

Crestron **ST-1700CIR**
SmarTouch™ IR Wireless Touchpanel
Operations Guide



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



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

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SmarTouch™ IR Wireless Touchpanel: ST-1700CIR

Introduction

Features and Functions

- 1-way IR wireless; 50 foot range
- 5.7 inch active matrix touchscreen display; 320 x 240 resolution
- Isys graphics engine; Synapse Image Rendering Algorithm
- 10 quick-touch pushbuttons (optional); audible “key click”
- Long-lasting NiMH batteries; docking station/charger included
- Lightweight contoured design for tabletop and handheld use

SmarTouch

A SmarTouch touchpanel offers an ideal user-interface for controlling home theater, boardroom AV and a host of other applications, providing a wide-open canvas for the creation of custom control screens tailored to the user’s unique needs and tastes. Incredibly compact and portable, the SmarTouch touchpanel does away with piles of remotes and cryptic control panels, affording true “one-touch” control over a broad range of complex devices and systems.

IR Wireless

Affords an operational range of up to 50 feet line-of-sight. The unit is compatible with any Crestron® control system via the C2N-IRGW-1G IR Gateway or with select systems using the CNXRMIRD IR Receiver (both sold separately).

Isys®

The powerful Isys engine produces astonishing 16-bit full-color graphics and images. Programmable logic built into the ST-1700CIR enables virtual button feedback and subpages, affording considerable versatility for a 1-way touchpanel to deliver the “feel” of a more expensive 2-way RF-based panel.

Synapse™

Crestron's exclusive Synapse Image Rendering Algorithm enables system programmers to produce amazing graphics – faster and easier. Advanced antialiasing delivers crisper, sharper objects and text. Enhanced 3D effects add new depth and style. And, because Synapse is native to the touchpanel, memory requirements and upload time are substantially reduced.

Quick-Touch Pushbuttons

The ST-1700CIR includes a button bezel kit, which may be installed to provide ten tactile pushbuttons for quick-touch access to frequently used commands. In standby, the pushbuttons may be operated without waking the touchscreen for extended battery life. Custom engraving of the pushbuttons may be attained using Crestron Engraver software.

Long-Life NiMH Batteries

A fast-charging NiMH battery pack is included to provide long-lasting wireless operation, with adjustable power management built in to preserve battery life up to 20 hours in standby.

Docking Station/Charger

Without removing the battery pack, the touchpanel can be placed in the ST-DSN docking station (included) for recharging, simultaneously providing operating power to the touchpanel. The docking station may also be used to recharge a spare ST-BTPN battery pack (sold separately). If necessary, the touchpanel may even be powered directly using the PW-1215 power pack (included).

NOTE: The ST-1700CIR is supplied with an optional bezel, two 5-button switch actuators, and ten black pushbuttons (blank), five for each side of the LCD screen. You can use these buttons to access any frequently used commands. Refer to “Appendix: Installation of Optional Pushbuttons” for installation instructions.

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

Specifications

Specifications for the ST-1700CIR are given in the following table.

ST-1700CIR Specifications

SPECIFICATION	DETAILS
Touchscreen Display Display Type Size Aspect Ratio Resolution Color Depth Illumination Viewing Angle Touchscreen Composition	Transflective TFT active matrix color LCD 5.7 inch (14.5 cm) diagonal 4:3 QVGA 320 x 240 pixels 16-bit, 64k colors Backlit fluorescent ±65° horizontal, +65°/-40° vertical Resistive membrane
Wireless ¹ IR Carrier Format Range	38 kHz RC5 3 to 50 feet (typical) ² C2N-IRGW-1G IR Gateway or C2NRMIRD IR Receiver required.
Processor CPU Processing Speed	32-bit Freescale ColdFire® Microprocessor 63 MIPS (Dhrystone 2.1 benchmark)
Memory DRAM Flash	8 MB 4 MB

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ST-1700CIR Specifications (continued)

SPECIFICATION	DETAILS
Graphic Engine	Isys engine, 16-bit non-palette graphics; 65,536 colors; Synapse image rendering algorithm
Audio	Built-in transducer for "key-click" sound
Battery ³ Model/Type	ST-BTPN battery pack, NiMH, 4.8 volt, 4100 mAh Lithium Polymer 4S1P, 14.8 Volt, 2000 mAh (included)
Usage per Charge	~3 hours continuous use at full brightness, 20 hours in standby
Charging Time	2.7 to 6 hours (depending upon use while charging)
Power Requirements Touchpanel: Docking Station/Charger (ST-DSN included): Power Supply (PW-1215 included)	18 Watts (1.5 Amps) @ 12 Volts DC 18 Watts (1.5 Amps) @ 12 Volts DC universal 100~240VAC 50/60Hz
Default Net ID	03
Default IR-ID	00
Minimum 2-Series Control System Update File ^{4,5}	Version C2-2004.CUZ or later
Environmental Temperature Humidity	50° to 113°F (10° to 45°C) 10% to 90% RH (non-condensing)
Enclosure Construction	High impact black/silver injection-molded case
Dimensions Height: Width: Depth:	3.85 in (9.78 cm) 8.75 in (22.23 cm) 5.51 in (14.00 cm)
Weight	1.85 lbs (0.84 kg) – not including battery or docking station
International Version (230 VAC) All the features of the ST-1700CIR except: Power Requirements Touchpanel: Docking Station/Charger (STI-DSN included) Power Supply (PWI-1215 included)	STI-1700CIR 18 Watts (1.5 Amps) @ 12 Volts DC 18 Watts (1.5 Amps) @ 12 Volts DC 230 Volts AC @ 50Hz
Included Accessories ST(I)-DSN ST-BTBN PW(I)-1215 1700C-BTNB-BEZELS-BLANK	Docking Station Battery Pack 12 Volt Power Pack Button and Bezel Kit (engraving sold separately)
Available Accessories C2N-IRGW-1G CNXRMIRD 1700C-BTNB 1700C-BTNS ST-PK	IR Gateway IR Receiver Set of 10 Black Button Caps with Engraving Set of 10 Silver Button Caps with Engraving Programming Cable Kit

1. Requires Crestron CNXRMIRD or C2N-IRGW-1G 1-Way IR Receiver.
2. Certain types of fluorescent lighting and ambient conditions may reduce the effective range.
3. 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.
4. The latest versions can be obtained from the Crestron website. Refer to NOTE after last footnote.
5. 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.

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).

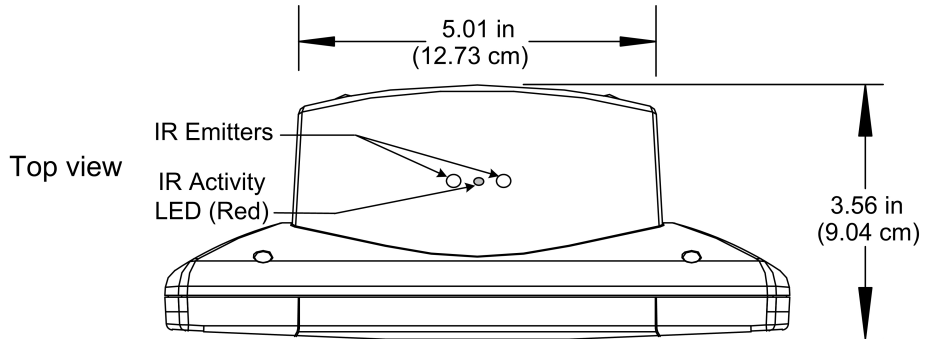
Physical Description

The touchpanel has a 5.7-inch (14.48 cm) active matrix color display panel with 320 x 240 resolution and 16-bit non-palette graphics. The electronic hardware is housed in a black and silver molded plastic enclosure, shown below. Connectors to power the unit and upload touchscreen projects are located on the sides of the unit.

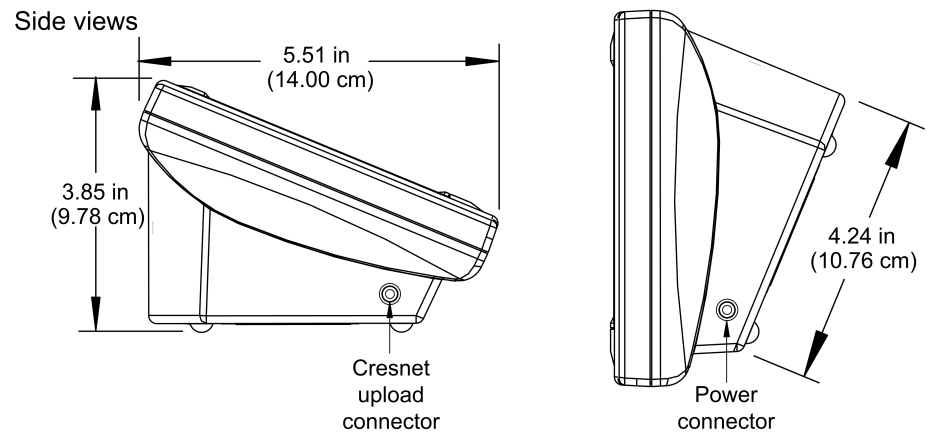
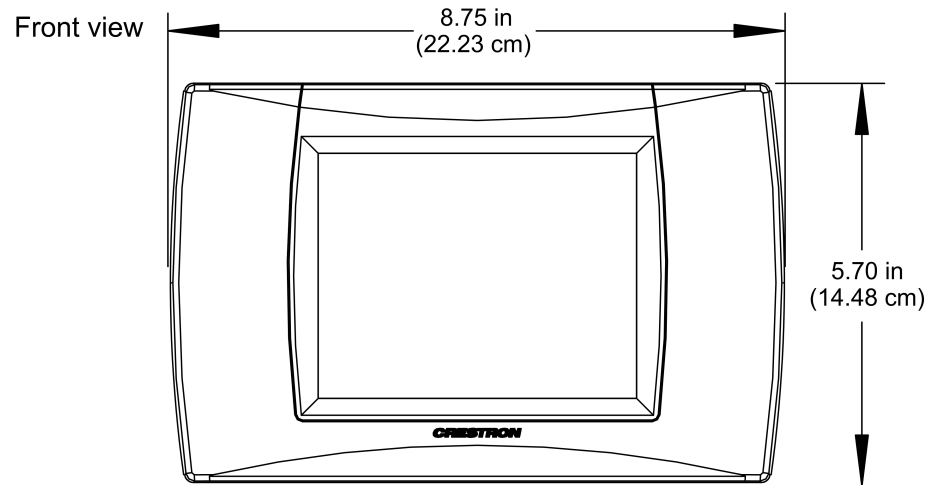
Physical View of ST-1700CIR



Physical Dimensions of ST-1700CIR



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Physical Dimensions of ST-1700CIR (continued)

The battery compartment, located on the underside of the unit, 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 Labeling.



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

Setup

Applying Power

The touchpanel can be powered via the supplied external AC power pack, the ST-DSN docking station, or the ST-BTPN battery pack. Each of these supplied items has its own guide which details proper usage. Refer to the following table for the required document number.

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.

NOTE: The touchpanel will not transmit IR commands unless the battery is installed and charged.

ST-1700CIR Power Source Options

POWER SOURCE OPTION	MODEL	DOCUMENT NUMBER ¹
Battery Pack ²	ST-BTPN	6088
Docking Station	ST-DSN	6095
Domestic External Power Pack or	PW-1215	5762
International External Power Pack	PWI-1215	5763

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

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

Identity Codes

The ST-1700CIR touchpanel uses two distinct types of identity codes: Cresnet[®] identity (Net ID or Cresnet ID), and IR ID. These codes are assigned to the touchpanel from an interface submenu when the unit is configured. Refer to “Setup Menu” on page 7. For the touchpanel to be identified within the Cresnet system, these assignments must match assignments made in the SIMPL Windows program.

Net ID

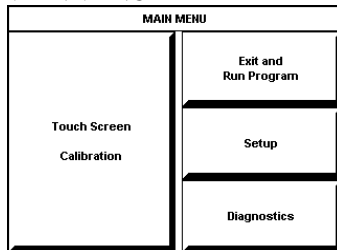
Every equipment and user interface within the Cresnet system requires a unique Net ID. The Net ID is a two-digit hexadecimal number that can range from 03 to FE. The Net ID is used when the touchpanel is wired directly to the control system during uploading a Crestron VisionTools[®] Pro-e (VT Pro-e) project or upgrading the touchpanel firmware. The Net ID of the ST-1700CIR has been factory set to 03.

IR ID

Every ST-1700CIR touchpanel communicating with a Cresnet control system via a CNXRMIRD or C2N-IRGW-1G requires a unique IR ID to secure IR communications. There are two useable codes (two-digit hexadecimal numbers): 00 and 10; the default is 00. The IR ID of the unit must match the IR ID specified in the SIMPL Windows program.

Configuring the Touchpanel

MAIN MENU



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

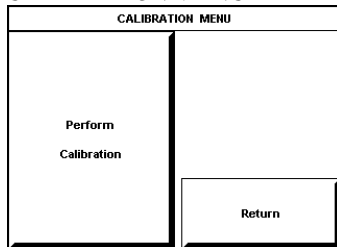
To configure the unit, it may be necessary to access a series of setup screens prior to viewing run-time screens that are loaded into the touchpanel for normal operation. The MAIN MENU for configuring the touchpanel appears when a finger is held to the touchscreen for about five seconds from the powered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

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

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

Calibration Menu

CALIBRATION MENU



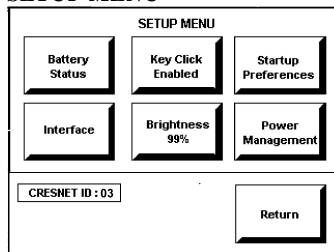
Calibration of the touchscreen is required if the active touch area of a button does not coincide with the button's image. Select the **Touch Screen Calibration** button to display the CALIBRATION MENU, shown to the left. The CALIBRATION MENU offers the choice to initiate calibration with the **Perform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

If you proceed 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 in the corner of the screen to initiate calibration. Other messages appear with cross hairs in the appropriate corners. Follow the screen instructions to conclude calibration and return to the MAIN MENU.

NOTE: When touching the screen during calibration, be as accurate as possible. Use the tip of a capped pen or the eraser end of a pencil.

Setup Menu

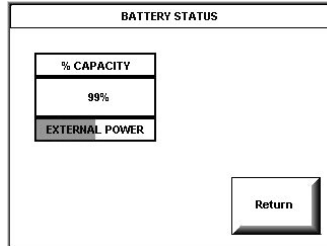
SETUP MENU



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 displays 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.

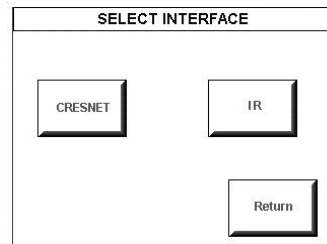
NOTE: All touchpanel settings are automatically saved in non-volatile memory.

BATTERY STATUS**Battery Status**

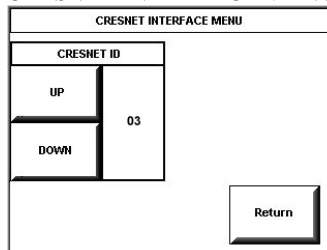
To access the BATTERY STATUS screen, shown to the left, press the **Battery Status** button on the SETUP MENU.

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 the touchpanel is in the docking station to recharge the battery, the % CAPACITY display is not an accurate indicator of battery charge level. The display will indicate a full charge (100%) before charging is actually complete. The docking station indicates that charging is complete by illuminating the RDY indicator.

SELECT INTERFACE**Select Interface**

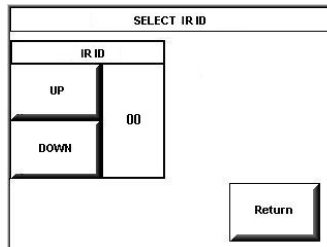
The touchpanel communicates with a control system to activate commands. The communication interface must be correctly specified or communication will not occur. To set communication parameters, first select the **Interface** button on the SETUP MENU to display the SELECT INTERFACE screen, shown to the left. Then, select either the **CRESNET** or the **IR** button to display the CRESNET INTERFACE MENU or the SELECT IR ID screen, respectively. Use these screens to set the Cresnet network identity (Net ID) and the IR ID numbers.

CRESNET INTERFACE MENU**Cresnet Interface Menu**

CRESNET ID is a two-digit hexadecimal number that can range from 03 to FE, used only during screen uploads to the touchpanel or upgrading the touchpanel firmware. The Net ID for the ST-1700CIR 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).

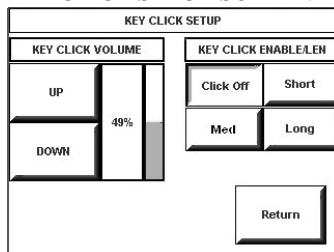
Select the **Return** button to return to the SELECT INTERFACE screen.

SELECT IR ID**IR Setup**

IR ID, the IR identity number, is necessary to secure IR communications such that controls can be activated from the touchpanel. The IR ID consists of a two-digit hexadecimal number. The touchpanel can be set to one of two numbers: 00 and 10. The default, 00, is shown as an example in the illustration. The IR ID setting should match the value assigned to the ST-1700CIR touchpanel definition in the SIMPL Windows program. Refer to page 12 for information about SIMPL programming/setup for this touchpanel.

Use the **UP** and **DOWN** buttons to select between the two numbers.

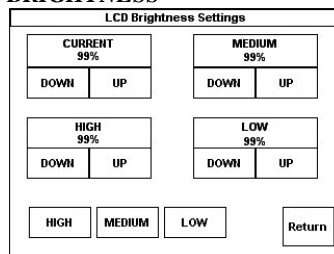
After the Cresnet ID and IR ID settings have been verified, touch the **Return** button to save the settings and display the SELECT INTERFACE screen.

KEY CLICK SETUP SCREEN**Key Click Setup**

From the SETUP MENU, press the **Key Click Enabled** button to open the 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**.

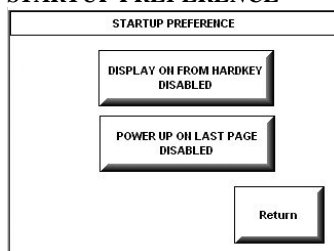
Use the KEY CLICK VOLUME **UP** and **DOWN** buttons to increase and decrease the volume of the signal. The display to the right of the buttons shows the relative volume from 0% to 100%, both as a numeric value and, for a quick visual reference, as an analog bar.

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 LCD Brightness Settings screen. The screen permits changes to the “current” screen brightness level, or setup of preset values for low, medium, and high brightness settings. “Joins” assigned to the **HIGH**, **MEDIUM**, and **LOW** buttons at the lower left make it possible to select these presets from buttons on a program page. The **UP** and **DOWN** buttons increase and decrease screen brightness, respectively, for each level.

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

STARTUP PREFERENCE**Startup Preference**

The Startup Preference feature 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.

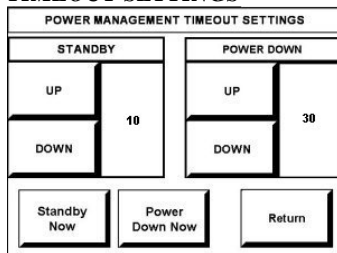
NOTE: The “Display On From Hardkey” feature applies only to units with the 1700C-BTNB-BEZEL or 1700C-BTNB-BEZEL-BLANK option installed. These options provide for installation of a new bezel and ten “quick” pushbuttons, five on each side of the LCD screen. You can use these buttons to access any frequently used commands. For detailed information, refer to the latest version of the 1700C Button Bezel Kit Operations and Installation Guide supplied with the options (Doc. 6224), available from the Crestron website (<http://www.crestron.com/manuals>).

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.

The **POWER UP ON LAST PAGE** button also toggles between ENABLED and DISABLED. Enabling this option causes the unit to “remember” the last page and which “joins” were active when the unit was last powered down, and return to that state when next powered on. If the option is disabled, the unit will always go to the first page of the project and all “joins” are cleared.

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. The time settings are in single-minute increments from 0 to 10 minutes, and in 10-minute increments from 10 minutes through 120 minutes.

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, either the first page of the project appears or the last screen to be displayed reappears, depending on the setting of the Power Up On Last Page option on the STARTUP PREFERENCE screen. The specified time is displayed in minutes. The default POWER DOWN timeout is 30 minutes.

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.

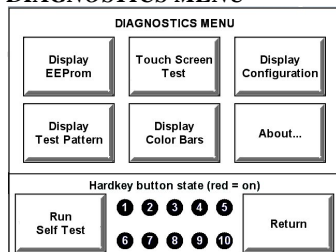
NOTE: When the panel is powered down, it will take about 1.5 seconds to power up and respond to a button press. There is no such delay from Standby mode.

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 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 that may detrimentally affect image quality.

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

Programming Software

Have a question or comment about Crestron software?

Answers to frequently asked questions (FAQs) can be viewed in the Online Help section of the Crestron website. 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.

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.

Crestron has developed an assortment of Windows[®]-based software tools to develop a Cresnet system. The following are the minimum recommended software versions for the PC:

Software

TASK	REQUIRED SOFTWARE VERSION
Program control system to operate the ST-1700CIR	SIMPL Windows version 2.06.20 or later with SIMPL+ Cross Compiler version 1.1. or later and Library update 361 or later; Also requires Crestron Database version 17.6.0 or later
Upload program and firmware	Crestron Toolbox 1.01.06 or later
Create labels for front panel buttons	Crestron Engraver 2.4.1.2 or later
Graphical touchscreen design	VT Pro-e version 3.5.1.5 or later
Program with simple wizards for systems using an ST-1700CIR (optional but recommended)	Crestron SystemBuilder™ version 2.0.6 or later with SystemBuilder Templates version 2.0.1 or later. Refer to software release notes or Crestron website for other required Crestron software packages.

Programming with Crestron SystemBuilder

Crestron SystemBuilder is the easiest method of programming but does not offer as much flexibility as SIMPL Windows. For additional details, download SystemBuilder from the Crestron website and examine the extensive help file.

Programming with SIMPL Windows

NOTE: While SIMPL Windows can be used to program the ST-1700CIR, it is recommended to use SystemBuilder for configuring the system.

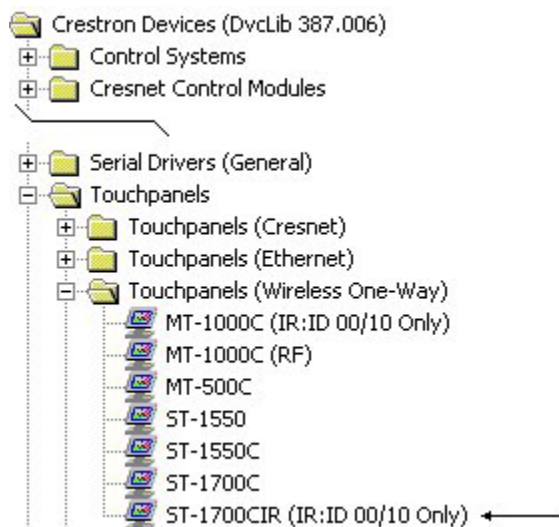
SIMPL Windows is Crestron's premier software for programming Crestron control systems. It is organized into two separate, but equally important "Managers."

Configuration Manager

Configuration Manager is the view where programmers “build” a Crestron control system by selecting hardware from the *Device Library*.

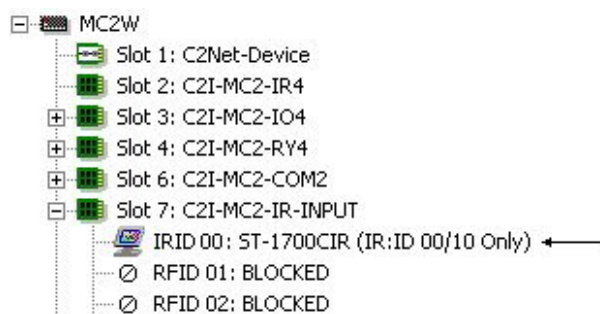
- To incorporate a wireless IR touchpanel into the system, either a CNXRMIRD IR receiver needs to be physically connected to the IR input port on the control system (it is not, however, included in *System Views*), or a C2N-IRGW-1G receiver needs to be included in system views. The choice depends on the control system being used. The following procedures include an MC2W control system. (The MC2W requires a CNXRMIRD connected to its IR input port.)
- Drag the ST-1700CIR (IR ID 00/10 Only) symbol from the Touchpanels | Touchpanels (Wireless One-Way) folder of the *Device Library* to the Slot 7 IR input port of the MC2W in the lower pane of *System Views*.

Locating the ST1700-CIR in the Device Library

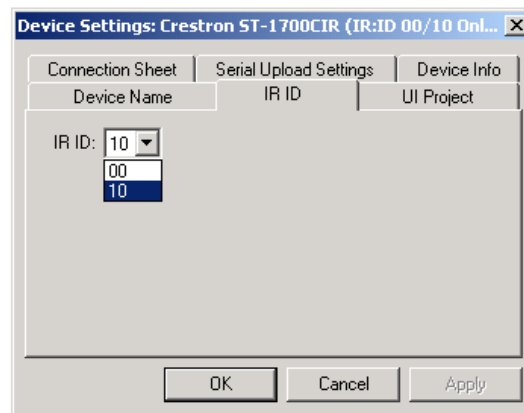


- The system tree of the control system displays the device in the appropriate slot with a default IR ID as shown in the following illustration.

C2Net Device, Slot 7



- An additional ST-1700CIR device is assigned a different IR ID number as it is added.
- If necessary, double click a device to open the “Device Settings” window and change the IR ID as shown in the following figure.

“ST-1700CIR Device Settings” Window

For more information on setting the IR ID, refer to “Select Interface” on page 8.

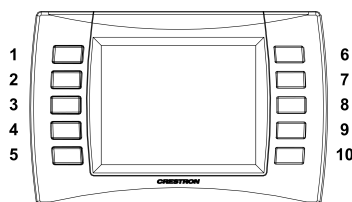
NOTE: The hardware and software settings of the IR ID must match. The IR ID consists of a two-digit hexadecimal number. The touchpanel can be set to one of two numbers: 00 and 10.

Programming Manager

Programming Manager is the view where programmers “program” a Crestron control system by assigning signals to symbols. The symbol can be viewed by double clicking on the icon or dragging it into *Detail View*. A description for each signal in the symbol is described in the SIMPL Windows help file (**F1**).

Programming with VisionTools Pro-e

Touchpanel screens should be created in VisionTools Pro-e to allow switching of source signals to desired outputs as well as selection of the system mode. There are no special programming requirements to use the functions of the ST-1700CIR in a room-control system.

Optional Pushbuttons**Pushbutton Layout and Join Number Assignment**

If the optional ten “hard” pushbuttons are installed, you can use these buttons to access any frequently used commands (refer to “Appendix: Installation of Optional Pushbuttons” on page 24). Each button has a permanently fixed digital join number; refer to the illustration shown to the left. The sequence of digital join numbers is (top to bottom) 1 through 5 on the left side and 6 through 10 on the right side.

NOTE: A user may not want the display to come on after a pushbutton is pressed when the unit is off. The Startup Preference option allows the user to select whether the touchpanel’s display comes on or stays off after a pushbutton is pressed. For more information, refer to “Startup Preference” on page 9.

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

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

MultiByte International Characters

Most languages use a single byte of 8 bits to represent a character, e.g., English, French, German, Hebrew, Russian, Thai, etc.

Multibyte character fonts require more than the usual eight bits to specify a character. This occurs when a language has more than 256 characters (2^8) in a font. For example, Chinese fonts contain several thousand characters. Other multibyte languages include Japanese and Korean.

There are two separate issues with multibyte characters - static text on buttons and indirect text on buttons. No Isis touchpanel firmware changes are required in either case.

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

Indirect text on a button is entered in VT Pro-e and the actual string to be displayed is entered in SIMPL Windows. You must use VT Pro-e 3.0 or later to guarantee that the full set of characters in the font is stored on the touchpanel. You must use SIMPL Windows 2.03.11 or later to enter Chinese characters directly. As of this publication date, only completely single-byte or completely multibyte strings may be entered or they will not be compiled correctly in SIMPL Windows. In other words, you cannot enter Chinese character interspersed with numbers. You can enter Chinese characters or numbers in separate strings. Crestron is scheduling time to fix this in the near future and the release notes for SIMPL Windows will mention it.

Of course, you can always use the workaround of showing a graphic that displays the string, but it is not dynamic. To compile and use multibyte characters, it is essential that the operating system understand the language. Windows XP is available in many international languages and add-on software is available for other versions of Windows.

Virtual Feedback

Programming a one-way IR touchpanel such as the ST-1700CIR 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. 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 use the following procedures 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.
- 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 button that is to be activated and 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

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 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 will remain 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 or lowering a screen.

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.

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 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

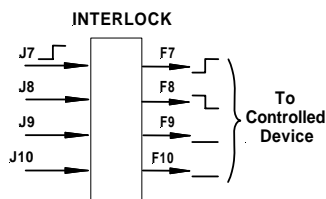
VT Pro-e always generates the proper virtual feedback logic and appends it to the compiled VT Pro-e file for upload to the panel. However, you must add similar logic to the control system via SIMPL Windows.

SIMPL Windows Procedures

Momentary Feedback

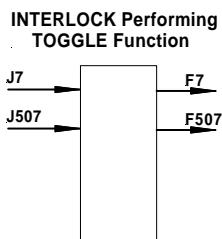
Momentary feedback is when the button feedback state is active as long as the button is pressed and inactive when it is not being pressed. Momentary feedback does not require anything special in the SIMPL Windows program. You simply connect the signal from the appropriate touchpanel join number to the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

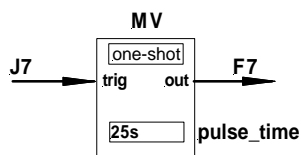
Toggle feedback is when the feedback of a button alternates between active and inactive each time the button is pressed. As in the interlock, the toggle feedback remains high even after the button is released, until the button is pressed again.

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, as shown to the left of this paragraph. 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 IR 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 both 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.



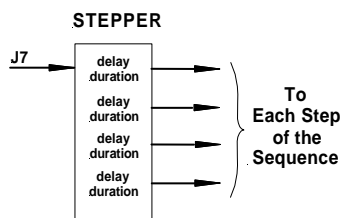
Duration Feedback

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 figure to the left.

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 figure to the left, 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.

Example Program

An example program for the ST-1700CIR is available from the “Example Program” section of the Crestron website (<http://www.crestron.com/exampleprograms>).

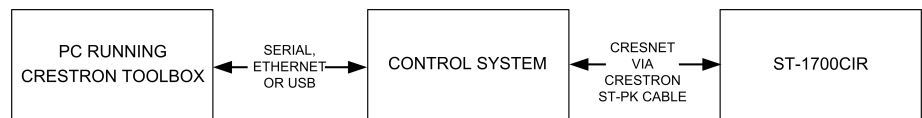
Uploading and Upgrading

Crestron recommends using the latest programming software and that each device contains the latest firmware to take advantage of the most recently released features. However, before attempting to upload or upgrade, it is necessary to establish communication.

Establishing Communication

Use Crestron Toolbox for communicating with the ST-1700CIR; refer to the Crestron Toolbox help file for details. There is a single method of communication, indirect serial communication.

Indirect Serial Communication



- The ST-1700CIR connects to the control system via Cresnet.
- Establish communications between the PC and the control system as described in the latest version of the 2-Series Control Systems Reference Guide (Doc. 6256).

Programs, Projects, and Firmware

- Display the network device tree (**Tools | Network Device Tree**); to show all network devices connected to the control system. Right-click on the ST-1700CIR to display actions that can be performed on the ST-1700CIR:
 - ⇒ Upgrade firmware
 - ⇒ Change Net ID
- Upload the SIMPL Windows file to the control system using SIMPL Windows or Crestron Toolbox.
- Upload the VisionTools Pro-e file to the touchpanel using VisionTools Pro-e or the Crestron Toolbox.
- Upgrade ST-1700CIR firmware via Crestron Toolbox.
 - ⇒ Establish serial or TCP/IP communications with the ST-1700CIR.
 - ⇒ Select **Functions | Firmware...** to upgrade the ST-1700CIR firmware.

For details on uploading and upgrading, refer to the SIMPL Windows help file, VisionTools Pro-e help file, or the Crestron Toolbox help file.

Problem Solving

Troubleshooting

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

ST-1700CIR Troubleshooting

TROUBLE	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
Project cannot be uploaded to touchpanel:		
1. Screen is black.	Touchpanel is powered down.	Touch the touchpanel to display a screen. 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 "Select 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.	<ol style="list-style-type: none"> 1. Enter "calibration mode" through the Setup Mode: <ol style="list-style-type: none"> a. Remove power (battery pack or adapter). b. Reapply power while holding finger to the touchscreen for approximately five seconds c. When finger is lifted from screen, the MAIN MENU screen appears d. Select Touch Screen Calibration to display the CALIBRATION MENU; select Perform Calibration to enter "calibration mode." 2. If you cannot manually enter calibration mode, use the Toolbox System Info Setup Mode Enter Calibration Mode to force the panel to display the screen.

(Continued on next page)

ST-1700CIR Troubleshooting (continued)

TROUBLE	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
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.

Reference Documents

The latest version of all documents mentioned within the guide can be obtained from the Crestron website (<http://www.crestron.com/manuals>). This link will provide a list of product manuals arranged in alphabetical order by model number.

List of Related Reference Documents

DOCUMENT TITLE
2-Series Control Systems Reference Guide
1700C BTNB-Bezel Button Bezel Kit
ST-BTPN Battery Pack
ST-DSN Docking Station
PW-1215 Domestic External Power Pack
PWI-1215 International External Power Pack

Further Inquiries

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

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

Future Updates

As Crestron improves functions, adds new features, and extends the capabilities of the ST-1700CIR, additional information may be made available as manual updates. These updates are solely electronic and serve as intermediary supplements prior to the release of a complete technical documentation revision.

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

Appendix: Installation of Optional Pushbuttons

The ST-1700CIR is supplied with ten optional pushbutton switches, blank buttons, and a bezel to accommodate the switches. As a further option, custom engraved black buttons (1700C-BTNB) or silver buttons (1700C-BTNS) can be designed and purchased via the Crestron Engraver software. Version 2.4.1.2 or later is available from the Crestron website.

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

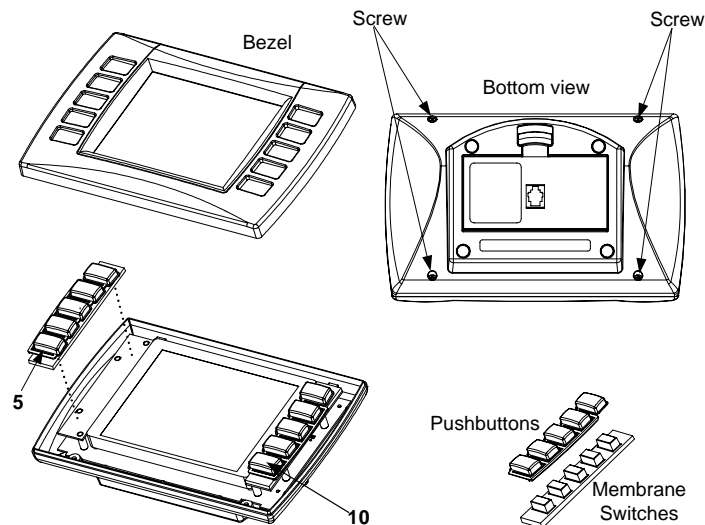
1. Place the touchpanel face down on a clean work surface.
2. Remove the four screws securing the front bezel to the base. Holding the bezel to the base, return the unit to its normal position and lift the bezel from the base.
3. Assemble the supplied membrane switches to the pushbutton sets. Notice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

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

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

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

Optional Pushbutton Installation Diagram



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Merchandise Returns / Repair Service

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

CRESTRON Limited Warranty

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

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

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

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

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

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

Trademark Information

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



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

**Operations Guide – DOC. 6469
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Specifications subject to
change without notice.