CATALOGUE
2016

ELPRIB®

OJSC

CATALOGUE

"ELECTROPRIBOR" OJSC
IS ONE OF THE LARGEST MANUFACTURERS
OF ELECTRICAL SAFETY EQUIPMENT, CLAMP METERS
AND MULTIMETERS,TEMPETATURE CONTROLLERS

The company was founded in 1957 and presently among CIS countries is the main manufacturer of voltage indicators, high voltage detectors, operative insulating rods, portable eearthling and short-circuiting devices, digital and analog clamp meters and multimeters and temperature controllers.

At the present time the following workshop are functioning in the factory: machine workshop, toolmaker's workshop, composite materials workshop, foundry, assembling workshop, electroplating workshop etc.

Due to new engineering developments the range of products has been essentially expanded for the last last 10 years. The present list of products covers over 150 descriptions.

In April 2002 for introducing a quality control system the enterprise was awarded ISO 9001:2000 Certificate.

High quality and reliability of our products are confirmed by exporting to many countries of CIS, Africa, East Europe and Middle East.

Since October 2002 all "ELECTROPRIBOR" OJSE products are manufactured under the ELPRIB registered trademark.

We look forward to building long-term relationships with more customers all over the world.

For more information please visit our website: www.elprib.ru

LOW VOLTAGE DETECTOR PIN90-2M

Two pole voltage detector is designed for checking voltage presence or absence in AC and DC electrical installations with nominal voltage from 50 up to 1000V, as well as for "phase" test. It can also be used in explosive atmosphere.

PIN90-2M

Nominal Voltage,	V50 – 1000
Light threshold,	V50
Max. current, mA10,0	
Connecting cable length, m	1,0
Operating Environment:	
Temperature ℃	from - 45 up to + 45
Humidity %, at 25 °	C98
Overall sizes, mm (in packing)	215x60x30
Weight, kg0,1	

LOW VOLTAGE DETECTOR PIN90-2MU

Two pole voltage detector is designed for checking voltage presence or absence in AC and DC electrical installations with nominal voltage from 50 up to 1000V.
The PIN90-2MU have elongated probes for activity in hard-to-reach places.

Nominal Voltage,	V50 - 1000
Light threshold,	V50
Max. current, mA	10,0
Connecting cable length, m	1,0
Operating Environment:	
Temperature ℃	from - 45 up to + 45
Humidity %, at 25 ℃98	
Overall sizes, mm (in packing)	720x60x30
Weight, kg0,	25

PIN90-2MU

VOLTAGE DETECTOR UN-500M

Two pole voltage detector with scale UN-500M is designed to check the "phase" and voltage presence or absence in AC electrical installations with nominal voltage from 50 up to 500V. The device enables checking the rated voltage in the circuit under control.

Nominal Voltage, V	50 - 500
Light threshold for "phase" checking, V	50
Light threshold of voltage checking, device	100
Connecting cable length, m	5,0
Current passing duration, sec	1,0
Operating Environment:	
Temperature ℃	- 45 to + 45
Humidity %. at 25 ℃	98
Overall sizes, mm (in packing)	250x60x30
Weight, kg0,	15

UN-500M

MICROCONTROLLER PHASE INDICATOR IF-517M

The device is designed to check alteration of A, B, C phases in three-phase 380V commercial circuits.

Nominal Voltage, V	380
Working indication	by LED
Built-in power supply	None
Operating Environment:	
Temperature ℃from	- 45 up to + 45
Humidity %. at 25 ℃up to 98	
Overall sizes, mm (in packing)	160x50x16
Weight, kg	0,11

IF-517M

VOLTAGE INDICATOR ELIN-1-SZ

Two pole indicator is designed to determine voltage presence and absence by contact method and display polarity in the 12 to 400V range.
It has a light and audible indication and permits to approximately evaluate voltage magnitude and phase under control. Do not have built-in power supply.

ELIN-1-SZ

Nominal Voltage,	V12-400
Light threshold, V	12
Indicator single-channel, multi-functional	
Audible Signal Level, dBA	70
Indication Frequency, Hz	3-4
Operating Environment:	
Temperature ℃	from -45 up to +45
Humidity %, at 25 ℃	up to 98
Overall sizes, mm (in packing)	260x50x70
Weight, kg	0,18

VOLTAGE INDICATOR ELIN-1-SZ-VL-M

Electronic Voltage Detector is designed for detecting voltage absence and presence on AC and DC electrical installations with nominal voltage from 50 up to 380V. Detector has possibility of setting from the ground with the help of the stick SHIUK-10-3 -6.6. Detector has plug and 10m flexible conductor for connecting to multimeter (clamp meters).

ELIN-1-SZ-VL-M

Nominal Voltage, V	24-660
Current passing , Ma	10
Connecting cable length, mm	1500
Operating Environment:	from -45 up to +45
Temperature ℃	
Humidity %, at 25 ℃	up to 98
Overall sizes, mm (in packing)	840x100x70
Weight, kg	0,8

VOLTAG EDETECTOR UNNU-1M

Two pole voltage detector UNNU-1M is designed for checking voltage presence or absence in electrical installations with up to 500V of DC (with polarity indication) and AC of 50/60Hz of commercial frequency.

Nominal Voltage, V	50-600
Light threshold, V	50
Connecting cable length, m	1,0
Current passing duration, sec	10
Operating Environment:	
Temperature ℃	from - 45 up to + 45
Humidity %, at 25 ℃	up to 98
Overall sizes, mm(in packing)	250x60x30
Weight, kg	0,15

UNNU-1M

VOLTAGE DETECTOR UNNU-1M-C

Two pole voltage detector UNNU-1M-C is designed for checking voltage presence or absence in electrical installations with up to 400 V of DC (with polarity indication) and AC of 50/60Hz of commercial frequency. UNNU-1M-C voltage detector is equipped with LED.

Nominal Voltage, V	12 - 400
Light threshold, V	12
Max. current, mA	10
Connecting cable length, m	1,0
Current passing duration, sec	10
Operating Environment:	
Temperature ℃	from - 45 up to + 45
Humidity %, at 25 ℃	up to 98
Overall sizes, mm (in packing)	250x60x30
Weight, kg	0,15

UNNU-1M-C

VOLTAGE DETECTOR UNNU-1M-F

Two-pole voltage detector is designed for detecting voltage presence and absence on DC and AC electrical installations with nominal voltage from 50 up to 600V. Have polarity ignition (for DC) and phase determination possibilities (for AC)

Nominal Voltage, V	50 - 600
Detector voltage ignition, V	50
Detector phasing ignition, V	90
Connecting cable length, m, at most	1,0
Operating Environment:	
Temperature °C	- 45 to + 45
Humidity, % at 25°C	up to 98
Overall sizes, mm, (in packing)	250x60x30
Weight, kg, (in packing)	0,15

UNNU-1M-F

HIGH VOLTAGE DETECTORS UVN80-2M/1, UVNU-2M/1

UVNU-2M/1

High voltage detectors UVN80-2M/1, UVNU-2M/1 are used for checking presence or absence of voltage in AC and DC electrical installations with nominal voltage from 6 up to 10kV. UVNU-2M/1 detector have built-in self checking device.

Nominal Voltage, kV	6 – 10
Ignition Voltage, kV	1,5
Number of links	2
Handle length, mm	120
Insulating part length, mm	310
Total length, mm740	
Operating Environment:	from -45 up to +45
Temperature ℃	
℃	up to 98
Size (packing), mm	750 x 60 x 60
Weight, kg	0,35

HIGH VOLTAGE DETECTORS FOR PHASE COINCIDENCE CHECKING UVN80-2M/1 - TF

High voltage detectors are two pole devices and used for phasing cable lines and power transformers, as well as for checking presence or absence of voltage in AC electrical installations with nominal voltage from 6 up to 10 kV.

UVN80-2M/1 - TF

Nominal Voltage, kV	6 – 10
Ignition Voltage at A-A	7,6 at 6 k
Vchecking, kV, not less than	12,7 at 10 k
VIgnition Voltage at A-B-C	1,5 at 6 k
Vchecking, kV, not less than	2,5 at 10 k
VInsulating part length, mm	310
Handle length, mm120	
Operating Environment:	from -45 up to +45
Temperature ℃	
Humidity % , at 25 ℃	up to 98
Size, mm	470x100x50
Weight, kg	0,95

HIGH VOLTAGE DETECTORS UVN80-2M/1-C, UVNU-2M/1-C

High voltage detectors UVN80-2M/1-C, UVNU-2M/1-C with LED indication are used for checking presence or absence of voltage in AC and DC electrical installations with nominal voltage from 6 up to 10kV. The detectors works without earthing of any its part in all electrical installations. The distinction of these devices is minimal energy consumption from built-in power source. UVNU-2M/1 detector have built-in self checking device.

Nominal Voltage, kV	6 – 10
Ignition Voltage, kV	1,5
Handle length, mm	120
Insulating part length, mm	400
Total length, mm760	
Operating Environment:from	-25 up to +45
Temperature ℃	
Humidity % , at 25 ℃	up to 80
Size (packing), mm	750 x 65 x 65
Weight, kg	0,35

UVNU-2M/1-C

HIGH VOLTAGE DETECTORS FOR PHASE COINCIDENCE CHECKING UVN80-2M/1-C - TF, UVNU-2M/1-C - TF

High voltage detectors are two pole devices with LED indication and used for phasing cable lines and power transformers, as well as for checking presence or absence of voltage in AC and DC electrical installations with nominal voltage from 6,0 up to 10kV.
UVNU-2M/1-C -TF detector have built-in self checking device.

Nominal Voltage, kV	6 – 10
Ignition Voltage at A-A	7,6 at 6 k
Vchecking, kV, not less than	12,7 at 10 k
VIgnition Voltage at A-B-C	1,5 at 6 k
Vchecking, kV, not less than	2,5 at 10 k
VInsulating part length, mm	370
Handle length, mm	120
Operating Environment:	
Temperature ℃	from - 30 up to +45
Humidity % , at 25 ℃	up to 98
Size, mm	750 x 100 x 60
Weight, kg	0,6

UVNU-2M/1-C - TF

HIGH VOLTAGE DETECTORS FAULT TRACING DEVICE UPP-10M

The fault tracing device UPP-10M is designed to be used in cable and overhead electrical networks with nominal voltage 6-10kV for quick detection of faulty lines or shortcircuit on earth. The device makes it possible to eliminate trial operation at possible short circuit, dangerous for the equipment and staff, particularly with high short circuit current. The device can also be used for network phasing (6-10kV).

UPP-10M

Nominal Voltage, kV	6 – 10
Frequency, Hz	50(60)
Measurement time, sec	10
Total length, mm	1300
- Working parts, mm	610
- Insulating part length, mm	320
- Handle length, mm	370
- Cable length, mm	1500
Diameter of sticks, mm	32
Operating Environment:	
Temperature ℃	from -30 up to +45
Humidity % , at 25 ℃	98
Weight, kg	2,5

HIGH VOLTAGE DETECTOR UN-453M WITH UPU-10M

The UN-453M voltage detector is device designed to check voltage presence or absence in underground electrical installations with 800 to 1140V AC of commercial frequency 50-100 Hz, and rectified (without smoothing) current for electrical installations in coal mines. Comes standard with UPU-10M detector checker.

WITH UPU-10M

Nominal Voltage, Vfrom	800 - 1140
Light threshold, V, ~	550
Current passing duration, sec	10
Temperature oC	from - 45 up to + 45
Humidity %, at 25 oC	up to 98
Overall sizes, mm (in packing)	50x90x210
Max. weight, kg	0,35

HIGH VOLTAGE DETECTORS CHECKING DEVICE UPU-10M

The device is designed for checking of serviceability of UVN80-2M/1 and UVN80-2M/1C voltage detectors, as well as other voltage detectors for nominal voltage from 1kV up to 10 kV. Permissible operating temperature is from –5°C to +55 °C, at air relative humidity up to 80% at 25 °C.

UPU-10M

Output Voltage , V	1500
Power supply , V	6, (4x AA))
Detectors checking time , sec, at most	10
Sizes (in packing), mm	56x176
Weight , kg, at most	0,25

HIGH VOLTAGE DETECTORS WITH LIGHT AND AUDIBLE INDICATION

High voltage detectors are designed for checking presence or absence of voltage in AC and DC electrical installations with nominal voltage from 10 up to 220kV. The detector is equipped with built in device for checking its serviceability. The principle of operation is based on triggering of light and audible indication device by capacitive current. The detectors UVNU SZ IP-K are equipped with an additional diode lamp to control the condition of the power source.

	UVNU- 10 SZ IP UVNU -10 SZ IP-K	**UVNU -35 SZ IP UVNU -35 SZ IP-K**	**UVNU -110 SZ IP UVNU- 110 SZ IP-K**	**UVNU -220 SZ IP-M1 UVNU – 220 SZ IP-M1-K**
Nominal Voltage, kV	6,0 to 10	351	10	220
Ignition Voltage, kV	1,5	8,75	27,5	55
Power supply, V	6, (2 x Cr2450)	6(2x Cr2450)	6,(2xCR2450)	6,(2xCR2450)
Audible Signal Level, dBA	70	70	70	70
Handle length, mm	120	130	650	850
Insulating part length, mm	340	600	1500	2800
Total length, mm	720	960	2240	3900
Operating Environment:				
Temperature ℃	-30 to +45	-30 to +45	-30 to +45	-30 to +45
Humidity % , at 25 ℃	98	98	9898	
Size, mm	780x80x110	960x80x110	2240x80x110	3900x130x60
Weight, kg	0,65	0,65	1,2	2,0

UVNU 10 SZ IP

UVNU 35 SZ IP

UVNU 110 SZ IP

HIGH VOLTAGE DETECTORS WITH LIGHT AND AUDIBLE INDICATION-COMBI

High voltage detectors COMBI with light and audible indication can operate in contact and non-contact modes. Control of operation is carried out by microprocessor, at that at first evaluate the presence of voltage on contact part of device, and at its absence the level of electromagnetic field of commercial frequency. Non-contact part indicate the presence of voltage by light signal (bright red LED) and audible signal (1-2Hz), and automatically turned off at voltage presence on contact part. The voltage presence at contact part indicated the by light signal (two LEDs) and audible signal (4-5Hz). The detector have self-checking device and have possibility to turn on and turn off non-contact part. At voltage absence, the detector after 30sec. turn to power save mode.

UVNU 10(35/110)
SZ-IP-COMBI

	UVNU 10 SZ-IP-COMBI	UVNU 35 SZ-IP-COMB	IUVNU 110 SZ-IP-COMBI
Nominal Voltage, kV	6,0	to 10	35110
Detector Ignition Voltage, kV	1,5	8,75	27.5
Frequency, Hz	50(60)	50(60)	50(60)
Minimal distance for triggering of non-contact part, m	1	3	3.5
Power supply, V	6 (2 CR 2450)	6	6
Audible Signal Level, dBA	70	70	70
Handle length, mm	120	120	650
Insulating part length, mm	340	600	1450
Total length, mm	860	1100	2510
Operating Environment: Temperature ℃	-30 to +45	-30 to +45	-30 to +45
Humidity % , at 25 ℃	98	98	98
Size, mm	860x80x110	1100x80x110	2510x110x80
Weight, kg	0,7	0,95	1,4

HIGH VOLTAGE DETECTOR WITH PHASING TUBE UVNU-10 SZ IP – TF, UVNU-10 SZ IP-TF-K

The detectors are designed to determine voltage presence or absence in AC electrical installations with 6 to 10kV voltage and 50 or 60 Hz frequency and also for phasing cable lines and power transformers. The detectors have a light-and-sound indication and a self-test device. UVNU-10 SZ-IP- TF-K detector is fitted with an additional light-emitting diode for monitoring the status of power source. The phasing tube with the connecting cable can be disconnected from the indicator tube, thus modifying the device into a one-pole, light-and-sound high voltage detector.

Nominal Voltage, Kv	6-10
Detector Ignition Voltage, Kv	1,5
Ignition Voltage during phasing	
at nominal voltage,KV	6 10
at A-A checking, Kv	7,6 12,7
at A-B-C checking, Kv	1,5 2,5
Power supply, V	6,(2xGR2450)
Insulating part length, mm	400
Handle length, mm	120
Connecting cable length, m	1,0
Operating Environment:-30 to + 45	
Temperature ℃	
Humidity % , at 25 ℃	98
Size, mm	790x130x65
Weight, kg	0,8

UVNU-10 SZ IP-TF-K

HIGH VOLTAGE DETECTOR UVN-35

UVN-35 portable high voltage detector is designed to determine voltage presence or absence in DC electrical installations with 35 kV nominal voltage.

Nominal Voltage, kV	35
Frequency, Hz	50(60)
Ignition Voltage, kV	8,75
Number of links	2
Handle length, mm	120
Insulating part length, mm	600
Total length, mm	1000
Operating Environment:	
Temperature oC	-45 to +45
Humidity % , at 25 oC	98
Size (in packing), mm	1070x85x60
Weight, kg	0,55

UVN-35

HIGH VOLTAGE DETECTOR UVN-35÷220

UVN 35-220 high voltage detector is designed to determine voltage presence or absence in DC electrical installations with 35 to 220kV nominal voltage; comes standard with a rod of variable length.

UVN-35÷220

Nominal Voltage, Kv	35 -220
Frequency, Hz	50(60)
Ignition Voltage, kV	8,75
Number of links	4
Handle length, mm	820
Insulating part length, mm	2500
Total length, mm	3520
Operating Environment:	
Temperature ℃	- 45 up to + 45
Humidity % , at 25 ℃	98
Size (in packing), mm	1800x120x85
Weight, kg	2,5

HIGH VOLTAGE DETECTORS UVN-110, UVN-220

High voltage detector UVN-110 and UVN-220 are used for checking presence or absence of voltage in AC and DC electrical installations with nominal voltage from 110 up to 220kV.

UVN-22

	UVN - 110	UVN-220
Nominal Voltage, kV	110	220
Frequency, Hz	50(60)	50(60)
Ignition Voltage, kV	27,5	55
Number of links33		
Handle length, mm	700	850
Insulating part length, mm	1400	2470
Total length, mm	2300	3520
Operating Environment:		
Temperature oC	-45 to +45	-45 to +45
Humidity % , at 25 oC	98	98
Size (in packing), mm	1700x100x80	2400x100x80
Weight, kg	1,2	1,8

HIGH VOLTAGE DETECTORS WITH LIGHT AND AUDIBLE INDICATION UVNU 35-220 SZ IP - M2

High voltage detectors are designed for checking presence or absence of voltage in AC and DC electrical installations with nominal voltage from 35 up to 330kV.

The detector is equipped with biult in device for checking its serviceability.

Theprinciple of operation is based on triggering of light and audible indicationdevice bycapacitive current.

	UVNU 35-220 SZ IP- M2
Nominal Voltage, kV	35 to 220
Ignition Voltage, kV	8,75
Indication	audio -visible
Weight, kg	2,7ч2,75
Size s, mm	
in operating condition (220 / 330 kV)	3900x110x80
in non-assembled condition	1700x110x80

UVNU 35-220 SZ IP - M2

HIGH VOLTAGE DETECTOR S WITH LIGHT AND AUDIBLE INDICATION UVNU-220 SZ IP-M2

High voltage detector s are designed for voltage absence or presence checking on AC and DC electrical installations of nominal voltage up to 220kV and 330kV, with frequency 50(60)Hz. The detector s have self-checking device. The principle of operation of detector is based on capacitive current passing. Can be used with SHIUK insulating sticks.

	UVNU-220 SZ IP -M2
Nominal Voltage, V	220
Detector Ignition Voltage , kV, at most	55
Power-Supply Voltage, V	6(4xAA)
Audible Signal Level, dbA, at most	70
Handle Length, mm	850
Insulating Part Length, mm	2800
Total Length , mm	4100
Operating Environment:	
Temperature, °	-30 to + 55
Humidity %, at 25°C	98
Overall Size, mm	4120x60x130
Weight, kg, at most	2,6

UVNU-220 SZ IP -M2

INDIVIDUAL VOLTAGE INDICATOR SNIN

SNIN voltage signaling device is designed for preliminary estimation of voltage presence in conductive parts of installations at a distance between the conductive parts and the operator considerably exceeding the safe distance. The signaling device is used by the service personnel as an additional means of individual protection upon maintenance of electrical installations with voltage from 6 to 110 kV, 50 (60) Hz frequency. The device is meant for operation at a temperature from --30°C to +45°C of ambient air and up to 98% relative humidity at 25°C. The detector uses both sound signaling and light indication.

SNIN

	SNIN 6-10	SNIN 6-35	SNIN 35-110
Nominal voltage, kV	6-10	10 -35	35 -110
Minimal working time in “hazard” mode without changing batteries, hours			
-in hazard mode	48	48	48
-in operate mode	300	300	300
Audible Signal Level, dBA/0,5m	70	70	70
Distance range from OHL , m	2	3	4
Power supply, V	6(2xCR2250)	6(2xCR2250)	6(2xCR2250)
Size, mm	100x42x26	100x42x26	100x42x26
Weight, kg	0,06	0,06	0,06

INDIVIDUAL VOLTAGE INDICATOR SNIN-VL

Individual voltage indicator SNIN-VL refers to the type of "non-automatic". The indicator is designed for a preliminary assessment of the presence of voltage on live parts of the overhead line from the surface of the earth, as well as the presence of voltage on RP at open cell voltage of 6 kV and frequency 50±5 Hz. The detector has sound and light indication. The detector is fully protected against erroneous indication caused by powerful radio signals and interference from static electricity.

SNIN-VL

Nominal Voltage, kV	6-220
Time of continuous running in indication mode, Hours	48
Audible Signal level at a distance 0.5m, dbA	70
Power Supply, V	6(4 x G13)
Distance range from OHL (6kV), m	2
Overall sizes, mm	90x50x38
Weight, kg,	0,06

INDIVIDUAL VOLTAGE INDICATOR SNIN-K: SNIN-K-KP

Individual Voltage Indicator SNIN-K is distinguished as “automatic”. It is designed for preliminary estimate of voltage presence on current lines at a distance between lines and personal, which is considerable exceeding safety distance. Indicator designed for setting on “SUPERBOSS” and “TERMOBOSS” type helmets of “UVEX” company and automatically powered during setting up it in slot for ear-laps strengthening.
Indicator has an audible and light indication, and is intended for use service of current lines with nominal voltage from 6 up to 110 kV. Indicator is protected from fault indication, caused by powerful radio signals and from static electricity interference. It can be used with transition knot for setting on another helmets

SNIN-K-KP indicator is a modification of SNIN-K which have additional function of periodic (once in 45sec.) indication of “operate” mode of device. It also constantly control the voltage of built-in power supply. If voltage of batteries less than 3V, the device turn on to continuously audible and light indication, pointing to replace batteries.

SNIN-K

SNIN-K-KP

Nominal Voltage, kV	6-110
Time of continuous running in indication mode, Hours	48
Audible Signal level at a distance 0.5m, dbA	70
Power Supply, V	6(4 x G13)
Distance range from OHL (6kV), m	2
Overall sizes, mm100x50x44Weight, kg,	0,11

ALL-PURPOSE INSULATING STICKS SHIU

SHIU all-purpose sticks are designing for fastening replaceable tools in case of need. The sticks have universal connector adaptor, to which can be attached:

· Scrapper
· Head for operative work
· All purpose head for operative work
· HV detector with light and audible indication

Instruments are secured to SHIU sticks by unified attachment unit

	SHIU-15	SHIU-35	SHIU-110	SHIU-220	SHIU-330	SHIU-500
Nominal Voltage, kV	1 to 15	15 to 35	35 to 110	220	330	500
Handle length, mm	300	400	610	850	850	1000
Insulating part length, mm	700	1100	1450	2800	3200	4200
Total length, mm	1100	1580	2100	3700	4100	5200
Operating Environment: Temperature oC			-45 to +45			
Humidity %, at 25 oC	98	98	98	98	98	98
Overall sizes, mm	Ш60x	85x50x	2150x85x50	100x60x	100x60x	100x60x
(in packing)	1100	1600		1900	2350	2350
Weight, kg	0,7	0,8	1,3	2,0	2,3	2,3ч2,6
Material	PVC or Fiber-glass	PVC or Fiber-glass	PVC or Fiber-glass	Fiber-Glass	Fiber-glass	Fiber-glass

INSULATING OPERATIVE STICKS SHO

The insulating operative sticks are designed for operative work within AC and DC electrical installations with nominal voltage up to 220 kV. They are used for switching on and off a single-pole switches. The design of the working part of the stick permits reliable fastening of accessories.

	SHO-1 SHO-1c	**SHO-10 SHO-10c**	**SHO-15 SHO-15c**	**SHO-35 SHO-35c**	**SHO-110 SHO-110c**	**SHO-220 SHO-220c**
Nominal Voltage, kV	1,0	10,0	1-15	10-35	35-110	110-220
Insulating part length, mm	330	710	890	1 100	1450	2750
Handle length, mm	140	330	420	430	750	850
Total length, mm	500	1080	1350	1560	2230	3635
Operating Environment: Temperature °C	from - 45 up to +45					
Humidity %, at 25 °C	98					
Overall sizes, mm (in packing)	420x70x50	1100x80x50	1070x80x70	1600x80x70	2250x100x70	1900x100x70
Weight, kg	0,4	0,8	0,7	0,9	1,2	2,0
Material	PVC or Fiber-glass	PVC or Fiber-glass	PVC or Fiber-glass	PVC or Fiber-Glass	Fiber-Glass	Fiber-glass

SHO-1

SHO-10

SHO - 220

INSULATING OPERATIVE ALL-PURPOSE STICKS SHOU.

The insulating operative all-purpose sticks are designed for operative work within AC and DC electrical installations with voltage up to 330 kV to control disconnecting switches, as well as to replace high-voltage cartridge fuses.

	SHOU-1	SHOU-15	SHOU-35	SHOU-110	SHOU-220	SHOU-330
Nominal Voltage, kV	1,0	1 - 15	15- 35	35-110	110-220	220-330
Piped fuse diameter, mm	60 to 80	60 to 80	60 to 80	60 to 80	60 to 80	60 to 80
Head Clamp, mm	85	85	85	85	85	85
Insulating part length, mm	330	720	1100	1460	2500	3000
Handle length, mm	140	330	430	610	800	850
Total length, mm	620	1200	1680	2200	3350	4000
Operating Environment:						
Temperature °C			- 45 to +45			
Humidity %, at 25 °C			98			
Overall sizes, mm (in packing)	630x100x80	1250x80x70	1730x80x70	2250x100x70	1800x120x80	2450x120x80
Weight, kg	0,8	1,1	1,3	1.6	2,3	2,5
Material	PVC or Fiber-Glass	PVC or Fiber-Glass	PVC or Fiber-glass	Fiber-glass	Fiber-glass	Fiber-glass

INSULATING STICKS SHZP

SHZP type insulating sticks are designed for applying portable earthing devices in 50 Hz AC and DC electrical installations. SHZP type insulating sticks are made from PVC pipes with diameter 32mm or fiberglass pipes with diameter 3 0mm.
Permissible operating temperature is from -45°C to +45 C, at air relative humidity up to 98% at 25 C.

	SHZP-10/15	SHZP-35	SHZP-110	SHZP-220	SHZP-330	SHZP-500
Nominal voltage, kV	1-15	15-35	35-110	110-220	220-330	500
Insulating part length, mm	700	1100	1460	2500	3000	4000
Handle length, mm	300	400	610	800	800	1000
Total length, mm	1080	1560	2100	3350	3850	5100
Number of links	1	1	1	2	3	3
Weight, kg	0,5	0,8	1,3	1,7	2,2	2,5ч2.7
Material	PVC or Fiber-glass	PVC or Fiber-glass	Fiber-glass	Fiber-glass	Fiber-Glass	Fiber-glass

SHZP-10/15, SHZP-35

SHZP-110, SHZP-220, SHZP-330

CONDENSER DISCHARGE STICK SHK-10

Condenser discharge stick is designed for use on AC and DC electrical installation with frequency 50(60)Hz and with nominal voltage up to 10kV. Stick consists of operating part, insulating part and handle part (handle part is combined with insulating part).
Operating part of stick is an aluminum cast part from AK-9 alloy with lugs and it is used for various operations on electrical installations. The metallic point is embedded on the lug, through the cable section 16 mm2 and connected with the ground clamp VZRU-M2.
The metallic point is used for condenser discharge.

Permissible operating temperature is from -30°C up to +45 °C, at air relative humidity up to 98% at 25°C.

Nominal Voltage, kV,	10
Insulating Part Length, mm	710
Handle Part length, mm	330
Cable Length, m	3,5
Operating Part Length, mm	80
Cable section, mm	216
Overall sizes, mm, (in packing)	1100x80x50
Stick weight, kg	1,1

SHK-10

INSULATING OPERATIVE STICKS SHO-10-6,6

SHO-10-6,6

SHO-10-6,6 insulating operative rod is designed for operative work within AC electrical installations with 50 (60) Hz frequency and up to 10 kV voltage. The rod consists of the working part, insulating part, handle (handle is combined with insulating part) and two metallic links with connecting half-couplings.

Nominal voltage, Kv	10
Insulating part length, mm	1000
Handle length, mm	5500
Total length, mm	6600
Number of links	3
Overall sizes, mm (in packing)	2300x150x75
Weight, kg	3.65

RESCUE INSULATING STICKS SHOS

SHOS-35

Rescue stick is designed for operative work in 50Hz AC and DC installations. Insulating stick ended by a hook in order to rescue quickly an electrified person in case of accident. The handle of the stick is equipped with a ring stop of at least 8 mm height at its insulating part.
SHOS -IN-6-35 have detector, which shows absence or presence of voltage. Voltage detector have self-checking device

	SHOS-10	SHOS-35	SHOS - IN 6-35
Nominal voltage, kV	10	10-35	6 to 35
Insulating part length, mm	700	1100	500
Handle length, mm	300	400	1250
Total length, mm	1400	1830	2050
Operating Environment:			
Temperature °C	- 45 to +45	- 45 to +45	-45 to + 45
Humidity %	98	98	98
Overall sizes, mm (in packing)	1450x450x70	1850x450x70	2050 90 90
Weight, kg	0,9	1,1	2,0
Material	PVC or Fiberglass	PVC or Fiberglass	Fiberglass

ALL - PURPOSE INSULATING STICK SHIUK-10- 3-6,6

SHIUK-10-3-6,6 rod is used for kitting voltage detectors, for performing various operative works and for applying temporary grounds on and removing from powered off electrical installations and HV lines with 6 to 110kV nominal voltage.
Connection of three links is done by means of special bayonet coupling.
May come standard with:
- adapter for connecting the indicator of VIN-SZ** voltage detectors.

Nominal Voltage,Kv	6-10
Insulating Part Diamet er, mm	1562
Handle Part Diamet er, mm	850
Thread Point Diameter	14
Total Stick Length, m	6,3 to 6,6
Total Stick Weight, kg.	3,5
Overall Sizes, mm, (in packing)	2390x280x100

SHIUK-10- 3-6,6

ALL - PURPOSE INSULATING STICK SHIUK

All-purpose insulating stick is used as insulating stick for height voltage detector packing during operative works, for setting and put away the earthing device on above powered off on all parts of electrical installations, with nominal voltage from 6 up to 110kV; from 6 up to 110kV; from 10 up to 35kV; from 35 up to 110kV; from 110 up to 220kV; from 220 up to 330kV.

Permissible operating temperature is from -45°C up to +45 °C, at air relative humidity up to 98% at 25°C.

	SHIUK-1	SHIUK-10-1-1,0	SHIUK-10-3-5,1	SHIUK-35-1-1,6	SHIUK-110-1-2,2	SHIUK-220-2-3,7	SHIUK-330-2-4,1
Nominal Voltage, kV	1	10	6-10	10 - 35	35 – 110	110 -220	220 -330
Insulating part length, mm	300	700	4120	1100	1440	2500	2720
Handle part length, mm	140	330	850	400	610	800	850
Tip thread diamet er, mm	14	14	14	14	14	14	14
Total stick length, m,	535	1085	5125	1605	2100	3350	4080
Stick weight, kg, (in packing)	0,3	0,6	2,9	0,95	1,2	2,2	2,4
Overall sizes, mm, (in packing)	600x80x60	1100x80x60	2400x180x80	1600x80x60	2150x60x60	1800x100x60	2300x120x80

PORTABLE EARTHING DEVICE FOR OVERHEAD LINES ZPL-1M

Portable earthing devices are designed to protect people working at a deenergized sections of overhead lines with nominal voltage up to 1 kV in case of accidental energization of the section or appearance of induced voltage. Supplied with cable section 16mm2. By order can be supplied with cable section 25mm2 ,35mm2 ,50mm2 and 70mm2 ZPL-1M (mod .2) is completed with VZL-M2 clamp.

Permissible operating temperature is from –45 oC to +45 oC, at air relative humidity up to 80% at 25 oC.

Nominal Voltage, kV	1,0
Withstanding thermal current, kA/3sec	2.5
Number of sticks, pc.	5
Number of phases	3
Cable section, mm^2	16
Cable length between phases, m.	0,8
Handle length, mm	120
Earthing cable length, m	9,0
Total clamp length, mm (mod. 1)	290
(mod. 2)	355
Total cable length,m	12,2
Weight, kg (mod. 1)	3,8
(mod. 2)	4,2

ZPL-1M

Modifications of ZPL -1M (mod .1)

Cable section, mm^2	25	35	50	70	95
Withstanding thermal current, kA/3sec	4,0	5,1	8,0	10,0	15,0
Weight, kg	5,0	6,3	8,1	10,6	13,7

PORTABLE EARTHING DEVICE FOR OVERHEAD LINES PZU-1M

Portable earthing devices are designed to protect people working at a deenergized sections of overhead lines with nominal voltage up to 1 kV in case of accidental energization of the section or appearance of induced voltage. Supplied with cable section 16mm2 . By order can be supplied with cable section 25mm2 ,35mm2 ,50mm2 and 70mm2 . PZU-1M (mod .2) is completed with VZL-M2 clamp.

Permissible operating temperature is from –45 oC to +45 oC, at air relative humidity up to 80% at 25 oC.

Nominal Voltage, kV	1,0
Withstanding thermal current, kA/3sec	2.5
Number of sticks, pc.	5
Number of phases	3
Cable section, mm^2	16
Cable length between phases, m.	0,8
Handle length, mm	120
Total clamp length, mm (mod. 1)	290
(mod. 2)	355
Weight, kg (mod. 1)	1,8
(mod. 2)	2,4

PZU-1M

Modifications of PZRU-1M

Cable section, mm^2	25	35	50	70	95
Withstanding thermal current, kA/3sec	4,0	5,6	8,0	10,0	15,0
Weight, kg	2,5	2,8	3,3	4,0	4,7

PORTABLE EARTHING DEVICE FOR ELECTRICAL INSTALLATIONS PZRU-1M

Portable earthing devices are designed to protect people working at a deenergized sections of electrical installations with nominal voltage up to 1 kV in case of accidental energization of the section or appearance of induced voltage. Supplied with cable section 16mm2 .
By order can be supplied with cable section 25mm2 , 35mm2 , 50mm2 and 70mm2 .
Permissible operating temperature is from –45 oC to +45 oC, at air relative humidity up to 80% at 25 oC.

Nominal Voltage, kV	Up to 1,0
Withstanding thermal current, kA/3sec	2.5
Number of sticks, pc.	3
Number of phases	3
Cable section, mm^2	16
Cable length between phases, m.	0,4
Insulating part length, mm	30
Handle length, mm	120
Earthing cable length, m	2,0
Total clamp length with handle, mm	250
Total cable length, m	2,8
Weight, kg	2,0

PZRU-1M

Modifications of PZRU-1M

Cable section, mm^2	25	35	50	70	95
Withstanding thermal current, kA/3sec	4,0	5,6	8,0	10,0	15,0
Weight, kg	2,5	2,8	3,3	4,0	4,7

PORTABLE EARTHING DEVICE FOR ELECTRICAL INSTALLATIONS PZRU-2M

The earthing device consists of plug-in phase plates (working part), earthwire, earthing clamp and a handle and serves for protection of people working at de-energized sections of electrical installations with nominal voltage of up to 1 kV. It provides protection in case of erroneous energization of the section or induced voltage occurrence, given absence of stationary earthing. Comes standard with a wire having a 16 mm section. Upon request, it may be supplied with a 25mm, 35mm, 50mm, 70mm and 95mm wire section. Permissible operating temperature is from –45 oC to +45 oC, at air relative humidity up to 80% at 25 oC.

Nominal Voltage, Kv	Up to 1,0
Withstanding thermal current, kA/3sec	2.5
Number of phases	3
Cable section, mm^2	16
Cable length between phases, m.	0,4
Earthing cable length, m	2,0
Total cable length, m	2,8
Weight, k	2,0

PZRU-2M

Modifications of PZRU-2

Cable section, mm^2	25	35	50	70	95
Withstanding thermal current, kA/3sec	4,0	5,6	8,0	10,0	14,0
Weight, kg	2,1	2,4	2,8	3,4	4,2

PORTABLE EARTHING DEVICE FOR MACHINES ZPM-1M

Portable earthing device ZPM-1M is designed to protect people working at a deenergized section of gas filling stations, fire-engine in case of appearance of induced voltage. Supplied with cable section 16mm2 and 25mm2.

Permissible operating temperature is from – 45 oC to +45 oC, at air relative humidity up to 80% at 25 oC.

ZPM-1M

Modifications of ZPM-1

Nominal Voltage, kV	1,0	1,0	1,0	1,0	1,0	1,0
Withstanding thermal current, kA/3sec	2,5	2,5	2,5	2,5	4,0	4,0
Cable section, mm^2	16	16	16	16	25	25
Total cable length, m	8,0	20,0	25,0	30,0	8,0	30,0
Weight, kg	1,9	3,8	4,7	5,4	2,6	8,0

PORTABLE EARTHING DEVICE FOR OVERHEAD LINES ZPL-10M

The device is designed for protection of people working at de-energized sections of overhead lines with voltage of 1 to 10kV in case of erroneous energization of the section or induced voltage occurrence. Comes standard with a wire having a 25 mm2 section. Upon request, it may be supplied with an earthwire with 35mm2, 50mm2 , 70mm2 or 95mm2 sections.

The set includes SHZP-10/15 rod.
ZPL-10M (mod. 2) comes standard with VZL-M2 clamps.
Permissible operating temperature is from –45 oC to +45 oC, at air relative humidity up to 80% at 25 oC.

Nominal Voltage, kV	1-10,0
Withstanding thermal current, kA/3sec	4,0
Number of sticks, pc.	1
Number of phases	3
Cable section, mm	225
Cable length between phases, m.	1,6
Earthing cable length, m	10,0
Total length, mm	1250
Total cable length, m	13,2
Weight, kg (mod.1)	5,2
(mod.2)	5,6

ZPL-10M

Cable section, mm^2	35	50	70	95
Withstanding thermal current, kA/3sec	5,6	8,0	10,0	15,0
Weight, kg	6,5/7,0	8,5/ 9,0	10,5/11	13,8/14,2

PORTABLE EARTHING DEVICE S FOR OVERHEAD LINES

Portable earthing devices are designed to protect people working at a deenergized sections of overhead lines in case of accidental energization of the section or appearance of induced voltage. Supplied with cable section 25mm ^{2}. By order can be supplied with cable section 35mm ^{2}, 50mm ^{2} and 70mm ^{2}.
Devices with cable section up to 50mm ^{2} completed by VZL-1M clamps. For cable section above 50mm ^{2} completed by clamps D16 PT. Completed with SHZP insulating stick s.

Permissible operating temperature is from -45 ° C to +45 ° C, at air relative humidity up to 80% at 25 °C.

	ZPL-35M -1	ZPL-35M -3	ZPL-110M -1	ZPL-110M -3	ZPL-220M -3
Nominal Voltage, kV	10-35	15-35	35-110	35-110	110-220
Withstanding thermal current, kA/3sec	4,0	4,0	4,0	4,0	4,0
Number of sticks, pc.	1	3	1	3	3
Number of phases	1	3	1	3	3
Cable section, mm^2	25	25	25	25	25
Earthing cable length, m	12,0	12,0	12,0	12,0	15,0
Cable length between phases, m	-	4,5	-	6,0	9,0
Weight, kg	5,8	9,8	6,2	11,8	16,3
Size (in packing), mm	340x220x90	340x220x90	350x220x90	350x200x150	350x200x180

Modifications of ZPL-35M -1			
Cable section, mm^2	**35**	**50**	**70**
Withstanding thermal current, kA/3sec	5,6	8,0	10,0
Weight, kg	7,0	8,8	11,2
Modifications of ZPL-35M -3			
Cable section, mm^2	**35**	**50**	**70**
Withstanding thermal current, kA/3sec	5,6	8,0	10,0
Weight, kg	11,9	15	19,2
Modifications of ZPL-110M -1			
Cable section, mm^2	**35**	**50**	**70**
Withstanding thermal current, kA/3sec	6.0	8,0	10,0
Weight, kg	7,4	9,2	11,6
Modifications of ZPL-110M -3			
Cable section, mm^2	**35**	**50**	**70**
Withstanding thermal current, kA/3sec	5,6	8,0	10,0
Weight, kg	14,2	17,8	22,6
Modifications of ZPL-220M -1			
Cable section, mm^2	**35**	**50**	**70**
Withstanding thermal current, kA/3sec	5,6	8,0	10,0
Weight, kg	8,1	10,3	13,3
Modifications of ZPL-220M -3			
Cable section, mm^2	**35**	**50**	**70**
Withstanding thermal current, kA/3sec	5,6	8,0	11,0
Weight, kg	19,6	24,6	31

SET OF STICKS KSHZ-0,4M FOR EARTHING OVERHEAD LINES FROM GROUND

A set of KSHZ-0,4M earthing rods for overhead lines is used as the primary tool of protection against electric shock and serves for protection of people working at de-energized sections of overhead lines in case of unplanned high voltage or induced voltage occurrence at those sections. The set is designed for earthing of overhead lines with voltage of up to 1 kV directly from the ground level.

Nominal Voltage, kVup to	1
Cable section, mm2	16
Number of earthing sticks, pc.	5
Length of each grounding cable	6
Detector insulating part length,mm	1000
Withstanding thermal current, kA/3sec	2,5
Withstanding dinamic current, kA/3sec	14
Metallic sections length, mm	
-Terminate link,mm	1700
- First link , mm	1530
Overall length,mm	6220
Earthing electrode sizes, mm	1700x100x200
Set weight, max. kg	24,7

SET OF STICKS KSHZ-04-10M FOR EARTHING OVERHEAD LINES FROM GROUND

The set of KSHZ-04-10M earthing rods for overhead lines is applied as a primary tool for electric shock protection, it serves for protection of people working at de-energized sections of overhead lines in case of unplanned high voltage or induced voltage occurrence at those sections. The set is designed for earthing of overhead lines with voltage of up to 1kV, and also those of 6 to 10kV directly from ground level.

Nominal Voltage, kV	up to 1 and from 6 to 10
Earthing sticks length, mm	8100
Metallic sections length, mm	2000
Number of earthing sticks, pc.	3
Cable section, mm	225
Withstanding thermal current, kA/3sec	4,0
Earthing cable length, m	5,0
Sticks and detector handle lengths, mm	1000
High voltage detector length, mm8	100
Detector insulating part length,mm	1000
Voltage detector lamp threshold,	
for 6-10kV OHL,kV	1,5
for 0,4kV OHL,kV	0,1
Operating Environment:	
Temperature ℃	from -45 to +45
Humidity %80	
Eearthing electrode sizes, mm	1760x150x200
Set weight, kg	26

SET OF STICKS KSHZ-10M FOR EARTHING OVERHEAD LINES FROM GROUND

The set of KSHZ-10M earthing rods for overhead lines is applied as a primary tool for electric shock protection, it serves for protection of people working at de-energized sections of overhead lines in case of unplanned high voltage or induced voltage occurrence at those sections.
The set is designed for earthing of overhead lines with voltage of 6 to 10kV directly from ground level.

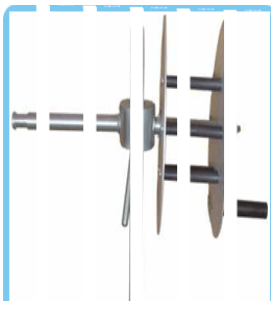
Nominal Voltage, kV	6 to 10
Withstanding thermal current, kA/3sec	4,0
Earthing sticks length, mm	8100
Insulating part length, mm	1000
Number of earthing sticks, pc.	3
Cable section, mm^2	25
Earthing cable length, m	5,0
High voltage detector length, mm,	1000
Sticks and detector handle lengths, mm	8100
Voltage detector lamp threshold, kV, at most	1,5
Eearthing electrode sizes, mm	1760x100x200; 1650x200x100
Operating Environment:	
Temperature °C	From 45 to + 45
Humidity % , at 25 °C	80
Set weight, kg	22,7

KSHZ-10M

EARTH ELECTRODE EZ-1 -MB; EZ-1M FOR PORTABLE EARTHING DEVICES UP TO 10 kV

The earth electrode is designed to be installed in the ground as an electrode of portable earthing devices for overhead lines of up to 10 kV. The electrode is designed for operation at temperature form –45 oC to +45 oC and air relative humidity up to 80% at 25 oC.

Nominal Voltage, kV	10
Diameter of rod, mm	22
Diameter of reel, mm	250
Sizes, mm	820x450x250/820x50
Set weight, kg	
EZ-1-MB	5,6 ч5,8
EZ-M	2,1ч2,3



DEVICE UNP -10B "BOOMERANG" FOR SHORT-CIRCUIT THROWING ON UP TO 10 kV OVERHEAD LINES WIRES

UNP-10B and UNP-10 are designed for emergency earthing of overhead lines through an overhead line short-circuit by means of a jumper connected to the “grounding” in all cases requiring instant voltage disconnection of overhead lines for rescuing of those affected by electric shock.
The device comprises the active part (operational), earthing part with a cramp, insulating wire weighted at the end, and earth rod EZ-1.
Permissible operating temperature is from –45 C to +45 oC, at air relative humidity up to 80% at 25 o

UNP -10B

Nominal Voltage, kV	6-10
Short-circuit part cable section, mm^2	25
Short-circuit part cable length, m	3,0
Earthing partcable length, m	15
Earthing partcable section, mm^2	25
Insulating wire length, m	25
Insulating wire section, mm^2	4
Withstanding thermal current, kA/3sec	2,5
Sizes (in packing), mm:	
- Bag	400x260x250
- Cover	850x50x30

PORTABLE EARTHING DEVICES FOR OVERHEAD LINES ZPL -1M PZ, ZPL-1-10M PZ, ZPL-10M PZ

Portable earthing devices for overhead lines are applied as a primary tool for electric shock protection of people working at de-energized sections of overhead lines in case of unplanned energization of the sections or induced voltage occurrence. The devices are designed for earthing of overhead lines with voltage up to 1kV as well as up to 10 kV directly from the ground level.

Permissible operating temperature is from –25 oC to +55 oC, at air relative humidity up to 80% at 25 oC.

ZPL

	ZPL -1M PZ	ZPL -1-10M PZ	ZPL -10M PZ
Nominal Voltage Range, kV	Up to 1	Up to 1 and from 6 to 10	From 6 to 10
Cable section, mm2	16	(3x25)+(2x16)	25
Length of each earthing cable, mm	6,0	6,0	6,0
Number of phases	5	5	3
Withstanding thermal current, kA/3sec	2,5	3-4	4,0
Handle length, mm	1000	1000	1000
Total length of insulating stick, mm	2020	2020	2020
Metallic links length:			
Terminate Link, mm	1700	1630	1630
Intermediate Link, mm	1580	1580	1580
First Link, mm	1530	1530	1530
Total length of assembled stick, mm	7800	7700	7700
Set weight, kg (in packing)	21,0	23,0	19,0
Overall sizes, mm (in packing)	1760x100x200	1750x150x200	1750x100x200

PORTABLE EARTHING DEVICE FOR INSULATED OVERHEAD LINES ZPL -1M-5-SIP- ELPRIB (MT-205 ANALOGUE); ZPL -1M-6 SIP- ELPRIB (MT-206 ANALOGUE)

ZPL-1M-5-SIP-ELPRIB Portable earthing device (with five modules) for isolated overhead lines (SIP) with a voltage of up to 1kV, alternating current of commercial frequency for connecting to three phase conductors, neutral conductor, to street lighting conductor and MT-205 earthing device; ZPL-1M-6-SIP-ELPRIB device (with six modules) for connecting to three phase conductors, neutral conductor, to street lighting conductor and MT-206 earthing device. These devices are applied as primary protection tools against nominal voltage shock in case of its unplanned occurrence or against induced voltage at de-energized sections of overhead lines. The earthing device includes 5 or 6-bayonet modules. The operational principle of the earthing device is the earthing of all isolated overhead lines.

Permissible operating temperature is from – 45 oC to +45 oC, at air relative humidity up to 80% at 25 oC.

ZPL -1M-6

	ZPL-1M-5-SIP ELPRIB	**ZPL-1M-6-SIP ELPRIB**
Nominal Voltage, kV, at most	Up to 1	Up to 1
Cable section, mm2	16	16
Phazing bridge length, m, not less	0,8	0,8
Bayonet modules number	5	6
Withstanding thermal current, kA/3 sec.	2,5	2,5
Withstanding dynamic current, kA.	14	14
Weight, kg,	1,12	1,55
Overall sizes, mm	230x220x80	230x220x80

ZPL-1M-SIP-ELPRIB (MT-245 ANALOGUE).

GZPL-1M-SIP-ELPRIB (an earthing lead to MT-205; MT-206) is applied as a primary protection tool against electric shock at de-energized sections of overhead lines in case of unplanned occurrence of high or induced voltage at these sections. The earthing lead consists of an earthing clamp, reciprocal bayonet module and earthing module. The operational principe of the earthing lead is the earthing of isolated overhead lines.

Permissible operating temperature is from –45 oC to +45 oC, at air relative humidity up to 80% at 25 oC.

Nominal Voltage, kV, at most	Up to 1
Cable section, mm2	16
Ground step-down, m, not less	10
Bayonet modules number	1
Withstanding thermal current, kA/3 sec.	2,5
Withstanding dynamic current, kA.	14
Weight, kg	2,3
Overall sizes, mm	230x220x80

ZPL-1M-SIP-ELPRIB

PORTABLE EARTHING DEVICE FOR ELECTRICAL INSTALLATIONS

Portable earthing devices are designed to protect people working at a deenergized section of electrical installations in case of accidental energization of the section or appearance of induced voltage. Supplied with cable section 25 mm^2. By order can be supplied with cable section 35mm^2, 50mm^2, 70mm^2, 95 mm^2 and 120mm^2.

Devices with cable section up to 50mm^2 completed by VZL-1M and VZRU-2 clamps. For cable section above 50mm^2 completed by clamps D16 PT
Completed with SHZP insulating stick.

Permissible operating temperature is from -45 °C to +45 °C, at air relative humidity up to 80% at 25 ℃.

ZPP-15M

	ZPP-15M	ZPP-15M -3	ZPPM-35	ZPP-35M -3	ZPP-110M	ZPP-220M	ZPP-330M
Nominal Voltage, kV	1-15	1-15	35	15-35	35-110	110-220	220-330
Withstanding thermal current, kA/3sec	4,0	4,0	4,0	4,0	4,0	4,0	4,0
Number of sticks, pc.	1	3	1	3	1	1	1
Number of phases	3	3	3	3	3	3	3
Cable section, mm2	25	25	25	25	25	25	25
Cable length between phases, m.	1,25	1,25	2,5	2,5	3,5	7	9
Earthing cable length, m	2,5	2,5	7	7	10	10	12
Weight, kg	3,6	4,5	5,0±5,4	9,8	7,3	9,3	11,5
Size (in packing), mm	**300x160x90**	300x200x100	340x220x90	340x220x90	300x160x90	300x160x100	300x160x110

Modifications of ZPP-15M

Cable section, mm^2	**35**	**50**	**70**	**95**	**120**
Withstanding thermal current, kA/3sec	5,6	8,0	10,0	15,0	18,0
Weight, kg	4,1	4,9	5,9	7,0	8,3

Modifications of ZPP-15M -3

Cable section, mm^2	**35**	**50**	**70**	**95**	**120**
Withstanding thermal current, kA/3sec	5,6	8,0	10	15,0	18,0
Weight, kg	5,0	5,7	6,5	7,5	8,7

Modifications of ZPP-35M

Cable section, mm^2	**35**	**50**	**70**	**95**
Withstanding thermal current, kA/3sec	5,1	8,0	10,0	15,0
Weight, kg	6,0±6,3	8,4±8,7	11,0±11,5	13,8±14,2

Modifications of ZPP-110M

Cable section, mm^2	**35**	**50**	**70**	**95**
Withstanding thermal current, kA/3sec	5,6	8,0	10,0	14,0
Weight, kg	11,5	17,8	26,2	36,4

Modifications of ZPP-220M

Cable section, mm^2	**35**	**50**	**70**	**95**
Withstanding thermal current, kA/3sec	5,1	8,0	10,0	15,0
Weight, kg	11,7	15,3	20,1	26

Modifications of ZPP-330M

Cable section, mm^2	**35**	**50**	**70**	**95**
Withstanding thermal current, kA/3sec	5,6	8,0	10,0	15,0
Weight, kg	14,5	19,0	25	32,5

PORTABLE EARTHING DEVICES WITH STICKS PZ110-220SH, PZ330-500SH PZ750SH, PZ1150SH

The devices are designed for applying on to 110 to 1150 kV overhead lines wires of commercial frequency for separate earthing of wires with 90 to 600 mm ^{2}cross-section area of disconnected overhead lines in order to protect personnel in case of accidental energization of the section or appearance of induced voltage in the section.

Permissible operating temperature is from -45 ^{0} C to +45 ^{0}C at air relative humidity up to 80% at 25 ^{0}C.

	PZ 110-220SH	PZ 330 - 500SH	PZ 750SH	PZ 115 0SH
Nominal Voltage, kV	110-220	330-500	750	750-1150
Withstanding thermal current, kA/3sec	4,0	4,0	4,0	4,0
Cable section, mm^2	25	25	25	25
Earthing cable length, m.	2,0	3,0	3,0	4,0
Handle length, mm	850	1000	1 000	1200
Insulating part length, mm	550	1000	1000	800
Metallic links length, mm	2000	2000	2000	2000
Total length, mm	3800	6450	8450	10650
Sizes, mm	2350x150x100	2350x160x100	2400x160x120	2350x190x120
Weight, kg	4,0	6,0	6,8	7,5

PORTABLE EARTHING DEVICES WITH STICKS FOR LIGHTNING PROTECTOR CABLE PZT 330-500; PZT 750-1150

Earthing devices of PZT type are designed for applying on lightning protector cable of overhead lines in order to protect personnel in case appearance of induced voltage in the section. Permissible operating temperature is from -45 ^{0}C to +45 ^{0}C at air relative humidity up to 80% at 25 ^{0}C.

PZT 750-1150

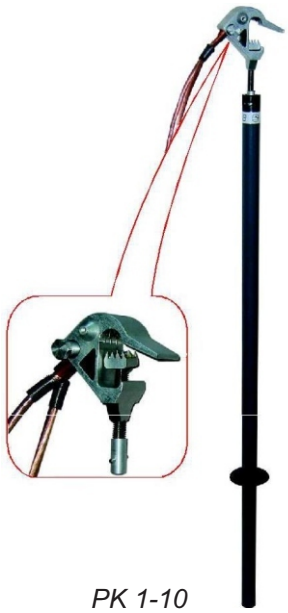
	PZT 330 -500	PZT 750-1150
Nominal Voltage, kV	330-500	750-1150
Withstanding thermal current, kA/3sec	2,5	2,5
Cable section, mm^2	16	16
Earthing cable length, m.	1,5	3,0
Handle length, mm	320	520
Insulating part length, mm	720	1680
Number of links	1	1
Sizes, mm	1200x120x60	2300x150x60
Weight, kg	2,1	2,5

SPECIAL PORTABLE EARTHING DEVICE PK 1-10

The earthing device is designed for separate earthing of protected plastic-insulated wires of overhead lines of up to 10kV and commercial frequency, in order to protect personnel working at a deenergized section of electrical equipment and performing switching work. Supplied with cable section 25mm^2. Completed with SHZP 10/15 insulating stick.

Permissible operating temperature is from -45 ℃ to +45 ℃,
at air relative humidity up to 80% at 25 ℃.

Nominal Voltage, kV	0,4 - 10
Withstanding thermal current, kA/3sec	4,0
Number of phases	3
Number of sticks, pc.	3
Cable section, mm^2	25
Cable length between phases, m	1,6
Earthing cable length, m	10,0
Total cable length, m	13,2
Total length, mm	1280
Sizes (in packing) :	
Stick, mm	1160x 290x 90
Bag, mm	360x 240x 140
Weight, kg	7,2



PK 1-10

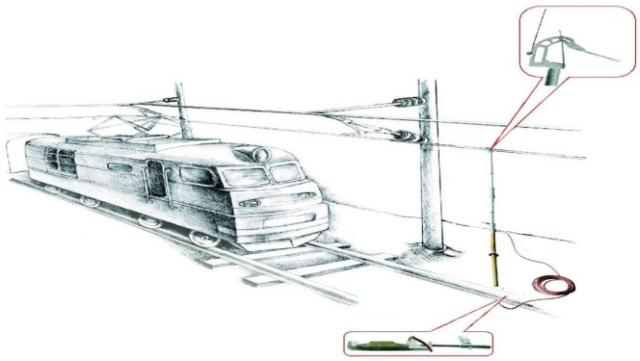
FOR RAILWAY AND TROLLEY

PORTABLE EARTHING DEVICES WITH STICKS FOR RAILWAYS UZP-2

The device is designed for applying from-the-ground earthing on to railway contact systems. A special design excludes possibility of earthing imposition without preliminary installation of earthing cramps.

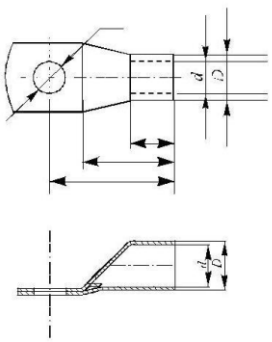
Permissible operating temperature is from -45 ℃ to +45 C°,
at air relative humidity up to 80% at 25 ℃.

Nominal Voltage, kV	
DC	up to 3,3
AC	up to 27,5
Withstanding thermal current, kA/3sec	8
Handle length, mm	1000
Insulating part length, mm	1000
Number of metallic links	1
Cable section, mm^2	50
Earthing cable length, m.	12,0
Total length, mm	up to 4600
Weight, kg	8,0 up to 12,5



CABLE TIN-PLATED LUGS

Lugs are intended for mounting on cables used in portable earthing devices. Lugs are made from copper pipe and have good conductivity. The sizes of lugs are given in table.



Ref-Number	Cable cross-section mm^2	Dimensions					
		D	*d*	*L*	l	l_1	d_1
-16	16	9	6	51	41	30	6,5
-25	25	10	7	51	41	30	6,5
-35	35	12	9	51	41	30	8,5
-50	50	14	11	51	41	30	8,5
-70	70	16	13	56	46	35	8,5
-95	95	18	15	56	46	35	8,5
-120	120	20	16	61	51	40	8,5
-150	150	22	18	64	52	40	10,5

GLASS-REINFORCES PLASTIC LADDERS AND STEPS

These products are used in performing civil engineering and installation work, for maintenance and repair of electrical equipment as well as for other accessory work. The construction of ladders and steps take a load up to 1500 N , strings take a load up to 800 N. The string f lexure is not more than 35mm.

By order ladders and steps can be produced with height up to 4,5m.

LADDERS

	LSPD-2,0	LSPD -2,5
Stringer length, m	2,0	2,5
Number of steps	5	6
Steps distance, m	0,35	0,35
Ladder width at the top, m	0,34	0,34
Ladder width at the bottom, m	0,5	0,5
Weight, kg	6,0	6,5

STEPS

	CCD-1,0	CCD-1,5
Stringer length, m	2	2,5
Number of steps	3	4
Steps distance, m	0,35	0,35
Platform height,m	1,0	1,5
Steps height, m	1,8	1,8
Steps width at the top, m	0,4	0,4
Stepswidth at the bottom, m	0,59	0,63
Weight, kg	8,0	10,0

SCREW CLAMP FOR OVERHEAD LINES VZL- M1

VZL-M1 screw clam for overhead lines is designed for completing portable devices at 35 to 220 kV rated voltage. There is an earthing wire in-jack and a pin on the clamp axle for adjusting on the SHZP type stick.

Cramp window size, mm	50x30
Diameter of grounded wires, mm	6 to 40
Sizes, mm	200x70x40
Weight, kg	0,32

CLAMP FOR OVERHEAD LINES WITH SPRING VZL- M2

VZL-M2 spring clamp for overhead lines is designed for completing portable devices at 1 to 10 kV rated voltage. The clamp is made of AK-9 alloy, and have a jack to connect earthing wire with lug.

Cramp window size, mm	30
Diameter of grounded wires, mm	6 to 28
Thickness of grounding trunks, mm	up to 20
Sizes, mm	160x60x33
Weight, kg	0,24

VZL- M2

HIGH VOLTAGE DETECTOR WITH LIGHT AND AUDIBLE INDICATION VIN-SZ

High voltage detector is an independent electronic device designed for checking presence or absence of voltage in DC and AC electrical installations with nominal voltage from 6 up to 110kV. The detector is equipped with built in serviceability control unit and light-audible indication. Mounted on SHIU insulating sticks.

VIN-SZ

Nominal Voltage, kV	6,0 - 110
Frequency, Hz	50(60)
Power supply, V	6, (2xCR2032)
Audible Signal Level, dBA	more than 70
Operating Environment:	
Temperature ℃	- 15 up to + 55
Humidity % , at 25 ℃	up to 80
Size, mm	270x60x60
Weight, kg	0,28

OPERATIVE AND OPERATIVE MULTIPURPOSE TIPS

The tips are designed to be mounted on SHIU sticks. They are equipped with unified attachment unit, and can be fixed at 30 °, 60 °and 90 °angles.

ANALOG CLAMPMETERS K4575A, K4575/1A, K4577A

Analog clampmeters are designed for quick measuring ofAC without breaking the current circuit, voltage inAC circuits of 50/60 Hz, and resistance.

It is a portable instrument combining current transformer having split magnetic circuit with a measuring mechanism of a permanent-magnet metering system.

	K4575
AC Voltage, V	150; 300; 600
AC Current, A	6; 20; 60; 200; 600
Resistance, kW	2,0
Accuracy, %:	±5,0
Power supply, V	1,5 (AAR6)
Operating Environment: Temperature °C	from -30 up to +50
Humidity, %, at 25 °C	up to 98
Clamp window size, mm	41Ч33
Clamp size, mm	33
Sizes, mm	220Ч83Ч40
Weight, kg	0,39

	K4575/1
AC Voltage, V	600
DC Voltage, V	150
AC Current, A	10,150,300,1000
Resistance, kW	5,0
Temperature °?	from -50 up to +150
Accuracy, %:	±5,0
Power supply, V	1,5 (AAR6)
Operating Environment: Temperature °C	from -30 up to +50
Humidity, %, at 25 °C	up to 98
Clamp window size, mm	75 x 53
Clamp size, mm	40
Sizes, mm	285x100x46
Weight, kg	0,4

	K4577
AC Voltage, V	150; 300; 600
AC Current, A	5; 10; 25; 50; 100; 250
Accuracy, %:	±5,0
Operating Environment: Temperature °C	from -30 up to +50
Humidity, %, at 25 °C	up to 98
Clamp window size, mm	Ш 21
Clamp size, mm	22
Sizes, mm	139Ч52Ч36
Weight, kg	0,14

DIGITAL CLAMP METERS K4570/1C, K4570/2C, K4571C

Digital clamp meters are designed for measuring of AC without breaking the AC current circuit, voltage in DC circuits of up to 1000 V, and in AC circuits of rated voltage of up to 750 V and 50/60 Hz, resistance, temperature (K4570/2C, K4571C), frequency (K4571C), as well as to test diodes and contacts (audible probe). Clamp meters are portable devices combining transformer current having split magnetic circuit with a digital multimeter.

Permissible operating temperature is from 0 °C to +45 ℃, at air relative humidity up to 80% at 25 ℃.

	K4570/1C	Accuracy, %:
AC Voltage, V	200;750	±1,5
DC Voltage, V	2-20-200-1000	±1,0
AC Current, A	200-1000	±2,5
Resistance, kW	0,2-2-20- 200-2000	±1,5
Frequency, kHz:	2,0	±2,5
Diode test	+	
Continuity Buzzer	+	
Data Hold	+	
Indication	3 ½ Digits LCD (Max reading 1999)	
Power supply, V	9(6F22)	
Sizes, mm	237x95x40	
Weight, kg	0,35	

	K4570/2C	Accuracy, %:
AC Voltage, V	200;750	±1,5
DC Voltage, V	0,2-2-20-200-1000	±1,0
AC Current, A	20-200-400	±2,5
Resistance, kW	0,2-20-2000	±1,5
Temperature, °C	from 0 up to + 750	±1,5
°F	from 32 up to 1400	
Data Hold	+	
Indication	3 ½ Digits LCD (Max reading 1999)	
Power supply, V	9 (6F22)	
Sizes, mm	237x95x40	
Weight, kg	0,35	

	K4571C	Accuracy, %:
AC Voltage, V	0,4;4;40;400; 700	±2,0
DC Voltage, V	0,4;4;40;400; 1000	±1,5
AC Current, A	0,4;4;400; 1000	±3,0
Resistance, kW	0,4;4;40;400; 4000	±2,0
Capacitance, Mf	0,4;4;40;100	±2,5
Frequency, KHz	0,4;4;40;400; 4000; 20MHz	
Diode test	+	
Continuity Buzzer	+	
Data Hold	+	
Indication	3 ½ Digits LCD (Max reading 3999)	
Power supply, V	9 (6F22)	
Sizes, mm	248x88x45	
Weight, kg	0,36	

DIGITAL MULTIMETERS
M4580C; M4580 /1C; M4581C; M4583/1C; M4583/2C

Multimeters are combined instruments and are designed to measure voltage inAC and DC 50/60 Hz circuits, strength of AC and DC, resistance, capacity, frequency, temperature, to control transistors, diodes, and contacts (buzzer).

Permissible operating temperature is from 0 °C to +45 ℃, at air relative humidity up to 80% at 25 ℃.

M4580 C

		Accuracy, %:
AC Voltage, V	200-750	±1.5
DC Voltage, V	0,2- 2- 200- 1000	±0.8
DC Current, mA	2-20-200-10A	±1.5
Resistance, kW	0,2-2-20- 200-2000	±1.0
Temperature, °C	from -40 up to 1000	±3.0
Diode Test	+	
Continuity Buzzer	+	
Indication	3 ½ Digits LCD (Max reading 1999)	
Power supply, V	9 (6F22)	
Sizes, mm	120x70x28	
Weight, kg	0,15	

M4580/1 C

		Accuracy, %:
AC Voltage, V	200-500	±1.2
DC Voltage, V	0,2- 2- 20-200- 500	±0.8
DC Current, mA	2-20-200-10A	±1.2
Resistance, kW	0,2-2-20- 200-20MW	±1.0
Temperature, °C	from -40 up to 1000	±1.5
Diode Test	+	
Data Hold	+	
Indication	3 ½ Digits LCD (Max reading 1999)	
Power supply, V	3,0 (2x AAR6)	
Sizes, mm	130x135x35	
Weight, kg	0,156	

M4581 C

		Accuracy, %:
AC Voltage, V	200-450	±2,0
DC Voltage, V	2-20- 200 - 450	±1,0
AC Current, mA	200	±2,5
Resistance, kW	0,2-20-200- 2000	±1,5
Temperature, °C	from -40 up to 1000	±3,0
Diode Test	+	
Continuity Buzzer	+	
Indication	3 ½ Digits LCD (Max reading 1999)	
Power supply, V	9 (6F22)	
Sizes, mm	139 75 76	
Weight, kg	0,16	

M4583/1C

		Accuracy, %:
AC Voltage, V	2-20-200-700	±1,5
DC Voltage, V	0,2-2-20-200-1000	±1,0
AC Current, A	20-200	±3,0
DC Current, mA	2-20-200-20A	±2,0
Resistance, kW	0,2-2-20-200- 2000-20M W - 200MW	±1,5
Frequency, kHz	20	±1,5
Capacitance	200pF; 20nF; 200nF;2mF; 20 mF	±1,5
Diode Test	+	
Continuity Buzzer	+	
Indication	3 ½ Digits LCD (Max reading 1999)	
Power supply, V	9 (6F22)	
Sizes, mm	190 95 40	
Weight, kg	0,29	

M4583/2C

		Accuracy, %:
AC Voltage, V	2-20-200-700	±1,5
DC Voltage, V	0,2-2-20-200-1000	±1,0
AC Current, A	20-200	±3,0
DC Current, mA	2-20-200-20A	±2,0
Resistance, kW	0,2-2-20-200- 2000-20M W - 200MW	±1,5
Capacitance	200pF; 20nF; 200nF;2mF; 20 mF	±1,5
Temperature, °C	from -50 up to +1000	±3,0
Diode Test	+	
Continuity Buzzer	+	
Indication	3 ½ Digits LCD (Max reading 1999)	
Power supply, V	9 (6F22)	
Sizes, mm	190 95 40	
Weight, kg	0,29	

ANALOG MULTIMETERS M4585A

Multimeters are combined instruments and are designed to measure voltage in AC and DC 50/60 Hz circuits, strength ofAC and DC, resistance,. Permissible operating temperature is from -10 ° C to +45 ° C, at air relative humidity up to 80% at 25 ℃.

	M4585	
		Accuracy, %:
AC Voltage, V	10; 50; 250; 1000	±5.0
DC Voltage, V	2,5; 10; 50; 250; 1000	±4,0
DC Current, Ma	5; 50; 500; 10A	±4,0
Resistance, Kw	10; 100; 10MW	±4,0
Power supply, V	3 (2?1,5V)	
Sizes, mm	142x97x39	
Weight, kg	0,25	

TEMPERATURE REGULATORS SH4538, SH4538/1

Temperature regulators SH4538, SH4538/1 are intended for automatic temperature regulation according to proportional-differential and proportional-integral-differential control laws as well as for warning in case of emergency temperature rise. .

Temperature regulator SH4538 is designed for operation in complete set with thermoelectric converters of nominal static graduatic tables XK(L), XA(K), PP(S) and PR(B). .

Temperature regulator SH4538/1 is designed for operation in comple set with resistive temperature transducers of nominal conversion static characteristics Pt10, Pt50, Pt100, Cu50, Cu100.

	SH4538	**SH4538/1**
Temperature regulation range, °C	from - 50 up to +1800	from - 200 up to +650
Basic Error, %	1,0	1,0
Band of setting emergency temperature rise signal, %	2 - 20	2 - 20
Proportional range, %	20	20
Required power, W	6,5	6,5
Power supply:	220V , 50(60)Hz	220V , 50(60)Hz
Operating Environment:		
Temperature, °C	5 - 50	5 - 50
Humidity at 35 °C, %	up to 80	up to 80
Sizes, mm	160x 240x 40	160x 240x 40
Dimensions of rectangular slot in panel, mm	155 x 35	155 x 35
Weight, kg,	1,3	1,3

MILLIVOLTMETRS FOR MEASURING TEMPERATURE SH4540, SH4540/1, SH4547

These millivoltmeters are designed to measure the temperature of various objects in mechanical engineering, metallurgy, chemical and other branches of industry.
The SH4540 millivoltmeter is designed to operate with thermoelectric converters of nominal static graduation tables XK(L), XA(K), PP(S) and PR(B).
SH4540/1 and SH4547 millivoltmeterers are designed to operate with thermal transducers of resistance nominal static characteristics conversion Pt10, Pt50, Pt100 and Cu50.
SH4547 device consists of millivoltmeter and a P4510 unit and is designed to operate in highly explosive environment.
The millivoltmeter is mounted in dangerously explosive facilities and the P4510 unit out of them.

	SH4540	SH4540/1	SH4547
Temperature regulation range, °C	-50 to +1800	-200 to +650	-200 to +650
Basic Error, %	1.0	1.0	1.0
Power supply	220V , 50(60)Hz	220V , 50(60)Hz	220V , 50(60)Hz
Power consumption, VA	4	4	4
Sizes, mm	80x160x300	80x160x300	80x160x300 meter 120x90x50 unit
Weight, kg,	2,1	2,1	2,1 - meter 0,8 unit

MILLIVOLTMETERS FOR TEMPERATURE MEASURING AND CONTROL SH4541 AND SH4541/1

SH4541 and SH4541/1 millivoltmeters are designed for measuring and two-positional control of temperature of various objects in mechanical engineering, metallurgy, chemical and other branches of industry. The SH4541 millivoltmeter is designed to operate thermoelectric converters (TC) of nominal static graduation tables XK(L), XA(K), PP(S) and PR(B). The SH4541 millivoltmeter is equipped with a TT built-in open-circuit signaling device with contact outlet signal and free leads temperature compensation for nominal static characteristics XK(L), XA(K), PR(S), and PR(B).
The SH4541/1 is designed to operate with thermal transducers of resistance (TR) with nominal static characteristics conversion Pt10,Pt 50, Pt100, and Cu 50.
Millivoltveters have contactless relay output (nominal voltage 12V, nominal current-180mA).

	SH4541	SH4541/1
Temperature regulation range, °C	-50 to +1800	-200 to +650
Basic Error, %	1 ,0	1.0
Control law	Proportional	proportional
Response time, sec	7,0	7,0
Power supply	220V , 50(60)Hz	220V , 50(60)Hz
Power consumption, VA	5,6	5,6
Operating Environment:		
Temperature, °C	+5 to +50	+5 to +50
Humidity, %	up to 80 at +35 °C	up to 80 at +35 °C
Sizes, mm	80x160x300	80x160x300
Indication	Analog	analog
Weight, kg	2,6	2,6

TEMPERATURE MEASURING SYSTEM K69001

The system composed of a SH69009 millivoltmeter and thermoelectric temperature transducers of rated static characteristics of conversion XA(K) or XK(L), is designed for measuring temperature of exhaust gases, as well as the temperature in the exhaust pipe of an internal combustion engine under vibration, inclination and impacts at ambient temperature 0 to +60 ℃ and air relative humidity up to 98% and +35 ℃.

	69001/1	69001/2
Temperature regulation range, °C	0 up to + 600	0 up to + 900
Characteristics of conversion	XK (L)	XA (K)
Basic Error, %	±2,5	
Sizes, mm Millivoltmeter SH69009	255 x 220 x 100	
Weight, kg Millivoltmeter SH69009		6,0

TEMPERATURE MEASURING COMPLETE SETS KITU

The complete sets operate with thermoelectric temperature transducers of rated static characteristics of conversion XA(L) or XK(L), as well as with thermal converters of resistance rated static characteristics 21, Pt50, Pt100, 23, Cu50, and are designed for measuring of temperature under vibration, inclination, impacts and high humidity.

Temperature regulation range, °C	from -200 up to +650 (TR) from -50 up to +1100 (TC)
Basic Error, %	1,5
Response time, sec	3,0
Power supply	127; 220 V, 50(60)Hz
Power consumption, VA	10
Operating Environment:	
Temperature, °C	from 0 up to +50
Humidity, %	up to 100 at +35 °C
Weight, kg	16

CERTIFICATES