Stainless Steel, Condensing, Gas-Fired Commercial Boiler

- 95% AHRI-Certified Efficiency
- 1000, 1500, 2000, 2500, 3000 MBH
- Lifetime Shockproof Seal
- Knockdown or Fully Packaged
- Field-Repairable Heat Exchanger
- Variable Primary or Primary/Secondary Piping
- 100°F Delta-T with Low Minimum Flows
- Concert™ Touch Screen Display
- Designed and Made in the U.S.A.
Flexible watertubes have long been the workhorse of the boiler industry, naturally flexing and moving with expansion & contraction that occurs in heating. These tubes are unrivaled at absorbing and transferring the intense heat of today’s burners into water and distributed as heat. Thermal Solutions uses no welds in mechanically sealing tubes to header and provides a lifetime warranty on this seal. With no welds, the Arctic permits field access for tube replacement making it the only field repairable heat exchanger in the condensing market. The Arctic is available fully packaged, or if required, knockdown for ease of onsite maneuvering and assembly, another industry first.

Weld-Free from Tube to Header!
Tapered end-forms are mechanically fitted into the upper and lower headers allowing water to pass from tube to header. This proven assembly method has stood the test of time for nearly 100 years and is backed by a **Lifetime Shockproof Seal of Certainty** against leakage due to thermal shock. Capable of up to 100°F delta-T, no welded boiler can provide this assurance and longevity.

Advanced Control Platform – Concert™ Boiler Control
- 7” touch screen
- Icon navigation
- USB data sharing port
- EMS & peer-to-peer sequencing

Combustion Design
- Standard 5:1 turndown
- Direct spark
- UV scanner
- Low NOx capable

Service-Friendly by Design
Accessibility for service and maintenance is another vital feature to the overall design:
- Electrical panel available from front door
- Burner/blower assembly easily reached through front door and/or removable side flue collector doors
- Heat exchanger tubes accessible from removable side flue collector doors

Venting Category II and IV
Common and Individual venting with engineered vent systems.

High Temperature Supply Header
We use flexible watertubes for what they do best;
- Flex and move with heat
- Absorb 2000°F burner heat into water
- Field-replaceable tubes

Low Temperature Return Header
- Maximum heat transfer
- Minimal waterside pressure drop
- 0.33 ft. hd. at 57 gpm min. flow on ARC-3000

Variable Primary or Primary/Secondary Piping
Low waterside pressure drop and minimal flow requirements make the Arctic ideal for variable primary and LEED conscious designs; also well suited for traditional primary/secondary piping.

Knockdown Availability
The Arctic’s weld-free tube design allows for multiple knockdown configurations to gain entry access into a building whereas a packaged boiler could not. To ensure reliability and performance, we build the Arctic complete as a package, perform a combustion fire test and then disassemble into the required knockdown configuration. Reassembly is fast and easy without the need of an ASME code welder.

Reverse Construction
Reverse construction is a space-saving design that provides full access to the Arctic heat exchanger tubes and burner from the right-hand side when installed beside a standard construction (left-hand access) Arctic boiler.
The Concert™ Boiler Control includes features and functions designed to save energy, optimize long-term efficiency, and integrate seamlessly with all Energy Management Systems (EMS). Built on a proven control platform, Concert is the most comprehensive commercial boiler control on the market. From Intuitive Icon Navigation, to Self Guiding Diagnostics, Unmatched Archives, USB Data Sharing, and other unique features & optional system enhancements, this control scales above all others!

Intuitive Icon Navigation – “Touch” and move through our control menus effortlessly. Whether it be commissioning the boiler with the “Quick Setup” menu, pinpointing fault codes with corrective actions in seconds or seamlessly connecting to an EMS. Extensive data archives with graphical displays are available to evaluate boiler performance and make value-added adjustments to maximize boiler & system efficiency.

Self-Guiding Diagnostics – Troubleshooting boiler issues has never been this easy! The industry-leading fault identification and correction feature allows the service technician to quickly drill down on the issue, with cause and corrective measures.

Unmatched Archives – With the largest collection of stored operational data (4 months), no stone is left unturned when it comes to evaluating a boiler’s performance and pinpointing adjustments for improvement. The boiler’s onboard energy management system is a true step above all others!

Unique Features:
- Complete EMS Interface - Read and write firing rate demand & setpoint.
- A.I.D. (Advanced Input Determination) - Firing rate and water temperature based algorithms for multiple boilers.
- Factory Default Settings - Restore control parameters back to factory settings.
- Real Time BTU/Hr Display.
- Time/Date Stamp - On all logged events.
- Two (2) Boiler Start/Stop Triggers - Support large domestic hot water demands.
- USB Data Sharing Port - Easily transfer parameters from boiler to boiler.

Options:
- Motorized Isolation Valves - Maintain energy efficient flow requirements for variable flow systems.
- 0-10 vdc Input - Converts 0-10vdc signal from EMS to 4-20mAdc for our control.
- Wireless Outdoor Sensor - Saves installation time.
- BACnet, Metasys N2, LonWorks and Modbus - Communication gateway translates effectively to various EMS protocols.
Arctic Standard Equipment

**PRESSURE VESSEL DESIGN**
- ASME certified stainless steel heat exchanger
- ASME Section IV certified, “H” Stamp
- MMWP 160 PSIG & max temp 210°F
- Ten Year limited heat exchanger warranty
- Lifetime thermal shock warranty

**COMBUSTION DESIGN**
- Stainless steel pre-mix burner
- Low NOx emissions
- Full modulation, 5:1 turndown
- Natural gas (consult factory on LP gas)
- 4” wc to 14” wc inlet gas pressure
- Direct spark ignition system/UV scanner
- High/low gas pressure switches, manual reset
- Variable speed combustion blower
- Air proving switch
- High altitude available; please consult factory

**VENTING**
- Air Intake - Ducted or Room Air
- Category II Common Venting with Engineered Vent System
- Category IV Individual Venting with Engineered Vent System

**BOILER EQUIPMENT**
- Concert Boiler Control™ (24 Vac)
- High limit/water reset temperature control
- High limit/w manual reset temperature control
- Water flow switch
- Supply & return water temperature sensors
- Flue gas temperature sensor
- Air vent valve
- Boiler drain valve
- Condensate trap
- Pressure & temperature gauge
- ASME safety relief valve 50 psig (optional 30, 60, 75, 100, 125, or 150 psig)

**ELECTRICAL DESIGN**
- 120 VAC / 60 Hertz / 1 phase power supply
- 208-240 VAC / 60 Hertz / 3 phase power supply
- 208-240-460 VAC / 60 Hertz / 3 phase power supply
- 24 VAC low voltage control power supply

**MEASUREMENTS**
- Minimum input (MBH)
- Maximum input (MBH)
- Gross output (MBH)
- Input efficiency (%)
- "A" height (IN.)
- "B" width (IN.)
- "C" length (IN.)
- Supply/return conn. height (IN.)
- Vent dia. (IN.)
- Air intake dia. (IN.)
- Condensate & boiler drain conn. (IN.)
- Gas conn. (IN.)
- Approx. shipping weight (LBS)

**CONCERT BOILER CONTROL OPTIONS**
- Communications gateway - BACnet, LonWorks or Modbus compatible
- Wireless outdoor air temperature kit
- 0-10v signal converter

**CONCERT BOILER CONTROL SPECIFICATIONS**
- Intuitive icon navigation
- "Quick” setup menus
- "Real-time" BTU display
- Temperature demand inputs
- Outdoor air reset curve for each input
- Time of day setback capability (EnviraCom thermostat must be installed)
- Three (3) pump control
- Boiler pump with on/off or variable speed cont.
- Domestic hot water (DHW) pump
- System pump
- Alternative control to isolation valve, combustion air damper, or standby loss damper
- Pump overrun for heat dissipation
- Pump exercise
- Pump rotor seizing protection

**PEER-TO-PEER BOILER COMMUNICATIONS**
- Multiple size boiler sequencing up to 8 units
- Two (2) boiler start/stop trigger* 
- Lead boiler automatic rotation

**ENERGY MANAGEMENT SYSTEM (EMS) INTERFACE**
- Firing rate and water temperature based
- Control algorithm for multiple boilers; loss of EMS signal defaults to local boiler settings*
- 4-20mA/DC input/output (0-10vdc optional converter)
- Modbus Input/Output (BACnet or LonWorks optional gateway)
- Simultaneous interface with peer-to-peer

**USB DATA PORT TRANSFER**
- Upload settings between boilers
- Download parameters for troubleshooting
- Import data into .CRV formatted files for performance analysis

**CONTROL OPTIONS**
- Communications gateway - BACnet, LonWorks or Modbus compatible
- Wireless outdoor air temperature kit
- 0-10v signal converter

**SPECIFICATIONS, DIMENSIONS, & RATINGS**

**ARCTIC STANDARD EQUIPMENT**

**CONCERT BOILER CONTROL OPTIONS**

**SPECIFICATIONS, DIMENSIONS, & RATINGS**

<table>
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<tr>
<th>MODEL</th>
<th>MIN INPUT (MBH)</th>
<th>MAX INPUT (MBH)</th>
<th>GROSS OUTPUT (MBH)</th>
<th>THERM. EFF. %</th>
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<th>&quot;B&quot; WIDTH (IN.)</th>
<th>&quot;C&quot; LENGTH (IN.)</th>
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<th>VENT DIA. (IN.)</th>
<th>AIR INTAKE DIA. (IN.)</th>
<th>CONDENSATE &amp; BOILER DRAIN CONN. (IN.)</th>
<th>GAS CONN. (IN.)</th>
<th>APPROX. SHIPPING WEIGHT (LBS)</th>
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