

ET-1020KW

Digital earth tester

This equipment allows for the measurement of Earth Resistances and Soil Specific Resistivity, and also the spurious voltages caused by parasitic voltages present in the soil.

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PRECISION INSTRUMENTS

OVERVIEW

The ET-1020KW is suitable for fast and easy measurement of the grounding resistance in house and industrial buildings, hospital installations, lightning rods, antennas, substations, etc. Soil resistivity measurement allows for soil stratification in order to optimize the most complex grounding systems engineering.

Its state-of-the-art system of active and passive filters provides it with high immunity to electric interferences, making it possible to obtain reliable measurements even in the presence of spurious voltages, such as the ones that can be found in some urban areas and near primary substations.

A 1,470 Hz internal generator injects alternated current on the soil through an auxiliary rod. The voltage generated over the earth resistance is measured by the apparatus, and the resistance value is evaluated. The test current is automatically regulated.

It has an audible signal which advises the operator when the generated current is not enough to carry out reliable measurements. Due to the fact that it may not be noticed, this alarm also prevents further testing.

Because of its wide range of measurement (from 0.01 Ω up to 20 k Ω), this equipment allows for reliable testing in all kinds of soils, including those that offer very high resistivity. The use of this instrument is very simple, it has a high-visibility 3½ - digit display with direct readings, even under sunlight.

This earth tester is supplied with a rechargeable internal battery. The smart charger is microprocessor-controlled, and can be powered from a 12 V car battery (or a similar one).

It has a sturdy, easy and safe to carry cabinet, with IP54 protection level. It is suitable to work under adverse geographical and environmental conditions, with extreme temperatures in cold or tropical regions and in high mountain areas, showing a reliable performance in the field.



KEY FEATURES

- ➔ 3½ digits display
- ➔ Earth Resistance measurement
- ➔ Spurious voltage measurement
- ➔ Ground resistivity measurement
- ➔ Resolution: 0.01 Ω
- ➔ Resistance reading: up to 20 k Ω
- ➔ Audible signal indicates anomalies in the current circuit

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APPLICATION

Measurement of grounding resistances (3 terminals), soil resistivity (4 terminals) and spurious voltages present in the soil.

RESISTANCE MEASUREMENT METHOD

The equipment injects an electronically stabilised current in the soil, and measures, with high precision, the voltage developed in the soil by means of that current flowing through grounding diffusion resistances. Display shows the Resistance value.

IMMUNITY TO INTERFERENCE

Operation frequency: 1470 Hz

This operation frequency complies with the equation:

$$fg = \frac{2n + 1}{2} \times fi$$

WHERE:

fg = frequency of the current generated by the earth meter.

n = integer number.

fi = industrial frequency (50 or 60 Hz).

The compliance with this equation implies that the operation frequency will not coincide with any harmonic of the industrial frequency, in order to minimise the effect of parasitic currents present in the surveyed soils, by means of the use of appropriate filters.

OPERATION AS A VOLTMETER

In the voltmeter function, the equipment operates as a AC conventional voltmeter, making it possible to check the presence and to measure voltages generated by parasitic currents.

MEASUREMENT RANGES

Resistances: 0-20 Ω ; 0-200 Ω ; 0-2000 Ω and 0-20 k Ω .

Voltage: 0-200 V \sim .

ACCURACY

Resistances measurements: \pm (2% of the measured value + 1% of the maximum value of the selected range).

Voltage measurement: \pm (2% of the measured value + 1% of end of scale value).

READING RESOLUTION

0.01 Ω in the resistance measurement.

0.1 V in the voltage measurement.

OUTPUT POWER AND CURRENT

The output power is less than 0.5 W, and the output current is limited to less than 15 mA (Peak to peak).

BATTERY STATUS CHECKING

It makes it possible to verify the battery charge status under normal use conditions.

AUDIBLE ALARM

It warns the operator in case that there are abnormalities in the current circuit, which make it difficult to obtain a reliable result.

POWER SUPPLY

By means of an internal rechargeable battery, from a 12 V external battery.

BATTERY CHARGER

A smart, microprocessor controlled, circuit adjusts the battery charge to the optimised parameters in order to ensure the maximum service life. It is supplied by means of an external AC adapter (provided with the equipment) or from a 12 V car battery.

OPERATION TEMPERATURE

-10 $^{\circ}$ C to 50 $^{\circ}$ C.

STORAGE TEMPERATURE

-25 $^{\circ}$ C to 65 $^{\circ}$ C.

HUMIDITY

95 % RH (without condensation).

EQUIPMENT WEIGHT

Approx. 2.3 kg (without accessories).

DIMENSIONS

221 x 189 x 99 mm.

ACCESSORIES

- 4 Steel rods (50 cm)
- 1 Rod extraction tool
- 1 AC adapter for the battery charger
- 1 Connection cable to use an external 12 V battery (car battery or similar) to charge the internal battery
- 1 40m red lead (on spool)
- 1 20m blue lead (on spool)
- 1 20m green lead (on spool)
- 1 5m black lead
- 1 5m green lead
- 1 Carrying bag
- 1 User guide

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