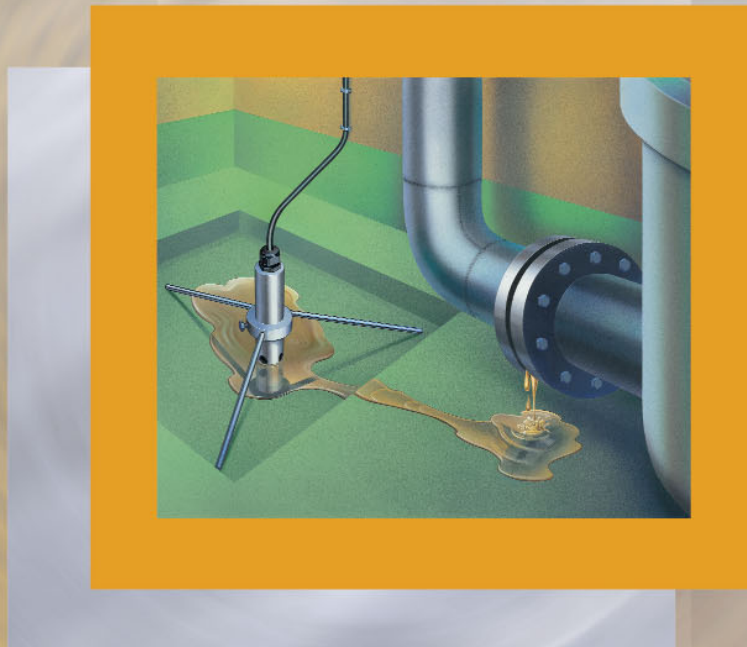


Capacitive leakage detectors of the Leckmaster range

for installation in normally dry rooms



Jola Spezialschalter K. Mattil & Co. KG
Klostergartenstraße 11-20 • D-67466 Lambrecht (Pfalz)
P.O.B. 1149 • D-67460 Lambrecht (Pfalz) • Germany
Phone +49 6325 188-01 • Fax +49 6325 6396
kontakt@jola-info.de • www.jola-info.de

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The units described in this documentation may only be installed, connected and started up by suitably qualified personnel!

Subject to deviations from the diagrams and technical data.

The details in this brochure are product specification descriptions and do not constitute assured properties in the legal sense.



Leakage detectors of the Leckmaster range - general information

with integrated cable break monitoring

for conductive and non-conductive liquids; can basically be used for the detection of all low-viscosity liquids for such tasks as signalling the presence of fuel oil on the floor of a tank room or in a collection tub located underneath a fuel oil burner.

The Leckmaster leakage detectors consist of 2 components:

- a **COW/L** or **OWE 2/C** sensor
- and
- a **Leckmaster 101** relay.

The **COW/L** and **OWE 2/C** sensors are designed for connection to the **Leckmaster 101** relay. They work on a capacitive basis. **If several sensors are used, a separate Leckmaster 101 relay is required for each sensor.**

The **COW/L** and **OWE 2/C** sensors can be mounted either

- upright on the floor (using the stand offered by Jola as an option)
- or
- freely suspended by their cable above the floor.

Please follow the installation, operating and maintenance instructions (see page 31-6-11).

The COW/L and OWE 2/C sensors should only be used in normally dry surroundings – e.g. in collection rooms or collection tubs.

The **Leckmaster 101** relay is designed for U-bar mounting or surface mounting. The various operating statuses are shown by coloured LEDs.

Areas of application:

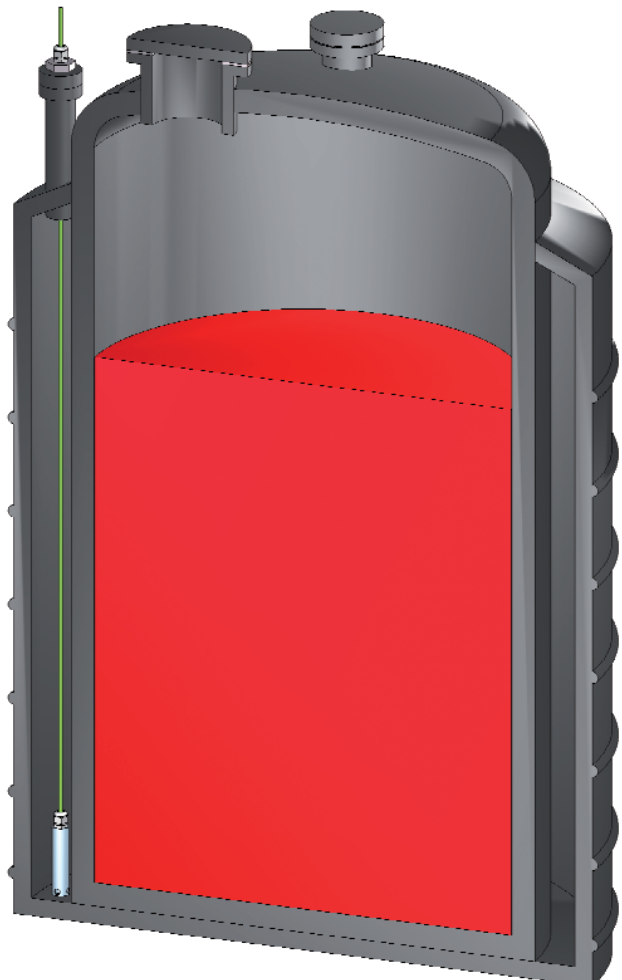
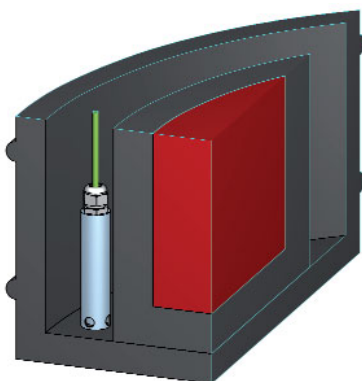
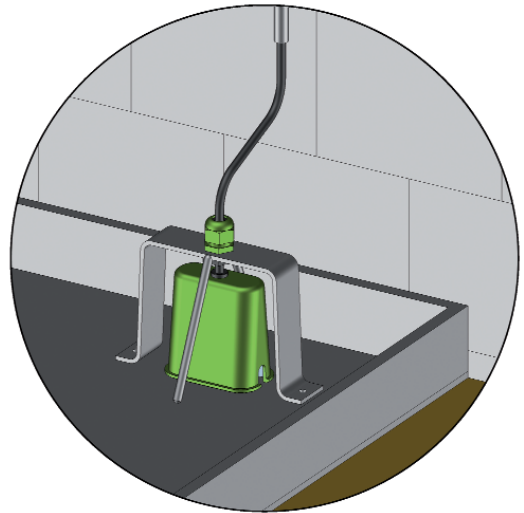
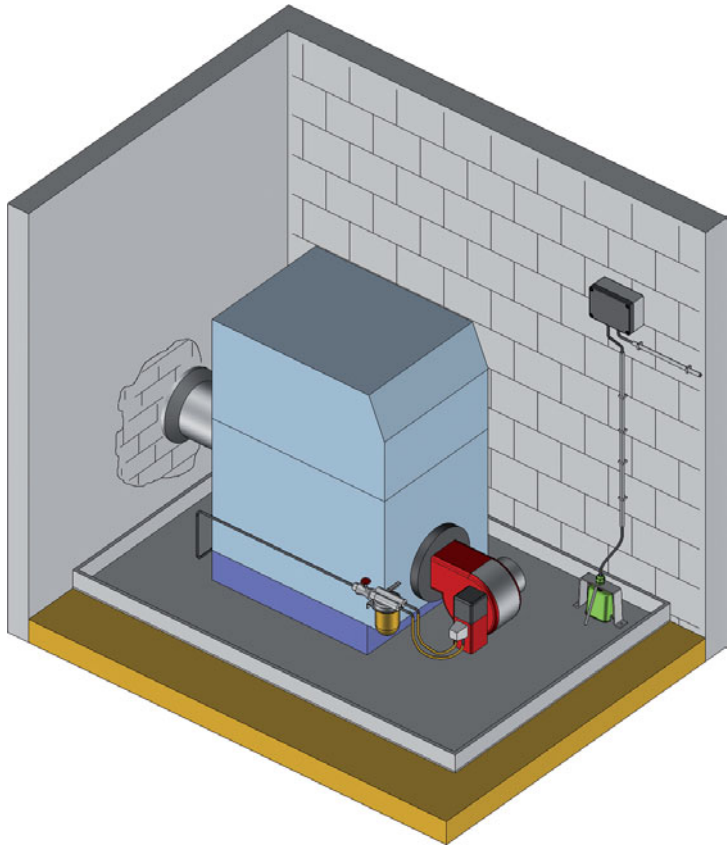
All organic and inorganic liquids with specific dielectric constants between 1.8 and 109.

Prerequisite is that these liquids, dependent on the ambient temperature, are present in fluid form, and that the sensors to be used will be sufficiently wetted. Response height is approx. 12 mm.



Leakage detection with “Leckmaster” capacitive sensors

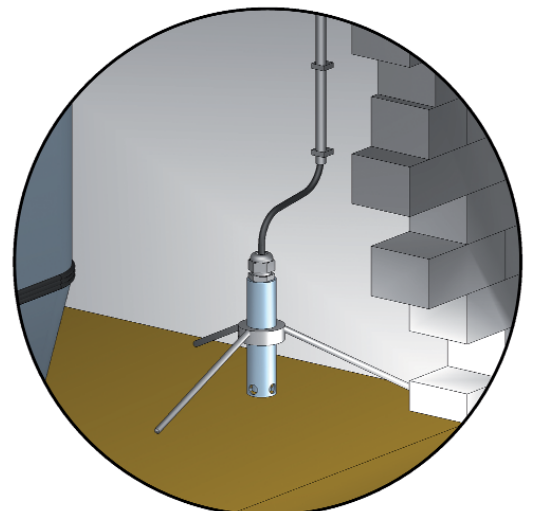
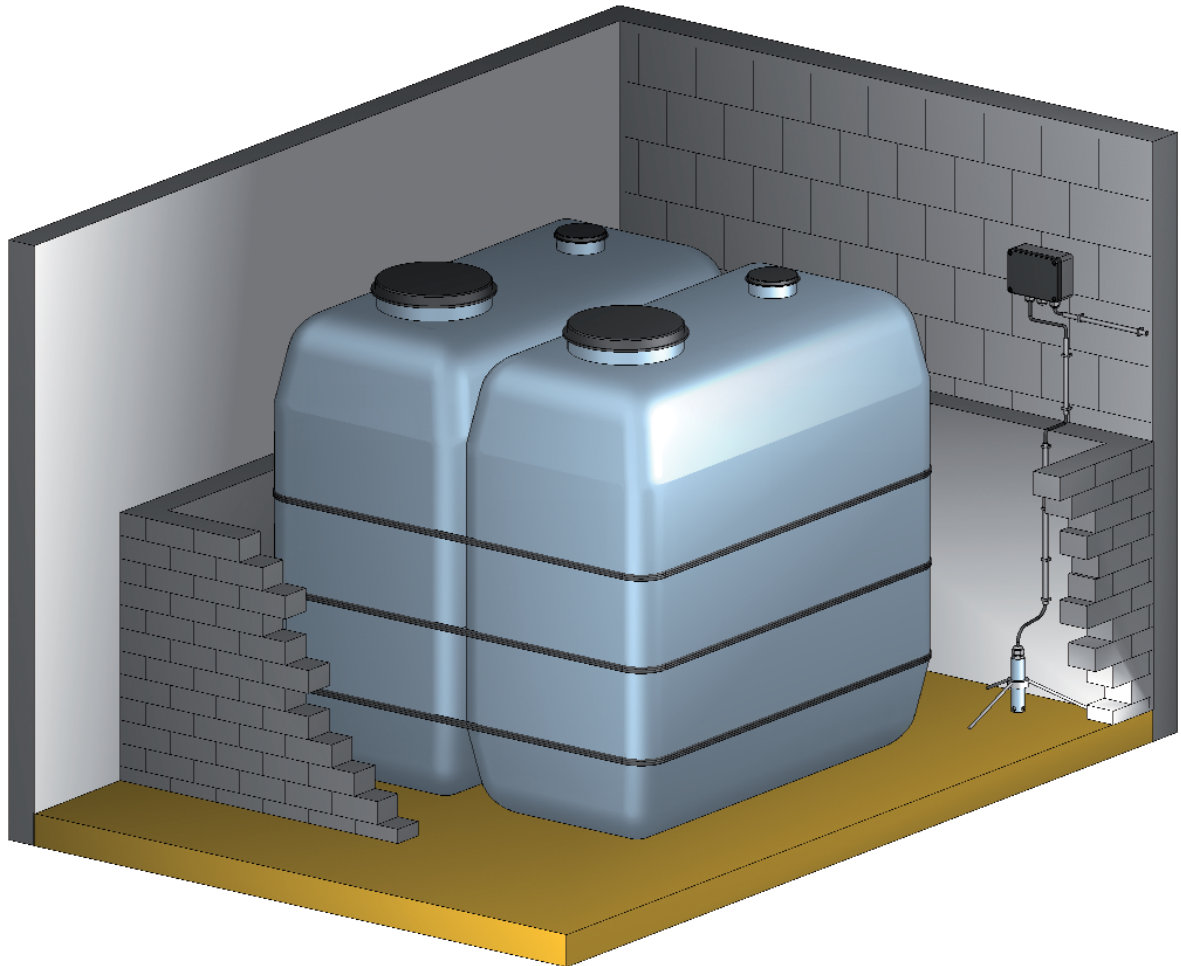
Application examples





Leakage detection with “Leckmaster” capacitive sensors

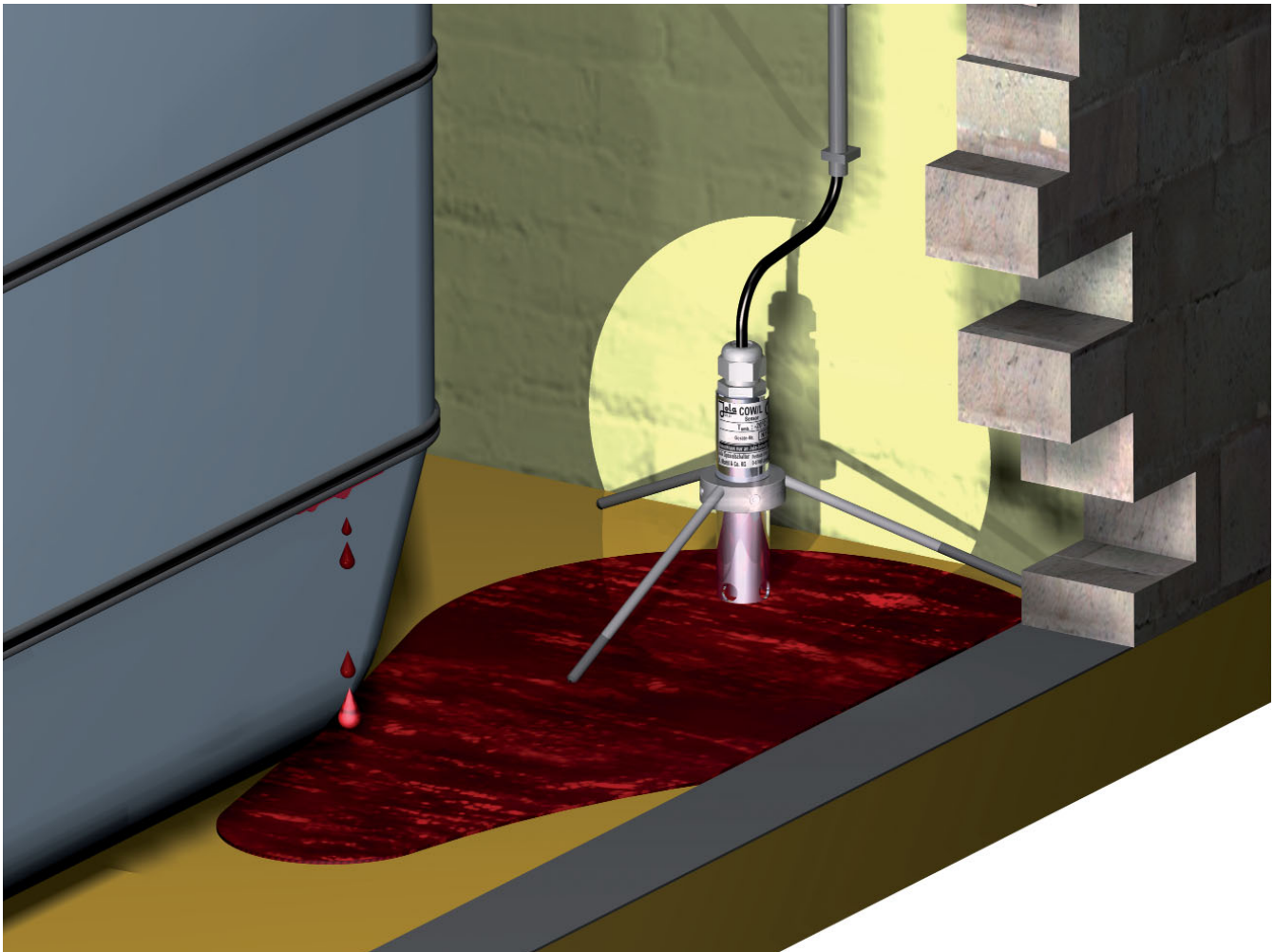
Application example





Leakage detection with “Leckmaster” capacitive sensors

Application example

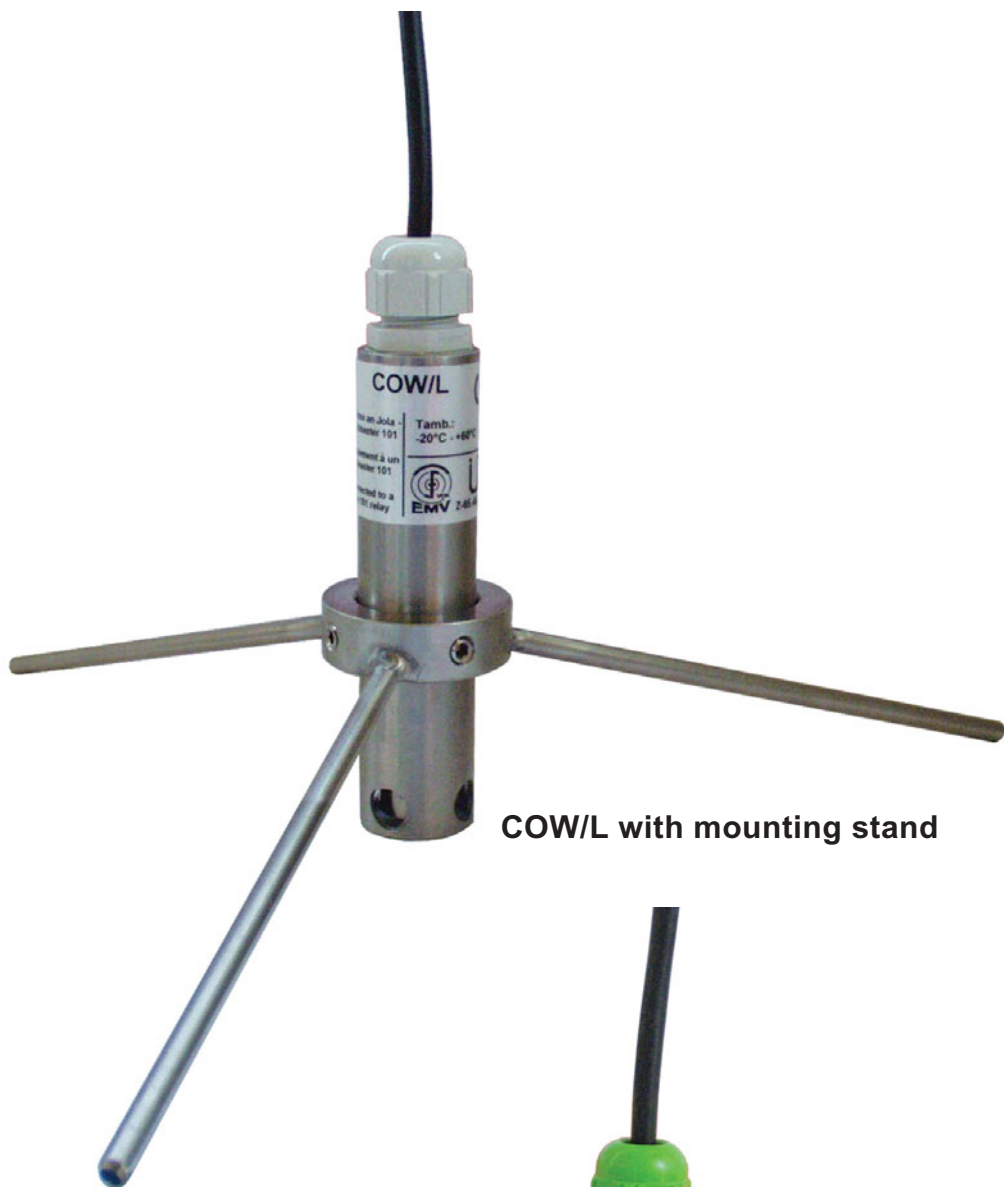




COW/L and OWE 2/C sensors



COW/L



COW/L with mounting stand



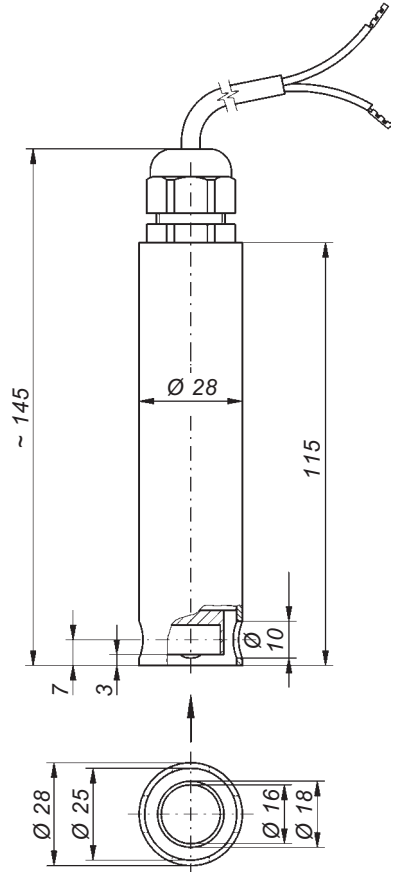
OWE 2/C



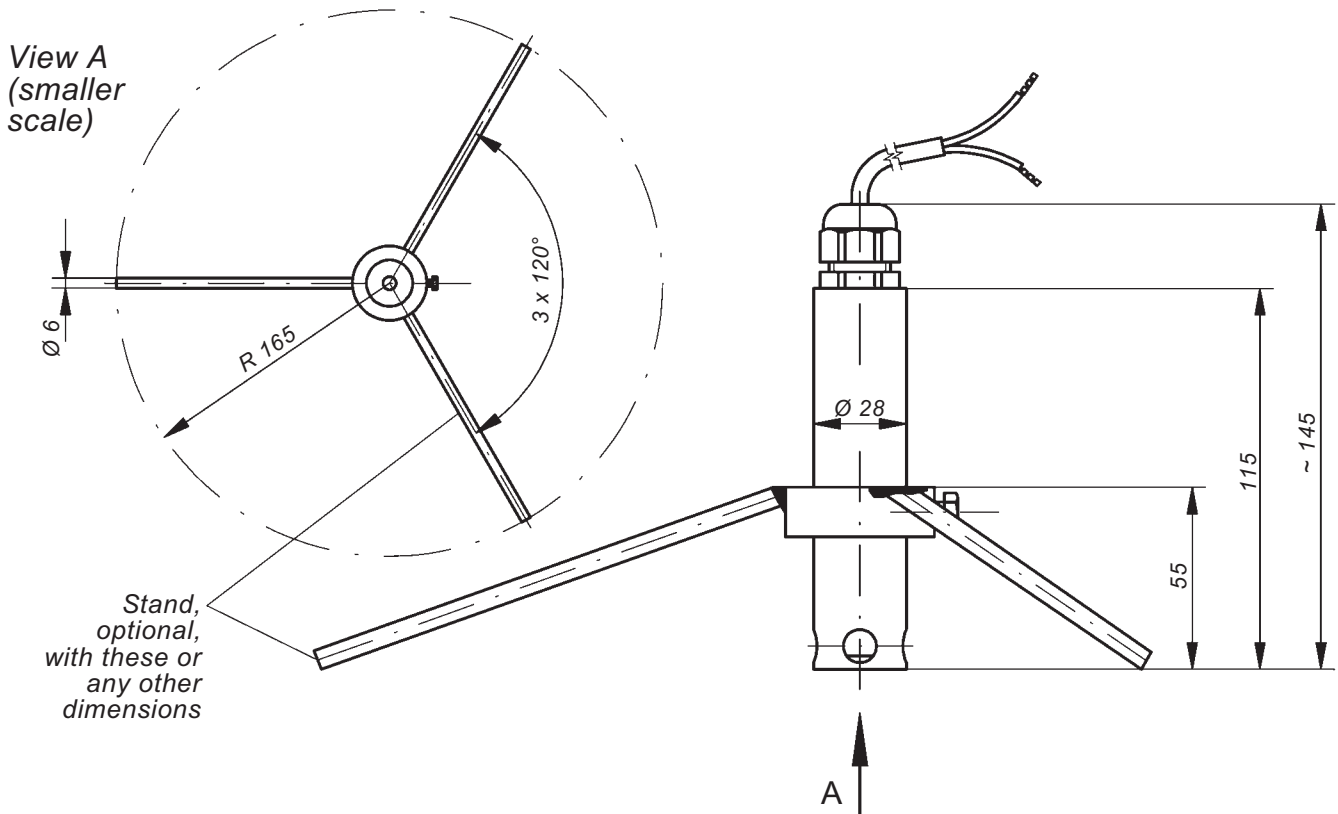
OWE 2/C with mounting stand

Jola COW/L sensor

Technical data	COW/L
Housing	stainless steel 316 Ti and PTFE
Connecting cable	oil-resistant PVC cable 2 x 0.75 mm ² , cable length 5 metres, longer cable on request, other types of cable on request
Functional principle	capacitive sensor with stainless steel cylindrical capacitor
Self-capacitance	$C_{eq} = 80 \text{ nF} + 0.2 \text{ nF per metre of connecting cable}$
Self-inductance	$L_{eq} = 0 + 1 \text{ } \mu\text{H per metre of connecting cable}$
Protection class for the electronics sealed in the housing	IP 65
Temperature range	- 20°C to + 60°C
Response height from bottom edge of housing	$\geq 12 \text{ mm}$ (depending on the dielectric constant of the liquid)
Mounting accessory	stand made of stainless steel 316 Ti (optional)
Max. length of connecting cable between relay and sensor	1,000 metres, longer on request
EMC	for interference emission in accordance with the appliance-specific requirements for households, business and commerce as well as small companies, and for interference immunity in accordance with the appliance-specific requirements for industrial companies.

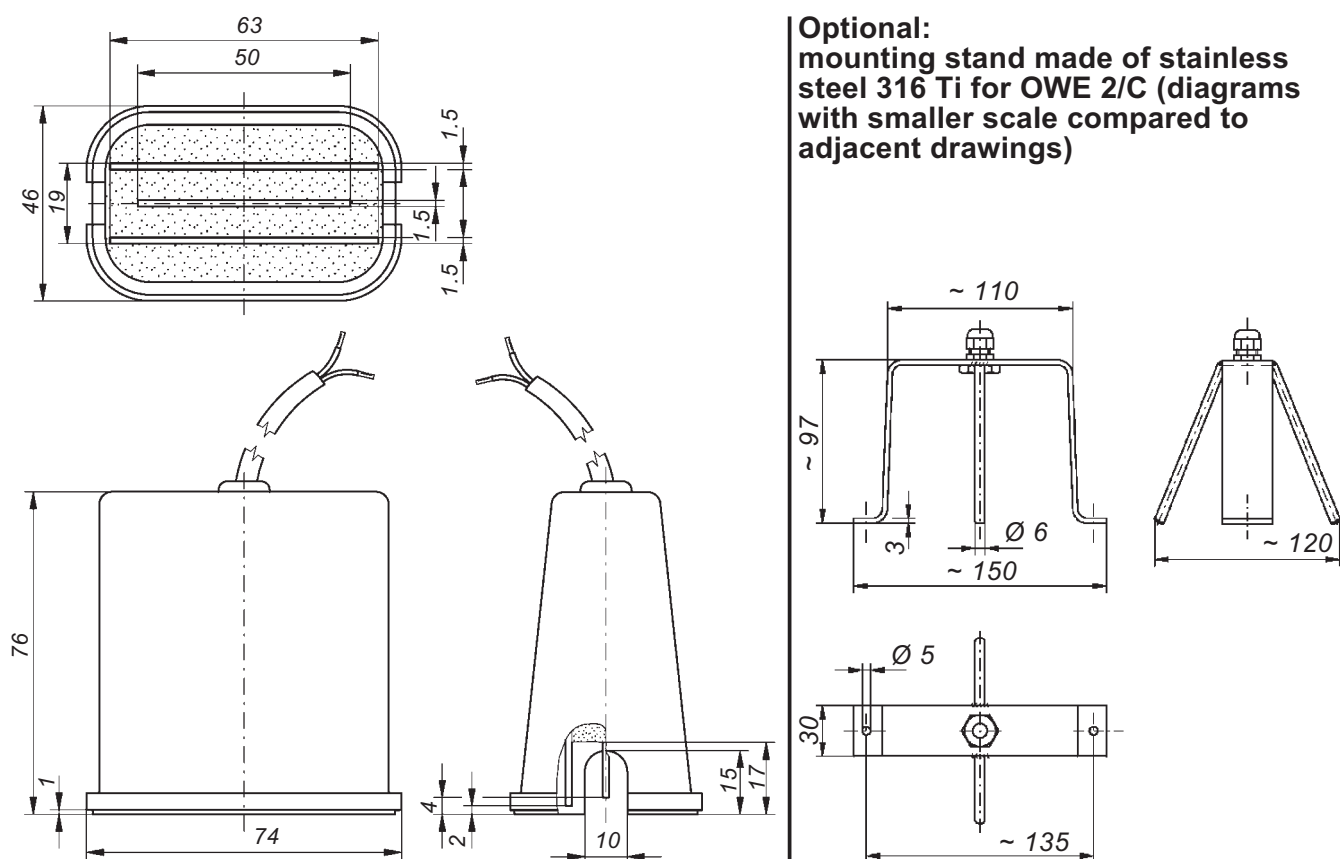


Optional: mounting stand made of stainless steel 316 Ti for COW/L



Jola OWE 2/C sensor

Technical data	OWE 2/C
Housing	PP and cast resin
Connecting cable	oil-resistant PVC cable 2 x 0.75 mm ² , cable length 5 metres, longer cable on request, other types of cable on request
Functional principle	capacitive sensor with gold-plated capacitor plates on epoxy resin backing material
Self-capacitance	$C_{eq} = 80 \text{ nF} + 0.2 \text{ nF per metre of connecting cable}$
Self-inductance	$L_{eq} = 0 + 1 \text{ } \mu\text{H per metre of connecting cable}$
Protection class for the electronics sealed in the housing	IP 65
Temperature range	- 20°C to + 60°C
Response height from bottom edge of housing	≥ 12 mm (depending on the dielectric constant of the liquid)
Mounting accessory	stand made of stainless steel 316 Ti (optional)
Max. length of connecting cable between relay and sensor	1,000 metres, longer on request
EMC	for interference emission in accordance with the appliance-specific requirements for households, business and commerce as well as small companies, and for interference immunity in accordance with the appliance-specific requirements for industrial companies.





Leckmaster 101 relay

with cable break monitoring and switchable self-hold,
for connection of a COW/L or OWE 2/C sensor

Switching unit for U-bar mounting or surface mounting, with connection terminals on top, with switchable self-hold function, and with built-in LEDs for signalling the operating status.

The appliance is designed for switch cabinet installation or mounting in an appropriate protective housing and may therefore not be installed in other locations. It is only suitable for use in clean environments.

Self-hold:

- If the switch **for self-hold is switched on, an alarm is stored**. The relay continues to signal the alarm even if the cause of the alarm (e.g. the presence of oil) is no longer present – in other words, if the sensor is dry again. The alarm is reset by switching off the switch for self-hold.
- If the switch **for self-hold is not switched on, the alarm is not maintained** when the cause of the alarm has been remedied but is reset.

Technical data

Leckmaster 101

Alternative supply voltages
(AC versions:
terminals 15 and 16;
DC versions:
- terminal 15: -,
- terminal 16: +)

- AC 230 V (delivered if no other supply voltage is specified in the order) or
 - AC 240 V or
 - AC 115 V or
 - AC 24 V or
 - DC 24 V or
 - DC 12 V or
- in these two cases, the unit must only be connected to a low safety voltage which corresponds to the safety regulations relating to the application
- further supply voltages on request

Power input
Control circuit
(terminals 6 and 8)

approx. 3 VA
2 terminals (under safety extra low voltage SELV) acting on 1 output relay with switchable self-hold

Sensor connection
(in line with EN 50 227):
- no-load voltage
- short-circuit current
- response hysteresis

DC 8.4 V (safety extra low voltage SELV)
< 10 mA
1.5 mA \square 1.8 mA
 $I < 0.15$ mA

Cable break monitoring
**Controlled circuit
(terminals 9, 10, 11)**

1 single-pole potential-free changeover contact based on the quiescent current principle

Switching status indicators
Switching voltage
Switching current
Switching capacity
Housing
Connection
Protection class
Mounting

3 LEDs (see next page)
max. AC 250 V
max. AC 4 A
max. 500 VA
insulating material, 75 x 55 x 110 mm
terminals on top of housing
IP 20
clip attachment for U-bar to DIN 46 277 and EN 50 022 or fastening via two boreholes

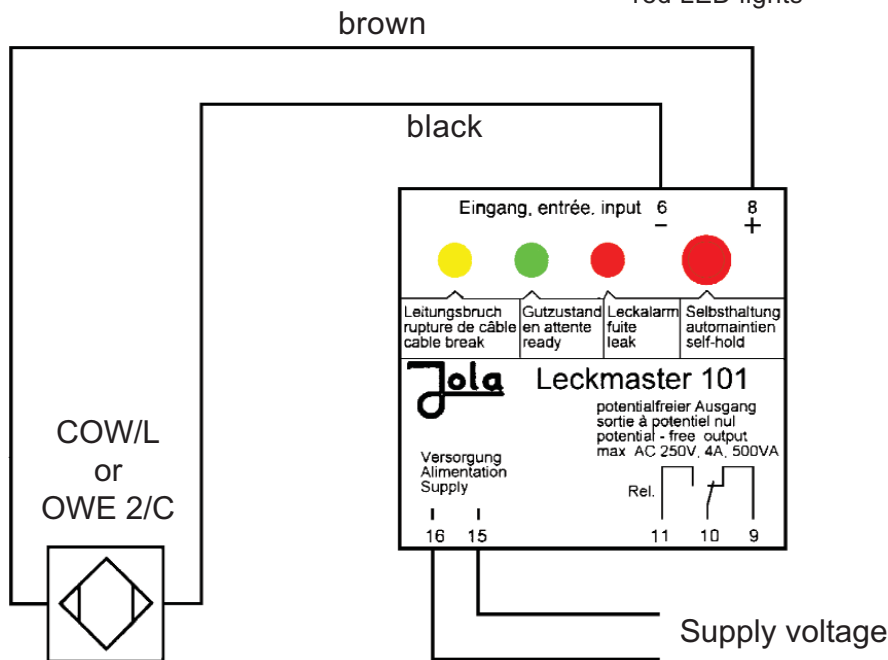
Mounting orientation
Temperature range
Max. length of connecting cable between relay and sensor
EMC

any
- 20°C to + 60°C

1,000 metres, longer on request
for interference emission in accordance with the appliance-specific requirements for households, business and commerce as well as small companies, and for interference immunity in accordance with the appliance-specific requirements for industrial companies.

Connection diagram - Leckmaster 101 relay

yellow LED flashes = cable break
 green LED lights = OK status
 red LED lights = leakage alarm



Position of contact when Leckmaster 101 without voltage

Position of the output contact of the Leckmaster 101 relay

Relay Leckmaster 101 without voltage

Cable break

OK status

Alarm status

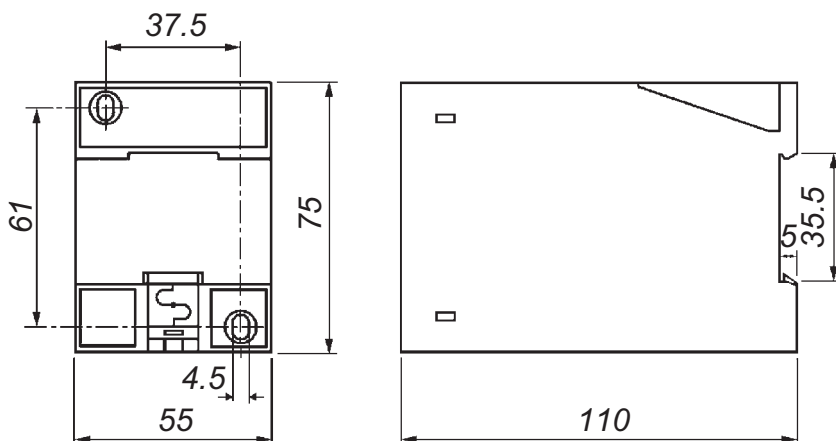


LEDs dark:
 Leckmaster 101 without voltage, output relay not energised

yellow LED flashes:
 Leckmaster 101 under voltage, cable break in sensor or its connecting cable, output relay not energised

green LED lights:
 Leckmaster 101 under voltage, sensor not activated, output relay energised

red LED lights:
 Leckmaster 101 under voltage, sensor activated, output relay not energised



Installation, operating and maintenance instructions for the capacitive leakage detectors in the Leckmaster range

1. Areas of application:

All organic and inorganic liquids with specific dielectric constants between 1.8 and 109.

Prerequisite is that these liquids, dependent on the ambient temperature, are present in fluid form, and that the sensors to be used will be sufficiently wetted. Response height is approx. 12 mm.

The sensors may only be used in a temperature range between -20°C and $+60^{\circ}\text{C}$. The admissible temperature range for use of the Leckmaster 101 relay is from -20°C to $+60^{\circ}\text{C}$.

It is, however, advisable to use the unit in frost-free rooms or in heated protective boxes.

2. Installation site:

The COW/L and OWE 2/C sensors should only be used in normally dry surroundings – e.g. in collection rooms or collection tubs.

The COW/L and OWE 2/C sensors should be installed at the lowest point to ensure rapid leakage alarm.

3. Installation (see also the sample applications on pages 31-6-3 to 31-6-5):

The COW/L and OWE 2/C sensors can be installed using the standard mounting stands offered by JOLA. Where this is not feasible, the sensor should be suspended from above in a position just above the floor. In both cases, the cable of the sensor in question should be routed in an installation tube in such a way that it cannot be moved. In other words, the fastening should always ensure that the sensor cannot be tilted by external influences and the fastening mode should not be able to influence the sensitivity of the sensor.

If the COW/L or OWE 2/C sensor is used in extremely confined spaces, where none of the above installation modes is feasible, it can be suspended by its connecting cable. When it is at the lowest point, the connecting cable should be secured using suitable fasteners at the point of suspension. Stuffing glands, connection boxes with integrated stuffing gland or cable fastening clips can be used as fasteners. Wherever possible, installation tubes should be used, and they should be routed toward the sensor as far as possible in order to prevent tilting of the sensor. It should always be ensured that the sensor is at the lowest point, that its cable points vertically upwards, and that its position cannot be influenced by external factors.

4. Procedure following an alarm:

After every alarm, the sensor in question should be cleaned thoroughly and dried. The cable and floor surface should also be cleaned and dried. If there are traces of mechanical or chemical aggression on the sensor, a new sensor should be fitted.

5. Ongoing maintenance:

The COW/L and OWE 2/C sensors should be serviced at regular intervals, the intervals depending on the potential for soiling of the sensors and their environment. However, maintenance should be performed prior to startup and then at least at the intervals defined in the water regulations. Maintenance should always comprise the following tasks:

- cleaning and drying of the sensor and its environment,
- sight check of the sensor,
- functional test of the sensor using the liquid to be monitored (where this is not possible, using a liquid which is comparable to the liquid to be monitored with regard to the dielectric constant),
- disconnection of a sensor connecting cable wire in the junction box closest to the sensor or – if the sensor cable has been laid without junction box – from the relay to check the cable break monitoring function. Proper functioning of the cable break monitoring feature is indicated by yellow flashing of the LED on the Leckmaster 101 relay.