

FACT SHEET

Battery Energy Storage System PQplus

Maximizing solar self-consumption while enabling peak shaving



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Battery Energy Storage
System PQplus for
solar applications

ABB's PQplus is a compact and plug-and-play battery energy storage solution which enables commercial and industrial businesses save on their electricity bills by maximizing solar self-consumption and reducing peak demand.

ABB's PQstorl energy storage inverter, Li-Ion batteries, protection and control system - with embedded peak shaving and self-consumption algorithms - are integrated in a single cabinet, reducing the footprint and installation works and making it the right choice for solar integrators and end users. Customers will benefit from the advantages of both solar and energy storage technologies to minimize their energy consumption and reduce their dependency from the grid.

Maximize solar self-consumption

Solar self-consumption consists in consuming on-site solar production, reducing the energy consumption from the grid. The excess of production can be injected into the grid or the production can be curtailed to enable 0 injection. In many cases, C&I sites cannot benefit from the maximum solar potential of their sites because they cannot consume the total energy production during the day.

Energy storage provides opportunities for maximizing self-consumption of onsite solar production, which involves storing power during the day when the solar production is higher than energy demand,

As major consumers of electricity, commercial and industrial (C&I) sites have the opportunity with energy storage to save on their electricity bills by maximizing solar self-consumption and avoiding costly peak demand.

and delivering it during periods of higher demand or after sunset. This load management translates into savings on additional energy cost and maximizing energy autonomy for the site.

Peak shaving

The energy consumption pattern in the C&I segment follows a cycle of peak and low load conditions. Peak load periods coinciding for several consumers can lead to a shortage of power supply. To avoid such situation, utilities often charge premium price for energy consumed during peak hours, resulting in high energy cost to the consumer.

PQplus is used for peak demand shaving, resulting in a uniform load distribution around the complete load cycle and saves penalties for the consumer. With the emerging demand for fast EV charging infrastructure, battery energy storage is also an alternative to grid upgrades, enabling integration of these new peak loads with a limited impact on the site electrification and on the grid.

Power quality

ABB's PQstorl inverters form the core of the PQplus, and are capable of offering power quality functionalities without reducing the battery life. Harmonic filtering, reactive power compensation and load balancing improves the power quality at the consumer end. This improves the efficiency of operation of the overall electrical network.

Technical data

General	
Components	Battery inverter (PQstorI), battery rack (Li-Ion, Samsung, SDI), AC and DC protection, BESS controller (PLC) with embedded EMS functions , HMI
Rated power @ 400 Vac	30 kW
Rated capacity	68.5 kWh
Communication protocol	Modbus TCP/IP
Round trip efficiency	> 88%
Typical losses (full power)	1.3 kW
Electrical	
Frequency (+/- 5 %)	50 or 60 Hz
AC Voltage	380 - 415 V
Connection method	3-phase 3-wire / 3-phase 4-wire (with neutral)
Embedded functions	
Peak shaving*	Smooth peaks in power consumption. The user has to define lower and upper limits of state the charge (SoC) and upper and lower limits in kW as hysteresis.
Solar self-consumption*	Batteries are charged when solar production is higher than site energy consumption, and discharged when site energy consumption is higher than solar production
Power Quality*	
• Harmonic filtering	2 nd to 13 th order, maximum 50% rated current
• Reactive power compensation	Programmable from 0.6 (inductive) to 0.6 (capacitive)
• Load balancing	Balance the currents between phases and/ or between phases and neutral (4-wire)
For all other functions customer must provide setpoint from a higher level control system/Energy Management System	
Environmental	
Ambient temperature	23°C +/- 5°C
Relative humidity	80% not condensed
Altitude	< 1000 m above sea level
IP rating	IP21 (door closed) IP20 (door open)
Enclosure specifications	
Dimensions (W x D x H)	700 mm x 800 mm x 2003 mm (without baseframe)
Color	RAL 7035
Power and control cable entry	Top or bottom entry
Panel type	Floor standing panel, with lifting lugs on top
Ventilation	Air natural cooling with perforated front and top plate
Certification	
Standards	IEC60529, IEC61439
Grid code compliance	Pending (DE, IT, UK, FR, DK)
Option	
Off-gas sensor	Off-gas monitoring system to provide early detection of battery failure

*For peak shaving, solar self-consumption and Power Quality features, need current transformers (CT) (5A, 15VA)