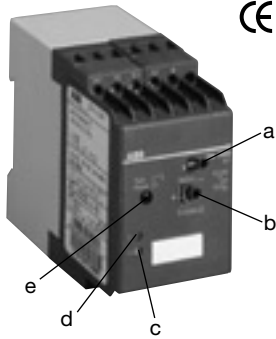


Insulation Monitors for Ungrounded AC Mains

CM-IWN-AC

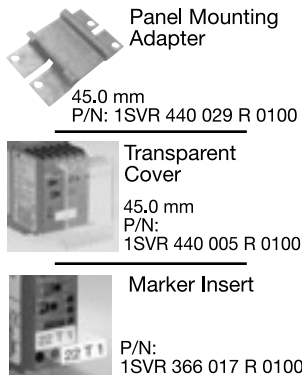
SPDT Relay Output



- a Range selector switch
- b Response threshold 1...110 kΩ
- c U: green LED - supply voltage
- d F: red LED - relay status
- e Test button: "Test - Reset"
- 2 measuring ranges from 1...110 kΩ, selectable
- Tripping memory
- Suitable for insulation monitoring of single and three phase ungrounded AC systems
- Test via test button or a remote test switch
- VDE 0413/T.2
- 1 SPDT contact, normally de-energized
- 2 LED for status indication

Approvals: us

Accessories



See accessory pages for specifications.

Description

The CM-IWN-AC monitors the insulation resistance between ungrounded AC systems and ground potential. It is designed for insulation resistances to be monitored from 1 to 110 kΩ, divided into two ranges. The desired range is selected with a front-mounted switch. The output relay is energized and the LED lights up as soon as the insulation resistance falls below the threshold value. The relay is reset (de-energized) automatically if the measured insulation resistance exceeds 1.6 times the threshold value.

Test

An earth-leakage fault can be simulated using the front-mounted "Test" button. A remote test button can be connected via the terminals S1-⊥. Tripping is caused by closing a n/o contact.

Operation

The CM-IWN-AC is used to monitor the insulation resistance of single-phase or three-phase AC supply voltages. It is primarily used to monitor auxiliary circuits that are electrically isolated from ground. The CM-IWN-AC monitors the insulation resistance between ungrounded AC supply voltages and the protective earth conductors. A superimposed DC measuring voltage is used for measurement.

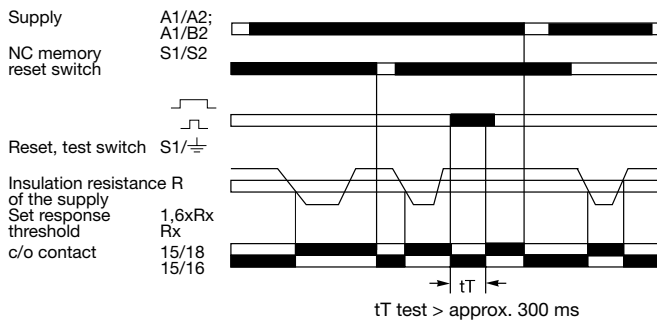
Fault Storage

By jumpering the terminals S1 and S2, fault tripping can be stored. Remote reset can be implemented by connecting a n/c pushbutton to S1 and S2. Pressing the button then resets storage of a fault.

Attention

The CM-IWN-AC is designed for AC supply voltages. Rectifiers, that are connected in series, should be electrically isolated from the measuring relay.

Function



Operating Principle

The voltage is supplied via terminals A1-A2 (A1-B2). This can be the voltage supplied from the system to be monitored. The CM-IWN-AC superimposes DC-voltage on the system to be monitored via the terminals L and ⊥ (one phase or, if available, the neutral). In case of earth-leakage, the resistance of the system to earth potential changes. The resulting earth-leakage current overcomes the insulation resistance. If this earth-leakage current exceeds the adjusted response threshold, the output relay energizes after a delay (see Tripping Time chart) and the red "fault" LED glows.

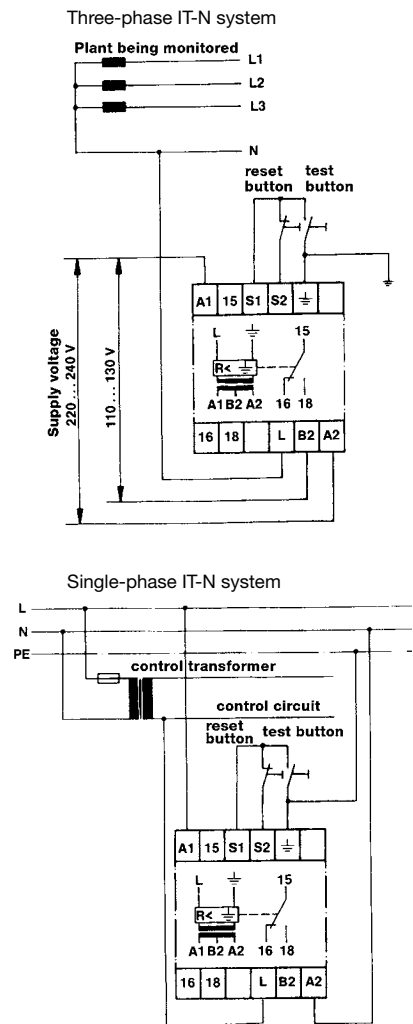
Fields of Application

The insulation resistance monitor CM-IWN-AC is mainly used in industrial applications with electrically isolated AC systems for pre-warning of an isolation fault. This can prevent the installation from incorrect operation caused by a possible second isolation fault. The resistances R1 and R2 correspond to two subsequent isolated faults (see drawing). In this case, the resistances are connected in series related to earth potential which would prevent contactor K2 from being de-energized (fault!) although auxiliary contact K1 is open. This incorrect operation may cause considerable faults within the installation.

Ordering Table

Supply voltage	Part Number
24...240 V AC/DC	1SVR 450 075 R 0000
110...130 V, 220...240 V AC	1SVR 450 071 R 0000

Connection



Insulation Monitors for Ungrounded AC Mains

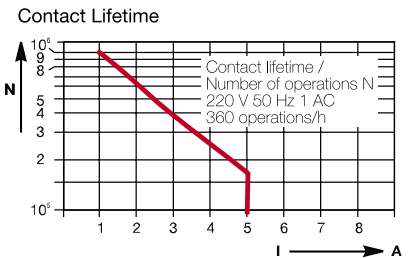
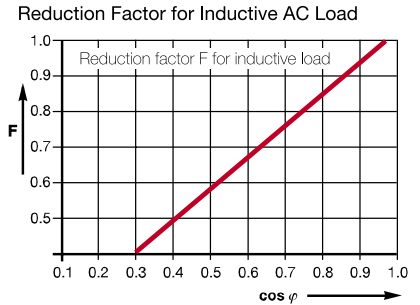
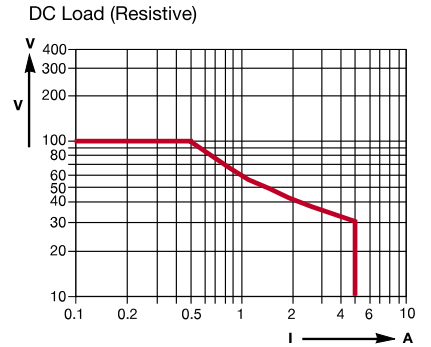
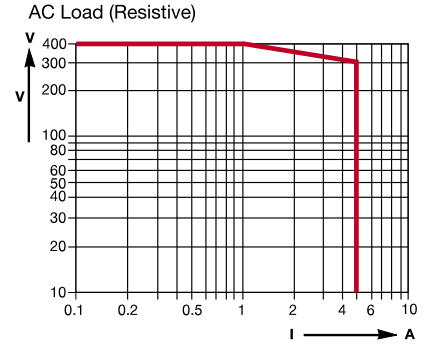
CM-IWN-AC

SPDT Relay Output

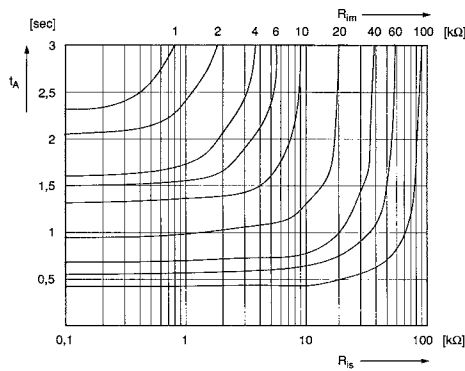
Technical Data

Input		
Supply voltage - power consumption	A1-A2 A1-B2 A1-A2	24...240 V AC/DC - \approx 4.5 VA / W 110...130 V AC - \approx 3 VA 220...240 V AC - \approx 3 VA
Tolerance of supply voltage		-15 % ... +10 %
Supply voltage frequency		50...60 Hz
Measuring circuit		
Measuring input	L, PE \perp	
Response value		1...11 k Ω , 10...110 k Ω
AC current internal resistance min.		100 k Ω
DC current internal resistance min.		100 k Ω
Test resistance		820 Ω
Max. isolation voltage (L-PE)		415 V AC
Measuring DC voltage max.		30 V DC
Cable length for test and reset switch		\leq 10 m
Time delay		see tripping time chart
Display of operational status		
Supply voltage		LED, green
Output relay energized		LED, red
Output		Relay, 1 SPDT contact, normally de-energized
Rated voltage	VDE 0110, IEC 947-1	400 V
Rated switching voltage max.		400 V AC
Rated switching current	AC 12 (resistive) AC 15 (inductive) DC 12 (resistive) DC 13 (inductive)	5 A (at 230 V) 3 A (at 230 V) 5 A (at 24 V) 2.5 A (at 24 V)
Maximum mechanical life/ operations		30 x 10 ⁶ operations
Maximum electrical life (to AC 12 / 230 V / 5 A)		1 x 10 ⁵ operations
Short-circuit proof, max. fuse rating		5 A / fast acting
General data		
Rated impulse withstand voltage V _{imp}		4 kV
Operating temperature		-25°C ... +65°C
Storage temperature		-40°C ... +85°C
Mounting to DIN rail (EN 50022)		Snap-on mounting/Screw mounting using an adapter
Cable size stranded with wire end ferrule		2 x 14 AWG (2 x 2.5 mm ²)
Weight		Approx. 0.66 lb (300 g)

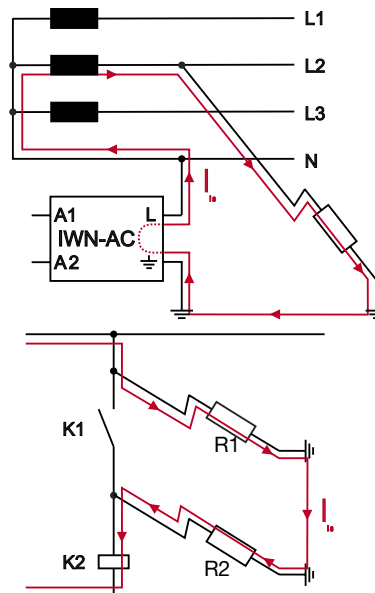
Load Limit Curves



Tripping time



t_d = Delay time
 R_{fm} = Measured insulation resistance
 R_{is} = Adjusted insulation resistance



Mechanical View

