

Crestron **C2N-ANLZ**

Cresnet[®] Analyzer

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

All brand names, product names and trademarks are the property of their respective owners.

©2006 Crestron Electronics, Inc.

Contents

Cresnet® Analyzer: C2N-ANLZ	1
Introduction	1
Features and Functions	1
Applications	1
Specifications	2
Physical Description	3
Industry Compliance	6
Setup	7
Network Wiring	7
Hardware Hookup	7
Memory Card	8
Battery	8
Uploading and Upgrading	9
Establishing Communication	9
Firmware	9
Operation	10
Button Operation	10
Console Operation	11
Network Analyzer	12
Problem Solving	13
Troubleshooting	13
Check Network Wiring	13
Further Inquiries	14
Future Updates	14
Return and Warranty Policies	15
Merchandise Returns / Repair Service	15
CRESTRON Limited Warranty	15

Cresnet[®] Analyzer: C2N-ANLZ

Introduction

Features and Functions

- Cresnet[®] Analyzer records Cresnet data at customer installations for analysis by Crestron engineers
- Logs Cresnet traffic and assesses the Cresnet network
- Dual power – Cresnet Power (24 VDC) or included 9 Volt battery backup
- Logs analyzed data to included 512MB (expandable to 1GB) multimedia memory card (MMC); USB 2.0 MMC-compatible card reader included
- Push-button operation for simple logging of data

Applications

The C2N-ANLZ is used to diagnose and record Cresnet problems at customer installations. The C2N-ANLZ is capable of performing the following functions:

- Record Cresnet traffic data to included memory card
- Log under-voltage events (i.e. power failure, wiring faults, etc.)
- Provide Network Analyzer functionality for 2-Series control systems that do not natively support it (i.e. QM-RMCRX and QM-RMCRX-BA)

Specifications

Specifications for the C2N-ANLZ are listed in the following table.

C2N-ANLZ Specifications

SPECIFICATION	DETAILS
Power Requirements Cresnet Power Usage Battery Backup (included)	<1 Watt @ 24 Volts DC 9 Volt disposable Alkaline, 625 mAh; Approximately 10 hours of full operation in lieu of Cresnet power, 6 months on standby
Memory Card (included) Size Format	512MB Multimedia Memory Card; Upgradeable to 1GB FAT16, Microsoft® Windows® compatible
Data Logging	Via software or hardware command; logs power interruptions and system startup when powered by battery backup
Environmental Temperature Humidity	41° to 104°F (5° to 40°C) 10% to 90% RH (non-condensing)
Enclosure	Black metal, surface mount box
Dimensions Height Width Depth	1.25 in (3.18 cm) 3.80 in (9.65 cm) 3.13 in (7.94 cm)
Weight	9.6 oz (272 grams)

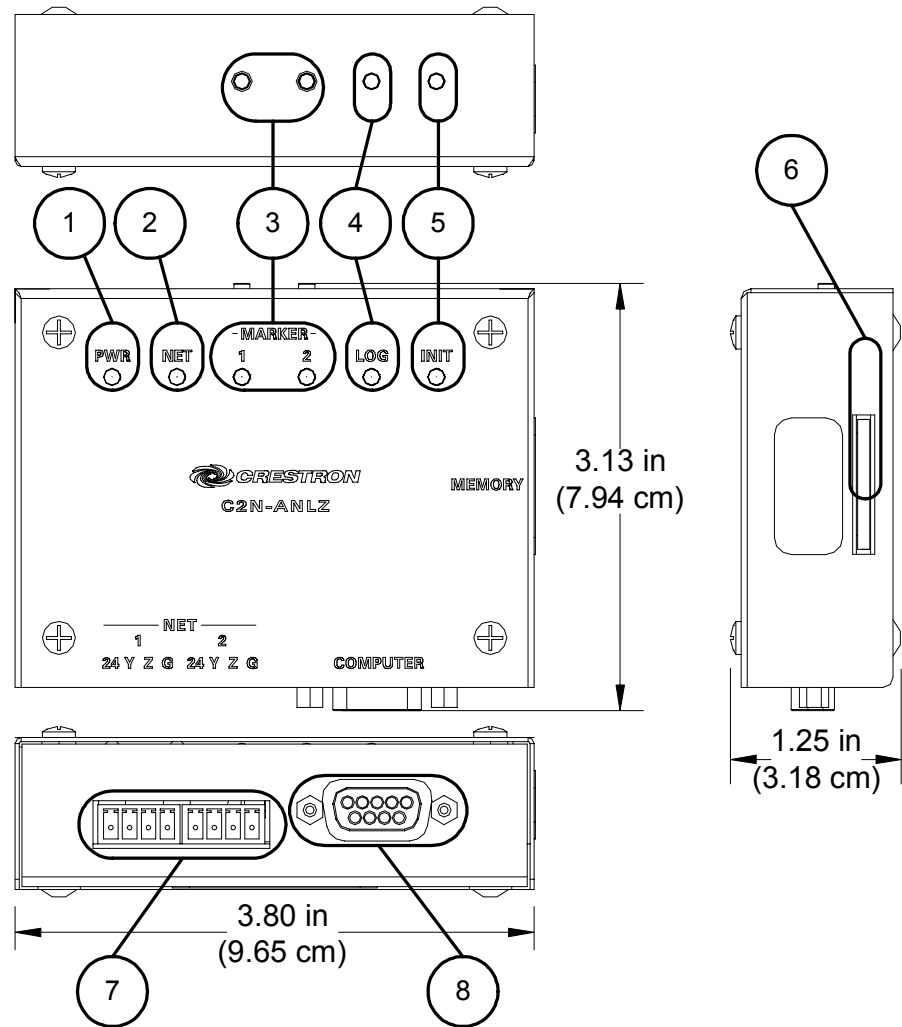
Physical Description

This section provides information on the connections, controls, and indicators available on your C2N-ANLZ.

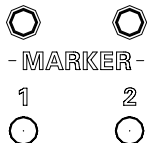
C2N-ANLZ Physical View



C2N-ANLZ Overall Dimensions



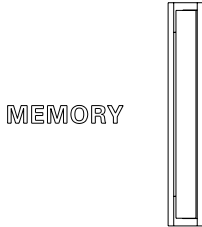
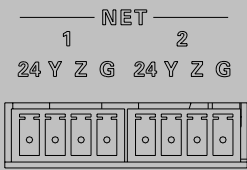
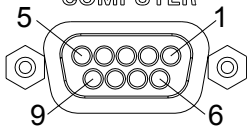


Connectors, Controls, & Indicators

#	CONNECTORS, CONTROLS, & INDICATORS	DESCRIPTION
1	PWR Light Emitting Diode (LED)	Indicates the state of operation of the C2N-ANLZ. Refer to "Operational Status" on page 10 for more information.
2	NET LED	Indicates Cresnet activity on the Cresnet bus.
3	MARKER 1 & 2 BUTTONS 	Marker buttons are used to leave a marker in the recorded log file that can note a specific occurrence on a Cresnet network (i.e. an unexpected event). Refer to "Mark Events in the Log" on page 11 for more information.

(continued on following page)

Connectors, Controls, & Indicators (continued)

#	CONNECTORS, CONTROLS, & INDICATORS	DESCRIPTION
4	<p>LOG BUTTON</p> 	<p>The LOG button starts and stops data logging to the memory card. Refer to “Log Data to a Memory Card” on page 10 for more information.</p>
5	<p>INIT BUTTON</p> 	<p>The INIT button initializes and formats the memory card. Refer to “Format a Memory Card” on page 10 for more information.</p>
6	<p>MEMORY</p> 	<p>Memory card slot for included removable multimedia memory card. The memory card can be inserted or removed when the C2N-ANLZ is not logging data (LOG LED is off).</p>
7	<p>NET PORTS</p> 	<p>(2) Four-pin terminal block NET ports connect the C2N-ANLZ between the control system and the Cresnet network.</p>
8	<p>COMPUTER</p> 	<p>One DB9, female, bidirectional computer console port for connection to a PC. Use with included straight serial cable.</p> <p>Pin 1: N/A Pin 2: Receive Data (RD) Pin 3: Transmit Data (TD) Pin 4: Data Terminal Ready (DTR) Pin 5: Signal Ground (G) Pin 6: N/A Pin 7: N/A Pin 8: Clear To Send (CTS) Pin 9: N/A</p>

Industry Compliance

As of the date of manufacture, the C2N-ANLZ has been tested and found to comply with specifications for CE marking and standards per EMC and Radiocommunications Compliance Labelling.



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

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

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

Setup

Network Wiring

When wiring the network, consider the following:

- Use Crestron Certified Wire.
- Use Crestron power supplies for Crestron equipment.
- Provide sufficient power to the system.

CAUTION: Insufficient power can lead to unpredictable results or damage to the equipment. Please use the Crestron Power Calculator to help calculate how much power is needed for the system (<http://www.crestron.com/calculators>).

- For larger networks, Use a Cresnet Hub/Repeater (CNXHUB) to maintain signal quality

For more details, refer to “Check Network Wiring” on page 13.

Hardware Hookup

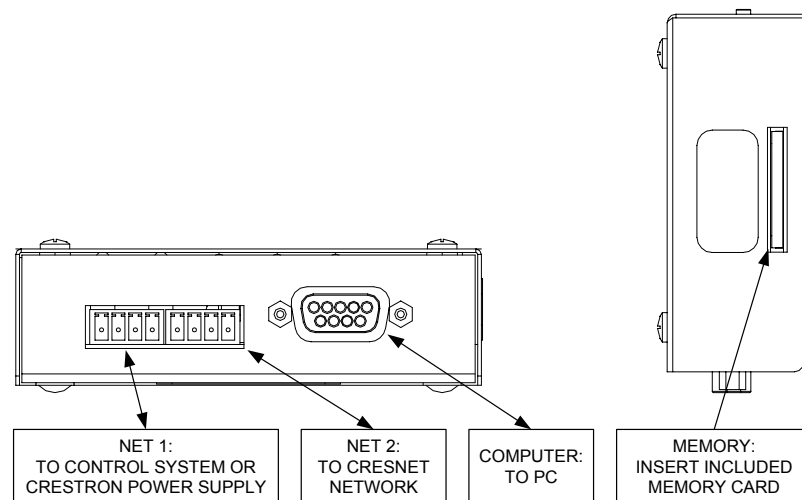
Connect the Device

Make the necessary connections as called out in the illustration that follows this paragraph. Refer to “Network Wiring” on page 7 before attaching the 4-position terminal block connector. Apply power after all connections have been made.

When making connections to the C2N-ANLZ, consider the following:

- Use Crestron power supplies for Crestron equipment.
- The included cables cannot be extended.

Hardware Connections for the C2N-ANLZ



Alternate Hookup

If the analyzer cannot be easily accessed, connect the COMPUTER port to a serial port on the control system. Use a remote connection to the control system’s serial port to issue commands to the C2N-ANLZ.

Memory Card

When installing the memory card, observe the following:

- Insert the memory card with electrical contacts facing up.
- Push in the memory card until it clicks into the socket.
- The memory card should only be inserted or removed when the **LOG LED** is off.

Battery

The C2N-ANLZ has a 9 Volt battery that is used as a backup in the absence of Cresnet power. To install a battery, use a #2 Philips screwdriver and perform the following:

- Remove memory card from C2N-ANLZ.
- Remove the four cover screws from the top of the C2N-ANLZ.
- Lift the top cover to expose the battery.
- Remove the old battery from the battery socket, if one exists.
- Install a fresh battery. Observe polarity.
- Replace and secure the top cover with the cover screws.

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 C2N-ANLZ; refer to the Crestron Toolbox help file for details. There is a single method of communication; direct serial communication.

Direct Serial Communication



- The **COMPUTER** port on the C2N-ANLZ connects to the serial port on the PC via the included straight-through serial cable.
- Use the Address Book in Crestron Toolbox to create an entry using the expected serial communication protocol (RS232, auto-detect baud rate, no parity, 8 data bits, 1 stop bit, XON/XOFF disabled, RTS/CTS enabled).
- Open a “Text Console” window (click the  icon) or display the C2N-ANLZ’s “System Info” window (click the  icon); using the address book entry for the C2N-ANLZ; communications are confirmed when the C2N-ANLZ prompt is displayed (in the “Text Console” window) or when the device information is displayed (in the System Info window).

Firmware

Upgrade the C2N-ANLZ firmware via Crestron Toolbox.

- Establish communications with the C2N-ANLZ and display the “System Info” window.
- Select **Functions | Firmware...** to upgrade the C2N-ANLZ firmware.

For details on upgrading firmware, refer to Crestron Toolbox help file.

Operation

The C2N-ANLZ can be operated from the buttons on the device or via console commands from a connected PC.

Button Operation

Using the buttons on the C2N-ANLZ, you can:

- Format a memory card
- Log Cresnet data to a memory card
- Mark events in the log

Operational Status

The **PWR** LED indicates the operational status of the C2N-ANLZ:

- Off: The C2N-ANLZ is sleeping
- Blink: Operating from 9 Volt battery. The C2N-ANLZ will switch to a low-power operating mode.
- On: Operating from Cresnet power.

Format a Memory Card

Formatting a memory card will erase any files that are stored on the card. To format a memory card:

- Install the memory card as described on page 8.
- Press and hold the **INIT** button for five seconds. The **INIT** LED will turn on. If text console communications are established with the C2N-ANLZ, messages indicating the status of the format process will be displayed.
- When the LED turns off, the card is formatted.

Log Data to a Memory Card

Logged data is written to a text file on the memory card. To log Cresnet data to a memory card:

- Install the memory card as described on page 8.
- To start logging data, press and release the **LOG** button. A new log file is created and the **LOG** LED will light and then start blinking. If text console communications are established with the C2N-ANLZ, a message will be displayed indicating the start time of the log.
- To stop logging data, press the **LOG** button. The **LOG** LED will light and then turn off. If text console communications are established with the C2N-ANLZ, a message will be displayed indicating the end time of the log in addition to file size information.

Mark Events in the Log

When troubleshooting, events can be marked in the log for future analysis. To mark events while logging:

- Start logging data as described above.
- Press either of the **MARKER** buttons to place a marker in the log. Pressing the **MARKER 1** button will place the text “MARK 1” in the log file. Pressing the **MARKER 2** button will place the text “MARK 2” in the log file. When a marker button is pressed, its corresponding LED will light.
- To stop logging data, press the **LOG** button. The **LOG** LED will light and then turn off. If text console communications are established with the C2N-ANLZ, a message will be displayed indicating the end time of the log in addition to file size information.

Once data has been logged, remove the memory card and use the included USB card reader to email the log file(s) to Crestron for analysis.

Console Operation

Use the C2N-ANLZ console commands to perform many of the functions available from the buttons on the C2N-ANLZ as well as retrieve information about the C2N-ANLZ and the log files stored on the memory card.

Format a Memory Card

Formatting a memory card will erase any files that are stored on the card. To format a memory card:

- Establish communications with the C2N-ANLZ and open a text console window as described on page 9.
- Install the memory card as described on page 8.
- Type the **FORMAT** command and press the **Enter** key. The status of the format process will be displayed.

Log Data to a Memory Card

Logged data is written to a text file on the memory card. To log Cresnet data to a memory card:

- Establish communications with the C2N-ANLZ and open a text console window as described on page 9.
- Install the memory card as described on page 8.
- To start logging data, type the **LOG** command and press the **Enter** key. The **LOG** LED will light and then start blinking. A message will be displayed indicating the start time of the log.
- To stop logging data, type the **-LOG** command and press the **Enter** key. The **LOG** LED will light and then turn off. A message will be displayed indicating the end time of the log in addition to file size information.

Mark Events in the Log

When troubleshooting, events can be marked in the log for future analysis. When the engineer reviews the log, he/she can search the log for the marker to locate the instance that requires the engineer's analysis. To mark events while logging:

- While the C2N-ANLZ is logging data, enter the console command **MARK 1** to place the text "MARK 1" in the log file.
- While the C2N-ANLZ is logging data, enter the console command **MARK 2** to place the text "MARK 2" in the log file.

Once data has been logged, remove the memory card and use the included USB card reader to email the log file(s) to Crestron for analysis.

Other Commands


Other console commands can be used to obtain information on or control the C2N-ANLZ. To use the following console commands, communications must be established and a text console window must be opened as described on page 9:

- **DIR:** Lists the file directory of the installed memory card. Wildcard characters can be used. i.e. the command *dir *.txt* will list all files with a ".txt" extension.
- **GET [filename]:** Transfers a file from the memory card via XMODEM.

Advanced analysis tools are built into the C2N-ANLZ. These tools should only be used under supervision of a Crestron engineer when required. For more information, contact Crestron.

Network Analyzer

The C2N-ANLZ can provide Network Analyzer functionality to 2-Series control systems that do not have built-in Network Analyzer capabilities such as the QM-RMCRX-BA. To use the C2N-ANLZ as a Network Analyzer:

- Connect the C2N-ANLZ to Cresnet Network
- Establish communications with the C2N-ANLZ as described on page 9.
- Select the Network Analyzer tool by clicking the  icon. Refer to the Crestron Toolbox help file for instructions on using Network Analyzer.

NOTE: The control system must be connected to the Cresnet network and must be running a program that contains the connected network devices.

For more information on Network Analyzer, refer to 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.

C2N-ANLZ Troubleshooting

TROUBLE	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
Device does not function.	Device is not receiving power.	Check that NET 1 connector is connected to a Crestron control system or a Crestron 24 VDC power supply.
PWR LED does not illuminate.	Power is not connected to NET 1 connector or battery is weak.	Connect power to NET 1 connector. Replace battery.
LOG LED does not illuminate when pressed.	Memory card not installed.	Install memory card.
	Memory card is full.	Remove data files from memory card.
NET LED does not illuminate when C2N-ANLZ is connected to a control system.	C2N-ANLZ is not synchronized to Cresnet traffic.	On control systems with an LCD front panel (i.e. PRO2 and RACK2), perform a Cresnet poll (press INFO button, then NET button).
		Poll the Cresnet network from a Crestron Toolbox text console window.
		Restart the control system by pressing HW-R or SW-R or by cycling power.
Memory card does not format.	Memory card is not installed.	Install memory card.
	INIT button is not held long enough.	Hold INIT button for five seconds.

Check Network Wiring

Use the Right Wire

In order to ensure optimum performance over the full range of your installation topology, Crestron Certified Wire, and only Crestron Certified Wire, may be used. Failure to do so may incur additional charges if support is required to identify performance deficiencies because of using improper wire.

Calculate Power

CAUTION: Use only Crestron power supplies for Crestron equipment. Failure to do so could cause equipment damage or void the Crestron warranty.

CAUTION: Provide sufficient power to the system. Insufficient power can lead to unpredictable results or damage to the equipment. Please use the Crestron Power Calculator to help calculate how much power is needed for the system

(<http://www.crestron.com/calculators>).

When calculating the length of wire for a particular Cresnet run, the wire gauge and the Cresnet power usage of each network unit to be connected must be taken into consideration. Use Crestron Certified Wire only. If Cresnet units are to be daisy-chained on the run, the Cresnet power usage of each network unit to be daisy-chained must be added together to determine the Cresnet power usage of the entire chain. If the unit is a home-run from a Crestron system power supply network port, the Cresnet power usage of that unit is the Cresnet power usage of the entire run. The wire gauge and the Cresnet power usage of the run should be used in the following equation to calculate the cable length value on the equation's left side.

Cable Length Equation

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

Where: L = Length of run (or chain) in feet
 R = 6 Ohms (Crestron Certified Wire: 18 AWG (0.75 MM²))
 or 1.6 Ohms (Cresnet HP: 12 AWG (4 MM²))
 P = Cresnet power usage of entire run (or chain)

Make sure the cable length value is less than the value calculated on the right side of the equation. For example, a Cresnet run using 18 AWG Crestron Certified Wire and drawing 20 watts should not have a length of run more than 333 feet. If Cresnet HP is used for the same run, its length could extend to 1250 feet.

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

Strip and Tin Wire

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.

Add Hubs

For larger networks (i.e., greater than 28 network devices), it may become necessary to add a Cresnet Hub/Repeater (CNXHUB) to maintain signal quality throughout the network. Also, for networks with lengthy cable runs, it may be necessary to add a Hub/Repeater after only 20 devices.

Further Inquiries

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

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

Future Updates

As Crestron improves functions, adds new features, and extends the capabilities of the C2N-ANLZ, 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.

Return and Warranty Policies

Merchandise Returns / Repair Service

1. No merchandise may be returned for credit, exchange, or service without prior authorization from CRESTRON. To obtain warranty service for CRESTRON products, contact 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 supersedes 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. 6473
(2014834)
06.06
Specifications subject to
change without notice.