Crestron Isys® **TPS-G-TPI**
G-Series Touchpanel Interface
Operations Guide

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Contents

Isys® G-Series Touchpanel Interface: TPS-G-TPI

Introduction

Features and Functions

The Crestron TPS-G-TPI Isys® G-Series Touchpanel Interface offers a host of sophisticated capabilities like the other models in the Isys family, but is designed without a display. This rack-mountable unit allows for the integration of non-Crestron® touchscreens into the Crestron control system, transforming a third-party device into a full-featured Isys G-series touchpanel. The TPS-G-TPI is designed for plasma displays equipped with touch-sensitive overlays, a variety of LCD touchscreen monitors, interactive pen displays and standard PC monitors where a mouse would be used to control the unit instead of a touchpanel.

The TPS-G-TPI provides expanded memory for demanding applications and graphic intensive GUIs. It incorporates support for HDTV signals up to 720p and 1080i, and high-resolution computer graphics up to 1600 x 1200. The interface's screens can generate a dual-Window display to view full motion video and high-resolution RGB. The TPS-G-TPI also includes built-in 10/100BaseT Ethernet, two QuickMedia ™ (QM) input ports and one QM output.

The TPS-G-TPI is only available as a black metal, single-space, rack unit (rack ears included) designed to be mounted in a 19-inch standard rack.

Functional Summary

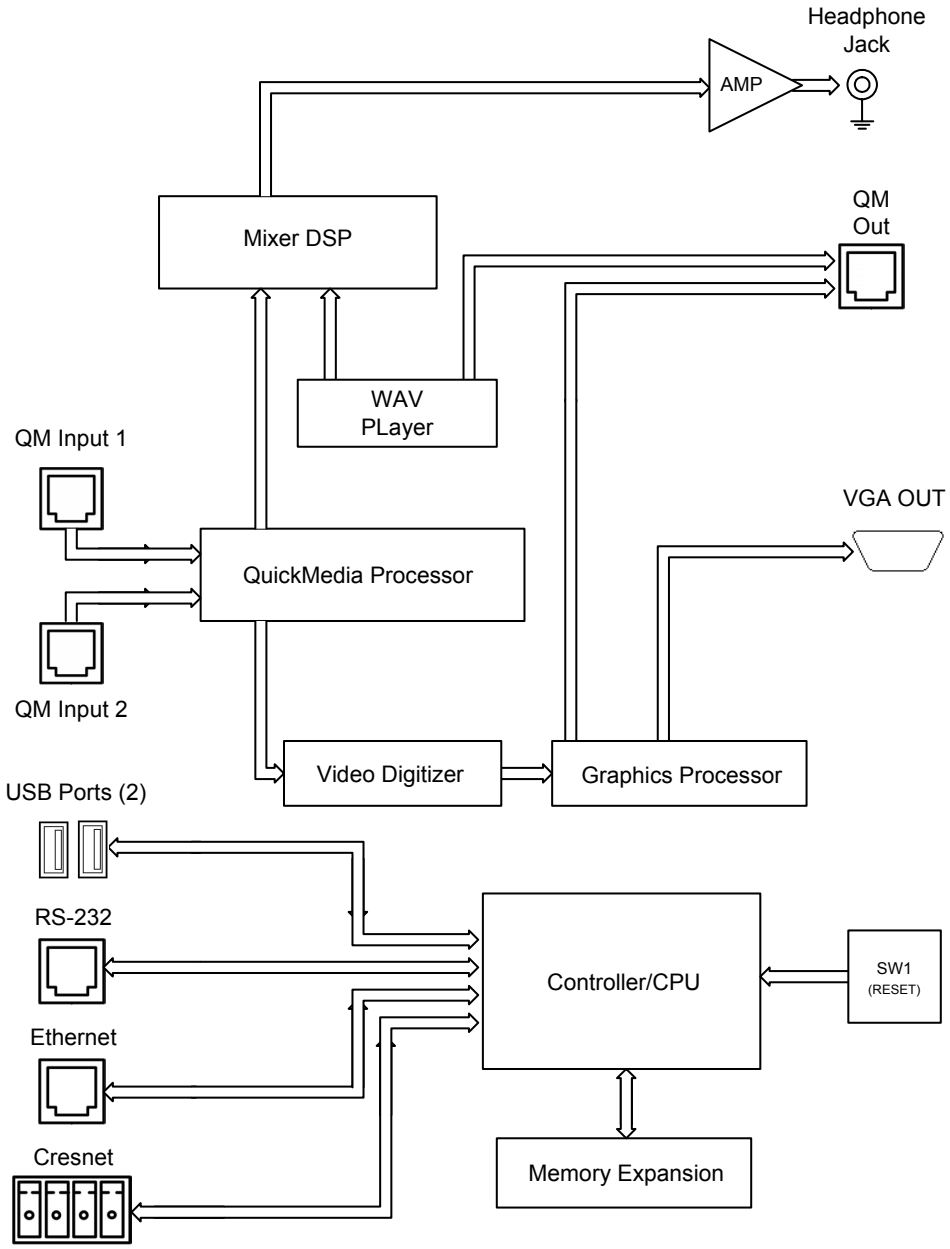
- VGA Output: programmable to 800 x 600, 1024 x 768, or 1280 x 768 resolution.
- 16.7 million colors, 24-bit non-palette graphics with color key video window capability.
- 128 MB of DDR RAM, 64 MB of internal flash expandable to 192 via compact flash.
- Built-in time-based and gamma correction for stable video and graphics.
- Supports composite, S-video, and component inputs in both NTSC and PAL formats, HDTV to 720p and 1080i, hi-res computer graphics up to 1600 x 1200.
- Supports QuickMedia™ transport technology, which affords expanded AV connectivity through a streamlined wiring solution.

Continued on the following page

Functional Summary (continued)

- Supports Crestron's QM-based MediaManager products using Crestron Certified Wiring.
- Dual window capability for viewing full motion video and hi-res RGB.
- Full screen video capability.
- Stores and plays back WAV sound files.
- Stereo headphone jack.
- Two (2) QuickMedia inputs and a single QM output.
- 10BaseT/100BaseTX auto-switching Fast Ethernet, 802.3U compliant, full duplex.
- Serial mouse support for Microsoft and Kensington devices.
- Built-in Annotation Capability allows the live output of writing or drawing over touchscreen images using a finger or stylus.

TPS-G-TPI Block Diagram



Memory

The TPS-G-TPI features 128 MB DDR RAM and 64 MB Flash, which is expandable to 192 MB via compact flash.

Sound

Audio capabilities include a stereo headphone/line level out, built-in volume control and audio mixer, and built-in wave (WAV) sound file capability. Sound can be generated by the TPS-G-TPI by using downloaded WAV files or can be mixed in from two external QuickMedia inputs. Sound from the Quick Media inputs along with WAV and Keyclick is sent to the stereo headphone and QuickMedia output. Mic input received at the QuickMedia inputs is sent to only the QuickMedia output.

Video

The TPS-G-TPI can simultaneously display two fully-scalable, full-motion video windows, each supporting standard video, HDTV, and high-resolution RGB signals from external AV and computer sources. The TPS-G-TPI uses auto-detect for composite, S-video, component or RGBHV. It supports SDTV (NTSC and PAL), EDTV, HDTV and RGB (VGA) up to UXGA (1600 x 1200). Two QM inputs provide for connectivity to QuickMedia allowing graphics and video to be passed through for output via the **QM OUT** port or VGA connector and QM sound via the stereo headphone jack.

QuickMedia™

The TPS-G-TPI acts as both a QuickMedia (QM) receiver and transmitter. Its two QM input ports support both video and audio as described earlier and the QM Output port supports simultaneous video output to feed an additional remote display device. QM out also supports WAV audio, but not audio from the QM inputs. The TPS-G-TPI interfaces directly with other QM-based products via CresCAT-QM cable.

Connectivity

The TPS-G-TPI interfaces feature a Cresnet® and a high-speed Ethernet port for seamless communication with Crestron control systems, and computers. In addition, two USB ports are provided for future applications. The bidirectional RS-232 port is provided for computer console, mouse or "Touch-The-PC" support.

Specifications

The following table provides a summary of specifications for the TPS-G-TPI.

TPS-G-TPI Specifications

SPECIFICATION	DETAILS
Cresnet® Power Usage	45 Watts (1.88 Amps @ 24 Volts DC)
Default Net ID	03
Signal Join Maximums	4000 Digital, 4000 Analog, 999 Serial
Control System Update Files [1, 2, 3] 2-Series Control System	 Version 3.137.CUZ or later
Interface Firmware	tps-g-tpi_1.002.00021.csf
Memory	128 MB DDR RAM, 64 MB Flash

Continued on the following page

TPS-G-TPI Specifications (continued)

SPECIFICATION	DETAILS
Memory Expansion	Flash memory can be expanded to 192 MB[4, 5]
Video	RGB and auto detect of composite, S-video, component, NTSC, and PAL 16.7M colors Time base correction & gamma correction Supports SDTV 480i (NTSC) & 576i (PAL), EDTV 480p & 576p, HDTV 720p & 1080i; RGB (VGA) up to UXGA 1600 x 1200
Audio	Stereo headphone/line-level audio output, internal volume control and audio mixer WAV file capability (8-bit PCM Mono, 8kHz sampling rate) 24-bit, 48kHz D to A conversion
Connectors	
NET	One 4-pin 3.5 mm detachable terminal block for connection to Cresnet Control Network.
USB	Two USB Type A female (future mouse/touch inputs)
RS-232	(1) 6-pin RJ-11 female Computer console or mouse/touch input port[6] Bidirectional RS-232 up to 115.2k baud Hardware and software handshaking support
Headphones	(1) 3.5 mm TRS mini phone jack Stereo headphone or unbalanced stereo line-level audio output Output Power: 12mW per channel Minimum Impedance: 32 ohms
QM IN	Two RJ-45 QuickMedia input connectors for both video and audio. Delay Skew Compensation of 0 to 22ns (Max) on QM Input 1 only.
QM OUT	One RJ-45 QuickMedia output connector for RGBHV video and WAV audio output.
LAN	One 8-wire RJ-45 Ethernet port with link/activity LED indicators, 10BaseT/100BaseTX high-speed Ethernet, TCP/IP, UDP/IP, CIP, 802.3U compliant, full duplex, auto switching
VGA OUT	(1) DB15 HD female, RGBHV output resolution: 800 x 600, 1024 x 768, or 1280 x 768 (1152 x 864, 1280 x 1024, and 1366 x 768 future)[6]
PC Card	(2) Type II PCMCIA Card slots (reserved for future applications)[6]
Buttons	One recessed, miniature reset button used to reboot the interface
Device Support	
Touchscreen/Pen Display	3M Microtouch, DisplayMate, Elo TouchSystems, SMART Technologies, Wacom (serial only, USB future)
Mouse	Generic Microsoft Serial Mouse shipped with unit (USB mouse future)
Enclosure	Black metal, 1U 19” rack mountable (rack ears included)
CPU	32-bit Freescale Coldfire®
Processing Speed	410 MIPS
Operating Environment	Temperature: 50° to 113°F (10° to 45°C) Humidity: 10% to 90% RH (non-condensing) Allow a single rack space above the unit for cooling purposes.
Dimensions	Height: 1.70 in (4.32 cm) Width: 19.00 in (48.26 cm) with ears; 17.03 in (43.26 cm) without Depth: 10.43 in (26.49 cm) Weight: 5 lbs (2.2 kg)
Available Accessories	QM-TX QuickMedia Transmitter TPS/TPMC-CBL-T Triamese Interface Cable ST-PK Programming Cable Kit

TPS-G-TPI Specifications (continued)

1 The latest software versions can be obtained from the Crestron website. Refer to the NOTE following these footnotes.

2 Crestron 2-Series control systems include the AV2 and PRO2. Consult the latest Crestron Product Catalog for a complete list of 2-Series control systems.

3 When loading VT Pro-e files or firmware through the RS-232 port of the control system, be sure that the baud rate is at 38400 (Cresnet speed) or lower. Otherwise, Toolbox may post the "Transfer Failed" message.

4 **CAUTION:** Verify that any compact flash used either contains no files or only contains files you want loaded to the interface prior to inserting into the interface. When unknown files reside on the compact flash, existing files on the interface may be overridden or erased if the interface reboots.

5 Although flash memory is expandable to 192MB, the current suggested maximum project size is 170MB or less. Projects larger than this may load without error, but may not display correctly.

6 Refer to the Crestron website or contact Crestron Customer Service for the latest firmware capabilities and device support.

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).

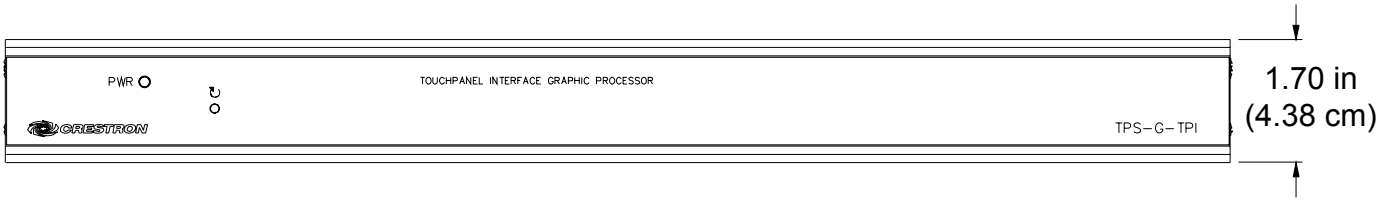
Physical Description

The electronic hardware is housed in a black metal, single-space (1U), 19-inch rack mount unit. This unit is designed to allow for the integration of non-Crestron touchscreens into the Crestron control system. All audio, serial, video, and network connections are made at the rear of the unit. A power LED and a recessed reset button are located on the front.

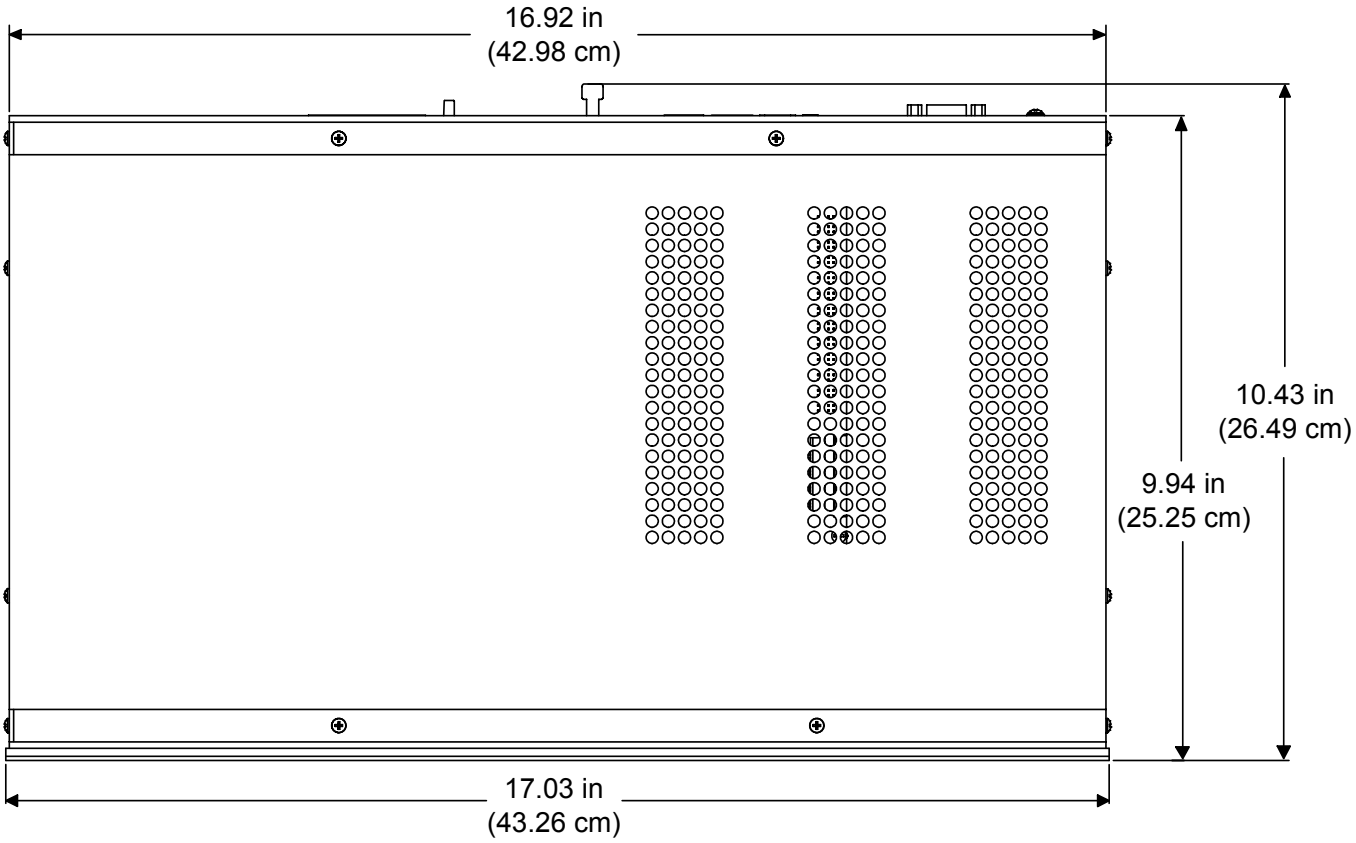
TPS-G-TPI Front View

TPS-G-TPI Rear View

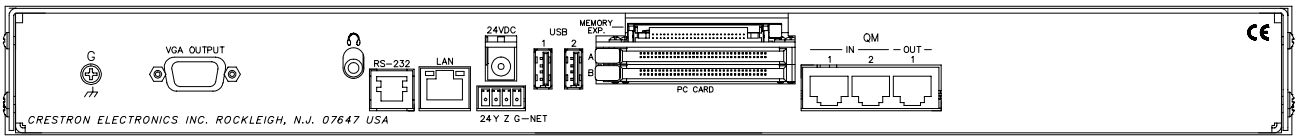
TPS-G-TPI Physical View – Front



TPS-G-TPI Physical Views – Top



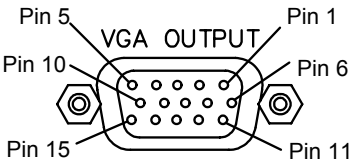
View of Rear Connectors – Cover Removed



Ports and Pushbuttons

All connections to the TPS-G-TPI interface are made through the ports on the rear panel. Refer to the illustrations and descriptions that follow.

VGA OUTPUT



A DB15HD female connector is provided for RGB (VGA) output. A touchpanel, PC monitor or other device would be connected to the VGA OUTPUT for analog video.

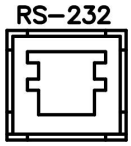
Output DB15HD Pinout

PIN	DESCRIPTION	PIN	DESCRIPTION
1	Red video output	9	Not Connected
2	Green video output	10	GND
3	Blue video output	11	Not Connected
4	Not Connected	12	Not Connected
5	GND	13	Horizontal or Composite Sync
6	GND	14	Vertical Sync
7	GND	15	Not Connected
8	GND		

PHONE

Connect this standard mini phone jack (12 mW, 32 ohm load) to the plug of a 3.5 mm external plug (not supplied) for either a pair of external amplified speakers or headphones.

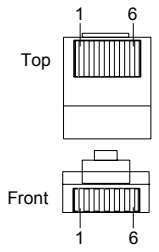
RS-232



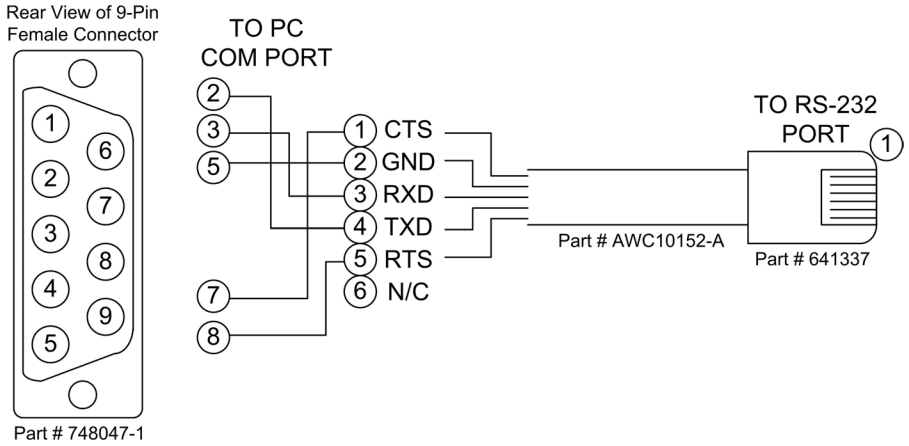
This 6-pin RJ-11 connector mates with a 9-pin serial port of a PC. The connecting cable is not supplied. Use this port to establish a direct connection between the TPS-G-TPI and a PC, mouse or touchscreen input. When a direct connection to a PC is established, firmware updates and other files can be uploaded to the TPS-G-TPI. Additionally, the interface's diagnostic tools and set up screens can be accessed over the direct connection or a direct connection to a touchpanel. In the event that modular cables or an RJ-11 to DB9F adapter is not available, the following table and diagram provide information so that the cable can be fabricated on site. Refer to "RS-232 Menu" on page 18 for RS-232 port configuration settings.

RS-232 Pinouts

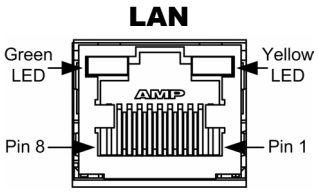
PIN #	DESCRIPTION
1	CTS
2	GND
3	RXD
4	TXD
5	RTS
6	N/C (Not connected)



PC to TPS-G-TPI Cable Specifications (Crestron Cable Number STCP-502PC)



LAN

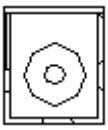


One 8-wire RJ-45 connector with two LED indicators (green LED indicates link status, yellow LED indicates Ethernet activity). This connector provides an Ethernet 10baseT /100baseTX, full duplex, TCP/IP, UDP/IP, CIP, IEEE 802.3U compliant network connection.

Network Connector Pinout

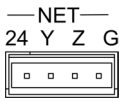
PIN	SIGNALS
1	TX +
2	TX -
3	RC+
4	N/C
5	N/C
6	RC -
7	N/C
8	N/C

24VDC



One 24 Volt DC power jack (PW-2420RU power supply sold separately) powers the TPS-G-TPI interface in lieu of Cresnet power.

NET



The four-pin 5 mm detachable terminal block provides communication with and power from a Cresnet control network. For additional details, refer to "Network Wiring" on page 11. A cable for this connection is provided with the interface.

Pins 24 and G provide 24 VDC and ground respectively. Power supply CNWPS-75 OR C2N-SPW5300 can be used to power the TPS-G-TPI.

Pins Y and Z provide communications (data).

USB

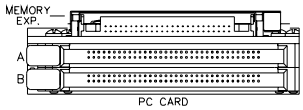
Two Universal Serial Bus (USB) "A" connectors provide a communications link. USB is a connectivity specification developed by the USB Implementers Forum that provides a single, simple, standardized way to connect devices to a computer. USB shielded cables contain two wires for power +5 volts (red) and ground (brown) and a twisted pair of wires (yellow and blue) that carry data.

USB Type A Connector Pinout

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

NOTE: This connector is reserved for future applications (i.e., mouse and touch input).

MEMORY EXPANSION



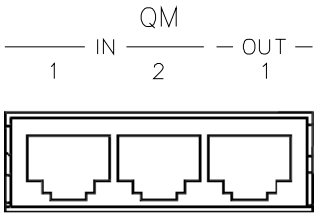
The onboard memory may be enhanced with the addition of a Type II compact flash memory card (up to 192 MB).

CAUTION: Verify that any compact flash used either contains no files or only contains files you want loaded to the interface prior to inserting into the interface. When unknown files reside on the compact flash, existing files on the interface may be overridden or erased if the interface reboots.

NOTE: Although flash memory is expandable to 192MB, the current suggested maximum project size is 170MB or less. Projects larger than this may load without error, but may not display correctly.

The flash memory slot is accessible on the rear panel of the unit and is labeled MEMORY EXP. Slots A and B are PCMCIA slots and are **not currently supported**.

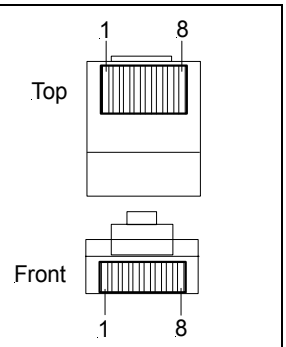
QuickMedia Connections



There are two QM input ports for connecting two QM sources and one QM output port for connecting a QM receiver or any other device with a QM input. Each QM port has an RJ-45 connector with pinouts described in the following table. For wiring information, refer to "QuickMedia Network Wiring" on page 12.

RJ-45 Pin Assignments

PIN	WIRE COLORS (568B)	QM ASSIGNMENT: RGB	QM ASSIGNMENT: COMPOSITE, S-VIDEO, COMPONENT AND AUDIO
1	WHITE/ORANGE	- RGB Red	- CHROMINANCE (-P_R)
2	ORANGE	+ RGB Red	+ CHROMINANCE (+P_R)
3	WHITE/GREEN	- RGB Green	- LUMINANCE (-Y)
4	BLUE	+ Digital Audio	+ AUDIO
5	WHITE/BLUE	- Digital Audio	- AUDIO
6	GREEN	+ RGB Green	+ LUMINANCE (+Y)
7	WHITE/BROWN	- RGB Blue	- COMPOSITE (-P_B)
8	BROWN	+ RGB Blue	+ COMPOSITE (+P_B)



QM Input #1 provides adjustable delay skew compensation for optimizing video signals. The compensation corrects color separation problems that can occur when CAT5 cables have variations in the pair lengths. The twisting of the cable pairs inside the cable sheath causes this variation in length. To ensure sufficient bandwidth to support signal resolutions up to 1600 x 1200 @ 60 Hz, the maximum aggregate cable length should not exceed 328 feet.

QM Input #2 does not have adjustable delay skew compensation. QM Input #2 is capable of the following:

QM Input # 2 Maximum Cable Length

SIGNAL TYPE	RESOLUTION	MAXIMUM CABLE LENGTH* (FEET)
Video/S-video	480i	300
Component	480p	300
Component	720p	300
Component	1080i	300
RGB	1024 x 768 @ 75 Hz	69
RGB	1280 x 1024 @ 75 Hz	40
RGB	1600 x 1200 @ 60 Hz	20
RGB	640 x 480 @ 60 Hz	216
RGB	800 x 600 @ 60Hz	136
RGB	1024 x 768 @ 60Hz	84
RGB	1280 x 768 @ 60Hz	50

* With CresCAT-QM or -IM cable, available from Crestron. Using other may adversely affect performance and is not recommended.

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

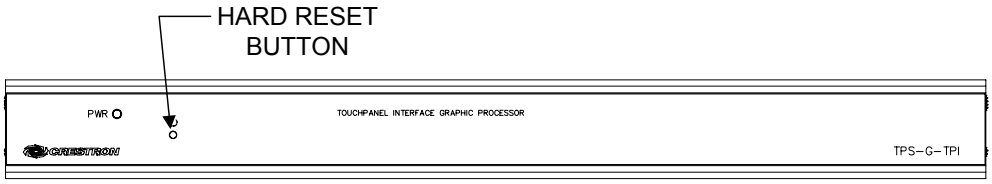
NOTE: Use CresCAT-QM or -IM, to make QM connections. The cumulative skew over the entire length must be less than 22 ns. Refer to "QuickMedia Network Wiring" on page 12 for cable specifications.

NOTE: When using CresCAT-QM wiring, four additional wires are included for making Cresnet connections. Refer to "QuickMedia Network Wiring" on page 12 for cable specifications.

Pushbuttons

There is only a single, recessed button on the front panel of the TPS-G-TPI interface. It is the hard reset used to reboot the interface.

TPS-G-TPI Pushbuttons



Industry Compliance

As of the date of manufacture, the TPS-G-TPI, has been tested and found to comply with specifications for CE marking and standards per EMC and Radio communications Compliance Labeling.

NOTE: This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Setup

Network Wiring

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

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

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

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

wire gauge and the Cresnet power usage of the run should be used in the following equation to calculate the cable length value on the equation's left side.

Cable Length Equation

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

Where: L = Length of run (or chain) in feet.
R = 6 Ohms (Crestron Certified Wire: 18 AWG (0.75 MM^2))
P = Cresnet power usage of entire run (or chain).

Make sure the cable length value is less than the value calculated on the right side of the equation. For example, a Cresnet run drawing 20 watts should not have a length of run more than 333 feet.

NOTE: All Crestron certified Cresnet wiring must consist of two twisted pairs. One twisted pair is the +24V conductor and the GND conductor, and the other twisted pair is the Y conductor and the Z conductor.

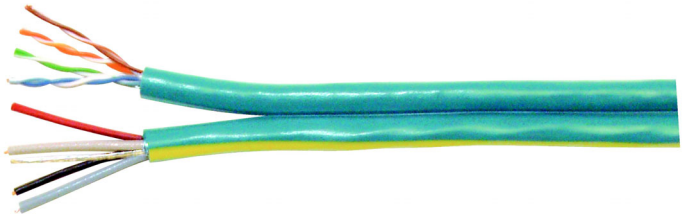
NOTE: When daisy-chaining Cresnet units, strip the ends of the wires carefully to avoid nicking the conductors. Twist together the ends of the wires that share a pin on the network connector, and tin the twisted connection. Apply solder only to the ends of the twisted wires. Avoid tinning too far up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

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

QuickMedia Network Wiring

For the QuickMedia (QM) transport, use CresCAT-QM cable. The Crestron QuickMedia cable "CresCAT-QM" contains one CAT5E cable and one Cresnet cable in siamese jackets.

CresCAT-QM Cable



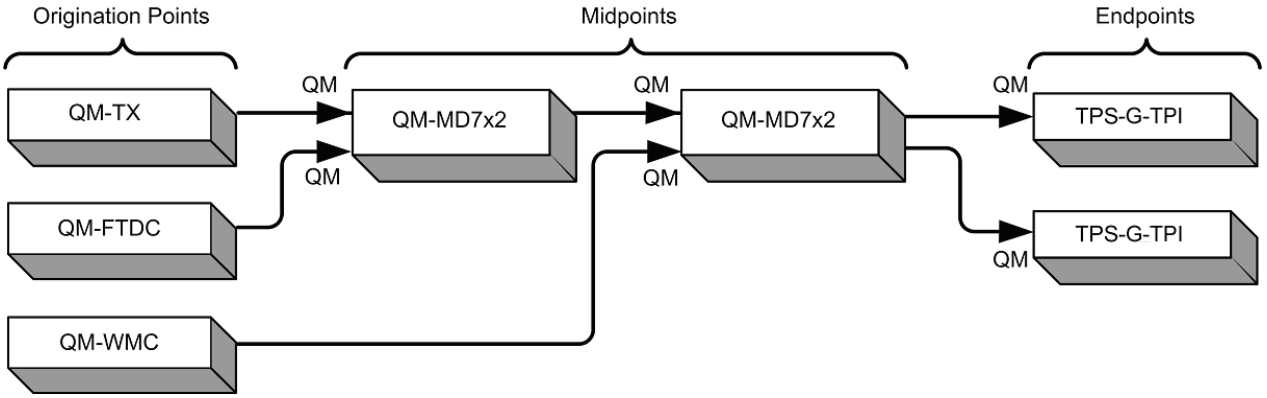
NOTE: Do not untwist the two wires in a single pair for more than 1/3-1/2" (0.84 – 1.27 cm) when making a connection. The twists are critical to canceling out interference between the wires.

The aggregate cable length of a signal path originating at a QM transmitter and terminating at the TPS-G-TPI must not exceed 328 feet (100 meters). Video signals may experience a loss of quality over very long lengths of cable. This phenomenon is due to the added resistance and capacitance of longer cable lengths, and is not particular to either Crestron and/or QuickMedia systems. To ensure sufficient bandwidth, the maximum aggregate cable length should not exceed 328 feet. The use of lower-resolution signals may allow increased cable length but must be tested by the installer with the sources to be used. The QM pin assignment is based on the EIA/TIA 568B RJ-45 Jack standard.

NOTE: In the case of the QM 2 input port, the maximum cable length will vary. See the QM Input # 2 Maximum Cable Length table on page 10.

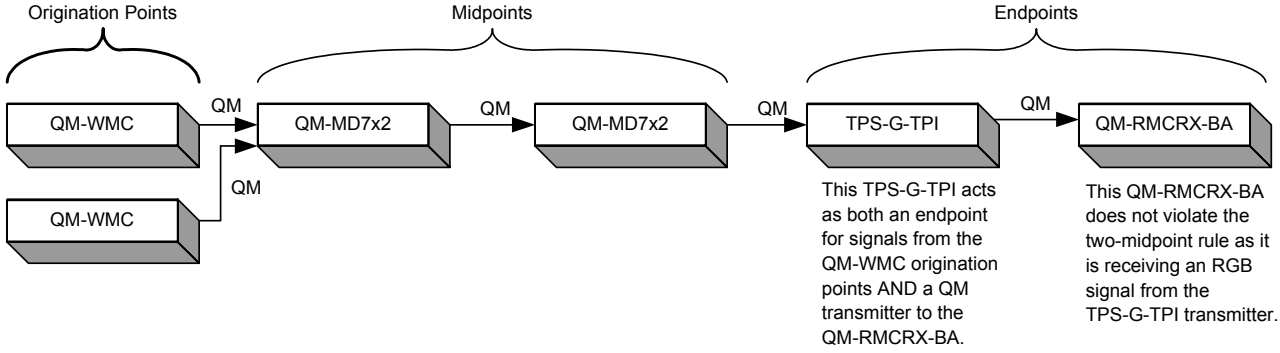
When connecting multiple QM devices, the route between a QM origination point (transmitter) and a QM endpoint (receiver) cannot have more than two midpoints (e.g., QM-MD7x2 or other QM switchers). Refer to the following diagram when configuring a QM network.

QM Network Topology



The TPS-G-TPI is not a switcher, but a QM transmitter. Therefore, even when designated as the endpoint from two midpoint switchers, the QM output of the TPS-G-TPI can become another transmitter sending RGB video at the touchpanel's native resolution and aspect ratio. Refer to the following diagram.

QM Network Topology with TPS-G-TPI Acting as an Endpoint and a Transmitter



Identity Code

All equipment and user interfaces within the network require a unique identity code (Net ID). These codes are two-digit hexadecimal numbers ranging from 03 to FE (Net ID 02 is reserved for control processors). The Net ID of each unit must match an ID code specified in the SIMPL Windows program. The Net ID is set using the internal setup menu (refer to "Interface Menu" on page 16). The Net ID may also be changed using Crestron Toolbox (refer to "Establishing Communications" on page 41).

Configuring the Interface

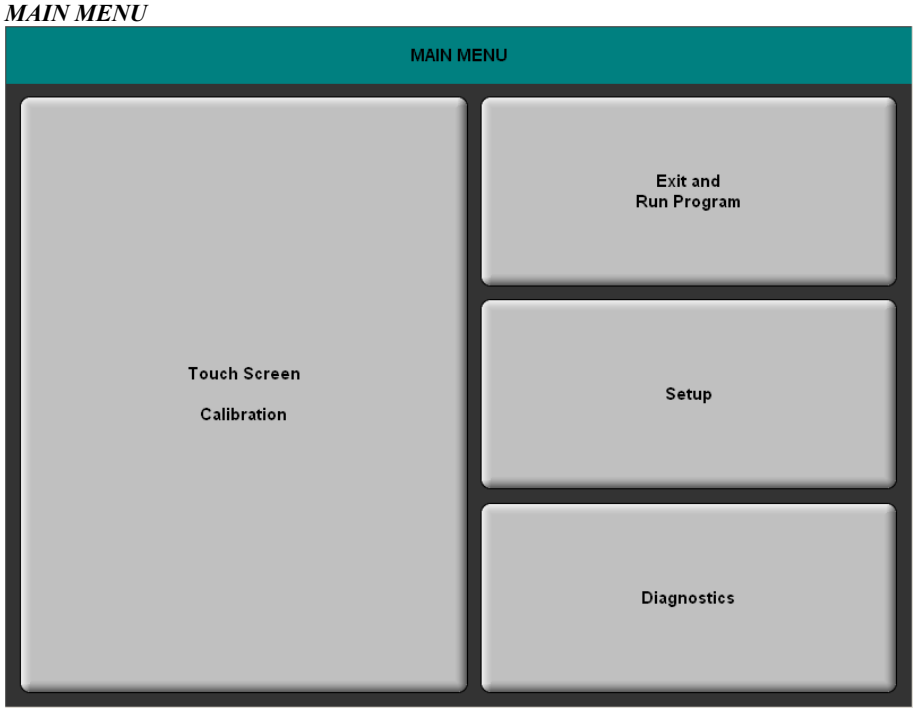
NOTE: In order to configure the TPS-G-TPI interface, power (supplied via Cresnet) and a connection to an external touchpanel or other video device are required. Refer to "Hardware Hookup" on page 31 for details.

To configure the unit, it may be necessary to access a series of setup screens prior to viewing run-time screens that are loaded into the interface for normal operation. The MAIN MENU for configuring the interface appears when a finger is held to the connected touchscreen as power is applied, or after the hardware reset button is pressed and released. Remove your finger when the message "SETUP MODE" briefly appears on the touchscreen.

Upon entering SETUP MODE, the MAIN MENU, as shown in the following illustration, displays four buttons: **Touch Screen Calibration**, **Exit and Run Program**, **Setup**, and **Diagnostics**.

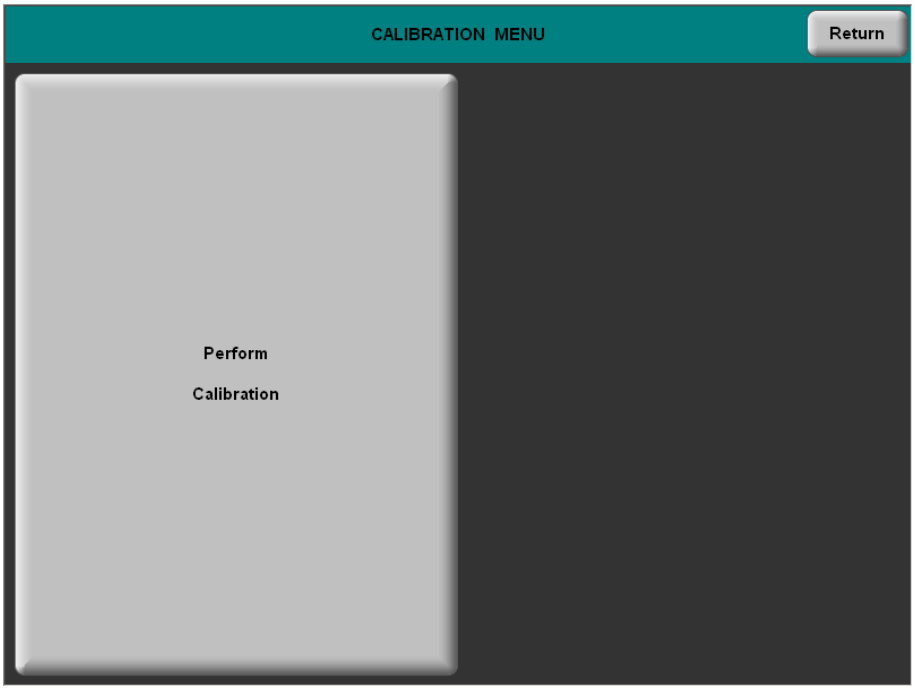
The **Exit and Run Program** button verifies that all of the setup information has been saved to the EEPROM and displays the main page that has been programmed into your system. The remaining buttons on the MAIN MENU open other menus, which are discussed in subsequent paragraphs.

MAIN MENU



Calibration Menu

CALIBRATION MENU



Touch **Perform Calibration**. The message "Touch Upper Left" appears centered on the panel with a cross hair in the upper left corner. Touch the center of the cross hair in the corner of the screen to initiate calibration. Another message, "Touch Upper Right", appears with a cross hair in the correct corner. Touch the center of the cross hair in the corner of the screen. A final message, "Touch Lower Right", appears with a cross hair in the correct corner. Touch the center of the cross hair in the corner of the screen to conclude calibration and return to the MAIN MENU.

NOTE: When touching the screen during calibration, be as accurate as possible. Use the tip of a capped pen or the eraser end of a pencil. To cancel calibration and return to the CALIBRATION MENU without saving calibration data, create a calibration error by touching the screen in the same spot three times.

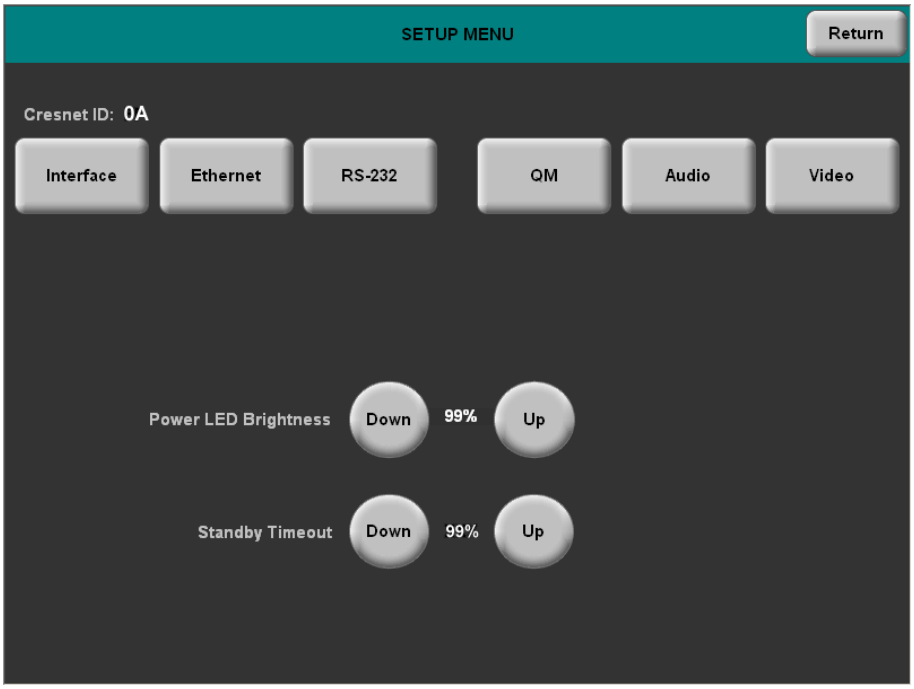
Setup Menu

To obtain the SETUP MENU, press the **Setup** button from the MAIN MENU. The SETUP MENU offers a series of buttons, which open additional menus and displays, and are detailed in subsequent paragraphs. The SETUP MENU also provides the Power LED brightness control and the standby timeout setting. After setup parameters have been selected, select the **Return** button to return to the MAIN MENU.

NOTE: For convenience, the current CRESNET ID setting is displayed in the upper left corner.

NOTE: All TPS-G-TPI interface settings are automatically saved in non-volatile memory.

SETUP MENU

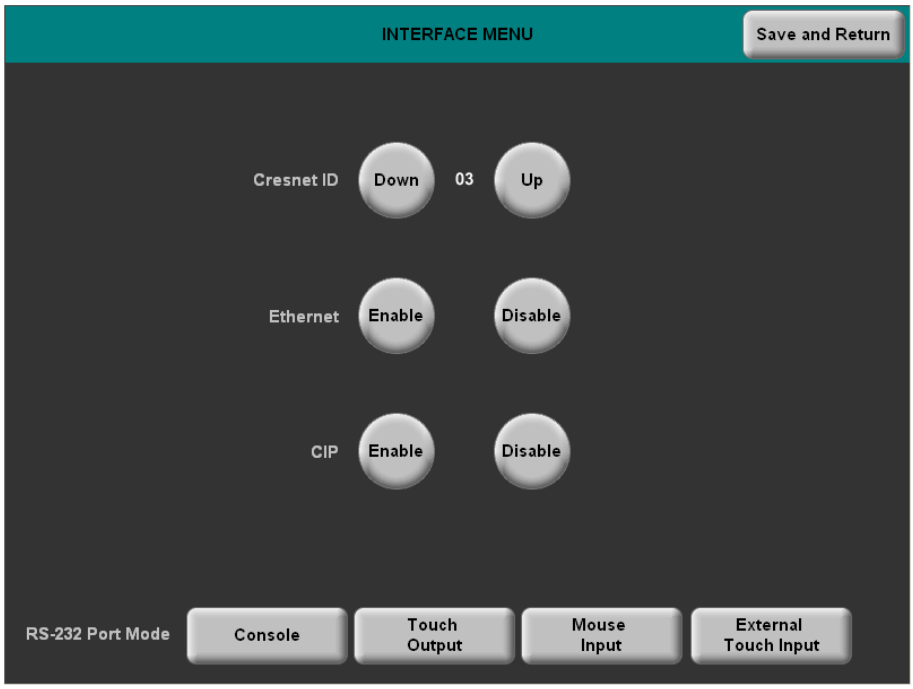


Interface Menu

The TPS-G-TPI communicates with a control system to activate commands or to display feedback from components within the system. The communication interface must be correctly configured or communication will not occur. To set communication parameters select the **Interface** button located on the SETUP MENU and display the INTERFACE MENU.

The Cresnet network identity number (CRESNET ID also known as the Net ID) is displayed on the INTERFACE MENU. Net ID is the two-digit hexadecimal number. The hexadecimal number can range from 03 to FE and must correspond to the Net ID set in the SIMPL Windows program of the Cresnet system. Matching IDs between the TPS-G-TPI and the SIMPL Windows program is required if data is to be successfully transferred. Net ID for the TPS-G-TPI is factory set to 03. No two devices in the same system can have the same Net ID.

INTERFACE MENU



Two buttons adjacent to the hexadecimal display, **DOWN** and **UP**, decrease and increase the Net ID by one, respectively.

The four buttons on the bottom define how the RS-232 port can be used; as a console port (i.e., loading TPS-G-TPI projects and firmware), a touch output port (communication of touch coordinates to an external device), a mouse input port (allows a mouse to control the interface) and an External Touch Input.

There may be Ethernet devices (i.e., a control system) on the network that communicates with the TPS-G-TPI via CIP (Cresnet Internet Protocol). The CIP buttons, located on the INTERFACE MENU, determine if the TPS-G-TPI is capable of this type of communication. Select **Enable** to permit this protocol recognition and **Disable** to prohibit any CIP connection. CIP must be enabled for the TPS-G-TPI to communicate with other Crestron Ethernet devices.

The Ethernet **Enable** and **Disable** buttons determine the status of the interface's Ethernet communications.

NOTE: The TPS-G-TPI does not support wireless Ethernet.

Select the **Save and Return** button located on the INTERFACE MENU to return to the SETUP MENU.

Ethernet

Selection of the **Ethernet** button from the SETUP MENU displays details such as the IP Address, Subnet Mask, Default Router, IP Table, etc. The settings can only be viewed from this screen. The enable/disable Ethernet feature is provided on the INTERFACE MENU. Ethernet settings are made through Crestron Toolbox. Refer to page 45 for additional details.

RS-232 Menu

The TPS-G-TPI interface allows for one of four RS-232 communication modes:

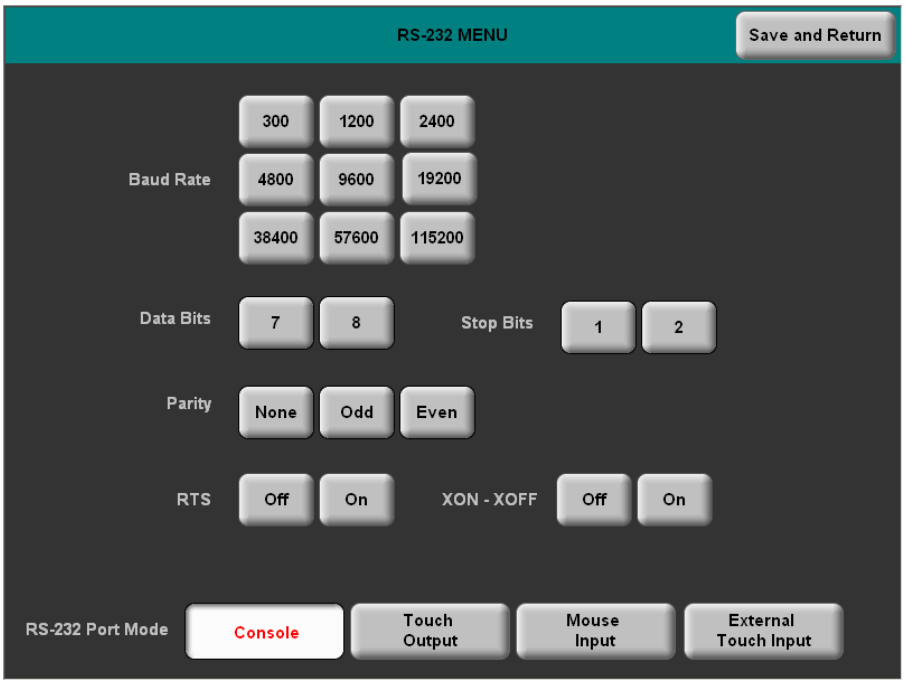
- Console (i.e., loading TPS-G-TPI interface projects and firmware)
- Touch Output (communication of touch coordinates to an external device)
- Mouse Input (allows a mouse to control the interface)
- External Touch Input (allows another device to control the interface).

For convenience, the RS-232 MENU Consol Port Mode also permits the selection of the RS-232 communication options, RTS On/Off, XON-XOFF On/Off, Baud Rate, Data Bits, Parity, and Stop Bits.

Touch the communication option to select communication parameters and then select **Save and Return** to save the RS-232 settings and return to the SETUP MENU.

Default settings: Console mode, Baud rate: 115200, data bits: 8 bit, parity: none, stop bit: 1, XON/XOFF off, RTS off.

RS-232 MENU

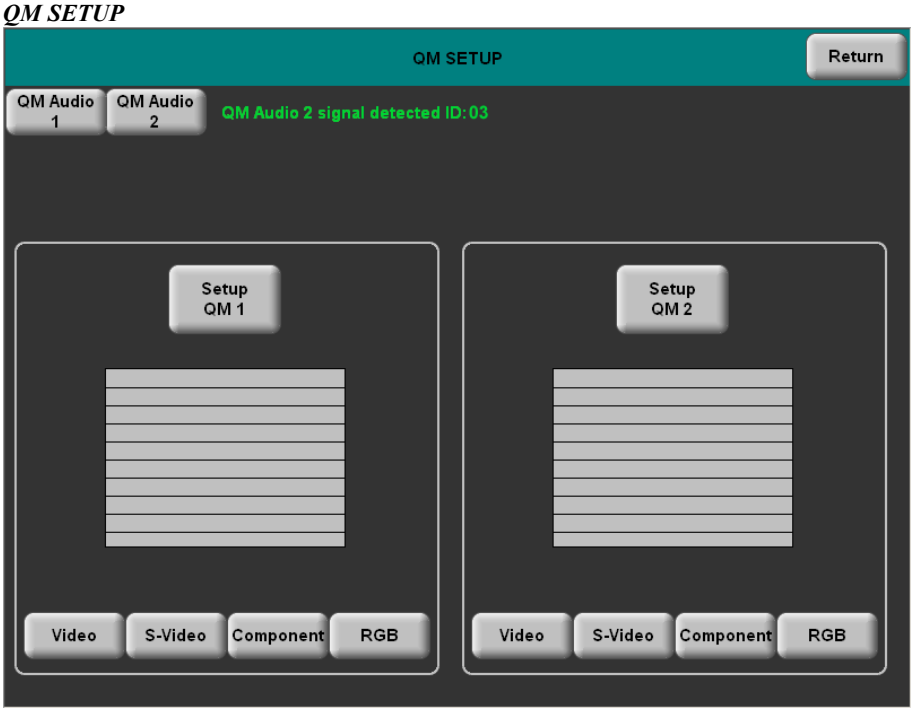


QM Setup Menu

To open the QM SETUP MENU, press the **QM** button from the SETUP MENU. The QM SETUP MENU offers controls for detecting QM Audio Input, Transmitter ID, QM Setup channels and video type for each QM Setup channel.

After these parameters have been set, select the **Return** button to return to the SETUP MENU.

QM SETUP



Refer to the following table for additional QM SETUP MENU details.

QM Setup Details

QM SETUP SCREEN CONTROLS	DESCRIPTION
QM Audio 1	Detects the presence of QM Audio on channel 1 when selected.
QM Audio 2	Detects the presence of QM Audio on channel 2 when selected.
QM Transmitter ID	Displays the ID of the QM transmitter in the range of 03 to FE.
Setup QM 1	Displays the QM 1 SETUP MENU. By default, the QM 1 SETUP MENU displays video controls: Peak, Boost, Skew Red, Skew Green and Skew Blue, in the lower right quadrant of the menu.
Video	Pressing this before pressing the **Setup QM 1** button will open the QM 1 SETUP MENU in Video mode.
S-Video	Pressing this before pressing the **Setup QM 1** button will open the QM 1 SETUP MENU in S-Video mode.
Component	Pressing this before pressing the **Setup QM 1** button will open the QM 1 SETUP MENU in Component mode.
RGB	Pressing this before pressing the **Setup QM 1** button will open the QM 1 SETUP MENU in RGB mode.

Continued on the following page

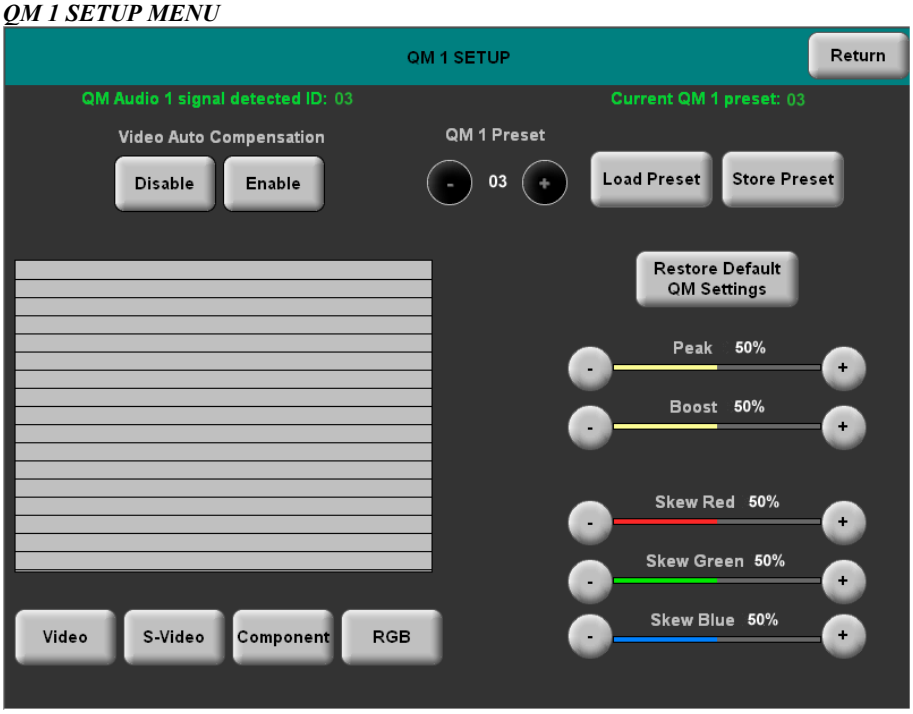
QM Setup Details (continued)

QM SETUP SCREEN CONTROLS	DESCRIPTION
Setup QM 2	Displays the QM 2 Setup Menu. By default, the QM 2 Setup Menu displays video controls Peak and Boost, in the lower right quadrant of the menu.
Video	Pressing this before pressing the **Setup QM 2** button will open the QM 2 SETUP MENU in Video mode.
S-Video	Pressing this before pressing the **Setup QM 2** button will open the QM 2 SETUP MENU in S-Video mode.
Component	Pressing this before pressing the **Setup QM 2** button will open the QM 2 SETUP MENU in Component mode.
RGB	Pressing this before pressing the **Setup QM 2** button will open the QM 2 SETUP MENU in RGB mode.

To open the QM 1 SETUP MENU, press the **Setup QM 1** button from the QM SETUP MENU. The QM 1 SETUP MENU offers controls for Peak, Boost, Skew Red, Skew Green and Skew Blue in Video, S-Video, Component and RGB modes. In addition, touching the video window will expand it to full screen with transparent controls.

After QM 1 parameters have been set, select the **Return** button to return to the QM SETUP MENU.

QM 1 SETUP MENU



Refer to the following table for additional QM 1 SETUP MENU details.

NOTE: The QM 1 SETUP MENU and the QM 2 SETUP MENU are identical except that the QM 2 SETUP MENU offers only Peak and Boost controls.

QM 1 Setup Details

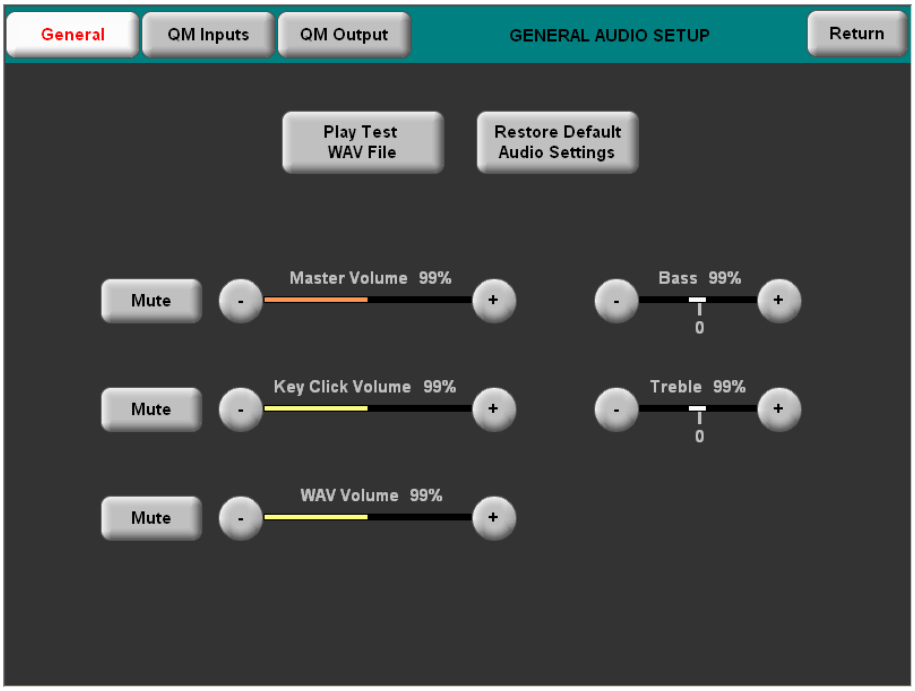
QM 1 SETUP SCREEN CONTROLS	DESCRIPTION
Auto Compensation Disable	Turns off auto compensation.
Auto Compensation Enable	Turns on auto compensation. When auto compensation is enabled, the QM receiving device uses the auto compensation data received from the QM-Video preset matching the transmitter's QM ID..
Video	Puts the menu in Video mode so that you can adjust the Peak, Boost, Skew Red, Skew Green and Skew Blue signals for Video.
S-Video	Puts the menu in S-Video mode so that you can adjust the Peak, Boost, Skew Red, Skew Green and Skew Blue signals for S-Video.
Component	Puts the menu in Component mode so that you can adjust the Peak, Boost, Skew Red, Skew Green and Skew Blue signals for Component video.
RGB	Puts the menu in RGB mode so that you can adjust the Peak, Boost, Skew Red, Skew Green and Skew Blue signals for RGB video.
QM 1 Preset	Displays the current QM 1 Preset number. Saved presets can also be called up using this control. Plus and minus buttons increment the displayed value.
Load Preset	Will load the selected QM 1 Preset.
Store Preset	Will store any changes you've made to the QM 1 setup at the displayed preset number.
Restore Default QM Settings	Restores the QM settings to their original defaults.
Peak	Peak adjusts for high frequency attenuation that can occur over long cable lengths.
Boost	Boost compensates for overall signal loss that can occur over long cable lengths.
Skew Red	Adjusts the timing position of the red signal on the skew test pattern to compensate for any losses caused by long cable runs.
Skew Green	Adjusts the timing position of the green signal on the skew test pattern to compensate for any losses caused by long cable runs.
Skew blue	Adjusts the timing position of the blue signal on the skew test pattern to compensate for any losses caused by long cable runs.

General Audio Setup Menu

To open the GENERAL AUDIO SETUP MENU, press the **Audio** button from the SETUP MENU. The GENERAL AUDIO SETUP MENU offers a series of buttons that adjust the volume as indicated by the sliding bars. These controls allow you to precisely control Master Volume, Key Click and WAV volume, Bass and Treble in the audio mix.

The **Play Test WAV File** button plays a short audio file, while the **Restore Default Audio Settings** button returns all audio parameters on this menu to their default settings. After these general audio parameters have been set, select the **Return** button to return to the SETUP MENU.

GENERAL AUDIO SETUP MENU



Refer to the following table for additional GENERAL AUDIO SETUP MENU details.

General Audio Setup Details

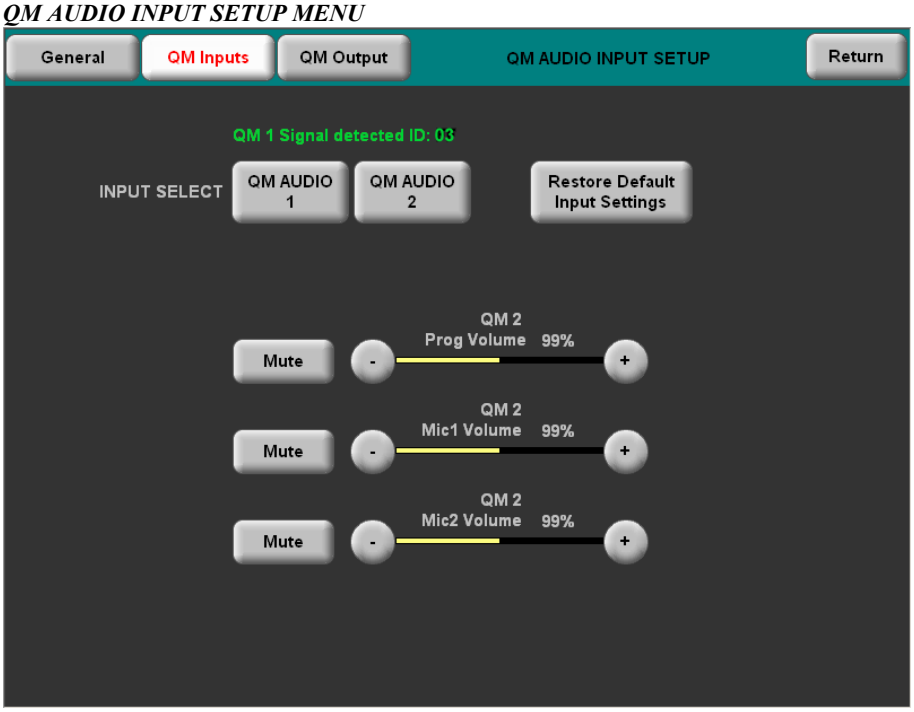
GENERAL AUDIO SETUP MENU CONTROLS	DESCRIPTION
QM Inputs	Displays the QM Audio Input Setup menu.
QM Output	Displays the QM Audio Output Setup menu.
Play Test WAV File	Plays a short WAV audio file.
Restore Default Audio Settings	Returns the settings on this menu to their factory defaults.
Master Volume	The headphone volume of all audio types (QM Program and Mic Input, WAV, and key click) is affected by the Master Volume control. If the Master Volume control is set to 100%, the volume for any type of audio is at maximum. If the Master Volume is set to 0%, the value of all audio types is overridden and the interface is silent. If Master Volume is a percentage (say 50%), then all audio types can only achieve half their value.
Key Click	Adjusts the level of the key click sound with the plus and minus buttons.
WAV Volume	Adjusts the volume of the WAV file with the plus and minus buttons. Click **Play Test WAV File** button to sample and adjust the volume as a pre-loaded WAV file plays.
Bass	Adjusts the overall bass output with the plus and minus buttons.
Treble	Adjusts the overall treble output with the plus and minus buttons.

QM Audio Input Setup Menu

To open the QM AUDIO INPUT SETUP MENU, press the **QM Inputs** button on the GENERAL AUDIO SETUP MENU. The QM AUDIO INPUT SETUP MENU offers a series of buttons that adjust the volume as indicated by the sliding bars. These controls allow you to precisely control QM Prog (program) and Mic (1 and 2) Volume.

The **QM Audio 1** and **QM Audio 2** buttons select the source of QM input, while the **Restore Default Input Settings** button returns all audio parameters on this menu to their default settings. **Mute** buttons are provided to turn off program or mic input from the selected source. After these parameters have been set, select the **Return** button to return to the SETUP MENU.

QM AUDIO INPUT SETUP MENU



Refer to the following table for additional QM AUDIO INPUT SETUP MENU details.

QM Audio Input Setup Details

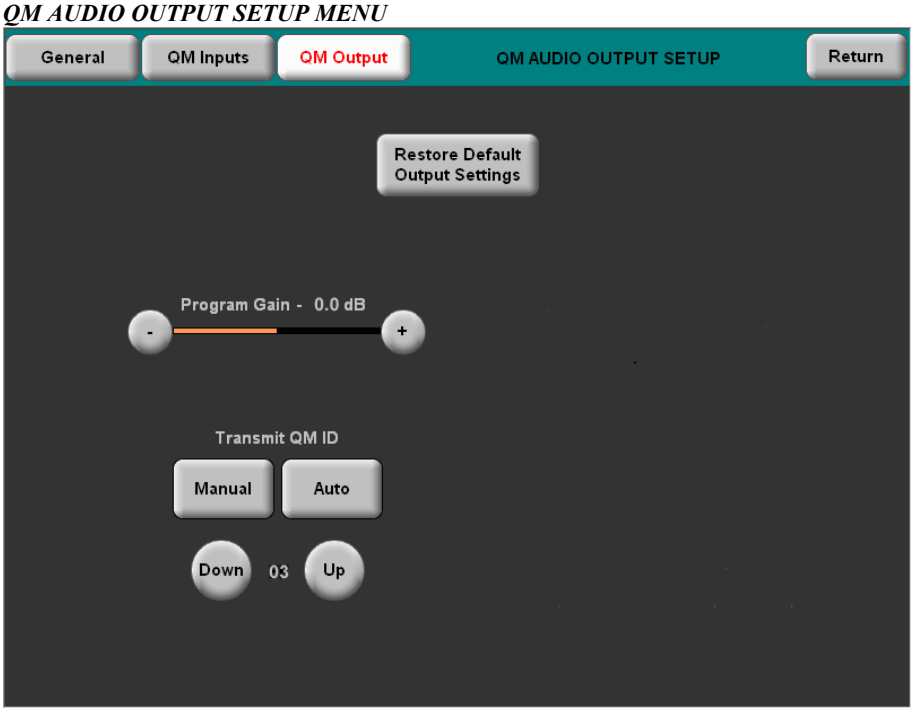
QM AUDIO INPUT SETUP MENU CONTROLS	DESCRIPTION
QM Audio 1	Selects the source of the QM data. QM Program and Mic on QM Input 1 can be adjusted and the Prog and Mic controls display QM 1.
QM Audio 2	Selects the source of the QM data. QM Program and Mic input on QM Input 2 can be adjusted and the Prog and Mic controls display QM 2.
Restore Default Input Settings	Returns the settings on this menu to their factory defaults.
QM Prog Volume	Depending on the selected QM source, this controls the volume of incoming QM program information.
QM Mic 1 Volume	Depending on the selected QM source, this controls the volume of an upstream mic entering the TPS-G-TPI Interface.
QM Mic 2 Volume	Depending on the selected QM source, this controls the volume of an upstream mic entering the TPS-G-TPI Interface.

QM Audio Output Setup Menu

To open the QM AUDIO OUTPUT SETUP MENU, press the **QM Output** button on the GENERAL AUDIO SETUP MENU. The QM AUDIO OUTPUT SETUP MENU offers a series of buttons that adjust the program gain, QM Transmit ID and speech EQ.

The **Restore Default Output Settings** button returns all audio parameters on this menu to their default settings. **Program Gain** buttons and Transmit QM ID **Manual** and **Auto** buttons are provided to adjust QM audio output. After these parameters have been set, select the **Return** button to return to the SETUP MENU.

QM AUDIO OUTPUT SETUP MENU



Refer to the following table for additional QM AUDIO OUTPUT SETUP MENU details.

QM Audio Output Setup Details

QM AUDIO OUTPUT SETUP MENU CONTROLS	DESCRIPTION
Restore Default Output Settings	Returns the settings on this menu to their factory defaults.
Program Gain	This controls the volume of the QM Program audio sent to the QM output.
Transmit QM ID	This determines the QM ID transmitted to the next device in the installation.
Manual	Enables the Down and Up buttons to manually set the transmitted QM ID.
Auto	Sets the QM ID to the devices Cresnet ID

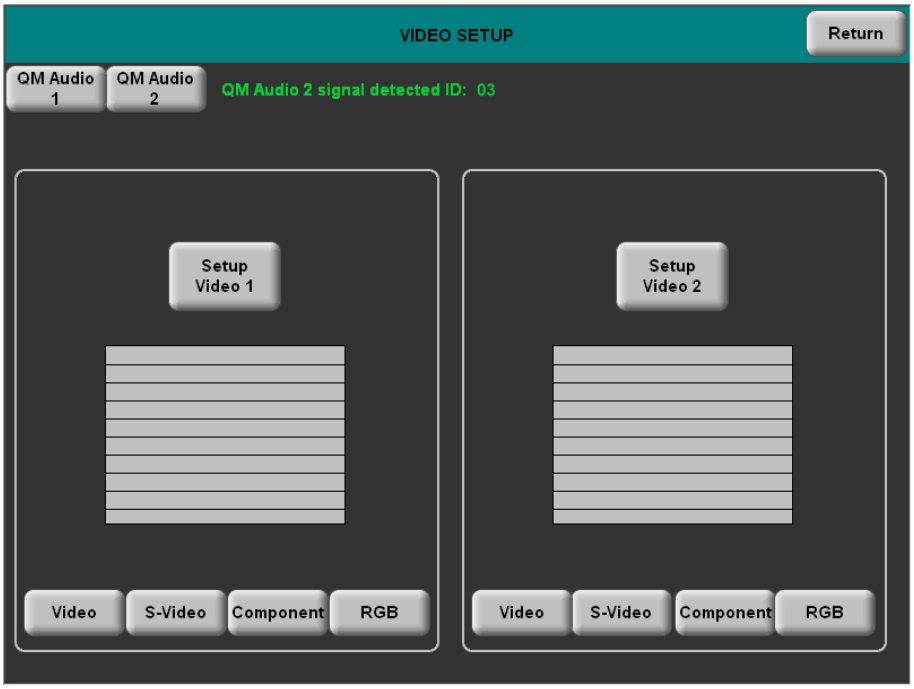
Video Menu

The TPS-G-TPI can display two fully-scalable and movable, full motion video windows, each supporting standard video, HDTV and high-resolution RGB signals from external AV and computer sources. These units use auto-detect for composite, S-video, component or RGBHV. They support SDTV (NTSC and PAL), EDTV, HDTV and RGB (VGA) up to UXGA (1600 x 1200). Two video inputs provide for connectivity to QuickMedia. You can perform Auto Detect by selecting **QM Audio 1** or **QM Audio 2** or manually choose **Video, S-Video, Component or RGB** as an input source. **Enable Black & White** can also be selected for either video channel.

A table describing the video menu controls follows the illustrations.

Touching on the **Video** button on the SETUP MENU, will open the screen shown below. From here, you can enter the setup screens for both Video 1 and Video 2 by touching their respective buttons.

VIDEO SETUP



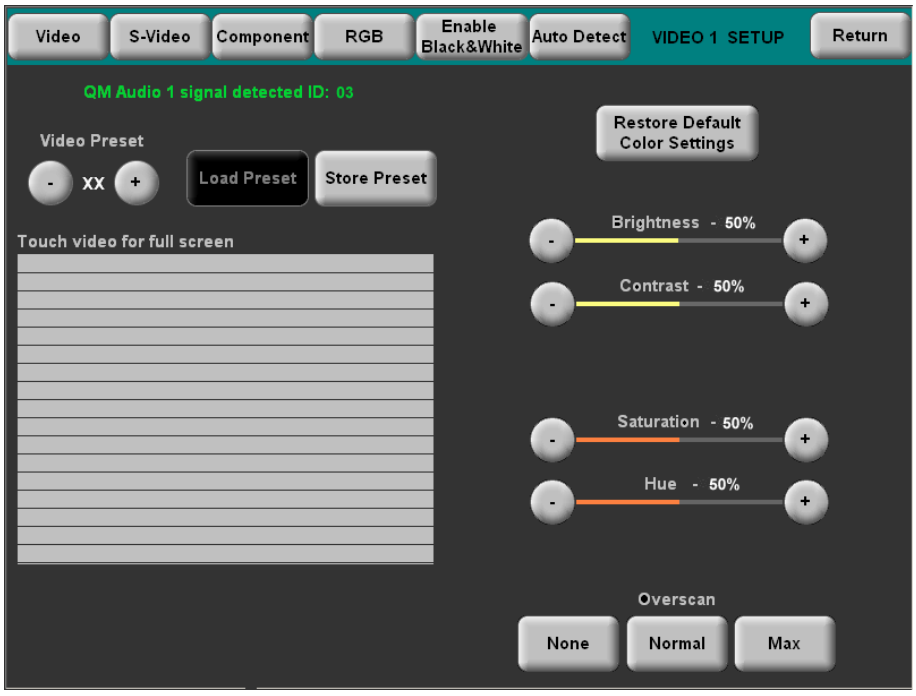
Refer to the following table for additional VIDEO SETUP MENU details.

Video Setup Details

VIDEO SETUP SCREEN CONTROLS	DESCRIPTION
QM Audio 1	Detects the presence of QM Audio on channel 1 when selected.
QM Audio 2	Detects the presence of QM Audio on channel 2 when selected.
Setup Video 1	Displays the VIDEO 1 SETUP MENU. By default, the VIDEO 1 SETUP MENU displays video controls: Brightness, Contrast, Saturation and Hue on the right side of the menu.
Video	Pressing this before pressing the **Setup Video 1** button will open the VIDEO 1 SETUP MENU in Video mode.
S-Video	Pressing this before pressing the **Setup Video 1** button will open the VIDEO 1 SETUP MENU in S-Video mode.
Component	Pressing this before pressing the **Setup Video 1** button will open the VIDEO 1 SETUP MENU in Component mode.
RGB	Pressing this before pressing the **Setup Video 1** button will open the VIDEO 1 SETUP MENU in RGB mode.
Setup Video 2	Displays the VIDEO 2 SETUP MENU. By default, the VIDEO 2 SETUP MENU displays video controls: Brightness, Contrast, Saturation and Hue on the right side of the menu.
Video	Pressing this before pressing the **Setup Video 2** button will open the VIDEO 2 SETUP MENU in Video mode.
S-Video	Pressing this before pressing the **Setup Video 2** button will open the VIDEO 2 SETUP MENU in S-Video mode.
Component	Pressing this before pressing the **Setup Video 2** button will open the VIDEO 2 SETUP MENU in Component mode.
RGB	Pressing this before pressing the **Setup Video 2** button will open the VIDEO 2 SETUP MENU in RGB mode.

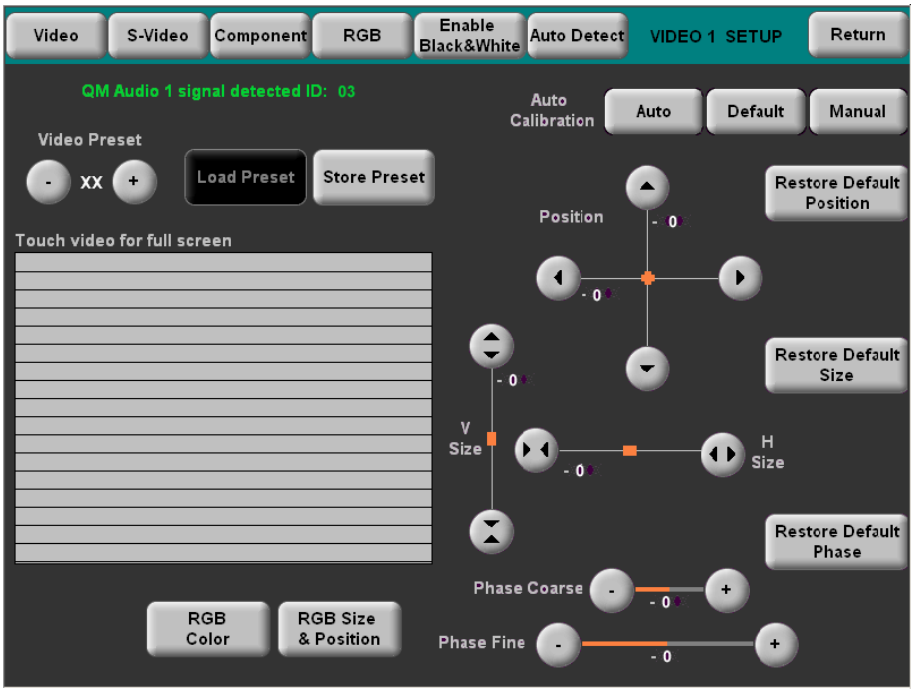
The following screen is displayed when Video, S-Video or Component are selected.

VIDEO 1 SETUP –VIDEO, S-VIDEO AND COMPONENT



The video menu for RGB controls consists of Preset Controls and Color and Size & Position submenus. Touching the **RGB Color** button enables controls for Brightness, Contrast, Red, Green, and Blue. Touching the **RGB Size & Position** button enables Position, Size and Phase controls.

VIDEO 1 SETUP RGB (Size and position shown)



Refer to the following table for additional VIDEO 1 SETUP details.

Video Setup Details – Video, S-Video, Component and RGB

VIDEO SCREEN CONTROLS	DESCRIPTION
QM Signal	Field indicates the presence of a QM signal.
Video Preset	Displays the current Video Preset number. Saved presets can also be called up using this control.
Load Preset	Will load the selected Video Preset.
Store Preset	Will store any changes you've made to the Video setup at the displayed preset number.
Restore Default Color Settings	Restores the color settings to their original defaults.
Color Control	When Video, S-Video or Component is selected as the video type, these controls are available. The **Restore Default Color Settings** button places the controls at midpoint.
Brightness [1, 2]	Adjusts video image brightness in the signal.
Contrast [1, 2]	Adjusts video image contrast in the signal.
Saturation[3]	The saturation, or intensity of color in the video image can be adjusted with the plus and minus buttons.
Hue[3]	The hue, or tint of the video image is adjusted with the plus and minus buttons.
Red [1, 2]	Adjusts the amount of red in the video signal. Available when the **RGB Color** button is selected.
Green [1, 2]	Adjusts the amount of green in the video signal. Available when the **RGB Color** button is selected.
Blue [1, 2]	Adjusts the amount of blue in the video signal. Available when the **RGB Color** button is selected.

Video Setup Details – Video, S-Video, Component and RGB (continued)

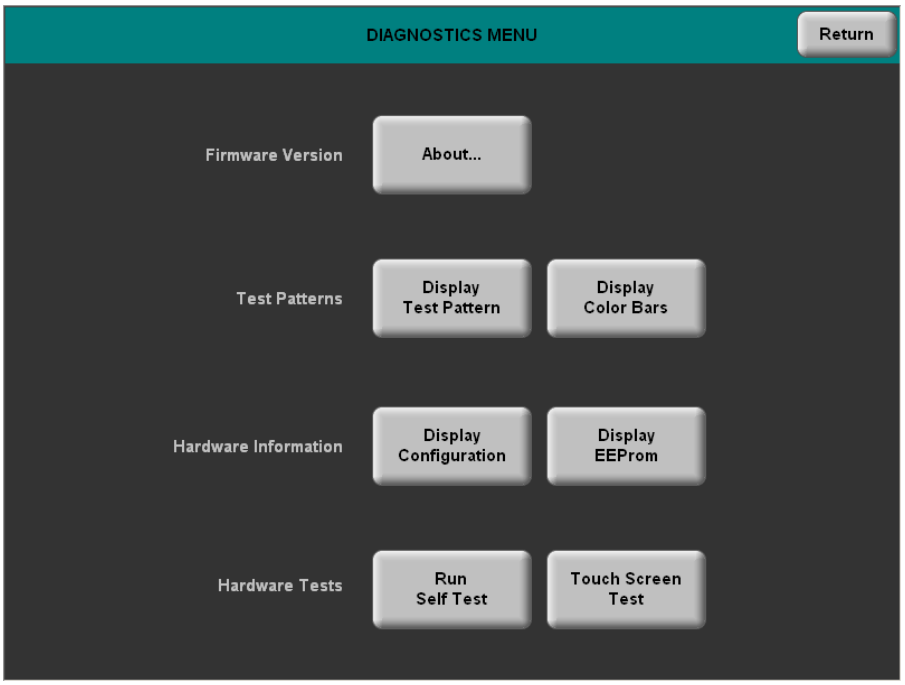
VIDEO SCREEN CONTROLS	DESCRIPTION
Overscan[3]	These controls adjust the amount of video information at the edges of the image. This part of the video picture is usually beyond the display capabilities of the screen.
None[3]	Sets the video screen so there is no overscan. The amount of used screen area is smallest in this configuration.
Normal[3]	Sets the video screen for normal overscan. This results in more area of the screen being used.
Max[3]	This sets the video screen area to the maximum. The screen area is largest in this configuration. All video information at the edges is visible.
Size and Position	When RGB is selected as the video source, these controls are available when the **RGB Size and Position** button has been pressed.
Auto Calibration	Automatically calibrates the incoming RGB signal for optimal position, size and phase when **Auto** button is pressed. **Default** and **Manual** buttons return the controls to default position and allow manual adjustment respectively.
Position[4]	This control allows you to set the position of the video screen the interface sends to a video device. The arrow buttons move the screen along the X and Y axis.
Restore Default Position[4]	Returns the video screen to its original position as displayed by the interface.
Size[4]	Allows you to set the size of the video screen in both the vertical and horizontal directions.
Restore Default Size[4]	Returns the video screen to it original size as displayed by the interface.
Phase[4]	These controls adjust the phase of the RGB signal. Controls are shown for both course and fine adjustments.
Restore Default Phase[4]	Returns the video signal to its original default phase.

1. Video default is 50% for each of the video parameters (brightness, contrast, red, green, and blue).
2. Adjustment applies to the currently selected video source only.
3. These controls are available only in composite, component and S-video modes. In RGB video, they are analogous to the **Position**, **Width** and **Height** controls.
4. These controls are available only in RGB video mode.

Diagnostics Menu

The **Diagnostics** button from the MAIN MENU contains controls for diagnostic tools. The diagnostic tools should only be used under supervision from a Crestron customer service representative during telephone support. The options available from the DIAGNOSTICS MENU are numeric in nature and their interpretation is beyond the scope of this manual.

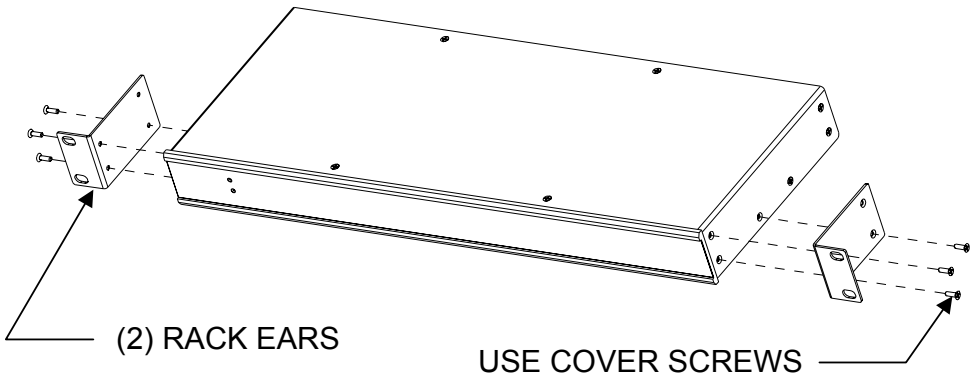
DIAGNOSTICS MENU



Rack Ears Assembly

The TPS-GTPI interface is designed to be rack mounted. Use a standard Phillips screwdriver and attach the rack ears to the TPS-G-TPI as shown in the following diagram.

TPS-G-TPI Rack Ears Assembly



Hardware Hookup

Refer to the following diagrams and complete the video and communications connections as needed in any order. Be sure to connect ground (G) and 24-volt power prior to connecting other cables.

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

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

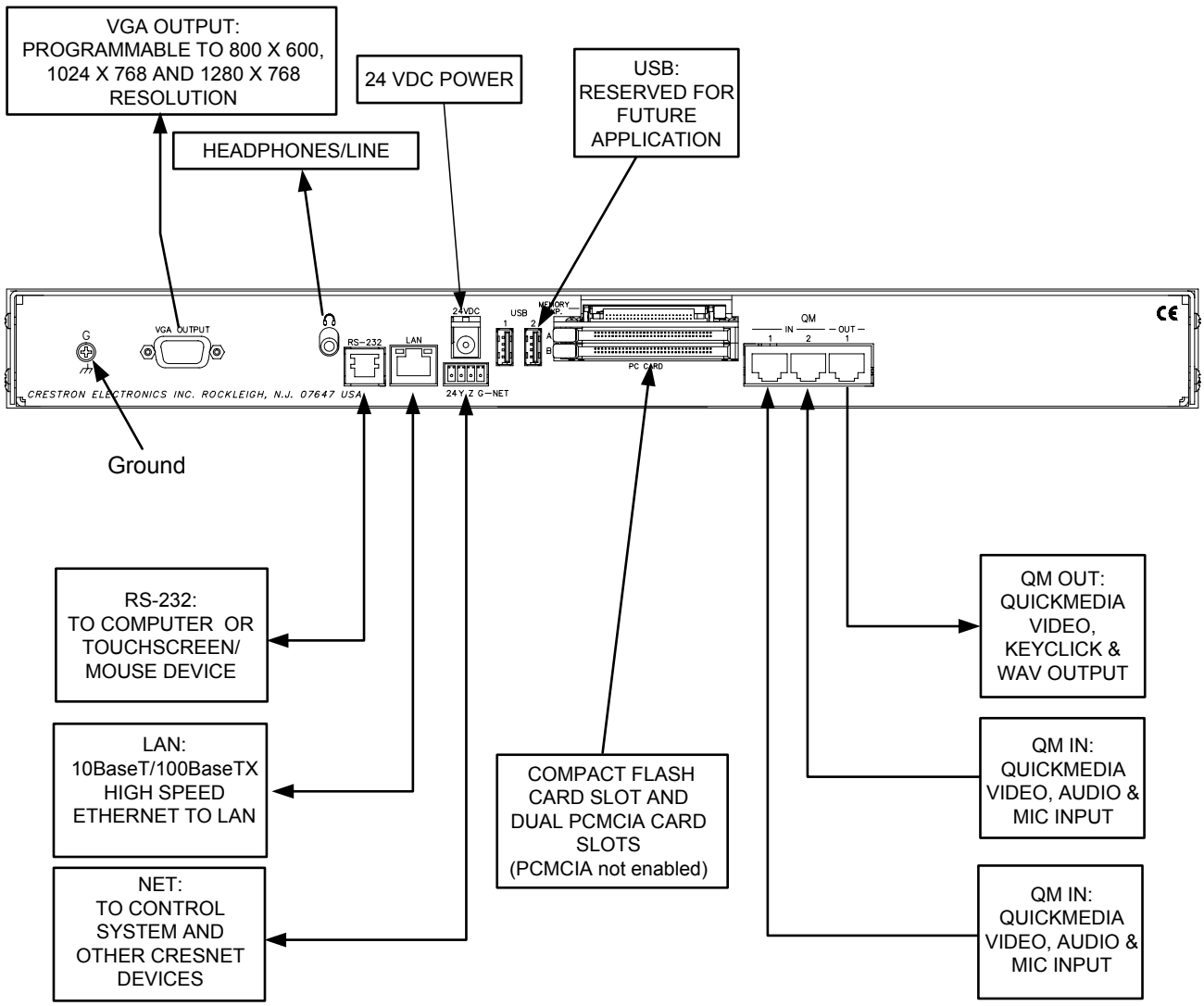
NOTE: Sound from the QuickMedia inputs along with WAV and keyclick is sent to the stereo headphone/line out and QuickMedia output. Mic input received at the QuickMedia inputs is sent to only the QuickMedia output.

NOTE: Audio, video and QuickMedia connections must use Crestron Certified Wire (CresCAT-QM, CresCAT-IM) to ensure optimum performance.

NOTE: Crestron recommends an independent power supply for the TPS-G-TPI when Cresnet power is not available.

Make the required connections as shown and described in the following sections. Refer to the following illustration for proper connections; apply Cresnet with power first.

TPS-G-TPI Hookup



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://www.crestron.com/support. First-time users will need to establish a user account.

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

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

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

Digital, analog and serial join numbers are a common thread between VT Pro-e and SIMPL Windows. These numbers define how the objects on a page of a VT Pro-e project interface to the outside world, specifically the Cresnet system as defined in the SIMPL Windows program. There are digital join numbers that carry out some predetermined function (a logical high or low); analog join numbers for displaying incremental values, sliders, gauges and bar graphs; and serial join numbers that allow for the display of variable text and transmission/reception of serial commands from other manufacturers. Unjoined objects are not interfaced with the system and thus cannot initiate any logic functions (although they can perform page flips).

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.

The following are recommended software version requirements for the PC:

- (Optional but highly recommended) SystemBuilder version 2.0 or later (Requires SIMPL Windows, VT Pro-e, Crestron Database and Crestron Engraver).

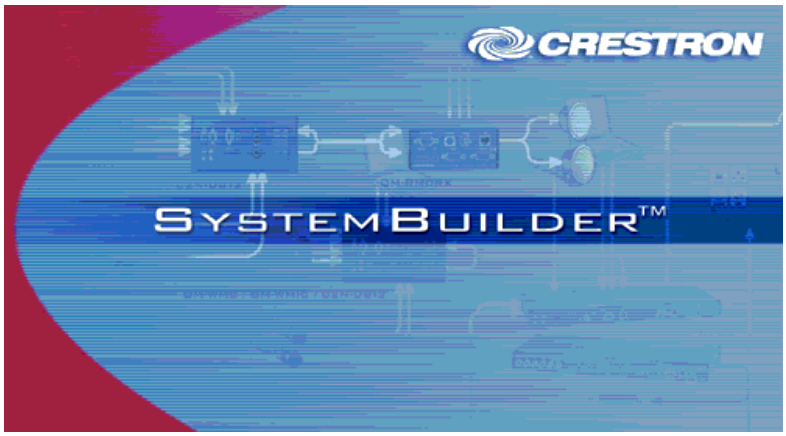
- SIMPL Windows version 2.06.16 or later. Requires SIMPL+® Cross Compiler version 1.1 and Device Library update 342.
- Crestron Database version 17.2.0 or later. Required by SIMPL Windows and VT Pro-e.
- VisionTools Pro-e version 3.4.0.7 or later. Used for graphical touchscreen design.
- Crestron Toolbox version 1.0 or later. Used for communication, file transfer, and many other functions (replaces Viewport).

Programming with Crestron System Builder

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

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

SystemBuilder



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

Programming with SIMPL Windows

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

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

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

NOTE: In the following description, the PRO2 control system is used.

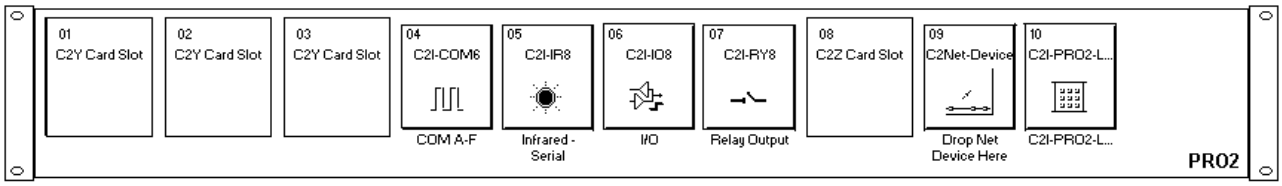
SIMPL Windows is Crestron's software for programming Crestron control systems. It provides a well-designed graphical environment with a number of workspaces (i.e., windows) in which a programmer can select, configure, program, test, and monitor a Crestron control system. SIMPL Windows offers drag and drop functionality in a familiar Windows® environment.

This section describes a sample SIMPL Windows program that includes a TPS-G-TPI interface.

Join Number Remapping (JNR) is a programming concept that allows a TPS Series touchpanel or interface to use join numbers with values over 4000 (Join Numbers 4001 to 15999) by bringing them within the range of the TPS-G-TPI interface symbol, thereby increasing the device's functionality. JNR provides the capability of managing IP IDs in Ethernet applications where a device communicates with multiple control systems that have been uploaded with the same program. Refer to the latest version of the 2-Series Control System Reference Guide (Doc. 6256) and the SIMPL Windows help file for more details.

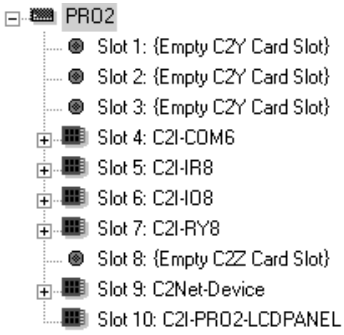
Configuration Manager is where programmers "build" a Crestron control system by selecting hardware from the *Device Library*. In Configuration Manager, drag the PRO2 from the Control Systems folder of the *Device Library* and drop it in the upper pane of the *System Views*. The PRO2 with its associated communication ports is displayed in the *System Views* upper pane.

PRO2 System View



The *System Views* lower pane displays the PRO2 system tree. This tree can be expanded to display and configure the communications ports.

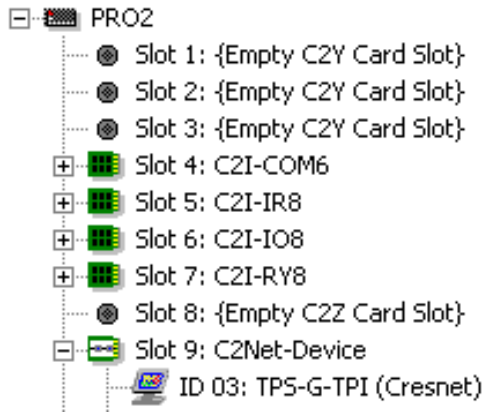
Expanded PRO2 System Tree



C2Net-Device Slot in Configuration Manager

To incorporate the TPS-G-TPI interface into the system, drag it from the Touchpanels folder (Cresnet) of the *Device Library* and drop it on the C2Net-Device Slot. The PRO2 system tree displays the interface in Slot 9, with a default Net ID of 03, as shown in the following illustration. Additional interfaces will be added with the next available Net ID number.

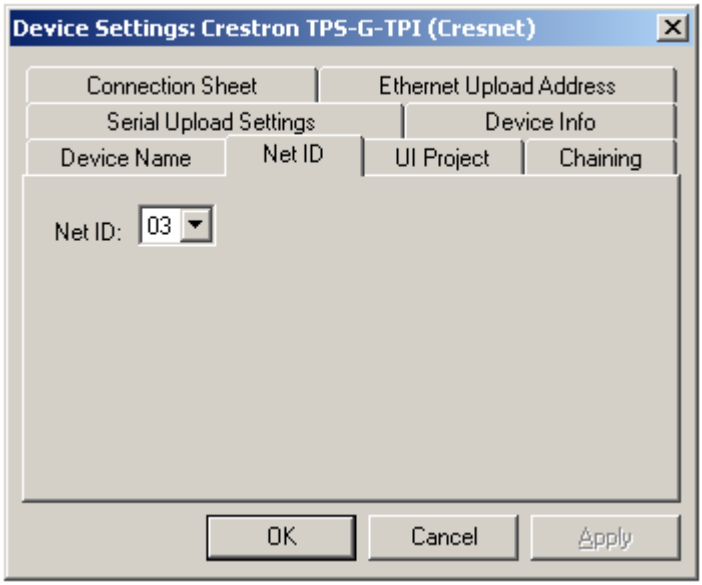
C2Net Device, Slot 9



Setting the Net ID in Device Settings

Double-click the TPS-G-TPI icon in the upper pane to open the "Device Settings" window. This window displays TPS-G-TPI device information. If necessary, select the *Net ID* tab to change the Net ID, as shown in the following figure.

"Device Settings" Window for the TPS-G-TPI



NOTE: This procedure sets the Net ID for the TPS-G-TPI interface in the program only. It does not automatically set the Net ID for the interface itself. SIMPL Windows automatically changes Net ID values of a device added to a program if a duplicate device or a device with the same Net ID already exists in the program. Always ensure that the hardware and software settings of the Net ID match. For Net ID hardware settings details, refer to "Interface Menu" which begins on page 16.

TPS-G-TPI Symbol in Programming Manager

Programming Manager is 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*. A description for each signal in the symbol is described in the SIMPL Windows help file (**F1**).

Example Program

An example program for the TPS-G-TPI is available from the "Example Program" section of the Crestron website (http://www.crestron.com/tools_and_resources/programming_and_integration_resources/example_programs.asp). Search for TPS-G-TPI.zip.

Programming with VisionTools Pro-e

VT Pro-e, a design and programming Windows®-based software, permits the creation of unlimited control screen variations incorporating two and three-dimensional graphics and text as well as video and sounds (recorded as WAV files). A set of pages, which make up a project, can be designed for each TPS-G-TPI application. Each page contains objects such as custom control graphics, two and three-dimensional buttons, sliders, and digital readouts which allow the user to interact with the control system via join numbers. Unjoined objects are not recognized by the system and thus cannot initiate any functions. The completed and compiled project is uploaded to the TPS-G-TPI interface and programmed into the flash PROM via the **File | Upload Project** command. The interface uses the programmed project until another set is uploaded from the PC. The PC may be disconnected from the control system or interface except during reprogramming. VT Pro-e also allows users the option to generate projects destined for web browsers rather than for physical interfaces.

For additional software information, refer to the help file provided with the software. The latest version of VT Pro-e can be obtained from the Crestron website.

Multi-Mode Objects

Multi-mode objects offer high-performance programming!

The single most-advanced VT Pro-e high-performance programming technique involving the TPS-G-TPI 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 http://www.crestron.com/downloads/example_programs.asp and search for Multi-mode object examples. This file contains the VT Pro-e interface files and SIMPL Windows files that illustrate the high-performance capabilities of multi-mode objects.

WAV File Audio Messages

The TPS-G-TPI interfaces are capable of producing (via headphone jack) or transmitting (via QuickMedia) 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™. 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 TPS-G-TPI interfaces only accept the following WAV file format: **PCM, 8KHz, mono, 8-bit**. 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 an interface 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 interfaces directly or may be edited with the Sound Recorder. For example, the individual files can be combined to create custom messages.

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

Bit Depth and File Size

A bit depth refers to the number of memory bits used to store color data for each pixel in a raster image. A TPS-G-TPI 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, contains 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, but (since the human eye is more sensitive to the color green) 6-bits to represent 64 levels of green. These can therefore be combined to provide 65,536 mixed colors (32 x 32 x 64 = 65,536).

In a 24-bit graphics display, the video memory allocates 24 bits for each pixel on the screen, enabling each pixel to take on any one of a possible 16.7 million colors. Each 24-bit value is composed of 8-bits for red, 8-bits for green, and 8-bits for blue. These triplets of 8-bit values are also referred to as the red, green, and blue color planes. A 24-bit image is actually composed of three component images, which combine to create the truecolor picture. The reason this is called truecolor is that this is around 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 translucency. The 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, 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 a majority of 8-bit or 16-bit graphics, and holding the 32-bit graphics to a minimum (ex. for a family photo, etc.), you can create a sophisticated project that will fit in the memory space provided, and have the interface remain very responsive.

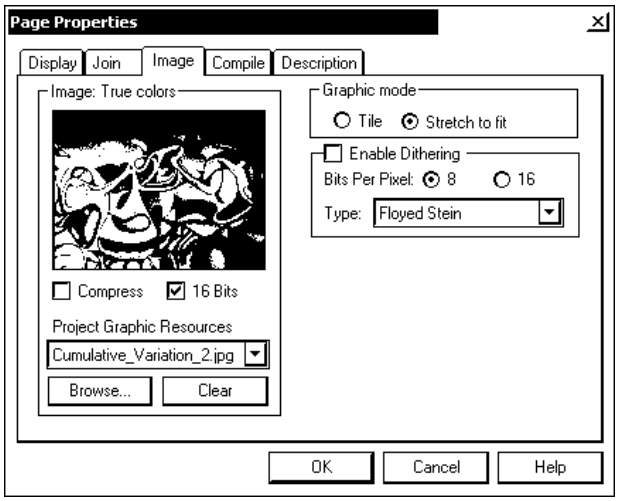
Relationship of Bits to Colors

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

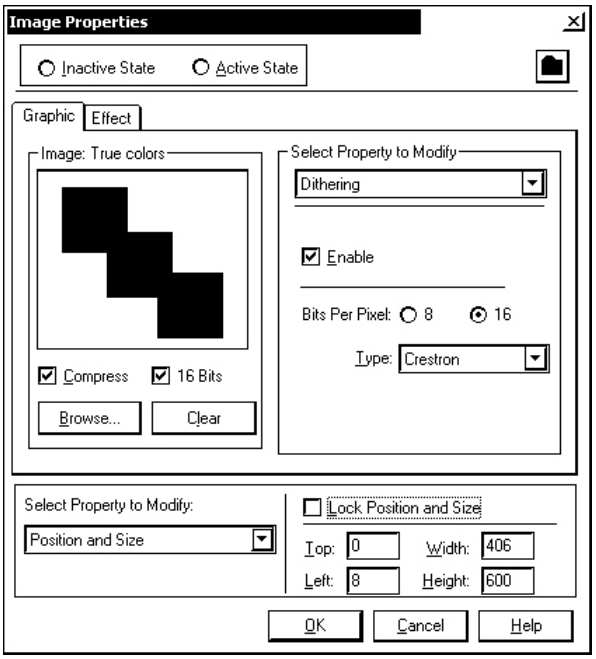
When creating a VT Pro-e project, you can elect to compress and reduce the image size in the "Page Properties" window for the entire page, and/or perform the same function of reducing the image size using the "Image Properties" window. A reduction in image size will save a considerable amount of memory 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. Various dithering types are available. 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 8 bits to represent a character, e.g. English, French, German, Hebrew, Russian, Thai, etc.

Multibyte character fonts require more than the usual 8 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 issues with multibyte characters – static text on buttons and indirect text on buttons. No Isys touchpanel or interface firmware changes are required in either case.

Static text on a button, entered in the standard way in VT Pro-e, always works under Windows 98. Under Windows XP, you must use VT Pro-e 3.0 or later.

Indirect text on a button is entered in VT Pro-e and the actual string to be displayed is entered in SIMPL Windows. You must use VT Pro-e 3.0 or later to guarantee that the full set of characters in the font is stored in the interface. You must use SIMPL Windows 2.03.11 or later to enter Chinese characters directly. 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 character interspersed with numbers. You can enter Chinese characters or numbers in separate strings. Crestron is working to incorporate mixed single and multibyte string capability in the near future.

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 is available in many international languages, and add-on software is available for other versions of Windows.

Uploading and Upgrading

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

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

NOTE: The Crestron Toolbox is a broad-based software package that accomplishes multiple system tasks, primarily using an RS-232 or TCP/IP connection between a PC and one or more Crestron control systems.

The following sections define how to upload a SIMPL Windows program, VT Pro-e project, or upgrade interface firmware. However, before attempting to upload or upgrade, it is necessary to establish communications between the PC and the device.

Establishing Communications

When communicating with an interface from a PC, one of three communication methods can be used.

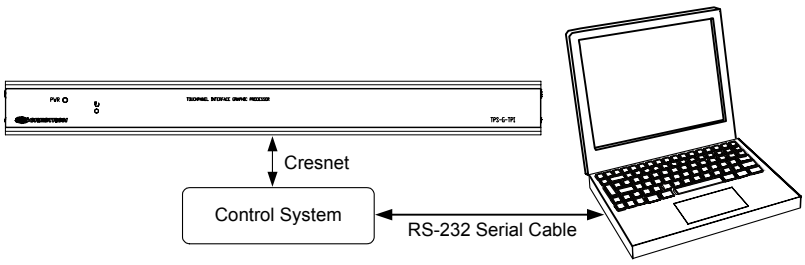
- Indirect RS-232 serial communication via control system
- Direct RS-232 serial communication
- TCP/IP communication

Indirect Serial Communication via Control System

The procedure in this section provides details for RS-232 communication between the PC and the interface via the control system. This method can be used to communicate with the control system directly and with an interface via the control system's Cresnet connection.

Refer to the following figure for a typical connection diagram connecting to an interface via a control system.

Indirect Serial Communications Setup Connections

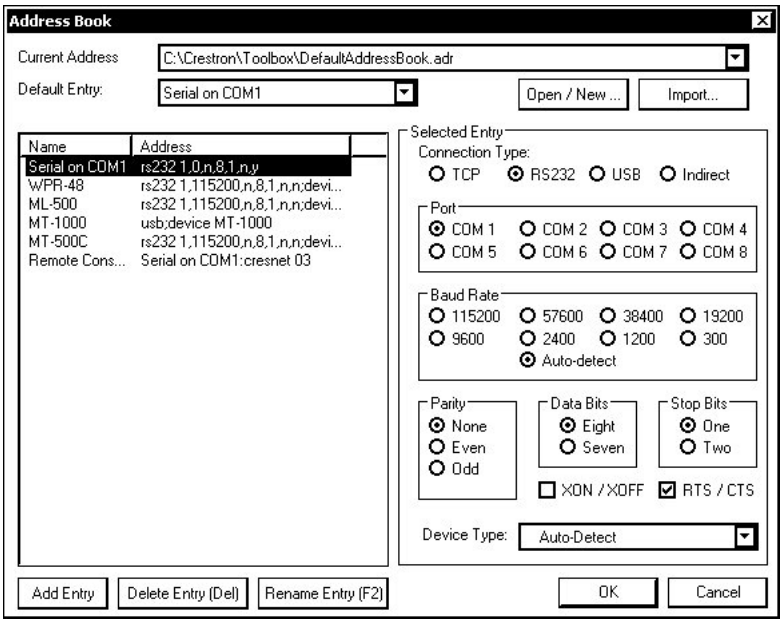


1. Ensure that all devices are connected to the control processor and the control processor is connected via serial cable to the PC.
2. Open Crestron Toolbox and click **Tools | Manage Address Book** to display a list of available devices. Select **Serial on COM1** as the connection type. **Serial on COM1** is an entry in the DefaultAddressBook that is included with Crestron Toolbox.

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

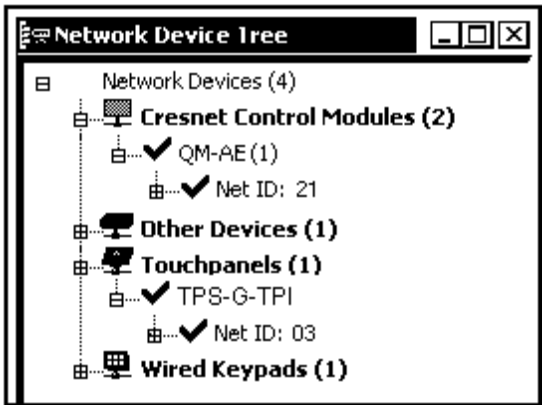
   - Port = COM 1 through COM 8. Select the correct COM port on the PC.
   - Baud rate = Auto-Detect.
   - Parity = None.
   - Number of data bits = 8.
   - Number of stop bits = 1.
   - Hardware handshaking (RTS/CTS) enabled.
   - Software handshaking (XON/XOFF) not enabled.

"Address Book" Window – Serial Setup



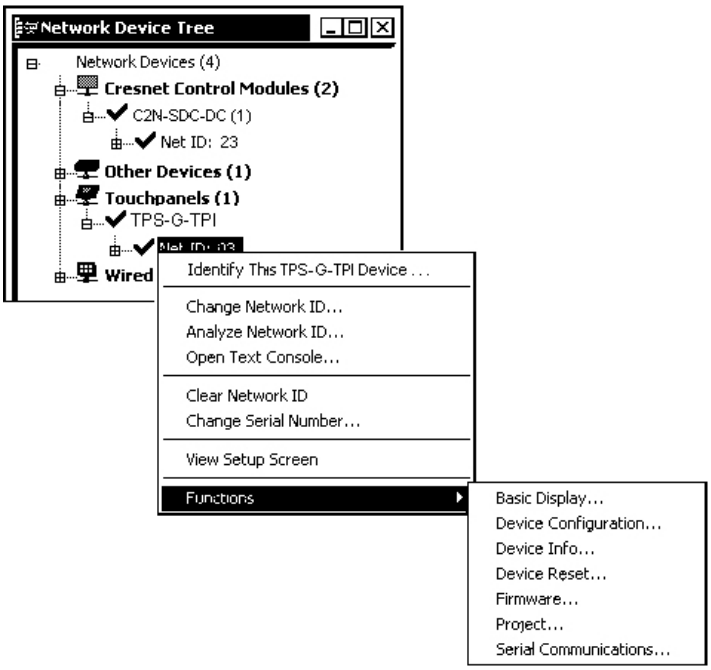
3. After setting the correct parameters, click **OK** to return to the Crestron Toolbox main window.
4. Click **Tools | Network Device Tree**, or click the network device tree icon  to display the devices in the system. Communications are confirmed when the network devices are displayed.

Network Device Tree



To view a specific device, expand the network device tree by clicking +. Expand the network device tree till the device to be managed is selected. Right-click the desired Net ID to open the sub-menu. This menu provides a wide range of functions, including; change the Net ID, open text console, upload project, update firmware, etc.

Network Device Tree Sub-Menu -Functions



NOTE: Toolbox displays a customized list of functions depending on the type of device with which it is communicating.

Direct Serial Communication

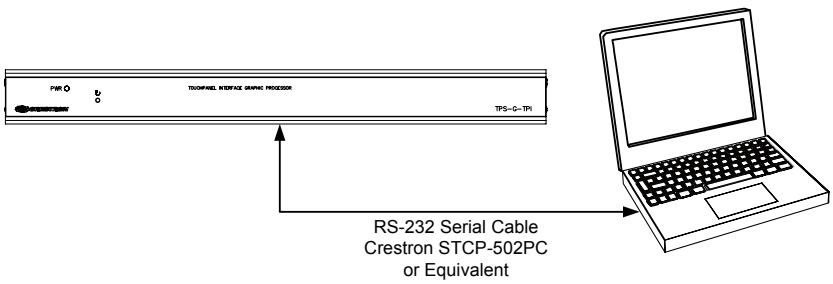
Crestron devices that have an RS-232 port can be connected directly to a PC.

To prepare the interface for direct communication from a PC, refer to the following figure. Connect the RS-232 port of the computer directly to the RS-232 port of the interface using Crestron Cable Number STCP-502PC. Refer to page 7 for pin assignments.

NOTE: Direct serial communication is a faster method for transferring programming and projects than indirect serial communication, which uses the control system's Cresnet connection.

NOTE: Configure the TPS-G-TPI interface so that the RS-232 port can be used as a console port. Navigate to the INTERFACE MENU and select the **Console** button. Refer to "Interface Menu" on page 16.

Direct Serial Communications Setup Connections



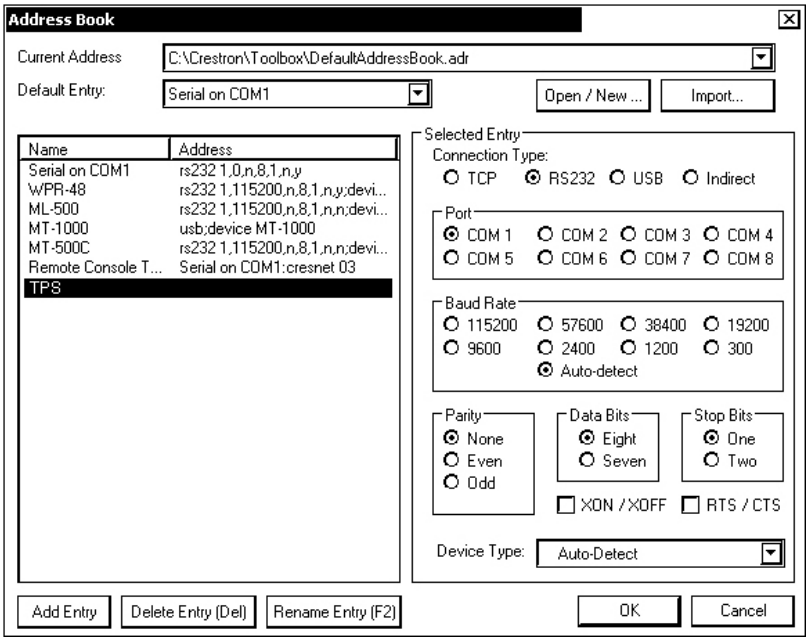
1. Apply power to the interface.

2. Open Crestron Toolbox.
3. Click the **Address Book** icon , or select **Tools | Manage Address Book** to open the Address Book. The Address Book allows you to maintain a list of accessible control systems and network devices. You can establish a session with any or all of the devices in the address book (provided the PC has a valid connection to each Cresnet or Ethernet network).
4. Select the device from the Address Book or click **Add Entry** and type a name for the new device, such as **Interface Direct**.
5. Select **RS232** as the *Connection Type* and select the serial settings of the device. This sets the PC to the same serial settings. Enter the settings and click **OK**.

   For the interface, the default settings are:

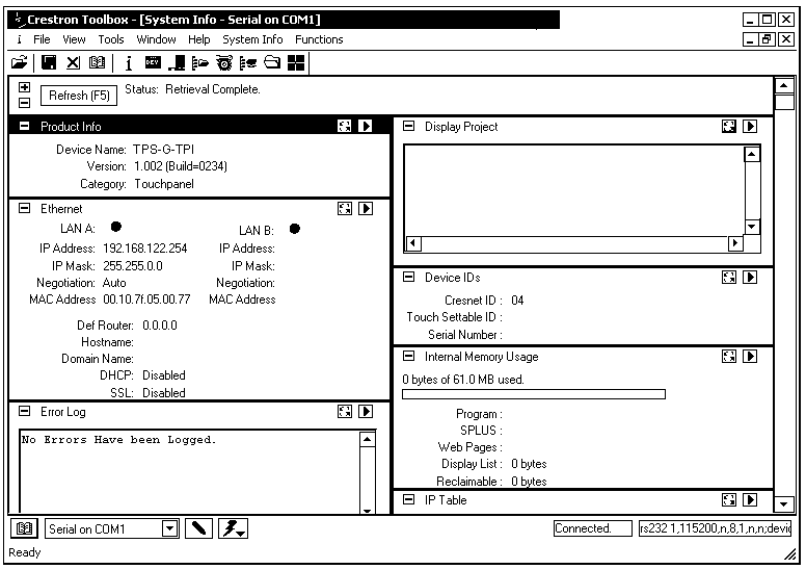
   - Port = COM 1
   - Baud Rate = 152000 (or select Auto-Detect)
   - Parity = None
   - Data Bits = 8
   - Stop Bits = 1
   - Hardware Handshaking (RTS/CTS) = Off
   - Software Handshaking (XON/XOFF) = Off

   Crestron Toolbox Address Book Setup



6. Select **Tools | System Info** or click the System Info icon . Select **Direct** from the drop down list at the bottom of the window if it is not already selected. If communication is successful, the "System Info" window displays the operating system, Cresnet ID, connection parameters, memory usage, and hardware information.

Toolbox – System Info



The *Functions* menu may now be used to upload a project, update firmware, and reset the network ID.

Toolbox Functions Menu – Specific to TPS-G-TPI

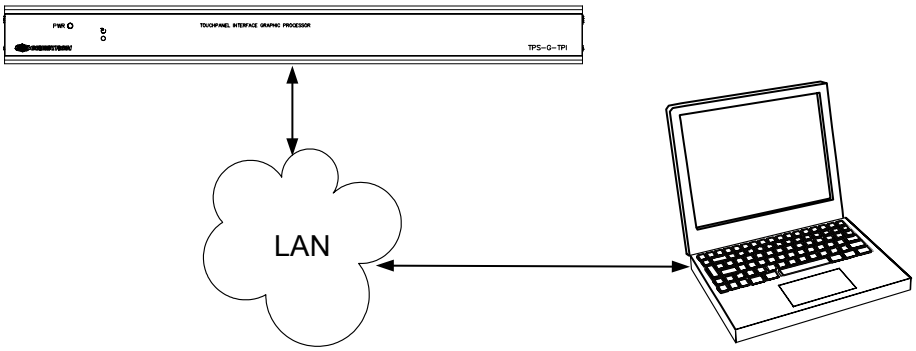
NOTE: The list of functions depends on the type of device.

TCP/IP Communication

This section explains how to configure a TPS-G-TPI to communicate over Ethernet using TCP/IP. These procedures assume that the interface has been powered up and connected properly.

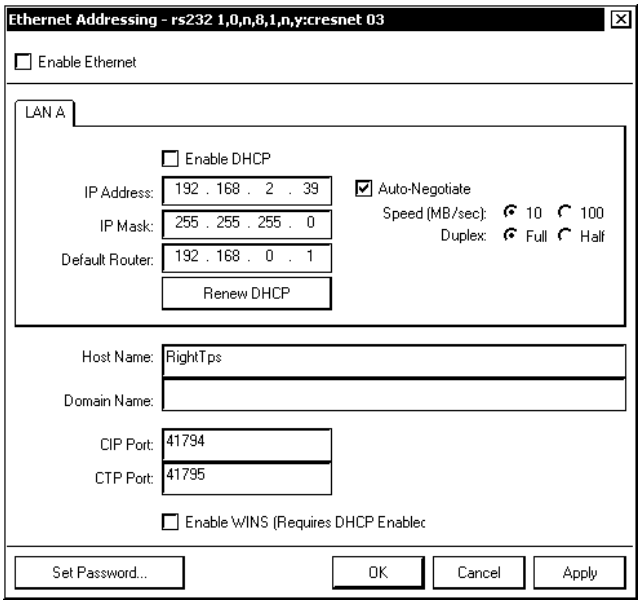
PC-to-interface communications can be implemented over TCP/IP as shown in the following diagram. TCP/IP is the fastest method of communicating between the PC and the interface.

Typical Connection Diagram when Uploading a Project or Firmware to the Interface via TCP/IP



1. To establish TCP/IP communications with the interface, a serial connection must be established between the PC and interface. Refer to "Indirect Serial Communication" on page 41 or "Direct Serial Connection" on page 43 for instructions.
2. While connected to the interface, select **Functions** | **Ethernet Addressing**. The current IP address, IP mask and default router are displayed.

"Ethernet Address" Window



3. Enter a new IP address, IP Mask, Default Router, or select **Enable DHCP** and click **OK**.

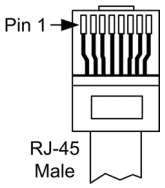
NOTE: The interface is capable of communicating via DHCP (Dynamic Host Configuration Protocol). A network server uses this protocol to dynamically assign IP addresses to networked devices. The DHCP client is not guaranteed to have a particular TCP/IP address at any given time. If the DHCP is disabled, the network administrator must assign the IP address. The Interface menu provides an enable/disable feature for Ethernet and CIP (Crestron Internet Protocol).

4. Ensure that all devices are connected to the control processor. For TCP/IP, use CAT5 straight through cables with 8-pin RJ-45 connectors to connect the LAN port on the interface and the LAN port on the PC to the Ethernet hub. Alternatively, you can use a CAT5 crossover cable to connect the two LAN ports directly, without using a hub. The following figure illustrates

pinouts for straight through and crossover RJ-45 cables. Pins 4, 5, 7, and 8 are not used.

RJ-45 Straight Through Cable – For Connection Through Hub

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

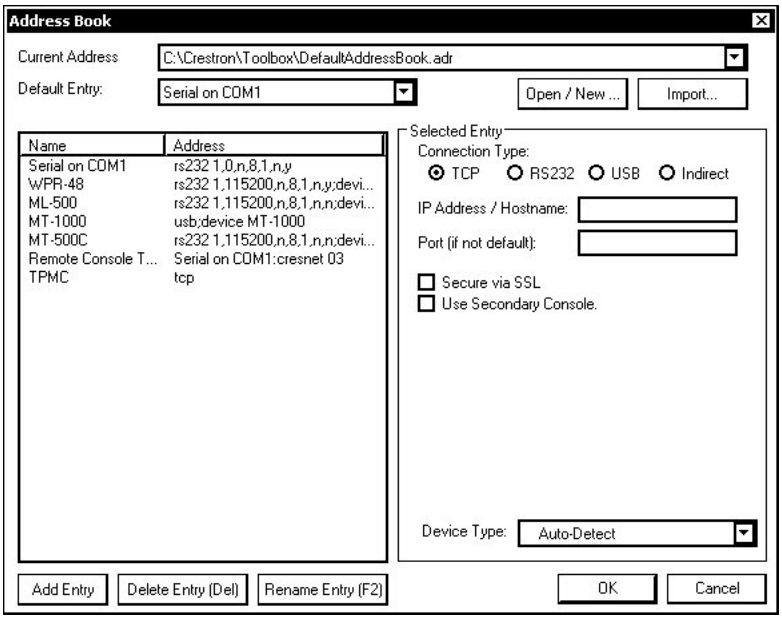


RJ-45 Crossover Cable – For Direct PC Connection

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

5. Once the cable connections are made, open Crestron Toolbox and click **Tools | Manage Address book** to display the "Address Book" window.
6. Select the interface from the address book or click **Add Entry** and type a new name for the new device, such as **TPS**.
7. Click **TCP** as the connection type. Enter the IP address or hostname of the interface and click **OK**.

"Address Book" Window – TCP/IP Setup



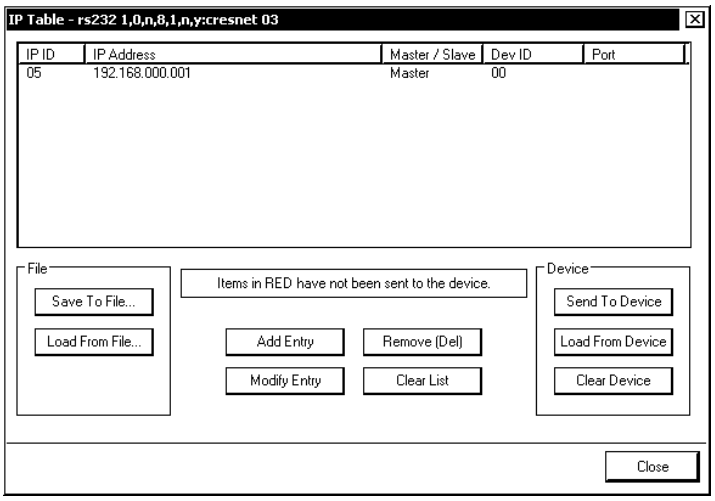
8. Click **Tools | System Info** to display the "System Info" window. From the pull-down menu at the lower left of the window, select the entry created in step 7.

If the interface is to communicate with a control system over TCP/IP, an IP table must be created on the interface to identify the control system(s) it will communicate with over TCP/IP.

Use the following instructions to create the IP table.

1. Select **Functions | IP Table Setup** from the Toolbox menu bar.

"IP Table" Window

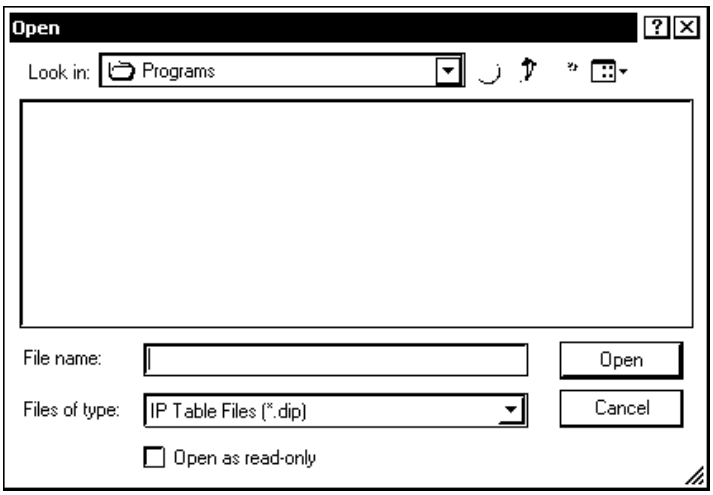


2. If the interface already has an IP table, it is displayed at the top of the window.
3. Click **Add Entry t**o add a new IP table entry or select an existing IP entry from the list and click **Modify Entry**. Up to 252 entries can be listed on a interfaces IP table. Click **Remove [Del]** to remove a selected IP entry or click **Clear List** to remove all of the entries from the IP table.

NOTE: IP table entries that have not yet been sent to the device are listed in red.

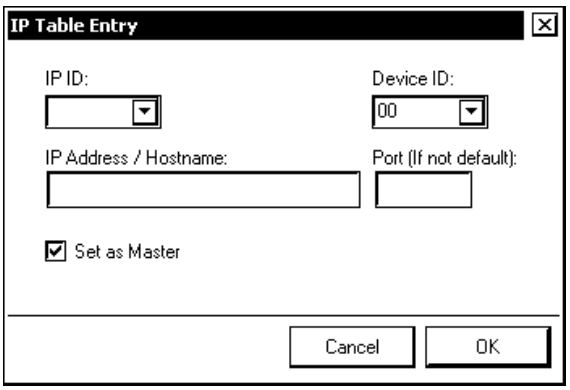
4. Click **Load From File…** to browse for a saved IP table.

"Open" Window



5. To enter a new IP ID, select the hexadecimal IP ID of the control system from the *IP ID* list. The IP ID of the control system must match the IP ID that is specified for the interface in the SIMPL Windows program.

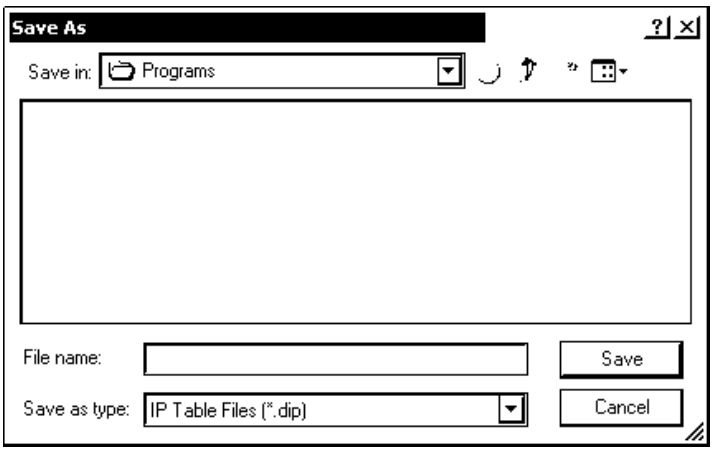
"IP Table Entry" Window



NOTE: All IP table entries are set as Master and cannot be changed.

6. In the *IP Address/Hostname* field, enter the static IP address of the control system, or if the control system is DHCP-enabled, its fully qualified domain name. After entering all of the information, click **OK** to add the device to the IP table.
7. Repeat this procedure for all the control systems that will control the interface.
8. Click **Save To File…** on the "IP Table" window to save this IP table to the PC.

"Save As" Window



9. Once all of the control systems have been listed, click **Send to Device** on the "IP Table" window to upload the IP table to the interface. The interface will reboot and all of the table entries will be listed in black.

NOTE: The control system IP table for the TPS-G-TPI must have a loopback entry of 127.0.0.1 to indicate a gateway.

NOTE: When an IP table is sent to the interface, the previously loaded IP table is overwritten.

Troubleshooting Communications

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

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

Uploading a SIMPL Windows Program

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

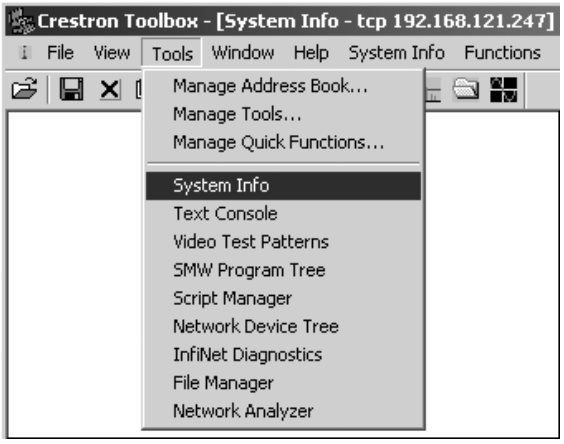
Upload via SIMPL Windows

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

Upload via Crestron Toolbox

1. Verify that the procedure for "Establishing Communications" that begins on page 41 has been performed to establish a connection between the PC and the control system.
2. Open Crestron Toolbox.
3. Select **Tools | System Info.**

Crestron Toolbox – Tools | System Info



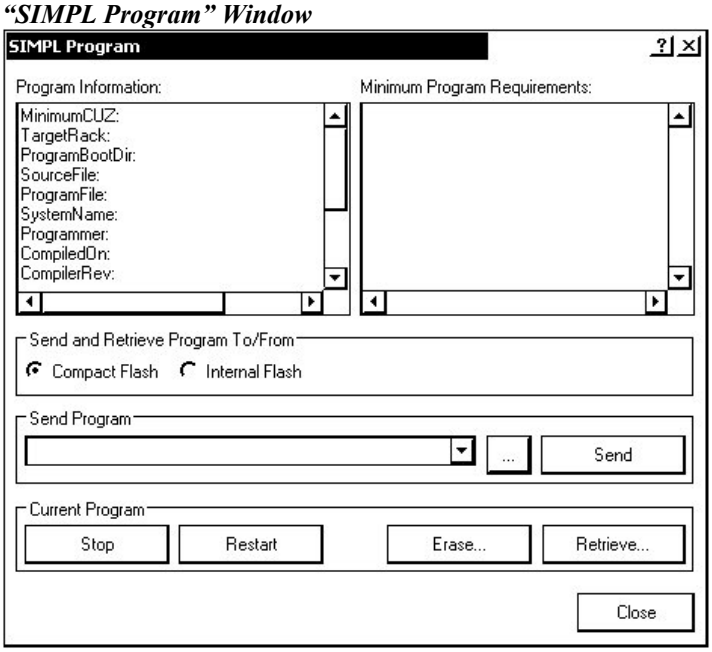
4. Click on the Address Book icon and select the desired connection to the control system and click **OK**. The "System Info" window will update to display the connection information and the Functions menu is populated.
5. Select **Functions | SIMPL Program**.

   The "SIMPL Program" window contains information about the currently loaded SIMPL program (if any), and permits you to stop, start, erase, retrieve, and upload a SIMPL program. This menu also permits you to upload to compact flash or internal flash.

CAUTION: Verify that any compact flash used either contains no files or only contains files you want loaded to the interface prior to inserting into the interface. When unknown files reside on the compact flash, existing files on the interface may be overridden or erased if the interface reboots.

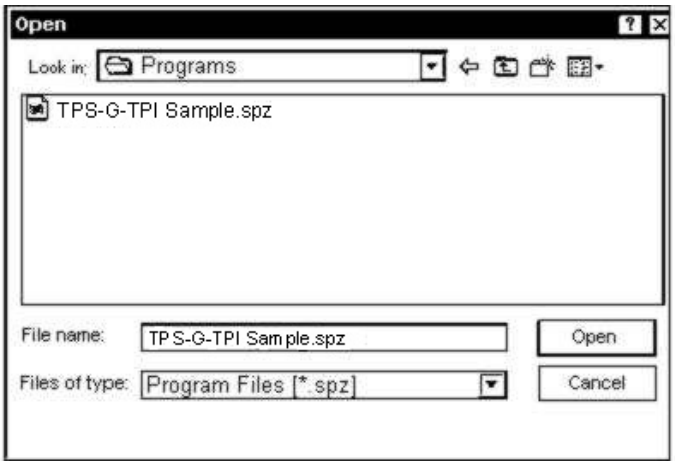
NOTE: The current suggested maximum project size is 170MB or less. Projects larger than this may load without error, but may not display correctly.

"SIMPL Program" Window



6. Click the **Browse** button to locate a compiled (.spz) program.

"Open" Window



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

Uploading a VT Pro-e Project

The VT Pro-e file can be uploaded to the interface using VT Pro-e or via the Crestron Toolbox. If uploading to a touchpanel or interface that has an external compact flash slot, Crestron Toolbox should be used. The TPS-G-TPI interface source file has the extension .vtp. A compiled VT Pro-e file has the extension .vtz.

CAUTION: Verify that any compact flash used either contains no files or only contains files you want loaded to the interface prior to inserting into the interface. When unknown files reside on the compact flash, existing files on the interface may be overridden or erased if the interface reboots.

NOTE: The current suggested maximum project size is 170MB or less. Projects larger than this may load without error, but may not display correctly.

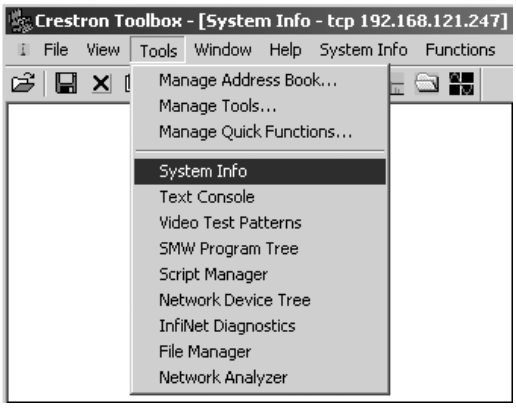
Upload via VT Pro-e

Please use Crestron Toolbox. VT Pro-e does not properly support the more advanced file system of the TPS-G-TPI interface.

Upload via Crestron Toolbox

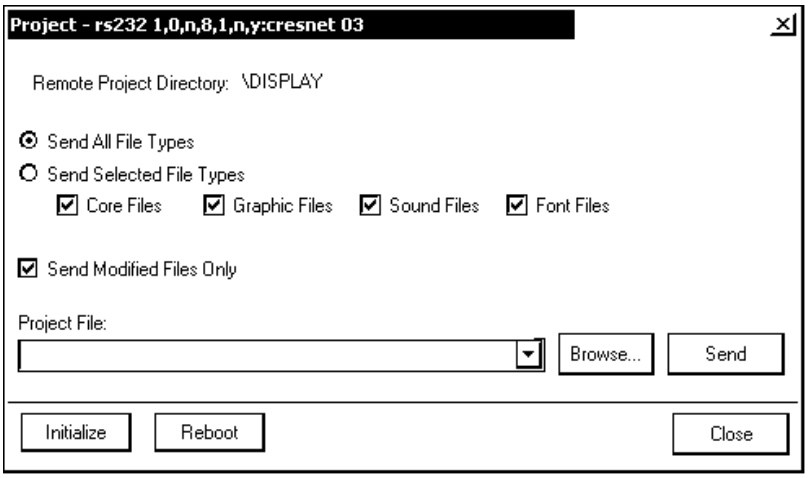
1. Verify that the procedure for "Establishing Communications" that begins on page 41 has been performed to establish a connection between the PC and the interface.
2. Open Crestron Toolbox.
3. Select **Tools | System Info.** Click on the Address Book icon and select the desired connection and click **OK**. The "System Info" window will display the connection information.

Crestron Toolbox – Tools | System Info



4. When the "System Info" window appears, and you are connected to the interface and the Functions menu is populated.
5. Select **Functions | Project** (alternatively, press **Alt+P**).
6. The "Project" window is used to select the project to be uploaded to the interface.

"Project" Window



Each time a project is selected using the **Browse** command, that project is added to the *Project File* drop-down list. This makes it convenient to recall projects without the need to browse to a directory.

- **Send All File Types** sends the entire project.
- **Send Selected File Types** sends only the file types that are selected.
- **Core Files** are files that include interface logic, join number remapping, and other files related to interface functionality.
- **Graphic Files** are graphics that are displayed on the touchpanel screen attached to the interface. **Sound Files** are WAV files that are assigned within an interface project.
- **Font Files** are fonts that are part of an interface project.
- **Send Modified Files Only** will only send files that are different from those that are currently stored in the interface. Note that if any pages in the panel are not present in the project, those pages will be deleted from the panel.

NOTE: When loading a compact flash directly from a PC, the VTZ files contain a single timestamp that is assumed to be the local time of the machine on which it is opened. When loading through a panel, Toolbox may see a mismatch of timestamps between some of the project files within the VTZ file and the project files already loaded to the panel, and may re-send these files even if they have not been updated. This will happen once each time Toolbox updates files that were originally loaded by a PC directly to the CF card.

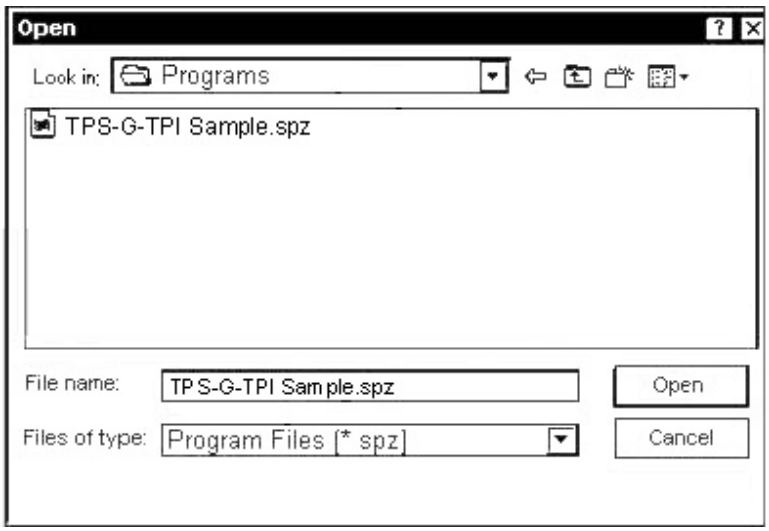
CAUTION: Verify that any compact flash used either contains no files or only contains files you want loaded to the interface prior to inserting into the interface. When unknown files reside on the compact flash, existing files on the interface may be overridden or erased if the interface reboots.

NOTE: The current suggested maximum project size is 170MB or less. Projects larger than this may load without error, but may not display correctly.

NOTE: With a browser project, there is no .vtz or .hex file; rather, VT Pro-e creates a .web folder with the name of the project. This .web folder contains HTML pages and a JAVA subfolder.

7. Click the **Browse** button to browse for a new compiled (.vtz) program.

   "Open" Window



8. Select a file and click **Open.** When the "Project" window re-opens click **Send** to send the project to the interface.

   To verify that the project has been transferred successfully, select **Tools** | **System Info**. The new project information will appear in the upper left corner of the "System Info" window.

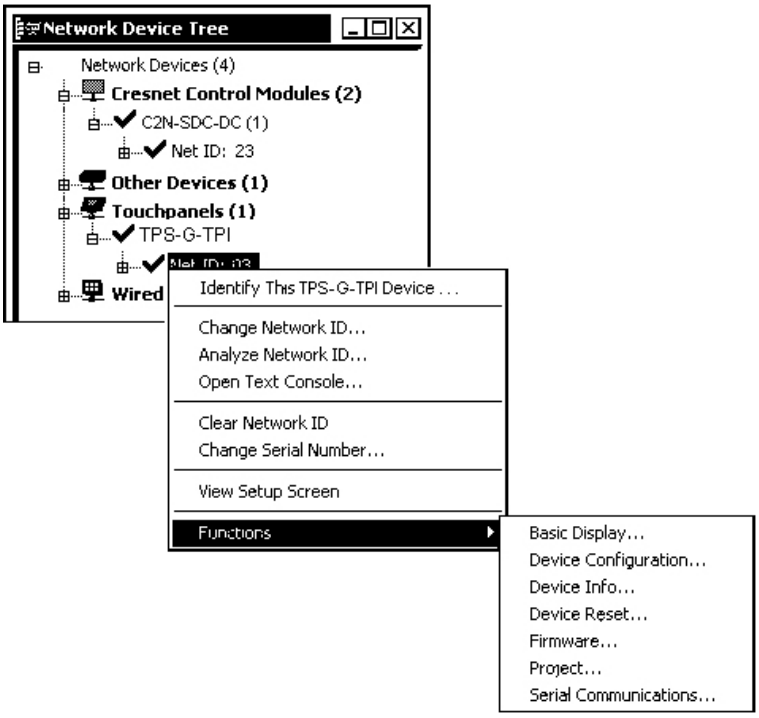
Firmware Upgrade

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

NOTE: Interface calibration may be required after a firmware upgrade.

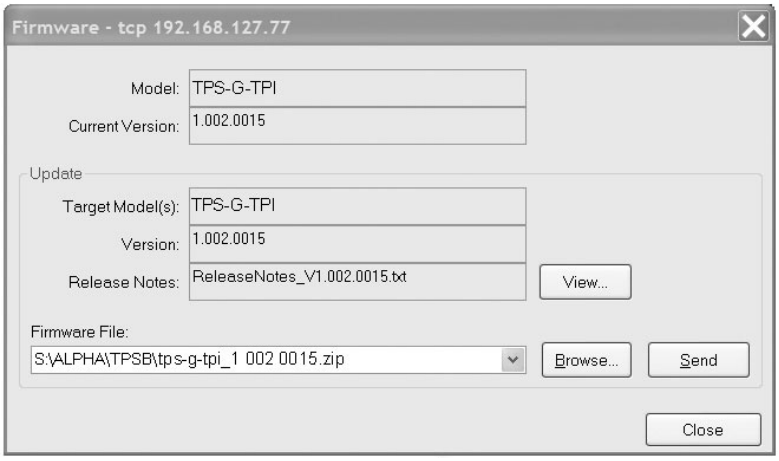
1. Make sure that "Establishing Communications" that begins on page 41 has been performed.
2. Open Crestron Toolbox.
3. Select **Tools | System Info**. The Status field on the "System Info" window will display **Retrieving Data** along with a progress bar.
4. When the Status field becomes **Retrieval Complete**, open the "Network Device Tree" window (the firmware upgrade function is also available in the SMW Program Tree window).
5. Right-click on the device and select **Functions | Firmware**.

Network Device Tree Window – Right-Click Sub Menu



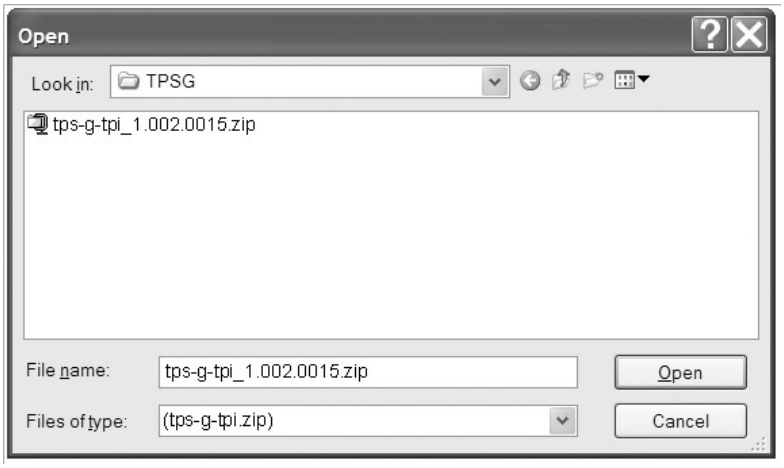
6. When the following "Firmware" window appears, browse to locate the firmware (.zip) file.

"Firmware" Window



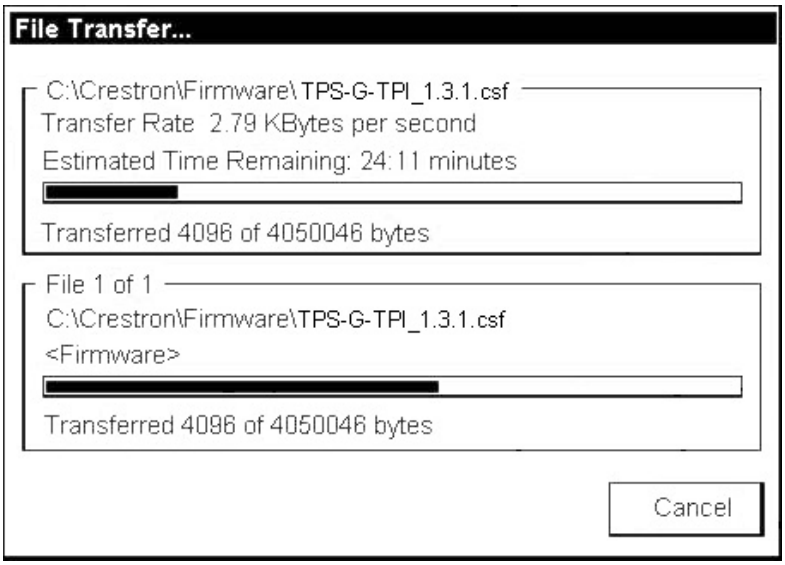
7. Select the file and click **Open** in the **"**Open**"** window as shown in the following graphic.

Locate Firmware in the "Open" Window



8. The "Open" window will be dismissed and the file and path will display in *Firmware File* dropdown on the "Firmware" window.
9. Click the **Send** button on the "Firmware" window and the "File Transfer" window will open.

"File Transfer" Window



10. The "Firmware" window reopens indicating the new firmware version. Click **Close** after the interface automatically reboots.

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.

TPS-G-TPI Troubleshooting

TROUBLE	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
TPS-G-TPI interface does not function.	TPS-G-TPI is not receiving power.	Verify power to unit. Use only Crestron power supplies for Crestron equipment.
	Incorrect cable connections.	Follow connection procedures in this guide and inspect connector pins.
	Incorrect firmware/software.	Update firmware/software versions as per those listed in the "Specifications" section.
	Interface is incorrectly calibrated.	Enter "SETUP MODE" and recalibrate.
	Interface is not communicating with the Cresnet network.	Use Toolbox to poll the network. Verify Cresnet connection to the interface.
		Verify interface is in "CRESNET MODE" as defined in the "Interface Menu" on page 16.
	Brightness is set too low.	Adjust brightness using the setup menu. Refer to page 15.
Interface is not responding to Cresnet.	Incorrect network wiring.	Touch the screen to remove the message and verify correct wiring to all connectors.
	Incorrect configuration parameters.	Enter Setup and verify parameters.
	Interface Cresnet ID is not set to match the Net ID in the SIMPL program.	Use Crestron Toolbox or Viewport to poll the network. Verify that the Cresnet ID for the interface is properly set to match the Net ID in the SIMPL program.
	Interface Cresnet ID is not unique, two or more units share the same ID.	Use Crestron Toolbox or Viewport to poll the network and verify that each ID is used only once.
	ICMP is disabled.	Enable ICMP by typing **ICMP ON** at the command prompt in the Toolbox Text Console or in Viewport.
No video displayed.	Wrong VT Pro-e or SIMPL Windows programs.	Verify correct programs. Verify proper video set up.
	Incorrect input connection.	Verify video input and QM connections.
TPS-G-TPI does not respond to ping command.	IP address not correct (LAN green and amber LEDs are off).	Assign correct IP address to TPS-G-TPI.
	IP mask not correct (LAN green and amber LEDs are on).	Assign correct IP mask.
	PC and TPS-G-TPI not on same subnet.	Ensure that the PC and the TPS-G-TPI are on the same subnet.

Continued on the following page

TPS-G-TPI Troubleshooting (continued)

TROUBLE	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
Mouse or attached touchpanel does not work.	Incorrect Touch settings.	Check Touch settings on INTERFACE MENU.
	Incorrect Calibration	Use Toolbox function Setup Mode to perform calibration.
Interface does not communicate with RS-232 devices.	Incorrect RS-232 settings.	Match communication settings of interface to peripheral device.
Attached interface display is dark.	Standby timeout has elapsed.	Touch the screen to reactivate.
Unexpected response from the interface.	Interface is incorrectly calibrated.	Enter “SETUP MODE” and recalibrate.
Communications via the LAN port is not functioning.	Improper Ethernet connection.	Verify proper connection at interface LAN port.
	Another device set to the same IP address.	Obtain new interface static IP address.

Further Inquiries

If you cannot locate specific information or have questions after reviewing this guide, please take advantage of Crestron's award winning customer service team by calling the Crestron corporate headquarters at 1-888-CRESTRON [1-888-273-7876]. For assistance in your local time zone, refer to the Crestron website (www.crestron.com) for a listing of Crestron worldwide offices.

You can also log onto the online help section of the Crestron website to ask questions about Crestron products. First-time users will need to establish a user account to fully benefit from all available features.

Future Updates

As Crestron improves functions, adds new features, and extends the capabilities of the TPS-G-TPI, additional information may be made available as manual updates. These updates are solely electronic and serve as intermediary supplements prior to the release of a complete technical documentation revision.

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

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Merchandise Returns / Repair Service

1. No merchandise may be returned for credit, exchange, or service without prior authorization from CRESTRON. To obtain warranty service for CRESTRON products, contact the factory and request an RMA (Return Merchandise Authorization) number. Enclose a note specifying the nature of the problem, name and phone number of contact person, RMA number, and return address.
2. Products may be returned for credit, exchange, or service with a CRESTRON Return Merchandise Authorization (RMA) number. Authorized returns must be shipped freight prepaid to CRESTRON, 6 Volvo Drive, Rockleigh, N.J. 07647, or its authorized subsidiaries, with RMA number clearly marked on the outside of all cartons. Shipments arriving freight collect or without an RMA number shall be subject to refusal. CRESTRON reserves the right in its sole and absolute discretion to charge a 15% restocking fee, plus shipping costs, on any products returned with an RMA.
3. Return freight charges following repair of items under warranty shall be paid by CRESTRON, shipping by standard ground carrier. In the event repairs are found to be non-warranty, return freight costs shall be paid by the purchaser.

CRESTRON Limited Warranty

CRESTRON ELECTRONICS, Inc. warrants its products to be free from manufacturing defects in materials and workmanship under normal use for a period of three (3) years from the date of purchase from CRESTRON, with the following exceptions: disk drives and any other moving or rotating mechanical parts, pan/tilt heads and power supplies are covered for a period of one (1) year; touchscreen display and overlay components are covered for 90 days; batteries and incandescent lamps are not covered.

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

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

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02.06
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