OY1500 LoRaWAN® Radon gas sensor

LoRaWAN® sensor that measures radon gas content in the air in real-time. Full range of 0-100 000 Bq/m³. Highly sensitive measurements, to enable ventilation control or to report on radon exposure during working hours.

Revolutionary reaction time

The device uses high voltage and is thanks to this one of the most sensitive radon units on the market. High sensitivity means that rapid variations in the radon content are registered more correctly. In combination with the LoRaWAN® network connectivity, this has resulted in a revolutionary device on the market for radon measurements that sends actionable data to the internet in real-time.

Since detection of radon always takes place by measuring the radioactive alpha decay from the so-called radon progeny of radon gas, the measurement is a relatively complex process. The most common is that radon measurement produces an energy spectrum from the alpha decay of the radon progeny Po-218 and Po-214, which have different half-lives in relation to radon. In order to obtain a correct radon content within an hour, it is necessary to be able to create a full spectrum with a sufficient amount of data from the alpha decay. This is done by applying high voltage to the radon sensor, which can then attract the charged radon progeny. For cheaper radon sensors that run on low voltage, this is not possible. They calculate the average value for 24 hours, as it is not possible to obtain sufficient data from the decay in a shorter time.

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Data calibration and verification

Nordic Propeye, expert in LoRaWAN® technology, has co-developed the product with the world leading radon sensing company. The device is designed to provide high quality, verified measurement data of radon gas. To get high quality measurement data of radon gas requires calculations that require more power than is possible for the device's battery capacity. Therefore, the device comes with a subscription to our cloud service for data calibration to the NIST standard, accessible via Nordic Propeye's API. End users need to subscribe to the data processing service and connect to the API by MQTT.

Measurement	
Measurement principle	Electronic sensor
Sensor type	Silicon detector with alpha spectrometry
Measurement range	0 – 100.000 Bq/m^3
Measurement accuracy	High precision
	<15% after 6h at 200Bq/m^3
Minimum detectable activity	25Bq/m^3 at 1 hour int. time
Time resolution	1h – 3h
Temperature range	-10°C + 60°C
Humidity range	0-95%
Connectivity	
Network	LoRaWAN®
Frequency bands	
Provisioning	Over the air & personalization
Security	
Algorithms	AES-128
Hardware	Cryptographic co-processor
Features	Secure boot
	Secure firmware upgrade
Hardware based ultra-secure key storage	
Characteristics	
Power	5V Micro USB, or
	10-28V AC/DC fixed installation
Battery back-up	Lasts more than 60 days @10 minute reporting interval (default)
	Rechargeable
Weight	360g
Size	150 x 100 x 45 mm
Compliancy	
NIST standard	
RoHS	
LoRaWAN®	
CE	

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Order Product Numbers (OPN)

Version	OPN
OY1500 LoRaWAN® Radon gas sensor, wall mount EU868	TP-T1500-0WM-1-EU
2 year data calibration service for OY1500 LoRaWAN® Radon gas sensor	TP-F1500-API-1-00
OY1500 LoRaWAN® Radon gas sensor, wall mount, 2 years calibration pre-paid, EU868	TP-T1500-1WM-1-EU

The device follows the LoRaWAN® standard and can be implemented with any LoRaWAN® network server. New customers: please contact us to discuss the integration with your network server first.

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TP-T1500-0WM-1-EU

LoRaWAN network

Application server

MQTT API

Data processing and calibration
TP-F1500-API-1-EU
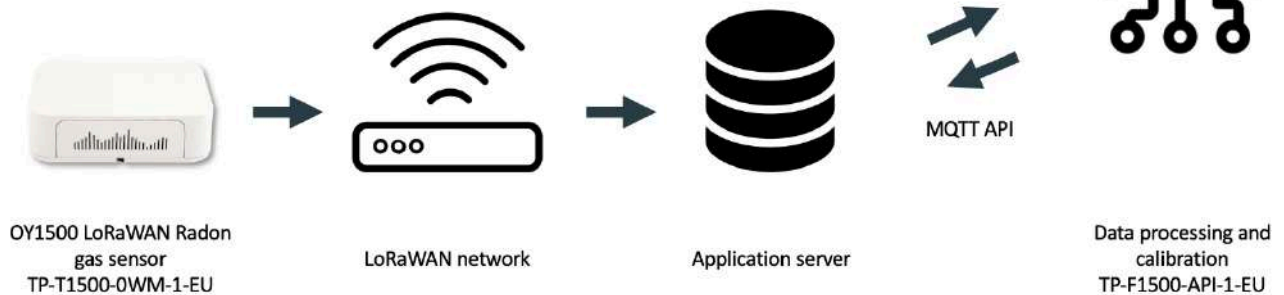
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Nordic Propeye stands for smart, sustainable choices. We have made it our mission to help our customer to make their real estate and condominiums lean, clean & green.