
SMART METERING


SMART BUILDING


SMART INDUSTRY

TRIPHAS'O

LoRaWAN

The **TRIPHAS'O** sensor allows the remote reading of the electrical energy consumption of a three-phase installation in a non-intrusive way via the LoRaWAN® network. In a single-phase installation, it is used for submetering. The sensor is specially designed to meet the energy management needs of industrial and tertiary buildings, operating with medium and high energy consumption equipment.

APPLICATIONS

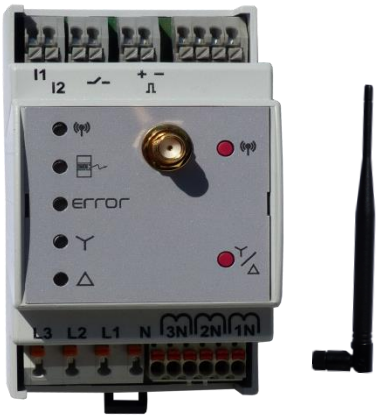
- Telemetry, energy management
- Real-time monitoring of power consumption at the three-phase meter
- Submetering on up to 3 single-phase circuits
- Any industrial application: industry, shopping centres, data centres...

BENEFITS & KEY FEATURES

- LoRaWAN®, Class C
- Easy to use and deploy
- External RF antenna which can be remote
- Measurements at regular intervals
  - Active, reactive power
  - Active, reactive energy
  - Average or instantaneous power (analysis of change of consumption/maintenance regime).
  - RMS voltages and currents

QUALITY & RELIABILITY

- RED, RoHS



Two versions of the **TRIPHAS'O** sensor are available in order to meet electrical measurement requirements:

- with current transformers (opening - non-intrusive) for low power, primary reference current: 0-60A or 0-400A.
- with Rogowski loops (opening - non-intrusive) for high power, primary reference current from 0 to 4000A

On a three-phase meter, the **TRIPHAS'O** sensor provides for each phase, the active and reactive energy indexes, the different powers available, the RMS voltages, the RMS currents and the current/voltage phase shift angles. It transmits the sum of the different energy indexes and different powers of the three phases L1, L2, L3.

On a single-phase installation, the **TRIPHAS'O** sensor provides the energy and power absorbed on each circuit (submetering).

The energy and power transfer is carried out at 10-minute intervals by default. The aim is to recreate the load curve.
The interval can be reconfigured via the LoRaWAN® downlink; it is possible to go down to 30s to have a transient analysis during maintenance periods for example.

The implementation of the sensor is quick and simple: the sensor is fixed on a DIN rail next to the electrical circuits. The external antenna can be mounted on a cable (not supplied) when the sensor is installed in a metal cabinet. A remote waterproof antenna kit is available as an option.

The sensor is powered from the mains 50Hz - 60Hz with 230 Volts between phase and neutral (or 400 Volts between two phases). The sensor is built as a Class II construction.

The connections are made via spring-loaded terminal blocks.

THE LARGEST IOT PRODUCTS RANGE FOR YOUR PROJECT

WATTECO is a European leader in the design and manufacture of smart IoT devices to suit all remote reading and data collection solutions.

WATTECO is a LoRa Alliance® member.

TRIPHAS'O

TECHNICAL DATA

RADIOFREQUENCY	Frequency (MHz)	Transmit Power (dBm)	Receiver Sensitivity (dBm)
	EU: 863-870	+14	-140

FIRMWARE	
Protocol	LoRaWAN®, Class C with AES128 data encryption
Activation method	Activation by Personalization (ABP) or Over-The-Air Activation (OTAA)
Measurements & Transmission cycles	Frames at intervals of 10min (default) up to 12hrs, remotely configurable: • rms voltage, rms current, angle between voltage and current per phase • active energies, reactive energies, active powers, reactive powers, positive and negative powers in each case per phase • sum of the 3 phases Configurable alert on variation (voltage, current, angle, energy, power)
Data compression	Yes (differential coding)

VOLTAGE INPUT
230VAC between L1 and Neutral or 400VAC between L1 and L2 (if no Neutral) -15% +10 Frequency 50 - 60Hz
Selection of circuit configuration by front panel button : • Three-phase: phases L1 to L3 with or without Neutral; phase inversion signaled by front panel indicator light. • or Single-phase: submetering of up to 3 circuits L1 to L3 referenced to Neutral Accuracy 1% - Resolution 0.1 Volt

CURRENT INPUT	Range	Associated sensor	Current measurement
	0 ... 60A	Remote opening toroid on 2m cable Conversion ratio 1/3000	For cable up to Ø10mm Accuracy ± 0.9A - Resolution 0.1A
	0 … 400A	Remote opening toroid on 2m cable Conversion ratio 1/5000	For cable up to Ø24mm Accuracy ± 4.0A - Resolution 0.1A
	0 … 4000A	Remote opening toroid on 1.5m cable Transformer ratio 22.5mV/kAmp	For cable up to Ø70mm Accuracy ± 30.0A - Resolution 0.1A

MEASUREMENTS	
Voltage / Current angle	Resolution 1°
Active (Reactive) energy resolution	1W.h (1 Var.h) ; 1kW.h (1 kVar.h) for Rogowski Loop
Active (Reactive) power resolution	1W (1 Var) ; 1kW (1 kVar) for Rogowski Loop
Average power	Calculated on the interval 10min (default) up to 60min, remotely configurable.

USER INTERFACES	
NFC Tag	Product code, serial number, batch number
LEDs & Push button	Configuration and network pairing

ENCLOSURE	Size (mm)	Fastenings	IP rating
	3 DIN modules housing – Width 53.5mm	For 35mm DIN rail	IP20

ENVIRONMENTAL	Operating temperature	Storage conditions	
	-20°C to +50°C	+10°C to +30°C	+20%rH to +60%rH

DIRECTIVES & STANDARD
Radio Equipment Directive 2014/53/EU, RoHS

PRODUCT REFERENCES

REFERENCE	DESCRIPTION
50-70-105	LoRaWAN® TRIPHAS'O Sensor + 3 Toroids 0 - 60A on 2m cable
50-70-145	LoRaWAN® TRIPHAS'O Sensor + 3 Toroids 0 - 400A on 2m cables
50-70-146	LoRaWAN® TRIPHAS'O Sensor for Rogowski loops, delivered without loops
50-70-147	LoRaWAN® Set of 3 loops of Rogowski 4,000A on 1.5m cables – 75mm Diameter
50-70-214	LoRaWAN® Set of 3 loops of Rogowski 4,000A on 4.5m cables – 125mm Diameter
26-43-035	Waterproof Remote Antenna Kit on support with 3m cable