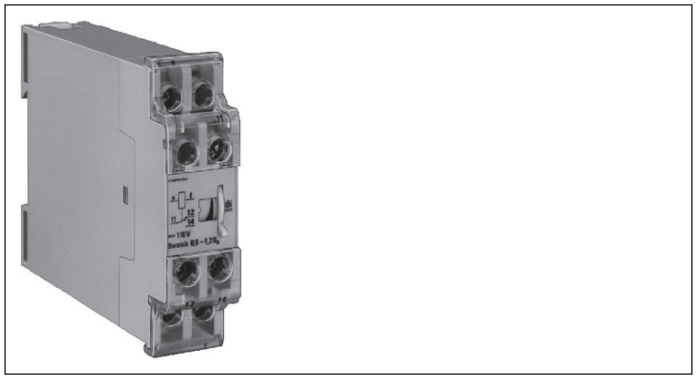
VARIMETER
Current Relay
ML 9701

Translation of the original instructions

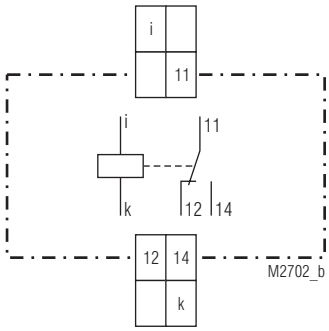
DOLD

0221586



- According IEC/EN 60255-1
- Single-phase
- Can be used for under- or overcurrent detection
- Measuring ranges from 0,5 to 16 A
- Settable response value
- Without auxiliary voltage
- Width 22, 5mm

Circuit Diagram



Connection Terminals

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

Approvals and Markings

CE

Applications

Because of the electromechanical construction the ML 9701 is insensitive to high voltage peeks with high energy and radio frequency disturbance. Special interference suppression is not necessary. The relay is used to monitor current in heatings, field current and motorprotection.

Function

The setting ratio is 1 : 2.
Please note when mounting the units without distance to each other:

1. If the relays are connected to DC current please connect all the units with the same polarity
2. If the relays are connected to AC current please connect on all units terminal f to neutral
3. If the relays are connected to a 3-phase system it is possible that the relays influence each other by magnetic fields, so that the response value is increased by approx. 25 %

If the units are mounted with a distance of > 22 mm, the a.m. behaviour does not occur.

Technical Data

Input

Measuring range:	0,5 ... 1 0,8 ... 1,6 1,5 ... 3 2,5 ... 5 4 ... 8 6 ... 12 8 ... 16 A AC 50 / 60 Hz, DC 0 ... 48 % RW
Setting:	Infinite variable
Setting accuracy:	± 5 %
Hysteresis:	AC approx. 0,85 / DC approx. 0,5
Nominal consumption:	7 VA / 1,4 W
Nominal frequency:	50 / 60 Hz
Frequency range:	± 5 %

Output

Contacts		
ML 9701.11:	1 changeover contact	
Thermal current I_{th}:	4 A	
Switching capacity		
NO contact:	2 A / AC 230 V	IEC/EN 60947-5-1
NC contact:	1 A / AC 230 V	IEC/EN 60947-5-1

Technical Data

Electrical life:	1,2 x 10^6 switching cycles 1 500 switching cycles / h at 30 % of the switching capacity 0,8 x 10^6 switching cycles 1 000 switching cycles / h at 50 % of the switching capacity 0,3 x 10^6 switching cycles 500 switching cycles / h at 100 % of the switching capacity	
Permissible switching:	1 000 switching cycles / h	
Short-circuit strength		
Max. fuse rating:	2 A gG / gL	IEC/EN 60947-5-1
Mechanical life:	1,5 x 10^6 switching cycles	

General Data

Operating mode:	Continuous operation	
Temperature range:	See nomograph of overload and temperature range	
Clearance and creepage distances		
Rated impulse voltage / pollution degree:	4 kV / 3	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:	2 kV	IEC/EN 61000-4-4
Surge voltages		
Between		
wires for power supply:	1 kV	IEC/EN 61000-4-5
Between wire and ground:	4 kV	IEC/EN 61000-4-5
HF-wire guided:	10 V	IEC/EN 61000-4-6
Interference suppression:	Limit value class B	EN 55011
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 ... 55 Hz	IEC/EN 60068-2-5
Climate resistance:	Humid heat	IEC/EN 60068-2-30
Terminal designation:	EN 50005	
Wire connection:	2 x 2,5 mm^2 solid or 2 x 1,5 mm^2 stranded wire with sleeve DIN 46228-1/-2/-3/-4	
Wire fixing:	Flat terminals with self-lifting clamping piece	IEC/EN 60999-1
Fixing torque:	0.8 Nm	
Mounting:	DIN rail	IEC/EN 60715
Weight:	250 g	

Dimensions

Width x height x depth:	22,5 x 80 x 102 mm

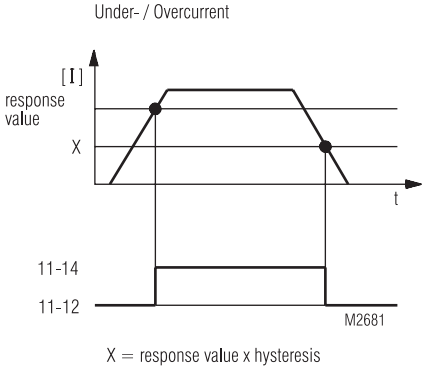
Standard Type

ML 9701.11 0,8 ... 1,6 A	
Article number:	0029209
• Output:	1 changeover contact
• Measuring range:	0,8 ... 1,6 A
• Width:	22,5 mm

Ordering Example

ML 9701 .11 4 ... 8 A
- 4 ... 8 A — Measuring range
- .11 — Contact
- ML 9701 — Type

Characteristics



X = response value x hysteresis

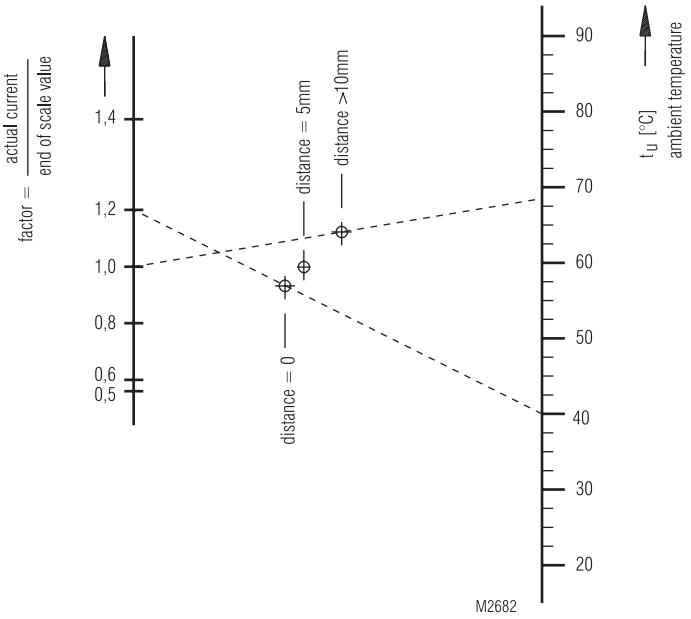
Undercurrent detection (closed circuit operation)
Example:
Required response value: ≤ AC 3 A

$$\text{Setting value} = \frac{\text{required response value}}{\text{Hysteresis}} = \frac{3\ A}{0{,}85} = 3{,}5\ A$$

If the current exceeds 3,5 A the contact 11-14 closes. If the current drops under 3 A the output contact switches back to 11-12.

Overcurrent detection (open circuit operation)
Example:
Required response value: ≥ AC 4 A
= Setting value on ML 9701

If the current exceeds 4 A the contact 11-14 closes. If the current drops under 3,4 A (hysteresis 0,85) the output contact switches back to 11-12.



Overload and ambient temperature:

Nomograph to evaluate the max. continuous overload depending on mounting distance and ambient temperature:
1. Select ambient temperature e.g. 40 °C
2. Select mounting distance e.g. 0 mm
Draw a line throught the 2 points and extend it to the left scale.
Faxtor 1,2 means, that the relay can be used with 1,2 times overvoltage having an ambient temperature of 40 degrees and the relay is mounted without distance.