Product brochure



Eaton xStorage battery energy storage system (BESS)

250 to 1000 kWh usable stored energy

Versatile energy storage for commercial and industrial applications

The demand for power, and variation in the demand, continues to increase due to end-user loads and electrification, including the proliferation of new machinery, DC charging and AI-based chips. Battery energy storage systems (BESSs) play an important part in creating a compelling next-generation electrical infrastructure that encompasses microgrids, distributed energy resources (DERs), DC fast charging, Buildings as a Grid and backup power free of fossil fuels for buildings and data centers. A BESS can store and supplement power needs to keep utility loads relatively uniform based on utility supply and end-user demand.

The xStorage BESS optimizes energy usage and enables energy transition with support for energy storage, EV integration and grid modernization. The ability to avoid peak usage rates from utilities helps reduce energy costs for businesses, government and military agencies, schools, industrial plants and healthcare facilities. If utility power is interrupted, the BESS can provide environmentally friendly backup to reduce dependence on generators.

Key features

Versatile energy storage

- xStorage BESS holds 250 to 1000 kWh of usable stored energy (279 to 1117 kWh of installed energy).
- The BESS includes a control cabinet with auxiliary transformer, a power conversion system (PCS) and up to three battery cabinets (with six or eight battery modules in each cabinet).

Flexible installation

- Modular installation maximizes available space (control cabinet, PCS and battery cabinets can be individually placed).
- Enclosures mount directly onto an outdoor concrete pad without the need for an additional container and air conditioning.

Liquid-cooled PCS and battery cabinets

- PCS and battery cabinets have self-contained liquid cooling to deliver more precise temperature regulation than an air-cooled BESS.
- Lithium iron phosphate batteries are maintained within two to three degrees Celsius of their ideal operating temperature for minimal maintenance and improved reliability and uptime.

Energy functions

Energy optimization

- Peak shaving – During times of peak demand, stored energy can be used to help avoid penalties from the utility.
- Time-of-use optimization – Energy consumption is shifted to avoid peak usage and optimize battery charge/discharge times. During the day, stored energy is used to offset peak demand, saving money on utility fees. Batteries charge at night when demand is lower and utility power is less expensive.

Uninterrupted operation

- Backup power – Enables islanding capability to protect against downtime due to utility outages.
- Solar self-consumption – Allows efficient use of on-site generation sources, like solar panels, and storage of the excess energy for later use.

Grid stabilization

- Demand response – If the utility company requests a reduction in power use, stored energy can replace utility power to avoid penalties.
- Aggregation services – The BESS can be aggregated with other distributed energy resources and managed by a higher-level site controller to optimize energy usage and gain financial benefits from participating in energy markets.

Why choose xStorage BESS?

Specialized management features maximize system uptime

- Embedded Global Stored Energy Controls (GSEC) hardware provides mission-critical accuracy to optimize energy usage.
- Eaton's Brightlayer software suite enables remote monitoring and management.
- The xStorage BESS is optimized for predictive 24x7 monitoring and management service to proactively identify component risks, reduce downtime and expedite critical alarm response.

Expert service and support

Full support is available from quotation to startup and beyond.

- 24x7 call center support with dispatch
- Service plans from extended warranty to response-time-based agreements
- National network of 300+ highly trained field service engineers to support startup and provide technical support, maintenance and service
- Service engineer vehicles stocked with common spare parts
- Centralized spare parts warehouse with overnight shipping capability

Powering Business Worldwide

Technical specifications



Control cabinet with 480/208V auxiliary transformer



Power conversion system (PCS)



Battery cabinet



Battery cabinet (interior view with 8 battery modules)

BESS rating	
Power rating	250 to 1000 kW
Energy rating	250 to 1000 kWh
AC characteristics	
Nominal voltage (+/- 10%)	480 VAC 3Ph/3W
Aux power	208 VAC 1Ph
Max fault current allowed from AC source	180 kAIC
Power factor	100% active to 100% reactive
Input current distortion	<3%
Peak efficiency	98.8%
Overload (@ 40°C (104°F) and >65% full load)	116% for 5 min.; 120% for 3 sec.
DC characteristics	
DC voltage (nominal)	761 to 1200 VDC
DC voltage (maximum)	720 to 1500 VDC
Minimum battery voltage	1.65 x nominal VAC
Max fault current allowed from DC source	180 kAIC
Battery cabinet (each)	
Battery type	Lithium iron phosphate
Battery voltage	1165 to 1498 VDC
Rated energy	373 kWh
General characteristics	
Ambient temperature (operating)	-20°C to 50°C (-4°F to 122°F), derating >40°C (104°F)
Ambient temperature (storage)	-40°C to 60°C (-40°F to 140°F)
Humidity	5 to 95% non-condensing
Protection	NEMA type 3R (IP54)
Cooling (PCS/Battery cabinets)	Liquid cooled (self-contained)

General characteristics (continued)	
Cooling (Control cabinet)	Air cooled (self-contained)
Audible noise	<75 dBA @ 3 m
Altitude (max)	1000 m @ 40°C (104°F) without derating
Installation	Pad mount or skid mount
Dimensions and weight (480V system)	
Control cabinet	53.5" w x 58.5" d x 68.9" h / 1014 lb.
PCS	39.9" w x 64.6" d x 87.6" h / 3173 lb.
Battery cabinet (each)	50.9" w x 51.6" d x 89.8" h / 7830 lb.
Available modes of operation	
Peak shaving, time-of-use optimization, demand response, backup power, islanding, solar self-consumption, aggregation services	
References	
System	UL 9540
Power conversion system	UL 1741 SA, SB
Battery	UL 1973, UL 9540A
Other	ISO9001
Communications	
Modbus TCP/IP	
Service	
Startup	Standard
24x7 dispatch call center for service needs	Standard
User remote monitoring and control	Standard
Service plans (remote or onsite)	Optional
Predictive analytics remote monitoring and service	Future

Due to continuous improvement programs, all specifications are subject to change without notice.

For more information, visit Eaton.com/xStorageBESS or contact your Eaton sales representative.

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