Date: Bid Date:

Project #: Location:

Project Name: Engineer:

Contractor: Prepared By:

Laars 6-Stage Boiler & Pump Sequencing Control

Model SC6P

Specification

The contractor shall furnish and install a microprocessor based control system. The control shall be pre-engineered and programmed for the operation of multiple hot water boilers. It shall incorporate the following integrated functions:

Manual or automatic lead stage rotation and boiler stage sequencing control. The control shall be of modular construction to facilitate field modification, upgrading or repair. It shall include the following features:

SENSORS: The temperature sensors shall be of the thermistor type, suitable for insertion into a 3/8" I.D. well. The standard operating range shall be -30°F to 250°F.

SENSOR SET POINT: The control shall provide an integral sensor set point adjustment. The set point shall be adjustable in 1°F increments via a multi-turn knob. The setting shall be stored until otherwise changed by the set point knob.

DIGITAL DISPLAY: The control shall provide a digital display of the actual temperature, set point temperature, the reaction time, the pump delay, and the purge time. LEDs shall be provided to indicate the lead stage and all activated stages.

MODE SELECTION SWITCH: A three position switch shall be provided for each stage to set the operating mode of the respective stage. Each switch shall include On, Auto and Off positions.

LEAD STAGE ROTATION SWITCH: The control shall have an Auto/Off/Increment switch for rotation of the lead stage. When set in the Auto position, the lead stage will automatically change. The automatic rotation shall be selectable for either every 24 hours, or a first on/first off basis. The Increment position will manually change the lead stage. In the OFF position, the lead stage will remain as the current lead stage until the switch is reset to Auto or Increment.

OUTPUTS: The control shall have the capability of operating up to six units. Outputs shall be up to six on/off, three 2-stage (lo/hi), two 3-stage, or one 4-stage. Each stage shall have two normally open contacts. One set of contacts shall start/stop the respective stage. The other set of contacts shall provide a time delay function for secondary pump run on. The time delay function designated as the pump delay shall be adjustable from 0 to 30 minutes. Outputs shall be up to six on/off, three 2 stage (lo/hi), two 3 stage, or one 4 stage. Control shall be capable of sequencing lo/hi stages in a lo/lo/hi/hi or lo/hi/lo/hi fashion. The control's software shall automatically prevent the high fire mode from ever being a lead stage. An additional normally open contact shall be energized when any stage is energized. After the last stage is turned off, this additional contact shall remain energized for the pump delay period.

REACTION TIME: The control shall have a programmable reaction time, fully adjustable from 0.5 minutes to 8.0 minutes. The reaction time is the minimum time between stages being energized. To prevent short cycling, once a stage has been activated, it will remain activated for at least one-half the reaction time.

PURGE TIME: The control shall have a programmable purge time, fully adjustable from 0.0 minutes to 10.0 minutes to compensate for units pre-purge cycles. The purge time shall apply when any on/off stage is activated, or when the lo stage of any multi-stage unit is activated.

EXTERNAL SET POINT: The SC6P shall be able to accept an external set point from a 4-20mA signal. The range of the external set point shall be 60° to 220°F.

EXTERNAL SHUTDOWN: The SC6P shall be able to accept a dry contact input to turn off all stages. The start/stop contacts shall immediately turn off, the time delay outputs shall remain energized for the period of time set by the pump delay.

INTERFACE MODE: The SC6P shall be able to interface to Heat Timer HWRQ, MPCQ, or HWM550 outdoor reset controls.

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