

# HIGH EFFICIENCY BOILERS

**FTXL**<sup>TM</sup>  
FIRE TUBE BOILER

**SMART SYSTEM**<sup>TM</sup>

**CON-X-US**<sup>®</sup> REMOTE CONNECT CAPABLE

CASCADING SEQUENCER

LOCH-N-LINK<sup>TM</sup> USB DRIVE SETUP

5 INPUTS FROM 399,999 TO 850,000 BTU/HR

UP TO 10:1 TURNDOWN RATIO

COMMON VENT AND PVC DIRECT-VENTING

FLOW RATES FROM 10 TO 150 GPM

SMALL 6.2 SQ. FT. FOOTPRINT

4 PUMP CONTROL

WIRELESS OUTDOOR SENSOR CAPABLE



**98%** **AHRI CERTIFIED**<sup>®</sup>  
THERMAL EFFICIENCY<sup>\*</sup>

\*See back page for efficiency by model

 **Lochinvar**<sup>®</sup>  
HIGH EFFICIENCY BOILERS & WATER HEATERS

DESIGNED ★ ENGINEERED ★ ASSEMBLED

**USA**

[Lochinvar.com](http://Lochinvar.com)



## THE NEW 98% STANDARD

Lochinvar re-defined the fire-tube boiler category with its KNIGHT® Wall-Mount and CREST® lines. For residential and light commercial applications, the FTXL™ adds models from 399,999 to 850,000 Btu/hr, and takes Lochinvar's fire-tube technology to the next level. FTXL offers best-in-class AHRI Thermal Efficiency and footprints, plus remote connectivity that puts the SMART SYSTEM™ control at your fingertips, anywhere!

### REDUCE INSTALLATION COST WITH VARIABLE FLOW TECHNOLOGY

FTXL can operate over a wide range of flow rates\* with very low pressure drop. This permits installation of a "full flow" (variable primary) system eliminating the time and materials cost of primary/secondary piping, and pumps needed to maintain flow in a water-tube boiler. Variable flow also makes FTXL more flexible at handling frequent fluctuations in the system flow rate.

\*See back page for minimum and maximum flow rates by model.

### SMOOTH-RUNNING, MODULATING COMBUSTION

FTXL boilers have a top-mounted, micrometal fiber burner, with a blower/gas valve assembly that drives heat energy downward, through stainless steel fire tubes, with exhaust venting through the bottom of the unit. With up to 10:1 modulation turndown, the burner automatically changes its firing rate as building heat loads vary. An FTX500 fires at its maximum 500,000 Btu/hr rate when heat load is highest, then gradually "turns down" to as low as 10% (50,000 Btu/hr) as load decreases. A modulating system runs smoothly and efficiently, without frequent on/off cycling.

### MINIMUM SUPPLY PRESSURE, INSTALLER-FRIENDLY

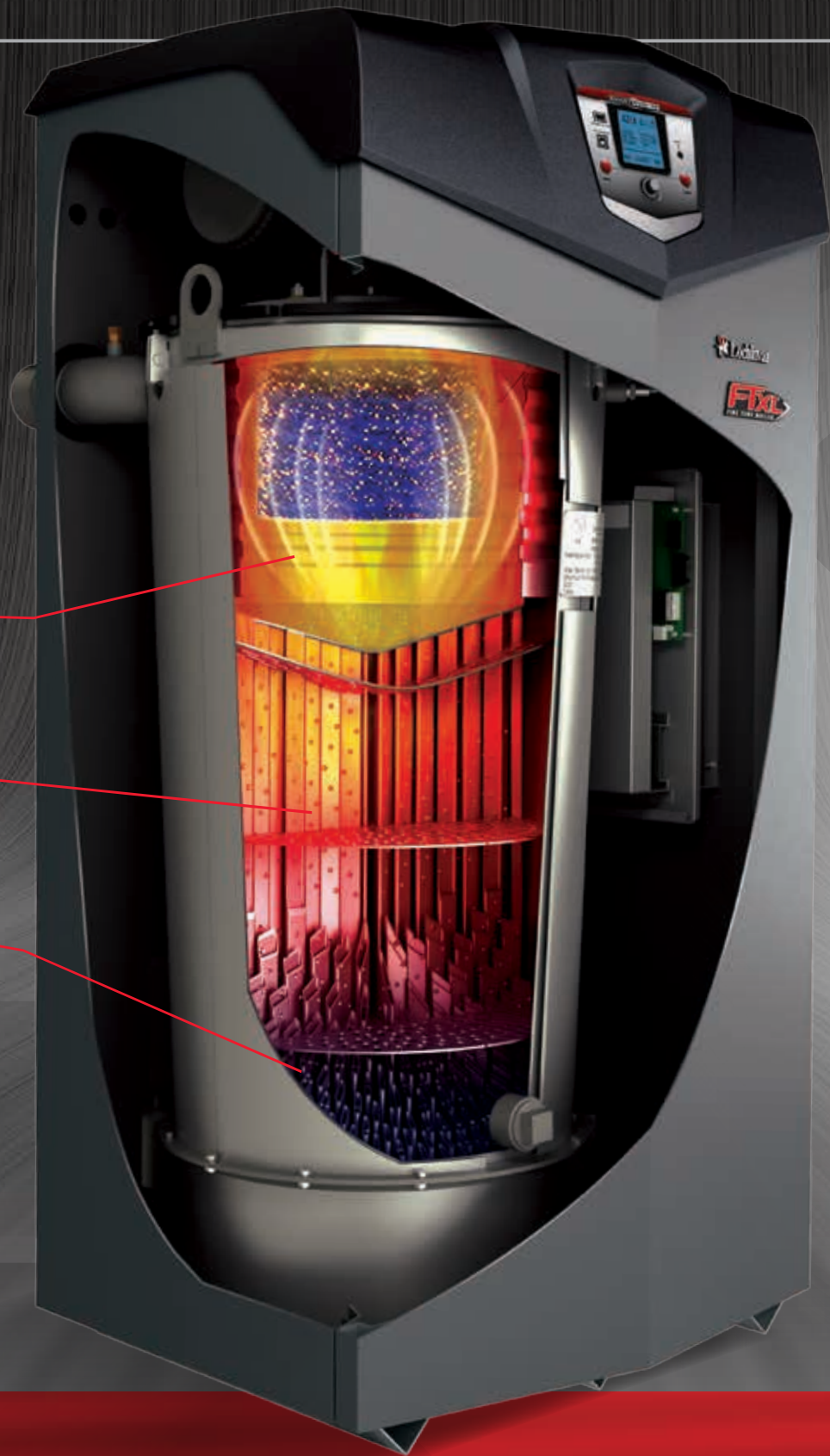
FTXL operates with supply gas pressure as low as 4 inches water column. **Negative Regulation** draws gas into a pre-mix combustion system, instead of relying on utility pressure through the gas valve. The result is steady operation in low gas pressure systems or when peak demand occurs on gas supply. Automatic fan speed control fine-tunes the correct fuel/air ratio entering the burner, providing superior combustion throughout the entire operating range.

MICROMETAL FIBER BURNER DELIVERS HEAT TO THE COMBUSTION CHAMBER

BAFFLES DIRECT THE FLOW OF WATER FOR OPTIMAL HEAT TRANSFER

WATER ENTERS THE BOTTOM AND TRAVERSES UP AND AROUND FIRE TUBES

DOWNWARD FLOW OF FLUE GASES TRANSFER HEAT WITHIN FIRE TUBES



## INTRODUCING BOILER PLANT CONTROL, FROM ANYWHERE.

FTXL features the next generation of Lochinvar's all-in-one SMART SYSTEM operating control with a re-designed multi-color LCD interface. SMART SYSTEM provides outstanding functionality, and can be integrated directly into a Building Automation System via ModBus and other communications protocols. And now, the CON-X-US mobile communication platform allows SMART SYSTEM to go where no other boiler has gone before.†



CON-X-US provides the ability to monitor and manage multiple FTXL boiler plants without ever stepping into the mechanical room. CON-X-US will send alerts via text or e-mail notifying of changes in system status, and anytime, from anywhere, a user can check system status and re-program any boiler function. Once downloaded, the free CON-X-US mobile application allows for remote access to all SMART SYSTEM functions using any Internet-capable device.

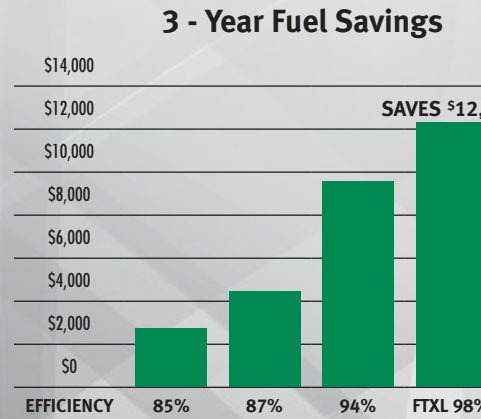


†CON-X-US control board sold separately. See back cover for a complete list of SMART SYSTEM features.

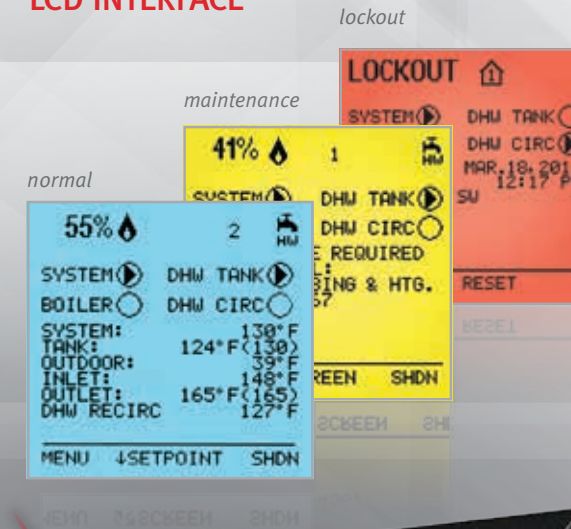
### HOW 98% TRANSLATES INTO FTXL SAVINGS

Even when compared to other condensing boilers, the FTXL fire-tube combustion system will produce significant fuel cost savings. Here are three comparisons, based on building load of approximately 19,000 therms/year, at a cost of \$1.09 per therm of natural gas.

Fuel savings is based on a heating load of 19,000 therms per year being supplied by an 82% efficient boiler at the DOE National average for natural gas of \$1.09.



### ENHANCED MULTI-COLOR LCD INTERFACE



### LOCH-N-LINK™ EASY USB FLASH PROGRAMMING

Use a USB drive to name, store and easily manage multiple existing proven parameter sets. Quickly upload them via the front panel port into the FTXL boiler, reducing installation and programming time by up to 30 minutes per boiler.

### WIRELESS OUTDOOR SENSOR

Easy to install, greatly reduces time and materials cost for running sensor wire from standard outdoor temperature sensor to boiler control. Approximate range 2,000 feet line-of-sight.





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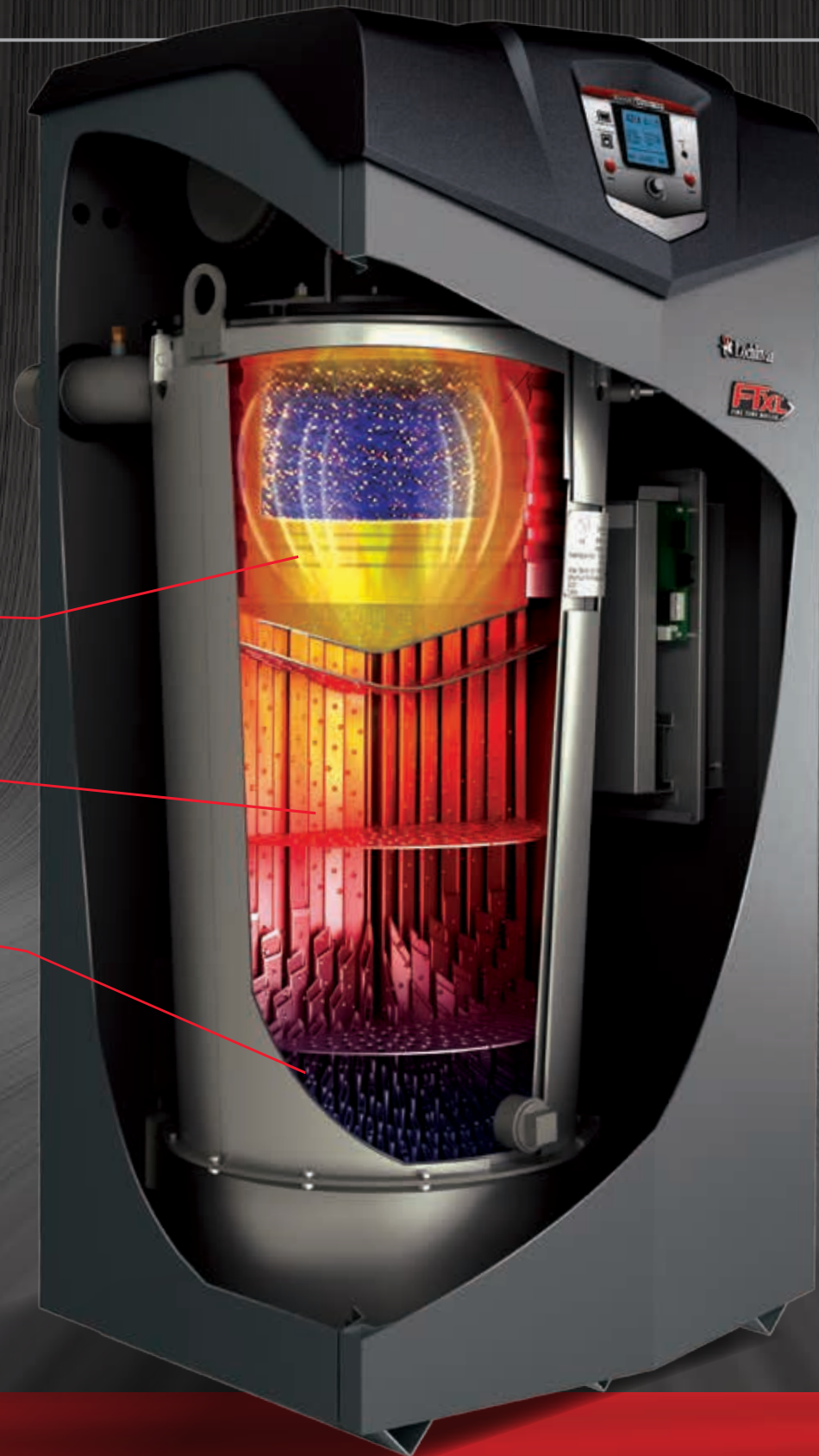
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BAFFLES DIRECT THE FLOW OF WATER FOR OPTIMAL HEAT TRANSFER

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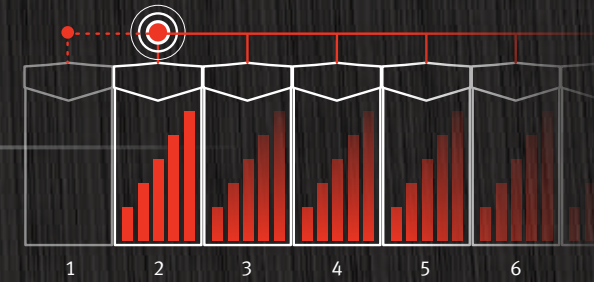
DOWNWARD FLOW OF FLUE GASES TRANSFER HEAT WITHIN FIRE TUBES



### PEACE OF MIND, WHEN IT MATTERS MOST

Up to eight FTXL boilers can be sequenced using a 2-wire daisy-chain connection. Cascade sequencing can be programmed for "Lead-Lag" or "Efficiency Optimized" operation.

With Lead-Lag operation, one lead boiler modulates to capacity on demand. As load increases, the system then cascades to additional lag boilers in sequence. The first-on role shifts daily, distributing equal runtimes to each unit.



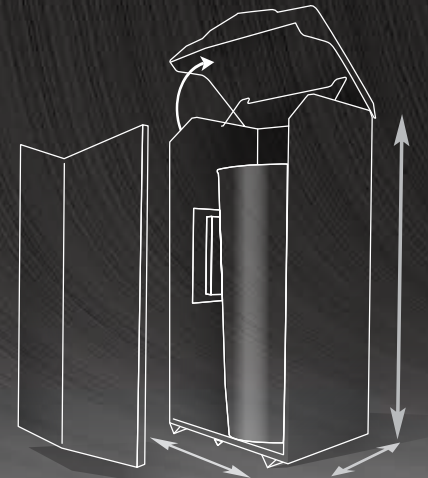
In an Efficiency Optimized system, all boilers fire and modulate simultaneously at the same BTU/hr input rates, maximizing thermal efficiency.

If the lead boiler is turned off for maintenance, Cascade Redundancy automatically shifts the lead role to the second sequenced boiler. Peace of mind comes from knowing the system will still function with no downtime until the original lead boiler is back online.

### THE SMALLEST FOOTPRINT, EASY TO INSTALL & SERVICE

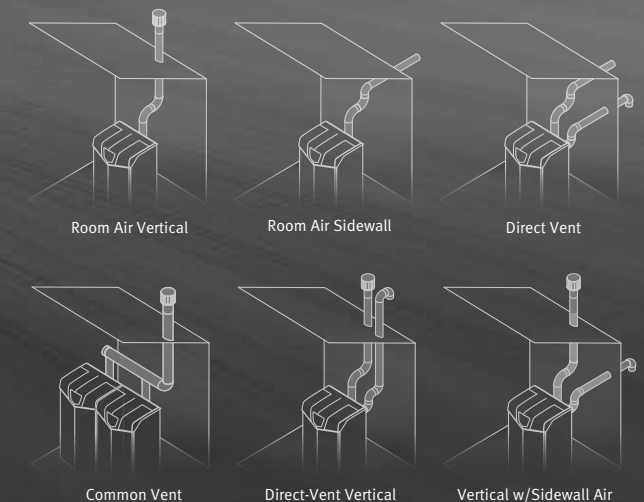
FTXL can be installed with zero clearance on the left and right, and the boiler's installed footprint is just 6.2 sq. ft.

All water, gas and vent connections are in the back of the unit. A hinged top opens for easy access to components and the front panel is easily removed using no tools.



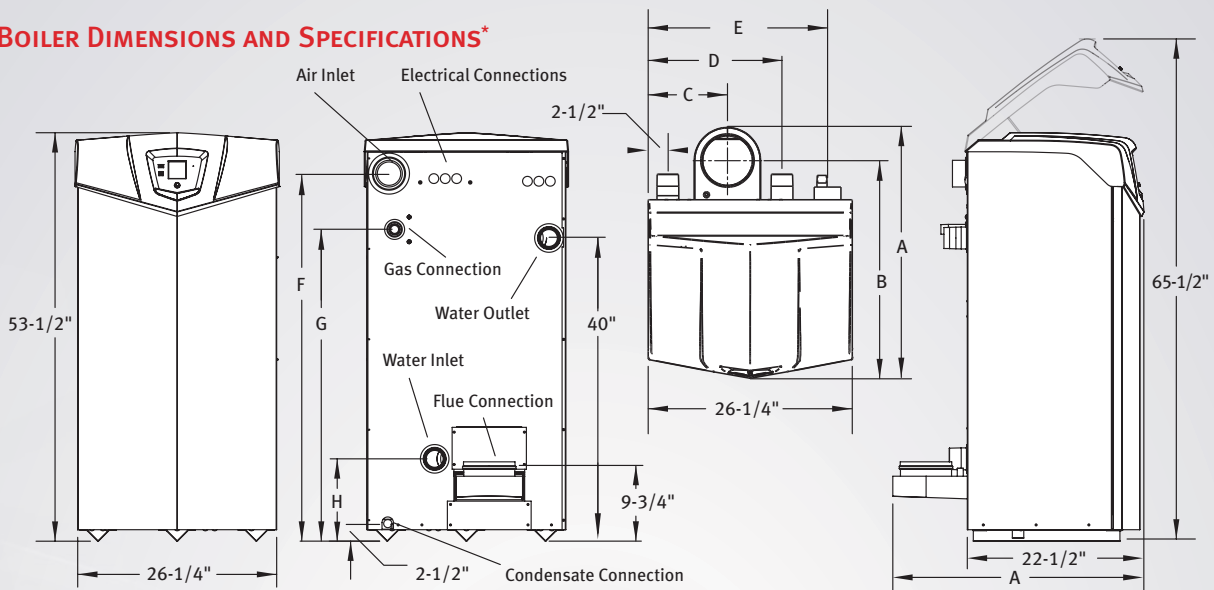
### FLEXIBLE VENTING OPTIONS

FTXL offers 6 venting options, and permits direct-vent air intake and exhaust runs up to 100 equivalent feet, using PVC, CPVC, polypropylene or stainless steel pipe. Plus multiple units can be common-vented to reduce time and materials costs.



TO LEARN MORE, LOG ON TO [WWW.FTXLBOILER.COM](http://WWW.FTXLBOILER.COM) TODAY!

# FTXL™ BOILER DIMENSIONS AND SPECIFICATIONS\*



## FTXL BOILER



## DIMENSIONS AND SPECIFICATIONS

Model Number	Input		Thermal Efficiency	Gross Output MBH	NET AHRI Rating MBH	Turn down	Flow (GPM)		HEX Water Volume	A	B	C	D	E	F	G	H	Water Conn.	Vent Size	Air Intake	Gas Conn.	Shipping Wt. (lbs.)
	Min MBH	Max MBH					Min	Max														
FTX400(N,L)	40.0	399.9	98.0%	392	341	10:1	10	105	13	30-1/2"	27-1/2"	10-1/4"	17"	23-1/4"	46-1/4"	39-1/2"	10-3/4"	2"	4"	4"	1"	435
FTX500(N,L)	50.0	500.0	97.7%	489	425	10:1	15	105	12	30-1/2"	27-1/2"	10-1/4"	17"	23-1/4"	46-1/4"	39-1/2"	10-3/4"	2"	4"	4"	1"	460
FTX600(N,L)	85.0	600.0	97.5%	585	509	7:1	15	105	12	30-1/2"	27-1/2"	10-1/4"	17"	23-1/4"	46-1/4"	39-1/2"	10-3/4"	2"	4"	4"	1"	470
FTX725(N,L)	103.5	725.0	97.2%	705	613	7:1	20	150	17	33"	28-1/2"	10-1/2"	17-1/2"	23-1/2"	48-1/2"	41-1/4"	11"	2-1/2"	6"	4"	1"	510
FTX850(N,L)	121.5	850.0	97.0%	825	717	7:1	25	150	16	33"	28-1/2"	10-1/2"	17-1/2"	23-1/2"	48-1/2"	41-1/4"	11"	2-1/2"	6"	4"	1"	535

\*Information subject to change without notice. Dimensions are in inches. Select "N" or "L" for Natural or LP gas. \*The Net AHRI Water Ratings shown are based on a piping and pickup allowance of 1.15. \*Lochinvar should be consulted before selecting a boiler for installations having unusual piping and pickup requirements, such as intermittent system operation, extensive piping systems, etc. \*The ratings have been determined under the provisions governing forced draft burners.

### SMART SYSTEM FEATURES

- ▶ **Smart System Digital Operating Control**  
Multi-Color Graphic LCD Display w/Navigation Dial
- ▶ **Loch-N-Link™ USB Thumb Drive Port for Easy Programming**
- ▶ **Cascading Sequencer with Built-in Redundancy**  
Selectable Cascade Type:  
Lead Lag/Efficiency Optimization  
Multiple Size Boilers  
Front-End Loading
- ▶ **3 Reset Temperatures Inputs w/Independent Outdoor Reset Curves for Each**  
Outdoor Sensor
- ▶ **Four-Pump Control**  
System Pump with Parameter for Continuous Operation  
Boiler Pump with Variable-Speed Control  
Domestic Hot Water Boiler Pump  
Domestic Hot Water Recirculation Pump Control with Sensor
- ▶ **Building Management System Integration**  
0-10 VDC Input to Control Modulation or Setpoint  
0-10 VDC Input from Variable-Speed System Pump  
0-10 VDC Modulation Rate Output Signal  
0-10 VDC Enable/Disable Signal
- ▶ **Programmable System Efficiency Optimizers**  
Space Heating Night Setback  
DHW Night Setback  
Anti-Cycling  
Ramp Delay  
Boost Time and Temperature
- ▶ **High-Voltage Terminal Strip**  
120 VAC/60 Hertz/1 Phase  
Pump Contacts for 3 Pumps

- ▶ **Low-Voltage Terminal Strip**  
Building Recirculation Pump Start/Stop  
Proving Switch Contacts  
Flow Switch Contacts  
Alarm Contacts  
Runtime Contacts  
3 Space Heat Thermostat Contacts  
Tank Thermostat Contacts  
System Sensor Contacts  
Tank Sensor Contacts  
Cascade Contacts  
0-10 VDC BMS Contacts  
0-10 VDC Boiler Rate Output Contacts  
0-10 VDC Boiler Pump Speed Contacts  
0-10 VDC System Pump Speed Contacts  
ModBus Contacts
- ▶ **Time Clock**
- ▶ **Data Logging**  
Ignition Attempts  
Last 10 Lockouts  
Space Heat Run Hours  
Domestic Hot Water Run Hours

### STANDARD FEATURES

- ▶ **97%-98% Thermal Efficiency**
- ▶ **Modulating Burner with up to 10:1 Turndown**  
Direct Spark Ignition  
Low NOx Operation  
Sealed Combustion  
Low Gas Pressure Operation
- ▶ **Stainless Steel Fire-Tube Heat Exchanger**  
ASME-Certified, "H" Stamped  
160 psi Working Pressure  
50 psi Relief Valve  
Combustion Analyzer Test Port  
Fully Welded Design

- ▶ **Vertical and Horizontal Direct Vent**  
Direct Vent up to 100 feet  
PVC, CPVC, Polypropylene or AL29-4C  
Factory Supplied Sidewall Vent Termination
- ▶ **Smart System Control**
- ▶ **Other Features**  
On/Off Switch  
Adjustable High Limit with Manual Reset  
Automatic Reset High Limit  
Manual Reset Low Water Cutoff  
Flue Temperature Sensor  
Low Air Pressure Switch  
Temperature and Pressure Gauge  
Condensate Trap  
Zero Service Clearances  
10-Year Limited Warranty (See Warranty)  
Custom Maintenance Reminder with Contact Info  
Password Security  
Customizable Freeze Protection Parameters

### OPTIONAL EQUIPMENT

- CON-X-US® Remote Connectivity
- Motorized Isolation Valve
- Wireless Outdoor Temperature Sensor
- Multi-Temperature Loop Control
- Variable-Speed Boiler Circulator
- Constant-Speed Boiler Circulator
- ModBus Communication
- Alarm Bell
- Condensate Neutralization Kit
- Concentric Vent Kit (FTX400-FTX600)
- BMS Gateway to BACnet or LonWorks
- High and Low Gas Pressure Switches w/Manual Reset (FTX500-FTX850)
- ▶ **Firing Controls**  
M9-Standard Construction  
M13-CSD-1/FM/GE Gas (FTX500-FTX850)



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