

### Main

Commercial Status	Commercialised
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	Without time delay
Power consumption	2.4 VA AC
Electrical connection	2 conductors cable 2.5 mm <sup>2</sup> flexible cable without cable end conforming to IEC 60947-1 2 conductors cable 1.5 mm <sup>2</sup> flexible cable with cable end conforming to IEC 60947-1
Contacts type and composition	1 C/O

### Complementary

[Un] rated nominal voltage	220...240 V AC 50/60 Hz
Operating voltage tolerance	0.85...1.1 Uc
Width	22.5 mm
Output contacts	1 C/O
Maximum electrode voltage	24 V AC
Maximum electrode current	1 mA
Maximum cable capacity	0 mF
Cable length	<= 100 m
Sensitivity scale	5...100 kOhm
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 Uc
Operating position	Any position without derating
Tightening torque	0.6...1.1 N.m
Mechanical durability	30000000 cycles
[Ith] conventional free air thermal current	8 A
[Ie] 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 (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

## Contractual warranty

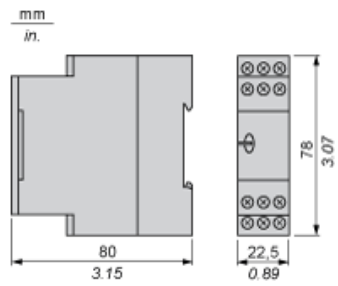
Period	18 months
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Liquid Level Control Relays

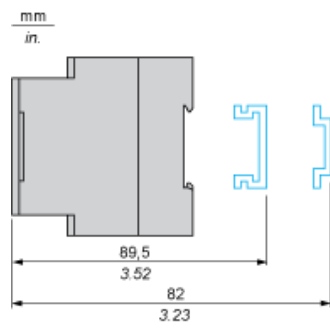
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Dimensions

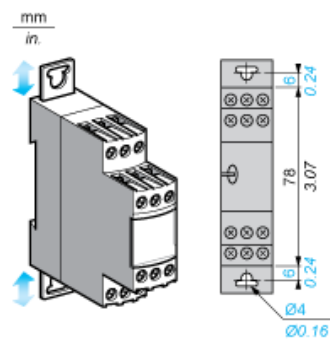


Liquid Level Control Relays

Rail mounting

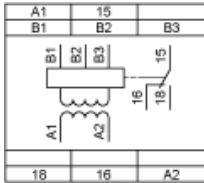


Screw fixing



Liquid Level Control Relays

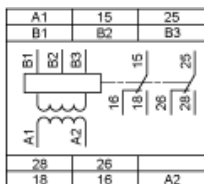
RM4LG01 Wiring Diagram



- 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

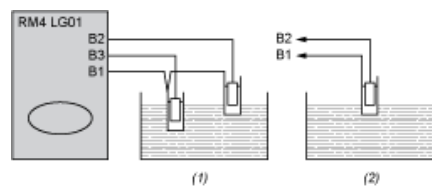
Connection Examples

Control by Electrodes



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

## Control by Probes

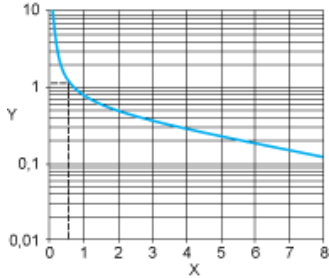


- (1) 2 levels
- (2) 1 level

Electrical Durability and Load Limit Curves

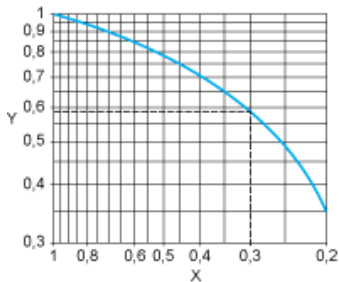
AC Load

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.

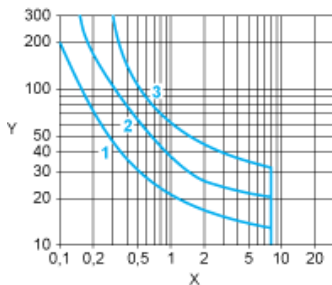
For cos φ = 0.3: k = 0.6

The electrical durability therefore becomes:

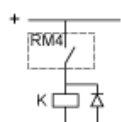
$$1.5 \times 10^6 \text{ operating cycles} \times 0.6 = 900\,000 \text{ operating cycles}$$

DC Load

Load limit curve



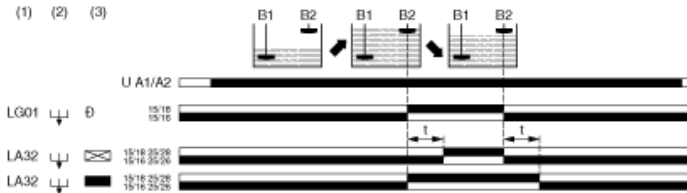
X Current in A  
Y Voltage in V  
1 L/R = 20 ms  
2 L/R with load protection diode  
3 Resistive load



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;

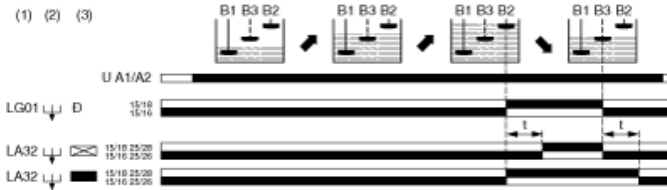
25/26,

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

(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.



## 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;

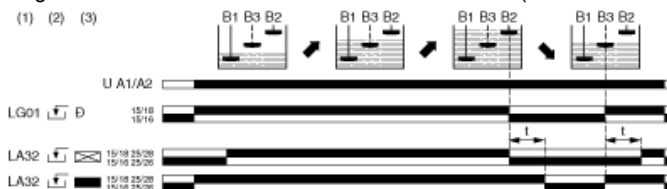
25/26,

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.