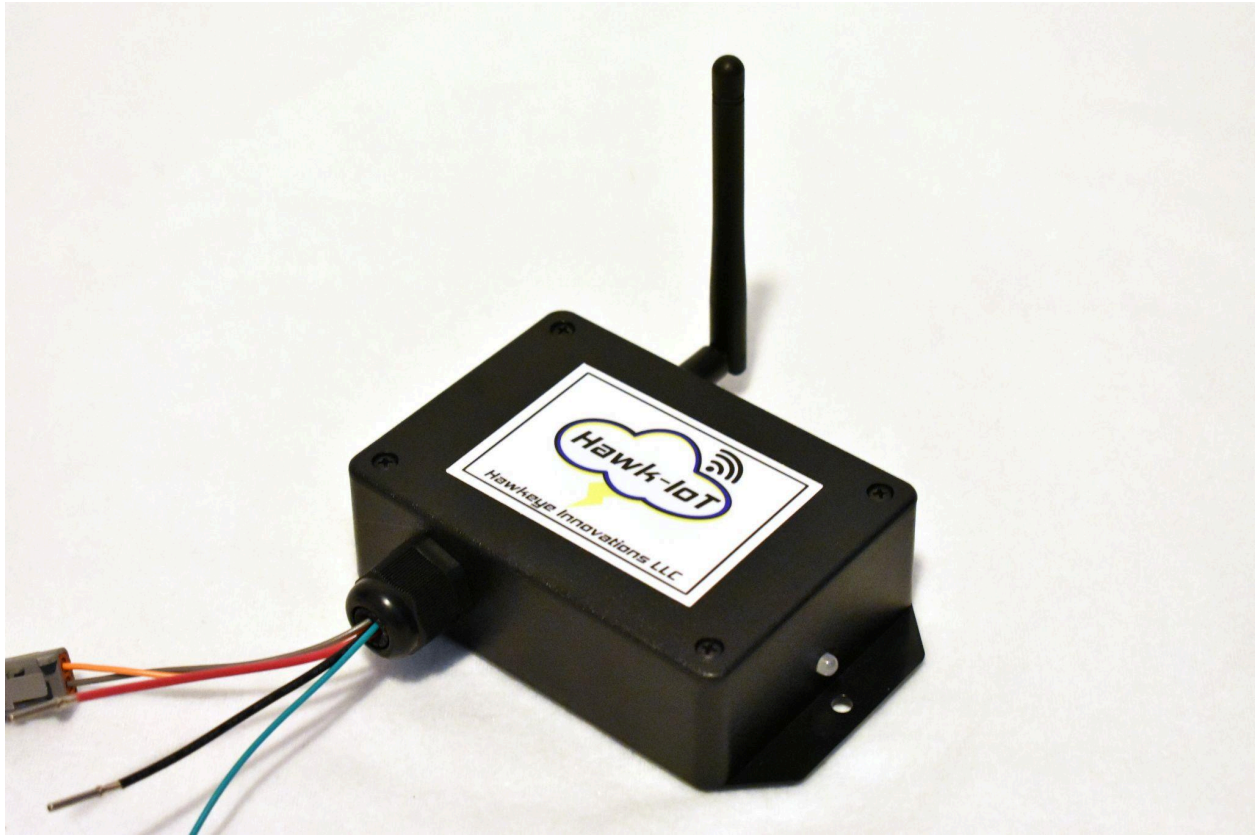


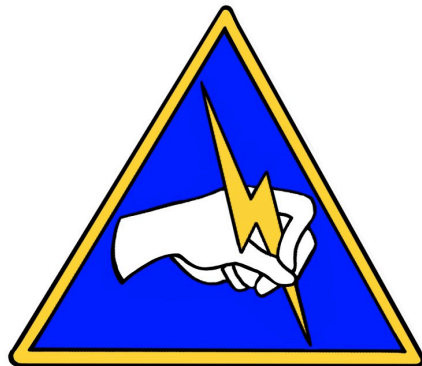
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# Hawk-IoT WiFi Module Manual



Contains FCC ID: 2AHMR-ESP07S

FCC Certification and Test Report available on the product page for download.



**HAWKEYE INNOVATIONS  
LLC**

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## **Safety First!**

**This list is not all inclusive. Use common sense and be responsible when working with high voltage and high voltage components. High voltage components are dangerous and can cause injury or death if not correctly or safely handled.**

**Always wear safety equipment such as high voltage rated shoes, gloves, and safety glasses. Be sure to remove all metal jewelry or any metal objects prior to working with any high voltage. Use insulated tools or insulate any tools that may be coming in contact with high voltage points.**

**Always check over the high voltage wiring and connections several times. Always use precautions when working with high voltage and/or series connected batteries. Be sure that the vehicle is off of the ground, and the wheels will not make contact with anything. It is good practice to have more than one support mechanism that supports the vehicle for extra safety.**

**Always refer to the component manufacturers' manuals for the most up to date information on their specific products. Please be sure to always use correct high voltage fusing and high voltage disconnect devices that are fully operational.**

**If you ever feel uncomfortable or uncertain in any way, STOP and seek advice from a knowledgeable person immediately.**

# Introduction

Hawk-IoT is an Internet of Things (IoT) product that is designed to access all of the data of the compatible components. Not only does it provide a beautiful user interface in the iOS and android apps, but it also allows an expert to help troubleshoot issues quickly. The power and wifi setup wires are fitted with a Deutsch DTM socket, which can be used with a DTM plug, or cut off and a connector of choice may be used.

**NOTE: Be sure to change the CAN bus baud rates of the HyPer Controller and Orion BMS to 250kbps before connecting any other devices to the CAN bus. Colliding CAN bus messages at different baud rates will cause none of the CAN bus devices to work.**

## Compatibility:

Orion BMS 2

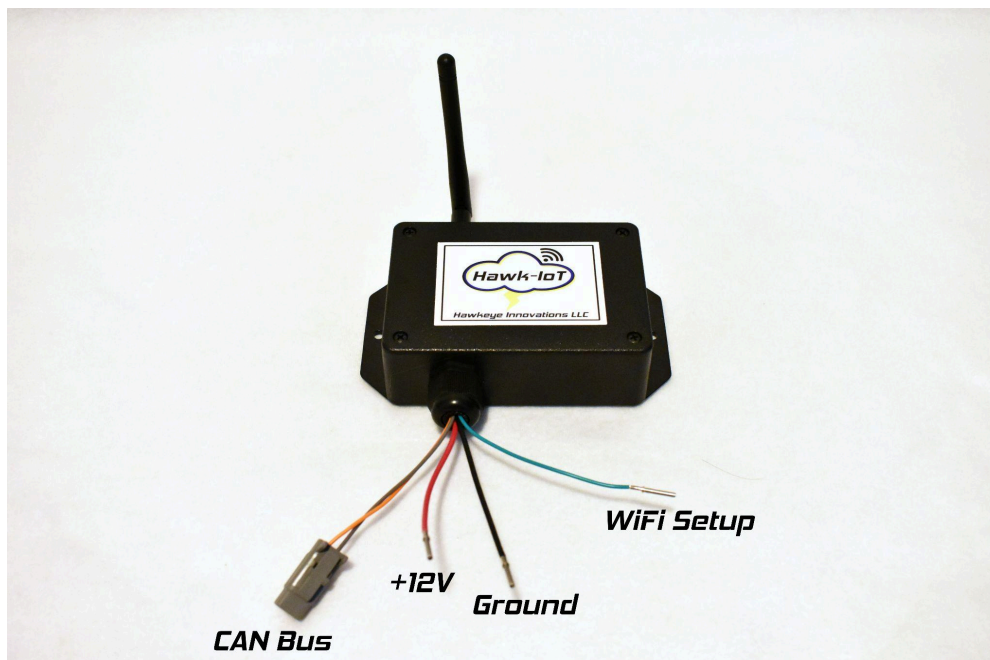
Hyper 9 System (can monitor two independent systems)

TC/Elcon 1kW DC/DC Converter

TC/Elcon 3.3kW/6.6kW Charger

Hawkeye Innovations 6.6kW+1.2kW Charger DC/DC Combo  
SCM2

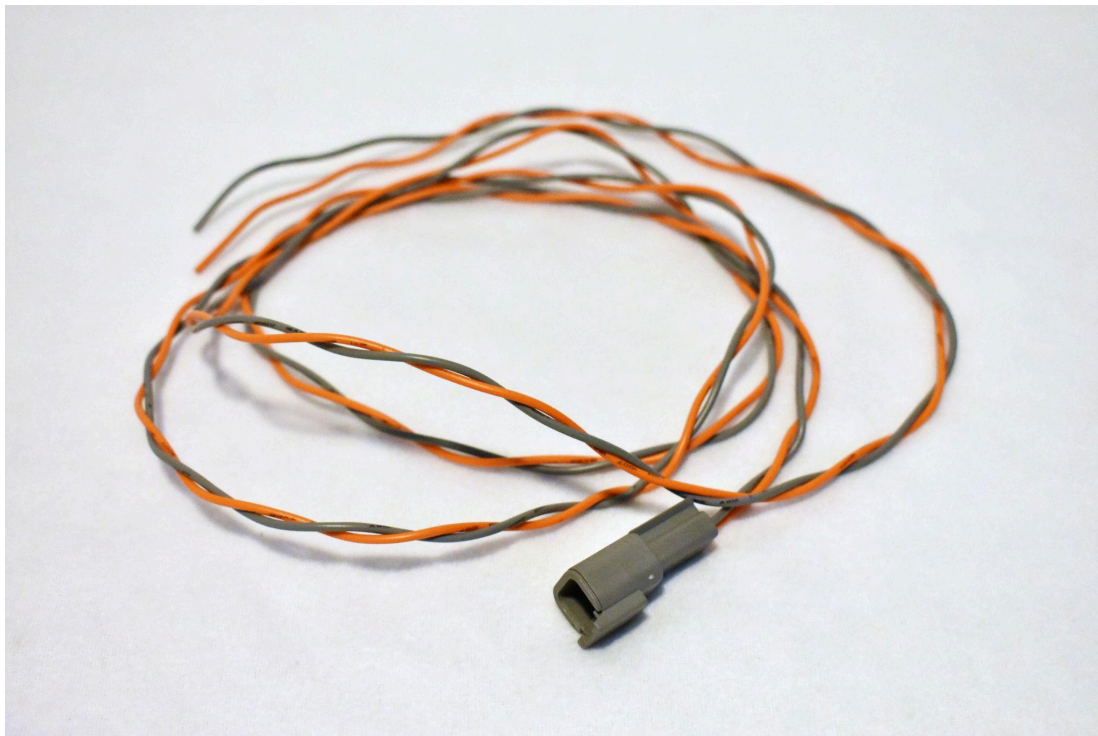
## Module Overview:



**Figure 1**

## Wiring

1. Ensure no 12V power is present, and there is nothing powered on the CAN Bus. Connect +12V (as shown in Figure 1) to power using a 5A fuse.
2. Connect Ground (as shown in Figure 1) to chassis ground (-12V).
3. The WiFi Setup wire should be wired to an accessible toggle switch, and the other side of the switch should be connected to ground. When this input is switched to ground, the module will enter WiFi Setup Mode, which will be covered later in this manual. This input should NOT be switched to ground by default, only when your target WiFi network settings need to be set.
4. The CAN Bus (as shown in Figure 1) can be wired up using the supplied CAN Bus harness as shown in Figure 2. The gray wire is CAN low, and the orange wire is CAN high. Once these wires are connected to your CAN bus, you can plug the CAN harness into the Hawk-IoT module.

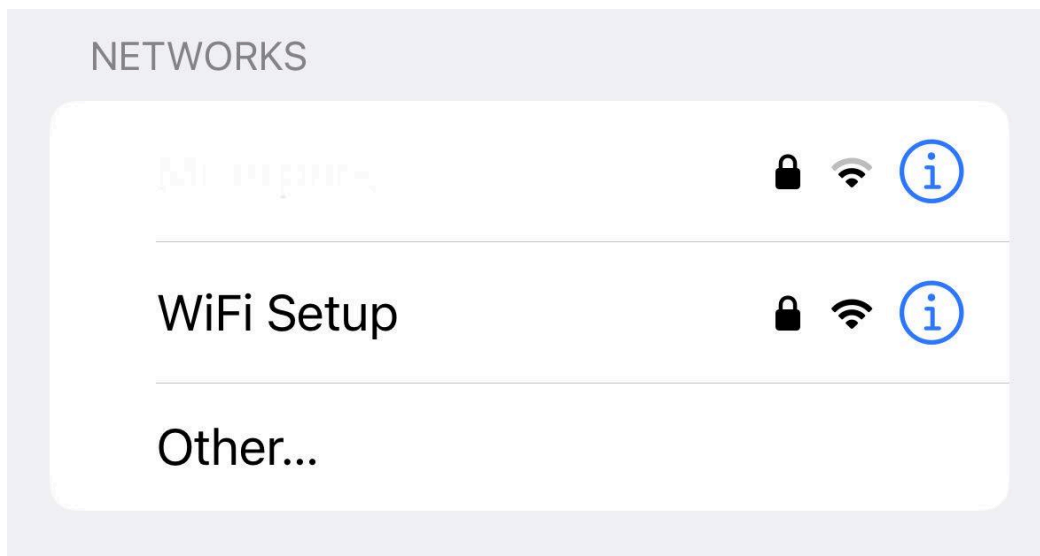


**Figure 2**

# WiFi Setup

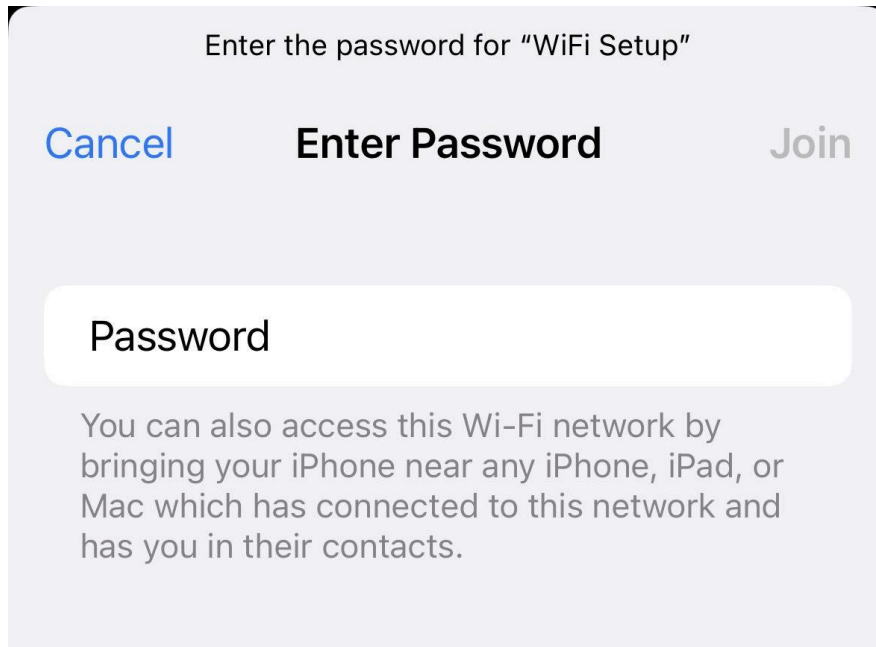
When the WiFi Setup input is switched to ground, it will enter the WiFi Setup mode. The module will create its own WiFi network called 'WiFi Setup'. By following the steps below, you will provide the target WiFi network name (called the SSID) and the network password of the WiFi network you want the module to connect to. This will save the WiFi settings in the memory of the module, and when powered on, it will always search to connect to that saved network. Only one WiFi network can be stored. We will show the setup steps with an iOS device, but the steps are generally the same for android devices.

1. With your module powered off, switch the WiFi setup input to ground. Then, apply power to the module. The LED should turn solid red, but allow about 30 seconds for the module's WiFi network to generate. Go to your WiFi settings on your phone (or other device) and wait for the 'WiFi Setup' Network to appear as shown in **Figure 3**. Once it appears, click on it to connect to it.



**Figure 3**

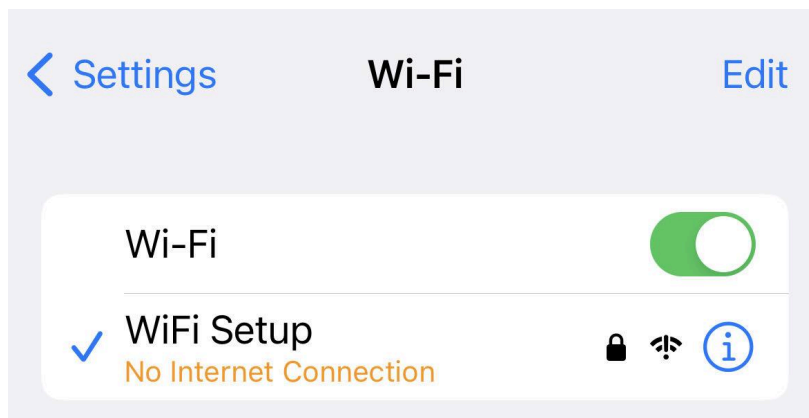
2. You will be prompted to enter a password as shown in **Figure 4**. Enter the password and then click 'Join'. The default password is **12345678**



**Figure 4**

3. Once you're connected to the WiFi Setup network, it should look as shown in **Figure 5**.

*It is normal to see a 'No Internet Connection' message since the module does not have its own internet connection. You are just using a temporary WiFi Setup Network to load your WiFi settings into the device.*



**Figure 5**

- Next, go to your internet browser on the phone. On iOS devices, it is Safari. Once there, enter **192.168.4.1** into the website address field, and click 'Go' as shown in **Figure 6**.



**Figure 6**



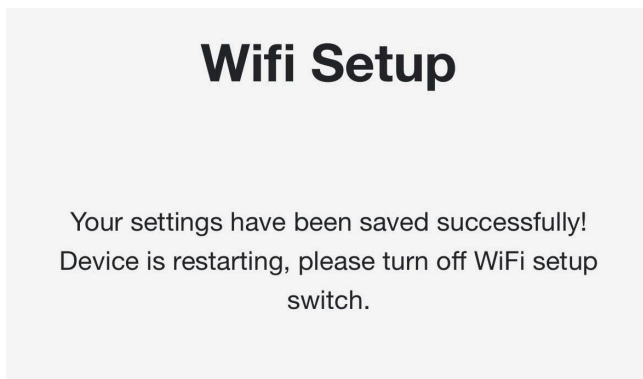
5. Once the page loads, it should appear as shown in **Figure 7**. If it does not load, then you more than likely lost connection to the WiFi setup network, or your phone reconnected to your home network, please retry. At this page, you need to enter in your network name (SSID) that you would like to connect to, and your network password. **These must be entered exactly as they appear, including spaces, and they are case sensitive. Be careful entering your password and ensure you enter it correctly. Some large network names that are too long, or with more than one space are known to have issues.**



The screenshot shows a 'Wifi Setup' interface. At the top, the title 'Wifi Setup' is displayed in a large, bold, black font. Below the title, there are two input fields: the first is labeled 'SSID' and the second is labeled 'Password'. Both fields are empty and have a light gray border. Below the input fields is a prominent blue button with the word 'Save' written in white. At the bottom of the form, the URL [www.hawkeyeinnovationsLLC.com](http://www.hawkeyeinnovationsLLC.com) is displayed in a smaller, blue font.

**Figure 7**

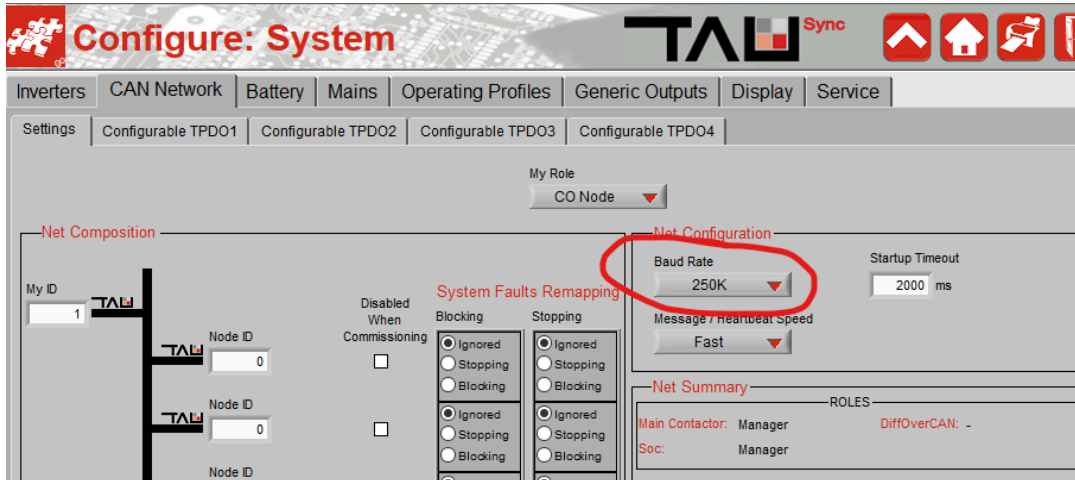
6. Once you have entered your network name and password, click 'Save' and you should see the message shown in **Figure 8**. Follow the instructions, and disconnect your WiFi Setup input now (turn off your setup switch). If this message does not appear, then you more than likely lost connection to the WiFi setup network, or your phone reconnected to your home network, please retry. You may need to disable the 'auto-join' setting on your home network.



The screenshot shows a 'Wifi Setup' interface with a success message. The title 'Wifi Setup' is at the top in a large, bold, black font. Below the title, the message reads: 'Your settings have been saved successfully! Device is restarting, please turn off WiFi setup switch.' The text is centered and in a black font.

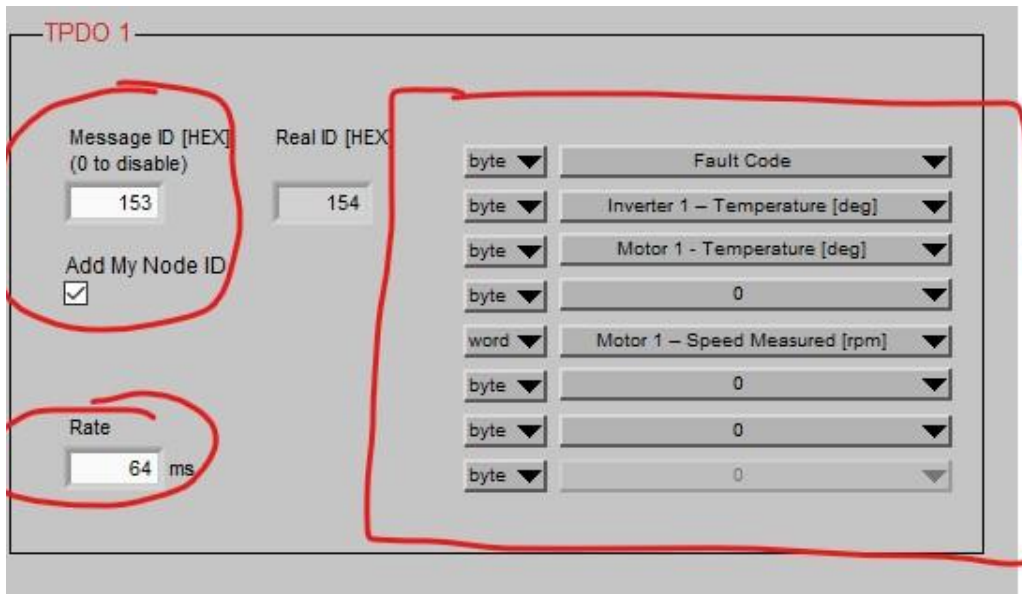
# HyPer Controller CAN Setup

Once you have enabled the CAN bus functionality of the HyPer controller, make sure the CAN speed is set to 250kbps as shown in **Figure 8**.



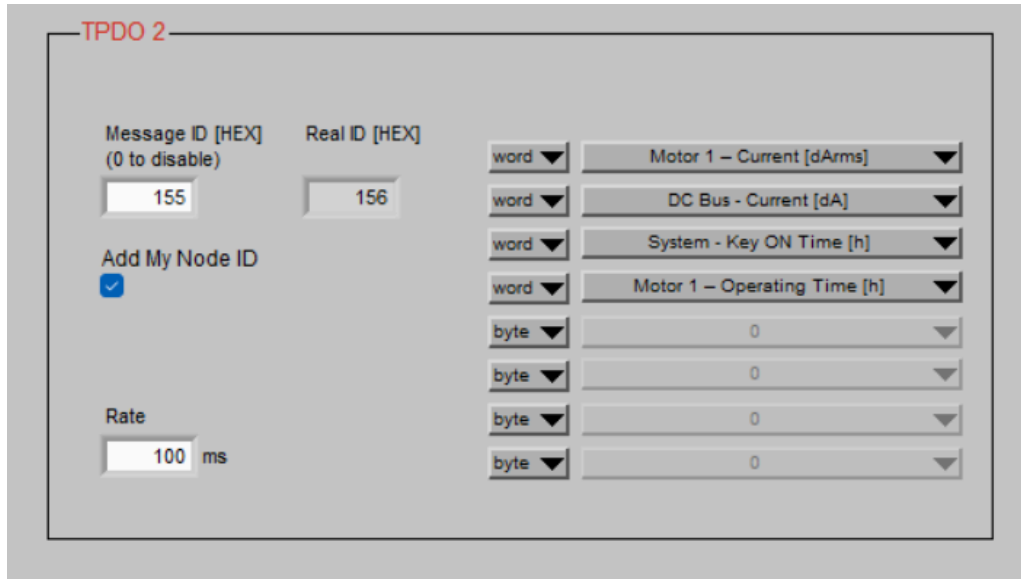
**Figure 8**

Next, go to the ‘Configurable TPDO1’ page, and type in ‘153’ for the message ID, ‘64’ for the rate, and set the parameters to the right exactly as shown in **Figure 9**. After configuring TPDO1, click the save icon, and proceed to the next step to configure TPDO2.



**Figure 9**

Configure TPDO2 the same way as TPDO1, be sure to click the save icon to save all changes. Follow the parameters in **Figure 10** below and copy it exactly as shown. Once you finish setting all of the CAN parameters, restart the system so the changes can take effect.



**Figure 10**

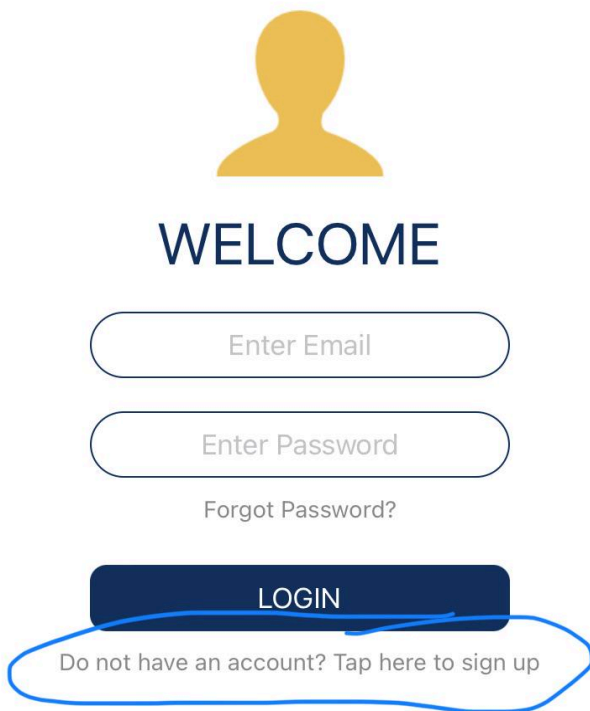
## Orion BMS CAN Setup

Please use our Orion BMS CAN Bus template file on our website on the Hawk-IoT product page, or send us your BMS profile to make the changes. The Hawk-IoT module is not yet added to the Orion BMS 3rd party CAN bus devices page, but will be soon. **This template is ONLY here to use the existing CAN bus settings, and you must complete all other settings for your BMS.**

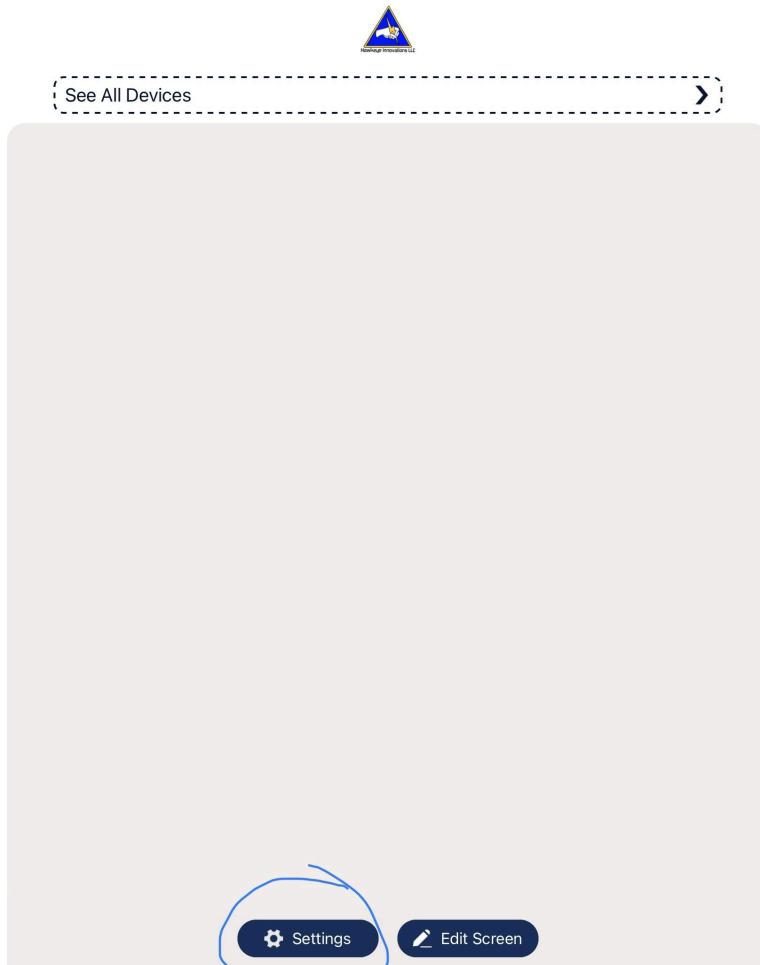
**Be sure that the CAN speed of the BMS is 250kbps, unless you have a display that was pre programmed by us to a different CAN speed.** Don't forget to upload the changes to your BMS! If you change the CAN speed of the BMS, after uploading the changes, you must disconnect the BMS power and wait 30-60 seconds before reconnecting the power.

# Mobile App Manual

The Hawk-IoT app can be downloaded from the iOS app store and android google play store for free. Once you open the Hawk-IoT app, you can sign in with your credentials, or create an account if you don't already have one by clicking the text circled in blue in **Figure 11**. Follow the prompts to create your account, and you should receive an email to verify your email address. Be sure to check your spam folder. Once your email is verified, you can return to the app and login.



**Figure 11**

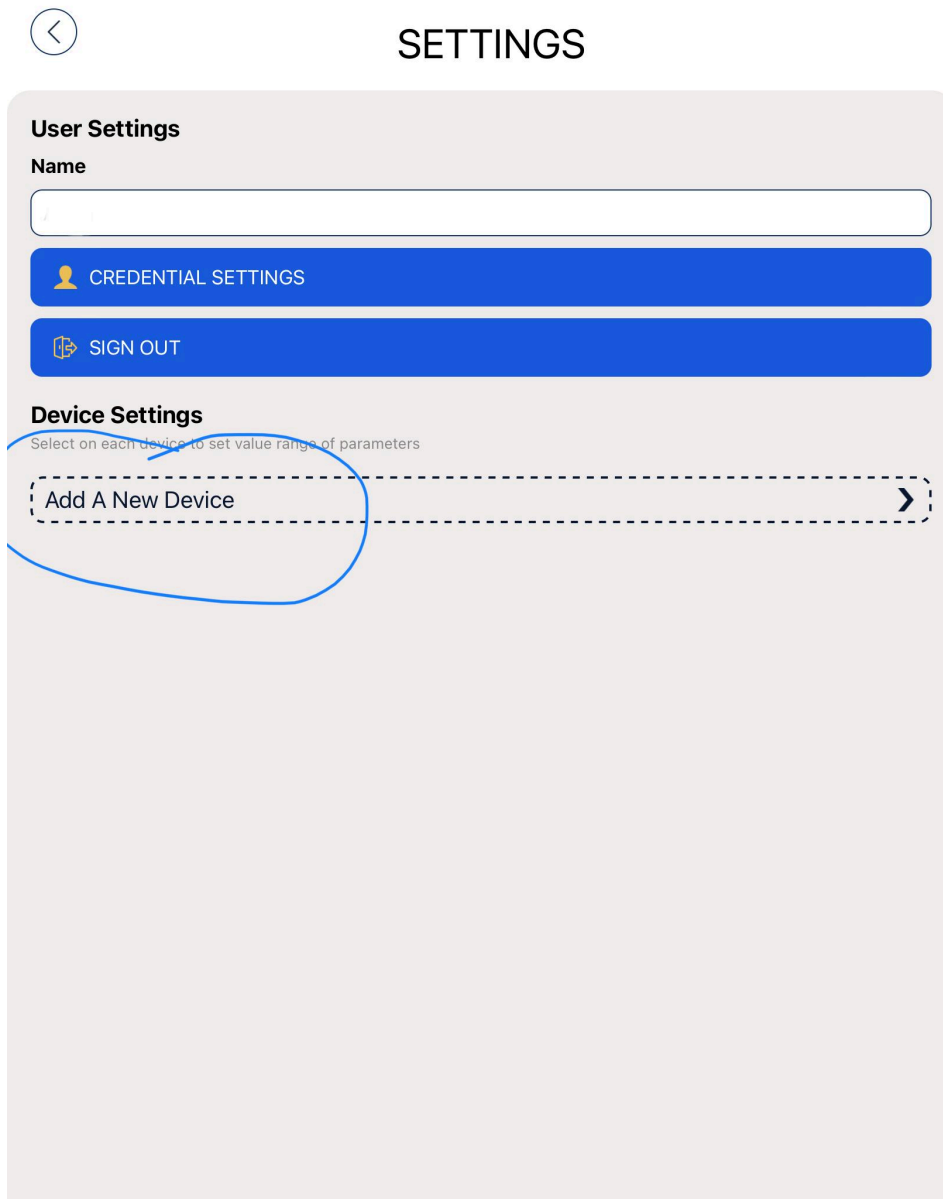


**Figure 12**

The favorites page of the app is shown above in **Figure 12** that will show all of your widgets. Your widgets on this page are your ‘favorites’, and you can have up to 7. **These widgets can be from any device, any device module, and any parameter.** For example, you can view the SOC of 7 different vehicles at the same time.

The ‘See All Devices’ button will allow you to browse to a device, the device module, and a specific parameter. This is the easiest way to access any parameter across all of your devices and modules in real time.


To add a device, click on the ‘Settings’ button circled in blue as shown in **Figure 12**.



**Figure 13**

At the top you can set the name on the account. ‘Credential Settings’ button allows you to reset your password. ‘Sign out’ allows you to sign out of your account.

Select ‘Add A New Device’ circled in blue in **Figure 13**.



**REGISTER DEVICE**

Enter Device UID

Enter Name for Device

Device UID is on the sticker attached to your device

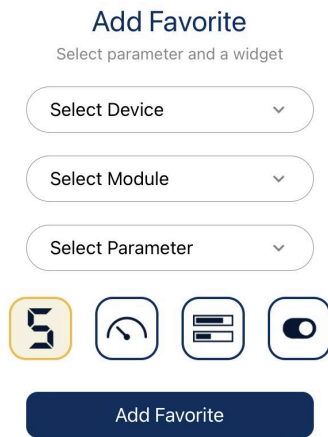
**CONNECT DEVICE**

**X CANCEL**

**Figure 14**

The Add Device screen is shown in **Figure 14**. Your device UID is specific to your device, and is printed on your device serial label. To test the app using our demo device enter 'Demo' as the UID. For the device name, enter in the nickname for that device, whatever you want it to be. Once you finish, click 'Connect Device'. It will prompt you that it has been added successfully. Click the back arrow in the top left corner of the screen to return to the favorites screen.

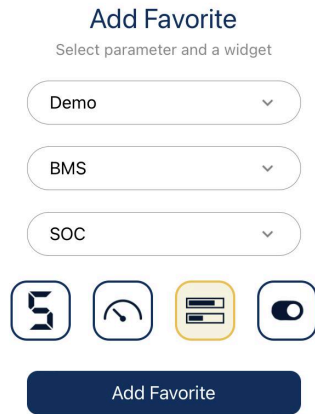
Once you're back at the favorites screen, click 'Edit Screen', and then click 'Add Widget'.



**Figure 15**

Shown in **Figure 15** is the add widget screen, which is also the same format as the edit widget screen. Click the drop down arrow to select your device. Then select the module you want to read from, and the parameter you want to add a widget for. Finally, select which widget type you would like to use for this parameter.

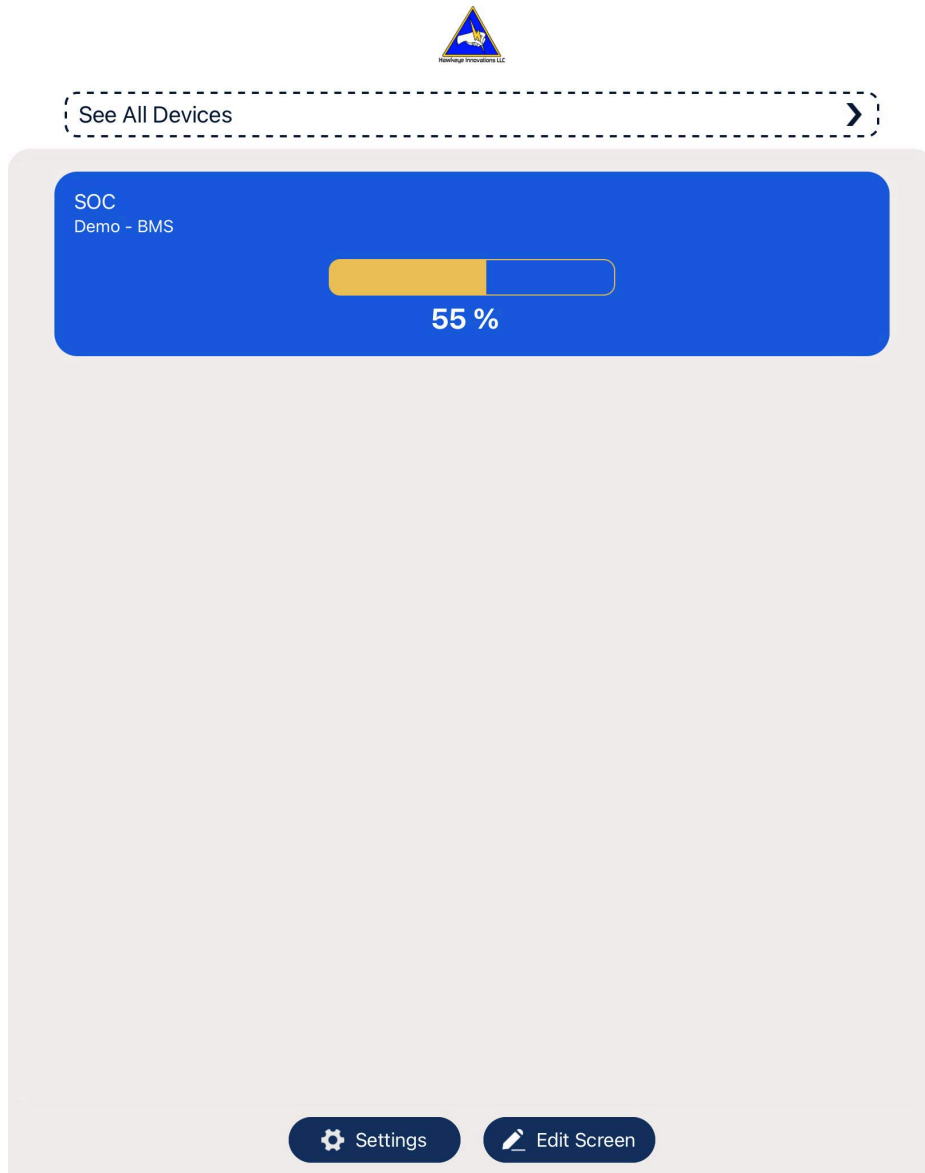




**Figure 16**

**Figure 16** is an example of what adding a widget should look like. Once you have selected your parameter, click ‘Add Favorite’. It will prompt you that it has been added successfully, then click outside of the Add Widget window to return to the favorites screen. Click ‘Cancel’ to leave the edit mode and start loading data.

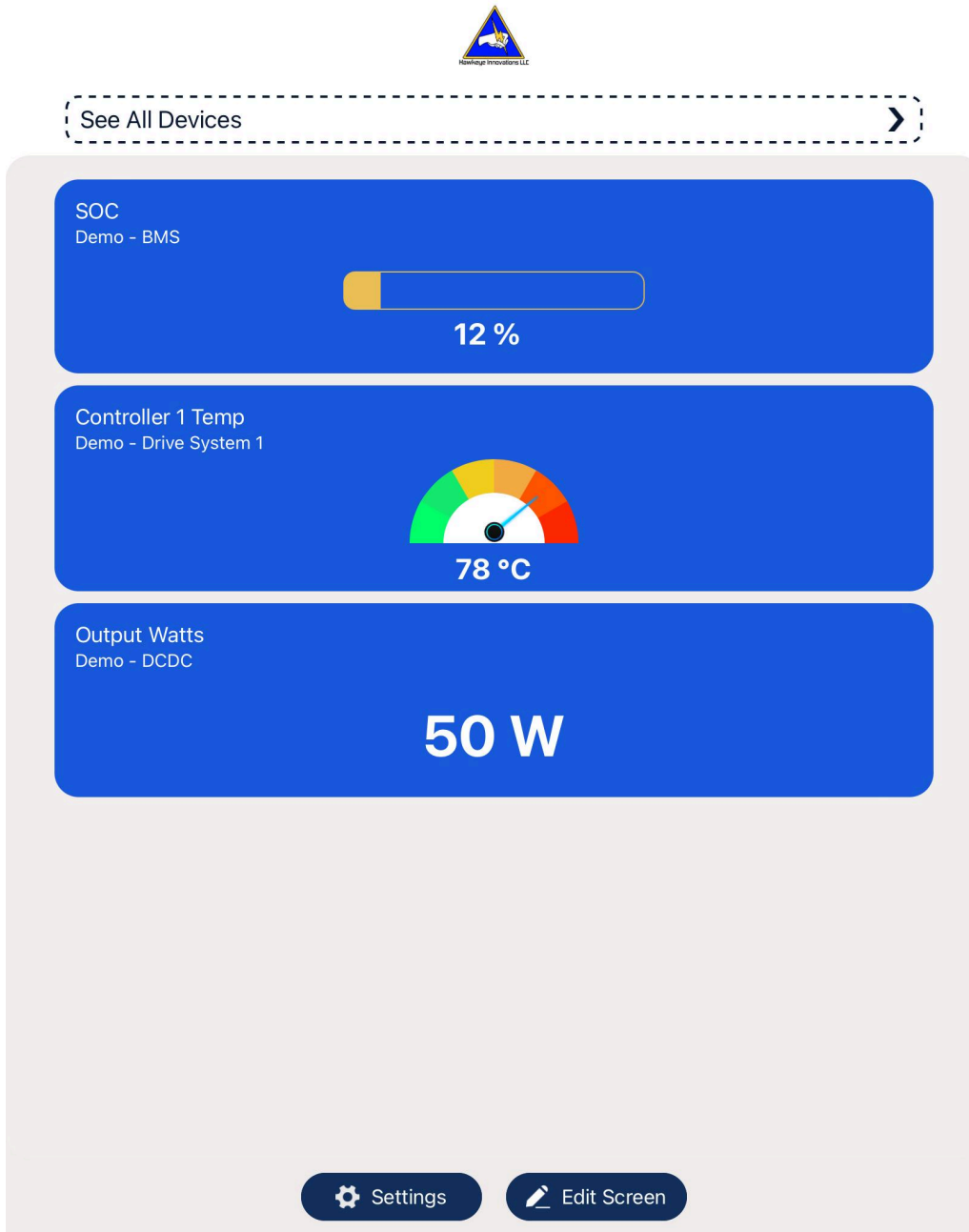
NOTE: The button widget is currently reserved for future use.



**Figure 17**

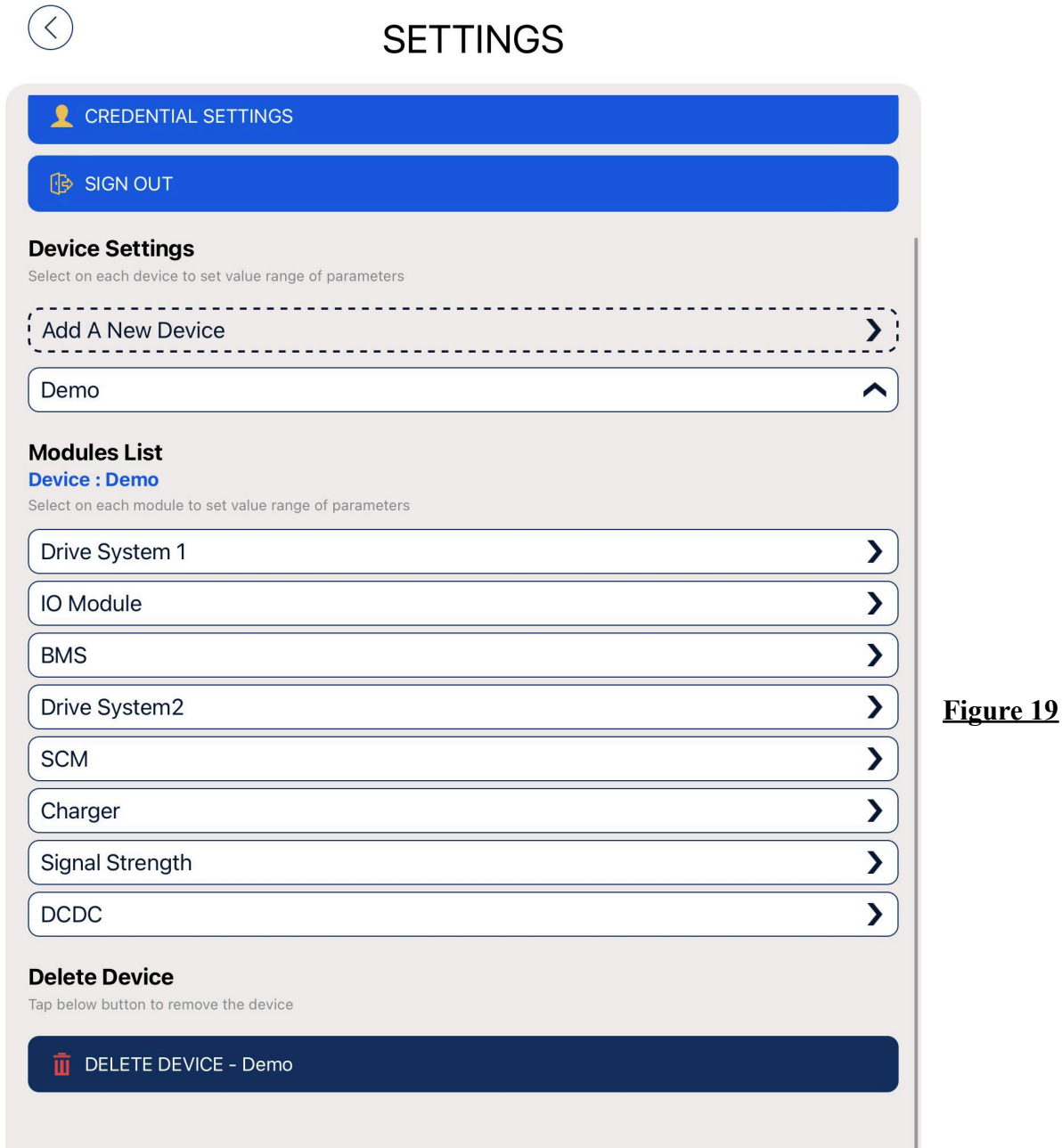
Clicking ‘Edit Screen’ will go into edit mode, and then clicking cancel, will refresh the data acquisition. **Sometimes if the app is open in the background, you may have to close the app and reopen, or click edit screen and then cancel to refresh the data.**

As mentioned, you can add up to 7 favorites to your screen, but keep in mind that all parameters can still be viewed in ‘See All Devices’, more on that later.



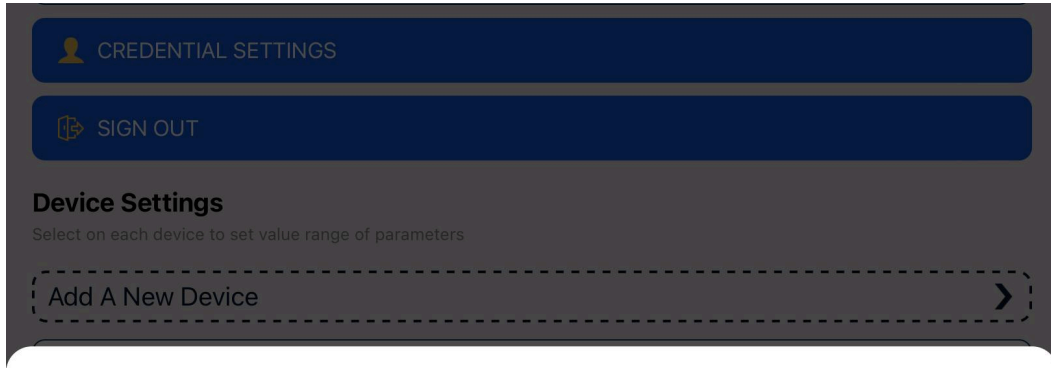
**Figure 18**

All widgets will default with a range of 0 to 100. If the value is outside of this range, it will show an error message that it is out of range. The range of every value can be configured. To change the range, click on settings, then click on your device from the list shown in **Figure 19**.



**Figure 19**

Once you select the device, the modules list will appear as shown in **Figure 19**. Click on the module whose parameter you want to set the range.



**Set Parameter Range**  
Demo - BMS

Select a parameter and set range values

Select Parameter ▾

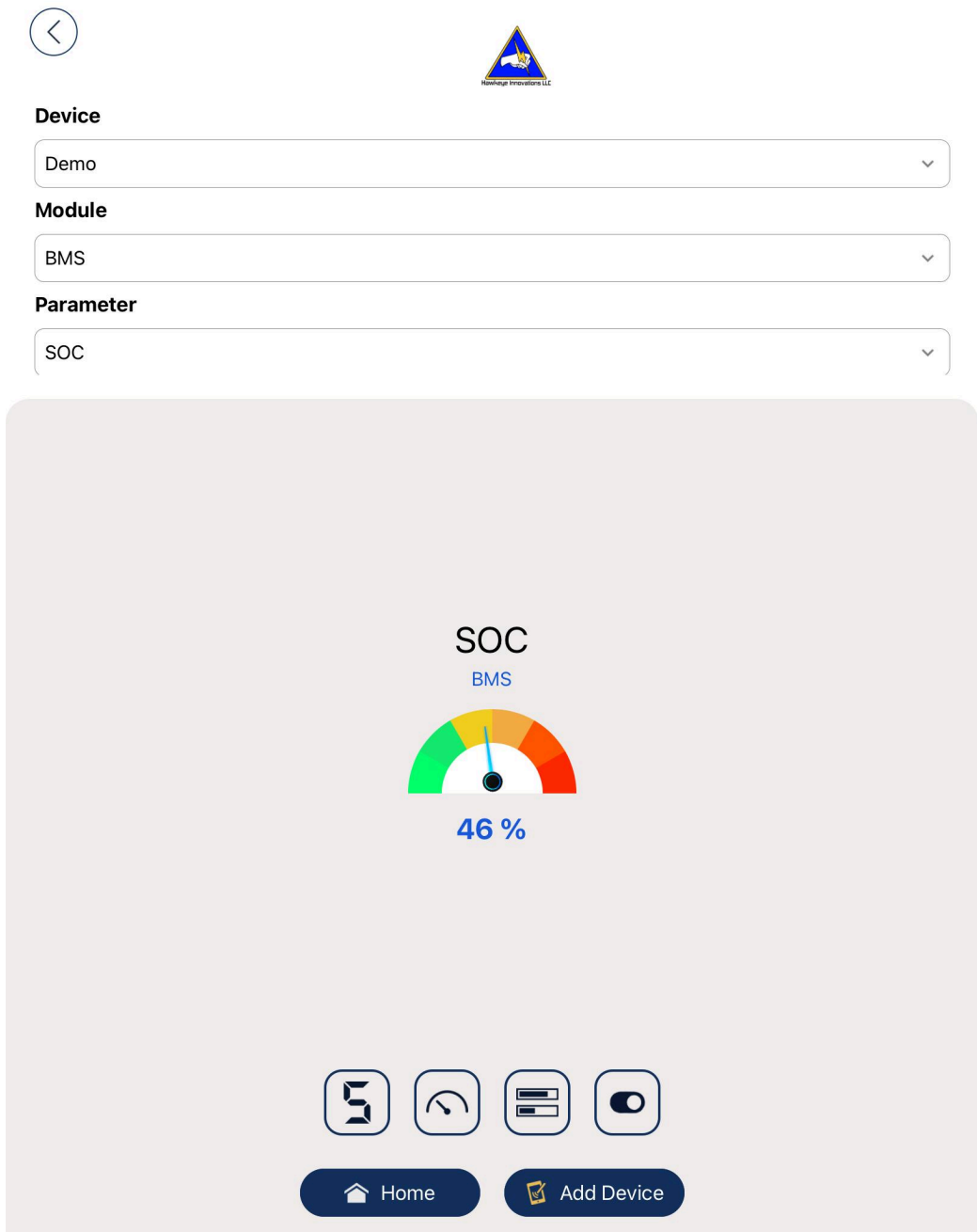
0

0

Set Range

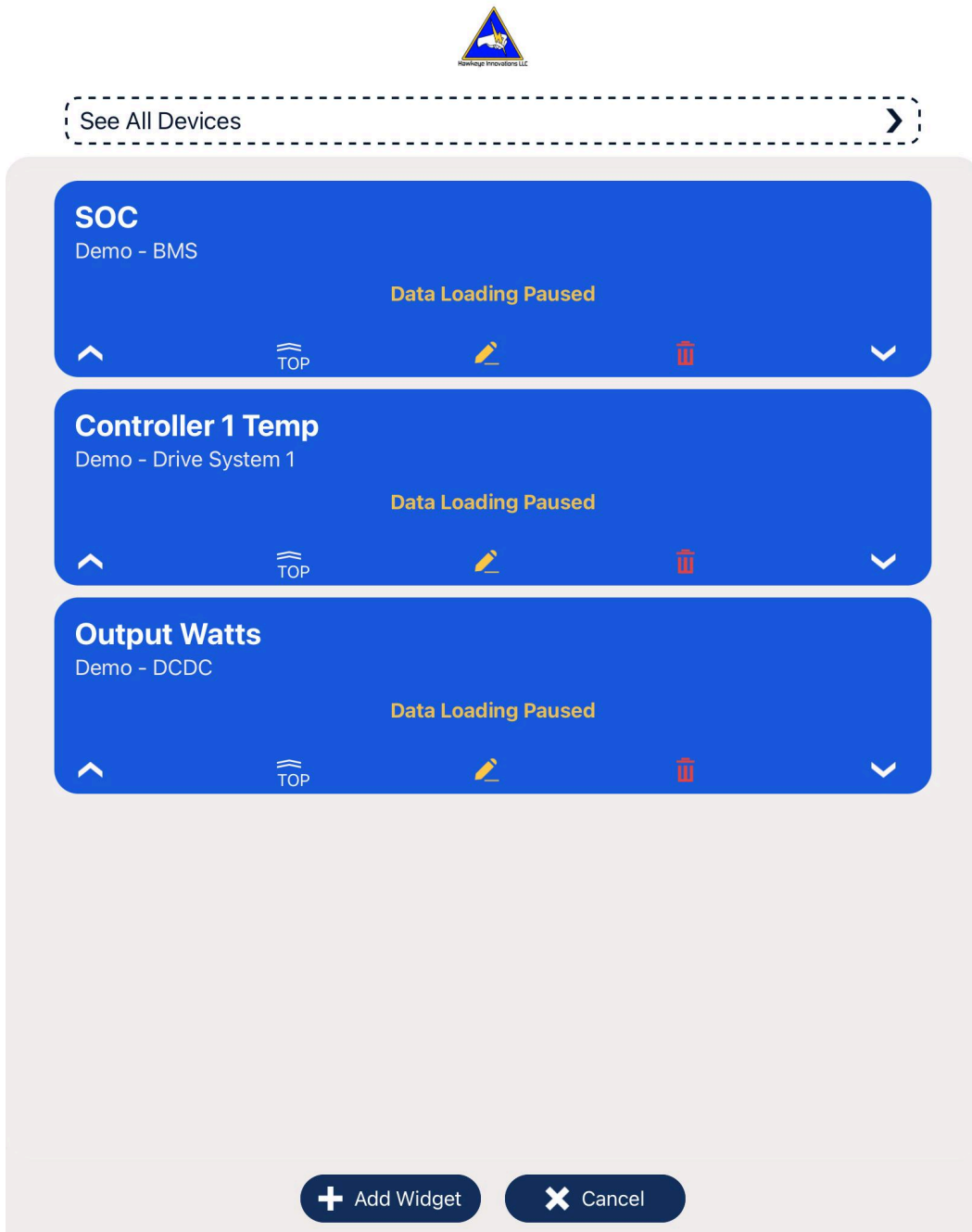
**Figure 20**

You can now select the parameter, then set your low value on top, and high value on the bottom as shown in **Figure 20**. When you are finished, click 'Set Range'.



**Figure 21**

In the ‘See All Devices’ screen shown in **Figure 21**, you can view any parameter from any device in real time and with any widget style.



**Figure 22**

If you select 'Edit Screen' to go into edit mode, you can also rearrange the widgets to your liking. The widget arrows on the left and right side can be used to move the widget up and down. The 'Top' button will move the widget to the top of the list. The trash can icon will delete the widget, and the yellow pencil icon is to edit the widget (which looks exactly like the add widget screen).

# LED States

**The Hawk-IoT LED will remain a dim blue in most states. The only two states to know are:**

1. **No WiFi Connection:** After about 15 seconds, you will see a red flash 5 times very quickly. The device will continue to restart and try again until it connects to the WiFi. You may be out of range, have very poor connection, or you may have entered your WiFi credentials incorrectly (return to the WiFi setup steps and try again).
2. **No CAN connection (but WiFi is connected):** After 5-10 seconds, you will see a slow red flash 3 times. At this point the WiFi is connected, and you should see zeros registering for the parameters in the Hawk-IoT App. The device is restarting after you see the red flash, so data sent out will be unstable. In this state it is unable to read any of the compatible CAN bus devices.
3. **WiFi Setup Mode:** If the WiFi setup input is switched to ground before the module is powered on, the LED will be solid red. If you switch the WiFi setup input to ground while the module is already on, the WiFi setup will still work, but the LED will not change states.

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The Hawk-IoT module and app should now be fully operational and set up with your system. If you have any questions, please feel free to contact us!

**Hawkeye Innovations, LLC**

**Email:** [support@hawkeyeinnovationsLLC.com](mailto:support@hawkeyeinnovationsLLC.com)