

# 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 U<sub>0</sub> (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
<b>Optional accessories</b>			
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			89500180110000

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)