

Crestron **TPS-1700**

Isys® Wired 5.7 Inch Tabletop Touchpanel

Operations Guide



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



Crestron Electronics, Inc.
15 Volvo Drive
Rockleigh, NJ 07647
1-888-CRESTRON

Contents

Isys® Wired 5.7 Inch Tabletop Touchpanel: TPS-1700	1
Introduction	1
Functions and Features	1
Specifications	2
Physical Description	3
Industry Compliance	4
Setup	5
Network Wiring	5
Identity Code	6
Configuring the Touchpanel	6
Hardware Hookup	9
Recommended Touchpanel Cleaning	9
Programming Software	10
Earliest Version Software Requirements for the PC	10
Programming with Crestron System Builder	11
Programming with SIMPL Windows	11
Programming with VT Pro-e	15
Optional Pushbuttons	16
Reserved Join Numbers	16
MultiByte International Characters	17
Uploading and Upgrading	18
Communication Settings	18
Uploading a SIMPL Windows Program	20
Uploading a VT Pro-e Project	22
Firmware Upgrade	23
Problem Solving	25
Troubleshooting	25
Further Inquiries	26
Future Updates	26
Appendix: Installation of Optional Pushbuttons	27
Software License Agreement	28
Return and Warranty Policies	30
Merchandise Returns / Repair Service	30
CRESTRON Limited Warranty	30

Isys[®] Wired 5.7 Inch Tabletop Touchpanel: TPS-1700

Introduction

Functions and Features

The TPS-1700 is a compact Crestron Isys[®] wired 5.7-inch tabletop touchpanel that provides user interface to a Crestron[®] remote control system (Cresnet[®] system). The unit provides dynamic on-screen 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 Crestron Isys[®] generation firmware
- 16-bit, non-palette graphics
- 64,000-color Crestron Isys engine
- 4 MB of flash (approx. 3MB for user display lists)
- 8 MB of SDRAM (Synchronous Dynamic RAM) for panel firmware
- Connection to Cresnet via 6-pin RJ-11 port in base
- CN-RJ11 4-Wire to RJ-11 converter and cable supplied
- Engraveable pushbuttons available

NOTE: The TPS-1700 is supplied with an optional bezel, ten membrane switches, and ten black pushbuttons (blank), five for each side of the LCD screen. You can use these buttons to access any frequently used commands. Refer to “Appendix: Installation of Optional Pushbuttons” for instructions to install the optional switches, buttons, and bezel.

NOTE: Two options, 1700C-BTNB (black buttons) and 1700C-BTNS (silver buttons) provide custom engraved buttons for your touchpanel. Contact Crestron customer support for more information.

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 (0.40 Amp @ 24 VDC)
Default Net ID	03
Default Standby Timeout	10 minutes
Signal Join Maximums	4K (digital), 4K (analog), 999 (serial)
Control System Update Files ¹	
2-Series Control System	Version C2-2004.CUZ or later ²
CEN/CN-TVAV	Version 5.13.12V.UPZ or later ^{3,4}
CNMSX-AV/Pro	Version 5.12.63X.UPZ or later ^{3,4}
CNRACKX/-DP	Version 5.10.11W.UPZ or later ^{3,4}
CNMS, CNRACK, CNLCOMP	Version 3.18.09m, l, c or later ⁵
ST-CP	Version 4.02.04S.UPZ or later ³
Acceptable File Extensions ⁶	
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 for firmware storage
Touchscreen Dimensions	Height: 3.50 in (8.89 cm) Width: 4.60 in (11.68 cm) Diagonal: 5.70 in (14.48 cm)
Touchscreen Resolution	320 x 240 pixels, 64K colors (16-bit)
Touchscreen Viewing Angles	±65° for X dir, +65°/-40° for Y dir
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 (22.22 cm) Height: 3.85 in (9.78 cm) Depth: 5.51 in (14.00 cm)
Weight	1.85 lb (0.84 kg)

- 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.
- 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.
- 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).
- When loading touchpanel projects or firmware through the RS-232 port of the control system, Viewport may post the "Transfer Failed" message. To ensure successful data transfer, set the baud rate to 38400 (Cresnet speed) or lower.
- These control systems do not support file transfers (firmware or touchpanel projects) over Cresnet. File transfers must be directly uploaded through the RS-232 port.
- 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 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).

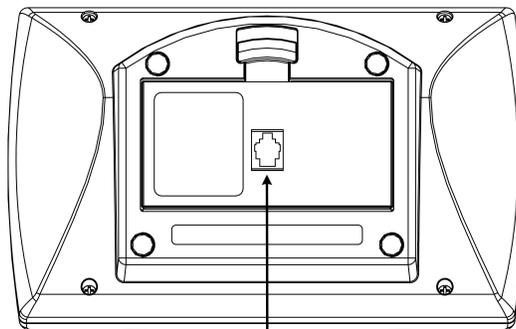
Physical Description

The touch-sensitive viewing screen is located on the front of the TPS-1700. The electronic hardware is housed in a black and silver 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

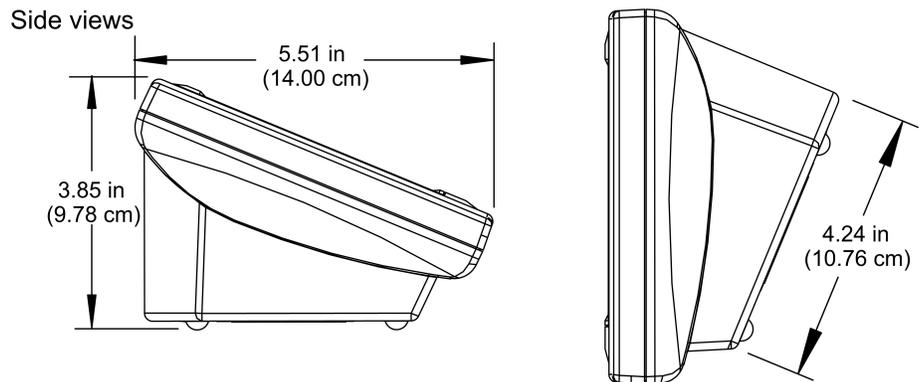
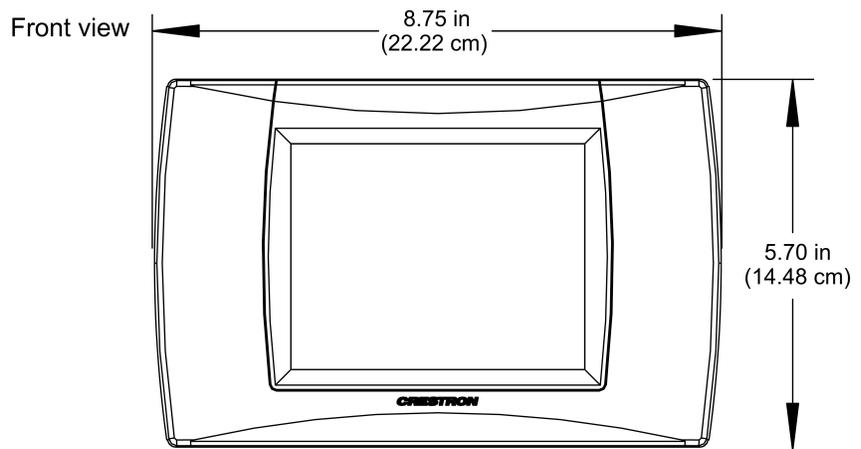
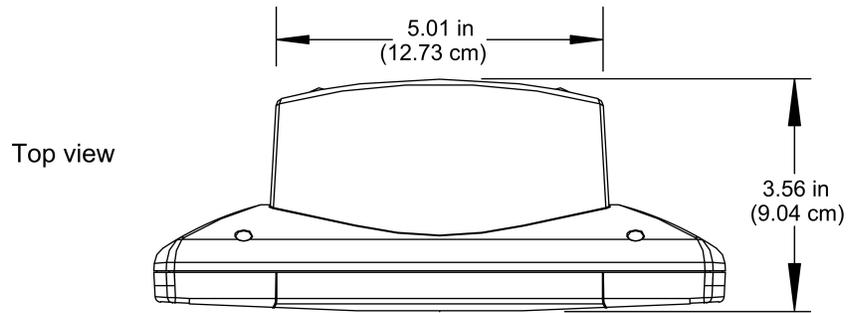


Bottom view



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

Physical Views of TPS-1700 (continued)



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.

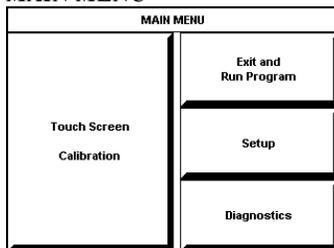
Identity Code

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. The Net ID is used when the touchpanel is wired directly to the control system during uploading a Crestron VisionTools® Pro-e (VT Pro-e) project or upgrading the touchpanel firmware.

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.

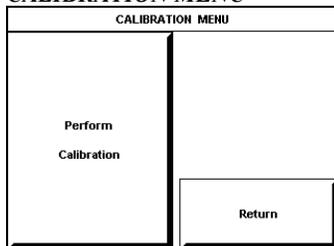
To configure the unit, it may be necessary to access a series of setup screens prior to viewing run-time screens that are loaded into the touchpanel for normal operation. The MAIN MENU for configuring the touchpanel appears when a finger is held (approximately five seconds) to the touchscreen when power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



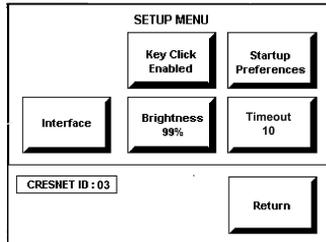
Calibration of the touchscreen is required if the active touch area of a button does not coincide with the button's image. Select the **Touch Screen Calibration** button to display the CALIBRATION MENU, as shown to the left. The CALIBRATION MENU offers the choice to initiate calibration with the **Perform 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



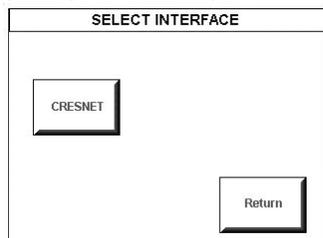
To obtain the SETUP MENU, shown to the left, press the **Setup** button from the MAIN MENU. The SETUP MENU offers a series of buttons, which open additional menus and screens that are detailed in subsequent paragraphs. After setup parameters have been set, select the **Return** button to return to the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

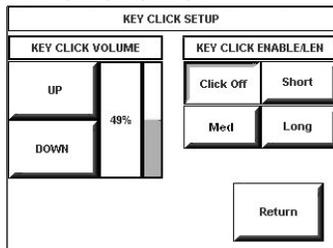
SELECT INTERFACE



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



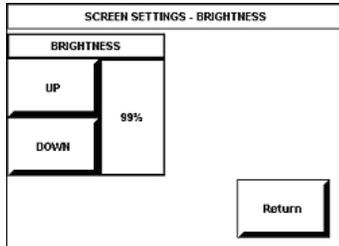
Key Click Setup

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

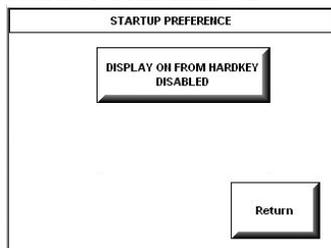


Brightness

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

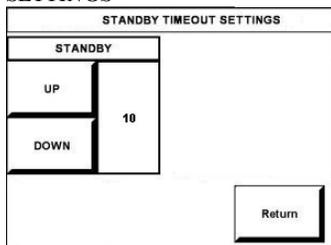
NOTE: This feature applies only to units with the optional bezel and “hard” pushbuttons installed (refer to “Appendix: Installation of Optional Pushbuttons”). You can use these buttons to access any frequently used commands. For detailed information, refer to “Optional Pushbuttons” on page 16.

The Startup Preference option allows (when the touchpanel is off or in standby) the display to come on or stay off when a “hard” 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 “hard” pushbuttons is pressed. With DISABLED selected, the display stays off when a “hard” 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



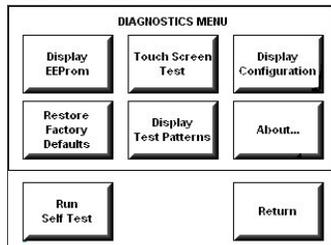
Power Management Timeout Settings

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

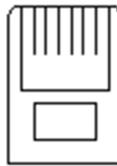
The **Diagnostics** button from the MAIN MENU should only be used under supervision from a Crestron customer service representative during telephone support. Many options available from the DIAGNOSTICS MENU, shown to the left, are numeric in nature and their interpretation is beyond the scope of this 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 RJ-11 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



①②③④⑤⑥

CONNECTOR, 6 PIN, RJ-11
(TAB FACING AWAY)

RJ-11 PIN	CRESNET 4-WIRE
1	2 4
2	
3	Y
4	Z
5	G
6	

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 question or comment about Crestron software?

Answers to frequently asked questions (FAQs) can be viewed in the Online Help section of the Crestron website (www.crestron.com). To post your own question or view questions you have submitted to Crestron's True Blue Support, log in at <http://www.crestron.com/accounts/login.asp>. First-time users will need to establish a user account.

You can create a program that allows you to set up the TPS-1700 to operate a Crestron control system using the Crestron programming tools Crestron System Builder™ and SIMPL Windows. These tools are intended for users with different levels of programming knowledge. The flexibility of each tool is proportional to the degree of programming expertise (i.e., the more flexible, the more a programmer needs to know and account for). Of course, one can initiate programming using the easiest method (Crestron System Builder) and use advanced techniques that are available from SIMPL Windows to customize the job.

VT Pro-e is a Windows compatible software package for creating Crestron touchpanel screen designs. Refer to “Programming with VT Pro-e” on page 15 for additional details regarding VT Pro-e.

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

The following are recommended software version requirements for the PC:

- System Builder version 1.02 or later. Requires SIMPL Windows. Requires System Builder templates 1.01 or later
- SIMPL Windows version 2.05.22 or later. Requires SIMPL+ Cross Compiler version 1.1.
- Crestron Database version 16.2.1 or later. Required by SIMPL Windows.
- VisionTools Pro-e version 3.2.1.8 or later. Used for graphical touchscreen design.
- (Optional) Crestron Engraver version 2.3.0.0 (only required if optional hard buttons and bezel are installed, and 1700C-BTNB or 1700C-BTNS engraveable button kits are purchased).

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

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, touchpanels, devices, and functionality. Crestron System Builder then programs the system, including all touchpanel projects and control system logic.

Crestron System Builder is fully integrated with Crestron's 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.

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.

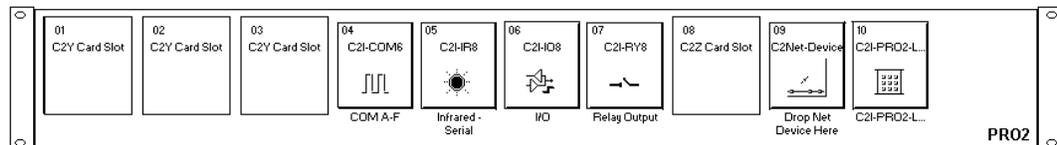
NOTE: In the following description, the PRO2 control system is used.

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.

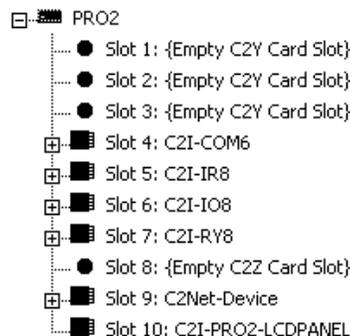
Configuration Manager is where programmers “build” a Crestron control system by selecting hardware from the *Device Library*. In Configuration Manager, drag the PRO2 from the Control Systems folder of the *Device Library* and drop it in the upper pane of the *System Views*. The PRO2 with its associated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

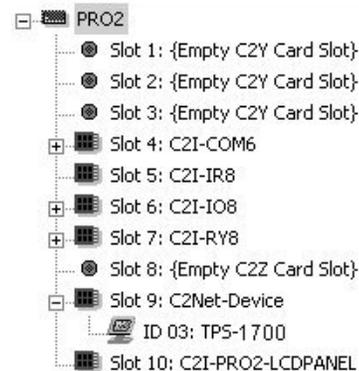


C2Net-Device Slot in Configuration Manager

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.

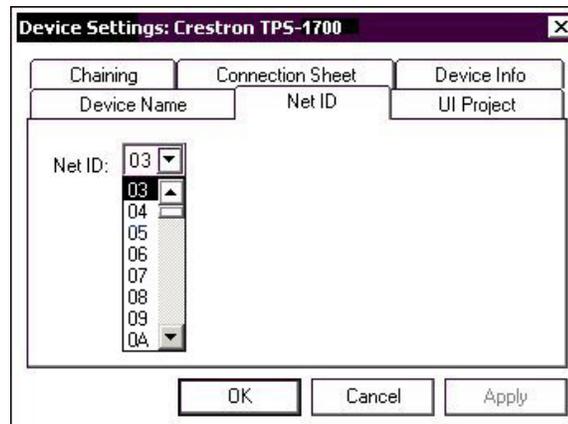
C2Net Device, Slot 9



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

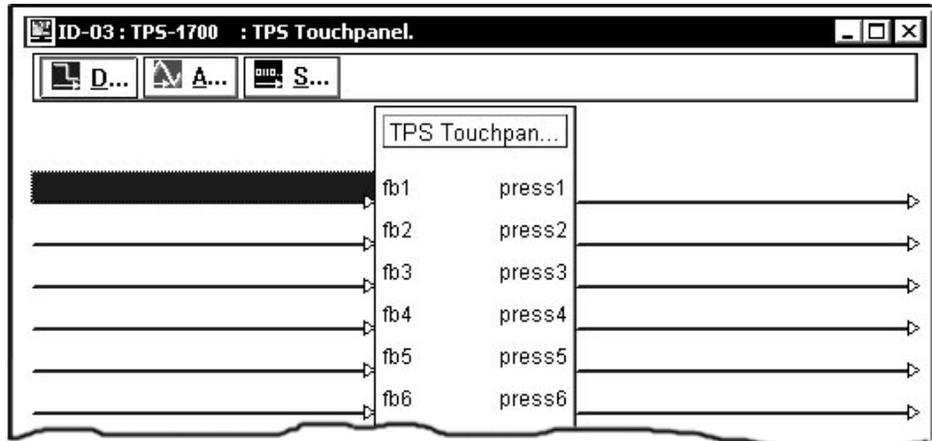


NOTE: SIMPL Windows automatically changes Net ID values of a device added to a program if a duplicate device or a device with the same default Net ID already exists in the program. Always ensure that the hardware and software settings of the Net ID match. For Net ID hardware setting details, refer to “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 following graphic 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 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 VT Pro-e

VT Pro-e, 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*).

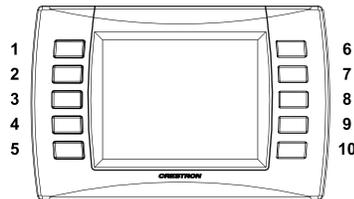
For examples, refer to the MULT-MOD.ZIP file. It is available from the Crestron FTP site <ftp://ftp.crestron.com>. Select the Examples Folder. This file contains the

Multi-mode objects offer high-performance programming!

VT Pro-e touchpanel files and SIMPL Windows files that illustrate the high-performance capabilities of multi-mode objects.

Optional Pushbuttons

Pushbutton Layout and Join Number Assignment



If the optional ten “hard” pushbuttons are installed, you can use these buttons to access any frequently used commands (refer to “Appendix: Installation of Optional Pushbuttons”). 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 user may not want the display to come on after a pushbutton is pressed when the unit is off. 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.

NOTE: To program a quick pushbutton to flip a page (change a screen) on the TPS-1700, go to the *Hard Keys* tab of the “Project Properties” window in VT Pro-e. Select a button from the *Button* drop-down list, and then select the desired page from the *Page Flip* drop-down list. When the button is pressed, the page is displayed.

The quick pushbuttons can also be programmed to do a page flip via SIMPL Windows.

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 below and 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	DIRECTION ²
17201	LCD Brightness ¹	1-100%	I/O
17203	Standby Timeout ¹	0-120 minutes	I/O
17300	Key Click Volume ¹	0-120 minutes	I/O

1 Defaults:

LCD Brightness – 50% Standby Timeout – 10 minutes
Power Timeout – 30 minutes Key Click Volume – 50%

2 "I" indicates that pressing a button with this join number commands the touchpanel to perform the function. "O" indicates feedback to the display (all actions are local to the touchpanel, no information is transmitted).

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	DIRECTION*
17216	Brightness	Up	I
17217	Brightness	Down	I
17218	Brightness	High	I
17219	Brightness	Medium (Default)	I
17220	Brightness	Low	I
17230	Standby	On	I/O
17231	Standby Timeout	Up	I
17232	Standby Timeout	Down	I
17242	Setup	N/A	I
17302	Keyclick	On	I/O
17303	Keyclick	Off	I/O
17304	Key Click Volume	Up	I
17305	Key Click Volume	Down	I
17322	Key Click Short	Short (Default)	I
17323	Key Click Medium	Medium	I
17324	Key Click Long	Long	I

* "I" indicates that pressing a button with this join number commands the touchpanel to perform the function. "O" indicates feedback to the display (all actions are local to the touchpanel, no information is transmitted).

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: The Crestron Viewport utility performs 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.

NOTE: CNMS, CNRACK, and CNLCOMP control systems do not support file transfers (firmware or touchpanel projects) over Cresnet. Upgrading firmware or uploading touchpanel projects to a TPS-1700 must be done via an ST-CP, an X-generation, or a 2-Series control processor.

Communication Settings

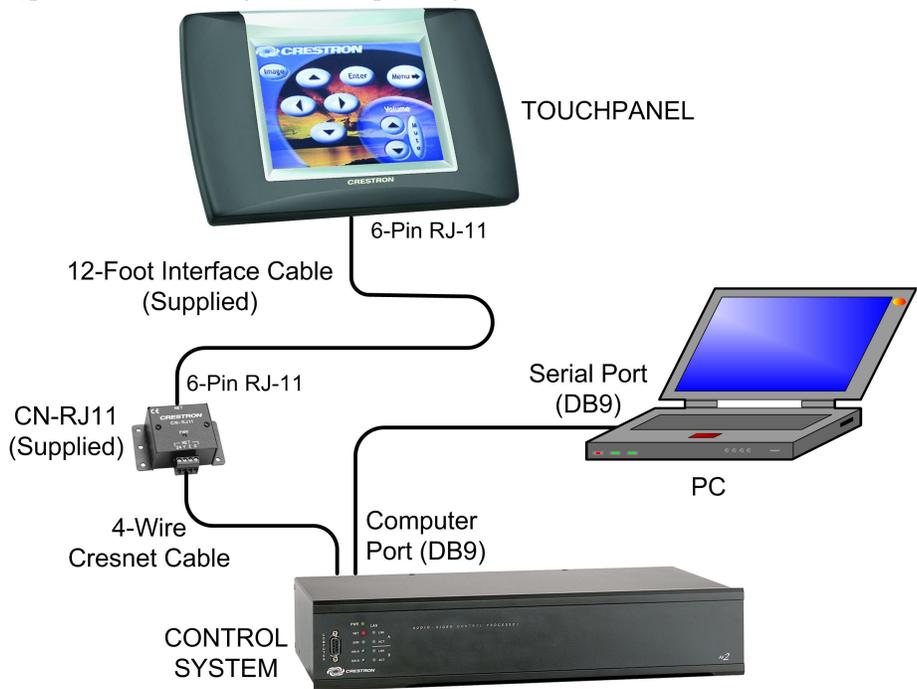
NOTE: For laptops and other PCs without a built-in RS-232 port, Crestron recommends the use of PCMCIA cards, rather than USB-to-serial adapters. If a USB-to-serial adapter must be used, Crestron has tested the following devices with good results:

Belkin (large model) F5U103
I/O Gear GUC232A (discontinued))
Keyspan USA-19QW (discontinued)

Other models, even from the same manufacturer, may not yield the same results.

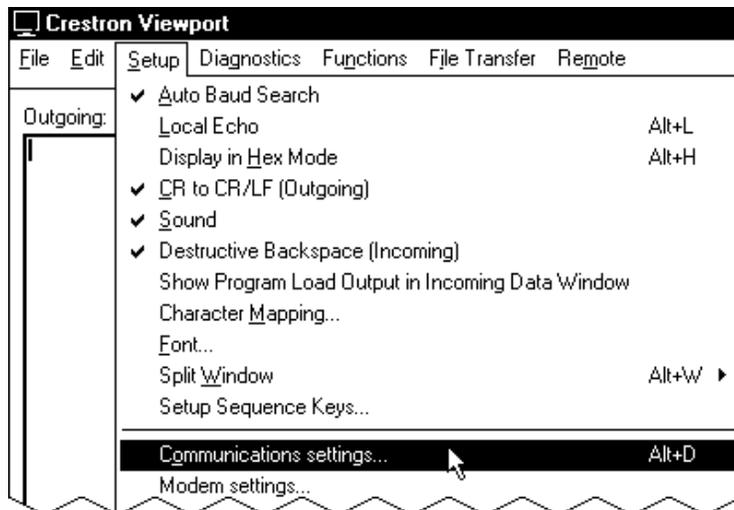
Connection to the TPS-1700 touchpanel is via a 6-pin RJ-11 connector in the base of the unit. Therefore, uploading or upgrading must be accomplished through a control system. The procedure in this section provides details for RS-232 communication between the PC and the control system. If TCP/IP communication 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 following figure for a typical connection diagram when uploading files.

Typical Connection Diagram when Uploading Files



1. Open the Crestron Viewport.
Either launch the stand-alone version of Viewport, or start SIMPL Windows or VT Pro-e, and from the menu bar, select **Tools | Viewport**.
2. From the Viewport menu, select **Setup | Communications settings** (alternatively, press **Alt+D**) to open the “Port Settings” window. Refer to the figures below and on the next page.

Setup | Communications Settings Command



3. 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

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

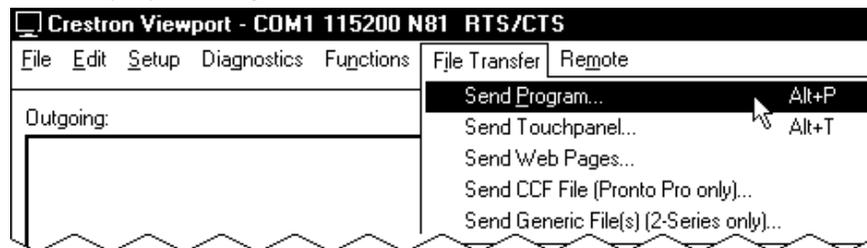
Upload via SIMPL Windows

- 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

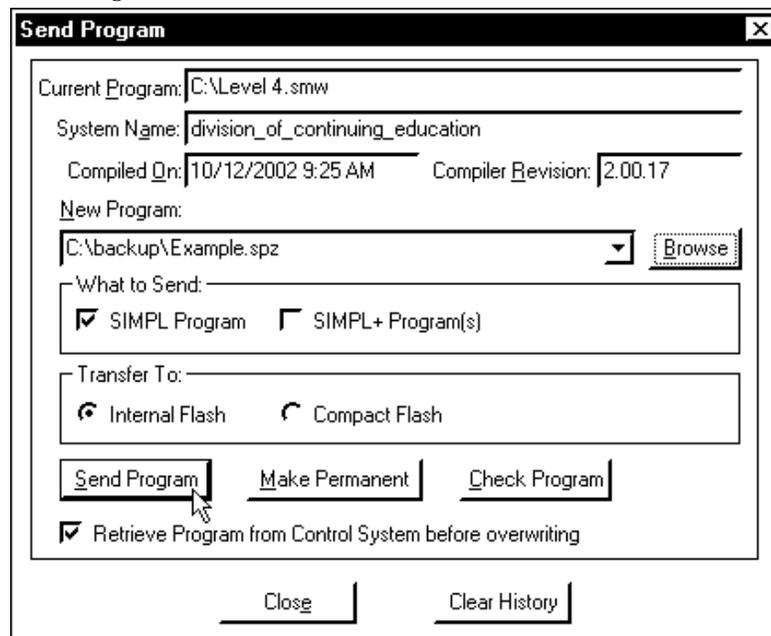
- Verify that the procedure for “Communication Settings” that begins on page 18 has been performed.
- As shown after this step, select **File Transfer | Send Program** (alternatively, press **Alt+P**) from the Viewport menu.

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+.

File Transfer | Send Program Command

3. 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

4. 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.

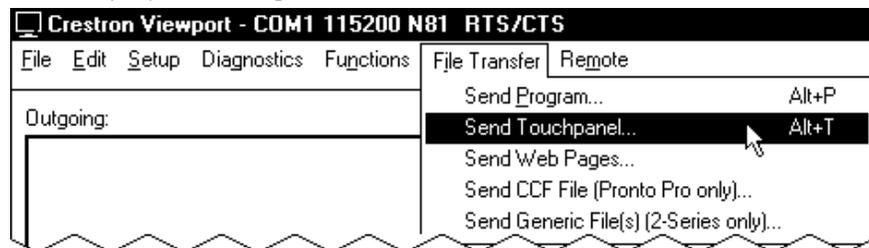
Upload via VT Pro-e

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

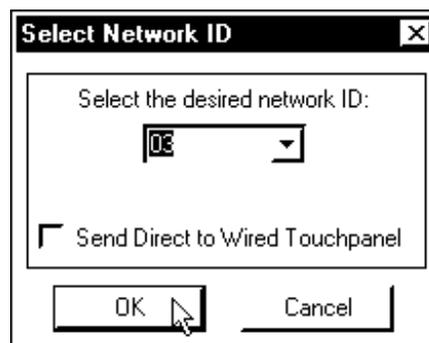
1. Verify that the procedure for “Communication Settings” that begins on page 18 has been performed.
2. As shown after this step, select **File Transfer | Send Touchpanel** (alternatively, press **Alt+T**) from the Viewport menu.

File Transfer | Send Touchpanel Command

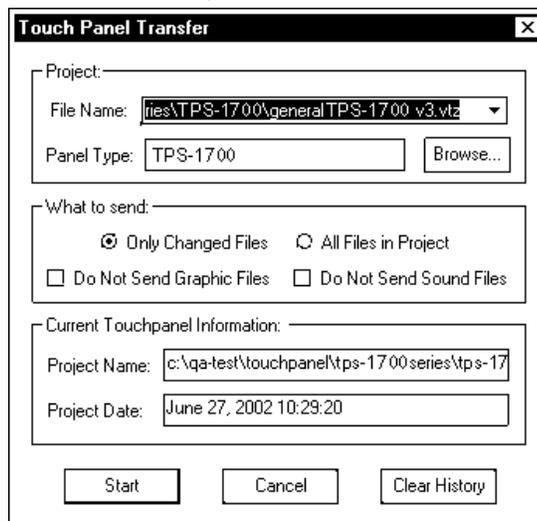


3. As shown after this step, select the Net ID of the TPS-1700 touchpanel and then click **OK**. The “Touch Panel Transfer” window appears (refer to graphic on the next page).

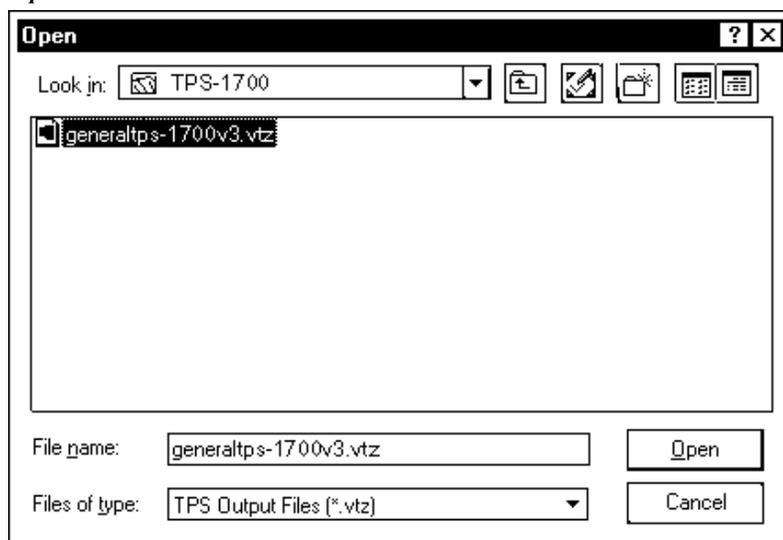
“Select Network ID” Window



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

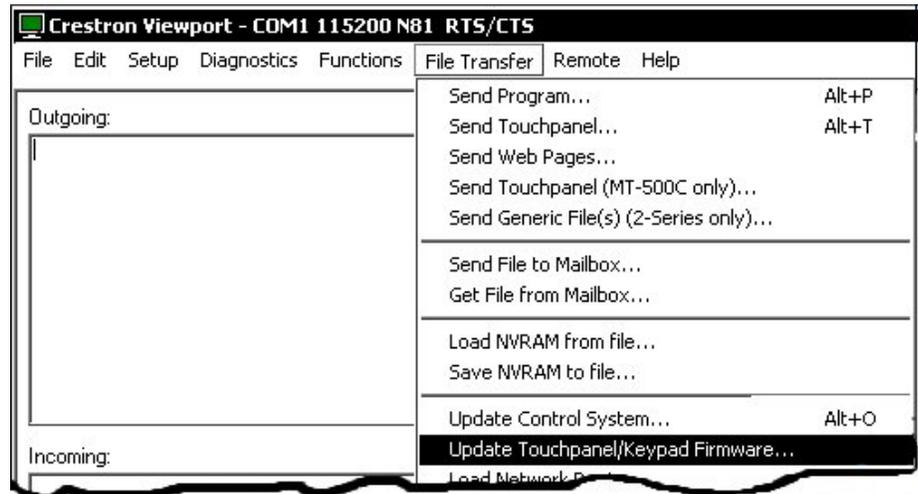
A firmware upgrade file has the extension .csf.

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.

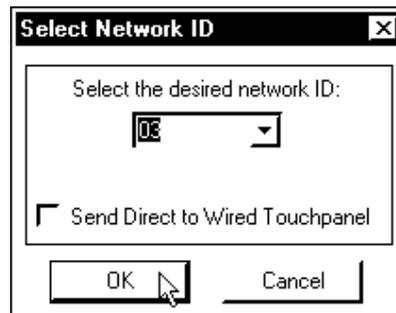
- As shown after this step, select **File Transfer | Update Touchpanel Firmware** from the Viewport menu.

File Transfer | Update Touchpanel Firmware Command

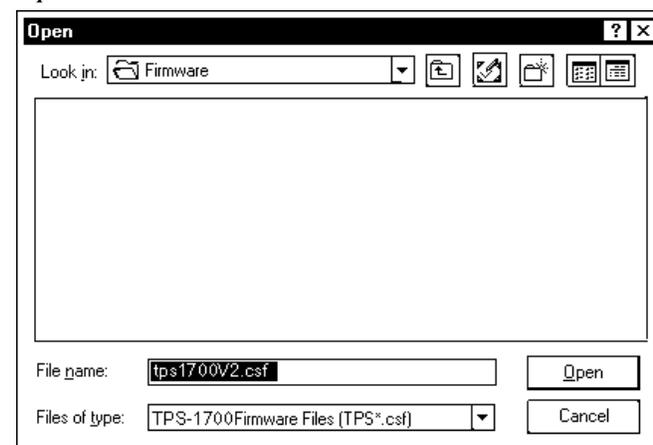


- As shown after this step, select the Net ID of the TPS-1700 touchpanel and then click **OK**. The “Open” window appears (refer to the subsequent graphic).

“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 "Hardware Hookup" procedures on page 9.
	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 five seconds). The Main Menu appears. Select Touchscreen Calibration . The Calibration Menu appears. Select Perform Calibration and follow prompts.
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 five seconds). Set brightness using the Setup menu.

(continued on next page)

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 exists 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 Crestron Control Solutions at +61-2-9737-8203.

You can also log onto the online help section of the Crestron website (www.crestron.com) 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-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 relevance. Updates are available from the Download | Product Manuals section and are identified as an "Addendum" in the Download column.

Appendix: Installation of Optional Pushbuttons

The TPS-1700 is supplied with ten optional pushbutton switches, blank buttons, and a bezel to accommodate the switches. As a further option, custom engraved black or silver buttons (1700C-BTNB or 1700C-BTNS) can be designed and purchased via the Crestron Engraver software. Version 2.3.0.0 or later is available from the Downloads | Software Updates section of the Crestron website (www.crestron.com).

Perform the following to install pushbuttons on the TPS-1700. Follow these same basic procedures to replace the blank buttons with the optional engraved buttons. A #1 Phillips screwdriver is required. Refer to the illustration below.

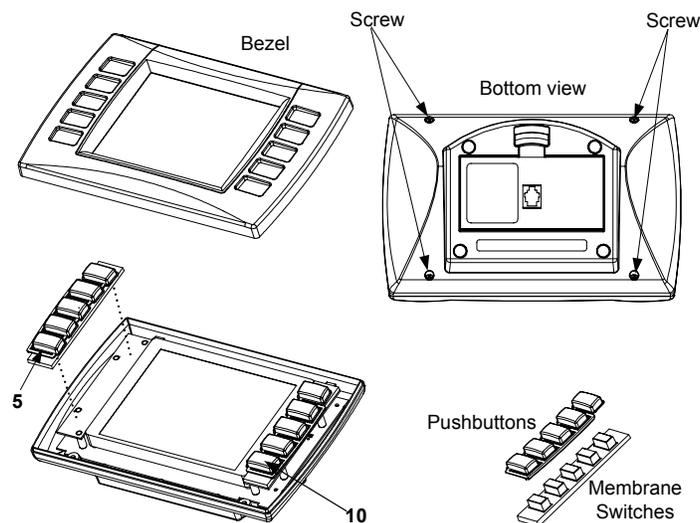
1. Place the touchpanel face down on a clean work surface.
2. Remove the four screws securing the front bezel to the base. Holding the bezel to the base, return the unit to its normal position and lift the bezel from the base.
3. Assemble the supplied membrane switches to the pushbutton sets. Notice that the pushbutton sets fit snugly on the membrane switches. (Refer to the following Notes.)
4. Put the assembled pushbuttons and switches in place (refer to the following Notes), and place the new bezel in position.

NOTE: The rear of the pushbuttons are marked TOP 1-5 and 6-10 to ensure correct orientation when installed. Do not remove the plastic frame connecting the buttons together.

NOTE: Carefully position the switch/pushbutton assemblies on the printed circuit boards—edges should be aligned—and place the bezel over the pushbuttons to hold them in place.

5. Hold the bezel in position 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.

Optional Pushbutton Installation Diagram



Software License Agreement

This License Agreement (“Agreement”) is a legal contract between you (either an individual or a single business entity) and Crestron Electronics, Inc. (“Crestron”) for software referenced in this guide, which includes computer software and, as applicable, associated media, printed materials, and “online” or electronic documentation (the “Software”).

BY INSTALLING, COPYING, OR OTHERWISE USING THE SOFTWARE, YOU REPRESENT THAT YOU ARE AN AUTHORIZED DEALER OF CRESTRON PRODUCTS OR A CRESTRON AUTHORIZED INDEPENDENT PROGRAMMER AND YOU AGREE TO BE BOUND BY THE TERMS OF THIS AGREEMENT. IF YOU DO NOT AGREE TO THE TERMS OF THIS AGREEMENT, DO NOT INSTALL OR USE THE SOFTWARE.

IF YOU HAVE PAID A FEE FOR THIS LICENSE AND DO NOT ACCEPT THE TERMS OF THIS AGREEMENT, CRESTRON WILL REFUND THE FEE TO YOU PROVIDED YOU (1) CLICK THE DO NOT ACCEPT BUTTON, (2) DO NOT INSTALL THE SOFTWARE AND (3) RETURN ALL SOFTWARE, MEDIA AND OTHER DOCUMENTATION AND MATERIALS PROVIDED WITH THE SOFTWARE TO CRESTRON AT: CRESTRON ELECTRONICS, INC., 15 VOLVO DRIVE, ROCKLEIGH, NEW JERSEY 07647, WITHIN 30 DAYS OF PAYMENT.

LICENSE TERMS

Crestron hereby grants You and You accept a nonexclusive, nontransferable license to use the Software (a) in machine readable object code together with the related explanatory written materials provided by Crestron (b) on a central processing unit (“CPU”) owned or leased or otherwise controlled exclusively by You, and (c) only as authorized in this Agreement and the related explanatory files and written materials provided by Crestron.

If this software requires payment for a license, you may make one backup copy of the Software, provided Your backup copy is not installed or used on any CPU. You may not transfer the rights of this Agreement to a backup copy unless the installed copy of the Software is destroyed or otherwise inoperable and You transfer all rights in the Software.

You may not transfer the license granted pursuant to this Agreement or assign this Agreement without the express written consent of Crestron.

If this software requires payment for a license, the total number of CPU’s on which all versions of the Software are installed may not exceed one per license fee (1) and no concurrent, server or network use of the Software (including any permitted back-up copies) is permitted, including but not limited to using the Software (a) either directly or through commands, data or instructions from or to another computer (b) for local, campus or wide area network, internet or web hosting services; or (c) pursuant to any rental, sharing or “service bureau” arrangement.

The Software is designed as a software development and customization tool. As such Crestron cannot and does not guarantee any results of use of the Software or that the Software will operate error free and You acknowledge that any development that You perform using the Software or Host Application is done entirely at Your own risk.

The Software is licensed and not sold. Crestron retains ownership of the Software and all copies of the Software and reserves all rights not expressly granted in writing.

OTHER LIMITATIONS

You must be an Authorized Dealer of Crestron products or a Crestron Authorized Independent Programmer to install or use the Software. If Your status as a Crestron Authorized Dealer or Crestron Authorized Independent Programmer is terminated, Your license is also terminated.

You may not rent, lease, lend, sublicense, distribute or otherwise transfer or assign any interest in or to the Software.

You may not reverse engineer, decompile, or disassemble the Software.

You agree that the Software will not be shipped, transferred or exported into any country or used in any manner prohibited by the United States Export Administration Act or any other export laws, restrictions or regulations (“Export Laws”). By downloading or installing the Software You (a) are certifying that You are not a national of Cuba, Iran, Iraq, Libya, North Korea, Sudan, or Syria or any country to which the United States embargoes goods (b) are certifying that You are not otherwise prohibited from receiving the Software and (c) You agree to comply with the Export Laws.

If any part of this Agreement is found void and unenforceable, it will not affect the validity of the balance of the Agreement, which shall remain valid and enforceable according to its terms. This Agreement may only be modified by a writing signed by an authorized officer of Crestron. Updates may be licensed to You by Crestron with additional or different terms. This is the entire agreement between Crestron and You relating to the Software and it supersedes any prior representations, discussions, undertakings, communications or advertising relating to the Software. The failure of either party to enforce any right or take any action in the event of a breach hereunder shall constitute a waiver unless expressly acknowledged and set forth in writing by the party alleged to have provided such waiver.

If You are a business or organization, You agree that upon request from Crestron or its authorized agent, You will within thirty (30) days fully document and certify that use of any and all Software at the time of the request is in conformity with Your valid licenses from Crestron or its authorized agent.

Without prejudice to any other rights, Crestron may terminate this Agreement immediately upon notice if you fail to comply with the terms and conditions of this Agreement. In such event, you must destroy all copies of the Software and all of its component parts.

PROPRIETARY RIGHTS

Copyright. All title and copyrights in and to the Software (including, without limitation, any images, photographs, animations, video, audio, music, text, and “applets” incorporated into the Software), the accompanying media and printed materials, and any copies of the Software are owned by Crestron or its suppliers. The Software is protected by copyright laws and international treaty provisions. Therefore, you must treat the Software like any other copyrighted material, subject to the provisions of this Agreement.

Submissions. Should you decide to transmit to Crestron’s website by any means or by any media any materials or other information (including, without limitation, ideas, concepts or techniques for new or improved services and products), whether as information, feedback, data, questions, comments, suggestions or the like, you agree such submissions are unrestricted and shall be deemed non-confidential and you automatically grant Crestron and its assigns a non-exclusive, royalty-free, worldwide, perpetual, irrevocable license, with the right to sublicense, to use, copy, transmit, distribute, create derivative works of, display and perform the same.

Trademarks. CRESTRON and the Swirl Logo are registered trademarks of Crestron Electronics, Inc. You shall not remove or conceal any trademark or proprietary notice of Crestron from the Software including any back-up copy.

GOVERNING LAW

This Agreement shall be governed by the laws of the State of New Jersey, without regard to conflicts of laws principles. Any disputes between the parties to the Agreement shall be brought in the state courts in Bergen County, New Jersey or the federal courts located in the District of New Jersey. The United Nations Convention on Contracts for the International Sale of Goods, shall not apply to this Agreement.

CRESTRON LIMITED WARRANTY

CRESTRON warrants that: (a) the Software will perform substantially in accordance with the published specifications for a period of ninety (90) days from the date of receipt, and (b) that any hardware accompanying the Software will be subject to its own limited warranty as stated in its accompanying written material. Crestron shall, at its option, repair or replace or refund the license fee for any Software found defective by Crestron if notified by you within the warranty period. The foregoing remedy shall be your exclusive remedy for any claim or loss arising from the Software.

CRESTRON shall not be liable to honor warranty terms if the product has been used in any application other than that for which it was intended, or if it as 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 or license code altered, defaced, improperly obtained, or removed.

Notwithstanding any agreement to maintain or correct errors or defects Crestron, shall have no obligation to service or correct any error or defect that is not reproducible by Crestron or is deemed in Crestron’s reasonable discretion to have resulted from (1) accident; unusual stress; neglect; misuse; failure of electric power, operation of the Software with other media not meeting or not maintained in accordance with the manufacturer’s specifications; or causes other than ordinary use; (2) improper installation by anyone other than Crestron or its authorized agents of the Software that deviates from any operating procedures established by Crestron in the material and files provided to You by Crestron or its authorized agent; (3) use of the Software on unauthorized hardware; or (4) modification of, alteration of, or additions to the Software undertaken by persons other than Crestron or Crestron’s authorized agents.

ANY LIABILITY OF CRESTRON FOR A DEFECTIVE COPY OF THE SOFTWARE WILL BE LIMITED EXCLUSIVELY TO REPAIR OR REPLACEMENT OF YOUR COPY OF THE SOFTWARE WITH ANOTHER COPY OR REFUND OF THE INITIAL LICENSE FEE CRESTRON RECEIVED FROM YOU FOR THE DEFECTIVE COPY OF THE PRODUCT. THIS WARRANTY SHALL BE THE SOLE AND EXCLUSIVE REMEDY TO YOU. IN NO EVENT SHALL CRESTRON BE LIABLE FOR INCIDENTAL, CONSEQUENTIAL, SPECIAL OR PUNITIVE DAMAGES OF ANY KIND (PROPERTY OR ECONOMIC DAMAGES INCLUSIVE), EVEN IF A CRESTRON REPRESENTATIVE HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES OR OF ANY CLAIM BY ANY THIRD PARTY. CRESTRON MAKES NO WARRANTIES, EXPRESS OR IMPLIED, AS TO TITLE OR INFRINGEMENT OF THIRD-PARTY RIGHTS, MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE, OR ANY OTHER WARRANTIES, NOR AUTHORIZES ANY OTHER PARTY TO OFFER ANY WARRANTIES, INCLUDING WARRANTIES OF MERCHANTABILITY FOR THIS PRODUCT. THIS WARRANTY STATEMENT SUPERSEDES ALL PREVIOUS WARRANTIES.

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, 6 Volvo Drive, Rockleigh, N.J., or its authorized subsidiaries, with RMA number clearly marked on the outside of all cartons. Shipments arriving freight collect or without an RMA number shall be subject to refusal. CRESTRON reserves the right in its sole and absolute discretion to charge a 15% restocking fee, plus shipping costs, on any products returned with an RMA.
3. Return freight charges following repair of items under warranty shall be paid by CRESTRON, shipping by standard ground carrier. In the event repairs are found to be non-warranty, return freight costs shall be paid by the purchaser.

CRESTRON Limited Warranty

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

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

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

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

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

Except as expressly set forth in this warranty, CRESTRON makes no other warranties, expressed or implied, nor authorizes any other party to offer any warranty, including any implied warranties of merchantability or fitness for a particular purpose. Any implied warranties that may be imposed by law are limited to the terms of this limited warranty. This warranty statement supercedes all previous warranties.

Trademark Information

All brand names, product names, and trademarks are the sole property of their respective owners. Windows is a registered trademark of Microsoft Corporation. Windows95/98/Me/XP and WindowsNT/2000 are trademarks of Microsoft Corporation.

This page intentionally left blank.



Crestron Electronics, Inc.
15 Volvo Drive Rockleigh, NJ 07647
Tel: 888.CRESTRON
Fax: 201.767.7576
www.crestron.com

Operations Guide – DOC. 6223A
10.04

Specifications subject to
change without notice.