



P.H.P.U.
IZOL PLAST
 Sp. z o.o.
 44-362 Rogów
 ul. Raciborska 79
 tel./fax 32-4512444, 32-4512010
www.izol-plast.rogow.pl

INDEX CARD

SHOCK-ACOUSTIC GENERATOR WITH MEASUREMENT TYPE GUA-100E / P

Shock-acoustic generator with measurement type GUA-100E / P

The shock-acoustic generator with the GUA-100E / P measurement, hereinafter referred to as the generator, was developed as a portable, special device of normal construction, used to locate damage to power cables and tire cables and to measure the correctness of the repair of the damaged cable.

It can be used to locate damage to cables and wires supplying mining, transport, mobile, transportable and manual devices installed in underground workings (rooms) of mines.

When using the GUA-100E / P generator in workings (rooms) classified as grade "b" and / or "c" of the methane explosion hazard on the basis of: **Regulation of the Minister of Energy of November 23, 2016. on detailed requirements for the operation of underground mining plants - point 5.11** the following conditions must be met:

- **damage location and voltage tests will be performed by persons on the basis of a written order or in the manner specified in the detailed instructions for safe performance of these works and tests, approved by the manager of the mining plant operations,**
- **the dispatcher will be notified of the commencement and completion of the measurements,**
- **the location does not begin or it is interrupted if a methane content greater than 0.5% is found along the route of a damaged cable or wire**

The use of a generator allows the personnel to visually or audibly locate a damaged cable or conductor.

GENERATOR TYPE GUA-100E/P	
Supply voltage	230 VAC/50Hz
Range of supply voltage changes	(0.85±, 1.10) U _N
Supply current	1,6A
Test voltage	0-20kV DC±10%
Maximum measuring current	11mA DC ±10%
Nominal energy of the test pulse	86J
Electrically adjustable regulation of gap of spark gap	0-10mm
Working temperature	-5°C+ +40°C
Location during work	Face up
The degree of protection of the housing	IP54
Dimensions (height with cover x length with handles x width)	(333x 450x 264)mm
Mass	(34 ±0.5)kg
Length of the power cord	(2,5±0,25)m
Length of test leads	(2,5±0,25)m
Initialization time	80s±25%



In the shock-acoustic generator with the GUA-100E / P measurement, the method of using the optical-acoustic effects accompanying the impulse breakdown of insulation with the test voltage (adjustable up to 20kV) at the point of damage to the conductor of the tested cable or sheathing conductor was used for the location of damage to cables or tire conductors. The shock-acoustic generator with the GUA-100E / P measurement can work in the measurement and location modes.

LOCATION:

The energy from the capacitor bank with adjustable voltage from 0 to 20kV through the magneto and test clamps is supplied to the tested cable or sheath conductor. The test voltage can be changed with the adjustment knob. The frequency of the pulses and their energy depend on the distance of the magneto electrodes.



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MEASUREMENT:

The correctness of the repair of a damaged cable is measured by observing the current on the display of the milliammeter with an appropriately set test voltage. According to the standard, the repair cable or wire can be connected to the voltage when the leakage current is $<300\mu\text{A} / \text{km}$.

The housing of the GUA-100E / P generator is a rectangular steel box consisting of a body and a removable cover. The generator body is equipped with an external grounding clamp. The PE protective terminal is connected to the internal grounding terminal of the body with a copper wire with green-yellow insulation.

A shock-acoustic generator with the GUA-100E / P measurement has positive technical opinion no: **OBAC/0434/TE/18** from **07.12.2018** issued by the Center for Testing, Attestation and Certification OBAC Sp. z o. o. in Gliwice. The Shock-Acoustic Generator with the measurement of the GUA-100E / P type has the mark **CE**.

The Shock-Acoustic Generator with the measurement type GUA-100E / P meets the requirements of the following standards and regulations:

- Regulation of the Minister of Energy of November 23, 2016. on detailed requirements for running underground mining plants (Warsaw, June 9, 2017, Journal of Laws, item 1118);
- Operation and control of machinery, equipment and electrical installations in excavations - point 5 of the above-mentioned regulation;
- **PN-EN 61557-1:2009** – Electrical safety in low-voltage power networks with alternating voltages up to 1 kV and direct voltages up to 1.5 kV. Devices intended for checking, measuring or monitoring protective measures. Part 1: General requirements.
- **PN-EN 61557-9:2015-03** – Electrical safety in low-voltage power networks with alternating voltages up to 1 kV and direct voltages up to 1.5 kV. Devices for checking, measuring or monitoring protective measures. Lot 9: Fault location devices in IT networks.
- **PN-EN 61010-1:2011** – Safety requirements for electrical measuring instruments, automation and laboratory devices. Part 1: General requirements.
- **PN-EN 60529:2003** – The degree of protection provided by the enclosures.
- **PN-EN 60664-1:2011** – Coordination of the insulation of electrical devices in low voltage systems. Part 1: Principles, Requirements and Research.
- **PN-EN 61000-6-2:2008** – Electromagnetic Compatibility (EMC). Part 6-2: General standards. Resistance in industrial environments.
- **PN-EN 61000-6-4:2008** – Electromagnetic Compatibility (EMC). Part 6-4: General standards. Emission standard in industrial environments.
- **PN-EN 61326-1:2013-06** – Electrical equipment for measurement, control and use in laboratories - Electromagnetic compatibility (EMC) requirements - Part 1: General requirements.