



TESLA VEHICLES PLUG-IN FOR HOMESEER HS4

VERSION 4.0

RELEASE DATE: 9/20/2023

CONTENTS

Terms & Conditions	2
Overview.....	3
Installation.....	3
System Requirements.....	4
Power Management.....	4
Configuration.....	5
Vehicle Configuration.....	7
Locations.....	10
Actions.....	11
Functions.....	11
Known Issues.....	11
Support.....	11
Appendix 1: Files.....	12
Appendix 2: Creating a Google Maps API Key.....	14

TERMS & CONDITIONS

Tesla has not officially published their API, though it has been documented by unrelated entities and is in use by many non-Tesla projects. This means that if Tesla changes their API, work will have to be done on this plugin to make it compatible, and that there is a chance the changes could render it inoperable. These changes are done without my knowledge or control, and your purchase/use of this plug-in is as-is and at your own risk. That being said, I own a Tesla and will always endeavor to resolve any issues created by Tesla’s changes whenever possible!

While there are currently no specific limits published, as with any API, excessive activity may result in negative actions being taken on your account.

The ability to control items like door locks, trunks, and initiate remote driving of a Tesla vehicle without a key present is also a known risk that you accept when controlling your vehicle remotely and could result in theft or loss of property.

By activating this plugin in your HomeSeer software, you acknowledge this risk and agree to indemnify and hold harmless the developer of this plugin (Steve Hill), HomeSeer Technologies, and any other third-party plugin developers from any damages (including but not limited to financial, physical injury, time spent, opportunity cost, loss of account privileges, and the inability to control your vehicle or other connected devices).

Tesla™ is a trademark of Tesla, Inc.



OVERVIEW

The skWare Tesla Vehicles Plug-In for HomeSeer provides you with a way to monitor and control your Tesla vehicle from HomeSeer.

Thermostat | First Floor

First Floor (148) ↓		Today 2:38:20 PM	
Status (149)	Success	Today 2:40:04 PM	<input type="button" value="UPDATE"/>
Cool Setpoint (150)	74F	Today 2:34:14 PM	<input type="text" value="74F"/> <input type="button" value="-1"/> <input type="button" value="+1"/>
Heat Setpoint (151)	72F	Today 10:01:56 AM	<input type="text" value="72F"/> <input type="button" value="-1"/> <input type="button" value="+1"/>
System Mode (152)	Heat	1/15/2021 5:36:08 PM	<input type="button" value="AUTO"/> <input type="button" value="COOL"/> <input type="button" value="HEAT"/> <input type="button" value="OFF"/>
Operating Status (153)	Heating	Today 2:39:05 PM	
Operating Mode (154)	Heat	1/15/2021 5:36:08 PM	
Fan Mode (155)	Auto	1/15/2021 5:36:08 PM	<input type="button" value="ON"/> <input type="button" value="AUTO"/> <input type="button" value="CIRCULATE"/>
Fan Status (156)	Off	1/15/2021 5:36:08 PM	
Indoor Temp (157)	72°F	Today 10:01:56 AM	
Outdoor Temp (158)	42°F	Today 2:39:05 PM	
Outdoor Humidity (159)	43%	Today 2:09:11 PM	
Hold Type (160)	None	Today 10:01:56 AM	<input type="button" value="NONE"/> <input type="button" value="TEMPORARY"/> <input type="button" value="PERMANENT"/>

INSTALLATION

This Plug-In is installed using the built-in updater capability of HomeSeer. New installations include the binaries and supporting files needed to run the Plug-In, and updates will replace any of those items that have changed.

Before you set it up, you must create your account with Tesla and you must have a vehicle registered to your account. If you can see your vehicle in the official Tesla mobile app, you should also be able to see it in this plugin once your account is connected.

SYSTEM REQUIREMENTS

The Tesla Vehicles Plug-In for HomeSeer HS4 runs on both Windows and Linux installations of HS4 and has been tested with version 4.2.19.0.

Due to modern network security restrictions, this plugin is not supported on Windows XP, and for Linux/Zee users, it requires Mono version 4.8.1 or higher.

You must have a Tesla vehicle connected to the account you're using. To date, this plugin has been developed and tested with the following models:

- Tesla Model S
- Tesla Model 3*
- Tesla Model X
- Tesla Model Y

Other models are also expected to work, but there are features of those vehicles that the author cannot fully test. Please report any issues (or successes) on the forums so they can be resolved/documented.

POWER MANAGEMENT

In order to minimize “vampire drain” (the loss of range and battery levels over time when not driving), it is important to allow your car to sleep when not in use. When the car is asleep, no data (other than whether it is “online” or “asleep”) is available without waking it up.

One of the challenges with these vehicles is that both the amount of time it takes to wake up a sleeping car and the amount of time it takes the car to go into sleep mode are unpredictable. The plugin has been designed to give you options that help control the way in which it interacts with your vehicle and to allow you to minimize the drain caused by polling it. These options are detailed in [Configuration](#) below, but as you use the plugin, please keep in mind the variability of the “wake” process (which may sometimes fail) and for how long it takes the car to fall asleep – there is no command to tell it to do so, it's simply a matter of not disturbing it for as long as it takes.

See <https://support.teslafi.com/knowledge-bases/2/articles/161-my-vehicle-is-not-sleeping> for more info on the challenges with getting these cars to go to sleep in general.

When the car is awake (or when it's in use, if the vehicle option to “keep awake while charging/driving” is enabled), the plugin will keep updating the data, but once those conditions are no longer met, it will stop updating and only check to see if it's asleep for a period of time. Once it goes to sleep, it simply monitors to see when it's awake again so it can keep updating. Note that the “Update” button on the Status device will force the car awake to do the update, after which it will allow the car to go back to sleep before another schedule polling happens. (If the “Wake to Update” options is turned on, it will always attempt to wake the car with every polling interval.)

Of course, you can use HomeSeer events to create your own polling process as well by forcing updates at specific times or based on other conditions, too.

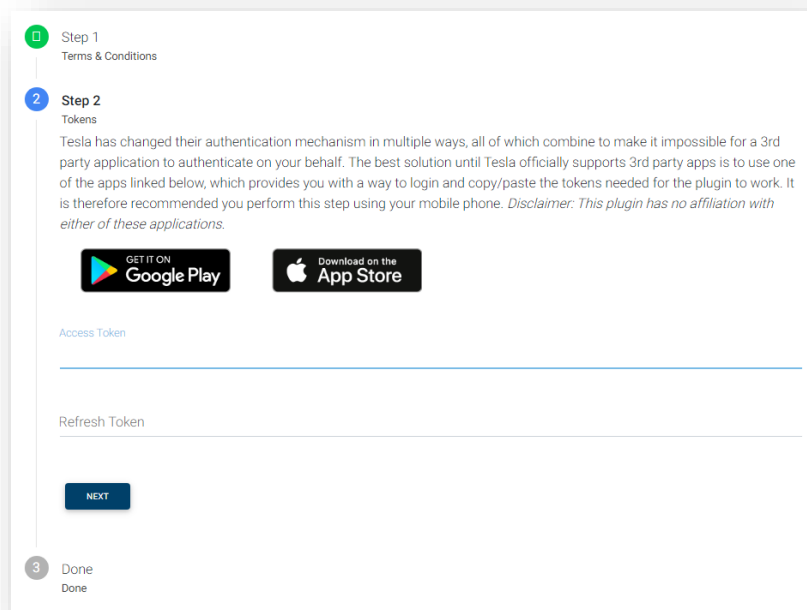
CONFIGURATION

After installing the plug-in, a new “Tesla Vehicles” menu item can be found under “Plug-Ins” menu in the Homeseer browser interface. The “Configuration” item will take you to the configuration page, where you are able to define your devices and setup additional options for the plug-in.

The first step is to accept the plug-in Terms & Conditions (see above) and provide your account details. The Tesla API requires a token which cannot be generated using the web-based architecture of Homeseer. Fortunately there are mobile apps that can be used to generate these tokens, such as [Tesla Tokens on the Google Play Store](#) or [Tesla Token on the Apple App Store](#). *Disclaimer: This plugin nor its author have any affiliation nor make any warranty regarding these or any similar applications.*

The Status device will alert you if your authentication is failing by changing to “Login Failed” so you can create an event based on this value to provide a notification if this occurs.


Because of the need to use mobile applications to generate the tokens, it is recommended that the initial setup is performed via the Homeseer web site from your mobile device in order to use copy/paste.




Step 1
Terms & Conditions

Step 2
Tokens

Tesla has changed their authentication mechanism in multiple ways, all of which combine to make it impossible for a 3rd party application to authenticate on your behalf. The best solution until Tesla officially supports 3rd party apps is to use one of the apps linked below, which provides you with a way to login and copy/paste the tokens needed for the plugin to work. It is therefore recommended you perform this step using your mobile phone. *Disclaimer: This plugin has no affiliation with either of these applications.*

 GET IT ON
Google Play

 Download on the
App Store

Access Token

Refresh Token

NEXT

Step 3
Done
Done

Once your account is connected, you will have the option to reset your tokens from the Settings page if needed. Reauthorizing your account may be necessary from time to time.

The “Settings” page also provides the control over plug-in behavior and logging output.

Account Options

Access Token

Refresh Token

Authorization Status: ✔ VALIDATE TOKENS

Account Email (Optional, but required To use 'Streaming' capability.)

Account Password (Optional, but required To use 'Remote Start' capability.)

Plugin Options

Google Maps API Key (Optional, but required to define 'Locations' in the plugin.)

Logging Options

Debug Logging (not for prolonged use) DOWNLOAD LOG FILE CLEAR LOG FILE

CANCEL SAVE

The Account Options allows you to replace the Access and Refresh Tokens, shows the current authorization status, and provides a “Validate Tokens” button to test the provided tokens. In order to use the optional “Streaming” (COMING SOON) interface to the vehicle, the account email address must be provided. Likewise, in order to use the optional “Remote Start” capability, the account password must be provided.

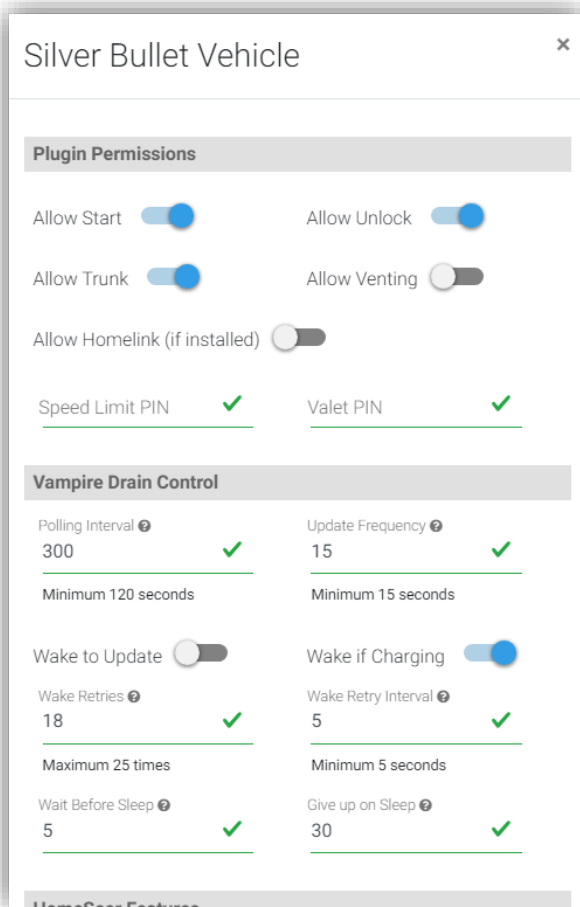
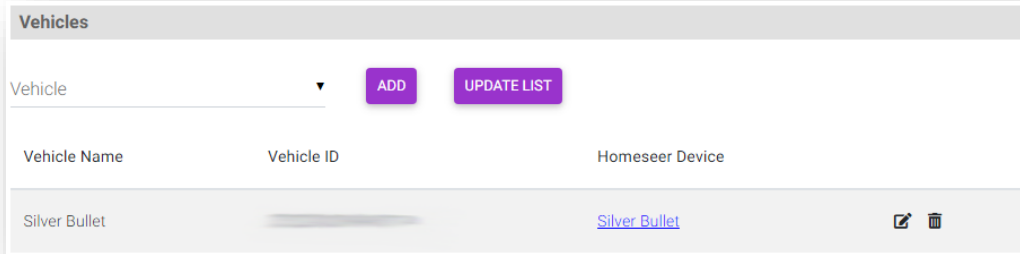
This plugin also provides the ability to define geofences for locations that are set based on the latitude and longitude of the vehicle. In order to use this capability, a Google Maps API Key must be provided. See [Appendix 2](#) for details on the process to create this key.

Optional log data can be recorded in a stand-alone Plugin log (which can be found in the “Logs” directory of your Homeseer installation). Please note that this logging level should only be used when troubleshooting or sending in for support as it can have a significant impact on performance. This option also enables a special “Debug” item under the “Plugins > Tesla Vehicles” menu that may be helpful in diagnosing issues.

The “Download Log File” and “Clear Log File” buttons on this page make it easier to manage the plugin log files on your server, as you are no longer required to access the file system to get them when requested for support.

VEHICLE CONFIGURATION

Once your account is connected, the “Vehicles” Page will be added to the plug-in menu, where you can add one or more vehicles to be controlled by Homeseer, edit the settings for a single vehicle, or remove a connected vehicle.



The “Plugin Permissions” section provides control over which types of actions are allowed by the plugin and is where the PINs for Speed Limit Mode and Valet Mode can be defined.

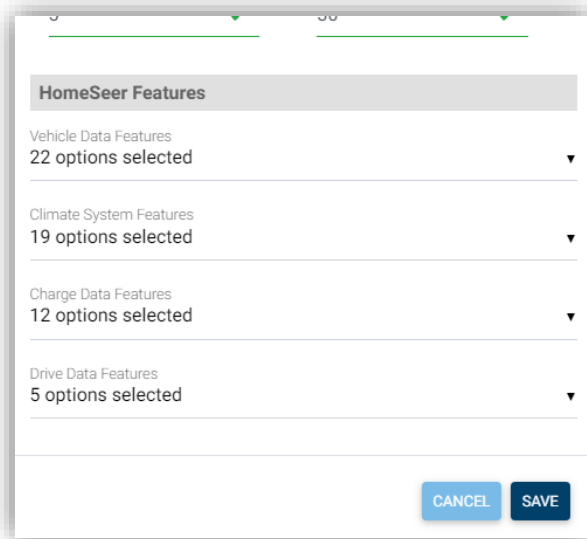
The “Vampire Drain Control” section is where most of the options related to the [Power Management](#) settings are managed.

The polling interval specifies how often to retrieve the current data for this vehicle. A value of 120 seconds or higher is required.

The “Update Frequency” controls how much time must pass between update requests. A value of 15 seconds or higher is required. Requests made within less time than this will result in a “Waiting for update...” status.

You may choose whether to wake the vehicle on every update (high drain, not recommended) or when charging, and when attempting to wake the vehicle, you can specify how many times to retry and how long to wait between each attempt.

The final two options in this section define how long, after stopping, to wait before starting to ignore the vehicle so it will sleep, as well as how long (in minutes) to wait before giving up and checking on the vehicle again. These settings are important because a short stop of the vehicle could get caught in the “Waiting to Sleep” state even though it’s started driving again.



The final section under Vehicle Configuration is the list of HomeSeer Features to create for this vehicle. There are many possible options, and not all may be useful in your situation, so rather than cluttering up the HomeSeer interface, you can only choose to enable the features you desire. See below for a full list of the options under each dropdown.

Note that some options may not be available for your vehicle and will not result in devices being created even if selected. HomeSeer Features are added following the first update after changing these values.

In addition to the Parent device, three mandatory features are always created:

- A “Controls” device with Flash, Honk, Start (if allowed), Vent Windows (if allowed), Close Windows (Model 3/Y only), and Homelink (if allowed) controls.
- A “Wake State” device that shows whether the vehicle is online or asleep, or waiting for a change. This device also has a Wake button.
- The Status device, representing the result of the last command, with an Update button. It also tracks the last command date/time (so the date/time changes even if the status does not).

Here is the full list of other devices and their Device Types:

Tesla Vehicle Data	Tesla Climate System	Tesla Charge Data	Tesla Drive Data
Battery Level	Battery Heater	Charge Current (<i>Amps</i>)	Shift State
Battery Range (Estimated)	Climate System <i>(On/Off/Max Defrost)</i>	Charge Limit <i>(Percent/Daily/Max)</i>	Speed
Battery Range (Ideal)	Climate Temp Driver	Charge Port <i>(Open*/Close*)</i>	Latitude
Battery Range	Climate Temp Passenger	Charge Port Lock <i>(Unlock)</i>	Longitude
Door Locks <i>(Lock/Unlock)</i>	Driver Back Seat Heater* <i>(Off/Low/Medium/High)</i>	Charge Rate	Location
Driver Front Door	Driver Front Seat Heater* <i>(Off/Low/Medium/High)</i>	Charge State <i>(Start/Stop)</i>	
Driver Front Window	Driver Rear Seat Heater* <i>(Off/Low/Medium/High)</i>	Charge Time Remaining	
Driver Rear Door	Front Defroster	Charge Voltage	
Driver Rear Window	Inside Temp	Distance Added Last Charge (Estimated)	
Frunk <i>(Open*)</i>	Middle Rear Seat Heater* <i>(Off/Low/Medium/High)</i>	Distance Added Last Charge (Ideal)	
Odometer	Outside Temp	Energy Added Last Charge	
Passenger Front Door	Passenger Back Seat Heater* <i>(Off/Low/Medium/High)</i>	Max Charge Counter	
Passenger Front Window	Passenger Front Seat Heater* <i>(Off/Low/Medium/High)</i>		
Passenger Rear Door	Passenger Rear Seat Heater* <i>(Off/Low/Medium/High)</i>		

Passenger Rear Window	Rear Defroster		
Sentry Mode <i>(On/Off)</i>	Side Mirror Heaters*		
Software Version <i>(Install/Cancel)</i>	Steering Wheel Heater* <i>(On/Off)</i>		
Speed Limit Mode <i>(On/Off)</i>	Wiper Blade Heater*		
Speed Limit <i>(Set)</i>			
Sunroof* <i>(Vent/Close)</i>			
Trunk <i>(Open*/Close*)</i>			
Valet Mode <i>(On/Off)</i>			

**Depends on vehicle configuration.*

Controllable.

Can be restricted in options.

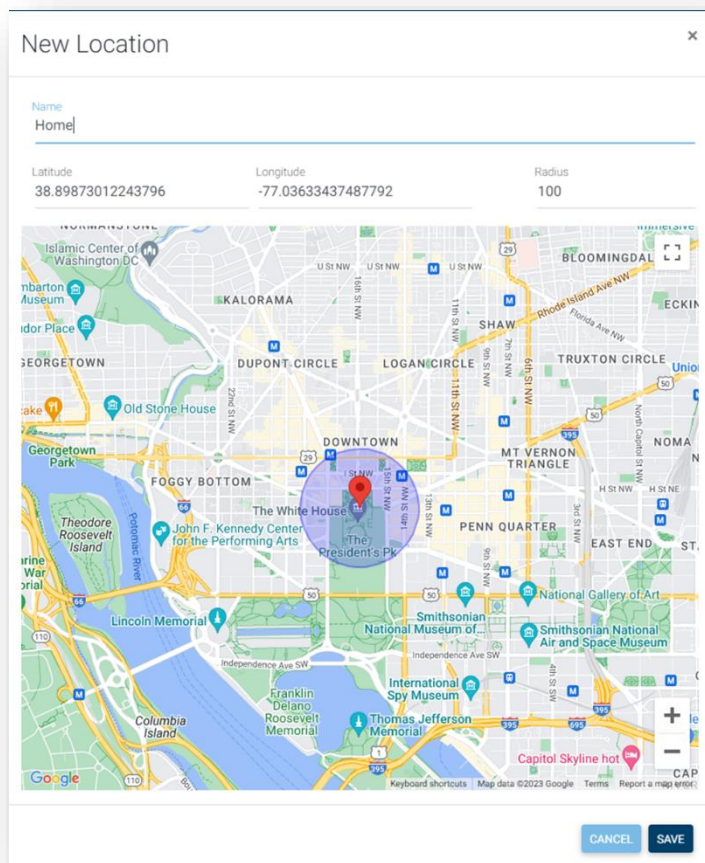
The “Status Graphics” for this plugin are based entirely on graphics contained within the “<Homeseer>\html\TeslaVehicles\images” folder (see [Appendix 1](#)). If you prefer different icons, you can replace those (keeping the same name/case/extension) with your own and prevent any recurring or future changes to those “Status Graphics” pairs from reverting the icons to the original settings.

LOCATIONS

If you have configured a Google Maps API Key, there will be a “Locations” menu item available the plugin menu. This allows you to define geofences that will be used by the “Location” feature to easily trigger events or use as conditions based on the current location of the vehicle.

Locations				
ADD NEW LOCATION				
Location Name	Latitude	Longitude	Radius	
Church			200	
Home			50	
Work			600	

Adding a new location is accomplished by clicking “Add New Location” then dragging the marker on the map to the desired location. The default location will be the current location of the first vehicle you have added to the plug-in, or in some circumstances may interrogate your browser or use the Google Maps API as a last resort.



The latitude and longitude will change as you move the marker; manually edit the “Radius” option to increase or decrease the size of the area inside the circle.

ACTIONS

This plugin provides the following Actions that can be included in Events:

- Navigate

Provide an address or “<latitude>,<longitude>” coordinates to be sent to the vehicle.

FUNCTIONS

The following functions are available for use via scripts and the HomeSeer “hs.PluginFunction” method.

- `Navigate(vehicleID, destination)`
 - `vehicleID` = string ID of the vehicle, found on the Vehicles page
 - `destination` = string address or coordinates to send to the vehicle
- `ScheduleUpdate(vehicleID, seconds)`
 - `vehicleID` = string ID of the vehicle, found on the Vehicles page
 - `seconds` = number of seconds from now to start the install of a new system update

KNOWN ISSUES

- When using Fahrenheit temperature units, Tesla does some strange math/rounding and the actual value shown in the plugin and vehicle may vary by 1 degree.

SUPPORT

Support for the skWare Tesla Vehicles Plug-In for HomeSeer is provided through the standard HomeSeer channels. The primary mechanism is via the [Tesla Vehicles forum](#) on the HomeSeer website. The author can be contacted directly at steve@skware.net.

Links to the documentation and the support forum can be found on the Plugin’s “Docs” page in the Plugin menu.

APPENDIX 1: FILES

The following files are used by the Plug-In. Directories in bold are part of the standard Homeseer installation. Files marked with * are created by the software during usage; all other files are included in the installation.

<Homeseer Installation Directory>

```

HSPI_SKWARE_TESLA_VEHICLES.exe
HSPI_SKWARE_TESLA_VEHICLES.exe.config
\Bin
  \skWare
    \TeslaVehicles
      log4net.dll
      Newtonsoft.Json.dll
      skWare.Common.dll
      skWare.Common.HS4.dll
      skWare.Common.HS4.dll.config
      skWare.Homeseer.TeslaVehicles.Core.dll
      skWare.Homeseer.TeslaVehicles.Core.dll.config
  \Config
    HSPI_SKWARE_TESLA_VEHICLES.ini*
  \html
    \TeslaVehicles
      Debug.html
      debug_list.html
      Help.html
      location_list.html
      locationpicker.jquery.js
      Locations.html
      Settings.html
      Setup.html
      skware.css
      skWare Tesla Vehicles Plug-In User Guide.pdf
      skware_common.js
      spinner.html
      vehicle_list.html
      Vehicles.html
    \images
      android.png
      apple.png
      asleep.png
      awake.png
      away.png
      battery-heater-no-power.png
      battery_0.png
      battery_1.png
      battery_2.png
      battery_3.png
      battery_4.png
      car_closed.png
      car_open.png
      charging.png
      climate-off.png
      climate-on.png
      complete.png
      disconnected.png
      download.png
      drive.png
      failed.png
      files.txt
      front_defrost_on.png
      frunk_open.png
      heat.png
      installing.png
      locked.png
      neutral.png
      no-power.png
      nostatus.gif
      off.png
      on.png

```

TESLA VEHICLES PLUG-IN FOR HOMESEER HS4

park.png
place.png
port_closed.png
port_open.png
rear_defrost_on.png
reverse.png
schedule.png
seat_heat_high.png
seat_heat_low.png
seat_heat_med.png
seat_vent_high.png
seat_vent_low.png
seat_vent_med.png
speed_limit_on.png
success.png
sunroof_open.png
thermometer-generic-0.png
thermometer-generic-1.png
thermometer-generic-2.png
thermometer-generic-3.png
thermometer-generic-4.png
thermometer-generic-5.png
trunk_open.png
unknown.png
unlocked.png
update-available.png
waiting.png
window_closed.png
window_open.png

\Logs

HSPI_SKWARE_TESLA_VEHICLES.log*

APPENDIX 2: CREATING A GOOGLE MAPS API KEY

In order to use the “Locations” capability of the plugin, you must provide an Google Maps API key properly configured to allow use of Google’s Services with this plugin.

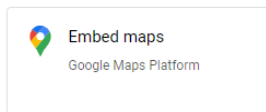
Step 1: Setup your Google Cloud Account

This can be a new or existing gmail or GSuite account. Visit <https://cloud.google.com> to get started. You can then click “Start Free” to set up your Google Cloud account if you don’t have one already configured. Simply provide your country, organization needs (“Other” works) and accept the Google Cloud Terms of Service.

The second step is to provide your payment details. This is required, but the usage of the API by this plugin should never exceed the “free” volume allowed each month since it’s only accessed while setting up Locations.

Step 2: Configure the Google Maps Platform

Choose the “Embed Maps” option to start the setup of this feature.



On the very first screen, an API Key will be provided. **Copy this value and paste it into the appropriate field on the plugin “Settings” screen.** I recommend choosing “Maybe Later” on the prompt to secure the API key so you can use the more detailed configuration documented below.

Step 3: Configure the Credentials

From the Cloud Console, choose Keys & Credentials, then click on the “Maps API Key” that was created for you.

To protect your API key from misuse, you can restrict it to certain APIs or only allow referrals from specific websites. Note that “IP Address” does not work with this type of API request according to Google, so use the IP of your server as a “Website” restriction instead and add your IP and, if you choose, include support for access via MyHS (for example, “192.168.0.128/*” and “*.homeseer.com/*”).

You can also restrict it to only certain API types by including only:

- Geocoding API
- Geolocation API
- Maps JavaScript API
- Places API