BTM Microgrid for Commercial & Industrial Facilities

Optimizing energy costs while improving power resilience

Product Highlights

SCADA Switch | EDS-G4012

- Support for IEEE 802.3bt PoE for up to 90W output per port
- Wide range of power input options for flexible deployment
- IEC 62443-4-2 Security Level 2 certified

IIoT Gateway | AIG-302

- Modbus RTU/ASCII/TCP to MQTT/Azure/AWS cloud-ready gateway
- Built-in network traffic monitoring, diagnostics, and data processing capabilities
- Compliance with IEC 62443-4-2 Security Level 2 requirements

SCADA Computer| DRP-A100

- DIN-rail mountable fanless computer
- Compact size to fit most field applications
- Rich interface options for up to 8 serial and 10 LAN ports

Secure Router | EDR-8010

- 10-port Gigabit all-in-one firewall/VPN/NAT router/switch
- -40 to 75°C operating temperature range
- IEC 62443-4-2 Security Level 2 certified

Protocol Gateway | MGate MB 3170-G2

- Converts between Modbus RTU/ Proprietary serial and Modbus TCP
- Supports agent mode to actively poll Modbus devices and cache data
- Intuitive Modbus diagnostics and traffic monitoring for easy troubleshooting

Remote I/O | ioLogik E1212

- Supports IT/OT protocols for connecting with upper system easily
- Compact size with front wiring to fit most application scenarios
- -40 to 75°C operating temperature range

What is BTM Microgrid

A behind-the-meter (BTM) microgrid is deployed on the customer side of the utility meter and is owned and managed by the facility operator. It integrates on-site energy resources such as solar PV, energy storage systems (ESS), backup generators, and an energy management system (EMS). By coordinating energy assets, a BTM microgrid supports autonomous operation and can maintain critical loads during grid disturbances, while also improving energy cost efficiency.

Typical BTM microgrid deployments include factories, hospitals, campuses, data centers, and large commercial buildings, with grid architecture varying by load criticality and operational objectives.

Why Automated Factories Are Adopting BTM Microgrids

Highly automated industrial operations are extremely sensitive to power instability. In high-stakes industries such as semiconductor manufacturing and chemical processing, even brief power disturbances can result in significant financial losses and serious process safety risks.

BTM microgrids enhance **power autonomy** by ensuring stable electricity supply to critical loads while enabling controlled operation during grid disturbances or outages.

Beyond resilience, rising electricity demand and increasing price volatility are accelerating the need for **optimizing energy costs**. By coordinating ESS, power generation, and EMS control logic, BTM microgrids enable practical strategies such as peak shaving, load balancing, and optimized dispatch, improving cost transparency and long-term operational efficiency.

Project Requirements

- **Integrated Communications and Scalable Architecture**

  Seamless integration with existing factory automation and energy systems, supporting multiple industrial protocols and scalable network architectures.

- **Real-Time Energy Monitoring and Peak Load Management**

  Real-time monitoring of energy consumption and load variations, enabling EMS-driven peak shaving and optimized energy usage.

- **Highly Reliable Power Supply and Fast Transition Capability**

  Rapid switching between grid-connected and islanded modes to maintain stable operation of critical processes during grid disturbances.

Why Moxa

Moxa provides industrial networking and computing solutions that enable reliable, secure, and scalable communication infrastructure for industrial BTM microgrids.

- **Seamless Integration with Existing and Heterogeneous Systems**

  Enable seamless integration with existing and heterogeneous systems to support control and monitoring of high-power-consuming devices without requiring major infrastructure changes, while enabling effective management of electrified smart loads.

- **Engineer-friendly Management Interface**

  Simplify deployment and maintenance with intuitive web-based configuration and streamlined management tools

- **Cybersecurity References IEC 62443**

  Supports IEC 62443-aligned security architecture with zone segmentation and defense-in-depth protection, ensuring the security of both onsite data and data transmitted externally.

- **Flexible Design for Ensuring High Availability and Network Redundancy**

  Ensure continuous communication with flexible redundancy and high-availability network architectures.