

## A-ISOMETER® IR450...

Insulation monitoring device for unearthed AC and 3 AC systems (IT systems) in particular for mobile generators



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### Gerätemerkmale:

- Insulation monitoring for IT AC / 3 AC systems 0...276 V
- Response values:  
IR450YR-4 10 kΩ...100 kΩ  
IR450R 23 kΩ
- Power ON and ALARM LEDs indicating insulation faults
- TEST button, RESET button
- Alarm relay with one potential-free changeover contact
- N/ C operation
- Fault memory, selectable
- Enclosure for installation into standard distribution panels

### Approvals



### Ordering details

Supply voltage $U_s$		Type	Art. No.
AC	DC		
230 V (196...276 V)	–	IR450R-4	B 9101 6029
		IR450YR-4	B 9101 6030
–	9.6...84 V <sup>1)</sup>	IR450R-421	B 9101 6031
		IR450YR-421	B 9101 6033

<sup>1)</sup> Absolute values

### Product description

The A-ISOMETERS® of the IR450... series monitor the insulation resistance of unearthed AC/ 3 AC systems (IT systems) of 0...276 V. The device is supplied by the system being monitored.

### Application

Mobile generators with the protective measure "Protective separation with insulation monitoring and disconnection" in accordance with DIN VDE 0100-551: 1997-08 Low voltage power supply systems (IEC 60364-5-551: 1994; German version HD 384.5.551 S1: 1997).

### Function

If the insulation resistance between the system conductors and earth falls below the set response value, the alarm relay switches and the alarm LEDs light up. The fault message can be stored. The fault memory can be reset by pressing the RESET button. By pressing the TEST button, the function of the device can be tested.

### Measuring principle



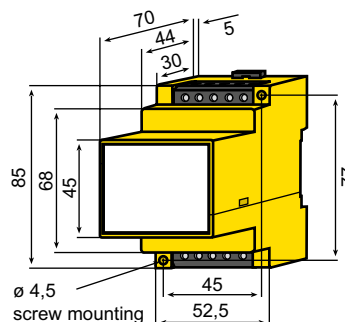
Superimposed DC measuring voltage with reversing stage (see chapter annex – measurement technology).

### Standards

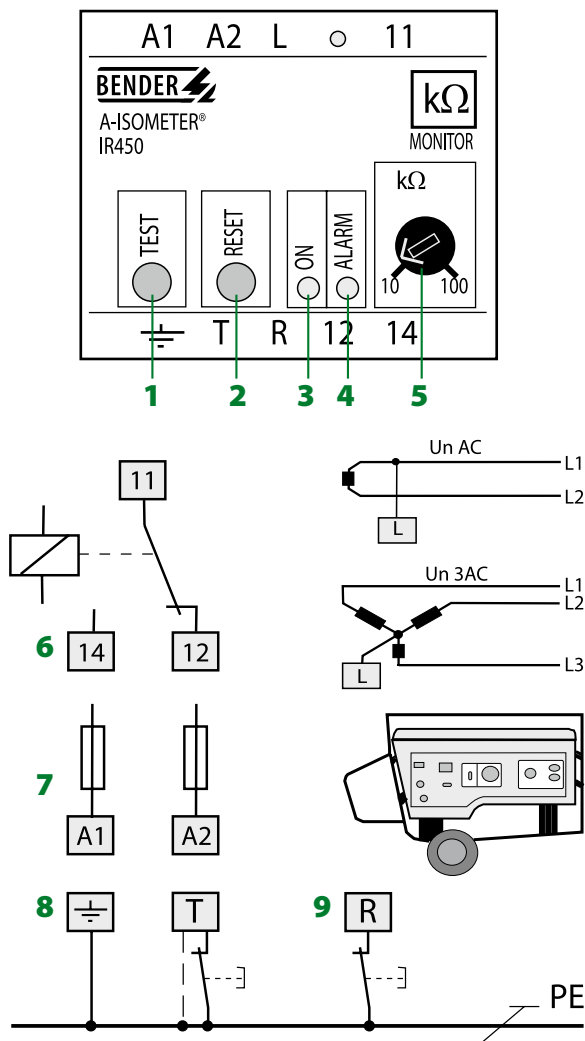
The IR450... series complies with the standards: DIN EN 61557-8 (VDE 0413 part 8): 1998-05; EN 61557-8: 1997-03, IEC 61557-8: 1997-02, ASTM F 1669M-96, VDE 0100 part 551.

### Dimension diagram X450

Dimensions in mm



Wiring diagram



- 1 - TEST button
- 2 - RESET button
- 3 - Power On LED
- 4 - ALARM LED illuminates wenn the value falls below the preset response value or in case of interruption of the connecting leads earth or T
- 5 - Potentiometer for the adjustment of the response value  $R_{an}$  (only version IR450Y), Factory setting: left-hand position (10 k $\Omega$ )
- 6 - Alarm relay
- 7 -  $U_S$  see ordering details – 6 A fuse recommended
- 8 - External TEST button; pressing = TEST or bridge connection T/PE
- 9 - External RESET button, if required; pressing = RESET; without RESET button the fault memory is inactive

The device needs a recovery time of 5 seconds after disconnection.

Technische Daten

Insulation coordination acc. to IEC 60664-1

Rated insulation voltage	AC 250 V
Rated impulse voltage/pollution degree	4 kV/3

Voltage ranges

Nominal system voltage $U_n$	AC 0...276 V (400 V/1 min.)
Nominal frequency $f_n$	40...460 Hz
Supply voltage $U_S$	see ordering details
Frequency range $U_S$	50...460 Hz
Power consumption	< 2 VA

Response values

Response value $R_{an1}$ (ALARM1)	$R = 23 \text{ k}\Omega$ , $R_Y = 10...100 \text{ k}\Omega$
Response time $t_{an}$ at $R_F = 0.5 \times R_{an}$ and $C_e = 1 \mu\text{F}$	< 1 s

Measuring circuit

Measuring voltage $U_m$	< 15 V
Measuring current $I_m$ max. (at $R_F = 0 \Omega$ )	< 200 $\mu\text{A}$
Internal d.c. resistance $R_i$	> 75 k $\Omega$
Internal impedance $Z_i$ at 50 Hz	> 65 k $\Omega$
Max. permissible extraneous DC voltage $U_{fg}$	< 300 V
System leakage capacitance $C_e$	< 5 $\mu\text{F}$

Outputs

TEST/RESET button internal/external

Switching elements

Switching elements	1 changeover contact
Operating principle	N/C operation
Electrical endurance	12000 cycles
Contact class	IIB acc. to DIN IEC 60255 part 0-20
Rated contact voltage	AC 250 V/DC 300 V
Making capacity	AC/DC 5 A
Breaking capacity	2 A, AC 230 V, $\cos \phi = 0.4$ 0.2 A, DC 220 V, $L/R = 0.04 \text{ s}$
Minimum contact current at DC 24 V	2 mA (50 mW)

General data

Shock resistance acc. to IEC 60068-2-27 (device in operation)	30 g/11 ms
Bumping acc. to IEC 60068-2-29 (during transport)	40 g/6 ms
Vibration resistance acc. to IEC 60068-2-6 (device in operation)	1 g/10...150 Hz
Vibration resistance acc. to IEC 60068-2-6 (during transport)	2 g/10...150 Hz
Ambient temperature (during transport)	-25...+60 °C
Storage temperature range	-40...+70 °C
Climatic class according to IEC 60721-3-3	3K5
Operating mode	continuous operation
Mounting	any position
Connection	screw terminals
Wire cross section, rigid, flexible	0.2...4 mm <sup>2</sup> /0.2...2.5 mm <sup>2</sup>
Degree of protection, internal components (DIN EN 60529)	IP30
Degree of protection, terminals (DIN EN 60529)	IP20
Screw mounting	2 x M4
DIN rail mounting according to	DIN EN 60715/IEC 60715
Flammability class	UL94V-0
Instruction leaflet	101004
Weight approx.	200 g



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