

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

HB Products is a development-oriented company, which specialises 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 optimisation of industrial refrigeration systems. This knowledge enables us to develop and produce the best sensors!

Since its start more than 20 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 trustworthy products, and provide a high level of service.

For further info and guidance please visit our homepage

[www.hbproducts.dk](http://www.hbproducts.dk)



## Quick guide

HBSC2 - liquid CO2 switch



### Functionality:

The HBSC2 switch is made to detect liquid CO2 in refrigeration systems. If the HBSC2 is to be used in a different way, prior approval must be obtained from HB Products.

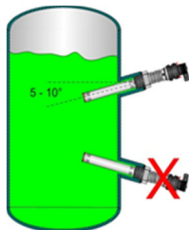
### Download complete manual:

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:

Ambient temperature: -20...+50°C  
Liquid temperature: -30...+100°C  
Max. pressure: 150 bar  
Material, mechanical: AISI304/PTFE  
Thread connection: see packaging.

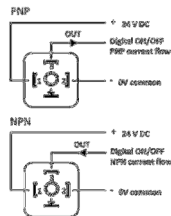
### Installation guide:

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, the electronic part must be removed. Welding work can damage the electronics. The mechanical part of the sensor must not be installed in the pipe socket during welding.

## Electrical installation



### Electrical specifications:

Supply: 24 VDC  
Current draw: Max 50 mA  
Plug: DIN 43650  
Enclosure: IP65  
Material, electronics: Nylon 6 (PA).

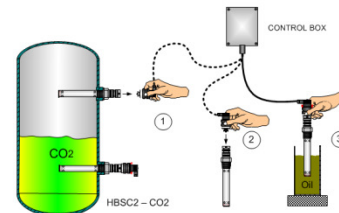
### Output types:

HBSC2 can be delivered with a PNP or NPN output. The connection depends on the selected sensor type as well as the type of controller/PLC used.

**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.

## Test of installation and troubleshooting

### Testing/troubleshooting on HBSC2-CO2 level sensor



Testing of electronics can be conducted without de-pressurizing the system. Check the instruction manual for further information.

### Function and outputs:

LED indication: 4 x LED (red)  
Liquid: CO2 liquid refrigerant  
Transistor output: NPN or PNP  
Output function: NO or NC.

### LED activation:

4 x red LEDs indicate liquid  
Irrespective of the output function NO/NC, LEDs are activated at CO2 liquid level.

### Function of charge output on pin 3 & 4:

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

**Note!** LED is always activated when approx. half of the sensors is covered or immersed in refrigerant, 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.