TRANE®

Installation and Configuration Instructions

Air-Fi® Wireless Communications Sensor (WCS-SB/R)

Model Number: X13791004001

X39641364001

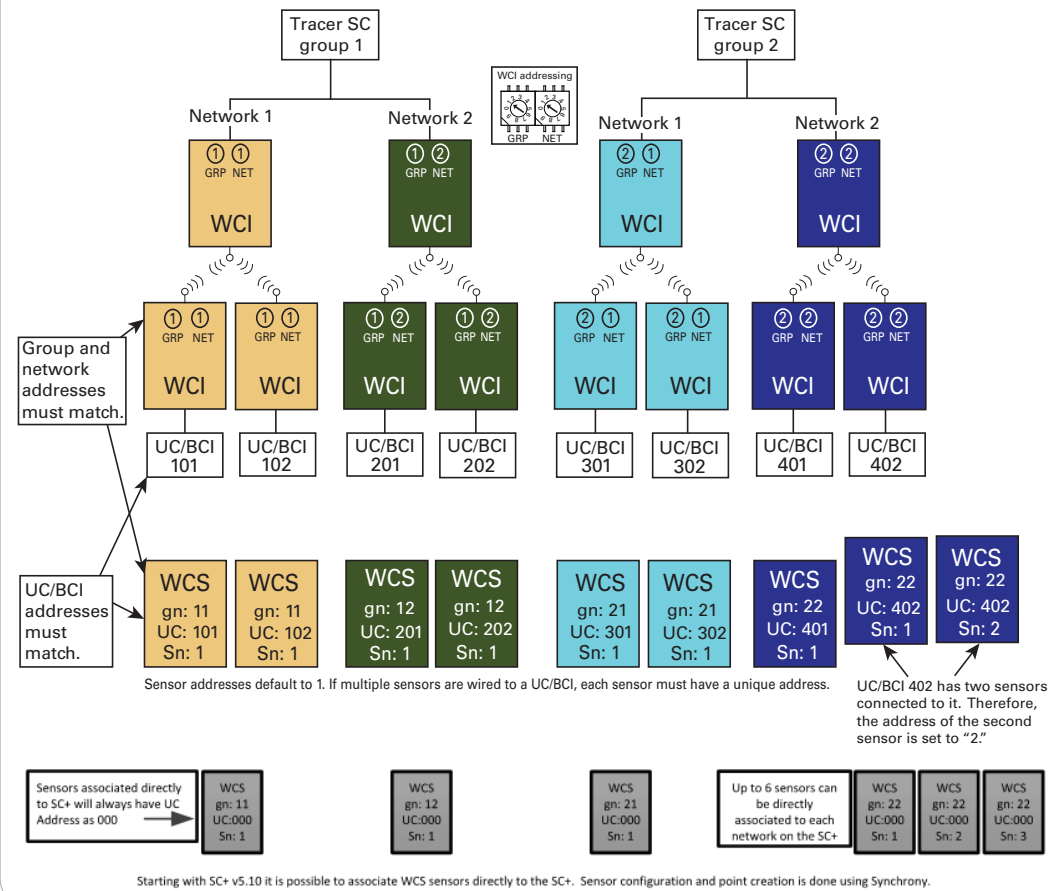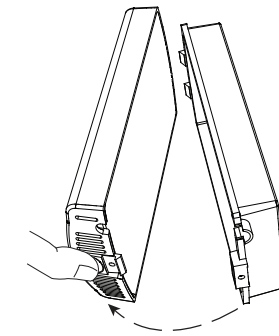| ⚠ WARNING	Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
⚠ CAUTION	Indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury. It could also be used to alert against unsafe
NOTICE	Indicates a situation that could result in equipment or property-damage only accidents.

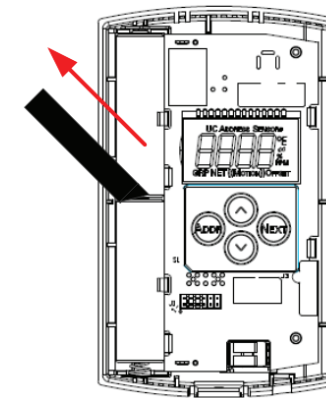June 2020   **BAS-SVN039C-EN**   TRANE TECHNOLOGIES
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1 Addressing Overview

Sensor addresses default to 1. If multiple sensors are wired to a UC/BCI, each sensor must have a unique address.

UC/BCI 402 has two sensors connected to it. Therefore, the address of the second sensor is set to "2."

Sensors associated directly to SC+ will always have UC Address as 000

Up to 6 sensors can be directly associated to each network on the SC+

Starting with SC+ v5.10 it is possible to associate WCS sensors directly to the SC+. Sensor configuration and point creation is done using Synchrony.
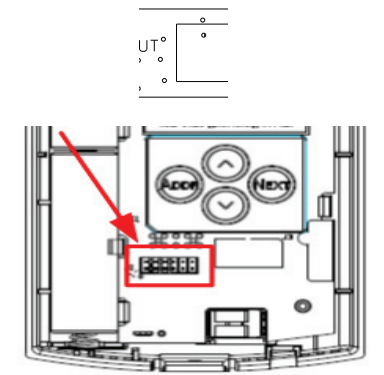
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2 Remove the Cover

Pull the Insulation Strip from between the Batteries

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3 RH Sensor Module

A 2% relative humidity sensor module, available as a separate part (X13790973030; model WCS-SH), can be installed on a WCS either before or after the WCS is powered up.


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4 Set Addresses

Press and hold the **ADDR** button for 3 seconds to enter addressing mode. Press the **UP/DOWN** arrows to change the value of the number that is flashing. Press the **NEXT** button to move to the next item in the addressing sequence (see following pictures).

- Set the group (GRP) address.
- Set the Network (NET) address.
- Set the UC address (UC ADDRESS) or if associated directly to SC+, set address to 000.
- Set the Sensor number (SENSOR #).

Press and hold the **ADDR** button for three (3) seconds to exit addressing mode.
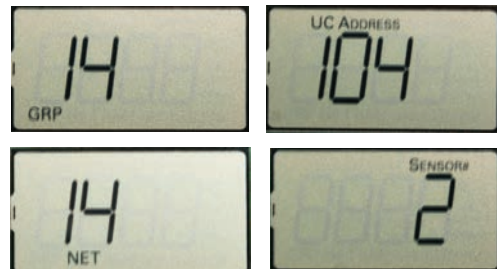
Sensor Response

After addresses are set, the WCS will immediately attempt to join the network and associate with the controller or you can press the UP arrow once to force the sensor to join.
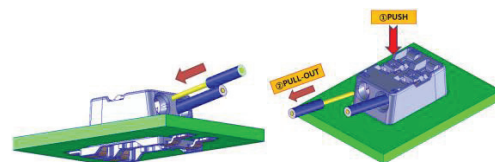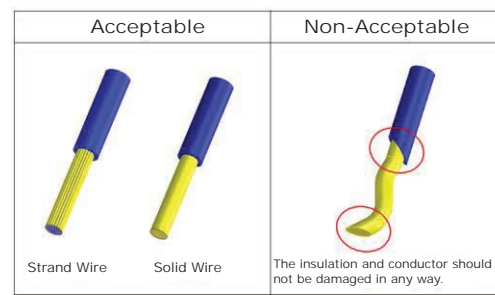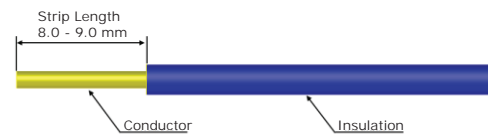
Error code E2 will appear on the sensor display until the WCS successfully joins the network.

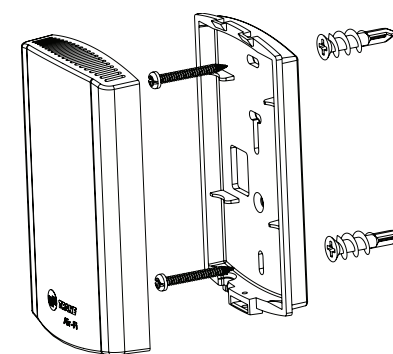*Note: The network must be open to allow the sensor to join.*

Error code E1 will be displayed until the sensor associates to the controller.

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5 Wire Recommendation for External Sensor Cable

- Up to 100' low capacity cable. (25 pf/ft or less).
- 22 AWG wire recommended. (Will accept 18 - 24 AWG).
- Strip back 5/16" of insulation.
- Insert bare wire into connector until it "clicks".
- Tug on wire to ensure fully seated.
- To remove wire, press down on tab, pull wire out.

Strip Length 8.0 - 9.0 mm

Conductor   Insulation

Acceptable	Non-Acceptable
Strand Wire Solid Wire	The insulation and conductor should not be damaged in any way.

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6 Secure the Backplate to a Mounting Surface

Note: To comply with FCC and IC regulations, do not mount this sensor within 20 cm of any other radio device including other WCS sensors.

Mount sensor outside of refrigerator or freezer. Run a cable from the sensor to the thermistor probe mounted on the inside.
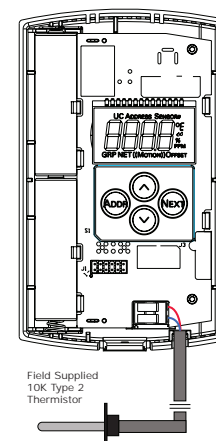
Field Supplied 10K Type 2 Thermistor

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7 Testing WCS-to-WCI Signal Strength and Battery Life

From the blank or error screen, press the **UP** arrow to display signal strength and the **DOWN** arrow to display battery strength.

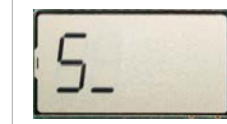| S	An "S" indicates signal strength.
b	A lowercase "b" indicates battery life.

Symbols:

These symbols follow the S or b:

- **S -** Excellent signal quality (Equals green link on the Tracer TU network health map)
- **b -** 100-50% battery life remaining

- **S -** Satisfactory signal quality (Equals yellow link on the Tracer TU network health map.)
- **b -** 50% - 3% battery life remaining

- **S -** Poor signal quality resulting in unreliable communication (Move sensor or WCI to a better location, if necessary.)
- **b -** Less than 3% battery life remaining.
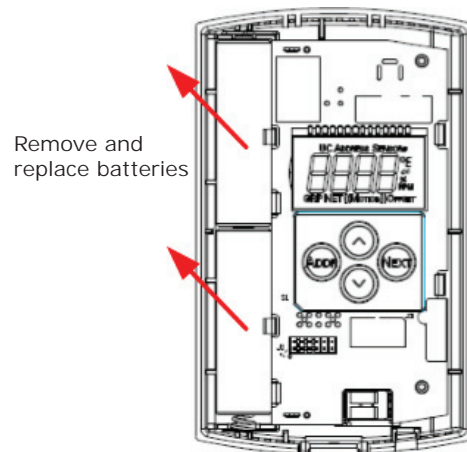
Changing the Batteries

Remove the cover as shown in panel 2. Remove the cells. Dispose of used cell promptly. Keep away from children.

> **⚠ CAUTION**
>
> **Avoid Risk of Fire!**
> To reduce risk of fire, use only Energizer L91 lithium batteries.

> **⚠ CAUTION**
>
> **Fire Hazard!**
> The cells used in this device may present a fire or chemical burn hazard if mistreated. Do not disassemble, heat above 100°C (212°F), or incinerate.

Remove and replace batteries

Note: Batteries will last over 15 years in typical locations. Replace with Energizer L91 batteries.

Manually Associating a Sensor to a UC

Pressing the **UP** arrow while on a blank or error screen forces the sensor to attempt a manual association to a UC. This is indicated by rotating segments on the display. After the manual association is accomplished, the signal strength is displayed. However, if the manual association fails, the unit displays an error code.

Note: The network must be open to allow a sensor to join.

Here is an example of excellent signal quality:
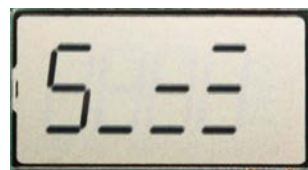
Pressing the **DOWN** arrow while on a blank or error screen will show the battery strength.

Here is an example of 100 - 50% battery life remaining:
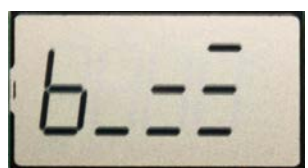
Display Sequence

Pressing the **NEXT** button repeatedly will display the following settings in this order:

1. Blank Screen or Errors
2. Temperature (Space or External)
3. Temperature Calibration Offset
4. % Relative Humidity (Optional)
5. Humidity Offset (Optional)
6. Motion Test (Displayed but not Functioning)

1. Blank Screen or Errors

This is the "Home" screen. It will be blank if there are no errors. If errors are present, it will show the error number.

Home screen with no errors

Home screen displaying an error code

See "Error Codes" (Panel 6) for causes and solutions.

2. Temperature (Space or External)

Use the **UP** or **DOWN** arrow to toggle between °C and °F.
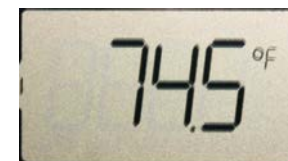
Note: when external temperature probe is attached, the external temperature will be shown. If no external temperature probe is attached the space temperature from the internal sensor will be shown.

3. Temperature Calibration Offset

The temperature calibration offset is adjustable in increments of 0.1 °F or 0.1 ° C to a maximum of ±3.6°F or ±2° C). Use the **UP** and **DOWN** arrows to adjust the offset.
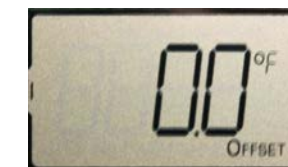
4. % Relative Humidity

(Available as a field installed option.)

Note: Optional Humidity module will only read the space humidity, not external humidity.

5. Humidity Calibration Offset

The humidity calibration offset is available if the RH module is installed on the WCS. You can adjust the humidity calibration offset in increments of +/- 0.1% RH to a maximum of +/- 5.0% RH. Use the **UP** and **DOWN** arrows to adjust the offset.

Agency Listings and Compliance

The European Union (EU) Declaration of Conformity is available from your local Trane® office.

Note: To comply with FCC and IC regulations, do not mount this sensor within 20 cm of any other radio device including other WCS sensors.

Sensor Behavior

1. If no external sensor is connected, the internal temperature sensor value is displayed. When you connect an external sensor, the sensor will automatically detect it and start reading and displaying the external sensor value within about 60 seconds. However, if the external temperature sensor is connected and being displayed, and then disconnected while the sensor is running, the display will change to dashes (- - -). It will not automatically change to the internal temperature sensor. You must either reconnect the external sensor or cycle power to the sensor to get it to start reading the internal temperature sensor.
2. If you have more than one sensor associated to the same unit controller, by default the temperature values will average and be displayed as Space Temperature Local. This default temperature averaging is undesirable if using the external sensor for refrigeration or freezer monitoring and a space temperature sensor. Some work will be required in Tracer TU to create a new point and remove the refrigeration temperature from space temperature averaging. See "WCS-SB/R Refrigerator Temperature Sensor Setup" and "WCS-SB/R Refrigerator Sensor plus Two Averaged Space Temp Sensors Setup Instructions" section in BAS-SVX40*.
3. Starting with SC+ version 5.10, it is possible to associate wireless WCS sensors directly to SC+. If using a WCS-SB/R sensor to monitor a refrigerator or freezer we recommend associating the sensor directly to the SC+ as a way to avoid the extra TU setup work described in #2. Use Tracer Synchrony v.5.10 or later to add the sensor to the SC+. See HUB article "How

to connect Air-Fi Wireless Sensors (WCS-) directly to SC+ WCI (coordinator).
4. WCS-SB/R sensor will not have full support from BCI controllers because you cannot create points to enable seeing the refrigeration or freezer temperature.
5. When installing a WCS-SB/R sensor in a refrigerator or freezer where the temperature may fluctuate rapidly, it is recommended to use a thermo buffer to slow down the rapid temperature change which will help preserve the battery life.
6.

Remote Sensor Input Resolution	
Temperature Input Range	**Resolution(a)**
-10 °F to 80 °F	≤ 0.2 °F
-11 °F to -30 °F and 81 °F to 100 °F	≤ 0.3 °F
-31 °F to -40 °F and 101 °F to 122 °F	≤ 0.4 °F
-41 °F to -58 °F	≥ 0.4 °F

(a) Resolution does not include field supplied 10K Type 2 thermistor tolerance.

Error Codes

Possible cause	Explanation/Resolution
Sensor is not associated with UC (**E1**)	• Verify that the unit controller and WCI firmware are up to date. • The configured address in the sensor does not match the dials of a UC for any WCI in the same wireless network. Re-associate the sensor with the WCI by correcting the UC address in the sensor. WCI　　WCS UC ADDRESS　=　UC ADDRESS 341 Match to UC
Sensor has not joined the network (**E2**)	• Verify that the network is open. • Normal for sensor configured with GRP-NET 0-0. • Verify that the sensor has the correct group (GRP) and network (NET) addresses. • Verify that the sensor is within radio range. • If the sensor has previously joined the network, verify that WCIs in range are powered up. From the blank screen or error screen, press the **UP** arrow to force manual association/joining. Otherwise, set the correct **GRP** and **NET** addresses and open the wireless network to allow the sensor to join.
Sensor drains battery current during sleep (**E3**)	If the error persists and batteries drain prematurely, the sensor may have defective components and need to be replaced.
Internal failure (**E7**)	Replace the sensor.
Wrong sensor address (**E8**)	The configured sensor address does not match the sensor address that is expected by the UC. Use Tracer TU to configure the UC for the quantity of sensors it should accept, if more than one.
Duplicate sensor (**E9**)	Another sensor with the same configured UC address and sensor address is already associated with the UC. Resolve the duplication. This may involve waiting (up to 51 minutes) for the UC to forget the address of a failed sensor.