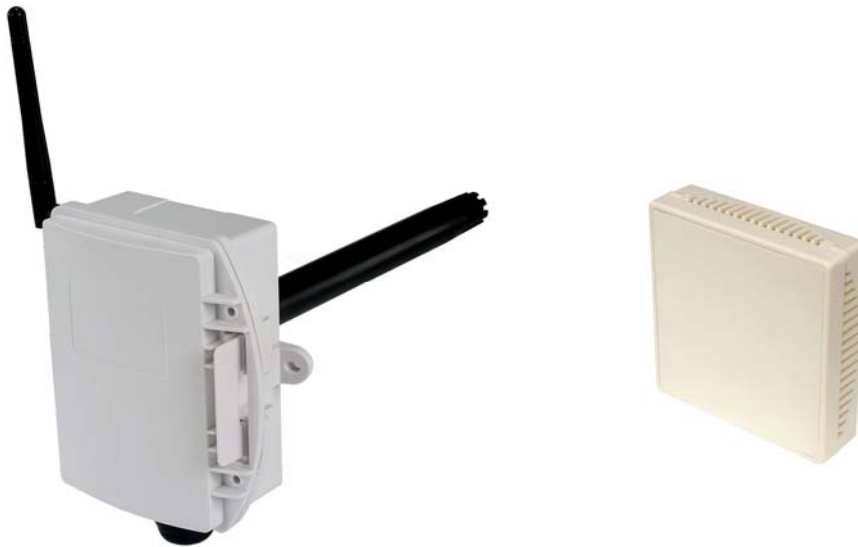**Sontay**®

RF-RR-T
24V Powered Routers/RH & Temp Sensors

Features:

- Proven 802.15.4 low power network
- Complete range of sensor types
- Allows networks to be expanded

Benefits:

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

Technical Overview

These routers are used in conjunction with the Sontay RF-RX20 or RF-RX40 receiver units, and RF-RS series of battery powered radio sensors, and are used to route signals from battery powered nodes and other routers to the receiver module, where the signal strength of a direct path is not sufficient for reliable communications.

Note: Each router can support a maximum of 16 'children', which can consist of a maximum of 8 battery powered nodes and 8 routers, or up to 16 routers if there are no battery powered nodes. Consideration should be given to network planning for redundancy in case of router failure or damage.
Routers automatically find the best path back to the receiver, which may be directly to the receiver or via other 'parent' routers.

Tel: +44 (0)1732 861200. - E-mail: sales@sontay.com. - Web: www.sontay.com.

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

Power Supply   24Vac/dc

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

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

Protection   IP30

Aerial Characteristics:

	Gain	1.2dBi
	VSWR	1.5:1

CE

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

Part Codes:

RF-RR-R-911
    Space RH & temperature sensor/router

RF-RR-R-622
    Duct RH & temperature sensor/router

RF-RR-R-631
    Wall RH & temperature sensor/router

RF-RR-R-632
    Outside RH & temperature sensor/router

How It Works:

Routers are used to route signals from battery powered nodes and other routers to the receiver module, where the signal strength of a direct path is not sufficient for reliable communications.

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 and routers automatically find the best path back to the receiver, which may be directly to the receiver or via "parent" routers.

NB Each router can support a maximum of 16 "children", a maximum of 8 of which can be battery powered "end devices" and a maximum of which can be 8 routers. Consideration should be given on network planning for redundancy in case of router failure or damage.

Aerial Orientation (plant sensor types);

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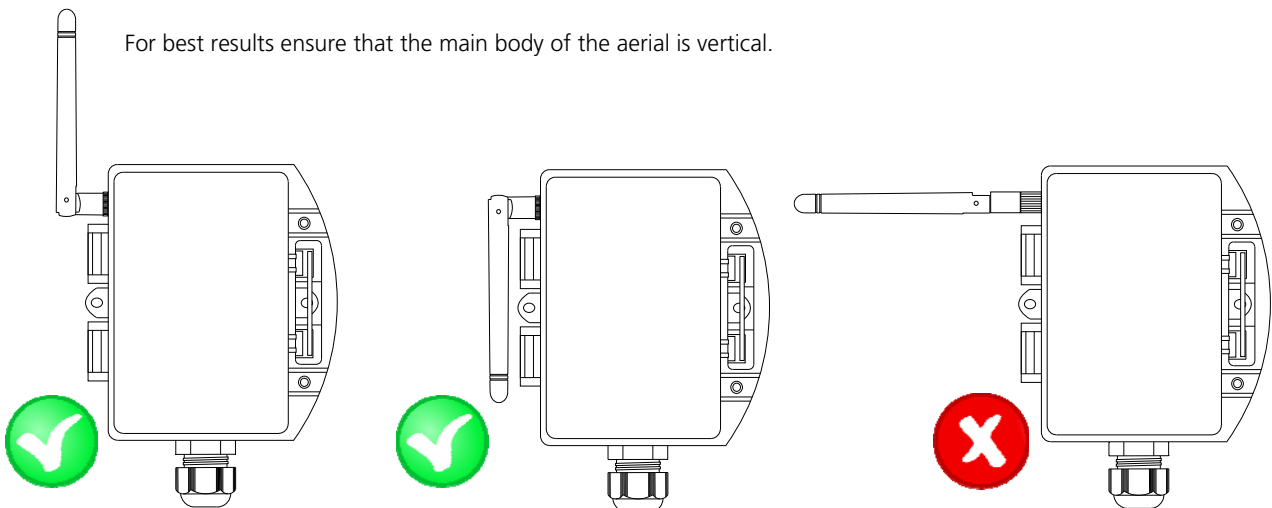
Installation:

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. It is recommended that the unit be mounted with the cable entry at the bottom. If the cable is fed from above then into the cable gland at the bottom, it is recommended that a rain loop be placed in the cable before entry into the sensor.

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Installation (continued):

5. See below for individual installation depending on sensor type.

6. Release the snap-fit lid by gently squeezing the locking tab and feed the cable through the waterproof gland & terminate the cores at the terminal block. Leaving some slack inside the unit, tighten the cable gland onto the cable to ensure water tightness.

7. Observe correct polarity if using a 24Vdc power supply. To power on the unit, fit J200.

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

9. 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
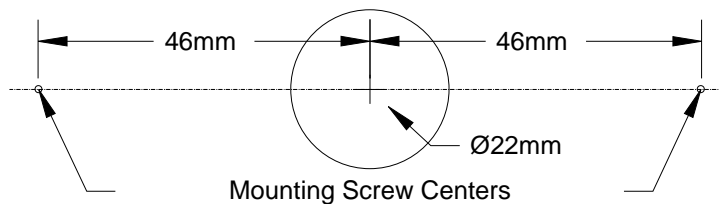
Wall

- 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.

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Installation (continued):

Space Sensor Type:

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. Using the base as a template mark the hole centres and fix to the wall with suitable screws. Alternatively the base plate can be mounted on to a conduit box or a standard recessed back box.

6. Feed cable through the 22mm knockout in the base of the housing and terminate the cores at the terminal block as required. Leaving some slack inside the unit.

7. Observe correct polarity if using a 24Vdc power supply. To power on the unit, fit J200.

8. Replace the housing to the base plate.

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

10. 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.