A-ISOMETER® IRDH1065B-4...

Insulation monitoring device for unearthed AC, AC/DC and DC systems (IT systems)

IRDH1065B-4..

Device characteristics

- Insulation monitoring device for IT AC, AC / DC and DC systems 0…575 V
- Nominal voltage extendable via coupling devices
- Two separately adjustable response values 10 kΩ…990 kΩ
- AMP measuring principle
- Automatic adaptation to the system leakage capacitance
- Automatic device self test, selectable
- Connection for external kΩ indication
- Current output 0(4)…20 mA / 0…400 µA
- Combined TEST and RESET button
- Connection external TEST / RESET button
- Two separate alarm relays with two voltage-free changeover contacts
- N/O / N/C operation, selectable
- Alarm relay for system fault indication (N/C operation)
- Illuminated plain text display
- RS485 interface

Product description

The A-ISOMETERs® of the IRDH1065B-… series monitor the insulation resistance of unearthed main circuits (IT systems). AC, AC / DC and DC 0…575 V. Thanks to the AMP measuring principle they particularly meet the requirements of modern power supply systems which often include rectifiers, converters, thyristor-controlled DC drives and directly connected DC components. In these systems often high leakage capacitances against earth occur due to interference suppression measures. The IRDH1065B-… automatically adapts itself to the existing system conditions.

In combination with a coupling device, the devices can also be used for higher voltages. A separate supply voltage source allows monitoring of de-energized systems.

Application

- AC, DC or AC / DC main circuits
- AC / DC main circuits with directly connected DC components such as rectifiers, converters or thyristor-controlled DC drives
- UPS systems, battery systems
- Heaters with phase control
- Systems including switched-mode power supply units
- IT systems with high leakage capacitances
- Coupled IT systems

Function

If the insulation resistance between the system conductors and earth falls below the set response value, the alarm relays switch and the alarm LEDs light up. Two separately adjustable response values resp. alarm relays allow to distinguish between “prewarning” and “alarm”. The measured value is indicated on the LC display or an externally connectable measuring instrument. In this way any changes, e. g. the connection of branch circuits, can easily be detected. 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 as well as the connections to system and earth can be tested. The optocoupler output switches with alarm relay ALARM 1.

The function of the device and the system and earth connections are continuously monitored. If a fault occurs, the alarm LEDs 1 and 2 flash. The parameterization of the device can be carried out via the LC display or the function keys integrated in the front plate.

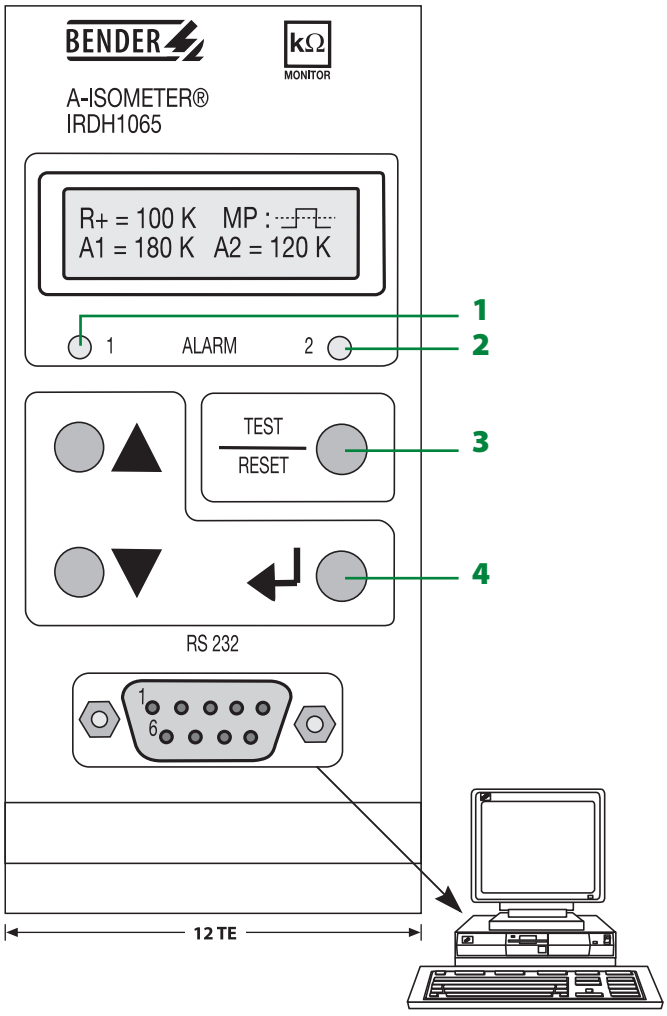
Measuring principle

The IRDH1065B-4… series uses the patented AMP measuring principle (see chapter annex – measurement technology). This measuring method allows concise monitoring of modern power supply systems also in case of extensive directly connected DC components and high system leakage capacitances.

Standards

The IRDH1065B-4… series complies with the standards: DIN EN 61557-8 (VDE 0413 Teil 8): 1998-05; EN 61557-8: 1997-03, IEC 61557-8: 1997-02, ASTM F 1669M-96.

Operating elements IRDH1065B-…



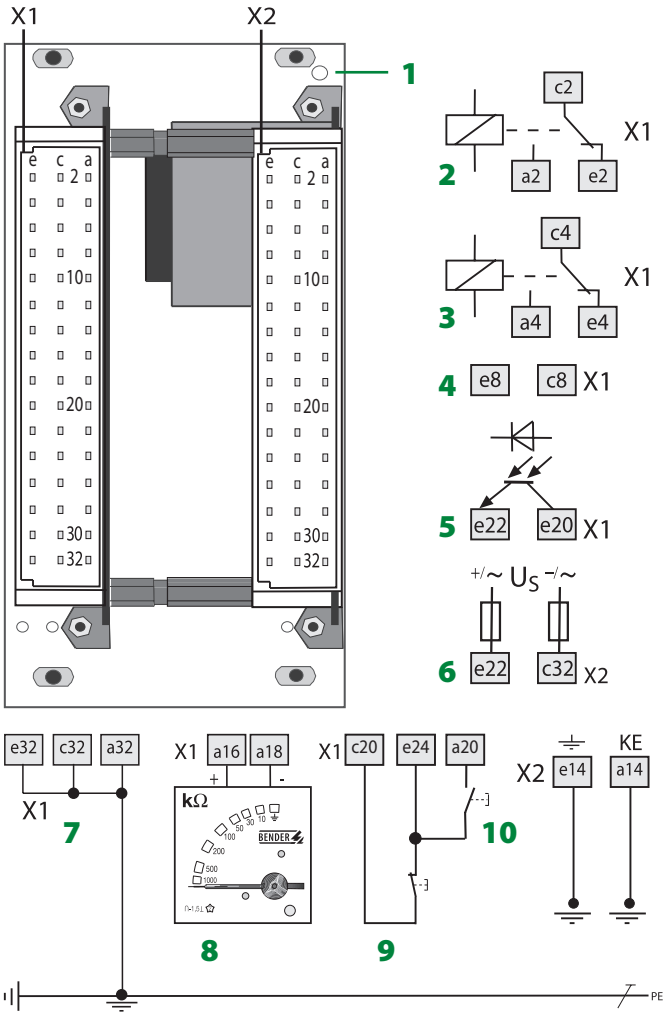
1 - Alarm LED 1, yellow, lights up when the value falls below R_{ALARM1}

2 - Alarm LED 2, yellow, lights up when the value falls below R_{ALARM2}

3 - Combined TEST / RESET button, short-time pressing (< 1 s) = RESET, long-time pressing (> 2 s) = TEST

4 - Function keys

Wiring diagram



1 - Rear view IRDH1065B-4…

2 - Alarm relay R_{an1} (ALARM1)

3 - Alarm relay R_{an2} (ALARM2)

4 - RS485 interface (electrically isolated)

5 - Optocoupler output

6 - U_S see ordering details, 6 A fuse

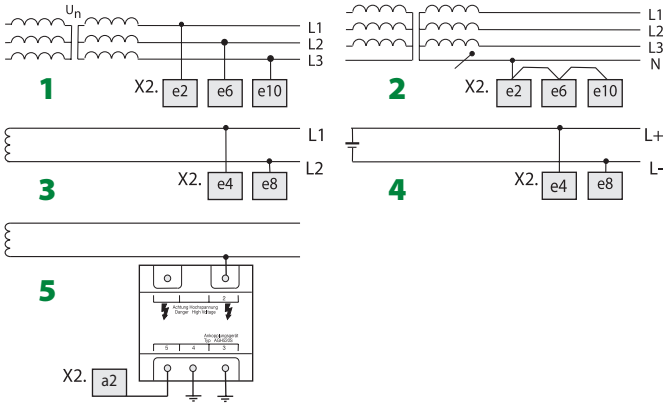
7 - Front panel earth connection

8 - Current output 0(4)…20 mA, 0…400 µA

9 - External RESET button (NC contact or wire jumper), when the terminals LT are open, the fault message will not be stored

10 - External TEST button, if required

Wiring diagram – system connection



1 - 3 AC system

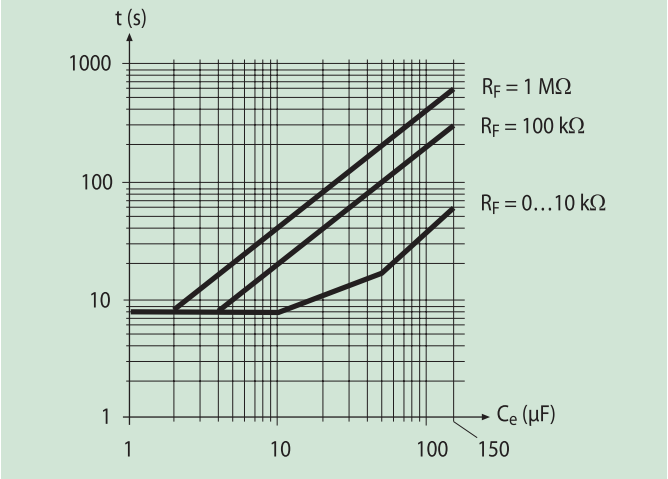
2 - 3N AC system

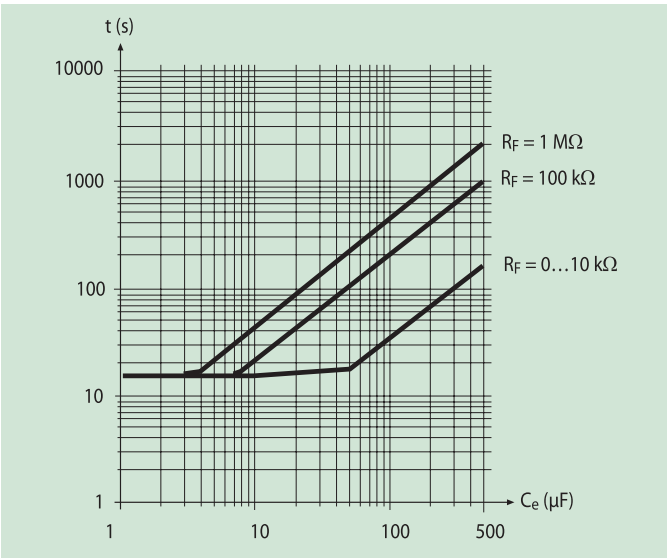
3 - AC system

4 - DC system

5 - 3 AC / DC > 575 V with coupling device: AGH520S AC 0…7200 V, AGH204S-4 AC 0…1650 V or AGH150W-4 DC 0…1760 V

Response times





Ordering details

Type	Nominal system voltage U_n	Supply voltage U_S	Art. No.
IRDH1065B-4	AC / DC 0…575 V	AC 230 V	B 9106 8033
IRDH1065B-425	AC / DC 0…575 V	DC 18…36 V*	B 9106 8028

Other voltages on request
*Absolute values

Accessories

External kΩ measuring instruments

Type	Art. No.
7204-1421	B 986 763
9604-1421	B 986 764

Coupling devices

Type	Nominal system voltage U_n	Art. No.
AGH150W-4	DC 0…1760 V	B 9801 8006
AGH204S-4	AC 0…1300 V / 0…1650 V	B 914 013
AGH520S	AC 0…7200 V	B 913033

Technical data A-ISOMETER® IRDH1065B-4…

Insulation coordination acc. to IEC 60664-1

Rated insulation voltage	AC 500 V
Rated impulse voltage / pollution degree	4 kV/3

Voltage ranges

Nominal system voltage U_n	AC, 3(N) AC 0…575 V, DC 0…575 V
Nominal frequency f_n	DC, 1…460 Hz
Supply voltage U_S	AC 230 V
Operating range of U_S	0.8…1.15 x U_S
Frequency range U_S	40…460 Hz
Power consumption	≤ 10 VA

Response values

Response value R_{an1} (ALARM1)	10 kΩ…990 kΩ
Response value R_{an2} (ALARM2)	10 kΩ…990 kΩ
Response time t_{an} at R_F = 0.5 x R_{an} and C_e = 1 µF	approx. 6 s / see curves repsonse times

Measuring circuit

Measuring voltage U_m	≤ 27 V
Measuring current I_m max. (at R_F = 0 Ω)	≤ 225 µA
Internal d.c. resistance R_i	≥ 120 kΩ
Internal impedance Z_i at 50 Hz	≥ 250 kΩ
System leakage capacitance C_e	≤ 150 (500) µF

Displays

Display, illuminated	two-line display
Characters (number of characters, height)	2 x 16 characters / 3 mm
Display range, measuring value	< 1 kΩ…> 10 MΩ

Outputs

TEST / RESET button	internal / external
Current output at measuring instrument (scale centre point 120 kΩ)	120 kΩ
Max. load	0…400 µA (12.5 kΩ) or 0 / 4…20 mA (400 Ω)

Switching elements

Switching elements	1 changeover contact each
Operating principle	N/O / N/C operation
Factory setting	N/O 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 2 A
Breaking capacity	2 A, AC 230 V, cos phi = 0.4 0.2 A, DC 220 V, L/R = 0.04 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)	15 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)	- 10 °C…+ 70 °C
Storage temperature range	- 40 °C…+ 70 °C
Operating mode	continuous operation
Mounting	any position
Connection	plug-in connectors DIN 41612 / E48
Type of enclosure / dimension diagram	Eurocard 100 x 160 mm, 12 TE
Technical manual	TGH 1264
Weight approx.	920 g