# Energomaster

The universal smart electricity sub-meter for the IoT age

- Monitors electricity consumption accurately, in real-time

- Monitors voltage, current, power, energy, and power failures

- 3 phases, up to 9 individual circuits, and two digital inputs monitored by one device

- Two digital outputs

- Wide range of communication interfaces (per client's request: LTE, WiFi, LoRaWAN and others)

- Industry standard interfaces for connecting to monitoring and management systems (MQTT, CoAP, DLMS/COSEM)

The universal, smart electricity sub-meter Energomaster can be used for a range of applications where fast and accurate information on power consumption or production is needed, optionally complemented by universal digital inputs and outputs, i.e. for monitoring and production control. Energomaster is the ideal solution for Industry 4.0, smart city, microgrids, monitoring efficiency and other clever energy solutions of the 21st century.

Energomaster provides a wide range of data both in power production and consumption — it measures the voltage and frequency in the supply network and a wide range of parameters for monitored circuits (up to 3×3 phases): active and reactive power, power factor, and others.

In the event of a power outage, Energomaster is equipped with a short-term internal power backup and can send an alert to help maintain network stability. Two RJ11 digital inputs/outputs allow for connection to impulse outputs of smart meters (optical/S0) or connection to gas or water meter pulse outputs, process control counters or control over remote circuit switching.

## Examples of use in Industry 4.0 installation
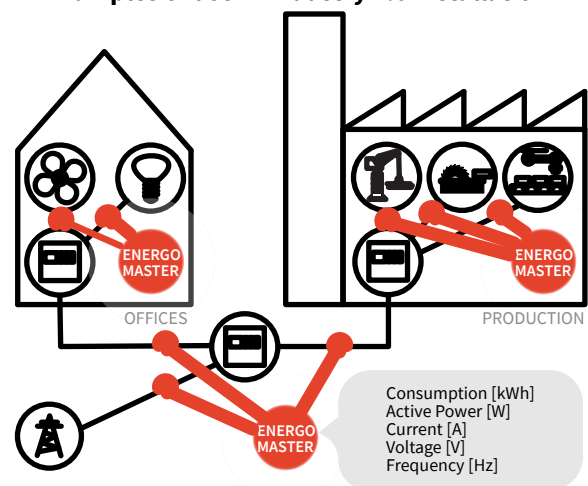


Data measured by Energomaster is sent via a communication interface (optional LTE, WiFi, LoRaWAN, etc.) to monitoring and management systems at adjustable intervals (5 seconds – 60 minutes). The MQTT and CoAP standards are used for data transmission.

## Do you have an IoT project idea that you want developed?

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## Sample household photovoltaic installation



Solar Production

Power Plant

Cabinet

ENERGO MASTER

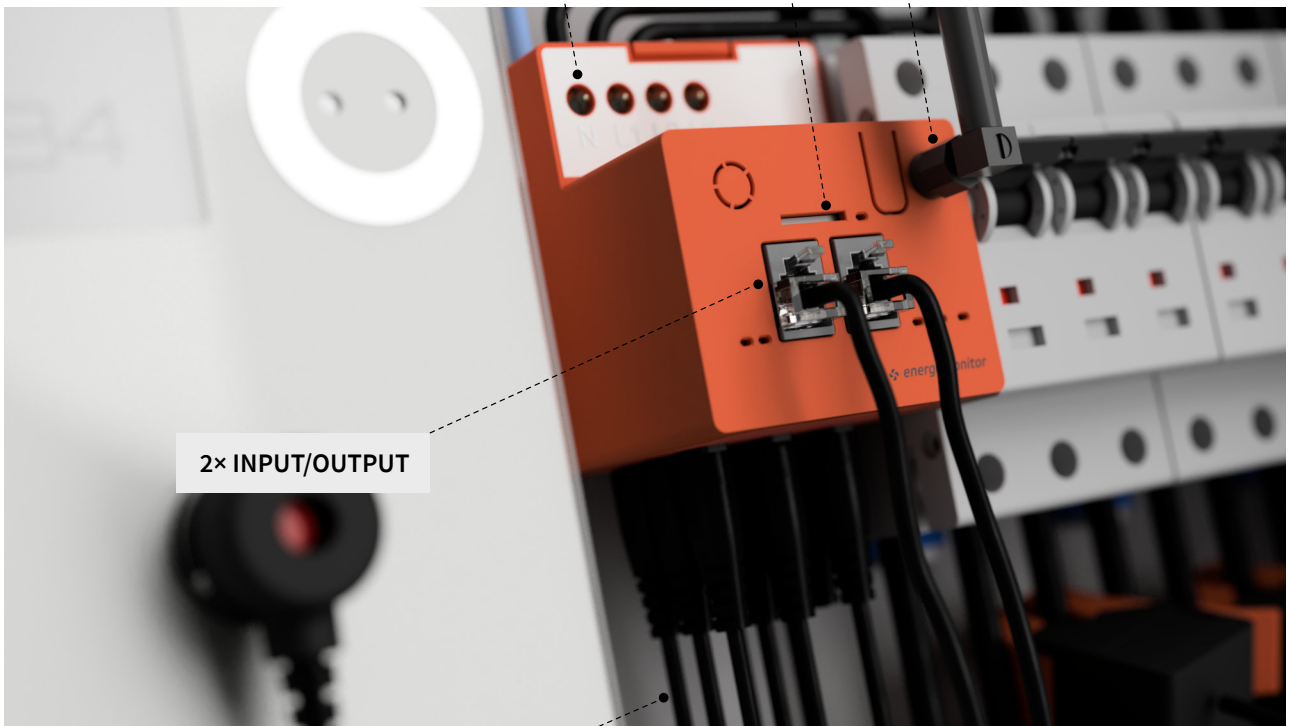Relay   Heating   Lights   Washing Machine
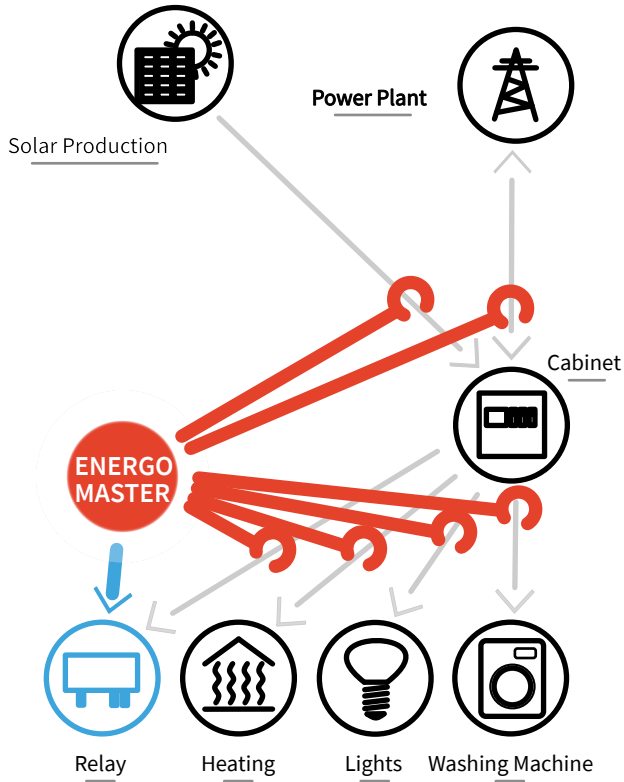
## Use cases

- Smart industry measuring points (Industry 4.0)
- Industrial machinery consumption and performance
- Smart mobility solutions – measure charging/discharge for electromobile applications
- Demand response management systems (DERMS)
- Building and facility consumption monitoring with high resolution
- Microgrids
- PV installations, including on-site consumption and measurement of both import and export of energy from/to the grid
- HVAC equipment performance and efficiency
- Heat pump performance monitoring and efficiency
- Public lighting consumption and real-time switching/monitoring (Smart city applications)
- Remote sites monitoring of consumption and activity (blackouts, unusual loads, underperforming equipment) in telecom, grid infrastructure, gas and water pumping operations, etc.
- Monitoring of load balance for large equipment or facility to prevent uneven distribution of loads
- Calculate the electrical cost for individual projects for accurate budgeting

**VOLTAGE INPUTS**
3× 230/400 V AC, 50 Hz

**NANO SIM SLOT**

**SMA CONNECTOR**
(with external antena / stub antenna)



**2× INPUT/OUTPUT**

**9× CURRENT INPUT**

# Technical details

| | |
|---|---|
| **Measured parameters** | Voltage, current, active power, reactive power, frequency, energy, power factor, power failures |
| **Accuracy of metering** | ±2 % |
| **Resolution of metering** | 1 W |
| **Inputs** | 3× voltage (230/400 V AC, 50 Hz) |
| | 2× impulse/digital input (optical, S0, general I/O) |
| | 9× individual CT inputs, possible combinations of 3 phase measurements, or individual circuits configured by the user: |
| | <ul><li>9× 1 phase</li><li>3× 3 phase</li><li>1× 3 phase + 6× 1 phase</li><li>2× 3 phase + 3× 1 phase</li></ul> |
| **Output** | 2× digital output |
| **Range of measurement** | 50/80/300 A per CT input (depending on used external CTs). Higher currents are possible per demand as well. |
| | The range of impulse inputs is dependent on the used meter/source of impulse data — with indirect measurement can be used even for large MW scale loads. |
| **Network connectivity** | One of following*: GPRS/3G/LTE, WiFi, Ethernet, LoRaWAN, NB-IoT, sub-1GHz short range radio, Energomonitor Chirp, wM-bus |
| | *If a specific version is currently not available, it can be developed per client's request. |
| **SIM Card format** | Nano SIM Card for GPRS/3G/LTE and NB-IoT |
| **Frequency Band** | WiFi: 2.4 GHz |
| | LoRaWAN: 433, 868, 915 MHz |
| | sub-1GHz(SRD,ISM): 433, 868, 915 MHz |
| **Session protocol** | MQTT (TCP) for GPRS/3G/LTE, WiFi, Ethernet, and Chirp |
| | CoAP (UDP) for NB-IoT, LoRaWAN GPRS/3G/LTE, WiFi, and Ethernet |
| **Physical size** | 76 × 57 × 63 mm (without antenna) |
| **Mass** | 140 g |
| **Power supply** | 100–240 V AC, 50 Hz |
| **Protection** | IP20, IP40 from the front of the device (higher protection on demand) |
| **Type of antenna** | SMA connector (with external antenna / stub antenna) |
| **Working conditions** | from −20 °C to +60 °C, 10 to 90 % RH |
| **Consumption** | max. 5 W |
| **Availability** | Standard orders (> 500 pcs) lead-time 12–16 weeks. Samples on demand. |

## For more information contact sales@energomonitor.com

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