ENGINEERING
TOMORROW

Brochure | Industrial Refrigeration

High-performing **solutions** for natural refrigerant-based **industrial refrigeration systems**

100+

applications covered with flexible, time saving and simple modularity

danfoss.com/ir

One Supplier Covers your Industrial Refrigeration Needs

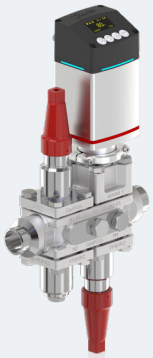
At Danfoss, our aim is to be a one-stop-shop for all your industrial refrigeration needs. Whether your industrial refrigeration plant uses manual systems or the most advanced automation, we offer high quality components to suit your project's specifications. And for every step in the process – from product selection to installation and servicing – our online tools and dedicated staff are here to help you save time, improve safety and work more efficiently.

ICF Flexline™ valves

The Flexline™ platform is synonymous with flexibility within industrial refrigeration. Based on a modular design concept, each product features a variety of benefits, including easy selection, installation and maintenance.

ICF Flexline™ valve station

The ICF familiy includes a wide range of highly modular valve stations which can be configured to meet specific applications to provide maximum design flexibility and operational safety and efficiency. They can be applied across the refrigeration system in liquid lines, compressor injection lines and hot gas lines.

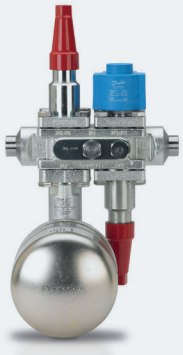


ICF 20-2 Solenoid

The ICF platform offers full flexibility and serviceability. ICF 20-2 solenoid valve offering multiple connection types, capacity match, assisted lift option and manual opener standard. Direct welds replace flanges, enhancing safety and efficiency. The flat top cover gasket can be used in systems down to -60°C and for CO_2 up to 65 bar.

ICFD Defrost Module

Packaged into the Danfoss ICF valve station, the ICFD Defrost module improves defrost performance and reduces energy consumption. It can be used with Ammonia and CO_2 systems. The liquid drain method is widely acknowledged as the most efficient hot gas defrost method within industrial refrigeration.
This method significantly reduces the blow-by gas that needs to be recompressed (by up to 90%), which releases compressor capacity and reduces energy consumption.



Read more about
ICF Flexline™

ICV Flexline™ valves

The ICV product family consists of an ICS pilot operated control, ICM motor operated control and ICLX 2-step solenoid valve. All valve variants are based on one common valve body to offer outstanding flexibility.

The modular concept greatly facilitates the building of a valve that saves energy and reduces downtime. All valves are designed for a maximum working pressure of 65 bar (943 psi) and efficiently handles natural refrigerants like ammonia (NH_3) and CO_2.

ICLX 2-step solenoid valve

The ICLX valves are 2-step servo-operated main valves with pilot solenoid valves offering safe, flexible and convenient installation, operation and service.

ICM motor operated valve

The ICM motor operated valves are very compact and easy to handle. The ICM motor valve is available as a complete valve and as parts programme.

ICS pilot operated servo valve

The ICS pilot operated servo valves are quick and simple to handle, install and service due to their low weight and compact design.

ICSH, dual position solenoid valve

The ICSH dual position solenoid valve is designed for gradual and safe opening of the hot gas flow to the evaporator, featuring an extra-safety-configuration to prevent hydraulic shocks in the system.

SVL Flexline™ valves

The SVL Flexline™ product platform is designed to meet all industrial refrigeration requirements, providing high flexibility, functional efficiency and safe operation. Using just two basic valve housings, the SVL platform offers five different functions: stop valves, regulating valves, stop/check valves, check valves and filters.

SVL Flexline™ product platform

The SVL Stainless steel series is available for hygenic environments and non-corrosive requirements. The newest entry to the product line includes the SVL 65 bar series which is perfectly suited for the higher pressure and temperature requirements of industrial ammonia (R717) heat recovery systems and sub critical CO_2 (R744) systems.

CO_2 in industrial refrigeration

CO_2 in industrial refrigeration is used either as the low-stage refrigerant in cascade installations, or as a secondary coolant. With the introduction of larger compressors with high working pressure, CO_2 is also being used on the high stage in CO_2 transcritical systems. Danfoss has more than 20 years of experience in developing industrial solutions for CO_2 systems and offers a complete range of valves and controls for sub- and transcritical applications. The most recent additions to our product portfolio include a range of solutions for higher pressure requirements. As industrial refrigeration systems continue to evolve, so will our product portfolio to ensure our customers can design efficient, sustainable and future-proof industrial refrigeration systems.

SNV-140B

140 bar stop gauge designed as a service valve with a very sturdy construction to match application requirements.

SVA-140B and FIA-140B

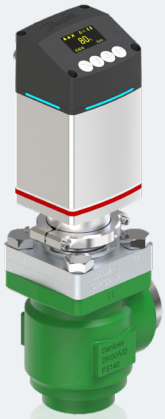
140 bar fully serviceable stop valve and strainer needed to simplify your large CO_2 transcritical system. With Simplified design and installation, operational reliability and balancing out large differential pressures. It is available as a parts program in DN 50-150.

SFA 10H Safety valves

Highly reliable safety valves designed to industrial standards. Because of the lower capacity and higher pressure range up to 65 bar, Danfoss safety relief valves provide more flexibility in system design. The SFA 10H is suitable for CO_2 applications on the low-pressure side as well as in low-charge ammonia systems.

ICMTS 50/80

140 bar motor operated valve is suitable as a high-pressure expansion valve and gas-bypass valve in large capacity CO_2 transcritical systems.



Read more about **CO_2 in industrial refrigeration:**

Plug & play **gas detection units** – reliable and safe

A series of fixed gas detector units for industrial refrigeration that are reliable, accurate and easy to work with. Danfoss gas detectors are based on an intelligent platform and intuitive user-interface. They range from basic to heavy duty models with sensor technology to match your system's specific refrigerant, application, and safety requirements. They also enable you to comply with regulations according to EN 378:2016, ISO 5149:2014, IIAR 2-2017, and ASHRAE 15:2016.

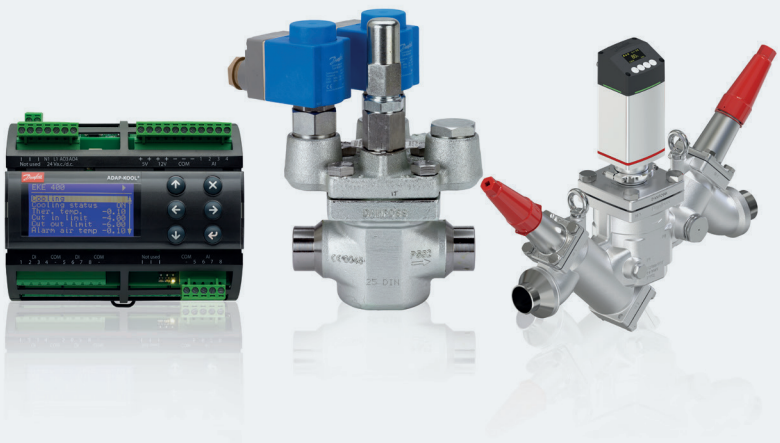
IPS 8 – Saving energy with intelligent air purging

Reducing the amount of non-condensable gases ("air") in cooling systems greatly improves plant performance and helps reduce energy consumption. Providing a high purging efficiency (minimal NH_3 release) and only purging when necessary, the IPS 8 air purger provides cleaner and safer purging than traditional solutions, enabling tangible energy savings.

Evaporator control for optimal cooling and defrost

The evaporator sub-system solution brings together Danfoss' efficient and reliable valves and controls to provide efficient and safe installation, operation & maintenance of the evaporator sub-system. The EKE 400 evaporator control solution is designed for industrial refrigeration applications. It controls the operation of the valves and the fans for each evaporator to achieve optimal cooling mode and defrost sequence for safe and trouble-free operation. The controller integrates with the central PLC system, but can also work as an autonomous unit.

The solution features an easy-to-use wizard that includes Danfoss valves, so you can quickly and efficiently set up and commission your system. The predefined defrost sequence based on IIAR recommendations and our application knowledge offers a safe defrost process that meets the latest IIAR standards for hot gas defrost.



Precise **liquid level regulation**

Liquid level regulation is an important element in the design of industrial refrigeration systems. It controls the liquid injection to maintain a constant liquid level for the smooth and consistent operation of the refrigeration system.

AKS 4100/4100U

AKS 4100 Liquid level sensor [in combination with Danfoss EKE 347 controller] is designed to measure the liquid level of many different refrigerants in vessels, accumulators, receivers, standpipes, etc. providing high accuracy and flexibility.

LLS 4000

Danfoss LLS 4000 electronic liquid switch is a compact and reliable switch for liquid level measurements. With simple, one-point installation, smart commissioning via Bluetooth, and next-level reliability thanks to its Safety Integrity Level classification (SIL), the LLS 4000 makes electric liquid measuring smarter and more reliable than ever.

ENGINEERING TOMORROW

Latest in refrigeration technology

With more than 90 years of experience in the global refrigeration industry, Danfoss is your reliable partner in innovative refrigeration technology. We are offering you support in finding sustainable refrigerant solutions. With our wide range of components for industrial refrigeration, Danfoss reduces complexity and optimizes project deliveries. Our global know-how is always available to you – just contact your local Danfoss representative for more information.

Support Tools for Professionals

Coolselector®2:
Easy selection and calculation software
https://www.danfoss.com/en/service-and-support/downloads/dcs/coolselector-2/

3D CAD symbols:
Download symbols and illustrations

Ref–Tools:
Complete overview of spare parts, Product-finder and more relevant HVACR tools.
https://www.danfoss.com/en/service-and-support/downloads/dcs/ref-tools/

IR Application Tool:
How a two-stage ammonia plant works.
https://www.danfoss.com/en/service-and-support/downloads/dcs/industrial-refrigeration-application-tool/

Application Handbook:
How to select control methods for different refrigeration systems.
https://www.danfoss.com/en/markets/refrigeration-and-air-conditioning/dcs/industrial-refrigeration/industrial-refrigeration-application-handbook/

Training for Professionals

Danfoss Learning:
Your personal learning portal is fast, easy and always accessible.
https://www.danfoss.com/en/service-and-support/learning/

Follow us in Social Media

LinkedIn:
https://www.linkedin.com/company/danfossclimate

YouTube:
https://www.youtube.com/DanfossClimate

Instagram
https://www.instagram.com/DanfossInstallerLife/

Facebook
https://www.facebook.com/danfossclimate/

AD318946972177en-000201