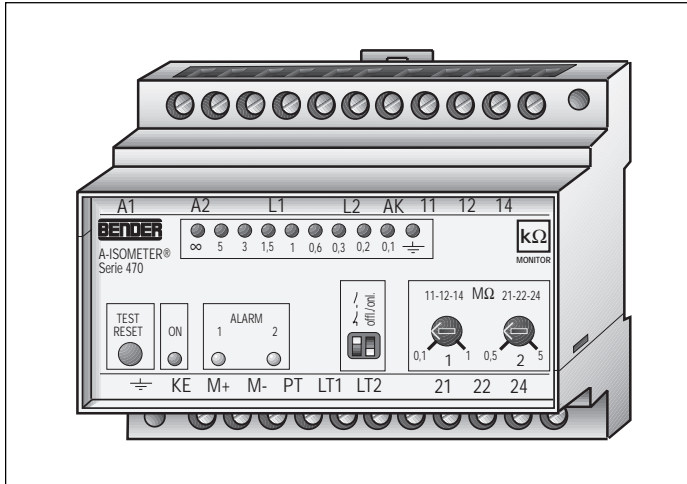
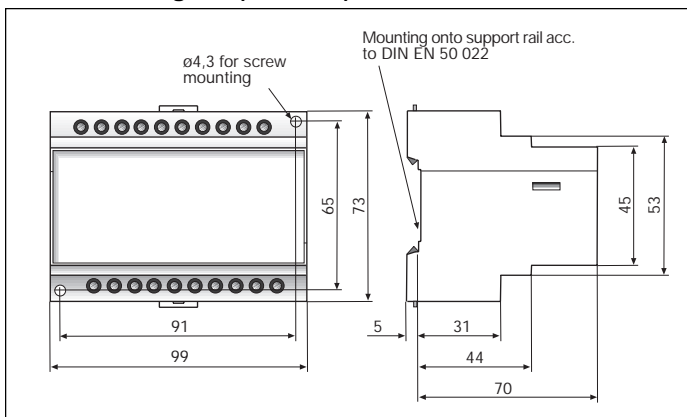




VDE IEC



Dimension Diagram (mm/inch)



- Insulation monitoring device for ungrounded single and three-phase AC systems (floating power supply) AC 0 ... 690 V/ 50 ... 400 Hz
- In combination with coupling devices the voltage range can be extended to 6000V
- OFF-line Monitoring of AC or DC consumers in ungrounded, high-resistance grounded and grounded systems
- ON-Line/OFF-Line function, selectable
- Connection monitoring
- Adjustable alarm point
100 kΩ - 1 MΩ and 500 kΩ - 5 MΩ
- Power ON, Alarm LEDs and LED bar-graph kΩ indicator
- Test and reset button
- Two alarm relays with SPDT contacts
- Relays (N/E) Normally Energized or (N/D) De-energized
- Fault memory, selectable

Product Description

The A-ISOMETER IR470LY2 monitors the insulation resistance of single and three phase ungrounded AC systems (isolated power) up to 690 V. The device can also be used for OFF-Line monitoring and therefore is suited for universal application in ungrounded, high-resistance grounded, and ungrounded systems.

The device is equipped with two response values which are adjustable. That allows the combinations prewarning and main alarm or prewarning and disconnection.

The value of the measuring voltage of the A-ISOMETER IR470LY2 ensures that the normally increased response sensitivity to insulation faults in a DC system behind directly connected rectifiers will be reduced.

The A-ISOMETER is suited for installation into standard distribution panels according to DIN 43 871 and for quick assembly onto support rail according to DIN EN 50 022. The device may also be screw mounted.

Operational Information

Within the BENDER IR470LY2 a DC measuring voltage is generated. The positive pole is connected to the system via the terminals L1/L2. The negative pole is connected to earth via an electronic circuitry and the terminals \perp /KE. The connections are monitored continuously. If one of these connections is interrupted, it will be indicated by flashing alarm LEDs and the output relays.

The measuring circuit is closed via ohmic insulation faults. When the insulation value of the system falls below one of the preset response values, the respective alarm LED signals either "alarm1" or "alarm2" and one or both of the associated output relays switches.

If the fault indication is to be stored, the terminals LT1/LT2 have to be bridged by a wire jumper or the external reset button (NC contact). The fault memory can be reset by pushing the <TEST/RESET> button located at the front plate or the external reset button for a short period provided that the insulation resistance exceeds the preset response value by 25%.

By pushing the test button, the correct function of the measuring circuit, the alarm LEDs and the output relay can be checked.

Standards

The A-ISOMETER IR470LY2 complies with the standards UL508, DIN 57 413 BI.2/VDE 0413 T2/01.73, ASTM F1207-89, IEC 1557-8: 1995, pr. EN 50197-8:1994.

Technical Data - IR470LY2

Insulation

Rated insulation voltage	AC 630 V
Rated impulse withstand voltage/ disturbance level	6 kV/3
Voltage test acc. to IEC 255	3 kV

Monitored System

Rated mains voltage U_N	AC 50 ... 400 Hz, 0 ... 690 V
Operating range of U_N	0 ... 1.15 x U_N
Voltage range OFF-Line function	AC/DC 80 ... 793 V

Supply Voltage

Supply voltage U_S	see ordering information
Operating range of U_S	0.8 ... 1.15 x U_S

Alarm Response Values

Response value R_{ALARM1}	100 k Ω ... 1 M Ω
Response value R_{ALARM2}	500 k Ω ... 5 M Ω
Response time for $R_E=0.5 \times R_{ALARM}$ and $C_E=1\mu F$.*	< 4 sec
Max. mains leakage capacitance	10 μF

Measuring Circuit

Measuring voltage U_M	40 V
Measuring current I_M	33 μA
Internal DC resistance R_i	1.2 M Ω
Impedance Z , 50 Hz	> 1 M Ω
Max. admissible stray DC voltage	DC 800 V

Output

Meter output SKMP 1.2 M Ω *	0 ... 400 μA
Max. load	25 k Ω

Alarm Relay

Switching components	two relays with SPDT contact
Rated contact voltage	AC 250 V/DC 300 V
Limited making capacity	UC 5 A
Limited breaking capacity	
AC 230 V and p.f. = 0.4	AC 2 A
DC 220 V and L/R = 0.04 s	DC 0.2 A
Operating principle	selectable N/D or N/E mode
Pre-set by factory	Normal Deenergized (N/D) mode

Type Tests

Test of the Electromagnetic Compatibility (EMC):

Immunity against electromagnetic interferences acc. prEN 50082-2:	
ESD acc. to IEC 801-2/EN 60801-2	
EM field acc. to IEC 801-3	
Burst acc. to IEC 801-4	Severity degree 3
Surge acc. to draft of IEC 801-5	
Impulse voltage and electrical disturbance test acc. to IEC 255:	
Impulse voltage test acc. to IEC 255-5	class III
Electrical disturbance test acc. to IEC 255-5	class III
Emissions acc. to EN 50081-2:	
Emissions acc. to EN 55011/CISPR11	
Mechanical Tests:	
Shock resistance acc. to IEC 68-2-27	15 g/11 ms
Bumping acc. to IEC 68-2-29	40 g/11 ms
Vibration strength acc. to IEC 68-2-6 10 ... 150 Hz/0.15 mm - 2 g	

Environmental Conditions

Ambient temperature, during operation	-10°C ... +55°C
Storage temperature range	-40°C ... +70°C
Climatic class acc. to IEC 721	3 K5, except condensation and formation of ice

General Data

Operation class	continuous operation
Mounting	DIN rail or screw (#990056)
Type of connection	screw terminals
Wire size, solid	14 AWG
Wire size, stranded with end sleeve	16 AWG
fine braid	16 AWG
Rapid mounting	DIN Rail / DIN EN 50 022
Screw mounting	90.7 x 64.8 mm
Protection class acc. to EN 60529	
Internal components	IP 30
Terminals	IP 20
Type of casing	X 470
Flammability class	UL 94V-0
Weight approx.	1 lb

* Notes:

R_E	Fault resistance between system and earth (total insulation resistance)
C_E	System leakage capacitance between system and earth (total leakage capacitance)
SKMP	Meter scale center point

Please Note

Please check for correct mains voltage !

Only one insulation monitoring device may be used in each interconnected system.

In order to check the proper connection of the device, it is recommended to carry out a functional test using a genuine ground fault, e.g. via a suitable resistance, before using the A-ISOMETER.

When insulation or voltage tests are to be carried out, the device must be isolated from the system for the test period.

There must always be a connection between L1/L2 for connection monitoring (e.g. via the winding of the isolating transformer).

Connection monitoring is essential to guarantee the safety measure. This function remains deactivated if L1/L2 or KE/ $\underline{\text{PE}}$ are bridged.

Electrical equipment has to be installed by qualified personnel only in accordance with national and local safety regulations.

OFF-Line monitoring:

If the device is used for OFF-Line monitoring, the switch has to be set to "OFF-Line" position.

Operation in combination with coupling devices:

The A-ISOMETER IR470LY2 can be used in combination with the coupling devices AGH520S (up to AC 6 kV).

Connection monitoring is deactivated when using the device in combination with coupling devices. For this purpose, the connections L1 and L2 have to be bridged.

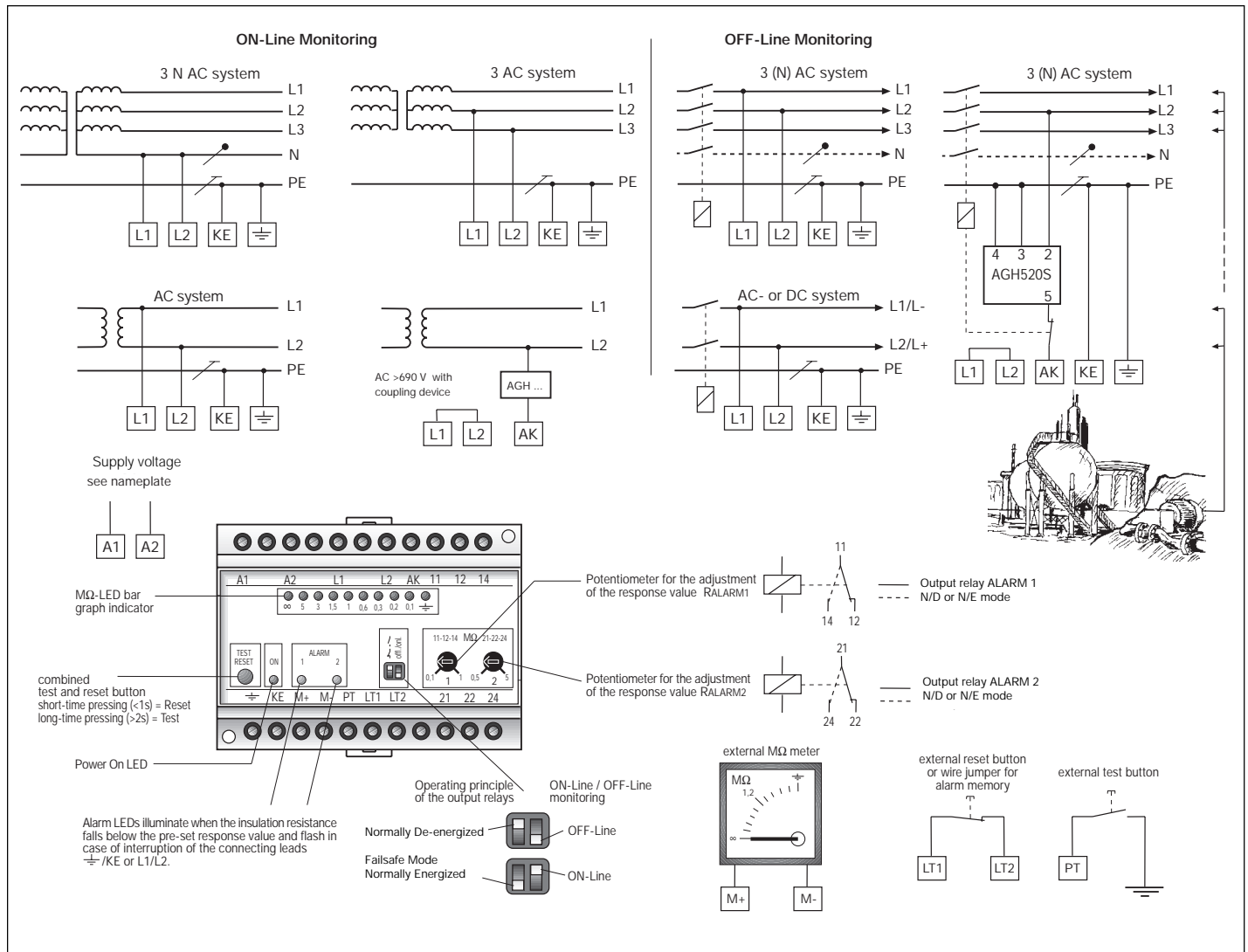
Ordering Details

Type	Supply voltage U_S	Art. No.
IR470LY2-60	AC 230 V	9104 8010
IR470LY2-6015	AC 400 V	9104 8009
IR470LY2-6013	AC 90 ... 132 V**	9104 8013
IR470LY2-6021	DC 10.5 ... 80 V**	9104 8014
IR470LY2-6023	DC 77...286V**	9104 8015

Other supply voltages available

** Absolute values of the voltage range

Wiring diagram



Important Notes:

The IR470LY2 is suited for both single and three phase AC systems. As indicated in the wiring diagram, there are several ways of connection. From the metrological point of view, it is irrelevant whether the connections L1 and L2 are connected to one or two different system conductors or to the N-conductor. L1 and L2 have to be led separately. Before connecting the device, the maximum rated voltage has to be considered. The terminals KE and \perp also have to be led separately.

Table: Fault Indications

Fault indications	Alarm LED		Output relay	
	3	4	12	13
Alarm 1	x		x	
Alarm 2		x		x
Interruption \perp /KE or L1/L2	o	o		x

o = flashing
x = continuous indication

Directions for OFF-Line Monitoring

In the OFF-Line mode, idle consumers are monitored for insulation faults. When the system voltage between the terminals L1 and L2 falls below 80 V, the device automatically switches to OFF-Line mode and insulation monitoring is activated.

If the voltage between the terminals L1 and L2 exceeds the value of 80 V, insulation monitoring is automatically deactivated. This is signalled by flashing of the LED ∞ of the LED bar graph indicator.

In the OFF-Line mode, in most cases only one consumer and one relatively short cable run is monitored. Therefore it is recommended to select higher response values than used for insulation monitoring of networks in operation. The response values should be selected individually, in consideration of the prevailing conditions like humidity, temperature, pollution and age of the electrical system.

Two response values with one output relay each allow prewarning already when high-resistance insulation faults occur. The second response value, which can be set lower than the first one, may prevent faulty consumers from connecting to supply by interlocking.

In the OFF-Line mode, the voltage range can also be extended via coupling devices. For this purpose, the coupling device AGH520S for voltages up to 6 kV is available.

In combination with the coupling device, the A-ISOMETER IR470LY2 must be connected to the system or disconnected from the system via an auxiliary contact of the main contactor. (see wiring diagram).

Note:

The auxiliary contact (NC contact) of K1, located in the supply line between the A-ISOMETER and the coupling device, doesn't have to be designed for the rated voltage of the system. A rated insulation voltage of AC 230 V is sufficient.