

EZ-THUMP™ 3 kV & 4 kV Models V3

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 @ 4 kV 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**
- **Multishot feature in ARM mode for optimum fault capture**
- **Up to 94 mA current, depending on voltage**
- **F-OHM safety feature to ensure safe connections**
- **Interface for remote EMERGENCY OFF box**
- **7 in. HiBrite color display for outdoor visibility**
- **TDR prelocation of low resistive faults, LV/MV cables**
- **ARM® prelocation for flashover faults, LV/MV cables**
- **Fault pinpointing, High Resistive Fault, LV/MV cables**
- **Fault pinpointing, "Ground Faults", LV cables**
- **Sheath testing and sheath fault locating, MV cables**

DESCRIPTION

The *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 MV and LV power cables*. The newest version V3 features Multishot Technology when performing ARM prelocation.

Due to their portable, robust and (wet) outdoor-capable enclosure, they are ideally suited for all typical fault locating operations on LV/MV cables up to 5kV system voltage either in industrial applications, street light fault locating or fault locating of LV power circuits in the utility industry.

The EZT3DV3 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, featuring *Multishot Technology*, of high resistance / flashover faults in LV/MV cables.
- *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.

- DC Hipot Test 0-1.5 kV / 0-3 kV or single-stage 0-4 kV, timing 1-30 minutes, with insulation resistance indication
- Sheath testing / sheath fault locating MV cables
- Ground fault pinpointing LV / unshielded cables
- DC Hipot Test 0-1.5 kV / 0-3 kV or single-stage 0-4 kV

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 its insulation resistance value.

Fault prelocation

After identifying the type of fault as high resistance/flashover, prelocation of any concentric neutral type MV / armor LV cable can be determined using ARM. In ARM, the electrical arc from the flashover creates a temporary "jumper" to the neutral / armor. 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, phase to neutral, phase to armor).

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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 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 (optional, for specific markets).
- Automatic breakdown detection.
- Sheath Fault /Ground Fault Mode, *customer configurable*
- Manual Voltage Control, *customer configurable*
- Safety key switch interlock (also available without).
- F-OHM HV interlock to detect improper connections.
- 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.



EZT3DV3 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, phase to armor;
on screen comparison of up to 256 pairs
Range: up to 170,000 ft / 52km
Sampling Rate: 100 Mhz
Resolution: 2.5 ft @ 250 ft/fs
0.8 m @ 80 m/μs

Arc Reflection: Single Shot surge, Multishot TDR, 0 – 1.5/0 - 3 kV
Single Shot surge, Multishot TDR, 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

7 in. (17.78 cm)
HiBrite TFT Color LCD 1280 x 800 pixel

Memory

100 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 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: 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)

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ORDER INFORMATION, SAMPLE MODEL Number, EZT3DV3-15T4WK			
MODEL EZT3DV3- MODEL EZT4V3-		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
*PREP KIT	Required if <i>optional Hand cart, foldable</i> is selected, please see below under section "Optional Accessories"		C
**PERMANENTLY ATTACHED CART	Provides special permanently attached cart with sturdy stainless steel frame, telescope handle and air tires		WK
DELIVERY <i>WITHOUT</i> SAFETY KEY SWITCH (<i>check whether permissible under local safety regulations</i>)			P
Optional accessories			
15-kV elbow 14 mm female MC connector, North American Market			865000100100000
25-kV elbow 14 mm female MC connector, North American Market			865000200100000
35-kV elbow 14 mm female MC connector, North American Market			865000300100000
Hand cart, foldable			895000180110000- V2
Remote EMERGENCY OFF Box			2010012
Connecting cable for Remote EMERGENCY OFF Box			890024896

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

*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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