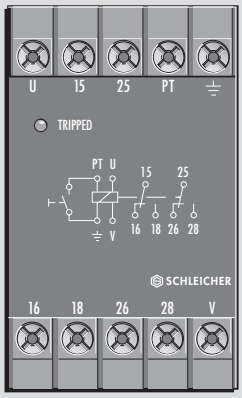
Insulation Monitors

**Insulation Monitoring of Ungrounded AC Auxiliary Circuits
Without Rectifier according to DIN VDE 0100/5.73 §60 f/2
Short-Circuit to Ground Indicated with LED
Fixed Response Values Associated with Network Voltages**

SIW 1001



For Example

- In control and regulation circuits
- In firing systems
- In foundries
- To protect robots
- In plants with a production process that is sensitive to interferences

- According to VDE 0113/12.73 and DIN 57113/1 12.73, the insulation of ungrounded networks must be monitored according to VDE 0100/5.73 § 60f/2.
  The insulation and ground-fault monitors of the SIW construction series are used to monitor the installation of ungrounded AC auxiliary circuits, such as are present e.g. at machine tools, production lines, cranes and conveyance systems, processing facilities, etc.
  They are used to provide a signal or to shut-down the network in case of a ground fault.

Function

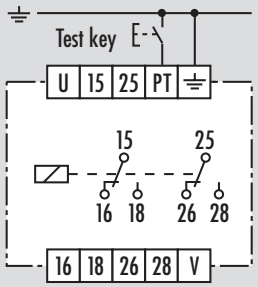
The insulation monitor SIW 1001monitors the insulation in AC auxiliary circuits. If rectifiers or equipment containing such, are to be operated in the network that is being monitored, these must be electrically isolated from the network by means of transformers.
The response values of the insulation monitor are associated with the network voltages and cannot be changed.
The SIW 1001 has an output relay with two changeover contacts.
It operates according to the closed-circuit current principle.
When the supply voltage is applied, the relay switches into its operating position. If the insulation resistance of the network falls below the permanently set minimum value (ground fault), the relay switches back into its de-energized position. The red LED lights up.
Once the ground fault has been eliminated, the relay switches again into its operating position. If ground fault messages are to be stored, this is possible through the second changeover contact of the output relay.
Reset is accomplished through an external reset key.
An external test key for a function test can be connected to the SIW 1001 (see application examples).

5

Connection Diagram

KS 0162/1

SIW 1001



Notes

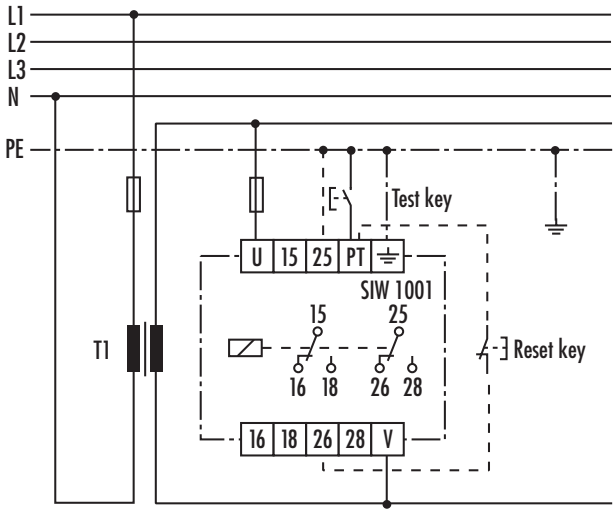
- Only one insulation monitor may be connected in each auxiliary circuit with its own transformer.
  Several insulation monitors would mutually affect one another.
- The insulation monitor must be isolated from the network before insulation and voltage tests of the system.
- Fixed response values: 5, 10, 40, or 80 kΩ corresponding to the respective rated volatges
- Insulation monitors with other response values on request.

SIW 1001

Application Example

A 1050

Monitoring an Ungrounded Auxiliary Circuit

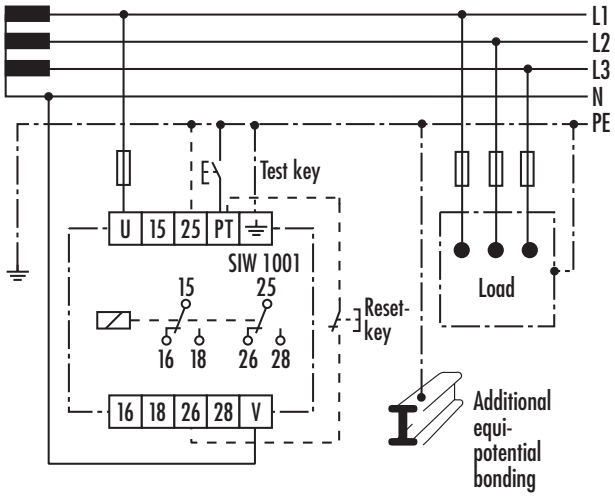


An ungrounded auxiliary circuit is built-up from the grounded main network by means of a transformer.
The auxiliary circuit is monitored with the SIW 1001. All the advantages of an ungrounded network can now be utilized.

Application Example

A 1051

Monitoring a Three-Phase IT-Network

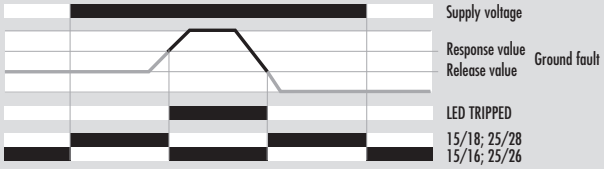


The insulation monitor SIW 1001 monitors the three-phase IT network for insulation faults.
The DC measurement current divides uniformly into the three phases through the very small ohmic resistances of the three-phase transformer.
If the insulation resistance falls below the response value, the SIW 1001 switches back into its off position.
The red LED lights up. The fault message is stored until the RESET key is pressed.

Function Diagram

FD 0023 W1

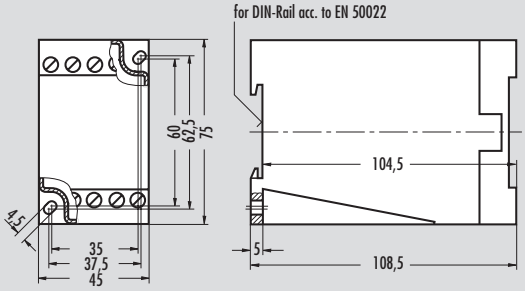
SIW 1001



Dimension Diagram

S 3-2

SIW 1001



Order Example

SIW 1001	230 V AC
Type	Rated Voltage

5

TECHNICAL DATA

SIW 1001

FUNCTION According to DIN VDE 0413 S2:01.73		Insulation-Ground Fault Monitor,with Superimposed DC Measurement Voltage for AC Auxiliary Circuits without Rectifier
Function Display		1 LED red
Function Diagram		FD 0023 W1
POWER SUPPLY		
Rated Voltage U_N	V AC	**24** | **42** | **110 - 127** | **230**
Rated Consumption at 50 Hz and U_N (3 AC)	VA	2,5 | 2,5 | 2,5 | 2,5
Rated Consumption at 50 Hz and U_N (3 AC)	W	2,0 | 2,0 | 2,0 | 2,0
Rated Frequency	Hz	50 to 60
Operating Voltage Range		0,8 to 1,1 x U_N
MEASURING CIRCUIT		
Rated Voltage U_N	V AC	**24** | **42** | **110 - 127** | **230**
Response Value t_A	kΩ	5 | 10 | 40 | 80
Release Value t_R	kΩ	8 | 15 | 60 | 150
Response Time at R_{is} = 0 Ω	ms	120
Measurement Value	V DC	15
Maximum Measurement Current at Ground Fault	mA DC	1
Test Resistance	kΩ	4,7
DC Internal Resistance	kΩ	1,5
AC Internal Resistance	kΩ	≤ 60
Average Value of the Error	%	± 5
OUTPUT CIRCUIT		
Contact Equipment		2 Changeover
Contact Material		Ag - Alloy; Gold - Plated
Switching Voltage U_n	V AC/DC	230/250
Maximum Rated Current I_n per Contact	A	≤ 5
Application Category acc. to EN 60947–5–1:1991		AC–15: U_e 230 V AC, I_e 3 A DC–13: U_e 24 V DC, I_e 2 A
Short-Circuit Protection Max. Fuse Class gG	A	6
Permissible Switching Frequency	Switching Cycle/h	3600
Mechanical Lifetime	Switching Cycles	30 x 10^6
GENERAL DATA		
Creepage and Clearance Distances Between Circuits		
According to DIN VDE 0110-1:04.97: Rated Withstand Voltage	kV	4
Over-Voltage Category		III
Contamination Level		3 Outside, 2 Inside
Design Voltage	V	250
Test Voltage U_{eff} 50 Hz acc. to DIN VDE 0110-1, Table A.1	kV	2,2
Protection Class Housing/Terminals acc. to DIN VDE 0470 Sec. 1:11.92		IP 30/IP 20
Radiated Noise		EN 50081–1:03.93, –2:03.94
Noise Immunity		EN 50082–2:1995
Ambient Temperature, Working Range	°C	– 20 to + 60
Dimension Diagram		S 3 - 2
Connection Diagram		KS 0162/1
Weight	kg	0,36
GENERAL TECHNICAL SPECIFICATIONS		Page i.11

5