

# PFL32M1500

## Portable Cable Fault Location System



- **Portable, rugged fault locating system**
- **HV insulation testing up to 32 kV**
- **Proof/burn up to 32 kV, 65/35 mA**
- **16/32 kV, 1500 Joules surge output**
- **Arc reflection method**
- **Arc reflection plus**
- **Differential arc reflection**
- **Impulse current (ICE)**
- **Integrated 10.4" screen color TDR**

### DESCRIPTION

The PFL32M1500 Power Cable Fault locator is designed to provide quick, effective, accurate and safe fault location, thereby reducing system outages and minutes lost.

The instrument comes in a rugged yet portable enclosure, which makes it suitable for use in and outdoor conditions.

The PFL32 provides all typical methods for cable testing: cable and fault diagnosis, pre-location of cable faults, fault conditioning, and pinpoint fault location using magnetic acoustic methods.

### FEATURES AND BENEFITS

- Innovative MTDR100 mounted in the lid features:
  - Single knob (jog-dial) control
  - Large 10.4" color (XGA) display
  - Auto ranging
  - Cable library
- Multiple fault locating techniques
  - Pre-location
  - TDR method
  - Arc reflection
  - Arc reflection plus
  - Differential arc reflection
  - Impulse Current (ICE)
- Pinpoint
  - Surge/voltage impulse
- High-voltage module
  - 2-range / dual capacitors
  - Safety interlocks
  - HV ON indicator

### APPLICATIONS

#### HV Testing (proof/insulation testing)

Used to prove the integrity of and identify / confirm fault conditions in cable networks. The variable output voltage can also be used for sheath testing at 5 or 10 kV.

#### Fault Pre-location

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

- A **TDR** is used to pre-locate cable faults using TDR, Arc reflection, Impulse Current (ICE). The MTDR100 features auto-ranging, auto distance to fault and operator assist functions that guide the operator through the fault locating process.
- In the **Arc reflection** mode, faults are stabilized by creating a temporary "bridge" to earth. During this condition, a standard TDR measurement is taken into what is basically a short circuit fault.
- **Arc reflection plus** provides the operator the added advantage of being able to view and analyze up to 1024 traces (range dependent) taken during the period of the arc.
- During **Differential arc reflection** mode unwanted and confusing reflection are removed leaving a clean trace with only the fault position point being displayed as a positive pulse. This method is especially suited in locating high-resistance faults in complex cable systems.
- **Impulse current, or ICE**, is the analysis of the transients current signal on the HV return to obtain the fault distance.

#### Fault Conditioning

Fault conditioning is used to stabilize unstable flashing or high resistance faults. The PFL32M1500 incorporates both proof/burn and arc reflection modes.

**Proof/Burn**

Following a breakdown of the cable under test, a current is applied to condition the fault. This allows easier and faster pre-location and pinpointing of the unstable faults.

**Pinpoint fault location**

Accurate pinpoint fault location is achieved using the magnetic acoustic method whereby the powerful 16/32 kV 1500 Joule surge generator (thumper) and magnetic acoustic receiver (Digiphone Plus) is used.

**SPECIFICATIONS****Testing**

|             |   |
|-------------|---|
| Output:     | 0 - 32 kV (negative with regard to earth)<br>0 - 32 kV, 35 mA constant<br>0 - 16 kV, 65 mA constant |
| Resolution: | 5 mA  |
| Metering:   | Analog metering of current and voltage  |

**Low-voltage Pre-location****MTDR100**

|                   |   |
|-------------------|---|
| Range:            | 10 ranges; 100 m – 55 km (328 ft - 34 miles)<br>100 m - 220 km (328 ft - 137 miles) - transient methods |
| Pulse width:      | 50, 100, 200, 500 ns, 1, 2, 5, 10 µs, and auto  |
| Pulse Amplitude:  | 25 V into 50 Ω  |
| Sampling Rate:    | 100 MHz   |
| Timbase Accuracy: | 200 ppm   |
| Resolution:       | 0.82 m (2.8 ft) @ 82.5m / µsec  |
| Display:          | 26.4 mm (10.4 in.), full XGA, 1024 X 768 color display  |
| Cursors:          | Dual independent control  |
| Gain:             | 60 dB range in 5 dB Steps   |
| Input:            | Impedance 50 Ω  |
| Inputs:           | 1 x TDR/ARC, 1 x current impulse  |
| Ports:            | 1 x printer/USB memory device   |
| Software:         | CAS1 (Cable analysis software)  |

**High Voltage Pre-location**

|                              |   |
|------------------------------|---|
| Arc Reflection:              | 0-16 and 0-32 kV, 1500 Joule  |
| Arc Reflection Plus:         | 0-16 and 0-32 kV, 1500 Joule<br>1024 – 16 traces dependent on range |
| Differential Arc Reflection: | 0-16 and 0-32 kV, 1500 Joule  |
| Impulse Current:             | 0-16 and 0-32 kV, 1500 Joule  |

**Fault Conditioning**

|             |                                    |
|-------------|------------------------------------|
| Proof/burn: | 0 - 32 kV 35 mA<br>0 - 16 kV 65 mA |
|-------------|------------------------------------|

**Pinpoint Fault Location**

|                   |  |
|-------------------|--|
| Surge:            | 0 - 16 and 0 - 32 kV, @ 1500 Joule       |
| Impulse Sequence: | Adjustable 5 – 30 seconds<br>Single Shot |

**Cables**

|                        |   |
|------------------------|---|
| HV:                    | Detachable 15 m (50 ft) 1-phase flexible shielded cable with HV crock-clips |
| 120/230V Input/Supply: | Input Cable   |
| Safety Ground:         | 15 m (50 ft) 8 mm <sup>2</sup> flexible ground cable with vice grips        |

**Safety**

|   |
|---|
| High visibility “status” bar              |
| Emergency stop                            |
| Safety Interlock circuit                  |
| External beacon circuit (beacon optional) |

**Supply**

Universal AVSM 2-ranges: 108 - 132 V ac and 208 - 265 V ac 47 – 63 Hz

**Environmental**

|                        |   |
|------------------------|---|
| Operating Temperature: | -20 ° to +50 °C (-4 ° to 122 °F)              |
| Storage Temperature:   | -20 ° to +55 °C (-4 ° to 131 °F)              |
| Elevation:             | 1600 m (De-rate voltages at higher altitudes) |
| Humidity:              | 5 to 95% RH non-condensing                    |

**IP Rating**

IP64 (with top/back flaps closed)

**Weight**

131 kgs (290 lbs)

**Dimensions**

965 mm H x 536 mm W x 503 mm D  
(38 in. H x 21 in. W x 20 in. D)

**ORDERING INFORMATION**

| Item   | Cat. No.        | Item                            | Cat. No.        |
|--|-----------------|---------------------------------|-----------------|
| 32 kV dc, 16/32 kV @ 1500 Joule surge  | PFL32M1500-EN   | Cable bag                       | 2001-813        |
| 32 kV dc, 16/32 kV @ 1500 Joule surge  | PFL32M1500-ES   | Instruction manual, English     | AVTMPFL32-EN    |
| 32 kV dc, 16/32 kV @ 1500 Joule surge  | PFL32M1500-FR   | Instruction manual, Spanish     | AVTMPFL32-ES    |
|  |                 | Instruction manual, French      | AVTMPFL32-FR    |
|  |                 | Software                        | CAS-1           |
| <b>Included Accessories</b>  |                 | <b>Optional Accessories</b>     |                 |
| High-Voltage shielded output cable 15 m including MC terminations with HV Clamps | 1001-123        | HV Vice Grips                   | 18944-2         |
| Supply/Input cables (1x ea USA, UK, SHUKO, International)                        | 17032-4/5/12/13 | PFL32 Transit case              | 2001-289        |
| Flexible ground cable, 15 m (50 ft)  | 19265-15        | Pinpointer Digiphone Plus       | 871500500100000 |
| Interlock Quick Release Pin  | 90003-606       | Stand alone cable reel assembly | CBL100HV        |

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**ISO STATEMENT**

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