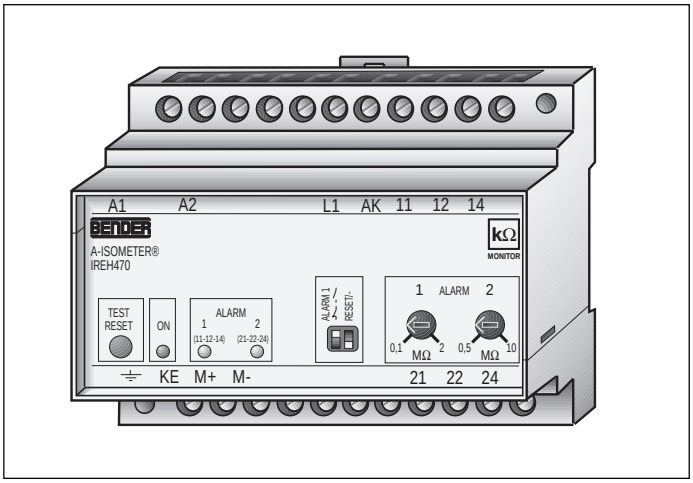
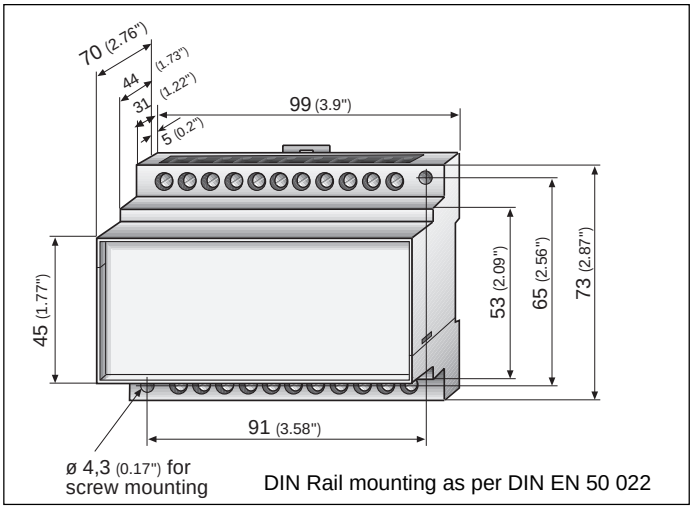
INSULATION RESISTANCE MONITOR IREH470Y2-6

for off-line motors and generators

ISO 9001 CE UL LISTED c UL LISTED **VDE IEC**



Dimension Diagram (mm/inch)



- Provides ADVANCED WARNING of insulation resistance breakdown in standby motors and generators
- Excellent return on investment by PROTECTING your equipment from damage and insuring operation when needed
- Two alarm set-points providing both a PRE-ALARM and a MAIN ALARM. Pre-alarm allows for fault alarm indication without disabling the equpment whereas the main alarm can be used to interlock the defective equipment from starting
- UNIVERSAL monitor for AC and DC applications to 690V. High-voltage coupler extends voltage range to 6kV

Product Description

The BENDER IREH470Y2-6.. is a high-performance insulation resistance monitor that provides ADVANCED WARNING of insulation breakdown in standby motors and generators.

One of the major causes of motor and generator failure is insulation resistance breakdown. Periodic megger testing helps prevent equipment failure due to insulation breakdown, however, an IREH470Y2 can continously monitor standby motors and generators offering continuous protection at an afforable price.

The IREH470LY-6.. is equipped with two steplessly adjustable alarm set-points, a pre-alarm and a main-alarm:

PRE-ALARM:	500kΩ...10MΩ	RELAY 11-12/14
MAIN ALARM:	100kΩ...2MΩ	RELAY 21-22/24

For off-line monitoring, in most cases only one motor or generator and one short cable run is monitored. Therefore it is recommended to select higher response values than used for insulation monitoring of active systems (on-line monitoring). The response values are to be selected indivdually, in consideration of the prevailing conditions like humidity, temperature, pollution and age of electrical systems.

The devices are 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 or for screw mounting.

Operational Information

In the Off-line mode, the alarm relay ALARM1, the main-alarm switches when the value falls below the set response value R_{ALARM1} and can prevent faulty consumers from connecting to supply by appropriate interlocking. If the motor or generator is to be connected to the system despite an insulation fault, the DIP-switch <ALARM1> located at the front plate has to be set to "_◺_". The LED alarm indications and the switching performance of the alarm relay for ALARM2 won't be influenced. If the fault indication is to be stored, the DIP-switch at the front plate has to be set to Reset. The fault memory can be reset by pushing the <Test/Reset> button located at the front plate for a short period provided that the insulation resistance exceeds the preset response value by 25%. By pushing the test/reset button, the correct function of the measuring circuit, the alarm LEDs and the alarm relays can be checked.

Bender Industrial Products - 700 Fox Chase - Coatesville, PA 19320 - Toll-free: (800) 356-4266 - Fax: (610) 383-7100

Insulation

Rated insulation voltage	AC 630 V
Rated impulse voltage/ disturbance grade	6 kV/3
Dielectric test acc. to IEC 255	3 kV

System being Monitored

Rated mains voltage U_N	DC, AC 50 ... 400 Hz, 0... 690 V
Operating range of U_N	0...1.15 xU_N

Supply Voltage

Supply voltage U_S	AC 50..60 Hz 120V
(see type label on unit, other AC & DC supply voltages available)	
Operating range of U_S	0.8 ... 1.15 x U_S
Maximum self-consumption	5.8VA

Alarm Response Values

Main Alarm - R_{ALARM1}	100kΩ - 2 MΩ
Pre-Alarm - R_{ALARM2}	500kΩ - 10 MΩ
Response times R_E=0.5 x R_{ALARM} und C_E=1uF: *	< 4 sec
Max. system capacitance to ground	10 µF

Measuring Circuit

Measuring voltage U_M	20 V
Measuring current I_M	17 µA
Internal DC resistance R_i	1.2 MΩ
Impedance Z_i, 60 Hz	>1 MΩ
Max. admissible stray DC voltage	DC 800 V

Contact Configuration

Switching components	2 relays / 1 SPDT contact each
Contact class acc. to DIN IEC 255 Section 0-20	IIB
Rated contact voltage	AC 250 V/DC 300 V
Rated Current	UC 5 A
Break capacity AC 230 V, p.f. = 0.4	AC 2 A
DC 220 V and L/R = 0.04 s	DC 0.2 A
Operating principle:	
Alarm relay R_{ALARM1}	N.D. (normally de-energized) operation
Alarm relay R_{ALARM2}	N.E. (normally energized) operation

Outputs

Meter output SKMP 1.2 MΩ*	0 ... 400 µA
Max. load	12.5 kΩ

Testing

Test of the Electromagnetic Compatibility (EMC):	
Immunity against electromagnetic	
Interferences acc. to prEN 50082-2:	
ESD acc. to IEC 1000-4-2	severity degree 3
EM field acc. to IEC 1000-4-3	severity degree 3
Burst acc. to IEC 1000-4-4	severity degree 3
Surge acc. to Draft of IEC 1000-4-5	severity degree 3
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 50081-1:	
Emissions acc. to EN 55011/CISPR11	class B
Mechanical tests:	
Shock resistance acc. to IEC 68-2-27	15g/11 ms
Bumping acc. to IEC 68-2-29	40g/6 ms
Vibration strength acc. to IEC 68-2-6	10...150 Hz/0.15mm -2g

Environmental Conditions

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

General Data

Operation class	continuous operation
Mounting	as desired
Type of connection	screw terminals
Wire cross section	AWG 12 -24
Rapid mounting onto support 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	X470
Flammability class	UL94V-0
Weight approx.	1 lb (350g)

***** Explanation:

R_E Insulation resistance between system and earth (total resistance)

C_E System leakage capacitance between system and earth (total leakage capacitance)

SKMP Meter scale centre point

Ordering Guide

Model	Supply Voltage U_S	Ordering #
IREH470Y2-613	AC 120V	91078002
IREH470Y2-6	AC 230V	91078001
IREH470Y2-621	DC 10.5...80 V	91078004

Accessories

High-voltage Coupling Devices

Model	System voltage	Ordering #
AGH204S	AC 0...1500V	914013
AGH520S	AC 0...6600V	913033
AGH150W	DC 0 ... 1000V	915576

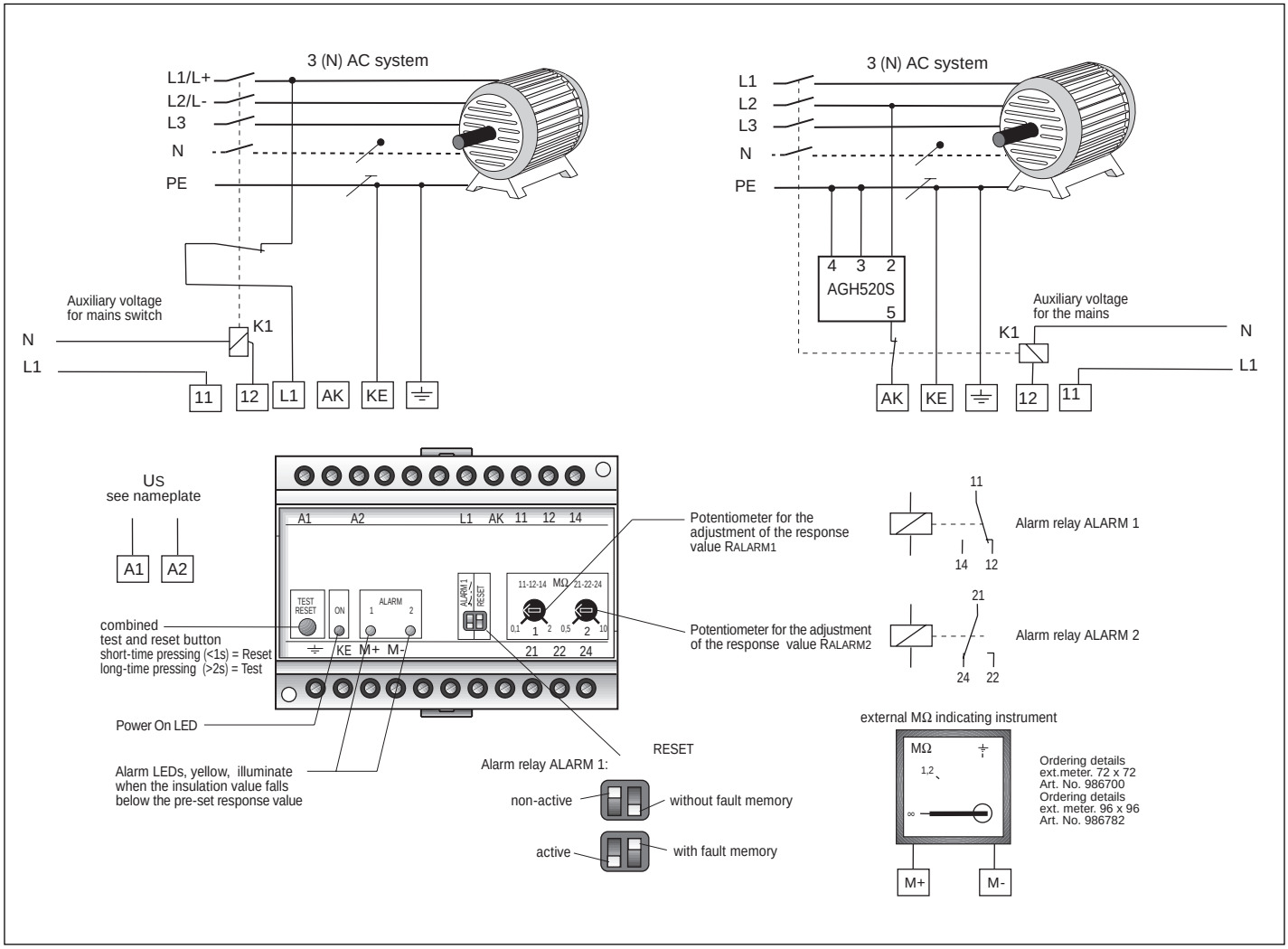
External Panel-mount Meters

Model	Dimensions	Ordering #
7204S-1731	72x72mm	986748
9604S-1732	96x96mm	986785

Standards

The A-ISOMETER ® IREH470Y2-6 complies with the standard DIN 57 413 Bl2/VDE 0413 T2/01.73, ASTM F 1207-89, ASTM F1134-88, draft of IEC 1557-8: 1995, pr.EN 50 197-8:1994.

Wiring Diagram



Important Notes

The A-Isometer IREH470Y2-6 has to be connected and disconnected via an auxiliary contact of the mains switch K1 (see wiring diagrams).

The auxiliary contact (normally closed contact) of K1 located in the supply line between the IREH470Y2-6 and the coupling device need not be designed for the rated voltage of the system. A rated insulation voltage of AC 230 V is sufficient.

Safety instructions

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

Please make sure that all outgoing feeders are connected to the superimposed DC measuring voltage via the consumer. In this way the three conductors of the 3AC system can be monitored if a motor or transformer is connected between the phases.

If the device is to be used in a grounded system, all lines going to the consumer have to be disconnected including the neutral conductor.

Caution

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 starting the operation.

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

Please check for correct mains voltage !

Warning

Electrical equipment shall only be installed by qualified personnel in consideration of the current safety regulations.

For short-circuit protection, the connection to the supply voltage has to be equipped with a protective device according to IEC 364-4-473 (A fuse of 6 A is recommended).

Short-circuit protection for network coupling and connection monitoring according to IEC 364-4-473 is not necessary when the wiring has been installed short-circuit and ground-fault proof; i.e. that the risk of a short-circuit is reduced to the absolute minimum.

If you have any questions concerning the operation of this unit, please contact our technical support.