

# IRD201 / IRD201M

## A-ISOMETER<sup>®</sup> for unearthed AC or 3AC networks



### A-ISOMETER® IRD201 / IRD201M



IRD201 / IRD201M

#### Approvals



#### Construction

The unit is fitted in a plastic housing. It is suitable for quick - mounting on a support rail 35 x 27 x 7,3 mm DIN EN 50 022 or for screw-fixing.

#### **Product description**

The A-ISOMETER® IRD201(M) monitors the insulation of unearthed network AC or 3AC 380 / 220 V against earth. With the coupling devices AGH251 and AGH507S connected in series, networks with higher supply voltages and frequencies can be monitored. The application possibilities comprise electrically operated furnaces, as far as these are supplied via a disconnecting transformer.

For furnaces supplied via frequency converters, the A-ISOMETER® IRD251 is available.

Due to particular application range, the devices offer an extra ordinary low ohmic internal resistance, as to this point, the devices so not correspond to the VDE regulations 0413 part 2 or part 8.

#### Functions and operation

The A-ISOMETER® is connected between the unearthed three - phase system and the potential equalization (earth). Within the device a measuring voltage is generated the plus pole of which is connected to the system via internal coupling elements or via an externally connectable coupling device, whereas the minus pole is connected to earth by means of an electronic measuring circuit. The measuring circuit closes via the insulation errors between system and earth.

As soon as the preselected response value is reached, the output relais K1 is activated (working current principle) and the integrated earth - leakage indicator (LED) lights up. The devices are automatically reset after the earth - leakage fault has been removed.

Direct current system parts, e.g. DC intermediate circuit or frequency converters, direct voltage starting equipment, must be galvanically separated from the system to the monitored as external direct voltages may lead to distortion of the measurement values. When pressing the integrated or external test key, an earth - leakage is simulated in the device; this earth - leakage will be displayed and a corresponding message will be output.

#### **Please note**

To check the connection of the units we recommend to carry out a function test using a genuine earth fault and suitable resistor before commissioning the circuit.

Please observe correct nominal supply voltages.

Only one earth fault monitoring device may be connected in any circuit system.

The unit must be isolated from the circuit before insulation or voltage tests may be carried out.

Connection lead E of measuring earth and KE of system earth must be laid separately in any case. Each terminal is to be connected to the earth conductor by its own lead.

Each unit is supplied complete with terminal covers as protection against shock hazard. If these terminal covers are not used, other suitable protection measures must be taken in accordance with accident prevention regulations.

Due to the relatively low ohmic internal resistance of the devices, direct voltages between system and earth which are higher than the values indicated in the specifications, may lead to a destruction of the device.

Ordering information				
Туре	Nominal system voltage U <sub>n</sub>	Supply voltage Us	Art. No.	
IRD201M	3AC 0230 V	AC 230/110/42 V	B 915 564	
		AC 500/380/230 V	B 915 563	
		AC 660/500/380 V	B 915 565	
AGH251	3AC 01000 V		B 915 578	
AGH507S	AC 02500 V		B 915 570	
AGH508S	AC 03000 V		B 9803 9003	

#### Wiring diagram





#### IRD201(M) with AGH507S or AGH508S





#### Key to wiring diagram

- 1 built in test button
- 2 external test button, if required
- Output relay with one free change contact one n/o contact. The relay works in circuit closing connetion.
- 4 built in ohmmeter (only at IRD201M)
- external ohmmeter, if required. If P2 is not conneted terminals M+ and M- have to be bridged.
- 6 variable resistor of response adjustment.
- 7 earth fault alarm lamp (LED red).
- F Fuses (line protection)

# Supply voltage Us U1 - V11 U1 - V12 U1 - V13 42 V 110 V 230 V or 230 V 380 V 500 V or 380 V 500 V 660 V

#### **Technische Daten**

Normainal insulation voltage	250 V
Insulation group according to VDE 0110	C

#### Test voltage

IRD201(M)	2000 V
AGH584	3000 V
AGH507S	6000 V
Operation class	permanent operation
Rated mains voltage U <sub>n</sub>	AC 501000 Hz 220 V
with AGH251	AC 501000 Hz 1000 V
with AGH507S	AC 501000 Hz 2500 V
Direct voltage strength (between system and earth)	max. DC 55 V
Operating range of Un	01.1 U <sub>n</sub>
Supply voltage U <sub>S</sub>	AC 5060 Hz 42 / 110 / 220 V
(see type label)	or AC 5060 Hz 220 / 380 / 500 V
	or AC 5060 Hz 380 / 500 / 660 V
Operating range Us	0.81.15 Us
Self consumption	4 VA

Admissible ambient temperature	
when stored	-20°C +60°C/253 K 333 K
when operating	-5°C +40°C/268 K 313 k
Mounting	
IRD201M	according to meter
IRD201	indifferent
AGH251 / AGH507S	indifferent
Type of connection	
terminal screws	M 3
strip terminals	with self - lifting clamp - washers
Wire cross section	
single wire	2 x (1 1.5mm <sup>2</sup> )
fine braid with end sleeve	2 x (0.75 1.5 mm <sup>2</sup> )
Protection class according to DIN 40 050	
Internal components IRD201 (M) /AGH251	IP 50
AH507S	IP 65
Terminals with covers	IP 20

IRD201 (M) 700 g, AGH251 1300 g,

AGH507S 400 g

#### **Measuring circuit**

Measuring voltage U <sub>m</sub>	15 V
Measuring current max. Im	12.5 mA
DC - internal resistance R <sub>i</sub>	1.2 kΩ
Impedance Z <sub>i</sub> at 50 Hz	> 40 kΩ
with AGH251 at 50 Hz	> 200 kΩ
with AGH507S at 50 Hz	> 120 kΩ
Response value R <sub>AN</sub> (adjustable)	50 3000Ω
Max leakage capacitance of the system to be monitored C <sub>E</sub>	< 1 µF
Test circle time = response retardation $t_{AN}$	< 1 sec

#### Meter output not floating

IRD201 (load 500 Ω)	0 400 μA
Switch components	1 free change over contact
	l make contact
Switch capacity max.	1100 VA
Rated contact voltage	220 V
Constant current	5 A
Break capacity	
at AC 220 V and cos. $phi = 0,4$	3.8 A
at DC 110 V and $L/R = 0$	0.38 A
Operating princible	N/C operation

#### **Dimension diagram X200**

Dimensions in mm

Weight approx





#### Dipl.-Ing. W. Bender GmbH & Co. KG

P.O.Box 1161 • 35301 Grünberg • Germany Londorfer Straße 65 • 35305 Grünberg • Germany Tel.: +49 6401 807-0 • Fax: +49 6401 807-259 E-Mail: info@bender-de.com • www.bender-de.com