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ELU Duo Heating Boiler Specification Sheet

Models: ELUD-285FBN / ELUD-301FBN / ELUD-399FBN

The boiler shall be an HTP model ELUD- , having a modulation input range of Btu/Hr. The boiler shall operate on either Natural Gas (NG) or Liquid Propane (LP) . The boiler shall be capable of full modulation with a turndown ratio of up to 20:1. **NOTE:** An LP conversion kit is available as an optional component.

The boiler shall be equipped with Dual Xtratech heat exchangers certified and stamped for 50PSI. The heat exchangers shall be National Board Listed and constructed with 441 Stainless Steel. There shall be no banding material, bolts, gaskets, or "O" rings in the header configuration. The heat exchanger is removable from the cabinet for replacement without removing the entire boiler assembly from the site. The stainless-steel combustion chamber shall be designed to direct condensate to the rear of the chamber to ensure that condensation does not collect in the boiler. The complete heat exchanger assembly shall have a five (5) year basic or ten (10) year extended limited warranty. The boiler shall be used in a closed loop pressurized system and require a properly sized thermal expansion tank to meet local codes.

The boiler shall be certified and listed by ETL under the latest edition of the harmonized ANSI Z21.13 test standard for the US and Canada. The boiler shall comply with the energy efficiency requirements of the latest edition of the ASHRAE 90.1 Standard and the minimum efficiency requirements of the latest edition of the ASHRAE 103 Standard. The boiler shall operate at up to **95%** AFUE / Thermal Efficiency. The boiler shall be certified for indoor installation.

NOTE: Design of the boiler allows for stacking on top of one another to install boilers in very tight space.

The boiler shall be constructed with a heavy gauge steel jacket assembly, primed and pre-painted on both sides. The boiler jacket shall afford easy access to all components through easily removable access doors to facilitate service of all components. The combustion chamber shall be sealed and completely enclosed, independent of the outer jacket assembly, so that integrity of the outer jacket does not affect a proper seal. A burner/flame observation port shall be provided. The dual heating modules will be equipped with burners of a premix design constructed of **high-grade stainless-steel**. Each module shall be supplied with negative pressure regulation pneumatic gas valves and be equipped with variable speed blower systems to precisely control the fuel/air mixture to provide modulating boiler firing rates for maximum efficiency. Each module shall be equipped with a blower outlet check valve system to eliminate back-feeding of the flue system. The boiler shall operate in a safe condition at a derated output with gas supply pressures as low as 3 ½ inches of water column.

The boiler dual heating modules shall be designed so the internal piping ensures balanced flow without the use of valves or other devices. The internal water manifold piping shall provide two (2) 1 ½" connections for the heating circuit (supply and return). The internal gas manifold piping will provide a signal connection point for incoming gas to the boiler.

The customer connection board shall be equipped with two types of screw connectors. The smaller green terminal blocks are designated for low voltage connection inputs including thermostat, DHW sensor, system sensor, outdoor sensor, 0-10VDC, external low water cut off input signals, bus wiring connections, and Low Voltage Output 0-10 volt - A (Modulating Pump Output) and Low Voltage B (see the status of various parameters through 0-10VDC output for the Fan Speed - Boiler Power - Cascade Power Alarm Status or Target temperature). The larger black barrier strips are designated for 120-volt connections for incoming power, central heat pump (CH), DHW pump (indirect water heater), and system pump operation with additional double pole relay rated at 5 amp for Alarm Output. The three pump outputs have LED lights to show operation and are 2-amp fuse protected. The control cabinet will also include two RJ-45 style jacks for cascade communication bus wiring using CAT 5 or CAT 3 cables. These connections and fuses are accessed from the outside of the boiler by removing an access door. The electrical supply shall be 120 volt / 60 hertz / 15A single phase. The boiler comes equipped with an Integrated UL 353 certified CSD-1 compliant low water cut-off with manual reset and manual reset high limit to meet CSD-1 compliance requirements. An outdoor sensor is supplied with the boiler.

The boiler shall utilize a 120 VAC control circuit and components. The control system shall have a seven-inch (7") color touch screen display to monitor the operation and system parameters of the boiler's dual heating modules. All components shall be easily accessed and serviceable from the front, right, and left sides of the jacket. The boiler shall be supplied with a high-resolution flow switch to ensure minimum flow rates through the heat exchanger, temperature/pressure gauge, ASME certified pressure relief valve, Dual Water Supply Temperature Sensor / High Limit (210ºF), return water temperature sensor, blocked vent pressure switch, flue temperature sensor, built-in freeze protection, and an optional high limit temperature control with manual reset. The boiler shall also be equipped with an outdoor temperature reset function.

The boiler features the HTP Link system as standard equipment. HTP Link offers a WiFi connection, allowing the user to remotely monitor boiler operation, change system parameters to maximize boiler efficiency, and alert the user when system issues occur to aid in troubleshooting. The boiler shall include an ON/OFF power switch and feature the 928 intelligent control system with color touch screen display with graphic indicators for System Pump, DHW Pump, Boiler Pump, Pump Service Mode, Flame On, and Fault Indication. Pump operation and the combustion system can be manually operated to assist the installer in system commissioning. The control will have password protection for the installer to set limits and configure outdoor reset. The control will have freeze protection (which can be disabled for snowmelt applications), outdoor reset, indirect priority with operation time limits, and a 0-10V DC input for building management system (i.e. programmable to control either boiler temperature or firing). The boiler control shall have an optional gateway device which will allow integration of Modbus or BACnet Protocols. The boiler control is equipped for cascading up to four (4) boilers each with dual heating modules for up to 80:1 system turndown and system backup.

Each boiler heating module shall be equipped with a condensate collection system equipped with an internal float switch which will protect the boiler from condensation backing up into the combustion chamber. The condensate collection system shall provide manifold piping to meet at a single 3/4” plastic sweat connection for condensation drainage.

The boiler will have a sealed combustion system, taking outside air for combustion and exhausting the flue gas with a 4" dual vent adapter. The dual vent adapter will be designed to provide a secondary condensation drain to avoid contaminants from the external vent system getting into the connected heating modules. The Category IV vent system may be constructed with Stainless Steel, PVC, CPVC, or Polypropylene. The boiler's intake air and exhaust vent lengths, including fitting allowances for both intake and exhaust, shall not exceed the 150 feet on either the intake air or exhaust vent run.

The boiler can be vented in many methods, including:

Horizontal Venting shall be done as a balanced system only. Both intake and exhaust must terminate on the same side of the building.

Vertical Venting shall be done either as a balanced or unbalanced system. An unbalanced system shall ONLY be allowed when the exhaust is installed vertically and the intake horizontally. Both exhaust and intake must remain within the boiler’s combined equivalent length.

Indoor Combustion Venting from a Confined or Unconfined Space – Where the exhaust runs vertically and combustion air is drawn either from the mechanical room or from outdoors.

Common Venting – May be used in cascade boiler systems to provide single exhaust vent and air intake pipe terminations. Common Venting installation requirements must be followed. Additional mechanical room CO detectors are required for safe long-term operation.

Adequate combustion air must be supplied when drawing air from the mechanical room. Avoid the room contaminants listed in the installation manual. (Refer to appliance installation manual venting section for additional venting requirements.)

CAUTION: Foam core pipe is NOT an approved material for either intake or exhaust piping.

The boiler shall comply with the NOx emissions limit set forth in SCAQMD Rule 1146.2. The manufacturer shall verify proper operation of the burner, the combustion and control systems, as well as all related safety functions, to ensure the boiler will operate based on its designed parameters before shipping. Complete operating and installation instructions shall be furnished with every boiler as packaged by the manufacturer for shipping.

The appliance shall operate at high elevations without additional parts. However, adjustments to the combustion system may be required at any elevation. See installation manual for combustion system setting details.

Maximum unit dimensions shall be depth 35 inches, width 35 inches and height 47.5 inches. Maximum unit weight shall be 355.5 pounds.

NOTE: Due to variations in CSD-1 requirements from state to state, please consult with the factory for all controls required in your jurisdiction.

NOTE: HTP reserves the right to make product changes or updates without notice and will not be held liable for typographical errors in literature.