Overview Brochure | ADAP-KOOL® Evaporator Controllers

Achieve **best-in-class** energy efficiency and food safety

Proven solutions based on

30 years of experience

food-retail.danfoss.com
Full range of controllers for TXV solutions
EKC 202; EKC 302; AK-CC 250; AK-CC 350; AK-CC 450

Danfoss offers a full range of evaporator controllers for thermostatic expansion valves.

Main Features:
- Robust
- Built-in data communication
- HACCP compliant
- Ease of use and installation
- Available as panel version or for DIN mounting

Evaporator control for CO₂
The special Danfoss CO₂ injection algorithm (present in AK-CC 550A, AK-CC 750, AK-CT 200) ensures fast reaction if the valve is closed to prevent the refrigerant from floating back into the suction line.

Danfoss Adaptive Superheat Control with CO₂ injection will reduce the superheat to the lowest possible level at all load conditions.

The popular Danfoss AKV electric expansion valve is also available for CO₂. Its normally closed functionality minimizes the risk of compressor damage in case of power outage. With more than 2 million AKV valves installed in supermarkets all over the world, the valve has proven to be robust and simple to install and service.
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<td>High-end TXV Evaporator Controller</td>
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<td>TXV Room Controller</td>
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<th>Control Principle</th>
<th>ON - OFF</th>
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<th>Modulating or ON - OFF</th>
<th>ON - OFF</th>
<th>MSS Superheat Control</th>
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| Digital Outputs Relay / Akv | 2-4 / - | 4 / - | 6 / - | 5 / - | 5 / 1 | Flexible via I / O | 8x16Amp + 1 / 1 |
| Supply Voltage     | 230 VAC | 230 VAC | 230 VAC | 230 VAC | 115 VAC 230 VAC | 24 VAC / DC | 3x230VAC+N (L1, L2, L3, N, PE) |
| Co2 Control        | -        | -        | (✓) | -        | ✓        | ✓        | ✓        |
| Adaptive Defrost   | -        | -        | -        | -        | ✓        | ✓        | ✓        |
| Rail Heat Control  | -        | ✓        | ✓        | -        | ✓        | ✓        | ✓        |
| Hotgas Defrost Control | -        | (✓) | ✓        | (✓) | ✓        | ✓        | ✓        |
| Heating Thermostat | -        | ✓        | ✓        | -        | ✓        | ✓        | ✓        |
| Mcb Service Switch | -        | -        | -        | ✓        | -        | -        | ✓        |
| Integrated High Power Control / 3 Phase Defrost | -        | -        | -        | ✓        | -        | -        | ✓        |
| Build In Current Monitoring Low Load Alarms | -        | -        | -        | -        | -        | -        | ✓        |

* Pumped CO₂
High-end with the best TCO

Reduce number of components from 300 to 1
The complexity of gear trays in display cases can be greatly reduced with the new ADAP-KOOL® AK-CT 200 that gathers all case controls in one place. Changes are performed by simple software configuration instead of different electrical components and wiring. The new controller allows easy trouble-shooting, service and maintenance, and the compact, elegant design fits into any environment.

AK-CT 200 offers:
• Configurable fuse size (4 to 16 Amp)
• One common label for all display cases
• Common or 3 phase defrost
• Power management from 10 W to 10 kW

From today’s gear tray solution
• Standard electromechanical components and electrical wiring

To fully integrated gear tray and case controller
• Integrated power components
• Built-in current measurement
• Zero-crossing technology
• Pluggable spring loaded wire connectors

*only available with 240V supply voltage
Save energy and enhance food safety

Danfoss offers a wide range of evaporator control solutions with thermostatic or electric expansion valves. The solutions can be used for a wide range of refrigerants and operating conditions. The Danfoss solutions are designed to ensure precise control of the injection of refrigerant liquid into the evaporators to ensure optimum performance and low energy consumption. Among the key features are:

- Adaptive superheat control
- Adaptive defrost – defrosting only when required
- Adaptive emergency operation – to avoid food loss during power outage
- Quick set-up via application pre-sets
- Robust electric valve with integrated solenoid valve
- Optimum utilization at all load conditions
- No superheat required to open
- Low Pc automatically compensated with higher opening degree
- Dedicated HACCP sensor
- Modulating temperature control for precise temperature quality
- 8-12 % energy savings compared to TXV or other EEV solutions

**Built-in data communication** enables remote alarm monitoring and service to minimize food loss and reduce maintenance cost. In addition, Danfoss solutions offer electronically delivered services including HACCP reporting, alarm management and performance tracking and benchmark.

**Adaptive Minimum Stable Superheat Control (MSS)**

MSS ensures that injection of refrigerant to the individual cases and cabinets is controlled adaptively based upon the actual demand. This eliminates energy wastage and maximizes system efficiency.

**Intelligent Control Solutions for Simplified Installation**

The ADAP-KOOL® evaporator controllers for display cases and cold rooms offer 5th generation intelligent and adaptive superheat control, also for CO2 applications. Different applications have different control dynamics, each requiring special set-up and optimization. The intelligent Danfoss controllers automatically adapt to different evaporator applications and load conditions.

In addition, our intelligent solutions offer:
- Rail heat optimization
- Day and night functions (case temperature, blinds and lights)
- Hot gas defrost

![Graph showing Superheat Set Point and Actual Superheat](image)
Discover the opportunities with Danfoss Smart Store

Danfoss Electronically Delivered Services

Enterprise Manager

Remote Management Tool Web Browser

System Manager

Store View Desktop

Site Service App

Evaporator Control

Pack Control

HVAC, Light, Aux. Control

Basic

High-End

Controller Tray

Mid-Range HFC

High End HFC / CO2

Basic Control Customized Solutions

3rd Party HVAC, Light, Controllers

TXV EEV Sensors Drives CO2 Valves I/O Modules

Humidity Sensors Light Sensors


Learn more at food-retail.danfoss.com