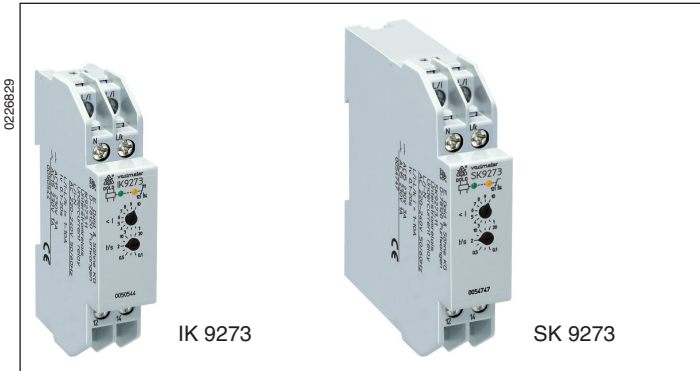


Monitoring Technique

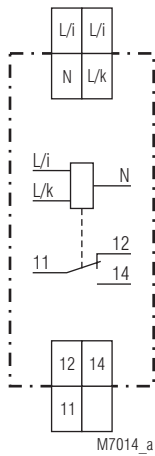
VARIMETER Undercurrent Relay IK 9273, SK 9273

Translation
of the original instructions



- According to IEC/EN 60255
- Single phase
- Measuring ranges from 0.05 ... 10 A
- Setting value adjustable from 0.1 ... 1 I_N
- Fixed hysteresis approx. 4 %
- Settable switching delay
- Closed circuit operation
- Optionally open circuit operation
- Automatic reset
- Optionally manual reset, reset button on the front
- LED indication for auxiliary voltage and contact position
- 1 changeover contact
- Devices available in 2 enclosure versions:
 IK 9273: Depth 59 mm, with terminals at the bottom for installation systems and industrial distribution systems according to DIN 43880
 SK 9273: Depth 98 mm, with terminals at the top for cabinets with mounting plate and cable duct
- Width 17.5 mm

Circuit Diagram



IK 9273.11, SK 9273.11

Approvals and Markings



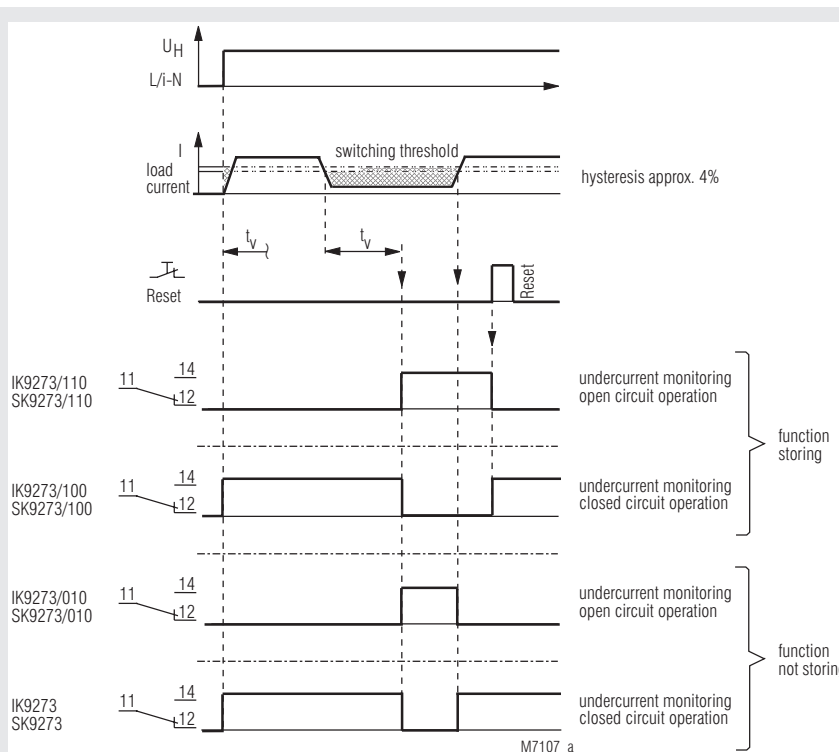
Application

Undercurrent monitoring in AC voltage power supplies

Indication

Green LED: On when auxiliary supply connected
 Yellow LED: On when output contacts switched

Function Diagram



Notes

Auxiliary voltage and measuring circuit are not galvanically separated. Thus they need, the same reference potential "N" if there is no external galvanic separation, e.g. through a current transformer see Application Examples.

Technical Data

Input

Measuring ranges:	AC 50 ... 500 mA AC 0.1 ... 1 A AC 0.5 ... 5 A AC 1 ... 10 A higher currents via external current transformer (2.5 VA)
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Nominal frequency of measuring current: Maximum continuous measuring current:

At AC 50 ... 500 mA:	2.5 A, at 50°C ambient temperature
At AC 0.1 ... 1 A:	5 A, at 50°C ambient temperature
At AC 0.5 ... 5 A:	11 A, at 50°C ambient temperature
At AC 1 ... 10 A:	15 A, at 50°C ambient temperature

Max. overload:

At AC 50 ... 500 mA:	8 A, max. 3 s
At AC 0.1 ... 1 A:	10 A, max. 3 s
At AC 0.5 ... 5 A:	20 A, max. 3 s
At AC 1 ... 10 A:	20 A, max. 3 s

Temperature influence:

Reaction time:	See characteristics, switching delay
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Setting Ranges

Response value:	Infinite variable within measuring range
Hysteresis:	Approx. 0.96 of setting value, fixed Approx. 4 % hysteresis
Setting accuracy:	≤ ± 10 % of setting value
Repeat accuracy:	≤ ± 1 %
Switching delay tv:	0.1 ... 20 s adjustable

Auxiliary Circuit

Auxiliary voltage U_H:	AC 115 ... 127 V, AC 220 ... 240 V
Voltage range:	0.8 ... 1.1 U _H

Nominal consumption

At AC 230 V:	5.5 VA
Nominal frequency:	50 / 60 Hz
Frequency range:	± 5 %

Output

Contacts

IK 9273.11, SK 9273.11:	1 changeover contact
Thermal current I_{th}:	5 A

Switching capacity

To AC 15		
NO contact:	3 A / AC 230 V	IEC/EN 60947-5-1
NC contact:	1 A / AC 230 V	IEC/EN 60947-5-1

Electrical life

To AC 15 at 1 A, AC 230 V	
NO contact:	3 x 10 ⁵ switching cycles

Short circuit strength

max. fuse rating:	4 A gG / gL	IEC/EN 60947-5-1
Mechanical life:	> 10 ⁸ Schaltspiele	

General Data

Operating mode:	Continuous operation
Temperature range:	- 20 ... + 60°C

Clearance and creepage distances

Rated impulse voltage / pollution degree:	4 kV / 2	IEC 60664-1
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Technical Data

EMC

Electrostatic discharge:	8 kV (air) IEC/EN 61000-4-2
HF irradiation:	10 V/m IEC/EN 61000-4-3
Fast transients:	4 kV IEC/EN 61000-4-4
Surge voltages	
Between	
wires for power supply:	1 kV IEC/EN 61000-4-5
Between wire and ground:	2 kV IEC/EN 61000-4-5
HF wire guided:	10 V IEC/EN 61000-4-6
Interference suppression:	Limit value class B EN 55011
Degree of protection:	Housing: IP 40 IEC/EN 60529
	Terminals: IP 20 IEC/EN 60529

Housing:

	Thermoplastic with V0 behaviour according to UL subject 94
Vibration resistance:	Amplitude 0.35 mm frequency 10 ... 55 Hz IEC/EN 60068-2-6
	20 / 060 / 04 IEC/EN 60068-1

Climate resistance:

Terminal designation:

Wire connection:

	EN 50005
	2 x 2.5 mm ² solid or 2 x 1.5 mm ² stranded ferruled DIN 46228-1/-2/-3/-4
Wire fixing:	Flat terminals with self-lifting clamping piece IEC/EN 60999-1
	0.8 Nm IEC/EN 60999-1
Fixing torque:	DIN rail IEC/EN 60715
Mounting:	
Weight	
IK 9273:	65 g
SK 9273:	84 g

Dimensions

Width x height x depth

IK 9273:	17.5 x 90 x 59 mm
SK 9273:	17.5 x 90 x 98 mm

Standard Types

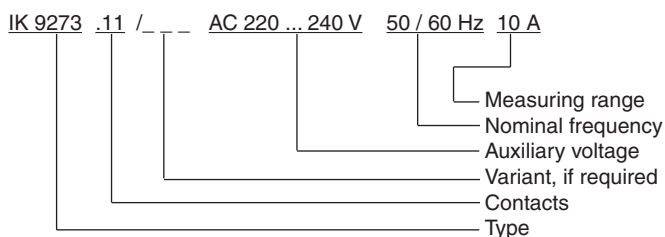
IK 9273.11 AC 220 ... 240 V	50/60 Hz	10 A
Article number:	0050544	
• Closed circuit operation		
• Output:	1 changeover contact	
• Nominal voltage U _N :	AC 220 ... 240 V	
• Measuring range:	1 ... 10 A	
• Width:	17.5 mm	

SK 9273.11 AC 220 ... 240 V	50/60 Hz	10 A
Article number:	0054747	
• Closed circuit operation		
• Output:	1 changeover contact	
• Nominal voltage U _N :	AC 220 ... 240 V	
• Measuring range:	1 ... 10 A	
• Width:	17.5 mm	

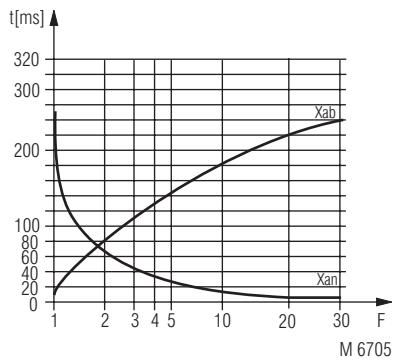
Variants

IK 9273.11/010:	Open circuit operation
IK 9273.11/100:	Manual reset, closed circuit operation
IK 9273.11/110:	Manual reset, open circuit operation

Ordering example for variants



Characteristics

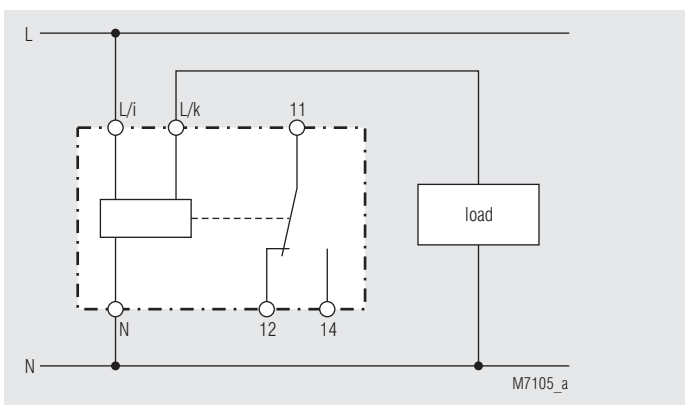


Switching delay

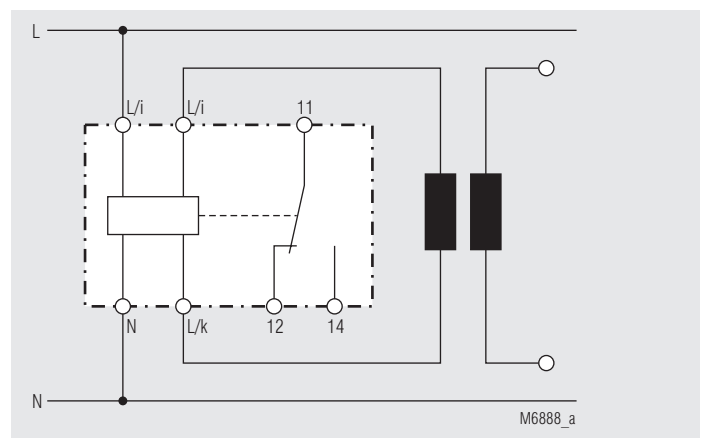
The characteristic shows the switching delay depending on the values of X_{an} - X_{ab} when switching the current on or off. A slow current change reduces the delay.

$$F = \frac{I_{\text{applied}}}{I_{\text{setting}}}$$

Application Examples

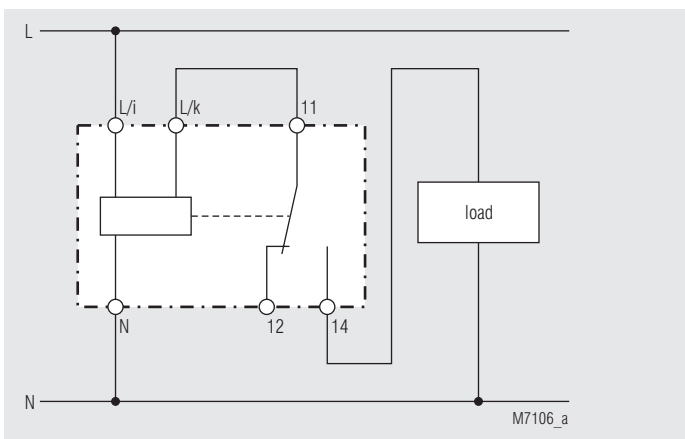


L/i - N Auxiliary voltage
L/i - L/k Current input



Connection Example with external galvanic separation, e.g. by current transformer

Attention: On the secondary side of the current transformer is the potential L.
L/i is allowed to be exchanged, so that the secondary side of the current transformer has the potential N.



Connection Example for IK 9273/100 + IK 9273

Load in series to the contact. When undercurrent the load is turned on. The fault is stored. New start by pressing reset button or auxiliary voltage off, on. Maximum continuous measuring current for this application is 5 A.

