# Danfoss ADAP-KOOL Driver for Tridium Niagara

User Guide

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niagara4

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# 1 Introduction

The Danfoss[1] ADAP-KOOL driver for Tridium Niagara enables full integration with Danfoss ADAP-KOOL controllers via System Manager units such as AK-SM 350. Communication is TCP/IP based with no extra cabling required. Field controllers can be connected to the System Manager via various protocols: proprietary Modbus, LON-RS485, LON-TP, and Danbuss.

Danfoss ADAP-KOOL is a market-leading control solution for the food retail industry with over 30 years of experience helping retailers keep food fresh and safe, save energy, and monitor environmental conditions.

All field controllers and their points can be automatically discovered with names, types, and facets. Point grouping allows combining up to 50 points in a single read request for fast response.

# 2 Requirements

- Niagara-powered device with software v4.8 or later, such as JACE, Supervisor, or any OEM version
- Danfoss ADAP-KOOL driver module and license
- Danfoss System Manager (e.g., AK-SM 350, AK-SM 720, AK-SM 800AL, AK-SM 810, AK-SM 820, AK-SM 850, or AK-SM 880)
- TCP/IP connectivity between the Niagara host and the System Manager

# 3 Quick Start

1. Copy danfoss-rt.jar module to Niagara /modules folder and restart the software.
    a. If the driver is hosted on PC: restart Supervisor station.
    b. If the driver is hosted on JACE: restart JACE from the platform.
2. Open the station in Workbench.
3. Open the **Palette** and locate the **danfoss** palette.
4. Drag and drop **DanfossNetwork** from the palette onto the **Drivers** container in the station.
5. Enter license code in **License** property under **DanfossNetwork**.
6. Configure the network properties (IP address and port of the System Manager).
7. Right-click on the network and select **Discover** to find all connected devices.
8. Select the desired devices and press **Add** to import them into the station.
9. Expand a device, right-click on the point manager, and select **Discover** to find all points.

[1] All trademarks or registered trademarks are the property of their respective owners

# 4 Danfoss Network

The Danfoss Network represents a connection to a single System Manager. Add one network per System Manager.

Network properties:

- **License** – the code that allows the driver to run on your host.
- **Host** – IP address or hostname of the Danfoss System Manager.
- **Port** – TCP port number for communication (default 80).
- **Response Timeout** – time in milliseconds to wait for the System Manager response. Increase for slow networks.
- **Poll Scheduler** – specifies polling rates for periodic data reading:
  - Fast Rate: 5 seconds
  - Normal Rate: 10 seconds
  - Slow Rate: 30 seconds

In most cases only **License**, **Host**, and **Port** values need to be changed.

# 5 Danfoss Devices

Devices represent individual ADAP-KOOL controllers connected to the System Manager. During discovery, all field controllers are automatically found with their names and types.

Device properties:

- **Address** – unique address of the controller on the fieldbus.
- **Poll Frequency** – polling rate: Fast, Normal, or Slow, corresponding to the **Poll Scheduler** rates.

Supported controller models include:

| | | | |
|---|---|---|---|
| AK-SM 350 | AK-SM 720 | AK-SM 800AL | AK-SM 810 |
| AK-SM 820 | AK-SM 850 | AK-SM 880 | AK-CC 210 |
| AK-CC 240 | AK-CC 350 | AK-CC 450 | AK-CC 460 |
| AK-CC 525A | AK-CC 550 | AK-CC 550A | AK-CC 550B |
| AK-CC 750 | AK-PI 200 | AK-PC 351 | AK-PC 420 |
| AK-PC 520 | AK-PC 530 | AK-PC 551 | AK-PC 560 |

| | | | |
|---|---|---|---|
| AK-CH 650A | AK-PC 651 | AK-PC 710 | AK-PC 772 |
| AK-PC 772A | AK-PC 781 | AK-PC 781A | AK-PC 782A |
| AK-PC 783 | AK-PC 783A | EKC 202A | EKC 202B |
| EKC 202C | EKC 202D | EKC 302D | EKC 313 |
| EKC 315A | EKC 316A | EKD 316A | EKC 319A |
| EKC 326A | EKC 361 | EKC 366 | EKC 367 |
| EKE 1A | EKE 1B | EKE 1C | |

# 6 Danfoss Points

Points are automatically discovered with their names, types, and engineering unit facets. The driver supports reading and writing of point values. To write to a point, change its type to writable (e.g., **Numeric Writable** or **Boolean Writable**) before or after adding it to the station.

Point grouping combines multiple points into a single read request for efficient communication, allowing up to 50 points per read cycle. This significantly reduces network traffic when monitoring large numbers of controllers.

Point types include analog (temperature, pressure, setpoints) and digital (compressor status, fan status, alarm states).

Each point proxy extension contains:

- **Point Address** – unique address of the point within the controller. Set during discovery.
- **Poll Frequency** – polling rate: Fast, Normal, or Slow, corresponding to the **Poll Scheduler** rates.

# 7 FAQ

## 7.1 How many controllers can I integrate via one System Manager?

The number of controllers depends on the System Manager model and the field bus configuration. AK-SM 800 series can support several hundred controllers across multiple fieldbus segments.

### 7.2 What communication protocols are supported between the System Manager and field controllers?

The System Manager supports LON-RS485, LON-TP, proprietary Modbus, and Danbuss for connecting to field controllers. The Niagara driver communicates with the System Manager via TCP/IP only.

### 7.3 I cannot discover any devices

- Verify the System Manager IP address and port are correct.
- Check network connectivity: ping the System Manager from the Niagara host.
- Ensure the license is valid.
- Check that the System Manager is online and accessible.

### 7.4 Devices are discovered but show as offline

- The System Manager may not be able to reach the field controllers. Check the System Manager front panel or web interface for communication errors.
- Increase the **Response Timeout** for slow networks.