ISOMETER® IR1575PG1

Insulation monitoring device for unearthed

AC/3(N)AC systems up to 480 V and DC systems up to 480 V

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for unearthed AC/3(N)AC systems
up to 480 V and DC systems up to 480 V**

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Device features

- Insulation monitoring for unearthed AC, AC/DC systems 0 … 480 V and DC systems 0 … 480 V
- Two separately adjustable response values 2 kΩ…1 MΩ
- AMP measurement method
- Automatic adaptation to the system leakage capacitance
- Injection of the locating current required for selective insulation fault location
- Alarm LEDs for Alarm 1/Alarm 2
- Fault memory selectable
- Connection monitoring system conductor/earth
- Test and reset button
- External test/reset button can be connected
- Two separate alarm relays with one potential-free changeover contact each
- N/O or N/C operation, selectable
- Backlit LC display
- Self monitoring with automatic alarm
- Plug-in terminals
- Door mounting enclosure 96 x 96 mm

Certifications

CE

Lloyd's Register TYPE APPROVED

Product description

The ISOMETER®s of the IR1575PG1 series monitor the insulation resistance of unearthed main circuits (IT systems) AC, 3(N)AC 0…480 V or DC 0… 480 V.

The AMP measurement method allows them to be used in systems with directly connected DC components. To optimise the measuring time, the IR1575PG1 automatically adapts itself to the existing system leakage capacitances. An external supply voltage allows deenergised systems to be monitored too.

When used in systems with variable-speed drives, the permissible frequency range DC, 30...420 Hz must be observed. For this application, we recommend the use of the IRDH275/375 series.

The insulation fault locators EDS4.... can be used to locate insulation faults. These must operate in AUTO mode (automatic insulation fault location without communication interface).

Application

- AC or AC/DC main circuits
- AC/DC main circuits with directly connected DC components
- UPS systems, battery systems
- Heaters with phase control
- Installations with switched-mode power supplies

Function

When the insulation resistance between the system conductors and earth falls below the set response values, the alarm relays switch and the alarm LEDs light up. Two separately adjustable response values or alarm relays allow to distinguish between a prewarning and an alarm. The measured value is indicated on the LC display. The fault message can be stored. The fault memory can be reset by pressing the reset button. By pressing the test button, the device function as well as the connections to the system and to earth are tested. If a fault occurs during this test, it will be signalled by the alarm relay K2. The parameterisation of the device can be carried out via the LC display or the function buttons integrated in the front plate.

Insulation fault location

Another function of the IR1575PG1 is the selective insulation fault location. For this purpose, the IR1575PG1 injects a corresponding locating current when the set value falls below the response values Alarm 1 and Alarm 2. The insulation fault is selectively located by means of an EDS4… insulation fault locator and the measuring current transformers connected to it. If no locating current > 2 mA can be generated, the error message “No EDS function” is output. The cause for this can be a device defect, no mains voltage or overtemperature in the device. Likewise, a response value that is set too high may mean that a sufficient locating current cannot be generated via an insulation resistance that is too high.

Measurement method

The ISOMETER®s of the IR1575PG1 series work with the AMP measuring method.

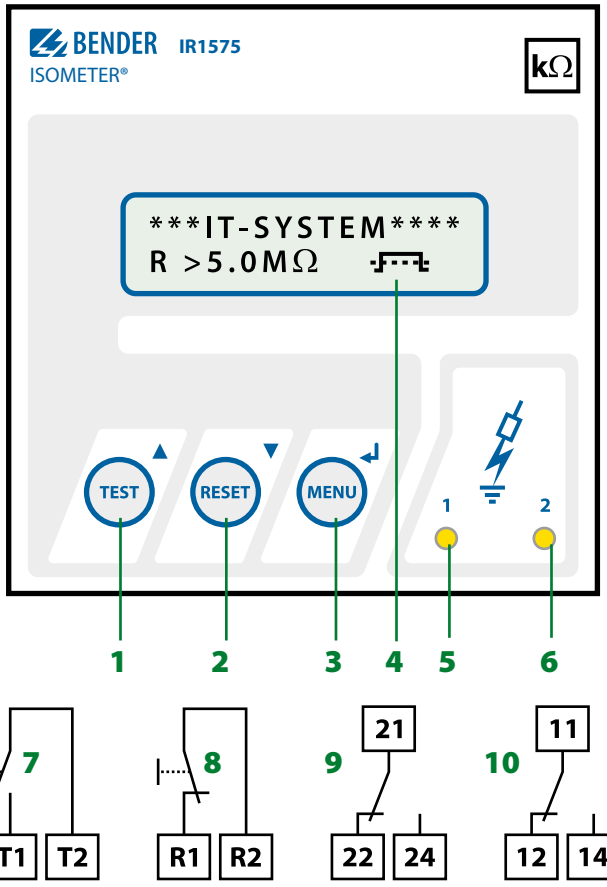
Standards

The ISOMETER® IR1575PG1 series meets the following device standards:

- DIN EN 61557-8 (VDE 0413-8)
- EN 61557-8
- IEC 61557-8
- IEC 61557-9

AC/DC

Wiring diagram – operating elements



1 - "TEST" button: to call up the self test
Arrow-up button: parameter change, scroll

2 - "RESET" button: to delete insulation and fault messages
Arrow-down button: parameter change, scroll

3 - "MENU" button: call up the menu system
Enter button: confirm parameter changes

4 - LC display 2 x 16 characters

5 - Alarm LED "1" is lit: insulation fault, first warning level reached

6 - Alarm LED "2" is lit: insulation fault, second warning level reached

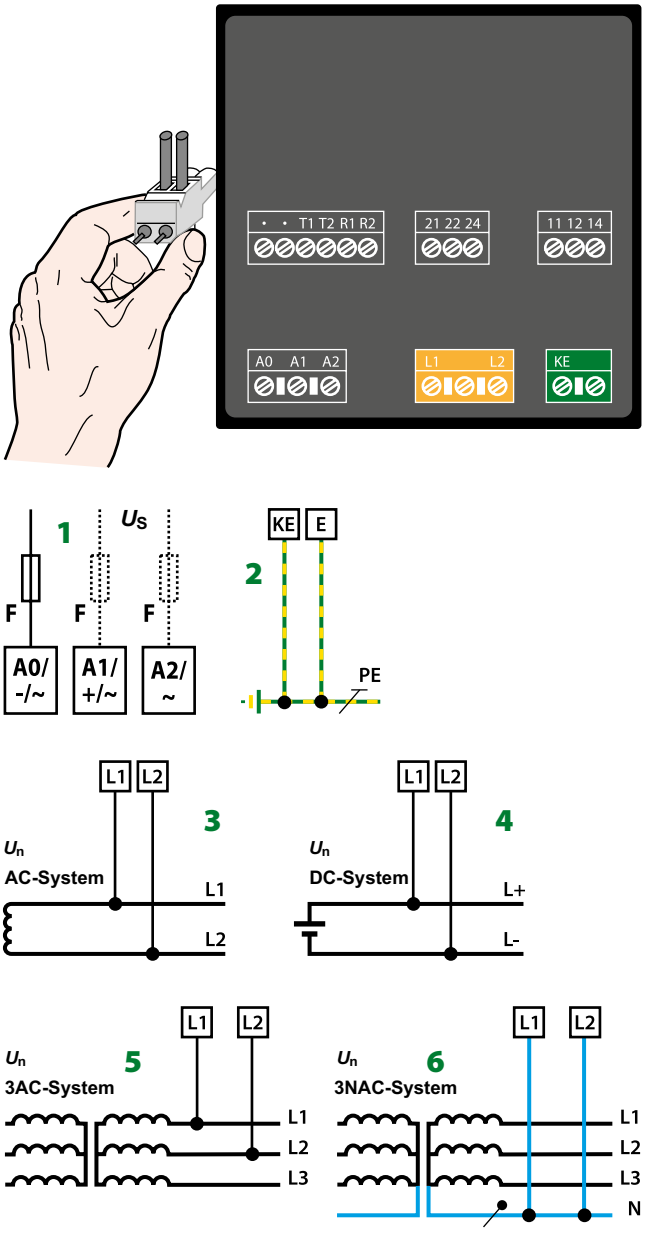
7 - External test button "T1, T2" (N/O contact)

8 - External reset button "R1, R2" (N/C contact or wire jumper), when the terminals are open, the fault message will not be stored

9 - Alarm relay: Alarm 2

10 - Alarm relay: Alarm 1

Wiring diagram – network connection



1 - Supply voltage U_S (see nameplate) via 6 A fuse:
A0 - A1 = AC 88 … 264 V, DC 77 … 286 V
A0 - A2 = AC 340 … 460 V

2 - Separate connection of E and KE to PE

3 - Connection to the AC system to be monitored:
connect terminals L1, L2 to conductor L1, L2

4 - Connection to the DC system to be monitored:
Connect terminal L1 to conductor L+,
terminal L2 to conductor L-

5,6 - Connection to the 3AC system to be monitored:
Connect terminals L1, L2 to neutral conductor N or terminals L1, L2 to conductor L1, L2

Technical data

Insulation coordination acc. to IEC 60664-1

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

Voltage ranges

IR1575PG1…:	
Nominal system voltage U_n	AC/3 AC 20…480 V
Nominal frequency f_n	30…460 Hz
Nominal system voltage U_n	DC 20…480 V
IR1575PG1-435:	
Supply voltage U_s at A0/A1 (see nameplate)	AC 88…264 V
Frequency range of U_s	42…460 Hz
Supply voltage U_s at A0/A2 (see nameplate)	AC 340…460 V
Frequency range of U_s	47…63 Hz
Supply voltage U_s at A0/A1 (see nameplate)	DC 77…286 V
IR1575PG1-434:	
Supply voltage U_s at A0/A1 (see nameplate)	AC 16…72 V
Frequency range of U_s	42…460 Hz
Supply voltage U_s at A0/A1 (see nameplate)	DC 10.2…84 V
IR1575PG1…:	
Power consumption	≤ 5 V

Response values

Response value R_{an1} (Alarm1)	2 kΩ…1 MΩ
Response value R_{an2} (Alarm2)	2 kΩ…1 MΩ
Specified response value (2 kΩ…10 kΩ)	+ 2 kΩ
Specified response value (10 kΩ…1 MΩ)	0 %…+20 %
Response time t_{an} at R_F = 0.5 x R_{an} and C_e = 1 µF	≤ 5 s
Measuring time	see characteristic curves
Hysteresis (2 kΩ…10 kΩ)	+2 kΩ
Hysteresis (10 kΩ…1 MΩ)	25 %

Measuring circuit for insulation measurement

Measuring voltage U_m	≤ 20 V
Measuring current I_m (bei R_F = 0 W)	≤ 170 µA
Internal DC resistance R_i	≥ 119 kΩ
Internal impedance Z_i, at 50 Hz	≥ 119 kΩ
Permissible extraneous DC voltage U_{fg}	≤ DC 680 V
Permissible system leakage capacitance C_e	≤ 60 µF

Measuring circuit for insulation fault location (EDS)

Test current I_p DC	10/25 mA
Test pulse/break	2 s/4 s

Displays

Display, illuminated	two-line display
Number of characters	2 x 16
Display range measuring value	1 kΩ…5 MΩ
Absolute error (1 kΩ…10 kΩ)	±1 kΩ
Relative percentage error (1 kΩ…10 kΩ)	±10 %

Outputs/inputs

TEST/ RESET button	internal/external

Switching elements

Switching elements	2 changeover contacts
Operating principle	N/O or N/C operation
Factory setting (Alarm1/Alarm2)	N/O operation
Admissible number of operations/h	12 000 cycles
Contact class	IIB (DIN EN 60255-23)
Rated contact voltage	AC 250 V/DC 300 V
Making capacity	UC 5 A
Breaking capacity	2 A, AC 230 V, cos φ = 0.4
	0.2 A, DC 220 V, L/R = 0.04 s
Minimum contact current at DC 24 V	2 mA (50 mW)

Environment

EMC immunity	acc. to EN 61326
EMC emission	acc. to EN 61326
Shock resistance IEC 60068-2-27 (device in operation)	15 g/11 ms
Bumping IEC 60068-2-29 (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 (transport)	2 g/10…150 Hz
Ambient temperature (during operation)	-10…+55 °C
Ambient temperature (during storage)	-40…+70 °C
Classification of climatic conditions acc. to DIN IEC 60721-3-3	3K5

Connection

Connection	plug-in terminals
Connection properties	
rigid/flexible	0.2…4/0.2…2.5 mm²
flexible with ferrule with/without plastic sleeve	0.25…2.5 mm²
Conductor sizes (AWG)	24…12
Tightening torque	0.5…0.6 Nm (4.3…5.3 lb-in)

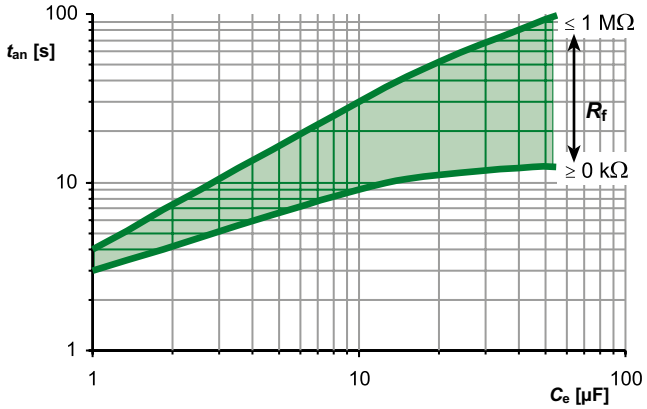
Other

Operating mode	continuous operation
Mounting position	display-oriented
Degree of protection, internal components (DIN EN 60529)	IP30
Degree of protection, terminals (DIN EN 60529)	IP20
Mounting	panel mounting
Enclosure	for panel mounting 96 x 96 mm
Flammability class	UL94 V-2
Weight	≤ 400 g

Option „W“

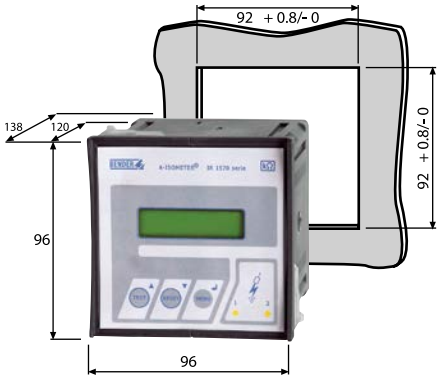
Shock resistance acc. to IEC 60068-2-27 (during operation)	30 g/11 ms
Bumping acc. to IEC 60068-2-29 (during transport)	40 g/6 ms
Vibration resistance acc. to IEC 60068-2-6	1.6 mm/10…25 Hz
	4 g/25…150 Hz
Ambient temperature (during operation)	-10 °C…+55 °C
Storage temperature range	-40 °C…+85 °C

Measuring time



Dimension diagram

Dimensions in mm



Ordering details

Version	Supply voltage U_S[1]		Type	Art. No.
	AC	DC		
Standard	88…264 V 340…460 V	77…286 V	IR1575PG1-435	B91064002
	16…72 V	10.2…84 V	IR1575PG1-434	B91064004
Increased shock and vibration resistance	88…264 V 340…460 V	77…286 V	IR1575PG1W-435	B91064002W

[1] Absolute values

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