Precision Liquid Fertilizer Solutions

ag Xcel

www.agxcel.com
where precision meets the soil...
877.218.1981

Quick Start Setup Instructions for Raven RCM & AgXcel Harness for 2 Liquid Product

PLEASE NOTE: Your setup may vary. These screen shots represents a typical AgXcel Liquid Fertilizer System setup. See the Raven LRC Operator's Manual for safety information and additional setup and operating information.

1. Navigate to the Applicator Setup Screen

For the initial setup, start a new profile. The Raven LRC allows you to store 8 profiles. Be prepared to wait during this phase of the setup process....*A LONG TIME!*

2. Name Profile
Enter Profile Name, Machine Type, Application Width

Name Profile

Profile Name
* AGXCEL

Machine Type
* Generic

Application* Width   10.000   (ft)

Software Version Number   1.1.0.1

Hardware Serial Number   1100

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3. Enter the number of products you will be using and how many RPM sensors in use

Setup System

ECU S/N   ECU #   Number of Products

RCM-1100   1   2   ?

Setup Fan/Spinner RPM

Select the number of spinner or fan RPM sensors installed on the Implement used for fan or spinner RPM monitoring or control

0

4. Select LIQUID for Product 1 and Product 2

Setup Application Type

Product   Application Type

1 * Liquid

2 * Liquid

Setup Application Type

Product 1 Liquid
Application Mode
* Liquid
Application Mode – Liquid

Setup Application Type

Product 2 Liquid
Application Mode
* Liquid
Application Mode – Liquid

5. Setup Section Groups
Enter how many sections you have and the width of the sections.
Make sure "Master Clutch" is unchecked.

Setup Sections

Number of* Sections   4   ?

Equal Width Sections   ✓

Master Clutch   ☐

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6. Scale Setup: NONE

Scale Setup

None   ?

7. The AgXcel Pressure Sensor will be setup as a Custom sensor. Calibration will be done later.

Setup Pressure Assignment

Pressure Sensor 1 — Custom
Pressure Sensor 2 — Custom
Pressure Sensor 3 — None
Pressure Sensor 4 — None

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Setup Pressure Assignment

Pressure Sensor 1
Product 1 ✓
Product 2 ☐

Setup Pressure Assignment

Pressure Sensor 2
Product 1 ☐
Product 2 ✓

Setup Pressure Alarms

	Min	Max	Alarm?
Pressure 1 (PSI)	1	100	
Pressure 2 (PSI)	1	100	
Pressure 3 (PSI)	0	0	
Pressure 4 (PSI)	0	0	

Sensors (such as pressure, pump RPM, spinner RPM) do not need to be asigned to a specific product if they are just being used to monitor a device and not to control it. AgXcel recommends that you NOT assign pressure product. However, there may be times when you want to assign the sensor to a product.

8. Control Valve Setup (use the number indicated for your

system) Valve Response Rate: *(Adjust as needed)*
GX5 (hydraulic)....100   Synergist...............80
GX2 (electric).......100   GX12HP.................80

If pump is slow responding to rate or speed changes, increase **Valve Response Rate** 10hz at a time. If product oscillates around rate going across the field, reduce **Valve Response Rate**.

Control Deadband: Start at 2

Coil Frequency:
GX5 (hydraulic).....100   Synergist......125
GX2 (electric)........100   GX12HP........100

PWM High Limit:
GX5 (hydraulic)....100   Synergist........80
GX2 (hydraulic)....100   GX12HP.........90

Low Limit *(Adjust in field as needed)*
GX5 (hydraulic).....25   Synergist........10
GX2 (electric)........10   GX12HP..........10

PWM Startup *(Adjust in field as needed)*
GX5 (hyrdaulic)......80   Synergist........80
GX2 (electric).......100   GX12HP..........10

Setup Control Valve

Product 1 Liquid

Control Valve Type: PWM Close
Valve Response Rate (1-100): ☐
Control Deadband (%): ☐

Setup PWM

Product 1 Liquid

Coil Frequency (Hz): ☐
PWM High Limit (%): ☐
PWM Low Limit (%): ☐
PWM Startup (%): ☐

For best startup performance, set the PWM Startup at or slightly above the normal operating PWM Duty Cycle (DC%). When the pump starts it will go immediately to that Duty Cycle and then will have just a minor adjustment to lock on to the Target Rate. **IF THE PUMP STARTS TOO FAST, LOWER THE PWM STARTUP.**
Normal Operation:
37.1 DC%

9. Enter appropriate Flowmeter Cal number

Setup Rate Sensor

Product 1 Liquid ?

Flowmeter* Calibration [　　　]

Flowmeter Pulse/Units [gal　]

GX12HP	
# OF PUMPS	CAL#
1	84
2	42
3	28

AGXCEL FLOW METER GUIDE		
MODEL / RATE	PULSES / GAL	Flow Cal #
0.08 - 1.6	37850 *	4731
0.13 - 2.6	22710 *	2838
0.3 - 5	11355 *	1419
0.6 - 13	4542	4542
1.3 - 26	2271	2271
2.6 - 53	1135	1135
NOTE: JDRC does not except more than 4 digits for a flow cal so a divide by 8 cable is required.		

Use charts for flowmeter calibration number

CAUTION: When choosing pulses/gal, be sure to choose the "gal" unit. This will allow the controller to read in ounces with the flow cal entered.

10. Tank & Fill Setup

Setup Tank/Bin

Product 1 Liquid

Tank Capacity {gal} [0]

Current Tank Level {gal} [0]

Alarm?

Low Tank Level {gal} [0] [　]

Tank Fill Monitor [　]

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Check Tank Fill Monitor box if using a fill flow-meter. Then enter Tank Fill Flowmeter Calibration. (Units are 10 gal)

Setup Alarms

Product 1 Liquid ?

Alarm?

Off Rate Alarm (% off target rate) [20] ✓

Enter minimum flow rate required to maintain spray pattern.

Minimum Flow Rate [0.0] {gal/min}

11. Set Rates & Rate Smoothing

Check the Decimal Shift box to enter rates with one more decimal point (such as 0.25 GPA)

Setup Rates

Product 1 Liquid ?

	Rate 1	Rate 2	Rate 3
Preset Rate* Values {gal/ac}	1.0	3.0	5.0

Rate Bump {gal/ac} [0.0]

Rate Selection [Predefined or Rx]

Display Smoothing [✓]

Decimal Shift [1]

12. Set Off Rate Alarm as desired

The Minimum Flow Rate box will not be present if a pressure sensor has been assigned to this product. Typically, **Minimum Flow Rate will be left at 0.**

13. Pressure Sensor

When using an AgXcel pressure sensor the steps must be performed below. AgXcel uses a 0 - 100 PSI pressure transducer and a calibration number of **50.0 mv/PSI** is to be used. To ensure that the sensor is properly calibrated, please make sure that the M12 connector with a **GREEN lit LED is DISCONNECTED** from the sensor, this will ensure that the sensor does not detect any pressure in the system. 0 Pressure = 0.00 V.

For compete information on how the **Sensor** is operating, go to:
Diagnostics > Readings > Pressure Sensors. **0 Pressure Voltage should be 0.00 V .**
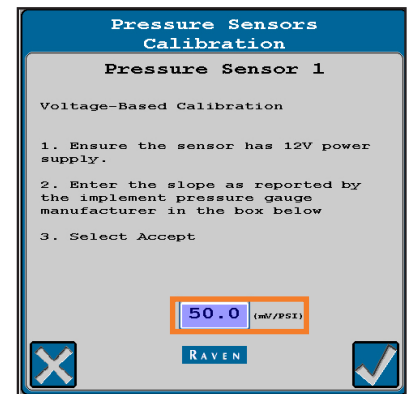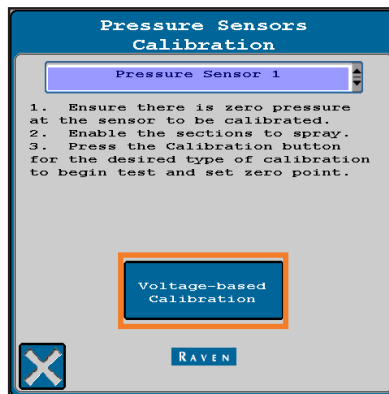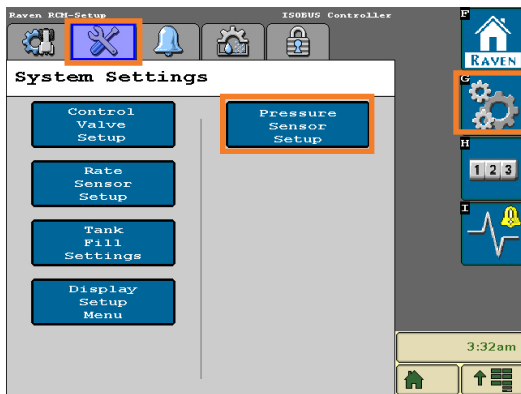
14. Advance Tuning

- Many times the Control Valve Settings are not enough to appropriately control the AgXcel EMD PWM Intelligent Module. Therefore, additional fine tuning using the Raven LRC under the Advance Tuning section is required. On the AgXcel GX2 or Synergist system the PID values must be modified. For more in-depth details of this feature press the ? button.

Press and HOLD the SETTINGS tab for about 10 seconds until the Advanced Tuning button displays

Default Settings are:
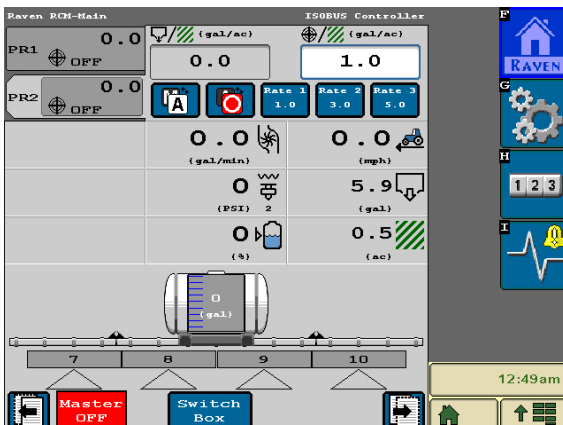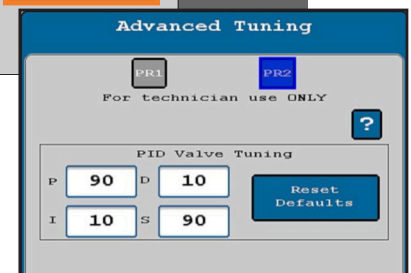   P = 50   D = 50
   I = 20   S = 50
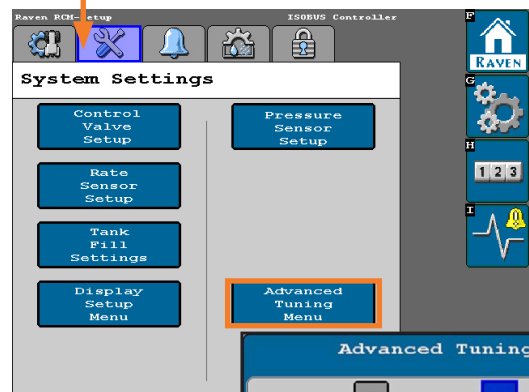*PID Valve Tunning for AgXcel GX12HP Electric System:*
   Set P = 20   D = 10
   Set i = 10   S = 20

Setting P = 100 and S = 100 will ensure the quickest response from the AgXcel GX2 Electric System
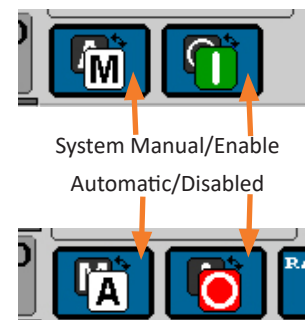

Ensure that you have these options selected:

Volume Per Minute

Speed Layout

Task Area

Pressure Readout (if you have a Pressure Transducer)

System Manual/Enable

Automatic/Disabled

AgXcel Raven RCM
2 Product Harness

Agxcel #5 5457
320-430 Rev.B

47-PIN MALE

Wire Size: 18G
Length : 25in

PRODUCT 01

Pin	Label
01	VALVE GROUND
02	VALVE GROUND
03	
04	SECTION 01
05	SECTION 02
06	SECTION 03
07	SECTION 04
08	SECTION 05
09	SECTION 06
10	SECTION 07
11	SECTION 08
12	
13	
14	
15	PRODUCT 01 PWM (-)
16	PRODUCT 01 PWM (+)
17	
18	MASTER ON/OFF
19	
20	
21	FLOWMETER GROUND
22	
23	
24	
25	FLOW 5V
26	
27	
28	FLOW SIGNAL
29	SENSOR GROUND
30	SENSOR 12V POWER
31	PRESSURE 01
32	
33	
34	
35	
36	VALVE POWER (15A)
37	HC POWER (15A)

47-PIN MALE connector:

Label	Pin
HC GROUND	01
SENSOR GROUND	02
	03
HC GROUND	04
HC POWER (15A)	05
HC POWER (15A)	06
PRESSURE 01	07
PRESSURE 02	08
	09
	10
	11
FLOWMETER 01	12
	13
FLOWMETER 02	14
	15
	16
	17
MASTER ON/OFF	18
	19
	20
	21
SENSOR 5V POWER	22
PRODUCT 01 PWM (-)	23
PRODUCT 01 PWM (+)	24
PRODUCT 02 PWM (+)	25
PRODUCT 02 PWM (-)	26
SECTION 13	27
SECTION 14	28
SECTION 15	29
SECTION 16	30
IMPLEMENT SWITCH INPUT	31
	32
SENSOR 12V POWER	33
SENSOR GROUND	34
	35
SECTION 01	36
SECTION 02	37
SECTION 03	38
SECTION 04	39
SECTION 05	40
SECTION 06	41
SECTION 07	42
SECTION 08	43
SECTION 09	44
SECTION 10	45
SECTION 11	46
SECTION 12	47

PRODUCT 02

Pin	Label
01	VALVE GROUND
02	VALVE GROUND
03	
04	SECTION 09
05	SECTION 10
06	SECTION 11
07	SECTION 12
08	SECTION 13
09	SECTION 14
10	SECTION 15
11	SECTION 16
12	
13	
14	
15	PRODUCT 02 PWM (-)
16	PRODUCT 02 PWM (+)
17	
18	MASTER ON/OFF
19	
20	
21	FLOWMETER GROUND
22	
23	
24	
25	FLOW 5V
26	
27	
28	FLOW SIGNAL
29	SENSOR GROUND
30	SENSOR 12V POWER
31	PRESSURE 02
32	
33	
34	
35	
36	VALVE POWER (15A)
37	HC POWER (15A)

Version 1.1
Revised 06-28-18

IMPLEMENT SWITCH

Label	Pin
GROUND	B
SENSOR 5V POWER	A

AgXcel Raven Integration Harness
37-Round Pin to Twin
16-Round Pin "Y" Connector

Agxcel #53593
309-524

37-PIN MALE

Wire Size: 18G
Length : 3ft

VALVE GROUND	01
VALVE GROUND	02
VALVE POWER (15A)	03
SECTION 01	04
SECTION 02	05
SECTION 03	06
SECTION 04	07
SECTION 05	08
SECTION 06	09
SECTION 07	10
SECTION 08	11
SECTION 09	12
SECTION 10	13
	14
PWM (-)	15
PWM (+)	16
	17
	18
SECTION 12	19
SECTION 11	20
FLOWMETER GROUND	21
	22
	23
	24
	25
	26
	27
FLOWMETER	28
	29
	30
PRESSURE SIGNAL	31
	32
	33
	34
	35
HC POWER (15A)	36
HC POWER (15A)	37

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SECTIONS

01	VALVE GROUND
02	SECTION 02
03	SECTION 03
04	SECTION 04
05	SECTION 05
06	SECTION 06
07	SECTION 07
08	SECTION 08
09	SECTION 09
10	SECTION 10
11	SECTION 11
12	SECTION 12
13	PRESSURE SIGNAL
14	VALVE POWER (15A)
15	SECTION 01
16	VALVE POWER (15A)

PUMP

01	GROUND
02	
03	PWM (+)
04	PWM (-)
05	
06	SECTION 01
07	
08	
09	PRESSURE SIGNAL
10	
11	FLOWMETER GROUND
12	
13	FLOW SIGNAL
14	
15	
16	VALVE POWER (15A)

AgXcel Channel Integration Harness
(PWM, Flowmeter, Pressure)

Agxcel #53697
309-506

16-PIN ROUND CONNECTOR TO NH3

Wire Size: 18G

Length: 10ft

GND	01
	02
Servo (+) PWM	03
Servo (-) PWM	04
Flow 5V	05
12V Sensor Power	06
Sensor GND	07
	08
Pressure Signal 1	09
Pressure Signal 2	10
Flow GND	11
	12
Flow Signal	13
	14
MASTER ON/OFF	15
Power	16

YEL
GRN
PURP
PURP/WHT
BLK03
BLU01
RED02A

Version 1.0
Created 07-2-18

PRESSURE 01

PURP	A	Pressure Signal 1
RED02C	B	Power
BLK03C	C	Flow GND

12V FLOW
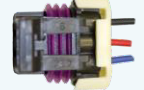
BLU01A	A	Flow Signal
RED02B	B	12V Sensor Power
BLK03B	C	Flow GND

PRESSURE 02

PURP/WHT	A	Pressure Signal 2
RED02D	B	Power
BLK03D	C	Flow GND

PWM

YEL	A	PWM (+)
GRN	B	PWM (-)