

SymphonyNozzle™

Operator's Guide



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2024.1.x Limited Release Software Note

2024.1.x Limited Release Software is adding additional features throughout the 2024 season. This document will receive regular updates and your version may be out of date. [Click here to access the most recent publication online.](#)

20|20 Monitor Overview

Note: *This guide is intended for use with limited release software 2024.1.0 and its variants. Due to the nature of the limited release software update process, screenshots and descriptions provided in this guide may differ from the current available software version. Updates will be made to this guide as often as possible.*



The Precision Planting 20|20 display is a high-definition, easy-to-use monitoring and control system for planting, seeding, harvesting, and liquid application. Its high definition mapping features and metrics on single and dual displays allows the user to see exactly what is going on in their fields. Navigate the easy-to-use touch screen for implement and system setup, health checks, diagnostics, and other helpful information. The 20|20 display provides complete monitoring, control, and diagnostics for all of Precision Planting's SRM-based control products for seed and liquid application, down force control, and in-field sensing in addition to basic implement monitoring.

The 20|20 has complete control, monitoring, and diagnostics for: vDrive, DeltaForce, SpeedTube, SmartFirmer, vDrive Insecticide, vApplyHD, FlowSense, vSet Select, mSet, FurrowForce, Clarity, SeederForce, Smart Connector, SymphonyNozzle, and YieldSense.

Software Updates

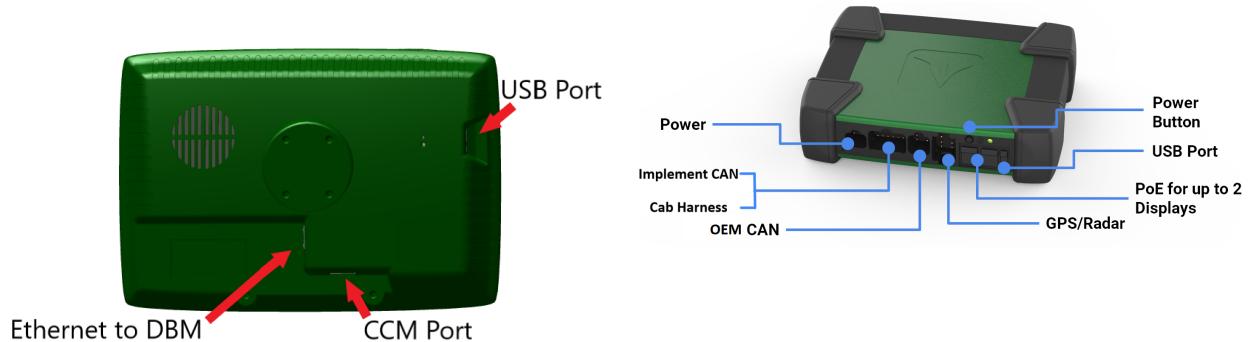
Precision Planting will continue to update and improve the 20|20. Software updates are free of charge and may be downloaded from www.2020.ag and installed on the display with a USB drive. See *Software Update* in this guide for more details.

20|20 Hardware Overview

Up to two displays may be connected to the Display Base Module [DBM] at any time. One of these two displays may be an iPad running the Climate Corporation FieldView Cab app. Displays may be mounted in any location within the cab.



Display Base Module [DBM]



The Power over Ethernet [PoE] ports require a Shielded Twisted Pair [STP] Ethernet Cable to connect to a display. If only one display is being used, use either port. Both ports will be used if connecting to two displays or one display and a FieldView Module [FVM]. The display(s) or FVM may be plugged in to either port.

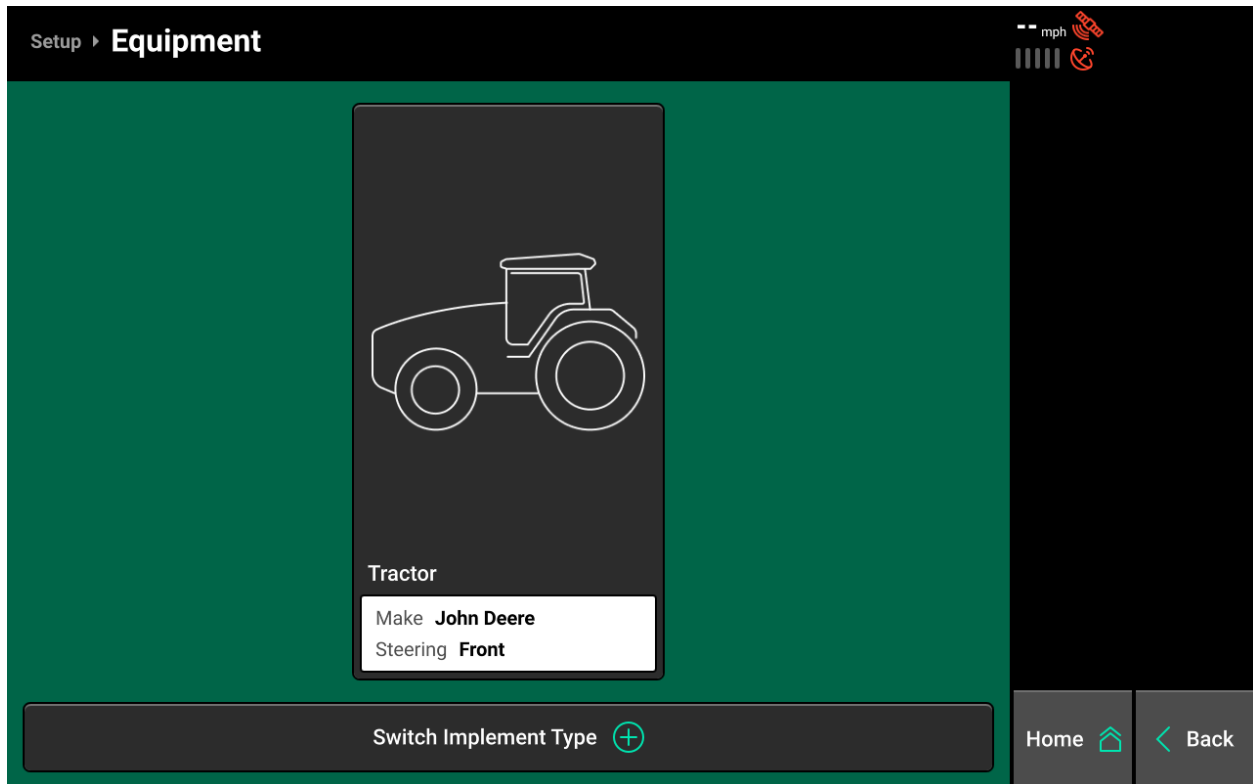
Indicator Light Overview

Use the following table to determine the status indicated by the LED on the corresponding device.

Color	Display Base Module	Display	FieldView Module
Green	Good Connectivity	Good Connectivity	Good Connectivity
White	Initializing	N/A	Downloading Software
Blinking White	Firmware Update in Process	N/A	N/A
Yellow	No Connection between Display and DBM	Initializing	Initializing
Blinking Yellow	Software Update in Process	Software Update in Process	Software Update In Progress
Blue	N/A	N/A	Nothing Connected
Purple	Need to Power Cycle System	N/A	FieldView Not Connected
Red	N/A	Powering On	Powering Up
Blinking Red	Failure - Call Precision Support	N/A	N/A

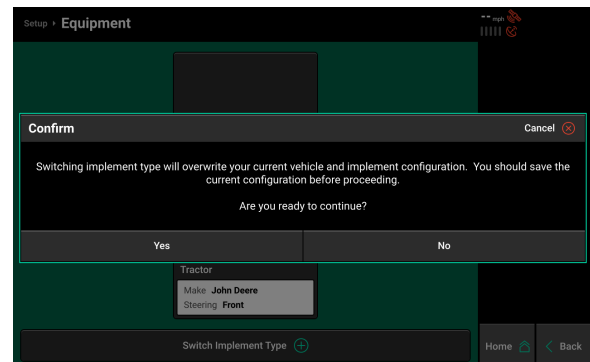
Equipment

The Equipment menu is used to set up Tractor and Implement profiles. When navigating to the Equipment menu on a new 20|20, or after performing a Delete All Data, the only equipment icon available by default will be Tractor.

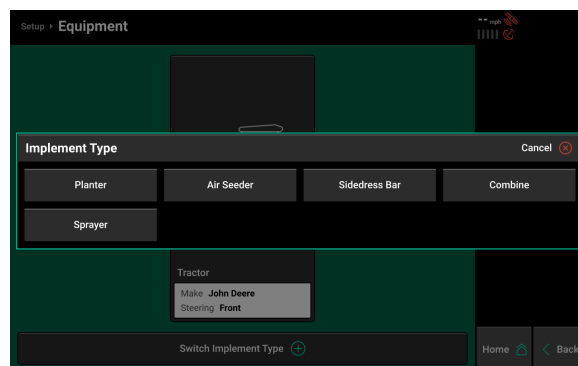


To set up a Sprayer system, start by pressing the Switch Implement Type button to change between equipment modes. This will open a dialogue box that prompts the user to save the active tractor and implement if desired.

If this is a first time setup, press Yes. If there are any unsaved tractor or implement profiles active, press No, then navigate to any active profile pages and save the active configurations. For more information on saving/loading configurations, see *Save/Load* in this section.

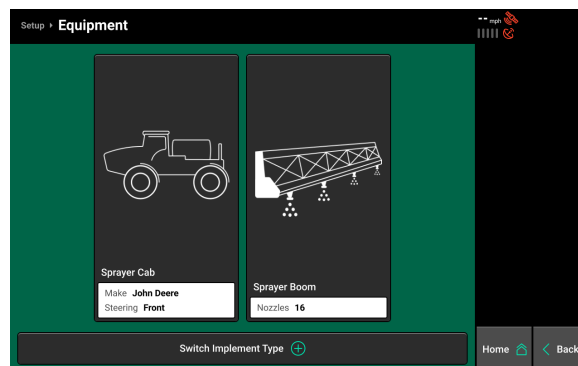


Press the desired implement type, then choose the appropriate subtype if necessary. When setting up your SymphonyNozzle system, you will have the option to choose between “Self Propelled” and “Pull Behind” Sprayer options.



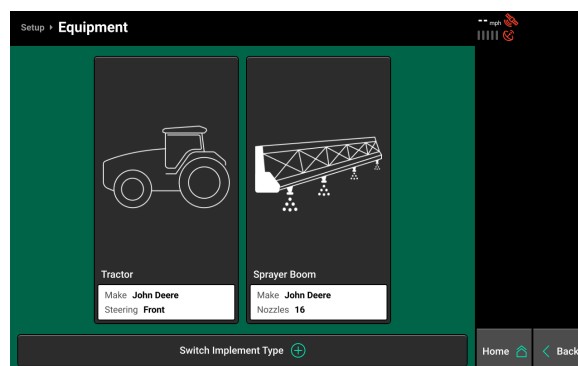
Self Propelled Sprayer

Sprayer cab/boom combination.



Pull Behind Sprayer

Tractor/sprayer boom combination.



Sprayer Cab Setup

Use the Sprayer Cab setup card to configure the Model of sprayer cab and to configure your GPS measurements for proper control and mapping. See the GPS Setup section for more details on GPS Measurements.

Sprayer Boom Setup

Use the Sprayer Boom setup card to configure the physical layout, size, and spacing of your sprayer boom equipment and nozzles.

Selecting the Sprayer Boom card will open up a page where you can define the specifics of your sprayer boom.

Type: The Type options allow you to configure the physical layout of your boom style. It is recommended to use the CUSTOM option on ALL sprayer setups for the 2024 season. The custom option provides additional GPS options that allow for the most accurate boom setup. This will ensure proper swath control and GPS mapping.

Nozzles: Use the Nozzles selection to input the total number of nozzles you are installing SymphonyNozzle control on.

NCM Locations: Use this option to define the total number of Nozzle Control Modules (NCM) that are installed across the sprayer boom.

Nozzle Spacing: Nozzle Spacing is used to define the physical nozzle spacing for your sprayer. This will be used to help calculate accurate swath and rates.

Active Nozzles: Active nozzles is used to configure which SymphonyNozzles are currently active and available to control your spray rate.

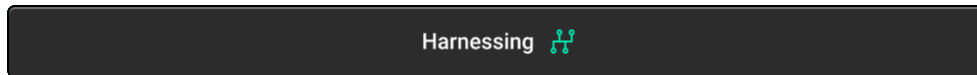
Controlled Nozzle Spacing: Controlled Nozzle Spacing configures the 2020 to correctly output a rate specific to the active spacing. This is important to adjust when Active Nozzles have been changed.

Controlled Sprayer Boom Width: Controlled Sprayer Boom Width is a calculation of Active Nozzles and Controlled Nozzle Spacing.

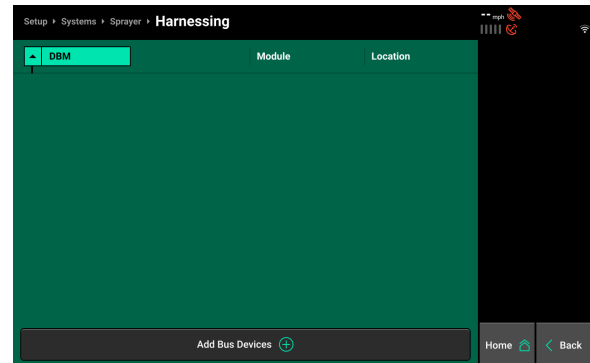
PDM: PDM needs to be set to present on all SymphonyNozzle systems. This ensures proper turn rate compensation and map modeling as well as pump control options.

Please watch the [“Sprayer Implement Setup”](#) video in order to set up the custom GPS measurements for your specific sprayer. This video will walk you through how to configure each boom to correctly set up your GPS model for the sprayer boom and nozzle locations.

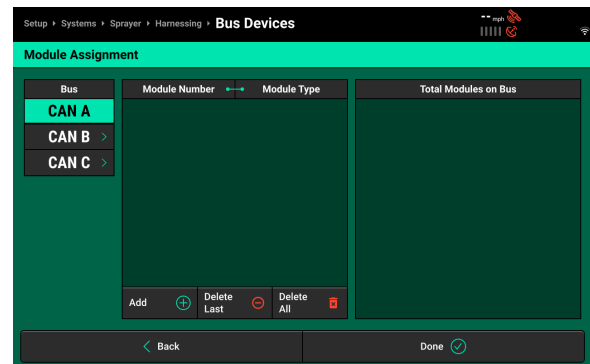
Harnessing



Press Harnessing to open the Harnessing screen, which displays a schematic of all CAN networks and bus devices. The only default bus device is the DBM.

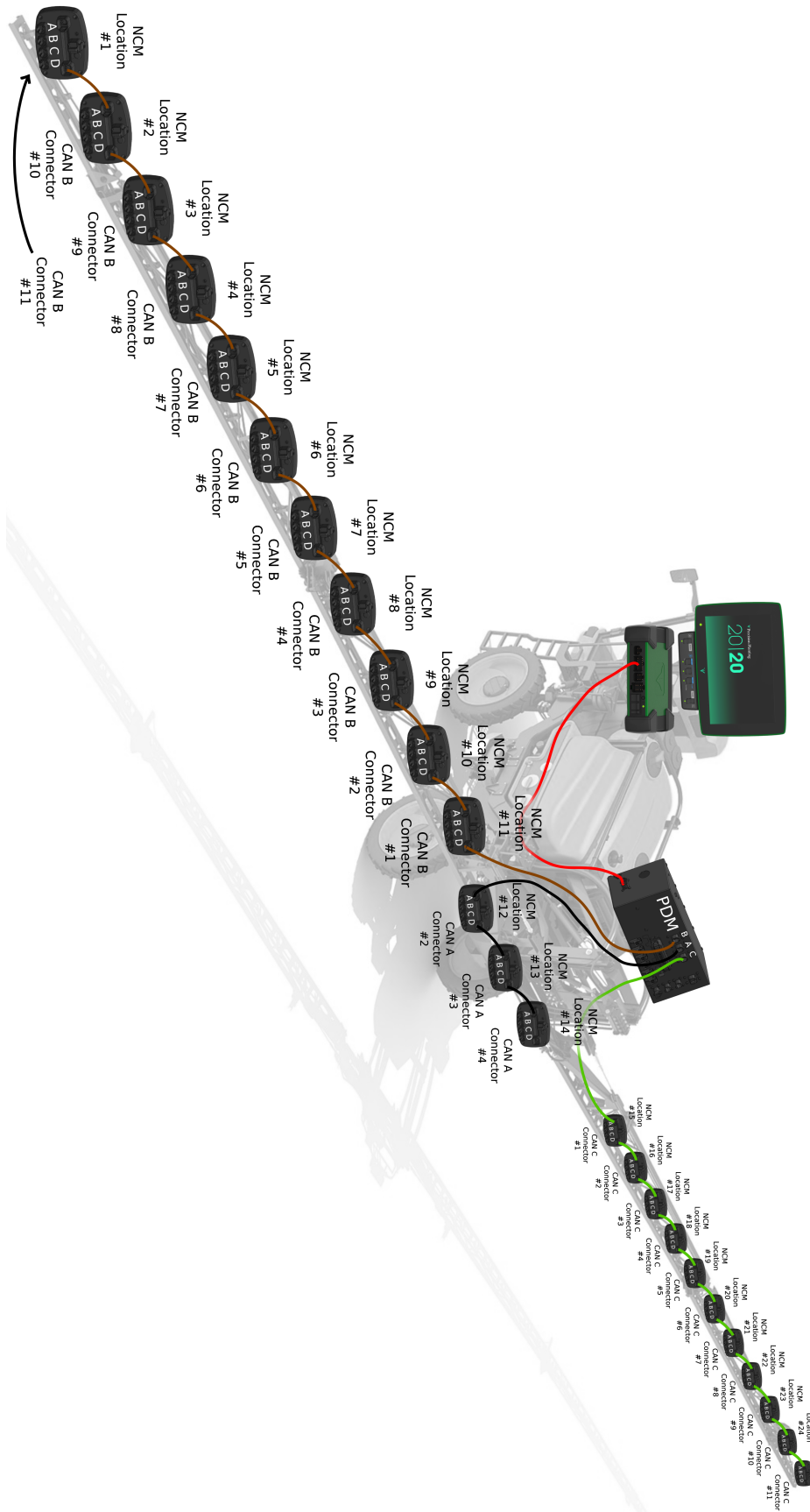


Press Add Bus Devices to open the Bus Devices screen. This screen allows the user to set up all other bus devices and CAN networks. No systems will function until bus devices and CAN networks have been set up in the 20|20 in the same configuration that those devices and networks are laid out physically on the implement.



Select the desired CAN network from the Bus list on the left side of the screen, then press Add + to add bus devices. Remember, **CAN A** is the middle boom section on a sprayer AND contains the Sprayer Control Module (SCM) inside the Sprayer PDM.

The example diagram below will be used to show the harnessing set up for each CAN Bus on a SymphonyNozzle system.

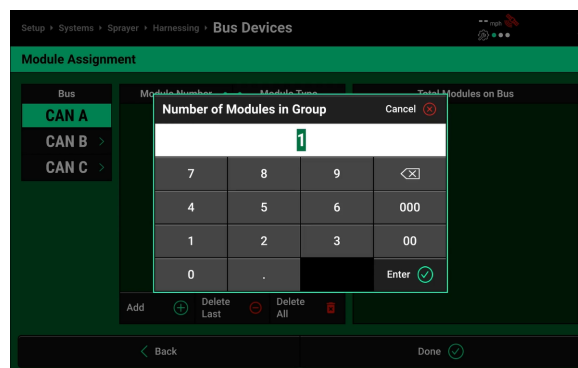
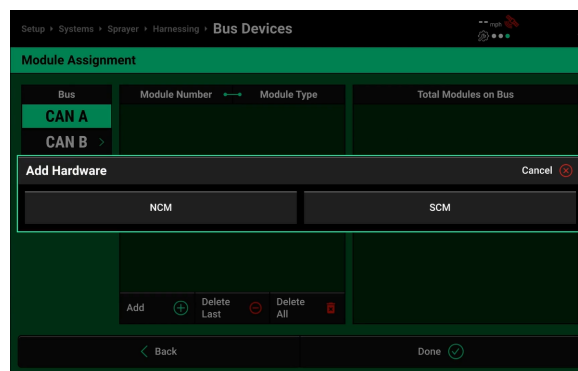
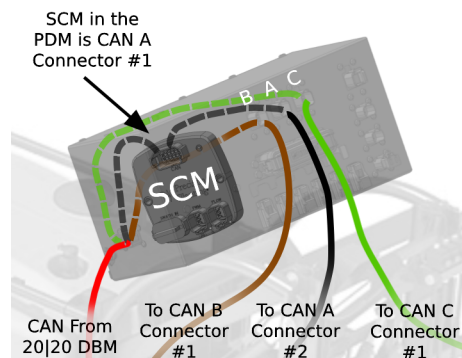


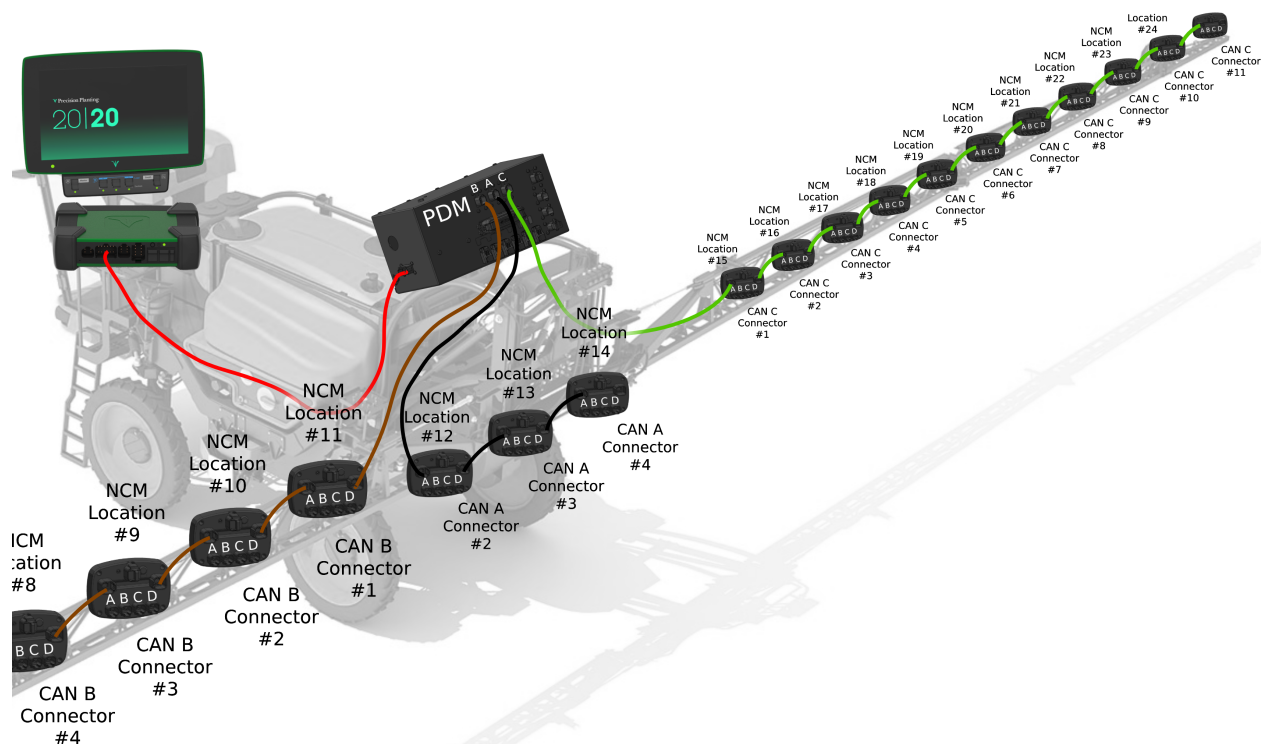
Bus Devices

Sprayer mode — NCM (Nozzle Control Module), SCM (Sprayer Control Module).

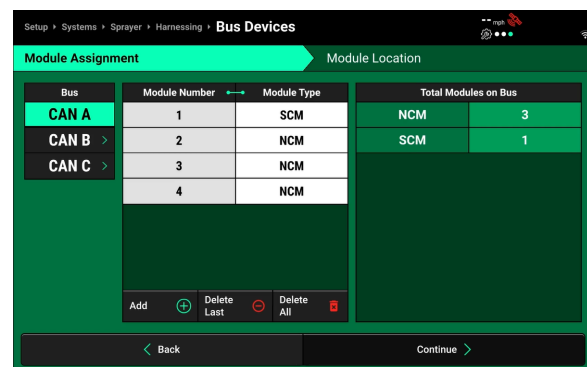
Press the desired bus device to open the Modules in Group pop-up. Use the pop-up to enter the number of selected bus devices that are installed *in sequence* on the selected CAN network. If another type of bus device is connected to the implement harnessing, enter a group size only up to the next type of bus device. On CAN A, a single SCM needs to be set up first.

A close up of the Sprayer PDM shows that CAN A starts with connector #1 going through the SCM inside before then leaving the PDM and heading to your first NCM (CAN A connector #2).

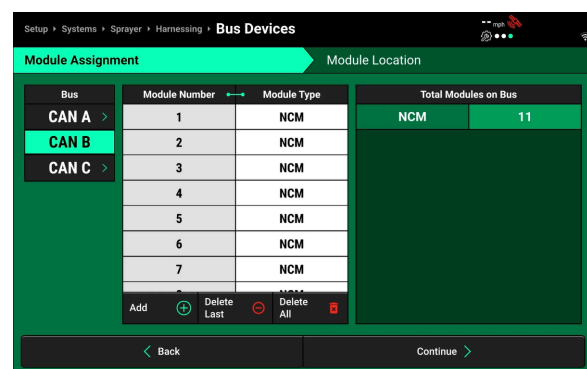




Continue by pressing “Add” again and then adding in the number of Nozzle Control Modules (NCM) that you have installed on CAN A. In this example, we have 3 NCMs added.



Before hitting “Continue”, set up CAN B and then CAN C by selecting the CAN network from the Bus list on the left side of the screen. Follow the process above to “Add” modules to each network. On SymphonyNozzle, you will just have NCMs installed on CAN B and CAN C. In this example, we had 11 NCMs added to both CAN B and CAN C.



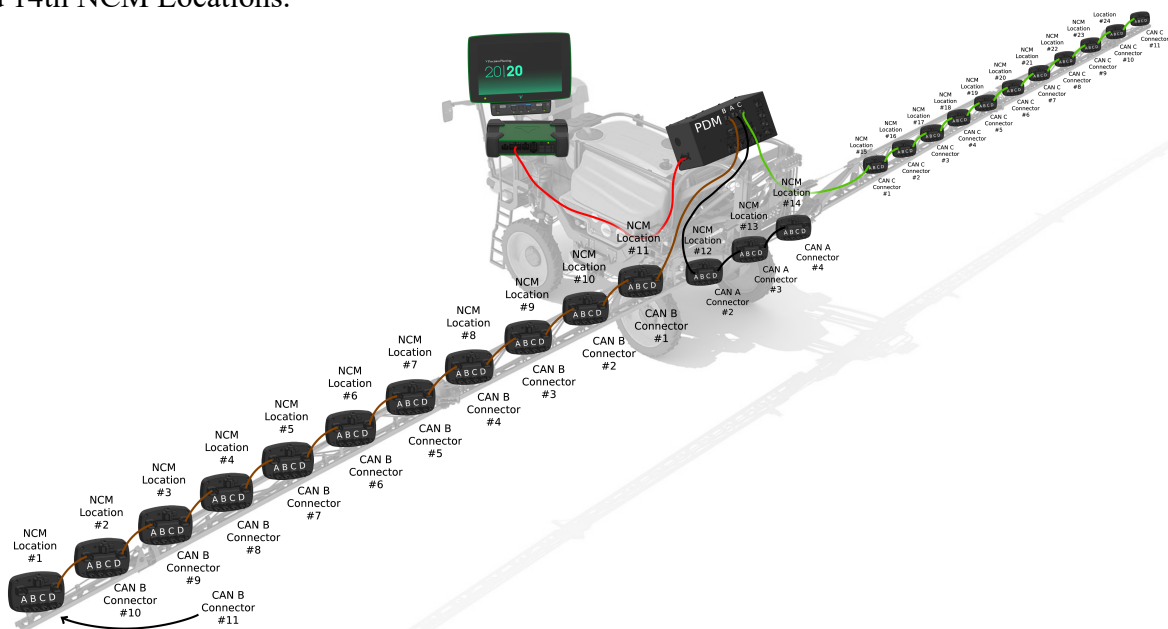
After all CAN networks have been configured, press Continue to advance to module assignment. We will now define where each module on the three CAN Networks is located in reference to the sprayer chassis and boom.

Note: *The selected CAN network will not change when progressing to module assignment. To set up CAN A first, ensure to select CAN A after pressing Continue.*

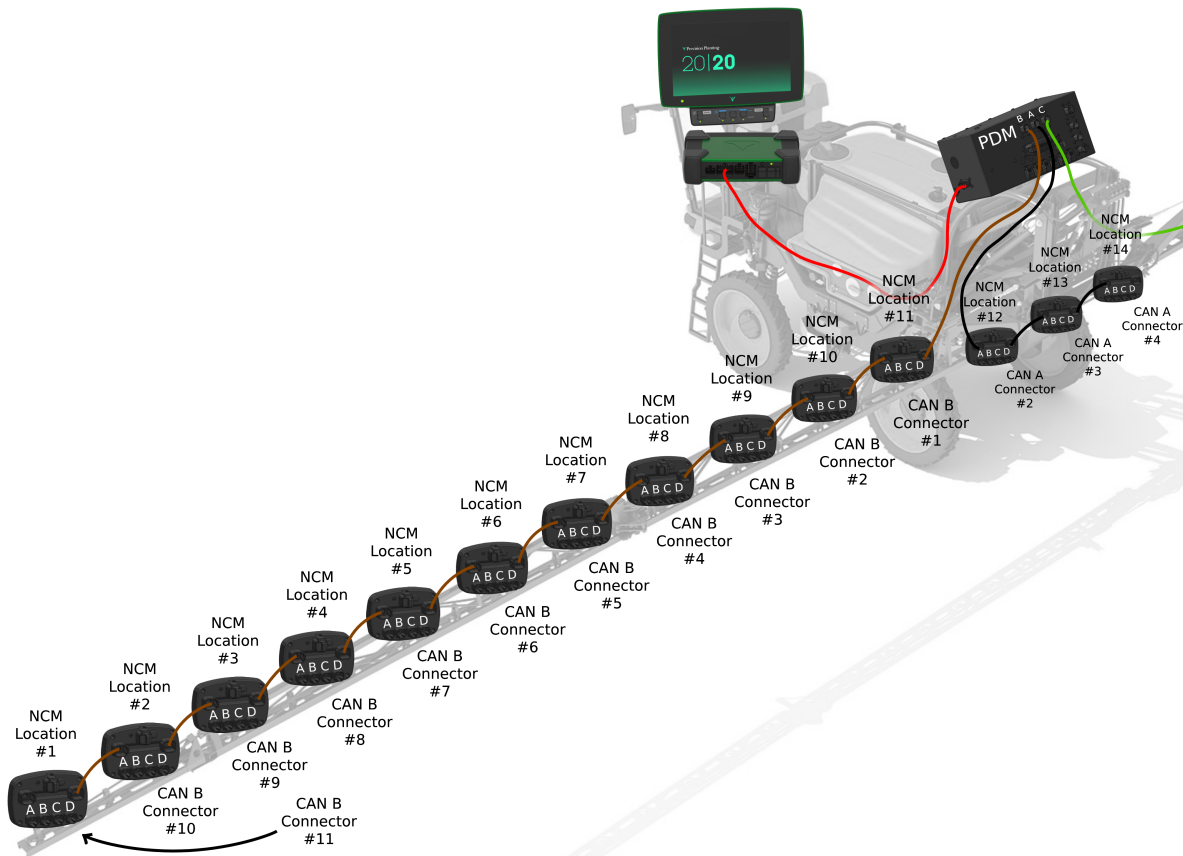
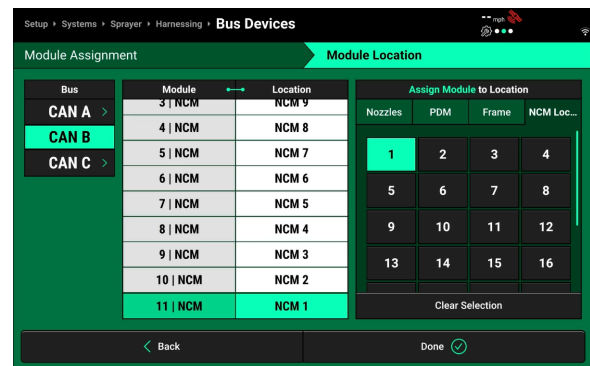
Bus	Module	Location
CAN A	1 SCM	PDM
CAN B	2 NCM	NCM 12
CAN C	3 NCM	NCM 13
	4 NCM	NCM 14

Nozzles	PDM	Frame	NCM Loc...
9	10	11	12
13	14	15	16
17	18	19	20
21	22	23	24

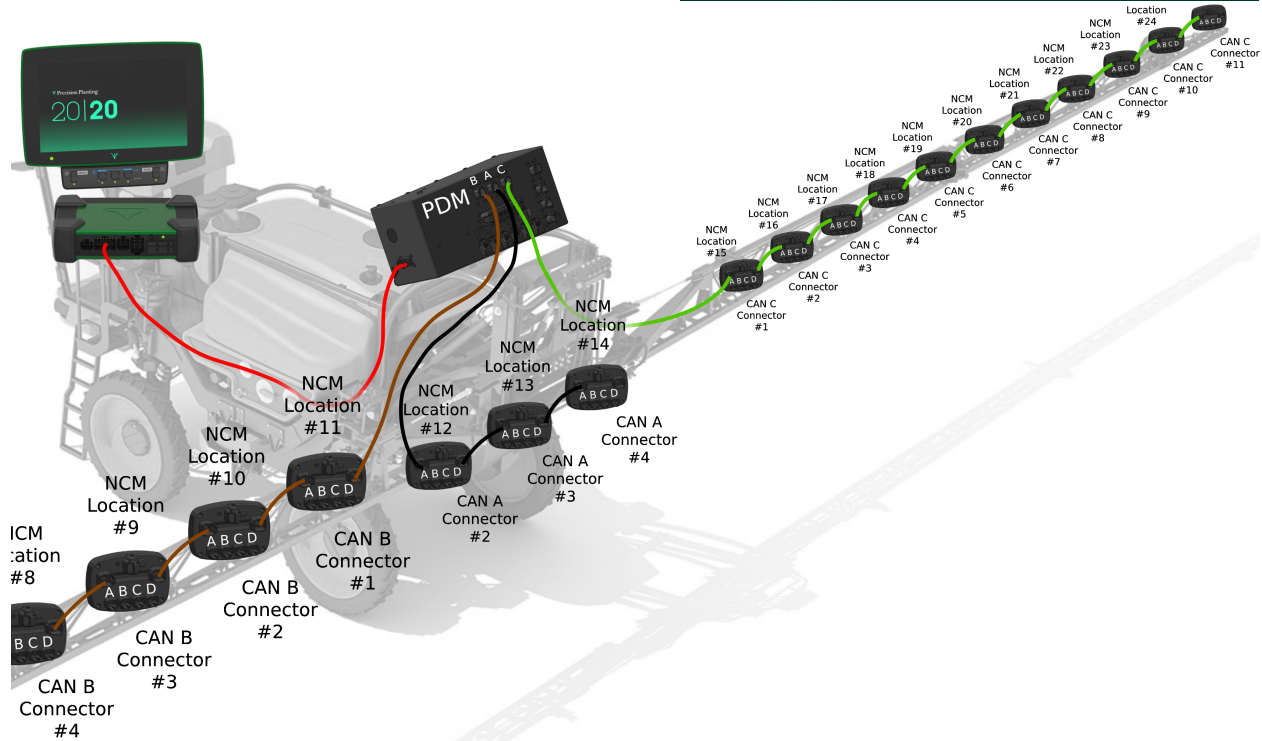
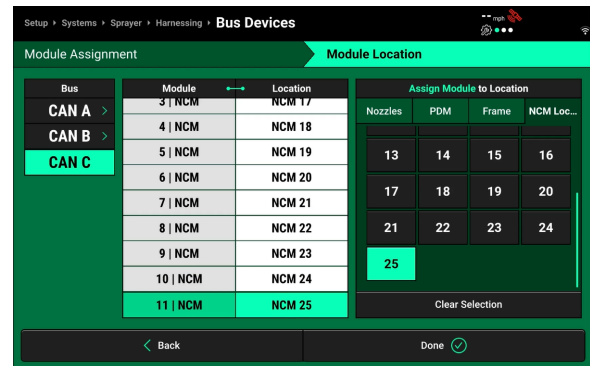
Use the table under Assign Module to Location to view all available locations that may be assigned to a module. To properly assign the SCM on CAN A, select the “PDM” table and then “PDM” to assign the SCM inside the PDM. The location selection will be applied to the highlighted module in the table displayed in the center of the screen. Press Clear Selection to clear the location selection for the highlighted module only. Continue assigning locations to each module on CAN A by selecting the next module (Module 2|NCM) and then selecting “NCM Location” from the “Assign Module” table on the right. This location will define which NCM this is in reference to the total number of NCMs across all three CAN Networks on the Sprayer Boom. In our example (image below), the three NCMs on CAN A are assigned to the 12th, 13th, and 14th NCM Locations.



Next, select CAN B from the Bus list on the left and step through assigning each NCM module to the physical location on the Sprayer Boom. Keep in mind that CAN B is ran from right to left across the left boom. As a result, the first NCM Module that the PDM is connected to is going to be assigned to the NCM Location that is right at the fold point of that left boom. Each module that is connected in series from the PDM out across the left boom will decrease in location number until you get to NCM Location number 1 out at the very tip of the left spray boom. In our example, the 11 NCMs on the left boom are assigned with NCM Module 1 getting assigned to NCM Location 11 and then each subsequent module on CAN B is assigned a location in descending order.

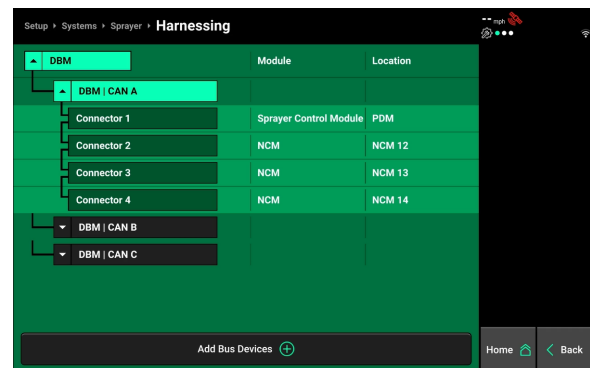


CAN C will repeat this process, however, keep in mind that CAN C now connects from the PDM out to the right boom and each NCM Module will be assigned an NCM Location that is in ascending order. This is the opposite direction that CAN B was assigned. In this example, the 11 NCMs on CAN C are assigned locations 15 to 25.

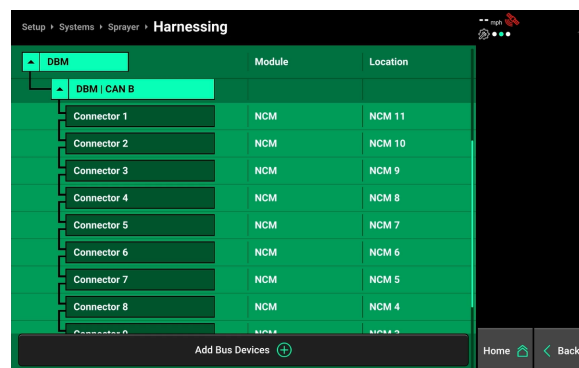


Press Done to return to the Harnessing screen. The schematic will now display all configured CAN networks. Press the dropdown arrow next to a CAN network to view the detailed schematic for that network. Scroll down on the table to view all modules or select another network.

Our example shows CAN A with it's four connectors correlating with the Sprayer Control Module in the PDM Location, and then connector 2, 3 and 4 with their NCMs assigned to NCM Location 12, 13, and 14.

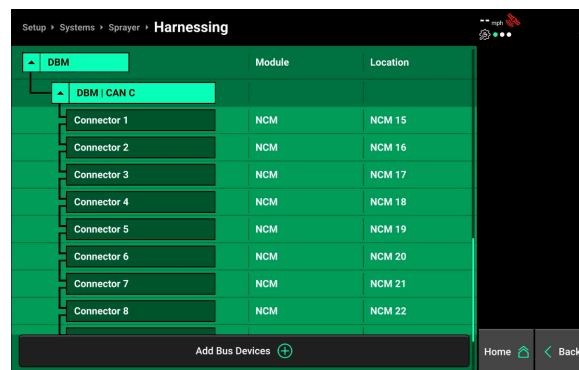


Expanding CAN B shows all of the connectors on CAN B and their Modules and Location Assignments. Remember, since the CAN Jumper Harnesses start at the PDM, on the center boom section, and then connect out towards the left boom, running from right to left, the connector numbers end up being inverse compared to the physical NCM Locations. This allows the 20|20 to properly identify all of the NCMs in order of real-world locations and helps make module and nozzle identification easier for the operator when running the sprayer throughout the season. In our example, CAN B has 11 connectors correlating with 11 NCMs. The first connection from the PDM is assigned to NCM Location 11 and then each connection after that continues to decrease in number until NCM Location number 1 is reached at the far left sprayer boom tip.



DBM	Module	Location
DBM CAN B		
Connector 1	NCM	NCM 11
Connector 2	NCM	NCM 10
Connector 3	NCM	NCM 9
Connector 4	NCM	NCM 8
Connector 5	NCM	NCM 7
Connector 6	NCM	NCM 6
Connector 7	NCM	NCM 5
Connector 8	NCM	NCM 4

Expanding CAN C shows all of the connectors on CAN C and their Modules and Location Assignments. Since the CAN Jumper Harnesses start at the PDM, on the center boom section, and then connect out towards the right boom, running from left to right, the connector numbers will increase incrementally along with NCM Locations. Again, this allows the 20|20 to properly identify all of the NCMs in order of real-world locations and helps make module and nozzle identification easier for the operator when running the sprayer throughout the season. In our example, CAN C has 11 connectors correlating with 11 NCMs. The first connection from the PDM is assigned to NCM Location 15 and then each connection after that continues to decrease in number until NCM Location number 25 is reached at the far right sprayer boom tip.

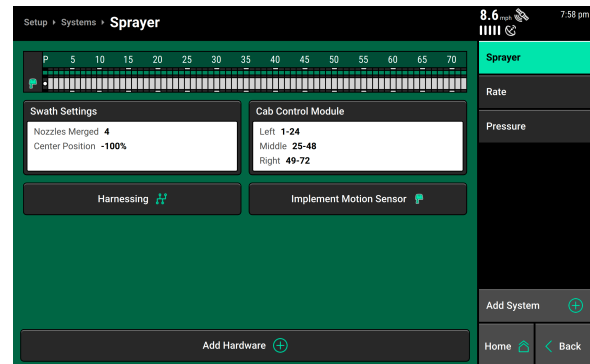


DBM	Module	Location
DBM CAN C		
Connector 1	NCM	NCM 15
Connector 2	NCM	NCM 16
Connector 3	NCM	NCM 17
Connector 4	NCM	NCM 18
Connector 5	NCM	NCM 19
Connector 6	NCM	NCM 20
Connector 7	NCM	NCM 21
Connector 8	NCM	NCM 22

System Setup — General

General Sprayer Systems Setup

The main Sprayer tab (located in Setup>Systems>Sprayer) has all of the settings and hardware that are used to define the sprayer as a whole. This is where the main Harnessing Setup is located and each individual control product can be setup and configured. Additionally, sprayer-wide control settings are located here; Swath Settings and Cab Control Module.



Swath Settings: This setting is used to configure the sprayer boom swath settings. Nozzles Merged allows the operator to tie several nozzles together on each end of the boom. This may be desirable when GPS accuracy is not exact and will allow for the merged nozzles to act like one larger section. The “Center Position” percentage gives the operator the ability to configure how this section of nozzles will behave when entering previous coverage. This percentage defaults to 0% as the middle of the nozzle section and allows for values from 100%, shifting the swath decision to the inside of the section, down to —100%, shifting the swath decision to the outside of the section.

Cab Control Module: This setting gives the operator the ability to configure which nozzles are controlled by which of the three Cab Control Module switches. Use the slider, or enter a percentage, to adjust your three sections.

Add Hardware: use the Add Hardware option to setup up hardware that is assigned at a sprayer wide level.

Implement Motion Sensor

The Implement Motion Sensor is a sensor installed inside every Sprayer PDM. This sensor is used in conjunction with GPS in order model the sprayer's motion. This gives the system the ability for turn compensation, nozzle by nozzle rate and swath, as well as accurate mapping of data. To set up the Implement Motion Sensor, tap on **"Add Hardware"** and then select **"Implement Motion Sensor"** from the list of hardware options.

Next, assign the Implement Motion Sensor (IMS). Since it is installed in the PDM, select the module location of **"PDM"** and then press **"Continue"**.

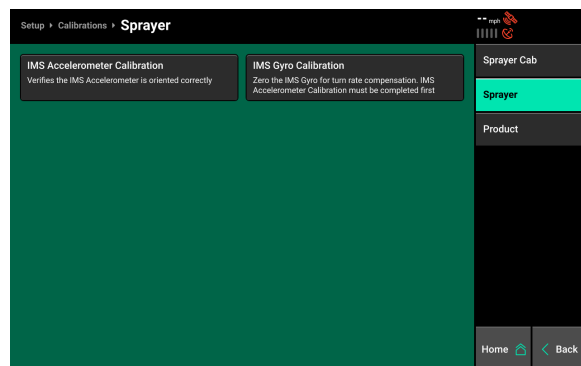
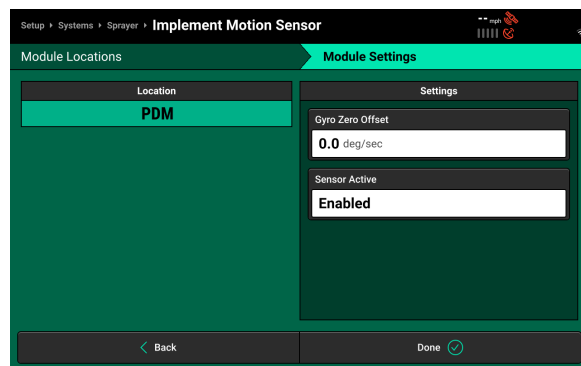
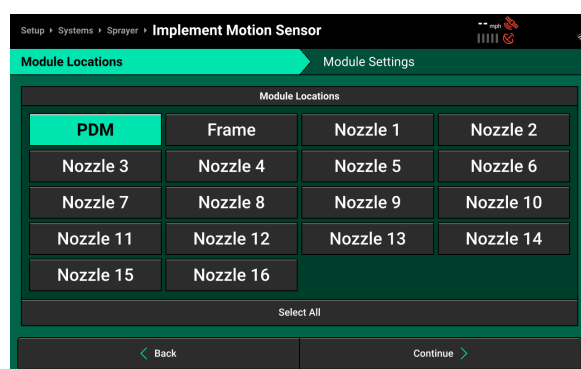
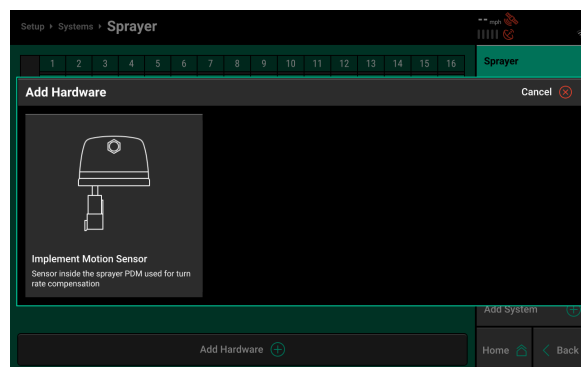
You will now see the Module Location and Settings. The settings for your Implement Motion Sensor (IMS) show it's Gyro Zero Offset and if the sensor is currently enabled or not.

NOTE: While the settings do show the current Gyro Zero Offset, you will need to navigate to the Calibrations Page in order to calibrate this offset properly. Do not enter a manual value.

Implement Motion Sensor Calibration

Navigate to Setup>Calibrations>Sprayer. You will be presented with two calibrations, **"IMS Accelerometer Calibration"** and **"IMS Gyro Calibration"**.

IMPORTANT: You MUST calibrate the Accelerometer BEFORE you run the Gyro Calibration. This is due to how the two sensors interact with each other.



IMS Accelerometer Calibration

Select the IMS Accelerometer Calibration to begin. Follow the “Prepare to Zero” prompt screen.

This Calibration will require you to completely stop your equipment and then accelerate to a speed of 4 mph or greater.

Make sure you have more than 300 ft of straightaway and are completely stationary and level before you begin this test.

Press “Continue” when you are ready to proceed.

Step 1 instructs you to make sure you are at a complete stop for 5 seconds before then pressing continue.

This page will present a readout of your accelerometer.

Supply (V): Supply voltage should be above 12v

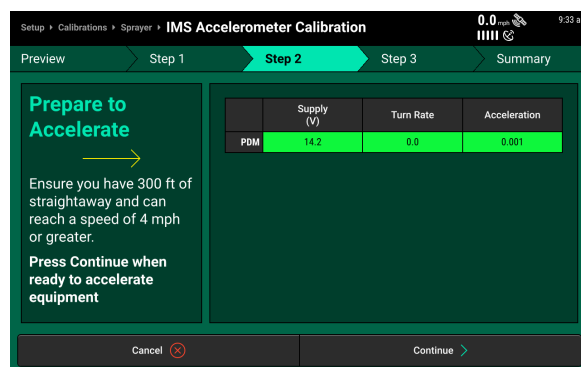
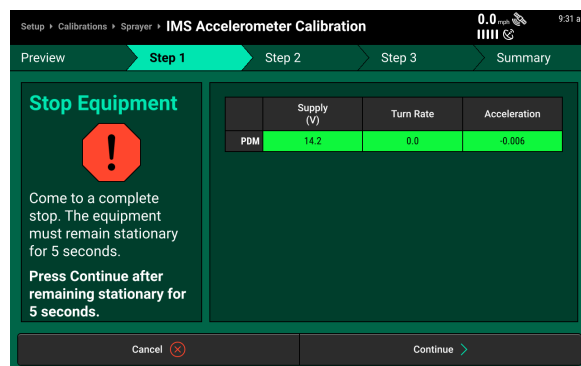
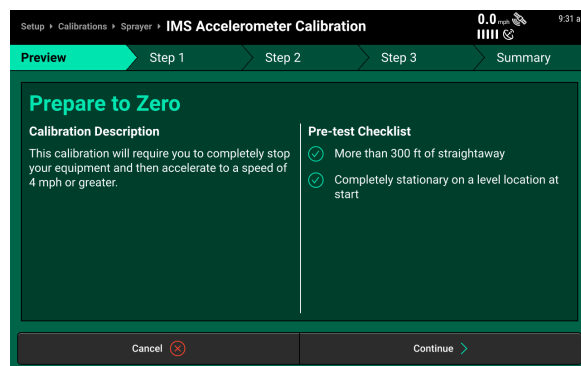
Turn Rate: Turn rate should be 0.0.

Acceleration: Acceleration should be close to zero. This sensor is very precise and it’s not uncommon to see some values here due to implement vibrations. Ex. This sprayer was showing -0.006 when stationary.

Press Continue when ready.

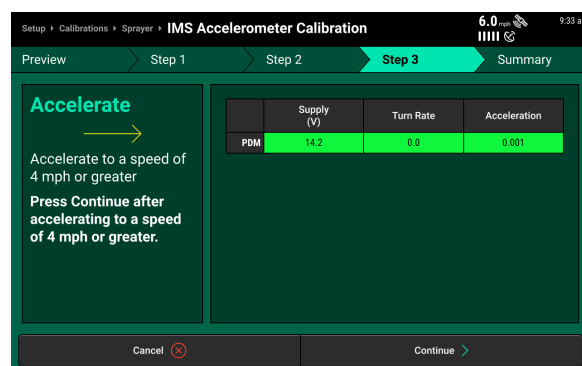
Step 2 will give instructions to ensure you have 300 ft of straightaway and will be able to reach a speed of 4mph or greater.

Press Continue when you are ready.



Step 3 will give instructions to accelerate to a speed of 4 mph or greater.

Press Continue after you have reached a speed of greater than 4 mph.

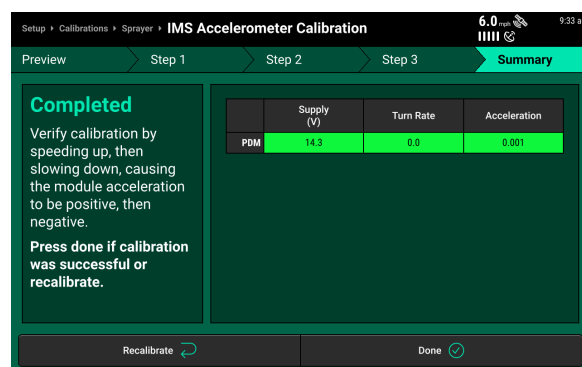


You are now done with the calibration and presented with a Summary page.

You can verify your calibration by speeding up and slowing down and watching the Acceleration number on this screen.

Speeding up should present positive numbers while slowing down will produce negative numbers.

Press “Done” to complete.



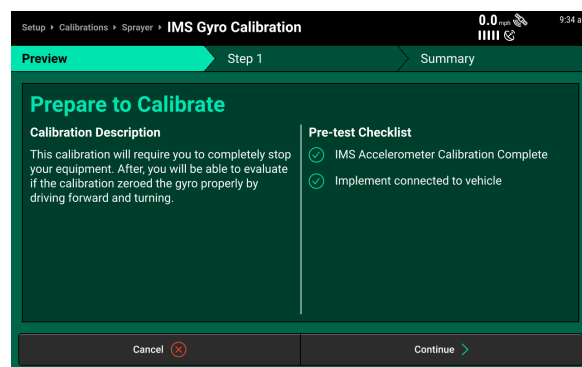
IMS Gyro Calibration

Select the IMS Gyro Calibration to begin. Follow the “Prepare to Calibrate” prompt screen.

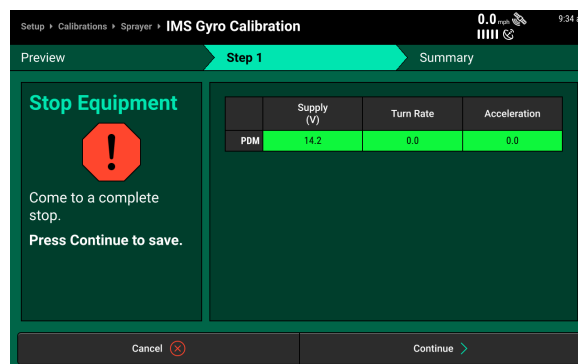
This Calibration will require you to completely stop your equipment, prior to starting the calibration process.

You will also need to have the implement connected to the vehicle (this is more focused on pull-type sprayers or other implements like planters).

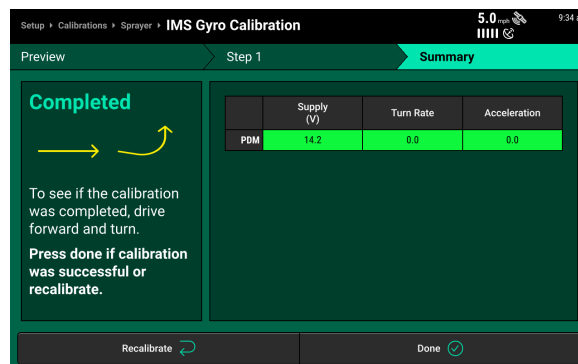
Press “Continue” to begin.



Step 1 will require you to be completely stopped. Press continue after you have come to a complete stop. This will set the expected “zero” for your Gyro.



You will now be presented with a Summary Page. Driving your vehicle and turning should now provide you with a “Turn Rate” value. You will also see “Acceleration” values since you have already calibrated the Accelerometer in the processes before.



Press “Done” to finalize your IMS Gyro Calibration.

System Setup — Pressure

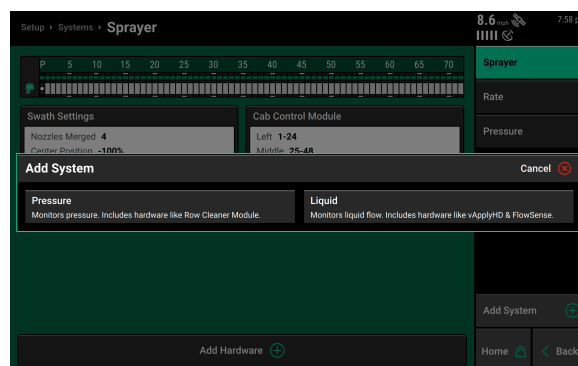
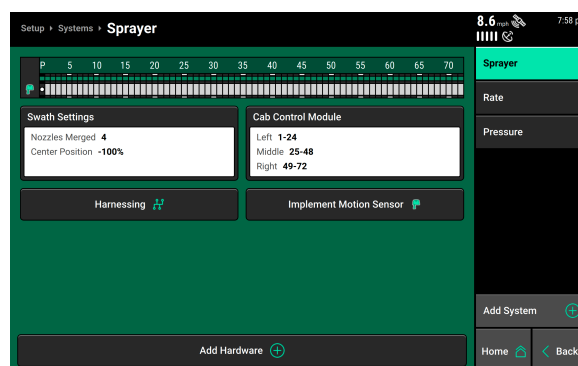
Sprayer Setup

After setting up your “**Harnessing**” you can use the “**Add System**” button on the lower right of the Sprayer systems screen to add your first control product.

Add System: Sprayers have two separate control products to set up.

Pressure is the product setup that defines how SymphonyNozzle will control the pump for the desired operating pressure of the sprayer.

Liquid is the product setup that defines how SymphonyNozzle will control the PWM nozzles to apply the desired application rates in the field.



Pressure System Setup

Select **“Add System”** and then select **“Pressure”** to start adding a pressure control system. The two system name defaults are either “Pressure” or selecting “Custom” to enter your own system name. This is the name that will be used for the Control Widgets and Metrics throughout the display. After selecting a system name you will be presented with the default pressure system setup page. You can now add the hardware that will interact and control the pressure system.

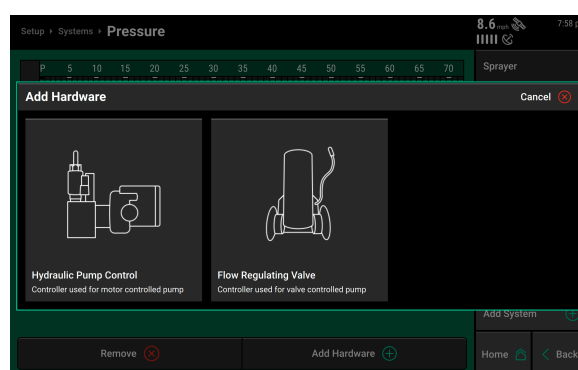
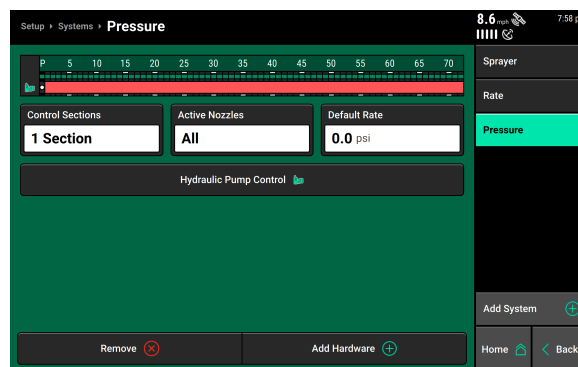
Press **“Add Hardware”** to see a list of compatible hardware for your pressure system.

NOTE: Set up only ONE of the hardware options listed below. Pressure systems can only operate if one hardware solution is in control.

“Hydraulic Pump Control” is used to set up a pump that is controlled with a PWM valve. This will control the pump directly via hydraulic flow in order to maintain the selected pressure control set point in the field.

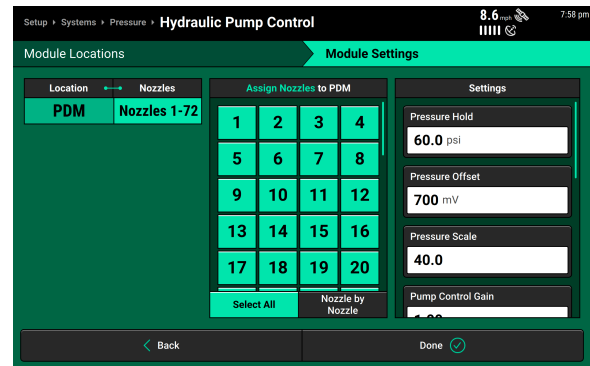
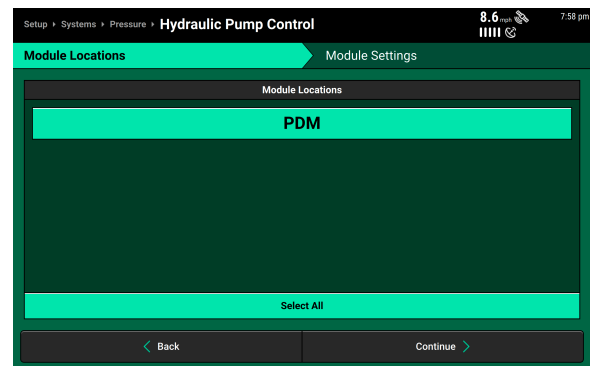
“Flow Regulating Valve” is used to set up a system that has a constant pump speed and regulates pump output with a butterfly style valve in order to maintain the selected pressure control set point in the field.

Select the correct control style to then set up that hardware.



Selecting a pump control hardware option will then bring you to a module setup screen. Select the location this module plugged in to. By default, the Sprayer Control Module (SCM), that you are using to control a PWM pump or Regulating Valve, is located inside the PDM and you will need to make sure to have PDM selected.

Pressing “Continue” will bring you to the “Module Settings” page for the pump. First, assign the module to the nozzles that it is controlling product for (SymphonyNozzle pump control should have all nozzles selected). Then you can use the “Settings” menu on the right to set up pump control defaults.



Hydraulic Pump Control Settings:

Pressure Hold: This value sets the pressure at which the system will maintain when you are not actively spraying but still have the pressure control system enabled.

Pressure Offset: This value defines the zero point for the pressure sensors used in the SymphonyNozzle control. The default should not be changed unless instructed by Product Support.

Pressure Scale: This value sets the scale of the pressure sensors used in the SymphonyNozzle system. The default should not be changed unless instructed by Product Support.

Pump Control Gain: This is the gain for how fast or slow the pump reacts to commanded changes. Adjustments should be made in 0.1 increments. Increasing the gain will make the pump react with ‘faster’ commands while decreasing the number will result in the pump making ‘slower’ commands.

Nozzle Control Gain: This is the gain for how fast or slow the PWM Nozzles react to commanded changes. Adjustments should be made in 0.1 increments. Increasing the gain will make the nozzles react with ‘faster’ commands while decreasing the number will result in the pump making ‘slower’ commands. Nozzle Gain should not be changed unless directed by Product Support.

Pump PWM Frequency: This number sets the frequency the Sprayer Control Module (SCM) will control the PWM Valve on your pump. Refer to your OEM manual or technician to find out what frequency your valve should run at.

Maximum PWM: This sets the maximum PWM percent that the system will command for pump control.

Minimum PWM: This sets the minimum PWM percent that the system will command for pump control.

Flow Regulating Valve Settings:

Pressure Hold: This value sets the pressure at which the system will maintain when you are not actively spraying but still have the pressure control system enabled.

Pressure Offset: This value defines the zero point for the pressure sensors used in the SymphonyNozzle control. The default should not be changed unless instructed by Product Support.

Pressure Scale: This value sets the scale of the pressure sensors used in the SymphonyNozzle system. The default should not be changed unless instructed by Product Support.

Nozzle Control Gain: This is the gain for how fast or slow the PWM Nozzles react to commanded changes. Adjustments should be made in 0.1 increments. Increasing the gain will make the nozzles react with ‘faster’ commands while decreasing the number will result in the pump making ‘slower’ commands. Nozzle Gain should not be changed unless directed by Product Support.

Pump Valve Braking Point: Percent error in flow from target above which valve moves at full speed.

- If flow has large oscillations, increase braking point.
- If control seems slow to reach target, decrease braking point.

Pump Valve Deadband: Percent error in flow from target below which valve does not move.

- If flow seems to have small oscillations around target, increase deadband.
- If flow seems to stabilize slightly above or below target, decrease deadband.

System Setup — Liquid System

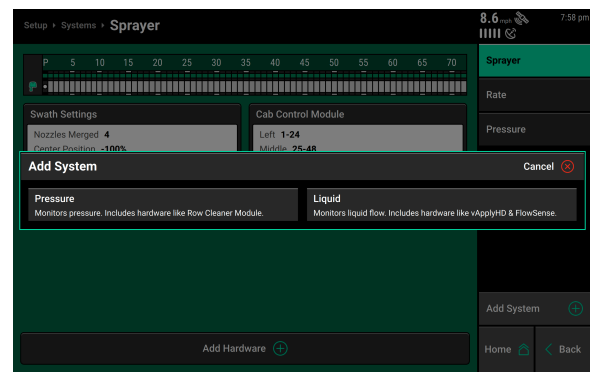
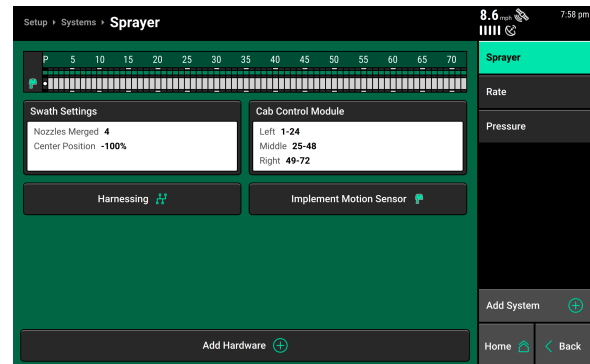
Sprayer Setup

After setting up your “**Harnessing**” you can use the “**Add System**” button on the lower right of the Sprayer systems screen to add your first control product.

Add System: Sprayers have two separate control products to set up.

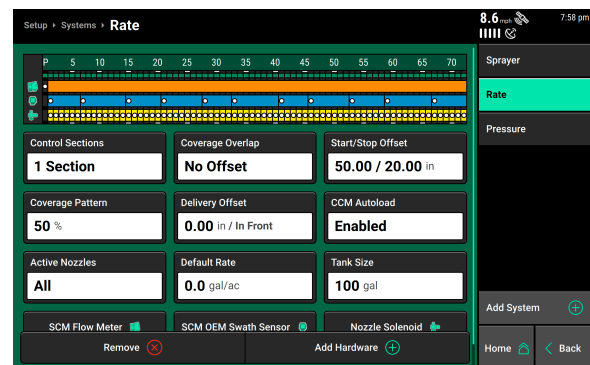
Pressure is the product setup that defines how SymphonyNozzle will control the pump for the desired operating pressure of the sprayer.

Liquid is the product setup that defines how SymphonyNozzle will control the PWM nozzles to apply the desired application rates in the field.



Liquid (Rate) System Setup

Select “**Add System**” and then select “**Liquid**” to start adding a liquid control system. The two system name defaults are either “**Product**” or selecting “**Custom**” to enter your own system name. This is the name that will be used for the Control Widgets and Metrics throughout the display. After selecting a system name you will be presented with the default liquid system setup page. You can now add the hardware that will interact and control the liquid system.



Press **"Add Hardware"** to see a list of compatible hardware for your pressure system.

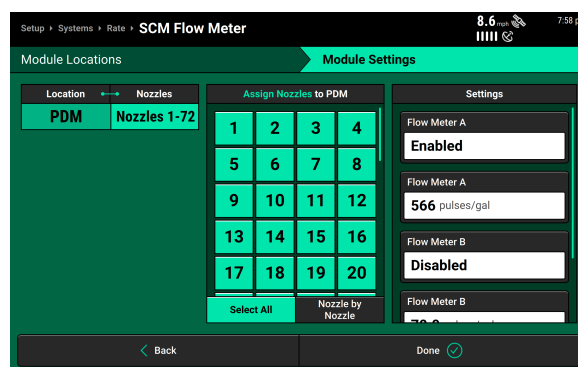
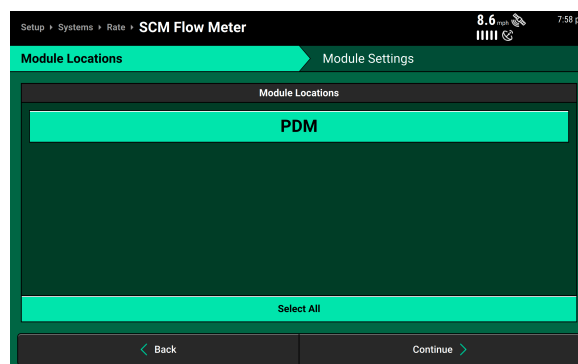
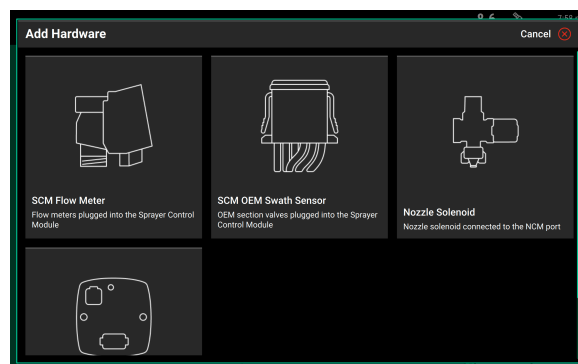
"SCM Flow Meter" is used to set up the flow meter that will provide boom-wide flow feedback for SymphonyNozzle System. A flow meter is needed for accurate PWM nozzle control.

"SCM OEM Swath Sensor" is used to set up an OEM Swath Harness. This harness taps into the signal of the in-cab OEM swath switches and allows SymphonyNozzle to see when the operator turns off a manual swath valve. This harness is set up in this step to assign the PWM Nozzles you want to also shut off when a specific OEM Swath switch is turned off.

"Nozzle Solenoid" hardware is how you set up the PWM Nozzles for SymphonyNozzle.

Selecting **"SCM Flow Meter"** will walk you through setting up the SCM Flow Meter. First, assign the module location the flow meter is plugged in at. On SymphonyNozzle systems, the flow meter plugs in to the SCM at the PDM location.

Pressing **"Continue"** will bring you to the **"Module Settings"** page for the flow meter. Assign the flow meter to the nozzles that it is monitoring product for (SymphonyNozzle flow meter systems should have all nozzles selected). Then you can use the **"Settings"** menu on the right to set up flow meter defaults.



SCM Flow Meter Settings:

Flow Meter A: Make sure your flow meter is enabled.

Flow Meter A (pulses/gal): This value defines the number of pulses per gallon that your flow meter is calibrated for. Refer to your OEM flow meter tag, manual, or technician to find out what your pulses are.

Flow Meter B: Flow Meter B is only needed if your sprayer is a high flow style sprayer that utilizes two flow meters. Enable or disable this secondary flow meter here.

Flow Meter B(pulses/gal): This value defines the number of pulses per gallon that your flow meter B is calibrated for. Refer to your OEM flow meter tag, manual, or technician to find out what your pulses are.

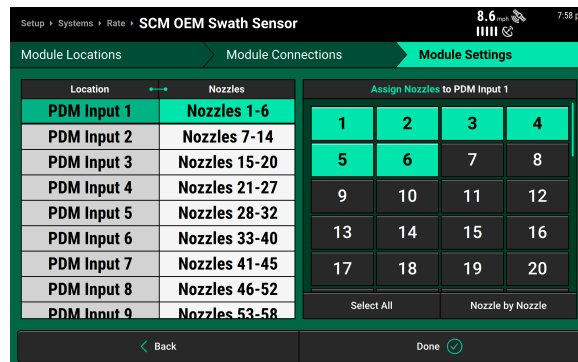
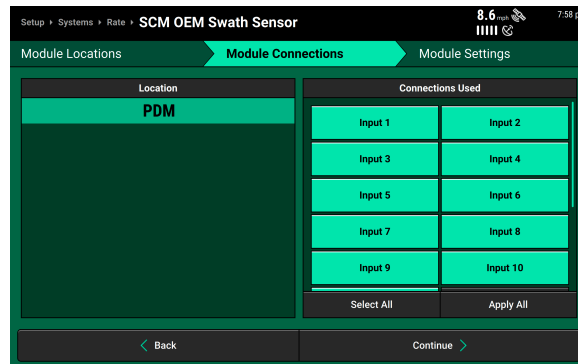
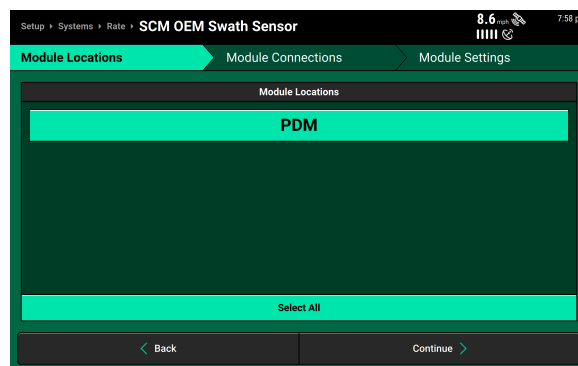
Flow Rate Smoothing: This value sets the percentage of smoothing that you want to allow on the home screen flow rate metric. Increasing this number will result in less variation displayed on the Liquid Rate Metric. This provides a more user friendly rate feedback but DOES NOT impact actual rate control.

Minimum Boom Pressure: This setting is only used when the PWM Nozzles have all been disabled and the SymphonyNozzle system is operating as a flow only system. Minimum Boom Pressure will be the lowest pressure the flow system will operate at.

Selecting “**SCM OEM Swath Sensor**” will walk you through setting up the OEM Swath Sensor Input harness. First, assign the location the OEM Swath Sensor Harness is plugged in at. On SymphonyNozzle systems, this harness plugs in to the SCM at the PDM location.

Pressing “Continue” will bring you to the “**Module Connections**” page for the harness. Select the Input Connections your harness uses to match the OEM Cab Swath Valve switches to the input connections on the SCM OEM Swath Sensor Harness. Refer to the Appendix below to find Make and Model charts for your specific harness.

The last step is defining which PWM Nozzles should be assigned to turn on/off with the OEM Input Connection. The nozzles should match the number of nozzles on the physical section supply valve boom section.



John Deere 4-Series (Excludes R4023)				
Connections Used	7 Sections	9 Sections	11 Sections	13 Sections
Input 1			L5 (Section 1)	L6 (Section 1)
Input 2		L4 (Section 1)	L4 (Section 2)	L5 (Section 2)
Input 3	L3 (Section 1)	L3 (Section 2)	L3 (Section 3)	L4 (Section 3)
Input 4	L2 (Section 2)	L2 (Section 3)	L2 (Section 4)	L3 (Section 4)
Input 5	L1 (Section 3)	L1 (Section 4)	L1 (Section 5)	L2 (Section 5)
Input 6	C (Section 4)	C (Section 5)	C (Section 6)	L1 (Section 6)
Input 7	R1 (Section 5)	R1 (Section 6)	R1 (Section 7)	C (Section 7)
Input 8	R2 (Section 6)	R2 (Section 7)	R2 (Section 8)	R1 (Section 8)
Input 9	R3 (Section 7)	R3 (Section 8)	R3 (Section 9)	R2 (Section 9)
Input 10		R4 (Section 9)	R4 (Section 10)	R3 (Section 10)
Input 11			R5 (Section 11)	R4 (Section 11)
Input 12				R5 (Section 12)
Input 13				R6 (Section 13)

John Deere 4630, 4730, 4830, R4023				
Connections Used	5 Sections	7 Sections		
Input 1		L3 (Section 1)		
Input 2	L2 (Section 1)	L2 (Section 2)		
Input 3	L1 (Section 2)	L1 (Section 3)		
Input 4	C (Section 3)	C (Section 4)		
Input 5	R1 (Section 4)	R1 (Section 5)		
Input 6	R2 (Section 5)	R2 (Section 6)		
Input 7		R3 (Section 7)		

John Deere 00,10,20 Series				
Connections Used	5 Sections	7 Sections		
Input 1	L2 (Section 1)	L3 (Section 1)		
Input 2	L1 (Section 2)	L2 (Section 2)		
Input 3	C (Section 3)	L1 (Section 3)		
Input 4	R1 (Section 4)	C (Section 4)		
Input 5	R2 (Section 5)	R1 (Section 5)		
Input 6		R2 (Section 6)		
Input 7		R3 (Section 7)		

John Deere 4940				
Connections Used	9 Sections	11 Sections		
Input 1		L5 (Section 1)		
Input 2	L4 (Section 1)	L4 (Section 2)		
Input 3	L3 (Section 2)	L3 (Section 3)		
Input 4	L2 (Section 3)	L2 (Section 4)		
Input 5	L1 (Section 4)	L1 (Section 5)		
Input 6	C (Section 5)	C (Section 6)		
Input 7	R1 (Section 6)	R1 (Section 7)		
Input 8	R2 (Section 7)	R2 (Section 8)		
Input 9	R3 (Section 8)	R3 (Section 9)		
Input 10	R4 (Section 9)	R4 (Section 10)		
Input 11		R5 (Section 11)		

All Other Swath harnesses(Apache, Case, Rogator, JD 4930)				
Connections Used	5 Sections	7 Sections	9 Sections	
Input 1	Section 1	Section 1	Section 1	
Input 2	Section 2	Section 2	Section 2	
Input 3	Section 3	Section 3	Section 3	
Input 4	Section 4	Section 4	Section 4	
Input 5	Section 5	Section 5	Section 5	
Input 6		Section 6	Section 6	
Input 7		Section 7	Section 7	
Input 8			Section 8	
Input 9			Section 9	

Selecting “**Nozzle Solenoid**” will walk you through setting up all of the PWM Nozzle Solenoids on the SymphonyNozzle system. First, select all the Nozzle Control Modules that have PWM Nozzles plugged in. On SymphonyNozzle systems, all NCMs should be in use and have at least one PWM nozzle in use.

Pressing “Continue” will bring you to the “**Module Connections**” page where you will select all of the connection ports in use on each NCM. Make sure to verify ALL NCM connections by selecting each NCM from the left-hand list.

The last step is defining which port on each NCM locations corresponds to which PWM nozzle on the sprayer boom. If you set up the Module Connections page correctly, you can hit “Nozzle by Nozzle” and the system will automatically assign each port a nozzle location in order.

Nozzle Control Module Settings:

Each setting is specific to the Nozzle Location you have selected in light green on the left of the page.

Override Duty Cycle: This duty cycle percent defines the duty cycle that this specific nozzle will perform if the “Enable Override Mode” is “Enabled”.

Minimum PWM: This value is the minimum Duty Cycle percent that this specific Nozzle can control to. Do not change this value unless instructed by Product Support.

Maximum PWM: This value is the maximum Duty Cycle percent that this specific Nozzle can control to. Do not change this value unless instructed by Product Support.

Control Frequency: This is the Frequency that this specific PWM Nozzle will control at.