

Crestron **CNCS**
AC Current Sensor

Operations Guide



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AC Current Sensor: CNCS

Introduction

Features and Functions

- Measures average current of each half cycle of an AC load, up to a maximum of 5 Amps
- Full load and partial load threshold adjustability by means of a 15-turn precision potentiometer (POT)
- Mutually exclusive full load and partial load relay closures

The CNCS provides power sensing of any single AC powered device or AC load up to 5 Amps. A current sensor is typically used with any television, AV receiver, etc. to provide confirmation of the device's power on/off state. This is often necessary to enable reliable power control for IR controlled devices that do not include discrete power commands in their IR control protocol.

The CNCS provides true power status feedback to the control system via a pair of low-voltage contact closures, which may be connected directly to Versiports or other digital input ports on any Crestron control system, room box, expansion module, etc. Although the CNCS is not a Cresnet[®] device, it does require power (24 and G) from the Cresnet bus.

Specifications

Specifications for the CNCS are listed in the following table.

CNCS Specifications

SPECIFICATION	DETAILS
Power Requirements Cresnet Power Usage	3 Watts (0.125 Amp @ 24 Volts DC)
Enclosure	Steel, black matte powder coat finish, freestanding (adhesive feet included)
Dimensions	
Height	1.94 in (4.92 cm)
Width	4.49 in (11.39 cm)
Depth	4.33 in (10.99 cm)
Weight	1.8 lb (0.8kg)

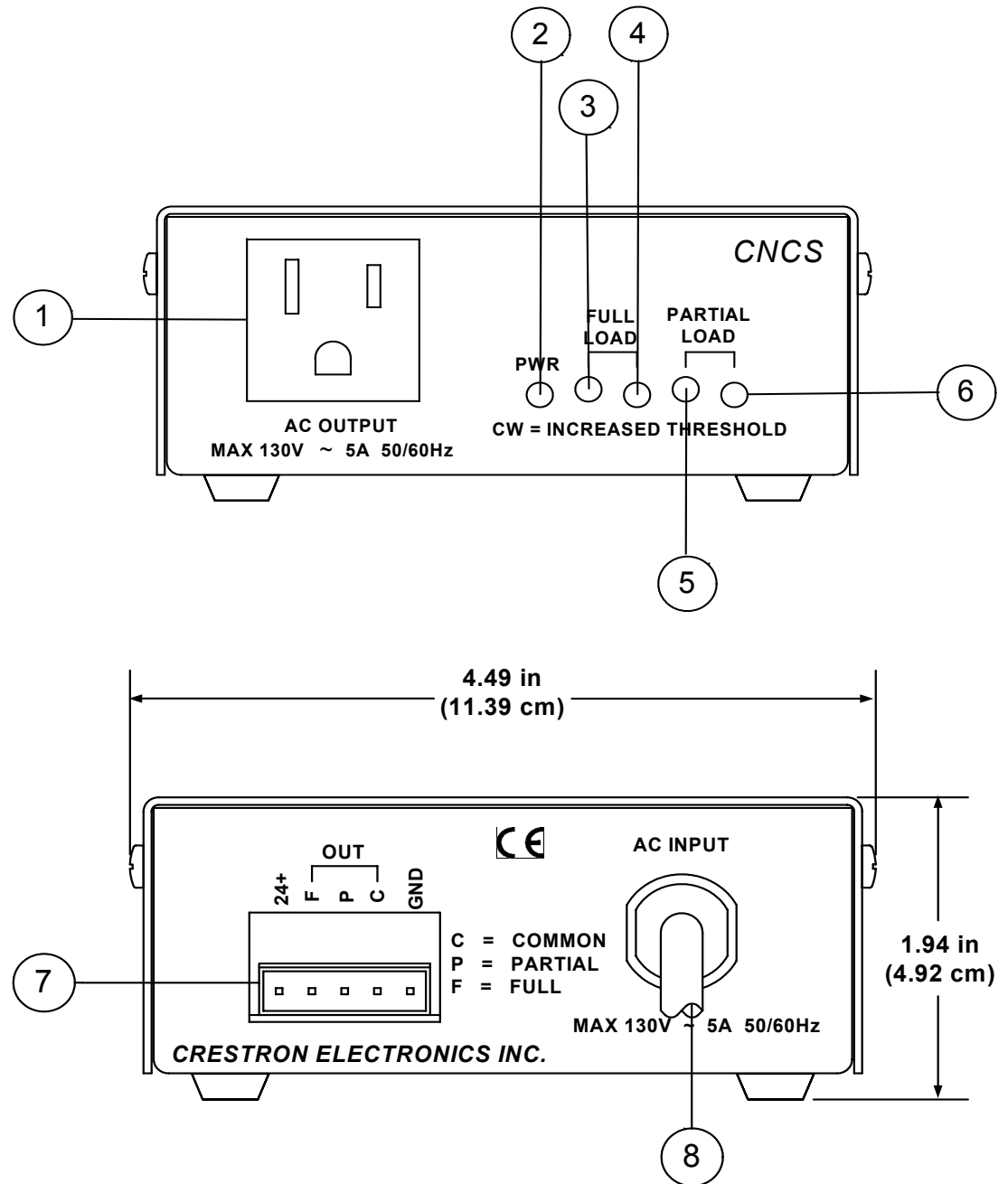
Physical Description

This section provides information on the connections, controls and indicators available on your CNCS.

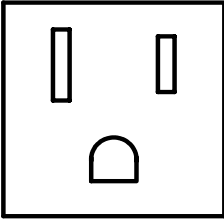
CNCS Physical View



CNCS Overall Dimensions

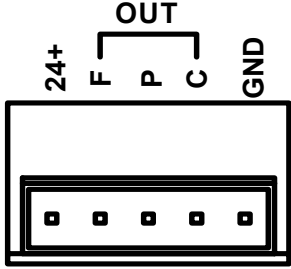


Connectors, Controls & Indicators

#	CONNECTORS, CONTROLS & INDICATORS	DESCRIPTION
1	 <p data-bbox="557 667 867 726">AC OUTPUT MAX 130V ~ 5A 50/60Hz</p>	<p data-bbox="954 432 1442 751">3-prong grounded AC socket, sensed AC power outlet; Maximum Load: 5 Amps, 130 VAC @ 50/60Hz; Minimum Sensing Load: 0.033 Amps (4 Watts) at 120 VAC;</p> <p data-bbox="954 774 1300 856">Voltage Range: 90 to 130 VAC@ 50/60 Hz</p>
2	PWR (LED)	Green LED, indicates 24 VDC power supplied to unit.
3	FULL LOAD (POT)	Recessed trim pot adjusts “full load” threshold.
4	FULL LOAD (LED)	Red LED, illuminates when “full load” threshold exceeded.
5	PARTIAL LOAD (POT)	Recessed trim pot adjusts “partial load” threshold.
6	PARTIAL LOAD (LED)	Yellow LED, illuminates when “partial load” threshold exceeded.

(Continued on following page)

Connectors, Controls, & Indicators (Continued)

#	CONNECTORS, CONTROLS & INDICATORS	DESCRIPTION
7		<p>5-pin 5mm detachable terminal block*</p> <ul style="list-style-type: none"> • 24+: DC power input, connects to the '24' terminal of the Cresnet bus; • F: Relay output, latches when "full" threshold has been exceeded; • P: Relay output, latches when "partial" threshold has been exceeded; • C: Floating common for "F" and "P"; • GND: Ground, connects to the 'G' terminal of the Cresnet bus; <p>Relay outputs rated 1 Amp @ 24 Volts AC/DC, referenced to "C"</p>
8	AC INPUT	<p>Attached cable with grounded AC plug;</p> <p>Connects to grounded AC power source</p>

* Interface connector for the **24+/F/P/C/GND** port is provided. The CNCS must not be connected to the 'Y' or 'Z' terminals of the Cresnet Bus.

Industry Compliance

As of the date of manufacture, the CNCS 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

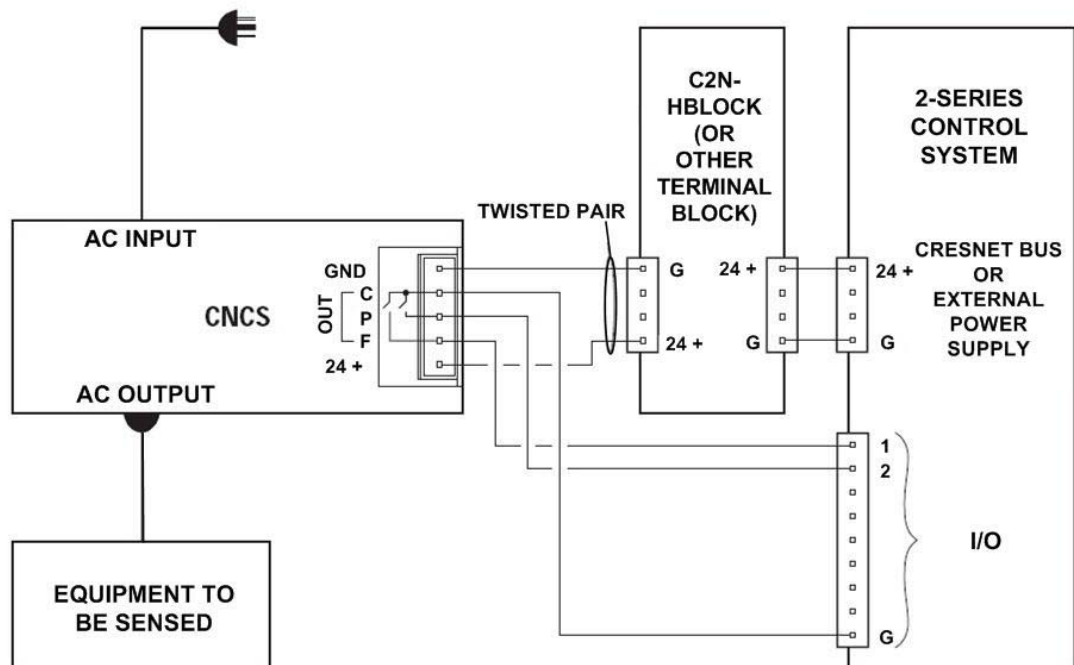
Stacking

Four “feet” are provided with the CNCS to provide stability when the unit is placed on a flat surface or stacked. These feet should be attached prior to the hookup procedure.

Connect the Device

Refer to the following diagram illustrating hookup connections for the CNCS.

CNCS, Hookup Block Diagram



The CNCS is not a Cresnet device, however it does require power (24 and G) from the Cresnet bus as illustrated above.

NOTE: Partial power output may be used as the primary output if increased sensitivity is required.

NOTE: CNCS must not be connected to the ‘Y’ or ‘Z’ terminals of the Cresnet Bus.

Operation

POT Adjustments

The CNCS has two mutually exclusive relay closures (labeled as **FULL LOAD** and **PARTIAL LOAD**) resulting in only one closure ever being connected to the common. The POT allows for highly accurate and repeatable threshold settings for both relay closures.

“Full Load”
Threshold

Clockwise (CW) rotation of the 15-turn POT increases threshold (i.e., reduces sensitivity) and changes partial load threshold, accordingly.

“Partial
Load”
Threshold

Clockwise rotation of the 15-turn POT increases threshold.

Threshold Adjustments

NOTE: Do not attempt threshold adjustments during periods of high or low power line voltage or voltage fluctuation.

NOTE: If partial power output is not required, the partial power adjustment may be placed in any position that does not cause LED flashing or relay chatter.

Based on the POT adjustment convention described above, the following steps adjust the CNCS to their proper threshold settings when being used for low power loads, high power loads with partial power, or high power loads. These steps assume that all hardware connections have been made properly and power has been applied to all units and left in their “OFF” modes.

Low Power Loads (Such as VCRs)

1. Rotate **FULL LOAD** POT 15 turns counterclockwise (CCW).
2. Rotate **PARTIAL LOAD** POT 15 turns CCW.
3. Place VCR (or other low power load unit) in “ON” mode. Red and yellow LEDs should illuminate.
4. Slowly rotate **FULL LOAD** POT CW until red LED flashes and relay chatters.

5. Place VCR in “OFF” mode. Red LED should turn off.
6. Slowly rotate **FULL LOAD POT** CCW while counting the turns until red LED flashes and relay chatters.

NOTE: If the LED flash and relay chatter cannot be achieved in step 6, restart procedure from step 1. After performing step 4, rotate **FULL LOAD POT** two turns CCW. Continue onto step 5, omit steps 6 and 7, and complete steps 8 and 9.

7. Rotate **FULL LOAD POT** CW half the number of turns counted in the previous step. For example, if the POT was rotated four turn CCW in step 6, the POT should then be turned CW two turns in this step.
8. Rotate **PARTIAL LOAD POT** CW until yellow LED flashes and relay chatters.
9. Rotate **PARTIAL LOAD POT** two to five turns CCW.

High Power Loads with Partial Power (Such as TV Sets)

1. Rotate **FULL LOAD POT** 15 turns CW.
2. Rotate **PARTIAL LOAD POT** 15 turns CCW.
3. Slowly rotate **FULL LOAD POT** CCW until yellow LED flashes and relay chatters.
4. Slowly rotate **PARTIAL LOAD POT** CW until yellow LED turns off.
5. Slowly rotate **PARTIAL LOAD POT** CW an additional two turns.
6. Slowly rotate **FULL LOAD POT** CCW until yellow LED flashes and relay chatters.
7. Slowly rotate **PARTIAL LOAD POT** CCW for an additional two turns. Yellow LED should remain illuminated.

High Power Loads (Such as TV Sets)

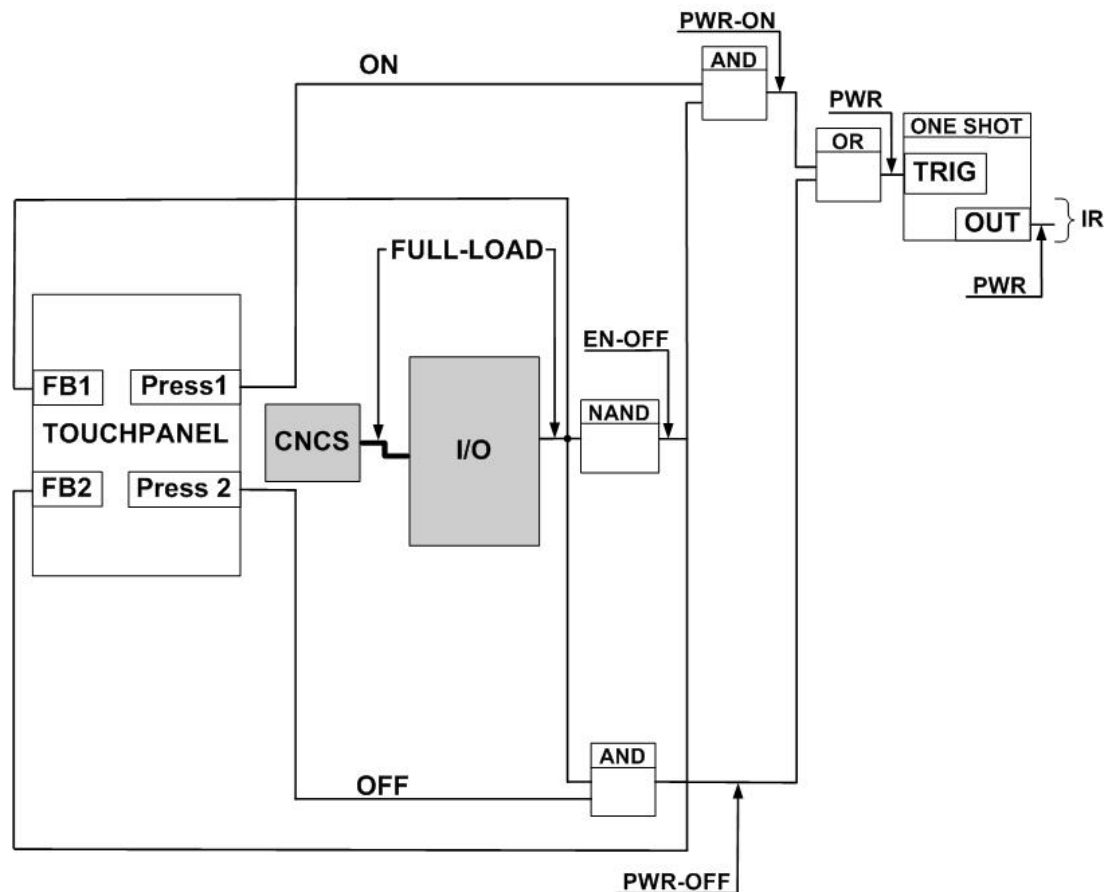
1. Rotate **FULL LOAD POT** 15 turns CW.
2. Rotate **PARTIAL LOAD POT** 15 turns CCW.
3. Place TV in “ON” mode. Red and yellow LED should turn off.
4. Slowly rotate **FULL LOAD POT** CCW until red LED flashes and relay chatters.

5. Slowly rotate **FULL LOAD POT** CCW for an additional two to five turns.

CNCS Implementation

The following diagram is an example of the CNCS implementation using SIMPL™ Windows®. This sample program illustrates discrete ON/OFF for toggle type IR control and may not be relevant for every application.

CNCS – Example SIMPL Program



Contact Information and Updates

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/offices>) for a listing of Crestron worldwide offices.

You can also log onto the online help section of the Crestron website (<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.

Future Updates

As Crestron improves functions, adds new features and extends the capabilities of the CNCS, 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.

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