

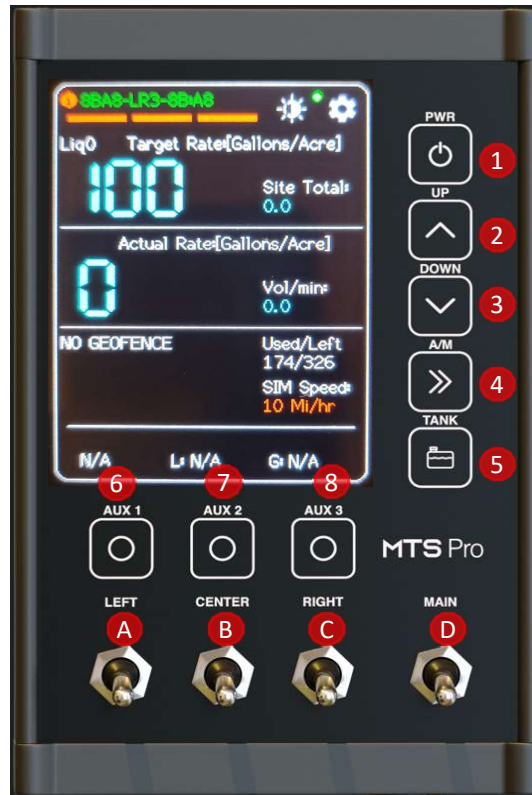
MTS Pro

Liquid Rate Controller

Setup and Operators guide

Under normal operation, the operator only needs to consider the following

- Power on controller using (1). The wireless control unit should connect automatically turning the icon at the top left from red to green.
- Set the desired rate using (2) and (3)
- Wait for the GPS to obtain a fix and display speed in green
- Use (A) (B) (C) and (D) switches to operate booms while spraying
- Use (4) to switch unit to manual mode. Useful when spraying at very slow speeds
- Use (5) to set current tank volume
- Use Aux 1 to turn on/off auxiliary light etc
- Use Aux 2 and 3 to start/stop and control gas engine



Buttons and Switches

1- Short press to power on/off. Long press to reset.

Use the auto power on/off parameter in settings to automatically turn the unit on upon receiving power

2- Short press to increase target rate

3- Short press to decrease target rate

4- Short press to select Auto/Manual mode. Manual mode simulates a set ground speed and is useful for testing and when high volume of liquid needs to be dispensed at low speeds like spraying decks and loading bays

5- Short press to open tank fill menu. Allows to set current tank volume

6- Aux 1. Short press to turn on/off device connected to Aux1.

7- Aux 2 – See gas engine control manual

8- Aux 3 – See gas engine control manual

A- Left boom control. Toggle up to turn on

B- Left boom control. Toggle up to turn on

C- Left boom control. Toggle up to turn on

D- Main override. Can be used to turn off all booms without having to individually turn each boom on/off. Typically used to stop spraying momentarily as a convenient alternative to turning individual switches off.

If speed is 0 and auto boom close option is enabled the booms may not open. Refer to control settings for more details

Home Screen

1- Outside control unit communication status. Red indicates no connection. Green indicates a control unit is connected.

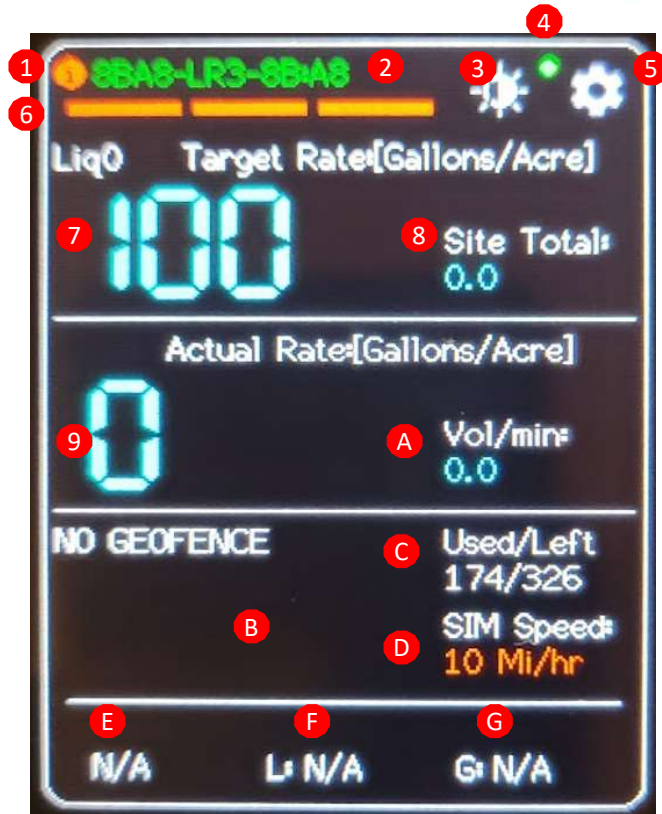
TAP to open general info screen

2- Device followed by the 4 digit device ID that can be used to claim/add this device to your online account.

Green indicates the device firmware is connected to the online portal. White indicates a firmware update is required to use web features for this device.

3- Brightness adjustment. **TAP** to adjust brightness. This setting will be saved for future.

4- Cellular communication status. Green indicates the device is connected to the internet via onboard modem. Red indicates an internet connection is not currently present
5- Setup. **TAP** to enter device setup menu. If enabled, a PIN code will have to be entered to access settings



6- Status of Left, Center and Right booms. Red indicates off. White indicates on

7- Current target rate. Use up and down key to adjust. **TAP** to change current liquid material selection

8- Display alternating between total material dispensed at the current site (based on geofence) or current shift (since powerup)

9- Actual rate. May fluctuate slightly but in most cases should be close to desired rate.

A- Current flow (gallons/liters per minute) useful for diagnostics and when running in manual mode

B- Information about current site (geofence) with name and notes if enabled via web portal

C- Readout of Used/Remaining liquid in tank. Can be reset using the tank fill option.

D- Current Speed/Sim speed indicator. **TAP** to open manual override menu

In Sim speed mode, color is always red.

In normal mode Green indicates a good GPS fix. Orange or Red indicate a poor GPS fix and may require the unit to be re-mounted in a more suitable position for a better fix.

E- Current Event (Low, Medium, High) if enabled via web portal

F- Target rate for liquid for current site (if enabled via portal)*

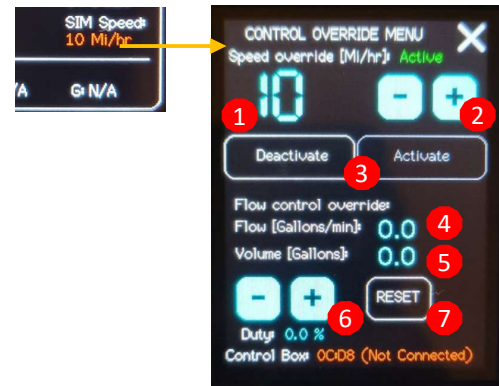
G- Target rate for granular (if enabled via portal) *

* Also alternates between Air and Pavement temperature if a compatible wireless sensor is present and enabled in settings.

Control Override Menu

The control override menu can be accessed by tapping on the sim speed area on the home screen. It offers various controls that can prove handy during operation. For example, the override screen can be used to test system performance while testing the sprayer. The menu can also be used when using the system to dispense liquid to fill other tanks.

- 1- Display of current manual speed setting. This is the speed simulated by the unit when in manual mode.
- 2- +/- buttons to increase or decrease the manual speed setting
- 3- Option to activate/deactivate manual mode
- 4- Current flow as calculated by the flow meter
- 5- Volume dispensed from the time the override menu is opened
- 6- Manually adjust liquid flow. Overrides all systems and lets the operator operate the valve manually. Control on how these buttons function can be found in the liquid control menu.
- 7- Reset current volume total



Setup

- 1- Diagnostic information about the device. **For factory use only**
- 2- Liquid control configuration
- 3- Granular calibration menu
- 4- Liquid Calibration menu
- 5- Settings like units and other preferences
- 6- Firmware update menu. Wifi and cellular
- 7- Switch between liquid control and track mode. Only available if supported by hardware

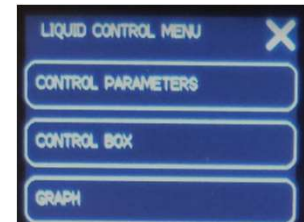


Liquid Control Menu

- 1- Multiple screens that allow fine tuning of liquid control features of the system including, boom widths, control type and others.

Some items are factory use only

- 2- Pairing/syncing with the control box
- 3- Graph plot of the performance of the control system showing desired vs actual flow



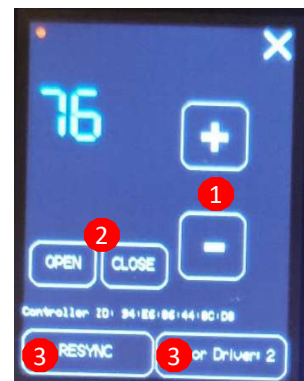
Control Box Menu

- 1, 2 and 4 are **Factory use only**
- 3- Use this option to sync a new wireless control box to the MTS pro display unit.

The MTS pro can only be paired with one control unit at a time.

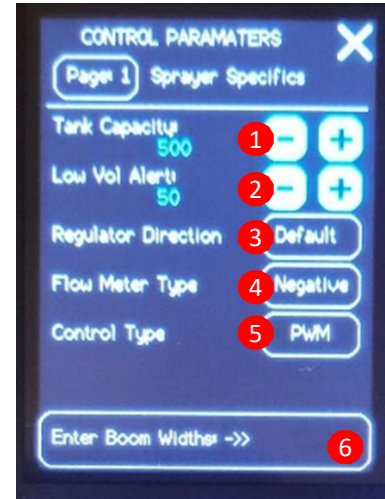
To pair with a new control unit

- Turn on the control unit to pair to
- Make sure this is the only control unit in range
- Tap the resync button. Wait for the dot on the top left corner to turn green (max 2 seconds)



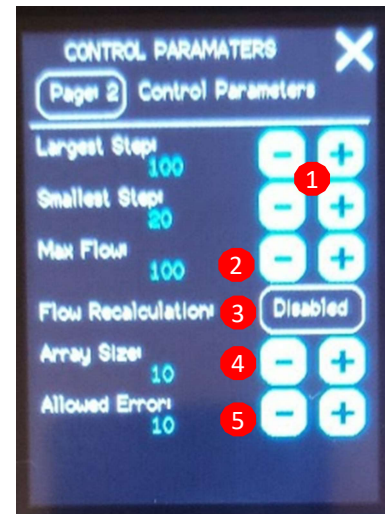
Liquid Control – Page 1

- 1- Use the +/- buttons to set tank capacity
- 2- Use the +/- buttons to set volume alert
- 3- Set if regulator valve is in bypass or inline direction. **Factory only**
- 4- Set output type of flow meter. Arag is positive output, tee jet and microtrak are negative.
- 5- Set control type. **Factory only**. Use this option to set if the system flow is controller using a motorized regulating valve or a hydraulic PWM valve
- 6- Set boom widths



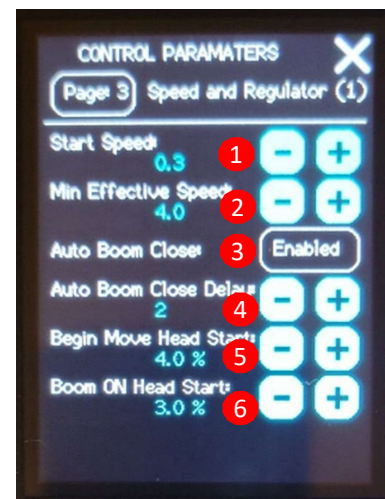
Liquid Control – Page 2

- 1- Smallest and largest step settings used to control how much to open and close valved (regulating or hydraulic PWM).
- Factory only**
- 2- Use to set maximum flow of the system. **Factory only**
- 3- Enable for flow meters with very low ppg. **Factory only**
- 4- Tied to #3. **Factory only**
- 5- The maximum allowed % difference between required and actual flow. 10% is recommended to keep control oscillations to a minimum



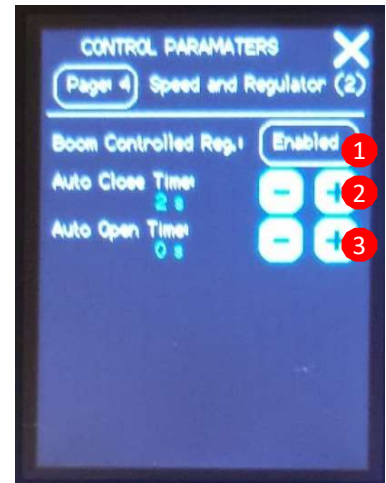
Liquid Control – Page 3

- 1- Speed at which the system starts spraying
- 2- Minimum speed assumed when spraying. For example, if the vehicle is moving at 1mpg, the system is assume a speed of 4mph to help stay within the operable limits of the system
- 3- Enable this option to automatically turn off all booms when the vehicle stops
- 4- Time to wait before booms are shut off automatically due to 0 speed.
- 5- Time in seconds (for regulator valve) and % duty cycle (for hydraulic PWM) for the system to open valves continuously upon beginning to move. This helps get to desired flow as quickly as possible
- 6- Time in seconds (for regulator valve) and % duty cycle (for hydraulic PWM) for the system to open valves continuously upon opening another boom. This helps get to desired flow as quickly as possible



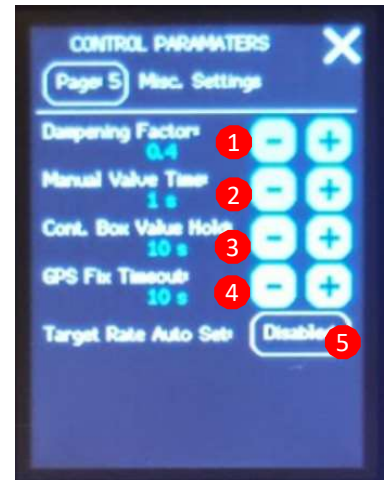
Liquid Control – Page 4

- 1- When enabled the regulating valve will close and then open for pre-configured time periods when booms are closed. This will help maintain some pressure in the system to help provide instant flow when the booms are opened again.
- 2- Use the +/- buttons to set time for which the regulating valve will be closed. This should typically be set to the time it takes for the valve to fully open or close
- 3- Use the +/- buttons to set time for which the regulating valve will be opened **after closing**. This should typically be set to the time it takes to open the valve enough to maintain safe pressure in the system



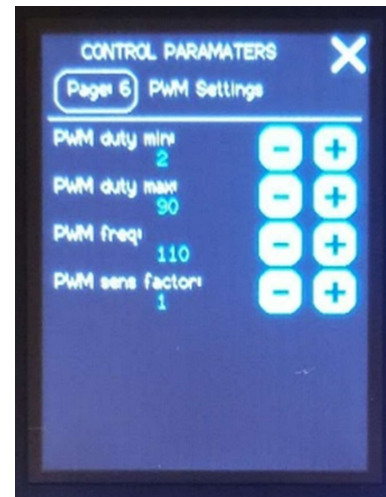
Liquid Control – Page 5

- 1- **Factory only.**
- 2- Time for which the regulating valve is opened or closed per button press (for manual override screen only)
- 3- Time for the control box to continue to operate based on last known parameters in the event that there is a temporary loss in communication between display and wireless control unit
- 4- Time to hold last known GPS speed if there is a temporary loss of GPS fix
- 5- Automatically set application rate based on geofence (if set via web portal)



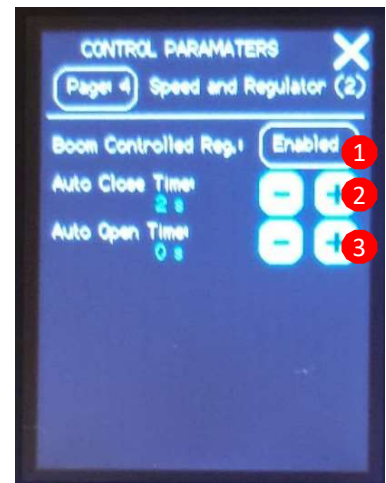
Liquid Control – Page 6

- 1- **Factory only settings for PWM hydraulic control**



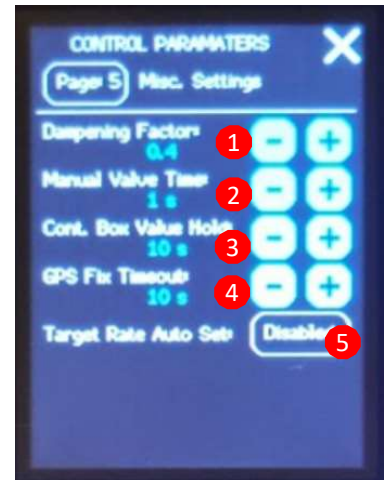
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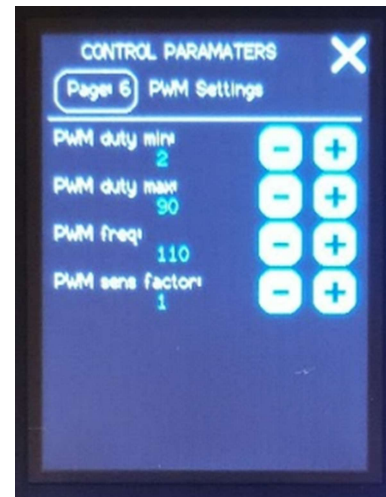
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Liquid Control – Page 6

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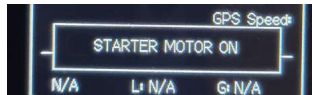
Engine Control

In engine control mode, the MTS pro home screen will allow the following operations

- Start the engine
- Stop the engine
- Increase throttle
- Decrease throttle
- Manual throttle and choke control

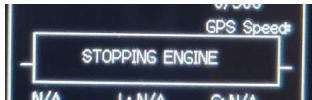
Engine Start

Press and hold 3 to energize the engine start circuit. Release to de-energize



Engine Stop

Press and hold 2 for three seconds to stop then engine

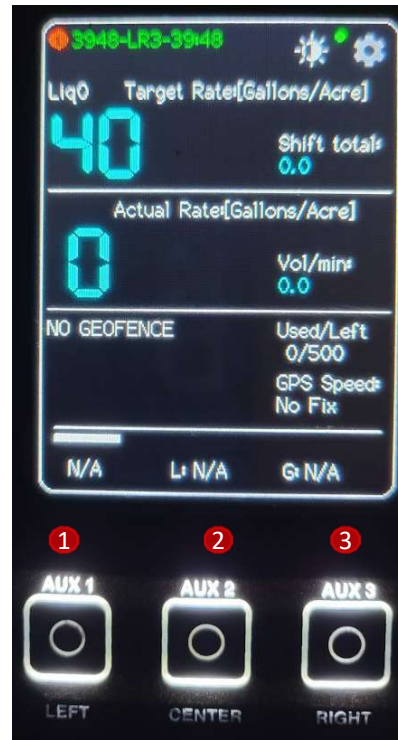


Throttle up

Press 1 to increase throttle

Throttle down

Press 2 to decrease throttle



Manual Throttle Control

Cold starts and diagnostics may require manual control of the throttle and choke servos.

Long press 1 to open Servo Override Menu

Tap the + / - buttons to adjust throttle and choke positions.

Choke and throttle will return to home position upon leaving this screen

Refer to servo control settings to fine tune servo behavior to your system

