



KMN-5900E Series

KMC Fusion General Purpose Controller Data Sheet

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DESCRIPTION

KMC Fusion™ KMN-5900E Series general purpose controllers are designed to control HVAC equipment using the Niagara platform. With their Integrated alarming, scheduling, and trending, KMC Fusion controllers are powerful edge devices for the modern smart building ecosystem.

The flexible license model is optimized for secondary equipment control and can expand to manage large-scale primary equipment.

KMC Fusion's powerful architecture supports current and future Niagara upgrades. It leverages a Niagara Edge-based license with no software maintenance agreement (SMA) required, offering cost-effective flexibility.

To meet the most demanding building automation custom requirements, these controllers are also fully programmable.

The 10 inputs and 8 outputs can be expanded using CAN-5900-FSN Series Expansion Modules.



 **KMCFusion™**



APPLICATIONS

KMC Fusion controllers are intended for both primary and secondary equipment control. Examples include:

- Air handling units
- Boilers
- Chillers
- Chilled beams
- Cooling towers
- Fan coil units
- Heat pump units
- Pumps
- Roof top units
- Terminal Units
- Unit ventilators
- Variable Air Volume boxes
- Other HVAC and building automation system equipment

NOTE: Applications generally require custom programming.
See also [Sample Installation on page 6](#).

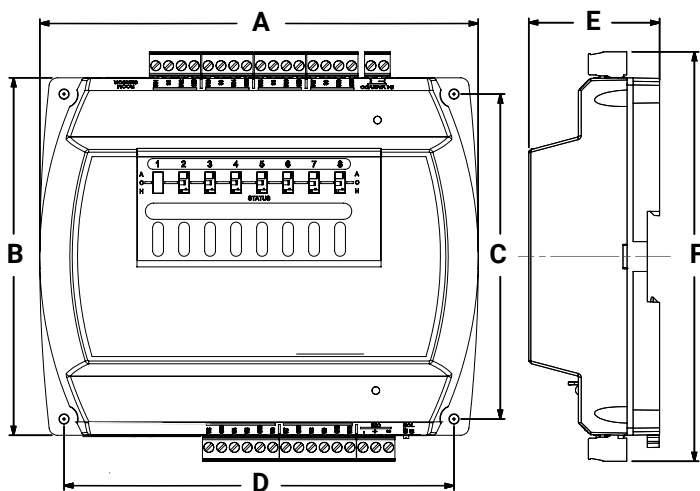
MODEL

MODEL	APPLICATIONS	INPUTS*	OUTPUTS*	NIAGARA GLOBAL CAPACITY	BACNET INTEGRATION
KMN-5901E	AHU, pumps, lighting, FCU, HPU, RTU, terminal units, unit ventilators, VAV, other HVAC	10 total: • 2 analog (temperature sensor port) • 8 universal inputs (software configurable as analog, binary, or pulse input on terminals)	8 universal: • Software configurable as analog or binary • Override boards allow additional options**	1 Device 30 Points	
KMN-5901E-EXP	AHU, chillers, boilers, cooling towers, pumps, lighting, FCU, HPU, RTU, unit ventilators, other HVAC	10 total: • 2 analog (temperature sensor port) • 8 universal inputs (software configurable as analog, binary, or pulse input on terminals)	8 universal: • Software configurable as analog or binary • Override boards allow additional options**	5 Devices 100 Points	✓

*Up to four CAN-5900-FSN Series I/O expansion modules can be used with KMN-5900E Series controllers, which provides an additional 64 physical inputs and 32 outputs.

**HPO-6700 series output override board series provide options (triac, NC/NO relays, 4–20 mA, adjustable 0–10 VDC) for devices that cannot be powered from a standard universal output. These boards can also be used with the CAN-5901-FSN.

SPECIFICATIONS



DIMENSIONS		
A	6.750 inches	171 mm
B	5.500 inches	140 mm
C	5.000 inches	127 mm
D	6.000 inches	152 mm
E	2.012 inches	51 mm
F	6.300 inches	160 mm

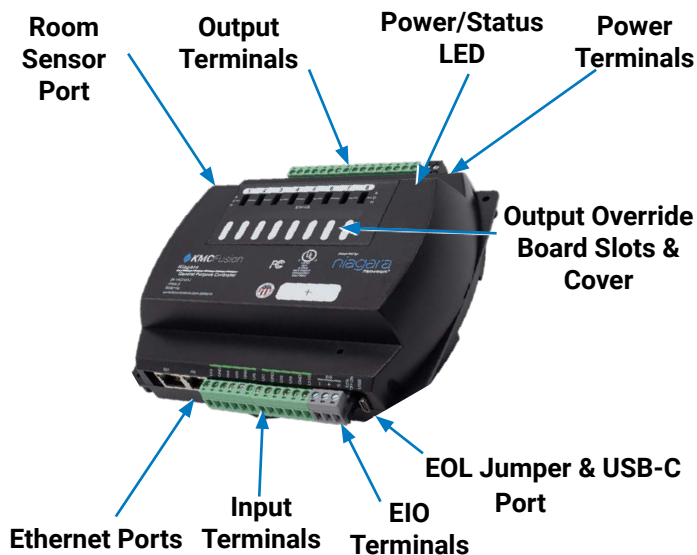
Inputs and Outputs

Inputs, Universal (8 on Terminal Blocks)

Universal inputs	Configurable as analog, binary, or pulse input objects
Termination	1K and 10K ohm sensors, 0–12 VDC, or 0–20 mA (without need for an external resistor)
Resolution	16-bit analog-to-digital conversion
Protection	Overvoltage protection (24 VAC, continuous)
Wire size	12–24 AWG, copper, in removable screw terminal blocks

Input, Dedicated Room Sensor Port

Connector	Modular connector for STE-9xx1 series digital wall sensors or STE-6010/6014/6017 analog temperature sensors
Cable	Uses standard Ethernet patch cable up to 150 feet (45 meters)



TERMINAL COLOR CODE	
Black	24 VAC/VDC Power
Gray	CAN Communications
Green	Inputs and Outputs

Outputs, Universal (8 on Terminal Blocks)

Universal outputs	Configurable as an analog (0 to 12 VDC) or binary object (0 or 12 VDC, on/off); alternatively, an output override board is installed for devices that cannot be powered from a standard universal output
Power/protection	Each short-circuit protected universal output capable of driving up to 100 mA (at 0–12 VDC) or 300 mA total for all outputs
Resolution	12-bit digital-to-analog conversion
Wire size	12–24 AWG, copper, in removable screw terminal blocks

Communications

Expansion (EIO)	One CAN serial bus connection (terminal block) for daisy-chaining I/O expansion modules up to 200 feet (61 meters) from the controller via standard shielded twisted-pair wire
Ethernet	Two 10/100BaseT Ethernet connectors; up to 328 ft (100 m) between controllers (using T568B Category 5 or better cable)
Other	One USB-C port

Configurability

OBJECTS*	MAXIMUM #
Inputs and Outputs	
Analog, binary, or pulse input	74
Analog or binary output	40
User-defined Values	
Analog value	50
Binary value	30
Multi-state value	10
*Configuration allows creation and deletion of objects (with the maximum number of objects shown). Additional system objects are provided and can be discovered within the Niagara application.	

Programming

KMC Fusion controllers are fully programmable using KMC Workbench software compatible with the Niagara framework.

Hardware Features

Processor, Memory, and Clock

Processor	NPX i.MX8M-PLUS 1.6 GHz Quad Core
Memory	1 GB RAM, 8 GB Flash.
RTC	Real time clock with (capacitor) power backup for 72 hours for network time synchronization or full stand-alone operation

Indicators and Isolation

LED indicators	Power/status, EIO (CAN) communication, Ethernet status
EOL (End of Line) Jumper	EIO (CAN bus)

Installation

Power

Supply voltage	24 VAC (50/60 Hz) or 24 VDC; -15%, +20%; Class 2 only; non-supervised (all circuits, including supply voltage, are power limited circuits)
Required power	14 VA, plus external loads
Wire size	12–24 AWG, copper, in a removable screw terminal block

Enclosure and Mounting

Weight	13.8 ounces (0.39 kg)
Case material	Black, flame-retardant plastic
Mounting	Direct mounting to panels or DIN rails

Environmental Limits

Operating	32 to 120° F (0 to 49° C)
Shipping	-40 to 160° F (-40 to 71° C)
Humidity	0 to 95% relative humidity (non-condensing)

Warranty, Protocol, and Approvals

Warranty

KMC Limited Warranty 5 years (from mfg. date code)

CAN (External Inputs Outputs) Protocol

CAN	CAN (Controller Area Network) bus on (EIO) terminals
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Regulatory Approvals

UL	UL 916 Energy Management Equipment listed
RoHS 2	RoHS 2 compliant
FCC	FCC Class A, Part 15, Subpart B and complies with Canadian ICES-003 Class A*

*This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

ACCESSORIES

NOTE: For accessory details, see the respective product data sheets and installation guides.

Communications

BAC-5051AE	BACnet router with dual Ethernet/IP and single MS/TP ports
HSO-9001	Ethernet patch cable, 50 feet
HSO-9011	Ethernet patch cable, 50 feet, plenum rated
HSO-9012	Ethernet patch cable, 75 feet, plenum rated

I/O Expansion and Output Override Boards

CAN-5901-FSN	8-input, 8-output expansion module*
CAN-5902-FSN	16-input expansion module*
HPO-6701	Triac output w/ zero-cross switching (AC only)
HPO-6702	0–10 VDC analog with adjustable override potentiometer
HPO-6703	Relay, NO contacts (AC/DC)
HPO-6704	4–20 mA DC current loop with adjustable override potentiometer**
HPO-6705	Relay, NC contacts (AC/DC)

***NOTE:** Up to four CAN-5900-FSN Series I/O expansion modules can be used with KMN-5900E Series controllers, which provides an additional 64 physical inputs and up to 32 outputs.

Miscellaneous Hardware

HCO-1103	Steel control enclosure (single controller) with DIN rail mounting, 10 × 7.5 × 2.5 inches (257 × 67 × 193 mm)
HCO-1035	Steel control enclosure, 20 × 24 × 6 inches (508 × 610 × 152 mm)*
HCO-1036	Steel control enclosure, 24 × 36 × 6 inches (610 × 914 × 152 mm)
HPO-0063	Replacement output (override board) jumper, 2-pin (pack of 5)
HPO-9901	Controller replacement parts kit with terminal blocks (1 gray, 1 black, 2 green 3-terminal, 4 green 4-terminal, 2 green 5-terminal, 2 green 6-terminal) and DIN clips (2 small for router and 1 large for controllers)

Room Sensors, Analog

STE-6010W10	Temperature sensor, white
STE-6014W10	Sensor with rotary setpoint dial, white
STE-6017W10	Sensor with rotary setpoint dial and override button, white
HPO-9005	Room sensor adapter allows other sensors and optional setpoint potentiometers (with wire leads or terminal blocks) to be used instead of STE-601x sensor models with modular jacks

NOTE: Other STE-6000 series sensors are not fully compatible with the dedicated sensor port. However, various other models can be used with an HPO-9005 adapter or with the controller screw terminals. See the STE-6000 series data sheet for more information. For digital sensor information, see the STE-9000 series.

NOTE: To order the STE-601x sensor with light almond color instead of white, omit the “W” at the end of the model number (e.g., STE-6010W is white and STE-6010 is light almond).

Room Sensors, Digital (LCD Display)

STE-9000 Series	KMC NetSensor digital room temperature sensors for viewing, configuring, and optional humidity, occupancy, and CO ₂ sensing
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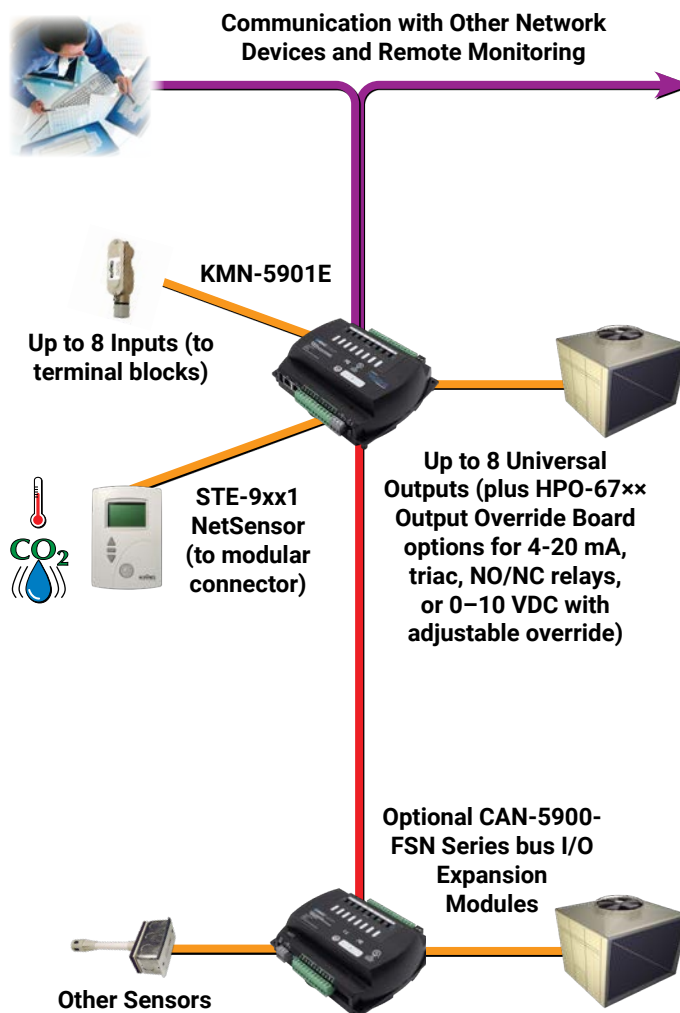
Sensors, Miscellaneous

STE-1405	DAT sensor with plenum-rated cable
STE-1451	OAT sensor

Transformers, 120 to 24 VAC

XEE-6111-050	50 VA, single-hub
XEE-6112-050	50 VA, dual-hub

SAMPLE INSTALLATION



For more information about installation and operation, see:

- [KMN-5900E Series Controller Installation Guide](#)
- [KMN-5900E Controller Application Guide](#)

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SUPPORT

Additional resources for installation, configuration, application, operation, programming, upgrading, and much more are available on the web at www.kmccontrols.com. Log-in to see all available files.

