

Technical Data Sheet

Edge Controller for Benchmark E

The Edge[®] Controller is a next-generation controls platform designed to deliver consistent value throughout the entire lifecycle of the heating system. From lowering project and operating costs to simplifying system design, commissioning, and long-term maintenance, Edge equips operators with deeper visibility and more precise control of their Benchmark E equipment. Its intuitive touch-screen interface and streamlined menu structure help reduce configuration errors and accelerate startup, while built-in IST and BST technologies intelligently coordinate multi-unit or hybrid plants for optimized performance, energy efficiency, and reliable operation. The Edge comes with integrated BACnet & Modbus protocols¹ for full compatibility with building automation and energy management systems. Firmware upgrade, settings transfer/backup and data logging are conveniently accomplished via a USB port. Edge provides a modern, durable control solution ready to support current and future heating system requirements.

Features

- Precise Temperature Control
- Hybrid Plant Control
- Boiler Sequencing Technology
- Independent Sequencing Technology
- Integrated BACnet & Modbus* Communication Protocols
- Peak Load Management*
- Primary Pump Control
- Manual Run
- Reserve Unit Control
- Intuitive Touchscreen, Graphical Interface
- Save and Load Unit Settings
- Upgrade Unit Software
- USB Data Logging
- UL 60730 Listed



*Modbus RTU and TCP/IP, Peak Load Management, and Automatic Backup Manager Transfer available via upcoming firmware update

Performance & Control

Precise Temperature Control

The Edge Controller uses advanced PI (Proportional & Integral) control with Dynamic Up/Down Modulation to maintain stable boiler operation with a consistent $\pm 4^{\circ}\text{F}$ header temperature. This reduces overshoot, short cycling, and unnecessary energy waste during both standalone and multi-unit plant operation.

Reserve Unit Control

Reserve Unit Control activates a designated backup (AERCO or non-AERCO) boiler when the primary system approaches full capacity or during peak-rate periods, improving both performance and operating cost management.

Primary Pump Control

Edge integrates direct control of fixed-speed and variable-speed primary pumps, eliminating the need for external pump control panels and reducing commissioning time.

Startup, Service & Diagnostics

Faster Startup & Replication

The intuitive touchscreen interface accelerates commissioning with guided setup. Unit configurations can be saved to USB and uploaded to additional Benchmark E units for fast duplication across multi-boiler plants.

Operational Visibility

A graphical home screen provides live operating conditions, unit status, setpoints, and key performance data without requiring deep menu navigation.

Diagnostics & Troubleshooting

Enhanced Event History, configuration diagnostics, and Manual Run Mode streamline troubleshooting and performance verification.

Connectivity & Integration

Building Management System Compatibility

Integrated BACnet (standard) and Modbus RTU/TCP/IP* interfaces enable seamless connection to building automation systems, energy management platforms, and plant monitoring tools.

The Edge Controller's supports USB firmware upgrades, data logging, saving and loading configuration settings, and rapid deployment of plant-wide settings.

System Performance & Efficiency

By coordinating the internal element sequencer with a dedicated SSR (solid-state relay) module, the Edge Controller precisely match heat output for varying hydronic system demand, resulting in a more efficient and stable plant with smoother electrical and thermal performance. This coordination:

- Minimizes spikes in electrical draw
- Reduces unnecessary element cycling
- Improves temperature stability
- Enhances long-term component reliability

Independent Sequencing Technology (IST)

Optimized Load Sharing for Maximum Efficiency and Reliability

AERCO's Independent Sequencing Technology (IST) is engineered to maximize efficiency and uptime across Benchmark® E electric boiler plants. IST evaluates system demand and automatically stages up to 16 Benchmark E units, ensuring that each boiler operates in its ideal efficiency range and that the plant meets building demand with the lowest total energy use while maximizing operating reliability.

Key Features

- Optimized staging based on outlet temperature comparison with plant setpoint
- Stable header temperature as boilers are added or removed
- Lead/Lag Rotation to balance runtime evenly across units
- Automatic Manager Transfer* to a backup manager during a communication loss/failure
- Fine-resolution power modulation leveraging Benchmark E's electric element sequencing



Hybrid Plant Control (Benchmark E + Benchmark boilers)

Coordinated Electric and Gas Boiler Sequencing

The Edge Controller's Hybrid Plant Control integrates IST for Benchmark E boilers with BST (Boiler Sequencing Technology) for Benchmark gas units to deliver unified, intelligent staging across a mixed-fuel plant. Hybrid operation allows facilities to optimize for cost, carbon reduction, and resiliency while maintaining high performance.

Key Features

- Smart resource prioritization: choose electric first, gas-first, or runtime-equalized strategies
- Coordinated staging of up to 16 units
- Stable plant temperature as units cycle on/off
- Automatic lead/lag rotation to balance runtime
- Automatic manager transfer in case of failure or communication loss*



*Available via upcoming firmware update



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