

Technical Data Sheet Edge[®] Controller

The Edge is a revolutionary controller designed to provide continuous benefit throughout the life cycle of a heating system: from project/ operating cost savings to simplified system design and startup, and optimized system performance and health monitoring.

The Edge Controller makes water heater startups effortless with EZ Setup – guiding users step by step through automated configuration, while Assisted Combustion Calibration saves time and ensures precise combustion settings. Intuitive touchscreen and menu structure virtually eliminate programming errors. Graphical unit and plant status details are accessible on screen.

Water heating applications are optimized with the Edge Controller through control of sequencing valves.

Built into the Edge Controller are PVI's Water Heater Management (WHM) and O₂ Trim System ensuring peak performance, system efficiency, and reliability while reducing cost of ownership.

The Edge comes with integrated BACnet & Modbus protocols 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.

Features

- Self-adjusting air-fuel ratio with O2 Trim
- Water Heater Management with Auto Manager Transfer
- Thermal Sanitation for Legionella Prevention
- Sequencing Valve Control
- Assisted Combustion Calibration
- EZ Setup with guided application configuration
- Integrated BACnet & Modbus Communication protocols
- Transfer settings and upgrade firmware through USB port
- Precise Temperature Control
- Intuitive Touchscreen, Graphical interface
- Freeze Protection
- UL Listed



Future-Proof Software in a Hardware Enclosure that is Built to Last

The most important feature of any product manufactured in today's information age is its ability to network with related equipment. And not just the equipment and systems that are available today – but those that are still on the horizon. This indisputable fact was a guiding principle in the design of the PVI Edge Controller. It pairs software flexibility with hardware durability to ensure that your PVI equipment will be as current tomorrow as it is today.

Patented O₂ Trim Ensures Optimal O₂ Levels, Lowering Operating and Maintenance Costs

O₂ Trim saves energy and lowers operating and maintenance cost by delivering the exact fuel needed for combustion. Precise air-fuel ratio increases condensing zone in the heat exchanger to maximize efficiency, deliver additional seasonal efficiency gains, and decrease emissions.

Startup, Setup and Troubleshooting Made Easy

EZ Setup simplifies start-ups, enabling even the most complex systems to be setup in minutes through intuitive, guided instructions. Settings can be uploaded without having to redo the same steps for each unit in the plant. Important unit and plant performance details are viewable without sifting through multiple screens. Units are precisely calibrated with Assisted or Manual Calibration options.

Step-by-step guided setup ensures applications are configured correctly. Trend multiple parameters simultaneously for a more holistic insight into the health of the system. Troubleshooting is made easy with enhanced diagnostics and visual ignition sequence.

Integrated BACnet & Modbus Protocols for Full Compatibility with BAS

For facilities that have taken a building-wide approach to energy efficiency, the Edge has integrated BACnet IP, BACnet MSTP, Modbus RTU and Modbus TCP for easy integration with Building Automation Software (BAS). In addition, it offers optional N2 communication using AERCO's ProtoAir and LonWorks communication using AERCO's Lon ProtoNode gateway.

Simplified Software Upgrade

Once a PVI Edge Controller is in place, all new versions of the system's operating software can be uploaded via a USB port. The ability to upgrade the controller – without replacing hardware, circuit cards or water heater equipment – makes it faster, easier and less expensive to take advantage of new features and management controls that become available in the future.

Water Heater Management (WHM) - Load Sharing Strategy Maximizes Energy Efficiency

The Edge's integrated Water Heater Management (WHM) for Centurion water heaters is designed to maximize energy savings and uptime reliability in modular unit plants. It requires less energy for a group of modulating water heaters, each firing at "part load," to meet the demand, than for a single water heater operating at "full fire" to carry the entire workload. The WHM system can stage and coordinate operations for up to 16 units, utilizing PVI's condensing equipments' unmatched modulation for utmost plant efficiency. To meet demand, the WHM will employ as many PVI water heaters as available, each operating at its most efficient firing rate.

WHM Breakthrough Features Sustain Efficient Water Heater Plant Operation



Precise Temperature Control

Feedforward and feedback control on each heater allows for responsive and precise control of its outlet temperature while the WHM manager controls the plant to maintain an average outlet temperature of $\pm 2^{\circ}$ F.

Lead/Lag Water Heater Designation and Rotation

The WHM will select the Lead and Lag water heaters by either Unit Size or Run Hours depending on user setting. The Lead and Lag water heaters can also be manually selected by the user. Lead water heaters are rotated at specified time and help equalize runtime.

Anti-Cycling Features

These features prolong the system's stay at specific state (firing/off) - reducing the number of cycles while maintaining accurate temperature control. Shutoff Delay Temp, Demand offset, Deadband high and Deadband low settings help to reduce the cycling of water heaters.

Next Turn On Valve Position

When all ignited water heaters reach or exceed the WHM Next On Valve Position value, another water heater will be ignited to share the load (if one is available). The default value is 50%. This feature is also useful if a user wishes to always have as few water heaters on at any one time. Setting the WHM Next On Valve Position value to a high number (Example 100%) will only ignite an available water heater when all currently ignited water heaters reach their next on VP configured value BTU capacity (100%).

Automatic Transfer of Manager Function

In the event the manager unit experiences a panel failure or communication loss, the WHM system will automatically transfer the manager function to the pre-assigned backup unit in the system plant. This ensures maximum efficiency and uninterrupted plant operation in face of the events mentioned above.



Hot Water Solutions

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