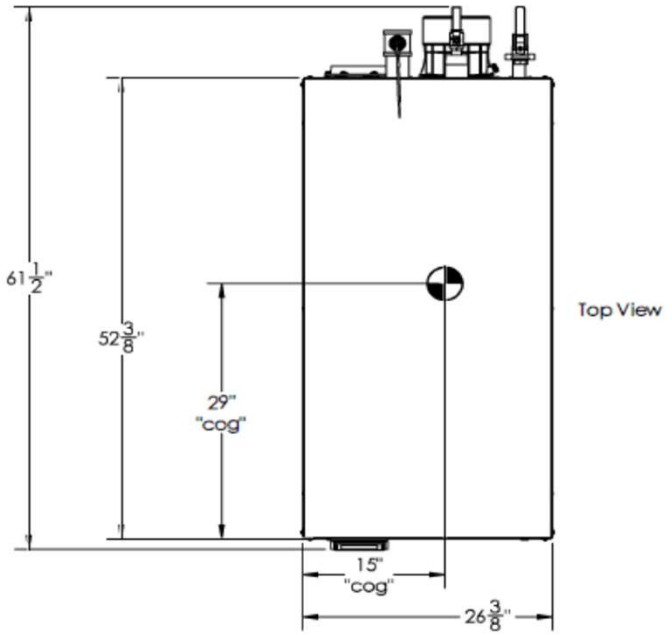
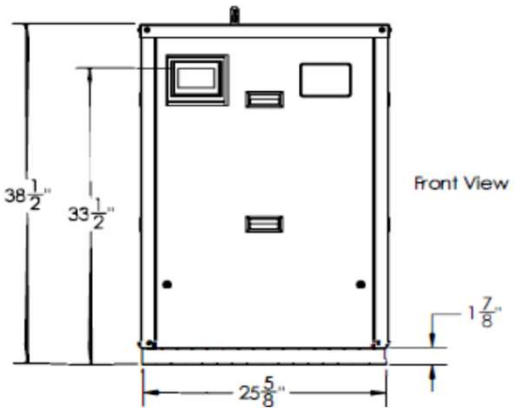
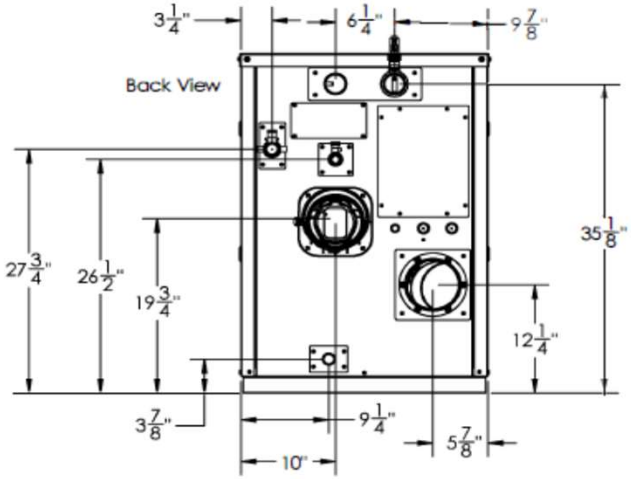
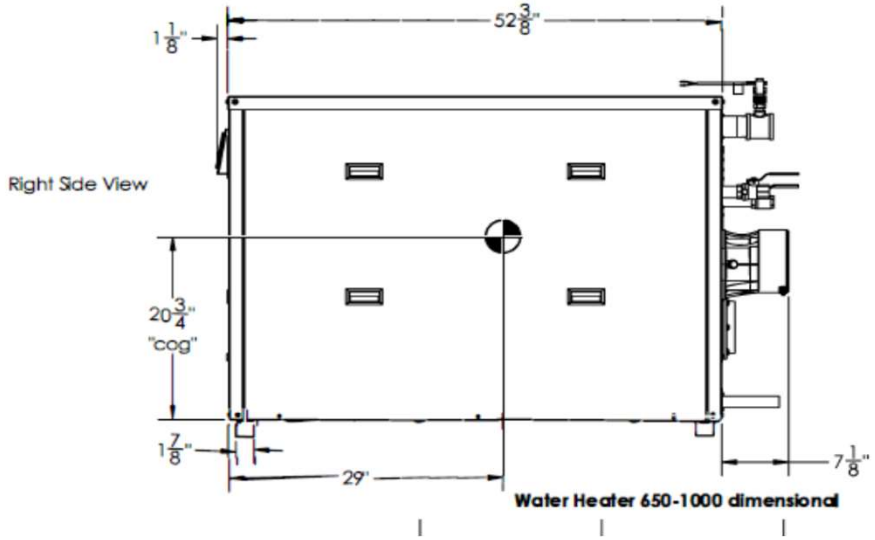
# AMP-L CONDENSING WATER HEATERS - SUBMITTAL DATA SHEET




Water Heater 650-1000 dimensional

| | | | |
|---|---|---|---|
| THERMAL SOLUTIONS<br>Innovative Equipment for Hot Water Systems<br>PO BOX 3244 \| LANCASTER, PA 17601 | AMPW-650 | INNOVATIVE EQUIPMENT FOR<br>HOT WATER SYSTEMS<br>WWW.THERMALSOLUTIONS.COM | Updated 8/8/2024<br>AMPL650WH-20240801 |

# AMP-L CONDENSING WATER HEATERS - SUBMITTAL DATA SHEET

| RATINGS AND CAPACITIES | | |
|---|---|---|
| Input - Low flre: | **65,000** | BTU/HR |
| Input - High Fire: | **650,000** | BTU/HR |
| Output - High Fire: | **637,000** | BTU/HR |
| DHW Recovery (40°F to 140° Rise): | **764** | GPH |
| Thermal Efficiency: | **98.0%** | |
| Heating Surface: | **52.2** | Sq.Ft. |
| Water Content: | **5.6** | Gallons |
| Fuel: | **Natural Gas or LP Gas** | |
| Firing Rate: | **Full Modulation** | |
| Burner Turndown: | **10:1** | |
| Low NOx Emissions: | **< 10 ppm** | |
| Inlet Gas Pressure (NG): | **4" wc** | Min. |
| Inlet Gas Pressure (LP): | **8" wc** | Min. |
| | **14" wc** | Max. |
| Shipping Weight, Approximate: | **530** | lbs |

ASME Section IV (Max 160 PSIG / 210°F)
Setpoint range is 60-185°F
Adjustable, manual reset high limit setting of ≤ 200°F.
ASME HLW stamp MAWT is 210°F for the vessel. (For max setpoint, see Setpoint range.)
ETL Certified to ANSI Z21.10.3 / CSA 4.3
NSF/ANSI Standard 372

| DIMENSIONS / CONNECTIONS | | |
|---|---|---|
| Height: | **38-1/2"** | (Note 1) |
| Width: | **26-3/8"** | (Note 2) |
| Length: | **52 3/8"** | (Note 3) |
| Supply Connection: | **2" NPT** | |
| Return Connection: | **2" NPT** | |
| Vent / Air Intake Connections: | **6"** | |
| Condensate / Boiler Drain Connection: | **1"** | |
| Gas Connection: | **1" NPT** | |

**NOTES:** 1. Height dimension is from floor to top of jacket.
2. Length is from jacket front to jacket rear.
3. Dimensions shown are for reference only

| FLOW REQUIREMENTS | | |
|---|---|---|
| **Water Hardness** | **Flow (GPM)** | **△ P (Ft. Hd)** |
| 4 - 12 gpg | **44** | **6.5** |
| 12 - 15 gpg | **59** | **10.4** |

| FLOWS AND PRESSURE DROPS | | |
|---|---|---|
| **Delta T** | **Flow (GPM)** | **△ P (Ft. Hd)** |
| 20°F △ T | **63** | **11.8** |
| 30°F △ T | **42** | **6.1** |

# AMP-L CONDENSING WATER HEATERS - SUBMITTAL DATA SHEET

## STANDARD EQUIPMENT

### PRESSURE VESSEL DESIGN

Stainless Steel Heat Exchanger
ASME Section IV Certified, "H" Stamp
MAWP 160 PSIG & Max Temp 210°F
Setpoint range is 60-185°F
Adjustable, manual reset high limit setting of ≤ 200°F.
ASME HLW stamp MAWT is 210°F for the vessel. (For max setpoint, see Setpoint range.)
Five Year Limited Heat Exchanger Warranty
Ten Year Limited Pressure Vessel Warranty

### COMBUSTION DESIGN

Stainless Steel Pre-Mix Burner
Low NOx Emissions ( < 10 ppm)
Full Modulation, 10:1 Turndown
Natural Gas or Propane
4" wc (8" wc Propane) to 14" wc inlet gas pressure
Direct Spark Ignition System
High/Low gas pressure switches, manual reset
Variable Speed Combustion Blower
Air Proving Switch
Blocked Vent Switch

### VENTING

Category II or IV Venting
Indivdual or Common (Engineered) Vent System
Vertical or Horizontal
3-in-1 Vent Connector: Accepts CPVC, PP or Stainless Steel
Includes built-in vent gas sensor test port
Combustion Air Intake - Sealed or Room

### Water Heater Equipment

Concert ™ Control (24 Vac)
High Limit Temp Control, Manual Reset
Low water cutoff, manual reset
Water Flow Switch
Supply & Return Water Temperature Sensors
Flue Gas Temperature Sensor
Condensate trap
Blocked Condensate Switch
Pressure & Temperature Gauge
ASME Temperature & Pressure Relief Valve, 150 psi

### ELECTRICAL DESIGN

**Models 400-500:**
- 120 VAC Only
Amp Draw: 7.0 Amps

**Models 650-1000L:**
- 120 VAC Only
Amp Draw: 8.0 Amps
- PCB (Printed Circuit Board) Fused Connections

**24VAC/5VDC - Low Voltage PCB**
- EMS Communications
(Dual RJ45 Jacks for Peer-To-Peer or ModBus)
- DHW Demand Contacts
- Remote Header Sensor Contacts
- Remote 4-20mA Contacts

* Flue system material shall be capable of continuous operation at 210°F or higher and shall be certified to UL 1738 – venting system for gas-burning appliances cat II, III and IV.

## OPTIONAL EQUIPMENT

_____ External High Limit Temperature Control, Manual Reset
_____ Condensate Neutralizer
_____ Hot Water Header Temperature Sensor: ☐ Direct Immersion ☐ Well Immersion (with Well)
_____ EMS Signal Converter Kit (Converts Energy or Building Management System 0-10v signal to 4-20mA)
_____ Alarm Buzzer with Silencing Switch
_____ PVC Starter Kit
_____ Universal Communications Gateway (BACnet, Metasys, Modbus or Lonworks)
_____ Conductor Sequencing Panel

The Conductor manages multiple condensing & non-condensing, small & large heat output, new and/or existing boilers (full modulation or on-off), and steam or hot water applications. It helps improve system efficiency by selecting and modulating the right boiler to match operating conditions. The Conductor offers a single point boiler plant Energy Management System (EMS) interface including Modbus TCP/IP, Modbus RTU RS485, BACnet/IP and BACnet MSTP standard. If Lonworks needed, add for the separate Lonworks gateway.

_____ Extended Warranty
☐ 3-Year Parts ☐ 5-Year Parts ☐ 10-Year Parts ☐ 5-Year Parts/Labor ☐ 10-Year Parts/Labor

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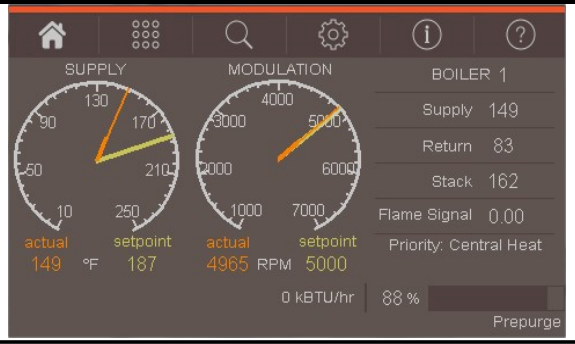
## CONCERT CONTROL FEATURES




### Dashboard - Color Touchscreen Display, 4"

Intuitive Icon Navigation
"Quick" Setup Menus
*Real Time BTU/H Display

### Temperature Demand Inputs

Time of Day Setback Capability
(Enviracom Thermastat must be installed)

### Two (2) Pump Control

System Pump
Alternative Control to Combustion
Air Damper or Standby Loss Damper
Pump Overun for Heat Dissipation
Pump Exercise
Pump Rotor Seizing Protection
Pump Overun for Heat Dissipation

### Peer-to-Peer Boiler Communications

Multiple Size Boiler Sequencing Up to 8 Units
Lead Boiler Automatic Rotation

### Energy Management System (EMS) Interface

*Firing Rate and Water Temperature Based
Algorithms for Multiple Boilers; loss of EMS
signal defaults to local boiler settings
420mAdc Input/Output (010Vdc Optional Converter)
ModBus Input/Output (BACnet or LonWorks
Optional Gateway)
Simultaneous Interface with PeertoPeer

### USB Data Port Transfer

Upload Settings Between Boilers
Download Parameters for Troubleshooting
Import Data into .CRV Formatted Files for Performance Analysis

### Energy Efficiency Enhancer

AntiCycling Technology
Multipler boiler base load common rate
Boost Temperature & Time
Ramp Delay
OverTemperature Safeguarding

### Self-Guiding Diagnostics

Identifies Fault
Describes Possible Problems
Provides Corrective Actions
Time/Date Stamp on Alarms and Lockouts

### Unmatched Archives

Historical Trends Collects Up to 4 months Data
Event History Up to 3000 Alarms, Lockouts and Cycle & Run Times
Alarm Limit String Faults, Holds, Lockouts and Others
Cycle & Run Time Boilers & Pumps
Resettable (Lockouts/Alarms/Cycles & Run Time)

### Other Features

Factory Default Settings
Three Level Password Security
Frost Protection
Contractor Contacts (Up to 3)
Low Water Flow Safety Control & Indication
Proportion Integral Derivative (PID) Parameters for
Central Heat, DWH, Sequencer and Fan
Built-in Brown-Out Protection

*** Unique to Concert**