

Crestron **TPS-1700**

Isys™ Wired 5.7 Inch Tabletop Touchpanel

Operations Guide



CRESTRON

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Isys™ Wired 5.7 Inch Tabletop Touchpanel: TPS-1700

Introduction

Functions and Features

The TPS-1700 is a compact Isys™ wired 5.7-inch tabletop touchpanel that provides user interface to a Crestron™ remote control system (herein referred to as the Cresnet™ system). The unit provides dynamic onscreen feedback for real-time confirmation of commands.

Functional Summary

- 5.7 in (14.78 cm) Active Color Matrix Display
- 320x240 Screen Resolution
- 63MIPs ColdFire Processor Running Isys Generation Firmware
- 16-Bit, Non-Palette Graphics
- 64,000-color Isys engine
- 4 MB of Flash (approx. 3MB For User Display Lists)
- 8 MB of SDRAM
- Built-in 10 "quick" Pushbuttons (Fixed Joins 1-10)
 - Engraveable*
 - Operate Without Waking Display
- Connection to Cresnet via 6-pin RJ-11 Port in Base
 - CN-RJ11 4-Wire to RJ-11 Converter and Cable Supplied

* Supplied with standard legends. Additional set of blank buttons and installation instructions also supplied. Customizable Engraving Button Kit sold separately.

Specifications

The table below provides a summary of specifications for the TPS-1700.

Specifications of the TPS-1700 Touchpanel

SPECIFICATION	DETAILS
Power Requirements	10 Watts, 24 VDC, 0.40 Amp
Default NET ID	03
Default Standby Timeout	10 minutes
Signal Join Maximums	4K (digital), 4K (analog), 999 (serial)
Control System Update Files ^{1, 2, 3}	
2-Series Control System Update	Version C2-2004.CUZ or later
CEN/CN-TVAV Update File	Version 5.13.12V.UPZ or later
CNMSX-AV/Pro Update File	Version 5.12.63X.UPZ or later
CNRACKX/-DP Update File	Version 5.10.11W.UPZ or later
ST-CP Update File	Version 4.02.04S.UPZ or later
Acceptable File Extensions ⁴	
SIMPL Windows	
.smw	<i>projectname.smw</i> (source file)
.spz	<i>projectname.spz</i> (compiled file for 2-Series)
.bin	<i>projectname.bin</i> (compiled file for CNX generation)
.csz	<i>projectname.csz</i> (compiled file for CNX generation with SIMPL+)
VT Pro-e	
.vtp	<i>projectname.vtp</i> (source file)
.vtz	<i>projectname.vtz</i> (compiled file)
Firmware	
.csf	TPS-1700xxxxxx.csf (panel firmware)
Memory	4 MB flash memory (3.5 Mbytes available for user programming) 8 MB SDRAM
Touchscreen Dimensions	Height: 3.50 in (8.89 cm) Width: 4.60 in (11.68 cm) Diagonal: 5.70 in (14.48 cm)
Touchscreen Angles	±50° for X dir, +40/-50° for Y dir
Touchscreen Resolution	320 x 240 pixels, 64K colors (16 bit)
Touchscreen LCD	Active matrix
Touchscreen Illumination	Backlit fluorescent
Touchscreen Composition	Resistive Membrane
Operating Temperature	50° to 113°F (10° to 45°C)
Humidity	10% to 90% RH (non-condensing)
Overall Dimensions	Width: 8.75 in (22.23 cm) Height: 3.62 in (9.20 cm) Depth: 5.43 in (13.80 cm)
Weight	1.85 lb (0.84 kg)

1. The latest versions can be obtained from the Downloads | Software Updates section of the Crestron website (www.crestron.com). Refer to NOTE after last footnote.
2. Crestron 2-Series control systems include the AV2, PAC2, PRO2, and RACK2.
3. CNX update files are required for either CNMSX-AV/Pro or CNRACKX/-DP. Filenames for CNX update files have a UPZ extension and are in one EXE or zipped UPZ file. To avoid program problems, make certain you are using the update file with the correct suffix letter (e.g., S, V, W, X).
4. Extension requires a prefix specific to the touchpanel type. In DETAILS, *projectname* represents the assigned project name, and xxxxxx represents a version number.

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

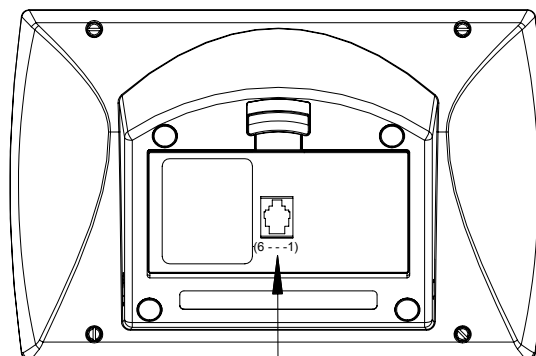
Physical Description

The touch-sensitive viewing screen and “quick” pushbuttons are located on the front of the TPS-1700. The electronic hardware is housed in a high impact, black molded plastic enclosure. Connection to the control system is via a 6-pin RJ-11 connector mounted on the bottom of the unit base. Refer to the illustrations below and on the next page.

Physical Views of TPS-1700

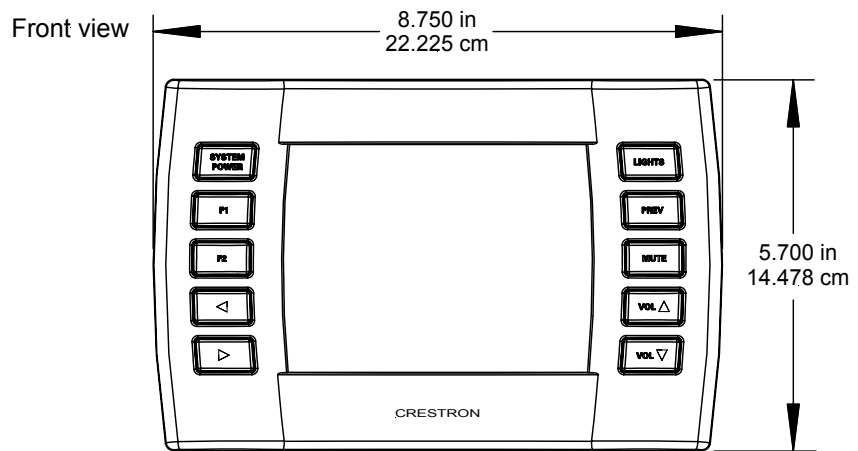
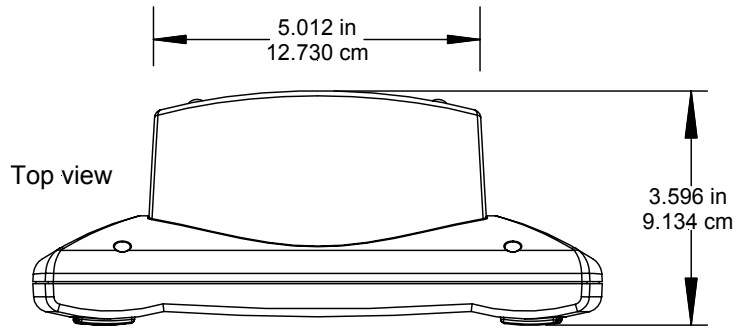


Bottom view



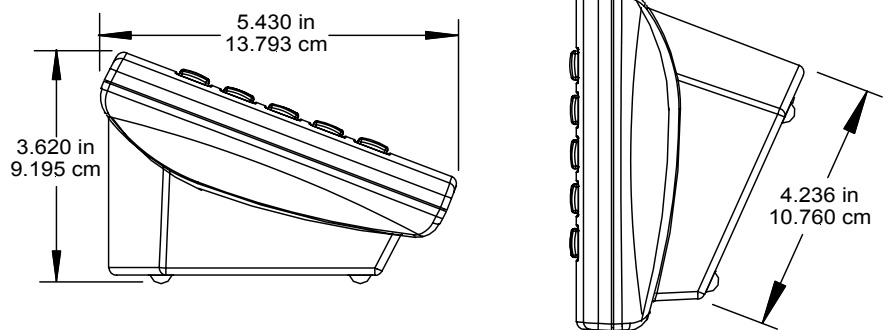
6-Pin RJ-11
Connector
(Refer to page 9 for pinout.)

Physical Views of TPS-1700 (continued)



Refer to "Quick Pushbuttons" on page 16 for button orientation.

Side views



Four rubber feet on the underside of the unit are for stability and to prevent slippage on flat surfaces.

Industry Compliance

As of the date of manufacture, this unit has been tested and found to comply with specifications for CE marking and standards per EMC and Radio Communications Compliance Labeling (N11785).



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

Setup

Network Wiring

NOTE: When installing network wiring, refer to the latest revision of the wiring diagram(s) appropriate for your specific system configuration, available from the Downloads | Product Manuals | Software and Wiring Diagrams section of the Crestron website (www.crestron.com).

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

Resistance Equation

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

Where: R = Resistance (refer to table below). L = Length of run (or chain) in feet. PF = Power factor of entire run (or chain).

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

Wire Gauge Values

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

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

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

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

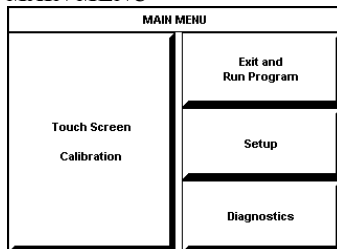
Identity Code

Every equipment and user interface within the Cresnet system requires a unique Cresnet identity code (NET ID). These codes are two-digit hexadecimal numbers from 03 to FE. Refer to “Select Interface” on page 7 for instructions on setting the unit’s NET ID. The NET ID of the unit must match the NET ID specified in the SIMPL Windows program. Refer to “Setting the Net ID in Device Settings” on page 12 for details of the SIMPL Windows procedure.

Configuring the Touchpanel

NOTE: The only connection required to configure the touchpanel is power. Refer to “Hardware Hookup” on page 9 for details.

MAIN MENU



This menu can also be obtained via digital reserved join number, 17242.

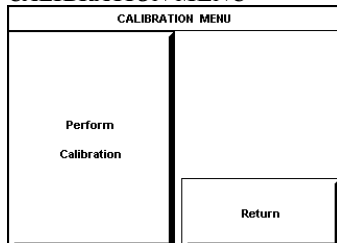
To configure the unit, it may be necessary to access a series of setup screens prior to viewing run-time screens that are loaded into the touchpanel for normal operation. The MAIN MENU for configuring the touchpanel appears when a finger is held (approx. 5 seconds) to the touchscreen when power is applied.

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

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

Calibration Menu

CALIBRATION MENU



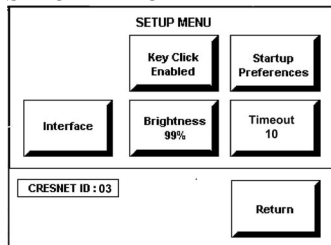
Calibration of the touchscreen is required if the active touch area of a button does not coincide with the button's image. Select the **Touch Screen Calibration** button to display the CALIBRATION MENU, as shown to the left. The CALIBRATION MENU offers the choice to initiate calibration with the **Perform Calibration** button or return to the previous screen with the **Return** button. Choose an option by touching the appropriate button.

If you need to calibrate the touchpanel, the screen displays the message "Touch Upper Left" centered on the panel with a cross hair in the upper left corner. Touch the cross hair to initiate calibration. Another message, "Touch Upper Right", appears with a cross hair in the correct corner. Touch the cross hair. A final message, "Touch Lower Right", appears with a cross hair in the correct corner. Touch the crosshair to finish the calibration and return to the MAIN MENU.

NOTE: When touching each crosshair 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 an area that is opposite from the instructed area.

Setup Menu

SETUP MENU



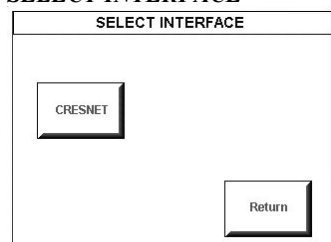
To obtain the SETUP MENU, shown to the left, press the **Setup** button from the MAIN MENU. The SETUP MENU offers a series of buttons, which open additional menus and screens that are detailed in subsequent paragraphs. After setup parameters have been set, select the **Return** button to return to the MAIN MENU.

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

NOTE: All touchpanel settings are automatically saved in non-volatile memory.

Select Interface

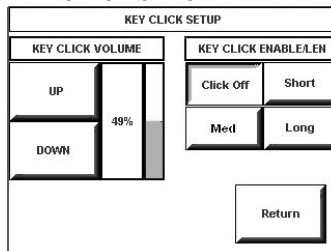
SELECT INTERFACE



The touchpanel communicates with a control system to activate commands or to display feedback from components within the system. The communication interface must be correctly specified or communication will not occur. To set communication parameters, first select the **Interface** button on the SETUP MENU to display the SELECT INTERFACE screen, shown to the left. Then, select the **CRESNET** button to display the CRESNET INTERFACE MENU. Use that screen to set the Cresnet network identity (CRESNET ID).

After the Cresnet ID setting has been verified, touch the **Return** button at the bottom of the screen to save the setting and display the SELECT INTERFACE menu.

KEY CLICK SETUP



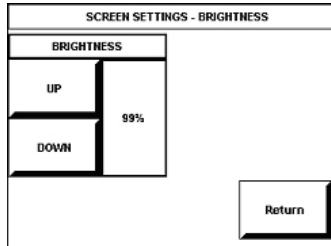
Key Click Setup

From the SETUP MENU, press the **Key Click Enabled** button to open KEY CLICK SETUP screen. (If the function is currently disabled, the button legend is “**Key Click Disabled.**”) To enable an audible tone (beep) when the touchpanel buttons are pressed, select among the **Short, Med, or Long** KEY CLICK ENABLE/LEN buttons to set the duration of the tone. The touchpanel responds with a corresponding signal. To disable the feature, select **Click Off**.

Use the KEY CLICK VOLUME **UP** and **DOWN** buttons to increase and decrease the volume of the signal. The area to the right of the buttons shows the relative volume from 0% to 100%, both as a numeric value and, for a quick visual reference, as an analog bar.

Select the **Return** button to return to the SETUP MENU.

SCREEN SETTINGS - BRIGHTNESS

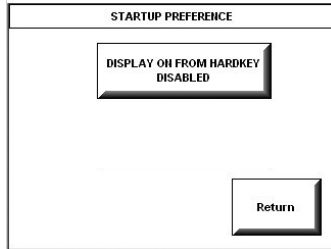


Brightness

From the SETUP MENU, press the **Brightness** button to open the SCREEN SETTINGS – BRIGHTNESS screen. The **UP** and **DOWN** buttons increase and decrease screen brightness, respectively. The area to the right of the buttons shows the relative brightness from 0% to 100%.

Select the **Return** button to return to the SETUP MENU.

STARTUP PREFERENCE



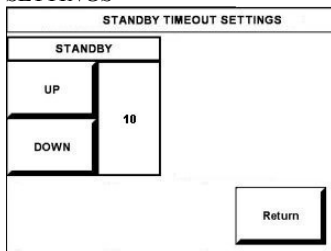
Startup Preference

The Startup Preference option allows (when the touchpanel is off or in standby) the display to come on or stay off when a “quick” pushbutton is pressed. From the SETUP MENU, press the **Startup Preference** button to open the STARTUP PREFERENCE screen.

When pressed, the **DISPLAY ON FROM HARDKEY** button toggles between ENABLED and DISABLED. With ENABLED selected, the display comes on when one of the “quick” pushbuttons is pressed. With DISABLED selected, the display stays off when a “quick” pushbutton is pressed (if touchpanel was off). The default is DISABLED.

Select the **Return** button to return to the SETUP MENU.

POWER MANAGEMENT TIMEOUT SETTINGS



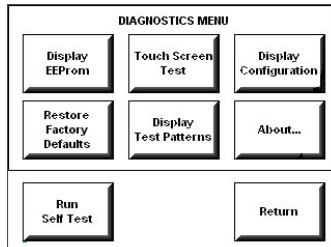
Power Management Timeout Settings

The Power Management Timeout feature is a screen saver. From the SETUP menu, press the **Timeout** button to display the POWER MANAGEMENT TIMEOUT SETTINGS screen. Use the STANDBY **UP** and **DOWN** buttons to set the timeout from 0 through 120 minutes, where 0 disables the timeout. Adjustment is in one-minute increments from 1 to 10; in ten-minute increments from 20-120.

STANDBY timeout turns the display and backlight off when the touchpanel is inactive for the specified time. When the touchpanel is reactivated, the last screen to be displayed reappears. The specified time is displayed in minutes. The default STANDBY timeout is 10 minutes.

Press **Return** to save the settings and return to the SETUP MENU.

DIAGNOSTICS MENU



Diagnostics Menu

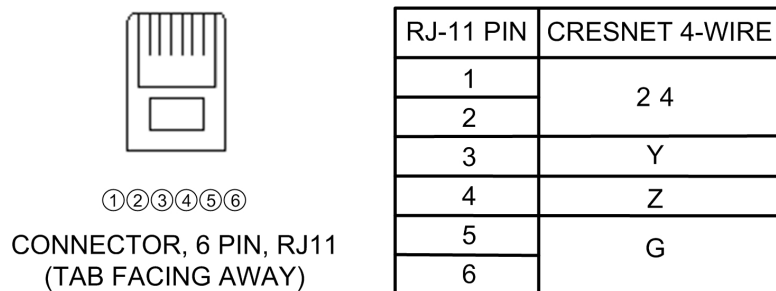
The **Diagnostics** button from the MAIN MENU should only be used under supervision from a Crestron customer service representative during telephone support. Many options available from the DIAGNOSTICS MENU, shown to the left, are numeric in nature and their interpretation is beyond the scope of this manual.

Hardware Hookup

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

The TPS-1700 touchpanel has rubber pads on the underside of its base so that it can rest on a horizontal surface. The only connection necessary is made to the 6-pin RJ-11 connector mounted in the bottom of the unit base. The Crestron CN-RJ11 4 Wire to RJ11 Converter and a 12-foot interface cable are supplied to convert a 4-pin Cresnet connection on the control system to the 6-pin connection in the touchpanel.

The following figure shows the pinout for the 6-pin RJ-11



Recommended Touchpanel Cleaning

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

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

Programming Software

*Have a comment about
Crestron software?*

*Direct software related suggestions
and/or complaints to Crestron via
email (software@crestron.com).
Do not forward any queries to this
address. Instead refer to “Further
Inquiries” on page 26 for assistance.*

Setup is easy thanks to Crestron’s Windows®-based programming software. The Crestron Application Builder™ (Appbuilder) creates a complete project, with no special programming required. Crestron Appbuilder completes all necessary programming for a base system including all touchpanel screens and the control system program. Once Crestron Appbuilder creates the project, the system interfaces and program logic can be customized. It can easily be modified with Crestron development tools (i.e., SIMPL™ Windows® and VisionTools™ Pro-e (VT Pro-e) software packages).

The program output of Crestron Appbuilder is a SIMPL Windows program with much of the functionality encapsulated in macros. Therefore, extending the capabilities of the system is very easy. Crestron AppBuilder and SIMPL Windows are intended for users with different levels of programming knowledge. Crestron AppBuilder is easier to use for the beginning programmer, and much faster for all programmers. However, it does not allow the degree of control and flexibility that SIMPL Windows does. Of course, one can initiate programming using the easiest method (Crestron AppBuilder) and use advanced techniques that are available from SIMPL Windows to customize the job.

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

The following are recommended software version requirements for the PC:

- Application Builder version 1.1.6 or later. Requires SIMPL Windows.
- SIMPL Windows version 2.02.11 or later with library update file. Requires SIMPL+ Cross Compiler version 1.1.
- Crestron Database version 15.7.5 or later. Required by SIMPL Windows.
- VisionTools Pro-e version 2.4.1.6 or later. Used for graphical touchscreen design.

NOTE: The TPS-1700 touchpanel is supplied with 10 blank pushbuttons. Custom-engraved keys can be obtained by using the Crestron Engraver software. Version 1.1.1.6 or later is available from the Downloads | Software Updates section of the Crestron website (www.crestron.com).

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 touchpanel 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 functions.

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

Programming with Crestron AppBuilder

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

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

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.

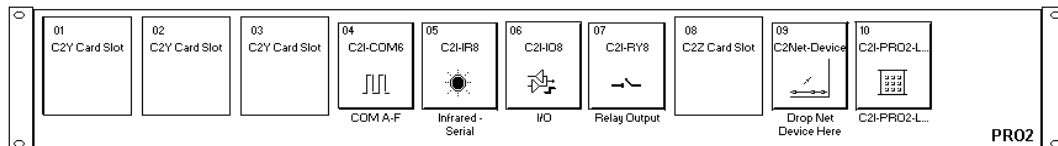
NOTE: In the following description, the PRO2 control system is used.

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-1700.

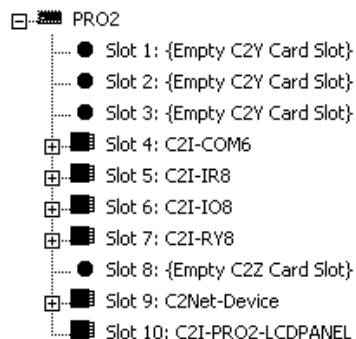
Configuration Manager is where programmers “build” a Crestron control system by selecting hardware from the *Device Library*. In Configuration Manager, drag the PRO2 from the Control Systems folder of the *Device Library* and drop it in the upper pane of the *System Views*. The PRO2 with its associated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

PRO2 System View



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

Expanded PRO2 System Tree

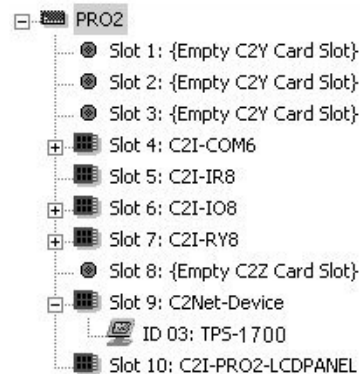


C2Net-Device Slot in Configuration Manager

To incorporate a TPS-1700 into the system, drag the TPS-1700 from the Touchpanels | Touchpanels (Cresnet) folder of the *Device Library* and drop it in *System Views*. The PRO2 system tree displays the touchpanel in Slot 9, with a default NET ID of 03 as shown in the following illustration.

NOTE: The first touchpanel in a system is preset with a NET ID of 03, when its symbol is dragged into the upper pane of *System Views*. Additional touchpanels are assigned different NET ID numbers as they are added.

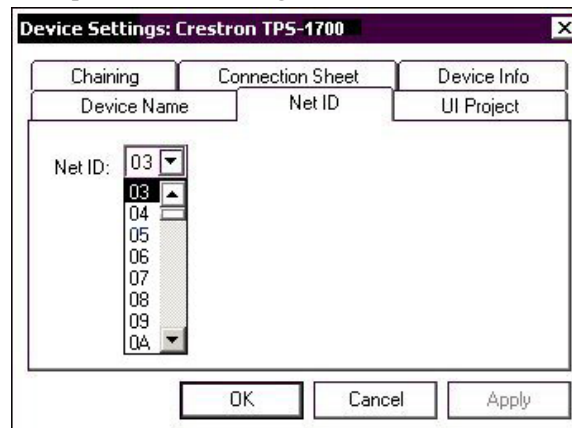
C2Net Device, Slot 9



Setting the Net ID in Device Settings

Double-click the TPS-1700 icon to open the “Device Settings” window. This window displays the TPS-1700 device information. If necessary, select the *NET ID* tab to change the touchpanel NET ID, as shown in the following figure.

Touchpanel “Device Settings” Window

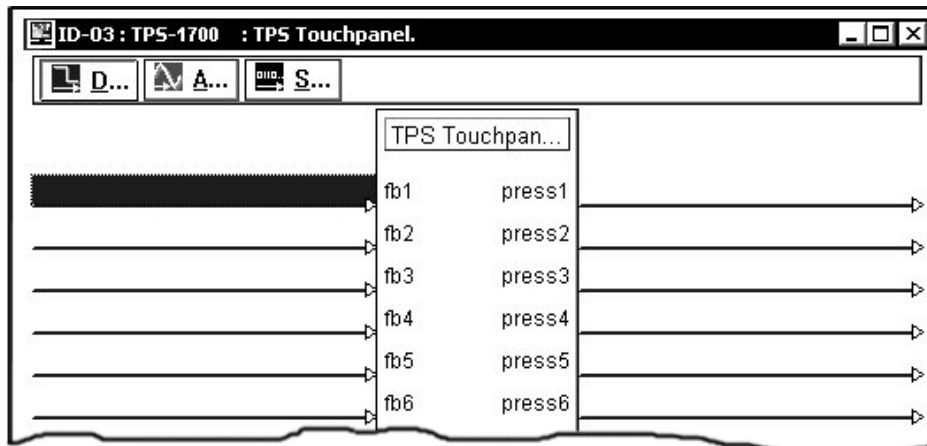


NOTE: SIMPL Windows automatically changes NET ID values of a device added to a program if a duplicate device or a device with the same default NET ID already exists in the program. Always ensure that the hardware and software settings of the NET ID match. For NET ID hardware setting details, refer to “Select Interface” on page 7.

TPS-1700 Symbol in Programming Manager

Programming Manager is where programmers “program” a Crestron control system by assigning signals to symbols. The graphic on the next page shows the TPS-1700 symbol in the SIMPL Windows’ Programming Manager.

Detail View of the TPS-1700 in SIMPL Windows’ Programming Manager



Signal Types

Signals interconnect the various devices and logic symbols that comprise a SIMPL program. Signals can be one of three types: digital, analog, or serial. For any given signal, the signal type is determined by its driving source. That is, if the symbol that drives the signal has an analog output, then, by definition, the signal connected there will be an analog signal.

In SIMPL Windows, the signal types are color-coded as follows:

Digital = Blue

Analog = Red

Serial = Black

Other = Green

NOTE: “Other” signals are a combination of the three basic types (e.g. many symbols accept either analog or serial signals where the combination is shown as a green signal). The signal type is displayed on the Status Bar when the signal is highlighted.

For additional information, refer to Doc. 6120, Crestron SIMPL Windows Symbol Guide. It may be downloaded from the Downloads | Product Manuals | Software section of the Crestron website (www.crestron.com).

Digital Signals

A digital signal contains one bit of information and usually takes on one of two values: 1 or 0. These two digits can represent the logical values true and false, and they can be represented in an electronic device by the states on/off or high/low, recognized as two voltage levels. (Other common descriptors are active/inactive.)

Analog Signals

Unlike digital signals, analog signals can vary continuously in value, in the same manner as a parameter such as volume, temperature, or pressure. Analog signals contain 16 bits of information, which means that this type of signal can have values ranging from 0 to 65535 ($2^{16}-1$). This 16-bit property makes analog signals useful for controlling devices that do not have discrete settings, such as volume controllers, pan/tilt head controllers, and lighting dimmers.

Serial Signals

Serial signals are much like analog signals, in that they, too, contain 16 bits of information. However, whereas the value of an analog signal is used directly—to control volume or temperature, for instance—the value of the serial signal is used as a pointer to a location in memory that contains a string of characters. When a serial signal is routed to a symbol, that symbol can identify the signal as serial rather than analog and it will automatically look at the data to which it points.

Thus, serial signals are used to facilitate the transmission of serial data (strings of characters). These signals can be generated by incoming data on a COM port or by a symbol that has a serial output.

TPS-1700 Input/Output Signals

The TPS-1700 symbol provides up to 4K digital and/or analog input and output joins, up to 999 serial input and up to 127 serial output joins. The programmer selects the signal types by clicking on the appropriate button at the top of the *Symbol Detail* view when programming the panel.

The following tables list functional descriptions for the touchpanel outputs and inputs.

Digital Output Signal Descriptions

OUTPUT	DESCRIPTION
press 1 through press 4000	Notifies control system of button press (1 – 4000). High/1 = press On Low/0 = press Off

Digital Input Signal Descriptions

INPUT	DESCRIPTION
fb 1 through fb 4000	Notifies panel to display feedback (1 – 4000). This can represent that the button was pressed, or can be actual device feedback, e.g., that power was turned on.

Analog Output Signal Descriptions

OUTPUT	DESCRIPTION
an_act 1 through an_act 4000	Notifies control system of an analog action (1 - 4000). Any value from 0 through 65535

Analog Input Signal Descriptions

INPUT	DESCRIPTION
an_fb 1 through an_fb 4000	Notifies panel of analog feedback (1 – 4000).

Serial Input Signal Descriptions

INPUT	DESCRIPTION
text-o1 through text-o999	Notifies panel of text string (1 – 999). Also called indirect text.

Serial Output Signal Descriptions

OUTPUT	DESCRIPTION
text-i1 through text-i127	For remapping of system reserved joins (1 – 127).

Device Extenders

Device extenders provide additional logic and functionality to a device. The Poll Manager and Sleep/Wake Manager symbols are device extenders for touchpanels. Poll Manager takes the touchpanel on and off line during polling by the control system. Sleep/Wake Manager suspends and restores operation of the touchpanel. For additional information about Device Extenders, refer to the latest version of the Crestron SIMPL Windows Symbol Guide (Doc. 6120), or the on-line help included with SIMPL Windows.

Example Program

An example program for the TPS-1700 is available from the Crestron FTP site (<ftp://ftp.crestron.com>). Select the Examples folder and search for TPS-1700.ZIP that contains the example program, associated files and a README.TXT file that describes the program.

Programming with VisionTools™ Pro-e

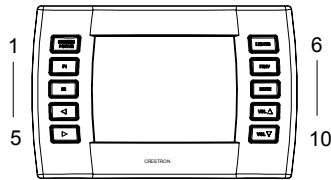
VT Pro-e, a design and programming Windows®-based software, permits the creation of unlimited control screen variations incorporating two and three-dimensional graphics and text. A set of pages, which make up a project, can be designed for each TPS-1700 touchpanel application. Each page contains objects such as custom control graphics, two and three-dimensional buttons, sliders, and digital readouts which allow the user to interface with the control system via join numbers. Unjoined objects are not interfaced with the system and thus cannot initiate any functions. The completed and compiled project is uploaded to the touchpanel and programmed into the flash PROM via the **File | Upload Project** command. The touchpanel uses the programmed project until another set is uploaded from the PC. The PC may be disconnected from the control system or panel except during reprogramming. VT Pro-e also allows users the option to generate projects destined for web browsers rather than for physical touchpanels.

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 Downloads | Software Updates section of the Crestron website (www.crestron.com).

The single most-advanced VT Pro-e high-performance programming technique involving the TPS-1700 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 the MULT-MOD.ZIP file. It is available from the Crestron FTP site [<ftp://ftp.crestron.com>](ftp://ftp.crestron.com). Select the Examples Folder. This file contains the VT Pro-e touchpanel files and SIMPL Windows files that illustrate the high-performance capabilities of multi-mode objects.

Multi-mode objects offer high-performance programming!

Pushbutton Layout and Join Number Assignment**“Quick” Pushbuttons**

Ten “quick” pushbuttons flank the LCD display. You can use these buttons to access any frequently used commands. Each button has a permanently fixed digital join number; refer to the illustration shown to the left. The sequence of digital join numbers is (top to bottom) 1 through 5 on the left side and 6 through 10 on the right side.

NOTE: A VT Pro-e sample project, TPS-1700.VTP, is available from the Downloads page (VTPRO-E Library) of the Crestron website (www.crestron.com). This project provides guides for panel designers so that they can line up objects with the 10 “quick” pushbuttons that flank the LCD display. New users are required to register in order to obtain access to the FTP site.

NOTE: A user may not want the LCD display to come on after a pushbutton is pressed when the unit is in Standby mode. The Startup Preference option allows the user to select whether the touchpanel’s display comes on or stays off after a pushbutton is pressed. For more information, refer to “Startup Preference” on page 8.

Reserved Join Numbers

A reserved join number is a feature of the software that enables a designer to create a button that completes a predetermined function. The tables on the next page provide lists of reserved join numbers available within the software.

NOTE: Many touchpanel configuration “shortcuts” are available via the software. A button can be created on a page that either calls up the Preferences Menu, adjusts brightness, etc., via reserved join numbers.

Analog Reserved Join Numbers for TPS-1700

JOIN NUMBER	FUNCTION	VALUE
17201	Brightness*	1-100%
17203	Standby Timeout*	0-120 minutes
17300	Keyclick Volume*	1-100%

* Defaults:

LCD Brightness – 48%; Standby Timeout – 10 minutes;
Key Click Volume – 50%

NOTE: Standby Timeout adjusts in 1-minute increments from 1 to 10 minutes, and in ten-minute increments from 20-120 minutes.

Digital Reserved Join Numbers TPS-1700

JOIN NUMBER	FUNCTION	VALUE
17216	Brightness	Up
17217	Brightness	Down
17218	Brightness	High
17219	Brightness	Medium (Default)
17220	Brightness	Low
17230	Standby	N/A
17231	Standby Timeout	Up
17232	Standby Timeout	Down
17242	Setup	N/A
17302	Keyclick	On
17303	Keyclick	Off
17304	Keyclick Volume	Up
17305	Keyclick Volume	Down
17322	Keyclick Short	Short (Default)
17323	Keyclick Medium	Medium
17324	Keyclick Long	Long

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 firmware changes are required in either case.

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

Indirect text on a button is entered in VTPro-e and the actual string to be displayed is entered in SIMPL Windows. You must use VTPro-e 3.0 or later to guarantee that the full set of characters in the font is stored on the touchpanel. 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 scheduling time to fix this in the near future and the release notes for SIMPL Windows will mention it.

Of course, you can always use the workaround of showing a graphic that displays the string, but it is not dynamic.

Uploading and Upgrading

Assuming a PC is properly connected to the entire system, Crestron programming software allows the programmer to upload programs and projects to the system and touchpanel 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 Viewport.

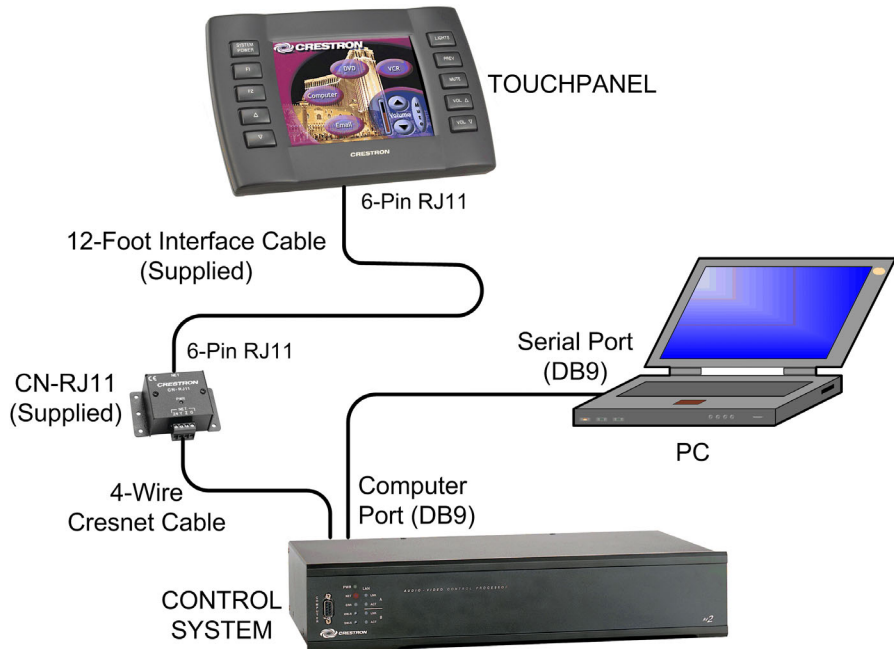
NOTE: Currently, the Crestron Viewport is only available as a pull-down command from SIMPL Windows and VT Pro-e (**Tools | Viewport**). The Viewport utility accomplishes multiple system tasks, primarily via an RS-232 or TCP/IP connection between the control system and a PC. It is used to observe system processes, upload new operating systems and firmware, change system and network parameters, and communicate with network device consoles and touchpanels, among many other tasks. Viewport can also function as a terminal emulator for generic file transfer. All of these functions are accessed through the commands and options in the Viewport menus. Therefore, for its effectiveness as a support and diagnostic tool, the Crestron Viewport may be preferred over development tools when uploading programs and projects.

The following sections define how one would upload a SIMPL Windows program, VT Pro-e project or upgrade the firmware of the TPS-1700 touchpanel. However, before attempting to upload or upgrade, it is necessary to establish communications.

Communication Settings

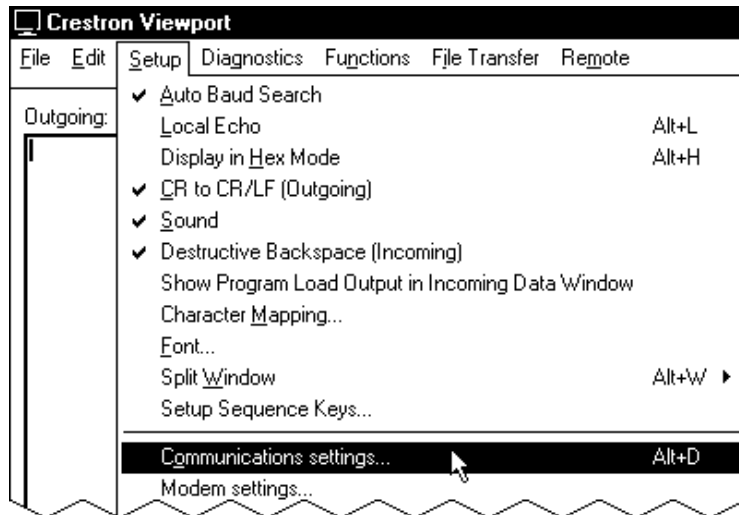
Connection to the TPS-1700 touchpanel is via a 6-pin RJ-11 connector in the base of the unit. Therefore, uploading or upgrading must be accomplished through a control system. The procedure in this section provides details for RS-232 communication between the PC and the control system. If TCP/IP communication is preferred, consult the latest version of the Crestron e-Control Reference Guide (Doc. 6052) or the respective Operations Guide for the control system. These documents are available from the Downloads | Product Manuals section of the Crestron website (www.crestron.com). Refer to the figure on the next page for a typical connection diagram when uploading files.

Typical Connection Diagram when Uploading Files



1. Start SIMPL Windows or VT Pro-e.
2. From the menu bar, select **Tools | Viewport** to open the Crestron Viewport.
3. Refer to the figure after this step. From the Viewport menu, select **Setup | Communications settings** (alternatively, press **Alt+D**) to open the “Port Settings” window.

Setup | Communications Settings Command



4. Select **RS-232** as the connection type. Verify that an available COM port (COM 1 is shown after this step) is selected, and that all communication parameters and necessary options from the “Port Settings” window are selected as shown after this step. Click the **OK** button to save the settings and close the window.

“Port Settings” Window

- To verify communication, select **Diagnostics | Establish Communications (Find Rack)**. This should display a window that gives the COM port and baud rate. If communication cannot be established, refer to the “Troubleshooting Communications” section in the respective Operations Guide for the control system.

Uploading a SIMPL Windows Program

A control system source file has the extension .smw. A compiled SIMPL Windows file has the extension .spz for a 2-Series control system, .bin for CNX generation, and .csz for CNX generation with SIMPL+.

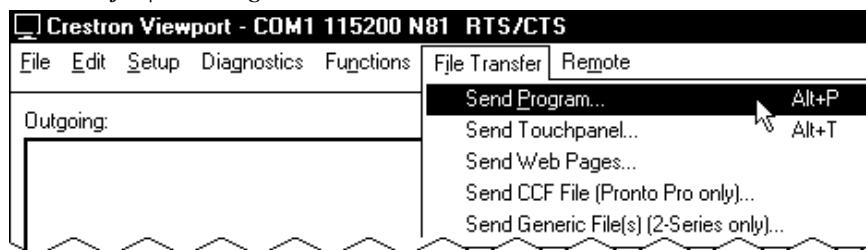
The SIMPL Windows file can be uploaded to the control using SIMPL Windows or via the Crestron Viewport.

Upload via SIMPL Windows

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

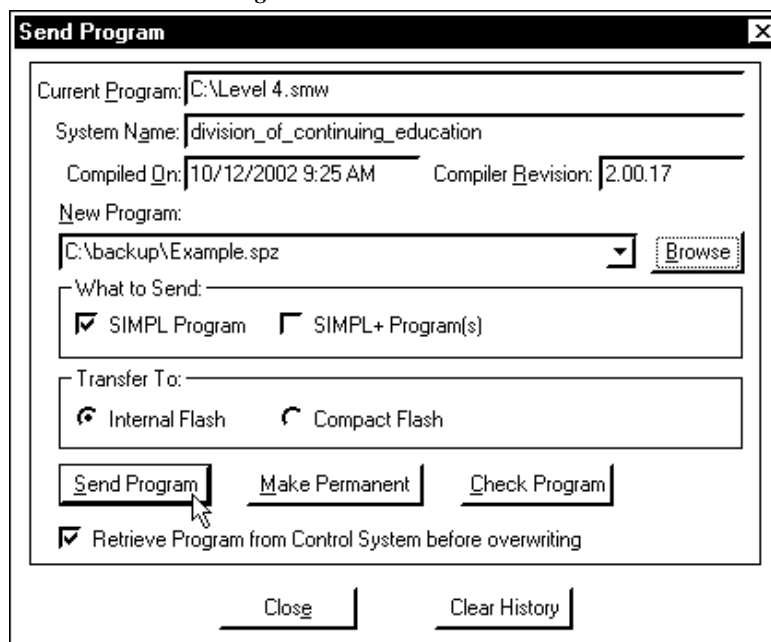
Upload via Crestron Viewport

- Verify that the procedure for “Communication Settings” that begins on page 18 has been performed.
- As shown after this step, select **File Transfer | Send Program** (alternatively, press **Alt+P**) from the Viewport menu.

File Transfer | Send Program Command

- The “Send Program” window appears, as shown after this step. Click **Browse**, locate the compiled file (.spz) and click **Open**. This will display the program's header information and enable one or both of the *What to Send* check boxes. If the program does not contain any SIMPL+ modules, only the **SIMPL Program** check box will be enabled. If it does contain SIMPL+ modules, then the **SIMPL+** check box will also be enabled. Select one or both check boxes and then click **Send Program** to begin the transfer.

NOTE: Refer to the respective Operations Guide for the control system for details about the other fields shown on the “Send Program” window.

“Send Program” Window

- To verify that the program has been transferred successfully, select **Diagnostics | Report Program Information**. This should display a window that provides details about the current program loaded into the control system.

The TPS-1700 touchpanel source file has the extension .vtp. A compiled VT Pro-e file has the extension .vtz.

Uploading a VT Pro-e Project

The VT Pro-e file can be uploaded to the touchpanel using VT Pro-e or via the Crestron Viewport.

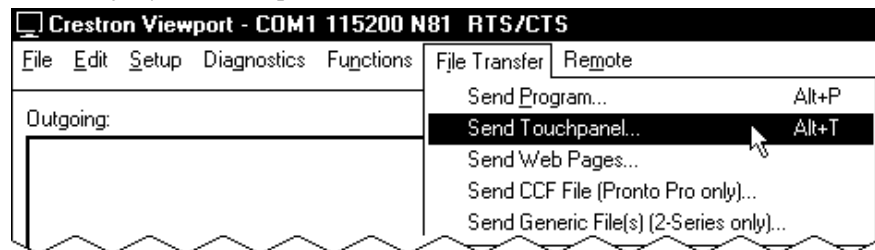
Upload via VT Pro-e

1. Start VT Pro-e.
2. Select **File | Open | Project** to view the “Open” window, navigate to the VT Pro-e file (.vtp), and click **Open**.
3. Select **File | Upload Project**.

Upload via Crestron Viewport

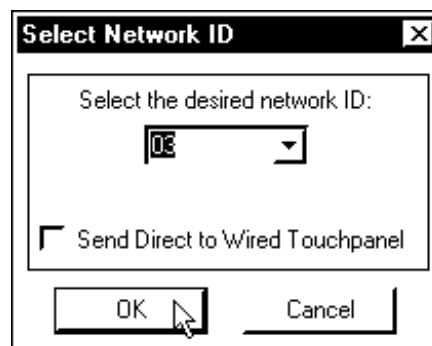
1. Verify that the procedure for “Communication Settings” that begins on page 18 has been performed.
2. As shown after this step, select **File Transfer | Send Touchpanel** (alternatively, press **Alt+T**) from the Viewport menu.

File Transfer | Send Touchpanel Command

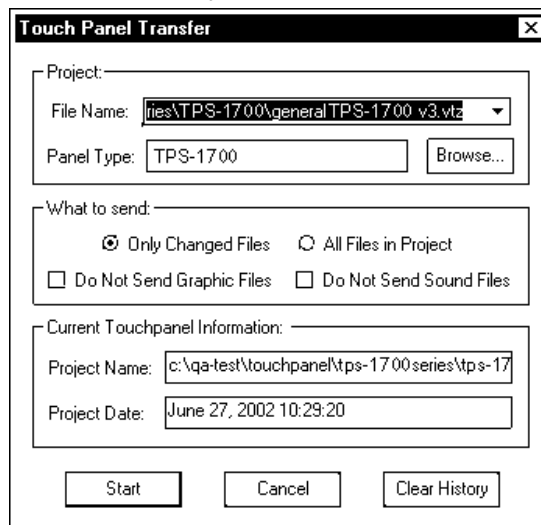


3. As shown after this step, select the NET ID of the TPS-1700 touchpanel and then click **OK**. The “Touch Panel Transfer” window appears (refer to graphic on next page).

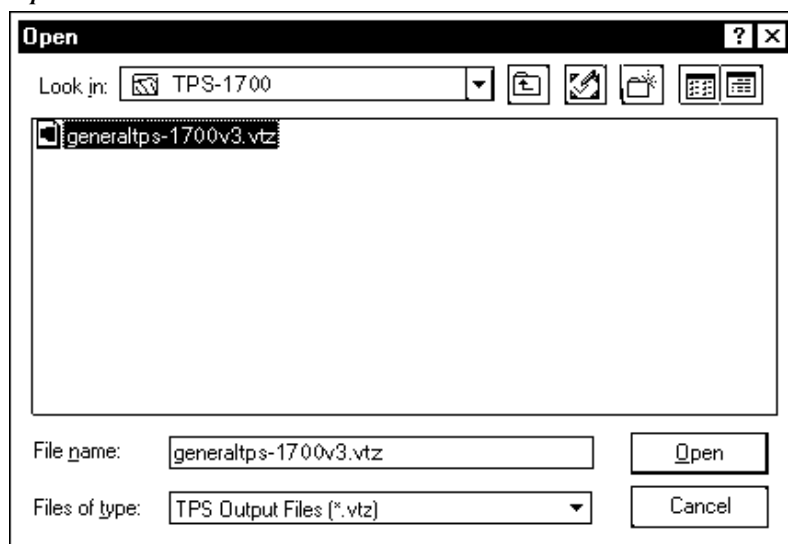
“Select Network ID” Window



NOTE: When transferring any Cresnet file (touchpanel project/firmware), lower the port speed baud rate to 38400 to match the Cresnet bus speed.

“Touch Panel Transfer” Window

4. Click Browse. The “Open” window appears as shown below.

“Open” Window

5. Select the VT Pro-e (vtz) file and click **Open**. The transfer will complete automatically.

Firmware Upgrade

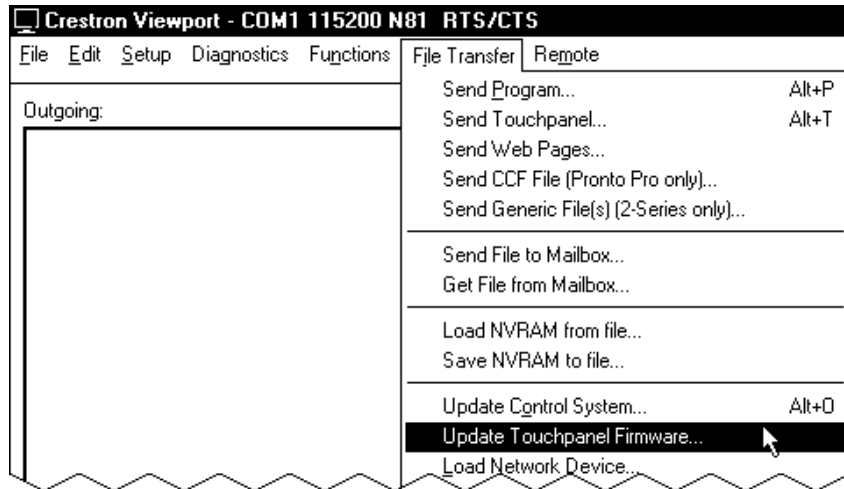
A firmware upgrade file has the extension .csf.

To take advantage of all the TPS-1700 touchpanel features, it is important that the unit contains the latest firmware available. Therefore, please check the Crestron website (http://www.crestron.com/downloads/software_updates.asp) for the latest version of firmware. Not every product has a firmware upgrade, but as Crestron improves functions, adds new features, and extends the capabilities of its products, firmware upgrades are posted. To upgrade the firmware, complete the following steps.

1. Make sure that “Communication Settings” that begins on page 18 has been performed.

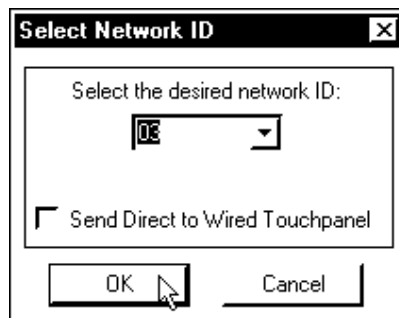
- As shown after this step, select **File Transfer | Update Touchpanel Firmware** from the Viewport menu.

File Transfer | Update Touchpanel Firmware Command

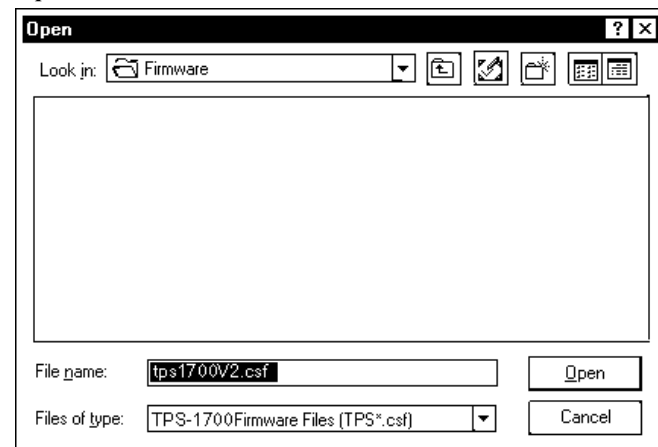


- As shown after this step, select the NET ID of the TPS-1700 touchpanel and then click **OK**. The “Open” window appears (refer to the subsequent graphic).

“Select Network ID” Window



“Open” Window



- Browse to the .csf file and click **Open** to begin the transfer.

Problem Solving

Troubleshooting

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

TPS-1700 Troubleshooting

TROUBLE	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
Touchpanel does not function.	No power to the touchpanel.	Verify that the touchpanel is connected to the system as described in the "Hookup and Preparation" procedures on page 'n'.
	Touchpanel is not communicating to the control system.	Poll the network (F4 in Viewport, VT Pro-e or SIMPL Windows) to verify communication.
	Incorrect NET ID setting.	Verify that panel NET ID matches the NET ID specified in the SIMPL Windows program. Refer to "Identity Code."
Project can not be uploaded to touchpanel.	Communications error between PC and control system.	Verify upload preferences is set to the COM port being used to communicate to the control system.
	Transfer speed discrepancies.	Do the following: 1. Lower the baud rate to 38400 to match the Cresnet bus speed. 2. Confirm RTS/CTS is checked; Xon/Xoff is unchecked. 3. Confirm that Xmodem is selected for Mode for Network Transfers.
	Incorrect NET ID setting.	Verify that panel NET ID matches the NET ID specified during upload. Refer to "Select Interface Menu."
	Problem with cable between control system and touchpanel.	Check the cable for damage or bad connections.
Wrong screens appear on touchpanel.	Wrong screens uploaded.	Upload correct screens. Refer to "Uploading a VT Pro-e Project."
Active area does not coincide with button on screen.	Touchpanel is incorrectly calibrated.	Remove power and then reapply power while holding finger to touchscreen (for about 5 seconds). The Main Menu appears. Select "Touchscreen Calibration". The Calibration Menu appears. Select "Perform Calibration" and follow prompts.
One or more "quick" pushbuttons do not function as expected.	Wrong SIMPL Windows program uploaded.	Upload correct SIMPL Windows program. Refer to the SIMPL Windows Help file for more information.
Touchpanel display is dark or too light.	Screen brightness is improperly set.	Remove power and then reapply power while holding finger to touchscreen (for about 5 seconds). Set brightness using the Setup menu.

TPS-1700 Troubleshooting (continued)

TROUBLE	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
Touchpanel exhibits slow operation.	Compressed graphics take time to decompress.	If there are no memory problems, decompressed graphics decrease the drawing time of panel pages.
	NET ID conflict between devices	Verify that panel NET ID matches the NET ID set in the program. Eliminate any duplicate NET ID settings.
Touchpanel display is dark.	Standby timeout has elapsed.	Touch screen to reactivate.

Further Inquiries

If after reviewing this Operations Guide, you cannot locate specific information or have questions, please take advantage of Crestron's award winning customer service team by calling:

- In the US and Canada, call Crestron's corporate headquarters at 1-888-CRESTRON [1-888-273-7876].
- In Europe, call Crestron International at +32-15-50-99-50.
- In Asia, call Crestron Asia at +852-2341-2016.
- In Latin America, call Crestron Latin America at +5255-5093-2160.
- In Australia and New Zealand, call Creston Pacific at +613-9480-2999

Future Updates

As Crestron improves functions, adds new features, and extends the capabilities of the TPS-1700, 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 (www.crestron.com) periodically for manual update availability and its subjective value. Updates are available from the Download | Product Manuals section and are identified as an "Addendum" in the Download column.

Appendix: Engraveable Pushbutton Installation

Perform the following to install engraveable pushbuttons on the TPS-1700. A #1 Phillips screwdriver is required. Refer to the illustration below.

NOTE: Use the Crestron Engraver software to submit an Engraver file. The Engraving Software package, version 1.1.1.6, is available from the Downloads | Software Updates section of the Crestron website (www.crestron.com).

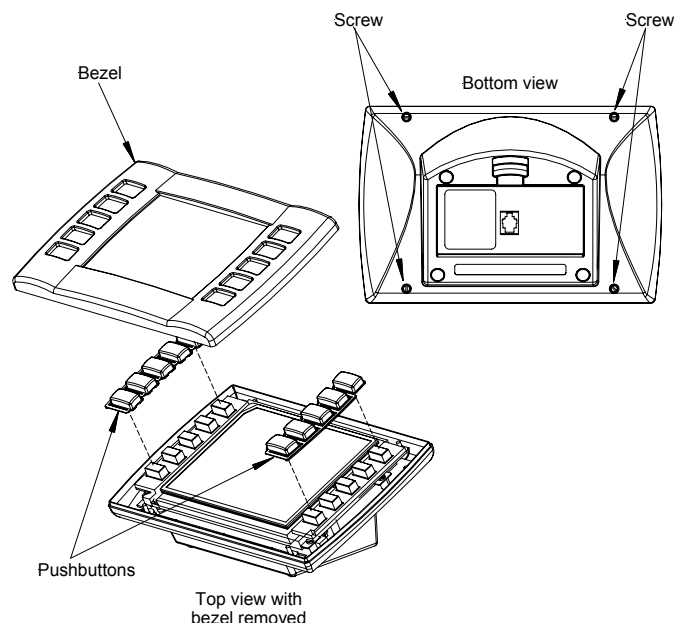
1. Place the touchpanel face down on a clean work surface.
2. Remove the four screws securing the front bezel to the base, and return the unit to its normal position (use care to prevent the bezel from dropping and becoming damaged).
3. Lift the bezel from the touchpanel, and remove the pushbuttons being replaced. Note that the pushbutton sets fit snugly.
4. Put the new pushbuttons in place (see following Note), press firmly to ensure they are seated, and place the bezel back in position.

NOTE: The rear of the pushbuttons are marked TOP 1-5 and 6-10 to ensure correct orientation when installed. Do not separate buttons from their plastic framing.

NOTE: The pushbutton sets are not interchangeable with each other

5. Hold the bezel in place and turn the unit over on its face.
6. Reinstall the four screws to secure the bezel to the base. Tighten the screws, being careful not to strip the threads.
7. Verify that the pushbuttons function properly.

Engraveable Pushbutton Installation



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Return and Warranty Policies

Merchandise Returns / Repair Service

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

CRESTRON Limited Warranty

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

This warranty extends to products purchased directly from CRESTRON or an authorized CRESTRON dealer. Purchasers should inquire of the dealer regarding the nature and extent of the dealer's warranty, if any.

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

This warranty shall be the sole and exclusive remedy to the original purchaser. In no event shall CRESTRON be liable for incidental or consequential damages of any kind (property or economic damages inclusive) arising from the sale or use of this equipment. CRESTRON is not liable for any claim made by a third party or made by the purchaser for a third party.

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

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