

SWG-12

MOBILE CABLE TEST AND FAULT LOCATION SYSTEM



- **Detachable reflectometer with touch screen control**
- **Powerful 1100 J surge generator**
- **ARC single shot / ARC multi-shot pre-location**
- **Surge levels 0 ... 3 / 6 / 12 kV**
- **Fault conditioning (burning) with up to 100 mA @ 12 kV**
- **Advanced safety systems**

Description

SWG-12 is a 1-phase mobile cable test and fault location system, made in a form of a trolley. It is designed for:

- **testing medium-voltage cables** with direct current voltage up to 12 kV;
- **fault conditioning** by burning faulty cable insulation with current up to 100 mA @ 12 kV;
- **pre-locating cable faults** with the reflectometer RIF-9 based on the low-voltage pulse reflection method (TDR), high-voltage decay method (DECAY), arc reflection method (ARC single shot / ARC multi-shot), and current pulse method (ICE);
- **pinpointing cable faults** with the acoustic method with 1100 J surge generator and a suitable signal receiver.

Detachable reflectometer RIF-9 is equipped with extra-bright display with touch screen technology, which makes fault pre-location quick, easy and efficient.

Powerful 1100 J surge generator is accompanied with a surge voltage level switch allowing to receive maximum surge power at 3, 6 and 12 kV. High surge energy enhances the possibilities of fault pinpointing by providing a stronger signal in the conditions of high interference, deep cable burial or long distance to the place of fault.

SWG-12 provides a reliable, safe and comprehensive solution for a complete servicing of medium-voltage voltage cables.



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High-voltage testing (DC)	Output voltage range	0 ... 12 kV
	Output current range	0 ... 10 mA
	Voltage adjustment type	Continuous
	Indication	Analogue output voltage and leakage current in real time
	Measurement error	± 3 %
Fault conditioning (Burn)	Output DC voltage range	0 ... 12 kV
	Output current range	0 ... 100 mA
	Voltage adjustment type	Continuous
	Indication	Analogue output voltage and leakage current in real time
	Measurement error	± 3 %
Fault pre-location (RIF-9)	Pre-location methods	<ul style="list-style-type: none"> ▪ TDR ▪ ARC single shot ▪ ARC multi-shot ▪ ICE ▪ DECAF
	Measurement ranges (for shortening coefficient of 1.50 or $v/2 = 100 \text{ m}/\mu\text{s}$)	0 ... 60 / 120 / 250 / 500 / 1000 / 2000 / 5000 / 10,000 / 20,000 / 50,000 / 120,000 m
	Resolution:	
	<ul style="list-style-type: none"> ▪ for shortening coefficient of 1.5 ($v/2 = 100 \text{ m}/\mu\text{s}$) ▪ for shortening coefficient 1.87 ($v/2 = 80.2 \text{ m}/\mu\text{s}$) 	0.5 m 0.4 m
	Distance measurement accuracy	0.2 % of measurement range
	Sampling rate	200 MHz
	Time mark accuracy	0.01 %
	Output impedance range	2 ... 100 Ω , resolution 2 Ω
	Probe pulse parameters:	
	<ul style="list-style-type: none"> ▪ voltage ▪ width range 	45 V 10 ns ... 100 μs
	Gain range	- 21 ... + 69 dB
	Shortening coefficient range	0.750 ... 3.000, resolution 0.001
	Propagation velocity $v/2$ range	50.0 ... 200.0 $\text{m}/\mu\text{s}$, resolution 0.1 $\text{m}/\mu\text{s}$
Probe pulse parameters:		
<ul style="list-style-type: none"> ▪ reflectograms with parameters ▪ data on cable shortening coefficients 	1000 500	
Fault pinpointing (Surge)	Surge voltage range levels	<ul style="list-style-type: none"> ▪ 0 ... 3 kV ▪ 0 ... 6 kV ▪ 0 ... 12 kV
	Voltage adjustment within each level	Continuous
	Surge energy at each level	up to 1100 J
	Surge rate	<ul style="list-style-type: none"> ▪ Single discharge, manually triggered ▪ 4 ... 20 surges/min, automatic mode
	Indication	Analogue output voltage in real time

Controls and interfaces	Connection interfaces	<ul style="list-style-type: none"> USB-A (user memory stick, formatted under FAT32) USB-B (service only)
	Graphical display <ul style="list-style-type: none"> Reflectometer RIF-9 	10.4" colour TFT, 800 × 600 px, resistive touch
	Operating modes switch	Manual
	Surge voltage levels switch	Manual
	Secondary control interface	Rotary encoder
	Internal memory	10,000 test results
Connections	HV cable KEP-12DC	6 m
	Power supply cable	6 m
	TDR connection cable RG-58, 1-phase	2.4 m
	Protective earthing cable KEP-10GCt, copper 10 mm ² , transparent	10 m
	Earthing control cable (red)	6 m
Safety	Protection	<ul style="list-style-type: none"> Operating against auxiliary grounding control Chassis potential control Overtoltage, overcurrent, overheating protection EMERGENCY STOP button, automatic discharge Operator lockout key
Power supply and consumption	Supply voltage	230 V ±10 % AC, single phase
	Supply frequency	50 Hz
	Power consumption	1.0 kVA
Physical	Dimensions, H × W × D (with RIF-9)	1172 × 775 × 603 mm
	Total weight (with RIF-9, connection cables)	120 kg
	Protection rating (as per EN 60529)	IP 30

Specifications are subject to change without notice.
Pictures for are for illustration purposes only.



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P-900

MULTIFUNCTIONAL PINPOINTING RECEIVER

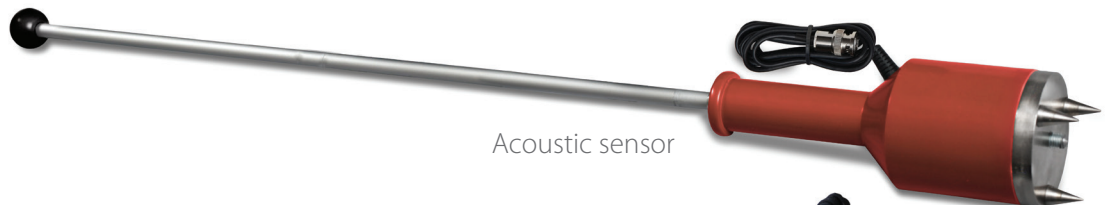
- For acoustic and inductive fault pinpointing
- Finding short circuit points in cables
- Finding the location of underground high-voltage power cables
- Transflective sun readable display
- Compact case suitable for storage and carrying of the complete system (optional)
- Built-in battery with 16 hour continuous duty cycle
- Easiest Operation



Inductive sensor
(frame type)



Headphones



Acoustic sensor



Inductive sensor (flat type)



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The ground microphone P-900 should be used with an auxiliary frequency generator of 1024 ± 2 Hz / $2048 \pm$ Hz and no less than 200 W of output power at the load range from 0.5 to 200 Ohms (e.g., LFG-2500) when searching using the inductive method.

Technical specification

Ground microphone	P-900
Operating frequency, Hz	1024 / 2048
Sensitivity at highest amplification, μ V	20
Sensitivity at lowest amplification, μ V	500
Frequency band -3 dB, «1024 Hz» mode, Hz	10
Frequency band -3 dB, «2048 Hz» mode, Hz	12
Bandwidth in the acoustic mode, Hz	20 ... 2200
Built-in battery parameters	5 x 1.2 V 2500 mAh
Continuous operation, hours, min	16
Battery charge time, hours, max	16
Weight with batteries, kg, max	0.65
Dimensions, W x H x D, mm, max	180 x 70 x 120
Ambient operation temperature, $^{\circ}$ C	- 10 ... + 40
Ambient storage temperature, $^{\circ}$ C	- 20 ... + 60
Relative air humidity	Non condensing
Atmospheric pressure, mm Hg	630 to 800

Package contents

Ground microphone	P-900
Carrying bag	1
Acoustic sensor (sensor rod for grassland and loose ground)	1
• sensor rod for smooth, solid ground	
• 3-point foot	
Inductive sensor	1
Inductive loop sensor	1
Headphones	1
Power supply unit	1
Operation manual	1

KEP reserves right to make changes into specifications

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