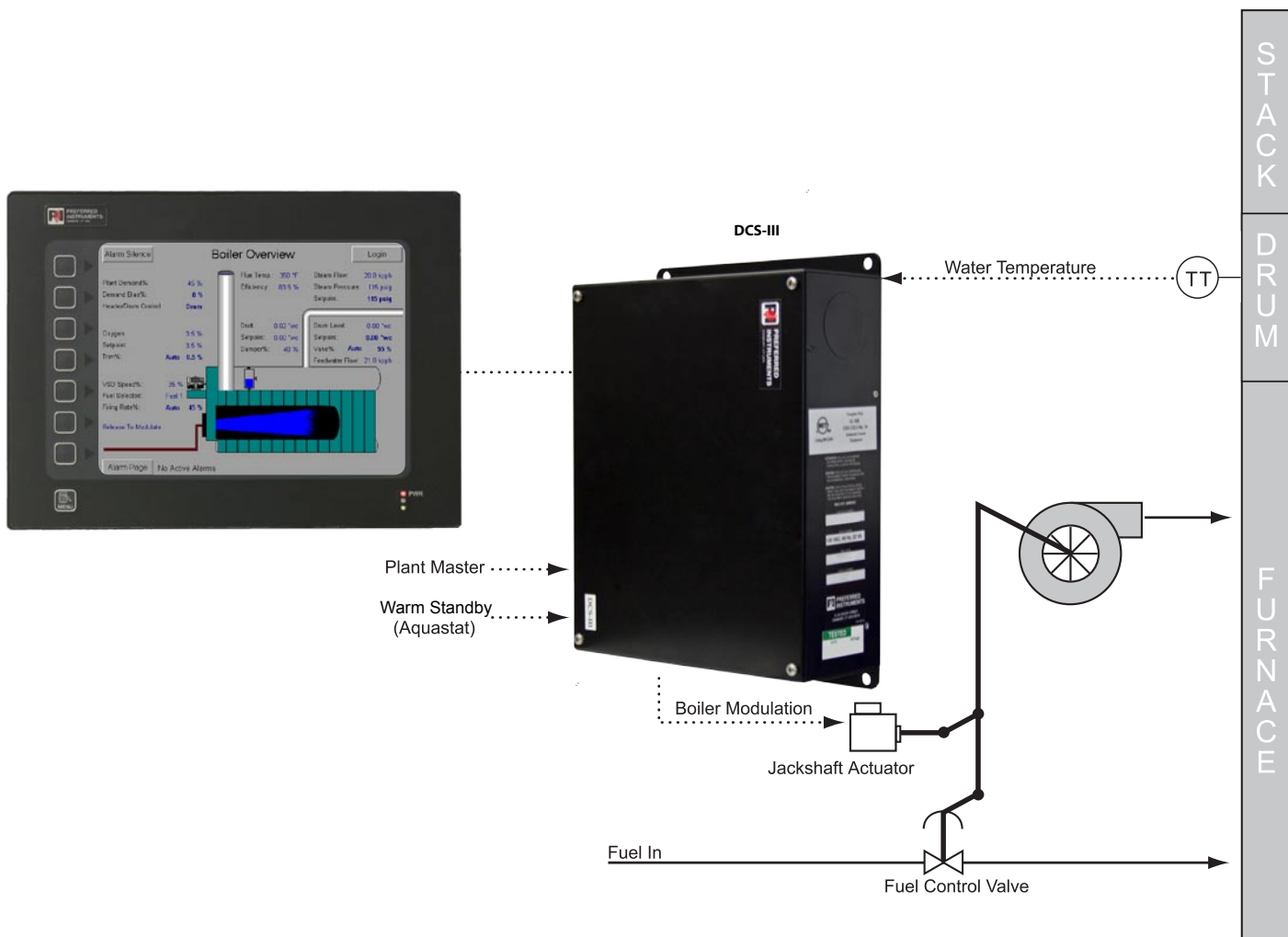


BURNERMATE TS MODEL BMTS-HWSP

Hot Water Boiler Single Point Positioning Combustion Control



Model BMTS-HWSP Combustion Control System

Application

The BurnerMate TS **Model BMTS-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 **BMTS-HWSP**.

BURNERMATE TS MODEL BMTS-HWSP

Suggested Specifications

Specifications

BurnerMate TS Control Panel

Touchscreen: OIT-10 or OIT-15
Controller: **DCS-III-0000**
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	BMTS-HWSPT
Hot Water Boiler Control with Current Output	BMTS-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

Suggested Specification

1. Application

Supply a self-contained Boiler Control System with 10" (or 15") color touch screen 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. The following color touch screen graphic pages shall be provided: Boiler Overview, Flame Safeguard Overview, Control Panel Faceplate with real time and historical trending, Set up and Commissioning screens, and Boiler Alarm.

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, microprocessor-based, multiple loop controller system shall be provided. The controller shall include process variable and “first - out” annunciator, 120 VAC discrete inputs and outputs, 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. All control logic, tuning, and fuel/air ratio curves shall be field configurable. If required to allow field modifications to the controller logic, provide one configuration tool or laptop computer per facility.

5. Communication

Each controller shall be equipped with an optically isolated RS485 modbus communications data highway connection to the color touch screen. The touch screen shall communicate with the plant BAS, EMS, or DCS by a Modbus over Ethernet 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, **BurnerMate TS Model BMTS-HWSPx** ('x' = "C" or "T" to denote a Current or Triac Control Output).