

# *How To Specify*

## *General Specifications*

### • *Operational Data*

The supplier shall provide a Century Controls Model CC-700 PLC Oxygen Control and Master Control/Sequencer to continually adjust the air/fuel ratio and manage the firing rates, while controlling the (pressure/temperature) of the boilers. The control shall analyze the oxygen level and compare it to the programmed set points correcting as needed to achieve the most efficient combustion.

The control shall also analyze the process variable load (pressure/temperature) versus the set point to match the load demand. The control shall be approved by Underwriter's Laboratories and shall have affixed to it the Underwriter's label.

### • *Control Design Features*

The control shall be a microprocessor based unit designed for three boilers (requires dual processor for additional boilers). The computer shall utilize a variable correction rate control algorithm that has fast response without overshooting the set point.

The oxygen control shall have adjustable set points across the firing range adjustable for each of two fuels. Automatic interpolation between set points must be standard. Fixed points with no interpolation will not be acceptable.

The system shall include adjustable alarms for low oxygen level.

Oxygen levels shall be measured by an Insitu analyzer which shall be equipped with a calibration port for reference gas. No aspiration air line shall be permitted.

The oxygen system shall be equipped with a compact electromechanical actuator. This actuator must have a "no backlash" feature eliminating the introduction of additional hysteresis into the burner linkage.

***CENTURY  
CONTROLS, INC.***

***Model CC-700  
Combined Boiler Master  
& O<sub>2</sub> Trim Control***

The sequencer control shall start boilers as they are required gently raising the firing rate to meet the load demand. The sequencer control shall also utilize an algorithm that prevents the boiler from firing at a greater rate than the load demand requires. Controls that allow immediate advancement to high fire or merely implement low fire hold by time or temperature will not be acceptable. The boilers are to be warmed at low fire via a time schedule. However, the control must not allow more than one boiler to warm at once. The controller will select lag boiler addition by true load. When the firing rate of the lead boiler exceeds a programmed value representing true load, the second boiler shall be started after an adjustable delay. When more than one boiler is in use, they shall operate at the same general firing rate, not permitting any boiler to reach high fire ahead of the other, to prevent "carryover" problems. As the load demand decreases and the firing rates drop to the lower programmed value, the operational cycle is reversed, the last lag boiler in the sequence, after an adjustable time delay, will modulate downward to low fire, then shut down.

The lead/lag sequence shall be changed via a keypad or using the optional automatic alternation feature. The control shall have the capability of two (pressure/ temperature) set points within the program. This permits a lower set point during day, night, and weekend operations.

The control panel shall display boiler number, type of fuel, oxygen, firing rate, and system (pressure/temperature). A comparison of process set point versus actual must be available. It shall have a 4-line 20 character LCD display and keypad.

Option: Include stack temperature sensor for each boiler and efficiency calculations with readout on the display. Communications to a central system is available such as modbus, contact the home office.

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# How To Specify

## General Specifications

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### • Technical Data

#### CC-700 SPECIFICATIONS

##### Electronics Package

<i>Construction</i>	NEMA 12 panel
<i>Memory</i>	Non-volatile, no battery back-up required
<i>Range</i>	0-999 Eng. units settable to match transducer
<i>Display</i>	4-line 20 character LCD w/keyboard
<i>Deadband</i>	Adjustable
<i>Power Requirement</i>	120/220 VAC, 50/60 Hz, 100 VA Max
<i>Output</i>	4-20 mA time proportioning
<i>Set Points</i>	Adjustable
<i>Alarms</i>	No response, high and low process variable, no light off
<i>Auxiliary Outputs</i>	1 to 5 volts DC, 0-1 v firing rate, RS-232, common alarm
<i>Temperature Limits</i>	0-140 degrees Fahrenheit

##### O<sub>2</sub> Probe

<i>Enclosure</i>	NEMA 4X, probe is RA330
<i>Accuracy</i>	+/- 3% of measured value
<i>Repeatability</i>	+/- 1% of measured value
<i>Drift</i>	Less than +/- 1% of cell output per month
<i>Cell Response</i>	1 Millisecond
<i>Overall Response</i>	Less than 6 seconds for 63% change
<i>Process Gas Temp.</i>	To 1150 degrees Fahrenheit
<i>Calibration</i>	Calibration port for certified gases
<i>Power Requirements</i>	120/220 VAC 60-50 Hz

## ***CENTURY CONTROLS, INC.***

### ***Model CC-700 Combined Boiler Master & O<sub>2</sub> Trim Control***

##### Trim Actuator

<i>Output</i>	+/- 1/2 " adjustable linear travel, threadless screw type with mechanical stops
<i>Thrust</i>	5-40 lb. adjustable with unique slip ability
<i>Temperature</i>	0-150 degrees Fahrenheit
<i>Installation Req.</i>	Installs in existing linkage

##### UL/CUL Approved

<i>Warranty</i>	One year
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##### Options

<i>Pressure Transducer</i>	1 to 5 volts, range 0-30, 0-200 etc.
<i>Temperature Probe</i>	
<i>Elements</i>	RTD 100 Ohm, platinum 3 wire,
<i>Thermocouple</i>	One year