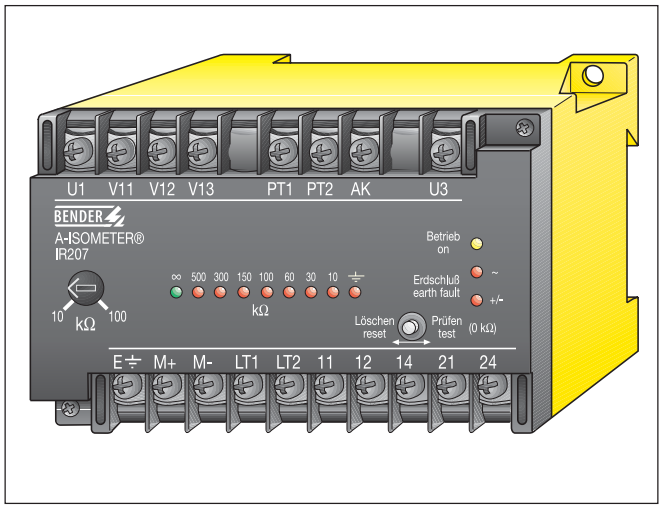
A-ISOMETER®

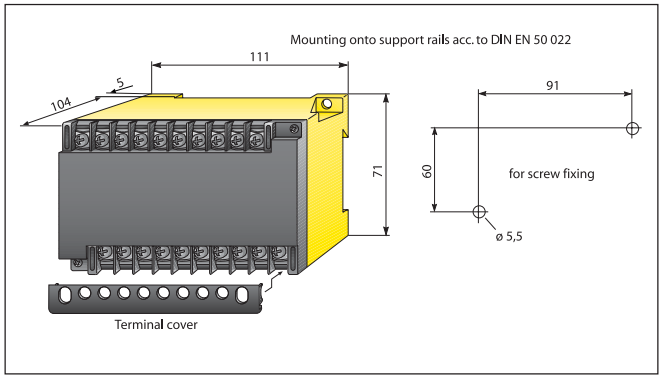
IR207M
IR207L

insulation monitoring device for
IT AC systems (isolated power)



- **insulation monitoring device for IT AC systems (isolated power)**
- **built-in fault location LEDs**
- **built-in test button**
- **built-in bar graph indicator**
- **steplessly adjustable response value**
- **steplessly adjustable time delay**
- **principle of measurement: superimposed measuring DC voltage**
- **output relay with one change over contact and one n.o. contact**

Dimension diagram



Product description

The A-ISOMETERs IR207(M), (L) monitor the insulation resistance of IT AC systems (isolated power).

The supply voltage for the device should be taken from the network to be monitored or any other independent power source. The device is designed for supply voltages AC 50 ... 60 Hz 230/110/42 V (others on request).

The devices are suitable for AC system voltages up to 3 AC 1000 V. Coupling units for networks >1000 V are available (see coupling units).

In order to avoid complex network conditions, DC supplied loads should be separated galvanically from the network to be monitored. The preset response values apply to the pure AC network only.

Model IR207M has an integral ohmmeter and IR207L displays the insulation resistance by a LED bar graph indicator.

Function

A DC measuring voltage is superimposed on the network by the device. One pole is connected to the network via a coupling device while the other pole is connected to earth by means of an electronic measuring circuit. The measuring circuit is closed via insulation faults between system and earth.

When the preset value is reached, the output relay K1 will energize (N/O operation) and the built-in alarm LED signals <earth fault>. Low-ohmic DC faults will be indicated by an alarm LED (earth fault at DC).

Insulation faults are measured as parallel connection of all resistors between circuit and earth. In a disconnected circuit, the condcutors L1, L2, L3 and N must be coupled via a low impedance (e.g. via an isolating transformer).

The test button allows the function of the A-ISOMETER to be tested. Pressing the button causes the red LEDs to illuminate, the ohmmeters point to the earth fault marker ⏚ and the output relay switches.

The unit can only be reset if the insulation resistance increases the set point by 25%. For systems with high leakage capacitance, the devices are equipped with an adjustable time delay (accessible by removing cap on top of casing).

Technical data IR207M, IR207L

Insulation	
Insulation coordination acc. to DIN VDE 0110 T1:	
Rated insulation voltage	AC 1000 V
Rated impulse withstand voltage/ contamination level	8 kV/3
Dielectric test acc. to IEC 255-5, series C	3000/4000 V
Operation class	permanent operation
Network being monitored	
Rated mains voltage U_N	3 AC 50 ... 400 Hz 0 ... 1000 V
Operating range U_N when using an external supply voltage U_S	0 ... 1.1 U_N
Supply voltage	
Supply voltage U_S (selectable) *) (see ordering details)	AC 50 ... 60 Hz 230/110/42 V
Operating range	0.8 ... 1.1 U_S
Self-consumption	4 VA
Response values	
Response value R_{AN1} approx.	10 ... 200 kOhm
Response delay	approx. 1 ... 8 sec
Adjustment by factory	1 sec
Max. mains leakage capacitance	5 µF
Measuring circuit	
Measuring voltage U_M	DC 15 V
Measuring current I_M	125 µA
Internal DC resistance R_i, acc. to DIN VDE 0413	90 kOhm
Internal measuring resistance	120 kOhm
Impedance Z_i, 50 Hz DIN VDE 0413	> 1 MOhm
Max. admissible stray DC voltage	(permanent operation) DC 250 V (short-time <1 sec: DC 2500 V)
Outputs	
Meter output SKMP	not floating
Current output (max. load)	400 µA (12.5 kOhm)
Contact circuit	
Switching components	1 change over contact and one n.o. contact
Contact class acc. to DIN IEC 255 Teil 0-20	IIB
Rated contact voltage	AC 250 V/DC 300 V
Admissible number of operations	12000 cycles
Limited making capacity	UC 5 A
Limited breaking capacity	
at AC 230 V and cos = 0.4	AC 2 A
at DC 110 V and L/R = 0.04 s	DC 0.2 A
Operating principle	N/O operation
Adjustment by factory	N/C operation as required
Special type tests	
Test of electromagnetic compatibility (EMC)	
Impulse voltage test acc. to IEC 255-5	class III
Electrical disturbance test acc. to IEC 255-5	class III
Electrical fast transient test burst acc. to IEC 801-4	
Mechanical tests	
Shock resistance acc. to IEC 68-2-27	15 g/11 ms
Vibration strength acc. to IEC 68-2-6	10 ... 15 kHz/0.15 mm - 2 g
Bumping acc. to IEC 68-2-29	40 g/11 ms
Environmental conditions	
Ambient temperature, during operation	-10°C ... +55°C/263 K ... 328 K
Storage temperature range	-20°C ... +60°C/253 K ... 333 K
Climatic class acc. to DIN 40040	F
General data	
Mounting	IR207M acc. to measuring instrument, IR207L as desired
Type of connection	terminals with self-lifting clamp-washers
Wire cross section	
single wire	2 x (1 ... 1.5 mm^2)
fine braid	2 x (0.75 ... 1.5 mm^2)
Rapid mounting	onto support rails acc. to DIN EN 50 022
Screw mounting	M4
Protection class acc. to DIN 40050	
Internal components	IP 50
Terminals/with terminal covers	IP 10/IP 20
Type of casing	X 200
Flammability class	UL-94V-0
Weight approx.	700 g
Wiring diagram	Z 120 430

*)please indicate supply voltage when ordering

Please note

In order to check the proper connection of the device, it is recommended to carry out a functional test using a genuine earth fault, e.g. via a suitable resistance, before starting the operation.

Please check correct mains voltage !

Only one insulation monitor may be used in each interconnected system. When insulation and voltage tests are to be carried out, the device must be isolated from the system for the test period.

Each device is supplied with terminal covers for protection against electric shock. If these covers are not used, other suitable protection measures must be observed in accordance with the accident prevention regulations.

Before opening the casing or before removing the protection covers to get access to the adjustment elements, the device must be disconnected from the system.

Standards

The A-ISOMETERs IR207(M) (L) correspond to DIN 57 413 Bl 2/VDE 0413 T2/01.73.

Ordering details

Type	Rated mains voltage U_N	Supply voltage U_S	Art. No.
IR207L	AC 0 ... 1000 V	AC 230/110/42 V AC 400/230/110 V AC 690/400/230 V DC 10,5 - 80 V	913037 913043 913588 913352
IR207M	AC 0 ... 1000 V	AC 230/110/42 V	B 913 040

Ordering details for coupling units

Type	Rated mains voltage U_N	Art. No.
AGH204S	3 AC 0 ... 1500 V	B 914 013
AGH520S	AC 0 ... 6000 V	B 913 033

Ordering details for external kOhm-meters

Type	Dimensions	Art. No.
9604	96 x 96 mm	B 986 764
7204	72 x 72 mm	B 986 763

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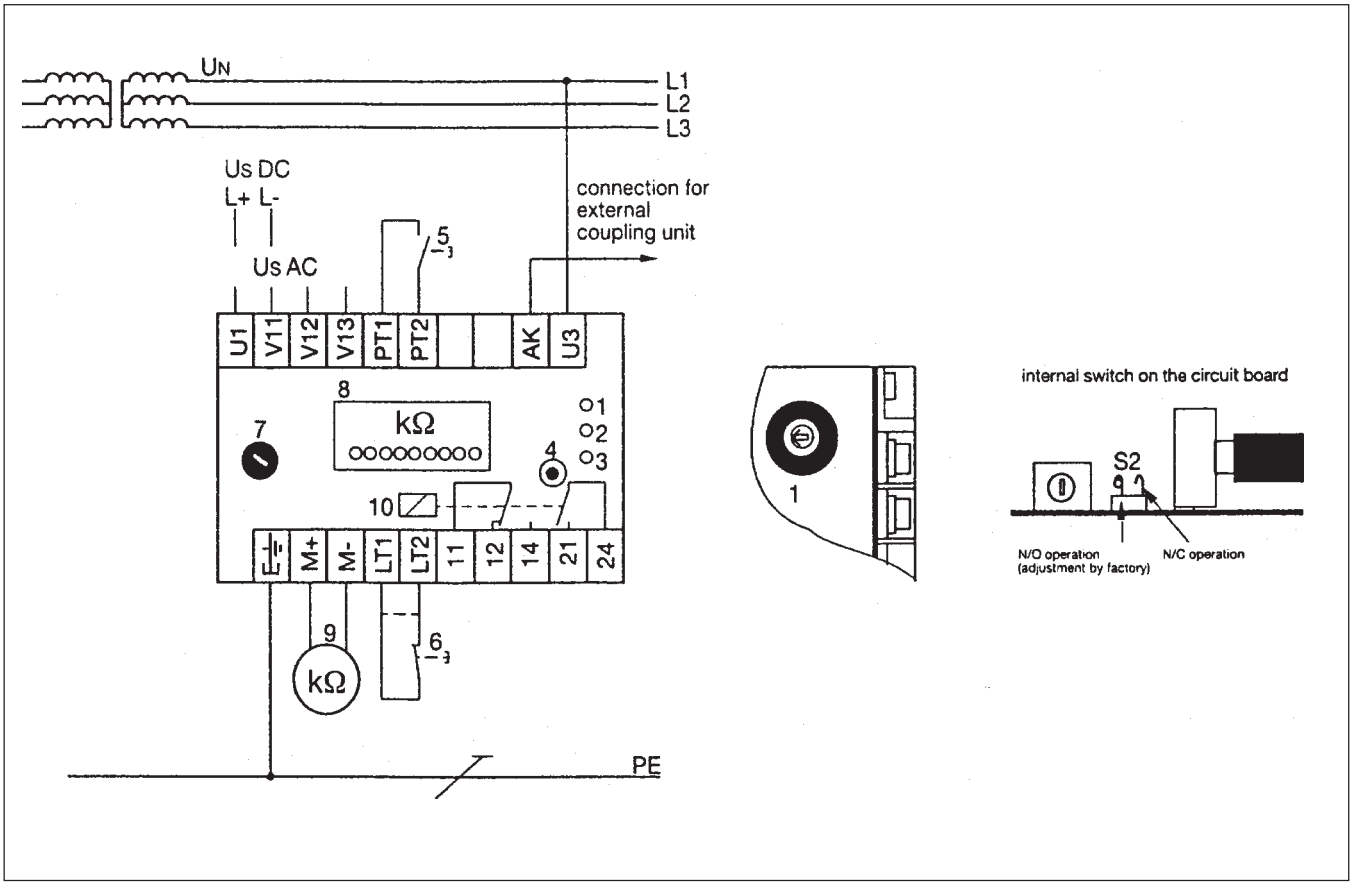
Wiring diagram



Legend to wiring diagram

1	operation-LED, green
2	alarm LED red, indicates earth fault at AC
3	alarm LED red, indicates earth fault at DC
4	built-in test/reset button
5	external test button, as required
6	external reset button, as required. If the fault indication is to be stored, the terminals LT1/LT2 have to be connected by a bridge or the external reset button (6).
7	potentiometer for the adjustment of the response value
8	built-in kOhm meter
9	external ohmmeter, as required
10	output relay with one change over contact and one n.o. contact
11	adjustable time delay, 1 ... 8 sec (accessible by removing cap on top of casing)
S2	change over switch, N/C or N/O operation (internal)
AK	terminal for external high tension coupling (U_N > 1000 V)

Connections of supply voltage U_S

U1 - V11	U1 - V12	U1 - V13
42 V or 380 V or DC 10,5 - 80 V	110 V	230 V
	500 V	660 V

other values on request