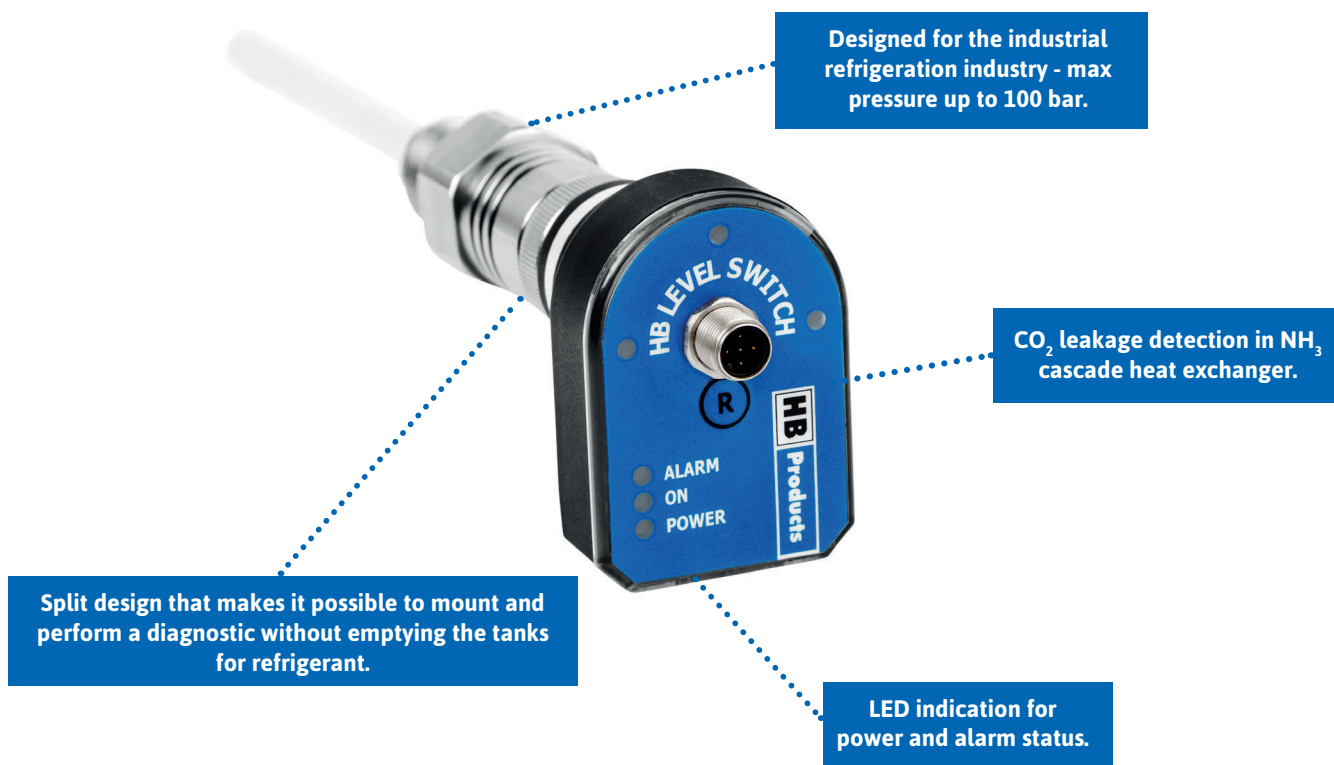


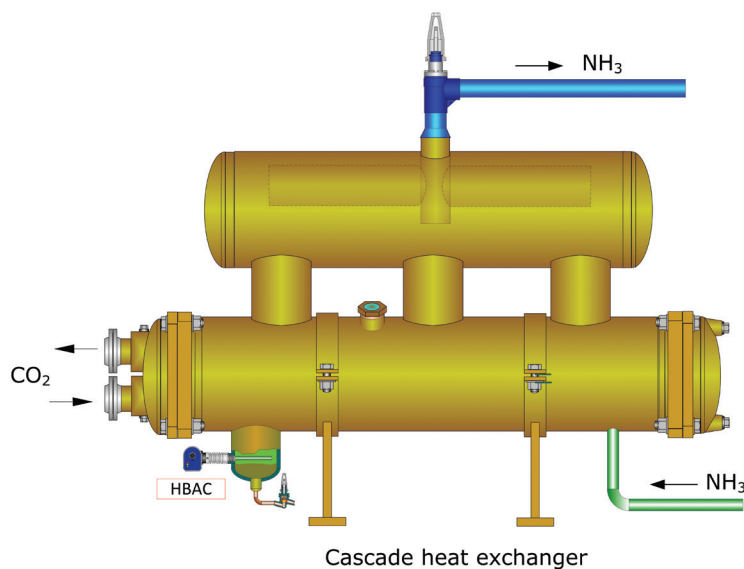
NH₃/CO₂ Leakage Switch

Category: HBAC-U



Functional description

HBAC-U is used for detecting leakage in cascade systems. The sensor triggers an alarm if there is an CO₂ leak in the NH₃ part. A leak results in several hours of cleaning the pipes and heat exchanger. If a CO₂ leak occurs in the NH₃ part, salt crystals are formed. These salt crystals are very corrosive and lead to clogging of the parts. If the leak is not stopped in time, it can lead to extensive damage to the heat exchanger, pipes, and pump. The sensor detects even very small leaks.

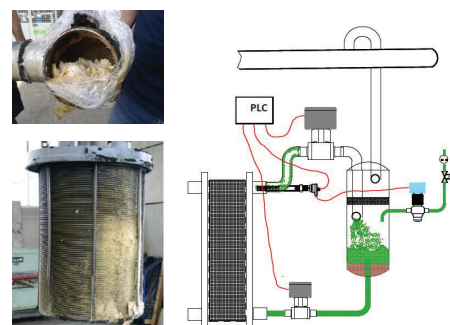


CO₂/NH₃ Cascade Refrigeration Systems

New measurement methods make it possible to design energy-efficient Low Charge Evaporator Systems Controlling both the injection of refrigerant according to the Evaporator load, while also increasing safety aspect when using natural refrigerants as CO₂/NH₃ cascade systems.

HB products developed a sensor, which detects ammonium carbamate in an NH₃ system through the capacitive principle. The detection is based on the fact that the permittivity (dielectric constant) of ammonium carbamate is much higher than of carbon dioxide and ammonia.

Experiments show that the chemical reaction is very fast. But also the sensor is very fast as the ammonium carbamate is detected at the same moment as the CO₂ enters the NH₃ system. This is indicated by a rapid increase in permittivity. Built-in alarm function is used to stop the refrigeration plant or to close the stop valves, to limits the damages on the system.

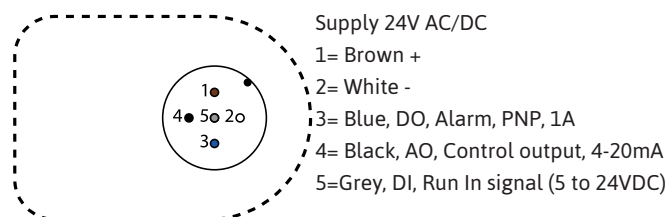


detects ammonium carbamate in a NH₃ system

Technical data

Power supply		Mechanical specifications	
Voltage	24 V AC/DC ±10%	Thread connection	¾" NPT / BSPP
Current draw	Max 50 mA	Material – mechanical parts	AISI 304 / PTFE
		Material – electronic parts	Nylon 6 (PA)
Electrical connection	M12 - DIN 0627	Dimensions	210x52x40
Output		Environmental conditions	
Output type	PNP, 1 A	Ambient temperature	-30...+50°C
Output function	NC or NO	Refrigerant temperature	-60...+80°C
LED indication	Green & red	Max pressure	100 bar
Cable specification (power supply)		Protection degree	IP65
Cable size	5m - 3 x 0.34 mm ²	Vibrations	IEC 68-2-6 (4g)
Cable glands	PG7 / M8		
Cable resistance	500 Ω/Km		
Approvals			
CE	EN 61000-2		

Electrical installation

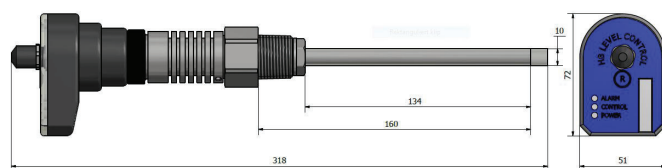


The HBAC-U sensor have both a digital and analog output, alarm setting switches when a leak occurs, you can also choose to set the alarm when the mA signal exceeds 16mA.

Ordering codes

Output	Thread type (G)	Ordering code
NO	3/4" NPT	HBAC-U-1.6-NO-2
NC	3/4" NPT	HBAC-U-1.6-NC-2
NO	3/4" BSPP	HBAC-U-1.6-NO-6
NC	3/4" BSPP	HBAC-U-1.6-NC-6

Mechanical dimensions



Spare parts for HBAC-U

Position	Specification	Type	Ordering code
1	Electronic parts	NO	HBAC-U-EL-NO
		NC	HBAC-U-EL-NC
2	Mechanical parts	3/4" NPT	HBLC-U-MEK-1.6-2
		3/4" BSPP	HBLC-U-MEK-1.6-6

Spare parts for HBAC

Position	Specification	Type	Ordering code
1	Electronic parts	NO	HBAC-EL-NO
		NC	HBAC-EL-NC