COOPER Power Systems

Reclosers

Kyle® Form 4C Recloser Control Front Panel Replacement Kit KME4-701 Installation Instructions

Service Information

S280-77-13

961066KM

Figure 1.
Kyle® Type Form 4C Recloser Control

Contents

SAFETY FOR LIFE

Cooper Power Systems products meet or exceed all applicable industry standards relating to product safety. 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 Cooper Power Systems 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 flash clothing, safety glasses, face shield, hard hat, rubber gloves, 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 equipment must be 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 this equipment can result in death, severe personal injury, and equipment damage. G122.2

PRODUCT INFORMATION

Introduction

Service Information S280-77-13 provides instructions for replacing the front panel of the Form 4C Recloser Control. Before installing this kit, carefully read and understand the contents of this manual.

Description

The kit includes the parts necessary to replace the front panel of the Form 4C control.

Review ALL steps in this publication before installing the enclosed kit. In addition, refer to the included Form 4C *Service Information S280-77-1* before the control is placed back into service. *Service Information S280-77-1* provides control operation, maintenance instructions and testing procedures for Form 4C Microprocessor-Based Recloser Control.

The parts included in the Form 4C Front Panel Kit are listed in Table 1.

For installation of the kit, the following tools are required.

- Kyle Type MET Electronic Recloser Tester or equivalent.
- 5/16” wrench
- 11/32” wrench
- A standard screwdriver

Note: Routing of the panel harness may differ from the original routing.

Note: The view may differ slightly for different revisions of Form 4C controls.

TABLE 1
Kit KME4-701 Parts

Qty.	Catalog Number	Description
1	S280-77-13	Kit Installation Instructions
1	S280-77-1	Form 4C Installation/Operation Manual
1	S280-77-4	Form 4C Programming Guide
1	KME40003000001	Form 4C Control Panel Assembly
1	KME4000203	Connector Cable Assembly (Option I/O)
1	KA20720001	18” length of Plastic Spiral Cable Wrap
3	KA20060020	Plastic Cable Clamps
4	KA20200028	Elastic Stop Nut
1	KME4-1235	Accessory Label (See Figure 3)
1	KME4-1110	Cabinet Door Revision Label (See Figure 3)
1	KME4-1133	Optional I/O Label (See Figure 3)
5	KA23580007	Ty-Wraps
4	KA23580008	Ty-Wraps
1	KME4-1214	Malfunction Code Label (See Figure 3)
1	KA20060001	Cable Clip
1	KA20060008	Cable Clip
1	KA20200005	Elastic Stop Nut

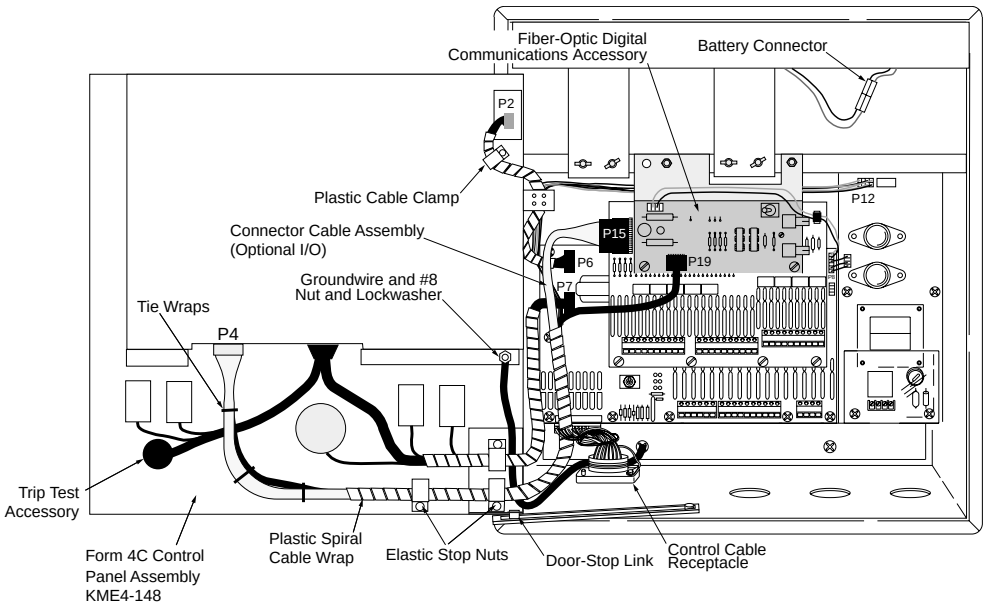

Figure 2.
Identification of various part locations on Form 4C controls.

INSTALLATION

Application of New Control Labels

To reflect the new features available in the Form 4C Control, new labels must be added to the unit's inside door panel.

1. Remove the document spring clip on the inside of the control door panel. Retain spring clip for re-installation at the end of this procedure.
2. Clean the inside of the door panel with isopropanol alcohol to remove excess dirt and contaminants from the original accessory label surface.
3. Apply the new accessory label KME4-1235 to the inside door panel as shown in Figure 3.
4. Apply the malfunction code label KME4-1214 to the inside door panel as shown in Figure 3.
5. If the control is equipped with the optional I/O accessory, place label KME4-1133 as shown in Figure 3. (If optional I/O accessory is not installed, discard label KME4-1133).
6. Re-install the spring clip on the inside door panel.
7. Clean the area directly below the nameplate on the front door of the control cabinet.
8. Apply the kit label KME4-1110 directly below the nameplate on the cabinet front door panel.

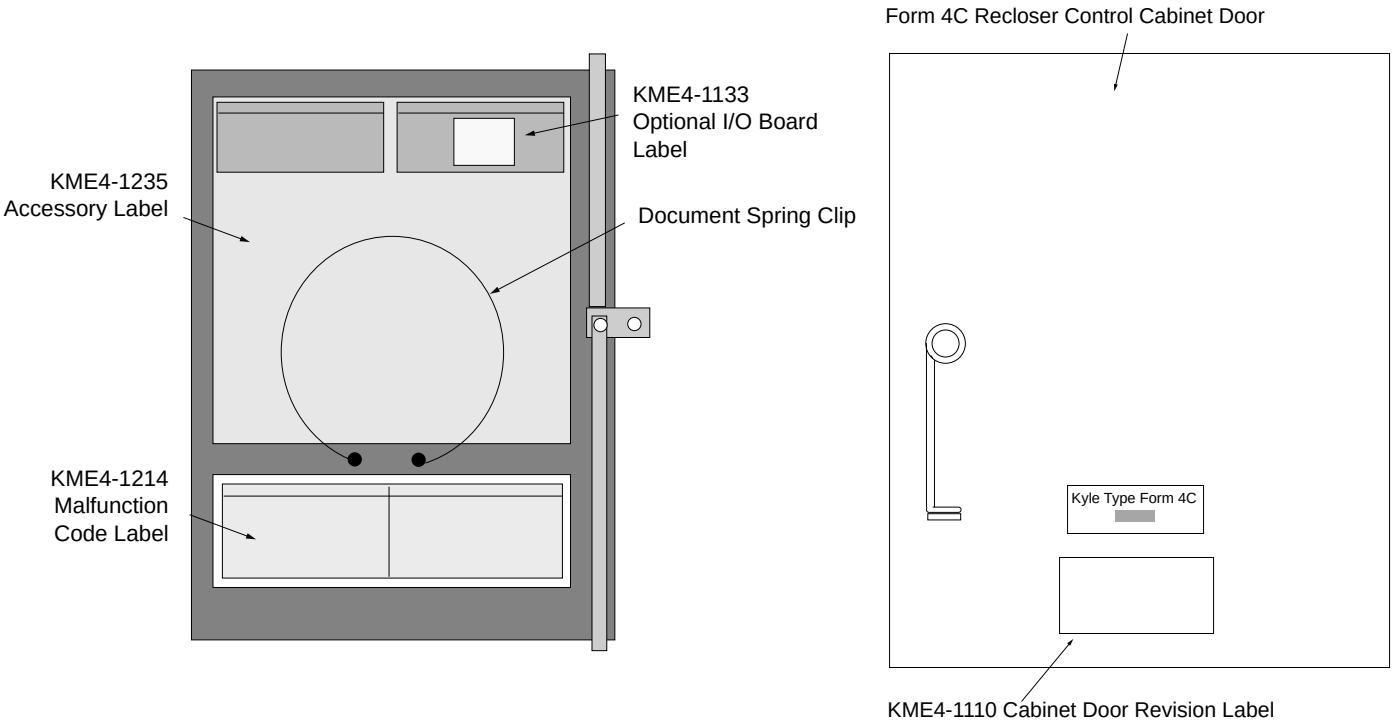

Figure 3.
Application of labels inside of door panel (left), label application outside door panel (right).

Removal of Front Panel Assembly

CAUTION: Recloser misoperation. The control must be removed from service before disconnecting the control battery. Disconnecting the control battery from an in-service control may cause recloser misoperation (unintentional operation). Failure to comply can result in equipment damage and personal injury. T213.4

CAUTION: Control damage. De-energize both ac and dc power prior to removing or installing any internal connections or circuit boards in the control. Failure to comply can result in damage to the control. T241.1

CAUTION: Equipment damage. Always wear a grounding wrist strap to control static electricity before handling circuit boards. Failure to use this strap may result in circuit board damage. T253.1

Refer to Figure 3 for part locations. The view may differ slightly for different versions of the Form 4C control. Proceed as follows:

1. Remove the control from service. Follow all locally approved safety regulations, practices, and procedures. Refer to *S280-77-1 Kyle Form 4C Microprocessor-Based Recloser Control Installation and Operation Instructions* prior to removal of panel.
   - **A.** Set Ground Trip Block switch to BLOCK.
   - **B.** Disconnect control cable from the control.
   - **C.** De-energize/disconnect ac power from the control.
   - **D.** Unplug the control battery.
2. Disconnect the battery connector.
3. Disconnect the front panel ground strap by removing the grounding nut on the back panel. Discard ground strap.

IMPORTANT: Electro-static discharge. All microprocessor equipment is subject to electrostatic discharge (ESD) damage which can affect programming or result in component degradation or failure.

To prevent possible ESD damage to circuit boards, make sure of the following when removing, handling, or installing circuit boards:

- Make sure the control is grounded.
- Use a grounding wrist strap connected to the control ground connection.
- Always transport and store circuit boards in static-free packaging.

4. Disconnect cable plug from the standard I/O Board socket P7. Release the cable from the ty-wraps and cable clamps.

   Note: Newer Form 4C controls also use cable clamps.
5. Disconnect the cable plug from power supply plug P12. Release the cable back panel cable clamps.
6. If the control is equipped with an optional I/O board, disconnect the cable plug from socket P15 on the optional I/O board. Release the cable from the ty-wraps and cable clamps if present.
7. Remove and retain the cable clamp hardware from the top right corner of the front panel assembly. Disconnect the cable plug from socket P2.
8. Disconnect the panel door-stop link by removing the spring clip and hinge pin. Retain for later use.
9. Remove the existing control panel by lifting the panel off it's slide hinges.

Installation of Form 4C Control Panel

CAUTION: Control damage. De-energize both ac and dc power prior to removing or installing any internal connections or circuit boards in the control. Failure to comply can result in damage to the control. T241.1

CAUTION: Equipment damage. Always wear a grounding wrist strap to control static electricity before handling circuit boards. Failure to use this strap may result in circuit board damage. T253.1

Refer to Figure 4 for part locations. The view may differ slightly for different versions of the Form 4C control.

1. Install the new Form 4C Control panel by sliding it onto the control cabinet hinge pins and reconnecting the door link.
2. Reconnect the cable plug to board socket P2 using the cable clamp hardware that was removed during the disassembly process.
3. Connect the cable plug to socket P12 on the power supply board. Use the cable clamps on the back panel to secure the cable.
4. Connect the cable plug to socket P7 on the standard I/O board.
5. If the control is equipped with a optional I/O board, connect the kit cable KME4-203 to the optional I/O board socket P15 and the CPU board socket P4.

   Note: If the control does not have the optional I/O board, discard KME4-203 cable assembly.
6. Use the ty-wraps and spiral wrap to bundle the panel control cable and optional I/O cable KME4-203 (if installed).
7. Use cable clamp hardware included with the kit to secure the cable assembly to the front control panel (Figure 4).
8. Make sure the panel ground wire is routed under the cable and secured to the back plate.
9. Use the cable clamps and ty-wraps inside the cabinet to secure the panel cables to the control cabinet wall.
10. Visually inspect the control cabinet for damaged or unconnected cables or wires. Make sure cable routings are as shown in Figure 4 and Figure 5 before proceeding.
11. If desired, install the the Trip Test Accessory. Instructions are included with the accessory.
12. Program and test the installed kit. Refer to **Programming and Testing the Installed Kit** section of this manual.

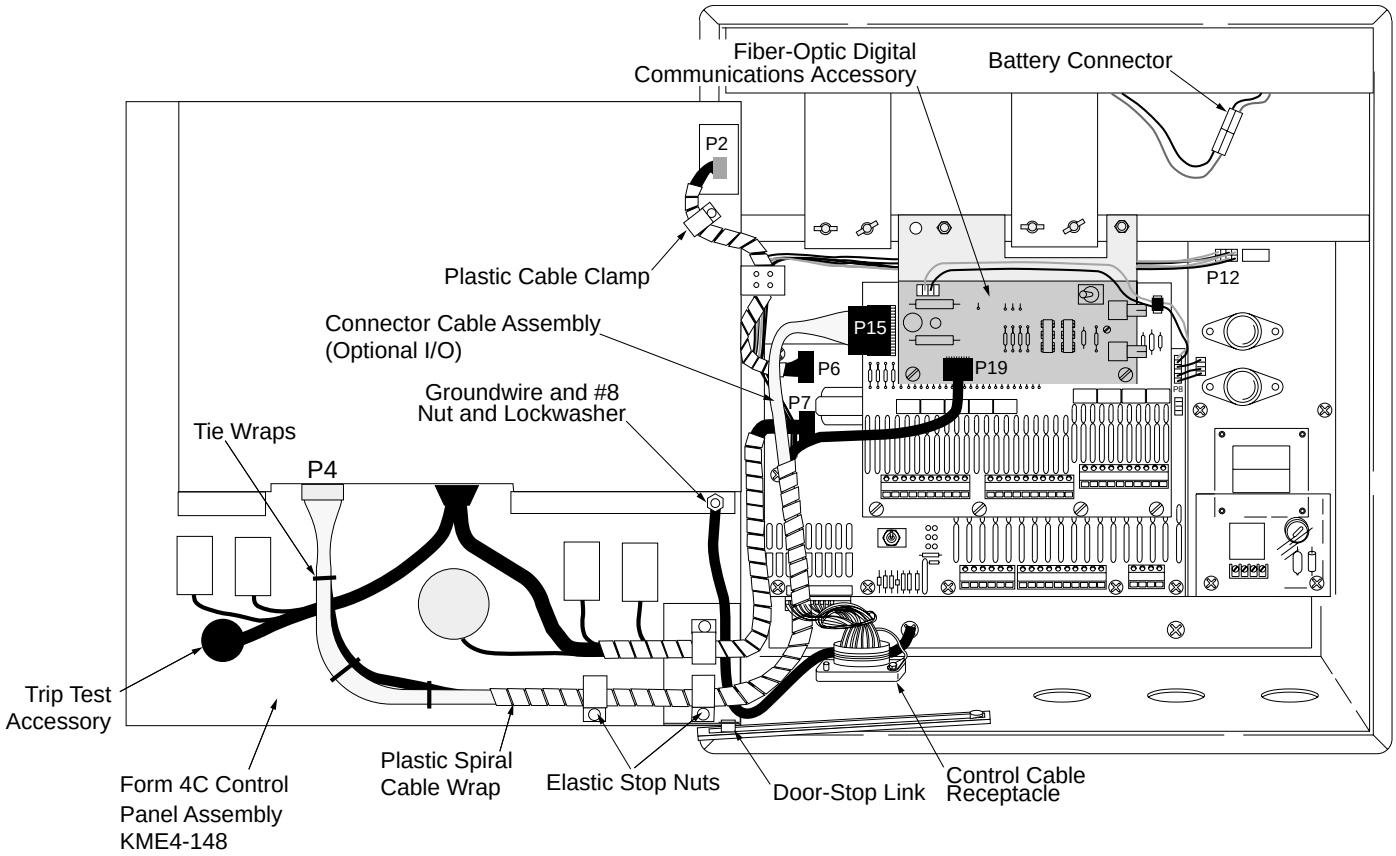

Figure 4.
Correct panel ground strap routing.

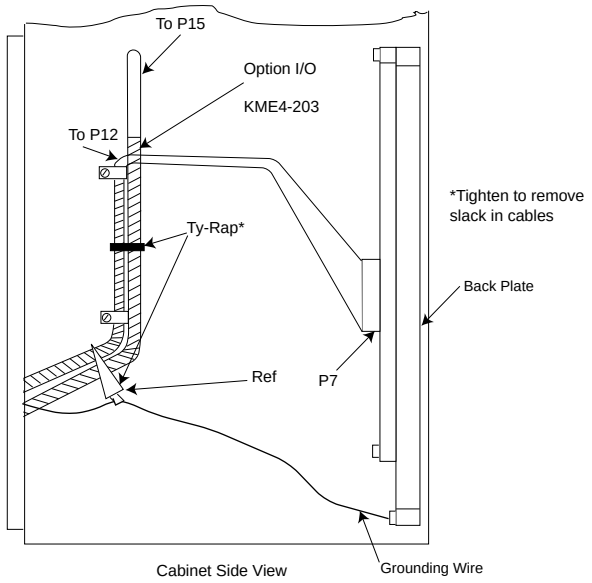

Figure 5.
Securing with Ty-wraps.

Programming and Testing the Installed Kit

Note: Follow the testing and programming procedures in *S280-77-1 Kyle Form 4C Microprocessor-Based Recloser Control Installation and Operation Instructions* before placing the control back in service.

1. Reconnect the battery connector.
2. Energize the control with AC power.
3. Program the control. Refer to *S280-77-4 Kyle® Form 4C Microprocessor-Based Recloser Control Programming Guide* for further information.
4. Test the control with the Kyle® Type MET Electronic Control Tester (or equivalent) to verify proper programming and operation
5. After all programming and testing has been successfully completed, the control may be reinstalled and placed into service. Refer to *S280-77-1 Kyle Form 4C Microprocessor-Based Recloser Control Installation and Operation Instructions*.

Troubleshooting

If the front panel fails to operate properly, review the troubleshooting information in Table 2 prior to contacting your Cooper Power Systems representative.

TABLE 2
Troubleshooting Information

Problem	Possible Causes	Remedy
Display Will Not Turn On	No power to control. Neon lamp on power supply should be “ON”.	Connect power.
	Cable to power supply P12 not connected.	Connect plug.
	Cables incorrectly attached or damaged.	Inspect all cables.
Malfunction Display ON and Check Battery Display ON	Battery left connected without 120 Vac supplied to control.	Contact Cooper Power Systems.
	Battery drained.	Contact Cooper Power Systems.
	Battery disconnected.	Connect battery.
	Cables incorrectly attached or damaged.	Inspect all cables.
Unit Failed KMET Testing	Incorrect program parameters.	Verify unit was programmed correctly. Refer to S280-77-4*.
	Cables incorrectly attached or damaged.	Inspect all cables.
	Cable socket pins bent.	Inspect / straighten pins.

* S280-77-4 Kyle® Form 4C Microprocessor-Based Recloser Control Programming Guide

COOPER Power Systems

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