Sontay®

RF-RX
Radio Sensor Receiver, 0-10Vdc Outputs

Features:

- Proven 802.15.4 low power network
- Encrypted data transmission
- 20 or 40 output variants
- Short-circuit protected analogue outputs
- Overvoltage protected analogue outputs to +36V

Benefits:

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

Technical Overview

The Sontay RF-RX20 or RF-RX40 receiver collects data from all other devices on the radio network, including measurements from sensors, link quality for all links formed in the network, battery levels for all battery powered devices, hours run for all devices and the current status of all devices.

Note: Each receiver can support a maximum of 16 'children', which can consist of a maximum of 12 battery powered nodes and 4 routers, or up to 16 routers if there are no battery powered nodes.

A USB socket is provided for connection to a PC or laptop running the Sontay SonNet CMS software.

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Specification:

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

Aerial Characteristics:
- Gain   2.0dBi
- VSWR   <2:1

Data Encryption   AES 128

Power Output   +10dBm

Power Supply:
- 24Vdc ±15%
- 24Vac ±15%, 50/60 Hz

Fuses:
- Power supply   20mm, 250V, 500mA, Anti-surge
- Alarm   20mm, 250V, 250mA, Fast-acting

Serial communications   USB 2.0

Alarm output indication for;
- Low battery
- Node 'off-line'
- Out-of-limit sensor value

Outputs:
- RF-RX20   20 x 0-10Vdc @ 10mA each
- RF-RX40   40 x 0-10Vdc @ 10mA each

Output ranges:
- Temperature   -10°C to +70°C
- RH   0% to +100%
- Setpoint   0% to +100%
- Switch   0Vdc = OFF, 10Vdc = ON

Output accuracy   ±2% of output range

Alarm output   Reed relay, 24V @50mA max.

Environmental:

Ambient:
- Temperature   -10 to +50°C
- RH   0 to 90%, non-condensing

Dimensions (H x W x D)   105 x 202 x 45mm

Country of origin   UK

CE

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

Part Codes:

RF-RX20
> Radio sensor system receiver, 20 outputs

RF-RX40
> Radio sensor system receiver, 40 outputs

Accessories

RF-AERIAL-PM2
> Coaxial extension cable for externally mounted aerial - 2m length

RF-AERIAL-PM5
> Coaxial extension cable for externally mounted aerial - 5m length

How It Works:

The radio receiver is used in conjunction with the Sontay RF-RR and RF-RS radio sensors.

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.

General Information:

Power Connections
The receiver requires a 24V supply, either AC or DC. Observe power connections polarity.

Configuration
The receiver outputs must be configured so as to be associated with individual sensor parameters, such as temperature, RH, set point value or switch state. Use the Sontay CMS for configuration (see the CMS quick start guide and manual for further details).

LED Indication
D603 remains ON whilst the receiver has children and will flash if the receiver has no children. D604 indicates radio traffic.

Common Alarm Output
The RF-RX receivers have a reed relay output for indication of common alarm conditions. This relay will energise if *any* of the battery powered nodes or 24V routers are offline, have a low battery or have an out-of-limits sensor parameter reading (indicating a damaged sensor element, for example).

The relay output is energized for 15 seconds, and resets to enable further alarms to be processed.

The relay output is polarity independent.

Installation:

1. Remove all packaging from the receiver.

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

3. Mount the receiver in the required position (this will have been determined by the site survey tool, (see the quick start guide and manual for further details), taking care *not* to site the receiver behind any obstruction likely to impede the radio signal.

4. Fix the receiver to the DIN rail.

5. **NB** If the receiver is to be mounted in a metal enclosure, it is **essential** that the aerial is mounted externally. A 2 or 5m coaxial extension cable assembly is available for this option.

6. 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.

7. Ensure the antenna is positioned in a vertical alignment.

8. Observe correct polarity if using a 24Vdc power supply.

9. To power on the unit, move the power switch to the ON position.
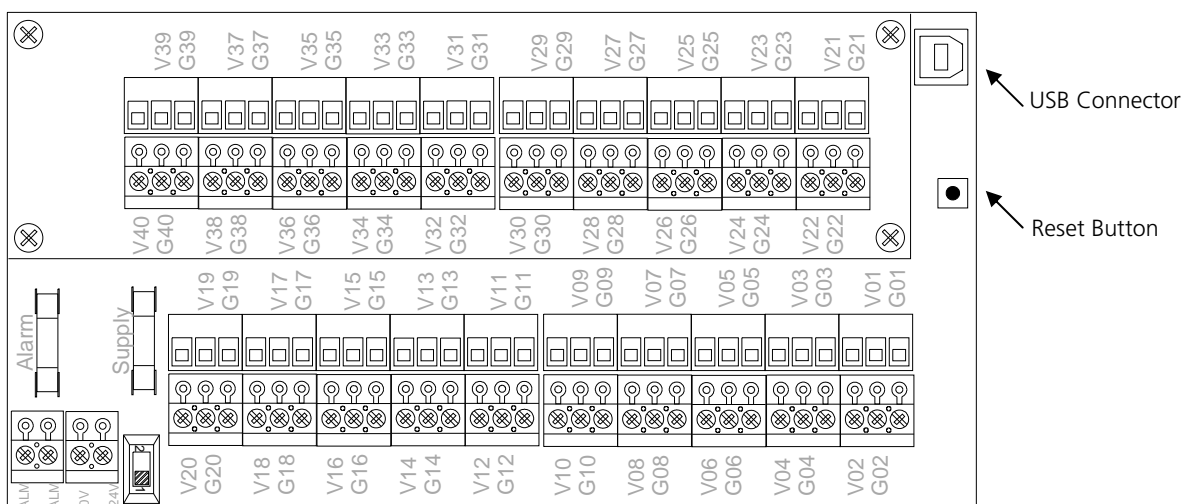
Connections:

RF-RX20 Outputs

USB Connector

Reset Button
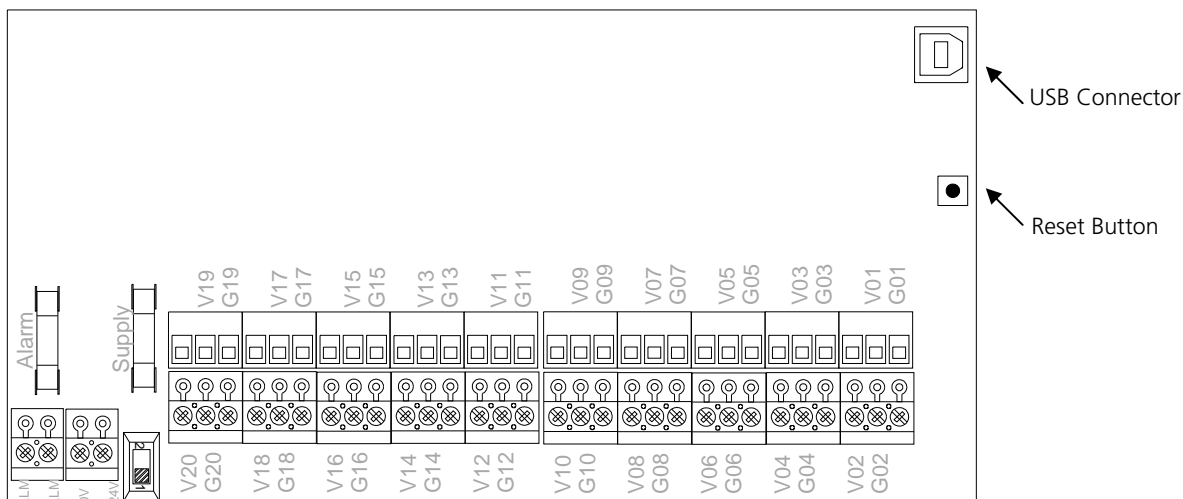
Terminal Assignments:

- G = Common 0V
- V = 0-10Vdc output

Example: Output 2, G02 = 0V, V02 = 0-10Vdc

RF-RX40 Outputs

USB Connector

Reset Button

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