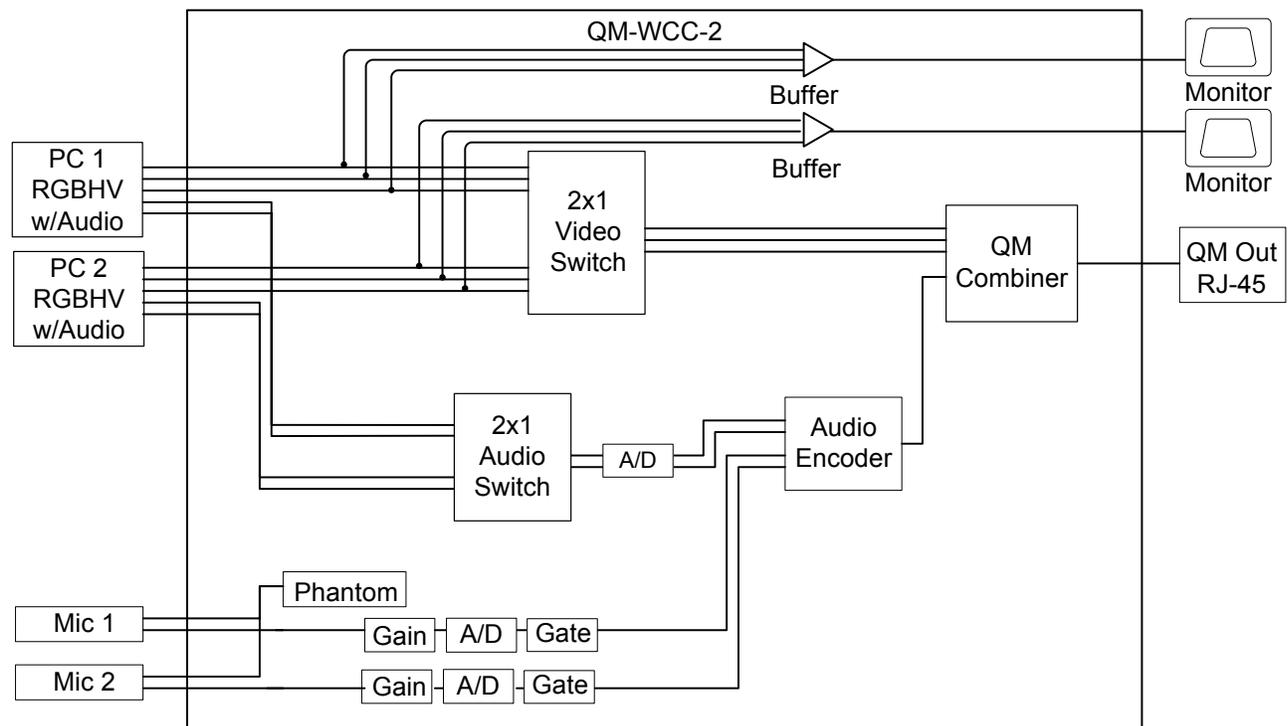
Internal Block Diagram of the QM-WMC (with QM-WMIC)



Internal Block Diagram of the QM-WMC-VCC (with QM-WMIC)



Internal Block Diagram of the QM-WCC-2 (with QM-WMIC)



Specifications

Specifications for the QM-WMC/WMC-VCC/WCC-2 are listed in the following table.

QM-WMC/WMC-VCC/WCC-2 Specifications

| SPECIFICATION | DETAILS |
|---|---|
| Video | |
| Signal Types | RGB and composite, S-video ¹ or component ² video |
| Video/HDTV Formats ³ | NTSC or PAL, HDTV up to 1080i/1080p ² |
| 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 [®] Power Usage | |
| QM-WMC | 5 watts (0.21 Amp @ 24 Volts DC) |
| QM-WMC-VCC & QM-WCC-2 | 6 watts (0.25 Amp @ 24 Volts DC) |
| Default Net ID | |
| QM-WMC | 04 |
| QM-WMC-VCC | 8F |
| QM-WCC-2 | 8E |
| Minimum 2-Series Control System Update File ^{4, 5} | Version 3.117 or later |

(Continued on following page)

QM-WMC/WMC-VCC/WCC-2 Specifications (Continued)

| SPECIFICATION | DETAILS |
|--|---|
| Environmental Temperature Humidity Heat Dissipation QM-WMC QM-WMC-VCC & QM-WCC-2 | 41° to 104° F (5° to 40° C) 10% to 90% RH (non-condensing) 17 BTU/Hr 21 BTU/Hr |
| Enclosure | Two-gang mountable in a 2.5 in (6.35 cm) deep electrical box; Required decorator style faceplate (not supplied) |
| Dimensions Height Width Depth QM-WMC QM-WMC-VCC QM-WCC-2 | 4.12 in (105 mm) 3.50 in (89 mm) 2.61 in (66 mm) 2.56 in (65 mm) 2.52 in (64 mm) |
| Weight QM-WMC & QM-WMC-VCC QM-WCC-2 | 8.0 oz (227 g) 9.6 oz (272 g) |
| Available Accessories QM-WMIC | Microphone Input Module |

1. S-video on QM-WMC and QM-WMC-VCC only. QM-WMC-VCC may require an appropriate adapter or breakout cable (not included) to connect Y/C to **COMPONENT** input.
2. QM-WMC may require a suitable VGA-to-component adapter or breakout cable (not included) for component video or HDTV.
3. QM-WMC and QM-WMC-VCC only.
4. The latest software versions can be obtained from the Crestron website. Refer to the NOTE following these footnotes.
5. 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-WMC/WMC-VCC/WCC-2.

QM-WMC Physical View



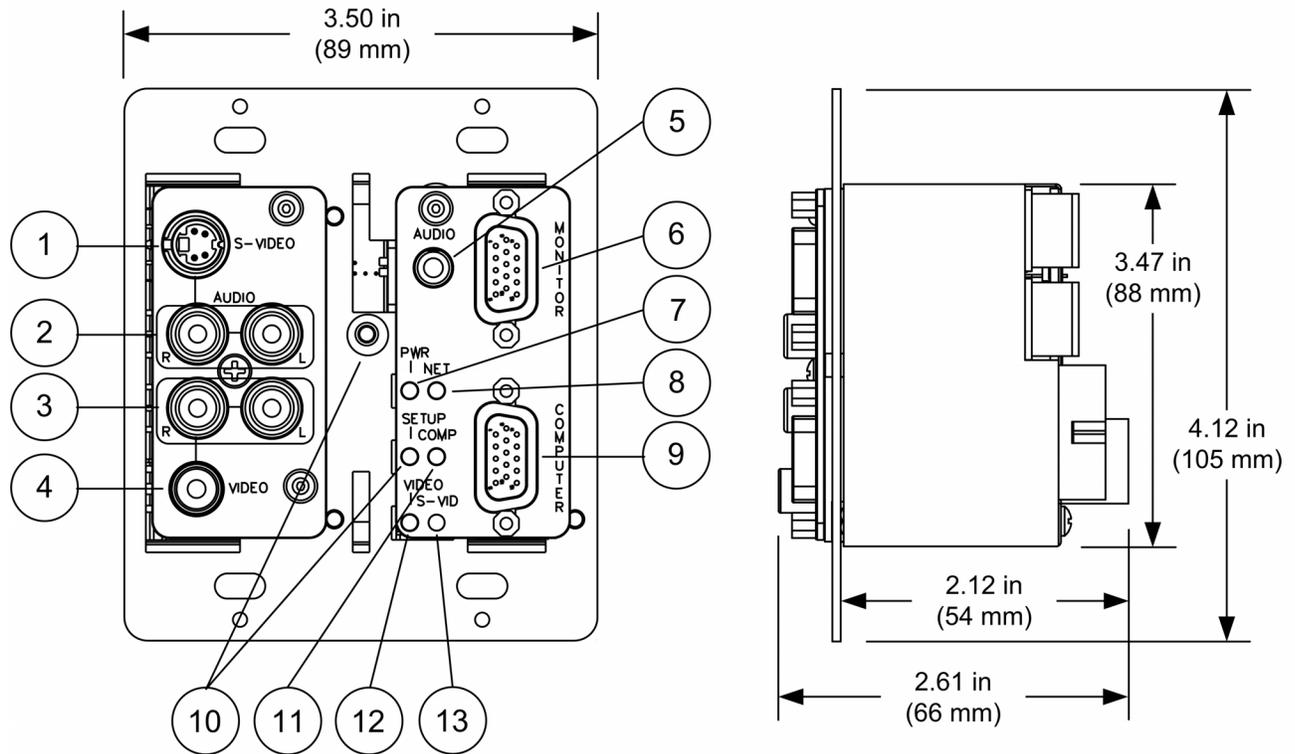
QM-WMC-VCC Physical View



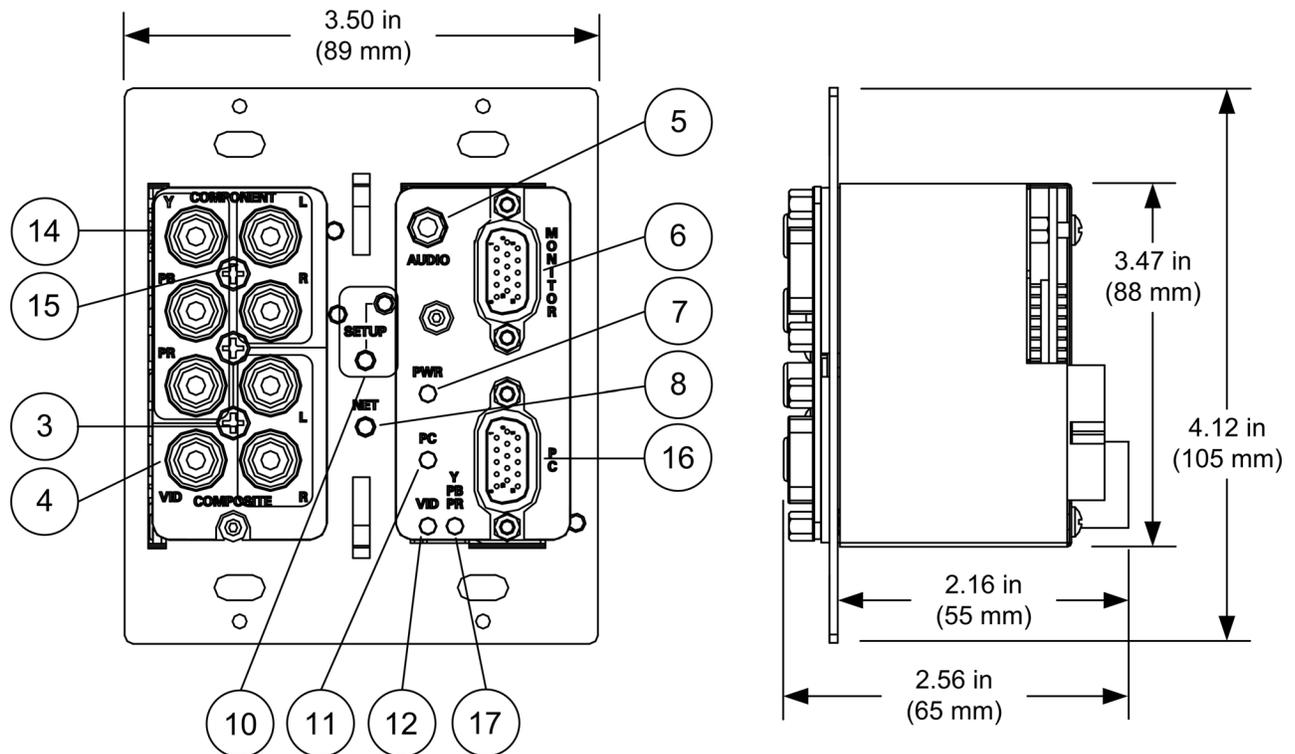
QM-WCC-2 Physical View



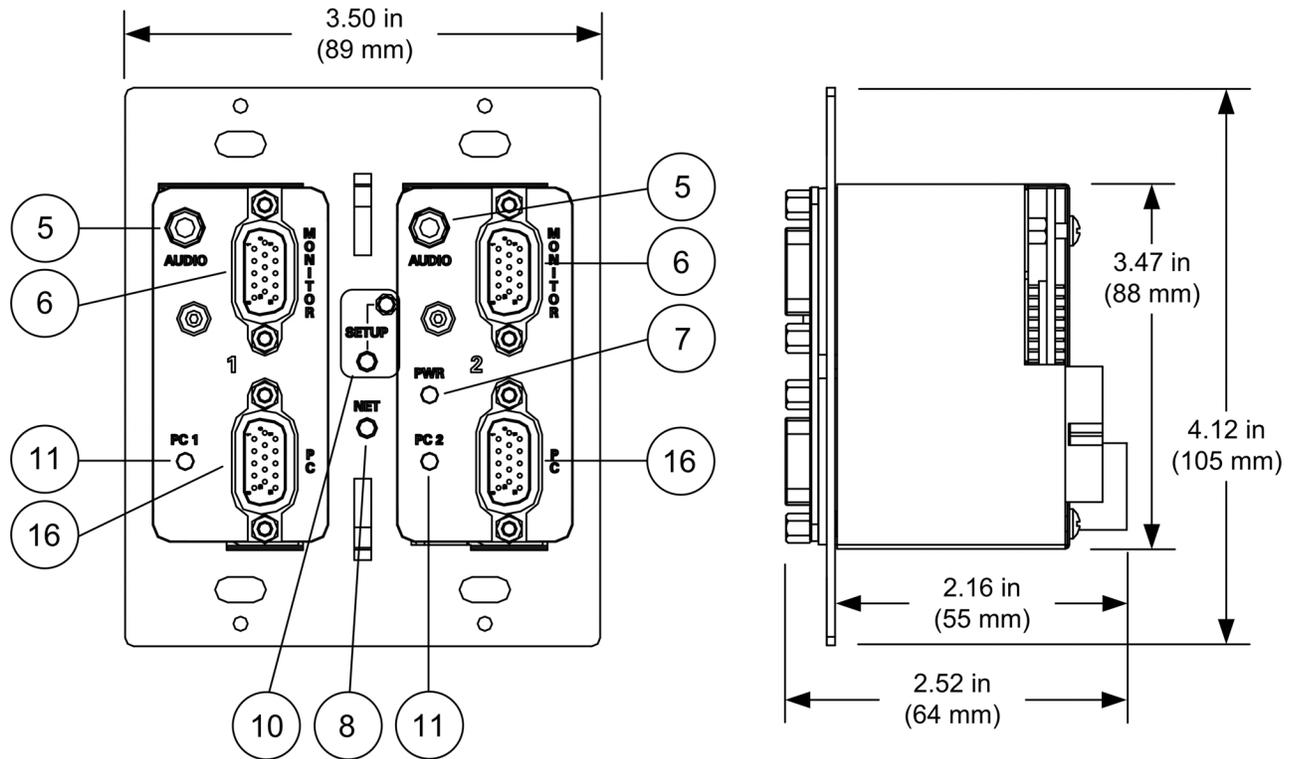
QM-WMC Overall Dimensions (Front and Side Views)



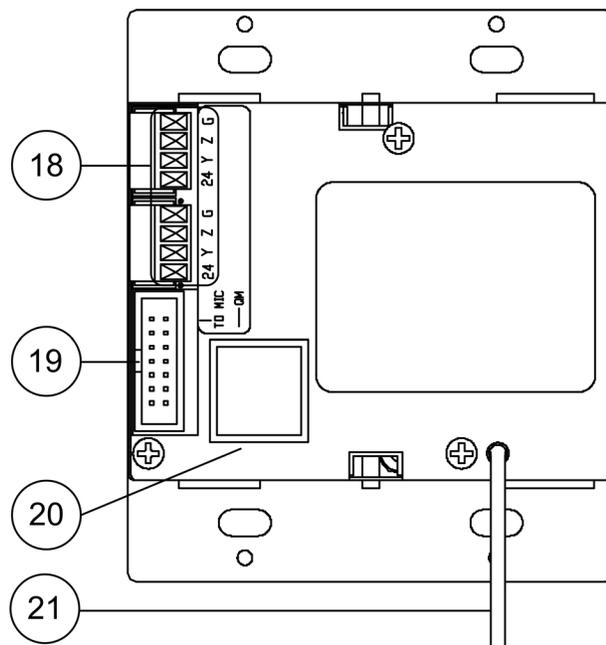
QM-WMC-VCC Overall Dimensions (Front and Side Views)



QM-WCC-2 Overall Dimensions (Front and Side Views)



QM-WMC/WMC-VCC/WCC-2 Overall Dimensions (Rear View)

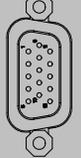
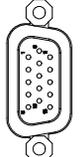


Connectors, Controls & Indicators

| # | CONNECTORS ¹ , CONTROLS & INDICATORS | DESCRIPTION | | | | | | | | | | |
|-----|---|---|-----|-------------|---|------------------|---|--------------------|---|-----------|---|-------------|
| 1 | <p>S-VIDEO²</p>  | <p>(1) 4-pin mini DIN female, S-video (Y/C) input Input impedance: 75 Ω Maximum input level: 1 V_{p-p} Signal sensing on Y</p> <p><i>S-video DIN Connector Pin Assignments</i></p> <table border="1" data-bbox="933 657 1448 926"> <thead> <tr> <th data-bbox="933 657 1027 709">PIN</th> <th data-bbox="1027 657 1448 709">DESCRIPTION</th> </tr> </thead> <tbody> <tr> <td data-bbox="933 709 1027 762">1</td> <td data-bbox="1027 709 1448 762">Luminance Ground</td> </tr> <tr> <td data-bbox="933 762 1027 814">2</td> <td data-bbox="1027 762 1448 814">Chrominance Ground</td> </tr> <tr> <td data-bbox="933 814 1027 867">3</td> <td data-bbox="1027 814 1448 867">Luminance</td> </tr> <tr> <td data-bbox="933 867 1027 926">4</td> <td data-bbox="1027 867 1448 926">Chrominance</td> </tr> </tbody> </table> | PIN | DESCRIPTION | 1 | Luminance Ground | 2 | Chrominance Ground | 3 | Luminance | 4 | Chrominance |
| PIN | DESCRIPTION | | | | | | | | | | | |
| 1 | Luminance Ground | | | | | | | | | | | |
| 2 | Chrominance Ground | | | | | | | | | | | |
| 3 | Luminance | | | | | | | | | | | |
| 4 | Chrominance | | | | | | | | | | | |
| 2 | <p>AUDIO (S-video)²</p>  | <p>(2) RCA female; Unbalanced stereo line level audio input; Input impedance: 10 kΩ; Maximum input level: 2 V_{rms}</p> | | | | | | | | | | |
| 3 | <p>AUDIO (video)²</p>  <p>AUDIO (composite)³</p>  | <p>(2) RCA female; Unbalanced line level audio input; Input impedance: 10 kΩ; Maximum input level: 2 V_{rms}</p> | | | | | | | | | | |
| 4 | <p>VIDEO²</p>  <p>VID (COMPOSITE)³</p>  | <p>(1) RCA female, composite video input; Input impedance: 75 Ω Maximum input level: 1 V_{p-p} Includes signal sensing</p> | | | | | | | | | | |

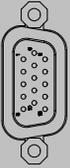
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Connectors, Controls & Indicators (Continued)

| # | CONNECTORS ¹ , CONTROLS & INDICATORS | DESCRIPTION |
|----|--|--|
| 5 | AUDIO  | (1) 3.5 mm TRS mini phone jack; Unbalanced stereo line level audio input; Input impedance: 10 k Ω ; Maximum input level: 1 V _{rms} |
| 6 | MONITOR ⁴  | DB15HD female, buffered RGBHV pass-through |
| 7 | PWR LED | (1) Green LED, indicates 24 Volts DC power supplied from Cresnet network |
| 8 | NET LED | (1) Yellow LED, indicates communication with Cresnet system |
| 9 | COMPUTER ²  | (1) DB15HD female; RGB(VGA)/component video ⁵ input; Formats: RGBHV, RGBS, RGsB, YP _b P _r ; Input impedance: 75 Ω H sync impedance: 1 k Ω V sync impedance: 2.2 k Ω Maximum input level: 1 V _{p-p} Maximum sync level: 5 V _{p-p} Signal sensing on H sync only |
| 10 | SETUP (Button and LED) | (1) Miniature pushbutton and red LED, used for touch-settable ID (TSID) |

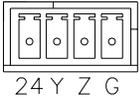
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Connectors, Controls & Indicators (Continued)

| # | CONNECTORS ¹ , CONTROLS & INDICATORS | DESCRIPTION |
|----|---|--|
| 11 | COMP ² / PC ³ / PC (1-2) ⁶ LED | (1) Red LED, indicates a signal at the COMPUTER, PC or PC (1-2) input |
| 12 | VIDEO ² / VID ³ LED | (1) Red LED, indicates a signal at the VIDEO or COMPOSITE input |
| 13 | S-VID ² LED | (1) Red LED, indicates a signal at the S-VIDEO input |
| 14 | COMPONENT ³  | (3) RCA female, component video input; Formats: YP _b P _r , Y/C ⁷ ; Input impedance: 75 Ω Maximum input: level: 1 V _{p-p} Signal sensing on P _b |
| 15 | AUDIO (component) ³  | (2) RCA female; Unbalanced stereo line level audio input; Input impedance: 10 kΩ; Maximum input level: 2 V _{rms} |
| 16 | PC ⁸  | DB15HD female; RGB(VGA) input; Formats: RGBHV, RGBS, RGsB; Input impedance: 75 Ω H sync impedance: 1 kΩ V sync impedance: 2.2 kΩ Maximum input: level: 1 V _{p-p} Maximum sync level: 5 V _{p-p} Signal sensing on H sync only |
| 17 | Y PB PR LED ³ | (1) Red LED, indicates a signal at the COMPONENT input |

(Continued on following page)

Connectors, Controls & Indicators (Continued)

| # | CONNECTORS¹, CONTROLS & INDICATORS | DESCRIPTION |
|----|--|--|
| 18 | <p style="text-align: center;">NET</p>  | <p>(2) Four-position terminal block connectors for data and power. Cresnet slave ports, paralleled; Connect to Cresnet control network via CresCAT-QM or Cresnet cable</p> <p style="margin-left: 40px;">24: Power (24 Volts DC) Y: Data Z: Data G: Ground</p> |
| 19 | <p style="text-align: center;">TO MIC</p>  | <p>(1) 14-pin header; Accepts connection from optional QM-WMIC Microphone Input Module (sold separately)</p> |
| 20 | <p style="text-align: center;">QM^{9, 10}</p>  | <p>(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</p> |
| 21 | GROUNDING WIRE | (1) Flying lead, grounding wire |

1. Interface connectors for the **NET** ports are provided with the unit.
2. QM-WMC only.
3. QM-WMC-VCC only.
4. One on QM-WMC and QM-WMC-VCC. Two on QM-WCC-2.
5. S-video (Y/C) may require an appropriate adapter or breakout cable (not included).
6. QM-WCC-2 only.
7. S-video (Y/C) may require an appropriate adapter or breakout cable (not included) to connect to the **COMPONENT** input.
8. QM-WMC-VCC and QM-WCC-2 only. One on QM-WMC-VCC, two on QM-WCC-2.
9. 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.

10. The eight-pin RJ-45 QuickMedia transport port accepts CAT5E/CAT6 carrying audio, video and microphone signals. The QM output 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 _r) |
| 2 | ORANGE | + RGB RED | + CHROMINANCE (+ P _r) |
| 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 _b) |
| 8 | BROWN | + RGB BLUE | + COMPOSITE (+ P _b) |

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.

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

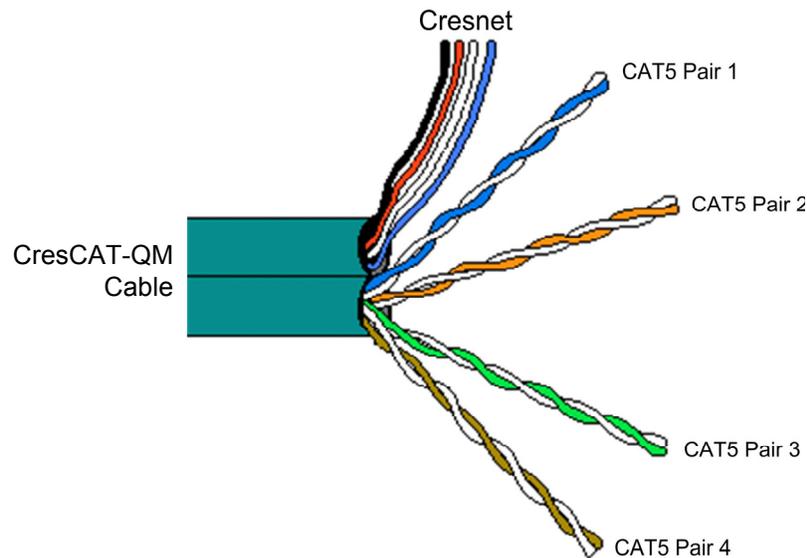
- For networks with 20 or more devices, use a Cresnet Hub/Repeater (CNXHUB) to maintain signal quality.

For more details, refer to “Check Network Wiring” which starts on page 38.

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 from the Crestron website.

CresCAT-QM Cable



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.

The aggregate cable length of a signal path originating at a QM-WMC/WMC-VCC/WCC-2 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.

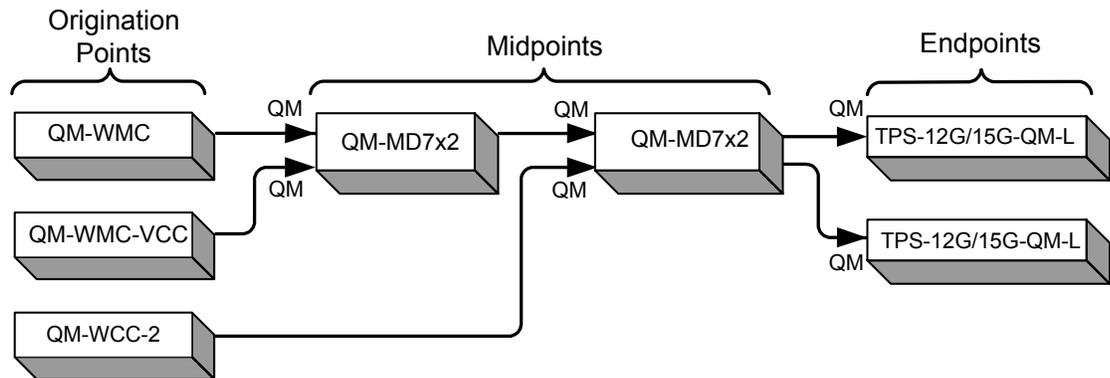
NOTE: When transmitting S-video or composite video, luminance uses the green video pathway and chrominance uses the red video pathway. When transmitting composite video, the signal is carried on the blue video pathway.

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

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.

NOTE: The aggregate length from transmitter to receiver cannot have a delay skew of more than 22 ns per 100 meters.

QM Network Topology



Identity Code

The Net ID of the QM-WMC has been factory set to **04**. The Net ID of the QM-WMC-VCC has been factory set to **8F**. The Net ID of the QM-WCC-2 has been factory set to **8E**. The Net IDs of multiple QM-WMC/WMC-VCC/WCC-2 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 34).

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.

Installation

NOTE: If the QM-WMIC is to be used, refer to the installation instructions in the latest revision of the QM-WMIC Operations and Installation Guide (Doc. 6245) which is available from the Crestron website.

The QM-WMC/WMC-VCC/WCC-2 should be used in a well-ventilated area. The venting holes should not be obstructed under any circumstances.

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

The following items and tools are required for installation:

- CresCAT-QM QuickMedia cable or equivalent (not supplied) terminated with RJ-45 connector for media signals and mini-phoenix connector for Cresnet signals. Refer to “Network Wiring” on page 21 and “QuickMedia Wiring” which starts on page 21.
- Phillips screwdriver (not supplied)
- Four #06-32 x 3/4” pan head Phillips screws (supplied)
- Standard two or three-gang electrical box (not supplied)
- Decorator style or equivalent faceplate

After Cresnet and QM wiring has been installed and verified, use the following procedure to install the QM-WMC/WMC-VCC/WCC-2 in a standard, two-gang electrical box. (When using the QM-WMIC option, install in a three-gang electrical box.)

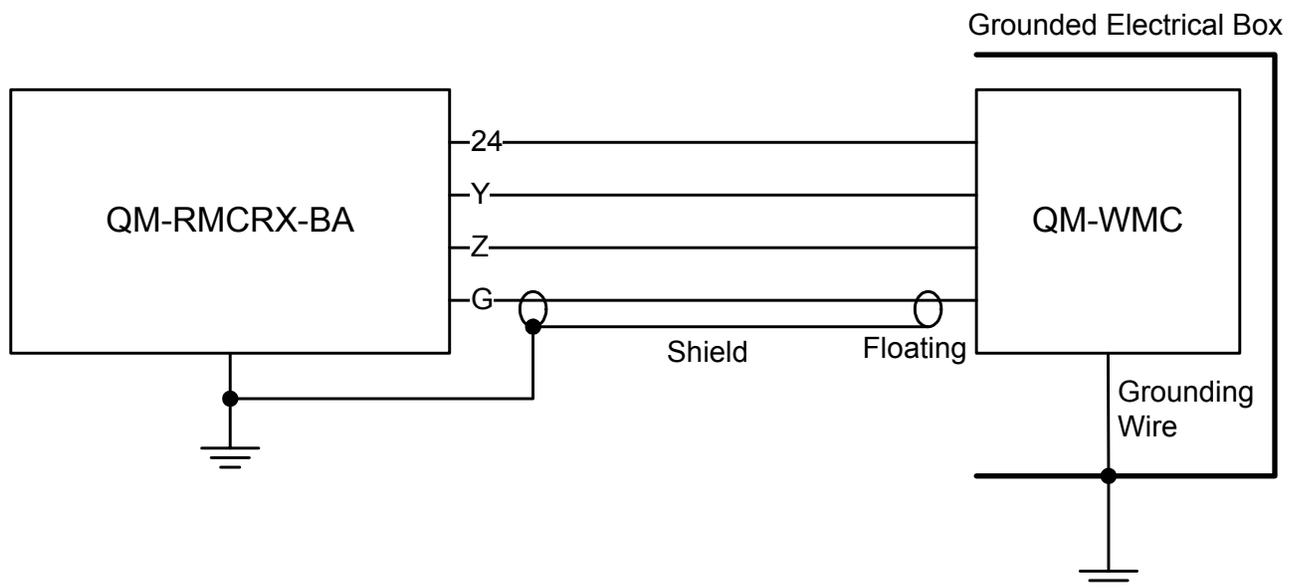
1. Turn Cresnet system power **OFF**.
2. Connect the Cresnet cable with the supplied connector plug to the QM-WMC/WMC-VCC/WCC-2’s Cresnet port and the other end to the control system. Refer to illustration on page 27 for location of the Cresnet ports.
3. Connect the terminated QuickMedia cable to the QM-WMC/WMC-VCC/WCC-2’s RJ-45 QuickMedia (QM) port and the other end to an available QuickMedia port on a QuickMedia device. Refer to illustration on page 27 for location of the QuickMedia port.

4. Remove the pre-cut insulation from the QM-WMC/WMC-VCC/WCC-2's grounding wire on the back of the device and connect the grounding wire to an appropriate ground. (Refer to illustration on page 27 for location of the grounding wire.)

Suitable grounding methods are:

- Connect the grounding wire to the electrical box or a ground wire in the electrical box, as shown in the following illustration. (The electrical box must be earth grounded.)

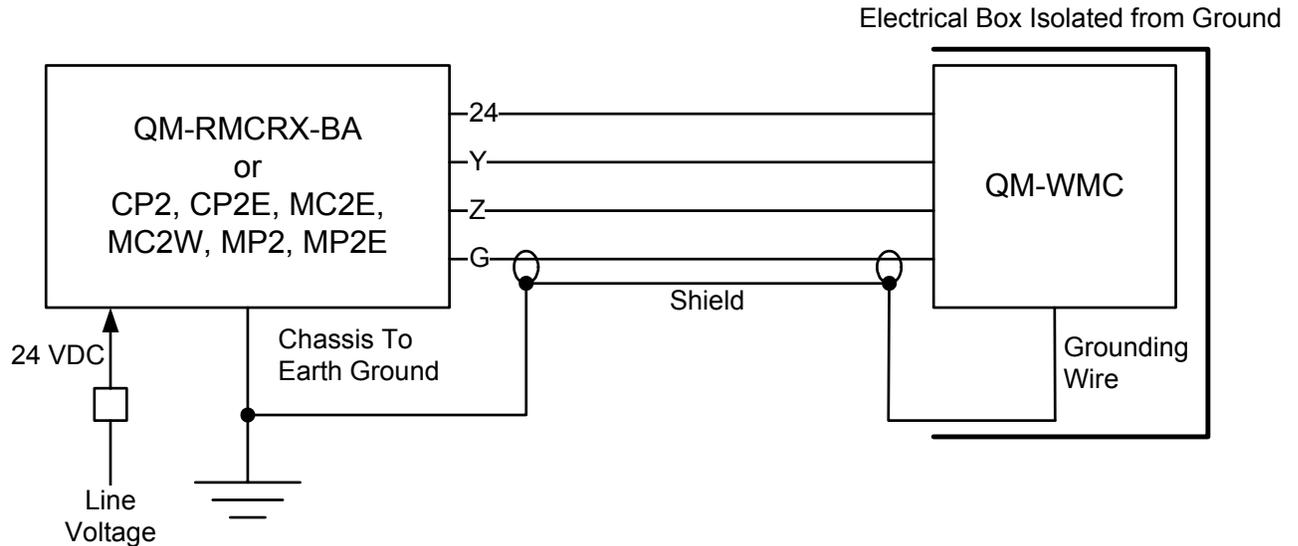
Grounding the QM-WMC/WMC-VCC/WCC-2 to a Grounded Electrical Box (QM-WMC Shown)



OR

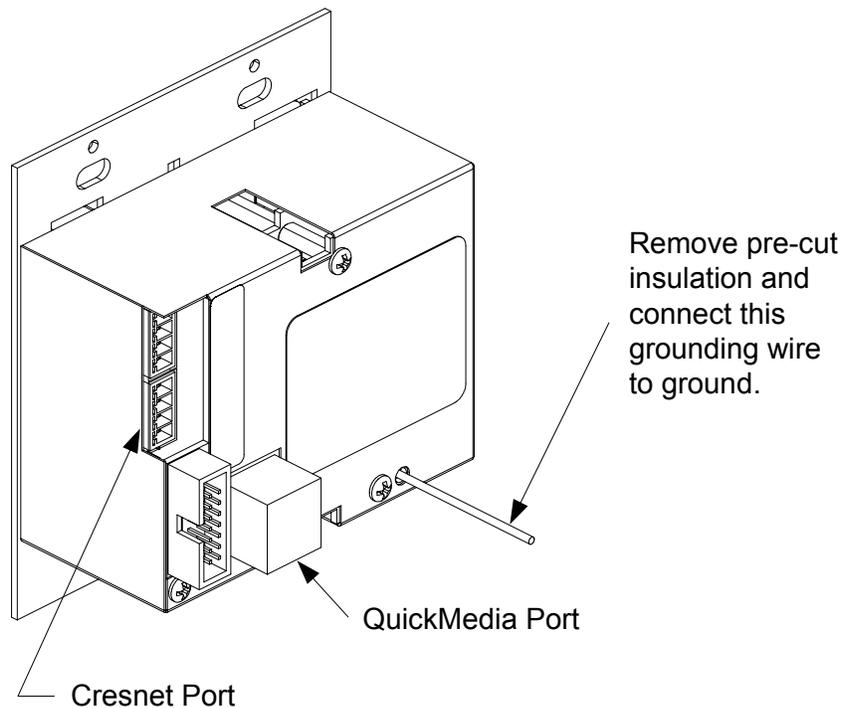
- Connect the ground wire to the Cresnet shield and connect the Cresnet shield at the QM-RMCRX-BA to the chassis of the QM-RMCRX-BA as shown in the following illustration. (The QM-RMCRX-BA must be connected to an earth ground.) In this instance, the Cresnet shield is not connected to Cresnet ground.

Grounding the QM-WMC/WMC-VCC/WCC-2 Using Cresnet Shield to Grounded Chassis (QM-WMC Shown)



NOTE: When the Cresnet shield is used to connect the QM-WMC/WMC-VCC/WCC-2 to the ground terminal of a PRO2, PAC2, AV2 or any other 2-Series control system where the chassis is already earth grounded, the grounding wire from the control system to earth ground is unnecessary.

Cresnet Ports, QuickMedia Port and Grounding Lead Locations

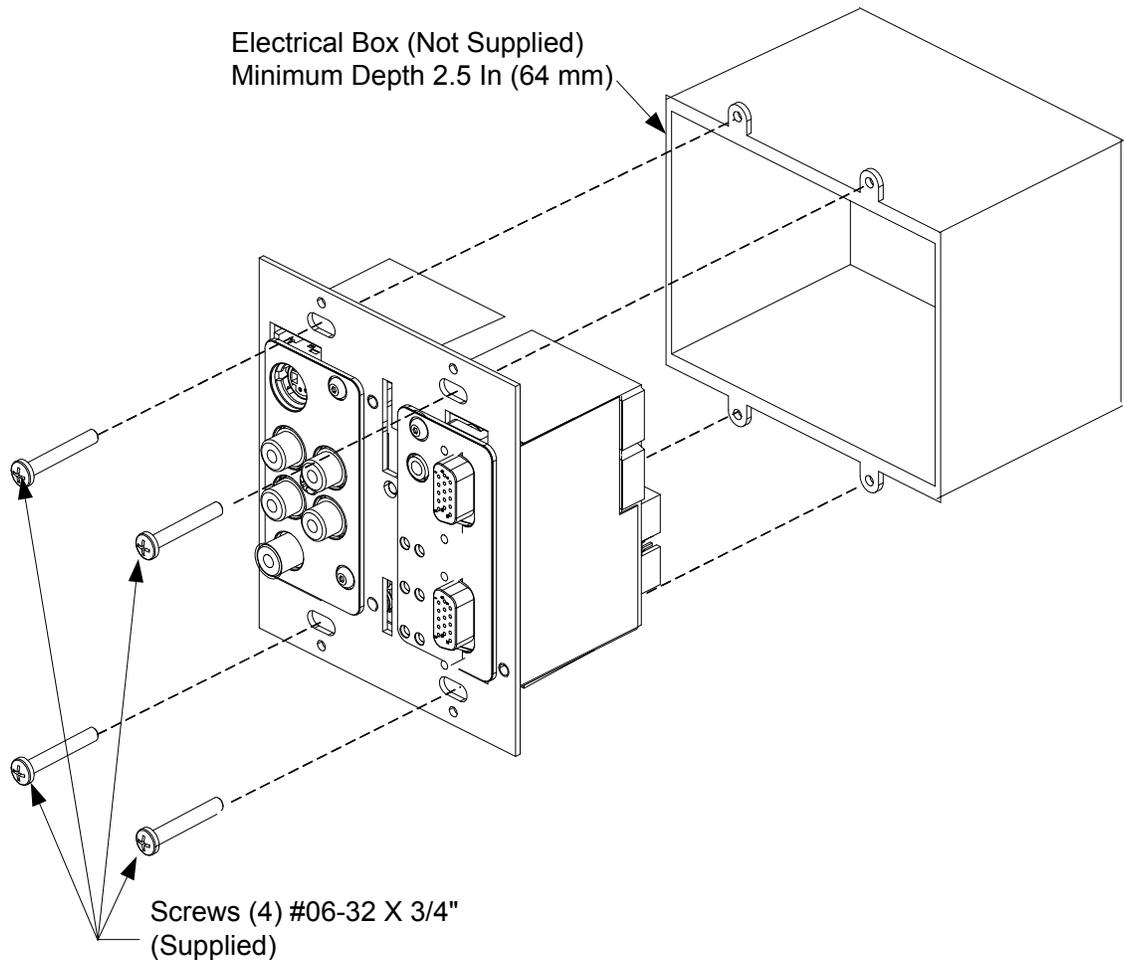


5. Make sure the QM-WMC/WMC-VCC/WCC-2 is properly oriented (labels are upright) and place it in the electrical box.

CAUTION: Excess wire that is pinched between the QM-WMC/WMC-VCC/WCC-2 and the electrical box could short out. Make sure all excess wire is completely inside the electrical box and not between the box and the QM-WMC/WMC-VCC/WCC-2.

6. Attach the QM-WMC/WMC-VCC/WCC-2 to the electrical box using the supplied #06-32 x 3/4" pan head screws as shown in the following illustration.

*Install QM-WMC/WMC-VCC/WCC-2 into Two-Gang Electrical Box
(QM-WMC Shown)*



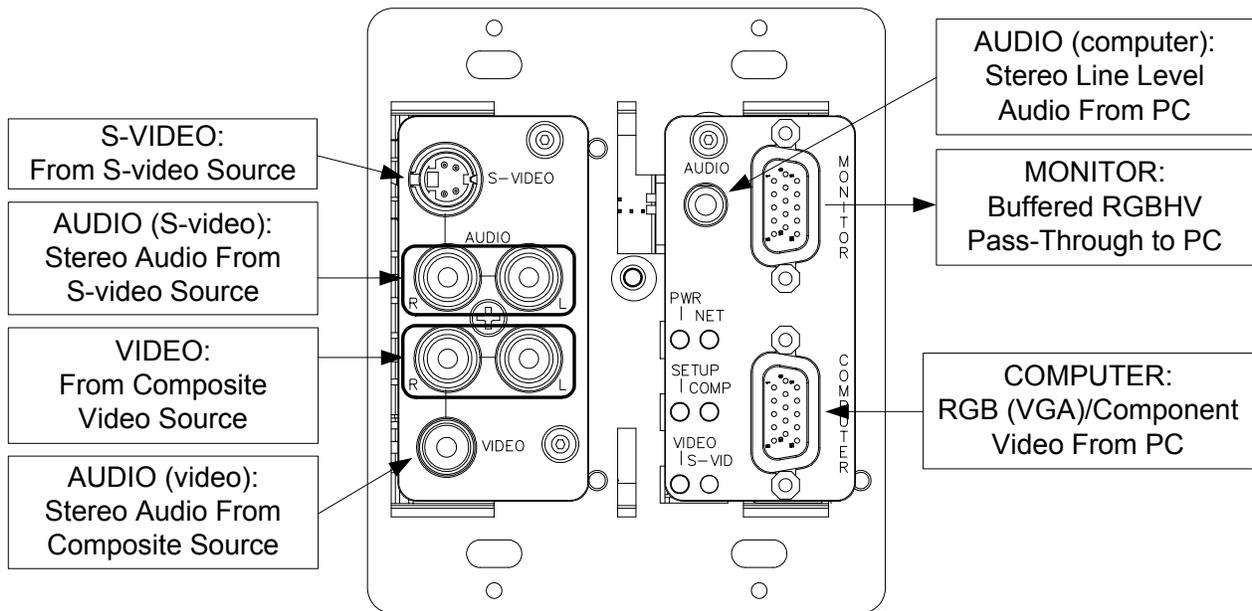
7. Attach an appropriate decorator style or equivalent faceplate (not supplied).
8. Turn Cresnet system power **ON**.

Hardware Hookup

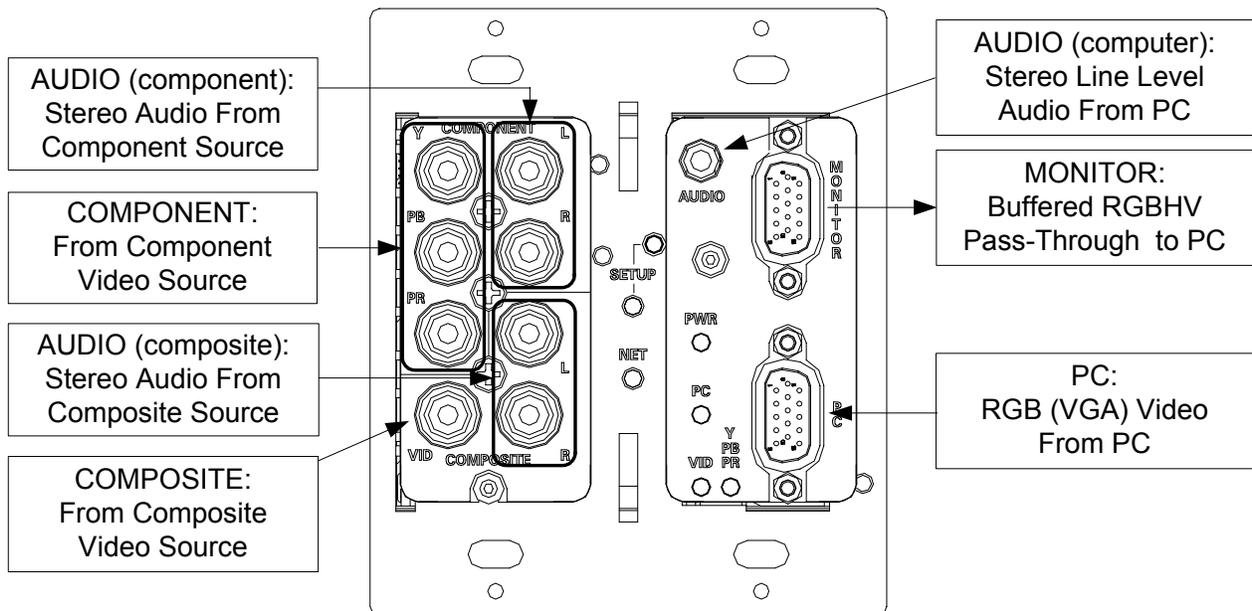
Make the necessary connections as called out in the illustrations that follow this paragraph. Refer to “Network Wiring” on page 21 before attaching the 4-position terminal block connector. Apply power after all connections have been made.

When making connections to the QM-WMC/WMC-VCC/WCC-2, use Crestron power supplies for Crestron equipment.

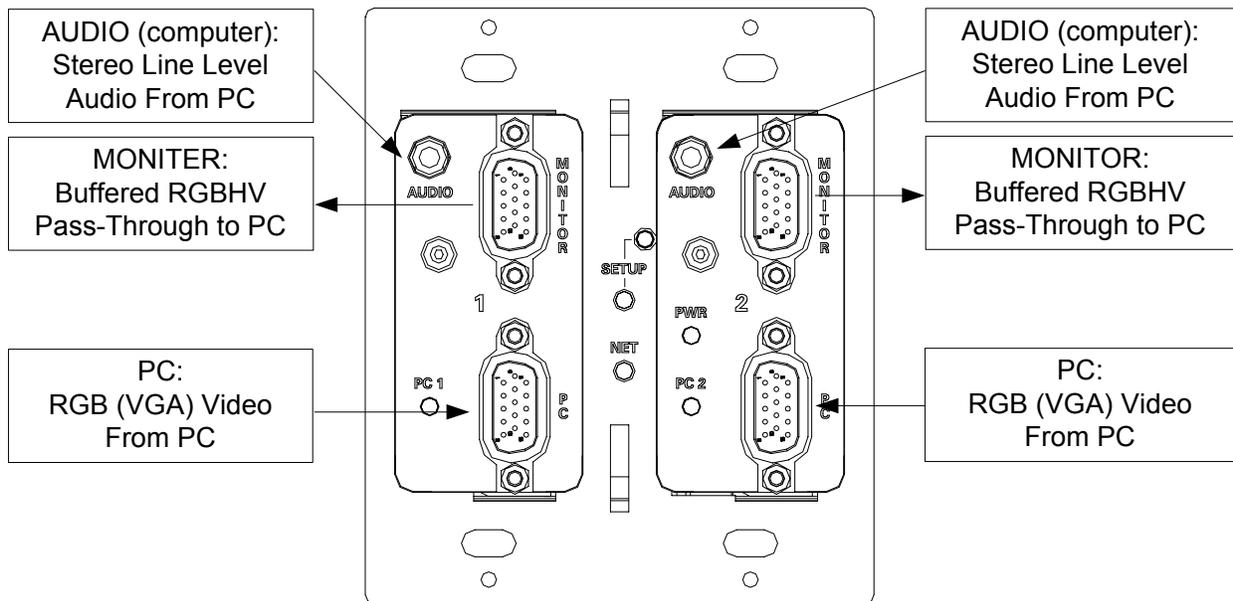
Hardware Connections for the QM-WMC



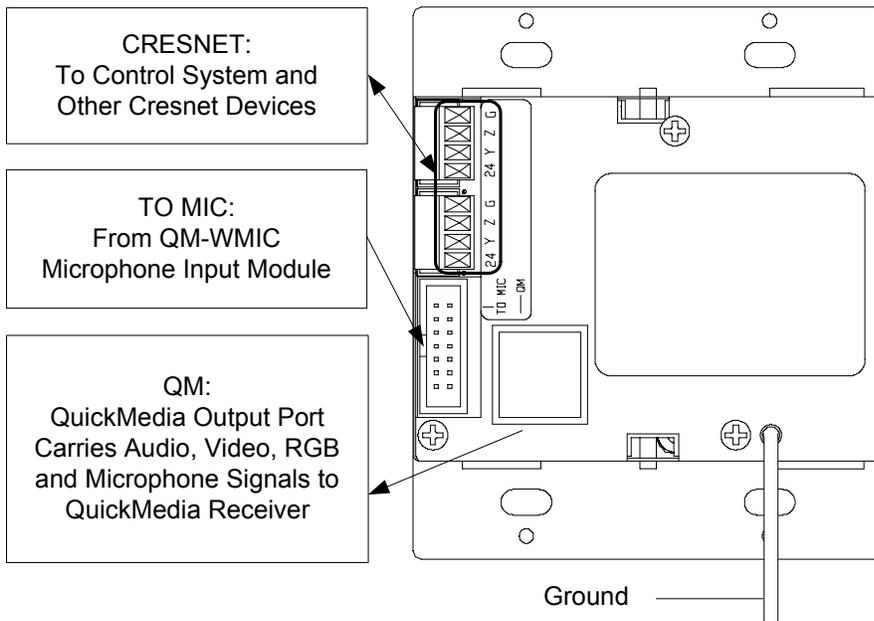
Hardware Connections for the QM-WMC-VCC



Hardware Connections for the QM-WCC-2



Hardware Connections for the QM-WMC/WMC-VCC2/WCC-2 (Rear View)



NOTE: Ensure the unit is properly grounded. Refer to step 4 on page 26.

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.

Programming Software

Have a question or comment about Crestron software?

Answers to frequently asked questions (FAQs) can be viewed in the Online Help section of the Crestron 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.

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.

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).

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

NOTE: While SIMPL Windows can be used to program the QM-WMC/WMC-VCC/WCC-2, it is recommended to use SystemBuilder for configuring a QuickMedia system.

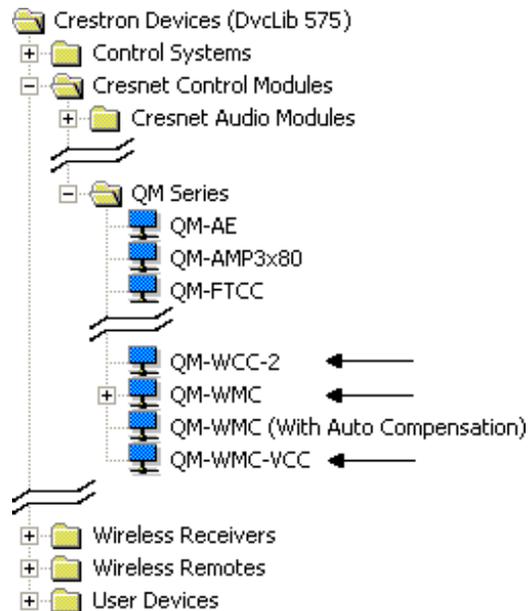
SIMPL Windows is Crestron's premier software for programming Crestron control systems. It is organized into two separate but equally important "Managers".

Configuration Manager

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

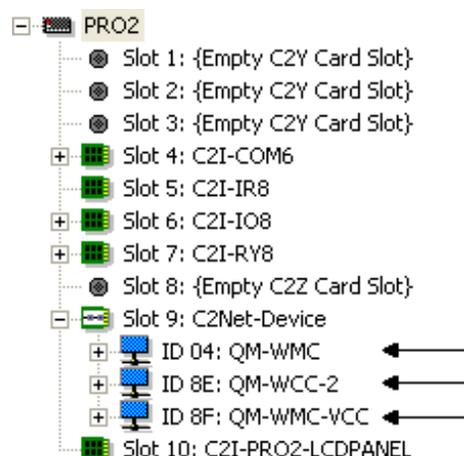
- To incorporate the QM-WMC/WMC-VCC/WCC-2 into the system, drag the QM-WMC/WMC-VCC/WCC-2 from the Cresnet Control Modules | QM Series folder of the *Device Library* and drop it in the *System Views*.

Locating the QM-WMC/WMC-VCC/WCC-2 in the Device Library



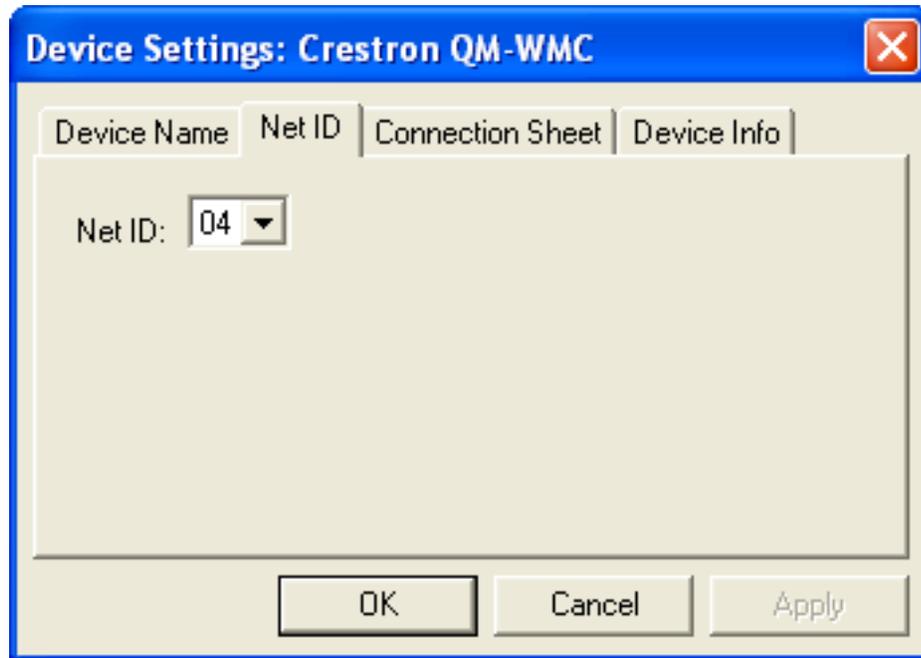
- The system tree of the control system displays the device in the appropriate slot with a default Net ID as shown in the following illustration.

C2Net Device, Slot 9



- Additional QM-WMC/WMC-VCC/WCC-2 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.

**“QM-WMC/WMC-VCC/WCC-2 Device Settings” Window
(QM-WMC Shown)**



- The ID code specified in the SIMPL Windows program must match the Net ID of each unit. Refer to “Identity Code” on page 23.

Program Manager

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

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

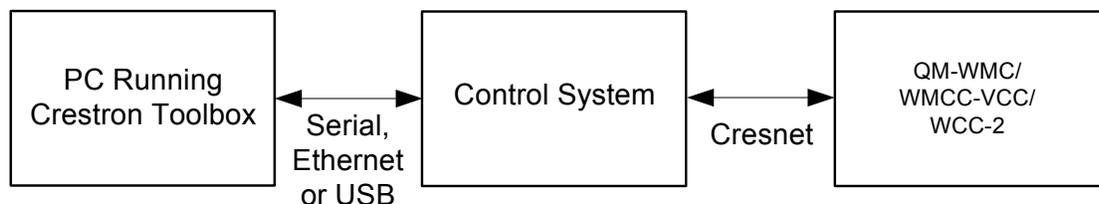
Uploading and Upgrading

Crestron recommends using the latest programming software and that each device contains the latest firmware to take advantage of the most recently released features. However, before attempting to upload or upgrade it is necessary to establish communication. Once communication has been established, files (for example, 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 or creating an IP table) to ensure proper functioning.

Establishing Communication

Use Crestron Toolbox for communicating with the QM-WMC/WMC-VCC/WCC-2; refer to the Crestron Toolbox help file for details. There is a single method of communication: indirect communication.

Indirect Communication



- QM-WMC/WMC-VCC/WCC-2 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-WMC/WMC-VCC/WCC-2 using the expected communication protocol (Indirect). Select the Cresnet ID of the QM-WMC/WMC-VCC/WCC-2 and the address book entry of the control system that is connected to the QM-WMC/WMC-VCC/WCC-2.

- Display the QM-WMC/WMC-VCC/WCC-2'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-WMC/WMC-VCC/WCC-2 firmware via Crestron Toolbox.

- Establish communication with the QM-WMC/WMC-VCC/WCC-2 and display the "System Info" window.
- Select **Functions | Firmware...** to upgrade the QM-WMC/WMC-VCC/WCC-2 firmware.

Program Checks

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-WMC/WMC-VCC/WCC-2 to display actions that can be performed on the QM-WMC/WMC-VCC/WCC-2.

QM Tools

In the Crestron Toolbox Address Book, select the QM-WMC, QM-WMC-VCC or QM-WCC-2. Then use the QM Tools to configure audio/video settings, including EDID (QM-WMC-VCC or QM-WCC-2 only). 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-WMC/WMC-VCC/WCC-2 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. |

(Continued on following page)

QM-WMC/WMC-VCC/WCC-2 Troubleshooting (Continued)

| TROUBLE | POSSIBLE CAUSE(S) | CORRECTIVE ACTION |
|--|---|--|
| PWR 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. |
| Intermittent or no audio output. | Incorrect peak setting. | Adjust QM-RMCRX-BA peak control until audio is restored. For more information, refer to the latest revision of the QM-RMCRX-BA Operations Guide (Doc. 6332). |
| | Poor cable connection. | Verify all cable connections. |
| Poor RGB or video image quality. | Incorrect peak and/or boost setting. | Adjust QM-RMCRX-BA peak or boost controls until image quality is improved. For more information, refer to the latest revision of the QM-RMCRX-BA Operations Guide (Doc. 6332). |
| 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).

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 mm²))
 or 1.6 Ohms (Cresnet HP: 12 AWG (4 mm²))
 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). 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 |
| QM-RMCRX-BA Room Media Controller and QuickMedia Receiver |
| QM-WMIC Microphone Input Module |

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) 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-WMC/WMC-VCC/WCC-2, 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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**Operations & Installation Guide – DOC. 6237C
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07.10

Specifications subject to
change without notice.