

# Introduction



## **Guardian – IoT Gateway Installation and Operation Manual**

The Guardian hub is a monitoring and controls device for your Fortress eFlex and eVault MAX battery products. It uploads your Fortress batteries' data to the cloud over Wi-Fi so that you can view key information on your battery system in the Guardian companion app such as charged percentage, time till full charge, voltage, current, and more. The companion app allows for a smoother tech support experience by featuring a chat widget where you can contact support directly. Additionally, the app automatically tracks your Fortress battery warranties once they are connected to the Guardian hub.

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# Required Tools + Materials

- Fortress Power eFlex or eVault MAX battery
- An Android or Apple Phone
- Stable Wi-Fi connection

## Material List

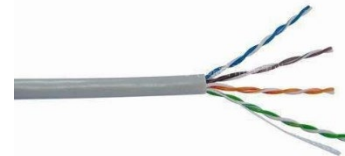
### 120V AC Power supply

120V AC -> DC 24V / 2A adapter (outer diameter 5.5 / inner diameter 2.5 )



### 48V DC power cable (from battery)

(included power cable is pre-crimped with ring terminals for battery)



### Battery-Guardian Communication Cable

pre-wired for connection to both eFlex and eVault battery units (same cable for both models).



## Physical Features

- [IP23 Rated](#)
- Two power supply sources
  - 120V AC/DC wall socket adapter
  - 48V DC input for use with FlexTower or DuraRack racking system
- Connects to home internet via Wifi or hardwired ethernet cable
- CANbus communication to Fortress batteries
- SD card input
- Reset Button
- Status Lights
- Tools and Materials
- 

## Download the App

Commission the Fortress Guardian hub using the Fortress Power Guardian App.

Apple:

<https://apps.apple.com/us/app/fortress-power-guardian/id1632364415>

Google Playstore:

<https://play.google.com/store/apps/details?id=com.app.fortresspower>

# Specifications

## Electrical Specifications

Power Consumption	5W – 24V@1A power supply.
AC/DC Adapter	120V / 5A 24V DC 5.5mm
Supported Communication Types	1x MODBUS/TCP, 2x MODBUS/RTU, 2xCAN 2.0
Operation Frequency	2.4Ghz
Antennae	SMA standard connector
Environment	Indoor or inside a box
Local Communication	not yet available / 2023 eta

## Physical Specifications

Weight (device only)	0.8 lbs. – 0.4kg
Dimensions (device only) (W x H x D)	7.25 ″ x 6 ″ x 1.25 ″
Shipping package dimensions	Not known at this time
Shipping package weight	Not known at this time
Housing/	IP23 /
Mounting system	Din Rail Mount
Status Display LEDs	From top to bottom: power, cloud connection, Bluetooth or Wi-Fi connection, serial communication with battery, error signal

## Resetting the Guardian Hub

The Guardian has a reset button that can be pressed for 5 seconds to restore the Guardian to factory settings. Only use this function if directed by technical support. You can use the included pin to press the button.

# Installing the Guardian

The Guardian monitoring hub should be installed near the battery bank. When building a custom communication cable, stay within 50' of the battery units. If the installation is outdoors, you must install the Guardian inside a plastic junction box. Alternately, the Guardian can be installed inside the Fortress FlexTower or DuraRack racking system.

The Guardian is din-rail mountable and includes a din rail which can be mounted to an electrical box or wall.



# Wiring the hub

The Guardian contains multiple digital connector points.

A B C D E F



A – 48V DC battery power	Optional. Positive, Negative (Fortress 48V batteries only)
B – modbus communication	Not used. 1A, 1G, 2A, 3A (upper) / 2A, 2G, 2B, 3B (lower)
C – not used	Not used. 1DI, 2DI (upper) / 1G, 2G (lower)
D – battery canbus communication	2L, 2G, 1L (upper) / 2H, 1G, 1H (lower) <i>grounds not used</i>
E – hardwired ethernet	Optional. 100Mb, 1Gb
F– Not used.	Reserved for future use

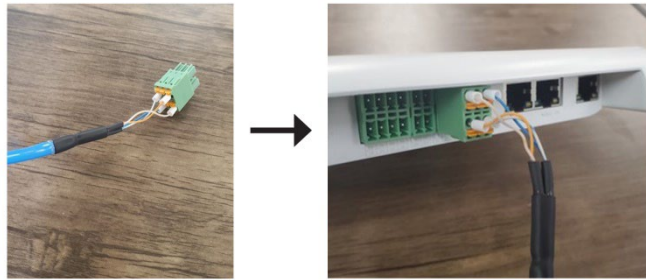
The Guardian includes a pre-wired communication cable to communicate with both eVault MAX and eFlex battery units.

To battery communication port  
eFlex - any port  
eVault MAX - CAN port

To Guardian  
6 pin connector



Communication  
Cable



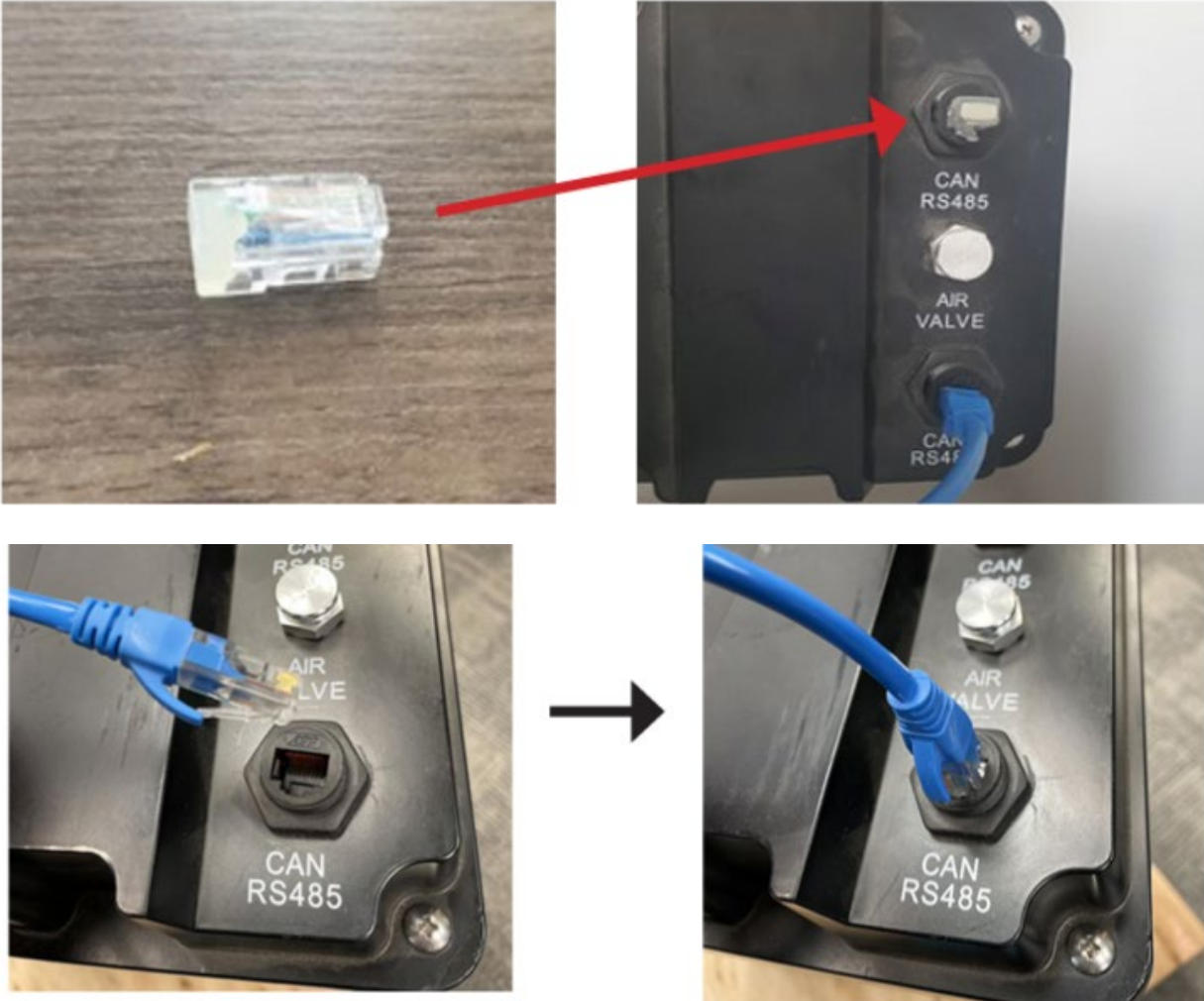
# Powering the Guardian

The Guardian includes options for 120V AC power, 48V DC power, or both simultaneously. Using both power supplies simultaneously allows for cell phone - Guardian communication even when the AC or DC power is unavailable. Please note the AC power adapter converts to 24V - Do not connect battery power to the port intended for the AC wall wart. Use the 48V DC power port connector instead.



# eFlex Specific Instructions

The Guardian connects to the last remaining communication port on the communication circuit. It does not matter which communication port is used. Remove the canbus resistor and install the Guardian communication cable directly onto this port.

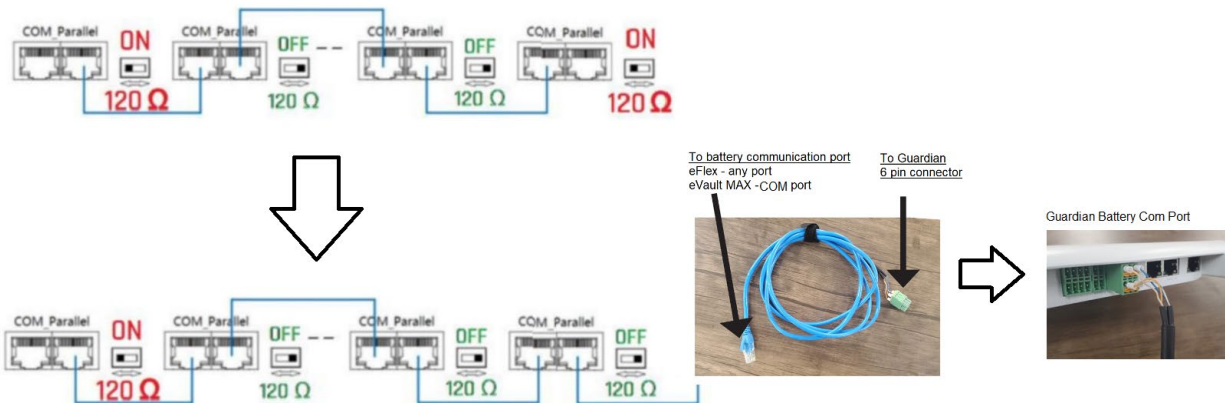


For outdoor installations, you may need to install a female-female ethernet connector to transition to the weatherproof communication cabling, in order to maintain the weatherproof rating of the eFlex battery. This custom cabling is not required for indoor eFlex installations or installations inside the DuraRack or FlexTower.

# eVault Specific Instructions

The Guardian connects to the last remaining communication port on the battery-battery communication circuit. It does NOT connect to the eVault canbus port.

Move the canbus resistor toggle switch to the OFF position (the canbus resistor is included inside the Guardian unit). If more than one eVault MAX are installed, only the primary battery unit should have the canbus resistor in the ON position.



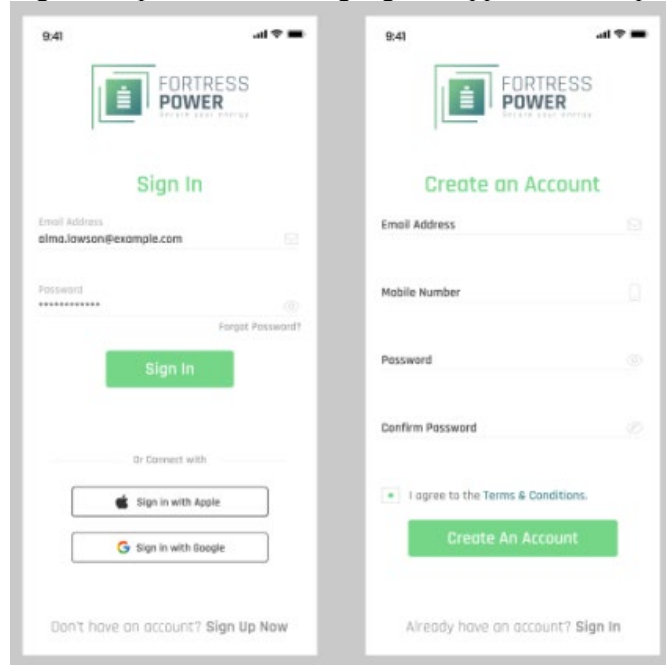
For outdoor installations, you may need to install a female-female ethernet connector to transition to the weatherproof communication cabling, in order to maintain the weatherproof rating of the eFlex battery. This custom cabling is not required for indoor eFlex installations or installations inside the DuraRack or FlexTower.



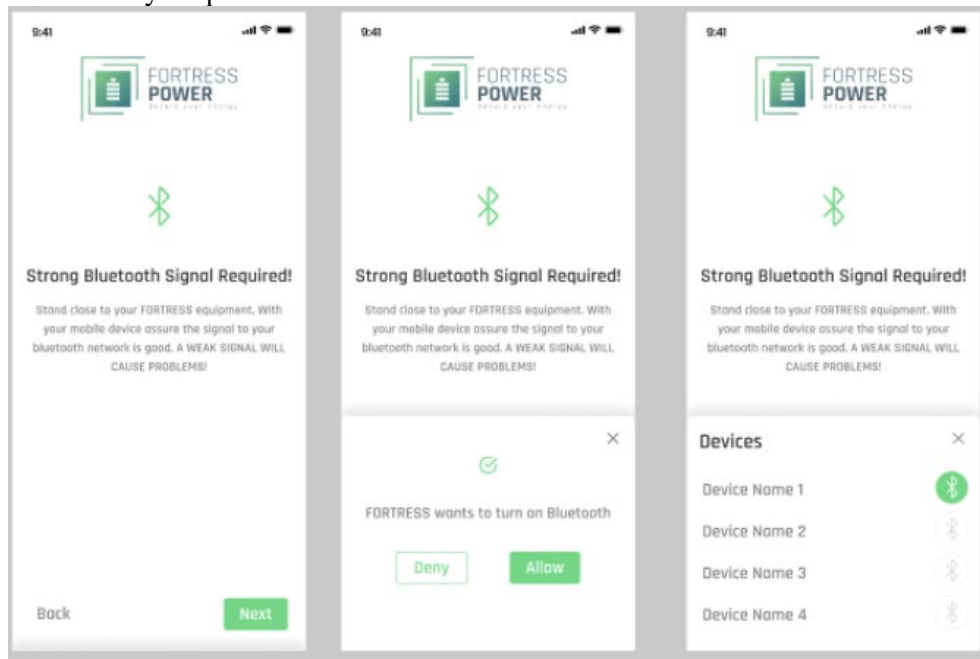
# Commissioning

A cell phone app is used (with Bluetooth) to set up Wi-fi access. Hardwired ethernet may also be used. Please visit the Google Play store or Apple App store and search for the Fortress Guardian App.

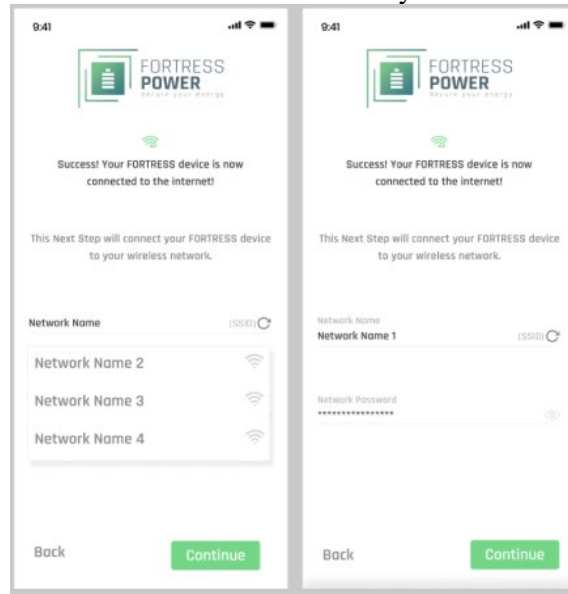
- Login or Signup for the Guardian App by entering new account credentials or authenticating with a provider such as google or apple, and accept terms and conditions:



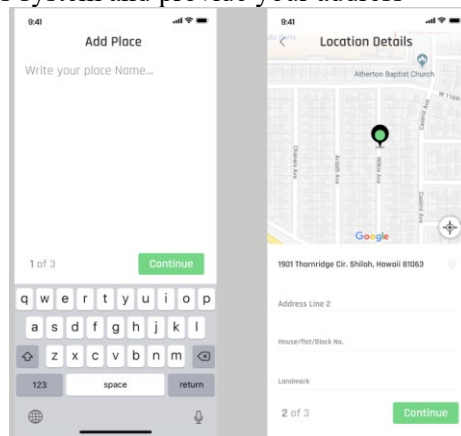
- Connect your phone to the Guardian hub over Bluetooth connection:



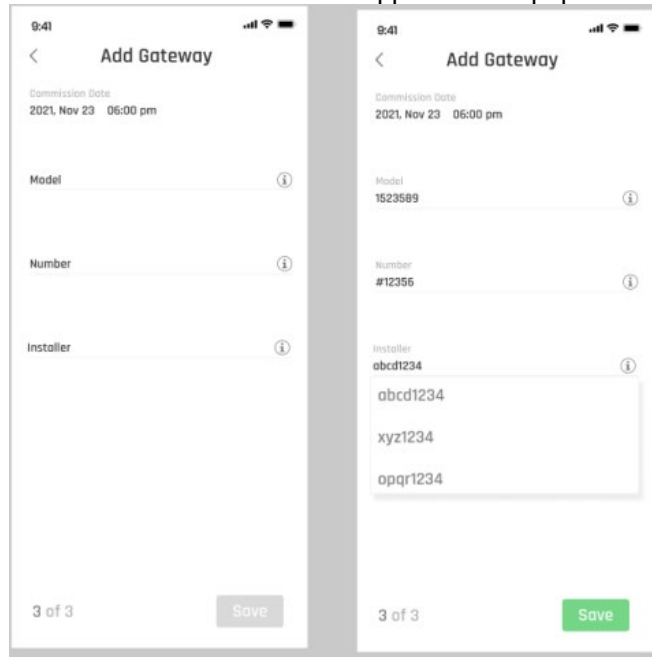
- Connect your Guardian hub to the internet over your home WI-FI:



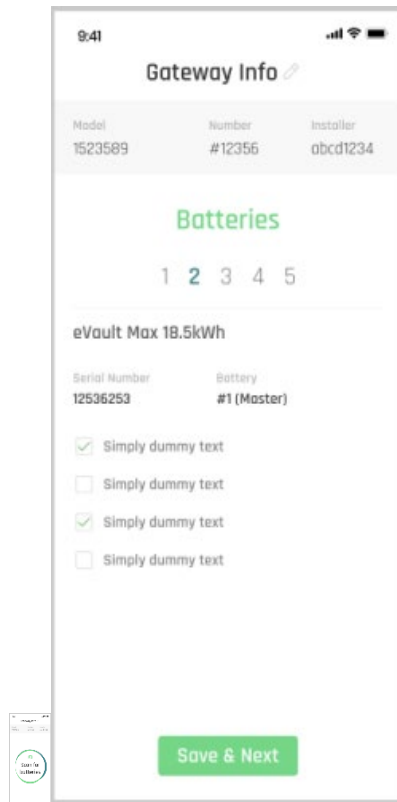
- Name your Fortress system and provide your address



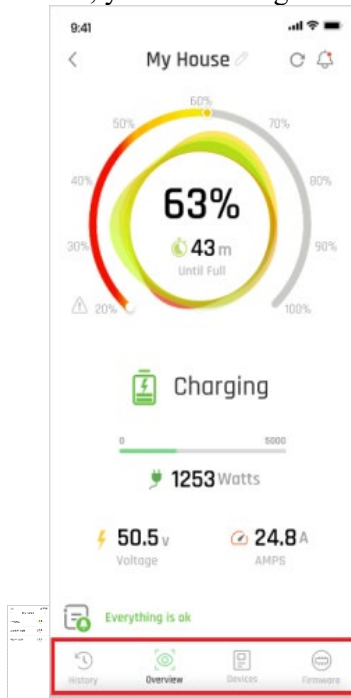
Configure your Guardian Hub's information in the app. It should populate automatically:



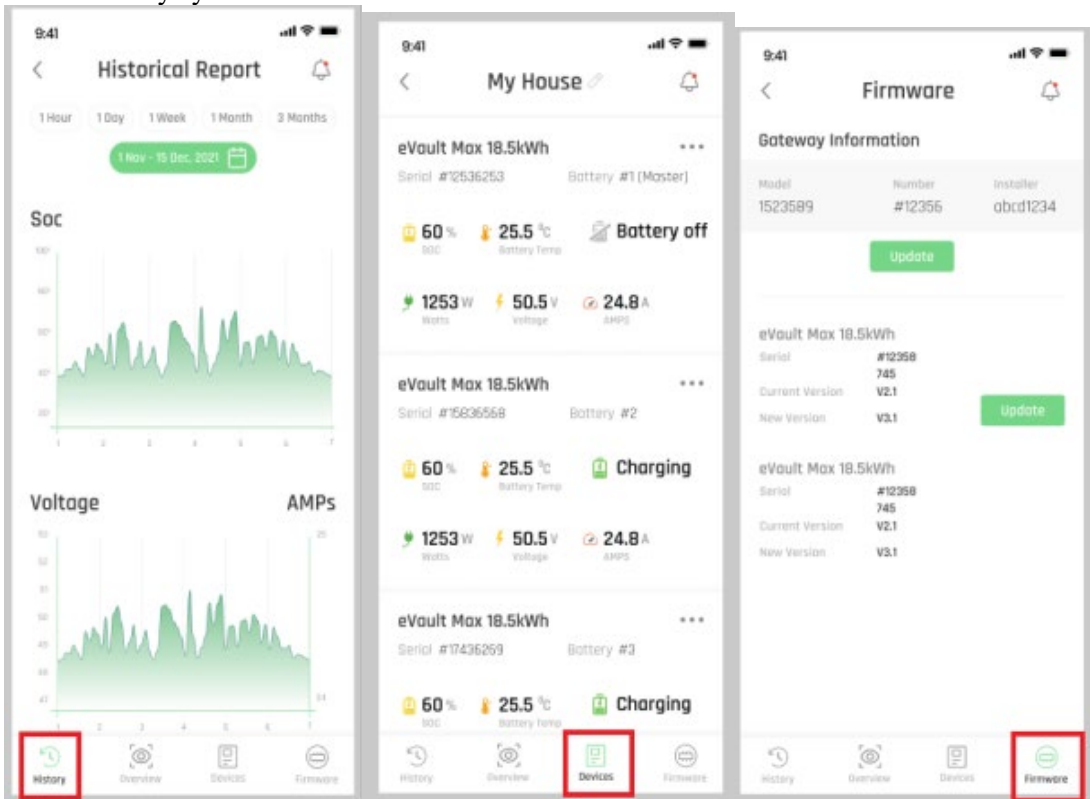
- Scan for batteries allowing the app to view information on your Fortress battery system's health from the Guardian hub:



- After submitting your battery information, you should now be able to see your newly created place. If you press on it, you will see a general overview of your battery system

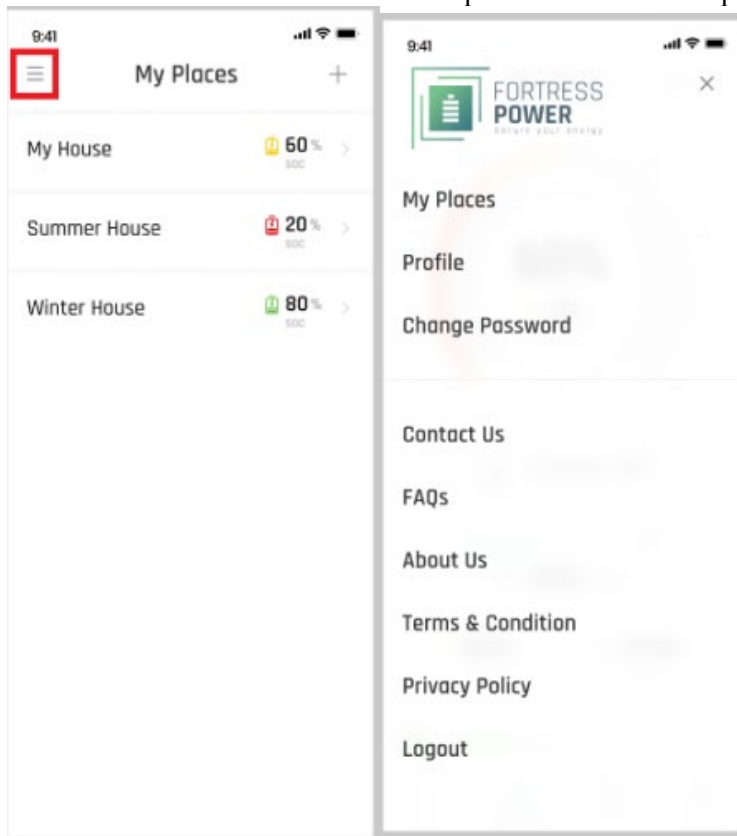


- Press any of the tabs highlighted in red above to get more information on your Fortress battery system:

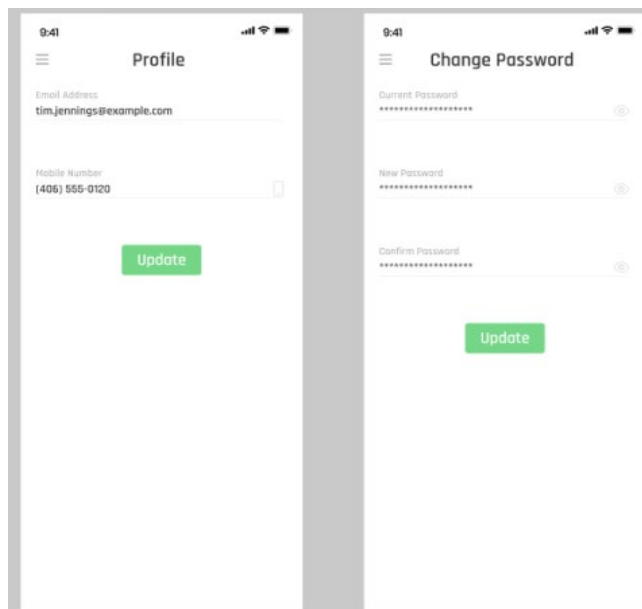


## Changing Guardian Settings

In the My Place section click on the dashboard icon in the top left to view the companion app dashboard:



Press on profile to update email and phone number information and on change password to update account password:



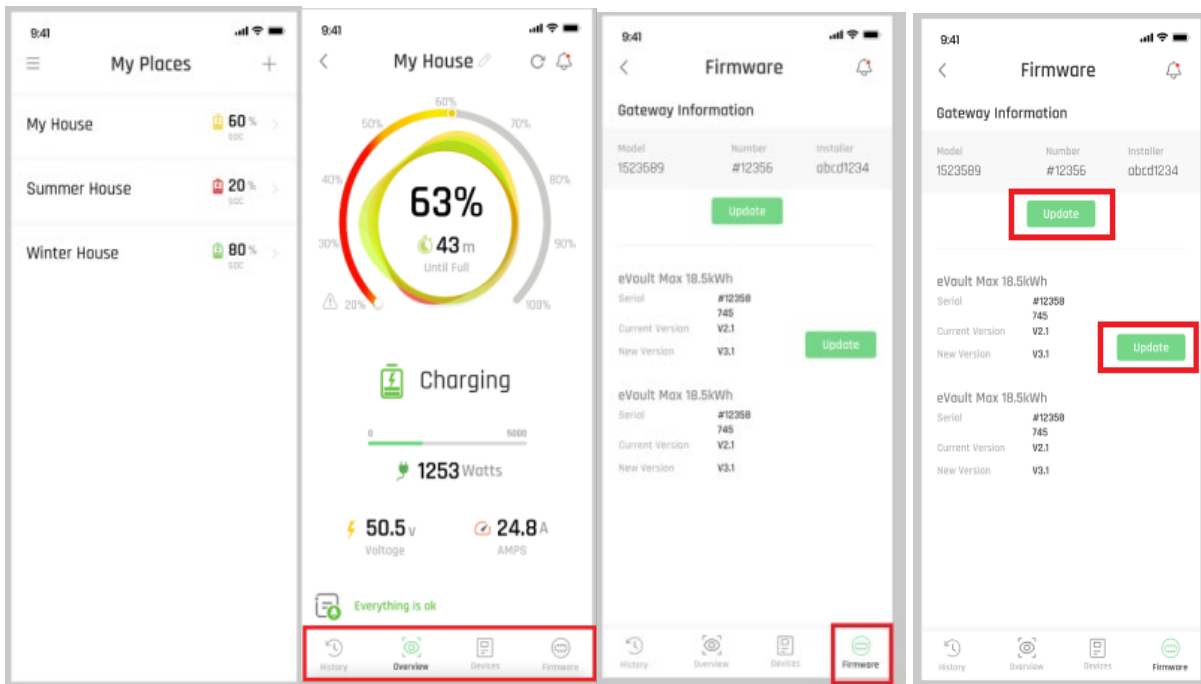
# Firmware

## Firmware Revision

The initial firmware version of the Guardian is 1.0. Please check <https://fortresspower.com/firmware> for release information. The Guardian is new hardware, so be prepared to update Guardian firmware at each site visit until ~2024.

## Upgrading Firmware

Select the place where you want to update firmware then select firmware option from the icons below. Update the firmware of the Guardian hub by pressing the above update button or of the batteries that need it by pressing the update buttons below:



# Troubleshooting

Please fill out a support requests at <https://support.fortresspower.com>

## Error Codes and Events

DISCONNECTED	1
INITIALIZING	2
CONNECTED	3
STANDBY	4
SOC PROTECTION	5
SUSPENDING	6
FAULT	99

## ChaSt (charge state)

OFF	1
EMPTY	2
DISCHARGING	3
CHARGING	4
FULL	5
HOLDING	6
TESTING	7

## Evt1 (faults)

COMMUNICATION_ERROR	0
OVER_TEMP_ALARM	1
OVER_TEMP_WARNING	2
UNDER_TEMP_ALARM	3
UNDER_TEMP_WARNING	4
OVER_CHARGE_CURRENT_ALARM	5
OVER_CHARGE_CURRENT_WARNING	6
OVER_DISCHARGE_CURRENT_ALARM	7
OVER_DISCHARGE_CURRENT_WARNING	8
OVER_VOLT_ALARM	9
OVER_VOLT_WARNING	10
UNDER_VOLT_ALARM	11
UNDER_VOLT_WARNING	12
UNDER_SOC_MIN_ALARM	13
UNDER_SOC_MIN_WARNING	14
OVER_SOC_MAX_ALARM	15
OVER_SOC_MAX_WARNING	16
VOLTAGE_IMBALANCE_WARNING	17
TEMPERATURE_IMBALANCE_ALARM	18
TEMPERATURE_IMBALANCE_WARNING	19
CONTACTOR_ERROR	20
FAN_ERROR	21
GROUND_FAULT	22
OPEN_DOOR_ERROR	23
CURRENT_IMBALANCE_WARNING	24
OTHER_ALARM	25
OTHER_WARNING	26
RESERVED_1	27
CONFIGURATION_ALARM	28
CONFIGURATION_WARNING	29

## Alerts

Battery full
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Battery empty