Crestron **TPMC-12**
Isys i/O® Tilt Touchpanel Media Center
Operations Guide

CRESTRON®

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CRESTRON.

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Contents

Isys i/O® Tilt Touchpanel Media Center: TPMC-12

Introduction

The Isys i/O® TPMC-12 delivers a stylish and powerful touchpanel control solution, featuring blazingly fast performance and native capabilities for browsing the Internet, streaming multimedia and more. A brilliant 12" active matrix SVGA display, 24-bit color depth and 8-bit alpha channel transparency combine to produce stunning 3D graphics using DNav dynamic menu objects, dynamic graphics and text, animations, multimode objects, full motion or streaming video and exclusive Synapse™ image rendering, all with astonishing speed.

Features and Functions

- 12" active matrix touchscreen display
- 24-bit Isys graphics | 800 x 600 resolution
- Synapse image rendering algorithm
- DNav dynamic menu objects
- Full motion video with gamma correction
- Interactive annotation capability
- Windows® XP Embedded operating system
- Windows® SideShow® enabled
- Onboard PC applications for Web browsing, streaming media, conferencing, VoIP and remote computer access
- Multi-format streaming video and audio
- WAV file audio feedback
- Built-in amplified speaker system and microphone
- QuickMedia® and Crestron Home® CAT5 connectivity
- High speed Ethernet and Cresnet® communications
- Rear panel USB ports and memory card slot
- Backlit "hard key" pushbuttons
- Slimline tiltcase housing
- Integral rear cover and cable strain relief
- Available in black or white

Isys i/O® Touchpanel Control

Crestron® touchpanels offer an ideal user interface for multimedia presentation, home automation and much more, providing a wide open canvas for the creation of custom control screens tailored to the needs of the end user. Touchpanels do away with piles of remote controls, cryptic control panels and cluttered wall switches, simultaneously expanding and simplifying control over a broad range of complex devices and systems.

Synapse™

Crestron's exclusive Synapse Image Rendering Algorithm enables system programmers to produce amazing graphics – faster and easier. Advanced antialiasing delivers crisper, sharper objects and text. Enhanced 3D effects add new depth and style. Since Synapse is native to the touchpanel, memory requirements and upload time are substantially reduced.

Embedded PC

The power of Isys i/O is in its embedded PC engine, combining rock solid touchpanel performance with built-in Windows Media® Player and RealPlayer®, Internet Explorer, Adobe® Acrobat® Reader and Microsoft® Word, Excel and PowerPoint® document viewers. While simultaneously controlling your home, boardroom or lecture hall, the TPMC-12 provides everything needed for enjoying online music and movies, viewing Web pages and accessing most types of digital media without necessitating a separate computer.

Support for Windows® SideShow® gives the TPMC-12 access to all kinds of PC and Web-based content such as news feeds, sports scores, weather alerts, media guides, email messages and appointment notifications, all through a simple network connection to a Windows Vista™ computer.

VNC Viewer support delivers enhanced cross-platform interaction with remote computers over the network or Internet, allowing access and control of desktop applications with live presentation capability.

Built on the Windows® XP Embedded operating system, the TPMC-12 delivers a powerful and secure platform for touchpanel control with integrated PC capabilities. Programmatic control erases the lines between control system and PC, allowing programmers to customize each application's behavior within the touchpanel environment to create a truly powerful and user-friendly interface.

Integrated Video

For presentation preview, surveillance or pure entertainment, the TPMC-12 provides multiple ways to view video signals from security cameras, movies and other sources right on the touchscreen. Video images can be displayed full screen as well as in a fully scalable window. High quality, full motion video is supported via a direct wire connection from an external AV source. Streaming video is also supported in a variety of formats over the LAN connection, enabling access to everything from online streaming videos to personal media servers to live Web cameras.

Interactive Annotation

Built-in annotation capability allows presenters to write or draw over video images right on the touchscreen using a finger or stylus. Moving images can also be frozen on screen to allow annotation over a still picture. Brush sizes and colors are selectable on the fly. Remote annotation capability allows multiple touchpanel users to draw over the same image, supporting interactive annotation between several participants in a courtroom, classroom or similar environment.

High Quality Audio

Built-in amplified speakers provide clear audio for external AV sources, streaming media and internal PC applications and enable two-way intercom in combination with the integrated microphone. Customized WAV files can be loaded on the touchpanel to add dimension to the touchscreen graphics with personalized sounds, button feedback and voice prompts.

Crestron Home® CAT5 AV

Connecting audio and video sources to the TPMC-12 is facilitated using inexpensive CAT5 wire, enabling direct connection to Crestron's popular CAT5 balanced audio and video distribution switchers. A single video input port accepts signals from composite, S-video and standard definition component sources over wiring distances of up to 750 feet (229 meters). A bidirectional audio port receives stereo program audio and intercom signals and outputs audio from the internal PC and microphone. To facilitate the connection of conventional video and audio devices, an external interface module (TPMC-CH-IMC) is included.

QuickMedia®*

The TPMC-12 is also equipped with a single QuickMedia input port. Through QuickMedia (QM), the TPMC-12 interfaces directly with Crestron's QM-based MediaManager products using a single CAT5e type cable. Over wiring distances of up to 450 feet (137 meters), the QM input port accepts video signals from composite, S-video and standard definition component sources along with discrete audio signals from one stereo program source and up to two microphones.

*   QuickMedia implementation in this product supports standard definition video only; does not support HDTV or high resolution RGB.

High Speed Connectivity

Both Cresnet® and high speed Ethernet are standard on the TPMC-12, providing for easy network integration and seamless communications with Crestron control systems, media servers and computers. Two USB 2.0 ports are also included on the rear panel to support a mouse and keyboard and external storage devices.

Slimline Tiltcase Design

The stylish tiltcase housing allows smooth tilt adjustment from 45 to 90 degrees and features an integral cable strain relief system and rear cover to secure and hide the connections at the back of the touchpanel. Four backlit pushbuttons are also provided, allowing for quick access to commonly used functions.

Specifications

Specifications for the TPMC-12 are listed in the following table.

TPMC-12 Specifications

SPECIFICATION	DETAILS
Touchscreen Display	
Display Type	TFT active matrix color LCD
Size	12 inch (30.5 cm) diagonal
Aspect Ratio	4:3 SVGA
Resolution	800 x 600 pixels
Brightness	400 nits
Contrast	600:1
Color Depth	18-bit, 256k colors
Illumination	Backlit fluorescent
Viewing Angle	±80º horizontal, +80º/-60º vertical
Touchscreen	Resistive membrane
Memory	
SRDAM	512 MB
Flash	2 GB
Memory Card	Expandable up to 4 GB using MMC compatible card (not included)
Maximum Project Size	120 MB using external flash
Operating System	Microsoft® Windows® XP Embedded
Graphic Engine	Isys i/O engine, 24 bit non-palette graphics + 8 bit alpha channel translucency, 16.7 million colors, Synapse image rendering algorithm, multi-mode objects, DNav dynamic menu objects, dynamic graphics[1], Windows® SideShow® support, PNG translucency, full-motion (60 fps) animation, transition effects, color key video windowing, remote annotation.
Embedded PC Applications[2]	Microsoft Internet Explorer w/Macromedia® Flash® plug-in, Windows Media® Player, RealPlayer®, Axis® Media Control, Crestron MJPEG Viewer, NetMeeting®, Remote Desktop, VNC Viewer[3], Java™ Runtime, Crestron MediaMarker™ Notebook, Crestron Keyboard, Adobe® Acrobat® Reader, WordPad, MS Word Viewer 2007, Excel® Viewer 2007, PowerPoint® Viewer 2007.
Ethernet	10/100/1000 Mbps, auto-switching, auto-negotiating, auto-discovery, full/half duplex TCP/IP, UDP/IP, CIP, DHCP, IEEE 802.3U compliant; Unit ships with DHCP enabled

(Continued on following page)

TPMC-12 Specifications (Continued)

SPECIFICATION	DETAILS
Video	
Signal Types	Auto-detecting composite, S-video or component
Formats	NTSC 480i or PAL 576i
Color Depth	24-bit, 16.7M colors
Features	Single window scalable to full screen, input switching between **QM** and **VIDEO** inputs, gamma correction, line doubling
Streaming/File Formats	MPEG4 and MJPEG via Axis Media Control or Crestron MJPEG Viewer, plus all formats supported by the embedded media player applications[2]
Audio	
Hardware Features	Built-in microphone and amplified speakers, internal volume control and audio mixer
Streaming/File Formats	All formats supported by the embedded media player application[2]
Audio Feedback (WAV)	8 and 16-bit PCM, mono and stereo, 8 - 44.1 kHz sampling rates
D-A Conversion (QM only)	24-bit, 48 kHz
Amplification	Mono, 5 Watts x 2
Power Requirements	
Cresnet Power Usage	37 Watts (1.54 Amps @ 24 Volts DC)
Default Net ID[4]	03
Control System Update Files[5, 6]	
2-Series Control System	Version 3.137 or later
Environmental	
Temperature	41° to 113° F (5° to 45° C)
Humidity	10% to 90% RH (non-condensing)
Heat Dissipation	126 BTU/Hr
Enclosure	
Construction	High impact injection-molded case, tilt screen with adjustable tension, integral rear cover and cable strain relief in base
Screen Tilt	Adjustable 45 to 90 degrees
Dimensions	
Height	12.15 in (30.87 cm)
Width	12.85 in (32.64 cm)
Depth	12.40 in (31.50 cm)
Weight	13.0 lbs (5.9 kg)
Available Models	
TPMC-12B	Isys i/O 12" Tilt Touchpanel Media Center, Black
TPMC-12W	Isys i/O 12" Tilt Touchpanel Media Center, White

(Continued on following page)

TPMC-12 Specifications (Continued)

SPECIFICATION	DETAILS
Included Accessories	
TPMC-CH-IMC	CAT5 Balanced AV Interface Module + 15 ft triamese cable; refer to the latest revision of the TPMC-CH-IMC Operations Guide (Doc. 6345) for more information
Available Accessories	
CresCAT™ D	Crestron Home® CAT5 Balanced AV Cable
CresCAT™ IM	iMedia cable
CresCAT™ QM	QuickMedia Cable
QM-TX	QuickMedia Transmitter
SMK-12/15/17	Swivel Mount Kit
TPMC-CH-IMW	CAT5 Balanced AV Interface Wall Plate
TPS/TPMC-CBL-T	Triamese Interface Cables

1. By design, the panel will not load dynamic graphics if they are located on a password protected FTP or HTTP server.
2. Contact Crestron for a current list of compatible devices and embedded applications. To ensure reliable performance, new device drivers and applications are available only from Crestron through firmware updates.
3. The supported VNC viewer is UltraVNC version 1.0.2. Other VNC viewers may work but are not guaranteed.
4. Refer to "Identity Code" on page 16 for details.
5. The latest software versions can be obtained from the Crestron website. Refer to the NOTE following these footnotes.
6. 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).
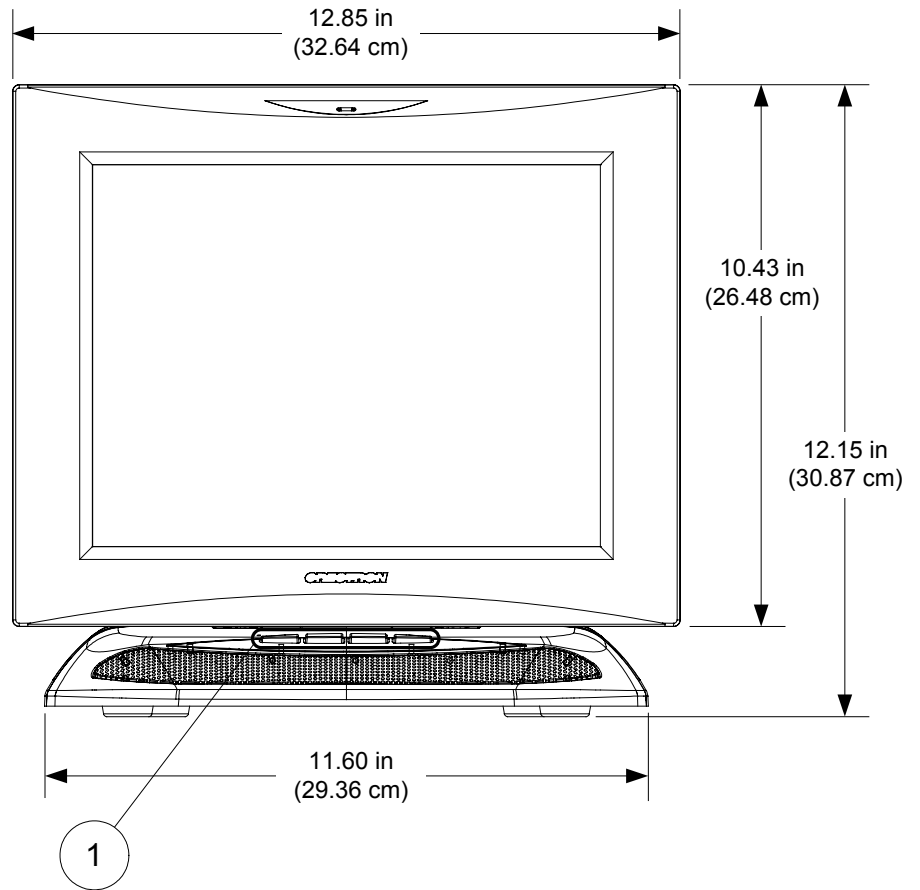
Physical Description

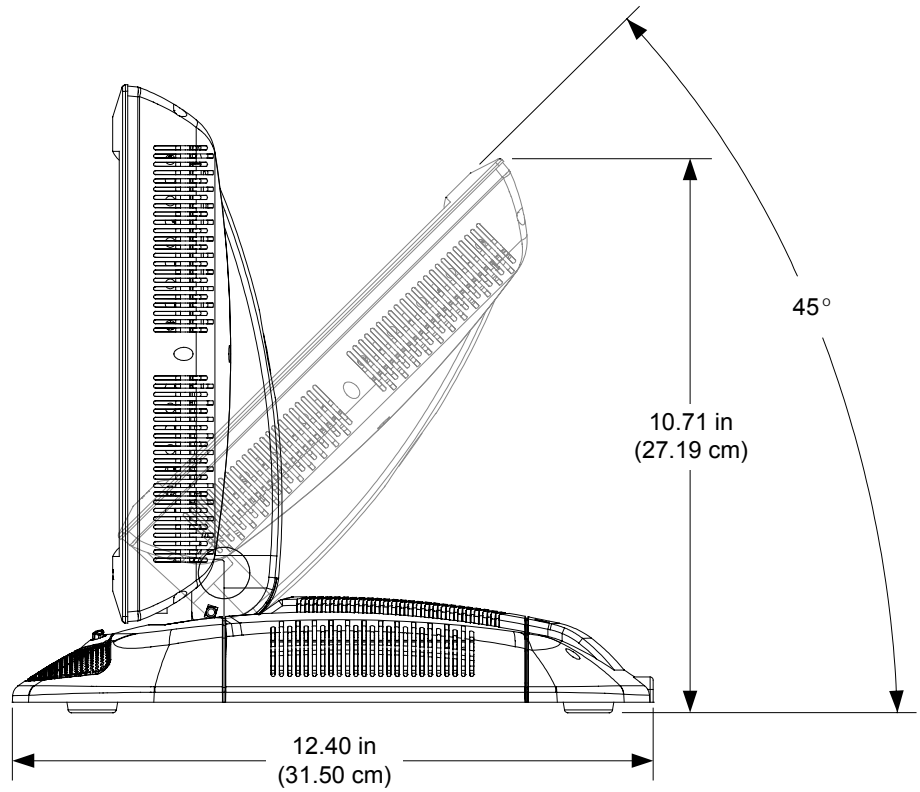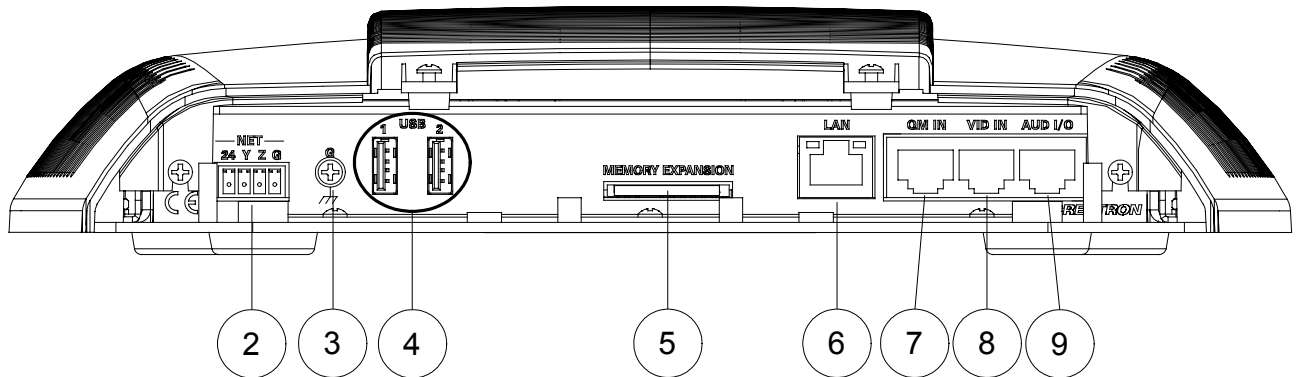This section provides information on the connections, controls and indicators available on your TPMC-12.

TPMC-12 Physical View

TPMC-12 Overall Dimensions (Front View)
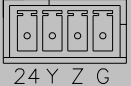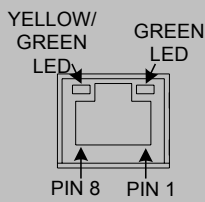
TPMC-12 Overall Dimensions (Side View)

45°

10.71 in
(27.19 cm)

12.40 in
(31.50 cm)

TPMC-12 Connectors

Connectors, Controls & Indicators

#	CONNECTORS[1], CONTROLS & INDICATORS	DESCRIPTION
1	BUTTONS[2]	(4) Backlit "hard key" buttons, programmable (1) Miniature recessed hard reset button, reboots the touchpanel
2	NET 24 Y Z G	(1) 4-pin 3.5 mm detachable terminal block; Connects to Cresnet control network or TPMC-CH-IMC interface module (included) via 15 foot (4.6 meter) "triamese" cable provided **24**: Power (24 Volts DC) **Y**: Data **Z**: Data **G**: Ground
3	GROUND	(1) 6-32 screw, chassis ground lug
4	USB	(2) USB Type A female USB 2.0 ports for USB keyboard, mouse and storage devices[3]
5	MEMORY EXPANSION	(1) MMC compatible card slot Accepts Multimedia Memory Cards (MMC) up to 4 GB for memory expansion[3]
6	LAN YELLOW/GREEN LED GREEN LED PIN 8 PIN 1	(1) 8-wire RJ-45 with two LED indicators; 10/100/1000 Mbps Ethernet port; Left yellow LED indicates 10 Mbps link status; Left green LED indicates 100 Mbps link status; Right green LED indicates 1000 Mbps link status <table><tr><th>PIN</th><th>SIGNAL</th><th>PIN</th><th>SIGNAL</th></tr><tr><td>1</td><td>A +</td><td>5</td><td>C -</td></tr><tr><td>2</td><td>A -</td><td>6</td><td>B -</td></tr><tr><td>3</td><td>B +</td><td>7</td><td>D +</td></tr><tr><td>4</td><td>C +</td><td>8</td><td>D -</td></tr></table>
7	QM IN[4, 5] 1 8	(1) 8-wire RJ-45 female, QuickMedia input port; Signal types: Auto-detecting component (YP_bP_r), S-video (Y/C) or composite video with stereo program audio and (2) mic channels; Video formats: NTSC 480i or PAL 576i; Connects to QM output port of a QM-TX or other QuickMedia device via CresCAT-QM or CresCAT-IM cable; Maximum cable length: 450 feet (137 meters) (aggregate distance from QM origination)

(Continued on following page)

Connectors, Controls & Indicators (Continued)

#	CONNECTORS[1], CONTROLS & INDICATORS	DESCRIPTION
8	VIDEO IN[6, 7] 1 8	(1) 8-wire RJ-45 female, CAT5 balanced video input port; Signal types: Auto-detecting component (YP_bP_r), S-video (Y/C) or composite; Video formats: NTSC 480i or PAL 576i; Input impedance: 100 Ω balanced; Connects to any Crestron CAT5 balanced video source via CresCAT-D cable or TPMC-CH-IMC interface module (included) via 15 foot (4.6 meter) "triamese" cable provided; Maximum cable length: 500 feet (152 meters) for component, 750 feet (229 meters) for composite/S-video
9	AUDIO I/O[6, 8] 1 8	(1) 8-wire RJ-45 female, bidirectional CAT5 balanced audio port; Signal type: receives (1) balanced stereo audio signal and transmits (1) balanced stereo audio signal from internal microphone; Maximum input level: 4 V_{rms}; Maximum output level: 2 V_{rms}; Input/output impedance: 600 Ω; Connects to any other Crestron CAT5 balanced audio port via CresCAT-D cable or TPMC-CH-IMC interface module (included) via 15 foot (4.6 meter) "triamese" cable provided; Maximum cable length: 1000 feet (305 meters)

1. An interface connector for the **NET** port is provided with the unit.
2. Refer to "Pushbutton Programming" on page 51 for details.
3. Contact Crestron for a current list of compatible devices and embedded applications. To ensure reliable performance, new device drivers and applications are available only from Crestron through firmware updates.
4. Supports standard definition video only; does not support HDTV or high resolution RGB.
5. The eight-pin RJ-45 QuickMedia transport port accepts CAT5E/CAT6 carrying audio, video and microphone signals. The QM input port conforms to the 568B wiring standard. Refer to the following table for connector pinouts.

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

6. Use only the TPMC-CH-IMC Interface Module when connecting this port. Use of other "IMC" products could damage the panel.

7. This eight-pin RJ-45 port provides connectivity to the CNX-PVID or the TPMC-CH-IMC Interface Module. This port provides component, composite or S-video balanced input to the touchpanel over CAT5 wiring. Refer to the following table for connector pinouts.

PIN	WIRE COLORS (568B)	COMPOSITE	S-VIDEO	COMPONENT
1	WHITE/ORANGE	+ Composite	+ Luminance	+ Y
2	ORANGE	- Composite	- Luminance	- Y
3	WHITE/GREEN	N/A	+ Chrominance	+ P_b
4	BLUE	N/A	N/A	+ P_r
5	WHITE/BLUE	N/A	N/A	- P_r
6	GREEN	N/A	- Chrominance	- P_b
7	WHITE/BROWN	N/A	N/A	N/A
8	BROWN	N/A	N/A	N/A

8. This eight-pin RJ-45 port provides connectivity to the CNX-BIPAD or the TPMC-CH-IMC Interface Module. This port uses CAT5 wiring and provides audio input to the touchpanel and output from the touchpanel's built-in microphone. Refer to the following table for connector pinouts.

PIN	WIRE COLORS (568B)	AUDIO I/O
1	WHITE/ORANGE	+ Mic Left Out
2	ORANGE	- Mic Left Out
3	WHITE/GREEN	+ Mic Right Out
4	BLUE	+ Audio Left In
5	WHITE/BLUE	- Audio Left In
6	GREEN	- Mic Right Out
7	WHITE/BROWN	+ Audio Right In
8	BROWN	- Audio Right In

Industry Compliance

As of the date of manufacture, the TPMC-12 has been tested and found to comply with specifications for CE marking and standards per EMC and Radiocommunications Compliance Labelling.

$$C \in \mathcal{C}$$

Federal Communications Commission (FCC) Compliance Statement

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.

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.

Setup

Network Wiring

When wiring the Cresnet® and Ethernet 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).

Cresnet

For larger networks, use a Cresnet Hub/Repeater (CNXHUB) to maintain signal quality.

For more details, refer to "Check Network Wiring" which starts on page 61.

Ethernet

The TPMC-12 can also use high-speed Ethernet for communications between the device and a control system, computer, digital media server and other IP-based devices.

For information on connecting Ethernet devices in a Crestron system, refer to the latest version of the Crestron e-Control® Reference Guide (Doc. 6052), which is available from the Crestron website (www.crestron.com/manuals).

CAT5 Wiring

Category 5 (CAT5) wiring is a twisted pair cable designed for Ethernet networks. These networks operate at speeds of up to 100 Megabits per second (Mbps) using the 100BASE-T standard. Crestron takes advantage of this specification for a variety of audio and video applications.

When using a Crestron wiring solution, the CresCAT-IM (or D) wire can carry audio and video signals up to 500 feet (152 meters) (observe distance limitations based upon power consumption for the device in use).

For more information, refer to the latest version of the Crestron CAT5 Wiring Reference Guide (Doc. 6137), which is available from the Crestron website.

QuickMedia Wiring

The Crestron QuickMedia (QM) 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
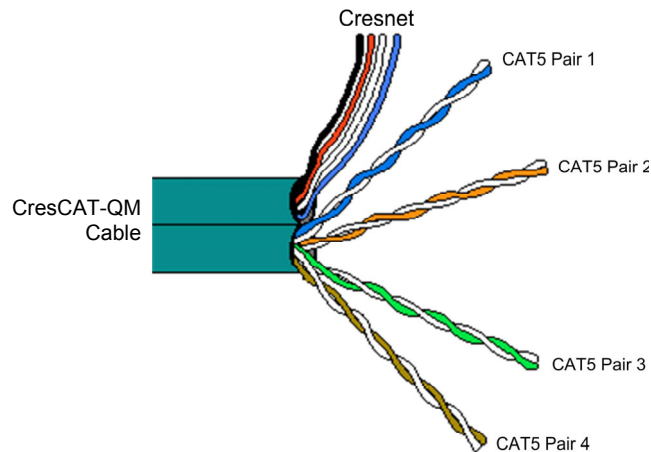
NOTE: Do not untwist the two wires in a single pair for more than 1/3-1/2"
(8-12 mm) when making a connection. The twists are critical to canceling out
interference between the wires.

The aggregate cable length of a signal path originating at a QM transmitter and
terminating at a TPMC-12 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, 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.

QM Network Topology
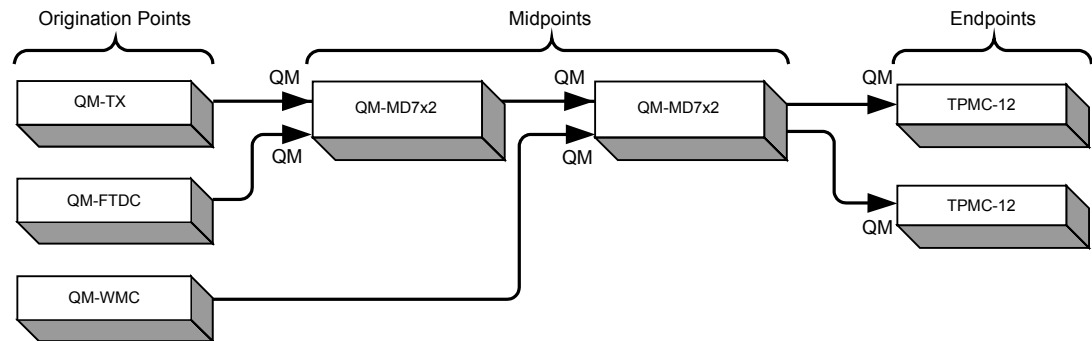
Identity Code

Net ID

The Net ID of the TPMC-12 has been factory set to **03**. The Net IDs of multiple TPMC-12 devices in the same system must be unique. The Net ID is set using the internal setup menu (refer to "Cresnet" which starts on page 21). Net ID may also be set from a personal computer (PC) via Crestron Toolbox™ (refer to "Establishing Communication" which starts on page 56).

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.

IP ID

The IP ID is set within the TPMC-12's table using Crestron Toolbox. For information on setting an IP table, refer to the Crestron Toolbox help file. The IP IDs of multiple TPMC-12 devices in the same system must be unique.

When setting the IP ID, consider the following:

- The IP ID of each unit must match an IP ID specified in the SIMPL Windows program.

- Each device using IP to communicate with a control system must have a unique IP ID.

Configuring the Touchpanel

NOTE: The only connection required to configure the touchpanel is power (supplied via Cresnet). Refer to "Hardware Hookup" which starts on page 40 for details.

NOTE: When booting the TPMC-12, the only USB devices supported are a keyboard or mouse. Having a USB drive or hub connected will interfere with proper booting of the touchpanel.

The TPMC-12 is configured from the setup menu.

NOTE: If no project has been loaded or if an invalid project has been loaded, the touchpanel defaults to the setup menu screen.

If a project is running, the setup menu can be accessed using one of two methods: USB keyboard or Crestron Toolbox.

Via USB Keyboard

1. Attach a USB keyboard (refer to "Hardware Hookup" which starts on page 40 for details).

2. Open the "Validate User Account Info" window (shown on the following page) by pressing **Ctrl+Alt+Shift** on the keyboard.

"Validate User Account Info" Window
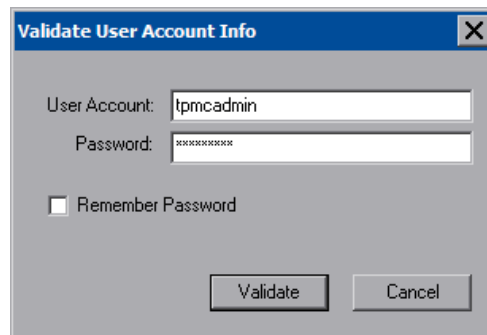
3. Enter the user account *tpmcadmin*, and the password *tpmcadmin* and touch **Validate**.

NOTE: The password is case sensitive. After logging in, the password can be changed from the "Security" window. Refer to "Security" which starts on page 19 for more information.

4. When the "Crestron Debug Output" window appears (shown in the following diagram), select **Project | Enter Setup Mode** to enter the setup menu (refer to "Setup Menu Details" on page 19).

"Crestron Debug Output" Window
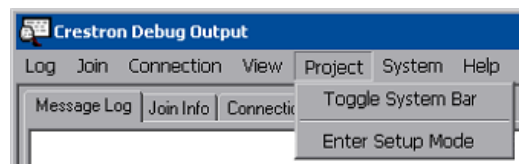
Via Crestron Toolbox

1. Establish communication with the touchpanel (refer to "Establishing Communication" which starts on page 56 for details).

2. From the Network Device Tree, right-click on the device, then select **Functions | Setup Mode…**.

"Setup/Calibrate" Window
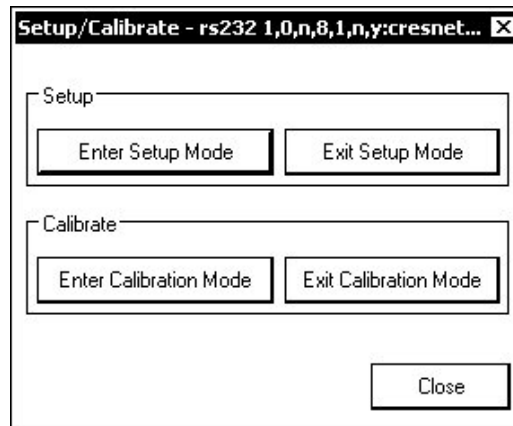
3. Select **Enter Setup Mode**. The setup menu will be displayed as shown in the illustration below.

NOTE: Select **Exit Setup Mode** to exit the setup menu.

TPMC-12 Setup Menu
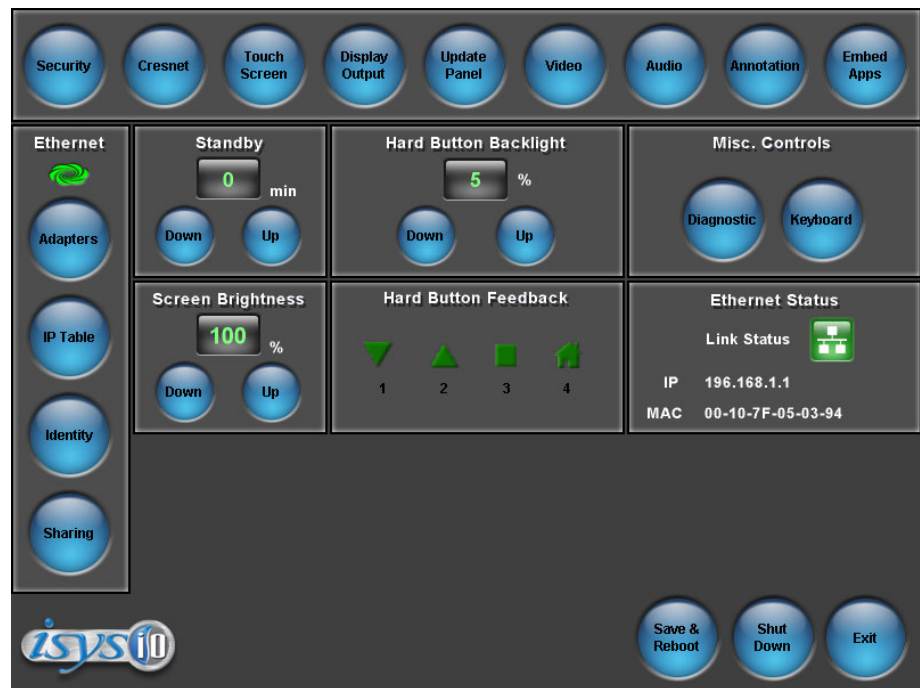
NOTE: Another way to enter the setup menu (after a project has been loaded) is to touch the screen during boot up when you see the "Preparing to Load Project" message. Maintain touch until after the countdown, when the message will change to "Loading Setup Screen".

The setup menu provides access to all basic functions and parameters. It is divided into a top row of setup buttons and *Ethernet*, *Standby*, *Hard Button Backlight*, *Misc. Controls*, *Screen Brightness, Hard Button Feedback,* and *Ethernet Status* sections. There are also buttons for **Save & Reboot**, **Shut Down** and **Exit**.

NOTE: To allow the touchpanel to upload projects, standby is disabled until approximately five minutes after the project is loaded.

To exit the setup menu and return to the program, touch **Exit**, located at the bottom of the setup menu. To save any changes and reboot the touchpanel, touch **Save & Reboot**, located at the bottom of the setup menu. Use the **Shut Down** button to turn off the touchpanel.

Setup Menu Details

The setup menu allows configuration of the touchpanel's settings for security, Cresnet ID, touch screen calibration, display, runtime project, video, audio, annotation, embedded applications, diagnostics and hard button programming. The setup menu also has a button that will toggle the on-screen keyboard on and off.

NOTE: When in *Annotation* mode, the setup menu will still be available but all setup windows will be disabled (i.e. you will not be able to bring up any setup window via a digital join). For more information about *Annotation* mode, refer to "About Annotation Mode" in the VisionTools® Pro-e (VT Pro-e) Help file.

Security

The **Security** button opens the "Security Setup" window, which allows the user to change the username and password of the system account, setup and close network connections, setup a proxy server, close network connections and clear Internet browser temporary files, history and cookies.

NOTE: To use the on-screen keyboard for security settings, touch **Keyboard** on the startup menu before touching **Security**.

"Security Setup" Window
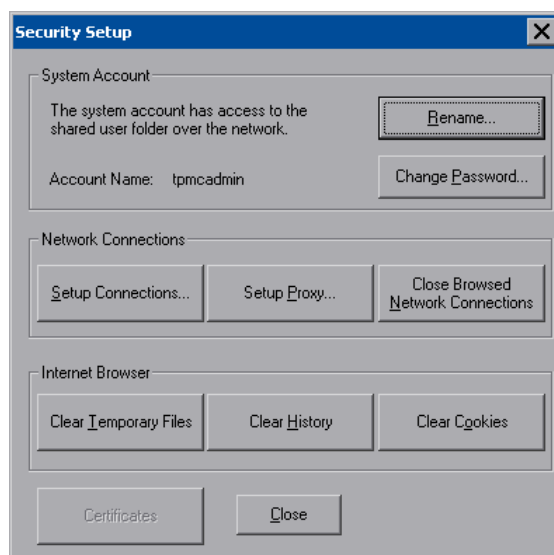
Touch **Setup Connections…** to open the "Network Connections" window. This window is used to map to a network drive. A mapped network drive permits easy access to embedded application files (Word, Excel, PowerPoint, MediaMarker, etc.)

and provides a location to save files. To further customize the installation, network drives containing compiled touchpanel project files can also be mapped.

"Network Connections" Window
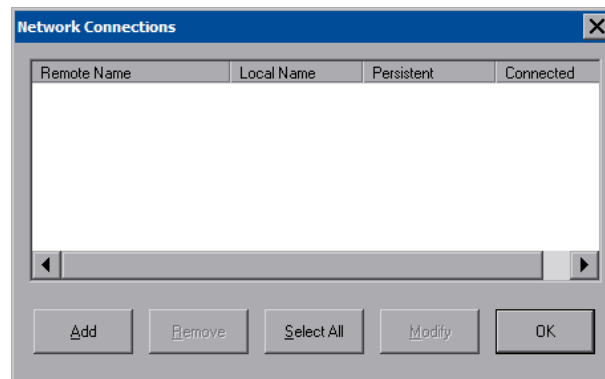
To add a new network connection, touch **Add…**.

"Configure Network Connection" Window
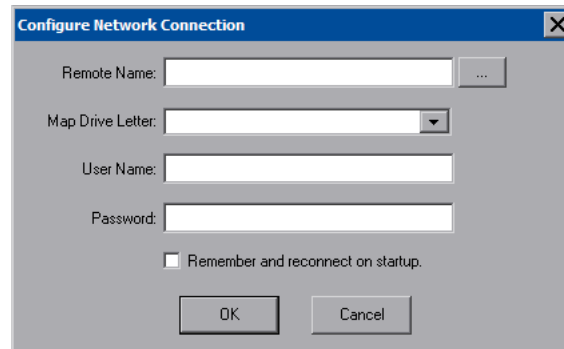
To add a network drive, perform the following procedure:

1. Touch [...] to browse for the new network connection. If the remote shareable folder name does not appear on the list, it can be entered manually in the *Remote Name* field, using the following format:

   ```
   \\Remote host name\Shareable folder name
   ```

2. Map this connection by selecting a drive letter from the *Map Drive Letter* drop box.

3. Enter a User Name and Password.

4. Touch the *Remember and reconnect on startup* checkbox if so desired.

5. Touch **OK** to enable the new network connection and return to the "Network Connections" window.

Once all changes to network connections have been completed, touch **OK** to return to the "Security Setup" window.

Touch **Setup Proxy…** to open the "Setup Proxy" window. This window is used to point to a proxy server for Internet access. A proxy server acts as an intermediary between your internal network (intranet) and the Internet, retrieving files from remove Web servers.

"Setup Proxy" Window
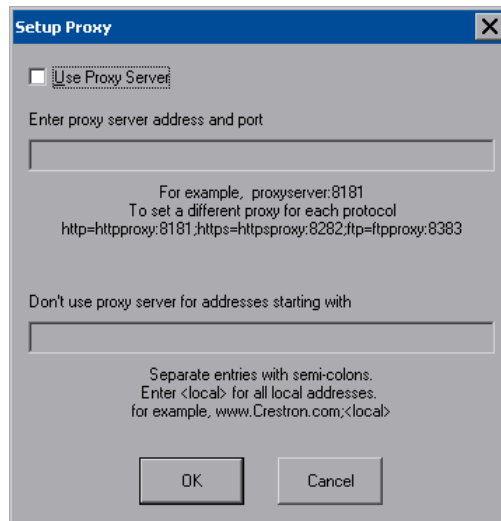
To setup a proxy server, select *Use Proxy Server*.

1. Enter the IP address or name of the proxy server.

2. If desired, specify addresses that should not use the proxy server (i.e. intranet addresses).

Touch **OK** to enable the proxy server connection and return to the "Security Setup" window. Then touch **Close** to return to the setup menu.

Cresnet

The **Cresnet** button opens the "Cresnet Setup" window, which allows you to enable or disable Cresnet and permits changing the Cresnet ID.

"Cresnet Setup" Window
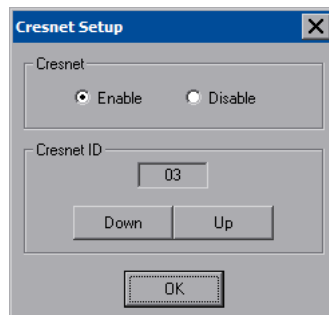
Select **Enable** for normal Cresnet communication mode and **Disable** when the touchpanel is connected to a control system via Ethernet. Communication mode is factory set to **Enable**.

The Cresnet network identity number (*Cresnet ID*) is displayed in the "Cresnet Setup" window. Cresnet ID is the two-digit hexadecimal number. The hexadecimal number can range from 03 to FE and must correspond to the Net ID set in the SIMPL Windows program of the Cresnet system. Matching IDs between touchpanel and SIMPL Windows program is required if data is to be successfully transferred. The Net ID for the TPMC-12 is factory set to 03. No two devices in the same system can have the same Net ID.

Two buttons below the hexadecimal display, **Down** and **Up**, decrease and increase the Cresnet ID by one, respectively.

Select **OK** to accept the changes and return to the setup menu.

Touch Screen

The **Touch Screen** button opens the "Touch Screen Settings" window, which provides access to touch screen calibration when you touch **Calibrate Touch Screen…**.

"Touch Screen Settings" Window
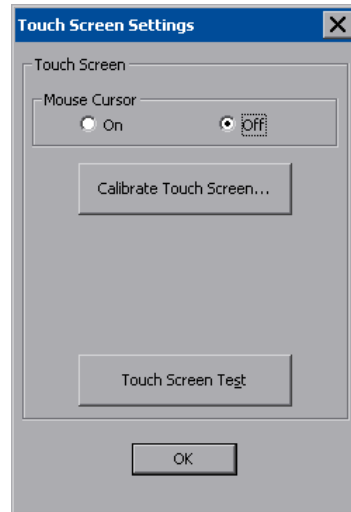
To view the mouse cursor on the touchpanel, select **On** in the *Mouse Cursor* section of the window. The mouse cursor will only be displayed if a mouse is connected to the touchpanel.

When **Calibrate Touch Screen…** is touched, the calibration screen will be displayed. Touch the screen to begin the calibration process. If the screen is not touched within sixty seconds, the calibration sequence will stop and the screen will return to the "Touch Screen Settings" window.

If the screen is touched before the sixty second timeout, the screen instructs you to touch the center of each target as it appears. There will be a series of crosshairs on the panel, starting near the upper left corner. Touch the center of the first crosshair to initiate calibration. As each new crosshair is touched, the next will appear. After the upper left, crosshairs will appear in the upper center, upper right, middle left, screen center, middle right, lower left, lower center and finally lower right. Touch the center of the crosshair in the lower right of the screen to conclude calibration and return to the "Touch Screen Settings" window. Touch **OK** to accept the changes and return to the setup menu.

NOTE: When touching the screen during calibration, be as accurate as possible. Use the tip of a capped pen or the eraser end of a pencil. To cancel calibration and return to the "Touch Screen Settings" window without saving calibration data, create a calibration error by touching the screen in the same spot for each calibration point.

NOTE: The touchpanel's calibration routine can also be accessed through Crestron Toolbox if the touchpanel is connected to a control system via Cresnet and/or TCP/IP by selecting the device from the Network Device Tree and right-clicking the

device to select **Functions | Setup Mode…**. Select **Enter Calibration Mode** to begin calibration.

When **Touch Screen Test** is touched, the test screen will be displayed (refer to illustration below). This screen allows the user to test the touch screen response at 17 points on the screen. Each button on the screen will light when touched. Touch **Return** to exit the test screen.

Touch Screen Test Window
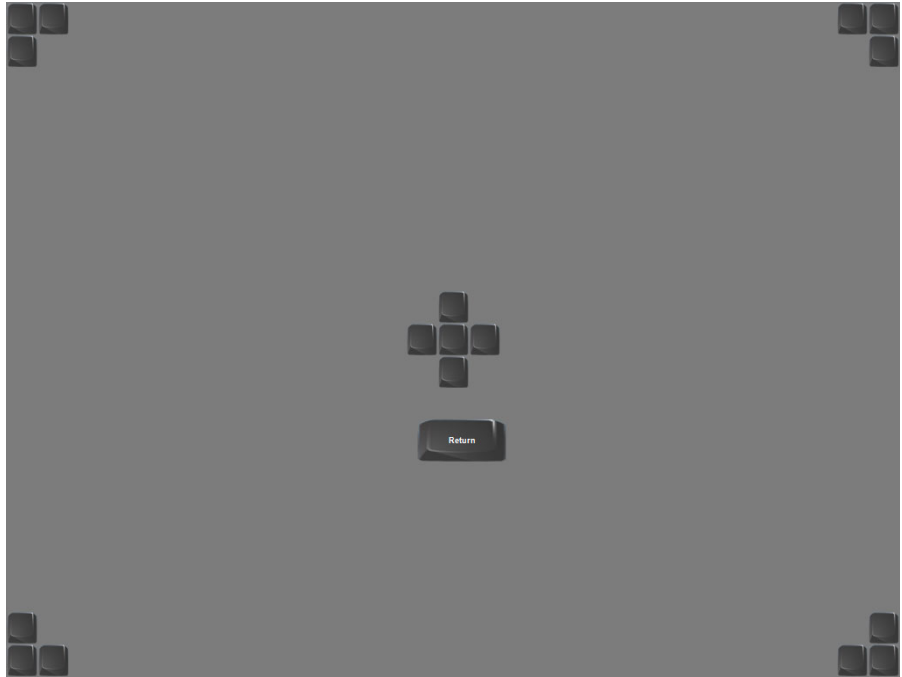
Display Output

Touching **Display Output** shows the display resolution of the touchpanel and provides test charts for adjusting skew, peak and boost settings on a remote display.

"Display Output" Window
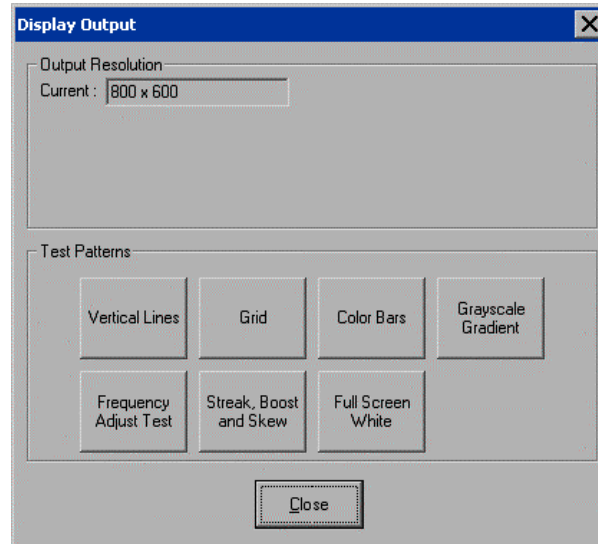
Select the following *Test Patterns,* in the following order and adjust the display as necessary.

1. **Vertical Lines**

2. **Grid**

3. **Color Bars**

4. **Grayscale Gradient**

5. **Frequency Adjust Test**

6. **Streak, Boost and Skew**

7. **Full Screen White**

Update Panel

The **Update Panel** button permits the selection of the touchpanel program, a .vtz file. It is also used to upgrade firmware.

The *Project* tab of the "Project and Firmware" window is divided into two sections: *Current Loaded Project* and *Load New Project.*

In the *Target Location to Load the Project to* section, you can choose the location where your uncompressed project files will be stored. The default file location is the internal flash.

In the *Load New Project* section, touch **Browse** and select the compiled project (i.e. the .vtz file) to be loaded from a network drive, USB device or flash drive, then touch **Open** to show the source file in the "Project and Firmware" window. Touch **Load** to uncompress the project file, place it in the destination selected in *Target Location to Load the Project to* and display it on the touchpanel.

NOTE: If there is a mapped network drive on the touchpanel, the first time you select **Browse**, it may take some time for the "Open" window to appear.

NOTE: When selecting **Browse**, the contents of the "Recent" folder will not be available.

NOTE: Projects can also be loaded via Crestron Toolbox.

NOTE: If **External** is checked, the display list cannot be viewed via Crestron Toolbox.

"Project and Firmware" Window – Project Tab
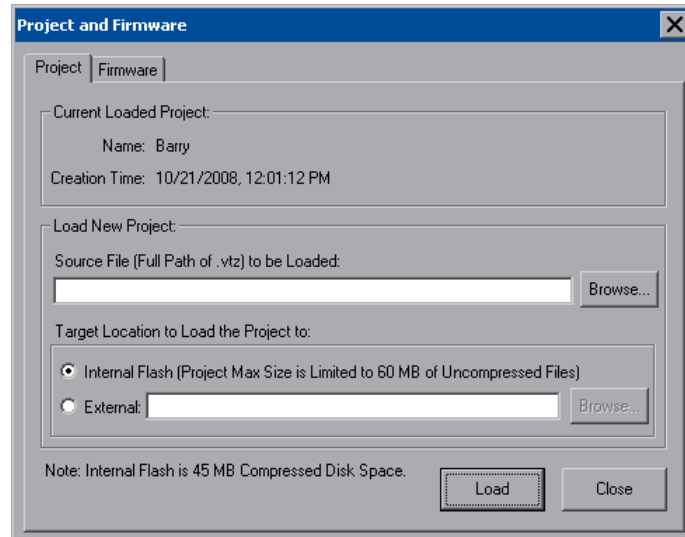
The *Firmware* tab of the "Project and Firmware" window (refer to illustration below) displays the *Current Loaded Firmware* and also has a *Load New Firmware* section.

"Project and Firmware" Window – Firmware Tab
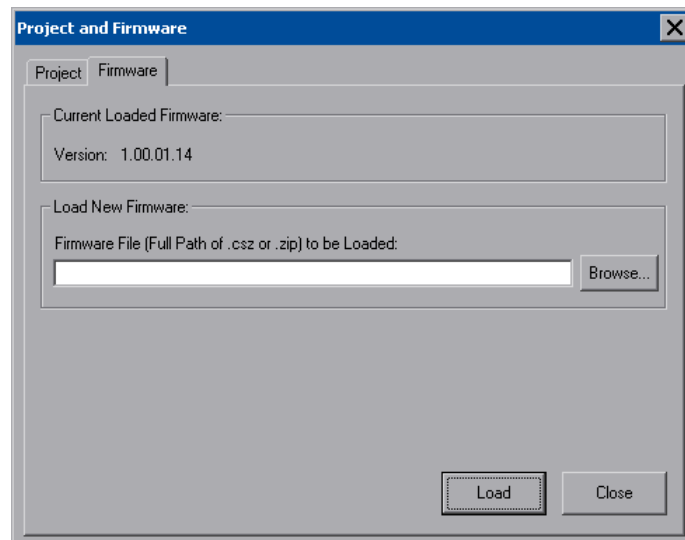
Current Loaded Firmware displays the version of the current firmware.

In the *Load New Firmware* section, touch **Browse** and select the firmware file (i.e. the .csz or .zip file) to be loaded from a network drive, USB device or flash drive. Touch **Load** to load the new firmware.

Video

Each one of the video inputs is selected and adjusted from this window. Touch an input tab and adjust the settings for the selected input.

Video Setup

The setup screen for each video source contains the settings as displayed in the following illustration. Changes are made in real time.

"Video Setup" Window - Video (QM) Tab
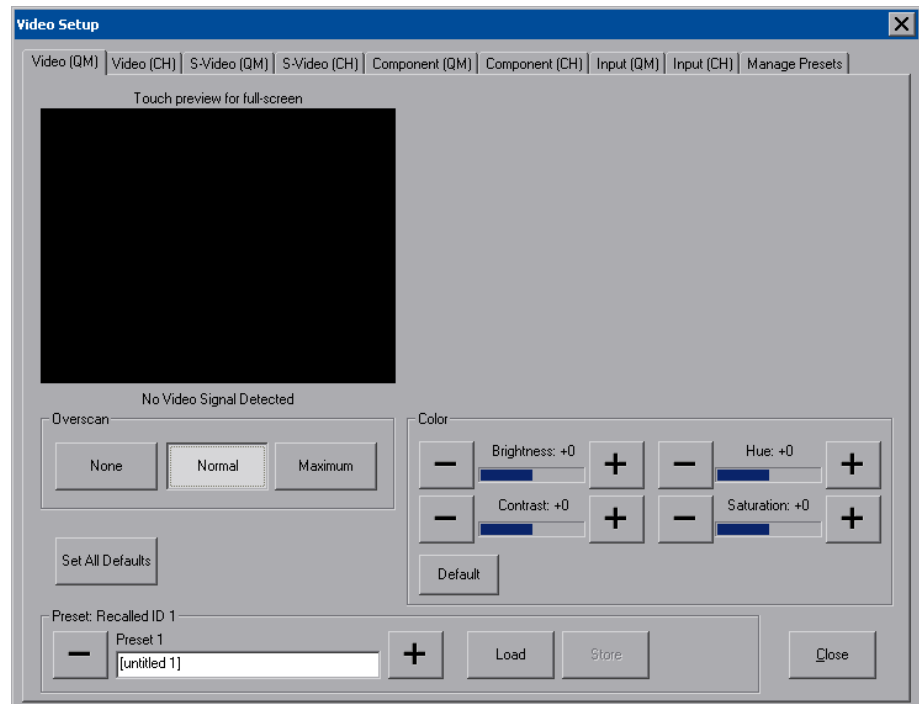
Video is setup using the *Overscan* and *Color* controls. The following test patterns are recommended for adjustment.

Overscan

Overscan is the active image area in a video picture that is outside the edges of the display device. Overscan adjustment first came about because of noise and other artifacts at the beginning and end of the scan lines. To reliably eliminate the noise and fill the screen with a picture, the outside edge of the active picture area was pushed out past the edge of the display area. The average or targeted over-scan loss is about 5 to 10% of the image on each edge. Digital images have nearly eliminated the noise and other artifacts at the edge of the picture, so more of the video image can be safely shown. The **Normal** setting is usually the correct choice for most video inputs.

Presets

Up to 30 presets may be stored for future retrieval.

Input

The *Input (QM)* tab of the "Video Setup" window has controls for adjusting *Peak*, *Boost*, *Skew* and presets for each of the inputs as shown in the following illustration. Changes are made in real time.

"Video Setup" Window - Input (QM) Tab
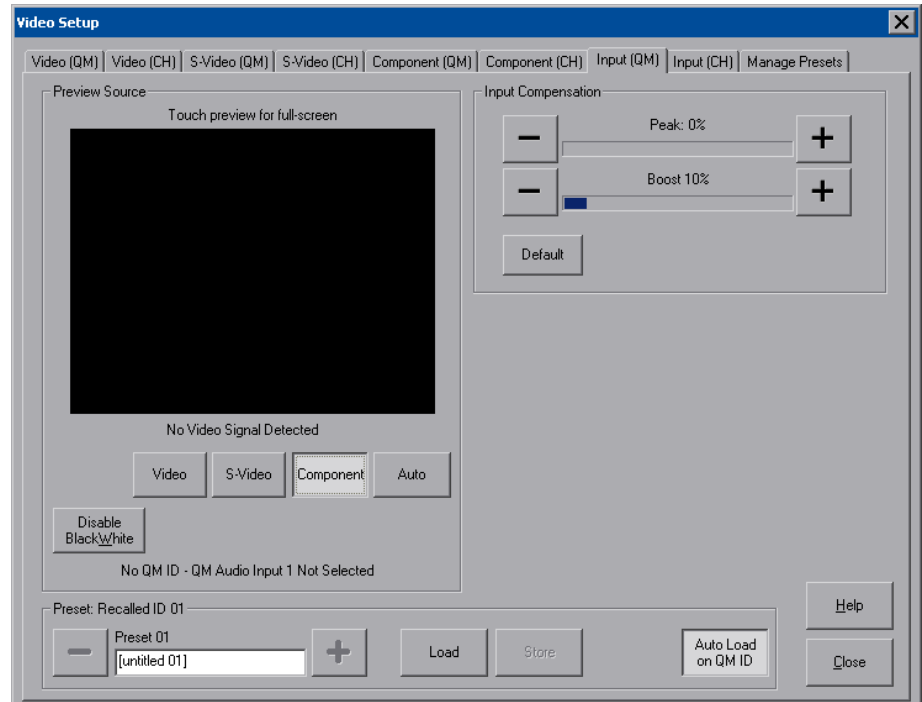
The **Auto** button can be used to auto detect video when a single video source (per input) is connected.

Adjust *Peak* and *Boost* to compensate for white or black streaking.

Up to 255 preset locations are available to store settings for peak and boost. In QM systems using auto compensation, the touchpanel can be set to automatically recall preset values upon receipt of a QM ID by selecting **Auto Load on QM ID**.

In order to manually load preset values, make sure **Auto Load on QM ID** is not selected.

For more information on peak and boost settings, refer to the latest revision of the Crestron MediaManager Applications Guide (Doc. 6244).

NOTE: The *Input (CH)* tab of the "Video Setup" window does not have adjustments for *Peak*, *Boost* and *Preset*.

Manage Presets

Use the *Manage Presets* tab to copy presets for position, size and color for one source to other sources.

"Video Setup" Window – Manage Presets Tab
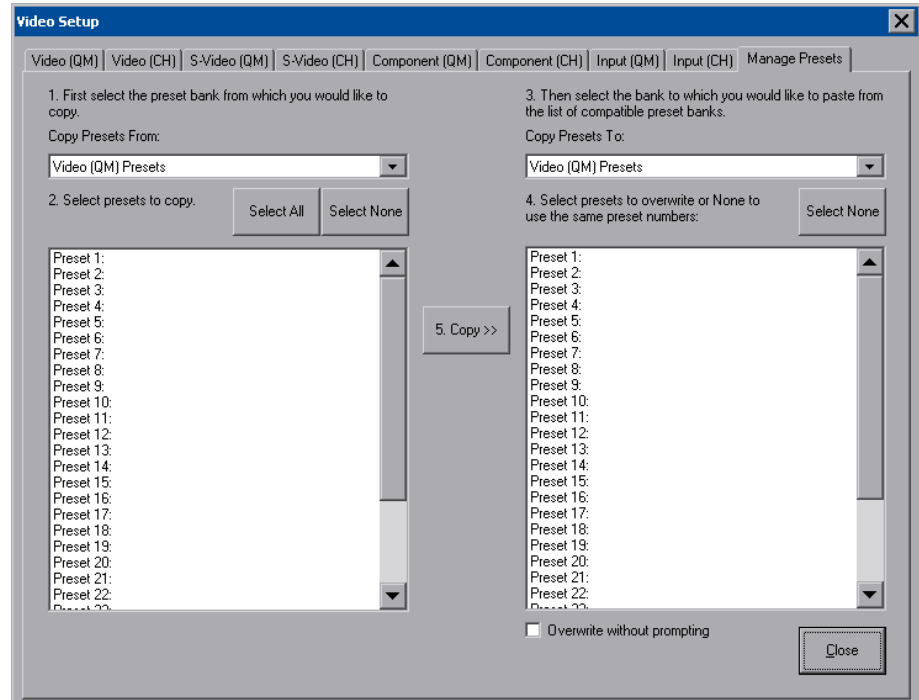
Audio

Touch **Audio** to open the "Audio Setup" window. The *General* tab of the "Audio Setup" window is shown in the illustration on the following page.

In addition to the overall *Speakers* volume and mute controls, volume, balance and mute controls are available for the *Local Audio* outputs. The key click sound has its own volume and mute controls. Defaults are 25 for volume on *Speakers* and *Local Audio* and zero for *Local Audio* balance. *Key Clicks* default volume is 100. Touching **Play Test Sound** plays a short internal audio file.

Changes to audio settings are made in real time.

"Audio Setup" Window - General Tab
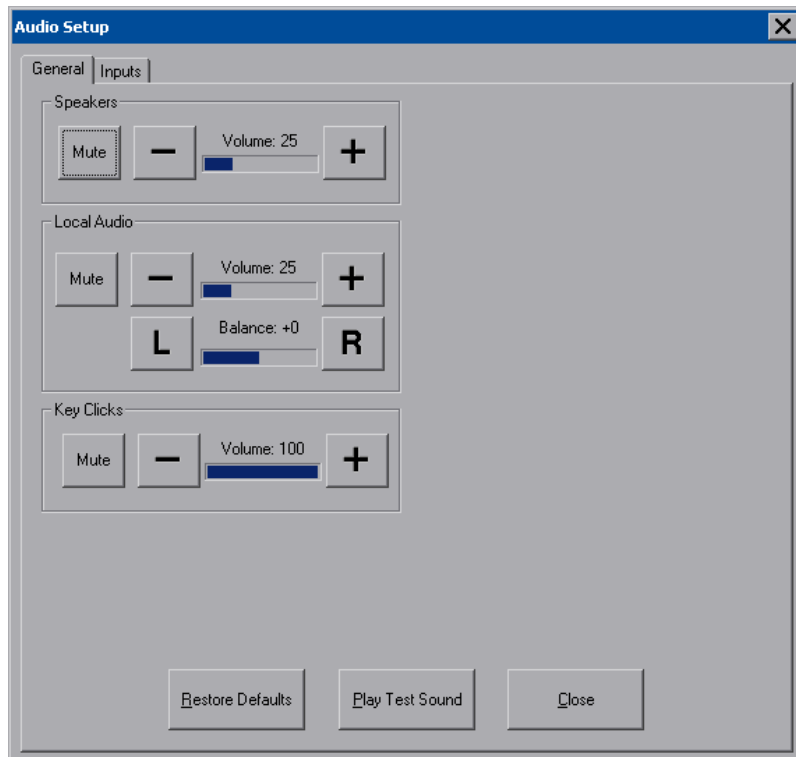
The *Inputs* tab of the "Audio Setup" window is shown in the illustration below.

"Audio Setup" Window - Inputs Tab
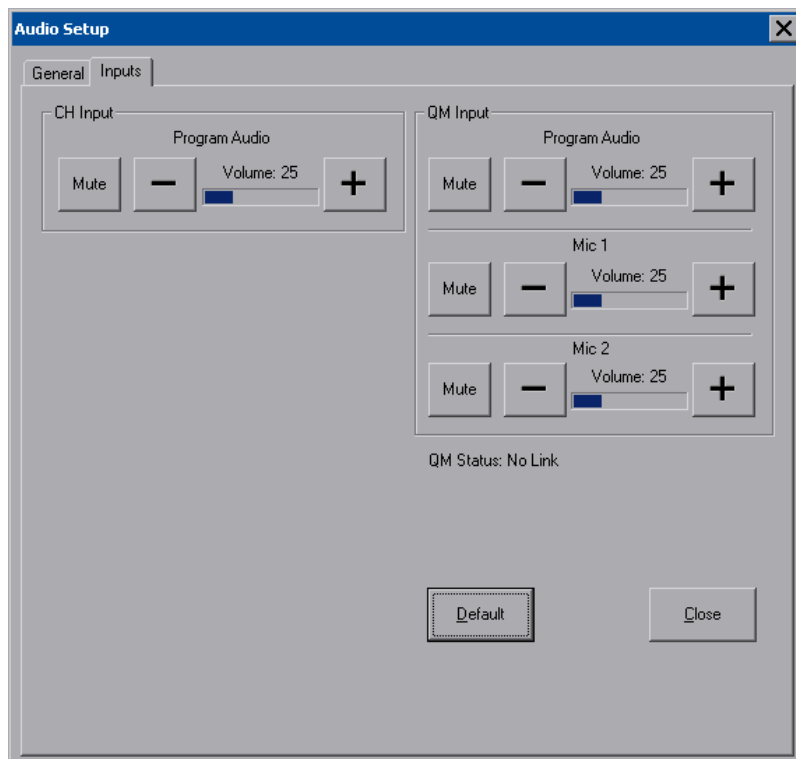
The *CH Input* section of this window contains volume and mute controls for *Program Audio*. The *QM Input* section contains volume and mute controls for *Program Audio*, *Mic 1* and *Mic 2*.

Annotation

The **Annotation** button displays the "MediaMarker Session Information" window.

"MediaMarker Session Information" Window

The "MediaMarker Session Information" window allows the date, time, author name, session title and session notes to be stored for the current frame. The *Author* dropdown list box contains all the authors available on the system. Authors can be added and removed from the **Edit | Preferences | Authors** menu within MediaMarker, or by touching [...] .

The *Session Folder* browse button [...] permits searching other folders. You may select a flash memory card, a network drive or a USB drive.

The *Default Frame Template* browse button [...] permits you to search for templates. For Crestron provided templates, choose from the pulldown list.

Frames created during the annotation session will use a default annotation template file, frame prefix and frame output file type.

Each new frame title will contain the frame prefix followed by a sequential frame number.

The frame template serves as a starting point for each new frame. Crestron supplies some ready-made templates or you can use one of your own.

Screen captures can automatically save the contents of the current annotation frame to an image file. The file will be saved as the *Default File Type* (.html, .jpg, .bmp, .png or .tif) as specified in the session folder.

For additional information, refer to "MediaMarker" on page 58 and the help file included with the MediaMarker software.

Embed Apps (Embedded Applications)

Touch **Embed Apps** to open the "Embedded Apps" window, which permits you to set internet security to different levels for different types of internet sites.

"Embedded Apps" Window
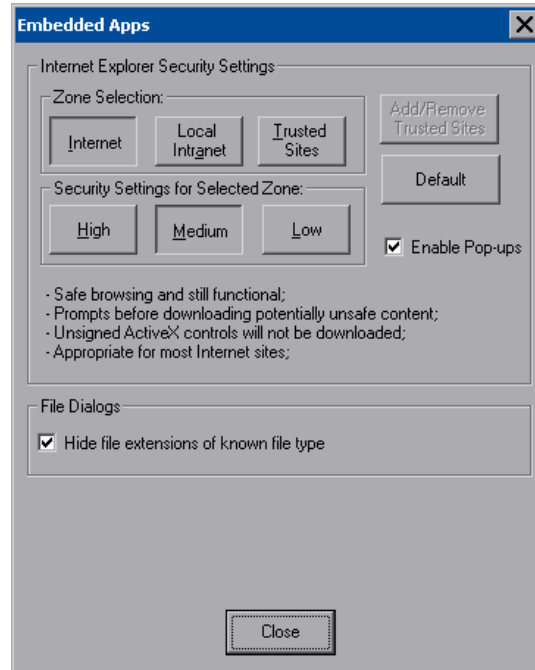
For each of the three zones (**Internet**, **Local Intranet**, and **Trusted Sites)**, one of three security levels (**High**, **Medium** or **Low**) can be selected. The security levels are defined as:

- **High:** The safest way to browse but also the least functional. Less secure features are disabled. Appropriate for sites that may have harmful content.

- **Medium:** Safe browsing and still functional. Prompts before downloading potentially unsafe content. Unsigned ActiveX controls will not be downloaded. Appropriate for most internet sites.

- **Low:** Minimal safeguards and warning prompts are provided. Most content is downloaded and run without prompts. All active content can run. Appropriate for sites you absolutely trust.

Touch **Default** to restore the default security settings. By default, security is set to **Medium** for **Internet** and **Local Intranet** and **Low** for **Trusted Sites**.

The "Embedded Apps" window also permits you to enable the popup windows (child windows) that open when you are in Internet Explorer (not the popup windows of the embedded applications).

NOTE: Refer to the Crestron website (www.crestron.com), online help Answer ID 4190, for information on the latest versions of the software.

Touch **Close** after all changes have been made. The touchpanel must be rebooted for changes to take effect. Touch **Save & Reboot**, located in the shutdown section of the setup menu.

A list of trusted sites can be created and edited by touching **Add/Remove Trusted Sites**. Touching this button will open the "Trusted Sites" window. From here, trusted sites can be added and edited. Sites are listed by domain name or IP address. Once all sites have been entered, touch **Close**.

"Trusted Sites" Window
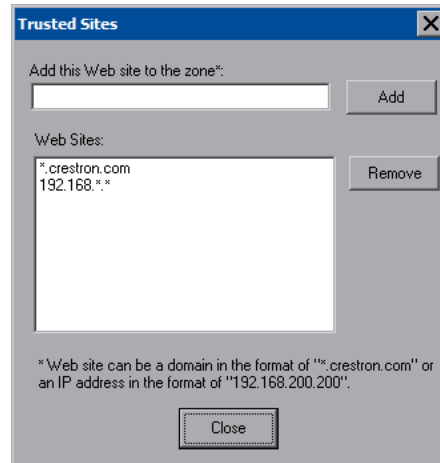
NOTE: **Save & Reboot** on the setup menu must be selected for Embedded Apps changes to take effect.

NOTE: While browsing the Internet with the TPMC-12, clicking on a link may cause a message box titled "Restrictions" to appear that contains the text "This operation has been cancelled due to restrictions in effect on this computer. Please contact your system administrator." If this message appears, checking *Enable Pop-ups* in the "Embedded Apps" window may correct this error. Other restrictions may also cause this error, so this may not prevent all occurrences.

NOTE: The TPMC-12 supports automatic connection to the VNC server when the VNC View application is opened. For automatic connection without having to enter the server location and password every time the VNC viewer is opened, launch the application and using a USB mouse, right-click on the VNC viewer window, then select **Save configuration info as…**.

NOTE: Refer to the Crestron website, online help Answer ID 4627, for information on how to set up the VNC viewer. Refer to Answer ID 3345 for information on how to program the MJPEG viewer. Refer to Answer ID 4640 for information about the default paths for embedded applications and dynamic graphics.

NOTE: When using the embedded applications, only one document window can be open at a time. Opening a second document window will cause the first document window to close.

ETHERNET Details

The Ethernet portion of the setup menu allows configuration of the touchpanel settings for Ethernet communications.

The Crestron Swirl logo 🌀 at the top of the Ethernet portion of the setup menu illuminates to indicate the status of your connection to the control system(s):

- Green   Connected

- Yellow   Network trouble

- Orange   Connected to some but not all of the control systems (listed in IP table)

- Red   Not connected to any control system (listed in the IP table)

Adapters

Touch the **Adapters** button to access the "Ethernet Setup" window. Changes are made in real time and there is typically no need to reboot. The Ethernet address and mask are displayed on this screen.

"Ethernet Setup" Window
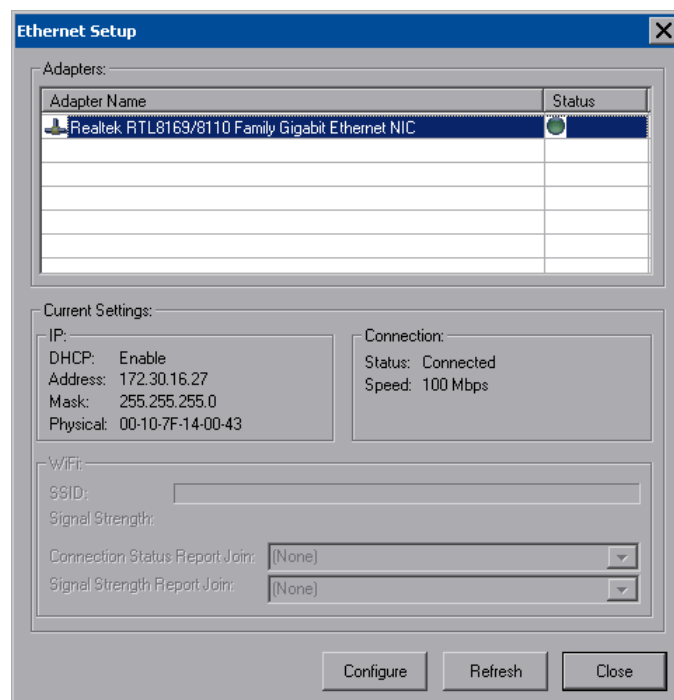
To configure the Ethernet adapter, touch its name once to select it in the *Adapter Name* list. Then, touch **Configure** to open the "Local Area Connection Properties" window. This window displays the connection and related required items.

NOTE: When configuring an adapter, only one item can be modified at a time. For example, to modify an IP address and also change authentication, touch **Configure** and modify the IP address, then touch **OK** (you must return to the "Ethernet Setup" window). Touch **Configure** again, change authentication, then touch **OK**. The order in which modifications are performed does not matter.

"Local Area Connection" Window
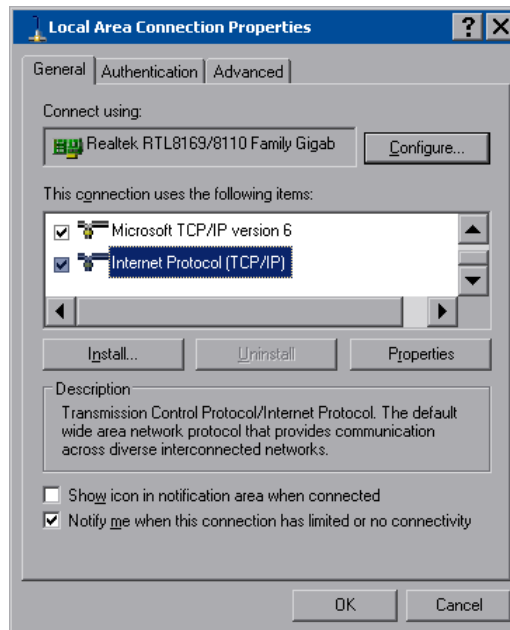
To establish dynamic or static processing, select **Internet Protocol (TCP/IP)** and touch **Properties**.

"Internet Protocol (TCP/IP) Properties" Window
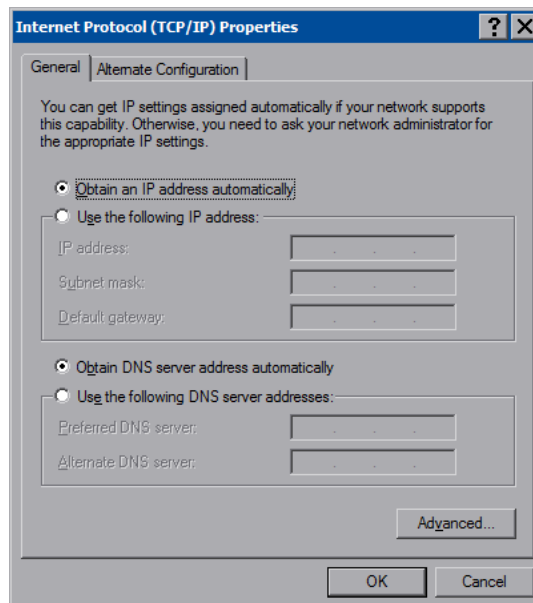
Transmission Control Protocol/Internet Protocol (TCP/IP) is a set of protocols that defines how to transfer data between two computers. TCP monitors and ensures correct transfer of data. IP receives the data from TCP, breaks it up into packets and ships it off to a network. The IP address is a unique number consisting of four parts (called "octets") separated by dots, e.g., 165.113.245.2.

Dynamic Host Configuration Protocol (DHCP) is a protocol for assigning dynamic IP addresses to devices on a network. With dynamic addressing, a device can have a different IP address every time it connects to the network. In some systems, the IP

address of the device can even change while it is still connected. DHCP also supports a mix of static and dynamic IP addresses.

Dynamic addressing simplifies network administration because the software keeps track of IP addresses rather than requiring an administrator to manage the task. New computers can be added to a network without manually assigning each one a unique IP address.

NOTE: The TPMC-12 ships with DHCP enabled.

Static IP addresses on a dedicated AV/control system allow the integrator to have a fixed/controllable network. This helps maintain communication stability between Ethernet devices.

IP Table

Touch **IP Table** on the setup menu to open the "IP Table Setup" window.

Edit, remove or enter a control system's IP address in the IP table to enable communication between the touchpanel and a control system. The touchpanel can communicate with multiple control systems.

For more information on IP tables, refer to the latest version of the Crestron 2-Series Control Systems Reference Guide (Doc. 6256).

"IP Table Setup" Window
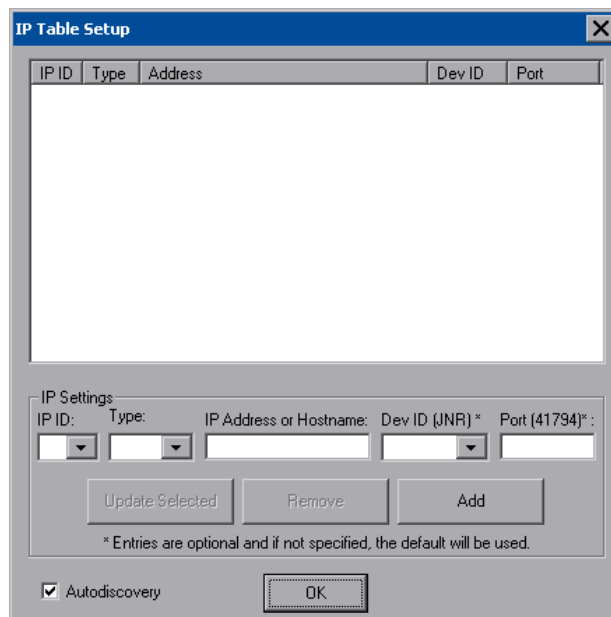
The IP ID is the ID number that is used to identify the touchpanel in the control system's IP table. The IP ID should match the IP ID set in the SIMPL Windows program.

Identity

Touch **Identity** to open the "Network ID" window. The "Network ID" window displays the hostname and workgroup that identify the touchpanel on the network. The hostname may be used when transferring a program over Ethernet using Crestron Toolbox. This window permits editing of the hostname and workgroup.

"Network ID" Window
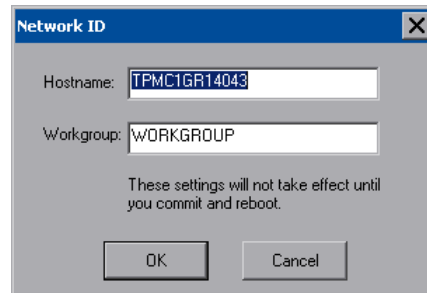
NOTE: The hostname is required for Ethernet communication.

Sharing

Touch **Sharing** to open the "Configure Shared Folders" window. This window is used to set up shared folders. Sharing enables remote computers to view and/or modify files stored on the touchpanel.

"Configure Shared Folders" Window
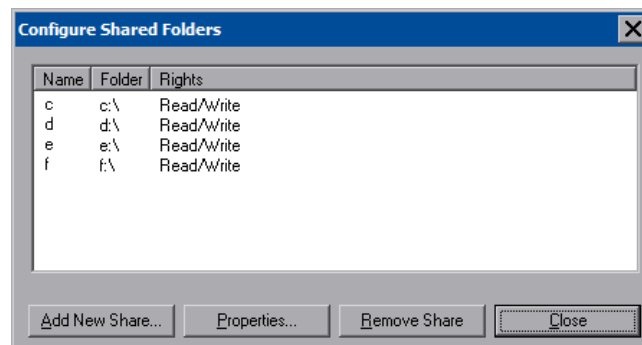
Touch **Add New Share…** to browse and add directories with permission to read-only or read/write. Touch **Close** after adding all folders to be shared.

NOTE: For security reasons, there is no persistence of the shared drive(s) after the panel is rebooted.

Standby Details

The *Standby* function turns off the backlight when the touchpanel is inactive for a specified time. Use the **Up** and **Down** buttons to set the *Standby* from 0 through 120 minutes, where 0 disables the timeout. Touch the screen to reactivate the touchpanel from standby mode. When the touchpanel is reactivated, the last screen to be displayed reappears.

NOTE: The hard buttons will still function when the touchpanel is in standby mode but will not cause it to awaken from standby. You must touch the screen to reactivate the touchpanel.

Hard Button Backlight Details

The *Hard Button Backlight* can be varied from 0 to 100. To increase the brightness, touch **Up**. To decrease the brightness, touch **Down**.

Misc. Controls Details

The *Misc. Controls* section of the setup menu contains the **Diagnostics** and **Keyboard** buttons.

Diagnostics

Touch **Diagnostic** to display the firmware version number, see *Installed Packs* and to reset the end user license from the "Diagnostics" window.

"Diagnostics" Window
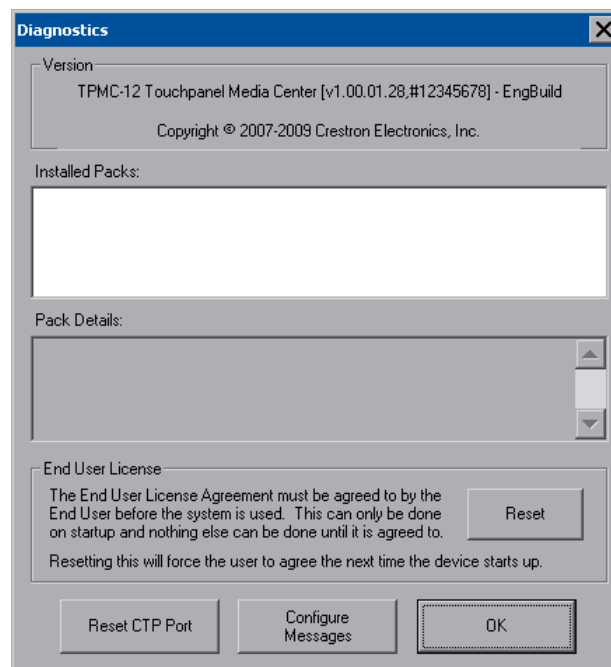
Reset CTP Port resets the default value of the CTP port to 41795, for terminal connection using Crestron Toolbox.

To configure the appearance of popup messages, touch **Configure Messages**. The "Message Popup Configuration" window will open.

"Message Popup Configuration" Window
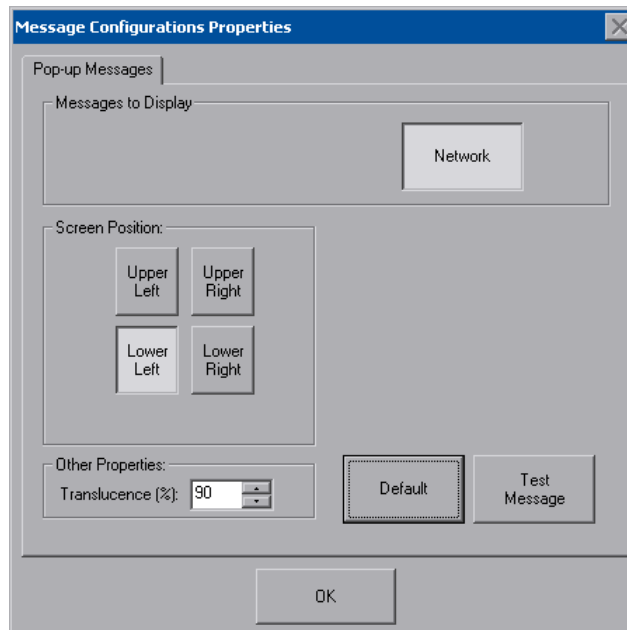
There are three types of **Network** popup messages. Following are definitions of each message type:

- **Connected:** A green popup message appears when the panel is connected to the control system.

- **Checking Connection:** A yellow popup message appears when the panel is experiencing network issues.

- **Disconnected, Trying to Reconnect…:** A red popup message appears when the panel loses connection with the control system.

A control for popup message *Translucence* is also provided. Translucence ranges from 25% to 100%, with a default value of 90%.

The **Default** button restores the original *Screen Position* and *Translucence* settings, as well as enabling display of *Network* messages. A **Test Message** button lets you see the changes to popup message position and translucence. Touch **Close** to close the popup window.

NOTE: The default value for *Screen Position* is *Lower Left*.

Show Keyboard

Touch the **Keyboard** button to display the on-screen keyboard.

The on-screen keyboard can be used in an identical manner to a physically connected keyboard. It can be used in any of the embedded applications, for example, to enter a web address or to enter data into a spreadsheet, etc.

The on-screen keyboard also has a few special keys:

Volume down

Volume up

Right click: simulates right-click of mouse

Size: toggles on-screen keyboard size (small, medium, large)

Keyboard translucence down: decreases keyboard translucence

Keyboard translucence up: increases keyboard translucence

On-Screen Keyboard
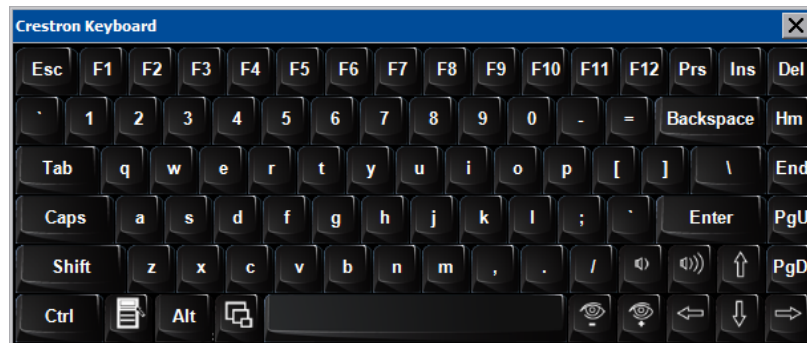
The initial position of the on-screen keyboard is determined by the VT Pro-e program or SIMPL Windows settings. The on-screen keyboard will default to its largest size.

In use, when the on-screen keyboard is moved and/or resized and then closed, it will re-open in the same position it was in and at the same size it was when closed. This position and size will remain in memory until the touchpanel is re-booted or it is re-set by the SIMPL Windows program. After reboot, the position of the on-screen keyboard will revert to the defaults set in the VT Pro-e or SIMPL Windows program. The size will revert to the largest as determined by the firmware installed in the touchpanel.

Exit the on-screen keyboard by selecting by touching the "X" close button in the upper right corner of the keyboard window. If the **Keyboard** button on the start menu is still visible, you can also touch it to exit the keyboard.

Screen Brightness Details

The *Screen Brightness* can be varied from 0 to 100. To increase the brightness, touch **Up**. To decrease the brightness, touch **Down**.

Hard Button Feedback Details

The *Hard Button Feedback* section of the setup menu provides visual feedback for all hard button presses. Pressing any of the hard buttons (except Reset) will result in its corresponding icon on the screen illuminating in bright green.

Ethernet Status Details

The *Ethernet Status* section of the setup menu provides a *Link Status* light to indicate an Ethernet connection and displays the current IP and MAC addresses.

Save & Reboot and Shutdown Details

To save any changes and reboot the touchpanel, touch **Save & Reboot**, located in the lower right section of the setup menu.

To turn off the touchpanel, touch **Shut Down**, located in lower right section of the setup menu. This is the recommended method for shutting down the touchpanel. After the touchpanel has shut down, the power supply can be safely removed from the touchpanel.

Exit Details

Touch **Exit** to leave the setup menu and return to the project. If no project has been loaded, the touchpanel will display an error message and return to the setup menu.

Hardware Hookup

Ventilation

The TPMC-12 should be used in a well-ventilated area.

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

Connect the Device

Make the necessary connections as called out in the illustration that follows this paragraph. Refer to "Network Wiring", "CAT5 Wiring" and "QuickMedia Wiring" on page 14 before applying power. If the TPMC-CH-IMC is to be used for connecting CAT5 audio and CAT5 video, refer to the latest revision of the TPMC-CH-IMC Operations Guide (Doc. 6345) for more information.

Hardware Connections for the TPMC-12
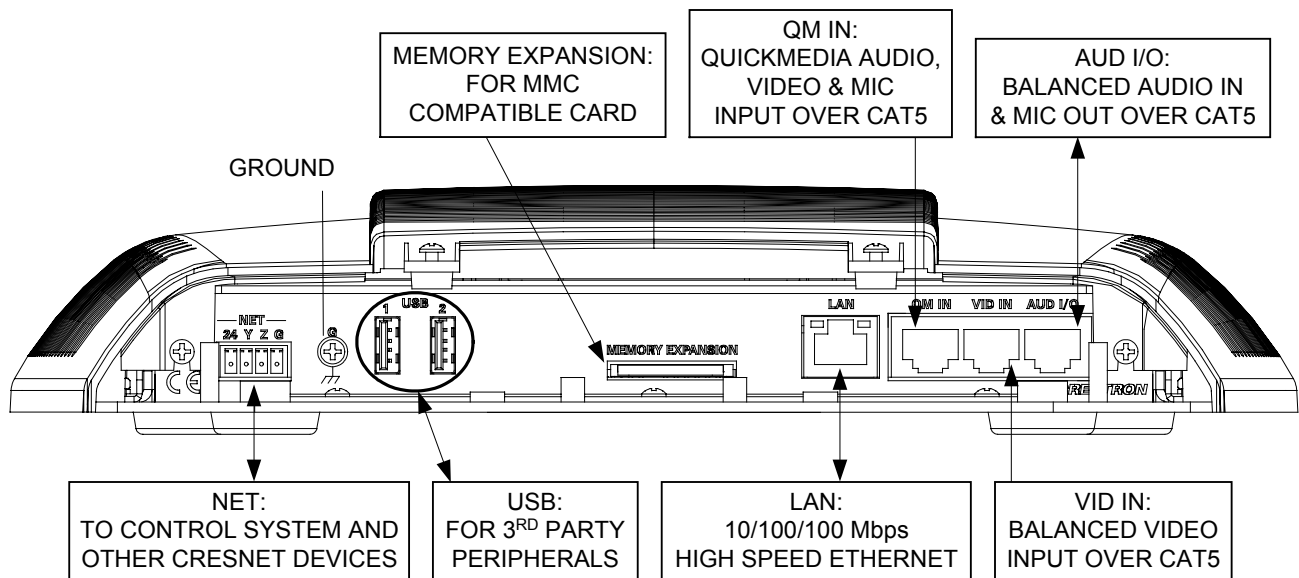
CAUTION: Do not apply excessive pressure to the touchscreen display during handling. Doing so can crack the screen and damage the touchpanel.

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

NOTE: The TPMC-12 can only be powered by the 4-position terminal block connector labeled **NET**. Power cannot be supplied from network devices that are connected to the mini-terminal block connectors.

NOTE: The Y and Z Cresnet data lines from the network are connected to the **NET** connector, which is internally wired to the 4-position mini-terminal block connector at each QM connector. (Does not necessarily apply to all QM products.)

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.

NOTE: Be sure to set Cresnet to *Disable* when using Ethernet. Refer to "Cresnet" which starts on page 21 for details.

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

NOTE: For CAT5 and QuickMedia connections, use Crestron Certified Wire.

NOTE: A QuickMedia transmitter such as the QM-TX is required in order to connect conventional video and audio sources to the **QM IN** port. The QM port is not connected through any "IMC" interface.

NOTE: TPMC-12 touchpanels include a TPMC-CH-IMC Interface Module for system connection. The TPMC-CH-IMC serves as an interface between the touchpanel, external A/V system, microphone output and the Cresnet system. Refer to the TPMC-CH-IMC Operations Guide (Doc. 6345) for hardware hookup using this interface.

CAUTION: Use only the TPMC-CH-IMC Interface Module when connecting to the **VID IN** port. Use of the older "IMC" products, such as those with a 10-pin RJ-45 based interface, could damage the panel.

NOTE: U3 type smart drives are not supported by the TPMC-12.

NOTE: When booting the TPMC-12, the only USB devices supported are a keyboard or mouse. Having a USB drive or hub connected will interfere with proper booting of the touchpanel.

NOTE: After inserting a USB device or MMC card, a "Found New Hardware" window may appear. If this window appears, click "Yes" to close the window.

TPMC-CH-IMC Interface Module

For networks without CAT5 audio and video, the TPMC-CH-IMC Interface Module (as well as a 15 foot "triamese" interface cable) is included to convert unbalanced video sent over coax cable and balanced/unbalanced audio sent over shielded, twisted-pair wiring to Crestron Certified Wire for connection to the touchpanel.

NOTE: The TPMC-CH-IMC is not for use with QuickMedia.

NOTE: Audio and video wiring between the touchpanel and module may be as long as 500 feet (152 meters) for component video or 750 feet (229 meters) for composite and S-video. However, the length of Cresnet cable must account for limits based upon the touchpanel power requirements. Refer to the latest version of the TPMC-CH-IMC Interface Module Operations Guide (Doc. 6345) and "Network Wiring" on page 14.

QM-TX QuickMedia Transmitter

The QM-TX QuickMedia Transmitter (sold separately) can be used to connect a video or audio source to a QuickMedia network without a locally available QM transmitter (such as the QM-WMC).

The QM-TX accepts composite video, S-video, component video and audio signals. These signals are converted to the QuickMedia standard and fed over a CAT5E or CAT6 cable to a QM receiver (such as the TPMC-12). All signal routing occurs automatically under the command of the control system.

For more information, refer to the latest version of the QuickMedia Transmitter: QM-TX Operations Guide (Doc. 6334).

Cable Management

The TPMC-12 uses a built-in strain relief to prevent accidental disconnection of vital cables and provide strain relief for connectors on cables and the touchpanel. Refer to the following illustration to use the built-in strain relief mechanism to secure cables to the touchpanel.

TPMC-12 Cable Management

Remove the four cover screws to access the I/O panel

Route I/O cables under the metal bracket

Use screws and metal bracket to clamp I/O cables in place
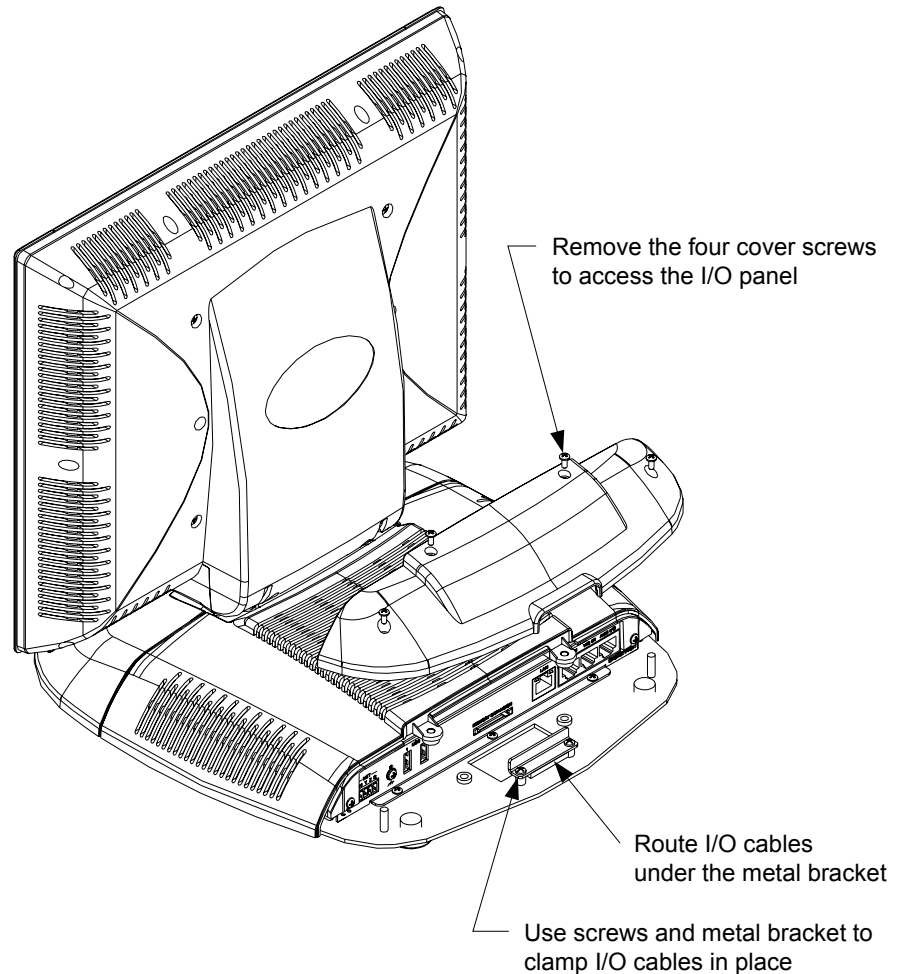
Tilt Angle Tension Adjustment

Use a 5/32" socket (not included) with a hex drive key (Allen wrench) to increase or decrease pivot tension at the base of the touchscreen. Turning the key clockwise increases the tension, counterclockwise decreases tension.

Tension Adjustment Screw

Tilt Tension Adjustment
Use a 5/32" Hex (Allen) Wrench
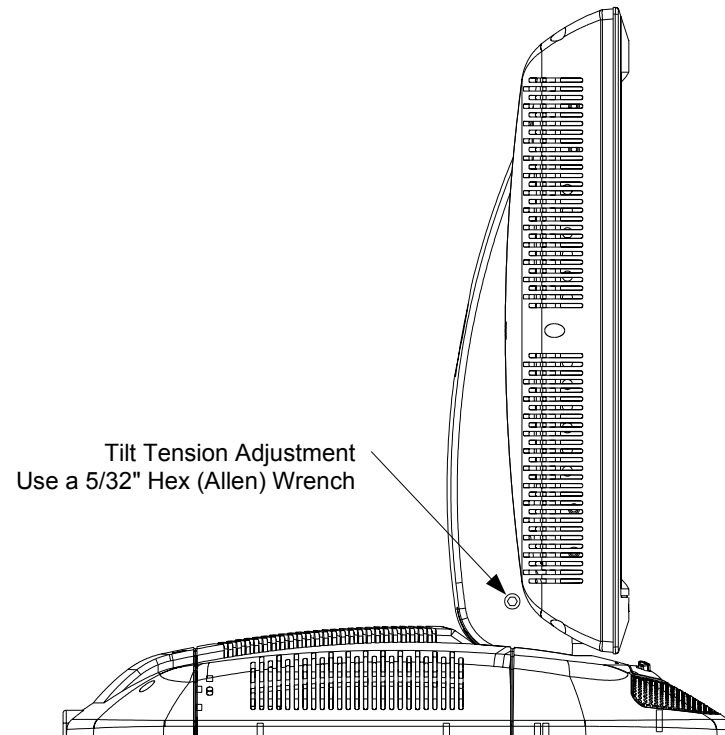
Recommended Cleaning

Keep the surface of the touchscreen free of dirt, dust or other materials that could degrade optical properties. Long-term contact with abrasive materials can scratch the surface, which may detrimentally affect image quality.

For best cleaning results use a clean, damp, non-abrasive cloth with any commercially available non-ammonia glass cleaner. Bezels may not provide a complete watertight seal. Therefore, apply cleaning solution to the cloth rather than the surface of the touchscreen. Wipe touchscreen clean and avoid getting moisture beneath the bezels.

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 TPMC-12, it is recommended to use SystemBuilder for configuring a system.

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

Configuration Manager

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

- To incorporate the TPMC-12 (Cresnet) into the system, drag the TPMC-12 from the Touchpanels | Touchpanels (Cresnet) folder of the *Device Library* and drop it in the *System Views*.

Locating the TPMC-12 (Cresnet) in the Device Library

Crestron Devices (DvcLib 567)

Touchpanels
  Touchpanels (Cresnet)
    C2N-FT-TPS4 (Cresnet)

    TPMC-12 (Cresnet) ◄────────
    TPMC-15-CH (Cresnet)

Wireless Receivers
Wireless Remotes
User Devices
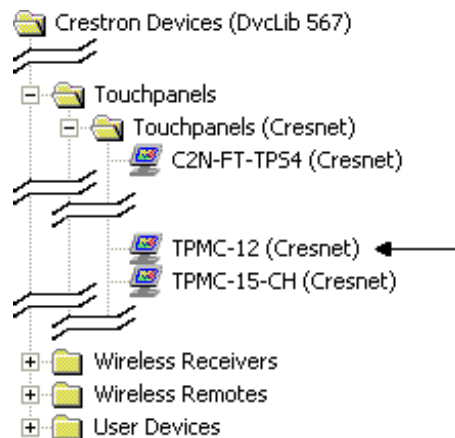
- To incorporate the TPMC-12 (Ethernet) into the system, drag the TPMC-12 from the Touchpanels | Touchpanels (Ethernet) folder of the *Device Library* and drop it in the *System Views*.

Locating the TPMC-12 (Ethernet) in the Device Library

Crestron Devices (DvcLib 567)

Touchpanels
  Touchpanels (Cresnet)
  Touchpanels (Ethernet)
    C2N-FT-TPS4 (Ethernet)

    TPMC-12 (Ethernet) ◄────────
    TPMC-15-CH (Ethernet)

Wireless Receivers
Wireless Remotes
User Devices
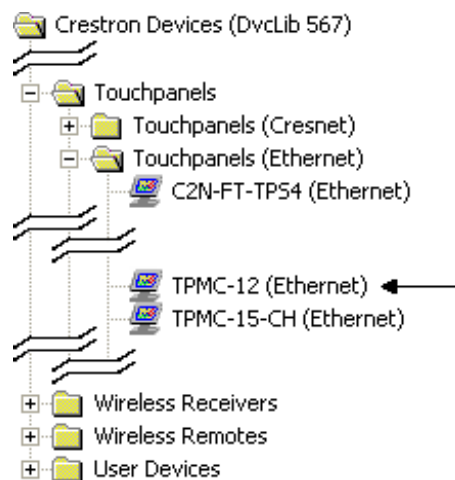
- The system tree of the control system displays the device in the appropriate slot with a default Net ID or IP ID as shown in the following illustration.

NOTE: In the following illustration, there is both an Ethernet device in Slot 8 and a Cresnet device in Slot 9. It is possible to have both types of device attached to a control system as long as the control system has either a built-in or expansion Ethernet interface.

C2Net Device, Slot 8 and 9
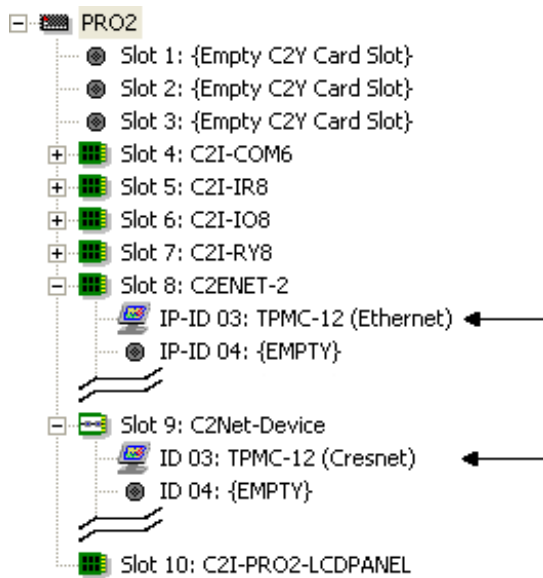
- Additional TPMC-12 devices are assigned different Net ID or IP ID numbers as they are added.

- If necessary, double click a device to open the "Device Settings" window and change the Net ID or IP ID, as shown in the following figures.

"Device Settings: Crestron TPMC-12 (Cresnet)" Window
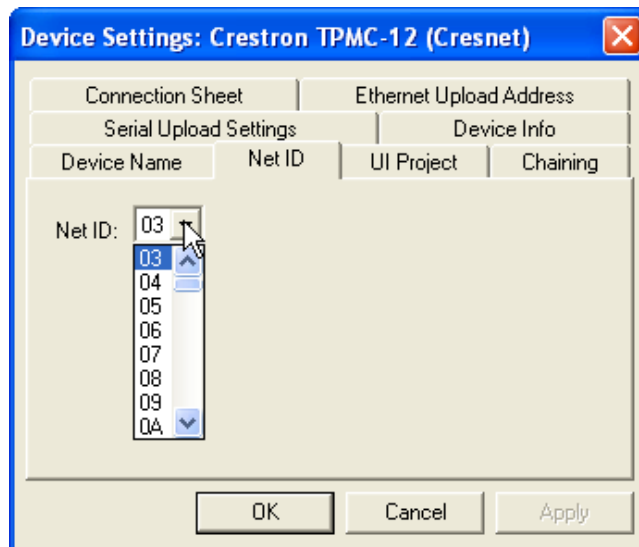
"Device Settings: Crestron TPMC-12 (Ethernet)" Window
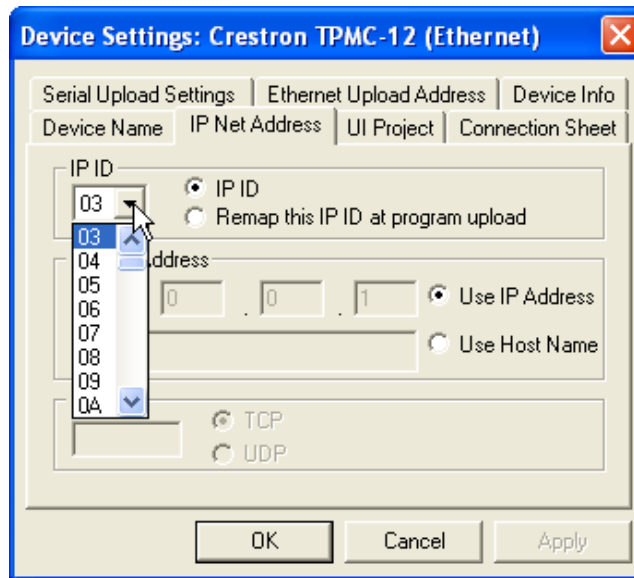
- The ID code specified in the SIMPL Windows program must match the Net ID or IP ID of each unit. Refer to "Identity Code" on page 16.

Program Manager

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

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

Programming with VisionTools Pro-e

Touchpanel screens should be created in VT Pro-e to allow accessing the embedded applications, switching of source signals to desired outputs as well as selection of the system mode. There are no special programming requirements to use the functions of the TPMC-12 in a room control system.

Multi-Mode Objects

Multi-mode objects offer high-performance programming!

The single most advanced VT Pro-e high performance programming technique involving the TPMC-12 is the concept of multi-mode objects. A multi-mode object (i.e. button, legend, etc.) is an object drawn on a VT Pro-e page that can have one or more active and inactive visible settings (*modes*).

For examples, refer to www.crestron.com/exampleprograms and search for multi-mode object examples. This file contains the VT Pro-e touchpanel files and SIMPL Windows files that illustrate the high-performance capabilities of multi-mode objects.

WAV File Audio Messages

The TPMC-12 touchpanels are capable of playing audio messages as system prompts and responses. These files are recorded as WAV files on a PC using an audio utility such as Sound Recorder that is packaged with Microsoft Windows 95/98/Me/XP/NT/2000/Vista™. Files from other sources may also be converted to an acceptable format by using this or a similar utility. Many other audio utilities are available commercially or as shareware. The TPMC-12 touchpanels only accept the following WAV file format: **PCM, 8 and 16 bit, 8 – 44.1kHz, mono and stereo**.

For more information about how to use Sound Recorder, refer to its User's Guide and extensive help information provided with the software. Also refer to the help file in VT Pro-e to learn how to use its audio tool, Sound Manager, to attach WAV files to a touchpanel project.

Pre-recorded WAV files for voice prompts and responses are available from Crestron. These files can be stored into and programmed for use in the touchpanel directly or may be edited with the Sound Recorder. For example, the individual files can be combined to create custom messages.

NOTE: Touchpanel WAV files can be obtained from the Wave LC Library of the Crestron FTP site.

Bit Depth and File Size

A balance of performance and quality can be achieved by using VT Pro-e to configure the size of graphics in a project. Read this section to learn about bit depth and how to maximize the quality and performance of a TPMC-12 project.

Bit depth refers to the number of memory bits used to store color data for each pixel in a raster image. A touchpanel raster image consists of a rectangular grid of picture elements (pixels). Each pixel uses the same amount of memory to store its color data. The amount of memory is called the bit depth of the image.

Greater bit depths are required to represent finer gradations of color. Increasing bit depth necessarily increases file size. A black and white drawing requires only one bit per pixel to store all the available color information. Using a 32-bit per pixel bit depth for a black and white image increases the file size 32 times without adding anything to the black and white image quality.

In an 8-bit per pixel system, the associated 8-bits of video memory for every screen pixel contain a value referring to a location in an 8-bit color table. In this way any one of the specific 256 color table locations is assigned to a pixel.

A 16-bit highcolor system is considered sufficient to provide life-like colors. It is encoded using 5-bits to represent red, 5-bits to represent blue and (since the human eye is more sensitive to the color green) 6-bits to represent 64 levels of green. These can therefore be combined to provide 65,536 mixed colors (32 x 32 x 64 = 65,536).

In a 24-bit graphics display, the video memory allocates 24 bits for each pixel on the screen enabling each pixel to take on any one of a possible 16.7 million colors. Each 24-bit value is composed of 8-bits for red, 8-bits for green and 8-bits for blue. These triplets of 8-bit values are also referred to as the red, green and blue color planes. A 24-bit image is actually composed of three component images which combine to create the truecolor picture. The reason this is called truecolor is that this is near the maximum number of colors the human eye is able to detect.

Truecolor images are sometimes represented by a 32-bit value. The extra 8-bits do not enhance the precision of the color representation but act as an alpha channel that represents pixel translucence. 32-bit truecolor has become popular on the computer desktop to provide effects such as translucent windows, fading menus and shadows.

In graphics intensive applications such as touchpanels, raising or lowering the color depth of the displayed graphics can achieve a balance of performance and quality. Lower color depths do not require as much frame buffer memory or display bandwidth, allowing them to be generated and displayed more quickly. Increasing color depth results in higher color quality at the expense of display speed and responsiveness. By using mostly 8-bit or 16-bit graphics and holding 32-bit graphics to a minimum (e.g. for a family photo, etc.), you can create a sophisticated project

that will fit in the memory space provided and have the touchpanel remain very responsive.

Relationship of Bits to Colors

NUMBER OF BITS	NUMBER OF COLORS
1 bit	Black and White
2 bits	4 Colors
4 bits	16 Colors
8 bits	256 Colors
16 bits	65,536 Colors (Highcolor)
24 bits	16.7 million Colors (Truecolor)
32 bits	16.7 million Colors plus Transparency

When creating a VT Pro-e project you can elect to compress and reduce the image size in the "Page Properties" window for the entire page and/or perform the same function of reducing the image size using the "Image Properties" window. A reduction in image size will save a considerable amount of memory space for your project.

In VT Pro-e, the **Compress** checkbox permits the image to be compressed when compiling. The **16 Bits** checkbox converts a 24-bit or 32-bit image to 16 bits. This conversion to a 16-bit image may cause the loss of some subtle shading. To compensate for this, use the dithering to simulate the original shading. Check your image with each of the available dithering types to determine which will deliver the best quality image.

Dithering type selection can be accessed from the "Page Properties" or "Image Properties" windows in VT-Pro-e. Refer to the following illustrations.

VT Pro-e "Page Properties" Window – Bit Depth Selection
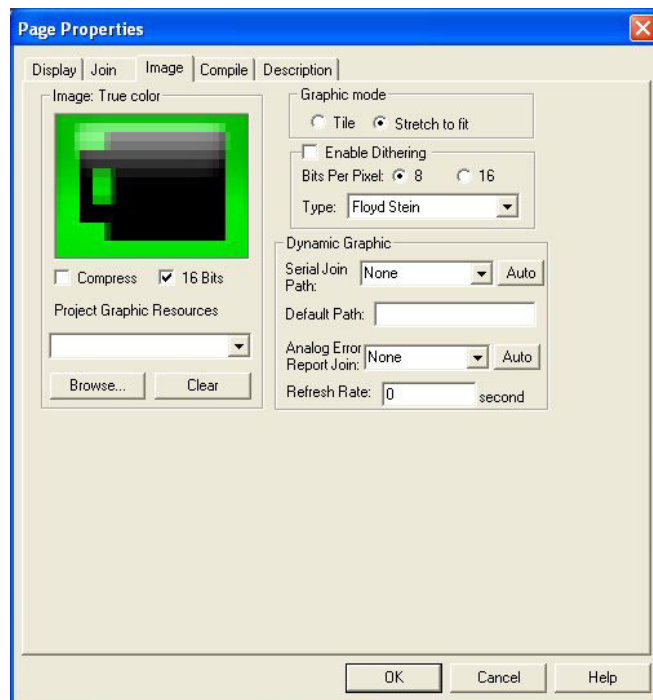
VT Pro-e "Image Properties" Window – Bit Depth Selection
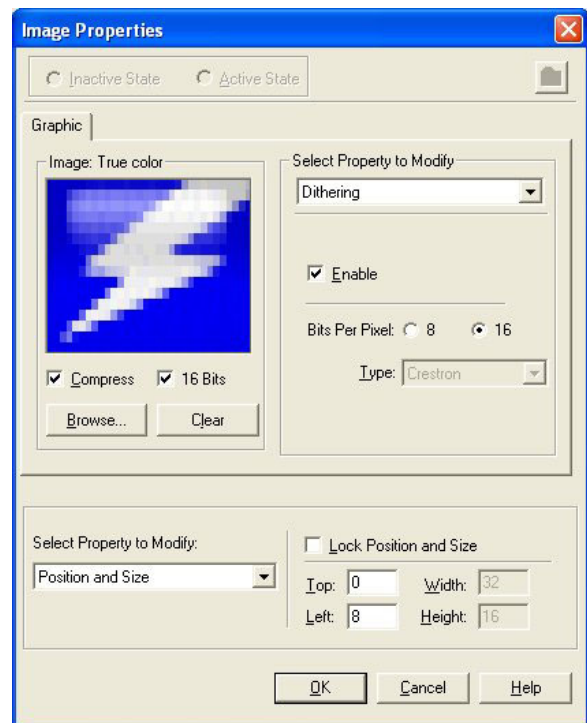
Pushbutton Programming

Four of the buttons can be programmed to access any frequently used command. Each button has a permanently fixed digital join number. The sequence of digital join numbers is (left to right) 1 through 4. Refer to the following illustration for their assigned join numbers. A description for each button signal is described in the SIMPL Windows help file (**F1**).

Pushbutton Layout and Join Number Assignment

Reset button:
Use paper clip to
press reset button
through this hole

Join 1   Join 2   Join 3   Join 4
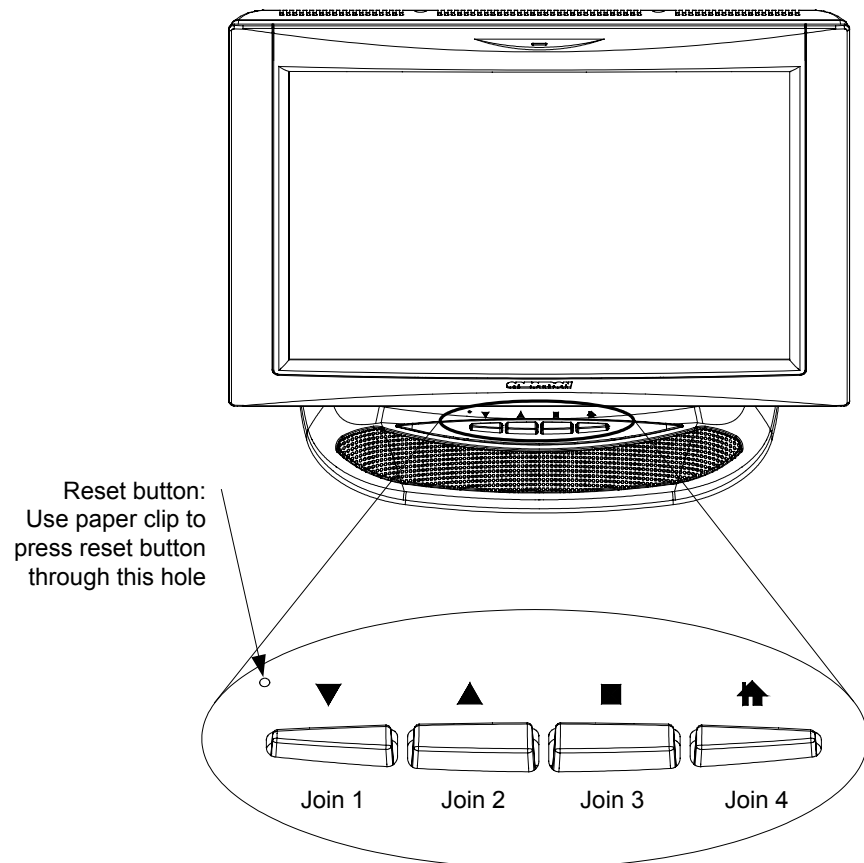
MultiByte International Characters

Most languages use a single byte of eight bits to represent a character, e.g. English, French, German, Hebrew, Russian, Thai, etc.

Multibyte character fonts require more than the usual eight bits to specify a character. This occurs when a language has more than 256 characters (2^8) in a font. For example, Chinese fonts contain several thousand characters. Other multibyte languages include Japanese and Korean.

There are two separate applications with multibyte characters – static text on buttons and indirect text on buttons. No Isys touchpanel firmware changes are required in either case.

Indirect text on a button is entered in VT Pro-e and the actual string to be displayed is entered in SIMPL Windows. As of this publication date only completely single byte or completely multibyte strings may be entered or they will not be compiled correctly in SIMPL Windows. In other words, you cannot enter Chinese characters interspersed with numbers. You can enter Chinese characters or numbers in separate

strings or you can pad each number with "\x00" to make it multibyte and then combine it with Chinese characters in the same string.

Of course you can always use the workaround of showing a graphic that displays the string but it is not dynamic. To compile and use multibyte characters it is essential that the operating system understand the language. Windows XP and Vista are available in many international languages and add-on software is available for other versions of Windows.

Embedded Applications

NOTE: Installations and downloads from within embedded applications are not supported by the TPMC-12.

A number of third-party or in-house applications are embedded in a VT Pro-e TPMC-12 project. (Refer to illustration on the following page.)

- Adobe Reader
- Microsoft Excel Viewer
- Microsoft Internet Explorer
- Microsoft Word Viewer
- MJPEG Viewer
- NetMeeting
- PowerPoint Viewer
- Real Player
- Remote Desktop
- VNC Viewer
- Windows Media Player
- WordPad

The embedded applications have the following features:

- All embedded applications listed in the VT Pro-e *ProjectView* workspace are created by default for a new TPMC-12 project.
- All applications are created at project-level – one instance per project.
- The static position and size of each application can be viewed from any page.
- Four analog joins can be assigned to each application to dynamically change position and size.
- One digital feedback join or one analog join can be assigned to dynamically show/hide an application.

Embedded Applications in ProjectView
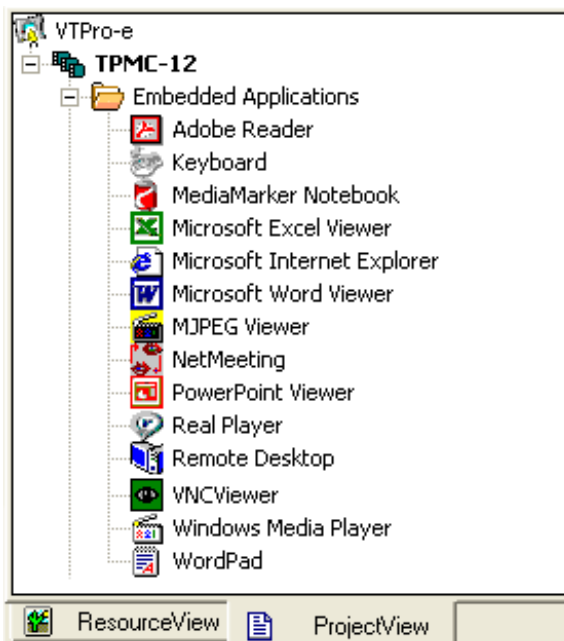
Right-click on any of the applications in the *Project View* and select **Properties** to open the "Embedded Application Property" window (refer to the illustration on the following page). This window permits a choice of positions on the screen, assignment of an analog touch join type and number and a show/hide join number.

Defaults for Embedded Windows Applications

Use the *Default Path* text box in the "Embedded Applications Properties" window to enter the default document for the application.

Edit the *Default Position and Size* in the "Embedded Application Properties" window to point to your new location.

Sample of an "Embedded Application Properties" Window
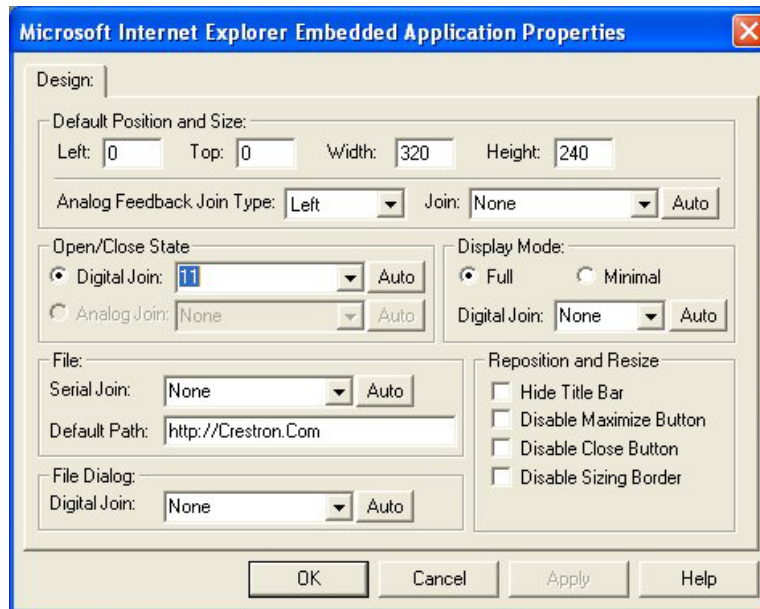
Programming Embedded Windows Applications

The following diagram is an example of a basic SIMPL program that enables you to open/close an embedded application. The example program is discussed following the diagram.
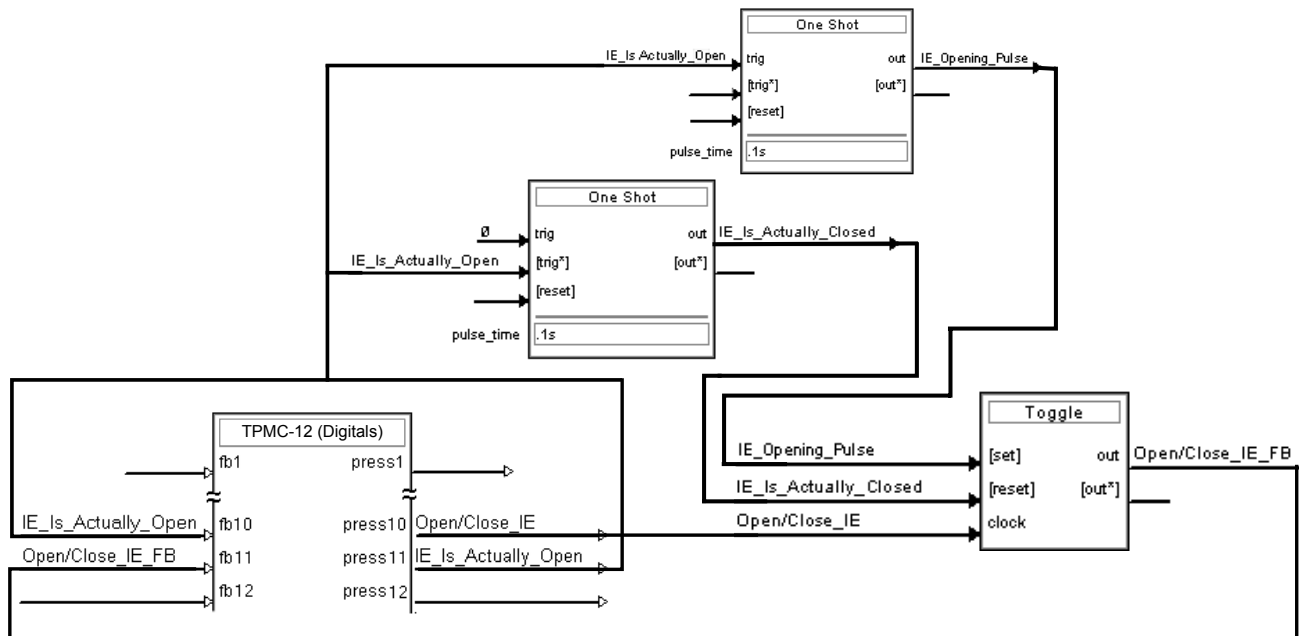
The example has Join #10 assigned to a button that is used to toggle the state of Internet Explorer. Press10 is routed to the clock line of a Toggle symbol. The output of the toggle is routed to fb11. Join #11 is referred to as the "Open/Close State Digital Join." The feedback signal of the Open/Close State Digital Join is used to Open/Close the application. In this example, when fb11 goes high, Internet Explorer opens, and when fb11 goes low, Internet Explorer closes. However, since the

application can also be closed by pressing the "X" in the upper right hand corner of Internet Explorer, we must keep the logic synchronized. If we do not, the toggle will get out of sync. Similarly, using the reserved join to launch the embedded application would result in the application being open, but the state of the toggle remaining low, so a one-shot is used to set the state of the toggle if the embedded application is opened in this way.

For example, the user presses button #10 and the output of the toggle (<**Open/Close_IE_FB**>) is high. If the user presses the "X" on IE, IE closes. The next time they touch button #10, <**Open/Close_IE_FB**> will go low, which tries to close the application. However, the application is already closed. We need to reset the state of the toggle to keep in sync with the actual state of the application.

The "Press" signal of the Open Close State Digital Join can be used to know the true state of the application. When Press11 goes high, in this example, IE is open. When Press11 goes low, IE is closed. Here, we use the falling edge of Press11 through a One-Shot to reset the state of the Toggle symbol. Now the toggle is properly synchronized if the user closes the application from the panel itself.

Example Program

An example program for the TPMC-12 is available from the Crestron website (www.crestron.com/exampleprograms).

Uploading and Upgrading

Crestron recommends using the latest programming software and that each device contains the latest firmware to take advantage of the most recently released features. However, before attempting to upload or upgrade it is necessary to establish communication. Once communication has been established, files (for example, programs, projects 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 TPMC-12; refer to the Crestron Toolbox help file for details. There are two methods of communication.

Indirect

Indirect Communication
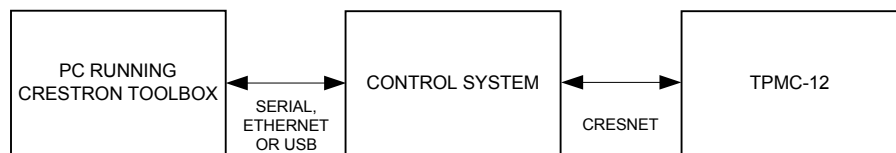
TPMC-12 connects to control system via Cresnet:

1. 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).

2. Use the Address Book in Crestron Toolbox to create an entry for the TPMC-12 using the expected communication protocol (Indirect). Select the Cresnet ID of the TPMC-12 and the address book entry of the control system that is connected to the TPMC-12.

3. Display the TPMC-12's "System Info" window (click the ▇ icon); communications are confirmed when the device information is displayed.

TCP/IP

Ethernet Communication

The TPMC-12 connects to PC via Ethernet:

1. Establish serial communication between TPMC-12 and PC.

2. Enter the IP address, IP mask and default router of the TPMC-12 via the Crestron Toolbox (**Functions | Ethernet Addressing**); otherwise leave DHCP enabled. (The unit ships with DHCP enabled.)

3. Confirm Ethernet connections between TPMC-12 and PC. If connecting through a hub or router, use CAT5 straight through cables with 8-pin RJ-45

connectors. Alternatively, use a CAT5 crossover cable to connect the two **LAN** ports directly without using a hub or router.

4. Use the Address Book in Crestron Toolbox to create an entry for the TPMC-12 with the TPMC-12's TCP/IP communication parameters.

5. Display the "System Info" window (click the [icon] icon) and select the TPMC-12 entry.

Programs, Projects and Firmware

Program, project 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 and projects 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, VT Pro-e 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.

VisionTools Pro-e   Upload the VT Pro-e file to the touchpanel using VT Pro-e 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 TPMC-12 firmware via Crestron Toolbox.

1. Establish communication with the TPMC-12 and display the "System Info" window.

2. Select **Functions | Firmware…** to upgrade the TPMC-12 firmware.

Program Checks

Actions that can be performed on the TPMC-12 vary depending on whether it is connected via Cresnet or Ethernet.

Cresnet Connections   For Cresnet connections, using Crestron Toolbox, display the network device tree (**Tools | Network Device Tree**) to show all network devices connected to the control system. Right-click on the TPMC-12 to display actions that can be performed on the TPMC-12.

Ethernet Connections   For Ethernet connections, display the "System Info window (click the [icon] icon) and select the **Functions** menu to display actions that can be performed on the TPMC-12.

Be sure to use Crestron Toolbox to create the TPMC-12 IP table.

1. Select **Functions | IP Table Setup**.

2. Add, modify or delete entries in the IP table. The TPMC-12 can have only one IP table entry.

3. A defined IP table can be saved to a file or sent to the device.

Edit the control system's IP table to include an entry for the TPMC-12. The entry should list the TPMC-12's IP ID (specified on the TPMC-12's IP table) and the internal gateway IP address 127.0.0.1.

Operation

MediaMarker

Crestron's MediaMarker software is used to create, organize and save presentations. A presenter can devise an entire lecture or demonstration and save it to the notebook. At the presenter's discretion, the audience may view the presentation complete with annotation in real-time.

MediaMarker can be used with the TPMC-12 or on a personal computer.

In addition to containing the tools required for object creation, MediaMarker can import graphics and text from many other applications. Importable objects include: html, jpg, bmp, png and tif.

MediaMarker projects can be saved to and retrieved from a disk or a "notebook" (Export and Import functions in the **File** menu).

File | Export Project – Archives the project into one file.

File | Import Project – Opens and extracts all files from a previously exported project into an active folder.

NOTE: When saving a project, the background images are stored as external graphic files. The graphic file type (html, jpg, bmp, png and tif) can be set within **Edit | Preferences | Application Settings**.

Additional information is available in the MediaMarker help file.

Security Infrastructure

Since the TPMC-12 does not use a traditional hard drive but rather an image that is restored every time the touchpanel is rebooted, any virus infection is cleared immediately after a reboot. However, using the currently available tools and techniques, Crestron has provided an infrastructure that protects against possible virus infections.

1. Executables/Scripts brought in on external media
    The implementation of the TPMC-12 series has restrictions on starting any application or script. The only applications that can be started are those allowed by Crestron and these can only be started from the Crestron project.

2. Downloaded Program/Script
    The browser is customized in such a way that files cannot be downloaded. The only files the browser can open are the files it has plug-ins for, such as PDF, etc. The user cannot change the options, as this dialog box has been disabled.

3. Browser Hijack and Browser vulnerability
    Crestron has patched all currently known hijacks and vulnerabilities. Future updates can be downloaded from the Crestron website.

4. Email Viruses
    There is no e-mail client installed on the TPMC-12, so email-based viruses cannot be executed.

5. Viruses that attack web/FTP servers
    The TPMC-12 does not run a web or FTP server and is therefore not listening to

port 21 or 80. The only ports the system listens to are the ports registered to Crestron.

6. Virus from other machines on the network
   Since drives on the TPMC-12 can be shared on the network, it is possible that a virus can write itself to files/folders on these shares. Our recommendation therefore is to share as "Read-Only", so that viruses cannot attach themselves to files on the TPMC-12.

7. ActiveX and Java
   The TPMC-12 has ActiveX disabled and has no Java Virtual Machine installed. These applets cannot run on the TPMC-12.

NOTE: While browsing the Internet with the TPMC-12, clicking on a link may cause a message box titled "Restrictions" to appear that contains the text "This operation has been cancelled due to restrictions in effect on this computer. Please contact your system administrator." If this message appears, checking *Enable Pop-ups* in the "Embedded Apps" window (refer to "Embed Apps (Embedded Applications)" which starts on page 31) may correct this error. Other restrictions may also cause this error, so this may not prevent all occurrences.

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.

TPMC-12 Troubleshooting

TROUBLE	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
Touchpanel does not function.	Touchpanel is not communicating with the network.	Use Crestron Toolbox (via SIMPL Windows or VT Pro-e) to poll the network. Verify network connection to the touchpanel.
	Touchpanel is incorrectly calibrated.	Enter the setup menu or use Crestron Toolbox to initiate the calibration sequence and recalibrate. (Refer to "Touch Screen" which starts on page 22.)
Touchpanel is not responding.	Incorrect network wiring.	Touch the screen to remove any message and verify correct wiring to all connectors.
	Touchpanel Cresnet ID is not set to match the Net ID in the SIMPL program.	Use Crestron Toolbox to poll the network. Verify that the Cresnet ID for the touchpanel is properly set to match the Net ID in the SIMPL program.
	Touchpanel Cresnet ID is not unique; two or more units share the same ID.	Use Crestron Toolbox to poll the network and verify that each ID is used only once.
Touchpanel display is dark.	Standby timeout has elapsed.	Touch the screen to reactivate.
	Screen brightness is improperly set.	Adjust screen brightness from the setup menu. (Refer to "Setup Menu Details" which starts on page 19.)
Unexpected response from the touchpanel.	Touchpanel is incorrectly calibrated.	Enter the setup menu or use Crestron Toolbox to initiate the calibration sequence and recalibrate. (Refer to "Touch Screen" which starts on page 22.)

(Continued on following page)

TPMC-12 Troubleshooting (Continued)

TROUBLE	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
Video window touchpanel has no display.	Improper video connection.	Verify proper connections on the touchpanel.
	Incorrect video cable used.	Verify that the correct video cable is being used.
	Incorrect video format selection.	Select the proper video input configuration in the touchpanel configuration setup menu. (Refer to "Video" which starts on page 26.)
	Incorrect VT Pro-e project file loaded.	Make sure that video window object resides in project, re-compile and reload.
Communications via the LAN port is not functioning.	Improper Ethernet connection (IEC).	Verify proper connection at touchpanel LAN port.
	Incorrect touchpanel selected in SIMPL Windows.	Select "Touchpanel (Ethernet)" instead of "Touchpanel (Cresnet)".
	Another device set to the same IP address.	Obtain new touchpanel static IP address.
	Possible bad port on the hub.	Use crossover cable to connect directly to the Ethernet port on a PC and ping the IP address of the touchpanel to confirm communication. If it is good, confirm hub port by testing with another Ethernet device.

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
CAT5 Wiring Reference Guide
Crestron e-Control Reference Guide
MediaManager Applications Guide
QM-TX QuickMedia Transmitter
TPMC-CH-IMC Interface 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 TPMC-12, 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.

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