HPO-9007 Series Gateways
Installation Guide

CONTENTS

INTRODUCTION

Complete the following steps to:

- Mount a KMC Conquest™ HPO-9007NW or HPO-9007DW gateway
- Connect it to a KMC Conquest BAC-59xx/9xxx controller
- Discover wireless sensors

> **NOTE:** The HPO-9007s only receive signals from sensors. They do not transmit signals to devices.

> **NOTE:** See the **data sheet** at **kmccontrols.com** for specifications and other information.

NOTICE

OBSERVE PRECAUTIONS FOR HANDLING ELECTROSTATIC SENSITIVE DEVICES

SELECT MOUNTING LOCATION

For the RF signal, the maximum theoretical straight-line distance between the gateway and sensors is about 100 feet (30 meters).

However, in practice, **the maximum distance will be substantially reduced by obstacles in the path, the shape of the room, sources of radio interference, and placement/orientation of the sensors and gateway!**

See the application guide **Planning for Wireless Sensors** for important information about proper placement of sensors and their gateway.

> **NOTE:** KMC **STW-6010**, **STW-6014**, and **THW-1102** wireless sensors require optimizing installation locations for adequate **RF range** to the gateway, adequate **light** for sensor charging, **AND** accurate **temperature** measurement. These factors may require repositioning the gateway from its original intended location to optimize RF range to the sensors. Testing operation **before** permanent mounting is recommended. See the sensors **installation guide** for more information.

REMOVE BACKPLATE

1. Turn the **hex screw clockwise** into the backplate until the screw clears the cover.

> **NOTE:** The hex screw should remain in the backplate.

Hex Screw
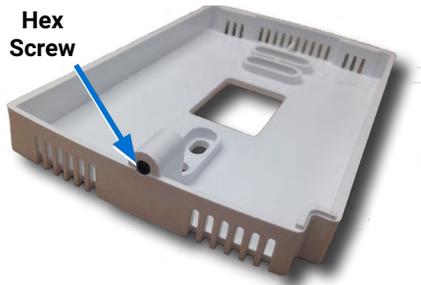
2. Pull the cover off the backplate.

CONNECT ETHERNET CABLE

3. Feed the Ethernet patch cable from the Conquest controller through the center of the backplate.

NOTE: The Ethernet patch cable should be a maximum of 150 feet (45 meters).

NOTE: To use multiple gateways and/or NetSensors on a single controller, see **Use of HPO-9001 Distribution Module on page 5**.

4. Mount the backplate on an electrical box or non-metal panel using the provided screws.

5. Plug the Ethernet cable into the modular jack of the gateway.

ANTENNA COPPER
KEEPOUT AREA
NO COPPER THIEVING
IN THIS AREA
TOP OR BOTTOM

INSTALL COVER

6. Place the cover over the top of the backplate and swing it down.

NOTE: Be careful not to pinch the Ethernet cable.

7. Turn the **hex screw counter**clockwise until it engages the cover.

CONFIGURE

Software and Firmware Requirements

The gateway becomes operational after it is connected to a powered KMC Conquest controller. Controllers must have **firmware** version R1.5.0.4 or later for full functionality.

Configuration of the gateway and connected sensors is performed with one of these software tools:

- **KMC Connect**™ software (ver. 1.0.11.12 or later)
- **KMC TotalControl**™ software (ver. 4.5.0.12 or later)

See the documents or Help systems for the respective KMC tools for more information.

If the the HPO-9007 is connected to an optional HPO-9001 NetSensor distribution module (for use with up to 8 total HPO-9007s and STE-9000 series NetSensors), see **Use of HPO-9001 Distribution Module on page 5**.

Sensor and gateway points that can be mapped to BACnet objects (AVs) are:

- Sensor values of relative **humidity** % (THE-1102 only), **setpoint adjustment** (STW-6014 only and requires adding Control Basic code), and **temperature** in °C that can be converted to °F with Control Basic code
- RSSI (Received **Signal Strength** Indication) of the sensor signal in (−) db
- **Time** since the last-received sensor update in seconds

Convert and Configure the Sensor Object

1. In the software, open the Network Manager.
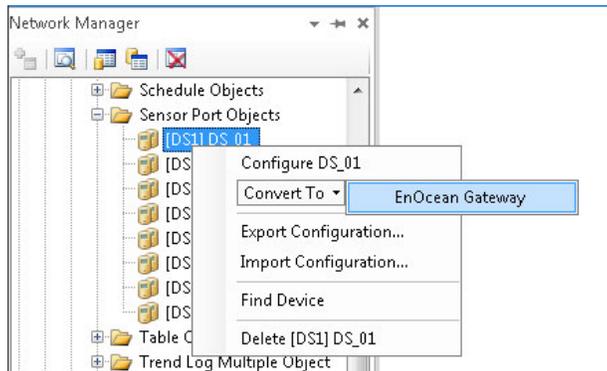
2. Under Sensor Port Objects, right-click **[DS1] DS_01** and select **Convert To** > **EnOcean Gateway**.

   NOTE: Convert the equivalent DSx object to an EGx object if using an HPO-9001 expansion board and multiple gateways and/or NetSensors.

3. Double-click **[EGx] ENOGATE_0x** object to open it.

4. See the sensor installation guide for information about removing the cover from the backplate and locating the sensor's **Learn** pushbutton and the **sensor identification number** (identifying that unique sensor) on a label that is inside of the sensor body.

Add Sensors

(Method 1) Automated KMC Sensor Discovery

   NOTE: For devices other than KMC STW/THW sensors, use Method 2.

1. On the back of the sensor, press the Learn button on the side or top of the button body (dependent on the model) with a small screwdriver.

2. In Gateway Sensor List Properties, wait until the fields for the sensor to populate with an icon and profile.

   NOTE: If multiple wireless sensors are available look for the desired sensor identification number.

   NOTE: Signal strength of the sensor received by the gateway is in decibels and shown in the Signal (dB) column. A smaller negative number (closer to 0) is a **stronger** signal than a larger negative number. This number should be the same as the RSSI (Received Signal Strength Indication) Value in the Sensor Mapping Properties section.

   NOTE: Values in the Signal (dB) column are color-coded **green** (good, −75 dB or stronger), **yellow-orange** (fair), or **red** (poor, −85 dB or weaker). **For red/poor signals, consider taking actions to increase signal strength and reliability.**

   NOTE: HPO-9007 gateways only **receive** signals from sensors. They do not transmit any signals to the sensors.

3. A list of discovered sensors will appear in the **Gateway Sensor List Properties** section.

4. For a desired sensor, drag its icon in the left column down to the **Sensor Mapping Properties** section.
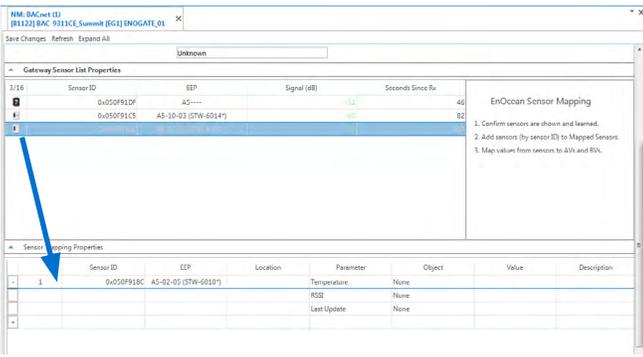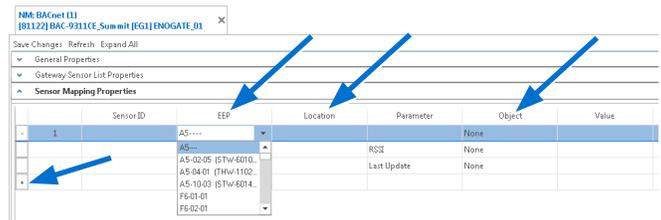
5. Click in the Object column and select the relevant **AV object(s)** in the drop-down box(es).

6. If desired, click in the Location column to add a description of the sensor's location.
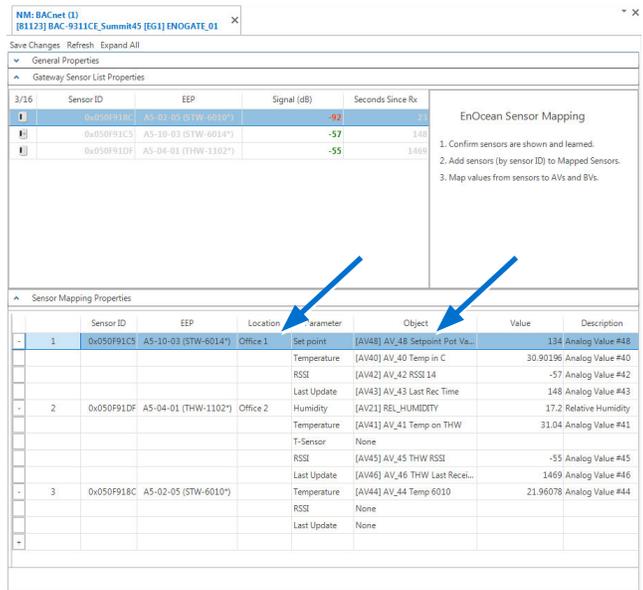
(Method 2) Manual Sensor/Device Addition

> **NOTE:** With Method 2, configuration of sensors can be done before the STW/THW sensor signals are present or when using other compatible EnOcean devices with the selectable profiles.

1. In the Sensor Mapping Properties section, click the **+** (plus) sign in the bottom row.

2. Click in the Sensor ID field and enter a valid **sensor identification number** (from the label on the device).

3. Click in the EEP field and select the **EnOcean Equipment Profile (EPP) number** for the desired device from the drop-down box.

4. Click in the Object column and select the relevant **AV object(s)** in the drop-down box(es).

5. If desired, click in the Location column to add a description of the sensor's location.

6. Click **Save Changes**.

Configure Value and Programming Objects

1. Configure the relevant AVs as needed from the above steps (e.g., add object names and units) and click **Save Changes**.

   > **NOTE:** For temperature in degrees C or humidity only, you are done. Confirm that temperature and humidity readings are functioning properly.

2. For degrees F or a setpoint, add the following (or equivalent) code to an unused Control Basic program object.

```
REM WIRELESS SENSOR CODE EXAMPLES
REM Use different AVs as needed
REM Configure AVs for applicable
relinquish defaults and units

REM Convert STW/THW Degrees C to F
REM AV40 = Temp in Degrees C from
STW/THW Sensor
REM AV1 = Temp in Degrees F
Converted from AV40
AV1@8 = AV40 * 1.8 + 32

REM STW-6014 Setpoint Offset
REM In PRG1, add REM before the "U
= DS1.KMC_STAT_STATUS" line
REM Sets MSV10 to STE-6014/7
MSV10@8 = 9
```

```
REM AV2 = The Desired Setpoint
Offset (such as a maximum of +/- 3
degrees)
REM AV48 = The Potentiometer (0-
255) Value from the STW-6014
Sensor
REM AV49 = Setpoint (Total) Range
(such as a relinquish default of 6
degrees)
AV2@8 = AV49 / ( 255 / AV48 ) -
AV49 / 2
```

3. In the Program Object, be sure that **Run on Coldstart** is checked in the General Properties section and click **Save Changes**.

4. For an STW-6014 setpoint offset, in **[PRG1] SETPOINTS-MODES**, also add REM in front of the line "U = DS1.KMC_STAT_STATUS":

```
REM U = DS1.KMC_STAT_STATUS
```

5. If using an STW-6014 setpoint offset, configure MSV10's **Relinquish Default** to **[9] STE-6014/7** and click **Save Changes**.

6. Configure other **Relinquish Defaults** and **Units** of relevant AV or BV objects as needed and click **Save Changes**.

7. Restart the controller and check the operation.

   NOTE: Because the wireless sensors normally transmit only several times per hour to conserve power, **allow at least 30 minutes for transmissions to be received and all the relevant object values to be updated** when verifying normal operation.

   NOTE: When sensor values change beyond their threshold, however, a signal will be transmitted within a few minutes.

   NOTE: Momentarily pressing the Learn button sends a new (identification) transmission immediately, but that transmission does **not** include sensor temperature, setpoint, or humidity values.

USE OF HPO-9001 DISTRIBUTION MODULE

To use multiple HPO-9007 gateways (and/or STE-9000 series NetSensors) on a single controller, an **HPO-9001 distribution module** is required. The HPO-9001 must have **0.1.0.0** or later firmware.
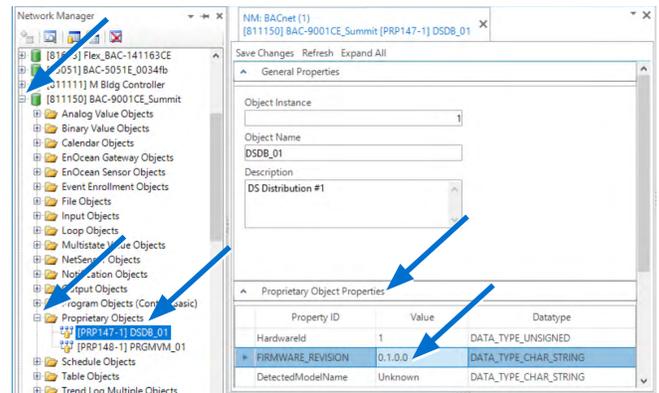
To view the firmware version of a board using KMC software (see **Software and Firmware Requirements on page 2**):

1. In Network Manager, click the **+** in front of the relevant controller.

2. Click the **+** in front of **Proprietary Objects**.

3. Double-click **[PRP147-1] DSDB_01** (or equivalent).

4. Click **Proprietary Object Properties**.

5. View the **Value** of **FIRMWARE_REVISION**. If the firmware version is **earlier** than **0.1.0.0**, contact KMC Controls for assistance.

TROUBLESHOOTING

If using an HPO-9001 distribution module:

- Check the firmware version (see **Use of HPO-9001 Distribution Module on page 5**).
- See the **HPO-9001 Distribution Module Installation Guide**.

For all other issues, see the Troubleshooting section in the **STW/THW Wireless Sensors Installation Guide**.

   NOTE: If the HPO-9007 is momentarily unplugged or the controller momentarily loses power, sensor values will temporarily return to 0 until updated by a later sensor transmission.

The sensors may also need to be discovered again to see the icon and EEP in the Gateway Sensor List section of the EnOcean Sensor Port object. See **Add Sensors on page 3**. (Restarting the controller through software may also cause a temporary loss of values but should not require a new discovery of the sensors.)

MAINTENANCE

To clean the case or display, use a soft, damp cloth (and mild soap if necessary).

IMPORTANT NOTICES

NOTE: Contains FCC ID SZV-STM300U. 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.

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