# LIGHTSPEED

# Zulu H-Mod User Guide

# Welcome

Congratulations on purchasing a Lightspeed Aviation Zulu H-Mod Active Noise Reduction (ANR) kit for your helmet. Your installation provides a premium product engineered to provide the highest levels of performance, comfort, and durability and is backed by the only warranty in the industry.

For more information about our company and products, visit LightspeedAviation.com.

Thank you for choosing Lightspeed.

# Contents

# Introduction

Your Zulu H-Mod kit includes
(on the following page):

- Zulu H-Mod ANR kit

- Two AA batteries
  (not included with panel-powered kits)

- Cord clip

- Audio device/iPhone cable with standard
  3.5mm connector

# Getting Started

## Fit

The Zulu H-Mod ANR kit is optimized to deliver clarity and quieting with comfort. Contrary to most in-helmet passive systems, this ANR kit does not need significant pressure to ensure quieting.

For adjustments in fitting, you should refer to the helmet dealer who provided the certified installation of your Zulu H-Mod ANR kit. The fitting instructions for each helmet will vary considerably.

## Battery Installation

The standard Zulu H-Mod requires two AA batteries (included). Use alkaline batteries for best performance.

A.  Open the controller battery/DIP switch door by either pressing down on the circle icon or by pulling open the door along the notched edges. Insert two AA batteries with the correct polarity positioning.

B.  The LED flashes GREEN when charged batteries are in use and the power is on.

C.  When batteries begin to run low the power LED flashes RED. If the LED flashes RED during flight the headset will continue to operate for 5–10 more hours. Install new batteries as soon as possible at any indication of low batteries.

**Battery Types**

Use two AA alkaline or lithium batteries. Lithium batteries may provide improved battery life in colder temperatures. We do not recommend using rechargeable batteries or mixing battery types and brands.

**Battery Life**

A set of batteries can provide up to 40 hours of power. However, heavy *Bluetooth*® wireless technology usage can significantly reduce battery life. Under quiet conditions Zulu H-Mod will auto shut off approximately five minutes after the helmet is removed from your head.

# Getting Started

**Controller**

A.  Power indicator LED: Flashes GREEN when power is supplied to Zulu H-Mod and batteries are strong. Flashes RED when batteries are low.

B.  Power button: Powers on the kit, turning on Active Noise Reduction (ANR). Press button once to turn Zulu H-Mod on; press and hold to turn Zulu H-Mod off.

   To toggle the LED brightness from bright to dim quickly press the power button twice.

C.  Volume control: Controls audio panel volume with individual sliders for each ear. Does not affect the volume of auxiliary devices.
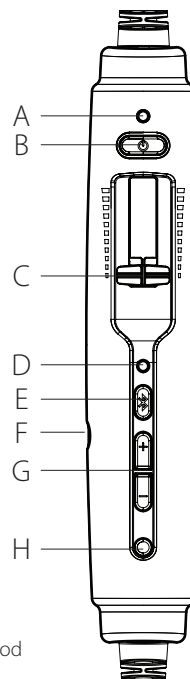
The Zulu H-Mod controller

D.  Bluetooth mode indicator LED: Flashes BLUE
    when Bluetooth mode is on and RED when
    Bluetooth mode is being turned off. In pairing
    mode, flashes alternating RED and BLUE.

E.  Bluetooth power button: Turns on and off the
    Bluetooth signal and controls deviced connected
    devices via Bluetooth technology.

F.  Auxiliary input jack: Provides a wired input for
    audio and cell phone devices.

G.  Bluetooth volume buttons: Controls the volume
    of devices connected via Bluetooth technology.

H.  ComPriority button: When enabled, automatically
    quiets music and audio from auxiliary devices
    during radio communications.

# Using Your Zulu H-Mod

**Turning ON and OFF**

ON: Press the power button once to turn on the system. The GREEN power LED flashes when power is supplied. Active Noise Reduction (ANR) is engaged when you turn on the system.

OFF: Press and hold the power button until the GREEN power LED turns off.

Zulu H-Mod will auto shut off approximately five minutes after removing the helmet and under quiet conditions.

The power LED flashes RED when batteries are low; see Battery Installation on page 4.

**Matching Stereo/Mono Setting to an Audio Panel**

The Stereo/Mono DIP switch setting should match the signal from your audio panel.  Zulu H-Mod is shipped in Mono (the "on" position) so you only need to change the setting if you use a stereo panel. STEREO should be used for a stereo panel and MONO for a mono panel. Incorrect settings result in communications being heard in only one ear or weakly in both. This switch does not affect auxiliary devices, so you can enjoy auxiliary audio in stereo regardless of how the Stereo/Mono DIP switch is set.

**Front Row Center™**

Front Row Center is a built-in feature that gives you a theater-like experience, enhancing stereo sound reproduction so that audio seems to come from all around you, not just from your right and left.

**ComPriority™**

ComPriority is turned on or off by the bottom-most controller button. With ComPriority enabled when radio communications are detected, the volume of auxiliary devices will be significantly reduced. ComPriority is enabled by default when you power on your Zulu H-Mod. Plug into your intercom and talk into the microphone while playing music using a wired device. If ComPriority is enabled, your auxiliary music volume will decrease when you start to talk. During cell phone calls, the other party will be muted, so you should disable ComPriority before making calls.

**Wired Auxiliary Devices**

Zulu H-Mod's wired auxiliary input allows you to connect to cell phones and to most audio devices. To connect a music player to the auxiliary input jack, use the cord provided. To adjust the volume on a device connected to the auxiliary input jack, use the controls on the device itself.

**Connecting to iPhone or iPad with the Auxiliary Input Cord**

If you connect to an iPhone or iPad using the wired auxiliary input cord, you can use the silver button on the cord to perform the following functions:

• Play/Pause: Press the button **once** to Pause music; press the button again to Play music.

# Using Your Zulu H-Mod

- Track Forward: Press the button **twice** rapidly to track forward.

- Answering calls: Music automatically mutes and pauses for an incoming call. Press the button to answer the call.

- Disconnecting a call: Press the button to disconnect the call; music automatically resumes.

**Setting DIP Switches**

DIP switches are factory set to match most aircraft audio panels. To change a DIP switch setting open the controller battery/DIP switch door. Use a small pointed object such as a wood toothpick to slide the DIP switch to ON or OFF depending on your preference.

**Zulu H-Mod DIP Switch and Their Recommended Use**

| DIP switch | OFF position | ON position | Recommendations |
|---|---|---|---|
| Stereo/Mono | Stereo | Mono—Factory setting | Affects audio from the panel only. Set to Stereo only if you are using a stereo panel. If your audio panel produces a mono signal but the switch is set to Stereo, you will hear audio communications in only one ear or weakly in both. |
| Leave off | Leave set to OFF | | Test mode; for factory use only. |
| Cell mic bias—two switches that must both be in the same position | Cell mic bias off— Factory setting for helicopter and panel-powered headsets | Cell mic bias on— Factory setting for battery-powered airplane headset | Lets you make phone calls with the system when it is not plugged into a cockpit audio panel. Available for battery-powered systems only.<br><br>Note to helicopter pilots: The ON setting for these switches is incompatible with some helicopter audio panels. If you plan to use this feature and keep the switches set to ON, test the system in the cockpit before takeoff. |
| Noise gating | Factory setting | | Usually left OFF; only used in quiet environments. Test before using to avoid missed communications from softer radio signals. |
| FlightLink | Factory setting | Enables FlightLink | For FlightLink to work properly, it must be in the ON position. This will also affect cell phone usage — when in the ON position, the recipient of a cell phone call will hear all sounds on the intercom. To avoid this, unplug from the panel during phone calls. |

# Using Devices Enabled by Bluetooth Technology

**Connecting to Mobile Devices for the First Time**

The Bluetooth interface allows cell phone and stereo music streaming capability (A2DP). Before using a mobile phone for the first time with Zulu H-Mod, it must be "paired" or electronically connected via Bluetooth wireless technology.

**To pair a mobile phone or device:**

1. Turn on the system and verify the GREEN LED is flashing. Make sure the Bluetooth mode is turned **OFF**. (See "Bluetooth Mode—ON and OFF", page 13).

2. **Press and hold** the Bluetooth button for about five to ten seconds or until the Bluetooth LED *continually flashes RED and BLUE*. This indicates the pairing mode setting and lasts about two minutes. If this step takes longer and the

Bluetooth LED is no longer alternating RED and BLUE, start over from step one.

3. In pairing mode, follow the menu prompts on your Bluetooth wireless technology enabled device directing it to look for other Bluetooth wireless technology enabled devices.

4. Select Lightspeed-V### (numbers may vary) on your mobile device from the list of found devices.

5. If asked to enter a password or PIN, enter 0000.

Your mobile device should now be paired and ready for continued use.

When you turn on Bluetooth mode again, it will connect to the most recently paired device. Most mobile devices connect automatically. If that doesn't happen it may be necessary to use the settings

menu of your device to choose and re-pair Lightspeed-V### (numbers may vary). Turning off Bluetooth **before** turning off your system may help retain the pairing.

**Using Bluetooth Wireless Technology Features**

Depending on the Bluetooth profile of the phone, you can use the Bluetooth buttons to perform several functions. Some typical functions are:

- Press the Bluetooth button once for voice dialing (if supported by your phone).

- Press the Bluetooth button once to answer a call.

- Press the Bluetooth button once to disconnect from a call.

- Press and hold the Bluetooth button for two

seconds to redial the last number called.

- Use the Bluetooth volume buttons (+ and – buttons) to adjust the volume. You may also adjust the volume on your connected device.

**Bluetooth Mode—ON and OFF**

ON: With Zulu H-Mod turned ON, press and hold the Bluetooth button (see page 7), until you hear a high tone and the Bluetooth indicator LED flashes three BLUE pulses. For first-time pairing see instructions on page 12.

OFF: Press and hold the Bluetooth button for about three seconds until a high tone is emitted and the Bluetooth indicator LED flashes three RED pulses.

Note: The Bluetooth feature must be turned ON for devices connected via Bluetooth to correctly function.

# FlightLink

FlightLink is the first in-flight cockpit recording application for the iPad® and iPhone.® The free app works seamlessly with Zulu H-Mod to capture and retrieve all incoming and outgoing communications.

### Features

- Record all activity over the intercom, as well as in-cabin conversation.
- Playback the prior two seconds or two minutes.
- Store your recording library.
- Draw notes, codes, or diagrams on the convenient iPad scratchpad for reference.

### How to Activate

- Download the FlightLink app from the App Store.
- Move the far right DIP switch (#6) to the ON position. When in the FlightLink DIP switch is in the ON position, the recipient of a cell phone call will hear all sounds on the intercom. To avoid this, unplug your system from the panel during phone calls.

- Connect your Apple® device to the controller using the supplied auxilliary device/iPhone cable.

- Tap the icon to begin using the app.

### Toggling Between Apps

Press your device's Home button or swipe up to access and select another app. Your recording will continue uninterrupted as you switch between different applications.

NOTE: If you simultaneously use an app that provides audio, you will need to run it on a second device to prevent interruption of FlightLink recording.

**Quick Disconnect cable**

Experience fast, safe egress with Lightspeed's exclusive quick-disconnect cable that has a 9-pound pull force (4 kg) and makes emergency egress even safer.

To know if this feature is connected properly, there are two ways you can verify its proper alignment: visually and mechanically. Visually you can align two indicators (red dots) on each connecting end of the Quick Disconnect feature. When the red dots are aligned, the connection is correct. The second is a tactile way, or non-visual. Spin the two ends once aligned until you hear or feel a click. The Quick Disconnect must be aligned or won't snap in.

In non-emergency situations, the power should be turned off instead of using the Quick Disconnect feature to power off.

# Peak Performance Tips

**Peak Performance Tips**

- Start with an excellent fit—see "Fit," on page 4.

- Set the Stereo/Mono DIP switch to match the signal from your audio panel (see "Matching Stereo/Mono Setting to an Audio Panel" on page 8).

- Keep cell phones at least 12 inches from the Zulu H-Mod controller when making calls to reduce static noise during phone calls.

- To conserve battery life, turn off Bluetooth mode when not in use.

- You can use auxiliary devices such as a music player by connecting to the Zulu H-Mod auxiliary input jack and a cell phone by connecting via Bluetooth wireless technology, or through the 3.5mm audio device/iPhone cable provided.

**Why do I hear radio communications in only one ear, or weakly in both?**

The Zulu H-Mod Stereo/Mono DIP switch is likely set to Stereo while your audio panel is transmitting a mono signal. To fix this, change the Stereo/Mono DIP switch to Mono (the "on" position). This setting does not affect music or audio from auxiliary devices; you can hear stereo sound on auxiliary devices even when the Stereo/Mono DIP switch is set to Mono.

**When pairing Zulu H-Mod with my phone via Bluetooth wireless technology, why does my phone indicate it cannot connect?**

The system may not be in pairing mode. To enter pairing mode, you must start with Bluetooth mode turned fully OFF; (see "Connecting to Mobile Devices for the First Time," on page 12).

**Why doesn't my phone accept the 0000 passcode when I try to connect via Bluetooth wireless technology?**

Your system may not be in pairing mode. Some phones prompt for a pass code without checking for pairing mode. When the phone cannot pair, it rejects the passcode. To enter pairing mode, you must start with Bluetooth mode turned fully OFF (see "Connecting to Mobile Devices for the First Time," on page 12).

**How can I reduce static noise during cell phone calls?**

To reduce RF interference during phone calls, keep cell phones at least 12 inches from the controller when making calls.

# FAQs

**When flying, what causes a warbling noise in the ear cup?**

If your ear is not entirely inside the cup, with a tight seal, air can seep in and cause the ANR to compensate for uneven internal cup pressure. See "Fit," on page 4.

The Zulu H-Mod is available in several connector options: U-174, LEMO (6-pin panel power), Dual general aviation, Fisher, Airbus, and XLR. The type of connector is not determined by whether the system is low or high impedance. Any of these configurations can be had with 5-ohm, 150 ohm or electret mics which can be established with your installer.

## General

Battery power supply: 3V, two AA batteries
Panel aircraft 8-40 VDC

## ANR

Maximum SPL: Greater than 125 dB at 100 Hz

## Headphone

Transducer: 40mm moving coil
Frequency response: 20 Hz-20 kHz
Nominal impedance @ 1 kHz:
OFF—Mono: 200 ohms, ON—Mono: 280 ohms
OFF—Stereo: 400 ohms, ON—Stereo: 560 ohms

## Microphone

Lightspeed does not provide a boom microphone, however, we do provide support for connection to the communication system through the harness and control box. Work with your helmet provider to define the microphone that will be used in your application (electret or dynamic) and ensure that the proper supporting control box is used.

# Warranty Information

**3-Year Limited Warranty for New Aviation ANR kits Sold by Lightspeed Aviation, Inc.**

Lightspeed Aviation, Inc. ("LSA") warrants that the new aviation ANR kit sold by LSA ("New Kit") is free from all material defects in workmanship and materials. For the New Kit, all warranties provided by LSA and all implied warranties imposed by law are limited to a 3-year period, beginning on the purchase date shown on the New Kit's sales receipt ("Warranty Period"). This 3-year Limited Warranty ("Limited Warranty") is provided solely for the benefit of the initial purchaser of the New Kit ("Purchaser"), and it excludes all 3rd parties, including distributors, dealers, retailers, subsequent owners, and other users of the New Kit. This Limited Warranty is not assignable and remains in full force and effect during the Warranty Period, but only if the New Kit: (a) has been properly maintained; (b) has not been abused or misused; and (c) has not been repaired, altered, or modified without LSA's approval. This Limited Warranty specifically excludes all taxes, shipping costs, and problems relating to any: (1) repair, alteration, or modification not approved by LSA; (2) abuse or failure to properly maintain the New Kit; (3) faulty workmanship by any person, except LSA or its approved agent; (4) operation of the New Kit, except as specified in its operating manual; (5) ordinary wear and tear; or (6) finish and appearance item. For each claim made under this Limited Warranty ("Claim"), Purchaser must, within 10 days of discovering a New Kit problem indicating a breach of this Limited Warranty, deliver to LSA a written notice that explains in detail the New Kit's specific defect, that shows proof of Purchaser's purchase of the New Kit before the end of the Warranty Period, and that shows proof that this Limited Warranty applies to the New Kit. LSA or its agent may investigate any Claim. For each Claim, LSA may, in its sole discretion, choose any of the following exclusive remedies: (I) repair or replace the New Kit or any part thereof, without charge to Purchaser, but first Purchaser must return the New Kit to LSA's authorized repair facility, pre-paying all shipping charges, and Purchaser must accept the same as repaired or replaced at the facility's location (i.e., FOB the facility) within 10 days of the date of LSA's completion notice sent to Purchaser, or else LSA will deem the New Kit abandoned, in which case LSA may keep, sell, or otherwise discard it; or (II) refund the New Kit's purchase price to Purchaser. Without

paying any amount to Purchaser, LSA may keep, sell, or otherwise discard all replaced New Kits and parts thereof and all New Kits where LSA has refunded the purchase price to Purchaser. In repairing or replacing any New Kit, LSA may, in its sole discretion, use new, used, or reconditioned parts or provide a refurbished used kit as a replacement. In connection therewith, LSA warrants that all new, used, or reconditioned parts or refurbished used kits will be free from all material defects in workmanship and materials during the Warranty Period and for a period of up to 90 days thereafter, but only to the extent that such event occurs during the final 90 days of the Warranty Period. LSA may, in its sole discretion, (i) establish separate, additional, non-warranty repair and replacement programs for any new or used kit ("Non- Warranty Service Programs"), (ii) the Non-Warranty Service Programs may cover any time period, before or after any Warranty Period has expired, and (iii) charge any amount and impose any term with respect to any Non-Warranty Service Program. For Non-Warranty Service Programs, LSA warrants that all new, used, reconditioned, or refurbished parts and kits used to repair or replace any kit will be free from all material defects in workmanship and materials, but only for a limited period of 90 days thereafter. Purchaser acknowledges that used or reconditioned parts may be used to repair any new or used kit, and that a refurbished used kit may be provided as a replacement for any new or used kit. LSA may hire a 3rd party to repair or replace any new or used kit. "Including" means "including, but not limited to. "THE TERMS IN THIS DOCUMENT ARE THE ONLY TERMS THAT GOVERN LSA'S WARRANTY OBLIGATIONS FOR ANY NEW OR USED KIT OR PART THEREOF. NO ORAL OR OTHER WRITTEN TERM APPLIES. THIS DOCUMENT PROVIDES THE EXCLUSIVE REMEDY FOR ALL CLAIMS AGAINST LSA WITH RESPECT TO ANY NEW OR USED KIT OR PART THEREOF. NOTWITHSTANDING ANY PROVISION TO THE CONTRARY IN THIS LIMITED WARRANTY, LSA RESERVES THE RIGHT TO MODIFY, AT ANY TIME AND FROM TIME TO TIME IN ITS SOLE DISCRETION, ANY AND ALL TERMS IN THIS LIMITED WARRANTY. EACH SUCH MODIFICATION IS DEEMED EFFECTIVE UPON PUBLICATION ON LSA'S WEBSITE OR OTHERWISE. TO THE EXTENT ALLOWED BY LAW: LSA DISCLAIMS AND PROVIDES THIS LIMITED WARRANTY IN LIEU OF ALL OTHER EXPRESS OR IMPLIED WARRANTIES, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR

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Per FCC 15.19(a)(3) and (a)(4) This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Caution: Per FCC 15.21, any changes or modifications to this system not expressly approved by Lightspeed Aviation could void the user's authority to operate the equipment

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