SMART THUMP ST16-20
Portable/Vehicle Mount Cable Fault Location System

M1, M2, M3

M6, M7

M4, M5

- **Delivers 1500 J at 8/16 kV**
- **20-kV DC high voltage proof/burn and displays insulation resistance**
- **E-Tray automatic test sequence to proof test, prelocate and pinpoint**
- **ARC reflection MV cable prelocation**
- **ICE MV cable prelocation**
- **Multi-shot technology for ARM***
- **Earth gradient LV fault locating and sheath fault locating**
- **Interprets test results for user**
- **7.0 in. HiBrite color display**
- **IP53 rating for wet environments**
- **Safety / grounding check**
- **USB interface**

*** Available August 2020**

DESCRIPTION

The SMART THUMP ST16-20 Portable/Vehicle-mounted Cable Fault Locating System provides safe, efficient and extremely easy-to-use solutions for quickly identifying, prelocating and pinpointing various types of cable faults for power cables. The ST16-20 is developed to meet the requirements for typical medium-voltage distribution cable fault location markets from 11 to 35 kV system voltage.

Circuit parameters include:

- System voltage up to 35 kV (phase to phase)
- Insulation EPR, XLPE and mixed cables
- Typical conductor sizes between #2 and 1000 MCM (34 mm^2 to 500 mm^2)
- Typical circuit lengths from a few hundred feet up to 25,000 ft (100 m to 7.5 km), max length 100,000 ft (30 km)

Typical end users include: operations department of power utility companies, electrical departments within municipalities, private network operators, high voltage electrical contractors, service companies, port authorities, mining, airports, military bases, petrochemical and paper companies.

The ST16-20 unit incorporates the "E-Tray" technology, a concept that has been already proven in other products (EZ-Thump, EZ-Restore Overdrive, and TDR T3090) and which has been carried forward into new Megger products. It allows that all E-Tray units, including the ST16-20, are operated in the exact same way, which reduces training time very substantially.

The E-Tray adds the unique capability to access and operate every function through an innovative and intuitive user interface, without the need to make adjustments; the software is suggesting the next logical step to the user.

APPLICATIONS

The SMART THUMP ST16-20 represents a new generation of advanced underground cable fault locating systems that require less training than a traditional thumper-only system, while providing the big advantage of displaying the distance to fault. It is the only fault locator with built-in intelligence to interpret the results of the initial test sequence. The "turn & click" rotary button operation lets the user automatically proof test, pre-locate, and pinpoint the fault from one convenient control console. No adjustments are typically required. If the user selects, the unit automatically sets the thump voltage to minimize the stress applied to the cable. The ST16-20 features an automatic safety check to protect the user from incorrect or faulty connections (F-Ohm). The heavy-duty wheels of the unit are ideal for use in rough terrain. The IP53 rating allows operation in wet environments. The ST16-20 can also be permanently installed in a vehicle (truck mount version).

SMART THUMP ST16-20

Portable/Vehicle Mount Cable Fault Location System

FEATURES AND BENEFITS

- This fully integrated system can be operated from either its *internal* battery/inverter, *external* 12 VDC or *120/230 VAC*
- "Expert Mode" provides up to 20 individual TDR features to the experienced user for optimum fault locating results
- "Quick-Steps Mode" limits the available TDR features to those that are useful to the casual or inexperienced user
- Rugged, lightweight powder coated IP53 rated enclosure
- F-OHM safety feature to check for correct setup of connections
- E-TRAY operation eliminates lengthy training
- Very quick access to all components in case service is required

SPECIFICATIONS

Impulse Generator (Thumper)

Operating modes:

Arc Reflection Method (ARM®)
ICE surge pulse (customer configurable)
Sectionalizing (North America only), optional - see configurator
Direct surge (Thumping)
DC-HV proof test and resistance readout (Ω)
Burning / fault conditioning (customer configurable)
Sheath fault test & pinpointing / LV fault locating (customer configurarable)

TDR

TDR mode (customer configurable)
TDR range: 25,000 ft/100,000 ft (7.5kM /30kM) (customer configurable)
TDR supports phase comparison mode (>4 phase conducors instant overlay)
TDR supports ARM prelocation with Multishot
TDR supports ICE prelocation

Energy Output

Dual stage: 1500 J @ 8 kV and 16 kV
Proof test: 0 to 20 kV continuous
Burn current: 0 to 60 mA max continuous output

Key Features

Single-shot thump in ARM
Multishot TDR in ARM (available August 2020)
Built-in inductive type ARM filter
8 second thump cycle @ max output energy
Automatic cable, and system discharging and grounding

Display Features

HiBrite TFT color display, sunlight proof
7.0 in., 1280 x 800 pixel resolution

Power Options

120/230 V, 60/50 Hz ac operation (incl. isolation transformer if no internal battery
12 V deep cycle marine battery with internal dc charger/inverter
12 V external battery terminals

SMART Features

Entirely automatic test sequences includes proof test, prelocate, and pinpoint
Automatic interpretation regarding type of fault (i.e. open, burnt in the clear, short)
Automatic adjustment of thump voltage
Automatic alphanumeric display of cable end and fault distance

USB

Host interface 2.0 for TDR trace export and system upgrades

Mounting and Enclosure

Mounted on cart with heavy-duty 15 in. air tires or permanently vehicle mounted
Rain tight powder coated enclosure

Digital "Analog" Meter

Displayed on LCD screen

Environmental

Operating Temperature: -20ºC to +50ºC; -4ºF to +122ºF
Storage Temperature: -25ºC to +65ºC; -13ºF to +149ºF

IP Rating

IP53 (with top open)

Weight

Range from M5 model 210 lbs (95 kg) to M1 model 270 lbs (120 kg)

Dimensions

M1 model: 27 x 49 x 24 in. (686 x 1244 x 609 mm) W x H x D
M5 model: 20 x 40 x 16 in. (508 x 1016 x 406 mm) W x H x D

ST16-20 PART NUMBER CONFIGURATOR

Examples: ST16 - M M1 50 T1 S

Model #: ST16 - [ ] [ ] [ ] [ ] [ ]

Base Model
ST16

Output Voltage Control
M = Manual Mode*
*Factory Default Setting (no option)

Enclosure Configuration/Mounting

M1= Cart mounted, 15" air tires, AC, internal 12V battery and inverter, external DC , integrated E-tray control / TDR
M2= Cart mounted, 15" air tires, AC, Isolation transformer, internal inverter, external DC, integrated E-tray control / TDR. *No battery*
M3= Cart mounted, 15" air tires, AC only, isolation transformer, integrated E-tray control / TDR *No battery*
M4= Truck mount, AC, with isolation transformer, internal inverter, external DC, integrated E-tray control / TDR
M5= truck mount, AC only, with isolation transformer, integrated E-tray control / TDR
M6= Flat top truck mount, AC, Isolation transformer, internal inverter, external DC, 12 foot remote E-tray control / TDR (Pelican case)
M7= Flat top truck mount, AC only, Isolation transformer,12 foot remote E-tray control / TDR (Pelican case)

HV Test / Safety Ground Lead Cable Length

12 = 12 foot cable length
25 = 25 foot cable length
50 = 50 foot cable length
100 = 100 foot cable length

Optional - S/W functionality

S = Transformer sectionalizing *
*Only applicable with North American networks

Test lead termination style

T1=	14mm male MC with hotline clamps (North America channel)
T2=	14mm male MC with vide grips (North American channel)
T3=	Battery clamps only, not plug & play terminations (No combination with cable reels)
T4=	2 x 10mm female MC with battery clamps (CEE, ROW & CSA channels)

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