



Data centers demand the highest levels of reliability, uptime, and energy efficiency. A booming market demand combined with higher evaporating temperatures means solutions must evolve and become even more efficient and sustainable. Danfoss' expanding product portfolio and frontline application expertise help improve the performance of your Computer Room Air Conditioning (CRAC) unit and ensure peak performance of your data server room.

SOLUTIONS FOR HIGHLY EFFICIENT CLOSE CONTROLS

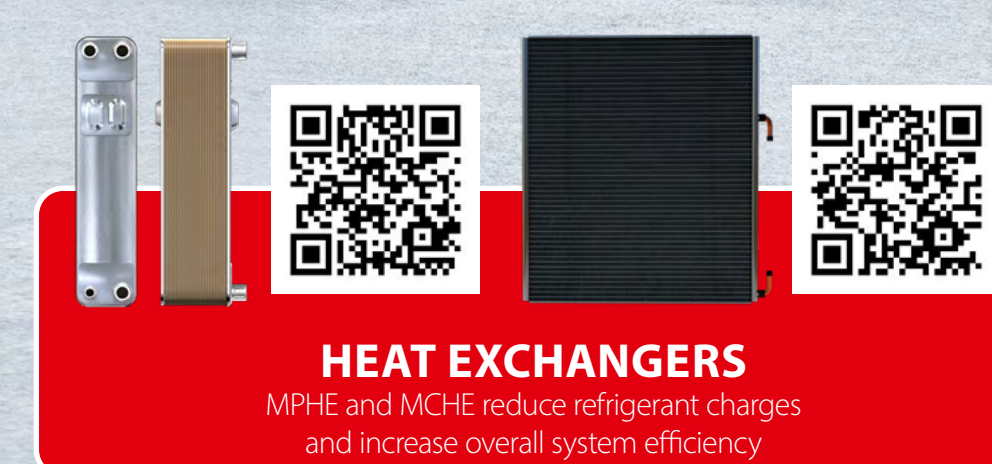
2021 Releases

TYPES OF DATA CENTERS

- HYPERSCALE
- COLOCATION
- ENTERPRISE
- TELECOM
- EDGE

ADDRESSING DEMANDS ON TODAY'S DATA CENTER ARCHITECTURES

THE ROAD TO LOWER GWP REFRIGERANTS



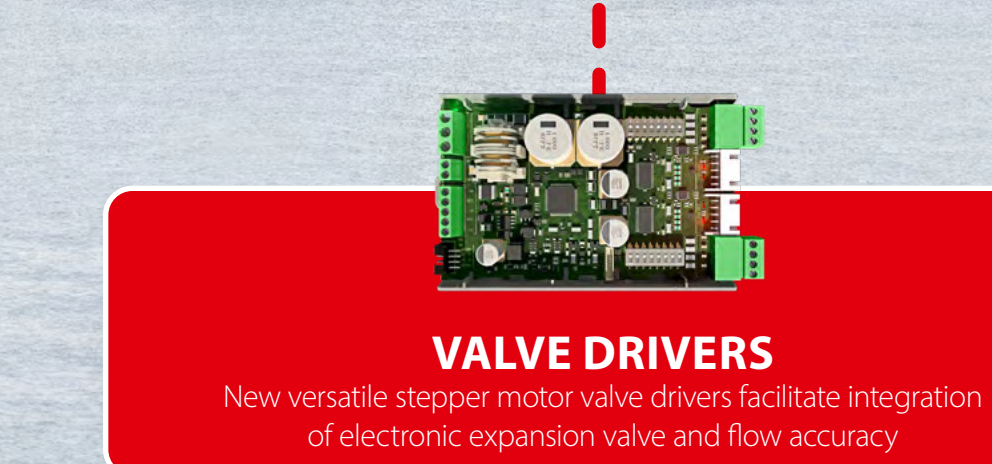
HEAT EXCHANGERS

MPHE and MCHC reduce refrigerant charges and increase overall system efficiency.



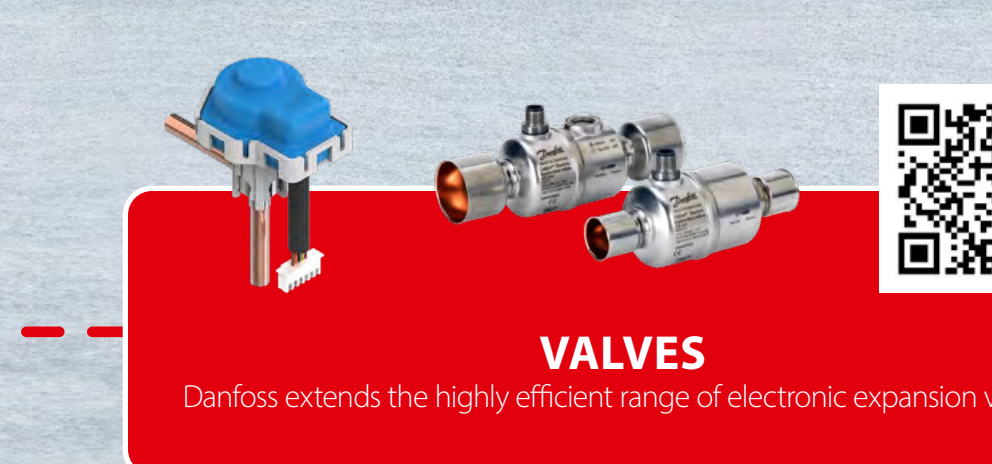
COMPRESSORS

Danfoss widest inverter scroll range and scrolls with IDV's adapt to room cooling demand and lower power consumption.



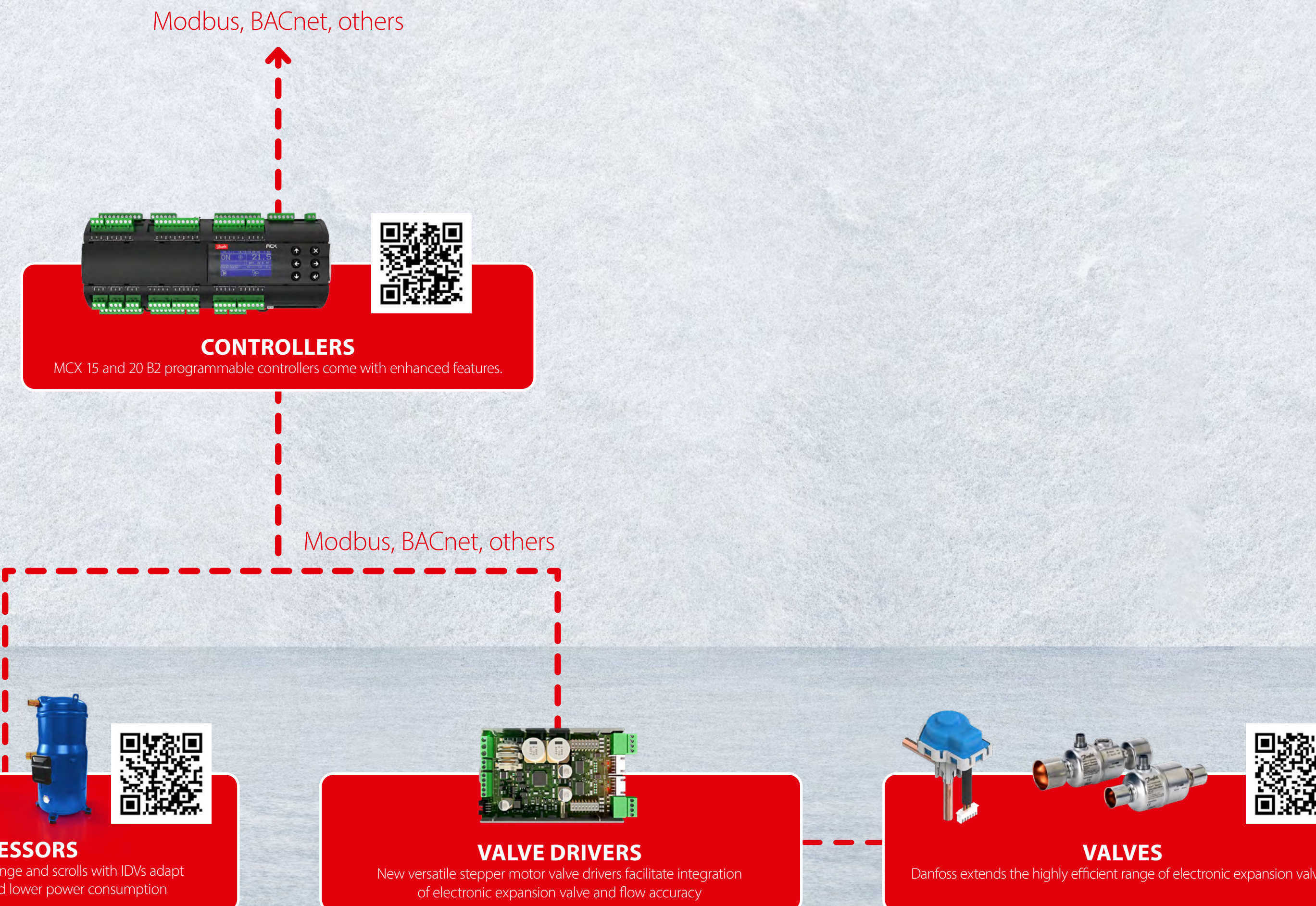
VALVE DRIVERS

New versatile stepper motor valve drivers facilitate integration of electronic expansion valve and flow accuracy.



VALVES

Danfoss extends the highly efficient range of electronic expansion valves.



2021: NEW SOLUTIONS CONSOLIDATE DANFOSS' MARKET LEADERSHIP

Computer rooms require finely-tuned humidity and temperature control with a flexible load and capacity to cool the server over the course of a day and over an entire year. Furthermore, these systems demand an increasingly higher temperature inlet which creates more challenges for the cooling components. So, to optimize development time while enhancing reliability and performance, the Danfoss portfolio is expanding with even more integrated solutions.

CONTROLLERS

MCX 15 and 20 B2 programmable controllers come with enhanced features for:

- Connectivity: smart and easy integration for the monitoring and management of buildings with best-in-class connectivity

- Safety: integrated compressor control logic for VZH inverter scroll compressor management; time- and level-based functions for envelope and discharge gas temperature control and single oil management, generating alarms and increased speed and maintenance; best-in-class web security

- System performance

- To MCX in [Danfoss Product Store](#).

HEAT EXCHANGERS

- Condenser: Micro-Channel Technology reduces refrigerant charge and increases overall system efficiency by reducing the condensing temperature.

- Evaporator: a wide range of highly efficient Micro Plate Heat Exchangers with Z-design technology. The highly efficient heat exchange surface allows for a compact design with a lower hold-up volume and lower refrigerant charge. Optimized ranges for R410A, R452B and R454B and now for R32.

- Cooling capacity up to 300kW for 1 circuit, more than enough to meet the requirement of the CRAC unit using water or glycol as a refrigerant.

- View the Micro Channel Heat Exchangers on the [Danfoss Product Store](#).

- To MPHE in [Danfoss Product Store](#).

COMPRESSORS

Danfoss widest inverter scroll range VZH enables to:

- Fit in up to 27°C evaporating temperatures to save on cooling costs

- Tackle the demand for precise temperature & humidity control, flexible load and high efficiency. Match the exact cooling need 24/7

- Save on development with prequalified compressors and drives

- Cut 65% of GWP level with a multi-refrigerant range operating with R410A, R454B and R452B

- Cooling capacity: from 4 TR / 17 kW to 75 kW with a stand-alone compressor. Up to 52 TR / 150 kW in a single hybrid tandem.

The compressor ranges include comprehensive fixed-speed compressor range with wide operating maps and efficiency through IDV technology.

To the [compressor website](#).

VALVE DRIVERS

In 2021, Danfoss releases two new models of the stepper motor valve drivers, called EKF to complement the expansion management ecosystem.

- Designed to open the valve as the system requires

- Versatile models compatible with existing or new system designs using electric expansion valves

- Easy to install and to program

VALVES

Danfoss extends the wide and highly efficient range of electronic expansion valves of ETS C with the new ETS 5M. They work optimally with the variable speed technology for a precise and reactive superheat control. Available for R410A-like refrigerants as well as medium density, R134a-like refrigerants.

- ETS 5M only model used from 20kW up to the ETS24C (110kW) in one circuit.

- To ETS 5M in [Danfoss Product Store](#).

MORE INFO:

- See the latest solutions explained in [this video](#).

- Explore the digital landing page with our complete portfolio including [sensors](#) and [other system protectors](#).

Your toolbox



Coolselector²
free cooling calculation software
Danfoss



Hexact
Heat exchanger design software
Danfoss



Ref Tools
Refrigerant slider and other
support tools in one app
Danfoss

While different cooling architectures exist to cool servers, a common system is based on evaporative coolers. Air-cooled CRAC/close control units are a typical solution to cool the server room from the inside. In IT environments of all sizes, they have been established as the standard for small and medium rooms, including in scalable

contexts. In a split system, half the components of the refrigeration cycle are in the CRAC unit while the remaining components are outdoors in an air-cooled condenser. This type of solution is advantageous, offering the lowest overall cost and the easiest maintenance for a data center of 7 to 200 kW.

The GWP level of refrigerants used in cooling systems can contribute to the reduction of data centers' direct CO₂ emissions. That is, the lower the GWP, the lower the carbon footprint. Nevertheless, selecting a lower GWP refrigerant is a strategic business decision and for CRAC units, the path to sustainability is unclear. Efficient lower GWP refrigerants such as R454B and R32 are mildly flammable, and there is no high-density non-flammable refrigerant with a GWP level below 500.

However, if refrigerant flammability is accepted, solutions are available today. Danfoss' portfolio is well-equipped with multi-refrigerant ranges for R410A, R454B, and an option optimized for R32. All components heat exchangers, compressors, expansion valves, controls, sensors, and system protectors such as filter driers and pressure switches are compatible with these refrigerants.

FIND MORE INFORMATION ON OUR VISION FOR SUSTAINABLE REFRIGERANTS AT [REFRIGERANTS.DANFOSS.COM](#)