

**HB Products – dedicated to optimal solutions for level measurement and control of oil and refrigerants.**

HB Products is a development-oriented company, which specializes in the development and production of sensors for industrial refrigeration systems. Apart from expertise within oil and refrigerant control, we have great know-how in the design and optimization of industrial refrigeration systems. This knowledge enables us to develop and produce the best sensors!

Since its start more than 25 years ago, HB Products has attained a strong global position. This is the result of our ability to think in terms of new technological solutions, create

For further info and guidance please visit our homepage [www.hbproducts.dk](http://www.hbproducts.dk)

**Quick guide**

HBSO1/HBSO2- Oil Level Switch

**Functionality:**

The HBSO1/HBSO2 switch is made to detect oil in refrigeration systems. If the HBSO1/HBSO2 is to be used in a different way, prior approval must be obtained from HB Products.

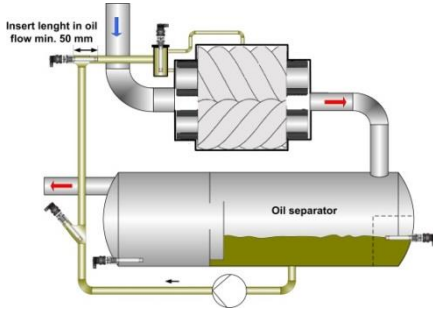
**Download complete manual:**

For further information please download the instruction manual from our homepage: [www.hbproducts.dk](http://www.hbproducts.dk).

**Caution:**

Only qualified personnel should work with the product. The technician must be aware of the consequences of an improperly installed sensor, and must be committed to adhering to the applicable local legislation.

## Mechanical installation



### Mechanical specifications:

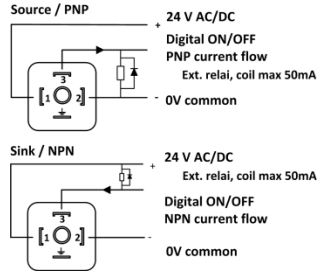
Oil type HBSO1: PAO, PEO & mineral oil  
 Oil type HBSO2: PAG  
 Ambient temperature: -30...+50°C  
 Oil temperature: 0...+80°C  
 Max. pressure: 150 bar  
 Material, mechanical: AISI304/PTFE  
 Thread connection: See packaging.

### Installation guide:

In case the sensor is installed in a threaded sleeve/pipe stub, this should be welded at a 5-10° upwards angle relative to the horizontal, so as to prevent the formation of liquid pockets.  
 The installation length of the sensor must be taken into account, since there must be at least 2mm between the sensor's mechanical part and other fixed or moving parts.

**Caution!** In case of welding work on the unit, please make sure that proper earthing is carried out to avoid damaging the electronics.

## Electrical installation



### Electrical specifications:

Supply: 24 V AC/DC  
 Current draw: Max 50 mA  
 Plug: DIN 43650  
 Enclosure: IP65  
 Material, electronics: Nylon 6 (PA).  
 LED indication: 4 x LED (red)

### LED activation:

4 x red LEDs indicate liquid.  
 Irrespective of the output function NO/NC, LEDs are activated at oil level.

### Function of charge output:

NC: There should be no signal when it is in oil.  
 NO: There should be a signal when it is in oil.

**Note!** All terminals are protected against improper termination with a supply voltage up to 40 V. If the supply voltage is greater than 40 V the electronics will be damaged.

## Mounting on oil separator or compressor



1) Tighten screws with 5 Nm.

### Mounting of mechanical part:

- 1) Loose the 2 set screws and dismount electronic
- 2) Install the mechanical part on separator or compressor. Seal it with Teflon or sealing ring (cylindrical thread).
- 3) Tighten the mechanical part with 80 Nm.

### Mounting of electronic part:

- 1) Place the electronic
- 2) Tighten the 2 set screws with a torque of 5 Nm

**Note!** LED is always activated when approx. half of the sensors is covered or immersed in oil, irrespective of the sensor's output function NC/NO.

**Note!** Fault detection on the electronic function can be carried out without releasing pressure from the system or disassembling the mechanical part of the sensor.