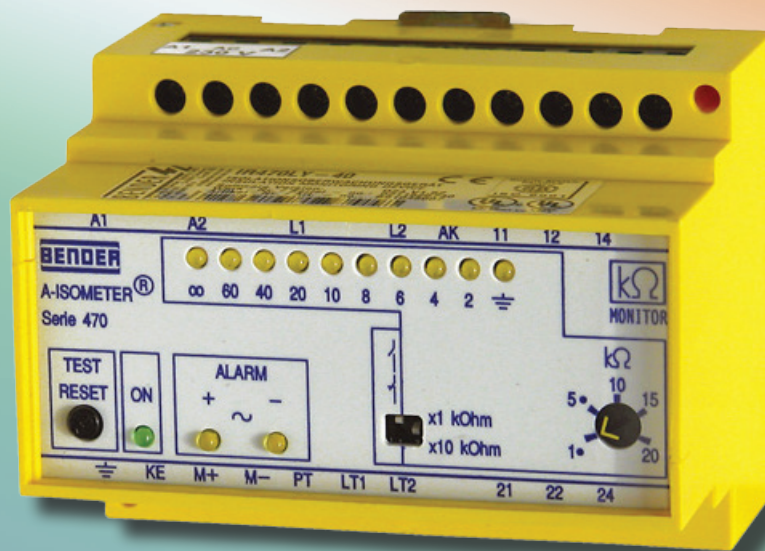


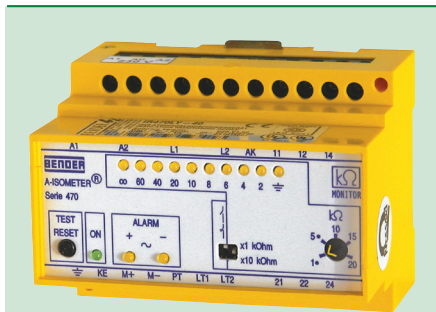
IR470LY Series

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



IR470LY Series

Ground Fault Monitor / Ground Fault Relay for Ungrounded AC Systems



IR470LY

Features

- Insulation monitoring for ungrounded single- and three-phase AC systems 0 - 793 V
- Nominal voltage extendable via coupling device
- Response values, adjustable 1 - 200 kΩ
- Connection monitoring
- LEDs: Power On LED, LED for insulation faults, L+, L-
- LED bar graph indicator
- Connection for optional external meter
- Combined test/reset button
- Connection for external test/reset
- Voltage-free DPDT alarm contact
- Selectably operates normally energized or normally de-energized
- Latching or non-latching operation

Approvals



Description

The IR470LY monitors for ground faults in ungrounded AC systems (both single- and three-phase) up to 793 V by measuring the system's insulation resistance. The IR470LY is able to detect ground faults in ungrounded systems before leakage current may even be present.

An optional voltage coupler extends the nominal voltage range up to 7200 V. An external power supply allows offline/standby systems to be monitored.

Application

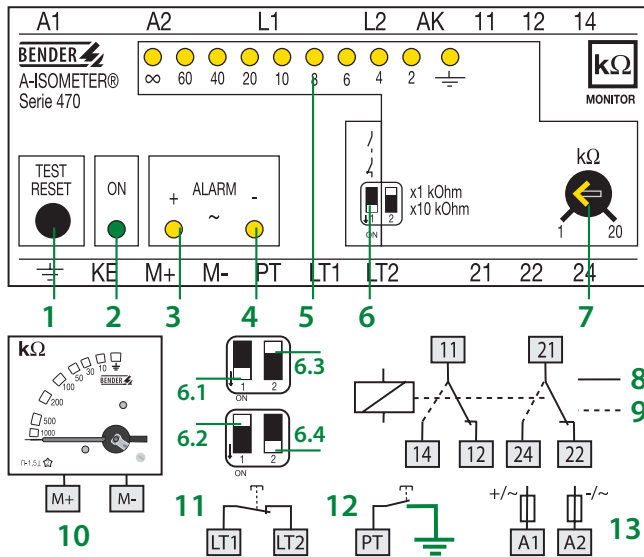
- Ground fault detection in AC systems, single- and three-phase
- Motors and motor control centers (without variable frequency drives)
- 480 V ungrounded distribution centers
- Generators, portable and fixed

Function

When the insulation resistance between system and ground falls below the set response value, the alarm relays switch and the alarm LEDs activate. The measured value is indicated on the LED bar graph indicator or by an externally connected measuring instrument. If the device is set to non-latching mode and the ground fault clears, the device will reset and the alarms will clear. If the device is set to latching mode and the ground fault clears, the alarms will not clear until the device is reset manually or the supply voltage is lost.

The IR470LY continuously monitors the equipment ground connection to ensure proper operation. Settings are carried out via the device's DIP switches and potentiometer.

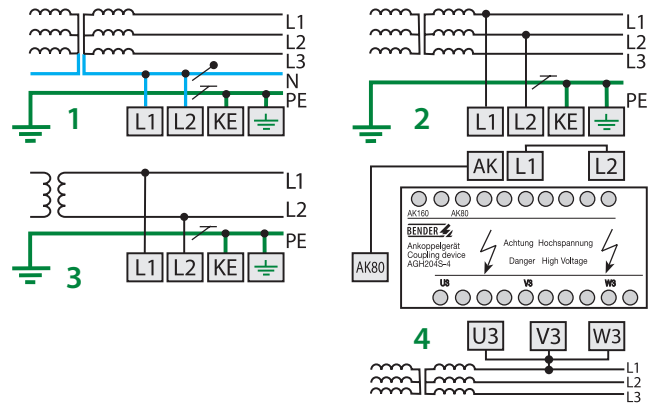
Wiring diagram – Front plate operation and outputs



- 1 - Combined test/reset button "TEST/RESET"; short depress (< 1 s) = RESET, hold (> 1 s) = TEST
- 2 - Power On LED "ON"
- 3, 4 - Alarm LEDs, yellow: Illuminates when the response value is exceeded. Flashes when the connection monitoring (\neq ground/KE or L1/L2) is active.
- 5 - kΩ LED bar graph indicator
- 6 - Operating principle of the alarm relays and setting range R_{ALARM}
 - 6.1 - Normally energized operation
 - 6.2 - Normally de-energized operation
 - 6.3 - x 10 kΩ
 - 6.4 - x 1 kΩ

Changing the setting range from x 1 kΩ to x 10 kΩ automatically changes the indication of the kΩ values on the LED bar graph indicator. Setting range x 1 kΩ: Meter scale point x 1 kΩ. Setting range: x 10 kΩ: Meter scale point has to be multiplied by 10 kΩ.
- 7 - Potentiometer to set alarm value R_{ALARM}
- 8 - Alarm relay - normally energized example (basic setting)
- 9 - Alarm relay - normally de-energized example
- 10 - Optional external kΩ indicating instrument
- 11 - External reset button or contact bridge for latching mode
- 12 - External test button
- 13 - U_s see ordering information, 6 A fuse recommended

Wiring diagram – System connections



- 1 - U_n : Three-phase AC system (with neutral)
- 2 - U_n : Three-phase AC system (without neutral)
- 3 - U_n : Single-phase AC system
- 4 - U_n with coupling devices: AGH204S-4 = 0 - 1300 V resp. 0 - 1650 V, AGH520S = 0 - 7200 V, here: Coupling device AGH204S-4 connected to U_n three-phase AC system without neutral

Technical Data: A-ISOMETER® IR470LY -

Insulation coordination acc. to IEC 60664-1

Rated insulation voltage	AC 630 V
Rated impulse voltage/pollution degree	6 kV/3

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	0.8 - 1.15 x U_s
Frequency range U_s	50 - 460 Hz
Power consumption max.	3 VA

Response values

Response value R_{an1} (Alarm 1)	1 k Ω - 200 k Ω
Response time t_{an} bei $R_f = 0.5 \times R_{an}$ and $C_e = 1 \mu F$	
Range 10 - 200 k Ω	≤ 1 s
Range 1 - 10 k Ω	≤ 3 s

Measuring circuit

Measuring voltage U_m	≤ 40 V
Measuring current I_m (at $R_f = 0 \Omega$)	$\leq 200 \mu A$
Internal DC resistance R_i	≥ 200 k Ω
Impedance Z_i at 50 Hz	≥ 180 k Ω
Permissible extraneous DC voltage U_{fg}	≤ 800 V
Permissible system leakage capacitance	$\leq 20 \mu F$

Outputs

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

Switching elements

Switching elements	1 DPDT contact
Operating principle	normally energized or de-energized
Factory setting	normally de-energized
Electrical service life, number of cycles	12000
Contact class	IIB in accordance with DIN IEC 602550-20
Rated contact voltage	AC 250 V/DC 300 V
Making capacity	AC/DC 5 A
Breaking capacity	2 A, AC 230 V, PF = 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/during storage)	- 10 °C - + 55 °C/- 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	AWG 24 - 12/24 - 14
Degree of protection, internal components (DIN EN 60529)	IP 30, NEMA 1
Degree of protection, terminals (DIN EN 60529)	IP 20, NEMA 1
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 F1669M-96
Operating manual	BP104001
Weight (approx.)	0.8 lb (360 g)

Ordering information

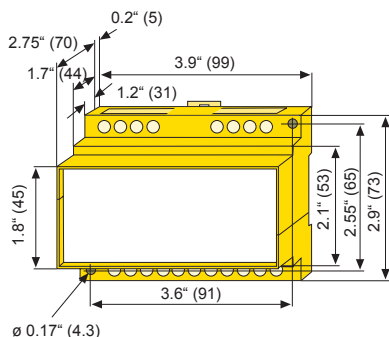
All models are rated for the same system voltages listed above. Voltage differences listed below apply only to the supply voltage used to power the device. For AC supply voltages, the frequency range is 50 - 460 Hz. Voltage ranges noted with an asterisk (*) are absolute ranges.

Supply voltage		Type	Ordering No.
AC	DC		
230 V	-	IR470LY-40	B 9104 8007
24 V	-	IR470LY-4011	B 9104 8012
42 V	-	IR470LY-4012	B 9104 8002
90 - 132 V*	-	IR470LY-4013	B 9104 8011
400 V	-	IR470LY-4015	B 9104 8008

Supply voltage		Type	Ordering No.
AC	DC		
500 V	-	IR470LY-4016	B 9104 8018
690 V	-	IR470LY-4017	B 9104 8017
440 V	-	IR470LY-4018	B 9104 8024
-	9.6 - 84 V*	IR470LY-4021	B 9104 8006
-	77 - 286 V*	IR470LY-4023	B 9104 8026

Dimensions

Dimensions in inches (mm)



Accessories

Description	Type	Ordering No.
External meters	7204-1421	B 986 763
	9604-1421	B 986 764
	AGH204S-4	B 914 013
	AGH520S	B 914 033



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