

Honeywell SLATE ICM Platform

SUBMITTAL SPECIFICATION

Note to specifiers: To specify Honeywell SLATE™ Integrated Combustion Management System with specified packaged boiler manufactures, “Copy and Paste” both Items 1.2 and 2.3 in project MasterSpec specification.

- 23 52 00 HEATING BOILER
 - 23 52 23 CAST-IRON BOILERS
 - 23 52 33 WATER-TUBE BOILERS
 - 23 52 39 FIRE-TUBE BOILERS

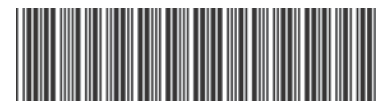
PART 1 GENERAL

- 1.1 SUMMARY
- 1.2 RELATED SECTIONS
 - A. SECTION 23 09 13.33 – Control Valves
 - B. SECTION 23 09 13.43 – Control Dampers
 - C. SECTION 23 09 23 – Direct-Digital Control Systems for HVAC
 - D. SECTION 23 09 33 – Electric and Electronic Control Systems for HVAC
 - E. SECTION 23 09 93 – Sequence of Operations for HVAC Controls
 - F. SECTION 25 55 00 – Integrated Automation Control of HVAC
 - G. SECTION 25 95 00 – Integrated Automation Control Sequences for HVAC

PART 2 PRODUCTS

- 2.1 MANUFACTURES
 - Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. MFR_1
 - 2. MFR_2
 - 3. MFR_3

Note to specifiers: Depending on the project configuration and requirements, and fuel options, a wide range of manufactures and models of packaged boilers can be specified. Cast-Iron boilers in commercial applications are employed. Firetube boilers in commercial, institutional, and industrial applications; both watertube and firetube units are employed.



2.2 CONSTRUCTION

- A. Description: The boiler shall be factory-fabricated, factory-assembled and factory-tested, built on a steel base, including insulated jacket, flue-gas vent, combustion-air intake connections, water supply, return connections, and an integrated combustion management system. The combustion management system shall combine configurable safety and programmable logic ancillary control into a singular control platform in a modular format. Power burner shall have full modulation. Boiler efficiency shall increase with decreasing load (output), while maintaining setpoint. Unit to be ready for automatic operation except for connection of piping, fuel, electrical, chemical, and vent.
- B. Pressure Vessel Design:
- C. Heat Exchanger:
- D. Modulating Fuel Valve:
- E. Blower:
 - 1. Motors:
 - a. Motor Sizes:
- F. Ignition:

2.3 BOILER /BURNER CONTROLS

- A. Description: The boiler /burner integrated combustion management system shall provide automatic boiler sequencing, circulation pump control, fan control, electronic ignition, flame supervision, system status indication, firing rate control, load control, central heating /domestic hot water control, limit control, system or self-diagnostics, and communications interface for a display, other network devices, Building Automation System, industrial control system, or to all simultaneously.
- B. The control panel shall be factory pre-wired supplied with each boiler /burner unit. . The panel shall consist of an array of modules implementing a singular controller; **Honeywell SLATE™ Integrated Combustion Management System**, programmed at the OEM production facility. The control panel shall be mounted on the boiler, Base Module with light sensor backlit LCD screen local Operator Interface for monitoring the individual boiler.
- C. The integrated combustion management system shall provide options and advanced system functions, configurable safety and programmable logic using NiagaraAX wire sheet editor , that allow standard and customizable control solutions.
- D. Singular control platform modules:
 - 1. Base module shall provide:
 - a. Storage of data for device configuration and control program initialization.
 - b. Backlit LCD screen with light sensor, local Operator Interface for monitoring the individual boiler.
 - c. Power supply for all modules with multiple voltage options.
 - d. Real time clock.
 - e. Event log storage for lock-outs, fault history, and OEM requested events.
 - f. Trend logging for OEM specified data.

- g. Network identification of the system as singular device.
 - h. External communication 10BASE-T for Ethernet and /or RS485.
 - i. Web services for direct browser access to the system, both Honeywell provided and designer customized pages, based on JavaScript, such as implemented and supports HTML5.
2. Burner Control module shall provide:
 - a. Configurable safety.
 - b. Flame safeguard control, 24 VDC or 24 to 240 VAC, primary or programmer, semi-automatic or fully automatic.
 - c. Valve proving.
 - d. Dual fuels capability.
 3. Flame Amplifier modules shall provide:
 - a. Signal from flame detector to indicate presence of flame, operated by Burner Control “parent” safety module.
 - b. Display for flame signal strength.
 - c. DIN rail or remote mounting.
 4. Fuel Air Ratio Control module provides:
 - a. Relational control between fuel, airflow, and flue gas recirculation for the power burner.
 - b. Parallel-positioning control of up to four SLATE™ actuators and /or two variable frequency drives, up to (24) point curve with no slope constrains that would limit the steepness of the curve.
 - c. Control of the SLATE™ actuators and receive feedback (torque sizes: 50, 150, 300, 900 in-lb) with component anti-swap protection.
 - d. Curve verification and off curve checking algorithms.
 - e. Dual fuels capability.
 - f. O2 Trim control, or other flue gas constituents or temperatures.
 5. Limit module shall provide:
 - a. The capability to directly receive any type of analog signal to create limits on either pressure or temperature or other, without requiring a UDC controller.
 - b. Four analog sensor cells, input or two sets of redundant inputs.
 - c. Twelve limit blocks, with each block monitoring any sensor or pair of sensors.
 - d. Redundant relay output.
 6. Analog I/O module shall provide:
 - a. Analog input and output capability for all combustion and ancillary control applications.
 - b. Multiple combination of analog functionality for each cell.
 - c. Four analog cells, with up to (12) signal inputs and outputs.
 - d. The capability to support voltage, resistance, current, PWM, Tachometer, Thermocouples, RTD, Bridge and NTC sensors.
 - e. The capability to configure inputs and outputs as voltage, current, or PWM signals.

7. Digital I/O module shall provide:
 - a. Digital input and output capability for all combustion and ancillary control applications.
 - b. Universal I/O configurable in multiple combination up to (14) optical inputs or (6) relay outputs.
 - c. Automatic adaptation to 24VDC or 24VAC to 240VAC.
8. Annunciator module shall provide:
 - a. Status monitoring of a series string of limit, control, and /or interlock contacts for diagnostic of a commercial or industrial burner.
 - b. One relay output.
 - c. Automatic adaptation to 24VDC or 24VAC to 240VAC.
- E. The platform shall be identified as a single network device, supporting communications protocols:
 1. BACnet /IP -via 802.3i 10BASE-T.
 2. BACnet /MSTP -via RS-485.
 3. Modbus RTU /TCP -via 802.3i 10BASE-T.
 4. Modbus RTU /485 -via RS-485.
 5. Web Browser access (httpd) -via 802.3i 10BASE-T
- F. The platform shall provide a web-based user interface for viewing system status, and viewing, creating, or modifying configurations. **(Where Shown on Drawings)** The color touch screen display shall be:

Honeywell R8001K5001.
Third-party panel PC.
Tablet or SmartPhone
- G. Multiple Boiler Management: The OEM shall factory configure the Honeywell SLATE™ Integrated Combustion Management System for Lead /Lag Master Operation of a multiple boiler heating plant. The system shall be configured with all components of the system listed as products of a single manufacturer under the appropriate category by the Underwriter’s Laboratories, Inc. and in accordance with the appropriate CSD-1 sections. System shall be commissioned by a factory authorized representative or supplier/installer with factory trained personnel.
- H. Operational Sequence:
 1. Shall comply with requirements specified in Section 23 09 93 Sequence of Operations for HVAC Controls.
 2. Shall comply with requirements specified in Section 25 95 00 Integrated Automation Control Sequences for HVAC.
- I. SLATE™ System Integration: Each system shall function as a single network device responding to a single address, multiple SLATE™ systems may communicate “peer to peer” via BACnet/MSTP and/or BACnet/IP communication protocols.

- J. Building Automation System Interface: The system shall function as a single network device responding to a single address or be comprised of multiple SLATE™ controllers, communicating via Modbus/RS485 or BACnet/MSTP and/or Modbus/TCP, BACnet/IP and/or HTTP communication protocols:
 - 1. Shall comply with requirements specified in Section 23 09 23 Direct-Digital Control System for HVAC.
 - 2. Shall comply with requirements specified in Section 25 55 00 Integrated Automation Control of HVAC.

2.4 ELECTRICAL POWER

- A.
- B.

2.5 VENTING

- A.
- B.

2.6 SOURCE QUALITY CONTROL

- A.
- B.

PART 3 EXECUTION

3.1 EXAMINATION

- A.
- B.

3.2 BOILER INSTALLATION

- A.
- B.

3.3 CONNECTIONS

- A.
- B.

3.4 FIELD QUALITY CONTROL

- A.
- B.

