TYPE SLC

Shipco® Logic Controller
Program Manual
For Condensate Units

July 2018

OVERVIEW

Features

- **Live graphical and numeric indication for water level and temperature via the Shipco® Transmitter.**

- **Operates up to 3 pumps.**
  - Alternating control — Automatically changes lead pump on each cycle.
  - Manual control — LEAD-LAG(-LAG2)-OFF selector switch.
  - Test button bypasses control sequence to energize pumps until button is released.
  - Pump graphics change color to indicate status (Green = ON, Red = FAULT, Grey = INACTIVE).
  - Run Cycle Timers with manual reset.

- **Failure indication and protection.**
  - High water alarm indicates overflow.
  - Low water alarm indicates leaking tank.
  - High temperature alarm indicates traps failed open.
  - High temperature shutoff protects pumps from cavitation.
  - Automatically adds cooling water to maintain operating temperature (optional).
  - Alarm ledger automatically logs any irregular operating conditions.
  - Loss of sensor signal indicators.

- **BACnet IP communication with remote control override capability.**

- **Factory programmed for the operating conditions of each unit.**

OVERVIEW

Menu Navigation
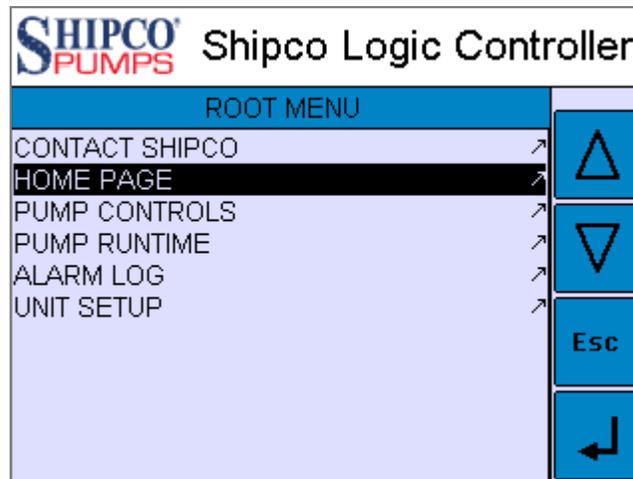
 The controller is equipped with a touch screen. Simply tap menu items or use the Up and Down arrow keys to highlight menu options.

 Pressing the *Esc* key will return to a previous screen or cancel an action.

 Pressing the *Enter* key will confirm and execute the action of the highlighted menu option (for example an action will be to input a value or go to another screen).

 The **Root Menu** screen can be accessed from any page during standard operation using the blue menu button in the lower right hand corner of the screen.
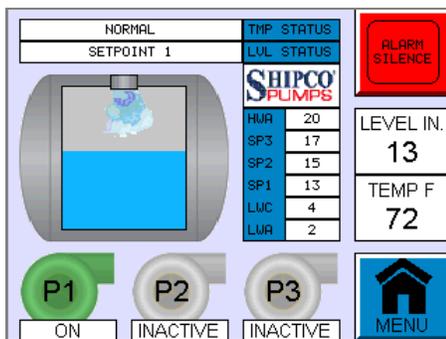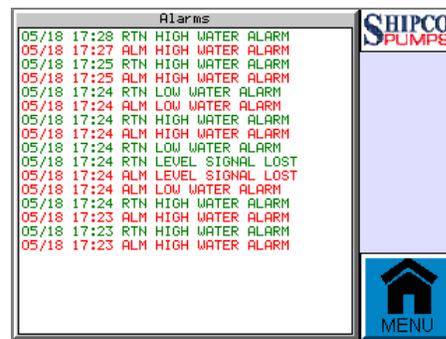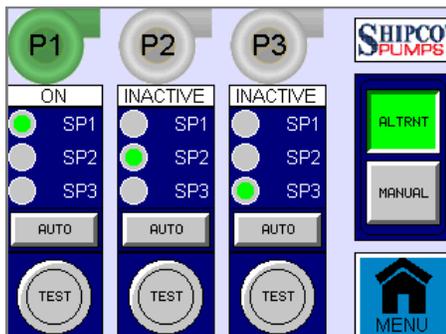
OVERVIEW

Root Menu
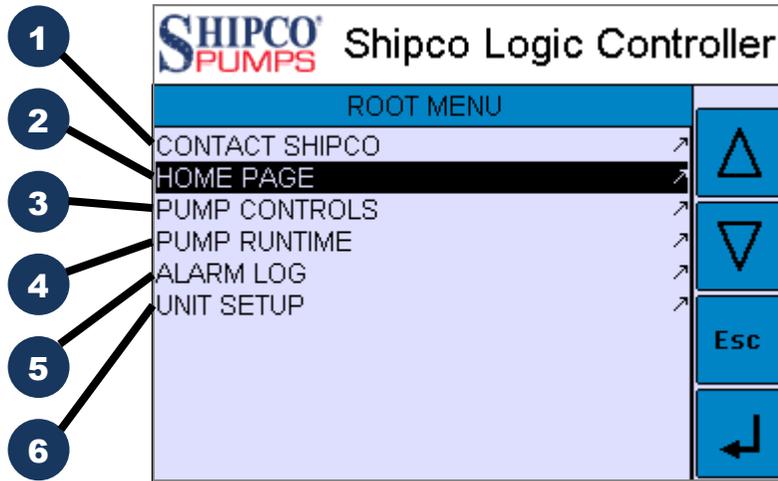
1 CONTACT SHIPCO

2 HOME PAGE

3 PUMP CONTROLS

4 PUMP RUNTIME

5 ALARM LOG

6 UNIT SETUP

HOME PAGE

Water Level
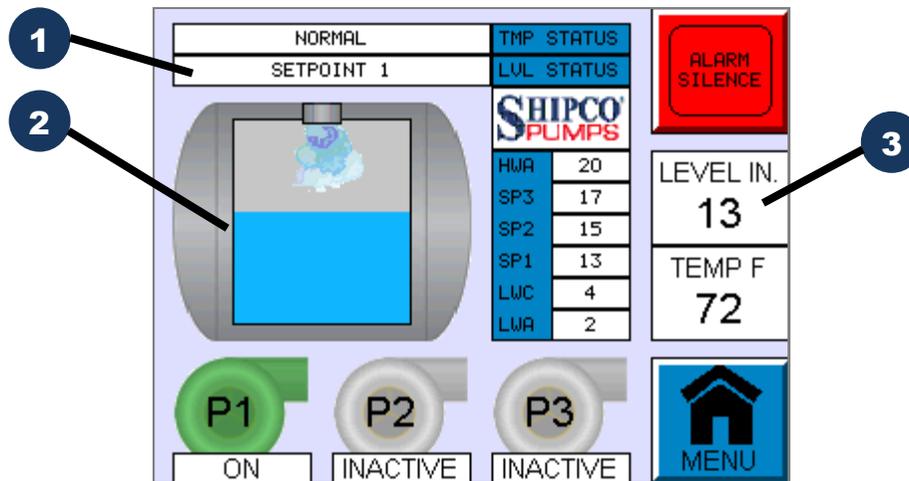
1. Level Status

LOW WATER ALARM	Traps failed closed.
PUMPS OFF	Water is below the cut-off set point. All pumps will be de-energized.
SETPOINT 1	Water level is above the 1st set point. One pump will run (if available).
SETPOINT 2	Water level is above the 2nd set point. Two pumps will run (if available).
SETPOINT 3	Water level is above the 3rd set point. Three pumps will run (if available).
HIGH WATER ALARM	Overflow or possible flooded state.

2. Level Graphic

Rises and falls according to the water level in the tank. Graphic changes color when set points are reached or to indicate an alarm state.
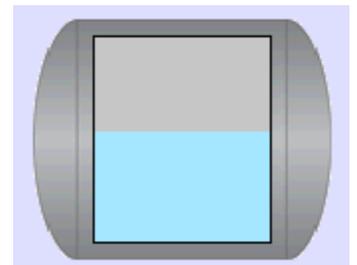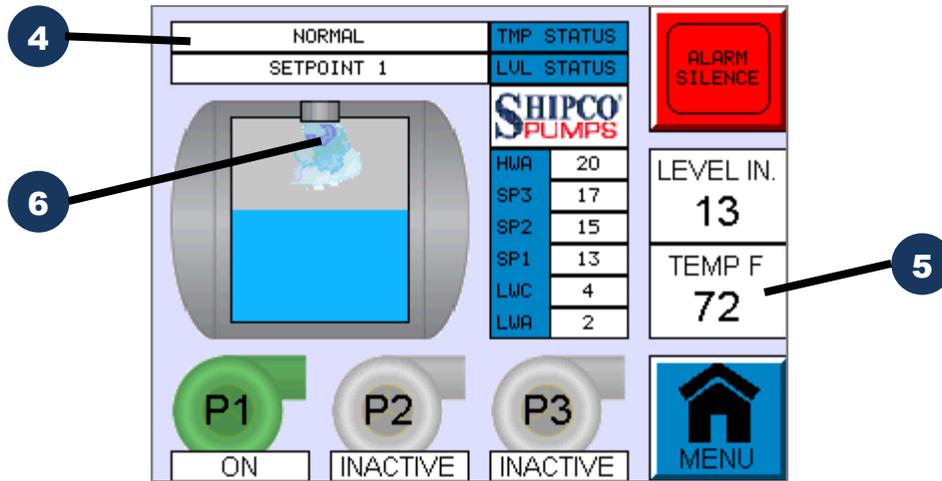

3. Level Indicator

Numeric readout of water level expressed in inches. Indicator will blink "SIG LOST" to indicate a loss of signal.

HOME PAGE

Water Temperature

4. Temperature Status

NORMAL	Water temperature is within normal range.
COOLING WATER	Cooling water solenoid is on (if available).
HIGH TEMP	Traps failed open.
PUMP SHUTOFF	Protects pumps from cavitation.

5. Temperature Indicator

Numeric readout of water temperature expressed in °F. Indicator will blink "SIG LOST" to indicate a loss of signal.
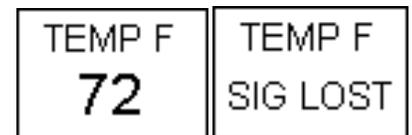
6. Cooling Water

The "spray" graphic shows to indicate cooling water from a solenoid valve (if available).

HOME PAGE

Pump Status & Set Points

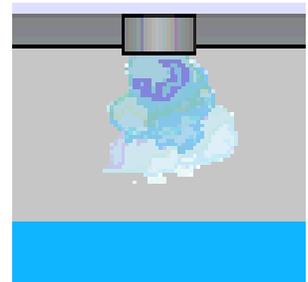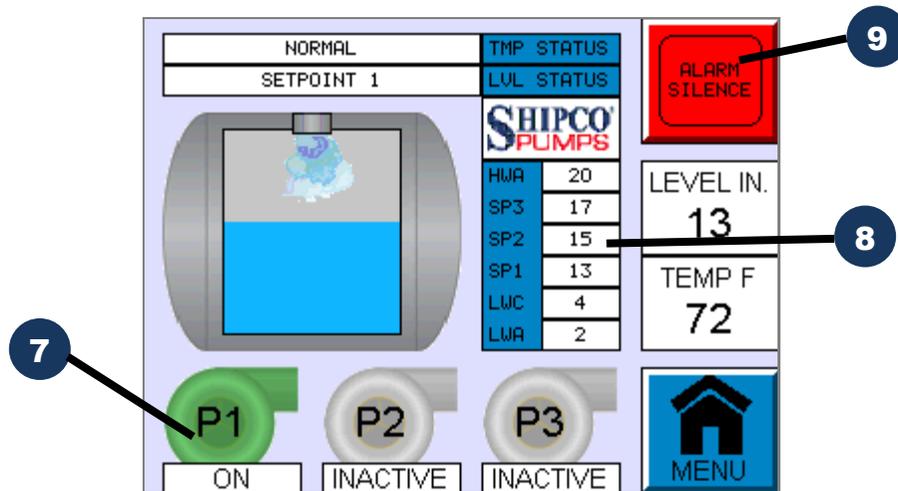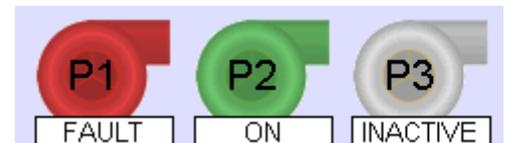## 7. Pump Status

GREEN	*(ON)* Pump is energized and running.
GREY	*(INACTIVE)* Pump is available but is currently de-energized and not running.
RED	*(FAULT)* Pump was energized but failed to start due to possible failure from starter or motor.

8. Set Point Indicators

Shows level control set points expressed in inches.

HWA	High water alarm.
SP3	3rd operating set point (three pumps run if available).
SP2	2nd operating set point (two pumps run if available).
SP1	1st operating set point (one pump run if available).
LWC	Low water cut-off (shuts pumps off when tank is empty).
LWA	Low water alarm.

9. Alarm Silence

Push to silence the audible alarm buzzer. The buzzer will remain off until the next alarm status re-energizes the alarm.

PUMP CONTROLS

Pump Sequence & Status
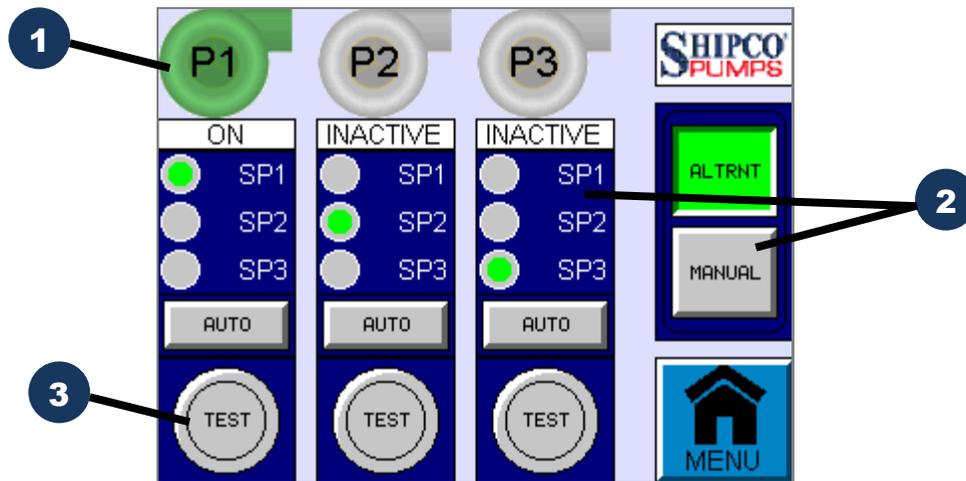
1. Pump Status

GREEN *(ON)* Pump is energized and running.

GREY *(INACTIVE)* Pump is available but is currently de-energized and not running.

RED *(FAULT)* Pump was energized but failed to start due to possible failure from starter or motor.
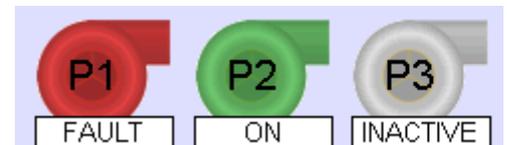
2. Sequence Operation

Toggles pump sequence operation to either automatically alternate (ALTRNT) or user-defined without alternation (MANUAL).

3. Test Button

Push to test the motor rotation for a specific pump.

PUMP CONTROLS

Alternation Pump Sequence
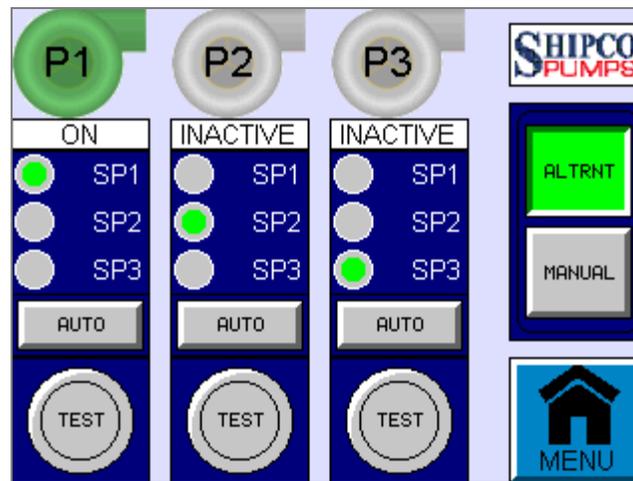
Alternation

When sequence is set to "ALTRNT" the controller automatically alternates pumps after each pumping cycle. Each pump has an alternation sequence indicator.

Alternation Sequence Indicator

SP1   Pump will turn on when water level reaches set point 1.

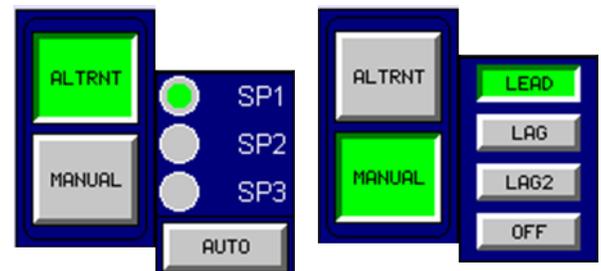**SP2**   Pump will turn on if water level continues to rise to set point 2.

SP3   Pump will turn on if water level continues to rise to set point 3.
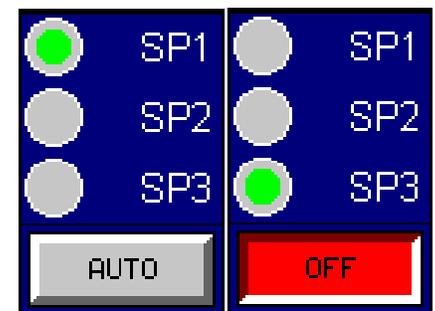
AUTO/OFF   Toggles removing the pump from level sequence.

IMPORTANT: This <u>does not</u> take the place of **pump disconnect** or **control circuit disconnect** switches to isolate a pump from electrical current during servicing.

All running pumps will turn off when tank level reaches low water shutoff.

PUMP CONTROLS

Manual Pump Sequence

Manual

When sequence is set to "MANUAL" the controller allows the user to define pump sequence without alternation. Each pump has an manual sequence indicator.

Manual Sequence Indicator

LEAD   Pump will turn on when water level reaches set point 1.

LAG   Pump will turn on if water level continues to rise to set point 2.

LAG2   Pump will turn on if water level continues to rise to set point 3.

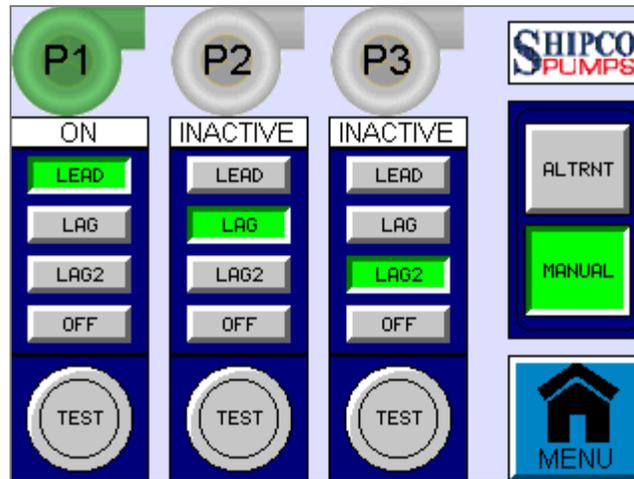**OFF**   Removes the pump from level sequence.

IMPORTANT: This <u>does not</u> take the place of **pump disconnect** or **control circuit disconnect** switches to isolate a pump from electrical current during servicing.

All running pumps will turn off when tank level reaches low water shutoff.

PUMP RUNTIME

Pump Runtime Screen
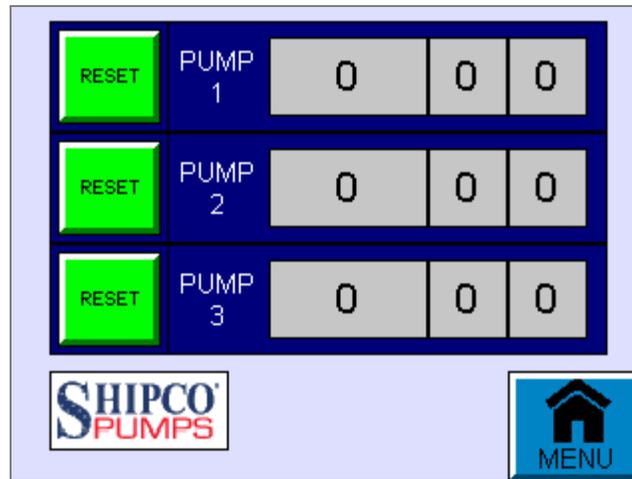
Pump Runtime Counters

Each pump has a counter showing hours, minutes and seconds of pump operation. Press the RESET button to reset the counter for each pump.
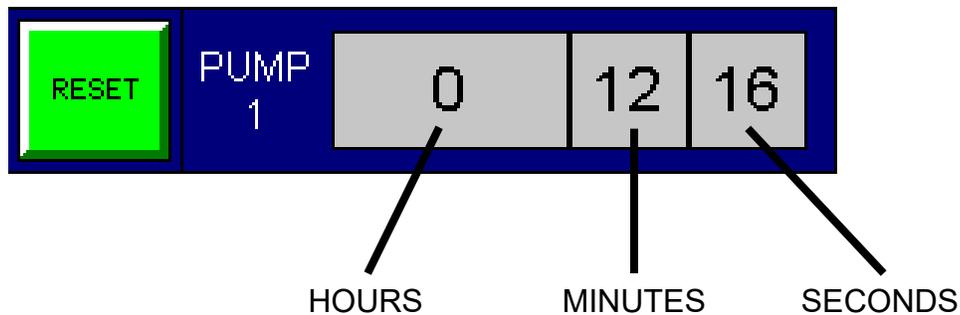
ALARM LOG

Unit Alarm Screen
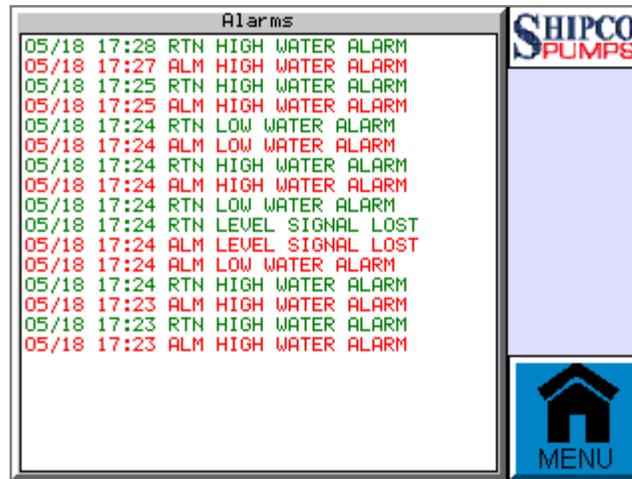
Alarm Log

Any alarms that are displayed are also recorded on the Alarm Log screen. Touching the log object allows the user to acknowledge alarms or clear the log.

UNIT SETUP

WARNING: Be cautious when adjusting parameters in Unit Setup! Certain parameters are factory set to design specifications and incorrectly adjusting these parameters could result in equipment damage.

Consult the factory first before making adjustments which could affect unit operation.

UNIT SETUP

Login Screen

Unit Setup

Unit Setup allows the user to adjust parameters for the unit such as set points, sensor settings, etc. The user must first login to adjust these criteria.

User Login

Tap inside the Username or Password fields to bring up the virtual keyboard. Pressing the **padlock** symbol toggles between uppercase and lowercase letters. Input the value for each field and press **Enter** when finished or **Esc** to cancel.

Press the **Login** button. If the Username and Password are valid, User will change to show who is currently logged in. The Login button will also change to display **Logout**.
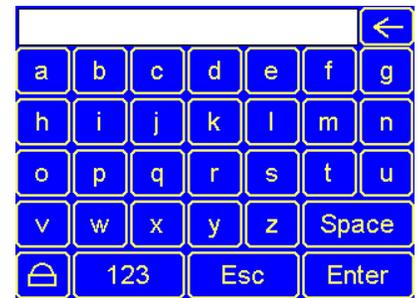
A logged in User will stay logged in for 30 minutes or until **Logout** is pressed.

Press **Setup Routine** to enter the Unit Setup menu.

UNIT SETUP

Unit Setup Screen

SHIPCO PUMPS Shipco Logic Controller
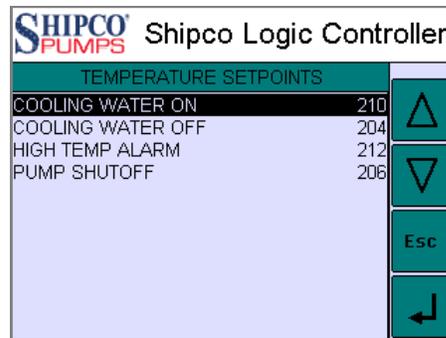
UNIT SETUP
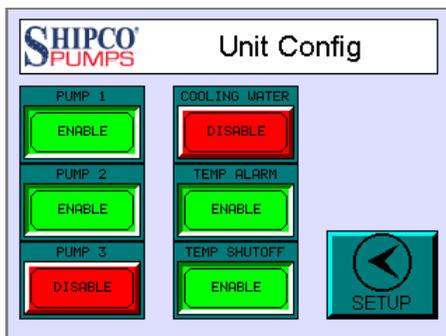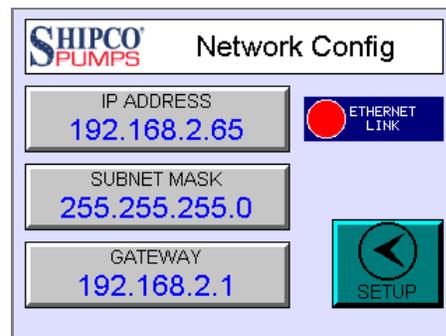
1 → ROOT MENU ↗
2 → LOGOUT ↗
     SENSOR SETUP ↗
     UNIT CONFIG ↗
3 → LEVEL SETPOINTS ↗
     TEMP SETPOINTS ↗
4 → NETWORK CONFIG ↗
5

△ ▽ Esc ↵

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1 — SENSOR SETUP

SHIPCO PUMPS Shipco Logic Controller

SENSOR SETUP

SENSOR LENGTH (in)	24
LEVEL OFFSET (in)	0
LEVEL DEADBD (in)	1
TEMP OFFSET (F)	0
TEMP DEADBD (F)	1

LVL 4-20mA 12.60
LVL IN 12
TEMP 0-10V 0.223
TEMP C 22
TEMP F 72

△ ▽ Esc ↵
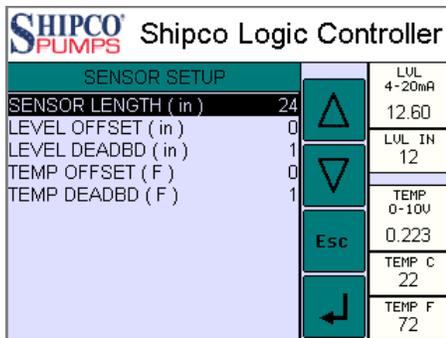
4 — TEMP SETPOINTS

SHIPCO PUMPS Shipco Logic Controller

TEMPERATURE SETPOINTS

COOLING WATER ON	210
COOLING WATER OFF	204
HIGH TEMP ALARM	212
PUMP SHUTOFF	206

△ ▽ Esc ↵

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2 — UNIT CONFIG

SHIPCO PUMPS Unit Config

PUMP 1 — ENABLE	COOLING WATER — DISABLE
PUMP 2 — ENABLE	TEMP ALARM — ENABLE
PUMP 3 — DISABLE	TEMP SHUTOFF — ENABLE

◁ SETUP

5 — NETWORK CONFIG

SHIPCO PUMPS Network Config

IP ADDRESS
192.168.2.65

● ETHERNET LINK

SUBNET MASK
255.255.255.0

GATEWAY
192.168.2.1

◁ SETUP

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3 — LEVEL SETPOINTS

SHIPCO PUMPS Shipco Logic Controller

LEVEL SETPOINTS

HIGH WATER ALARM	20
SETPOINT 3	17
SETPOINT 2	15
SETPOINT 1	13
PUMP SHUTOFF	4
LOW WATER ALARM	2

△ ▽ Esc ↵

UNIT SETUP

Sensor Setup

Sensor Length

The total length of the continuous level/temperature transmitter inside the tank expressed in inches.

Level Offset

An offset value allows the level sensor to ignore a measurement of level from the bottom of the tank, expressed in inches.

Level Deadband

Defines the amount of level change before the controller reacts to the change, expressed in inches.
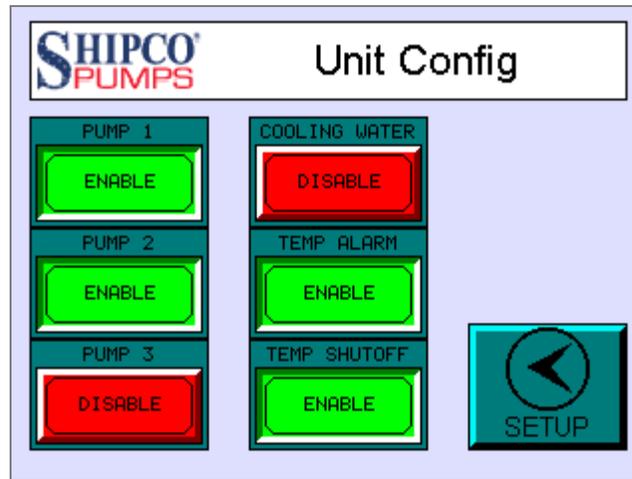
Temperature Offset

An offset value from the current temperature to correct for accuracy, expressed in °F. The accuracy of the temperature sensor is typically within 1-2 degrees.

Temperature Deadband

Defines the amount of temperature change before the controller reacts to the change, expressed in °F.

UNIT SETUP

Unit Configuration

Pumps

Toggles whether a pump should be included on the controller. Disabling a pump will not allow the pump to run and it will not be available in pump sequence operations.

⚠️ **IMPORTANT:** This <u>does not</u> take the place of **pump disconnect** or **control circuit disconnect** switches to isolate a pump from electrical current during servicing.

Cooling Water

Toggles whether a solenoid valve is present to allow cooling water into the tank.

Temperature Alarm

Toggles whether to trigger an alarm if temperature exceeds the high temperature set point defined under the *Temperature Setpoints* menu.

Temperature Shutoff

Toggles whether to shut pumps off if temperature falls below the pump shutoff set point defined under the *Temperature Setpoints* menu.

UNIT SETUP

Level Set Points

High Water Alarm

Water must rise to this level before a high water alarm status is triggered, expressed in inches. This value should be larger than all other set points.

Set Points 1, 2 and 3

Pumps will stage on or off according to their defined sequence operation if water level rises above or falls below these set points, expressed in inches. Ideally the value of each set point starting from set point 1 should be greater than the previous.

Pump Shutoff

Water must fall to this level before all pumps are shut off, expressed in inches.

Low Water Alarm

Water must fall to this level before a low water alarm status is triggered, expressed in inches. This value should be smaller than all other set points.

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UNIT SETUP

Temperature Set Points

Cooling Water On

If a solenoid valve is present, temperature inside the tank must rise to this measure before the valve opens allowing cold water into the tank, expressed in °F.

Cooling Water Off

If a solenoid valve is present, temperature inside the tank must fall to this measure before the valve closes prohibiting cold water into the tank, expressed in °F.

High Temperature Alarm

If enabled under *Unit Configuration*, temperature must rise to this measure before a high temperature alarm status is triggered, expressed in °F. This value should be larger than all other set points.

Pump Shutoff

If enabled under *Unit Configuration*, temperature must fall to this measure before pumps are shutoff, expressed in °F.

UNIT SETUP

Network Configuration
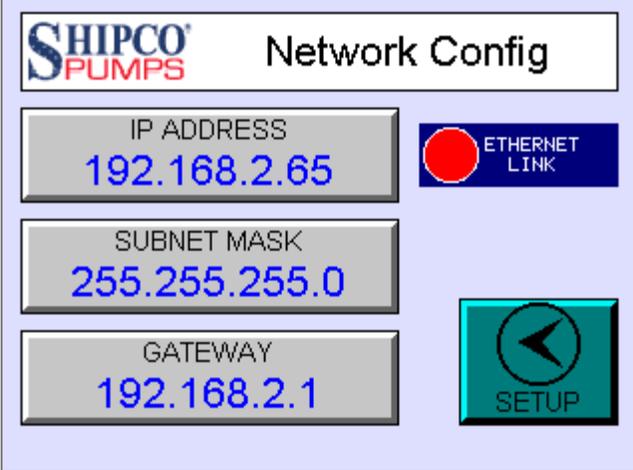
Ethernet

The controller comes equipped with a 10/100 Mbps Ethernet port labeled LAN1. Connecting the controller to an Ethernet network allows communication via various factory-loaded protocols such as BACnet IP, Modbus TCP/UDP or for accessing the controller remotely where available.

IP Address, Subnet Mask, & Gateway

The controller must be manually assigned an individual IP address, Subnet address and Gateway address expressed in IPv4 dot-decimal notation. Consulting with local IT or computer network personnel may be necessary to obtain this information.

PARAMETERS

Register to BACnet values: %AI = Analog Input, %R = Analog Value

SENSOR SETUP		
	FACTORY VALUE	REV DATE:
SENSOR LENGTH		
LEVEL OFFSET		
LEVEL DEADBD		
TEMP OFFSET		
TEMP DEADBD		

UNIT CONFIG		
	ENABLED	REV DATE:
PUMP 1		
PUMP 2		
PUMP 3		
COOLING WATER		
TEMP ALARM		
TEMP SHUTOFF		

LEVEL SETPOINTS		
	FACTORY VALUE	REV DATE:
HIGH WATER ALARM		
SETPOINT 3		
SETPOINT 2		
SETPOINT 1		
PUMP SHUTOFF		
LOW WATER ALARM		

TEMPERATURE SETPOINTS		
	FACTORY VALUE	REV DATE:
COOLING WATER ON		
COOLING WATER OFF		
HIGH TEMP ALARM		
PUMP SHUTOFF		

BACNET MONITORING REGISTERS		TYPE
RAW SENSOR LEVEL	%AI001	0-32000
LIVE LEVEL	%R00006	0-#
RAW SENSOR TEMP	%AI003	0-32000
LIVE TEMP (F)	%R00011	0-#
MOTOR 1 FAULT	%R09501	1/0
MOTOR 2 FAULT	%R09502	1/0
MOTOR 3 FAULT	%R09503	1/0
EMPTY 4 INPUT	%R09504	1/0
EMPTY 5 INPUT	%R09505	1/0
EMPTY 6 INPUT	%R09506	1/0
EMPTY 7 INPUT	%R09507	1/0
EMPTY 8 INPUT	%R09508	1/0
MOTOR 1 ON	%R09401	1/0
MOTOR 2 ON	%R09402	1/0
MOTOR 3 ON	%R09403	1/0
ALARM BELL	%R09404	1/0
COOLING WATER	%R09405	1/0
EMPTY 6 OUTPUT	%R09406	1/0

BACNET CONTROL REGISTERS		TYPE
MTR 1 REMOTE CTRL	%R09701	1/0
MTR 1 (DIS/EN)ABLE	%R09801	1/0
MTR 2 REMOTE CTRL	%R09702	1/0
MTR 2 (DIS/EN)ABLE	%R09802	1/0
MTR 3 REMOTE CTRL	%R09703	1/0
MTR 3 (DIS/EN)ABLE	%R09803	1/0
ALRM REMOTE CTRL	%R09704	1/0
ALRM (DIS/EN)ABLE	%R09804	1/0
SOLN REMOTE CTRL	%R09705	1/0
SOLN (DIS/EN)ABLE	%R09805	1/0
OUT 6 REMOTE CTRL	%R09706	1/0
OUT 6 (DIS/EN)ABLE	%R09806	1/0

SETUP LOGIN	
USERNAME (CAPS)	SETUP
PASSWORD	1234

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