

Crestron **ST-1550C**
1-Way Wireless RF Touchpanel
Operations Guide



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1-Way Wireless RF Touchpanel: ST-1550C

Introduction

Functions and Features

The ST-1550C is a one-way wireless RF touchpanel that provides user interface to a Crestron® remote control system (Cresnet® system). Available in both a domestic and an international version (STI-1550C), the lightweight, hand-held touchpanel, with long-life NiMH battery and RF wireless communication with a range of up to 300 feet, allows complete freedom of movement, indoors or out. Customized graphic icons let users easily control any function.

Included with the touchpanel 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 descriptions and details.

The following table provides a functional summary of the touchpanel.

Functional Summary

- 5.7" (14.48 cm) display
- 320 x 240 screen resolution
- STN 256 color, dot matrix LCD (ST-1550C)
- 1 MB of Flash (768KB available for user display lists)
- Long-life NiMH battery
 - Fast charging
 - No battery memory
- 1-Way RF communication, range up to 300 feet
- Up to 999 digital join numbers

Specifications

The following table provides a summary of specifications for the ST-1550C.

Specifications of the ST-1550C

SPECIFICATION	DETAILS
Power Options ST-BTPN (or equivalent)	Rechargeable NiMH battery pack (included) (4100 mAh capacity after full charge. Operating time depends on usage.) ¹
AC: Domestic External Adapter	12VDC, 1.5A, 120VAC Input (included) (P/N PW-1215 or equivalent)
AC: International External Adapter	12VDC, 1.5A, 230VAC Input (included with international version touchpanel) (P/N PWI-1215 or equivalent)
ST-DSN	Docking Station/charger with external power pack (included)
Default NET ID	03
Default RF ID	10
Default Timeouts	2 minutes for standby 10 minutes for power down
Signal Join Maximums	999 digital
Control System Update Files ^{2, 3, 4} 2-Series Control System GEN/CN-TVAV CNMSX-AV/PRO CNRACKX/-DP ST-CP	Version C2-1001.CUZ or later Version 5.10.13V.UPZ or later Version 5.10.11X.UPZ or later Version 5.10.11W.UPZ or later Version 4.02.02S.UPZ or later
Acceptable File Extensions ⁵ .hex .csf	<i>projectname</i> .hex (compiled file) sx5xxxx.csf (panel firmware)
RF Specifications	1-Way Wireless RF Touchpanel, 433.92 MHz (418 MHz STI-1550C), Range up to 300 feet ⁵
Memory	1 MByte flash memory (768 Kbytes available for user programming)
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, 256 colors
Touchscreen Viewing Angles	±50° for X dir, +40°/-50° for Y dir
Touchscreen LCD	STN color, dot matrix type
Touchscreen Illumination	Backlit fluorescent
Touchscreen Composition	Resistive Membrane
Dimensions	Width: 8.75 in (22.23 cm) Height: 3.69 in (9.38 cm) Depth: 5.42 in (13.77 cm)
Weight (without battery pack)	1.85 lb (0.84 kg)

- Battery life is 260 minutes continuous usage with background lighting at full brightness. Actual operating time depends on usage and settings for background brightness and timeouts.
- The latest versions can be obtained from the Crestron website. 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 ST-CP files are in one EXE or zipped UPZ file. To avoid program problems, make certain you are using the update file with the correct suffix (e.g., S, V, W, X).

5. Extension requires a prefix specific to the touchpanel type. In DETAILS, *projectname* represents the assigned project name, and 5xxx. represents a version number.
6. Requires Crestron CNRFGWA 1-Way RF Receiver, or either an ST-CP or MC2W control processor, both of which have a built-in CNRFGWA.

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

Physical Description

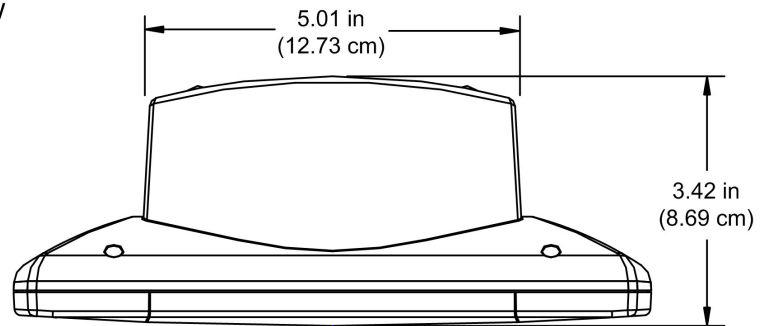
The touchpanel has a 5.7-inch (14.48 cm) active matrix color display panel with 320 x 240 resolution. The electronic hardware is housed in a black and silver molded plastic enclosure. In the following illustration, the touchpanel is shown mounted in the docking station. Connectors to power the unit and to upload touchscreen projects are located on the sides of the unit.

ST-1550C Touchpanel Physical Views

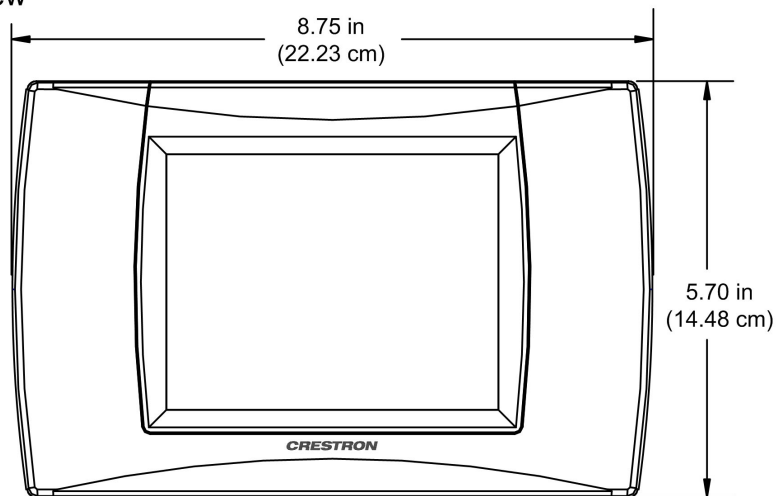


ST-1550C Touchpanel Physical Views (continued)

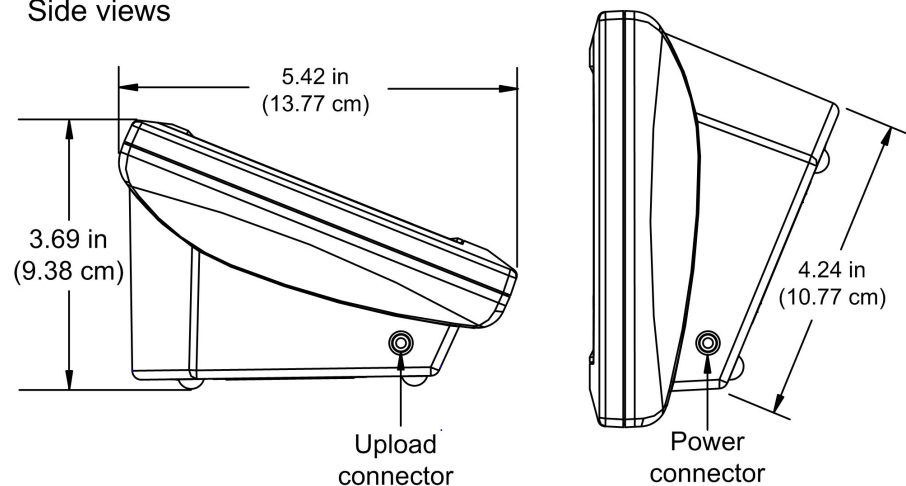
Top view



Front view



Side views



A battery compartment is located on the underside of the unit. The compartment holds one Crestron ST-BTPN, rechargeable power pack. There are also four rubber feet on the underside of the unit for stability and to prevent slippage.

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

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 Radiocommunications Compliance Labelling.



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 receiver.
 - Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
 - Consult the dealer or an experienced radio/TV technician for help.
-

Setup

Applying Power

The touchpanel can be powered via an external AC power pack, while resting in the ST-DSN, or via the ST-BTPN. Each of these supplied items has an Operations Guide which details proper usage. Refer to the table below for the required document number. This table does not account for the latest revision letter of each document.

NOTE: The battery can be charged only if the touchpanel is in the docking station. The touchpanel will function when powered by the external power pack, but this configuration will not charge the battery.

ST-1550C 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	5762
International External Power Pack	PWI-1215	5763

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

Identity Codes

The ST-1550C touchpanel uses two distinct types of identity codes: Cresnet identity (NET ID), and RF ID. These codes are assigned to the touchpanel from the Interface Submenu when the unit is configured. Refer to “Interface” on page 11. For the touchpanel to be identified within the Cresnet system, these assignments must match assignments made in the SIMPL Windows program.

NET ID

Every equipment and user interface within the Cresnet system requires a unique NET ID. The NET ID is a two-digit hexadecimal number that can range 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 when the touchpanel is wired directly to the control system during uploading a VisionTools™ Pro-e (VT Pro-e) project or upgrading the touchpanel firmware.

RF ID

Every ST-1550C touchpanel communicating with a Cresnet control system via an ST-CP or CNRFGWA requires a unique RF ID to secure RF communications. There are 15 useable codes for multiple touchpanel(s) ranging from 01 to 0F (hexadecimal number). The RF ID of the unit must match the RF ID specified in the SIMPL Windows program.

NOTE: Do not set the RF ID to “00”; it is not supported in SIMPL Windows.

Configuring the Touchpanel

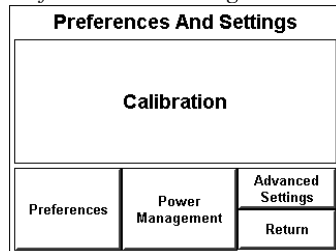
Opening Screen for ST-1550C



It may be necessary to make adjustments or *configure* the touchpanel to accommodate the preferences of the end user. This is accomplished through the Preferences And Settings screen. Instructions for configuring the touchpanel are given in the following paragraphs.

The opening screen, shown to the left of this paragraph, appears when a finger is held to the touchscreen for about three seconds from the powered down state. This screen indicates that you are in “setup mode” and can proceed to configure the touchpanel.

Preferences And Settings



Remove your finger and touch the opening screen again to display the Preferences And Settings screen, shown to the left of this paragraph. All resources to configure the touchpanel are available from this menu.

The Preferences And Settings screen displays five buttons: **Calibration**, **Preferences**, **Power Management**, **Advanced Settings**, and **Return**. The **Return** button saves all of the setup information to EEPROM and displays the main page that has been programmed into your system.

NOTE: Calibration works best when performed with a narrow, blunt instrument (i.e., pencil eraser).

Calibration

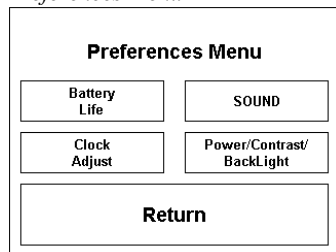
Calibration of the touchscreen is required if the active touch area of a button does not coincide with the button’s image. Select the **Calibration** button to initiate “calibration mode”. The touchpanel prompts you with a message, “Touch Upper Left Corner”. Touch the corner of the screen; be as accurate as possible. Another message, “Touch Lower Right Corner,” appears. Perform the operation to complete calibration and return to the opening screen.

If the **Calibration** button from the Preferences and Settings screen cannot be reached, complete the following steps.

1. Remove power (ST-BTPN, ST-DSN, and/or external AC power pack).
2. Reapply power while holding a finger to the touchscreen for at least three seconds. During this short period, the words “SETUP MODE” appear. The opening screen appears when the finger is removed from the touchscreen.
3. Touch the opening screen and select the **Calibration** button from the Preferences And Settings screen to enter “calibration mode.”

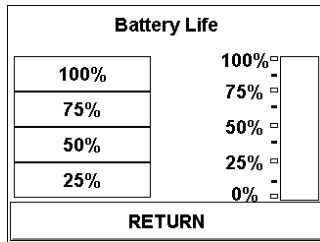
Preferences Menu

Preferences Menu



To obtain the Preferences Menu, shown to the left of this paragraph, touch the **Preferences** button from the Preferences And Settings screen. Many options for setting parameters of the touchpanel are available from the Preferences Menu and are explained in the following paragraphs. After these parameters have been set, press the **Return** button to return to the Preferences And Settings screen.

Battery Life

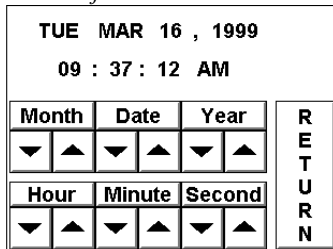


Battery Life Screen

NOTE: Detach the external AC power pack when viewing Battery Life screen. If this pack is attached, the gauges read full charge, which may be misleading.

To obtain the Battery Life screen, shown to the left of this paragraph, touch the **Battery Life** button from the Preferences Menu. This screen indicates the amount of charge (or life) remaining in the batteries, if batteries are installed. A digital and analog gauge is provided. The digital gauge, located on the left side of the screen, indicates five levels of charge: 0%, 25%, 50%, 75%, and 100%. The illustration shows that the battery life is at the 0% level. The analog gauge, located on the right side of the screen, indicates smaller and continuous incremental levels of charge. The analog bar fills to the appropriate level of charge. Touch the **RETURN** button to display the Preferences Menu.

Clock Adjust

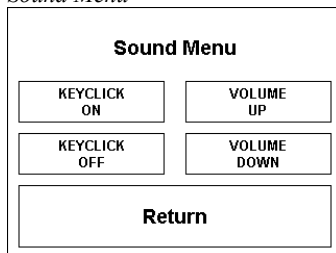


Clock Adjust Screen

If a screen page in your customized program employs a clock display, the touchpanel's internal clock and date setting must be set. To set date and time parameters select the **Clock Adjust** button located in the Preferences Menu and display the Clock Adjust screen, shown to the left.

The very top portion of this screen displays the current date and time setting as a scratchpad. Use the string of six buttons, **Month Down**, **Month Up**, **Date Down**, **Date Up**, **Year Down**, and **Year Up**, to alter the date values in the scratchpad to the current date. Use the string of six buttons, **Hour Down**, **Hour Up**, **Minute Down**, **Minute Up**, **Second Down**, and **Second Up**, to synchronize the time values in the scratchpad to the current time. To save the settings in the scratchpad to the touchpanel's internal clock and return to the Preferences Menu, touch the **RETURN** button.

Sound Menu

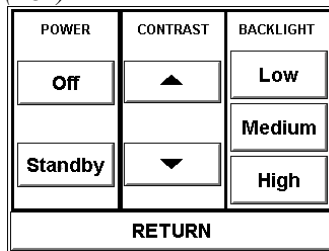


Sound Menu

The touchpanels are equipped with audible feedback that can be turned on or off and have its volume adjusted. To obtain the Sound Menu, shown to the left of this paragraph, touch the **SOUND** button from the Preferences Menu. The **KEYCLICK ON** and **KEYCLICK OFF** buttons activate and deactivate the audible feedback, respectively. The **VOLUME UP** and **VOLUME DOWN** buttons increase and decrease the sound's volume, respectively. A sample of sound volume is emitted with each incremental press. Touch the **Return** button, located at the bottom of the menu, to save the settings and display the Preferences Menu.

Power, Contrast, and Backlight Screen

Power, Contrast, and Backlight (PCB)



To obtain the Power, Contrast, and Backlight (PCB) screen, shown to the left, touch the **Power / Contrast / Backlight** button from the Preferences Menu. Each option is explained in the following paragraphs.

Power

Turning off the backlight can lengthen the touchpanel battery life when the touchpanel is inactive. Two buttons, **Off** and **Standby**, located in the left column of the PCB screen are available to conserve power. The **Off** button completely shuts down the touchpanel so that no power is drawn from the ST-BTPN, ST-DSN, or external AC power pack. The **Standby** button shuts down the touchpanel display so that minimal power is drawn from the ST-BTPN, ST-DSN, or external AC power pack. These buttons have special software identities (reserve join numbers) and can be recreated and programmed onto any page in the project. To reactivate the touchpanel after the **Off** or **Standby** buttons have been utilized, simply press the touchscreen.

Contrast

Screen contrast may need to be altered because of ambient light conditions, viewing angle, panel temperature, or personal preference. One of the two contrast buttons located centrally in the PCB screen may be held down for continuous and smooth adjustment of the screen.

Backlight

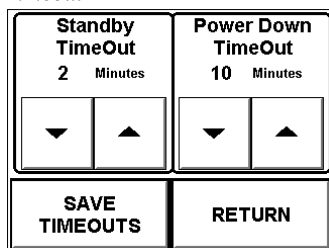
Screen brightness may need to be altered because of ambient light conditions or personal preference. Three brightness buttons, **Low**, **Medium**, and **High**, located in the right column of the PCB screen may be selected to assign the backlight setting.

NOTE: Display backlight requires warm-up time to reach full brightness.

Touch **RETURN**, after parameters have been set, to return to the Preferences Menu.

Power Management

Timeout



To obtain the Timeout screen, shown to the left of this paragraph, touch the **Power Management** button from the Preferences And Settings screen. Turning off the backlight when the touchpanel is inactive can lengthen the life of the touchpanel battery (ST-BTPN). The length of touchpanel inactivity can be specified to minimize power utilization.

Standby Timeout is displayed in the top left corner of the Timeout screen. This setting turns the display and backlight off when the touchpanel is inactive for the specified time. When the touchpanel is activated, the last screen to be displayed reappears. The specified time is displayed in minutes. A two-minute Standby Timeout is shown in the illustration. Minutes can vary from 0 to 120, where 0 disables the timeout. Down and up arrow buttons decrease and increase the timeout, respectively.

Power Down Timeout is displayed in the top right corner of the Timeout screen. This setting 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 or the last screen to be displayed reappears. Selection depends on how you setup your custom program. (Refer to “Power Up On Last Page” on page 11 for details.) The specified time is displayed in minutes. A 10-minute Power Down Timeout is shown in the illustration. Minutes can vary from 0 to 120, where 0 disables the timeout.

Down and up arrow buttons decrease and increase the timeout, respectively.

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: 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 the timeout is to maximize battery life. Standby timeout still functions.

After timeout parameters have been set, touch the **SAVE TIMEOUTS** button in the lower left corner of the ST-1550C to save the new settings. Touch the **RETURN** button to display the Preferences And Settings screen.

Advanced Settings Screen

The **Advanced Settings** button from the Preferences And Settings screen opens the Advanced Settings screen, shown to the left of this paragraph.

The Advanced Settings screen contains diagnostic buttons (**Display EEPROM**, **Display Touch Data**, **Firmware**, **Display Palette**, and **Self Test**). Diagnostic buttons should only be used under supervision of a Crestron technical support representative during telephone support. These options are numeric in nature and their interpretation is beyond the scope of this Operations Guide.

This screen also contains special settings buttons (**DayLight Savings**, **Power Up On Last Page**, and **Interface**). Details of the special settings buttons are discussed in the following paragraphs.

Touch the **RETURN** button to return to the Preferences And Settings screen.

Advance Settings

DayLight Savings	Power Up On Last Page
Display EEPROM	Display Palette
Display Touch Data	Interface
Firmware	Self Test
RETURN	

Daylight Savings Screen

To access the Daylight Savings screen, shown to the left of this paragraph, touch the **Daylight Savings** button from the Advanced Settings screen. Two options are available: **Set Daylight Savings Time Northern Hemisphere** and **Set Daylight Savings Time Southern Hemisphere**. Each button can be toggled (ON/OFF states). Activating one of these buttons causes the internal real time clock to automatically adjust on the appropriate dates for Daylight Savings Time. An activated button is indicated by the button's background color changing to blue. After verifying the setting, touch the **RETURN** button to return to the Advanced Settings screen.

Daylight Savings

Set Daylight Savings Time Northern Hemisphere	Set Daylight Savings Time Southern Hemisphere
RETURN	

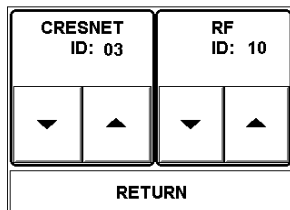
NOTE: If you wish to completely deactivate the Daylight Savings Time feature, verify that both buttons are not activated (both assume a background color of gray).

Power Up On Last Page

The **Power Up On Last Page** button lets you specify which screen appears when unit is powered up. When set to ON (indicated by the button's background color changing to blue), the last screen to be displayed reappears and all feedback is restored when the touchpanel is reactivated. When set to OFF (the button's text assumes the same shade as all the other buttons on the screen), the first page of the project appears when the touchpanel is activated.

Interface Screen

Interface



The touchpanel communicates with an ST-CP (for SmarTouch) or other Crestron control system (for Cresnet) via wireless RF (through a CNRFGWA gateway). To do so, the touchpanel Cresnet ID and RF ID settings and those assigned in the control system program must match. To set the Cresnet ID and RF ID, select the **Interface** button from the Advanced Settings screen and display the Interface screen, shown to the left of this paragraph.

The CRESNET ID network identity number (NET ID), displayed in the top left corner of the Interface screen, is only used during screen uploads to the touchpanel, and consists of a two-digit hexadecimal number. "03" is shown as an example in the illustration and happens to be the default. The down and up arrow buttons decrease and increase the NET ID by one, respectively (i.e., 01, 02, 03, . . . FE).

The radio frequency identity number (RF ID), displayed in the top right corner of the Interface screen, is necessary to secure RF communications such that controls can be activated from the touchpanel. The RF ID consists of a two-digit hexadecimal number. The touchpanel can be set to one of fifteen numbers; "10" is shown as an example in the illustration and happens to be the default. The down and up arrow buttons decrease and increase the RF ID most significant digit by one, respectively (i.e., 10, 20, 30, . . . , F0). The RF ID of the unit must match the RF ID specified in the SIMPL Windows program.

NOTE: Do not set the RF ID to "00"; it is not supported in SIMPL Windows.

After the Cresnet ID and RF ID settings have been verified, touch the **RETURN** button, located at the bottom of the screen, to save the settings and display the Advanced Settings Screen.

General Use and Safety

WARNING: To avoid shock hazard and possible damage to the unit, do not use touchpanel in 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 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. 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

Have a question or comment about Crestron software?

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

You can create a program that allows you to set up the ST-1550C to operate a Crestron control system using the Crestron programming tools Crestron SystemBuilder™ 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 (SystemBuilder) 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 16 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 Crestron website.

The following are recommended software version requirements for the PC:

- SIMPL Windows version 1.61.05 or later.
- Crestron Database version 11.7.211 or later.
- VisionTools Pro-e version 2.2.3.1 or later. Used for graphical touchscreen design.
- SystemBuilder version 1.02 or later. Requires SystemBuilder templates 1.01 or later. (If used, may require newer versions of above software. SystemBuilder displays version requirements messages, if any, upon launch.)
- (Optional) Crestron Engraver version 2.3.0.0 (only required if using SystemBuilder).

Programming with the Crestron SystemBuilder

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

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

SystemBuilder 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. SystemBuilder accesses these tools behind the scenes, enabling you to easily create robust systems.

SystemBuilder includes Scheduler programming which allows you to define weekly, periodic, or by-date events that run at scheduled times of day. Scheduler properties can be adjusted via a touchpanel. Refer to the extensive SystemBuilder help file for details.

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.

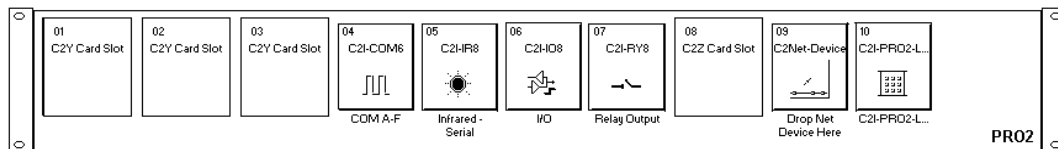
NOTE: In the following description, the PRO2 control system is used.

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 an ST-1550C touchpanel.

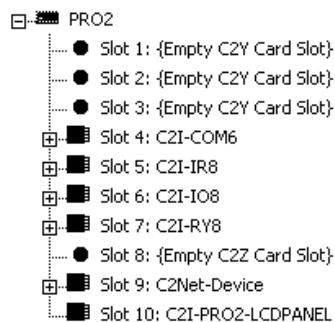
Configuration Manager is where programmers “build” a Crestron control system by selecting hardware from the *Device Library*. In Configuration Manager, drag the PRO2 from the Control Systems folder of the *Device Library* and drop it in the upper pane of the *System Views*. The PRO2 with its associated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

PRO2 System View



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

Expanded PRO2 System Tree



C2Net-Device Slot in Configuration Manager

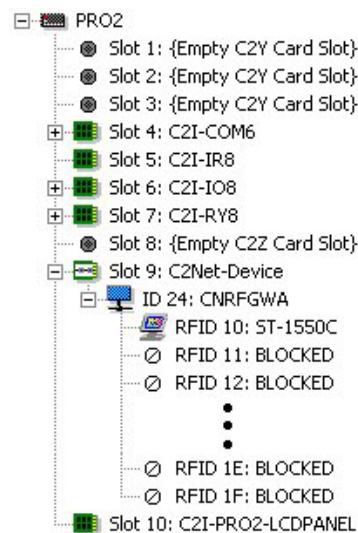
To incorporate a wireless RF touchpanel into the system, a gateway device is required. The C2Net-Device Slot can accept a gateway such as the CNRFGWA. Once a gateway is configured in a C2Net-Device Slot, the slot allows Cresnet communication between the touchpanel and the control system.

In Configuration Manager, drag the CNRFGWA gateway from the Wireless Receivers (RF) folder of the *Device Library*. The *System Views* upper pane displays the CNRFGWA device icon below the PRO2 graphic.

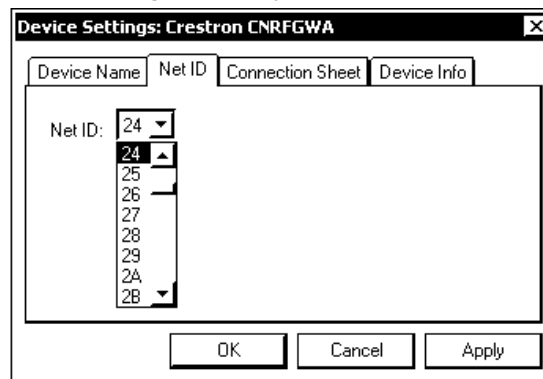
NOTE: The ST-CP control processor is automatically configured with a CNRFGWA in its STCP-Net Device Slot 3, with a fixed NET ID, when the ST-CP is dragged into the upper pane of *System Views*. Similarly, the MC2W control processor is configured with a CNRFGWA in its MC2W-Net Device Slot 8.

Drag the ST-1550C from the Touchpanels (Wireless | Wireless one way) folder of the *Device Library* and drop it on the CNRFGWA symbol in *System Views*. The PRO2 system tree displays the CNRFGWA gateway in Slot 9, with a default NET ID of 24. The CNRFGWA displays the touchpanel at the touchpanel's default RF ID location, "10," as shown in the following illustration.

C2Net Device, Slot 9



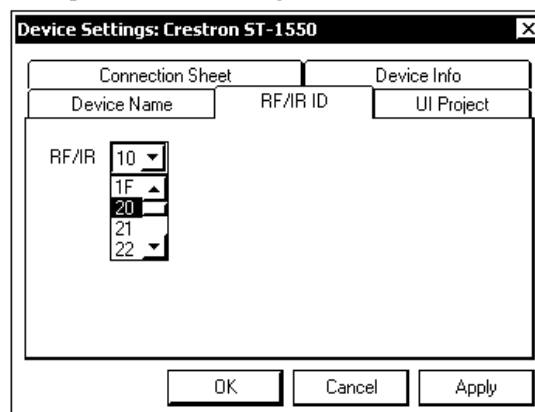
Double-click the CNRFGWA icon in the upper pane to open the "Device Settings" window. This window displays CNRFGWA device information. Select the *Net ID* tab to change the gateway Net ID, as shown in the following figure.

“Device Settings” Window for the CNRFGWA

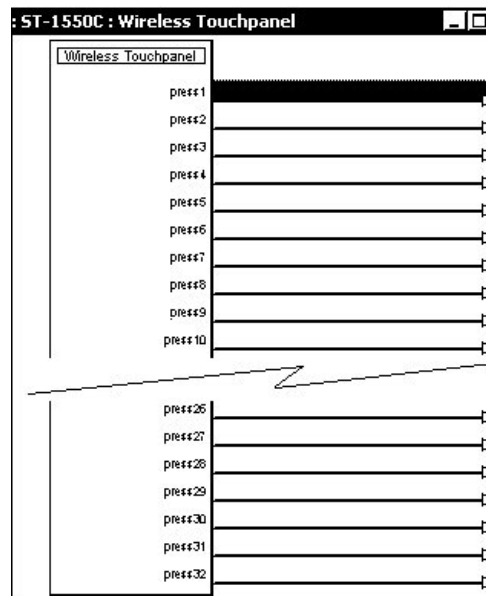
NOTE: Recall that in both the ST-CP and the MC2W configurations, the CNRFGWA has a fixed NET ID, which cannot be changed.

Similarly, expand the system tree in the lower pane and double-click the ST-1550C icon to open the “Device Settings” window for the touchpanel. Select the *RF/IR ID* tab to change the touchpanel RF ID, as shown in the following figure. For more information on setting the RF/IR ID, refer to “Interface Screen” on page 11.

NOTE: The hardware and software settings of the RF ID must match. Although the device setting window in SIMPL Windows allows choices through the range of two-digit Hexadecimal numbers from 01 through FE, the RF ID setting for the hardware is limited to numbers in increments of the most significant digit (i.e., 00, 10, 20). Since 00 is not a valid selection in SIMPL Windows, the RF ID number is limited to the fifteen numbers 10, 20, 30, 40, . . . F0.

Touchpanel “Device Settings” Window**ST-1550C Symbol in Programming Manager**

Programming Manager is where programmers “program” a Crestron control system by assigning signals to symbols. The following diagram shows the ST-1550C symbol in the SIMPL Windows’ Programming Manager.

Detail View of the ST-1550C in SIMPL Windows' Programming Manager

The following table lists and gives functional descriptions for the touchpanel outputs.

Symbol Output Signal Descriptions

OUTPUT	DESCRIPTION
press 1 through press 32	Notifies control system of button press (1 – 32). High/1 = Button being pressed Low/0 = Button not being pressed

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/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 Crestron website.

Virtual Feedback

Programming a one-way RF touchpanel such as the ST-1550C requires consideration of "feedback." Since the panels are one-way only, and there is no *true* feedback, you must create "virtual feedback" so that buttons respond appropriately when pressed and the user perceives no real difference between a one-way panel and a two-way panel. The SystemBuilder takes care of all of this for you. However, if you are programming your panels with SIMPL Windows and VT Pro-e, you must follow the following procedure to add logic both to the touchpanel for button feedback and to the control system program to properly process the signals, and to make sure that the state of the buttons on the panel and in the control system remain in sync.

Button press feedback produces a change in appearance from the inactive state to the active state, or vice versa, as defined in the program.

- Momentary feedback, from inactive to active and back to inactive, has a short duration, lasting only as long as the button is pressed.
- Toggle feedback produces a change of state each time the button is pressed (a logical active vs. inactive).
- With Interlock feedback, only one button in an assigned interlock group can be active at a time. Pressing an inactive button changes its state to active, and forces the other buttons in the group to inactive. (To clear all buttons in the interlock group requires that an extra button be added whose sole purpose is to force all the others to the inactive state.)
- Duration feedback is assigned to a group of buttons that are to be activated simultaneously, remain active for a specified period of time, and then return to the inactive state.

In the following paragraphs, each feedback type will be discussed in detail as applicable.

VT Pro-e Procedures

Buttons requiring feedback need to have the feedback type assigned as if it were a property of the object. Button feedback logic is classified as momentary, toggle, interlock, or duration. Logic is added to the buttons on the panel (after join numbers and other properties have been assigned), by right clicking the button in VT Pro-e and selecting **Feedback**, which displays the “Feedback” window.

“Feedback” Window

Feedback

Join: 20

Button Action

Select a join number to add it to the Sequence Group.

Joins: None Add Step Delete Step

Feedback Type: Momentary

Duration: Seconds

Interlock Group:

Close

NOTE: When the Feedback window is open, you can click on any of the buttons on the page and view their various feedback properties.

Interlock

An interlock consists of a number of assigned buttons grouped together so that button selection is mutually exclusive within the group. This is an important feature when you wish to guarantee that button selection can only be made when all the other buttons of the group are or will be forced inactive. For example, three sources (CD, VCR, tape deck) are controlled and designed within an interlock. This ensures that if CD is chosen, all other sources/subpages are inactive.

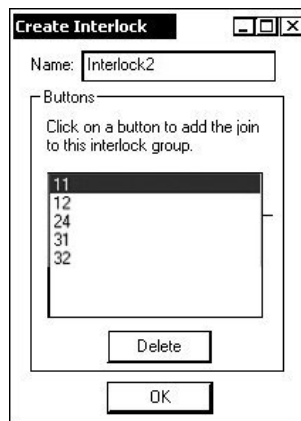
To create the interlock group, right-click on one of the buttons to be in the group, and select Feedback to display the “Feedback” window. Select *Interlock* as the feedback type. The window changes to show any existing interlock group(s), and includes a **Groups** button.

“Feedback” Window

Use the drop down *Interlock Group:* field to select an existing group, or click on **Groups** to open the “Edit Interlock” window, which allows you to edit the existing groups or create a new group.

“Edit Interlock” Window

Select **New** to create a new interlock group. Select **Edit** if you wish to modify an existing group. In either case, the “Create Interlock” window appears.

“Create Interlock” Window

For new interlock groups, move the cursor over each button to be added and left-click to select it. (Notice that the cursor assumes the pointing hand shape when it is over the page.) If a button is inadvertently placed in the “Buttons:” field, highlight the button and select **Delete** to remove it from the group. Select **OK** to confirm and save the interlock group.

To edit an existing interlock group, select the group in the “Edit Interlock” window and click **Edit** to open the “Create Interlock” window. Add or delete buttons as needed.

Duration

A button defined with duration feedback remains active for a fixed time period as defined in the *Duration* field. The purpose of a duration feedback is to simulate a function in the SIMPL Windows program that must remain active for a certain amount of time, such as closing drapes and lowering a screen, before turning on the projector.

Right-click on the desired button and select **Feedback**. In the “Feedback” window, select *Duration* as the feedback type, and enter the desired duration in seconds. When pressed to initiate the functions (drapes and screen then projector), the button remains active for the time required to complete the functions.

Sequence Groups

A sequence group consists of a number of assigned buttons that are activated as a group as a result of a single button press. When the first button is activated, the other buttons are activated either sequentially, when one or more of the buttons is defined as having duration feedback, or simultaneously if no durations are included in the group. This is an important feature when one wishes to guarantee that a single selection can activate a number of functions. For example, one can unify the following functions: draw shades closed, dim lights, and start projector. This ensures that when this sequence group is activated, all functions/join numbers of the collective unit are activated together.

Starting from an open page, select (or create) the button that is to activate the group, right click and select **Feedback**. In the “Feedback” window, select *Duration* as the feedback type, and enter the desired Duration in seconds. In the *Button Action* area *Joins* field, scroll to the desired button joins and click the **Add Step** button. As each one is added, “Simulate Button xx” appears in the *Sequence Group* list. When all the desired joins have been added, click **Close** to accept the entries and close the “Feedback” window. (Refer to the following figure.)

“Feedback” Window

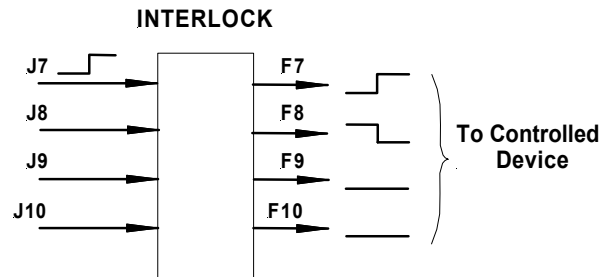
VT Pro-e always generates the proper virtual feedback logic and appends it to the compiled VT Pro-e file for upload to the panel. However, you must add similar logic to the control system via SIMPL Windows.

SIMPL Windows Procedures***Momentary Feedback***

Momentary feedback is when the button feedback state is active as long as the button is pressed and inactive when it is not being pressed. Momentary feedback does not require anything special in the SIMPL Windows program. You simply connect the signal from the appropriate touchpanel join number to the logic in the program (to the feedback of the same digital press).

Interlock Feedback

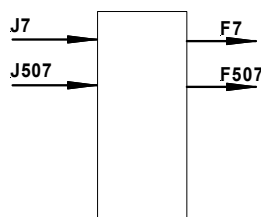
Interlock feedback is when the feedback of only one button in a group may be active at any one time. Pressing a button causes its feedback to go high and the feedback of all other buttons to become inactive, or low, as shown in the figure following this paragraph. In this example, join numbers 7 – 10 are in an interlock group; join 7 is pressed, causing join 8, initially high, to go low and join 7 to go high. The one-way touchpanels transmit **only** the newly pressed button to the control system. The programmer must add a SIMPL Windows INTERLOCK symbol and connect all of the touchpanel output's join numbers in that interlock group as inputs to the INTERLOCK symbol. All of the outputs are then used to drive the appropriate logic. Note that the output of the interlock corresponding to the pressed button remains high even after the button is released, until the next button is pressed.



Toggle Feedback

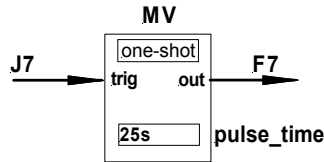
Toggle feedback is when the feedback of a button alternates between active and inactive each time the button is pressed. As in the interlock, the toggle feedback remains high even after the button is released, until the button is pressed again. Because there is no way to communicate the state of the toggle button between the panel and the control system by using that single button, Crestron models a toggle on a one-way panel as a two-button interlock group. The button shown on the panel is the first button. The second button (invisible, Crestron-created, not user-created) is the original button's join number + 500, e.g. 1 and 501, 101 and 601, etc. Since there are only 999 join numbers allowed by Crestron's RF protocol, a toggle button may only have a join number of 499 or below. Be aware that you must not use the toggle join numbers + 500 for other purposes. Crestron recommends that you keep toggle buttons in one numeric range (such as 100-150) and then make sure you do not use anything in the corresponding +500 range (600-750). When the user first presses and releases the toggle button, the panel transmits the join number press and release. The next time the user presses and releases the toggle button, the panel transmits the join number + 500 press and release, and then continues to alternate between them. By this method, Crestron knows that the user is explicitly turning the toggle on or explicitly turning it off, so that the state on the control system and the state on the touchpanel will match. The programmer must place an INTERLOCK symbol in the SIMPL Windows program and connect the join number and the join number + 500 to it. The feedback corresponding to the original join number should be used to drive the logic corresponding to the toggle being turned on, and the feedback corresponding to the join number offset by 500 is used to drive the logic corresponding to the toggle being turned off. Refer to the following figure.

INTERLOCK Performing TOGGLE Function



Duration Feedback

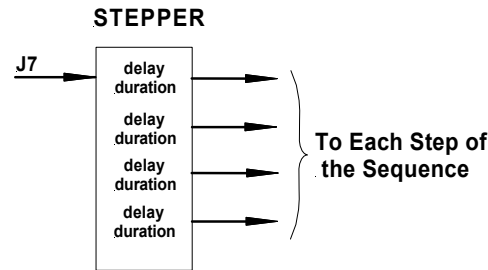
A button defined with duration feedback will remain active for a fixed period of time as programmed in the duration field. Active duration is defined by selecting duration as the feedback type, and entering a number of seconds in the duration field. The programmer should add an MV (one-shot) symbol to the SIMPL Windows program, with the appropriate time parameter, as shown in the following figure.



Sequence Groups

In addition to button feedback, programmers can specify that a single button perform a sequence of operations. The sequence can press other buttons and these buttons may have durations to introduce delays. The virtual feedback generated by VT Pro-e to the one-way panel will approximate as closely as possible the SIMPL Windows program of multi button press feedback generated from a single button press sequence, but the only information that is actually transmitted to the control system is the join number of the button that specifies the sequence. On the touchpanel, if timing is specified in the sequence, the button that specifies the sequence will appear active for the whole sequence; the other buttons in the sequence will go active in the order and for the duration specified in the sequence; if no timing is specified, the other buttons will go active simultaneously.

The programmer must duplicate the actual logic, including all button presses, functions and durations, on the control system. Normally, the programmer uses a STEPPER symbol in SIMPL Windows, with the input driven by the join number that initiates the sequence. As shown in the following figure, each output of the STEPPER drives the logic for the next step in the sequence with the appropriate duration and delay as the corresponding parameters.



Reserved Join Numbers

A reserved join number is a feature of the software that enables a designer to create a button on a touchpanel page that completes a predetermined function. The table after this paragraph provides a list of reserved join numbers available within SIMPL Windows 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.

Reserved Join Numbers for ST-1550C Touchpanel

JOIN NUMBER	FUNCTION	VALUE
1015	Power	Off
1016	Stand by	On
1017	Brightness	Low
1018	Brightness	Medium
1019	Brightness	High
1023	Contrast	Up
1024	Contrast	Down
1035	Reboots the System *	N/A
1036	Discharges ST-BTP **	N/A
1120 - 1123	Digital Battery Bargraph	Gauge Bottom (1120) to Gauge Top (1123)
1160	Keyclick Volume	Up
1161	Keyclick Volume	Down
1172	Keyclick	On
1173	Keyclick	Off
3076	Time & Date Adjustment	Increment Minutes
3077	Time & Date Adjustment	Decrement Minutes
3078	Time & Date Adjustment	Increment Hours
3079	Time & Date Adjustment	Decrement Hours
3080	Time & Date Adjustment	Increment Days
3081	Time & Date Adjustment	Decrement Days
3082	Time & Date Adjustment	Increment Months
3083	Time & Date Adjustment	Decrement Months
3084	Time & Date Adjustment	Increment Years
3085	Time & Date Adjustment	Decrement Years
3360	Time & Date Adjustment	Set Scratchpad Time & Date to Touchpanel's Current Time & Date
3361	Time & Date Adjustment	Save Settings

* Holding a button (assigned with join number 1035) for more than five seconds places the touchpanel into "setup mode". Use this mode to configure the touchpanel.

** While discharging, the touchpanel backlight is set to maximum and the timeouts are disabled.

NOTE: If designing an analog battery gauge bargraph, it can be displayed with any of the standard command text on analog channel 2. Therefore, `A2 displays the gauge as a bargraph that fills bottom to top. `D2 displays a bargraph that fills left to right. Obtain the latest version of VT Pro-e from the Crestron website.

Uploading and Upgrading

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

Assuming a PC is properly connected to the entire system, Crestron programming software allows the programmer to upload programs 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 VT Pro-e project or upgrade the firmware of the ST-1550C touchpanel. However, before attempting to upload or upgrade, it is necessary to establish communications.

Communication Settings

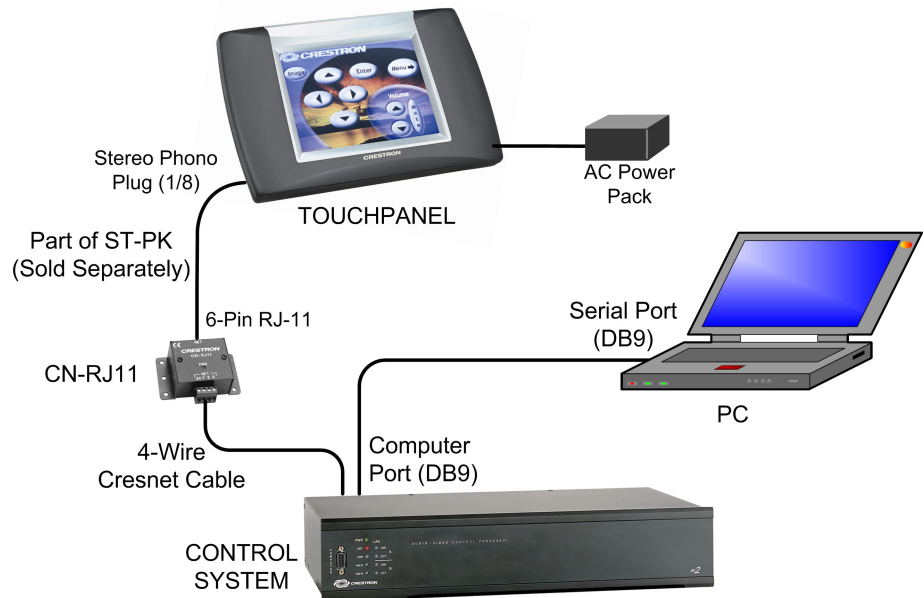
NOTE: For laptops and other PCs without a built-in RS-232 port, Crestron recommends the use of PCMCIA cards, rather than USB-to-serial adapters. If a USB-to-serial adapter must be used, Crestron has tested the following devices with good results:

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

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 Crestron website. Refer to the following figure for a typical connection diagram when uploading files.

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

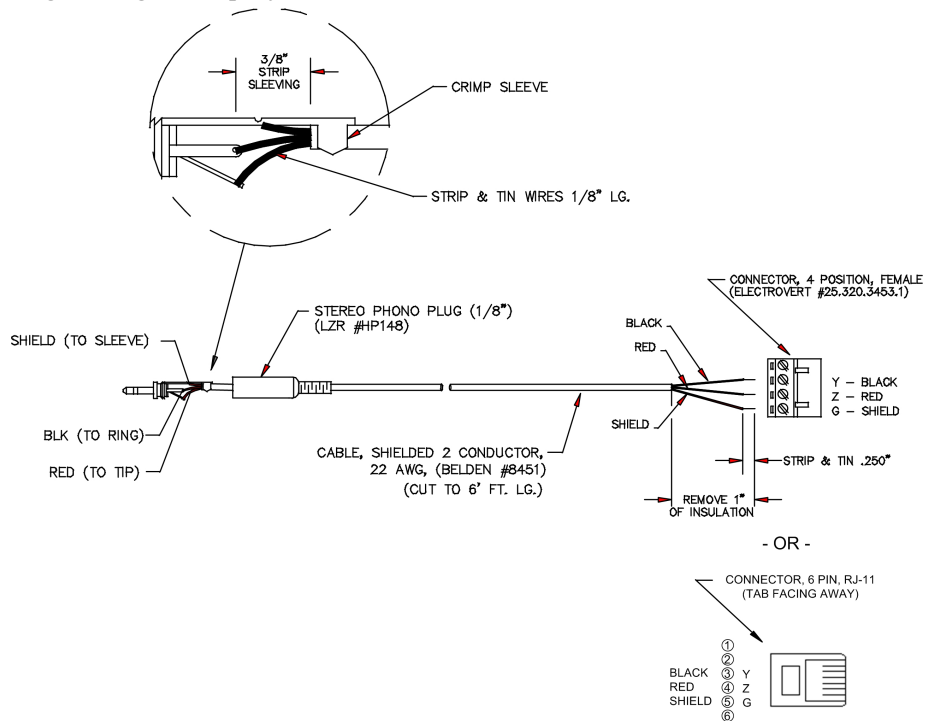
Typical Connection Diagram when Uploading a Project from the PRO2 or equivalent

NOTE: If the control system in use has a 4-pin network connector rather than a modular (RJ-11 type) NET connector, use an ST-CBL cable (sold separately).

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

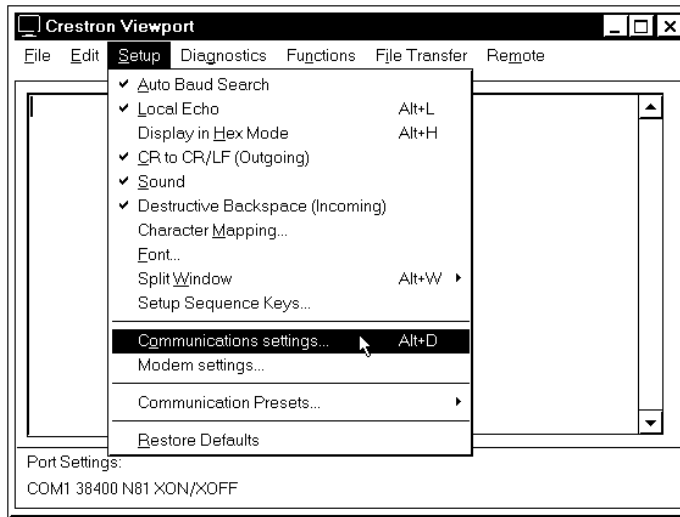
NOTE: An adapter such as a CN-RJ11 (sold separately) is required when using the RJ-11 cable.

NOTE: The RJ-11 (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 Crestron website.

Programming Cable Specifications

1. Before making any connections to the touchpanel, verify that the control system is properly connected to the PC (using ST-PK cable 15717 and adapter) and powered on.
2. Attach the stereo connector end of the ST-PK cable 15710, to the touchpanel.
3. Attach the RJ-11 connector end of the ST-PK cable 15710, to the connector labeled NET on the control system.
4. Attach the appropriate external power pack or equivalent to touchpanel and plug into 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.

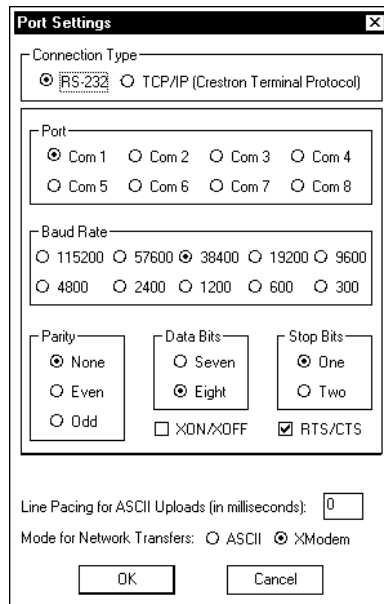
Accessing the “Port Settings” Window



7. Select the **RS-232** connection type. Verify the available COM is selected. Verify that the baud rate is set to **115200** (PRO2 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: If problems occur when transferring any Cresnet file (touchpanel project/firmware), lower the port speed baud rate to 38400 to match the Cresnet bus speed when transferring through a control system. 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 29, as appropriate.

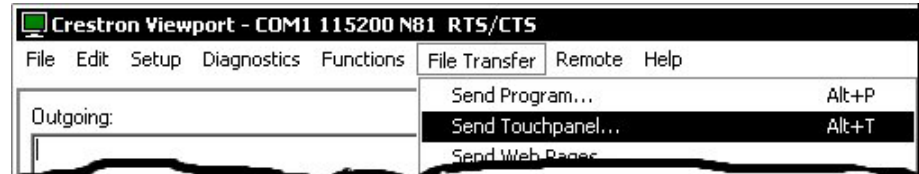
A compiled VT Pro-e file has the extension .vtz.

Uploading a VT Pro-e Project

VT Pro-e is a Windows compatible software package for creating Crestron touchpanel screen designs. Refer to “Programming with VT Pro-e” on page 16 for additional details. To upload a VT Pro-e project to the ST-1550C, complete the following steps.

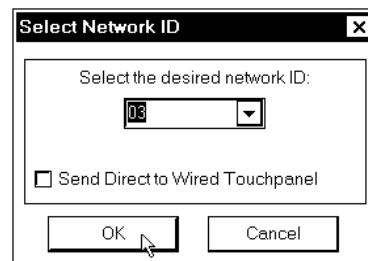
1. Make sure that “Communication Settings” which begins on page 24 has been performed.
2. As shown below, select **File Transfer | Send Touchpanel** (alternatively, depress **Alt+T**) from the Viewport menu.

Select Send Touchpanel

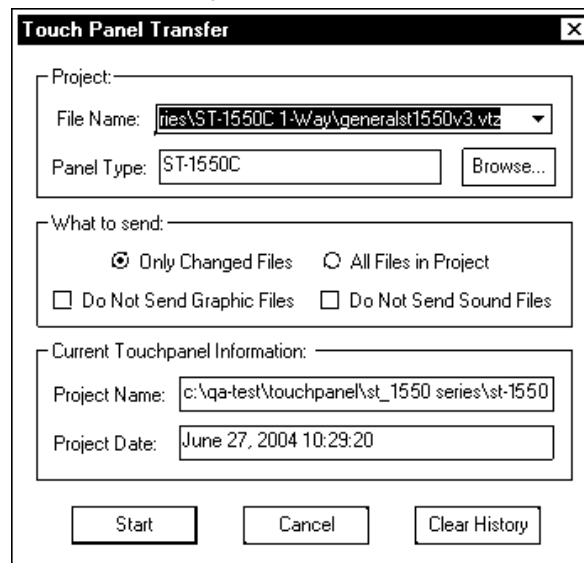


3. As shown below, select the network ID of the ST-1550C and then click **OK**. The “Touch Panel Transfer” window appears.

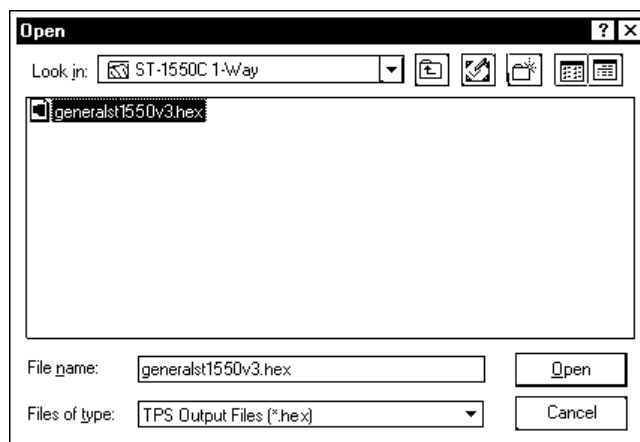
“Select Network ID” Window



“Touch Panel 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 will complete automatically.

Select VTZ File

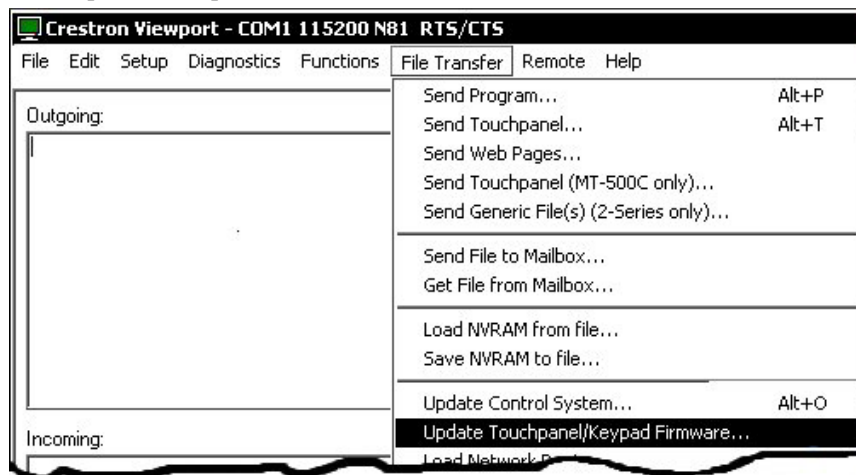
6. Disconnect the programming cable and the external power pack from the touchpanel.
7. Close the Viewport, exit VT Pro-e, and disconnect the programming cable from the PC and the control system.

Firmware Upgrade

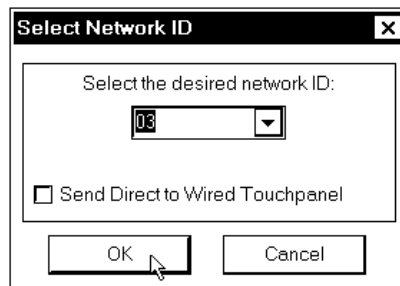
A firmware upgrade file has the extension .csf.

To take advantage of all the available features, it is important that the unit contains the latest firmware. Please check the Crestron website for the latest version of firmware. Not every product has a firmware upgrade, but as Crestron improves functions, adds new features, and extends the capabilities of its products, firmware upgrades are posted. To upgrade the ST-1550C firmware, complete the following steps.

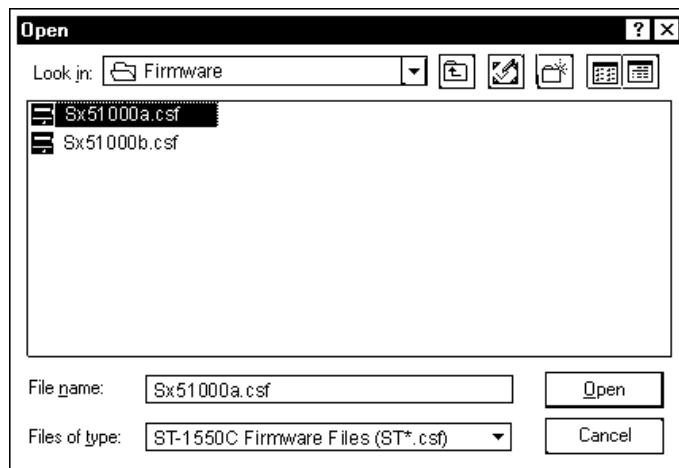
1. Make sure that “Communication Settings” that begins on page 24 has been performed.
2. As shown below, select **File Transfer | Update Touchpanel Firmware** from the Viewport menu.

Select Update Touchpanel Firmware

3. As shown on the next page, select the network ID of the ST-1550C and then click **OK**.

“Select Network ID” Window

4. As shown below, select Sx51000a.csf to upload first, the second file, Sx51000b.csf, will then upload once the first file has completed. 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 on the next page provides corrective action for possible trouble situations. If further assistance is required, please contact a Crestron customer service representative.

ST-1550C Troubleshooting

TROUBLE	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
Project cannot be uploaded to touchpanel:		
1. Screen is black.	Touchpanel is powered down.	Verify that the panel has power supplied to it, either battery or power pack.
2. Checking communications error.	Incorrect COM port specified.	Verify upload preferences is set to the COM port being used to communicate to the control system. Verify upload preferences specifies RACK (not the PANEL) as target of the upload.
3. Checking panel type error.	Incorrect NET ID setting.	Verify that panel NET ID matches the NET ID specified during upload. Refer to "Interface" in this Operations Guide.
	Problem with cable between control system and touchpanel.	Check the cable for errors or poor connections.
Wrong screens appear on touchpanel.	Screens were not uploaded.	Upload screens as described in the help files found in VT Pro-e.
Touchpanel does not function.	No power to the touchpanel.	Confirm that battery pack is installed or external adapter is connected.
	Touchpanel is incorrectly calibrated.	1. Enter "calibration mode" through the Setup Mode: a. Remove power (battery pack or adapter). b. Reapply power while holding finger to the touchscreen for about five seconds. c. When finger is lifted from screen, the opening screen appears. d. Touch the opening screen and select the Calibration button from the Preferences And Settings Menu to enter "Calibration mode." 2. If you cannot manually enter calibration mode, use the Viewport Function Put Touchpanel into Calibrate Mode to force the panel to display the screen.

(continued on next page)

ST-1550C Troubleshooting (continued)

TROUBLE	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
Touchpanel does not function and RF LED on ST-CP illuminates, but COM or IR LEDs do not illuminate.	Touchpanel RF ID is not set to match the RF ID assigned in the SmarTouch system program.	Verify that RF ID match. Refer to "Interface" in this Operations Guide and RF ID parameters assigned in the program.
Touchpanel display is dark or too light.	Screen brightness or contrast is improperly set.	Hold a finger to the touchscreen for more than three seconds as power is applied. The display sets the brightness and contrast to a safe value.
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.

Further Inquiries

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

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

Future Updates

As Crestron improves functions, adds new features, and extends the capabilities of the ST-1550C, 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 periodically for manual update availability and its relevance. Updates are identified as an "Addendum" in the Download column.

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