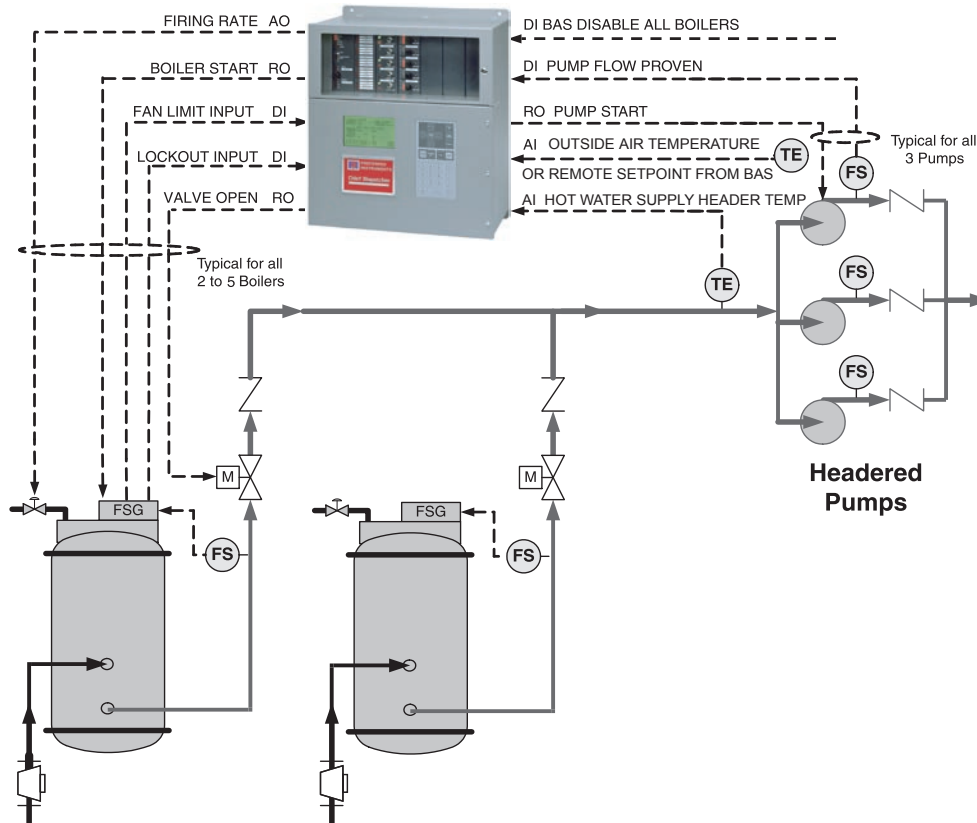


# CHIEF DISPATCHER MODEL JC-CDHWHP

## Hot Water Boilers with Header Pumps Modulating Lead/Lag Controller



JC-CDHWHP

2 to 5 Hot Water Boilers and Headered Primary Loop Pumps

### Application

The Chief Dispatcher **Model JC-CDHWHP** optimizes hot water system performance, helps extend Cast Iron Sectional, Finned-Tube, Fire Box or Flexible Tube boiler life. Header Pump sequencing ensures accurate temperature sensing and a failed pump is replaced with a backup pump.

### 2 To 5 Modulating Boilers

Hot Water Supply (HWS) header temperature is maintained using accurate PID control. Multiple boilers are modulated in "Unison" (all at the same firing rate) to ensure even heat delivery. Lag boilers are brought up to the "Unison" firing rate using a predetermined Ramp Rate to meet the heating load with minimum overshoot. When desired, the operator may set the "Unison" firing rate manually.

### Header Pump Sequencing

Header pump sequencing keeps the lead boiler pump running (therefore water flowing past the header sensor) to ensure accurate header temperature sensing and provides pump shutdown delay for boiler cool down. Additionally, a failed pump is automatically replaced with a backup.

### Outdoor Reset

Energy is saved by lowering the Hot Water Supply (HWS) temperature setpoint as the outside air temperature increases. Operating cost is reduced during warmer days. When desired, the operator may set the HWS setpoint manually.

### Time Of Day / Week Setback

This feature is used in heating applications to save energy by lowering the Hot Water Supply (HWS) temperature setpoint during times when the heating requirement is reduced, such as at night or on weekends and holidays.

### Domestic Hot Water Priority

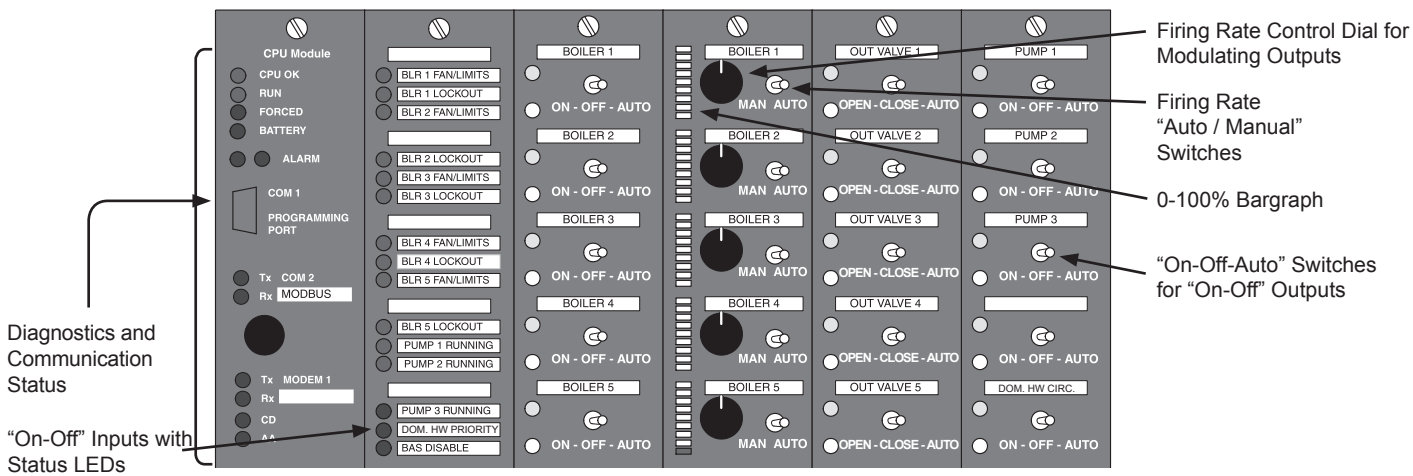
A temperature switch (thermostat) contact closure input will override the Outdoor Reset and Setback portion of the program and force the HWS temperature setpoint to a Domestic Hot Water Setpoint. A relay output is available to start a domestic hot water pump if required.

### Condensing Boiler Logic (Option "-C")

Condensing boiler logic takes full advantage of the condensing boiler design by maximizing the number of boilers running near low fire to maximize efficiency.

# CHIEF DISPATCHER MODEL JC-CDHWHP

Hot Water Boilers with Header Pumps Modulating Lead/Lag Controller



5 Boiler Controller Front Panel

## Specifications

### Panel Details

Controller: PWC  
 Case Size: 19¼" H X 18" W X 8½" D  
 Enclosure Type: Wall mounted, Weight: 55 lbs.

### Inputs

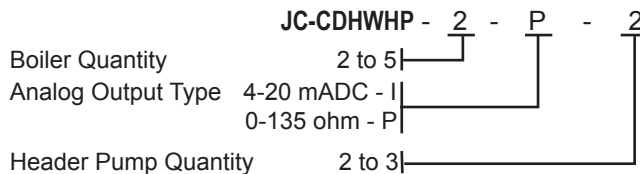
Hot Water Header: 0° to 300° F, Thermistor  
 Outdoor Air: Thermistor (non "-BAS" version)  
 BAS Reset Setpoint: 4-20 mADC ("-BAS" version)  
 BAS Boiler Disable: 120 VAC, optically isolated  
 Limits: 120 VAC, optically isolated (each boiler)  
 Boiler Lockout: 120 VAC, optically isolated (each boiler)  
 Pump Flow Proven: 120 VAC, optically isolated (each boiler)  
 Domestic HW Priority: 120 VAC, optically isolated

### Outputs

Modulation: Isolated 4-20 mADC or 0-135 ohm (each boiler)  
 Boiler Start: Dry Contact, 8 FLA, ½ HP, 120 VAC (each boiler)  
 Pump Start: Dry Contact, 8 FLA, ½ HP, 120 VAC (each boiler)  
 Valve Open: Dry Contact, 8 FLA, ½ HP, 120 VAC (each boiler)  
 Domestic HW Circulation Pump: Dry Contact, 8 FLA, ½ HP, 120 VAC

## Ordering Information

Specify Chief Dispatcher Catalog Number:



Optional Features	Catalog Number
Historical Trending	190604
Telephone Modem	190603
Building Automation System (BAS) 4-20 mADC Setpoint	add "-BAS" suffix
Condensing Boiler Logic	add "-C" suffix
Order Sensors Separately (Quantity as Required)	Catalog Number
Hot Water Thermistor Temperature Sensor 0° to 300° F, 4½" depth	70610
Thermowell, SS, 4.5" x ½ NPT	70610W
Outside Air Thermistor Temperature Sensor with weatherproof cover	70612

# CHIEF DISPATCHER MODEL JC-CDHWHP

## Suggested Specifications

### 1. Application

Supply a fully integrated boiler control system to coordinate the operation of two (select up to five) fully modulating hot water boilers, two (select up to three) header primary water circulating pumps and boiler water flow control valves in order to maintain the Hot Water Supply (HWS) temperature at setpoint. The control system shall be microprocessor-based and suitable for wall mounting.

### 2. Boiler Modulation

The control system shall incorporate a HWS header temperature PID control scheme. Boilers shall be modulated in "Unison" (all at the same firing rate). Modulation signals shall be 4-20mADC or 0-135 ohm (as required by the boiler) and shall be electrically isolated channel-channel and channel-ground.

### 3. Hot Water Supply (HWS) Temperature Setpoint

When the HWS Temperature control loop is in the "automatic" mode, the control system shall establish the HWS temperature setpoint based on the time of day, day of the week and the outside air temperature. When in "manual" mode the operator may set the HWS temperature via a front panel display. All temperatures and time/date data must be field adjustable through "fill-in-the-blanks" style displays. Alternately, the control system shall accept a 4-20 mADC outdoor air temperature reset setpoint signal from an external Building Automation System (BAS).

### 4. Boiler Sequence

The control system shall utilize both HWS temperature and boiler firing rate percent to start and stop the boilers and shall minimize the total number of boilers in operation. The controller shall start and stop boilers when the HWS temperature is outside the adjustable temperature limit for longer than the adjustable time delay. In order to minimize header temperature deviations the control system shall start and stop the next boiler when the "lead" boiler is at an adjustable firing rate limit for longer than the adjustable time delay. The control system shall monitor both boiler lockout and limit circuits to automatically skip over those boilers that are powered down for maintenance, tripped or otherwise will not start. The lead boiler shall either automatically rotate on a time of day, day of week (or month) schedule, or shall be manually selected by the operator. The boiler shall be run at low fire for warm-up for a preset low fire hold time. The base load ramp rate shall be field adjustable. The control system shall reduce the firing rate to a minimum before stopping a boiler to prevent accumulation of fuel in the furnace.

### 5. Header Pump Sequence

Provide main header primary water pump control to improve fired equipment availability. Start the quantity of header pumps as required for the number of boilers in operation. The control system shall monitor pump outlet flow switch status to automatically start a standby pump when a command to start the pump fails to produce flow. System must keep at least one pump running to ensure water is always moving past the header temperature sensor even after the last boiler has been stopped.

### 6. Boiler Water Flow Control Valve Sequence

Provide boiler water flow valve control to prevent water from flowing through off-line boilers (and lowering the HWS temperature); continue water flow for an adjustable cool down period after the boiler has stopped, and ensure water is always moving past the header temperature sensor even after the last boiler has been stopped. The valve shall be immediately closed if any trips occur during pre-purge, pilot, or main flame trial for ignition.

### 7. Operator Controls, Trends, Indications and Alarms

The control system shall include a 16 line x 40 character (or greater) LCD display for boiler sequence control and status, alarm and event summaries, and setup menus for easy operation, tuning and troubleshooting. Alarms, events and operator actions shall be logged with Time/Date stamp and English language description. The control system shall include a minimum of 200 point memory. The Control System shall include a minimum 100x150 pixel historical trending display or a paperless chart recorder or other videographic hardware to permit the logging of at least 32 data points for at least 45 days. Provide a minimum of 4 "pens" per chart with 8-minute through 24-hour chart "width" selections available.

### 8. Reliability

Include hardwired backup stations to permit manual operation of the plant should the control system require service. Manual operation must be possible when the microprocessor is not functioning. Hardwired "Hand-Off-Auto" control switches must be wired directly into every boiler, pump, and valve Start/Stop circuit. Each 4-20 mADC or 0-135 ohm modulating control output must include a hardwired manual backup station with Auto/Manual switch, output control knob and output level indicator (bargraph, analog meter or digital display).

### 9. Communication

The Control System shall have the ability of simultaneously communicating to a Data Acquisition System (DAS), Building Automation System (BAS) or Building Management System (BMS) via RS485 Modbus protocol and to a Personal Computer and an alphanumeric pager via standard telephone lines. The individual boiler limits, lockout, start/stop, warm standby, and firing rate status shall be readable. Header setpoint, plant firing rate, boiler quantity called to start, boiler selected as lead and all setup parameters shall be readable and writable.

### 10. Quality Assurance

The control system shall be manufactured and labeled in accordance with UL508 requirements (CSA C22.2 #14 for use in Canada). Inspection and labeling shall be supervised by UL or other OSHA approved Nationally Recognized Test Lab (NRTL). The control system shall be a Preferred Instruments, Danbury, CT, **Model JC-CDHWHP-x-P-y** ("x" = boiler quantity from 2 to 5; "-P" for 0-135 ohm; "-I" for 4-20 mA; "y" = pump quantity from 2 to 3).