

A-ISOMETER® IR470LY2-4061

Insulation monitoring device for unearthed AC and 3(N)AC systems (IT systems)



IR470LY2-4061

Device features

- Insulation monitoring for unearthed AC/3(N)AC systems 0...793 V
- Nominal voltage extendable via coupling device
- Two separately adjustable response values 10...100 kΩ/35...500 kΩ
- Connection monitoring system/earth
- LEDs: Power On LED, alarm LED to indicate insulation faults AC
- LED bar graph indicator for the insulation resistance
- Connection for kΩ indication
- Combined test/reset button
- Two separate alarm relays with one changeover contact each
- N/O or N/C operation
- Fault memory behaviour, selectable

Product description

The A-ISOMETER® of the IR470LY2 series is designed to monitor the insulation resistance of unearthed AC and three-phase systems (IT systems) AC/3(N)AC 0...793 V. Two separately adjustable response values/alarm relays allow a distinction to be made between "prewarning" and "alarm". In combination with a coupling device the device series can be used for higher voltages.

The systems to be monitored should not contain DC components. Due to the measuring principle, insulation faults behind directly connected rectifiers are indicated with increased response sensitivity. The set response values apply to 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 services, domestic electrical installation practice, etc.

Function

When 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. In case of interruption of the system and earth connection, the alarm LEDs flash. Two separately adjustable resp. alarm relays allow to distinguish between prewarning and alarm. The measured value is indicated by the LED bar graph indicator or an externally connectable measuring instrument. In this way any changes, for example when circuits are connected to the system, can be recognized easily. The fault messages can be stored. The fault memory can be reset by pressing the reset button. The device function can be tested using the test button.

Measuring principle

 Superimposed DC voltage with inverter (see chapter "Annex" - "Technical aspects...").

Approvals



Ordering information

| Type | Supply voltage U_s | Art. No. |
|---------------|----------------------|-------------|
| IR470LY2-4061 | AC 230 V | B 9104 8052 |

Other supply voltages on request

Accessories

External kΩ measuring instruments

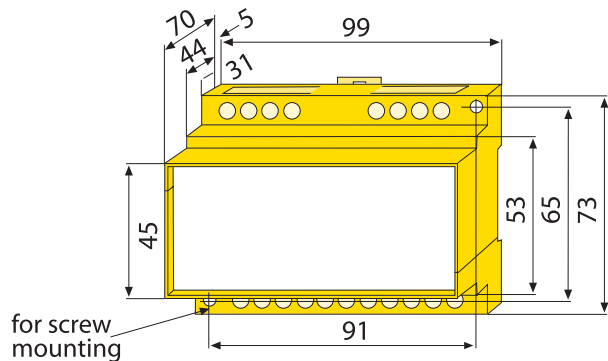
| Type | Art. No. |
|-----------|-----------|
| 7204-1421 | B 986 763 |
| 9604-1421 | B 986 764 |

Coupling devices

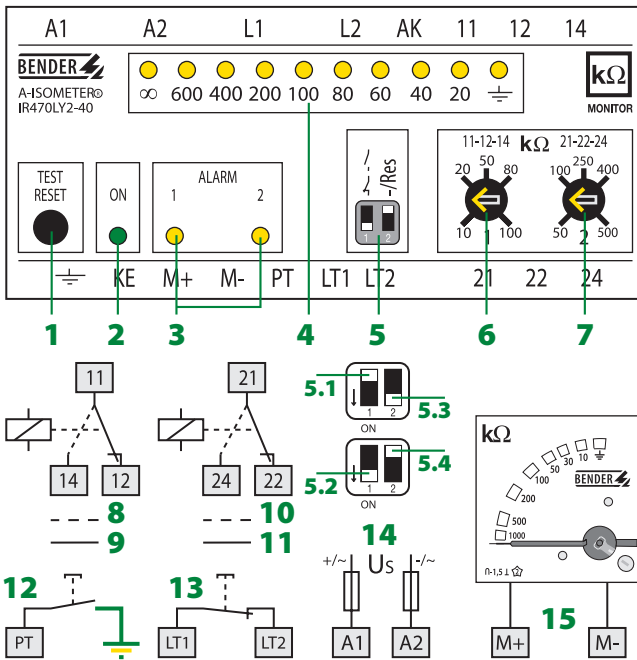
| Type | Operating range of the nominal voltage U_n | Art. No. |
|-----------|--|-----------|
| AGH204S-4 | AC 0...1650 V | B 914 013 |
| AGH520S | AC 0...7200 V | B 913 033 |

Dimension diagram X470

Dimensions are given in mm

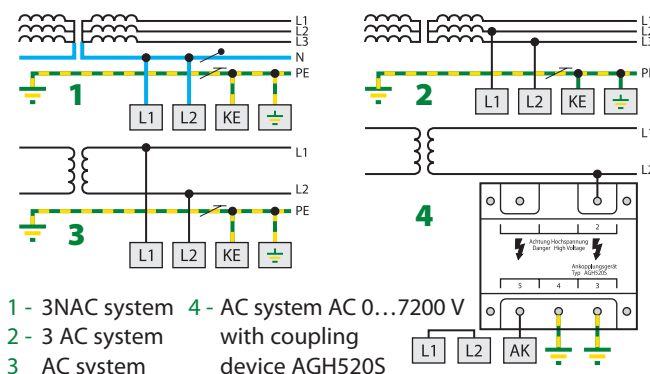


Wiring diagram – Operating elements



- 1 - Combined test/reset button "TEST/RESET", short-time pressing (< 1 s) = RESET, long-time pressing (> 2 s) = TEST
- 2 - Power On LED "ON"
- 3 - Alarm LEDs, yellow, light when the value falls below the set response value and flash in case of interruption of the connecting leads E/KE or L1/L2.
- 4 - LED bar graph indicator
- 5 - Operating principle of the alarm relay Fault memory
 - 5.1 - N/O operation
 - 5.2 - N/C operation
 - 5.3 - without fault memory
 - 5.4 - with fault memory
- 6 - Potentiometer to set the response value R_{ALARM1}
- 7 - Potentiometer to set the response value R_{ALARM2}
- 8 - Alarm relay 1: N/O operation
- 9 - Alarm relay 1: N/C operation
- 10 - Alarm relay 2: N/O operation
- 11 - Alarm relay 2: N/C operation
- 12 - External test button
- 13 - External reset button or contact bridge for fault memory
- 14 - U_S see ordering information, 6 A fuse recommended
- 15 - External kΩ indicating instrument

Wiring diagram – system connection



- 1 - 3NAC system
- 2 - 3 AC system with coupling device AGH520S
- 3 - AC system with coupling device AGH520S

Technical data A-ISOMETER® IR470LY2-4061

Insulation coordination acc. to IEC 60664-1

| | |
|--|----------|
| Rated insulation voltage | AC 630 V |
| Rated impulse voltage/pollution degree | 6 kV/3 |
| Voltage test acc. to IEC 60255 | 3 kV |

Voltage ranges

| | |
|------------------------------|--------------------------|
| Nominal system voltage U_n | AC, 3(N)AC 0...793 V |
| Rated frequency f_n | 40...460 Hz |
| Supply voltage U_S | see ordering information |
| Operating range of U_S | 0.85...1.15 x U_S |
| Frequency range U_S | 50...460 Hz |
| Power consumption | ≤ 3 VA |

Response values

| | |
|---|----------------|
| Response value R_{an1} (Alarm 1) | 10 kΩ...100 kΩ |
| Response value R_{an2} (Alarm 2) | 35 kΩ...500 kΩ |
| Response time t_{an} at $R_f = 0.5 \times R_{an}$ and $C_e = 1 \mu F$ | ≤ 1 s |

Measuring circuit

| | |
|--|---------------|
| Measuring voltage U_m | ≤ 40 V |
| Measuring current I_m (at $R_f = 0 \Omega$) | ≤ 200 μA |
| Internal DC resistance R_i | ≥ 200 kΩ |
| Impedance Z_i at 50 Hz | ≥ 180 kΩ |
| Permissible extraneous DC voltage U_{fg} | ≤ 800 V |
| Permissible system leakage capacitance | ≤ 20 μF |

Outputs

| | |
|---|-------------------|
| Test/reset button | internal/external |
| Current output for measuring instrument (scale centre point = 120 kΩ) | 0...400 μA |
| Load | ≤ 25 kΩ |

Switching elements

| | |
|---|--|
| Number of switching elements | 2 x 1 changeover contact |
| Operating principle | N/O operation / N/C operation |
| Factory setting | N/O operation |
| Electrical service life, number of cycles | 12000 |
| Contact class | IIB nach DIN IEC 60255-0-20 |
| Rated contact voltage | AC 250 V/DC 300 V |
| Making capacity | AC/DC 5 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 IEC 60068-2-27 (during operation) | 15 g/11 ms |
| Bumping IEC 60068-2-29 (during transport) | 40 g/6 ms |
| Vibration resistance IEC 60068-2-6 (during operation) | 1 g/10...150 Hz |
| Vibration resistance IEC 60068-2-6 (during transport) | 2 g/10...150 Hz |
| Ambient temperature (during operation) | -10 °C...+55 °C |
| Ambient temperature (during transport) | -40 °C...+70 °C |
| Climatic class acc. to DIN IEC 60721-3-3 | 3K5 |
| Operating mode | continuous operation |
| Mounting | any position |
| Connection | screw terminals |
| Connection properties rigid/flexible | 0.2...4 mm ² /0.2...2.5 mm ² |
| Degree of protection, internal components (DIN EN 60529) | IP 30 |
| Degree of protection, terminals (DIN EN 60529) | IP 20 |
| Screw mounting | 2 x M4 |
| DIN rail mounting acc. to | DIN EN 60715/IEC 60715 |
| Flammability class | UL94V-0 |
| Product standards | DIN EN 61557-8: 1998-05 |
| | EN 61557-8: 1997-03, IEC 61557-8: 1997-02, ASTM F 1669M-96 |
| Operating manual | BP104010 |
| Weight approx. | 360 g |

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