

# SANTERNO MONITORING

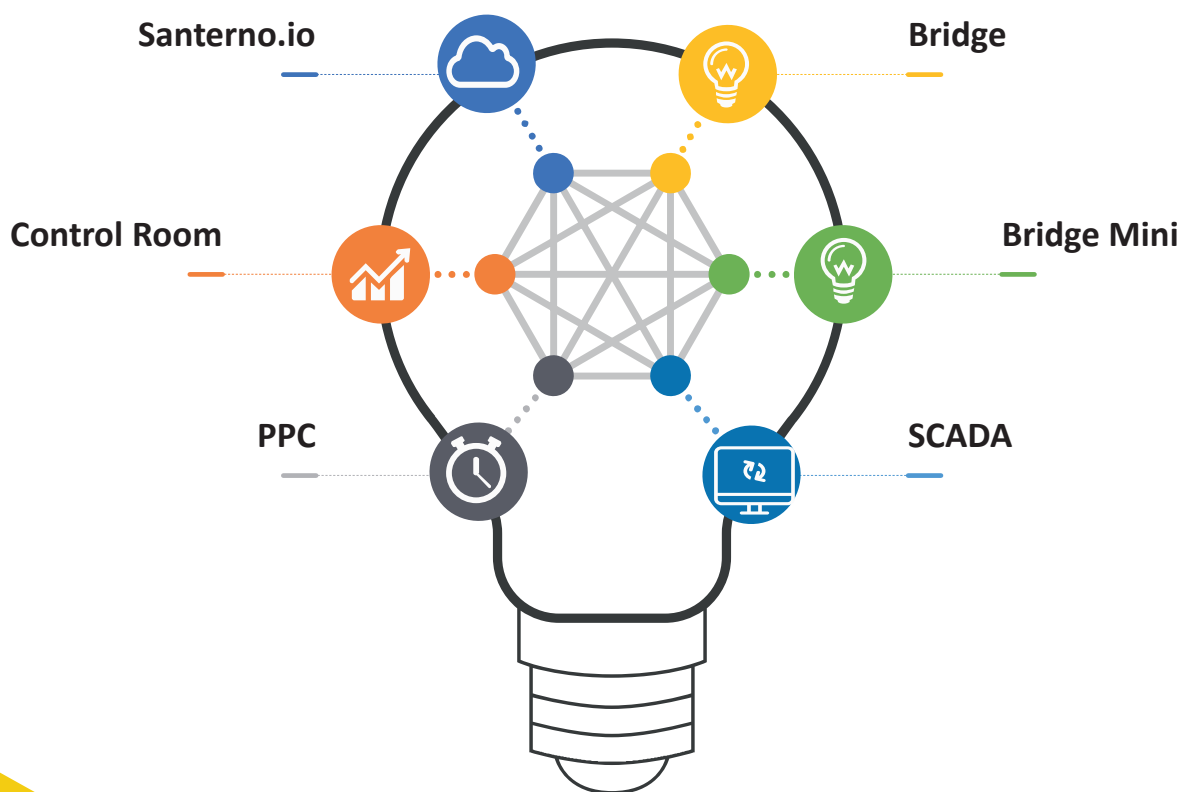
[www.enertronicasanterno.it](http://www.enertronicasanterno.it)





Through Smart Production and Smart Services, our philosophy adds to the value of Industry 4.0, allowing collaboration among operators, machines and instruments, without losing sight of the energetic issue creating more performing systems and minimising waste.

### SANTERNO PRODUCTS AND SERVICES



## BRIDGE

Bridge connects systems, machines and data all together. A simple and fast way to implement monitoring application. Easy to install and configured is available in two versions: **BRIDGE** and **BRIDGE MINI**. Bridge can manage devices of any brand and model, by means of standard IoT and industrial communication protocols. Perfectly integrated onto pre-existing monitoring solutions because of the standard protocols used.

Data display and datalogger configuration is made available by a safe and handy web interface.

### Bridge Mini, compact and performing, is available in two variants:

**Embedded:** mounted inside a Santerno inverter and powered directly by the inverter itself, thus offering maximum convenience and an easy installation.

**Stand-alone:** with DIN support.

Bridge may send data to **Santerno.io**, the Cloud application dedicated to remote monitoring. It is connected through secure and encrypted connections through the Internet, to allow remote monitoring and remote assistance.

### Bridge remote connection with Santerno Cloud is

**Simple:** all the Internet connection are supported with no particular configuration needed.

**Secure:** the connection is outgoing only.

**Encrypted:** all the communication are encrypted with modern algorithms, ie AES256, SHA512.

**Controlled:** every Bridge has its own authentication credentials, which may be managed remotely as well.

BRIDGE: Benefits	
Bridge e Bridge Mini share the following advantages	
Built in Web interface	Visualization and configuration are made with a standard browser, access protected with username and password
Automatic data refresh	Data is refreshed automatically (customizable timeout)
Custom synoptic	Synoptic can be customized
Datalogging	Measurements and events are saved onto the internal storage on Excel files (.csv). Sampling customizable
Log download	USB stick and FTP client
Data export	Acquired data is real time published with standard protocols, ie Modbus TCP, MQTT and REST APIs
Communication gateway	A single access to communicate with all the connected devices
Remote assistance	Secure and bidirectional connected with Santerno Cloud to ensure remote assistance, debug and configuration
Remote monitoring	Natively integrated with <b>Santerno.io</b> , the web portal dedicated to remote monitoring
Easy to upgrade	Both locally and remotely
Sturdy and reliable	Industrial temperature range

## SANTERNO.IO SERVICES

**Santerno.io** is an IoT platform that allows to monitor in real time all the data in the plant.

The monitoring is continuous and granular, with a system of personalized alarms and dedicated dashboard.

Santerno monitoring solutions can be applied to several areas and allow a secure and reliable management of the data, everywhere and at any time.



### Alerts

Alarms notification, emails and app supported



### Dashboard

Dashboard, that is customized trends and charts of the most important plant metrics



### Data Analysis

Data analysis tools, for data comparison and detailed debug



### Mobile App

Mobile app, for an easy and fast access from the smartphone

## CONTROL ROOM

**Control Room (CR)** is the heart of Santerno monitoring activities and the proactive management of the O&M contract operations. CR is remotely connected to the plants and can reach any installed device, including Scada, PPC, inverters, string boxes and sensors, in order to monitor all the relevant elements of the plant.

CR is tightly integrated with all the O&M services so it can guarantee to optimize intervention time and to centralize all the information coming from the site.



**Real time monitoring**



**Historical data always available**



**Performance analysis and detailed report**



**Raw data remote backup**



**Predictive maintenance**



**We are active all around the world on PV utility scale plants, with more than 1GW of monitored power.**

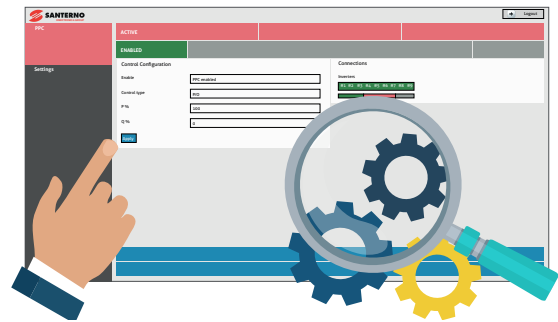
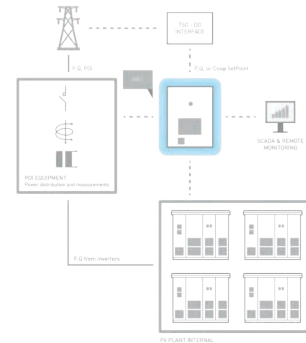
## PPC

**PPC, Power Plant Controller**, regulates the energy production for the entire plant.

It is designed to monitor the active and reactive power at the point of delivery of the system and to allow the grid operator to modify some parameters of the plant in real time, in accordance with the national grid codes.

### SOME KEY POINTS:

- Independent from rated power
- Control at POI, Point Of Interconnection
- Both local and remote commands
- Scada and grid operator interface and communication
- Control modes available: Active power, Reactive power, Power factor ( $\cos \phi$ ), Voltage, Start and stop
- Extremely quick response times



## SCADA

The Santerno SCADA is an advanced, industry-standard solution for plant data acquisition. System collects data from field devices and visualize real time and historical data for the operator using Windows based operating system and Graphical User Interface.

SCADA communicates with Bridge or Bridge Mini through Modbus TCP/IP protocol to acquire data related to products as inverter, zone monitoring, remote I/O, weather station, energy meter and PPC.

Data from field devices are then analyzed, processed, historicized inside SQL Server database and displayed locally or remotely for the operator.



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