Neuron Potentiometer Digitizer

The Neuron Potentiometer Digitizer sensor measures the middle pin resistance (wiper) of various potentiometers in the range of 1kΩ to 100kΩ and converts the analog signal into a digital measurement. Integrated battery ensures up to 10 years of battery life. All measurements are easily accessible from web, app or API

Features

- Integrated long life battery - up to 10 years lifetime
- The digitizer powers the potentiometer, no need for external power source.
- 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

- Draw wire distance measurement
- Valve position
- Linear actuator length

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

PT100 Measuring Range	1kΩ to 100kΩ potentiometers
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 measurement frequency, amount of critical data transmissions and ambient temperature*

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General Description

The Neuron Potentiometer Digitizer sensor measures a wide range of resistive potentiometers and converts the resistance measurement into a 13-bit digital representation. The device then transmits the converted digital signal via a wireless radio.

It is designed to be used in industrial environments, where the wireless transmission capability makes it easy to collect data from remote locations and the battery power makes it convenient to use in areas where power supply is not available.

Typical applications where potentiometers are found are in draw wire sensors, linear actuators and various positioning sensors.

Principle of Operation

The Neuron Potentiometer Digitizer supply a voltage source to the potentiometer and measures the resistance of the middle pin in the voltage divider circuit. The measured resistance then gets converted into a 13-bit digital representation for maximum accuracy.

This makes the sensor very flexible to measure a wide range of potentiometers from 1kΩ to 100kΩ.

The digital output signal can be configured in the app depending on the user need, where 100 count may represent 100mm length and 1000 count may represent 1000mm length for example.

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

Technical Specification

Operational Specification

Measuring Range	1kΩ to 100kΩ potentiometers
Resolution	1 count
Accuracy	13-bit (8192 count) of potentiometer range
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*	200 count (~2.5% FS) 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

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

Physical Specification

Materials	Polyurethane / Ni-Cu-Ni Coated Neodymium Magnet
Connection Type	M12 Connector
Connector cable	M12 A-coded 0.5m cable, other on request
Dimensions	Radio transmitter: 50mm x 15mm Cable length: 50cm

Ordering Information

	Europe/The Middle East/Africa Part number	**North America/Australia/ New Zealand** Part number
Neuron Potentiometer Digitizer	422680	422681

Regulatory

Certifications	**Directives/Standard**
CE UKCA	RED 2014/53/EU Radio Equipment Regulations 2017
FC Industry Canada	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 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.

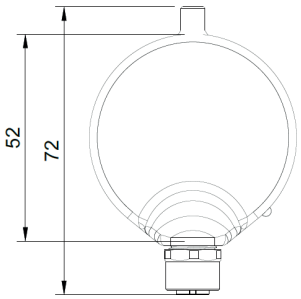
Place elevated with distance to fixed objects

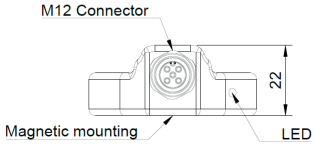

Keep antenna clear off the metallic surface


Sensors with IP21 Enclosure

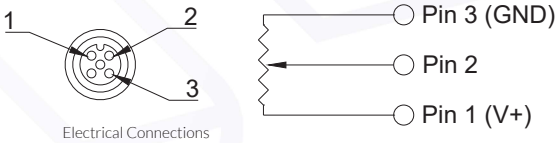

Sensors with IP67 Enclosure

Dimensions






Setup example with linear position sensor



Electrical Connections

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Additional information about Neuron sensors, installation, userguides, and more at our support website: support.el-watch.com