EZ-THUMP SERIES
Cable fault location system

Megger

- **Compact, lightweight, all-in-one, rugged portable cable fault locating system**
- **Battery and AC line operation; field-replaceable battery**
- **Automatic cable end identification**
- **Automatic ARM fault pre-location with multishot technology**
- **F-OHM safety feature ensures operator safety**
- **7” HiBrite color display for outdoor visibility**
- **Fault pinpointing, surge current**
- **Automated E-TRAY fault locating on both LV & MV cables**
- **Sheath testing and sheath fault locating, LV & MV cables**

DESCRIPTION

The EZ-THUMP units are a line of compact and lightweight cable fault locators. They combine simple operation with easy portability. The EZ-THUMP line can be powered off a internal battery or external AC. The optional wheel kit provides easy mobility. Designed to operate on MV, LV shielded and unshielded cables. The EZ-THUMP line combines a Hipot, TDR, prelocation and pinpointing (surge testing) all in one simple to use unit. The EXT line incorporate multiple advanced features that provide both simple operations reduced fault locating time.

Multishot technology when performing ARM prelocation increases accuracy and greatly reduces the likelihood of a false return. The E-TRAY technology automatically guides the operator through the fault finding process. Starting with Hipot the type of fault is determined, then prelocation is performed followed by pinpointing. The unit typically requires no adjustments and is operated via the unique and easy to follow E-TRAY GUI and a rotary control knob. During this 3 step process the test data will be stored and used in difficult fault locating situations to interpret the result and provide advice to the user of what to do next.

FEATURES

- Rugged, lightweight, high impact and weather resistant IP53 designed enclosure.
- Operation from internal battery or from an AC source, or simultaneous charging of battery and AC operation.
- Key switch safety interlock standard (available also without).
- F-OHM feature ensures operator safety.
- E-TRAY quick-step mode provides simple GUI. Ideal for operators who do not use the equipment on a regular basis.
- E-TRAY expert mode. Supports maximum functionality and versatility. Ideal for expert operators.
- E-TRAY provides an automatic fault locating procedure. Starting with hipot testing, continuing with the prelocation and pinpointing.
- Simple E-TRAY controller operation with a single rotary control knob.
- Automatic end of cable and distance to fault detection.
- Automatic optional sectionalizing.
- Automatic breakdown detection.
- Sheath fault testing
- LV ground fault locating in sheath mode.

APPLICATIONS

Safety

Performing cable fault locating can be hazardous. Working with high voltages at high energies can be life threatening when not performed properly. The EZ-THUMP not only has safety interlocks and requires the user to knowingly activate high voltage, but it also has an F-Ohm feature. This feature ensures there is no difference of potential between earth and return. Areas with poor grounds can lead to a difference of potential between the earth and return. This can lead to an operator being shocked! The F-Ohm feature identifies this potential and prevents the operator from being exposed to this hazard.

Insulation testing

The built in Hipot feature is used to test the dielectric strength of the cable or sheath insulation. An insulation test helps determine the type of fault a cable may have; shorted, open, a flashing fault, or excessive leakage. If the cable has a flashing fault, the EZ-THUMP will automatically identify the breakdown voltage.

Prelocation

After identifying the type of fault, the EZ-THUMP automatically starts a prelocating process.

A TDR test will be run. The EZ-THUMP will automatically identify the end of the cable and report the cables length. This can identify the location of shorted or opened cables.

TOnce the end of the cable is identified the EZ-THUMP will automatically proceed to performing an ARC reflection test. A pulse is released into the cable. This creates a flashover at the point of failure. The TDR using a Multishot technology then automatically identifies the distance to the fault. The multishot technology allows the TDR to take hundreds of reflection measurements. The software will then automatically identify the best trace and will identify the location of the fault. This Multishot technology provides a more accurate prelocating reduces the possibility of poor trace results with difficult interpretations.

Pinpointing

Once the fault has been prelocated the EZ-THUMP will automatically proceed to the pinpointing function. A surge current is pulsed through the cable, which creates a "thumping" sound. This allows operators to pinpoint the location of the fault.

The optional digiPHONE+2 can be used to locate the fault more accurately and quicker. The quicker the fault is located, the less the cable is stressed. When surge currents are injected in a cable, this not only creates a flashover at the point of the fault, but it will create small amounts of partial discharge across voids in the cable insulation. This overtime will degrade the cable, eventually leading to more faults. The faster the pinpointing the better for the cable.

The digiPHONE+2 uses the "Thunder & Lightning" method. It first picks up the magnetic wave caused by the surge, then it picks up the acoustic wave. Since both of these waves move at different predictable speeds, the digiPHONE+2 can measure the time interval between them and determine the distance to the fault. This way, reflected sound waves, such as those in conduits do not affect its measurements.

Applications	EZ-THUMP 3 (V3) - dual stage -	EZ-THUMP 4 (V3) - single stage -	EZ-THUMP 12 (V3) - single stage -
MV buried cable fault locating	×	×	✓
LV shielded buried cable fault locating	best	good	ok
LV unshielded cable fault locating	best	good	ok
Street light fault locating	best	good	ok
Sectionalizing networks	up to 3 kV	up to 4 kV	up to 12 kV
Solar buried and tray cable fault locating	best	good	ok
Insulation testing	3 kV	4 kV	12 kV
TDR (Time Domain Reflectometry)	✓	✓	✓
Conditioning cables	94 mA	35 mA	12 mA
Sheath testing	✓	✓	✓

Specifications	EZ-THUMP 3 (V3) - dual stage -	EZ-THUMP 4 (V3) - single stage -	EZ-THUMP 12 (V3) - single stage -
Supply			
AC supply	AC line: 100 - 230 VAC ± 50/60 Hz		
Battery	Battery: Internal 24 V, NiMH Battery 5 AH		
Battery charge	Approx. 30 - 60 min of surge/thumping		
Battery charger	Internal, 100-240 VAC-24 V_{DC} charger		
Battery recharge	Approx. 3 hours		
Features			
Hipot	3KV	4KV	12KV
Output (single stage) (dual stage)	0 - 1.5 kV: 47 mA 0 - 3 kV: 94 mA DC	0 - 4 kV: 35 mA DC	0 - 12 kV: 12 mA
TDR	On-screen comparison of upto 256 pairs		
TDR range	Up to 170,000 ft / 52 km		
TDR sampling rate	100 Mhz		
TDR resolution	2.5 ft @ 250 ft / fs (0.8m @ 80 m/µs)		
Automatic end of cable and distance to fault indication	✓		
Arc Reflection	Single shot surge, multishot TDR		
Surge	0 - 1.5 / 3.0 kV @ 500 J	0 - 4 kV @ 500 J	0 - 12 kV @ 500 J
Impulse sequence	5 - 10 seconds or single shot		
Sectionalization	Optional		
Sheath testing and sheath fault locating	✓		
E-TRAY *(step by step customizable fault locating)*	✓		
Hardware			
Display	7in (17.78 cm) HiBrite TFT Color LCD 1280 x 800 pixel		
Memory	100 traces		
Interface	USB port		
Terminations	T9		
Termination Kits			
North American hot line clamps	✓		
Vice grip clamps	✓		
Battery clamps	✓		
Dimensions (include top-mounted cable pouch)	14 x 11 x 25 in. (35.5 x 28 x 64 cm)		
Weight	75 lbs (34 kg)		
Safety			
Emergency OFF mushroom button	✓		
Key-switch interlock, Standard (available without)	✓		
F-Ohm interlock detection/indication "safe connections"	✓		
Interface for remote EMERGENCY OFF box	✓		
Environmental			
Operating temperature	-20°C to + 50°C (-4°F to + 122°F)		
Storage temperature	-25°C to + 65°C (-13°F to + 149°F)		
IP rating	IP53 (with top open)		
Cables supplied			
HV flexible shielded cable	12 ft (4.5 m), 50 ft (15 m) optional		
Safety ground cable	12 ft (4.5 m), 50 ft (15 m) optional		
AC supply lead set	6 ft (1.8 m), (US / SCHUKO / UK plug)		

ORDERING INFORMATION

Example:	EZT4V3 -	50	T9	X	WW	Z
Model			**T9**			

Base model

EZT3DV3
EZT4V3
EZT12V3

Cable length

YY = Cable length **15** or **50 m**

T9 = fixed value!

Select software option

X = Sectionalization*
S = Include
Blank field = Exclude

** Sectionalization Software (HDW Patent US B 6, 683, 495,B2)*

Safety key switch

Z = Safety key switch*
P = Exclude
Blank field = Include

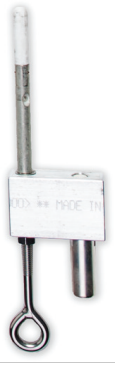
** Delivery without safety key switch (check whether permissible under local safety regulations)*

Permanently attached cart

WW = Wheel kit*
WK = Include
Blank field = Exclude

** Provides special permanently attached cart with sturdy stainless-steel frame, telescope handle and air tires.*

Included accessories – YOU MUST CHOOSE ONE TERMINATION KIT!		**Order No.**
North America (US,CA,MX) termination kit		1015-525-US
All other countries termination kit		1015-526-AOC
Vice grip termination kit		1015-525-VG

Optional accessories		Order No.
Elbow adapter 15kV 10 mm connector for T9 terminations		1013-514
Elbow adapter 25kv 10 mm connector for T9 terminations		1013-515
Elbow adapter 35kv 10 mm connector for T9 terminations		1013-516
Elbow adapter 35kv 10 mm connector for T9, ESNA		1013-517
15 kV probe adapter, w/10 mm male MC connector for T9 terminations		1013-518
25 kV probe adapter, w/10 mm male MC connector for T9 terminations		1013-519
35 kV probe adapter, w/10 mm male MC connector (fits Elastomold bushing), compatible with HV "T9" terminations		1013-520
35 kV probe adapter, w/10 mm male MC connector for T9,Cooper bushing.		1013-521
Portable equipment safety ground cable reel 13" high X 10-1/2". 130 ft		P1G130T9
Portable equipment safety ground cable reel 13" high X 10-1/2". 50 ft		P1G50T9
Portable equipment safety ground cable reel 13" high X 10-1/2". 85 ft		P1G85T9
Portable high voltage cable reel with HV return, 18" high X 20". effective width with 130' of HV cable. Compatible with T9 terminations.		P1H130T9
Portable high voltage cable reel with HV return, 18" high X 20". effective width with 50' of HV cable. Compatible with T9 terminations.		P1H50T9
Portable high voltage cable reel with HV return, 18" high X 20". effective width with 85' of HV cable. Compatible with T9 terminations.		P1H85T9

Optional accessories		Order No.
2-reel cable rack for vehicle mounting. Reels for HV cable, safety ground or AC line cord. 130 ft for T9 terminations.		R2H130T9G130
2-reel cable rack for vehicle mounting. Reels for HV cable, safety ground or AC line cord. 50 ft for T9 terminations.		R2H50T9G50
2-reel cable rack for vehicle mounting. Reels for HV cable, safety ground or AC line cord. 85 ft for T9 terminations.		R2H85T9G85
3-reel cable rack for vehicle mounting. Reels for HV cable, safety ground and AC line cord. 130 ft for T9 terminations.		R3H130T9G130A130
3-reel cable rack for vehicle mounting. Reels for HV cable, safety ground and AC line cord. 50 ft for T9 terminations.		R3H50T9G50A50
3-reel cable rack for vehicle mounting. Reels for HV cable, safety ground and AC line cord. 85 ft for T9 terminations.		R3H85T9G85A85
Large hastings clamp for large conductor sizes, with pigtail and 10 mm female MC connector compatible with HV T9 terminations		1013-526
Remote emergency OFF box*		2010012
*Connecting cable for remote emergency OFF box *(required for remote emergency box)*		890024896

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EZ-THUMP-series_DS_EN_V02
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ISO 9001
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