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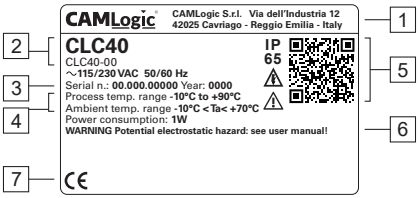
COSTRUZIONI MECCANICHE ELETTRICHE

Operating and maintenance instructions for conductive level indicator CLC40

PRODUCT IDENTIFICATION

The CLC40 is a conductive point level indicator designed to independently monitor two level switch thresholds for liquids.
The device is identified by the label on the side of the case, the characteristics of which are given below:

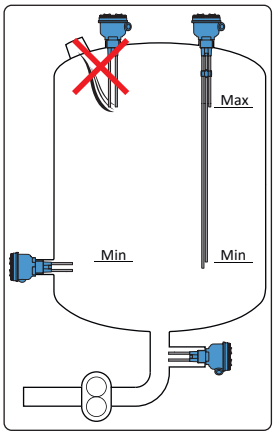


1. Manufacturer information
2. Product model and reference code for the specific configuration
3. Serial number and year of production
4. Ambient and process temperature range
5. QR code leading to the specific configuration and IP rating
6. Usage warnings
7. Conformities and certification symbols

Tampering with the label voids certifications and warranty.

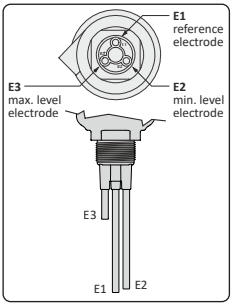
PRODUCT CHARACTERISTICS

Materials:	casing PA6 (Nylon), electrodes AISI 316 / EN 1.4401
Connection to process:	threaded G 1" 1/2 (BSPP)
Cable entry:	G 1/2 (BSPP)
Power supply voltages:	115/230 and 24/48 VAC 50/60 Hz or 24 VDC
Power consumption:	1W
Cables size:	0,5 ÷ 2,5 mm² (14 AWG)
Contacts capacity:	8A at 250 VAC
Signal output:	SPDT
Process temperature:	-10÷ +90°C (14 ÷ 194°F)
Ambient temperature:	-10 ÷ +70°C (14 ÷ 158°F)
Max process pressure:	10 bar (145 psi)
Protection rating:	IP 65 (dust-tight, protection against water jets)
Electrical conductivity:	minimum 5μS/cm with 20mm of electrode covered
Environmental conditions:	indoor and outdoor use, altitude up to 2000 m (6.562 ft), max. relative humidity 80% for temp. up to 31°C (88°F) decreasing linearly to 50% at 40°C (104°F), pollution degree 2



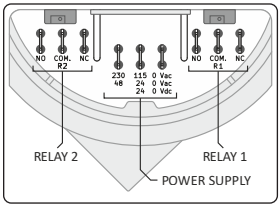
INSTALLATION

The CLC40 indicator can be installed in different positions, shown in the picture above.
With two electrodes it is possible to detect a single level (maximum level for overflow protection, or minimum level for dry running protection); with three electrodes there is a two-point control (filling pump switched on when the minimum level is reached and switched off at the maximum level).
The incoming liquid flow should not directly hit the electrodes to avoid false signals.
With liquids that tend to form a conductive patina, vertical mounting is preferable (from the top of the tank), however it is not recommended for use with greasy and oily products that might form an insulating film on the surface of the electrodes.
To adjust the intervention height, it is possible to shorten the electrodes. Before carrying out this operation, unscrew the bars from the casing to avoid damaging the level sensor. The numbers of the bars are visible on the back of the threaded connection. The length of the reference electrode (E1) must be equal to or greater than that of the minimum measurement electrode (E2).



WIRING

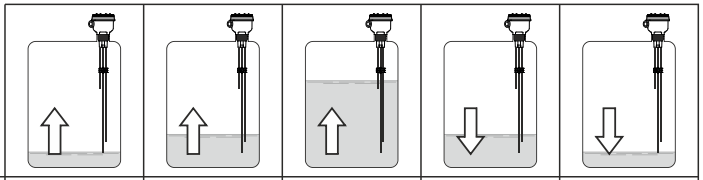
Disconnect the power supply, before proceeding with the connection operations.
Use cables with an adequate section to guarantee a current density, in each conductor, not exceeding 4A / mm2. Use flexible cables with an external diameter suitable for the cable gland used (not supplied) to ensure watertight integrity.
Use 6.3x0.8 mm Faston cable lugs with insulated Faston terminals for all contacts. Inside the level indicator, on the printed circuit, there are indications for the electrical connection of the power supply and relay.
If at least two electrodes are covered by a conductive product, small alternating currents will pass from the measuring electrode (E2 or E3) towards the reference electrode (E1), causing the respective relay to energize.

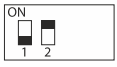
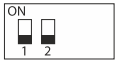
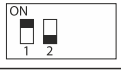


CONFIGURATION

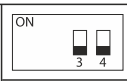
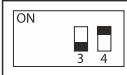
On the printed circuit board there are a few service elements, as shown in the picture.
- Relay 1 and relay 2 signalling LEDs;
- DIP Switch to choose the setting, one or two point operation and intervention delay;
- TRIMMER to adjust the instrument sensitivity (clockwise rotation = sensitivity increase).

The CLC40 can work with 1 or 2 relays in the default setting (de-energized) or inverted (energized).
To set the operating mode, use the first two selectors of the DIP Switch, as shown in the following table.



DEFAULT		Both relays are operating 1 OFF / 2 ON	R1	○ DE-ENERGIZED	☼ **ENERGIZED**	☼ **ENERGIZED**	☼ **ENERGIZED**	○ DE-ENERGIZED
			R2	○ DE-ENERGIZED	○ DE-ENERGIZED	☼ **ENERGIZED**	○ DE-ENERGIZED	○ DE-ENERGIZED
		Only R1 is operating 1 OFF / 2 OFF	R1	○ DE-ENERGIZED	○ DE-ENERGIZED	☼ **ENERGIZED**	☼ **ENERGIZED**	○ DE-ENERGIZED
			R2	○ DE-ENERGIZED	○ DE-ENERGIZED	○ DE-ENERGIZED	○ DE-ENERGIZED	○ DE-ENERGIZED
INVERTED		Both relays are operating 1 ON / 2 ON	R1	☼ **ENERGIZED**	○ DE-ENERGIZED	○ DE-ENERGIZED	○ DE-ENERGIZED	☼ **ENERGIZED**
			R2	☼ **ENERGIZED**	☼ **ENERGIZED**	○ DE-ENERGIZED	☼ **ENERGIZED**	☼ **ENERGIZED**
		Only R1 is operating 1 ON / 2 OFF	R1	☼ **ENERGIZED**	☼ **ENERGIZED**	○ DE-ENERGIZED	○ DE-ENERGIZED	☼ **ENERGIZED**
			R2	○ DE-ENERGIZED	○ DE-ENERGIZED	○ DE-ENERGIZED	○ DE-ENERGIZED	○ DE-ENERGIZED

With the last two selectors of the DIP Switch it is also possible to set an intervention delay for the CLC40, which can be used for example to avoid false signals.

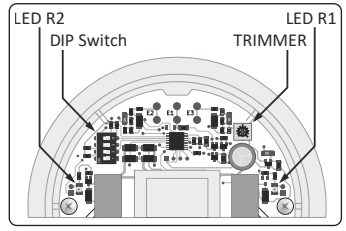
INTERVENTION DELAY			
	3 OFF 4 OFF	No delay
	3 ON 4 OFF	2 sec.
	3 OFF 4 ON	6 sec.
	3 ON 4 ON	10 sec.

Finally, thanks to the TRIMMER it is possible to adjust the sensitivity of the instrument, which increases by rotating it clockwise (screw). In particular, for liquids whose conductivity is lower than 1 mS, follow the procedure described below:

1. Fill the tank to cover about 1 cm of the minimum level electrode (E2).
2. Position the DIP Switch on the default setting (de-energized relays).
3. Switch on the power supply.
4. Gently unscrew (counter-clockwise) the TRIMMER to the minimum position.
5. Gently screw (clockwise) the TRIMMER untile the R1 LED turns on.

The sensor will then be properly adjusted to the product.

SAFETY WARNINGS

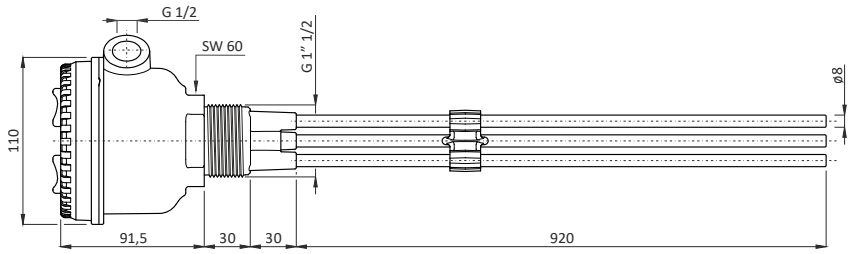


All the operations described in the documentation must be carried out only by qualified personnel authorized by the plant manager, adopting all the appropriate safety precautions to reduce the risk of fire, electric shock and personal injury.
Before installation, perform a visual inspection of the device to make sure that it did not suffered any damage during transport or storage. If anomalies are found, the product must be sent to the Manufacturer for restoration of efficiency.
The operational safety of the device is guaranteed only by use in accordance with the regulations, the instructions for use and any additional instructions.
Arbitrary transformations or modifications are categorically prohibited. In the event of improper or non-intended use, the device can be a source of dangers related to the specific application, or damage to the plant due to incorrect assembly or configuration.
Verify that the power supply system complies with the standards, with an automatic protection switch incorporated.
Any control, cleaning, maintenance, change or replacement of parts must be carried out with the indicator disconnected and the plug disconnected from the power supply.

MAINTENANCE

The CLC40 sensor, used appropriately in normal operating conditions, does not require any maintenance.
Deposits of limestone or other non-conductive films can interact with the correct functioning of the sensor. In such cases it is necessary to periodically clean the electrodes.

REFERENCE FIGURE



Standard length of the electrodes = 920 mm. To be determined by the client needs, minimum measure 80 mm and maximum 6000 mm.

REPAIRS

CLC40 level indicators can only be repaired by the CAMLogic manufacturer or by following the manufacturer's instructions. If in doubt about malfunctions or repairs, contact the manufacturer: CAMLogic S.r.l. - Via dell'Industria 12-12/A - 42025 Cavriago (RE) - Italy (camlogic@camlogic.it - www.camlogic.it).

Learn more about the product and find drawings of each model on our website.

WARRANTY

CAMLogic, in addition to the terms of the supply contract, guarantees its products for a period of twenty-four (24) months from the date of shipment.
This warranty is expressed exclusively in the repair or replacement, free of charge, of those parts which, after careful examination by the manufacturer, are found to be defective.
The warranty, excluding any liability for direct or indirect damages, is limited to material defects only and has no effect if the returned parts are found to have been in any way disassembled, tampered with or repaired by anyone other than the manufacturer.
Also excluded from the warranty is damage resulting from negligence, carelessness, incorrect or improper use of the level indicator, operator mishandling or improper installation.
The warranty is also void if non-original spare parts have been used. A returned level indicator, even if under warranty, must be shipped freight prepaid.

Symbol	Reference	Description
⎓	IEC 60417-5031 (2002-10)	Direct current
~	IEC 60417-5032 (2002-10)	Alternating current
	IEC 60417-6042 (2010-11)	Caution: risk of electric shock
	ISO 7000-0434B (2004-01)	Caution: if the instrument is used in a manner not specified by the manufacturer, the protection offered by the equipment may be impaired.

Please note: the printed version of this manual may not reflect the most recent changes.
Please always refer to the updated digital version available on the official CAMLogic website: www.camlogic.it