



# KMC Conquest™ Selection Guide

Controllers, Sensors, and Accessories



## APPLICATIONS AND MODELS

APPLICATIONS	MODELS*	APPLICATIONS	MODELS*
AHU (Air Handler Unit)	<b>BAC-5901</b> and <b>BAC-93x1</b>	HVAC, Other	<b>BAC-5901</b>
Boiler	<b>BAC-5901</b>	Lighting	<b>STE-92x1**/95x1</b> and <b>BAC-5901</b>
CAV (Constant Air Volume)	<b>BAC-90x1</b> , <b>BAC-9311</b> , and <b>STE-9xx1**</b>	Occupancy control	<b>STE-92x1**/95x1</b> and any controller
Chiller	<b>BAC-5901</b>	Pump	<b>BAC-5901</b>
Chilled beam	<b>BAC-5901</b> , <b>BAC-9301</b> , and <b>STE-9x21**</b>	RTU (Roof Top Unit)	<b>BAC-5901</b> , <b>BAC-9301</b> , and <b>STE-9xx1**</b>
Cooling tower	<b>BAC-5901</b>	Static pressure monitoring/control (RTU/HPU)	<b>BAC-9311</b>
DCV (Demand-Control Ventilation)	<b>STE-93x1**/95x1</b> and any controller	Supply/exhaust tracking	<b>BAC-9001</b> , <b>TSP-8003</b> , and <b>STE-9xx1**</b>
FCU (Fan Coil Unit)	<b>BAC-9301</b> and <b>STE-9xx1**</b>	Unit ventilator	<b>BAC-5901</b> , <b>BAC-9301</b> , and <b>STE-9xx1**</b>
HPU (Heat Pump Unit)	<b>BAC-9301</b> , <b>BAC-5901</b> , and <b>STE-9xx1**</b>	VAV (Variable Air Volume)	<b>BAC-90x1</b> , <b>BAC-9311</b> , <b>TSP-8003</b> , and <b>STE-9xx1**</b>
Humidity control	<b>STE-9x21**</b> , <b>BAC-5901</b> , and <b>BAC-9301</b>	Ventilation control	<b>STE-93x1**/95x1</b> and any controller

\*The most typical models are shown for an application. The controllers are fully programmable, and any controller with sufficient I/O can be adapted to the application. Programming and custom graphics requires KMC Connect™, TotalControl, and/or the KMC Converge™ app for Niagara Workbench, but basic configuration for standard applications can be done using just an STE-9000 series NetSensor® (with display) or the KMC Connect Lite™ app. See [Setup Tools \(Configuring, Programming, and Designing\)](#) on page 8. See also [Accessories](#) on page 6.

\*\*Including models without displays (i.e. -NDL models). See [STE-9000 Series NetSensors \(Digital Room Sensors\)](#) on page 5.

# BAC-5900 SERIES GENERAL PURPOSE CONTROLLERS (B-AAC)

APPLICATIONS	INPUTS*	OUTPUTS*	FEATURES			MODEL
			Real Time Clock (RTC)	Ethernet Port	MS/TP Port	
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 accumulator on terminals)	8 universal: • Software configurable as analog or binary • Override boards give additional options**	✓		✓	BAC-5901C
				✓		BAC-5901CE

\*Up to four CAN-5900 series expansion modules can be used with BAC-5900 series controllers to provide up to 74 physical (Room Sensor port and terminal block) inputs and up to 40 outputs.

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

These controllers can be used with the following types of equipment:

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

Requires custom programming in the controller. For more information, see the [BAC-5900 Series](#) product page. See also [Accessories on page 6](#).



## CAN-5900 SERIES I/O EXPANSION MODULES

APPLICATIONS	INPUTS	OUTPUTS*	MODEL
Input/Output Expansion	8 universal (software configurable as analog, binary, or accumulator)	8 universal • Software configurable as analog or binary • Override boards give additional options**	CAN-5901
Input Expansion	16 universal (software configurable as analog, binary, or accumulator)	None	CAN-5902

\*Up to four CAN-5900 series expansion modules can be used with BAC-5900 series controllers to provide up to 74 physical (Room Sensor port and terminal block) inputs and up to 40 outputs.

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

For applications, see the BAC-5900 series section above. See also the [CAN-5900 Series I/O Expansion Modules](#) product pages.



# BAC-9000 SERIES VAV CONTROLLER-ACTUATORS (B-AAC)

APPLICATIONS	INPUTS	OUTPUTS	FEATURES				MODEL
			Air Pressure Sensor	Real Time Clock	MS/TP	Ethernet	
Pressure- <b>independent</b> VAV, cooling/heating with fan and reheat; CAV	8 total: <ul style="list-style-type: none"> <li>• 1 internal actuator position feedback</li> <li>• 1 integrated air pressure sensor (except BAC-9021)</li> <li>• 2 analog (temperature sensor port)</li> <li>• 4 software-configurable universal inputs (terminals)</li> </ul>	9 total: <ul style="list-style-type: none"> <li>• 2 internal triacs (actuator motor control)</li> <li>• 4 external triacs (terminals)</li> <li>• 3 universal outputs (0–12 VDC on terminals)</li> </ul>	✓		✓		BAC-9001
				✓		✓	BAC-9001CE
Pressure- <b>dependent</b> VAV							✓

VAV application options for these controllers include:

- Pressure independent or dependent VAV
- Cooling only and with changeover
- Staged, modulated, floating, or time-proportional reheat
- Series or parallel fan control
- Dual duct (with TSP-8003 actuators, see below)
- Supply/exhaust tracking (with TSP-8003 actuators)
- CAV (Constant Air Volume)

For installations with a BACnet building automation system, these easily integrated controllers signal demands for higher static duct pressure, cooler or warmer supply air, and other diagnostics for AHU optimization. For more information, see the [BAC-9000 Series](#) product page. See also [Accessories](#) on page 6.



## TSP-8003 (DUAL DUCT) TRI-STATE ACTUATOR WITH PRESSURE SENSOR

The TSP-8003 is a 40 in-lb. tri-state actuator with a differential air pressure sensor, typically used in Conquest VAV dual-duct applications as a secondary actuator. The TSP-8003 connects directly to a BAC-9001 VAV controller-actuator for easy installation. Application options include:

- Dual duct VAV or CAV
- Bypass damper\*
- Economizer damper\*
- Building pressure control damper\*
- Supply/exhaust tracking\*

**\*NOTE:** Requires custom programming in the controller.

For more information, see the [TSP-8003](#) product page.



## BAC-9300 SERIES UNITARY CONTROLLERS (B-AAC)

APPLICATIONS	INPUTS	OUTPUTS	FEATURES				MODEL
			Air Pressure Sensor (Input)	Real Time Clock (RTC)	Ethernet Port	MS/TP Port	
RTU, HPU, FCU, AHU, and unit ventilator	1 opt. air pressure sensor and 8 (total) standard: <ul style="list-style-type: none"> <li>• 2 analog (temp. sensor port)</li> <li>• 6 universal inputs (software configurable as analog, binary, or accumulator on terminals)</li> </ul>	10 total: <ul style="list-style-type: none"> <li>• 6 triacs (binary)</li> <li>• 4 universal (software configurable as analog or binary)</li> </ul>				✓	BAC-9301
				✓		✓	BAC-9301C
				✓	✓		BAC-9301CE
✓					✓	BAC-9311	
✓			✓		✓	BAC-9311C	
✓			✓	✓		BAC-9311CE	

These controllers can be used with the following equipment:

- Air handling units
- CAV or VAV with external actuator
- Chilled beams\*
- Fan coil units
- Heat pump units
- Roof top units
- Unit ventilators

For more information, see the [BAC-9300 Series](#) product page. See also [Accessories on page 6](#).

**\*NOTE:** Requires custom programming in the controller.



# STE-9000 SERIES NETSENSORS (DIGITAL ROOM SENSORS)

APPLICATIONS: TEMPERATURE CONTROL PLUS...	INTEGRATED SENSORS*				Display	MODEL**
	Temp.	Humidity	Motion	CO <sub>2</sub>		
Temperature control only					✓	STE-9001W
Temperature control only						STE-9001W-NDL
Humidity control for dehumidification/humidification		✓			✓	STE-9021W
Humidity control for dehumidification/humidification		✓				STE-9021W-NDL
Enhanced occupancy-based control (lighting/setback/self-learning)			✓		✓	STE-9201W
Humidity and occupancy control	✓	✓	✓		✓	STE-9221W
DCV (Demand-Control Ventilation)				✓	✓	STE-9301W
DCV (Demand-Control Ventilation)				✓		STE-9301W-NDL
Humidity and ventilation control		✓		✓	✓	STE-9321W
Humidity and ventilation control		✓		✓		STE-9321W-NDL
Occupancy and ventilation control			✓	✓	✓	STE-9501W
Humidity, occupancy, and ventilation control		✓	✓	✓	✓	STE-9521W

\*All units have a temperature sensor (standard). See above for additional sensor options.

\*\*A W at the end of the model number indicates a white case. To order the sensor with light almond color (for models with a display only) instead of white, drop the W on the end of the model number (e.g., STE-9001W is white and STE-9001 is light almond).

KMC Conquest™ STE-9000 series NetSensors are wall-mounted digital space temperature sensors designed for use with KMC BAC-5900/9000/9300 series controllers. Key features include the following:

- Up to four sensors in a single package minimizes labor, wiring, and wall space, while optional humidity, motion, and CO<sub>2</sub> sensors allow expanded energy-efficient control of humidity, temperature setback, lighting, and ventilation
- A user-friendly three-button integrated operator interface (on models with a display, i.e. **non**-NDL models) provides system and IAQ monitoring and adjusting for occupants.
- It installs permanently as a room sensor or (for models with a display) temporarily as a service tool; as a service tool, it commissions controllers without software, configures communication and application settings, and balances VAV air flow
- An HPO-9001 NetSensor® distribution module allows up to eight STE-9000 series NetSensors to be linked to one controller or allows one **STE-6010/6014/6017** analog temperature sensor to be connected with up to seven NetSensors

For more information, see the [STE-9000 Series](#) product page.

NOTE: STE-6010/6014/6017 analog temperature sensors can be connected to a controller in the place of an STE-9001W after the connected controller is configured. See [Accessories on page 6](#).



**STE-9221W**  
Temperature/Humidity/Motion Sensing  
with Full Control/Configuration



**STE-9xx1W-NDL**  
(no display) models




**STE-6017W10**  
Temperature Sensing (Only)  
with Setpoint Dial and Override Button

## ACCESSORIES






**NOTE:** For accessory details, see the respective product data sheets and installation guides. See also [Setup Tools \(Configuring, Programming, and Designing\)](#) on page 8 and [IoT Interface Platform](#) on page 8.

### Actuators

**NOTE:** See also the selection chart in the Connecting a Remote Actuator to a BAC-9311 section of the [KMC Conquest Controller Application Guide](#).

<b>MEP-4xxx</b>	Actuators, 25 to 90 in.-lb., fail-safe and non-fail-safe	
<b>MEP-7xxx</b>	Actuators, 180 and 320 in.-lb., fail-safe and non-fail-safe	
<b>TSP-8003</b>	Dual duct actuator (for BAC-9001)—see <a href="#">TSP-8003 (Dual Duct) Tri-State Actuator with Pressure Sensor</a> on page 3	


### Misc. Hardware

<b>CAN-590x</b>	Expansion modules—see <a href="#">CAN-5900 Series I/O Expansion Modules</a> on page 2	
<b>HCO-1103</b>	Steel control enclosure with integrated DIN rail, 10-1/8 x 2-5/8 x 7-19/32 inches (257 x 67 x 193 mm)	
<b>HPO-0055</b>	Replacement network bulb assembly (pack of 5)	
<b>HPO-0063</b>	Replacement output jumper, 2-pin (pack of 5)	
<b>HPO-9901</b>	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)	
<b>SP-001</b>	Screwdriver (KMC branded) with a hex end (for STE-9000 series cover screws) and a flat blade (for controller terminal screws)	



## Network and Sensor Connections

<b>BAC-5051E</b>	BACnet IP, Ethernet, and (single port) MS/TP router	
<b>HPO-5551</b>	Router technician cable kit for BAC-5051E router	
<b>HPO-9003</b>	NFC Bluetooth/USB module (fob) for KMC Connect Lite app	
<b>HPO-9008</b>	Ethernet to Wi-Fi network adapter kit	
<b>HSO-9001</b>	Ethernet cable, 50 feet	
<b>HSO-9011</b>	Ethernet cable, 50 feet, plenum rated	
<b>HSO-9012</b>	Ethernet cable, 75 feet, plenum rated	
<b>KMD-5567</b>	Network surge suppressor	
<b>XEE-9008</b>	Replacement 24-VAC to 5-VDC power supply for HPO-9008 kit	

## Output Override Boards (for BAC/CAN-5901)

<b>HPO-6701</b>	Triac output w/ zerocross switching (AC only)	
<b>HPO-6702</b>	0–10 VDC analog with adjustable override potentiometer	
<b>HPO-6703</b>	Relay, NO contacts (AC/DC)	
<b>HPO-6704</b>	4–20 mA DC current loop with adjustable override potentiometer	
<b>HPO-6705</b>	Relay, NC contacts (AC/DC)	

## Sensors, Analog Room (with Modular Jack)

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

## HMO-6036W

Wall plate, white (or order **HMO-6036** for light almond), allows STE-6000 series mounting to 2 x 4 inch electrical boxes



**NOTE:** To order the STE-601x sensor with **light almond color** instead of white, **replace the W on the end of the model number with a hyphen** (e.g., STE-6010W10 is white and STE-6010-10 is light almond).

**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.

**NOTE:** For information about digital sensors (with LCD displays), see the **STE-9000 Series NetSensors (Digital Room Sensors) on page 5**.

## Sensors, Differential Air Pressure

**SSS-1012** Sensor, 3-5/32 inches (80 mm) length

**SSS-1013** Sensor, 5-13/32 in. (137 mm) length

**SSS-1014** Sensor, 7-21/32 in. (194 mm) length

**SSS-1015** Sensor, 9-29/32 in. (252 mm) length



## Sensors, Digital Room (LCD Display)

### HMO-10000W

White (or order HMO-10000 for light almond) mounting plate, allows STE-9000 series mounting to horizontal 2 x 4 or 4 x 4 inch electrical boxes



### HPO-0044

Replacement cover hex screw



### HPO-9001

NetSensor distribution module



### HPO-9002

Foam insulating gasket (mounts between the black backplate and the electrical box) for STE-9xx1 NetSensor and STE-8x01 AppStat



### STE-9000 Series\*

NetSensor digital room temperature sensors for viewing and configuration\*\* and optional humidity, occupancy, and CO<sub>2</sub> sensing—see **STE-9000 Series NetSensors (Digital Room Sensors) on page 5**



\* Models **without** the NDL suffix have LCD displays.

\*\*Because NDL models do not have a display or buttons, they cannot be used for viewing and configuration, but still function as a sensor.

## Sensors, Miscellaneous Temperature

### STE-1405

DAT sensor with plenum-rated cable

### STE-1451

OAT sensor



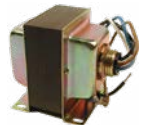
## Transformers, 120 to 24 VAC

### XEE-6111-050

50 VA, single-hub

### XEE-6112-050

50 VA, dual-hub



# SETUP TOOLS (CONFIGURING, PROGRAMMING, AND DESIGNING)

SETUP PROCESS			KMC CONTROLS TOOL
Configuration	Programming (Control Basic)	Web Page Graphics*	
✓			Internal configuration web pages in Ethernet "E" models**
✓			<b>KMC Conquest STE-9000 series NetSensors</b> (with display)
✓			<b>KMC Connect Lite™</b> NFC mobile app***
✓	✓		<b>KMC Connect™</b> software
✓	✓	✓	<b>TotalControl™</b> software
✓	✓		<b>KMC Converge™</b> module for Niagara Workbench
		✓	<b>KMC Converge GFX</b> module for Niagara Workbench
		✓	<b>KMC Commander®</b> IoT Interface Platform****

\*Custom graphical user-interface web pages can be hosted on a remote web server, but not in the controller.

\*\*Ethernet-enabled "E" models (BAC-5901CE, BAC-9001CE, BAC-9301CE, and BAC-9311CE) with the latest firmware can be configured with an HTML5-compatible web browser from pages served from within the controllers. For more information, see the [Conquest Ethernet Controller Configuration Web Pages Application Guide](#).

\*\*\*Near Field Communication via enabled smart phone or tablet running the KMC Connect Lite app.

\*\*\*\*KMC Commander's web interface shows "cards" for monitoring and control, trends, alarms, and schedules. For more information, see [IoT Interface Platform on page 8](#)

## IOT INTERFACE PLATFORM

**KMC Commander** is a next-generation IoT (Internet of Things) solution that connects your building and other devices to the cloud and provides meaningful data in real-time to your PC or mobile device. The KMC Commander platform consists of Dell Edge Gateway 3002 or Advantech UNO-420 hardware plus KMC IoT software and cloud services. It is an out-of-the-box solution to visualize, connect, and manage energy, building, and other systems. It not only works with KMC Conquest controllers, but also most third-party meters and many other energy and automation devices. It is designed to aggregate, analyze, secure, and relay data from diverse sensors and equipment... and communicate the analytics and visualizations to your mobile device. From a mobile device in the palm of your hand, you can analyze and act on data at the edge of the network with this IoT platform, purpose-built for building and industrial automation.



## SUPPORT

Additional resources for installation, configuration, application, operation, programming, upgrading, and much more are available on the web at [www.kmcccontrols.com](http://www.kmcccontrols.com). Log in to see all available files.

See also [KMC videos on YouTube](#).

