



EARTH FAULT METER MD-08

MEASUREMENT AND MONITORING DEVICES



AC & DC POWER SOLUTIONS
TRACTION CONVERTERS



APPLICATION

The MD-08 is designed to measure continuous insulation resistance in the circuits of DC systems. When the value of the resistance falls below a set value, an alarm relay is triggered. The device may be used in 220 V=, 110 V=, 48 V= and 24 V= systems. The system detects drops in both asymmetric resistance (only the positive or negative pole relative to earth or a 220 V / 380 V supply) and symmetric resistance (simultaneous fall in resistance of both poles). In addition, the potentials at both poles of the battery are measured, and alarm thresholds can be set for the minimum and maximum permitted battery voltage.

MAIN FEATURES

- simple to use
- stable parameters
- easy to install
- compact dimensions
- low cost to install and operate
- high immunity to interference
- low value of measurement signal (5 V)
- wide range of resistance measurement
- wide range of alarm settings levels
- can be used in 220 V=, 110 V=, 48 V= and 24 V= systems
- measurement of “+” and “-” potential relative to PE



STANDARDS AND CERTIFICATES

The device complies with the following standards:

EN 61010-1

Safety requirements for electrical equipment for measurement, control and laboratory use. General requirements.

EN 61326

EMC. Electrical equipment for measurement, control and laboratory use.

Certificate:

Energopomiar-Elektryka no. 16/EA/97



Earth fault meter MD-08



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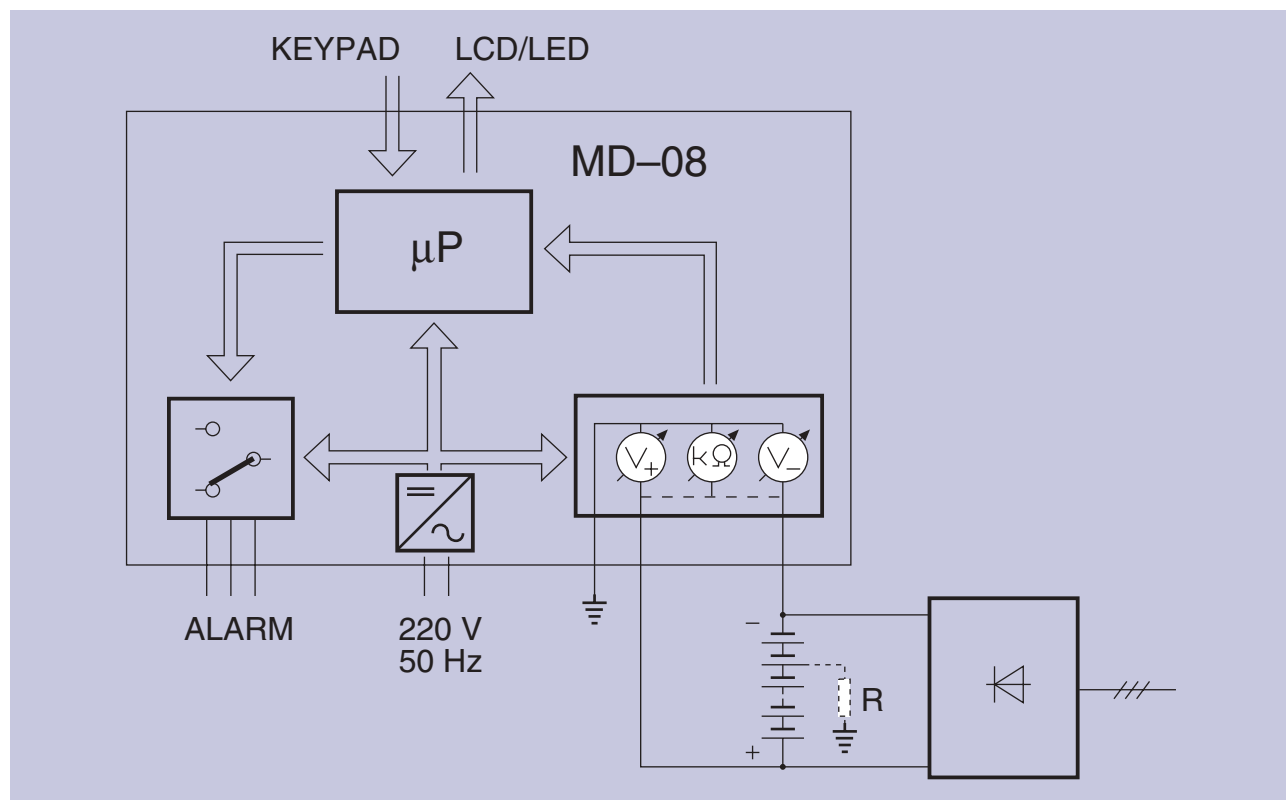


PRINCIPLES OF OPERATION

An electronic system containing a single-chip micro-processor performs constant measurement of the earth resistance using an AC signal (0.05 Hz). When the value of the resistance falls below a minimum value, set using the keypad and LCD display, an alarm relay is triggered and the appropriate LEDs (for circuits with “+” and “-” polarization) indicate the alarm condition. The values for the potentials of the “+” and “-” circuits relative to the PE circuit, as well as the measured resistance reading and the set alarm level, are displayed constantly while the device is in use.

The use of a low-frequency measurement signal and appropriate filtering of signals mean that the device is highly resistant to the effects of interference and the AC component of the voltage. The device detects falling in resistance relative to earth and relative to a 220 V / 380 V supply.

The use of highly stable components and digital conversion of signals guarantees that the parameters will not vary with temperature or over the time.



Earth fault meter - functional diagram

EARTH FAULT METER MD-08

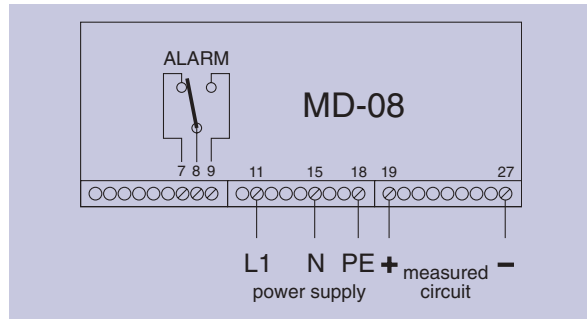


INSTALLATION

There are three lines of terminals on the lower part of the cabinet.

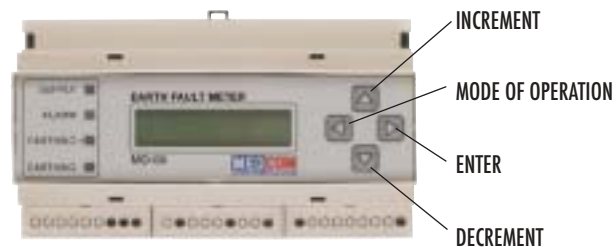
The device should be connected as follows:

- terminals 7, 8, 9 – alarm circuit
- terminals 11, 15 – 220 V (50 Hz) power supply
- terminal 18 – PE circuit
- terminals 19, 27 – battery poles



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U- = 118 U+ = 118 V
R > 200 Ra = 50 K
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LCD display



OPERATION

When the device has been properly installed, the alarm levels for resistance and potential should be set. To make these settings:

- Press ENTER
- Use the cursors to enter the device code (confirm by pressing ENTER)
- Use the cursors to enter the settings (pressing ENTER to confirm)

When an alarm occurs, the message “SYSTEM ALARM” is displayed. The type of alarm(s) can be identified using the cursors.

Periodically (e.g. once a year) the device should be tested by connecting a suitable resistor in such a way as to cause the resistance (between the pole and the earth) to fall below the alarm level set.

On the front of the cabinet are signal LEDs, an alphanumeric LCD display and a keypad.

The display shows potential and resistance values:

- U₋ voltage difference between the “-” circuit and the PE circuit
- U₊ voltage difference between the “+” circuit and the PE circuit
- R_s resistance between the DC system and the PE circuit
- R_a alarm level set

The LEDs indicate the following:

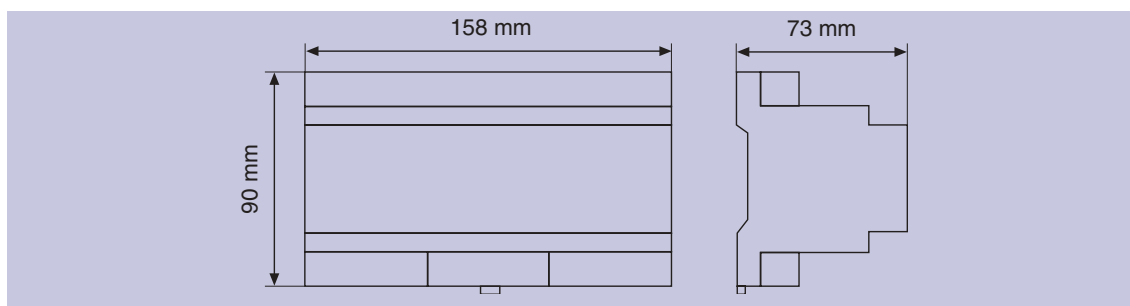
- SUPPLY – shows that the device is connected to the power supply
- ALARM – indicates that the insulation resistance has fallen below the alarm level
- EARTHING+ – earthing of “+” circuit
- EARTHING- – earthing of “-” circuit



TECHNICAL PARAMETERS

Power supply		
Input voltage	220 V +15 % ÷ -15 % (-25 %)	
Frequency	50 Hz	
Dielectric test	2.8 kV 60 s	
Measurement circuit		
Voltage rating of battery	220 V = (110 V =)	48 V = (24 V =)
Battery voltage range	+15% -25%	
Measurement range for potential of “+” and “-” relative to PE	0 ÷ 250 V	0 ÷ 99.9 V
Symmetric resistance measurement range	1 ÷ 500 kΩ	
Resistance measurement error	10% (±2 poz.)	
Range of available alarm level settings	5 ÷ 500 kΩ	
Internal resistance	ca. 0.5 MΩ	
Max. capacity of measured circuit	25 μF (50 μF for R < 50 kΩ)	
Resistance measurement time	ca. 5 min	
Potential measurement time	ca. 5 s	ca. 30 s
Alarm terminals		
Max. operating voltage	300 V = or 250 V ~	
Max. load capacity of terminals	220 V ~ 4 A 220 V = 0,3 A	
Ambient conditions (storage and operating)		
Operating temperature	0 ÷ 40 °C	
Storage temperature	-40 ÷ 65 °C	
Humidity (noncondensing)	max. 98%	
Installation site altitude	below 2000 m	
Cabinet		
Degree of protection	IP20	
Material	Self-extinguishing material NORYL UL 94 V-O	
Mounting	DIN rail mounting	
Dimensions (width × depth × height)	158 mm × 73 mm × 90 mm	

MECHANICAL PARAMETERS



To be mounted on a DIN rail using snap fasteners



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MEDCOM Sp. z o.o.

Founded in 1988, active in the design, manufacture, installation and servicing of modern electronic devices, aimed mainly at the power industry, military, railway and tramway transport, industry and health service customers. The use of latest technologies and system solutions, the services of highly experienced structural designers and the introduction of an ISO 9001:2000 Quality Assurance System, ensure that the devices manufactured are state-of-the-art and highly reliable. The technical design for all products is carried out in-house. In 2001 the company was awarded a prize The Polish President's Economy Award for THE BEST POLISH SMALL ENTERPRISE.

The most important products in the company's offer:

- DC power supplies
- Uninterruptible power systems
- High-voltage power supplies
- Power supplies (MIL standards)
- Static converters for railway and tramway applications
- Power supplies for industrial applications
- Power active filters
- Traction battery chargers
- Static transfer switches
- "Fail-safe" power supplies
- Motor driving systems: AC and DC motors
- Measurement devices: battery earth fault meters, battery operation monitors
- Wind power converters

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Since we are constantly incorporating the latest technological advances, our products are subject to modification. For this reason it may happen that certain elements of the above descriptions are no longer valid.

