

SET/OELO2

Capacitive level sensor for leakage detection



Installation and Operation Instructions



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SYMBOLS



Warning / Attention



Pay special attention to installations at explosive atmospheres

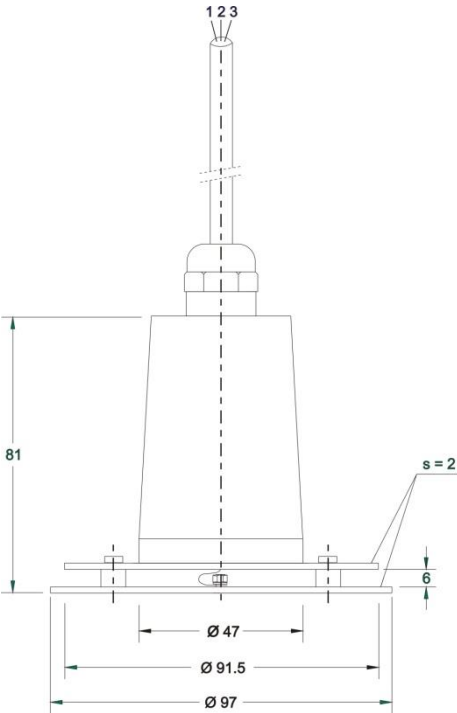


Fig. 1. SET/OELO2 dimensions

1 GENERAL

SET/OELO2 is a capacitive sensor which can be utilized for leak detection of oil, fuel, chemical, water, etc. Typical applications include e.g. tank farms, boiler rooms and cellars. The sensitivity of the sensor is adjusted in the Labkotec SET control unit.

The sensor is an apparatus of equipment group II, category 1 G and can be installed in Zone 1/2 hazardous area.

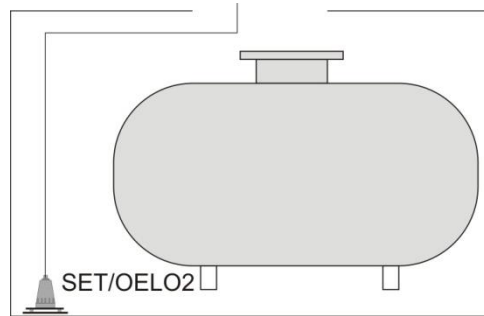


Fig. 2. Application; leak detector

2 CONNECTIONS AND INSTALLATION

SET/OELO2 has a standard 3-wire cable. The wires are numbered 1, 2 and 3. These wires shall be connected to the corresponding connectors (1 = +, 2 = -) in the control unit. The wire nr. 3 and shield of the extension cable must be connected to equipotential GND. For further information see also separate installation and operating instructions of control unit.

The cable can be shortened or lengthened with a connection box. The sensor shall be installed on the bottom of a basin or canal.



When installing the sensor into an explosion hazardous area (1/2), the following standards need to be followed; IEC/EN 60079-25 Electrical apparatus for potentially explosive atmospheres - Intrinsically safe electrical system "i", IEC/EN 60079-14 Electrical apparatus for explosive gas atmospheres.

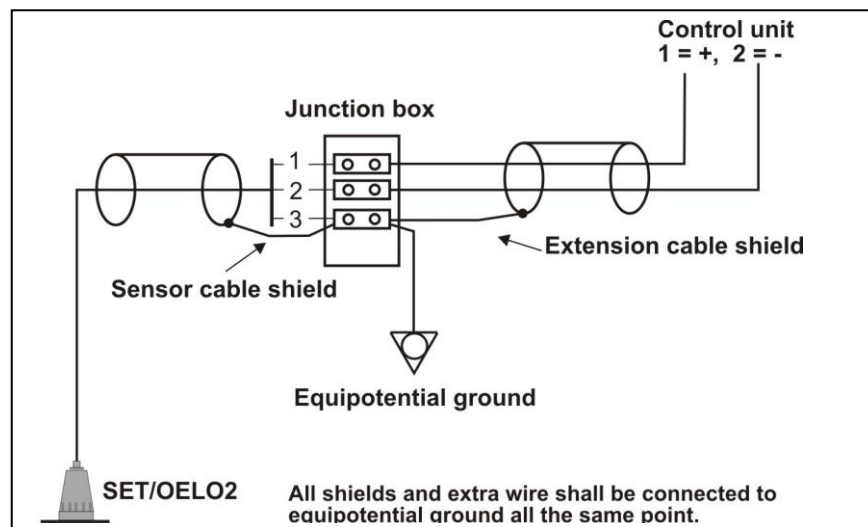


Fig. 3. Wiring example

3 ADJUSTING THE SWITCHING POINT

1. Check that the SENSE trimmer of the control unit is in the middle position.
2. Immerse b of the sensing plates of the sensor, according to Fig. 4 below, to the liquid to be measured which should cause the relay in the control unit to operate. If the control unit does not operate within the operating range or the set-point isn't at the desired position, turn the SENSE trimmer until the desired set-point has been reached.
3. Check the function by lifting and immersing the sensor few times into the liquid.

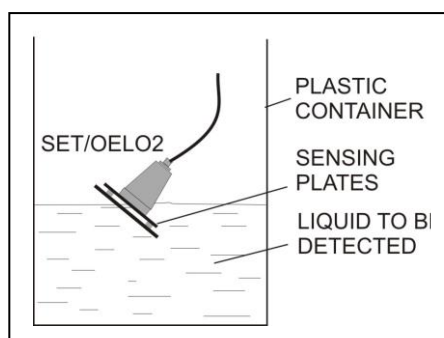


Fig. 4. Adjusting the switching point

IF THE SENSOR DOES NOT WORK



If the sensor is located in a hazardous area an Exi-classified multimeter must be used and the Ex-standards mentioned in chapter 4. SERVICE AND REPAIR must be followed.

Make sure that the sensor is properly connected to the control unit. The voltage between connectors 1 and 2 in the control unit should be 10,5...12V.

If the voltage is correct, measure the sensor current as follows:

- Connect the ampere meter according to the picture below by disconnecting the conducting wire 1 from the central unit.
- Measure the current.

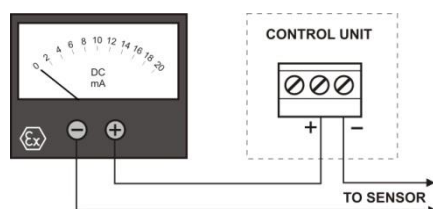


Fig. 5. Measuring the sensor current

Sensor current in different conditions:

sensor clean and wholly in air	5...7 mA
changes when sensor is immersed in oil ($\epsilon_r \approx 2$) from air	3...4 mA
sensor in water	12...16 mA

4 SERVICE AND REPAIR

The sensors must always be cleaned down and tested when emptying the tank or separator and when carrying out annual maintenance. For cleaning, a mild detergent (e.g. washing-up liquid) and scrubbing brush can be used.




Service, inspection and repair of Ex-apparatus needs to be done according to standards IEC/EN 60079-17 and IEC/EN 60079-19.

5 TECHNICAL DATA

SET/OELO2 sensor	
Control units	Labkotec SET control units
Cable	Shielded, oil-proof instrumentation cable 3 x 0,5mm ² . Standard length is 5m. Can also be delivered according to the order with a maximum 15 m long cable. The cable can be extended with a similar instrumentation cable. The maximum pair resistance of the cable should not extend 75 Ω.
Temperature Operational Safety	-25 °C...+60 °C -25 °C...+60 °C
Materials	AISI 316, Nylon 12
EMC Emission Immunity	IEC/EN 61000-6-3 IEC/EN 61000-6-2
IP-classification Sensor Junction box	IP68 IP67
Ex-luokitus ATEX Special conditions (X)	II 2 G Ex ia IIB T5 Ga VTT 03 ATEX 015X Ta = -25 °C...+60 °C The sensor cable can be extended with the junction box type LJB3-78-83 or LJB2-78-83.
Ex-connection values	Ui = 18 V I = 66 mA Pi = 297 mW Ci = 3 nF Li = 30 μH
Operating principle	Capacitive
Manufacturing year: Please see the serial number on the type plate	xxx x xxxxx xx YY x where YY = manufacturing year (e.g. 16 = 2016)

EU DECLARATION OF CONFORMITY

We hereby declare that the product named below has been designed to comply with the relevant requirements of the referenced directives and standards.

Product	Sensor of leakage detection device for liquids SET/OELO2
Manufacturer	Labkotec Oy Myllyhaantie 6 FI-33960 Pirkkala Finland
Directives	The product is in accordance with the following EU Directives: 2014/30/EU Electromagnetic Compatibility Directive (EMC) 2014/34/EU Equipment for Potentially Explosive Atmospheres Directive (ATEX) 2011/65/EU Restriction of Hazardous Substances Directive (RoHS)
Standards	<p>The following standards were applied:</p> <p>EMC: EN 61000-6-2:2005 EN 61000-6-3:2007/A1:2011</p> <p>ATEX: EN 60079-0:2012/A11:2013 EN 60079-11:2012</p> <p>EC-type examination certificate: VTT 03 ATEX 015X. Notified Body: VTT Expert Services Ltd, Notified Body number 0537.</p> <p>The revised harmonised standards have been compared to the previous standard versions used in the original type certification and no changes in the "state of the art" apply to the equipment.</p> <p>RoHS: EN 50581:2012</p> <p>The product is CE-marked since 1996.</p>
Signature	<p>This declaration of conformity is issued under the sole responsibility of the manufacturer. Signed for and on behalf of Labkotec Oy.</p> <p>Pirkkala 30.6.2017</p>  <p>Ari Tolonen, CEO Labkotec Oy</p>