

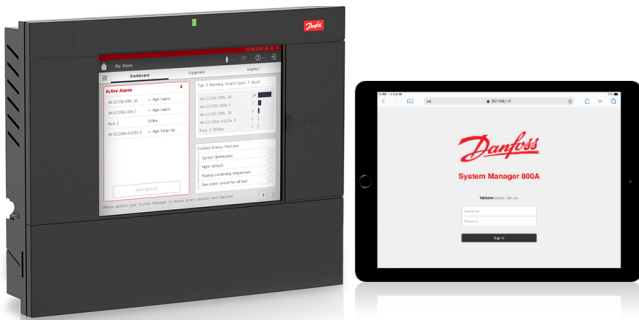
ENGINEERING
TOMORROW

Danfoss

Data Sheet

System manager Type **AK-SM 800A series**

Global control and supervisory solution for food retail industry.



The System Manager controller from Danfoss is the global control and supervisory solution for food retail industry. The System Manager uses the latest technology to provide maximum benefit to the end user, both in terms of energy saving optimization, control options and full web user access.

Designed specifically for the food retail and food processing / handling market, the System Manager provides comprehensive functionality and support tools to cover small to large stores.

Features

Designed and created for Food Retail

- Built-in HVAC, light and compressor control for a flexible system design.

4 versions

- AK-SM 820A (Small store)
- AK-SM 850A (Refrigeration)
- AK-SM 880A (Full store)
- AK-SM 880A TP78 (Retrofit)

Connectivity

- x3 USB port connections
- Mobile device support for built in Utilities

Multiple Fieldbus Connections

- Dedicated fieldbus tailored for Food retailers (LON, Modbus, Ethernet)

IT Security Best Practice

- Secure web connection (HTTPS), Secure e-mail, Encrypted data and secure software update packages

Enhanced User Interface

- Color touch screen
- New HTML5 based web browser support
- Duplicate to what is described in connectivity above
- Updated User Interface and Quick Link menus help navigate faster through the system

Secure Wi-Fi Access Point

- Direct connection from your device through the integrated Wi-Fi access point for extended connectivity.

Faster processing power

- Responsive system performance provided through a Linux operating system and upgraded processor family.

Expanded data collection

- Extended log point collection for future view, export or sync with cloud.

Full Web browser interface

- All browser-based (HTML5) for online access through StoreView Browser 5.

Cloud integration

- Operational efficiency through the Alsense Food Retail cloud platform and connected services.
- Open data access for enterprise systems

Product specification

Facts

Product highlights

- All new Electronics platform supporting new Operating System (based on Linux)
- Implementation of IT industry standard security protocols (HTTPS, SSL/TLS 1.2, WPA2 encryption)
- Full HTML5 web browser, known as StoreView Browser 5 (SvB5)
- New Utilities App (integrated in SvB5)
- Support of Mobile devices (Utilities App only)
- Retro-fit ready – includes EoL and legacy control functions supporting smooth upgrade path
- Extended History logging
- Secure Wi-Fi Access point – for site connection without disrupting WAN network

Design features

- Enhanced UI - new yet familiar touch screen
- Additional USB connections supporting flash drives.
- Built-in Wi-Fi access point

Hardware capability features

- Quad core processor
- Fieldbus support Lon RS485, Lon TP78, Modbus, SNMP
- Future utilization 2nd Ethernet, CANbus
- Connections (Ethernet, USB, Wi-Fi Access point, Alarm relays)

Technical data

Table 1: Technical data

| AK-SM 800A version comparison | AK-SM 820A Small store | AK-SM 850A Refrigeration | AK-SM 880A Full |
|--|--------------------------------|--|--|
| Refrigeration Control | | | |
| All AK-SM 800A variants come with Centralized I/O and Pack / Case control options. EKC AK2 SLV FC102 | Max. 32 generic device support | Max 170 generic device - see Table 4: Specifications | Max 170 generic device - see Table 4: Specifications |
| Lighting Control | | | |
| All AK-SM 800A variants come with built in lighting control via I/O modules. The number of zones differ. | 10 | 30 | 30 |
| HVAC | | | |
| Only the AK-SM 820A and AK-SM 880A support built in HVAC control via I/O | 10 | n/a | 45 |
| Alarms (Active) | | | |
| Capacity | 500 | 500 | 500 |
| Miscellaneous points (via IO modules) | | | |
| Relay (R), Sensor (S), ON / OFF (O / F), Variable (V) | R=20, S=20, O / F=20, V=20 | R=70, S=80, O / F=70, V=70 | R=70, S=80, O / F=70, V=70 |
| Master control | | | |
| Po Optimization, Master Schedules, AKC ON Note: Adaptive De-frost not currently supported | Yes | Yes | Yes |
| Misc Calculations | | | |
| Boolean Logic statements | 96 | 96 | 96 |
| History | | | |
| The AK-SM 800A has the ability to record datapoints for history and view. | 3000 total points | 3000 total points | 3000 total points |
| History HACCP | 200 total points | 200 total points | 200 total points |
| Leak Detectors | | | |
| Refrigerant gas detectors (connected via AK I/O) | 10 | 50 | 50 |

System manager, types AK-SM 800A series

| AK-SM 800A version comparison | AK-SM 820A Small store | AK-SM 850A Refrigeration | AK-SM 880A Full |
|---|---------------------------|-----------------------------|--------------------|
| Energy Meters | | | |
| Pulse Input (via I/O module), Carlo Garvazi, Wattnode, Wattnode Plus MODBUS, Veris MODBUS | 32 | 80 | 80 |
| Schneider PM3255 and iEM3250 | | | |

Table 2: Generic capacity

| Features | Max # of nodes | Modbus properties |
|---|--------------------------------|---------------------------------|
| Danfoss Modbus | | |
| Danfoss Modbus controller devices (EKC, AK-CC, AK-PC 3,4,5x, MCX) | 170 total across both channels | PARITY_EVEN, 38400, DATA_8_BITS |
| Danfoss gas sensors (DGS) | 50 | PARITY_EVEN, 38400, DATA_8_BITS |
| Danfoss SLV, WattNode Modbus (Modbus) | 120 | PARITY_EVEN, 19200, DATA_8_BITS |
| Danfoss SNMP | | |
| Danfoss SNMP controller devices | 160 | n/a |
| Danfoss Lon (RS485/TP78) | | |
| AK2 Multi-Case controllers (max per front end / no further generic devices allowed) | 60 | n/a |
| AK2 Pack Controllers | 12 | n/a |
| Danfoss Danbuss (Legacy AKC) | | |
| Danfoss Danbuss via PI-200 (max X4 PI-200 per front end) | 120 | |

Table 3: Generic capacity

| Typical mix examples | Field bus deployment examples |
|---|----------------------------------|
| Danfoss Pack (x12) + Danfoss Case (x158) = 170 max. | 12 LonWorks, 120 Mod#1, 38 Mod#2 |
| Danfoss Pack (x10) + Danfoss Case (x110) + Danfoss Gas sensors (x50) = 170 max. | 10 LonWorks, 120 Mod#1, 40 Mod#2 |
| Danfoss Pack (x10) + Danfoss AK2 Multi-Evap Case (x50) = 60 max. | 60 LonWorks |
| Danfoss Rack I/O (x12) + Danfoss Case (x170) = 170 max. | LonWorks, 85 Mod#1, 85 Mod#2 |

NOTE:

Max. 120 Modbus nodes per Modbus channel (170 max. in total between Mod#1 and Mod#2)

Specifications

Table 4: Specifications

| | |
|--------------------------------|---|
| Data communication | |
| Ethernet (WAN/Host network) | 1 |
| USB | 2 (Host) + 1 (800 mA) |
| Wi-Fi (Point-to-point access) | 1 |
| Alarm relays | 2 Contact voltage: up to 240 V, Current rating: max. 5 Amp for AC-1 (Ohmic load), Max. 3 Amp for AC-15(inductive load) |
| Field Bus Support | |
| RS485 Modbus | 2 |
| RS485 LON | 1 |
| TP78 | 4 (optional code #) |
| CANbus | 1 (future) |
| Ethernet | 1 (future) |
| Hardware specifications | |
| Enclosure | IP20 |
| Dimensions (WxDxH) | 295 mm (11.6") x 65 mm (2.5") x 235 mm (9.3") |
| Weight (gross) | 2,408 kg |
| WiFi transmitter | |
| WiFi Type | Wi-Fi Access Point |
| Transmitter type | Wi-Fi 2.4 GHz / 5 GHz (IEEE 802.11a/b/g/n/ac) |
| Transmit Frequency | 2412 – 2472 MHz, 4900 – 5925 MHz (frequencies limited by Software) |
| Receive Frequency | 2412 – 2472 MHz, 4900 – 5925 MHz |
| Antenna Gain | 2.4 GHz gain: 1.8 dBi, 5 GHz gain: 4.9 dBi |
| Communication standards | <ul style="list-style-type: none"> • Modbus • Lonworks • Danbus (via PI-200) • SNMP |
| Ports open | Use Port no. User configurable |

System manager, types AK-SM 800A series

| | | | |
|-------------------------|-----------------------------|------------------------|-----|
| HTTPS | Web communications | 443 | Yes |
| Service tool (AK-ST500) | Service tool communications | 1041, 254 | No |
| SNMP | SNMP communications | 5136 | No |
| PI200 | PI200 communications | 1041 | Yes |
| Local host | Local processes monitoring | 2812 | No |
| Host network | Host network communication | 5003, 5004, 5005, 5006 | No |

Security

The System Manager 800A series has been designed to reside behind appropriately configured firewalls and secure LAN. Do not install on any public or non secure network.

Remote encrypted Communications

- HTTPS Web browser support (Chrome / Safari / Edge (Chromium))
- HTTPS XML

Communication Ports

- 443 HTTPS (user configurable)
- Wi-Fi Access Point

System Passwords / User access

- All passwords stored in encrypted format
- User authentication required for unit access (no view only mode)
- Passwords comply with min 8 characters (1 capital, 1 special character, 1 numeral)
- User accounts and passwords not stored in system application database
- Password reset via authenticated unit check and issue of temporary code
- Danfoss does not have access nor can view passwords

Software update

- System software (application/device files/OS) stored and distributed via Danfoss software server
- Software payloads have digital signature to ensure authentic source

E-mail alarm notifications

- SSL/TSL 1.2

Wi-Fi User Wireless access point (point to point connection to unit)

- WPA2 encryption
- Default state off, enabled only via authorized users for 120 mins
- Isolated from WAN / Host network
- Password protected SSID associated with unit host #, password

General

- Access to USB application functions (USB flash drive) based on user authentication level/permission
- Factory set Linux OS firewall enabled - all non -required ports closed
- Linux OS updates available via Danfoss secure update server
- FTP - not available nor used in system
- Linux firewall between wireless access point and host network
- Linux firewall between Ethernet 0 and Ethernet 1

Ordering

Table 5: Ordering

| Type | Description | Options | Code no. |
|----------------------|---|---|----------|
| AK-SM 820A | C-Store (Refrigeration / HVAC / Lighting) | Convenience Store version with 32 device capacity | 080Z4024 |
| AK-SM 820A - no WiFi | No Wi-Fi, C-Store (Refrigeration / HVAC / Lighting) | Convenience Store version with 32 device capacity | 080Z4025 |
| AK-SM 850A | Refrigeration (including lighting) | Refrigeration version with 170 device capacity | 080Z4021 |
| AK-SM 850A - no WiFi | No Wi-Fi, Refrigeration (including lighting) | Refrigeration version with 170 device capacity | 080Z4022 |
| AK-SM 880A | Full (Refrigeration / HVAC / Lighting) | Smart store version with device capacity | 080Z4028 |
| AK-SM 880A - TP78 | TP78 | Smart store version with device capacity | 080Z4029 |

Certificates, declarations, and approvals

A full list of certificates, declarations and approvals are centrally managed in our Product Store. Individual code number may have some or all approvals, and certain local approvals may not be ready yet.

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