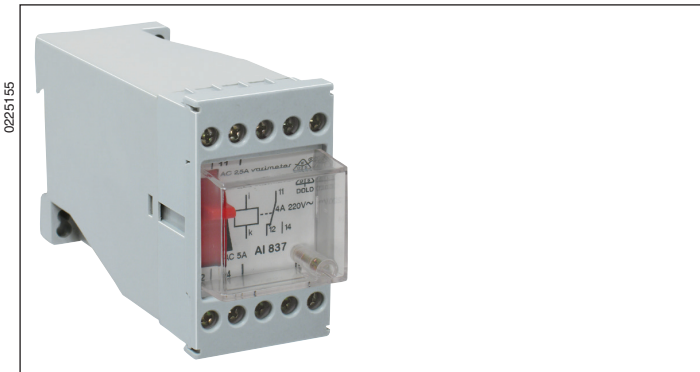


VARIMETER

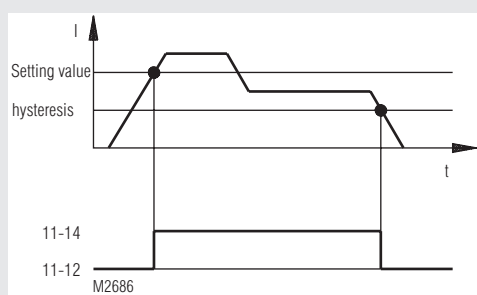
Undercurrent Relay AI 837,
Overcurrent Relay AI 838

Translation
of the original instructions



- According to nach IEC/EN 60255-1
- Single-phase
- Without auxiliary supply
- Measuring ranges from 0.5 to 16 A
- Settable response value
- 1 changeover contact
- Width 45 mm

Function Diagram



Approvals and Markings

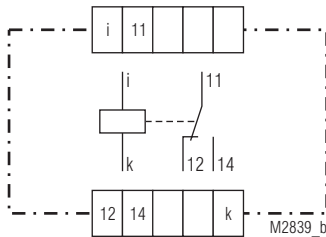


Notes

On the undercurrent relay AI 837 the scale is adjusted to the resetting value. To get a signal at undercurrent, the current must first reach a value higher then reset value / hysteresis to activate the relay.

On the overcurrent relay AI 838 the scale is adjusted to the response value. When the current exceeds the setting value the relay switches on. The contact resets, as soon as the current goes under the setting value x hysteresis.

Circuit Diagram



AI 837, AI 838

Technical Data

Input

Measuring ranges:

0.5 ... 1 A	4 ... 8 A
0.8 ... 1.6 A	6 ... 12 A
1.5 ... 3 A	8 ... 16 A
2.5 ... 5 A	

50/60 Hz or DC RW ≤ 5 %
or DC RW ≤ 48 %
(please state when ordering)

Extension of measuring range: For current > 16 A

AC: Intermediate switching of current transformers e.g from the company Ritz instrument Transformers GmbH D-2241 Hamburg with technical data: Secondary rated current: 5 A at setting range 2.5 ... 5 A Load capacity: 18 VA including a double cable with A = 1 mm²/1 m, Rated overcurrent n < 1.5; Class 3 e.g. type KSW 73.

DC: Parallel connection of shunt resistor to measuring relay with 8 ... 16 A range

Connection Terminals

Terminal designation	Signal description
i, k	Current measuring input
11, 12, 14	Changeover contact

The table is only valid when the wire between shunt and relay has a resistance of approx. 0.5 mΩ (equivalent to a copper wire with 0.3 m length and 10 mm ² diameter) and the ambient temperature is 20 °C. Offset of measuring range with other wire length see Characteristics.	Nominal current of shunt (150 mV)	Measuring range
	15 A	11.5 ... 22.5 A
	25 A	14 ... 27 A
	40 A	17.5 ... 33.5 A
	60 A	22 ... 42 A
	100 A	31 ... 60 A
	150 A	42 ... 83 A
	250 A	65 ... 126 A
	400 A	99 ... 195 A
	600 A	145 ... 285 A
	1000 A	235 ... 465 A
	1500 A	350 ... 690 A
2000 A	460 ... 915 A	
2500 A	575 ... 1140 A	

Technical Data

Internal resistance:	Current range	Ohm	
		AI 837	AI 838
	0.5 ... 1 A	2.52	4.45
	0.8 ... 1.6 A	0.85	1.54
	1.5 ... 3 A	0.257	0.48
	2.5 ... 5 A	0.089	0.166
	4 ... 8 A	0.032	0.066
	6 ... 12 A	0.015	0.0273
8 ... 16 A	0.00822	0.00822	

Setting: Infinite variable

Hysteresis: AC and DC
Residual ripple 48 %: Approx. 0.8 at beginning of scale
Approx. 0.9 at middle or end of scale

DC
Residual ripple < 5 %: Approx. 0.6 at beginning of scale
Approx. 0.7 at middle or end of scale

Accuracy: AC: $\pm 2\%$ / DC: $\leq 15\%$

Overload continuously
Up to 12 A: AI 837 DC 1.2 x End of scale value
AI 837 AC 1.0 x End of scale value
AI 838 AC/DC 1.0 x End of scale value for 1 s
2.0 x End of scale value
16 A: AI 837 DC 1.4 x End of scale value
AI 837 AC 1.2 x End of scale value
AI 838 AC/DC 1.2 x End of scale value

Nominal consumption: AC < 18 VA

Output

Contact: 1 changeover contact
Switching delay: Approx. 100 ms
longer times with external timer

Thermal current I_{th} : 6 A

Switching capacity: AC 24 V 110 V 230 V 380 V
Cos. φ 1 ... 0.7: 4 A 4 A 4 A 3 A
Cos. φ 0.4: 3 A 3 A 3 A 2.5 A

DC 24 V 60 V 110 V 220 V
Ohmsch: 1 A 0.4 A 0.3 A 0.15 A
Induktiv: 0.5 A 0.2 A 0.15 A 0.08 A

Electrical life: 5 x 10⁶ switching cycles
3000 switching cycles / h at 30 % of the switching capacity
3 x 10⁶ switching cycles
1000 switching cycles / h bei 50 % of the switching capacity
1 x 10⁶ switching cycles
500 switching cycles / h bei 100 % of the switching capacity

Permissible switching frequency: 1000 switching cycles / h

Short circuit strength max. fuse rating: 10 A gG / gL IEC/EN 60947-5-1

Mechanical life: > 5 x 10⁶ switching cycles

General Data

Operating mode: Continuous operation

Temperature range
Operation: - 10 ... + 45 °C
Storage: - 10 ... + 45 °C

Altitude: < 2000 m

Clearance and creepage distances

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

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: 2 kV IEC/EN 61000-4-5

Between wire and ground: 4 kV IEC/EN 61000-4-5

HF-wire guided: 10 V IEC/EN 61000-5-6

Interference suppression: Limit value class B EN 55011

Technical Data

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...55Hz IEC/EN 60068-2-6

Climate resistance: 10 / 045 / 04 IEC/EN 60068-1

Wire connection: 2 x 2.5 mm² solid or 2 x 1.5 mm² stranded wire with sleeve

DIN 46228-1/-2/-3/-4
AC/DC 16 A: 1 x 10 mm² solid

Wire fixing: Flat terminals with self-lifting clamping piece IEC/EN 60999-1

0.8 Nm

Fixing torque: 0.8 Nm

Mounting: DIN rail IEC/EN 60715

Weight: 600 g

Dimensions

Width x height x depth: 45 x 77 x 125 mm

Standard Type

AI 837 AC 2.5 ... 5 A
Article number: 0000850

• Undercurrent relay

• Measuring range: AC 2.5 ... 5 A

• Width: 45 mm

AI 838 AC 2.5 ... 5 A
Artikelnummer: 0000873

• Overcurrent relay

• Measuring range: AC 2.5 ... 5 A

• Width: 45 mm

Accessories

Setting range 8 ... 16 A

To wire the unit with bigger terminals a special tool is delivered with the unit.

Characteristic

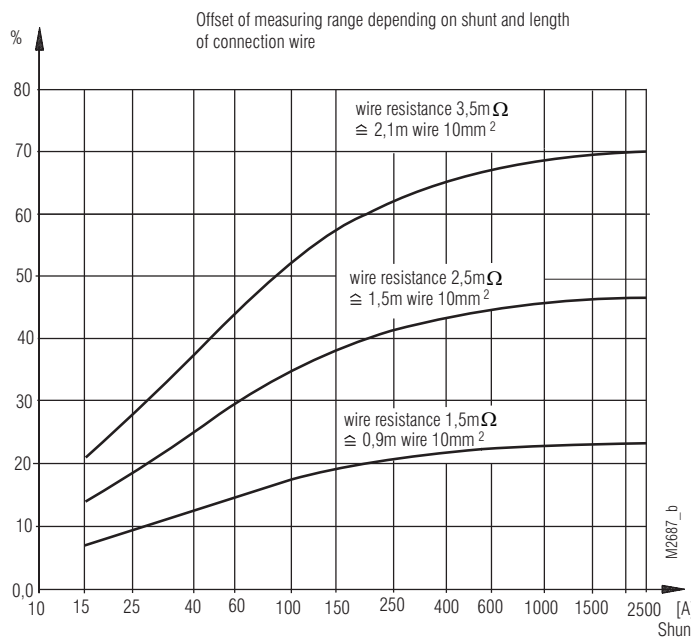


Diagram offset of measuring range