

IR425 Series

Digital Ground Fault Monitor / Ground Detector
Ungrounded (Floating) AC/DC Systems



A-ISOMETER® IR425

Ground Fault Monitor / Ground Fault Relay
for Ungrounded AC, DC, and AC/DC Systems



A-ISOMETER® IR425

Device features

- Insulation monitoring for low-voltage circuits AC/DC 0...300 V
- Two separately adjustable response values
- Preset function (automatic assignment of basic parameters)
- Ground connection monitoring
- LEDs: Power On, Alarm 1, Alarm 2
- Internal/external test/reset button
- Two separately adjustable SPDT contacts
- Normally energized or normally de-energized operation
- Latching or non-latching behavior
- Detailed LCD display
- Adjustable response delay
- Two-module enclosure (36 mm)

Approvals



Product description

The A-ISOMETER® IR425 monitors for ground faults in ungrounded AC and DC systems from 0 to 300 V by measuring the system's insulation resistance. The IR425 is designed to provide predictive maintenance and detect ground faults in ungrounded systems before leakage current may even be present.

Application

- General purpose industrial use in AC/DC control circuits
- Ungrounded systems at 300 V or less
- Low voltage systems with Variable Frequency Drives (VFDs)

Function

When the insulation resistance from system to ground falls below the set response value, the alarm relays switch and the alarm LEDs activate. Two separately adjustable alarm contacts can be set to a prewarning and main warning alarm. The measured value is indicated on the LCD display. A fault storage setting allows the device to either latch or automatically reset. TEST and RESET may be activated on the device or via a remote connection.

The IR425 continuously monitors the equipment ground connection to ensure proper operation. The device's easy-to-use onboard menu manages all settings via the detailed LCD display.

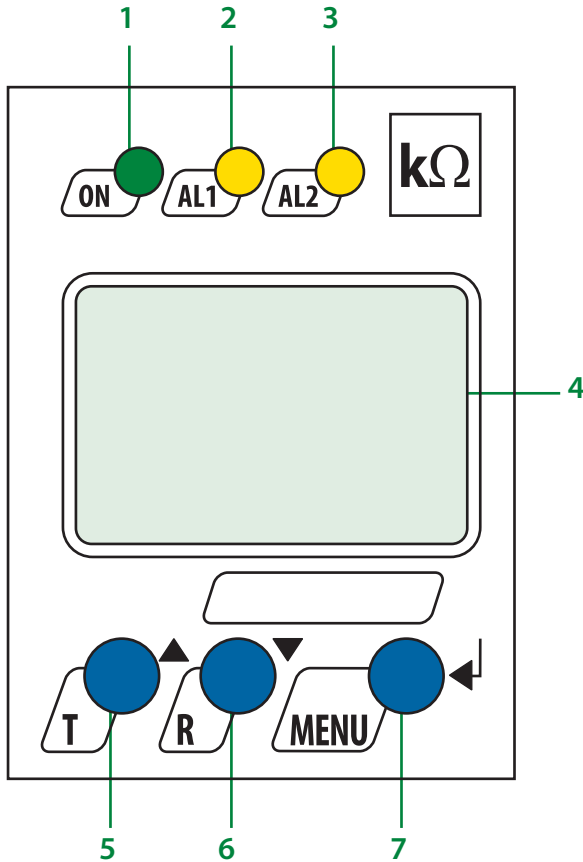
Preset function

The IR425 provides a preset function which, when first started up, will set response value alarms based on initial readings.

Measuring principle

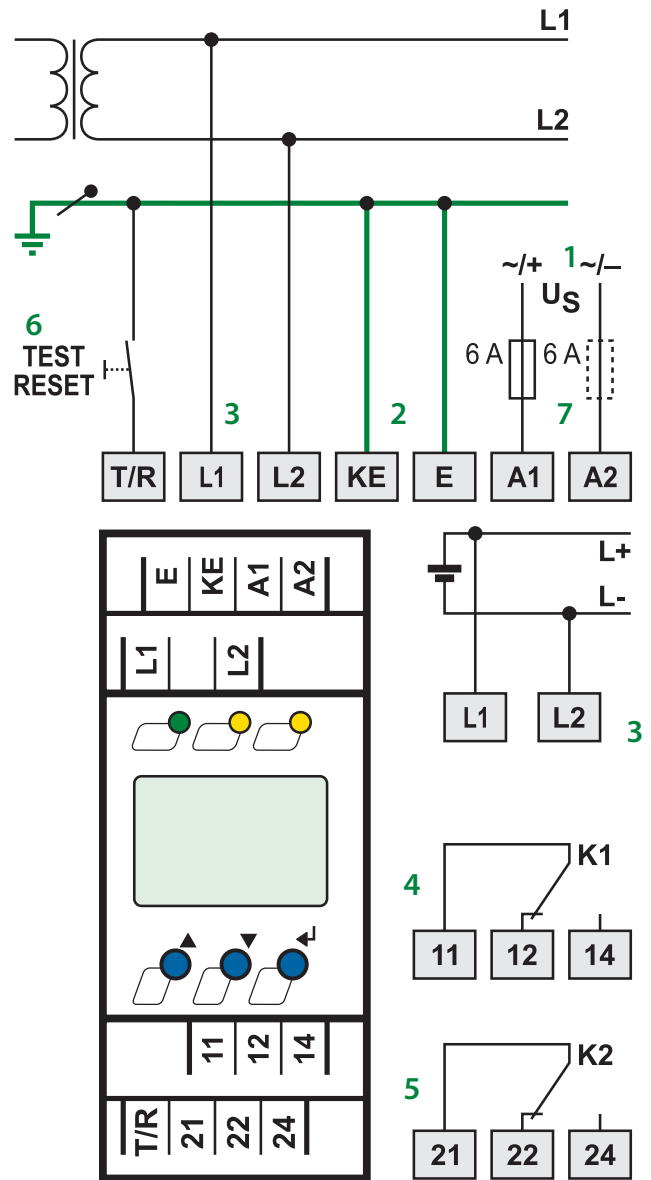
The A-ISOMETER® IR425 uses the AMP measuring principle.

Operating elements



- 1 - Power ON LED "ON"; flashes during connection error
- 2 - Alarm LED "AL1," Insulation fault, alarm 1 reached (flashes during connection error)
- 3 - Alarm LED "AL2," Insulation fault, alarm 2 reached (flashes during connection error)
- 4 - LCD display
- 5 - Test button "T": Activates self-test
Arrow up key: Scrolls up inside device's menu
- 6 - Reset button "R": Resets device
Arrow down key: Scrolls down inside device's menu
- 7 - MENU key: Activates device's internal menu
Enter key: Confirm changes inside device's menu

Wiring diagram



- 1 - Supply voltage U_s (see ordering information) via fuse
- 2 - Equipment ground connections
- 3 - Connection to monitored system
AC: Connect terminals L1, L2 to conductor L1, L2.
DC: Connect terminal L1 with L+ and L2 with L-.
- 4 - Alarm relay K1: Alarm 1
- 5 - Alarm relay K2: Alarm 2
- 6 - Combined external test and reset button "T/R":
Quick press (< 1.5 s) = RESET
Hold (> 1.5 s) = TEST
- 7 - Recommended line protection via fuse

Technical data: A-ISOMETER® IR425

Insulation coordination acc. to IEC 60664-1/IEC 60664-3

Rated insulation voltage	250 V
Rated impulse voltage/pollution degree	2.5 kV / III
Protective separation (reinforced insulation) between (A1, A2) - (L1, L2, E, KE, T/R) - (11, 12, 14) - (21, 22, 24)	
Voltage test according to IEC 61010-1	2.21 kV

Supply voltage

Supply voltage U_s	see ordering information
Power consumption	≤ 3 VA

Monitored system

Nominal system voltage U_n	AC/DC 0...300 V
Rated frequency f_n	DC 15...460 Hz

Response values

Response value R_{an1} (Alarm 1)	1...200 k Ω
Response value R_{an2} (Alarm 2)	1...200 k Ω
Preset-mode	$U_n \leq 72$ V R_{an1} (Alarm 1) = 20 k Ω / R_{an2} (Alarm 2) = 10 k Ω $U_n > 72$ V R_{an1} (Alarm 1) = 46 k Ω / R_{an2} (Alarm 2) = 23 k Ω
Operating error 1 k Ω ...5 k Ω /5 k Ω ...200 k Ω	$\pm 0,5$ k Ω / ± 15 %
Hysteresis	25 %

Specified time

Response time t_{an} at $R_f = 0,5 \times R_{an}$ and $C_e = 1$ μ F	≤ 2 s
Start-up delay t	0...10 s (0 s)*
Response delay t_{on}	0...99 s (0 s)*

Measuring circuit

Measuring voltage U_m	± 12 V
Measuring current I_m (at $R_f = 0$ Ω)	≤ 200 μ A
Internal DC resistance R_i	≥ 62 k Ω
Impedance Z_i at 50 Hz	≥ 60 k Ω
Permissible system leakage capacitance C_e	≤ 20 μ F

Displays, memory

Display range, measuring value	1 k Ω ...1 M Ω
Operating error 1 k Ω ...5 k Ω /5 k Ω ...1 M Ω	$\pm 0,5$ k Ω / ± 15 %
Password	off / 0...999 (off)*
Fault memory, alarm relay	on/off*

Outputs

Cable length for test and reset button	≤ 10 m
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Switching elements

Number of switching elements	2 x 1 changeover contact				
Operating principle	N/C or N/O operation (N/O operation)*				
Electrical service life, number of cycles	10.000				
Contact data acc. to IEC 60947-5-1					
Utilization category	AC-13	AC-14	DC-12	DC-12	DC-12
Rated operational voltage	230 V	230 V	220 V	110 V	24 V
Rated operational current	5 A	3 A	0.1 A	0.2 A	1 A
Minimum current	1 mA at AC/DC ≥ 10 V				

Environment/EMC

EMC	IEC 61326
Operating temperature	-25 °C...+55 °C
Climatic class acc. to IEC 60721	
Stationary use (IEC 60721-3-3)	3K5 (except condensation and formation of ice)
Transport (IEC 60721-3-2)	2K3 (except condensation and formation of ice)
Long-time storage (IEC 60721-3-1)	1K4 (except condensation and formation of ice)
Classification of mechanical conditions IEC 60721	
Stationary use (IEC 60721-3-3)	3M4
Transport (IEC 60721-3-2)	2M2
Long-time storage (IEC 60721-3-1)	1M3

Connection

Connection type	screwless-type terminals
Connection properties:	
rigid / flexible	0.2...2.5 mm ² (AWG 24...14)
flexible with connector sleeve	0.2...1.5 mm ² (AWG 24...16)
Stripping length	10 mm
Release force	50 N
Test aperture, diameter	2.1 mm

Other

Operating mode	continuous operation
Mounting	any position
Degree of protection, internal components (IEC 60529)	IP30
Degree of protection, terminals (IEC 60529)	IP20
Enclosure material	polycarbonate
DIN rail mounting acc. to	IEC 60715
Screw mounting	2 x M4 with mounting clip
Product standards	DIN EN 61557-8: 1998-05, EN 61557-8: 1997-03 IEC 61557-8: 1997-02, ASTM F 1669M-96 (2002)
Operating manual	BP103005
Weight	≤ 150 g

()* = factory setting

Ordering information

Type	Nominal system voltage* U_n	Supply voltage* U_s	Response value R_{an}	System leakage capacitance C_e	Art. No.
IR425-D4-1	DC/AC 15...460 Hz 0...300 V	DC 9.6...94 V/AC 15...460 Hz 16...72 V	1...200 k Ω	< 20 μ F	B 9103 6403
IR425-D4-2	DC/AC 15...460 Hz 0...300 V	DC 70...300 V/AC 15...460 Hz 70...300 V	1...200 k Ω	< 20 μ F	B 9103 6402

Device version with "screw-type terminals" on request.

* absolute values

Accessories

Type	Art. No.
Mounting clip for screw mounting (one piece per device)	B 9806 0008

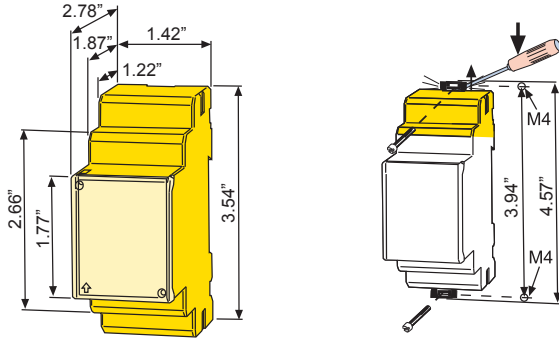
Dimensions

(dimensions in inches)

Open the front plate cover in direction of arrow!

Screw fixing

Note: The upper mounting clip must be ordered separately (see ordering information).



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