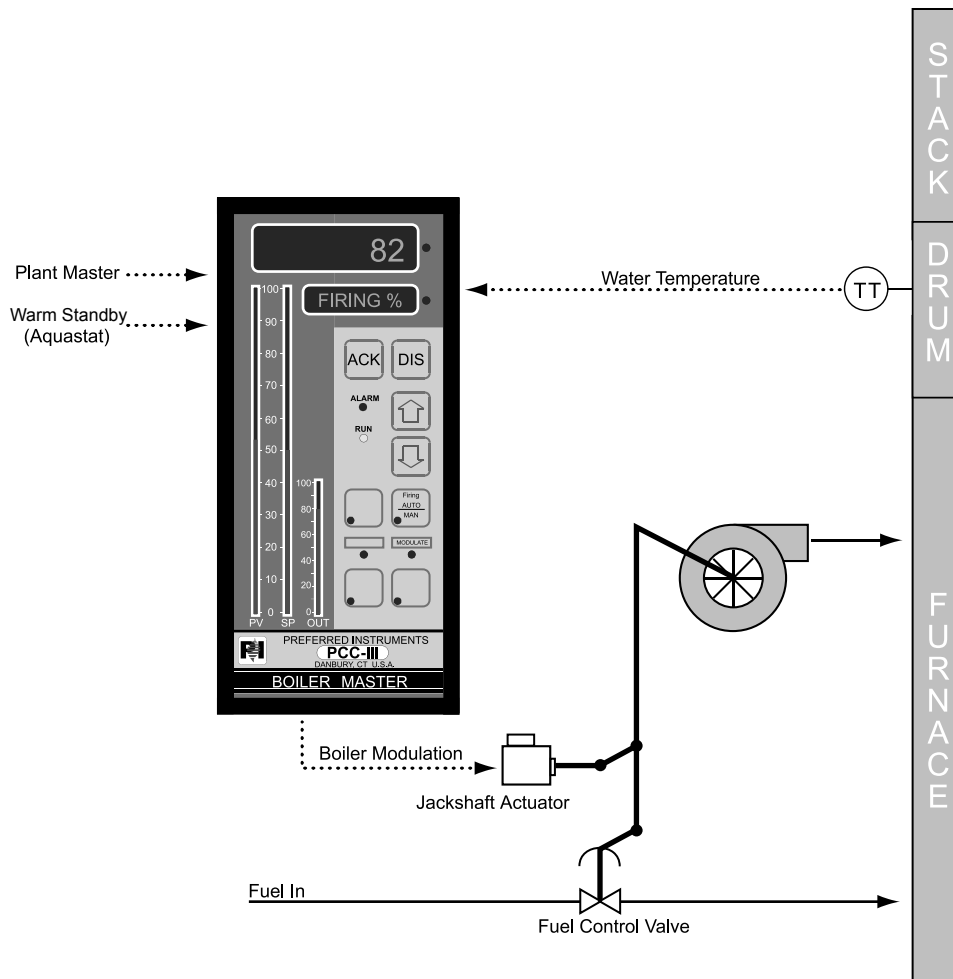


BURNERMATE MODEL BM-HWSP

Hot Water Boiler Single Point Positioning Combustion Control



BurnerMate BM-HWSP Combustion Control System

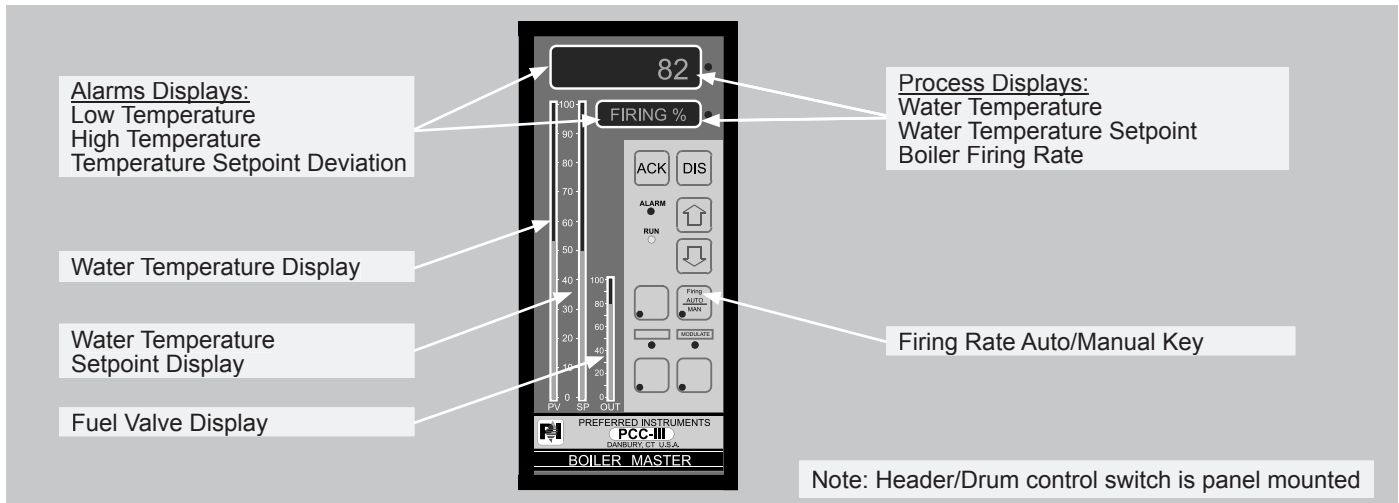
Application

The BurnerMate Model BM-HWSP provides automatic firing rate control for new or existing Hot Water Boilers using single point positioning combustion control. In a single point positioning system the fuel valves and air control damper are mechanically linked, and are modulated by a single control actuator. Generally, the fuel valve has a characterizable flow versus position relationship that is used to establish the fuel/air ratio over the range of modulation. Single point positioning control is recommended when the boiler size or service hours do not justify the addition of Oxygen trim and variable speed fan control logic.

- Hot Water Temperature is Maintained using local PID setpoint control. PID control provides efficient, accurate control by eliminating temperature “offset” (error)
- Responds to Plant Master Firing Rate and Sequencing Demand
- Low Fire Hold – Firing rate may be held at low fire during warm-up, or base loaded at an optimum level in response to the lead/lag controller
- Oxygen Trim (optional) – Using the Link Trim Actuator (LTA) and ZP In-Situ Oxygen Sensor, Oxygen Trim can be added to the BM-HWSP. See page 137 for additional information.

BURNERMATE MODEL BM-HWSP

Hot Water Boiler Single Point Positioning Combustion Control



BurnerMate Model BM-HWSP Front Panel

Specifications

BurnerMate Panel

Controller: PCC-III-0000 (see page 190)
 Input Power: 120 Vac (+/- 15%)

Inputs

Water Temperature: 4-20 mAdc
 Plant Master: 4-20 mAdc*
 Warm Standby: 120 Vac, optically isolated (Optional)*

Outputs

Boiler Modulation: 4-20 mAdc or Triac

*These features are standard, but their use is selectable at time of start-up.

Consult Factory for Inputs and Outputs included with "-ZP" option.

Ordering Information

Description	Catalog Number
Hot Water Boiler Control with Triac Output	BM-HWSPT
Hot Water Boiler Control with Current Output	BM-HWSPC

Order Sensors Separately (Optional)	Catalog Number
Hot Water Transmitter, 4-20 mAdc, 0 to 500° F, NEMA 4, with 4.5" depth	Consult Factory
Thermowell, SS, 4.5" x ½ NPT	Consult Factory

Instrument & Control
boilers larger than 200 bhp

BURNERMATE MODEL BM-HWSP

Suggested Specifications

1. Application

Supply a self contained Boiler Control System to provide process control of water temperature, combustion air and fuel flow. The control system shall be microprocessor-based and suitable for wall or windbox mounting. All the logic required to ensure that pre-purge, post-purge, light-off, and burner modulate cycles are automated shall be provided.

2. Combustion Control

A PID based single point positioning combustion control logic scheme shall be used to maintain water temperature at setpoint. The fuel flow control valve shall be mechanically linked to the air flow control device to assure an air rich fuel/air ratio. Mechanical linkage adjustment shall be required to adjust the fuel/air ratio. A combustion control microprocessor failure shall not prevent the continued manual operation of the boiler. Fuel valve and air damper shall be modulated in response to an external Plant Master demand signal or measured water temperature compared to setpoint. At a minimum, the control system shall display the following: Water Temperature, Temperature Setpoint, Firing Rate and alarm messages for Low Temperature, High Temperature, and Temperature Setpoint Deviation.

3. Hot Water Temperature Setpoint

When the controller is in the automatic mode, the control system shall establish the setpoint based on day-night and outside air temperature. When in manual mode, the operator may set the setpoint via the front panel display.

4. Boiler Controllers

To assure system integrity, a pre-wired and factory-tested, micro-processor-based, multiple loop controller system shall be provided to implement boiler control functions. The controller shall include: up to 10 process variable displays with sixteen character English language descriptions, 10 point "first - out" annunciator, two 50 segment bargraphs to display the controlled variable and setpoint and one 20 segment bargraph to display the loop output, 120 Vac for discrete inputs and outputs to assure system compatibility and 4-20 mAdc analog inputs and outputs. Configuration and calibration data shall be stored on redundant non-volatile EEPROM memory modules. The backup memory module shall automatically download into the primary memory in the event of primary memory data corruption. Control strategy shall be free form configurable "Blockware" type language. Hardware required for field configuration shall be provided with the system.

5. Communication

Each controller shall be equipped with an optically isolated RS485 modbus communications data highway and shall allow: Auto/Manual mode change, setpoint change, variation of the manual output, sensing and silencing of alarms, change of any configuration parameter (including PID tuning constants), change of timers, etc. Provide all equipment capabilities specified in this paragraph, even if a connecting SCADA system is not included in this project.

6. Quality Assurance

The system shall be factory manufactured and tested according to UL508A requirements (CSA C22.2 #14 for use in Canada). The system shall be designed to insure the safe start-up, on-line operation and shutdown of fuel firing equipment. The control system shall be a Preferred Instruments, Danbury, CT, **Burner-Mate Model BM-HWSPx** ('x' = "C" or "T" to denote a Current or Triac Control Output).