

Landing Height Announcement Controller

V3.0 WIFI. R1.1

User's & Installation guide

Note: This guide is for V3 of the LHC controller which comes with a WIFI interface compared to the earlier USB edition. If you have the previous unit, please use the other guide found at the product page online.

INTRODUCTION

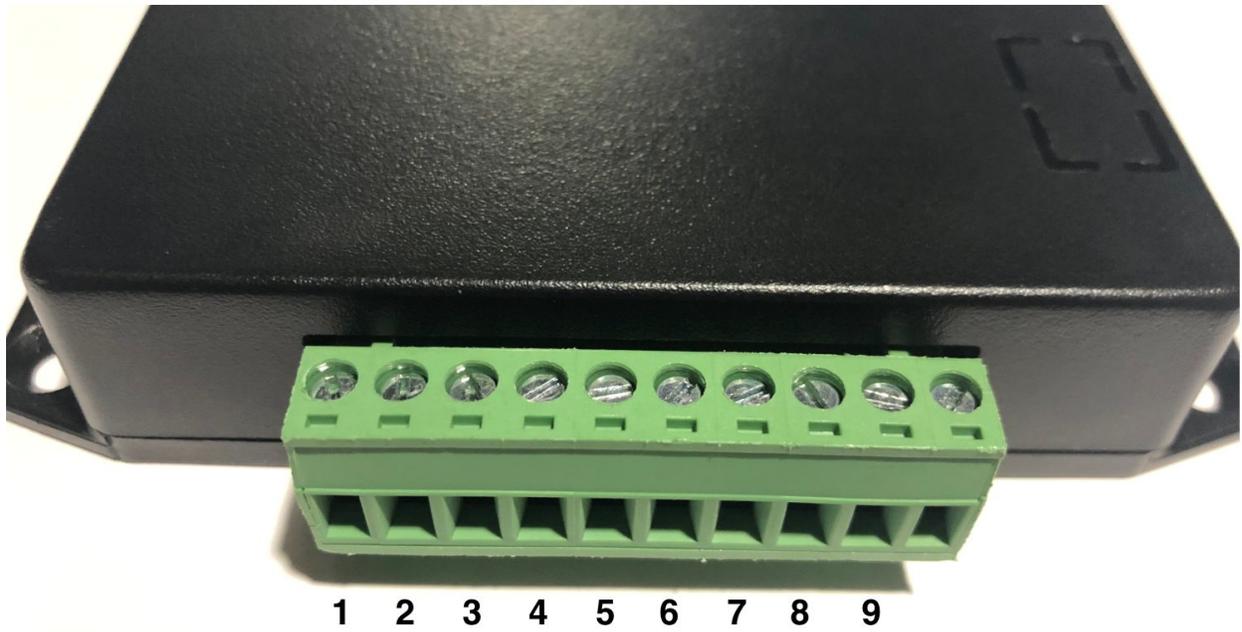
LHC uses Garmin LIDAR range finder module to detect actual height above runway starting from 100 feet down to touch down. It announces your height at certain fixed altitude all the way down.

The Garmin Laser module needs to be installed pointing to ground. Installing the module at an angle is also possible. The actual installation height is entered into the controller and with its current reading and provided installation height, any angles are calculated and stored. This setup which is performed initially allows the controller to detect the "standing" height of the airplane in compared to the LIDAR so Zero is announced when reaching a similar attitude during touchdown.

The Zero point can be calibrated by shifting it +/- 1-4" inches to take into account any flaring angle depending on the location of the LIDAR in compared to the main landing gear wheels.

CONNECTIONS

Refer to the following table for explanation of each PIN and connections.



10-PIN Connector

PIN	FUNCTION
1	(Input) GND. Connect this pin to airplane GND.
2	(Input) +12V. Maximum is 200mA. It can be shared with another non-inductive load circuit breaker. Or use a 1A circuit breaker or inline-fuse
3	(Output) +5V LIDAR Power. This is the RED colored wire for the LIDAR connection. WARNING: Don't mix LIDAR Power (Red) & Return (Black), it will DAMAGE the LIDAR power circuit.
4	(Output) LIDAR GND (BLACK)
5	(Input) LIDAR Yellow Wire.
6	(Output) Audio (+ve). Differential Audio output. (+ve line)
7	(Output) Audio (-ve). Differential Audio output. (-ve line)
8	(Input) LIDAR Green Wire (Don't use single twisted pair with PIN 9)
9	(Input) LIDAR Blue Wire. (Don't use single twisted pair with PIN 8)
10	No Connection. Leave empty.

Please see Notes & Recommendations at the end of this guide

INSTALLATION

There are different options/procedures to successfully install and test this controller.

This Controller uses a WIFI module to allow connection from Phones/PCs/Tablets such as iPads.

The value being read from the LIDAR unit is stored and used for subsequent operations so its necessary for the LIDAR unit to be properly secured and fully installed on your airplane before accessing the Setup menu.

The first procedure is to find a suitable location for the LIDAR; it needs a clear, unobstructed view of the grounds below. It can be installed at an angle, make sure no objects including landing gear doors can move, flap in the winds or obstruct the view during landing. These doors can move in front of the LIDAR during take off similar to our demo installation (see photos/video on our website), that LIDAR is installed in the gear well, the door closes on the LIDAR after takeoff, and opens before landing. Once the landing gear is fully down, the doors are out of the way and LIDAR sees the ground surface unobstructed.

An alternative first procedure is to test Audio output to your audio panel to make sure you can hear audio. The Audio output is **Mono differential audio signals**. You can use it on stereo input to your Audio panel by joining both stereo channels to the Audio (+) output of the controller. Or directly to a mono Audio input. The controller is capable of sending audio directly to the headset if equipped with a mono RCA jack input. For this case, connect both Audio wires to an RCA male then insert into your Panel input or headset.

Supply +12v/Gnd connection to the controller and choose a suitable location for the box.

In some installation with older type headsets or panels, a small amplifier module maybe needed to boost the audio to a proper level. Please contact us for suggestion if you experience weak audio signals from this controller.

If desired, Audio can be tested before installing or connecting the LIDAR unit. Just by applying power (even from a +9V small battery) and connecting the Audio cables. The software section explains how to test the Audio.

WIFI SYSTEM

Use your device WIFI Search and look for EI_XXXXXX

The default SSID (WIFI Access Point) is: EI_XXXXXX

The default WIFI Password: 61331970

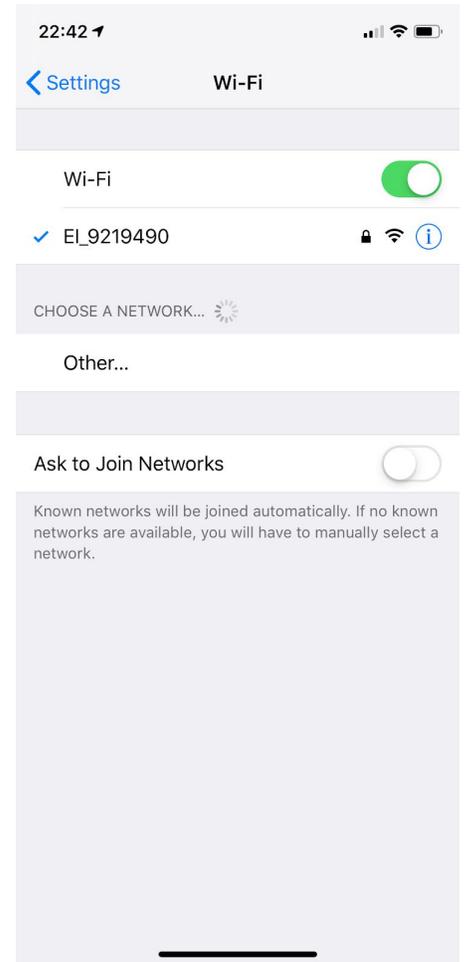
The _XXXXXX is the unique serial number of the unit.

The WIFI System is designed for Phone screen, but can be used with PCs and Tablets such as iPads. Multiple devices can connect at the same time if required.

Once connected, use your device Browser (Safari / Chrome / others) to connect to the Controller.

Use 192.168.10.1 as the IP in the Browser page. However, if its easier, any .com or .net can be used. As the Controller is not connected to the internet and it will respond with its own pages on any domain name.

Though its preferred to use the IP above and press Done or Go and Save the page into your Browser Bookmarks for easy access later on.



22:44 ↗



192.168.10.1





3.00

37.00

Set Vertical Height

Audio Functions

WIFI Settings

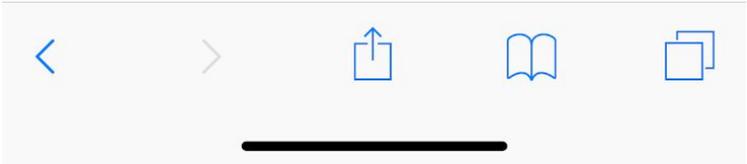
System Options

Installed Height: 0

Controller SW: v1.2

Controller HW: v1.20

DB: [1004/2949250](#)



When you first connect, as the Vertical Height is not yet set, the Controller shows the current reading value of the LIDAR.

As shows, the first button allows setting the Vertical Height. Do not follow the shown value, measure the actual vertical height from the ground exactly below the LIDAR to the back of the LIDAR. +/- 1" is not in issue. This can be adjusted later on to calibrate Zero announcement with your touch down depending on your flare angle. A higher flare angle means a slightly lower value needs to be set for the vertical height.

The second button allows Audio Testing. By going into that page and just pressing "Test Audio (0)" Controller announces Zero. Make sure your Audio Panel is on and you have the headset on. Note while Testing Audio (Full), the LIDAR is not being read, the first page will show "No Range" while the entire set of messages are being played.

The third Button allows changing the WIFI name & Password and Reset the WIFI back to factory settings.

The fourth button is System Options to upgrade firmware, change configuration and read Debug messages.

Set Vertical Height

Measure the actual vertical height from the ground exactly below the LIDAR to the back of the LIDAR. +/- 1" is not in issue

Input number in INCHES. Example 25.50

Using 0 will remove any previously Set height and return to show current reading of the LIDAR.



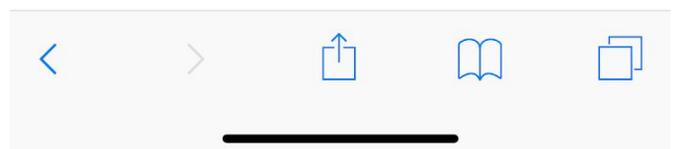
**In INCHES. 0-9 & '.' allowed.
Value between 10.00" and 60.00".
Example: 25.44 or 24.00 or 45**

**Height: 0 is allowed and this removes
the Saved Height Value (Reset)**

Enter install height

Save new height

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WIFI Settings

You can change the default EI_xxxxxxx Controller network name with any other name such as your Tail-Number. When changed, the system will restart, look for the new name.

For Network name, 4-15 standard A-Z characters allowed.

For Password change, 8-20 Standard characters with numbers allowed.

Note this is case-sensitive.

When changing password, please make sure at least one of your devices (phone or iPad) saves the new password and can connect to the unit again without asking for the password. If you forget the new password, the only way to reset it is either by using a device (phone or iPad) that saved the password and reset using this page or by returning the unit back for firmware re-programming. We have no way of knowing your new password if you are unable to connect to the unit.



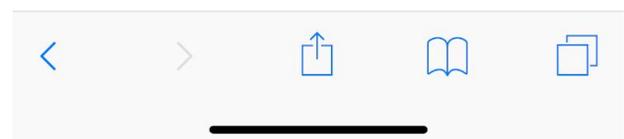
WIFI Settings

Change WIFI Name

Change WIFI Password

Reset WIFI Name & Password

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Additional Notes & Recommendations

- 1) The LIDAR unit will be sent with a Capacitor. This Capacitor needs to be installed. If the LIDAR unit will be installed close to the controller without the need to extend the wires, place the Capacitor between PIN 4 (LIDAR GND) & PIN 3 (LIDAR RED). Notice the polarity of the Capacitor. The Shorter lead (Marked -) on the Capacitor is the GND. The other Capacitor lead (longer lead) is the +Ve and goes to PIN 3 (LIDAR RED). Note that LIDAR wires are small and not suitable for the 10-PIN Connector, any overtightening of the screws may damage the wires and not allow it to make contact. It is recommended to solder a 22 AWG wires to the LIDAR wire and use that to connect to the 10-pin connector.

If you need to extend the LIDAR wires, solder the Capacitor right at where the LIDAR wires ends. So, the extension wires, and the original LIDAR wires along with the Capacitor are all soldered together and heat-shrink. Also notice the polarity of the Capacitor. The -ve Capacitor (shorter lead) goes to LIDAR BLACK wire. Other lead to LIDAR RED wire.

- 2) If you are attaching the LIDAR wires directly, it's recommended to actually solder a small extension (2" or so) or a thicker gauge wire before inserting into the 10-PIN Connector. The LIDAR wires are very small and can be actually cut when tightening the Connector screws. The Capacitor can go directly to the connector even with a 2" extension. It's also recommended soldering the Capacitor leads to the LIDAR wires rather than inserting both wires into the screw slot.
- 3) The LIDAR & Controller takes less than 200mA current @ 9V-14.5V. So it does not need its own dedicated circuit breaker. Though it can't share power any inductive loads such as motors (ex flaps). Sharing with avionics is perfect, but not with any ADS-B OUT units or high-load units. Can be shared with Lights if they are low-powered. If it will have its own CB, then 1A is recommended or just an inline-fuse.
- 4) If the LIDAR does not have a full unobstructed view of the ground surface and some other parts of the plane (such as part of the landing gear) in its view, it may be necessary to do some flight testing before making final holes or drills into the airframe for the final installation point. Its recommended the system is tested using a dummy access panel cover to attach the LIDAR before final location is selected and drilled.

- 5) To resolve any audio issues, it's recommended to use shielded 2-core wires for the two audio outputs. The shield itself can be used to connect the Audio Panel GND to Controller GND. In fact, it's also recommended that the Controller GND to be taken directly from the same point as the Audio Panel GND (or Headset GND if the audio is going directly to headset). This procedure eliminates any ground loop that can affect the audio signal.
- 6) **IMPORTANT** not to mix the Black & Red wires of the LIDAR. Red is Positive and connects to PIN3. Black is -ve and connects to PIN 4. The LIDAR may not have a reverse-power protection internally and if these pins are swapped, the unit will be immediately damaged and may not be covered by the warranty if that was the case.
- 7) LIDAR Wires needed are the RED/BLACK/YELLOW/GREEN/BLUE. The Orange wire is not needed. Please cut slightly shorter and heat-shrink. And make sure this wire is not touching anything as it will turn the LIDAR Off.
- 8) The Audio outputs (PIN 6 & 7) are Differential Audio lines. It's not Audio & GND. If your Audio panel only accepts Single Line for Audio, then try to use the +ve Audio signal only. Though most if not all Panels will accept Audio (+ve) / Audio (-ve) Pair. +ve & -ve Audio is the same as Hi/Lo sometimes mentioned in Audio Panel installations.
- 9) Almost all Audio panels/intercom will amplify the Audio signal, in certain situations or older equipment, it may be necessary to add a small low-cost amplifier module to boost the audio. Contact us for some suggestions to resolve any audio issues.
- 10) If a twisted pair wires are going to be used for connection, don't use a single pair for both PIN 8 & 9 (I2C) as this causes interference within the signal. It is best to use 5 straight wires for all 5 LIDAR connections.