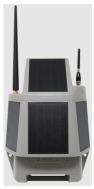

intellisense SYSTEMS AWARE Flood Sensor User Guide

Contents

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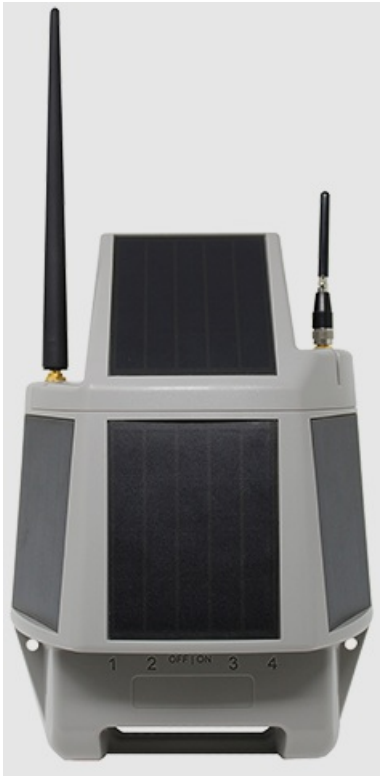


OPERATING THE AWARE FLOOD SYSTEM

The AWARE Flood System was designed with simple commands and an open architecture that will work with nearly every existing network or platform. This document explains the commands, initialization, and website navigation at **https://flashflood.info** so that users can set up their AWARE Flood System and access their data within minutes.

AWARE Flood Commands

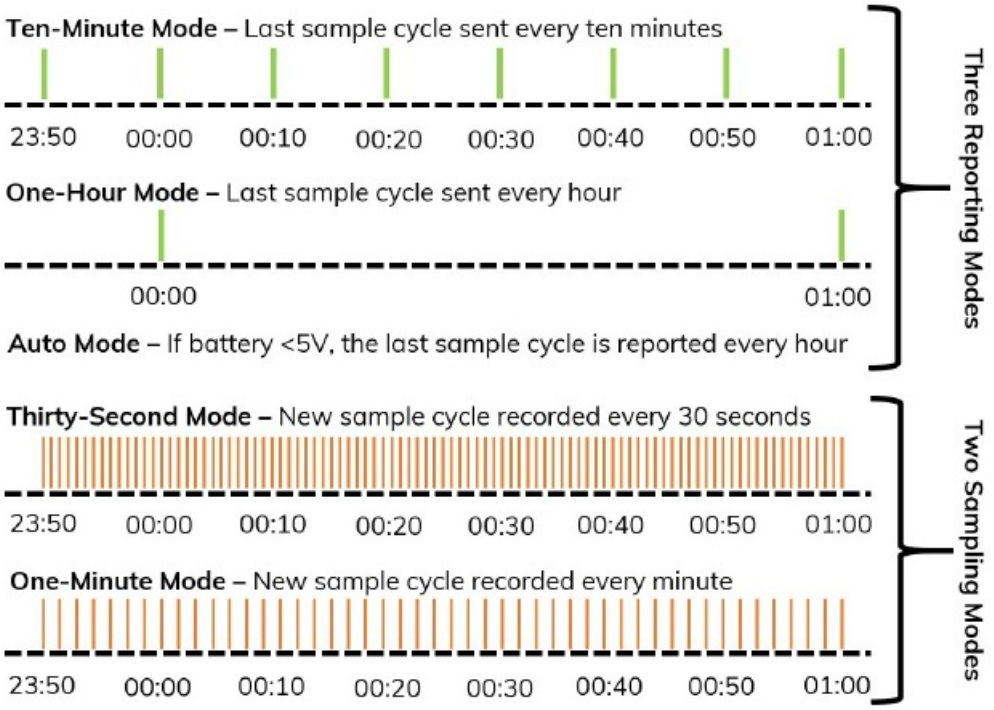
The AWARE Flood Node can be remotely configured and commanded via two-way cellular LTE-M communication. Below is a list of all the commands that the unit can receive:

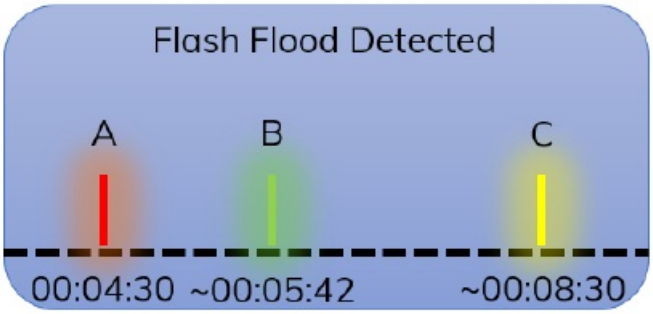
Command Parameter		Description
1	Depth Detection Thresholds	§ Range: 2 – 508 in § Allows the customer to set three independent water level thresholds. Activation triggers the unit to send immediate notification and data packet up detection.
2	Set Water Level Rise/Drop Rate Thresholds	§ Range: 0.01-152.5 in/min § Allows the customer to set independent thresholds based on water level rise and fall rates. Activation triggers the unit to send immediate notification and data packet up detection.
3	Reporting Mode	§ Auto reporting mode (Switches to Slow Mode on low Battery) § Fast Mode (10-min) § Slow Mode (1-hr)
4	Sampling Mode	§ 30-second mode § 60-second mode
5	Saltwater Adjustment	Applies appropriate calibration factor for saltwater/freshwater
6	Image Request	Request an image on the next scheduled data report § *Future upgrades will allow users to make the AWARE Node prioritize images and send the image immediately upon request
7	GPS Update	Request a GPS location update on the next scheduled update (0600 or 1800 UTC)
8	Reboot Command	§ If needed, the customer can reboot the AWARE Flood Node remotely
9	Set Calibration Value	§ Allows the user to customize the calibration value ±6.35 mb
10	Imaging Modes	§ Triggered Imaging o Depth Detection Imaging o Rise Rate Imaging o Drop Rate Imaging § High-Resolution Imaging

AWARE Flood Timing Diagrams

The AWARE Flood Node is capable of three reporting modes and two sampling modes. In addition to these reporting modes, if any of the user-defined alarm thresholds have been met, the system will report immediately. By default, the AWARE Flood Node will report in an automated mode to preserve power and maximize operation during extended weather events that prevent the unit from solar recharge. In auto mode, the data will be reported every 10 minutes when the battery voltage is 5 V or greater, and every 1 hour when the battery voltage is 5 V or fewer. Both depth detection and rise/fall rate alarms can occur in any sampling or reporting mode. Upon detection of an alarm, the unit will send data immediately. If the water-resistant camera module is installed, then the unit will capture an image of the alarm state and send the image packet following the data packet. A diagram of the

reporting and sampling timing, as well as the flash flood detection timing, is shown in Figure 1.

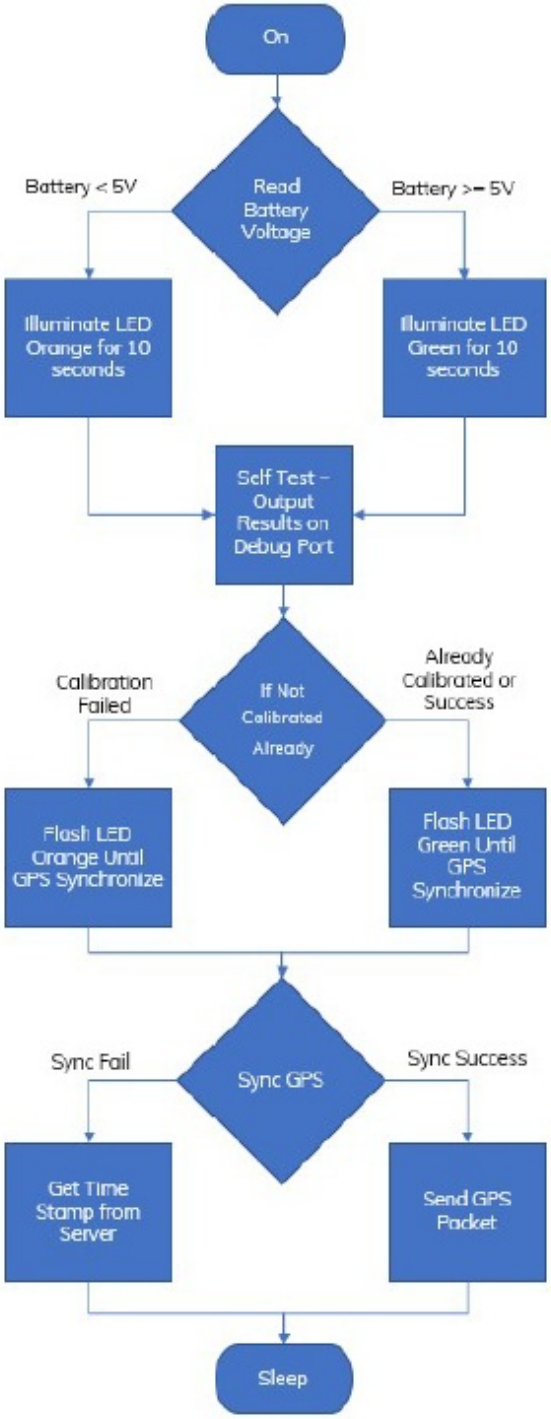




1. Water Level Rise Rate Threshold Triggered
2. Email/Text Notification Received
3. Image Displayed (if Camera Installed)

AWARE Flood Initialization Sequence

Before turning on the AWARE Flood Node, please ensure that all sensors/modules are connected to the main node. On start-up, the node will automatically complete the following functions:



1. Establish configuration (initialize camera, sensors, communications)
2. Calibrate the Water Level Pressure Sensor for water level measurement (sensor must be plugged in)
3. Inform the user if the battery is fully charged
4. Synchronize the global positioning system (GPS)

Following these functions, the node will go into sleep mode until the next scheduled sample cycle. A flowchart of the initialization sequence is provided in Figure 2.

SOFTWARE CONTROL FOR THE AWARE FLOOD SYSTEM

The AWARE Flood System integrates into existing software by utilizing a direct connection via the standard TCP/IP protocol. This protocol is an open standard utilized by most Internet-based data servers. In addition, the code and packet structure with integration instructions can be provided to integrate sensor data into almost any existing server network.

Data and Software Accessibility
The AWARE Flood hardware comes preconfigured with the cellular modem directed to send data to the Intellisense Systems server at **https://flashflood.info**. This server, along with one user account, is free with the purchase of the

AWARE Flood System.
AWARE Flood is also capable of being directly pointed to any server IP address and port destination and has been fully integrated and tested with the following third-party software platforms: To configure the third-party software to receive data from your AWARE Flood sensors/modules, contact their respective technical support for instructions on how to configure the software and ports to begin receiving this data.

Data Destination Flexibility
The AWARE Flood hardware can be locally pointed to any destination. This can be accomplished by changing the unit's destination IP address and port number via the **https://flashflood.info** webpage or a physical connection using the optional USB serial debug/charging cable. As mentioned earlier, the AWARE Flood hardware comes preconfigured to send data to the Intellisense Systems server at **https://flashflood.info**. The following sections will explain how to access and navigate this website so that users can stay up to date on the operation and alerts from the AWARE Flood System.

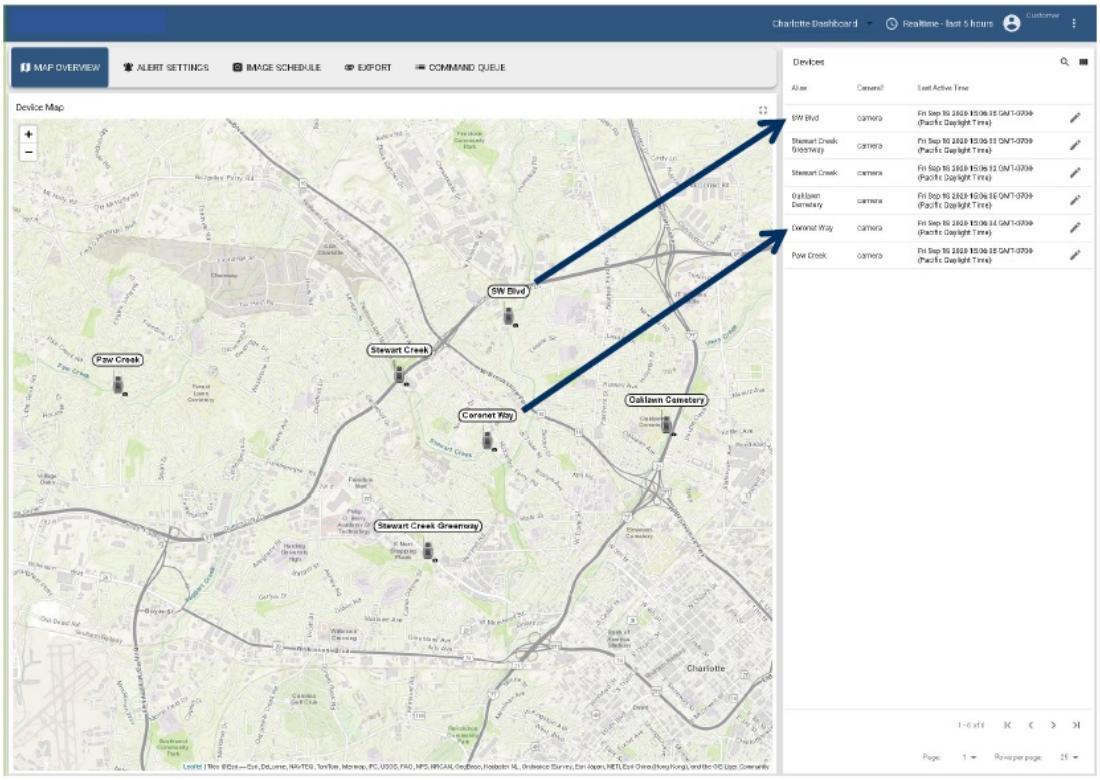
Accessing the Website
Data from the AWARE Flood System is available at the following address **https://flashflood.info:8080**
Requesting a user account to access the data from the website is required. A user account only has access to data from the AWARE Flood System purchased by that user. Users will be able to request accounts through the Intellisense Systems helpdesk support.

Navigating the Website
After logging into the user account, the main dashboard is displayed on the screen (as shown in Figure 3 below). This screen is organized by five tabs towards top of the screen which are used for the overall network management.

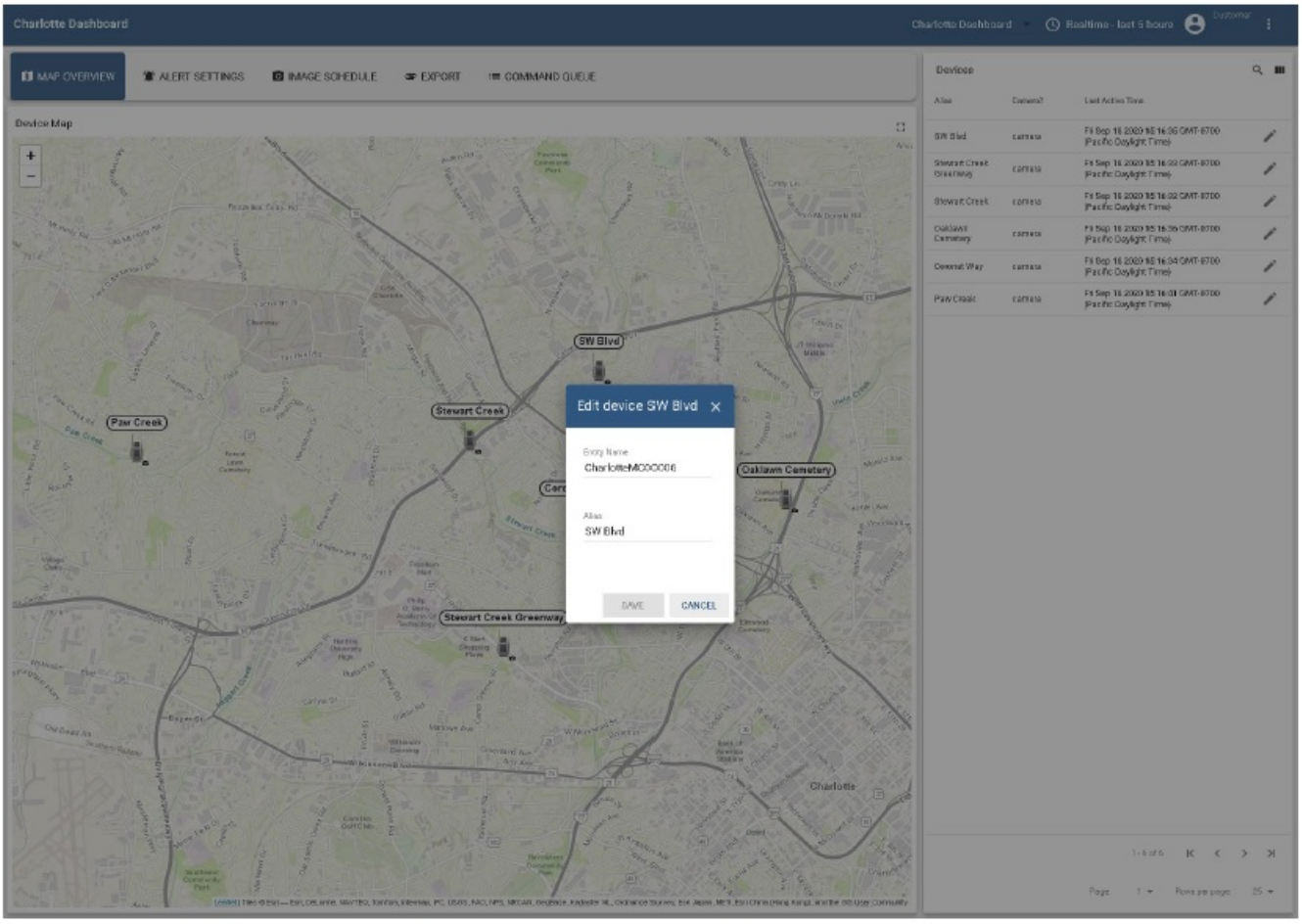
MAP OVERVIEW

This tab shows a map with the locations of AWARE Flood System on the left, and a list of all nodes on the right. The map can be zoomed in or out, and when the mouse is not on a unit icon, the map can be moved left to right or up and down.

NOTE: Icons on the map that appear faded out are units that have recently experienced an extended period of inactivity. Units on the list at the right side in RED font are low on power and may not report for an extended time period.



Clicking on the pencil icon next to each unit in the Devices panel will open the “Edit Device” window where users can change the organization’s name and the device’s alias.



ALERT SETTINGS

This tab allows the user to set up destination SMS and email addresses. Each device assigned to the user is prepopulated to this tab. For each desired unit check the “Alert Enabled (Input)” check box and insert the desired destination into the “Alert Email(s) (Input)” text box. Once these changes have been made click the “Change Alert Settings” button at the bottom of the list.

NOTE: If multiple destinations are desired, simply insert a comma in between each destination. You may also configure the unit to send SMS text messages by providing inserting the full phone number along with the correct carrier’s SMS gateway domain. Below are a few examples of the most used SMS gateway domains in the US.

AT&T – [insert 10-digit number]@txt.att.net Google Fi – [insert 10-digit number]@msg.fi.google.com T-Mobile – [insert 10-digit number]@tmomail.net Verizon – [insert 10-digit number]@vtext.com

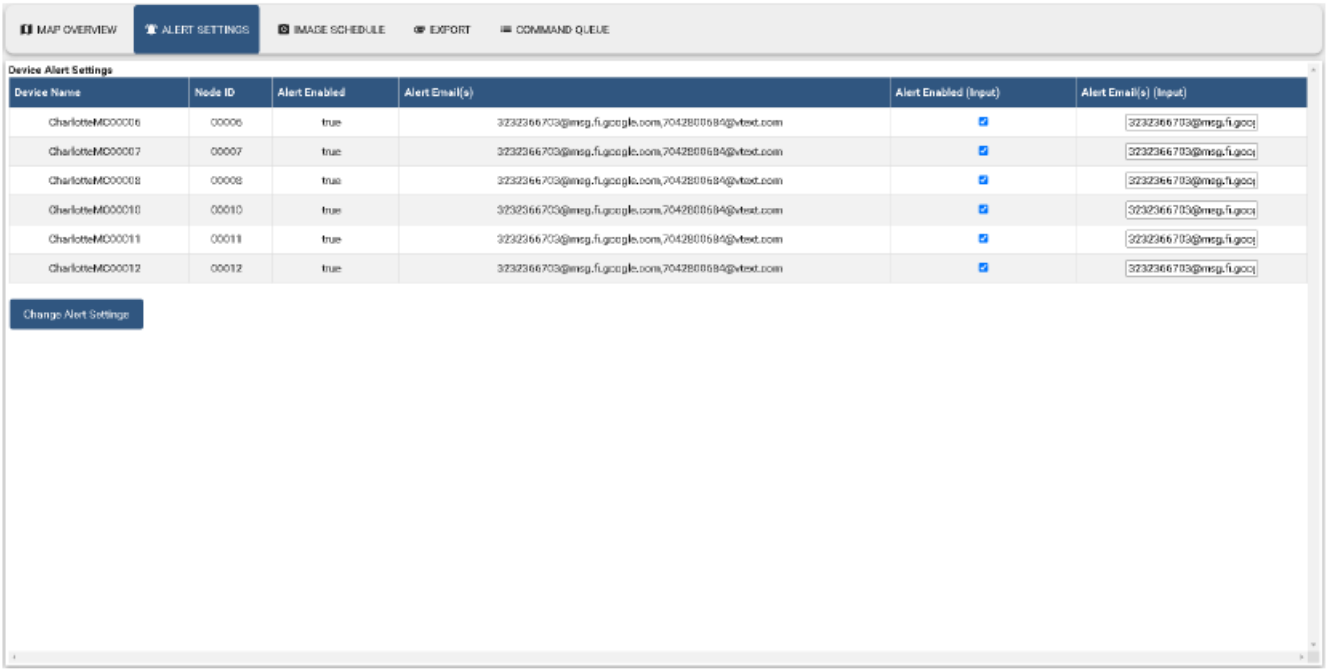
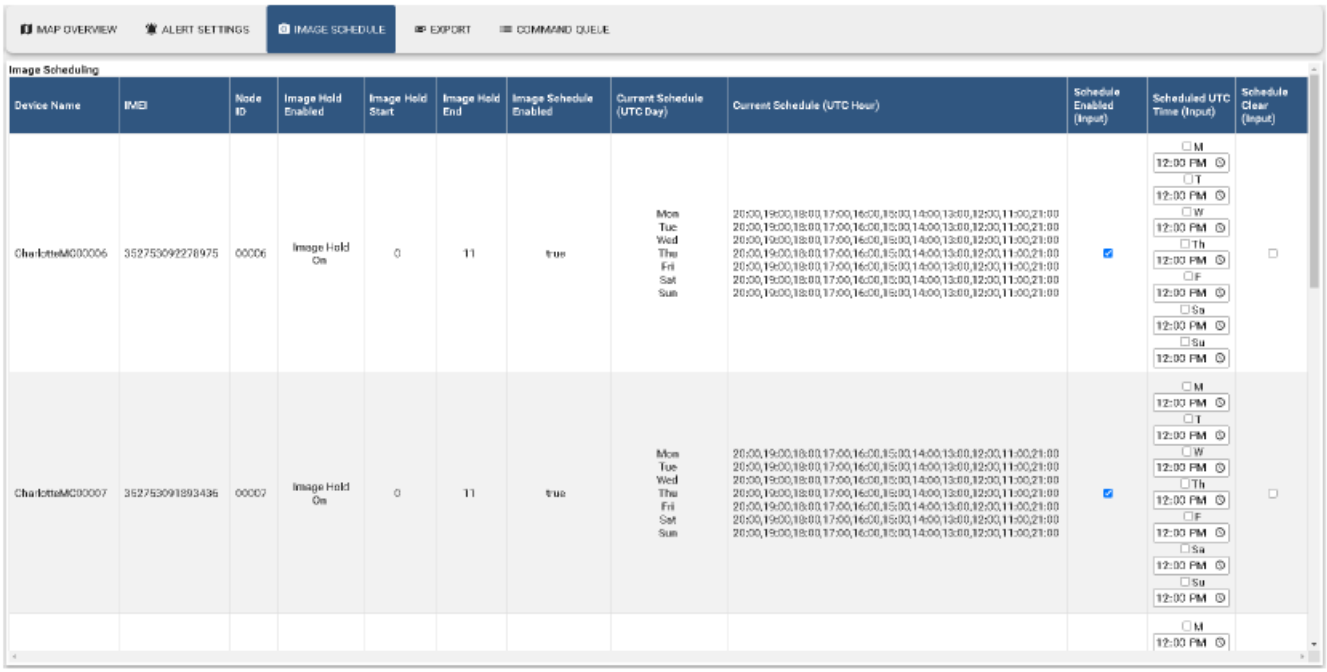


IMAGE SCHEDULE

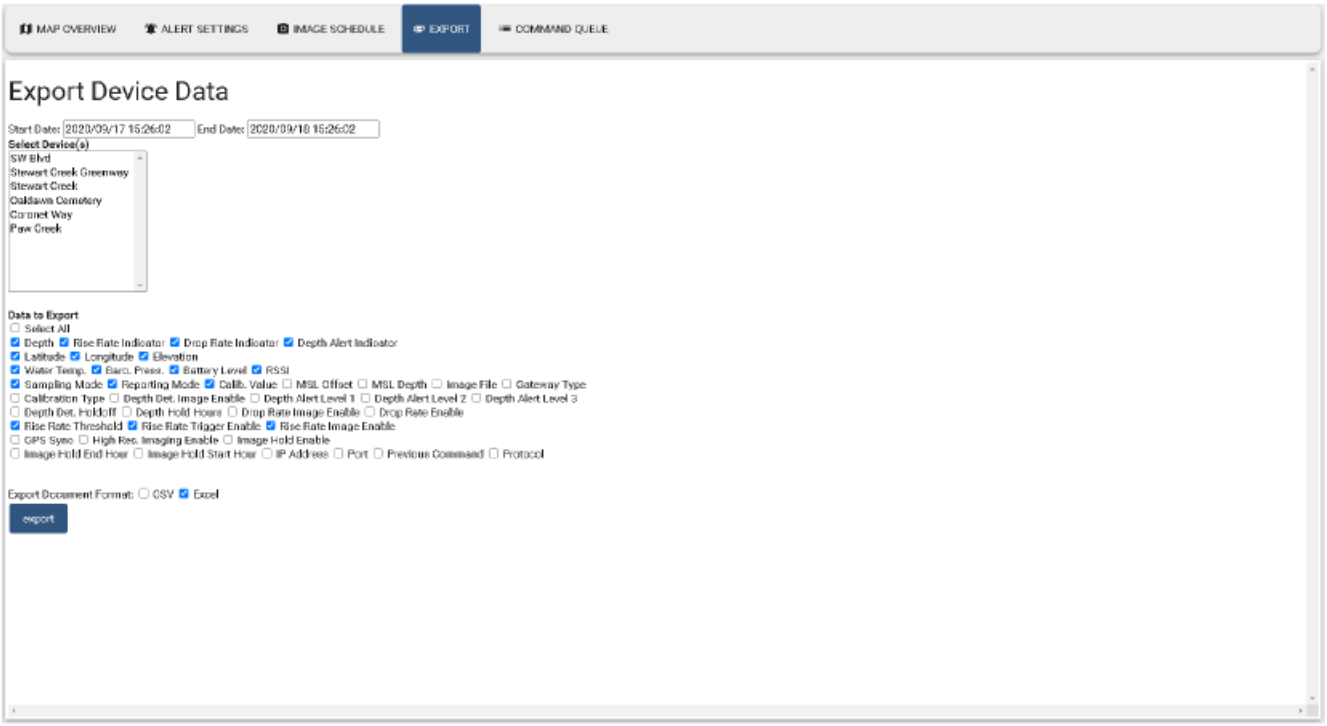
This tab is for units that are equipped with a water-resistant camera module. It allows the user to schedule specific days and times for the unit to capture an image. It also enables the unit to visually verify conditions outside of events. Each device assigned to the user is prepopulated to this tab. For each desired unit, check the “Schedule Enabled (Input)” check box and use the drop-down boxes to set the day and time (UTC) of the desired schedule. If you would like to reset the days/times previously set, select the “Schedule Clear (Input)” check box. Once the desired changes have been made, click the “Set Image Schedule” button at the bottom of the list.



EXPORT

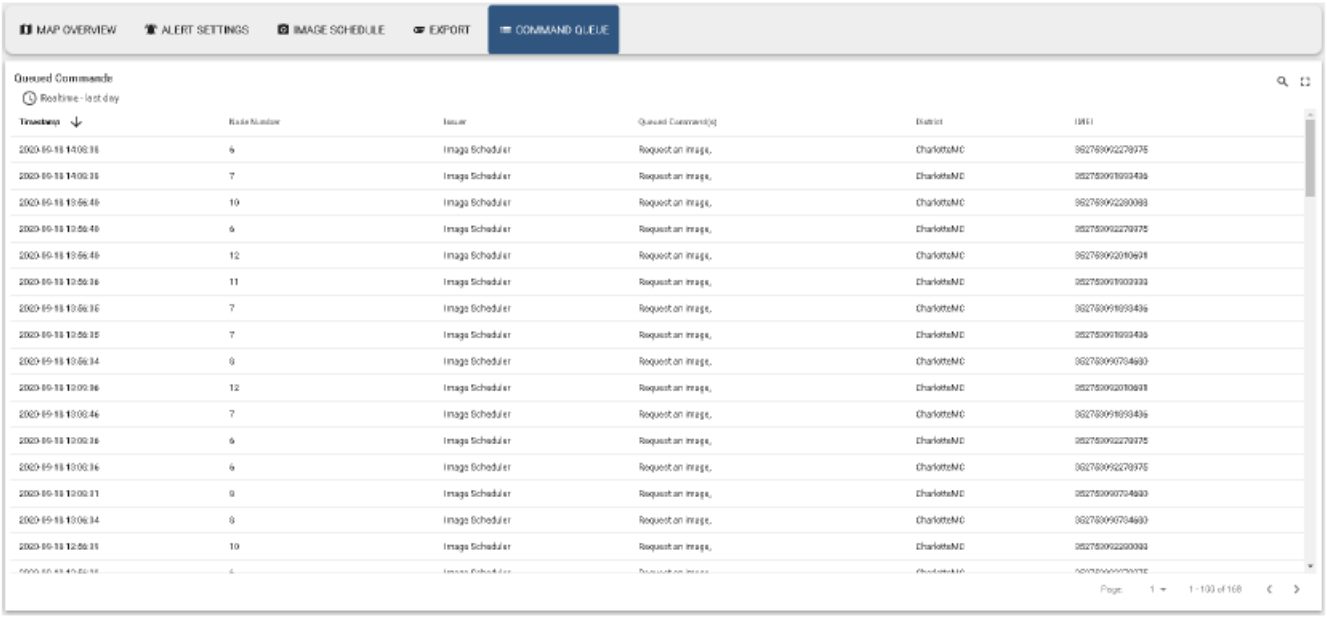
This tab allows the user to export data for desired units to either a .csv or Excel spreadsheet. Follow the following steps to access the historical data:

1. Set the time constraints of the desired data
2. Select the unit from the list
3. Select the desired data points
4. Select the file format
5. Click “Export”



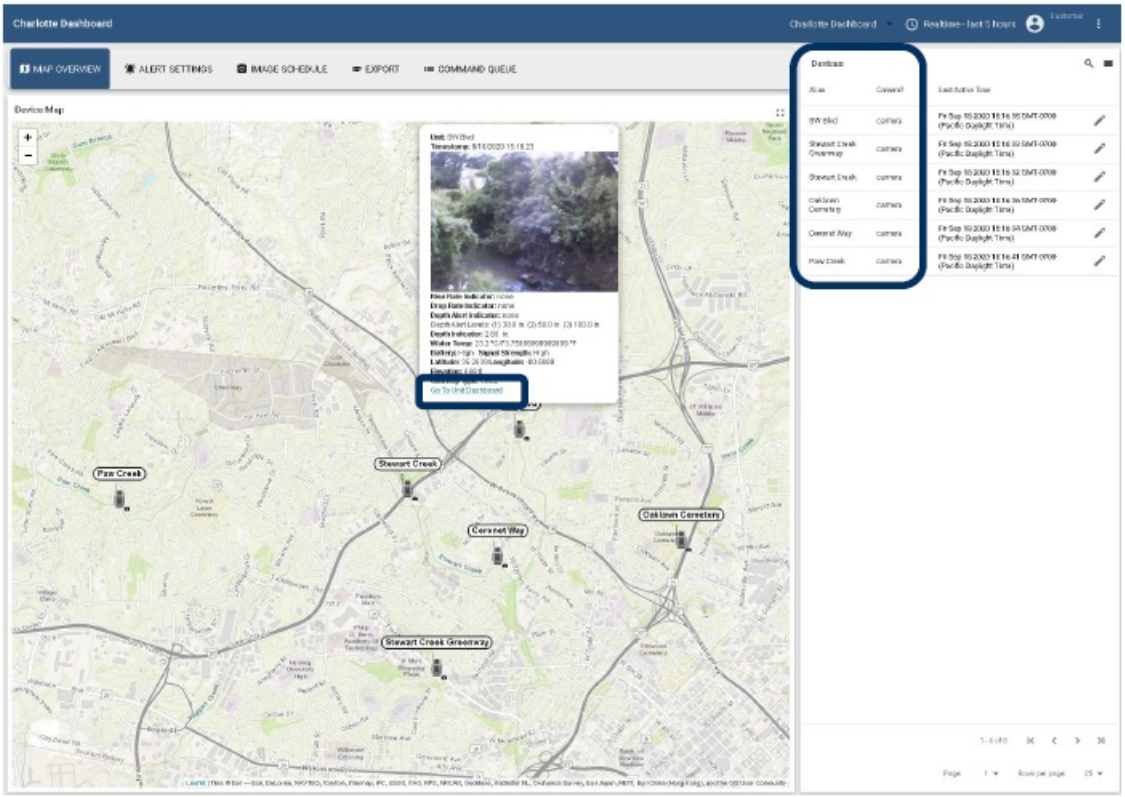
COMMAND QUEUE

This tab allows users to see the commands that have been requested of each unit. The default window is set to the last day. You may change the window by clicking on the clock icon near the top of the tab. To view the data easily, the user may click the top of each column to sort the entries in ascending or descending order.



Accessing the Unit Dashboard

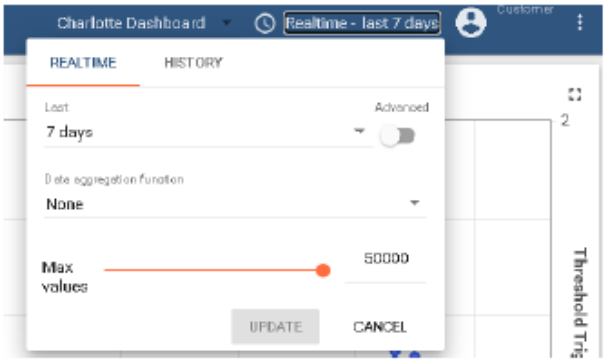
Clicking on an active icon will pop-up a preview window with the current data (as shown in Figure 3). Clicking on “Go To Unit Dashboard” or on any item from the list to the right will make the website navigate to the Unit Dashboard, which displays complete details of the unit.



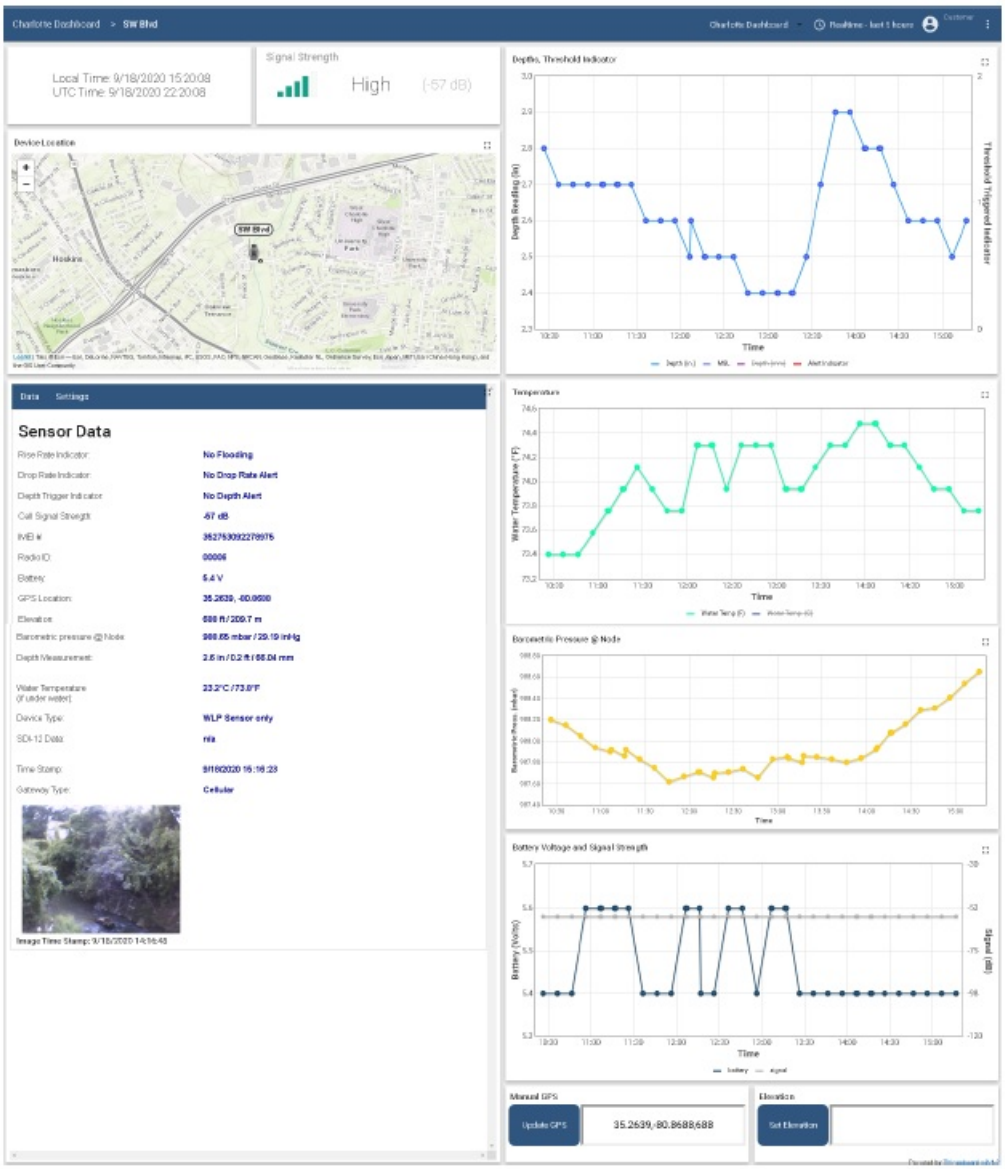
The Unit Dashboard shows the following information:

1. The signal strength of the cell modem
2. The water depth graph both in inches and in feet (NAVD88 adjustable)
3. The current reporting mode interval
4. Battery voltage
5. Pressure calibration
6. An image of the site (if requested with the optional water-resistant camera sensor installed)

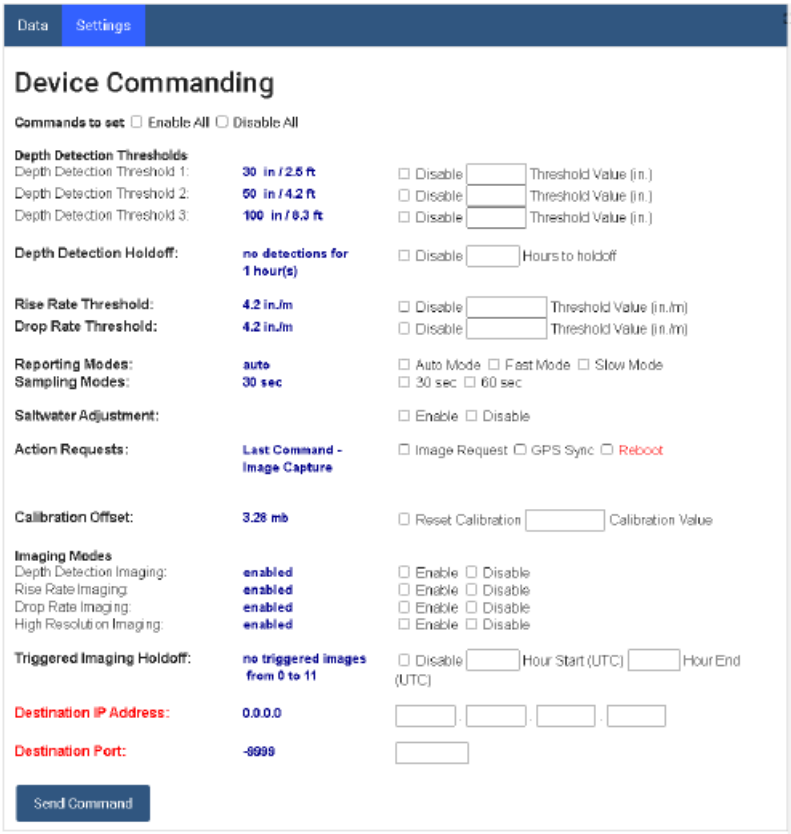
NOTE: The user may change the amount of time displayed in the historical data graphs by clicking on the clock icon. The user can zoom into a specific time frame with a simple click and drag around the desired data point. From the Unit Dashboard, the user can request that the unit take an image and update the GPS coordinates. The image will appear in the pop-up preview window and dashboard view when available.



Mean Sea Level (MSL) Setting
The Mean Sea Level (MSL) setting allows the user to know the exact water height relative to other structures with a known elevation from sea level. To enable this function, a surveyed WLP sensor elevation must be entered into the Elevation text box at the bottom of the unit dashboard, (as shown in the image below). Once the elevation is entered, press the “Set Elevation” button next to the text box.

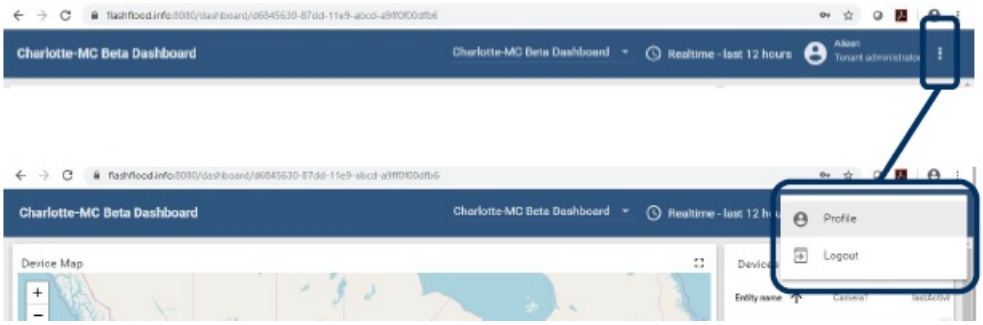


The Unit Dashboard also enables the user to make changes to the unit settings. These settings are listed on page 1, along with manual overrides of both GPS location and elevation. For more information, please see page 1.



NOTE: Any parameter that appears in RED text or showing “-9999” is NOT reporting correctly. If you experience this issue, please check the connection point of the unit. If this does not resolve the problem, please contact Intellisense Systems for further assistance.

The user can update the email address and account password by opening the menu at the top right of the page and going to “Profile.” The user’s email address should be current so that notifications of website maintenance and other pertinent updates can be quickly and efficiently communicated to the right person. The user can also log out by opening the same menu (as shown in Figure 7 below).



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Documents / Resources

	intellisense SYSTEMS AWARE Flood Sensor [pdf] User Guide AWARE, Flood Sensor, AWARE Flood Sensor

References

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- HOME - AWARE Flood Software Management
- Intellisense Systems, Inc. - Innovative, End-to-End Technology Solutions
- flashflood.info:8080