PRODUCT DATA

Intelligent Boiler Management Control Technology



HeatNet, Smith Cast Iron Boiler's proprietary integrated boiler management system is the driving force behind Smith's energy optimization philosophy for its high efficiency equipment.

Designed for precise system control, HeatNet provides repeatability and system feedback thru digital communications. The control monitors and supports both boiler system and vent stack temperatures while maintaining space heating and domestic hot water requirements. HeatNet has full support capability for additional boiler room components including system/domestic pump, combustion air dampers and full boiler firing rate modulation for peak efficiencies.

Developed and manufactured by Smith's sister company Mestek Technologies, HeatNet provides an intuitive interface with plug-and-play connections to speed set-up and diagnostics for installing contractors. HeatNet operates units as stand alone, multi-boiler master/member networks of up to 16 boilers or as units working in conjunction with wall-mounted building management system. The network can incorporate mixing of condensing, non-condensing or base-loading existing boilers based on conditional and priority firing – all of which eliminate the need for additional third party control platforms.

The control configuration "learns" the applications optimal firing rates by using microprocessor electronics to monitor time-average responses based on actual usage to determine the load for the system for optimal energy efficiency. Standard HeatNet controls use a Modbus protocol with optional protocessor boards for BACnet and LonWorks based building management systems, which eliminate the need for analog control signals. The use of analog control signals is still supported, but a higher level of control precision, repeatability and feedback is gained with digital communication control.

Typical master/member systems using 2, 3 or 4 boiler configurations can see a total turndown ratio of 6, 9 or even 12:1!

Variable control settings for Mod/Max firing rates allows adjustable maximum firing rates (factory pre-set at 70%) enabling all boilers to run at extremely efficient levels until all units in the sequence have fired at which time firing rates can increase above the standard setting to meet system demands. Firing rates are kept as low as possible to take advantage of increased efficiency at lower inputs. Boiler firing rotations can be programmed for first on/first off, first on/last off or "true rotation" which rotates boiler run times so

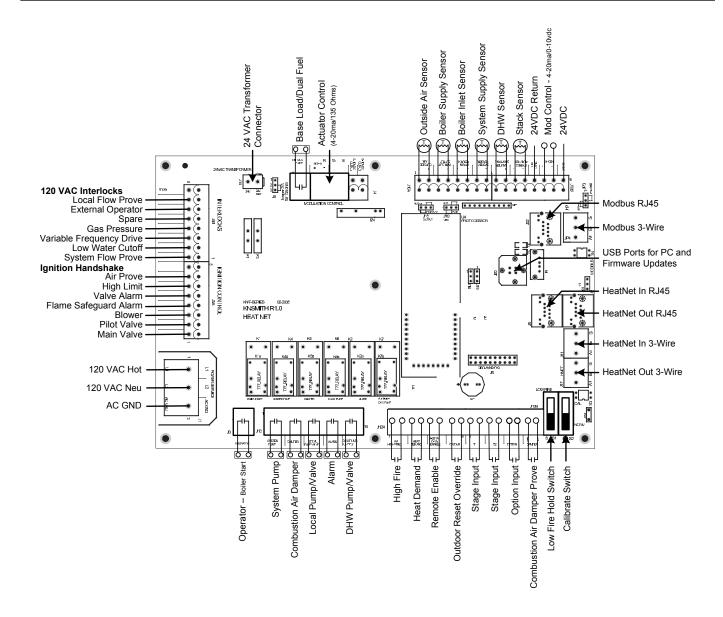
all units run for the same amount of time. The control incorporates compensated output signals based on firing rates to modulate the local boiler pump for primary/ secondary systems to maintain optimum boiler system delta t.

HeatNet control platforms are easily updated with seamless flash drive or lap top driven firmware downloads adding continuous value and boiler system control without the need for physical updates that can make some equipment obsolete. Electronics are located in a self-contained enclosure through which all internal components and terminal blocks are easily accessed.

CONTROL FEATURES

- A. Boiler to Boiler Communication HeatNet Protocol for up to 16 Boilers
- B. Modbus Protocol for BMS Interface
- C. BACnet IP/MSTP and LonWorks Protocol (Optional)
- D. Menu Driven Calibration and Setup Menus with Bright (Adj.) 4-Line Vacuum Fluorescent Display
 - Set Point Control
 - Outdoor Reset
 - Night Setback
 - Domestic Hot Water (Priority/Non Priority)
 - Digital/Analog Communication
 - System/Local Pump Control
 - Combustion Air Damper
 - Monitor Max Stack Temp
 - Monitor Min Return Temp
 - Heat Exchanger Delta T (Limits to Half Fire)
 - Firmware Loading Flash Drive or USB Cable
 - Fail Safe Mode Member Boilers
 - First Boiler ON Venting
 - Min Boiler Off Time
 - Add Boiler Delay Timing
 - Shed Boiler Delay Timing
 - Adaptive Modulation Prevents Short Cycling
 - Modulate Delay Time (Low Fire Hold)
 - (6) Dedicated Temperature Sensor Inputs for: Outside Air Temp., Supply (Outlet) Temp., Return (Inlet) Temp., Header Temp., DHW and Stack Temp.
 - Min/Max VFD Load Match (low fire); Input Adjustment (Elevation, Direct Vent)
 - Log Entry Troubleshoot and Diagnostic Tool

 Records Major Activity of Boiler Operation
 - Five levels of External Control Inputs: On/Off, Staging, RS485 Digital Comm, BMS (4-20 mA) and HeatNet Heat Demand



OPTIONAL EQUIPMENT

02-4284:

Common Header 10K Sensor with 2.5" Well

02-4283:

10K Sensor and Housing only

02-4286:

4" Well for 10K Sensor

02-4281:

Strap on 10K Sensor

02-4280:

Outside Air Sensor with Housing

SPECIFICATIONS

Control:

Microprocessor based PID modulating control (NOT a safety limit)

Environment:

-40°F to 140°F, <90% RH non-condensing

Input Power:

24 VAC, 250 ma

Switched Line:

120 VAC single phase, 240 VAC single phase

Relays:

Stage, Circulator, Alarm 8A 250 VAC

AC Interlocks:

24 VAC - 120 VAC input

Control Inputs:

AA, Heat Demand, 4-20ma Enable, OA override, T1-T4: 24 VAC

Dimensions:

12" wide: 9" high: 5" deep

Approvals:

ETL Approved

Temperature Sensors:

NTC thermistor, 10K @ 77°F, 335.67K @ -40°F, 185 @ 150°F, +/- 1°F

Communications Environment:

-40°F to 140°F, <90% RH non-condensing

USB:

1.0

RS485 Console:

Modbus RTU, 19200 baud, 8 bits, Even Parity, 1 Stop Bit

Boiler-to-Boiler:

HeatNet™