



STW-601x/THW-1102 Series

Wireless Temperature and Humidity Sensors

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DESCRIPTION

The KMC STW-6010, STW-6014, and THW-1102 series are wireless temperature sensors with optional humidity sensing and setpoint adjustment. Integrated solar/photovoltaic power eliminates or reduces the need for batteries. They connect with KMC Conquest™ HPO-9007 gateways (and other compatible EnOcean gateways). The HPO-9007 gateways plug into the Room Sensor ports of KMC Conquest BAC-5900/9000/9300 series controllers.



STW-6010 and THW-1102



STW-6014

Key features of the sensors include the following:

- Use the EnOcean (ISO/IEC 14543-3-10) wireless standard
- With no need to run wiring through walls, save time and labor cost on installation, especially in retrofit applications
- Energy-harvesting, photovoltaic power reduces (wireless battery-replacement) maintenance
- Choose from models with temperature only, temperature and humidity, or temperature with setpoint—see [Models on page 1](#)
- Available frequencies are 902 MHz (for North America) or 868 MHz (for outside North America)
- Up to 16 wireless sensors can communicate with one KMC HPO-9007NW or HPO-9007DW gateway
- Durable, low-profile, thermostat-style case is visually appealing and easily mounts to flat surfaces
- Configuration of the KMC gateway/sensor objects is done through KMC software—see [Configuration on page 3](#)



APPLICATIONS

When installing building automation systems, wireless sensor networks can provide (especially in retrofit applications) lower installation costs and increased flexibility compared to wired sensor systems. These wireless sensors provide temperature sensing and optional setpoint adjustment to BAC-5900/9000/9300 series controllers for such applications as RTUs, HPU's, FCUs, AHUs, VAVs, and unit ventilators. Optional humidity sensing is for dehumidification and/or humidification sequences. (See also [Sample Installation on page 3](#).)

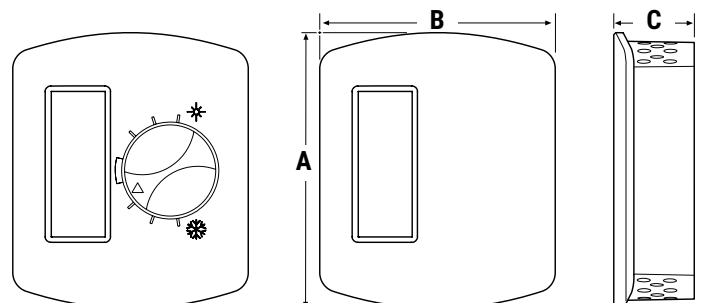
MODELS

FOR USE...	FREQUENCY	SENSORS*			GATEWAY MODEL
		Temperature (Only)	Setpoint Adjustment (Pot)	Humidity	
In North America	902 MHz	STW-6010NW	STW-6014NW	THW-1102NW	HPO-9007NW
Outside of North America	868 MHz	STW-6010DW	STW-6014DW	THW-1102DW	HPO-9007DW

*All sensors include temperature.

SPECIFICATIONS

DIMENSIONS		
A	2.64 inches	67 mm
B	2.25 inches	57 mm
C	0.77 inches	20 mm



STW-6014

STW-6010 and THW-1102

Transceiver

RF Transmission

Antenna	Built-in wire whip
Frequency	868.3 MHz (ASK, Amplitude-Shift Keying) or 902.875 MHz (FSK, Frequency-Shift Keying)
Output Power	+8 dBm (EIRP) ± 2.5 dB for 868.3 MHz; +101 dB μ V/m ± 2 dB for 902.875 MHz
Transmission range*	Approximately 100 ft. (30 m) line-of-sight maximum in open spaces; typically 33 ft. (10 m) or less in closed spaces with obstacles

***NOTE:** See the application guide [Planning Guide for Wireless Sensor Networks](#) for important information about planning an installation.

Power

Power supply	Energy-harvesting solar/photovoltaic cell with optional CR1225 lithium coin cell battery backup
Illumination range	50 to 100,000 lux (typical living room to direct sunlight)
Sensor operational time in full darkness:	At least 4 days (at 77° F or 25° C) with solar/photovoltaic cell only (if energy storage is fully charged); up to 3 years with CR1225 battery backup
Time from fully discharged to fully operational:	Typically less than 2.5 minutes with 400 lux (typical office) of fluorescent or incandescent light with the solar/photovoltaic cell (only); instantaneous with battery backup

Measurements and Adjustments

Temperature range*	32 to 104° F (0 to 40° C)
Temperature accuracy	$\pm 0.9^\circ$ F from 62 to 80° F ($\pm 0.5^\circ$ C from 17 to 27° C)
Humidity range	(THW-1102 only) 0 to 95% RH
Humidity accuracy	$\pm 5\%$ RH from 30 to 70% RH from 32 to 104° F (0 to 40° C)
Setpoint adjustment**	(STE-6014 only) 270° rotation of the dial = 0 to 255 values; requires custom Control Basic code to use as a setpoint of (typically) $\pm 3^\circ$ F ($\pm 1.7^\circ$ C) or equivalent for KMC Conquest controllers

***NOTE:** Default temperature scale is degrees C; conversion to degrees F requires custom Control Basic code

****NOTE:** Conversion of 0 to 255 to a configurable setpoint range requires custom Control Basic code

Measurement Threshold and Transmission Interval

Temperature	$\pm 0.9^\circ$ F ($\pm 0.5^\circ$ C)
Humidity	$\pm 2.0\%$
Setpoint change	± 10 digits of 0 to 255 scale (change in equivalent degrees is configurable with custom Control Basic code)
Transmission interval*	Approximately once every 15 to 25 minutes during normal operation; less than two minutes after a sensor or setpoint value change exceeds its threshold; immediately (but without sensor values) after pressing the Learn button

***NOTE:** After about 4 days of darkness, transmission intervals drop to every (approximately) 18 hours to conserve power, and the “standby” transmissions do **not** contain sensor or setpoint values.

Installation

Enclosure and Mounting

Weight	Approximately 1.25 oz. (35 grams)
Case material	White flame-retardant plastic
Mounting	Surface mount directly to a non-metallic flat surface

Environmental Limits

Operating	23 to 113° F (–5 to 45° C)
Shipping	–40 to 140° F (–40 to 60° C)
Humidity	0 to 95% relative humidity non-condensing

Warranty, Protocol, and Approvals

Warranty

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

Protocols

Wireless	EnOcean Wireless Standard for Building Automation and Smart Homes (ISO/IEC 14543.3.1x)
Network	KMC Conquest BACnet BAC-5900/9000/9300 series controllers through HPO-9007 gateway; other compatible EnOcean gateways and devices—see EnOcean Equipment Profiles on page 3

Regulatory Approvals

RED (868.3 MHz)	Radio Equipment Directive 2014/53/EU
FCC (902.875 MHz)*	FCC CFR-47 Part 15

***NOTE:** Contains FCC ID SZV-STM332U.
902 MHz devices comply with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (i.) these devices may not cause harmful interference and (ii.) these devices must accept any interference received, including interference that may cause undesired operation.

Configuration

EnOcean Equipment Profiles

STW-6010 (Temperature Only)	A5-02-05
STW-6014 (Temperature and Setpoint)	A5-10-03
THW-1102 (Temperature and Humidity)	A5-04-01

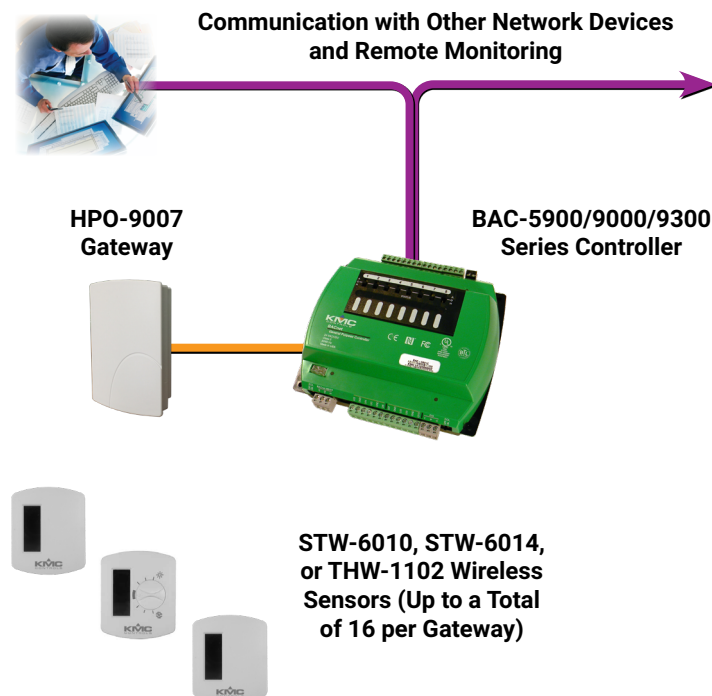
Sensors and KMC Gateway

Configuration of the sensors and the connected HPO-9007 gateway is done through software:

- **KMC Connect™** software (ver. 1.0.13.8 or later)
- **KMC TotalControl™** software (ver. 4.5.0.8 or later)

Controllers must have firmware version R1.5.0.4 or later for full functionality. See the documents or Help systems for the respective KMC tools for more information.

SAMPLE INSTALLATION



ACCESSORIES

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

HPO-9007DW	Wireless gateway, 868 MHz, white
HPO-9007NW	Wireless gateway, 902 MHz, white

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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.

