



## How to Specify

# CC-300 Boiler Oxygen Trim Control Steam and Hot Water Systems

### **General Operation**

The supplier shall provide a Century Controls Model CC-300 PLC Based Oxygen Trim Control to continuously adjust the air/fuel ratio for maximum efficiency. The control shall analyze the oxygen level and compare it to the programmed set points, making corrections to obtain the most efficient combustion across the firing range. The control shall be approved by the Underwriter's Laboratories and shall have affixed to it the Underwriter's label.

### **Control Design Features**

The control shall be a PLC based unit designed to accept up to three boilers. The computer shall utilize a variable correction rate control algorithm that provides fast response without overshooting the set point. The control shall have up to ten set points across the firing range of the burner, adjustable for each of two fuels. Automatic interpolation between set points must be standard. Fixed points with no interpolation will not be acceptable.

The control system shall be capable of faster trim on increasing air and slower trim for decreasing air. The system shall have an adjustable alarm for low O<sub>2</sub> levels. The control system shall include a diagnostics program such that the alarm will be enunciated if the oxygen level cannot be maintained in the normal trim area.

O<sub>2</sub> levels shall be measured by an Insitu O<sub>2</sub> analyzer, easily mounted on the stack of each boiler. The analyzer shall be equipped with a calibration port for reference gas. No aspiration air line is required.

The control system shall be equipped with a compact electromechanical actuator, easily mounted to the forced draft fan linkage of the boiler. The actuator must be provided with a no backlash feature to eliminate the introduction of additional hysteresis into the burner linkage. Actuators that induce hysteresis when reversing are not permitted.

The control panel shall display boiler number, type of fuel, current O<sub>2</sub> reading, and firing rate on a color touch-screen TFT display.



## Communications

The controller shall have the capability of communicating to a building management system utilizing Lon, BACnet IP, BACnet MS/TP, Modbus RTU, Modbus or JCI Metasys Integrator.

## Technical Specifications

### Control

Display	8-inch color touch-screen display
Range	0-999 Eng. units settable to match transducer
Alarms	Hi and low process variable
Input	4-20 mA or 1 to 5 volts DC
Memory	Non-volatile, battery back-up included
Power Requirement	120 VAC, 50/60 Hz
Enclosure	NEMA 12 panel
Auxiliary Outputs	0-135 OHM, 4-20 mA, 1-5 volts, teleprinter, RS-232, common alarm
Deadband	Adjustable
Set Points	Ten adjustable O <sub>2</sub> set points for different boiler firing rates
UL/CUL	Approved
Limited Warranty	Two-years on panel components if installed by authorized technician; one-year on O <sub>2</sub> sensor
Temperature Limits	0-140 degrees F
Temperature Probe	RTD 100 Ohm, platinum 3 wire, Thermocouple
Combustion Efficiency	Calculation and real-time HMI display available if stack temperature sensors are present
Communication Protocols	Lon, BACnet IP, BACnet MS/TP, Modbus RTU, Modbus TCP or JCI Metasys Integrator.

### Oxygen Analyzer

Enclosure	NEMA 4X, probe is RA330
Accuracy	+/- 3% of measured value
Repeatability	+/- 1% of measured value
Drift	Less than 1% of cell output per month
Cell Response	1 millisecond
Overall Response	Less than six seconds for 63% change
Process Gas Temp	Up to 1,250 degrees F
Calibration	Calibration port for certified gases
Power	120/220 VAC, 60-50 Hz

### Trim Actuator

Output	+/- 3/4" adjustable linear travel, threadless screw type with mechanical stops
Thrust	5-40 lb. adjustable with unique slip ability
Temperature	0-150 degrees F
Installation	In-line with existing linkage