PFL22M1500
Portable Cable Fault Location System

- Portable, rugged fault locating systems
- HV insulation testing to 20 kV
- Proof/burn up to 20 kV, 115 mA
- 8/16 kV, 1500 Joules surge output
- Arc reflection method
- Arc reflection plus
- Differential arc reflection
- Impulse current (current impulse)
- Integrated large screen color TDR
- Optional onboard inverter

DESCRIPTION

The PFL22M1500 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. Its IP64 rating makes it suitable for use in even environmentally hostile conditions.

All systems offer the facility to undertake cable testing: cable and fault diagnosis, pre-location of cable faults, fault conditioning, and pinpoint fault location using acoustic methods.

FEATURES AND BENEFITS

- Innovative MTDR100 mounted in the lid features:
  - Single knob (jog-dial) control
  - Large easy-to-view color (XGA) display
  - Auto ranging
  - Cable library
- Multiple fault locating techniques
  - Pre-location
  - Pulse echo
  - Arc reflection
  - Arc reflection plus
  - Differential arc reflection
  - Impulse current
  - Pinpoint
  - Surge/voltage impulse
- High-voltage module
  - 2-range
  - Safety interlocks
  - HV on indicator

APPLICATIONS

HV Testing (proof/insulation testing)

Used to prove the integrity of and identify and 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, pre-location of the fault position can be determined using the following methods:

- A TDR is used to pre-locate cable faults using pulse echo, 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 pulse echo measurement is taken into what is basically seen as 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 by a positive pulse. This method is especially suited in locating high-resistance faults in complex cable systems.
- Impulse current, or ICE, is a transient analysis method of pre-location utilizing the integrated linear coupler.

Fault Conditioning

Fault conditioning is used to stabilize unstable flashing or high resistance faults. The PFL22M1500 incorporates both proof/burn and arc reflection modes.
Proof/Burn

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

Pinpoint fault location

Accurate pinpoint fault location is achieved using the acoustic method whereby the powerful 8/16 kV 1500 Joule surge generator (thumper) and an acoustic receiver (Megger MPP2000) is used.

SPECIFICATIONS

Testing

Output:  0 - 20 kV (negative with regard to earth)
         0 – 10 kV, 115 mA constant
         0 – 20 kV, 58 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)
         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 (V_p=55%):  0.82 m (2.8 ft)
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:  0-8 and 0-16 kV, 1500 Joule
Arc Reflection Plus:  0-8 and 0-16 kV, 1500 Joule
1024 – 16 traces dependent on range
Differential Arc Reflection:  0-8 and 0-16 kV , 1500 Joule
Impulse Current:  0-8 and 0-16 kV, 1500 Joule

Fault Conditioning

Proof/burn:  0 - 20 kV 58 mA
            0 - 10 kV 115 mA

Pinpoint Fault Location

Surge:  0 - 8 and 0 -16 kV, @ 1500 Joule
Impulse Sequence:  Adjustable 5 – 30 seconds
                 Single Shot

Cables

HV:  Detachable 15 m (50 ft) 1-phase flexible shielded cable with HV crock-clips
Input/Supply:  Input Cable
Earth:  15 m (50 ft) 8 mm² flexible earth cable with vice grips

Safety

High visibility “status” bar
Emergency stop
Safety Interlock circuit
External beacon circuit

Supply

Universal AVSM 2-ranges: 108 - 132 V ac and 208 - 265 V ac 47 – 63 Hz
Inverter:  11.5 – 14 V dc (Optional)

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
(3 ft H x 1.75 ft W x 1.65 ft D)

ORDERING INFORMATION

<table>
<thead>
<tr>
<th>Item</th>
<th>Cat. No.</th>
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</thead>
<tbody>
<tr>
<td>20 kV dc, 8/16 kV @ 1550 Joule surge</td>
<td>PFL22M1500-EN</td>
<td>Instruction manual</td>
<td>AVTMPLF22</td>
</tr>
<tr>
<td>As above but including 12 V inverter</td>
<td>PFL22M1500INV-EN</td>
<td>Software</td>
<td>CAS-1</td>
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<tr>
<td><strong>Included Accessories</strong></td>
<td></td>
<td><strong>Optional Accessories</strong></td>
<td></td>
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<tr>
<td>High-Voltage shielded output cable 15 m including MC terminations with HV Clamps</td>
<td>1001-123</td>
<td>HV Vice Grips</td>
<td>18944-2</td>
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<tr>
<td>Supply/Input cables (1xea USA, UK, SHUKO, International)</td>
<td>17032-4/5/12/13</td>
<td>PFL20M Transit case</td>
<td>2001-289</td>
</tr>
<tr>
<td>Flexible ground cable, 15 m (50 ft)</td>
<td>19265-15</td>
<td>12 V Stand alone battery kit</td>
<td>1001-690</td>
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<tr>
<td>Interlock shorting plug</td>
<td>10226-1</td>
<td>Acoustic/Electromagnetic Receiver</td>
<td>MPP2000</td>
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<tr>
<td>Cable bag</td>
<td>2001-813</td>
<td>Stand alone cable reel assembly</td>
<td>CBL100HV</td>
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NB: Refer to factory for full list of cable reel assemblies

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SWITZERLAND, Kingdom of BAHRAIN,
Mumbai INDIA, Johannesburg SOUTH
AFRICA, and Chonburi THAILAND

ISO STATEMENT
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