

CFL40A2000

Vehicle Mountable Cable Fault Location and High Voltage Test Solution



- Separate HV and control modules
- HV insulation testing to 40 kV
- 8/16/34 kV, 2000 Joules surge output
- 4 kV, 1500 Joules range (optional)
- 34 kV arc reflection, arc reflection plus and differential arc reflection
- Proof/burn up to 40 kV
- 34 kV impulse current (ICE)
- Voltage decay (optional)
- Menu driven large screen color TDR

DESCRIPTION

The CFL40A vehicle-mountable cable fault location system has been developed to provide quick, effective, accurate and safe fault location, reducing system outages and “customer minutes lost.” The system is a valuable addition to the existing range of highly successful, field proven family of cable fault locating systems available from Megger.

The CFL40A system comes as two separate modules, making it suitable for mounting in a vehicle or trailer. The HV module contains all of the high voltage elements. Control of all of the HV elements and CFL methods is by a separate control panel, which also houses the large screen color TDR.

Standard Scope of Supply

Operator control panel

- HMI selection and control of all HV and CFL methods
- Analog metering of outputs and leakage current
- Menu driven large screen color TDR
- Emergency “Off”

HV Control

- PFF - Fault locator module
- HV insulation/proof testing
- Surge generator
- Arc reflection filter
- Transient ICE/Voltage decay couplers
- Proof/Burn
- Ground safety interlock

HV Testing (proof testing)

Proves the integrity, identifies and confirms fault conditions in cable networks. They can be used for sheath testing at 5 or 10 kV. The selectable over-current trip levels provide protection, and leakage current is shown on the analog metering.

Fault Pre-location

After identifying the type of fault, low or high voltage methods of pre-locations are used to determine the fault position.

- **TDR** pre-locate cable faults using pulse echo, arc reflection, impulse current (ICE) and the optional voltage decay method. In pulse echo mode, a real time trace and a stored trace are viewed simultaneously on the large color display, allowing comparison and difference measurements to be made.
- **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 a short circuit fault.
- **Arc Reflection plus** provides the operator with the added advantage of having the ability 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 is 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.
- **ICE** and **Voltage Decay** methods are both transient analysis methods of pre-location which utilize either a linear coupler or voltage divider.

Fault Conditioning

Fault conditioning is used to stabilize unstable, flashing or high resistance faults. The Megger fault locator system incorporates both proof/burn and arc reflection modes.

■ **Proof/Burn**

Using the high voltage output and following a breakdown of the cable under test, a high current is applied, creating a carbon bridge, stabilizing the fault condition. This allows prelocation and pinpoint location of unstable faults.

■ **Arc Reflection**

Not widely recognized as a fault condition method, a high current is applied to the cable under test, creating a carbon bridge and stabilizing the fault condition. This allows pre-location and pinpoint location of unstable faults.

Acoustic pinpoint fault location

Accurate pinpoint fault location is achieved using the acoustic method, whereby the powerful surge generator (thumper) and a receiver (MPP2000) are used. The Megger acoustic and electromagnetic pinpointer shows direction and distance to fault.

SPECIFICATIONS

Testing

Output: 0 – 40 kV (negative with regard to earth) 25 mA constant
Resolution: 1 mA

Trip: Adjustable current trip

Metering: Analogue and digital metering of current and voltage

Low Voltage Pre-location

MTDR

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
Display: 26.4 mm (10.4 in.), full XGA, color display
Resolution: (Vp = 55%) 0.82 m (2.8 ft)
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 Prelocation

Arc Reflection: 8/16/34 kV at 2000 J
4 kV at 1500 J (optional)
ICE: 8/16/34 kV
4 kV at 1500 J (optional)
Voltage decay: 0 – 40 kV (optional)

Fault Conditioning

Arc Reflection: 8/16/34 kV (optional 4 kV)
Proof/burn: 0 – 8 kV, 120 mA
0 – 16 kV, 60 mA
0 – 40 kV, 30 mA
0 – 4 kV, 240 mA (optional)

Pinpoint Fault Location

Surge: 0 – 8/16/34 kV at 2000 J
0 – 4 kV/1500 Joules
2000 Joules (dependent on model)
Impulse Sequence : Adjustable 2 – 12 seconds Single Shot

Cables CFL40A cable set

Environmental

Operating Temperature: -20 ° to +50 °C (-4 ° to 122 °F)
Storage Temperature: -20 ° to +70 °C (-4 ° to 158 °F)
Elevation: 1500 m (5000 ft) Derate voltages at higher altitudes
Humidity: 50 to 95 % RH non-condensing
Supply: Universal AVSM 2-ranges: 108 - 132 V ac and 208 - 265 V ac 47 - 63 Hz

Weight

HV module: 145 kg (320 lb)
Control module: 9 kg (20 lb)

Dimensions

HV module: 1000 mm (H) x 536 mm (W) x 501 mm (D)
39 in. (H) x 21 in. (W) x 20 in. (D)
Control module: 480 mm (H) x 490 mm (W) x 180 mm (D)
19 in. (H) x 19 in. (W) x 7 in. (W)

ORDERING INFORMATION

Item	Cat. No.	Item	Cat. No.
40 kV dc, 3-range 8/16/34 kV, 2000 Joule surge (240 V)	CFL40A2000-23	Optional Accessories	
40 kV dc, 4-range 4/8/16/34 kV, 2000 Joule surge (240 V)	CFL40A2000-31	Acoustic/electromagnetic receiver	MPP2000
40 kV dc, 3-range 8/16/34 kV, 2000 Joule surge (110 V)	CFL40A2000-19	Voltage decay coupler	36569
40 kV dc, 4-range 4/8/16/34 kV, 2000 Joule surge (110 V)	CFL40A2000-27	70-kV Earthing/discharge Stick	222070-62
Included Accessories		3-reel cable tree with 50 m of HV cable, 50 m earth/ground cable with ferrules and 50 m of supply cable with no end termination	CBL167HVP
HV module	PFF40A	3-reel cable tree with 50 m of HV cable, 50 m earth/ground cable with ferrules and 15 m of earth monitor lead	CBL167HVE
Earth safety monitor/interlock		4-reel Cable tree with 50 m of HV cable, 50 m earth/ground cable with ferrules, 50 m input power cable with no termination and 15 m of earth monitor lead	CBL167HVPE
Control module & integrated MTDR		Additional manual and motorized cable drum assemblies	See separate data sheet
CFL40A cable kit			
Interlock shorting plug	10226-1		
Cable bag	18313		
Instruction manual	AVTMPFL40		

UK
Archcliffe Road, Dover
CT17 9EN England
T +44 (0) 1 304 502101
F +44 (0) 1 304 207342
UKsales@megger.com

UNITED STATES
4271 Bronze Way
Dallas, TX 75237-1019 USA
T 1 800 723 2861 (USA only)
T +1 214 333 3201
F +1 214 331 7399
USsales@megger.com

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