

Crestron **STX-1700CXP**
2-Way RF Wireless Touchpanel

Operations Guide



CRESTRON

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2-Way RF Wireless Touchpanel: STX-1700CXP

Introduction

Functions and Features

The STX-1700CXP is a 2-way wireless radio frequency (RF) compact color touchpanel that utilizes 2.4 GHz spread spectrum technology to provide a user interface to a Crestron® control system (herein referred to as the Cresnet® system). The “Wi-Fi friendly” touchpanel is a handheld transceiver that communicates through Crestron’s gateway/transceiver, the TPS-RFGWX (sold separately), to the Cresnet system. (Refer to “Wi-Fi Technology” and “Gateway Compatibility” on page 2 for more details.) The 2-way communications provide control of third party and Cresnet devices and dynamic onscreen feedback for real-time confirmation of commands. Up to 15 touchpanels can communicate with one TPS-RFGWX. RF signals can travel from a minimum of three feet up to a maximum between 100 - 200 feet; the range is dependent on location of the touchpanel, the construction of the building, and obstructions and RF interference from other devices. Location and antenna orientation of the TPS-RFGWX also are important factors in RF reception/transmission.

Functional Summary

- 5.7" (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 memory (approx. 3MB for user display lists)
- 8 MB of SDRAM
- Built-in 10 "quick" pushbuttons
 - Engraveable*
 - Operate without waking display
- Long-life NiMH battery
 - Fast charging
 - No battery memory
- “Wi-Fi friendly” operating frequency selection to avoid interference
- Compatible with TPS-RFGWX RF gateways that are not Wi-Fi friendly. **

*Customizable engraving available. Refer to “Appendix A” on page 30 for details.

**Refer to “Gateway Compatibility” on page 2 for details.

Included with the STX-1700CXP are a Crestron High Performance Rechargeable Battery Pack (ST-BTPN) and a Docking Station (ST-DSN) that docks the touchpanel and/or recharges the ST-BTPN. An external power pack (PW-1215 for domestic use or PWI-1215 for international use) is also provided to power the touchpanel. Refer to the latest revisions of the documentation supplied with these items for details.

The touchpanel is also available in an international version, the STXI-1700CXP.

Wi-Fi Technology

Wi-Fi (wireless fidelity) is the common term for high-frequency wireless local area network (WLAN) technology that is gaining acceptance as an alternative to a wired LAN in commercial as well as home network configurations. Wi-Fi is specified in the 802.11b specification from the Institute of Electrical and Electronics Engineers (IEEE) and is part of a series of wireless specifications together with 802.11, 802.11a, and 802.11g.

The STX-1700CXP touchpanel is not “Wi-Fi compatible.” It does not comply with the 802.11 specifications, nor can it communicate with 802.11 devices. It is, however, considered “Wi-Fi friendly,” since you can select a communication band (frequency range) that will avoid interference with 802.11 devices. The touchpanel’s transceiver (as well as the gateway’s) allows you to select one of ten possible bands (0 through 9) for communication. The bands define specific frequency ranges within the 2.4 GHz Spectrum. The default band (Band 0) covers almost the entire spectrum and is, therefore, not Wi-Fi friendly. The nine additional bands define narrower ranges, leaving the rest of the frequency spectrum available for other RF devices, thus making it possible to avoid interference. Refer to the “ADDITIONAL RF SETUP” illustration on page 10 for details.

As you configure the touchpanel for operation, you select an RF channel to identify the gateway that will communicate with the touchpanel. Up to 16 gateways can be included in one SIMPL program, and up to 15 touchpanels can communicate with each gateway.

You then select one of the ten frequency bands. Selection of a band is based on a number of factors, most importantly the need to avoid interference with nearby RF devices, and compliance with local communication laws. Crestron recommends using Bands 5 (USA comp 1) through 9 (USA comp 5) within the US. Bands 1 through 4 (France, Spain, Japan, and Canada) are intended for use in Cresnet systems outside the US.

If you have two or more Crestron wireless RF devices in the Cresnet system, they should all be set to the same band. If your system includes non-Crestron RF devices, set the Crestron RF devices to a different band than the non-Crestron devices to minimize the possibility of interference between them.

Gateway Compatibility

The ability to select frequency bands makes it possible for the STX-1700CXP to communicate with TPS-RFGWX two-way RF transceivers (gateways) that are Wi-Fi friendly as well as those that are not. TPS-RFGWX gateways that are Wi-Fi friendly (include band selection) have product labels that include a seven-digit number beginning with 600 (e.g., 6002104). Product labels on earlier models of the TPS-RFGWX gateway (fixed band; not Wi-Fi friendly) include seven-digit alphanumeric codes beginning with ZA (e.g., ZA11308). Similarly, Wi-Fi friendly TPS-RFGWX gateways can communicate with touchpanels that are not so enabled as well as those that are. In either case, in order to communicate, the TPS-RFGWX gateway and STX-1700CXP touchpanel must be set to the same band and have identical identity code settings (refer to “Identity Codes” on page 7 for details).

Specifications

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

Specifications of the STX-1700CXP Touchpanel

SPECIFICATION	DETAILS
Power Options <i>ST-BTPN</i>	Rechargeable NiMH battery pack (included) 4100 mAh capacity after full charge. (Operating time depends on usage.) ¹
<i>AC: Domestic External Adapter</i>	12VDC, 1.5A, 120VAC Input (included) (P/N PW-1215 or equivalent)
<i>AC: International External Adapter</i>	12VDC, 1.5A, 230VAC Input (included with international version touchpanel) (P/N PWI-1215 or equivalent)
<i>ST-DSN</i>	Docking Station/charger with external power pack (included)
RF Specifications ²	Bidirectional Spread Spectrum 2.4 GHz (range approximately 100 - 200 feet). Requires one TPS-RFGWX transceiver per 15 touchpanels.
Default NET ID ³	03 (NET ID used in wired configuration only.)
Default RF ID ³	01 (RF ID used in wireless configuration only.)
Default RF Channel ³	01 (Identifies RF gateway to be used for communication.)
Default RF Band ³	Band 0 (USA Original) Ten frequency bands (ranges) available for selection.
Default Timeouts	10 minutes for standby 30 minutes for power down
Signal Join Maximums	4000 digital, 1024 analog, 127 serial input, 255 serial output
Control System Update Files ^{4, 5, 6} 2-Series Control System Update CEN/CN-TVAV Update File CNMSX-AV/Pro Update File CNRACKX-DP Update File	Version C2-3.044.CUZ or later Version 5.12.63V.UPZ or later Version 5.14.02X.UPZ or later Version 5.14.02W.UPZ or later
Acceptable file extensions ⁷ .vtz .csf	<i>projectname.vtz</i> (compiled file) STX1700CXP.vx.xxx.x.csf (panel firmware)
TPS-RFGWX firmware	Version 2.15 or later
Memory	4 MB flash memory (3 Mbytes available for user programming) 8 MB SDRAM
Touchscreen Dimensions	Height: 3.700 in (9.017 cm) Width: 4.700 in (11.938 cm)
Touchscreen Resolution	320 x 240 pixels
Touchscreen Viewing Angles	±65° for X dir, +65/-40° for Y dir
Touchscreen LCD	Active matrix, 64K colors
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 ⁸	1.85 lb (0.84 kg)

1. Battery life is 180 minutes continuous usage with background lighting at full brightness. Actual operating time depends on usage and settings for background brightness and timeouts.
2. Requires Crestron TPS-RFGWX 2-Way RF Gateway/Transceiver. The RF signals can travel from a minimum of three feet up to a maximum between 100 - 200 feet; the range is dependent on construction of the building, obstructions, and RF interference from other devices. The location of the TPS-RFGWX and the orientation of the antenna are also important factors in the RF performance.
3. Refer to "Identity Codes" on page 7 for details.
4. 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.
5. Crestron 2-Series control systems include the AV2, AV2 with Card Cage, CP2, CP2E, PAC2, MC2W, MC2E, MP2, MP2E, PRO2, and RACK2.
6. 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).
7. In DETAILS, *projectname* represents the assigned project name, and *v1.x.x.x.x* represents a version number.
8. The weight listed for the touchpanel does not include the ST-BTPN, ST-DSN or external power pack.

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).

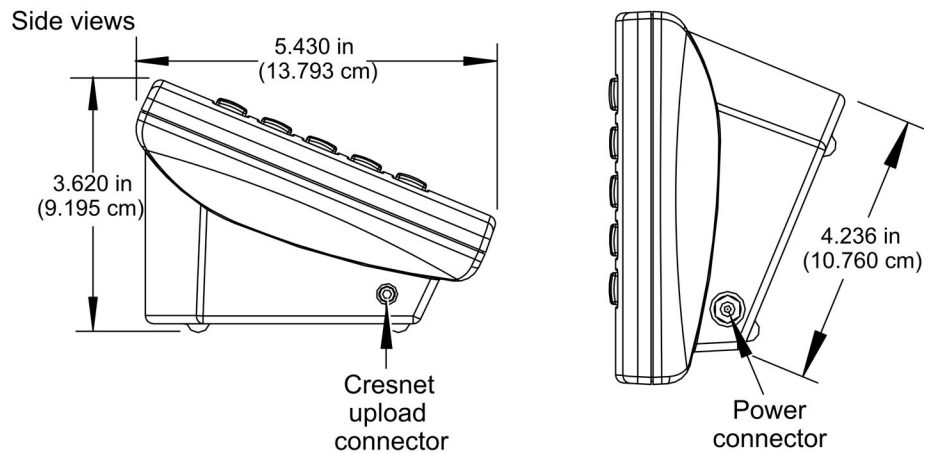
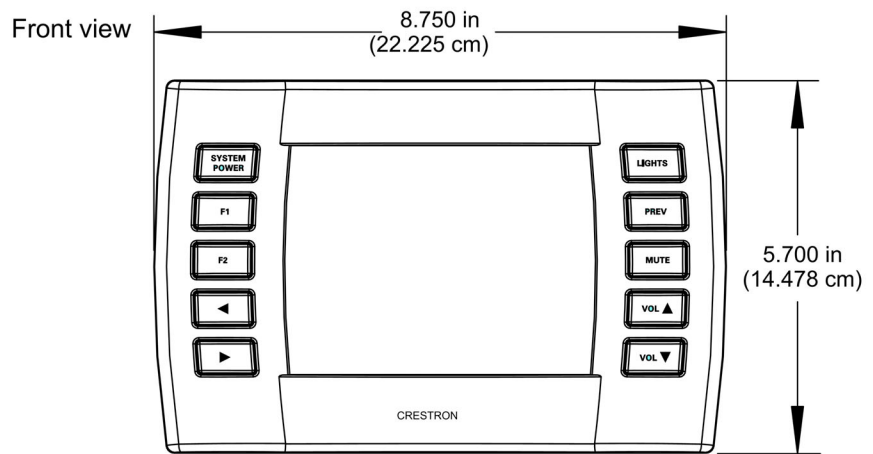
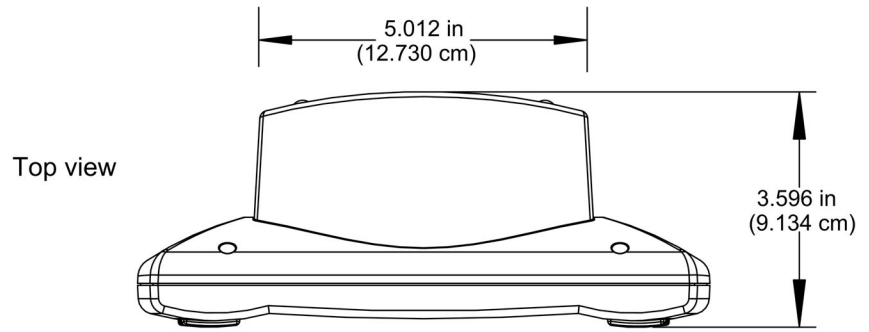
Physical Description

The touch-sensitive viewing screen and "quick" pushbuttons are located on the front of the STX-1700CXP. The electronic hardware is housed in a high impact, black molded plastic enclosure, shown below. Connectors to upload touchscreen projects via Cresnet, using a PC and Crestron processor, and to power the unit using the external power pack are located on the left and right sides of the unit, respectively. Refer to illustrations on the next page.

Physical View of STX-1700CXP



Physical Views (continued)



The underside of the unit contains the battery compartment that holds one ST-BTPN. Contacts for the ST-DSN are through the ST-BTPN. Four rubber feet on the underside of the unit are for stability and to prevent slippage on flat surfaces.

Refer to “Programming Cable” on page 22 for details and pinouts of the cable used for programming and uploading.

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

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. The equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and transceiver.
- Connect the equipment into an outlet on a circuit different from that to which the transceiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Setup

Applying Power

The touchpanel can be powered via the ST-BTPN, while docked in the ST-DSN, or via the external power pack. Each of these items has its own Operations Guide which details proper usage. Refer to the table below for the required document number.

STX-1700CXP Power Source Options

POWER SOURCE OPTION	MODEL	DOCUMENT NUMBER*
Battery Pack**	ST-BTPN	6088
Docking Station	ST-DSN	6095
Domestic External Power Pack, or	PW-1215	5764
International External Power Pack	PWI-1215	5765

* The latest revision may have a revision letter after the document number (i.e., 6088A).

** The battery pack does not “trickle” charge when the external power pack is used to power the touchpanel.

Identity Codes

The STX-1700CXP touchpanel uses distinct types of identity (ID) codes for recognition within a Cresnet system: Cresnet identity (NET ID) for instances when the touchpanel is wired to the Cresnet system, and RF ID for those instances when the touchpanel communicates with the Cresnet system via the RF gateway. These codes are assigned to the touchpanel from the SELECT INTERFACE screen when the unit is configured. Refer to “Select Interface” on page 9. These assignments must match assignments made in the SIMPL Windows project.

In addition, it is necessary to specify an RF channel and band in order for the touchpanel and TPS-RFGWX gateway to communicate. These settings, described briefly below, are assigned via the RF SETUP and ADDITIONAL RF SETUP screens, shown on pages 9 and 10, respectively.

NET ID

Every equipment and user interface wired to the Cresnet system requires a unique NET ID. These codes are two-digit hexadecimal numbers from 03 to FE. The NET ID of the unit must match the NET ID specified in the SIMPL Windows program. The NET ID is used during uploading of a Crestron VisionTools® Pro-e (VT Pro-e) project or upgrading the touchpanel firmware.

The NET ID is also used when operating the unit as a wired touchpanel.

RF ID

Every STX-1700CXP touchpanel communicating with a Cresnet control system via a TPS-RFGWX requires a unique RF ID to identify it to the gateway to secure RF communications. There are 15 useable codes, ranging from 1 to F (hexadecimal number), to allow for up to 15 touchpanels communicating via a given gateway. The RF ID of the touchpanel must match the RF ID specified in the SIMPL Windows program.

NOTE: The RF channel and band selection of the touchpanel must match the channel ID and band selection of the gateway to have communication. Refer to the latest version of the TPS-RFGWX Operations Guide (DOC. 5847) for gateway assignment details.

RF CHANNEL

Each STX-1700CXP touchpanel communicating to the TPS-RFGWX transceiver must have an RF channel that matches the channel ID of the TPS-RFGWX. There are 16 possible RF channels ranging from 0 to F (hexadecimal number). Having multiple channels available allows for multiple gateways, and therefore many multiple touchpanels, to be used in a given project without signal interference.

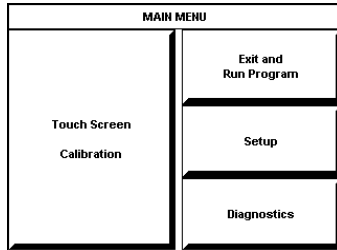
The channel ID assignment of the TPS-RFGWX is viewed/changed in the Crestron Viewport software utility.

Band

The ability to specify one of the ten bands (frequency ranges) designated for communication within the 2.4 GHz spectrum makes it possible to minimize interference with other RF devices that may be operating near the Cresnet system. Refer to the “ADDITIONAL RF SETUP” illustration on page 10 for details.

Configuring the Touchpanel

MAIN MENU



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

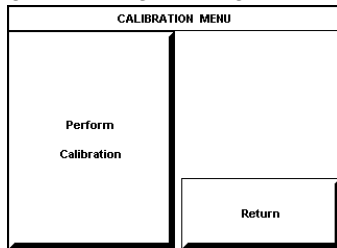
To configure the unit, it may be necessary to access a series of setup screens prior to viewing run-time screens that are loaded into the touchpanel for normal operation. The MAIN MENU for configuring the touchpanel appears when a finger is pressed on the screen just before power is applied, and held pressed for about five seconds as the unit powers up.

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



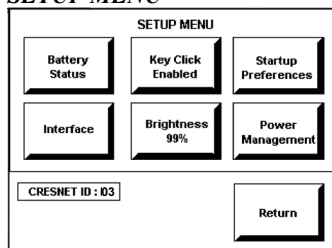
Calibration of the touchscreen is required if the active touch area of a button does not coincide with the button's image. Select the **Touch Screen Calibration** button to display the CALIBRATION MENU, as shown to the left. The CALIBRATION MENU offers the choice to initiate calibration with the **Perform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

Setup Menu

SETUP MENU

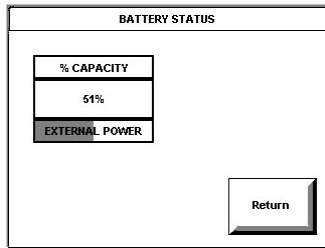


To obtain the SETUP MENU, shown to the left, press the **Setup** button from the MAIN MENU. The SETUP MENU offers a series of buttons, which open additional menus and screens that are detailed in subsequent paragraphs. After setup parameters have been set, select the **Return** button to return to the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

BATTERY STATUS



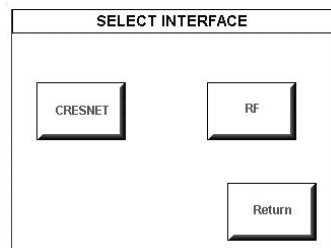
Battery Status

To access the Battery Status screen, shown to the left, press the **Battery Status** button on the SETUP MENU.

This screen indicates the amount of charge (or life) remaining in the battery as a percentage of full capacity, if the battery is installed. An analog bar is provided below the percentage amount as a quick visual reference to the approximate level of charge remaining. The EXTERNAL POWER label appears if external power is applied either through the docking station or via the optional power pack. Note that battery recharging takes place only through the docking station. Touch the **Return** button to display the SETUP MENU.

NOTE: When charging the battery, the battery status screen is not an accurate indicator of battery level. The battery status screen will indicate a full charge (100%) before the docking station indicates that charging is complete (RDY illuminates).

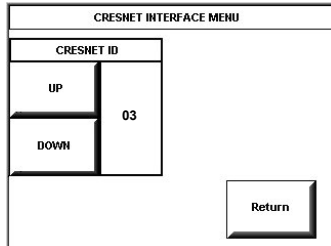
SELECT INTERFACE



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 either the **CRESNET** or the **RF** button to display the CRESNET INTERFACE MENU or the RF SETUP screen, respectively. Use these screens to set the Cresnet network identity (CRESNET ID) and the RF ID numbers.

CRESNET INTERFACE MENU



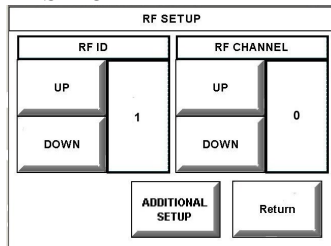
Cresnet Interface Menu

CRESNET ID is a two-digit hexadecimal number that can range from 03 to FE. Note that if the panel is to be used in a wired mode, this number and the NET ID set in the SIMPL Windows program of the Cresnet system must match. NET ID for the STX-1700CXP is factory set to 03.

The **UP** and **DOWN** buttons increase and decrease the CRESNET ID by one digit (i.e., 03, 04, 05, . . . FE).

Select the **Return** button to return to the SELECT INTERFACE menu.

RF SETUP



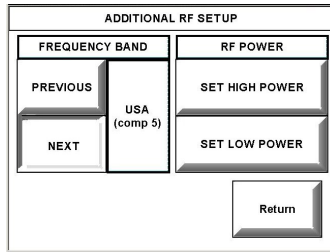
RF Setup

The RF ID identifies the gateway port that the touchpanel will use for communication. The RF ID consists of a one-digit hexadecimal number. The touchpanel can be set to one of fifteen numbers; “1” is shown as an example in the illustration and is the default. This means that up to fifteen touchpanels can communicate with a given gateway.

The **UP** and **DOWN** buttons increase/decrease the RF ID by one, respectively (i.e., 1, 2, 3, . . . F).

The radio frequency channel setting (RF CHANNEL) identifies the particular TPS-RFGWX gateway used for communication with the touchpanel. (Up to sixteen TPS-RFGWX gateways can exist in a SIMPL program.) The RF CHANNEL setting consists of a one-digit hexadecimal number; “0” is shown as an example in the illustration on the left and is the default. The UP and DOWN buttons increase and decrease the RF CHANNEL by one, respectively (i.e., 1, 2, 3, . . . F). Refer to the latest revision of the TPS-RFGWX Operation Guide (Doc. 5847) for more information on setting up the RF CHANNEL for the RF gateway.

ADDITIONAL RF SETUP



Press the **ADDITIONAL SETUP** button to display the ADDITIONAL RF SETUP screen. In situations where two or more touchpanels are in close proximity and could conflict with each other, press the **SET LOW POWER** button to reduce the touchpanel’s power and minimize the possibility of interference. The factory default setting is **SET HIGH POWER**.

Use the **PREVIOUS** and **NEXT** buttons to choose the desired frequency band. The choices correspond with the names shown in the following table. The table shows the 802.11b channels within each band that are occupied by the STX-1700CXP. Selection of a band is based on a number of factors, including the need to avoid interference with nearby RF devices, and compliance with local communication laws. In the US, Crestron recommends using Bands 5 (USA comp 1) through 9 (USA comp 5). Bands 1 through 4 (France, Spain, Japan, and Canada) are intended for use in Cresnet systems outside the US. The default setting is Band 0, USA (original), which is *not* Wi-Fi friendly. At this setting, the touchpanel can communicate with a TPS-RFGWX gateway whether it is Wi-Fi friendly or not, since Band 0 is the default for both versions of the gateway. Note that the touchpanel and gateway must be set to the same band in order to communicate.

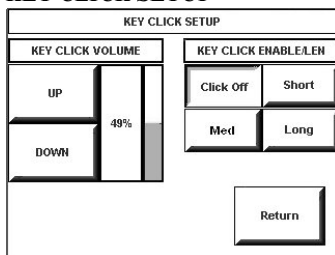
Band #	Freq. Range (MHz)	Band Name	Occupied 802.11b Channels														
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	
0	2400-2474	USA (original)	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
1	2448-2474	France															
2	2448-2474	Spain															
3	2471-2497	Japan															
4	2452-2477	Canada															
5	2400-2425	USA (comp 1)	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
6	2409-2435	USA (comp 2)	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
7	2419-2445	USA (comp 3)		•	•	•	•	•	•	•	•	•	•	•	•	•	•
8	2430-2455	USA (comp 4)			•	•	•	•	•	•	•	•	•	•	•	•	•
9	2440-2465	USA (comp 5)															

In the table, a bullet (•) indicates channels that are used by the STX-1700CXP. The unmarked channels can be used by other devices communicating near the Cresnet system, thus minimizing interference.

After the Cresnet ID, RF ID, RF CHANNEL, and Band settings have been verified, touch the **Return** button at the bottom of the screen to save settings and display the SELECT INTERFACE screen. Touch **Return** again to display the SETUP MENU.

Key Click Setup

KEY CLICK SETUP

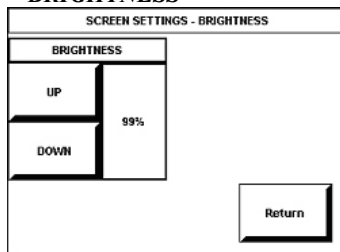


From the SETUP MENU, press the **Key Click Enabled** button to open KEY CLICK SETUP screen. (If the function is currently disabled, the button legend is “**Key Click Disabled.**”) To enable an audible tone (beep) when the touchpanel buttons are pressed, select among the **Short**, **Med**, or **Long** 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**

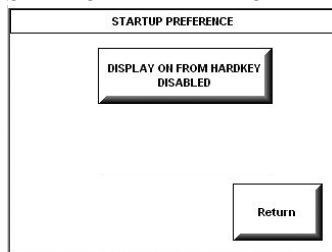


Brightness

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



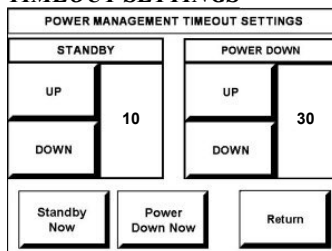
Startup Preference

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 Preferences** button to open the STARTUP PREFERENCE screen. In either case, the button signal will be sent to the RF gateway if the touchpanel is in standby mode.

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, it goes to standby). 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 feature is intended to conserve energy, and to extend the service life of the battery. From the SETUP MENU, press the **Power Management** button to display the POWER MANAGEMENT TIMEOUT SETTINGS screen. Use the STANDBY and POWER DOWN **UP** and **DOWN** buttons to set the respective timeouts from 0 through 120 minutes, where 0 disables the timeout. It adjusts in one-minute increments from 1 to 10, in ten-minute increments from 20-120.

Use the **Standby Now** and **Power Down Now** buttons to immediately enter the respective mode.

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.

POWER DOWN timeout turns off all power when the touchpanel is inactive for the specified time. When the touchpanel is activated, the first page of the project appears. The specified time is displayed in minutes. The default POWER DOWN timeout is 30 minutes. It adjusts in one-minute increments from 1 to 10, in ten-minute increments from 20-120.

NOTE: Power Down Timeout should be set low to maximize battery life. However, Power Down Timeout should be set greater than Standby Timeout. Otherwise, the Standby Timeout is meaningless.

NOTE: When the panel is powered down, it will take about 1.5 seconds to power up and respond to a button press. There is no delay from Standby mode.

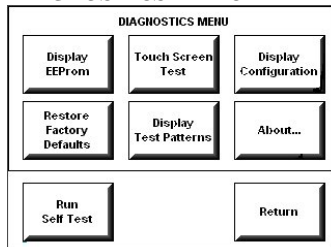
NOTE: This touchpanel does not include a built-in option to power up on the last page viewed prior to power down. To power up on the last page viewed, you must give the pages discrete join numbers and track them with SIMPL Windows logic.

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

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.

General Use and Safety

WARNING: To avoid shock hazard and possible damage to the unit, do not use the touchpanel in the rain or expose it to unnecessary moisture.

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, which may detrimentally affect image quality.

For best cleaning results, use a clean, damp, non-abrasive cloth with any commercially available non-ammonia glass cleaner. The surrounding plastic enclosure may not provide a completely watertight seal. Therefore, apply cleaning solution to the cloth rather than the surface of the touchscreen. Wipe touchscreen clean and avoid leakage 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 29
for assistance.*

You can create a program that allows you to set up the STX-1700CXP to operate a Crestron control system using the Crestron programming tools Crestron Application Builder™ (AppBuilder) 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 AppBuilder) 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 18 for additional details regarding VT Pro-e.

The following are recommended software version requirements for the PC:

- SIMPL Windows version 2.04.14 or later. Requires SIMPL+ Cross Compiler version 1.1.
- Crestron Database version 15.9.10 or later.
- (Optional) Crestron Application Builder version 1.2.3 or later. Requires SIMPL Windows.
- VT Pro-e version 3.0.0.8 or later, used for graphical touchscreen design.
- (Optional) Crestron Engraver version 2.1.0.2

Programming with the Crestron AppBuilder

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

The 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. The Crestron AppBuilder then programs the system, including all touchpanel projects and control system logic.

The Crestron AppBuilder 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. The 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.

NOTE: The STX-1700CXP can operate as a wired panel when set correctly in the SIMPL program. This is recommended to troubleshoot the program code and to eliminate wireless/RF configuration issues before running the program in wireless mode.

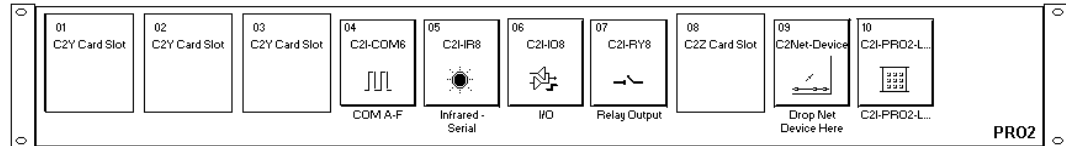
SIMPL Windows is Crestron's software for programming Crestron control systems. It provides a well-designed graphical environment with a number of workspaces (i.e., windows) in which a programmer can select, configure, program, test, and

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 an STX-1700CXP.

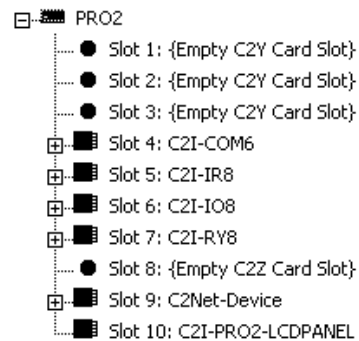
Configuration Manager is where programmers “build” a Crestron control system by selecting hardware from the *Device Library*. In Configuration Manager, drag the PRO2 from the Control Systems folder of the *Device Library* and drop it in the upper pane of the *System Views*. The PRO2 with its associated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



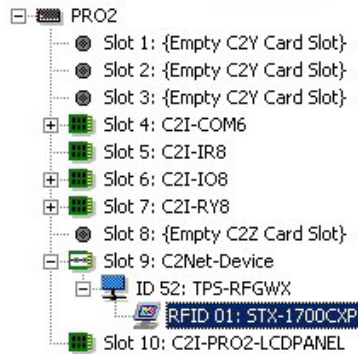
C2Net-Device Slot in Configuration Manager

To incorporate an STX-1700CXP into the system, a gateway device is required. The C2Net-Device Slot can accept a gateway such as the TPS-RFGWX. Once a gateway is configured in a C2Net-Device Slot, the slot allows Cresnet communication between the touchpanel and the control system.

In Configuration Manager, drag the TPS-RFGWX gateway from the Wireless Receivers (RF) folder of the *Device Library* and drop it in the upper pane of the *System Views*. The *System Views* upper pane displays the TPS-RFGWX device icon below the PRO2 graphic.

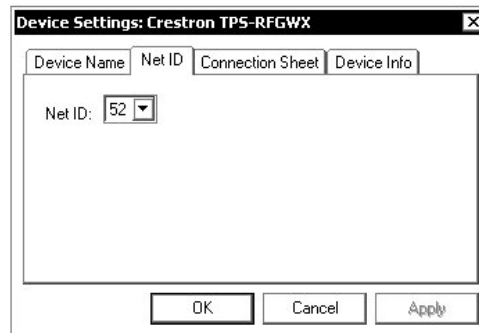
Drag the STX-1700CXP from the Touchpanels (Wireless | Wireless Two-Way) folder of the *Device Library* and drop it on the TPS-RFGWX symbol in *System Views*. The PRO2 system tree displays the TPS-RFGWX gateway in Slot 9, with a default NET ID of 52. The TPS-RFGWX displays the touchpanel at the touchpanel’s default RF ID location, “01,” as shown in the graphic on the next page.

C2Net Device, Slot 9



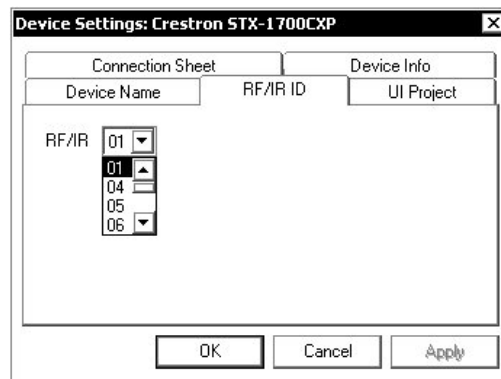
Double-click the TPS-RFGWX icon in the upper pane to open the “Device Settings” window. This window displays TPS-RFGWX device information. Select the *Net ID* tab to change the gateway Net ID, as shown in the following graphic.

“Device Settings” Window for the TPS-RFGWX



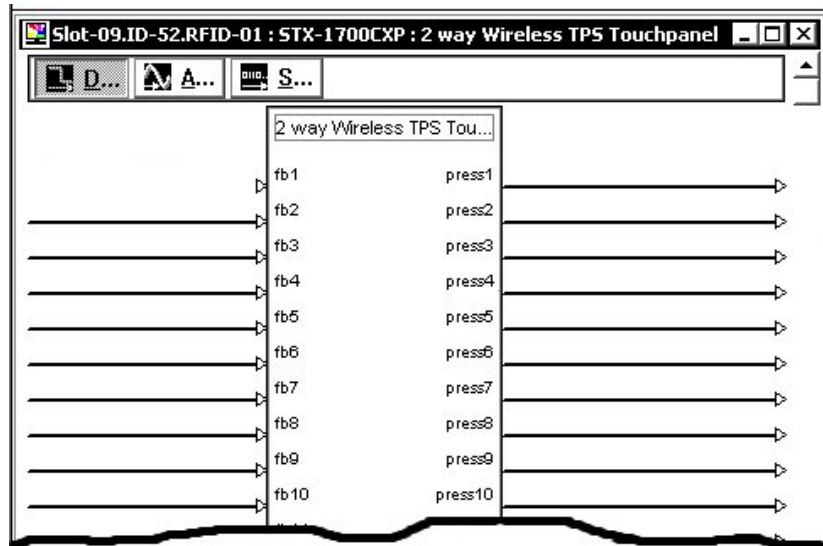
Similarly, expand the system tree in the lower pane and double-click the STX-1700CXP icon to open the “Device Settings” window for the touchpanel. Select the *RF/IR ID* tab to change the touchpanel RF ID, as shown below. For more information on setting the RF/IR ID, refer to “RF Setup” shown on page 9.

Touchpanel “Device Settings” Window



STX-1700CXP Symbol in Programming Manager

Programming Manager is where programmers “program” a Crestron control system by assigning signals to symbols. The graphic after this paragraph shows the STX-1700CXP symbol in the SIMPL Windows’ Programming Manager.

Detail View of the STX-1700CXP 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.

STX-1700CXP Input/Output Signals

The STX-1700CXP symbol provides up to 4000 digital joins, up to 1024 analog joins, and up to 127 serial output joins and 255 serial input 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 1024	Notifies control system of an analog action (1 – 1024). Any value from 0 through 65535

Analog Input Signal Descriptions

INPUT	DESCRIPTION
an_fb 1 through an_fb 1024	Notifies panel of analog feedback (1 – 1024).

Serial Output Signal Descriptions

OUTPUT	DESCRIPTION
text-I1 through text-I127	For remapping of system reserved joins (1 – 127).

Serial Input Signal Descriptions

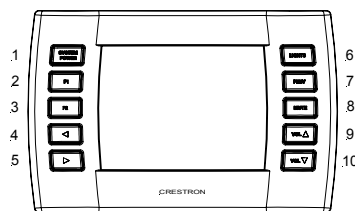
INPUT	DESCRIPTION
text-o1 through text-o255	Notifies panel of text string (1 – 255). Also called indirect text.

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. For the STX-1700CXP in wired mode only, the Poll Manager takes the touchpanel on and off line during polling by the control system. In wireless mode, 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.

“Quick” Pushbuttons

The STX-1700CXP has ten “quick” pushbuttons, five on each side of 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.

Pushbutton Layout and Join Number Assignment

NOTE: A user may not want the LCD 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 11.

NOTE: To use a quick pushbutton to flip a page (change a screen) on the STX-1700CXP, you would assign the desired button’s digital join number to the page (Crestron recommends this method) and enable the corresponding feedback from the control system. Using button 10 as an example, in VT Pro-e you would assign digital join number 10 to a page using page properties. In the SIMPL Windows’ Programming Manager view, you would connect the signal at press 10 (output) to the fb10 (input) of the STX-1700CXP symbol.

NOTE: Assuming that the touchpanel is powered down, pressing a “quick” pushbutton once “wakes up” the touchpanel but no command is sent. A second button press sends the command. However, if the touchpanel is actually in standby mode, the panel is “awake” and the initial button press sends the command.

Programming with VT Pro-e

Control screen variations incorporating two- and three-dimensional graphics and text are possible and can be created with VT Pro-e, a design and programming Windows®-based software program. A set of pages, which make up a project, can be designed for each application. Each touchpanel can be organized with the ideal, color-oriented control environment with custom control graphics: icons, two and three-dimensional buttons, and floor plans. The project is uploaded to the touchpanel’s flash PROM. The touchpanel uses the project until another is uploaded from the PC. The PC may be disconnected from the control processor except when uploading a project.

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).

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 provide lists of reserved join numbers available within the VT Pro-e software.

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

Digital Reserved Join Numbers STX-1700CXP

JOIN NUMBER	FUNCTION	VALUE
17200	Power	Off
17216	Brightness	Up
17217	Brightness	Down
17218	Brightness	High
17219	Brightness	Medium (Default)
17220	Brightness	Low
17230	Standby	On
17231	Standby Timeout	Up
17232	Standby Timeout	Down
17233	Power Timeout	Up
17234	Power Timeout	Down
17242	Run Setup	Off
17302	Keyclick	On
17303	Keyclick	Off
17304	Key Click Volume	Up
17305	Key Click Volume	Down
17322	Key Click Short	Short (Default)
17323	Key Click Medium	Medium
17324	Key Click Long	Long
17509	Out of Range*	N/A
17532	Send Update Request	N/A

* Assigning 17509 (Out of Range) to a page, sub page or button activates the page, subpage or button when the STX-1700CXP goes out of range.

Analog Reserved Join Numbers for STX-1700CXP

JOIN NUMBER	FUNCTION	VALUE
17201	LCD Brightness*	1-100%
17202	Power Timeout*	0-120 minutes
17203	Standby Timeout*	0-120 minutes
17300	Key Click Volume*	1-100%
17507	Battery Level	0-100%

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

Uploading and Upgrading

Assuming a PC is properly connected to the entire system, Crestron programming software allows the programmer to upload programs and projects after their development to the system and network devices. 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 VT Pro-e project or upgrade the firmware of the STX-1700CXP. However, before attempting to upload or upgrade, it is necessary to establish communications.

Communication Settings

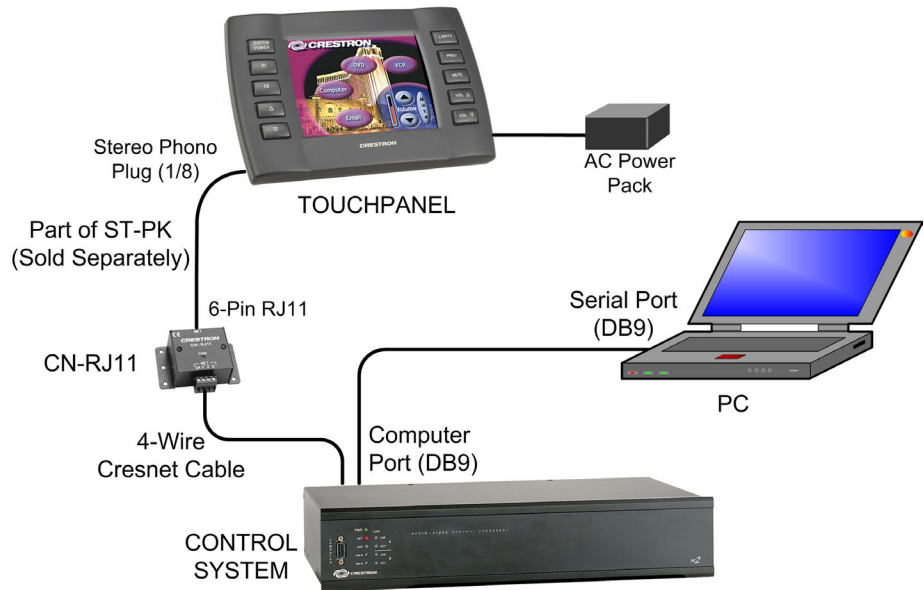
NOTE: For laptops and other PCs without a built-in RS-232 port, Crestron recommends the use of PCMCIA cards, rather than USB-to-serial adapters. If a USB-to-serial adapter must be used, Crestron has tested the following devices with good results:

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

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

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.

NOTE: Use a standard DB9 male to female “straight-through” cable.

Typical Connection Diagram when Uploading

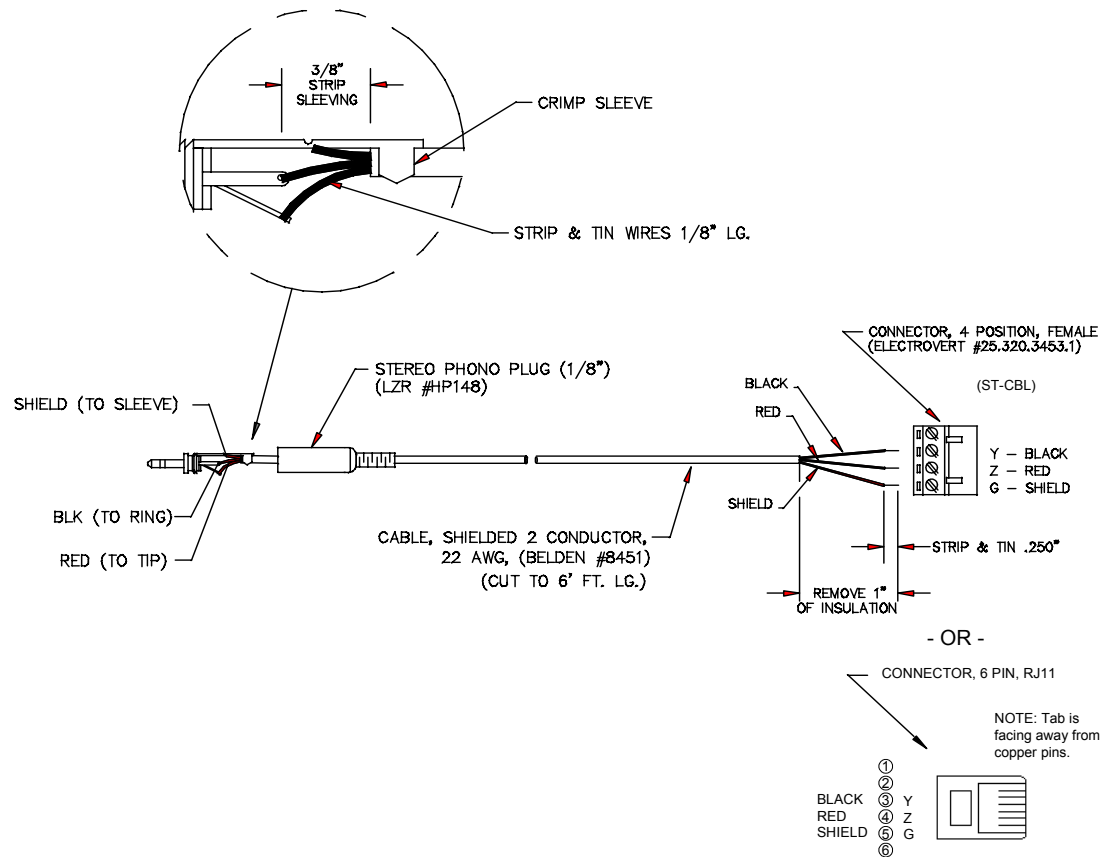
NOTE: If the control system in use has a 4-pin network connector rather than a modular (RJ11-type) NET connector, use an ST-CBL interface cable (sold separately).

NOTE: To make a cable for either configuration, refer to the “Programming Cable Specifications” diagram after these notes.

NOTE: An adapter such as a CN-RJ11 (sold separately) is required when using the RJ11 cable.

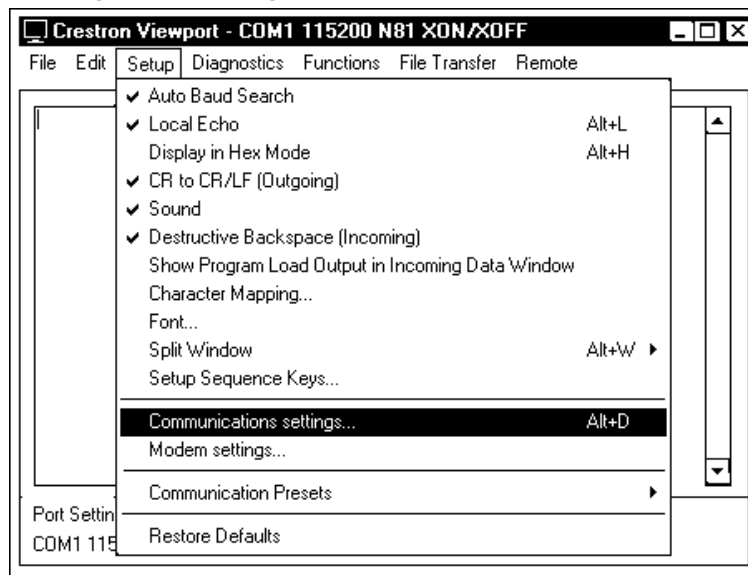
NOTE: The RJ11 (part of ST-PK) and ST-CBL cables can also be found as part numbers CNSP-585 and CNSP-586, respectively, in the Crestron cable database. The database can be downloaded from the Downloads/Software Updates/Cables section of the Crestron website (www.crestron.com).

NOTE: The procedure on the next page uses the ST-CBL.

Programming Cable Specifications

1. Before making any connections to the touchpanel, verify that the control system is properly connected to the PC (using an RS-232 DB9 straight-through cable, Crestron P/N CNSP-587) and powered on.
2. Attach the stereo connector end of the ST-CBL to the touchpanel.
3. Attach the network connector end of the ST-CBL to the connector labeled NET on the control system.
4. Attach the appropriate Crestron external power pack to the touchpanel and plug it into an outlet. At the PC, make sure that no programs accessing the COM port of the PC are running.
5. 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**.
6. From the Viewport menu, select **Setup | Communications settings** (alternatively, press **Alt+D**) to open the "Port Settings" window. Refer to the figures on the next page.

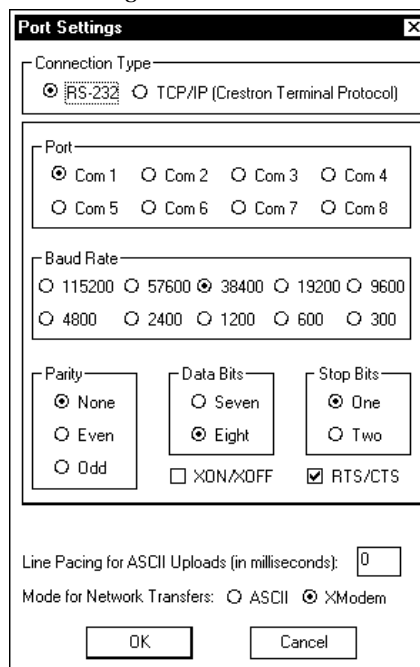
Accessing the “Port Settings” Window



7. Select the **RS-232** connection type. Verify the available COM is selected. Verify that the baud rate is set to **115200** (PRO 2 default), the parity is **None**, the data bits is **Eight**, the stop bits is **One**, XON/XOFF is not selected, and RTS/CTS is selected. Click the **OK** button to save the settings and close the window.

NOTE: You may need to select a lower baud rate for larger files (38,400 is recommended). Make sure **XModem** is selected from *Mode for Network Transfers*.

“Port Settings” Window



8. Proceed to “Uploading a VT Pro-e Project” on the next page or “Firmware Upgrade” that begins on page 25 as appropriate.

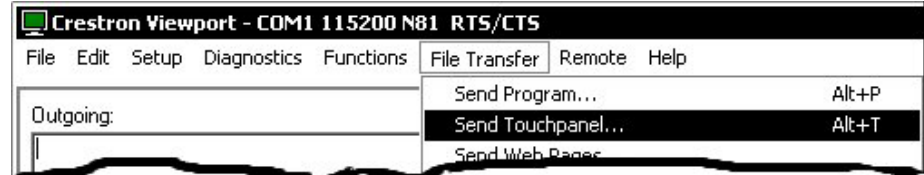
A compiled VT Pro-e file has the extension .vtz

Uploading a VT Pro-e Project

To upload a compiled VT Pro-e project to the STX-1700CXP, complete the following steps.

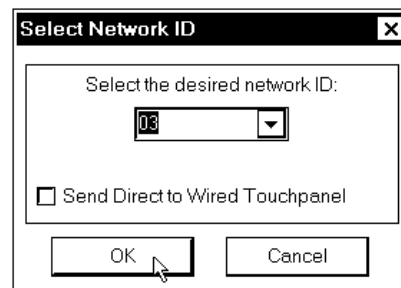
1. Make sure that “Communication Settings” that begins on page 20 has been performed.
2. As shown below, select **File Transfer | Send Touchpanel** (alternatively, depress **Alt+T**) from the Viewport menu.

Select Send Touchpanel

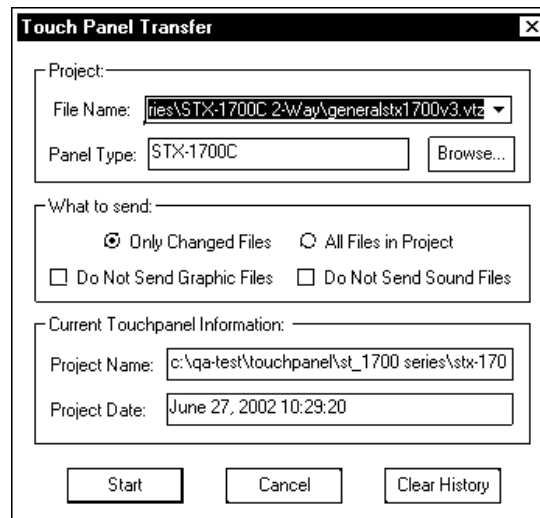


3. As shown below, select the NET ID of the STX-1700CXP and then click **OK**. The “Touchpanel Transfer” window appears (refer to graphic below).

“Select Network ID” Window

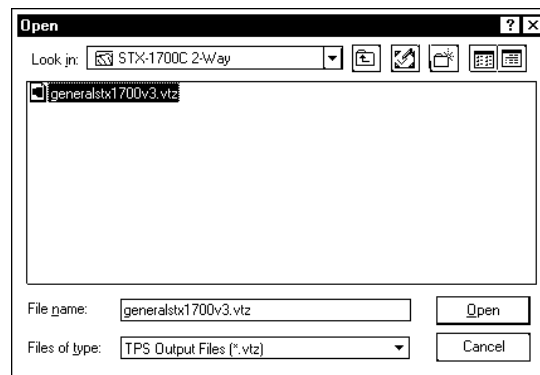


“Touchpanel Transfer” Window



4. Click Browse. The “Open” window appears as shown on the next page.
5. Select the VT Pro-e (.vtz) file and click **Open**. The transfer completes automatically.

Select VTZ File



6. Disconnect the programming cable and the external power pack from the touchpanel.
7. Close the Viewport, exit VT Pro-e, and disconnect the programming cable from the PC and the control system.

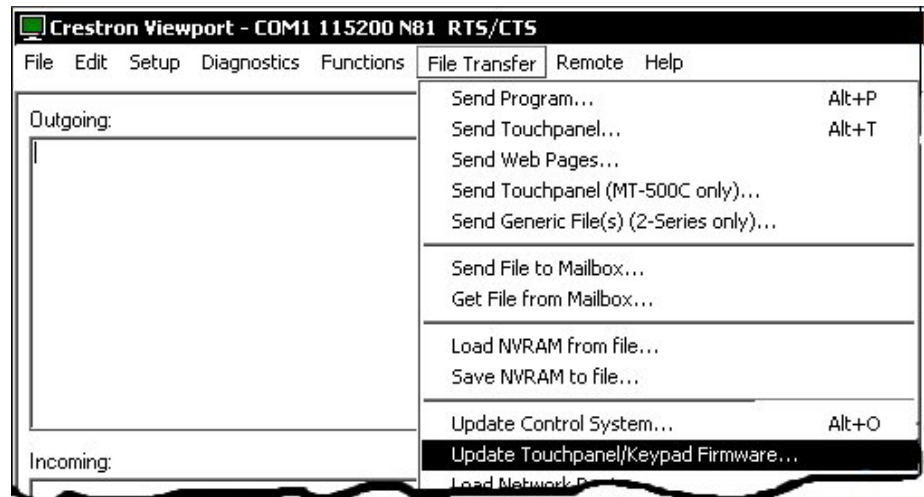
Firmware Upgrade

A firmware upgrade file has the extension .csf

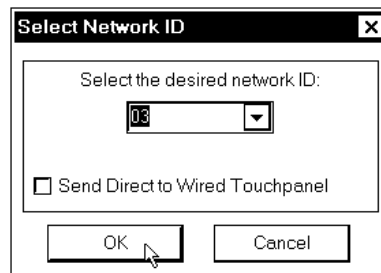
Firmware upgrade files can be obtained from the Downloads | Software Updates | Touchpanels section of Crestron’s website (www.crestron.com). To upgrade the STX-1700CXP firmware, complete the following steps.

1. Make sure that “Communication Settings” that begins on page 20 has been performed. Suggested baud rate is 38400.
2. As shown below, select **File Transfer | Update Touchpanel/Keypad Firmware** from the Viewport menu.

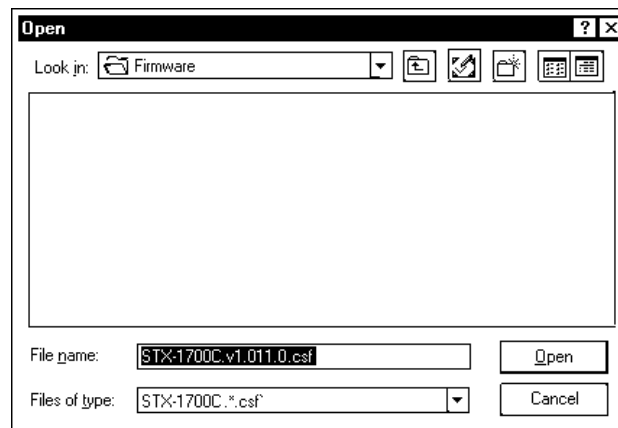
Select Update Touchpanel Firmware



3. As shown on the next page, select the NET ID of the STX-1700CXP and then click **OK**.

“Select Network ID” Window

4. As shown below, select the firmware (CSF) file and click **Open**. The transfer will complete automatically.

Select CSF File

5. Disconnect the programming cable and the external power pack from the touchpanel.

Problem Solving

Troubleshooting

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

NOTE: To minimize system diagnostics and troubleshooting, Crestron recommends defining the touchpanel as a wired unit in SIMPL Windows, then test functionality as a wired network device prior to testing the TPS-XTXRF transceiver operations. This will help in determining whether there is a programming problem, an RF setting conflict, or RF interference in the environment.

NOTE: The diagram shown on page 21 is a typical “wired” hookup.

STX-1700CXP Troubleshooting

TROUBLE	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
Touchpanel does not function.	No power to the touchpanel.	Confirm that battery pack is installed or external adapter is connected.
	Touchpanel is not communicating to the control system.	Poll the network (F4 in Viewport, VT Pro-e or SIMPL Windows) to verify communication.
Project can not be uploaded to touchpanel.	Touchpanel is not powered up.	Touch the touchpanel to display a screen. Verify that the panel has power supplied to it, either battery or power pack.
	Communications error between PC and control system.	Verify upload preferences is set to the COM port being used to communicate to the control system.
	Incorrect NET ID setting.	Verify that panel NET ID matches the NET ID specified during upload. Refer to "Uploading a VT Pro-e Project".
	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 Touch Screen Calibration . The CALIBRATION MENU appears. Select Perform Calibration and follow prompts. *
Touchpanel display is dark or too light.	Screen brightness is improperly set.	Hold a finger to the touchscreen for more than five seconds from power off. Set brightness using Setup menu.
Touchpanel exhibits slow operation.	Compressed graphics take time to decompress.	If sufficient memory is already available, decompressed graphics decrease the drawing time of panel pages.

* You can also use the **caltouch** command in Viewport to access the Calibration option.

(continued on next page)

STX-1700CXP Troubleshooting (continued)

TROUBLE	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
Touchpanel display is dark.	Standby or power down timeout has elapsed.	Touch screen to reactivate.
	No power to the touchpanel.	Verify the power is properly applied and all connections are made.
One or more "quick" pushbuttons do not function as expected.	Unit out of range. Refer to "Out of Range Feature" on page 27.	Bring unit in range.
	Wrong SIMPL Windows program uploaded.	Upload correct SIMPL Windows program. Refer to the SIMPL Window help file for more information.
Touchpanel operation appears unreliable.	Touchpanel is out of range. Refer to "Out of Range Feature" below.	Bring unit within range. Refer to "Specifications" for details.
		Use reserved join number 17509 in SIMPL Windows program to indicate when touchpanel is out of range.
	RF Interference	Test as wired unit. If unit tests OK as wired touchpanel, and fails as wireless touchpanel, call Crestron Customer Service.
	Code related issues	Test as wired unit. If unit tests OK as wired touchpanel, and fails as wireless touchpanel, call Crestron Customer Service.
Touchpanel does not function and SIG LED on TPS-RFGWX illuminates, but Rx or Tx LEDs do not.	Touchpanel RF ID is not set to match the RF ID assigned in the control system program.	Verify that RF IDs match. Refer to the "Select Interface" on page 8 for details and RF ID parameters assigned in the program.
SIG LED on TPS-RFGWX does not illuminate.	RF channel of Touchpanel and channel ID of TPS-RFGWX receiver do not match.	Verify that RF channel matches channel ID of TPS-RFGWX. Refer to the "Select Interface" on page 8 for details and RF ID parameters assigned in the program.
Touchpanel screen changes without touching screen or buttons.	Touchpanel went out and then in range while control system changed a screen.	Use reserved join number 17509 in SIMPL Windows program to indicate when touchpanel is out of range.

Out of Range Feature

The out of range feature is always active. It is up to the programmer to provide an indication on the touchpanel.

When the STX-1700CXP is out of range, it displays an out of range indication of your choice (refer to "Reserved Join Numbers" on page 19), and the touchpanel does not respond. Also, the TPS-RFGWX's Tx (transmit) LED will flash every four to five seconds for approximately 30 seconds and then the LED stops flashing (the unit stops transmitting if the touchpanel does not come into range in the allotted time). If the touchpanel comes into range *before* the TPS-RFGWX stops transmitting, the display reverts to whatever screen the control system has active. If the touchpanel comes into range *after* the TPS-RFGWX stops transmitting, the user must touch the screen to activate the gateway and leave the out of range screen.

The screen may change if the control system sent a change to the touchpanel during the time it was out of range.

Further Inquiries

If, after reviewing this Operations Guide for the STX-1700CXP, you cannot locate specific information or have questions, please take advantage of Crestron's award winning customer service team in your area. Dial one of the following numbers.

- 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.
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Future Updates

As Crestron improves functions, adds new features, and extends the capabilities of the STX-1700CXP, additional information and programming examples 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 A: Engraveable Pushbutton Installation

The STX-1700CXP is supplied with ten pushbuttons, pre-labeled with standard legends. As an option, custom-engraved buttons can be designed and obtained by using the Crestron Engraver software. Version 2.0.1.5 or later is available from the Downloads | Software Updates section of the Crestron website (www.crestron.com).

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

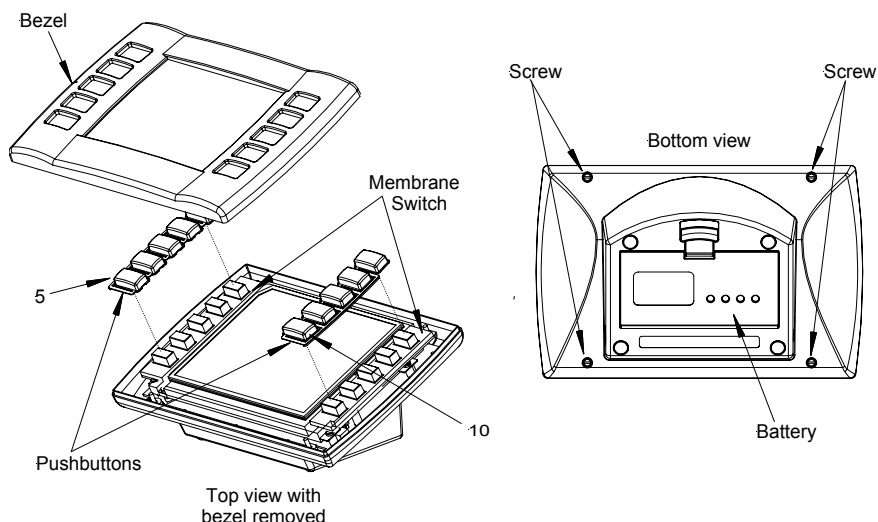
1. Remove the battery, and place the touchpanel face down on a clean work surface.
2. Remove the four screws securing the front bezel to the base, and return the unit to its normal position (hold the bezel and the base of the unit together at the sides while turning it over, to prevent the assembly from falling apart).
3. Lift the bezel from the touchpanel, and remove the pushbuttons being replaced. Note that the pushbutton sets fit snugly on the membrane switch. (Refer to the following Notes.)
4. Put the new pushbuttons in place (refer to the following Notes), 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 remove the plastic frame connecting the buttons together.

NOTE: Some touchpanels are supplied without any adhesive holding the membrane switches in place. For these units, after assembling the new pushbuttons to the membrane switches, 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. Reinstall the battery and verify that the pushbuttons function properly.

Engraveable Pushbutton Installation Diagram



Appendix B: Optimum RF Reception Guidelines

Many factors can affect the reliability of RF communication between an RF gateway and an RF touchpanel. While an effort has been made to determine operating specifications, some specifications are not constant. RF Communication can be limited by several factors including but not limited to EMI (electromagnetic interference), intervening objects, antenna orientation and receiver placement. To obtain maximum reliability and performance, some basic rules for installing RF transceivers are listed below.

Minimize Interference

RF reception range can be hindered by spurious EMI noise that may interfere with or mask the desired frequency thereby reducing useable range. EMI is generated by any electrical device at various RF noise levels depending on the device. Sources of EMI include computers, video equipment, digital processors, lighting dimmers, lighting ballasts, motors or any large AC source. Every effort should be made to separate any RF transceiver from these sources of RF noise including Audio Visual equipment in racks. If a gateway must be installed in an equipment rack, make sure you have ample separation between the equipment and the gateway.

NOTE: Check any 802.11b equipment operating near the Cresnet system to see that it is using only channels that are not being used by the STX-1700CXP touchpanel. If necessary, change the touchpanel's band setting to avoid interference. Refer to "Identity Codes" on page 7 for details.

Gateway Placement

Optimum reception for any RF transceiver is obtained by installing the gateway transceiver in an open area or shelf with a clear line of sight (no obstructions between gateway and receiver). Crestron recommends that the gateway is at least five to six feet high for best results. Avoid placing transceivers or transmitters at a low height or on the ground. Placing RF equipment near metal objects, walls, corners or metal enclosures will compromise RF propagation and reception. Try to avoid installing gateways in equipment racks, service rooms, electrical closets or in rooms other than that which the panel or transmitter is located.

Antenna Orientation

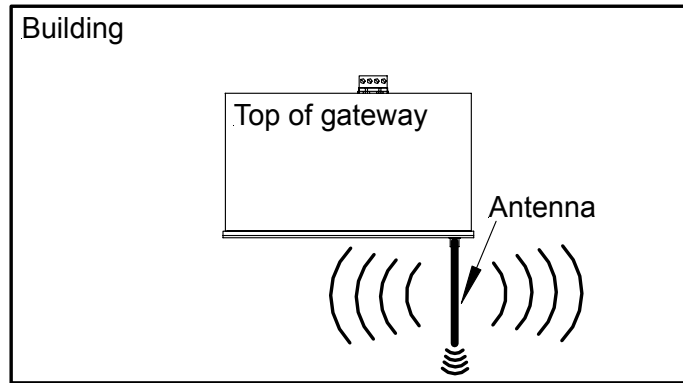
The antenna orientation on Crestron gateways has considerable effect on range and reliability. Optimum performance is obtained by setting the antenna horizontally (parallel to the ground). When absolutely necessary, two alternate orientations are possible – each will be less effective than the horizontal orientation:

- Point the antenna vertically
- Point the antenna at a right angle to the gateway.

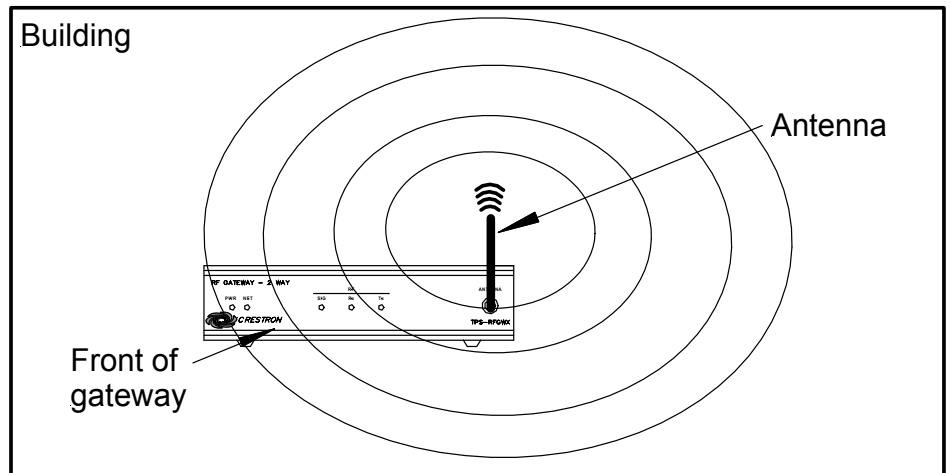
These may allow for rack or equipment closet doors to be shut but these orientations may also compromise reception. Never point the antenna downward or directly parallel to the front panel, this will decrease range and reliability. Refer to illustrations on the next page for examples of the different antenna orientations.

NOTE: RF propagation is best from the sides of the antenna.

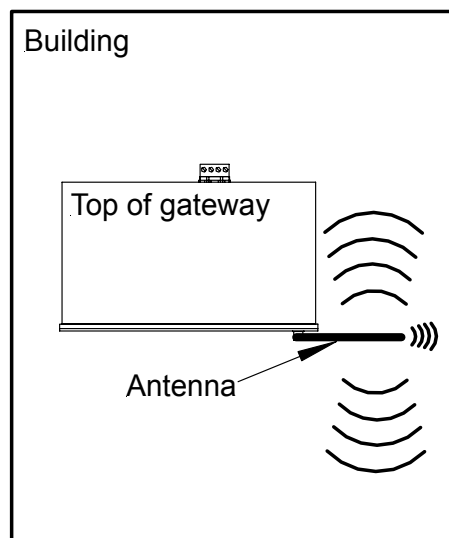
Horizontal Orientation



Vertical Orientation



Right Angle Orientation



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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.

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