



# Electricity Meter.

## Datasheet



## Application.

- The iQ Electricity Meter measures AC flowing through the devices connected to the electricity grid.
- The iQ EM2101 can be connected directly to a single phase electricity grid with a maximum load of 80A.
- The iQ EM2101 has a built-in relay that automatically turns of based on configurable parameters.
- A digital input on the iQ EM2101 can be used to monitor the state of a external circuit breaker.
- Accurate mapping and logging of various energy parameters and energy consumption in both directions.
- 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 on standard TS35 DIN Rails.
- The device has a direct measuring circuit for 1 phase systems.

## Device Operation.

- The iQ Electricity Meter requires an operational LoRaWAN® network to transmit data, however it can operate as a stand-alone device as well.
- The device is powered by the power wires it's connected to.
- 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 iQ Electricity Meter transmits data over more than 2 km in an open space with a medium density of buildings.
- It's recommended to add the device to the Yobi Hub, which allows detailed and easy monitoring of the data transmitted by the device.

## Advantages.

- Because of its 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 its 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 an 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.

<b>Type of measurement</b>	RMS including harmonics on AC systems, supporting single phase two wire.	
<b>Measurement accuracy</b>	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
<b>Data update rate</b>	1 second	
<b>Input Voltage</b>	Rate voltage (Un)	230 Vac
	Direct Connection	Measured range : 85 to 270Vac
	Frequency Range	45 to 65 Hz
<b>Input Current</b>	Measured Range	0.005 to 80A, basic current (Ib) is 5A
	Overload capacity	30*I <sub>max</sub> for 0.01 second
<b>Realtime clock accuracy</b>	0.5 s/d	

## Mechanical Characteristics.

<b>IP Degree of Protection (IEC 60529)</b>	Designed to IP51 front display, IP30 meter body
<b>Dimensions (WxHxD)</b>	36 x 100 x 65 mm
<b>Materials</b>	UL 94 V-0

## Environmental Characteristics.

<b>Operating temperature</b>	-25 to +55°C
<b>Storage temperature</b>	-40 to +80°C
<b>Humidity</b>	<99% Rv, non condensing
<b>Pollution degree</b>	2
<b>Altitude</b>	Up to 2000m
<b>Vibration</b>	10Hz to 150Hz, according to IEC 60068-2-6

## Electromagnetic Characteristics.

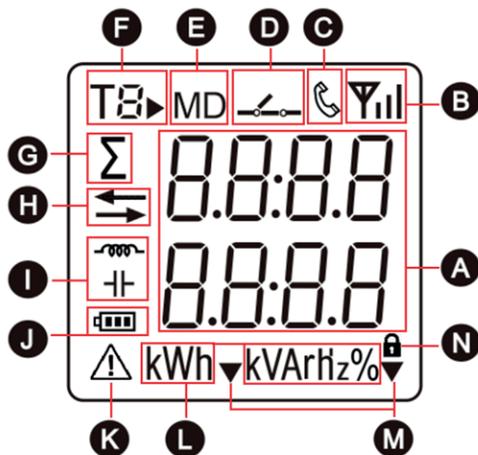
Electrostatic Discharge	Level 4, according to IEC 61000-4-21
Immunity to Radiated Field	Level 3, according to IEC 61000-4-31
Immunity to Electrical Fast Transients	Level 4, according to IEC 61000-4-41
Immunity to Surges	Level 4, according to IEC 61000-4-51
Immunity to Conducted Disturbances	Level 3, according to IEC 61000-4-61
Immunity to Magnetic Fields	IEC 61000-4-81
Immunity to Voltage Dips	IEC 61000-4-111
Radiated Emissions	Class B, according to EN55011
Conducted Emissions	Class B, according to EN55011
Harmonics	IEC 61000-3-21

The laboratory test is carried out according to the grade requirements of industrial grade products in IEC61326-1

## 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

## Display.



- A** - Measured values.
- B** - Wireless signal strength icon.
- C** - Communication Status Icon.
- D** - Relay status icon.
- E** - Maximum demand icon.
- F** - Multi tariff icon indicating the tariff segment.
- G** - Sum icon, which indicates that the data currently displayed is the sum of the displayed parameter.
- H** - Direction icon for import and export.
- I** - Display icon of the load feature.
- J** - Battery status icon displays the battery status, if applicable.
- K** - Warning Status icon.
- L** - An icon of a unit of measurement data.
- M** - Auxiliary display icon.
- N** - Lock icon.

## Buttons.



Escape / Scroll Scroll the page of the displayed page.

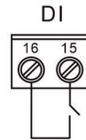
Confirm / Shift Confirm or shift the parameter.

## Wiring.

### Measurement Wiring



### Digital Input



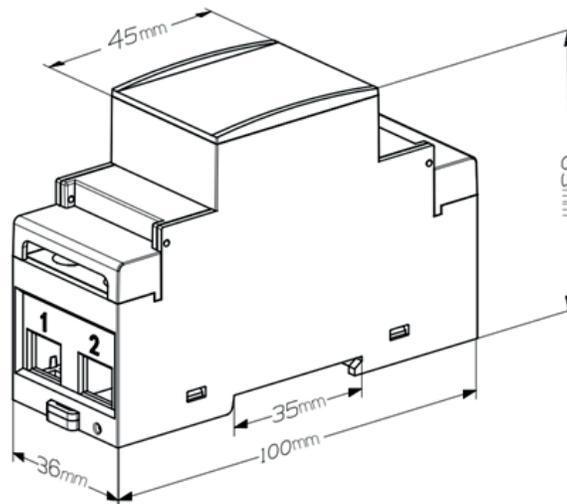
## Relay.

The Relay is capable of automatically switching off when a threshold is exceeded for a configurable amount of time. The relay will switch off when either a current limit, voltage limit or power limit is exceeded, for a configurable amount of time. After switching off, the device is capable of automatically turning on the relay after a set amount of time to see if the exceeding still occurs.

If the limits are exceeded more than a configurable amount of times within a configurable time period, the device will not perform an automated recovery.

The relay can be overruled by a downlink command or by the buttons on the device itself.

## Dimensions.



## Order Information.

iQ EM2101 - LoRaWAN 868 (EU)

1002009



## Our mission is to make all environments smarter.

The best way to predict the smart future is to create it. That's what we do every day. Locating and building solutions for you, your business, and your smart objectives. We provide cutting-edge IoT hardware and software to connect, monitor, and optimize your environment seamlessly. Discover our range of products designed to enhance efficiency, security, and productivity across various industries.



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