

# Neuron Temperature IP21



The Neuron Temperature IP21 is a small wireless sensor with long battery life that measures ambient air temperature every three seconds. It transmits measurements wirelessly through a Neuron gateway to the Neuron app. Typical applications are monitoring of temperature in all types of rooms and buildings, refrigerators, freezers and fuse boxes. The sensor is attached with double-sided tape or cable tie.

## Features

- Integrated long life battery - up to 10 years lifetime
- Continuous measurement and instant alarm
- Adjustment of parameters such as measurement frequency on request
- Define your own alarm levels in the Neuron app
- Receive alerts as push notifications, emails or SMS
- Easily connect the sensor to the system with the QR-code on the sensor. Ensures immediate and accurate registration in the app on your phone/PC/tablet
- The sensor transmits data to your nearby Neuron Gateway which then again communicates with the Neuron Cloud

## Essentials

Measuring Range	-40 - 85 °C
Measuring Frequency	Every 3 sec
Report Frequency	Every 2 min, or immediately after measurement if trigger for critical data transmission is reached
Expected Operating Time*	Up to 10 years

\*Depends on measurement frequency, amount of critical data transmissions and ambient temperature

## Typical Applications

- HVAC
- Transformer stations
- Industry
- Storage
- Greenhouse

## Neuron System Benefits

Sensor - Gateway - Cloud - App



- **Robust sensors**  
Suitable for rough environments
- **Wireless**  
Wireless sensor with integrated battery
- **Long lifetime**  
Typical 10 years battery life
- **Quick installation**  
Wireless, installed and operational in minutes
- **Collect and deliver data**  
Data delivery through API and app
- **Broad offering**  
More than 50 different sensor types available

## General Description

Temperature is a crucial parameter in many different applications, from HVAC systems and industrial process maintenance to freezers. Accurate measurement of ambient temperature is therefore essential for maintaining optimal conditions and ensuring proper functioning of these systems.

The Neuron Temperature IP21 sensor is a high-precision device designed specifically for measuring the temperature of air. With a wide temperature range of -40°C to 85°C and an accuracy of  $\pm 0.5^\circ\text{C}$ , this sensor is ideal for a variety of applications where temperature needs to be monitored and controlled with a high degree of accuracy.

Compact in size at just 37mm x 25mm x 14mm, the sensor is easy to integrate into any system. It operates on a non-replaceable internal battery allowing it to operate up to 10 years.

Whether you need to monitor the temperature in a warehouse, control the temperature in a refrigerator, or monitor HVAC-systems, the Neuron Temperature IP21 sensor is the perfect choice for reliable and accurate temperature measurement.


## Principle of Operation

In the Neuron Temperature IP21 sensor, an NTC thermistor is used as the sensing element. The thermistor is placed in direct contact with the air, allowing it to accurately measure the ambient temperature.

The thermistor's resistance is measured by passing a small current through it and measuring the voltage across it. This voltage is then used to calculate the thermistor's resistance, and from that the ambient temperature can be inferred.

The Temperature IP21 sensor has high accuracy, wide temperature range, robust IP21 enclosure, and fast response time.

Every three second the sensor measures the ambient temperature and if the temperature has changed more than 2 degrees since the last transmission, the sensor reports immediately. Otherwise, it reports every 2 minutes.

The symbol  on the product label refers to this data sheet for important information regarding intended use, requirements for the operating environment etc. If the equipment is used in a manner not specified by El-Watch, the protection provided by the equipment may be impaired.

## Technical Specification

### Operational Specification

Measuring Range	-40 - 85°C
Resolution	0.1°C
Accuracy	$\pm 0.5^\circ\text{C}$ (-5 - 75 °C)
Measuring Frequency*	Every 3 sec
Report Frequency*	Reports every 2 min. Or immediately if trigger for critical data transmission is reached, see below
Trigger for Critical Data Transmission*	2°C
Operating Environment	Ambient temperature: -40 - 85 °C Relative humidity: 0-80% (non-condensing) Altitude < 2000m above sea level Pollution degree: 3
IP Grade	IP 21, indoor use
Radio Frequency	863-870 MHz / 902-928 MHz
Battery Type	Li-SOCI2, 3.6V
Expected Operating Time**	Up to 10 years

\* Adjustable on request

\*\* Depends on measurement frequency, amount of critical data transmissions and ambient temperature






### Physical Specification

Materials	POLYblend 65 FS
Dimensions LxWxH	37x25x14mm

### Ordering Information

	Europe/The Middle East/Africa Part number	North America/Australia/ New Zealand Part number
Neuron Temperature IP21	421838	422406

### Regulatory

Certifications	Directives/Standard
 	RED 2014/53/EU Radio Equipment Regulations 2017
  	FCC Part 15C
Safety	IEC 61010-1:2010

## Installation

Neuron sensors are ready for use out of the box and will start logging data after registering the sensor in the app. Even though Neuron sensors deliver great range and long battery life, following some simple guidelines for mounting of the sensor and gateway can greatly improve signal coverage and lifetime of the sensor.

To ensure optimal antenna performance and signal strength, the sensor should be placed elevated with some distance to fixed objects. Keep in mind that RF-signals are greatly affected by close metallic surfaces.

For sensors with an external antenna, the antenna should be clear off the metallic surface.

You can find all you need to get started with Neuron Sensors at our support site: [support.el-watch.com](https://support.el-watch.com)



For sensors operating in environments with greatly varying temperatures, care should be taken to avoid putting the sensor in unnecessary stress. Very high or low temperatures will affect the battery life and the signal strength of the sensor. While some sensors must be close to the source of heat or cold, other sensors have external probes which allow the sensor to be placed at a distance.

## Fastening

The small, compact blue Neuron sensors are fitted with fastening holes for use with cable ties. The sensors are also delivered with double-sided tape that may be used for fastening of the sensors.

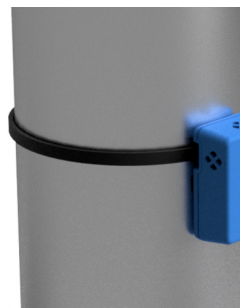
All the black Neuron sensors, like the Neuron IR380 and Neuron Vibration, are fitted with a strong magnet at the back for easy fastening. If there is no magnetic surface, then double-sided tape is a good solution.



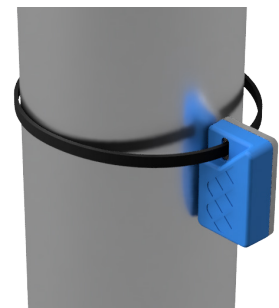
Place elevated with distance to fixed objects



Keep antenna clear off the metallic surface



Sensors with IP21 Enclosure



Sensors with IP67 Enclosure

## Dimensions

