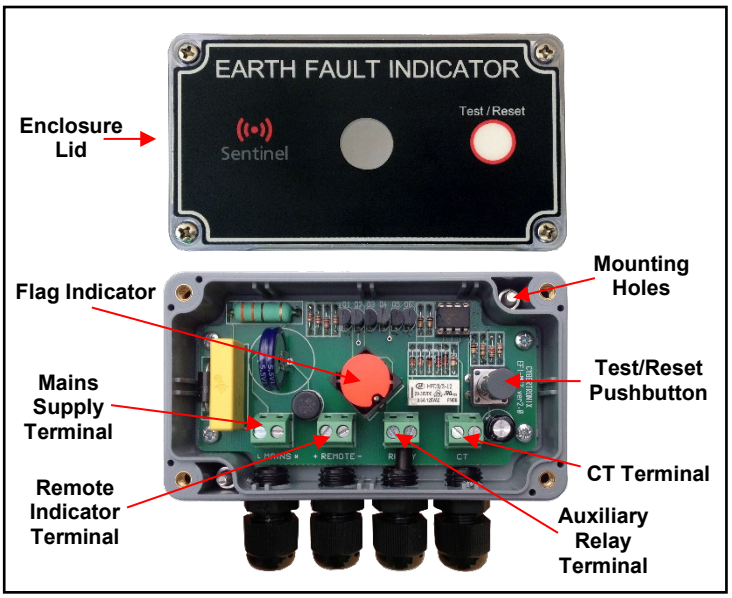


Cybertronix

Sentinel™ EFI-MFZ
Earth Fault Indicator

- **Mains powered**
- **Flag Indication**
- **SCADA relay output contact**
- **Remote indicator output contact**
- **Trip level user specified**

Please read safety instructions carefully

INSTALLATION INSTRUCTIONS

PACKING CONTENTS:

- Control Unit: Grey ABS box enclosure with product information and warning labels
- Current Transformer: CT100 (standard) or CT120, CT150, CT300
- Mains Cable (optional): 3 meter lead (standard option), or as ordered
- Remote LED Indicator (optional): 2 meter lead (standard option), or as ordered
- Auxiliary Relay Cable (optional): 2 meter lead (standard option), or as ordered

INSTALLATION INSTRUCTIONS

Installing the Control Unit
The Control Unit is surface mounted using the two 4mm mounting holes provided. To access the mounting holes, unscrew the four screws securing the lid of the Control Unit. Two M4 × 16mm bolts are located inside the enclosure for mounting the unit. After mounting, replace the cover of the unit, and secure tightly with the four screws to ensure good sealing.

Installing the Remote Indicator (optional)
The remote indicator consists of a M10 bolt and should be mounted in a secure place where the indication is required.

Connecting the Auxiliary Relay (optional)
For additional remote fault signaling the auxiliary relay cable is connected through a cable gland to the two-way screw terminal marked “RELAY”. This is a normally-open circuit.

Connecting the Mains Supply
The mains cable is connected though a cable gland to the two-way screw terminal marked “MAINS”.

Installing the Current Transformer (CT)
The current transformer comprises of a flexible iron-core belt with a magnetic pickup coil. The CT is wrapped tightly around the three-phase system to be monitored using the adjustable cable ties provided.
NOTE: The CT should not encircle the HV cable earth lead as well. Instead the earth lead should by-pass the CT, as shown in Figure 1 and Figure 2.

Multi-Core Cable System
The CT100 and CT150 sensors are used for multi-core cable systems. The CT is mounted on the screened part of the cable below the strip-back point as shown in Figure 1. The center cable-tie of the CT sensor is used to secure the sensor firmly on the cable. The flexible iron-core of the sensor is wrapped in a closed overlapping circle around the cable and pulled tightly with the second cable-tie as far as is possible. The screen of the cable is turned back underneath the sensor and terminated as shown.

Single-Core Cable System
For single-core cable systems a larger CT300 sensor is used. The flexible iron-core of the sensor is wrapped in a closed overlapping circle around the cable as tightly as possible and secured in place with cable-ties. Care should be taken to ensure that the sensor is mounted on the screened part of the cable. The screen of all three conductors should be turned underneath the core and terminated as shown in Figure 2.

FIGURE 1: CURRENT SENSOR MOUNTED ON MULTI-CORE CABLE SYSTEM

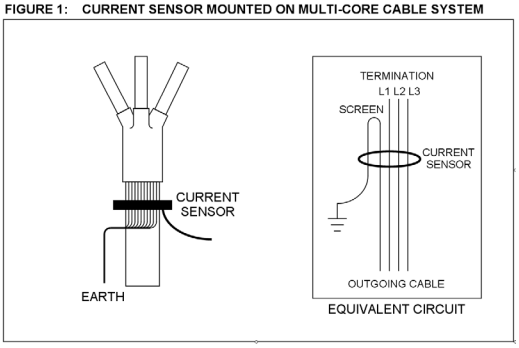
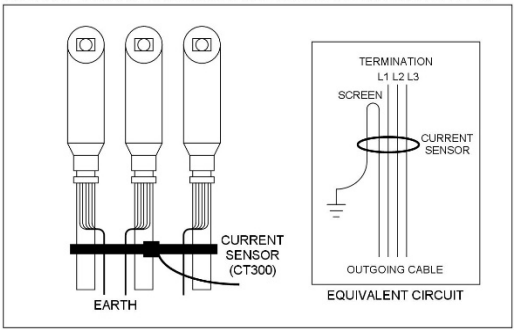


FIGURE 2: CURRENT SENSOR MOUNTED ON SINGLE-CORE CABLE SYSTEM



POWER UP and MANUAL TEST

NOTE: When the unit is first powered up from the mains supply, a period of up to 20 minutes is required to charge the on-board backup power supply before the unit can become operational. This charge period is reduced if the backup supply is already partly charged and will also vary depending on the level of mains supply voltage used.

Following installation, it is important that the unit is tested with the Manual test facility provided.
The test sequence below should be followed.

1) Ensure that the unit is powered up for a period of up to 20 minutes.
2) Press the "Test / Reset" pushbutton on the front of the unit for a minimum of 3 seconds.
   The flag indicator in the control unit will flip to the red tripped position.
   The auxiliary relay will latch in the closed position.
   The remote indicator (if installed) will also flash at approximately 1Hz.
   This test state will continue for a period of 60 seconds or until mains is present for 10 seconds or until the test pushbutton is pressed again to terminate the manual test.

SAFETY

WARNING: Under certain fault conditions, high voltages can be conducted into the earth fault indicator enclosure through the CT, remote indicator, or the auxiliary relay cables. All parts within the enclosure should be handled as if carrying dangerous voltages.

WARNING: Use extreme caution during the installation and use of the earth fault indicator as high voltages and currents may be present in the circuit.

- Ensure that the current sensor is installed at earth potential on the HV cable system.
- Ensure that the current sensor is installed on the screened part of the cable system.
- Use caution during the installation and use of this product; high voltages and currents may be present in the circuit.
- This product must be used only by qualified personnel practicing applicable safety precautions.
- Wear protective clothing and gloves as required.
- Do not install this product on live conductors.
- Always de-energize circuit before installing the current sensor and indicating unit.
- Always inspect the current sensor, indicating unit and all leads for damage before using the product.
- Do not use the product if damaged.

Technical Data

Network voltage range:	1-36kV AC
Rated mains voltage:	110V-240V AC ±20% 50/60Hz
Over voltage withstand:	600V for 48 hours
Impulse voltage withstand:	10kV, 1.2/50uS waveform
Trip current:	50A ±20% (default unless specified)
Minimum fault duration:	2.5 cycles (50ms@50Hz)
Fault current withstand:	25kA for 1second
Supply charging time:	10-20 minutes
Operating temp range:	-20ºC to 70ºC
Operating humidity range:	0-100% RH
Reset of fault:	10s of healthy mains or manual reset pushbutton

Remote Indicator (optional)

Type:	High intensity red LED
Flash rate:	1Hz
Flash duration	12 hours nominal
Lead type:	2-core, 0.5mm², double insulated
Mounting:	M10 panel hole

Auxiliary Relay

Number of contacts:	1
Type:	Latching, N/O on reset
Rating:	Max voltage: 220VDC, 250VAC
Maximum switching:	60W
Maximum current	2A