Crestron **TPMC-8X**
Isys i/O® 8.4" WiFi Touchpanel
Operations Guide

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

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Isys i/O® 8.4" WiFi Touchpanel: TPMC-8X

Introduction

The Isys i/O® TPMC-8X is a compact, stylish Wi-Fi touchpanel featuring the Windows® XP Embedded OS to deliver a 2-way wireless control solution with blazingly fast performance and native capabilities for browsing the Internet, streaming multimedia and much more. A brilliant 8.4" (21.3 cm) active-matrix SVGA display and 16-bit color depth combine to produce stunning 3D graphics using DNav dynamic menu objects, dynamic graphics and text, animations, multimode objects, PNG translucency and exclusive Synapse™ image rendering - all with astonishing speed.

Features and Functions

- Stylish and compact ergonomic design
- 8.4 in (21.3 cm) active matrix touchscreen display with 800 x 600 resolution
- 16-bit Isys i/O® graphics with Synapse™ image rendering algorithm
- Windows® SideShow® enabled
- DNav dynamic menu objects
- 802.11a/b/g WiFi 2-way wireless communications
- Windows® XP Embedded operating system
- Onboard PC applications for Web browsing, streaming media, conferencing, VoIP and remote computer access
- Wireless video from network cameras and servers
- Direct panel-to-panel intercom over IP
- Integrated SIP phone capability
- Built-in microphone and stereo speakers
- 5-way thumbpad and four "hard key" buttons
- Includes stylus with onboard storage slot
- Built-in biometric fingerprint scanner
- Internal Li-Ion battery pack included
- External "booster" battery pack available
- Optional desktop and wall mount docking stations

Advanced Ergonomics

Incredibly thin and compact, the TPMC-8X is brilliantly designed to provide a powerful mobile control solution that is easy to hold and intuitive to use. Its magnesium alloy enclosure presents a sleek, modern appearance that is both rugged and lightweight.

Tactile Controls

An integrated 5-way thumbpad and up/down arrow buttons add quick access and tactile response for controlling functions ranging from simple volume adjustment and channel selection to on-screen menu navigation or even pan/tilt camera control. Four additional "hard key" buttons are positioned below the touchscreen, programmable for context sensitive menu functions. A stylus is even included for use with the on-screen keyboard, conveniently stowed in its own storage slot.

Biometric Scanner

The built-in fingerprint scanner unleashes a whole new level of convenience and security, allowing individual users to be identified instantly and logged on automatically. With just the touch of a fingertip, each user can be presented with a unique graphical interface with its own set of preferences, access privileges and even its own look through the use of touchpanel "skins".

WiFi Wireless

Integrated 802.11a/b/g WiFi technology with WEP encryption delivers secure, high speed 2-way wireless performance across wireless LANs, affording mobile freedom and seamless communications with Crestron control systems, computers, digital media servers and other IP-based devices.

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 theater, boardroom or lecture hall, the TPMC-8X 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-8X access to all kinds of PC and Web based content such as news feeds, sports scores, stock tickers, 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-8X 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.

Wireless Video

For presentation preview, surveillance or pure entertainment, the TPMC-8X makes it easy to view security cameras, movies and other video sources right on the touchscreen. In addition to the wide range of streaming video formats supported by its onboard media player applications, the TPMC-8X also features native support for video over IP from a variety of third-party Web cameras and servers using the motion-JPEG format.

Audio Features

Built-in stereo speakers and headphone output provide clear audio for streaming media and internal PC applications and enable 2-way intercom and VoIP communications 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.

Intercom and Telephone

Built-in IP intercom capability facilitates direct panel-to-panel intercom and monitoring right over the wireless LAN. New Crestron SIP phone allows 2-way communication between touchpanels as well as with traditional PSTN (public switched telephone network) telephones and other SIP/VoIP phones.

NOTE: SIP Phone requires a high speed LAN and/or broadband connection and a connection to a SIP server or SIP-based Internet phone (VoIP) service provider.

Li-Ion Rechargeable Batteries

A field-replaceable Lithium Ion battery pack onboard the TPMC-8X provides fast charging, long lasting wireless operation without the "memory" issues typical of other rechargeable batteries. An external "booster" battery pack is also available, providing up to 20 hours of typical use between charges. The optional external battery pack clips neatly to the rear of the touchpanel without tools, adding 0.75 inch (19 mm) depth and non-slip rubber feet resulting in a fixed tilt angle of 7 degrees.

Docking Station Options

Optional desktop or wall mount docking stations afford a choice of convenient charging solutions, adding 10/100 Ethernet for direct connection to a wired LAN, plus two USB ports for mouse and keyboard. The desktop dock allows the touchpanel to be operated at a 37 degree angle, while the wall mount model provides a secure, flush look.

Specifications

Specifications for the TPMC-8X are listed in the following table.

TPMC-8X Specifications

SPECIFICATION	DETAILS
Touchscreen Display	
Display Type	TFT active matrix color LCD
Size	8.4 inch (21.3 cm) diagonal
Aspect Ratio	4:3 SVGA
Resolution	800 x 600 pixels
Brightness	200 nits
Contrast	500:1
Color Depth	18-bit, 262k colors
Illumination	Edgelit fluorescent
Viewing Angle[1]	±65º horizontal, +65º/-45º vertical
Touchscreen	Resistive membrane
Memory	
DDR SDRAM	512 MB
Flash	1 GB
Compact Flash	Accepts up to 4 GB Type II CF (not included)
Maximum Project Size	190 MB
Operating System	Microsoft® Windows® XP Embedded
Graphic Engine	Isys i/O engine, 16-bit non-palette graphics; 65,536 colors; Synapse image rendering algorithm; multi-mode objects; DNav dynamic menu objects; dynamic graphics[2]; Windows® SideShow® support, PNG translucency; full motion (60 fps) animation; transition effects
Embedded PC Applications[3]	Microsoft Internet Explorer w/Macromedia® Flash® plug-in, Windows Media® Player, RealPlayer®, Crestron MJPEG viewer, Crestron IP Intercom, Crestron SIP Phone, NetMeeting®, VNC viewer[4], Remote Desktop, Java™ Runtime, Crestron Keyboard, Adobe® Acrobat® Reader, WordPad, MS Word Viewer 2003, Excel® Viewer 2003, PowerPoint® Viewer 2003
RF Wireless[3]	
RF Transceiver	IEEE 802.11a/b/g WiFi, 5.8 or 2.4 GHz 2-way RF, static IP or dynamic IP via DHCP, 64 and 128-bit WEP encryption
Range	30 feet (10 meters) @ 54 Mbps; range and speed vary based upon environmental conditions

(Continued on following page)

TPMC-8X Specifications (Continued)

SPECIFICATION	DETAILS
RF Wireless (Continued)	
Gateway	Requires a CEN-WAP-ABG or similar 802.11a/b/g wireless access point and Ethernet enabled Crestron 2-Series control system
Ethernet[5]	10BASE-T/100BASE-TX, auto-switching, auto-negotiating, auto-discovery, full/half duplex, TCP/IP, UDP/IP, DHCP, IEEE 802.3U compliant
Video	
Streaming/File Formats	MPEG4 and MJPEG via Axis Media Control or Crestron MJPEG Viewer, plus all formats supported by the embedded media player applications[3]
Audio	
Hardware Features	Dual onboard microphones, built-in stereo speakers, stereo headphone output
Streaming/File Formats	As supported by the embedded media player applications[3]
Audio Feedback (WAV)	8 & 16 bit PCM, mono & stereo, 8 – 44.1 kHz sampling rates
Amplification	Stereo, 1.1 Watts per channel
Battery	
Internal Battery	Lithium Ion, 7.4 Volt, 2200 mAh, Crestron model TPMC-8X-BTP included
Usage per Charge[6]	~1.5 hours continuous, 9+ hours under normal use with standby/power down activated
Charging Time	~2 hours (~2.5 - 3 hours when in use)
Power Requirements	
Touchpanel	42 Watts (3.5 Amps @ 12 Volts DC)
Universal Power Supply/Charger (included)	100~240 VAC 50/60 Hz
Default IP ID[7]	03
Minimum 2-Series Control System Update File[8, 9]	Version 3.137 or later
Environmental	
Operating Temperature	32º to 104ºF (0º to 40ºC)
Storage Temperature	14º to 140ºF (-10º to 60ºC)
Humidity	10% to 90% RH (non-condensing)
Heat Dissipation	143 BTU/Hr
Enclosure	Magnesium alloy case with plastic buttons, stylus storage slot (stylus included), integral docking station port

(Continued on following page)

TPMC-8X Specifications (Continued)

SPECIFICATION	DETAILS
Dimensions	
Height	8.21 in (20.85 cm)
Width	9.69 in (24.60 cm)
Depth	0.92 in (2.32 cm)
Weight (with internal battery)	2.0 lbs (0.9 kg)
Included Accessories	
TPMC-8X-BTP	Internal Battery Pack
Available Accessories	
CEN-WAP-ABG-1G	Wall Mount 802.11a/b/g Wireless Access Point
CEN-WAP-ABG-CM	Ceiling Mount 802.11a/b/g Wireless Access Point
TPMC-8X-BTPE	External Battery Pack
TPMC-8X-DS	Desktop Docking Station/Charger
TPMC-8X-DSW	Wall Mount Docking Station/Charger

1. Optimum viewing angle for best contrast is 37º.
2. By design, the panel will not load dynamic graphics if they are located on a password protected FTP or HTTP server.
3. Refer to website or 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. The supported VNC viewer is UltraVNC version 1.0.2. Other VNC viewers may work but are not guaranteed.
5. Requires a wired connection via docking station.
6. Up to 3.5 hours continuous, 20+ hours under normal use with standby/power down activated, when using external battery pack option, with screen brightness set to 65%, standby set to 1 minute, power down set to 2 minutes, waking the panel five time per hour. Actual usage can vary depending on your settings.
7. Refer to "Identity Code" on page 12 for details.
8. The latest software versions can be obtained from the Crestron website. Refer to the NOTE following these footnotes.
9. 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

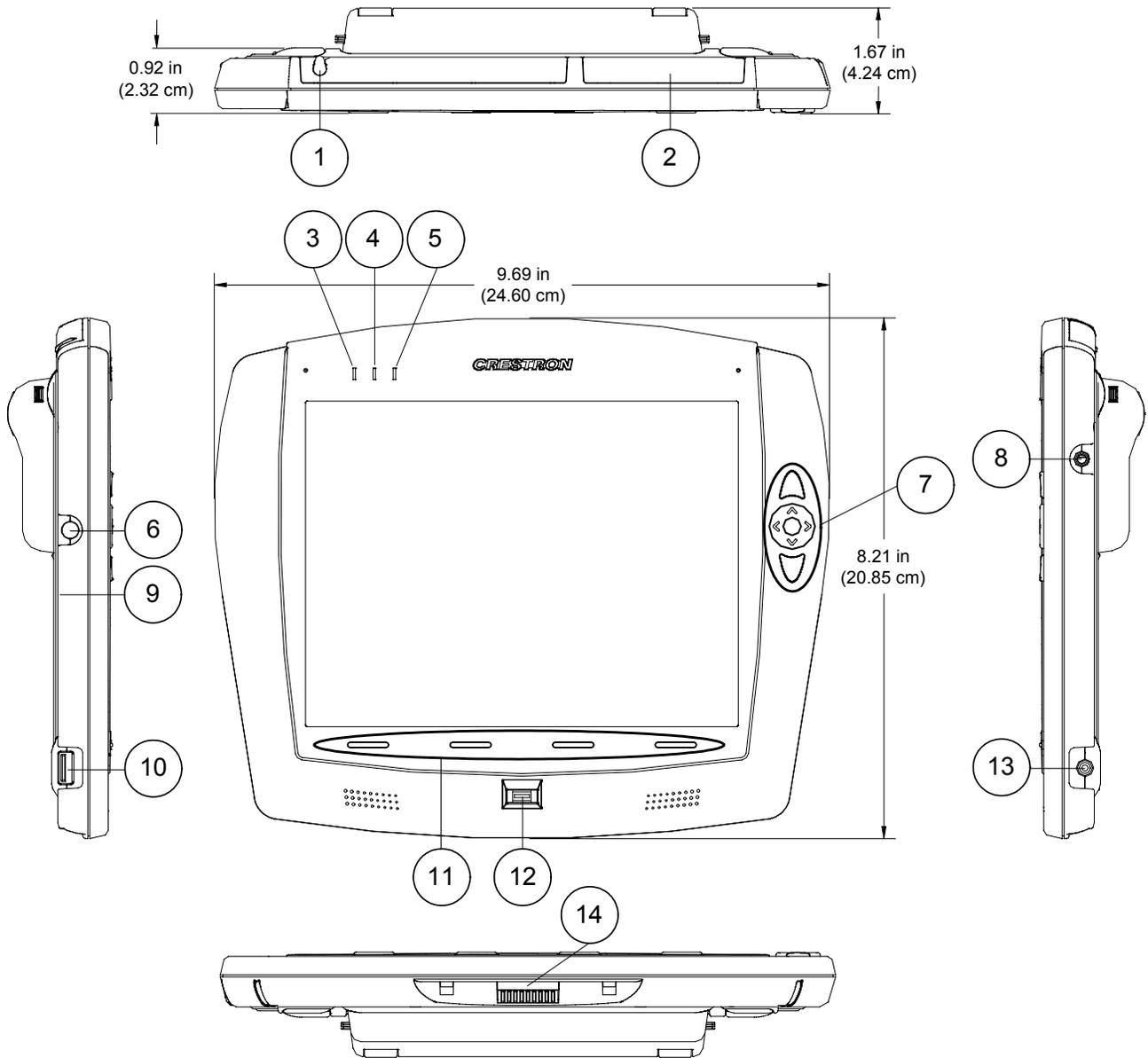This section provides information on the connections, controls and indicators available on your TPMC-8X.

TPMC-8X Physical View

TPMC-8X Physical View (on optional TPMC-8X-DS Desktop Docking Station/Charger)

TPMC-8X Overall Dimensions (shown with optional TPMC-8X-BTPE External Battery Pack attached)

0.92 in
(2.32 cm)

1.67 in
(4.24 cm)

1

2

3 4 5

9.69 in
(24.60 cm)

CRESTRON

6

9

7

8

8.21 in
(20.85 cm)

10

13

11 12

14

Connectors, Controls & Indicators

#	CONNECTORS, CONTROLS & INDICATORS	DESCRIPTION
1	STYLUS	Used to "tap" or to do "select and drag" functions just as you would using a mouse; Also used to "type" on the input panel "keyboard" when entering text or commands
2	MEMORY CARD	(1) Type II CF+ card slot[1]
3	POWER LED	(1) Green LED, indicates touchpanel power status
4	BATTERY LED	(1) Green/yellow dual color LED, indicates battery condition and charging status; When AC is offline and the external battery is connected, the panel will use the external battery before using the internal battery and the LED will remain solid green; Once the internal battery is in use, the LED will remain solid green if battery level is above 25% (±3%) of full charge, solid yellow if charge drops to 25% (±3%) and blinking yellow if battery level drops to 10% (±3%); When AC is online and battery is charging, the LED will be blinking green until charge is 100%
5	WIFI LED	(1) Green LED, indicates wireless network connection status: Solid green – communicating with a wireless access point (WAP) Blinking green – searching for a WAP Off – no wireless communication (unit is in power down mode or power is off)
6	POWER BUTTON	(1) Pushbutton, initiates "Power On" and Power Down": Press to turn touchpanel power on; Press again to put panel in power down mode; Press to restore full on mode; Press and hold for four seconds to turn power off (The recommended method for shutting down the touchpanel is to press the **Shut Down** button on the setup menu.)
7	THUMBPAD & ARROWS[2]	(1) programmable 5-way thumbpad (4-way navigation plus center "Enter" button) and (2) programmable up/down pushbuttons
8	HEADPHONES	(1) 3.5 mm TRS mini phone jack; Stereo headphone output; Output power: 12 mW per channel; Minimum impedance: 32 Ω
9	BATTERY SWITCH	(1) Recessed slide switch inside battery compartment, shuts off battery for long term storage; refer to "Internal Battery Switch" on page 12

(Continued on following page)

Connectors, Controls & Indicators (Continued)

#	CONNECTORS, CONTROLS & INDICATORS	DESCRIPTION
10	USB	(1) USB Type A female; USB 2.0 port for keyboard, mouse and storage devices[1, 3]

PIN	DESCRIPTION
1	+5 VDC
2	Data -
3	Data +
4	Ground

#	CONNECTORS, CONTROLS & INDICATORS	DESCRIPTION
11	HARD KEYS	(4) Programmable pushbuttons below touchscreen
12	BIOMETRIC SCANNER	AuthenTec EntraPad® 1610 fingerprint scanner; identifies up to 30 users by fingerprint
13	12V 3.5A	(1) 2.5 mm barrel DC power jack; 12 Volt DC power input (power supply included); Power pack can also be used to charge internal battery
14	DOCKING STATION CONNECTOR	Mates with TPMC-8X-DS or TPMC-8X-DSW Docking Station/Charger (sold separately)

1. Refer to website or 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.
2. For programming details, refer to "Hard Buttons" on page 32.
3. Only generic USB devices (i.e. simple keyboard, mouse and external storage) should be used with the TPMC-8X. Any complex USB devices (e.g. a storage device with a built-in fingerprint scanner) will not have the proper support on the panel.

Industry Compliance

As of the date of manufacture, the TPMC-8X has been tested and found to comply with specifications for CE marking and standards per EMC and Radiocommunications Compliance Labelling.

Federal Communications Commission (FCC) Compliance Statement

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

Identity Code

The IP ID is set within the TPMC-8X'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-8X 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.

Internal Battery Switch

The TPMC-8X comes with a TPMC-8X-BTP Internal Battery Pack installed. To prevent internal battery drain during shipment or long-term storage, the TPMC-8X has a battery switch inside the battery compartment. To use the internal battery, remove the battery compartment cover by first removing the two screws that attach it to the back of the touchpanel. Move the switch to the up (on) position and re-attach the battery compartment cover.

To conserve internal battery power when the unit will not be used for extended periods, move the switch to the down (off) position.

NOTE: The internal battery can still be charged with the switch in the off position.

TPMC-8X Internal Battery Switch
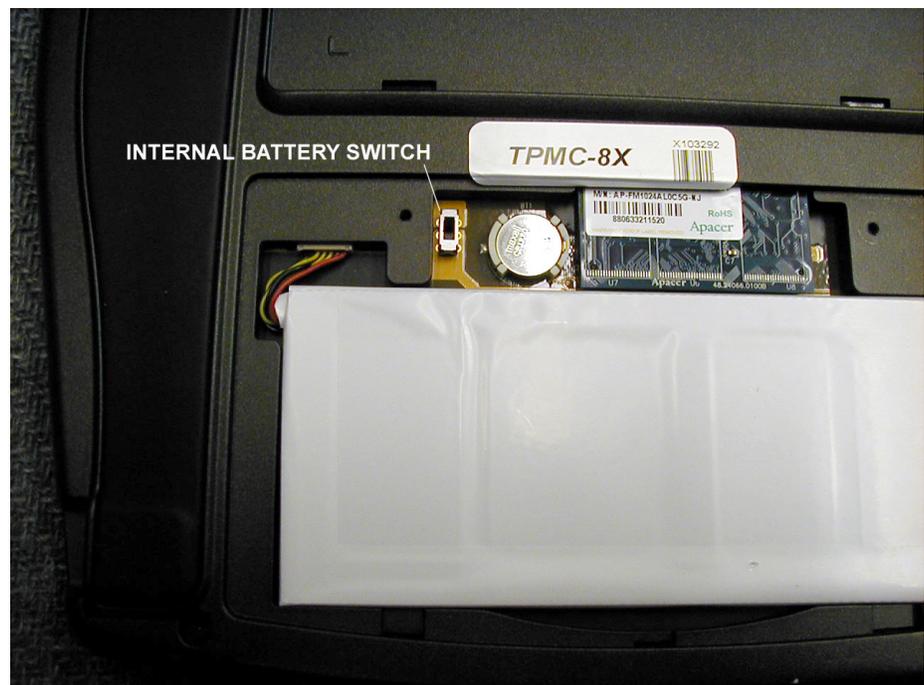
Configuring the Touchpanel

NOTE: The only connection required to configure the touchpanel is power (supplied from the internal battery, external battery or the included power pack).

The TPMC-8X is configured from the setup menu.

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

If a project is running, the setup menu can be accessed using one of three methods.

Via the Hard Keys

Press the four hard keys at the bottom of the touchpanel in sequence, from left to right and again from left to right (i.e. press 1, 2, 3, 4, 1, 2, 3, 4) within a 10 second period.

Via USB Keyboard

1. Attach a USB keyboard (refer to "Hardware Hookup" on page 47 for details).

2. Open the "Validate User Account Info" window (shown below) 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" on page 15 for more information.

4. When the "TPMC-8X Debug Output" window appears (shown below), select **Project | Enter Setup Mode** to enter the setup menu (refer to "Setup Menu Details" which starts on page 15).

    "TPMC-8X Debug Output" Window
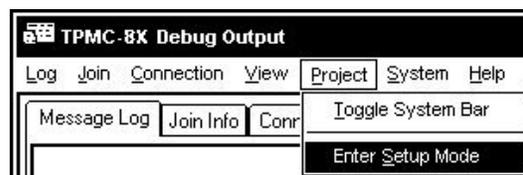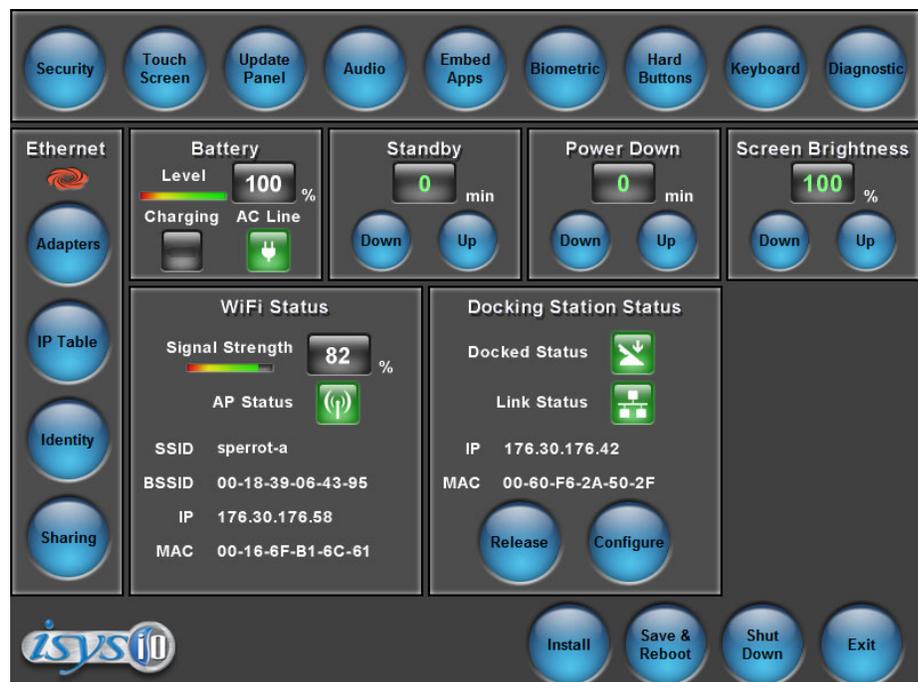
1. Establish communication with the touchpanel (refer to "Establishing Communication" on page 58 for details).

2. Right-click on the device and select **Functions | Setup Mode…**.

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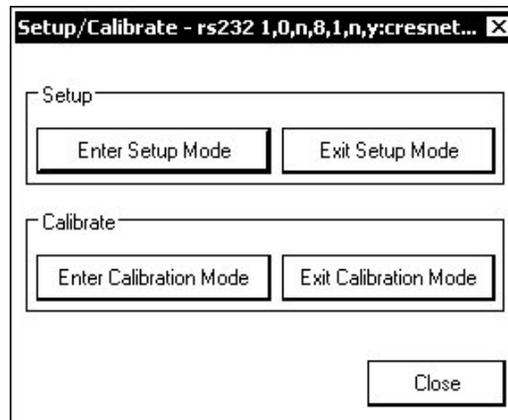
3. Select **Enter Setup Mode**. The setup menu will be displayed as shown in the following diagram.

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

TPMC-8X 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 *Setup*, *Ethernet*, *Battery*, *Standby*, *Power Down, Screen Brightness*, *WiFi Status* and *Docking Station Status* sections. There are also buttons for **Install**, **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.

NOTE: The **Install** button is reserved for future applications.

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, touch screen calibration, runtime project, audio, embedded applications, diagnostics and hard button programming. The setup menu also has a button that will toggle the on-screen keyboard on and off.
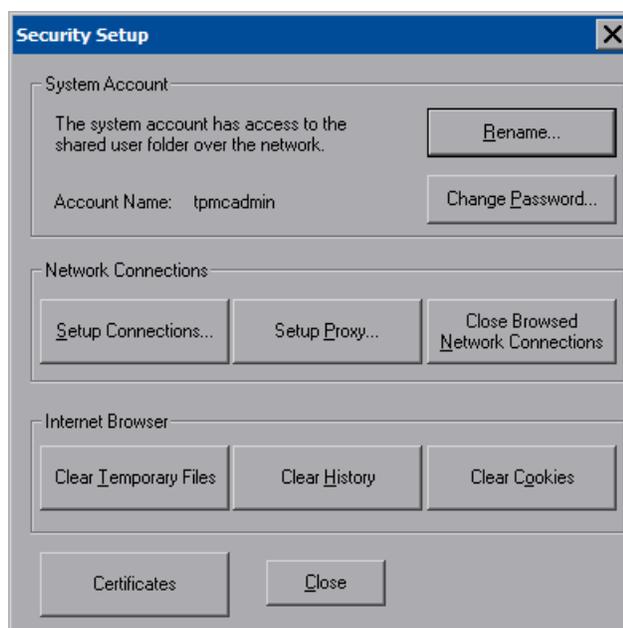
Security

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 and clear cookies.

NOTE: To use the on-screen keyboard for security settings, touch **Keyboard** on the setup 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, 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
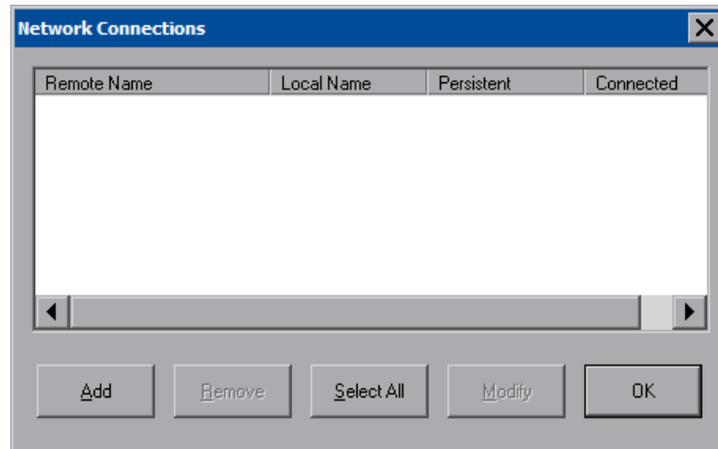
To add a new network connection, touch **Add**.

"Configure Network Connection" Window
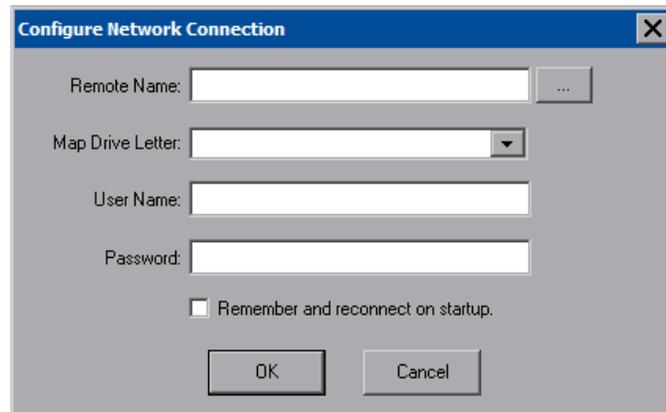
To add a network drive, touch [...] to browse for the new network connection.

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

2. Enter a User Name and Password.

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

4. 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.

The **Certificates** button can be used to install or uninstall certificates used for server and/or user authentication when making a secure connection (for example, to a secured wireless access point). In order to use certificates, the TPMC-8X Security

Pack must be installed (refer to "Appendix A: TPMC-8X Security Pack (Atheros)" which starts on page 66 or "Appendix B: TPMC-8X Security Pack (Intel PROSet)" which starts on page 70 for details).

Touch **Close** to return to the setup menu.

Touch Screen

When **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 10 seconds, the calibration sequence will stop and the screen will again display the setup menu.

If the screen is touched within the 10-second timeout, it displays a series of messages indicating that you should touch the red square in five places around the screen. These messages will appear sequentially starting with "Touch the red square" at the top of the screen toward the upper left corner. Touch and hold the center of the red square to initiate calibration. The message will say "Hold…" for a few seconds, then change to "Lift off to proceed". Touch the displayed squares as prompted everywhere they appear around the screen until the calibration is complete and you are returned to the setup menu.

NOTE: When touching the screen during calibration, be as accurate as possible. Use the tip of the included stylus. To cancel calibration and return to the setup menu without saving calibration data, ignore the "Touch the red square" message. After about 10 seconds, the setup menu will be displayed. If a USB keyboard is attached to the touchpanel, you can also press the Escape key (**Esc**) to cancel calibration and return to the setup menu.

NOTE: The touchpanel's calibration routine can also be accessed through Crestron Toolbox if the touchpanel is connected to a control system via TCP/IP. From the System Info page, select **Functions | Setup Mode…**. Select **Enter Calibration Mode** to begin calibration.

Update Panel

The **Update Panel** button permits the selection of the touchpanel program, a .vtz file. The *Project* tab of the "Project and Firmware" window (refer to illustration on the following page) displays the *Current Loaded Project* and also has a *Load New Project* section.

Current Loaded Project displays the *Name* and *Creation Time* of the current project.

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. You can choose the location where your uncompressed project files will be stored. The default file location is the internal flash. 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.

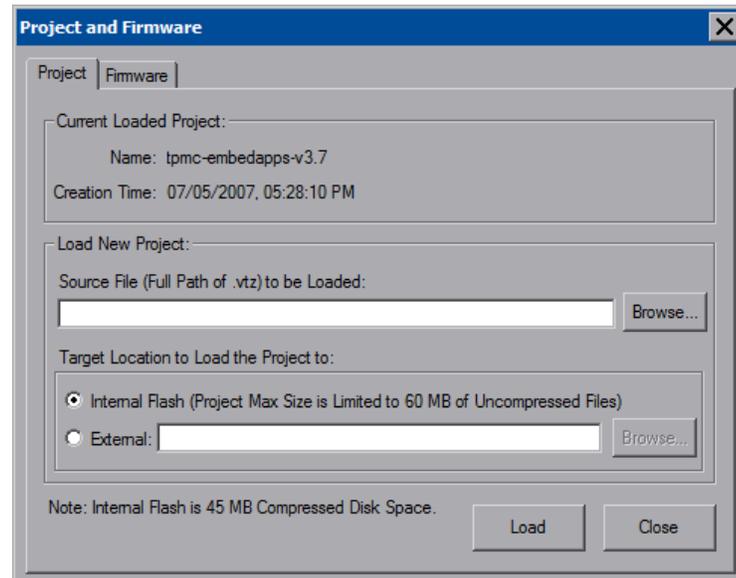**NOTE:** When selecting **Browse**, the contents of the "Recent" folder will not be available.

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.

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.

"Project and Firmware" Window (Firmware Tab)
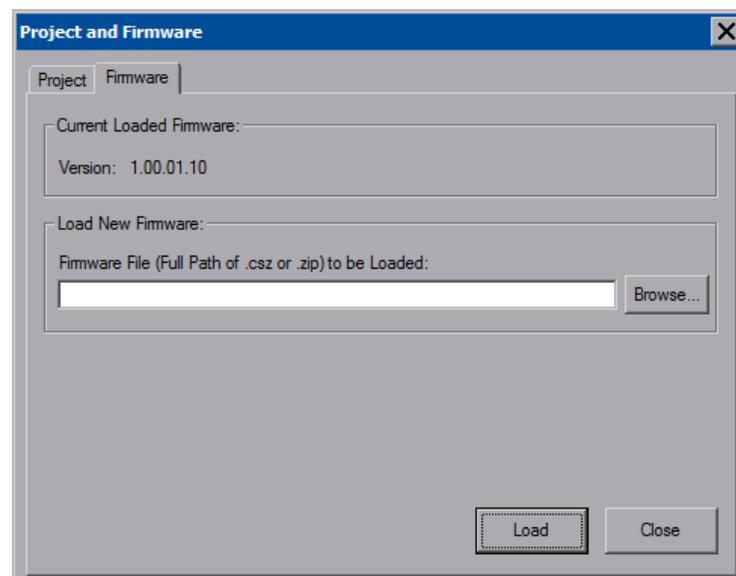
Audio

The **Audio** button opens the "Audio Setup" window. Overall *All Audio* volume and balance controls and a *Mute* checkbox are available as well as volume and balance controls and *Mute* checkboxes for *Wave Out* and *Microphone In*. The *Microphone In* settings also include a *Boost* checkbox, which applies a 20 dB boost to the level of the microphone input. The key click sound can be enabled or disabled with the *Key Click On* and *Off* radio buttons.

When connected to the (optional) TPMC-8X-DSW docking station, the *Audio Output* section of the window provides radio buttons for selection of internal or external speakers. In addition, a checkbox allows for automatic switching to external speakers when docked.

Touching **Play Test** plays a short internal audio file. Changes to audio settings are made in real time.

"Audio Setup" Window
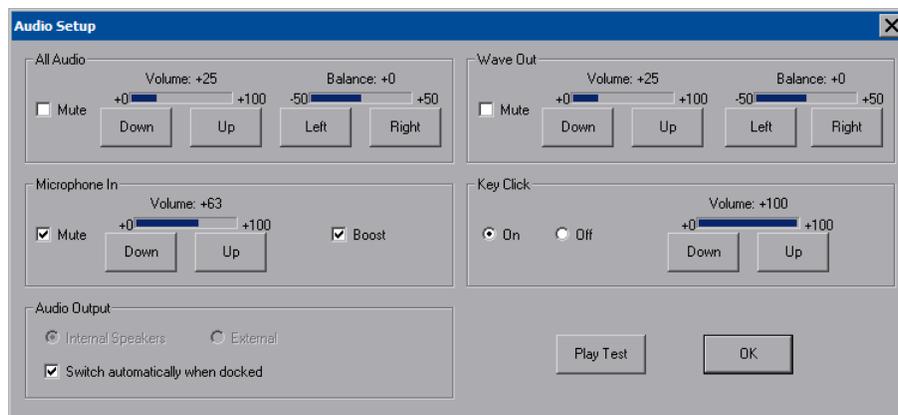
Embed Apps (Embedded Applications)

The **Embed Apps** button opens a window that permits you to set internet security to different levels for different types of internet sites.

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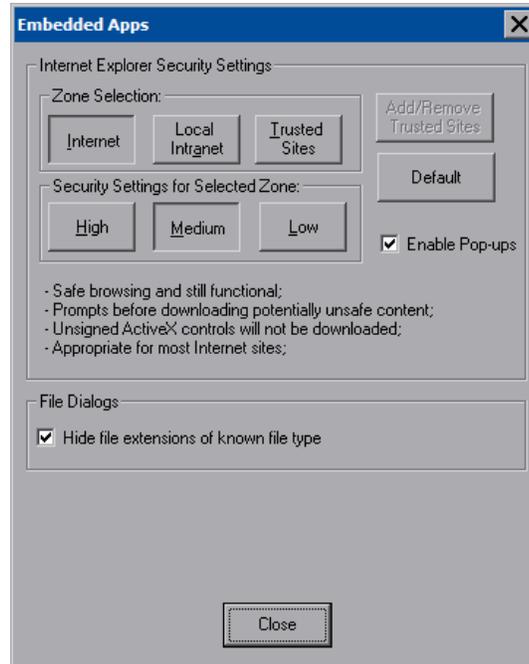
Three security levels (**High**, **Medium** and **Low**) can be selected for each of the three zones (**Internet**, **Local Intranet**, and **Trusted Sites**). The security levels are defined as:

- **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. Refer to “Save & Reboot and Shut Down Details” on page 46 for more information.

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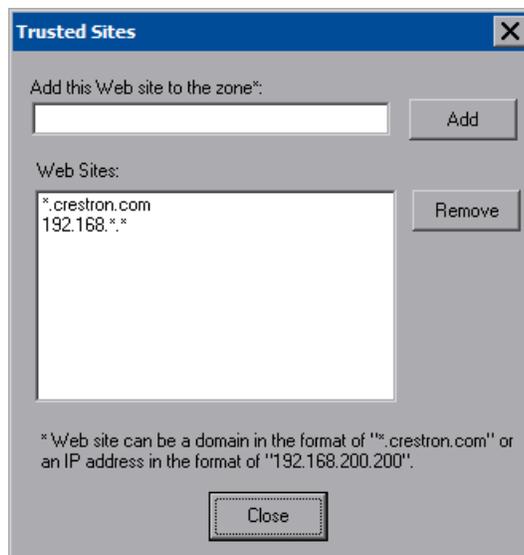
NOTE: **Save & Reboot** on the setup menu must be selected for Embedded Apps changes to take effect.

NOTE: While browsing the Internet with the TPMC-8X, 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 Popup Windows* 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-8X Multi-Language Pack allows the user to view documents written in any of 32 supported international languages by all the embedded apps in the touchpanel. For details, refer to "Appendix C: TPMC-8X Multi-Language Pack" on page 75.

NOTE: The TPMC-8X 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: Applications that use audio will need to be re-launched when the TPMC-8X is docked or undocked from the (optional) TPMC-8X-DSW docking station, unless it

is set to use *Internal Speakers* and *Switch automatically when docked* is unchecked (refer to "Audio" on page 19 for details).
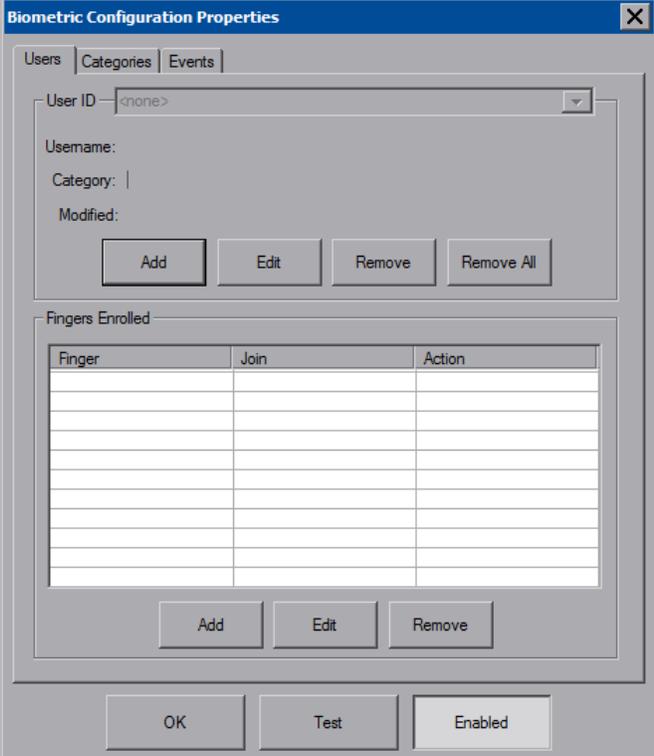
Biometric

The built in fingerprint scanner makes user identification easy. Up to 10 fingers can be scanned for each user. Each finger scan is able to trigger a join and/or an automated action (such as entering setup mode, wake, sleep, etc.).

Touching **Biometric** will display the "Biometric Configuration Properties" window. New users can be enrolled from here and the resulting join and/or action for each finger can be edited. The **Enabled** button at the bottom of the window can be used to turn the fingerprint scanner on and off.

"Biometric Configuration Properties" Window (Users)

From the *Users* tab, touch **Add** (in the upper half of the window) to start the "Add New User Wizard".
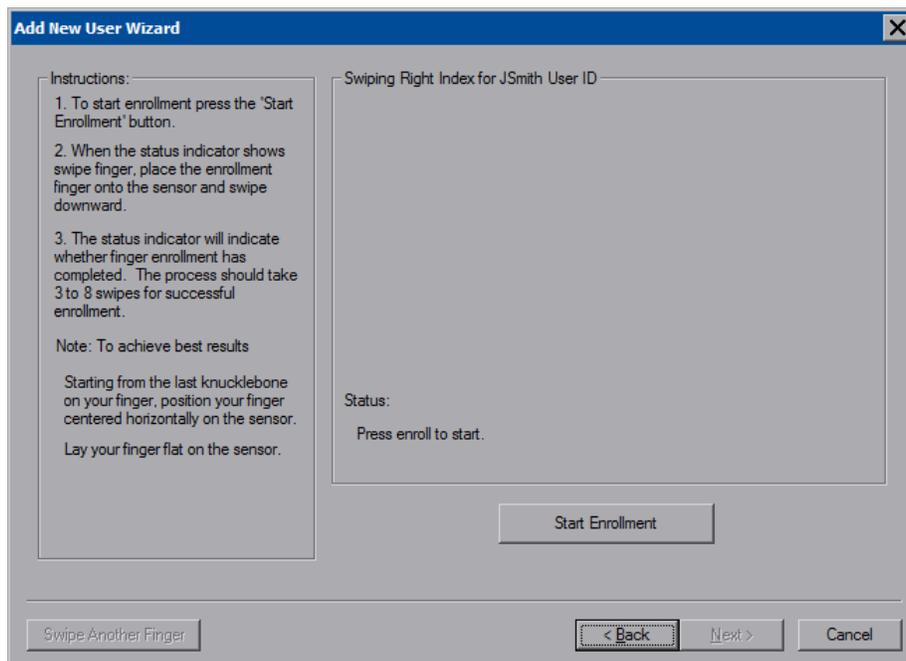
"Add New User Wizard" First Window
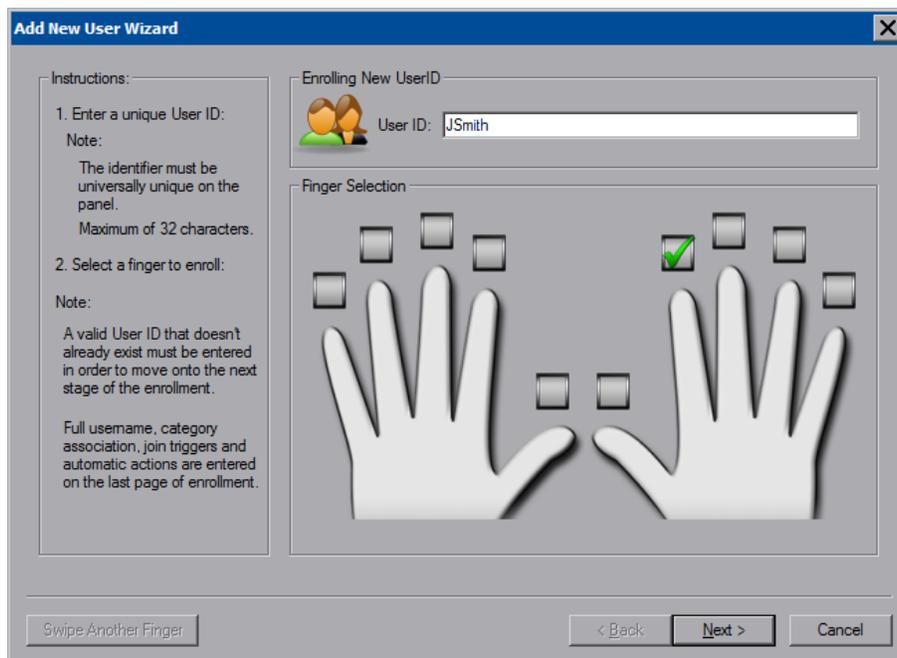
After entering a *User ID* and selecting which finger to scan, touch **Next**.

NOTE: A valid *User ID* that does not already exist must be entered in order to move onto the next stage of enrollment. Only one *User ID* should be used per person.
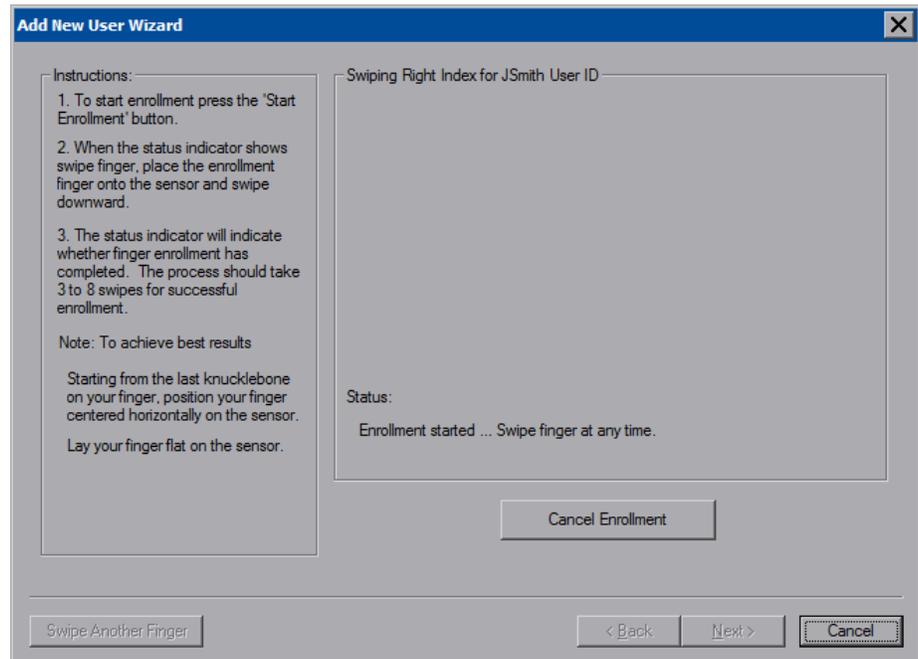
"Add New User Wizard" Second Window

At the next window, touch **Start Enrollment**.

You will be instructed to swipe or slide the selected finger over the sensor.

*"Add New User Wizard" Window - Ready For Swipe*

You will need to swipe or slide the selected finger over the sensor a few times and will see a count for how many swipes have occurred. For each swipe, you will see the scanned fingerprint.

*"Add New User Wizard" Window - Showing Scanned Fingerprint*
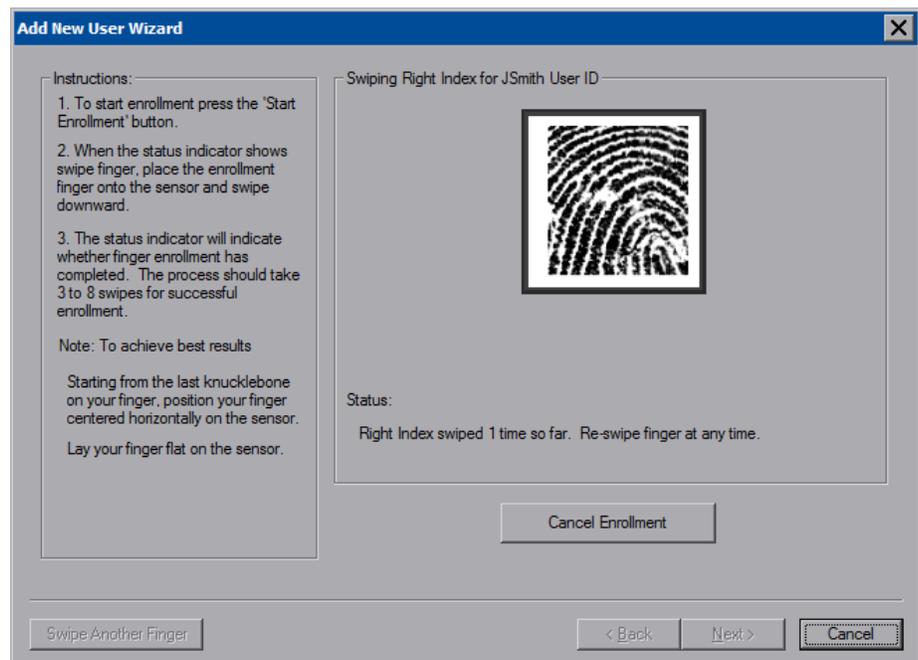
When scanning is complete you will see an "Enrollment Complete". Touch **Next** to proceed.

"Add New User Wizard" Window - Showing "Enrollment Complete" Message
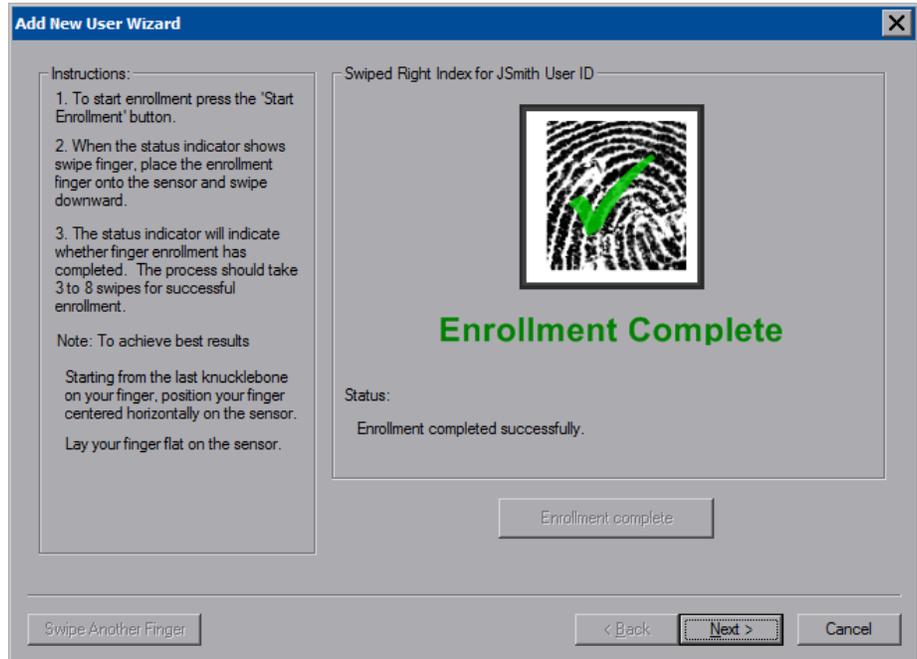
The next window allows you to enter a user name, set a category (i.e. a user defined grouping such as "admin" or "guest", etc.), join number and/or an automated action to associate with the finger scan. These can also be set later in the "Biometric Management" window.

"Add New User Wizard" Window - Showing Options After Scanning
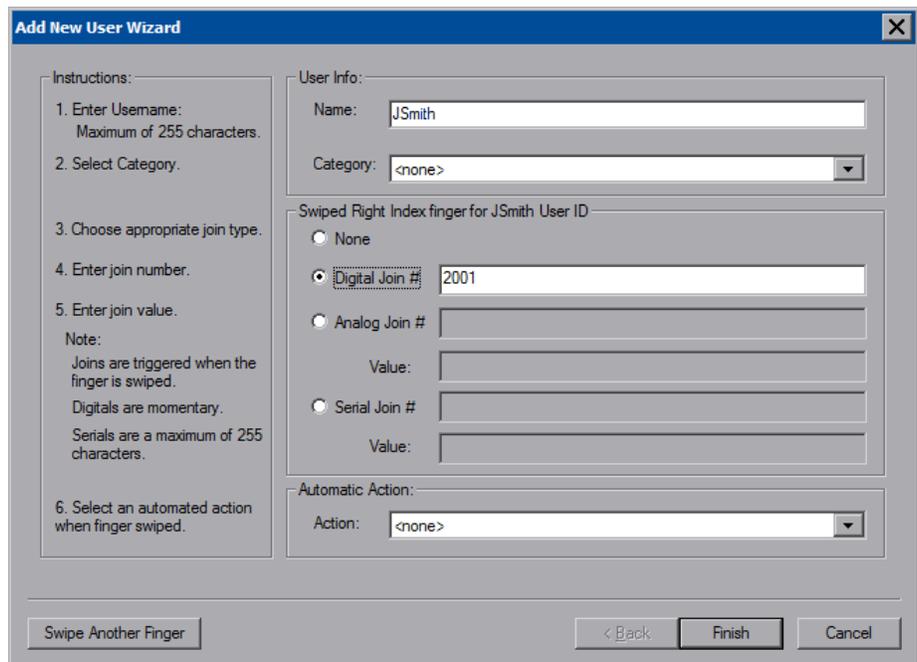
To scan another finger, touch **Swipe Another Finger**. When done, touch **Finish** to return to the "Biometric Configuration Properties" window.

"Biometric Configuration Properties" Window - Showing New User ID and Scan Data

If more than one finger is to be enrolled, touch **Add** (in the lower half of the window). Touch **OK** to return to the setup menu or touch **Edit** (in the lower half of the window) to access the "User Biometric Information" window.

"User Biometric Information" Window

You can also touch **Test** to open the "Biometric Information" window, to practice finger swipes and verify identities. (Refer to illustration on the following page.)

"Biometric Information" Window
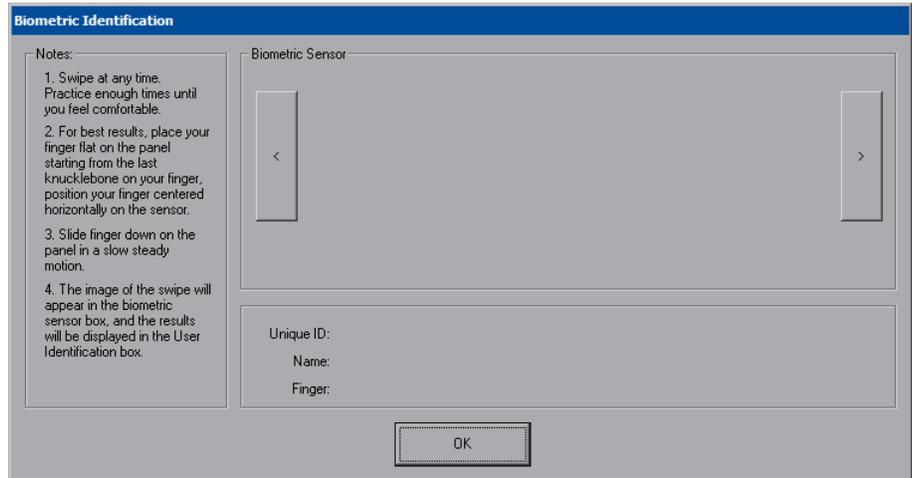
If the finger swipe matches one in the touchpanel's database, it will show an "Identification Match Found" message along with the matching *Unique ID*, *Name* and *Finger*.

"Biometric Information" Window - Showing Match Found

If the finger swipe does not match one in the touchpanel's database, it will show an "Identification No Match Found" message.

"Biometric Information" Window - Showing No Match Found
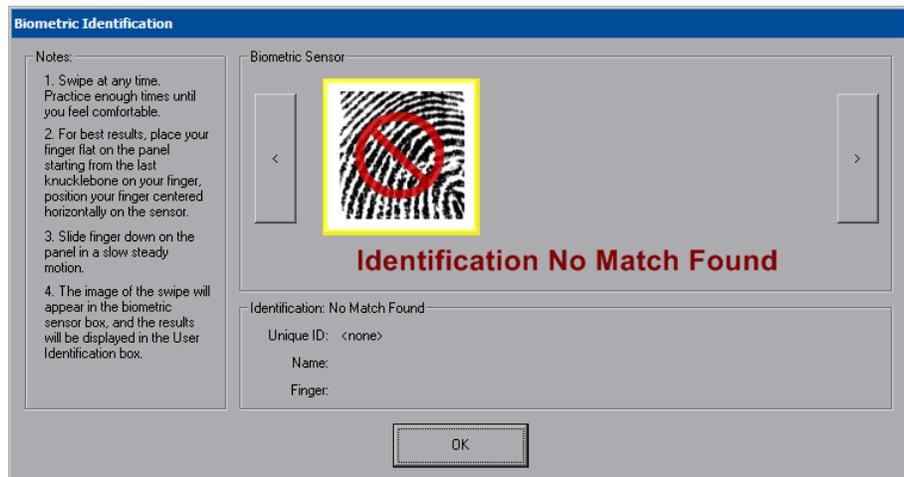
If the touchpanel is unable to read the finger swipe, it will show a message indicating the type of error. In the example below, it shows the "Swipe Too Short" message.

"Biometric Information" Window - Showing Swipe Error
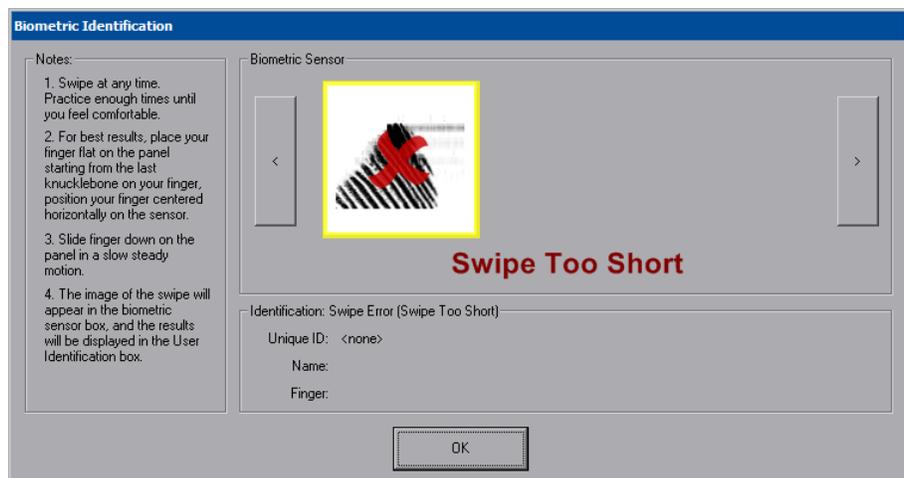
Touch **OK** at any time to return to the "Biometric Configuration Properties" window.

From the *Categories* tab of the "Biometric Configuration Properties" window, you can add, edit or remove categories.

"Biometric Configuration Properties" Window (Categories)
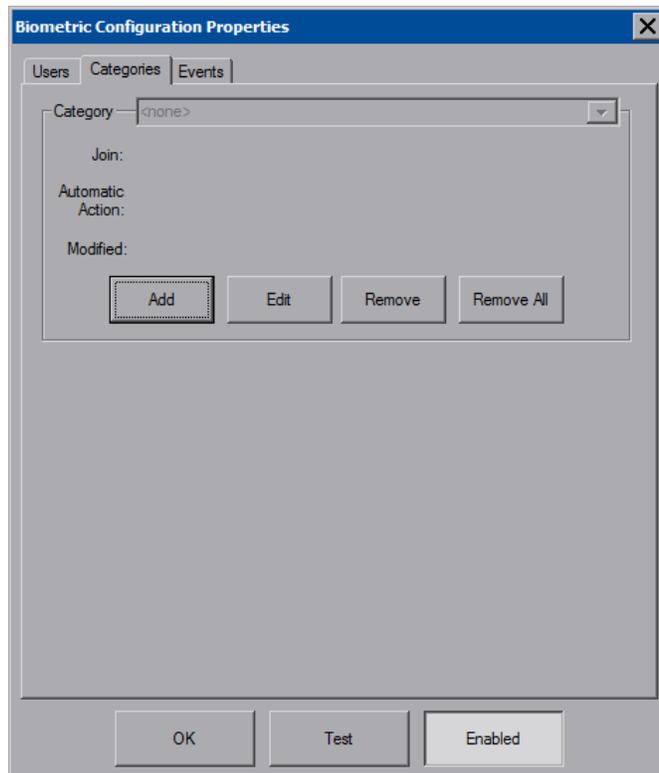
To create a new category, touch **Add** to open the "Category Biometric Information" window.

"Category Biometric Information" Window
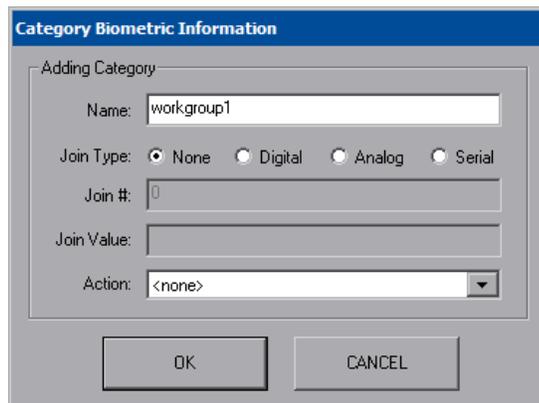
Touch **OK** to accept (or touch **CANCEL** to cancel) and return to the "Biometric Configuration Properties" window.

From the *Events* tab of the "Biometric Configuration Properties" window, you can add, edit or remove events.

"Biometric Configuration Properties" Window (Events)
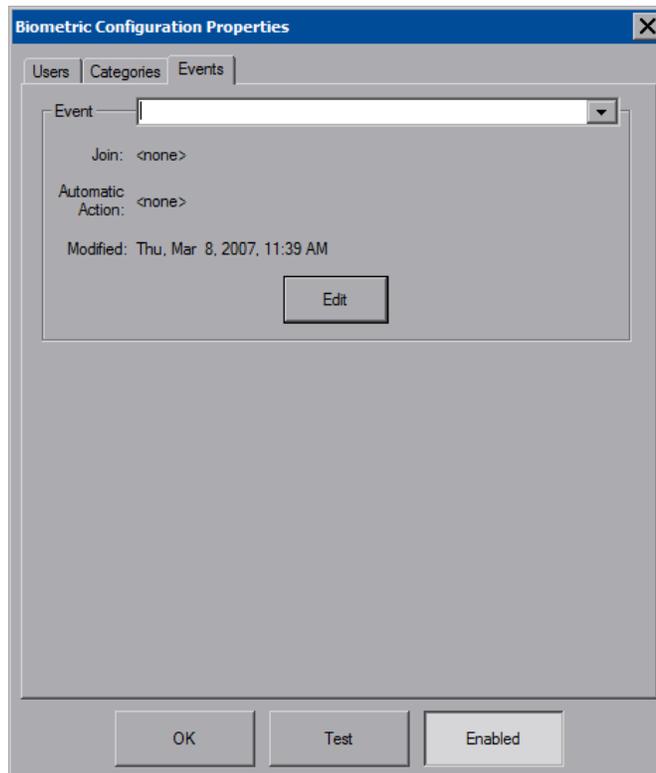
Touching the down arrow will open a drop down list of events.

"Biometric Configuration Properties" Window - Showing Event List (Events)
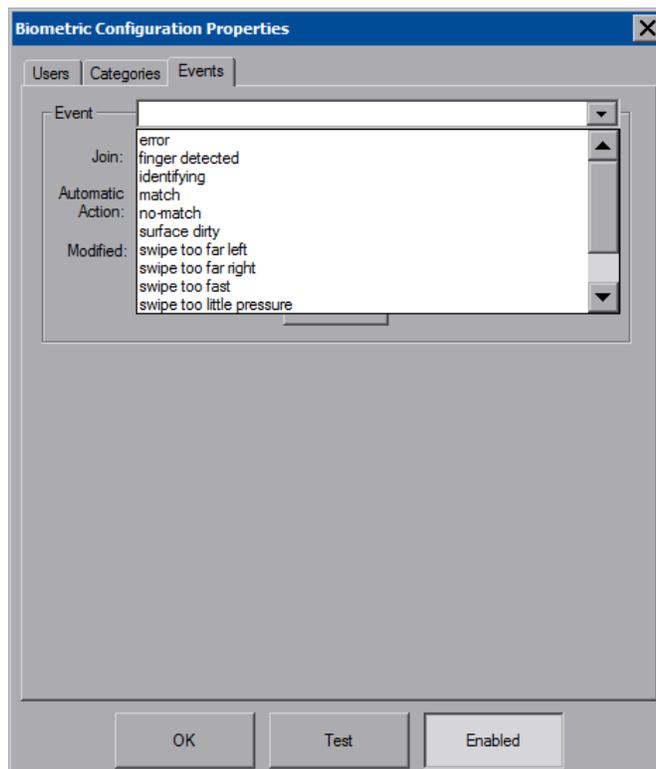
The following are the events that can be selected:

1. **Error:** An error occurred while trying to identify the swiped finger. It could be any of the events listed below from #6 through #13.

2. **Finger detected:** A finger has been detected and identification will start.

3. **Identifying:** The sensor is in the process of identifying.

4. **Match:** Identification has completed and a match has been found.

5. **No-match:** Identification has completed and no match was found in the user database.

6. **Surface dirty:** The surface is too dirty for identification.

7. **Swipe too far left**

8. **Swipe too far right**

9. **Swipe too fast**

10. **Swipe too little pressure**

11. **Swipe too short**

12. **Swipe too skewed**

13. **Swipe too slow**

Select the event you wish to edit and touch **Edit** to open the "Event Biometric Information" window.

"Event Biometric Information" Window
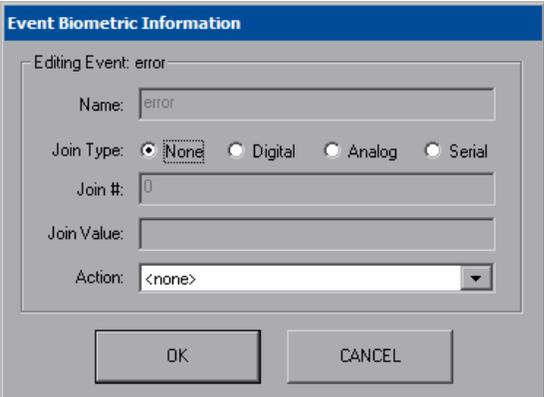
Touch **OK** to accept (or touch **CANCEL** to cancel) and return to the "Biometric Configuration Properties" window. Then touch **OK** to return to the startup menu.

In actual use, a popup window will appear showing if a match was found, if a match was not found or if the scan was no good (for example, too short).

Crestron Toolbox includes a utility that will allow the database from one TPMC-8X to be shared with another, by backing up the database from one touchpanel and restoring it to another. From Toolbox, select **Functions | Biometric Data…** to open the utility, as shown in the illustration on the following page.

"Biometric Data" window in Toolbox
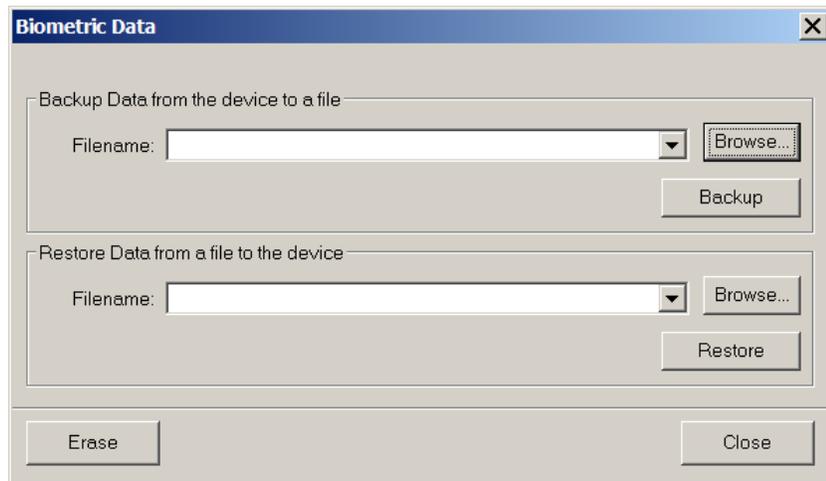
Hard Buttons

Touching **Hard Buttons** will display a screen that provides visual feedback for all button presses. Pressing hard keys 2 through 4, the up or down buttons or any of the buttons on the 5-way thumbpad will result in its corresponding number on the screen illuminating in yellow.

By default, hard key number 1 toggles the on-screen keyboard on and off. However, this can be disabled using the **Keyboard** button on the **Hard Buttons** screen. Hard key number 1 can then be used like any of the other buttons. If disabled, it will use the VT Pro-e project assignment.

By default, hard key number 4 will release the touchpanel from the (optional) TPMC-8X-DSW docking station.

Buttons are programmed using VT Pro-e.

Touch **Close** to return to the setup menu.

"Hard Buttons" Window

Keyboard

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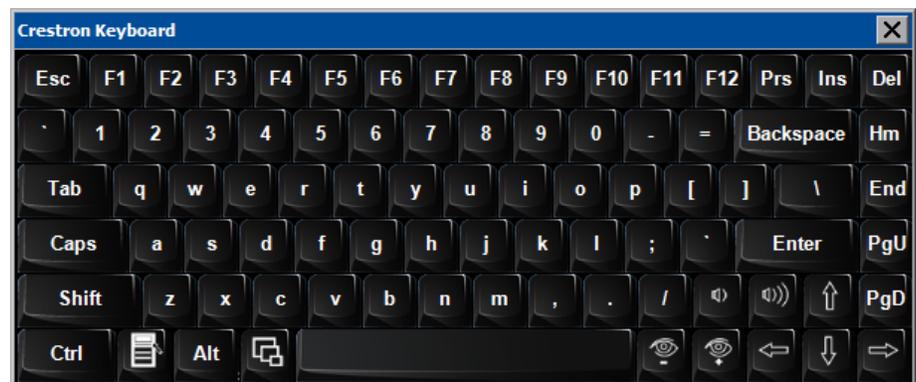
The initial position of the on-screen keyboard is determined by the VT Pro-e program or SIMPL Windows settings. The on-screen keyboard will default to its largest size.

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 **File | Exit** or by touching the "X" close button in the upper right corner of the keyboard window. If hard key number 1 has the keyboard enabled, you can also exit the keyboard by using hard key number 1, a reserve join number in VT Pro-e or a device extender in SIMPL Windows.

Diagnostic

Touch **Diagnostic** to display the firmware version number, view *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 and passcode messages, touch **Configure Messages**. The "Message Configurations Properties" window will open.

"Message Configurations Properties" Window (Popup Messages Tab)
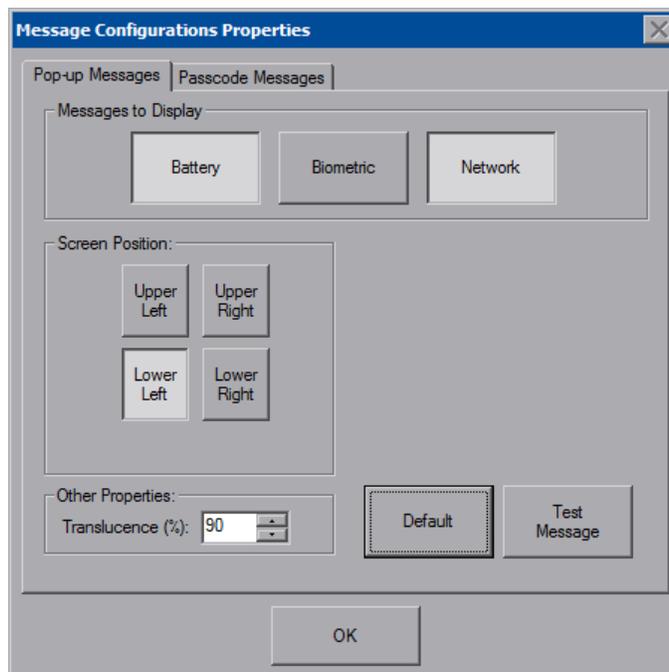
To configure the appearance of popup messages, touch the *Popup Messages* tab.

There are various types of popup messages. The button associated with each type (**Battery**, **Biometric** and **Network**) allows you to set which types are displayed.

There are three types of **Battery** popup messages. Following are definitions of each message type:

- **Low Battery:** A yellow popup message appears when battery is low.

- **Very Low Battery:** A red popup message appears when battery power is very low.

- **Shutting Down:** A red popup message appears when battery power is not sufficient to supply the panel.

There are three types of **Biometric** popup messages. Following are definitions of each message type:

- **Identification In Progress:** A blue popup message appears when biometric identification is in progress.

- **Identification Successful:** A green popup message appears when biometric identification is successful.

- **Identification Failed:** A red popup message appears when biometric identification has failed.

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**.

To configure the appearance of passcode messages, touch the *Passcode Messages* tab.

"Message Configurations Properties" Window (Passcode Messages Tab)
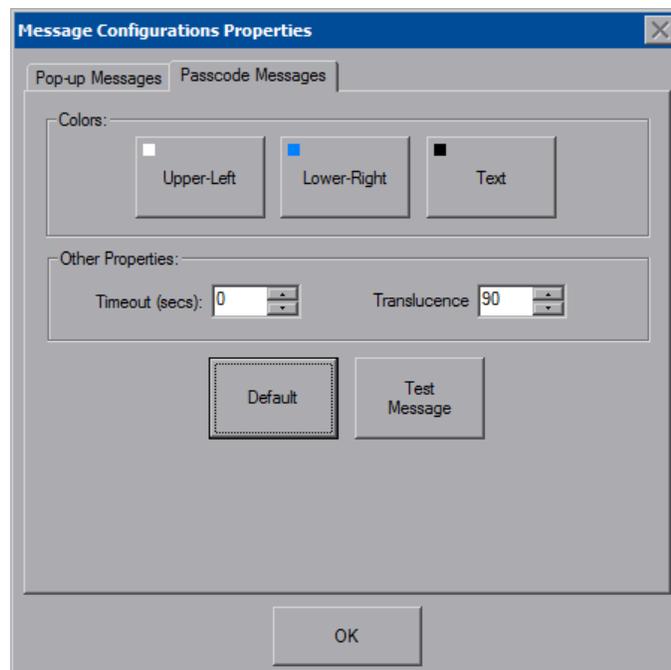
The *Colors* controls allow you to determine background and text color of passcode messages, which will appear when releasing the touchpanel from the (optional) TPMC-8X-DSW docking station (refer to "Docking Station Status Details" which starts on page 45 for details).

Also provided are controls for popup message *Timeout* and *Translucence*. Translucence ranges from 25% to 100%, with a default value of 90%.

The **Default** button restores the original *Colors*, *Timeout* and *Translucence* settings and enables passcode messages. A **Test Message** button lets you see the changes to passcode message appearance. Touch **Close** to close the test popup window.

NOTE: The default values for *Color* are white for *Upper Left*, blue for *Lower-Right* and black for *Text*. The default value for *Timeout* is 0 seconds.

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 **Adapters** to access the "Ethernet Setup" window. To save any changes, use the **Save & Reboot** button on the setup menu. The Ethernet address and mask are displayed on this screen.
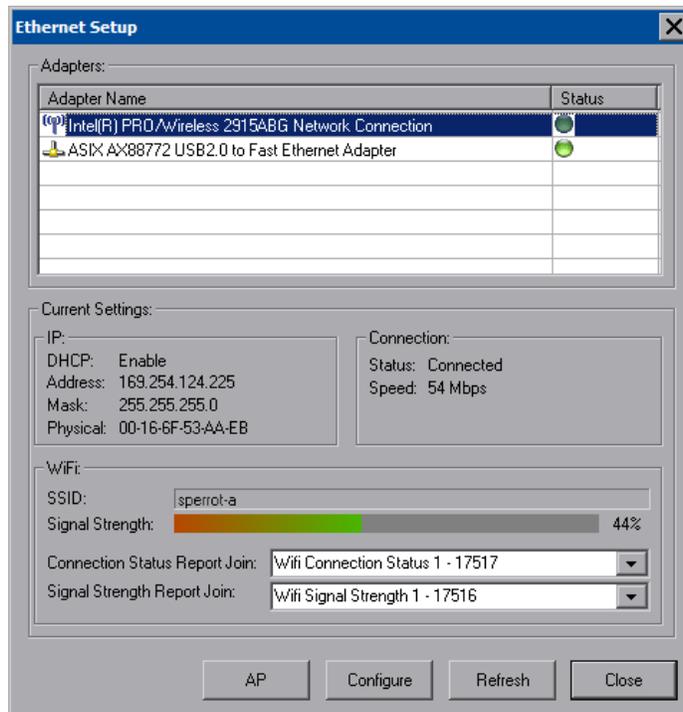
NOTE: The adapter listed in the "Ethernet Setup" window will depend on which adapter came with your TPMC-8X. Either an Atheros or Intel PRO will be displayed, as shown in the illustration below and the one on the following page.

"Ethernet Setup" Window (Atheros)
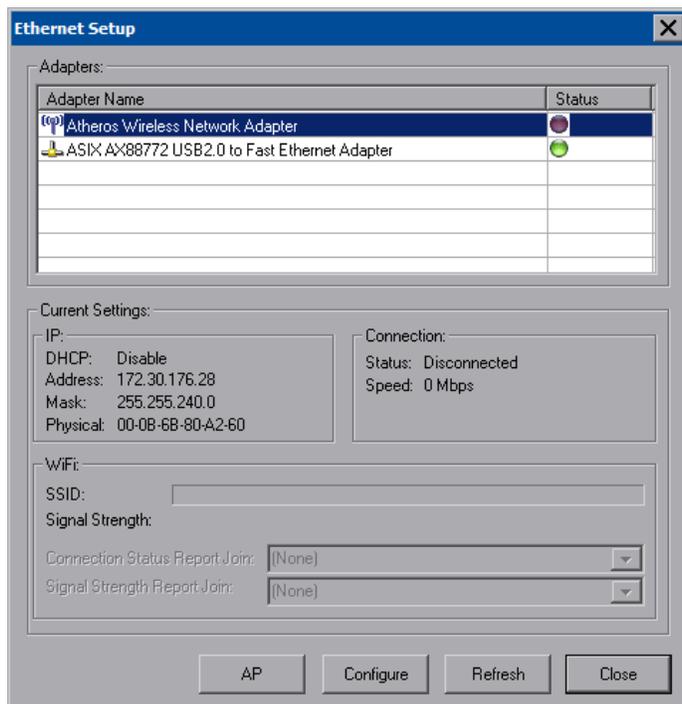
"Ethernet Setup" Window (Intel PRO)

NOTE: The "ASIX AX88772 USB 2.0 to Fast Ethernet Adapter" line in the "Ethernet Setup" window is seen only when the TPMC-8X is mounted on the optional (TPMC-8X-DS) Docking Station/Charger.

NOTE: When the TPMC-8X is mounted on the optional Docking Station/Charger and the wired LAN connection is used, the touchpanel auto-switches to wired Ethernet communications. When the TPMC-8X is removed from the Docking Station/Charger, it will seamlessly switch over to WiFi. Docking Station/Charger must be using AC power pack for its LAN and USB ports to function.

NOTE: Refer to the Crestron website (www.crestron.com), online help Answer ID 4628, for information on how Windows switches between wired Ethernet communications and WiFi.

NOTE: The TPMC-8X Security Pack allows the user to provide a username and password for authentication in infrastructures utilizing a RADIUS (Remote Authentication Dial In User Service) server. For details, refer to "Appendix A: TPMC-8X Security Pack (Atheros)" which starts on page 66 or "Appendix B: TPMC-8X Security Pack (Intel PROSet)" which starts on page 70.

Touch **Configure** to open the "Wireless Network 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 the wireless network, touch **Configure** and modify the IP address, then touch **OK** (you must return to the "Ethernet Setup" window). Touch **Configure** again, modify the wireless network, then touch **OK**. The order in which modifications are performed does not matter.

"Wireless Network Connection Properties" Window (General)
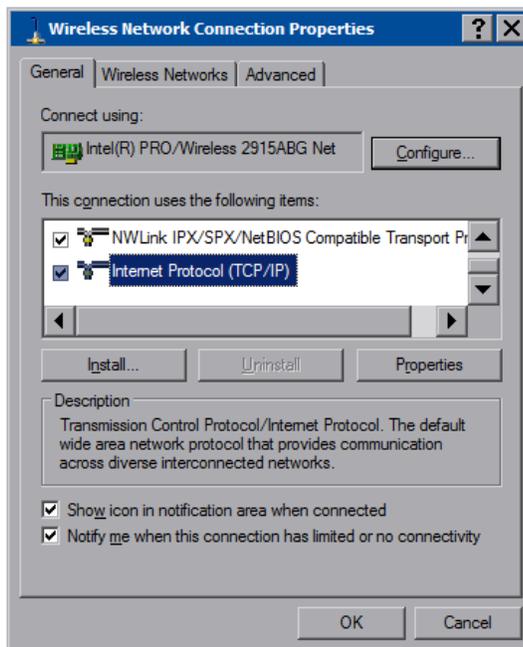
NOTE:
The *Advanced* tab
is not supported
at this time.

Touch the *Wireless Networks* tab.

"Wireless Network Connection Properties" Window (Wireless Networks)
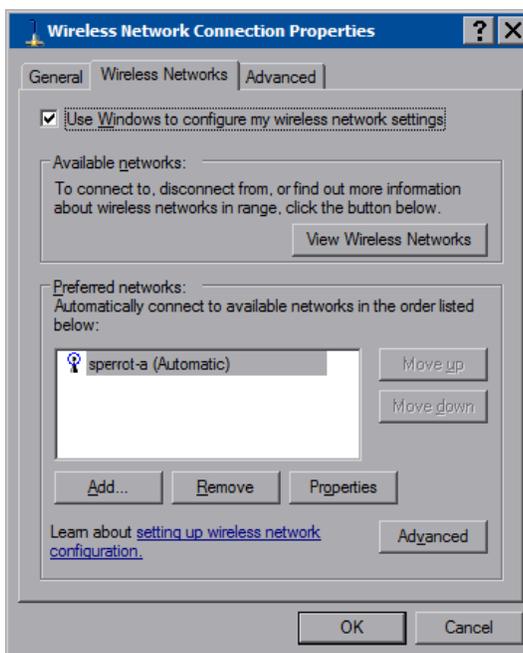
NOTE: The link at the bottom of the window which says "Learn about setting up a wireless network configuration" is not supported at this time.

From here you can add or remove wireless access points (WAPs) or routers. To view wireless networks being accessed or scan for access points, touch **View Wireless Networks** to view the "Wireless Network Connection" window.

"Wireless Network Connection" Window
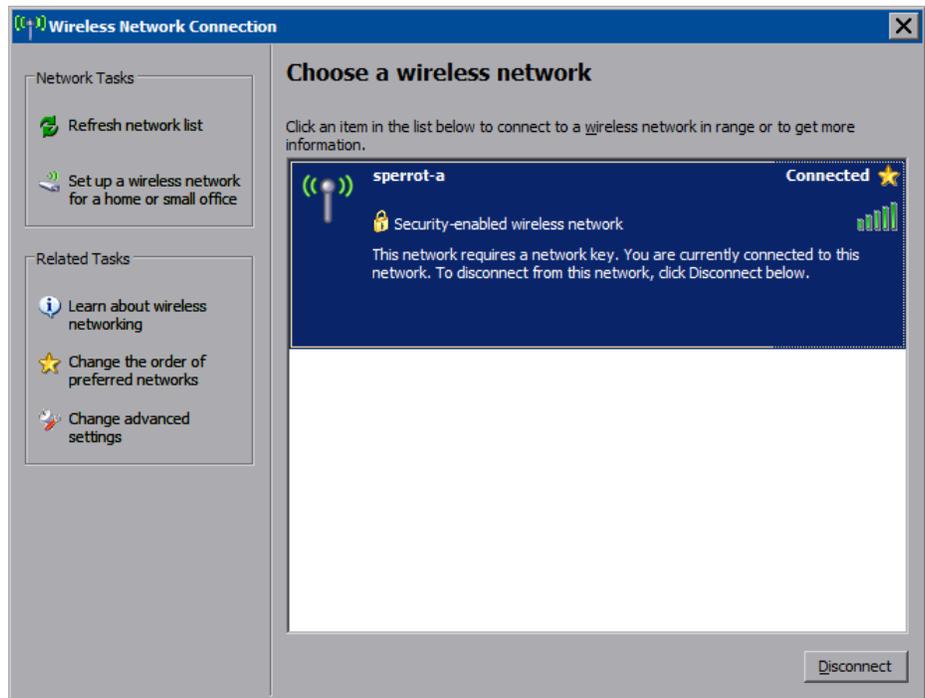
Touch **Refresh network list** to scan for available access points.

The TPMC-8X is already configured for DHCP. To establish static processing or to switch between DHCP and static IP, use the *General* tab of the "Wireless Network Connection Properties" window (refer to illustration on page 39), select **Internet Protocol (TCP/IP)** and touch **Properties**.

Touch **Set up a wireless network for a home or small office** to start the *Wireless Network Setup Wizard*.

The *Wireless Network Setup Wizard* will create a network with the *Network Authentication* value set to **Open**. If your Wireless Access Point is configured with a value other than **Open**, you must set this value manually, using the *Wireless Networks* tab of the "Wireless Network Connection Properties" window (refer to illustration on page 39).

To manually configure your Wireless Access Point, perform the following procedure:

1. In the *Preferred Networks* section of the window, select your network and touch **Properties** to open the "Properties" window for your network.

"Network (your network name) Properties" Window
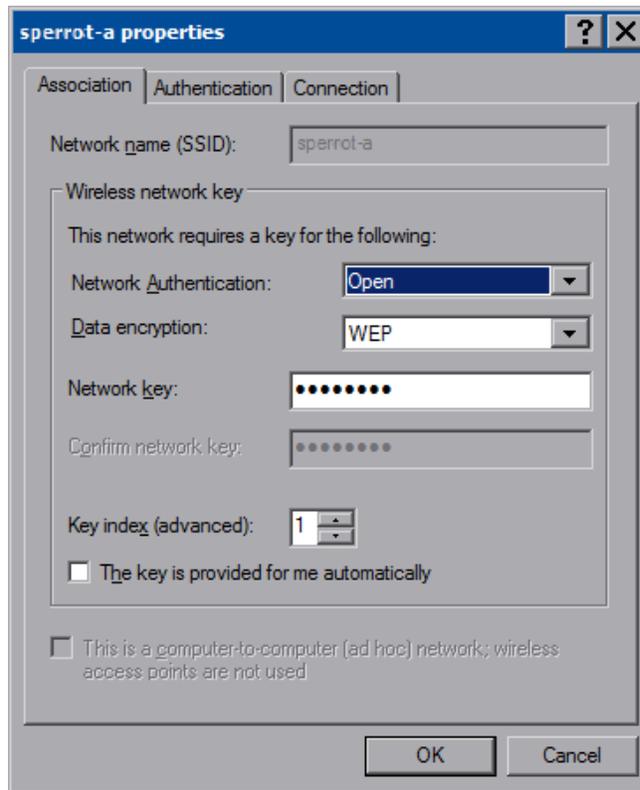
2.   With *Data encryption* set to **WEP**, select **Open** from the *Network Authentication* dropdown list.

3.   Enter and confirm the *Network key*.

4.   Touch **OK**.

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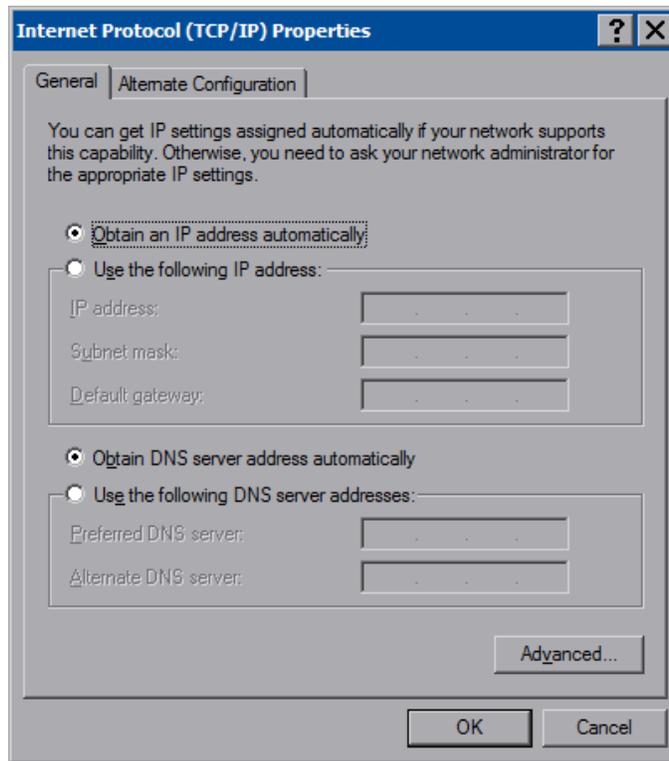
Transmission Control Protocol/Internet Protocol (TCP/IP) is a set of protocols that defines how to transfer data between two computers. TCP monitors and ensures correct transfer of data. IP receives the data from TCP, breaks it up into packets, and ships it off to a network. The IP address is a unique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

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), which is available from the Crestron website (www.crestron.com/manuals).

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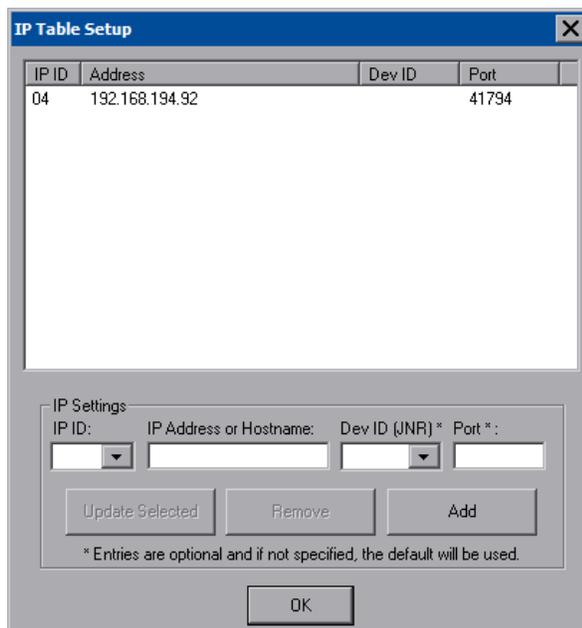
The IP ID is the ID number that is used to identify the touchpanel in the control system's IP table. The IP ID should match the IP ID set in the SIMPL Windows program.

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
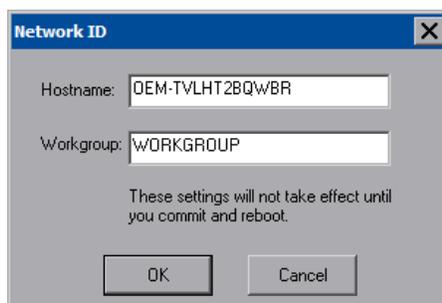
NOTE: The hostname is required for Ethernet communication.

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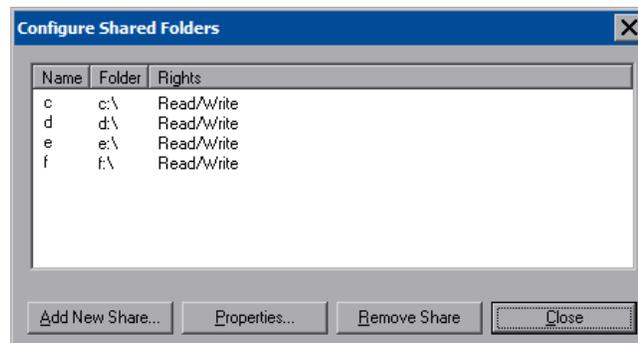
Touch **Add New Share…** to browse and add directories with permission to read only or read/write. Touch **Close** after adding all folders to be shared.

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

Battery Details

The *Battery* section of the setup menu contains a bar graph showing the amount of charge in the internal battery as well as indicators to show when the battery is charging and when the TPMC-8X is connected to an AC line.

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.

Power Down Details

The *Power Down* function turns off the touchpanel display, shuts off WiFi and puts the processor to "sleep" when the touchpanel is inactive for a specified time. Use the **Up** and **Down** buttons to set the *Power Down* from 0 through 120 minutes, where 0 disables the timeout.

The power button (on the left side of the TPMC-8X) can also be used to manually put the touchpanel into power down mode. Press and release the power button to enter power down mode. Use the power button to activate the touchpanel from power down mode. When the touchpanel is activated, the first page of the project appears.

NOTE: When the panel is powered down, it will take less than 10 seconds to power up and respond to a button press. There is no delay from Standby mode.

NOTE: If the external AC power pack is attached to the touchpanel and plugged into an active AC receptacle or if the touchpanel is resting in the docking station and plugged into an active AC receptacle, the panel does not power down when the *Power Down* is achieved. Note that the purpose of this timeout is to maximize battery life. *Standby* still functions.

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**. Lower brightness settings extend battery life.

WiFi Status Details

The *WiFi Status* section of the setup menu contains a bar graph showing the strength of the WiFi signal as well as an indicator to show when the TPMC-8X is communicating with a wireless access point (AP). SSID, BSSID, IP and MAC addresses are also shown.

Docking Station Status Details

The *Docking Station Status* section of the setup menu has two indicators: *Docked Status* shows when the touchpanel is mounted in a docking station and *Link Status* shows when it is connected to Ethernet via the docking station. IP and MAC addresses are also shown.

The **Release** button can be used to release the TPMC-8X from the docking station. The **Configure** button will open the "Wallmount Docking Station Setup" window.

"Wallmount Docking Station Setup" Window

In *Standard Mode*, the panel to be removed from the docking station by anyone. In *Lock-Down Mode*, only authorized users can remove the panel from the docking station by first entering a passcode. The "Wallmount Docking Station Setup"

window allows the entry of up to five passcodes. (A sixth passcode, created with the SIMPL Windows program, can be stored in the control system.)

NOTE: If a new SIMPL program is loaded in the control system, the passcode in the previous program can be cleared by rebooting the touchpanel.

The *Show Plain-Text Passcode Dialog* checkbox will cause the entered text to appear instead of asterisks, when a passcode is entered.

In addition, *the Show Pop-up Release Icon* checkbox makes a release icon available when a project is views on the touchpanel.

Release Icon

The *Hardbutton #4 Releases Panel* checkbox can be used to enable or disable button #4 from releasing the touchpanel from the docking station.

Save & Reboot and Shut Down 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 the 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-8X 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

When making connections to the TPMC-8X, consider the following:

- Use the included Crestron power supply for these devices.

The power supply cable cannot be extended.

Hardware Connections for the TPMC-8X

Left Side View   *Right Side View*

COMPACT FLASH
CARD SLOT

HEADPHONES

USB: FROM
KEYBOARD OR
OTHER WIRED
DEVICE

12V 3.5A:
AC POWER PACK*

DOCKING STATION
CONNECTOR*

Bottom View
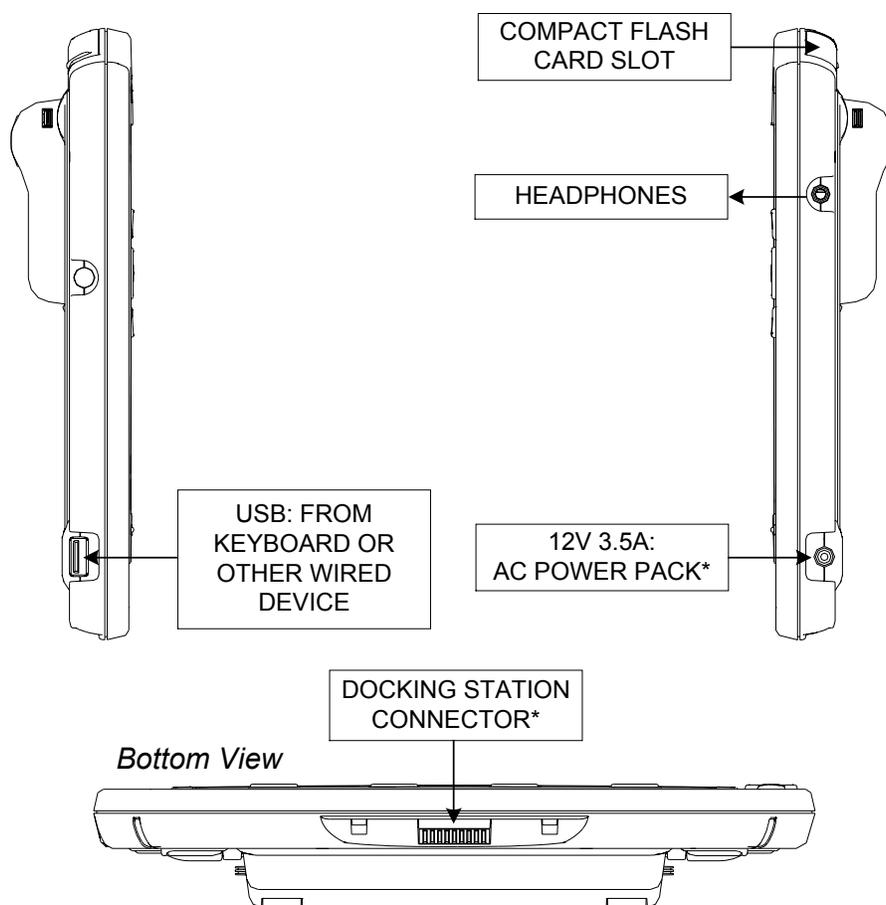
* These connectors are optional for powering the device.

CAUTION: Do not apply excessive pressure to the touchscreen display during handling. Doing so can crack the screen and damage the touchpanel.

NOTE: When inserting a Compact Flash card, orient the card so that the small lip at the top of the card is facing away from the touchpanel.

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 support a controlled 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-8X, 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-8X into the system, drag the TPMC-8X from the Touchpanels | Touchpanels (Ethernet) folder of the *Device Library* and drop it in the *System Views*.

Locating the TPMC-8X in the Device Library
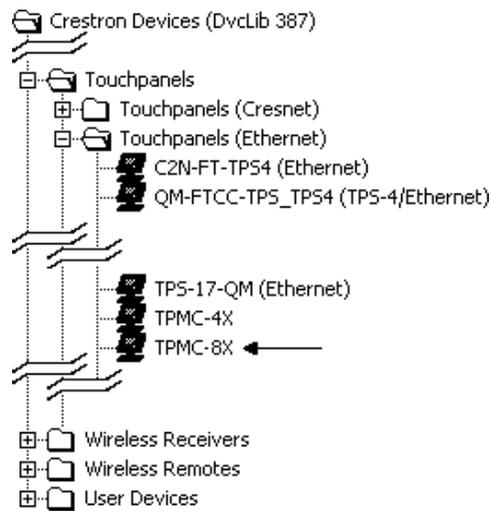
- The system tree of the control system displays the device in the appropriate slot with a default IP ID as shown in the following illustration.

C2Net Device, Slot 8
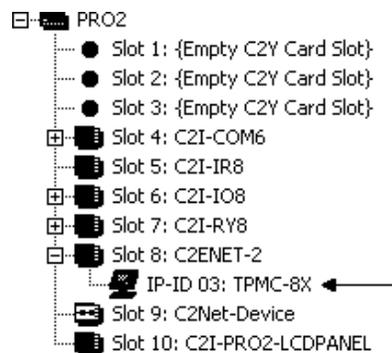
- Additional TPMC-8X devices are assigned different IP ID numbers as they are added.

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

"TPMC-8X Device Settings" Window
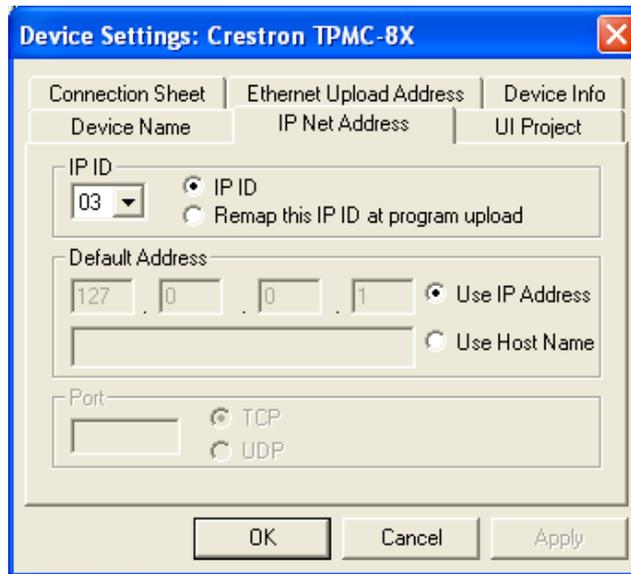
- The ID code specified in the SIMPL Windows program must match the IP ID of each unit.

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 VisionTools Pro-e (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-8X 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-8X 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-8X 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-8X touchpanels accept the following WAV file formats: **PCM, 8 & 16 bit, 8 – 44.1 kHz, mono & 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-8X 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 ($32 \times 32 \times 64 = 65,536$).

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
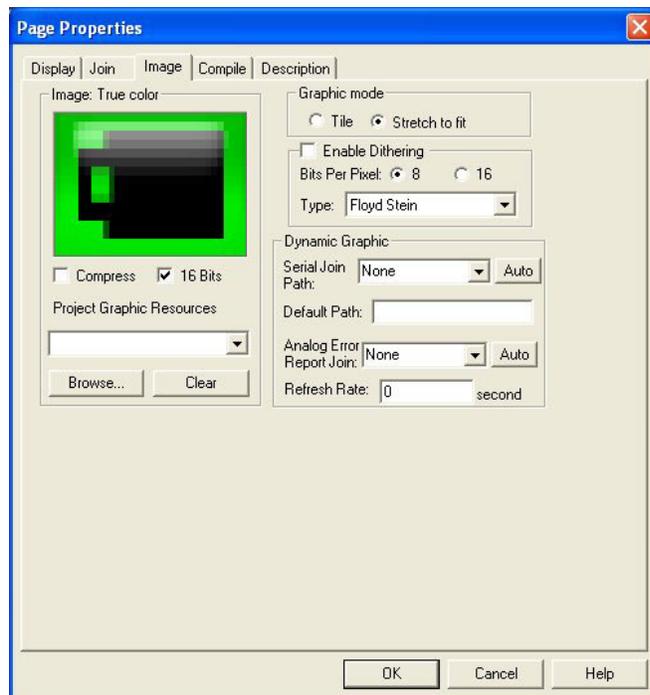
VT Pro-e "Image Properties" Window – Bit Depth Selection
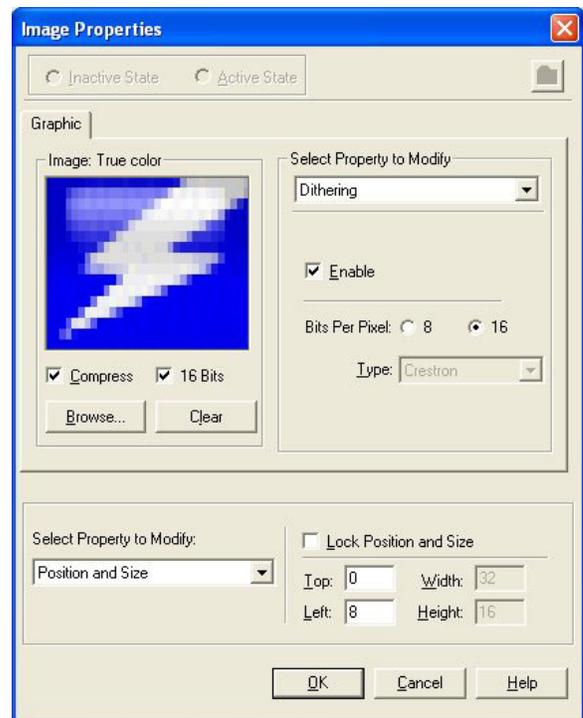
MultiByte International Characters

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 i/O 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

A number of third-party or in-house applications are embedded in a VT Pro-e TPMC-8X 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-8X 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
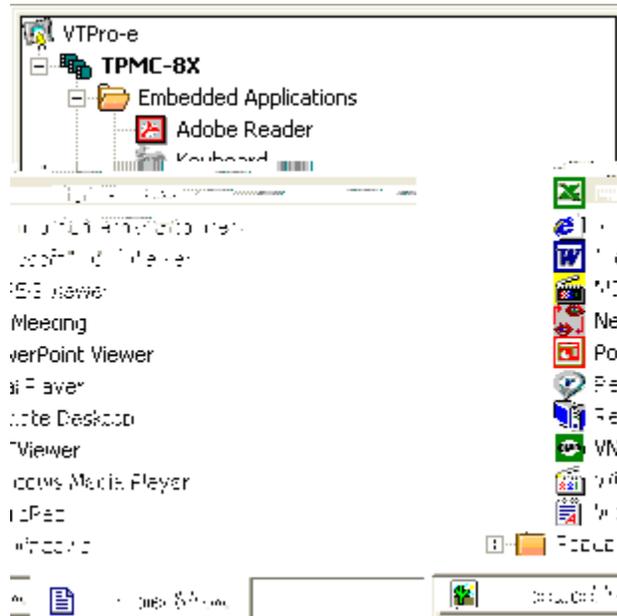
Right-click on any of the applications in the *Project View* and select **Properties** to open the "Embedded Application Property" window (refer to the illustration on the following page). This window permits a choice of positions on the screen, assignment of an analog touch join type and number and 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
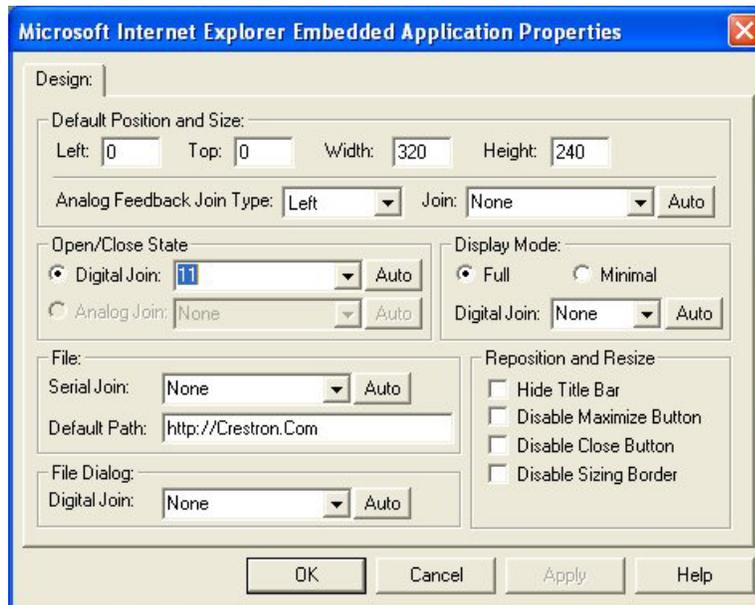
Programming Embedded Windows Applications

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.
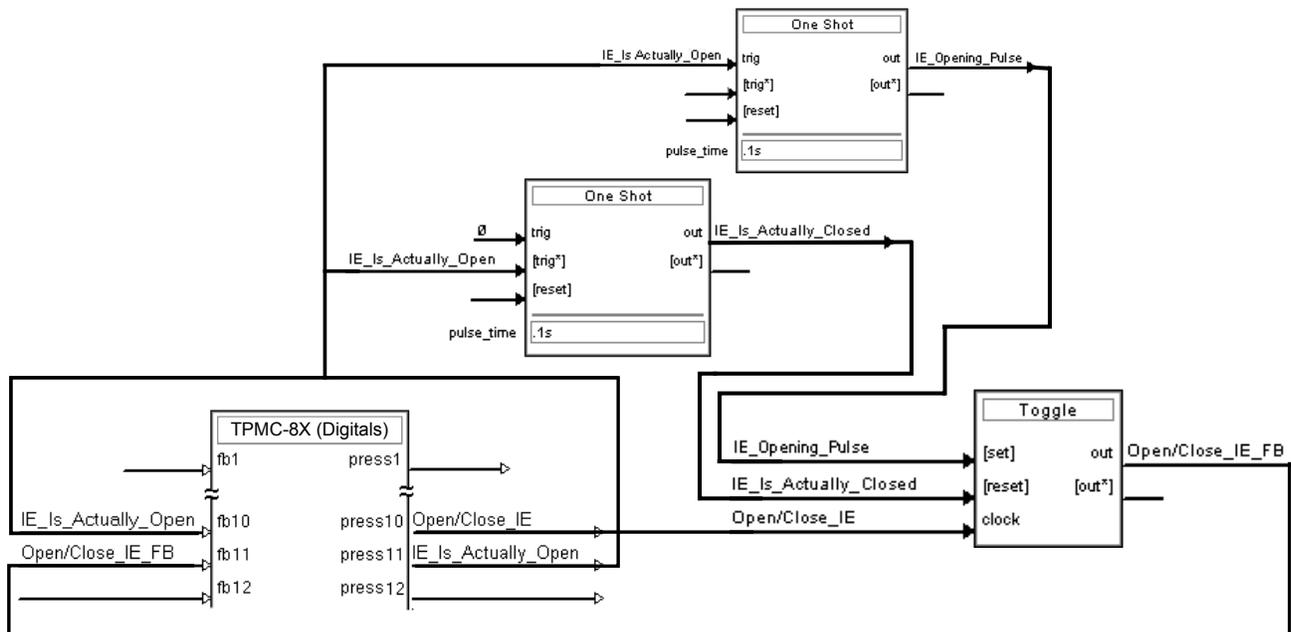
The example has Join #10 assigned to a button that is used to toggle the state of Internet Explorer. Press10 is routed to the clock line of a Toggle symbol. The output of the toggle is routed to fb11. Join #11 is referred to as the "Open/Close State Digital Join." The feedback signal of the Open/Close 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-8X 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.

Establishing Communication

Use Crestron Toolbox for communicating with the TPMC-8X; refer to the Crestron Toolbox help file for details. There is a single method of communication: TCP/IP communication.

NOTE: Required for operation with a Crestron control system.

Ethernet Communication
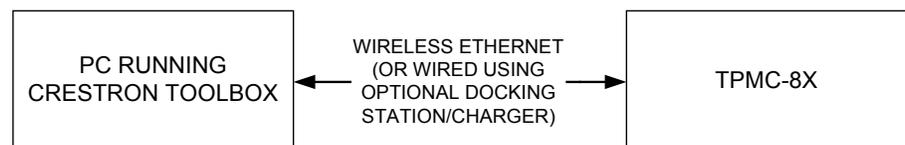
The TPMC-8X connects to PC via Ethernet:

1. Enter the *IP address*, *Subnet mask* and *Default gateway* of the TPMC-8X in the "Internet Protocol (TCP/IP) Properties" window (refer to "Ethernet Details" which starts on page 37).

2. Confirm Ethernet connections between TPMC-8X and PC.

3. Use the Address Book in the Crestron Toolbox to create an entry for the TPMC-8X with the TPMC-8X's TCP/IP communication parameters.

4. Display the "System Info" window (click the ▮▮ icon) and select the TPMC-8X 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 VisionTools Pro-e file to the touchpanel using VisionTools 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-8X firmware via Crestron Toolbox.

1. Establish serial or TCP/IP communications with the TPMC-8X and display the "System Info" window.

2. Select **Functions | Firmware…** to upgrade the TPMC-8X firmware.

Program Checks

In Crestron Toolbox, display the "System Info window (click the ▉ icon) and select the **Functions** menu to display actions that can be performed on the TPMC-8X.

Be sure to use the Crestron Toolbox to create the TPMC-8X IP table.

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

2. Add, modify or delete entries in the IP table. The TPMC-8X 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-8X. The entry should list the TPMC-8X's IP ID (specified on the TPMC-8X's IP table) and the internal gateway IP address 127.0.0.1.

To prevent interference with other 802.11 devices that may be operating nearby, channels should be adequately spaced when configuring your wireless network; channels 1, 6 and 11 are the only non-overlapping channels. Refer to the information supplied with the WAP for instructions concerning channel selection.

Operation

Power Options

The TPMC-8X can be powered in the following ways:

- TPMC-8X-BTP Internal Battery Pack (included)

- TPMC-8X-BTPE External Battery Pack (sold separately)

- TPMC-8X-DS Desktop Docking Station/Charger (sold separately)

- TPMC-8X-DSW Wall Mount Docking Station/Charger (sold separately)

The internal and external batteries can be charged by using the included AC power pack, by connecting the TPMC-8X to the optional Docking Station/Charger (TPMC-8X-DS) when it is connected to AC power or by connecting the TPMC-8X to the optional Wall Mount Docking Station/Charger (TPMC-8X-DSW).

The TPMC-8X has four power modes: On, Standby, Power Down and Off. Refer to the following table for details.

TPMC-8X Power Modes

POWER MODE	DETAILS
On	Normal operating mode. Initiated with power button on left side of touchpanel.
Standby	Backlight is turned off to conserve battery power but WiFi and processor are still on and hard buttons are still functional. Initiated with *Standby* function from the setup menu.* Touch the screen to reactivate the TPMC-8X from standby mode.
Power Down	Backlight is turned off, WiFi is turned off and the internal processor is put into "sleep" mode to conserve battery power. Initiated with *Power Down* function from the setup menu or by momentarily pressing the power button on the left side of the touchpanel.* The TPMC-8X can be activated from power down mode by pressing the power button on the left side of the touchpanel.
Off	All power is off. Can be initiated by pressing the power button on the left side of the touchpanel and holding it for four seconds. However, the recommended method for shutting down the touchpanel is to press the **Shut Down** button on the setup menu.*

* Standby, power down and power off modes can also be initiated using reserve join numbers in VT Pro-e and the Device Extender function in SIMPL Windows. For details, refer to the respective help files in these programs.

Charging the Internal Battery

NOTE: A Lithium Ion (Li-Ion) battery typically provides 300-500 charge/discharge cycles.

There are three ways to charge the TPMC-8X-BTP Internal Battery Pack:

- With the TPMC-8X-BTP installed in the TPMC-8X touchpanel, connect the touchpanel to an AC source using its AC adapter or

- With the TPMC-8X-BTP installed in the TPMC-8X touchpanel, mount the touchpanel on an AC powered TPMC-8X-DS Docking Station/Charger (sold separately) or

- With the TPMC-8X-BTP installed in the TPMC-8X touchpanel, mount the touchpanel on a TPMC-8X-DSW Wall Mount Docking Station/Charger (sold separately).

NOTE: The battery pack may take up to three hours to charge in a powered touchpanel if the panel is in use during charging.

NOTE: When the external battery pack (TPMC-8X-BTPE, sold separately) is attached, both the internal and external battery packs charge simultaneously.

Security Infrastructure

Since the TPMC-8X does not use a traditional hard drive but rather an image that gets 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-8X 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-8X, so email-based viruses cannot be executed.

5. Viruses that attack web/FTP servers
   The TPMC-8X 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-8X 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-8X.

7. ActiveX and Java
   The TPMC-8X has ActiveX disabled and has no Java Virtual Machine installed. These applets cannot run on the TPMC-8X.

NOTE: While browsing the Internet with the TPMC-8X, 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 Popup Windows in the "Embedded Apps" section of the setup menu may correct this error. Other restrictions may also cause this error, so this may not prevent all occurrences.

NOTE: Security settings and restrictions can be changed via the **Embed Apps** button on the setup menu. Refer to "Embed Apps (Embedded Applications)" which starts on page 20 for details.

Problem Solving

Troubleshooting

The following table provides corrective action for possible trouble situations. If further assistance is required, please contact a Crestron customer service representative.

TPMC-8X Troubleshooting

TROUBLE	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
Touchpanel does not turn on.	Battery was not charged or is discharged.	Place the TPMC-8X on the docking station and charge the battery using the provided power pack.
Cannot upload VT Pro-e project or firmware from Toolbox via WiFi.	TPMC-8X is off, in power down mode or has no power.	Verify that TPMC-8X has power and is on or in standby mode.
	No WAPs defined/selected on the TPMC-8X.	Refer to the "Ethernet Details" section of this guide, which starts on page 37 to define/select WAPs.
	No IP address configured/obtained on the TPMC-8X.	Refer to "Ethernet Details" which starts on page 37 to define IP addresses. If the TPMC-8X is set up to use DHCP (not recommended), you can use the WAP window box to verity the IP address provided. If the number is invalid for your subnet or no number is present, verify that the DHCP server is working properly.
	TPMC-8X is out of range or has poor access to the WAPs.	The TPMC-8X is out of range of the WAP or is experiencing interference. Refer to the WAP documentation for instructions on setting up a wireless network with minimum interference and no dead spots.
TPMC-8X does not show feedback and/or does not control any devices.	No WAPs defined/selected on the TPMC-8X.	Refer to the "Ethernet Details" section of this guide, which starts on page 37 to define/select WAPs.

(Continued on following page)

TPMC-8X Troubleshooting (Continued)

TROUBLE	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
TPMC-8X does not show feedback and/or does not control any devices. (Continued)	No IP address configured/obtained on the TPMC-8X.	Refer to "Ethernet Details" which starts on page 37 to define IP addresses. If the TPMC-8X is set up to use DHCP (not recommended), you can use the WAP window box to verity the IP address provided. If the number is invalid for your subnet or no number is present, verify that the DHCP server is working properly.
	Invalid control system IP address / IP ID set up on TPMC-8X.	The IP address (or host name) for the control system is invalid or the IP ID does not match the one defined in the SIMPL program. Refer to "IP Table" which starts on page 42 to define IP addresses.
	TPMC-8X is out of range or has poor access to the WAPs.	The TPMC-8X is out of range of the WAP or is experiencing interference. Refer to the WAP documentation for instructions on setting up a wireless network with minimum interference and no dead spots.
TMPC-8X shows unexpected or intermittent feedback and/or has intermittent device control.	TPMC-8X is out of range or has poor access to the WAPs.	The TPMC-8X is out of range of the WAP or is experiencing interference. Refer to the WAP documentation for instructions on setting up a wireless network with minimum interference and no dead spots.
TPMC-8X boots up in setup screens every time.	Invalid VT Pro-e project or no VT Pro-e project is loaded.	Load/reload VT Pro-e project using the Toolbox.

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

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-8X, additional information may be made available as manual updates. These updates are solely electronic and serve as intermediary supplements prior to the release of a complete technical documentation revision.

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

Appendix A: TPMC-8X Security Pack (Atheros)

In some situations, such as when your wireless access point is connected to a RADIUS (Remote Authentication Dial In User Service) server, authentication is required before network access is granted.

In order to gain access in this infrastructure, a username and password must be entered for verification by the server. To facilitate this, the TPMC-8X Security Pack adds the Atheros Client configuration utility.

The Security Pack is available as a special firmware build (TPMC-8X_SP_1.4.zip or later) for the TPMC-8X. For details on how to upgrade firmware, refer to "Programs, Projects and Firmware" which starts on page 58.

NOTE: The TPMC-8X Security Pack is only needed if authentication is required by the server with which your wireless access point communicates. If authentication is not required, Crestron recommends that you do not install this package. Once installed it cannot be removed without sending the TPMC-8X back to Crestron.
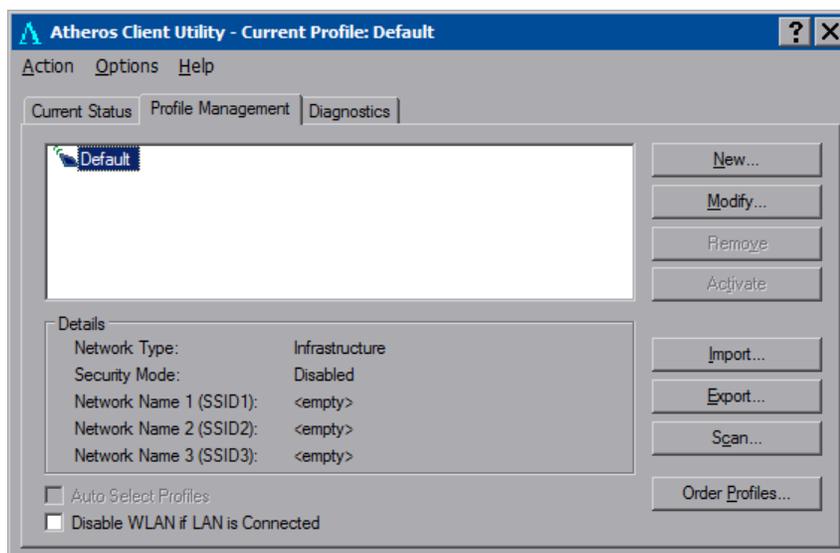
To begin the authentication process for your wireless access point, touch **AP** in the "Ethernet Setup" window. (Refer to illustration on page 37.) The "Atheros Client Utility" window will open.

"Atheros Client Utility" Window
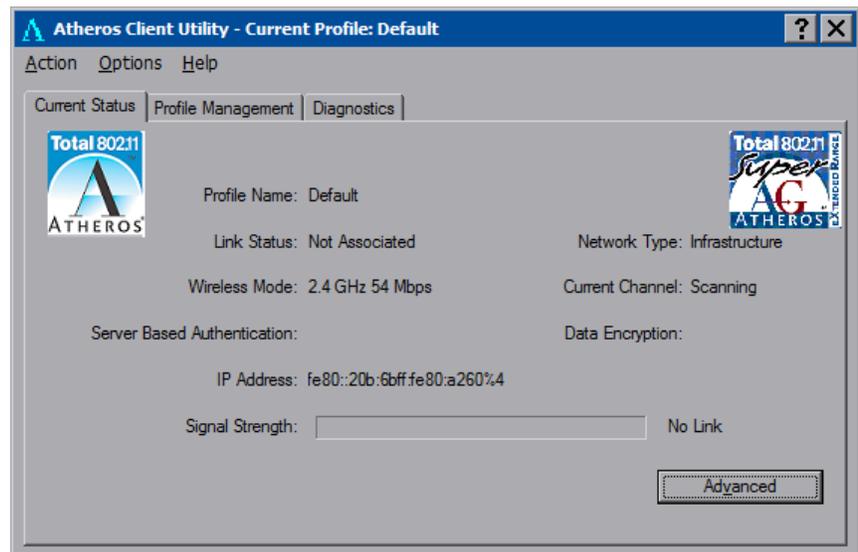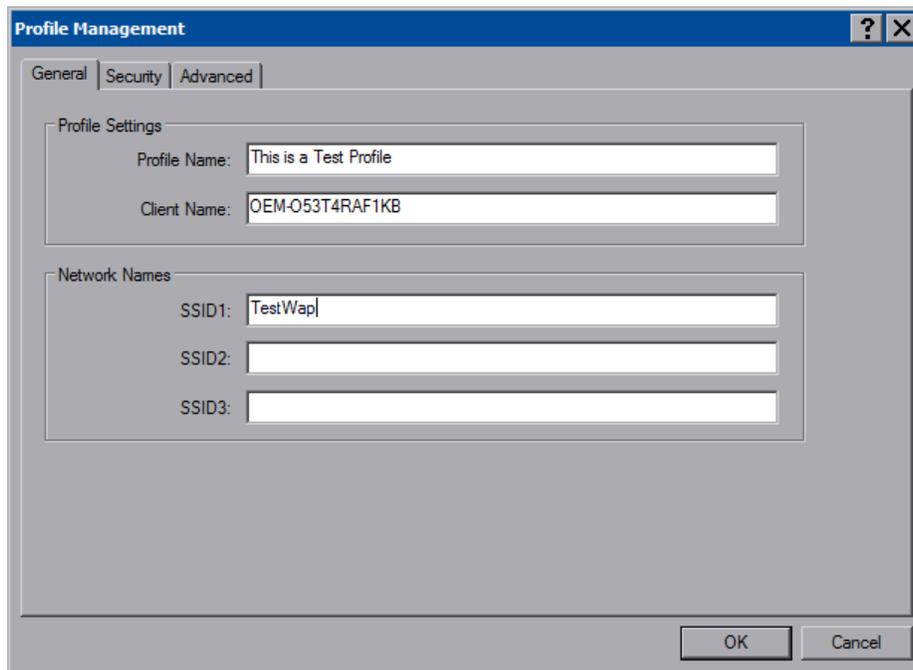

Touch the *Profile Management* tab.

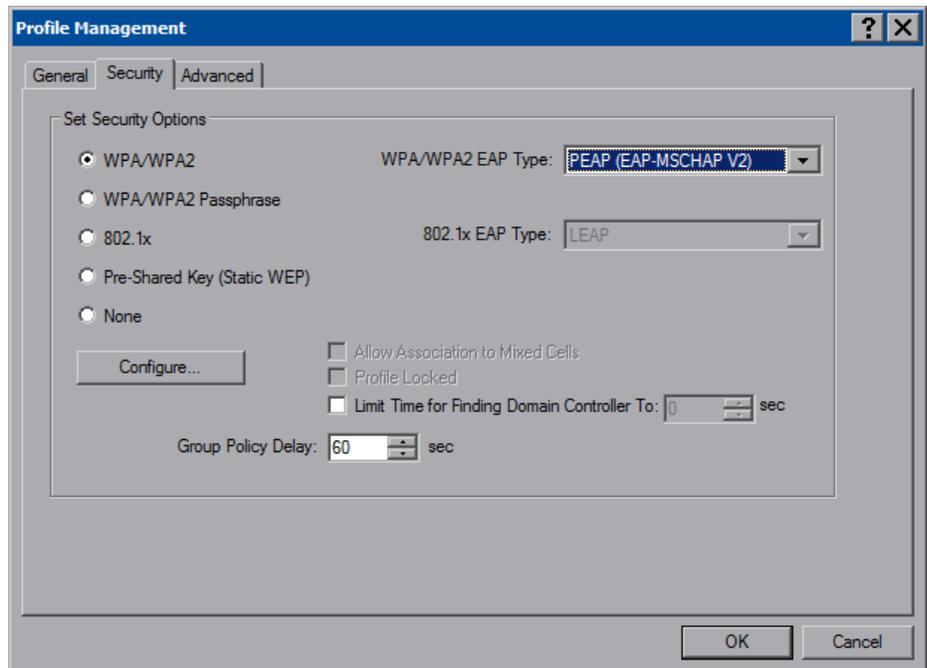*"Atheros Client Utility" Window (Profile Management Tab)*

NOTE: Leave the *Disable WLAN if LAN is Connected* box unchecked.

Touch **New…** to open the "Profile Management" window.

"Profile Management" Window (General)

Enter a name for the profile in *Profile Name* and the name of your wireless network in *SSID1*. Then, touch the *Security* tab.

"Profile Management" Window (Security)

Select one of the *Security Options*. Depending on your choice, one of the drop down boxes to the right, either *WPA/WPA2 EAP Type* or *802.1x EAP Type*, will become enabled. Use the drop down box to make your selection, then touch **Configure…**.

"Configure PEAP" Window
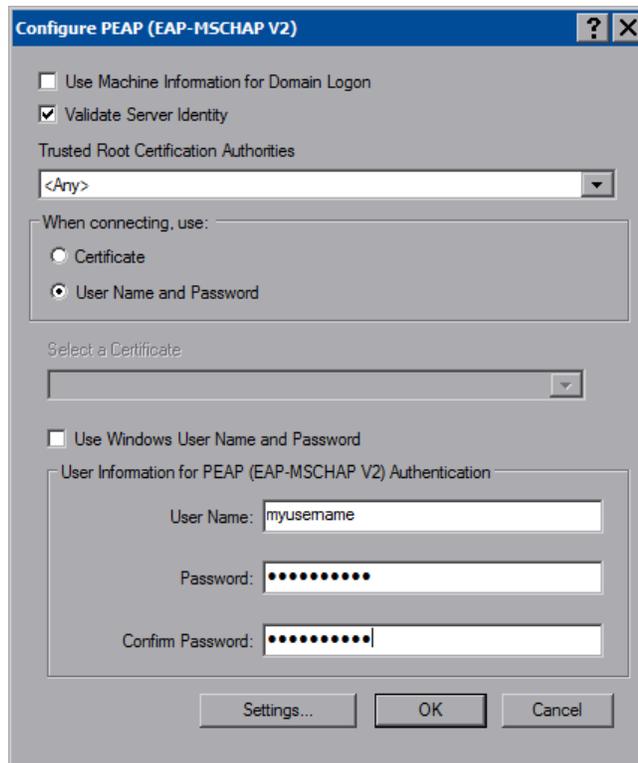
Selecting *Validate Server Identity* will enable the *Trusted Root Certification Authorities* drop down box.
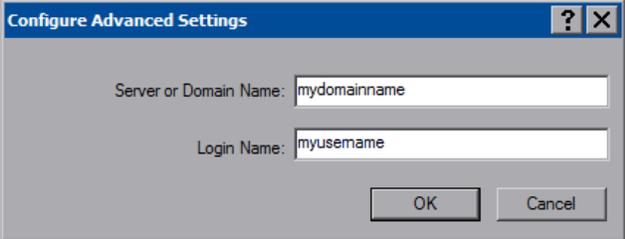
Selecting *Certificate* in the *When connecting, use:* section, will enable the *Select a Certificate* drop down box.

Fill in the *User Name*, *Password* and *Confirm Password* boxes, then touch **Settings…** to open the "Configure Advanced Settings" window.

"Configure Advanced Settings" Window

Enter the *Server of Domain Name* and *Login Name*. Then, touch **OK**.

You will be returned to the previous window. Touch **OK** to return to the "Profile Management" window. Touch **OK** again to return to the "Atheros Client Utility" window.

With the *Profile Management* tab selected, the window will display the new entry. Select the entry within the window and touch **Activate**. To complete the process, close this window using the "X" in the upper right corner.

Appendix B: TPMC-8X Security Pack (Intel PROSet)

In some situations, such as when your wireless access point is connected to a RADIUS (Remote Authentication Dial In User Service) server, authentication is required before network access is granted.

In order to gain access in this infrastructure, a username and password must be entered for verification by the server. To facilitate this, the TPMC-8X Security Pack adds the Intel PROSet Wireless configuration utility.

The Security Pack is available as a special firmware build (TPMC-8X_SP_1.4.zip or later) for the TPMC-8X. For details on how to upgrade firmware, refer to "Programs, Projects and Firmware" which starts on page 58.

NOTE: The TPMC-8X Security Pack is only needed if authentication is required by the server with which your wireless access point communicates. If authentication is not required, Crestron recommends that you do not install this package. Once installed it cannot be removed without sending the TPMC-8X back to Crestron.

To begin the authentication process for your wireless access point, touch **AP** in the "Ethernet Setup" window. (Refer to illustration on page 38.) The "Intel® PROSet/Wireless" window will open, showing the access points within range of the TPMC-8X.

"Intel® PROSet/Wireless" Window
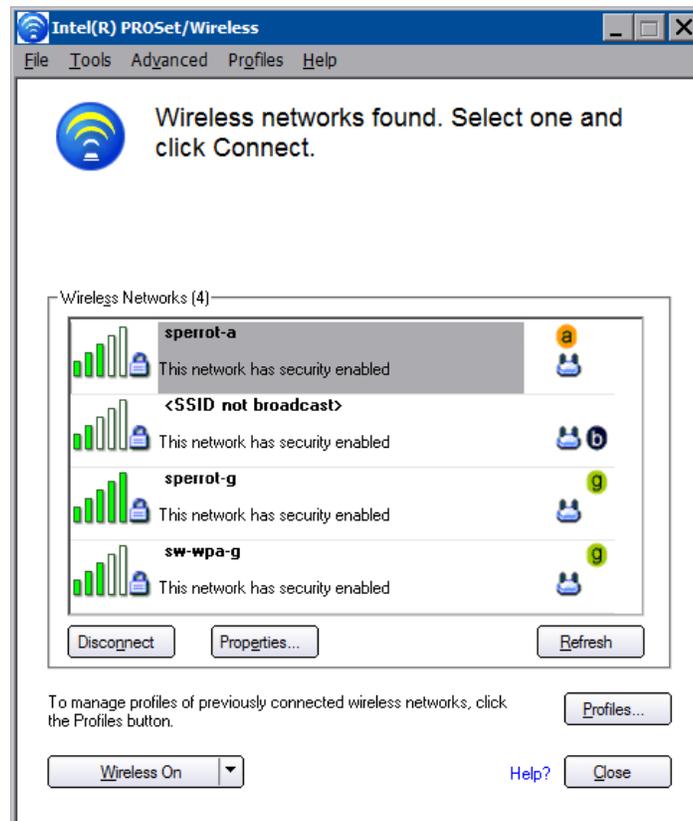
Touch **Profiles…** to open the "Profiles" window.

"Profiles" Window
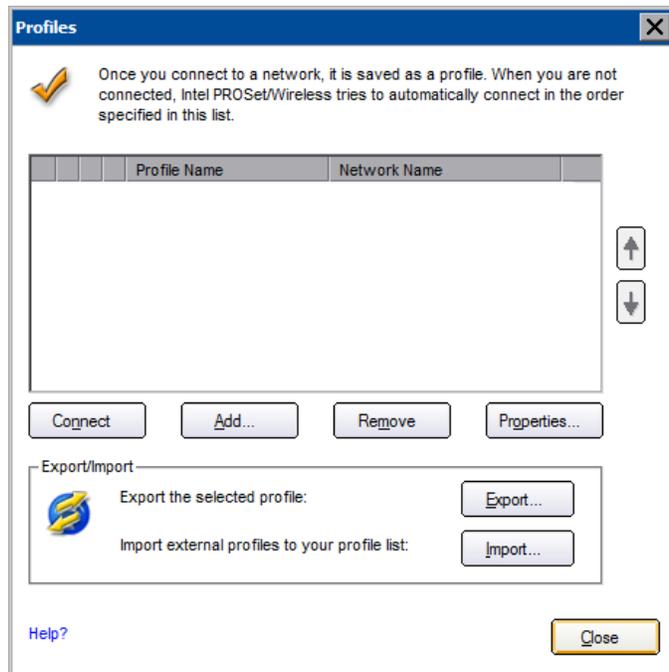
Touch **Add…** to open the "Create Wireless Profile" window's "General Settings".

"Create Wireless Profile" Window (General Settings)
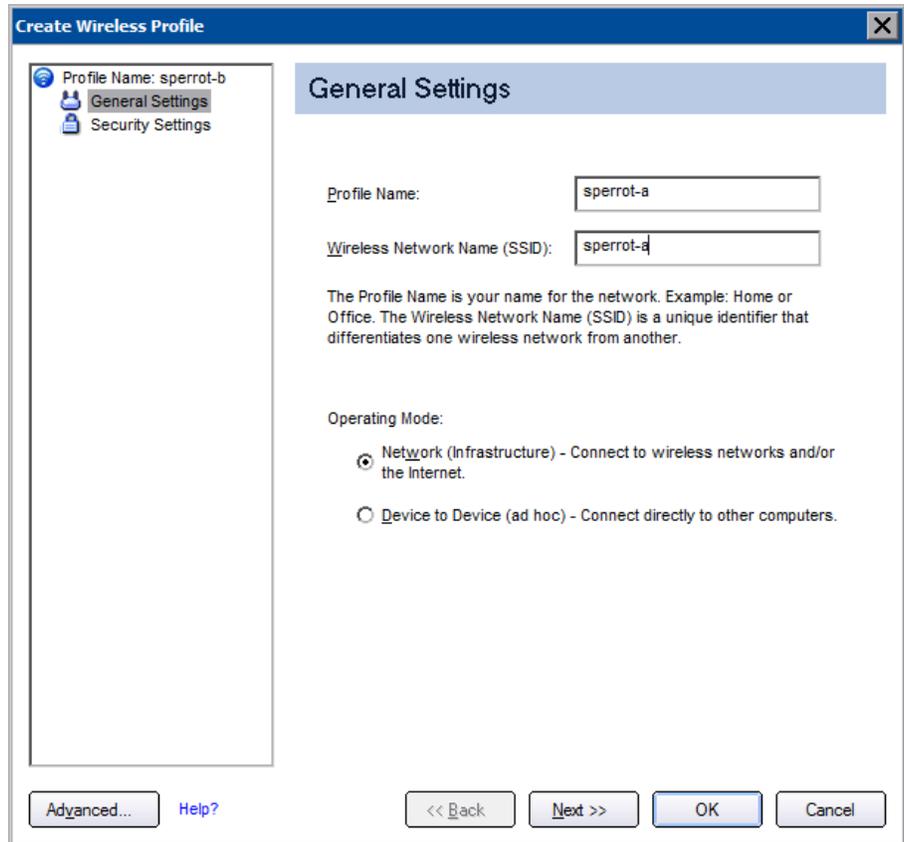
Enter a name for the profile in *Profile Name* and the name of your wireless network in *Wireless Network Name (SSID)*. Touch **Next >>** to proceed to "Security Settings".

"Create Wireless Profile" Window (Security Settings – PEAP User)

Use the drop down boxes to select your *Network Authentication* type, *Data Encryption* type, *Authentication Type* and *Authentication Protocol*. Make sure the *Enable 802.1x* checkbox is checked.

Enter a *User Name*, *Domain* and *Password*. The *Roaming Identity* should match the *Domain*. Then touch **Next >>** to proceed to the second "Security Settings" window.

"Create Wireless Profile" Window (Security Settings – PEAP Server)

Leave both checkboxes in the *Step 2 of 2: PEAP Server* part of the window unchecked, then touch **OK**.

The "Profiles" window will now show your authenticated access point.

"Profiles" Window - Showing Authenticated Access Point

Touch **Close** to complete the process.

The "Intel® PROSet/Wireless" window will now show the connection.

"Intel® PROSet/Wireless" Window - Showing Connection
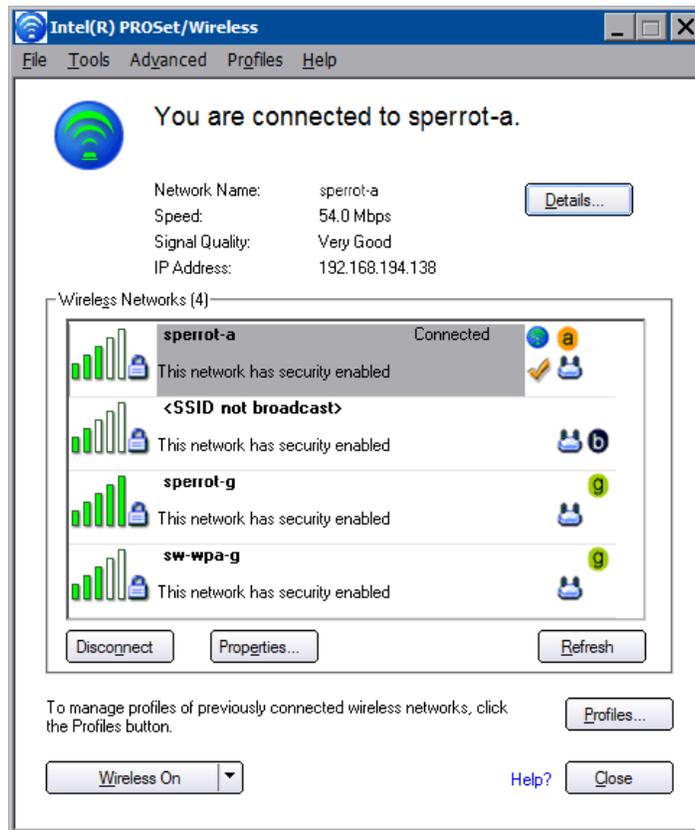
Appendix C: TPMC-8X Multi-Language Pack

The TPMC-8X Multi-Language Pack adds support for 32 international languages in addition to the default English language support in the TPMC-8X. This allows the user to view documents written in those languages by all the embedded apps in the touchpanel.

The 32 international languages added by the Multi-Language Pack are:
Arabic, Chinese (simplified), Chinese (traditional), Croatian, Czech, Danish, Dutch, Estonian, Finnish, French, German, Greek, Hebrew, Hungarian, Icelandic, Indonesian, Italian, Japanese, Korean, Latvian, Lithuanian, Norwegian, Polish, Portuguese, Romanian, Russian, Serbian, Slovak, Slovenian, Spanish, Swedish and Turkish.

The Multi-Language Pack is available as a special firmware build (TPMC-8X_MLP_1.0.zip or later) for the TPMC-8X. For details on how to upgrade firmware, refer to "Programs, Projects and Firmware" which starts on page 58.

NOTE: Once installed, the TPMC-8X Multi-Language Pack cannot be removed without sending the TPMC-8X back to Crestron.

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