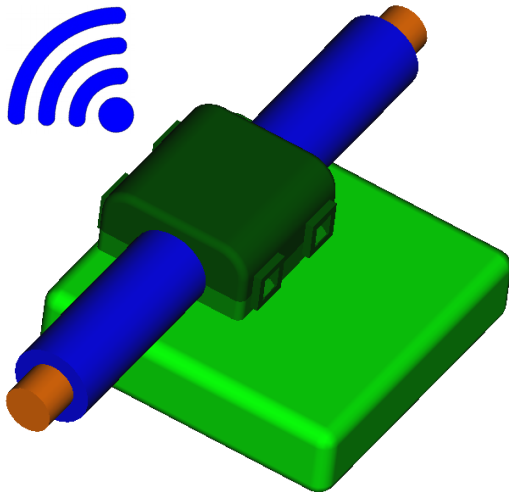# IoT Current and Voltage Sensor
with WiFi Interface and Cloud Connection

Features

+ Multisensor system: DC and AC Current (Hall, shunt, CT), voltage, temperature
+ WiFi interface with cloud connectivity
+ Transceiver extensible (LoRa, ZigBee, CAN)
+ Galvanically isolated split-core design
+ Contactless Melexis 91208 Hall sensor

Applications

+ Internet of Things (IoT), Internet of Everything (IoE)
+ Monitoring of battery driven equipment
+ Workplace safety, factory monitoring
+ Energy efficiency / cost monitoring
+ Solar power
+ Prototyping, development, test platform

Description

The IoT Current and Voltage Sensor consists of four sensors: (i) contactless Hall or CT current sensor, (ii) shunt resistor based current sensor (iii) battery voltage sensor, and (iv) temperature sensor. The four sensor signals are read by analog-to-digital converters (ADCs), processed by a programmable state-of-the-art microcontroller, and uploaded to the cloud via WiFi interface. The connectivity of the module is extensible to CAN, LoRa, GSM, ZigBee, Bluetooth, and Ethernet interfaces.

A particular feature of the product is its easy and safe installation without interrupting the primary current wire by using contactless galvanically isolated Hall sensor technology. This additionally allows the module to be used for hassle-free retrofit application.

The device is supplied directly with 5V...60V DC from the primary battery and optionally can be operated with a secondary 9V battery for autonomous use.
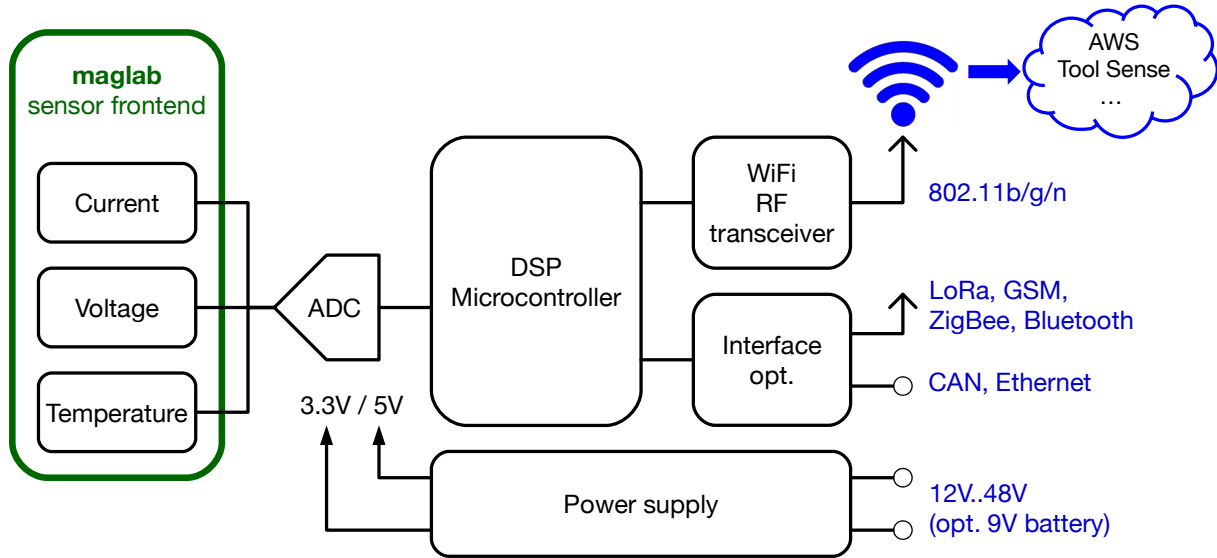
Characteristics

Parameter	Typical Value	Unit
Primary input current range (DC and AC)	±5...±2000	A
Voltage measurement range (DC and AC)	±1...±1000	V
Measurement accuracy	1.0	%
Operation temperature range	–40 ... 85	°C
Supply voltage	12 (5...60)	VDC
Battery supply for autonomous use	9	VDC
Output refresh time	10.0[1] 100.0[2]	ms

1) wired connection
2) wireless connection

Block Diagram (Single-channel)

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sensor frontend

Current

Voltage

Temperature

ADC

3.3V / 5V

DSP Microcontroller

WiFi RF transceiver

AWS Tool Sense ...

802.11b/g/n

Interface opt.

LoRa, GSM, ZigBee, Bluetooth

CAN, Ethernet

Power supply

12V..48V
(opt. 9V battery)

Block Diagram (Multi-channel)

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multi-channel sensor frontend

Channel 1
I,V,T

Channel 2
I,V,T

Channel 3
I,V,T

Channel 4
I,V,T

:

Channel n
I,V,T

ADC

3.3V / 5V

DSP Microcontroller

WiFi RF transceiver

AWS Tool Sense ...

802.11b/g/n

Interface opt.

LoRa, GSM, ZigBee, Bluetooth

CAN, Ethernet

Power supply

12V..48V
(opt. 9V battery)
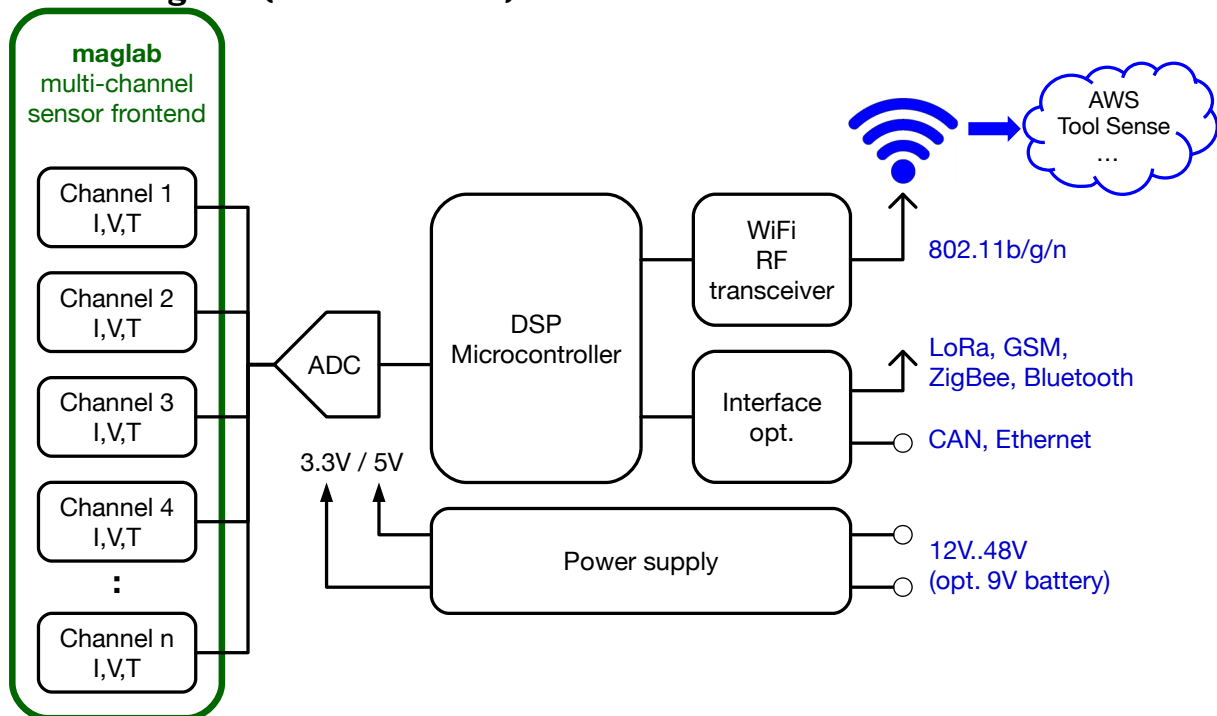
Module Variants

The IoT Current and Voltage Sensor module is available in several variants:
- Single-channel sensor frontend
- Multi-channel sensor frontend, e.g., 4-channel solution for the solar applications
- Interface options include WiFi, CAN, LoRa, GSM, Zigbee, Bluetooth, Ethernet
- Power supply directly from your 12V..48V batteries
- Autonomous supply with separate 9V battery
- Hall, CT, or shunt current sensor technologies available

Single-channel
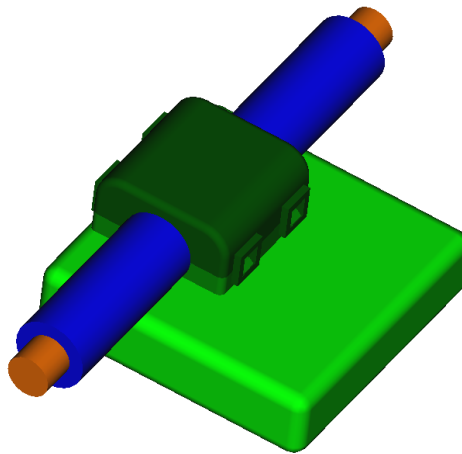
Multi-channel
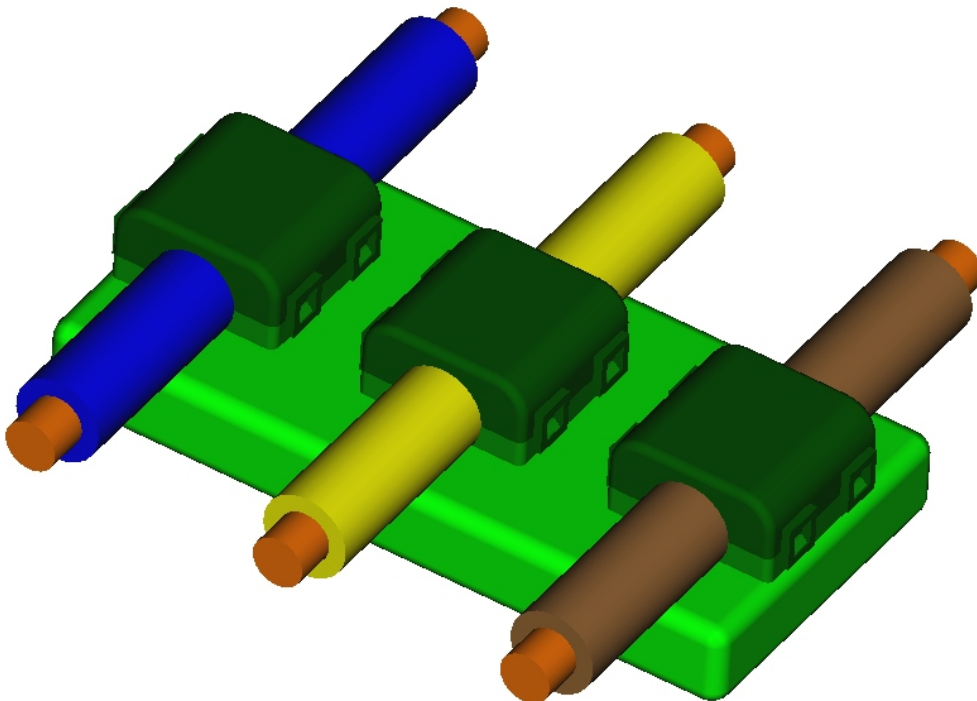
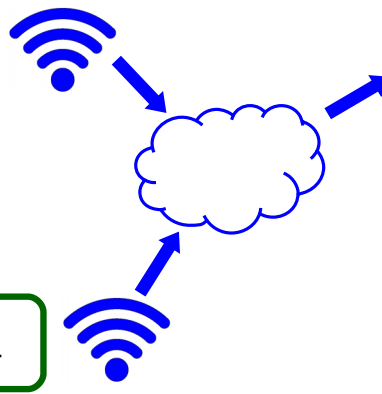## Typical Applications

Battery-Driven Fleet and Tools

Fleet and tools

Reporting

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✓ **Fleet management**
✓ **Charge control**
✓ **Smart maintenance**
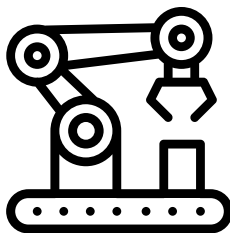
Workplace Safety / Energy Efficiency

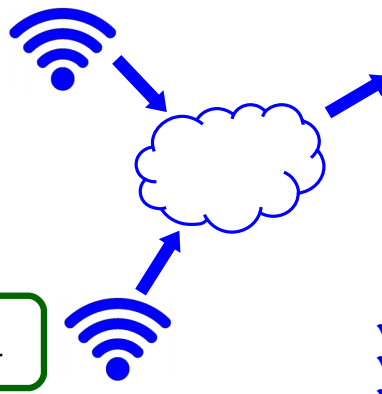**Factory and machinery**
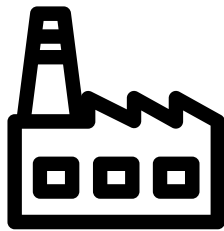
Reporting

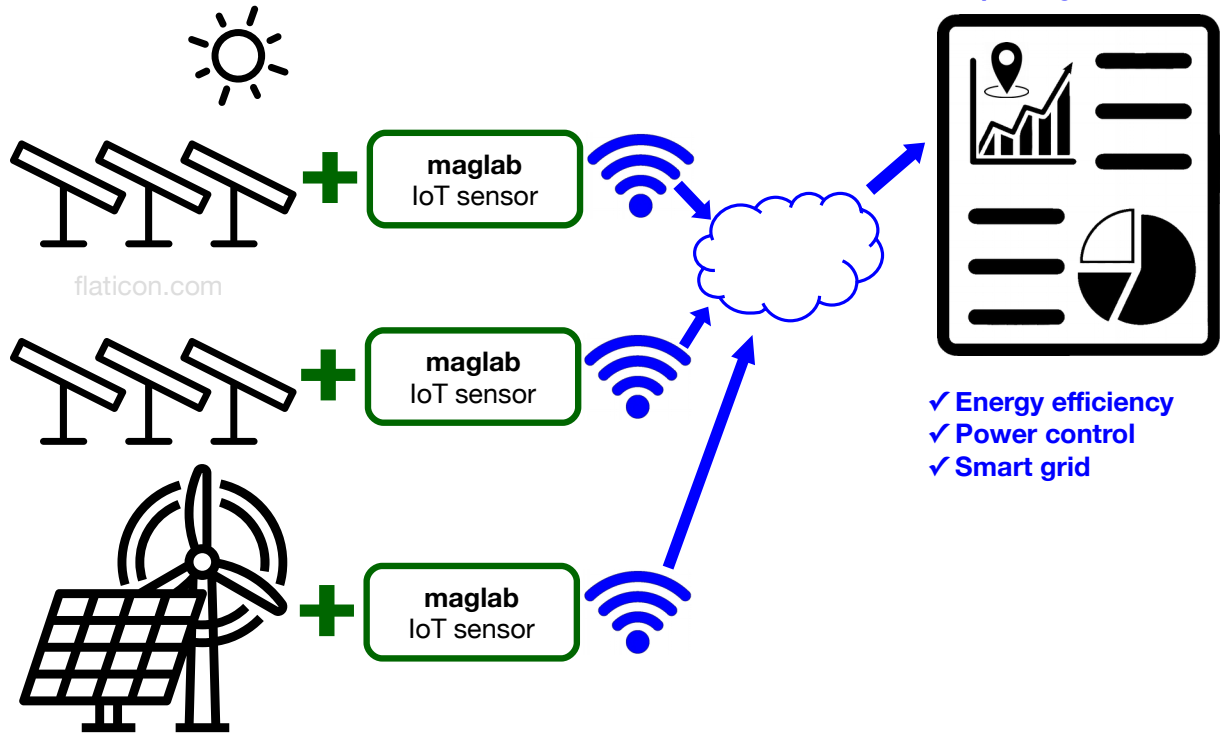flaticon.com

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✓ **Energy efficiency**
✓ **Workplace safety**
✓ **Facility management**

Renewable Energy, Solar Power, and Smart Grid

Solar Power & Renewables

Reporting

+ maglab IoT sensor

+ maglab IoT sensor

+ maglab IoT sensor

✓ **Energy efficiency**
✓ **Power control**
✓ **Smart grid**

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We drive innovative IoT sensor solutions from prototyping to volume production!

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