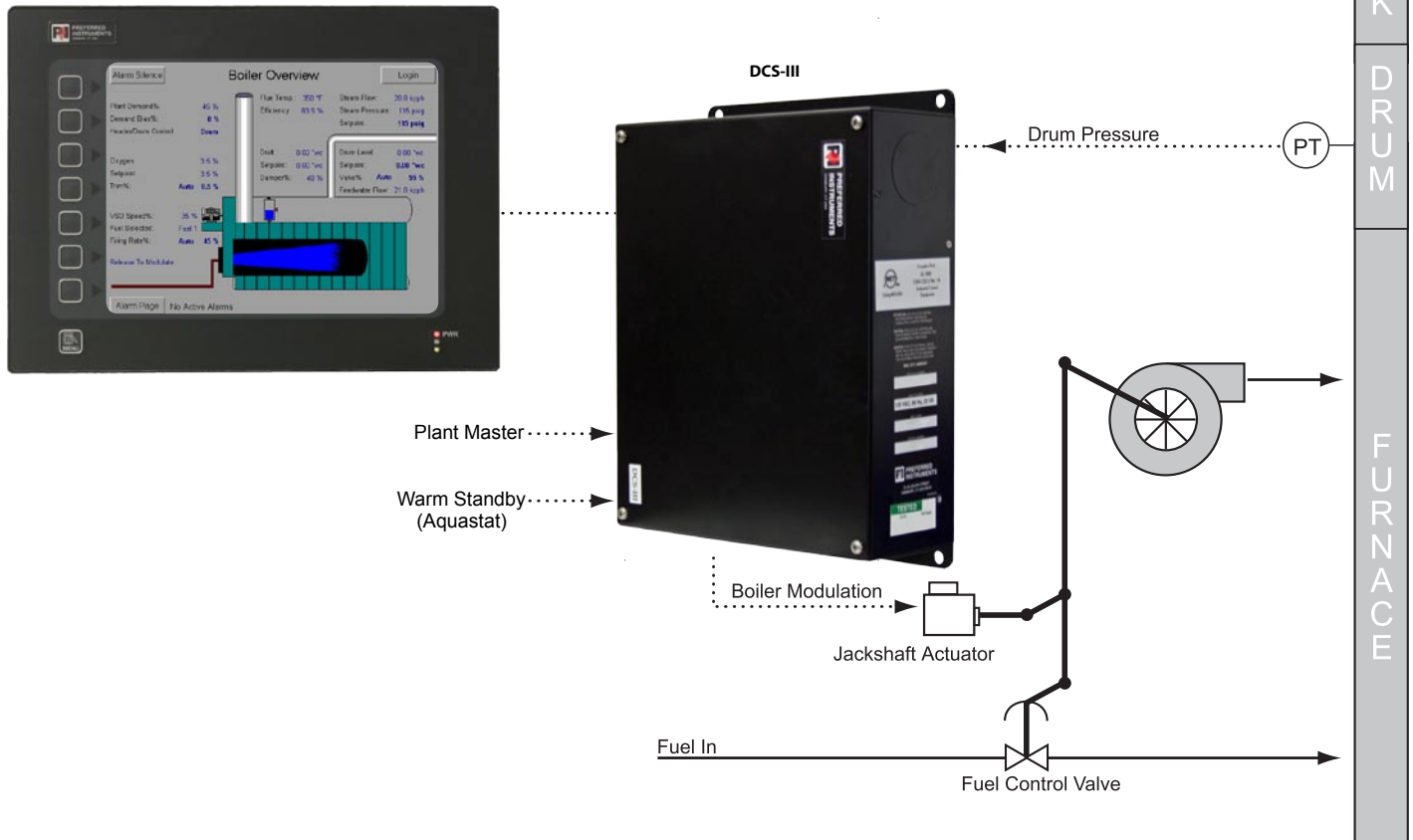


# BURNERMATE TS MODEL BMTS-STSP

## Steam Boiler Single Point Positioning Combustion Control



Model BMTS-STSP Combustion Control System

### Application

The BurnerMate TS Model **BMTS-STSP** provides automatic firing rate control for new or existing steam 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.

- Steam Drum Pressure is Maintained using local PID setpoint control. PID control provides efficient, accurate control by eliminating drum pressure “offset” (error)
- Responds to Plant Master Firing Rate and Sequencing Demand
- Warm Standby and Low Fire Hold – The boiler is periodically started and held at low fire until it returns to the warm standby temperature. (Aquastat supplied by fired equipment manufacturer)
- Oxygen Trim (optional) – Using the Link Trim Actuator (LTA) and ZP In-Situ Oxygen Sensor, Oxygen Trim can be added to the **BMTS-STSP**.

# BURNERMATE TS MODEL BMTS-STSP

## Suggested Specifications

### Specifications

#### BurnerMate TS Control Panel

Touchscreen: OIT-10 or OIT-15  
Controller: **DCS-III-0000**  
Input Power: 120 VAC (+/- 15%)

#### Inputs

Drum Pressure: 4-20 mADC  
Plant Master: 4-20 mADC\*  
Warm Standby: 120 VAC, optically isolated\*

#### 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.

### Suggested Specification

#### 1. Application

Supply a self-contained Boiler Control System with 10” (or 15”) color touch screen to provide process control of steam pressure, 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 steam drum pressure 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 boiler drum pressure compared to setpoint. At a minimum, the control system shall display the following: Steam Pressure, Steam Pressure Setpoint, Boiler Firing Rate and alarm messages for Low Pressure, High Pressure, and Pressure 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.

### Ordering Information

Description	Catalog Number
Steam Boiler Control with Triac Output	<b>BMTS-STSP T</b>
Steam Boiler Control with Current Output	<b>BMTS-STSP C</b>

Order Sensors Separately (Optional)	Catalog Number
Steam Pressure Transmitter, 4-20 mADC, 0 to 200 PSI, NEMA 4, Smart with single valve manifold	<b>Consult Factory</b>

#### 3. 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.

#### 4. 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.

#### 5. Quality Assurance

The system shall be factory manufactured and tested according to UL508A requirements (CSA C22.2 #14 for use in Canada). The control system shall be a Preferred Instruments, Danbury, CT, **BurnerMate TS Model BMTS-STSPx** (‘x’ = “C” or “T” to denote a Current or Triac Control Output).