



# Conquest NetSensors

## STE-9000 Series Digital Room Sensors

### DESCRIPTION

KMC Conquest™ STE-9000 series NetSensors are wall-mounted digital space temperature sensors designed for use with KMC Conquest 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 provides occupant viewing and adjusting, and the LCD display is user-configurable to show parameters such as temperature, setpoint, system status, and time
- The NetSensor supports single or multiple setpoints
- It allows up to two separate passwords for adjusting setpoints and configuring/commissioning/balancing
- It connects to a controller via a modular jack connection using standard Ethernet patch cables
- It installs permanently as a room sensor or 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



### APPLICATIONS

Temperature sensing to BAC-5900/9000/9300 series controllers for such applications as RTUs, HPUs, FCUs, AHUs, VAV terminal units, and unit ventilators.

Optional humidity sensing is for **dehumidification and/or humidification** sequences.

Optional motion sensing **enhances occupancy-based control** for lighting control, temperature setback, or self-learning schedules.

Optional CO<sub>2</sub> sensing enables **demand-control ventilation (DCV)** for optimizing ventilation and energy efficiency.

(See also **Sample Installation on page 5.**)

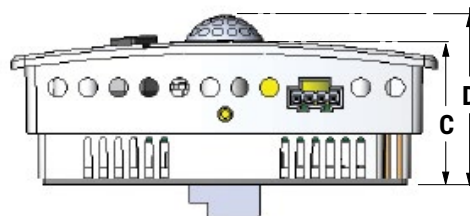
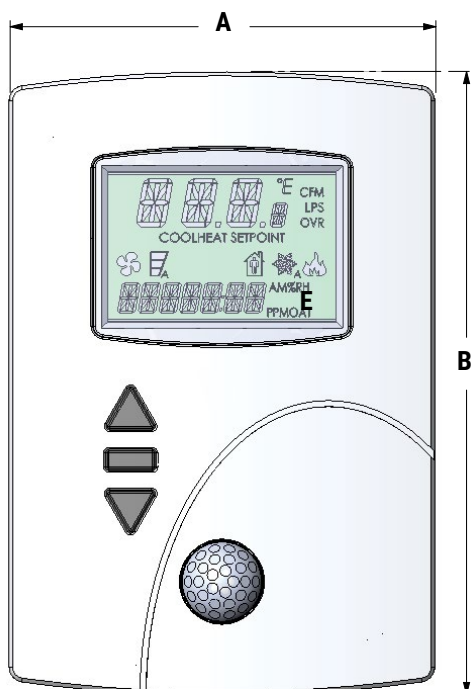
### MODELS

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

# SPECIFICATIONS



DIMENSIONS		
A	3.500 inches	89 mm
B	5.124 inches	130 mm
C	1.125 inches	29 mm
D	1.336 inches	34 mm

## Sensors

### Temperature Sensor (without humidity sensor)

Sensor type	Thermistor, 10K Type II
Accuracy	$\pm 0.36^{\circ}\text{ F}$ ( $\pm 0.2^{\circ}\text{ C}$ )
Resistance	10,000 ohms at $77^{\circ}\text{ F}$ ( $25^{\circ}\text{ C}$ )
Operating range	$48$ to $96^{\circ}\text{ F}$ ( $8.8$ to $35.5^{\circ}\text{ C}$ )

### Temperature Sensor (with humidity sensor)

Sensor type	CMOS
Accuracy	$\pm 0.9^{\circ}\text{ F}$ ( $\pm 0.5^{\circ}\text{ C}$ ) offset from $40$ to $104^{\circ}\text{ F}$ ( $4.4$ to $40^{\circ}\text{ C}$ )
Operating range	$36$ to $120^{\circ}\text{ F}$ ( $2.2$ to $48.8^{\circ}\text{ C}$ )

### Humidity Sensor (optional)

Sensor type	CMOS
Range	$0$ to $100\%$ RH
Accuracy @ $25^{\circ}\text{ C}$	$\pm 2\%$ RH ( $10$ to $90\%$ RH)
Response time	Less than or equal to $4$ seconds

### CO<sub>2</sub> Sensor (optional)

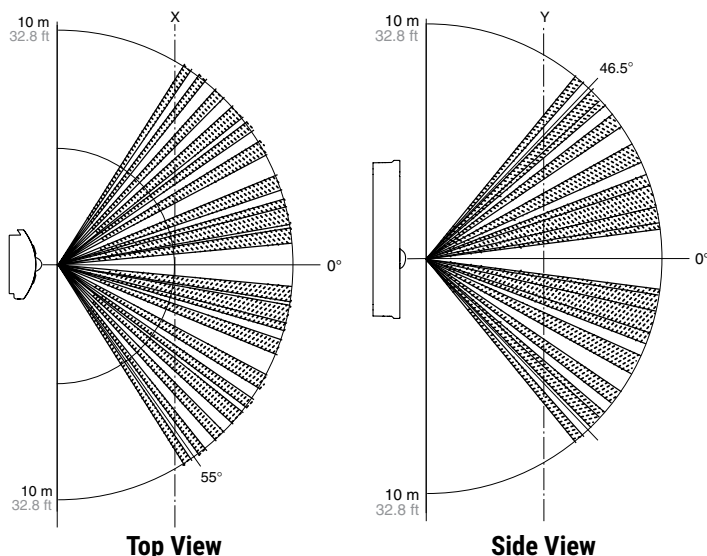
Detector type	Non Dispersive Infrared (NDIR), with solid-state source and detector
Sample method	Diffusion
Rated life	$15$ years minimum

Operating limits	$34^{\circ}$ to $122^{\circ}\text{ F}$ ( $1.1$ to $50^{\circ}\text{ C}$ )
Shipping limits	$-22^{\circ}$ to $140^{\circ}\text{ F}$ ( $-30^{\circ}\text{ C}$ to $60^{\circ}\text{ C}$ )
CO <sub>2</sub> range	$0$ to $2000$ ppm, $0-1\%$
Accuracy	$\pm 50$ ppm, $\pm 3\%$ of reading*
Non-linearity	$< 1\%$ of full scale
Calibration	Automatic calibration built-in*
Pressure dependence	$0.13\%$ of reading per mm Hg
Oper. pressure range	$950$ to $1050$ bar
Warm-up time	$10$ seconds

**\*NOTE:** The CO<sub>2</sub> sensor uses a self-calibration technique designed to be used in applications where **CO<sub>2</sub> concentrations will periodically drop to outside ambient conditions** (approximately  $400$  ppm), typically during unoccupied periods. The sensor will typically reach its operational accuracy after  $25$  hours of continuous operation if it was exposed to ambient reference levels of air at  $400 \pm 10$  ppm CO<sub>2</sub>. The sensor will maintain accuracy specifications if it is exposed to the reference value at least four times in  $21$  days.

### Motion Sensor (optional)

Detector type	Passive infrared
Range	$33$ feet ( $10$ meters)—see Top and Side Views diagram



## Installation

### Connections

Connector type	Eight-wire RJ-45 modular jack
Cable type	Standard T568B (Category 5 or better) Ethernet patch cable up to 150 feet (45 meters)
Power	Supplied by connected controller

### Display

Type	Multifunctional LCD with backlight
Size	1.88 x 1.25 inches (48 x 32 mm)
Icons	Language-independent symbols for mode and operating status

### Enclosure and Mounting

Weight	2.8 ounces (80 grams)
Case material	Flame-retardant plastic
Mounting	Surface mount directly to any flat surface or to a 2 x 4 inch or 4 x 4 inch electrical box (mounting on a 4 x 4 box or a horizontal 2 x 4 box requires an HMO-10000/10000W mounting backplate)

### Environmental Limits

Operating	34° to 125° F (1.1 to 51.6° C)*
Shipping	-40° to 140° F (-40°C to 60° C)*
Humidity	0 to 95% relative humidity non-condensing

**\*NOTE:** For models with the optional CO<sub>2</sub> sensor, see the reduced range in the operating and shipping limits in [CO<sub>2</sub> Sensor \(optional\) on page 2](#).

## Warranty, Protocol, and Approvals

### Warranty

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

### Controller Protocol Compatibility

BACnet	BAC-5900/9000/9300 series
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### Regulatory Approvals

UL	UL 916 Energy Management Equipment listed
CE	CE compliant (pending)
RoHS	RoHS compliant (pending)
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.

<b>HMO-10000</b>	Light almond mounting plate, allows mounting to horizontal 2 x 4 or 4 x 4 inch electrical boxes
<b>HMO-10000W</b>	White version of HMO-10000
<b>HPO-0044</b>	Replacement cover hex screw
<b>HPO-9001</b>	NetSensor distribution module (future release; for more information, see <a href="#">HPO-9001 Distribution Module on page 4</a> )
<b>HPO-9002</b>	Foam insulating gasket (mounts between the black backplate and the electrical box)
<b>HSO-9001</b>	Ethernet patch cable, 50 feet
<b>HSO-9011</b>	Ethernet patch cable, 50 feet, plenum rated
<b>SP-001</b>	Screwdriver (KMC branded) with hex end (for cover screws) and flat blade (for controller terminals)

# HPO-9001 DISTRIBUTION MODULE

The (future release) HPO-9001 NetSensor distribution module allows up to eight STE-9000 series NetSensors to be linked to one BAC-5900/9000/9300 series controller (see [Sample Installation on page 5](#)).

The module provides power (from a connected 24 VAC transformer) and addressing (according to the connected port) for each NetSensor. It also allows one STE-6010/6014/6017 analog temperature sensor to be connected to a controller along with up to seven NetSensors.

The module may be connected to a controller with an Ethernet patch cable up to 150 feet (45 meters) long. Cables from the module to any NetSensors may also be up to 150 feet (45 meters) long.

The module board is mounted via supplied Snap Track.



## Installation

### Connections

Connector type	Eight-wire RJ-45 modular jacks
Cable type	Standard (Category 5 or better) Ethernet patch cable up to 150 feet (45 meters)

### Power

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

## Enclosure and Mounting

Mounting	Provided with 3.25 x 4 inch (83 x 102 mm) Snap Track
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## 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)

### Controller Compatibility

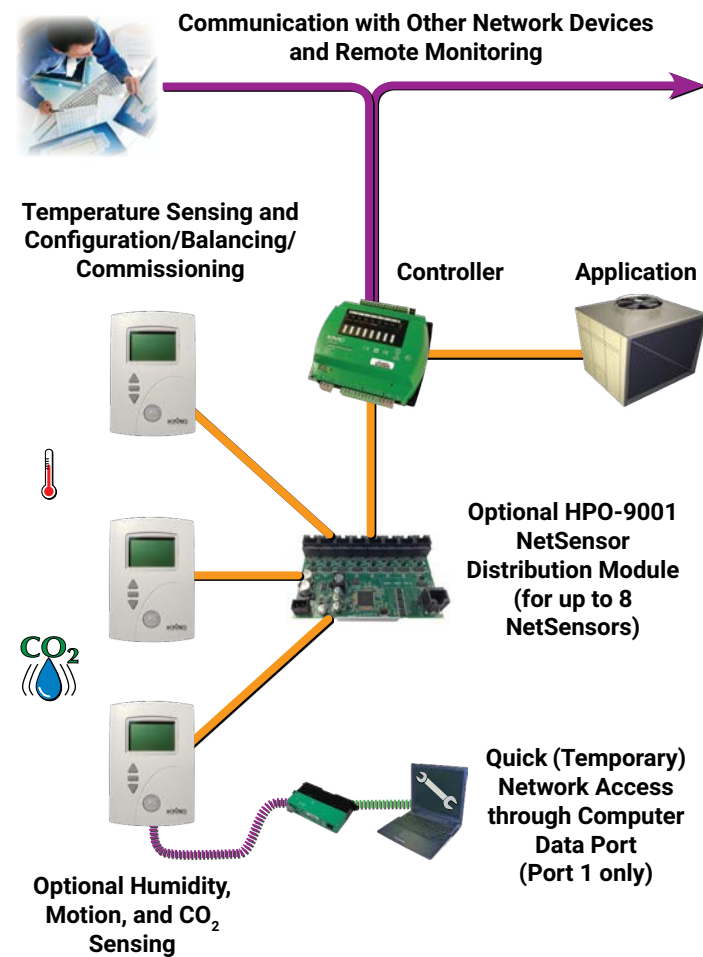
BACnet	BAC-5900/9000/9300 series
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### Regulatory

UL	UL 916 Energy Management Equipment (pending)
CE	CE compliant (pending)
RoHS	RoHS compliant (pending)
FCC	FCC Class B, Part 15, Subpart B and complies with Canadian ICES-003 Class B (pending)*

\*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.

## SAMPLE INSTALLATION



## SUPPORT

Additional resources for installation, configuration, application, operation, programming, upgrading, and much more are available on the web at [www.kmccontrols.com](http://www.kmccontrols.com). To see all available files, log-in to the KMC Partners site.



For more information about installation and operation, see:

- [STE-9000 Series NetSensors Installation Guide](#)
- [Room Sensor and Thermostat Mounting and Maintenance Application Guide](#)
- [KMC Conquest Controller Application Guide](#)