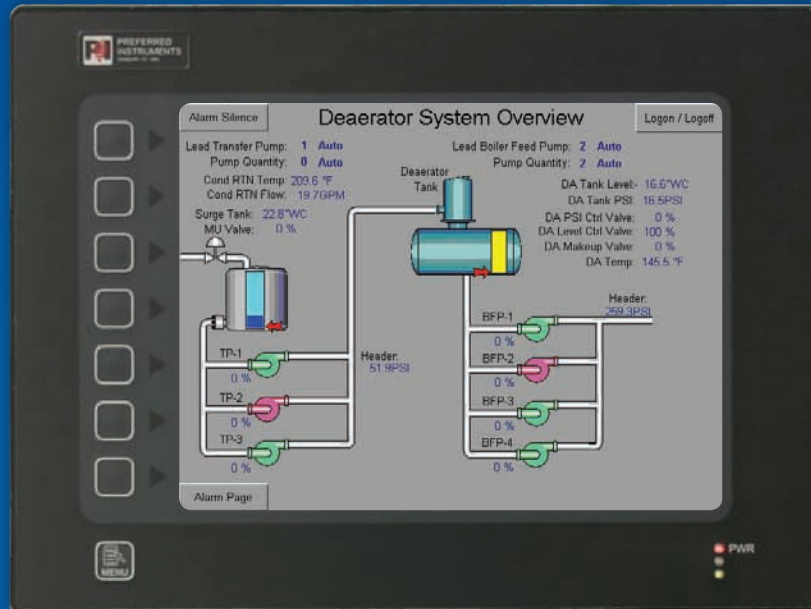


FEEDWATER CENTER



- Control VFDs to Save Electricity
- Communicate Important Plant Information
- Improve Water Quality and Extend Boiler Life

PREFERRED INSTRUMENTS
A Division of Preferred Utilities Manufacturing Corporation



SYSTEM OVERVIEW



The Preferred Feedwater Center Control System

Boiler feedwater control systems are often the most archaic controls in the steam plant. Poor boiler waterside control contributes to scaling, corrosion, and eventually hot spots and tube failures. The Preferred Feedwater Center is designed to improve the control of boiler feedwater by modulating up to four feedwater pumps and three transfer pumps. Deaerator temperature, level, and chemical pumps are controlled to improve boiler feedwater quality. Local feedwater monitoring is available by LCD keypad, or optional 10" color touch screen. Remote monitoring is available by RS232 Modbus, or Modbus over Ethernet if the touch screen is purchased.

“Combustion Technology Since 1920”

Preferred Instruments has been in business continuously since 1920. Located in Danbury Connecticut, our products are proudly made and supported in the United States of America. Our staff of service engineers, field service technicians, and service trained sales engineers are dedicated to making all of your projects a major success.

FEEDWATER CENTER BENEFITS



ENSURE CONSISTENT FEEDWATER TEMPERATURE AND PRESSURE



MAINTAIN PROPER OXYGEN REMOVAL AT ALL FIRING RATES



INTEGRATED MODEM FOR OFF-SITE MONITORING



FIELD ADJUSTABLE PARAMETERS



PLUG-IN OPTION BOARDS AVAILABLE FOR INSTANT FIELD UPGRADES

Deaerator Control

- Ensures a steady flow of properly treated boiler feedwater by precisely controlling deaerator temperature, pressure, and level.
- Secure a continuous supply of make up water to the deaerator by controlling surge tank level.
- Deaerator control allows the user to minimize deaerator venting and boiler blowdown and improve plant efficiency.
- Maintains consistent deaerator temperature and pressure to stabilize steam plant operation.

Pump Control

- Ensures a continuous supply of boiler feedwater with start / stop and PID modulating control of up to four boiler feed pumps, three transfer pumps, and a chemical injection pump.
- Saves electricity with PID control of feed pump and transfer pump variable frequency drives matching pump speed to the actual current load.
- Increase reliability. In headered mode, pumps are automatically start / stopped to guarantee the correct number of pumps are always running.

Automation

- The Feedwater Center operates independently, reassuring proper feedwater conditions to the boilers, even in the event of a pump failure.
- The automatic rotation of lead and lag pumps allows for even wear of pumps without operator input.

Plant Monitoring

- Instantly see the status of all controlled variables from the LCD screen.
- Alarm indications quickly alert plant personnel to upset conditions providing corrected before interrupting boiler operations.
- Trend screens help diagnose problems so stationary engineers can take corrective action.
- RS232 Modbus interface allows remote viewing of important Feedwater Center variables. Remote control of certain inputs helps automate plant operations for unmanned or remote boiler rooms.

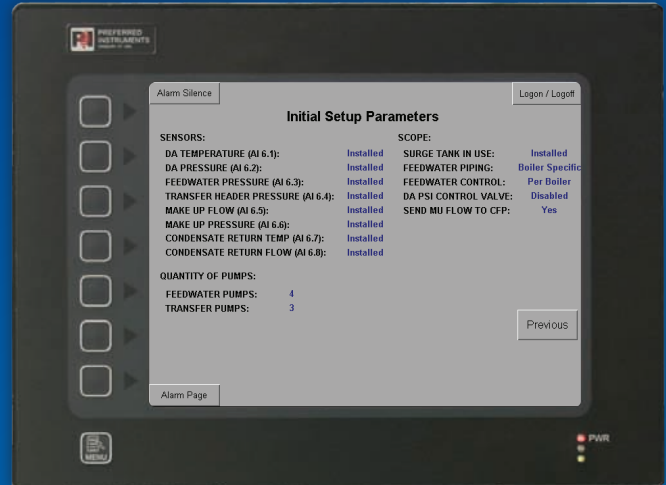
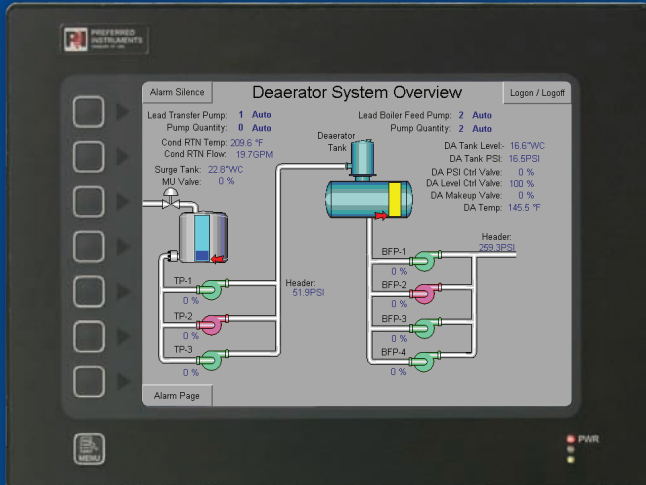
Optional Color Touch Screen

- 10" operator color touch screen provides vivid graphical representations of boiler plant equipment, trending of plant parameters, and alarm annunciation.
- Touch screens also provide Modbus over Ethernet communications.

TOUCH SCREEN OPTIONS

Ease of Use

The Feedwater Center is easy to set up by parameter selection. No programming is required. The system is easily customized to the particular equipment at each plant. The controller is based on the industry-proven Plant Wide Controller and the same color touch screen used for all Preferred control systems. Below are some examples of the interactive touch screens. There are over 20 custom screens.

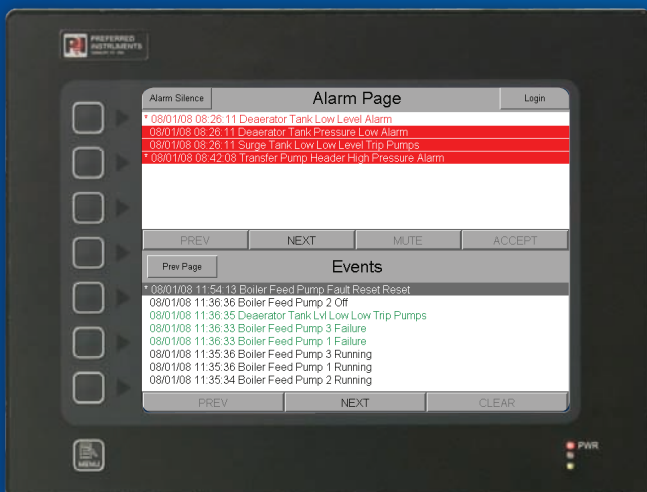


Touch Screen Overview

The optional 10" Operator Interface Terminal (OIT) touch screen provides graphical representation of current system status. Pump status, level indication, and valve position are all readily available on the system overview page.

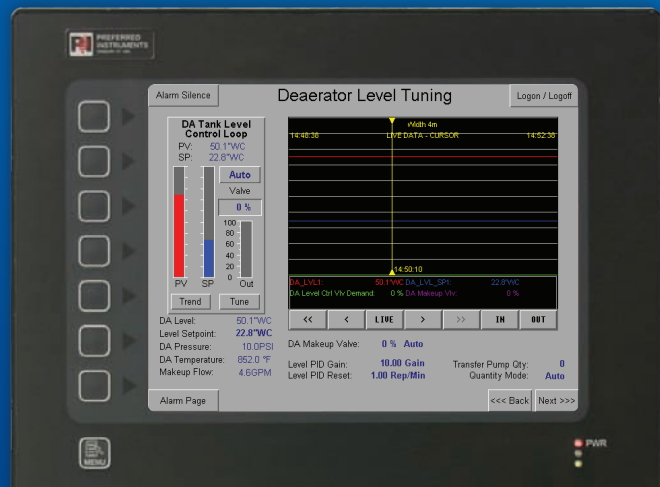
Setup Parameters

All parameters are available through the setup pages on the touch screen. System features and control logic are adjusted depending on the initial setup parameters.



Alarm Page

The alarm and events screen lists all current alarms and all recent control events. This screen helps diagnose boiler before they impact boiler operation.



Tuning Page

Tuning pages allow the user to view control loops for tuning purposes. Historical data is saved to a compact flash card and can be viewed through a PC.

MANUFACTURING



Design

We boast a fully staffed engineering department ready to provide drawings, panel wiring drawings, sequence of operations, SAMA drawings, and O&M manuals. Our engineering department uses state-of-the-art engineering tools to streamline the engineering process.



Construction

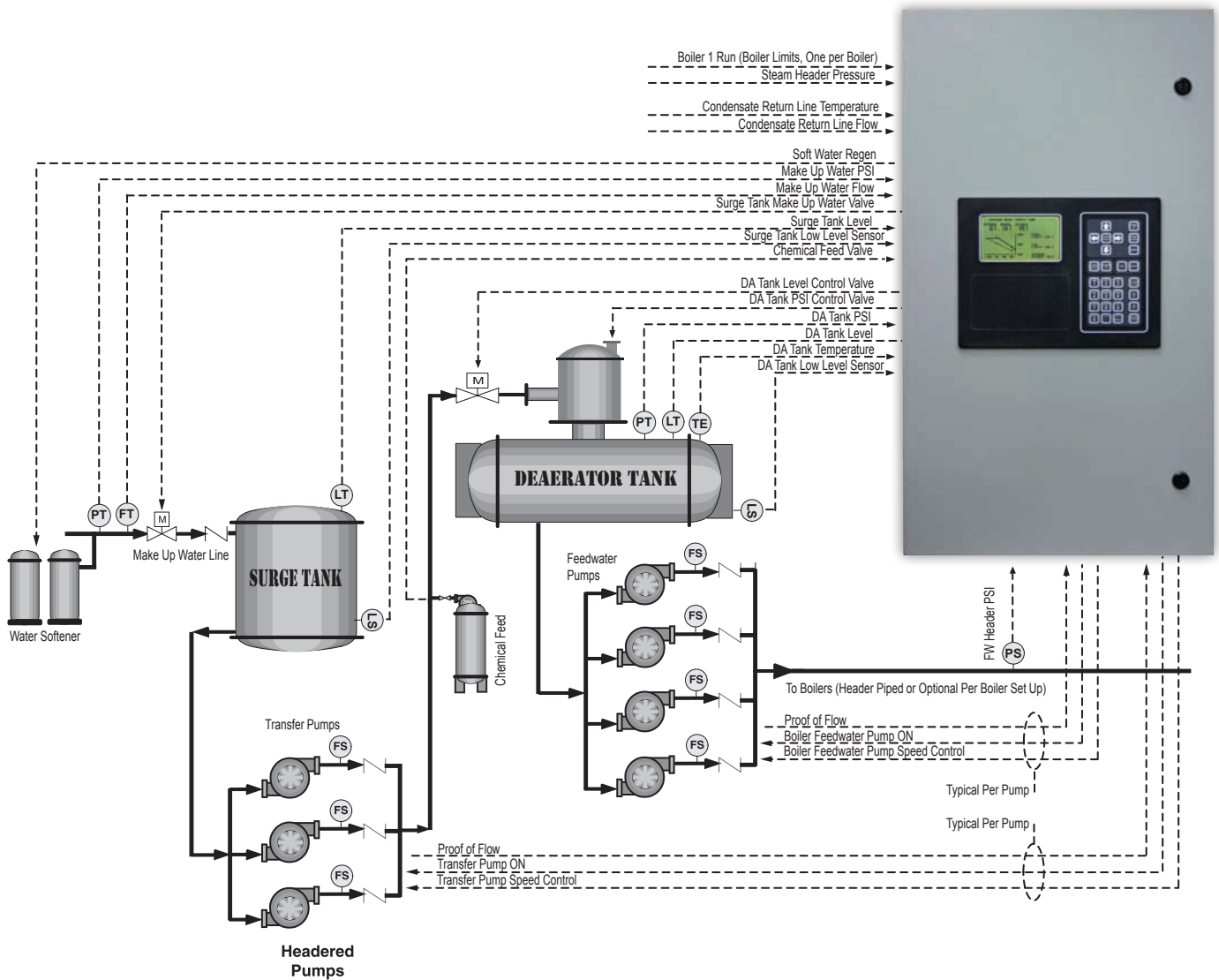
The Feedwater Center is housed in a NEMA 4 enclosure for installation in potentially wet areas. This wall-mount enclosure can be mounted on the side of a boiler, or on a wall in a central location. Only 120 VAC (12 amp) power is required.



Quality Assurance

The unique types of problems that we solve for our customers require the implementation of an effective quality assurance program. Our record of strict adherence to established quality standards and industry practices has made us the leader in our field.

FULL CONTROL SCHEMATIC



Application

The Feedwater Center Model JC-FWC-FC includes all available features and capabilities required to control feedwater delivery systems including DA level and pressure control, surge tank level control, transfer pump control, feedwater pump control, chemical feed pump control and water softener regeneration.

ORDERING INFORMATION

The Preferred Feedwater Center is available in four models, each with different capabilities. To select the correct model for each application, consult the hardware configurations.

Model Number	Description	PWC Hardware Configuration
JC-FWC-FC	Full Control	PWCN4-CDRO00A
JC-FWC-FC-OIT	Full Control WITH 10" OIT	PWCN4-CDRO00A
JC-FWC-NV	No VSD Control (on-off control of pumps)	PWCN4-CDROxxA
JC-FWC-NV-OIT	No VSD Control (on-off control of pumps) with 10" OIT	PWCN4-CDROxxA
JC-FWC-NS	No Surge Tank/Transfer Pumps	PWCN4-CDH00xA
JC-FWC-NS-OIT	No Surge Tank/Transfer Pumps with 10" OIT	PWCN4-CDH00xA
JC-FWC-NVS	No VSDs and no Surge Tank/Transfer Pump	PWCN4-CDHxxxx
JC-FWC-NVS-OIT	No VSDs and no Surge Tank/Transfer Pump with 10" OIT	PWCN4-CDHxxxx

JC-FWC- <u>xxx</u>	-FC	-NV	-NS	-NVS	Field Device
Digital Inputs					
FW Pump Running	4	4	4	4	120 VAC - (e.g. current sensing relay)
Boiler Running/Call For Water	4	4	4	4	120 VAC - BLR Run/Drum Level Switch
TP Pump Running	3	3			120 VAC - CSR/Aux Contact Motorstarter
DA Low Level Cutoff Switch	1	1	1	1	120 VAC - Level Switch
ST Low Level Cutoff Switch	1	1		1	120 VAC - Level Switch
Water Softener Alarm	1	1	1	1	120 VAC - Contact From Softener
Disable	1	1	1	1	120 VAC - Contact From BAS
Analog Inputs					
DA Level	1	1	1	1	4-20mA Level Transmitter
DA Temperature	1	1	1		Thermowell (part numbers 70610, 70611)
DA PSI	1	1	1		4-20mA PSI Transmitter (part number 7060X)
FW Header PSI	1	1	1	1	4-20mA PSI Transmitter (part number 7060X)
Steam PSI	1	1	1		4-20mA PSI Transmitter (part number 7060X)*
Makeup Flow	1	1	1		4-20mA Flow Meter
Makeup Pressure	1	1	1		4-20mA PSI Transmitter (part number 7060X)
Condensate Return Temperature	1	1	1		Thermowell (part numbers 70610, 70611)
Condensate Return Flow	1	1	1		4-20mA Flow Meter
Surge Tank Level	1	1			4-20mA Level Transmitter
Digital Outputs					
FW Pump Start	4	4	4**	4**	Dry Contact (close to start)
TP Pump Start	3	3			Dry Contact (close to start)
Water Softener Regen Cycle	1	1	1**		Dry Contact (close to start)
Analog Outputs					
FW Pump Speed	4		4		4-20mA Output
TP Pump Speed	3				4-20mA Output
ST MU Water Valve	1	1			4-20mA Output
Chem Feed Pump	1	1	1		4-20mA Output
DA PSI Control Valve	1	1	1		4-20mA Output
DA Level Control Valve	1	1	1		4-20mA Output

*Steam PSI transmitter must be scaled similar to the Feedwater PSI transmitter

**HOA switches provided on -NS and -NVS models



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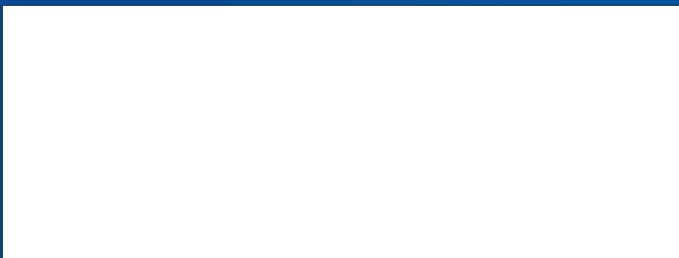
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CS-FWC-1



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