



KMC Conquest™ Selection Guide

Controllers, Sensors, and Accessories



APPLICATIONS AND MODELS

APPLICATIONS	MODELS*	APPLICATIONS	MODELS*
AHU (Air Handler Unit)	BAC-5901, BAC-93x1, and BAC-19xx36	HVAC, Other	BAC-5901
Airflow measurement	BAC-5901-AFMS BAC-9311-AFMS	Lighting	STE-92x1/95x1 and BAC-5901
Boiler	BAC-5901	Occupancy control	STE-92x1/95x1 with an BAC-59xx or BAC-9xxx controller, BAC-192xxx, and BAC-195xxx
CAV (Constant Air Volume)	BAC-90x1, BAC-9311, and STE-9xx1	Pump	BAC-5901
Chiller	BAC-5901	RTU (Roof Top Unit)	BAC-5901, BAC-9301, STE-9xx1, and BAC-19xx63
Chilled beam	BAC-5901, BAC-9301, and STE-9x21	Static pressure monitoring/control (RTU/HPU)	BAC-9311
Cooling tower	BAC-5901	Supply/exhaust tracking	BAC-9001, TSP-8003, and STE-9xx1
DCV (Demand-Control Ventilation)	STE-93x1/95x1 with any BAC-59xx or BAC-9xxx controller, BAC-193xxx, and BAC-195xxx	Unit ventilator	BAC-5901, BAC-9301, STE-9xx1, and BAC-19xx36
FCU (Fan Coil Unit)	BAC-9301, STE-9xx1, and BAC-19xx63	VAV (Variable Air Volume)	BAC-90x1, BAC-9311, TSP-8003, and STE-9xx1
HPU (Heat Pump Unit)	BAC-9301, BAC-5901, STE-9xx1, and BAC-19xx63	Ventilation control	STE-93x1/95x1 with any BAC-59xx or BAC-9xxx controller, BAC-193xxx, and BAC-195xxx
Humidity control	STE-9x21, BAC-5901, BAC-9301, and BAC-19x2xx		

*The most typical models are shown for an application. The controllers are fully programmable, and a controller with sufficient inputs and outputs can be adapted to the application. See **Setup Tools (Configuring, Programming, and Designing) on page 10**. See also **Accessories on page 8**.

AIRFLOW MEASUREMENT SYSTEM CONTROLLERS (B-AAC)

MODEL	APPLI-CATIONS	INPUTS	OUTPUTS	FEATURES					
				Customiz-able	Pressure Sensing	Real Time Clock (RTC)	Network	Airflow Measurement Programming	
BAC-5901C-AFMS	RTU AHU unit venti-lator	10 total: • 2 analog (room 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	✓	External	✓	MS/TP	standard airflow measurement application, plus a pressure assist application option	
BAC-5901CE-AFMS							Ethernet		
BAC-9311C-AFMS		1 air pressure sensor and 8 (total) standard: • 2 analog (room sensor port) • 6 universal inputs (software configurable as analog, binary, or accumulator on terminals)	10 total: • 6 triacs (binary) • 4 universal (software configurable as analog or binary)		Integrated			MS/TP	standard airflow measurement application
BAC-9311CE-AFMS								Ethernet	

The KMC Conquest Airflow Measurement System (AFMS) reliably provides accurate outside, return, and supply airflow data for monitoring and control. It delivers accurate, repeatable results on any type of equipment, without the traditionally expected mechanical limitations, performance issues, or ongoing maintenance issues.

The complete system consists of the following components, installed on an AHU, RTU, or unit ventilator:

- 1 controller with airflow measurement programming [BAC-9311C(E)-AFMS or BAC-5901C(E)-AFMS]
- 1 inclinometer (included with the controller) mounted on an outside air damper blade
- At least 2 pressure flow pickup tubes (SSS-1000 Series) installed in a pitot array on the supply air duct, or on the fan inlet
- If a BAC-5901C(E)-AFMS is used, 1 pressure transducer (TPE-14750-21)
- If pressure assist measurements are needed (for units with changing pressure in mixed and/or return air sections), 1 additional pressure transducer (TPE-14750-21), connected to 2 additional pressure flow pickup tubes (SSS-1000 Series), mounted on both sides of the outside air damper.
- 3 temperature sensors (STE-1400 Series) for outside, mixed, and return air
- 1 proportional actuator, mounted on the damper shaft

For more information, see the AFMS documentation.



BAC-190000 SERIES FLEXSTAT ROOM SENSORS/CONTROLLERS (B-AAC)

MODELS, APPLICATIONS, AND OUTPUTS*		6 TERMINAL INPUTS AND UP TO FOUR INTEGRATED SENSORS**				NETWORK CONNECTION		
FCU, HPU, and RTU	AHU and Unit Ventilator	Temperature	Humidity	Motion	CO ₂	Ethernet Port	MS/TP Port	
6 Relays and 3 Analog/ Universal Outputs	3 Relays and 6 Analog/ Universal Outputs							
BAC-190063CEW***	BAC-190036CEW	✓				✓		
BAC-190063CW	BAC-190036CW						✓	
BAC-190263CEW	BAC-190236CEW		✓				✓	
BAC-190263CW	BAC-190236CW							✓
BAC-192063CEW	BAC-192036CEW				✓		✓	
BAC-192063CW	BAC-192036CW							✓
BAC-192263CEW	BAC-192236CEW			✓	✓		✓	
BAC-192263CW	BAC-192236CW							✓
BAC-193263CEW	BAC-193236CEW			✓		✓	✓	
BAC-193263CW	BAC-193236CW							✓
BAC-195263CEW	BAC-195236CEW			✓	✓	✓	✓	
BAC-195263CW	BAC-195236CW							✓

*NOTE: Applications and options are dependent on the model.

**NOTE: Terminals are provided for six external inputs in addition to the (standard) temperature and up to three additional sensors.

***NOTE: All models are white ("W") and contain a hardware Real Time Clock ("C").

BAC-190000 series FlexStats are wall-mounted, touchscreen, combined sensors and controllers. The intelligent integral temperature/humidity/motion/CO₂-sensing, wall-mounted thermostats simplify networked zone control for common HVAC equipment, which can be controlled via the on-board or custom libraries of programs. FlexStats have built-in, configurable applications to be used with the following types of equipment:

BAC-19xx36C models (3 relays, 6 analog/universal outputs):

- Air Handling Units
- Unit Ventilators (4-Pipe)

BAC-19xx63C models (6 relays, 3 analog/universal outputs):

- Fan Coil Units (2- and 4-Pipe)
- Heat Pump Units
- Roof Top Units

These applications can be configured from the touchscreen without using any software. Additional customization and applications beyond the standard library can be created using software. (See [Setup Tools \(Configuring, Programming, and Designing\) on page 10.](#)) Some applications require custom programming in the controller.



These methods of configuration are **not** available for FlexStats:

- KMC Connect Lite app
- STE-9xxxx NetSensors
- Built-in web pages

For more information, see the [BAC-190000 Series](#) product pages and documents. See also [Accessories on page 8.](#)

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 8](#).



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- independent VAV, cooling/heating with fan and reheat; CAV	8 total: <ul style="list-style-type: none"> • 1 internal actuator position feedback • 1 integrated air pressure sensor (except BAC-9021) • 2 analog (temperature sensor port) • 4 software-configurable universal inputs (terminals) 	9 total: <ul style="list-style-type: none"> • 2 internal triacs (actuator motor control) • 4 external triacs (terminals) • 3 universal outputs (0–12 VDC on terminals) 	✓		✓		BAC-9001
				✓		✓	BAC-9001CE
Pressure- dependent 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 8](#).



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"> • 2 analog (temp. sensor port) • 6 universal inputs (software configurable as analog, binary, or accumulator on terminals) 	10 total: <ul style="list-style-type: none"> • 6 triacs (binary) • 4 universal (software configurable as analog or binary) 				✓	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 8](#).

***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 ₂		
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 CO₂ 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 8**.



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 10 and [IoT Interface Platform](#) on page 10.

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](#).

MEP-4xxx	Actuators, 25 to 90 in.-lb., fail-safe and non-fail-safe	
MEP-7xxx	Actuators, 180 and 320 in.-lb., fail-safe and non-fail-safe	
TSP-8003	Dual duct actuator (for BAC-9001)—see TSP-8003 (Dual Duct) Tri-State Actuator with Pressure Sensor on page 5	

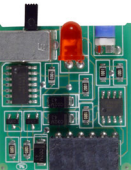
Misc. Hardware

CAN-590x	Expansion modules—see CAN-5900 Series I/O Expansion Modules on page 4	
HCO-1103	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)	
HPO-0055	Replacement network bulb assembly (pack of 5)	
HPO-0063	Replacement output 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)	
SP-001	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

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

Output Override Boards (for BAC/CAN-5901)

HPO-6701	Triac output w/ zerocross 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)	

Sensors, Analog Room (with Modular Jack)

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 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 7**.

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 CO₂ sensing—see **STE-9000 Series NetSensors (Digital Room Sensors) on page 7**



* 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

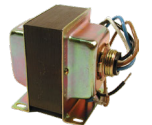
STE-1451 OAT sensor



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**
✓			KMC Conquest STE-9000 series NetSensors (with display)
✓			KMC Connect Lite™ NFC mobile app***
✓	✓		KMC Connect™ software
✓	✓	✓	TotalControl™ software
✓	✓		KMC Converge™ module for Niagara Workbench
		✓	KMC Converge GFX module for Niagara Workbench
		✓	KMC Commander® 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 10**

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.kmccontrols.com. Log in to see all available files.

See also **KMC videos on YouTube**.

