

## Functional Summary

The CLS-EXP-DIMU enables the expansion of the Crestron iLux™ Integrated Lighting System (CLS-C6 series) and other Crestron lighting dimmers to allow dimming of both forward and reverse phase type loads. Supported loads include electronic low-voltage, magnetic low-voltage, incandescent, neon/cold cathode, or 2-wire dimmable fluorescent. A single model supports 120, 230, or 277 Volt loads up to 16 Amps.

The CLS-EXP-DIMU simplifies installation by auto-detecting the dimmable load type connected to it and selecting the appropriate dimming mode to control that load. Reverse phase (trailing edge) dimming supports incandescent and electronic low-voltage load types, while forward phase (leading edge) dimming handles magnetic low-voltage, neon, and other inductive load types.

Any output channel of the iLux system can be used to control the CLS-EXP-DIMU to dim a fully loaded circuit. It is also compatible with CLW-Series<sup>1</sup> in-wall dimmers and select CLX-Series lighting control modules. The metal enclosure is designed for mounting to a vertical surface and can be installed in a space used for environmental air as defined in NEC Article 300.22(C). Conduit knockouts are provided on the bottom and lower sides. All connections are made via screw terminals behind the front cover.

- Works with Crestron iLux (CLS-C6 series), DIN-1DIMU4, CLW<sup>1</sup> Series, and CLX Series dimmers
- Emulates the characteristics of the dimmer that is controlling it
- Up to five Expansion Modules can be connected to a single dimmer output
- Supports 120, 230, and 277 Volt ELV, MLV, NCC, incandescent, and 2-wire dimmable fluorescent loads
- Auto-selects for forward or reverse phase
- Can be installed in an air-handling space<sup>2</sup>
- Includes threshold adjustment for setting minimum fluorescent dimming level
- Built-in air gap relay at the output
- Surface mount design

1. CLW-Series devices must have a dedicated neutral.  
 2. As defined in NEC Article 300.22(C).

CLS-EXP-DIMU Physical View



## Specifications

CLS-EXP-DIMU Specifications

SPECIFICATION	DETAILS
Load Ratings	
Output Channels	1
Load Rating	16 Amps
Minimum Load	
at 120 Volts	15 Watts
at 230 Volts	25 Watts
at 277 Volts	30 Watts
Load Types	Electronic Low Voltage, Incandescent, Neon/Cold Cathode, Magnetic Low Voltage, 2-Wire Dimmable Fluorescent (Advance Mark 10 Powerline® or equivalent)
Maximum Modules per Dimmer Output	5
Input Voltages	
Line Power	120 to 277 Volts AC, 50/60 Hz
Control Input	120 or 230 Volts AC, 50/60 Hz, phase independent of line power and load, presents 25 Watts load to the controlling device
Electrical Terminals	Captive screw type; Accommodates two 22-12 AWG (0.34-4.0 mm <sup>2</sup> ) wires

(Continued on following page.)

*CLS-EXP-DIMU Specifications (continued)*

SPECIFICATION	DETAILS
Enclosure	Surface mount module with (2) integral mounting flanges, galvanized steel w/gray matte powder coat front panel, extruded aluminum heat sink, ½" and ¾" conduit knockouts provided on bottom and lower left & right sides
Environmental	
Temperature	32° to 104°F (0° to 40°C)
Humidity	10% to 90% RH (non-condensing)
Heat Dissipation	200 BTU/Hr at maximum load

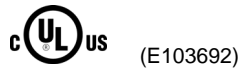
*(Continued on following column.)*

*CLS-EXP-DIMU Specifications (continued)*

SPECIFICATION	DETAILS
Dimensions	
Height	8.82 in (22.40 cm)
Width	6.39 in (16.23 cm)
Depth	3.18 in (8.08 cm)
Weight	3.34 lbs (1.52 kg)
Compatible Control Devices	
CLS(I)-C6 Series	iLux Integrated Lighting System
CLW-DIM Series	Wall Dimmers
CLW-DIMXRF Series	infiNet™ Wall Dimmers
CLX(I)-1DIM4	Four Channel Dimmer Module, Single Feed
CLX-1DIM8	Eight Channel Dimmer Module, Single Feed
CLX(I)-2DIM2	Two Channel Dimmer Module, Two Feeds
CLX(I)-2DIM8	Eight Channel Dimmer Module, Two Feeds
DIN-1DIMU4	DIN Rail Universal Dimmer

## Industry Compliance

This product is Listed to applicable UL Standards and requirements by Underwriters Laboratories Inc. These devices have been additionally evaluated to UL 2043, The Standard for Fire Test for Heat and Visible Smoke Release for Discrete Products and Their Accessories Installed in Air-Handling Spaces.



As of the date of manufacture, the CLS-EXP-DIMU has been tested and found to comply with specifications for CE marking.



**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.

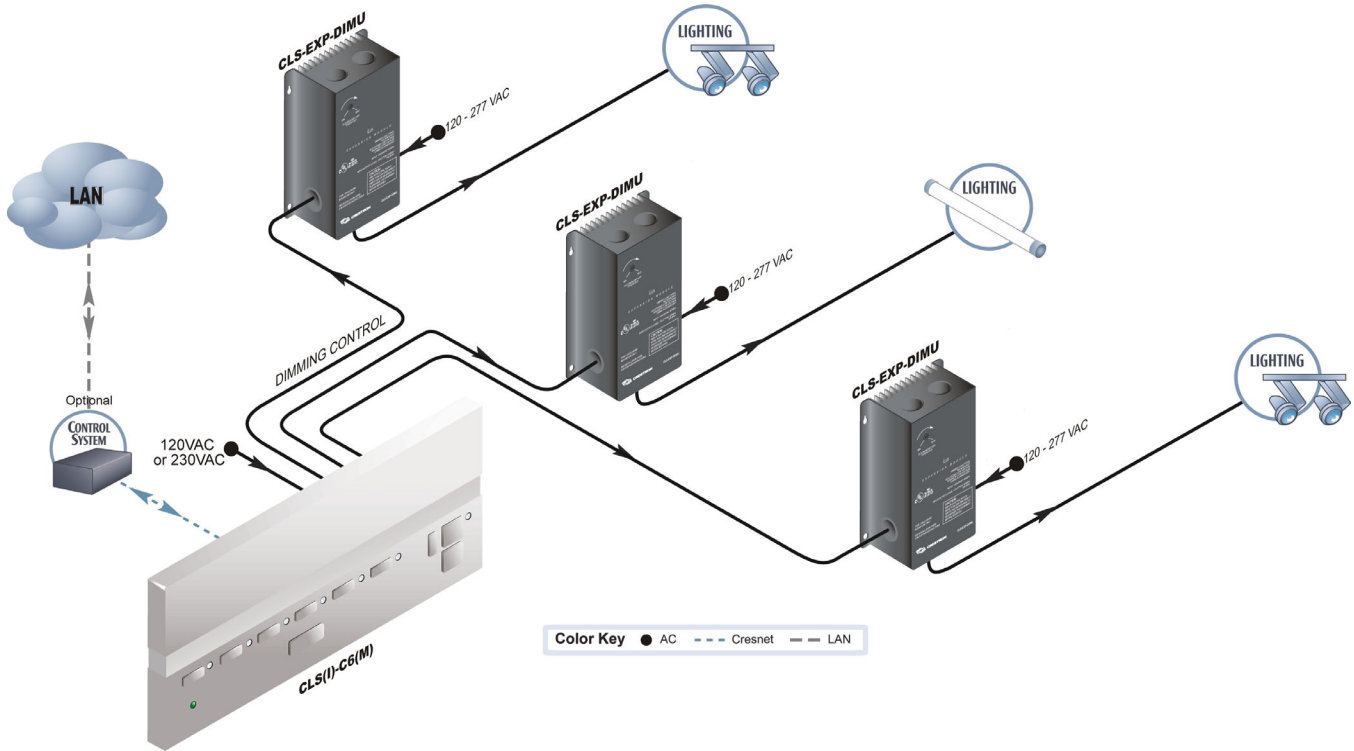
This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate 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.

## Application

The following diagram shows several CLS-EXP-DIMU modules in a typical application.

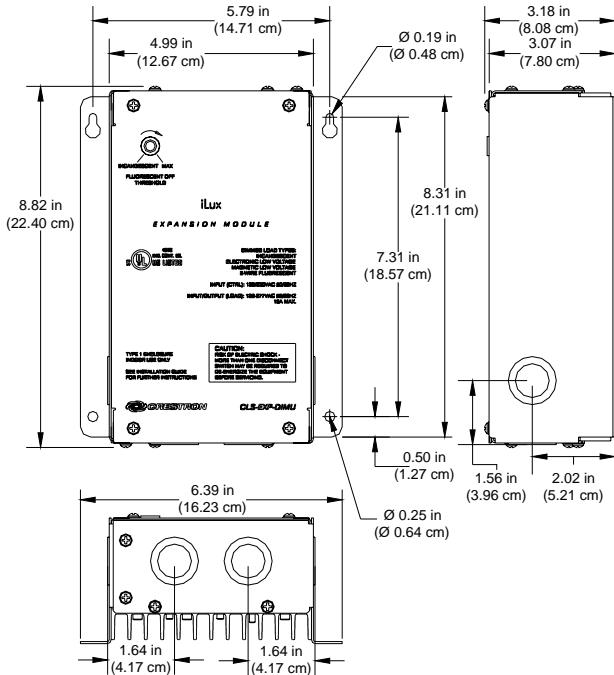
### *CLS-EXP-DIMU Modules in a Lighting Application*



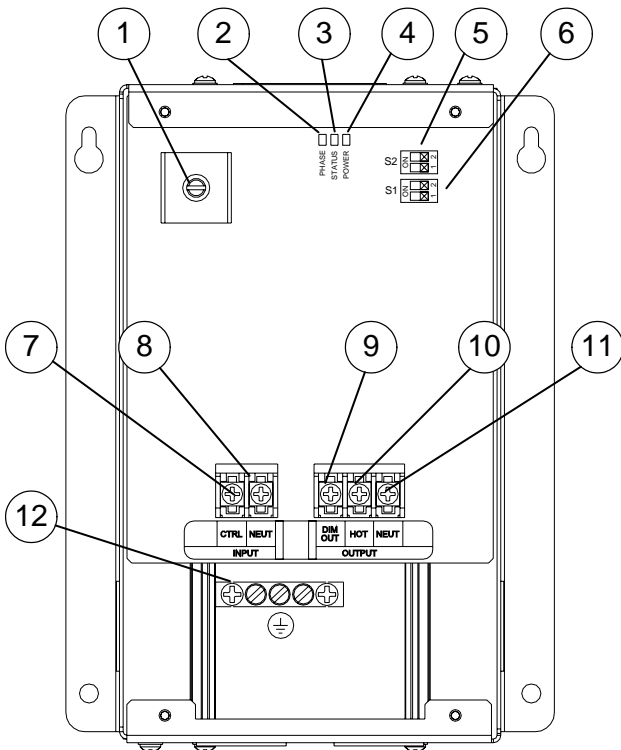
## Physical Description

This section provides information on the connections, controls and indicators available on the CLS-EXP-DIMU.

### CLS-EXP-DIMU Overall Dimensions



### CLS-EXP-DIMU (cover removed)



### Connectors, Controls & Indicators

#	CONNECTORS, CONTROLS & INDICATORS	DESCRIPTION
1	FLUORESCENT OFF THRESHOLD	(1) Recessed screwdriver-adjustable trim pot, adjusts minimum brightness level. Covered by removable cap.
2	PHASE LED	(1) Yellow LED behind front panel; illuminates when operating in <i>Reverse Phase</i> mode.
3	STATUS LED	(1) Red LED behind front panel; illuminates when load output is on.
4	POWER LED	(1) Green LED behind front panel; indicates power is applied to the <b>HOT</b> terminal.
5	S2 ZERO CROSS MODE SW1 OFF=AUTO SW1 ON=BASIC	(1) Two-position DIP switch behind front panel; used to select the zero cross detection filter.  For more information, refer to "Zero Cross Detection Filter" on page 6.
6	S1 LOADTYPE SW1 OFF=AUTO, DEFECT SW1 ON, SW2 OFF=REV ONLY SW2 ON, SW2 ON=FWD ONLY	(1) Two-position DIP switch behind front panel; used to select dimming mode.  For more information, refer to "Dimming Mode" on page 6.
7	CTRL	(1) Captive screw terminal, for control input from CLS-Series, CLW-Series* dimmers, CLX-DIM (all versions), or other Crestron incandescent dimmers.
8	NEUT (INPUT)	(1) Captive screw terminal, for neutral connection for control input.
9	DIM OUT	(1) Captive screw terminal for dimmed output to the load.
10	HOT	(1) Captive screw terminal, for line power input.
11	NEUT (OUTPUT)	(1) Captive screw terminal, neutral connection for line power input and load.
12	GROUND	(1) Chassis ground bus bar.

\* CLW-Series device must have a dedicated neutral.

## Setup

### Important Notes

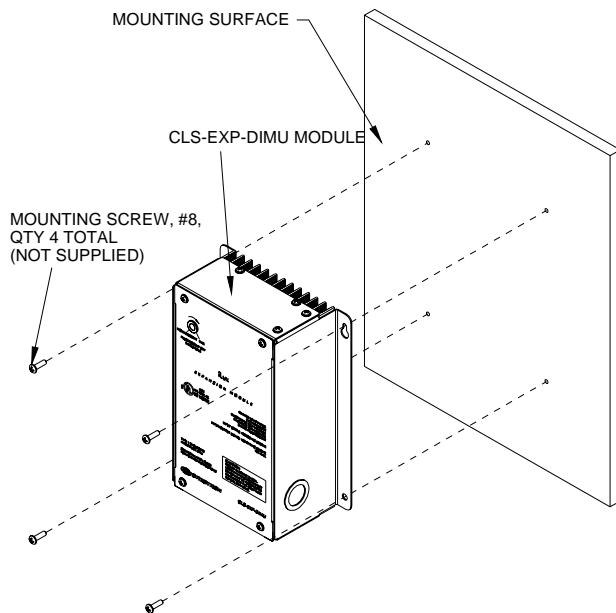
#### Read before installation.

- Permits: An electrical permit shall be obtained prior to each installation.
- Codes: Install in accordance with all local and national electrical codes.
- Wiring: Use 75°C copper wire only.
- Not suitable for Hazardous/Classified areas.

### Installation

The CLS-EXP-DIMU can be installed vertically on a wall and can also be installed in a space used for environmental air as defined in NEC Article 300.22(C). Refer to the following diagram when installing a CLS-EXP-DIMU module.

#### Module Installation



To ensure proper ventilation:

- The device must be installed vertically on a vertical surface.

**NOTE:** To prevent potential heat damage to drywall, do not mount the CLS-EXP-DIMU directly onto drywall. Mount a piece of 1/2" (minimum) thick plywood between the CLS-EXP-DIMU and the drywall.

- Install device with 6 inches (152 mm) of clearance from the top and bottom of the device.

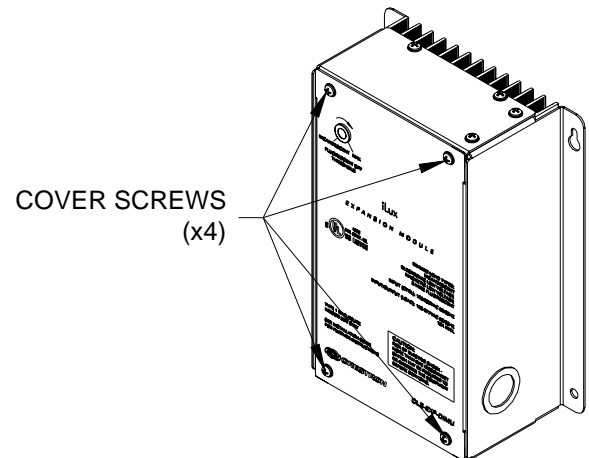
## Hardware Hookup

### **WARNING: RISK OF SERIOUS PERSONAL**

**INJURY.** Turn off power at the circuit breaker(s) prior to installation. Installing with power on can result in serious personal injury and damage to the device.

1. Use a #2 Philips screwdriver to remove the cover screws as shown in the following diagram and remove the cover.

#### Remove Cover Screws



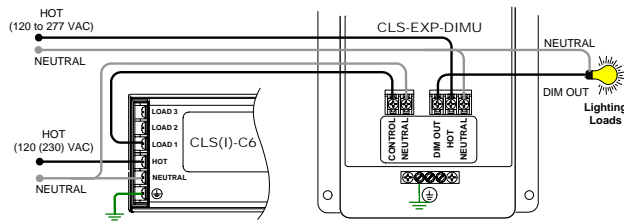
2. Depending on the module's application, select the appropriate configuration from one of the wiring diagrams on the next page and connect the CLS-C6 and load(s) as shown.
  - Do not connect wires of differing gauge to a single terminal.
  - Wires should be stripped to 7/16" (11 mm)
  - Tighten terminal screws to 7 in-lbs (0.79 Nm)

**NOTE:** Dimmers controlling one or more CLS-EXP-DIMU modules must not be wired to control any other type of load.

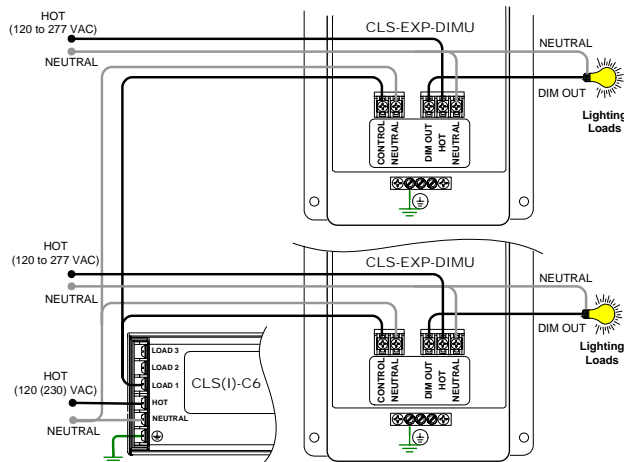
**NOTE:** When using a CLW-Series wall dimmer, the wall dimmer must be wired with a dedicated neutral wire.

**NOTE:** While these diagrams show a CLS-C6 as the controlling source, other Crestron products such as CLW-Series wall dimmers (Cresnet® and infiNET™), DIN-1DIMU4, and CLX-Series dimming modules can be used as well. Please refer to the specific dimmer's Installation Guide for detailed information.

**CLS-EXP-DIMU Wiring with Dual Feeds**



**Multiple CLS-EXP-DIMU Modules**



3. Apply power to the line/load and turn on the controlling device. The power indicator LED will light indicating that power is supplied to the module.
4. Replace the cover and cover screws.

**Dimming Mode**

The CLS-EXP-DIMU is capable of automatically detecting the attached load type, and setting itself for forward-phase (leading edge) or reverse-phase (trailing edge) dimming accordingly. In addition, the unit can be forced to perform forward- or reverse-phase dimming by overriding the automatic detection.

**Disabling the *Auto Detect* mode should not be necessary, and is not recommended unless suggested by a Crestron technical support representative.**

**WARNING: RISK OF SERIOUS PERSONAL INJURY.** Turn off power at the circuit breaker(s) prior to changing any switch settings. Changing settings with power on can result in serious personal injury and damage to the device.

The dimming mode can be changed by adjusting the **S1** DIP switches as detailed in the following table.

**Switch Settings for S1 DIP Switch**

SW. 1	SW. 2	DIMMING MODE	LOAD TYPES
Off	Off	Auto Detect (Default, recommended)	All
On	Off	Reverse Phase	Incandescent, Electronic Low Voltage
On	On	Forward Phase	Magnetic Low Voltage, Neon/CC, 2-wire dimmable Fluorescent

**Zero Cross Detection Filter**

The CLS-EXP-DIMU performs filtering to compensate for noise on the incoming AC line. This filtering is useful for eliminating flickering of the load caused by line noise. If necessary, this filtering can be disabled.

**Disabling the zero cross detection filter should not be necessary, and is not recommended unless suggested by a Crestron technical support representative.**

**WARNING: RISK OF SERIOUS PERSONAL INJURY.** Turn off power at the circuit breaker(s) prior to changing any switch settings. Changing settings with power on can result in serious personal injury and damage to the device.

The function of the zero cross detection filter is set using the **S2** DIP switch. Refer to the following table when setting the zero cross detection filter.

**Switch Settings for S2 DIP Switch**

SW. 1	SW. 2	DESCRIPTION
Off	Off	Enable zero cross detection filter (Default, recommended). Provides maximum filtering under various line noise conditions.
On	Off	Disable zero cross detection filter. Allows rapid tracking of the AC line. Suitable when using generators for AC line power.

**Set the Minimum Dimming Level**

Certain types of loads can flicker when dimmed too low. Adjust the **FLUORESCENT OFF THRESHOLD** to prevent the CLS-EXP-DIMU from attempting to dim the load below a certain level. To adjust:

1. Remove the cap from the **FLUORESCENT OFF THRESHOLD** adjustment from the inside of the cover (requires removal of cover as shown on previous page).

2. Using a flat-head screwdriver, turn the **FLUORESCENT OFF THRESHOLD** adjustment counter-clockwise until it stops.
3. Set the CLS-C6 so that the light output is on but is below the desired minimum level.
4. Turn the **FLUORESCENT OFF THRESHOLD** adjustment clockwise until the light output is at the desired minimum level.
5. Replace the cap.

## 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.

#### CLS-EXP-DIMU Troubleshooting

TROUBLE	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
Load does not turn on.	Controller is not working.	Make sure the controller is powered on, and is one of the compatible dimmers listed in "Specifications" on page 1.
	No power applied to <b>HOT</b> terminal.	Check circuit breaker. Check that green <b>POWER LED</b> on inside of unit is lit.
Load turns on and off, but will not dim.	Controlling unit is either not a dimmer, or has been set to non-dim.	Verify that dimmer is compatible with the CLS-EXP-DIMU (refer to "Specifications" on page 1). Verify that the controlling channel has not been programmed as non-dim.
	<b>FLUORESCENT OFF THRESHOLD</b> has been set too high.	Refer to "Set the Minimum Dimming Level" on page 6.
Lights do not dim properly.	Using an incompatible dimmer.	Make sure that the dimmer is one of those listed in "Specifications" on page 1.

(Continued on following column.)

#### CLS-EXP-DIMU Troubleshooting (continued)

TROUBLE	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
Audible noise while dimming.	Load is being dimmed in wrong mode.	Refer to the list of load types in the table at the top of page 6. Check the <b>PHASE LED</b> to ensure that the load is being dimmed in the proper way for the attached load type. If the unit is set to <i>Auto</i> , and the improper mode is being used, follow the instructions on page 6 to override the <i>Auto</i> setting and force the unit to the proper mode.
	Large incandescent load.	Some incandescent loads can make noise when dimmed due to the size of the filament. Try a different lamp manufacturer.
Lights flicker when at certain dimming levels.	Some types of loads cannot be dimmed below a certain level.	Refer to "Set the Minimum Dimming Level" on page 6.
Lights cannot be dimmed below a certain level.	<b>FLUORESCENT OFF THRESHOLD</b> has been set too high.	Refer to "Set the Minimum Dimming Level" on page 6.

### 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 Crestron at 1-888-CRESTRON [1-888-273-7876].

You can also log onto the online help section of the Crestron website ([www.crestron.com/onlinehelp](http://www.crestron.com/onlinehelp)) to ask questions about Crestron products. First-time users will need to establish a user account to fully benefit from all available features.

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## 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.

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