

Smart Nozzle

Operating Instructions

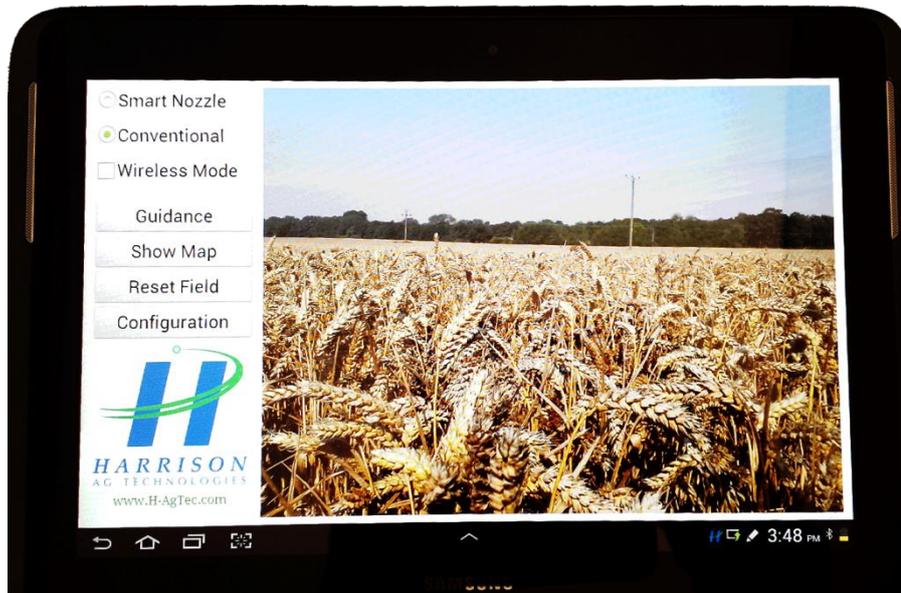
Version 1.1

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Home Screen



Operation Modes:

Smart Nozzle: This should be selected to when the system in “Auto Nozzle shut off Mode”. When this is selected the Green indicator will be shown. When the system is started and a GPS signal is received, “Smart Nozzle” mode will automatically be selected.

Conventional: This can be selected manually to operate the sprayer in the standard set up (Section Control). In this mode nozzles will not be controlled automatically by the smart nozzle system. The system will “Fail” into this mode automatically if GPS is lost whilst spraying.

Wireless Mode: This mode allows the operator to check for any blocked or damaged nozzles. On selecting this mode the operator turns on the sprayer pump and all sections. The operator then uses the wireless Key Fob to operate the nozzles individually. The system always starts at No 1 Nozzle which is the Outer nozzle on the left hand side of the spray boom view when standing behind the sprayer looking in the direction of forward travel.

Start the Smart nozzle software by clicking on the “Smart Nozzle” application icon on tablet



When the software loads you will see the Smart nozzle home screen. The software will immediately search for the in-cab controller via the “Bluetooth” transmitter. This should have been paired to the android tablet during the installation process. If no connection is made you will get the error message “No Bluetooth Connection”.

Check the tablet Bluetooth settings that the controller is paired. (Pairing code is 1234)

NOTE: It can take up to 1 minute for the Bluetooth to find the In-Cab controller

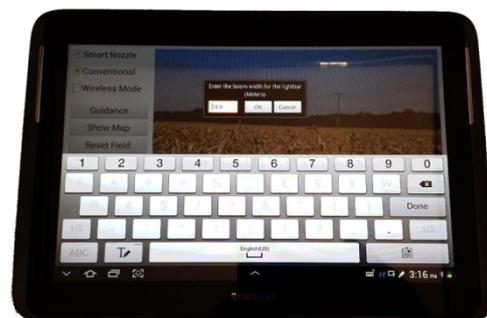


When the tablet is paired with the in-cab controller the system will search for a GPS signal, when this is obtained the system will go into “Smart Nozzle mode. Note: If no GPS is found you will see the error message “No GPS Signal” Check that the GPS receiver is on and receiving a signal.

Before using the Smart Nozzle system in spraying operations the following settings should be made.

Guidance Set Up:

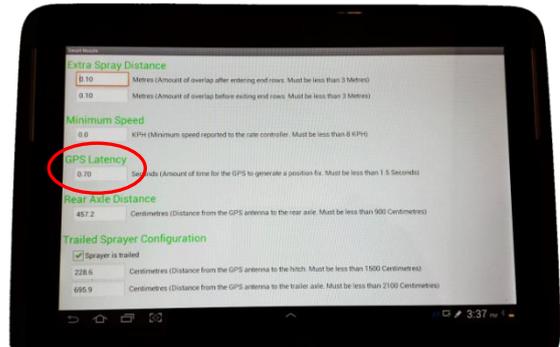
Select the Guidance tab on the home screen and enter the sprayer boom width in the pop up box and press OK.



Calculating GPS Latency:

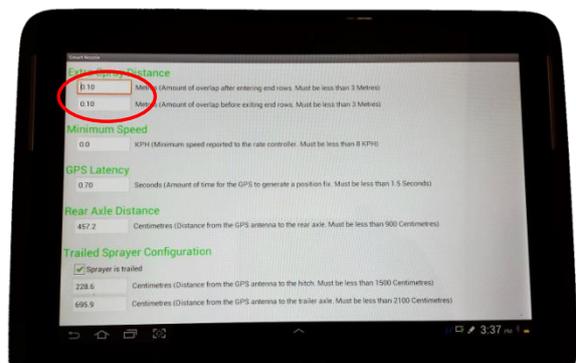
All GPS receivers have a time delay between the time the position calculation begins and the time the position solution is finally sent to the Smart Nozzle system. The following is an iterative method to determine the latency of the GPS receivers.

1. Locate a small area of land that can be sprayed to determine GPS latency.
2. Spray a straight path of land and **mark with the outer spray borders**
3. At a normal speed, spray across the previous patch at a right angle to it.
4. Measure how late (in tenths of a second) the nozzles turned on or off as they cross the marked borders. Experience suggests that this value will be somewhere between 0.7 & 1.5. Select the configuration tab on the home screen and enter the measured time in seconds, into the GPS latency menu item. Scroll to the bottom of the screen and select SAVE before exiting this screen
5. This is an iterative process. Repeat this step until the correct time value is found.



Extra Spray Distances:

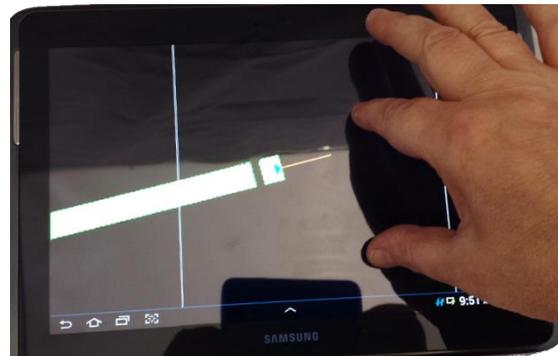
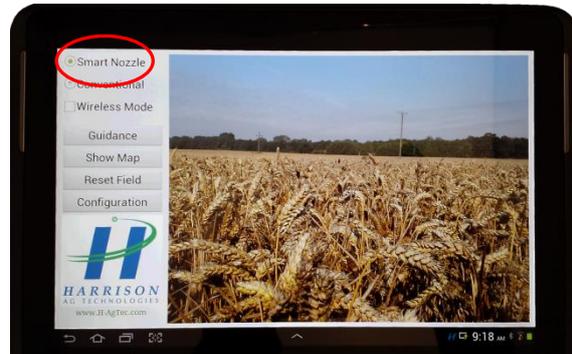
This configuration item is a personal preference. Some operators feel more comfortable if there is a small amount of overlap at the headlands. This can be accommodated with the 'Extra Spray Distance' in the 'Configuration' menu. There are two parameters that can be changed at any time. The first is the 'Early On'. Enter the number of inches or millimetres that you prefer the nozzle to turn on early when coming out of a headland. The second parameter is 'Late Off'. This parameter is the distance in inches or millimetres that the nozzle will turn off late when coming into a headland.



Operation of the Smart Nozzle System:

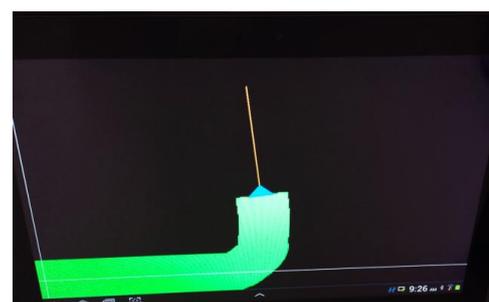
Once the smart nozzle software is running the system will automatically default to “**Smart Nozzle**” mode. When the system is in this mode you simply spray the field as normal, there is no need to operate the master or section control switches as the sprayer will not overspray or spray when the sprayer is travelling in reverse. Individual Sections may be turned off if there is an area that does not require spraying.

1. With this mode selected the operator can turn on the sprayer pump
2. Turn on all sections
3. Turn on the sprayer master switch (the sprayer will not spray)
4. Select “Show Map” on the home screen. (The Map display can be magnified in or out by touching the screen with 2 fingers and bring together to zoom in and moving apart to zoom out).



When the sprayer moves forward the sprayer will start to spray as normal. The nozzles will continue to spray until the sprayer stops. Individual nozzles that overlap and area already sprayed will stop spraying, In addition any nozzle that travels backwards (When turning) will also stop spraying.

To allow spraying into corners, the system has a 5 second override feature. To operate tap the screen twice in quick succession. The sprayer will now spray for 5 seconds. If the sprayer does not move it will shut off. If the sprayer is moving then the system will carry on spraying in Smart nozzle mode. **(The “Double Tap” can also be used if the GPS gets confused IE: remains in reverse when moving forward)**



The map display will colour in Green the area sprayed.

When the field is finished you should not see any gaps.

Follow on / follow off:

There are two view options when view the map. This can be selected by touching and hold the screen until the pop up box appears, select Follow On /Follow off to change the views.

Follow On = Sprayer remains in the centre of the screen – Map moves

Follow Off = Sprayer moves around the screen. Use Zoom as explained earlier to resize the map as required.

Re-setting the field:

The system will remember when a field has been sprayed, to clear the field you need to re-set the field.

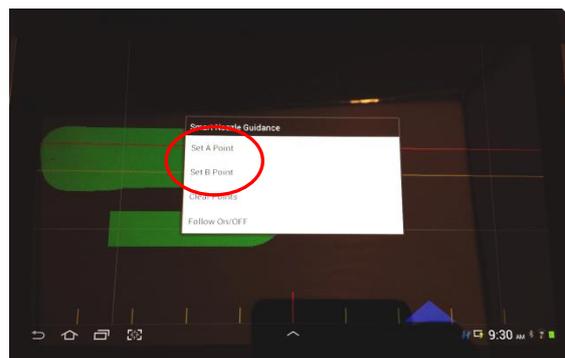
To reset the field return to the **Home Screen** and select **“Reset Field”**. A pop up box will appear in the centre of the screen to confirm that you wish to reset the field. Selecting “Yes” will clear **ALL** fields that have been sprayed.

NOTE: Vehicle must be stopped to clear field.

Guidance A & B Line Set Up:

To set up the A & B Guidance, line the sprayer up in the direction you are going to spray. Choose show map on the home screen if not already selected. Touch and hold your finger on the screen until the pop up box appears.

Select Set **A Point**.



Commence Spraying, after 100 metres or at the end of the field stop the sprayer. Touch and hold your finger on the screen until the pop up box appears.

Select Set **B Point**.

Once this is completed you will see the guide lines and indicator along the bottom of the screen.



To Clear the A & B Lines, Touch and hold your finger on the screen until the pop up box appears. Select clear points.

Shutting Down Smart Nozzle Software

To shut down the smart nozzle software, return to the smart Nozzle home page. Hold your figure on the table screen until a pop up appears asking you to confirm if you wish to shut down smart nozzle. Select Yes and the software will shut down.