

ENERGOMASTER

The universal smart electricity sub-meter for the IoT age

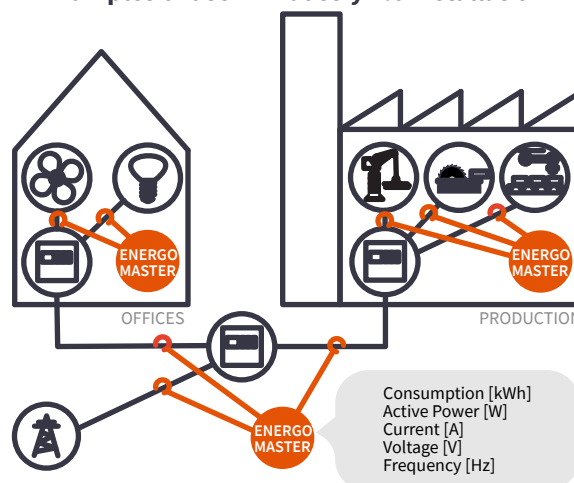
- Monitors electricity consumption accurately, in real-time
- Monitors voltage, current, power, energy, and power failures
- 3 phases, up to 9 individual circuits, and two digital inputs monitored by one device
- Two digital outputs
- Wide range of communication interfaces :
WiFi, 2G, NB-IoT, LoRaWAN and others)
- Industry standard interfaces for connecting to monitoring and management systems (MQTT, MQTT-SN)

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

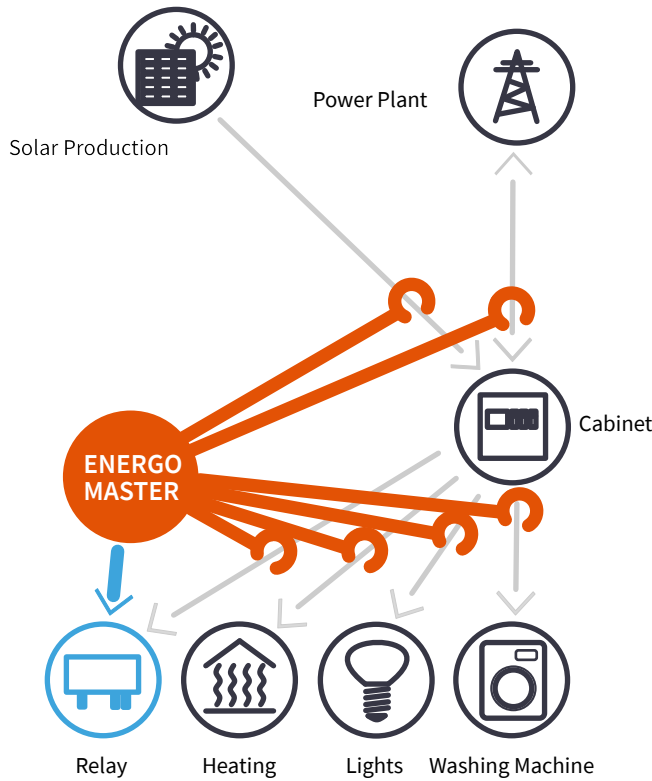


Data measured by Energomaster is sent via a communication interface (WiFi, 2G, NB-IoT, LoRaWAN, etc.) to monitoring and management systems at adjustable intervals (5 seconds – 60 minutes).

The MQTT and MQTT-SN standards are used for data transmission.



Sample household photovoltaic installation



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

Technical details

Parameters in italics can be developed per client's request

Measured parameters	Voltage, current, active power, reactive power, frequency, energy, power factor, power failures	
Accuracy of metering	±2 % (±1 %)	
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 configured by the user	<ul style="list-style-type: none"> ● 9× 1 phase ● 3× 3 phase ● 1× 3 phase + 6× 1 phase ● 2× 3 phase + 3× 1 phase
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: 2G/LTE, WiFi, NB-IoT, <i>LoRaWAN</i> , <i>sub-1GHz short range radio</i> , <i>Energomonitor Chirp</i> , <i>wM-bus</i>	
SIM Card format	Nano SIM Card for 2G/LTE and NB-IoT/WiFi: 2.4 GHz	
Frequency Band	WiFi: 2.4 GHz, LoRaWAN: 433, 868, 915 MHz, sub-1GHz(SRD,ISM): 433, 868, 915 MHz	
Session protocol	MQTT-SN for 2G, NB-IoT, MQTT (TCP) for WiFi, 2G	
Physical size	68.2 × 70.15 × 62.7 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 non condensing	
Consumption	5 W	
Availability	Standard orders (> 500 pcs) lead-time 12–16 weeks. Samples on demand.	