Single-phase current monitoring
S1IM

The S1IM current monitoring relay is used to monitor the maximum current values on heaters, lamps etc.

Approvals

	S1IM
c UL us LISTED	◆
CCC	◆

Unit features

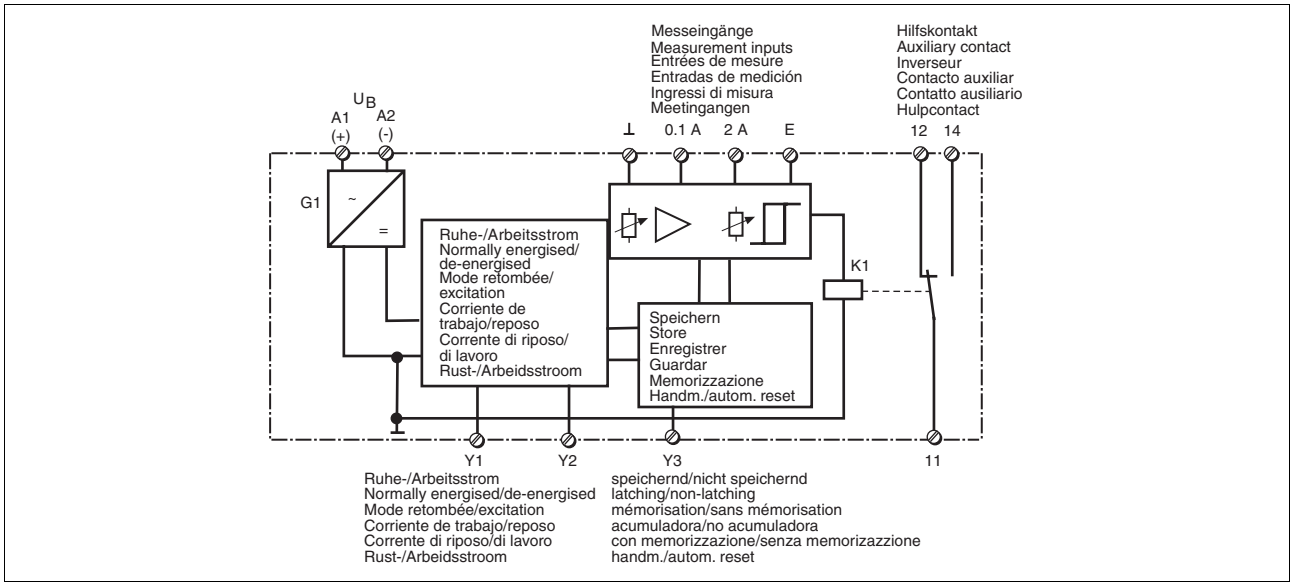
- 12 measuring ranges can be selected from 0.002 to 15 A
- Reaction time can be set to up to 10 seconds
- Operates to either normally energised or normally de-energised mode
- Galvanic isolation between measuring and supply voltage
- UP version: measuring inputs are not polarity-sensitive

Description

The current 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 0.1 A, 2 A and E, each with 4 different ranges
- Response value can be set from 20 % to 100 % of the measuring range limit value
- Hysteresis factor can be set from 0.6 to 0.9 x I_{on}
- Fault latching or automatic reset
- LEDs for relay's switch status and for supply voltage

The S1IM monitors for current values exceeding a selectable threshold limit. On the UP version, the measuring inputs are not polarity-sensitive. If the measuring current reaches the response value I_{on}, auxiliary contact 11-14 changes over and the LED lights. If the measured current falls below the hysteresis value I_{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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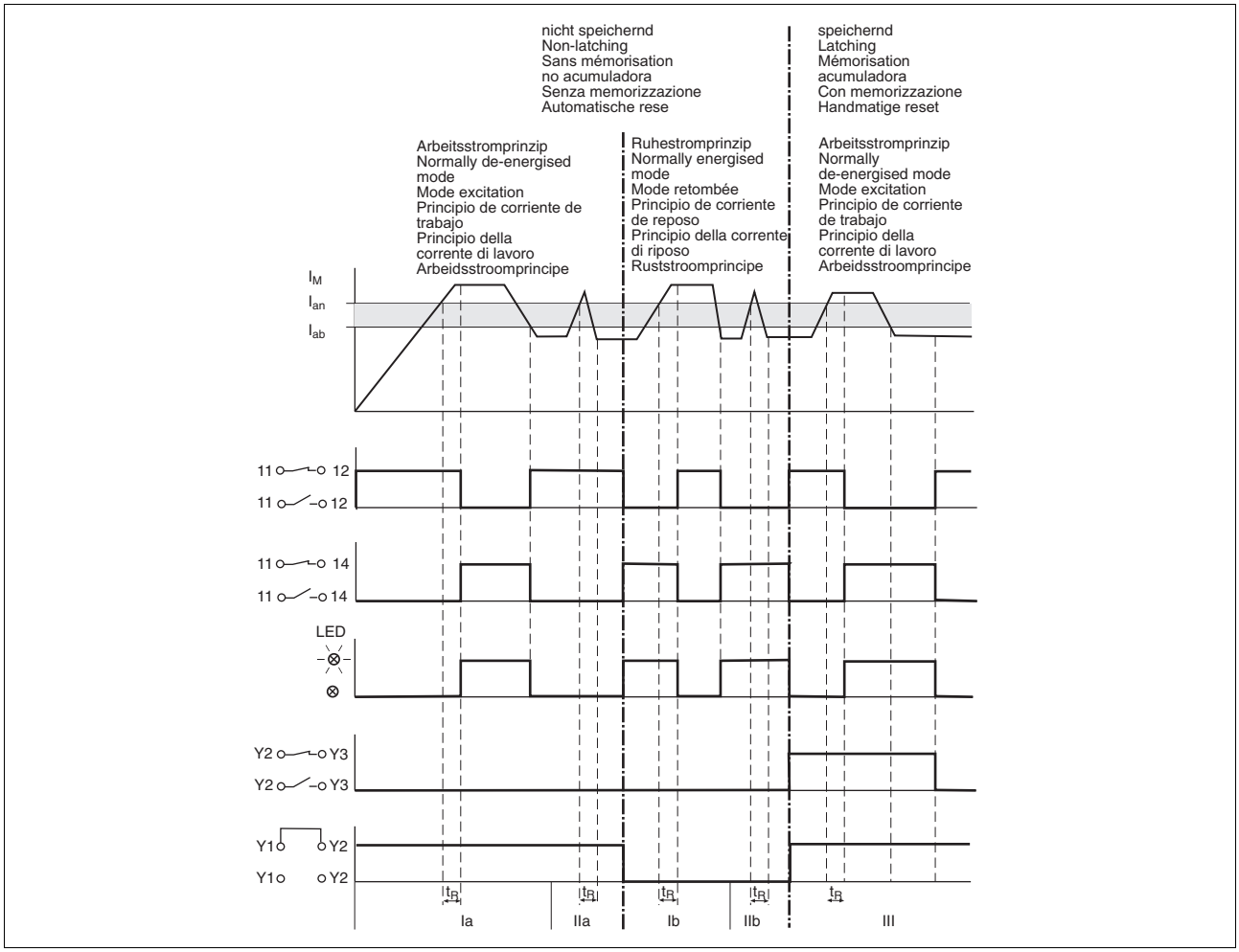
Timing diagram



Key

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

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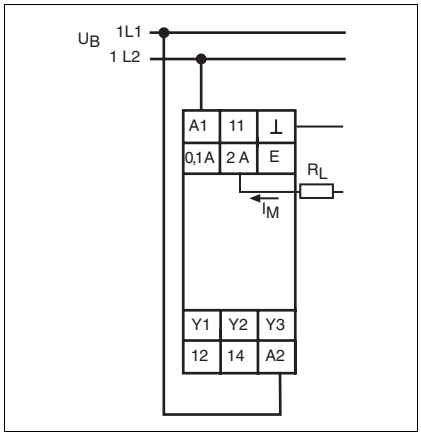
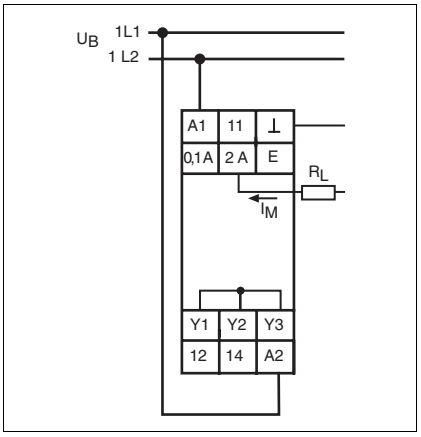
Connection examples

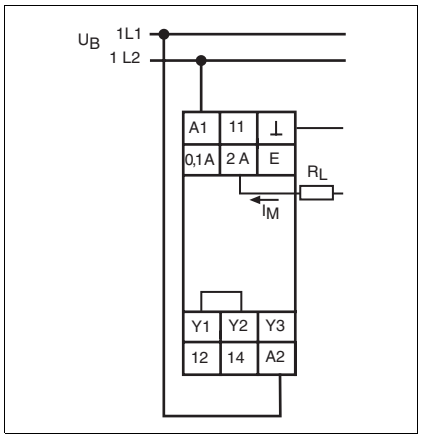
- Example 1
  Normally energised, non-latching



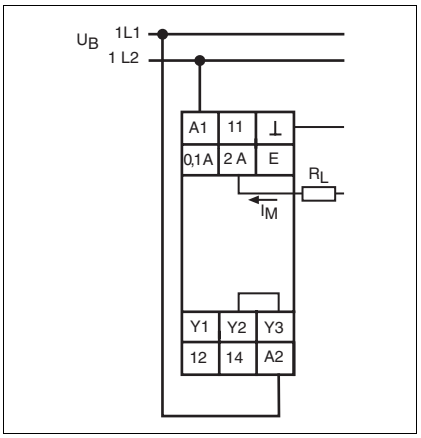
- Example 3
  Normally de-energised, latching



- Example 2
  Normally de-energised, non-latching



- Example 4
  Normally energised, latching



Technical details	S1IM
Electrical data	
Supply voltage	AC: 24, 42-48, 110-127, 230-240 V DC: 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 EN 60947-5-1	 AC1: 240 V/0.1 ... 5 A/1200 VA DC1: 24 V/0.1 ... 5 A/120 W AC15: 230 V/2 A; DC13: 24 V/1.5 A
Output contacts	1 auxiliary contact (C/O)

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Electrical data	
Contact material	AgCdO, 3 µm gold plating for low load range 1-50 V/1-100 mA
Contact fuse protection in accordance with EN 60947-5-1	Max. 6 A quick or max. 4 A slow
Measuring circuit	
Frequency range	DC, 40 ... 400 Hz
Adjustable limit values for measuring ranges	0.1 A: 0.1; 0.05; 0.02; 0.01 A 2 A: 2; 1; 0.4; 0.2 A E: 50 A/25 A/10 A/5 A
Hysteresis	60 ... 95 % of response value
Impedance of the measuring inputs	0.1 A: 2.5 Ω 2 A: 125 mΩ E: 5 mΩ
Max. overload	0.1 A: max. 0.2 A 2 A: max. 2.5 A E: 15 A/100 ED, 20 A/10 s, 50 A/2 s
Polarity of the measuring inputs	Polarised: 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	0.60 Nm (screws)
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 121 mm
Weight	170 g

Order reference

Type	U_B	I_M	Order no.
S1IM	24 VAC	15 A	828 020
S1IM	42 - 48 VAC	15 A	828 030
S1IM	110 - 130 V AC	15 A	828 040
S1IM	230 - 240 VAC	15 A	828 050
S1IM UP	24 VDC	15 A	828 035

U_B: Supply voltage
I_M: Measuring current
Additional versions on request

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