

# OWNER'S MANUAL 193111-300

Issued May 2021

**IMPORTANT:** Read these instructions before installing, operating, or servicing this system.



**DO NOT DESTROY**

AMETEK/PRESTOLITE POWER , TROY, OHIO 45373-1099, U.S.A.



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# INTRODUCTION

## Getting The Application

This manual is for the AMETEK Prestolite Power PCInsight application. The application is available online at:

[www.prestolitepower.com](http://www.prestolitepower.com)

PCInsight is a program that allows the user to communicate and retrieve data from AMETEK Prestolite Power Chargers and Battery Modules. It uses a USB plugin device that communicates with Wireless Battery Identification Devices, Evolution chargers, and Eclipse II Plus chargers.

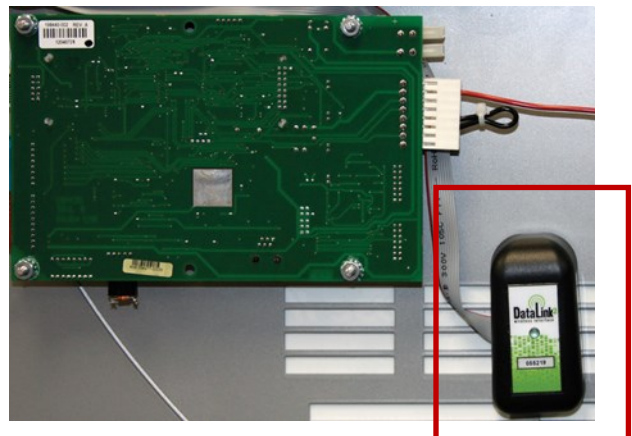
This software has powerful tools to help the user understand each piece of equipment and the facility as a whole.

## Equipment Identification

Wireless Interface Device 2.0  
WID2  
199603

Wireless Battery Identification Device  
WBID  
198900C

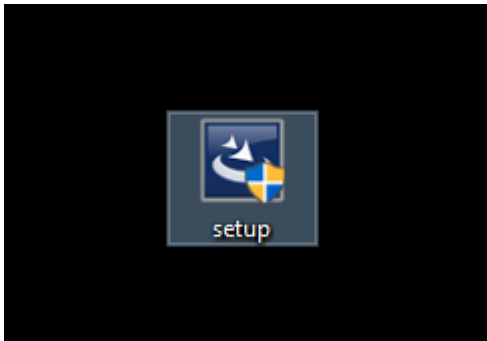
Charger Interface Device  
CID  
198389



# INTRODUCTION

## Installing the Application

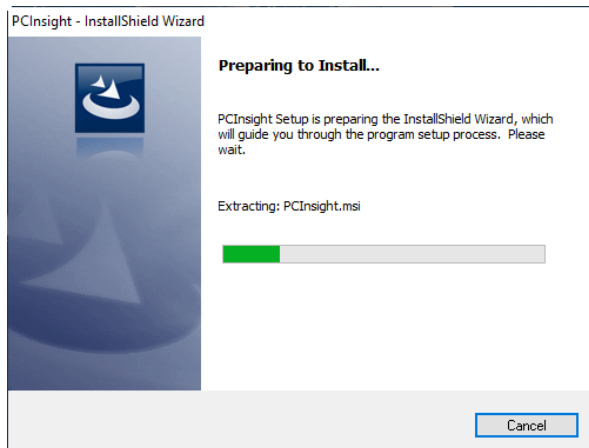
To install the application, download it from the Prestolite Power website.



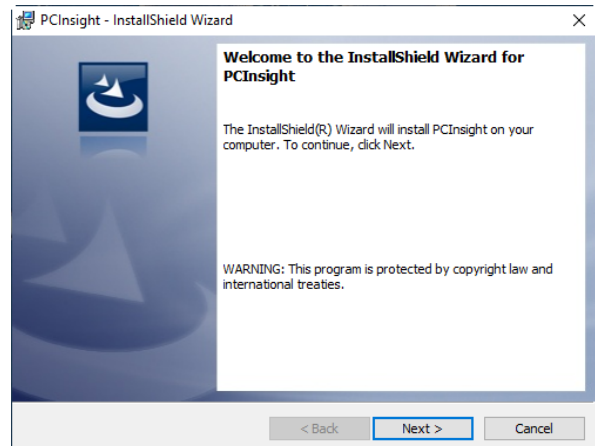
Click the setup icon in the downloads folder or open the file in your browser to start the installation process.

There may be a Windows User Account Control prompt that will ask the user to verify this file is ok to run. Click Yes or OK to continue.

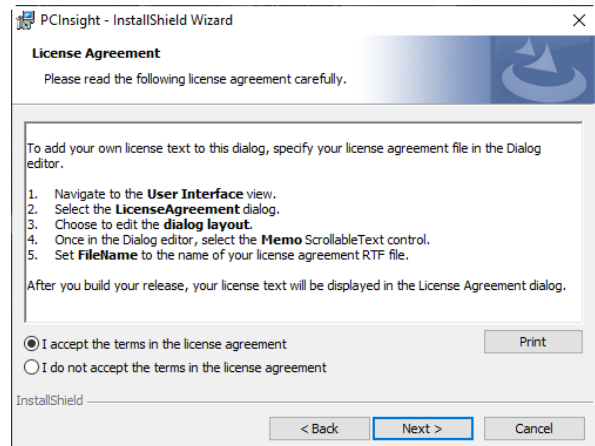
It will extract the file.



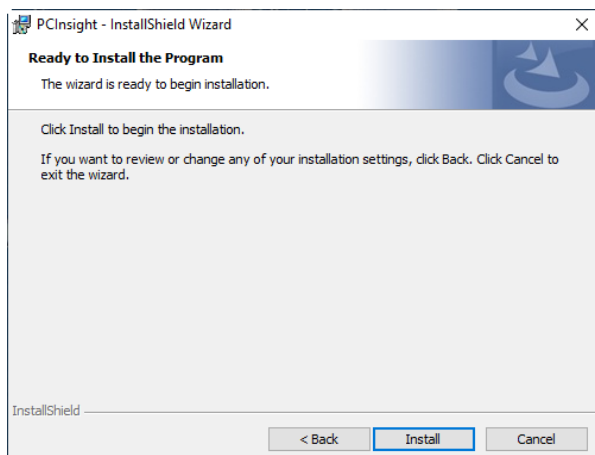
Progress through the pages.



Click Next

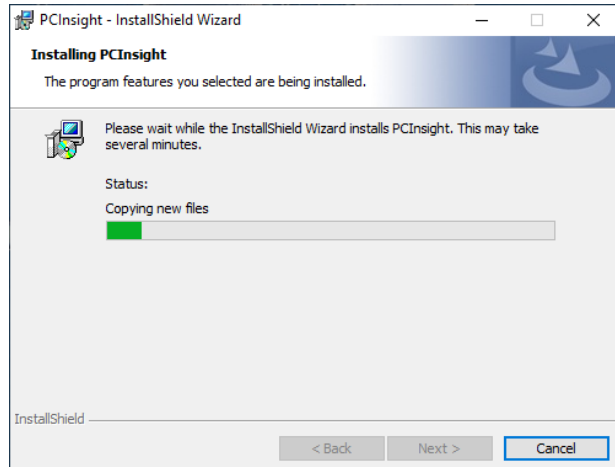


After reading the User License Agreement, accept them and click Next

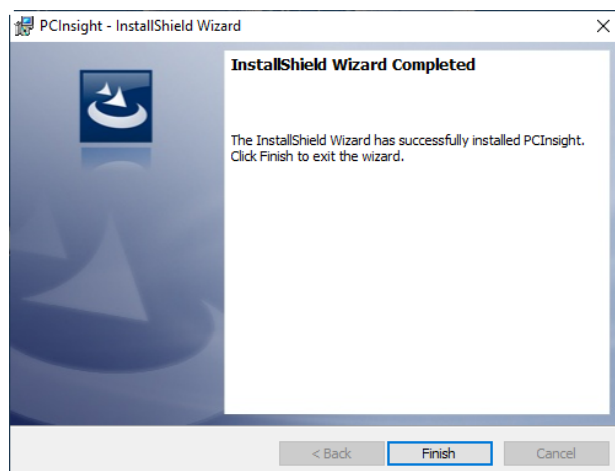


# INTRODUCTION

Click Install



The Application will load on the PC.

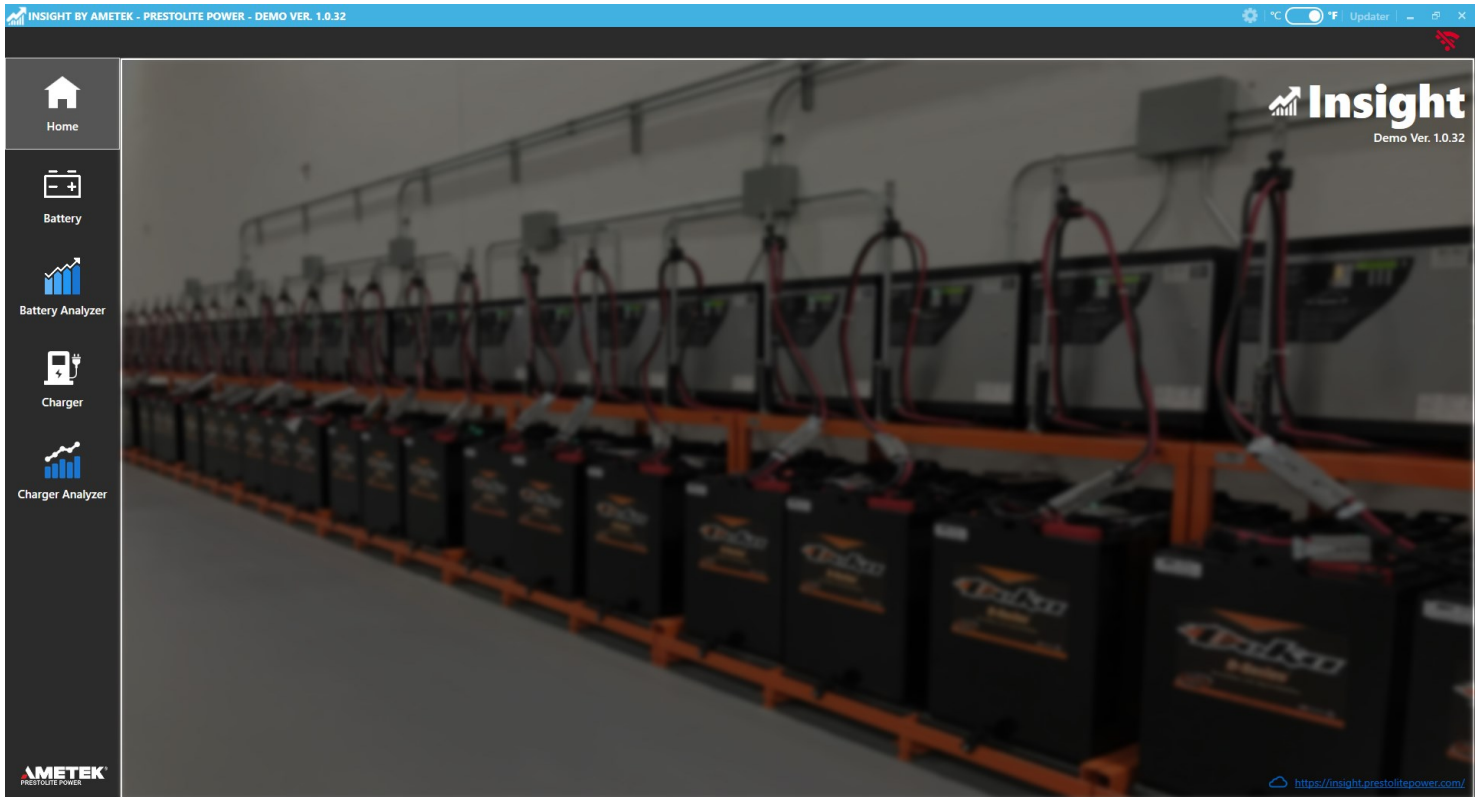


The install is complete. Restart the PC and PCInsight will be ready to use.



The PCInsight icon will look like this on the desktop.

# GETTING STARTED



## HOME SCREEN

The PCInsight Home screen is the landing page for the application.

The bar along the top has a couple of settings and features that can be accessed at any time.

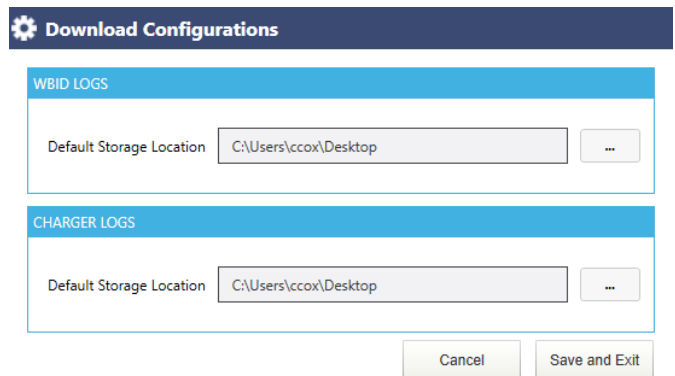
The top left will show the software revision.

## SETTINGS/OPTIONS



The top right bar has a wired updater tool, a temperature unit toggle switch and a little gear with a few settings.

This menu is where the default save location is for charger and battery module downloads.





# GETTING STARTED

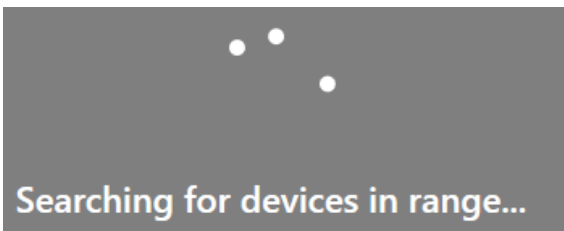
## WID 2

The Wireless Interface Device, WID, is the USB device that allows the computer to connect to the modules.

This is the second version of the WID and it has two different types of wireless transmitters. One will do all older AMETEK Prestolite Power products, and the other will work with the new devices.

Only one WID2 can be connected on a single network at a time.

When you plug in the WID2, the program will sync to it. Selecting Batteries or Chargers will activate it.



The program will let the user know when the WID2 is establishing a network connection.

### Device Error



No WID was detected. You need to connect a WID in order to search for batteries.

If the WID2 is not detected, it will give the user this error.

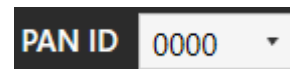
## LEGACY/INSIGHT MODE



The top right of the battery or charger screen has a toggle switch called WID Mode.



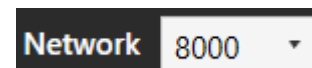
Insight Mode works with all new products. It is a more stable network than the older versions of Datalink.



Network ID is 0000 to 0020. Any of these can be used to separate batteries or chargers on different networks



Legacy Mode is used to communicate with the older Prestolite Products.



Legacy Mode networks for WBIDs are 7000, 8000 and 9000. Site Probes are 1111. Eclipse II Plus Chargers default to 1234 but can be set in the control to any four digit number.

# BATTERY SCREEN

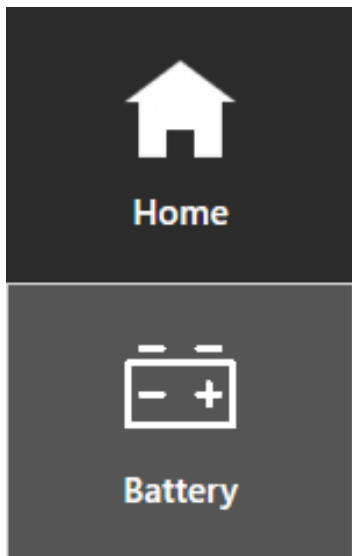
## CONNECTING TO WBIDS

The screenshot shows the 'NEW (WBIDs)' section of the application. It features a 'Summary Lifetime Information' table with the following data:

Select	Batt. ID	Install Date	Batt. Model	Batt. SN	WBID SN	Calibrated	Cells	Amp Hours	Avg. Days	Network	Firmware	Actions
<input type="checkbox"/>	888870	02/26/20	NA	NA	1B4986	✓	18	788	0	3E41	03.10.00	[Location] [Settings] [Play] [Refresh] [Download]
<input type="checkbox"/>	888867	02/26/20	NA	NA	1B4985	✓	24	888	0	6983	03.10.00	[Location] [Settings] [Play] [Refresh] [Download]
<input type="checkbox"/>	888857	02/26/20	NA	NA	1B49A0	✓	24	888	0	8866	03.10.00	[Location] [Settings] [Play] [Refresh] [Download]

Below the table are two buttons: 'Batch Logs Download' and 'Batch Firmware Update'.

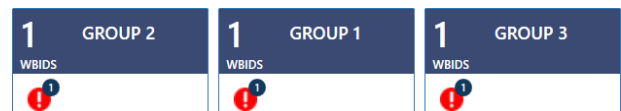
The WBIDs data and live readings can be accessed from the Battery Screen. Select the Battery icon on the left side of the application.



When the WID2 is connected, the battery screen will populate WBIDs that it finds on the network.



The network Mode and ID is in the top right corner. This is always where it will be found in PCInsight.



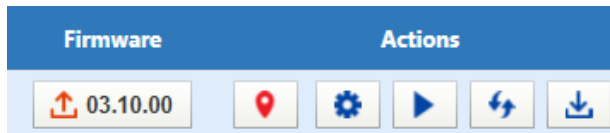
The batteries on the same network can separate themselves further by creating groups. Select the desired group by clicking the group above the populated list.

# BATTERY SCREEN

Under the Group boxes is a line showing the selected group and three view settings. Information is default.

## Summary Lifetime Information

The information screen will show basic identifier information, calibration status, network, as well as a series of buttons with different functions.



Under Firmware is a button indicating the current firmware revision of the WBID. Pressing this button will start a single WBID update.



The red pin icon is a “Find Me” tool. The WBID will flash a different sequence when this is selected. It will become solid red for a short period.



The gear icon is to access the settings of the WBID. The settings screen will be covered in the next section of this chapter.



The play icon is the Real-time values. Select this to see the battery voltage, current and temperature in real time.



This icon is a refresh icon. The WBID will reload values and display changes made to settings.



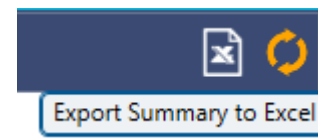
This is the Download button. Selecting this will initiate a single WBID download for this device. Downloading WBID records will be covered in the last section of this chapter.

## Summary Lifetime Information

The Summary page will show a full list of readings that were taken by a WBID.

## Summary Lifetime Information

The Lifetime page has fewer items than the Summary page but it is ideal for tracking the most important readings that a battery needs to maintain its warranty. This page was designed for that purpose.



Each page has an Export icon, located under the network ID. A populated list of WBIDs can have their Summary or Lifetime pages exported to the PC without downloading all the log files.

# BATTERY SCREEN

## Icon View

GROUP 1 (WBIDs)

888867

Summary ( Last 30 days )

Batt. ID: 888867    Install Date: 02/26/20    Batt. Model:    Details:    Batt. SN:    WBID SN: 184985    FW version: 03.10.00    Address: 6983

EBU/day		Temperature (°F)		VPC		SOC		Dry Days	Connects	EQ
0	0	83	152 <sup>!</sup>	1.26 <sup>!</sup>	1.27	NA	NA	NA	00.0	0.0 <sup>!</sup>
Average	Maximum	Average	Maximum	Minimum	Maximum	Minimum	Average	No. of days	Avg. per day	Est. EQ/week
Life Time AH			Life Time Temp. (°F)		Life Left (%)		No. of Cells	Amp Hrs.	Calibration	
99,999	99,999	1	152	80	9%			888		
In	Out	In/Out Ratio	Maximum	Average		Cell count	AH			

Update    Find Me    Settings    RTV    Summary    Download

There is also a different way to view the WBIDs. There is a list icon on the right side of the screen. Selecting this will open Icon view.

WID Mode    Insight    PAN ID    0001

AH Out	AH In/Out Ratio	% Life Left
99999	1	9

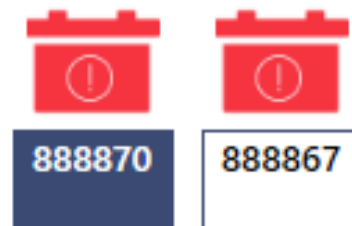
Table View



Icon View



The Icon view will show all the information on one page, giving a closer look at the selected battery.

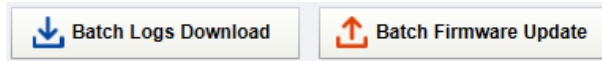


The selected battery will be highlighted blue.

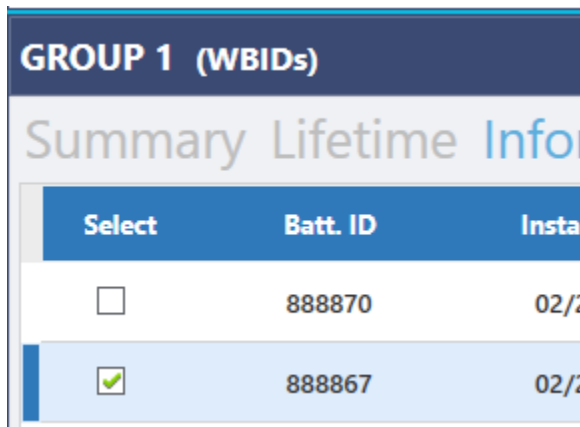
Batteries that have gone out of range will be greyed out.

# BATTERY SCREEN

There are two buttons along the bottom of the Battery Screen.



These are the batch Download and Update buttons. It will initiate the process with the batteries that have been checked in the populated list.



The checkbox is to the left of the Battery ID number on the information page. In this example, 888867 will be in the batch and 888870 will not be.

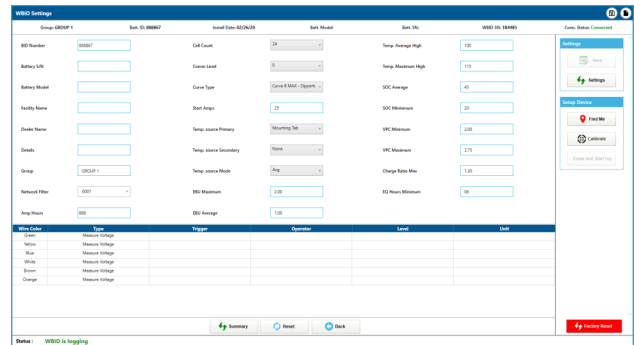
You can check the boxes of WBIDs in any group and the batch process will move from group to group when it is started.

## SETTING UP WBIDs

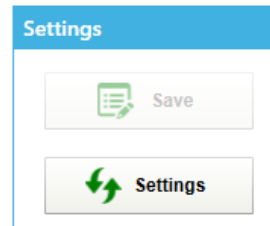
Setting up WBIDs can be done on either the Legacy or Insight networks on any WBID that the application finds.

Settings are found by clicking the gear icon to the right of the list view or the bottom of the icon view.

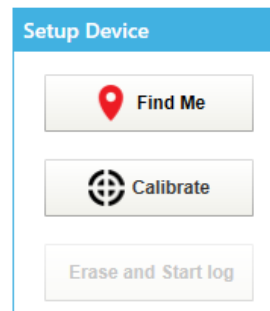
The settings  page will open.



This page has a few different sections.



The top right has the Save Settings and Refresh buttons.



The setup device functions have the Find Me, Calibrate, and Erase and Start Logging Buttons.

# BATTERY SCREEN

Group: GROUP 1		Batt. ID: 888867		Install Date: 02/26/20		Batt. Model:		Batt. SN:		WBID SN: 1B4985	
BID Number	<input type="text" value="888867"/>	Cell Count	<input type="text" value="24"/>	Temp. Average High	<input type="text" value="100"/>	Battery S/N	<input type="text"/>	Comm Level	<input type="text" value="0"/>	Temp. Maximum High	<input type="text" value="115"/>
Battery Model	<input type="text"/>	Curve Type	<input type="text" value="Curve 8 MAX - Opport"/>	SOC Average	<input type="text" value="45"/>	Facility Name	<input type="text"/>	Start Amps	<input type="text" value="25"/>	SOC Minimum	<input type="text" value="20"/>
Dealer Name	<input type="text"/>	Temp. source Primary	<input type="text" value="Mounting Tab"/>	VPC Minimum	<input type="text" value="2.00"/>	Details	<input type="text"/>	Temp. source Secondary	<input type="text" value="None"/>	VPC Maximum	<input type="text" value="2.75"/>
Group	<input type="text" value="GROUP 1"/>	Temp. source Mode	<input type="text" value="Avg"/>	Charge Ratio Max	<input type="text" value="1.30"/>	Network Filter	<input type="text" value="0001"/>	EBU Maximum	<input type="text" value="2.00"/>	EQ Hours Minimum	<input type="text" value="06"/>
Amp Hours	<input type="text" value="888"/>	EBU Average	<input type="text" value="1.00"/>								

This is the section that the WBID is programmed for the battery it will be tracking. BID number, Amp-hour, Cell Count and Battery Type are the only *mandatory* settings to program a WBID.

The Group is set on this page as well. This is how PCInsight will organize the WBIDs.

Other settings include names of the servicing dealer, facility name and details so that the user can have this information in the WBID.

The other items are threshold values to give the user notifications when the battery goes outside of this value. These will highlight problems in the log files when downloaded. We also have a cloud system that can download the records and notify the user of these conditions in the form of an email or text message.



The bottom right has a button that is a factory reset. This will clear all data and settings. At this point, the WBID can be used on other batteries without getting the data confused with that of another battery.

There is also a section to program the auxiliary leads that are on the WBID.

Wire Color	Type
Green	Measure Voltage
Yellow	Measure Voltage
Blue	Measure Voltage
White	Measure Voltage
Brown	Measure Voltage
Orange	Measure Voltage

# BATTERY SCREEN

After the WBID is set up on a battery,, save the settings, calibrate it and click the “Erase and Start Logging” button. At this point, it is set up.

There is a more detailed installation guide included with the WBIDs and in the back of this manual.

## ICON COLORS



Green icons indicate a battery that is set up and has no problems.



Red icons indicate a battery that is not set up or has an alert.

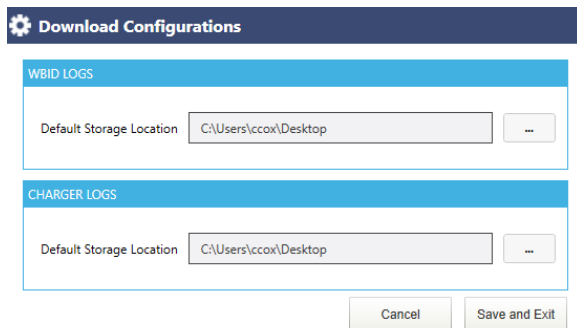


Grey icons indicate a battery that was in range but has gone out of range of the WID2.

# BATTERY SCREEN

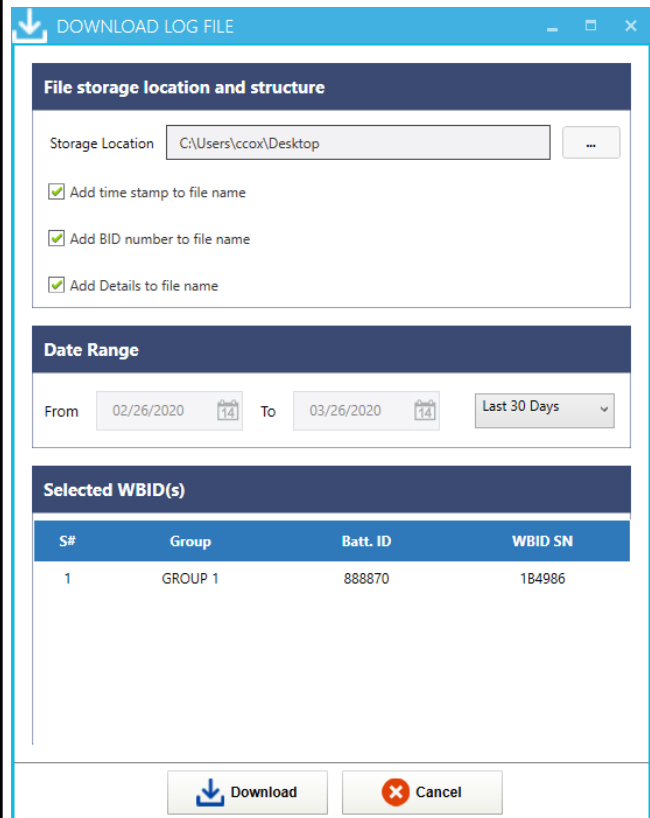
## DOWNLOADING WBIDS

Downloading the WBIDs can be done by clicking the Download button on the Information Tab or checking the box and clicking the batch download button on the bottom of the page.



The default save locations are accessible by clicking the settings gear button along the top right edge of the PCInsight screen.

After clicking download, there is another chance to choose a save-file location. 30 days of records takes about 7 minutes.



This box also includes a list of WBIDs that have been selected by the user to do a batch download and a selectable date range for the download. Click Download and process will begin.

**GROUP 1 (WBIDs)**

Summary Lifetime Information

Select	Progress	Status	Batt. ID	Install Date	Batt. Model	Batt. SN	WBID SN	Calibrated
<input checked="" type="checkbox"/>	1 %	In Progress	888870	02/26/20	NA	NA	184986	✓
<input type="checkbox"/>		None	888867	02/26/20	NA	NA	184985	✓

**Logs Download** Time : 20:24:30

**BID : 888870** Group : GROUP 1

Download in progress - 1 %



# BATTERY SCREEN

↓ WBID Log Download Summary

Time : 20:29:12

Folder Location: C:\Users\ccox\Desktop

Date Range: 2/26/2020 To 3/26/2020

S#	Group	Batt. ID	WBID SN	Status
1	GROUP 1	888870	1B4986	Completed

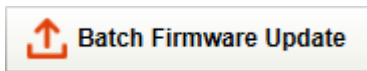
 Analyze  OK

When the download is done, there will be a list of the WBIDs that were selected and the status of the download. The first file on this list can be opened by selecting the Analyze button on the bottom. There is also a folder location, giving the user the exact location of these log files.

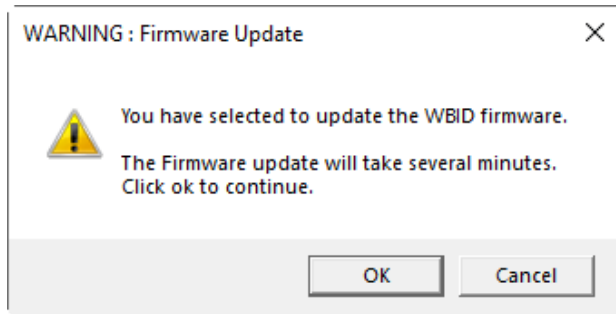
# BATTERY SCREEN

## UPDATING WBIDS

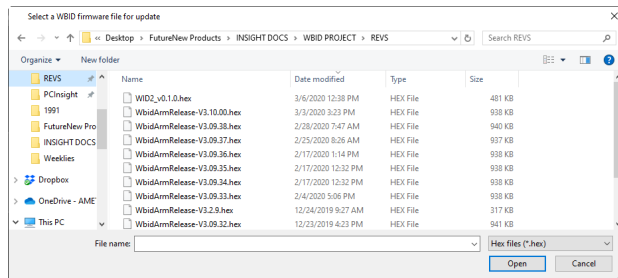
Updating WBID firmware works similar to downloading records. The user can click the update button to the right of the WBID list or they can check the boxes on the left of the populated list and click the batch update button on the bottom of the Battery screen.



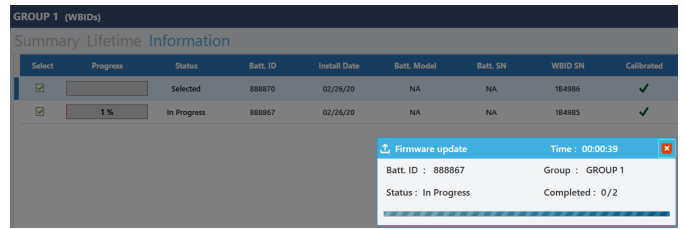
After clicking the Update button, it will prompt the user with the following warning.



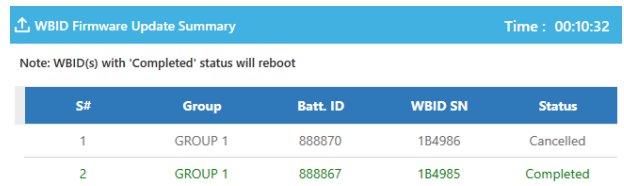
Click ok



A windows browser will open and the user will select the firmware rev to load into the modules.



There will be a progress box while the update is occurring.



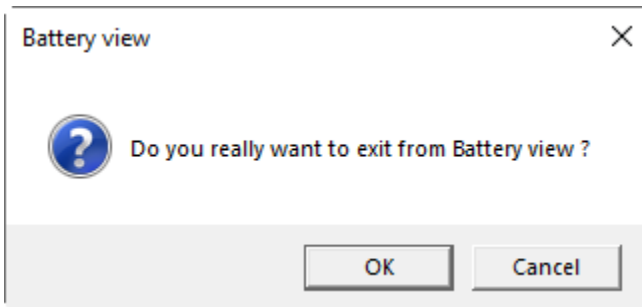
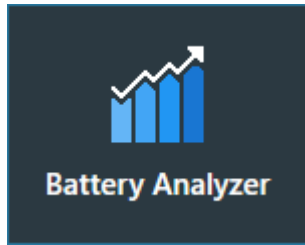
After the update, a box will appear with the list of WBIDs and their update status. In this example, one completed and the other was cancelled.

Failed Updates will not corrupt the WBID. This was put in to be able to update these as they are moving around a facility.

# BATTERY ANALYZER

## IMPORTING RECORDS

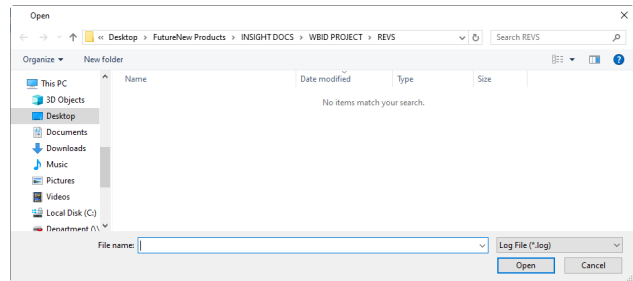
Opening the records for WBIDs is simple. Click the Battery Analyzer button on the left of the screen.



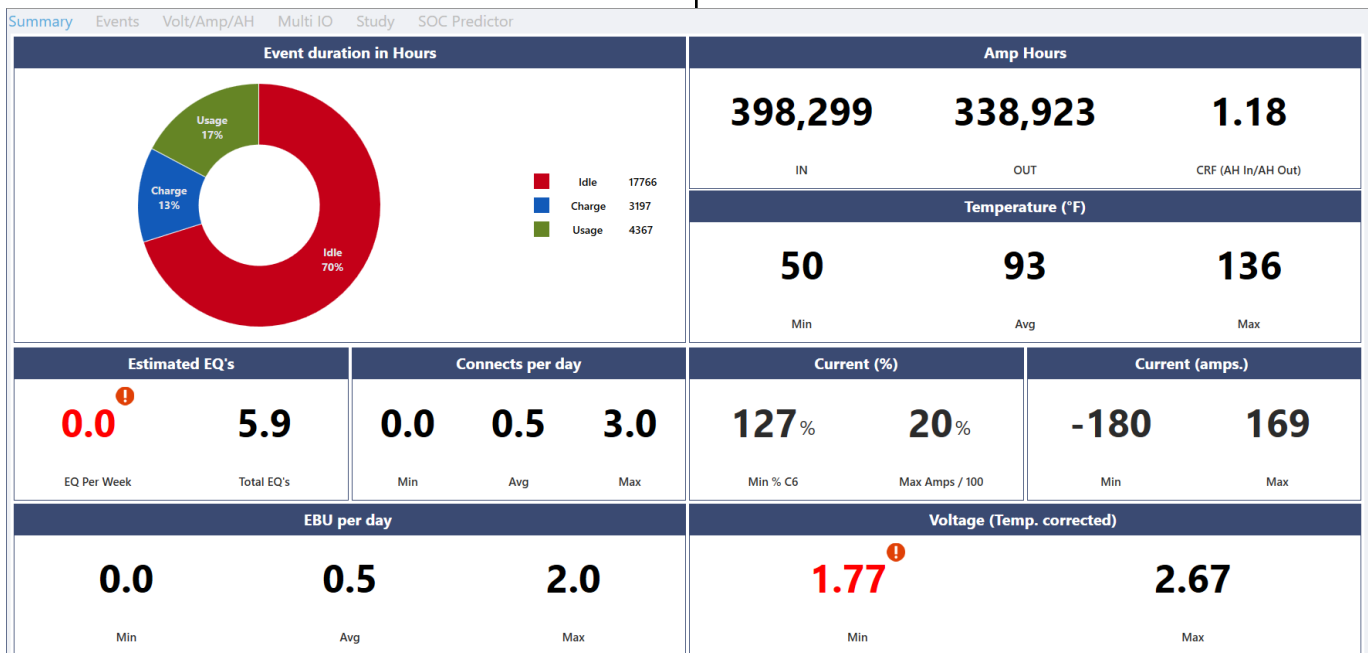
When you click off of the Battery page, it will verify with the user that they want to leave the page. The reason for this is because the network

created by the WID2 will fall off and it will have to rebuild the network if the Battery screen is selected again.

Before you enter the analyzer, the application will open a windows browser. This is where you select the file that was downloaded. Navigate the browser to find the file save location.

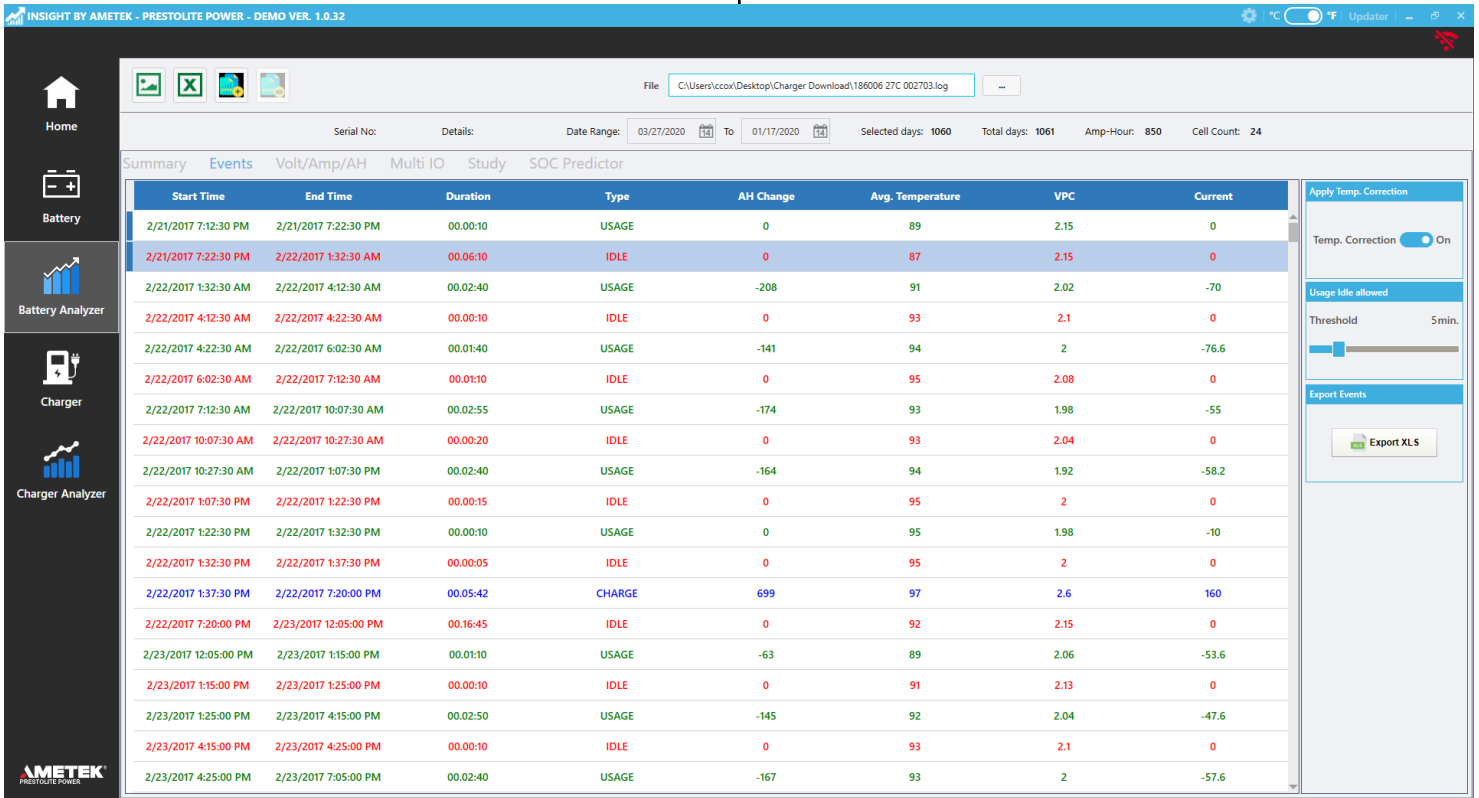


After the file opens, the application will create a summary screen, graphs and a table list of all charge, discharge and idle events.



# BATTERY ANALYZER

## USING THE BATTERY ANALYZER



Summary Events Volt/Amp/AH Multi IO Study SOC Predictor

The analyzer screen starts on the Summary page and the other items can be selected using the bar along the top of the data.

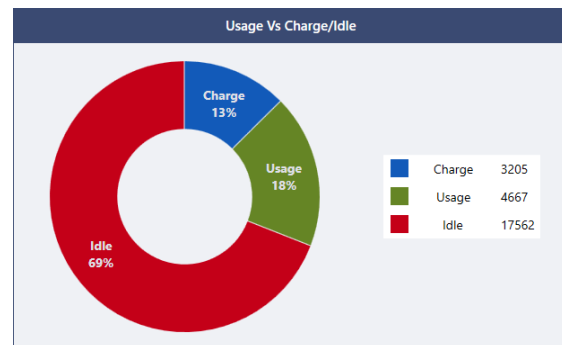
Above is the events page, showing usage, charge and idle times.

The graphs are on the Volt/Amp/AH page.

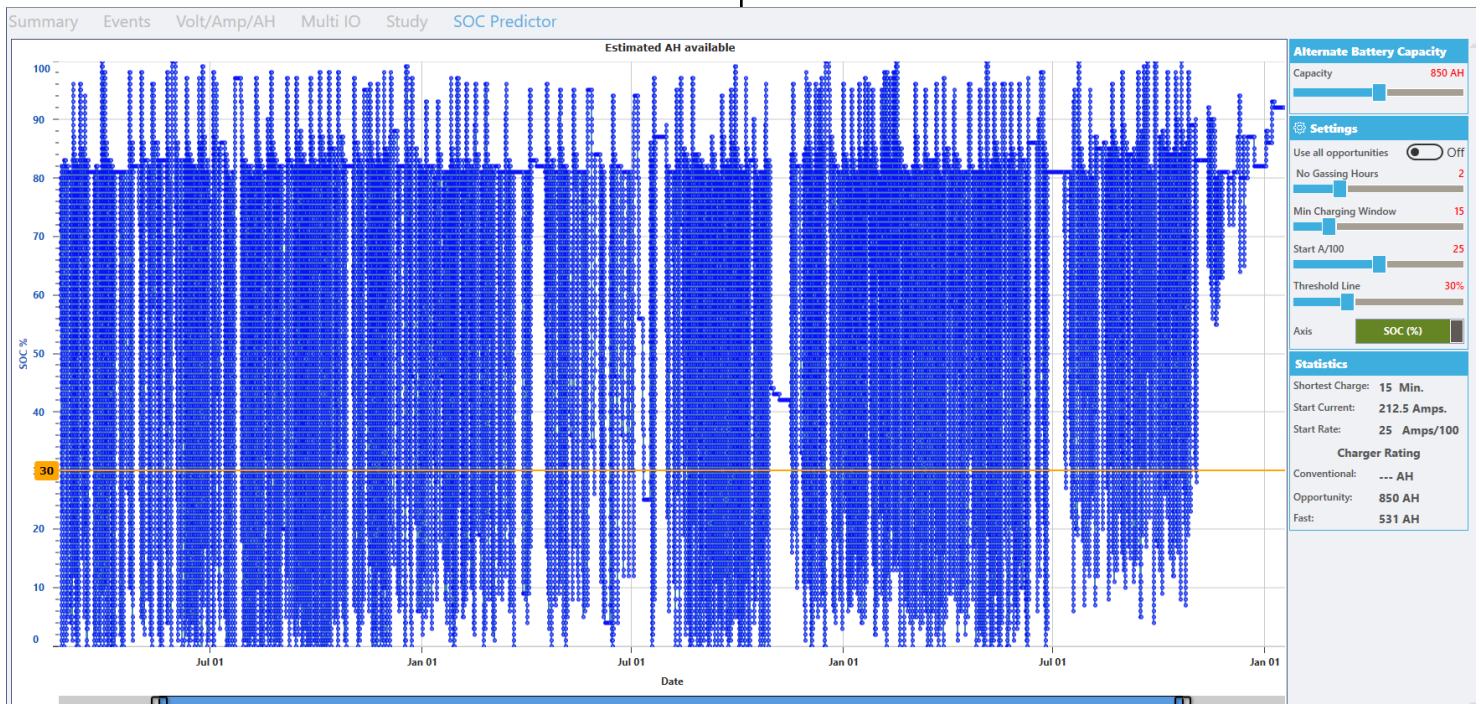


The Multi-IO page is used for tracking data from the auxiliary wires on the WBID.

The Study page has graphical views of the usage/charge/idle time.



# BATTERY ANALYZER



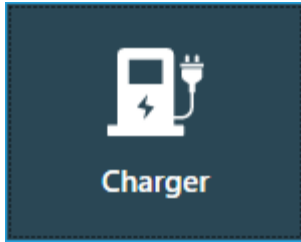
The SOC Predictor is a tool used to simulate a different charge scheme based on the usage of a truck or battery. SOC means State-of-Charge.

The right side of this screen has different parameters that can be changed in order to better plan an equipment upgrade or sale.

***THE SOC SIMULATOR IS NOT SHOWING REAL, MEASURED INFORMATION. IT IS SHOWING THE SIMULATED STATE OF CHARGE BASED ON DIFFERENT SETTINGS. IT USES REAL DISCHARGE DATA BUT DISCARDS CHARGE DATA.***

# CHARGER SCREEN

## CONNECTING TO ECLIPSE II CHARGERS



Select the Charger icon on the left side of the screen.



Eclipse II Plus's will be on the Legacy network. The default charger network ID is 1234.

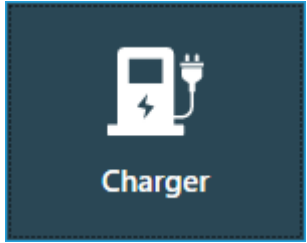
The chargers will show up on the list.

The chargers to be downloaded need to have the check box on the left checked and then select the download button.

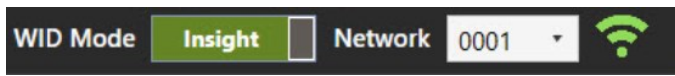
The data will download to the default save-file location or to a new location chosen by the user.

# CHARGER SCREEN

## CONNECTING TO EVOLUTION AND EDGE CHARGERS

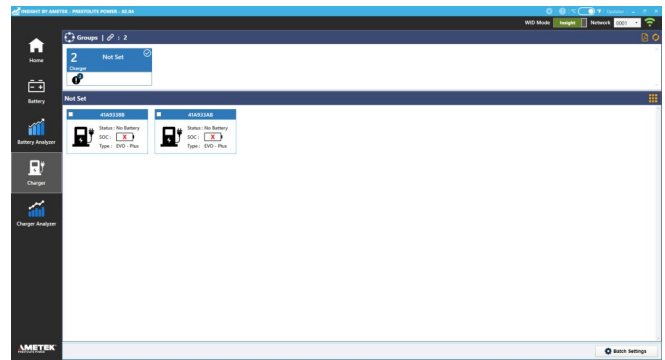


Evolution and Edge chargers have a digital control board with the capability to communicate to PCInsight. They are on WID mode INSIGHT and will be on network 0000 or 0001.

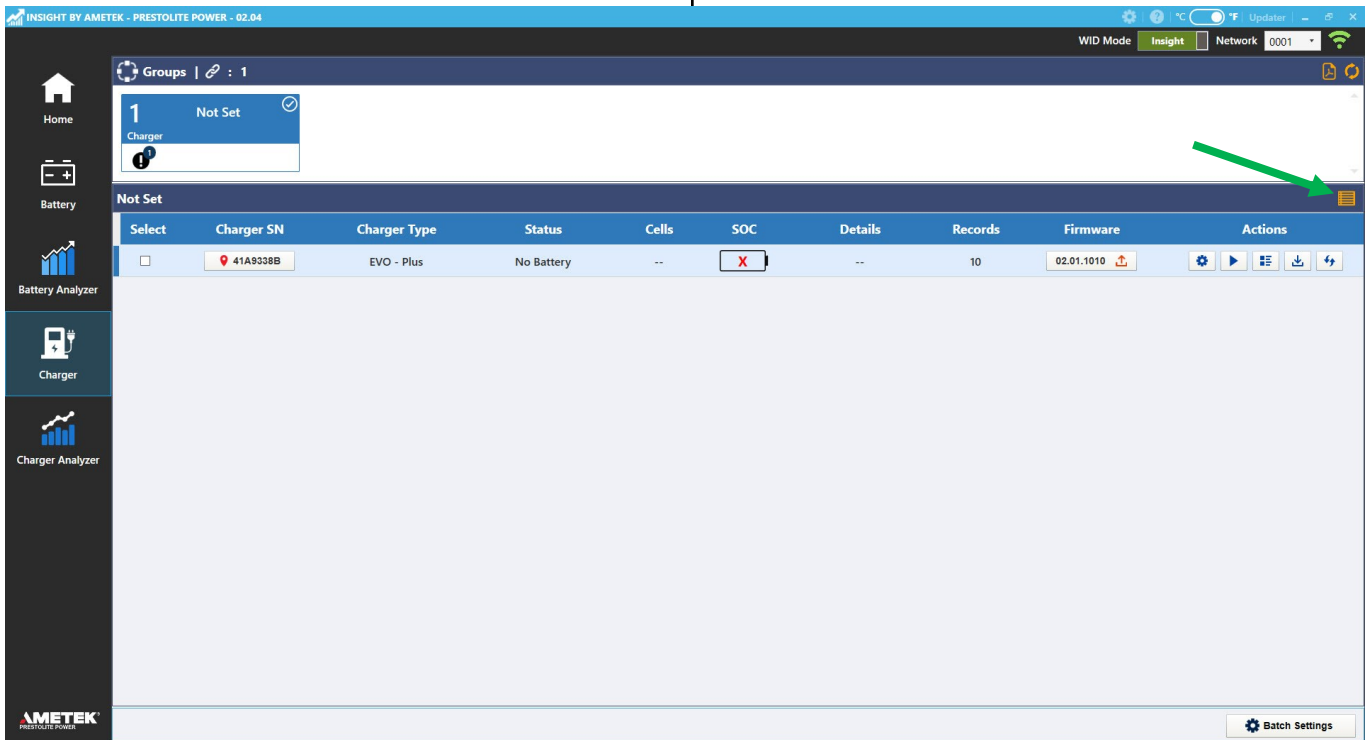


When the WID2 finds a charger, it will populate the list view screen.

The list view can be modified to an icon view by clicking the list/icon selector, indicated with the green arrow below.



Icon view



# CHARGER SCREEN

## Evolution/Edge Charger Functions

The Evolution and Edge chargers use the same user interface and network. In PCInsight, they work the same way.

Each charger has a series of buttons that will take the user to different functions of the software.



Settings. Clicking this will open the charger settings. These settings screens are similar to the ones in the charger control when using the touch screen display.



Dashboard view. Shows real-time Values. This screen will allow the user to see the current, temperature and voltage readings of the charger while it is connected to a battery. This function is disabled when there is no battery connected.



Statistics Screen. This screen allows the user to see many readings inside the charger like module temperatures and termination settings.



Download button. Clicking this will prompt the user to choose a save-file location and name for the charger download. After these have been selected, it will download this charger.



Refresh button. This will refresh the readings on the list/icon screen.



Each charger has a button that displays the serial number. Clicking this will cause the charger to flash red so it can be identified on site.



The existing firmware revision is displayed on a button. Clicking this button will prompt the user to update the firmware of the charger over the network.



Settings can updated to multiple chargers by selecting the chargers and clicking the Batch Settings button.



# CHARGER SCREEN

## Evolution/Edge Settings Screen

### General Settings

INSIGHT BY AMETEK - PRESTOLITE POWER - 02.04

WID Mode Insight Network 0001

Summary Settings Export Back

Settings Factory Settings

Charger SN	Group	Model	Status	Details
41A9338B	Not Set	EVO - Plus	No Battery	--

General Start Mode Charge Curve BID Equalize Refresh No Gassing Watering

General

Parameters

Network Filter	0001	Fixed Battery AH.	175	Date and Time	05/07/2021 16:02
Group Name		Fixed Battery Temp.	77	Temp. Corrected Voltage	Off
Details		Max Battery Temp.	149	Enable Password	Off
Cool Down Hours	0	Fixed Battery Cells	18	Power Save Mode	Off
Cable Error Adjust	0.00	Display Backlight Level	High	Multiple Cell Mode	Off

Write

Status: Charger Read Settings successful

### Start Mode

INSIGHT BY AMETEK - PRESTOLITE POWER - 02.04

WID Mode Insight Network 0001

Summary Settings Export Back

Settings Factory Settings

Charger SN	Group	Model	Status	Details
41A9338B	Not Set	EVO - Plus	No Battery	--

General Start Mode Charge Curve BID Equalize Refresh No Gassing Watering

Start Mode

Parameters

Mode  Auto Mode  Time of Day Start (TODS)  Delayed Start  Time of Day Block (TODB)  Timer Mode

Start Time	<input type="range"/>	N/A
End Time	<input type="range"/>	N/A
Timer	<input type="range"/>	N/A
Manual Override	<input type="checkbox"/>	Off

Write

Status: Charger Read Settings successful

# CHARGER SCREEN

## Charge Curve

INSIGHT BY AMETEK - PRESTOLITE POWER - 02.04

WID Mode Insight Network 0001

Settings Factory Settings

Summary Settings Export Back

Charger SN	Group	Model	Status	Details
41A9338B	Not Set	EVO - Plus	No Battery	--

General Start Mode Charge Curve BID Equalize Refresh No Gassing Watering

Charge Curve

Parameters

Curve Type  FLD  CTM  YGR  SLR  DSG  SLE  DAG  CDR  MAX  LiFePo  DeSULF

Start Percentage(%)	25.00	Add. Charge Time	00 : 00 (HH:MM)
Finish Percentage(%)	5.00	Termination Type	<input checked="" type="button"/> VT-4 <input type="button"/> VT-6 <input type="button"/> DVDT
Gassing VPC	2.37		
LID VPC	2.75		

Write

Status: Charger Read Settings successful

## BID

INSIGHT BY AMETEK - PRESTOLITE POWER - 02.04

WID Mode Insight Network 0001

Settings Factory Settings

Summary Settings Export Back

Charger SN	Group	Model	Status	Details
41A9338B	Not Set	EVO - Plus	No Battery	--

General Start Mode Charge Curve BID Equalize Refresh No Gassing Watering

BID

Parameters

BID Communication	<input checked="" type="checkbox"/> On	Start Amps/100	00	Charge Curve <input checked="" type="button"/> FLD <input type="button"/> CTM <input type="button"/> YGR <input type="button"/> SLR <input type="button"/> DSG <input type="button"/> SLE <input type="button"/> DAG <input type="button"/> CDR <input type="button"/> MAX
Battery ID	0	Equalize Count	000	
AH Capacity	0000	Cell Count	40	

Write

Status: Charger Read Settings successful

# CHARGER SCREEN

## Equalize

Settings Factory Settings

Charger SN: 41A9338B | Group: Not Set | Model: EVO - Plus | Status: No Battery

Equalize Parameters

Equalize Type:  Off  Cycle  Day Of Week  BID Cycles  Manual

Day of week	Sun Mon Tue Wed Thu Fri Sat
Charge Cycles	5 + -
BID Cycles	N/A
Weekly Limit	None EQWL-1 EQWL-2

Write

Status: Charger Read Settings successful

## Refresh

Settings Factory Settings

Charger SN: 41A9338B | Group: Not Set | Model: EVO - Plus | Status: No Battery

Refresh Parameters

Refresh	<input checked="" type="checkbox"/> On
Time (H)	72 + -
VPC	1 + -

Write

Status: Charger Read Settings successful

# CHARGER SCREEN

## No Gassing

Charger SN	Group	Model	Status	Details
41A9338B	Not Set	EVO - Plus	No Battery	--

Parameter	Value
Start Time	N/A
End Time	N/A
Timer	02:00
1x Full Day Charge	Off

## Battery Watering

Parameter	Value
Battery Watering	Off
Day of week	Sun Mon Tue Wed Thu Fri Sat
Valve Interval (sec)	N/A
Water At	Charge Complete Equalize Complete

*This is a planned feature. The functionality is in the control, but there is no hardware interface for this yet.*

# CHARGER ANALYZER

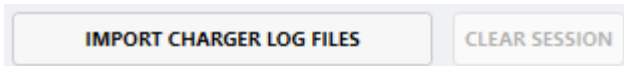
## FACILITY ANALYZER

The Facility Analyzer utilizes single or multiple charger records to understand how an entire facility is working.

If there are BID modules on the batteries, the analyzer will be able to get full charge information for the batteries on site.



After clicking the Charger Analyzer, a windows browser will open and prompt the user to choose a charger file. Multiple files can be chosen or added by clicking import log files.



The charger records will be shown on a table list. The check box on the left can select or deselect chargers in the dataset.

Along the top of the list will be a menu.



Facility View will show data for all the selected charger records. This view can be split into Battery and Charger.



Battery view will show the data organized by BID numbers. To use this function, the batteries must have BIDs or WBIDs.

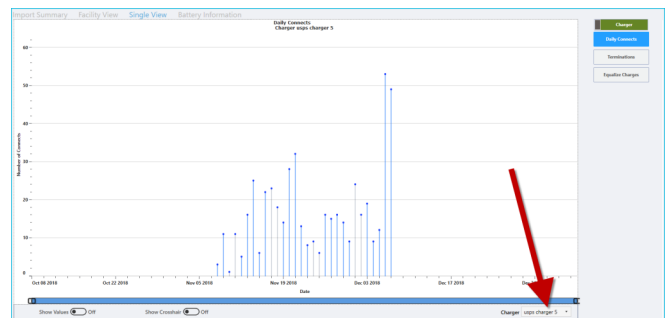


Charger View will just track what the chargers are doing as a whole. This view is best utilized when trying to troubleshoot charger problems.



Single view can be set to track batteries or chargers as well.

Choose the specific battery or charger in the drop box on the bottom right of the screen.



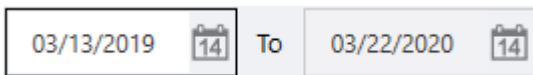
# CHARGER ANALYZER

## Battery Information

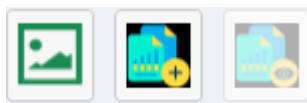
Import Summary	Facility View	Single View	Battery Information			
Select	Battery ID	Cells	Amp Hrs.	Start Date	End Date	
<input checked="" type="checkbox"/>	771090	18	850	03/13/2019	03/20/2020	
<input checked="" type="checkbox"/>	771091	18	850	03/14/2019	03/20/2019	
<input checked="" type="checkbox"/>	775426	18	850	03/13/2019	03/22/2020	
<input checked="" type="checkbox"/>	776873	18	750	03/14/2019	03/14/2019	
<input checked="" type="checkbox"/>	777574	18	750	03/13/2019	03/21/2020	
<input checked="" type="checkbox"/>	777575	18	750	03/13/2019	03/22/2020	
<input checked="" type="checkbox"/>	777576	18	750	03/13/2019	03/22/2020	
<input checked="" type="checkbox"/>	777577	18	750	03/13/2019	03/22/2020	
<input checked="" type="checkbox"/>	777579	18	750	03/13/2019	03/13/2019	
<input checked="" type="checkbox"/>	777581	18	750	03/13/2019	03/22/2020	
<input checked="" type="checkbox"/>	777583	18	750	03/13/2019	03/21/2020	

There is also a tab for Battery Information. This allows the user to specify which battery to graph, regardless of charger.

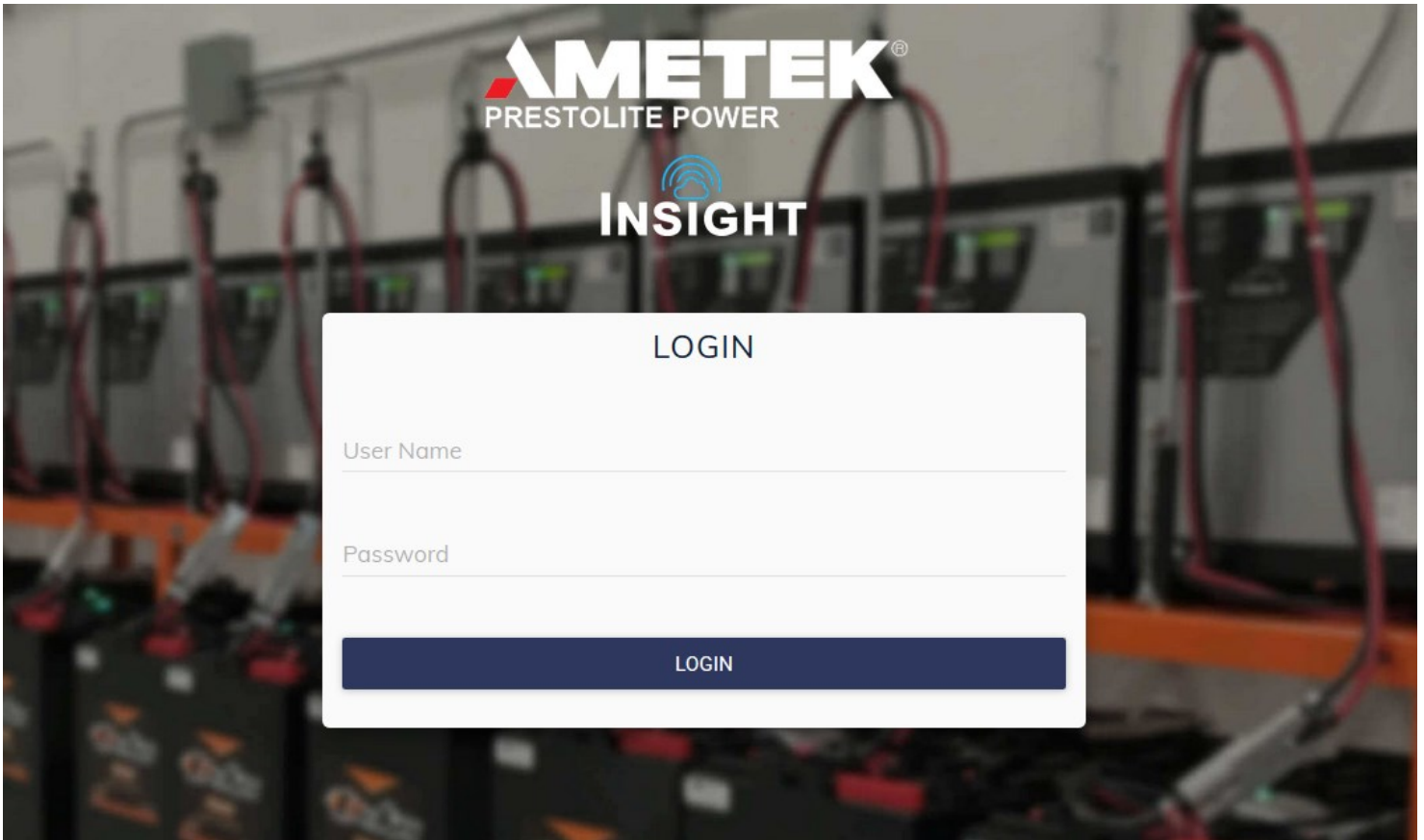
Clicking date ranges will allow the user to adjust the date range



There are small icons on the graphs and pages that allow the user to export excel files, pictures and create a summary page.



# CLOUD



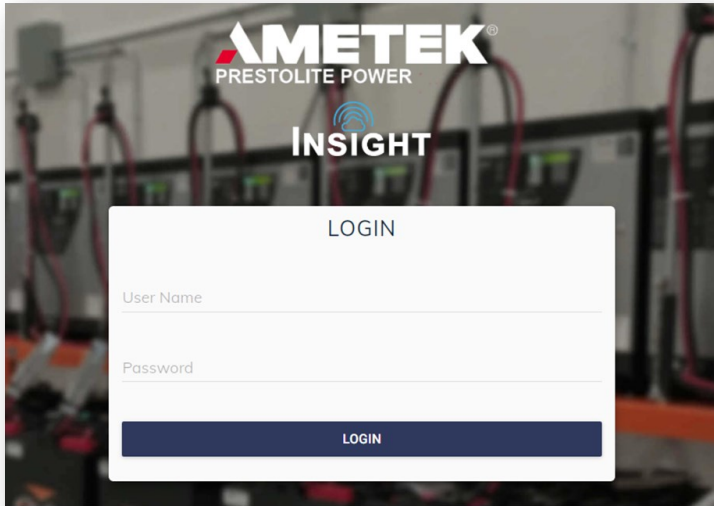
AMETEK Prestolite Power can upload charger and WBID data to our cloud system. This is a system that can be accessed with any web browser. This also allows the user to be notified of issues as they happen. This feature requires hardware and is separate from the PCInsight app itself.

Stand Ups												
BID	EBU Avg	EBU Max	Avg Est EQ/wk	Min Est EQ/wk	Max Est EQ/wk	Temp Min	Temp Avg	Temp Max	Avg Conn/Day	Min VPC	Latest Finish	Max Days
005402	0.1	0.4	5.5	2.1	6.0	55°	74°	91°	1.2	1.97	2.68	NA
005404	0.3	0.8	1.7	0.2	3.9	64°	80°	100°	0.9	1.92	2.74	NA
005405	0.1	0.7	4.1	1.4	4.6	60°	75°	100°	1.3	1.94	2.69	NA
005406	0	0	0	0	0	0	0	0	0	0	--	NA
005411	0.2	0.7	19.4	0.3	56.3	60°	84°	149°	0.6	1.94	2.75	NA
005412	0.3	0.3	7.2	2.1	2.1	69°	79°	93°	1.5	1.96	2.69	NA

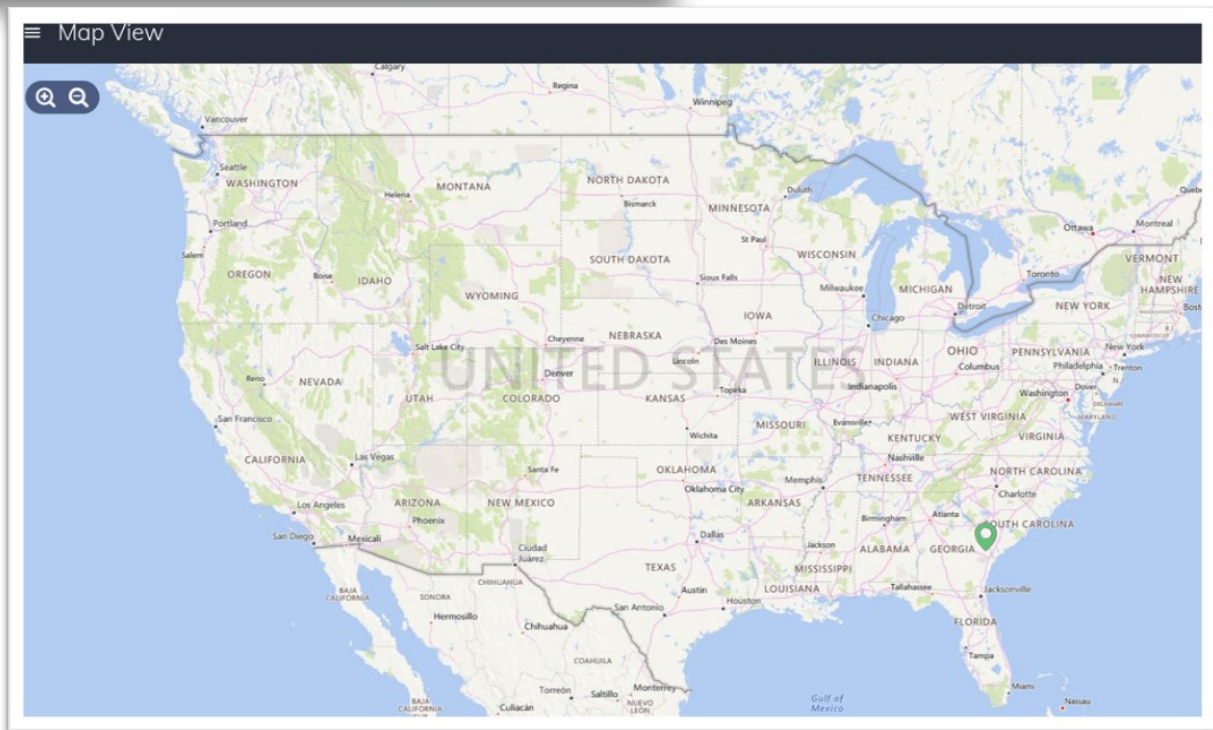
# Insight Cloud

## Accessing the Cloud

<https://insight.prestolitepower.com/>



Enter the login and password provided. This login is case-sensitive.



**The map screen is the first screen after signing in.**

1. Shows sites displayed with accurate map pins for the facilities location
  - Click the pins to open the site
  - Pin color will show green, yellow or red depending on the alarms present
2. Menu button. Referred to as a hamburger menu because it looks like a layered sandwich.

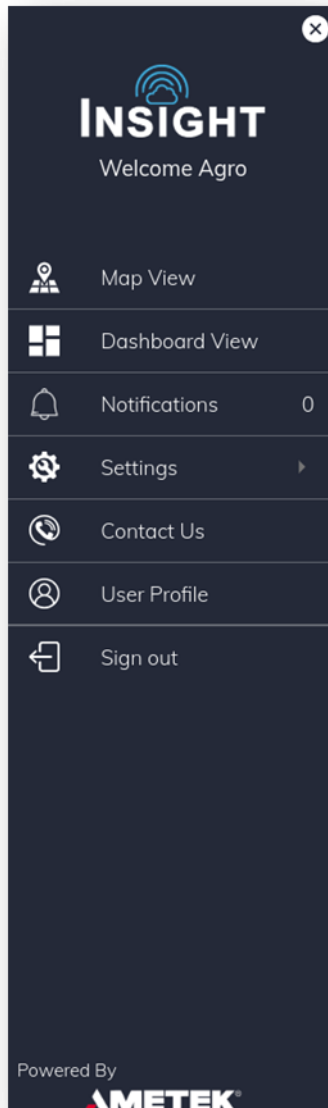


# Insight Cloud



Clicking the hamburger menu will open this menu.

There are two different views: Map View and Dashboard View



Green is indicating that the batteries on those sites are good.

Yellow is a warning indicating a potential problem or minor issue.

Red is an alert indicating a problem.

*This is how the badging works whether it is one battery, a group or an entire site.*

**User Profile:** This is the profile of the managing user. Notifications will be sent to this email and cell phone texts if desired.

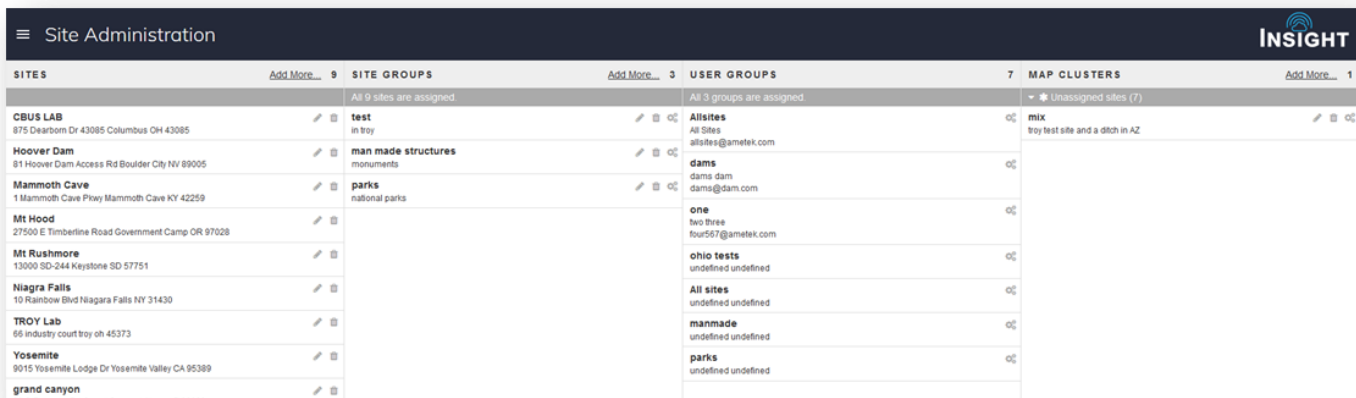
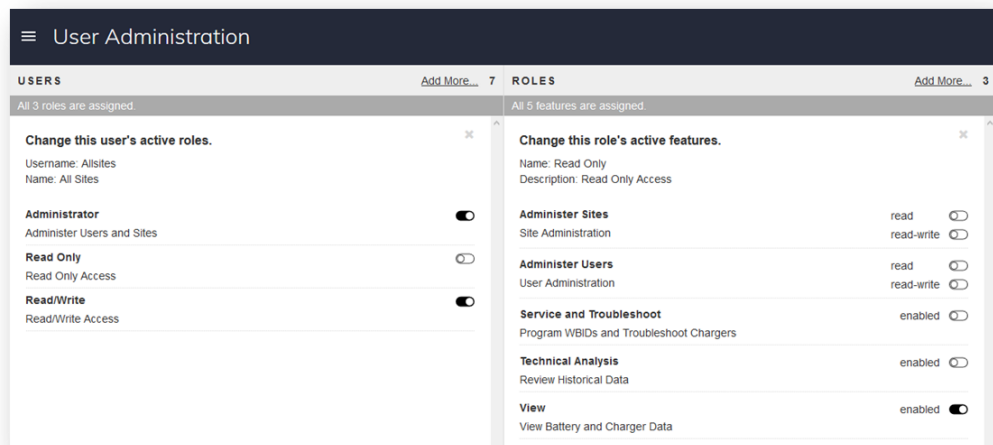
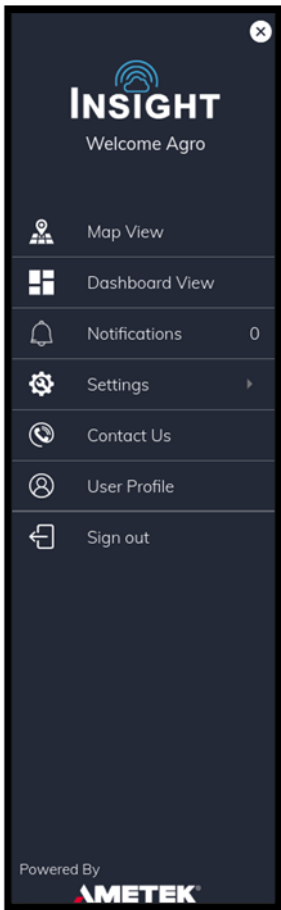
**User Profile, Notifications:** This is the screen where the user chooses which alarms that notifications will be pushed to the email and text as well as the time and days that these notifications are sent.

# Insight Cloud

**Settings:** This item is available for site/customer administrators. They have additional control over users and can create new logins with the desired level of access.

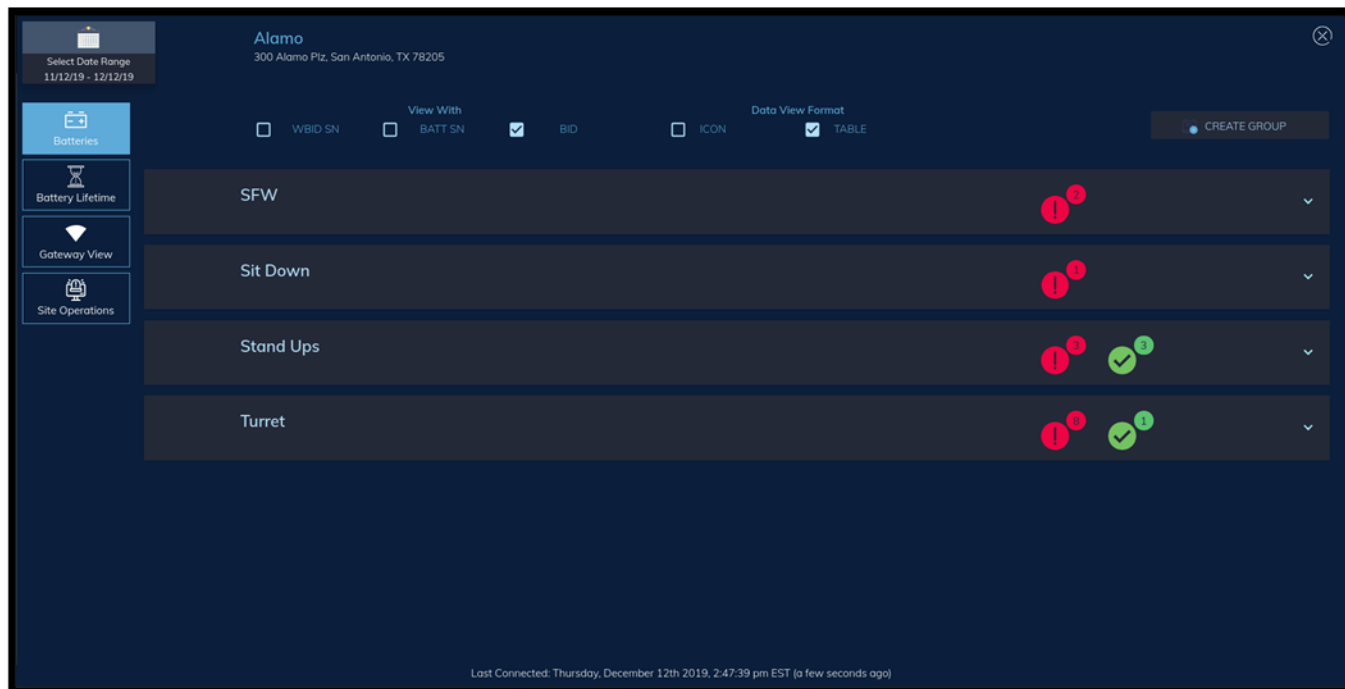
**Site Admin:** This menu gives the admin the ability to modify sites and groups. Different users have access to different groups of facilities across North America.

**User Admin:** This menu gives the admin the ability to modify users within their control and change the levels of access.

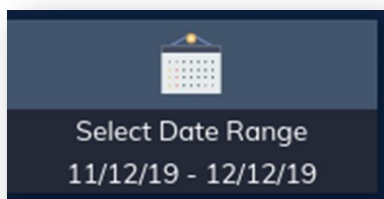


# Insight Cloud

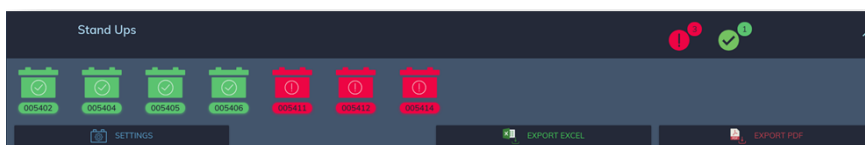
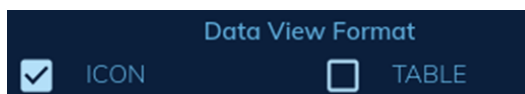
This is the landing page for a single site. Each group has its own drop-down menus. These menus can show either Icon view or Table view by checking the desired box above the groups.



The site can track WBIDs different ways. Default is by BID number.



In the top left corner, there is a calendar button. This is used to change the range of the data for all modules on this site. The default is 30 days. There are different ranges available such as monthly, weekly, quarterly and a custom range setting.



BID	EBU Avg	EBU Max	Avg Est EQ/wk	Min Est E
005402	0.1	0.4	5.5	2.1
005404	0.3	0.8	1.7	0.2
005405	0.1	0.7	4.1	1.4
005406	0	0	0	0
005411	0.2	0.7	19.4	0.3
005412	0.3	0.3	7.2	2.1

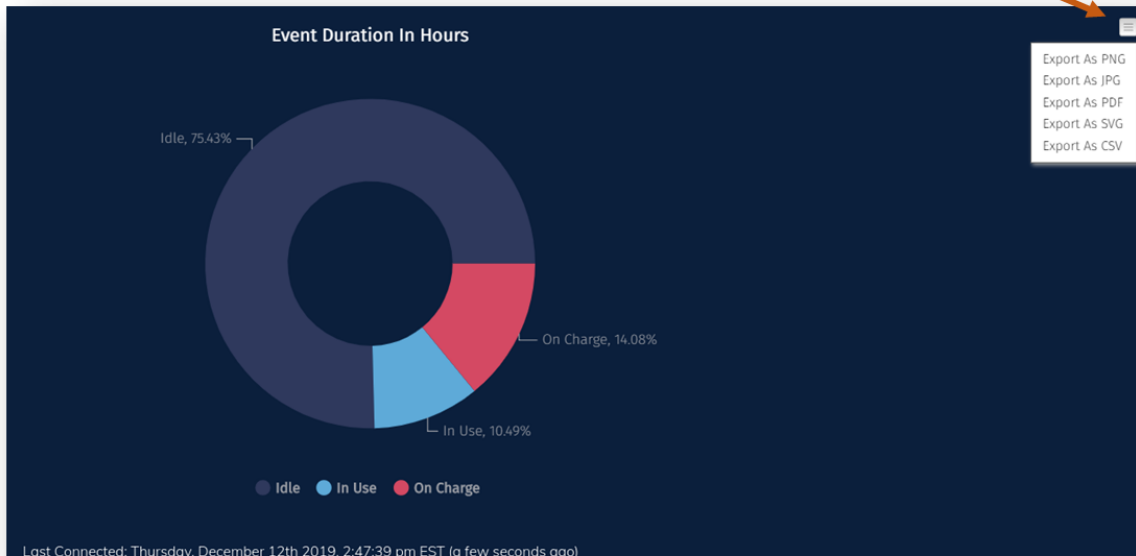
# Insight Cloud

Clicking a battery will open this summary screen.



This screen provides general information. There are buttons in the top right to Change Group and Delete Batteries. Deleted batteries will be removed from the system. If a deleted battery is reconnected to the gateway, it will repopulate the data. The summary screen also includes a pie graph of the WBIDs use.

Graphs and data sets have small icons in the corner that will export in different forms for saving and sending



# Insight Cloud

## Events Screen



The WBIDs will keep track of all throughput data. One of the useful items it can track is whether the battery is in use or on charge. This is raw data and can be exported to Excel for record keeping.

Start Time	End Time	Total Time	Type	Ah Change	Avg Temperature	VPC	
12/11/19 06:00:00	12/11/19 06:35:00	00:35:00	IDLE	0	90°	2.00	<input type="checkbox"/> Earliest
12/11/19 04:45:00	12/11/19 06:00:00	01:15:00	USAGE	-82	90°	1.99	<input checked="" type="checkbox"/> Latest
12/11/19 04:40:00	12/11/19 04:45:00	00:05:00	IDLE	0	91°	2.00	
12/11/19 03:45:00	12/11/19 04:40:00	00:55:00	USAGE	-53	92°	2.04	
12/11/19 03:25:00	12/11/19 03:45:00	00:20:00	CHARGE	8	94°	2.00	
12/11/19 03:20:00	12/11/19 03:25:00	00:05:00	IDLE	0	93°	2.00	
12/11/19 02:15:00	12/11/19 03:20:00	01:05:00	IDLE	0	93°	2.00	
12/11/19 02:05:00	12/11/19 02:15:00	00:10:00	USAGE	-1	94°	2.04	
12/11/19 01:50:00	12/11/19 02:05:00	00:15:00	IDLE	0	95°	2.00	
12/11/19 01:45:00	12/11/19 01:50:00	00:05:00	USAGE	0	95°	2.06	
12/11/19 12:40:00	12/11/19 01:45:00	01:05:00	IDLE	0	95°	2.00	
12/11/19 12:35:00	12/11/19 12:40:00	00:05:00	USAGE	0	96°	2.06	
12/11/19 12:30:00	12/11/19 12:35:00	00:05:00	IDLE	0	96°	2.00	
12/11/19 12:10:00	12/11/19 12:30:00	00:20:00	USAGE	-3	96°	2.08	

**SORT BY**

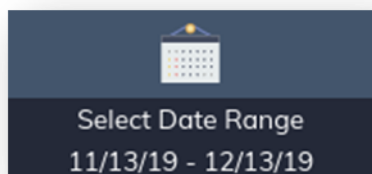
Earliest

Latest

Usage Idle Allowed

5 minutes

An event is a record of the battery in use, on charge and idle times. The Usage Idle Allowed slider is a threshold for counting idle time. If the battery has no output for a time period over that threshold, it will count it as idle time.



The Select Date Range icon in the top left can be used to set the range at any point. This will require the data to be reset and you will return to the landing page when it resets.

# Insight Cloud

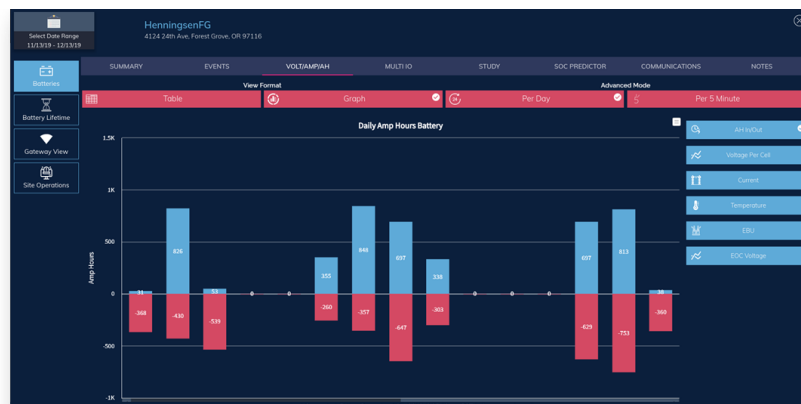
## Volt/Amp/AH Screen



Clicking the Volt/Amp/AH tab will show the detailed WBID data. The default view is Table view. Table view shows a daily log of the general WBID conditions. Badging on the top refers to conditions in the entire field for the time period selected




Clicking the Graph button will expand the options under Advanced Mode. Graphs have two available views to choose from:  
Per Day- Daily bar graphs of minimums and maximums.  
Per 5 Minute- detailed line graphs of every 5-minute reading. This is useful for pinpointing events and troubleshooting.



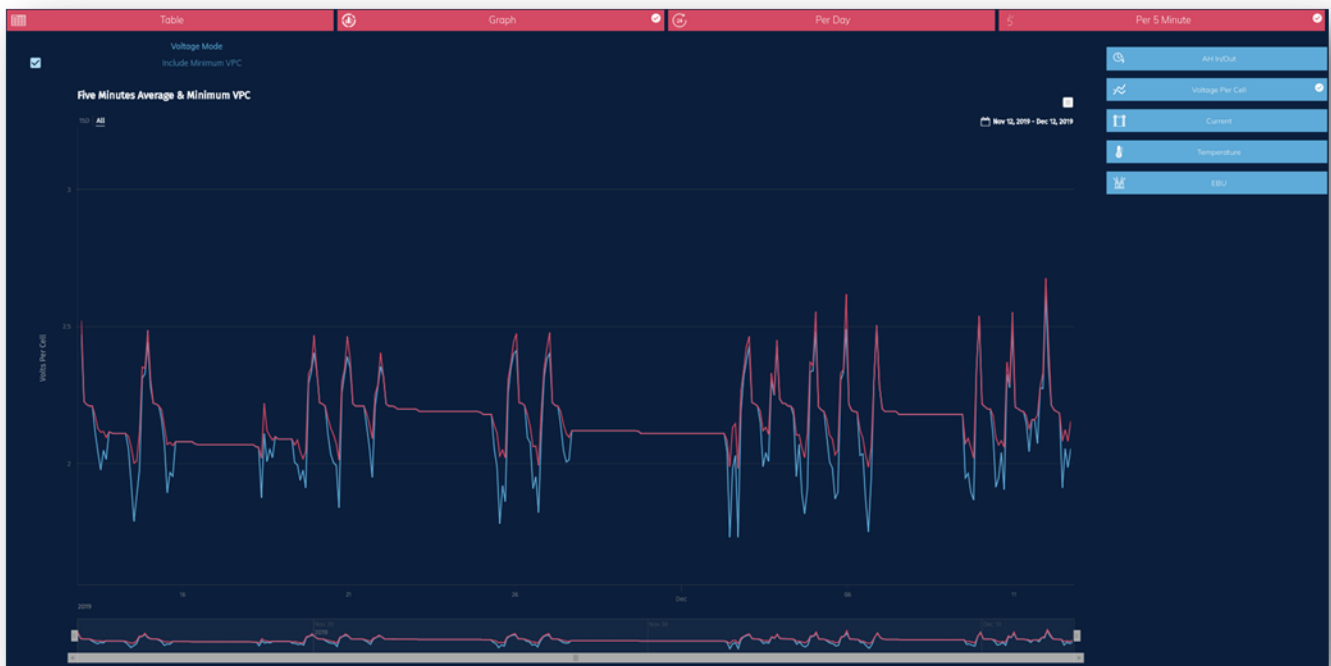
# Insight Cloud

## Volt/Amp/AH Screen



 Export icons are in the top right of the graph

Selecting the Per 5 Minute tab on Graph view will show a line graph. This graph series shows a 5-minute average of all the WBID readings.



The range of these graphs can be tightened in a couple different ways. Along the bottom is a drag bar that can tighten the window by dragging the little tabs on the sides to the desired point in the data. In the top right of the graph is a drop-down menu with calendars and entry points for hours.



# Insight Cloud

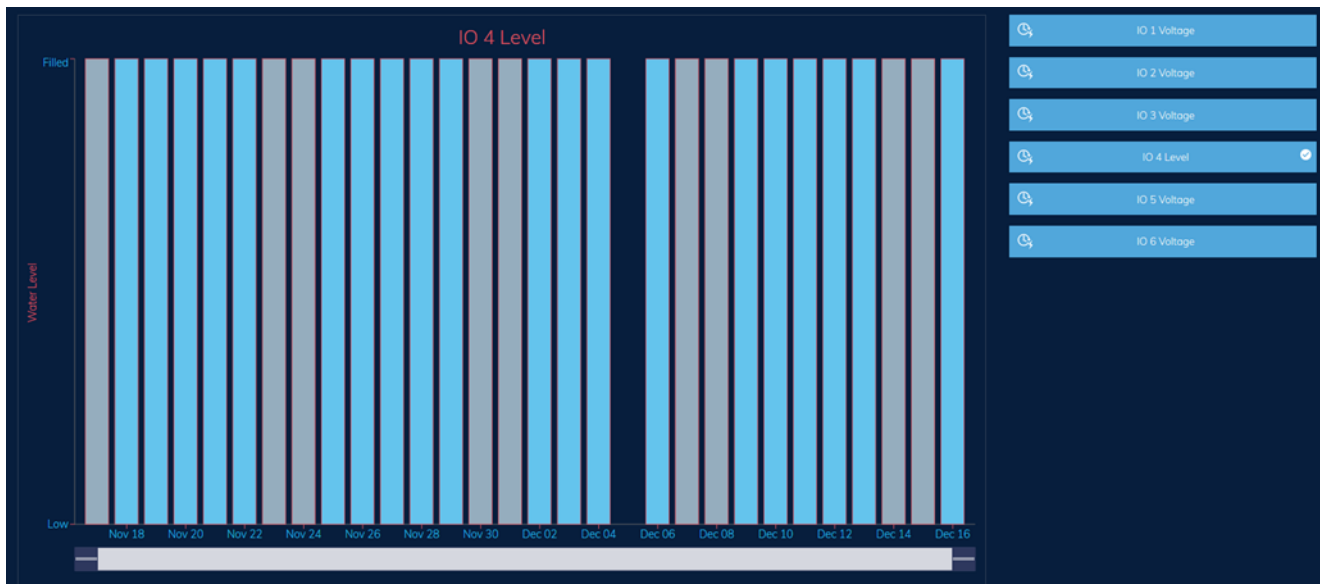
## Multi I/O Screen

EVENTS

VOLT/AMP/AH

MULTI IO

The WBID has auxiliary wires that can be connected to different devices including water level, electrolyte temperature and blinking lights that can be programmed to trigger off other connected devices or voltage readings.



Each auxiliary wire can have a device attached. Wire 4 is the water sensor for this WBID

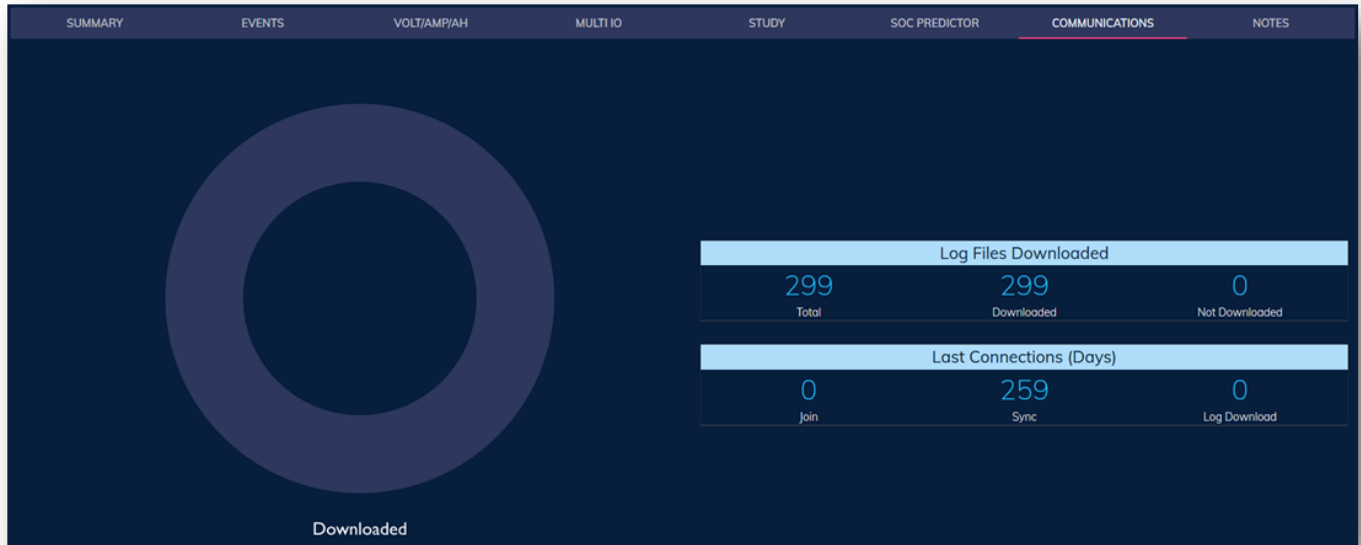
This is an example of a WBID with a water level sensor. As the battery gets used, it will lower the electrolyte. This graph shows that the battery was sufficiently watered since the 'dry' days are less than a week straight.



# Insight Cloud

## SOC Predictor and Communications Screen

The SOC Predictor on the cloud works the same way that the SOC predictor in PCInsight works. The cloud server is not as good at manipulating the data as the PC software due to the constraints of using a processor on a cloud server.



The communications tab is a count of the log files downloaded compared with the total amount of log files on a Wireless BID.

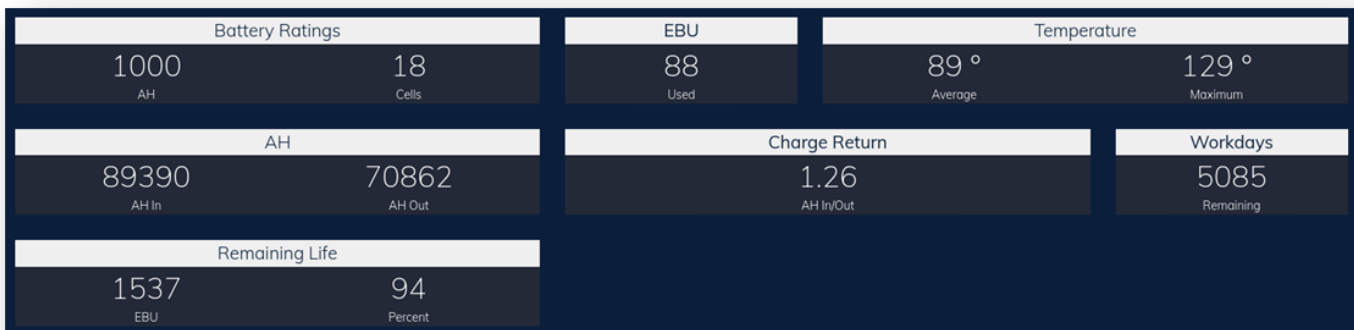
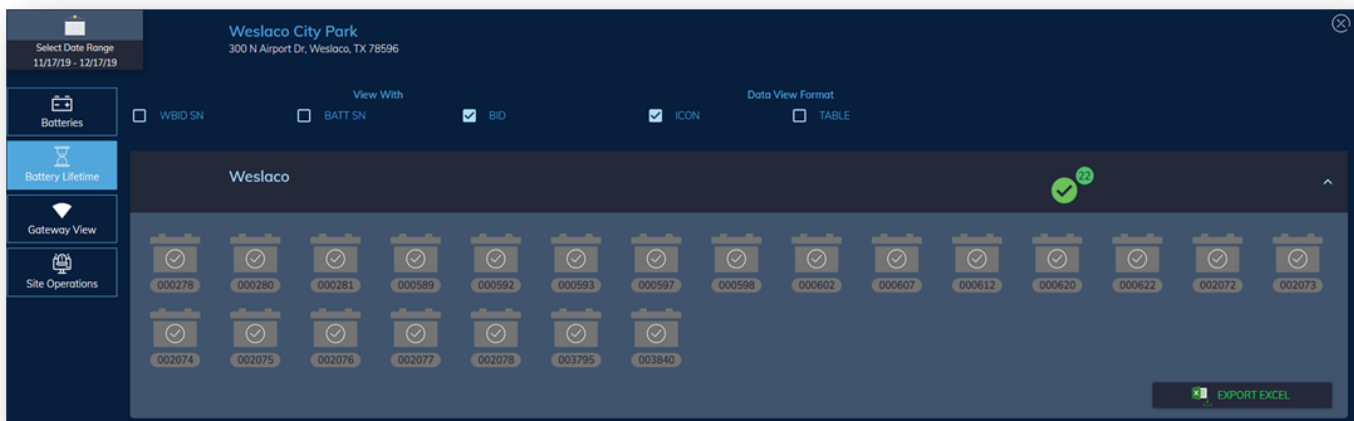


The notes tab is a place that the user can add notes to a Wireless BID module. Notes can be deleted if they are no longer needed. These notes are not programmed into the WBID and are only available on the cloud.

# Insight Cloud

## Battery Lifetime Screen

The Battery Lifetime screen shows a lifetime report for each battery in the fleet. This is an estimate of the lifespan of the battery based on its throughput. WBIDs installed on used batteries will not have an accurate estimate due to the battery not being new during the time of install.



# Insight Cloud

## Gateway View

Gateway View provides the user a view of the network. Each gateway will have a drop-down table of all the devices connected to it in *real time*. You can check signal quality, firmware revision, and ping the WBIDs so they will identify themselves with a change in the light sequence.

If a WBID is pinged, it will show a solid red light for a few seconds.

Gateway Serial Number: 0004F3083B23  
WBID Firmware Version: Unknown  
WBID Firmware File: Unknown  
Devices Online: 6

WBID Address	BID	WBID SN	Age	RSSI	Signal Quality	Firmware Version	Find Me
70:B3:D5:6D:E3:1B:31:C1	016520	1B31C1	8	-68 dB	64 %	03.09.26	FIND ME
70:B3:D5:6D:E3:1B:31:86	016690	1B3186	58	-61 dB	78 %	03.09.26	FIND ME
70:B3:D5:6D:E3:1B:2F:F9	022140	1B2FF9	18556	-72 dB	56 %	03.09.26	FIND ME
70:B3:D5:6D:E3:1B:31:C6	038410	1B31C6	51	-59 dB	82 %	03.09.26	FIND ME
70:B3:D5:6D:E3:1B:35:AB	039570	1B35AB	3223	-58 dB	84 %	03.09.26	FIND ME
70:B3:D5:6D:E3:1B:31:A1	039680	1B31A1	45	-62 dB	76 %	03.09.26	FIND ME

## Site Operations

The Site Operations page shows a calendar. Each day will show a badge that reflects battery problems or potential problems that occurred on that day. Clicking on a day will give the user a list of the issues with the Battery, condition and date.

The screenshot shows the 'Site Operations' page interface. On the left is a sidebar with four menu items: 'Batteries', 'Battery Lifetime', 'Gateway View', and 'Site Operations' (which is highlighted in blue). The main area displays a calendar for 'DECEMBER 2019'. Above the calendar is a 'SORT ALERTS' bar with a checked box for 'Earliest' and an unchecked box for 'Latest'. The calendar grid shows days from Sunday to Saturday. Each day has a yellow triangle icon, except for the 12th, which has a red circle icon. At the bottom of the calendar is a red bar with a calendar icon and the text 'CLEAR SELECTED DATE'.

# Glossary of Terms

**EBU- Equivalent Battery Usage.** 1 EBU=80% of a battery's total capacity. This is a term used to help user's opportunity charge properly. EBU's should be between .7 and 2 EBU/day to merit opportunity or fast charging. Below .7 indicates that a standard daily charge will suffice to charge the battery properly.

**EOC Voltage- End-of-Charge voltage.** This is a reading of the last 30 minutes of each charge cycles volts/cell. This will give the user a general idea of the health of the battery. The closer the voltage is to 2.75 vpc (Lid), the healthier the battery, generally.

**SOC Predictor-** State-of-charge Predictor. This is a simulator that takes raw usage data and allows the user to modify how the battery charges to predict the state-of-charge of the battery over time in order to set it up to work within the opportunity charging window to maintain battery health.

**BID Number-** This is the battery identification number. This is to be set as close to the assigned name of the battery as it can be. Numeric characters only.

**Gateway-** Device that pulls data from WBIDs and routes it to the cloud server.

**Charge Return-** Ratio of charge Amp hours over discharge amp hours. Always above 1.00. 1.15 is the recommended level. Going above this threshold usually indicates that the batteries are getting charged more often than needed. Short cycling, or unnecessary opportunity charging are likely culprits.

**Connects per day-** total occurrences of a battery connecting to a charger. This helps make sure that the batteries are getting plugged in enough to keep the trucks running while opportunity charging.

**Wet/Dry-** If a water level sensor is present, this will show if that sensor has been wet or dry for each day. Wet means that the electrolyte levels are good. Dry means that it will need water after its next equalize.

**Max Dry Days-** a count of how many days in a row that the water level sensor did not log any wet days. Any day where the sensor is activated will register as a wet day.

# Installation and Setup

## Planning Your Installation

The first step in planning your WBID installation is to select what options you wish to install.

**WBID Module.** The basic module includes power and current sensing connections which enable it to sense and record the entire electrical history of the battery for the entire life of the battery. To enable that functionality, you will need only to make the proper connections on the battery and configure the parameters in the module. We'll get to that in detail shortly.

**Optional Devices.** In all but the simplest installations, it is highly beneficial to include some key external sensors in your installation.

**Electrolyte Temperature Sensor(s).** In moderate usage applications at room temperature, the built-in capability to measure the temperature of an intercell connector is sufficiently reflective of cell temperatures to suffice. But, in any application that includes large temperature changes such as foundries or cold storage, or in opportunity charge situations where the charging process itself must be monitored for heating effects, at least one electrolyte temperature sensor is a great idea. In fact, in many situations (particularly in cold storage), there can be a substantial temperature difference between the internal cells and the corner cells. In these situations, it is well worthwhile to include multiple electrolyte temperature sensors so that several cell temperatures can be recorded and used to regulate the charge.



**Electrolyte Level Sensor.** Ordinary usage of the battery causes the electrolyte level to decrease – partially due to charging and partially due to evaporation. If the tops of the plates become dry, they lose their activity and the battery's capacity falls. So, routine watering is essential to optimal battery performance and life. With an electrolyte level sensor installed, the information will be recorded in the battery history file on the Wireless BID.

**LED Indicator Light.** Frequently, users want a visible indicator on the battery when some condition arises. With an LED indicator, you can install the module on the battery and configure it to turn on the light upon the occurrence of whatever condition you choose.

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## Mechanical and Electrical Installation

**WARNING:** Use extreme caution when working with batteries. The possibility of shock, fire, and explosion exists. Batteries produce explosive gases. Keep sparks, flame, and cigarettes away. Ventilate when working in an enclosed area. Always shield eyes when working near batteries. Facemask and gloves are recommended during WBID installation.

**WARNING:** Do not lay tools on top of the battery as they may conduct electricity.

These instructions cover mechanical and electrical installation of the AMETEK WBID. The following tools will be required for the installation:

- Portable power drill
- 3/16" drill bit with suitable stop to limit drill depth to 1/2"
- #2 Phillips screwdriver
- Diagonal cutting pliers (side cutters)
- Wood or rubber mallet

Note: If you will be installing any sensors or other optional devices, be sure to check the instructions packed with the device(s) for any additional tool requirements. Accessory instructions are also included in the appendices of this document.

### **Installation:**

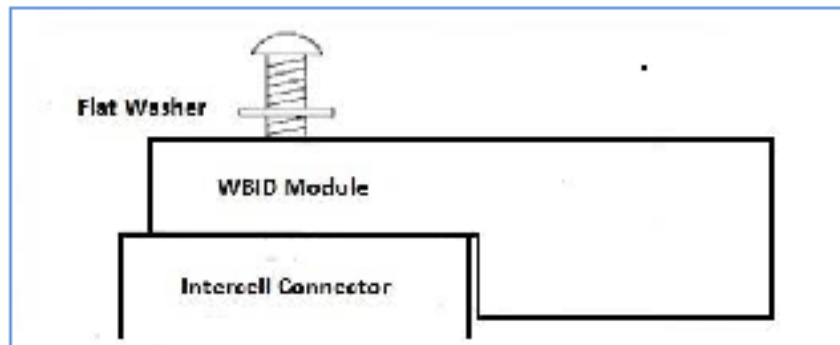
1. Carefully unpack the WBID from its shipping carton, and neatly lay out the parts. Some of the wires will have their terminations sealed in heat shrink tubing. **DO NOT REMOVE THE HEAT SHRINK AT THIS TIME.** Check the parts against the following material list:
  - a. WBID Module
  - b. Qty 1: No-Ox-ID A Special grease, 0.25 oz
  - c. Qty 5: 6-32 1/4" screws
  - d. Qty 2: 6-32 3/4" screws
  - e. Qty 7: #6 flat washer
  - f. Qty 7: Brass inserts
  - g. Qty 8: Wire ties
2. Move the battery to a clean, well-lit area.
3. The battery must be clean and free of corrosion for proper operation of the WBID.

**WARNING:** drilling can cause sparks that can ignite flammable gas. Please use caution with batteries that have recently been under charge or in areas with flammable gas or material.

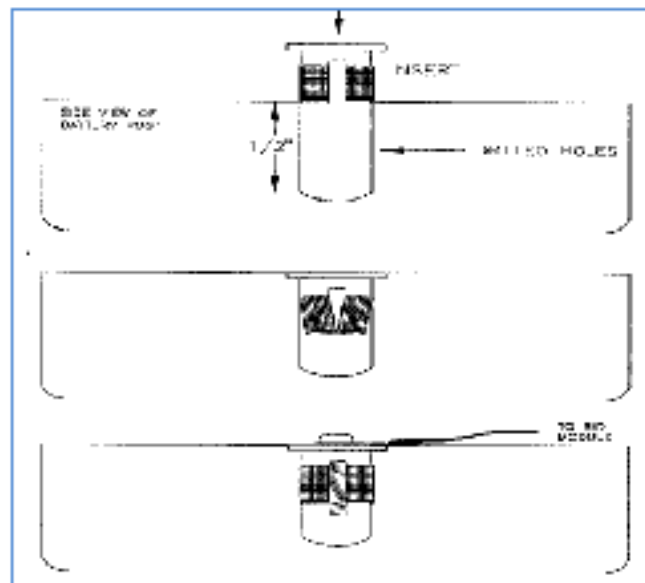
4. Using a 3/16" drill and a suitable stop to limit the depth of the hole to 1/2", drill 7 holes for the provided inserts. **These holes must be at least 3/8" deep in order to assure proper seating of the components.**
  - a. In the center of the battery negative post
  - b. In the center of the battery positive post
  - c. In the positive post of the cell closest to the negative battery terminal (most negative cell)
  - d. In the negative post of the second cell from the negative terminal
  - e. In the positive post of the second cell from the negative terminal
  - f. Two holes in the intercell connector where the module is to be mounted. Typically, this will be toward the center of the battery as that gives the module maximum mechanical protection. Before removing the connector cover, place the module in its planned location on top of the connector cover and scribe a line around it. Then remove the connector cover, and cut out along the line so that after mounting, the module will make direct contact with the connector. Now, with the connector cover back in place, use the module as a template for drilling the holes. When drilling the intercell, be careful to limit the depth so as not to damage a cell cover.

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- Place an insert into each one of the 7 holes and tap it gently with a wooden or rubber mallet until it is flush with the surface. It is especially critical that the module mounting inserts be flush so that the bottom of the module is tight against the intercell connector.

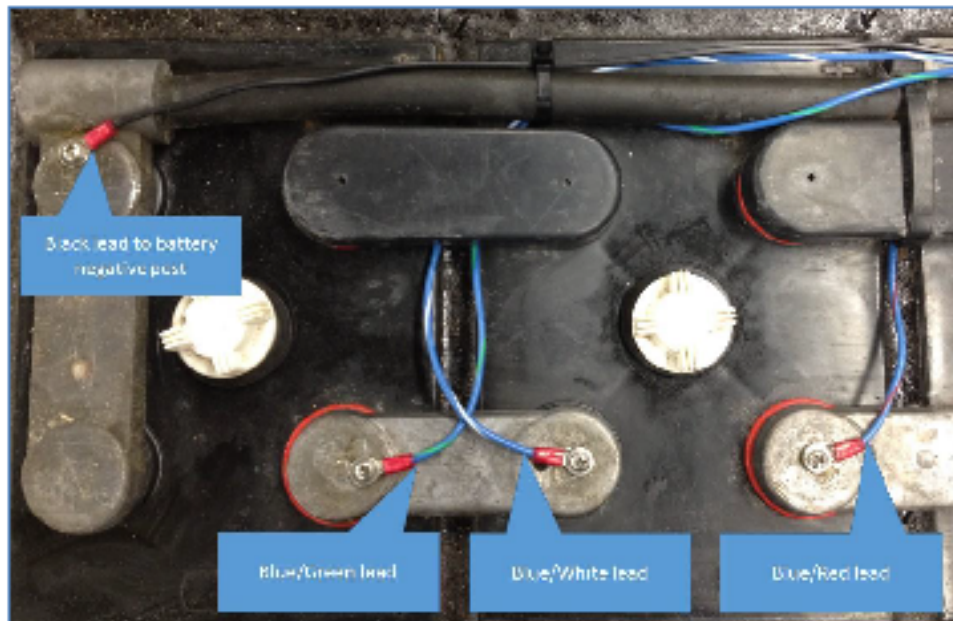


- Pre-grease the two 6-32 x 3/4" machine screws with NO-OX-ID A, and attach the WBID to the intercell connector using the two holes drilled in step 4f and using two #6 flat washers as shown above.
- Apply NO-OX-ID A corrosion inhibitor on all 5 of the remaining inserts prior to connecting the harness to the battery.
- Loosely route the red and black WBID power leads to the positive and negative battery terminals, respectively. Do not connect them yet.
- Route the bundle of wire whose ends are sealed in heat shrink into the vicinity of the last two cells (those nearest the negative battery terminal). Then carefully remove the heat shrink, taking care to prevent the ring terminals from touching any intercell connectors other than those on the first two cells.

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10. Loosely route the blue/green WBID lead to the positive post of the most negative battery cell.
11. Loosely route the blue/white WBID lead to the negative post of the second cell from the negative terminal.



12. Loosely route the blue/red WBID lead to the positive post of the second cell from the negative terminal.
13. Plan the electrical installation of any optional devices. The WBID includes a cluster of six color coded wires (Green, Yellow, Blue, White, Brown and Orange) that form its accessory ports. Select which of the wires will be connected to which of the sensors and make a note of it. The sensors and indicators have their own installation instructions detailing mechanical installation that come packed with the devices. They are also included in the appendix to this document.
14. Using a 6-32 x 1/4" machine screw and provided washer, connect the black power lead to battery negative.

**NOTE: Double check the following two connections: verify ~2V from the black WBID lead to the planned connections for the blue/green and blue/white WBID leads.**

15. Using a 6-32 x 1/4" machine screw and provided washer, connect the blue/green lead to the positive post of the most negative cell.
16. Using a 6-32 x 1/4" machine screw and provided washer, connect the blue/white lead to the negative post of the second cell from the negative terminal.

**NOTE: Double check the following connection: verify ~4V from the black WBID lead to the planned connection for the blue/red WBID lead.**

17. Using a 6-32 x 1/4" machine screw and provided washer, connect the blue/red lead to the positive post of the second cell from the negative terminal.
18. Using a 6-32 x 1/4" machine screw and provided washer, connect the red power lead to the positive battery terminal.
19. Verify that the green LED on the WBID is flashing rapidly (10x/sec), indicating that the module is operating. It may take more than 30 seconds for the startup process to be completed and the LED's to settle into this pattern.
20. Coat all exposed metal connections/screw heads with NO-OX-ID A.

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21. Replace the terminal covers. Modify the intercell covers if needed, and replace those as well. Tie down all wiring with the provided wire ties. If for any reason other wire ties are used, make sure they are the polypropylene type. (Most wire ties are nylon which deteriorates quickly in contact with battery acid.)
22. If the battery has a cover, verify that it closes with no interference. If there is no cover, verify that the battery goes into the truck with no issues.

The WBID must be calibrated and configured to your battery before connecting it to a charger. DataLink includes screens that make this quick and easy using a laptop computer and an AMETEK Wireless Interface Device (WID).

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## WARRANTY

### AMETEK/PRESTOLITE WIRELESS BATTERY IDENTIFICATION DEVICES (WBID)

AMETEK/Prestolite Power (hereinafter called "Prestolite") warrants that each new and unused WBID manufactured and supplied by it is of good workmanship and is free from any inherent mechanical defects, provided that (1) the product is installed and operated in accordance with generally accepted industrial standards and in accordance with the printed instructions of Prestolite, (2) the product is used under normal conditions for which designed, (3) the product is not subjected to misuse, negligence or accident, and (4) the product receives proper care, protection and maintenance under supervision of competent personnel. This warranty is subject to the following provisions:

1. **PRODUCT AND PARTS WARRANTED.** Subject to the exceptions listed below, each WBID is warranted for a specific period of time commencing from the date of its shipment by Prestolite, provided the charger is used in accordance with Prestolite's published performance rating for the unit involved. The exceptions to this warranty are as follows:
  - a) Terms and conditions for warranty coverage: Parts replacement only. For a warranty period of 1 year.
  - b) Warranty Expense Limitation: The maximum warranty expense Prestolite will incur for any WBIDs will be limited to the original purchase price of the device.
2. **COMMENCEMENT OF WARRANTY TIME PERIODS.** The warranty periods indicated in the Warranty Schedule shall commence on the date of shipment by Prestolite.
3. **PERSONS COVERED BY WARRANTY.** Prestolite extends this warranty only to the purchaser of new equipment from Prestolite or one of its authorized distributors. The products purchased under this agreement shall be used exclusively by the buyer and its employees and by no other persons; and therefore, there shall be no third-party beneficiary to this warranty.
4. **LIMITATION OF REMEDY.** The existence of claimed defects in any product covered by this warranty is subject to Prestolite's factory inspection and judgement. Prestolite's liability is limited to repair of any defects found by Prestolite to exist or, at Prestolite's option, the replacement of the defective product F.O.B. factory after the defective product has been returned by the purchaser at its expense to Prestolite's shipping place. Replacement and exchange parts will be warranted for the remainder of the original Data Device Warranty or for a period of ninety (90) days, whichever is greater.
5. **USE OF DEFECTIVE PRODUCT.** Continued use of WBID after discovery of a defect VOIDS ALL WARRANTIES.
6. **ALTERED EQUIPMENT.** Except as authorized in writing, the warranty specified does not cover any equipment that has been altered by any party other than Prestolite.

**THIS WARRANTY IS GIVEN AND ACCEPTED IN LIEU OF ALL OTHER WARRANTIES, WHETHER EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION ANY WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, OTHER THAN AS EXPRESSLY SET FORTH HEREIN. IN NO EVENT SHALL PRESTOLITE BE LIABLE FOR ANY ANTICIPATED OR LOST PROFITS, SPECIAL, DIRECT, INDIRECT, OR INCIDENTAL DAMAGES, CONSEQUENTIAL DAMAGES, TIME CHARGES OR OTHER COMMERCIAL EXPENSES OR LOSSES, AND BUYER ASSUMES ALL RISK AND LIABILITY RESULTING FROM USE OF THE GOODS. PRESTOLITE DOES NOT AUTHORIZE ANY REPRESENTATIVE OR OTHER PERSON TO ASSUME ON BEHALF OF PRESTOLITE ANY OTHER LIABILITY IN CONNECTION WITH THE SALE OR USE OF THE GOODS SOLD, AND THERE ARE NO ORAL AGREEMENTS OR WARRANTIES COLLATERAL TO OR AFFECTING THIS WRITTEN WARRANTY.**

### WARNING

At all times, safety must be considered an important factor in the installation, servicing and operation of the product and skilled, qualified technical assistance should be utilized.

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