

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



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



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.

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



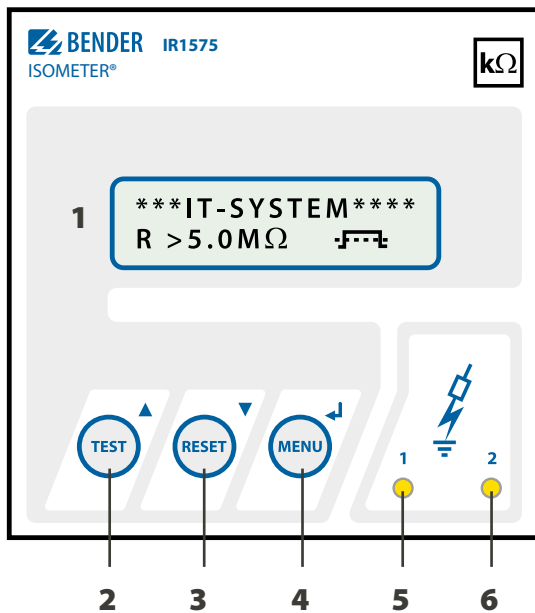
The ISOMETER®s of the IR1575PG1 series work with the AMP measuring method.

Standards

The ISOMETER® IR1575PG1 series meets the following device standards:

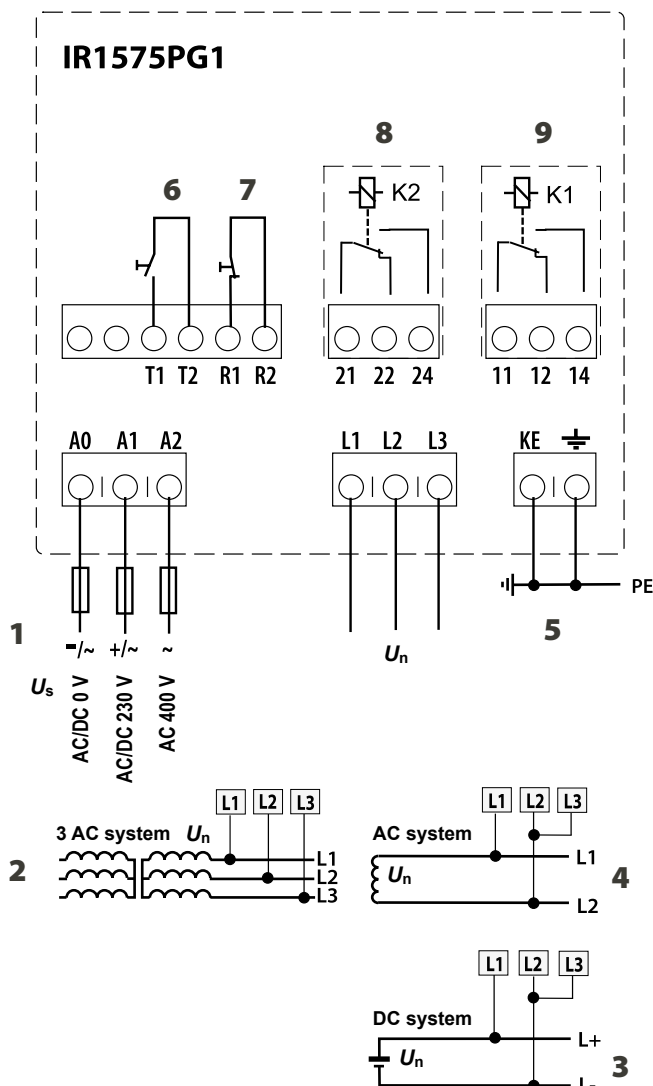
- DIN EN 61557-8 (VDE 0413-8)
- EN 61557-8
- IEC 61557-8
- IEC 61557-9

Operating elements



1	Two-line display for standard and menu mode
2	TEST button: to activate the self test/ Up key: parameter change, moving up in the menu
3	RESET button: to delete insulation fault alarms/ Down key: parameter change, moving down in the menu
4	MENU key: activating the menu system/ Enter key: confirmation parameter change
5	Alarm LED 1 lights: insulation fault, first warning level reached
6	Alarm LED 2 lights: insulation fault, second warning level reached, or system fault message

Wiring diagram



1	Supply voltage U_s (see name plate or the ordering details) via 6 A fuse:
2	Connection of the 3AC system to be monitored: connect the terminals L1, L2, L3 to the conductors L1, L2, L3
3	Connection of the DC system to be monitored: connect L1 to conductor L+, terminal L2, L3 to conductor L-
4	Connection of the AC system to be monitored: connect terminal L1 to conductor L1, terminals L2, L3 to conductor L2
5	Separate connection of \perp and KE to PE
6	External TEST button (N/O contact)
7	External RESET button (NC contact or wire jumper), when the terminals are open, the alarm message will not be stored, Factory setting: Memory off !
8	Alarm relay: Alarm2
9	Alarm relay: Alarm1

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 W
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Response values

Response value R_{an1} (Alarm1)	2 k Ω ...1 M Ω
Response value R_{an2} (Alarm2)	2 k Ω ...1 M Ω
Specified response value (2 k Ω ...10 k Ω)	+2 k Ω
Specified response value (10 k Ω ...1 M Ω)	0%...+20%
Response time t_{an} at $R_F = 0.5 \times R_{an}$ and $C_e = 1 \mu\text{F}$	≤ 5 s
Measuring time	see characteristic curves
Hysteresis (2 k Ω ...10 k Ω)	+2 k Ω
Hysteresis (10 k Ω ...1 M Ω)	25%

Measuring circuit for insulation measurement

Measuring voltage U_m	≤ 20 V
Measuring current I_m (bei $R_F = 0$ W)	$\leq 170 \mu\text{A}$
Internal DC resistance R_i	≥ 119 k Ω
Internal impedance Z_i , at 50 Hz	≥ 119 k Ω
Permissible extraneous DC voltage U_{fg}	\leq DC 680 V
Permissible system leakage capacitance C_e	$\leq 60 \mu\text{F}$

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 k Ω ...5 M Ω
Absolute error (1 k Ω ...10 k Ω)	± 1 k Ω
Relative percentage error (1 k Ω ...10 k Ω)	± 10 %

Outputs/inputs

TEST/ RESET button	internal/external
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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, $\cos \varphi = 0.4$ 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	3K22

Connection

Connection	plug-in terminals
Connection properties	
rigid/flexible	0.2...4/0.2...2.5 mm ²
flexible with ferrule with/without plastic sleeve	0.25...2.5 mm ²
Conductor sizes (AWG)	24...12
Tightening torque	0.5...0.6 Nm (4.3...5.3 lb-in)

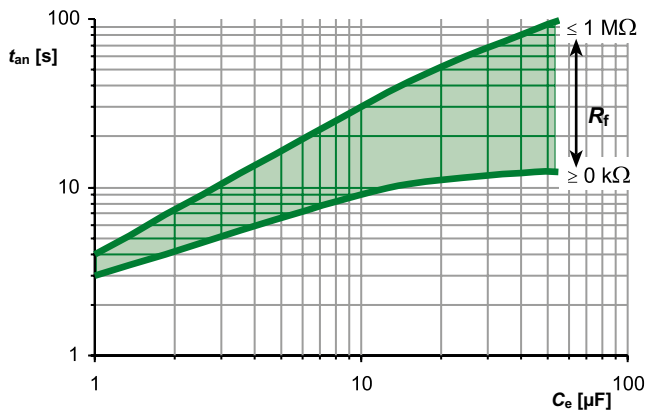
Other

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
Documentation number	D00357
Weight	≤ 400 g

Option „W“

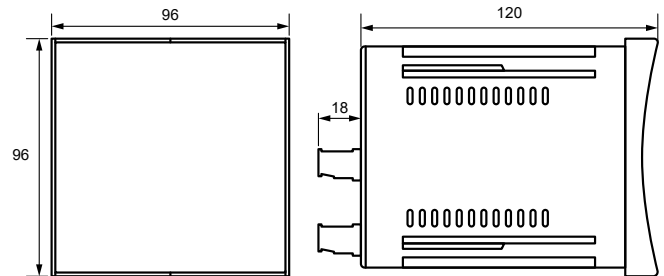
Shock resistance acc. to IEC 60068-2-27 (during operation)	30 g/11 ms
Bumping acc. to IEC 60068-2-29 (during transport)	40 g/6 ms
Vibration resistance acc. to IEC 60068-2-6	1.6 mm/10...25 Hz 4 g/25...150 Hz
Ambient temperature (during operation)	-10...+55 °C
Storage temperature range	-40...+85 °C

Measuring time



Dimension diagram

Dimensions in mm



Ordering details

Type	Supply voltage U_s	Nominal voltage U_n	Version	Art. No.
IR1575PG1-435	AC 88...264 V AC 340...460 V DC 77...286 V	3/(N) AC 20...480 V AC 20...480 V	Standard	B91064002
IR1575PG1-434	AC 16...72 V DC 10,2...84 V			B91064004
IR1575PG1W-435	AC 88...264 V AC 340...460 V DC 77...286 V		Increased shock and vibration resistance	B91064002W



Bender GmbH & Co. KG

Londorfer Straße 65
35305 Grünberg
Germany

Tel.: +49 6401 807-0
info@bender.de
www.bender.de



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Subject to change!
The specified standards take into account the
edition valid until 09.2024 unless otherwise
indicated.