

# Technical Data Sheet

## Element Q

### Complete Domestic Hot Water Solution with Multi-barrier Pathogen Mitigation and Water Quality Treatment



Element Q® is a complete, engineered domestic hot water solution that integrates high-efficiency water heating, multi-barrier pathogen protection and water quality treatment as well as temperature control and remote monitoring into one smart, compact appliance. Element Q's hot water wellness solution provides safe, reliable domestic hot water while mitigating the risks of scalding and waterborne pathogens (such as Legionella), and aids in full building sanitation. Designed and built by a single source, Element Q features a unique, supervisory controller for the entire fully connected system promoting easy installation, operation, maintenance and sanitation. The compact footprint allows for multiple units to be installed through a standard doorway and can all be accessed from a single mobile device. The Edge® SC supervisory controller and myLync® mobile app locally and remotely control and report on the health of the system. Remote user identities are securely confirmed by Microsoft Azure®.

## Features

- Factory-assembled and piped domestic hot water system including water heating, temperature control, water treatment, pumps, valves and sensors
  - Integrated design built for pathogen mitigation
    - UV treatment of both cold water supply and return water to treat Legionella Pneumophila to 5-log or more
    - Sediment filtration to 5µm
    - Scale reduction reaching >95% using Media Assisted Crystallization technology per DVGW W512
    - Scheduled self-sanitization mode with timed high temperature flow and return to system setpoint
    - Scheduled water heater blowdown to prevent biofilm build up and improve water heater efficiency
    - Controlled system loop thermal sanitization mode
  - Compact footprint: installs through standard doorway – 35.5 W x 90 L x 82.5 H in (90 x 229 x 210 cm)
  - High efficiency
    - Dual temperature supplies for hot output and ASSE 1017-compliant tempered output with separate integral return loop
    - Increased water heater efficiency by flowing return water into appropriate water heater condensing zone
  - Gas-powered firetube heat exchanger with duplex stainless steel for superior corrosion resistance
  - Temperature creep protection when building system is not in use
  - Generate automatic reports to support water management plans compliant to ASHRAE 188
  - Predictive maintenance with convenient alerts, remote monitoring and mobile app
    - Maintenance reminders over email, text, and mobile app including UV bulb and filter life
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- A photograph of the Element Q water heater unit. It is a tall, white, rectangular cabinet-style unit. On the left side, there is a control panel with a digital display showing various temperature and status indicators. The right side of the unit has a large glass door that reveals the internal components, including pipes, valves, and a water tank. The unit is shown from a three-quarter perspective, highlighting its compact design.
- Patents Pending
- System alerts when temperatures are outside disinfecting limits
  - BACnet and Modbus compatibility for building automation systems (BAS)
  - Secure user credentialing through Microsoft Azure

## Pathogen Prevention Methods

Element Q treats and thermally controls building domestic hot water systems for the purpose of disinfection and can be installed at point-of-entry. The system includes an integral water heater, ASSE 1017-compliant temperature control, ultraviolet disinfection subsystems on both incoming cold water and return water, scale reduction subsystem, sediment filters, self-sanitizing pump, cold water booster pump, chemical injection ports, return water diverting solenoid valve, and water heater blowdown solenoid valve. Service of the system can be easily performed without removing the enclosure.

The onboard Edge SC supervisory controller connects to building automation systems over Modbus or BACnet and securely to the myLync® mobile app. The controls provide the ability to thermally self-disinfect, perform building system disinfection, and return to system temperature setpoints.

### System Fill and Recirculation Protection

Element Q treats incoming cold water using a 3-stage process: through a 5-micron particulate filter, then through the anti-scale device to precipitate hard water minerals, and finally through an ultraviolet disinfecting system. Recirculated water returns to a separate internal branch to both filter and UV disinfect for ongoing protection with no corrosive chemical residuals required.

### Water Heater Disinfection

Regular thermal disinfection helps reduce pathogens. The 130 gallons (492 L) of stored water in the integral water heater can be thermally disinfected and self-circulated on a schedule in order to quickly treat the internal surfaces. After the cycle is complete, Element Q will automatically return to the original setpoint.

### Building Plumbing Disinfection

Elevated temperatures for given time periods can be used to penetrate the insulating biofilm and reduce the number of pathogens in a building's water system. When required as a part of a building water management plan, Element Q can be locally controlled to disinfect an entire hot water system in a controlled setting.

### Alerts and Communication

With the myLync mobile app or on the web, you can remotely monitor your system, receive immediate alerts and send maintenance notes to your team. For example, alerts are sent if the UV system needs attention, if the return temperature is in the Legionella growth zone, as well as when regular maintenance is required.



## Predictive Maintenance and Remote Monitoring

The myLync mobile app and web interface allows you to monitor your system's activity in real time. Each sub-system provides a status of life to replacement. Hot, mixed, return and cold water makeup temperatures are actively monitored.

A record of events is provided for each sub-system and can be commented on for contextual communication with building staff. Element Q units can be monitored in parallel in a single building, in different locations within a building, or in different properties altogether. All connected Element Q systems can be monitored from the myLync mobile app. When required by the building water management plan, the ASHRAE 188 report can be generated by Element Q to show UV output, thermal sanitation details, and when critical maintenance was performed and is needed.

# Specifications

Element Q Models			
Maximum Flow	Q 100	Q 80	Q 60
Cold Water Supply			
Flow Rate GPM (LPM)	30 (113.6)	25 (94.6)	20 (75.5)
Recirculation Loop			
Flow Rate GPM (LPM)	30 (113.6)	25 (94.6)	20 (75.5)
Performance			
Input MBH (kW)	999 (293)	800 (234)	600 (176)
Recovery GPH (LPH) Thermal Efficiency*			
Δ 70 °F (39 °C)	1635 (6189) 95%	1317 (4985) 96%	988 (3740) 96%
Δ 100 °F (56 °C)	1157 (4380) 97%	932 (3528) 97%	699 (2646) 98%

Input Requirements	
Natural gas pressure	>3.5in W.C. flowing (872 Pa), ≤14in W.C. static (3487 Pa). Convertible to use liquid propane
Electrical service	120VAC, 30A
Exhaust venting	Use a Category IV, CPVC or ETL, UL, ULC or CSA listed stainless steel or Centrotherm InnoFlue SW Polypropylene vent. Minimum vent length is 5 eq. feet. See installation manual for specifics.
Inlet Combustion Air Duct	Use PVC or galvanized pipe. 150 eq. ft. using 6" pipe. Longer lengths are ETL listed with larger diameters: see installation manual for specifics.
Internet connectivity	Wired via Ethernet RJ-45
Ambient temperature	0 - 130 °F (-17.8 – 54.4 °C)

Water Inlet Requirements	
Pressure	15 - 145psi (103 - 1000 kPa)
Temperature	Cold: 40 - 100°F (5 - 38°C) Recirc: ≤ 180°F (≤ 82.2°C)
pH	6.5 - 8.5
Hardness	Cold: ≤ 30 grains (≤ 513 ppm CaCO <sub>3</sub> ) Recirc: ≤ 7 grains (≤ 120 ppm CaCO <sub>3</sub> )
Free chlorine	≤ 1 ppm
Iron	≤ 0.3 ppm
Manganese	≤ 0.05 ppm
Phosphates	< 3.0 ppm
Silica	≤ 20 ppm
Oil and H <sub>2</sub> S	Must be removed
TDS	500 mg/L
Copper	< 1.3 ppm
Chloride	≤ 200 ppm
Sulfate	≤ 250 ppm

\*Recoveries and thermal efficiency based on DOE 10 CFR 431 testing per ANSI Z21.10.3 / CSA 4.3 from 70°F (21°C) at inlet to 140°F (60°C)

## Certifications



### System Certifications

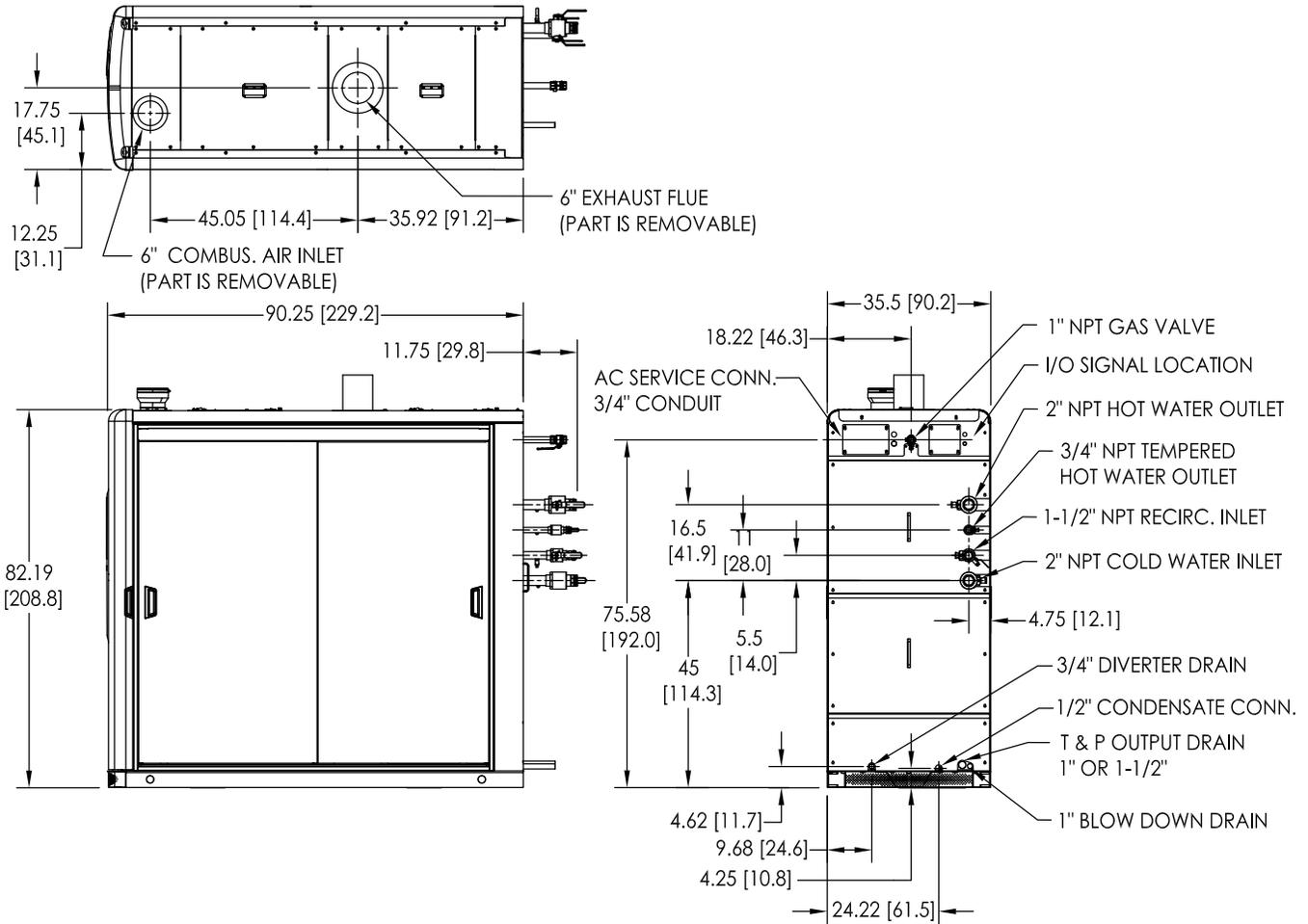
ASSE LEC 2012 - Element Q is certified by IAPMO R&T

### Sub-system Certifications

ASME BPVC Section IV HLW to 150psi  
ANSI Z21.10.3 / CSA 4.3  
ASSE 1017  
NSF 372  
NSF 61

## Compact Footprint and Doorway Delivery

The overall size and removable exhaust flue and air intake pipe eliminate the need to remove and rebuild walls, floors, and ceilings to deliver Element Q into the mechanical room. It is designed to pass through a standard 7ft x 3-1/2ft doorway. Minimum height clearance after installation is 101 in. Dimensions shown are in inches [centimeters].



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