Single-phase voltage monitoring
S1UM

The S1UM voltage monitoring relay is used to monitor min. or max. voltage values.

Approvals

	S1UM
c UL us LISTED	◆
CCC	◆

Unit features

- 12 measuring ranges 0.1 V ... 500 V, selectable
- Reaction time can be set to up to 10 seconds
- Detects AC/DC voltage values automatically
- Normally energised or normally de-energised mode
- Galvanic isolation between measuring and supply voltage
- S1UM UP version: measuring inputs are not polarity-sensitive
- Response value can be set from 20 % to 100 % of the measuring range limit value
- Hysteresis can be set from 0.6 to 0.95 x U_{on}
- Fault status can be latching or non-latching
- LEDs for relay's switch status and for supply voltage

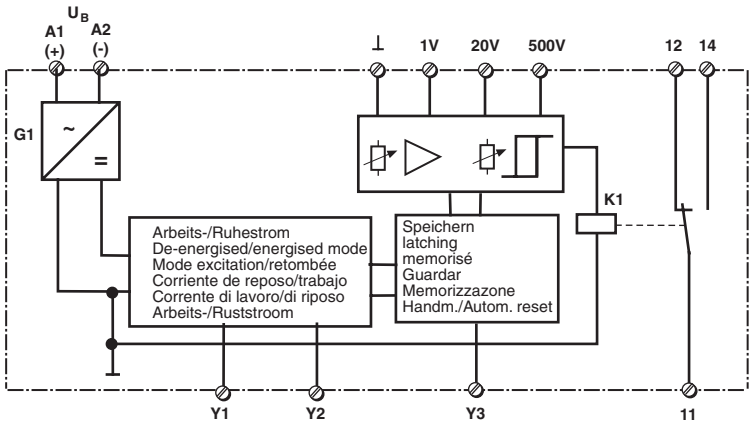
Description

The voltage monitoring relay is enclosed in an S-95 slimline housing. There are 8 versions available for AC operation and one for DC operation.
Features

- Relay outputs: 1 auxiliary contact (C/O)
- 3 measuring circuits for 1 V, 20 V and 500 V, each with 4 different ranges

The S1UM monitors for voltage values exceeding a threshold limit. On the S1UM UP version, the measuring inputs are not polarity-sensitive. If the measuring voltage reaches the set response value U_{on}, auxiliary contact 11-14 changes over and the LED lights. If the measuring voltage falls below the hysteresis value U_{off} and automatic reset is selected, the auxiliary contact changes over again and the LED goes out. The unit is ready for operation again. If faults are latched, the unit will not be ready for operation again until an external reset button is operated or the supply voltage has been switched off and then on again.

Internal wiring diagram



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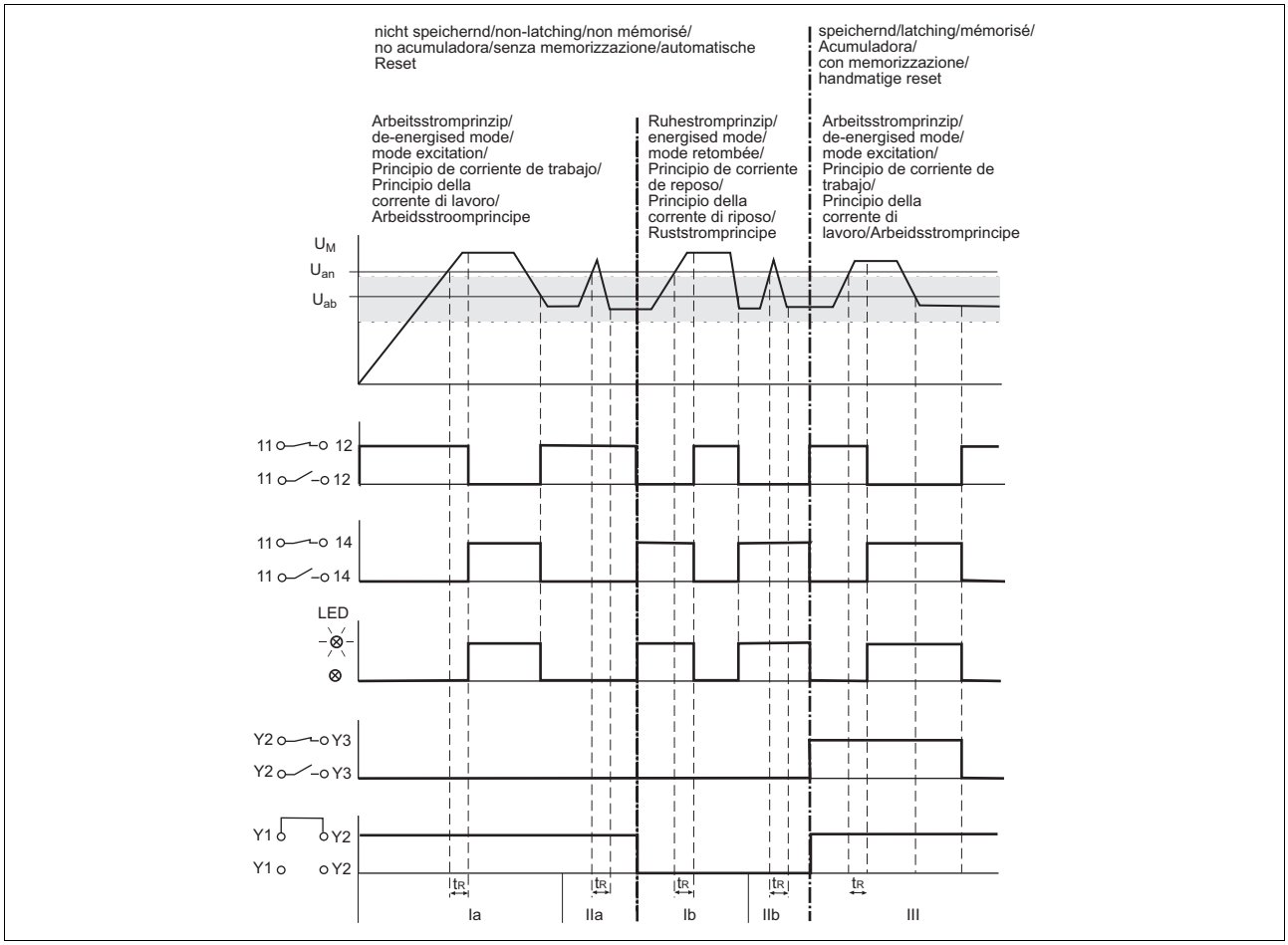
Timing diagram



Key

- Hysteresis (U_{off}): 0.6 to 0.95 x U_{on}
- Grey area: Adjustable hysteresis
- t_r: Reaction time
- Ia: $U_M > U_{on}$: Once t_R has elapsed, the relay energises and the LED “OUT” is lit.
  $U_M < U_{off}$: Relay de-energises and LED goes out.
- IIa: $U_M > U_{on}$ before t_R has elapsed: Relay remains de-energised.
- Ib: $U_M > U_{on}$: As above, but relay de-energises and LED “OUT” goes out.
  $U_M < U_{off}$: Relay energises and LED is lit.
- IIb: As above, but relay remains energised.
- III: $U_M > U_{on}$: See above
  $U_M < U_{off}$: Relay does not de-energise until Y2-Y3 is open.

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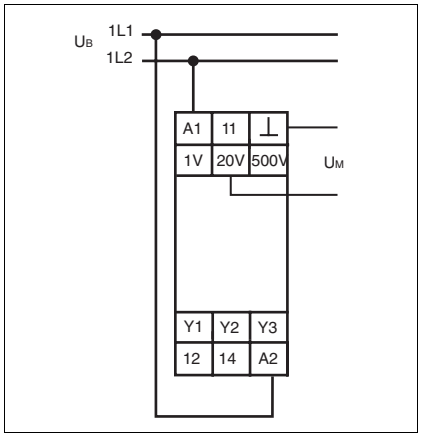
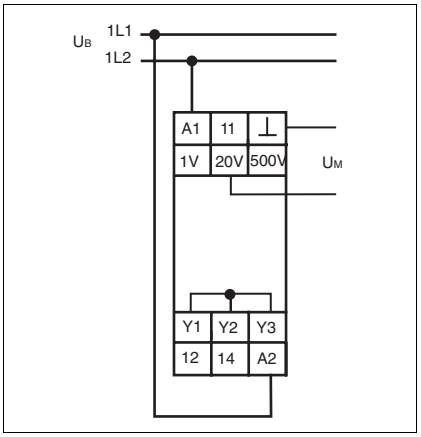
Connection examples

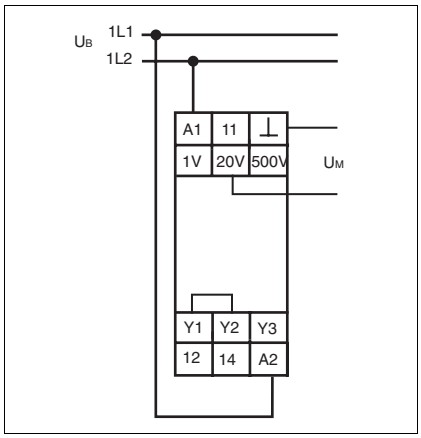
- Example 1
  Normally energised, non-latching



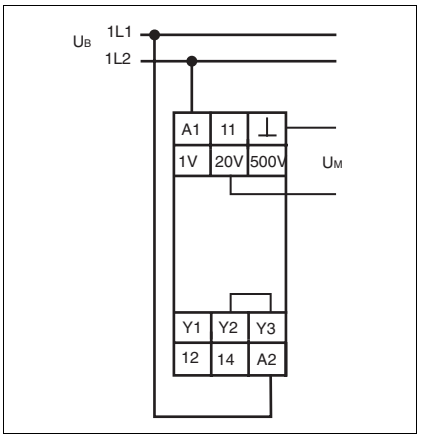
- Example 3
  Normally de-energised, latching



- Example 2
  Normally de-energised, non-latching



- Example 4
  Normally energised, latching



Technical details	S1UM
Electrical data	
Supply voltage	AC: 24, 42 ... 48, 110 ... 127, 230 ... 240 VDC: 24 V
Tolerance	85 ... 110 %
Frequency range AC	50 ... 60 Hz
Power consumption	AC: 2 VA, DC: 1 W
Utilisation category in accordance with EN 60947-4-1	AC1: 240 V/0.1 ... 5 A/1200 VA DC1: 24 V/0.1 ... 5 A/120 W
EN 60947-5-1	AC15: 230 V/2 A; DC13: 24 V/1.5 A
Output contacts	1 auxiliary contact (C/O)
Contact material	AgCdO, 3 µm gold plating for low load range 1-50 V/1-100 mA
Contact fuse protection to EN 60947-5-1	Max. 6 A quick or max. 4 A slow

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Measuring circuit	
Frequency range	0, 40 ... 400 Hz
Adjustable limit values for measuring ranges	1 V: 1, 0.5; 0.2, 0.1 V 20 V: 20, 10, 4, 2 V 500 V: 500, 250, 100, 50 V
Hysteresis	60 ... 95 % of response value
Impedance of the measuring inputs	1 V: 15 kOhm 20 V: 390 kOhm 500 V: 10 MOhm
Overload capacity of the measuring inputs	1 V: max. 40 V 20 V: max. 200 V 500 V: max. 700 V
Polarity of the measuring inputs	Polarised S1UM UP version: Any
Reaction time	0.1 … 10 s
Temperature dependence	+/-0.05 % per +1 °C
Environmental data	
EMC	EN 60947-5-1, EN 61000-6-2
Vibration in accordance with EN 60068-2-6	Frequency: 10 ... 55 Hz Amplitude: 0.35 mm
Climatic suitability	EN 60068-2-78
Airgap creepage	EN 60947-1
Ambient temperature	-15 ... +55 °C
Storage temperature	-40 ... +85 °C
Mechanical data	
Cross section of external conductors	
1 core flexible	0.20 – 4.00 mm², 24 – 10 AWG
2 core with the same cross section, flexible	
with crimp connectors, no plastic sleeve	0.20 – 2.50 mm², 24 – 14 AWG
without crimp connectors or with TWIN crimp connectors	0.20 – 2.50 mm², 24 –14 AWG
Torque setting for connection terminals	0.6 Nm
Mounting position	Any
Housing material	
Housing	PPO UL 94 V0
Front	ABS UL 94 V0
Protection types	Mounting: IP54 Housing: IP40 Terminals: IP20
Dimensions (H x W x D)	87 x 22.5 x 122 mm
Weight	165 g

Order reference

Type	U_B	U_M	Order no.
S1UM	24 VAC	500 VAC/DC	827 230
S1UM	42 - 48 VAC	500 VAC/DC	827 240
S1UM	110 - 130 VAC	500 VAC/DC	827 250
S1UM	230 - 240 VAC	500 VAC/DC	827 260
S1UM UP	24 VDC	500 VAC/DC	827 225
S1UM UP	24 VAC	500 VAC/DC	827 235
S1UM UP	42 - 48 VAC	500 VAC/DC	827 245
S1UM UP	110 - 130 VAC	500 VAC/DC	827 255
S1UM UP	230 - 240 VAC	500 VAC/DC	827 265

U_B: Supply voltage
U_M: Measuring voltage
Additional versions on request

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