

# Application note



Subject:  
**Residential photovoltaic monitoring in storage systems**

Industry:  
**Renewable energy**

Product:  
**EM511**

Customer:  
**OEMs, System integrators, Installers**

## CUSTOMER ISSUE

In residential applications, photovoltaic panels are often installed in combination with battery storage systems.

The storage system supervisor unit needs to know the actual photovoltaic production and load consumption, so to manage the power flow to or from the battery.

To correctly operate - and avoid feeding the grid, which is forbidden in many countries - the system needs real-time data.

The commonly available energy meters are too slow, with a typical response time of around 1 second.

Frequency data, useful to detect anomalies, is only available with low resolution.

## OUR SOLUTION

The EM511 is able to continuously analyze any phase, providing accurate data of voltage, current, power, and many other single-phase and system variables, updated (via serial communication) every 100 ms. The frequency resolution is 0.001 Hz. It is therefore able to provide top-quality measurement capabilities, which are usually available only in much more expensive devices.

## BENEFITS

- 100 ms refresh time via Modbus RTU
- 0.001 kWh energy and 0.001 Hz frequency resolution