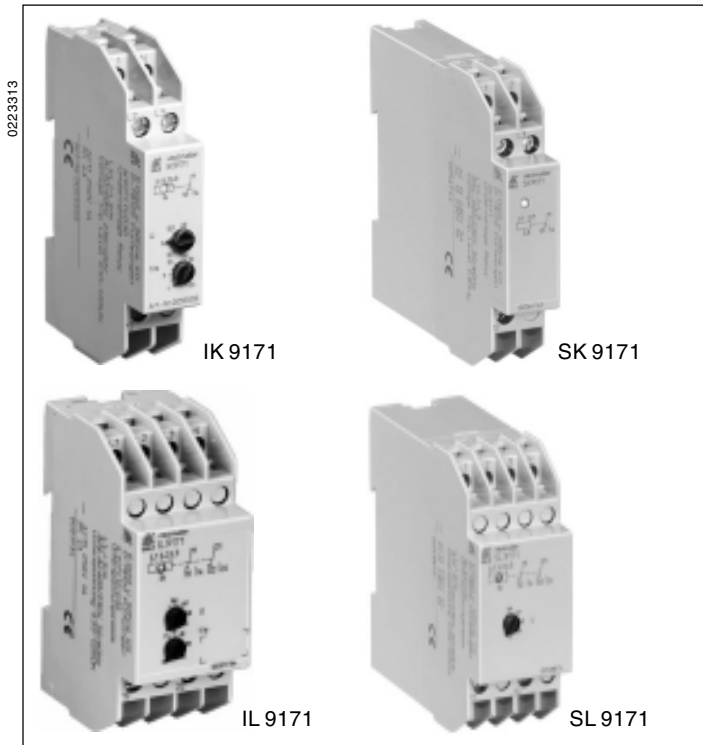


# Monitoring technique

Undervoltage relay IK 9171 / IL 9171,  
SK 9171, SL 9171, 3-phase

varimeter



0223313

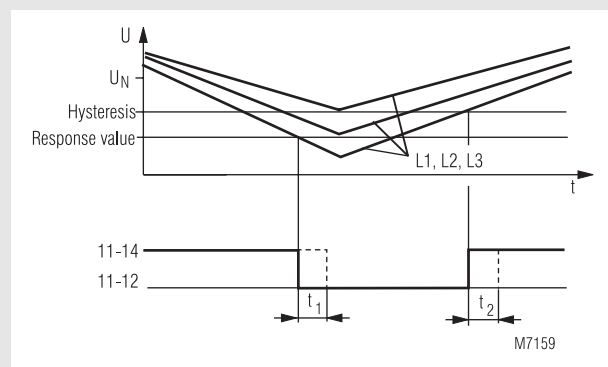
- According to IEC/EN 60 255, DIN VDE 0435-303
- **Devices available in 2 enclosure versions:**
  - I-model:** depth 59 mm, with terminals at the bottom for installation systems and industrial distribution systems according to DIN 43 880
  - S-model:** depth 98 mm, with terminals at the top for cabinets with mounting plate and cable duct
- Monitoring of undervoltage in 3-phase system
- Also for single phase
- Without auxiliary supply
- Optionally for 3p3w systems
- LED indicator for state of output relay
- Independent of phase sequence
- 1 or 2 changeover contacts
- Optionally fixed or settable response value
- As option with phase sequence detection
- Optionally with or without N
- Optionally with off-delay  $t_1$
- Optionally with on delay  $t_2$
- Width:
  - IK 9171, SK 9171: 17,5 mm
  - IL 9171, SL 9171: 35 mm

### Approvals and marking

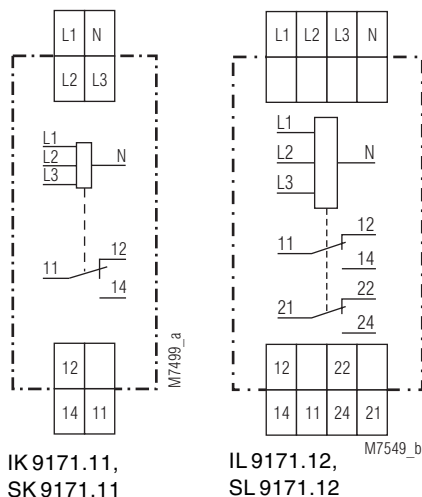


\* pending

### Function diagram



### Circuit diagram



### Applications

Monitoring of voltage systems on undervoltage. Automatic switching to emergency supply or of emergency light in the case of phase loss according to DIN VDE 0100-710 or DIN VDE 0108.

Variant with  $t_2$  is used in unstable voltage systems, where after phase failure detection the consumers should be energized one after the other. This is done by setting the operate delay e.g. 0,1 ... 20 s of the different relays to different values.

This variant is also used where a consumer after only short phase failure should not be started immediately (e.g. compressors).

### Function

The arithmetic mean value of each phase is measured against N. The variants without N measure L1 and L3 against L2 (IK/SK 9171) and L1 against L3 (IL/SL 9171).

### Indicators

Yellow LED: output contact active (11-14 closed)

### Notes

To measure single-phase voltage terminals L1, L2, L3 have to be linked together.

The time delay  $t_1$  is only active if the voltage L1-N (IK/SK 9171) or L3-N (IL/SL 9171) is at least  $0,5 U_N$ .

### Technical data

#### Input circuit

#### Nominal voltage $U_N$

- with neutral:
  - 3 AC 110/63 V, 3 AC 220/127 V,
  - 3 AC 400/230 V, 3 AC 415/240 V,
  - 3 AC 440/254 V, 3 AC 500/290 V
- without neutral:
  - 3 AC 110 V, 3 AC 127 V, 3 AC 220 V,
  - 3 AC 400 V, 3 AC 415 V, 3 AC 440 V,
  - 3 AC 500 V
- Max overload:** 1,15  $U_N$  continuously

## Technical data

### Nominal consumption

IK/SK 9171.11:	approx. 6 VA
IL/SL 9171.12:	approx. 8 VA
<b>Frequency range:</b>	45 ... 65 Hz

### Setting ranges

<b>Response value:</b>	fixed: 0,7 or 0,85 $U_N$ adjustable: 0,55 ... 1,05 $U_N$
<b>Hysteresis:</b>	approx. 4 % of setting value
<b>Time delay <math>t_1</math> / <math>t_2</math>:</b>	0,5 ... 20 s
<b>Reaction time:</b>	approx. 100 ms

### Output

#### Contacts

IK/SK 9171.11:	1 changeover contact
IL/SL 9171.12:	2 changeover contacts
<b>Thermal current <math>I_{th}</math>:</b>	4 A

#### Switching capacity

to AC 15

NO contact:	3 A / AC 230 V	IEC/EN 60 947-5-1
NC contact:	1 A / AC 230 V	IEC/EN 60 947-5-1

#### Electrical life

to AC 15 at 1 A, AC 230 V:	$\geq 3 \times 10^5$ switching cycles
----------------------------	---------------------------------------

#### Short circuit strength

<b>max. fuse rating:</b>	4 A gL	IEC/EN 60 947-5-1
--------------------------	--------	-------------------

#### Mechanical life:

$\geq 30 \times 10^6$  switching cycles

### General data

<b>Operating mode:</b>	Continuous operation	
<b>Temperature range:</b>	- 20 ... + 60 °C	
<b>Clearance and creepage distances</b>		
overvoltage category / contamination level:	4 kV / 2	IEC 60 664-1
<b>EMC</b>		
Electrostatic discharge:	8 kV (air)	IEC/EN 61 000-4-2
HF irradiation:	10 V / m	IEC/EN 61 000-4-3
Fast transients:	2 kV	IEC/EN 61 000-4-4
Surge voltages between wires for power supply:	1 kV	IEC/EN 61 000-4-5
between wire and ground:	2 kV	IEC/EN 61 000-4-5
Interference suppression:	Limit value class B	EN 55 011
<b>Degree of protection:</b>	Housing: IP 40	IEC/EN 60 529
	Terminals: IP 20	IEC/EN 60 529
<b>Housing:</b>	Thermoplastic with V0 behaviour according to UL subject 94	
<b>Vibration resistance:</b>	Amplitude 0,35 mm, frequency 10 ... 55 Hz, IEC/EN 60 068-2-6	
<b>Climate resistance:</b>	20 / 060 / 04	IEC/EN 60 068-1
<b>Terminal designation:</b>	EN 50 005	
<b>Wire connection:</b>	2 x 2,5 mm <sup>2</sup> solid or 2 x 1,5 mm <sup>2</sup> stranded ferruled DIN 46 228-1/-2/-3/-4	
<b>Wire fixing:</b>	Flat terminals with self-lifting clamping piece IEC/EN 60 999-1	
<b>Mounting:</b>	DIN rail IEC/EN 60 715	

#### Weight

IK 9171:	65 g
SK 9171:	83 g
IL 9171:	110 g
SL 9171:	137 g

### Dimensions

#### Width x height x depth

IK 9171:	17,5 x 90 x 59 mm
SK 9171:	17,5 x 90 x 98 mm
IL 9171:	35 x 90 x 59 mm
SL 9171:	35 x 90 x 98 mm

## Standard type

IK 9171.11/200 3/N AC 400/230 V 50/60 Hz 0,85 $U_N$		
Article number:	0049292	stock item
SK 9171.11/200 3/N AC 400/230V 50/60Hz 0,85 $U_N$		
Article number:	0054744	
• Output:	1 changeover contact	
• Nominal voltage $U_N$ :	3/N AC 400/230 V	
• Detection of undervoltage at $< 0,85 U_N$		
• Fixed response value:	0,85 $U_N$	
• No time delay		
• For 3p3w connection		
• Width:	17,5 mm	

## Variants

I_ 9171/001	
0	NC circuit operation with N
1	NC circuit operation without N
0	without time delay
3	settable time delay $t_1$
4	settable time delay $t_2$
0	settable response value
2	fixed response value
K	width 17,5 mm
L	width 35 mm

### Ordering example for Variants

IK 9171 .11 / _ _ _ 3 AC 400 V 50/60 Hz 0,55 ... 1,05 $U_N$ 0,5 ... 20 s	
	Time delay $t_2$
	Response value
	Nominal frequency
	Nominal voltage
	Variant, if required
	Contact
	Type