Operating Instructions

for

Optical Level Sensor

Model: OPT

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Manufactured and sold by:

Kobold Messring GmbH
Nordring 22-24
D-65719 Hofheim, Germany
Tel.: +49 (0)6192-2990
Fax: +49(0)6192-23398
E-mail: info.de@kobold.com
Internet: www.kobold.com

2. Note

Please read these operating instructions before unpacking and putting the unit into operation. Follow the instructions precisely as described herein.
The instruction manuals on our website www.kobold.com are always for currently manufactured version of our products. Due to technical changes, the instruction manuals available online may not always correspond to the product version you have purchased. If you need an instruction manual that corresponds to the purchased product version, you can request it from us free of charge by email (info.de@kobold.com) in PDF format, specifying the relevant invoice number and serial number. If you wish, the operating instructions can also be sent to you by post in paper form against an applicable postage fee.

Operating instructions, data sheet, approvals and further information via the QR code on the device or via www.kobold.com

The devices are only to be used, maintained and serviced by persons familiar with these operating instructions and in accordance with local regulations applying to Health & Safety and prevention of accidents.

When used in machines, the measuring unit should be used only when the machines fulfil the EC-machine guidelines.

When using the OEM designs (OPT - 0), the electromagnetic compatibility in the plant must be demonstrated. The sensors themselves are not subjected to any testing of this type.

3. Instrument Inspection

All Instruments are inspected before shipping and sent out in perfect condition.
Should damage to a device be visible, we recommend a thorough inspection of the delivery packaging. In case of damage, please inform your parcel service / forwarding agent immediately, since they are responsible for damages during transit.

Scope of delivery:
The standard delivery includes:

- Optical Level Sensor model: OPT

4. Regulation Use

Any use of the Optical Level Sensor, model: OPT, which exceeds the manufacturers specification may invalidate its warranty. Therefore, any resulting damage is not the responsibility of the manufacturer. The user assumes all risk for such usage.

5. Operating Principle

The optical level sensors of model OPT have been developed for monitoring **transparent** liquids. Due to the very small dimensions, very slight switching hysteresis and high repeatability, the instruments are also suited for service in small vessels. The optical sensor is situated in a robust housing. It comprises a plastic hollow hemisphere, in which the infrared diode is fitted as a transmitter and a semiconductor as a receiver. When the sensor is not wetted by liquid, the infrared light is reflected fully from the surface of the hemisphere to the receiver. As soon as the sensor is covered with liquid, the refractive index on the boundary layer changes and most of the light escapes into the liquid. Less light then reaches the receiver, which allows switching to take place. The level probe should not be fitted with the sensor pointing downwards, as errors can occur due to drops of liquid sticking to it.

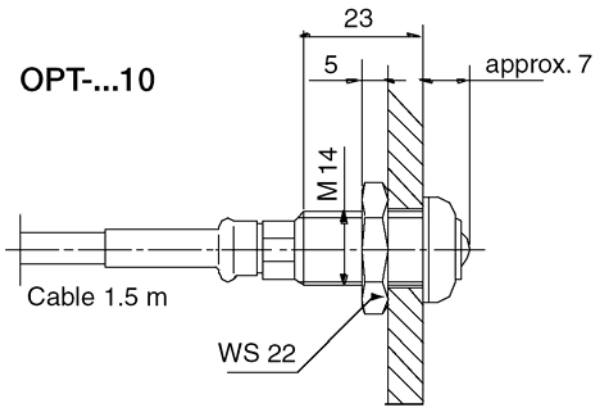
6. Mechanical Connection

Before installation:
Make sure that the maximum operating pressures and temperatures allowed for this device are not exceeded (see **Fehler! Verweisquelle konnte nicht gefunden werden.**. **Fehler! Verweisquelle konnte nicht gefunden werden.**).

Avoid mounting the Optical Level Sensor vertically downward from the top of the container cover. In this position, drops accumulating on the optical sensor can cause the sensor to report an apparent, false, simulated level (switching point reached).

Recommended mounting positions:
- On the side wall of the tank
- Vertically upward on the bottom of the tank

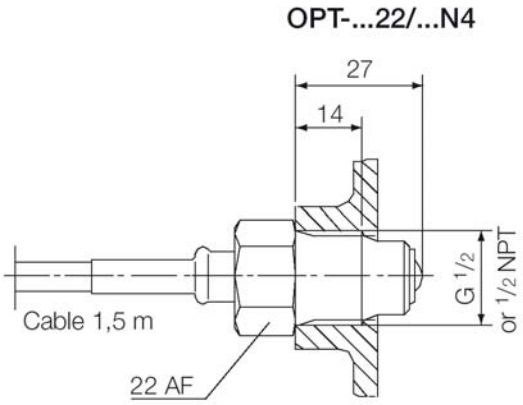
6.1. Process Connection M14 with Nut (OPT-..10)



Hole in the bottom of the tank:
∅ 15 mm

The device is sealed with the supplied O-ring.

6.2. Process Connection G ½ (OPT-..22)



Seal the device in the side of the container with Teflon tape or similar sealant.

7. Electrical Connection

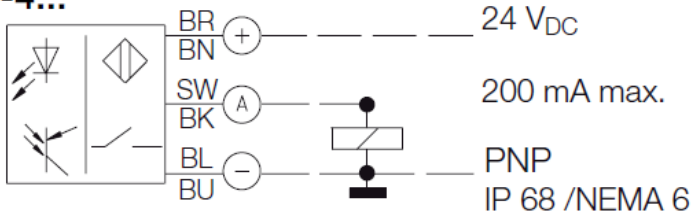
7.1. General Information

Attention! Make sure that the voltage values of your system correspond with the voltage values of the measuring unit.

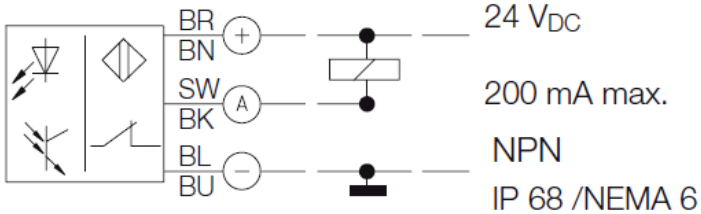
Make sure that the supply wires are de-energised.

7.2. Terminal Connection Diagrams

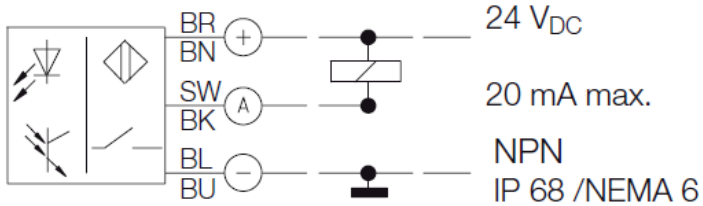
OPT-4...



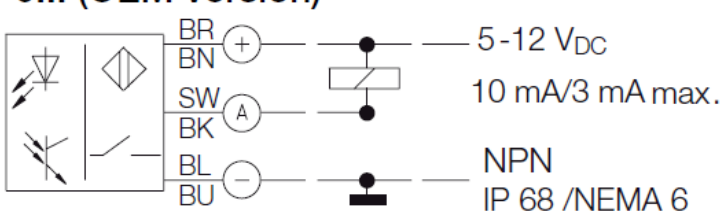
OPT-5...



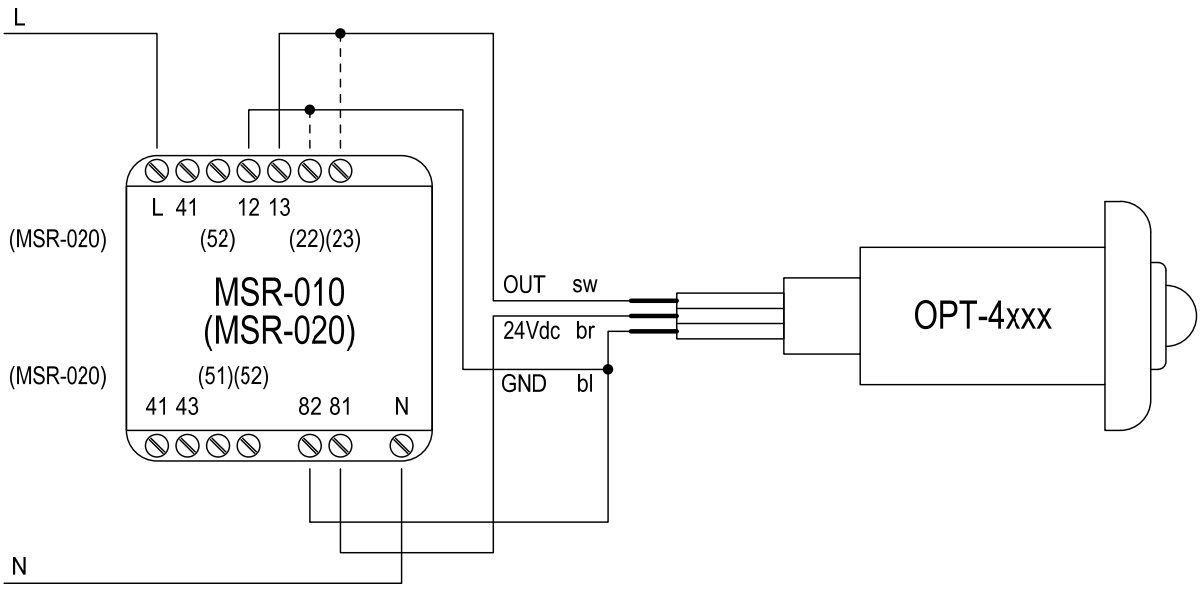
OPT-6...



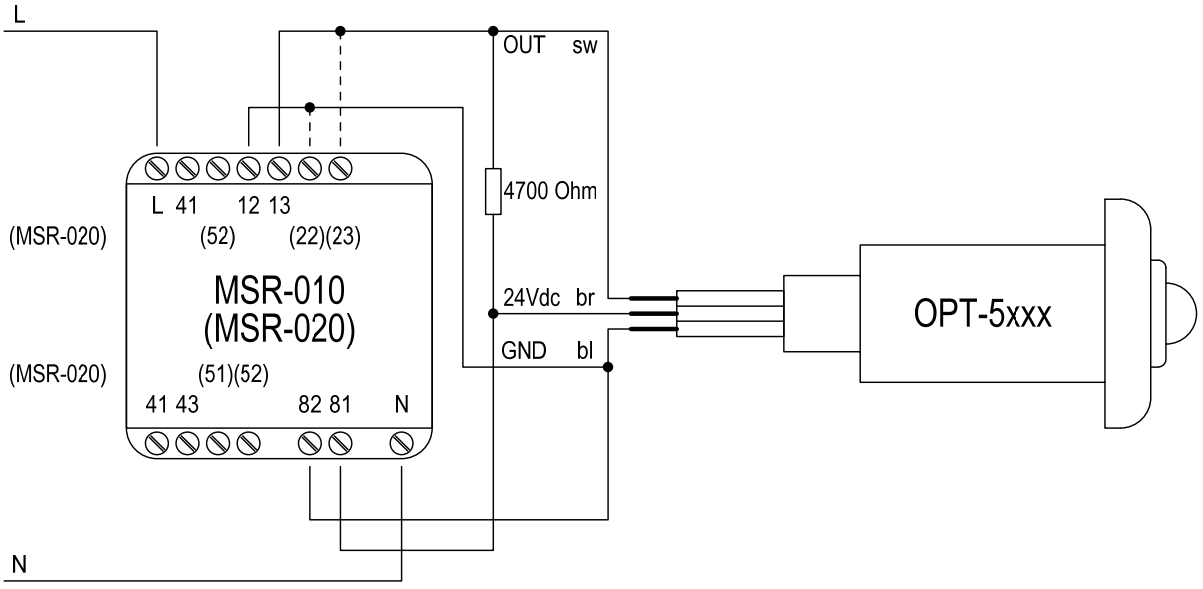
OPT-0... (OEM version)



Connection example OPT-4xxx with pulse relay MSR-010/MSR-020



Connection example OPT-5xxx with pulse relay MSR-010/MSR-020 and external pullup resistor 4700 Ohm



8. Technical Information

Operating instructions, data sheet, approvals and further information via the QR code on the device or via www.kobold.com

9. Order Codes

Operating instructions, data sheet, approvals and further information via the QR code on the device or via www.kobold.com

10. Dimensions

Operating instructions, data sheet, approvals and further information via the QR code on the device or via www.kobold.com

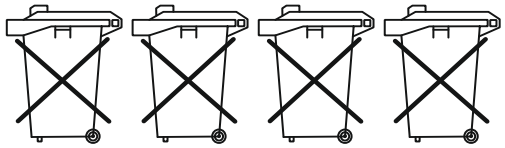
11. Disposal

Note!

- Avoid environmental damage caused by media-contaminated parts
- Dispose of the device and packaging in an environmentally friendly manner
- Comply with applicable national and international disposal regulations and environmental regulations.

Batteries

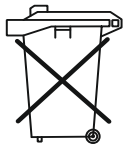
Batteries containing pollutants are marked with a sign consisting of a crossed-out garbage can and the chemical symbol (Cd, Hg, Li or Pb) of the heavy metal that is decisive for the classification as containing pollutants:



Cd[1] Hg[2] Pb[3] Li[4]

1. „Cd" stands for cadmium
2. „Hg" stands for mercury
3. „Pb" stands for lead
4. „Li" stands for lithium

Electrical and electronic equipment



12. EU Declaration of Conformance

We, KOBOLD Messring GmbH, Nordring 22-24, 65719 Hofheim, Germany, declare under our sole responsibility that the product:

Optical Level Sensor **model: OPT –4..., OPT –5... and OPT-6**

to which this declaration relates is in conformity with the following EU directives stated below:

2014/30/EU	**EMC Directive**
2011/65/EU	**RoHS** (category 9)
2015/863/EU	Delegated Directive (RoHS III)

Also, the following standards are fulfilled:

EN 61000-4-4:2012
Electromagnetic compatibility (EMC) - Part 4-4: Testing and measurement techniques - Electrical fast transient/burst immunity test, BURST 2 kV

EN 61000-4-2:2009
Electromagnetic compatibility (EMC) - Part 4-2: Testing and measurement techniques - Electrostatic discharge immunity test, ESD 4 kV/8 kV

EN IEC 63000:2018 Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances

Hofheim, 10 October 2023

H. Volz
General Manager

J. Burke
Compliance Manager

13. UK Declaration of Conformity

We, KOBOLD Messring GmbH, Nordring 22-24, 65719 Hofheim, Germany, declare under our sole responsibility that the product:

Optical Level Sensor **model: OPT –4..., OPT –5... and OPT-6**

to which this declaration relates is in conformity with the following UK directives stated below:

S.I. 2016/1091	**Electromagnetic Compatibility Regulations 2016**
S.I. 2012/3032	The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012

Also, the following standards are fulfilled:

BS EN 61000-4-4:2012
Electromagnetic compatibility (EMC). Testing and measurement techniques. Electrical fast transient/burst immunity test, BURST 2 kV

BS EN 61000-4-2:2009
Electromagnetic compatibility (EMC). Testing and measurement techniques. Electrostatic discharge immunity test, ESD 4 kV/8 kV

BS EN IEC 63000:2018
Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances.

Hofheim, 10 October 2023

H. Volz	J. Burke
General Manager	Compliance Manager