rpr-IoT-AT01

www.r-p-r.co.uk

Indoor Ambient Temperature Node

► **Low Power Wireless Sensor Node.**

► **Compatible with The Things Network LoRaWAN**

► **±0.5⁰C accuracy 0.1⁰C resolution**

► **Long life replaceable battery.**

► **Data and status information displayed on the rpr-IoT dashboard.**

Overview

The rpr-IoT-AT01 is a battery powered ambient temperature sensor node that communicates using long range radio compatible with LoRaWAN and the Things Network.

Data is stored on the rpr-IoT cloud and or the RPR WeatherFile.com cloud for long-term storage and access. Readings and status information is displayed on the rpr-IoT dashboard (subscription required). The dashboard enables data from several nodes to be plotted and displayed in a flexible manner to suit the user.

The unit uses a long life 4000mAh A size Lithium Thionyl Chloride (LiSOCl2) battery which is user replaceable.

Applications

The rpr-IoT-AT01 has a wide range of applications where ambient temperature must be monitored.

✓ Building energy management
✓ Goods storage
✓ Warehousing
✓ Working conditions
✓ Food Production
✓ Personnel safety and comfort
✓ Education and research projects
✓ Sports halls
✓ Museums
✓ Agriculture and Horticulture

Message interval

The rpr-IoT-AT01 by default adheres to the Things Network's public community network fair use policy and adjusts the minimum uplink message interval depending on the Data rate / Spreading Factor as shown in the following table:

Data rate	Spreading Factor	Up message interval
DR5	SF7	3 minutes
DR4	SF8	6 minutes
DR3	SF9	10 minutes
DR2	SF10	20 minutes
DR1	SF11	45 minutes
DR0	SF12	90 minutes

The spreading factor is determined by the Adaptive Data Rate (ADR) mechanism implemented in The Things Stack which is based on the signal to noise ratio (snr) of the received signal. When first switched on the node will join with a spreading factor of 12.

Data Security

Advanced Encryption Standard (AES) 128-bit algorithms are used to provide two layers of cryptography, to the network server and end-to-end to the application server.

Dashboard

The rpr-IoT dashboard is user configurable to display data from multiple sensor nodes. Tiles can be added which display data in different formats, for example: line plots, bar graphs, dials or graphicly on a map or plan. Individual tiles can be defined and positioned by the user to suit their needs. Sensors can be given names applicable to their application.
The dashboard allows status information including battery state, signal strength, signal to noise ratio, and gateways to be monitored.

Dimensions
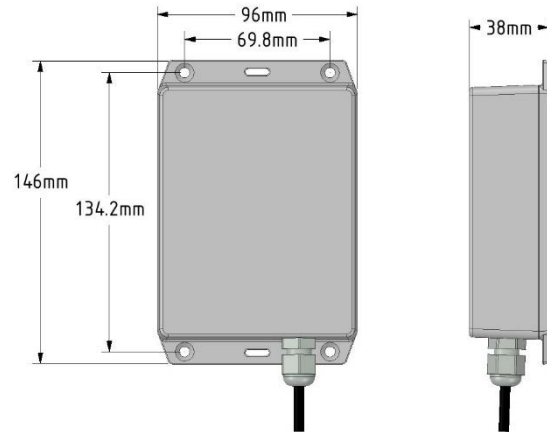
RPR Products

Richard Paul Russell Ltd offers a range of IoT systems, weather instrumentation and data loggers. Please contact us for more information.

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The manufacturer reserves the right to amend the specification and therefore the information in this document may be subject to change. Please contact us for the latest information.

rpr-IoT-AT01

Specification

Physical	
Enclosure dimensions including flanges but excluding sensor	146mm x 96mm x 38mm
Mounting holes	4 off 3.5mm dia. Countersunk, 134.2mm x 69.8mm
Mounting slots	2 off 11.5mm x 3mm slot, 134.2mm spacing
Flange thickness	3 mm
Enclosure material	ABS Plastic, Light Gray
Enclosure flammability rating	UL94 V-0
Weight	180g
Temperature Sensor	
Sensor type	DS18B20 digital
Sensor Accuracy	±0.5°C Accuracy from -10°C to +85°C ±1°C Accuracy from -30°C to +100°C
Resolution	0.1°C
Usable Sensor temperature range	-10°C to +60°C
Sensor Identification	Each sensor has a unique 64-bit serial code
Time constant	TBD
Sample rate	1 per second to 1 per 12 hours
Wireless/network Connectivity	
Frequency band	863-870 MHz
LoRa Channel	EU868
Networking Protocol	LoRaWAN, Class A
Aerial	Internal Meandering Monopole circuit board mounted
Uplink Message Interval	By default, the interval is dependent on Spreading Factor and The Things Network's public community network Fair Use Policy.
Range	Up to 10km Line of sight dependent on environment
Power	
Battery type	A size Lithium Thionyl Chloride (LiSOCl2)
Nominal Battery Capacity	4000mAh
Nominal Battery Voltage	3.6V
Environmental	
Temperature range	Operating: -10°C to +60°C, Storage: -40°C to +70°C
Relative Humidity	0% to 100% (non-condensing)
Enclosure protection	IP54
Compliance	UKCA, CE