



**Harmony™ Sequencer**

**For POWER-fin®**

## **Comfort and Savings**

Advanced microprocessors help multiple modulating Power-Fins maintain comfortable and even temperatures by continuously monitoring: the **time** it takes for the system to rise or drop in temperature, the **rate** at which it increases or decreases, and the **deviation** from set point.

Additional Power-Fins may be either added or subtracted to keep up with the present demands on the system. This process allows demand to be met with the most efficient use of equipment, and eliminates peaks and valleys typically seen with other sequencers.

### **Rotation Among Units**

Sequences up to 12 Power-Fins with automatic rotation among units to maintain precise set point control and promote even wear on each Power-Fin unit. The Harmony sequencer has three modes of rotation: **Manual**, **First-ON/First-OFF** or **Automatic** at selected time periods from every hour to every seven days. This allows you to pick the optimum schedule for your system. To ensure that Power-Fins are never turned off at maximum firing rate, the Harmony Sequencer backs the burner rate down to the lowest setting before the units are shut down.

### **Prevents Short Cycling**

The purge timer sets the minimum run time for any unit, preventing short cycling. The Last Stage Hold setting prevents short cycling even further. The user adjustable range allows the system temperature to vary from the set point before turning the last Power-Fin off. This reduces stage unit cycling when there is minimal load requirements.

### **Energy Savings**

The Harmony Sequencer has an optional stand-alone hydronic outdoor temperature reset function, or it can be connected to an existing outdoor reset control. For more savings, the Harmony sequencer connects to energy management systems and can be disabled when there is no output requirement.

The Harmony sequencer saves energy by activating only the minimum number of Power-Fins necessary to meet the load requirements. Unlike other sequencers, it does not bring all Power-Fins up to maximum firing rate and then back them down. The sequencer will start the first



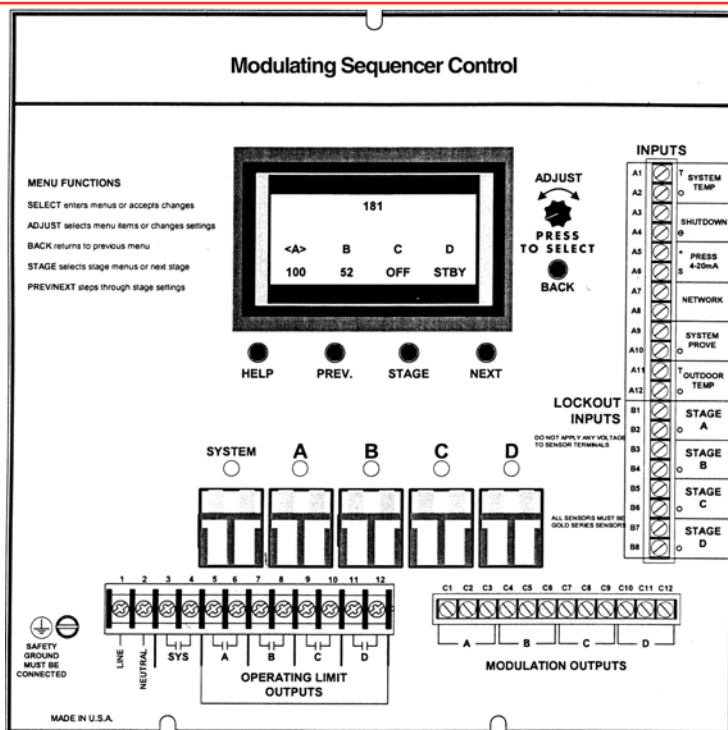
Power-Fin at its minimum firing rate and adjust the input, as required, to any point between 25% and 100% of the maximum firing rate. To prevent “overshooting” the system’s required Btu input when additional heat is requested; the sequencer will decrease the first Power-Fin to its minimum firing rate before it starts the second Power-Fin at its minimum firing rate. When the sequencer determines that still more heat is needed it will adjust the Power-Fin’s input in 0.5% increments until the system’s required Btu input is matched. The sequencer’s built-in setback capability will also lower the set point when less system input is required.

### **Easy to Follow Digital Display**

The Harmony sequencer’s digital display shows the precise value of each system parameter. Its easy to follow menu allows users to quickly make changes to any system setting without having to learn any specialized codes or keyboard commands. Password protection is available to prevent unauthorized users from making adjustments to control settings.

## Standard Features

- 120 VAC power for ease of installation
- Built in password protection
- Adjustable ignition and modulation start points
- LED indicator lights
- Digital display of system status: set point, lead unit and status of last unit
- Unit signal output: 4-20mA
- Sequencing Options:  
Manual, First ON/First OFF, or Automatic at selected time periods from every hour to every seven days
- 4-20mA interface for outdoor or night setback
- Temperature display – Fahrenheit or Celsius
- Pump relay provided is energized when output is required. It is adjustable for time delay
- Adjustable PID logic controls system loading/unloading
- System sensor can be located up to 500 feet from the control module
- All settings and operating modes are stored permanently and maintain their values if power is lost
- Requires only one sensor located in the common header of all units
- System output can be used to activate a system pump, damper, or other functions when a Power-Fin is active.



## Optional Equipment

- Expandable, up to 12 units of heating
- Outdoor air sensor

Sequencing of up to 4 Units requires the following:

- 1 - SMP2100 or 2103 Master Control Module

Sequencing of 5 - 12 units requires the following:

- 1 - SMP2100 or 2103 Master Control Module
- 1 - SMP2101 or 2104 Extension Module

## Ordering Information

Description	Model Number	Part Number
1-4 Unit Master Control Module	PB/PF 1500-2000	SMP2100
5-12 Unit Extension Module	PB/PF 1500-2000	SMP2101
Outdoor Air Sensor (optional)	PB 1500-2000	SMP2102
1-4 Unit Master Control Module	PB/PF 501-1300 (M9)	SMP2103
5-12 Unit Extension Module	PB/PF 501-1300 (M9)	SMP2104
Outdoor Air Sensor (optional)	PB 501-1300 (M9)	SMP2102

## Typical Specification

The sequencing control for proportional boilers shall be Lochinvar model number SMP \_\_\_\_\_ having a capacity for \_\_\_\_\_ stages to be used on \_\_\_\_\_ Power-Fin units.

### The control system shall provide:

A field adjustable set point from 100°F to 240°F; (Minimum inlet water temperature on Power-Fin 130°F) Field adjustable reset ratio from 1:4 to 4:1 (Outdoor temperature: Water temperature); Field adjustable integral offset to parallel shift the selected reset curve in the range of -50°F to 50°F; Field adjustable outdoor temperature cutoff in the range of 30°F to 75°F and capable of ON/OFF; Field adjustable number of stages, input from 1 to 4 stages; Optional control of up to 12 stage; Field adjustable rotation among stages: Manual, First ON/First OFF, or Automatic at every selected time period from every hour to every 7 days; Four line by twenty character VFD display of numbers and characters visible without ambient light; Thermistor type temperature sensors; Field adjustable modulation start point from 25% to 100% of rated input; Field adjustable purge timer from 0 to 10 minutes of delay between energizing a stage and the beginning of modulation; Field adjustable lag stage delay from 0 to 60 minutes; Adjustable setback from 0°F to 75°F with external switch closure; NEMA-1 enclosure with key lock; Field adjustable standby timer from 1 to 60 minutes to determine the delay period before standby stages are activated; Field adjustable system delay from 0 to 60 minutes; 120 VAC power supply to panel; Terminal strips for all field wiring connections.



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