Littelfuse
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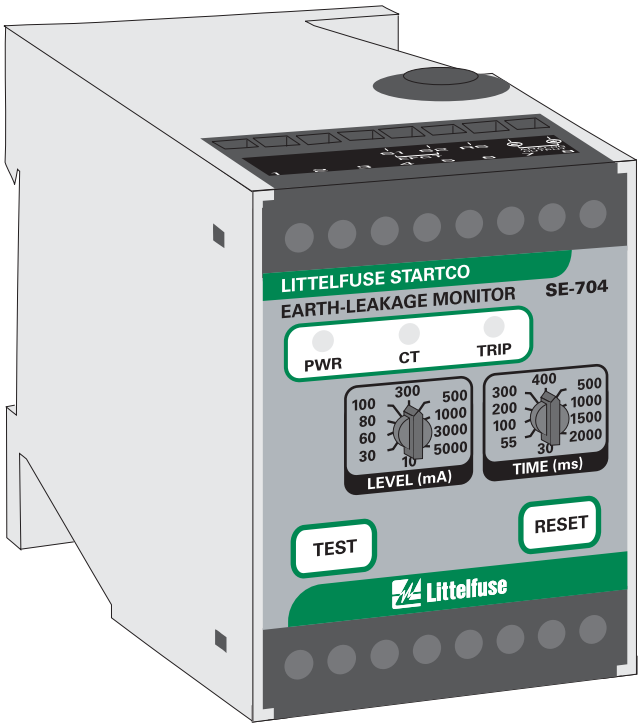
SE-704 MANUAL

EARTH-LEAKAGE MONITOR

REVISION 7-C-082814



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DISCLAIMER

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1. GENERAL

The SE-704 is a microprocessor-based earth-leakage monitor for ac power supply systems that require earth-leakage detection as low as 10 mA. It is uniquely suited for very sensitive earth-fault protection on systems with significant harmonic content. Its output relay can operate in the fail-safe or non-fail-safe mode for undervoltage or shunt-trip applications. The SE-704 has one output relay with isolated normally open and normally closed contacts for use in independent control circuits. Additional features include LED trip and power indication, autoreset or latching trips with front-panel and remote reset, trip memory, test button, self diagnostics, 0- to 1-mA and 0- to 5-V analog outputs, CT verification with LED indication, digital selector switches, and switch-selectable algorithms for fixed-frequency or variable-frequency applications.

Earth-leakage current is sensed by an SE-CS30-series core-balance earth-fault current transformer (CT). The trip level of the earth-leakage circuit is digital-switch selectable from 10 to 5,000 mA. Trip time is digital-switch selectable from 30 to 2,000 ms.

2. OPERATION

2.1 CONFIGURATION-SWITCH SETTINGS

See Fig. 1.

2.1.1 RELAY OPERATING MODE

Switch 1 is used to set the operating mode of the output relay. In the fail-safe mode, the output relay energizes when the earth-leakage circuit is not tripped. In the fail-safe mode, non-volatile memory retains the trip status of the SE-704. If tripped, and the supply voltage is cycled, the SE-704 will remain tripped, with the trip relay de-energized and the TRIP LED on, until reset.

In the non-fail-safe mode, the output relay energizes when an earth-leakage trip occurs. In the non-fail-safe mode, trip status is not retained in non-volatile memory.

2.1.2 FILTER SELECTION

Switch 2 is used to select the filtering algorithm for a fixed-frequency (50/60 Hz) or variable-frequency application, for earth-leakage trip levels of 500 mA or less. The peak-detection algorithm is used for settings greater than 500 mA, regardless of the filter selection.

The FIXED FREQUENCY setting uses a DFT filter that allows lower trip levels to be used by rejecting harmonics that can cause nuisance tripping. The VARIABLE FREQUENCY setting uses a peak-detection algorithm with a wider band width for fault detection in variable-frequency drive applications.

2.1.3 CT VERIFICATION

Switch 3 is used to enable CT verification. In the ON position, a trip will occur if the SE-CS30 current sensor is disconnected.

2.1.4 RESET MODE

Switch 4 is used to select autoreset or latching trips. See Section 2.2.3.

2.1.5 ANALOG OUTPUT

Switch 5 is used to select analog-output scaling. Selecting % OF 5A results in full scale output (1 mA or 5 V) when earth-fault current is 5 A. Selecting % OF SETTING results in full scale output when earth-fault current equals the trip-level setting. See Section 2.4.

2.2 FRONT-PANEL CONTROLS

2.2.1 EARTH-LEAKAGE TRIP LEVEL

The LEVEL (mA) selection switch is used to set the earth-leakage trip level. For earth-leakage detection, the earth-leakage trip level must be substantially below the prospective earth-fault current. To avoid sympathetic tripping, the trip level must be above the charging current of the protected feeder.

2.2.2 EARTH-LEAKAGE TRIP TIME

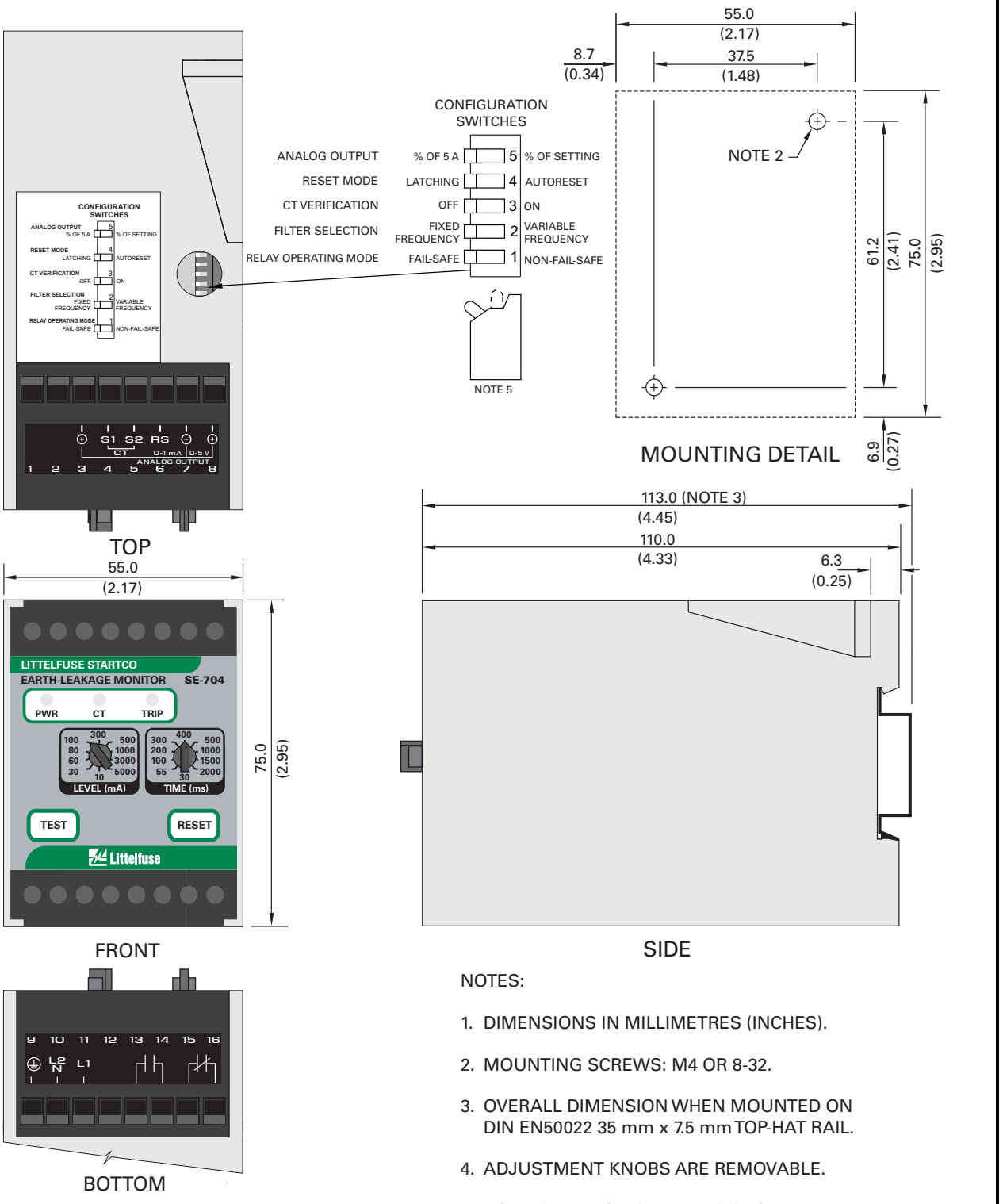
The SE-704 has a definite-time trip characteristic. The TIME (ms) selector switch is used to set the earth-leakage trip time for coordination with upstream and downstream earth-fault devices. Coordination requires the same trip level for all earth-leakage devices in a system and the trip time to progressively increase upstream. The amount of equipment removed from the system will be a minimum if the first earth-leakage device to operate is the one immediately upstream from the fault.

2.2.3 RESET

If the Reset Mode switch is in the LATCHING position, a trip remains latched until the RESET button is pressed or the remote-reset terminals (6 and 7) are momentarily connected. In the non-fail-safe relay operating mode, cycling the supply voltage will also reset the SE-704.

If the Reset Mode switch is in the AUTORESET position, a trip will reset when the fault is removed.

The reset circuit responds only to a momentary closure so that a jammed or shorted button will not prevent a trip. The front-panel RESET button is inoperative when the remote-reset terminals are connected.



NOTES:

1. DIMENSIONS IN MILLIMETRES (INCHES).
2. MOUNTING SCREWS: M4 OR 8-32.
3. OVERALL DIMENSION WHEN MOUNTED ON DIN EN50022 35 mm x 7.5 mm TOP-HAT RAIL.
4. ADJUSTMENT KNOBS ARE REMOVABLE.
5. CONFIGURATION SWITCHES SHOWN IN DEFAULT POSITION.

FIGURE 1. SE-704 Outline and Mounting Details.

2.2.4 TEST

The TEST button is used to test the earth-leakage circuit, the indication, and the output relay. When the TEST button is pressed for one second, a test signal is applied to the earth-leakage-detection circuit, the circuit will trip, the TRIP LED will light, and the output relay will operate.

2.3 FRONT-PANEL INDICATION

2.3.1 POWER

The green LED labelled PWR indicates presence of supply voltage.

2.3.2 TRIP

The red LED labelled TRIP indicates a trip. A solid red LED indicates an earth-leakage trip and a flashing LED indicates a trip initiated by a CT fault. Two fast flashes of the TRIP LED indicate a diagnostic trip. See Section 2.5.

2.3.3 CT VERIFICATION

The green LED labelled CT indicates that an SE-CS30 sensor is connected, even if CT verification is disabled.

2.4 ANALOG OUTPUTS

The non-isolated, 0- to 1-mA (terminal 3) and 0- to 5-V (terminal 8) analog outputs indicate earth-leakage current sensed by the SE-CS30 series current sensor. The output is linear between zero and full scale. Use a PGA-0500 Analog Percent Current Meter to indicate earth-leakage current. See Figs. 2, 3, and 9.

2.5 SELF DIAGNOSTICS

A diagnostic trip is indicated by two fast flashes of the TRIP LED. It can be caused by a problem detected by the watchdog timer, or from an incorrect reading from non-volatile memory. Press RESET or cycle supply voltage. If the problem persists, consult the factory.

3. INSTALLATION

NOTE: Mounting, terminal-block connections and wiring must conform to applicable local electrical codes. Check all applicable codes prior to installation.

This earth-leakage monitoring system consists of an SE-704 Earth-Leakage Monitor and an SE-CS30-series current sensor connected as shown in Figs. 2 and 3.

An SE-704 can be surface or DIN-rail mounted. See Fig. 1. Panel mounting requires a PMA-55 or PMA-60 Panel-Mount Adapter. See Figs. 7 and 8.

Use terminal 11 (L1) as the line terminal on ac systems or the positive terminal on dc systems. Use terminal 10 (L2/N) as the neutral terminal on ac systems or the negative terminal on dc systems. Connect terminal 9 (⏚) to earth.

Pass the phase conductors through the CT window and position them in the centre of the opening—for 4-wire and single-phase systems also pass the neutral conductor through the CT window, as shown in Figs. 2 and 3. Do not pass earth conductors through the CT window. In applications that require shields or drain wires to pass through the CT window, return them through the CT window before connecting them to earth. Connect the SE-CS30-series current sensor to terminals 4 and 5, connect the shield to terminal 5, and earth terminal 5. See Figs. 4, 5, and 6 for SE-CS30 current-sensor dimensional drawings.

Remove the connection to terminal 9 for dielectric-strength testing—all inputs and outputs have ANSI/IEEE C37.90 surge protection circuits that conduct above 300 Vac.

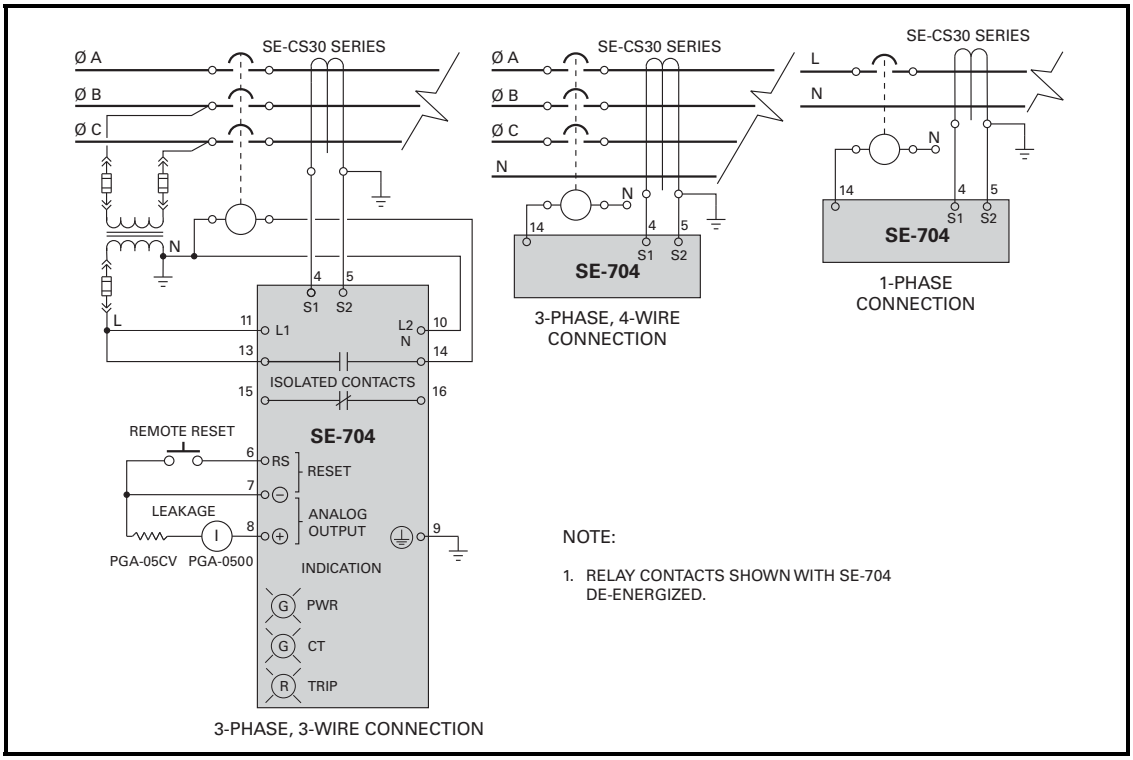


FIGURE 2. Typical Connection Diagrams.

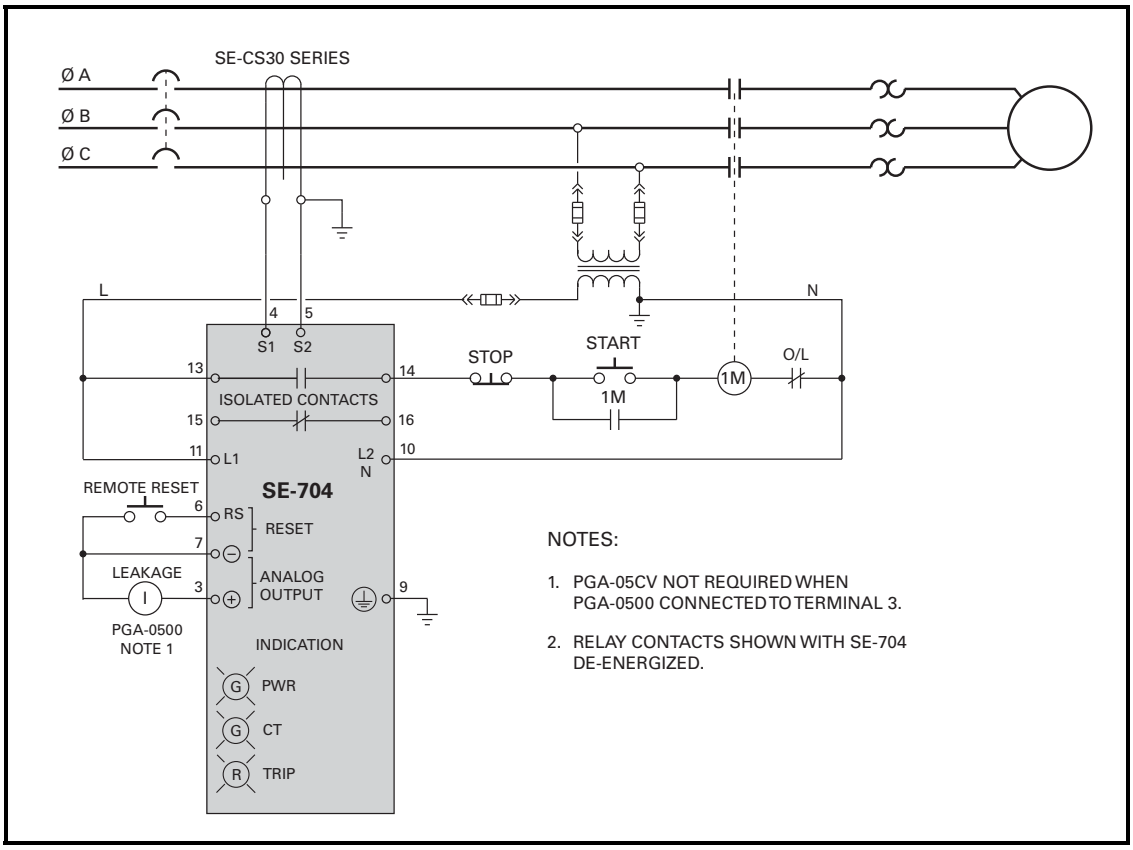


FIGURE 3. Typical Three-Phase-Starter Connection.

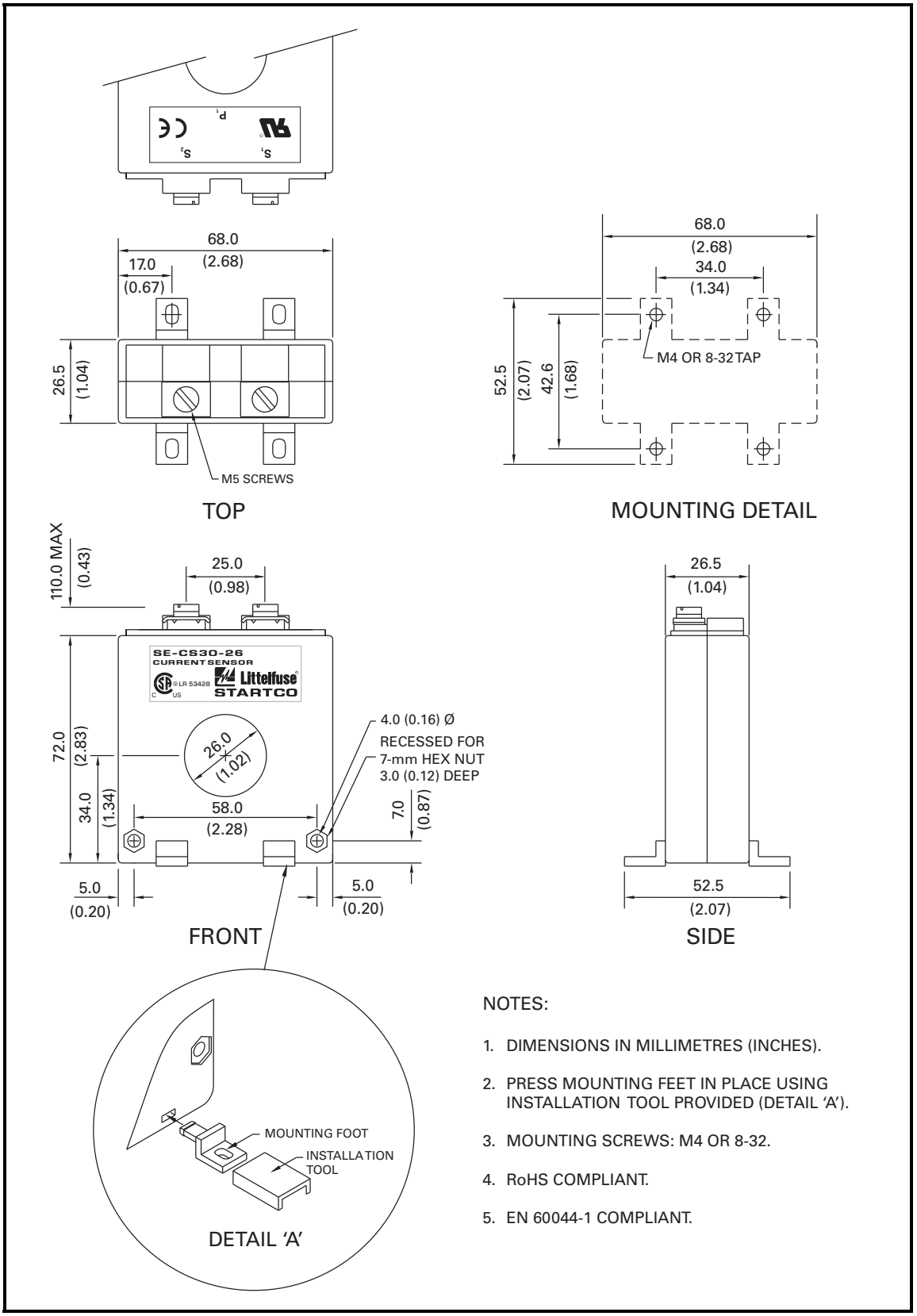
4. SE-704 COMPATIBILITY

The current SE-704 has been enhanced with the addition of non-volatile trip memory for the fail-safe relay operating mode. Prior to hardware revision 01, a mechanical flag was used instead of non-volatile trip memory. The current revision of the SE-704 can directly replace previous revision-00 units. The hardware-revision number is listed on the SE-704 model/serial-number label affixed to the SE-704 enclosure. SE-704 generations are compared in Table 1.

The SE-704 was previously available with SE-704-01 120-Vac and SE-704-02 240-Vac control-voltage options. These have been discontinued. An SE-704-0U universal 120/240-Vac/Vdc unit can directly replace an SE-704-01 or SE-704-02.

TABLE 1. TRIP-FEATURES COMPARISON

		HARDWARE REVISION	
		00	≥ 01
LED trip indication		Yes	Yes
Mechanical flag trip indication		Yes	No
Non-volatile trip memory		No	Yes
Device state after supply voltage cycled when tripped (earth fault removed)	Fail-safe	Trip LED: Off Trip relay: Energized Trip flag: Red	Trip LED: On Trip relay: De-energized
	Non-fail-safe	Trip LED: Off Trip relay: De-energized Trip flag: Red	Trip LED: Off Trip relay: De-energized



NOTES:

1. DIMENSIONS IN MILLIMETRES (INCHES).
2. PRESS MOUNTING FEET IN PLACE USING INSTALLATION TOOL PROVIDED (DETAIL 'A').
3. MOUNTING SCREWS: M4 OR 8-32.
4. RoHS COMPLIANT.
5. EN 60044-1 COMPLIANT.

FIGURE 4. SE-CS30-26 Current Sensor.

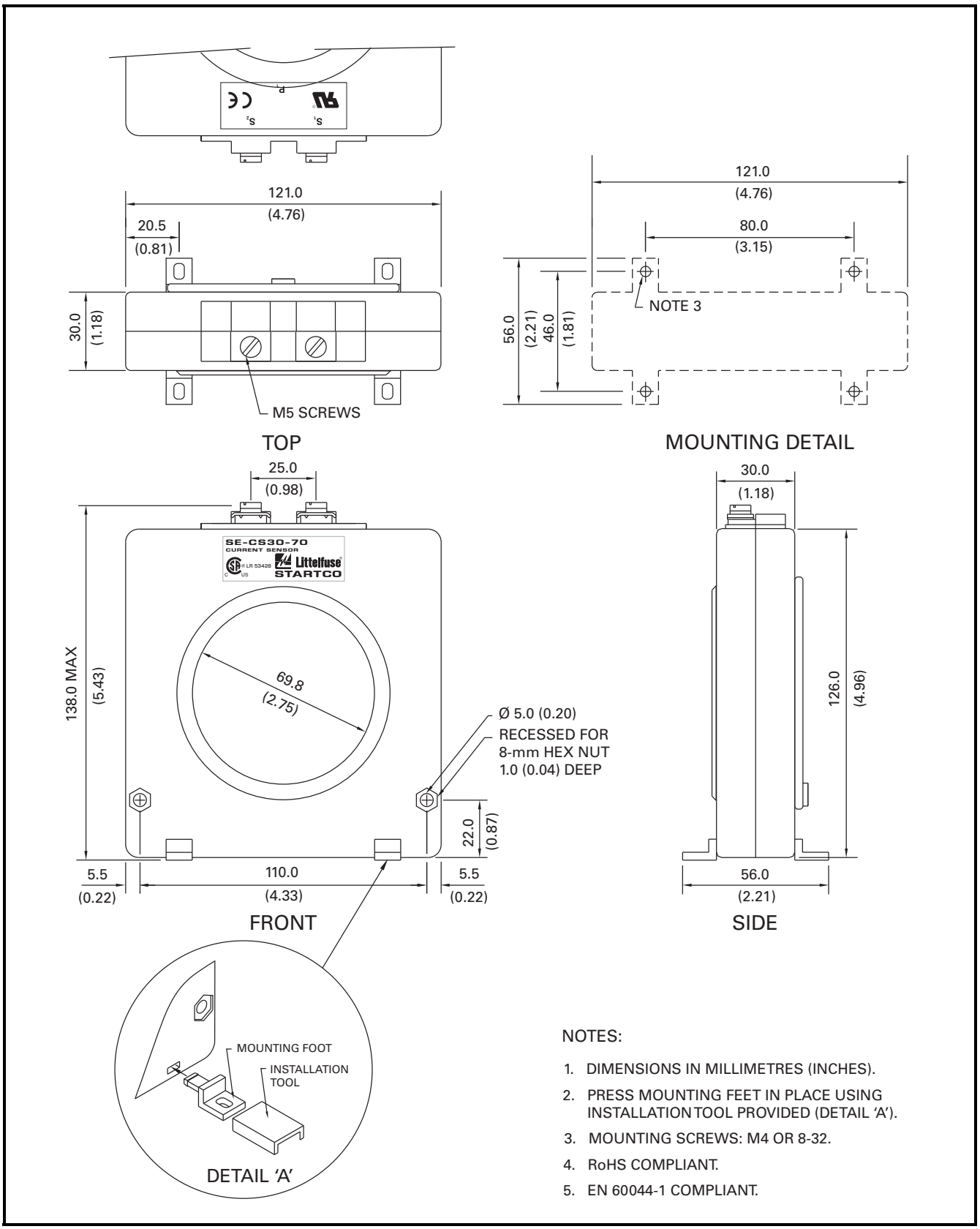
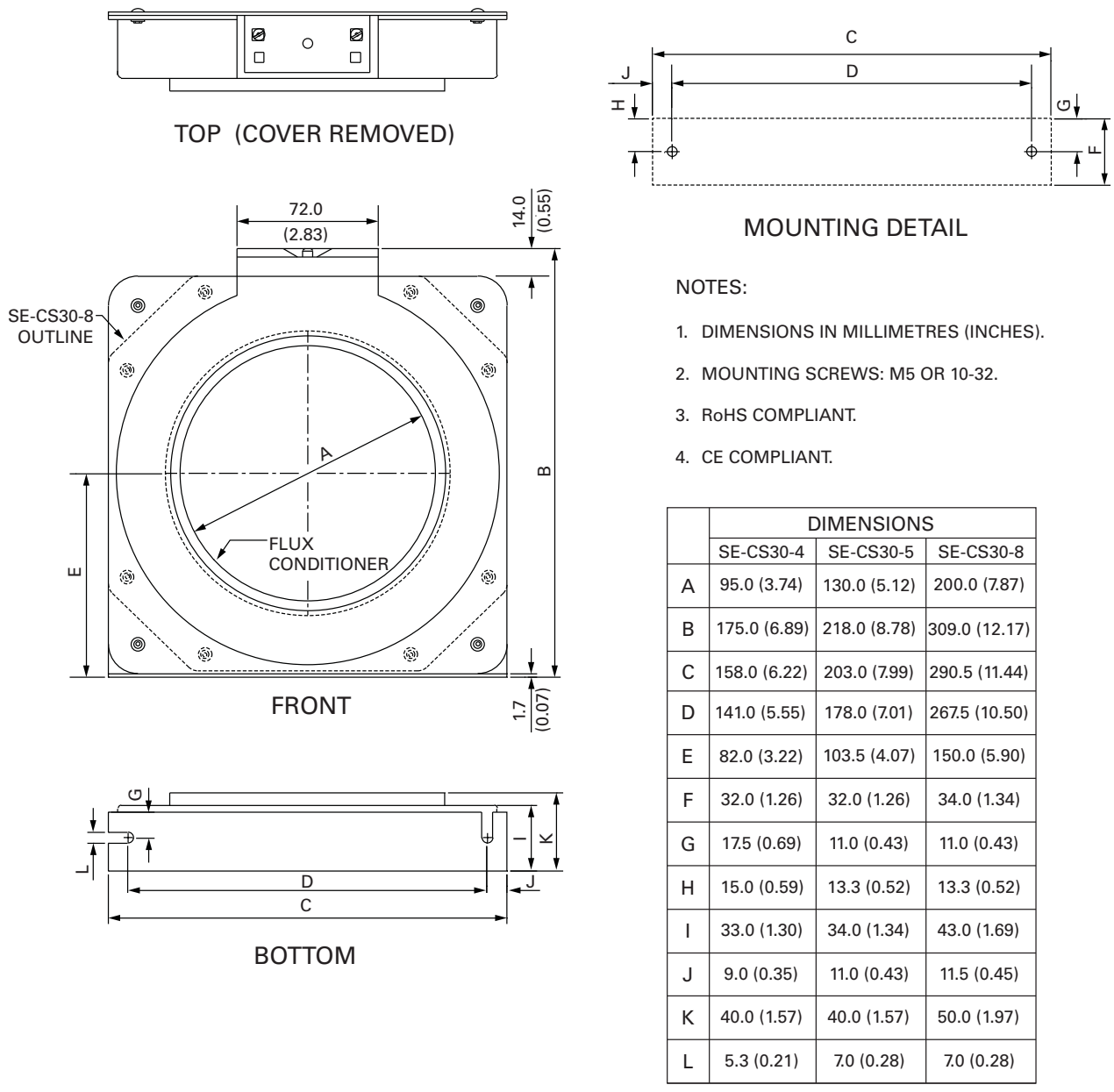


FIGURE 5. SE-CS30-70 Current Sensor.

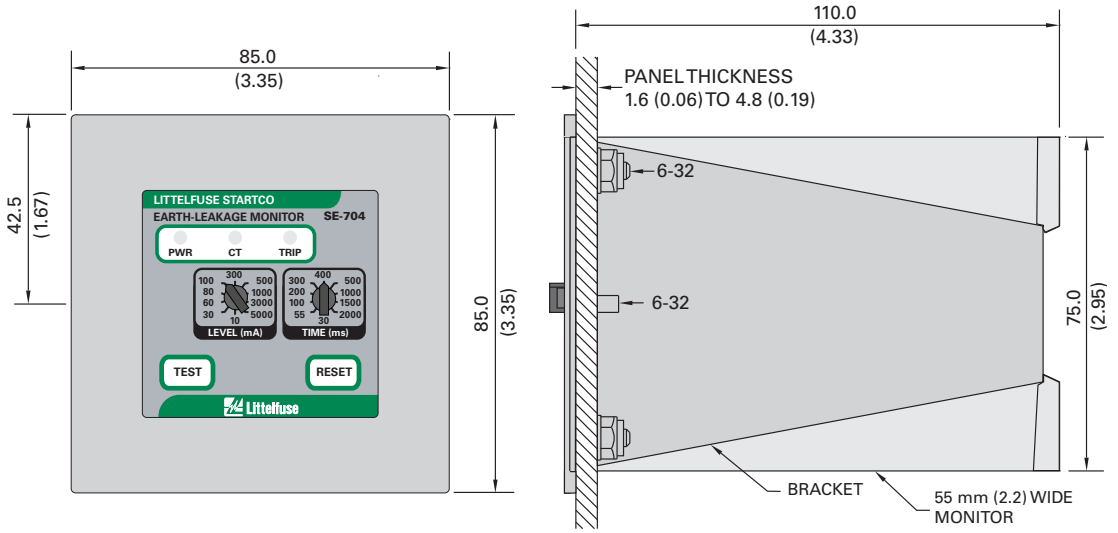


NOTES:

1. DIMENSIONS IN MILLIMETRES (INCHES).
2. MOUNTING SCREWS: M5 OR 10-32.
3. RoHS COMPLIANT.
4. CE COMPLIANT.

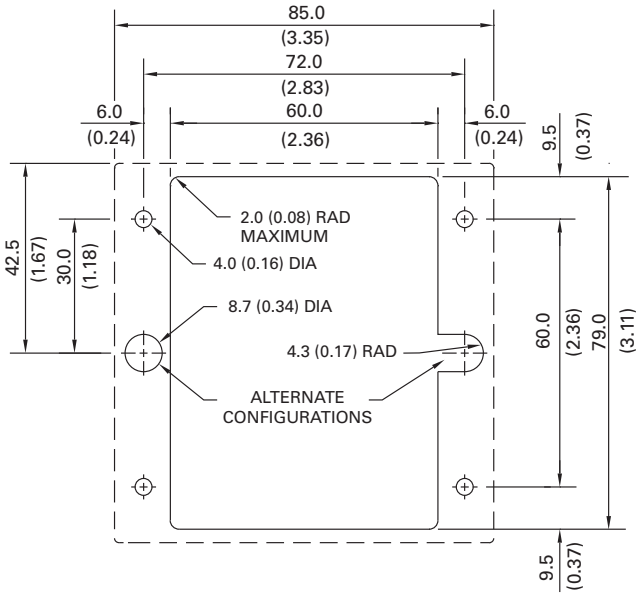
	DIMENSIONS		
	SE-CS30-4	SE-CS30-5	SE-CS30-8
A	95.0 (3.74)	130.0 (5.12)	200.0 (7.87)
B	175.0 (6.89)	218.0 (8.78)	309.0 (12.17)
C	158.0 (6.22)	203.0 (7.99)	290.5 (11.44)
D	141.0 (5.55)	178.0 (7.01)	267.5 (10.50)
E	82.0 (3.22)	103.5 (4.07)	150.0 (5.90)
F	32.0 (1.26)	32.0 (1.26)	34.0 (1.34)
G	17.5 (0.69)	11.0 (0.43)	11.0 (0.43)
H	15.0 (0.59)	13.3 (0.52)	13.3 (0.52)
I	33.0 (1.30)	34.0 (1.34)	43.0 (1.69)
J	9.0 (0.35)	11.0 (0.43)	11.5 (0.45)
K	40.0 (1.57)	40.0 (1.57)	50.0 (1.97)
L	5.3 (0.21)	7.0 (0.28)	7.0 (0.28)

FIGURE 6. SE-CS30-4, -5, and -8 Current Sensors.



FRONT VIEW

SIDE VIEW



PANEL CUTOUT DETAIL

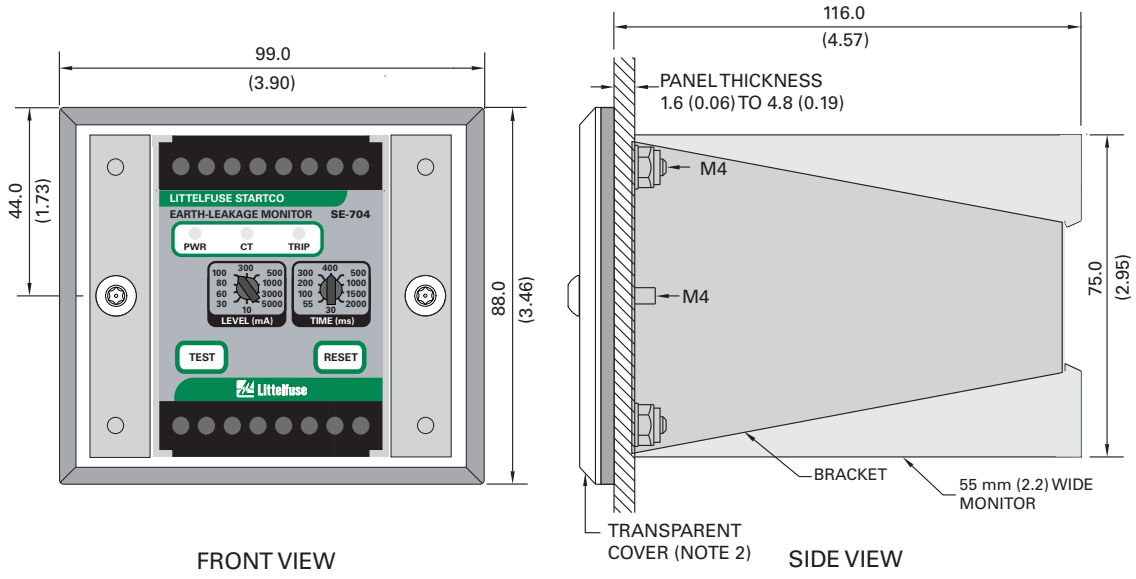
INSTALLATION INSTRUCTIONS:

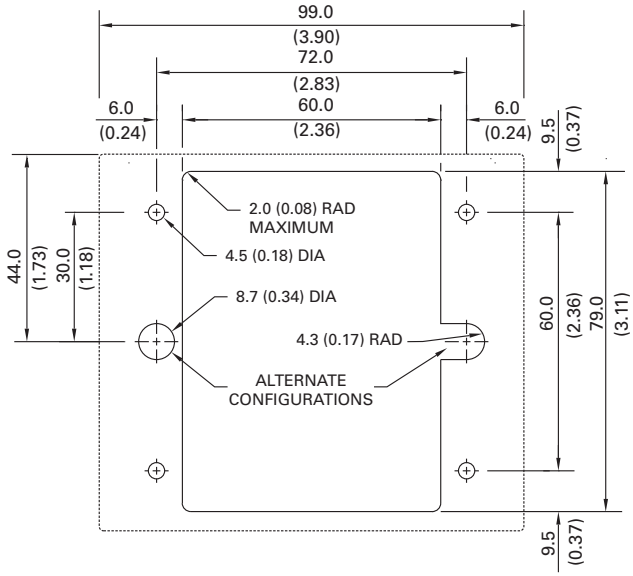
1. REMOVE BEZEL AND LATCH MONITOR TO BRACKET.
2. INSERT BRACKET THROUGH FRONT OF PANEL CUTOUT AND SECURE WITH FLAT WASHERS AND LOCKNUTS PROVIDED.
3. CONNECT WIRING TO TERMINALS.
4. INSTALL BEZEL USING 6-32 x 0.31 SCREWS PROVIDED.

NOTE:

1. DIMENSIONS IN MILLIMETRES (INCHES).

FIGURE 7. PMA-55 Panel-Mount Adapter.





INSTALLATION INSTRUCTIONS:

1. WITH COVER REMOVED LATCH MONITOR TO BRACKET.
2. INSERT BRACKET THROUGH FRONT OF PANEL CUTOUT AND SECURE WITH FLAT WASHERS AND LOCKNUTS PROVIDED.
3. CONNECT WIRING TO TERMINALS.
4. ATTACH COVER USING SECURITY SCREWS OR THUMB SCREWS PROVIDED.

NOTES:

1. DIMENSIONS IN MILLIMETRES (INCHES).
2. MEETS NEMA3, IP53.
3. INCLUDES TWO TR20 TAMPER-RESISTANT TORX SCREWS (M4-0.7x16 mm, INSTALLED) AND TWO THUMB SCREWS.

FIGURE 8. PMA-60 Panel-Mount Adapter.

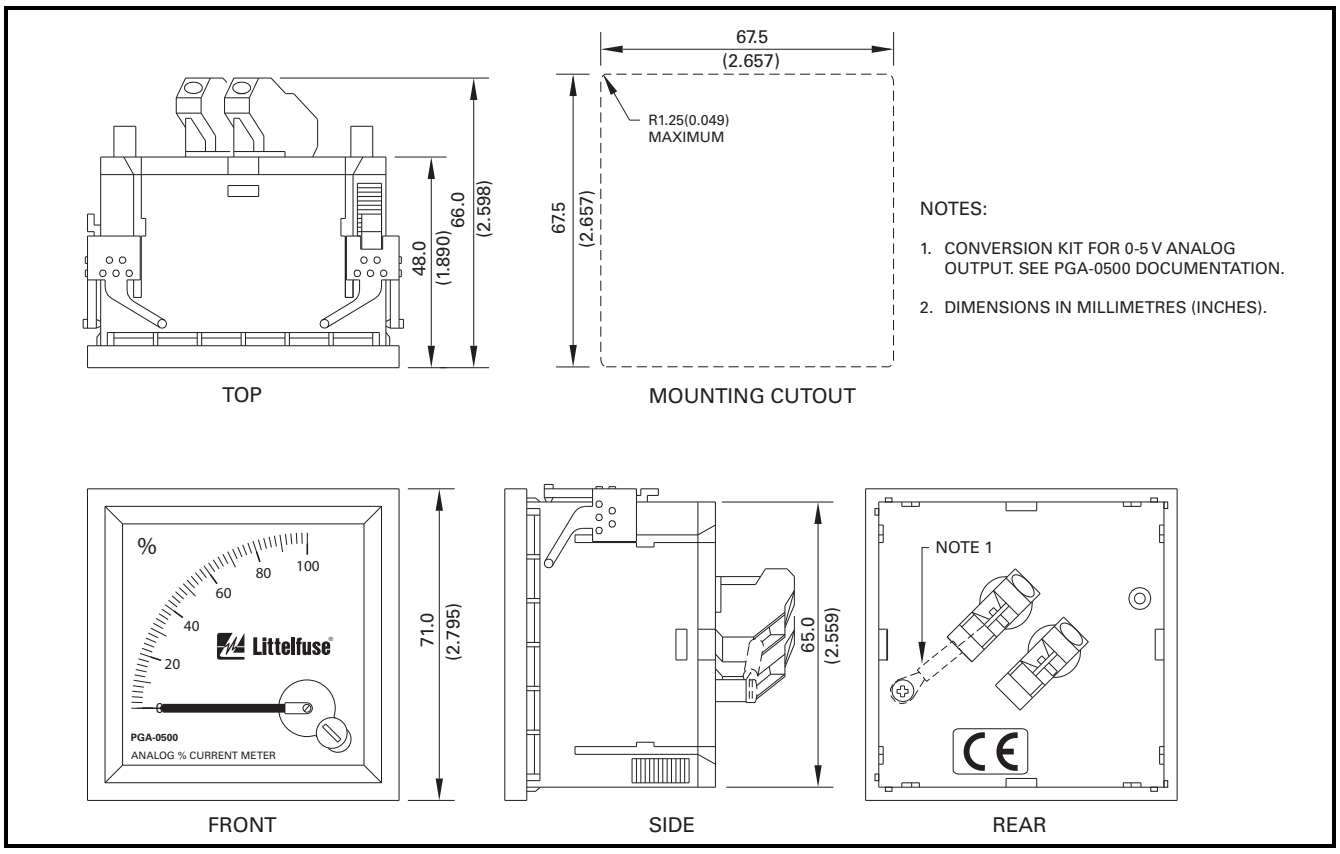


FIGURE 9. PGA-0500 Analog Percent Current Meter.

5. TECHNICAL SPECIFICATIONS

5.1 SE-704

Supply:

0U Option	5 VA, 120 to 240 Vac, (+20, -55%) 50/60 Hz, 2 W, 100 to 240 Vdc, (+20, -25%)
0D Option	2 W, 12 to 30 Vdc, (+20, -25%)
0T Option	2 W, 40 to 55 Vdc, (+20, -25%)
03 Option	2.5 VA, 24 Vac, (+15%, -40%), 50/60 Hz

Trip-Level Settings	10, 30, 60, 80, 100, 300, 500, 1,000, 3,000, and 5,000 mA
Trip-Time Settings	30, 55, 100, 200, 300, 400, 500, 1,000, 1,500, and 2,000 ms

Accuracies: [1, 2]

Trip Level: [3, 4]	
1,000 to 5,000 mA	+ 2, -10% (60 Hz) + 0, -12% (50 Hz)
60 to 500 mA	+ 0, -10%, 10 mA min
30 mA	+ 0, -6 mA
10 mA	+ 4, -1 mA
Trip Time [5]	5% of setting, 20 ms min

Input:

Algorithms [6]	DFT Digital or Peak
DFT 3 dB Frequency Response	32 to 86 Hz (<1,000 mA)
Peak 3 dB Frequency Response	20 to 420 Hz (<1,000 mA)
Peak 3 dB Frequency Response	20 to 120 Hz (≥1,000 mA)
CT	SE-CS30-Series Current Sensor
CT Detection	Open-Circuit Detection
Thermal Withstand:	
Continuous	25 A Earth-Fault Current
1-Second	400 A Earth-Fault Current

Analog Output:
- Modes: % of 5 A or % of Trip-Level Setting
- Range:
  - Terminal 3: 0 to 1 mA
  - Terminal 8: 0 to 5 Vdc
- Output Impedance:
  - Terminal 3: 4,970 Ω
  - Terminal 8: 220 Ω

Output Relay:
- Contact Configuration: Isolated N.O. and N.C.
- Operating Mode: Fail-Safe or Non-Fail-Safe
- CSA/UL Contact Rating: 8 A General Use, 250 Vac,
  8 A Resistive, 30 Vdc
  0.25 HP, 120/240 Vac
- Supplemental Contact Ratings:
  - Carry Current: 8 A, maximum
  - Break:
    - 30 Vdc: 240 W Resistive,
      170 W Inductive (L/R = 7 ms)
    - 120 Vdc: 24 W Resistive,
      17 W Inductive (L/R = 7 ms)
    - ac: 2,000 VA Resistive,
      875 VA Inductive
      (PF = 0.4)
  - Subject to maximums of 8 A and 250 Vac/30 Vdc or 200 mA at 120 Vdc

Trip Mode: Latching or Autoreset

Reset: Front-Panel Button and Remote N.O. Contact

Functional Test: Front-Panel Button

Terminals: Wire Clamping,
24 to 12 AWG
(0.2 to 2.5 mm^2) conductors

Dimensions:
- Height: 75 mm (3.0”)
- Width: 55 mm (2.2”)
- Depth: 113 mm (4.5”)

Shipping Weight: 0.45 kg (1 lb)

Environment:
- Operating Temperature:
  - Altitude:
    - ≤ 1,000 m (3,281’): –40 to 60°C
      (-40 to 140°F)
    - 3,000 m (9,843’): –40 to 55°C
      (-40 to 131°F)
    - 5,000 m (16,404’): –40 to 50°C
      (-40 to 122°F)
- Storage Temperature: –55 to 80°C
  (-67 to 160°F)
- Humidity: 85% Non-Condensing
- Altitude: 5,000 m (16,404’) maximum

PWB Conformal Coating: MIL-1-46058 qualified
UL QMJU2 recognized

Surge Withstand: ANSI/IEEE 37.90.1-1989 (Oscillatory and Fast Transient)

Vibration: EN60255-21-1 (Vibration, Shock, and Seismic)
EN60255-21-2 (Shock and Bump)

EMC Tests:
Verification tested in accordance with EN 50263:2000
- Radiated and Conducted Emissions: CISPR 11:2009,
  CISPR 22:2008,
  EN55022:2010
  Class A
- Current Harmonics and Voltage Fluctuation: IEC 61000-3-2 and
  IEC 61000-3-3
  Class A
- Electrostatic Discharge: IEC 61000-4-2
  ± 6 kV contact discharge
  (direct and indirect)
  ± 8 kV air discharge
- Radiated RF Immunity: IEC 61000-4-3
  10 V/m, 80-1000 MHz,
  80% AM (1 kHz)
  10 V/m, 900 MHz,
  200 Hz pulse modulated
- Fast Transient: IEC 61000-4-4
  ±4 kV on AC mains and I/O lines

Surge Immunity.....IEC 61000-4-5
Zone B
± 1 kV differential mode
± 2 kV common mode

Conducted RF Immunity .....IEC 61000-4-6
10 V, 0.15-80 MHz,
80% AM (1 kHz)

Magnetic Field Immunity .....IEC 61000-4-8
50 Hz and 60 Hz , 30 A/m
and 300 A/m

Voltage Interruption.....IEC 61000-4-11,
IEC 61000-4-29,
0% for 5, 10, 20, 50,100
& 200 ms 3x each

Power Frequency .....IEC 61000-4-16
Zone A: differential mode
150 Vrms
Zone A: common mode
300 Vrms

1 MHz Burst.....IEC 61000-4-18
± 1 kV differential mode
(line-to-line)
± 2.5 kV common mode

RFI Compliance .....FCC Part 15, Subpart B,
Class A – Unintentional
Radiators

Certification .....CSA, Canada and USA

® LR 53428
C US

UL Listed

LISTED
Ground Fault Sensing
and Relaying Equipment
4FX9 E340889

Australia

N11659

FCC

CE, European Union

Complies to IEC 61010-1:2001 (2nd Edition); EN 61010-1:2001 (2nd Edition) Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use – Part 1

NOTES:
(1) Detection limit (A) = (setting in mA – 5,610)/-1.4.
(2) At 50 or 60 Hz unless otherwise noted.
(3) SE-CS30-series current sensor included.
(4) Maximum lead resistance of 2 Ω.
(5) Trip Time at 3 x trip-level setting.
(6) Peak algorithm for trip-level setting ≥ 1,000 mA.

5.2 CURRENT SENSORS

Environment:
Operating Temperature .....-40 to 60°C (-40 to 140°F)
Storage Temperature.....-55 to 80°C (-67 to 176°F)
Compliance .....RoHS, REACH, IEC 60044-1

SE-CS30-26:
Current Ratio.....30:0.05 A
Insulation .....600-V Class
Window Diameter.....26 mm (1.0")
Shipping Weight .....0.45 kg (1.0 lb)
Certifications.....CSA, UL, CE

SE-CS30-70:
Current Ratio.....30:0.05 A
Insulation .....600-V Class
Window Diameter.....70 mm (2.7")
Shipping Weight .....1.2 kg (2.5 lb)
Certifications.....CSA, UL, CE

SE-CS30-4:
Current Ratio.....30:0.05 A
Insulation .....600-V Class
Window Diameter.....95 mm (3.7")
Shipping Weight .....1.3 kg (3.0 lb)
Certifications.....CE, CSA (pending), UL (pending)

SE-CS30-5:
Current Ratio.....30:0.05 A
Insulation .....600-V Class
Window Diameter.....130 mm (5.1")
Shipping Weight .....2.1 kg (4.6 lb)
Certifications.....CE, CSA (pending), UL (pending)

SE-CS30-8:
Current Ratio.....30:0.05 A
Insulation .....600-V Class
Window Diameter.....200 mm (7.9")
Shipping Weight .....4.3 kg (9.4 lb)
Certifications.....CE, CSA (pending), UL (pending)

6. ORDERING INFORMATION

SE-704-0□-□□

Conformal Coating:
Blank – Partial Conformal Coating
CC – Full Conformal Coating

Supply:
3 – 24-Vac Supply
U – Universal 120/240-Vac/Vdc Supply
D – 12/24-Vdc Supply
T – 48-Vdc Supply

SE-CS30-26	Current Sensor, 26.0 mm (1.0") window
SE-CS30-70	Current Sensor c/w Flux Conditioner, 69.8 mm (2.8") window
SE-CS30-4	Current Sensor c/w Flux Conditioner, 95.0 mm (3.7") window
SE-CS30-5	Current Sensor c/w Flux Conditioner, 130.0 mm (5.1") window
SE-CS30-8	Current Sensor c/w Flux Conditioner, 200.0 mm (7.9") window
PGA-0500	Analog Percent Current Meter (PGA-05CV included)
PMA-55	Panel-Mount Adapter, NEMA 1
PMA-60	Panel-Mount Adapter, NEMA 3, IP53. Includes two TR20 tamper-resistant Torx screws and two thumb screws.
AC700-HW-00	TR20 tamper-resistant Torx, 0.25" insert bit
AC700-HW-01	TR20 tamper-resistant Torx driver
PMA-3	Adapter Plate, GEC/MCGG
PMA-6	Adapter Plate, FPL-GFRM
PMA-15	Adapter Plate, MGFR

Consult factory for custom mounting adapters.

7. WARRANTY

The SE-704 Earth-Leakage Monitor is warranted to be free from defects in material and workmanship for a period of five years from the date of purchase.

Littelfuse Startco will (at Littelfuse Startco's option) repair, replace, or refund the original purchase price of an SE-704 that is determined by Littelfuse Startco to be defective if it is returned to the factory, freight prepaid, within the warranty period. This warranty does not apply to repairs required as a result of misuse, negligence, an accident, improper installation, tampering, or insufficient care. Littelfuse Startco does not warrant products repaired or modified by non-Littelfuse Startco personnel.

8. EARTH-FAULT PERFORMANCE TEST

Some jurisdictions require periodic earth-fault performance tests. A test record form is provided for recording the date and the result of the performance tests. The following earth-fault system tests are to be conducted by qualified personnel.

a) Evaluate the interconnected system in accordance with the overall equipment manufacturer's detailed instructions.

b) Verify proper location of the SE-CS30 current sensor. Ensure the cables pass through the current-sensor window. This check can be done visually with knowledge of the circuit. The connection of the current-sensor secondary to the SE-704 is not polarity sensitive.

c) Verify that the system is correctly earthed and that alternate earth paths do not exist that bypass the current sensor. High-voltage testers and resistance bridges can be used to determine the existence of alternate earth paths.

d) Verify proper reaction of the circuit-interrupting device in response to a simulated or controlled earth-fault current. To simulate earth-fault current, use CT-primary current injection. Fig. 10 shows a test circuit using an SE-400 Ground-Fault-Relay Test Unit. The SE-400 has a programmable output of 0.5 to 9.9 A for a duration of 0.1 to 9.9 seconds. Fig. 10 shows the use of resistors that reduce the injected current to 10% of the SE-400 setting. Set the test current to 120% of the SE-704 setting. Inject the test current through the current-sensor window for at least 2.5 seconds. Verify that the circuit under test has reacted properly. Correct any problems and re-test until the proper reaction is verified.

e) Record the date and the results of the test on the attached test-record form.

NOTE: Do not inject test current directly into current-sensor-input terminals 4 and 5.

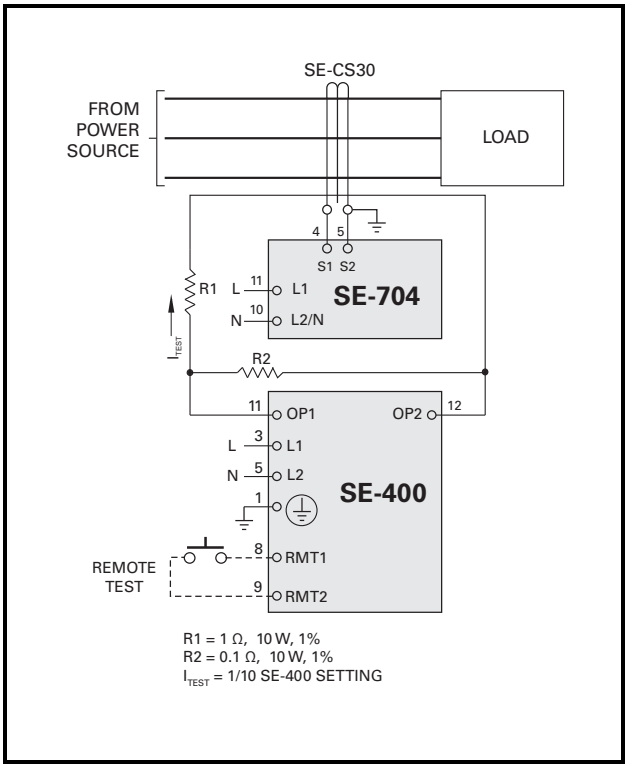


FIGURE 10. Earth-Fault-Test Circuit.

TABLE 2. EARTH-FAULT-TEST RECORD

DATE	TEST RESULTS

Retain this record for the authority having jurisdiction.

APPENDIX A
SE-704 REVISION HISTORY

MANUAL RELEASE DATE	MANUAL REVISION	PRODUCT REVISION (REVISION NUMBER ON PRODUCT LABEL)
August 28, 2014	7-C-082814	04
May 21, 2014	7-B-052114	
April 8, 2013	7-A-040813	

MANUAL REVISION HISTORY

REVISION 7-C-082814

SECTION 3

EFCT-x figures updated.

SECTION 4

EMC Test specifications updated.

REVISION 7-B-052114

SECTION 4

Figs. 2, 3, 4, 5, 6, and 9 updated.

SECTION 5

Update to include altitude and vibration specifications.
FCC certification added.
Update to trip-level accuracy.
Added current sensor specifications.

SECTION 6

Ordering information updated.

SECTION 8

Fig. 10 updated.

REVISION 7-A-040813

SECTION 3

Fig. 2 updated to include PGA-05CV.

SECTION 4

Fig. 6 updated.

SECTION 5

Environment section updated to include Fahrenheit temperature range.

APPENDIX A

Revision history added.

PRODUCT REVISION HISTORY

REVISION 04

Firmware: Improved operation of front-panel test button.