

# Centurion<sup>®</sup>

Condensing Gas Water Heater



AquaPLEX<sup>®</sup>  
Engineered Duplex Alloy

1600, 2000 MBH | Edge Controller | 15-year Warranty

PVI.com



# Enhanced Dynamic Water Heating

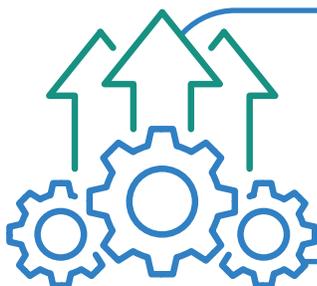
Centurion is PVI's next step in the evolution of Dynamic Water Heating. Designed for maximum performance, longevity and reliability in a compact design with the integrated Edge® Controller for enhanced hot water management.

The high-efficiency, direct-fired domestic hot water heater is packed with state-of-the-art technology that enables building owners and facility managers to confidently meet the highly diverse and demanding commercial and industrial hot water requirements of today and tomorrow. Its compact design fits through a standard 36" wide doorway which makes it ideal for both retrofit or new applications where space savings and installation flexibility are key.

Centurion features the advanced Edge Controller to provide unparalleled control capabilities from setup and configuration to maintenance and diagnostics to streamline and simplify operation for a more effective and efficient management of the building's domestic hot water system.

## Key Features

- 1,600 and 2,000 MBH gas condensing water heater
- Precise temperature control  $\pm 4^{\circ}\text{F}$  via dynamic feed-forward sensing
- Up to 99% thermal efficiency
- Patented modulating high turndown air/fuel delivery system; up to 20:1 turndown; low NOx burner  $< 20\text{ppm}$
- Outlet water temperature of  $50^{\circ}\text{-}190^{\circ}\text{F}$
- Durable, corrosion-resistant AquaPLEX® duplex stainless-steel fire tube heat exchanger
- Advanced Edge Controller with 4.3" touchscreen
- O<sub>2</sub> Trim combustion controls technology self-adjusts and maintains optimal air/fuel ratios for peak efficiency, low emissions and maximum reliability
- Integrated Water Heater Management (WHM) multi-unit sequencing (up to 16 units)
- Integrated BACnet IP, BACnet MS/TP, Modbus IP and Modbus RTU communication
- Zero side clearance with up to 65% less footprint than competing models
- Dedicated hot water re-circulation connection
- 15-year warranty (8 years full, 7 years prorated)



- ✓ High Efficiency
- ✓ Superior Reliability
- ✓ Installation Flexibility
- ✓ Greater Longevity
- ✓ Advanced Controls

# Superior Reliability with Extensive Warranty

## Corrosion-Resistant Fire Tube Heat Exchanger

The durable, highly reliable AquaPLEX duplex stainless steel firetube heat exchanger is thermal shockproof and inherently immune to aqueous corrosion and chloride stress corrosion cracking for extended life. As a result, the AquaPLEX construction found in Centurion maximizes longevity in the condensing application, and the corrugated tubes increase effective heat transfer surface area for optimal thermal efficiency.

## Reliable Hot Water on Demand

Centurion's integrated Water Heater Management (WHM) multi-unit sequencing ensures a highly reliable water heating system design. Only those units required to meet load are operating. Units in standby do not needlessly cycle to maintain set point minimizing system standby losses as well as unit wear. Compared to a conventional storage system which requires 125 gallons of storage for every 500 MBH input, Centurion truly provides reliable domestic hot water on demand in the smallest possible energy footprint to significantly reduce maintenance and operating costs, while increasing Return on Investment.

## Legionella, Pathogen and Scalding Mitigation

Centurion provides safe, instant hot water while mitigating the risks of scalding and pathogen growth, including Legionella, due to lower set points, continual circulation and minimum water storage as buffer.

## Dedicated Hot Water Re-circulation Connection

Circulation of hot water into the cold inlet on a condensing water heater lowers the efficiency. Centurion provides a dedicated connection to building return loops maintaining two distinct temperature zones and allowing only the coldest water to enter the lower condensing zone of the water heater during a firing cycle to increase efficiency.

## Extensive Warranty

Benefit from Centurion's industry-best warranty for peace of mind which includes a prorated 15-year warranty on the heat exchanger and labor coverage for one year. Optional extended warranty available.

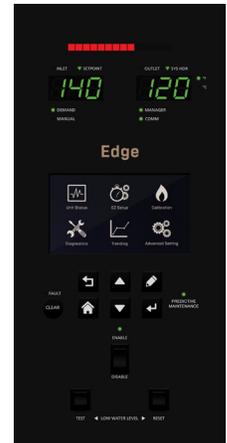


\*Prorated. 100% for first 8 years.

# Advanced Edge Controller

Centurion features the Edge Controller which is designed to provide benefits throughout the entire life cycle of the water heater: from a simplified system design and an easy startup guide to the significant cost savings achieved through greater operational efficiency, optimized system performance and health monitoring.

Edge combines temperature and operating controls, combustion safeguards and fault enunciator functions on a touchscreen, ensuring fail-safe heater operation if the external building controls fail.

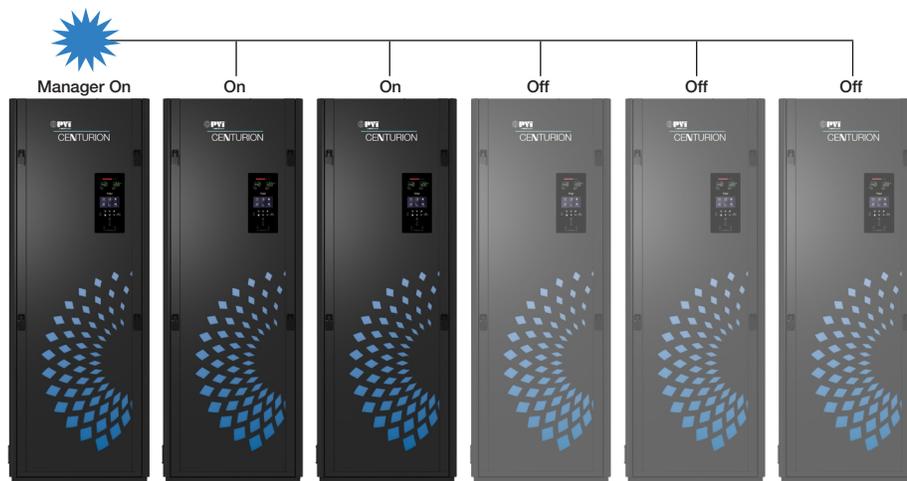


## Key Features

- **Combustion Calibration Assist** saves time and ensures precise combustion settings.
- **EZ Setup** simplifies startups, enabling even the most complex systems to be setup in minutes through intuitive, guided instructions.
- **Full BAS compatibility** with the integrated BACnet and Modbus protocols for a building-wide approach to energy efficiency.
- **Intuitive touchscreen** and menu structure virtually eliminate programming errors.

## Water Heater Management (WHM) Multi-unit Sequencing

The Edge Controller comes with integrated Water Heater Management (WHM) multi-unit sequencing that is designed to efficiently sequence up to 16 water heaters on the same system to meet load requirements and ensure all water heaters in the system operate at maximum efficiency. The result is the most energy-efficient and reliable water heating system design available. It monitors the fire rate of all water heater sequences by opening or closing the motorized valve, as required, to meet hot water demand.



Optimizes system efficiency at all load conditions



Virtually eliminates standby and cycling losses



Increases reliability – no cycling extends component life



Unique manager/client backup feature

# Built for Maximum Energy Efficiency

## O<sub>2</sub> Trim Technology

Advanced combustion control systems in high-efficiency water heaters need to maintain precise air/fuel ratios in order to work properly and maximize efficiency. However, environmental variations (such as humidity, atmospheric pressure, filter dust loading, delivered gas energy content and other factors) can often create problems in gas-fired water heaters causing them to deviate from the ideal oxygen-fuel ratio.

If O<sub>2</sub> levels are too low, it can cause unstable combustion resulting in faults and increased unscheduled maintenance. Conversely, if O<sub>2</sub> levels are too high, the Dew Point will be lower and the water heater is less likely to condense. If the water heater is not condensing, you are not getting the energy savings you should. With proper O<sub>2</sub> levels, you'll have greater uptime reliability, save money with increased efficiencies, produce lower emissions, and create the ideal environment for condensing to occur.

### Too Little O<sub>2</sub>



Unstable combustion causes faults and maintenance

O<sub>2</sub> Trim increases the blower speed to allow more O<sub>2</sub> into combustion chamber

### Too Much O<sub>2</sub>



Low Dew Point decreases condensing ability

O<sub>2</sub> Trim decreases the blower speed to slow down O<sub>2</sub> entering combustion chamber

### Optimal O<sub>2</sub>



Higher Dew Point enables a larger condensing zone for greater efficiency and reliability

## Tight Temperature Control

Centurion allows for highly precise temperature control of  $\pm 4^{\circ}\text{F}$  due to its dynamic feed-forward sensing and an unmatched 20:1 turndown. The set point is adjustable from 50°F to 190°F.

A modulating air/fuel delivery system matches heater output to domestic load to help maintain precise modulation of the high turndown air/fuel delivery system. Field-proven for more than 60 years, dynamic feed-forward and feed-back sensors monitor inlet flow via the proportional change in mixed temperatures due to variations in the flow. The system's controls fires the unit to accurately match the load requirements and produce tight  $\pm 4^{\circ}\text{F}$  outlet temperature control.

Centurion comes with a fully modulating air/fuel valve, VFD-driven premix blower, and fiber mesh radiant burner. The system guarantees safe, stable, reliable and efficient combustion with the lowest NO<sub>x</sub> and CO emissions. It also eliminates wasted fuel and reduces operating costs to make Centurion an environmentally conscious choice.



*Centurion's modulating air/fuel delivery system accurately matches heater output to domestic load.*

# Easy Installation and Setup Saves Time and Space

## Compact Design for Easy Installation

Centurion easily fits through a standard doorway and can be transported via a freight elevator which can translate into big savings on installation – both in terms of money and downtime. All units are delivered as a single, fully assembled unit with a footprint that is up to 65% smaller than most competitors. Its quiet operation along with its doorway-sized, small footprint makes it ideal for both new construction and retrofit applications.

## EZ Setup

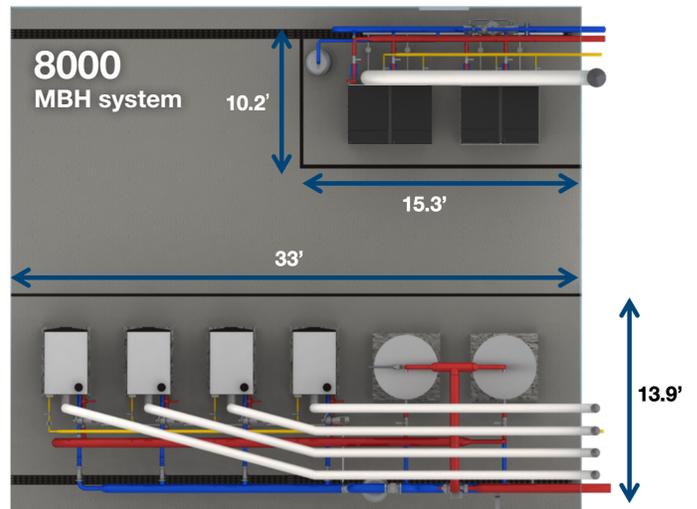
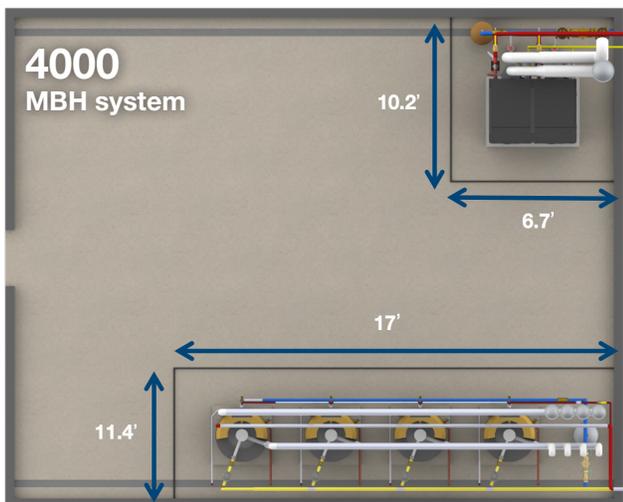
Edge Controller's EZ Setup guides users step-by-step through automated configuration while the intuitive touchscreen and menu structure virtually eliminate programming errors.

## Zero Side Clearance

Centurion can be serviced via the front or top of the water heater as well as the side to allow units to be configured side-by-side.

## 65% Smaller Installed Footprint vs. the Competition

With a small footprint, Centurion takes up significantly less space than most comparable water heaters. The images below show a top-down view of two mechanical rooms with two similarly sized water heater systems opposite each other.



# Specifications

	CEN 1600	CEN 2000
Adjustable Temperature Control	50°F to 190°F	
Ambient Temperature	0°F to 130°F	
Accuracy	+/-4°F	
Input	1,600 MBH	2,000 MBH
Certified Efficiency (DOE 10 CFR Part 431)	94%	96%
Turndown Ratio	16:1	20:1
Flue/Air Intake Connections	8" Inch	
Flue Material (per local code)	PVC, CPVC, Polypropylene or AL29-4C	
Water Inlet, Outlet, and Recirc. Conn.	3" Flanged	
Gas Connection - Natural Gas/Propane	2" NPT Male/1-1/2" NPT Male	
Gas Pressure Requirements - Natural Gas/Propane	14" WC Max/12" WC Max	
	4" WC Minimum @ Full Load	
Maximum Continuous Water Flow	130 GPM	
Condensate Trap Connection	3/4" NPT Female	
Maximum Condensate Flow	16 GPH	
Pressure Rating	160 PSIG @ 210°F	
NOx Emissions	< 20 ppm NOx. (SCAQMD)	
Standard Listing and Approvals	UL, cUL, ASME, (HLW)	
Gas Train Options	FM Compliant or Factory Installed DBB (IRI)	
Electrical Requirements	208VAC / 3Phase / 60Hz / 20A (10 FLA)	
	460VAC / 3Phase / 60Hz / 15A (5 FLA)	
Water Pressure Drop @ 50 gpm	2.1 psi	
Sound Rating	72 dbA	
Water Volume	64.0 gallons	
Weight, Installed	1,650 lbs. (dry)	
	2,203 lbs. (wet)	
Weight Shipping	1,850 lbs.	

## Recovery Capacity

Centurion 1600 (CEN 1600)									
Temperature Rise (°F)	60°	70°	80°	90°	100°	110°	120°	130°	140°
Gallons Per Minute (gpm)	51.1	43.0	37.6	33.4	30.1	27.3	25.1	23.1	21.5
Gallons Per Hour (gph)	3006	2580	2256	2004	1806	1638	1506	1386	1290
Centurion 2000 (CEN 2000)									
Temperature Rise (°F)	60°	70°	80°	90°	100°	110°	120°	130°	140°
Gallons Per Minute (gpm)	64.0	54.9	48	42.7	38.4	34.9	32.0	29.5	27.4
Gallons Per Hour (gph)	3840	3294	2880	2562	2304	2094	1920	1770	1644



**Hot Water Solutions**

PVI Industries | Fort Worth, TX  
T: (817) 335-9531 | Toll Free: (800) 784-8326 | PVI.com