



# SPG

Surge & Test  
Generators

# SWG

Surge Wave  
Generators



- Testing of Power Cables
- Acoustic Pinpointing with up to 3500 Joules
- Fault Location with the Step Voltage Method
- Integrated Prelocation

**sebaKMT**

# Surge Generators

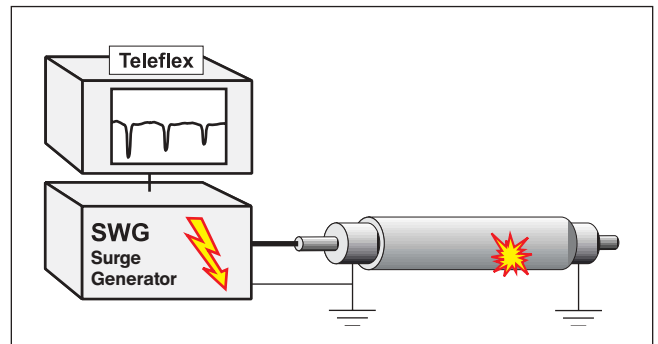
## Methods, Features, Possibilities

### Prelocation

#### ■ Impulse Current Method

The surge generator ignites an arc at the fault which creates a travelling wave between the fault and the surge generator. The TDR **Teleflex** displays this transient wave which indicates the distance to the fault.

A linear coupler for the impulse current method is installed in all surge generators with an output energy of 1000 J or more. This method can be useful for all high resistance faults, on wet cables and splices as well as on long paper-lead cables.



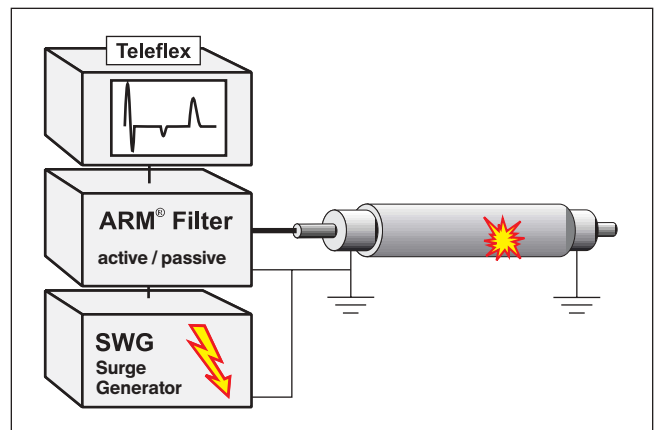
Impulse Current Method

#### ■ ARM® Arc Reflection Method

High resistive faults and intermittent faults can easily be located with the **ARM® Method**. If the fault resistance is too high for direct measurement with a TDR **Teleflex**, a surge generator provides a low resistance arc at the fault which is then clearly located by the **Teleflex** like a low resistance fault via an ARM® Filter. The **Teleflex** shows a comparison of the traces with and without the arc. It is an easy, clear and precise method and therefore the most commonly used fault locating procedure today and even often replaces burning (fault conditioning) on cables altogether.

ARM® Filters are also available as separate instruments. Available are passive filters M 219 (inductive) and LSG 300 (resistive). An **active Arc Reflection Filter LSG 3-E** provides an extra 2 kV power supply and capacitor.

The SPG 32-series features a built-in LSG 300 filter.

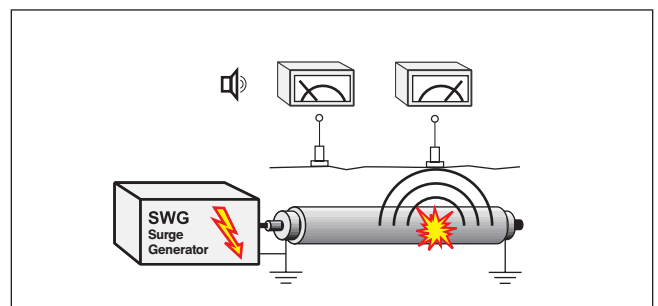


ARM® Arc Reflection Method

### Pinpoint Location

For a precise location of the fault it is essential to confirm its position along the cable after prelocation with TDR measurement or any HV-fault locating methods.

All SebaKMT surge generators have a time controlled surge output. It allows a periodical discharge into the cable for acoustic locating of the flash-over at the fault with an adequate ground microphone and receiver.

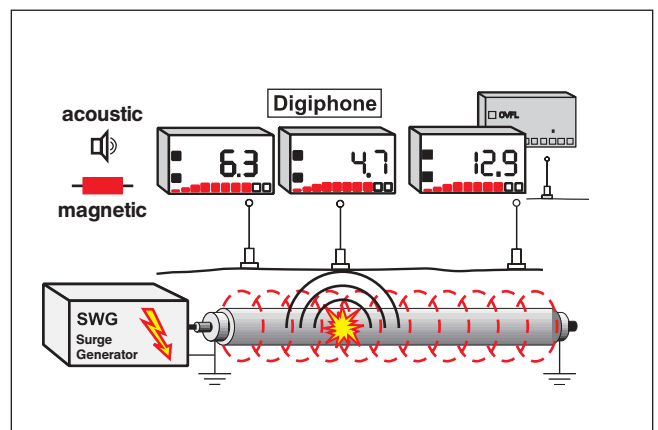


Acoustic pinpointing

### Combined Acoustic and Magnetic Method

The **Digiphone** (see page 4) measures the time difference between the magnetic signal of the surge current and the slower acoustic sound of the flash-over travelling through the ground. The display shows the time delay as indication of fault distance and the magnetic field strength as indication of the cable position.

This means that a low number showing a short time delay indicates a short distance to the fault. This will also work in noisy environment, cable ducts and for faults under paved surfaces.



Pinpointing with the Digiphone

## Technical Specifications Surge Generators

Model	Range	Voltage kV	Energy J	U cont. adjust.	I <sub>max.</sub> mA	Cap. µF	Cycle, Single Imp.	Dimensions W x D x H mm	Weight kg
<b>SWG 505</b>	I	3	180	no	129	40	1.5...6 yes	520 x 255 x 530	43
	II	4	320		172				
	III	5	500		213				
<b>SWG 500</b>	I	0...2.5/5/10	195	yes	185	62.5	1.5...6 yes	520 x 280 x 530	47
	II	0...4/8/16	500		300	15.6 3.9			
<b>Surge Unit 2/4/8</b>	I	0...2	1000	yes	1400	500	2...6 yes	520 x 270 x 670	70
	II	0...4	1000		700	125			
	III	0...8	1000		500	31.5			
<b>SWG 1000-C-1</b>	I	0...8	1000	yes	210	31.2	2.5...10 yes	520 x 430 x 630	106
	II	0...16	1000		105	7.81			
	III	0...32	1000		53	1.95			
<b>SWG 1750-C</b>	I	0...8	1750	yes	210	54.4	2.5...10 yes	520 x 430 x 630	97
	II	0...16	1750		105	13.6			
	III	0...32	1750		53	3.4			
<b>SWG 1750-CI</b>	with leakage current measurement								
<b>SWG 1750-C-4</b> (two pieces)	I	0...2	1150	yes	3650	566	2.5...10 yes	520 x 430 x 630	104
	II	0...4	1150		1850	142			
	I	0...8	1750		210	54.4			
	II	0...16	1750		105	13.6			
III	0...32	1750	53	3.4	520 x 430 x 460	69			
<b>SWG 1750-CD</b> (two pieces)	I	0...8	3500	yes	210	109	2.5...10 yes	520 x 430 x 630	99
	II	0...16	3500		105	27.2		520 x 270 x 410	30
	III	0...32	3500		53	6.8			

### Small Systems :

<b>SPG 5-1000</b>  DC-Test Sheath Fault Burning Prelocation <b>ICEplus</b>	I	0...2	1000	yes	1000	500	3...10 yes	545 x 500 x 650	45		
	II	0...4	1000							1000	
		0...5								1000	
		0...5								1000	
<b>SPG 32</b>  DC-Test Sheath Fault ARM®	I	0...8	1000	yes	210	31.2	2.5...10 yes	520 x 430 x 810	134		
	II	0...16	1000							105	7.81
	III	0...32	1000							53	1.95
	III	0...32	1000							2	
	I II III	0...32	1000								
<b>SPG 32-1750</b>  DC-Test Sheath Fault ARM®	I	0...8	1750	yes	210	54.4	2.5...10 yes	520 x 430 x 810	125		
	II	0...16	1750							105	13.6
	III	0...32	1750							53	3.4
	III	0...32	1750							2	
	I II III	0...32	1750								
<b>SPG 32-3500</b> (two pieces) DC-Test Sheath Fault ARM®	I	0...8	3500	yes	210	109	2.5...10 yes	520 x 430 x 810	125		
	II	0...16	3500							105	27.2
	III	0...32	3500							53	6.8
	III	0...32	3500							2	
	I II III	0...32	3500								
								520 x 270 x 410	30		

# Surge Wave Receiver Digiphone

## Application

The **Digiphone** is a directional acoustic listening device for the pinpointing of flash-over faults in power cables. State-of-the-art technology and ease of handling enables even users without training to precisely locate cable faults in conjunction with a surge generator.

## Description

The **Digiphone** receives magnetic and acoustic signals with specially developed sensors in one common housing.

The location of the buried cable is indicated by the intensity of the magnetic field produced by the impulse current of a surge generator. The bargraph indicator of the **Digiphone** shows a maximum intensity of the magnetic field above the cable.

The fault locating is done using a coincidence-measurement of the flash-over noise in time-relation to the magnetic signal of the surge current. The result is displayed as a big, easy-to-read number. A selectable built-in filter provides best measurements. The bandwidth of this filter is designed to minimise ambient noise (wind, traffic). In addition, headphones can be used to hear the flash-over noise.

A special advantage of this method is being independent from signal strength since only time delay matters. This allows fault locating even with cables in ducts or under pavement. Also infrequent users are easily guided to the fault location with the **Digiphone**.

## Technical Features

- Lightweight receiver with carrying straps
- Comfortable and easy to carry sensor
- Excellent acoustic characteristics
- Selectable filter against ambient noise
- Auto-ranging digital read-out of relative distance to the fault
- Bargraph-indication of the magnetic field strength for locating the cable path
- Big LC-Display for clear read-out
- Indication of battery condition
- Rain-proof foil keys
- Ruggedly built for field operation



## Technical Data

Amplification	acoustic channel > 65 dB magnetic channel > 50 dB
Display	LC-Display for measuring results and status information
Display range	00.0 ms to 99.9 ms 3 digit / 7 segment display
Overflow display	"OVFL" for Distance values $\geq$ 100 ms
Frequency range with filter	100 Hz to 1.5 kHz (acoustic) 270 Hz to 1.5 kHz
Power supply	10 x 1.5 V, batteries (LR6 (AA-size))
Operating time	approx. 16 hours
Dimensions	230 x 125 x 92 mm
Weight	approx. 1.25 kg (incl. batteries)

## Scope of Delivery

- Receiver
- Sensor
- Headphones
- Operation manual
- Instrument case
- 10 pcs. Batteries 1.5 V/R6/AA

ISO 9001:2000

**sebaKMT**

 **seba  
dynatronic**

**hagenuk**  **KMT**  
KABELMESSTECHNIK GmbH

Product Range: Instruments and Systems for Fault Location in Power and Telecommunication Networks and for Leak Detection in Water Distribution Systems • Cable and Pipe Locators • Seminars • Service • Contracting  
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Technical data subject to change without notice.

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