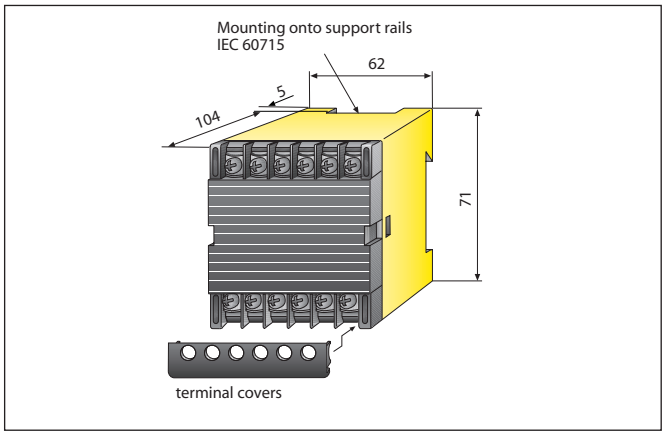
BENDER A - ISOMETER®

IREH150
IREH150P

Insulation monitor for off-line monitoring of DC and AC networks

- off-line monitor for DC-, AC- and 3 AC networks
- supply voltage U_S AC 230 V
- built-in test and reset button (only part of IREH150P)
- built-in alarm LED
- GL-certification

Dimension diagram



Product description

The A-ISOMETER®s IREH150 and IREH150P are used for off-line monitoring of earthed and unearthed single and three phase AC networks up to 660 V and DC networks up to 500 V.
The connecting leads of idle consumers, e.g. motors, are monitored continuously. The offline monitor detects insulation faults. Two output contacts can be used for signalling or motor restart interlocking.
The devices require a supply voltage of AV ... Hz 230 V.
Other values on request.
To obtain that monitoring is performed only in idle condition, the control voltage of the contactor coil is measured at the contactor for the respective load. If voltage is present, the monitoring will be suppressed. Only in case of no voltage, the consumer including the wiring will be monitored.
The control voltage of the contractor coil can be
AV 24...380 V or DC 24...500 V.

Application examples and advantages:

In many industrial applications, motors and their conducting leads are only energised „in case of emergency". Often short circuits or motor burnout occur due to the conducting leads and motor windings not being monitored permanently. The insulation decreases due to humidity or other influences during the long interruption. This happens in case of automatic fire pumps, closing the installations controlled by motors, emergency drives, reserve drives, diving pumps, ship cranes, drives for anchors, etc.

Function

A DC measuring voltage is superimposed on the network by the device. One pole is connected to the network via a high-resistance coupling link while the other pole is connected to earth by means of an electronic measuring circuit. The measuring circuit is closed via insulation faults between system and earth. One single-pole coupling to the idle network is sufficient. The DC measuring voltage is transferred onto the second phase for AC systems or the second or third phase for 3 AC systems via the load, e.g. motor windings, as the winding resistance is extremely low-ohmic for the DC measuring voltage.
Two response values, 500 kΩ and 1 MΩ, can be selected. When the preselected response value is reached, the output relay energises (N/O operation) and the built-in alarm LED illuminates. In case an earth fault occurs, the output relay of IREH150P remains locked in. The relay may only be reset by using the built-in test and reset button after elimination of the earth fault.

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Technical data IREH150, IREH150P

Insulation	
Nominal insulation voltage	AC 660 V
Insulation class acc. to DIN VDE 0110 / T.1 / 01.89	C
Contamination level	3
Dielectric test	2500 V
Operation class	permanent operation
Control voltage of the contactor coil U_F	AC 50...60 Hz 24...380 V / DC 24 ...500 V
Operating range of U_F	0,8...1,1 U_F
Supply voltage	
Supply voltage U_S	AC 50...60 Hz 230 V
Operating range	0,8...1,1 U_S
Self-consumption	4,5 VA
Response values	
Response value R_{AN1}	500 kΩ
Earthing connector (terminal E1)	
Response value R_{AN2}	1 MΩ
Earthing connector (terminal E2)	
Response delay	< 1sec
Measuring circuit	
Voltage-stable	up to U_N UC 660 V
Measuring circuit-Frequency	> 0...400 Hz
Measuring voltage U_M	DC 12 V
Measuring current I_M	≤ 12 µA
Internal DC resistance R_i, acc. to DIN VDE 0413	1,4 MΩ
Impedance Z_i, 50 Hz DIN VDE 0413	1 MΩ
Contact circuit	
Switching components	1 n.c. contact and 1 n.o. contact
Switching capacity max.	1100 VA
Rated contact voltage	230 V
Permanent current	5 A
Break capacity	
AC 220 V and cos = 0,4	3,8 A
DC 110 V and L/R = 0	0,3 A
Operating principle	N/O operation
Tests acc. to DIN VDE 0435 T.303 / IEC 255	
Impulse voltage test	class III
Electrical disturbance test	class III
Vibration test	according to IEC 68
Environmental conditions	
Ambient temperature, during operation	-10°C...+60°C
Storage temperature range	-20°C...+60°C
Climatic class acc. to DIN 40040	
General data	
Mounting	as desired
Type of connection	terminals with self-lifting clamp-washers, M 3,5
Wire cross section	
Single wire	2 x (1...1,5 mm²)
Fine braid	2 x (0,75...1,5 mm²)
Rapid mounting	onto support rails acc. to IEC 60715
Protection class acc to DIN 40050	
Internal components	IP 50
Terminals / with terminal covers	IP 10 / IP 20
Type of casing	X 150
Weight approx.	300 g
Wiring diagram	Z 120 458

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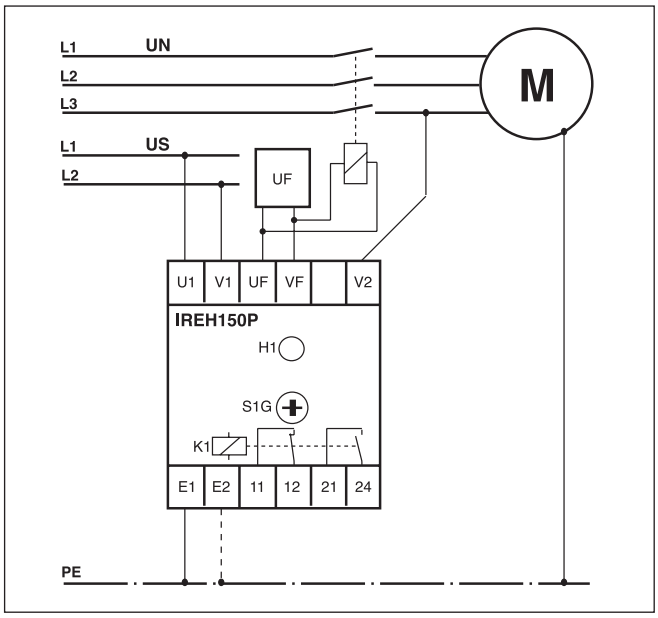
Type	Supply voltage U_S	Control voltage (Contactor coil) U_F	Rated mains U_N	Art.No.
IREH150P	AC 50...60 Hz 220 V	AC 50...60 Hz 24...380 V	UC 0...400 Hz 0...660V	9 121 992
IREH150		DC 24...500 V		9 121 991

Wiring diagram



Legend to wiring diagram

S1G combined test and reset button

E1 earthing connector for response value 1 = 500 KΩ

E2 earthing connector for response value 2 = 1 MΩ

H1 built-in alarm LED indicating earth-fault

K1 output relay, floating, with one n.c. contact and n.o. contact (N/O operaion)

V2 connection terminal for the measuring circuit, is connected unipolar between the earthing contacts and the motor (see chapter "Please note")

Please note

It must be observed that all outgoing leads are connected to the DC measuring voltage via the consumer. The three conductors of a 3 AC network can only be monitored when a motor or a transformer completes the connection between the phases.

If the consumer operates in star-delta connection or as a pole-changing motor with seperate windings, the before mentioned connection between the phases will not be achieved. In these cases, the coupling of the off-line monitor has to be carried out via an artificial neutral point. In addition, for these purposes a reactance coil star point type AG150 is available.

When using these devices in earthed networks (TN networks), the consumer has to be completely disconnected from the power supply.

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

Please check correct mains voltage!

Only one insulation monitor may be used in each off-line system. When insulation and voltage tests are to be carried out, the device must be isolated from the system for the test period.

The earthing connectors E1 or E2 has to be connected absolutely reliable.

Each device is supplied with terminal covers for protection against electric shock. If these covers are not used, other suitable protection measures must be observed in accordance with the accident prevention regulations.