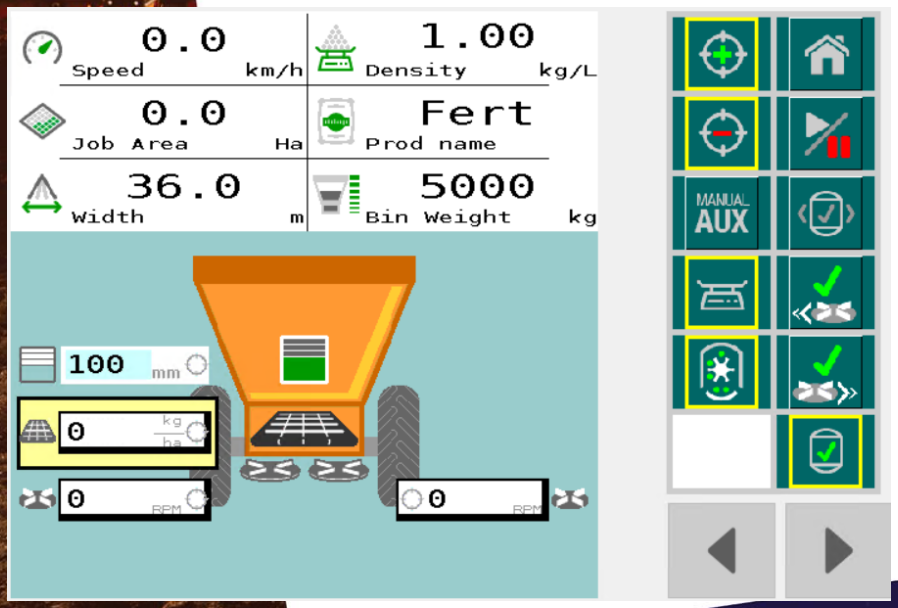
SmartAGSystems
www.smartAGsys.com

Operators Manual

ISO SPREADER CONTROLLER

This is a guide to be printed and kept with the ISO Spreader 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.



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ISO Spreader Operations Manual

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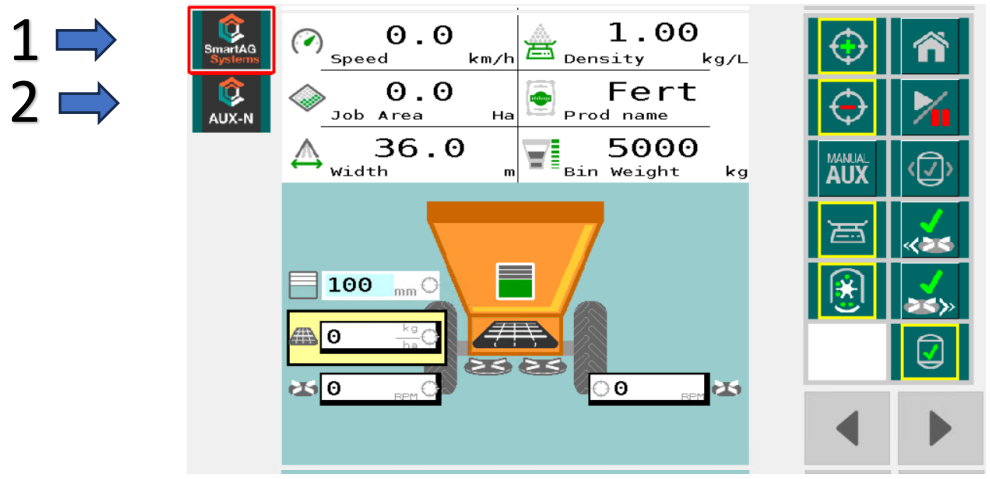
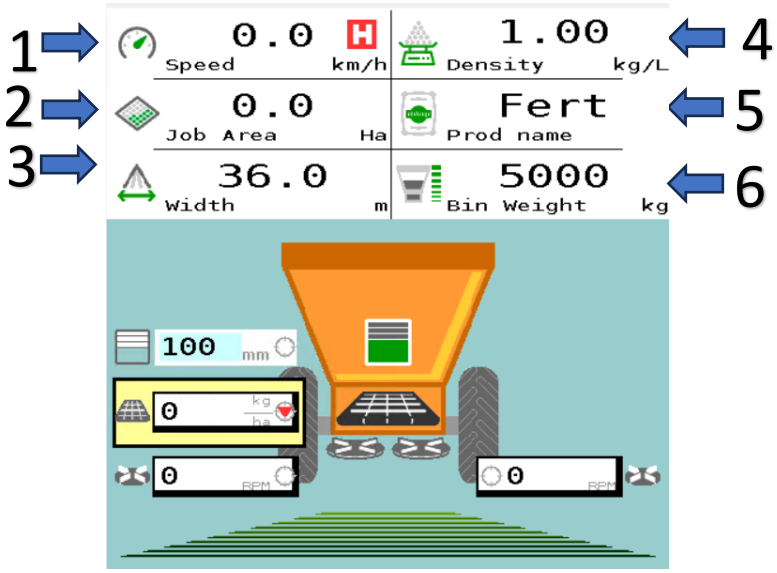
This manual is used as a guide for the operation of the Smart AG Systems ISO Controller on a spreader.



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

1) This selects the main spreader operations screen. This will 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.

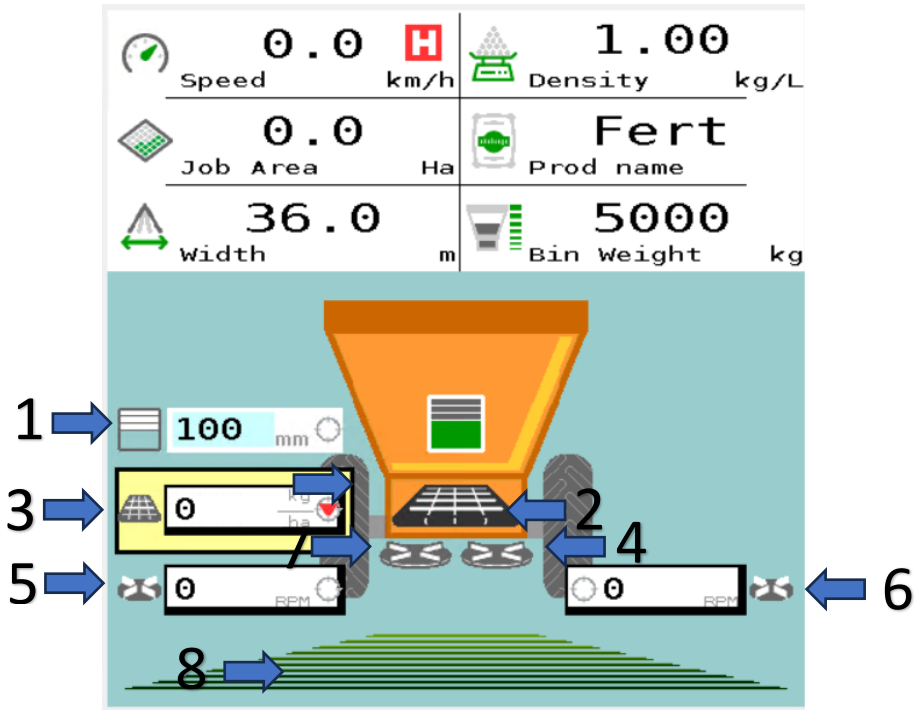
Main Operations Screen



(1) Ground speed indication	(4) Product Density
(2) Job Area	(5) Product Name
(3) Spread width	(6) Bin Weight

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

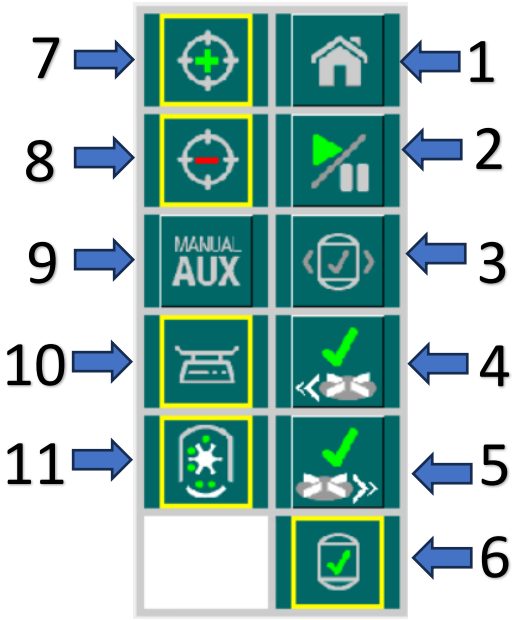
1) **P** to show that the system is in prime mode
2) **S** indicates the system is in slow hold mode
3) **H** to show that the system is in Hold until a speed reading is received



1) Gate Height
2) Belt status indication
3) Belt Rate (Live or Target)
4) Spinner/s On/Off Icon
5) Target Indicator. (Indicates if the rate is above, below or within 10% of target rate)
6) RH Spinner Rate (Live or Target).
7) LH Spinner Rate (Live or Target).
8) Spreading indicator

Soft Keys

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

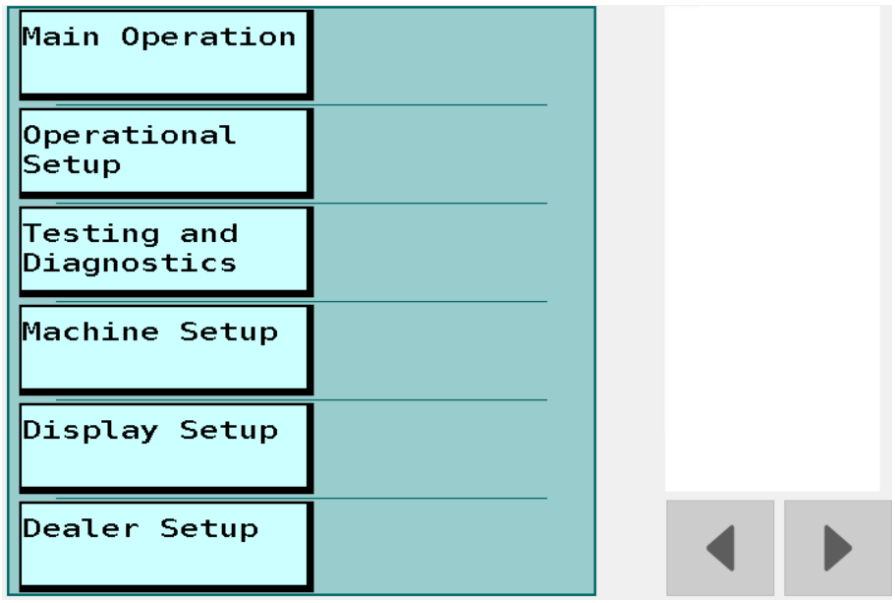


1) Home, Setup Pages Operational Setup, Machine Setup, Testing and Diagnostics.
2) Run/ Hold button.
3) Bin Selection button (Toggles the black shadow across the bin to the selected bin).
4) LH Spinner On/Off.
5) RH Spinner On/Off.
6) Bin Control Button (Isolates bins if not used).
7) Increase, selected option
8) Decrease selected option.
9) Auxiliary Switching selection
10) Auto calibrate via weigh scales.
11) Manual Flow Factor, Application Rate Adjustment .
12) Button to show more Buttons if available.
13) Button to return 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** If > 1 ISO screen is available**,** selects screen to use
5) **Dealer Setup** for use by the commissioning dealer.



Operational Setup

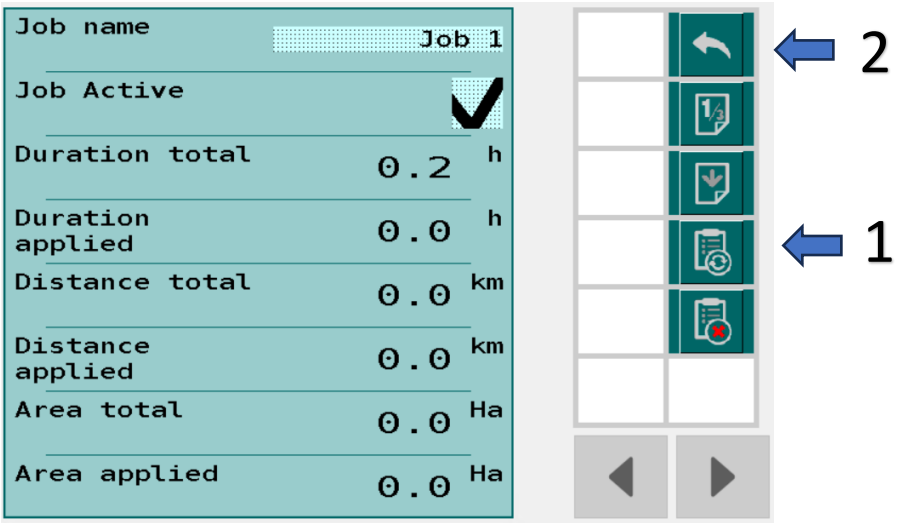
Press the Home button from the front screen and select **Operational Setup.**

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

Jobs	where the front screen Job information is kept and managed. NOTE - without Task Control – only one job is available.
Product setup	Addition, setup and information of products or removal of products.
Bin 1 Operations	Bin Levels, and product selection.
Belt 1 Operations	where Flow Factor, application rate, Application Step size and VRA nudge are setup.
Spreader Width	where spinner width control and the full or sectional control spread widths are setup.
Gate1 Operation	Where the actual gate height is entered.
TECU Hitch Position	Allows the operator enable sensor and set engage and disengage positions.
TECU Working State	Indicates if enable and what the current TECU working state is.

Jobs

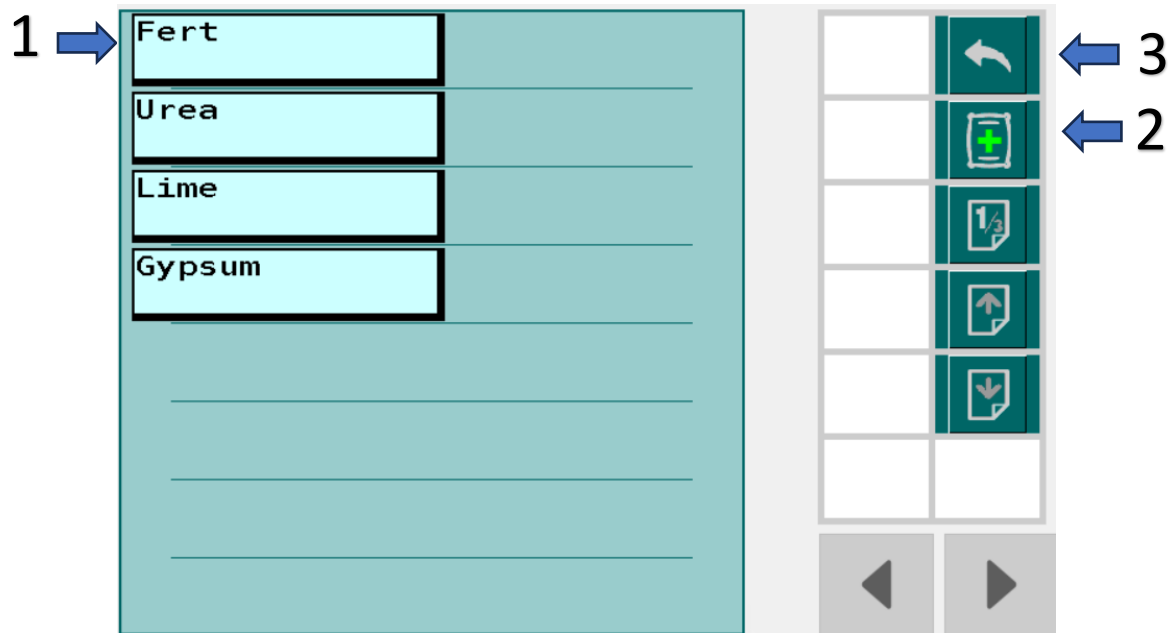
From the Operational Setup screen, press the **Jobs** tile. As there is only one job available, Press the **Job 1** tile to enter the Jobs information and management screen.



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 to set up new and remove unwanted products.

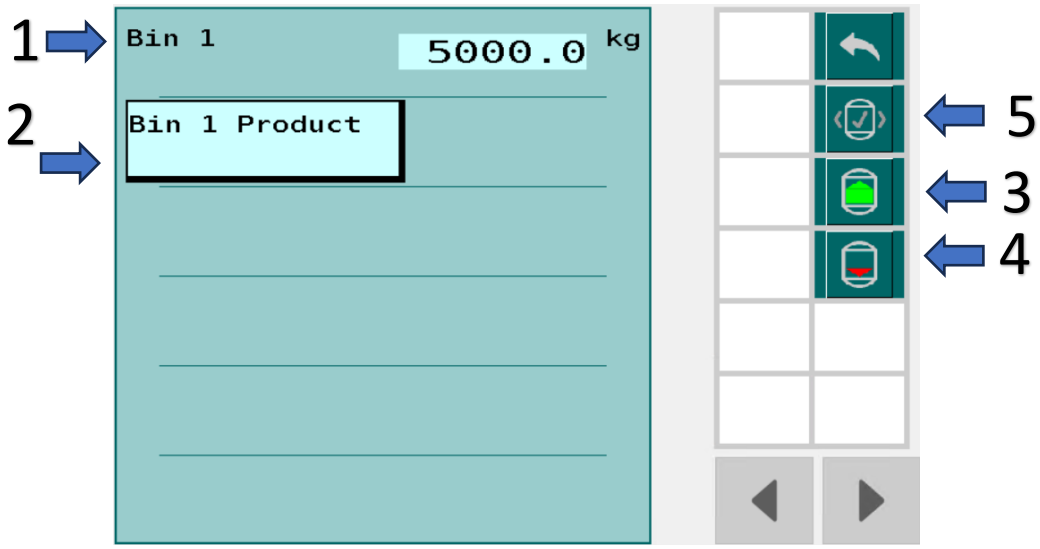


From the Operational Setup screen, press the **Product Management** tile.

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

Bin # Operations

From the Operational Setup screen, press the **Bin # Operations** tile for the bin/tank number required.

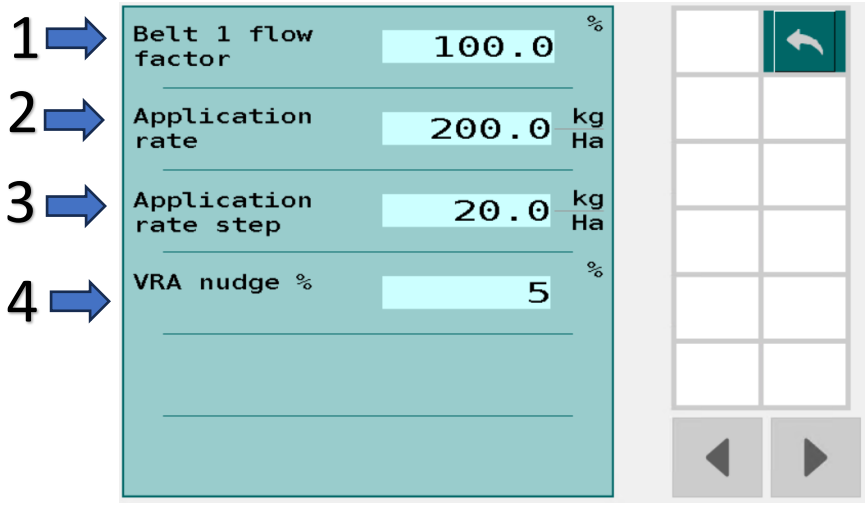


This area enables settings for:

1) Current Bin volume
2) Select Product
3) Quick Fill Button.
4) Quick empty Button
5) Toggle to next Bin button

Belt 1 Operation

From the Operational Setup screen, press the **Bin 1 Operation** tile to set spread rate



1) Flow Factor value is used to compensate for product drag when flowing through the gate. If the product rate is low the flow factor needs to be increased to speed the belt up.
2) Application rate is the rate selected to apply the product.
3) Application Rate Step the amount the rate is increased or decreased when the increase or decrease button are used of the front screen
4) VRA Nudge is the percentage that the rate increase/decrease when the increase or decrease button are used of the front screen

Spreader Width

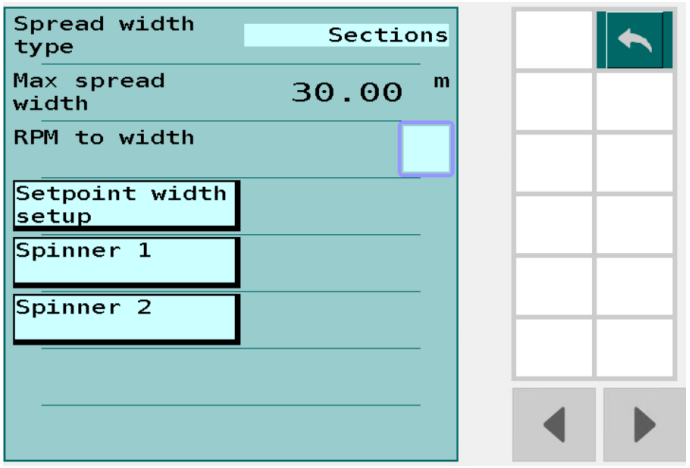
This section is where the spreader width is setup. There are two options for spreader width setup Single or Section and these are selected by pressing the Spread Width Type selection.

1) Spread Width Type – **Single**

The Current Spread Width is the width that the spinner/s can spread based on selected product and selected spinner speeds.

Selecting either Spinner 1 or Spinner 2 tile will allow the operator to input the Spinner demand (RPM) required and the Spinner demand step size (This is the amount-step the RPM can be raise/lowered from the front screen)

2) Spread Width Type – **Section**

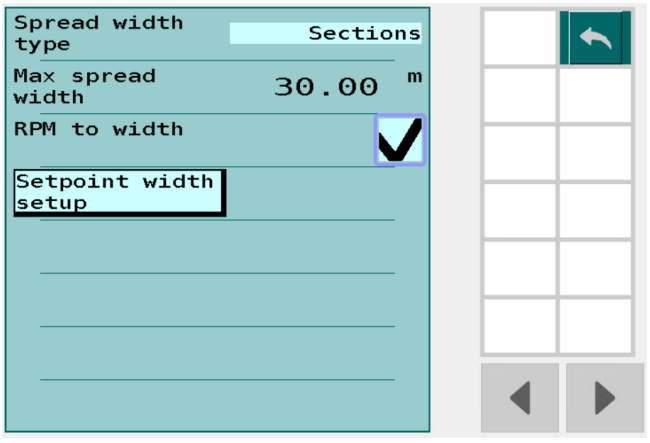


With **RPM to Width** unticked, the spinner rpm will not change irrespective of the sections being switched off. However, the belt will change its speed to maintain the correct rate for the applied area.

To set # sections, select Setpoint Width setup and use the Plus and Minus softkeys to set how many sections you require (maximum of 3, minimum of 1).

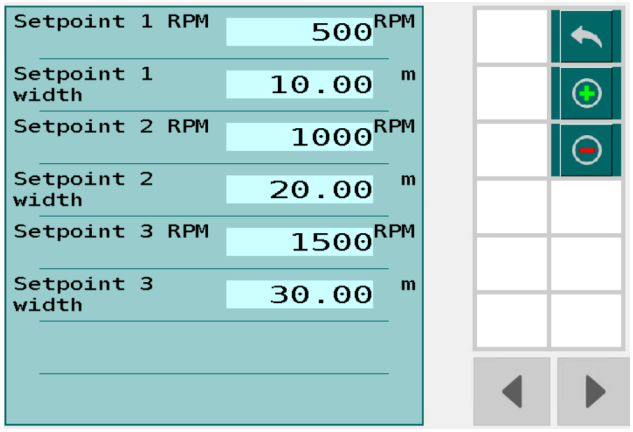
To set the section widths, select the section number in the Setpoint width box and adjust. If it is a dual spinner system each setpoint is for both spinners combined.

Selecting either Spinner 1 or Spinner 2 tile will allow you to input the Spinner demand (RPM) required and the Spinner demand step size (This is the step value that the RPM is raise/lowered on the front screen)



With **RPM to Width** ticked, the spinner rpm will be linked to the demand spread width. The Faster the spinner RPM the larger the spread width. The belt will change rpm to maintain the correct rate for the applied area.

Setpoint width setup now allows RPM of the spinners to adjust the spread width.



Use the Plus and Minus softkeys to set how many sections required (maximum of 3, minimum of 1).

Enter the required RPM and width for each section. If it is a dual spinner system each setpoint is for both spinners combined.

Gate 1 Operations

This section allows input of the gate height.

Select the number in the light blue and adjust to the required value.

TECU Hitch Position

This feature mimics the operation of the depth sensor however uses the tractor 3-point linkage position sensor to determine the Engage and Disengage position for the spreader.

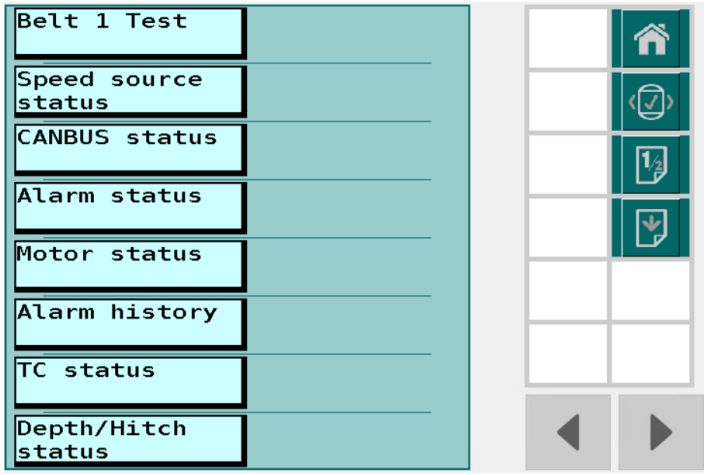
TECU Working State

When this feature is enabled a signal from the tractor will control the **run/hold** function of the spreader.

Testing and Diagnostics

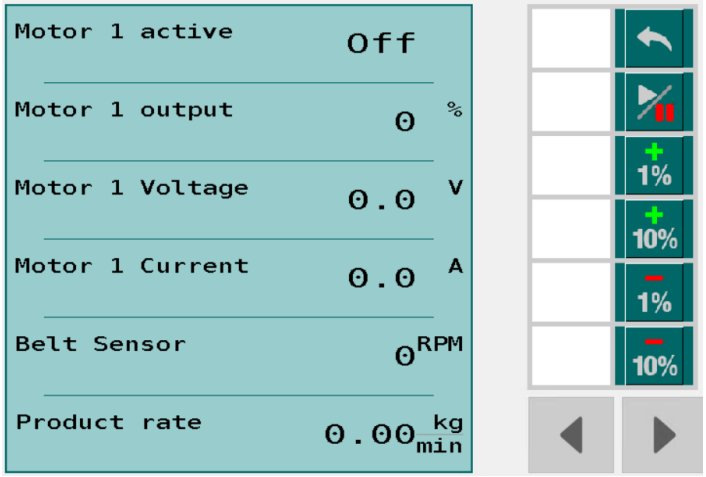
Press the **Testing and Diagnostics** Button - this is the area where all diagnostics information is found.

1) Belt 1 test (Allows manual operation and adjustment of the Belt speed)
2) Speed Source Status (Shows the raw data from the speed sensor).
3) CANBus Status (Shows all connected ECU's).
4) Alarm Status (shows all alarms available and tripped status)
5) Motor Status (Shows live motor power outputs (% output, Voltage and Currrent)
6) Alarm History (recorded history of all alarms)
7) TC Status
   (Shows if the TC controller is available and connected)
8) About System (Shows Software version, hardware ID, unlocks and ability to add Unlock Code for extra features.



Belt 1 Test

The Belt 1 test enables an operator to directly output power to the belt control valve. This removes any control algorithm from the output control and supplies the full range of output power.



The soft keys allow you to test the valve drive operation. Pressing the Play key will start the test and selecting the Plus % or Minus % key will increase or decrease the power going to the valve respectively.

During testing, this page indicates power being sent to the valve with sensor feedback showing current pulse rate from the belt sensor and the actual kg/min displayed.

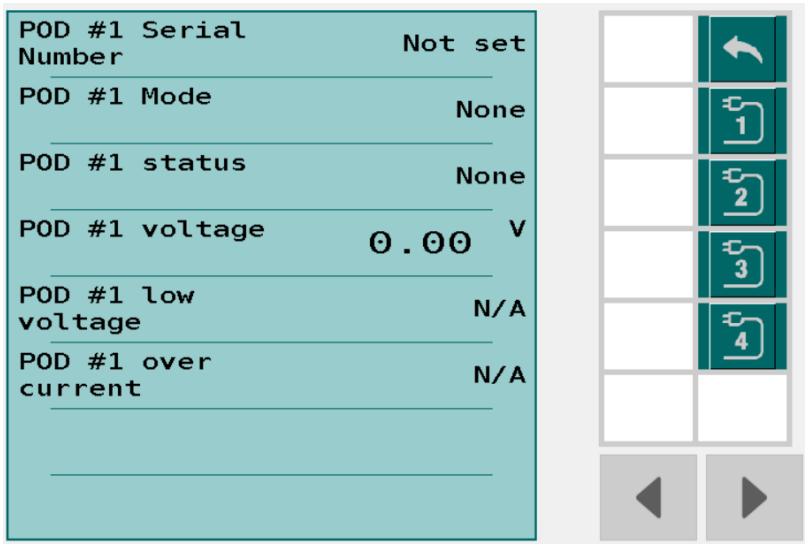
Speed Source Status

This page shows the type of speed source available (Online) and any live data on the speed inputs.

CANBus Status

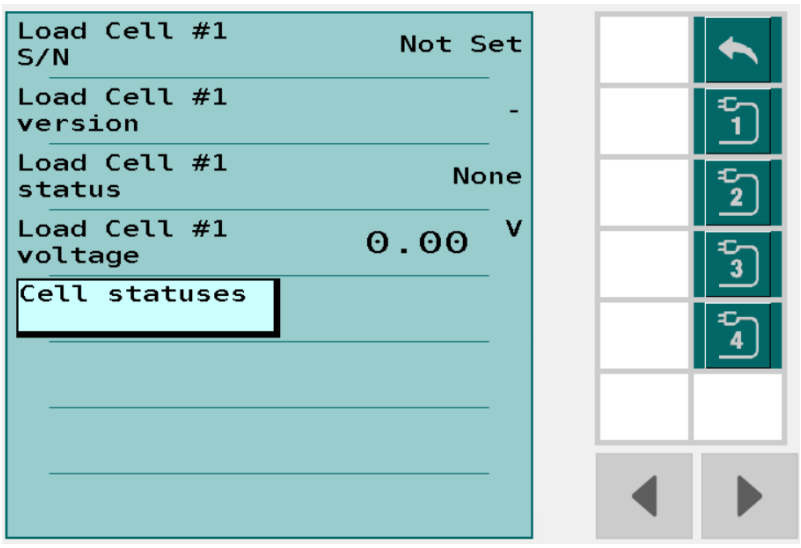
These pages show the following information for:

1) **Pods** – This displays the information to show the pod is connected correctly.



If more than one pod is connected, then the softkeys allows quick access to the other pods.

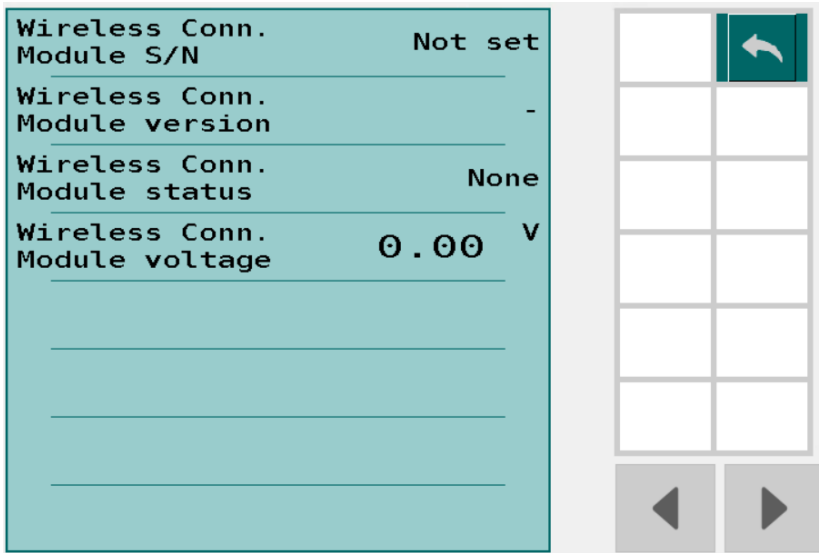
2) **Load cell** – This displays information to show the load cell is connected correctly and all individual cell readings when, **Cell statuses** is pressed.



If more than one load cell is connected, the softkeys allows quick access to other load cell settings.

3) **Run/Hold Switches**. These pages allow the operator to see what switches are connected and how many times they have been activated in the current session.

4) Wireless Conn Module - This displays information showing the Wireless Control Module status and current software version.



Please note that there is currently no functionality for this unit on the spreader, but is left in for future development.

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 run mode and allows visibility of the current motor state is and can also be used determine if the motor is running in the optimum range. If the motor is close to it maximum, the gate needs to be opened and visa versa if the motor is close to the minimum.

TC Status

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

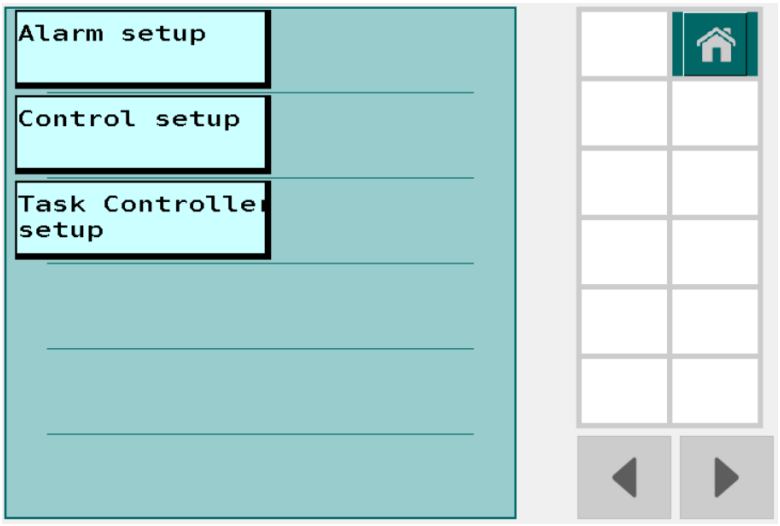
About System

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 bin related machine step

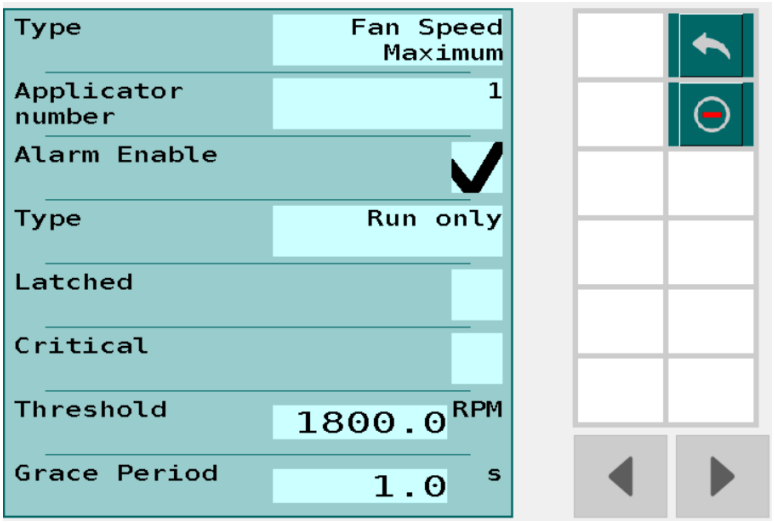


Alarm Setup

Basic alarms are automatically populated when the bin 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, press the Alarm tile you wish to setup and it will display the setup page.



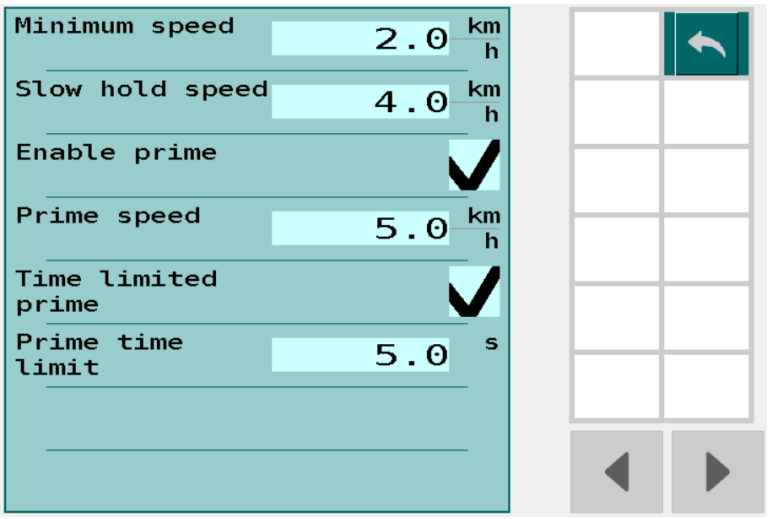
1) **Type** Select this tile, to determine the alarm type you want from the list
2) **Applicator Number** Currently the spreader only has one applicator.
3) **Alarm Enable** **A**llows operator to enable and disable the alarm
4) **Latched** **I**f tripped the alarm will not automatically reset when the parameters get with normal range. Manual reset is required.
5) **Critical** **I**f the alarm is tripped the system will go into hold mode (Unit stops spreading) and the alarm needs to be reset for it to work again.
6) **Threshold** **I**s the amount from the set point before the alarm sounds.
7) **Alarm Delay** **T**he alarm will not sound for this period of time. This allows for the parameters to be exceeded for a short period of time without the alarm sounding.

After configuring the alarm tile, press the return key to return to the main alarm page. In most cases there will be more than 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.

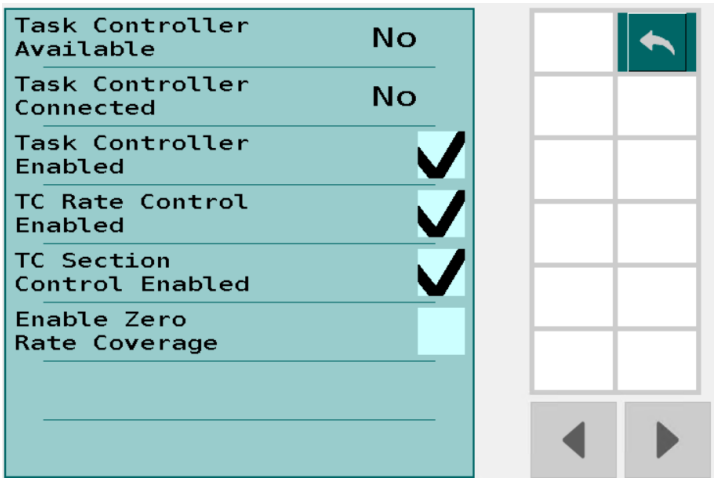


1) **Minimum speed** **is** the slowest operating speed for the machine to operate. Below this speed the machine will go into **Hold** mode.
2) **Slow Hold speed** this value should be set at the speed, below which the spreader does not operate effectively but above that of the Minimum Speed. If the spreader is still effective at the Minimum speed, set the Slow Hold Speed to equal it
3) **Enable Prime** enabling this allows the system to output a control speed when standing still.
4) **Prime Speed** this is a simulated control speed, that the system will control to, when the **Run** is activated.
5) **Time Limited** enabling this allows the system to run in prime mode for a designated time. If not ticked 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** is activated.

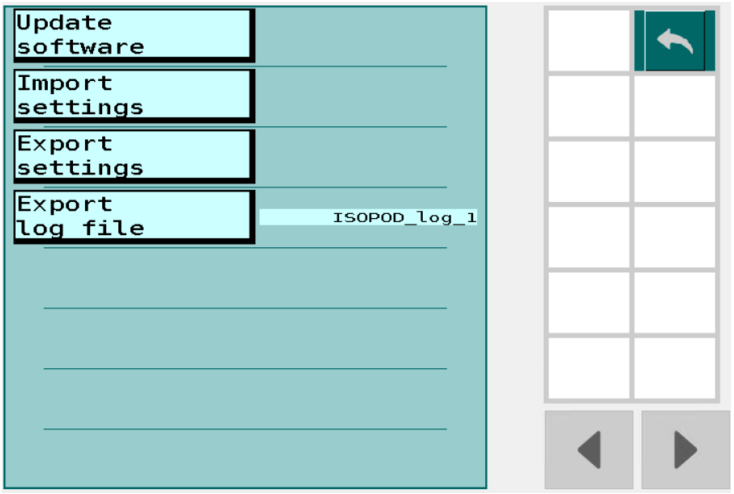
If both the Prime Speed and the Prime time are enabled, when any of these two parameters are exceeded, normal control will be resumed.

Task Controller Setup

This is where the operator can see if the Task Controller is available and select functions that have unlocked.



File Server (where the tractor screen is file server capable)



Use this to:

1) **Update software** by inserting USB stick (containing latest Software) into tractor screen and pressing Update Software will start the updating process.
2) **Import Settings** if you have saved your setting to a USB stick, you can import them to reset the machine.
3) **Export Settings** once you have setup the machine it is possible to save the settings, by exporting them to a USB stick. This is a valuable backup enabling the operator to reimport the original saved settings and regain operating status.
4) **Export Log File** This is used to export files for diagnostic purposes.

Display Setup

This area is used If you have two ISO capable screen in your Tractor/self-propelled machine and you want to move spreader operations screen to the other display.

Dealer Setup

This area is for use by the commissioning dealer and is password protected.