# RC2105 Series 2000 Wireless Steam or Hot Water Receiver-Controller Operating Manual

## General Description

The RC2105 Series 2000 wireless heating system controller utilizes reliable Spread Spectrum Radio technology. Together with other existing Trs Systems WT2630A wireless space sensors and OST2630 wireless outside air temperature (OSA) sensors, the RC2105 controller will control the boiler system based on the average space temperature (up to 12 zones) and wireless outside air temperature. If the OSA temperature is below OSA set point and the average temperature is lower than the average space temperature set point, the heating system will be activated after a preset time delay (adjustable) by a relay output from the RC2105 controller to the boiler control system. The RC2105 provides maximum flexibility with extensive system adjustability, sensor selectability, alarms and reliable wireless sensor capability.

The RC2105 Series 2000 Controller is also capable of communicating **wirelessly** with the Trs Systems RM9500 Series 2000 Receiver/Server. This enables the user to control and monitor their buildings remotely through the Local Area Network and/or the Internet.

The maximum radio transmission distance is dependent on building type. The maximum open-air transmission distance is one mile. In a typical commercial building with steel I-beam construction, concrete floors with reinforcing rod, and metal stud walls, it can be expected that transmissions will penetrate vertically through floors and horizontally through 200 to 500 feet of walls, furniture and air. Generally a wireless system will cover at least three floors - one floor above and one floor below the receiver location.

## Features

- Averages inputs from up to 12 wireless wall sensor modules
- wireless outside air temperature input
- Two temperature set points (day/night)
- Outside air temperature override
- Sensor Enable – Mini-switch selects remote space sensors to be included in the average temperature computation
- Adjustable time delay for control output to prevent short cycling of equipment.
- Manual (local)/Auto system switch
- Automatic manual mode on power failure
- Summer/Winter mode switch
- Built-in Real Time Clock
- Optional external time clock input
- Wireless remote control and monitoring
- Field Adjustable parameters:
  - Space temperature set point
  - Space set point differential
  - Outside air temperature set point
  - OA temperature set point differential
  - Day/night setpoints & schedule
  - Time of day
  - Output time delay
  - Sensor high/low limit range (excludes a particular sensor from the average temperature calculation if its temperature is beyond the set point limit range)
- LED display:
  - Average space temperature
  - Space temperatures included in the average calculation
  - Space temperature set point & differential
  - Night mode set point offset
  - Time of day & day/night schedule
  - Outside air temperature
  - Outside air set point & differential
  - Individual space temperature(s)
  - Low Battery, Lost Sensor & Space Temperature Low Limit Alarms
  - Sensor limit range for calculation
- High intensity LED display for mechanical room or low ambient lighting environment
- Low battery and lost sensor alarm indication and alarm relay output
- Space temperature low limit alarm indication and alarm relay output
- Reliable Spread Spectrum technology

## Specifications

Input Voltage:
- 24 VAC 60 Hz (+10%/-15%)

Power Consumption
- 3 VA Maximum

Dimensions:
- 9-3/8" x 4-5/8" x 2-3/8"

Operating Conditions:
- 15 F to 125 F
- 5 to 95% non-condensing

Sensor Indicating Ranges:
- Outside air sensor, -40 deg to 160 deg F
- Space Temperature, 32 deg to 104 deg F
- Accuracy, +/- 1 deg F

Boiler System Control Output:
- Three terminals for heating system enable output
- (Common, Manual & Auto) – SPST N.O.
- Pilot Duty (1 amp max. at 24VAC)

Low Battery/Lost Transmitter Alarm Output:
- Pilot Duty Relay Contact (SPST N.O., 1 amp max. at 24 VAC)

Low Limit Alarm Output:
- Pilot Duty Relay Contact (SPST N.O., 1 amp max. at 24 VAC)

Set Point Adjustment Range
- 35 deg F to 95 deg F

Case
- NEMA4 Enclosure (Light Gray)
- Transparent Cover
- UL94V-2 Flammability Rating

Network Connections:
- Ethernet – RJ45, Cat. 5 cable for controller setup

RF Characteristics
- Operating Frequency Channel
  - 923.58 MHz
- Receiver Sensitivity (avg. power)
  - –107 dBm
- Jam Resistance
  - 60 dB out-of-band rejection

Approvals
- FCC part 15.247

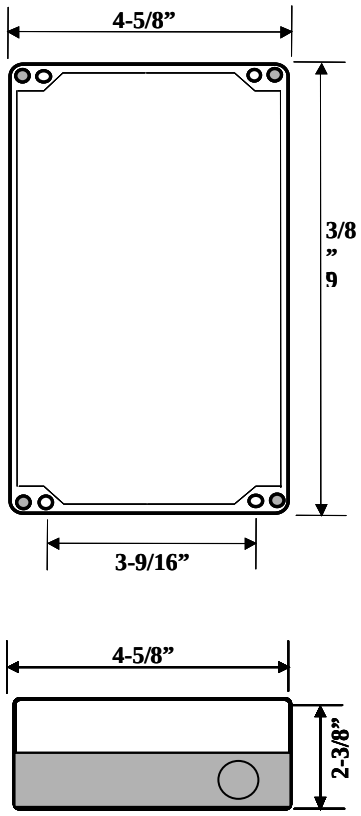


**Figure 1**

## Ordering Information

| Model | Description |
|---|---|
| RC2105YA-2K | Controller supports up to 4 WT2630A wireless space sensors |
| RC2105YB-2K | Controller supports up to 8 WT2630A wireless space sensors |
| RC2105YC-2K | Controller supports up to 12 WT2630A wireless space sensors |

**Other System Components (Order Separately)**

| Model | Description |
|---|---|
| WT2630A | Wireless Wall Temperature Sensor |
| OST2630 | Wireless Compact OSA Temperature Sensor |
| RR2552A | Signal Repeater |

# Installation

The RC2105 Series 2000 Controller is compatible with different Trs Systems wireless sensors. Each wireless sensor will have a unique individual address (or ID) and the RC2105 Controller is pre-configured to work with each wireless sensor's unique address at the factory or distributor location.

Wireless sensor transmitters should be installed within 200 to 500 feet of the RC2105 Controller.

RR1552 signal repeaters can be installed as needed to increase transmission distance between sensors and receivers. The network number of the repeater has to be set to the same network number of the RC2100 controller for the system to operate correctly. Please refer to the RR2552 repeater instruction.

## ⚠ CAUTION

**Sensors, Repeaters and receivers should NOT be installed in the following areas:**

- **Inside metal enclosure/panel**
- **Inside or immediately next to elevator shaft/elevator banks**
- **In front of or immediately next to large trees or a large body of water**

**Transmission distance and performance will be drastically reduced.**

## Mounting

The RC2105 controller should be mounted using four #8 screws (Mounting dimension see figure 1). The controller shall be oriented in an vertical position with the conduit connection at the bottom.

The controller will be pre-configured by the factory or the distributor and the configuration will be recorded on the lower part of the operation display label located inside the cover

## Power Wiring

Connect 24 V 60 Hz to the input terminals using 18 AWG wire.

## ⚠ Caution

**Disconnect power before installation to prevent electrical shock or equipment damage.**

## ⚠ Caution

**Do not use this product in any safety related applications where human life may be affected.**

For WT2630 wireless temperature sensor, OST wireless compact OSA sensor, RR1552A Signal Repeater and the RT1620A remote clock input module, please refer to the respective product specifications for installation information.

## Control Wiring

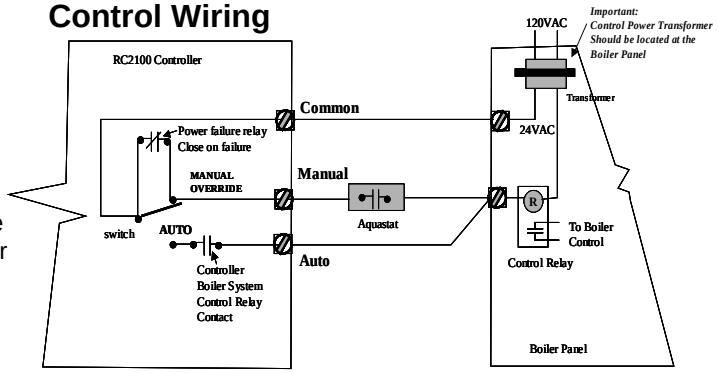


**Figure 2**

# Configuration

The RC2105 controller is pre-configured at the factory or the distributor location. If reconfiguration is needed, please refer to the software configuration manual or call your local distributor

# System Overview

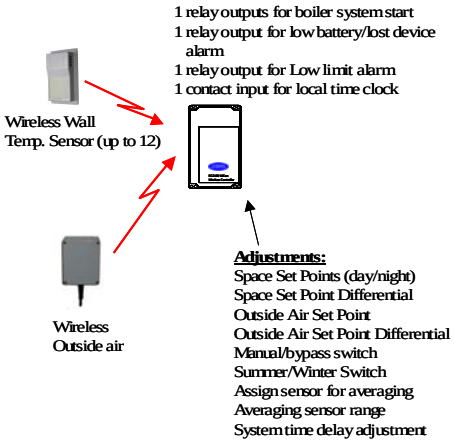


**Figure 3**

Limitation of Liability - Trs Systems' liability shall not exceed the purchase price paid for the products giving rise to any liability. In no event shall Trs be liable for any special, consequential or incidental damages arising in any way from using this product by the customers.

# Description/Operation

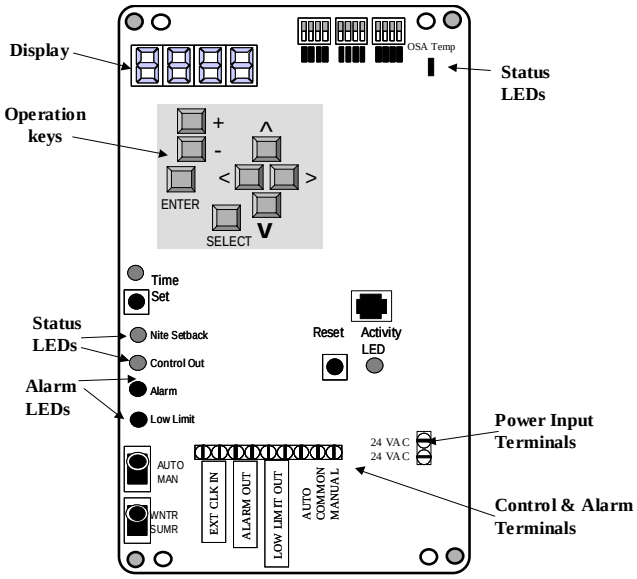


**Figure 4**

## Display

A four digit display and 8 user interface keys are used to display system information and field adjustment of setpoints and field parameters (see Figure 4).

The display of the RC2105 is organized in a tabular format. By using the four scrolling keys (Columns <, >, Rows ∧, ∨) and the select key, The user can view the stored information/parameters.

The Right (>) or Left (<) keys are used to move from column to column. The Up (∧) and Down (∨) keys are used to move within a specific column. Pressing the "SELECT" key will display the value.

For example:
Using the Up (∧) and Down (∨) keys, the display can be scrolled to display "oAt" (Outside Air Temperature). Then press the (SELECT) key to display the actual outside air temperature.

The Plus (+) and Minus (-) and ENTER keys can be used for changing set points, control differentials, time delays, sensor limit range, clock settings, and day/night schedules.

For example:
Using the Up (∧) and Down (∨) keys, the display can be scrolled to display "dSP" (day set point). Then press the (SELECT) key to display the actual day set point temperature. To change the set point, press the Plus (+) or Minus (-) keys to reach the desired temperature and press the ENTER key to store the new setpoint value.

## Display Table

The internal information is organized in 4 columns as shown:

| Column 1 | Column 2 | Column 3 | Column 4 |
|---|---|---|---|
| | | | |
| Ast | dSP | CLOC | trbL |
| oAt | nSb | dAy | nonE |
| S 1 | dIFF | nitE | lOSt |
| S 2 | dLAy | inPt | S1-S12 |
| S 3 | SLr | int | S OA |
| S 4 | oAC | tb | bAtt |
| S 5 | oAd | | S1-S12 |
| S 6 | | | S OA |
| S 7 | | | |
| S 8 | | | |
| S 9 | | | |
| S 10 | | | |
| S 11 | | | |
| S 12 | | | |

The Right (>) or Left (<) keys are used to move from column to column. The Up (∧) and Down (∨) keys are used to move within a specific column.

**Keys:**

**Ast – Average Space Temperature**
**OAt – Outside Air Temperature**
**dSP – Day Set Point**
**nSb – Night Setback Offset**
**dIFF – Space Setpoint Differential**
**dLAy – Output Time Delay**
**SLr – Sensor Limit Range**
**oAC – Outside Air Cutoff S Point**
**oAd – Outside Air Differential**
**CLOC – Time Clock**
**dAy – Day Schedule Start Time**
**nItE – Night Schedule start Time**
**InPt – Clock Input Selection**
**Int – Internal Software Clock**
**tb – Terminal Block (External Clock)**
**S 1 to 12 – Space Temperatures (#1 to #12)**
**trbl – Trouble Alarms**
**lOSt – Lost Sensor Alarm**
**bAtt – Low Battery Alarm**
**S OA – Outside Air Sensor**

## Space Temperature and Outside Air Temperature

The basic RC2105A can support up to 4 zones (one sensor per zone). RC2105B can support up to 8 zones and RC2105C can support up to 12 zones.

The RC2105 controller is located next to the boiler control panel. The wireless room sensors will transmit space temperature information to the controller every minute and the controller will calculate the average space temperature (based on up to 12 space sensors).

If any one of the space sensors is out of Temperature Limit Range (SLr), that particular sensor will be removed from the average temperature calculation. The sensor will be included again for the calculation when the value returns to the limit range. The sensor Temperature Limit Range is defined as degrees from set point. The default value is 10 degrees F above or below Day/Night Set Point.

Dip switches (on-off) located on the controller can be used to manually remove a specific space sensor from the averaging calculation. The LEDs below the dip switches indicate all sensors that are currently included in the averaging calculation (Refer to Figure 5).

When a specific sensor is removed automatically or manually from the averaging calculation, the associated LED indication on the controller will be de-energized (Refer to Figure 5).

The wireless outside air sensor should be located somewhere on the outside of the building close to the boiler room. The Trs Systems OST1630 Outside Air Sensor can be used.

On rare occasions when all of the space sensors are out of the Temperature Limit Range (such as building start up after an extended shut down), the average temperature of all the sensors will be used until one of the sensor's temperature returns to within the Temperature Limit Range. The controller will then revert to normal temperature averaging calculation as describe above.

All sensor values can be read by user through the keyboard/LED Display panel.

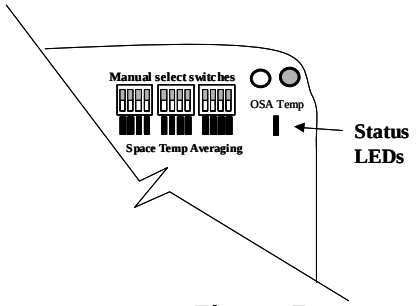


**Figure 5**

## Boiler System Control/Enable

If the OSA temperature is below Outside Air Cutoff set point (oAC) and the average temperature is lower than the average space temperature set point (dSP), the heating systems will be activated (after a preset time delay of 5 min. to 30 min) by a relay output from the RC2105 controller to the boiler control system.

The heating system output time delay (dLAy) can be adjusted by the user using keyboard.

On a rise in average space temperature (above set point) or outside air temperature (above set point plus differential), the heating relay from the RC2105 will be deenergized (Refer to Figure 6). On a drop in average temperature (below set point plus differential), the heating relay will be energized.

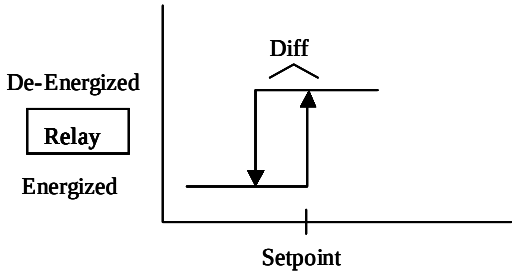


**Figure 6**

***If the OSA sensor fails to report to the controller for more than 15 minutes and the Lost Transmitter Alarm LED/relay are energized, the controller will continue to control the heating systems based on the average space temperature only.***

The average space temperature set point (dSP and nSb), average space temperature set point differential (dIFF), OSA temperature cutoff set point (oAC), OSA temperature set point differential (oAd) can be displayed and adjusted using the keyboard/display panel on the RC2105.

## Automatic/Manual override and Power Failure Mode

An automatic – Manual Override switch at the controller will provide by-pass operation. When the switch is in Automatic mode, the RC2105 controller will control the heating systems as described above. When the switch is put in Manual Override mode, the RC2105 output will be bypassed and an optional external aquastat should be used to take over the control of the boiler system.

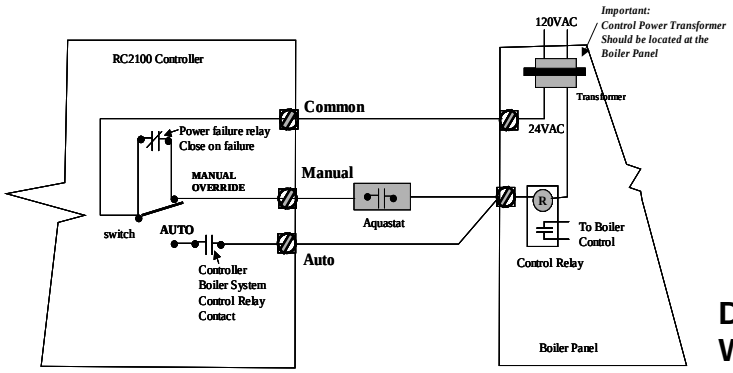


**Figure 7**

On power failure, the RC2105 will default to Manual Override mode as described above.

## Low Limit Control

If any space temperature drops below 35 deg. F and the outside air temperature is below 32 degree F, the heating systems relay and the Low Limit Alarm LED (figure 9) will be activated.

On a rise of the space temperature (above 35 deg F plus differential) the heating system relay from the RC2105 will be deenergized. And the alarm indication will be turned off.

The space low limit protection set point of 35 deg F, space temperature differential of 4 degree and the OSA temperature set point of 32 degree F are non-adjustable by user.

***If the OSA sensor fails to report to the controller for more than 15 minutes and the Lost Transmitter Alarm LED/relay are energized, this Low Limit Control feature will be disabled.***

## Summer/Winter Switch

A Summer/Winter switch (Figure 8) is also located inside the controller. When the switch is in the Winter mode, the controller will control the heating system normally as described previously. When the switch is in the Summer mode, the control output will not function. All display and adjustment features of the controller remain functional in Summer mode.

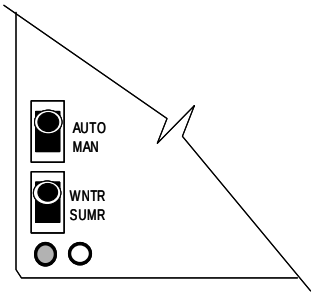


**Figure 8**

## Day/Night Control, Local Or Wireless Remote Clock Input

The RC2105 has day and night schedules (adjustable) for controlling the boiler system according to the day and night setpoints.

If selected, input terminals (Figure 9) for an external time clock input (contact closure) can also be used. When the external clock input is energized (contact closed), the RC2105 controller will control the heating system based on the daytime space temperature set point. When the external clock input is de-energized (contact open), the RC2105 controller will control the heating system based on the night space temperature set point (day setpoint dSP minus the night setback offset nSb). When the external clock input is used, the internal day/night schedules are disabled.

The day and night set points can be displayed and adjusted using the keyboard/display panel.

The night set point (nSb) will be entered as an offset of the day set point.

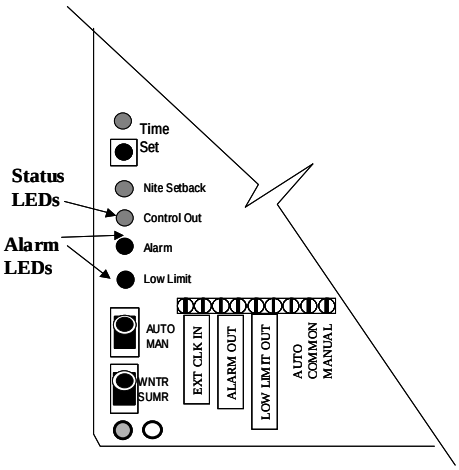


**Figure 9**

## Alarm Indications

Low Battery/Lost Transmitter Alarm
If any of the wall or outside air sensors transmit a low battery alarm, the alarm LED and the Low Battery/Lost Transmitter relay will be energized.

If any of the wall or outside air sensors fail to report to the controller for 15 minutes, the alarm LED and the Low Battery/Lost Transmitter relay will be energized.

Low limit Protection Alarm – The Low limit Alarm LED will be energized if any of the space sensors drop below 35 degree F. If the Low Limit Control option is enabled, the Low Limit Alarm relay will also be energized.

The Low Battery/Lost Transmitter and Low Limit alarm relay outputs should be wired to external alert system to notify building maintenance/service personnel.

## Selecting Internal or External Clock

Using the Right (>) and Left (<) keys, the display can be scrolled to display “CLOC” (clock). Press the up (∧) and down (∨) keys. The display can be scroll to display “inPt” (clock input selection).

Press and hold the Time Set button until the Time Set LED is energized (refer to Figure 9). Press the “SELECT” key. The current clock selection will be displayed (“int” – internal clock or “tb” – external clock using terminal block). To change the selection, press the Plus (+) or Minus (-) keys to the desired clock option and press the ENTER key to set.

Press and hold the Time Set button until the Time Set LED is de-energized (refer to Figure 9). Press SELECT key to verify the setting has been changed.

## Setting the Real time Clock

Using the Right (>) and Left (<) keys, the display can be scrolled to display “CLOC” (clock).

Press and hold the Time Set button until the Time Set LED is energized (refer to Figure 9). Press the SELECT key. The time of the day will be displayed (in 24 hour format). To change the time, move the cursor (see figure 10) to the desired digit using the Right (>) and Left (<) keys and then press the Plus (+) or Minus (-) keys to change the value. After all the changes are completed, hit the ENTER key to set.

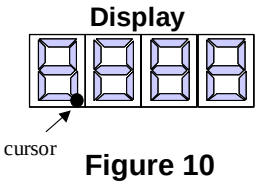


**Figure 10**

Press and hold the Time Set button until the Time Set LED is de-energized (refer to Figure 9). Press “SELECT” key to verify the Clock setting has been changed

## Setting the Day and Night Schedule

### Day Mode

Using the Right (>) and Left (<) keys, the display can be scrolled to display “CLOC” (clock). Press the up (∧) and down (∨) keys. The display can be scroll to display “dAy” (day start time).

Press and hold the Time Set button until the Time Set LED is energized (refer to Figure 9). Press the SELECT key. The time of the day will be displayed (in 24 hour format). To change the time, move the cursor (see figure 10) to the desired digit using the Right (>) and Left (<) keys and then press the Plus (+) or Minus (-) keys to change the value. After all the changes are completed, hit the ENTER key to set.

Press and hold the Time Set button until the Time Set LED is de-energized (refer to Figure 9). Press “SELECT” key to verify the day mode start time setting has been changed.

### Night Mode

Using the Right (>) and Left (<) keys, the display can be scrolled to display “CLOC” (clock). Press the up (∧) and down (∨) keys. The display can be scroll to display “nitE” (night start time). Repeat the above procedure to set the night mode start time.

For more information, please contact:

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601 Carlson Parkway
Suite 1050
Minnetonka, Minnesota 55305
Telephone: 1-952-745-4510
Fax: 1-952-449-5249

# RR2552
# Spread Spectrum Repeater

## General Description

The mesh network Series 2000 RR2552 signal repeater utilizes reliable Spread Spectrum Radio technology. It can be installed easily in minutes to increase the transmission distance between wireless sensors and the receivers.

The maximum radio transmission distance is dependent on building type. The maximum open air transmission distance between two repeaters is one mile. In a typical commercial building with steel I-beam construction, concrete floors with reinforcing rod, and metal stud walls, it can be expected that transmissions will penetrate vertically through floors and horizontally through 200 to 500 feet of walls, furniture and air.

Miltiple repeaters can be used to extend the transmission distance to thousands of feet inside any commercial and industrial buildings.

The Series 2000 sensor Data & Link LED confirms the data transmission was received by the receiver for fast and reliable positioning of the repeaters during installation. There is no need for special wireless installation equipment.

The Trs Systems Series 2000 wireless system can be used with any LON, BacNet, MODbus, or DDC control system or panel.

## Determining Repeater Location

To select the proper repeater location first install and power the receiver or transceiver. The receiver will have a Network ID assigned to it during initial programming. The repeater must have the same Network ID as the receiver or transceiver. Set the Network ID on the repeater using the Network ID DIP Switch (see Setting The Network ID on page 2).

The battery operated Test Mode is intended to be used only during the initial installation to determine the optimum location for a repeater in the system prior to wiring 24 VAC to the repeater. To operate the unit in Test Mode, move the jumper (J1 located near the battery terminals on the PWB) from 24 VAC to Battery. Install (2) batteries - Type 3.0V LiMNO2 1400 mAH (e.g. Duracell DL123A, Varta CR123A). The repeater is now functional and can be moved to different locations to determine proper system performance.

While the repeater is attempting to connect to the receiver the Data LED will blink rapidlyDi. Once a connection has been established the Data-Link LED will blink once to indicate the data transmission has been received and transmitted successfully. The Active LED will blink once every second to indicate that the repeater is functional.

## Specifications

Input Voltage:
- 24 VAC 60 Hz
- 14-20 AWG

Dimensions:
- 7.3” x 4.7” x 2.25”

Operating Temperature:
- -30 F to 160 F

Operating Humidity:
- 5 to 95% non-condensing

Case
- Flame Retardant ABS Plastic (Black)
- UL Flame Rating – 94-5VA

Receiver RF Characteristics
- Operating Frequency Channel
  - 902 – 928 MHz
- Receiver Sensitivity (avg. power)
  - –110 dBm

Transmitter RF Characteristics
- Data Rate – 20 kbit/s nominal
- Transmit Power Output
  - 11 dBm

Approvals
- FCC certified

## Ordering Information

| Model | Description |
|---|---|
| RR2552B | Two Way Repeater |
| RR2552BE | Same as RR2552B except in NEMA4 Enclosure |

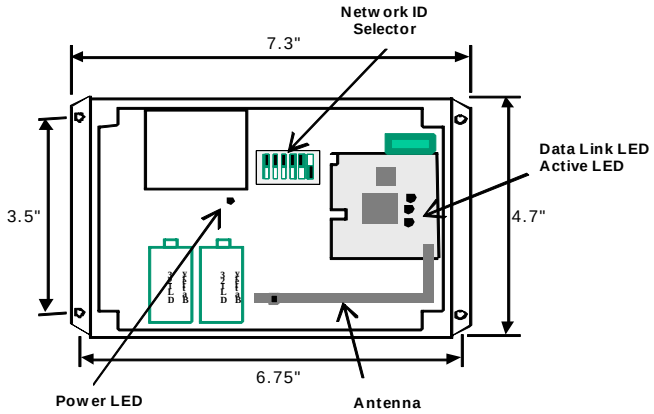


**Figure 1**

## Setting The Repeater Network ID

The repeater must have the same Network ID as the receiver (1 to 64). The repeater Network ID is field programmable using the Network ID Selector Switch to add numbers to the Base Network ID of "1".

When all (6) switches are set to the top "OFF" the Network ID is set to "1". To set a different Network ID depress the appropriate DIP Switch. Each switch adds a number to the Base Network ID of 1.

For Example to set the Network ID to "2" depress the "+1" switch to "ON" to add "1" to the Base ID of "1".

To set the Network ID to "3" set the "+1" switch to "OFF" and the "+2" switch to "ON" to add "2" to the Base ID of "1" equaling "3". See table below for switch positions.

| Switch +32 | Switch +16 | Switch +8 | Switch +4 | Switch +2 | Switch +1 | Network Address |
|---|---|---|---|---|---|---|
| OFF | OFF | OFF | OFF | OFF | OFF | 1 |
| OFF | OFF | OFF | OFF | OFF | ON | 2 |
| OFF | OFF | OFF | OFF | ON | OFF | 3 |
| OFF | OFF | OFF | OFF | ON | ON | 4 |
| OFF | OFF | OFF | ON | OFF | OFF | 5 |
| OFF | OFF | OFF | ON | OFF | ON | 6 |
| OFF | OFF | OFF | ON | ON | OFF | 7 |
| OFF | OFF | OFF | ON | ON | ON | 8 |
| OFF | OFF | ON | OFF | OFF | OFF | 9 |
| OFF | OFF | ON | OFF | OFF | ON | 10 |
| OFF | OFF | ON | OFF | ON | OFF | 11 |
| OFF | OFF | ON | OFF | ON | ON | 12 |
| OFF | OFF | ON | ON | OFF | OFF | 13 |
| OFF | OFF | ON | ON | OFF | ON | 14 |
| OFF | OFF | ON | ON | ON | OFF | 15 |
| OFF | OFF | ON | ON | ON | OFF | 16 |
| : | : | : | : | : | : | : |
| : | : | : | : | : | : | : |
| ON | ON | ON | ON | OFF | OFF | 61 |
| ON | ON | ON | ON | OFF | ON | 62 |
| ON | ON | ON | ON | ON | OFF | 63 |
| ON | ON | ON | ON | ON | ON | 64 |

**Repeater Network ID Dip Switch Setting**

## Installation

A signal repeater can be installed 200 to 500 feet from a receiver as needed to improve transmission distance/reliability between sensors and the receiver.

### ⚠ CAUTION

**Sensors, Repeaters and Receivers should NOT be installed in the following areas:**

- **Inside a metal enclosure/panel**
- **Inside or immediately next to an elevator shaft/elevator banks**
- **In front of or immediately next to large trees or a large body of water**

**Transmission distance and performance will be drastically reduced.**

Performance of the device is generally better when the repeater is installed elevated from the ground as much as possible.

Mount the RR2552 to the wall using four #10 screws.

Check to see that the Test Mode Jumper (J1) has been moved from "Battery" to "24 VAC".

Connect 24 V 60 Hz to the power input terminals using 16-20 AWG wire.

### ⚠ Caution

**For long term operation the Repeater requires 24 VAC. The repeater will function for only 4 to 6 hours in the Test Mode on a set of batteries.**

### ⚠ CAUTION

**Do not use this product in any safety related applications where human life may be affected.**

***Limitation of Liability* - Trs Systems' liability shall not exceed the purchase price paid for the products giving rise to any liability. In no event shall Trs be liable for any special, consequential or incidental damages arising in any way from using this product by the customers.**

Trs Systems Inc.

**Wireless Transmitters, Receivers and Sensors For All Your Applications**

# WT2630A, B, C Wireless Wall Temperature Sensors

## General Description

The mesh network Series 2000 WT2630 is a battery operated spread spectrum wireless wall temperature sensor or thermostat.

The override button (B & C models only) located on the side of the sensor housing can be assigned to a digital output in the Trs Systems Series 2000 family of receivers for occupancy override or similar applications.

The setpoint adjustment (B Model only) can be assigned to an analog output in the Series 2000 receiver. The output will then be used by a controller for a variety of control setpoint ranges (user defined) and other applications such as dimming of light and window blinds control.

Trs Systems mesh network Series 2000 wireless sensors utilize reliable Spread Spectrum Radio technology. They can be installed easily in minutes eliminating hundreds of feet of wire and saving installation cost while reducing installation labor risks.

The Series 2000 sensor Data-Link LED confirms the data transmission was received by the receiver for fast and reliable positioning of the sensor during installation. *There is no need for special wireless installation equipment or tool.*

Together with the Trs Systems Series 2000 receivers and controllers , the Trs Systems wireless sensors can be used with any LON, BacNet, MODbus, or DDC control system or panel.

The maximum radio transmission distance is dependent on building type. The maximum open air transmission distance is one mile. In a typical commercial building with steel I-beam construction, concrete floors with reinforcing rod, and metal stud walls, it can be expected that transmissions will penetrate vertically through floors and horizontally through 200 to 500 feet of walls, furniture and air.

## Ordering Information

| Model | Description |
|---|---|
| WT2630A | Wall sensor only |
| WT2630B | Wall Sensor with setpoint adjustment and override push button |
| WT2630C | Wall sensor with override push button |

## Features

- NO calibration required
- Flexible user defined setpoint range
- Setpoint slider can also be used for a variety of other applications such as window blind or lighting controls
- Battery powered sensors
- Mesh Network Wireless – easy to install & relocate sensors without additional wireless installation tools
- Sensor Data-Link LED confirms connection with Series 2000 receivers
- Long battery life (4-5 years)
- Low battery LED + remote low battery alarm notification

## Specifications

Input Voltage:
- Battery - Type 3.0V LiMNO2 1400 mAH (e.g. Duracell DL123A)

Dimensions:
- 4.50” x 2.75” x 1. 50”

Operating Conditions:
- 32 F to 104 F
- 5 to 95% RH non-condensing

Setpoint temperature label (W2630B):
- Warm – Cool or
- 65 F to 85 F

Open Field Range:
- One mile line of sight

Construction
- Two-piece construction
- Locking Cover
- White Plastic

Space Temperature Sensor
- Sensing Range 32 F to 104 F
- Accuracy +/- 1 F
- 12 Bit Resolution

Transmitter Characteristics
- Center Transmit Frequency
  - 923.58 MHz
- Transmitter Power - 11 dB

Approvals - RF
- FCC certified

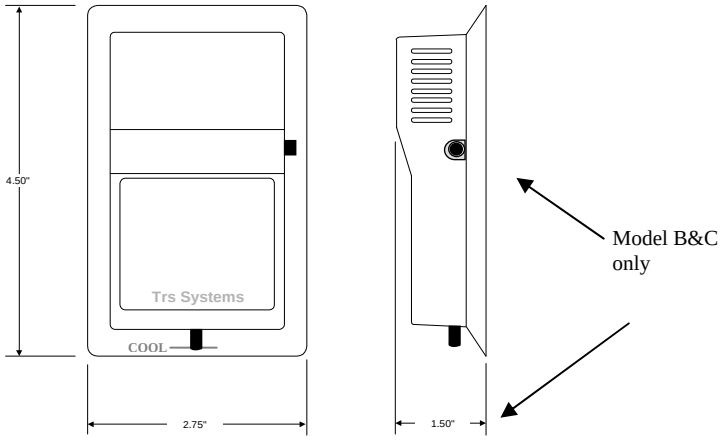


**Figure 1**

# Installation

Wireless wall sensors should be installed within 200 to 500 feet of the receiver. RR2552 signal repeaters can be installed as to increase transmission distance between sensors and receivers.

## ⚠ CAUTION

**Observe battery polarity when installing battery.**

To select the proper sensor location first install and power the receiver. Observing polarity insert the battery into the sensor to activate it. The mesh networked Series 2000 system does not require any additional wireless equipment to determine the proper location of the sensors.

While the sensor is attempting to connect to the receiver the Data-Link LED will blink rapidly 8-10 times every 10 seconds. Once a connection has been established the Data-Link LED will blink once to indicate the data transmission has been received successfully. The Data-Link LED will continue to blink once for every data transmission The data transmission rate is programmed into the sensor (normally 1 minute intervals). To manually initiate a data transmission press the push button switch located by the negative terminal of the battery.

Once the sensor location has been determined mount the subbase on an inside wall approximately 4.5 ft. from the floor (or in the specified location) to allow exposure to the average zone temperature using two #8 screws, Velcro™ or double sided tape.

## ⚠ CAUTION

**Sensors, Repeaters and receivers should NOT be installed in the following areas:**

- **Inside metal enclosure/panel**
- **Inside or immediately next to elevator shaft/elevator banks**
- **In front of or immediately next to large trees or a large body of water**

**Transmission distance and performance will be drastically reduced.**

Do not mount the sensors on an outside wall, on a wall containing water pipes or near air ducts. Avoid locations that are exposed to discharge air from registers or radiation from lights, appliances, or the sun.

Attach the wall sensor to the subbase by tightening the two locking screws at the bottom of the subbase.

**NOTE:** The locking screw must be installed for a secure installation. The screws are turned counter-clockwise to secure the cover.

The sensor has a Low Battery LED that will start to blink continuously when the battery voltage is low. A low battery signal is also sent to the receiver for remote indication that the battery should be replaced. If the battery is not replaced in approximately 2 months the battery voltage will become so low that the Low Battery and Data-Link LEDs will not blink. Replace the battery and the Data-Link LED will start blinking while the sensor is re-establishing communications with the receiver.

## ⚠ CAUTION

**Do not use this product in any safety related applications where human life may be affected.**

*Limitation of Liability - Trs Systems' liability shall not exceed the purchase price paid for the products giving rise to any liability. In no event shall Trs be liable for any special, consequential or incidental damages arising in any way from using this product by the customers.*

# OST2630
# Wireless Compact Outside Air Temperature Sensors

## General Description

The mesh network OST2630 is a battery operated compact wireless outside air temperature sensor. The sensor is housed in a NEMA4 enclosure and can be mounted anywhere in the shaded area outside of a building.

If needed the distance from the sensor to the receivers can be extended using the Trs RR2552 repeater.

Trs Systems mesh network Series 2000 wireless sensors utilize reliable Spread Spectrum Radio technology. They can be installed easily in minutes eliminating hundreds of feet of wire and saving installation cost while reducing installation labor risks.

The Series 2000 sensor Data-Link LED confirms the data transmission was received by the receiver for fast and reliable positioning of the sensor during installation. *There is no need for special wireless installation equipment or tool.*

Together with the Trs Systems Series 2000 receivers and controllers , the Trs Systems wireless sensors can be used with any LON, BacNet, MODbus, or DDC control system or panel.

The maximum radio transmission distance is dependent on building type. The maximum open air transmission distance is one mile. In a typical commercial building with steel I-beam construction, concrete floors with reinforcing rod, and metal stud walls, it can be expected that transmissions will penetrate vertically through floors and horizontally through 200 to 500 feet of walls, furniture and air. If needed, the distance from the sensor to the receivers can be extended using the Trs RR2552 repeater.

## Ordering Information

| Model | Description |
|---|---|
| OST2630A | Compact Outside Air Temperature Sensor in NEMA4 Enclosure |

## Features

- NO calibration required
- NO wiring needed
- Easy to install
- Battery powered sensors
- Compact UV resistant NEMA4 enclosure
- Wireless Mesh Network – easy to install & relocate sensors without additional wireless installation tools
- Long battery life (approximately 5 years) with standard models
- Low battery alarms
- Reliable Spread Spectrum Mesh Network radio technology

## Specifications

Input Voltage:
- Battery - One or two type 3.0V LiMNO2 1400 mAH (e.g. Duracell DL123A, Varta CR123A)

Dimensions:
- Probe length: 2-14/16”
- Housing : NEMA4
  1-3/4" X 3-1/8" X 5-3/4"

Operating Conditions:
- -40 F to 160 F (Sensor Housing)
- 5 to 95% RH non-condensing

Open Field Range:
- One mile line of sight

Temperature Sensor
- Sensing Ranges: -40 F to 160 F
- Accuracy +/- 1 F
- 12 Bit Resolution

Transmitter Characteristics
- Center Transmit Frequency
  - 923.58 MHz
- Transmitter Power - 11 dB

Approvals - RF
- FCC certified

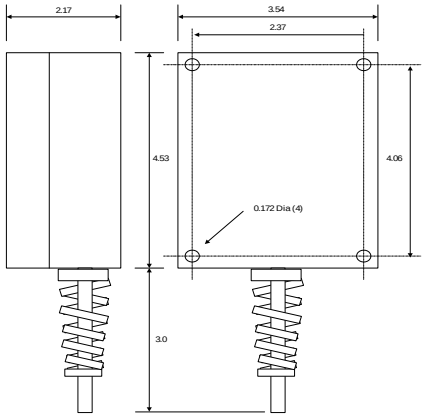


**Figure 1 – Enclosure**

# Installation

Wireless outside air sensors should be installed within 200 to 500 feet of the receiver. RR2552 signal repeaters can be installed as needed to increase transmission distance between sensors and receivers.

Mount the OST2630 sensor on any flat surface outside using four #8 screws (mounting dimensions see Figure 1)

To select the proper sensor location, first install and power the receiver. Observing polarity insert the battery into the sensor to activate it. The mesh networked Series 2000 system does not require any additional wireless equipment to determine the proper location of the sensors.

While the sensor is attempting to connect to the receiver the Data-Link LED will blink rapidly 8-10 times every 10 seconds. Once a connection has been established the Data-Link LED will blink once to indicate the data transmission has been received successfully. The Data-Link LED will continue to blink once for every data transmission The data transmission rate is programmed into the sensor (normally 1 minute intervals). To manually initiate a data transmission press the push button switch located by the negative terminal of the battery.

**The sensor should be installed in the shaded area away from the sun & rain preferably in the north side of the building. For proper performance, the sensor should be oriented with the sensing probe pointing down.**

## ⚠ CAUTION

**Sensors, Repeaters and receivers should NOT be installed in the following areas:**

- **Inside metal enclosure/panel**
- **Inside or immediately next to elevator shaft/elevator banks**
- **In front of or immediately next to large trees or a large body of water**

**Transmission distance and performance will be drastically reduced.**

Locate and record the duct sensor TXID numbers located on a label on the inside of the enclosure cover.

The sensor has a Low Battery LED that will start to blink continuously when the battery voltage is low. A low battery signal is also sent to the receiver for remote indication that the battery should be replaced. If the battery is not replaced in approximately 2 months the battery voltage will become so low that the Low Battery and Data-Link LEDs will not blink. Replace the battery and the Data-Link LED will start blinking while the sensor is re-establishing communications with the receiver.

Attach the cover of the sensor by installing the four screws to complete the installation.

## ⚠ CAUTION

**Do not use this product in any safety related applications where human life may be affected.**

*Limitation of Liability - Trs Systems' liability shall not exceed the purchase price paid for the products giving rise to any liability. In no event shall Trs be liable for any special, consequential or incidental damages arising in any way from using this product by the customers.*