SmartAGSystems

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Operators Manual

ISO SPRAY CONTROLLER

This is a guide to be printed and kept with the ISO Spray Controller to ensure optimal setup and use for your machinery and safety.

PLEASE NOTE Parts and specifications are subject to change. Part numbers may differ if supplied directly from an OEM or retrofit.

DRIVING CONTROL EFFICIENCY
IN AGRICULTURE

ISO Sprayer Operations Manual

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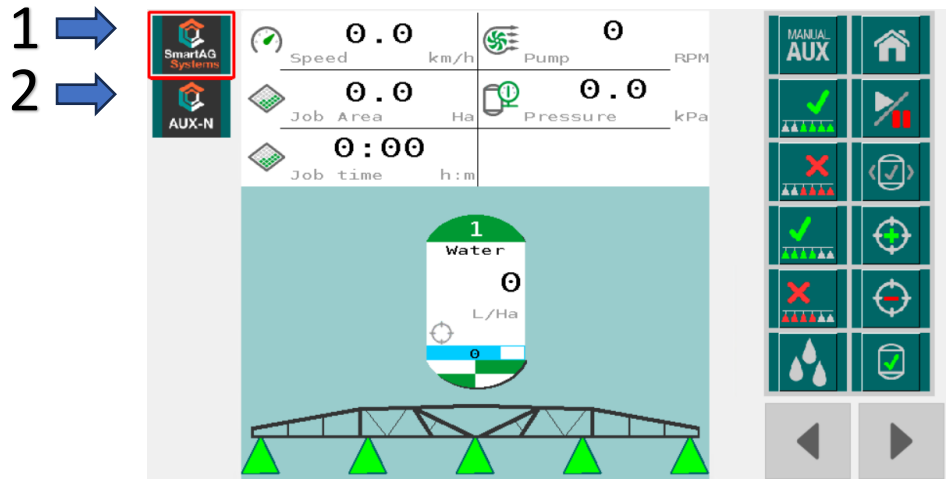
This manual is used as a guide for the operation of the Smart AG Systems ISO Controller on a sprayer.



When the screen view populates on your tractor screen you have two options:

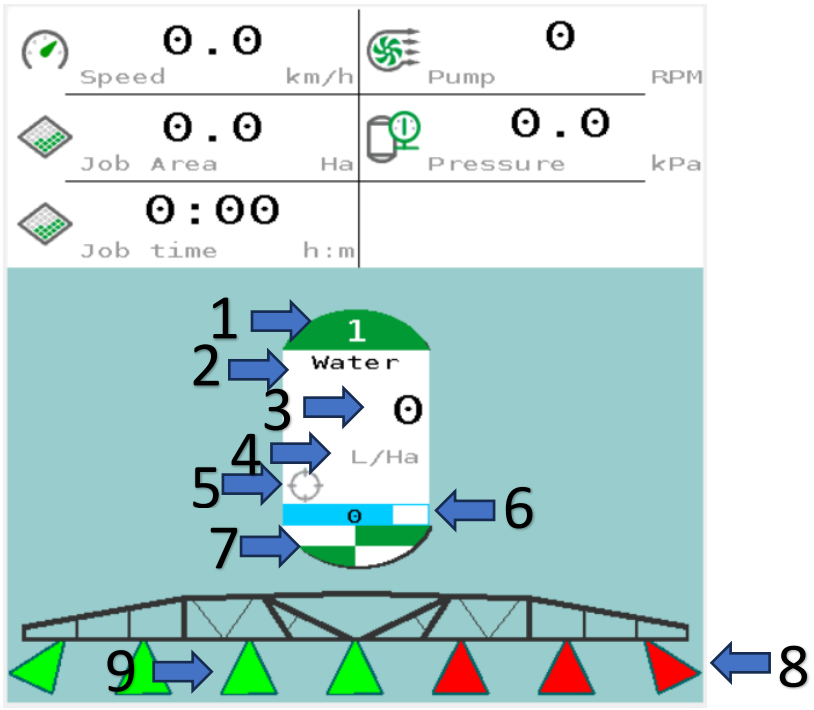
1) This selects the main sprayer operations screen. This will in future come up automatically when the system is restarted.
2) AUX-N allows you to configure arm rest and Joystick buttons to operate the ISO screen.

Main Operations Screen

(1) Ground speed indication	(4) Pump RPM
(2) Job Area	(5) Pump Pressure
(3) Job Time	

If the Prime mode has been set the Speed tile can display alongside the speed reading the following:

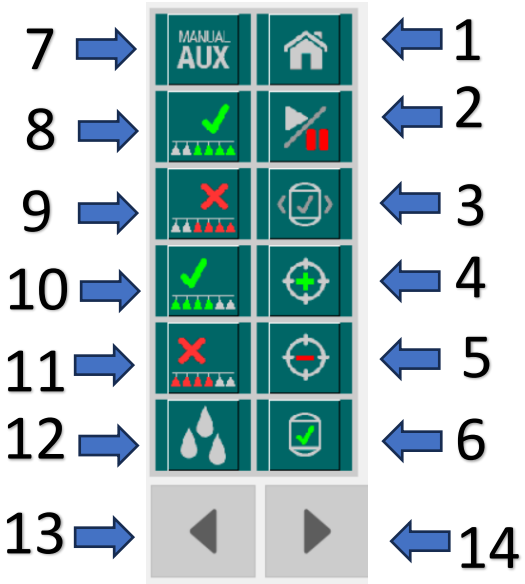
1) **P** to show you are in prime mode
2) **S** indicates the system is in slow hold mode
3) **H** to show that the system is in Hold until a speed reading is received



1) Bin Number
2) Product allocated to bin.
3) Actual Rate (Live or Target)
4) S I Rate Units. (Kg/Ha or L/Ha)
5) Target Indicator. (Indicates if the rate is above, below or with 10% of target rate)
6) Bin Weight and blue area showing the current percentage of bin capacity.
7) Icon to show if bin is in Run or Hold mode.
8) Fence line nozzles status indicator
9) Section status indicator
10) Auto boom section control Indicator

Soft Keys

Please note these keys can be on either side of the display and larger or smaller numbers depending on screen layout.

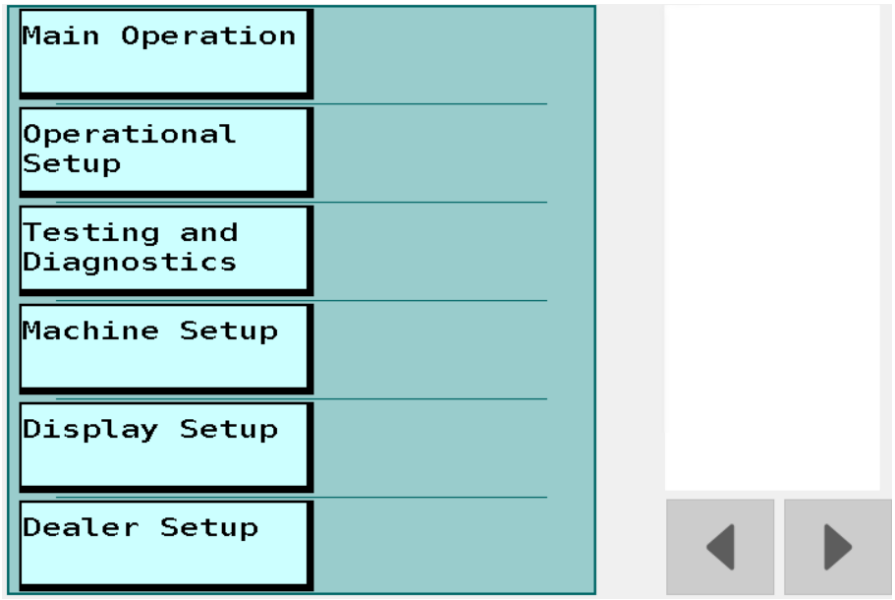


1) Home, Setup Pages Operational Setup, Machine Setup, Testing and Diagnostics.
2) Run/ Hold button.
3) Bin Selection button (Toggles the black box across the bin to the selected bin).
4) Rate Increase button.
5) Rate Decrease Button.
6) Bin Control Button (Isolates bins if not used).
7) Manual Aux Button (Manual switches for Lights and Hydraulics).
8) Increase sections used on right hand side of boom.
9) Decrease sections used on right hand side of boom.
10) Increase sections used on left hand side of boom.
11) Decrease sections used on left hand side of boom.
12) Flush Button, for cleaning out boom.
13) Button to show more Buttons if available.
14) Button to get back to main Buttons.

System Setup

Press the **Home** Softkey for all setup and system configurations.

1) **Operational Setup**, for all bin/product related configurations.
2) **Testing and Diagnostics**, for all motor testing and diagnostic information.
3) **Machine Setup,** Alarms, Prime Time and Task Controller setup.
4) **Display Setup,** select screen you wish to use
5) **Dealer Setup,** this is to be done by the commissioning dealer.



Operational Setup

Press the Home button from the front screen and select **Operational Setup.**

This area is where all day-to-day setup is done and all bin associated management is controlled.

Jobs, this is where front screen Job information is kept and managed.

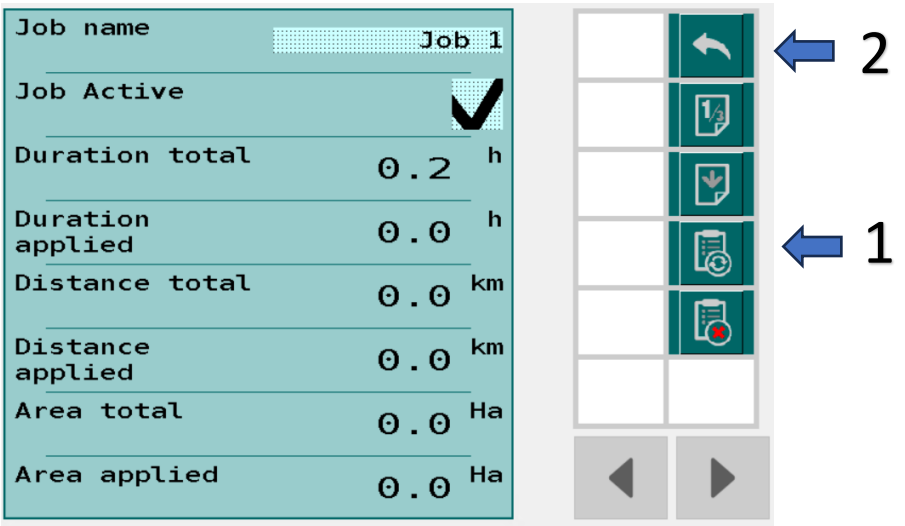
Product setup (Addition, setup and information of products or removal of products).

Tank # Operations (Bin Levels, Application Rates, Application Step size, VRA Nudge Step size) Individual **Tank Operations** tiles will be displayed for all bins setup on the system.

Tank Product (Product Selection, Manual Calibration input, Product Calibration, Advanced Calibration setup and Calibration units)

Jobs

From the Operational Setup screen, press the **Jobs** tile. As there is only one job available, Press the **Job 1** tile to enter the Jobs information and management screen.



1) This button will reset all the Job 1 data and clear the Main operations screen job information.
2) Press the **Return** button twice to return to the Operational Setup page.

Product Management

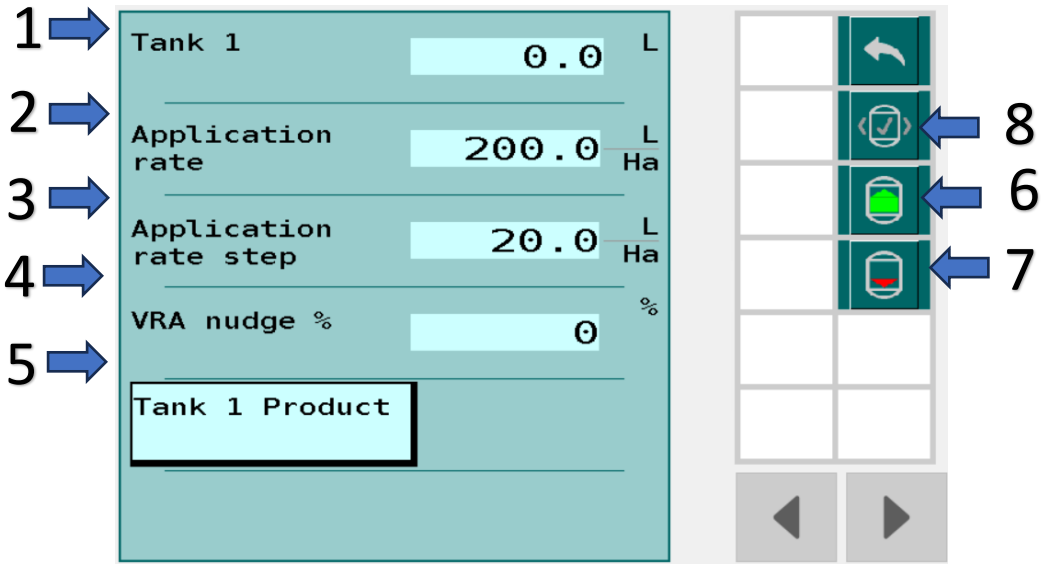
This area is where you set up new and remove products.

From the Operational Setup screen, press the **Product Management** tile.

1) Select the product and it allow you to setup and view product details.
2) Press this button allow you to add/setup a new product.
3) Press the **Return** button to return to the Operational Setup page.

Tank # Operations

From the Operational Setup screen, press the **Tank # Operations** tile for the tank number you require.

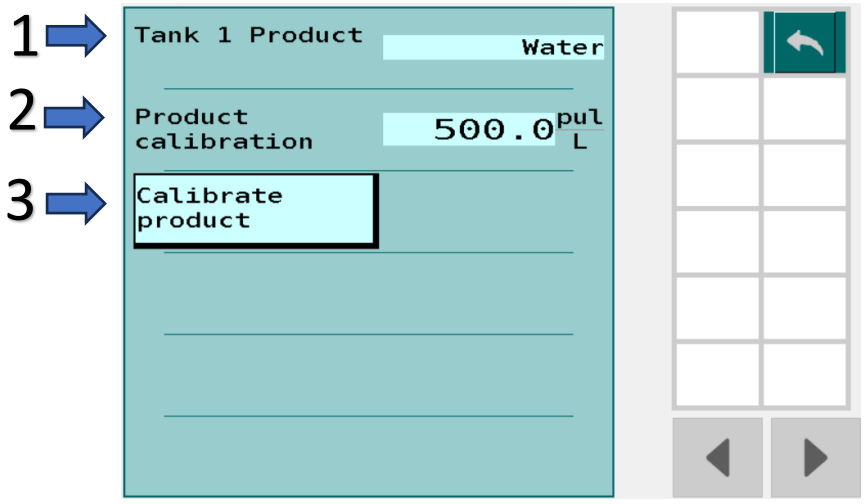


This area allows you to set your:

1) Current tank volume (excluding if you have load cells-automatically sets them)
2) Application rate
3) Application rate step size
4) VRA rate step size
5) Calibrate the product for this bin.
6) Quick Fill Button
7) Quick empty Button
8) Toggle to next Bin button

Calibration Setup

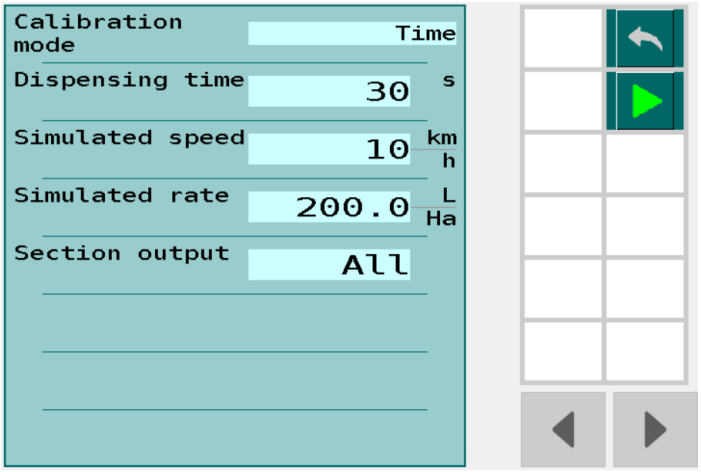
From the Tank # Operations screen, press the **Tank Product** tile**.**



1) Tank product (Press the **Product** to get the selection from the preset products, setup in Product Management).
2) Product Calibration (Press the **Value** if you know the calibration value and you want to set it manually)
3) Product Calibration (Press **Product Calibration** tile to start the calibration)

Calibration

From the Tank Product screen, press **Calibrate Product** tile.

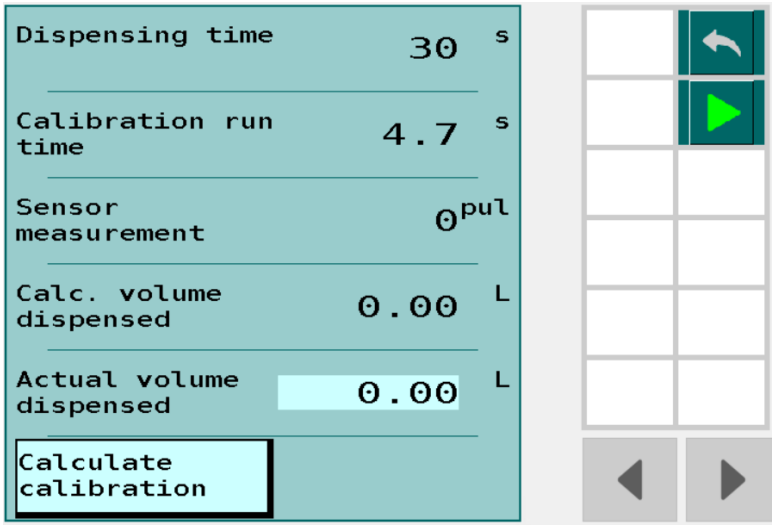


This screen is set up with a default mode of time and is set for 30 seconds, this can be changed to suit your requirements.

Select the **Simulated Speed** and **Rate** to best match what the actual machine would be doing.

The section Output selects which sections you are going to collect the liquid volume from. Ensure that you have enough containers to collect all the liquid from all the nozzles on that section.

To Start the calibration, Press the **Play** Button (2) and the live calibration page will be displayed.



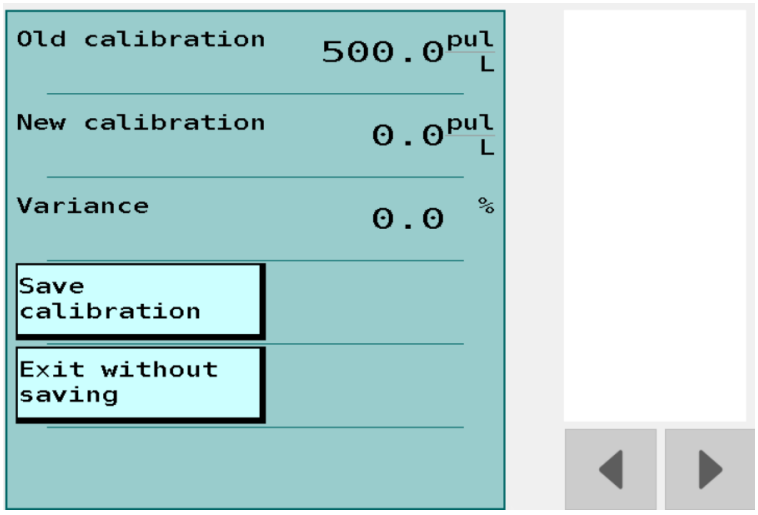
The system will run for the dispensing time and then stop. If for any reason you want to stop the calibration process, then press the **Pause** button. (This will not affect the calibration)

Once the calibration is completed, measure the volume of the product dispensed and press the **Actual volume Dispensed.** Type the measured value in there.

Then press the **Calculate Calibration** Button.

Once the Calculate Calibration button has been pressed, the calibration values will be displayed along with the variance between the two calibration values.

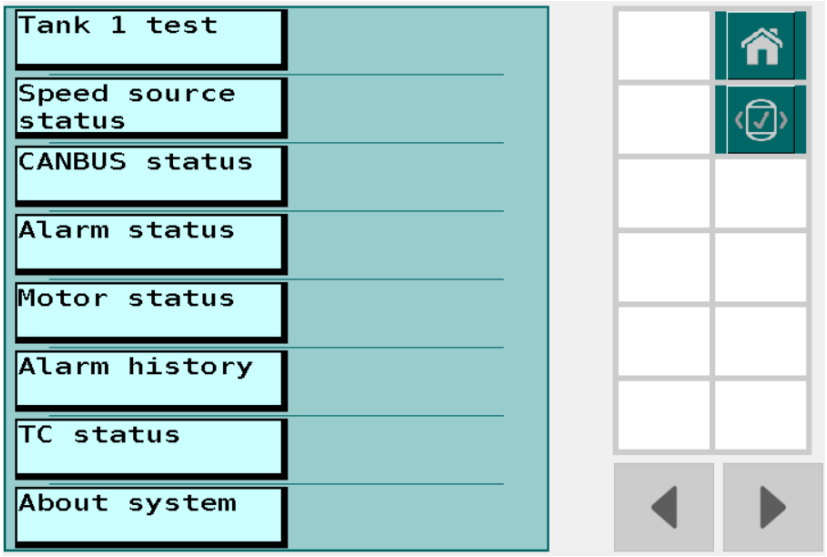
If you are happy with the new value, then press the **Save Calibration** button and this will update the calibration value automatically**.** If you feel that the new calibration value is not correct, or something is amiss then, press the **Exit without Saving** Button. It will ask you to confirm that you wish to Exit without Saving. By pressing the **Exit without Saving** button. Now you can either redo the calibration or continue with the old calibration value.



Press the return key to exit back to the main display.

Testing and Diagnostics

Press the **Testing and Diagnostics** Button, this is the area where all diagnostics information is found.

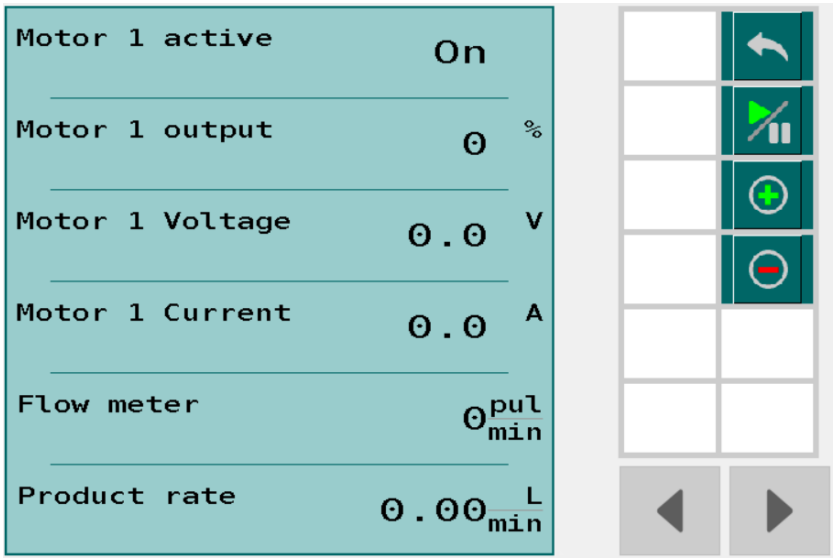


1) Test # test (This allows you to confirm the motor output is working as it should).
2) Speed Source Status (Shows the raw data from the speed sensor).
3) CANBus Status (Shows which pods/load cell are connected). (Pod and individual load cell voltage readings)
4) Alarm Status (shows all alarms available and it tripped or not)
5) Motor Status (Shows live motor power outputs (% output, Voltage and Amps used)
6) Alarm History (records the history of all alarms)
7) TC Status (Shows if the TC controller is available and connected)
8) About System (Shows Software version, hardware ID, the unlocks current on the POD and the ability to add an Unlock Code for extra features.

Tank # Test

The Test # test allows you to directly output power to the control valve. This removes any control algorithm from the output and just supplies the full range of output power to verify the power supply is working.

The soft keys allow you to test on the valve drive operation. Pressing the Play key will start the test and holding the Plus or Minus key will open or close the valve respectively.



During the testing, this page indicates what power is being sent to the valve with sensor feedback showing current pulse rate from the flow meter and the actual flow displayed.

Speed Source Status

This page shows the type of speed source selected and any live data on the speed input.

CANBus Status

These pages show the following information for both pods and load cells.

1) Serial Number
2) Mode
3) Status
4) Voltage
5) If Low voltage has been tripped
6) If the over current has been tripped

Alarm Status

These pages show all alarms setup and if they are OK, Tripped or disabled.

Motor Status

This page is available when the machine is in ruin mode and allows you to see what the motor state is and to determine if the motor is running correctly.

TC Status

This page shows if the Task Controller is available and if connected.

About System

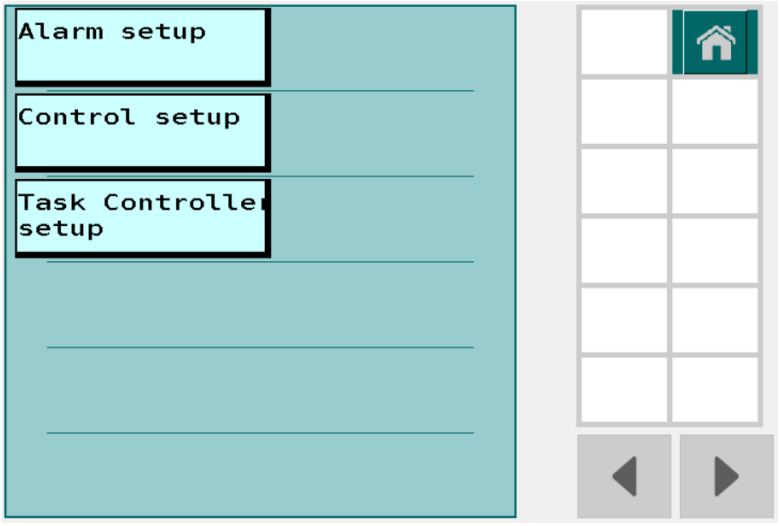
This page shows the following information:

1) Software version
2) Build Version

3) Controller Model
4) Site ID
5) Hardware ID
6) View Software Unlock This allows you to see which software feature is unlocked, what features are available and to enter the unlock code to enable the locked feature.

Machine Setup

Press **Machine setup** button for all the non tank related machine step

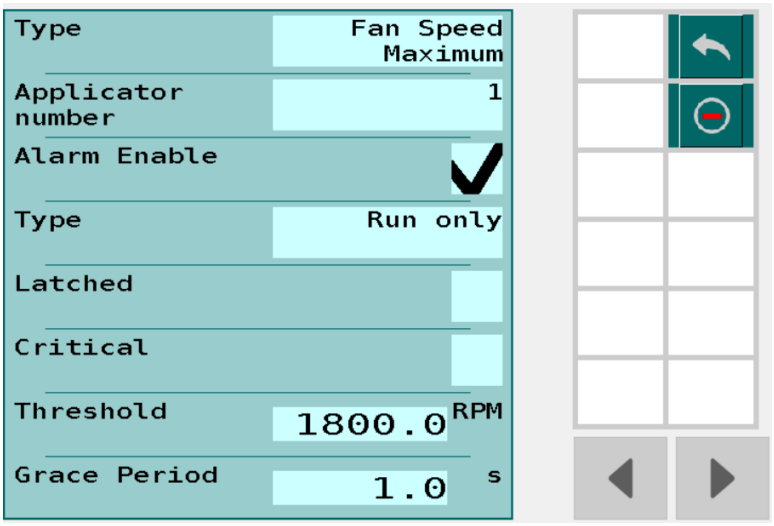


Alarm Setup

Basic alarms are automatically populated when the tank number is selected. This area allows you to tailor the alarms to your settings.

If the alarm, you require is not shown on the list the press the Plus softkey to add an additional alarm.

To configure the currently displayed alarms, then press the Alarm tile you wish to setup and it will display the setup page.



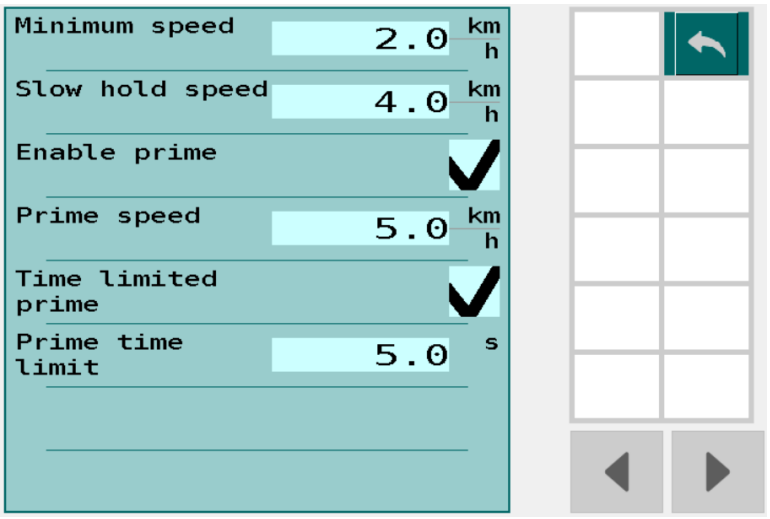
1) **Type,** Select this tile, to determine the alarm type you want from the list
2) **Applicator Number**, Ensure that you elect the correct applicator (usually only one for sprayer(
3) **Alarm Enable,** allows to you to enable and disable the alarm (if you have a faulty sensor you can disable to stop the alarm from tripping until sensor replaced/fixed)
4) **Latched,** if tripped the alarm will not automatically reset when the parameters get with normal range.
5) **Critical,** if the alarm is tripped the system will go into hold mode (Unit stops spraying) and the alarm need to be reset for it to work again.
6) **Threshold,** this is the setting you want the alarm to trip at.
7) **Grace Period,** the alarm will be delayed for this period of time, so that short periods beyond the threshold does not cause the alarm to go off.

Once you have configured your alarm tile, press the return key to get back to the main alarm page. In Most cases there will be more that one page of alarms so, use the **Up** or **Down** pages soft keys to scroll to the required alarm tile.

Use the Red minus softkey if you wish to remove an alarm completely.

Control Setup

This is where the speed related control is setup.

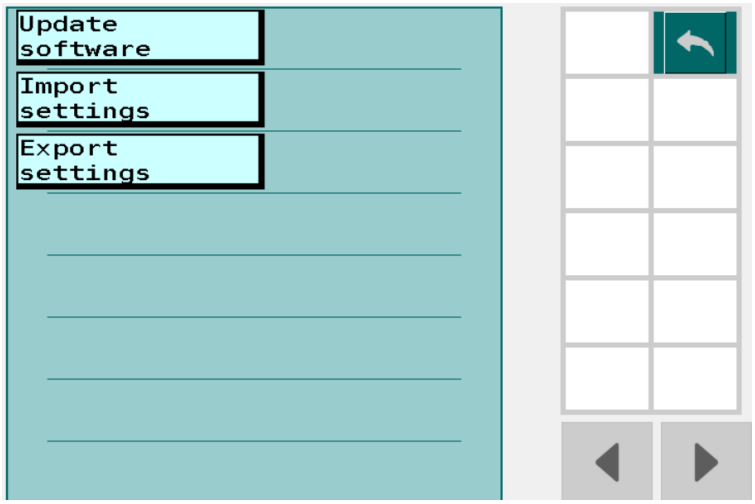


1) **Minimum speed,** the slowest operating speed for the machine to operate. Below this speed the machine will go into **Hold** mode.
2) **Slow Hold speed,** this setting will maintain the speed you set, when you go below that speed until either you speed up above the slow hold speed or you slow down below the minimum speed where the unit will go into hold mode.
3) **Enable Prime,** enabling this allows the system to output a control signal when standing still.
4) **Prime Speed,** this is a simulated speed, that the system will run at, when the **Run** button is pressed.
5) **Time Limited**, enabling this allows the system to run in prime mode for a designated time, if not ticked then and prime mode selected this will override the actual speed signal. This can be used as a speed source when the speed sensor has failed, but to get the rate accurate you **must** drive to the prime speed.
6) **Prime Time Limit,** this is time the system will run for when the **Run** button is pressed.

If both the Prime Speed and the Prime time are enabled, when any of these two parameters are exceeded, normal control will be resumed.

File Sever

This is where the ISOpod software can be updated, and you can save/ load configuration files.



1) **Update software,** select this button when you have loaded a newer version of the software on a USB drive and inserted into the drive on the tractor Display. Please note that not all tractor displays have the File Server capabilities.
2) **Import Setting,** If you have previously saved your setting on a USB drive, then you can reimport them to return the screen functionality back to original settings.
3) **Export settings,** this allows you to save any changes/configurations to the system that you have made to tailor your system to how you want it.