

Monitoring Technique

VARIMETER

Thermistor Motor Protection Relay

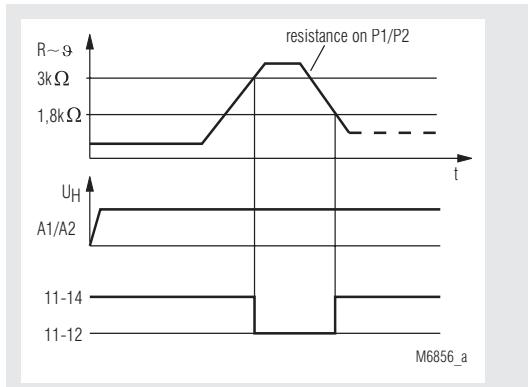
BA 9038, AI 938

DOLD 

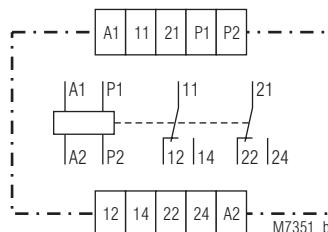
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Function Diagram



Circuit Diagram



BA 9038.12, AI 938.002,

- According to DIN VDE 0660 part 302 (pr EN 60 947-8) and part 303
- 1 input for PTC-resistors or bimetal contacts
- Broken wire detection in sensor circuit
- Optionally with no voltage reclosing interlock
- Closed circuit operation
- 1 or 2 changeover contacts
- Width 45 mm

Approvals and Marking



* see variants

Applications

To protect against thermal overload of motors caused by high switching frequency, heavy duty starting, phase failure on one phase, bad cooling, high ambient temperature.

Function

As sensors special PTC-resistors are used, which are normally built into the motor windings. Up to 6 PTC resistors can be connected in series. When the resistance reaches a certain value, the output relay deenergizes. An LED comes on. The thermistor motor protection relay works with closed circuit operation and also detects broken wire on the sensor circuit. Please note, that contact 11-12 and 21-22 may be closed for a short moment while the voltage is switched on.

The models AI 938.001/03 and BA 9038.11/003 include a thermal reclosing interlock. When the response temperature is reached the output relay deenergizes and the push button on the relay front comes out after approx. 1 s. This unit has no indicator LED.

The model BA 9038.100 includes an electromagnetic reclosing interlock. When the response temperature is reached the output relay deenergizes and the push button on the relay front comes out immediately. This model has 2 LEDs. One indicates connected auxiliary supply, the other one overtemperature.

The output relay of the units with reclosing interlock remains deenergized, also when the temperature goes back to normal. The interlock is no voltage safe, so also on loss of voltage its actual state is stored (VDE 0113 § 5.4.2). By pressing the button on the front the module can be reset again.

Notes

The wires of the sensor circuit must not be influenced by other voltages therefore they should be routed separately or screened and earthed at one end only. The total resistance of the wiring should not exceed 100 Ω .

Technical Data

Input Circuit

Response value:	$\geq 3 \text{ k}\Omega$
Release value:	$\leq 1.8 \text{ k}\Omega$
Number of sensors:	1 ... 6 pcs
Operate delay:	$\leq 20 \text{ ms}$
Release delay:	$\leq 15 \text{ ms}$

Auxiliary Circuit

Auxiliary voltage U_H :	AC 24, 42, 110, 127, 230, 240 V
Voltage range of U_H :	0.8 ... 1.1 U_N
Nominal consumption:	2.2 VA
Nominal frequency of U_H :	50 / 60 Hz

Technical Data

Output

Contacts

BA 9038.11:	1 changeover contact
AI 938.001:	1 changeover contact
BA 9038.12:	2 changeover contacts
AI 938.002:	2 changeover contacts
Thermal current I_{th}:	5 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 3 A, AC 230 V

2 changeover contacts:	0.5 x 10 ⁵ switching cycles
1 changeover contact:	2.5 x 10 ⁵ switching cycles

at 0.05 A:

2 changeover contacts:	10 x 10 ⁶ switching cycles
1 changeover contact:	30 x 10 ⁶ switching cycles

Short-circuit strength

max. fuse rating:

4 A gL	IEC/EN 60 947-5-1
> 30 x 10 ⁶ switching cycles	

Mechanical life:

> 30 x 10⁶ switching cycles

General Data

Operating mode:

Continuous operation

- 20 ... + 60°C

Clearance and creepage distances

rated impuls voltage / pollution degree:

4 kV / 2	IEC 60 664-1
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EMC

Electrostatic discharge:	6 kV (air)	IEC/EN 61 000-4-2
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 wired and ground:	2 kV	IEC/EN 61 000-4-5

Interference suppressions:

Limit value class B	EN 55 011
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Degree of protection

Housing:	IP 40	IEC/EN 60 529
Terminals:	IP 20	IEC/EN 60 529

Housing:

Thermoplastic with V0 behaviour according to UL subject 94
Amplitude 0.35 mm, IEC/EN 60 068-2-6 frequency 10 ... 55 Hz

Vibration resistance:	20 / 060 / 04	IEC/EN 60 068-1
Climate resistance:	EN 50 005	

Terminal designation:	2 x 2.5 mm ² solid or
Wire connection:	2 x 1.5 mm ² stranded wire with sleeve

DIN 46 228-1/-2/-3/-4	
Wire fixing:	Flat terminals with self-lifting clamping piece

35 x 50 mm and	IEC/EN 60 999-1
35 x 60 mm	

Mounting:	DIN rail	IEC/EN 60 715
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Weight:

BA 9038:	250 g
AI 938:	240 g

Dimensions

Width x height x depth:

BA 9038: 45 x 74 x 124 mm

AI 938: 45 x 77 x 127 mm

Standard Types

BA 9038.11/003 AC 230 V 50 / 60 Hz

Article number: 0028829

stock item

• Output: 1 changeover contact

• Auxiliary voltage U_{H} : AC 230 V

• with thermal reclosing interlock (manual reset)

• Width: 45 mm

Variants

BA 9038.11: without thermal reclosing interlock (manual reset function)

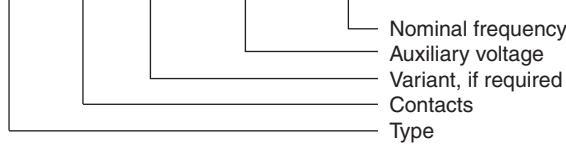
BA 9038. __ /100: with electro magnetic reclosing interlock (manual reset function)

AI 938.001: without thermal reclosing interlock (manual reset function)

AI 938. __ /60: with CSA approval

Ordering example for variants

BA 9038 . __ / __ AC 230 V 50/60 Hz



Application Example

