Compact High Voltage Cable Fault Location System

SG12.800SMT

Product Overview

- Generates a High Voltage DC surge voltage suitable for the following methods in combination with optional devices such as:
- 0-12kV / 800 Joules surge energy.
- DC withstand voltage 0-12kV / 0-164mA
- TDR Time Domain Reflectometry(included with all models in the TDR.Series)
- ICM impulse current method.(TDR.750A, TDR.850A & TDR.950A)
- MIM/ARC secondary/multiple impulse method coupling possible with the (TDR.950A only).
- Acoustic pin-pointing with our advanced digital GM.Series universal receiver and accessories set.

Key Features:

- Integrated design, built in power capacitor to avoid leakage
- High voltage directly connected to the cable under test, easy operating and extremely portable.
- Multiple safety protection built in, Zero voltage starting, Auto discharge when power off.
- Industrial wheeling moulded case for easy transport on site.

Multiple working mode's such as:

- ✓ Single surge used for Pre-location of the fault distance
- ✓ Cycle surge used for fault pinpointing
- ✓ DC Withstand Voltage testing

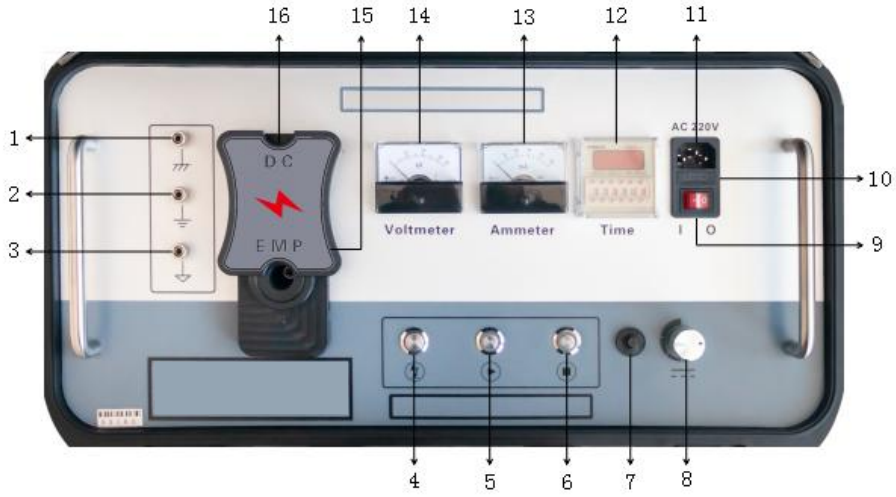
Standard Accessories:

High Voltage Surge Generator	x1
High Voltage test lead	x1
Power cord	x1
Ground wire set	x1
Discharge rod	x1
8A Spare Fuses	x5
User manual	x1
Factory Conformance certificate	x1
Warranty Certificate	x1

Technical Specifications:

Mains supply	220-230 V
Option:	110-120 / 240 V with external Isolating transformer
Output Voltage Polarity	Negative Polarity
Mains frequency	45 Hz to 60 Hz
Output surge voltage	0~12KV, Continuously variable
DC Withstand Voltage	Continuous
Impulse sequence	single-shot pulse or Variable
Impact power	400W
Max. surge energy	800J, Energy Capacity 8uF
Impulse frequency	0-20 Imp/min
Operating temp	-20 °C to +60°C
Humidity	5-90%RH
Elevation	<4500m
Weight with housing	25 kg
Dimensions	540mmx400mmx450mm

Panel Diagram



1. Safety ground: The ground of the instrument shell must be reliably connected to the ground in order to prevent the instrument shell from being electrified or electric shock to personnel.

2. High-voltage ground: Also known as high-voltage tail, it must be grounded reliably to prevent high-voltage leakage and discharge. Poor contact may cause failure to boost the voltage, high voltage breakdown of the internal components of the instrument, and accidents caused by leakage or discharge inside the instrument.

3. Sampling ground: The negative terminal of the pulse energy storage capacitor has a high voltage and must be grounded reliably. It is used for sampling when the waveform is sampled under the high-voltage flashover state of the cable fault tester. (Without high-voltage flashover sampling, reliable grounding is still required).

4. Discharge button: Press this button to make contact with the ball gap, and discharge manually. (The duration of each key press cannot exceed 1s).

5. High voltage start button: When the start button light is on, it means that the voltage output is in the zero position. When the light is on, the start button is valid. If the start button light is not on after turning on the power switch, turn the voltage adjustment knob counterclockwise until the light is on. When the button light is on, press this button to start the device and generate high voltage output.

6. High-voltage stop button: When the test is completed or an abnormality occurs, press this button to cut off the high-voltage output, the high-voltage light goes out, and the internal discharge ball stops working. When the stop key is on, it means there is high voltage output, and when it is off, it means there is no high voltage output.

7. Over-current protection switch: When pressed, it means that the over-current protection function has started; when it is popped up, it means that the instrument has triggered the over-current protection.

8. Voltage adjustment: After turning on the device, you must first turn the knob counterclockwise to the end, press the start button, and then adjust clockwise to increase the output high voltage from small to large, and adjust counterclockwise to reduce the output high voltage from large to small.

9. Power switch: I switch turns on the AC 220V power supply switch, and 0 switch turns off the system power.

10. The fuse holder: the place where the fuse of the AC 220V power supply system is installed.

11. Power socket: the working power supply of the instrument, AC 220V connection port.

12. Time setting: Set the discharge time interval.

13. Ammeter: indication of the current on the high voltage side.

14. Voltmeter: high voltage output voltage indicating kV meter.

15. High-voltage output (EMP): When impacting discharge, connect the high-voltage output line.

16. High voltage output (DC): When DC withstand voltage, connect the high voltage output line.

Colour Display

IP65

touch

TDR.750A

Product Overview

- TDR Low current impulse method: apply to the locating of the low resistance fault. Short circuit fault, open circuit fault. It also can be used in the measurement of the cable length, the intermediate joints, T joints, and cable termination joint. This method also can be used to correct the wave velocity.
- ICM Impulse current method: apply to the high resistance fault, breakdown fault. Use the current coupler to gather signal from the earth wire, it allows the user to be a safe distance from the high voltage source.
- Light, compact and easy to operate
- Main unit for the tried-and-tested pre-location method
- Compliant with the following standards GB/T 18268,1, DL/T849,1-2019 & JJF1042-2020.

Technical specification:

Pulse voltage	0-100V±15%
Pulse width Range	0,125uS – 10us
Voltage-proof up to	400V CAT IV, 50/60 Hz
Output impedance	0 – 50 Ohm
Input signal gain	0 – 75 dB
Measurement range	0 - 65 km
Accuracy	0.1%
Sampling rate	80 MHz
Resolution	0.1 m (at v/2 = 80 m/μs)
Velocity of propagation	(v/2),adjustable 50 – 220 m/μs
Storage capacity	8000 LV pulses 250 Flashover waveforms
Communication interface	USB
Display	10,1” TFT, Colour Touch Screen
Battery type	L-ion battery rechargeable batteries,7.4 V)
Battery life	Approx. 6h contiguous use
Charger	110 – 240 VAC, 50/60 Hz
Operating Temperature	-20℃ – +65℃
Humidity	5-90％RH
Elevation	<4500m (750±30mmHg)
Dimensions (W x H x D)	Approx. 284×168×358mm
Weight Approx.	4,7 kg
Degree of protection	IP65 Case

Key Features:

- Fully automated measurement and display of the fault distance
- Test range select: 300m/1km/5km/25km/65km
- High measurement resolution thanks to the 80 MHz sampling rate
- Simple, interactive menu navigation in several languages
- Touch screen and press key operation
- Touch operating screen with smart gesture operation
- Support cursor drag-drop function and double-click function, easy to locate
- Simple function menus with high performance.
- Large LED touch screen for ease of use.
- Simple function menus with high performance
- Large 10.1-inch colour touch screen for easy operation with a 1024x600 resolution
- Waveform storage and PC communication
- Software management, backup and restore in device.
- Waveform storage and communication with computer.
- Internal storage of waveform.
- Mini printer for waveform printing
- Support connection with PC or laptop
- Back light weakens if no operation in 2 min and power off in 10 min. if not operational.

Surge Wave Fault Pin-pointer (Optional)

IP65

touch

Colour Display

GM.1000

- **Product Overview**

- The cable fault locator uses the principles of vibration pickup and electromagnetic induction to determine the specific location of the cable fault point.
- A high-voltage pulse generator is used to cause flash over discharge at the fault point. Physical phenomena such as vibration waves, sound waves, and electromagnetic waves generated by the flash over discharge at the fault point are picked up by a special probe of the pointing instrument, amplified, processed, displayed, and output by the cable fault pointing instrument.
- The precise location of the fault point is determined by the tester's hearing and vision. That is, the task of accurately locating the cable fault point "directly above the cable and within the range of rough measurement" is completed.
- This fixed-point instrument is suitable for low-resistance, short-circuit, open-circuit and disconnection faults of power cables, high-frequency coaxial cables, street light cables, and buried wires made of various materials with different cross-sections and media, as well as high-resistance leakage and high-resistance flash over fault.

Operating Methods:

1. Acoustic-magnetic synchronization method:
Acoustic-magnetic synchronization method is a very accurate and unique method for precise fault location. Its principle is based on the traditional acoustic point determination method and adds the detection and application of electromagnetic signals.
When the high-voltage generator performs impact discharge on the faulty cable, the sound generated by the discharge at the fault point is transmitted to the ground. The sound signal is picked up by a highly sensitive probe. After amplification, a "pop" sound can be heard by listening with headphones. The built-in probe of the probe receives the magnetic field signal in real time and uses the principle that the propagation speed of the magnetic field is much higher than the propagation speed of sound to determine the distance of the fault point by detecting the time difference between the electromagnetic signal and the sound signal. Keep moving the sensor position to find the point with the smallest acoustic-magnetic time difference, then the exact location of the fault point will be below it.
Traditional acoustic measurement legal point instruments generally only use earphones to monitor or are supplemented by the swing of the meter pointer to identify the discharge sound at the fault point. Since the discharge sound disappears in a blink of an eye and is not much different from the ambient noise, it often brings great difficulties to operators who are not very experienced. The acoustic-magnetic synchronization method effectively avoids the above problems of the traditional acoustic measurement method.

2. Pure sound method:
The pure sound method consists of an acoustic vibration sensor, a signal amplifier, a filter circuit, a sampling unit, a processor, a display unit, a power amplifier unit, headphones, etc. The pure sound method is mainly used to measure high resistance and flashover faults. Its main principle is to use a high-voltage source to apply impulse voltage to the fault cable to cause discharge breakdown at the fault point, and then use the sound generated during the discharge to accurately locate the fault. The acoustic vibration sensor converts the acoustic signal into an electrical signal, which is amplified and filtered by a signal amplifier and filter circuit. Finally, it is restored to sound through headphones, or the intensity of the sound is displayed. The place with the greatest sound intensity is the fault point.

3. Pure magnetic method:
The pure magnetic method can determine the cable path and the precise location of the cable fault point. Its main principle is to use a high-voltage source to apply impulse voltage to the faulty cable, use an induction coil to pick up the pulse signal, and judge whether it deviates from the cable through the characteristics of the pulse signal. When the characteristics of the picked-up pulse signals deviate, it is determined as a fault point.

4. A-frame method: **(Optional with GM.2000 model)**
If a ground fault occurs in a buried cable, we can use the potential difference method to find the fault point. The method is to add a test voltage between the test point of the faulty cable and the ground, then a distributed electric field concentric with the entry point will be formed around the entry point of the cable. There is no potential difference between any points with the same radius in this electric field, but there is a potential difference between any two points with different radii (points A and B in the figure), and when the distance between the two points is fixed, the distance between the two points is The closer the object is, the stronger the potential difference is. Using this feature, we can move points A and B gradually closer to the center point. When the fault point is exactly between points A and B, the potential difference becomes zero. If it continues to move beyond the fault point, the polarity of the potential difference will be reversed, so that the grounding point can be accurately determined by moving back and forth.

Key Features:

1. 5-inch touch-high brightness LCD ensures visibility under sunlight.
2. It has 4 test modes: standard, enhanced, noise reduction, and customized.
3. It has four positioning functions: acoustic-magnetic synchronization, pure acoustic, pure magnetic, and step voltage.
4. It has background noise reduction technology and can choose from a variety of filtering methods.
5. Equipped with BNR and mute functions.
6. It has path deviation indication.
7. Equipped with multi-layer physical isolation signal sensors.
8. Waterproof grade IP65.
9. Built-in large-capacity lithium battery, long standby time, equipped with fast charger.
10. Small and lightweight, easy to operate, and simple human-machine interface.

Technical Specification:

Filter parameters	lAll-pass: 100Hz~1600Hz.
	lLow pass: 100Hz~300Hz.
	lQualcomm: 160Hz~1600Hz.
	lBandpass: 200Hz~600Hz.
Channel gain:	8 levels adjustable.
Magnetic channel gain:	8 levels adjustable.
Step voltage gain:	8 levels adjustable.
Output gain:	16 levels (0~112db)
Output impedance:	350Ω
Acoustomagnetic positioning accuracy:	less than 0.2m.
Step voltage positioning accuracy:	less than 0.5m.
Path identification accuracy:	less than 0.5m.
It has BNR background noise reduction and mute noise reduction functions.	
Display control method:	5-inch high-brightness touch screen control.
Power supply:	4*18650 standard lithium batteries.
Standby time:	more than 18 hours.
Volume:	428L×350W×230H
Weight:	1,5kg (Instrument), Probe variable dependent on accessories
Ambient temperature:	-25~65ºC; Relative humidity: ≤90%

Standard Accessories:

Description	Qty	Image	Description	Qty	Image
Cable fault locator	1		Probe (Including connecting rod, probe, three claws)	1	
7 core signal line1,5meter	1				
Charger	1				
Headphones	1