



Cable Products Catalog

- Testing (VLF & DC Hipot)
- Diagnostic (Tan δ , Partial Discharge, DAC and CDS)
- Cable Fault Locating and Pinpointing

Megger[®]

Overview

Typical Defects vs. Cable Type



DAMAGE TYPE	XLPE	EPR	PILC	Hybrid System of Cable Types
Assessing failure risk due to local condition				
Local water tree	■	■		■
Local electrical tree	■ ■	■ ■		■ ■
All splices	■ ■	■ ■	■ ■	■ ■
Moisture			■ ■	■
Dried out			■ ■ ■	■ ■
Assessing General Integrity				
Water trees throughout	■ ■ ■	■ ■		
Electrical trees throughout	■ ■ ■	■ ■		
Global moisture			■ ■ ■	■ ■
Dried out			■ ■	

TEST AND RECOMMENDED MEGGER UNITS	
IRC ----> CDS	■
0.1 HZ TANDELTA ----> VLF SINE TANDELTA	■
TRUE LEAKAGE CURRENT ----> VLF CR	■
0.1 HZ AC ----> VLF SINE & VLF CR	■
PARTIAL DISCHARGE ----> TDS NT & DAC	■
RVM ----> CDS	■
DC ----> HIPOT	■

Legend Cable Defect vs. Method Chart

1. CABLE TESTING

VLF Sine 34 kV.....2
 VLF Sine 45 kV.....2
 VLF Sine 54 kV.....2
 VLF CR 28 kV.....4
 VLF CR 40 kV.....4
 VLF CR 60 kV.....4
 VLF CR 80 kV.....4

2. TEST AND DIAGNOSTIC SYSTEMS

Medium Voltage Cables

DAC-306
 TDS NT 408
 TDS NT 608
 TDM 45 Series: VLF Sine 45 + TanDelta + PD 10

High Voltage Cables

HV DAC 200..... 11
 HV DAC 270..... 11

Cable Diagnostic System

CDS 12

3. CABLE FAULT LOCATING

Teleflex Options

TELEFLEX T3060 and T3090..... 13
 TELEFLEX VX..... 13
 TELEFLEX SX 13

Portable Cable Fault Locating Series

Portable Cable Fault Locating Series..... 14
 EZ-THUMP 4/12 kV 16
 SMART THUMP 16 kV..... 16
 PFL22M..... 17
 SG15/25 17
 Surgeflex 32 18
 Surgeflex 40 18
 Optional Accessories for Cables 19

Tracing and Pinpointing

Specifications.....20
 EASYLOC21
 FERROLUX FL Set EASYLOC22
 DIGIPHONE+ and ESG NT.....23
 DIGIPHONE+ and NT Set.....24
 CI & LCI25
 PIL 825

4. CABLE VAN SYSTEMS

Centrix 1 PH and 3 PH.....27
 Variant 1 PH and 3 PH28
 Compact City.....28

5. ADDITIONAL EQUIPMENT

Cable Sheath Fault Locating

MFM10.....29
 HVB1030

Pinpointing in LV Cables

Fault Sniffer31

Impedance Meter

NIM100032

VLF Sine 34 kV, 45 kV and 54 kV

VLF withstand test verifies the integrity of the cable under test. VLF sinusoidal and VLF cosine-rectangular are the two most commonly wave shapes used for VLF test.

The multifunctional VLF sinusoidal testing systems from Megger are designed for withstand testing using 0.1 Hz sine AC voltage, sheath-fault test and pinpointing. Their unique single-button operation makes them easy to use with a clearly structured menu and color display.

The cable nominal voltage, cable length and capacitance must be considered for choosing the right VLF unit.

SPECIFICATIONS	VLF Sine 34 kV	VLF Sine 45 kV	VLF Sine 54 kV
VLF test voltage	0 to 34 kV _{peak}	0 to 45 kV _{peak}	0 to 54 kV _{peak}
Frequency	0.01 to 0.1 Hz	0.01 to 0.1 Hz	0.01 to 0.1 Hz
Wave form	Sine	Sine	Sine
Testing cable capacitance	0.6 μF @ 0.1 Hz 5.0 μF @ 0.01 Hz	0.6 μF @ 0.1 Hz 10 μF @ 0.01 Hz	1 μF @ 0.1 Hz 5 μF @ 0.01 Hz
Optional TanDelta measurements	external	internal / external	internal / external
DC test voltage	0 to ± 34 kV	0 to ± 45 kV	0 to ± 54 kV
Sheath testing	0 to 5 kV or 0 to 10 kV	0 to 5 kV or 0 to 10 kV	0 to 5 kV or 0 to 10 kV
Sheath pinpointing test voltage	0 to 5 kV or 0 to 10 kV	0 to 5 kV or 0 to 10 kV	0 to 5 kV or 0 to 10 kV
Pulse rate	1:3 or 1:4	1:3 or 1:4	1:3 or 1:4
Output current measurement	0 to 14 mA	0 to 20 mA	0 to 35 mA
Protection class	IP54	IP21	IP20
Dimensions	20.5 x 17.8 x 11.8 in 520 x 450 x 300 mm	21.4 x 20.5 x 16.4 in 544 x 520 x 416 mm	39.4 x 23.6 x 19.7 in 1000 x 600 x 500 mm
Weight	55.1 lbs (25 kg)	110.2 lbs (50 kg)	242.5 lbs (110 kg)
Portable	Yes	Yes	Mounted inside van



VLF Sine 45 kV Operation Software

Resistance →

Capacitance →

Frequency →

Type of Test →

Settings →

← Remaining Test Time

Voltage/Current

Phase Selection

FEATURES FOR ALL VLF SINE MODELS

- High test capacity
- Continuous duty cycle (testing without operational interruptions)
- AC/DC testing in compliance with DIN VDE, EN, IEEE
- Intuitive user software with large internal memory
- Leakage current measurement in DC and VLF rectangular mode
- Sheath testing and fault pinpointing according to IEC 60229
- Optional TanDelta with automatic evaluation according to IEC 400.2 - 2013
- Maximum user safety through automatic discharge of the test object and earth loop ground monitoring
- Breakdown detection and load recognition (R, C)
- Quick, easy logging and updates via USB port

VLF SINE MODEL	VLF SINE MODELS CABLE NOMINAL VOLTAGE				
	15 kV	25 kV	30 kV	35 kV	VLF Withstand
VLF Sine 34 kV	■				Installation Acceptance Maintenance
VLF Sine 45 kV	■	■		■	Installation Acceptance Maintenance
VLF Sine 54 kV	■	■	■	■	Installation Acceptance Maintenance



RECOMMENDED ACCESSORIES

- TanDelta test (internal or external)
- ESG NT for sheath fault pinpointing

VLF CR 28 kV, 40 kV, 60 kV and 80 kV

VLF CR cosine-rectangular is a Megger patented wave form approved by IEC & IEEE.

VLF CR models allow to test high capacitance cables up to 5 μF @ 0.1 Hz.

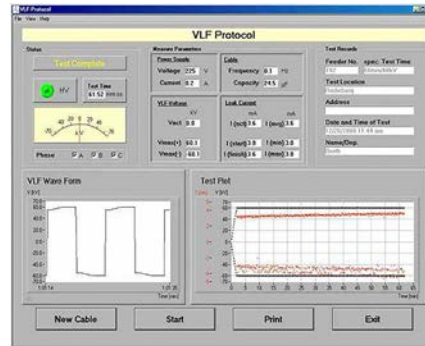
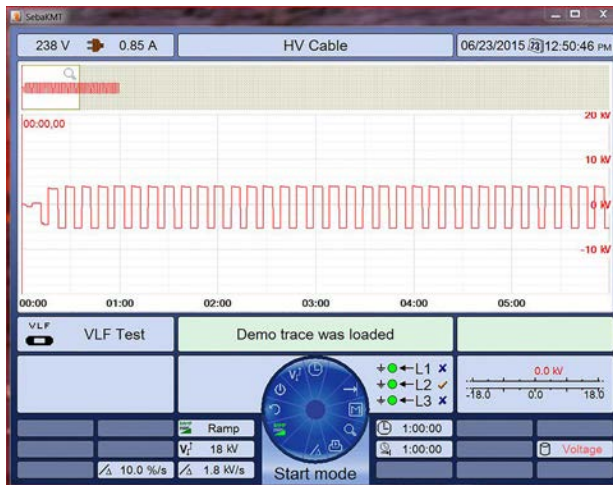
The high-performance and energy-efficient VLF CR test systems are used for testing cables according to the IEC/IEEE/CENELEC standards.

Solutions are available from portable units to powerful systems with 25 μF testing capacity.

SPECIFICATIONS	VLF CR 28 kV	VLF CR 40 kV	VLF CR 60 kV	VLF CR 80 kV
VLF test voltage	0 a 28 kV _{rms}	0 to 40 kV _{rms}	0 to 60 kV _{rms}	0 to 80 kV _{rms}
Frequency	0.1 Hz	0.1 Hz	0.1 Hz	0.1 Hz
Wave form	CR	CR	CR	CR
Testing cable capacitance	5 μF	2.4 μF (basic model) 4.8 μF (plus model)	1 μF (basic model) 2 μF (plus model)	2 μF
DC test voltage	0 to 28 kV	0 to 40 kV	0 to 60 kV	0 to 80 kV
Sheath testing	2 to 10 kV	2 to 10 kV	2 to 10 kV	0 to 10 kV
Sheath pinpointing Test voltage	2 to 10 kV	2 to 10 kV	2 to 10 kV	0 to 10 kV
Pulse rate	1:3,1:4 or 1:9	1:3,1:4 or 1:9	1:3,1:4 or 1:9	1:3,1:5 or 1:9
Output current Measurement	0 to 12 mA	0 to 7 mA	0 to 5 mA	0 to 10.5 mA
Dimensions	21.6 x 27 x 16.5 in 550 x 700 x 420 mm	21.6 x 43 x 16.5 in 550 x 1100 x 420 mm		53 x 49 x 43 in 1350 x 1250 x 1100 mm
Weight	55 + 55 lbs (25 + 25 kg)	121.2+105.8 lbs (55 Kg + 48 kg)	187.3+105.8 lbs (85 Kg + 48 kg)	837.7 lbs (380 kg)
Portable	Yes	Yes	Yes	Mounted inside van



The Winkis VLF Software allows you to display and transfer stored data for evaluation and reporting.



FEATURES FOR ALL VLF CR MODELS

- VLF Test, DC Test and Sheath Test in one device
- High test capacitance for testing all three phases simultaneously
- Integrated discharge system and breakdown detection
- Leakage current measurements for evaluation of the cable insulation quality
- Automatic reporting

VLF CR MODEL	VLF CR MODELS CABLE NOMINAL VOLTAGE					VLF Withstand
	15 kV	25 kV	30 kV	35 kV		
VLF CR 28 kV	■					Installation Acceptance Maintenance
VLF CR 40 kV	■	■				Installation Acceptance Maintenance
VLF CR 60 kV	■	■	■	■		Installation Acceptance Maintenance
VLF CR 80 kV	■	■	■	■	■	Installation Acceptance Maintenance



ESG NT

RECOMMENDED ACCESSORY
ESG NT for sheath fault pinpointing

DAC-30 - Partial Discharge

PD - Partial Discharge activity is an indication of incipient fault in the insulation and is one of the best “early warnings” indicator of the deterioration of medium and high voltage cables.

DAC - Damped AC Voltage unit can identify, evaluate and locate partial discharge in both cable insulation and accessories according to IEC 60270.

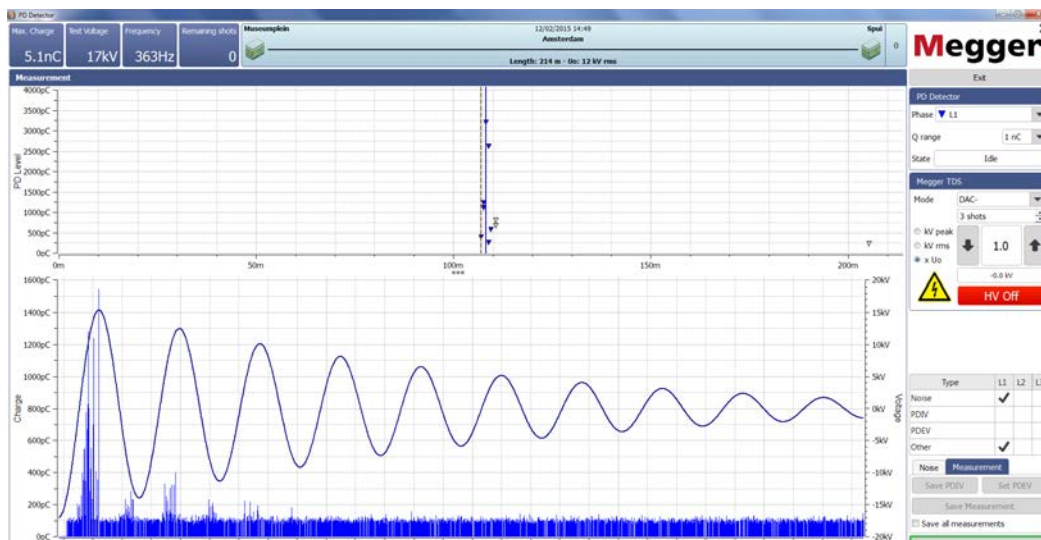
One of the major benefits of DAC waveform is the similarity between DAC slope and the 50/60 Hz power frequency.

DAC-30 model consists of HV source for signal processing.

The partial discharge measurement system MV DAC-30 and the included PD detector are specified by the following parameters

SPECIFICATIONS	DAC-30
Voltage range	3 ... 30 kV DC
DAC frequency	20 Hz ... 500 Hz
Testable load capacitance	10 μ F
Power supply	230 V, 50/60 Hz
Power consumption	500 VA at maximum
PD measuring range	2 pC ... 100 nC
System noise level	<2 pC
PD pulse repetition rate for charge evaluation	100 kHz
Charge evaluation	According to IEC60270
PD Localization	
Range	0 ... 16 km / $V/2 = 80$ m/ μ s
Propagation velocity $V/2$	50 ... 120 m/ μ s
Sample rate	125 MHz (8 ns)
Bandwidth	3 / 25 MHz (switchable)
Accuracy	1% of cable length
Resolution	± 1 pC / $\pm 0,1$ m
Filtering	Analogue and digital
Interfaces	Ethernet, external safety device
Weight	
HV module	30 kg
Control module	25 kg
Dimensions (W x D x H)	56 x 42 x 100 cm
Protection class (in accordance with IEC 61140 (DIN VDE 0140-1))	I
Ingress protection rating (in accordance with IEC 60529 (DIN VDE 0470 1))	IP21

Partial Discharge Mapping of HV cables



FEATURES

- Intuitive control and analysis software, suitable for the universal use with different systems
- Quick and fully automatic calibration in one step
- PD mapping and statistical evaluation in real time
- Fully automatic report generation directly after a measurement
- Cable database with individually adaptable segment templates
- Import of measurement data from other PD measurement systems

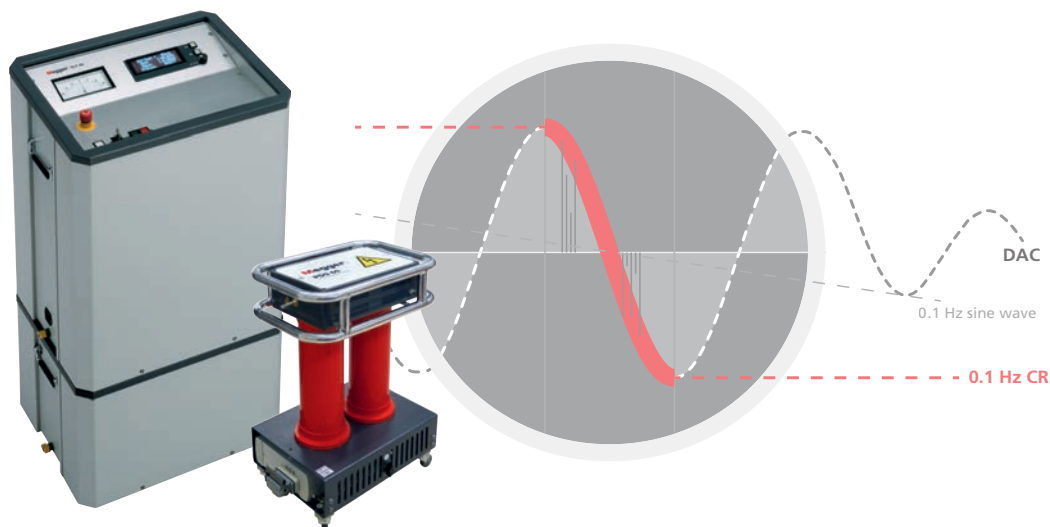


TDS NT Series

Megger TDS NT System combining VLF cosine-rectangular and partial discharge with damped AC voltages becomes the most powerful tool for the diagnostic of insulation on cables and accessories.

TDS NT consists of a multifunctional, compact voltage source and a PD detector. It can be used to test cables with a powerful VLF - CR according to the international standards (e.g. IEC 60502-2 and IEEE 400.2)

SPECIFICATIONS	TDS 40	TDS 60
Output Voltage		
VLF	3 ... 40 kV _{rms}	3 ... 60 kV _{rms}
DAC	3 ... 40 kV _{peak}	3 ... 60 kV _{peak}
DC	3 ... ±40 kV	3 ... ±60 kV
Output current	7 mA	5 mA
Leakage current measurement	0 ... 7 mA, resolution 10 µA	0 ... 5 mA, resolution 10 µA
Frequency	0.1 Hz cosine-rectangular 50 to 500 Hz	
VLF		
DAC		
Testable cable capacitance VLF		
Basic version	2.4 µF / 40 kV _{rms} @ 0.1 Hz	1 µF / 60 kV _{rms} @ 0.1 Hz
Plus version	4.8 µF / 40 kV _{rms} @ 0.1 Hz	2 µF / 60 kV _{rms} @ 0.1 Hz
Testable cable capacitance		
DAC	5 µF / 40 kV _{peak} 10 µF max.	2 µF / 60 kV _{peak} 10 µF max.
Sheath test / fault pinpointing	Testing: 3 ... 10 kV Pinpointing: 3 ... 10 kV pulse 1:3 / 1:5 / 1:9	
Safety devices	Breakdown detection, integrated discharge unit, earth loop monitoring	
Protection class	IP 20	
Weight (depending on options fitted)	Approx. 121 + 106 lbs (55 + 48 kg)	Approx. 187 + 106 lbs (85 + 48 kg)
Dimensions W x H x D, divided in two devices	21.6 x 43 x 16.5 in (550 x 1100 x 420 mm)	




TDS NT SERIES

TDS NT Series for PD diagnosis using the new 50/60 Hz Slope Technology can be performed simultaneously with the help of the PD detector PDS 60. Alternatively, the TDS NT can also be used for PD diagnosis with the proven damped AC voltage (DAC).

It is important to note that the PD measurement data, gained with the VLF CR or with the DAC test voltage, can be compared directly with the 50/60 Hz network voltage. The 50/60 Hz slope technology is able to give significantly more reliable information about the quality and condition of cables.

FEATURES

- Two proven voltage wave shapes in one device
- Standard compliant VLF 0.1 Hz cable testing with accompanying PD diagnosis
- Non-destructive PD diagnosis by means of proven DAC voltage
- 50/60 Hz slope technology for a direct comparison with the power frequency
- High test capacitance enables 0.1 Hz VLF tests on long cables or multiple phases in parallel
- Two-piece design allows for portable and easy transport
- Integrated leakage measurement
- Integrated discharge unit, earth-loop-monitoring and breakdown detection
- Fully automatic calibration
- Clear display of measurement results and live PD mapping
- Report generation by mouse click

	PD DETECTOR PDS 60	
	Voltage	
	Operation	Max. 60 kV _{rms}
	Type	VLF CR or DAC
	Capacity of HV coupling capacitor	25 nF
	Sensitivity range	2 pC ... 100 nC
	Resolution	± 0.1 pC
	PD self-noise level	< 2 pC
	PD localization	
	Measuring range	0 ... 16.000 m / v/2= 80 m/μs
	Propagation velocity v/2	5 ... 120 m/μs
	Sampling rate	125 MHz (8 ns)
	Bandwidth	3 / 25 MHz (switchable)
	Precision	1% of the cable length
	Resolution	±0.1 pC / ±0.1 m
	Weight	
HV filter/ coupler	55 lbs (25 kg)	
PD detector	13 lbs (6 kg)	
Dimensions (W x D x H)	15.7 x 31 x 21 in (40 x 78 x 54 cm)	
PD Calibrator (IEC 60270-compliant)		
Measuring range	200 pC ... 20 nC	
Power supply	9 V block battery	
Software	EasyGo principle, integrated cable database, fully automatic evaluation	

TDM 45 Series: VLF Sine 45 + TanDelta + PD

According to IEEE 400.2, VLF tan delta may be used to monitor aging and deterioration of cable systems.

A correlation between an increasing 0.1 Hz tangent delta and a decreasing insulation breakdown voltage level at power frequency has been reported for PE and XLPE cables. Using the Megger VLF 0.1 Hz sine 45 kV tan delta, measurements of tangent delta can be performed to determine degradation of the cable insulation (water-trees), insulation moisture and degradation of accessories.

Select your systems based on your needs! All systems can be upgraded in a later time span without the need of shipping the unit back!	TDM 45-P	TDM 45-P-TD	TDM 45-P-PD *	TDM 45-P-TD-PD *	TDM 4540-P	TDM 4540-P-TD	TDM 4540-P-PD	TDM 4540-P-TD-PD
	Set 1	Set 2	Set 3	Set 4				
VLF Testing of short cable lengths	✓	✓	✓	✓	✓	✓	✓	✓
VLF Testing of long cable lengths	✗	✗	✗	✗	✓	✓	✓	✓
TanDelta diagnosis	✗	✓	✗	✓	✗	✓	✗	✓
Partial discharge diagnosis	✗	✗	✓	✓	✗	✗	✓	✓

* PD testing with VLF Sinusoidal voltages only

FEATURES

- Cable testing, cable diagnosis and sheath testing in one device
- Enables standard compliant high power VLF testing at 0.1 Hz (5 μ F @ 40 kV_{rms})
- Internal TanDelta measurement with automatic result interpretation
- Partial discharge diagnosis using VLF Sine wave, Damped AC or 50/60 Hz Slope technology voltages

SET 1: TDM 45-P / TDM 45-P-TD



SET 2: TDM 45-P-PD / TDM 45-P-TD-PD



SET 3: TDM 4540-P / TDM 4540-P-TD



SET 4: TDM 4540-P-PD / TDM 4540-P-TD-PD



HV DAC 270 and HV DAC 200 apply damped AC voltage technique for installation, acceptance and maintenance of high voltage cables up to 230 kV.

HV DAC systems can easily identify, evaluate and locate partial discharges faults in cable insulation and cable accessories in all types of both new and aged high voltage power cables.

The DAC frequency of the test voltage is close to nominal AC service condition, therefore, all measured PD activities are evaluated and comparable to the power frequency. PD inception voltage (PDIV) and PD extinction voltage (PDEV) also can easily be determined.

Critical PD levels responsible for the degradation status of the cable insulation are important criteria in the evaluation. The analysis and evaluation of the typical PD parameter as well as the PD fault location supports the asset management for reliable decision criteria for maintenance or replacement activities.

SPECIFICATIONS	HV DAC 200	HV DAC 270
Output Voltage		
DAC	0-141 kVRMS / 0-200 kV _{peak}	0-191 kVRMS / 0-270 kV _{peak}
Commissioning cable	132 kV	230 kV
Commissioning standard	IEC 60840	IEC 62067
PD testing standard	IEC 60270	IEC 60270
Software	For operation, evaluation & reports	For operation, evaluation & reports
Frequency range	20 Hz – 300 Hz	20 Hz – 300 Hz
Capacity range	0.035 µF - 8 µF 200 m – 40 km @ 0.2 µF/km	0.035 µF - 8 µF 200 m – 40 km @ 0.2 µF/km
Charging current	10 mA	10 mA
PD range and resolution	2 pC – 100 nC & 0.1 pC	2 pC – 100 nC & 0.1 pC
Weight	1433 lbs (650 kg)	1543.3 lbs (700 kg)

FEATURES

- Cable withstand test and PD diagnostic in one single system
- Acceptance testing of newly installed cable
- Condition monitoring of in-service cables to check the aging of the cable
- PD inception and extinction voltage are easily determined
- Automatic display and evaluation of results during the test
- Software with integrated database and PD mapping display
- Automatic calibration by cable length or propagation velocity



RECOMMENDED ACCESSORIES

- HV DAC 270 or HV DAC 200
- Calibrator
- HV connection cable
- Main and ground cables
- Software and operation manual

Contact factory at 214-330-3293 for HV DAC system for testing 500 kV cables.

CDS

The portable combined CDS is used as universal dielectric diagnostic system on PE / XLPE insulated cables as well as paper insulated cables worldwide. It combines the known methods of Isothermal Relaxation Current measurement (IRC-Analysis) and Voltage Return Method (VRM-Analysis) for aging and deterioration diagnostics.

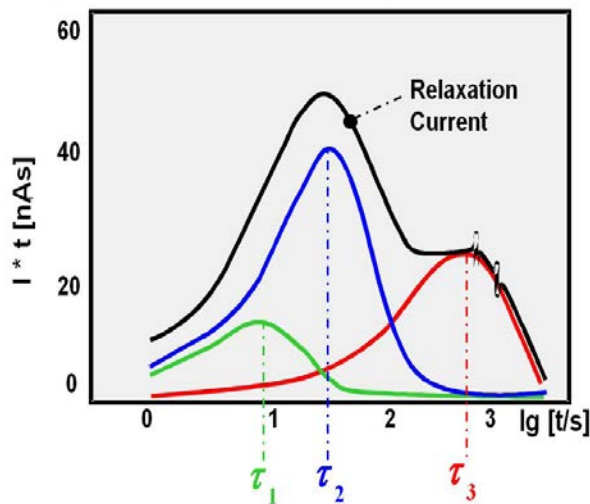
The results of this measurement give the cable operator essential information about the service reliability of the section under test. This information is very useful in the final decision making; whether or not to repair or replace the cable section in question.



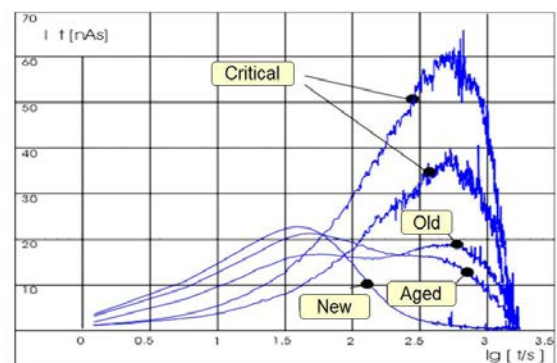
FEATURES

- Absolutely non-destructive condition evaluation of PE / XLPE / paper-oil insulated cable systems
- Three-phase parallel measurement for current and voltage – duration of a complete measurement is 1 hour
- Extended dynamic range for IRC measurement for long cable segments
- Measurement of charging current during formation
- Extended capacity of internal rechargeable battery for serial measurements
- Extended formation voltage up to 5 kV – suitable for diagnosis on HV cables

Combination of the different relaxation times



IRC-Plots from field aged cables - on site measurements



Teleflex models are time domain reflectometers (TDRs) designed for fast processing during the fault location in power cable. They can work alone or in combination with either portable or van mounted cable fault location systems.

Teleflex series are very powerful, efficient and easy to use systems ranging from the three-channel Teleflex VX model, the two-channel Teleflex SX model and single-channel T3060 and T3090 models.

The working interfaces EasyGo and EasyMode are very powerful, efficient and intelligent software tools that guide the user to the next operational step during the fault locating process.

While Teleflex T3060 and Teleflex T3090 are operated from just a single jogdial, both Teleflex VX and Teleflex SX can be operated through the touch screen or single jogdial.

SPECIFICATIONS	T3060 & T3090	SX	VX
Operation mode	Single button AC and battery (T3060 has both)	Single button AC & battery touchscreen	Single button AC & battery touchscreen
Measuring range @ 80m/μs	8 km	160 km	1280 km
Supported HV methods	ARM * Surge Pulse, ICE, sectionalizing	ARM, ICE, Decay, ARM burning, IFL	ARM, ICE, Decay, ARM burning, IFL
Pulse amplitude	35 V	Adjustable: 10-50 V	Adjustable: 30-160 V
Resolution	0.8 m @ 80 m/μs	0.1 m @ 80 m/μs	0.1 m @ 80 m/μs
ARM trigger	Automatic	Automatic	Automatic
ARM slide	1	15 traces per shot	15 traces per shot
Memory	External USB stick	4 Gb	4 Gb
Working interface	EasyMode	EasyGo	EasyGo
Interface	USB	USB	USB, Ethernet
Display color	5.7" (10.4")	10.4"	15"
Sample rate	100 MHz	400 MHz	400 MHz
Mounting	Portable	van or portable	van or portable
Channels	1 channel	2 channels	3 channels
Protection class	IP54	IP65 closed, IP54 open	IP65 closed, IP54 open
Weight	17 lbs (7.8 kg)	22 lbs (10 kg)	44 lbs (20 kg)
Dimensions	10.6 x 9.6 x 5 in (270 x 245 x 125 mm) 11 x 15 x 6 in (279 x 381 x 152 mm)	14 x 12 x 7.7 in (362 x 306 x 195 mm)	19 x 11.6 x 7.8 in (483 x 295 x 200 mm)

*For T3060 & T3090 optional techniques per customer request



TELEFLEX T3060



TELEFLEX SX



TELEFLEX VX

Portable Cable Fault Locator Series

The portable cable fault locator series of Megger provide a versatile solution for advanced identification, pre-location and pinpointing of cable faults on a wide variety of cable types.



SPECIFICATIONS	EZ Thump 4/12 kV	Smart Thump 16 kV	PFL 22M1500
Display	Transflective 5.7 in (14.5 cm) LCD color	Transflective, 5.7 in (14.5 cm) TFT	Color 10.4 in (26 cm) Full XGA
Insulation resistance test	-	Included	-
DC Testing	0 ... 12 kV or 0 ... 4 kV	0 ... 16 kV	0 ... 20 kV
Breakdown detection	Automatic	Automatic	Manual
Burning	-	60 mA max.	0 - 20 kV 58 mA 0 - 10 kV 115 mA
Surge voltage	0 ... 12 kV or 0 ... 4 kV	0-8 and 0-16 kV	0-8 and 0-16 kV
Surge sequence	4 - 12 sec	4 - 12 sec.	Adjustable 5 - 30 sec Single Shot
Surge energy	500 J @ max. voltage	1500 J @ max. voltage	1500 J @ max. voltage
Sheath fault location	-	Up to 5 kV	-
HV prelocation methods	ARM	ARM	Arc Reflection Arc Reflection Plus Differential Arc Reflection Impulse Current
Protection class	IP54	IP54	IP64 (with top/back flaps closed)
Supply	110 ... 230 V and battery 24 V / 5 AH	120/230 V, 50/60 Hz 12 V deep cycle marine battery	108-132/208-265V, 47/63 Hz 12 V battery (Optional)
Dimensions	14 x 11 x 21 in (355 x 280 x 533 mm)	19.7 x 30 x 14 in (500 x 750 x 350 mm)	38 x 21 x 19.8 in (965 x 536 x 503 mm)
Weight	70 lb (32 kg)	318 lbs (134 kg)	290 lbs (131 kg)
Typical conductor isolation & size	PE/XLPE/EPR #4 – 500 MCM	PE/XLPE/EPR #2 – 500 MCM	PE/XLPE/EPR #2 – 500 MCM
Typical conductor length	1,600 ft (500 m)	17,000 ft (5000 m)	17,000 ft (5000 m) with 2000 J option



SPECIFICATIONS	SG 15/25 1150	SFX 32	SFX 40
Display or TDR	T3060 or Teleflex SX	T3060 or Teleflex SX	Teleflex SX
Insulation test	-	-	Voltages 1,000 V and 5,000 V Ranges 1 kΩ, 1 MΩ, 100 MΩ
DC testing	0 ... 15/25 kV DC	0 ... 32 kV DC	0 ... 40 kV DC
Leakage current	-	-	0 ... 1 / 10 / 100 mA automatic range setting
Breakdown detection	0 ... 15/25 kV Manual	0 ... 32 kV Manual	0 ... 40 kV Automatic
Burning	-	0 ... 32 kV; 160 m	0 ... 8 kV, 750 mA 0 ... 20 kV, 0.1 A
Surge voltages	0 ... 7.5/12.5 kV 0 ... 15/25 kV	0 ... 4 kV ; 0 ... 8 kV 0 ... 16 kV ; 0 ... 32 kV	0 ... 12.5 / 25 kV or 0 ... 16 / 32 kV 0 ... 4 kV; 0 ... 8 kV 0 ... 3 kV; 0 ... 6 kV
Surge energy	1150 J @ max. voltage	1200 J (optional, 4kV surge stage only) 1750 J (3500 J optional)	1.000 J (optionally 2.000 J)
Surge rate	Adjustable manually 3 ... 9 sec and Single Shot	Adjustable manually 3 ... 10 sec and Single Shot	3 ... 10 sec. and single Shot
Sheath fault location	-	0 ... 5 kV; 160 m	0 ... 5 kV and 0 ... 10 kV
Cycle intervals	-	Adjustable manually 2.5 – 10 sec.	DC; 1:3 ; 1:4 ; 1:6 (sec.)
HV prelocation methods	ARM, ICE current decoupling, decay voltage coupling	ARM, ICE current decoupling, decay voltage coupling	ARM, ICE current decoupling, decay voltage coupling
Protection class	IP54	IP54	IP54
Supply	120/230 V, 50/60 Hz 12 V deep cycle marine battery	230 V; 50, 2 kVA (110 V optional)	230 V; 50 / 60 Hz (110 V optional)
Dimensions	23.6 x 49 x 23.6 in (600 x 1250 x 600 mm)	31.5 x 50 x 31.5 in (800 x 1280 x 800 mm)	20.5 x 17 x 4 in (520 x 430 x 1050 mm)
Weight	265 lbs (120 kg)	308 lbs (140 kg)	308 lbs (140 kg)



RECOMMENDED ACCESSORIES

Surge wave receiver digiPHONE+

Earth fault locator ESG NT

Audio frequency cable tracer and fault locator Ferrolux

External safety unit with emergency OFF, signalling lights according to VDE 0104 / DIN EN 50191 for portable and vehicle installed versions

EZ-Thump 4/12 and SMART-THUMP16



EZ-Thump 12

EZ-Thump 4/12

The practical and efficient solution for fast on-site fault location.

Quick-step and expert modes, especially convenient where operator may not be called upon to use the equipment on a regular basis.

FEATURES

- Compact, lightweight and rugged field instrument
- Battery and AC line operation
- Automatic end-of-cable and fault locating
- 4 kV or 12 kV output versions available
- 5.7" Transfective color display
- ARM® Prelocation
- 500 Joules for pinpointing fault location
- Optional sectionalizing software*



SMART-THUMP16

SMART-THUMP16

The SMART-THUMP16 is the only fault locator with built-in intelligence to interpret the results of the initial test sequence.

The "Turn & Click" rotary button operation allows the user automatically proof test, prelocate, and pinpoint the fault from one convenient control console. No adjustments are required.

FEATURES

- Delivers 1500 J at 8/16 kV
- 16 kV DC high voltage proof test and insulation resistance test
- EasyGo - automatic sequence to proof test, pre-locate and pinpoint
- Interpretation of test results
- 5.7" transfective color display
- Safety / grounding check

PFL22M 1500

The PFL22M1500 power cable fault locator is designed to provide quick, effective, accurate and safe fault location, thereby reducing system outages and minutes lost.

This instrument comes in a rugged yet portable enclosure. Its IP64 rating makes it suitable for use in even environmentally hostile conditions.

FEATURES

- HV insulation testing to 20 kV
- Proof / burn up to 20 kV, 115 mA 8/16 kV, 1500 Joules
- ARM, ARM Plus & ICE (current impulse)
- Integrated large screen color TDR
- Optional onboard inverter



PFL22M1500

Surgeflex 15/25

The SG15/25 series power cable fault locator systems are designed to provide safe, quick, accurate, and easy fault locating performance.

The SG15/25 is typically used on 15/25 kV URD circuits which are made of solid dielectric cables (XLPE, EPR). They are 2 to 3 miles (3 to 5 km) long, with a conductor size of up to 500 MCM (250 mm²).

The units feature a tough and high quality stainless steel enclosure, rated IP64 (closed) and IP53 (open) for use in rough outdoor environments.

FEATURES

- Dual stage cap 1150 J @ 7.5/15 kV or 12.5/25 kV
- Internal filter for arc reflection method
- Internal coupler for surge pulse (ICE) method
- Available either mounted on a heavy-duty portable hand cart or installed in a vehicle
- Burn/hipot test up to 15 or 25 kV
- 25,000 ft (7.62 km) TDR range, 100,000 ft (30 km) optional
- Internal 12 V battery with inverter/charger option



Surgeflex 15

Surgeflec 32 and Surgeflec 40



Surgeflec 32

Surgeflec 32

The Surgeflec 32 is a mobile system for testing and fault locating on low and medium voltage cables.

It is operated by the new touchscreen and well proven control knob functionality with Teleflex SX.

The interface is shown on a sharp and very bright 10.4" display. The EasyGO operation is reduced to the important and essential steps and runs automatically.

Surgeflec 32 can also be ordered with Teleflex 3060 or 3090.

FEATURES

- DC testing up to 32 kV
- Prelocation
 - Reflection measurement
 - ARM measurement up to 32 kV
 - Decay up to 32 kV
 - ICE Impulse current method
- Burning (fault conditioning) up to 32 kV
- 0 ... 8/16/32 kV @ 1750 Joules pinpointing
- Sheath fault locating (0 ... 5 kV power regulated)



Surgeflec 40

Surgeflec 40

A portable, trolley mounted or vehicle installed multi-functional system for testing, prelocation, pinpointing and converting cable faults in low and medium voltage networks.

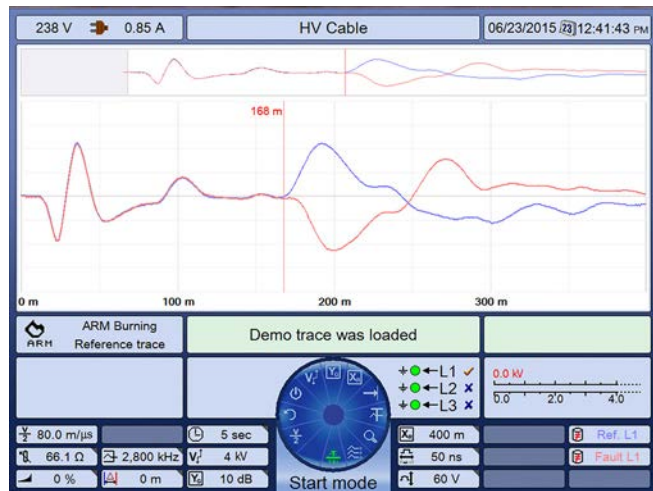
The system is either controlled directly by Teleflex SX reflectometer or the integrated control panel.

All functions of the system can be easily performed using the rotary encoder. The system supports easy and clear handling, even for inexperienced users.

FEATURES

- DC Testing up to 40 kV
- HV-prelocation methods integrated
- Easiest operation by the Teleflex SX
- 1000 or 2000 Joules for pinpointing
- Surge voltage levels for high voltage cable 12,5/25 kV or 16/32 kV
- Surge voltage levels for low voltage 3/6 kV or 4/8 kV
- Sheath fault location with step voltage method
- Integrated safety system for monitoring of earth (F Ω), step voltage (FU), emergency OFF, temperature etc

Screen showing a fault locating trace



Optional Accessories for Cables



1 - Elbow adapter 25 kV	9 - Vise grip with nutted stud
2 - Elbow adapter 15 kV	10 - Vise grip with 14 mm female MC
3 - Elbow adapter 35 kV	11 - Vise clamp brass
4 - Female MC 10 mm with rubber boot	12 - Vise clamp brass on mounting plate
5 - Male MC 14 mm with rubber boot	13 - Bushing pin connector 15/25 kV with 14 mm female MC
6 - Female MC 14 mm with rubber boot	14 - Narrow hot line clamp with 14 mm female MC
7 - HD battery clamp with 10 mm male MC	15 - Hotline clamp
8 - HD battery clamp with 10 mm male MC	16 - Small hotline clamp
*For other configurations of termination please contact factory	

Tracing and Pinpointing

Megger Cable Location Systems allow you to quickly and reliably locate cables, identify the exact route, and obtain a comprehensive view of the cable network.

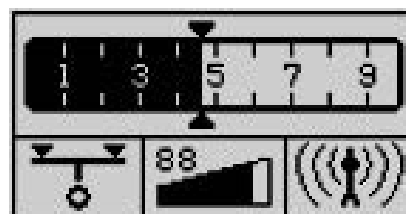
SPECIFICATIONS	Easyloc Plus	Ferrolux FL 10 Set	Ferrolux FL 50 Set
Application	Power and Telecomm cable and pipe location	Power and Telecomm cable and pipe location	Power and Telecomm cable and pipe location
Output power	0.1 W; 0.5 W and 2 W Continuous and pulsed signal (switchable)	0 ... 10 W, Manually switchable in 0.5 W increments	0 ... 50 W, Manually switchable in 2.5 W increments
Active frequencies	100 Hz / 120 Hz 8 kHz / 33 kHz	491 Hz / 982 Hz / 8.44 kHz	491 Hz / 982 Hz / 8.44 kHz
Passive frequencies	Radio: 15 kHz ... 23 kHz, Power: 50 Hz ... 250 Hz, Easyloc TX / Sonde: 33 kHz	50 Hz / 60 Hz / 100 Hz / 120 Hz	50 Hz / 60 Hz / 100 Hz / 120 Hz
Receiver techniques	Peak or maximum	Null or minimum Peak or maximum Super maximum	Null or minimum Peak or maximum Super maximum
Measured parameters	-	Loop impedance, current, voltage	Loop impedance, current, voltage
Depth measurements	Cables: .98 ft (0.3 m ... 5 m) Sondes: .98 ft (0.3 m ... 7 m)	0.1 m ... 7 m; (active frequencies only)	0.1 m ... 7 m; (active frequencies only)
Current measurements	-	1 mA ... 400 A / 180 A / 20 A	1 mA ... 400 A / 180 A / 20 A
Cable selection/identification	-	Included	Included
Internal memory	-	Data recording with graphic display	Data recording with graphic display
Location of cable sheath fault	-	-	Included
Protection class	Receiver: IP 56 IP 67 (below the battery case) Transmitter: IP54	IP 54	IP 54
Operating time	Receiver: > 40 h Transmitter: > 40 h	Receiver: >13 h Transmitter: 2.5 h at 10 W	Receiver: >13 h Transmitter: >1 h at PA=50 W or >5 h at PA=10 W
Dimensions receiver	3.9 x 26.4 x 10.2 in (10 x 67 x 26 cm)	21.7 x 3.9 x 1.6 in (55 x 10 x 4 cm)	21.7 x 3.9 x 1.6 in (55 x 10 x 4 cm)
Dimensions transmitter	10.2 x 10 x 5.5 in (26 x 25.5 x 14 cm)	9.8 x 4.8 x 6.7 in (25 x 12 x 17 cm)	16 x 13.2 x 6.9 in (41 x 33.5 x 17.5 cm)
Weight receiver	5.5 lbs (2,5 kg)	5.2 lbs (2,4 kg)	5.2 lbs (2,4 kg)
Weight transmitter	5.7 lbs (2,6 kg)	6.4 lbs (2.9 kg)	30.8 lbs (14 kg)



The Easyloc is a fast and simple to operate system for the detection and tracing of undergrounded cable and pipe systems. The Easyloc receiver shows the signal level received and marks the maximum. The operators can work with the audio signal and the visual confirmation at all times. Depth measurements can be obtained at the push of a button, identifying the selected sensor.

FEATURES

- Avoid cable damage and help to minimize costly accidents and inconvenient delays
- Depth measurement at the push of a button, even without a transmitter
- 33 kHz – compatible with other location systems
- Large display with automatic backlight
- Quick and simple to operate



Easyloc Rx

FERROLUX® FL Set

FERROLUX FLG 50



The FERROLUX® System provides solutions to a wide variety of problems for operators of power and telecommunication cable systems and public utility companies. The FERROLUX Audio Frequency System can be used for pipelines and cable tracing, cable selection and location of cable faults.

The FERROLUX combines the location techniques (identification of the direction of the signal flow) and audio-frequency methods in one instrument.

FEATURES

- Perfect ergonomics and light weight for comfortable operation
- Direct measurement of cable depth and signal current strength
- Signal select feature for unambiguous identification of targeted cable
- Cable locating with left-right guidance
- Automatic or manual frequency selection
- Multi-frequency operation – three frequencies at the same time
- Indication of dangerous output voltage
- Location of sheath faults
- Extensive PC software for evaluation of measurement data
- Rechargeable batteries



FERROLUX DEB 3-10



FERROLUX FLG 10



FERROLUX FS 10

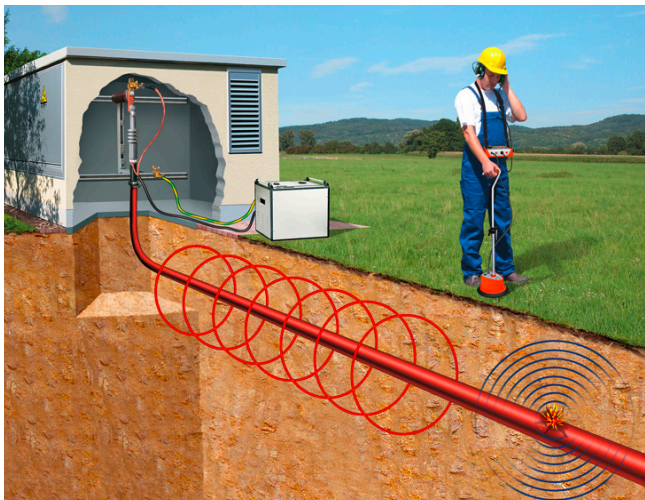
RECOMMENDED ACCESSORIES

- Mini antenna FLA 10 (for cable selection)
- Step voltage probe DEB 3-10 (for sheath fault locating)
- Transmitter clamp UZ 50, UZ 100 (for on-live cables)

DigiPHONE+

The DigiPHONE+ is the new definition of silence! It pinpoints underground cable faults with unprecedented accuracy and sets a new standard by applying innovative audio concepts. This combination results in a pinpointing device for high resistive faults that is unsurpassed in sensitivity.

DigiPHONE+ works off the "thunder and lightning principle" of fault location. In the same way you can measure how far away a storm is by counting the distance between a faster lightning flash and its slower thunder, this pinpointer works by measuring the energy around an underground fault. Think of the flashover at a fault as the lightning. The DigiPHONE+ measures distance by figuring timing between that electromagnetic "flash" and the seismic (or acoustic) jolt also created at the moment of flashover.



FEATURES

- Easiest operation
- Automatic adjustment of values
- BNR – Background Noise Reduction
- APM – Auto Proximity Mute when approaching the handle. ("Bang" protection)
- Bright, readable display
- 84 dB(A) limiter (according to noise and vibration protection laws, e.g. "OSHA")
- Distance measurement in milliseconds or meter/feet
- Easy tracing with left-right indicator
- "Compass" for fault direction indication
- High ground stability of the sensor up to 45°



ESG NT

The earth fault locator ESG NT is used for the high accuracy pinpointing of a sheath fault.

The easy-to-use instrument utilizes a bright, sun readable TFT color display.

A fully automatic calibration keeps the display always at zero. The integrated noise suppression eliminates all influences by DC, railway currents, industrial plants and high resistive soil environment.

With two earth rods, the ground step voltage potential is measured and the direction towards the fault is indicated by the display.

FEATURES

- Automatic adaptation to voltage level
- Automatic filtration of interfering signals
- Automatic zero calibration, no adjustments necessary
- History mode
- High-contrast color display



DigiPHONE+ NT Set



Megger has combined the two systems DigiPHONE+ and ESG NT in one device: the DigiPHONE+ NT Set.

The acoustic-magnetic cable fault pinpointing and step voltage pinpointing of cable sheath faults can be done easily, quickly, and reliably.

The operating mode switches automatically by identifying the selected sensor.

FEATURES

- Perfect acoustic quality and noise immunity
- Automatic filtration of interfering signals
- Automatic zero calibration, no adjustments necessary
- History mode



CI & LCI

CI & LCI models allow clear identification of a cable before it is cut or fitted with absolute relevance to safety. Any mistake can result in fatal consequences for the cable fitter and cause outages for the connected customers.

The CI cable identifier model will safely identify a de-energized primary HV cable within a group of energized or de-energized cables.

The LCI model will identify cable on energized low voltage cables.

The absolute safe identification is based on polarity, impulse shape, frequency (2-second interval) and signal magnitude of the DC pulse (up to 100 A) coming from the transmitter, which is picked up by the receiver and a clip-on probe. The transmitter can operate on 120 VAC or internal battery.

The standard combination kit (for HV & LV cables) includes a 6" flexible clip-on probe, and two touch sensors for all your applications where a clip on cannot be used.



CI and LCI



FEATURES

- Inexpensive cable identifier system
- Easy to operate and safe handling
- Avoids false positives

PIL 8

The Phase Identification System PIL 8 permits a fast and safe phase determination at the jointing location during the mounting of medium voltage cables.

The VDE regulations stipulate that if for the purpose of a phase identification in medium voltage cables it is necessary to disconnect the earthing and short-circuiting for the duration of the measurement, other suitable safety measures have to be implemented.

The PIL 8 unit meets this requirement, inasmuch as its application eliminates the need of disconnecting the short-circuiting and earthing circuit.



PIL 8

FEATURES

- Maintenance free transceiver clamps
- Suitable for any type of switch gear
- Requires only one person
- Easiest operation
- Absolute safe phase identification



From small vehicle mount to modular systems, Megger has the cable van system to fit your need.



Centrix

Centrix is the most modern system able to combine cable testing, cable diagnostic and cable fault location techniques into a van. Centrix operation is fully automatic for both single- and three-phase cable fault location models.

Centrix set-up for fault location includes DC testing up to 80 kV.

All the high voltage pre-location methods include ARM, ARM plus, decay plus, decay, IFL, and ARM burning. All the accessories such as cable tracer, cable fault pinpointing and cable identifier are included.

Centrix could be customized to become a complete testing and diagnostic cable system that will include VLF, tan delta, IRC/RVM and partial discharge techniques. It is the full, safety and reliable solution for predictive, preventive and corrective maintenance.



Compact City and VARIANT

VARIANT



Variant

The Variant is a manually operated, modern and modular system built into separate modules. It can be customized for cable fault location as a single- or three-phase system controlled by Teleflex VX.

Variant provides all the high voltage pre-location techniques for cable fault location. It also can be set up for cable testing and diagnostics providing a complete solution for customers working with underground cable systems. There are two versions available for DC testing: 80 kV and 110 kV.



Compact City

The most versatile solution for either cable testing, cable diagnostic or cable fault location, where a small vehicle is the main requirement in city areas with narrow pedestrian zones and minimal parking spaces is the Compact City van system.

For fault location applications, Compact City, equipped with the SPG 40 model, is the right answer not just due to the working space but also for the flexible and easy measurement system.

Compact City includes all the safety features implemented in the large cable test vehicle and provides the user with a friendly and easy to use system. The EasyGo operation philosophy enables even inexperienced users to efficiently carry out cable checks and fault location.



Compact City

The fully automatic MFM10 is a testing, pre-location and pinpointing cable sheath faults unit that works with the EasyGO principle.

The evaluation of the measured data gives the operator a fast, easy and reliable tool to evaluate this kind of fault.

The included voltage drop and bipolar pre-location method ensures the elimination of external galvanic and thermoelectric influences increasing the accuracy and quality.

FEATURES

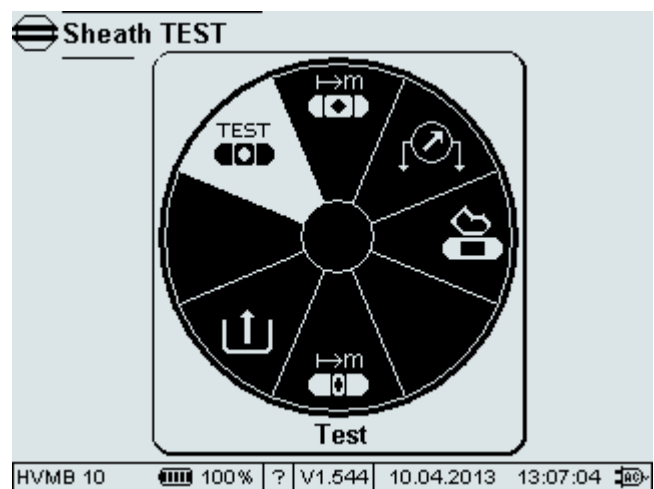
- Testing, pre-location and pinpointing of cable sheath faults
- Test voltage up to ± 10 kV DC
- High adjustable current up to 750 mA, also suitable for burning
- Improved pre-location with voltage drop method
- Highest accuracy by bi-polar measurement
- Fault locating of high-resistive faults inside cables
- Detection of multiple faults
- Detection, storage and indication of last events
- Easy-Go operation via jogdial and touch screen
- Solid IP53 PELI trolley case
- Only one single removable HV connection cable
- Max. test object capacity 10 μ F



MFM10

RECOMMENDED ACCESSORIES

- Version for vehicle installation (no battery)
- ESG NT earth fault probe for DC step voltage
- 10 m HV connection cable
- Connection clamps for large terminals
- Audio frequency option



HVB10

HVB10 is a highly accurate high-voltage bridge designed to locate cable and sheath faults, perform sheath testing, and pinpoint sheath faults, especially suited also for long high voltage cables.

With its top resolution, intermittent fault detection function, and load adaptation for faster cable charging, the HVB10 is an indispensable tool for all utilities that want to reduce downtime and facilitate repair of power and communication cables.

The primary purpose of the HVB10 is the pre-location of core-to-core and core-to-screen faults. But it also provides the sheath fault location functions from the MFM10, sheath testing, pre-location and pinpointing with pulsed DC, and optional audio frequency operation.



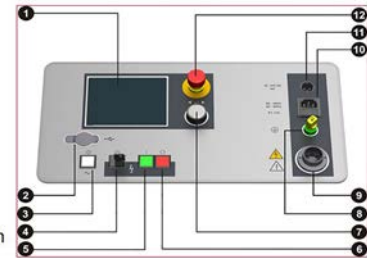
HVB10

FEATURES

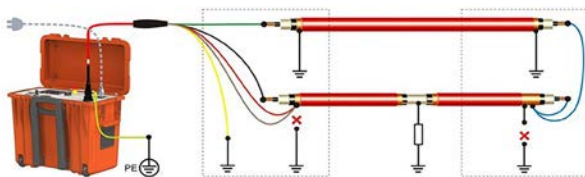
- Top class measurement and accuracy
- Automatic test sequence
- Bi-polar prelocation for the elimination of external influences
- Detection and indication of wrong connections
- Only one single removable HV connection cable
- Completely independent of the parameters of auxiliary lines
- EasyGO operating system
- Interface USB port
- Max. test object capacity 25 μ F

HVB10 Control & Operation

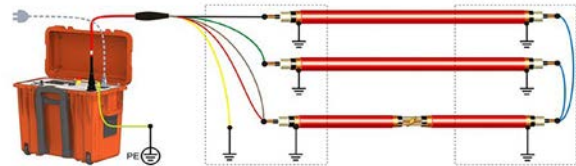
- ❶ Touch-screen display
- ❷ USB port
- ❸ On/off push-button
- ❹ HV "interlock" key switch
- ❺ "HV ON" push-button
- ❻ "HV OFF" push-button
- ❼ Rotary encoder
- ❽ Protective earthing connection
- ❾ HV output
- ❿ Power supply socket with fuses
- ⓫ 12 ... 24 V DC charging socket
- ⓬ Emergency off button



HVB10 Connection for sheath fault location



HVB10 Core to screen fault location



RECOMMENDED ACCESSORIES

- ESG NT earth fault probe for DC step voltage
- Audio frequency option

The Fault Sniffer is ideal for cable fault pinpointing in low voltage networks. Faults can be quickly located without interrupting the power supply.

The Fault Sniffer detects and measures the typical burning gases as they are produced by cable faults and shows their concentration.

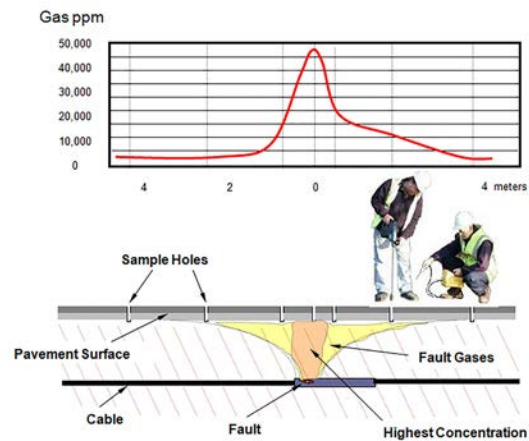
The fault is located where the concentration is highest and the maximum value is obtained.

The Fault Sniffer is reliable and avoids the incorrect excavations, saving time and money.



FEATURES

- Can be used on straight or branched networks
- Reliable avoidance of unnecessary excavations
- Fast and easy location of the fault spot
- Handy size, easy to transport
- Accurate to approximately a decimeter
- Detection of fault gases from a large distance
- Sensitive to several gases, suitable for any insulation material



NIM1000

The impedance meter NIM1000 measures the loop impedance to detect malfunctions in the LV grid at an early stage.

The NIM1000 triggers load-sensitive and neutral faults, detects weak contacts, and exposes hidden flaws. Depending on the grounding conditions of the tested grid, a multi-phase measurement calculates the impedance of the neutral conductor to detect defects that can cause severe safety issues.

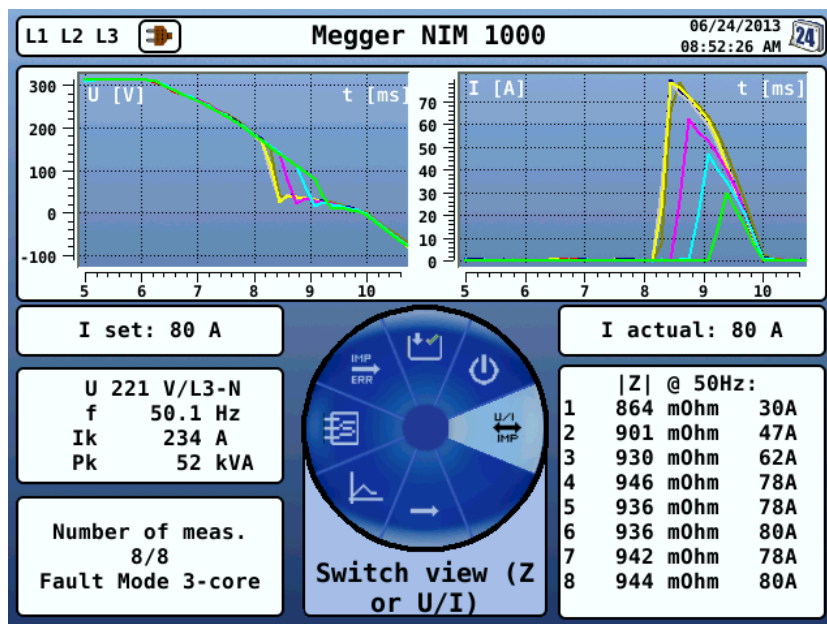
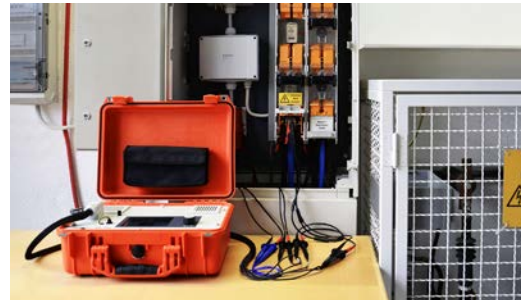
NIM1000 is a versatile device. It measures the current capacity under real-life conditions, determines the voltage dip resulting from a given load, and performs tests on cables, power supply lines, and busbars. Those tests help determine the correct dimensioning of the installations, ensure a consistently good power quality, and prevent downtimes.



NIM1000

FEATURES

- Compact and portable instrument for field use
- Easy operation with direct display of all measurement parameters
- Highest test current up to 1000 A
- Single and three-phase application
- Measures the grid impedance up to the 10th harmonic
- Automatic long-term measurement
- USB 2.0 for test report and screenshot generation
- Bright color display



Hands-on cable fault testing and diagnostics with the latest technology





Megger is a world leader in the manufacture and design of measuring instruments in cable testing, cable diagnosis and cable fault location.

Megger
4271 Bronze Way
Dallas, TX 75237
T: 1 214 330 3293
E: csasales@megger.com
www.megger.com

Megger[®]