**Sontay**®
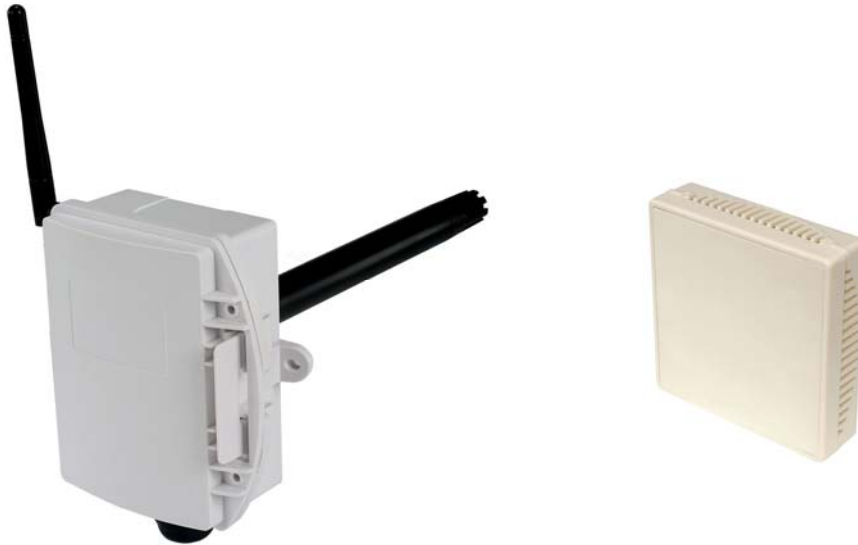
# RF-RS-R
# Battery Powered RH & Temp Sensors

## Features:

- Up to 5 years battery life
- Encrypted data transmission
- Configurable parameters

## Benefits:

- Self-healing tree topology
- Lower installation costs
- Easy to install and commission

## Technical Overview

These battery powered sensors are used in conjunction with the Sontay RF-RX20 or RF-RX40 receiver units, and RF-RR series of 24V powered routers.

Data is transmitted back to the receiver at configurable time intervals, or on a configurable change in measured value. Each sensor retains these configurations even if the battery becomes discharged or requires replacement.

Sensors automatically find the best path back to the receiver, which may be directly to the receiver or via other 'parent' routers.

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# Specification:

**Common specification:**

Radio Output:

| | | |
|---|---|---|
| Frequency | 2.4GHz | |
| 16 channels, automatically selected | | |
| Direct-sequence spread spectrum | | |
| Compliance | IEEE 802.15.4-2006 | |

| | |
|---|---|
| Data Encryption | AES 128 |
| Power Output | +10dBm |

Accuracy:

| | |
|---|---|
| RH | ±3% (20 to 80%RH) |
| Temperature | ±0.3°C |

Operating:

| | |
|---|---|
| Temperature | -10 to +50°C |
| RH | 0 to 90%, non-condensing |
| Country of origin | UK |

**Plant Housing:**

| | |
|---|---|
| Material | ABS (flame retardant type VO) |
| Dimensions | 116 x 106 x 52mm |

Battery (non-rechargeable):

| | |
|---|---|
| Type | 3.6V 2/3 Li-SOCl$_2$ |
| Life | >3 years (dependent on conf.) |

Protection:

| | |
|---|---|
| (622 & 632) | |
| Snap-shut lid | IP54 |
| | IP65 (see page 4 note 8) |
| (631) | IP54 |

Probe:

| | |
|---|---|
| Material | Probe, PVC - End cap, Delrin |
| Dimensions; | |
| (622) | 210 x 19mm dia. |
| (631) | 90 x 19mm dia. |
| (632) | 200 x 118mm dia. (Shield) |

Aerial Characteristics:

| | |
|---|---|
| Gain | 2.0dBi |
| VSWR | <2:1 |

**Space Housing:**

| | |
|---|---|
| Material | ABS (flame retardant) |
| Dimensions | 85 x 85 x 23mm |

Battery (non-rechargeable):

| | |
|---|---|
| Type | 3.6V AA Li-SOCl$_2$, |
| Life | >3 years (dependent on conf.) |
| Protection | IP30 |

Aerial Characteristics:

| | |
|---|---|
| Gain | 1.2dBi |
| VSWR | 1.5:1 |

# Part Codes:

**RF-RS-R-911**
Space RH & temperature sensor/router

**RF-RS-R-622**
Duct RH & temperature sensor/router

**RF-RS-R-631**
Wall RH & temperature sensor/router

**RF-RS-R-632**
Outside RH & temperature sensor/router

CE

The products referred to in this data sheet meet the requirements of EU Directive 2004/108/E

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## How It Works:

Data is transmitted back to the receiver at configurable time intervals, or on a configurable change in measured value. Each sensor retains these configurations if the battery becomes discharged or requires replacement.

The sensors, routers and receiver automatically select which of the 16 transmission channels available gives the best radio network performance, taking into account both signal strength and interference levels from adjacent channels and equipment (such as Wi-Fi etc.) The sensors automatically find the best path back to the receiver, which may be directly to the receiver or via "parent" routers.

**Aerial Orientation (plant sensor types);**

For best results ensure that the main body of the aerial is vertical.
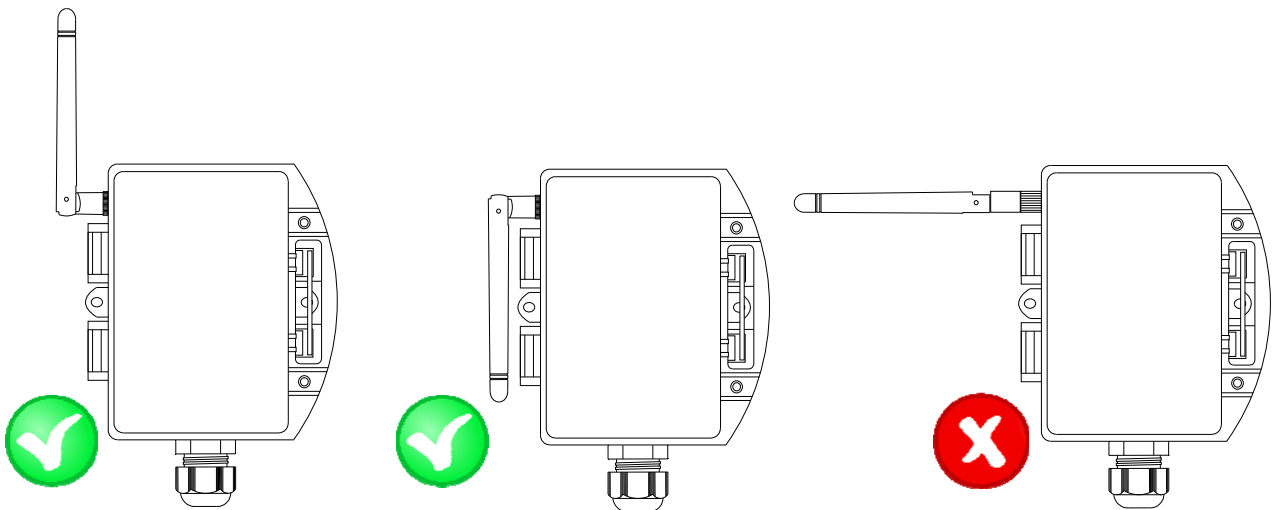


## Installation:

**Duct, Wall & Outside Sensor types:**
1. Remove all packaging from the sensor.

2. Note the MAC address printed on the affixed label and note where this MAC address is installed.

3. Mount the sensor in the required position (this will have been determined by the site survey tool, (see the quick start guide and manual).

4. See page 4 for individual installation depending on sensor type.

5. Release the snap-fit lid by gently squeezing the locking tab and install the Li-SOCl$_2$ battery, observing the correct polarity.

6. Snap shut the lid after the connections have been made if IP65 protection is required, secure the lid with two screws provided.

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# Installation (continued):

7. Ensure, at a minimum, that all routers and the receiver on the radio network are powered on, and allow about 5 minutes for the network to auto-commission before attempting to read values or make configuration changes.

**Duct**

- Select a location in the duct where the sensor probe will give a representative sample of the prevailing air condition.

- Drill a 22mm diameter hole in the duct, then use the housing as a template mark the hole centres or use the dimensions below), drill and fix the housing to the duct with the screws supplied.



46mm ← → 46mm
Ø22mm
Mounting Screw Centers
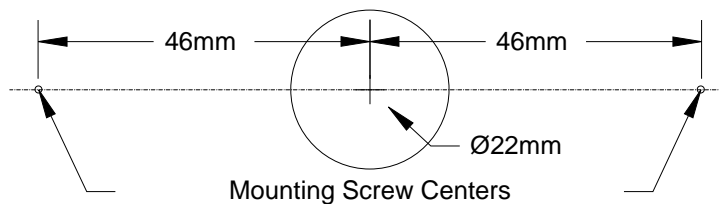
**Wall**

- Select a location where the sensor probe will give a representative sample of the prevailing air condition.

- Fix the housing to the wall with appropriate screws.

**Outside**

- Fix the radiation shield to a suitable mast using the U bolts supplied.

- Insert the probe into the shield and tighten the gland.

**Radiation Shield**

The plate profiles are shaped to allow the minimum restriction of airflow while providing the necessary shielding from solar radiation and precipitation.
All sensor shields produce an error due to temperature rise during high solar radiation; the error is reduced with higher wind speeds which provide ventilation. The figures given below are based on a radiation intensity of 1000W/m²;   typical errors for the specified wind speeds would be:
0.4°C @ 3 m/s       0.65°C @ 2 m/s     1.4°C @ 1 m/s or slower.

**Space Sensor Types:**

1. Remove all packaging from the sensor.

2. Note the MAC address printed on the affixed label and note where this MAC address is installed.

3. Mount the sensor in the required position (this will have been determined by the site survey tool, (see the quick start guide and manual).

4. Undo the tamperproof screw at the bottom of the housing and gently pull the front panel from the base.

5. Note the MAC address printed on the affixed label and note where this MAC address is installed.

## Installation (continued):

**Space Sensor Types:**

6. Replace the housing to the base plate.

7. Re-fit the tamperproof screw through the lug at the bottom of the base plate.

8. Ensure, at a minimum, that all routers and the receiver on the radio network are powered on, and allow about 5 minutes for the network to auto-commission before attempting to read values or make configuration changes.

## Battery Fitting & Replacement:

The current battery level of a sensor can be monitored using the CMS software connected to the receiver. When a battery is first installed, or when it is replaced, observe the correct polarity. **Fitting the battery incorrectly may result in permanent damage to the sensor**. Remove the power jumper prior to removing a battery. After fitting a battery, replace the power jumper while pressing the reset button. This resets the hours run counter for the battery.

**NB** Lithium-Thionyl Chloride batteries are **not rechargeable**, and should be stored in a clean, cool (not exceeding +30°C), dry and ventilated area.

**Disposal of Batteries - Warning! Fire, Explosion and Burn Hazard.**
Do not recharge, short-circuit, crush, disassemble heat above 100°C (212°F), incinerate, or expose the battery contents to water. Do not solder directly to the cell.

All batteries must be disposed of in accordance with EC Directive 2006/66/EC, amended by EU Directive 2008/12/EC.