PEM431.
Datasheet

Application.

- The PEM431 measures current flowing through the current transformers connected to the electricity grid.
- The measurement range of the current depends on your local requirements. The available options include current transformers with the following limits: 100A, 160 A, 200 A, 400 A, 600 A, 800 A, and 1000A.
- The current clamps need to be ordered based on your requirements.
- Power Quality Monitoring by 2-60th harmonic content, deviation ratio of odd harmonics, total harmonics content, unbalance level and sequence analyses.
- The PEM431 boosts True RMS multi parameter measurements.
- Accurate mapping and logging of various energy parameters and energy consumption in both directions.
- The 2 digital outputs are programmable as treshold alarm or pulse output.
- The 2 digital inputs can be programmed.
- The LoRaWAN® module with a very long data transmission range allows the device to be used virtually anywhere.

Components.

- The device is equipped with a LCD screen and touchbuttons for operating and reading the consumption information and configuring parameters.
- The device consists out of a Microcontroller with LoRaWAN® and Bluetooth Low Energy communication modules.
- The device is adapted for installation in power panels or automation cabinets with the standard built in size of 96x96mm, making it easy to directly retrofit old analog models.

Device Operation.

- The PEM431 requires an operational LoRaWAN® network to transmit data, however it can operate as a stand-alone device as well.
- The PEM431 requires an auxiliary 230V power supply.
- Once connected the meter will measure the following parameters Current, Voltage, Frequency.
- Active Power, Power Factor, Active Energy and store the maximum demand values.
- Configuration of the device is done using the touchbuttons, mobile app or LoRaWAN downlinks.
- The log interval and parameters to be stored are adjustable from 5-60 minutes, the device will store the measured values in the internal storage of the device.
- The PEM431 transmits data over more then 2 km in an open space with a medium density of buildings.
- It's recommended to add the device to the Kibi Cloud, which allows detailed and easy monitoring of the data transmitted by the device.

Advantages.

- Because of it's ability to operate stand alone or over the LoRaWAN network you save on cabling costs.
- Conversion of existing installations is not required because of the LoRaWAN module.
- The meter is manufactured by qualified engineers and CE certified.
- The device synchronizes time over the LoRaWAN network ensuring that the time is always accurate.
- The device can transmit measurement data over up to 10 ports, where each port can contain 10 parameters. Each port can have it's own transmission interval; meaning you can send up to 100 registers with different intervals.
- Measurement logging interval is always synchronized to a whole hour, thus if you set a interval of 5 minutes it will log the parameters at 00, 05, 10, 15, etc. minutes after the hour.
- The data transmission is pseudo-random to avoid radio collisions.
- The device can be used on Private or Public Networks and works with the majority of the network servers and visualization platforms.

Mounting Advice.

The device contains a radio antenna, it's recommended to observe the environment when mounting the device to avoid problems due to for instance EMC.

The installation and assembly of electrical equipment should only be performed by authorized personnel.

The product should only be used for the intended application. Unauthorised modifications are prohibited! The product must not be used in relation with any equipment that in case of a failure may threaten, directly or indirectly, human health or life or result in danger to human beings, animals or assets.

Ensure all power is disconnected before installing.

Do not connect to live/operating equipment.

CAUTION! Risk of electric shock due to live components within the enclosure.

Please comply with:

- Local laws, health & safety regulations, technical standards and regulations
- Condition of the device at the time of installation, to ensure safe installation
- This data sheet and installation manual

Technical Details.

Electrical Characteristics.

Type of measurement		RMS including harmonics on AC systems, supporting 3P3W, 3P4W.	
Measurement accuracy	Voltage, Current	Class 0.5, according to IEC 61557-12	
	Active Power	Class 1/0.5, according to IEC 61557-12	
	Reactive Power	Class 2, according to IEC 61557-12	
	Apparent Power	Class 1, according to IEC 61557-12	
	Active energy	Class 1 / 0.5S, according to IEC 62053-22, IEC 61557-12	
	Reactive energy	Class 2, according to IEC 62053-23, IEC 61557-12	
	Power factor	Class 1, according to IEC 61557-12	
	Frequency	Class 0.2, according to IEC 61557-12	
Data update rate		P, Var and VA - 100msec, other parameters 1 second	
Input Voltage		iQ EM4301	iQ EM4301-CT
	Rate voltage (Un)	230Vac (L-N) / 400Vac (L-L)	
	Impedance	45 to 65 Hz	
	PT Primary	30 to 500000V	
	Impedance	1MΩ	
	Frequency Range	45 to 65 Hz	
	Overload Capacity	2*Un for 1 second	
Input Current	CT2 (Secondary)	1A or 5A	
	CT1 (Primary)	1 to 9999A	
	Overload capacity	120A for 0.5 seconds	

Mechanical Characteristics.

IP Degree of Protection (IEC 60529)	Designed to IP51 front display, IP30 meter body
Dimensions (WxHxD)	96 x 96 x 81mm
Materials	UL 94 V-0

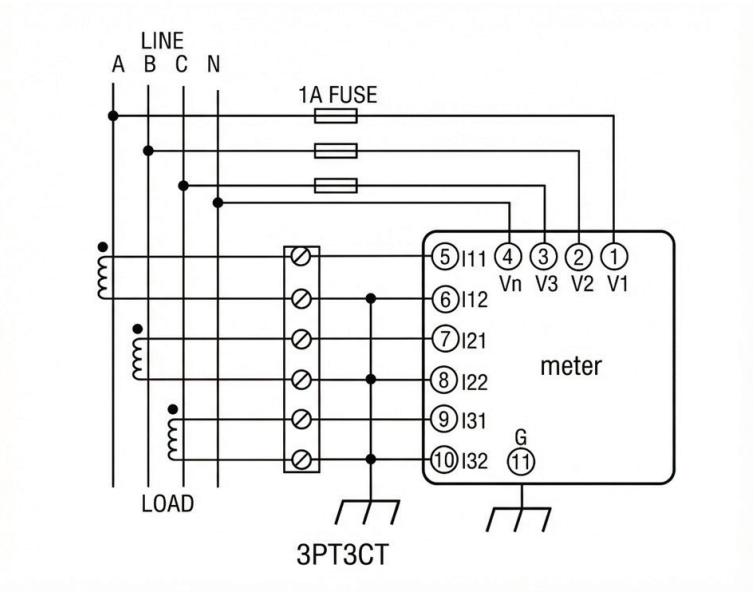
Environmental Characteristics.

Operating temperature	-25 to +55°C
Storage temperature	-40 to +80°C
Humidity	<75% Rv, non condensing
Pollution degree	2
Altitude	Up to 2000m
Vibration	10Hz to 150Hz, according to IEC 60068-2-6

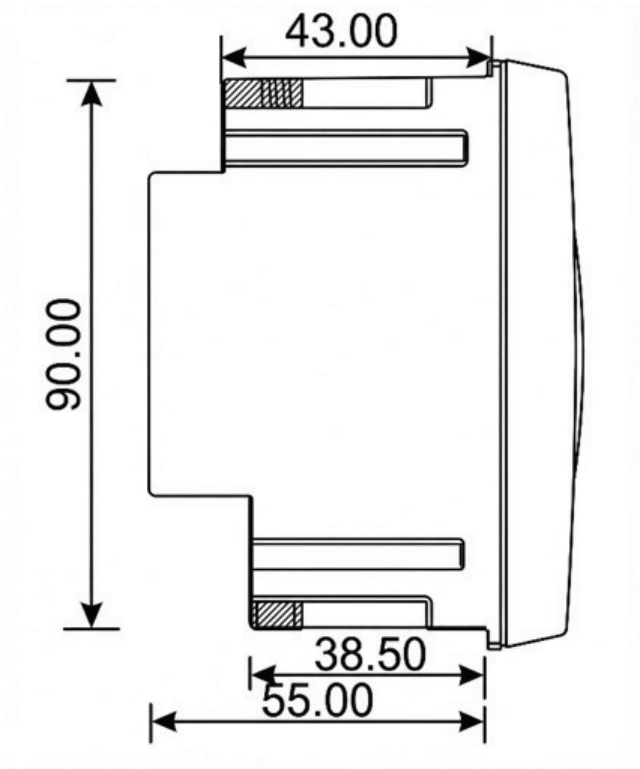
Safety.

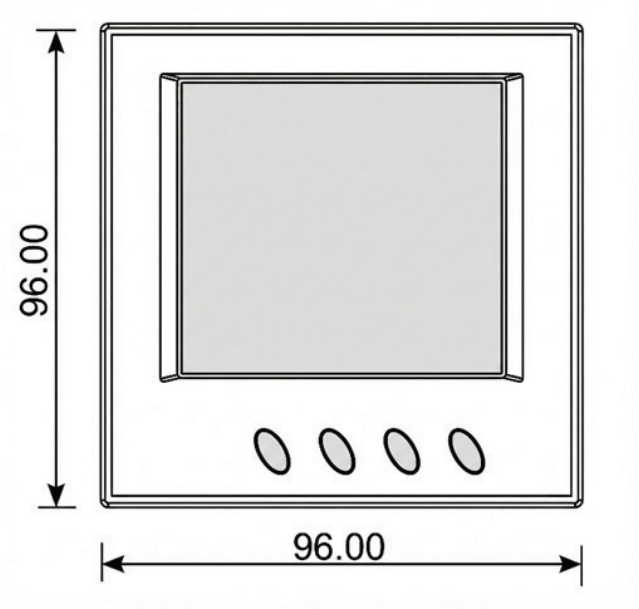
Measurement Category	CAT III, according to IEC 61010-1
Overvoltage Category	CAT III, according to IEC 61010-1
Insulation	AC Voltage Test : 4kV for 1 minute Impulse Voltage Test : 6kV - 1.2/50µS
Protective Class	CAT II, according to IEC 61010-1

Wiring Diagrams.



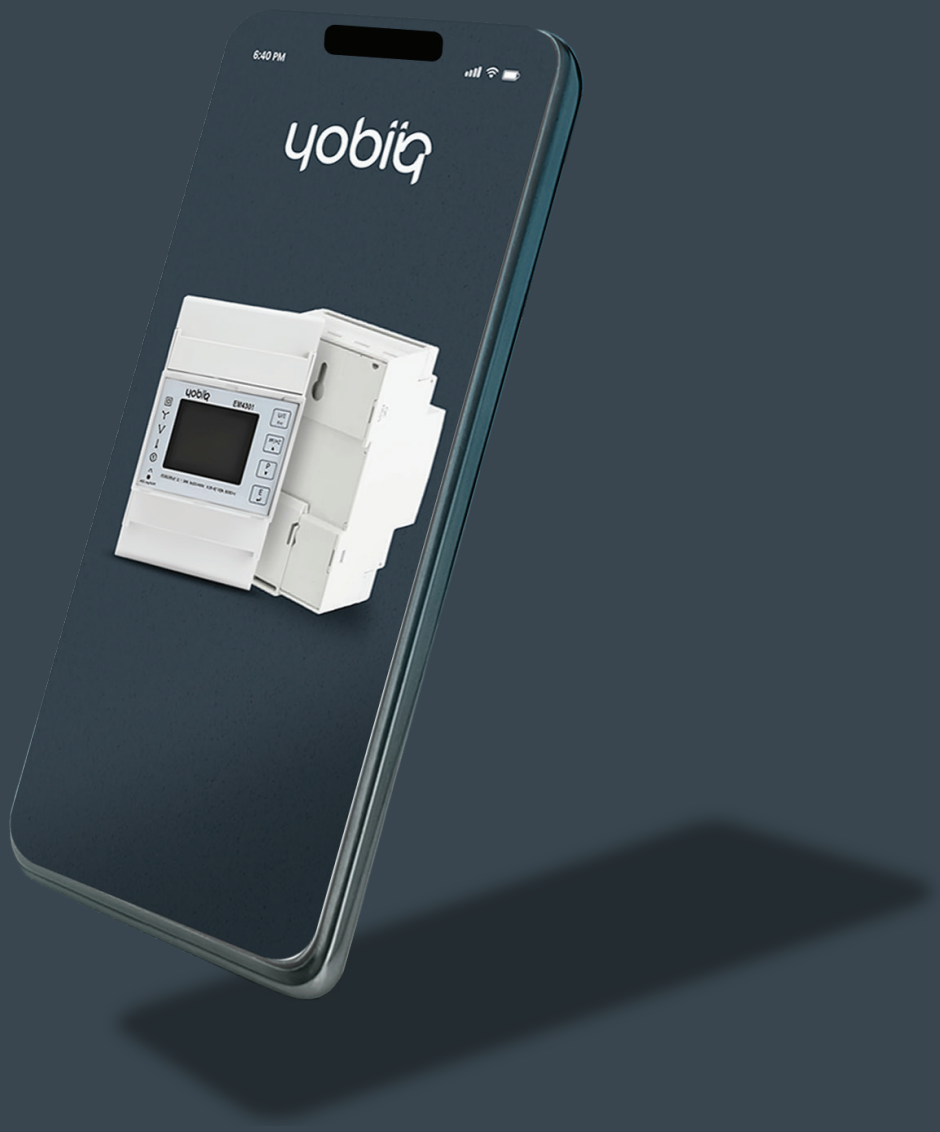
Dimensions.





Order Information.

26000A	PEM431 Panel Energy Meter EU868 MHz



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YOBIIQ B.V.

Bedrijfsweg 31, 6163 CZ Geleen

The Netherlands

Email: info@yobiiq.com

+31 (0)85 743 08 80