COOPER Power Systems

Reclosers

Type ME Control
Remote Non-Reclose and Remote Ground Trip Block Maintained Contact Accessory KA2035ME2

Service Information
S280-75-52

Applicable to Form 3 Controls Serial No. 5500 and above and all Form 3A Controls.

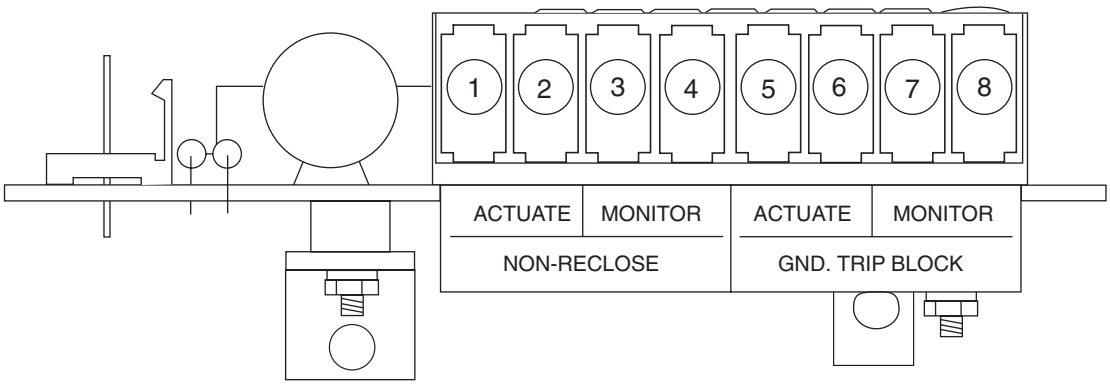

Figure 1.
Remote non-reclose and remote ground trip block accessory KA2035ME2.

Contents

TABLE 1
Ordering Information

Remote non-reclose and remote ground trip block, maintained contact, factory installed	KA2035ME2
Remote non-reclose and remote ground trip block, maintained contact, field installed	KA2035ME2S

TABLE 2
Parts List

ITEM	PART #	DESCRIPTION	QTY
1	MEA2151	Board/Bracket Assembly	1
2	MEA26005	Leadwire Assembly, #20, BLK, B04-5360-2050-T00	1
3	MEA260045	Leadwire Assembly BLK, B04-5360-2060-T00	1
4	MEA260153	Leadwire Assembly WHT, A05-5339-1050-B04	1
5	MEA2166001	Ribbon Wire	1
6	KA21240010	Toggle Switch, DPDT, 15 A-125 Vac, 10 A-120 Vac	2
7	KA21330067	Identification Label 24 Vdc REM GND TRIP	1
8	KA21370006	Heat-Shrink Tubing .13 ID X 1.0 LG, BLK	1
9	751515106037A	Screw, St Rh #6-32 X .375, Type F, SS	2
10	900815006000A	Spring Lockwasher, #6 Medium, SS	2
11	KA20630004	Terminal, Wire, Type A, #20-16 AWG	6
12	KA20630017	Terminal, Wire, Type J, #22-18 AWG	1
13	KA21240001	Toggle Switch, DPDT, 15 A-125 Vac, 10 A-120 Vac	2
14	KA2048-0318	Service Information S280-75-52	1

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 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 may result in death, severe personal injury and equipment damage. G102.1

WARNING: Power distribution 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 prodedures. 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 equipment can result in death, severe personal injury, and equipment damage. G122.2

PRODUCT INFORMATION

Introduction

Service Information S280-75-52 provides installation and operation instructions for the Type ME Control Remote Non-Reclose and Remote Ground Trip Block Maintained Contact Accessory KA2035ME2.

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 process described nor provide directions for meeting every possible contingency during installation, operation, or maintenance. For additional information, please contact your Cooper Power Systems representative.

Acceptance and Initial Inspection

This product is completely tested and inspected at the factory. It is carefully calibrated, adjusted, and in good condition when accepted by the carrier for shipment.

Upon receipt, inspect the carton for signs of damage. Unpack the accessory and inspect it thoroughly for damage incurred during shipment. If damage is discovered, file a claim with the carrier immediately.

Handling and Storage

Be careful during handling and storage of equipment to minimize the possibility of damage.

Quality Standards

The Quality System at the Cooper Power Systems, Kyle Distribution Switchgear plant is certified to the following standards:

ISO 9001

CAN/CSA ISO 9001

BS EN ISO 9001

ANSI/ASQC Q9001

Description

The remote non-reclose and ground trip block accessory provides remote operation and status indication of the ME Control non-reclose and ground trip block features.

Customer supplied wiring and contacts allow remote operation of both the non-reclose and the ground trip block features. Both features can also be operated locally with the switches on the control front panel. Neither the remote contacts nor the local switches can override the operation of the other.

The accessory also provides monitor contacts for both features. If non-reclose or ground trip block is selected, remotely or locally, the corresponding monitor contact will be closed.

The accessory requires 24 Vdc, supplied by the control battery, for operation.

The remote non-reclose and remote ground trip block accessory is available in versions for factory or field installation.

CONNECTIONS

The KA2035ME2 remote non-reclose and remote ground trip block accessory is connected in Form 3A, Type ME controls as shown in Figure 2.

Leads from the customer's remote actuating and monitoring devices are brought in through a knockout in the bottom of the control cabinet and are connected to terminals on the accessory board customer connections terminal strip. See Figure 1.

TABLE 3
Wiring Connection Colors

Wiring Connection	Color
T7-1 (Ground Transformer)	BRN
Minimum Trip Resistor Bus	RED
GS-2	ORG
Used wuth Sequence Coordination	YEL
Non-Reclose 2	GRN
Non-Reclose 1	BLU
GS-5	VIO
GS-4	GRY
NRS-5	WHT
NRS-4	BLK
Intermediate Strip +	WHT*
N-	BLK*
NRS-1 to Non-Reclose 2	BLK
NRS-1 to Non-Reclose 1	BLK
A	VIO*

OPERATION

The customer's remote contacts complete the circuit used to energize the accessory function selection relays and must be maintained for accessory operation.

Remote ground trip block operation is accomplished by closing a customer-furnished remote contact to short accessory terminals 5 and 6. As long as the terminals are shorted, the control will remain in the ground trip block mode, bypassing normal ground minumum trip sensing and prohibiting ground trip operation.

Remote non-reclose operation is obtained by closing a customer-furnished remote contact to short accessory terminals 1 and 2. This bypasses the normal operating sequence of the control to provide one-shot-to-lockout operation. The control will remain in the non-reclose mode as long as terminals 1 and 2 are shorted.

The accessory provides continuous monitoring of both the non-reclose and the ground trip block features, for local or remote operation, with normally open contacts. Non-reclose is monitored via terminals 3 and 4; ground trip block is monitored via terminals 7 and 8.

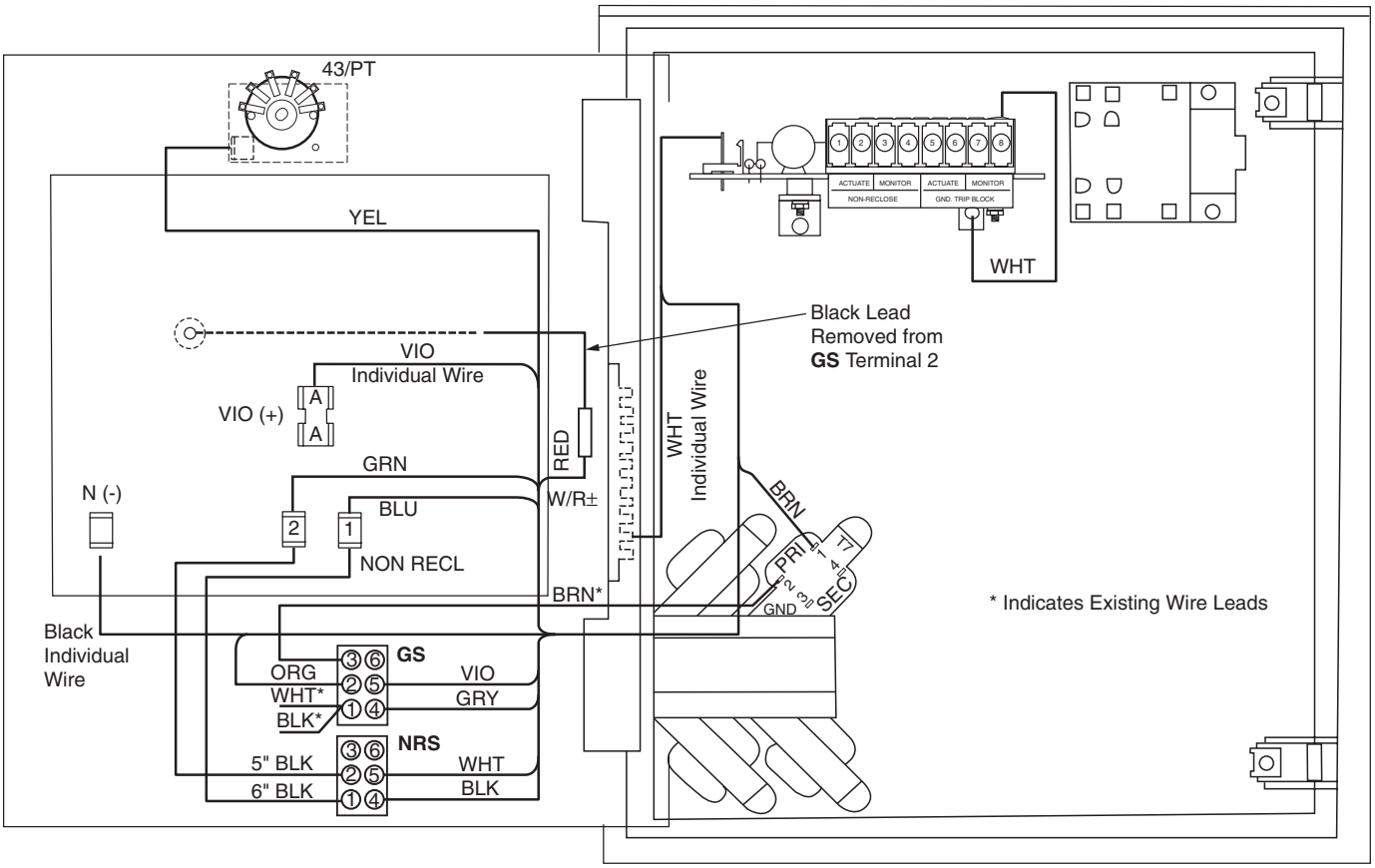

Figure 2.
Remote non-reclose and remote ground trip block accessory installed in a Form 3A, Type ME control (location of tieboard terminals slightly different for Form 3 controls).

FIELD INSTALLATION

The following procedure can be used to install the remote non-reclose and remote ground trip block accessory in Form 3 Controls above serial number 5500 and all Form 3A Controls. Refer to the mounting and wiring diagram in Figures 2 and 4. For additional information, refer to *Service Information S280-75-1 Form 3A Type ME Electronic Control Installation, Operations, and Testing Instructions*.

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

CAUTION: Recloser Misoperation. The control must be removed from service prior to performing any maintenance, testing, or programming changes. Failure to comply can result in misoperation (unintentional operation) of the recloser. T216.2

1. Place the gound trip block switch to BLOCK.
2. Disconnect control cable.
3. Release and swing out the hinged control panel to gain access to inside of cabinet.
4. De-energize 120 (240) Vac low-voltage power supplied to control.
5. Disconnect control battery at battery-lead plug and receptacle, or remove power input.
6. Locate ground trip block (GS) and non-release (NRS) toggle switches shown in Figures 2 and 3. Tag each lead; note the terminal each wire is currently attached to nad record on the tag.
7. Remove leads from GS and NRS switches. Remove and discard switches.
8. Install the two new switches,Item 6 and Item 13, supplied in accessory kit.
9. Plug-in ribbon wire connector and install accessory circuit board, Item 1, in upper left hand corner of back panel, using screws, Item 9, and lockwashers, Item 10, as shown in Figure 2. Attach short white jumper wire, Item 4, with hardware securing right side of accessory bracket. Push opposite end of wire onto terminal along right side of accessory circuit board.
10. Remove orange wire from transformer terminal T7-1, remove terminal from wire and replace with combination terminal Item 12. Push orange wire back onto terminal T7-1.
11. Route ribbon wire assembly, Item 5, and connect leads as follows (refer to Figure 2 for connections and wiring table); attach terminals, Item 11, to wires:
    A. Route Brown lead to transformer terminal T7-1.
    B. Locate Black lead removed from GS switch terminal 2 in Step 7 and slide the heat-shrink tubing, Item 8, over the lead. Solder-splice the Black lead to the Red ribbon wire lead. After soldering, slide the heat-shrink tubing over the splice and apply moderate heat to shrink the tubing.
    C. Route Green lead to non-reclose terminal 2, on tie board, and connect.
    D. Route Blue lead to non-reclose terminal 1, on tie board, and connect.
12. Yellow lead is taped off unless sequence coordination accessory is installed in control. If sequence coordination is present, route wire to 43/PT phase trip selector switch and connect to the push on terminal located on switch circuit board.
13. Connect and solder leads to GS switch, as follows:
    A. Black and White wires, removed from original GS switch, to terminal 1.
    B. Orange wire, from ribbon wire, Item 5, to terminal 2.
    C. Brown wire, removed from original GS switch, to terminal 3.
    D. Grey wire, from ribbon wire, Item 5, to terminal 4.
    E. Violet wire, from ribbon wire, Item 5, to terminal 5.
14. Connect and solder leads to NRS switch, as follows:
    A. 6” Black jumper wire, Item 3, to terminal 1.
    B. 5” Black jumper wire, Item 2, to terminal 2.
    C. Black wire, from ribbon wire, Item 5, to terminal 4.
    D. White wire, from ribbon wire, Item 5, to terminal 5.
15. Route Black individual lead from accessory, Item 1, to terminal N-, on tie board, and connect.
16. Route White, individual lead from accessory to terminal W/R±, on intermediate terminal strip, and connect.
17. Route Violet individual lead from accessory to terminal A, on tie board, and connect.
18. Route Black jumper wire from NRS switch terminal 1 to non-reclose terminal 1, on tie board, and connect.
19. Route Black jumper wire from NRS switch terminal 2 to non-reclose terminal 2, on tie board, and connect.
20. Bring customer-supplied remote operation and monitoring leads through a knockout in bottom of control cabinet, using a weather-tight connector. Carefully route leads to accessory circuit board terminal strip.

CAUTION: Equipment damage; misoperation. External leads must be shielded and the shield must be grounded at both ends. Terminate each lead with a 320 Vac, 160 Joules metal oxide varistor (MOV), or equivalent, at the remote end. Attach MOV’s between the leads and ground. Failure to properly shield and protect leads can result in equipment damage and/or unintentional operation. G117.3

21. Connect customer non-reclose actuating leads to accessory board terminals TX-1 and TX-2.
22. Connect customer non-reclose monitor leads to accessory board terminals TX-3 and TX-4.
23. Connect customer ground trip block actuating leads to accessory board terminals TX-5 and TX-6.
24. Connect customer ground trip block monitor leads to accessory board terminals TX-7 and TX-8.
25. Apply the identification label, Item 7, to the location guide on the inside of the cabinet door in the approximate location of the accessory.
26. After confirming that all connections are correct, the control can be returned to service:
    A. Connect the control battery lead.
    B. Energize 120 (240) Vac low-voltage power supply to control.
    C. Close hinged control panel and secure latches.
    D. Check that all control settings and plugs are properly programmed.
    E. Operate manual control switch to CLOSE, to ensure control is in the home position; verify by placing the test switch to LOCKOUT TEST: the lockout indicator lamp should not light.
    F. Place ground trip switch to BLOCK position.
    G. Reconnect recloser interconnecting cable to receptacle on bottom of control cabinet.
    H. Place ground trip switch to NORMAL position.

VERIFICATION OF OPERATION

Operation of the remote non-reclose and ground trip block accessory can be verified using the following procedure. The control must be removed from service and connected to an MET tester. For additional information, refer to *Service Information S280-76-1 Type MET Electronic Recloser Control Tester Operating Instructions*.

1. Initial conditions for the ME control:
   A. Battery connected and control in lockout (verify with Lockout Test switch and Lockout Indicator lamp).
   B. Non-reclosing switch down in NORMAL RECLOSING position. Refer to Figure 3.
   C. Ground Trip switch down in NORMAL position.
   D. Control operations-to-lockout and minimum-trip settings programmed for desired operating conditions.
2. Using an ohmmeter, check accessory board non-reclose monitor terminals TX-3 and TX-4. There should be no continuity.

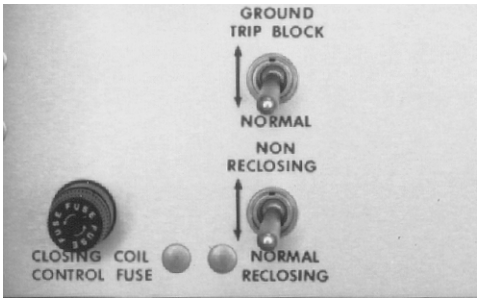

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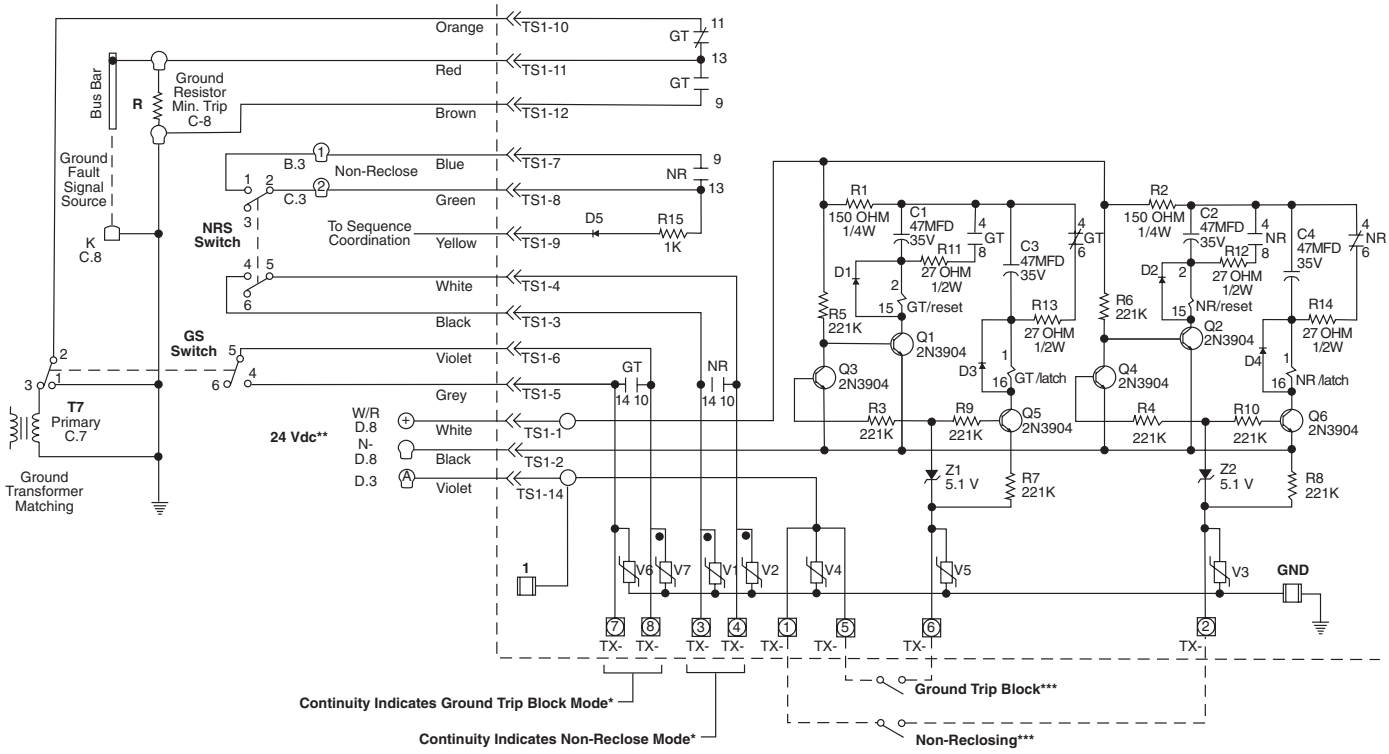
Figure 3.
Ground trip block and non-reclosing switches located on front panel of control.

   If continuity does exist, check that the non-reclosing switch is in the NORMAL RECLOSING position. If switch is properly set, double check wiring and make corrections as required.
3. Set the Operations to Lockout selector on the front panel of the control to 2, 3, or 4 operations.
4. Use the MET tester to apply a fault current above the control's minimum trip level and verify that the control functions normally through its programmed operating sequence to lockout.
5. Use a jumper to short accessory board non-reclose actuate terminals TX-1 and TX-2.
6. Use an ohmmeter to verify that continuity now exists between terminals TX-3 and TX-4.
7. Use the MET tester to apply a fault current and verify that the control trips once and locks out (one-shot-to-lockout operation).
8. Set the reclosing mode toggle switch on the control's front panel to the Non-Reclosing position.
9. Apply a fault current and verify that the control operates only one-shot-to-lockout.
10. Remove the jumper between TX-1 and TX-2. Continuity should still exist between TX-3 and TX-4.
11. Apply a fault current and verify that the control operates one-shot-to-lockout.
12. Place the non-reclose switch to the NORMAL RECLOSING position. Apply a fault and verify that the control operates as it has been programmed.
13. To confirm ground trip block operation, set the ground trip toggle switch on the control's front panel to NORMAL (down position).
14. Use an ohmmeter to check the accessory board ground trip block monitor terminals TX-7 and TX-8. There should be no continuity.

    If continuity does exist, check that the ground trip block switch is in the NORMAL position. If switch is properly set, double check wiring and make corrections as required.
15. Use a jumper to short accessory board ground trip block actuate terminals TX-5 and TX-6. Continuity should now exist between TX-7 and TX-8.

16. Use MET tester to apply a fault current above the ground minimum trip level, but below the phase minimum trip level. Verify that the control does not send out a trip signal.
17. Move the ground trip toggle switch on the control's front panel up to the Ground Trip Block position.
18. Use the MET tester to apply a fault current and verify that the control does not issue a trip signal.
19. Remove the jumper between TX-5 and TX-6. Continuity should still exist between TX-7 and TX-8.
20. Apply a ground fault and verify that the control does not issue a trip signal.
21. With ground fault still applied, move ground trip block switch to NORMAL. The control should trip out.
22. Disconnect control from the MET tester and return control to service. For additional information, refer to *Service Information S280-75-1 Form 3A Type ME Electronic Control Installation, Operations, and Testing Instructions*.



*CONTACT UL/CSA RATING

110 Vdc	0.6 A
48 Vdc	1.0 A
24 Vdc	2.0 A
12 Vdc	2.0 A
120 Vac	1.0 A

**QUIESCENT CURRENT DRAW
0.22 ma steady state
0.85 ma when active

***CUSTOMER EXTERNAL LEADS AND SHORTING LOOP SHOULD NOT EXCEED 50 Ω.

Figure 4.
Schematic diagram of remote non-reclose and remote ground trip block accessory KA2035ME2.

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