Voltage Sensor Profile Definition for Rest API

Monnit Corporation

Contents

Overview

Monnit® wireless voltage meter(s) measure the electric current of another device, battery, or sensor. A variety of settings are customizable using the iMonnit® Rest API. Values for the voltage meter(s) are stored on the iMonnit database. However, a number of actions or "endpoints" are adjustable through the API/UI. This document will primarily focus on the "SensorSetCalibration" and "SensorSetThreshold" endpoints.

All sensor profiles have different numerical application identifiers (ApplicationID). This list of application identifiers can be reviewed by calling the "GetApplicationID" endpoint. It can be found under the Lookup Section of the API page.

There are two main categories of sensor profiles; measurement sensors and trigger sensors. Voltage Meters fall into the measurement category, because they measure the fluctuation present in an electric current. Values for sensors can be individually adjusted, but understanding the Base API Url makes it easier to configure multiple sensors at one time.

It is recommended that developers have a general understanding of Monnit sensor's Standard and Aware States to implement configuration changes to the iMonnit Rest API. Sensor profiles report in two states:

The **Standard State** provides the sensor with the longest available battery life while performing its required activity.

The **Aware State** allows the sensor to utilize more power if needed when certain conditions are met. These conditions will typically coincide with the application the sensor is being used to monitor.

For example: While monitoring the voltage for a battery, you might want to set a specific range or threshold you want readings to be between so the battery doesn't overheat. This would be the standard state of the sensor. If the preset maximum threshold for voltage is eclipsed, an immediate response is sent by the meter to your network. That is an alert state. Configuring the profile specific values allows you control over how (and when) the aware state is triggered.

Base API Url Explained

The Monnit Rest API End-Point commands may be accessed by going to the following link: https://www.imonnit.com/api.

The base API Url should follow the proceeding format:

Protocol://Host/ResponseType/Method/AuthorizationToken?Parameters

The online API only supports https for 256 bit ssl encryption or http for non-encrypted communication and is hosted by iMonnit. Response type must be xml or json. The method will be the method to call and the AuthorizationToken identifies you to the server.

Authentication

An Authorization Token is required for the base url. To get you token, find "GetAuthToken" in the Authentication Section. Authorization Tokens are created using your iMonnit username and password. Entering these in the fields under **Get Auth Token** and selecting the button will return the token. The Logon Result will return the message: "Success." This will remain active until your iMonnit password is changed.

Check your authorization token by selecting the "Logon" option and replacing the authorization token in the example with your token. You may also choose to update or reset your password in this section.

Voltage Sensor Configurations

Sensors in the Measurement category generally have more complex readings to acquire and therefore have more required values and are more specific in their configurations. Measurement sensors typically do utilize the threshold portion of the sensor configurations so the API call to configure those values will be covered in the second half of this section.

Sensor Set Threshold Endpoint

The "SensorSetThreshold" endpoint sets the values for the sensor alert states. All fields need to be filled in order for the set threshold to be effective. It is recommended that you research the maximum and minimum values for your area before placing the sensor.

Sensor Set Threshold Parameter List:

Parameter Name	Parameter Type	Parameter Description
sensorID:	Integer	Unique identifier of the sensor
measurementsPerTransmission:	Integer	Number of times per heartbeat the thresholds are checked.
minimumThreshold:	Integer	Minimum Threshold
maximumThreshold:	Integer	Maximum Threshold
hysteresis:	Integer	Hysteresis applied before entering normal operation mode

Measurements per Transmission: This is a number indicating the frequency per heartbeat that maximum and minimum thresholds are checked during an alert state. The heartbeat is then divided by the entered value to get the measurements. The minimum entry is 1. Maximum

assessment frequency is the formula: x=heartbeat/measurementsPerTransmission value or 1 second, whichever entry is higher. **Example:** 60 min heartbeat and 30 measurements per transmission will result in the sensor comparing actual reading against thresholds every 2 minutes.

Minimum Threshold: Lowest allowable voltage. The sensor will enter an aware state if the voltage dips below this number.

Maximum Threshold: If measured voltage reading is above this value, the sensor will enter the aware state.

Hysteresis: For the sensor to go from the aware state to the standard state it must re-enter the configured thresholds by this margin before it will return to the standard state. This prevents the sensor from oscillating between standard and aware states when observed readings are right at the configured threshold value.

Permitted Values/Ranges

Measurements Per Transmissions: 1-250

Minimum Threshold: 0

Maximum Threshold: 3368601850

Hysteresis: 0 - 250

Default Values

Measurements Per Transmissions: 1

Minimum Threshold: 0

Maximum Threshold: 3368601850

Hysteresis: 0

Example

The following example will configure the voltage threshold calibration to default levels. Because this profile will modify these values internally when performing a calibration, it is not advised to manually modify these values except to set back to default values if required.

Measurements Per Transmissions: 1

Minimum Threshold: 0

Maximum Threshold: 3368601850

Hysteresis: 0

Assumptions for Example:

Sensor Number = 1234

Authentication Token = ABCDEFG

https://www.imonnit.com/xml/SensorSetThreshold/ABCDEFG=?sensorID=1234&measurementsPerTransmissions=1&minimumThreshold=0&maximumThreshold=336801850&hysteresis=0

Sensor Set Calibration Endpoint

In the "SensorSetCalibration" endpoint there are a number of parameters open for modification. The Measurement category requires all fields be filled in order to proceed. It is recommended that you call the "SensorGetCalibration" endpoint and begin filling in fields with the existing value. Then move on to adjusting fields necessary for your adjustments. In the following list of parameters, the starred (*) fields are fields that are forwarded to the Measurement category of sensors.

Sensor Set Calibration Parameter List:

Parameter Name	Parameter Type	Parameter Description
sensorID:	Integer	Unique identifier of the sensor
*calibration1:	64 bit Integer	Value used to store calibration values on sensors.
*calibration2:	64 bit Integer	Value used to store calibration values on sensors.
*calibration3:	64 bit Integer	Value used to store calibration values on sensors.
*calibration4:	64 bit Integer	Value used to store calibration values on sensors.
eventDetectionType:	Integer	Type of event detected
eventDetectionCount:	Integer	Number of events required to trigger
eventDetectionPeriod:	Integer	Time window for event count to be reached
rearmTime:	Integer	Time before event can be triggered again
biStable:	Integer	Direction of event
*pushProfileConfig1:	boolean	Set the configuration page to be pushed to the sensor
*pushProfileConfig2:	boolean	Set the configuration page to be pushed to the sensor
*pushAutoCalibrateCommand:	boolean	Set the auto calibrate command to be pushed to the sensor

Calibration 1 – 4: Field used to hold calibration or other configurable parameters used by the sensor firmware to acquire accurate readings and or control sensor state.

Event Detection Type: Determines which value the sensor will report as its aware state. There are three supported options (True/False/Change). “Change” means that if the reading is different than the previous reading, it will be marked aware.

Event Detection Count: This field is utilized with the Event Detection Period parameter to create a software filter to adjust sensitivity and prevent false readings. This is the number of readings the processor must reach within the detection period before it is qualified as an actual event.

Event Detection Period: This field is utilized with the Event Detection Count parameter to create a software filter to adjust sensitivity and prevent false readings. This is the time window the processor uses to observe readings before it is qualified as an actual event.

Rearm Time: Once an event is set, this is the amount of time in seconds the sensor is deactivated to prevent unintended jitter from qualifying as multiple events.

Bi-Stable: Sets if the observed reading is bi-stable or not. The voltage sensor is set a certain way. (0=Not Bi-Stable, 1=Bi-stable).

Push Profile Config 1 and 2: Determines if the values saved are sent to the sensor. In almost every case when you make changes you will need to set this to true. The only exception would be if you are working between multiple systems, such as iMonnit portal and iMonnit Enterprise. If you are moving a sensor from one platform to the other, it may be useful to set these values in the new platform to match the old platform without needing them to be sent to the sensor. In measurement sensors this field determines if the Threshold page will be sent to the sensor or not.

Push Auto Calibrate Command: Sets a specific Action Control Command to the sensor often used to calibrate the sensor. There is no general use of this field it is always profile specific and not used in all profiles.

Default

Calibration 1: 504205831

Calibration 2: 504205831

Calibration 3: 504205831

Calibration 4: 65596

Event Detection Type: 0

Event Detection Count: 15

Event Detection Period: 100

Rearm Time: 1

Bi-stable: 1

Push Profile Config 1 and 2: False

Push Auto Calibrate Command: False

Example

The following example will outline one general use with an example for configuring a Voltage Meter back to default calibrations. Because this profile will modify these values internally when performing a calibration, it is not advised to manually modify these values except to set back to default values if required.

Calibration 1: 504205831

Calibration 2: 504205831

Calibration 3: 504205831

Calibration 4: 65596

Event Detection Type: 0

Event Detection Count: 15

Event Detection Period: 100

Rearm Time: 1

Bi-stable: 1

Push Profile Config 1 and 2: False

Push Auto Calibrate Command: False

Assumptions for example:

SensorID = 1234

AuthToken = ABCDEFG

Full URL from example:

https://www.imonnit.com/xml/SensorSetCalibration/ABCDEFG?sensorID=1234&calibration1=504205831&calibration2=504205831&calibration3=504205831&calibration4=65596&eventDetectionType=-0&eventDetectionCount=15&eventDetectionPeriod=100&rearmTime=0&biStable=1&pushProfileConfig1=false&pushProfileConfig2=false&pushAutoCalibrateCommand=false