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Aranet Radio benefits

Aranet Radio vs LoRaWAN

Aranet Radio works in the sub-gigahertz ISM 868/920 MHz frequency band and uses LoRa modulation technology, but not the LoRaWAN protocol.

2022-11-08

What is Aranet Radio?

Aranet Radio has its proprietary radio protocol which uses LoRa modulation technology but does not use LoRaWAN protocol. Our radio works in the sub-gigahertz ISM 868/920 MHz frequency band. Since Aranet Radio is an isolated communication protocol and is not part of LoRaWAN, it cannot be subjected to disruptions in the LoRaWAN system or external interference in your Aranet ecosystem. You can enjoy an uninterrupted connection.

Aranet radio EU, US vs LoRaWAN EU, US

	Aranet EU	LoRaWAN EU	Aranet US	LoRaWAN US
Frequencies, MHz	868.1 – 868.5	867.1 – 868.5	917.3 – 923.5	902.3 – 914.9 923.3 – 927.5
Spreading factors	8	7 – 12	8	7 – 10
Direction	Up	Up/down	up	Up/down
Packet size, bytes	8/12	16 – 255	8/12	16 – 255

The fixed value of spreading factors ensures predictable results. The one-way protocol is optimal for the use and application, additionally, it significantly **increases battery life** and excludes the possibility of attacks carried out on sensors.

The one-way protocol does take away the ability to transmit data before the set time, which has proven to not be substantial since the predefined measurement intervals for Aranet sensors can be set as **short as 1 minute**, compared to typical LoRaWAN 10, 30, or 60-minute intervals between readings. Smaller data packet size saves airtime, saves battery resources, and **minimizes the possibility that the data packets can be lost** due to the collision with other sensor data transmission in the system or interference with outside transmitters. Smaller data packet sizes mean a lack of interest in these signals to be part of randomized attacks.

How does this benefit client?

- The Aranet system is closed, autonomous, and fully owned by the client. Integration with your system is available.

From the information above you can understand that the Aranet ecosystem is a secure, closed system that is encrypted and does not depend on 3rd party cybersecurity flaws. Aranet Base station is not a simple gateway as it is in the LoRaWAN ecosystem. It has an independent WEB server built-in with sensor data storage for 10 years. In a situation where the connection with the network is interrupted or lost, sensor readings are still stored in the base station's memory and transmitted to the Cloud once the network connection is restored.

A local loop with an actuator controller can be created with MQTT or MODBUS protocols which are not available in LoRaWAN gateways.

Once installed your whole system can be hosted locally on your infrastructure and is thus completely off-grid secure. Since all the elements are within a single software ecosystem, it eliminates the risks of data transmission interoperability issues between elements.

- We take responsibility for the whole chain of equipment.

A United system means that we provide support for any problem which should arise. By buying the system separately – sensors, gateway, cloud – each from a different developer there is no one to ensure the compatibility of the system. As creators of our whole system, our technical support team offers to solve your problems rapidly.

- Single system – easy setup

It takes time and expertise to set up individual systems and ensure their compatibility. Having devices that are designed to be used together eases the installation. Sensor pairing takes minutes and you can have your Cloud dashboards up and running within an hour. For large-scale projects, such simple installation pays off.

- Aranet system is not infrastructure dependent

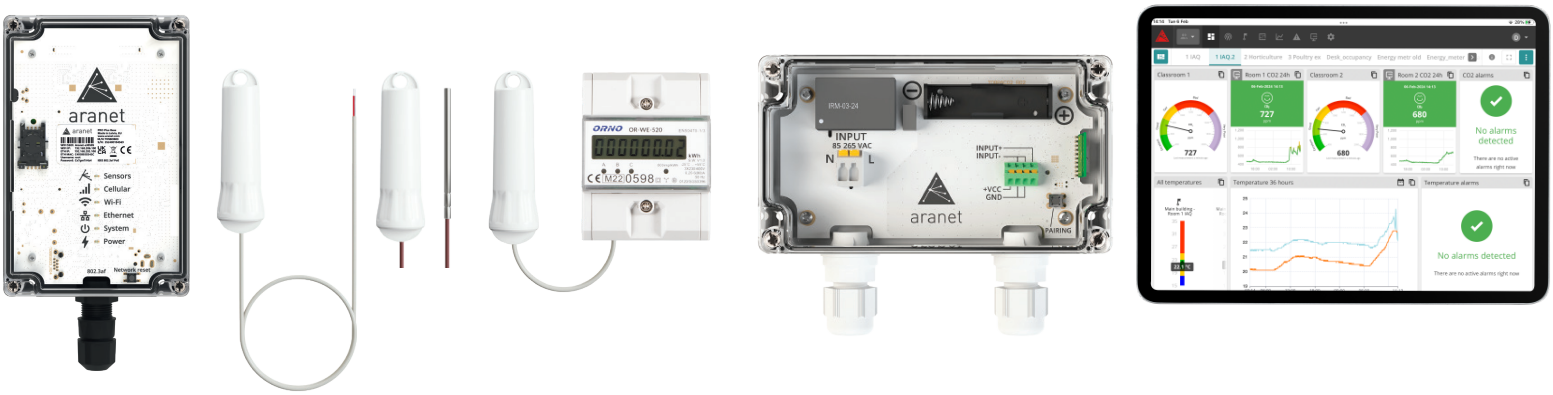
The system can be installed even in remote or rural territories where other data connections are not available. Aranet sensors have a **very long battery life and can operate for up to ten** years with one set of regular AA or AAA batteries. For the simplest setup, the base station just needs to be connected to mains power.

- Our products are designed and manufactured in European Union.

Aranet IoT ecosystem is a truly unique player in the wireless sensor market. We design, manufacture, and develop a complete solution - sensors, a 3-in-1 base station (gateway, data storage & web server). Our cloud solution – Aranet Cloud is fully running and operating from Latvia, EU. All elements of our ecosystem are **designed, manufactured, and maintained in Latvia, EU.** The sourcing of components covers various countries. Aranet is manufactured by SAF Tehnika JSC with 20+ years of experience in wireless transmission and a global presence in over 130 countries.

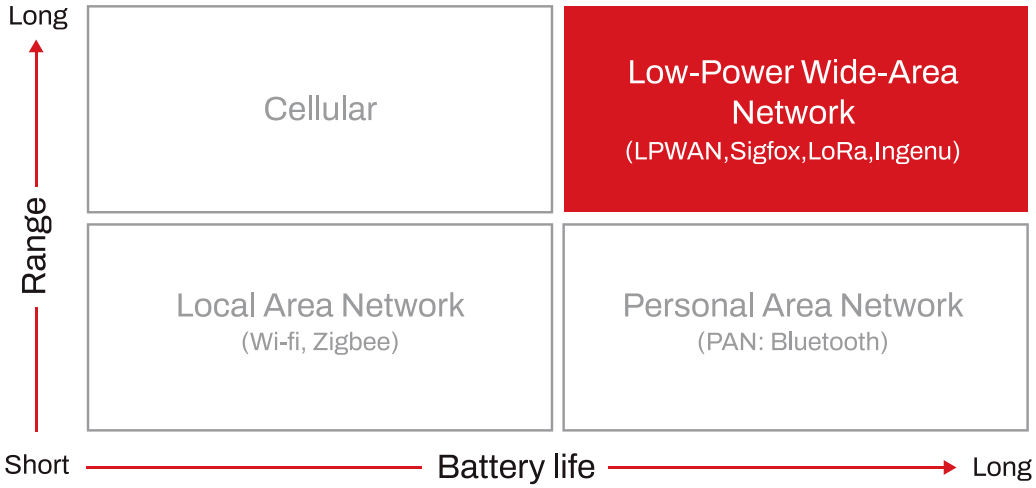
Why Aranet?

A Truly Unique Player on the Wireless Sensor Market



When evaluating different wireless sensors there are many parameters to consider. It may seem overwhelming at first, but each technology has its strong and weak points. Understanding these will help you make the right decision for your business.

The first and main two parameters to consider are range and battery life.



As you can see from the figure above, cellular devices are great for long distance. However, they cannot really operate for a longer time on a single battery charge. And this makes sense, as this technology was designed for larger data throughput. Sensor data readings do not require large data, as it typically is just a few numerical values. Similarly, one can make the case against using Wi-Fi for wireless sensors – the technology was designed for larger data necessities, with most devices being either plugged in or charged regularly. Bluetooth can potentially work for longer periods of time without charging. For price-sensitive applications, where the distances are small (a couple of meters) Bluetooth may work.

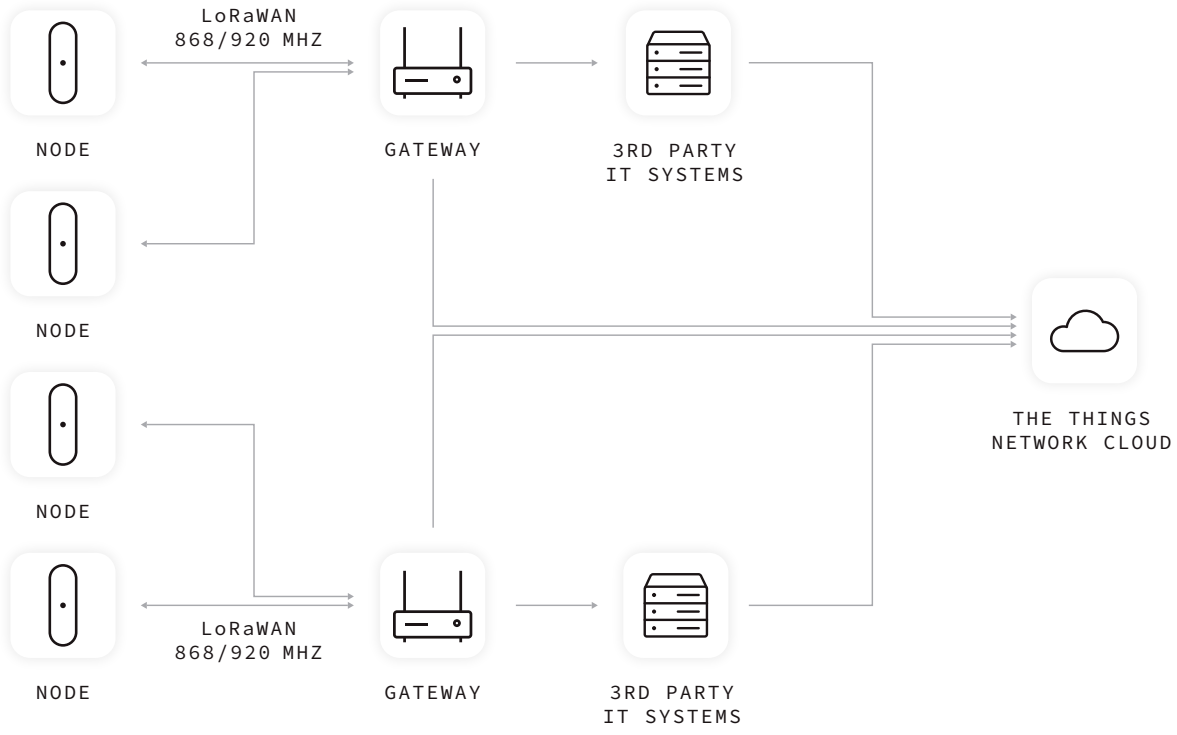
But wherever you need a reliable wireless sensor connection that extends beyond 20 meters and can work autonomously for several years, the low-power wide-area network technologies are the best solution, both in terms of range and battery life. While you wouldn't be able to download a movie via LPWAN, when it comes to applications such as measurements or telemetry that require relatively small data throughput, there is no better solution than this.

LPWAN

Low-power wide-area network or LPWAN is a specifically designed wireless communication network that allows long-range communications at a low bit rate between battery-operated sensors and gateways. There are several competing technology platforms within this domain, the two most popular being LoRa and SigFox. Each of them have slightly different features and applications. SigFox works only with network operators and keeps ownership of most of its devices, except the endpoints. SigFox aims to become the world's largest IoT network by working with a single operator in each country, effectively going for public networks only. LoRa, on the other hand, has both – options of the public networks via operators and deployment of private networks which is often necessary for IoT projects.

LoRa and LoRaWAN

LoRa stands for Long Range and it defines the technology on a physical layer – the principle of radio frequency modulation. LoRaWAN is the most popular protocol for managing communication between LPWAN gateways and sensors maintained by the LoRa Alliance. The main idea of the LoRaWAN protocol is that the network nodes and gateways can be assembled between different manufacturers that are able to work together. LoRaWAN manages the communication frequencies, data rate and power for all of the devices.

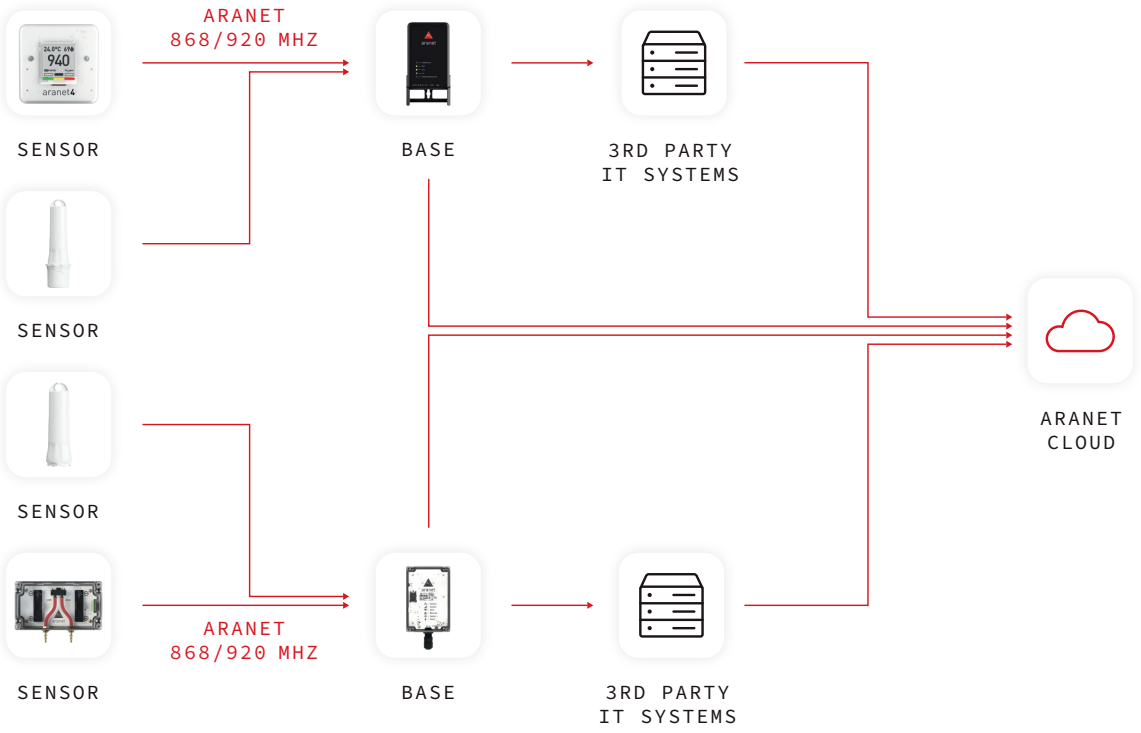


Aranet

Aranet Radio works in sub-gigahertz ISM 868/920 MHz frequency band and uses LoRa modulation technology, but not the LoRaWAN protocol. Aranet Radio has its own proprietary protocol. This offers several benefits to the user which we will describe below. The communication protocol between the Aranet base station and Aranet sensors is proprietary. It is custom-developed by the industry-leading wireless radio manufacturer SAF Tehnika, and is not compatible with LoRaWAN devices.

You can, however, use 3rd party sensors with Aranet 4-20 mA, Voltage and Pulse wireless transmitters and integrate your Aranet PRO base station via MQTT, BACnet IP or Modbus TCP/IP data communication protocols or Aranet Cloud level integration via Aranet Cloud APIs. Therefore the system is open for integration on both the sensor and the base station sides and Aranet takes care of the radio communication between them. With Aranet you control the whole IoT environment – from sensors to the base station to the Cloud.

In addition, Aranet base stations offer far greater range of capabilities than typical LoRa gateways. Aranet base station incorporates gateway, database and webserver functionalities.



There are several unique advantages to this kind of solution:

Security

As Aranet controls the whole network in its own secure encrypted communication protocol, there is no dependence on 3rd party cybersecurity flaws like password management or communication issues. You can have the whole system isolated from the rest of the world by hosting the cloud locally on your own infrastructure, making it completely off-grid secure.

Ease Of Use

Having all Aranet system devices simplifies the setup: sensor pairing takes a few minutes and you are ready to go, even without any deep technical knowledge. In comparison, it takes time and technological expertise to set-up and program LoRaWAN sensors to work with LoRaWAN gateways. When rolling out large scale projects the fast setup really pays off.

Excellent support

Aranet has a dedicated technical support team that helps you rapidly solve any problems should they arise. We take full responsibility for the whole communication chain of equipment. This means that you have a single and reliable point of contact for any potential issues.

Safety

All of the elements are within a single software ecosystem, eliminating the risks of data transmission interoperability issues between different elements.

Outstanding battery life

Aranet sensors communicate with the base station unidirectionally. This allows them to be more power-efficient than the typical LoRa sensors.

Reliability

Aranet is manufactured by SAF Tehnika, a company with more than 20 years of experience in mission-critical radio equipment engineering. SAF's experience has allowed us to create the Aranet brand, which we believe to be the most reliable wireless sensor network currently on the market.
The database, or SD memory card included in the Aranet base station also significantly improves the reliability of the solution.

Because of these reasons, the Aranet system really is a unique player in the wireless sensor market. So if you have limited resources for installation, you care about the network reliability and having a secure solution is important to you, we highly recommend you give the Aranet solution a go.