Mega Wash

Automatic Pipeline Wash Control



Installation, Operation & Maintenance Manual

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1. IMPORTANT SAFETY INFORMATION

Please read and understand this manual in its entirety before operating or servicing the **Mega Wash**. Failure to follow these instructions may result in equipment damage, electrical shock, serious injury, or death.

Electrical Safety Warning

- **Voltage Hazard:** This equipment operates at **120-240 Volts AC**. Use caution when handling or installing this unit.
- **Disconnect Power:** Do not connect or disconnect wiring while power is applied. Always turn off and fully disconnect all power sources before servicing, wiring, or modifying the equipment.
- **Qualified Staff Only:** Only qualified personnel should perform installation, servicing, or maintenance of this product.

User Responsibility & Compliance

- **Local Codes:** It is the responsibility of the user to ensure that the **Mega Wash** is installed and operated in accordance with all local, regional, and national electrical codes and safety standards.
- **Intended Use:** The manufacturer cannot be held liable for incidental or consequential damages resulting from improper installation, misuse, or a failure to maintain the equipment.

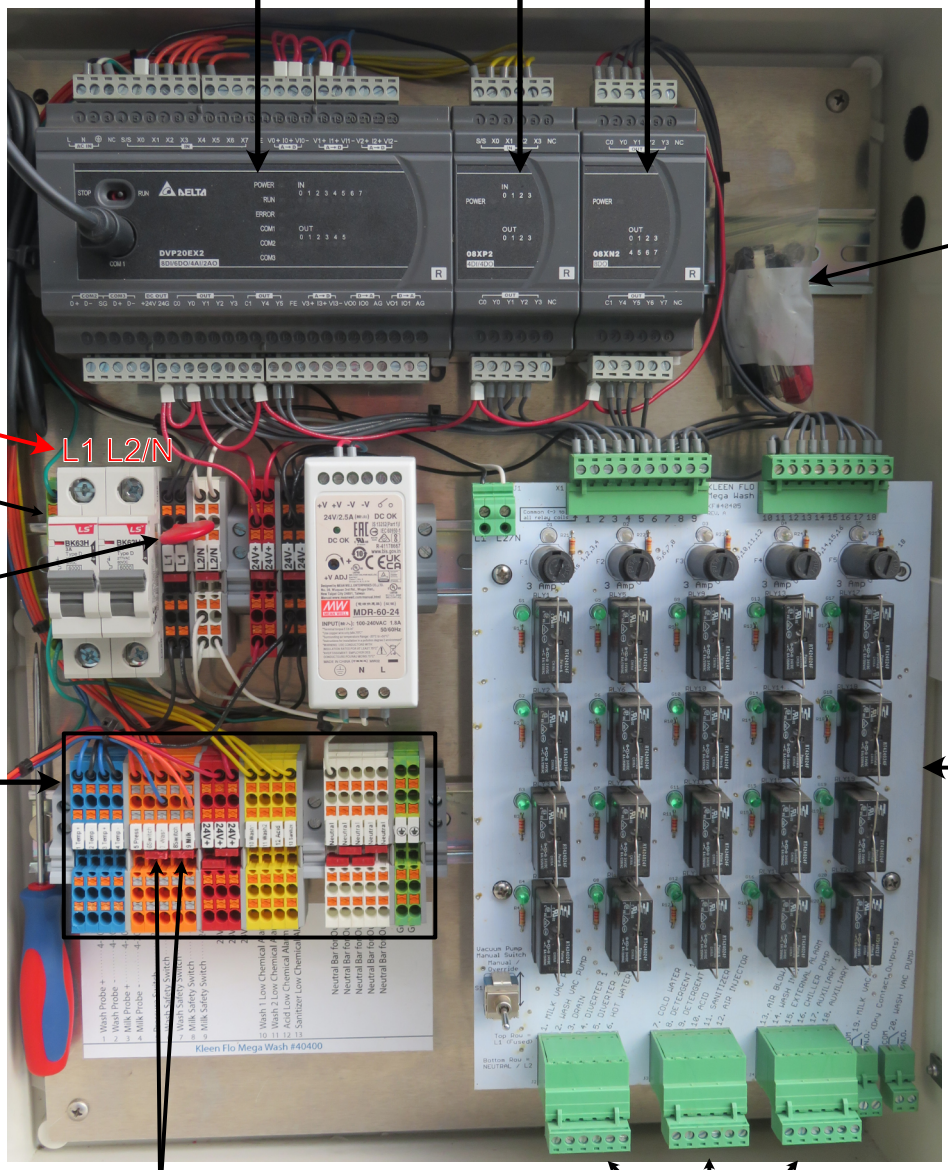
2 System Overview

The Mega Wash pipeline washer is designed to fit into most existing milking setups, whether on a mega dairy or on a small farm. Every milking system is different, and with 20 outputs that can be wired for any voltage preferred (under 300 volts) and programmable to the second, the wash can be easily setup to match the water, temperature, and chemical demands of each system. Programming is quick and easy with an intuitive layout on a 10 inch touch screen.

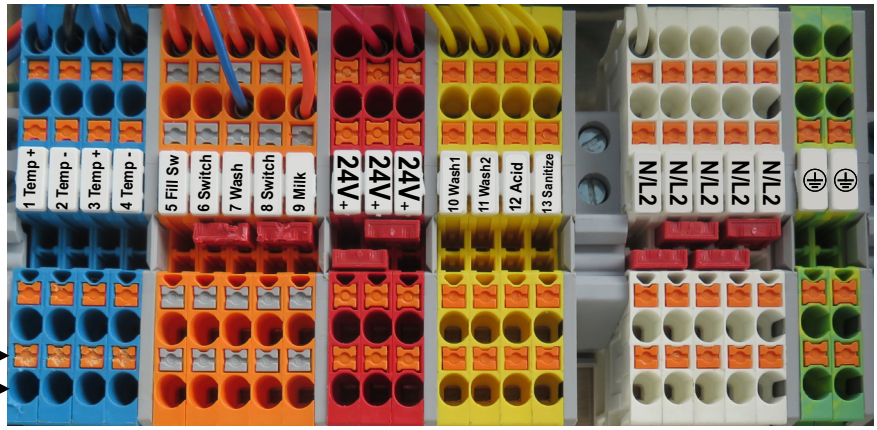
2.1 Features

- Simplified programming and a 10" touch screen for ease of setup and use.
- 20 programmable outputs.
- Two-week rolling history storage for milk and wash temperatures.
- 100-240 VAC input compatibility.
- Output voltage can be modified for any configuration up to 300 V.
- Dedicated chiller output for better cooling control.
- Pre-cooling option to start the chiller prior to milking.
- Manual override switch for the milk vacuum pump.
- Service-friendly design featuring removable terminal plugs on the main circuit board.
- Full cycle customization configurable down to the second.
- Wash probe compatibility for precise temperature control of wash water.
- Three independent wash setups with up to 7 cycles per setup.
- Automated wash cycling to rotate through selected wash setups sequentially.
- Pre-milking sanitize programmable for specific times of day.
- Automatic alternating vacuum pump option.

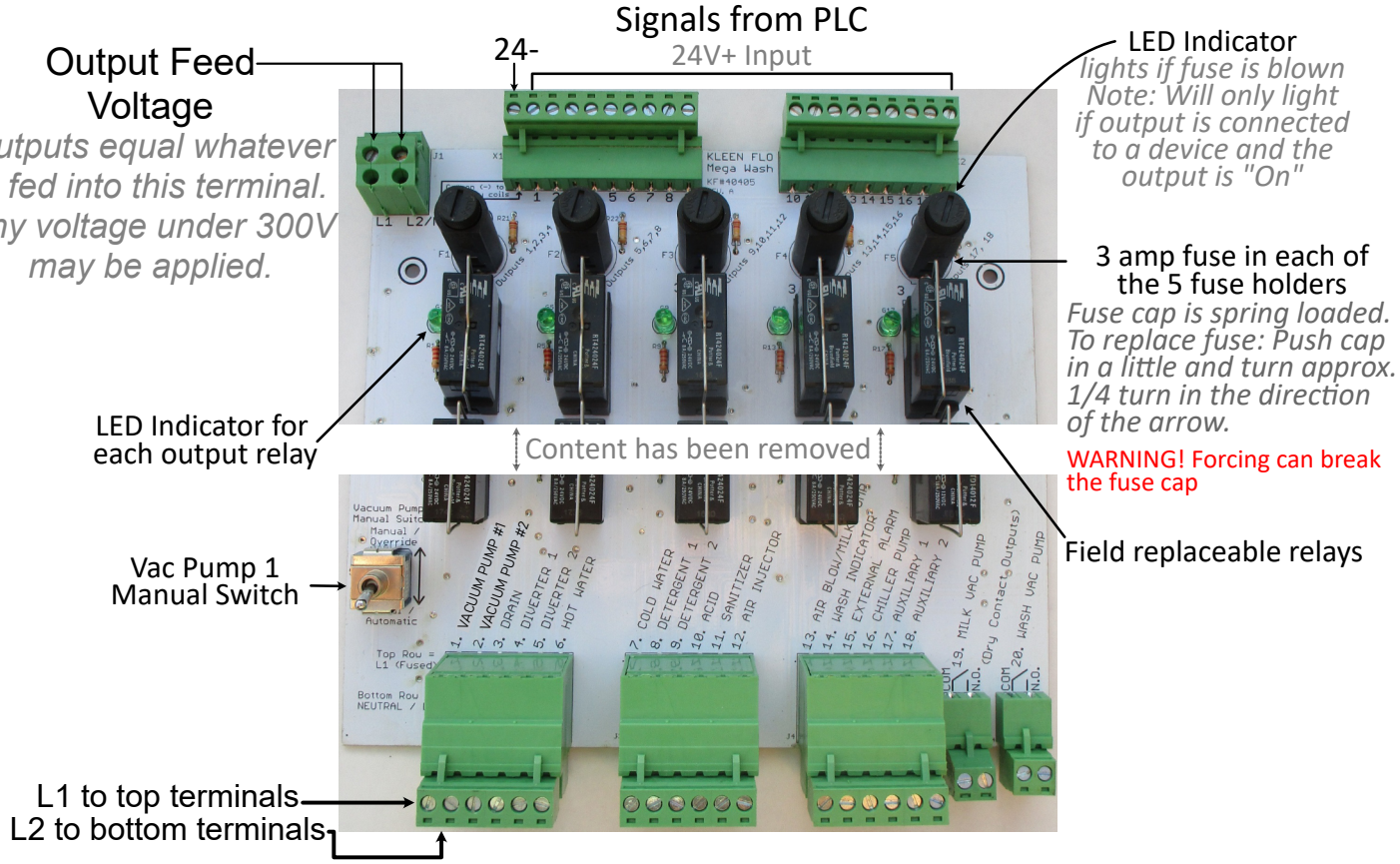
2.2Inside the Controller



2.3 Inputs & Outputs



2.4 I/O PCB Overview



3 Installation

3.1 Mounting

Determine a mounting location for the Mega Wash Controller. Avoid mounting it above the wash vat. Avoid water spray onto the controller. Mount the controller onto a flat surface via the 4 mounting tabs.

For an ideal installation, electrical conduit should be routed into the bottom of the controller enclosure. While the side is a secondary option if space is limited, conduit should never be brought into the top of the controller to ensure the enclosure remains properly sealed against moisture and debris.

⚠ IMPORTANT: Ensure all wiring complies with local, regional, and national electrical codes. Prioritize safety standards before applying power.

3.2 Wiring

Connect 120 or 240VAC to the top of the circuit breakers and ground to the green terminal block. Connect the inputs and outputs to the standards listed above.

For 120VAC applications: Connect L1 to the top row of terminals (fused) on the lower side of the PCB and neutral to the "white neutral bar for outputs" beside the PCB.

For 240V applications: Connect L1 to the top row of terminals (fused) on the lower side of the PCB and L2 to the bottom row of terminals. (*White neutral bar is only for 120V applications*.)

By default, input voltage equals output voltage. If a different output voltage is desired, connect the desired voltage (under 300V, AC or DC) to the "output feed" terminal on the top left corner of the PCB. See section 2.4.

3.3 Temperature Sensors

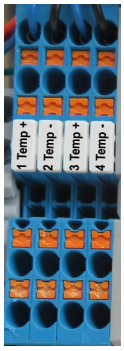
Wash Temp Sensor Assembly
#40106-1



3.3.1 Wash Probe

The Wash temperature probe (#40161) has 4 ft. of wire that connects to a 4-20Ma transmitter in the waterproof enclosure. The transmitter converts the probe signal to a 4-20Ma signal. Connect the 4-20Ma signal wire for "Wash":

+ *White wire from transmitter* to #1 Temp+
- B*lack wire from transmitter* to #2 Temp -



Milk Temp Sensor Assembly
#40106



3.3.2 Milk Probe

The Milk temperature probe (#40161) has 4 ft. of wire that connects to 4-20Ma transmitter in the waterproof enclosure. The transmitter converts the probe signal to a 4-20Ma signal. Connect the 4-20Ma signal wire for "Wash":

+ *White wire from transmitter* to #3 Temp+
- B*lack wire from transmitter* to #4 Temp -

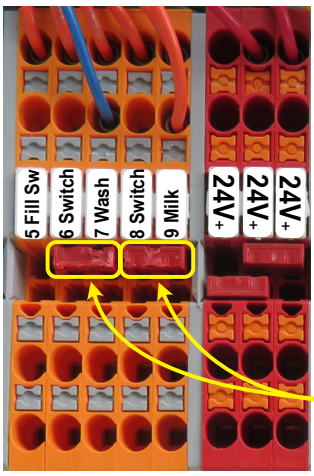
3.4 Fill Switch and Safety Switch Connections



 # 78495

A DPDT switch like the Honeywell Limit switch, or something similar, is recommended.

Connect fill switch wires to 24V+ and #5 (Fill Switch).



Connect wires from the two contacts that are shorted when the switch is in "Wash" position to #6 (Switch) and #7 (Wash).

Connect wires from the two contacts that are shorted when the switch is in "Milk" position to #8 (Switch) and #9 (Milk).

IMPORTANT!
Red fill switch bypass jumpers must be removed or the safety switch has no function.
"Grasp firmly with a needle nose and pull straight out"

Note: Save jumpers in case bypass is ever needed.

4 System Operation and Program Layout

Double check all connections and ensure wiring is correct, then power the controller.

4.0 Password To prevent unauthorized changes, a password needs to be entered before making changes. The password is 111.

4.1 Home Screen

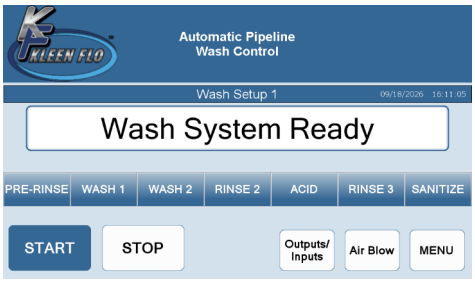
With main switch to Milk



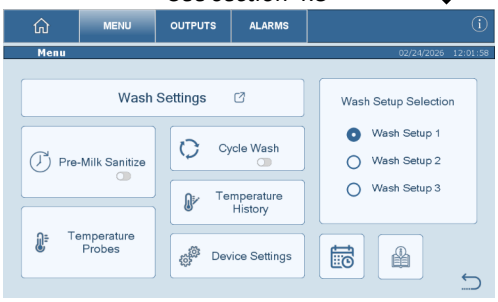
With main switch to Off



With main switch to Wash

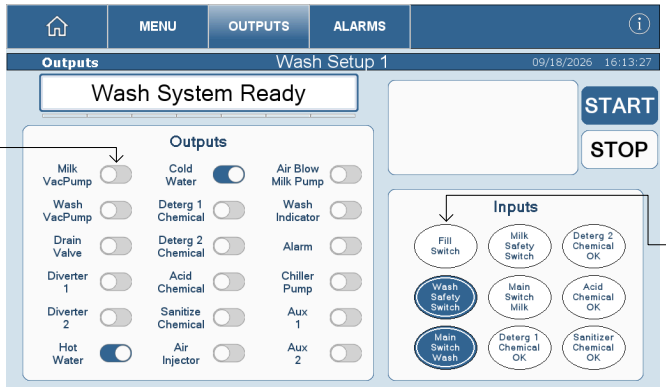


See section 4.3



Manual air blow push button (Run time can be adjusted in device settings)

4.2 Input/Output Viewing



Touch any of the output buttons to turn on the corresponding output for 30 seconds, or touch again to turn off .

Note: The 4 chemical and the 2 aux. outputs do not have a 30 second timer. Output will run as long as it is touched.

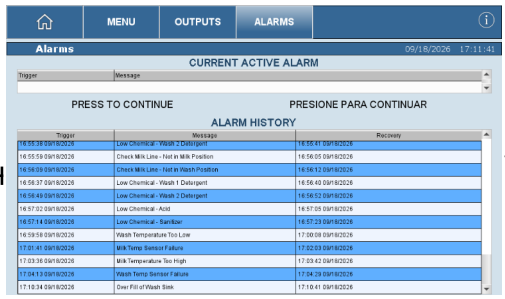
Inputs that are receiving a signal are blue, no color equals no active input.

Note: Fill switch can be touched to activate the fill switch input. (For testing and troubleshooting.)

4.3 Menu Screen



See 4.5



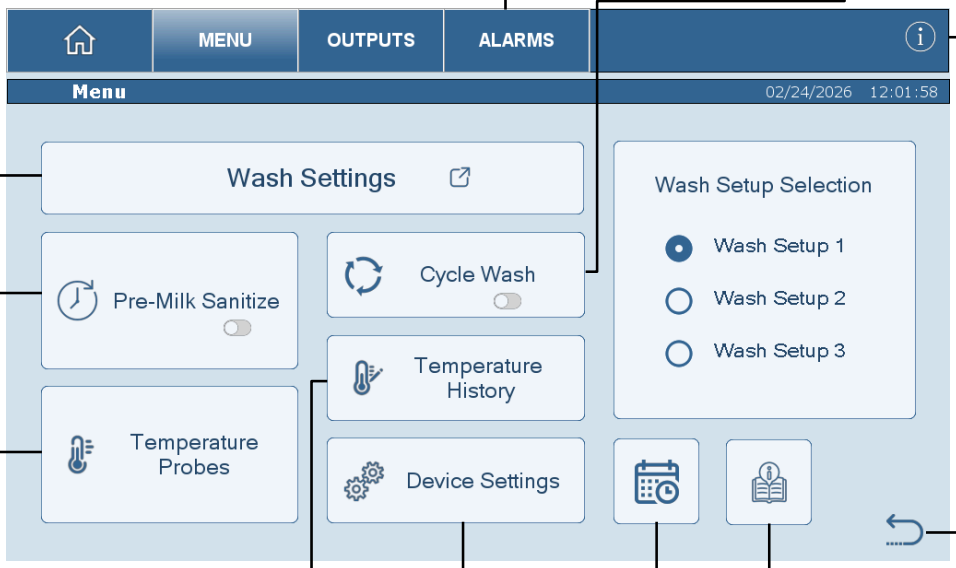
See 5



See 4.4



See 4.7

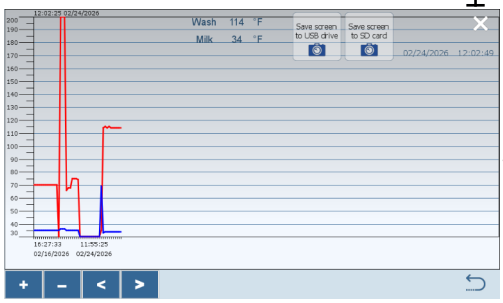


System Info

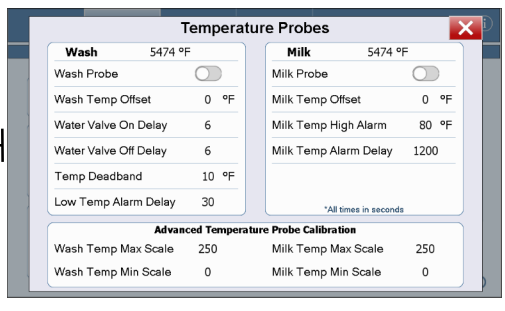
Back

Set Date/Time

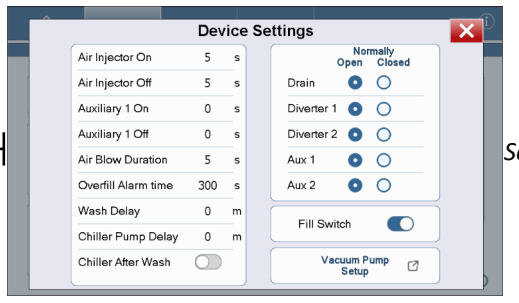
User Manual



See 4.8



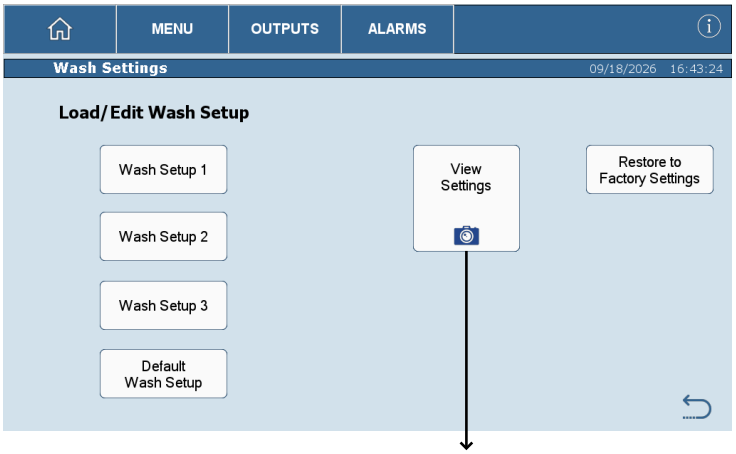
See 4.6



See 4.9

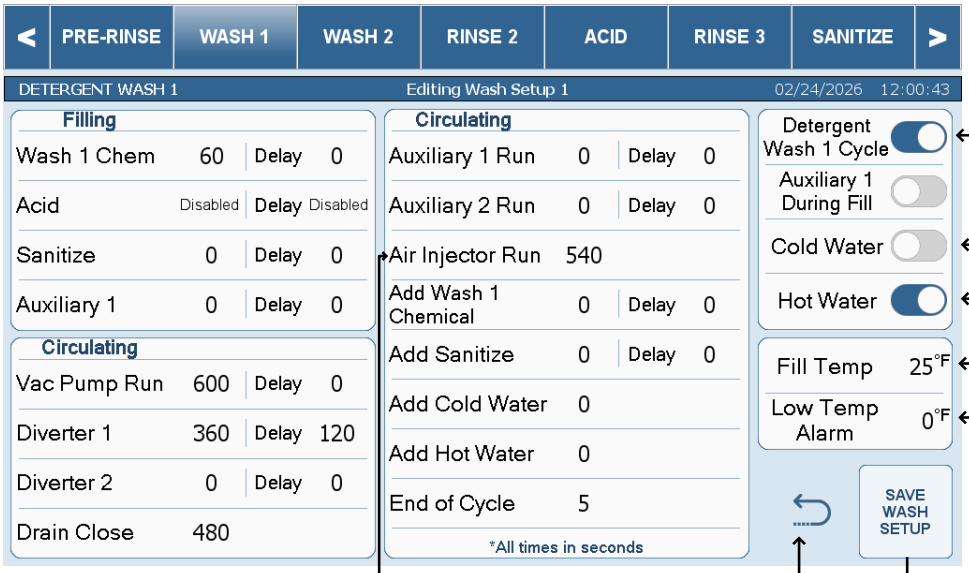
4.4 Wash Settings

Touch any of the Wash Setups to start modifying the wash settings for that setup. From new, all 3 Wash Setups have the factory default wash setup entered.



See Section 4.10

On the top of the screen, touch the cycle preferred to modify.



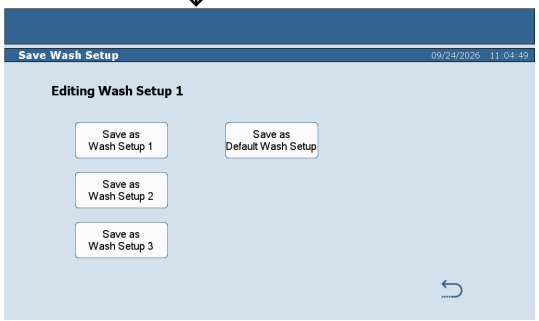
Cycle enabled or disabled

Water Valves Off or On

Set Fill Temperature & Low Temp alarm (Wash probe must be turned "On" in "Temperature Probe" settings)

Air Injector cycle times set in 'Device Settings'

"Back" Does not save



Choose which setup to save the edited settings

4.5 Premilk Sanitize

Pre-Milk Sanitize On/Off

Anytime pre-milk sanitize is turned on:

After a wash cycle the controller will display "Waiting to Pre-Milk Sanitize" until any of the 3 different times that are turned 'On' correspond.



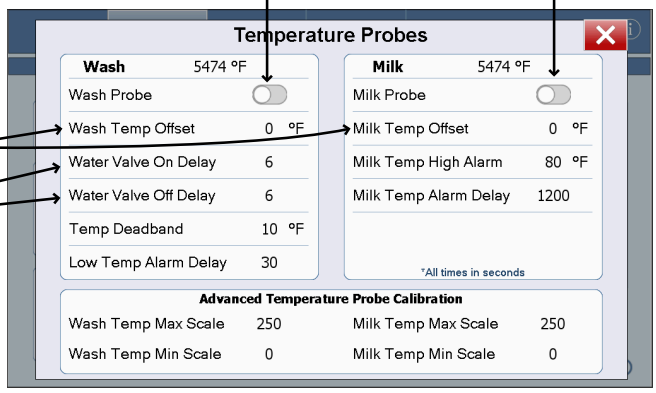
4.6 Temperature Probes Settings

Probes On/Off

Turn off if probe/s not used or if temporary bypass is needed due to probe failure.

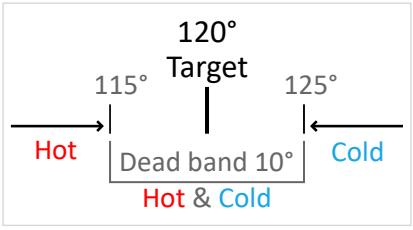
Calibrate after probe/s are installed & adjust if necessary

Delay water valve on/off to prevent chattering



Temp Deadband is the "target zone" around the target temperature where both the hot and cold-water valves stay open to fill the vat simultaneously. The target temp is the center of the deadband.

Example: Target Temp is 120°, deadband is 10:



Low Temp Alarm Delay begins when the cycle starts filling.

Milk Temp Alarm Delay begins when switched to Milk position.

Advanced Temperature Probe Calibration should not be adjusted unless the 4-20Ma transmitter in the **Temp Sensor Assembly** has been reprogrammed. Default program on the transmitter matches settings shown.

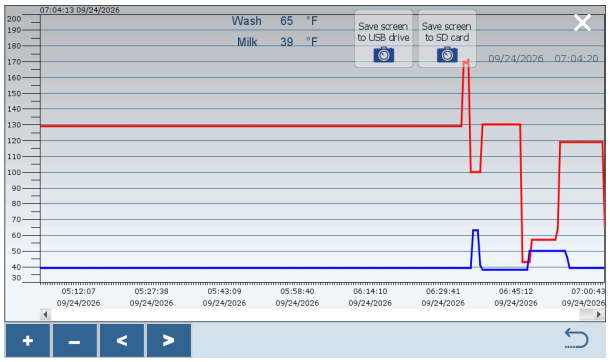
Min/Max of the transmitter and Min/Max shown here need to match for best accuracy.

4.7 Cycle Wash



Cycle wash is used to cycle through the 3 Wash Setups if a different wash configuration is preferred occasionally or for switching multiple times in a day. When toggled 'ON' and all completed are showing 0, the preset entered into Wash Setup 1 will count down first, when finished it will go to setup 2, and so on... The sequence will restart once all three are completed.

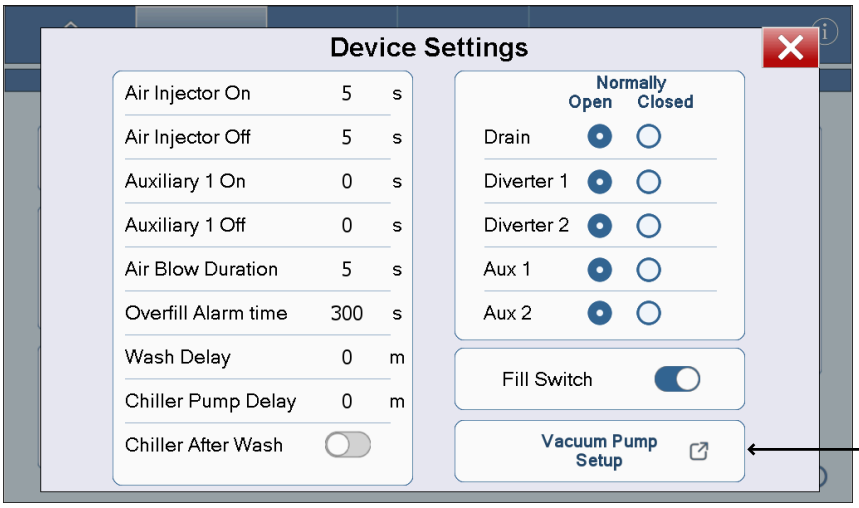
4.8 Temperature recording



Temps shown here are a sample, not actual on farm recording

Stores the last 2 weeks of Milk and Wash Temperature. Red=Wash, Blue = Milk Plus and minus can be used to zoom out or in to an exact time. Left and right arrows can be used to jump to the next set of time stamps. The slider toward the bottom can be used to quickly review the history. Temperature probes must be connected and turned On for recording to function.

4.9 Device Settings



See Section 4.9.1

Air injector On & Off: On/Off cycle that continues for the duration of time that the air injector run time in Wash Setup is set. Set On & Off to 0 if a constant signal is preferred.

Aux 1 On & Off: functions the same as air injector On/Off, can be used if a 2nd air injector is preferred.

Air Blow Duration: manual air blow time. (Activated from the home screen).

Overfill Alarm Time: Max fill time. If it times out before the fill switch is triggered, the wash cycle will abort.

Wash Delay: Delays the wash from when start is touched. Note: Timer is in minutes.

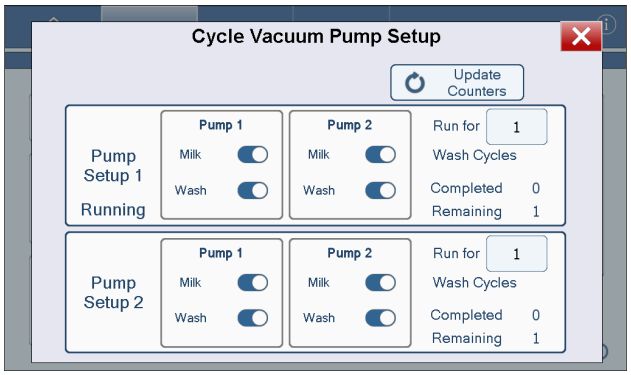
Chiller Pump Delay: Delays when the chiller pump output turns on after a wash. It starts counting down when the last cycle is completed. If using pre-milk sanitize, timer will not start until sanitize is completed.
Note: Timer is in minutes, and can be set for up to 12 hours.

Chiller After Wash: determines whether the chiller output stays off or turns on after the wash. Chiller output is always on when in Milking mode.

Normally Open or Closed: Options for setting 5 of the outputs to NO or NC. Will revert to unpowered state when all cycles are completed. End of cycle time can be adjusted if longer drain/dry time is preferred.

Fill Switch: Toggle on if using a fill switch. When toggled off, the fill cycle will be skipped and water fill & chemical fill needs to be set via the add water and add chemical timer. Vacuum pump run time can be delayed.

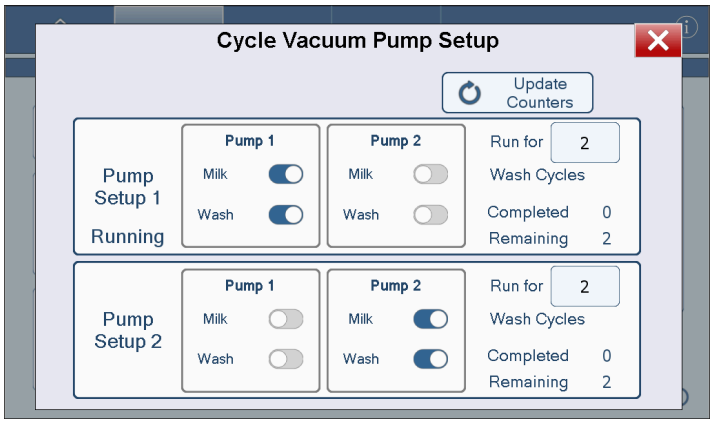
4.9.1 Cycle Vacuum Pump Setup



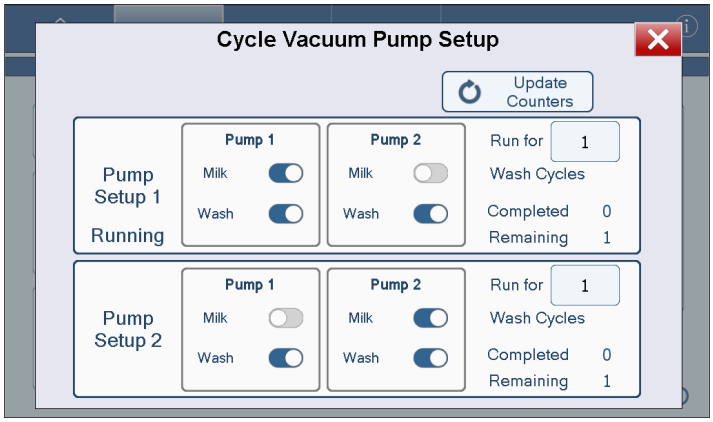
IMPORTANT! *After changing the number of wash cycles, "Update Counters" must be pressed to register the change.*

Cycle vacuum pump setup can be set for many different configurations for alternating the vacuum pumps in a system using 2 vacuum pumps. See below for two basic examples:

To alternate between Pump 1 and Pump 2 every 2 wash cycles:
(Milking and Washing with the same Pump)

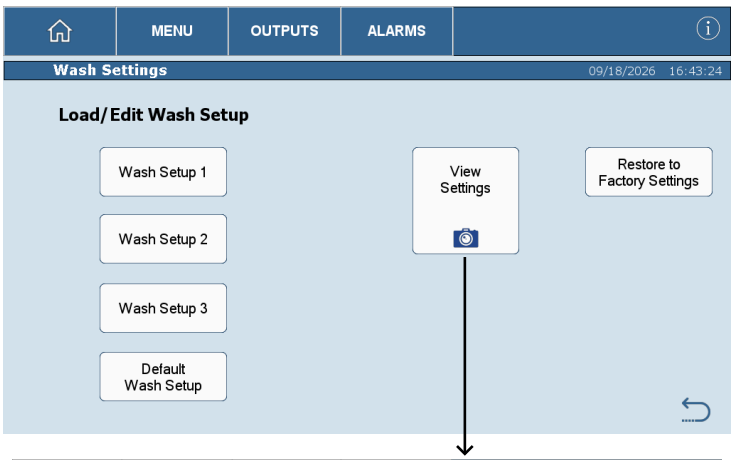


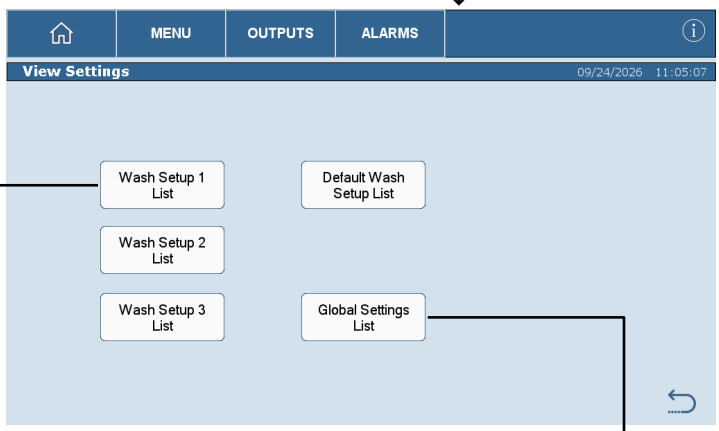
To wash with both pumps all the time and alternate between Pump 1 and Pump 2 for milking:

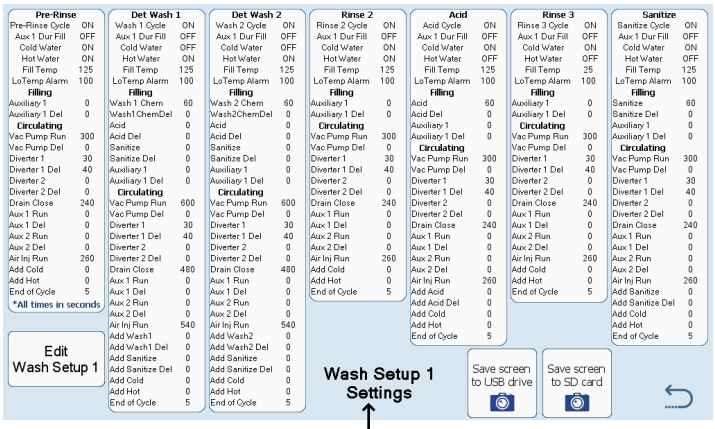


4.10 View & Record Settings

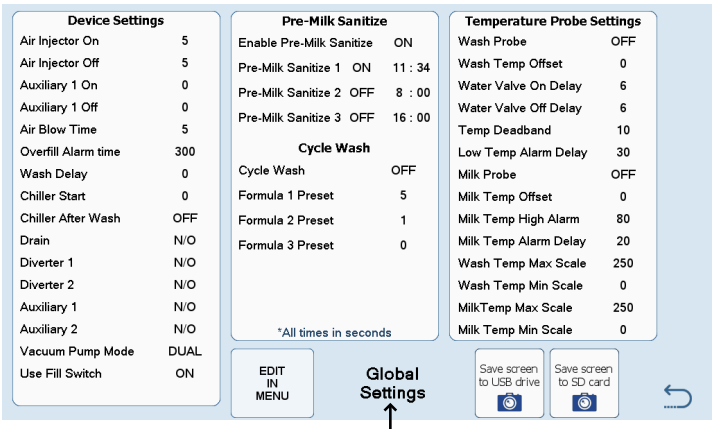
Touch view settings and choose either of the 3 wash setups or "global settings" (to view the corresponding settings. All of the parameters for a "Wash Setup" or Global Settings (applies to all wash setups) will display on one screen.







Displays all the Wash Settings for the selected setup



Displays all the settings that are separate from the Wash Setup list

Insert a USB or an SD card into the bottom right corner on the back of the Touch Screen and touch to save to USB or SD for convenient storage of the Wash Settings



4.11 Wash Cycle Run and Rapid Advancement

Before starting, the Wash cycles that are toggled off are faded out. If wanting to manually skip any cycles for just the upcoming wash, touch any of the other cycles to fade them out to manually skip them. When manually skipping, those cycles will be back to normal in the next wash.

If the Wash and Milk probes are toggled on and connected, the temperatures are displayed in the top right corner. Just below the temperatures is the time remaining for that cycle, or when filling, the amount of time it has been filling.

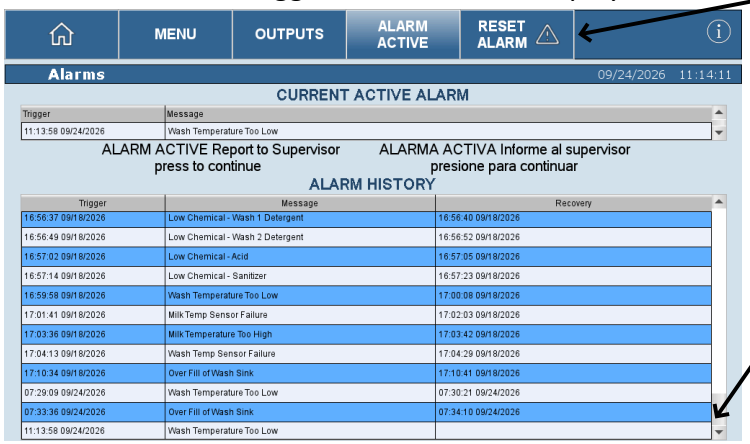
When filling, touch the "Fill Switch" button in the 'Inputs' section to replicate the fill switch and advance the cycle.

Whenever the system is running a cycle, (after the fill switch is activated), touch and hold the progress bar to skip through the cycle. After holding for 5 seconds, it will advance in jumps 30 seconds at a time as long the button is touched.



5 Alarms

If an alarm triggers, this screen is displayed:



If Reset Alarm is pressed and the alarm condition is still present, the alarm will not reset.

Most recent alarm is displayed at the bottom of the list

If the screen is pressed to continue and the alarm is still active, the home screen will show again, but the warning symbol and Alarm Active will be flashing.
If the alarm condition is corrected while in this state,self resetting alarms will reset and it will stop blinking. It will continue blinking for the three Alarms that need to be reset after the alarm condition is corrected.

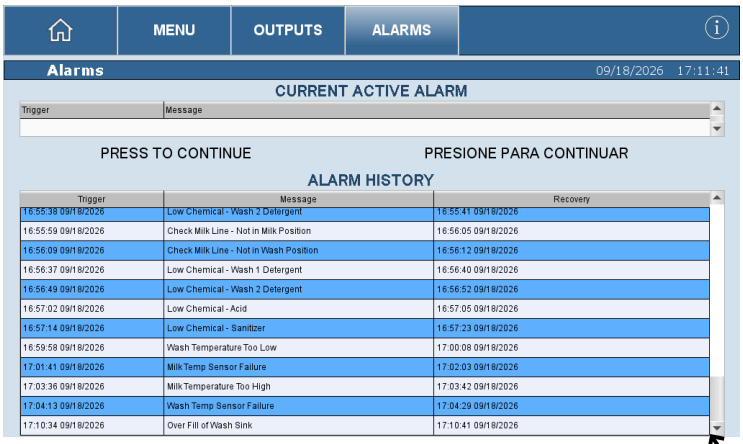


Self Re-settable Alarms:

1 Check Milk Line-Not in Milk Position
2 Wash Temperature Too Low
3 Milk Temperature Too High
4 Low Chemical- Wash 1 Detergent
5 Low Chemical- Wash 2 Detergent
6 Low Chemical- Acid
7 Low Chemical- Sanitizer
8 Fill Switch Stuck On
9 Power Failure-Wash Canceled
10 Check Milk Line-Not in Wash Position

Alarms that need to be reset:

11 Over Fill of Wash Sink
12 Wash Temp Sensor Failure
13 Milk Temp Sensor Failure



If the above screen is showing, an alarm was triggered but the reason for the alarm went away.

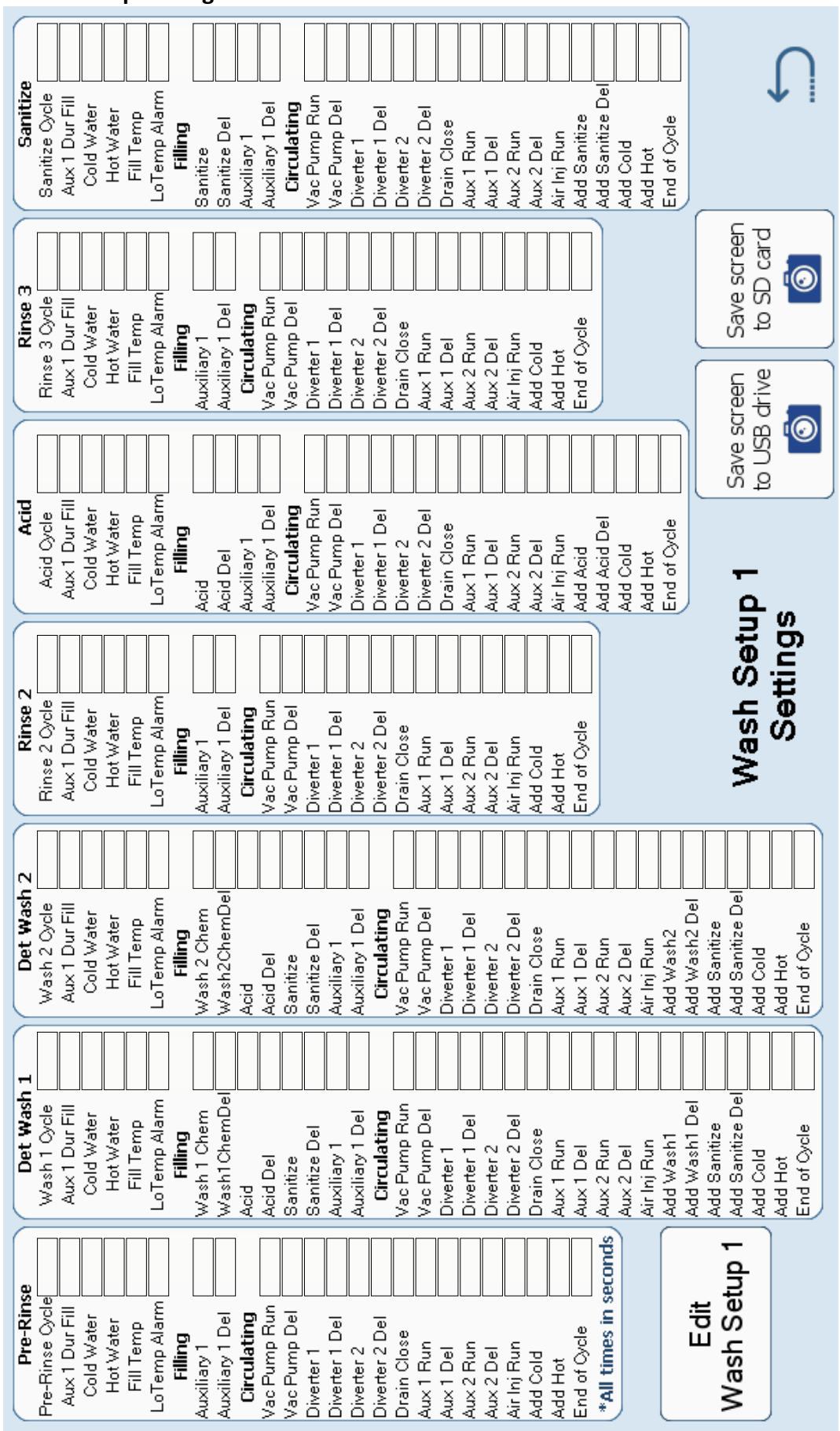
Check the latest alarm (bottom of the list).

5.1 Alarms Messages &Troubleshooting

#	Alarm Message	Possible Cause	Action
1	Check Milk Line - Not in Milk Position	1. Switch not installed, but will be used. 2. Switch is not activated, pipe not in position. 3. Switch is not wired correctly. 4. Switch is faulty. 5. Switch will not be used, but jumper not in.	1. Install limit switch. 2. Correct milk line position. 3. Inspect wiring. 4. Replace switch. 5. Install red jumper from 6 Switch to 7 Wash
2	Wash Temperature Sensor Failure	1. Wash sensor is toggled On, but uninstalled. 2. Sensor is open (or shorted). 3. Faulty wiring.	1. Toggle Wash sensor off or install sensor. 2. Replace sensor. 3. Inspect wiring and repair as necessary.
3	Milk Temperature Sensor failure	1. Milk sensor is toggled On, but uninstalled. 2. Sensor is open (or shorted). 3. Faulty wiring.	1. Toggle Milk sensor off or install sensor. 2. Replace sensor. 3. Inspect wiring and repair as necessary.
4	Fill Switch Stuck On	1. Switch closed before fill started. 2. Switch is faulty, or stays closed.	1. Inspect wiring. 2. Replace switch.
5	Overfill of Wash Sink	1. Overfill Alarm Time time is set too short. 2. Water valves are not working correctly. 3. Fuse for water valve outputs is blown. 4. Fill Switch not activating. 5. Water supply issue.	1. Change setting to longer time. 2. Ensure valves turn on using output screen. 3. Inspect fuse, replace if blown. 4. Replace or repair Fill Switch. 5. Inspect water supply system.
6	Wash Temperature Too Low	1. Cycle Fill Temp set too low. 2. Cycle Low Temperature is set too high. 3. Diverter 1 timer set too long for chem Cycle. 4. Water is not hot enough. 5. Not holding water.	1. Change setting to higher temperature. 2. Change setting to lower temperature. 3. Change setting to shorter time. 4. Check hot water supply. 5. Check Drain Valve.
7	Milk Temperature Too High	1. Alarm Temp Set too low. 2. Plate cooler water off. 3. Milk not cold enough. 4. Milk Temp Alarm Delay set too short.	1. Change setting. 2. Turn on plate cooler water. 3. Verify chiller or plate cooler is working. 4. Check Milk Temp Alarm Delay and adjust.
8	Low Chemical - Wash 1 Detergent	1.Out of chemical in that drum. 2.Chemical probe reed is bad or float is stuck.	1. Replace chemical drum or refill it. 2. Replace or repair chemical probe.
9	Low Chemical - Wash 2 Detergent	1.Out of chemical in that drum. 2.Chemical probe reed is bad or float is stuck.	1. Replace chemical drum or refill it. 2. Replace or repair chemical probe.
10	Low Chemical -Acid	1.Out of chemical in that drum. 2.Chemical probe reed is bad or float is stuck.	1. Replace chemical drum or refill it. 2. Replace or repair chemical probe.
11	Low Chemical - Sanitizer	1.Out of chemical in that drum. 2.Chemical probe reed is bad or float is stuck.	1. Replace chemical drum or refill it. 2. Replace or repair chemical probe.
12	Check Milk Line - Not in Wash Position	1. Switch not installed, but will be used. 2. Switch is not activated, pipe not in position. 3. Switch is not wired properly. 4. Switch is faulty. 5. Switch will not be used, but Jumper not in.	1. Install Limit Switch. 2. Correct milk line position. 3. Inspect wiring. 4. Replace switch. 5. Install red jumper from 6 Switch to 7 Wash
13	Power Failure - Wash Canceled	1. Power was lost during a wash cycle.	1. Cycle was canceled, wash needs to be restarted.

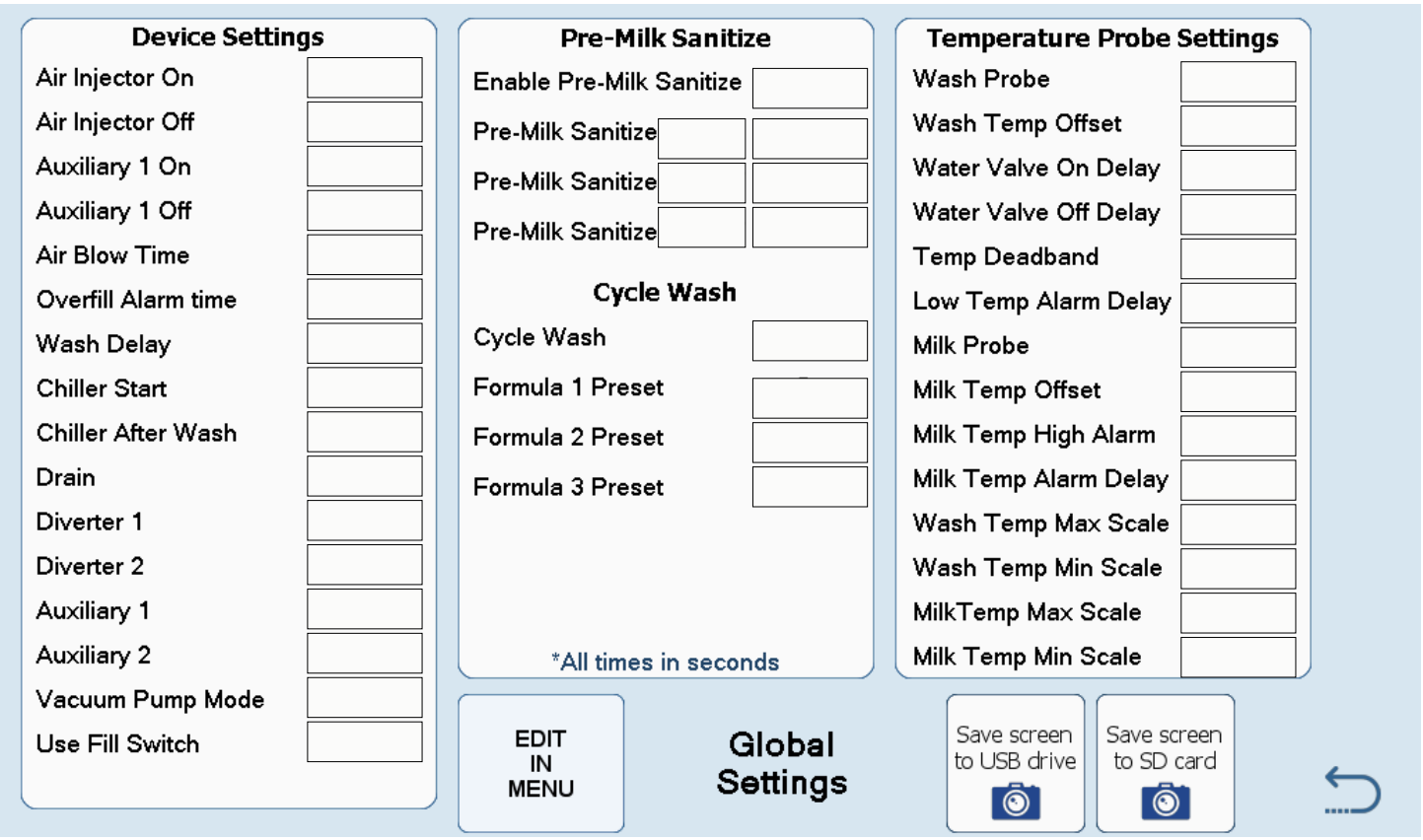
6 Hard Copy of Wash Setup Settings

The following chart can be used if it is preferred to have a hard copy of the Wash Setup Settings. (Instead of saving to an SD or a USB)



6.1 Hard Copy of Global Settings

The following chart can be used if it is preferred to write down the Global Settings.
(Instead of saving to an SD or a USB)



7.0 Spare parts list

#40405 - Replacement Mega Wash I/O PCB

#40110 - Replacement PLC

#40109 - Exp. Module 1

#40111 - Exp Module 2

#56505 - Replacement Touch Screen

8. Technical Support

Electronics: 610.273.7016 Toll Free:888.768.3928

Gert: 920.602.6724 (After hours)

E-Zee Main: 717.768.7560 Toll Free:888.880.3933

Additional Mega Wash Manuals can be downloaded at:

www.ezmilking.com/customer/manuals

Notes

Mega Wash
Automatic Pipeline Wash Control
Installation & Operation Manual

Rev 11.26

#40400

888.880.3933

www.ezmilking.com