Portable High Voltage Surge Generator System

SG32.1000SMT

Product Overview

- Portable outdoor ready unit with four wheels, IP43
- Very easy to use “turn & click” single rotary knob interface
- Surge/Thump energy 1024 Joule
- DC testing/surging/thumping up to 32 kV, burning up to 32 kV Working power 2000VA
- Pre-location methods: ARC Multi-shot, ICE and DECAY, low voltage pulse
- Built-in safety circuits for earth connection monitoring (F-Ohm) and touch potential monitoring (F-Voltage)

Pre-locating Methods:

- ARC Multi-shot: The Arc Reflection
- Method overlays and compares a low voltage reference trace and a high voltage fault trace captured via capacitor discharge through an inductive (coil-type) filter.
- 8 comparative measurements per ARM shot are displayed (Multi-shot feature), and the results are evaluated automatically.
- ICE/Surge Pulse: After fault ignition via capacitor discharge, the Impulse Current or Surge Pulse method measures the current component of the travelling wave, This technique is suitable for long cables and PILC cables.
- DECAY: After fault ignition via HV DC source, the DECAY method measures the voltage component of the travelling wave. This technique is suitable for very long cables, HV transmission cables and faults with very high breakdown voltage.
- IFL: Intermittent Fault Locating; to find intermittent faults with temporarily changing characteristics like they often occur in street lighting systems.

Typical view for built in TDR

Key Features:

- 10.1-inch full-color TFT touch screen;
- Embedded system, safe, stable, simple display and operation mode;
- With the function of testing cable wave velocity, cable length and fault distance;
- Fully automatic continuous sampling, waveform capture at all times, timely and accurate.
- With automatic test range setting, automatic waveform analysis and display of test distance.
- Full English menu, touch and coding button two operation modes, simple, fast and reliable.
- With low-voltage pulse method, high-voltage flashover method, multiple pulse method (8 times) test technology, waveform display is smooth and easy to read.
- When using the multiple pulse method, it is used with a pulse coupler to display 8 groups of high and low voltage waveform comparisons, which is convenient for automatic test distance, manual analysis and distance measurement.
- The instrument has powerful data processing capabilities, which is convenient for users to manage and archive waveform files.
- It has a massive test waveform storage function: the waveforms tested on site can be conveniently stored in the instrument in the order specified by the Chinese naming regulations, so that they can be called up for observation and analysis at any time; it can store more than 8,000 low-voltage pulse and high-voltage flashover waveform records, and more than 250 multiple pulse waveform records. The waveform files can be imported into the computer software for management and analysis using USB communication.
- Ultra-high brightness, LED backlight brightness up to 280nit, resolution 1024*600, easy to operate in direct sunlight.

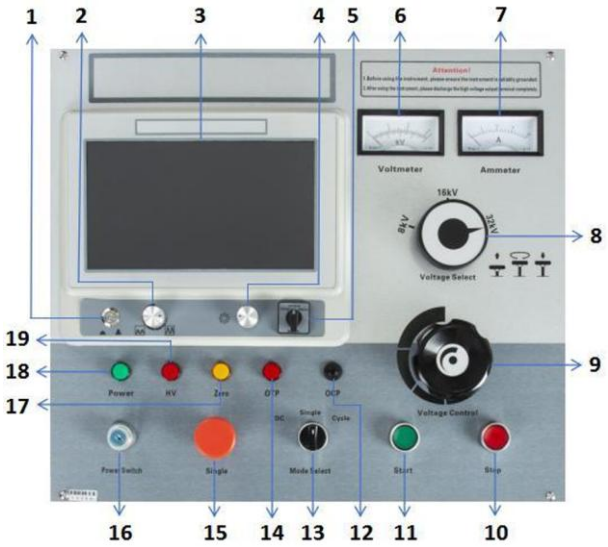
General features	
Portable cable fault location system	
Graphical interface	Graphical interface, more intuitive and easier to operate.
Operation	Turn and click a single knob (jog dial) on the control unit
Data management	General database
Data Synchronization	Universal Serial Bus
Control unit	
Display	Industrial grade TFT color panel with LED backlight
Anti-glare	have
Multi-touch	have
LCD size	10”
Aspect Ratio	16:9
Resolution	1024 x 768 Full HD
Brightness	450 cd/m²
Safety	
Adaptability	CE Compliance；EN 61010、EN 50191、VDE 0104、VDE 015、DGUV 203-034（BGI 891）
Discharge and grounding devices	72kJ, equivalent to the energy stored in a 10μF capacitor charged to 120kV DC fast charge: discharge time constant < 1 second
System Status	Real-time monitoring and indication
Intrinsically safe	Ground immediately when there is a power outage
F-U safety interlock	Operating voltage connection monitoring (high voltage circuit)
F-Ohm Safety Interlock	Operational earth connection monitoring (high voltage circuit)
Security Features	Front panel: power on/off, lockout button switch, emergency stop, residual pressure indicator light, high voltage switch; Control unit: Knob (jog dial)
Safety devices	System grounding status indicator, power input protection device, high voltage room monitoring through door contact, external safety device
Power input monitoring	Overvoltage protection, undervoltage protection, residual current device (RCD)
Defining Wiring	There is a switchboard inside the system

System function	
1.Use DC or high-voltage pulse to make the cable fault point flash over and discharge 2.Use the traveling wave reflection principle to make a rough measurement of all types of cable main insulation faults 3. Use the acoustic and magnetic synchronization method to make a precise measurement of all types of cable main insulation faults	
I、High voltage surge generator	
Output mode	DC, Single, Cycle
Output voltage	0-8kV、0-16kV、0-32kV
Built-in capacitor	32uF、8,0uF、2,0uF
Discharge energy	1024J @ each voltage level
Impact power	2000VA
Impulse rate	Automatic impact for about 6 seconds, manual impact for any control time
Surge voltage levels switch	Manual
Voltage adjustment type	Continuous
Indication	High-voltage side voltage metering, indication of output voltage and current in real time
Operating modes switch	Manual
Coupler	Built-in multiple pulse sampling box
Safe protection	With zero start protection function, safe and reliable
Discharge	Unique high-voltage measurement design, in the stop state, it will automatically discharge the internal capacitance of the device
Working power	AC 220V±15% ,50Hz±2Hz(60Hz)
DC withstand voltage testing	Output voltage adjustable and indication range 0-32kV, output current indication range 0-20A
Burn current	Fault conditioning (burning) with current up to 60 mA @ 32 kV, 120 mA @ 16kV, 240mA@8kV
Safety	Over-voltage, Over-current, Overheating protection. Automatic discharge after operation
Protection rating	Not lower than IP54
Dimensions(mm)	534L×444W×805H mm
Total weight	Not more than 110kg
II、TDR cable fault locator	
Test method	Low voltage pulse, Impulse current, Impulse voltage, ARC multipls pulse
Sampling rate	1MHz～400MHz
Pulse output	Unipolar
Pulse Amplitude	300V
Pulse width	0.15μS/0.30μS /0.60μS/1.20μS/2.4μS/5.0μS/7.5μS/10μS
Measurement scope	≥120km
Measurement range	100m/300m/500m/1km/3km/5km/10km/25km/50km/100km
Minimum resolution	0.07m
Measurement error	≤±（0.5%×L+1m），L is cable length
Signal gain	0…100%，adjustable
Propagation speed	10…999.9m/μs
Output Impedance	Automatic match
Trigger	Automatic continute
Result analysis	Automatic measure fault distance
Working conditions	temperature -25℃～+65℃, relative humidity 85%, atmospheric pressure 750±30mmHg

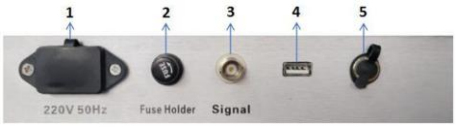
III.Acoustic and magnetic synchronous cable fault pin-pointer (Optional accessory)	
Location mode	Standard mode, enhanced mode, noise reduction mode, custom mode (ms, waveform)
Location method	Intelligent time difference method,electromagnetic inspection method, acoustic measurement method
Positioning accuracy	Fixed point: 0.1m, Path: 0.1m
Display	TFT ultra-bright 5-inch, 800×480 true color
Language	Graphical language is more intuitive
Gain	120dB, fully automatic adjustment, also can be adjusted manually
Frequency range	100～1600Hz
Dynamic Range	0～112dB(16 gears)
Synchronous trigger	Acoustic fully automatic synchronous trigger; magnetic field fully automatic synchronous trigger
Detection range	0.00～99.99ms、75mV～75V
Probe	Automatic mute, fully digital metal intelligent probe
Headphone	350Ω Military strong noise reduction and anti-interference technology
Working power	4*18650 Standard lithium battery
Working hours	More than 8 hours
Ambient temperature	-25～65℃；Relative humidity：≤90％
Weight	Host 0.6kg；Sensor 1.4kg
Waterproof grade	IP65

V Test cables	
(Note: Due to the existence of 35kV high voltage, special high voltage cables are made and should be kept away from the site during operation.)	
High voltage output cable	core wire 2.5mm2 red, withstand voltage 50kV DC, with shielding layer, outer diameter 14mm, length can be customized according to customer's requirements, including installation of large spool. Standard length of HV output cable is 5m.
Ground cable	grounding 3-column - main core 16mm2 transparent color, branch 2.5mm2, length can be customized according to customer's requirements, including installation of small spool. Standard length of ground cable is 5m.

Panel Diagram



1 Switch: Turn on/off the working power;
2 Amplitude: When collecting waveforms, adjust the amplitude knob to change the amplitude of the collected waveform.
3 Display: 10.1-inch full-color TFT touch screen.
4 Operation knob: Rotary button for system interface operation control, rotate to select and press to confirm;
5 Mode selection: Low Voltage Pulse: Low voltage pulse method; HV Flash: High voltage flashover method; Multiple Pulse: Multiple pulse method;
6 Voltmeter: High voltage output voltage indication kV meter, divided into 8kV, 16kV, 32kV combined with voltage level switch reading.
7 Ammeter: Indication of current size.
8 Voltage rotation mode (Voltage select): This key has three voltage level modes, 8kV, 16kV, 32kV. Please rotate to the appropriate position before turning on the machine. Lift, rotate, and press.
9 Voltage control knob: When this knob is in the zero position, the zero position light is on and the high voltage can be started. The voltage can be increased only after the high voltage is started.
10 Stop button: When the test is completed or an abnormality occurs, press this button to cut off the high voltage output, and the remaining high voltage of the test will be automatically discharged.
11 Start button: In the zero position, press the start button, the high voltage starts, and the high voltage light is on. In the non-zero position, the high voltage light is not on.
12 Overcurrent protection switch (OCP): When pressed, the overcurrent protection function has started; when it pops up, it means that the instrument has triggered the overcurrent protection.
13 Mode select: It is divided into three modes: withstand voltage (DC), single, and cycle. DC is the withstand voltage function. When this function is selected, the cable will be subjected to withstand voltage test; Single is a manual function. When this function is selected, the high voltage will be started and then boosted. Pressing the Single key can manually trigger the impact discharge; Cycle is an automatic function. When this function is selected, the high voltage will be started and boosted. The instrument will automatically trigger the impact discharge for about 7 seconds.
14 Overheat indication (OTP): When performing multiple pulse method tests, this light will light up, indicating that the internal temperature of the instrument is too high. Please stop using the multiple pulse method test.
15 Single key (Single): When the mode selection key is in the Single function, this key is valid.
16 Power switch (Power Switch): Turn clockwise to turn on the system power supply, and counterclockwise to turn off the system power supply.
17 Zero position light (Zero): Indicates that the voltage adjustment knob is in the zero position state. The high voltage can only be started when the zero position light is on.
18 Power light (Power): When the power switch is turned on, the indicator light is on.
19 High-voltage light (HV): When it is on, it indicates high-voltage output; when it is off, it indicates no high-voltage output.



1 Power socket (220V 50Hz): instrument working power supply, AC220V connection port. (connect when using high-voltage pulse generator);
2 Fuse holder: AC220V power supply system fuse installation place;
3 Communication socket (Signal): use a single Q line to connect the machine and the cable under test to collect waveforms, which is only valid when low-voltage pulses are used.
4 USB: use USB communication to import waveform files into the computer;
5 Charging: DC12.6V charging port, connect a 12.6V charger to start charging.

Packing list

Name	Qty.(unit)	Photo	Name	Qty.(unit)	Photo
Cable fault test system	1		Charger	1	
Single Q wire	1		HV connection line	1	
Power cable	1		USB cable	1	
High voltage output cable	1		Ground cable	1	
Fuse	1		Discharge rod	1	

Standard Accessories:

- Cable fault test system: Use low-voltage pulse method, high-voltage flashover method, and multiple pulse method to test and analyze cables and apply high voltage and high-energy pulse signals to the tested cables;
- Output line (5-meter single Q line): Connect the cable fault tester and the tested cable during low-voltage pulse test;
- Charger: 12.6V/3A charger, connected to the instrument charging port for charging;
- USB cable: used when importing waveform files to the computer.
- High-voltage output line (5 meters): connect the high-voltage output terminal of the host and the cable core under test;
- High-voltage connecting line (0.5 meters): short-circuit the high-voltage flashover output terminal and the multiple pulse input terminal during the multiple pulse method test;
- Ground line (5 meters): sampling ground, high-voltage ground and discharge rod ground line;
- Power line (1.8 meters): instrument working power line;
- Discharge rod: perform DC current limiting discharge or DC short-circuit discharge at the cable end under test;
- Fuse: AC220V power supply system spare fuse (8A fuse).

Optional Accessories:

- 25-meter lead set consisting or 1x HV Lead, Grounding wire set & Power corde
- 30-meter lead set consisting or 1x HV Lead, Grounding wire set & Power corde
- ITE Power Pack / One Inverter 3000W Pure Sine Wave AC/DC Charging system (Model FT-302), 4x 105 ah battery box complete with batteries 1150K Calcium Lead 12V UPS batteries. (Model BB4X105) (Portable box on wheels or mountable)
- ITE Power Pack / One Inverter 3000W Pure Sine Wave AC/DC Charging system (Model FT-302), 4x 105 ah battery box complete with batteries 1150K Calcium Lead 12V UPS batteries. (ModelLi100) (Portable box on wheels or mountable)
- ITE Power Pack / One Inverter 5000W Pure Sine Wave AC/DC Charging system (Model FT-502), 4x 105 ah battery box complete with batteries 1150K Calcium Lead 12V UPS batteries. (Model BB4X105) (Portable box on wheels or mountable)
- ITE Power Pack / One Inverter 5000W Pure Sine Wave AC/DC Charging system (Model FT-502), 4x 105 ah battery box complete with batteries 1150K Calcium Lead 12V UPS batteries. (ModelLi100) (Portable box on wheels or mountable)