

WHITE PAPER

RELIAGEAR[®] LIGHTING PANELBOARD WITH INTEGRATED BRANCH CIRCUIT MONITORING (BCM)

Feed high-density data centers with
smarter power monitoring

ENGINEERED
TO OTRUN



Data centers are projected to consume over 1,000 terawatt-hours (TWh) globally by 2030, driven largely by the rise of generative AI and high-performance computing. According to Deloitte Insights, this surge in demand is prompting a shift toward energy-efficient technologies and carbon-free power sources.

Modern data centers are expanding rapidly to support AI, cloud computing and digital services. These environments demand energy efficiency, reliability and scalability. ReliaGear® branch circuit monitoring (BCM) addresses these needs with granular circuit-level monitoring and predictive maintenance. Additionally, it supports the sustainability goals of tomorrow and compliance with global energy codes such as LEED, ASHRAE 90.1, IECC and California Title 24.

“Energy monitoring is no longer a luxury — it’s a necessity. For data centers dealing with high thermal loads and round-the-clock operations, the ability to see, understand and act on energy data is a powerful advantage.”

— eGauge energy blog

ABB'S RELIAGEAR® LIGHTING PANELBOARD WITH BCM

Meet and exceed evolving data center needs.

ABB's ReliaGear lighting panelboard with integrated branch circuit monitoring (BCM) is a game-changing solution for data centers. It delivers real-time, revenue-grade power monitoring and submetering in a compact, factory-assembled package, making it an ideal solution for AI-driven, high-density data center applications.

ReliaGear lighting panelboards support sustainability goals. Their Environmental Product Declaration (EPD) certification helps customers meet green building standards such as LEED, ASHRAE 90.1 and IECC.

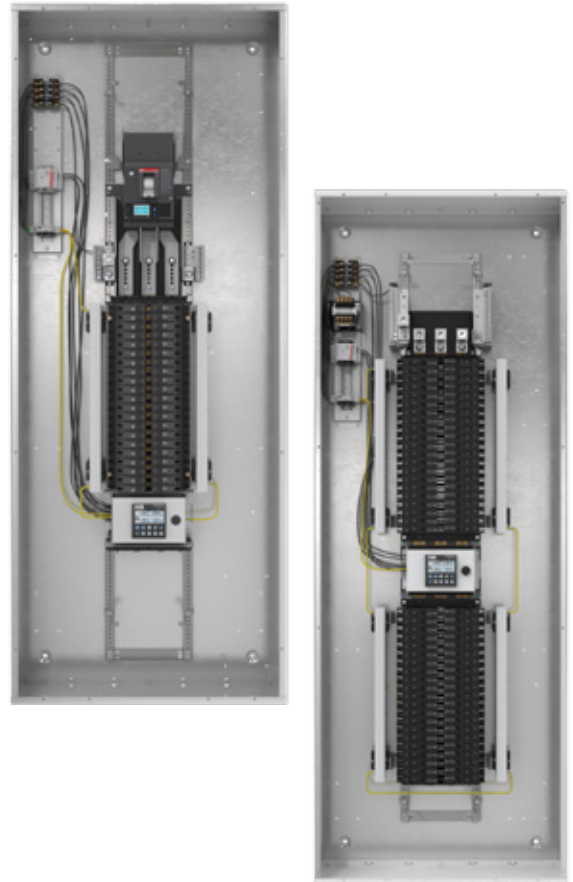
Detailed electrical monitoring ensures the reliability of the infrastructure and availability of continued power, the most critical metric for a data center.

Built for the future of energy management

The ReliaGear lighting panelboard with integrated BCM is a powerful innovation for the future of energy management, offering precise, real-time monitoring of electrical parameters at the circuit level. Designed for seamless integration into building automation and energy management systems, it supports protocols such as Modbus TCP/IP, BACnet IP and SNMP to deliver class 0.5 revenue-grade metering accuracy.

ReliaGear BCM's real-time data and predictive analytics enable facility managers to monitor energy usage at the circuit level, identify inefficiencies and enhance load distribution and sustainability compliance, all while meeting stringent energy codes like ASHRAE 90.1 and IECC. Its EPD certification supports green building initiatives, and its modular design facilitates scalability for future infrastructure growth.

ReliaGear BCM delivers reliable, secure, scalable energy management plus the insights customers need to optimize energy usage and maintain uninterrupted operations tailored to AI-driven, high-density data center applications.



○ 1 ReliaGear lighting panelboards with integrated BCM for 42 and 84 monitored circuits



Enhance server rack distribution in high-density data centers

Smarter monitoring enables smarter infrastructure. ReliaGear® neXT's branch circuit monitoring (BCM) is purpose-built to support intelligent server rack distribution.

Unlike traditional monitoring systems that require complex field installations, ReliaGear BCM's factory-integrated design reduces cable complexity and installation time. What's more, it supports up to 84 monitored circuits in a single section and up to 126 (42+84) monitored circuits in a multi-section, with solid-core or optional split-core sensors at field integration. This enables precise energy tracking, load balancing and improved manageability across server racks.

“Branch circuit monitoring allows data center managers to track total load vs. available capacity in real time for each cabinet. This visibility is essential for capacity planning, risk reduction and accurate billing.”

— Mike Schmitt, Nlyte Software





ABB's ReliaGear® BCM system provides a scalable and cost-effective solution to address the needs of AI-driven, high-density data center application. It offers granular visibility in energy usage, enabling users to:

- Analyze and reduce energy waste
- Take corrective action and optimize their energy expenses
- Accurately allocate costs across tenants or departments
- Improve load balancing and peak demand management
- Ensure compliance with global energy and sustainability standards like LEED, ASHRAE 90.1, IECC and California Title 24 energy codes
- Utilize alarm and power quality monitoring capabilities for predictive monitoring/maintenance, identifying abnormalities before they might cause outages and demonstrating a commitment to high availability and resiliency
- Integrate seamlessly with data center infrastructure management (DCIM) and other management platforms' APIs for a unified system view monitoring energy, cooling and security plus creation of custom dashboards that provide greater flexibility and control
- Leverage historical consumption data and growth trends to predict future power and space needs, proactively plan infrastructure expansion and ensure capacity is available when needed to avoid unnecessary expenses
- Plan for the growth of their workloads, ensuring that the data center infrastructure can support their future demands without disruption
- Ensure the reliability of the infrastructure and availability of continued power as the most critical metric for a data center

Key features and benefits of ReliaGear® lighting panelboard with branch circuit monitoring (BCM)

Upgrade to a higher level of versatility, scalability, security and reliability.

ABB's ReliaGear BCM system optimizes management of your AI-driven, high-density data centers, with robust features that include:

- Real-time Ethernet and RS-485 communication for seamless BMS/EPMS integration
- Modbus TCP, BACnet IP and SNMP connectivity
- End-to-end cybersecurity features aligned with IEC 62443 standards
- Rapid Set software for fast configuration and duplication across panels
- Support for up to 800 A in RQ, RE and RS panelboards
- Configurable alarms for increased load, required maintenance needed or accident prevention
- LEED, ASHRAE 90.1, IECC and California Title 24 compliances
- Compact, integrated design, with the BCM system's current sensors and communication modules factory-installed within the panelboard
 - Eliminates need for external components or field modifications
 - Single- and multi-section footprint is ideal for maximizing rack and floor space
- Modularity and scalability enable support for up to 84 monitored circuits in a single section and up to 126 (42+84) monitored circuits in a multi-section, with solid-core or optional split-core sensors at field integration
 - Ideal for high-density rack deployments
 - Highly adaptable to evolving infrastructure needs
 - Rapid Set software streamlines deployment and expansion across multiple panels
- Reliable, continuous monitoring with energy efficiency
 - Class 0.5 revenue-grade metering (IEC 61557-12, ANSI C12.20), real-time alarms and advanced power quality analytics ensure accurate energy tracking and operational reliability
 - Compliance with sustainability standards and EPD certification support customers' green building and energy efficiency goals, making it a future-ready solution for mission-critical environments

“America needs an unprecedented partnership between government, energy providers and data center operators to secure its digital and economic future. Without modernization, energy constraints could stall digital progress.”

— Doug Adams, CEO,
NTT Global Data Centers







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