Save energy and operational costs without compromising food safety

Danfoss ADAP-KOOL® Case Controls take retail cooling to the next level.

33% energy savings on optimized control of retail cooling
ADAP-KOOL® the way you work

Adapting to a changing world for over 30 years with state-of-the-art refrigeration control systems

ADAP-KOOL® is a family of high-end adaptive refrigeration controls developed by Danfoss for all food retail applications.

First introduced in 1987, Danfoss ADAP-KOOL® products have a long history of adapting to change. And ever since their introduction, the solutions have been defined by the same basic values: robust, reliable, and adaptive display-case and cold-room refrigeration that ensures high food safety and significant energy savings.

Robust and reliable control
A robust adaptive superheat algorithm can save 8-12% of energy use by ensuring the evaporator is always fully utilized under all conditions. But it requires several components to work together perfectly, and each new advance in technology makes a system more complex.

This is where modern case control solutions make the difference. As refrigeration technology gets more sophisticated, you can rely on ADAP-KOOL® case control to handle that complexity – optimizing efficiency and supporting valuable decisions.

The power of adaptive refrigeration
If operating conditions in food retail refrigeration never varied, setting up a refrigeration solution would be a lot easier. But conditions do change, and that means constantly fluctuating system loads.

To optimize refrigeration efficiency, ADAP-KOOL® avoids the “one size fits all” approach. With adaptive controls, you don’t need to manually adjust system operation for changing conditions.

The name “ADAP-KOOL®” is a shortened adaptation of the phrase “adaptive cooling”

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Save energy and enhance food safety with adaptive control algorithms

Over the decades, data from thousands of installations have proved the superiority of adaptive superheat control.

In refrigeration, superheat is the temperature difference between the actual temperature of the refrigerant vapor and its saturation temperature.

For every Kelvin the superheat can be decreased, there is an equal potential to increase the evaporating temperature. For every Kelvin the evaporating temperature is increased, 2-3% energy can be saved in a refrigeration system.

Robust and reliable control

Danfoss Adaptive Minimum Stable Superheat Control (MSS)
With MSS, utilization of the evaporator surface is maximized while ensuring that no liquid exits the evaporator.

The MSS algorithm, in combination with suction pressure optimization, delivers maximum system efficiency in systems with dry expansion.

Danfoss Adaptive Liquid Control (ALC)
The ALC algorithm typically used in transcritical CO2 systems with a suction accumulator and liquid ejectors, injects greater amounts of refrigerant into the evaporator, fully utilizing the entire surface. Increasing the amount of the refrigerant in the evaporator increases the evaporating temperature, bringing the superheat very close to zero.

The new Danfoss ALC algorithm provides the highest utilization of evaporator capacity, enabling up to 5 Kelvins higher suction pressure compared to MSS control and even twice as much compared to systems with fixed superheat.

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FULL RANGE OF CONTROLLERS

Thermostatic Expansion Valve solutions (TXV)
- EKC 202
- EKC 302
- AK-CC 250
- AK-CC 350
- AK-CC55 Compact
- AK-RC 101

Electronic Expansion Valve solutions (EEV)
- AK-CCSS Compact
- AK-CCSS Single Coil
- AK-CCSS Single Coil UI
- AK-CCSS Multi Coil
- AK-CC 750A

Find more information on each controller in the product overview on pages 6-7
Superior as always. Stronger than ever

Introducing the next generation case control series: AK-CC55

Now, Danfoss can offer a solution that makes it easier than ever to save on adaptive and reliable food retail refrigeration.

The new AK-CC55 case controls deliver energy savings of 6-10% compared to the next best alternative. They rely on acknowledged and advanced Danfoss adaptive superheat algorithms to control refrigerated display cases and cold rooms.

The new ADAP-KOOL® Case Control generation ensures that the system provides the same great value as always and now delivers a much better user experience, no matter whether you’re an OEM, installer, service technician or food retailer. For example, the new modern white LED AK-UI55 display, makes it easy to read out food temperatures and operating status.

AK-CC55 Connect app

AK-CC55 Connect is an industry-first wireless tool for the configuration and service of AK-CC55 controlling refrigerated display cases and cold rooms.

Simplified and convenient with Bluetooth

The AK-UI55 remote display comes in a Bluetooth version, which enables wireless connection to the AK-CC55 Connect service app on a smartphone or tablet supported by iOS or Android operating systems. The app allows for configuration and testing in a user-friendly, intuitive manner. Without the need to unload product, remove panels or make physical connections. And real-time, operating conditions can be monitored while at the display cases or cold room, which ensures better evaluation and troubleshooting.

Full text and graphic display

The enhanced user interface provides full text and graphic display of data not available on conventional multi-segment displays typical of these existing products.

Truly, for installers, commissioning agents, and service technicians, AK-CC55 Connect is a tool that makes the task easier and more efficient.

NEW and improved

AK-CC55 Single Coil
AK-CC55 Compact
AK-CC55 Multi Coil
AK-UI55 Bluetooth
AK-UI55 Set
AK-UI55 Info
AK-UI55 Single Coil UI

BENEFITS

Significant energy savings with adaptive superheat control algorithms and adaptive defrost

Simplified installation and service with smartphone app and large terminals

Suitable for any store size with Compact, Single Coil, and Multi Coil variants

Installation

- Controller setup in less than 2 minutes
- Send and receive setting files via email

Service

- Real-time overview of cabinet performance with 24-hour history
- Alarms including checklist function
- Monitoring and manual operation of inputs/outputs

Value

- Ease-of-use optimized for installation and service
- No need to unload cases to configure or troubleshoot equipment
- Enabling time savings and first-time fix
- Safe operation with patented Bluetooth lock function

Download the app here:

24-Hour historical log curves for primary control parameters
## Case controller Overview

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<th>TXV Refrigeration Controller</th>
<th>TXV Refrigeration Controller</th>
<th>TXV Room Controller</th>
<th>Flexible TXV Evaporator Controller</th>
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<tr>
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<td>TXV</td>
<td>TXV</td>
<td>TXV (App. 1-4)</td>
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<tr>
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<td>Optional Modbus or LON</td>
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<td>Built-in Modbus</td>
<td>Built-in Modbus</td>
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<td>230 VAC</td>
<td>230 VAC</td>
<td>115 VAC / 230 VAC</td>
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<tr>
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<td>Flexible EEV Evaporator Controller</td>
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<tr>
<td>MSS Superheat / ALC Control</td>
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Discover the **opportunities** with Danfoss **Smart Store** solutions

Danfoss Smart Store is the supermarket of tomorrow. We have made it our business to continuously improve the 5 key areas of food retail facility operation. And by connecting these areas we can harvest the synergies and take efficiency and food safety to the next level.

Learn more at [smartstore.danfoss.com](http://smartstore.danfoss.com)

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