

Offline monitoring

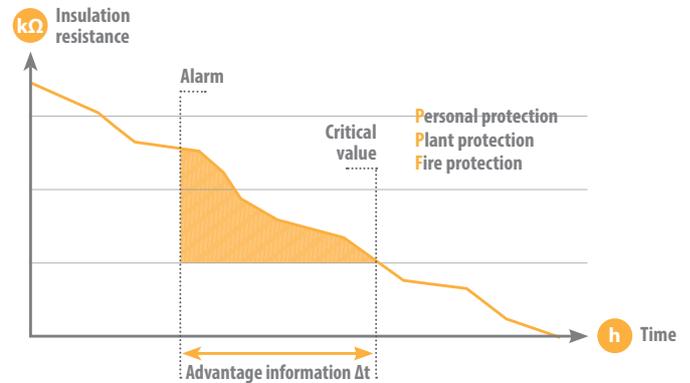
Continuous monitoring of de-energised loads and conductors



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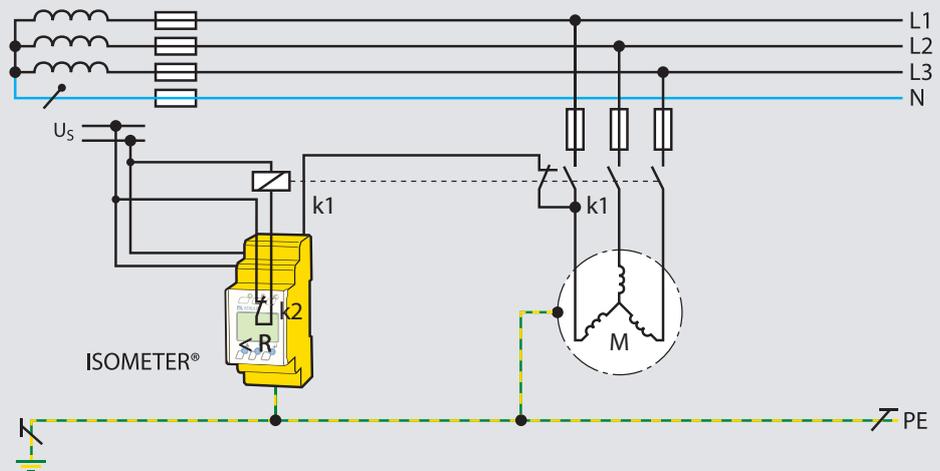
Many types of loads that are temporarily or mainly disconnected must function reliably when needed. This applies, for example, to fire pumps, slide-valve drives, lift motors or emergency power generators. However, during prolonged downtimes, insulation faults may occur at the supply line or at the load itself due to humidity or other impacts. If these insulation faults are not detected, when connecting the installation the protective device triggers and operation is not possible. In more severe cases, engine fires may occur.

"Offline monitors" can prevent this since they monitor the insulation resistance of de-energised loads in order to report faults at an early stage. Special ISOMETER®s (IR420-D6, IR425-D6, IRDH, iso685 series) are used for this purpose. For this solution it is irrelevant whether the temporarily or mainly disconnected loads are supplied by TN, TT or IT systems.



Areas of application

- Pumps (sprinkler systems, lifting pumps, etc.)
- Drives for emergency slide valves
- Crane systems (e.g. on ships)
- Slide-valve drives in supply lines (gas, water, oil, etc.)
- Lifts
- Flue gas dampers
- Emergency power generators
- Cables and conductors



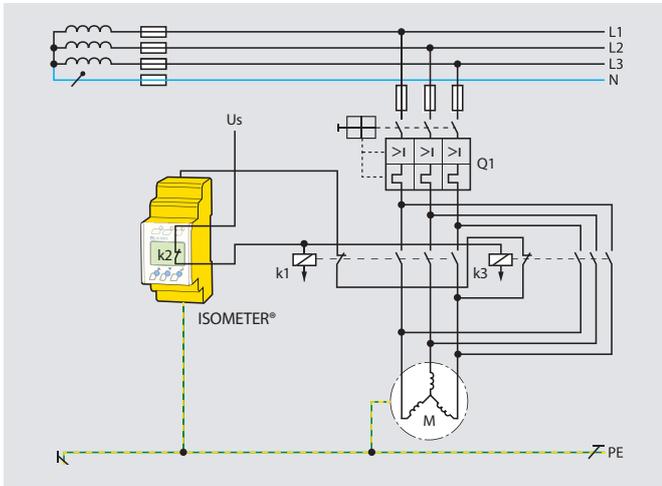
Schematic circuit diagram offline monitoring

Your benefits

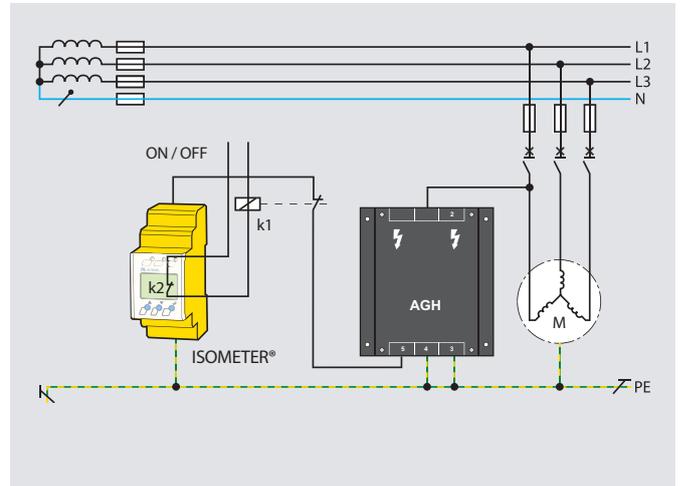
- Continuous monitoring instead of insulation measurement based on random samples during recurrent testing
- Avoiding expensive and unplanned system shutdowns
- Higher productivity
- Two-stage reporting minimises risk of fire and injury
- Optimised maintenance thanks to early detection
- Avoiding operational interruptions and emergency actions
- Less damage to property due to defective motors, longer service life
- Reducing operating and maintenance costs

Normative approach to the monitoring of de-energised loads

- *E DIN VDE 0100-530 (VDE 0100-530):2014-10*
Erection of low voltage electrical installations – Part 530: Selection and erection of electrical equipment – Switchgear and control gear
- *IEC 61557-8:2014-12*
Electrical safety in low voltage distribution systems up to AC 1000 V and DC 1500 V – Equipment for testing, measuring or monitoring of protective measures – Part 8: Insulation monitoring devices for IT systems.



Schematic wiring diagram motor right/left operation (reversing contactor circuit)



Schematic motors for medium voltage up to 12 kV

If the insulation resistance between the disconnected load and earth falls below the set response values, the alarm relays switch and the alarm LEDs light up. The measured value is indicated on the internal display. Therefore, changes that may occur over time or that depend on specific environmental conditions are easily detectable.

Due to the two selectable response values with separate alarm relays, a prewarning is signalled if insulation faults with a very high impedance occur. The second response value, which is below the first, can prevent the connection of the faulty load via a locking mechanism.

Measuring the insulation resistance is done via output L1 or a contact to the system to be monitored. In principle, during an offline monitoring, the offline monitor is separated from the load to be monitored while the load is operating. Thereby, the following can be guaranteed:

- **The offline monitor does not signal a false alarm:**
If the load is supplied by an earthed TN system, this would result in an insulation fault for the offline monitor if it is not separated from the load during operation.
- **A mutual influence and possible false alarms are prevented:**
If the load is supplied by an unearthed IT system, without the separation mentioned above, the offline monitor and the insulation monitoring device, which monitors the insulation of the entire system, would measure in the same system at the same time during operation.

If the load is de-energised, contact k1 is closed and the insulation resistance is measured. If the load is operating, k1 is opened and the insulation measurement is deactivated. Make sure that all poles of the main switch are disconnected. To superimpose the measuring voltage it must be ensured that a low-impedance connection exists between all system conductors (e.g. through motor winding).



Device features

- Insulation monitoring for de-energised TN, TT and IT systems AC, 3(N)AC and DC
- Nominal voltage expandable via coupling device
- Two separately configurable response values 100 kΩ...10 MΩ
- Operation LED, alarm LEDs for insulation faults alarm 1, alarm 2
- Combined test and reset button
- Two separate alarm relays with one potential-free changeover contact each
- Fault memory selectable



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