

Crestron **Series 3200** Touchpanel

Operations Guide



CRESTRON

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Series 3200 Touchpanels

Description

Functional Description

The Series 3200 touchpanels are 10.4 inch (26.4 cm) passive matrix touchscreen control panels for the Cresnet remote control system (herein referred to as the Cresnet system). There are two Series 3200 configurations available: either lectern-mount or adjustable tiltcase models. Configuration selection is based on application requirements. Refer to “Configuration Differences” on page 5 for a more detailed description of each.

The purpose of a Series 3200 unit is to replace hard-wired panels in either a Cresnet or an RS-232 based control system. The touchpanel is capable of replacing large, complicated panels with a series of simpler screens, each specific to the control problem at hand. Thus, very large numbers of functions can be made available to the user without the confusion associated with hardware panels of that complexity. Series 3200's icons, graphics, and text can dramatically increase any user's comprehension of the control environment. Devices, functions, and control zones are quickly organized and more easily accessed. The Series 3200 touchpanels offer:

- 256-color display
- pop-up sub panels to reduce memory requirements, providing optimal speed and performance
- multiple button, slider control, and icon configurations
- up to 999 functions and 96 screens
- imported photographs, drawings, and icons
- support for downloadable fonts - proportional and non-proportional
- foreign language text
- RS-232 interface for stand-alone applications (lectern-mount configuration only)
- printout of screen designs on standard printer
- Position Lock feature provides durable support of panel at any angle of inclination between 0 and 70 degrees (tiltcase configuration only).

Have a comment about Crestron's software?

Direct software related suggestions and/or complaints to Crestron via email (software@crestron.com). Do not forward any queries to this address. Instead refer to "Further Inquiries" on page 20 for assistance.

Software

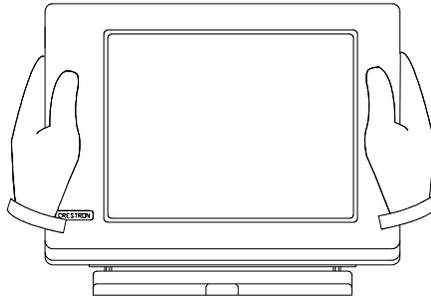
VisionTools™ Pro (VT Pro), a design and programming Windows®-based software, permits the creation of unlimited control screen variations incorporating two and three-dimensional graphics and text. A set of pages which make up a project can be designed for each Series 3200 touchpanel application. Each page contains objects such as custom control graphics, two and three-dimensional buttons, sliders, and digital readouts which allow the user to interface with the control system. The project is uploaded to the touchpanel and programmed into the flash PROM. The touchpanel uses the programmed project until another set is uploaded from the PC. The PC may be disconnected from the rack or panel except during reprogramming. For additional software information, consult the VT Pro help file.

Position Lock Button

The position lock button is centrally located at the front of the base on Series 3200 adjustable tiltcase touchpanels. These touchpanels permit incremental angle positions indicated by audible clicks. Range of motion is adjustable for user comfort and can vary from zero inclination to 70 degrees from horizontal. Thus the user can position the touchscreen to a comfortable angle, just as a microphone can be repositioned for each speaker. The comfortable angle is herein referred to as user position. The position lock guarantees that once a user position is established or locked, the angle will not degrade from repeated presses on the touchscreen.

The touchscreen is free to move up from the horizontal to an incremental angle. Grasp the touchscreen with a hand at each side and gently tilt up to a comfortable position. To activate position lock, slightly reverse the motion until the touchpanel stops moving. Correct hand placement is shown below. The touchscreen is now set into user position.

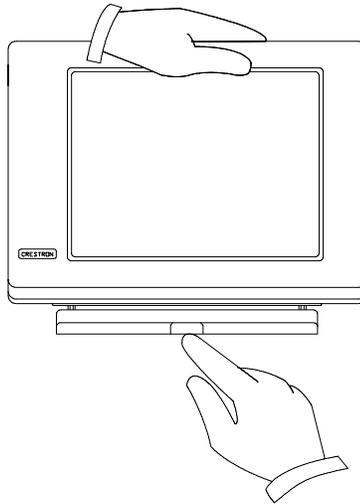
Hand Position for Tilting Touchpanel to Vertical



Once in user position, position lock is activated which means the touchscreen can not be forced to the horizontal position without depressing the position lock button. The touchscreen is still free to tilt up; a new user position is established at each increment or audible click.

The position lock button needs to be depressed before the touchscreen can be returned to the horizontal position. To depress the button, slightly position the touchscreen in the vertical direction with two hands, avoiding any tilting. The position lock button can be depressed with one hand; the touchscreen can be tilted down to the horizontal position with the other, shown on the next page.

Hand Position for Tilting Touchpanel to Horizontal

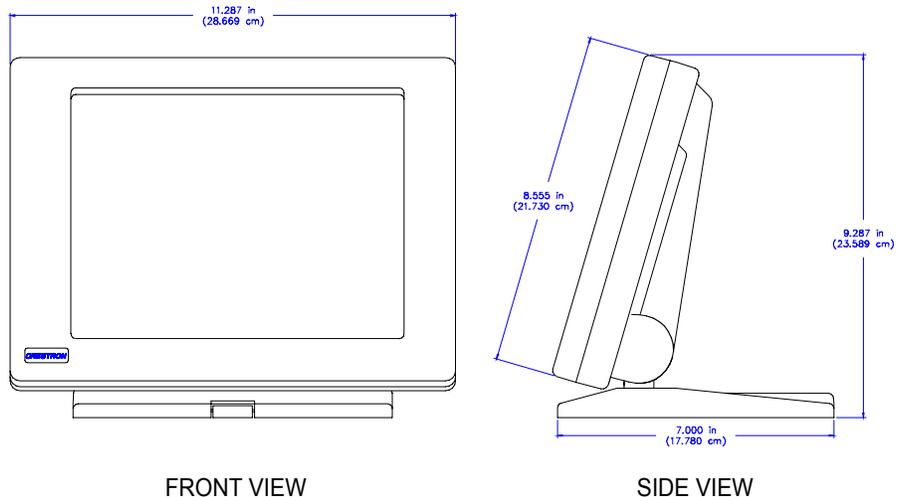


Physical Description

Touchpanels

The 10.4-inch (26.4 cm) touch sensitive viewing screen is located on the front of the Series 3200 touchpanel. The electronic hardware is housed in a high impact, black molded plastic enclosure for the adjustable tiltcase configurations, shown after this paragraph. This touchpanel is designed to be placed on a counter. It possesses a hinged base, which can tilt from 0 to 70 degrees. Depress the button located at the front of the base when pivoting the touchpanel to the horizontal position. A 6-pin, 6-position RJ11 modular jack is located at the rear of the adjustable tiltcase base. Use the cable assembly (supplied) to connect the touchpanel to the CN-RJ11 (supplied), which attaches directly to the Cresnet network.

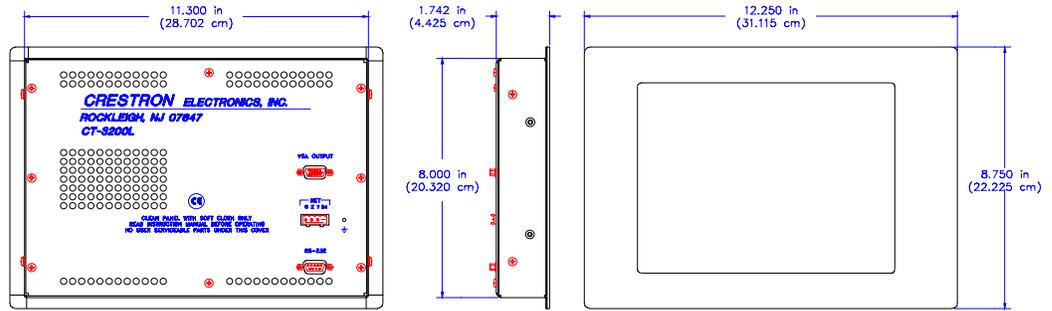
Physical Views of Tiltcase Series 3200 Touchpanel (CN-RJ11 not shown)



The lectern mount configuration, shown after this paragraph, is denoted with the letter “L” at the end of the nomenclature. The panel is housed in a black metal box topped with a plastic cover. The 15-pin female high density D sub video output,

four-pin network, and nine-pin RS-232 connector ports are located on the rear of the panel.

Physical Views of Lectern Series 3200 Touchpanel



BACK VIEW

SIDE VIEW

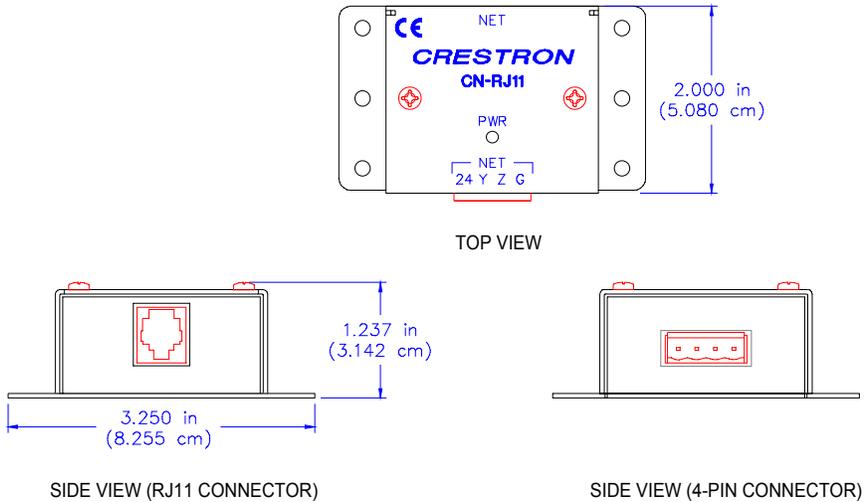
FRONT VIEW

Interface Module: CN-RJ11

NOTE: The tiltcase Series 3200 touchpanel is supplied with a cable assembly that connects to the CN-RJ11 (supplied). Pinout information is provided on the next page. If the assembly must be modified in any way, Crestron cannot guarantee the behavior of the touchpanel. The product may not function accordingly, as stated in this Operations Guide.

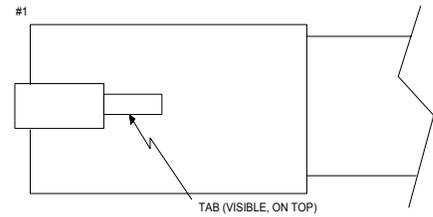
Crestron's CN-RJ11 is a network one-to-one converter that interfaces four-wire Cresnet and modular devices. The converter is housed in a black enclosure with silk-screened top panel, shown after this paragraph. A four-pin network connector is located on one side of the unit. A six-position, RJ11 modular telephone jack is located on the opposite side. At the shorter sides of the CN-RJ11, the enclosure extends to form feet at a right angle to the side. There are three holes per foot for inserting screws to further stabilize the unit.

Physical Views of the CN-RJ11



Six-Pin Jack Pinout (for CN-RJ11)

PIN #	SIGNAL	COLOR
1	+24 V (Network)	WHT
2	+24 V (Network)	BLK
3	Y (Data)	RED
4	Z (Data)	GRN
5	GND (Network)	YEL
6	GND (Network)	BLU



Configuration Differences

There are two Series 3200 configurations available and selection depends on type of installation (tiltcase or lectern mount). Tiltcase panels are referred to as the CT-3200 and lectern-mount panels are called CT-3200L. Each configuration has a 256-color display and 1M byte of flash memory.

NOTE: Wall-mount and rack-mount kits are available options that can be purchased with the lectern-mount configuration. Parts and instructions are provided with each kit.

Leading Specifications

The table below and on the next page provides a summary of leading specifications for the Series 3200 touchpanels. Dimensions and weight are rounded to the nearest hundredth unit.

Leading Specifications for Series 3200 Touchpanels

SPECIFICATION	DETAILS
Power Requirements	16 Watts, 24 VDC 0.66 Amp
SIMPL Windows	Version 1.21.04 or later*
CNX Operating System	Version 5.01.09x or later
CNX Monitor	Version 2.00 or later
CNMS, CNRACK, CNLCOMP Operating System	Version 3.16.08 or later
ST-CP Operating System	Version 4.00.29 or later
ST-CP Monitor	Version 1.29 or later
VisionTools Pro (VT Pro)	Version 1.1.3 or later*
Memory	1 Mbyte flash memory
CT-3200, Tiltcase Model	Height: 9.29 in (23.59 cm)
Dimensions & Weight (without CN-RJ11)	Width: 11.29 in (28.67 cm) Depth: 7.00 in (17.78 cm) Weight: 5.65 lb (2.56 kg)
CN-RJ11	Height: 2.00 in (5.08 cm)
Dimensions & Weight	Width: 3.25 in (8.26 cm) Depth: 1.24 in (3.14 cm) Weight: 0.40 lb (0.18 kg)

* The latest software versions can be obtained from the Software Downloads page of Crestron's website (www.crestron.com). New users are required to register in order to obtain access to the FTP site.

Leading Specifications for Series 3200 Touchpanels (Continued)

SPECIFICATION	DETAILS
CT-3200L Lectern-Mount Model	Height: 8.75 in (22.23 cm)
Dimensions & Weight	Width: 12.25 in (31.12 cm) Depth: 1.74 in (4.42 cm) Weight: 3.90 lb (1.77 kg)
Visible View Screen Dimensions	Height: 6.25 in (15.88 cm) Width: 8.25 in (20.96 cm)
View Screen Resolution	640 x 480 pixels
View Screen Display	Passive Matrix Color LCD
View Screen Illumination	Backlit Fluorescent
View Screen Touch Screen	Resistive Membrane

As of the date of manufacture, the Series 3200 touchpanels have been tested and found to comply with specifications for CE marking.



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

Setup

Recommended Cleaning

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

For best cleaning results, use a clean, damp, non-abrasive cloth with any commercially available non-ammonia glass cleaner. Bezels may not provide a complete water-tight 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.

Identity Code

Every equipment and user interface within the network requires a unique identity code (ID CODE). These codes are recognized by a two-digit hexadecimal number from 03 to FE. Refer to “Interface Menu” on page 13 for instructions on setting the unit’s ID CODE. The ID CODE of the unit must match the ID CODE specified in the SIMPL Windows program. Refer to “Programming with SIMPL™ Windows®” on page 15 for an example of a SIMPL Windows program.

Installation

Network Wiring

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

Resistance Equation

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

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

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

Wire Gauge Values

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

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

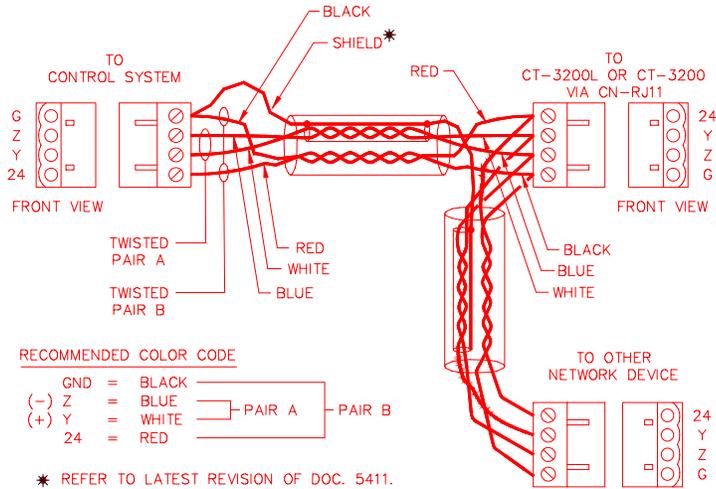
NOTE: When daisy-chaining Cresnet units, strip the ends of the wires carefully to avoid nicking the conductors. Twist together the ends of the wires that share a pin on the network connector, and tin the twisted connection. Apply solder only to the ends of the twisted wires. Avoid tinning too far up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

Hardware Hookup

Due to configuration differences (between lectern and tiltcase models), the hookup diagram differs among Series 3200 touchpanel models. Either way, connect the touchpanel to the Cresnet network via a Cresnet network cable, shown on the next page, and appropriate interface module.

NOTE: Before making any connections, review latest revision of network interconnection drawing (Doc. 5411) or, if necessary, the network modular cable requirements (Doc. 5682).

Recommended Network Cable, Liberty Wire Reference: Cresnet

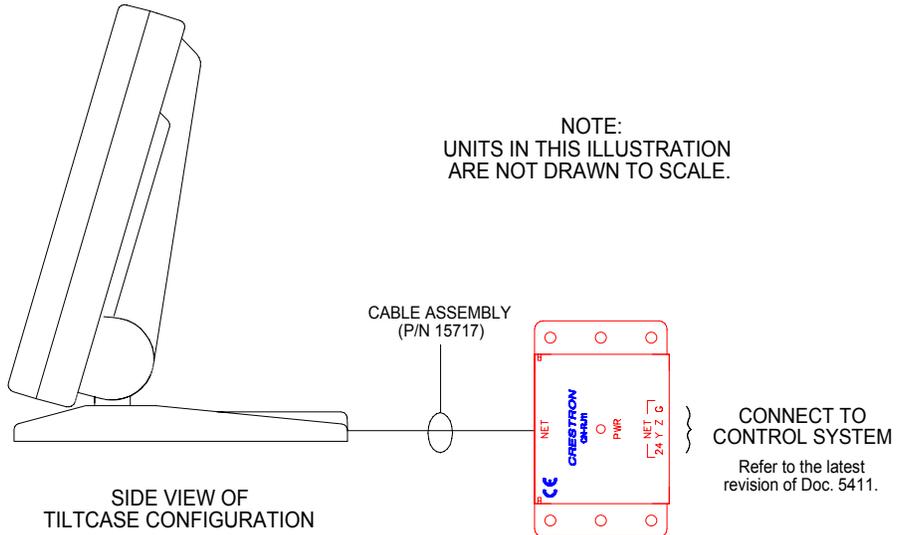


After completing the connections detailed in the following two sections, apply power to the touchpanel and observe illumination of the touch-sensitive screen. The touchpanel enters RUN MODE and displays a loaded panel page. To enter SETUP MODE and not RUN MODE, hold a finger to the touchscreen as power is applied. The user may configure the unit while in SETUP MODE. Refer to “Configuring the Touchpanel” on page 10 For details.

Tiltcase Models

A supplied cable assembly (P/N 15717) with six-position, six-pin connectors on each end connects the tiltcase configuration touchpanel to the CN-RJ11. Connect the CN-RJ11 to the Cresnet system via the network cable. Refer to diagram shown below.

Typical Connection Diagram for Tiltcase Configuration

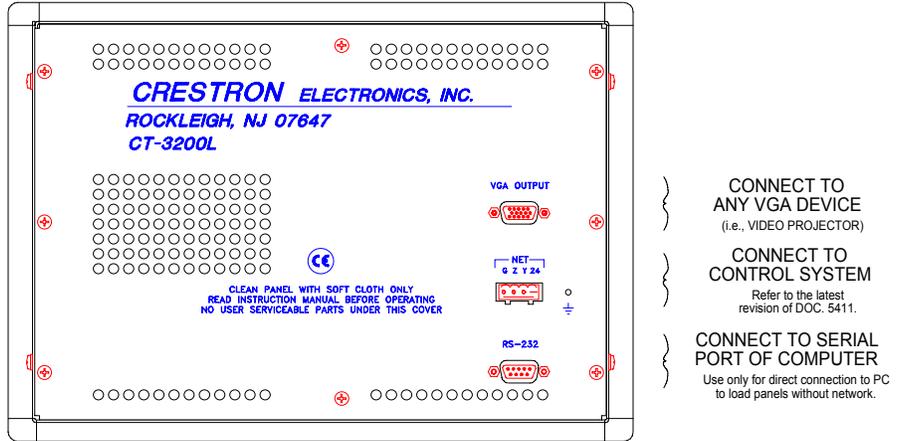


Lectern-Mount Models

Connect the lectern mount configuration directly to the Cresnet system via the network cable. If applicable, connect the lectern mount configuration to the serial port of the PC via the port labeled RS-232. Cable assembly is not supplied. If

necessary, connect a VGA device, such as a video projector, to VGA OUTPUT. Refer to the diagram shown below.

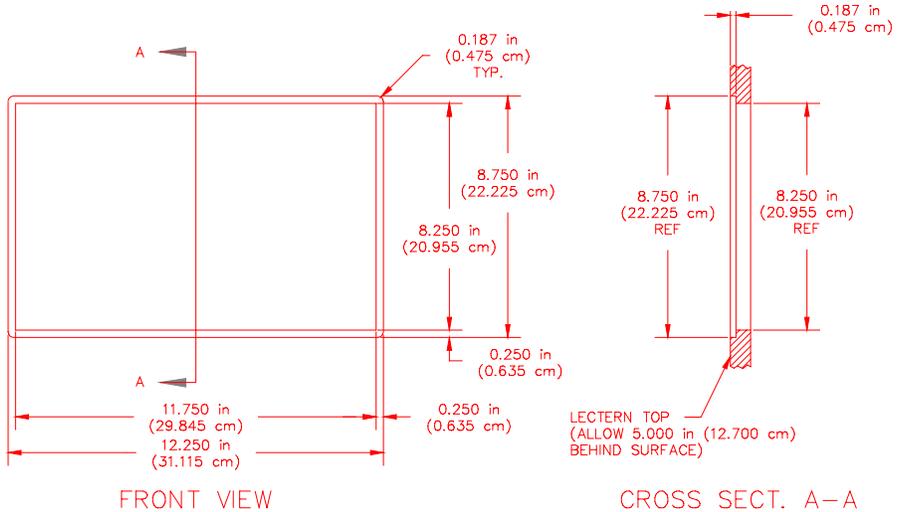
Typical Connection Diagram for Lectern-Mount Configuration



Preparation for Use

The only preparation that may be required is to mount the touchpanel. If a CT-3200L is being installed, the cutout dimensions are required. Refer to the lectern cutout details, shown after this paragraph, for these configurations. Cutout measurements in the figure have been rounded up to the nearest 1/8 inch.

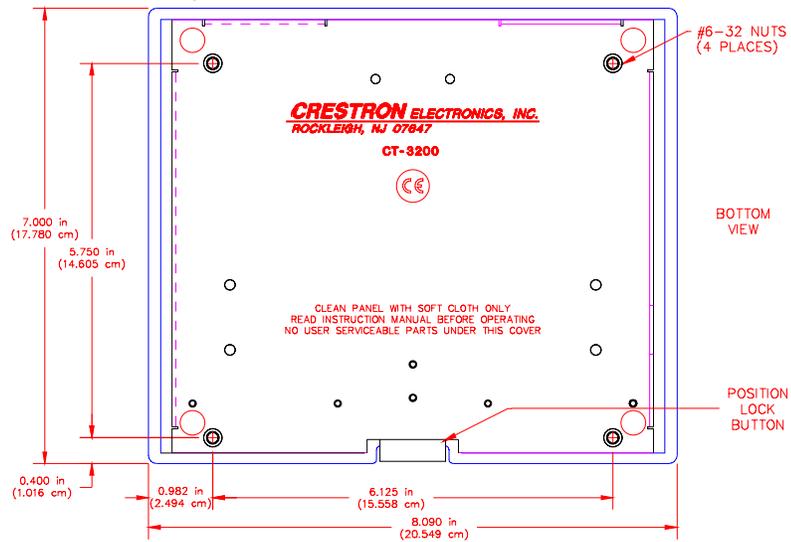
CT-3200L Lectern Cutout Detail



NOTE: Wall-mount and rack-mount kits are available options that can be purchased with the lectern-mount configuration. Parts and instructions are provided with each kit.

If a CT-3200 is being mounted to a flat surface, locate the mounting holes on the “foot” of the touchpanel. Refer to the mounting information on the next page for these configurations. Mount the touchpanel with #6-32 hardware (not supplied).

CT-3200 Mounting Detail

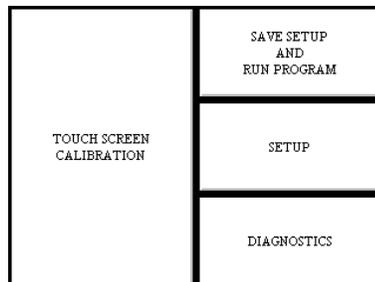


Configuring the Touchpanel

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 as power is applied. Remove your finger when the message "SETUP MODE" appears on the touchscreen. Holding a finger to the touchscreen for five seconds after the "SETUP MODE" message is displayed sets the brightness to high.

Upon entering SETUP MODE, the Main Menu, shown below, displays four buttons: **TOUCH SCREEN CALIBRATION**, **DIAGNOSTICS**, **SETUP**, and **SAVE SETUP AND RUN PROGRAM**.

Main 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 on the next page. The Calibration Menu offers the choice to initiate calibration with the **Perform Calibration** button or return to the previous screen with the **Return to Main Menu** button. Choose an option by touching the correct button. When touching the screen, be as accurate as possible. If you proceed to calibrate the touchpanel, the screen prompts you with the message "Touch Screen Calibration Menu" nearly centered on the display. Another

message, "Touch Upper Left Corner", appears in the upper left corner. Touch the corner of the screen to initiate calibration. Another message, "Touch Lower Right Corner", appears in the lower right corner. Touch the corner of the screen to return to the Main Menu.

Calibration Menu

Perform Calibration	Return to Main Menu

Diagnostics Menu

The **DIAGNOSTICS** button from the Main Menu should only be used under supervision from a CRESTRON technical support representative during telephone support. The options available from the Diagnostics Menu, shown below, are numeric in nature and their interpretation is beyond the scope of this manual.

Diagnostics Menu

DISPLAY EEPROM	DISPLAY PALETTE	DISPLAY COLORBAR	DISPLAY TOUCH DATA
SELF TEST			ABOUT...
Display Video			RETURN

Setup Menu

To obtain the Setup Menu, shown below, select and hold the **SETUP** button from the Main Menu until the Setup Menu is displayed. Many options for setting parameters of the touchpanel are available from the Setup Menu and are explained in the following paragraphs. After setup parameters have been set, select the **Return** button, located at the lower right corner of the Setup Menu.

Setup Menu

INTERFACE	RS-232	PANEL TRACKING	SOUND
CONTRAST <<	CONTRAST >>	BACKLIGHT TIMEOUT	SAVE SETUP
BRIGHTNESS LOW	BRIGHTNESS MED	BRIGHTNESS HI	RETURN

Brightness

Screen brightness may need to be altered because of ambient light conditions or personal preference. Three brightness buttons, **BRIGHTNESS LOW**, **BRIGHTNESS MED**, and **BRIGHTNESS HI**, located in the bottom row of the Setup Menu may be selected to assign brightness setting. Current brightness setting is shown in light gray rather than black text.

Contrast

Screen contrast may need to be altered because of ambient light conditions, panel temperature, or personal preference. Two contrast buttons, **CONTRAST <<** and **CONTRAST >>**, located in the two left-most columns of the middle row of the Setup Menu may be held down for continuous and smooth adjustment of the screen.

Save Setup

It is advisable to regularly save setup parameters if the user is satisfied with the settings. If parameters are saved, the settings are restored in the event of a power failure. The **SAVE SETUP** button located just above the **RETURN** button in the corner of the Setup Menu may be selected at any time to save setup parameters. The button text changes color from black to light gray while in save mode.

Return

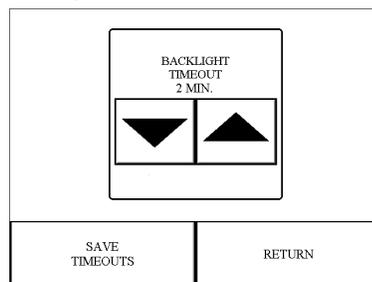
Select the **RETURN** button, located at the lower right corner of the Setup Menu, after setup parameters have been set.

Backlight Timeout Menu

NOTE: Display backlight requires warm-up time. A display reaches 80% of its final level in five minutes and full brightness in 20 minutes.

The touchpanel display hardware life can be lengthened by turning off the backlight when the touchpanel is inactive. The **BACKLIGHT TIMEOUT** button is located in the middle row of the third column of the Setup Menu. Selection of this button changes the touchpanel display to reveal the Backlight Timeout Menu, shown below. This setting turns the backlight off when the touchpanel is inactive for a specified time frame (shown in minutes). When the touchpanel is activated, the last screen to be displayed reappears. A two minute **BACKLIGHT TIMEOUT** is shown in the illustration. Minutes can vary from 0 to 120, where 0 disables the timeout. Down arrow and up arrow buttons decrease and increase the timeout, respectively.

Backlight Menu



After the timeout parameter has been set, touch the **SAVE TIMEOUT** button in the lower left corner of the screen to save the new settings. Touch the **RETURN** button, located in the lower right corner of the screen, to display the Setup Menu.

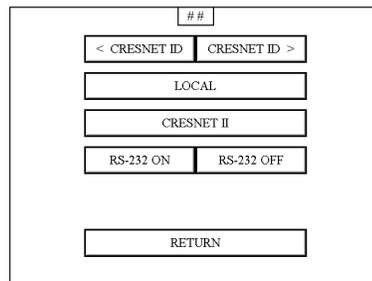
Panel Tracking

Panel tracking is a useful communication feature between touchpanels when more than one touchpanel exists on the network. Panel tracking is enabled when the **PANEL TRACKING** button, centrally located in the top row of the Setup Menu, is selected. Selection is indicated with light gray text. When enabled, a given touchpanel maintains communication in such a way that a page change to any touchpanel on the network forces the same page change to all enabled touchpanels. Panel tracking is disabled when the **PANEL TRACKING** button is deselected. When disabled a given touchpanel does not respond to page changes made to other touchpanels on the network. Panel tracking is factory set with the **PANEL TRACKING** button deselected.

Interface Menu

The touchpanel communicates with a control system to activate other controls or to display feedback from components within the system. The communication interface must be correctly specified or communication will not occur. To set communication parameters select the **INTERFACE** button located in the upper left corner of the Setup Menu and display the Interface Menu, shown below.

Interface Menu



The Cresnet network identity number (NET ID) is displayed in the upper-most rectangle of the Interface Menu. NET ID is the two-digit hexadecimal number represented by ## in the figure for illustrative purposes. The hexadecimal number can range from 03 to FE and must correspond to the NET ID set in the SIMPL Windows program of the Cresnet system. Matching NET IDs between touchpanel and SIMPL Windows program is required if data is to be successfully transferred. NET ID is factory set to 03.

Two side-by-side buttons beneath the hexadecimal display, **< CRESNET ID** and **CRESNET ID >**, decrease and increase the NET ID by one, respectively.

The touchpanel usually communicates with a Cresnet system. Occasionally the touchpanel can be used in a local demo mode where it merely displays various menus, but does not communicate with Cresnet II system. In local mode, the directory buttons change pages, but buttons requiring feedback do not work. Two centrally located buttons on the Interface Menu, **LOCAL** and **CRESNET II**, determine communication mode. Select Local to set the touchpanel into demo mode and **CRESNET II** for normal Cresnet communication mode. Text within the selected button changes color from black to light gray. Communication mode is factory set to **CRESNET II**.

Two side-by-side buttons, **RS-232 ON** and **RS-232 OFF**, are located just above the **RETURN** button at the bottom of the Interface Menu. RS-232 is just for external control applications. Panel loading is always available; RS-232 does not have to be on.

If the touchpanel is utilized in a system without a Cresnet system, ensure that the **RS-232 ON** button is selected. Additional RS-232 parameters must be set with the RS-232 Menu since alternative parameters may be required for successful transfers to a PC. Text within the selected button changes color from black to light gray. **RS-232 ON** is the default setting.

Select the **RETURN** button, located at the bottom of the Interface Menu, after interface parameters have been set.

RS-232 Menu (Lectern-Mount Configurations Only)

Select the **RS-232** button, located at the top of the second column of the Setup Menu, to change the touchpanel display to the RS-232 Menu, shown below. The RS-232 Menu specifies four parameters required for the touchpanel to use its RS-232 serial port. Ten baud rate buttons, labeled 110, 150, 300, 600, 1200, 2400, 4800, 9600, 19200, and 38400, are available for selection. Also select seven or eight data bits; none, odd, or even parity; one or two stop bits.

RS-232 Menu

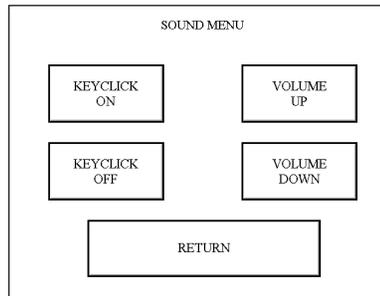
RS-232 Menu			
Baud Rate	110	150	300
	600	1200	2400
	4800	9600	19200
	38400		
Data Bits	7		8
Parity	None	Odd	Even
Stop Bits	1		2
HW Handshake	Off		RTS/CTS
Save and Return			

RTS/CTS handshaking is supported by the Series 3200 touchpanels. If hardware handshaking is desired, select the **RTS/CTS** button. If no hardware handshaking is needed, select the **Off** button. Selections for all RS-232 parameters are indicated with light gray text. The parameters are factory set to 38.4 Kbd, eight data bits, no parity bits, and one stop bit. Hardware handshaking is factory set to **Off**. If necessary, refer to “Appendix: RS-232 Protocol” on page 21.

Select the **Save and Return** button, located at the bottom of the RS-232 Menu, after RS-232 parameters have been set.

Sound Menu

The **SOUND** button, located at the top right corner of the Setup Menu, is used to display the Sound Menu, shown on the next page. Use this screen to activate audible key clicks. This feature is a useful feedback tool. Confirmation of a button press on a touchpanel is acknowledged by an audible click assuming this feature is enabled. To enable this feature, verify that the **KEYCLICK ON** button is active (light gray text). An active **KEYCLICK OFF** button disables the feature. Volume of the audible click is controlled with the **VOLUME UP** and **VOLUME DOWN** buttons. The unit is factory set with the sound on.

Sound Menu**Save Setup and Run Program**

The Save Setup and Run Program button, located at the upper right corner of the Main Menu, saves all of the setup information to EEPROM and displays the main page that has been programmed into your system.

Programming with SIMPL™ Windows®

NOTE: VisionTools Pro (VT Pro) is a Windows compatible software package for creating Crestron touchpanel screen designs. Refer to “Software” on page 2 for additional details regarding VT Pro.

SIMPL (Symbol Intensive Master Programming Language) is an easy-to-use programming language that is completely integrated and compatible with all Crestron system hardware. The objects that are used in SIMPL are called symbols. SIMPL Windows offers drag and drop functionality in a familiar Windows® environment.

SIMPL Windows is Crestron Electronics' 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.

The next two subsections describe a sample SIMPL Windows program that utilizes a Series 3200 touchpanel. The first subsection details how the sample program works with a textual description and block diagram. The second subsection provides a broad description of how to actually create the SIMPL Windows program.

NOTE: The following description assumes that the reader has knowledge of SIMPL Windows. If not, please refer to the extensive help information provided with the software.

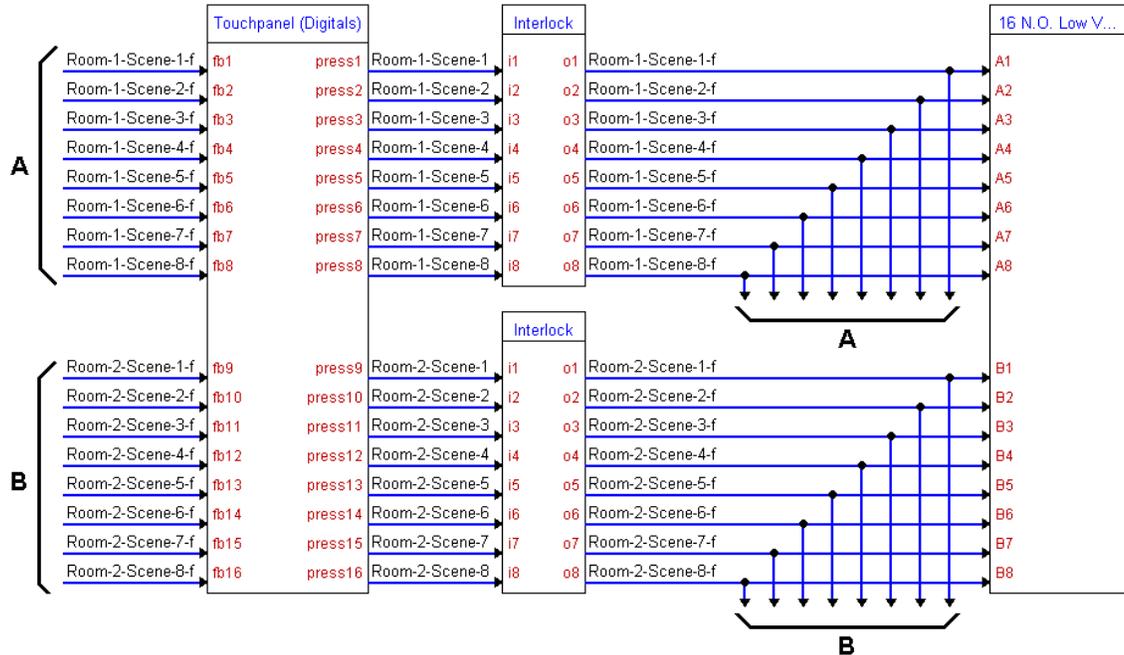
NOTE: There is no need to recreate the sample SIMPL Windows program. A similar copy of this program is available from Crestron's ControlCD (version 5.2 and later). Search for the CT-3200.SMW project in the SIMPL Windows Example Base.

How the Program Works

A basic Series 3200 touchpanel SIMPL program is shown on the next page in block diagram form. For this example, the CT-3200 is the user interface in a control system

containing a CNMSX-PRO which has a CNXRY-16 occupying slot 1. Assume that the CT-3200 is used to control a lighting system via relays in two rooms. Each room can have up to eight scenes of lighting. A scene is engaged by latching a relay. Only one scene can be activated in a room at a time.

Block Diagram of System Incorporating a CT-3200



Room 1 uses relays A1 through A8; room 2 uses relays B1 through B8. When the user presses any of the buttons on the CT-3200 for room 1 (join numbers 1 through 8), the corresponding signal goes high on the input of the Interlock symbol for room 1. The corresponding output of the Interlock latches high. Since the Interlock is mutually exclusive, only that output is high. The corresponding relay then latches high on the CNXRY-16 card.

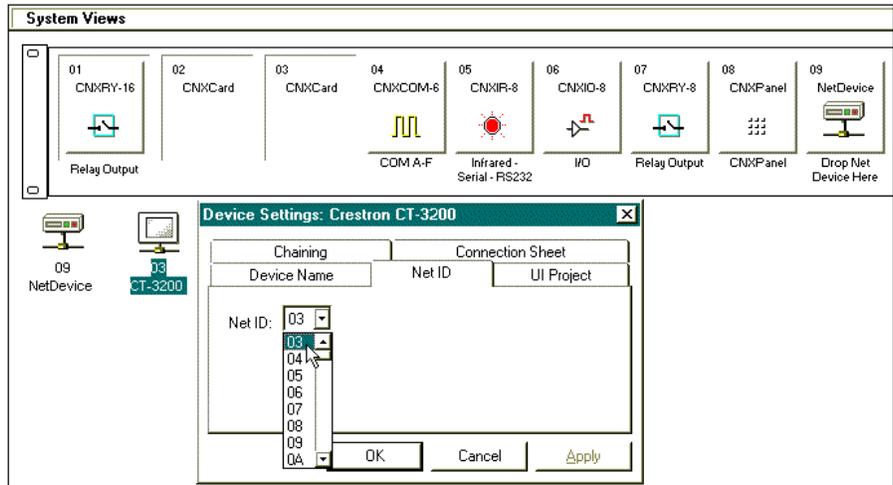
How to Create the Program

Configuration Manager

Use the Configuration Manager workspace (**Project | Configure System**) in SIMPL Windows to select and configure all the devices that need to be included into the system. For this example, add a CNXRY-16 to slot #1 of the CNMSX-PRO. Also add a CT-3200 to the system; its NET ID must be set to 03, shown on the next page.

NOTE: SIMPL Windows v1.21.04 or later is required to program the control system containing a CT-3200 touchpanel. If using an earlier version of SIMPL Windows, Crestron recommends a SIMPL Windows and operating system upgrade. The latest version can be obtained from the Software Downloads page of Crestron’s website (www.crestron.com). New users are required to register in order to obtain access to the FTP site.

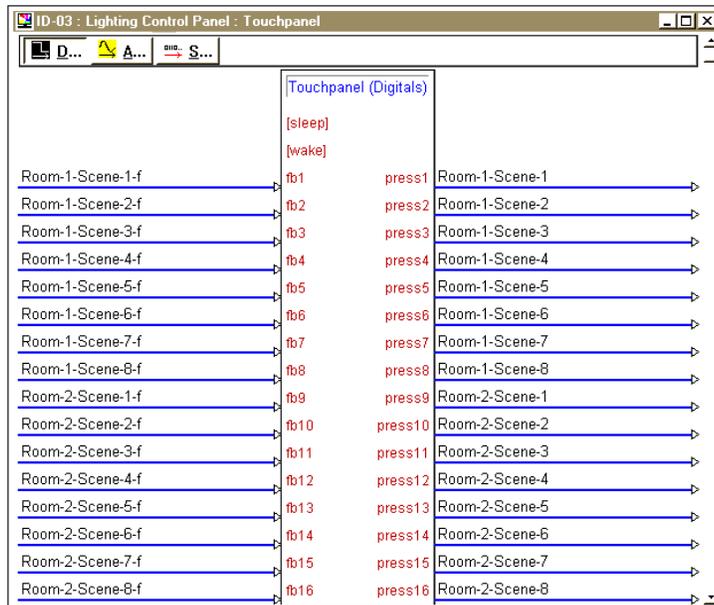
System View of the CNXRY-16 and CT-3200 in SIMPL Windows' Configuration Manager



Programming Manager

Use the Programming Manager workspace (**Project | Program System**) in SIMPL Windows to select symbols and assign their respective signals. For this example, a CT-3200 and CNXRY-16 symbols were added automatically when the devices were added to the system in the Configuration Manager workspace. Expand the Network Modules folder and double click on the touchpanel for a detail view (alternatively CTRL+D or drag and drop into Detail View). Assign signals as shown below.

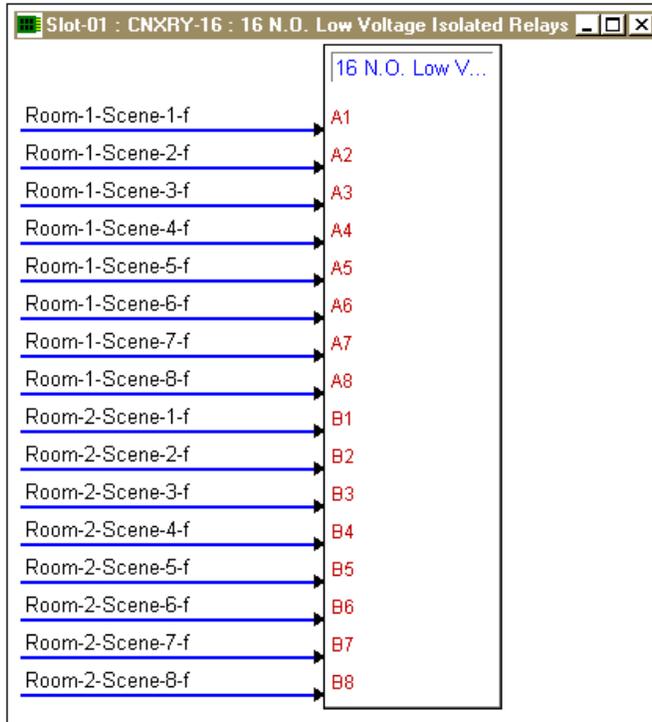
Detail View of the CT-3200 in SIMPL Windows' Programming Manager



NOTE: For a more descriptive symbol name, as shown in the illustration above, right mouse click on the touchpanel icon in the Network Modules folder in Program View and select **Edit Symbol Comment** (alternatively, highlight the icon and depress Ctrl+R or Tab). Enter a new descriptive name in the “Enter Symbol Comment” dialog box and click OK.

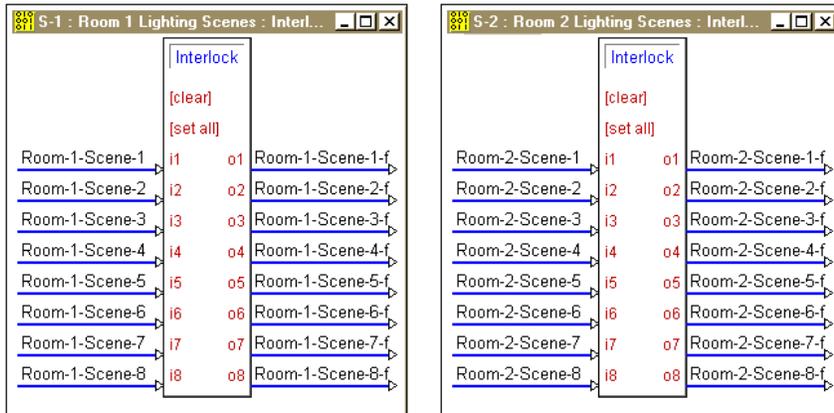
Expand the Central Control Modules folder and double click on the CNXRY-16 for a detail view (alternatively CTRL+D or drag and drop into Detail View). Assign signals as shown below.

Detail View of the CNXRY-16 in SIMPL Windows' Programming Manager



All logic symbols necessary for the SIMPL Windows program must be added from the *Symbol Library* in the Programming Manager workspace. In this example, drag and drop two Interlock symbols from the Memory folder into the Logic folder in *Program View*. Expand the Logic folder and double click on both Interlock icons for a detail view (alternatively CTRL+D or drag and drop into Detail View). Assign signals as shown below.

Detail View of a Interlocks (S-1 & S-2) in SIMPL Windows' Programming Manager



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 either calls up the Setup Menu, ramps contrast, etc. The table shown below provides a list of reserved join numbers available within the software.

Reserved Join Numbers for Series 3200 Touchpanels

JOIN NUMBER	FUNCTION	VALUE
1016	Brightness	On
1017	Brightness	Low
1018	Brightness	Medium
1019	Brightness	High
1023	Contrast	Up
1024	Contrast	Down
1035	Call up Setup Menu	Not Applicable
1160	Keyclick Volume	Up
1161	Keyclick Volume	Down
1172	Keyclick	On
1173	Keyclick	Off

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.

Series 3200 Touchpanel Troubleshooting

TROUBLE	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
Touchpanel does not function.	Touchpanel is not communicating to the network.	Use Performance Viewport (via SIMPL Windows or VT Pro) to poll the network. Verify network connection to the touchpanel. Verify touchpanel is in "CRESNET II" mode as defined in "Interface Menu", page 13.
	Touchpanel is not receiving network power.	Confirm that power is supplied to the network.
	Touchpanel is incorrectly calibrated.	Enter "SETUP MODE" and recalibrate.

Series 3200 Touchpanel Troubleshooting (Continued)

TROUBLE	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
Touchpanel is not responding and screen displays "Network Poll Error" message.	Incorrect network wiring.	Touch screen to remove message and verify correct wiring to all connectors.
	Touchpanel ID is not set to match the NET ID in the SIMPL program.	Touch screen to remove message and enter Performance Viewport (via SIMPL Windows or VT Pro) to poll the network. Verify that the NET ID for the touchpanel is properly set to match the SIMPL program.
	Touchpanel ID not unique, two or more units share same ID.	Verify that all networked touchpanels have their own unique NET ID and that it matches the NET ID assigned in SIMPL Windows.
Touchpanel display is dark.	Backlight timeout has elapsed.	Touch screen to reactivate.
	Screen brightness is improperly set.	Enter "SETUP MODE" and alter screen brightness from the Setup Menu.
Unexpected response from touchpanel.	Touchpanel is incorrectly calibrated.	Enter "SETUP MODE" and recalibrate.

Further Inquiries

If after reviewing this Operations Guide for the Series 3200 touchpanel, you cannot locate specific information or have questions, please take advantage of Crestron's award winning customer service team by calling:

- In the US and Canada, call Crestron's corporate headquarters at 1-888-CRESTRON [1-888-273-7876] or 1-201-767-3400.
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- In Asia, call Crestron Asia at +852-2341-2016.
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- In Australia, call Crestron Pacific at +613-9480-2999.

For local support from exclusive Crestron factory-trained personnel in New Zealand call Amber Technologies at +649-410-8382.

Appendix: RS-232 Protocol

Series 3200 touchpanels support panel operation via a host computer through the RS-232 port. Crestron recommends that the following serial data format is set.

Suggested Serial Data Format

Baud Rate: 38400	Data Bits: 8	Parity: None	Stop Bits: 1
------------------	--------------	--------------	--------------

These settings may be altered via the RS-232 Menu when configuring the touchpanel, however, doing so may prevent Crestron supplied software from operating with the touchpanel. Low baud rates will cause the panel to appear unresponsive. For example, at 300 baud, a single button press (and release) generates 12 characters and requires more than 0.333 of a second to send. Delays as short as 0.1 of a second are generally considered perceptible and somewhat annoying.

Command Format - Command format for all items sent to or from the touchpanel is very simple. All items are ASCII strings terminated by a <cr>. Line feed characters are ignored, thus <cr><lf> or <lf><cr> are also acceptable line terminators. When the touchpanel sends a line, it is always terminated with <cr><lf>.

For all strings, the first character determines command type. Numeric arguments, if present, are in decimal and separated by commas. No control characters are embedded in the strings to ease processing the strings with high level languages. Be careful when using commas in BASIC, because BASIC uses commas for field separators when reading strings from a file using the INPUT # statement. Since we are dealing with complete lines, use the LINE INPUT # statement to cure this problem.

P<#> and R<#> Commands - When in RUN mode, pressing a button (assuming that it has been joined) generates a six-character code in the format P###<cr><lf>, where ### is a three-character decimal number in the range of 1 through 999, providing for up to 999 functions. When the button is released, a similar code is generated, with an 'R' in place of the 'P'. Given that only one button may be pressed at a time, an 'R' code always follows a 'P' code. A fixed three-digit format is used to simplify software on the host.

Codes may be sent to the touchpanel in the same form as they are received. The 'P' form turns on a function and the 'R' form turns off a function; sending back information received from the touchpanel (i.e., jumping pins 2 and 3) makes the buttons momentary. Notice that the touchpanel responds to P and R commands even when configured for other interface modes. Selecting an RS-232 interface mode merely enables P and R commands to be issued. In addition, the fixed format is not required for commands sent to the touchpanel; P1, P01, and P001 are all perfectly valid commands.

Compared to running on Cresnet, an RS-232 interface to a personal computer is slower, provides less features (such as tracking, among others), is less noise immune (Cresnet uses balanced transmission for high common mode rejection, RS-232 does not), and requires the user to supply the control logic program in the PC.

V<chan>,<level> Command - Levels in gauge and slider objects may be set through the RS-232 port. The command contains both the object channel number (1-255) and level (0-65535) in decimal separated by a comma. For example, V6,32768 would set channel 6 to level 128, or half way up.

One quick note on baud rate and smooth ramping. Ramping is accomplished by sending successive levels to the object. To do this in 64 levels over three seconds, for

example, requires about 576 bytes worth of commands to be sent, and could not be accomplished at any rate less than 2400 baud. Obviously, ramping several objects at once requires a baud rate several times as high.

Indirect Text - Series 3200 touchpanels support a feature that permits the text field in any user-defined button to be altered on the fly in RUN mode. This is accomplished by substituting a text pointer for the text in the button. The text pointer informs the panel to use the contents of a variable that may be dynamically redefined as the text field for the button. This presents a considerable advantage over other methods in that changing screens does not destroy information and that information may be placed in buttons not currently displayed.

The text pointer is a number in the range of '1' through '127' preceded by the "pound" symbol (#). If [text...] is omitted, the text field is cleared. If [text...] exists, it is added to the text field. For example, consider the following string :

```
#3Now is the time<cr>
#3for all good men<cr>
#3to come to the<cr>
#3aid of the party.<cr>
```

Assuming that a button with an #3 text pointer was being displayed, the contents of the button would be changed to:

```
Now is the time
for all good men
to come to the
aid of the party.
```

NOTE: To clear the text field for this example, type in "#3<cr>".

As each line is entered, the display is updated. Since the text may be placed in several different buttons, no boundary checking is done to see if the text fits in the button. If the text overflows the button/boundaries, it remains centered in the button/boundary.

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