

Short to Earth Measuring Instrument

EMG 98-2

Users Manual

Genehmigt:

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Part 1: DESCRIPTION

1. Possible application

The short to earth measuring instrument EMG 98-2 is used to determine direct current earth contact resistance of installations and electric circuits in DC systems (12V to 136V) and AC systems (up to 750V) and as an insulation resistance device. That way, for example, measurements of wires against each other, against the ground or against other reference points are possible. During the fault to ground measurement a parallel connection of all leakages against the ground is being measured all the time because of the low internal resistance of the system.

2. Technical data

Measuring-circuit voltage:	100 V DC
Measuring range:	0... 1 MΩ
Internal resistance:	50 kΩ
Display:	Moving-coil instrument, KI 1,5, graduation in kΩ, position of normal use: horizontal
Dimensions:	160 x 200 x 90 mm
Weight:	≤ 1,8 kg
Power supply:	6 x battery 1,5V, LR 6 Alkaline
Operating temperature range:	0... + 40 °C
Class of protection:	II (totally insulated)
Power-frequency test voltage:	2,5 kV
Emitted interference:	limits complied with EN 50 081 - 1
Immunity to interference:	requirements fulfilled according to EN 50 082-2

3. Accessories

The supply range includes:

- 1 pc. aluminium tool bag
- 1 set of batteries (6pc.)
- 2 pc. measurement connections type MLB, red and black
- 2 pc. crocodile measuring clamps type MAK, red and black

On special request:

- 1 pc. crocodile measuring clamps type MKK
- 1 pc. test head type MPS, red

Part 2: OPERATING INSTRUCTIONS

1. Preparation

1.1 Batteries inlay

- The plastic covers on the bottom of the device are to be loosened by applying the screwdriver.
- The four screws are to be removed and the device has to be opened.
- Batteries (6x 1,5V LR 6 Alkaline) have to be inserted, fastened with a rubber ring.
- Polarity heeds!
- Device has to be closed again.

1.2 Function test

- The EMG 98-2 has to be put in the horizontal position of normal use.
- The compensating controller has to be put in the "0" position.
- The measuring sockets have to be short-circuited with the measuring leads.
- The device has to be switched in the "Start" position by the control switch.

A full-scale deflection of the measuring instrument of 0 k Ω indicates a regular function and battery condition.

2. Measurement of the ground contact resistance

Attention! During the measurements the device has to be screwed in due order and be free of all mechanical damages.

Before the usage the regular function and battery condition have to be checked by shortcircuiting of the measuring sockets with the measuring leads and the inspection of the needle deflection of 0 k Ω has to be performed.

2.1. Measurement on de-energized devices under test or on devices under test with a.c. voltage admission

- Connect the measuring socket "⊥" with the railway ground (e.g. main ground bus, grounded cable terminal rack or relay rack).
- The measuring socket "Rx" with the device under test.
- Put the switch button "polarity" in the position "orange".
- With the switch button "Start" turn on the EMG 98-2 and take a reading of the resistance Rx on the measuring instrument.

In battery systems one can measure both on the plus as well as on the minus terminal against ground. Due to the low internal resistance of the battery device a parallel connection of all leakages is being indicated all the time.

2.2. Measurement on devices under test with direct voltage admission

This measurement is being performed e.g. In the battery systems of the operating unit (interlocking), 60V-systems of the block-box, 24V-systems of the level crossing protection system.

- Connect the measuring socket "⊥" with the railway ground.
- The measuring socket "Rx" with the minus of the device under test.

When the switch is not in the "Start" position, depending upon the voltage and resistance ratio, this results in the deflection of the needle.

- With the potentiometer "compensation" the deflection of the needle can be put to "∞". Eventually the polarization is to be altered by operating the "polarity" button.
- By pressing the "Start (EIN)" button the EMG 98-2 is turned on and the measured value for Rx can be read on the deflection of the needle.

(Attention: depending on the charging circumstances the measured value can be read only after some seconds).

After the measurement the compensation potentiometer must be turned in the "0" position and the "Start (EIN)" button has to be released.

2.3. Measurement in the interference range of the DC conducting paths

If small ground contact resistance exist, incorrect measurements can occur because of the traction reverse current. One has to proceed according to point 2.2., whereat during compensation and measurement no essential changes of the traction current should occur.

3. Maintenance

The maintenance is limited to changing of the battery. Therefore the four plastic covers on the bottom of the device are to be removed by applying the screwdriver as a lever and the screws are to be loosened.

Discharged batteries should be removed out of the device!

Further maintenance works have to be performed only at the manufacturer's site.

4. Inspection

The check of the EMG 98-2 for specified safety terms as well as for maintaining measuring accuracy has to be performed within the 24 months inspection period at the manufacturer's site.

Important tip!

Measuring devices must be checked!
Regular supervision and adjustment

by:

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