

**RL10: Universal relay for filling or emptying**

**RL11: Level relay for emptying**

**RL12: Level relay for filling**

**1 or 2 sensor levels**

**Adjustable sensitivity**

**1- or 2-pole relay output**

**DC supply (RL10 only) or AC supply up to 230 VAC**

**Made in accordance with the CE and EMC regulations**



C-mac® level relays, series RL, are made for monitoring and control of the level in conductive liquids. The level is monitored by 1 or 2 electrodes in the liquid.

RL10 is supplied with internal oscillator for the signal to the electrodes, which means the module can be used for both AC and DC supply, and furthermore it is possible to adjust the unit to a very high sensitivity, which means it can be used for very clean liquids, i.e. liquids with low conductivity.

RL11 and RL12 use the frequency of the supply voltage to generate the signal for the electrodes, therefore these units are only available for AC supply, and the sensitivity is not so high as the RL10.

RL11 and RL12 are available with either adjustable or fixed sensitivity.

**Common technical data:**

- Supply, AC:** 24, 115 and 230 VAC +/- 10%
- Supply frequency:** 40-70 Hz
- Variable supply:** 12-50 or 48-250 VDC (RL10 only)
- Isolation voltage:** Supply - input - output: 3.75 kV
- Supply voltage, DC:** 24 VDC +/- 10% (RL10 only)  
Note: With this DC-supply there is no isolation between supply and internal electronics.
- Optional:** 12-50 VDC with internal DC/DC converter and galvanic isolation between supply and internal circuits.
- Power consumption:** 2,5 VA
- Operation temp.:** -20°C to +60°C
- Humidity:** 0 - 90% RH, non-condensing
- Sensor signal:**  
RL10: 8 VAC / 70 Hz, max 1 mA  
RL11 and RL12: 8 VAC, max 1 mA
- Sensor cable:** Standard 2- or 3-wire cable max. 100 m.
- Adjustments:** Potentiometer, scale 1 to 10 (RL11F and RL12F: no adjustment)
- Indications:**  
Green LED: Supply voltage connected  
Red LED: Relay active

**Sensitivity:**

module type	function	potentiometer	relay activates	relay releases
RL10	filling	min.	> 18 kΩ	< 9 kΩ
		max.	> 100 kΩ	< 66 kΩ
	emptying	min.	< 9 kΩ	> 18 kΩ
		max.	< 66 kΩ	> 100 kΩ
RL11	emptying	min.	< 3,5 kΩ	> 8 kΩ
		max.	< 25 kΩ	> 45 kΩ
RL11F	emptying	-	< 25 kΩ	> 35 kΩ
RL12	filling	min.	> 8 kΩ	< 3,5 kΩ
		max.	> 45 kΩ	< 25 kΩ
RL12F	filling	-	> 35 kΩ	< 25 kΩ

RL10 is a universal relay, with a 3-bit dipswitch in the bottom of the relay, where you can select the function:

Filling: switch 1 ON switch 2 OFF switch 3 ON  
Emptying: switch 1 OFF switch 2 ON switch 3 OFF

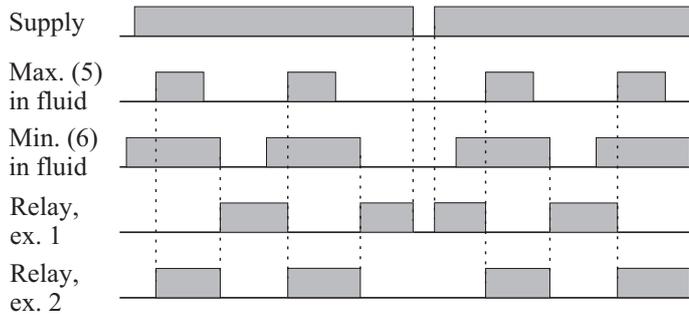
**Max. load, relay:** 1-pole: 8 A - 250 VAC  
2-pole: 5 A - 250 VAC, ohmic load

**EMC and safety regulations.**

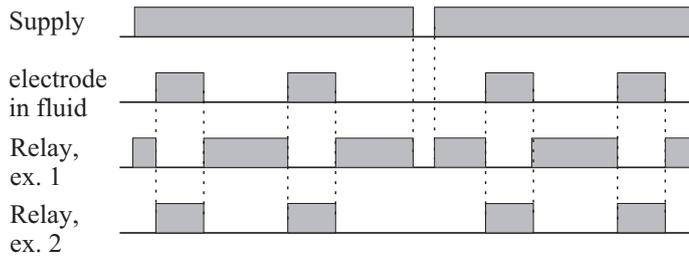
**Emmission:** EN 50 081 - 1  
**Immunity:** EN 50 082 - 2  
**Safety:** EN 60 730

**Approvals:** The units are produced in accordance with the CE og low voltage regulations.

### Functional diagram 1: 2 electrodes

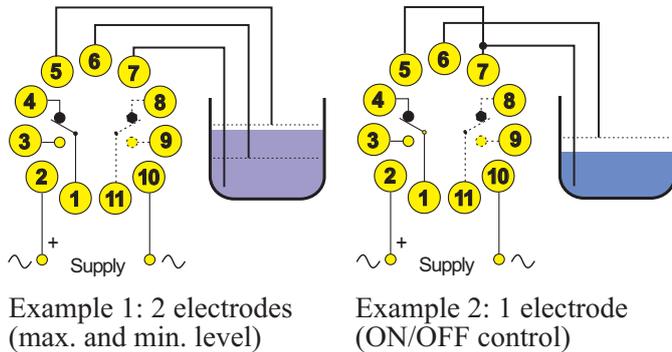


### Functional diagram 2: 1 electrode



- Example 1: Filling  
RL12 or RL10, selector switch in
- Example 2: Emptying  
RL11 or RL10, selector switch out

### Connections:



Example 1: 2 electrodes (max. and min. level)

Example 2: 1 electrode (ON/OFF control)

Connections 8-9-11:  
2-pole version only

### Ordering guide:

RL10-x-y-zzz

x = relay output

1 = 1-pole

2 = 2-pole

y-zzz = supply voltage:

0-024: 24 VDC RL10 only

4-012: 12-50 VDC RL10 only

1-024: 24 VAC

1-115: 115 VAC

1-230: 230 VAC

Ordering example: RL10-2-1-230

The examples are shown for RL10, but the same principle is used for RL11(F) and RL12(F).

### Mechanical dimensions:



### Materials and weight:

- Housing:** NORYL-SE-1, grey, self-extinguishing
- Housing bottom:** NORYL SE-1, GFN-2, black, self-extinguishing
- Terminals:** Nickel-plated brass
- Weight:** 190 g

