

Image shown may not reflect actual configuration

Cat® Energy Shift (ES)

125 kW – 1250 kW
287 kWh – 2296 kWh
50 Hz 380-415 Volt
60 Hz 380-690 Volt

The Cat ES module is a scalable, rapidly deployable energy storage system. The energy storage system integrates with solar or other renewable sources to store energy from the overproduction of the renewable source for use when the renewable source is not available. Cat energy storage systems provide temporary backup power to facilities in the event of a power outage.

- Seamless mode transfer
- Automatic anti-islanding
- Grid forming
- Grid following
- Autonomous mode or Remote-Control mode
- Parallel ready – multiple modules may be used in parallel to increase total output up to 100+MW)

Features

Reliable, Modular and Customizable
The Cat ES module is a robust, scalable energy storage system. The module consists of a pre-engineered walk-in container that is easily installed on site. Multiple energy storage modules can be operated in parallel to provide increased power output and/or increase the battery kWh capacity.

Renewable Integration
The energy storage modules are designed to work with an array of renewable systems, including solar and wind. Seamless integration with the Cat Microgrid Master Controller (MMC) allows for maximum renewable penetration and full asset control. The grid forming Cat Bi-Directional Power (BDP) inverters allow generator sets to be completely switched off, further reducing fuel consumption and operating costs.

Grid Stabilization
The ES module also protects against many typical power problems, including power failure, voltage sags/surges, and under/over voltage conditions.

Cat Bi-Directional Power (BDP) Inverters
The Cat BDP inverters are the core to the energy storage system. Based on technology developed for Cat electric drive machines. The Cat BDP provides exceptional reliability, durability and features that include:

- Intelligent controls for the charging and discharging of the energy storage equipment.
- 2 per unit fault current capability
- Static VAR compensator
- Full four-quadrant output power factor control
- Patented Non-Linear droop control for ultra-fast response

Energy Storage
- Advanced lithium-ion batteries provide good energy density, high discharge/recharge efficiency, and high cycle life.

Standard Equipment
- Cat BDP250 bi-directional power inverters
- Energy storage batteries
- Color HMI touchscreen
- CSC certified ISO High Cube container
- Remote communications via Modbus TCP
- HVAC system to maintain optimal interior temperatures
- Interior AC lighting and convenience receptacles
- Fire suppression system

Applications
- Time shifting of renewable energy
- Renewable smoothing
- Peak shaving
- Grid firming/grid stabilization
- Generator set transient assist
- Facility backup
- Virtual Spinning reserve

Worldwide Product Support
Cat® dealers provide extensive post-sale support including maintenance and repair agreements. Cat dealers have over 1,800 dealer branch stores operating in 200 countries.

Technical Data

		ES287H250	ES1.0H312	ES1.6H312	ES2.3H312	ES1.4H1.0
System Output Power						
Maximum Continuous at 1.0 PF	kW	272	312	312	312	1250
15 min Overload at 1.0 PF	kW	272	375	375	375	1360
10 min Overload at 1.0 PF	kW	272	375	375	375	1360
5 min Overload at 1.0 PF	kW	272	400	400	400	1360
1 min Maximum Rating at 1.0 PF	kW	272	430	430	430	1360
10 s Maximum Peak Power at 1.0 PF	kW	272	600	600	600	1360
Output Voltage	V	380-415 (50Hz) or 380-690 (60Hz)				
Output Voltage THD		<3%				
Energy (Nameplate Start of Life)	kWh	287	1005	1650	2290	1435
Energy type		Li-Ion - Energy				
Battery Chemistry		NMC				
Inverter Model		BDP250				
Number of inverters		1	1	1	1	4
Dimensions						
Length	m (ft)	3.0 (10)	6.1 (20)	9.1 (30)	12.2 (40)	12.2 (40)
Width	m (ft)	2.4 (8)				
Height	m (ft)	2.8 (9.5)				
Weight	kg	7,401	16,043	25,696	34,242	27,119
	(lbs)	*16,320*	*35,370*	*56,650*	*75,490*	*59,790*
Ambient Temperature Capability	°C	-40 to +50				
Average Parasitic Load						
At 0° / 40°C in standby operation (0% load)	kW	0.6/1.3	1.1/1.7	1.8/2.3	2.4/2.9	3.2/4.8
At 0° / 40°C in continuous operation (100% load)	kW	7.8/8.2	14.4/15.2	23.8/24.8	31.5/32.6	34.5/35.7
Shore Power Connection	V	230V/400V 50Hz or 208V/480V 60Hz				
Features						
Microgrid Stabilization		Yes				
Patented Non-Linear Droop Control		Yes				
Seamless mode transfer		Yes				
Islanding detection		Yes				
Grid forming		Yes				
Full Four Quadrant Power Factor Control		Yes				
Static VAR compensator		Yes				
2 Per Unit Fault Current Capability		Yes				
Virtual Spinning Reserve (VSR) function		Yes				
Plug-and-Play parallel ready		Yes				
Intelligent Energy Storage Management		Yes				
Human-Machine Interface		Yes				
Fire Suppression System		Yes				
Communications Protocols		Modbus TCP/IP				

Materials and specifications are subject to change without notice.
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