

## Liquid level relay

### 1. Device description

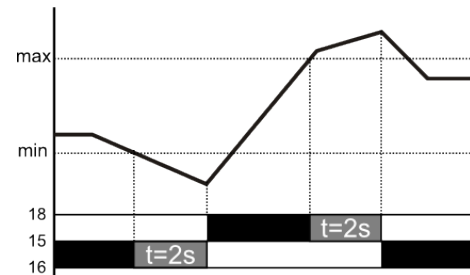
MRL01 is a double function level relay designed to control maximal and minimal level of conductive liquid in the vessel. Relay can be used to pump liquid up (function UP) or to pump liquid down (function DOWN). In the case when the vessel is made from conductive material it can be used instead of GND probe. In the measurement process, the relay is using AC current, which avoids electrolysis and probes oxidation. Relay has one double-throw output contact 16 A.

Terminal description	Terminal placement	Connection diagram
<ol style="list-style-type: none"> <li>1 Supply voltage</li> <li>2 Minimum liquid level probe</li> <li>3 Maximum liquid level probe</li> <li>4 Supply voltage indication</li> <li>5 Output indication</li> <li>6 Measurement sensitivity of liquid resistivity</li> <li>7 Function selection</li> <li>8 GND probe</li> <li>9 Outputs</li> </ol>		

### 2. Function

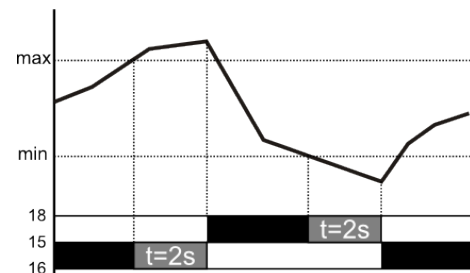
#### PUMP UP

If the level decreases below the minimal limit and it remains that way for the time of 2 s at least, the relay will start the pump-up process. In the moment after the maximal limit being exceeded for more then 2 s, the relay stops the pump-up process.



#### PUMP DOWN

If the level exceeds over the maximum limit and it remains that way for the time of 2 s at least, the relay will start the pump-down process. In the moment after the minimal limit being exceeded for more then 2 s, the relay stops the pump-down process.



### 3. LED diagnostic

<b>Yellow LED ON</b>	Output contact closed. Contact no. 15 – 18 is closed.
<b>Yellow LED blinking</b>	Probes error diagnostic. Signal-noise ratio is lower than device sensitivity. The device sensitivity must be reduced by potentiometer SENSITIVITY.

#### 4. Technical features

Parameter	Value
Supply voltage	230 VAC
Supply terminals	L, N
Power consumption	Max. 1,5 VA
Number of functions	2
Supply voltage indication	green LED
Output indication	yellow LED
Set sensitivity	5 kΩ ... 100 kΩ
Terminal of minimum liquid level	Min
Terminal of maximum liquid level	Max
Measuring connector - common	GND
Delay for liquid fluctuation elimination	2 sec
<b>Output parameters</b>	
Number and type of contacts	1x changeover
Nominal current	16 A
Switching power	max. AC 4000 VA
Trigger current	30 A
Nominal voltage / max. switching voltage	250 VAC / 440 VAC
Mechanical lifetime	3 x 10 <sup>7</sup>
Electrical lifetime	1 x 10 <sup>5</sup> 250 VAC, 16 A
<b>Others</b>	
Working temperature	-20 ... +55 °C
Storage temperature	-40 ... +70 °C
Working position	any
Mounting	IEC 60715 (DIN 35)
Protection degree	IP 40 on panel / IP 20 terminals
Electrical strength	4 kV
Input wire diameter with / without cavern	max. 2x1,5mm <sup>2</sup> ; 1x2,5mm <sup>2</sup> / max. 2x1,5mm <sup>2</sup> ; 1x2,5mm <sup>2</sup>
Weight	75 g
Dimensions	90 x 18 x 65 mm
Standards	IEC 60255-6, IEC 61010



#### Note

**Start-up procedure:** Move the sensitivity potentiometer (SENSITIVITY) to the left position **min**. Select requested function PUMP UP or PUMP DOWN. After filling the vessel with liquid to the level above the requested **max**, or to the level below requested **min** (according to the selected function), keep moving the sensitivity potentiometer (SENSITIVITY) until output the relay switches on.