

# HIGH VOLTAGE TESTING & MEASUREMENT EQUIPMENT CATALOG



high voltage  
testing equipment





high voltage  
testing equipment

**KEP**

KEP Power Testing Ltd. aims to deliver quality High Voltage testing equipment to the utilities, testing service companies, electrical contractors and large industrials worldwide.

Our wide product range includes technically advanced, portable Test Van solutions for integral HV maintenance, as well as easy to use products for High Voltage testing, diagnostics, evaluation, and preventive maintenance testing of electrical substation apparatus, power cables, and other objects designed to operate under medium to high voltage conditions.

All our equipment is designed and manufactured according to Quality Management System based on ISO 9001 standard, certified by Intertek plc., while the in-house ISO/IEC 17025-certified calibration laboratory is ensuring the accuracy of supplied apparatus.

Keeping in touch with our customers around the world, permanently combined with market analysis and quick response to its changes makes KEP well-equipped for developing progressive solutions for wide variety of customer needs.

*Your KEP Power Testing team*



PRODUCTION FACILITIES.....	4
----------------------------	---

## CABLE FAULT LOCATION

### VEHICLE-BASED SYSTEMS

<b>General overview</b> .....	6
-------------------------------	---

<b>ETL-8VI</b> Compact vehicle-based systems.....	8
---	---

<b>ETL-40VI</b> Vehicle-based systems .....	10
---	----

<b>ETL-80VI</b> Vehicle-based systems .....	14
---	----

### COMPACT SYSTEMS

<b>SWG-12/1100RI</b> Portable cable fault location system .....	16
---	----

### STANDALONE EQUIPMENT

<b>RIF-9I</b> Digital impulse reflectometer.....	18
--	----

<b>LFG-50I, LFG-200PI</b> Low-frequency generator .....	20
---	----

<b>PT-14I Tracer, P-900I</b> Ground microphone .....	22
--	----

<b>Cables for HV testing</b> .....	23
------------------------------------	----

## HV TESTERS FOR POWER NETWORKS OBJECTS

### PORTABLE AC/DC HIPOTS

<b>HVTS-70/50I</b> High-voltage testing system .....	24
--	----

<b>HVT-70/50I</b> High-voltage testing system .....	24
---	----

### AC/DC HIPOTS HP-SERIES

<b>HVTS-HPI</b> High-voltage insulation tester.....	26
---	----

## CIRCUIT BREAKERS TESTERS

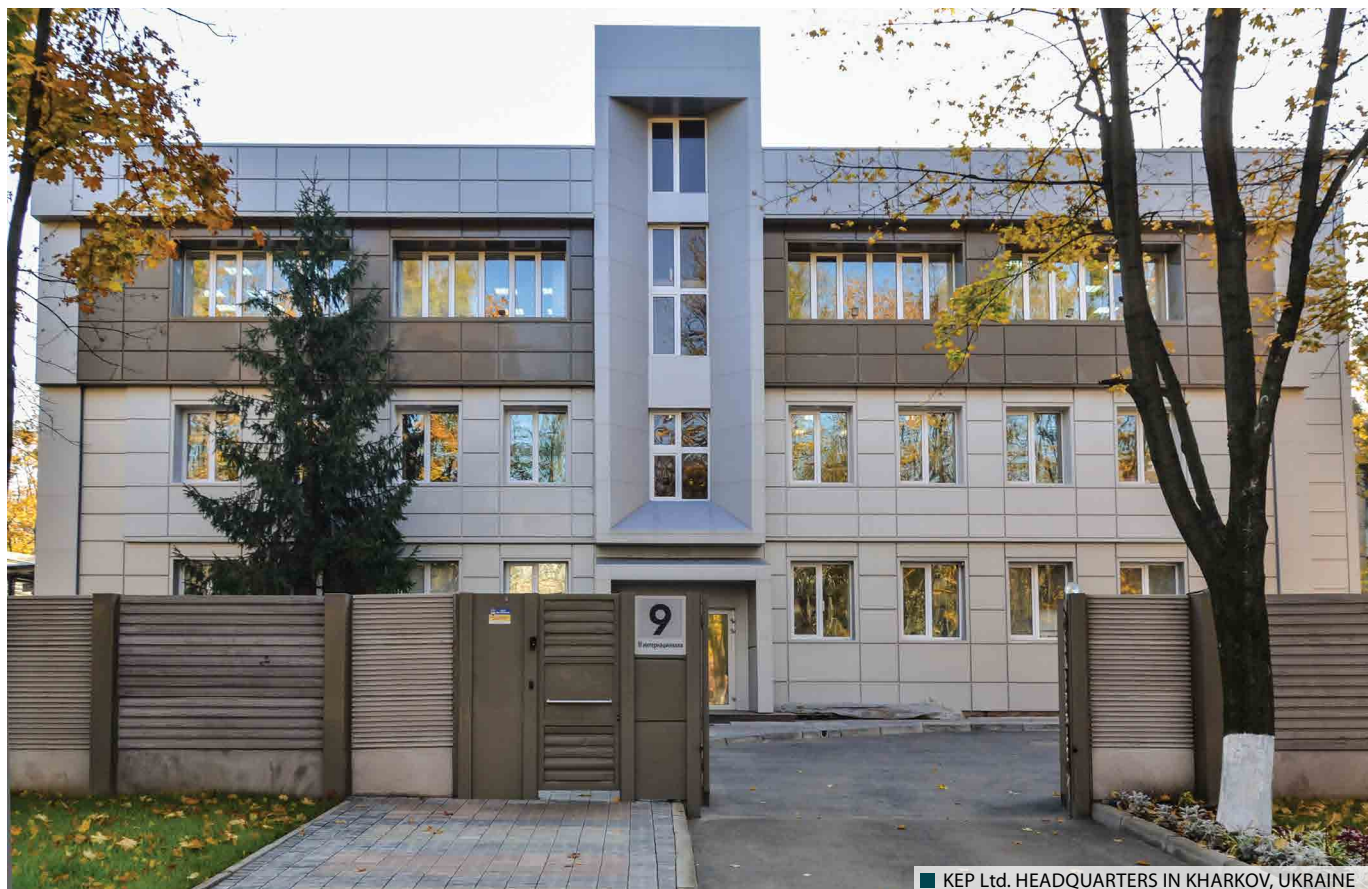
<b>UPA-1I</b> Automatic circuit breaker tester.....	28
<b>UPA-3I</b> Automatic circuit breaker tester.....	28
<b>UPA-6I</b> Automatic circuit breaker tester.....	28
<b>UPA-10I</b> Automatic circuit breaker tester.....	28
<b>UPA-16I, UPA-20I</b> Automatic circuit breaker tester.....	29

## OIL TESTERS

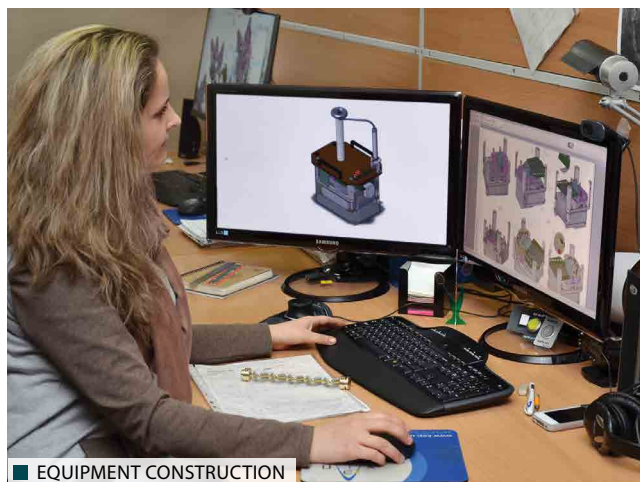
<b>OLT-80AI</b> Oil tester .....	30
<b>OLT-90AI</b> Oil tester .....	30
<b>OLT-100AI</b> Oil tester.....	30
<b>OLT-80MI</b> Oil tester .....	30
<b>OLT-90MI</b> Oil tester .....	31
<b>OLT-100MI</b> Oil tester.....	31
<b>C-80I, C-100I</b> Oil tester calibrator .....	33
<b>Tangens-3MI</b> Oil dissipation factor meter .....	34

## RESONANT TESTING SYSTEMS

<b>UIG-25/50/70-180I, UI-15/225I</b> .....	35
<b>UIG-35/70/100-750I, UIG-35/70/100-800I</b> .....	36
PACKAGE.....	38
DEALERS .....	40



■ KEP Ltd. HEADQUARTERS IN KHARKOV, UKRAINE



■ EQUIPMENT CONSTRUCTION



■ EQUIPMENT ADJUSTMENT





UV-PRINTING



LATHE WORK



CABLE TEST VAN ASSEMBLING



TURNING AND MILLING USING CNC



TURNING AND MILLING USING CNC



MILLING USING CNC



HV COILS WINDING



TRANSFORMERS WINDING



STEEL SHEET CUTTING



SF<sub>6</sub> FILLING EQUIPMENT



ENGINEERING TEAM

## ▶ Discription

The new generation of KEP Vehicle-based systems for cable testing and fault locating provides you with high-efficient, safe and reliable work on all kinds of LV and MV cables used in power networks.

We always consider individual customer needs, thus

## ▶ Safety

Our customer's safety is our first priority. KEP cable fault locating systems are built to meet all essential safety standards. As a base all our vehicle-based systems have:

- Earthing monitoring

All systems have safety earthing, operational earthing and auxiliary earthing. The independent GCU-3 module performs a permanent monitoring of resistance between safety earthing and operational earthing as well as a voltage between safety earthing (chassis) and auxiliary earthing. System will be stopped if these parameters exceed the tolerance limits.

- Control unit interlock

The control unit of each system always have an interlock. This prevents unauthorized energizing the high-voltage part of the system.

- Emergency stop button

Operator should always have a possibility to stop the system in case of any emergency. The emergency stop button is made to be easy reachable and fully independent from other system controls. Once this button has been pressed the system will be stopped immediately.

- Protection from incorrect HV connection

main parameters as well as a set of auxiliary equipment, which is delivered with the system, are object to change upon customer's request.

HV and LV connectors are made in a way to prevent their wrong connection.

- Rear doors monitoring

The system always monitors whether the rear doors of the vehicle (high-voltage compartment) are closed firmly. If the responsible sensors return fault the system is stopped immediately.

- Overvoltage protection

Inputs of a Time-Domain Reflectometer have overvoltage protection 400V CAT IV.

- Input current monitoring

The input current is monitored by internal monitoring system to prevent input circuits overheat.

- Isolating transformer

Insulating transformer is a basic option for increasing the safety level.

- Circuit breakers

The primary connection to mains has a relevant automatic circuit breaker, which trips out in a case of overcurrent.



Grounding control unit



Visible shorting bar

## ▶ System base

Compact systems can be based on vehicles of a size similar to VW Caddy. Full-size systems can be based on vehicles of a size similar to Mercedes Sprinter.

Furniture options as well as auxiliary equipment (air conditioner, additional heater, etc.) installed according to customer's demands.

Vehicles for:

compact systems

full-size systems





### ► Application

The ETL-8VI is an compact vehicle-based system, which is used for the following purposes:

- Cable testing up to 8 kV DC
- Cable faulty place burning
- Fault prelocating using Time-Domain Reflectometer RIF-9I working in:
  - TDR mode
  - Arc-Reflection mode
  - Impulse Current Mode
  - Voltage coupling mode
- Precise pinpointing with ground microphone
- Cable route tracing (optional).



## ► Technical specifications

Parameter	Value
<b>GENERAL parameter</b>	
Input voltage, V	230 ± 23
Frequency, Hz	50 ± 1
Power consumption, kVA, max	1.0
<b>TEST MODE</b>	
Output DC voltage range, kV	0 – 8
Output DC current range, mA	0 – 10
<b>BURN MODE</b>	
Output DC voltage range, kV	0 – 8
Output DC current range, mA	0 – 100
<b>SURGE MODE</b>	
DC voltage ranges, kV	2 / 4 / 8
Output energy, J, max	1000
Timer set (automatic surge mode)	3 – 15 seconds
Manual single surge	✓
Flexible voltage change during automatic operation	✓
Pinpointing with an acoustic receiver	✓
<b>PRELOCATION MODE<sup>1</sup></b>	
Methods	TDR / Arc reflection/ Impulse current/ Voltage coupling
Automatic distance measuring	✓
Saving cable parameters into Reflectometer non-volatile memory	✓
Saving reflectograms either to Reflectometer non-volatile memory or USB flash drive	✓
<b>CABLE TRACING MODE<sup>2</sup></b>	
Cable tracing using 50W audio-frequency generator with frequencies 491/ 982/ 8440 Hz with a receiver	✓

<sup>1</sup> - Learn more from KEP RIF-9I page;

<sup>2</sup> - Learn more from KEP LFG-50I page.





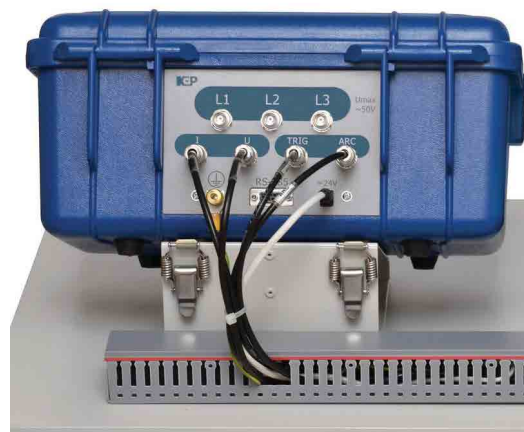
## ▶ Application

ETL-40VI is a modular test equipment, which is designed for testing and fault location of both LV and MV cables. The key parameters are designed flexible to satisfy customer's specific requirements.

Vehicle-based system ETL-40VI allows:

- DC cable testing up to 40 kV with 300 mA max. current
- Burning up to 20 kV / 1 A
- Surge energy up to 2400 J
- Precise fault prelocating using Time-Domain Reflectometer RIF-9I working in:
  - TDR mode
  - Arc-Reflection mode
  - Impulse Current Mode
  - Voltage coupling mode
  - Automatic test procedure
- Fault location using step voltage mode (optional)





► Technical specifications

Parameter	Value
<b>GENERAL parameter</b>	
Input voltage, V	230 ± 23
Frequency, Hz	50 ± 1
Power consumption, kVA, max	2.0
<b>[⚡] TEST MODE</b>	
Output DC voltage range, kV	0 – 40
Output DC current range, mA	300
<b>[🔥] BURN MODE</b>	
Output DC voltage range, kV	0 – 20
Output DC current range, A	1
<b>[⚡] SURGE MODE</b>	
Ranges, kV	4 / 8 / 16 / 32 (8 / 16 / 32)
Output energy, J, max	2000 (at each range)
Timer set (automatic surge mode), seconds	5 – 15
Manual single surge	✓

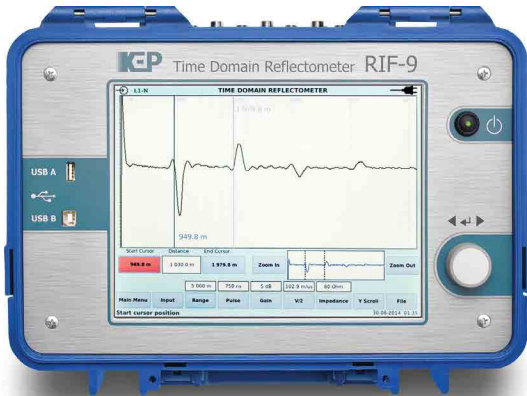
Parameter	Value
Flexible voltage change during automatic operation	✓
Pinpointing with an acoustic receiver	✓
<b>[?] PRELOCATION MODE</b>	
Methods	TDR / Arc reflection/ Impulse current/ Voltage coupling
Automatic distance measuring	✓
Saving cable parameters into Reflectometer non-volatile memory	✓
Saving reflectograms either to Reflectometer non-volatile memory or USB flash drive	✓
<b>CABLE TRACING MODE</b>	
Cable tracing using 50W audio-frequency generator with frequencies 491/ 982/ 8440 Hz with a receiver	✓



Power Panel



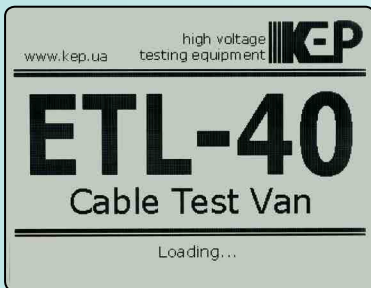
Operation Control Panel



## ► Prelocation

The digital impulse reflectometer RIF-9I, which is a part of ETL-40VI system, provides you with a precise cable fault prior locating. The 10-inch color display with a touchscreen makes it easier to navigate RIF-9I menu and operate it.

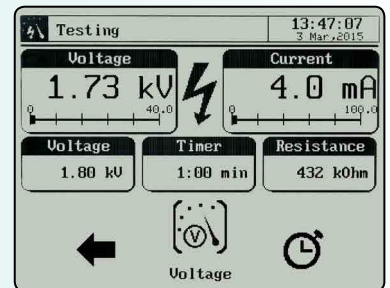
RIF-9I is made in a shock- and dustproof plastic case with a transporting belt. Its internal battery makes it possible to use it as a standalone device for not less than 8 hours.



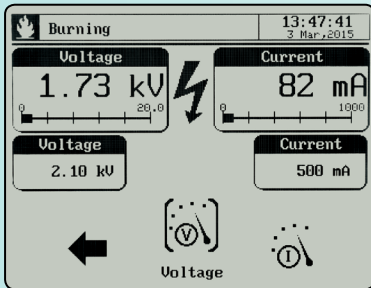
Starting up program



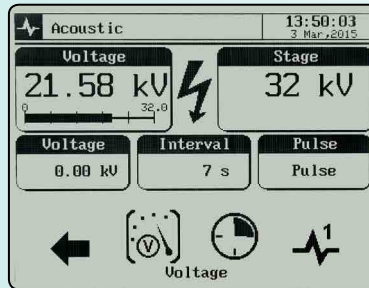
Language selection



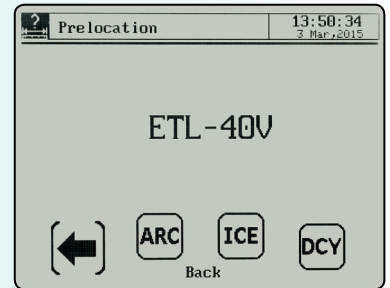
Testing Mode



Burning Mode



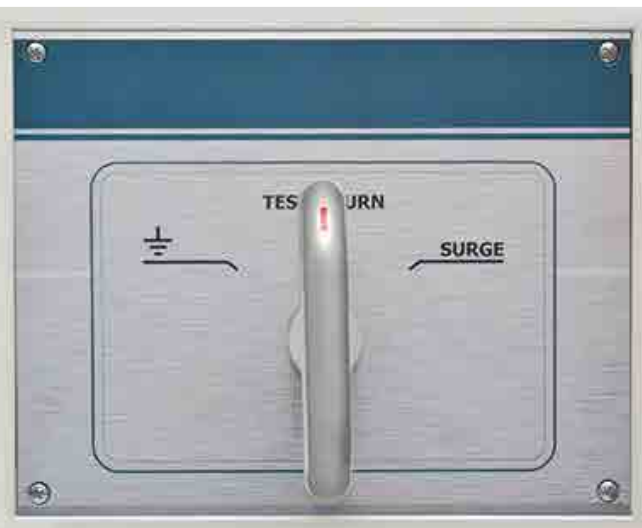
Acoustic Mode



Prelocation Mode



Surge Switch Panel



Mode Switch Panel





### ▶ Application

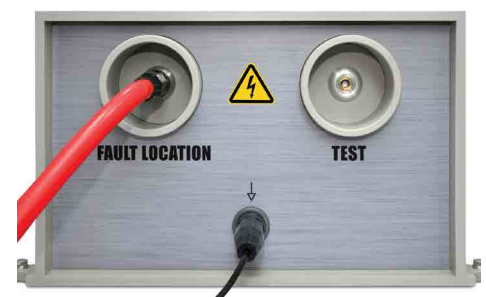
The ETL-80VI is a modular system, which is used for the following purposes:

- DC cable testing up to 80 kV
- Converting high-resistive cable faults into low-resistive with a use of burn generator
- Prelocating faulty places with a use of Time Domain Reflectometer RIF-9I
- Cable route tracing with a use of 200 W low-frequency generator and receiver
- Precise pinpointing using a surge wave generator with a ground microphone



## ► Technical specifications

Parameter	Value
<b>GENERAL parameter</b>	
Input voltage, V	230 ± 23
Frequency, Hz	50 ± 1
Power consumption, kVA, max	3.0 (3.5 for 40A burn generator)
<b>TEST MODE</b>	
Output DC voltage range, kV	0 – 80
Output DC current range, mA	0 – 580
<b>BURN MODE</b>	
Output DC voltage range, kV	0 – 20
Output DC current range, mA	0 – 40
<b>SURGE MODE</b>	
DC voltage ranges, kV	4 / 8 / 16 / 32
Output energy, J, max	2560 (at each range)
Timer set (automatic surge mode), seconds	3 – 15
Manual single surge	✓
Flexible voltage change during automatic operation	✓
Pinpointing with an acoustic receiver	✓
<b>PRELOCATION MODE</b>	
Methods	TDR / Arc reflection/ Impulse current/ Voltage coupling/ Arc reflection + burn
Automatic distance measuring	✓
Saving cable parameters into Reflectometer non-volatile memory	✓
Saving reflectograms either to Reflectometer non-volatile memory or USB flash drive	✓
<b>CABLE TRACING MODE</b>	
Cable tracing using 50W audio-frequency generator with frequencies 491/ 982/ 8440 Hz with a receiver	✓





## ▶ Application

SWG-12/1100RI portable cable fault location system is a complex solution for safe, fast and easy locating a faulty place on low and medium underground voltage cables. It includes a powerful high-voltage unit, which has a test, burn and surge generation modules, and a time-domain reflectometer for locating faults on cables.

## ▶ Description

The high-voltage unit of the system provides with high-power up to 1100 Joules surges at 3; 6 and 12 kV ranges. At each range, the output voltage is smoothly adjustable. The rate of surge waves can be smoothly adjusted. The single manual shot option is also included. The DC output mode is provided for quick fault diagnostics. The 100 mA burn mode is available.

Digital impulse reflectometer (TDR) RIF-9I provides you with 10.4-inch bright high-contrast TFT display with touchscreen. The 800 × 600 pixels resolution makes the picture sharp. The touchscreen allows an operator navigate through the menu fast and easy. An alternative way of navigation is included. It is provided with a control knob.



RIF-9I integrates a multiple ways of fault prelocation. It can be used either as a standalone device in TDR mode or in a conjunction with HV-module, working in arc reflection mode.

RIF-9I has USB interface. The package content

includes software for PC (optional), which allows working with saved reflectograms. The firmware can be easily updated through USB interface by inserting a flash drive.

## ► Technical specifications

GENERAL parameter	Value
Input voltage, V	230 ± 23
Frequency, Hz	50 ± 1
Power consumption, kVA, max	1.0
Dimensions (W × H × D), mm	731 × 1120 × 533
Net weight, kg	113
HV-module parameter	
⚡ TESTING MODE	
Output DC voltage, kV	0 – 12
Output DC current, mA	1 / 10
🔥 BURNING MODE	
Output DC voltage range, kV	0 – 12
Output DC current range, mA	0 – 100
⚡ SURGE MODE	
Ranges, kV	3 / 6 / 12
Surge rate, s	3 – 15 or single shot
Max. output energy, J	1100

TDR parameter	Value
Distance measurement ranges, m @ v/2 = 100 m/μs	60/120/ 250/ 500/1000/2000/5000/ 10000/20000/50000/120000
Resolution, m	0.5 @ v/2 = 100 m/μs 0.4 @ v/2 = 80 m/μs
Sampling rate, MHz	200
Gain, dB	-33 – 104
Output impedance (10 Ω steps), Ω	10 – 500
Propagation velocity (v/2), m/μs	50.0 – 150.0
Averaging reflectograms number, max	64
Time domain accuracy	0.2 % of FS
Pulse amplitude, V	45
Pulse width, ns	10 – 100 000
Operation modes	TDR (reflection measurement) ARC (arc-reflection)
Control	Touchscreen and control knob
Connectivity	RS-485, USB
Internal data storage	4 Gb (not less than 1000 reflectograms with data)
Display	10.4", 800 x 600 TFT, touch-sensitive

## ► Package contents

Component	Quantity
SWG-12/1100RI	1
Bag for cables	1
User manual	1
Connecting cables set (may vary on customer's demand)	6 m each

## ► Accessories

Component	Quantity
LFG-50I Audio frequency generator	1
P-900I Surge wave locator set	1



Bag for cables



## ▶ Application

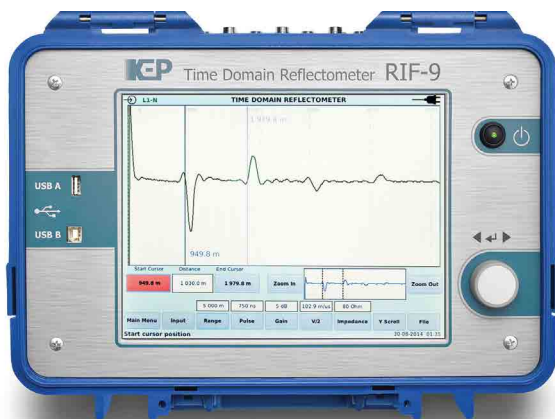
Battery powered digital impulse reflectometer (TDR) RIF-9I designed for determining the distance to a fault in communication and power cables.

Digital impulse reflectometer RIF-9I allows:

- Determining the distance to a fault or discontinuity in symmetric and asymmetric cables using a location (time domain reflection) method
- Measuring the length of a cable (including those wound on a drum) or distance to a fault or a short circuit
- Storing and processing the results of measurements both internally or using a supplied PC software
- As part of a Cable Test Van, determining the distance to a fault or discontinuity in cables with length of up to 100 km for all possible fault types without the need of preliminary full cable sheath burning

## ▶ Description

- RIF-9I provides you with 10.4-inch bright high-contrast TFT display with touchscreen. The 800 × 600 pixels resolution makes the picture sharp. The touchscreen allows an operator navigate through the menu fast and easy. An alternative way of navigation is included. It is provided with a control knob.
- RIF-9I integrates a multiple ways of fault prelocation. It can be used either as a standalone device in TDR mode or in a conjunction with HV-module (e.g. Cable test van or Surge wave generator), working in arc reflection (ARC), impulse current (ICE) and decay modes. A high-capacity internal battery allows working up to 8 hours.
- RIF-9I has both RS-485 and USB interfaces. The package content includes software for PC (optional), which allows working with saved reflectograms. The firmware is easily updated through USB interface by inserting a flash drive.

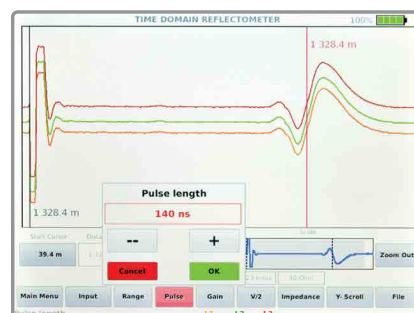


## ► Technical specifications

Parameter	Value
Distance measurement ranges, m @ v/2 = 100 m/μs	60 / 120 / 250 / 500 / 1000 / 2000 / 5000 10000 / 20000 / 50000 / 120000
Resolution, m	0.5 @ v/2 = 100 m/μs 0.4 @ v/2 = 80 m/μs
Sampling rate, MHz	200
Gain, dB	-33 – 104
Output impedance (10 Ω steps), Ω	10 – 500
Propagation velocity (v/2), m/μs	50.0 – 150.0
Averaging reflectograms number, max	64
Time domain accuracy	0.2 % of FS
Pulse amplitude, V	45
Propagation velocity (v/2) resolution, m/us	0.1
Pulse width, ns	10 – 100 000
Operation modes	TDR / ARC / ICE / Decay
Control	Touchscreen and control knob
Connectivity	RS-485, USB
Internal data storage	4 Gb (not less than 1000 reflectograms with data)
Display	10.4", 800 x 600 TFT, touch-sensitive
Internal battery	12 V (8 hours of operating when fully charged)
External power adaptor	Input 230 V 50 Hz Output 24 V DC
Power consumption, W, max	36
Dimensions (W x H x D), mm	366 x 178 x 270
Net weight (with internal battery), kg	8.0



RIF-9I bag for cables



RIF-9I workplay screenshot



LFG-200PI

## ► Application

Low-frequency generator LFG-50I, when operated in conjunction with a receiver, can be used for locating as well as tracing underground metal communications, such as any cables with metal cores as well as metal pipes. In addition, it provides operator with a quick detection of short circuits on cables as well as with an identification of a cable in a bunch.

## ► Description

LFG-50I is a 50 W low-frequency generator with ability to inject a signal of three frequencies via direct connection to an object or via internal transmission loop antenna, which is built-in a cover lid. Basic frequencies are 491, 982 and 8440 Hz. There are options of using a single-frequency or multi-frequency signals at the output.

The power of LFG-50I output signal can be adjusted up to 50 W with 2.5 W steps. This signal can be transmitted constantly or broken into separate blocks of 50 % duty cycle with 1 s repetition rate.

A load matching is made automatically. Main parameters, such as output power, load impedance, selected frequency are shown on OLED display. If a load is higher than 1000  $\Omega$  LFG-50I automatically switches into output voltage setting mode. The output overload protection will trip, when operating on short-circuit loops (lower than 0.5  $\Omega$ ).

## ► Package contents

Component	Quantity
LFG-50I	1
Soft case	1
Power cable	1
Signal connecting wires	2
"Crocodile" connectors	3
User manual	1
Fuse 10 A	4
Fuse 1 A	1

## ► Specifications

Parameter	Value	
	LFG-50I	LFG-200PI
Operating frequencies, Hz	491 / 982 / 8440 (other - on request)	
Max. Frequencies count, operated simultaneously	3	
Output power range, W	0 – 50	0 – 200
Output power regulating step, W	2.5	10
Frequency selection	manual	
Operating modes	continuous / pulse	
Loop impedance matching range, $\Omega$	0.5 – 1000	
Maximum output voltage (RMS), V	300	600
Loop impedance matching mode	auto	
Measured parameters ranges:		
output voltage, V RMS	0.1 – 300	0.1 – 600
output current, A RMS	0.01 – 9.99	
resistance, Ohm	0.5 – 1000	
phase angle, $^{\circ}$	0 – 90	
pulse duty cycle, %	50	
Measurement error, %, of FS	5	
Pulse repetition frequency, Hz	1	
Internal battery:		
type	LiFePO4	–
operating voltage, V DC	12	–
battery life, hours	not less than 1	–
average charging time, hours	3	–
Power supply:		
input voltage, V	230 $\pm$ 10 %	
input voltage frequency, Hz	50	
power consumption from mains, VA, max	100	400
External power source (not included):		
voltage, V	12 – 14	
current, A, not less	8	
Dimensions (W $\times$ H $\times$ D), mm	366 $\times$ 227 $\times$ 270	460 $\times$ 380 $\times$ 190
Net weight, kg, max	8	15



## ▶ Application

Fast and accurate search for power cables and other communications, identification of coating defects and the depth, followed by mapping.

## ▶ Technical specifications

Parameter	Value
Operating frequencies, Hz	491 / 982 / 8440
Bandwidth:	
RADIO mode, kHz	10 – 36
ONLINE mode, Hz	48 – 10 000
Sensitivity, $\mu\text{V}$	1
Track depth meas. error, %, max	5
Dimensions, mm	700 × 300 × 140
Net weight, kg, max	2.4

# Ground microphone **P-900I**

## ▶ Application

Ground microphone P-900I should be used with an auxiliary frequency generator of  $1024 \pm 2 \text{ Hz}$  /  $2048 \pm 2 \text{ Hz}$  and no less than 200 W of output power at the load range from 0.5 to 200 Ohms (e.g., LFG-50I) when searching using the inductive method.

You can also try to [use it virtually](#) from our web-site (Adobe Flash Player required)



## ▶ Technical specifications



Headphones

Parameter	Value
Sensitivity at max / min amplification	20 $\mu\text{V}$ / 500 mV
Pass band (-3 dB) in "1024Hz" / "2048Hz" mode, Hz	10 / 12
Pass band in audio frequency mode, Hz	20 – 2200
Power source	5 AA × 1.2 V NiMh
Duty time, hours	16
Dimensions (W × H × D), mm	180 × 70 × 120
Net weight (batteries included)	0.65



Acoustic sensor

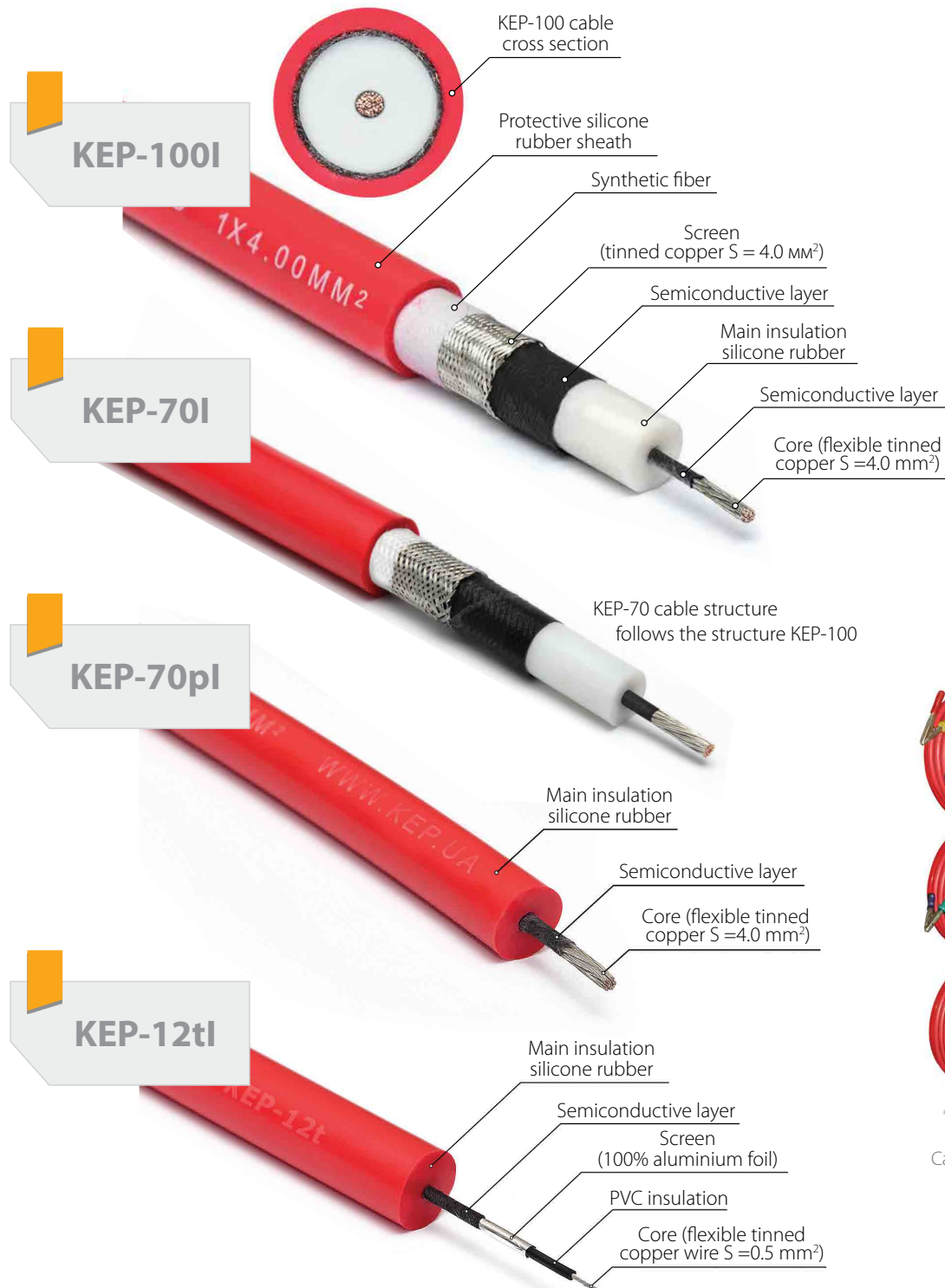


## Application

Flexible silicone frostproof high-voltage cables KEP-100I, KEP-70I and KEP-70pl are suitable for high-voltage testing both as part of ETL vans and separately, as well as for use in the measuring circuits of  $\text{tg}\delta$  insulation (KEP-12tI).

Cable test vans ETL-40VI and ETL-80VI made by

KharkovEnergOPribor as a means of testing and detecting cable faults are both supplied with flexible silicone frostproof high-voltage cables, which retains its flexibility at the temperatures as low as minus 40°C.



Cable drums for KEP-70I cables



## HVTS-70/50I



## HVT-70/50I



### ▶ Application

High-voltage testing system HVT and HVTS perform DC high-voltage testing of power cables (IEC 60502-2), power cables accessories (IEC 61442) as well as AC high-voltage testing of switchgear, reclosers, dielectric insulators, high-voltage dischargers (arresters), busbars and other dielectric materials with relatively low electric capacitance.

Both devices consist of a control unit and a high-voltage

unit. High-voltage units of both HVT and HVTS can be supplied with either transformer oil as an insulating material (HVU-L) or with sulfur hexafluoride as an insulating material (HVU-G). Thus, there are four modifications offered: HVTS + HVU-G, HVTS + HVU-L, HVT + HVU-L and HVT + HVU-L. We recommend using either HVTS + HVU-G or HVT + HVU-L.

### ▶ Technical specifications

Parameter	Value			
	HVTS-70/50I		HVT-70/50I	
	DC	AC	DC	AC
Output voltage, kV, max	70	50	70	50
Output current, mA, max	25	25 (40*)	15	25 (40*)
Output voltage measuring range, kV	3 – 70	3 – 50	0 – 70	0 – 50
Output current measuring range, mA	1 – 25	1 – 40	0 – 15	0 – 40
Measurement uncertainty	3 % of reading		3 % of FS	
Voltage raising rate, kV/s	manual / 0.5 – 4		manual	
Timer value, minutes, max	60		✗	
Input voltage, V	230 ± 10 %			
Frequency, Hz	50 ± 1			
Power consumption, kVA, max	3.0			
Control unit dimensions (W × H × D), mm	349 × 256 × 240			
HVU dimensions** (W × H × D), mm	322 × 356 × 355		360 × 500 × 310	
Control unit net weight, kg	14			
HVU net weight**, kg	22		35	

\* - In a short duration mode (1 minute ON, 5 minutes OFF).

\*\* - For HVTS-70/50I given size and weight HVU-G, for HVT-70/50I given size and weight HVU-L.

Technical data is an object to change without prior notification.

## ► Functional features

Control unit features	HVTS	HVT
<b>High resistance to external environmental influences.</b> Casing with firmly closing cover which prevents penetration of dust and moisture during the transportation and storage	✓	✓
<b>Mobility.</b> Supplied with a belt for easy transportation by a single person	✓	✓
<b>Advanced protection and safety features.</b> Emergency Stop button and grounding terminal on a front panel. Indication of the actual voltage on the output HV terminal	✓	✓
<b>Analog indicators.</b> Control panel with two analog indicators for voltage and current measurement	✓*	✓
<b>Overcurrent protection.</b> Blocks output circuit if current exceeds the limit	✓	✓
<b>Overvoltage protection.</b> Blocks output circuit if voltage exceeds the limit	✓	✗
<b>CE Compliant.</b> Conforms to the EU Directives 2006/95/EC (LVD) and 2004/108/EC (EMC), which is proven by independent tests at TRaC laboratories, UK	✓	✗
<b>Improved precision.</b> Ability to measure RMS values of both AC voltage and current irrespectively to the crest-factor (True-RMS) thus greatly reducing the crest factor errors	✓	✗
<b>High-contrast graphical display.</b> Ability to control and adjust the unit using a context menu which an operator can navigate by pressing keys located on both sides of display and reading the results on the display. Display indicates measurement and auxiliary information during test procedure	✓	✗
<b>Automatic testing mode.</b> Automatic and manual testing modes. In AUTO mode the unit raises the voltage at a pre-set rate to a pre-set voltage value, keeps the voltage on an object under test (OUT) for a certain time and then drops the voltage slowly down to zero	✓	✗
<b>Internal memory for test results storage.</b> Ability to save up to eight presets for the most frequently used test procedures. Ability to save measurement data history	✓	✗
<b>Auxiliary protection.</b> Blocking HVU-G output if insulating gas pressure is low or its temperature is high	✓	✗
High-Voltage unit features	HVU-G	HVU-L
<b>External automatic.</b> External shorting rod with a visible shorting indication. Ability to discharge OUT after voltage has been dropped down to zero by an operator without touching the High Voltage Unit.	✓	✓
<b>Auxiliary protection.</b> Built-in pressure and temperature sensors	✓	✗
<b>Reduced weight and dimensions</b>	✓	✗

\* - graphic display shows two analog bars which are an emulation of an analog indicating scales.



HVTS-70/50I control panel



HVT-70/50I control panel

You can also try to [use it virtually](#) from our web-site (Adobe Flash Player required)



HVTS-70/50I conveyance carriage (optional)





## ► Application

The High-power high-voltage testers of HVTS-HPI series are designed for testing an insulation of high-voltage cables and other non-liquid dielectric materials with both AC and DC voltage up to 140 kV.

Typically this series includes testers which have a test voltage 70 kV DC/50 kV AC 50 Hz and 100 kV DC/100 kV AC 50Hz. There are two common modifications for each model mentioned above which can bring output power value of 7.5 kVA and 17.5 kVA.

Any other special models, which have test voltages up to 250 kV with a power of up to 40 kVA are available on customer's request.

## ► Technical specifications

Parameter	HVTS-HPI 70/55-7.5 (17.5)	HVTS-HPI 70/100-7.5 (17.5)	HVTS-HPI 100/100-7.5 (17.5)	HVTS-HPI 140/100-7,5 (17.5)
Output AC voltage, kV, max	55		100	
Output DC voltage, kV, max		70	100	140
Output AC current, mA, max	130* (300*)		75* (175*)	
Output DC current, mA, max	90 (200)	30 (65)	40 (90)	55 (125)
Output AC voltage measuring range, kV	3 – 55		3 – 100	
Output DC voltage measuring range, kV		3 – 70	3 – 100	3 – 140
Output AC current measuring range, mA	1 – 130 (3 – 300)		1 – 75 (1 – 175)	
Output DC current measuring range, mA	1 – 90 (3 – 200)	1 – 30 (1 – 65)	1 – 40 (1 – 90)	1 – 55 (1 – 125)
Measuring uncertainty, %	3 of reading			
Interface languages	Russian, English, (Turkish, Polish and other – on request)			
Input voltage, V	230 ± 10 %			
Frequency, Hz	50 ± 1 (60 – on request)			
Output power, kVA, max	7.5 (17.5)			

Parameters for a 17.5 kVA model of HVTS-HPI are given in parenthesis.



HVTS-HPI control panel



HVTS-HPI high voltage unit



HVTS-HPI control unit



The connectors for control unit connection



Transporting position



Operating position

## Application

Automatic circuit breaker testers UPA are intended for automatic AC current circuit breakers testing. The devices allow registering the values of the supplied current and timing the automatic circuit breaker switching interval.

UPA operate on the principle of varying the power in the primary circuit of the matching power transformer and, respectively, varying the output current, flowing through the

automatic circuit breaker under the test. Power regulation could be done either through an external voltage regulator (RNO or VR) or through a built-in thyristor controller.

⚠ All metrological characteristics (current and time measurement) are valid if RNO is used, i.e. if the exit signal waveform is stable (just as in other analogs).



**UPA-31  
(UPA-11)**  
RNO-VT-201\*



Current source 3 kA  
(1 kA)

AC voltage regulators  
from 20 A to 120 A are available  
upon request

- RNO-VT-20I ..... 20A
- RNO-VT-40I ..... 40A
- RNO-VT-80I ..... 80A
- RNO-VT-120I ..... 120A

**UPA-10I  
(UPA-6I)**  
RNO-VT-801\*



RNO-VT-40I



RNO-VT-20I

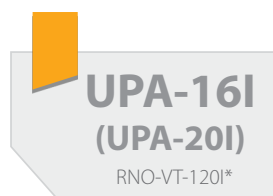
\* - recommended voltage regulator for current UPA models (optional)

## ► Technical specifications

Parameter	Value						
	UPA-11	UPA-3I	UPA-6I	UPA-10I	UPA-16I	UPA-20I	
Output current measuring range in mode "kA" (RMS), kA	one turn	0.1 – 1	1 – 3	1 – 6	1 – 9.99	3 – 16	3 – 20
	two turns	0.05 – 0.5	0.5 – 1.5	–	–	1.5 – 8	1.5 – 10
	three turns	0.03 – 0.33	0.33 – 1	–	–	1 – 5.33	1 – 6.67
	four turns	0.025 – 0.25	0.25 – 0.75	–	–	0.75 – 4	0.75 – 5
	five turns	0.02 – 0.2	0.2 – 0.6	–	–	0.6 – 3.2	0.6 – 4
Output current measuring range in mode "A" (RMS), A	one turn	10 – 100	100 – 1000	100 – 999		200 – 4000	
	two turns	5 – 50	50 – 500	–	–	100 – 2000	
	three turns	3.3 – 33	33 – 330	–	–	66.7 – 1333	
	four turns	2.5 – 25	25 – 250	–	–	50 – 1000	
	five turns	2 – 20	20 – 200	–	–	40 – 800	
Measurement uncertainty (for A and kA), %	3 of FS						
Circuit breaker switch off time measuring uncertainty*:	50 ms – 990 ms, ms	± 20					
	1 s – 7200 s**, %	3 of reading					
Max. time of uninterrupted work at max. current, s	10						
Input voltage, V	230 ± 10 %			230 V / 400 V ± 10 %			
Frequency, Hz	50 ± 1						
Power consumption, kVA, max	5.5		33	55	55		
Control unit dimensions (W × H × D), mm	347 × 140 × 210		542 × 360 × 200		660 × 985 × 480		
Current source dimensions (W × H × D), mm	110 × 212 × 253				185 × 305 × 360		
Control unit net weight, kg	3		47		110		
Current source net weight, kg	16.7				56		

\* The given measurement uncertainty are true when operating a UPA with VR.

\*\* The measurement of current feed duration over 10 s should be done at the current of not more than 1000 A. UPA-6I, UPA-10I have 1 s - 990 s range.



\* - recommended voltage regulator for current UPA models (optional)



**OLT-80AI**  
(OLT-90AI)  
(OLT-100AI)



A-Series



**OLT-80MI**  
(OLT-90MI)  
(OLT-100MI)



M-Series

## ▶ Application

Oil testers are used for testing dielectric liquids with their breakdown voltage measuring. A-series of oil testers works automatically, according with selected standard, which are preloaded.

## ▶ Description

Both A and M series of oil testers bring out accurate and repeatable results of measured breakdown voltage. Fast high-voltage switch off time makes it possible to carry out test of dielectric liquids, which are easily destroyed under such influences.

The internal design of oil testers combined with a use of automatic high voltage breakers, cutting off supplied voltage if tester's lid has been opened during the test, provide operator with high level of safety.

Testers are fully equipped and are ready for operation right after unpacking. They come with a test vessel (IEC 60156 – basic configuration) with VDE 0370 mushroom-shape electrodes. A gap between electrodes is easily regulated with a use of pass-no pass gauge, which comes in pack.

A-series provides with fully automatic test procedure according to selected standard (basically IEC 60156 and GOST 6581 settings are preloaded). It has a built-in printer which is able to print a test report after procedure is done. Test results are saved into non-volatile memory of oil tester. A PC-connectivity makes it easy to collect data from oil tester, save and store them as well as print a fulfilled report. Test voltage is being measured directly on electrodes. This fact combined with a true sine voltage shape (independent from supply voltage shape), increases repeatability and accuracy of measurements.

M-series provides operator with ultra-simplicity of operation. It doesn't require any presets. All you need is pressing start button after a test vessel is loaded. Tester will show a breakdown voltage result immediately after breakdown occurs.

Test vessel for this series goes with magnetic stirrer, which stirs a liquid between two measurements.

## ▶ Technical specifications

Parameter	A-Series	M-Series
Output AC voltage (symmetrical), OLT-80 / OLT-90 / OLT-100, kV RMS	80 / 90 / 100	
Voltage resolution, kV	0.1	
Measurement uncertainty	3 % of reading	3 % of FS
Output voltage rise rate, kV/s	2 ± 0.2 – basic (changes according to selected standard)	2 ± 0.2
Switch-off time on breakdown, µs	< 5	
Temperature measuring range, °C	5.0 – 50.0	N/A
Programmed test sequences	IEC 60156 (BS EN 60156, CEI EN 60156, NF EN 60156, UNE EN 60156, SABS EN 60156, PA SEV EN 60156) GOST 6581, ASTM D877 & ASTM D1816 (optional)	N/A
Electrodes	"mushroom" type IEC 60156 – basic; ASTM D877, ASTM D1816 (optional)	
Test vessel	IEC 60156, 400 ml, 1.0 kg	
Go/No-Go gauge width, mm	2.45 / 2.55 – basic; 1, 2, 2.5, 4 (optional)	
Display resolution	128 × 64 dot matrix, monochrome with backlight	3 × 7-segment digits
Interface languages	English, Russian	N/A
Printer	thermal line, 8 dots/mm, 384 dots/line	N/A
Memory for results, cells	512	N/A
PC connectivity	USB B-type	N/A
Input voltage, V	230 ± 10% (basic), 110/120 – on request	230 ± 10%
Frequency, Hz	50 / 60 ± 1	50 ± 1
Power consumption OLT-80 / OLT-90 / OLT-100, VA, max	100 / 120 / 140	
OLT-80 dimensions (W × H × D), mm	461 × 280 × 271	471 × 280 × 271
OLT-90 dimensions (W × H × D), mm	520 × 300 × 320	500 × 300 × 320
OLT-100 dimensions (W × H × D), mm	530 × 315 × 320	540 × 315 × 320
Net weight OLT-80 / OLT-90 / OLT-100, kg	21 / 25 / 30	23 / 27 / 32

## ▶ Safety and EMC compliance

Designed in accordance with IEC 61010 safety requirements.

Meets light industrial IEC 61326-1 Class B, CISPR 16-1, CISPR 16-2 and CISPR 22.



OLT-80AI in comparison with OLT-100AI



A-Series: OLT-80AI, OLT-90AI, OLT-100AI



M-Series: OLT-80MI, OLT-90MI, OLT-100MI

## Package contents

Component	Quantity	
	A-series	M-series
OLT oil tester	1	1
Test vessel* IEC 60156 with electrodes and cover	1	1
Go/No-Go gauge	1	1
Magnetic stirrer	1	N/A
Lifting stick for magnetic stirrer	1	N/A
USB cable (A-B type)	1	N/A
Power cord (C-type plug.)	1	1
Grounding cable	1	1
Software on USB flash-drive	1	N/A
Fuses (250V/3A)	2	2
Paper roll (inside the printer)	1	N/A
User's manual	1	1
ISO/IEC 17025 calibration certificate (optional, on Customer's request)	1	1
C-80I (C-100I) calibration kit (optional)	1	1

\* - Additional test vessels are available on request



A-Series built-in printer



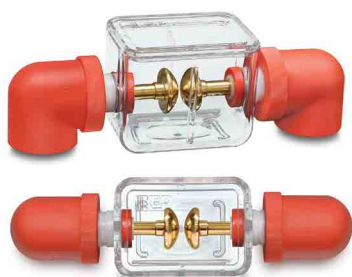
Stirrer



Go/No-Go gauge



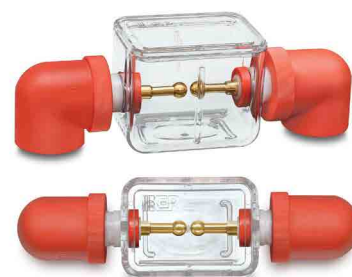
Lifting stick



Test vessel (mushroom-type electrodes)



Test vessel (cylinder-type electrodes, optional)



Test vessel (sphere-type electrodes, optional)

## Application

The reference measuring cell C-80I (C-100I) is intended for AC voltage measurement on the balanced transformers with the grounded midpoint high-voltage terminals, which are used in OLT-series oil testers.

The sell made as a mobile device with a built-in battery.



## Technical specifications

Parameter	Value	
	C-80I	C-100I
Measured voltage, kV, RMS	10 to 80	10 to 100
Measurement uncertainty, %	1.0 of reading	
Measured frequency, Hz	45 – 65	
Voltage resolution, kV	0.01	
Peak factor resolution, kV	0.01	
Frequency resolution, Hz	0.01	
Inter-electrode gap, mm	221	273
Input resistance, MΩ, min	600	700
Internal battery	LiPO 3.7V	
Charging supply voltage, V	9 – 12	
Continuous run time on full charge, hours	4	
Consumption supply current, mA, max	50	
Dimensions (W × H × D), mm, max	280 × 90 × 50	327 × 91 × 80
Net weight, kg, max	1.5	

You can also try to [use it virtually](#) from our web-site (Adobe Flash Player required)





## ▶ Application

A digital automatic dissipation factor measurement apparatus Tangens-3MI is intended for taking measurements of the transformer oil dielectric dissipation factor according to IEC 60247 at 50 Hz frequency.

## ▶ Technical specifications



YAPI-3I

### The system measures:

- dissipation factor  $\text{tg}\delta$ ;
- dielectric capacitivity  $\epsilon$ ;
- capacitance  $C$ ;
- voltage applied to a measurement cell;
- a transformer oil sample temperature.

Parameter	Value
Dissipation factor (DF) measuring range	0.0001 – 1.0000 (0.01% – 100 %)
DF measuring accuracy	$\pm (0.03 \text{ DF} + 0.0002)$
Resolution	0.00001
Output AC voltage, V RMS	1940 – 2060
Measuring uncertainty, %	2.5 of reading
Capacitance measuring range, pF	5 – 30
Testing temperature, °C	90
Temperature measuring accuracy, °C	$\pm 1$
Measuring time for "Program 1" (measuring at 70 °C and 90 °C), minutes	35
Measuring time for "Program 2" (measuring at 70 °C, 80 °C and 90 °C on increasing temperature and measuring at 90 °C, 80 °C and 70 °C on decreasing temperature), minutes	85
Input voltage, V	$230 \pm 10 \%$
Frequency, Hz	$50 \pm 1$
Power consumption, kVA, max	0.3
Dimensions (W × H × D), mm	405 × 260 × 90
Weight (incl. package), kg, max	10

## ▶ YAPI-3I test cell specifications

Terminals count	3
Volume, cm <sup>3</sup>	11 – 13
AC voltage corresponding to electric field strength of 1 MV/m, kV RMS	2



## ▶ Application

Resonance testers UIG are designed for testing high voltage objects such as generator stator windings, busbars, cables insulation, etc. with an AC voltage of an industrial frequency or with a rectified current voltage in semi-automatic and automatic modes.

UIG testers are developed based on the principle of parallel resonance in an electrical circuit in which an object under the test acts as an electrical capacitance (the stator winding of the generator, track, etc.), and where an automatic inductance changing is used for supporting the current resonance. For all voltage ranges, the resonance is maintained automatically.

Inductance change is done using a resonance reactor, which can have two structural variations.

The first option has a decreased initial value of inductance due to mechanical changes to the magnetic gap reactor. In the second option is based on changing the inductance of the bias magnetic DC reactor.

Using the current resonance effect enables a significant reduction of a power consumption (usually 40 times and more). Thus, it reduces voltage regulator power, a step-up transformer rated power as well allows for a smaller cross-section of cables.

The resonance testers UIG support performing full set of high-voltage tests for the high-power generators.

UIG testers are bespoke devices produced according to the individually client's requirements.

▶ Apparatus comparison table

Apparatus	Output power, kVA	Test object capacitance, $\mu\text{F}$	Voltage, kV			Place where installed
			AC (with resonance)	DC (without resonance)	DC	
UI-25/50/70-180I	180	0.01 – 0.8	25	50	70	Ust-Khantaiskaya HPP, Russia
UI-15/225I	225	0.01 – 6 (6 @ 7.5 kV)	15	–	–	CJSC Beltelekabel, Belarus
UIG-35/50/70-315I	315	0.01 – 0.8	35	50	70	Dniester PSP, Ukraine
UIG-35/400I	400	0.01 – 1	35	–	–	Boguchanskaya HPP, Ukraine
UIG-50-500I	500	0.01 – 0.7	35	50	70	Rogunskaya HPP, Tajikistan
UIG-30/60/85-700I	700	0.01 – 2.5	30	60	85	Voljskaya HPP, Russia
UIG-35/70/100-750I	750	0.01 – 1.5	35	70	100	Sayano-Shushenskaya HPP, Russia
UIG-35/70/100-800I	800	0.01 – 1.8	35	70	100	Krasnoyarskaya HPP, Russia
UIG-35/70/100-1400I	1400	0.01 – 1.5	35	70	100	Sayano-Shushenskaya HPP, Russia

▶ Generalized specifications

Parameter	Value
Output AC voltage in stator winding test mode, kV, max	30 – 50 <sup>1</sup>
Output AC voltage in bus test mode, kV, max	60 – 100
Output DC voltage in leakage current test mode, kV	85 – 140
Output AC/DC current, A, max	6 – 45
Measurement uncertainty (specified from 10 % of range to 100 % of range), %	3
Output power, kVA, max	200 – 1500
Test object capacitance, $\mu\text{F}$ , max	0.5 – 4
Duty cycle at full load (test / idle), minutes	20 / 40
Output test voltage rising speed (adjustable), kV/s	1
Input AC current, A	80 – 120
Input voltage, V	400 $\pm$ 10 % <sup>2</sup>
Frequency, Hz	50 $\pm$ 1
Power consumption, kVA	30 – 50
Typical dimensions (W x H x D), mm	1800 x 2200 x 1900
Weight, kg	1200 – 3500

<sup>1</sup> - there are possible modifications with increased output voltage (up to 330 kV);

<sup>2</sup> - for low-power apparatus it is possible to have mains voltage 230 V  $\pm$  10 %;



UIG-50-500I



UIG-35/400I



UI-25/50/70-180I



UIG-35/70/100-300I



UIG-35/70/100-300I



UIG-35/70/100-300I







## CHINA

### PD Technologies Limited

Hong Kong , 11B, Dan6, 6 Fui Yui Kok Street,  
Tsuen Wan

+852-3695-0998  
+852-3695-0999

www.pdtech.com.hk  
info@pdtech.com.hk



## EGYPT

### Engineering Trade Office

Cairo, 6 Abd El Kawy Ahmed street - El  
Mohandseen - 12411

+2 (02) 3384-7711

www.electroeto.com  
eto@electroeto.com



## INDIA

### MTekpro Technologies Private Limited

New Delhi - 110048, B-229, LGF, Greater  
Kailash Part-1

+91 (11) 4152-12-45

www.mtekpro.com  
info@mtekpro.com



## INDONESIA

### Pt. Multi Core Mitra Abadi

Jakarta, Jl. Pancoran Timur III No.6 Perdatam  
Jakarta Selatan 12780

+62 (813) 802-84622  
+62 (821) 227-06844

pramantaa@yahoo.co.id



## IRAK

### Al Zaitoon Group Companies

Irak, Basra, Al Jazair Street

+ 00 (964)-790-333-0-354

info@alzaitoongroup.com



## IRAN

### Protection Services Co.

Tehran, No.13, Alborz St., Baluchestan  
St.,Gisha St.

+98 (21) 8824-3403  
+98 (21) 8896-5140

www.ps-co.ir  
info@ps-co.ir



## KAZAKHSTAN

### TOO "Technosila-Kazakhstan" (GK Energoskan)

Astana, str. Beybitshilik 14, office 402

+7 (7172)-78-34-27

info@tekhnosila.kz



## RUSSIAN FEDERATION

### ALFA-ENERGY Ltd.

Moscow, str. 1-st Radiatorskaya, 3

+7 (495) 505-76-70

www.alfaen.ru  
info@alfaen.ru

### Electronpribor Ltd.

Fryazino, str. Barskiye prudy, d. 1, of. 4

+7 (495) 258-91-11  
+7 (903) 128-60-47

www.electronpribor.ru  
info@electronpribor.ru

### Energoskan Ltd.

Moscow, str. Akademika Koroleva, 13, office  
839

+7 (495) 268-02-90

kvs@energoskan.ru

### KS-Energo Ltd.

Moscow, Str. Chernyakhovsky, 19

+7 (499) 391-62-06

info@ksenergo.com



## SOUTH AFRICA

### **NERM Applications and Testing (Pty) Ltd.**

Boksburg, 187 Dr Vosloo Road, N12 Business Park, Gauteng, 1460

+27 (11) 894-23-26

[www.nerma.co.za](http://www.nerma.co.za)  
[info@nerma.co.za](mailto:info@nerma.co.za)



## SOUTH KOREA

### **Altus Corporation**

Gyeonggi-do, RM 801-B, Richtown, 1080-1, Jung-dong, Wonmi-gu Bucheon-city

+82 (0) 32-321-5075  
+82 (0) 32-321-5076

[www.altus.or.kr](http://www.altus.or.kr)  
[info@altus.or.kr](mailto:info@altus.or.kr)

### **Sam-Young Tech**

Gyeonggi-do, 505 (Bugun Plaza, Sang-dong), Giljuro77 beongil 61, Wonmi-gu, Bucheon-si

+82 (0) 32-324-2231

[ycsyt@chollian.net](mailto:ycsyt@chollian.net)



## TURKEY

### **ELZ Enerji Elektrik Elektronik İnş. Malz. İth. San. ve Tic. Ltd. Şti**

Ankara, Saray Mah. 213. Sok. No: 3/A Kazan 06980

+90 (312) 354-7030

[info@elizannenerji.com](mailto:info@elizannenerji.com)



## UZBEKISTAN

### **"Vodiy ulgurji sanoat" Ltd.**

Namangan, str. Navoi, 7

+998 (91) 342-92-09  
+998 (93) 499-00-55

[yustag@mail.ru](mailto:yustag@mail.ru)



## VIETNAM

### **Ha Long Inspection And Technical Service J.S.C.**

Hanoi, No.2, Quarter 46, Quan Hoa Ward, Cau Giay District

+84 (4) 3537-8919

[www.haintec.com](http://www.haintec.com)  
[lhcuong@haintec.com](mailto:lhcuong@haintec.com)

### **Hitech International Equipment J.S.C.**

Hanoi, No 2, H4 Block 8, Van Phuc ward, Ha Dong dist

+84 (4) 8589-4552  
+84 (4) 4450-3265

[www.thietbihitech.vn](http://www.thietbihitech.vn)  
[sale@thietbihitech.vn](mailto:sale@thietbihitech.vn)

### **Measuring And Testing Equipment Co., Ltd.**

Hanoi, 88 Au Co Street, Tay Ho Dist

+84 (4) 3719-8669  
+84 (4) 3719-8659

[www.mtcequipment.com.vn](http://www.mtcequipment.com.vn)  
[mtcequipment@gmail.com](mailto:mtcequipment@gmail.com)

### **Pacific Technology And Equipment Co., Ltd. (Patek)**

Ho Chi Minh, 69/1A Truong Van Hai St, Tang Nhon Phu B Ward, District 9

+84 (8) 3-878-2992

[www.patek.com.vn](http://www.patek.com.vn)  
[info@patek.com.vn](mailto:info@patek.com.vn)

### **Services And Automation For Energy J.S.C.**

Hanoi, Room 807, 8FL, 315 Truong Chinh Building, Thanh Xuan Ha Noi

+84 (4) 6296-7703  
+84 (4) 6295-4359

[www.safenergy.com.vn](http://www.safenergy.com.vn)  
[infor@safenergy.com.vn](mailto:infor@safenergy.com.vn)

### **Technology Transfer Group Corporation (TT-Group)**

Hanoi, No. 71/15, Do Quang Lane, Tran Duy Hung Street, Trung Hoa Aven, Cau Giay District

+84 (4) 2-2249-599;  
+84 (4) 3-5563-154


[www.tt-group.com.vn](http://www.tt-group.com.vn)  
[info@tt-group.com.vn](mailto:info@tt-group.com.vn)


high voltage  
testing equipment **KEP**

**Kharkovenergopribor Ltd.**

9, 3rd International str.,  
Kharkov, 61075, Ukraine


 +380 57 393 1069

 +380 67 576 2575

 +380 50 304 4449

**KEP Power Testing Ltd.**

28, Dorchester House, 8 Strand Drive,  
Richmond, TW9 4DX, United Kingdom

 +44 (0) 780-96-38-478

 [info@keppowertesting.uk](mailto:info@keppowertesting.uk)

 [www.kep.ua](http://www.kep.ua)

