Training aid

7SR224 three-phase control relay

Type SDR 15.5 kV to 38 kV three-phase distribution recloser

Answers for infrastructure.
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1. MLFB number (model)
2. Ratings label
3. In = CT secondary current
   (In = 1A for type SDR recloser)
   frequency = 50/60 Hz
   (60 Hz for type SDR recloser)
4. Vn = voltage supplied to relay from voltage sensors
   (63.5 for type SDR recloser)
5. Vx = power supply voltage range (48 Vdc for type SDR recloser)
6. BI = voltage to activate a binary input (19 Vdc for type SDR recloser)
7. Programming port

<table>
<thead>
<tr>
<th>Item</th>
<th>Button and/or LED</th>
<th>If associated LED is lit</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>A PH fault</td>
<td>Phase A target</td>
</tr>
<tr>
<td>8</td>
<td>B PH fault</td>
<td>Phase B target</td>
</tr>
<tr>
<td>9</td>
<td>C PH fault</td>
<td>Phase C target</td>
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<tr>
<td>10</td>
<td>Ground fault</td>
<td>Ground fault target</td>
</tr>
<tr>
<td>11</td>
<td>SEF</td>
<td>Sensitive earth fault (SEF) target</td>
</tr>
<tr>
<td>12</td>
<td>Lockout</td>
<td>Recloser is locked out</td>
</tr>
<tr>
<td>13</td>
<td>Aux power OK</td>
<td>AC input power to control cubicle OK</td>
</tr>
<tr>
<td>14</td>
<td>Recloser OK</td>
<td>Capacitors charged and system ready to close or open</td>
</tr>
</tbody>
</table>

**Note:** If buttons are labeled differently than shown above, factory settings have been reprogrammed.
Type 7SR224 protection and control relay operation exercises

Example 1: open recloser
- Press LCD screen
- F1 → Open
- Open SDR pressed
- ENTER to confirm
- Recloser will open
- Green LED at F1 will illuminate.

Example 2: close recloser
- Press LCD screen
- F2 → Close
- Close SDR pressed
- ENTER to confirm
- Recloser will close
- Red LED at F2 will illuminate.

Example 3: toggle reclosing operation on and off
- Press LCD screen
- F3 → Reclose ON
- Reclose On/Off pressed
- ENTER to confirm
- Recloser will not open or close
- Green LED at F3 will toggle on and off.
- LED:
  - On = reclosing enabled
  - Off = reclosing disabled.
Example 4: toggle hot line tag on and off

Press F4

LCD screen

Press

- Recloser will not open or close
- Red LED at F4 will toggle on and off.

LED:
- On = hot line tag enabled
- Off = hot line tag disabled.

Example 5: toggle ground fault protection on and off

Press F5

LCD screen

Press

- Recloser will not open or close
- Red LED at F5 will toggle on and off.

LED:
- On = ground fault protection disabled
- Off = ground fault protection enabled.

Example 6: toggle SEF protection on and off

Press F6

LCD screen

Press

- Recloser will not open or close
- Red LED at F6 will toggle on and off.

LED:
- On = SEF protection disabled
- Off = SEF protection enabled.

Example 7: toggle all protection on and off

Press F7

LCD screen

Press

- Recloser will not open or close
- Red LED at F7 will toggle on and off.

LED:
- On = all protection disabled
- Off = all protection enabled.
Example 8: toggle instantaneous (fast) protection on and off

Press \( \rightarrow \) to navigate to the LCD screen.

Press F8:
- **Inst Protn OFF**

LCD screen:
- INST Protn ON/OFF pressed
- ENTER to confirm

Press \( \rightarrow \) to navigate to the next screen.

Press ENTER to confirm.

- Recloser will not open or close.
- Red LED at F8 will toggle on and off.
- LED:
  - On = INST (fast) protection disabled
  - Off = INST (fast) protection enabled.

---

### Type 7SR224 protection and control relay navigation tree

The following pages will present the navigation tree of the relay settings tree using the navigation buttons.

For all arrows pointing \( \rightarrow \), press:

For all arrows pointing \( \downarrow \), press:

To scroll up \( \uparrow \), press:

To go back one level, press:

To select, press:

For detailed settings mode tree, please refer to page 12.
Press

CONTROL MODE
- CB: OPEN/CLOSED/TRAVELING
- AR: Out of Service
- AR: Trip & Reclose
- AR: Trip & Lockout
- Hotline Working IN/OUT
- GIF Protection IN/OUT
- SGF Protection IN/OUT
- Inst Protection IN/OUT
- Loss of Volts IN/OUT
- Battery Test
- Set Local
- Set L or R
- Set Remote
- Set Service

SETTINGS MODE
- SYSTEM CONFIG
- CT/VT CONFIG
- FUNCTION CONFIG
- CURRENT PROT’N
- VOLTAGE PROT’N
- VOLTAGE PROTN
- FUNCTION CONFIG
- LOAD TEST
- OUTPUT CONFIG
- VOLTAGE PROTN
- INPUT CONFIG
- INPUT CONFIG
- MAINTENANCE
- DATA STORAGE
- COMMUNICATIONS
- GENERAL ALARM METERS
- BATTERY CONDITION
- CAPACITOR CONDITION
- POWER QUALITY METERS
- DEMAND METERS
- BINARY INPUT METERS
- BINARY OUTPUT METERS
- VIRTUAL METERS
- COMMUNICATION METERS
- MISCELLANEOUS METERS
- QUICK LOGIC METERS

INSTRUMENT MODE
- FAIRVORITE METERS
- CURRENT METERS
- VOLTAGE METERS
- FREQUENCY METERS
- POWER METERS
- ENERGY METERS
- DIRECTIONAL METERS
- THERMAL METERS
- AUTORECLOSE METERS
- LOSS OF VOLTS METERS
- MAINTENANCE METERS

FAULT DATA
- FAULT 1
- FAULT 2
- FAULT 3
- FAULT 4
- FAULT 5
- FAULT 6
- FAULT 7
- FAULT 8
- FAULT 9
- FAULT 10

Footnote:
1 This function only available with LOV relay option.
Control mode tree

If the LCD screen does not read ENTER to CONTROL, press until it does.

This will not cause the recloser to operate.

This is the first of four modes in the relay tree, which bring you to multiple screens that will allow you to control the recloser.

To open/close the recloser, the LCD screen will read "CB: OPEN," "CB: CLOSED" or "CB: TRAVELING" indicating the recloser position. Traveling indicates lack of proper position indication. Refer to Troubleshooting table on page 34.

Recloser will open/close.

To toggle auto-reclose on/off, the LCD screen will read "AR: In Service," or "AR: Out of Service" indicating auto-reclose functionality being in or out of service.

Auto-reclose functionality will toggle between in and out of service.

Control mode tree continues on page 9.
AR: Trip & Reclose

Press

To trip and close the recloser. This screen will allow the user to trip the recloser, then the recloser will automatically reclose.

Recloser will trip, then reclose.

AR: Trip & Lockout

Press

To trip and lockout the recloser. This screen will allow the user to trip and lockout the recloser.

Recloser will trip and lockout.

Hotline Working: IN

Press

To toggle hot line tag On/Off. This screen will read "Hotline Working: IN" or "Hotline Working: OUT" indicating hot line tag being in/out of service.

Hot line tag functionality will toggle between in and out of service.

G/F Protection: IN

Press

To toggle ground fault prot'n On/Off, the LCD screen will read "G/F Protection: IN," or "G/F Protection: OUT" indicating ground fault protection is in/out of service.

Ground fault protection will toggle between in and out of service.

SGF Protection: In

Press

To toggle sensitive ground fault protection On/Off, the LCD screen will read "SGF Protection: IN," or "SGF Protection: OUT," indicating sensitive ground fault protection is in/out of service.

Sensitive ground fault protection will toggle between in and out of service.

Control mode tree continues on page 10.
To toggle Inst (fast) Protection On/Off, the LCD screen will read “Inst Protection: IN,” or “Inst Protection: OUT” indicating Inst (fast) protection is in or out of service.

Press to select

Press

Inst (fast) Protection will toggle between in and out of service.

To toggle between Loss of Volts On/Off, the LCD screen will read "Loss of Volts: In," or "Loss of Volts: Out" indicating loss of voltage detection is in or out of service.

Note: This function is only available with LOV relay option.

Press to select

Press

Loss of volts will toggle between in and out of service.

To manually initiate a battery test. This LCD screen will allow the user to manually initiate a battery test.

Press

Control will proceed through a battery test. (A capacitor test will immediately follow upon completion of the battery test.)

To set operational mode to local, the LCD screen will read "Set Local: mode" (where mode is local, L or R, remote or out of service.)

Press

Relay will be in local mode.

To set operational mode to L or R, the LCD screen will read "Set L or R: mode" (where mode is local, L or R, remote or out of service.)

Press

Relay will be in L or R mode.

Control mode tree continues on page 11.
Set Remote

To set operational mode to Remote, the LCD screen will read "Set Remote: mode" (where mode is local, L or R, remote or out of service.)

Press

Recloser will be in remote mode.

Press

Set Service

To set operational mode to Out of Service, the LCD screen will read "Set Service: mode" (where mode is local, L or R, remote or out of service.)

Press

Relay will be in out-of-service mode.

Press

Note: The Out of Service mode will inhibit all local and remote control of relay. To regain local control, refer to Changing the Operating Mode from the settings tree on page 23.
Press FUNCTION CONFIG

This menu allows the user to enable or disable functions and features available in the relay.

Press CURRENT PROT'N

This menu allows the user to change current protection settings. For examples of how to change these settings, please refer to page 22.

Press VOLTAGE PROT'N

This menu allows the user to change voltage protection settings.

Press SYSTEM CONFIG

This menu contains system settings, including language, frequency, date, passwords, etc.

Press CT/VT CONFIG

This menu allows the user to change current transformers and voltage transformers settings.

Press SETTINGS MODE

This is the second of four modes in the relay tree, which bring you to multiple screens that will allow you to control the recloser.

Press SETTINGS MODE

Settings mode tree continues on page 13.
This menu allows the user to change supervision settings, including battery and capacitor tests, CT and VT supervision, broken conductor, etc..

This menu allows the user to change control and logic settings.

This menu allows the user to change binary input settings.

This menu allows the user to change binary output settings.

This menu allows the user to change recloser maintenance settings, including counters and circuit breaker wear monitors.

This menu allows the user to change data storage settings, including waveform triggers, waveform record duration, manual waveform trigger, fault record time and data log information.

This menu allows the user to change communication settings, including protocol baud rate, parity, etc. For an example of how to change these settings, please refer to page 24.
Settings mode detailed tree structure

**SETTINGS MODE**

**SYSTEM CONFIG**
- Language Setting
- Active Group
- System Frequency
- View/Edit Group
- Setting Dependencies
- Favorite Meters Timer
- Backlight Timer
- System Frequency
- Vx Nom Voltage
- View/Edit Group
- Vx Voltage Trim Magnitude
- Setting Dependencies
- Vx Voltage Trim Angle
- Function Config
  - Phase VT Ratio Prim
  - Phase VT Ratio Sec
  - Vx Nom Voltage
  - Vx Voltage Trim Magnitude
  - Phase VT Ratio Prim
  - Vx VT Ratio Sec
  - Phase Current Input
  - Phase CT Ratio
  - Ground Current Input
  - Ground CT Ratio
  - I1, I2, I3 Connections
  - V1, V2, V3 Connections
  - Phase Rotation
  - Phase Overcurrent
  - Voltage Cont O/C
  - Cold Load
  - Measured G/F
  - Sensitive G/F
  - Restricted G/F
  - NPS Overcurrent
  - Under Current
  - Thermal
  - Phase U/O Voltage
  - Phase VT Ratio Prim
  - Phase VT Ratio Sec
  - Vx Nom Voltage
  - Vx Voltage Trim Magnitude
  - Phase VT Ratio Prim
  - Vx VT Ratio Sec
  - Phase Current Input
  - Phase CT Ratio
  - Ground Current Input
  - Ground CT Ratio
  - I1, I2, I3 Connections
  - V1, V2, V3 Connections
  - Phase Rotation
  - Phase Overcurrent
  - Voltage Cont O/C
  - Cold Load
  - Measured G/F
  - Sensitive G/F
  - Restricted G/F
  - NPS Overcurrent
  - Under Current
  - Thermal
  - Phase U/O Voltage
  - Phase VT Ratio Prim
  - Phase VT Ratio Sec
  - Vx Nom Voltage
  - Vx Voltage Trim Magnitude
  - Phase VT Ratio Prim
  - Vx VT Ratio Sec
  - Phase Current Input
  - Phase CT Ratio
  - Ground Current Input
  - Ground CT Ratio
  - I1, I2, I3 Connections
  - V1, V2, V3 Connections
  - Phase Rotation
  - Phase Overcurrent
  - Voltage Cont O/C
  - Cold Load
  - Measured G/F
  - Sensitive G/F
  - Restricted G/F
  - NPS Overcurrent
  - Under Current
  - Thermal
  - Phase U/O Voltage

**CT/VT CONFIG**
- Phase Nom Voltage
  - Phase Voltage Trim Magnitude
  - Phase Voltage Trim Angle
  - Phase Voltage Config

Settings mode detailed tree continues on page 15.
Footnote: 1 This function only available with LOV relay option.
VOLTAGE PROT’N

NPS OVERCURRENT

UNDERCURRENT

THERMAL

PHASE U/O VOLTAGE

NPS OVERVOLTAGE

NEUTRAL OVERVOLTAGE

U/O FREQUENCY

SUPERVISION

CB FAIL

VT SUPERVISION

CT SUPERVISION

BROKEN CONDUCTOR

TRIP CCT SUPERVISION

INRUSH DETECTOR

BATTERY TEST

CAPACITOR TEST

Voltage Input Mode

Battery Test Enable

Cap Element

Battery Test Rate

Battery Test Time

Battery Test Load

Battery Load Drop

Settings mode detailed tree continues on page 17.
Settings mode detailed tree continues on page 18.
DATA STORAGE

DEMAND/DATA LOG

WAVEFORM STORAGE

FAULT STORAGE

EVENT STORAGE

ENERGY STORAGE

COMMUNICATIONS

Station Address

COM1-RS485 Protocol

COM1-RS485 Baud Rate

COM1-RS485 Parity

COM1-RS485 Mode

COM2-USB Protocol

COM2-USB Mode

DNP3 Unsolicited Events

DNP3 Destination Address

DNP3 Application Timeout
Example 1: changing the active settings group

If the LCD screen does not read ENTER to CONTROL, press until it does.

This will not cause the recloser to operate.

Press

CONTROL MODE

Press

SETTINGS MODE

Press

SYSTEM CONFIG
  to view

Press

Active G1
Active Group
1

Press

Active G1
Active Group
1

Blinking

Press up or down buttons to change active setting group to desired setting group.

Press ENTER button to accept changes.

Active G2
Active Group
2

Notice the screen has updated from G1 to G2 indicating the new active setting group.

When finished making changes, press CANCEL button three times to return to initial ENTER to CONTROL screen.

Done
Example 2: changing the settings group that you are viewing/editing

If the LCD screen does not read ENTER to CONTROL, press \textit{CANCE}L until it does. This will not cause the recloser to operate.

Press

\begin{itemize}
  \item \textit{CONTROL MODE}
  \item \textit{SETTINGS MODE}
  \item \textit{SYSTEM CONFIG}
\end{itemize}

Press

\begin{itemize}
  \item \textit{View/Edit Group 1}
  \item \textit{View/Edit Group 2}
  \item \textit{CANCEL}
\end{itemize}

Press up or down buttons to change active setting group to desired setting group.

Press \textit{ENTER} button to accept changes.

Notice the screen has updated from G1 to G2 indicating the new active setting group.

When finished making changes, press \textit{CANCEL} button three times to return to initial ENTER to CONTROL screen.

Done
Example 3: changing a password

Press

CONTROL MODE

Press

SETTINGS MODE

Press

SYSTEM CONFIG

To view

Press

Active G1

Language Setting

English

Press until the following appears

Active G1

Settings Password

Not Active

Press

Active G1

New Password

Blinking

Press up or down buttons to enter a four-digit alphanumeric password.

Press TEST/RESET button to move on digit to the right.

Press ENTER button to accept changes.

Press

Active G1

Confirm Password

Repeat previous step.

Active G1

Setting Password

Code = 1682678776

The relay will present a code. Retain this code in case of a lost password. Refer to the instruction manual for the Siemens type 7SR224 recloser control relay (standard control and protection relay option) http://www.usa.siemens.com/reclosers

When finished making changes, press CANCEL button three times to return to initial ENTER to CONTROL screen.

You will now be prompted to enter the password once before you can make a setting change. Follow the same process to change the password at the control level.

Note: To deactivate the password feature, change the password to "NONE."

Done
Example 4: changing the pickup level of phase overcurrent element 51-1

If the LCD screen does not read ENTER to CONTROL, press CANCEL until it does.

This will not cause the recloser to operate.

Press

CONTROL MODE

Press

SETTINGS MODE

Press until the following appears

CURRENT PROTNS to view

Press

CURRENT PROTNS PHASE OVERCURRENT to view

Press

Active G1 View G1 51-1 Setting _x In

Press up or down buttons to change desired pickup level to desired current level.

Press ENTER button to accept changes.

When finished making changes, press CANCEL button four times to return to initial ENTER to CONTROL screen.

Done

Note: "Active G1 View G1" means that the active group settings group is group 1. If this is not the group you wish to edit, follow the instructions in Example 2 on page 19 to change the settings group.

Note: "_xIn" refers to the value times the nominal current that equals the trip setting. In = 800 A for type SDR reclosers.
Example 5: changing the operating mode from the settings tree

If the LCD screen does not read ENTER to CONTROL, press until it does. This will not cause the recloser to operate.

Press

CONTROL MODE

Press

SETTINGS MODE

Press

SYSTEM CONFIG to view

Press

Language Setting

Press until the following appears

Active G1 Operating Mode

Press

Active G1 Operating Mode

Press

Out Of Service

Blinking

Press up or down buttons to change operating mode to desired mode.

Press ENTER button to accept changes.

Notice the screen has updated from Out Of Service to Local or Remote, Remote or Local mode.

When finished making changes, press CANCEL button three times to return to initial ENTER to CONTROL screen.

Done
Example 6: changing the baud rate on COM1

If the LCD screen does not read ENTER to CONTROL, press CANCEL until it does. This will not cause the recloser to operate.

Press

CONTROL MODE

Press

SETTINGS MODE

Press until the following appears

COMMUNICATIONS to view

Press

Active G1 View G1
51-1 Setting
800.00A

Press up or down buttons to change baud rate as desired.

Press ENTER button to accept changes.

When finished making changes, press CANCEL button four times to return to initial ENTER to CONTROL screen.

Done

Press

ACTIVE G1 Station Address
0

Press until the following appears

Active G1 COM1-RS485 Baud Rate
19200

Blinking
Example 7: manually initiating the battery test

If the LCD screen does not read ENTER to CONTROL, press until it does.

This will not cause the recloser to operate.

Press

CONTROL MODE

Press until the following appears

Battery Test

Press

Battery Test
Confirm Start

Press

Battery Test
Active

Note: Result will be displayed at end of test.

Done
Instrument mode tree

Press

CONTROL MODE

Press

SETTINGS MODE

Press

INSTRUMENT MODE

Press

FAVORITE METERS

Press

CURRENT METERS

Press

VOLTAGE METERS

Press

FREQUENCY METERS

Press

POWER METERS

Press

ENERGY METERS

Instrument mode tree continues on page 27.
This menu will allow the user to view the directional meters if directional current elements are used.

Press

This menu will allow the user to view the thermal meters.

Press

This menu will allow the user to view the auto-reclose meters.

Press

This menu will allow the user to view the loss-of-volts meters if loss-of-volts function is used. This is only available with the LOV relay option.

Press

This menu will allow the user to view the maintenance meters - counters.

Press

This menu will allow the user to view the general alarm meters, which indicates which alarms are present.

Press

This menu will allow the user to view the battery condition meters.

Press

This menu will allow the user to view the capacitor condition meters.

Press

This menu will allow the user to view the power quality meters: SIARFI, SMARFI, Interrupts, etc.

Press

This menu will allow the user to view the demand meters.

Press

Instrument mode tree continues on page 28.
This menu will allow the user to view the binary output meters - →
_ indicates status is low, 1 indicates status is high.

Press

This menu will allow the user to view the virtual meters - →
_ indicates status is low, 1 indicates status is high.

Press

This menu will allow the user to view the communications meters. →

Press

This menu will allow the user to view the miscellaneous meters: →
date, time, waveform records, fault records, event records and data log records.

Press

This menu will allow the user to view the quick logic meters - →
_ indicates status is low, 1 indicates status is high.
Viewing meter examples

Example 1: viewing the current meters and adding them to favorite meters

If the LCD screen does not read ENTER to CONTROL, press until it does.
This will not cause the recloser to operate.

Press until the following appears

Press until the following appears

Press

Press

Press

Press

Press ENTER to make the meter a favorite meter.

Press ENTER to control

Press the down button to view other current meters:

- Secondary current
- Nominal current (for reclosers, In = 1A)
- Primary ground current
- Secondary ground current
- Nominal ground current (for reclosers, In = 1A)
- I-sequence components
- Second harmonic current
- Last trip phase fault
- Last trip earth fault.

Displays primary current levels.

Any meter or meters in the instrument mode may be added to favorite meters. The favorite meters may be displayed on the LCD screen, in rotating order, after no buttons have been pressed for a selectable period of time. To turn on and set the timer, select Setting Mode ➔ System Config ➔ Favorite Meters Timer.
Example 2: viewing the voltage meters and adding them to favorite meters

If the LCD screen does not read ENTER to CONTROL, press until it does. This will not cause the recloser to operate.

Press

CONTROL MODE

Press until the following appears

INSTRUMENTS MODE

Press until the following appears

Voltage Meters

to view

Press

Primary Ph-Ph Voltage

Vab 0.00kV
Vbc 0.00kV
Vca 0.00kV

Displays primary phase-to-phase voltage levels

Press

Press ENTER to make the meter a favorite meter.

Press ENTER to confirm

Add to Favorites

YES

Blinking

Done

Any meter or meters in the instrument mode may be added to favorite meters. The favorite meters may be displayed on the LCD screen, in rotating order, after no buttons have been pressed for a selectable period of time. To turn on and set the timer, select Setting Mode ➔ System Config ➔ Favorite Meters Timer.

Press the down button to view other voltage meters:

- Secondary phase-phase voltage
- Nominal phase-phase voltage (for reclosers, \(V_n = 63.5\) V)
- Primary phase-neutral voltage
- Secondary phase-neutral voltage
- Nominal phase-neutral voltage (for reclosers, \(V_n = 63.5\) V)
- V-sequence components
- Calculated ground voltage
- CS/NVD voltage (VX)
- Last trip voltage.
Example 3: viewing the demand meters and adding them to favorite meters

If the LCD screen does not read ENTER to CONTROL, press until it does. This will not cause the recloser to operate.

Press

CONTROL MODE

Press until the following appears

INSTRUMENTS MODE

Press until the following appears

Demand Meters to view

Displays phase A voltage demand

Press the down button to view other demand meters:
- Phase demand voltage (A, B and C)
- Phase-phase demand voltage (AB, BC and CA)
- Phase demand current (A, B and C)
- Ground demand current
- Power (P three-phase demand MW)
- Power (Q three-phase demand MVAR)
- Power (S three-phase demand MVA)
- Frequency demand.

Press ENTER to make the meter a favorite meter.

Confirm Add to Favorites

YES Blinking

Done

Any meter or meters in the instrument mode may be added to favorite meters. The favorite meters may be displayed on the LCD screen, in rotating order, after no buttons have been pressed for a selectable period of time. To turn on and set the timer, select Setting Mode ➔ System Config ➔ Favorite Meters Timer.
To view the fault data for the fault selected, press \( \text{TEST/RESET} \) to view the fault data. Then press \( \text{Enter} \) for more data.
Viewing fault data example

Example 1: fault data record 1

If the LCD screen does not read ENTER to CONTROL, press until it does.

Press

CONTROL MODE
Press until the following appears

FAULT DATA MODE

Fault 1 03/04/09 to view

Displays date and time of Fault 1.

Press

Fault 1 03/04/09
14:57:28:00.300

Example 1: fault data record 1

Displays date and time of Fault 1.

Press

Fault 1
G1 51G 468C 50BF-1
SO-1 51-2

Displays elements that picked up during Fault 1.

Press

Fault 1
Ia=0.304kA
Ib=0.000kA

Displays Ia and Ib levels during Fault 1.

Press

Fault 1
Ic=0.304kA
In=0.060kA

Displays Ic and In levels during Fault 1.

Press

Fault 1
Vb=0.000kV
Vc=0.000kV

Displays Vb and Vc levels during Fault 1.

Done
## Troubleshooting

<table>
<thead>
<tr>
<th>Malfunction</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>'AUX Power OK' LED not illuminated</td>
<td>1. Check miniature circuit breaker CB1 and switch on if necessary.</td>
</tr>
<tr>
<td></td>
<td>2. Check the status of the auxiliary power supply.</td>
</tr>
<tr>
<td>'Recloser OK' LED not illuminated</td>
<td>Check the discharge switch on PCB2 circuit board and verify it is in the operating position.</td>
</tr>
<tr>
<td>Position indication shown as 'Travelling'</td>
<td>Travelling' indicated that no position indication signals are received from the recloser or that both open and closed signals exist simultaneously.</td>
</tr>
<tr>
<td></td>
<td>1. Check the recloser position.</td>
</tr>
<tr>
<td></td>
<td>2. Check the control cable.</td>
</tr>
<tr>
<td>Relay shows 'Out Of Service' and control mode and all buttons are not functional</td>
<td>Refer to example 5 on page 23 for instructions on returning the unit to desired operating mode.</td>
</tr>
<tr>
<td>Unit will not power up after a quick power cycle</td>
<td>Relay requires 10 seconds power down before rebooting. Remove power for this time interval and then restart.</td>
</tr>
<tr>
<td>A port error message is displayed</td>
<td>This error occurs when the relay chassis communications ports do not match the relay configuration. Replace the relay chassis with the proper model.</td>
</tr>
<tr>
<td>Relay does not appear to be responding as programmed</td>
<td>Verify that the 'Active' setting group matches the desired group number. Refer to examples 1 on page 19 and 2 on page 20.</td>
</tr>
<tr>
<td>Rear panel communications not functioning</td>
<td>Check the baud rate and parity settings for the selected communications port. Refer to example 6 on page 24.</td>
</tr>
<tr>
<td>Favorite meters do not display and scroll</td>
<td>Add desired meters to favorite meters and set favorite meters timer. Refer to Viewing Meter Examples beginning on page 29.</td>
</tr>
</tbody>
</table>
The information provided in this document contains merely general descriptions or characteristics of performance which in case of actual use do not always apply as described or which may change as a result of further development of the products. An obligation to provide the respective characteristics shall only exist if expressly agreed in the terms of contract.

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