Supplemental Wiring Guide

Landing Height System

(NORSEE Certified Edition)

All Models

This guide offers various scenarios to assist in wiring the Landing Height System (LHS) to Aircraft power and Audio Panels.

LHS Power Wiring:

It is recommended that the LHS Audio be wired to a "Switched" audio input; this means there is a button that the pilot can use to mix or disable that particular audio channel. Similar to an ADF switch or NAV2 (if unused) and so on. If a Switched audio input is used; the LHS power can be shared with a non-essential equipment power, otherwise either a dedicated 1A circuit breaker of the Pull/Push type OR a panel mounted dedicated toggle switch powered from a non-essential equipment can be used to power the LHS.

- Pull a 2-core Shielded Aircraft approved cable (24 AWG or 22 AWG) from your power source to the location of the LHS.
- Use one wire for +12V/24V power and the other wire for Aircraft GND (Ground) point from a ground bus or terminal behind the panel. Airframe ground point next to the LHS can also be used if it offers a good ground connection.

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- Connect Aircraft Power wire to the LHS RED wire at the provided Quick-Disconnect cable. Crimp or heat shrink immediately before connecting any other wires.
- Connect Aircraft GND to LHS Yellow wire. Keep this uncrimped or exposed until Audio Test is completed, as you may add one more wire to this connection.
- The Shield of the 2-core shielded Power wires needs to be connected to the LHS Yellow wire as well.

LHS Audio Wiring:

Pull a 2-core Shielded Aircraft approved cable (24 AWG or 22 AWG) from your Audio Panel to the location of the LHS.

One wire connected to Audio Panel Channel HI; the other wire is connected to Audio Panel channel LO, assuming the Audio Panel offers an Audio Channel LO pin or wire.

If the Audio Panel does not offer an Audio LO pin or wire, or it is already used for other equipment; this means the Audio LO is a Ground Reference (see **Case 2 below)**

Case 1: The Audio Panel offers both Audio HI & Audio LO combination pins and both are available.

- Pull the cable with both Audio HI / LO connected to the location of the LHS; keep track of which wire is for HI and which wire is for LO.

- Connect the Audio Panel HI wire to the LHS BLUE wire. Crimp & Heat shrink this connection, as this is always the case. **Audio Panel HI -> LHS BLUE.**

- Temporarily connect the Audio Panel LO wire to the LHS YELLOW (LHS GND).
  Almost ALL Aviation Audio Panels use the AUDIO LO as a Ground Reference, and only require the Audio LO connection if the Channel is a Music Channel.   This Temporarily connection to allow for audio testing to confirm this case.

- Once the Audio Panel LO is connected to the exposed Yellow and the Audio HI to LHS Blue, Power the Master and connect to Wi-Fi and perform Audio Test.   Note that the Audio will NOT be heard on the iPad or Phone; listen to the Audio on the headset once you make sure that the Channel is selected (Mixed) on your audio panel control head.

- If Audio is clear and heard.   Make the connection permanent;
  - Audio HI -> LHS BLUE
  - Audio LO -> LHS Yellow; in addition to Airframe GND and also the Wire Shield (only on this end, keep shield on the other end unconnected)
  - LHS Green, leave unconnected, cut short & heat shrink.

- If Audio is not heard (double-check the pins inserted and wiring, 99% of cases audio will work as above)
  This could mean the Audio Channel selected does require an Audio LO connection, and the Audio LO for the Audio Panel is not a Ground Reference. Remove the Audio Panel LO from the LHS Yellow and connect it to LHS Green; test audio again.

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- Either one of the above scenarios will work; if both scenarios do not work; check the wiring again. If wires checked ok; it could be an issue with the internal Audio IC of the LHS (See Note 2 below).
Note that each LHS unit is fully tested (again) for Range, Wi-Fi and Audio immediately before being boxed and shipped.

<u>Case 2: The Audio Panel only offers a single Audio HI with no dedicated Audio LO pin or the Audio LO is already used for other equipment:</u>
This case confirms that the Audio Panel uses Aircraft GND as Audio LO/GND Reference. The connection for Audio Wires will be as follows:

- Pull a 2-core Shielded Aircraft approved cable (24 AWG or 22 AWG) from the Audio Panel to the location of the LHS.
One wire connects to Audio Panel Single Audio HI pins.
The other core connects to the Audio Panel **<u>Tray/Case</u>** or the actual ground point of the Audio Panel. This will be used to share both Grounds directly to eliminate any ground loops between the LHS & Audio Panel if the LHS is connected to a Wing Airframe GND point.

- At the LHS end:
  - Audio Panel HI -> LHS BLUE
  - Audio Panel Tray/Case/Ground -> LHS Yellow; in addition to Airframe GND & Wire Shield (only on this end, keep shield on the other end unconnected)
  - LHS Green, leave unconnected, cut short & heat shrink.

- Perform Audio Testing.

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NOTES:

1 - Audio test must be performed before closing up the panel; audio test can be done by accessing the Wi-Fi page of the LHS once powered

2- Wrong wiring such as connecting +Voltage source to the Audio HI / LO wires of the LHS **WILL** damage the internal Audio chip; the unit must be returned to replace the internal audio chip, this is not recoverable in the field. Any voltage source touching the Audio wires will damage the internal LHS audio system.

3- Above guide is for ANY Audio Channel; "Switched" or "Unswitched". Some Channels may be "Auto Muted" if COM activities are present while the announcements are active. Installers can verify any limitation of the audio channel selected by either checking with the Audio Panel guide, contacting the Audio Panel manufacturers or testing audio while an ATIS is active to make sure the channel selected is being "Mixed" with the main COM audio and not "auto muted".

4- Do not run the audio powers along a bundle of wires that can carry high current such as Battery cables, Strobe cables, Radio Transmitter cables/Antenna, ADS-B out/Transponder Out wiring

5- The LHS Audio output is "very" high impedance when it's not announcing; meaning these wires are fully released. If any noise is present while the unit is not announcing, the noise is external. Check location and/or run path.

6- Do not leave any long unconnected wires; these act as an antenna. If using a multicore cable that may include an unused wire, connect the wire to ground from one end.

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