

Troubleshooting
Table 1: Troubleshooting

Symptom	Action
CTC Analog Output Does Not Function	Verify that the maximum amperage range has not been exceeded. Voltages or currents above the rated levels may damage the CTC.
No CTC Output at Controller	<p>CTCG420NN:</p> <ol style="list-style-type: none"> 1. Verify that loop power between the CTC terminals and control panel analog input is 18-30 VDC. 2. Turn off monitored load. Disconnect inputs to controller. Measure current in power supply and CTC output loop with multimeter. Current should be 4 mA with no load. 3. Check current loop polarity. <p>CTCGV05NN and CTCGV10NN:</p> <ol style="list-style-type: none"> 1. Check amperage in monitored conductor. 2. Check polarity of sensor output and controller output. 3. Make sure clamp is fully closed. 4. Measure voltage across CTC output terminals.

Technical Specifications

	CTCG420R1	CTCGV05R1	CTCGV10R1
Amperage Range (Selectable)	30/60/120A	30/60/120A	20/100/150A
Continuous Operating Current	120A	120A	150A
Output	4-20mA	0-5V DC	0-10V DC
Accuracy	±2% FS from 10% to 100% of Selected Range		
Response Time	2 sec.		
Dimensions	2.7 x 2.56 x 1.73 in. (69 x 65 x 44 mm)		
Aperture Size	0.78 x 0.78 in. (18 x 20 mm)		
Sensor Supply Voltage	24V DC (18-30V DC)	Self-Powered	
Output Relay	Single-Pole, Single-Throw (SPST), Normally Open (NO), 10A @ 260V AC, 5A @ 30V DC		
Actuation Coil	24V AC/DC		
Max Relay Coil Current	30mA		
Isolation Voltage	600V AC rms.		
Temperature Range	5-140° F (-15 to 60° C)		
Frequency Range	50/60Hz		
Humidity Range	0-95% Non-Condensing		
Compliance	United States: UL Listed, File E317719 CCN NRNT, Under UL 508 Industrial Control Equipment Canada: UL Listed, File E317719, CCN NRNT7, Under CAN/CAS C22.2 No. 14-05, Industrial Control Equipment Europe: CE Mark Low Voltage Directive 2006/95/EC, EMC Directive 2004/108/EC For all CE technical questions, contact Setra System, USA. EU customers may contact Hengstler, GmbH, Uhlandstr 49, 78552 Aldingen, Germany (Tel: +49-7424-890), Fax: +49-7424-89500.		

The performance specifications are nominal and conform to acceptable industry standards. For application of conditions beyond these specifications, consult your local Setra representative. Setra Systems, Inc. shall not be liable for damages from misapplication or misuse of its products.

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CTC Series - Current Transducer Clamped w/ Relay
Model CTCG420R1 / CTCGV05R1 / CTCGV10R1
Installation Instructions



Introduction

The Current Transducer Clamped (CTC) Series of analog output current transducers are noninvasive devices designed to monitor current flowing through a cable or wire. A cost effective solution for monitoring load or proof of operation, these units are ideal for monitoring current loads on pumps, fans and blowers, and for sensing the status of heating coils and lighting. CTC's used for load trending over time are effective sensors for predictive maintenance programs.

These units are available with standard 4-20mA current loop, 0-5VDC, and 0-10VDC analog output. The voltage output models derive excitation by magnetic induction from the current-carrying conductor (wire or cable), making these units completely self-powered. The current loop output model requires a 24VDC power supply.

The factory installed snap-on power relay facilitates the remote startup and stopping of the motor. It requires a separate 24 V AC/DC power supply also.

IMPORTANT: The Current Transducer Clamped (CTC) Series Current Devices are intended to provide an input to equipment under normal operating conditions. Where failure or malfunction of the CTC could lead to personal injury or property damage to the controlled equipment or other property, additional precautions must be designed into the control system. Incorporate and maintain other devices such as supervisory or alarm systems or safety or limit controls intended to warn of, or protect against, failure or malfunction of the CTC. **READ INSTRUCTIONS THOROUGHLY PRIOR TO INSTALLATION.**

Installation

WARNING: Risk of Electric Shock
 Disconnect power supply before making electrical connections. Contact with components carrying hazardous voltage can cause electric shock and may result in

Dimensions

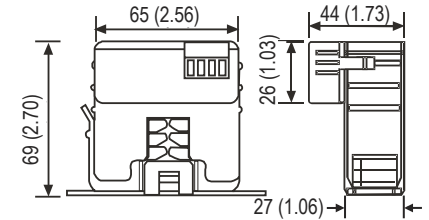


Figure 1: CTC Dimensions mm. (in.)

Mounting

1. Using the two screws (included), attach the mounting bracket to the back of the electrical enclosure.
2. Snap the CTC into place on the mounting bracket.

Wiring

1. Disconnect power to the conductor cable at the power source.
2. Place the split core around the power conductor cable, and close the core until the core snaps shut.
3. Wire CTC output terminals to the control box Analog Input (AI) terminal. Connect control box output to relay coil. Connect power relay to control power and motor starter.
Note: Connector terminal blocks accept wire sizes from 12-22 AWG. Screw terminal torque is 4 lbf-in. or .5 N-m maximum.
4. Set input current range with front panel slide switch. (See Setup)
5. Reconnect the power conductor cable (For wiring example, see Figure 2.)

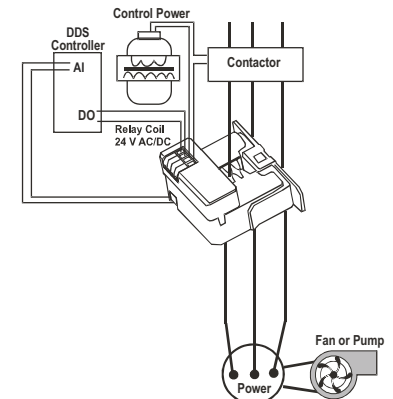


Figure 2: CTCGA420NN

If the measured current is too low to be detected or is higher than the maximum current rating of the CTC, use the following methods to increase or decrease current.

If Measured Current is Too Low to Be Detected

Wrap the conductor (wire) through the sensing hole and around the CTC body to produce multiple turns to increase the measured current. Measured current = actual current times the number of turns (see figure 3).

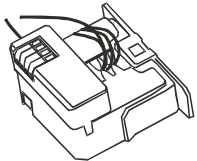


Figure 3: CTC Shown with Four Turns

NOTE: Controller must be scaled to account for the extra turns. If four turns pass through the sensor as shown, the normal controller reading must be divided by four.

IMPORTANT: Failure to derate the current capacity could result in damage to the CTC when using multiple turns to increase measured current. Use the following formula to determine the new maximum current:

New Maximum Current = CTC Current Rating/number of turns
For example, Model CTCG420NN with 4 turns = 120 A/4 = 30.0 A, new maximum current.

To Monitor Currents Exceeding the Maximum Current Rating of the CTC

For currents >120 A (Model CTCG420NN and CTCGV05NN) or >150 A (Model CTCGV10NN):

Use a 5 A Current Transformer (CT) to reduce the current passing through the CTC as shown in Figure 4. Run the current transformer secondary wire through the sensing hole. Terminate the 2 secondary wires of the 5 A current transformer to each other, and then install the 5 A current transformer on the monitored conductor. Set the CTC for lowest ampere range (20 or 30 A)

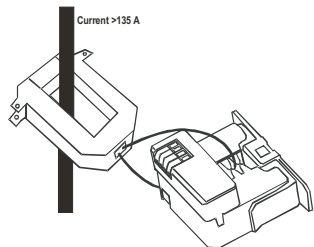


Figure 4: CTC with CT Transformer

Setup

Setting Amperage Range

Set the amperage range slide switch to a level consistent with your load.

- CTCG420R1 = 30, 60, or 120 A
- CTCGV05R1 = 30, 60, or 120 A
- CTCGV10R1 = 20, 100, or 150 A

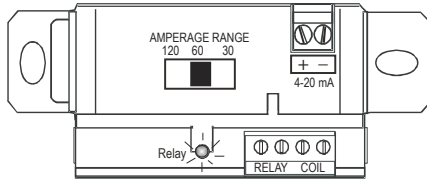


Figure 5: Setting CTC Amperage Range

Wiring and Output

CTCG420R1

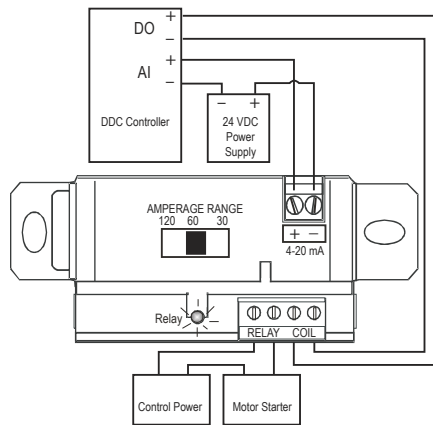


Figure 6: CTCG420R1 Wiring

Scale Software as Shown

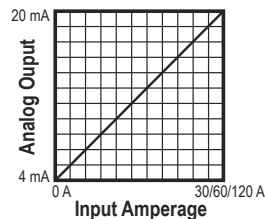


Figure 7: CTCG420R1 Linear Output

CTCGV05R1

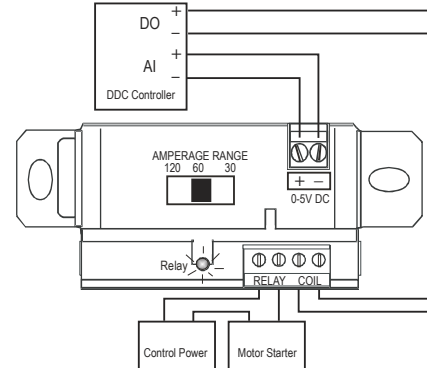


Figure 8: CTCGV05R1 Wiring

Scale Software as Shown

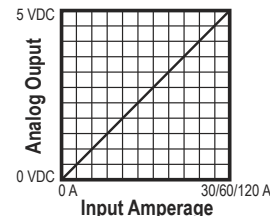


Figure 9: CTCGV05R1 Linear Output

CTCGV10R1

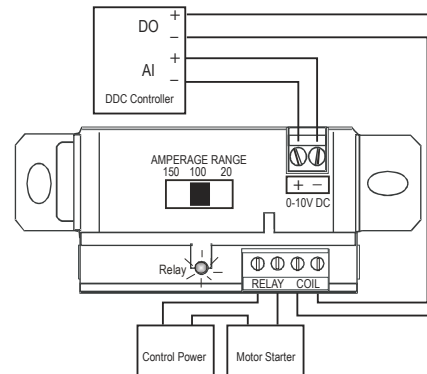


Figure 10: CTCGV10R1 Wiring

Scale Software as Shown

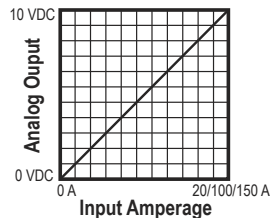


Figure 11: CTCGV10R1 Linear Output

RETURNING PRODUCTS FOR REPAIR

Please contact a Setra application engineer (800-257-3872, 978-263-1400) before returning unit for repair to review information relative to your application. Many times only minor field adjustments may be necessary. When returning a product to Setra, the material should be carefully packaged, and shipped to:

Setra Systems, Inc.
159 Swanson Road
Borborough, MA 01719-1304
Attn: Repair Department

To assure prompt handling, returned unit(s) must be accompanied by Setra's Return Order Form, completely filled out, found on Setra's web site at http://www.setra.com/tra/repairs/cal_rep.htm.

Notes: Please remove any pressure fittings and plumbing that you have installed and enclose any required mating electrical connectors and wiring diagrams.

Allow approximately 3 weeks after receipt at Setra for the repair and return of the unit.

Non-warranty repairs will not be made without customer approval and a purchase order to cover repair charges.

WARRANTY AND LIMITATION OF LIABILITY

ETRA warrants its products to be free from defects in materials and workmanship, subject to the following terms and conditions: Without charge, SETRA will repair or replace products found to be defective in materials or workmanship within the warranty period; provided that:

- a) the product has not been subjected to abuse, neglect, accident, incorrect wiring not our own, improper installation or servicing, or use in violation of instructions furnished by SETRA;
- b) the product has not been repaired or altered by anyone except SETRA or its authorized service agencies;
- c) the serial number or date code has not been removed, defaced, or otherwise changed; and
- d) examination discloses, in the judgment of SETRA, the defect in materials or workmanship developed under normal installation, use and service;
- e) SETRA is notified in advance of and the product is returned to SETRA transportation prepaid.

Unless otherwise specified in a manual or warranty card, or agreed to in writing and signed by a SETRA officer, SETRA pressure and acceleration products shall be warranted for one year from date of sale. The foregoing warranty is in lieu of all warranties, express, implied or statutory, including but not limited to, any implied warranty of merchantability for a particular purpose. SETRA's liability for breach of warranty is limited to repair or replacement, or if the goods cannot be repaired or replaced, to a refund of the purchase price. SETRA's liability for all other breaches is limited to a refund of the purchase price. In no instance shall SETRA be liable for incidental or consequential damages arising from a breach of warranty, or from the use or installation of its products.

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