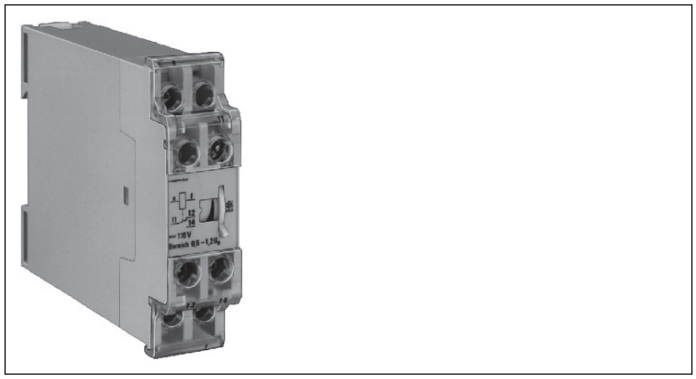
VARIMETER
Voltage Relay
ML 9702

Translation of the original instructions

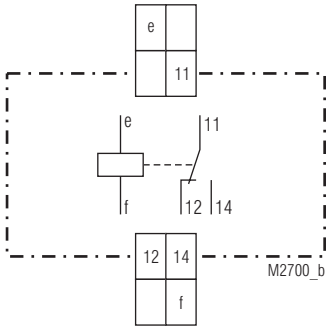
DOLD

0221587



- According to IEC/EN 60255, DIN VDE 0435-303
- Single-phase
- Can be used for under- or overvoltage detection
- Measuring ranges from 14 to 288 V
- Settable response value
- Without auxiliary supply
- Width 22.5 mm

Circuit Diagram



Approvals and Markings

CE

Applications

Because of the electromechanical construction the ML 9702 is insensitive to high voltage peeks with high energy and radio frequency disturbance. Special interference suppression is not necessary. It is used in emergency power supply systems, as fast reacting overvoltage protection and to monitor voltage in control circuits.

Function

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

1. If the relays are connected to DC voltage please connect all the units with the same polarity
2. If the relays are connected to AC voltage 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 Circuit

Nominal voltage U_N:	AC 24,110, 127, 230, 240 V DC 24, 110, 127, 220, 240 V
Response value:	0.6 ... 1.2 U_N
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 9702.11:	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 frequency:	1 000 switching cycles	
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-leitungsgeführt:	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 60068-2-6
Climate resistance:	Humid heat	IEC/EN 60068-2-30
Terminal designation:	EN 50005	
Wire connection:	2 x 2.5 mm² solid or 2 x 1.5 mm² stranded wire with sleeve DIN 46228-1/-2/-3/-4	
Wire fixing:	Flat terminals with self-lifting clamping piece	IEC/EN 60999-1
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 9702.11 AC 230 V 50 / 60 Hz

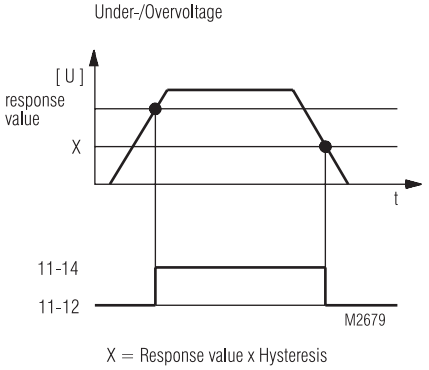
Article number:	0029210	stock item
• Output:	1 changeover contact	
• Nominal voltage U_N:	AC 230 V	
• Width:	22.5 mm	

Ordering Example

ML 9702 .11 DC 24 V

- DC 24 V — Nominal voltage
- .11 — Contacts
- ML 9702 — Type

Characteristics



X = Response value x Hysteresis

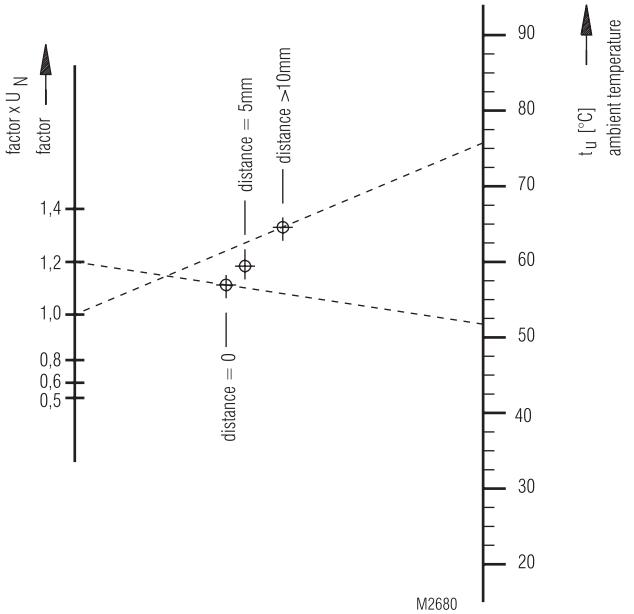
Undervoltage detection (closed circuit operation)
Example:
Required response value ≤ AC 196 V

$$\text{Setting value} = \frac{\text{required response value}}{\text{Hysteresis}} = \frac{196\ \text{V}}{0.85} = 230\ \text{V}$$

If the voltage exceeds 230 V the contact 11-14 closes. If the voltage drops under 196 V the output contact switches back to 11-12.

Overvoltage detection (open circuit operation)
Example:
Required response value: ≥ AC 230 V
= Setting value on ML 9702 (accurate setting with voltmeter)

If the voltage exceeds 230 V the contact 11-14 closes. If the voltage drops under 196 V (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:
Example:
1. Select ambient temperature e.g. 52 °C
2. Select mounting distance e.g. 0 mm

Draw a line through the 2 points and extend it to the left scale.
Factor 1.2 means, that the relay can be used with 1.2 times overvoltage having an ambient temperature of 52 degrees and the relay is mounted without distance.