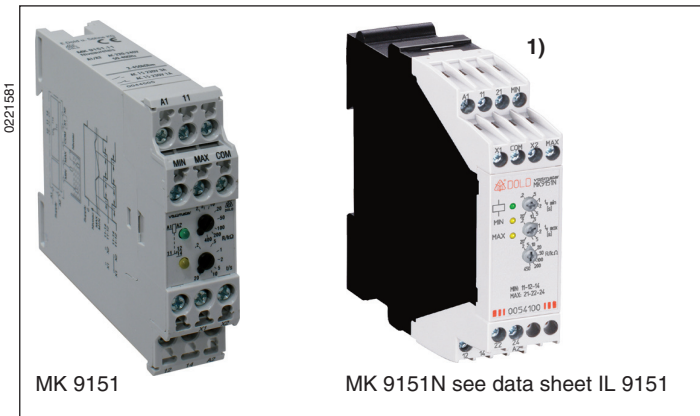


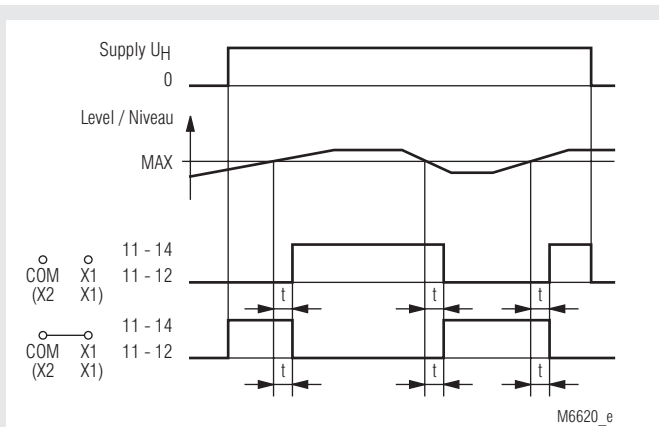
VARIMETER Level Sensing Relay MK 9151

1) Replacement for MK 9151

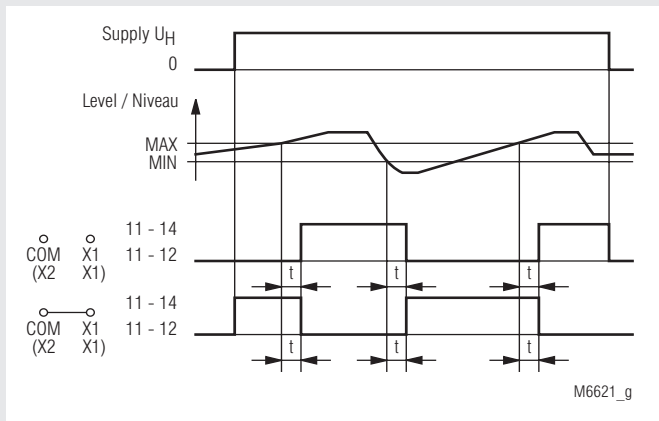


- According to IEC/EN 60 255, DIN VDE 0435-303
- 3 probe connections for 2-point and 1-point level control
- Also for use as moisture detector
- High interference resistance of the measuring circuit, which is isolated from the mains
- Max. wire length to the probes: 1500 m
- Large setting range: 2 ... 450 kΩ
this permits differentiation between fluid and foam
- Adjustable response and release time delay: 0.2 ... 20 s
- Programmable for open circuit operation (without bridge) or closed circuit operation (bridge X1-X2 or X1-COM)
- For auxiliary voltages of 24 ... 415 V AC or 24 V DC
- Green LED for operation
- Yellow LED for contact position
- 1 or 2 changeover contacts
- Also available with sealable transparent cover
- Available with safe separation according to IEC/EN 61 140, IEC/EN 60 947-1
- Width 22.5 mm

Function Diagrams



1-point level control



2-point level control

Approvals and Marking



* see variants

Application

- Level monitoring and control for conductive liquids and powders, e.g. maximum and minimum filling levels, overfilling and protection against dry running
- Monitoring and control of the mixing ratio of conductive liquids
- General resistance monitoring tasks, e.g. limit temperature detection with PTC

Indicators

green LED: on, when supply connected
yellow LED: on, when output relay active

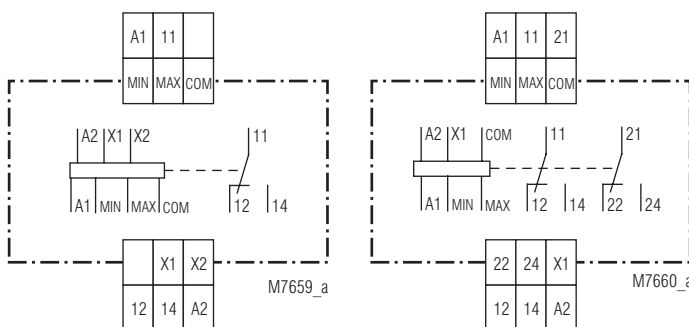
Notes

All commercially available probes are suitable.

The reference probe for level measurement is generally located at the lowest point of the container and must always be connected to the "COM" terminal. The container itself can be used as a reference probe if it consists of conductive material.

1-point level control (see Figure) is especially suitable for protection against overfilling and dry running on containers with a free inlet/outlet. In this configuration, all that is required besides the reference probe "COM" is the "MAX", which must be located at the desired limit level. The output relay switches over after the set delay time if the fluid level exceeds or falls below the limit level, which permits fluid to be pumped out or added.

Circuit Diagrams



MK 9151.11

MK 9151.12

Technical Data

Input

Setting range of the fluid resistance:

2 ... 450 kΩ; 0.02 ... 4.5 MΩ
(other ranges on request)

Setting: on logarithmically divided absolute scale
Switching point hysteresis: approx. 3 % (at max. setting) to 6 % (at min. setting) of the set value

Voltage and temperature influence:

< 2 % of the set value

Max. cable length to the probes:

Set value	Cable length (at 100 nF/km)
450 kΩ	50 m
100 kΩ	200 m
35 kΩ	500 m
10 kΩ	1500 m
5 kΩ	3000 m

Setting range 2 ... 450 kΩ:

450 kΩ	50 m
100 kΩ	200 m
35 kΩ	500 m
10 kΩ	1500 m
5 kΩ	3000 m

Setting range 0,02 ... 4,5 MΩ:

4.5 MΩ	5 m
1.0 MΩ	20 m
0.5 MΩ	50 m
0.1 MΩ	150 m
0.02 MΩ	300 m

Max. sensing voltage: approx. AC 10 V (internally generated)

Max. sensing current:

Setting range 2 ... 450 kΩ: approx. AC 1.5 mA (internally generated)

Setting range 0.02 ... 4.5 MΩ: approx. AC 0.2 mA (internally generated)

Response and release times:

0.2 ... 20 s
Setting on logarithmically-divided absolute scale

Auxiliary Circuit

Auxiliary voltage U_H : AC 24, 42 ... 48, 110 ... 127, 220 ... 240, 380 ... 415 V
DC 24 V

Voltage range of U_H AC: 0.8 ... 1.1 U_N
DC: 0.85 ... 1.25 U_N

Nominal power consumption AC: approx. 2 VA
DC: approx. 1 W

Frequency range: 45 ... 400 Hz

Output

Contacts

MK 9151.11: 1 changeover contact

MK 9151.12: 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 IEC/EN 60 947-5-1

to AC 15 at 1 A, AC 230 V: 5 x 10⁵ switching cycles

Permissible operating: 6 000 switching cycles / h

Short-circuit strength

max. fuse rating: 4 A gL IEC/EN 60 947-5-1

Mechanical life: 30 x 10⁶ switching cycles

General Data

Operating mode: Continuous operation

Temperature range: - 20 ... + 60°C

Clearance and creepage distances

rated impuls voltage / pollution degree IEC 60 664-1

input/auxiliary circuit: 6 kV / 2 (1 kV for DC 24 V-devices)

input/output circuit: 6 kV / 2 (4 kV for MK 9151.12)

auxiliary/output circuit: 4 kV / 2

EMC

Electrostatic discharge: 8 kV (air) IEC/EN 61 000-4-2

HF irradiation: 10 V / m IEC/EN 61 000-4-3

Fast transients: 2 kV IEC/EN 61 000-4-4

Surge voltages: 1 kV IEC/EN 61 000-4-5

Interference suppression: Limit value class B EN 55 011

Degree of protection

Housing: IP 40 IEC/EN 60 529

Terminals: IP 20 IEC/EN 60 529

Technical Data

Housing: Thermoplastic with V0 behavior according to UL subject 94

Vibration resistance: Amplitude 0.35 mm, frequency 10 ... 55 Hz, IEC/EN 60 068-2-6 20 / 060 / 04 IEC/EN 60 068-1

Climate resistance:

Terminal designation: EN 50 005

Wire connection: 2 x 1.5 mm² solid or 2 x 1.0 mm² stranded wire with sleeve DIN 46 228-1/-2/-3/-4

Wire fixing: Flat terminals with self-lifting clamping piece IEC/EN 60 999-1

Mounting: DIN rail IEC/EN 60 715

Weight: 155 g

Dimensions

Width x height x depth: 22.5 x 82 x 99 mm

Standard Type

MK 9151.11 2 ... 450 kΩ AC 220 ... 240 V

Article number: 0044505 stock item

• Output: 1 changeover contact

• Measuring range: 2 ... 450 kΩ

• Auxiliary voltage U_H : AC 220 ... 240 V

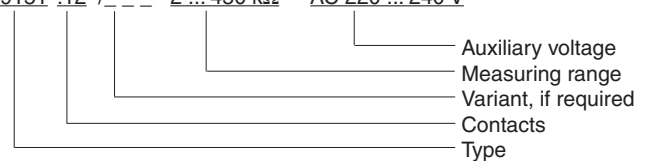
• Width: 22.5 mm

Variants

MK 9151. __ /60 CSA approval
MK 9151. __ /001: time delay on Min level
MK 9151. __ /002: time delay on Max level
MK 9151. __ /400: with sealable transparent cover
MK 9151. __ /106: with save separation according to VDE 0106

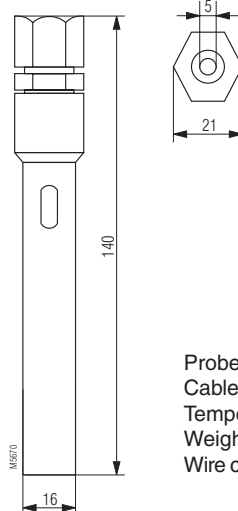
Ordering example for variants

MK 9151 .12 / _ _ _ 2 ... 450 kΩ AC 220 ... 240 V



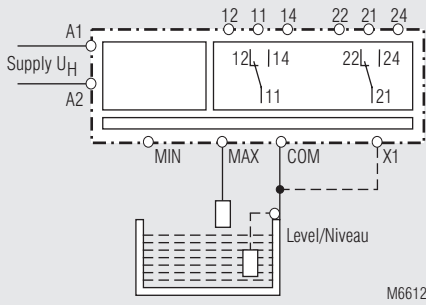
Accessories

OA 5640: Standard probe



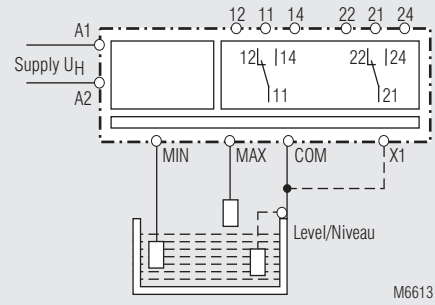
Probe made of stainless steel,
Cable entry PG 9,
Temperature range 0 ... +60°C,
Weight approx. 0.1 kg
Wire connection 2.5 mm² stranded wire with sleeve

Application Examples



1-point level control

M6612



2-point level control

M6613

