

Neuron Thermocouple Type K

The Neuron Thermocouple measures a very wide range of temperature based on a type K thermocouple probe. The sensor has a standard IEC miniature connector for easy connection to any type K probe.

It is designed for industrial temperature measurements with a rugged casing and wide temperature range from -250°C to 1350°C depending on choice of type K thermocouple probe.



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

Typical Applications

- General purpose high temperature measurements
- Kiln, gas exhaust, engine- and motor temperatures
- Process & chemical industries

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

Essentials

Measuring Range*	-250 °C - 1350 °C
Measuring Frequency	Every 10 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 choice of Type K probe.

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


General Description

Thermocouples enable measurement of very high and low temperatures, yielding wider range than comparable PT100 elements. The Neuron Thermocouple matched with a Type K temperature probe combines the power and versatility of the Neuron system with a high performing temperature probe to deliver accurate and flexible temperature data through the Neuron system.

The Neuron Thermocouple is equipped with a standard IEC miniature connector for easy connection to any type K probe.

Principle of Operation

The thermocouple drives a small gradient voltage caused by dissimilar metals joining at the thermocouple's tip. By measuring this voltage with respect to the reference ambient temperature at the connector, the thermocouple tip temperature can be inferred.

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	-250°C - 1350°C
Resolution	T_A (Temperature Ambient) ($T_A - 55^\circ\text{C}$) < T < ($T_A + 225^\circ\text{C}$): 0.1°C else: 0.7°C
Accuracy**	0.4%FS ± 1°C @ $T_A = 25^\circ\text{C}$ 1.5%FS ± 1°C @ $T_A = 25^\circ\text{C}$, T < -80°C
Measuring Frequency***	Every 10 sec
Report Frequency***	Reports every 2 min. Or immediately if trigger for critical data transmission is reached, see below
Trigger for Critical Data Transmission***	10°C change in measurement
Electronics Operating Environment	Ambient Temperature: -40 - 85 °C Relative Humidity: 0-80% Altitude < 2000m above sea level Pollution degree: 3
IP Grade ****	IP 67, wet conditions, indoor use.
Cleaning	Wipe clean with a damp cloth
Radio Frequency	863-870 MHz / 902-928 MHz
Battery Type	Lithium Manganese Dioxide, 3.0V
Expected Operating Time*****	Up to 10 years

* Depends on choice of Type K probe.

** The accuracy specification does not include the error of your probe. Please see your probe manufacturers datasheet for details.

*** Adjustable on request.

**** IP grade does not include sensing probe and its connector.

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



Physical Specification

Materials	Polyurethane / Ni-Cu-Ni Coated Neodymium Magnet
Connection Type	IEC Miniature Connector Type K
Dimensions LxWxH	53x71x14 mm

Ordering Information

	Europe/The Middle East/Africa Part number	North America/Australia/New Zealand Part number
Neuron Thermocouple	422610	422685

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 »

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/grey Neuron sensors, like the Neuron Thermocouple 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

