

Electromagnetic Impulse Detector



- Indicates direction of fault
- Works under all weather conditions
- Survives rough handling and transport
- Long-lasting 9-volt battery
- Converts to voltage gradient tester with optional earth frame

DESCRIPTION

The Electromagnetic Impulse Detector is composed of an amplifier module, a sheath coil and a carrying case. An optional earth frame and surface coil are available. The amplifier, sheath coil and surface coil fit into the carrying case.

Sheath Coil

This coupler is placed directly on the surface of the cable under test to sense the magnitude and direction of the net electromagnetic field produced by the impulse current from an impulse generator.

Amplifier Module

This module accepts output signals from either the sheath coil described above or either of the two optional sensors (surface coil and earth frame). It amplifies signals with a unique "stretching circuit." A zero-center meter receives the amplifier output and indicates both magnitude and, more importantly, the direction of the fault. The gain of the amplifier (0 to 10,000) is controlled by a continuously variable control knob located on the right side panel.

The three-position mode switch, located on the front panel, has selectable positions of IMPULSE AND TRACE for fault locating and cable route tracing. The LOW-HIGH EARTH VOLTAGE settings are used to locate cable faults using the earth gradient method. A BATTERY TEST switch also appears on the front panel.

Optional Earth Frame

This is an earth gradient tester accessory that uses the above amplifier module for its readout. When impulse current or burn current leaking through the fault bypasses

the shield or concentric neutral, the earth frame detects the direction and magnitude of the resulting voltage gradient in the earth. This valuable information is displayed on the meter.

APPLICATIONS

General

The electromagnetic detector system is used primarily to localize faults on cable buried in conduit. It may also be used to localize faults on non-buried and direct-buried cable.

When used with the optional surface coil, it is also possible to trace cable. When used with the optional earth frame, it is possible to pinpoint faults on direct-buried cable.

Sheath Coil

For localizing faults on cable in conduit, a thumper must first be connected to the cable to provide impulse current surges. These surges produce momentary electromagnetic fields around the outside of the cable that may be detected by a sensitive coupler known as a sheath coil.

The sheath coil is directional sensitive. It is marked with a large arrow which is always pointed toward the impulse generator. Its output is amplified and stretched by the amplifier unit and displayed on a zero-center meter. The user can readily see the direction in which the fault is located.

These measurements with the sheath coil are made at access points such as manholes, cabinets and pull boxes.

Comprehensive applications assistance is available from Megger, and is recommended for best results on complex conduit circuits.

Optional Earth Frame

For pinpointing faults on direct-buried cable, a thumper must first be connected to the cable to provide impulse current. When this impulse current leaks through the fault in the cable under test, some or all of it passes through the adjacent earth on its way back to the impulse generator.

This returning current generates a voltage gradient along the earth's surface which can be detected by a sensitive voltmeter. The voltage detected near the fault is much stronger than at points farther away. Also, because the impulse current is in one direction only, it can readily determine whether the operator is ahead of or beyond the fault.

Because of irregularities in the earth, the magnitude of the voltage detected along the route of the cable is sometimes deceptive. Consequently, it is advisable to look for the sharp reversal that occurs when the fault is passed.

The earth frame provides a convenient means for contacting the earth's surface at two in-line points along the route of the cable, evenly spaced. Magnitude and polarity are read on the amplifier unit. The low range is used for strong signals and the high range is used for weaker signals, providing all the flexibility usually required.

The earth frame may also be used to detect a 60-Hertz signal through the cable under test, but only magnitude is detected to guide the operator to the fault.

FEATURES AND BENEFITS

- Exclusive output level meter with zero center shows both magnitude and polarity of impulse current.
- Wide-range calibrated gain control adjusts to any application.
- Compact, rugged, and weather resistant.
- Optional surface coil for tracing route of underground cable from the impulse or burn signal

SPECIFICATIONS

Dimensions: 14 H x 19 W x 8.75 D in. (36 H x 49 W x 23 D cm)
Weight: 11.5 lb (5.2 kg)

Optional Earth Frame

Weight: 6 lb (2.7 kg)

ADDITIONAL EQUIPMENT FOR FAULT LOCATING

Megger Pinpointer

The MPP2000 has been designed to pinpoint faults in shielded, direct buried cables by detecting both the electromagnetic and acoustic pulses emitted from an arcing fault when it is surged. The MPP2000 provides detection of acoustic emission, measurement of time delay between acoustic and electromagnetic signals, and distance and direction to the fault.



The MPP2000 can be used with any surge generator.

ORDERING INFORMATION

Item (Qty)	Cat. No.
Electromagnetic Impulse Detector	651113
Included Accessories	
Amplifier [1]	
Sheath coil pickup with 6-ft (1.8-m) cord [1]	
Hard plastic, foam fitted carrying case [1]	
Optional Accessories	
Earth frame with 6-ft (1.8-m) cord	651115

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