



## *“Tomorrow’s Solutions Today”*

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### XR3000 II Quick Guide

#### Cranberries

The XR3000 and XR3000 II system provides a unique set of scheduling logic that allows for many different agricultural applications to be applied using a single control system. However, given that this system can provide many varieties of specific use cases, from simple to complex sets of logic, it also requires developing a good knowledge of how to build schedules or control from remote telemetry radios to ensure proper applications are being done.

Starting with code levels 1.56 and 11.56, this has been simplified for specific applications to make programming easier for the user.

An overview of the system.

### **IAS XR3000™ and IAS XR3000 II™ Agent Model**

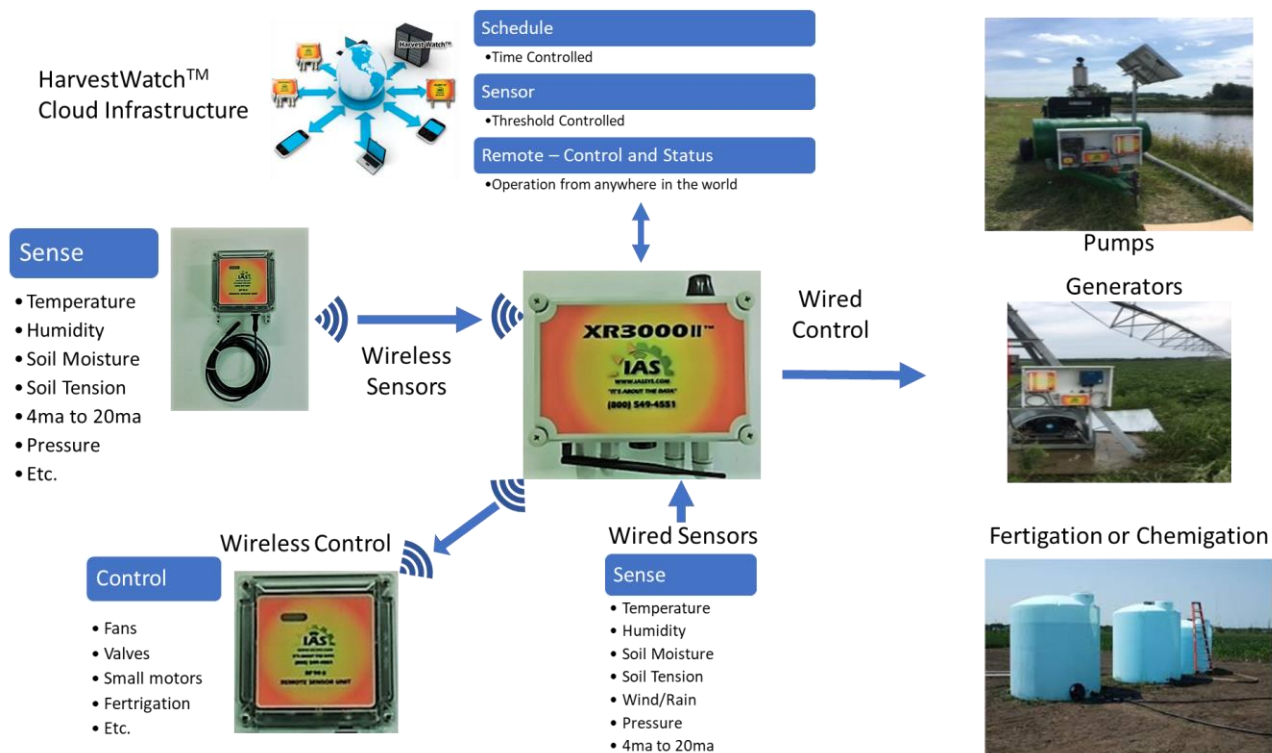
Is a cloud connected telemetry device with I/O. All sensors, outputs, and 8 channel Configurable Logic Controller (CLC) can act autonomously as an ‘Agent’ of the customer. Device access is through an internet accessible account under IAS Harvest Watch.

#### Inputs:

- 4 Ports for *IAS Intelligent Sensors™*
- 8 Wireless Radio Sensors

#### Outputs:

- 8 5A Programmable Outputs, Input thresholds can be set to control corresponding outputs
- Configurable for both remote and autonomous control.
- Automation configurable from intuitive, single page web interface
- RS485/Modbus interface - compatible with all major automation controllers and panels (IEM 2020, EMS Pro, MPC 20, etc.)
- Solar panel ready to maintain battery charge



## Chapter 1 - Creating an Irrigation Process

Cranberries generally only utilize a single output function to either run an engine based irrigation pump or an electric motor based irrigation pump. The output configured to be used for either pump or engine is wired in the factory as output 1 in the XR3000 II. This output is wired to the Murphy engine controller in the case of engine systems or a contactor relay in the electric pump systems. ***See installation specific documentation.***

The control for this output can either be set by a time-based schedule, and/or by remote access to the XR3000 through Harvest Watch, and/or with automation from the Telemetry Radios known as an RF90 II. Your RF90 II will have been configured and tested in the factory for temperature measurement capability. There can be up to 8 RF90's configured to a single XR3000 for protection in multiple locations that may be under the purview of a single pump. Also available are RF90 Radios with Soil Moisture measurement capability.

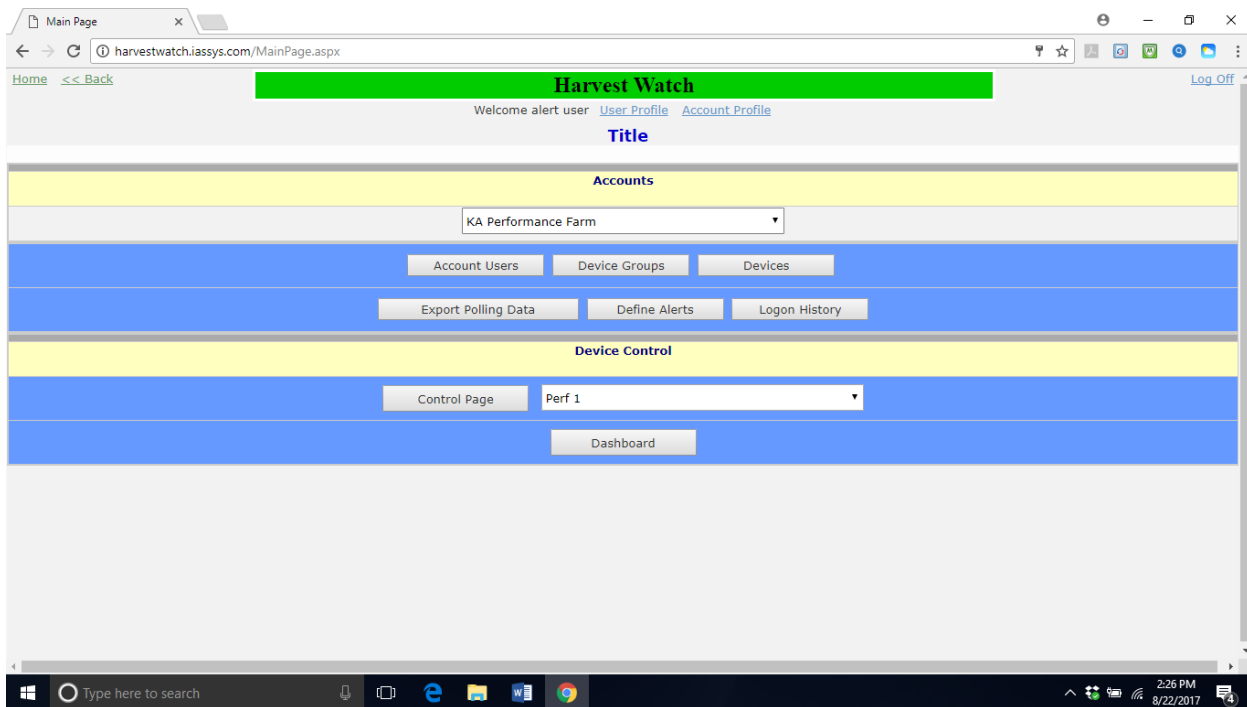
For engine based systems, reference the MPC Operations Manual:

<https://support.enovationcontrols.com/hc/en-us/articles/115010637727>

Setting up these parameters and alerts is done through Harvest Watch.

<http://harvestwatch.iassys.com>

Contact IAS for adding accounts and additional users.



After login in to HW, on the main page for your specific system in Harvest Watch (HW) there are 6 tabs under the control page, some of these tabs are used for system configuration information, Wireless, System, Local Sensors. The other tabs are to be used for defining how to control the irrigation process. See display 1 for an Electric Pump operation and display 2 for a typical engine based operation.

All changes require a “Write” to the device being programmed. ***Always perform a read after write to verify the change successfully transitioned over the cell network. Cell networks may drop packets normally just like when you hear spaces in your cell phone calls.***

Login | Manage Resources | Control Page | Control Page | Control Page

harvestwatch.iassys.com/Accessor2.aspx

Home << Back **BrettsFarm - XR3000 - 172.28.2.88** Log Off

Read request is Complete at 5-2-2017 2:33 PM

Write Read

Write to Group(s) Refresh Every 5 Minutes Retry on Error?

Select Device to View: XR3000 - 172.28.2.88

Control Input Output Wireless System Local Sensors

Schedule 1 Schedule 2 Schedule 3

Run Time (Hours 99.9) 0.0 0.0 0.0

Start Time (HH:MM) 0:00 0:00 0:00

Sun Mon Tue Wed Thu Fri Sat

1:RF Temp Graph(38) (F) 32.8 View Graph

Temperature RTD:P1 (F) 68.1 View Graph

Outputs for Schedules

Sched 1 Out Sched 2 Out Sched 3 Out

0 0 0

Output On 1-4

Prime Pump Acid Fertilizer

Output 1 Output 2 Output 3 Output 4

Off Off Off Off

Channel 1 Temperature Control

Crop Temp(38) Temp Radio(38) Start Temp(38) Stop Temp(38)

32.8 F 77.0 D4 58.0 F 58.0 F

Electric Pump Low Discharge

Low Discharge Threshold Low Discharge Status Write 0 to Clear

-- PSI OK 0

Write Read

Type here to search

2:33 PM 5/2/2017

Write Command button and Read Command button

Control Tab and typical display

Display 1

Control Page

harvestwatch.iassys.com/DevicesEdit.aspx

Write to Group(s) Refresh Every 5 Minutes Retry on Error?

Select Device to View: example

Control Thresholds Outputs Wireless System Local Sensors

MPC20 - Engine Status

Engine RPM Voltage Oil PSI Engine Temperature

0 16.4 V 0.6 PSI 73.4 F

MPC20 Pump (Old Firmware)

MPC20 Discharge Pressure MPC20 Maintain Pressure Eng. State MPC20 Auto

0 PSI 0.0 PSI Standby 1

MPC Shutdown

Eng. Hours Pressure Shutdown Shutdown 2

16.0 Hr 0 PSI

Schedule 1 Schedule 2 Schedule 3

Run Time (Hours 99.9) 1.0 0.0 0.0

Start Time (HH:MM) 5:00 0:00 0:00

Sun Mon Tue Wed Thu Fri Sat

Outputs for Schedules

Sched 1 Out Sched 2 Out Sched 3 Out

1 1 1

Output On 1-4

Pump Remote Start Out 3 Out 4

Channel 1 Temperature Control

Crop Temp Temp Radio(38) Start Temp(38) Stop Temp(38)

74.1 F 59.6 A 34.0 F 45.0 F

1:RF Temp Graph(38) (F) 74.1 View Graph

Engine RPM Graph 0 View Graph

Write Read

Type here to search

10:06 AM 8/21/2017

Register for writeable pressure Setting

Display 2

Control Page x +

Not secure | harvestwatch.iassys.com/MainPage.aspx

Home << Back BrettsFarm - XR3000 - 172.28.1.118 Log Off

Viewing Read from 4-25-2019 12:01 PM

Transmit Save Prior Read as a Write Device Information

Write Read Send Delete Polling History Edit Device

☐ Write to Group(s) ☐ Refresh Every 5 Minutes ☐ Retry on Error?

Select Device to View: XR3000 - 172.28.1.118

Control Thresholds Outputs Wireless System Local Sensors RemoteRelays

MPC20 - Start Control

MPC20 AutoMode ☒

MPC20 - Engine Status

Engine RPM Voltage Oil PSI Engine Temperature

0 12.1 V 44.7 PSI 174.2 F

MPC20 - Tier4

Particulate Filter Regen Status Filter 1 Soot Load Catalyst Tank Level

0 % 0

MPC Shutdown

Eng. Hours Pressure Shutdown Shutdown 2

25.0 Hr 0 PSI

MPC Pump (New Firmware)

New Discharge PSI New Maintain PSI Engine State. Auto Mode.

Type here to search

12:02 PM 4/25/2019

To run automatically, this box must show a check mark for the engine controller to respond to any command (can also be set on the front panel of the MPC)

Control Page x

harvestwatch.iassys.com/MainPage.aspx

Engine RPM Voltage Oil PSI Engine Temperature

0 13.0 V 0.6 PSI 123.8 F

MPC20 Pump (Old Firmware)

MPC20 Discharge Pressure MPC20 Maintain Pressure Eng. State MPC20 Auto

0 PSI 0.0 PSI Standby 1

MPC Shutdown

Eng. Hours Pressure Shutdown Shutdown 2

17.0 Hr 0 PSI

Schedule 1 Schedule 2 Schedule 3

Run Time (Hours 99.9) 0.0 0.0 0.0

Start Time (HH:MM) 0:00 0:00 0:00

Sun Mon Tue Wed Thu Fri Sat

Outputs for Schedules

Sched 1 Out Sched 2 Out Sched 3 Out

1 1 1

Output On 1-4

Pump Remote Start Out 3 Out 4

Output 1 Output 2 Output 3 Output 4

Off Off Off Off

Lockout Display

Lockout 1 Lockout 2 Lockout 3 Lockout 4

Write Read

Type here to search

9:32 AM 6/11/2018

To run a pump remotely, this box is the output to use.

Prior to any control setup, you will want to verify that in the System Tab, on the bottom right, that the "Mode" has been configured. Each one is defined by entering a numerical value in the "xx" box.

Cranberry = 01

These modes predefine certain programming requirements to simplify setup and use. As an example, the user will not need to be concerned about “lockouts” since these will be automatically calculated based on time entry in the schedules for time based operations. Other elements such as assigning “Schedule Out” is also predefined, but also cannot be changed. With this in mind, we’ll concentrate on the inputs an operator must define.

*Default is reserved for advanced programing and should not be used in general cases as improper irrigations cycles may result. If advanced programming is required, contact IAS for the manual and support.*

For automated control of the pump based on a bog temperature, the input tab (Display 2 and 3) will need to be configured to enable this feature. If using multiple radios from more than 1 bog on a single pump, each radio’s threshold will need to be set in the threshold tab.

Cranberry mode also presets the multradio operation for threshold triggers to act in a specific way. When a triggering temperature is reached by any radio in the assignment, the pump will start. Later, when the off threshold is reached, ALL radios must meet the off threshold for the pump to shut down.

Go to the input tab, the Radio tab(s), it should match the same 4 character code of the unit placed in the bog being monitored, which has been labled on the side. If it does not match, you may need to reassign the radio.

The next box down now shows what the radio is reading for an external temperature by the probe placed in the plants, RF Temp. Display 3.

To control the pump on and off cycles by remote temperature monitoring, you will need to set these values in the next 2 boxes for channel one, see display 2. For cold temperature protection, you will want to set your “on” temperature at a point above your critical freeze temperature, give yourself room for variation, temperature can vary across the bog. Display 4.

Next enter an off temperature setting so that the pump turns off when the temperature rises.

Login | Manage Resources F Control Page

harvestwatch.iasys.com/Accessor2.aspx

Home << Back BrettsF

Viewing Read from 5-2-2017 2:02 PM

Transmit Write Read Send Delete Polling History Edit Device

Write to Group(s) Refresh Every 5 Minutes Retry on Error?

Select Device to View: XR3000 172.28.2.88

Control Input Output Wireless System Local Sensors

Channel Inputs 1-4			
1:Input	2:Input	3:Input	4:Input
77: D4	02: 00	03: 00	04: 00

Channel Inputs 5-8			
5:Input	6:Input	7:Input	8:Input
05: 00	7C: CE	93: 6A	99: 34

Sensor Reading 1-4			
1:RF Temp(38)	2:Read	3:Read	4:Read
32.8	--	--	--

Sensor Reading 5-8			
5:RF Temp(38)	6:Read	7:Read	8:Read
--	--	--	--

On Threshold (Low or High) 1-4			
1:RF Temp(38)	2:On	3:On	4:On
On	28	0	0

Off Threshold (High or Low) 1-4			
1:RF Temp(38)	2:Off	3:Off	4:Off
Off	34	0	0

Off Threshold (High or Low) 5-8			
5:Off	6:RF Temp(38)	7:RF Temp(38)	8:Off
Off	0.0	-58.0	-58.0

Output Selected for Channel 1-4			
1:Set Out #	2:Set Out #	3:Set Out #	4:Set Out #
1	0	0	0

Output Selected for Channel 5-8			
5:Set Out #	6:Set Out #	7:Set Out #	8:Set Out #
--	--	--	--

Write Read

Input Tab

Radio ID – Should match unit in Bog

Temperature measured in the bog by the Radio.  
Also called crop temperature in control tab

Display 3

If you are using more than 1 Radio for control you will need to set the “set out #” for each additional radio to control Channel 1 or other channels if desired. Mode only pre-defines this for the first radio as this is the most common case.

For single radio operations, there is a control block that enables a display in the control tab for setting on and off thresholds for Radio 1 ONLY. If you are using multi radio setups, you must set your thresholds on the remaining radios in the Thresholds Tab. (Display 5)

On Temperature, the temperature that the pump will start

Off Temperature, the temperature that the pump will stop

The Pump Control Box Relay (output) being controlled by the Radio (automatically assigned by cranberry mode for Radio 1 only)

Display 4

For time based operations, we will now focus on the Control Tab. Display 5. Again since all cranberry operations have standardized on a single output for control, output #1, you will only need to worry about entering “Run Time”, “Start Time” and “Day of the Week”. Mode has automatically assigned these 3 values to run your schedule and there is no need to enter any “CH Trig”, “Delay”, or “On Time” in the output tab anymore. This is now reserved for advanced programming in specific cases, consult your IAS representative for such cases.

Simply enter “Run Time” in Hours X.X format, “Start Time” in 24 hour format and the “Day(s) of the week that these times should run.



Login | Manage Resources | Control Page | Control Page | Control Page

harvestwatch.iassys.com/Accessor2.aspx

Home << Back **BrettsFarm - XR3000 - 172.28.2.88** Log Off

Read request is Complete at 5-2-2017 2:33 PM

Transmit: Write Read Save Prior Read as a Write Send Delete Polling History Edit Device

Write to Group(s) Refresh Every 5 Minutes Retry on Error

Select Device to View: XR3000 - 172.28.2.88

Control Input Output Wireless System Local Sensors

Schedule 1 Schedule 2 Schedule 3

Run Time (Hours 99.9) 0.0 0.0 0.0

Start Time (HH:MM) 0:00 0:00 0:00

Sun Mon Tue Wed Thu Fri Sat

Sched 1 Out Sched 2 Out Sched 3 Out

0 0 0

Prime Pump Fertilizer

Output 1 Output 2 Output 3 Output 4

Off Off Off Off

Channel 1 Temperature Control

Crop Temp(38) Temp Radio(38) Start Temp(38) Stop Temp(38)

32.8 F 77.0 D4 -58.0 F -58.0 F

Electric Pump Low Discharge

Low Discharge Threshold Low Discharge Status Write 0 to Clear

PSI OK 0

Write Read

Run Time – The amount of time for the pump to run

Start Time – The time of day that the run time will begin. Bear in mind this is a 24-hour clock entry

Day of the week – Which days start time and run time will execute

Sched 1 out will be automatically set by cranberry mode to 1.

Convenience display: Radio 1 Only Threshold settable in control tab with "Channel 1 Temperature Control"  
Greater than 1 radio, thresholds must be set in thresholds tab.

Display 5

## Chapter 2 - Alerts

An advantage to the XR3000 family of products is the ability to set up alerts to enable positive feedback on irrigation processes. Alerts can be created and sent by any combination of email, text and voice. All accounts are called Farms and within your Farm you can add or delete specific individuals that are required to receive these alerts.

These alerts can be based on any register that has been defined in the irrigation process.

To enable alerts, first all user profiles for those who require access to the HW Farm (account) must be entered..... Display 6. This provides specific data such as phone numbers and email addresses for voice calls, text, and/or email alerts to go out. Once this is complete, then specific alerts can be tailored for everyone or specific individuals. This is where you also define the type of alert for everyone in your Farm. *Remember to check off which units you wish to be alerted for.*

The screenshot shows a web browser window with the URL `harvestwatch.iassys.com/Users.aspx`. The page title is "Harvest Watch" and it includes a green header bar. Below the header, there's a navigation bar with links: "Home", "<< Back", "Welcome Kevin Granlund", "User Profile", "Account Profile", and "Log Off". The main heading is "Edit User for BrettSFarm".

The form contains the following fields and options:

- Add user profile information and click Save & Exit**
- User Id**: 20531
- Is User Enabled?**: ☒
- First Name**: John
- Last Name**: Doe
- Change Password To**: 123456
- User Type**: Sys\_Admin (Note: You cannot change your own User Type)
- Email**: JohnDoe@xyz.com
- Other Contact Info**: (empty field)
- Address**: (empty field)
- Time Zone**: Dateline Standard Time
- Cell Phone Number**: 5088881111
- Receive Text Message Alerts?**: ☒
- Receive Email Alerts?**: ☐
- Receive Voice Call Alerts?**: ☐
- Can Access Reports?**: ☒
- Permitted Groups**: ☒ All Devices, ☐ Farm West, ☐ XR3000
- Permitted Devices**:

<input type="checkbox"/> 172.28.2.90 H	<input type="checkbox"/> XR3000 - 172.28.0.217	<input type="checkbox"/> XR3000 - seminole 2.54
<input type="checkbox"/> Alert III 172.28.0.211	<input type="checkbox"/> XR3000 - 172.28.1.111 Maxell@Womack	<input type="checkbox"/> XR3000 172.28.1.60 (revH)
<input type="checkbox"/> Alert III 172.28.2.105	<input type="checkbox"/> XR3000 - 172.28.1.118 - SC	<input type="checkbox"/> XR3000 172.28.2.10 (Tradewinds Copy)

The Windows taskbar at the bottom shows the time as 11:59 AM on 8/21/2017.

Display 6

Now enter the “Define Alerts” tab on your screen. Display 7. This will open the Alert definitions and listings to review what alerts are created, enabled, or disabled. You can add alerts with the Add Tab or copy pre-existing alerts from another controller you may have already defined.

The screenshot shows the 'Harvest Watch' web application interface. The main heading is 'Device Alerts for BrettsFarm'. Below this, there are buttons for 'Add Alert', 'Copy Alerts', 'Alert History', and 'Export to CSV File'. A dropdown menu for 'Select Device' is set to 'example', and a checkbox for 'Show Only Enabled Alerts?' is checked. The table below lists the following alerts:

	Id	Device Name	Register Name	Units	Enabled?	Alert Type	Alert Detail
Select	1649	example	Engine		True	Any Change	Resend every 0 minutes
Select	1652	example	PXTK100:1	PSI	True	Drop Below	Below 25 per 0 mintues
Select	1654	example	PXTK100:1	PSI	True	Rise Above	Above 40 per 0 mintues
Select	1632	example	PXTK100:1	PSI	True	Rise Above	Above 65 per 0 mintues

Display 7

Edit Alert

harvestwatch.iassys.com/alertsedit.aspx

Home << Back

**Harvest Watch**

Welcome Kevin Granlund [User Profile](#) [Account Profile](#)

**Edit Alert**

Make changes and click Save & Exit

Alert Id: 1652

Enabled? ☒

Register Name: 1:RF Temp Graph(38)

Alert Type: Drop\_Below

Is Level Triggered? ☐ Select Edge or Level Triggered Alert

Units of Measure: F

Select Register Value or Numeric Value: -- Use Numeric Value --

Lower Limit Value: 25 Lower and Upper Limit Values determine normal operational range

Wait Time to Send Alert Again: 0 Minutes

Save & Exit Discard Changes Exit

Note: Any alert being defined must match the exact name of the parameter (register) being used for that alert.

Display 8 + 9

Login | Manage Resources | Control Page

harvestwatch.iassys.com/Accessor2.aspx

Home << Back

**BrettsFarm - XR3000 - 172.28.2.88**

Log Off

Read request is Complete at 5-2-2017 2:33 PM

Transmit Save Prior Read as a Write Device Information

Write Read Send Delete Polling History Edit Device

Write to Group(s) Refresh Every 5 Minutes Retry on Error?

Select Device to View: XR3000 - 172.28.2.88

Control Input Output Wireless System Local Sensors

Schedule 1 Schedule 2 Schedule 3

Run Time (Hours 99.9) 0.0 0.0 0.0

Start Time (HH:MM) 0:00 0:00 0:00

Sun Mon Tue Wed Thu Fri Sat

Outputs for Schedules

Sched 1 Out Sched 2 Out Sched 3 Out

0 0 0

Output On 1-4

Prime Pump Acid Fertilizer

Output 1 Output 2 Output 3 Output 4

Off Off Off Off

Channel 1 Temperature Control

Crop Temp(38) Temp Radio(38) Start Temp(38) Stop Temp(38)

32.8 F 77.0 D4 -58.0 F -58.0 F

Electric Pump Low Discharge

Low Discharge Threshold Low Discharge Status Write 0 to Clear

-- PSI OK 0

Write Read

1:RF Temp Graph(38) (F) 32.8 View Graph

Temperature RTD:P1 (F) 68.1 View Graph

The edit alert has drop down menus to select the parameter (register) that will be used against the criteria listed in Display 10. So for example, in displays 8 + 9, the parameter being selected is “1: RF Temp Graph (38)”. Following further on in display 8, the alert is being defined as “drop below” and a numerical value of 25 has been entered.

What this has done is create a specific alert to be issued to whomever was selected in the farm user’s name list when ever Radio #1 has measured a temperature that is dropping and crossed over the 25F threshold defined in this example. This leads to no other action other than to define and generate alerts. Action by the controller to perform and run the pump as a result was defined earlier in the control setup. Also keep in mind, this is not real time, data is polled typically every 5 minutes plus transmission time over cell/internet communication. *Creating control and alerts to close to risk values is not good practice, give yourself some margin.*

This alert alone does not give a complete picture of the result of any action taken by the controller. Additional alerts may be required to get positive feedback that say a pump is running and providing frost protection as needed. So additional alerts built around pump output pressure sensing will then ensure you have knowledge of successful pumping going on. Also Engine change states may be of value.

Setup pressure rise above and drop below to know when the pump is at pressure or lost pressure. Lost pressure may be that the pump completed either a schedule or when combined with a temperature rise above alert, know that frost danger has been averted and the pump should shut off. But say a pump loses prime and pressure drops **before** the temp rise above threshold is reached, you will know something is not working correctly at that pump and can take action.

This should aid in you developing your own set of alerts to match your needs, attempting to list all possibilities here is beyond the scope of this document.

The screenshot displays the 'Edit Alert' web application. The browser address bar shows 'harvestwatch.iassys.com/alertsedit.aspx'. The page header includes 'Home << Back', 'Harvest Watch', 'Welcome Kevin Granlund', 'User Profile', 'Account Profile', and 'Log Off'. The main content area is titled 'Edit Alert' and contains the following fields and options:

- Alert Id: 1652
- Enabled?: ☒
- Register Name: Engine
- Alert Type: Drop\_Below
- Is Level Triggered?: None
- Units of Measure: Any\_Change
- Select Register Value or Numeric Value: Drop\_Below
- Lower Limit Value: Rise\_Above
- Wait Time to Send Alert Again: 0 Minutes

At the bottom of the form are three buttons: 'Save & Exit' (green), 'Discard Changes' (yellow), and 'Exit' (grey). The Windows taskbar at the bottom shows the time as 12:54 PM on 8/21/2017.

Display 10

After creating your process and alerts, you can now create a dashboard for an overall multi system 1 page state review. Display 11.

Dashboard

harvestwatch.iasys.com/Dashboard.aspx

Home << Back

**Harvest Watch**

Welcome Kevin Granlund [User Profile](#) [Account Profile](#)

**Dashboard for Brett's Farm**

Viewing Auto-Polled and User Initiated Reads

Select Device Class: XR3000 - General ☐ Show Only Devices Outside Limits

	Device Name	Last Read	Crop Temp	1:RF Temp	Remote Start	Engine RPM	Engine Temperature	Firmware Version	Oil PSI	Pump	Out 3
Select	172.28.2.90 H	4 mins			0			11 : 57		2	0
Select	Oak Hill Ranch Grove - Copy	77.3 days			0	51.8		01 : 53	0.6	0	0
Select	Old Hoyt - 172.28.2.62	2 mins			0	91.4		01 : 57	0.6	0	0
Select	Propane	3.1 days	74.1		0	73.4		11 : 56	0.6	0	0
Select	RMS3000 - 172.28.1.120	290.9 days			0	32.0		01 : 49	0.0	0	0
Select	XR3000 - 166.161.110.1	14 mins			0			01 : 43		0	0
Select	XR3000 - 172.28.2.53 (Out West)	7 mins			0			01 : 44		0	0
Select	XR3000 - 166.159.116.252 - bench	13 mins			0			01 : 23		0	0
Select	XR3000 - 172.28.0.217	11 mins			0			01 : 57		0	0
Select	XR3000 - 172.28.1.111 Maxell@Womack	15 secs			0			01 : 57		0	0
Select	XR3000 - 172.28.1.118 - SC	117.1 days			0			11 : 54		0	0
Select	XR3000 - 172.28.1.162 (rev.H)	139.0 days			0			08 : 50		0	0
Select	XR3000 - 172.28.1.87	300.9 days			0			00 : 01		0	0
Select	XR3000 - 172.28.2.70	128.9 days			0			0A : 54		2	0
Select	XR3000 - 172.28.2.71	3 mins	84.3		0			11 : 58		0	0
Select	XR3000 - 172.28.2.75	11 mins			0			11 : 57		0	0
Select	XR3000 - 172.28.2.81	14.0 days	74.0		0			11 : 56		0	0
Select	XR3000 - 172.28.2.86	6.9 days	78.0		0			11 : 57		0	2
Select	XR3000 - 172.28.2.93 Rev H	4.0 days	76.0		0	32.0		11 : 57	0.0	0	0
Select	XR3000 - 172.28.2.97 Rev H	70.2 days	49.3		0	89,025.8		11 : 58	0.0	0	0
Select	VR3000 - 720 - McHall	2 mins						0B : 52			

Display 11

## Addendum – Binding and Clearing Radios

Normally you receive your system(s) with RF90's already bound to the specific control unit with an IP address as an ID for the controller. However, if you need to add or replace radio's, this sections describes the process for assignment. This Radio should already be assigned to "Radio 1"

Go to the "Wireless" tab of the specific XR3000 unit you are working with. See display 12 as an example. You can add as many as 8 radios ("Radio 1 – 8") to a single system and either use any combination of radios for control or for simply data collection of your crop in a larger area.

Radio's are logically bound to a specific controller so that other radio's in your area, even though it is visible to your controller cannot perform any action. No Radio can perform action, until it has been "bound" and "thresholds" set for action to that specific controller radio combination. Basestation information is only used by IAS personel for diagnosis, no user input here. Same with "Time 1" "Radio LQ", "Radio 1 Temp". "RF Batt X" is an aid to whether batteries need replacement.

While these have been designed to last 2 years, this will depend on your environmental conditions. Batteries should be >2.8V, contact IAS if you suspect low battery power, however only suspect this if your Temperature charts are not obtaining consistent reads, that is the true indicator of radio performance. If you are

seeing many blank spaces in your temperature charts in the Control Panel, view the “Time x” window to determine when that last transmission was. Generally these will be every 2 minutes, but if it’s 1000’s of seconds since last transmission, contact IAS personel for evaluation.

Unbinding a radio from a controller requires a “clear” command. To do so, enter the “Radio X” position you want to clear in the “Clear 1-8” window and perform a write. Read verify it has cleared.

To bind a new radio into a radio position, first determine if the radio you want has appeared in the “Mac #” window. If that is the radio you need, then enter the radio # position you want to bind it to in the “Bind 1-8” window and perform a write, then read verify.

If it is not the radio desired, then bind it to an unused position, say Radio 8 for example. Then wait a minute or so and perform a read to see what new radio has highlighted itself in the “Mac #” window. If it is bind it where you desire. If not repeat the binding process to another unwanted location. Keep performing this until your radio is displayed. After you have bound the proper radio to the proper position, then go back and clear unwanted radios. The Mac # is a first come first serve location.

Control Page x

harvestwatch.iasys.com/Accessor2.aspx

Home << Back

Viewing Read from 8-18-2017 12:01 PM

Transmit Save Prior Read

Write Read Send

Write to Group(s) Refresh Every 5 Minute Retry on Error?

Select Device to View: Propane

Control Thresholds Outputs Wireless System Local Sensors

Radio 1 Radio 2 Radio 3 Radio 4

59:6A 02:00 03:00 04:00

Seconds Since Update 1-4

Time 1 Time 2 Time 3 Time 4

45 S -- S -- S -- S --

Radio Link Quality 1-4

Radio 1 LQ	Radio 2 LQ	Radio 3 LQ	Radio 4 LQ
42	%	100	%

Radio Link Quality 5-8

Radio 5 LQ	Radio 6 LQ	Radio 7 LQ	Radio 8 LQ
--	%	--	%

RF Batt:1 RF Batt:2 RF Batt:3 RF Batt:4

3.28 V -- V -- V -- V --

RF Batt:5 RF Batt:6 RF Batt:7 RF Batt:8

-- V -- V -- V -- V --

Radio 1 Temp Radio 2 Temp Radio 3 Temp Radio 4 Temp

81.1 F -- F -52.3 F -- F

Base Station

Base MAC	Seconds Threshold	Threshold Prestart
02:F7	1,200	65,535 S --

Found Radio

Bind (1-8)	Clear (1-8)	MAC #	Type
--	--	59:51	--

Write Read

Radio 1 position: Radio 596A has been bound to this position.

Time 1, Radio 1 LQ, RF Batt:1 Radio 1 Temp (internal temperature of the radio, not external) are all diagnostic aids and provide no user specific function.

Bind, Clear and Mac # can be used by the operator for reassigning new or additional radio's.

Type here to search

2:00 PM 8/22/2017

Display 12

## Electric Pump Low Pressure Cutoff

Starting in code level 1.58 or 11.58, there is now a feature to shut down an electric pump in the case of not producing sufficient pressure within a certain time. Both Pressure and Time are programmable. See display 13.

Set the “Low Discharge Threshold” to the pressure setting below your optimum operational pressure. This is the point where you know if it has not gone over this pressure, you have insufficient prime and need to prevent pump damage. Next the timeout you want to enter, given in seconds, to allow the pump to reach pressure before shutting down, “Low Discharge Seconds”.

The “Low Discharge Status” window will state whether it is “ok” or “Error”. Error indicating that a valid timeout has occurred due to lack of pressure according to the values you set. Writing a 0 into “Write 0 to Clear” will clear the error and seconds which will need to be written with a value.

The screenshot shows the 'Control Page' for the XR3000 device. The interface includes a top navigation bar with 'Home', '<< Back', and 'Log Off'. Below this is a status bar indicating 'Write request is Complete at 9-18-2017 12:01 PM'. The main content area is divided into several sections: 'Transmit' (Write, Read, Add, Send, Save, Delete), 'Device Information' (Polling History, Edit Device), and a 'Select Device to View' dropdown. The 'Control' tab is active, showing a 'Schedule' section with three schedules (1, 2, 3) and their respective run times. Below the schedules are 'Outputs for Schedules' (Sched 1 Out, Sched 2 Out, Sched 3 Out) and 'Output On 1-4' (Pump, Remote Start, Out 3, Out 4). The 'Channel 1 Temperature Control' section shows 'Crop Temp' (72.7 F) and 'Temp Radio(38)' (75.0 F). The 'Electric Pump Low Discharge' section is highlighted, showing 'Low Discharge Threshold' (30 PSI), 'Low Discharge Seconds' (300 S), and 'Low Discharge Status' (Error). A 'Write 0 to Clear' button is present. A blue callout box points to these three fields with the text: 'The 3 writable registers are Low Discharge Threshold, Low Discharge Seconds, Write 0 to clear'. Another blue callout box points to the 'Low Discharge Status' field with the text: 'Discharge Status'. The bottom of the screen shows a Windows taskbar with the time 12:08 PM and date 9/18/2017.

Display 13

## ML1000/2000/Tec10 Operations Manual

- Reference the Murphy Operators guide for details on specific settings.

[http://www.murcal.com/pdf%20folder/15.murphy\\_mpc10\\_operations.pdf](http://www.murcal.com/pdf%20folder/15.murphy_mpc10_operations.pdf)