TrickleStar TS1921 Occupancy Sensor Installation Guide

TS1921 Occupancy Sensor
Installation Guide

Welcome!
Thank you for choosing the TrickleStar TS1921 Occupancy Sensor.
This Occupancy Sensor is an accessory for the TrickleStar Wi-Fi Smart Thermostat. The Sensor helps the Thermostat to maximize comfort to your room as the sensor can detect occupancy as well as measure the temperature in the room. Maximum 6 sensors can be connected to the thermostat via Bluetooth.
This Installation Guide describes how to install the Sensor and pair it to a TrickleStar Wi-Fi Smart Thermostat.
If you have any inquiries about TrickleStar products or need technical support, visit our website for tutorials, videos, and Frequently Asked Questions (FAQ). You can also contact us by email or phone.

Website: www.tricklestar.com
Email: customer.service@tricklestar.com
Toll-Free: 1-888-700-1098

Instruction Videos

If you want to see the Installation Instructions as videos, visit our YouTube channel: https://www.youtube.com/user/TrickleStarUS/

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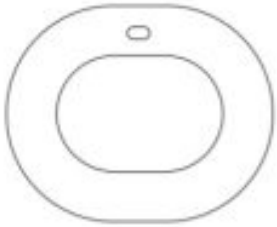
What is in the box?



Occupancy Sensor

Stand

Double-sided adhesive

QR code sheet

Lithium cell battery (CR2477X x 1)

Fig 4-A

Sensor Overview

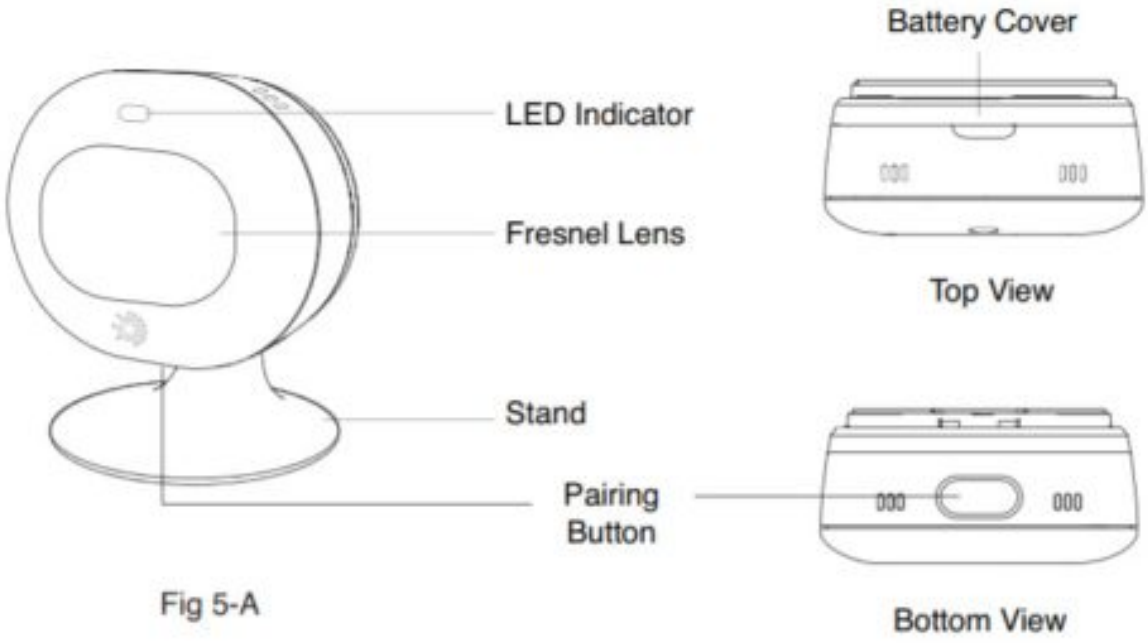


Fig 5-A

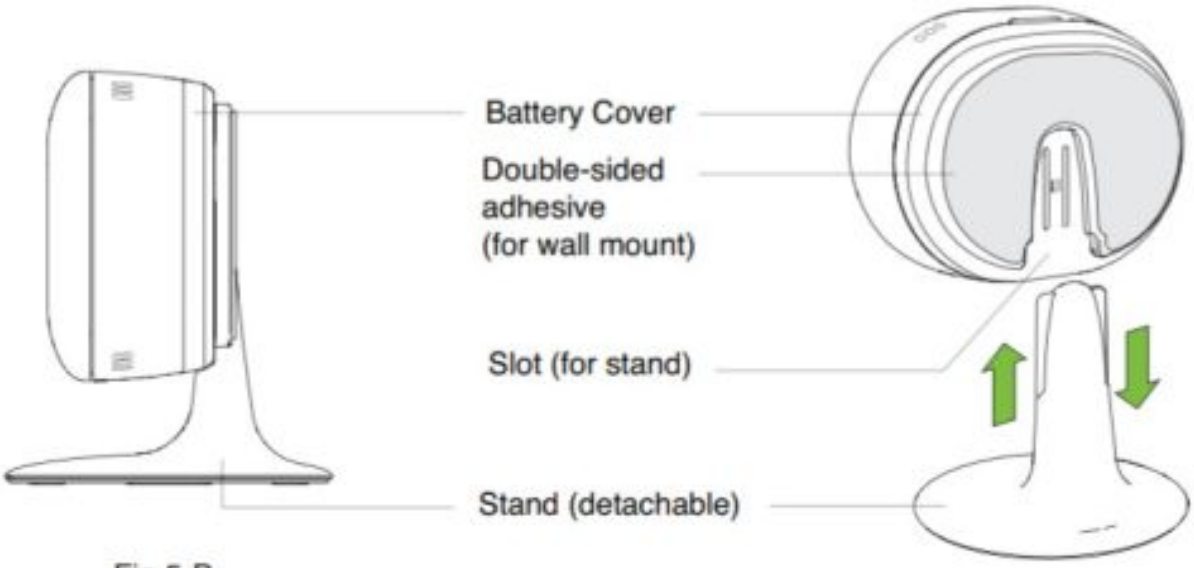


Fig 5-B

Pairing the sensor

Step 1: Remove Battery Insulator

To power up the sensor, gently remove the sensor back cover to detach the cover from the clips. You will see an insulator on the battery “REMOVE BEFORE USE”. Lift the battery by pulling on the battery insulator and gently peeling off the battery insulator.

Insert the battery back into the sensor’s battery compartment. Reassemble the sensor back cover.

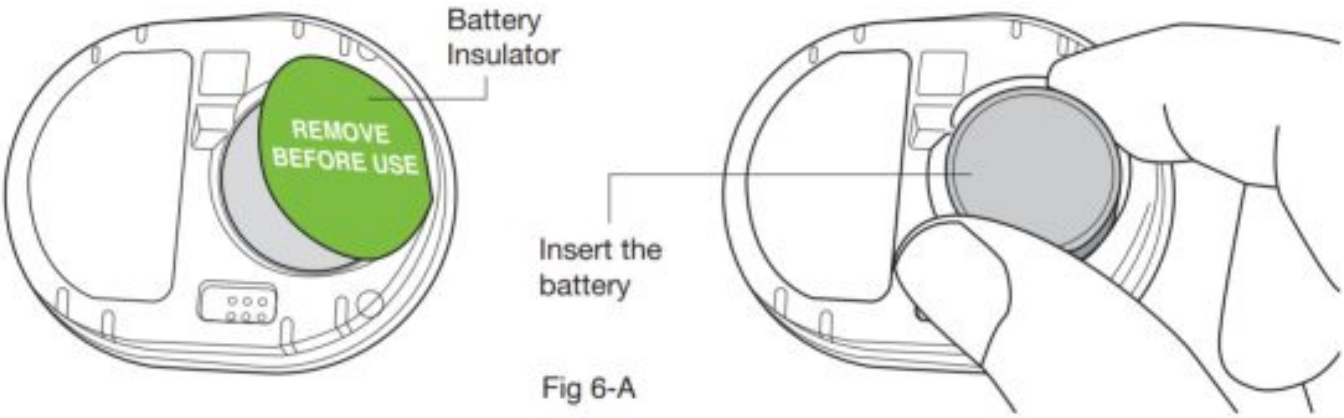


Fig 6-A

When the Sensor is powered up, it enters Pairing mode automatically. The LED starts blinking and continues blinking for up to eight minutes.

Fig 6-B

If the LED does not blink after the Sensor is powered up or after battery insertion or the Sensor exits Pairing mode after eight minutes, hold the Pairing Button for 2 seconds to re-initiate pairing to the thermostat. The sensor will enter Pairing mode again and broadcast itself for 8 minutes for thermostat scanning. LED will blink briefly in the mode.

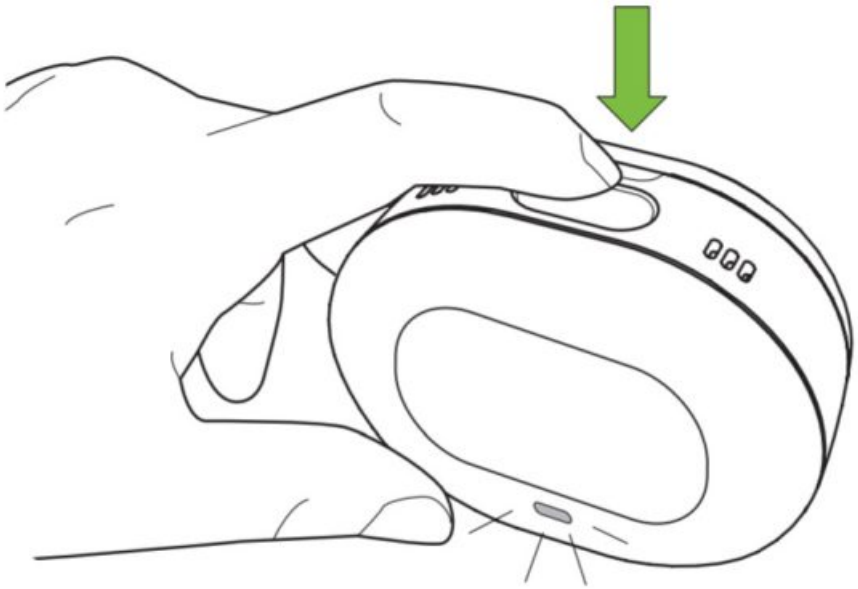


Fig 7-A

Step 2: Add Occupancy Sensor to the system

1. Log in to your TrickleStar Portal account at: **portal.tricklestar.com** You can also use the QR code here.

   http://portal.tricklestar.com
2. On the Dashboard screen, select Devices, then click on your Thermostat Name to enter the Thermostat page.
3. Select Sensors on the left panel, then click on “+” to add a new sensor.
4. Enter the name of your sensor.
5. Press Next once your sensor LED is blinking to complete the pairing process. This will initiate a scan function and the Thermostat will scan for sensors in range. Sensors that are detected will be listed by their MAC addresses. Users can select from the list if there is more than one sensor to be paired and add the sensors. Note: It may take up to 30 seconds to detect and pair a new sensor.
6. Once your sensor is successfully added, the Connection Status, Temperature, and Occupancy State will be “Not Used”. Wait for 1-2 minutes then Sensor Data will be auto-updated or you may click on the “Refresh Sensor Data” button to update the sensor readings.

Fig 8-A

If pairing is successful, the LED will blink twice. Then, the Bluetooth indicator appears on the Thermostat display.

Fig 9-A

If pairing is unsuccessful or time-out after 8 minutes, the LED will stop blinking and the Sensor will go into standby mode. In Standby mode, the connection between the sensor and the thermostat is not set up. All the sensor circuits will be shut down to save power. Hold the Pairing Button for 2 seconds to initiate the Pairing mode again.

Note: If the sensor is previously registered, it will be added to the thermostat network automatically in Pairing mode. If disconnected, the sensor will change to Pairing mode automatically and try to reconnect with the thermostat. Users can also press the pairing button to restart the sensor in Pairing mode.

Mounting the Sensor on the wall

Before you mount the Sensor on the wall, be sure to check that:

- The sensor is connected to the Thermostat.
- The sensor is mounted away from direct heating or cooling sources, such as a fireplace or an air ventilator.

Attach the double-sided adhesive to the Sensor. Then, mount the Sensor at a height of approximately 5 ft. (1.5 m) on the wall.

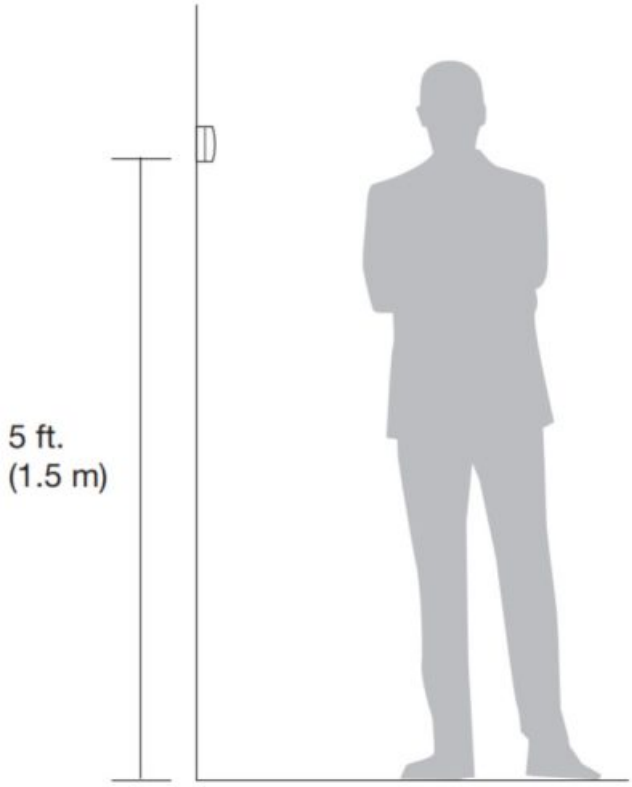


Fig 10-A

Placing the Sensor on a flat surface

Before you place the Sensor on a flat surface, be sure to check that:

- The sensor is connected to the Thermostat.
- The sensor is placed on an even surface and at a safe location.
- The sensor is facing the direction in which you want to detect occupancy.

Attach the stand to the Sensor. Then, place the Sensor on a flat surface.

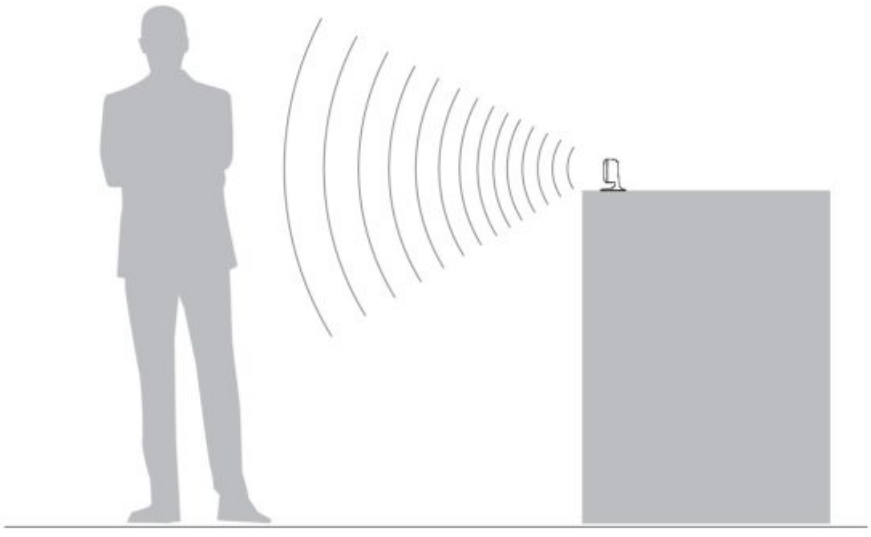


Fig 11-A

Ready for use

Normal mode

The Occupancy Sensor is now ready for use. In Normal mode, the connection between the sensor and the thermostat is set up. The sensor will automatically update the Connection Status, Room Temperature, Occupancy State, and Sensor Battery Level in the Tricklestar Portal and Tricklestar App.

You can enable or disable the sensor detection LED operation in Normal mode through the TrickleStar Portal Sensor settings (Occupancy Detection LED Enabled). This option also disables the sensor detection LED by default, where the sensor LED will not blink when it detects a movement. If the LED is enabled it will blink once when there is movement detected within the 30-second interval.

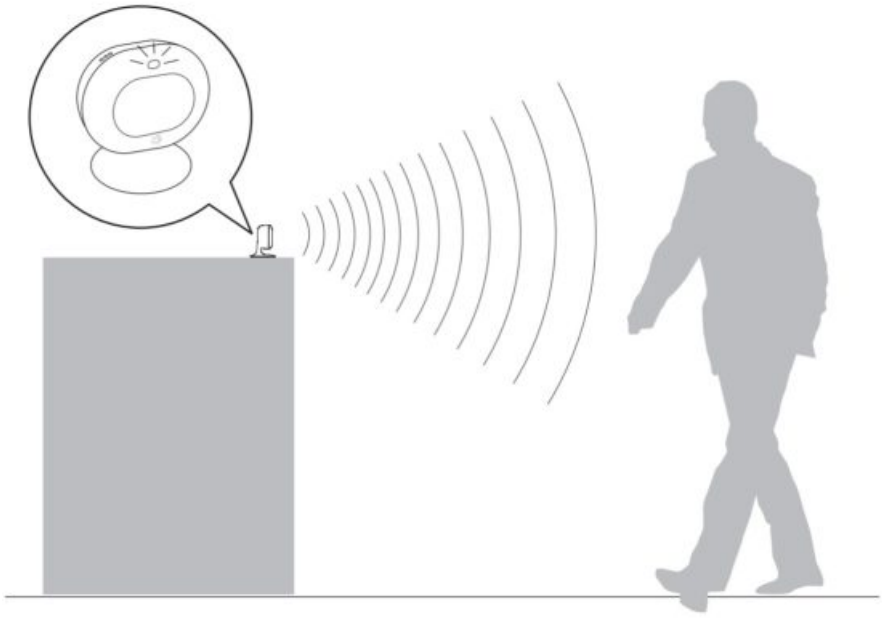


Fig 12-A

Occupancy Detection

The occupancy sensor is equipped with an occupancy detection function. It uses PIR sensor to detect the infrared signal of moving bodies. You can also enable or disable the occupancy detection function for each sensor individually through the Portal.

You can adjust the Absence Detection Sensitivity and Occupancy Detection Sensitivity, and enable or disable the Occupancy Detection feature of the thermostat. If disabled, regardless of any sensor output and individual sensor settings, the thermostat will ignore the occupancy status received and will not
automatically change the Mode. However, it will not shut off the sensor detection circuit and you can still check the occupancy states for each sensor through the Portal or App.

The occupancy detection feature is enabled if:

a) The Occupancy Detection Enabled is set to Yes at the Portal.
b) The Sensor Enabled of each individual sensor is set to Yes at the Portal.
c) The Sensor Status in the Portal is Connected.
d) The active Mode is Home or Away (not Sleep).
e) The Thermostat is on Schedule mode, not on Temporary/Permanent/Vacation Hold or when user has changed the Mode manually.

Changing Occupancy Detection settings on the Portal

Fig 13-A

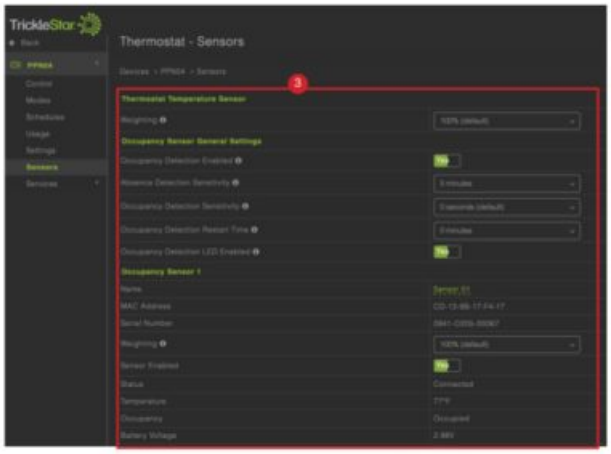


Fig 13-B

Occupancy detection algorithm

The thermostat changes the Mode automatically based on the received occupancy states from the sensors:

If the Mode is “Home”

You can set the Absence Detection Sensitivity as shown in Fig 13-B (Thermostat Sensor Settings).

When the occupancy sensor detects no movement within the Absence Detection Sensitivity time set, the Mode will automatically change to “Away (set by the sensor)” and follow your preset Away Mode setting as shown below:

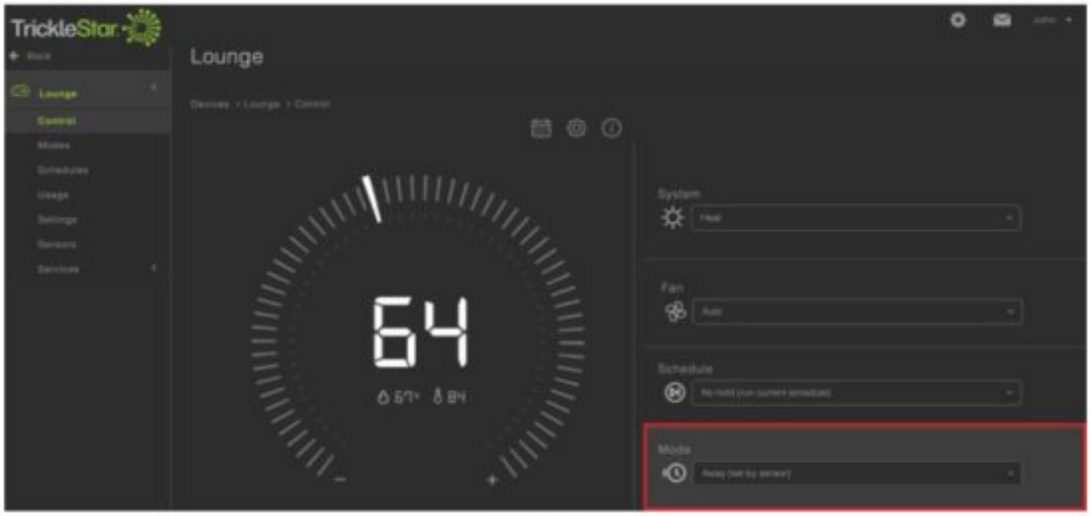


Fig 16-A

Fig 16-B

If the Mode is “Away”
You can set the Occupancy Detection Sensitivity as shown in Fig 13-B (Thermostat Sensor Settings). When the occupancy sensor detects a movement within the Occupancy Detection Sensitivity time set, the Mode will automatically change to “Home 1 (set by the sensor)” and follow your preset Home 1 Mode setting as shown below:

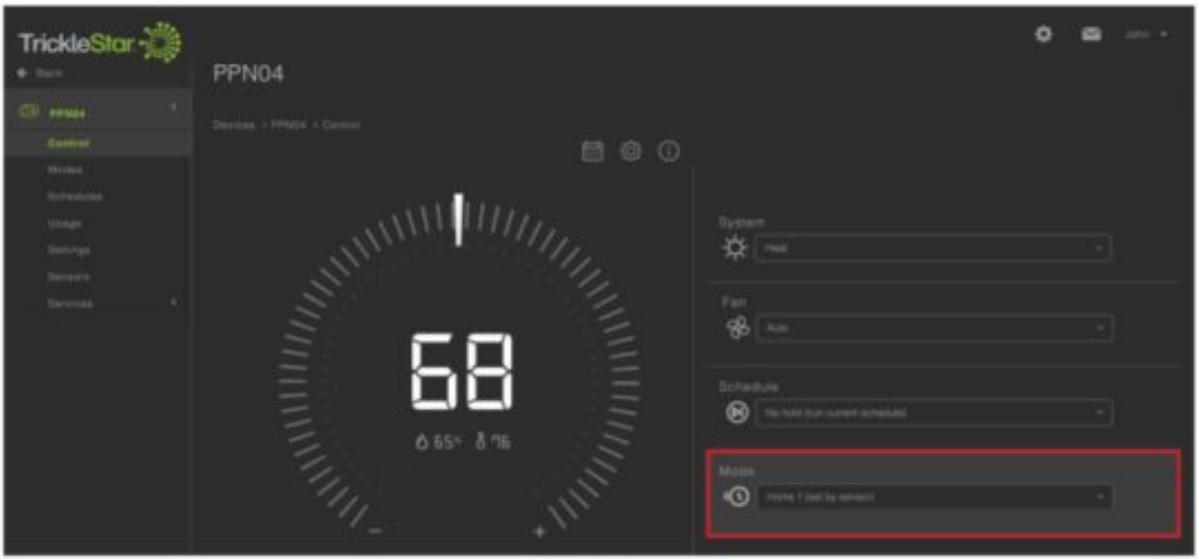


Fig 17-A

Fig 17-B

If the Mode is “Sleep”
The thermostat will not change the Mode.
To cancel the Mode change
Press jog dial for 3 seconds to return to the Current Schedule.

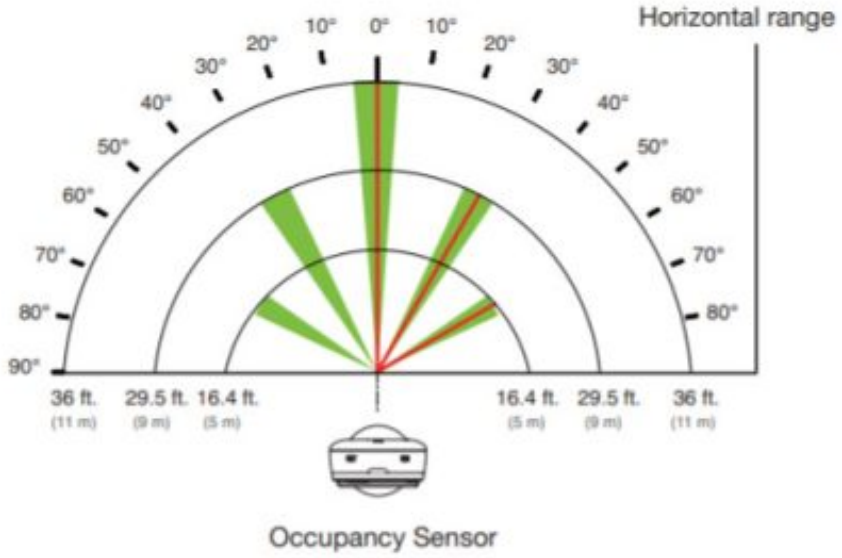
Connectivity

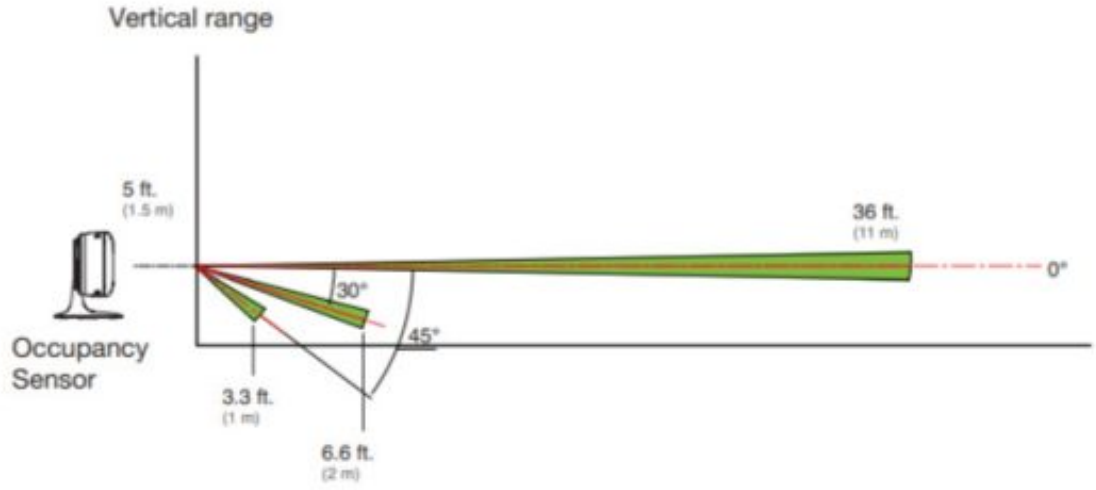
- Bluetooth Low Energy (BLE v4.2) connection with the TrickleStar Wi-Fi Smart Thermostat
- Connection range: 98 ft. (30m)
- Data refresh rate: 30 seconds (Connection Status, Temperature, Occupancy State, Battery Voltage)

Specifications

Temperature range
Measurement : 32°F to 104°F (0°C to 40°C)
Sensitivity : 0.1°F (0.05°C)
Accuracy : ±1°F (60°F to 80°F), ±2°F (any others)
Operating : 32°F to 122°F (0°C to 50°C)
Humidity range
Operating : 5% to 95% RH (non-condensing)
Storage
Temperature : -4°F to 140°F (-20°C to 60°C)
Humidity : 5% to 95% RH (non-condensing)

Product dimension
(Width/Height/Depth) : 2.4 in. x 1.9 in. x 1.1 in. (60.5 mm x 48.3 mm x (Approx.) 28.7 mm) (without the stand) 2.4 in. x 2.5 in. x 1.1 in. (60.5 mm x 64.5 mm x 28.7 mm) (with the stand)
Product weight
(Approx.) : 1.4 oz. (40.7 gm)
Battery
Battery voltage: Yes
measurement
Battery voltage : 0.1 V
measurement resolution
Battery warning level: 2.6 V
Battery critical level: 2.3 V
Battery life: 2 years
Detection Range
Occupancy : Passive Infrared (PIR)
detection method
Horizontal : 36 ft. (11 m) (0°), 29.5 ft. (9 m) (+/- 30°), 16.4 ft. (5 m) (+/- 60°)
Vertical : 6.6 ft. (2 m) (30° downward), 3.3 ft. (1 m) (45° downward)





Based on the following test condition:

- Room temperature: 77°F (25°C)
- Target temperature: 98°F (37°C)

- Sensor location: 5 ft. (1.5 m) above ground level
- Target height: 5.2 ft. (1.6 m) or above and moving at 3.94 in./s (10 cm/s) across the sensor

Environmentally-friendly features

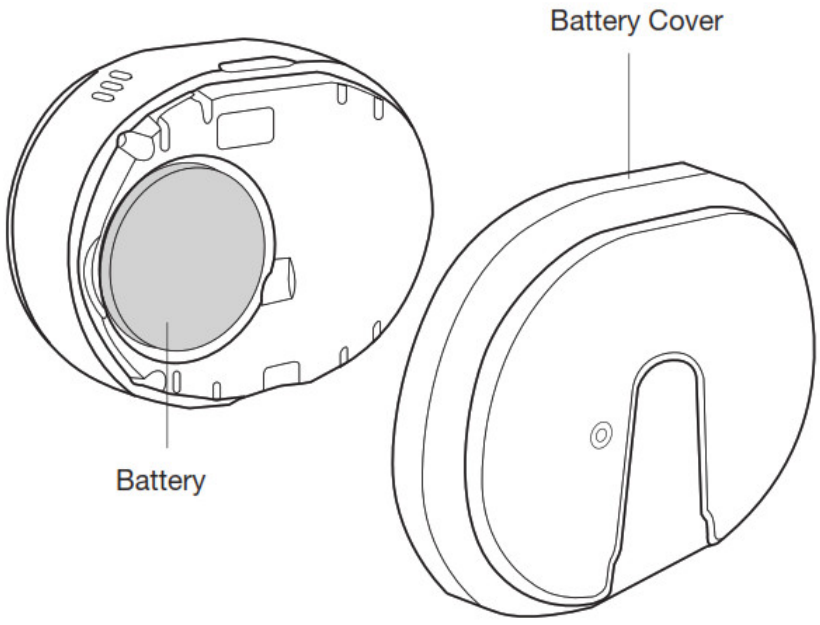
- Recyclable packaging
- Mercury-free
- Arsenic-free
- PVC-free
- PBT-Free

Approvals
FCC, IC (REL) – Canada, UN 38.3, RoHS compliant

CA PROP 65
California Proposition Compliant

Replacing the battery

There is no low battery indication on the sensor. The Portal or App will send notification to remind you to change the sensor battery when the battery voltage drops to warning level (2.6 V) or critical level (2.3 V). When the voltage drops to Battery critical level or below, normal operation of the sensor cannot be guaranteed.
Remove the Battery Cover and replace the battery in the battery compartment. Put back the Battery Cover. The Sensor will automatically power up and reconnect to the TrickleStar Wi-Fi Smart Thermostat.



Troubleshooting

Symptom	Solution
The Occupancy Sensor does not pair with the TrickleStar Wi-Fi Smart Thermostat	• Check that the battery insulator “Rl has been peeled off completely from continuously. • Check if the Sensor is within the cc • If the sensor LED does not flash, h ng to the Thermostat.
When you have added the Occupancy Sensor but the Connection Status, Temperature, and Occupancy The state is “Not Used”	Wait for 1-2 minutes then Sensor Da efresh Sensor Data” button to updat

If the problem persists, you can refer to the Frequently Asked Questions (FAQ) section on our website, or email or call our technical support:
Website: **www.tricklestar.com**
Email: **customer.service@tricklestar.com**
Toll-Free: 1-888-700-1098

FCC Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that nterference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

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.
Changes or modifications not expressly approved by the party responsible for compliance could void the user’s authority to operate the equipment.

IC Statement

This device complies with Industry Canada’s license-exempt RSS. Operation is subject to the following two conditions:

1. This device may not cause interference; and
2. This device must accept any interference, including interference that may cause undesired operation of the device.

20cm
The distance between user and device should be no less than 20cm.

https://www.youtube.com/user/TrickleStarUS/

For technical support, go to:
Website: www.tricklestar.com
Email: customer.service@tricklestar.com
Toll-Free: 1-888-700-1098

www.tricklestar.com

Documents / Resources

	TrickleStar TS1921 Occupancy Sensor [pdf] Installation Guide TS1921, Occupancy Sensor, TS1921 Occupancy Sensor, Sensor