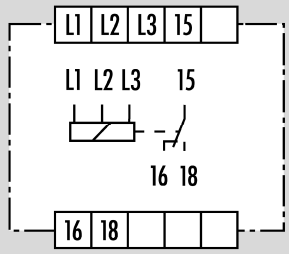
SAP 1002
SAP 1003

Alternating current phase sequence relay without auxiliary voltage

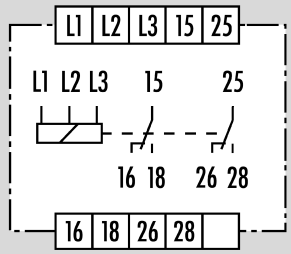
- Detection of incorrect phase sequence
- Standby current circuitry
- Contact allocation: SAP 1002 1 changer, SAP 1003 2 changers

Wiring diagram

SAP 1002 KS 0276/1



SAP 1003 KS 0236/1



Applications

- Monitoring of the phase sequence of installations, e.g.:
  - Crane and elevator installations
  - Machines with rotation direction reversal
  - Pumps and compressors
  - A/C units and ventilation installations
  - Run direction recognition in escalators

Function

After application of the phases L1, L2, L3, the SAP devices monitor their correct phase sequence (rotation to the right). When the load is only present in ohms, a phase failure is also recognized.

After application of the external conductor voltages L1, L2, L3 and when the phase sequence is correct, the relay toggles to the operating position. If one of the conditions is not fulfilled, then the relay remains in the Standby position. The red LED lights up.

If a phase failure occurs during operation, then the relay only re-toggles to the Standby position (and the red LED lighty up) when no voltage recovery occurs via the connected consumer loads. The reset occurs automatically after remedy of the fault.

The difference between the two devices is the contact assembly. The SAP 1002 is equipped with one contact; the SAP 1003 is equipped with two contacts.

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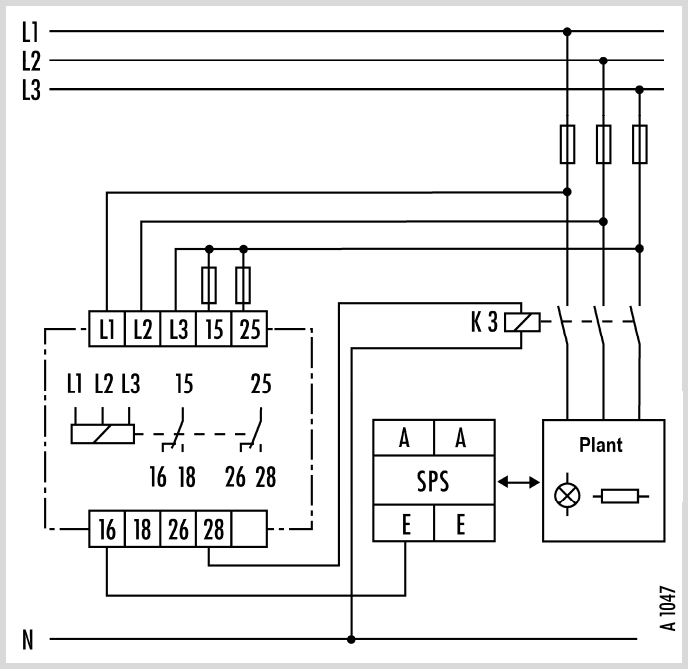
Application example

Monitoring of an installation
The SAP 1003 monitors the voltage supply for the installation. If an error occurs due to the wrong phase sequence or a phase failure, the SAP 1003 toggles to the Standby position. The contactor K3 powers the installation off. The SPS analyzes the message based on the specific installation.

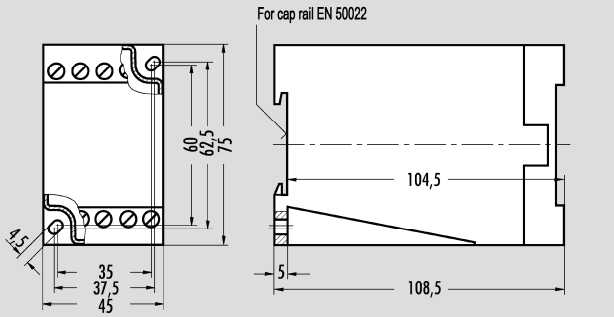


Function diagram

SAP 1002, SAP 1003 FD 0099 W1

Dimensional drawing

S 3-2



Technical Data	SAP 1002	SAP 1003
Function type according to DIN EN 60255-6:11.94	alternating current phase sequence relay, standby current principle	
Function check	1 LED green, 1 LED red	
Function diagram	FD 0099 W1	
Supply circuit		
Nominal voltage U_N 3 AC	**380-415 V** **440-480 V**	
Rated output at 50 Hz and U_N (AC)	3.9 VA 4.2 VA	
Rated output at 50 Hz and U_N (AC)	3.5 W 3.8 W	
Nominal frequency	50 to 60 Hz	
Operating voltage range	0.8 to 1.15 x U_N	
Output circuit		
Contact allocation	1 changer	2 changer
Contact material	Ag alloy, gold-plated	
Switching nominal voltage U_n	AC/DC 230/230 V	
Max. steady current I_n per current path	5 A	
Usage category according 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 safeguard, max. fuse insert Class gG	6 A	
Permissible frequency of operation	≤ 6000 switching cycles/h	
Mechanical service life	30 x 10^6 switching cycles	
Operate time t_A	20 ms	
Fallback interval t_R	35 ms	
General Data		
Air and creep sections between the electric circuits	According to DIN VDE 0110-1:04.97	
Rated voltage impulse	4 kV	
Excess voltage category	III	
Degree of contamination	3 exterior, 2 interior	
Rated voltage	250 V AC	
Testing voltage U_{eff} 50 Hz according to DIN VDE 0110-1, Table A.1	2.21 kV	
Safety class for casing / terminals according to DIN VDE 0470 Section 1:11.92	IP 30 / IP 20	
Interference resistance according to IEC 61000-4	Test acuity 3	
Ambient temperature, work area	–20 to +60 °C	
Dimensional drawing	S 3-2	
Wiring diagram	KS 0276/1	KS 0236/1
Connector cross-sections, fine wire / single core or fine wire with wire end ferrules	2 x 0.75 to 1.5 mm^2 / 2 x 0.75 to 2.5 mm^2 1 or 2 x 0.5 to 1.5 mm^2	
Permissible tightening torque	0.8 to 1 Nm	
Weight	0.28 kg	
Accessories	–	

Device overview / Order numbers

Type	Rated voltage	Order number
SAP 1002	3 AC 380-415 V 50-60 Hz	R3.183.0089.1
	3 AC 440-480 V 50-60 Hz	R3.183.0099.1
SAP 1003	3 AC 380-415 V 50-60 Hz	R3.183.0079.1
	3 AC 440-480 V 50-60 Hz	R3.183.0109.1

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