

# 4-20mA Sensor (EC420)

[Visit the online store page](#)

Model: EC420

Requires the [eGauge Sensor Hub](#) and eGauge model EG4xxx (Pro or Core), not compatible with older model units.

Only use straight-through RJ-11 cables to connect powered sensors to the Sensor Hub. Telephone systems generally use "reverse" style RJ-11 cables which are incompatible with the Sensor Hub. See [this article](#) for more information on verifying the correct RJ-11 wiring. Every Sensor Hub compatible sensor sold by eGauge Systems comes with a straight-through RJ-11 cable.

The eGauge 4-20mA Sensor is used in conjunction with the [Sensor Hub](#) and an EG4xxx model meter (Core or Pro) to read a 4-20mA current loop sensor such as pressure sensors, water level sensors, temperature probes, and other industrial sensors that output a 4-20mA current loop.

[See our Sensors product introduction video here.](#)



*eGauge EC420 4-20mA Sensor*

# Specifications

[Full specs \(data-sheet PDF\)](#)

[CAD file \(STEP format\)](#)

- CTid Enabled (w/ auto-configure and locator LED)
- Compatible with 4-20mA current loop sensors
- -30 °C to 70 °C
- Humidity range: Up to 80%
- Extruded aluminum Case
- 26 x 26 x 40 (mm), 1.02 x 1.02 x 1.57 (in.)
- 7' RJ-11 cable for Sensor to Sensor Hub
- 47 CFR Part 15, Subpart B – Unintentional Radiators, Class B for Home or Commercial use

- US Patent # 10560763
- 2-year limited warranty

## Hardware included

- 1x eGauge 4-20mA Sensor
- 1x 3-pin input plug
- 1x 7' RJ-11 cable for connection to Sensor Hub

## Assembly/installation information

It is not advisable to extend the RJ11 leads from the Sensor to Sensor Hub. It is acceptable to use a longer RJ45 cable from the *Sensor Hub* to the *eGauge*.

If RJ11 cable between *Sensor* and *Sensor Hub* must be extended, it is advisable to use twisted pair wires, such as a CAT5 cable with RJ11 plugs (most commonly used for DSL modems).

If terminating own cables, both RJ11 and RJ45 cables should be straight-through cables, with the same color order on both ends.

1. [Install the sensors and Sensor Hub.](#)
2. Connect the EC420 to the 4-20mA sensor output using the signal and ground ports on the EC420. The 5V pin is unused.
3. [Configure the sensors.](#)

## Additional Software Configuration

The EC420 will report and record the milliamp value as a decimal number. The milliamp value can be linearly mapped to the actual sensor value and unit by using a formula register with function `map420 (x: number, min: number, max: number)` where `x` is the register value, `min` is the minimum sensor value (reported when the input is 4mA or lower) and `max` is the maximum value (reported when the input is 20mA or greater).

The unit of the sensor's measurement is determined by the formula register type selected.

Generally, the instantaneous register value of the raw 4-20mA sensor reading will be used for `x`. To get an instantaneous register value, use the format of  `$"Register Name"` like in the examples shown below.

## Examples

If a 4-20mA sensor is connected to the meter's S3 input, measuring the output of a CO2 meter that reads between 0 and 10,000 ppm, the formula register will be `map420($"4-20mA sensor raw value", 0, 10000)`

| Name:                                       | Recorded value/formula:  |
|---|--|
| 4-20mA sensor raw value                     | <input type="text"/> = <input type="button" value="S"/> <input type="button" value="S3"/> <input type="button" value="DC-only (mean) value"/>  |
| CO2 PPM                                     | <input type="text"/> = <input type="button" value="="/> <input type="button" value="Parts per million [ppm]"/> <input 0,="" 10000)"="" 4-20ma="" raw="" sensor="" type="button" value="map420(\$" value",=""/> |
| <input type="button" value="Add Register"/> |  |

Similarly, a temperature sensor that can read between -50 °C and 200 °C would have a formula register of

`map420($"4-20mA temp sensor raw value", -50, 200)`

| Name:                                       | Recorded value/formula:   |
|---|---|
| 4-20mA sensor raw value                     | <input type="text"/> = <input type="button" value="S"/> <input type="button" value="S3"/> <input type="button" value="DC-only (mean) value"/>   |
| Temperature reading                         | <input type="text"/> = <input type="button" value="="/> <input type="button" value="Temperature [°C]"/> <input -50,="" 200)"="" 4-20ma="" raw="" sensor="" type="button" value="map420(\$" value",=""/> |
| <input type="button" value="Add Register"/> |   |

This assumes the minimum and maximum values of the sensor range start at 4mA and end at 20mA.

## Documents

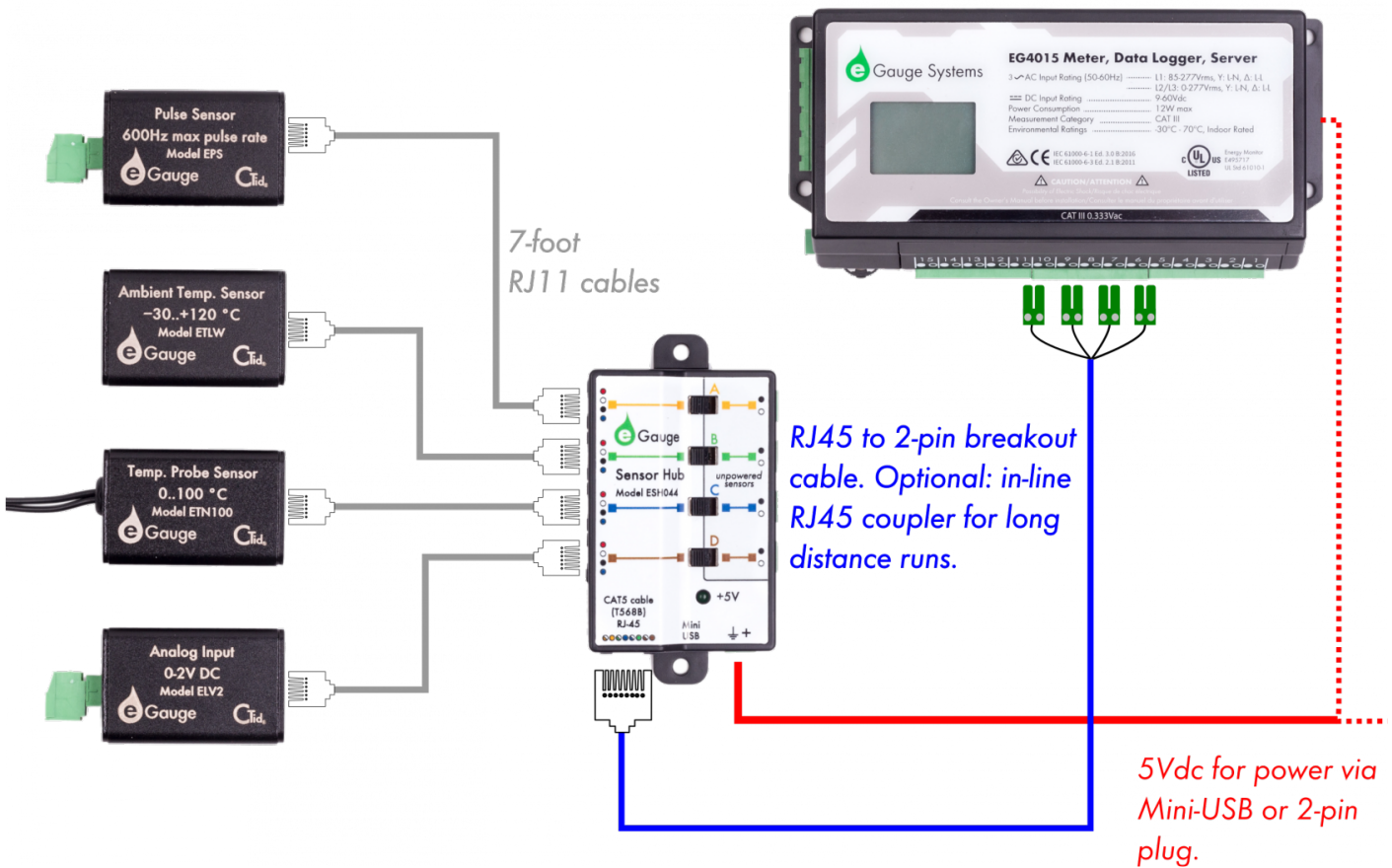
- [Spec Sheet](#)
- [FCC declaration](#)
- [CAD file \(STEP format\)](#)

## Related Information

- [Sensor Hub Product Page](#)
- [Configuring CTid Sensors](#)

# Diagrams

## Typical Setup Overview



Please visit [kb.egauge.net](http://kb.egauge.net) for the most up-to-date documentation.