

BSG Box – Advanced Energy Management Systems

BSG Solution delivers cutting-edge Energy Management System (EMS) platforms designed for modern energy infrastructures. The BSG Box product family combines industrial reliability, advanced control capabilities, and seamless integration into battery energy storage systems (BESS), renewable energy plants, and hybrid power environments.

Comprehensive Solution for Modern Energy Systems

The BSG Box portfolio is engineered to optimize energy flows, ensure grid compliance, and maximize return on investment. With support for a wide range of battery technologies, power conversion systems (PCS), and grid communication standards, these systems provide unmatched flexibility for both small and large-scale deployments.

BSG Box GX – Compact EMS for Small Installations

The BSG Box GX is designed for battery storage systems up to 0.5–1 MW. It is built on the Siemens S7-1200 platform, offering reliable performance and cost-effective deployment.

Key technical features:

- Up to 2 independent Ethernet ports
- RS232/485 communication interface
- I/O capacity: up to 14 digital inputs / 10 outputs
- Analog inputs: 0–10 V and RTD/TC support
- Protocols: Modbus TCP/RTU, MQTT, OPC UA
- Built-in WebServer for remote monitoring
- Support for external electricity meters

GX enables peak shaving, load shifting, and photovoltaic dynamic load management, making it ideal for commercial and industrial applications.



BSG Box GY – Scalable EMS for Utility Applications

The BSG Box GY is tailored for utility-scale battery storage systems up to approximately 12 MW. It is based on the Siemens S7-1500 controller, delivering higher performance and scalability.

Key technical features:

- Ethernet: 1x + 2x independent ports
- RS232/485 available
- I/O capacity: up to 32 inputs / 32 outputs
- Advanced analog measurement (U/I, RTD/TC)
- Support for energy measurement cards and external meters
- Protocols: Modbus TCP/RTU, MQTT, OPC UA, IEC 60870-5-101/104, IEC 61850
- WebServer, HMI, and SCADA connectivity
- Hardware firewall and cybersecurity features

GY acts as a distribution company gateway and enables advanced grid services, including aggregation and frequency control integration.



BSG Box GZ – Master EMS for Complex Power Systems

The BSG Box GZ is a master-level EMS designed for centralized control of complex energy systems and power plants. It supports integration of multiple energy assets, including battery storage, gas turbines, and diesel generators.

Key technical features:

- Siemens S7-1500 platform with redundant system architecture
- Ethernet: 1x + 2x ports
- I/O capacity: up to 64 inputs / 64 outputs
- Full protocol support including IEC 60870-5-101/104 and IEC 61850
- Advanced cybersecurity: firewall, VPN, syslog, NIS2 readiness
- High availability through redundancy
- Full SCADA and remote visualization support

GZ enables orchestration of large-scale energy systems, supports ancillary services (FCR, aFRR, mFRR), and provides a robust platform for aggregator integration.



System Architecture and Connectivity

The BSG Box systems support a modular architecture, allowing seamless integration of multiple energy sources and subsystems. They can operate as standalone local controllers or as part of a hierarchical control structure, where GZ acts as a master EMS coordinating multiple GX/GY units.

Connectivity options include:

- Ethernet and optical communication
- Mobile data
- Secure VPN tunnels
- Cloud and SCADA integration

Visualization and User Interface

All BSG Box systems provide advanced visualization tools for operators:

- Integrated WebServer interface
- HMI panels (including 10" display support)
- SCADA connectivity
- Monitoring of battery status, power flows, and system performance

These tools enable intuitive operation, fast diagnostics, and efficient system management.

Key Benefits

- Intelligent energy optimization (peak shaving, load shifting)
- Seamless integration with renewable energy sources
- Industrial-grade reliability and scalability
- Advanced cybersecurity and compliance readiness
- Support for grid services and aggregation
- Future-proof architecture with wide protocol compatibility

Ready for the Energy Future

BSG Box solutions empower operators to manage energy smarter, safer, and more efficiently. By combining robust hardware, advanced software, and deep industry expertise, BSG Solution delivers EMS platforms ready for the evolving demands of modern energy systems.

Make it real!

