

Engine Bridge EI (Electronic Ignition)

User's & Installation guide

INTRODUCTION

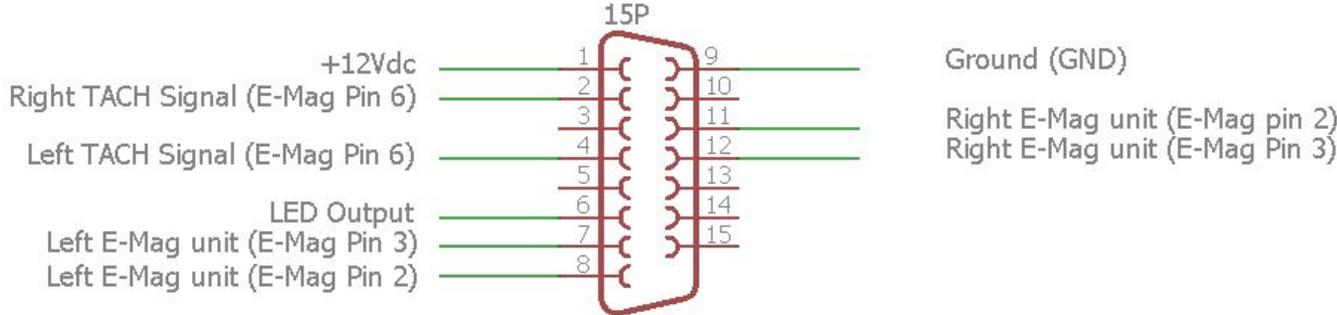
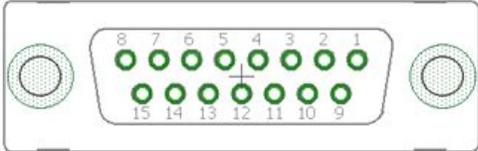
Engine Bridge EI connects to E-Mag Electronic Ignition modules and allows full control of the settings. Our controller also enables live monitoring and display of all available data using an iPad.

It can be used with one or two E-Mag Ignition modules. It replaces having a laptop in the plane to check/set and view the health of your E-Mag Ignition system with several extra features including the ability to save up to 10 presets for fast changes of all operational parameters of the Ignition system.

HARDWARE

Engine Bridge EI has a female DIN 15 pin connector. Refer to the image below and the following table for pin assignment and explanation of each pin.

Looking at the Female 15-PIN Connector



Engine Bridge EI (15 PIN)

PIN #	FUNCTION	15-PIN CONNECTOR
1	(Input) +12Vdc. Controller requires less than 50mA to operate. It includes built-in reverse-polarity & short circuit protection. Dedicating a circuit breaker is not required. Share power from any non-inductive load.	
2	(Input) TACH 2 (Right E-Mag PIN 6). If you have dual E-Mag installation, connect this PIN to Right E-Mag pin 6 (TACH signal output)	
3	NC - Do not connect	
4	(Input) TACH 1 (Left E-Mag PIN 6). If you have dual E-Mag installation, connect this PIN to Left E-Mag pin 6 (TACH signal output)	
5	NC - Do not connect	
6	(Output) Panel LED. (Optional) Use the provided Panel LED, connect the RED cable of the LED to this PIN. Connect the BLACK cable of LED to GND.	
7	(Output) Left E-Mag PIN 3. This is sometimes marked TX on E-Mag plug.	
8	(Input) Left E-Mag PIN 2. This is sometimes marked RX on E-Mag plug.	
9	(Input) Ground (GND)	
10	NC - Do not connect	
11	(Input) Right E-Mag PIN 2. This is sometimes marked RX on E-Mag plug	
12	Output) Right E-Mag PIN 3. This is sometimes marked TX on E-Mag plug.	
13,14,15	NC - Do not connect	

NOTE.1: Use shielded cables for PINs 7,8,11 & 12. With cable shield grounded from one end.

NOTE.2: For Single E-Mag installation, use Left E-MAG PINS 7 & 8 (even if the E-Mag unit is actually installed on the right side of the engine)

NOTE.3: TACH signals are only needed to compare both signals. Not used on Single E-Mag installation.

SOFTWARE

Our iOS App is designed for the iPad with plans to make it run on iPhone.

App can be purchased directly on the App store or if the hardware is bought first, a code will be sent which allows downloading the App for free. App can be installed on multiple devices but the hardware Controller can only connect to one device at a time.

Refer to the following table for sequence of screens and explanation of each function.

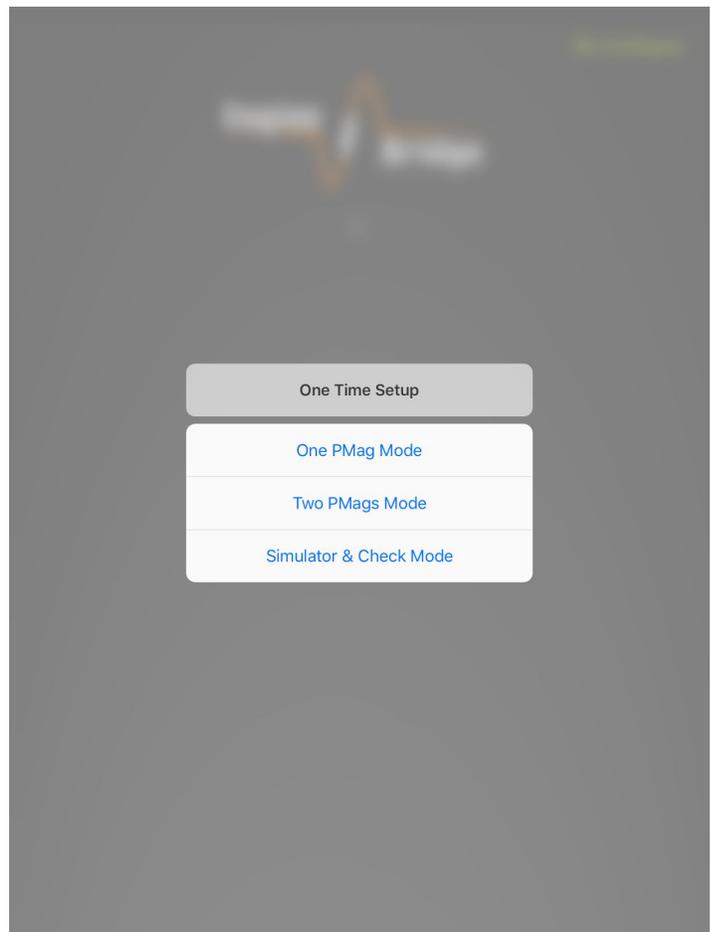


First run of the App shows the selection screen to select how many E-Mag modules you have installed. You start with one and add another one later.

If you want to try the App and learn its features without connecting to the E-Mag modules; select Simulator Mode.

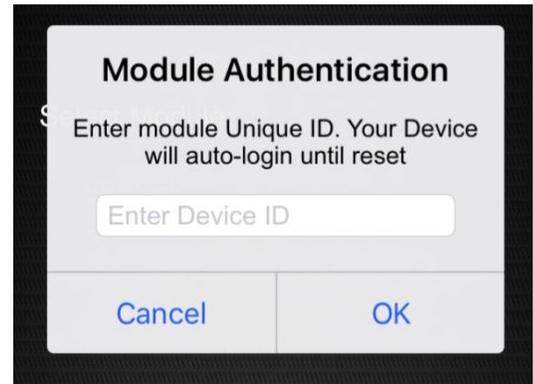
To delete the settings file from your iPad and start fresh with this screen, click **Re-Configure** and **Yes**, then restart the App manually (double click on the Home button to access running applications and close Engine Bridge EI) and run it again.

This allows the app to start fresh with a new settings file. (**Settings stored within your E-Mag modules are not affected and will be retrieved every time the application runs**).



In One or Two E-Mag modules; Controller must establish an actual connection to the E-Mag module and settings are retrieved each time you run the App.

First time the app runs and connects to our a Controller; a unique Code must be used to authenticate the controller. **This to prevent anyone with the same App from connecting to your Modules.**



This is one-time setup; once authenticated, the same iPad can re-connect to the same controller until the settings file deleted with **Re-Configure**

When authenticated for first time, and there is a valid connection to the E-Mag module(s); a PIN access screen is presented. Select a PIN (twice). This PIN is needed to access the Settings page.

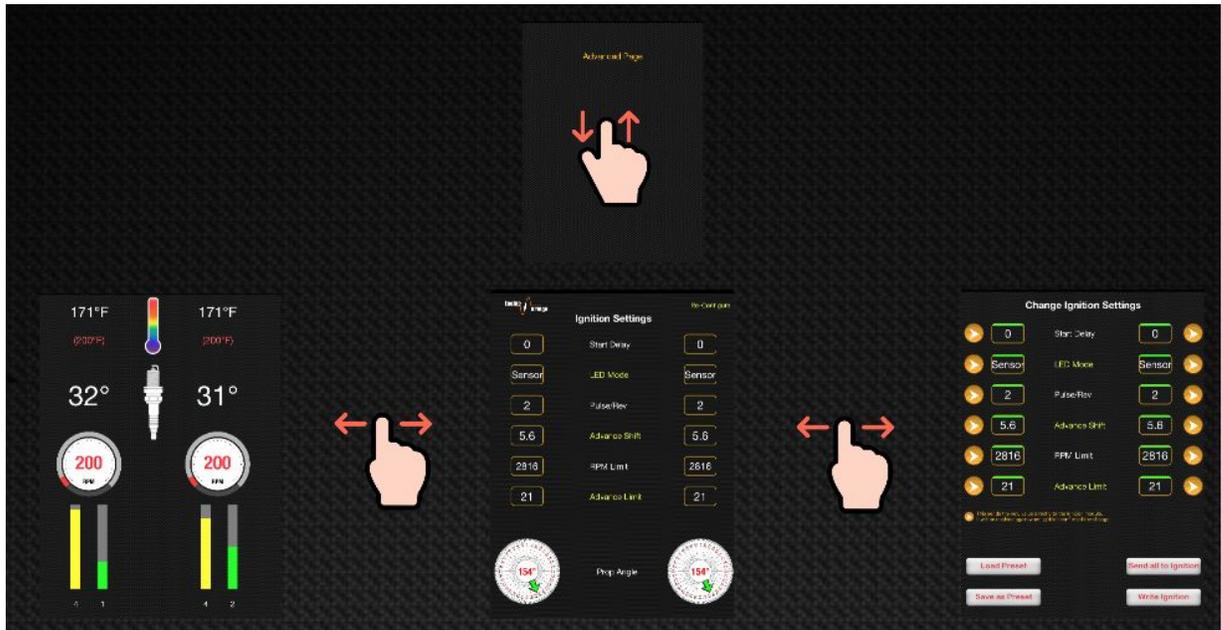
This to prevent anyone with access to your iPad from changing the E-Mag modules settings; as the App will auto-login to the Controller each time but Settings page asks for a PIN.

This PIN is only needed once each time you run the App. So if you entered the PIN and left the Settings page; and then go to the Settings page again, no PIN is needed.



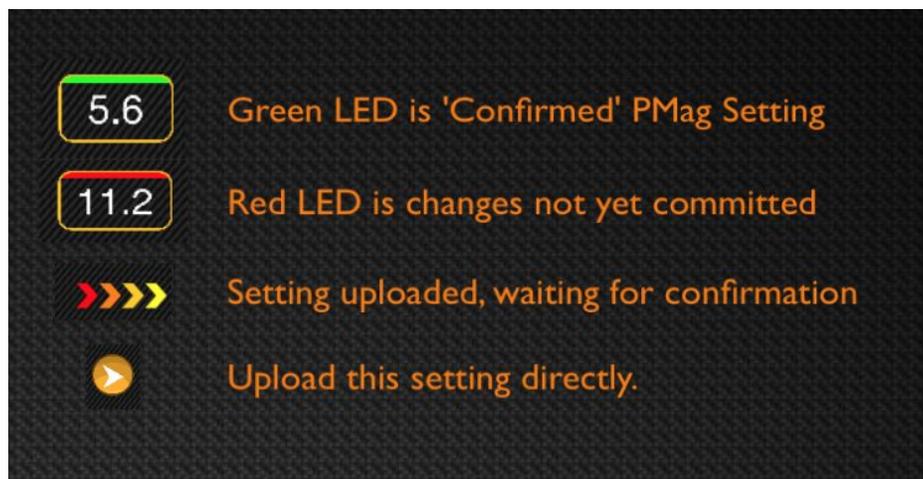
There are 4 main screens. With the Center (Main or First screen) is the View Settings. This screen just shows the current settings of your E-Mag modules and the Prop angle (relative to TDC) that is currently used in the connected E-Mag Ignition module(s).

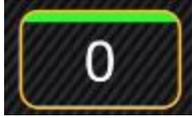
Navigation to the other screens is done by swiping to Right/Left/Top



SETTING PAGE

The page to the RIGHT is the Settings Page (Write Mode). This is the secured page which needs the PIN above.





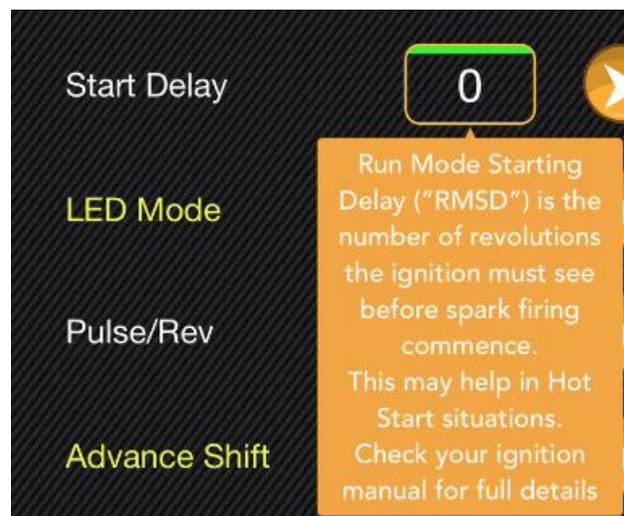
Settings with GREEN bar is confirmed and actual settings retrieved from the E-Mag module. Click anywhere inside the box to see available options.

A list menu is shown when you click inside each settings box.

These are the only available options which this setting can accept.



Click on the name of this Setting (Start Delay in this example) and a detailed description of the settings is shown.



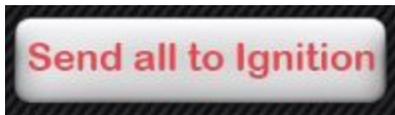


If a setting is changed (selected other than the E-Mag Module), the bar color changes to RED. This means it's changed but not yet sent to the E-Mag module. If you don't send it; nothing changes, if you close the page and go back to another page before sending it, nothing is changed.

New changes can be sent to the module either by clicking the Arrow button or by clicking "Send All to Ignition".



Send this specific (next to it) Settings only to the controller. So if you changing more than one setting, you need to send each individually.



This buttons sends ALL changes to the E-Mag module.



This animated bar indicate the new Settings is sent to the E-Mag and awaiting confirmation of the E-Mag modules. Once confirmed; the Setting bar will be Green indicating E-Mag modules accepted the Settings.

NOTE: ANY NEW SETTINGS ACCEPTED IS NOT SAVED PERMANENTLY WITHIN E-MAG MODULE UNTIL "WRITE IGNITION" IS USED.



This Asks E-Mag modules to permanently save the Settings into its memory. This means if Settings are changed but not "Written". E-Mag units will operate with the new settings until they are switched off. Once they are switch back on, they revert back to their "written" Settings within the memory. This feature allows you to test different configuration and settings during flight or on the ground and only save one time.

NOTE: SAVING SETTINGS PERMANENTLY CAUSES THE ENGINE TO BRIEFLY HESITATE AND GIVES A FEELING OF A MISFIRE; E-MAG MODULES TAKE A FEW MILLISECONDS TO SAVE AND DO NOT IGNITE DURING THESE MILLISECONDS. ITS

RECOMMENDED TO CHANGE SETTINGS IN FLIGHT IF NEEDED BUT ONLY SAVE/WRITE ONCE ON THE GROUND WHILE ENGINE IS OFF.



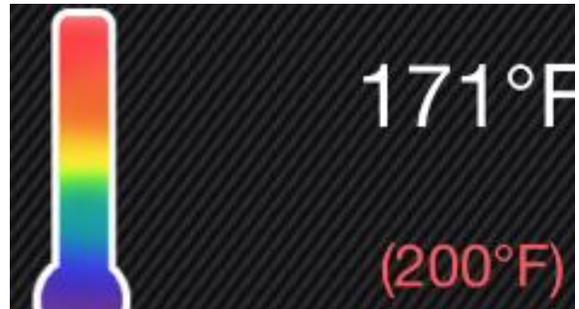
Saves up to 10 presets. This allows different settings for different condition.

To Save a Preset. Select the Settings you want (you don't have to actually Send or Write the Settings to the Modules), then select **Save as Preset** -> **Choose a Name** -> **Choose a Location** from the list menu.

LIVE PAGE

The page to the LEFT is the Run mode screen. This is where current live condition of the E-Mag module is shown.

Current reported temperature (and maximum temperature recorded if enabled) is shown. **Note: According to E-Mag modules manufacturer; these values are not calibrated and should not be taken as exact.**



Current RPM as reported by E-Mag module. **Note: Controller sends data once a second.**



Below 800 RPM, the arc color is displayed Red (As a reminder that built-in alternator for equipped E-Mag module only start around 800 RPM and above.



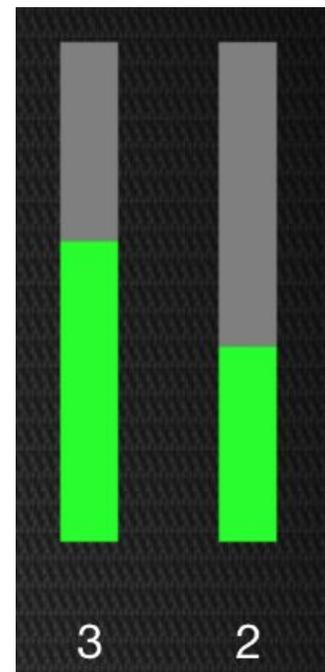
Current advance angle is shown.



refM (reference MAP) and refV (reference Voltage) are two optional data (can be disabled in the Options page) which are internal reference values for E-Mag units. These values should not be taken as the airplane MAP or bus Voltage; these values are part of the message received from E-Mag module and being displayed here for future reference or use.

27	refM	30
11.6	refV	11.8

This is dwell time reported by E-Mag modules. (Dwell is the amount of time required to charge an inductive coil) displayed at the bottom in ms (milliseconds). First bar on the left is the coil for Cylinders 1 & 2. To the right is for Cylinder 3 & 4 coil. Typical coils will have a dwell between 2ms and 5ms. This can be helpful in determining the condition of your spark plugs and wire leads to the plugs by observing the dwell time.



OPTINS PAGE

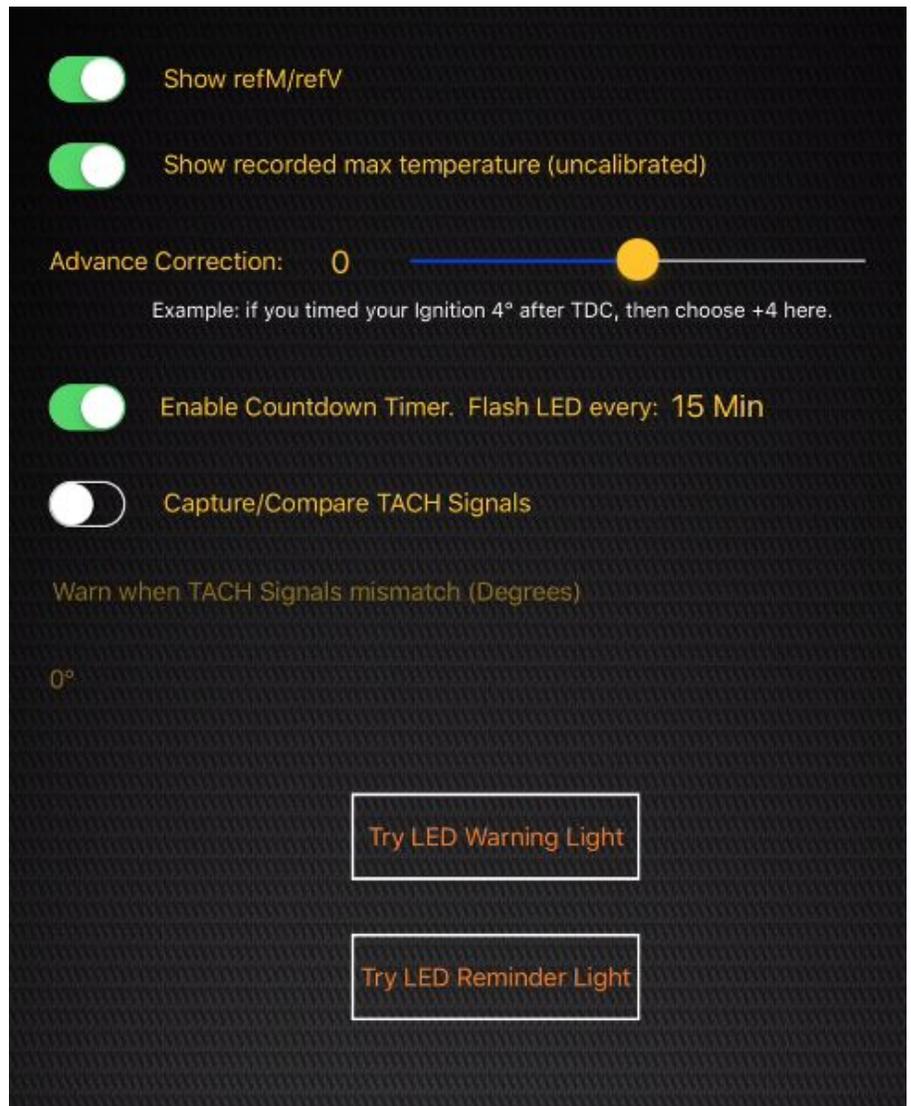
The page above (TOP) is the Option or Advance page.

Show RefM/V option enables extra data to be displayed in Run (Live) page. These are reference data for MAP and internal bus voltage as reported by E-Mag Module.

Show/Hide Max Temperature stored within the Modules. This is uncalibrated and in several cases been reported incorrectly. Hide the values using this option.

Advance Correction is useful tool for Pre-V40 E-Mag customers, specifically those who needed to time their Mags some degrees ahead of TDC.

This gives the option to correct the angle reported at Live page. E-Mag always report the angle based on TDC set when you first install the module.

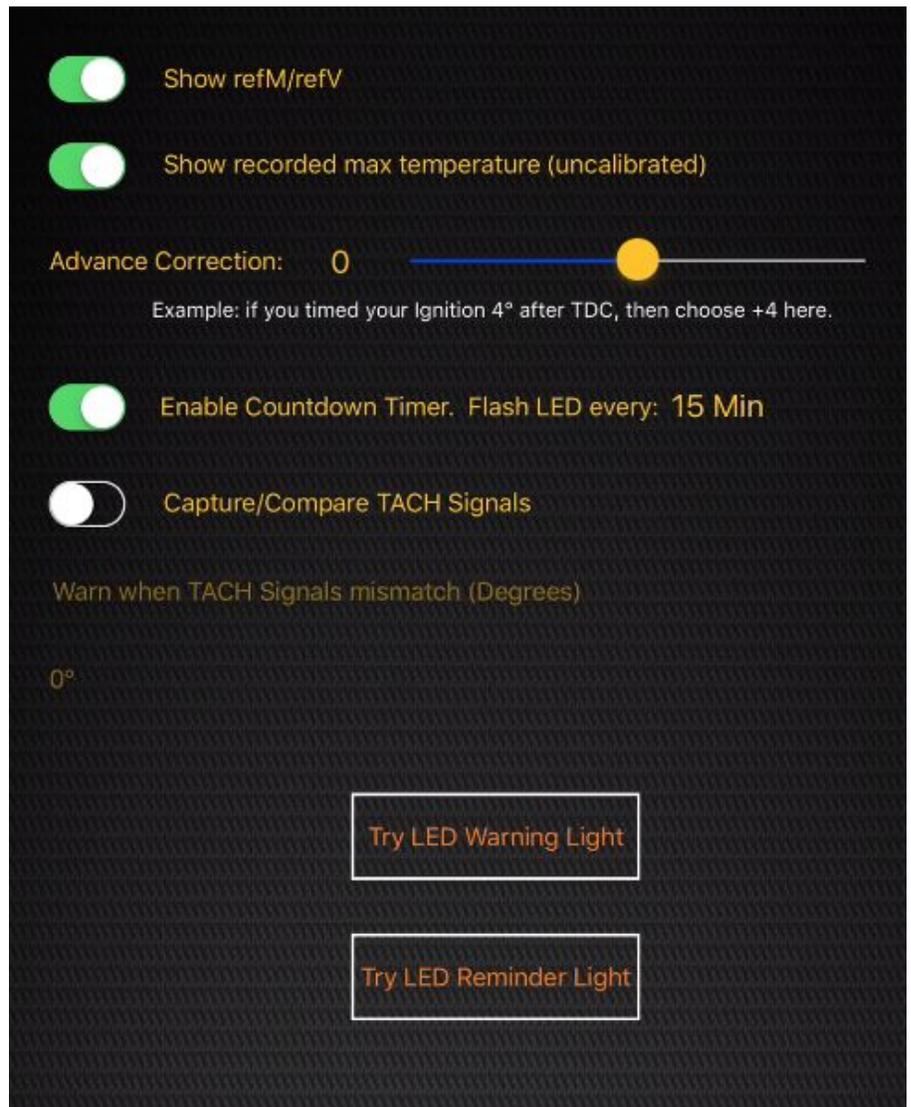


Countdown timer gives an option to have the panel LED (if installed) flash as a reminder when the set time is up.

Capture/Compare TACH:

If you have dual E-Mag installations and connected both TACH signal outputs; this enables the controller to compare both signals for mismatch. According to E-Mag module manufacturer, a few degrees difference should not be an issue.

If Panel LED is installed, you can check the difference between the Warning and Reminder lights by using the buttons.



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