ST Series
Cable Fault Location System

- **Delivers 1500 J at 8/16 kV & 1600 J at 12.5/25 kV**
- **20-kV or 30kV DC high voltage proof/burn and displays insulation resistance**
- **E-Tray automatic test sequence and data interpretation**
- **Automatic cable end identification**
- **Automatic ARM fault pre-location with multi-shot technology**
- **ARC & ICE MV cable prelocation**
- **Earth gradient LV fault locating and sheath fault locating**
- **IP53 rating for wet environments**
- **Portable with battery and AC line operation or truck mountable.**
- **F-OHM safety feature ensures operator safety**
- **7" HiBrite color display for outdoor visibility**

DESCRIPTION

The SMART THUMP Series are portable or vehicle-mounted Cable Fault Locating Systems that provide safe, efficient and extremely easy-to-use solutions for quickly identifying, prelocating and pinpointing various types of cable faults in power cables.

The ST Series is developed to meet the requirements of the medium-voltage distribution cable fault location market from 11 to 35 kV.

The Smart Thump line incorporates E-Tray technology. This technology guides the operator through the fault locating process. A step by step methodology that starts with a Hipot test, that identifies the type of fault as well as the breakdown voltage. The E-Tray then proceeds to a TDR test that automatically identifies the length of the cable. Then the E-Tray automatically proceeds to a pre-locating. Automatically identifying the location of the fault. Then it automatically proceeds to surge testing, allowing you to pinpoint the fault. Simple, easy cable fault locating that reduces the time to locate a fault. This reduces the amount of surges on the cable which reduces the stress on the cable.

The ST series also supports, Sheath testing, LV cable fault locating as well as network sectionization. One product can perform many functions.

FEATURES

- Fully integrated system can be operated from either its internal battery/inverter, external 12 VDC or 120/230 VAC
- 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 pre-location 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. Quickly identify what section of cable has the fault in downtown branched networks.
- Automatic breakdown detection.
- Sheath Fault Testing
- LV Ground Fault Locating in Sheath mode.
- Rugged, lightweight, high impact and weather resistant IP53 designed enclosure.
- Key switch safety interlock standard (available also without).
- F-OHM feature ensures operator safety.

ST Series
Cable Fault Location System

Safety
Performing cable fault locating can be hazardous. Working with high voltages at high energies can be life threatening, when not performed properly. The ST not only has safety inter-locks and requires the use 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 ST will automatically identify the breakdown voltage.

Prelocating
After identifying the type of fault, the ST automatically starts a prelocating process. A TDR test will be run. The ST will automatically identify the end of the cable and report the cables length. This can identify the location of shorted or opened cables.

Once the end of the cable is identified the ST 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.

Pinpoint fault location

Once the fault has been prelocated the ST 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.

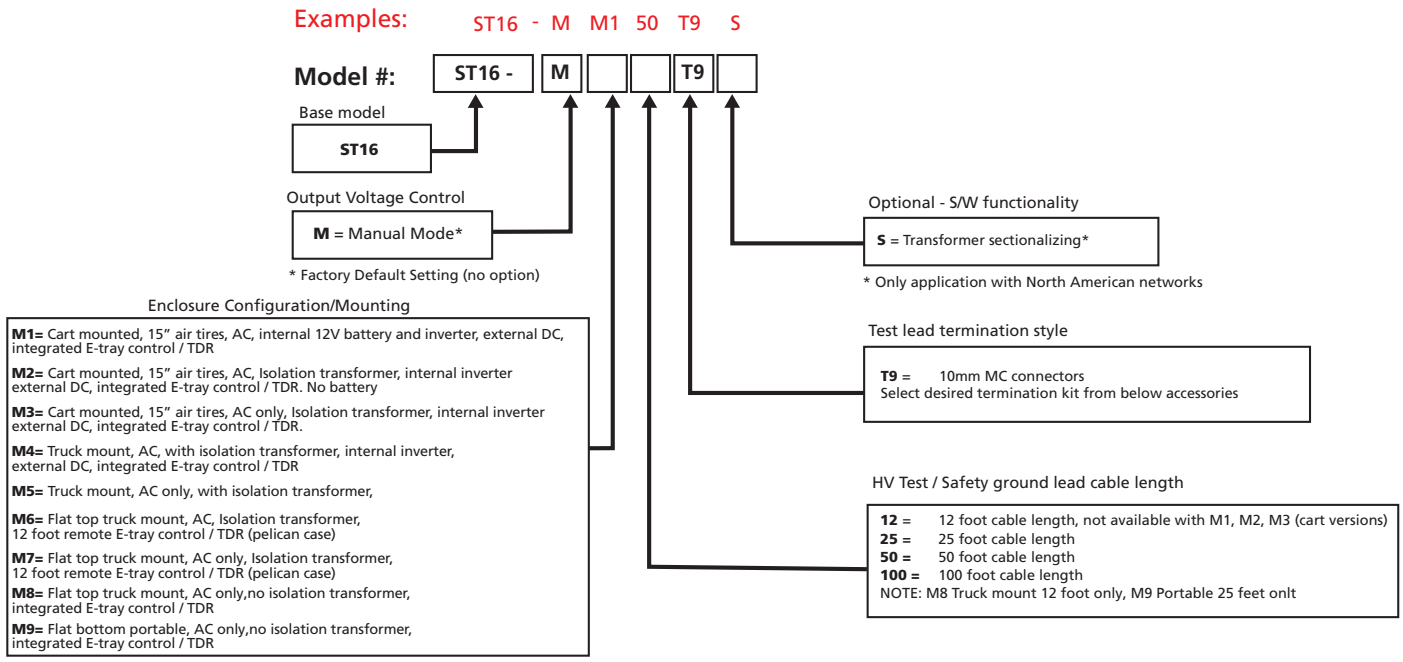
The optional Digi-phone can be used to locate the fault more accurately and quicker. The quicker the fault is located the less the cable is stressed. When surge currents are injected in a cable this not only creates a flashover at the point of the fault, but it will create small amounts of partial discharge 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 Digi-phone 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 Digi-phone 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.

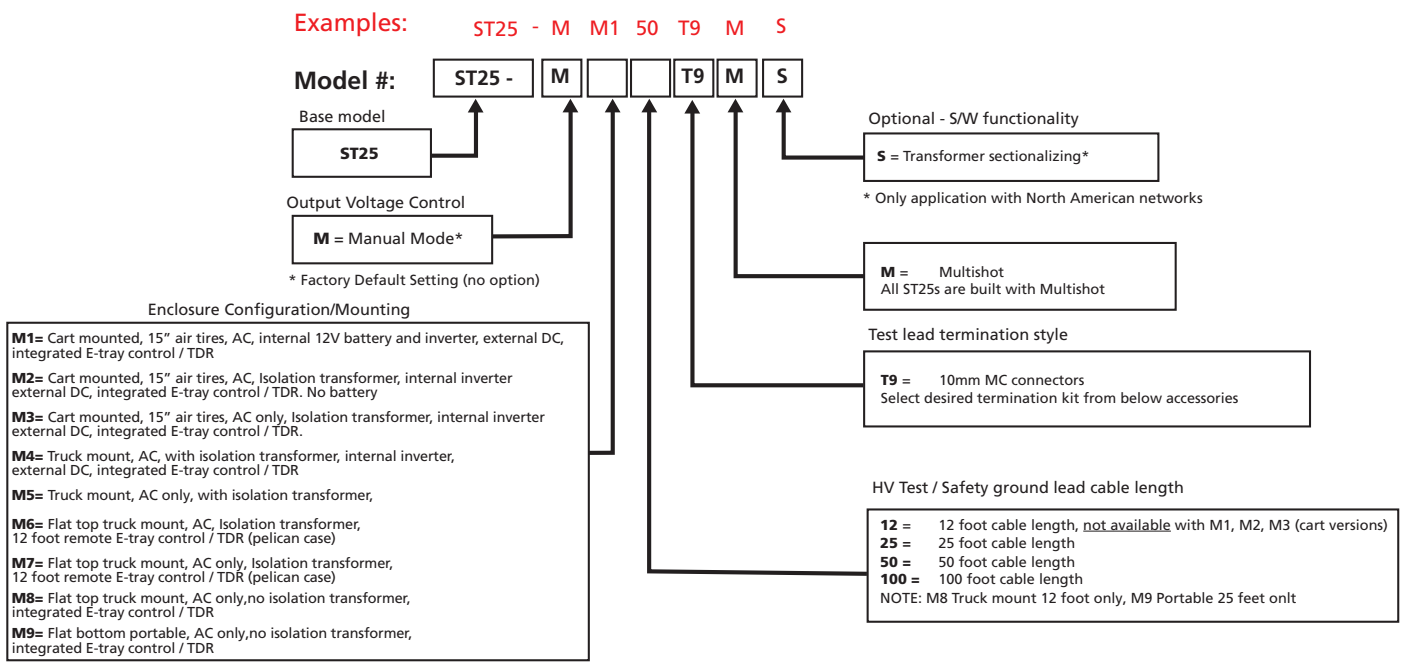
APPLICATIONS	ST16	ST25
MV Buried cable fault locating.	Up to 35KV	Up to 35KV
EPR, XLPE, PILC and mixed	■	■
Sizes between #2 and 1000 MCM	■	■
(34 mm2 to 500 mm2)	■	■
Circuit lengths from a few hundred feet up to a max of 170,00 ft (52 km)	■	■
LV Shielded buried cable fault locating	■	■
LV Unshielded cable fault locating	■	■
Sectionalizing networks	Up to 16KV	Up to 25KV
Solar buried and tray cable fault locating	Best	Good
Insulation testing	20KV	30KV
Time Domain Reflectom-etry (TDR)	■	■
Burning Cables	60mA	40mA
Sheath Testing	■	■

ST Series
Cable Fault Location System

ST16-20 PART NUMBER CONFIGURATOR



ST25-30 PART NUMBER CONFIGURATOR



Megger

Specifications

	ST16	ST25
	8KV/16kV	**12.5KV/25KVB**
Supply		
AC supply	AC line: 120/230 V, 60/50 Hz	AC line: 120/230 V, 60/50 Hz
power Consumption	700W	700W
Battery	Battery: Internal 12V, 74Ah deep cycle	Battery: Internal 12V, 74Ah deep cycle
Battery charge	>90 min (pinpointing at full energy)	45 min (pinpointing at full energy)
Battery charger	Internal	Internal
Battery re-charge	10-12H	10-12H
External 12V DC	■	■
Features		
Hipot	20KV	30KV
Burning	60mA	40mA
TDR	On-screen comparison of upto 256 pairs	On-screen comparison of upto 256 pairs
TDR range	Up to 170,000 ft / 52km	Up to 170,000 ft / 52km
TDR Sampling Rate	100 Mhz	100 Mhz
TDR resolution	2.5 ft @ 250 ft / fs (0.8m @ 80 m/µs)	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, 0-8/0 - 16kV	Single shot surge, multishot TDR, 0-8/0 - 16kV
ARM and ICE	■	■
Surge	0-8/16kV @ 1500 J	0-12.5/25KV @ 1600j
Impulse sequence	5-9 seconds	5-9 seconds
Sectionalization	Optional	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 1280x800 pixel	7in (17.78 cm) HiBrite TFT Color LCD 1280x800 pixel
Memory	100 traces	100 traces
Interface	USB port	USB port
Terminations	T9	T9
Termination Kits		
North American hot line clamps	■	■
Vice grip clamps	■	■
Battery clamps	■	■
Dimensions (include top-mounted cable pouch)	M1/3 model: 27x49x24 in. (686x1244x609 mm) WxHxD M4/5 model: 20x39x16 in. (508x990x406 mm) WxHxD M6/7 model: 20x34x16 in. (508x844x406 mm) WxHxD M8 model: 20x432x14 in. (508x794x356 mm) WxHxD M9 model: 20x32x18 in. (508x794x457mm) WxHxD	M1/3 model: 27x49x24 in. (686x1244x609 mm) WxHxD M4/5 model: 20x39x16 in. (508x990x406 mm) WxHxD M6/7 model: 20x34x16 in. (508x844x406 mm) WxHxD M8 model: 20x432x14 in. (508x794x356 mm) WxHxD M9 model: 20x32x18 in. (508x794x457mm) WxHxD
Weight	M8 model 147 lbs (67 kg) M5 model 210 lbs (95 kg) M1 model 270 lbs (120 kg)	M8 model 147 lbs (67 kg) M5 model 210 lbs (95 kg) M1 model 270 lbs (120 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)	-20°C to +50°C (-4°F to +122°F)
Storage temperature	-25°C to +65°C (-13°F to +149°F)	-25°C to +65°C (-13°F to +149°F)
IP Rating	IP53 (with top open)	IP53 (with top open)

Megger

ST Series
Cable Fault Location System

MODEL	MOUNT	EXTERNAL AC	INTERNAL BATTERY	ISOLATION TRANSFORMER	INTERNAL INVERTER	EXTERNAL DC	E-TRAY	TDR	
M1	Portable cart mount 15" air tires	AC	12 BATTERY	NO	YES	YES	INTEGRATED	INTEGRATED	
M2	Portable cart mount 15" air tires	AC	NO	YES	YES	YES	INTEGRATED	INTEGRATED	
M3	Portable cart mount 15" air tires	AC	NO	YES	NO	NO	INTEGRATED	INTEGRATED	
M4	TRUCK MOUNT	AC	NO	YES	YES	YES	INTEGRATED	INTEGRATED	
M5	TRUCK MOUNT	AC	NO	YES	NO	NO	INTEGRATED	INTEGRATED	
M6	FLAT TOP TRUCK MOUNT	AC	NO	YES	YES	YES	12 FOOT REMOTE E-TRAY CONTROL	TDR (PELICAN CASE)	
M7	FLAT TOP TRUCK MOUNT	AC	NO	YES	NO	NO	12 FOOT REMOTE E-TRAY CONTROL	TDR (PELICAN CASE)	
M8	FLAT BOTTOM TRUCK MOUNT	AC	NO	NO	NO	NO	INTEGRATED	INTEGRATED	
M9	FLAT BOTTOM PORTABLE	AC	NO	NO	NO	NO	INTEGRATED	INTEGRATED	

Megger

ST Series
Cable Fault Location System

Termination Kits		
Must Pick One		
Part Number	Description	
1015-525-US	North America (US,CA,MX) Termination Kit	
1015-526-AOC	All Other Countries Termination Kit	
1015-525-VG	Vice Grip Termination Kit	
Optional Accessories		
1013-514	ELBOW ADADPTER 15KV 10MM MALE MC T9 TERM	
1013-515	ELBOW ADAPTER 25KV 10MM MALE MC T9 TERM	
1013-516	ELBOW ADAPTER 35KV 10MM MALE MC T9 TERM	
1013-517	ELBOW ADAPTER 35KV 10MM MALE MC T9, ESNA	
1013-518	15kV probe adapter, w/10mm male MC connector for T9 terminations	
1013-519	25kV probe adapter, w/10mm male MC connector for T9 terminations	
1013-520	35kV probe adapter, w/10mm male MC connector (fits Elastomold bushing), compatible with HV "T9" terminations	
1013-521	35kV probe adapter, w/10mm male MC connector for T9,Cooper bushing.	
P1G130T9	Portable equipment safety ground cable reel 13" high X 10-1/2". 130FT	
P1G50T9	Portable equipment safety ground cable reel 13" high X 10-1/2". 50FT	
P1G85T9	Portable equipment safety ground cable reel 13" high X 10-1/2". 85FT	
P1H130T9	Portable high voltage cable reel with HV return, 18" high X 20". effective width with 130' of HV cable. Compatible with T9 terminations.	
P1H50T9	Portable high voltage cable reel with HV return, 18" high X 20". effective width with 50' of HV cable. Compatible with T9 terminations.	
P1H85T9	Portable high voltage cable reel with HV return, 18" high X 20". effective width with 85' of HV cable. Compatible with T9 terminations.	

ST Series
Cable Fault Location System

R2H130T9G130	2-reel cable rack for vehicle mounting. Reels for HV cable, safety ground or AC line cord. 130 FT for T9 terminations.	
R2H50T9G50	2-reel cable rack for vehicle mounting. Reels for HV cable, safety ground or AC line cord. 50 FT for T9 terminations.	
R2H85T9G85	2-reel cable rack for vehicle mounting. Reels for HV cable, safety ground or AC line cord. 85FT for T9 terminations.	
R3H130T9G130A130	3-reel cable rack for vehicle mounting. Reels for HV cable, safety ground and AC line cord. 130 FT for T9 terminations.	
R3H50T9G50A50	3-reel cable rack for vehicle mounting. Reels for HV cable, safety ground and AC line cord. 50 FT for T9 terminations.	
R3H85T9G85A85	3-reel cable rack for vehicle mounting. Reels for HV cable, safety ground and AC line cord. 85 FT for T9 terminations.	
1013-526	Large Hastings clamp for large conductor sizes, with pigtail and 10mm female MC connector compatible with HV T9 terminations	
2010012	Remote Emergency OFF box	
890024896	Connecting Cable for Remote Emergency OFF box (Required for Remote Emergency Box)	

UK
Archcliffe Road, Dover
CT17 9EN 2621
T +44 (0)1 304 502101
F +44 (0)1 304 207342
uksales@megger.com

United States
400 Opportunity Way
Phoenixville, PA 19460
T 1 800 723 2861 (USA only)
F+12143317399

Other Technical Sales Offices
Valley Forge USA, College Station USA
USASydney Australia, Danderyd Sweden,
Ontario Canada, Trappes France, Oberursel
Germany, Aargau Switzerland, Kingdom
of Bahrain, Mumbai India, Johannesburg
Africa, and Chonburi Thailand South

STSERIES_DS_EN_V01
Registered to ISO9001:2000
Cert.no.10006.01
www.megger.com