

Echoflex Installation Guide

Temperature Sensor RTS

Overview

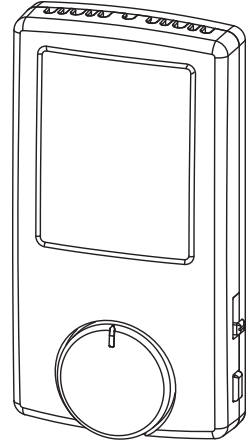
The Temperature Sensor (RTS) uses wireless technology to communicate accurate room temperature from 0°C to 40°C (32°F to 104°F) and relative humidity from 20% to 92%. The sensor provides current and on-change values for target controllers to manage the environment of a space.

The RTS is available in two radio frequencies, 902 MHz and 868 MHz. The core model (RTS-1T) monitors temperature. Additional models are available that also monitor relative humidity (RTS-1H), provide a temperature set point (RTS-1TS), and include all RTS features including fan speed control and an occupancy signal (RTS-2HS).

The RTS is solar powered and can store energy to maintain operation during periods of low light—up to 200 hours in darkness. A CR2032 battery can be used for running tests or backup power assistance, if required. Color LEDs are visible through the solar panel to indicate the sensor's operation.

The RTS is well suited for occupancy-based hospitality applications that require control to power a room or setback temperature control devices.

This document covers installation and tests that apply to all RTS models. The product package includes the sensor and installation guide.



RTS-2HS Model



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Prepare for Installation

To ensure optimal function, consider the installation environment and the following guidelines:

- For indoor use only. Operating temperature -25°C to 65°C (-13°F to 149°F), 5%–92% relative humidity (non-condensing).
- High-density construction materials and large metal appliances or fixtures in the space may disrupt wireless transmissions.
- Install the sensor within range of linked receivers or controllers, 24 m (80 ft). Consider adding a repeater to extend reception range.
- Before linking the sensor, expose it to a good light source for at least five minutes at 200 lux (19 fc).
- Install the RTS with the solar cell facing a light fixture. Ideally, an exposure of four hours of natural or artificial light a day.

Supplies required to install (not provided):

- Two #6 screws, double-sided tape, or Velcro®

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Installation

Use hand tools when installing. Over-torquing with a power tool can damage the sensor. The sensor's removable back plate can be mounted on most surfaces.



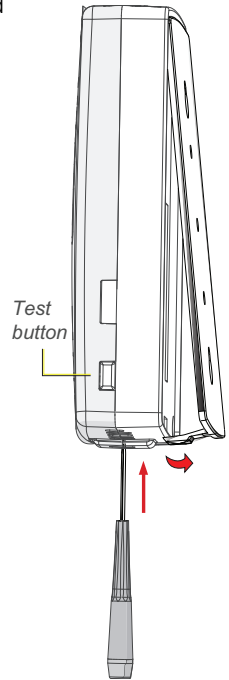
Note: Consider linking the RTS while you have access and before replacing the cover. See [Link to a Controller on page 5](#).

Three different mounting options are available:

- Flush-mounted to a firm surface with screws and wall anchors (not provided).
 - Using double-sided tape or Velcro (not provided).
 - Over a standard, Class 2 low-voltage electrical box. Keyholes in the back plate mate with standard screw patterns.
1. Insert a flatblade screwdriver into the slot on the key tab to separate the back plate from the sensor.
 2. Mount the back plate with the plastic key on the bottom.
 3. Align the sensor over the back plate and press the lower edge until it clicks in place.
 4. Test for adequate light levels. See [Light Level Test on page 6](#).



Note: The RTS can operate with low light exposure, but for best results, it should be mounted where it receives four hours of natural or artificial light daily.



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Sensing Operation

The following features are available depending on the RTS model. The receiving control equipment that the sensor is linked to uses its configurable settings and interprets messages sent by the RTS.

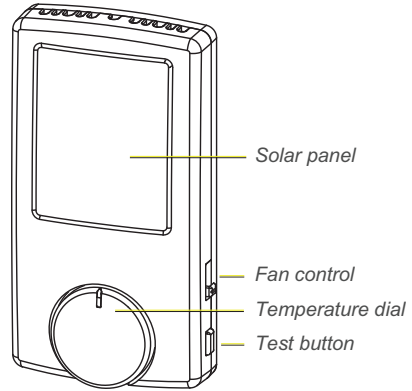
Temperature and Humidity

Monitoring: When there is sufficient power, 100 lux (9 fc), the sensor records the temperature, temperature set point, and humidity values every 10 seconds. If the light source is poor, the sampling interval increases to every 100 seconds. If a period of low light reaches 24 hours, the interval increases to every 200 seconds.

Temperature Set Point: Create an offset from the temperature set point value that is set on the receiving controller; rotate the dial counterclockwise to lower and clockwise to increase. The receiving control equipment interprets the set point value to an offset range. For no offset, point the arrow on the dial straight up.

Fan Speed Control: (RTS-2HS model only) Adjust the fan speed by selecting a setting: A (auto), O (off), 1 (low), 2 (med), 3 (high) for the receiving control equipment to interpret.

Test Button: (RTS-2HS model only) Activate an occupied room state by pressing the **[Test]** button on the right side of the sensor. This feature engages all of the automated settings configured for the occupied space, such as lights and heating. The receiving control equipment determines the settings and timers.



Transmission Rate

The RTS transmits a message when:

- 10 sample values have been recorded.
- The fan speed switch or the **[Test]** button are used.
- The difference from the last transmitted temperature value is greater than 0.3°C (0.5°F).
- The difference from the last transmitted humidity value is greater than 3%.

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Link to a Controller

The compatible target controller must be installed, powered, and within range of the RTS.



Note: *The linking process can be used both to link a device to a controller and to unlink a linked device from a controller.*

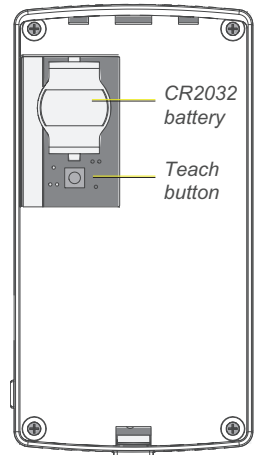
1. Press the tab on the bottom edge of the sensor body to remove the back plate and access the **[Teach]** button.
2. Press the **[Learn]** button on the controller to activate Link mode. If necessary, refer to the controller product documentation.
3. Press the **[Teach]** button on the sensor once to send a link message. An LED blinks to confirm a successful transmission.
4. Deactivate Link mode on the controller before attempting to link to any other controllers.

Battery Power

A battery is not required for normal operation if the sensor receives adequate natural or artificial light. See the table in the [Light Level Test on the next page](#). A CR2032 battery (not provided) may be required to run installation tests or when the artificial light is insufficient to power the sensor.

To replace the battery:

1. Remove the sensor from the back plate by pressing the key on the lower edge of the sensor body.
2. Use a flatblade screwdriver to remove the old battery from the holder.
3. Insert a new battery with the positive side (+) facing up and press in place.
4. Replace the back plate and snap it in place.



Sensor Back View

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Tests and Settings

Use the **[Test]** button and color LEDs to navigate the Tests and Settings menu. The **[Test]** button is on the side of the sensor and the LEDs display through the right side of the solar panel.

The menu times out after two minutes of inactivity.

Light Level Test

The Light Level Test quantifies the amount of energy produced by the solar cells and confirms a good installation location.

1. Press and hold the **[Test]** button until the green LED is displayed. Release the button to enter the menu and display the first item, the blinking green LED.
2. Press and hold the **[Test]** button again until the green LED stops blinking. The green LED then repeats a number of blinks according to the detected light level. The sensor reevaluates the light level every two seconds.

Blinks	Ambient Light Lux (Footcandles)	Time to Fully Charge	Discharge Time
0 or 1	< 15 (< 1.4)	Non-operational	N/A
2	15–50 (1.4–4.6)	Operational	N/A
3	50–100 (4.6–9.3)	24 hours	100 hours
4	100–200 (9.3–18.6)	12 hours	150 hours
5	200–400 (18.6–37.2)	6 hours	200 hours

The time to fully charge the storage capacitor is from a non-operational condition. Discharge time indicates how long a fully charged sensor operates in the dark. The test repeats every two seconds and runs for 100 seconds. To exit before the time-out, press and hold the **[Test]** button.

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Compliance

For complete regulatory compliance information, see the Temperature Sensor datasheet at echoflexsolutions.com.

FCC Compliance

Echoflex Temperature Sensor

(For any FCC matters):

Echoflex Solutions, Inc.

3031 Pleasant View Road

Middleton, WI 53562

+1 (608) 831-4116

echoflexsolutions.com

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.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. 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. Any modifications or changes to this product not expressly approved by Electronic Theatre Controls, Inc. could void the user's authority to operate the product. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at their own expense.

Contains FCC ID: TCM300U

ISED Compliance

This device contains a license-exempt transmitter/receiver that complies with Innovation, Science, and Economic Development Canada's license-exempt RSSs. Operation is subject to the following two conditions:

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

Contains IC ID: 5713A-STM300U

Conformité ISDE

Cet appareil contient un émetteur/récepteur conforme aux CNR d'Innovation, Sciences et Développement économique Canada (ISDE) applicables aux appareils radio exempt de licence. Son fonctionnement est soumis aux deux conditions suivantes:

1. L'appareil ne doit pas produire d'interférences.
2. L'utilisateur de l'appareil doit accepter toute interférence, même si l'interférence est susceptible d'en compromettre le fonctionnement.

Contient ID IC: 5713A-STM300U

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