



### Main

Range of product	Zelio Control
Product or component type	Industrial measurement and control relays
Relay type	Liquid level control relay
Relay name	RM4-L
Relay monitored parameters	Detection by resistive probes
Time delay	Adjustable 0.1...10 s
Power consumption	2.7 VA AC
Contacts type and composition	2 C/O

### Complementary

[Un] rated nominal voltage	110...130 V AC 50/60 Hz
Operating voltage tolerance	0.85...1.1 U <sub>c</sub>
Width	22.5 mm
Output contacts	2 C/O
Maximum electrode voltage	24 V AC
Maximum electrode current	1 mA
Maximum cable capacity	0 mF
Cable length	<= 1000 m
Sensitivity scale	25...500 kOhm HS (High Sensitivity) 2.5...50 kOhm St (Standard Sensitivity) 0.25...5 kOhm LS (Low Sensitivity)
Marking	CE : EMC 89/336/EEC CE : LVD 73/23/EEC
Overvoltage category	III conforming to IEC 60664-1
[Ui] rated insulation voltage	500 V conforming to IEC
Supply frequency	50/60 Hz +/- 5 %
Supply disconnection value	> 0.1 U <sub>c</sub>
Operating position	Any position without derating
Connections - terminals	Screw terminals 2 x 2.5 mm <sup>2</sup> , flexible cable without cable end Screw terminals 2 x 1.5 mm <sup>2</sup> , flexible cable with cable end
Tightening torque	0.6...1.1 N.m
Mechanical durability	30000000 cycles
[I <sub>th</sub> ] conventional free air thermal current	8 A
[I <sub>e</sub> ] rated operational current	0.3 A at 115 V DC-13 70 °C conforming to VDE 0660 0.3 A at 115 V DC-13 70 °C conforming to IEC 60947-5-1/1991 0.1 A at 250 V DC-13 70 °C conforming to VDE 0660 0.1 A at 250 V DC-13 70 °C conforming to IEC 60947-5-1/1991 3 A at 250 V AC-15 70 °C conforming to VDE 0660 3 A at 250 V AC-15 70 °C conforming to IEC 60947-5-1/1991 3 A at 24 V AC-15 70 °C conforming to VDE 0660 3 A at 24 V AC-15 70 °C conforming to IEC 60947-5-1/1991 3 A at 115 V AC-15 70 °C conforming to VDE 0660 3 A at 115 V AC-15 70 °C conforming to IEC 60947-5-1/1991 2 A at 24 V DC-13 70 °C conforming to VDE 0660 2 A at 24 V DC-13 70 °C conforming to IEC 60947-5-1/1991
Switching capacity in mA	10 mA at 12 V
Switching voltage	250 V AC <= 440 V AC
Contacts material	90/10 silver nickel contacts
Number of cables	2

CAD overall width	23 mm
CAD overall height	78 mm
CAD overall depth	80 mm
Terminals description ISO n°1	(15-16-18)OC (25-26-28)OC (A1-A2)CO (B1-B2-B3)CO
Output relay state	According to chosen function
9 mm pitches	2.5
Product weight	0.165 kg

## Environment

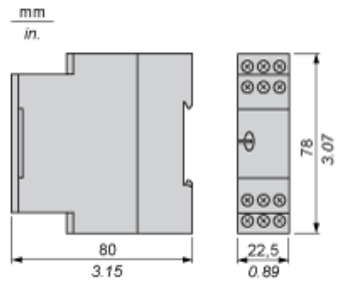
Standards	EN/IEC 60255-6
Product certifications	CSA GL UL
Ambient air temperature for storage	-40...85 °C
Ambient air temperature for operation	-20...65 °C
Relative humidity	15...85 % 3K3 conforming to IEC 60721-3-3
Vibration resistance	0.35 ms (f = 10...55 Hz) conforming to IEC 60068-2-6
Shock resistance	15 gn for 11 ms conforming to IEC 60068-2-27
IP degree of protection	IP50 (casing) conforming to IEC 60529 IP20 (terminals) conforming to IEC 60529
Pollution degree	3 conforming to IEC 60664-1
Dielectric test voltage	2.5 kV
Non-dissipating shock wave	4.8 kV
Resistance to electrostatic discharge	8 kV air conforming to IEC 61000-4-2 level 3 6 kV contact conforming to IEC 61000-4-2 level 3
Resistance to electromagnetic fields	10 V/m conforming to IEC 61000-4-3 level 3
Resistance to fast transients	2 kV conforming to IEC 61000-4-4 level 3
Protection against electric shocks	2 kV conforming to IEC 61000-4-5 level 3
Disturbance radiated/conducted	CISPR 11 group 1 - class A CISPR 22 - class A

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Liquid Level Control Relays

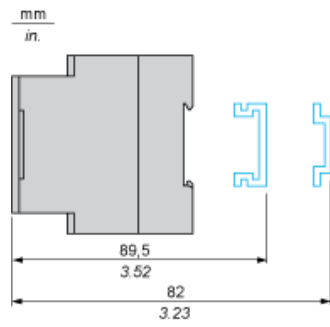
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Dimensions

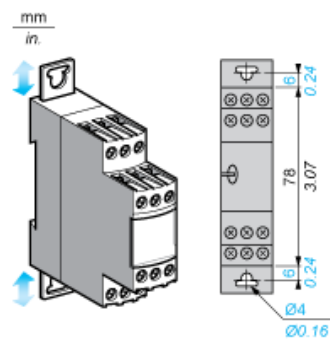


Liquid Level Control Relays

Rail mounting

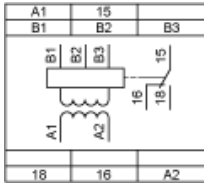


Screw fixing



Liquid Level Control Relays

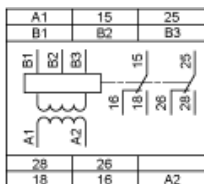
RM4LG01 Wiring Diagram



A1- Supply voltage Electrodes (see table below)  
 A2,  
 B1,  
 B2,  
 B3  
 15-18 C/O contact of the output relay

Electrodes and level controlled	
B1	Reference or tank earth electrode
B2	High level
B3	Low level

RM4LA32 Wiring Diagram



A1- Supply voltage Electrodes (see table below)  
 A2,  
 B1,  
 B2,  
 B3  
 15-18 C/O contact of the output relay  
 25-28 2nd C/O contact of the output relay  
 25-26

Electrodes and level controlled	
B1	Reference or tank earth electrode
B2	High level
B3	Low level

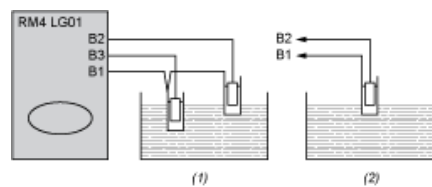
Connection Examples

Control by Electrodes



(1) Supply voltage  
 (2) High level  
 (3) Low level

## Control by Probes

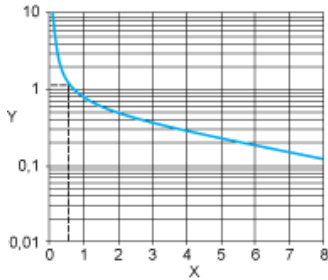


- (1) 2 levels
- (2) 1 level

Electrical Durability and Load Limit Curves

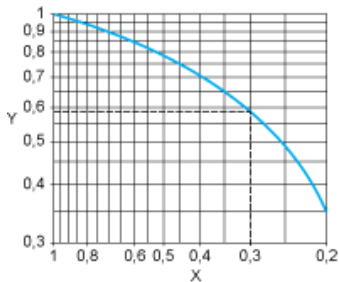
AC Load

Curve 1: Electrical durability of contacts on resistive load in millions of operating cycles



X Current broken in A  
Y Millions of operating cycles

Curve 2: Reduction factor k for inductive loads (applies to values taken from durability Curve 1)



X Power factor on breaking (cos φ)  
Y Reduction factor K

Example: An LC1-F185 contactor supplied with 115 V/50 Hz for a consumption of 55 VA or a current consumption equal to 0.5 A and cos φ = 0.3.

For 0.5 A, curve 1 indicates a durability of approximately 1.5 million operating cycles.

As the load is inductive, it is necessary to apply a reduction coefficient k to this number of cycles as indicated by curve 2.

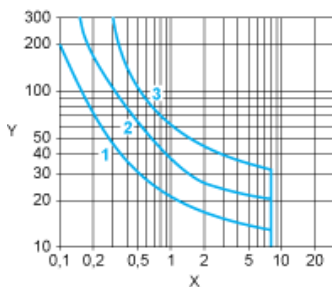
For cos φ = 0.3: k = 0.6

The electrical durability therefore becomes:

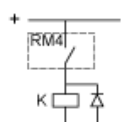
$$1.5 \times 10^6 \text{ operating cycles} \times 0.6 = 900\,000 \text{ operating cycles}$$

DC Load

Load limit curve



X Current in A  
Y Voltage in V  
1 L/R = 20 ms  
2 L/R with load protection diode  
3 Resistive load



Function Diagrams

Empty Function

Maximum level detection (2 electrodes or 1 probe LA9RM201)



U A1/Supply voltage

A2

- B1 Reference electrode
- B2 High/low level electrode

- (1) Type RM4
- (2) Function switch
- (3) Time delay switch

15/16 Output relays connections (refer to Connections and Schema)

15/18;  
 25/26,  
 25/28

Relay status: black color = energized.

On RM4LA32, a time delay can be set on energization or de-energization of the output relay.

Regulation between a maximum and a minimum level (3 electrodes or 2 probes LA9RM201)



U A1/Supply voltage

A2

- B1 Reference electrode
- B2 High level electrode
- B3 Low level electrode

- (1) Type RM4
- (2) Function switch
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15/16 Output relays connections (refer to Connections and Schema)

15/18;  
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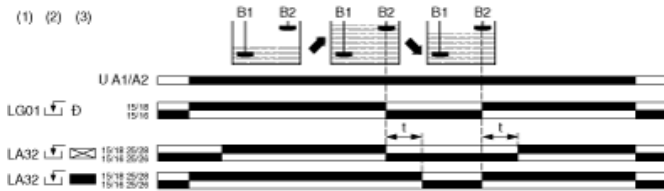
Relay status: black color = energized.

On RM4LA32, a time delay can be set on energization or de-energization of the output relay.



## Fill Function

Maximum level detection (2 electrodes or 1 probe LA9RM201)



U A1/Supply voltage

A2

B1 Reference electrode  
B2 High/low level electrode

(1) Type RM4  
(2) Function switch  
(3) Time delay switch

15/16 Output relays connections (refer to Connections and Schema)

15/18;

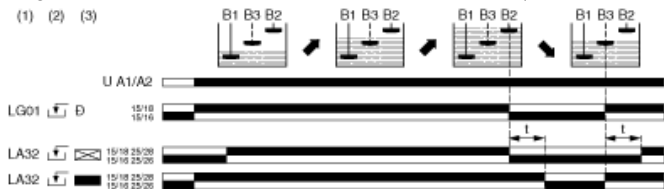
25/26,

25/28

Relay status: black color = energized.

On RM4LA32, a time delay can be set on energization or de-energization of the output relay.

Regulation between a maximum and a minimum level (3 electrodes or 2 probes LA9RM201)



U A1/Supply voltage

A2

B1 Reference electrode  
B2 High level electrode  
B3 Low level electrode

(1) Type RM4  
(2) Function switch  
(3) Time delay switch

15/16 Output relays connections (refer to Connections and Schema)

15/18;

25/26,

25/28

Relay status: black color = energized.

On RM4LA32, a time delay can be set on energization or de-energization of the output relay.