C200B5ZE C1000B5ZE
C400B5ZE C1500B5ZE
C600B5ZE C2000B5ZE

BATTERY ENERGY STORAGE SYSTEM (BESS)

100 – 1000 kW, 211 – 2280 kWh, 380 – 415VAC, 50Hz.

Unlock the future of energy with Cummins Battery Energy Storage System (BESS) Solutions! Our technology offers exceptional efficiency, reliability, and scalability, ensuring your business stays ahead in the rapidly evolving energy landscape. With Cummins BESS, you can seamlessly integrate renewable energy sources, reduce operational costs, and enhance grid stability, all while contributing to a sustainable future. Trust in Cummins' legacy of innovation and excellence to power your business with clean, reliable energy.

Cummins Battery Energy Storage System (BESS) solutions are designed with advanced lithium-ion battery technology, offering high energy density and long cycle life. Our systems feature a modular architecture, allowing for easy scalability to meet your specific energy needs. The integrated energy management system (EMS) optimizes performance by balancing power flow between distributed energy resources(DERs), ensuring maximum efficiency and reliability. With robust safety features, including thermal management, Cummins BESS provides secure and stable energy storage. Additionally, our solutions support seamless integration with renewable energy sources like solar and wind, enabling a flexible and resilient energy infrastructure. Choose Cummins BESS for a future-proof energy solution that combines innovation, efficiency, and sustainability.

BENEFITS

Energy Independence and Sustainability: Reduce reliance on traditional sources and promote sustainable practices.

Renewable Energy Integration: Manage variable renewable sources by storing and releasing energy as needed.

Demand Response and Load Management: Quickly adjust to changes in energy demand and supply.

Peak Shaving and Cost Reduction: Reduce costs by managing peak demand and minimizing additional infrastructure.

Grid Stabilization and Resilience: Smooth out fluctuations and maintain stable power supply.

Backup Power: Provide reliable power during outages, enhancing resilience.

EV Infrastructure Support: Balance supply and demand for electric vehicle charging, reducing grid stress.

Futureproofing: Ensure adaptability to future energy needs and market changes.

FOCUSED USE CASES

Reliable backup Power: Alternative electricity supply when grid power fails.

Off-grid power: Energy solutions for remote locations.

Energy arbitrage: Buying and selling energy to take advantage of price difference over time.

Peak shaving: Supplementing grid power when demand and/or costs are higher.

Renewable energy shifting: Storing excess energy during peak production time (e.g.: sunny or windy days) and releasing/ discharging it when needed.

Electric vehicle (EV) charging infrastructure: Enhancing the electricity grid to handle increasing loads for EVs, potentially preventing costly grid upgrades.

Demand response and load management: Managing the flow of electricity to meet demand while maintaining system stability.

Microgrids: Localized grids capable of operating autonomously.

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FEATURES

LFP Technology Battery Cell: Advanced lithium-ion batteries provide high energy density, improve discharge/recharge efficiency, and extend cycle life.

Liquid Cooled Battery system: The battery system adopts liquid cooling method for effective battery cooling and operating at wide ambient temperatures.

Fully Certified: Compliant to certifications at System level apart from the required certification at component level.

Product safety: Three-level fire alarm and extinguishing system, with real-time monitoring of cell-level temperature.

High Power Density: Integrated package with AC output for high power density and performance.

Plug and play: Minimal installation efforts for on-site interfacing.

Transportation ready: Robust IP54 containerized products for better transportation, handling and serviceability.

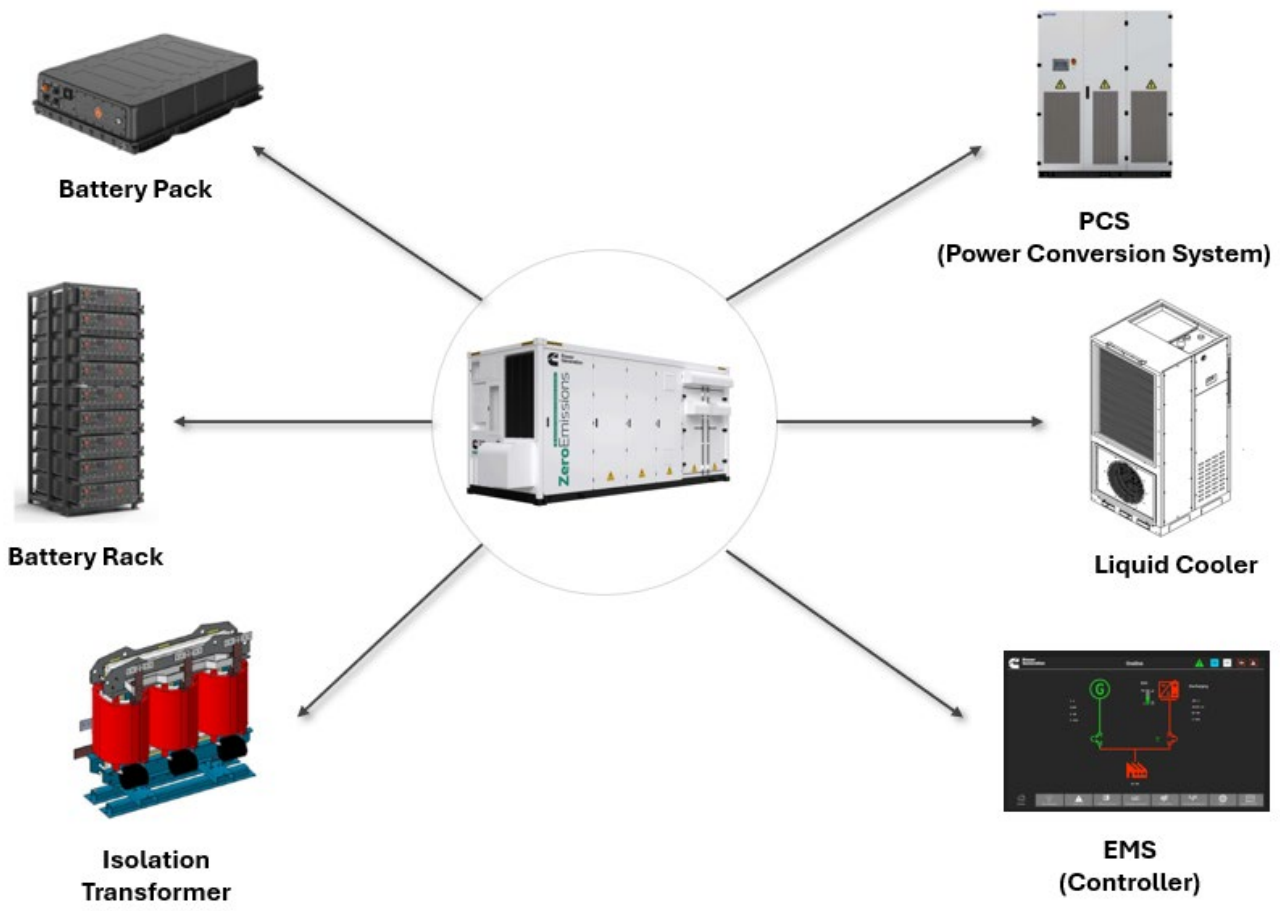
True on & off grid Solution: Capable of True ON-GRID & OFF-GRID functionality.

World class aftermarket service: Backed by a comprehensive warranty and worldwide distributor network.

Broad DER portfolio: Powergen Technical Expertise with broad DER portfolio.

Scalable design: Scalable configurations available in 2-hour and 4-hour options.

BESS CONSTRUCTION



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BESS SYSTEM

Model	C200B5ZE	C400B5ZE	C600B5ZE	C1000B5ZE	C1500B5ZE	C2000B5ZE
Power rating (kW)	100	200	300	500	750	1000
Energy rating (kWh)	211	422	633	1056	1520	2280
Weight (kg)	7000	8500	19000	22000	26000	32000
Footprint (Dimensions)	10’ ISO Std. Container		20' ISO HC Container			
Nominal AC voltage	380 – 415VAC, 3 Phase, 4 Wire					
Frequency	50Hz.					
Fire suppression system	Battery pack level immersion protection + System level perfluorohexacene aerosol + Active ventilation + Water sprinkler system					
EMS display	10” Touch Screen					
Anti corrosion grade	C4					
Noise level	70 dBA					
Life cycle (Batteries)	7000 cycles (25±2℃, 90% DOD, 70% EOL)					
Ingress protection	IP54					
Round trip efficiency	>85%					
Communication protocol	Modbus RTU/ Modbus TCP/ CAN2.0					

BATTERY (DC SYSTEM)

Cell type	Prismatic
Cell chemistry	LiFePO4 (LFP)
Cell rating	300Ah
Charge & discharge rate (C rate)	0.5
Cooling mode	Smart Liquid Cooling

PCS & ISOLATION TRANSFORMER (AC SYSTEM)

Maximum AC power	110kVA	275kVA	550kVA	1375kVA
Maximum AC current	160A	400A	794A	1443A
Total harmonic distortion ratio (THD) %	< 3%			
Power factor at nominal power / range	> 0.99/ 1 Leading ~ 1 Lagging			
Over-load capacity	110%~normal operation, 120%~1min			
Cooling method	Forced air cooling			
Working mode	On Grid and Off Grid			

OPERATING CONDITIONS

Maximum operating altitude (Full load)	No derate up to 2000m
Ambient temperature range	-20°C ~ +50°C
Relative humidity	0-95% (non-condensing)

WARRANTY

Standard product warranty[1]	3 Years
Battery performance warranty[2]	10 Years

[1]Refer to warranty document for product and performance warranty details.
[2]For extended product warranty, please reach out to the nearest distributor.

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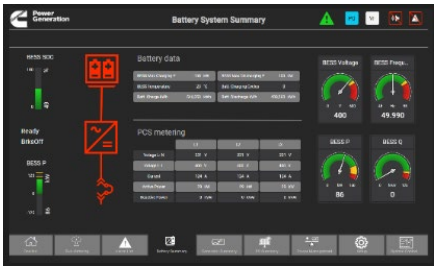
Energy Management System (EMS)



ENERGY MANAGEMENT SYSTEM (EMS)

DESCRIPTION

The EMS is a microgrid controller that offers a cost-effective solution for combining traditional grid or gen-sets with renewable energy sources to create a reliable and efficient power generation system. The EMS also oversees power control (VF, PQ Etc.), SOC management and other critical functionality to allow the BESS to operate safely and efficiently.

The EMS contains predefined control loops for typical applications of microgrid systems connected in parallel to on-grid and off-grid primary power sources.

The EMS also include PLC functionality to improve the BESS flexibility in meeting various customer applications. The Modbus client (master) capability allows for modular connection of renewable energy sources such as BESS and PV to generator sets and mains without compromising power stability.

BENEFITS

- Configurable microgrid parallel to mains application and multiple island-parallel application
- Modbus client onboard for flexible integration of devices via RTU or TCP

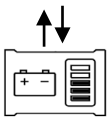
FEATURES

- Modbus Client support of up to 8 devices for RTU/TCP communications to inverters and storage systems
- Control and Monitoring of up to 8 Cummins Diesel and/or Natural Gas Gensets
- Supports black start of grid-forming battery storage systems
- Built in PLC interpreter with the use of free PLC Editor
- Possibility to remotely connect to the display, for example using Remote Desktop
- 2 Ethernet ports
- Compatible to load/Var sharing and power management
- Peak shaving for limiting the import from the mains (e.g., due to higher prices)
- Keeping your business and data as safe as possible with design to the ISA 62443 level 2 - level 3 security requirements
- Event-based history for fast and easy troubleshooting
- 10.1” touch screen with a resolution 1280 x 800 pixels
- PC tools pre-installed
- Direct monitoring (and control) of 3rd party devices via Modbus (using Gateway)

APPLICATIONS OVERVIEW

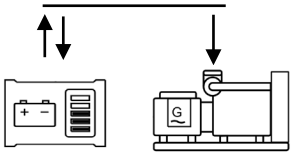
BESS

- Off grid application



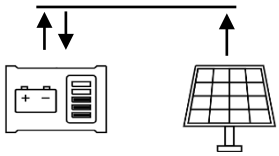
BESS + Genset

- Off grid application
- BESS discharges during low loading scenarios
- Genset mainly runs during higher load scenarios or recharge BESS during low loading scenarios. This improves Genset fuel consumption and transient performance.



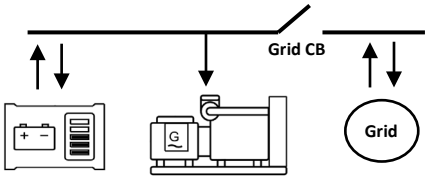
BESS + PV

- Off grid application
- BESS is charged when PV power exceeds load demand
- BESS is discharged when PV power is less than load demand
- Absorb Green Power to charge BESS



BESS + Genset + Grid

- On Grid application
- BESS paralleling with grid to do peak shaving
- Genset Paralleling with grid to do peak shaving
- BESS and Genset parallel with grid to do peak shaving
- Genset or Grid can charge BESS
- Genset paralleling with BESS to provide power when Grid is off



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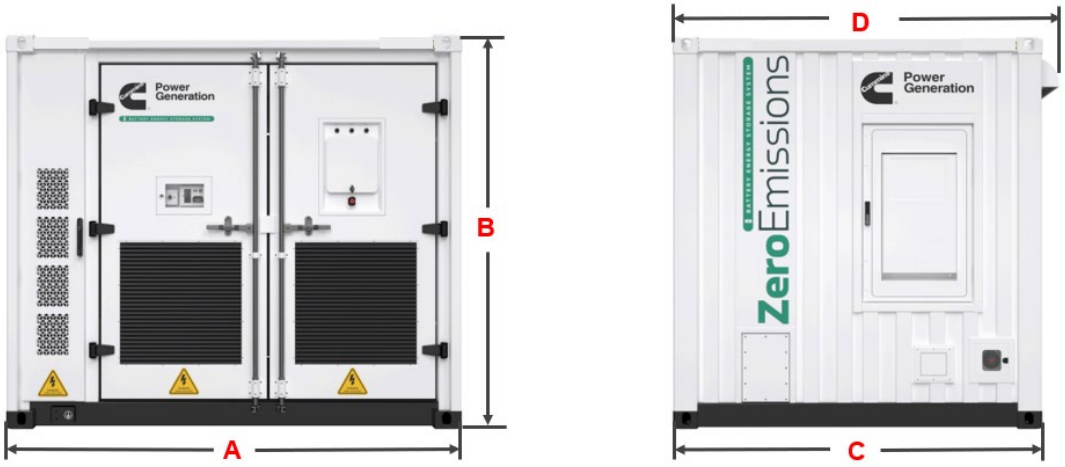
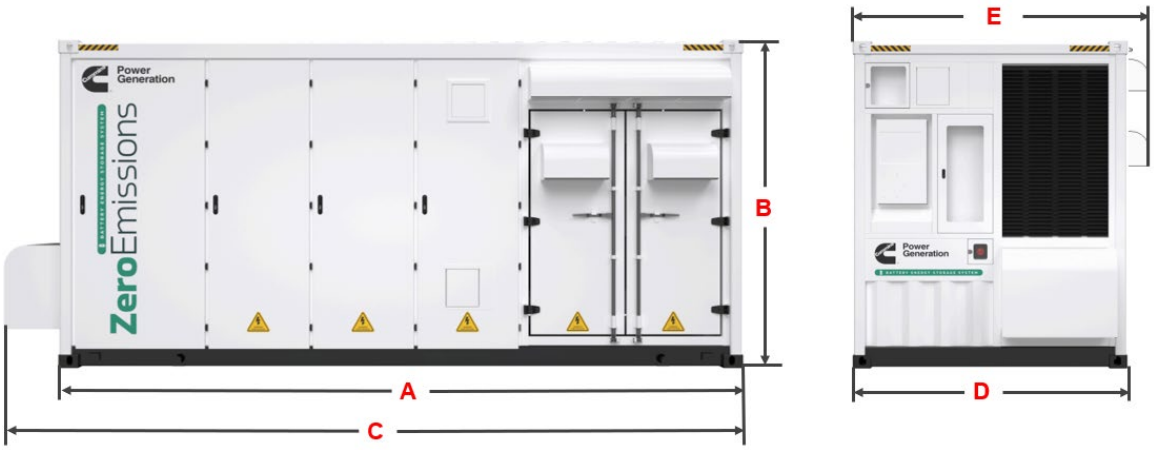
DIMENSIONS AND WEIGHTS[3]

10' CONTAINERIZED BESS



Model Name	Dim "A" mm	Dim "B" mm	Dim "C" mm	Dim "D" mm	Set weight kg
C200B5ZE	2991	2591	2438	2588	7000
C400B5ZE	2991	2591	2438	2588	8500

20' HC CONTAINERIZED BESS



Model Name	Dim "A" mm	Dim "B" mm	Dim "C" mm	Dim "D" mm	Dim "E" mm	Set weight kg
C600B5ZE	6058	2896	6586	2438	2691	19000
C1000B5ZE	6058	2896	6586	2438	2691	22000
C1500B5ZE	6058	2896	6586	2438	2691	26000
C2000B5ZE	6058	2896	6586	2438	2691	32000

[3] Do not use for installation design. See respective model outline drawing that contains weights of other configurations.

BATTERY ENERGY STORAGE SYSTEM COMPLIANCE TO STANDARDS

BATTERY ENERGY STORAGE SYSTEM	
CE & UKCA	CE and UKCA marked, conforms to applicable regulations and directives
LVD 2014/35/EU (IEC 62477-1:2022)	Low voltage directive and safety requirements for power electronic converter systems and equipment
EMC Directive 2014/30/EU (IEC 61000-6-2 & -6-4)	Ensures electrical and electronic equipment does not generate, or is not affected by, electromagnetic disturbance
REACH	Protect human health and the environment against the harmful effects of chemical substances
IEC 62933 (-5-2;-5-1)	Safety testing for energy storage systems
CSC	Container safety convention for transportation of containers
UN 3536	UN transportation standard for lithium metal batteries installed in a cargo transport or multi-modal shipping container
PCS (POWER CONVERSION SYSTEM) & ELECTRICAL	
IEC 61558	General requirements and tests for safety of transformers, power supply units Etc.
IEC 62477-1:2022/2023	Safety requirements for power electronic converter systems and equipment
AS/NZS 4777	Device specifications, functionality, testing and compliance requirements for electrical safety and performance of inverters
IEEE 1547	Interconnection and Interoperability of Distributed Energy Resources with Associated Electric Power Systems Interfaces
AS/NZS 3000	Australian/ New Zealand wiring rules
BATTERIES,RACK/SYSTEM	
IEC 60536	Safety and performance of electrical and electronic equipment with regard to protection against electric shock
UL9540A	Test method for evaluating thermal runaway fire propagation at the cell, module and unit level
IEC 62619	Safety requirements for secondary lithium cells and batteries
UL1973	Safety and performance of batteries to reduce the risk of fire explosion for lithium batteries
UN38.3	Transportation standard for dangerous goods. Tests and criteria for simulation of transport conditions like pressure, temperature, crush, impact Etc.
EU Battery Regulation 2023/1542	Battery marking, performance, safety, battery collection, recycling and reporting

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