OPERATING MANUAL

BTD-1 Accessory

Radio Modules

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Contents

General Information

1.1 BTD-1 Radio Module Description

The BTD-1 Radio Module allows the BTD-1 sensor to transfer information wirelessly over a radio link to facilitate a remote installation. The radio link functions up to 200m whilst maintaining a line of sight between the transmitter and receiver. The Radio Module kit is suitable for RS422 versions of the BTD-1 only.

The EU version of the Radio Kit operates over the licence exempt 868MHz band.

The US/ASIA version of the Radio Kit operates over the licence exempt 915MHz.

It is the customers responsibility to ensure that they are using the correct Radio Kit for the region.

NOTE: When using the Radio Modules there is a bandwidth restriction. For example, this will prohibit diagnostic dump and firmware updates. A temporary wired link shall be required to carry out high bandwidth activities.

1.2 Supplied Equipment

The following equipment is supplied in the Radio Module Kit carton. Please check the contents carefully and immediately report any missing items to your supplier.

- Transmitter Radio Module, mounted on support arm with cable
- Receiver Radio Module, mounted on window suction bracket
- U-bolt
- 2 Black nylon cable ties

2 Installation

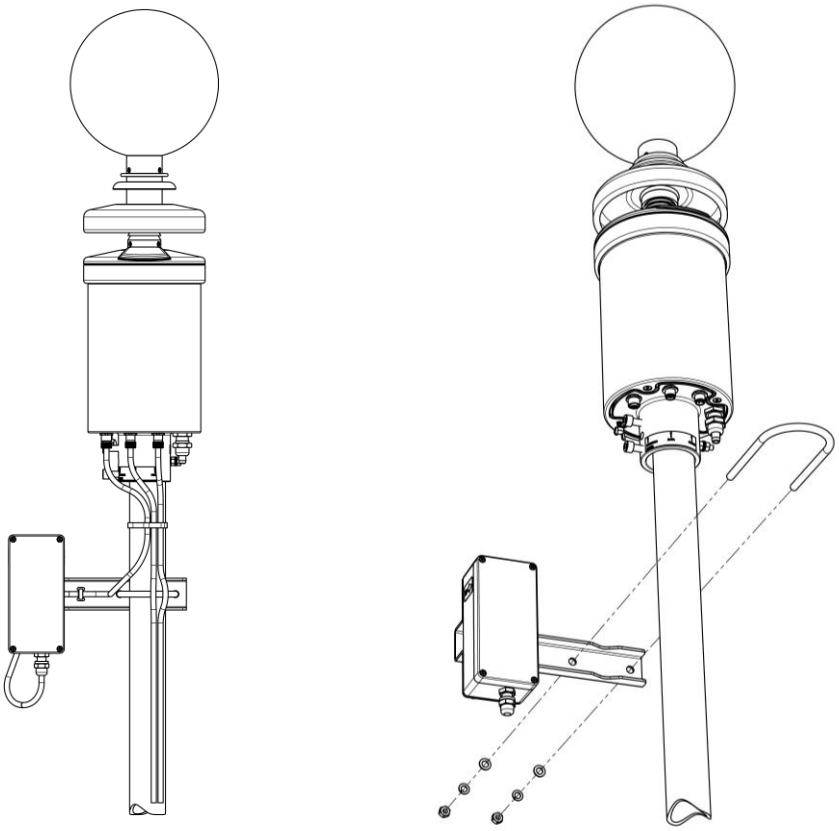
The Transmitter Radio Module mounts to the BTD-1 sensor mounting pole approximately 300mm below the sensor. The Transmitter Radio Module connects to the BTD-1 through the standard data port.

The Receiver Radio Module should be placed within 200m of the Transmitter Radio Module. There should be a clear line of sight between the Receiver Radio Module and the Transmitter Radio Module. The Receiver Radio Module can be connected directly to a Senseca Serial to RS422 Convertor (SCIU) using a standard BTD-1 Data Cable. Alternatively, the Receiver Radio Module can be connected to a third-party system using the M12 connector, see section 2.2.

Safety Distance: The Radio Module Kit operates over a low power radio link. A safety distance of 20cm must be maintained during prolonged operation.

2.1 Mounting the Radio Kit

The Transmitter Radio Module is supplied attached to the mounting arm with the cable attached. Mount the arm to the pole below the BTD-1 sensor using the supplied U-bolt. The Receiver Radio Module is supplied with a window suction mount. The Receiver until should be placed within 200m of the transmitter module and a line of sight visible between the transmitter and receiver. The suction mount of the receiver should aid in fixing the Receiver in a suitable location.



2.2 Receiver Pinout

Connection to the Senseca Serial to USB converter can be made through a BTD-1 Data cable.

It is possible for third party systems to interface with the Receiver Radio Module through the M12 connector at the base. For example, to form a wireless data link to a datalogger or equivalent. The Radio Module requires a 5V power source capable of providing 2W of power.

IMPORTANT: If integrating to a third-party system, the customer is responsible for maintaining a 10% duty cycle for transmission if transmitting sensor commands.

The pinout for the M12 connector is as follows:

RM (RX) Pinout	Description	Core Colour
1	5V	WHT
2	0V	BRN
3	RS422 TX+	GRN
4	RS422 TX-	YLW
5	RS422 RX+	GRY
6	RS422 RX-	PNK
7	NC	BLU
8	0V Isolated	RED

3 FAQ

I am not seeing any data messages.

Check the BTD-1 has power (LED illuminated), and the Receiver Module also has power. Locate the Transmitter Module close to the Receiver Module (<20m). Use a Senseca Serial to USB converter with a computer running the Lightning Eye software to check for data messages.

I am not seeing some data messages but not all.

Locate the Transmitter Module close to the Receiver Module (<20m). If more messages are seen the radio link signal is being distrupted, either move modules closer or clear a line of sight between the Transmitter Module and Reciever.

I am not getting the full 200m range.

Check for physical barriers (e.g. trees, shrubs) or reflective metallic surfaces. The antenna should be vertical for each unit.

I frequently get periods where the signal drops.

Check the local area for competing 868MHz sources, e.g. construction traffic lights. Contact Senseca for advise.

4 Maintenance

The BTD-1 Radio Module requires no routine maintenance; however, it is recommended the following checks are carried out at least annually to ensure your system continues to work reliably.

4.1 Cables, Corrosion and Fasteners

The Radio Module is made from glass reinforced plastic and stainless steel so should not corrode; however, we recommend that all mounting hardware and associated fasteners (nuts and bolts) are checked to ensure they are corrosion free and tight.

Check the condition of the cable going to the BTD-1. Ensure the cable is secured so it cannot be damaged by moving around in the wind.

4.2 General Cleaning

It is recommended that any heavy build-up of dirt is removed from the Radio Module. This can be achieved with a brush and water hose as required.

Small amounts of detergent can be used to clean the sensor if desired but make sure the sensor is thoroughly rinsed to remove all traces of detergent.

5 Specifications

5.1 Power Requirements (Transmitter/Receiver)

Supply Voltage	5V
Power Consumption	Less than 2 W (DC)

5.2 Environmental

Operating temperature	-20°C to 50°C
Relative humidity	0 to 100%
Protection rating	IP66
Wind speed	60 m/s
Altitude	-200m to 2,000m
Shock and vibration	Land based fixed installation

5.3 RF Characteristics (EU, EFTA)

Operating Frequency	869.4 - 869.65MHz
Max Transmit Power	<500mW (27dBm)
Duty Cycle	<10%
Channel Spacing	50kHz (channel selection available)
Compliance	RED 2014/53/EU

5.4 Certification and Compliance

EMC	EN61326-1:2021 Industrial immunity, industrial emissions
Radio	ETSI EN 300 220-1 / -2 ETSI EN 301 489-1 / -3
RoHS and WEEE compliant	

5.5 Physical

Material	Aluminium, Stainless steel, GRP
Weight	1.4kg
Height	300mm
Width	150mm

5.6 Maintenance

Visual inspection	6 to 12 months

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NOTES

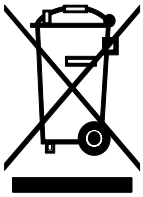
WARRANTY

The manufacturer is required to respond to the "factory warranty" only in those cases provided by the Consumer Rights Act 2015. Each instrument is sold after rigorous inspections; if any manufacturing defect is found, it is necessary to contact the distributor where the instrument was purchased from. During the warranty period (12 months from the date of invoice) any manufacturing defects found will be repaired free of charge. Misuse, wear, neglect, lack or inefficient maintenance as well as theft and damage during transport are excluded. Warranty does not apply if changes, tampering or unauthorized repairs are made on the product.
The manufacturer repairs the products that show defects of construction in accordance with the terms and conditions of warranty included in the manual of the product.

TECHNICAL INFORMATION

The quality level of our instruments is the result of the continuous product development. This may lead to differences between the information reported in the manual and the instrument you have purchased.
We reserve the right to change technical specifications and dimensions to fit the product requirements without prior notice.

DISPOSAL INFORMATION



Electrical and electronic equipment marked with specific symbol in compliance with 2012/19/EU Directive must be disposed of separately from household waste. European users can hand them over to the dealer or to the manufacturer when purchasing a new electrical and electronic equipment, or to a WEEE collection point designated by local authorities. Illegal disposal is punished by law.

Disposing of electrical and electronic equipment separately from normal waste helps to preserve natural resources and allows materials to be recycled in an environmentally friendly way without risks to human health.

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