

# Setting up the SurePoint Spartan Injection Pump with Raven RCM

Below are sample screenshots for setting up the Raven RCM for the SurePoint Spartan Injection Pump.

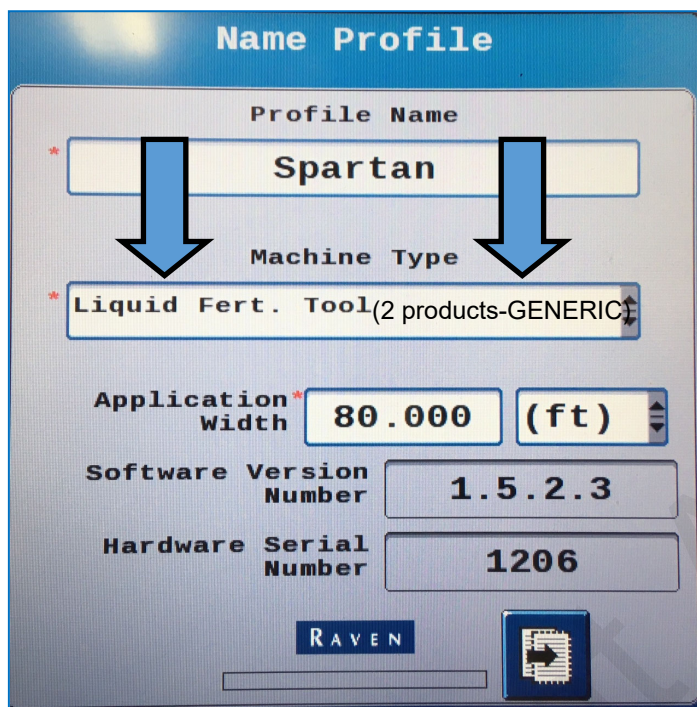
Your setup may be different. Set up Application Width, Sections, etc. as needed for your operation.

This sheet shows the Spartan set up as a single product Liquid Fert Tool. If you are setting the RCM to control more than one product, you would use a Generic profile setup. Many times, the carrier (main product) will be Product 1, and the Spartan will be Product 2.

Adjustments may be necessary in the field for best operation.

Setup > Implement > New Profile

**396-4330Y1**



**Name Profile**

Profile Name  
\* **Spartan**

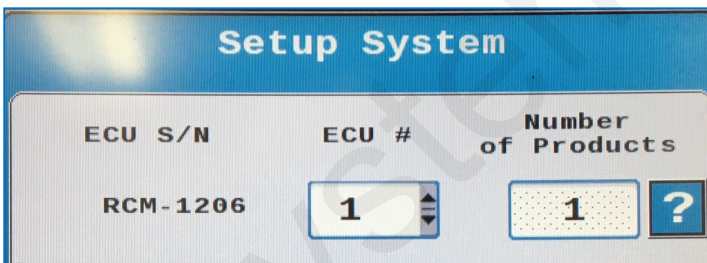
Machine Type  
\* **Liquid Fert. Tool** (2 products-GENERIC)

Application Width \* **80.000** (ft)

Software Version Number **1.5.2.3**

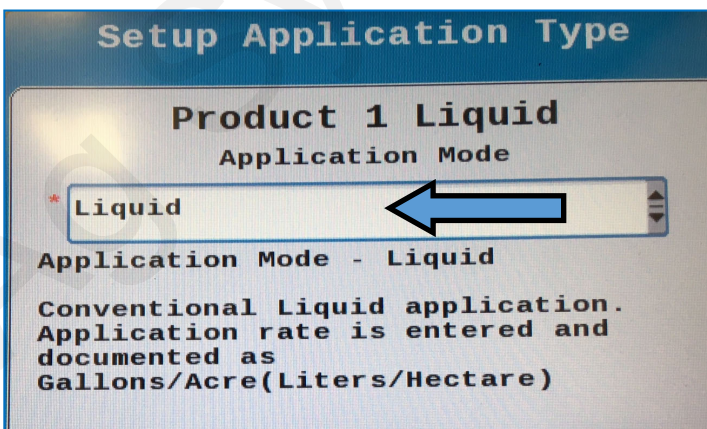
Hardware Serial Number **1206**

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**Setup System**

ECU S/N	ECU #	Number of Products
RCM-1206	<b>1</b>	<b>1</b> ?



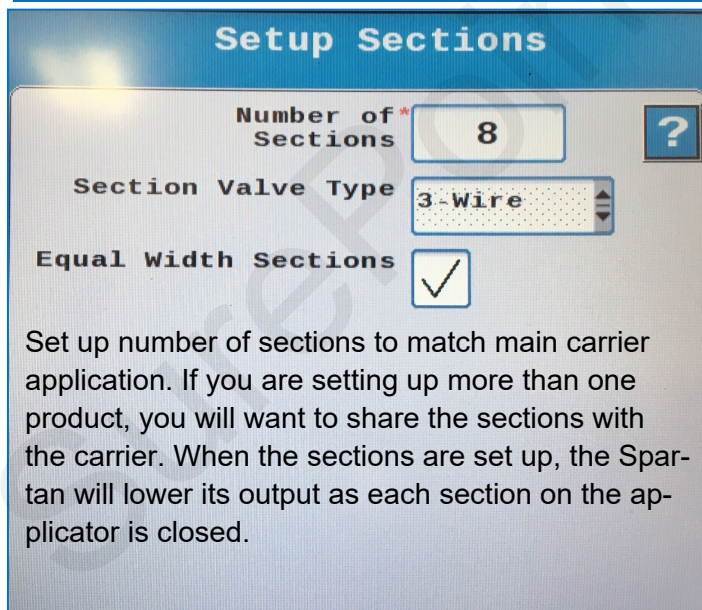
**Setup Application Type**

**Product 1 Liquid**

Application Mode  
\* **Liquid**

Application Mode - Liquid

Conventional Liquid application. Application rate is entered and documented as Gallons/Acre(Liters/Hectare)



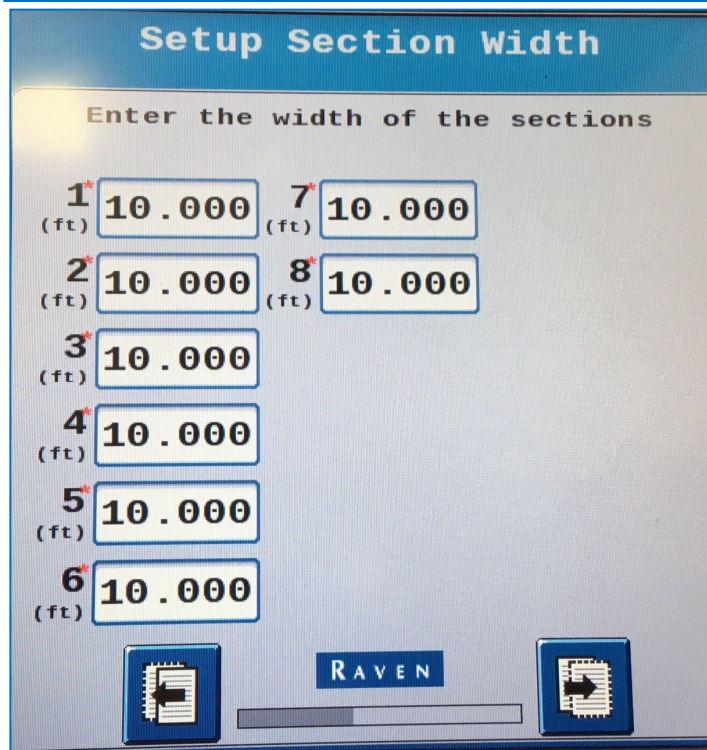
**Setup Sections**

Number of Sections \* **8** ?

Section Valve Type **3-Wire**

Equal Width Sections ☒

Set up number of sections to match main carrier application. If you are setting up more than one product, you will want to share the sections with the carrier. When the sections are set up, the Spartan will lower its output as each section on the applicator is closed.



**Setup Section Width**

Enter the width of the sections

1* <b>10.000</b> (ft)	7* <b>10.000</b> (ft)
2* <b>10.000</b> (ft)	8* <b>10.000</b> (ft)
3* <b>10.000</b> (ft)	
4* <b>10.000</b> (ft)	
5* <b>10.000</b> (ft)	
6* <b>10.000</b> (ft)	

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## Setup Auxiliary Drivers

**Auxiliary Driver 1** None Typical setup will not use Auxiliary Drivers

## Setup Pressure Sensors

**Product 1 Liquid** ?

Pressure Sensor 1 Custom

Pressure Sensor 2 None

## Setup Pressure Alarms

	Min	Max	Alarm?
Pressure 1 (PSI)	<span style="border: 1px solid black; padding: 2px;">0</span>	<span style="border: 1px solid black; padding: 2px;">85</span>	<input checked="" type="checkbox"/> <span style="border: 1px solid black; padding: 2px;">?</span>
Pressure 2 (PSI)	<span style="border: 1px solid black; padding: 2px;">0</span>	<span style="border: 1px solid black; padding: 2px;">0</span>	<input type="checkbox"/>

The Spartan is capable of reaching 200 PSI. Most system components will not handle that much pressure. Set a Max of 85 PSI and check the box. The RCM will not allow the Spartan to go above 85 PSI.

## Setup Auxiliary Functions

**Agitator Installed** ☐ ?

**Flow Return Installed** ☐

## Setup Control Valve

**Product 1 Liquid** ?

**Control Valve Type** PWM Close

**Valve Response Rate (1-100)** 1

**Control Deadband (%)** 2

**Enable PWM Smart Control** ☒

Start with Valve Response at 1. If Spartan seems slow to adjust, increase this number by 1 at a time. If system won't lock on, change Advanced Tuning > P = 5, S = 0.9. Press and hold the System Settings tab for 10 seconds to bring up the Advanced Tuning button.

## Setup PWM

**Product 1 Liquid** ?

**Coil Frequency (Hz)** 125

**PWM High Limit (%)** 100.0

**PWM Low Limit (%)** 5.0

**PWM Startup (%)** 10.0

PWM Low Limit may need to be lower if the pump will not slow down enough when low output is needed.

Adjust PWM Startup in the field so the Spartan starts up close to the rate.

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## Setup Rate Sensor

**Product 1 Liquid** ?

**Flowmeter Calibration**

**Flowmeter Pulse/Units** f1 oz

Model 115	1700	Monitor amount used and acres worked. Adjust the flow cal as needed for best accuracy. Increase the number if you need to apply more; decrease to apply less.
Model 125	890	
Model 135	450	
Model 145	220	

## Setup Rates

**Product 1 Liquid** ?

	Rate 1	Rate 2	Rate 3
Preset* Rate Values (gal/ac)	<span style="border: 1px solid black; padding: 2px;">0.25</span>	<span style="border: 1px solid black; padding: 2px;">0.00</span>	<span style="border: 1px solid black; padding: 2px;">0.00</span>
Rate Bump (gal/ac)	<span style="border: 1px solid black; padding: 2px;">0.00</span>		
Rate Selection	<span style="border: 1px solid black; padding: 2px;">Predefined or Rx</span>		
Display Smoothing	<input checked="" type="checkbox"/>		
Decimal Shift	<span style="border: 1px solid black; padding: 2px;">2</span>		

Enter desired Rate(s) in gal/ac



## Setup Alarms

**Product 1 Liquid** ?

Off Rate Alarm ( % off target rate )  Alarm? ☒

If Pressure Sensor 1 has a minimum pressure alarm enabled the system will not drop below that pressure to maintain spray pattern.

Raven RCM-Setup
Spartan

## System Settings

Control Valve Setup

Rate Sensor Setup

Tank Fill Settings

Display Setup Menu

Pressure Sensor Setup

Auxiliary Functions Setup

Press and hold the System Settings button (above) for 10 seconds to bring up Advanced Tuning.

Advanced Tuning Menu

## Pressure Sensor Setup

Pressure Sensor 1

Pressure Sensor 2

Calibrate Pressure Sensor

Pressure Assignment Setup

## Pressure Sensors Calibration

Pressure Sensor 1

1. Ensure there is zero pressure at the sensor to be calibrated.
2. Enable the sections to spray.
3. Press the Calibration button for the desired type of calibration to begin test and set zero point.

Voltage-based Calibration

Operation-based Calibration

## Pressure Sensors Calibration

### Pressure Sensor 1

#### Voltage-Based Calibration

1. Ensure the sensor has 12V power supply.
2. Enter the slope as reported by the implement pressure gauge manufacturer in the box below
3. Select Accept

50.0

(mV/PSI)

See the main manual for your system and the QuickStart Setup Guide for setting up the number of products your system will be using.

The screenshots in this document are designed to help set up the SurePoint Spartan Injection Pump with the Raven RCM.

Your settings may be different than those shown here.

Adjustments may need to be made in the field for best operation.

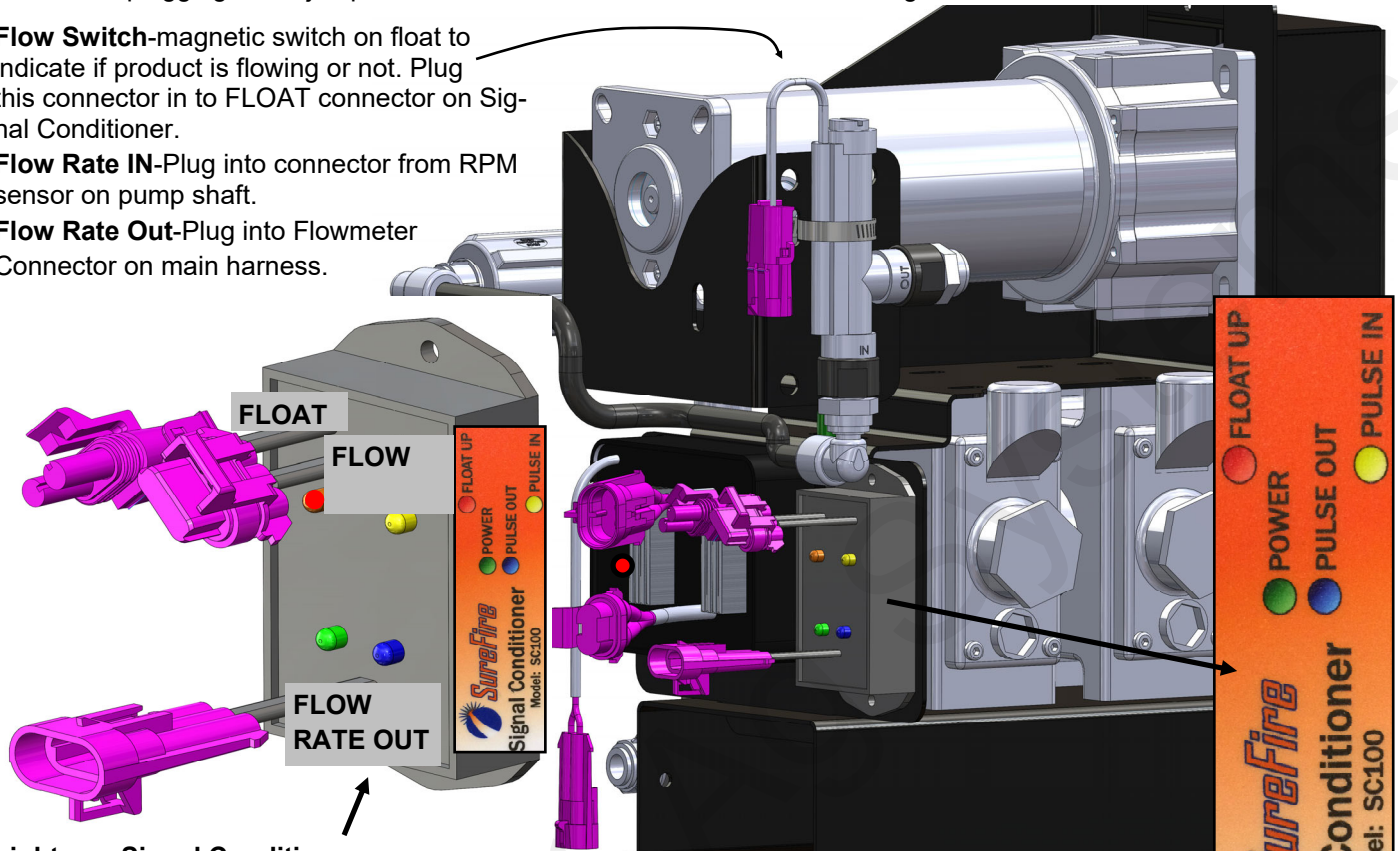


The flowmeter on the Spartan is a pump RPM sensor that is calibrated to convert the pump RPM to flow measured in oz/min. To be certain that liquid is actually flowing, a flow switch with a floating magnetic switch is in the flow line. If the tank is empty, the float will go down, telling the controller that there is no flow. If the flow switch malfunctions and tells the controller there is no flow when there is flow, you can run the system without the flow switch by unplugging the flow switch and plugging in the jumper connector to the Float connection on the Signal Conditioner.

**Flow Switch**-magnetic switch on float to indicate if product is flowing or not. Plug this connector in to FLOAT connector on Signal Conditioner.

**Flow Rate IN**-Plug into connector from RPM sensor on pump shaft.

**Flow Rate Out**-Plug into Flowmeter Connector on main harness.



#### Lights on Signal Conditioner:

**Normal operating mode:** Green and Blue steady on. Yellow pulsing quickly.

Green-Steady ON-is receiving power from flowmeter connector on harness.

Blue- should be ON when system is running. Indicates Signal Conditioner is sending out pulses to controller.

Yellow—Quick pulses while system is running indicates it is receiving pulses from the RPM sensor on the pump shaft.

Red-should be OFF. Red light ON indicates that float is down or is malfunctioning if fluid is flowing. Red light ON means no pulses are being sent to the controller. (When Red light first comes ON, pulses will be sent for about 10 seconds). To bypass the float (Flow Switch) unplug Flow Switch connector from Float connector on Signal Conditioner, and plug jumper into Float connector. Red light should go out.

#### Lights on EPD module:

Red light by fins-steady blink (once per second) indicates power from battery. When system is running, this light goes steady red, and red light in corner turns on (maybe not as bright) indicating PWM signal.

