

IR1570

Insulation monitoring device for IT AC, 3(N)AC systems up to 480 V



ISOMETER® IR1570

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Device characteristics

- Insulation monitoring for IT AC, 3(N)AC systems 0...480 V
- Two separately adjustable response values 2 kΩ...1 MΩ
- Selective fault location L+/L-
- Connection monitoring system/earth
- Alarm LEDs for ALARM 1 and ALARM 2
- LC display, 2 x 16 characters
- TEST and RESET button
- Two separate alarm relays with one voltage-free changeover contact each
- N/O or N/C operation, selectable
- Fault memory, selectable
- Illuminated clear text display
- Self monitoring with automatic alarm message
- Plug-in connection terminals
- Enclosure for door mounting, 96 x 96 mm

Approvals



Ordering details

Supply voltage U_s	Type	Art. No.
AC 88...264 V/DC 77...286 V, AC 340...460 V	IR1570-435	B91044000
	IR1570W-435	B91044000W

Product description

ISOMETERs® of the series IR1570 monitor the insulation resistance of unearthed AC and three-phase systems (isolated power) AC, 3(N) AC 0...480 V. Two separately adjustable response values respectively alarm relays allow to distinguish between prewarning and main alarm.

The systems to be monitored should not include DC components. Due to the measuring principle, insulation faults behind directly connected rectifiers are indicated with increased response sensitivity. The preset response values apply the pure AC system only.

Application

AC, 3(N)AC main circuits (without directly connected rectifiers), such as motors, pumps, rolling mills without variable-speed drives, air cooling and air conditioning systems, lighting systems, heating systems, mobile generators, building installation.

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. The measured value is indicated on the LC display. In this way any changes such as the connection of branch circuits can easily be recognized. The fault messages can be stored. The fault memory can be reset by pressing the RESET button. By pressing the TEST button, the function of the device and the connection to the system and earth can be tested. When a fault occurs during this test, it will be signalled by alarm relay K2. The parameterization of the device can be carried out via the LC display or the function keys integrated in the front plate.

Measuring principle



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

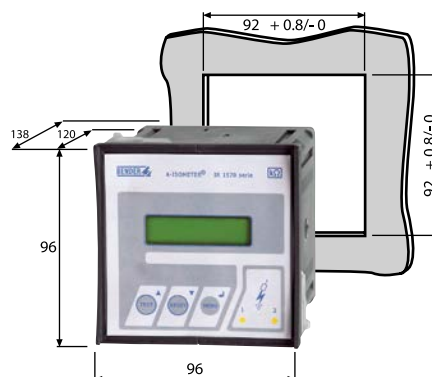
Standards

The IR1570 series complies with the standards:

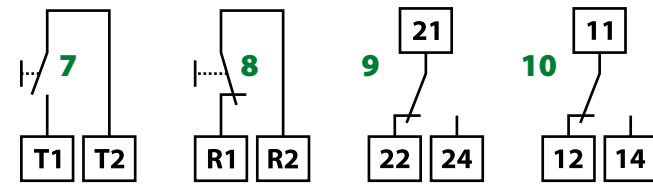
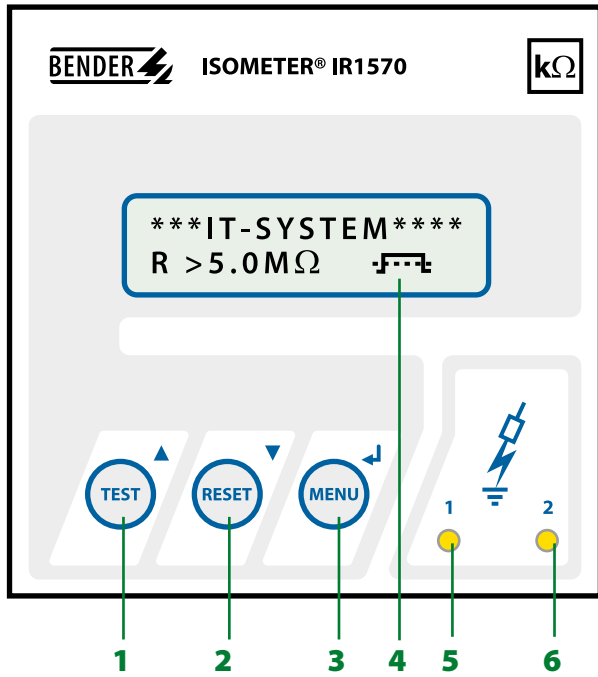
- DIN EN 61557-8 (VDE 0413 part 8)
- EN 61557-8
- IEC 61557-8

Dimension diagram

Dimensions in mm

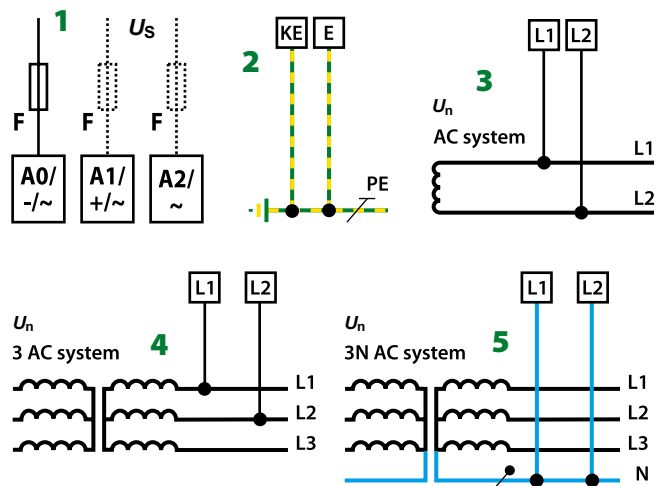
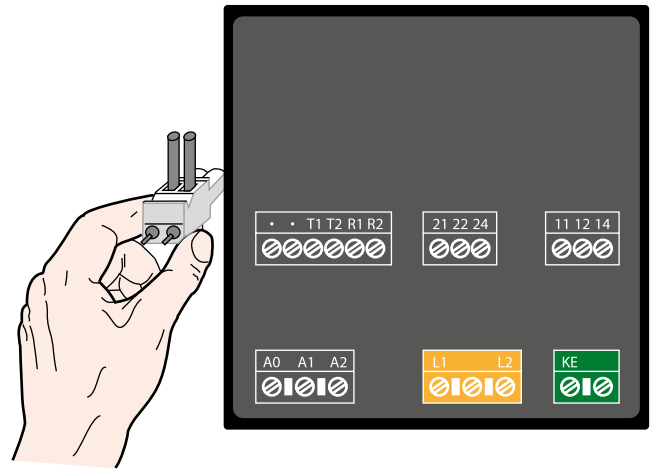


Wiring diagram – Operating elements



- 1 - TEST button: to call up the self test
Up key: parameter change, scrolling
- 2 - RESET button: to delete insulation and fault messages
Down key: parameter change, scrolling
- 3 - MENU button: to activate the menu system
Enter key: confirmation parameter change
- 4 - Double-line 16 character display, illuminated
- 5 - Alarm LED 1 lights up:
insulation fault, first warning level reached
- 6 - Alarm LED 2 lights up: insulation fault, second warning level reached or system fault
- 7 - External TEST button (NO contact)
- 8 - External RESET button (NC contact or wire jumper), when the terminals are open, the fault message will not be stored, factory setting: memory off
- 9 - Alarm relay: ALARM 2
- 10 - Alarm relay: ALARM 1

Wiring diagram – connection to the power supply



- 1 - Supply voltage U_S via 6 A fuse:
Terminal A0/A1: AC 88...264 V, DC 77...286 V
Terminal A0/A2: AC 340...460 V
- 2 - Separate connection of E and KE to PE
- 3 - Connection of the AC system to be monitored:
connect terminal L1, L2 to conductor L1, L2
- 4,5 - Connection of 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 range

Nominal voltage range U_n	AC, 3(N) AC 0...480 V
Nominal frequency f_n	30...420 Hz
Supply voltage U_S	see ordering details
Power consumption	≤ 5 VA

Response values

Response value R_{an1} (ALARM 1)	2 k Ω ...1 M Ω
Response value R_{an2} (ALARM 2)	2 k Ω ...1 M Ω
Relative percentage error	0...+20%/ min. +2k Ω
Response time t_{an} $R_F = 0.5 \times R_{an}$ and $C_e = 1 \mu F$	< 1 s
Hysteresis	25%

Measuring circuit

Measuring voltage U_m	DC 20 V
Measuring current I_m max. (at $R_F = 0 \Omega$)	$\leq 170 \mu A$
Internal DC resistance R_i	≥ 119 k Ω
Internal impedance Z_i bei 50 Hz	≥ 114 k Ω
Permissible extraneous DC voltage U_{fg}	DC 680 V
Permissible system leakage capacitance C_e	20 μF

Displays

Display, illuminated	double-line display
Characters (number of)	2 x 16 (4.5 mm)
Display range, measuring value	1 k Ω ...5 M Ω
Absolute error (1...10 k Ω)	± 1 k Ω
Relative percentage error (10 k Ω ...5 M Ω)	$\pm 10\%$

Outputs

TEST/RESET button	internal/external
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Switching elements

Switching elements	2 x 1 changeover contacts
Operating principle	N/O or N/C operation
Factory setting (Alarm1/Alarm2)	N/O operation
Contact class	IBB acc. to DIN IEC 60255 part 0-20
Rated contact voltage	AC 250 V/DC 300 V
Making capacity	AC/DC 5A
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)

Environment

Shock resistance IEC60068-2-27 (device in operation)	15 g/11 ms
Bumping IEC60068-2-29 (during transport)	40 g/6 ms
Vibration resistance IEC 60068-2-6 (device in operation)	1 g/10...150 Hz
Vibration resistance IEC 60068-2-6 (during transport)	2 g/10...150 Hz
Ambient temperature (during operation)	-10...+55 °C
Storage temperature range	-40...+70 °C
Climatic class acc.to DIN IEC 60721-3-3	3K5

Connection

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

Other

Operating mode	continuous operation
Mounting	as indicated on the display
Degree of protection, internal components (DIN EN 60529)	IP30
Degree of protection, terminals (DIN EN 60529)	IP20
Type of enclosure panel mounting	96 x 96 mm
Flammability class	UL94V-2
Weight	≤ 400 g



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