

PFL40-1500/2000

Portable Cable Fault Location and High Voltage Test Solutions



- Compact, portable fault locating systems
- DC testing to 40 kV
- Proof/burn up to 34 kV
- 8/16/34 kV, 1500 Joules surge output
 - 2000 Joules surge output optional
 - 4-kV range optional
- A.R.M. (Arc Reflection Method)
- Impulse current (current impulse)
- Voltage decay (optional)
- Integrated TDR

DESCRIPTION

The prime objective of any cable fault location system is to provide quick, effective, accurate and safe fault location, thereby reducing system outages and “customer minutes lost.”

The “new” family of compact Megger cable fault locating systems is designed to meet this criterion. These new systems are seen as a valuable extension to our existing range of CFL instruments and capabilities.

The standard system comes as a mobile compact system that can be further customised by the customer to meet local requirements. All systems offer the facility to undertake cable testing; cable and fault diagnosis; prelocation of cable faults; fault conditioning; pinpoint location using acoustic methods.

Standard Scope of Supply

TDR — The Time Domain Reflectometer offers:

- Menu driven operation
- User definable table of standard cable types
- All pulse echo modes
- Transient analyses methods of prelocation

PFL — Portable Fault Locator provides:

- D.C. testing
- Fault conditioning
 - Proof/Burn
 - A.R.M. (Arc Reflection Method)
- Fault pre-location using:
 - A.R.M. (Arc Reflection Method)
 - ICE (Impulse Current)
 - Voltage Decay
- Acoustic pinpoint fault location
- Ground Safety Interlock

DC Testing (0-40 kV DC)

Used to prove the integrity of and to identify and confirm fault conditions in cable networks with a test voltage up to 40 kV and a current of 25 mA. The variable output voltage can also be used to test sheaths requiring 5 or 10-kV test voltages. The operator selectable over-current trip levels provide protection to the system under test in the event of the cable under test breaking down.

Fault Pre-location

After identifying the type of fault, pre-location of the fault position can be determined using the following methods:

- The **TDR** is used to pre-locate cable faults using pulse echo, arc reflection, impulse current (ICE) and the optional voltage decay method.

In **TDR** mode, a real time trace and a stored trace can be viewed simultaneously on the colour display, allowing comparison and difference measurements to be determined.

In basic mode, the TDR features auto-ranging, auto distance to fault and operator assist functions that guide the operator through the fault locating process.
- In the **A.R.M.** mode, faults are stabilised by creating a temporary “bridge” to earth. During this condition, a standard pulse echo measurement is taken into what is basically a short circuit fault.
- **ICE** and **Voltage Decay** methods are both transient analysis methods of pre-location which utilise either a linear coupler or voltage divider. During a breakdown at the point of fault, transients are generated that oscillate both back to the TDR and far end of the cable. In ICE mode, a surge generator (34 kV) max is used to generate the breakdown; in voltage decay the dc source (40 kV) max is used.

Fault Conditioning

Fault conditioning is used to stabilise unstable, flashing or high resistance faults. The Megger Fault Locator system incorporates both A.R.M. and Proof/Burn modes.

■ **Proof/Burn**

Using the available 40 kV dc output and following a breakdown of the cable under test, a high current is applied, stabilising the fault condition. This allows easier and quicker prelocation and pinpointing of the unstable faults.

■ **A.R.M.**

Not widely thought of as a fault condition method, the A.R.M. method stabilises faults by creating a temporary “bridge” to earth, enabling standard pulse echo techniques of prelocation to be used.

Acoustic pinpoint fault location

Accurate acoustic pinpoint fault location is achieved with the powerful 8/16/34 kV (4 kV optional) surge generator (thumper) which comes in either 1500 Joules or 2000 Joules (optional) configurations.

Additional accuracy can be achieved by using the Megger **MPP1001** or **MPP1002** Acoustic and Electromagnetic pinpointer, which shows direction and distance to fault.

SPECIFICATIONS

Testing

DC testing: 0 – 40 kV I_{max} 25 mA (negative to earth)
 Resolution: 1 mA
 Trip: Adjustable current trip
 Metering: Analog and digital metering of current and voltage

Pre-location

MTDR

Range: 60 m – 50 km
 Pulse width: 40, 80, 160, 320, 640 ns 1, 2, 5, 10 µs, and auto
 Display: 8 in., full VGA, color
 Cursors: Dual independent
 Gain: Selectable, x1, 2, 3, 4, 5, 10, 20, 50, 100, and auto
 Input: Impedance 50 Ω
 Inputs: 1 pulse echo, 1 current impulse/voltage decay
 Ports: 1 serial, 2 parallel (printer/USB memory device)
 Software Included COMLink for downloading trace

High Voltage Prelocation

A.R.M.: 8/16/34 kV (4 kV optional)
 ICE: 8/16/34 kV (4 kV optional)
 Voltage decay: 0 – 40 kV

Fault Conditioning

A.R.M.: 8/16/34 kV (4 kV optional)
 Proof/burn: 0 – 40 kV
 0 – 4 kV, 240 mA (optional)
 0 – 8 kV, 120 mA
 0 – 16 kV, 60 mA
 0 – 34 kV, 30 mA

Pinpoint Fault Location

Surge: 0 – 8/16/34 kV, (4 kV optional)
 1500 Joules each range (2000 Joules optional)
 Impulse Sequence : Adjustable 2 – 12 seconds
 Single Shot

Cables

HV: 15m of 70kV 1-phase EPR
 System Supply: 15m, 8mm²
 Earth: 15m, 8mm²

Environmental

Operating Temperature: -20° to +50°C (-4° to 122°F)
Storage Temperature: -20° to +70°C (-4° to 122°F)
Elevation: 1500m (5000 ft)
 Derate voltages at higher altitudes
Humidity: 50 to 95% RH non-condensing
Supply Mains: Universal 100 to 260 V (50/60 Hz)

IP Rating

IP54 (with top/back flaps closed)

Weight

149 kg

Dimensions

965 mm H x 536 mm W x 503 mm D

ORDERING INFORMATION

Item	Cat. No.
40 kV dc, 8/16/34 kV @ 1500 Joule surge	PFL40-1500
40 kV dc, 8/16/34 kV @ 2000 Joule surge	PFL40-2000
Included Accessories	
PFF40 with integral MTDR1	PFL
High-voltage shielded output cable, 15 m	36566
Supply cable, 7 m	17032-17
Flexible earth cable, 15 m	19265-15
Wheel kit and	36306
Handle assembly	36409
Earth rod	23462-1
Interlock shorting plug	10226-1
Cable bag	18313
Instruction manual	AVTMPFL40
Optional Accessories	
Earth monitor/ground safety interlock	36724
4-kV stand-alone surge capability	36727
Stand-alone battery supply	36726
Voltage decay coupler	36569
Stand-alone cable reel assembly	CBL100HV
Rack mounted cable reel assembly	CBL125H
Pinpointer/Receiver	MPP1002