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DATA-SHEET



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WHY BUY
WHEN YOU CAN HIRE

IMPORTANT ADVISORY NOTICE

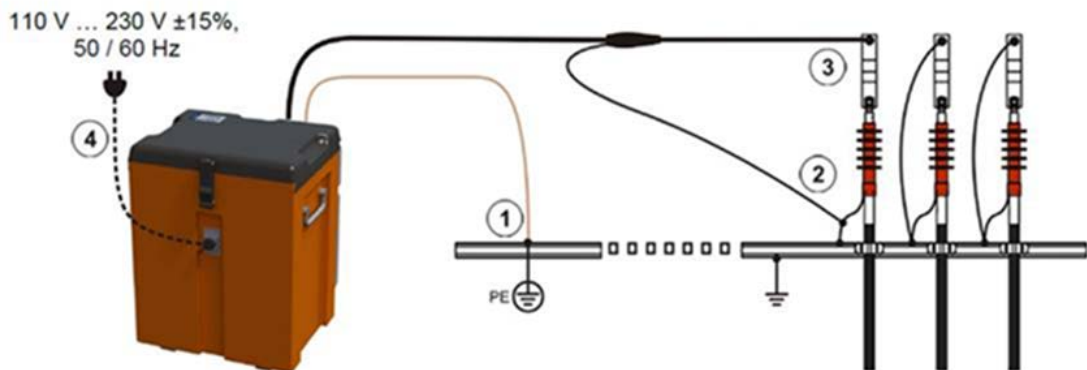
It has recently come to our attention that some users are not connecting the EZ Thump correctly. Safety is paramount and Megger is acting upon this information as a responsible supplier to ensure that it conveys the importance of using this equipment within the guidelines.

The EZ Thump **MUST** be connected as explicitly stated in the User Guide that accompanies the instrument. If the user fails to follow these instructions, a hazard may arise exposing a risk to the user, with subsequent damage to the equipment.

The diagram below is an extract from the User Guide:

The EZ thump has one High Voltage output lead (labelled 3) and two earth return leads. The HV earth return lead (labelled 2) is the measurement lead and must be connected to the test piece and to earth (ground) for safety. The safety earth (labelled 1) is an additional earth return path that must also be connected to ground, close to the user, so that if the HV return is accidentally disconnected this additional safety earth redirects the output current safely through the unit.

Connection diagram The following figure shows the simplified connection diagram:



To ensure correct earth connection between return earth (2) and additional safety earth (1), a measurement must be made using an appropriate ohmmeter. The user can then confirm the resistance between earth connections 1 and 2 is no more than 5 ohms. This information is specified in the User Guide.

In Version 1 EZ Thumps it is also advised to check the safety earth, before connection to the test piece. This is done by measuring between the HV earth return and safety earth return leads (labelled 1 and 2 in the diagram). This value should be 100 ohms +/- 10 ohms. If the measurement is not 100 ohms +/- 10 ohms, please return the unit to your local Megger Authorised Service centre for investigation.

V1 EZ Thumps can be identified by the serial number sticker on the operator plate. Another means of identifying V1 units have their associated leads stored in the back of the unit.

Version 2 EZ Thumps have an additional earth measurement functionality (F-Ohm). This continuously monitors the earth return and automatically disables the test if a reading between measurement and safety earth exceeds 5 ohms. Consequently, the advisory comment above regarding the 100 ohm check does not apply.

V2 units can be identified by the serial number sticker on the operator plate. Another means of identifying V2 units is that the leads are stored in a fabric case on top of the lid, as well as an IEC socket on the front of the unit. V2 units are always grey in colour.

All users must be aware that this instrument outputs high voltage and must only be used by competent, trained engineers. Full operational details are in the user guide which shall always accompany the unit. All safety warnings in the user guide must be adhered to. Megger can provide training on the EZ thump and any other Megger products if required.

If you have any queries on the above, please contact Megger.

EZ-THUMP™ 3 kV & 4 kV, Models V2

Portable Cable Fault Location Systems for Low Voltage Cables



- **Dual-stage capacitor surge discharge: 500 J @ 1.5 kV & 3.0 kV for new 3 kV model**
- **Single-stage capacitor surge discharge: 500 J for 4 kV model**
- **Compact and lightweight, 75 lbs (34 kg)**
- **Battery and AC line operation; field-replaceable battery**
- **Automatic end of cable and distance to fault indication**
- **Up to 94 mA current, depending on voltage**
- **F-OHM safety feature to ensure safe grounding**
- **Interface for remote EMERGENCY OFF box**
- **HiBrite color display for excellent outdoor visibility**
- **TDR prelocation of very low resistance faults**
- **ARM® prelocation of high resistance/flashover faults**
- **Fault pinpointing, high- and low-resistive fault**
- **Sheath testing and sheath fault locating**

DESCRIPTION

The new *dual-stage* 3 kV EZ-Thump is the first of its kind in the entire market, and along with the updated 4 kV single-stage unit they are portable, compact and lightweight, battery and AC line operated cable fault location systems *specifically designed for fault locating of shielded and unshielded low voltage power cables.*

Due to their portable, robust and (wet) outdoor-capable enclosure, they are ideally suited for all typical fault locating operations on LV cables either in industrial applications up to 3 kV or 4 kV, street light fault locating or fault locating of LV power circuits in the utility industry.

The EZT3DV2 model is the only dual-stage 3 kV unit in the market which addresses LV cables with either 600 V or 1000 V ratings and a max permissible test level of 3 U₀ (1.8 kV or 3 kV).

The EZ-Thump units offer:

- TDR method to prelocate very low resistance cable faults.
- Arc Reflection Method (ARM®) prelocation of high resistance/flashover faults.
- *Dual-stage* 500 Joule surge generator for pinpointing of high resistive faults at 0-1.5 kV or 0-3 kV (3 kV model) or as single-stage 500 J 0-4 kV (4 kV model).

- Testing 0-1.5 / 0-3 kV or 0-4 kV for breakdown detection.
- Insulation resistance measurement.
- Sheath testing and sheath fault locating.
- *Dual stage* 0-1.5 kV / 0-3 kV or single-stage 0-4 kV DC testing.

APPLICATIONS

Testing (proof/insulation testing, sheath testing)

Used to test the dielectric strength of the cable or sheath insulation and, if the test fails, to determine the breakdown voltage. For this purpose a test voltage up to 1.5 kV, 3 kV or 4 kV is applied to the cable under test indicating the resistance value.

Fault prelocation

After identifying the type of fault as high resistance/flashover, prelocation of any concentric neutral type LV cable can be determined using ARM. In ARM, the electrical arc from the flashover creates a temporary "jumper" to the neutral. During this condition, a standard TDR measurement is made into what is basically a short circuit fault providing a negative reflection at the location of the fault. Multi-conductor nonshielded LV cables with the *same type of fault* can be typically processed in the same way (phase to phase or phase to neutral).

Faults identified as low resistance/non flashover type in either shielded or unshielded cables can be *prelocated* using the TDR method.

Pinpoint fault location

Accurate pinpoint fault location of high resistance faults is achieved using the "Thunder & Lightning" method whereby the 4 kV single or 3 kV *dual stage* 500 Joule surge generator (thumper) and an acoustic/electromagnetic receiver are used.

Pinpointing of low resistance faults in unshielded cables requires the *additional* ESG NT digital ground/ earth fault locator with or without optional "A" frame. Accurate location of faults is achieved using the voltage gradient method. When approaching the fault, the voltage gradient potential increases, while decreasing with reversed polarity after passing the fault. The change in polarity allows the fault to be located precisely.

FEATURES

- Aside from the expert mode, the quick-step mode combined with the simple E-Tray GUI are especially convenient for operators who do not use the equipment on a regular basis.
- Automatic fault locating procedure starting with a hipot testing, continuing with the prelocation and pinpointing.
- Operating of unit via E-Tray GUI and rotary control knob.
- Automatic end of cable and distance to fault detection.
- Automatic sectionalizing (for specific markets).
- Automatic breakdown detection.
- Safety key switch interlock (also available without).
- F-OHM HV interlock to detect improper grounding.
- Operation from internal battery or from an AC source, or simultaneous charging of battery and AC operation.
- Rugged, lightweight, high impact and weather resistant IP53 designed enclosure.



EZT3DV2 with permanently mounted cart. See configurator on following page, identifier WK.

SPECIFICATIONS

Testing

Output: 0 – 1.5/0 - 3 kV, 94/47 mA DC
0 – 4 kV, 35 mA DC

Prelocation

TDR: Phase to neutral, phase to phase, on screen comparison of up to 256 pairs
Range: 25,000 ft (7.6 km)
Sampling Rate: 100 Mhz
Resolution: 2.5 ft @ 250 ft/fs
0.8 m @ 80 m/μs
Arc Reflection: 0 – 1.5/0 - 3 kV
0 – 4 kV

Pinpoint Fault Location

Surge: 0 - 1.5/3.0 kV @ 500 J
0 - 4 kV @ 500 J
Impulse Sequence: 5 - 10 seconds or single shot

Display

5.7 in. (14.48 cm)
HiBrite TFT Color LCD 640 x 480 pixel

Memory

1000 traces

Interface

USB Port

Cables Supplied

15 ft (4.5 m) HV flexible shielded cable; 50 ft (15 m) optional
15 ft (4.5 m) safety ground cable; 50 ft (15 m) optional
6 ft (1.8 m) AV supply lead set (US/Schuko/UK plug)

Terminations

T1 (typically North America): 14 mm male MC for HV output with matching hotline clamp attachment; HV return and safety ground with hooks and matching hotline clamp attachment.

T2 (typically North America): same as T1, however, hotline clamp attachments for HV output and HV return are replaced by vise grip attachments.

T3 (typically UK): the HV output and HV return leads are terminated with hardwired battery clamps.

T4 (typically all other countries): 10 mm female MC for HV output and HV return with matching battery clamp attachments, safety ground with hook and matching hotline clamp attachments.

Supply

Battery: Internal 24 V NiMH Battery 5 AH Approx.
30 - 60 mins of surge/thumping Approx. 3 hours
recharge time

AC Line: 100 – 230 VAC ±50/60 Hz

Safety

Emergency stop
Key-switch Interlock, standard (available without)
F-OHM interlock detection /indication "proper grounding"
Interface for remote EMERGENCY OFF box

Environmental

Operating Temperature: 4° F to 122° F (-20° C to +50° C)
Storage Temperature: -12° F to 160° F (-25° C to +70° C)

IP Rating

IP53 (with top open)

Weight

71 - 75 lbs (32 - 34 kgs)

Dimensions (include top mounted cable pouch)

14 x 11 x 25 in. (35.5 x 28 x 64 cm)

ORDERING INFORMATION			
MODEL EZT3DV2- MODEL EZT4V2-		YY	ZZ
SELECT CABLE LENGTH	15 ft (4.5 m) Standard cable	15	
	50 ft (15 m) Custom cable	50	
SELECT CABLE TERMINATION	14 mm male MC with hotline clamps (North America)		T1
	14 mm male MC with vise grips (North America)		T2
	2 x hardwired battery clamps (typical UK no alternative termination attachments)		T3
	2 x 10 mm female MC with battery clamps (CEE, ROW & CSA)		T4
* SELECT SOFTWARE OPTION	Sectionalizing software (HDW patent US B 6, 683,459 B2)		S
	Sheath fault testing / secondary fault locating		H
	Manual voltage control		M
**PREP KIT	Hand cart, foldable		C
***PERMANENTLY ATTACHED CART	Provides special permanently attached cart with telescope handle and air tires		WK
DELIVERY WITHOUT SAFETY KEY SWITCH			P
Optional accessories			
15-kV elbow 14 mm female MC connector			865000100100000
25-kV elbow 14 mm female MC connector			865000200100000
35-kV elbow 14 mm female MC connector			865000300100000
DigiPhone Plus surge wave receiver			1003316-S
ESG NT digital earth fault locator			1004629-S
Remote EMERGENCY OFF box with cable			893024147 and 890024896
Hand cart, foldable			895000180110000

NOTE: Prep kit feature C and permanently attached cart feature WK are mutually exclusive.

* Software options can be combined in any way

**Prep kit accommodates either cable lengths of 15 ft (4.5 m) or 50 ft (15 m)

***Permanently attached cart accommodates either cable lengths of 15 ft (4.5 m) or 50 ft (15 m)

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Top quality equipment from major manufacturers.

With Inlec you'll get the most accurate, reliable and well-maintained equipment available. Prices are regularly reviewed to ensure you always enjoy the best value for money. We have made a significant investment in test equipment so we ensure that it's well packed to minimise damage and delay.

We really do listen to you.

You won't waste your time contacting Inlec. Every request for equipment is logged and carefully considered. Listening to our customers helps keep our product range up to date and relevant. If you are unhappy about any aspect of our service please let us know so we can put it right.

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We understand why prompt delivery is important to you. So, if we confirm your order before 3pm, you are guaranteed same day despatch.

2 OUR PRICE GUARANTEE

Inlec guarantee you real value for money. Our price match policy is simple - if you can hire the same product for less elsewhere, we guarantee to match that price and reduce it by a further 10% of the difference - and still deliver our industry leading technical and customer support.

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3 TOP QUALITY GUARANTEED

All equipment is thoroughly checked prior to dispatch to ensure you receive it in full, safe working order. Your shipment will be securely packed and include manufacturer's instructions, accessories or consumables and a valid calibration certificate where appropriate. In addition, Inlec offer a 24 hour replacement service if you decide the equipment is not suitable for your application*.

4 FRIENDLY, KNOWLEDGEABLE ADVICE GUARANTEED

Inlec are happy to provide you with free advice, from an unbeatable team of experienced, knowledgeable and friendly engineers and hire experts.

5 YOUR GUARANTEE OF THE BEST CUSTOMER SERVICE

Throughout your hire we will work hard to ensure you enjoy the very best in support and service from Inlec. We guarantee you won't find better service anywhere in the industry.

*subject to availability and conditions

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