Conductive Sensors
2-point Level Controller, Cascade Coupling
Type CL with Potentiometer

Product Description
Level control relay for conductive liquids which can control two levels of filling or emptying. The relay features a sensitivity range from 250Ω to 500kΩ corresponding to 4m Siemens to 2µ Siemens. If more than two levels are required more systems can be added.

Type Selection

<table>
<thead>
<tr>
<th>Mounting</th>
<th>Ordering no.</th>
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</tr>
</thead>
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<tr>
<td>11-p circular plug</td>
<td>CLP2FA1BM24</td>
<td>CLP2FA1B115</td>
<td>CLP2FA1B230</td>
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Specifications

Rated operational voltage (U_B)

| Pin 2 & 10 | 230 |
| Supply class 2 | 115 |
| Rated insulation voltage | 24 |
| Rated impulse withstand voltage | <2.0 kVAC (rms) |

Rated operational power

| AC supply | 5 VA |
| AC/DC supply | 5 VA / 5 W |

Delay on operate (t_d)

< 300 ms

Relay ratings (AgCdO)

| Resistive loads | AC1 8 A / 250 VAC (2500 VA) |
|                 | DC1 1 A / 250 VDC (250 W) |
| Small induc. Loads | AC15 0.4 A / 250 VAC |
|                 | DC13 0.4 A / 30 VDC |
| Mechanical life (typical) | ≥ 30 x 10^6 operations @ 18'000 imp/h |
| Electrical life (typical) | AC1 > 250'000 operations |

Level probe supply

Max. 5 VAC

Level probe current

Max. 2 mA

Sensitivity

250Ω to 500kΩ

Factory settings standard range: 250Ω to 500kΩ

Ranges L (Low sensitivity)

| 250Ω to 5Ω; C_r = 4.7 nF |
| 5Ω to 100kΩ; C_r = 2.2 nF |
| 50kΩ to 500kΩ; C_r = 1.0 nF |

Dielectric voltage

>2.0 kVAC (rms) (contacts / electronics)

Rated impulse withstand voltage

4 kV (1.2/50 µS) (contacts / electronics) (IEC 664)

Operating frequency (f)

| Relay output | 0.5 HZ |
| Response time | OFF-ON (t_on) 1 s |
|               | ON-OFF (t_off) 1 s |

Environment

Overvoltage category III (IEC 60664)

Degree of protection IP 20 (IEC 60529, 60947-1)

Pollution degree 2 (IEC 60664/60664A, 60947-1)

Temperature

| Operating | -20º to +50ºC (-4º to +122º) |
| Storage   | -50º to +85ºC (-58º to +185ºF) |

Housing material

Noryl PPO, light grey

Screw type

M3

Tightening torque

| min/max | 0.4Nm/0.8Nm |

Weight

| AC supply | 200 g |
| AC/DC supply | 125 g |

Approvals

UL cURus UL508 CSA-22.2 No.247

CE marking

Yes

*C_r = maximum Cable Capacitance
Mode of Operation

Connection cable
2 or 3 conductor PVC cable, normally screened. Cable length: max. 100 m. The resistance between the cores and the ground must be at least 500k. Normally, it is recommended to use a screened cable between probe and controller, e.g. where the cable is placed in parallel to the load cables (mains). The screen has to be connected to pin 7 (reference).

Cascade
If more than 2 levels are required, up to 7 amplifiers can be cascaded, as shown in the example below. Connect pin 11 of the master controller to ground and pin 9 of the master controller to pin 8 of the next controller, the slave controllers (see drawing). Pin 11 of the slave controller must be left open! Pin 9 of the first slave must be connected to pin 8 of the second. Pin 9 of the last slave should be connected to pin 8 of Master. The connections must be made by screened cable to achieve optimal operation, e.g. in cable pits or trays where the cable is close to power cables. Connect the screen to pin 7, and be sure that the distance between two systems is max 3m. Adjust the connected system sensitivity and the systems are ready to work.

Example 1
The diagram shows the level control connected as max. and min. control. The relay react to the low alternating current created when the electrodes are in contact with the liquid. The reference (Ref) must be connected to the container or if the container consists of a non-conductive material, to an additional electrode. (To be connected to pin 7). (In the diagram this electrode is shown by the dotted line).

NB!
If only one level detection is required - interconnect the two inputs 5 and 6.

Operation Diagram

Filling and Emptying one common tank
Operation Diagram

Multilevel application in one tank

Specifications are subject to change without notice (14.12.2015)
**Wiring Diagram**

![Wiring Diagram Image]

**Dimension Drawings**

![Dimension Drawings Image]

**Accessories**
- 11 pole circular socket ZPD11
- Holding spring HF

**Delivery Contents**
- Amplifier
- Packaging: Carton box
- Manual

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