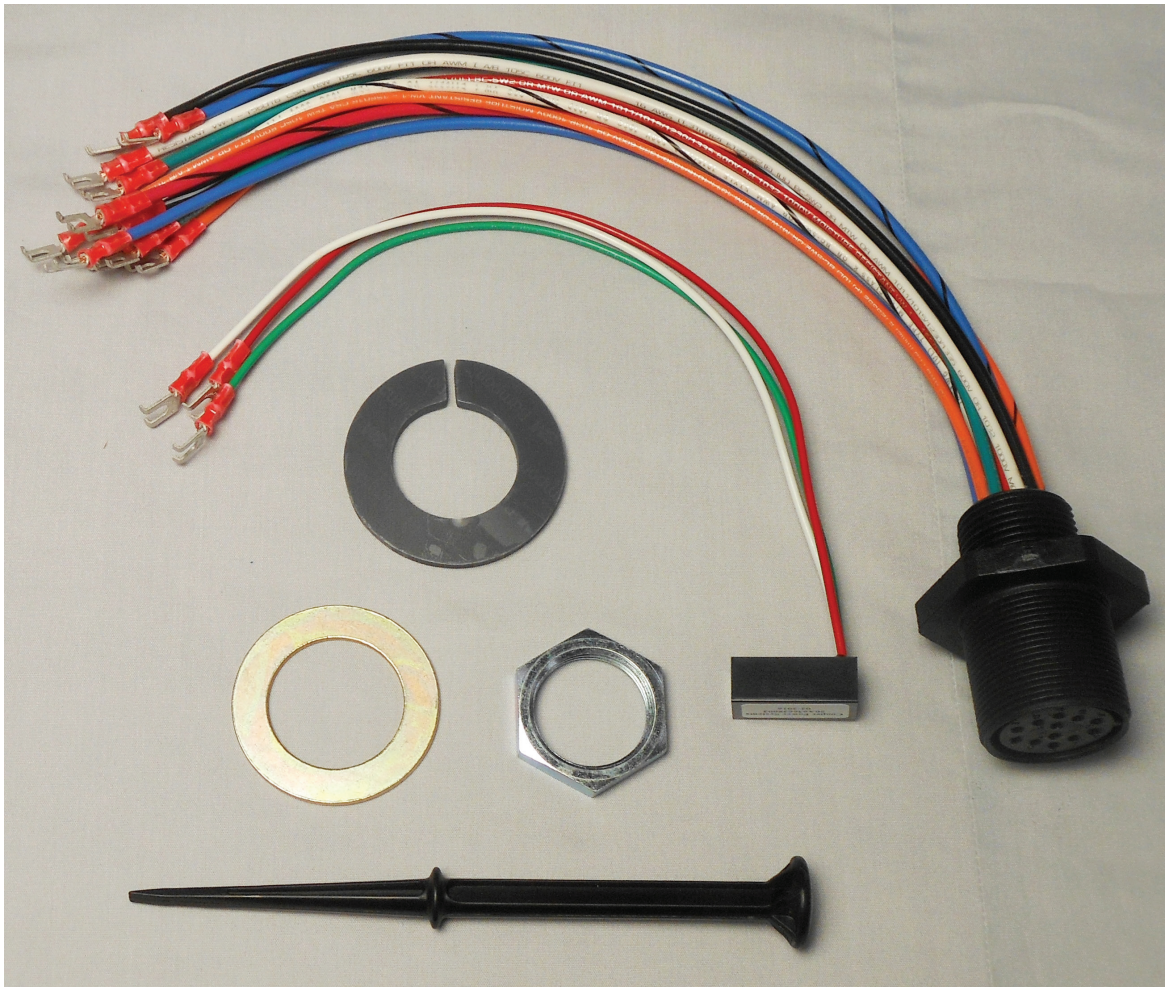
Quick connect assembly (QCA) universal kit



Powering Business Worldwide

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Contents

Safety for life

Eaton meets or exceeds all applicable industry standards relating to product safety in its Cooper Power™ series products. We actively promote safe practices in the use and maintenance of our products through our service literature, instructional training programs, and the continuous efforts of all Eaton employees involved in product design, manufacture, marketing, and service.

We strongly urge that you always follow all locally approved safety procedures and safety instructions when working around high voltage lines and equipment, and support our "Safety For Life" mission.

Safety information

The instructions in this manual are not intended as a substitute for proper training or adequate experience in the safe operation of the equipment described. Only competent technicians who are familiar with this equipment should install, operate, and service it.

A competent technician has these qualifications:

- Is thoroughly familiar with these instructions.
- Is trained in industry-accepted high and low-voltage safe operating practices and procedures.
- Is trained and authorized to energize, de-energize, clear, and ground power distribution equipment.
- Is trained in the care and use of protective equipment such as arc flash clothing, safety glasses, face shield, hard hat, rubber gloves, clampstick, hotstick, etc.

Following is important safety information. For safe installation and operation of this equipment, be sure to read and understand all cautions and warnings.

Hazard Statement Definitions

This manual may contain four types of hazard statements:

DANGER

Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

WARNING

Indicates a potentially hazardous situation which, if not avoided, could result In death or serious injury.

CAUTION

Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

CAUTION

Indicates a potentially hazardous situation which, if not avoided, may result in equipment damage only.

Safety instructions

Following are general caution and warning statements that apply to this equipment. Additional statements, related to specific tasks and procedures, are located throughout the manual.

DANGER

Hazardous voltage. Contact with hazardous voltage will cause death or severe personal injury. Follow all locally approved safety procedures when working around high- and low-voltage lines and equipment. G103.3

WARNING

Before installing, operating, maintaining, or testing this equipment, carefully read and understand the contents of this manual. Improper operation, handling or maintenance can result in death, severe personal injury, and equipment damage. G101.0

WARNING

This equipment is not intended to protect human life. Follow all locally approved procedures and safety practices when installing or operating this equipment. Failure to comply can result in death, severe personal injury and equipment damage. G102.1

WARNING

Power distribution and transmission equipment must be properly selected for the intended application. It must be installed and serviced by competent personnel who have been trained and understand proper safety procedures. These instructions are written for such personnel and are not a substitute for adequate training and experience in safety procedures. Failure to properly select, install or maintain power distribution and transmission equipment can result in death, severe personal injury, and equipment damage. G122.3

Product information

Introduction

Eaton's *Service Information MN225034EN* lists the parts and provides installation instructions to convert an existing control box into a quick connect junction box for its Cooper Power™ series quick connect assembly (QCA) universal kit. After installation of the QCA kit, the converted control box will interface with Eaton's Cooper Power series voltage regulator quick connect control cables. This will enable a quick connection retrofit of Eaton's Cooper Power series CL-7 multi-phase voltage regulator control.

Read this manual first

Read and understand the contents of this manual and follow all locally approved procedures and safety practices before installing or operating this equipment.

Additional information

These instructions cannot cover all details or variations in the equipment, procedures, or processes described nor provide directions for meeting every possible contingency during installation, operation, or maintenance. For additional information, contact your Eaton representative.

Acceptance and initial inspection

Each kit is in good condition when accepted by the carrier for shipment. Upon receipt, inspect the shipping container for signs of damage. Unpack the kit and inspect it thoroughly for damage incurred during shipment. If damaged is discovered, file a claim with the carrier immediately.

Handling and storage

Be careful during handling and storage of the kit to minimize the possibility of damage. If the kit is to be stored for any length of time prior to installation, provide a clean, dry storage area.

Standards

ISO 9001 Certified Quality Management System

Parts supplied

The QCA universal kit will include the parts shown in the chart below. Not all parts will be required for every installation.

Item	Part Number	Description	Qty.
1	5041848B03	Quick-connect pigtail, 12-conductor	1
2	50A63663800A	CT shorting device	1
3	08A621282001	Zinc-plated washer	1
4	A5481751	Nut, 3/4-14	1
5	05A622008001	Gasket	1
6	E0003X00G171	Dead-front connector, 20-position	1
7	A613098001	Back-panel wire tool	1
8	0800011079Z	Wire ties	3

Tools required

Item	Description	Qty.
1	Hammer	1
2	Punch	1
3	Philips screwdriver	1
4	Blade screwdriver	1
5	1-1/4" wrench	1
6	Wire cutter	1

Installation procedures

Note: The voltage regulator may remain energized during this procedure if the control box remains attached to the voltage regulator. If the control box must be removed from the voltage regulator, refer to the *Service Information MN225008EN, VR-32 Voltage Regulator with Quick-Drive™ Tap-changer Installation, Operation, and Maintenance Instructions* for information on safe bypassing of a voltage regulator before removing the control box.

⚠ CAUTION

Shock hazard and equipment damage. Insure that all voltage regulator control boxes are properly grounding to the voltage regulator tank ground using a grounding strap. Failure to do so could result in a static charge buildup which could cause personal injury and equipment damage.

Figure 1. Control box grounding is required.

Control removal

1. Remove the existing voltage regulator control from the control box following these steps:

   A. Move the Control Function switch to the **OFF** position.

   B. Move the control power switch to the **OFF** position.

   C. Swing open the control panel.

   D. Close the switch marked **C** (Figure 2 or 3).

   E. Open the switch marked **V1.** Also open any other switches marked with a **V** such as **V6** or **V2** (Figure 2 or 3).

   F. Disconnect the control wire harness connection. This will consist of loosening the fanning-strip screws (10 or 18 screws) (Figure 2) or unplugging the 18-position dead-front plug (Figure 3).

   G. Disconnect the green ground wire (Figure 2 or 3).

   H. Lift the existing control panel from the hinge pins.

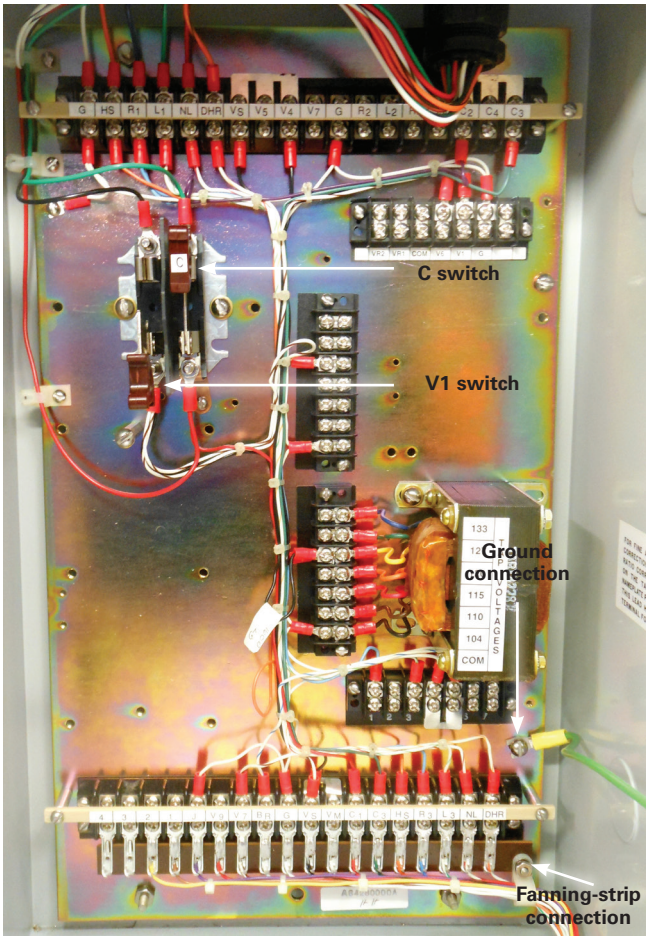

Figure 2. Fanning-strip style back panel.

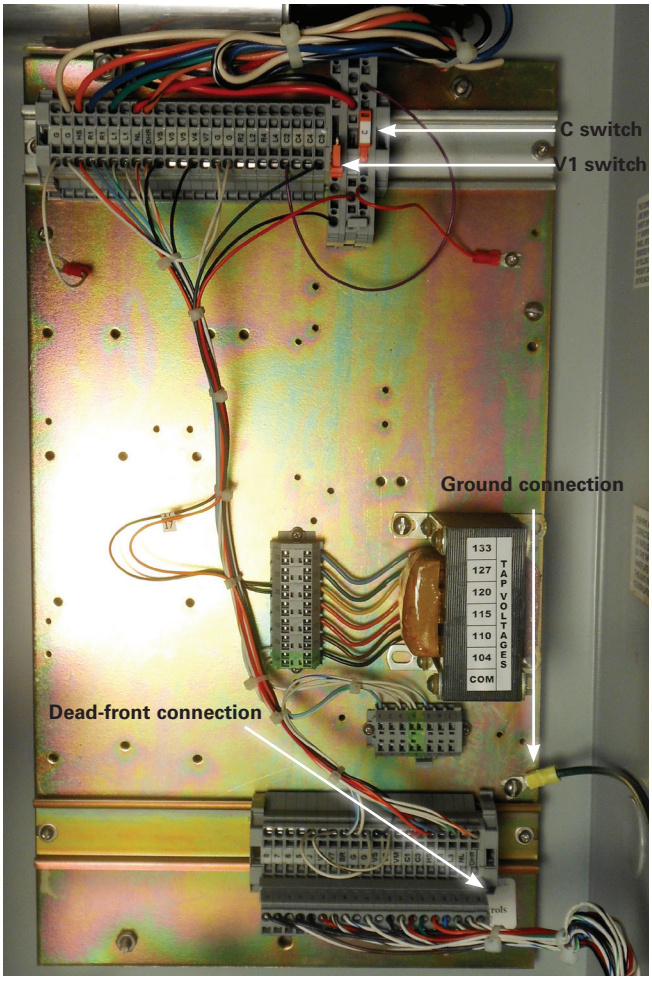

Figure 3. Dead-front style back panel.

Prepare control box

2. Locate and remove a knock-out in the bottom of the control box using a hammer and punch (Figure 4).

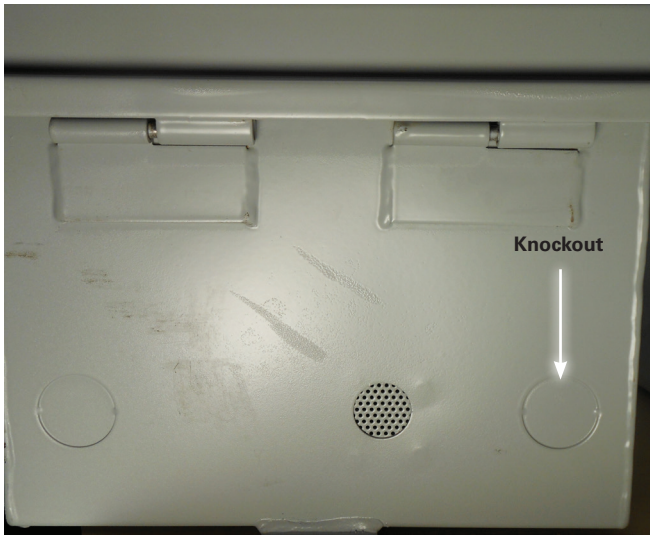

Figure 4. Remove knockout from bottom of control box.

3. Remove the plastic covering the adhesive side the of gasket and center the gasket over the hole on the outside of the control box (Figure 5).

Figure 5. Gasket adhering to bottom of control box.

4. Insert the wires from the pigtail through the bottom of the box from the outside (Figure 6).

Figure 6. Pigtail inserted through bottom of control box.

5. On the inside of the control box, place the washer and nut over the wires and then tighten the nut snuggly using a 1-1/4" wrench (Figure 7).

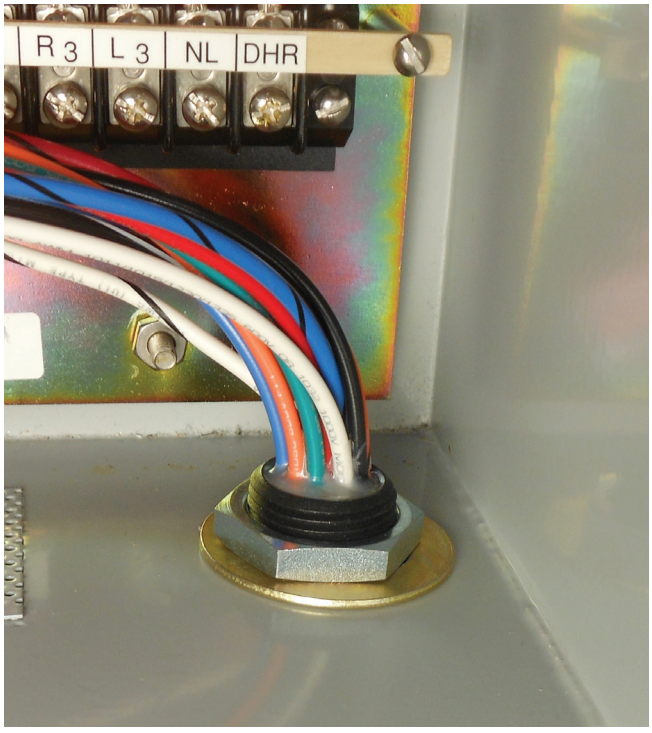

Figure 7. Pigtail attached with nut and washer.

Connect pigtail

6. Make the wire connections inside the control box. There are two possible connection scenarios:

   A. Fanning strip style connection (Figure 8):

      i. Connect the individual wires as shown in **Table 1** below by placing the fork terminals under the screws and tightening the screws snugly.

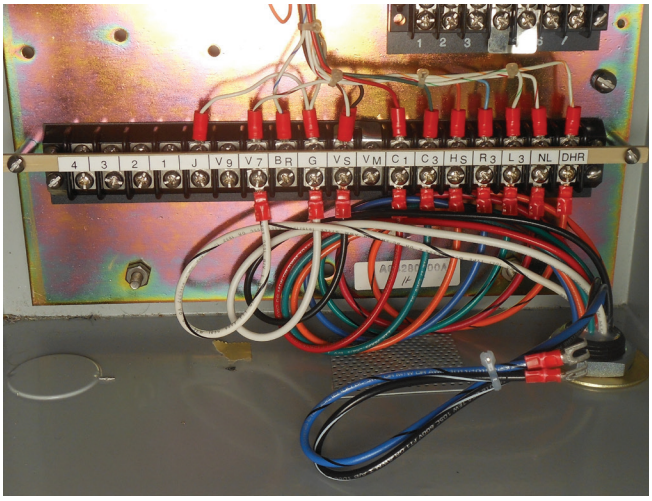

Figure 8. Pigtail wires connected to fanning-strip style terminal board.

Table 1. Fanning-Strip Style Wire Connections

Wire color	Terminal Board Connection	Function
Orange/Black	DHR	Drag-Hand Reset
Red/Black	NL	Neutral Light
Green/Black	L3	Motor Lower
Blue	R3	Motor Raise
Orange	HS	Holding Switch
Green	C3	CT Line
Red	C1	CT Ground
No Connection	VM	–
Black	VS	Load PT
White	G	Ground
No connection	BR	–
White/Black	V7	Source PT
No Connection	V9	–
No connection	J	–
No connection	1	–
No connection	2	–
No connection	3	–
No connection	4	–
Blue/Black	None	Wire unused
Black/White	None	Wire unused

B. For the dead-front style connector (Figure 9) :

i. Cut the forked terminals from the end of the wires.

ii. Strip back 3/8" of the wire insulation from each wire. The blue/black and black/white wires need not be stripped.

iii. Attach the wires to the dead-front plug by pushing the wire connection tool firmly into the square hole and then fully inserting the wires into the appropriate holes. Use **Table 2** as a guide for the correct wire connection points.

iv. Once all the wires are connected, push the dead-front plug into the receptacle on the back panel. Make sure that the side of the connection plug with the terminal markings is facing up.

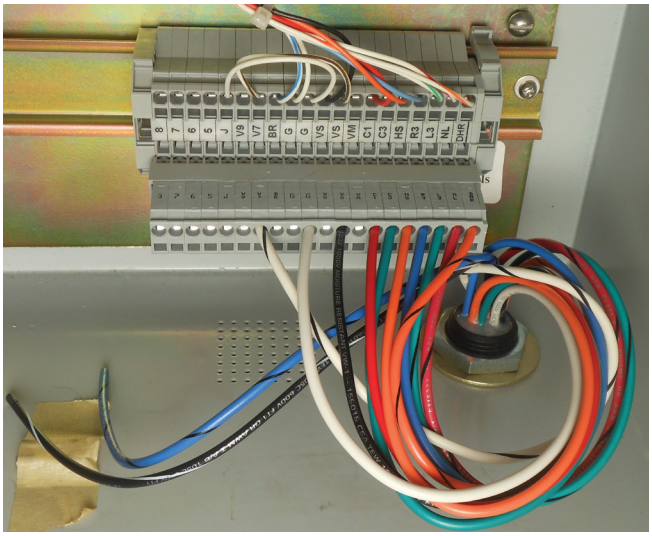

Figure 9. Pigtail wires connected to dead-front terminal board.

Table 2. Dead-Front Wire Connections

Wire color	Terminal Board Connection	Function
Orange/Black	DHR	Drag-Hand Reset
Red/Black	NL	Neutral Light
Green/Black	L3	Motor Lower
Blue	R3	Motor Raise
Orange	HS	Holding Switch
Green	C3	CT Line
Red	C1	CT Ground
No Connection	VM	–
Black	VS*	Load PT
White	G*	Ground
No connection	BR	–
White/Black	V7	Source PT
No Connection	V9	–
No connection	J	–
No connection	5	–
No connection	6	–
No connection	7	–
No connection	8	–
Blue/Black	None	Wire unused
Black/White	None	Wire unused

* Connect in either terminal with this marking.

Install CT protection device

7. If the existing control box is equipped with a quick-connect control cable of the same style as the new control box, a CT protection device will already be installed in the junction box and the new CT protection device will not be required. If the CT protection device is required, follow these instruction for installation:

   A. In a fanning-strip style control box (Figure 10):

      i. Connect the red wire to the C1 terminal, the green wire to the C3 terminal and the white wire to the G terminal.

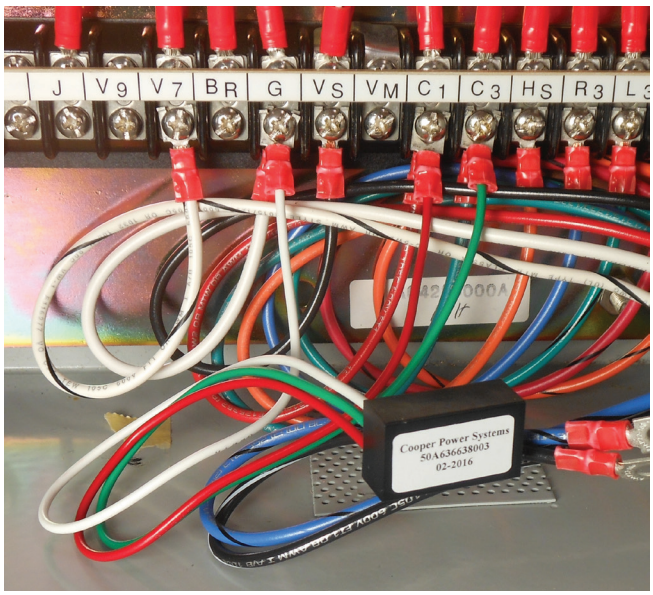

Figure 10. CT protection device installed in fanning-strip stye control box.

   B. In a dead front-style control box (Figure 11):

      i. Cut the forked terminals from the end of the wires.

      ii. Strip back 3/8" of the wire insulation from each wire.

      iii. Attach the wires to the terminal board above the dead-front plug by pushing the wire connection tool firmly into the square hole and then fully inserting the wires into the appropriate holes. Connect the red wire to the C1 terminal, the green wire to the C3 terminal and the white wire to the G terminal.

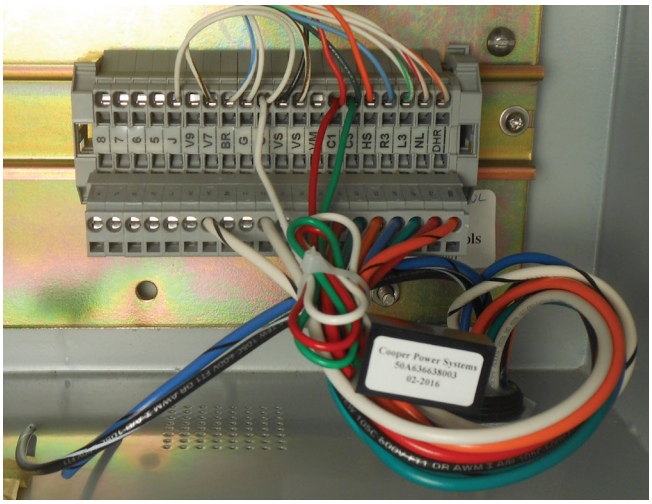

Figure 11. CT protection device installed in dead-front style control box.

Complete installation

8. Complete the installation by closing the V switches (V1, V2, V6, etc.), opening the C switch, and closing the cover on the box.

9. A control cable can now be attached to the quick-connect receptacle on the bottom of the control box.

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Powering Business Worldwide

Printed in USA
Publication No. MN225034EN / March 2016

For Eaton's Cooper Power series product information call 1-877-277-4636 or visit: www.eaton.com/cooperpowerseries.