Hydra® Transducer Duplex Control Panel

The Hydra® transducer duplex control panels will control two pumps in sewage, wastewater, and dewatering applications. See Water's Hydra® pump panels come standard with a 7.0" HMI touchscreen display, Type 3R rated enclosure, transducer, backup floats, IEC rated contactors, circuit breakers, and adjustable overloads. All panels are UL listed for the United States and Canada and come with a two-year warranty.

Model	Supply Voltage	Motor FLA
HTRD-31-X	208/240/480VAC, Three Phase	1.25-5.0
HTRD-32-X	208/240/480VAC, Three Phase	3.0-12.0
HTRD-33-X	208/240/480VAC, Three Phase	8.0-32.0
HTRD-34-X	208/240/480VAC, Three Phase	30.0-40.0
HTRD-35-X	208/240/480VAC, Three Phase	37.0-50.0
HTRD-36-X	208/240/480VAC, Three Phase	48.0-65.0
HTRD-37-X	208/240/480VAC Three Phase	65.0-115.0
HTRD-11-X	120/208/240VAC, Single Phase	1.25-5.0
HTRD-12-X	120/208/240VAC, Single Phase	3.0-12.0
HTRD-13-X	120/208/240VAC, Single Phase	8.0-32.0

Additional Panel Options:

CO = Convenience outlet
SFD = Seal failure circuit & indicator lights - duplex
ISD = Intrinsically safe - duplex
SS4 = Enclosure - 304 Stainless steel (Type 4X)
SS6 = Enclosure - 316 Stainless steel (Type 4X)
PM = Phase monitoring
LA = Lightning secondary surge arrestor
AH = Anti condensation heater
S3 = No transducer or floats
28 = Power on dry contact (normally open)
GR = Generator receptacle
PL = Polycarbonate Enclosure (Type 4X)
CS = Capacitor Start Circuit
PX = Pump Portal® wireless remote panel control & system monitoring

Features:

- Designed to control two pumps in sewage, wastewater, and dewatering applications.
- Duplex panel provides pump rotation and high demand two pump operation.
- Selectable alternation pattern: Cycle or timed.
- Alarm visible features: red beacon alarm light, alarm test, and silence buttons.
- Alarm horn sounds at 85 decibels at 10'.
- Remote monitoring dry contacts: high/low level alarms, summary alarm/fault (normally open).
- Pump protection: motor protective switch included for all pumps (branch circuit protection, adjustable overload, and disconnect).
- PLC provides pump control logic, HMI provides virtual HOA selector switches and pump run indicator lights, pump run times and cycle counts.
- HMI touchscreen display features:
  - Hand-Off-Auto (HOA) switch for each pump.
  - Green pump run indicators.
  - Red pump fault indicators.
  - Pump and level status screens.
  - Active alarm and alarm history logs.
- Password protected user access levels.
- Pump run data logging: records each pump event - start time, stop time and run duration.
- Alarm/fault history: data logging gives access to 250 fault conditions with date and time (optional access to auto save alarm history to USB drive).
- Modbus RTU/TCP communication options.
- UL Listed for the United States and Canada (panel and controls).

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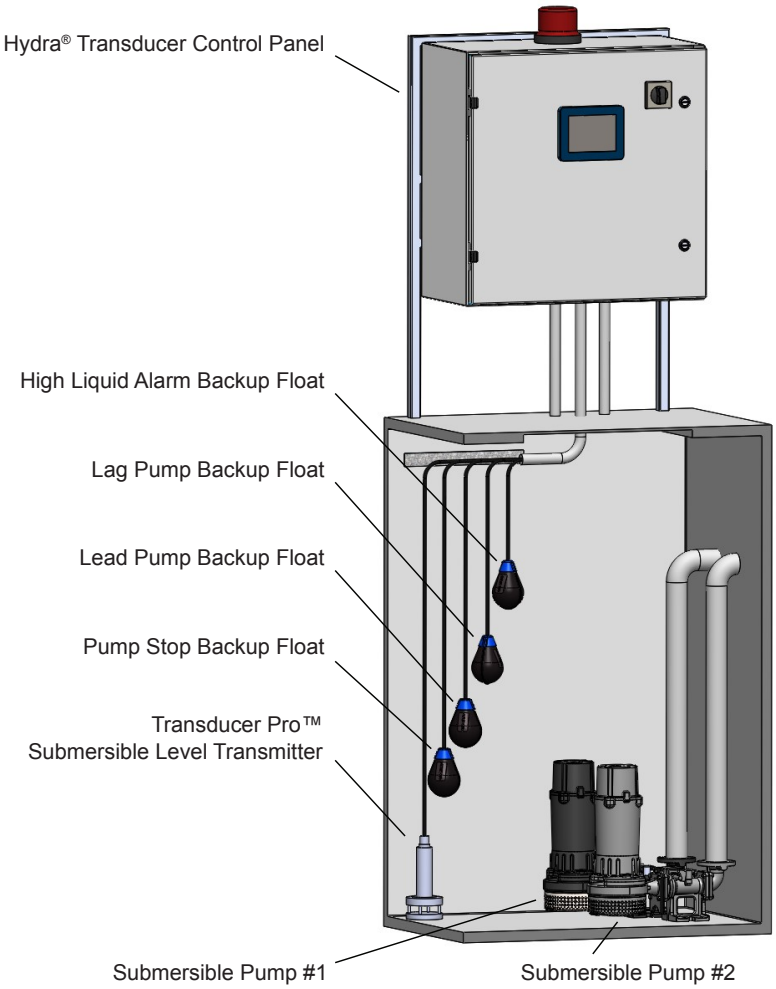
Enclosure Mounting: TYPE 3R/4X RATED

Mounting Brackets - A mounting bracket and bolt back are provided with the enclosure. To assemble, open enclosure door and insert the 3/8”-16 x 3/4” bolts through the enclosure mounting hole and attach external mounting feet.

Covers/Doors - Covers/doors have a gasket pre-assembled to seal against the base.

Note: The control panel should not be mounted in a location that may be subject to submersion.

Typical Installation of Hydra® Duplex Transducer Control Panel



Panel Installation:

1. **Caution:** To maintain the environmental rating, make all wiring connections with seal tight cable grips or conduit connections.
2. Three phase panels: wire transformer for incoming voltage per instructions attached to transformer.
3. Set motor protectors to FLA of motors.
4. Run pump cables, transducer cables, and floats cables through conduit. Make field connections as shown on wiring schematic. **Note:** Transducer cables require separate conduit from power and pump cables.
5. Run power line conductor through conduit. Wire to terminals per enclosed schematic.
6. Branch circuit protection to be provided by installer.
7. Panel circuit breakers are shipped in the closed position.
8. Ensure floats are properly mounted at the correct levels. **Note:** Floats shall have free range of motion without touching each other or other equipment.

Note for Intrinsically Safe Panels: cable grips or conduit connections from hazardous locations must be installed directly below the respective field wiring terminals to ensure intrinsically safe rating. Equipment from hazardous locations must be ran in separate conduit from other equipment.

Sequence of Operations:

Overview:

The panel controls the operation of two pumps based upon liquid level from a level transducer. Backup float operation is able to be configured in Float Setup (see page 6).

The pumps operate in a lead and lag scenario. Both pumps will operate during a high demand scenario.

Transducer Based Operation:

1. When the liquid rises to the 'Lead' level, pump #1 will energize. Pump #1 will remain operational until the liquid lowers to the 'Stop' level.
2. The next time the liquid rises to the 'Lead' level, the automatic pump alternation circuit will energize pump #2. Pump #2 will remain operational until the liquid lowers to the 'Stop' level.
3. If the level continues to rise after the first pump has been energized, the liquid will rise to the 'Lag' level. When the 'Lag' level is reached, the second pump will turn on. Both pumps will remain operational until the liquid falls below the 'Stop' level.
4. If the level continues to rise, when the liquid reaches the 'High' level the panel will alarm.
5. If the liquid level falls to the Low Level, the panel will alarm. This will illuminate the 360 degree visible beacon and sound the 85 decibel buzzer. If configured to fault, the pumps will shut off.

Backup Float Override Operation:

1. If enabled, when in transducer based operation, if the 'High' floats are lifted both pumps will energize. Pumps will remain energized until the 'Stop' and 'High' floats fall.
2. After the Backup Float Override operation has activated, the pumps will run off of float based operation until the panel is reset to transducer mode.

Float Based Operation:

1. When the 'Stop' and 'Lead' floats are lifted, pump #1 will energize. Pump #1 will remain operational until the 'Stop' float falls.
2. The next time the 'Stop' and 'Lead' floats are lifted, the automatic pump alternation circuit will energize pump #2. Pump #2 will remain operational until the 'Stop' float falls.
3. If the level continues to rise after the first pump has been energized, the 'Lag' float will lift. When the 'Lag' float has lifted, the second pump will turn on. Both pumps will remain operational until the 'Stop' float falls.
4. If the level continues to rise, the 'High' float will be lifted, and the panel will alarm.

The following are operation details for each pump:

- Place the HOA switch into the Hand position to manually operate the pump.
- Place the HOA switch into the Auto position to allow for automatic pump operation.

The following are operation details during a float sequencing error during float based operation:

- If the 'Lead' float is lifted the lead pump will turn on.
- If the 'Lag' float is lifted both pumps will turn on.

In the event of a pump motor overload condition, the following shall occur:

- The pump shall stop running.
- The pump fault light shall activate.
- The alarm beacon shall activate.
- The alarm buzzer shall activate.
- General Alarm Dry Contact will close.
- The next available pump shall start running.

In the event of a pump motor thermal fault condition, the following shall occur:

- The pump shall stop running.
- The pump fault light shall activate.
- The alarm beacon shall activate.
- The alarm buzzer shall activate.
- General Alarm Dry Contact will close.
- The next available pump shall start running.

In the event of the 'High' float being lifted, the following shall occur:

- The alarm beacon shall activate.
- The alarm buzzer shall activate.
- High Level Alarm Dry Contact will close.
- General Alarm Dry Contact will close.
- If configured for backup float override, operation will switch to float mode and the panel will alarm.

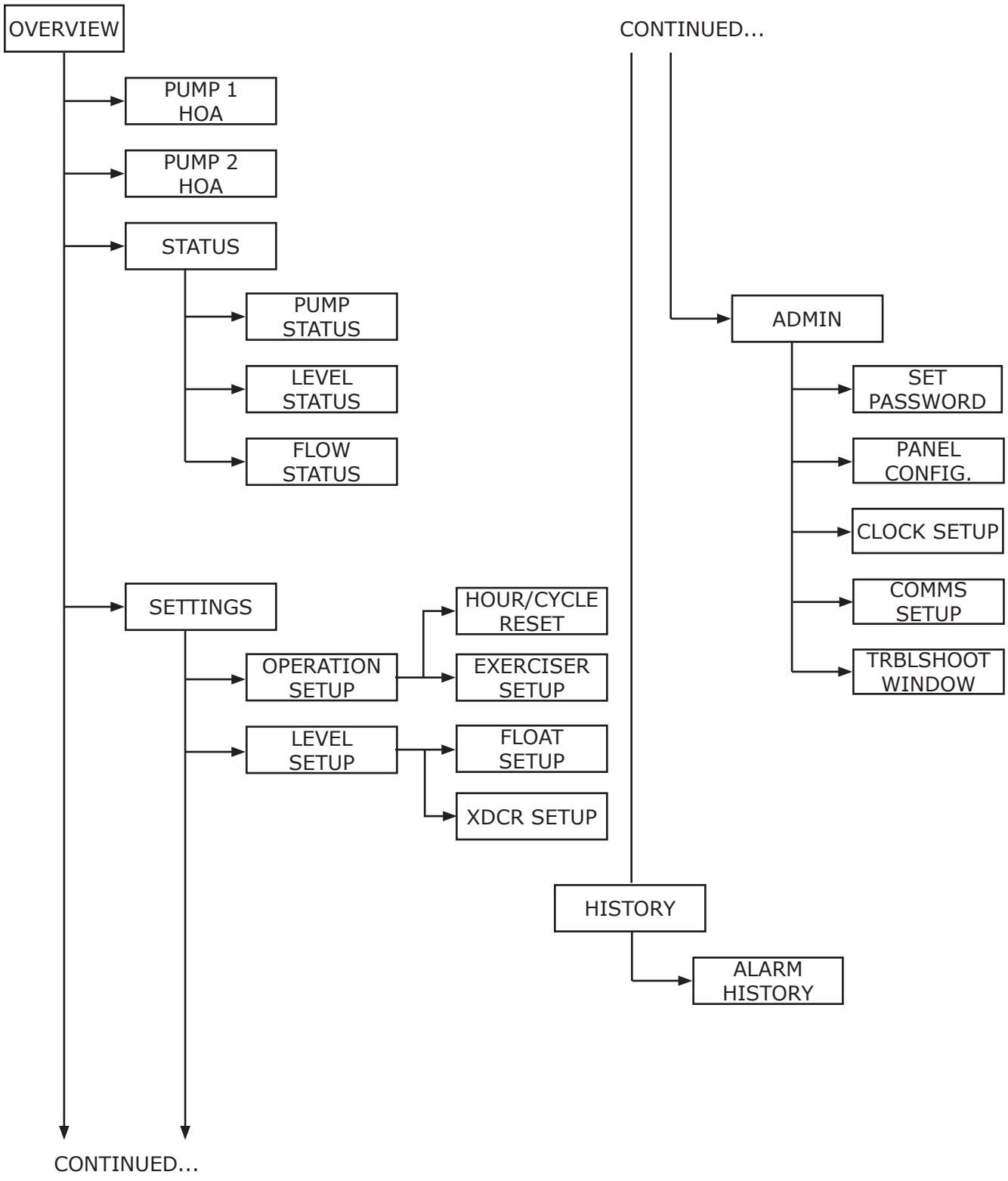
During an alarm test function, the following shall occur:

- The alarm beacon shall activate.
- The alarm buzzer shall activate.
- General Alarm Dry Contact will close.

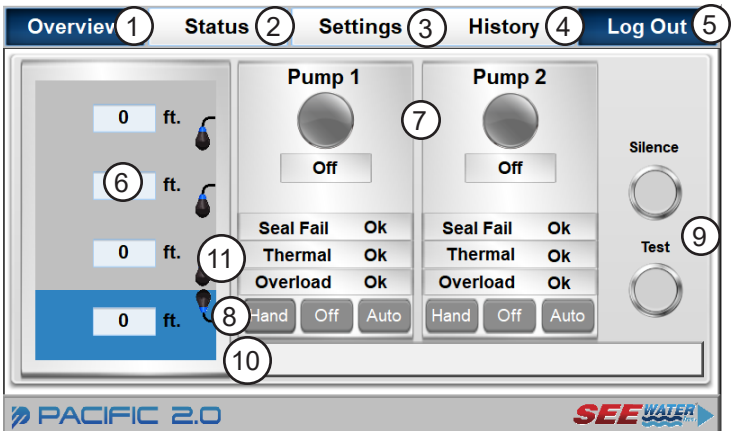
Start Up:

1. Set the various parameters within the Settings screen. Level 2 access is required. **Note:** Press Calibrate Transducer Button after connecting transducer while transducer is dry.
2. Place pump HOA selector switch in Hand to verify manual pump operation.
3. Place both HOA selector switches in Auto to verify automatic operation.
4. To test the alarm circuit, press and hold the test button located on the alarm screen. Verify the audible alarm sounds and the red beacon lights. Silence buzzer by pressing on the silence button.

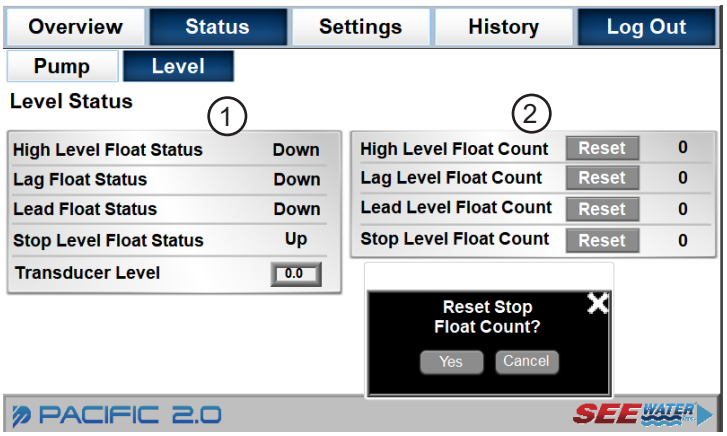
HMI Screen Flow Chart



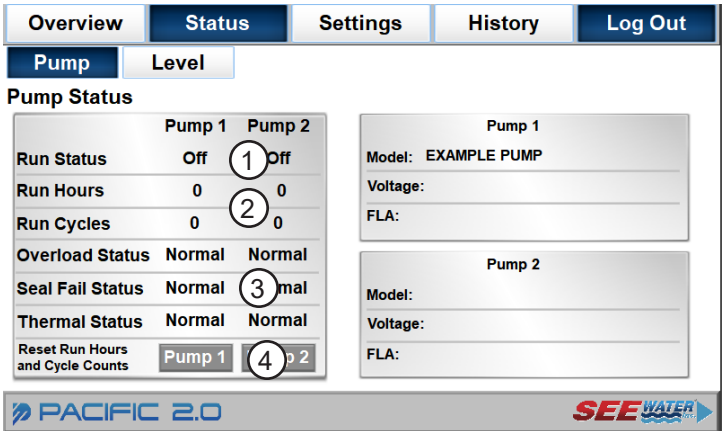
HMI Screen Descriptions



1. **Overview -** Navigate to the overview screen.
2. **Status -** Navigate to the status screen.
3. **Settings -** Navigate to the settings screen.
4. **History -** Navigate to the history screen.
5. **Log in/Log Out button -** Displays log in prompt.
   - No log in required for turning off pumps.
   - Level 1 log in required for setting pump operation, viewing status and alarm logs.
   - Level 2 log in required to change settings.
6. **Tank Level Indication -** Displays the current water level in the tank.
7. **Pump Run Indication-** Illuminates Green if running, Grey if off.
8. **Pump 1 & 2 HOA -** Current System Operation Status.
9. **Silence/Test -** Test and Silence the alarm circuit.
10. **Alarm Banner** - Displays any active alarm or fault conditions.
11. **Pump Protection Status** - Displays 'Ok' or 'Fault' for each sensor type.



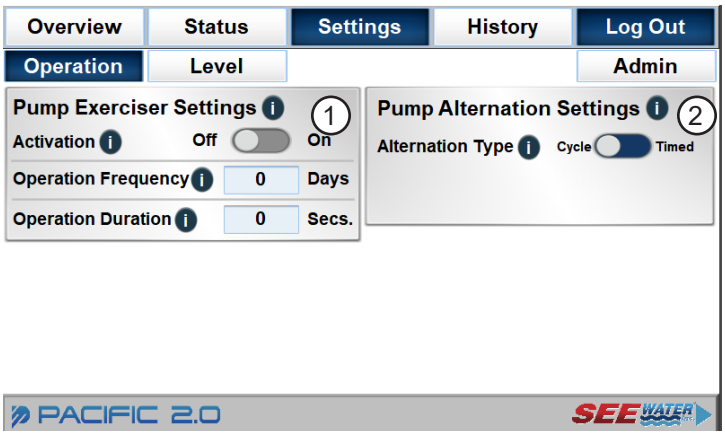
1. **Level Status -** Current level status indication for both Floats and Transducer.
2. **Float Count/Reset** - Displays current float count for each level. Reset Displays float count rest pop-up.



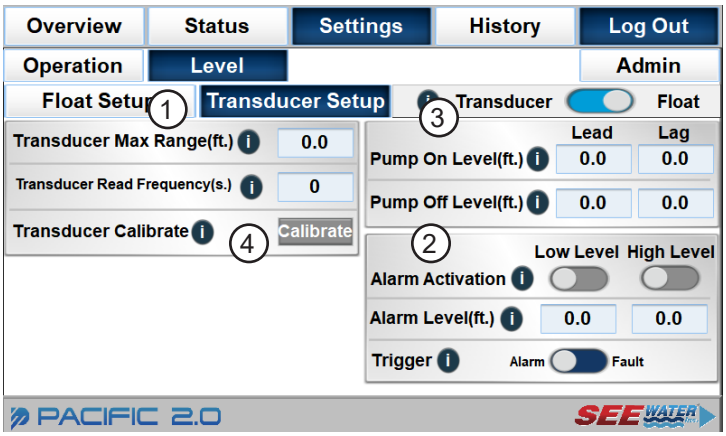
1. **Run status -** Displays the following states of the pumps: Off, Running.
2. **Run hours & cycles -** Displays the pumps' run hours and cycles.
3. **Overload, seal fail, thermal status -** Displays the following states of the pump overload, seal fail, and thermal inputs: Normal, Fault.
4. **Reset Run Hours and Cycle Counts** - Displays pop-up window for resetting pump run hours and cycle counts.

HMI Screen Descriptions

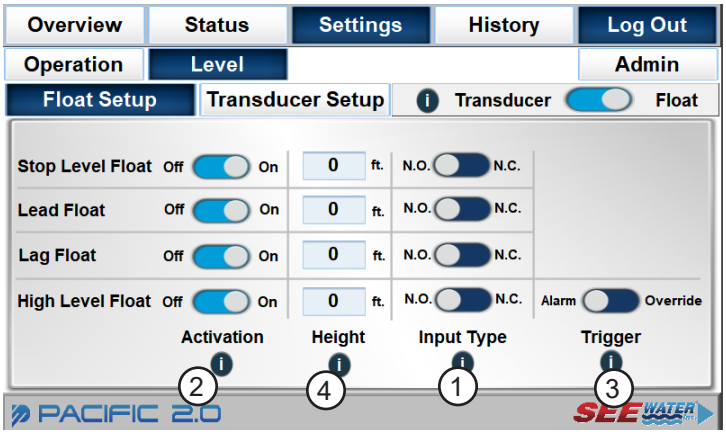
● - Click on these information icons for additional info anywhere they are present.



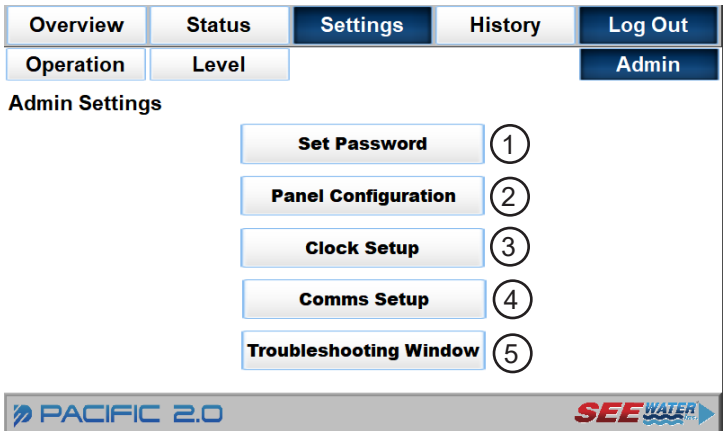
1. **Pump Exerciser -** Enable or disable the pump exerciser feature.
   - **Activation -** Enable or disable the pump exerciser feature.
   - **Operation frequency -** Set how frequently the pump exerciser energizes the pump.
   - **Operation duration -** Set how long the pump is energized when being exercised.
2. **Alternation -** Configure the alternation as cycle or time based. If timed, set the cumulative time that the lead time shall run before alternating.



1. **Transducer Settings-** Set transducer max range and read frequency.
2. **Alarm Activation**- Enable or disable the feature.
3. **Level** - Set the various pump control levels in feet.
4. **Calibrate** - Calibrate the transducer when the transducer is wired and not placed in the water containment area. See troubleshooting section of page 8 for detailed instructions.

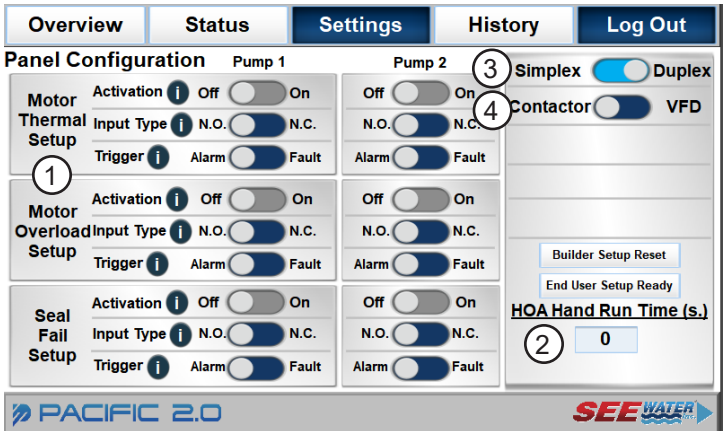


1. **Float Type -** Configure the type of input for each float as Normally Open or Normally Closed.
2. **Alarm Activation**- Enable or disable the feature
3. **Trigger -** Set the input to trigger an alarm or a fault.
4. **Float Height** - Log the mounting height of the float within the sump.

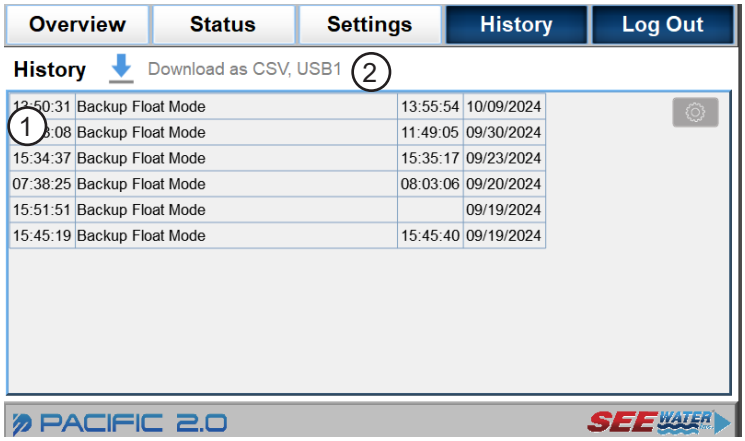


1. **Set password -** Displays the set password prompt. Default passwords are as follows:
   Level 1: 0000
   Level 2: 1234
2. **Panel configuration -** Configure panel safety features.
3. **Clock Setup -** Configure panel clock settings.
4. **Comms Setup -** Configure panel communication settings such as IP, BACnet, and MODBUS.
5. **Troubleshooting Window -** Window displaying current values of all PLC I/Os for troubleshooting purposes.

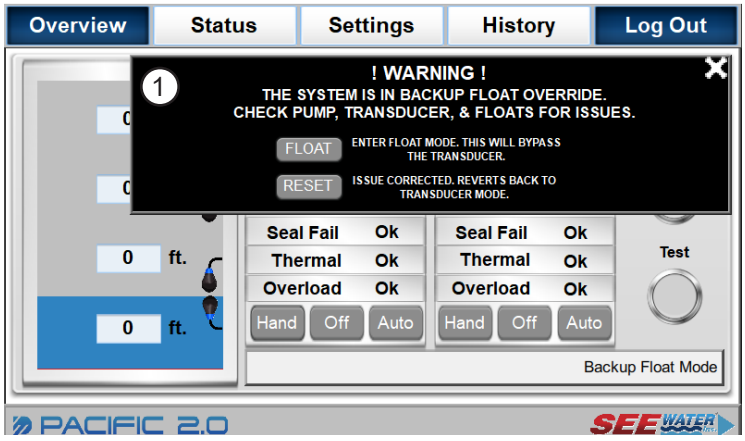
HMI Screen Descriptions



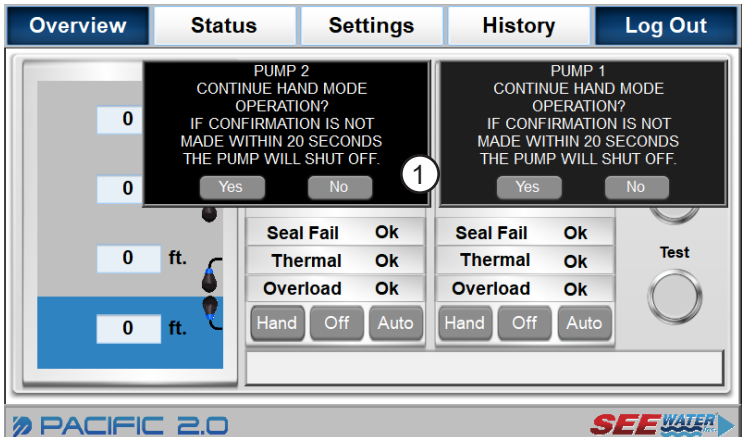
1. **Panel configuration -** Configure the seal fail, thermal, and overload.
   - **Activation -** Enable or disable the feature.
   - **Input Type -** Configure the input as Normally Open or Normally Closes.
   - **Trigger -** Set the input to trigger an alarm or a fault.
2. **HOA hand run time (s.) -** Adjust the time period that the pump runs in Hand mode in seconds (range: 0-9999 seconds). In Hand mode, after this time has elapsed the pump will shut off. *Factory default:* 60s
3. **Simplex/Duplex Select** - Configure Simplex or Duplex Panel Operation.
4. **Contactor/VFD Select** - Configure Contactor or VFD Operation.



1. **Event history list -** List of all event occurrences.
2. **Download -** Download the last 90 days of events as a CSV. Insert USB drive in the USB port located on the bottom of the HMI. Click this icon to begin download.



1. **Backup Float Override**
   - **Float -** Panel will remain in Float Mode
   - **Reset -** If issue is corrected and this button will revert the panel back to transducer operation.



1. **Continue Hand Mode Operation**
   - **Yes -** Hand Run Timer will reset and pump will continue running.
   - **No -** Pump will be turned off.

Notes:

Troubleshooting:

Caution: before checking electrical connections within the control or attempting to replace any components, turn off all branch circuits supplying power to the main control panel.

Alarm Circuit:

- To test the alarm light and buzzer, press the test button on the panel. If either the light or buzzer do not indicate, replace the light bulb or buzzer with the same type.

Operation:

- Check floats for entanglement, full range of motion. Replace damaged floats.
- Inspect the condition of the pumps and wiring.

Level Transducer:

- Ensure device is grounded. Ensure Transducer is wired to proper terminal block per provided panel schematic. The calibrate button sets the current reading as 0 on the scale function; calibrate the first time the equipment is installed when the reading from the equipment is at its lowest. See page 6 for calibrate button location.

Warranty:

See Water® Inc. warrants that products of its manufacture are free from defects in material and workmanship for a period of 2 years from the date of purchase. This date shall be determined by the date on the invoice and the serial number on the product.
Replacement of the product is at the discretion of See Water Inc. This warranty is valid when the product is installed in compliance with the manufacturer's installation instructions. The manufacturer's obligation under this warranty shall be limited to the repair or replacement of any parts found by the manufacturer to be defective, provided that the product is returned to See Water's factory, postage prepaid with proof of original purchase included.
The manufacturer of this warranty shall not be liable under this warranty if the product has not been properly installed; any alterations/additions/changes to the product will result in a void warranty. Failure to properly install and test this product can result in personal injury or equipment malfunction. See Water, Inc. shall not be liable for any loss, damage or expenses from installation or use of its products.

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