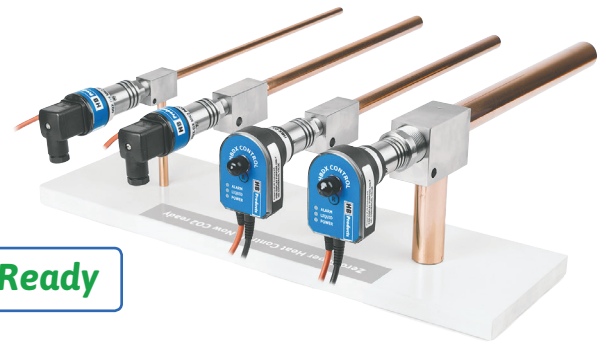
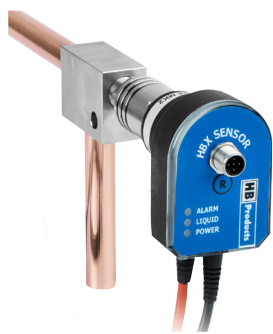


World News

HBX-DX-CU Zero Superheat controller



With an increased focus on the use of natural refrigerants, HB Products has developed a new and effective evaporator control system to control the capacity of all kinds of evaporators in cooling- and heat pump systems. The control system is available in different versions, with or without control function.



The controller is integrated in the sensor and is connected directly to an electronic expansion valve, which will then function as a closed loop control system. The system comes with all necessary IN/OUTPUT signals for start/stop and output signals for data logging.

With this revolutionary, patented technology we are now ready to solve one of the main challenges when using CO₂ as refrigerant. By nature CO₂ is highly dynamic and reacts strongly to even small changes in evaporator load. This, in conjunction with Superheat control causes unstable operation.

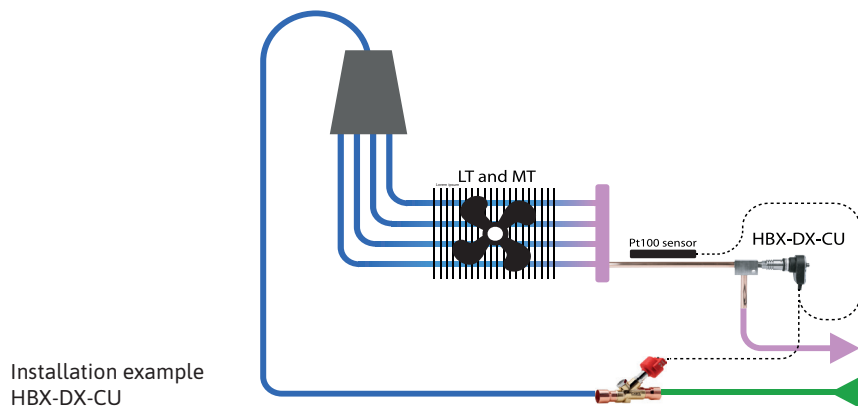
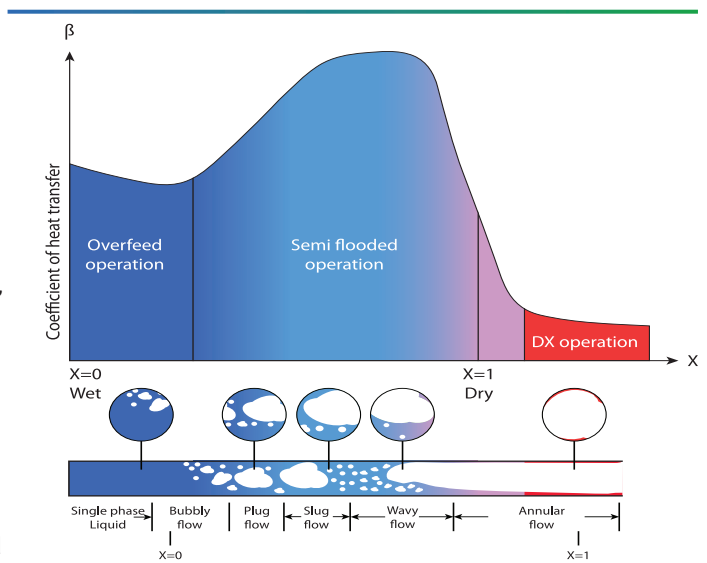
Tests with evaporator control based on Superheat show very poor efficiency. The reason is that that a relatively large area of the evaporator surface is used to ensure sufficient Superheat. This reduce the thermodynamic efficiency significantly. Energy efficient CO₂ systems must be designed for flooded/Semi-flooded operation.

With HBX-DX-CU it is now possible to measure the dryness of the evaporated refrigerant in the evaporator outlet and achieve semi flooded operation. Semi flooded operation ensure a much more balanced system with minimal variation of pressure and very little superheat from 0,5 to 1,0K

Semi flooded operation ensures maximum efficiency as 98% of the evaporator surface is wet. A wet surface ensures the best thermodynamic operation with higher heat transfer. The gas volume is reduced, thus decreasing the compressor load, power consumption and the discharge gas temperature.

Current solution for evaporator control rely on pressure- and temperature measurements. Temperature based control of evaporators is unstable and requires higher Superheat at 6 to 10K to prevent damages to the compressor caused by liquid fluid back.

The HBX-DX-CU-sensor is based on the capcative measuring principle. It measures the phase and dryness of the refrigerant and reacts instantaneously if dryness of the vapor/gas changes.

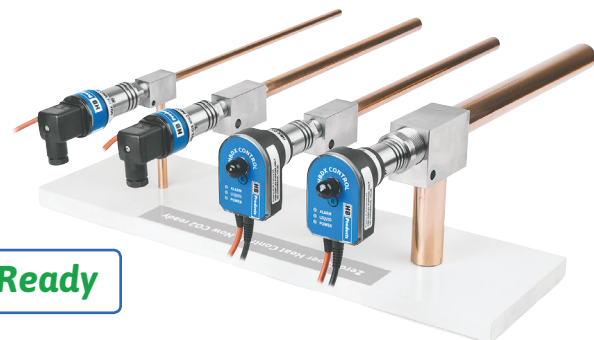


Installation example
HBX-DX-CU

World News

HBX-DX-CU

Zero Superheat controller

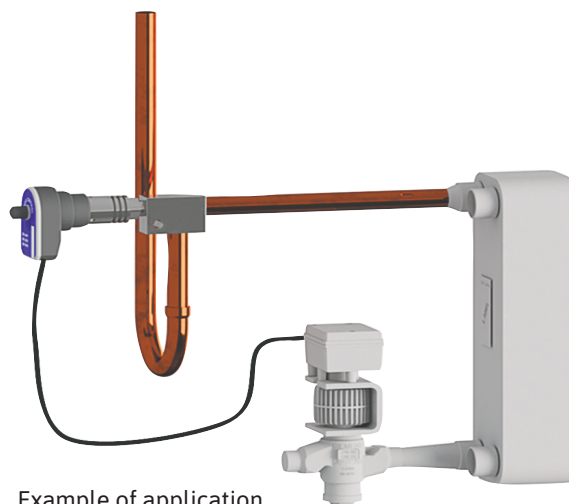
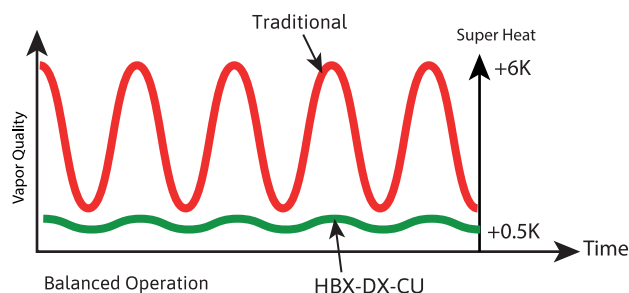


CO₂ Ready

Experience show that the entire system controlled with a HBX-DX-CU sensor is better balanced and has less pressure variation than a system with conventional control.

This new technology allows you to control the refrigerant feed very precisely and thus reducing the need for Superheat as well as minimizing the risk of liquid hammer damages to the compressor.

We are proud to launch this groundbreaking technology which will revolutionize the way in which you could design and control cooling- and heat pump systems.



Example of application

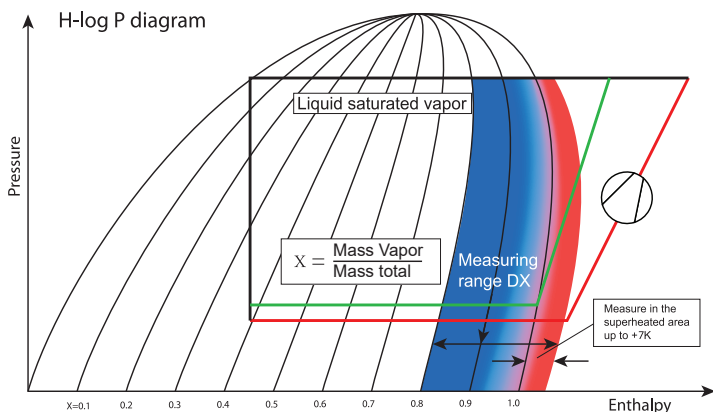
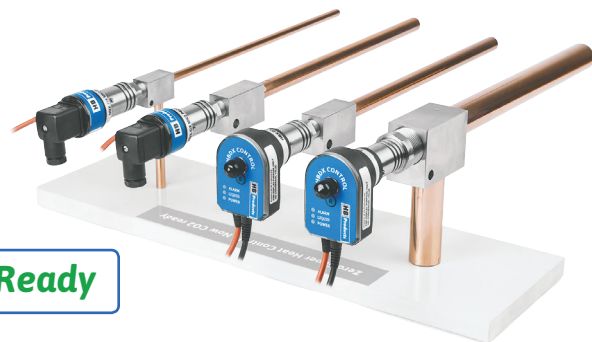
- Semi flooded evaporator operation ensures optimum heat transfer at all loads
- Higher evaporation temperature and suction pressure
- Lower discharge temperature
- Optimum performance in all climates
- Compressor protection
- Smaller refrigerant charge compared to flooded systems
- Simple DX System design

Savings:

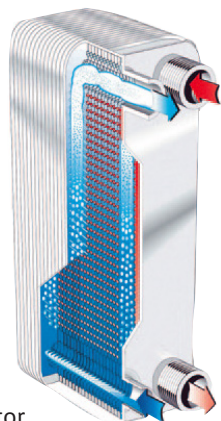
Energy	>20%
Installation	>30%
Maintenance	>30%

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HBX-DX-CU Zero Superheat controller



This H log P diagram shows the measuring range for the HBX-DX sensor. Experience show that the sensor measures superheating up to 7K compared to temperature- and pressure based measuring. Conventional measuring is inaccurate because the evaporated refrigerant is not homogeneous but contains droplets of liquid which disturbs the conventional sensor. The HBX-DX sensor is based on the capacitive measuring principle and reacts more appropriately and quickly to even small changes to the dryness of or droplets in the refrigerant.



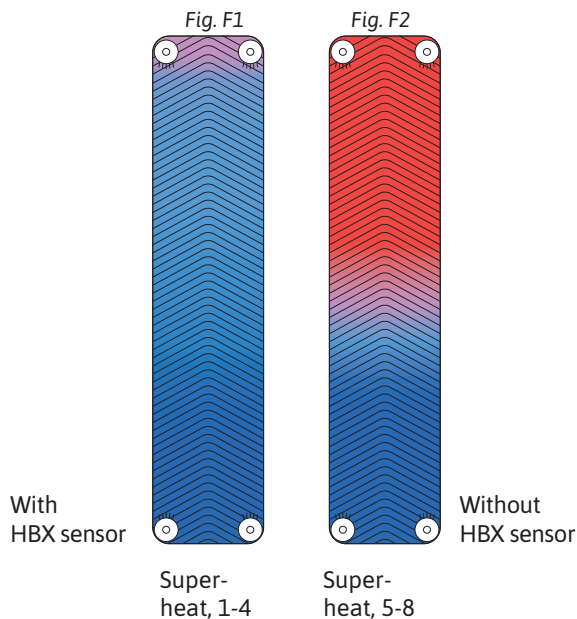
Evaporator

Available in 120 bar high pressure copper type K65 or stainless steel.

6 sensor sizes:
3/8" to 1 1/8" with or without PI and stepper motor control.

Preprogrammed with settings for commonly used refrigerants, including CO₂

Temperature profile in a DX-evaporator with and without the HBX-DX sensor.



This comparison shows more than 30% of the evaporator's surface is used to ensure a superheat of 5 to 8K - (Fig.2) The excess surface is a waste of material

Flooded operation in an evaporator with HBX-DX (Fig 1.) is more efficient and a more cost effective solution.



Information about the HBX-DX-CU sensor:

<http://bit.ly/HBX-DX>



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