ONRAMP WIRELESS

TOTAL VIEW

OTV Supplement: GE WiYZ Remote

Model GE MDS WiYZR-C

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010-0104-00 Rev. A

November 5, 2013

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Revision History

Revision	Release Date	Change Description
A	November 5, 2013	Initial release.

1 GE WiYZ Remote Overview

This document describes the operation of the GE MDS WiYZR-C Remote Product using the On-Ramp Total View (OTV) device monitoring system. It is assumed that the reader has a basic familiarity with On-Ramp Total Reach devices and network concepts.

The GE MDS WiYZR-C Remote Product is an industrial wireless device for monitoring signals from up to two analog inputs and two digital inputs. It is capable of controlling two digital outputs as well. The device can be ordered with analog inputs for use with 4–20 mA or 0–5 V sensors. Each device is set up to send readings from the inputs periodically and can be optionally configured with alarm thresholds to send asynchronous messages to operators when thresholds are crossed. This document also assumes the user is familiar with the GE MDS WiYZR-C R Remote Product configuration and setup.

Figure 1. GE MDS WiYZR-C R Remote Product

This supplemental document is intended to be used in conjunction with the following publications which are available for On-Ramp Total Reach Networks.

- *On-Ramp Total View Operator Guide, 010-0106-00*
- *On-Ramp Total Reach Network Security Specification, 014-0043-00*
- *MDS WiYZR-C Remote Product Reference, 05-4954A02*
- *MDS WiYZR-C Remote Setup Guide, 05-4953A02*

2 WiYZ Remote Operation

2.1 Pre-requisites

This document assumes that the user has an MDS WiYZR-C device that is provisioned and ready to join the On-Ramp Total Reach network. Information on provisioning and device pre-configuration is covered in the *MDS WiYZR-C Remote Product Reference (05-4954A02)* and *On-Ramp Total Reach Network Security Specification (014-0043-00).*

2.2 Basic Device Setup and Configuration

When a WiYZ device joins an On-Ramp Total Reach network for the first time, the first data packet sent to the network is called a Deployment Packet. This packet prompts On-Ramp Total View (OTV) to discover the device configuration for the new WiYZ device on the network. The new WiYZ device can be seen in the Devices tab of OTV and can be recognized by the "WiYZ Remote: Default Profile" that has been applied.

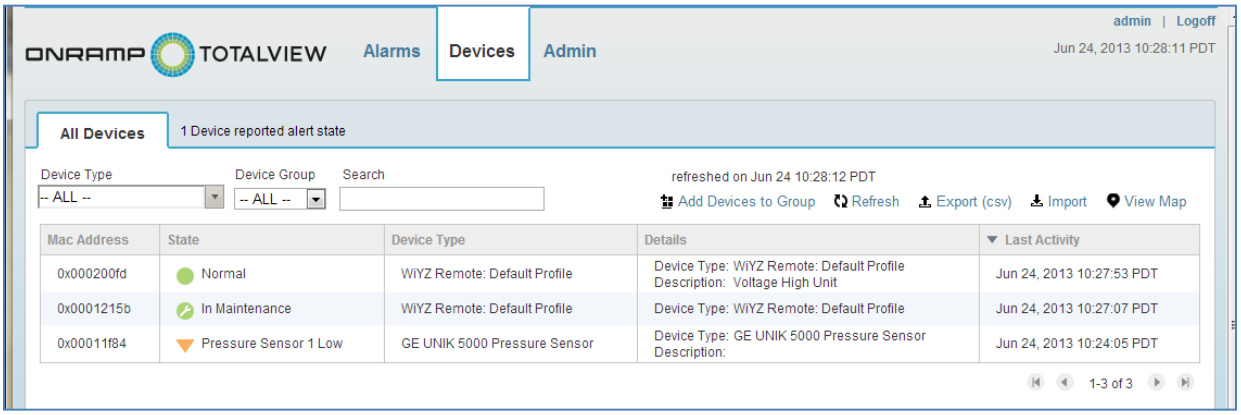

Figure 2. GE MDS WiYZ OTV Devices View

In response to this deployment packet, OTV sends read request messages to the device to fetch the configuration data. This configuration data includes all input/output and device configuration. This device configuration discovery process takes about 10 minutes under normal network coverage scenarios. Devices that are at the edge of network coverage may take longer to return their configuration information.

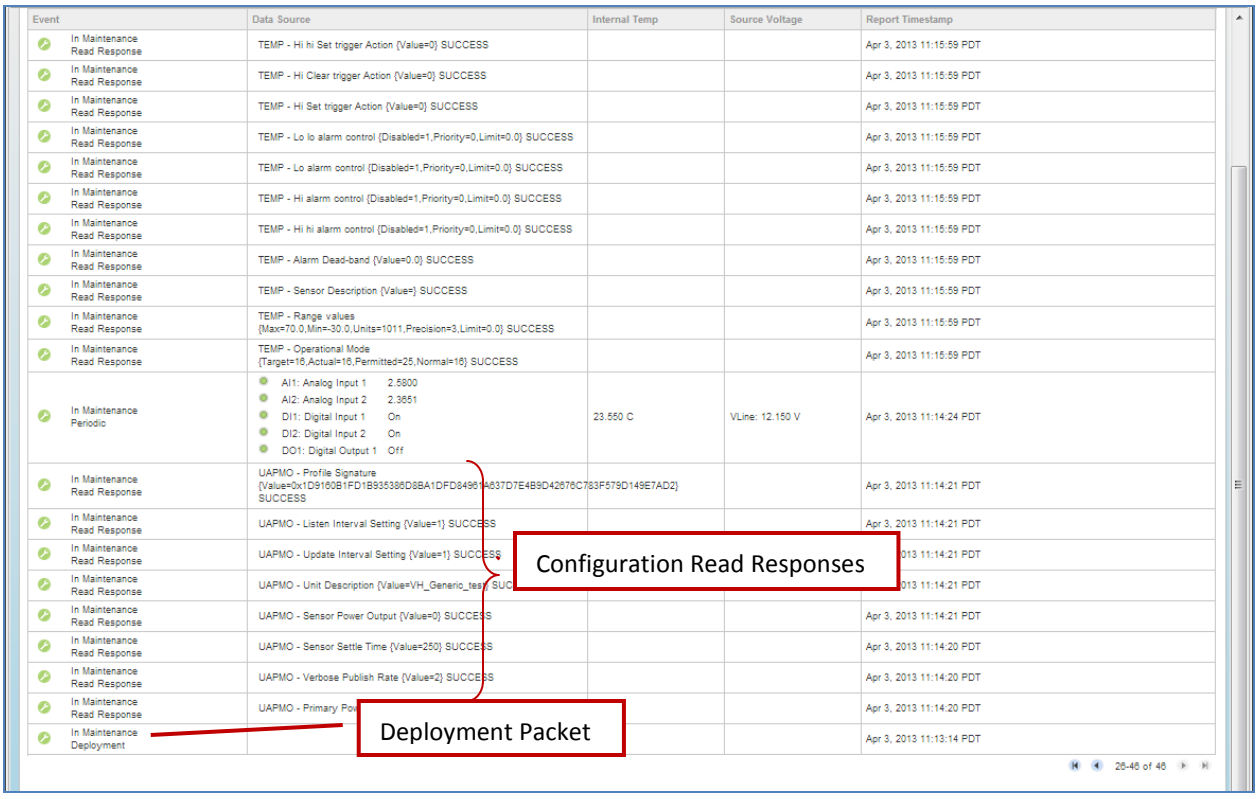

Figure 3. GE MDS WiYZ Configuration Discovery Messages

When all of the configuration properties have been read from the device, the configuration can be viewed from the properties page of the device.

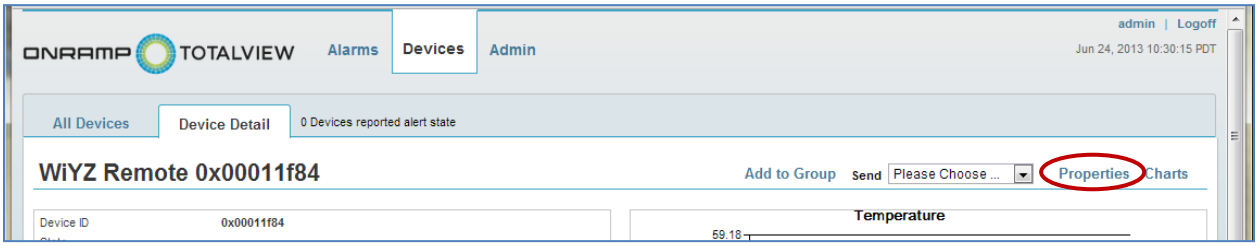

Figure 4. Location of Properties Button

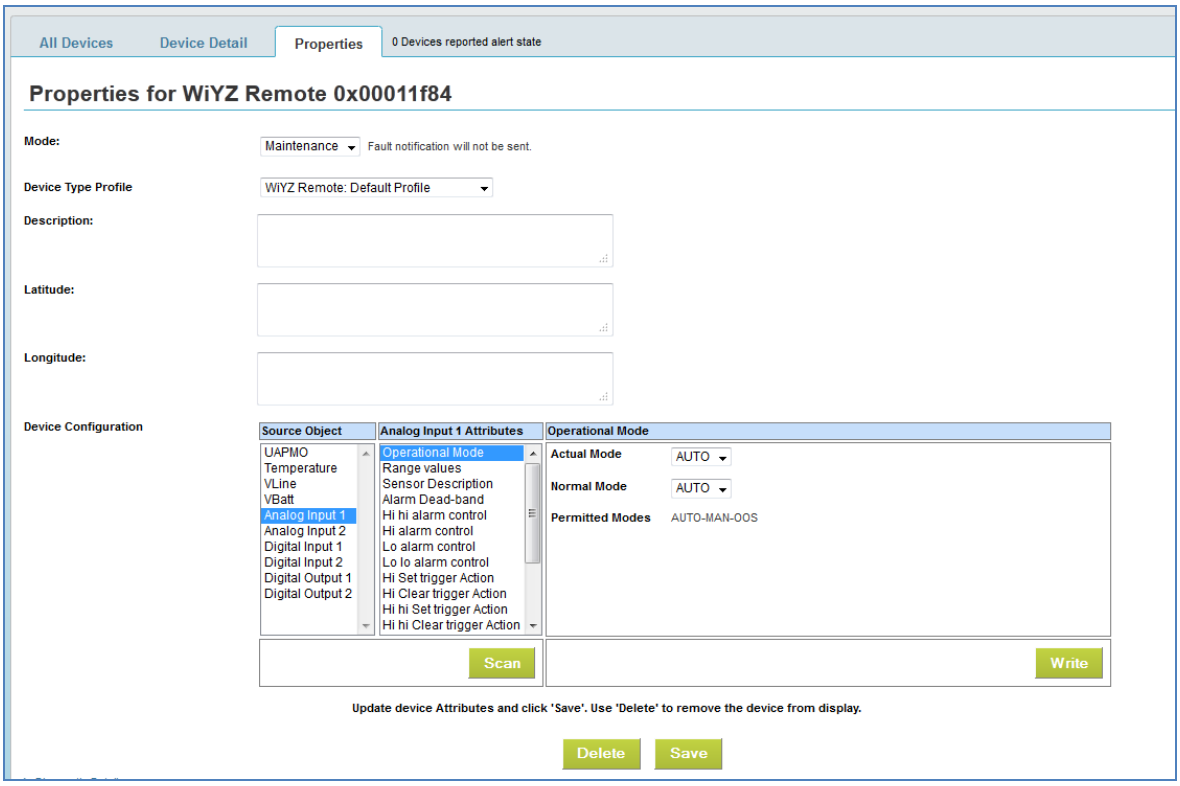

Figure 5. GE MDS WiYZ Properties

If the operator views the data before reads are complete, any unknown property is shown with a "--".

2.3 Reading and Writing WiYZ Data

Configuration data and behavior of the WiYZ is organized into various objects. OTV should always have the most up to date configuration information, but if the operator suspects some configuration values have changed locally via the serial interface (using WCAP), the operator may issue a "Scan" to re-read object configuration data from the device. The Scan request is processed at the next Update Interval (UI) for the device.

For any values that are also writeable, the operator may send a Write request for a configuration value change. This Write request is processed at the next Update Interval (UI). The read or write responses can be seen from the received messages display:

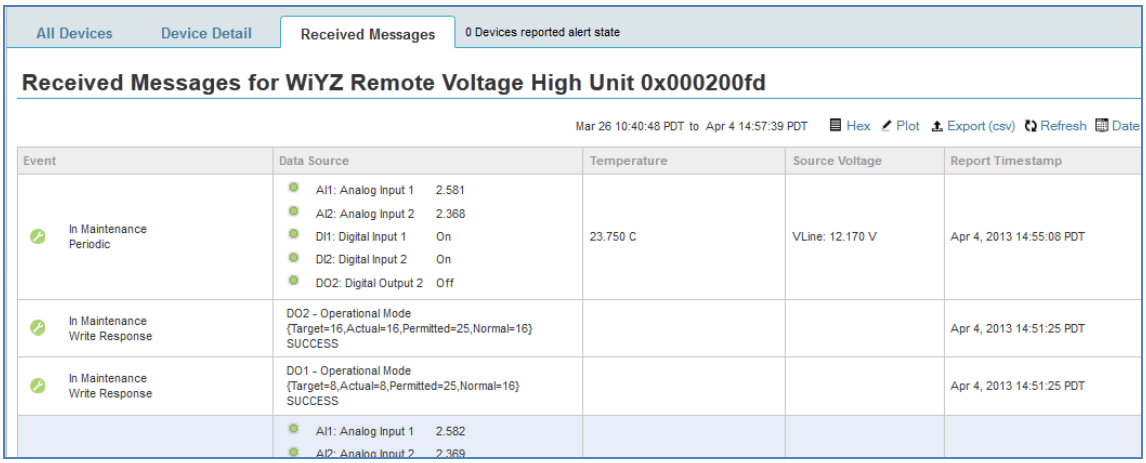

Figure 6. Write Responses Shown in the Received Messages Display

Although the values shown in the Received Messages display may be in their raw form, the operator may go to the Device Properties page to see the latest values.

The following sections describe the readable and writeable attributes of each object type.

2.3.1 User Application Process Management Object (UAPMO)

2.3.1.1 Device Command

This command can be used to reset the Radio only or the entire WiYZ main processor (which also resets the radio).

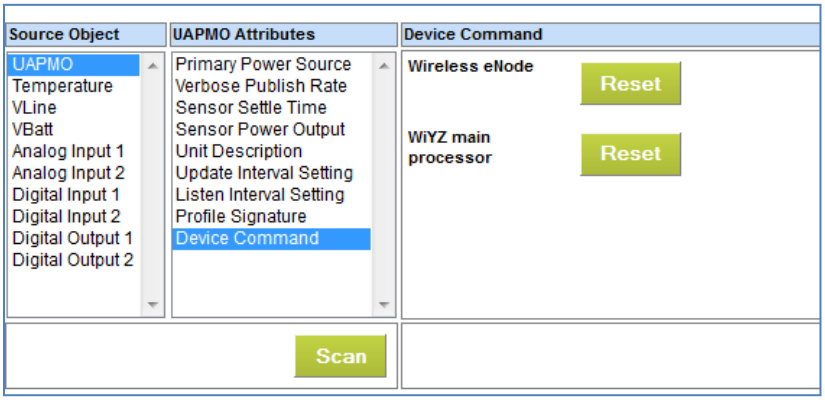

Figure 7. UAPMO Device Command

Resetting the radio causes the device to rescan the network and reacquire the network.

Resetting the WiYZ main processor causes the WiYZ system to reset and re-initialize all behaviors and to send another deployment packet.

2.3.1.2 Primary Power Source

Access: Read Only
Default: N/A
Units: N/A

The WiYZ Remote is designed to operate as either line powered or battery powered. This attribute informs the operator of the device's current operating mode.

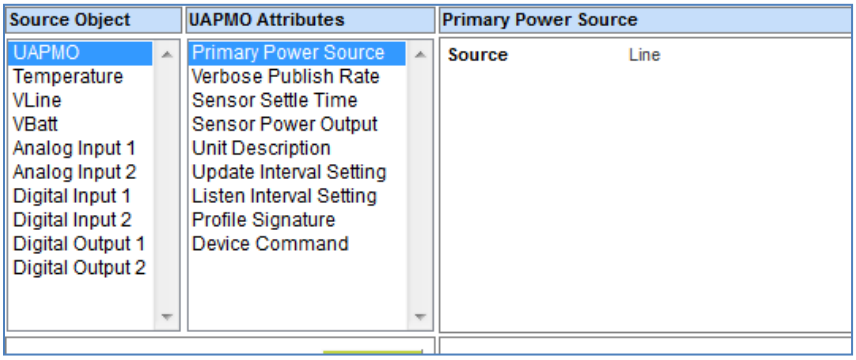

Figure 8. UAPMO Primary Power Source

If line power is available, the device always uses that source before battery power. There is no way to force a line-powered unit to utilize battery power.

In the event the device is line powered, then the current voltage level is delivered in the analog object "VLine." If it is battery powered, then the current battery voltage level is delivered in the analog object "VBatt." OTV always displays the relevant voltage in the appropriate place in the OTV screens so that there is no confusion.

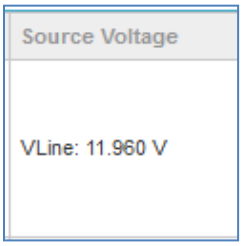

Figure 9. UAPMO Battery or Line Voltage Displayed

2.3.1.3 Verbose Publish Rate

Access: Read/Write
Default: 2 minutes

This value can be set from 1-10 minutes in 1 minute intervals. The Verbose Publish Rate attribute serves two different functions. First, it defines the sensor sampling interval, which the interval by which the WiYZ samples the sensor and checks for threshold crossing. Secondly, this defines the rate at which measurements are sent after a threshold has been crossed if verbose reporting has been enabled as a trigger action for that event. See later sections for information on setting trigger actions.

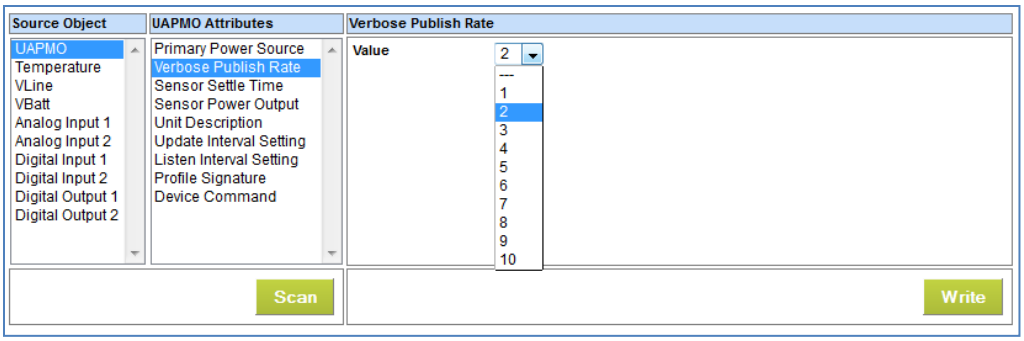

Figure 10. UAPMO Verbose Publish Rate

2.3.1.4 Sensor Power Output

Access: Read/Write
Default: Off

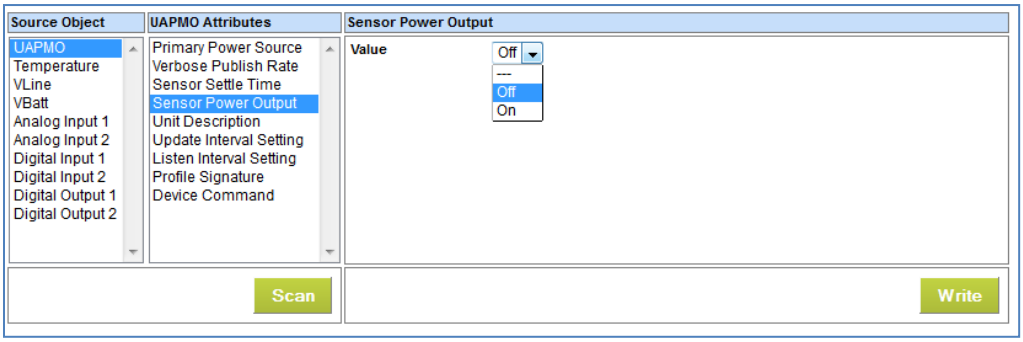

Figure 11. UAPMO Sensor Power Output

The Sensor Power Output field is used when the WiYZ Remote is responsible for powering an external sensor, Vext. See the *MDS WiYZR-C Remote Product Reference* for more information about using Vext for powering sensors.

2.3.1.5 Unit Description

Access: Read/Write
Default: <empty string>

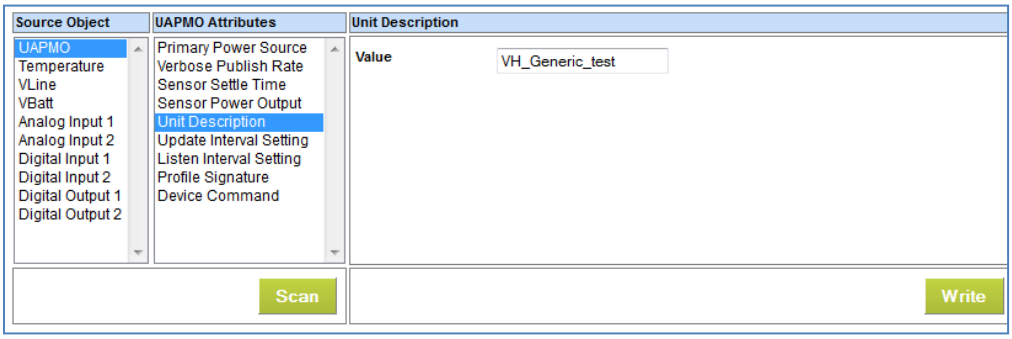

Figure 12. UAPMO Unit Description

The Unit Description field is a short 15 character string that can be written to the device to assist in identifying the unit. This could be used for a serial number or other identifier. It is up to the operator to use this field in a way that is useful to them.

2.3.1.6 Update and Listen Interval Settings

Access: Read Only
Default: 2 per day (every 12 hours)

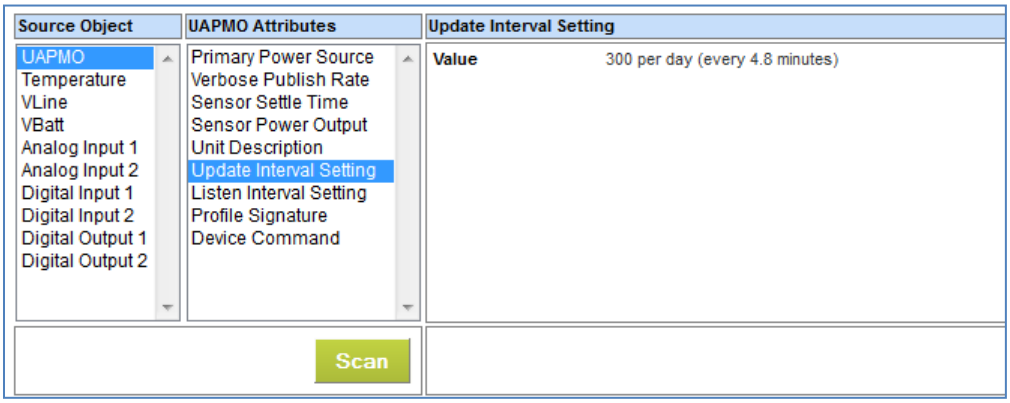

Figure 13. UAPMO Update and Listen Interval

This value is configured at the On-Ramp Network Element Management System (EMS) and can only be read from the OTV system. It is provided here to allow an OTV operator to see when the next update and listen intervals are planned. If an operator wishes to change this value they must do so within the EMS system. The possible values are:

300 per day (4.8 minutes)
200 per day (7.2 minutes)
150 per day (9.6 minutes)
120 per day (12 minutes)
60 per day (24 minutes)
40 per day (36 minutes)
30 per day (48 minutes)
24 per day (60 minutes)
12 per day (120 minutes)
8 per day (180 minutes)
6 per day (240 minutes)
4 per day (360 minutes)
3 per day (480 minutes)
2 per day (720 minutes)
1 per day (1440 minutes)

2.3.1.7 Profile Signature

Access: Read Only
Default: N/A

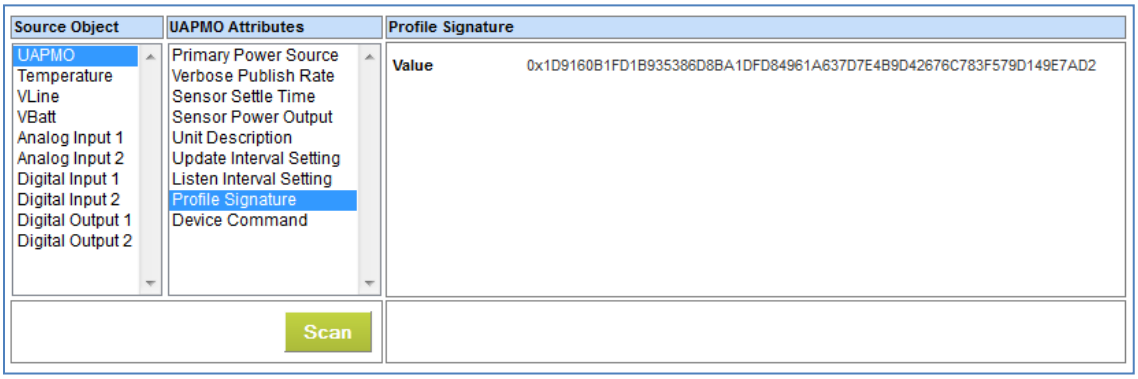

Figure 14. UAPMO Profile Signature

This value is a hash of the configuration values that is used to determine if configuration on the WiYZ has changed without notifying OTV. Only when the hash value is different from a stored value does OTV re-request the device configuration data.

2.3.2 Analog Input Object Definition

There are two generic Analog Inputs on every WiYZ Device that are generically called Analog Input 1 and Analog Input 2 using the WiYZ Default Profile. Also, the Temperature, VLine, and Vbatt objects are represented as Analog Inputs as well.

2.3.2.1 Operational Mode

Access: Read/Write
Default: AUTO

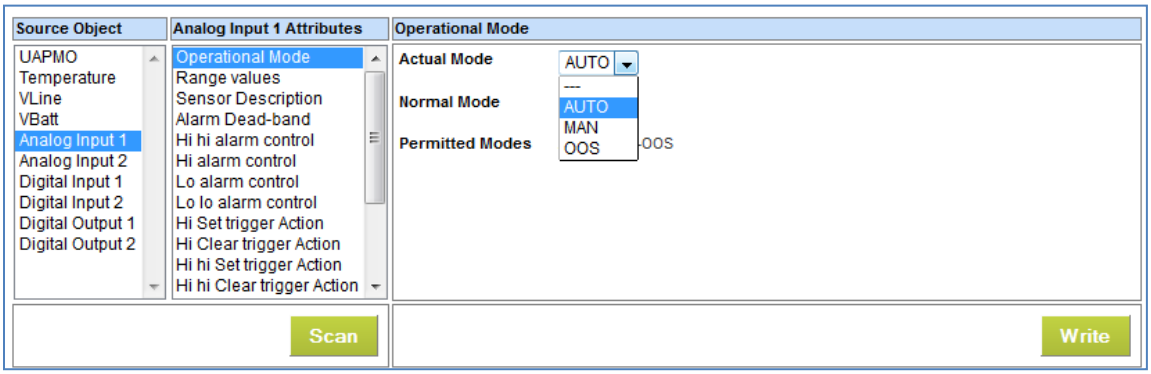

Figure 15. Analog Input Operational Mode

The Operational Mode of the Analog Input object controls the actual operating mode of the input, what is considered the “normal” mode, and provides visibility into the permitted modes of the device. Generally, operators only modify the Actual Mode of the input to enable the input

(AUTO) or take the input out of service (OOS). The Permitted Mode can only be modified from the WiYZ serial interface using GE MDS tools.

NOTE: The MAN mode is not permitted for inputs and is only supported for the Digital Output Object which is discussed in section 2.3.4 Digital Output Object.

The Temperature, VLine, and Vbatt objects cannot change operational mode; they are always in AUTO mode.

2.3.2.2 Range Values

Access: Read/Write
Default: 0-5V or 4-20mA, 3 decimal places, 0

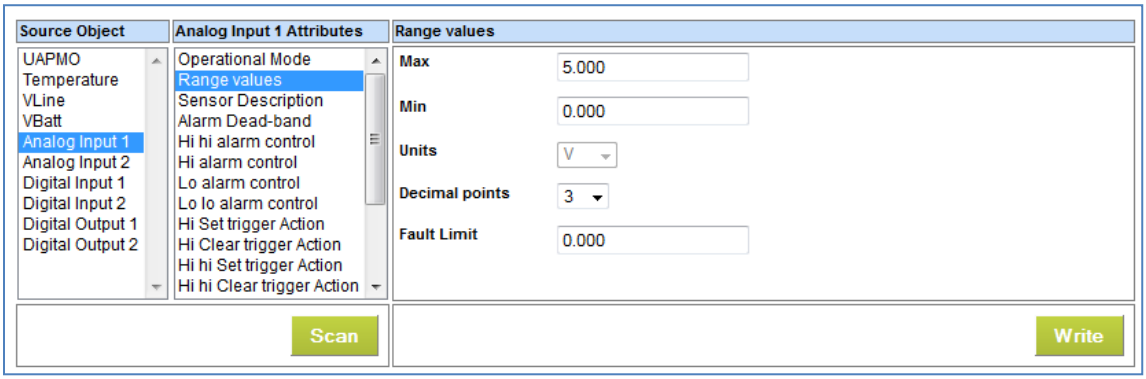

Figure 16. Analog Input Range Values

- The Range Values attribute contains critical information about the operation of the WiYZ analog input.
- The **Max** and **Min** values show the expected operating range of the input. In the above case, it is 0-5 V.
- The Units value shows that this device is a Voltage High unit.
- The Decimal points value can be configured so that more or less decimal precision can be displayed to the operator when viewing analog values.
- The Fault Limit value provides a setting that may be specific to the sensor to indicate a sensor fault condition. For example, a 4-20 mA sensor may use 3.5 mA to indicate a sensor failure.

2.3.2.3 Sensor Description

Access: Read/Write
Default: <empty string>

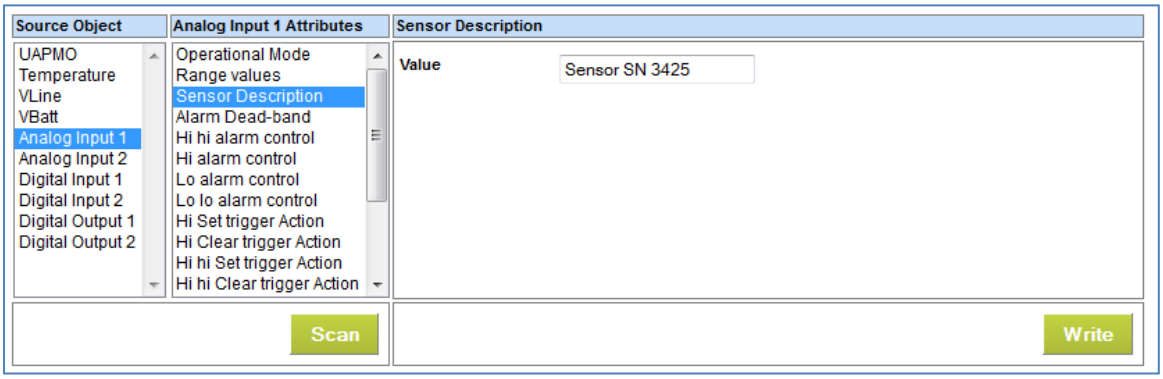

Figure 17. Analog Input Sensor Description

Each input provides another 15 character string to allow an operator to add text to identify the sensor connected.

2.3.2.4 Alarm Dead-band

Access: Read/Write
Default: 0%

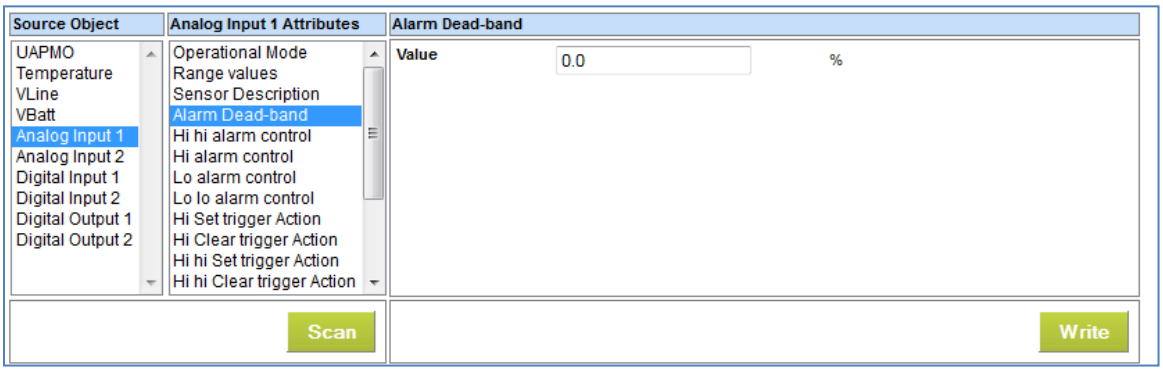

Figure 18. Analog Input Alarm Dead-band

The alarm dead-band value provides an alarm clearing hysteresis setting in terms of a percentage of the full hardware range of the device (0-5 V or 0-22 mA) and is not affected by the setting of the “Range values” variable. This means that an alarm from crossing an analog threshold is not cleared until the threshold +/- the dead-band hysteresis value has been crossed.

For example, a 3.43% dead-band value on a Current In type remote is 3.43%* 22 mA = 0.7986 mA.

2.3.2.5 High and Low Analog Threshold Alarm Controls

Access: Read/Write
Default: Disabled and 0

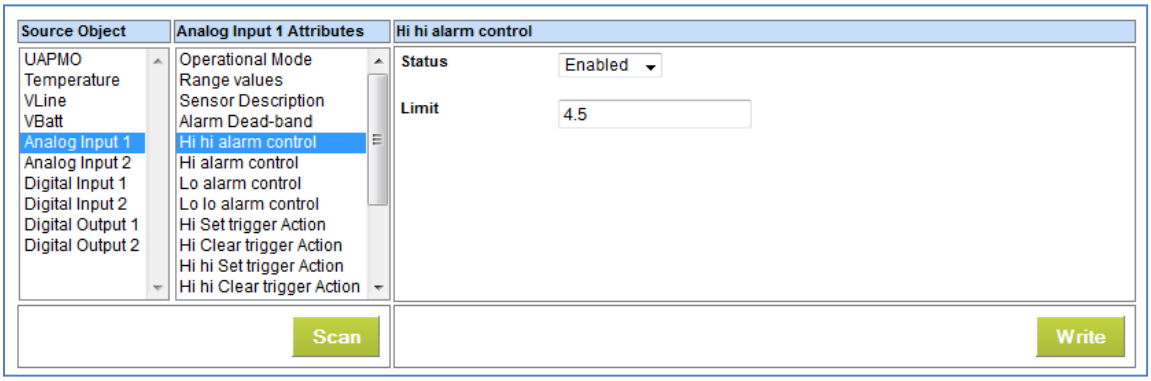

Figure 19. Analog Input High and Low Analog Threshold Alarms Controls

Alarm controls allow the operator to set thresholds for sending asynchronous alarm messages to OTV. These alarm messages result in alarms showing on the OTV alarm display and can be setup to generate email alerts to operators monitoring the system. For more details, see section 2.6 Device Alarm Management. The alarm must first be set to Enabled and then a limit can be set. This value is shown in the native units of the device (V or mA) unless a profile has been applied. More information on OTV WiYZ Profiles is available in section 2.4 Device Profile Setup. Each analog input has four possible settings, High High, High, Low, and Low Low. The operator should take care when setting multiple thresholds for alarms that the alarms are sensible relative to each other. For example, HighHigh > High > Low > LowLow.

2.3.2.6 Analog Threshold Set and Clear Trigger Actions

Access: Read/Write
Default: None

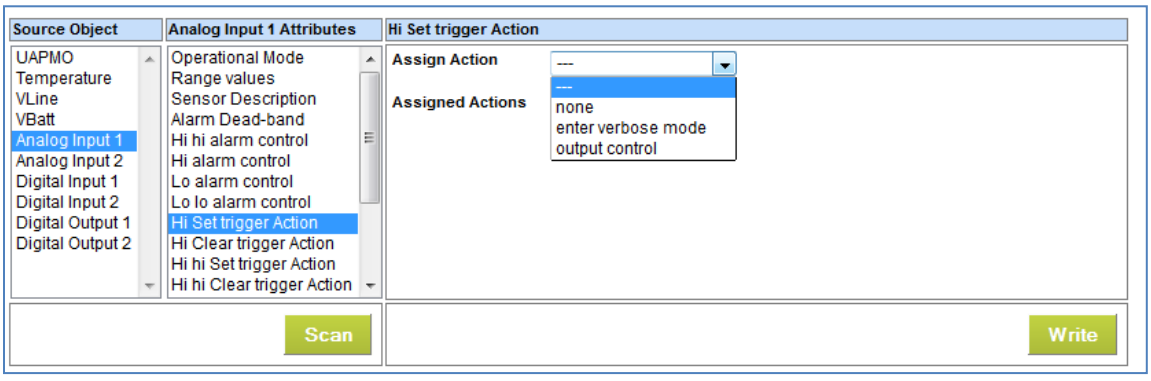

Figure 20. Analog Input Threshold Set and Clear Trigger Actions

The Set and Clear Trigger Actions are tied to the four available thresholds described in the previous section. This allows the operator to set certain behaviors after a threshold is crossed. The two options are “Enter Verbose Mode” and “Output Control.”

Verbose mode means that after the WiYZ device detects that the sensor reading has crossed a threshold, it sends more frequent readings of the sensor measurement until the alarm condition has cleared. The frequency of the messages during verbose mode is controlled by the value described in section 2.3.1.3 Verbose Publish Rate.

The output control feature is related to using one of the two digital outputs available on the remote. Once you enable the trigger output control here, you must also go to the Digital Output object to set up the relationship with the input object as well. Likewise, if you wish the digital output to change when the alarm condition is cleared you must also set that up in the "Clear trigger action" as well as the "Set Trigger Action." More information on controlling digital outputs is available in section 2.3.4 Digital Output Object.

2.3.2.7 Value and Status

Access: Read Only
Default: N/A

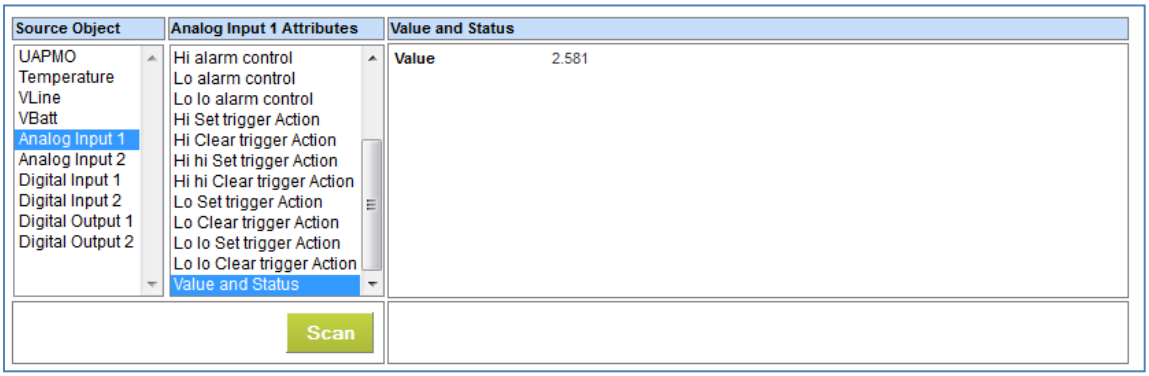

Figure 21. Analog Input Value and Status

This value simply displays the most recent read sensor measurement for the analog input.

2.3.3 Digital Input Object

There are two Digital Inputs on every WiYZ Device. They are generically called Digital Input 1 and Digital Input 2 using the WiYZ Default Profile.

2.3.3.1 Operational Mode

Access: Read/Write
Default: AUTO

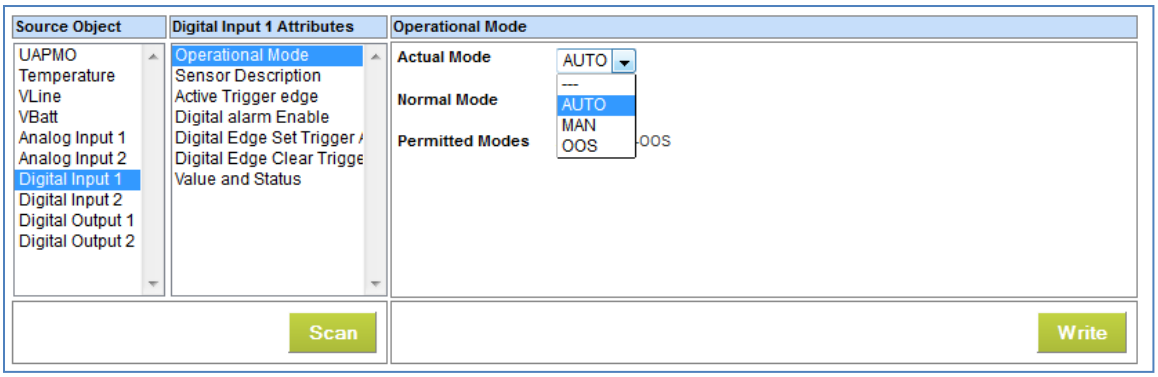

Figure 22. Digital Input Operational Mode

The Operational Mode of the Digital Input object controls the current operating mode of the input (considered the "normal" mode) and provides visibility into the permitted modes of the device. Generally operators only modify the Actual Mode of the input to enable the input (AUTO) or take the input out of service (OOS). The Permitted Mode can only be modified from the WiYZ serial interface using GE MDS tools. The MAN mode is not permitted for inputs and is only supported for the Digital Output Object which is discussed in section 2.3.4 Digital Output Object.

2.3.3.2 Sensor Description

Access: Read/Write
Default: <empty string>

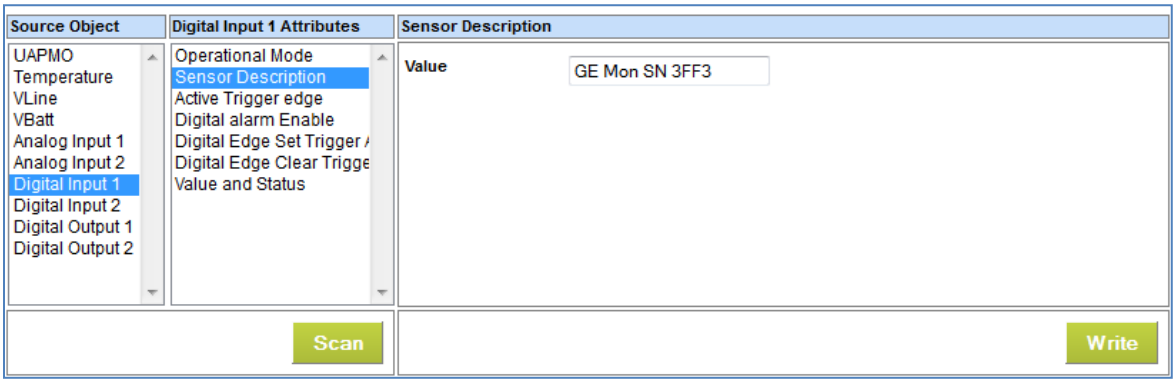

Figure 23. Digital Input Sensor Description

Each input provides another 15-character string to allow an operator to add text to identify the sensor connected.

2.3.3.3 Active Trigger Edge

Access: Read/Write
Default: Active High

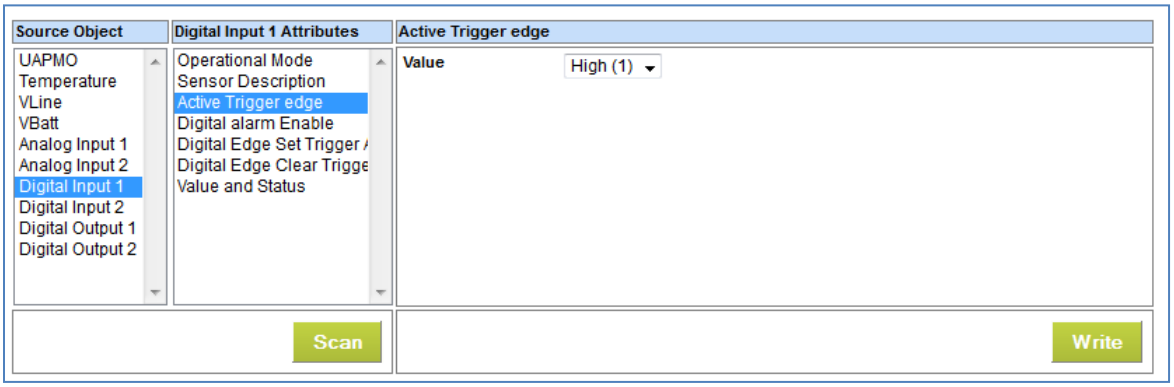

Figure 24. Digital Input Active Trigger Edge

This value is used to determine if the edge in transition is detected on the high or low edge of the digital input. This determines what is defined as an alarm “set” versus “clear” event.

2.3.3.4 Digital Alarm Enable

Access: Read/Write
Default: Disabled

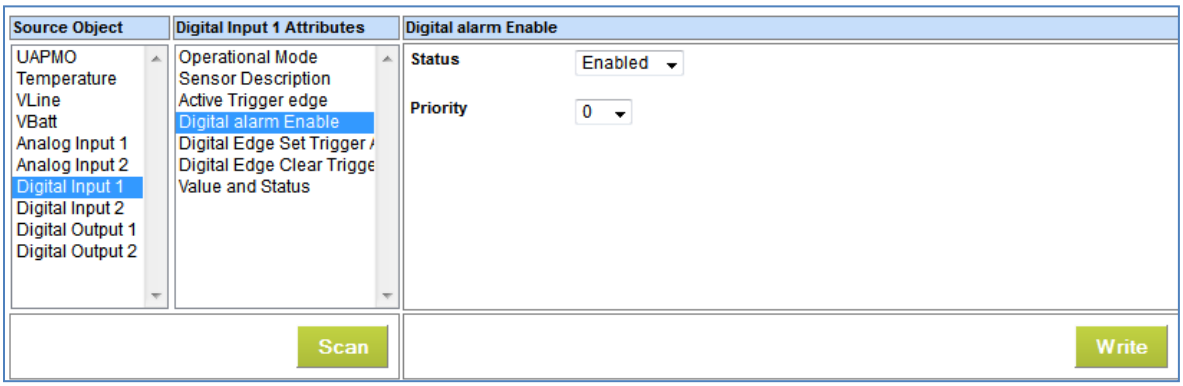

Figure 25. Digital Input Alarm Enable

In order for any digital input alarms to be sent, this value must be set to “Enabled.”

2.3.3.5 Digital Edge Set and Clear Trigger Actions

Access: Read/Write
Default: None

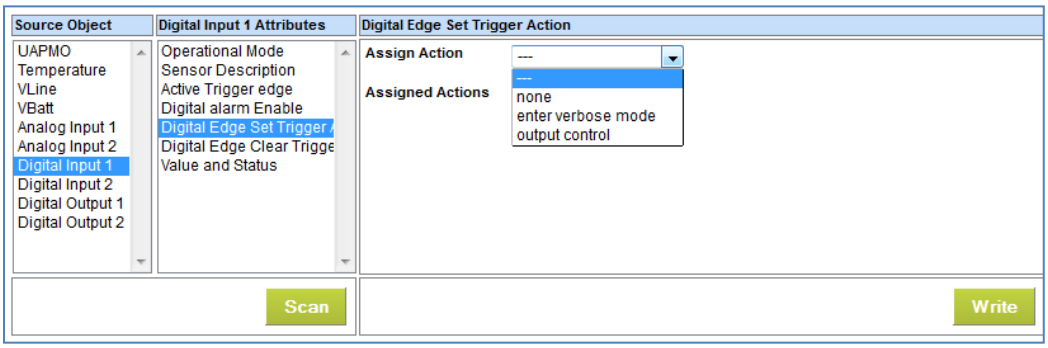

Figure 26. Digital Input Edge Set and Clear Trigger Actions

The Set and Clear Trigger Actions are tied to the digital input alarm setting described in the previous section. This allows the operator to set certain behaviors after the digital input transitions from high to low or low to high. The two options are “Enter Verbose Mode” and “Output Control.”

“Enter Verbose Mode” means that after the WiYZ detects that the input has transitioned from high to low or low to high, it sends more frequent messages with the sensor reading until the input transitions again. The frequency of the messages during verbose mode is controlled by the value described in section 2.3.1.3 Verbose Publish Rate.

The “Output Control” feature is related to using one of the two digital outputs available on the remote. Once you enable the trigger output control here, you must also go to the Digital Output object to set up the relationship with the input object as well. Likewise, if you wish the digital output to change when the alarm condition is cleared you must also set that up in the “Clear trigger action” as well as the “Set trigger action.” More information on controlling digital outputs is available in section 2.3.4 Digital Output Object.

2.3.3.6 Value and Status

Access: Read Only
Default: N/A

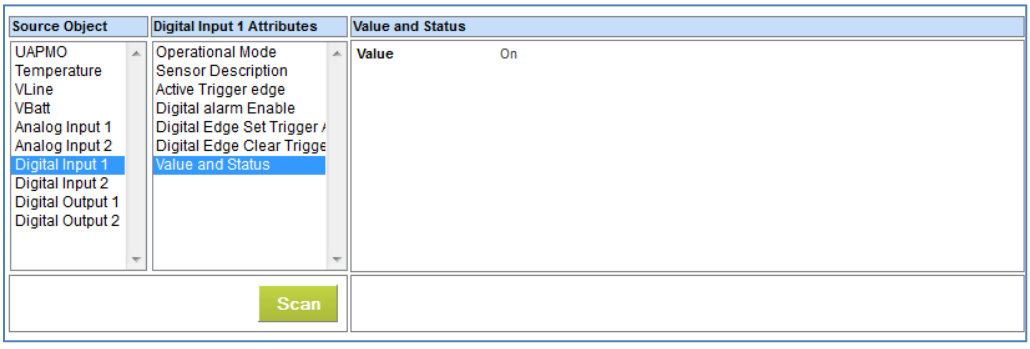

Figure 27. Digital Input Value and Status

This value simply displays the most recently read reading for the digital input.

2.3.4 Digital Output Object

There are two digital output objects on the WiYZ device that can be configured to control any type of switch or controller.

2.3.4.1 Operational Mode

Access: Read/Write
Default: OOS

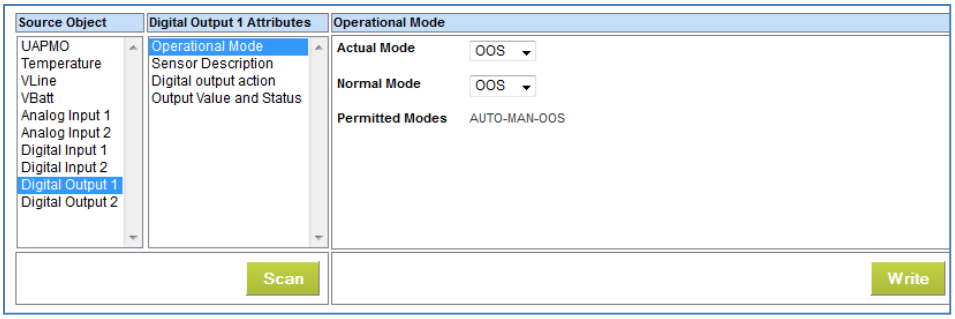

Figure 28. Digital Output Operational Mode

The Operational Mode of the Digital Output object controls the current operating mode of the output, what is considered the "normal" mode, and provides visibility into the permitted modes of the device. Generally operators only modify the Actual Mode of the output to enable automatic behavior (AUTO), to put the output into manual mode (MAN), or to take the input out of service (OOS). The Permitted Mode can only be modified from the WiYZ serial interface using GE MDS tools.

If the operator wishes to setup automatic enabling of digital outputs based on the values of analog or digital inputs the Operational Mode of the output must be in AUTO mode.

2.3.4.2 Sensor Description

Access: Read/Write
Default: <empty string>

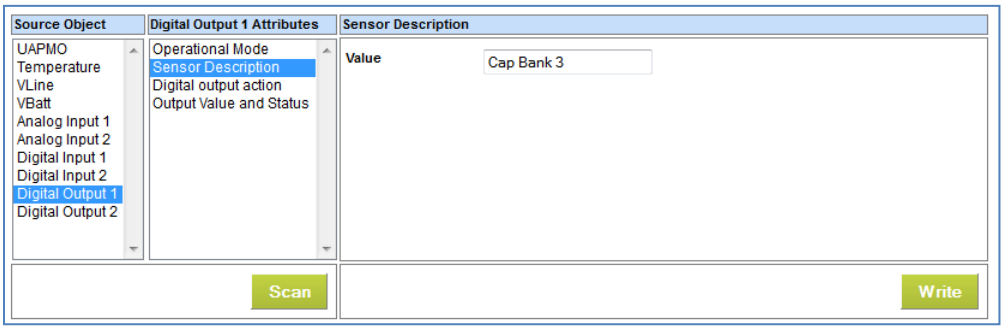

Figure 29. Digital Output Sensor Description

Each output provides a 15 character string to allow an operator to add text to identify what is connected to the digital output.

2.3.4.3 Digital Output Action

Access: Read/Write
Default: ---

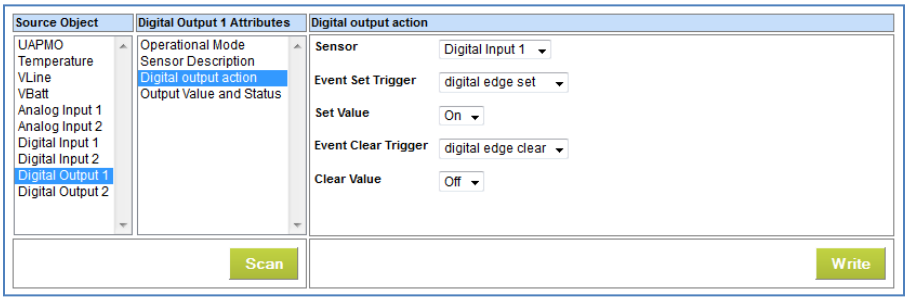

Figure 30. Digital Output Action

This attribute provides the operator complete control over the behavior of the digital output. If the output is in AUTO mode, it is here that the operator must link up which input object is to be used as the controller for the output.

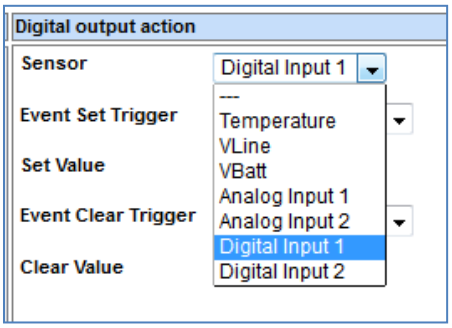

Figure 31. Digital Output Sensor Binding

The operator must also set here what the behavior is for the event set versus the event clear. For Example, they may have the digital output On, by default, and turned Off if an analog threshold is crossed. This is the location where that behavior is configured.

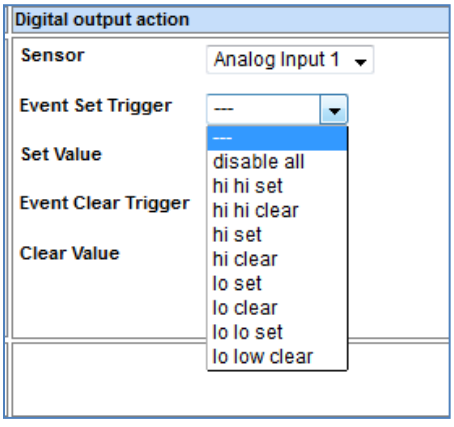

Figure 32. Digital Output Set Trigger Binding

Only operators knowledgeable about the desired behavior of the output should modify these settings, and the changes should be done during initial device staging. If the behavior is changed after the device has been deployed, operators should take care to do a reset of the WiYZ device in order to bring the device to a known configuration.

2.3.4.4 Value and Status

Access: Read/Write
Default: N/A

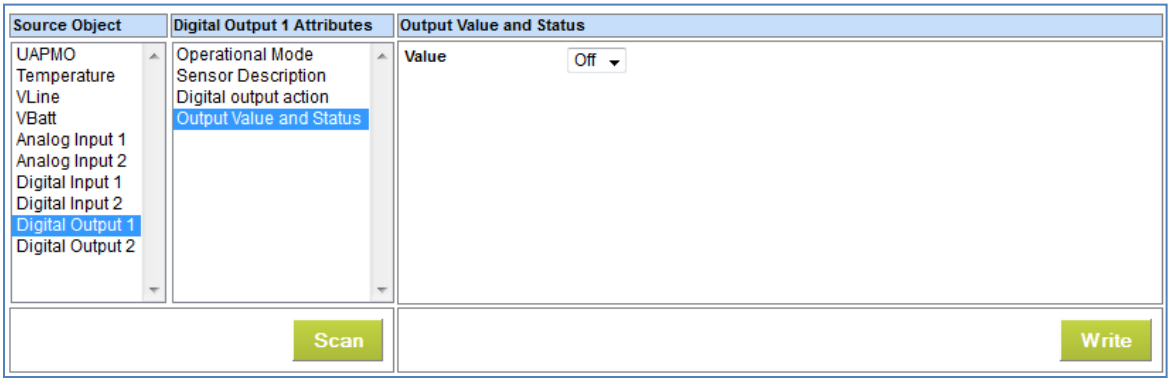

Figure 33. Digital Output Value and Status

The most recent value for the digital output is displayed. If the output is in MAN mode, the operator may set the Digital Output from On to Off and vice versa from this screen.

2.3.5 Sensor Reading Quality

The WiYZ device reports a sensor reading quality attribute when reading inputs and this quality reading is visible in the OTV interface. Any quality reading that is less than "Good," is reported as an error. Contact GE MDS for assistance in investigating any sensor reading quality issues.

2.4 Device Profile Setup

The OTV application provides a device profile capability to introduce specific behaviors and customization to each WiYZ device or group of similar devices. These configuration settings are completely local to the OTV system and are not delivered over-the-air to the WiYZ, and therefore can be quickly changed on the fly as needed by the administrator.

NOTE: Device profiles are not visible by users without Administrator privileges.

Modifying these profiles is done from the "Custom Device Type Editor" found in the Admin Configuration Page as shown below.

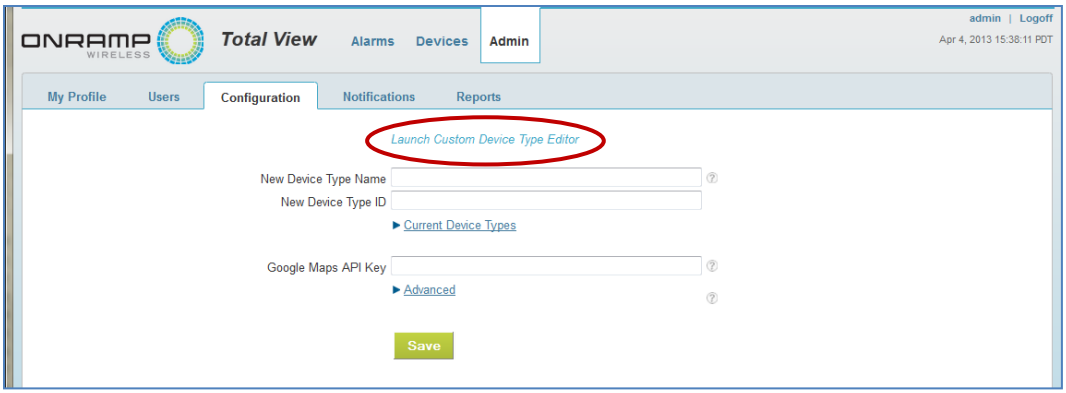

Figure 34. Custom Device Type Editor Location

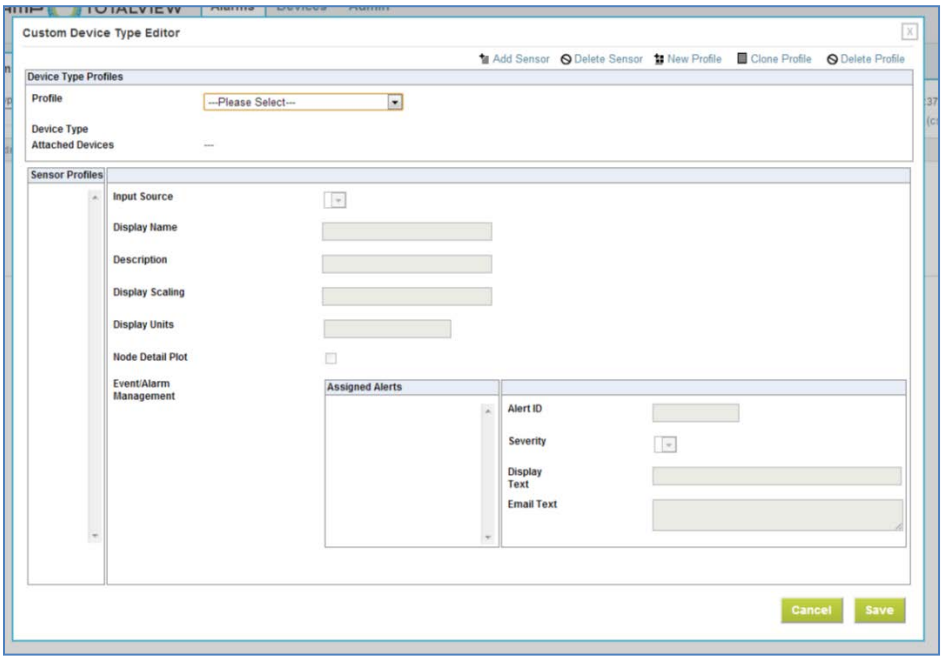

Figure 35. Custom Device Editor Main Screen

2.4.1 Viewing a Profile

To view a profile, select the profile from the drop down list.

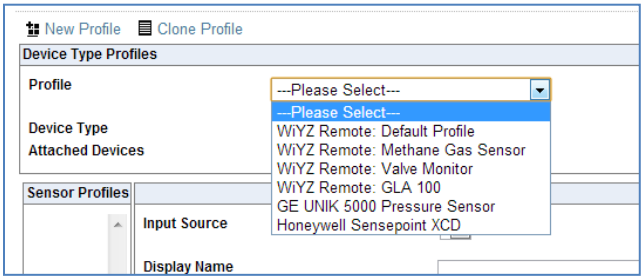

Figure 36. Custom Device Drop Down Menu

From the resulting screen the administrator can navigate the settings for analog and digital inputs. The operator can view the current settings for the names and user interface behaviors for alarm and informational events, inputs, and plot behaviors.

2.4.2 Configurable Properties

Administrators may make changes to any profile or any attribute within an object in the profile. The following list itemizes some notes and cautions with regard to changing profiles on an operational system:

- Changes to any of the profiles are saved whenever the “save” button is pressed.
- Navigating away from a profile does not cancel any pending changes to that profile.
- Changes to profiles are applied immediately to any WiYZ Remote devices that are using the profile.
- Changes apply to historical data. For example, new analog scaling formulas apply to historical analog input data.
- Changes to profiles should be closely managed by network operations personnel and communicated to all operators.

2.4.2.1 Changing Display Characteristics

The administrator may change the name of the object, the description, or the displayed units of just about any object or input type. The administrator should be careful to make changes that are well understood by all possible operators of the system. For example, the administrator could change the name of the UAPMO to be “WiYZ Device Object” to make it easier for operators. If this were done, however, this user manual could be harder to follow since the UAPMO would no longer exist for any object with that profile applied.

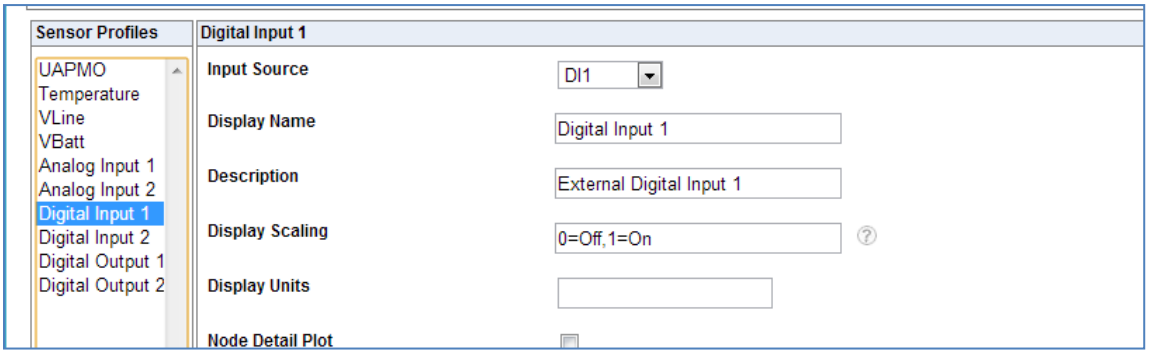

Figure 37. Editing Display Names and Descriptions in the Custom Device Editor

2.4.2.2 Analog and Digital Scaling

Any analog input can be scaled, or have a linear function applied to convert the raw analog value into the appropriate units for the sensor. The operator may put their cursor on the small ‘?’ to display some help in using this field.

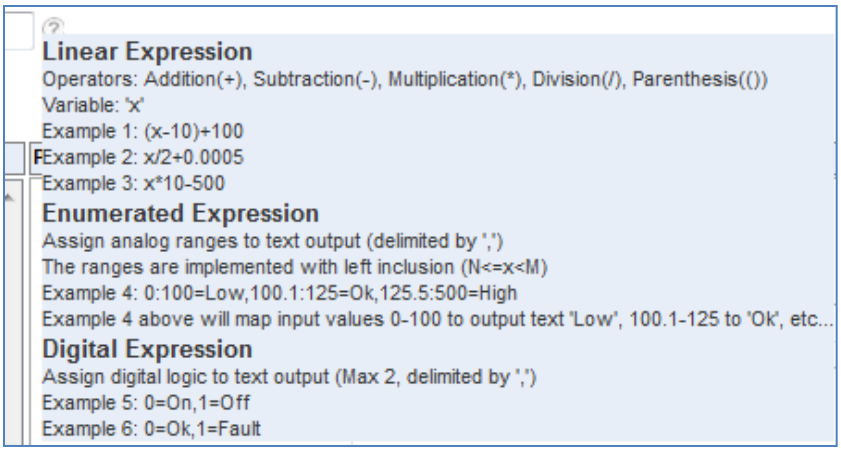

Figure 38. Help Menu for Analog and Digital Scaling

Typically this scaling is used to convert a sensor's analog output into the appropriate sensor units (for example, scaling a mA or V value to be PSI, LEL%, or %RH). The operator can also set up analog ranges that map to enumerated outputs, such as:

- 0-6 = Low
- 6-14 = Medium
- 14-22 = High

NOTE: Athough VLine and VBatt are technically analog inputs, it does not make much sense to convert them from their native unit of Volts. If the operator wants to see temperature in Fahrenheit instead of Celsius, then they can use a scaling formula of F=1.8*x+32. Digital scaling is a much simpler mapping of the 0 and 1 digital values to a textual value, such as:

- On and Off
- Open and Closed
- Enabled and Disabled
- Etc.

2.4.2.3 Changing Alert Settings

The administrator has control over the alert and alarm settings of the WiYZ objects. The operator may customize the severity of various alarms the WiYZ sends. These customizations determine the color of the icon shown in the OTV alarm display.

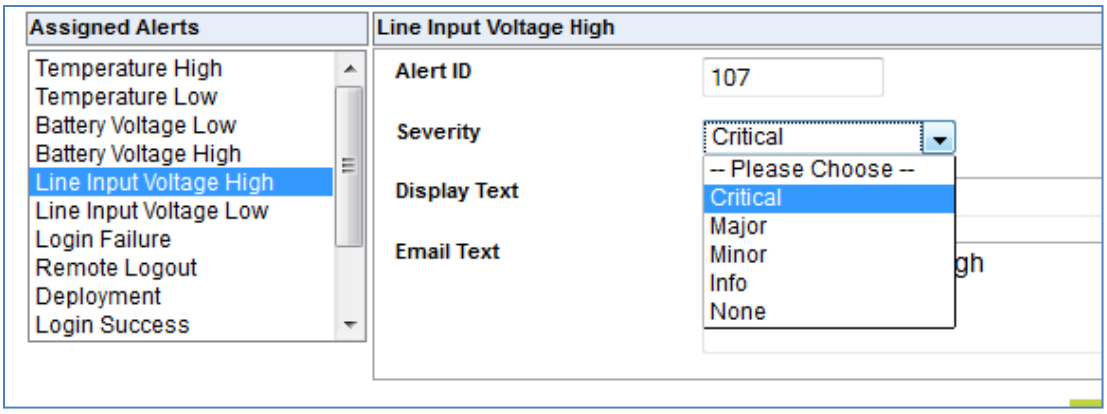

Figure 39. Modifying Alert Severities

Critical is shown as a red circle:

Major is shown as an orange triangle:

Minor is shown as a yellow diamond:

Info shows as a blue circle:

Devices that are still in “Maintenance Mode” have a wrench in the center of the icon. Devices that are designated “Out of Service” have a slash through the center of the icon. Each object in the device has specific events for which it sends asynchronous alerts to OTV. Digital outputs do not have any asynchronous events available for monitoring. See section 2.6 Device Alarm Management for more information on monitoring alerts.

2.4.2.4 UAPMO Profile Alerts

The UAPMO currently sends alerts in the following cases:

- Temperature exceeds a preconfigured threshold designated in ° C
- Battery Voltage falls below a predetermined voltage.
- Line Input Voltage exceeds a predetermined voltage or falls below a predetermined voltage.
- A switch to Battery power was detected.
- A switch to Line power was detected.

The Administrator may configure a “Switch to Battery Power“ as a higher severity alarm condition and when the device switches to “Line Power” the alarm is cleared.

The remaining alerts shown are reserved for future implementation at the WiYZ device.

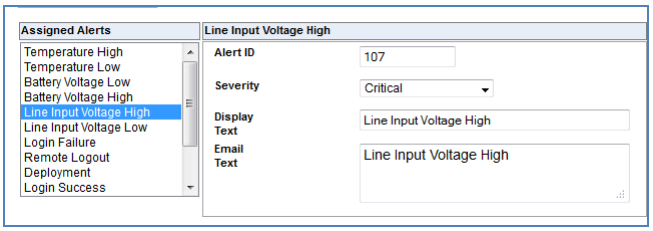

Figure 40. UAPMO Profile Alerts

2.4.2.5 Analog Input Profile Alerts

The Analog inputs currently send alert messages if the analog input value exceeds the High or HighHigh thresholds or falls below the Low or LowLow thresholds.

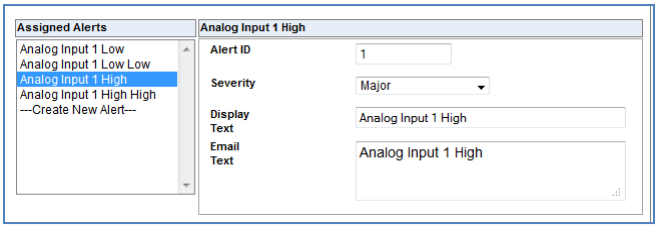

Figure 41. Analog Input Profile Alerts

2.4.2.6 Digital Input Profile Alerts

The digital inputs send alert messages when the status changes from its previous status. The administrator may choose to define the severity of this event depending on the application of the sensor.

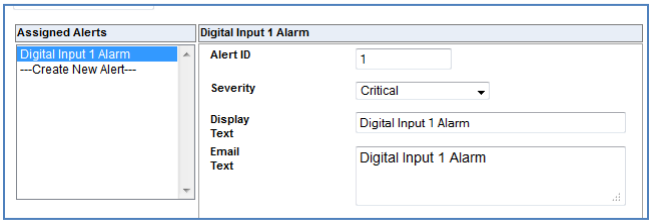

Figure 42. Digital Input Profile Alerts

2.4.3 Plot Settings

OTV provides a quick view of a plot of one of the data inputs from the WiYZ. In the profile the Administrator may pre-define which value is plotted on the device detail page by choosing the sensor and then clicking on the “Node Detail Plot” checkbox. In this case, Temperature is defined as the plot to show on the main device detail unit.

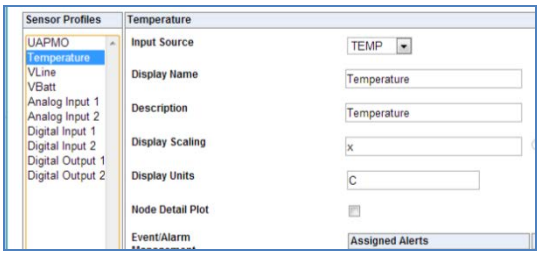

Figure 43. Default Detail View Plot Selection

When the checkbox is marked, the Plot Interval value appears. This determines the range for the graph shown on this device detail display:

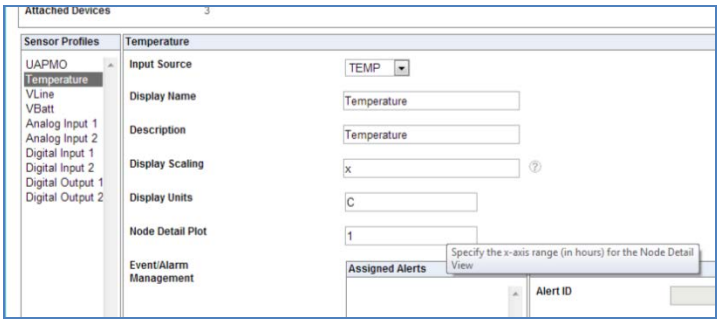

Figure 44. Default Detail View Plot Interval

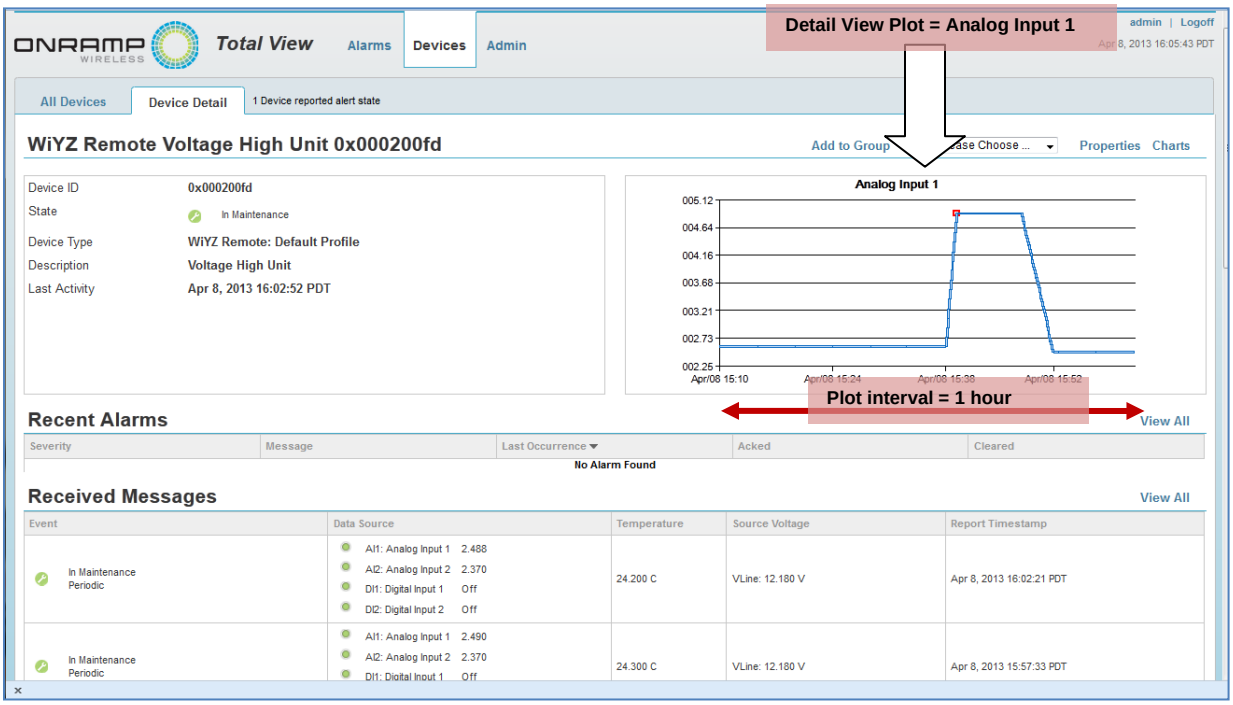

Figure 45. Default Detail View Plot Example

2.4.4 Pre-installed Profiles

Four device profiles are provided with each OTV release based on some known sensor types. These provide examples and can be cloned to connect the WiYZ to new sensor types.

The **WiYZ Remote: Default Profile** is assigned to every newly joined WiYZ Remote. This is a very generic profile with all inputs and outputs setup simply, with no scaling.

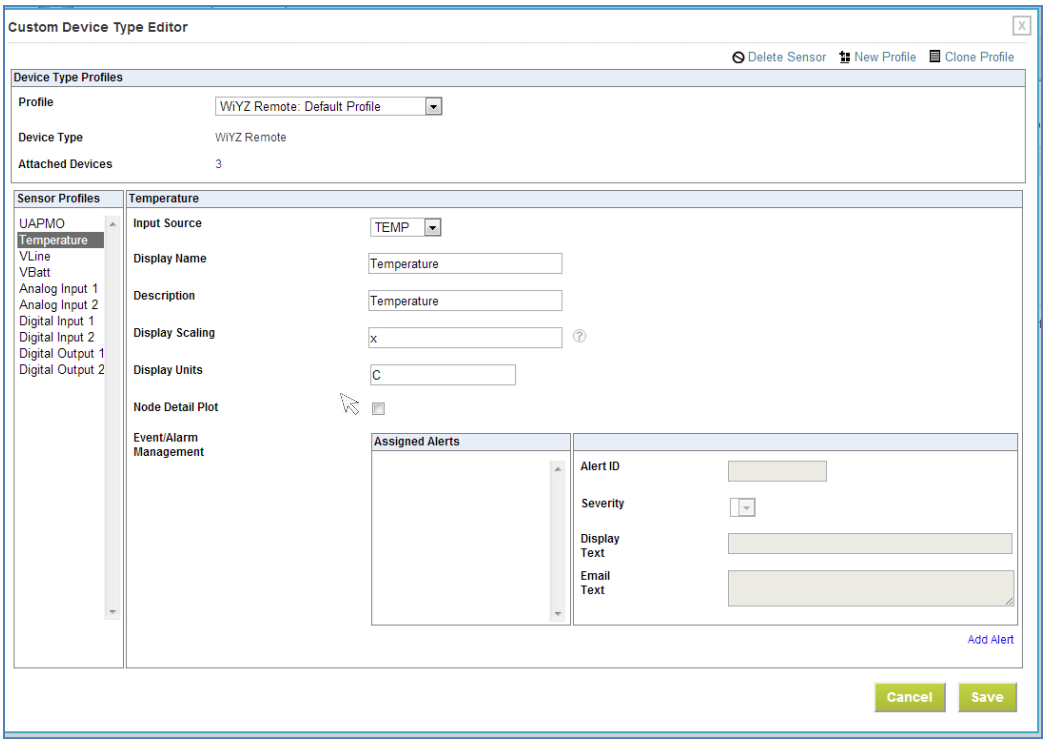

Figure 46. WiYZ Remote Default Profile

The **WiYZ Remote: Methane Gas Sensor** profile provides an example profile that uses an analog input and scales the mA value into a % LEL. This particular profile was tested using a Sensepoint XCD Methane sensor.

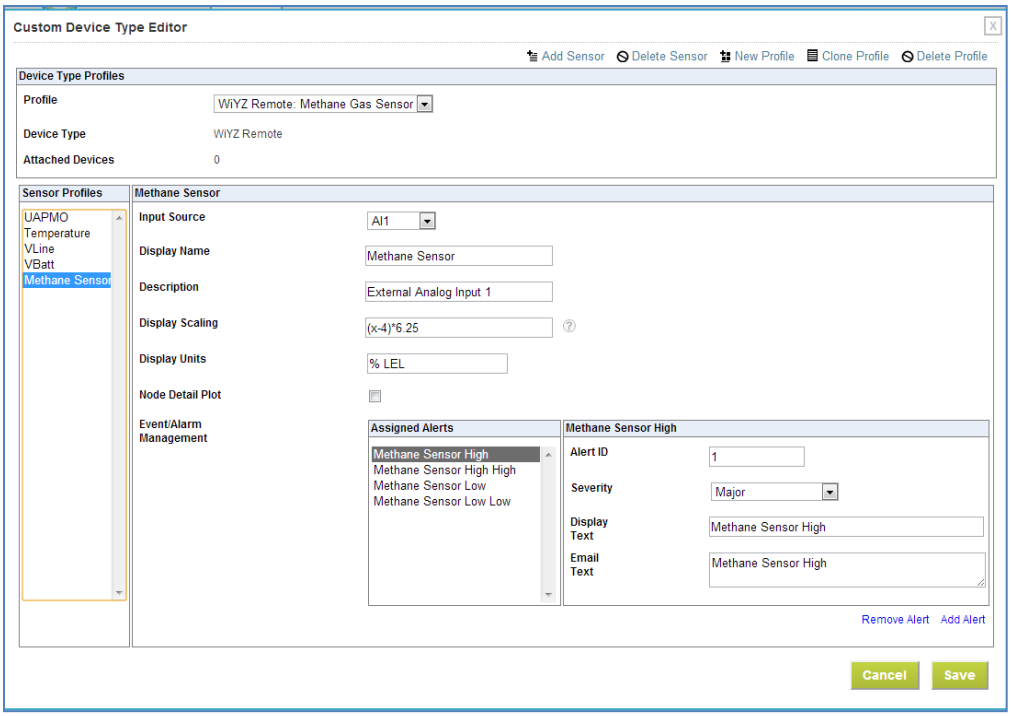

Figure 47. WiYZ Remote: Methane Sensor Profile

The **WiYZ Remote: Valve Monitor** profile provides an example profile that uses a digital input and maps the digital input of 0 to Open and 1 to Closed. This profile was tested with a Westlock AccuTrak Rotary Position Monitor.

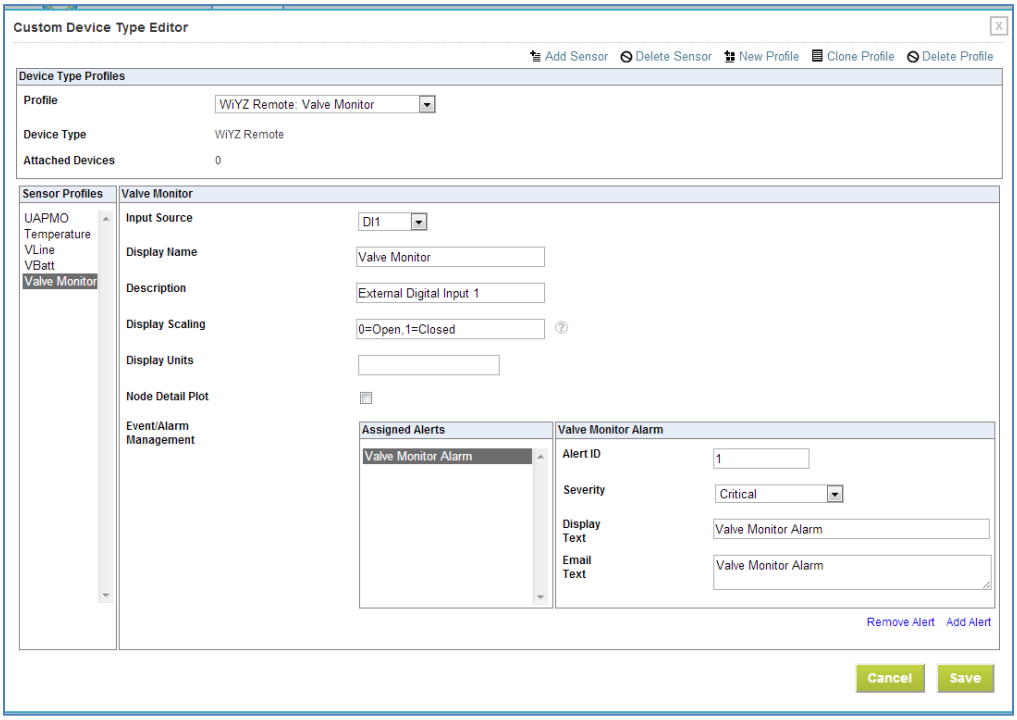

Figure 48. WiYZ Remote Valve Monitor Profile

The **WiYZ Remote: GLA 100** profile provides yet a different example that uses both digital and analog inputs to convert the sensor output into meaningful data for the operator. This particular sensor was designed to provide 3 digital inputs to display the System Fault Service alarm, Fault Gas Caution, and Fault Gas Alarm levels. The WiYZ profile was configured to use both digital inputs and to use one of the analog inputs to map the third digital signal. This was achieved using the "enumerated scaling" feature of the analog input display. This profile was tested with an Intellix GLA 100 sensor.

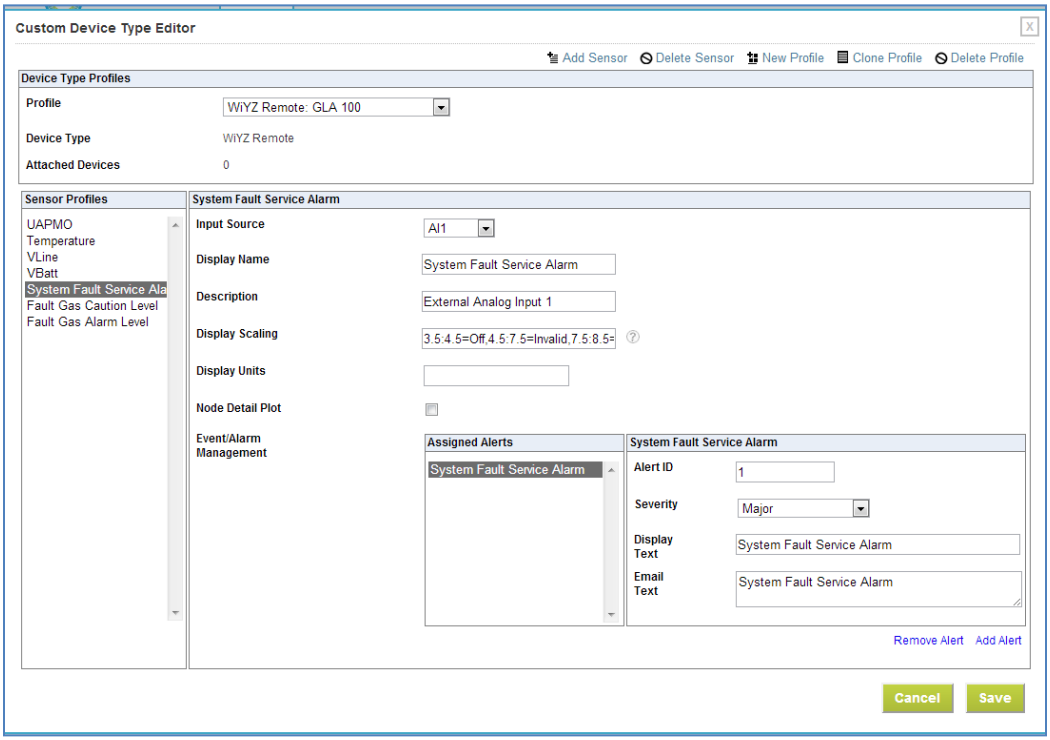

Figure 49. WiYZ Remote GLA 100 Profile

2.4.5 Cloning a Profile

It is recommended that administrators always "clone" a profile rather than starting a profile from scratch. This is because many settings need to be setup when starting from scratch which require mapping of numerical identifiers to inputs and alarms. This information is available in the GE WiYZ Interface Control Document (ICD) available to customers and partners by request.

To clone a profile, from the editor menu click the "Clone" button and choose a baseline profile from which to clone. Profile names must be unique.

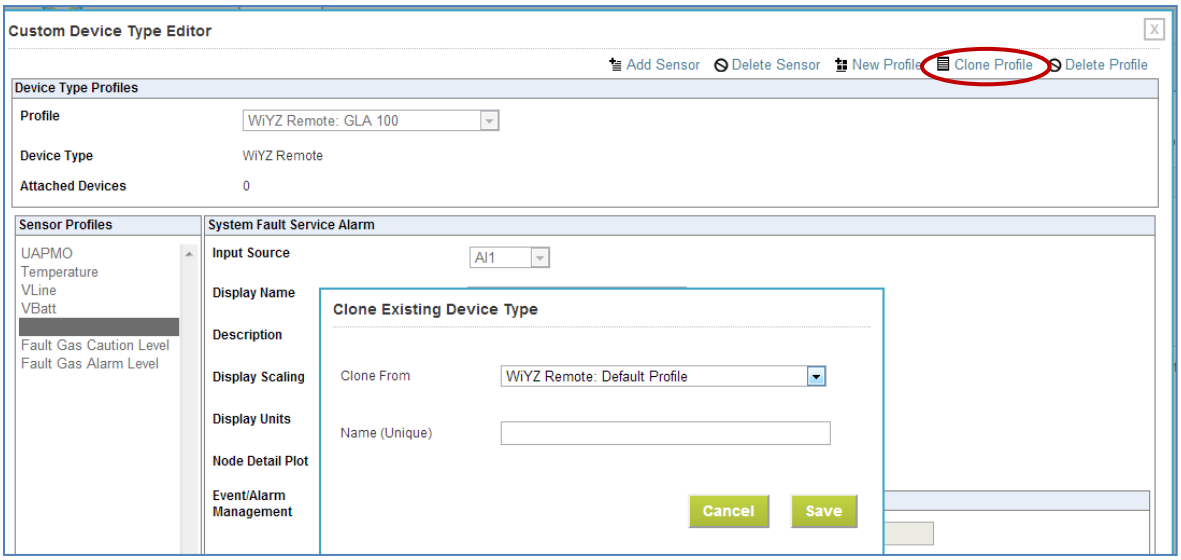

Figure 50. Profile Cloning

2.5 Device Measurement Monitoring

The five most recent messages received from the device are shown in the “Received Messages” display on OTV Device Detail Page.

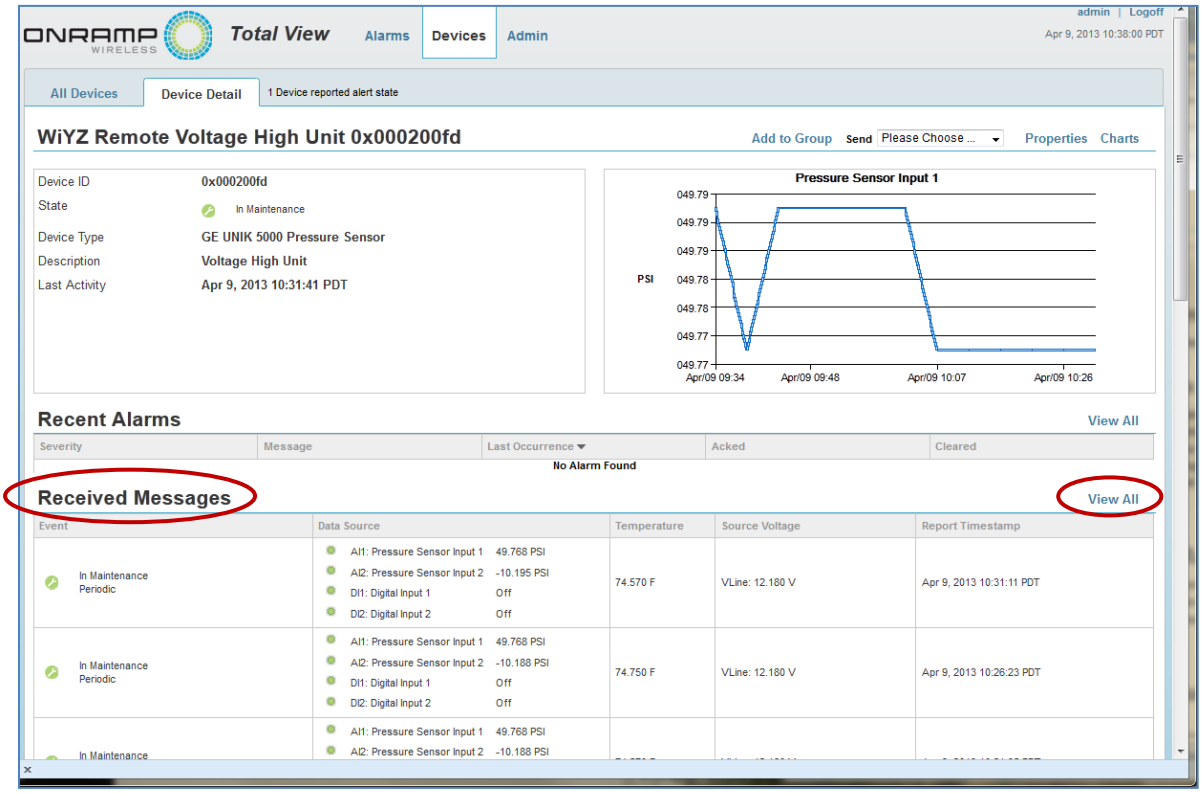

Figure 51. Viewing Sensor Readings from OTV

To view the complete history of the data, click on the “View All” link to see just the received data. From the Received Messages Screen that appears after clicking “View All”, the operator has the option to set a date and time range to view the data, to view a quick plot

2.5.1 Periodic Reports

GE MDS WiYZ Remotes are configured to send sensor readings periodically. This Update Interval (UI) can be set from 5 minutes up to 24 hours. The exact time at which the device sends this data is initially set to be a certain offset within the UI to prevent all devices from sending data at the same time. For example, a device set for a one-hour UI that has an offset of 12 minutes sends its periodic report at 12 minutes past the hour, so 00:12, 01:12, 02:12, etc.

Only the readings from analog and digital inputs that are in the AUTO mode are sent. The data shown has the analog scaling formula applied.

2.6 Device Alarm Management

The WiYZ Remote sends asynchronous alarms as defined by its operational parameters. These alarms include sensor readings going over or under set thresholds, switching to battery power, or digital inputs changing from on to off. OTV is also constantly monitoring the received data from operational devices and detects any device that has not communicated in a configurable amount of time. This timeout value is configurable at OTV and should line up with the configured update intervals for the WiYZ remotes. See the *OTV Operator Guide* for more information on setting up this timeout value.

OTV provides several places to review and manage alarms coming from the devices. OTV performs alarm management for devices that are in “Operational Mode.” Devices that are in “Maintenance” mode or are “Out of Service” mode do not generate alarm emails or show up in the alarms display. See the *OTV Operator Guide* for more information on Alarm Management in general. An overview is provided here.

2.6.1 Alarm Displays

OTV provides a main alarm summary page showing active alarms from all operational devices on the network.

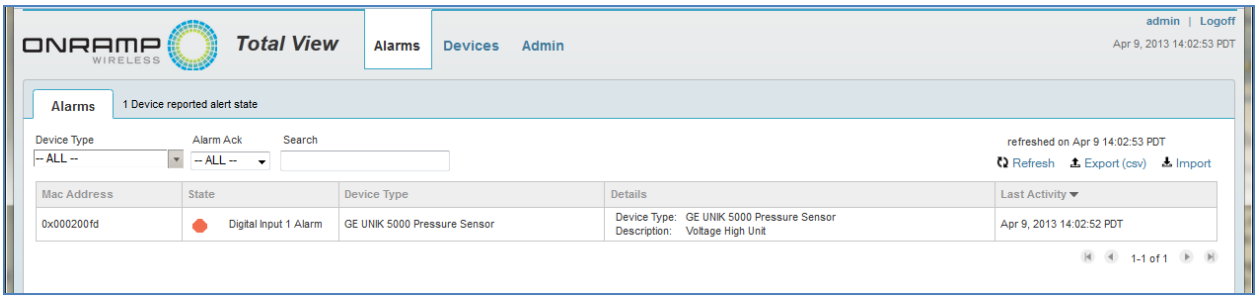

Figure 52. OTV Active Alarm Display

When an alarm has cleared, the alarm is not shown on this display.

When viewing many active alarms, the operator may choose to filter this view by device type and the alarm acknowledgement status. The operator may also search this display for alarms of interest.

Clicking on a device shows the five most recent alarms for the device even if they have been Cleared and/or acknowledged.

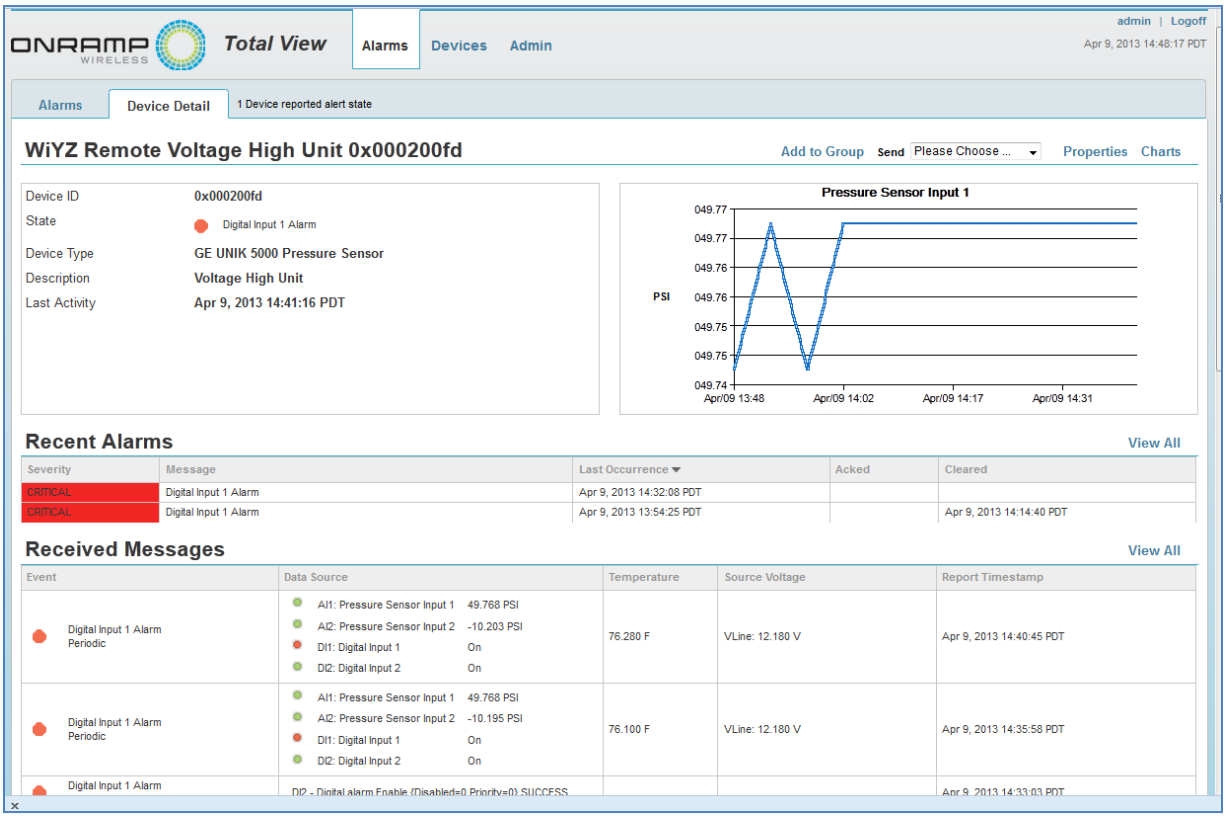

Figure 53. Device Recent Alarms

To “Acknowledge” an alarm the operator can click on the alarm and select “Yes” to acknowledge and save as shown below.

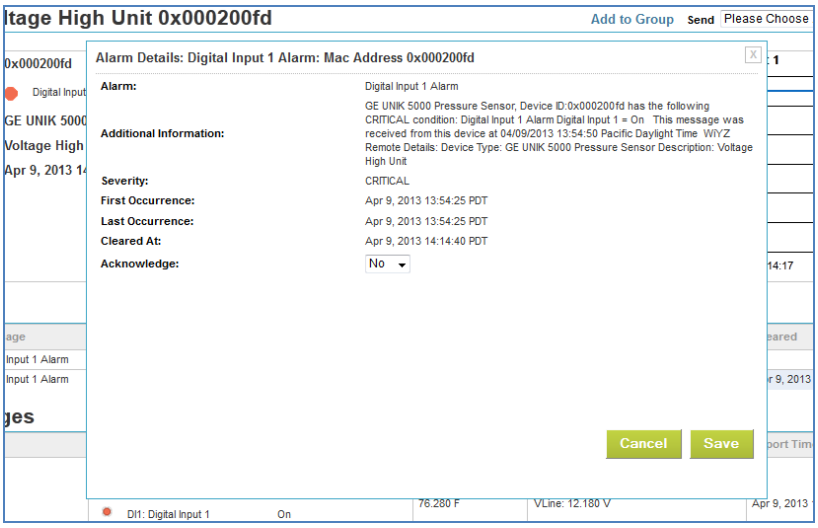

Figure 54. Acknowledging an Alarm

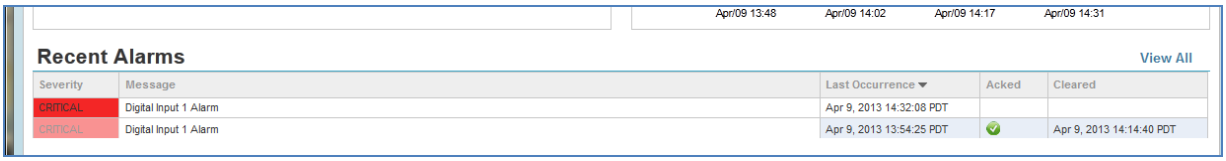

Figure 55. Acknowledged Alarms Versus Unacknowledged Alarms

The alarm messages can also be seen in the received messages display. The main device icon color lines up with the most severe of the active alarms. That is, if there is a Major and a Critical alarm active on different inputs, the device shows a red icon for the Critical alarm.

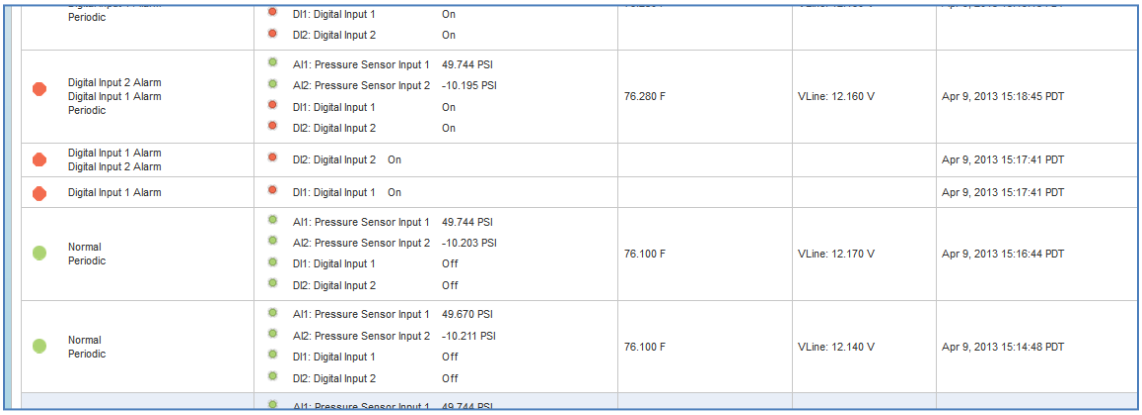

Figure 56. Viewing Alarms in Received Messages Display

2.6.2 Alarm Emails

The administrator can setup email notifications for alarm events. This is setup on the Notifications tab under the Admin panel.

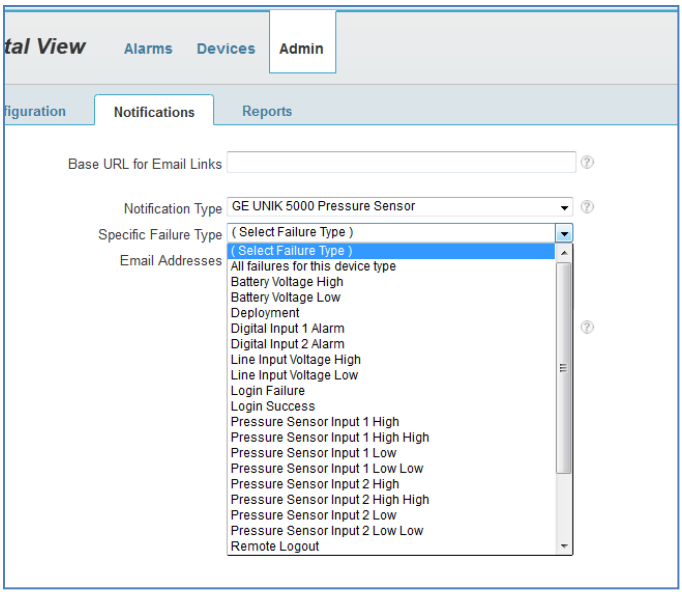

Figure 57. Setting Up Alarm Emails

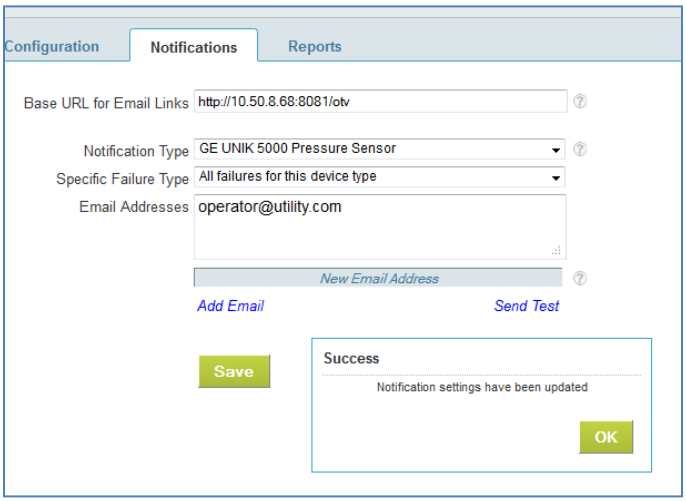

Figure 58. Adding Email Addresses for Alarms

When email alerts have been setup, operators receive emails when alarms occur. The email contains information about the alarm.

Figure 59. Switch to Battery Power Alarm Email

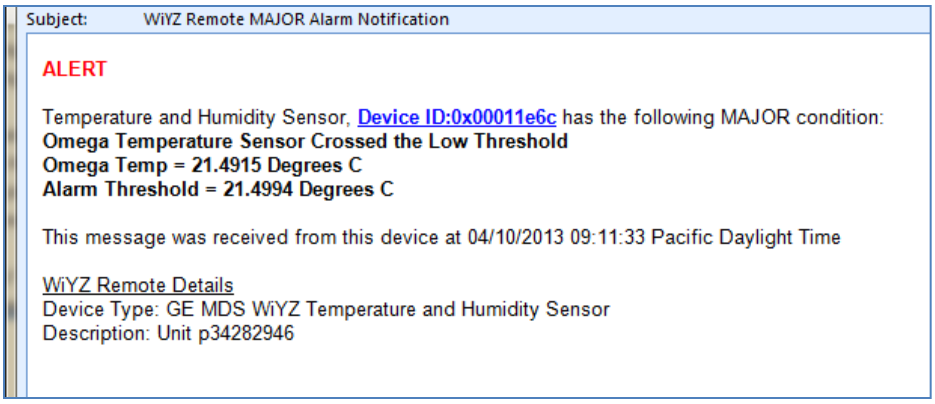

Figure 60. Sample Low Threshold Crossed Alarm Email

2.7 Advanced Feature: CSV Export

The WiYZ Remote sensor readings can be exported into a CSV file that can be used in Microsoft Excel or other tools for more advanced charting or calculations on the data. This feature is found on the Received Messages Display:

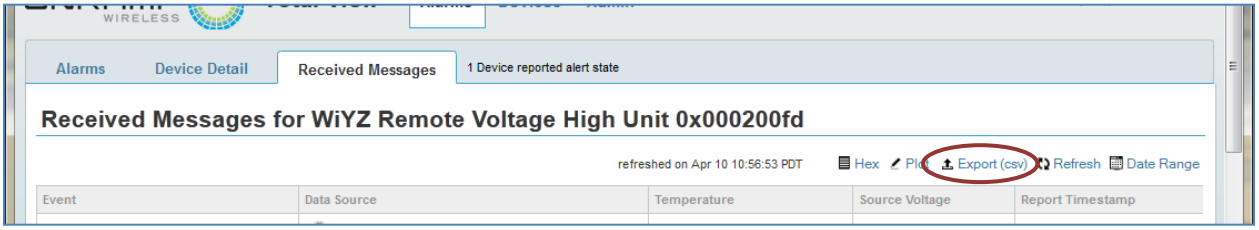

Figure 61. CSV Exports

Appendix A Object Attribute Tables

A.1 UAPMO

Attribute/ Command	Description	Type	Access	Default
Device Command	Command the device to Reset the Radio or reset the WiYZ Processor.	N/A	N/A	N/A
Primary power source	Indicates device power source. Valid Values: 0:Line Power 1:Battery Power	Enumerated	Read Only	N/A
Verbose Publish Rate	The asynchronous publish rate (also sample interval in minutes. Valid Values: N/A	Enumerated	Read/Write	2 Minutes
Sensor Settle Time	Milliseconds of time the sensor requires from power up before a stable value is available. Valid Values: 250-60000 (16bit integer).	Unsigned 16bit integer	Read/Write	250 milliseconds
Sensor Power Output	Enable/Disable on/off the sensor power output (Vext). Valid Values: 0:Off 1:On	Enumerated	Read/Write	Off
Unit Description	15 character text description for identifying the unit location, etc.	15 characters	Read/Write	N/A
Update Interval Setting	Returns the update interval enumeration. Configurable within the On-Ramp Total Reach network EMS system. Valid Values: 1:300 per day (4.8 minutes) 2:200 per day (7.2 minutes) 3:150 per day (9.6 minutes) 4:120 per day (12 minutes) 5:60 per day (24 minutes) 6:40 per day (36 minutes) 7:30 per day (48 minutes) 8:24 per day (60 minutes) 9:12 per day (120 minutes) 10:8 per day (180 minutes) 11:6 per day (240 minutes) 12:4 per day (360 minutes) 13:3 per day (480 minutes) 14:2 per day (720 minutes) 15:1 per day (1440 minutes) 16:Not Available	Enumerated	Read Only	N/A

Attribute/ Command	Description	Type	Access	Default
Listen Interval Setting	Returns the Listen Interval enumeration. Valid Values: 1:Node listens every update interval 2:Not Available	Enumerated	Read Only	N/A
Serial Number	Null terminated unique serial number string assigned at the time of manufacturing.	9 characters	Read Only	012345678
Hardware Revision	Null terminated unique hardware board revision assigned at the time of manufacturing.	3 characters	Read Only	A00
Profile Signature	Returns the I/O configuration profile signature (hash value). Valid Values: N/A	31 characters	Read Only	N/A

A.2 Analog Input Objects

Attribute	Description	Type	Access	Default
Output Value and Status Output Value	Commanded output value and status for analog value. Analog Value of Process Variable: See A.5 Sensor Status Value	Float	READWRITE	N/A
Operational Modes Target Mode	Actual mode (read only) settings for commanded target mode, permitted modes, and expected normal mode. Target Mode is the mode that was commanded to transition. Valid Values: 1:Out Of Service 8:Manual (testing) 16:Automatic	Enumerated	READWRITE	1
Operational Modes Actual Mode	Actual mode (read only) settings for commanded target mode, permitted modes, and expected normal mode. Actual Mode is the current mode of the object. Valid Values: 1:Out Of Service 8:Manual (testing) 16:Automatic	Enumerated	READONLY	1
Permitted Modes Mode Bits	Permitted Modes represent the set of modes that are valid for an object. Modes Bits Structure Valid Values: Process control mode bits structures	Selection	FACTWRITE	1
Operational Modes Normal Modes	Actual mode (read only) settings for commanded target mode, permitted modes, and expected normal mode. Normal Modes is the operating mode, other than OOS, that is designed as ‘normal operation.’ Valid Values: 1:Out Of Service 8:Manual (testing) 16:Automatic	Enumerated	READWRITE	16

Attribute	Description	Type	Access	Default
Readback Value Process Status	The actual value of the output analog Quality and Status of current Process Variable.	Enumerated	READONLY	N/A
Readback Value Output Value	The actual value of the output Analog Value of Process Variable. Valid Values: float32_t	Float	READWRITE	N/A
Range values Max value	Range, limits, and precision information. Maximum range limit per engineering units. Valid Values: N/A	Float	READWRITE	100
Range values Min value	Range, limits, and precision information. Minimum range limit per engineering units. Valid Values: N/A	Float	READWRITE	0
Range values Units index	Range, limits, and precision information. Units index as defined in Foundation Fieldbus. Valid Values: 1011:Degree Celsius 1211:milliampere (mA) 1240:Volt (V)	Enumerated	READWRITE	1211
Range values Decimal point	Range, limits, and precision information. Decimal point location. Valid Values: N/A	Unsigned 8bit integer	READWRITE	3
Range values SensorFaultLimit	Range, limits, and precision information. Sensor fault limit per engineering units Valid Values: N/A	Float	READWRITE	4.0
Sensor description	Describes the analog output value when event triggers. Valid Values: N/A	15 characters	READWRITE	N/A
Analog output action Input Object	Describes the analog output value when event triggers. Points to the input object with the following selected SET and CLEAR event triggers. Valid Values: 21:TEMP 22:RSSI 23:VLINE 24:VBATT 25:AI1 26:AI2 29:DI1 30:DI2	Enumerated	READWRITE	0
Analog output action Event trigger for SET	Describes the analog output value when event triggers. Selects the trigger event to initiate a write of the SET output action value to output. Valid Values: 0:Output action disable 1:Hi_Hi set trigger control 2:Hi_Hi clear trigger control 3:Hi set trigger control 4:Hi clear trigger control 5:Lo set trigger control 6:Lo clear trigger control 7:Lo_lo set trigger control 8:Lo_lo clear trigger control 9:Digital set trigger control 10:Digital clear trigger control	Enumerated	READWRITE	0

Attribute	Description	Type	Access	Default
Analog output action Value for SET	Describes the analog output value when event triggers. Output value when trigger event for SET output action occurs. Valid Values: As defined by IEEE for float32_t	Float	READWRITE	0
Analog output action Event trigger for CLEAR	Describes the analog output value when event triggers. Selects the trigger event to initiate a write of the CLEAR output action value to output. Valid Values: 0:Output action disable 1:Hi_Hi set trigger control 2:Hi_Hi clear trigger control 3:Hi set trigger control 4:Hi clear trigger control 5:Lo set trigger control 6:Lo clear trigger control 7:Lo_lo set trigger control 8:Lo_lo clear trigger control 9:Digital set trigger control 10:Digital clear trigger control	Enumerated	READWRITE	0
Analog output action Value for CLEAR	Describes the analog output value when event triggers. Output value when trigger event for CLEAR output action occurs. Valid Values: As defined by IEEE for float32_t	Float	READWRITE	0

A.3 Digital Input Objects

Attribute	Description	Type	Access	Default
Value and Status Process Status	Value and status for Digital value Quality and Status of current Process Variable Valid Values: See section A.5 Sensor Status Value.	Enumerated	READONLY	N/A
Value and Status Digital Value	Value and status for Digital value of process variable. Valid Values: N/A	Enumerated	READONLY	N/A
Operational Modes Target Mode	Actual mode (read only) settings for commanded target mode, permitted modes, and expected normal mode. Target Mode is the mode that was commanded to transition. Valid Values: 1:Out Of Service 8:Manual (testing) 16:Automatic	Enumerated	READWRITE	1
Operational Modes Actual Mode	Actual mode (read only) settings for commanded target mode, permitted modes, and expected normal mode. Actual Mode is the current mode of the object. Valid Values: 1:Out Of Service 8:Manual (testing) 16:Automatic	Enumerated	READONLY	1

Attribute	Description	Type	Access	Default
Permitted Modes Mode Bits	Permitted Modes represent the set of modes that are valid for an object. Modes Bits Structure Valid Values: Process control mode bits structures.	Selection	FACTWRITE	1
Operational Modes Normal Modes	Actual mode (read only) settings for commanded target mode, permitted modes, and expected normal mode. Normal Modes is the operating mode, other than Out of Service (OOS), that is designed as 'normal operation.' Valid Values: 1:Out Of Service 8:Manual (testing) 16:Automatic	Enumerated	READWRITE	16
Sensor description	Text description for identifying the sensor, location, etc. Valid Values: N/A	15 characters	READWRITE	N/A
Active Trigger edge	Used to determine send clear or set alarm. Valid Values: 0:Active Low 1:Active High	Enumerated	READWRITE	1
Digital alarm Enable Alarm Report	Specify the control definition of Digital Alarm. Valid Values: 0:Enabled 1:Disabled	Enumerated	READWRITE	1
Digital alarm Enable Reserved	Specify the control definition of Digital Alarm. Reserved Valid Values: N/A	Enumerated	READWRITE	0
Digital Edge Set Trigger Action Trigger Actions	Describes the action to take when digital edge event triggers enable or disable parallel trigger actions. Valid Values: Event Trigger bits structures	Selection	READWRITE	1
Digital Edge Clear Trigger Action Clear Trigger Actions	Describes the action to take when digital event clears enable or disable parallel trigger actions. Valid Values: Clear Event Trigger bits structures	Selection	READWRITE	0

A.4 Digital Output Objects

Attribute	Description	Type	Access	Default
Output Value and Status Process Status	Commanded output value and status for digital Quality and Status of current output Process Variable. Valid Values: See A.5 Sensor Status Value	Enumerated	READONLY	N/A
Output Value and Status Output Value	Commanded output value and status for digital value of output process variable. Valid Values: N/A	Enumerated	READWRITE	N/A

Attribute	Description	Type	Access	Default
Operational Modes Target Mode	Actual mode (read only) settings for commanded target mode, permitted modes, and expected normal mode. Target Mode is the mode to which was commanded to transition Valid Values: 1:Out Of Service 8:Manual (testing) 16:Automatic	Enumerated	READWRITE	1
Operational Modes Actual Mode	Actual mode (read only) settings for commanded target mode, permitted modes, and expected normal mode. Actual Mode is the current mode of the object. Valid Values: 1:Out Of Service 8:Manual (testing) 16:Automatic	Enumerated	READONLY	1
Permitted Modes Mode Bits	Permitted Modes represent the set of modes that are valid for an object. Modes Bits Structure Valid Values: Process control mode bits structures	Selection	FACTWRITE	1
Operational Modes Normal Modes	Actual mode (read only) settings for commanded target mode, permitted modes, and expected normal mode. Normal Modes is operating mode, other than Out of Service (OOS), that is designed as 'normal operation.' Valid Values: 1:Out Of Service 8:Manual (testing) 16:Automatic	Enumerated	READWRITE	16
Readback value Process Status	The actual value of the output digital Quality and Status of current output Process Variable. Valid Values: See A.5 Sensor Status Value	Enumerated	READONLY	N/A
Readback value Output Value	The actual value of the output digital value of the output process variable. Valid Values: N/A	Enumerated	READWRITE	N/A
Sensor description	Text description for identifying the sensor, location, etc. Valid Values: N/A	15 characters	READWRITE	N/A
Digital output action Input Object	Describes the digital output value when digital event triggers. Points to the input object with the following selected SET and CLEAR event triggers. Valid Values: 21:TEMP 22:RSSI 23:VLINE 24:VBATT 25:AI1 26:AI2 29:DI1 30:DI2	Enumerated	READWRITE	0

Attribute	Description	Type	Access	Default
Digital output action Event trigger for SET	Describes the digital output value when the digital event triggers. Selects the trigger event to initiate a write of the Digital SET output action value to output. Valid Values: 0:Output action disable 1:Hi_Hi set trigger control 2:Hi_Hi clear trigger control 3:Hi set trigger control 4:Hi clear trigger control 5:Lo set trigger control 6:Lo clear trigger control 7:Lo_lo set trigger control 8:Lo_lo clear trigger control 9:Digital set trigger control 10:Digital clear trigger control	Enumerated	READWRITE	0
Digital output action Value for SET	Describes the digital output value when the digital event triggers. Output value when trigger event for SET output action occurs. Valid Values: N/A	Enumerated	READWRITE	0
Digital output action Event trigger for CLEAR	Describes the digital output value when the digital event triggers. Selects the trigger event to initiate a write of the Digital CLEAR output action value to output. Valid Values: 0:Output action disable 1:Hi_Hi set trigger control 2:Hi_Hi clear trigger control 3:Hi set trigger control 4:Hi clear trigger control 5:Lo set trigger control 6:Lo clear trigger control 7:Lo_lo set trigger control 8:Lo_lo clear trigger control 9:Digital set trigger control 10:Digital clear trigger control	Enumerated	READWRITE	0
Digital output action Value for CLEAR	Describes the digital output value when the digital event triggers. Output value when trigger event for CLEAR output action occurs. Valid Values: N/A	Enumerated	READWRITE	0
Failsafe Value	Digital Failsafe output value. Valid Values: N/A	Enumerated	READWRITE	0

A.5 Sensor Status Value

Valid Values:

- 128:Good Quality, no special conditions exist
- 64:Uncertain Quality, non-specific
- 68:Uncertain Quality, last usable value
- 72:Uncertain Quality, substituted or manual entry
- 76:Uncertain Quality, initial value

- 80:Uncertain Quality, sensor conversion inaccurate
- 84:Uncertain Quality, range limits exceeded
- 88:Uncertain Quality, sub normal
- 92:Uncertain Quality, reserved
- 0:Bad Quality, non-specific
- 4:Bad Quality, configuration error
- 8:Bad Quality, not connected
- 12:Bad Quality, device failure
- 16:Bad Quality, sensor failure
- 20:Bad Quality, no communication with LUV
- 24:Bad Quality, no communication no LUV
- 28:Bad Quality, out of service (value is not being computed)

Appendix B Abbreviations and Terms

Abbreviation/Term	Definition
AP	Access Point. The On-Ramp Total Reach network component geographically deployed over a territory.
CSV File	Comma-Separated Values File. A file that stores tabular data (numbers and text) in plain-text form.
EMS	Element Management System. The network component that provides a concise view of the On-Ramp Total Reach network for controls and alarms.
ICD	Interface Control Document
MAN	Abbreviation for manual mode.
Node	The wireless module developed by On-Ramp Wireless that integrates with OEM sensors and communicates sensor data to an Access Point.
On-Ramp Total Reach	The On-Ramp Wireless' proprietary wireless communication network and technology.
On-Ramp Total View	The network component that passes data from the Gateway to the associated upstream databases.
OOS	Out of Service
ORW	On-Ramp Wireless
OTV	On-Ramp Total View
UAPMO	User Application Process Management Object. This object contains common attributes that govern WiYZ Remote operations.
UI	Update Interval
WCAP	WiYZ Configuration and Provisioning. A GE tool for configuring devices.