INSTALLATION, OPERATION & MAINTENANCE

MANUAL

Client Name	
Project Name	
Vendor Name	Exergy, LLC / Hydropure Systems
Item	40 LPM POU Cooler
Tag Number	HE-4113
Model Number	03376
Serial Numbers	55000
Document Number	HPS-8662-IOM-001

-	1/12/17	Initial Release	
Rev No.	**Issue Date**	**Description**	**Remarks**

TABLE OF CONTENTS

1.0 Overview

The Exergy/Hydropure Point-of-Use (POU) system dispenses cooled Water-for-Injection (WFI) from a heated distribution loop upon demand. When not in use, hot water flows through the system continually to maintain sanitization. The system is fully drainable on the product side with no dead legs, and can be used as a low point drain for the entire loop.

The system is easy to install, operate and maintain. It is delivered fully tested, passivated and ready for use. A Human/Machine Interface (HMI) is provided to display the current state of the system, and has simple interface to start and stop the dispensing cycle.

The POU incorporates Exergy's sanitary shell and tube heat exchanger to provide maximum thermal capacity in the smallest envelope. The double tubesheet construction eliminates the risk of any cross-contamination between the Chilled Water and the WFI.

The POU system described in this manual is designed to meet the following conditions:

	Process Side	**Utility Side**
Fluid	WFI	Chilled Water (w/ 38% glycol)
Flow Rate	40 LPM	203 LPM
Temperature In	85.0 °C	34 °F
Temperature Out	25.0 °C	57 °F
Surface Finish	≤20 µin RA (SF1)	N/A

2.0 Safety Warnings & Precautions

When working with the POU system, basic safety precautions must always be followed to reduce the risk of personal injury or death, fire, electric shock, and/or equipment damage. Particular attention should be paid to the following:

Do not allow persons to install, start-up, operate or perform maintenance on the POU system unless they have carefully read and understand all instructions and safety warnings and precautions in this manual.

Extreme caution must be taken when unpacking the crate to prevent possible injury from nails, screws, sharp edges, or any other packaging materials.

The POU system is heavy and must be properly lifted and supported. Lifting devices such as hoist rings, shackles, slings, and spreaders must be rated for the entire load being lifted. Do not attach lifting devices to inlet or outlet ports.

Ensure the POU system is properly secured during transportation and installation.

Ensure the POU system is securely mounted to the wall. Mounting hardware must have sufficient strength to support the weight of the POU system and must be screwed into wall studs or other structural supports.

Electrical connections must be made by certified electricians in compliance with local electrical codes and grounding practices.

Ensure power to the POU system is turned off and locked out before opening the enclosure.

Never operate the POU system under conditions that exceed the maximum temperature or pressure ratings.

The POU system utilizes very hot water and extreme caution must be exercised during start-up, operation and maintenance of the POU system to prevent severe burns.

Personal Protective Equipment (PPE), including safety-toe boots, safety eyewear and other adequate protection should always be worn while working in and around the POU system.

3.0 Installation

Before installation, the responsible persons should be duly informed of the operation of the POU system and the Safety Warnings and Precautions (Section 2.0). This manual should be available to personnel at all times.

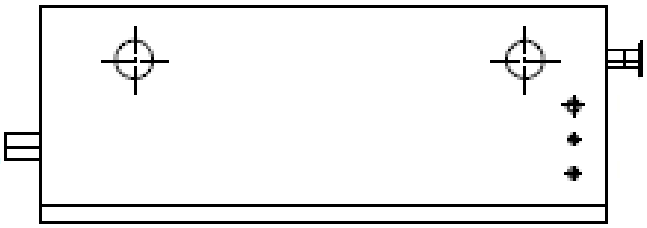
3.1 Mounting of POU

- Attach the POU system to the wall utilizing hardware of sufficient strength to bear the weight of the system while full.
- Ensure the hardware is installed into rigid supports.
- Never hang the system from plumbing alone.
- Ensure that the inlet and outlet ports of the system are aligned with the facilities plumbing connections.
- Mount the POU system vertically to maintain drainability.

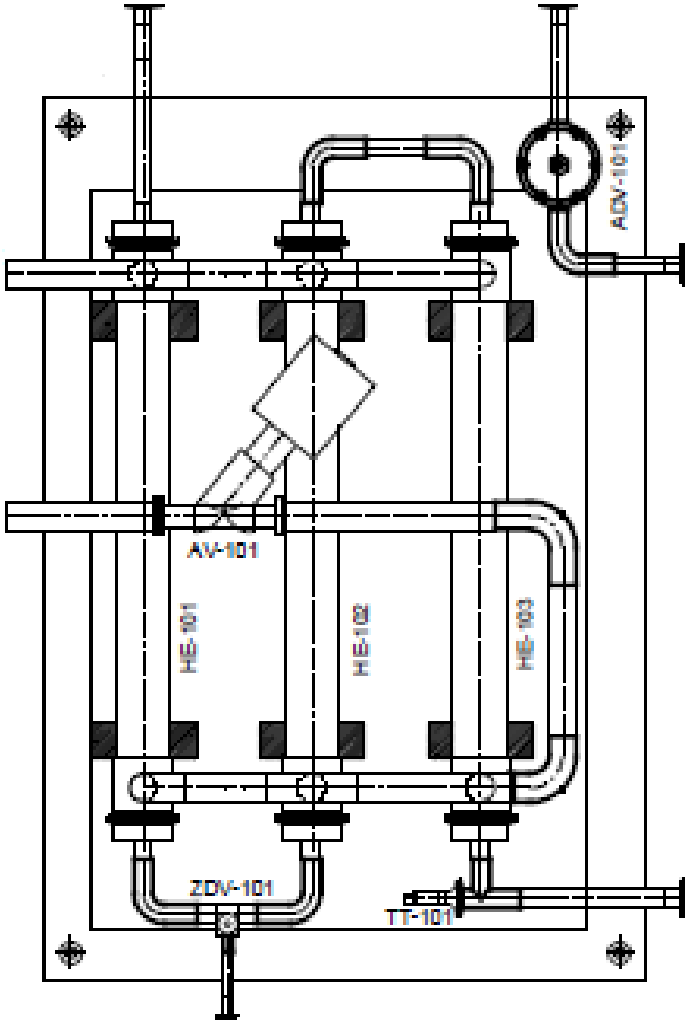
3.2 Connecting of POU

Make the following connections between the POU and the facility (or exterior valves if applicable):

NOZZLE	SIZE	CONNECTION TYPE	DESCRIPTION	MOC	CABINET LOCATION
N1	1.5”	FNPT	Chilled Water Inlet	SS 316L	Left Side
N2	1.5”	FNPT	Chilled Water Return	SS 316L	Left Side
N3	1/2”	Sanitary Tri Clamp	WFI Drain	SS 316L	Bottom
N4.1	1”	Sanitary Tri Clamp	WFI Sub Loop Supply	SS 316L	Right Side
N4.2	1”	Sanitary Tri Clamp	WFI Sub Loop Return	SS 316L	Right Side
N5	1”	Sanitary Tri Clamp	WFI Inlet	SS 316L	Top
N6	1”	Sanitary Tri Clamp	WFI Return	SS 316	Top
N7	1/4”	FNPT	Air Inlet to AV101	SS	Top
N8	1/4”	FNPT	Air Inlet to ADV101	SS	Top
N9		SS Gland	Cable Connection to TT101	SS	Top



TOP VIEW

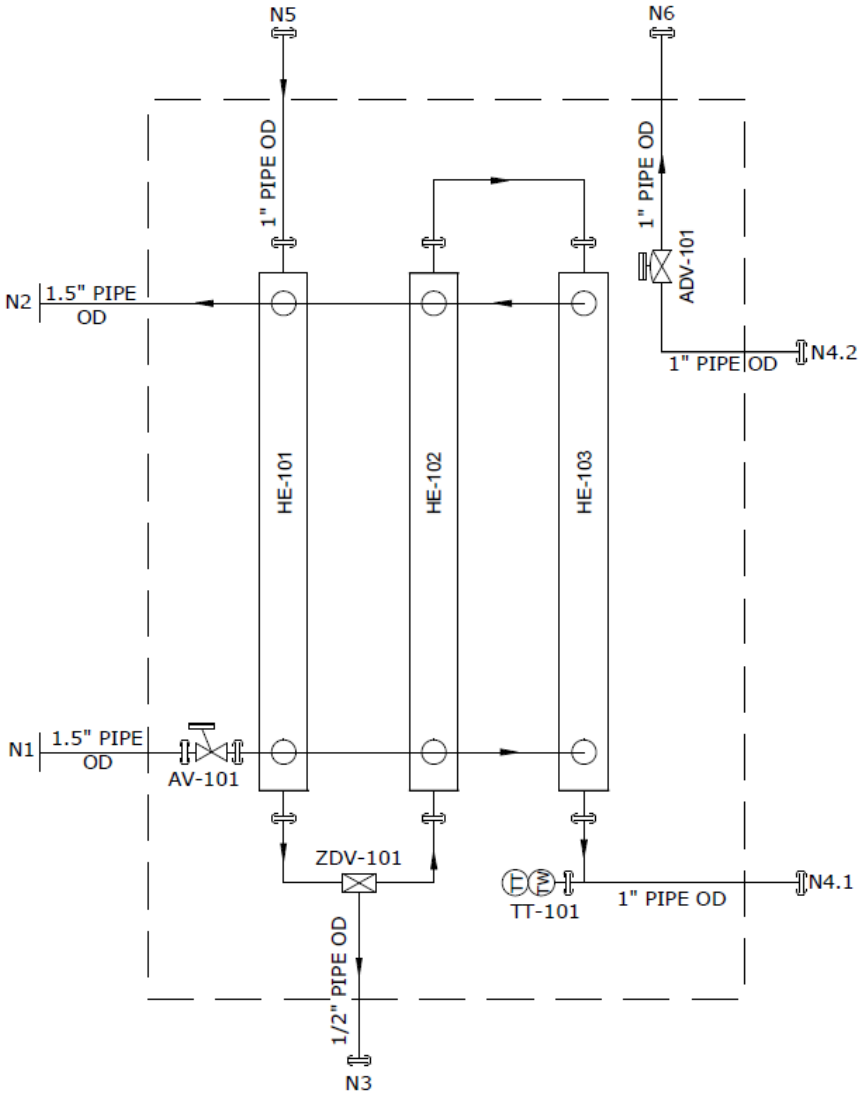


FRONT VIEW

4.0 Start-Up

Before start-up, the responsible persons should be duly informed of the operation of the POU system and the Safety Warnings and Precautions (Section 2.0). This manual should be available to personnel at all times.

Caution: During transit of the POU system, the sanitary tri-clamps may loosen. It is important to inspect all connections to verify there are no leaks. If a leak is found, remake the connection (change the gasket if necessary).



Piping & Instrument Diagram (P&ID)

4.1 Air Pressure Regulator

- Ensure air pressure regulator is set to 90 psi (6 Bars).

4.2 Filling and checking the POU

- Check and confirm that the manual WFI return valve is fully open.
- Log into the POU as either a supervisor or a manager and enable the Manual Mode (refer to section 5.0).
- Confirm on the HMI that the return to header valve (ADV-101) is open (green).
- The next step is to open the manual WFI inlet valve. Manually turn the valve handle counterclockwise and gradually introduce hot WFI into the POU. If the system shows no signs of issues, then continue turning the valve handle until the valve is completely open.
- Back at the HMI, open the Chilled Water inlet valve on the POU by pressing the Chilled Water inlet valve icon (AV-101) and turn it to green.
- After all checks of the Chilled Water piping are complete, press the Chilled Water inlet valve icon again and turn it red.
- After all checks of the piping carrying the hot WFI through the POU are complete, the user can chose to close the manual WFI inlet valve.

4.3 Setting the Standby Flowrate

If the facility has the requirement for establishing 1 meter/sec of constant hot WFI flow through the POU to maintain sanitization when not in use (or in Standby), a bolt-on or strap-on flowmeter is required. Once attached and calibrated,

- Check and confirm that the manual WFI return valve is fully open.
- Log into the POU as either a supervisor or a manager and enable the Manual Mode (refer to section 5.0).
- Confirm on the HMI that the return to header valve (ADV-101) is open (green).
- The next step is to open the manual WFI inlet valve (if not already open). Manually turn the valve handle counterclockwise and continue turning the valve handle until the valve is completely open.
- If the flowrate is too high or low, adjust the manual header valve to achieve the desired flowrate (closing the header valve should increase the flow and opening should decrease the flow). The manual WFI inlet can also be used to reduce the flowrate if the header valve is fully open and the flowrate is still too high.

4.4 Setting the Dispensing Flowrate

To determine the dispensing flowrate of the POU, either connect a flowmeter to the dispense point or use a stopwatch and container of known volume.

- Ensure that the manual WFI inlet valve is fully open (or set previously for setting the Standby Flowrate).
- Log into the POU as either a supervisor or a manager and enable the Manual Mode (refer to section 5.0).
- Confirm on the HMI that the return to header valve (ADV-101) is open (green).
- To bring the temperature of WFI down to a safe temperature for dispensing, open

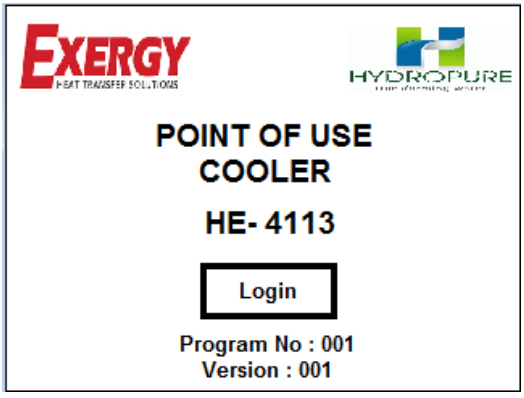
the Chilled Water inlet valve (AV-101) by pressing on the icon and change the color from red to green. Allow the Chilled Water to run through the heat exchangers for approx. 8 to 10 seconds.

- Then, close the return to header valve (ADV-101) by pressing on the icon and changing the color from green to red.
- Open the remote dispensing valve via whatever means is available to open.
- Measure the flow rate.
- If the flowrate is too high or low, adjust the stroke limiter on the dispensing valve to achieve the desired flowrate.
- Once the desired flow rate is achieved, close the dispensing valve. On the POU HMI, open the return to header valve (ADV-101) by pressing on the icon and changing the color to green, and close the Chilled Water inlet valve (AV-101) by pressing on the icon and changing the color to red.

5.0 Operation

⚠ Before operation, the responsible persons should be duly informed of the operation of the POU system and the Safety Warnings and Precautions (Section 2.0). This manual should be available to personnel at all times.

5.1 Home Screen



The Home Screen will appear when power is initially turned on or when power is restored from a power failure after the system has fully loaded.

- **To Login:** Press the "Login" button to display a pop-up keyboard allowing the user to enter their user name and password. Type in one of the three user names and then press the tab key. Then type the associated password and press enter arrow key. The system will then take you to the Welcome screen.

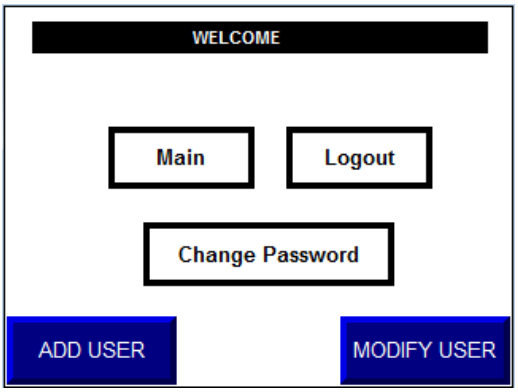
5.2 User Security Levels

The POU system includes three levels of security - Operator, Supervisor, and Manager. A user is required to login with a password to operate the system. Listed below are the security levels and default passwords:

User	Default Password	Access Rights
Operator	1234	Auto Mode, acknowledge alarms and change own password
Supervisor	12345	Auto Mode, acknowledge alarms, change own password and access to Manual Mode
Manager	55555	Auto Mode, acknowledge alarms, access to Manual Mode, ability to change own password, change Settings and HMI configurations

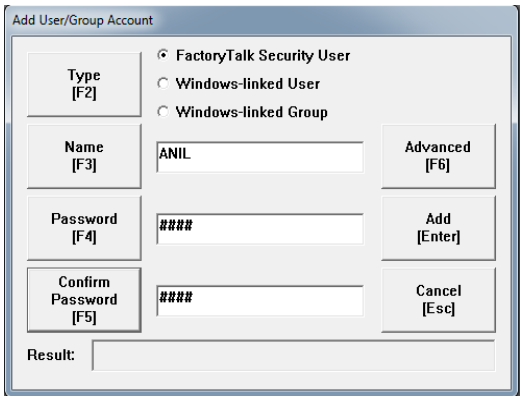
Passwords can be up to 15 characters in length and contain special characters.

5.3 Welcome



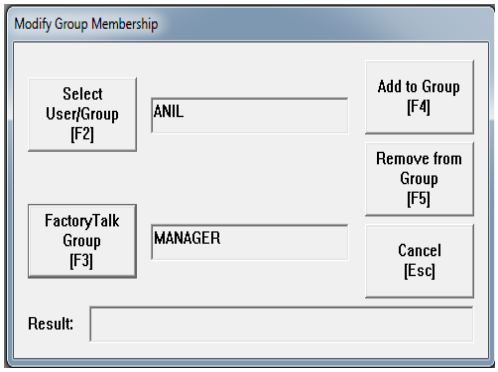
- Main button displays the Main screen
- Logout button allows the user to log out
- Change Password button allows the user to change his/her password
- Add User button allows a new user to be added into the system.
- Modify User button allows for the assignment of the security level of any user.

To add a user, press the Add User button and the following screen will appear.



The "Type" should remain as FactoryTalk Security User. Enter the Name, then create a Password, reenter the password, then press "Add/Enter". The "Advanced" button is used to block or unblock a user.

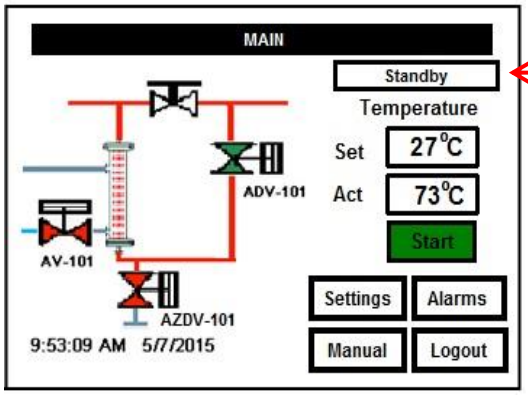
To assign or modify the security level to a user, press the Modify User button and the following screen will appear.



Select a user, select the level of security from FactoryTalk Group, then press either Add to Group or Remove from Group.

5.4 Main Screen

After pressing the Main button in the Welcome screen, the following screen will appear.



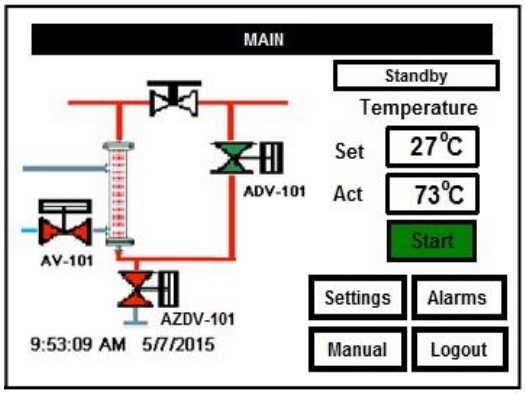
The Main screen is where the user can see the status of the system, start the dispensing cycle in Auto Mode, and have access to the functionality of the system. The state of the automated valves is indicated by the color either red (closed) or green (open) and the manual header valve is displayed in white. Also shown is the set point temperature for dispensing (Set) and the actual temperature currently of the WFI (Act).

5.5 Auto Mode

Auto Mode allows the user to start dispensing automatically by pressing the "Start" button. The POU system will cycle through the following stages:

Standby Stage

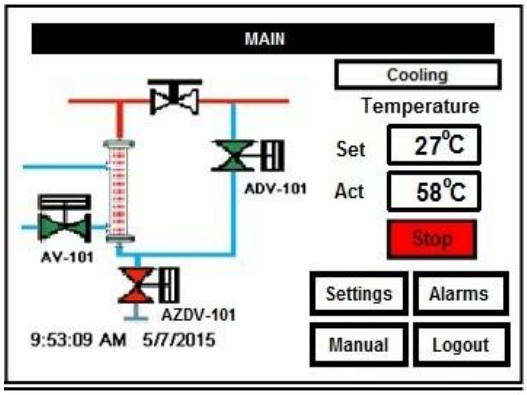
When in Standby (not dispensing), the POU is a subloop to the main WFI loop. The dispensing valve (AZDV-101) and the Chilled Water inlet valve (AV-101) are closed, while the return to header valve (ADV-101) remains open.



When the operator hits the Start button, the POU will automatically enter the Cooling stage.

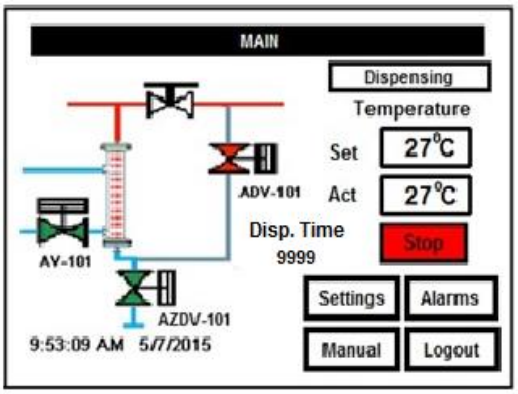
Cooling Stage

In the Cooling Stage, the Chilled Water inlet valve (AV-101) will open. The heat exchangers begin to cool the WFI. The dispensing valve (AZDV-101) remains closed until the set temperature is reached.



Dispensing Stage

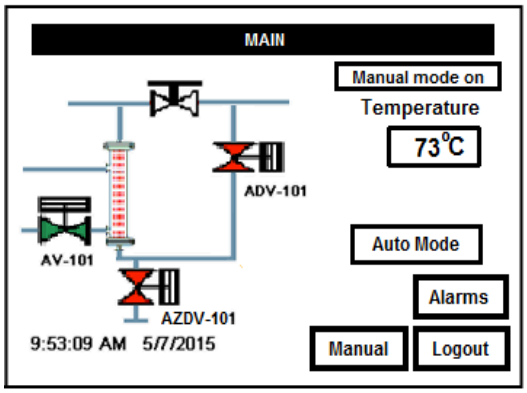
Once the WFI flowing though the heat exchangers reaches the desired temperature, the return to header valve (ADV-101) will close and the dispensing valve (AZDV-101) will open.



Once dispensing is stopped, either by the operator pressing the stop button or an alarm condition, the dispensing valve closes, the return to header valve (ADV-101) opens and the Chilled Water inlet valve (AV-101) closes. The WFI then begins to heat back up and the POU has now returned to Standby.

5.6 Manual Mode

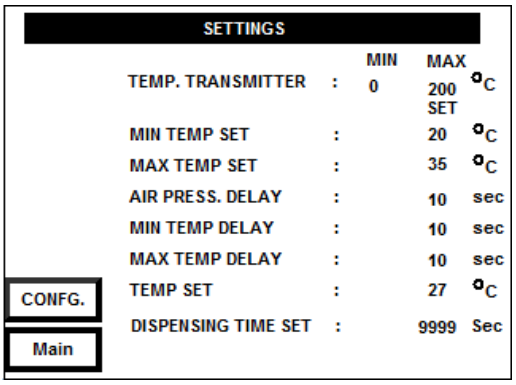
Manual Mode allows the user to control the state of each valve individually. To navigate to the Manual Mode screen, press the "Manual" button on the Main screen. The initial Manual Mode screen will show that the system is in Auto Mode and the user will need to press "Auto Mode" button in order to switch to Manual Mode. Now the user can press the valve icon to manually open (green) and close (grey) the valves.



Important: Before returning to the Main screen, ensure the system is in Auto Mode and the status shows Standby. This is accomplished simply by pressing the "Auto Mode" button. Failure to change the status back to "Standby" before leaving Manual Mode will cause the system to not operate properly while in Auto Mode.

5.7 Settings

The Settings screen is where the Manager can change any of the alarm parameters (or change the Temperature Setpoint of the dispensing WFI). A brief explanation of each parameter is listed below. To change a parameter, press on the value and a keypad will pop-up. Enter the desired value and then press the enter key.



1) The Settings screen is only accessible for users logged in as Manager.
2) The parameters can be changed by selecting the item and using the pop-up keypad to change the value
3) "Main" button displays the Main screen.
4) "CONFG." button displays the hardware configuration screen.

5.7.1 Parameter Details

- **TEMP TRANSMITTER**
  This is the range of the temperature transmitter and should be set to match the range of the instrument (parameter range is 0 to 400).
- **MIN TEMP SET**
  Sets the alarm threshold for the minimum temperature alarm. If the dispense water is below this temp for longer than the time set in the minimum temperature delay setting, then an alarm will be generated (parameter range is 0 to 200).
- **MAX TEMP SET**
  Sets the alarm threshold for the maximum temperature alarm. If the dispense water is above this temp for longer than the time set in the maximum temperature delay setting, then an alarm will be generated (parameter range is 0 to 200).
- **AIR PRESS DELAY**
  Sets the air pressure alarm time delay. If the pneumatic air pressure falls below the alarm threshold value for more than the time set in this parameter, then an alarm will be generated (parameter range is 0 to 999).
- **MIN TEMP DELAY**
  Sets the minimum temp alarm time delay. If the temperature measurement is below the alarm threshold value for more than the time set in this parameter, then an alarm will be generated (parameter range is 0 to 999).

- **MAX TEMP DELAY**
  Sets the maximum temp alarm time delay. If the temperature measurement is above the alarm threshold value for more than the time set in this parameter, then an alarm will be generated (parameter range is 0 to 999).
- **TEMP SET**
  Sets the temperature at which the dispensing valve (AZDV-101) will open (parameter range is 0 to 200).
- **DISPENSING TIME SET**
  Sets the maximum time the POU can dispense cold WFI (parameter range is 0 to 99999).

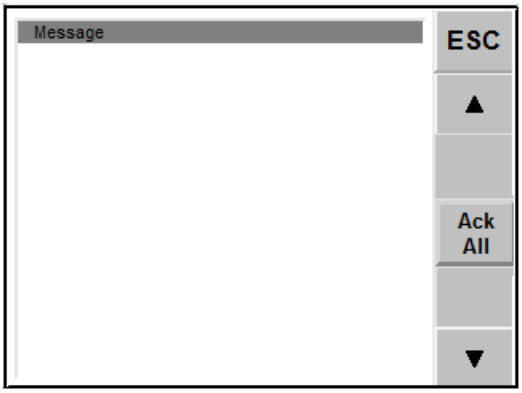
5.7.2 Date and Time

To set or change the date and/or time, press the Settings button, then the CONFG button, then the Terminal Settings button, then scroll down until Date and Time is displayed, press return, then enter the desired date and time in the appropriate file. Press the close button several times, then Run Application (not Exit) to save the changes and return to the Home screen.

5.8 Alarms

5.8.1 Alarm Messages

In the event an alarm occurs, the alarm message will appear on whichever screen the operator is in at the time and can be acknowledged and closed at the source. If the operator does not successfully acknowledge and close the alarm, the POU will be inoperable and the status box of the Main screen (in the upper right corner) will continue to display the status “System Alarms”. In the event the operator wants to see what alarms just occurred or the history of the alarms, press the Alarms button on the Main screen and the following screen will appear.



1) “ESC” button displays previous screen.
2) “Ack All” button acknowledges all alarms.
3) Up and Down arrows scroll through the list of alarms.

List of Alarm Messages

Alarm Message	System Response	Action Required
WFI TEMP LOW	Alarm is generated	Verify that the chilled water and WFI temperatures are correct
WFI TEMP HIGH	Alarm is generated	Verify that the chilled water and WFI temperatures are correct
TEMPERATURE SENSOR OPEN	Alarm is generated and POU switches to Standby	Check temperature sensor
AIR PRESSURE LOW	Alarm is generated	Check the Air Pressure gauge is at 90 psi
EMERGENCY PRESSED	Alarm is generated and POU switches to Standby	Verify it is safe to release from emergency condition and then release the emergency switch
SYSTEM TRIP, CHECK EMG, AIR PRESS & TEMP	Alarm is generated and POU switches to Standby	Check the alarm that was initiated

The alarm "SYSTEM TRIP, CHECK EMG, AIR PRESS & TEMP" will be activated when the POU has already begun its Auto Mode to cool down the WFI (or while dispensing) and one of the critical alarms is generated.

When the Emergency Stop is pressed at any stage, the POU will stop functioning and remain inoperable until the Emergency Stop is released. Then once released, return the POU to Standby.

6.0 Maintenance

Before performing maintenance, the responsible persons should be duly informed of the operation of the POU system and the Safety Warnings and Precautions (Section 2.0). This manual should be available to personnel at all times.

Ensure power to the POU system is turned off and locked out before opening the enclosure.

6.1 Draining the POU

The dispensing valve (AZDV-101) can be used to drain the POU system or as a low point drain to drain the entire loop. Using the Manual Mode, open the dispensing valve (AZDV-101) by pressing on the icon and changing the color to green. Once completed, close the valve by changing the color to red.

6.2 Steam-In-Place (SIP)

If utilizing SIP process to clean the WFI side of the POU system, follow these instructions:

Caution: Extreme caution must be exercised during this process to prevent severe burns.

Prepare POU system for SIP process:

- Switch system to Manual Mode;

- Open the dispensing valve (AZDV-101);
- Ensure that the return to header valve (ADV-101) is open and the Chilled Water inlet valve (AV-101) is closed;
- Steam traps must be installed at any open outlets that will be exposed to steam.

After the SIP process is complete, drain all condensate from the system. Close the dispensing valve (AZDV-101) and allow the system to cool.

6.3 Spare Part List

The following is a list of parts that may need to be replaced and are available from Exergy.

- Gasket for 1/2" tri-clamp
- Gasket for 1" tri-clamp
- Diaphragm for manual block valves
- Diaphragm for auto diaphragm valves
- Solenoid valves
- Air regulator filter