

TELEX



Ascend

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Warranty and Service Information

For warranty and service information, refer to the appropriate web site below:

Aviation Headsets www.telex.com/warranty

RTS www.rtsintercoms.com/warranty

RTSTW www.rtstw.com/warranty

AudioCom..... www.telexaudiocom.com/warranty

RadioCom www.telexradiocom.com/warranty

Headsets www.intercomheadsets.com/warranty

Regulatory Information

FCC



This device complies with part 15 of the FCC Rules. Operation is subject to the following two (2) 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.

FAA

The Telex Ascend Headset (with or without microphone) is approved for aircraft use under FAA TSO-C139.

The conditions and tests required for the TSO approval of this article are minimum performance standards. It is the responsibility of those installing this article, either on or within a specific type or class of aircraft, to determine that the aircraft installation conditions are within the TSO standards. TSO articles may have separate approval for installation on aircraft. The article may be installed only if performed under 14 CFR part 43 or the applicable air-worthiness requirements.

The Telex Ascend Headset is TSO-C139 approved. Tests were conducted using RTCA DO-214 and DO-160E. The headset was designed and is manufactured to meet the following environmental categories:

CONDITIONS	DO-160E SECTION	DESCRIPTION OF TESTS CONDUCTED
Temperature and Altitude	4.0	
Low Temperature	4.5.1	Equipment tested to Category A1
High Temperature	4.5.2 & 3	Equipment tested to Category A1 with 70°C max. exception by DO-214 2.5.1.2
In-Flight Loss of Cooling	4.5.4	Equipment identified as Category X, N/A
Altitude	4.6.1	Equipment tested to Category A1
Decompression	4.6.2	Equipment tested to Category A1/45000ft.
Overpressure	4.6.3	Equipment tested to Category A1
Temperature Variation	5.0	Equipment tested to Category C
Humidity	6.0	Equipment tested to Category A
Operational Shock and Crash Safety	7.0	Equipment identified as Category X, N/A by DO-214 2.5.4.1 and 2.5.4.2
Vibration	8.0	Equipment tested to Category S, aircraft zone 2 (instrument panel or console mounting), Aircraft type 2 (Fixed Wing Turbojet or Turbofan engines), using vibration test curve B.
Explosive Atmosphere	9.0	Equipment identified as Category X, N/A
Waterproofness	10.0	Equipment identified as Category X, N/A
Fluids Susceptibility	11.0	Equipment identified as Category X, N/A
Sand and Dust	12.0	Equipment identified as Category X, N/A
Fungus	13.0	Equipment identified as Category X, N/A
Salt Fog Test	14.0	Equipment identified as Category X, N/A
Magnetic Effect	15.0	Equipment is Category Z
Power Input	16.0	Equipment identified as Category X, N/A by DO-214 2.5.7.1
Voltage Spike	17.0	Equipment tested to Category A
Audio Frequency Susceptibility	18.0	Equipment identified as Category X, N/A by DO-214 2.5.9
Induced Signal Susceptibility	19.0	Equipment tested to Category A
Radio Frequency Susceptibility	20.0	
Transient RF		Equipment tested to Category T
Sustained Ambient RF		Equipment tested to DO-214 2.5.11.2
Radio Frequency Emission	21.0	Equipment tested to Category M
Lightning Induced Transient Susceptibility	22.0	Equipment identified as Category XXXXX, N/A by DO-214 2.5.13
Lightning Direct Effects	23.0	Equipment identified as Category X, N/A
Icing	24.0	Equipment identified as Category X, N/A
Electrostatic Discharge	25.0	Equipment identified as Category X, N/A by DO-214
Fire, Flammability	26.0	Equipment identified as Category X, N/A by DO-214
Other Tests		Fire resistance tests were conducted in accordance with Federal Aviation Regulations Part 25, Appendix F.

Headset Configuration Table

NOTE: The table below displays the combination of the headset and cord/boom assembly which have been FAA TSO C139 approved.

An Airworthy headset consists of at minimum two (2) pieces:

1 - headset frame

1 - cable or cable boom assembly

TSO Approved Final Assembly Part Number	Headset Frame Part Number	Cord/Boom Part Number
PRD000248000	F01U201758 or ASY000798001	ASY000858000
PRD000248050	F01U201758 or ASY000798001	ASY000858001
PRD000248100	F01U201758 or ASY000798001	ASY000858001
PRD000248150	F01U201758 or ASY000798001	ASY000858001
PRD000249000	F01U201758 or ASY000798001	ASY000857000
PRD000249050	F01U201758 or ASY000798001	ASY000857001
PRD000250000	F01U201763 or ASY000798000	ASY000858000
PRD000250050	F01U201763 or ASY000798000	ASY000858001
PRD000250100	F01U201763 or ASY000798000	ASY000858000
PRD000250150	F01U201763 or ASY000798000	ASY000858001
PRD000251000	F01U201763 or ASY000798000	ASY000857000
PRD000251050	F01U201763 or ASY000798000	ASY000857001
PRD000252000	F01U201767 or ASY000798002	ASY000858000
PRD000252050	F01U201767 or ASY000798002	ASY000858001
PRD000252100	F01U201767 or ASY000798002	ASY000858000
PRD000252150	F01U201767 or ASY000798002	ASY000858001
PRD000252500	F01U201767 or ASY000798002	ASY000858000
PRD000252550	F01U201767 or ASY000798002	ASY000858001

Table of Contents

Headset Configuration Table	4
INTRODUCTION	9
Important Safety Instructions	9
General Description	9
Features	10
Headset – Single-Sided	11
Dual-Sided Headset Reference Diagram	12
Filler Module	13
Battery Charger	13
Battery Charger Power Supply	14
CONFIGURATION AND INSTALLATION	15
Before First Use	15
Battery Charging	15
Battery Installation	15
Installation Instructions	16
Aircraft Installation	16
Audio Input Installation	17
OPERATION AND MAINTENANCE	19
Operation Instructions	19
Remove and Replace Modules	19
Headset Adjustment and Sizing	21
Boom Mic Adjustment	22
Turn the ANR On/Off (ANR Capable Headset Only)	23
Configure the Speaker Volume	24
Set Mono or Left Only Mode	25
Replace the Earcup and Headband Cushion	26
Replace the Windscreen	27
Adjust Microphone Gain	28
Care and Maintenance	29
Clean the Headset	29
BATTERY MODULE	31
Battery Module	31
Replace the Battery	31

Charge the Battery	32
WIRING DIAGRAMS	35
SPECIFICATIONS	37
Specifications	37
TROUBLESHOOTING AND FAQs	39
My ANR (Active Noise Reduction) is no longer working.	39
My headset does not work with my cell phone or MP3 player.	39
I need parts for my headset.	39
Technical Support phone number	39
I want to repair my headset at home.	39
How long will it take my headset to be repaired?	39

List of Figures

FIGURE 1.	Single-Sided Headset Reference View	11
FIGURE 2.	Dual-Sided and ANR Dual-Sided Headset Reference View	12
FIGURE 3.	Filler Module	13
FIGURE 4.	Battery Charger Reference Diagram	13
FIGURE 5.	Standard Power Supply and Plug Adapters	14
FIGURE 6.	Proper Headset Placement	21
FIGURE 7.	Boom Mic Movement	22
FIGURE 8.	ANR Switch	23
FIGURE 9.	Carrying Case	29
FIGURE 10.	Battery Charger Reference Diagram	32
FIGURE 11.	Dual Plug Wiring Diagram	35
FIGURE 12.	5-Pin XLR (male) Wiring Diagram	35
FIGURE 13.	Music/Entertainment Module Connector Wiring Diagram	36

Introduction

Important Safety Instructions

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Be sure, while wearing the headset, you are still able to hear all warning tones and signals. If you cannot hear the warning tones or signals, you may need to adjust your headset.
6. This headset is capable of producing sound pressure levels above 100dB SPL.
7. Refer all servicing to qualified service personnel. Servicing is required when the headset has been damaged in any way, such as headset cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
8. The battery used with these headsets is a Lithium based unit. This unit must only be charged with the Telex specified battery charger. Care should be used when transporting the battery; when not installed in a headset, battery terminals must not contact any continuous conductive surface, as this may result in a short circuit situation.
9. Our headsets are designed to be used with one (1) audio input module at a time.

General Description

Congratulations! You have made your first step toward a new level of excellence in headset technology. Introducing the Ascend, the newest design in headset technology by Telex. The Ascend was designed with you, the user, in mind with its modular design, installation options, and its multi-functionality beyond the aircraft. The modular design allows you to interchange different modules to allow the best headset for every environment. The Ascend also can install into an aircraft using either a dual plug cord, or an XLR connector – you decide. Finally, this headset is not just for the aircraft anymore, by installing alternate interface modules, you can connect to a GPS, an MP3 player, or many other audio device.

Features

Three (3) Headset Frame Options -	The Ascend gives you three (3) options when selecting the type of headset perfect for your environment: • Single-Sided Headset without ANR (Active Noise Reduction) • Dual-Sided Headset without ANR • Dual-Sided Headset with ANR
Installation Options -	The Ascend has two (2) options for aircraft installation; dual plug or XLR. You can take your headset to any aircraft installation and plug right in and get to work.
Modular Design -	The modular design of the Ascend allows for many options when configuring the perfect headset for use in your specific environment. All the modules are universal, which means they are fully interchangeable, giving you more flexibility in your headset needs. The versatility of the Ascend is obvious when using the music/audio module. The music/audio module turns the aviation headset into an everyday, everywhere headset, allowing for MP3 player hookup, GPS connection, and many other applications.
Acoustic Performance -	Expanded frequency response ensures clear communications and enhanced audio performance. The adjustable output level allows the user to match the headset to the requirements of the aircraft. Acoustic design and active noise reduction, if available, combine to remove common cockpit noises.
Comfortable Design -	The unique design of the Ascend headset with its headband location, in respect to the ear cups, delivers more stability when the headset is being worn. All user contact points, ear cup cushions, temple pads, headband cushions, and the windscreen are completely replaceable allowing for good hygiene.

Headset – Single-Sided



FIGURE 14. Single-Sided Headset Reference View

1. Headset Adjustment Slider. For more information, see “Headset Adjustment and Sizing” on page 21.
2. Headband Cushion
3. Temple Pad
4. Ear Cushion
5. Windscreen
6. Boom Mic
7. Side Pads

Dual-Sided Headset Reference Diagram



FIGURE 15. Dual-Sided and ANR Dual-Sided Headset Reference View

1. Headset Slider
2. Headband Cushion
3. ANR Switch (ANR equipped module only)

NOTE: The switch label is used to determine the on and off position for ANR



4. Battery Module/Filler Module
5. Ear Cup Cushions
6. Microphone Module
7. Microphone Windscreen
8. Side Pads

Filler Module



FIGURE 16. Filler Module

The **Filler Module** can be used to fill any unused module spots. It can be used on either side of the headset, left or right ear cup.

Battery Charger



FIGURE 17. Battery Charger Reference Diagram

1. Operation Mode LED - For more information, see “Battery Module” on page 31.
2. Module Release Button
3. Power Supply Connector

NOTE: The battery charger uses a universal power pack with a mini-USB connector. Alternative power packs may be used provided they are equipped with the mini-USB connector, for example a cell phone charger.

Battery Charger Power Supply

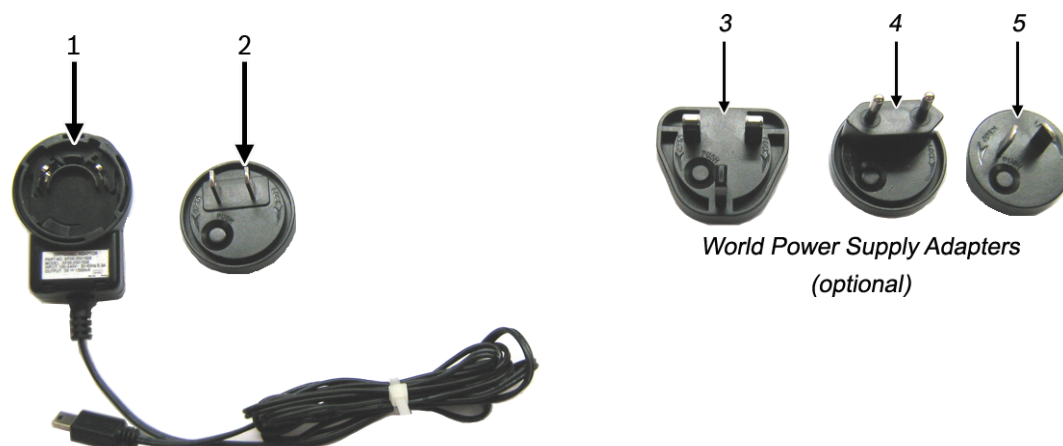


FIGURE 18. Standard Power Supply and Plug Adapters

Standard Power Supply

1. Wall Pack
2. US Plug (standard)

World Power Supply Adapters (Optional - p/n PRD000253005)

3. UK Plug (optional)
4. Euro Plug (optional)
5. Australian Plug (optional)

Configuration and Installation

CAUTION: The Ascend was designed for use in multiple application settings. When using the headset in an aviation application, use the following sections to verify the proper configuration and settings.

Before First Use

Battery Charging

For information on charging the battery, see “Charge the Battery” on page 32.

Battery Installation

For information on installing the battery, see “Remove and Replace Modules” on page 19.

Installation Instructions

NOTE: The Ascend headset dip switches have been set from the factory for use in the most common applications. We recommend these switches not be changed unless necessary.

Aircraft Installation

REQUIREMENTS: The minimum requirements (see “Headset Configuration Table” on page 4) needed for a typical aviation configuration include the following:

- Headset (either single-sided or dual-sided)
- Corded Module (no boom)
OR
Corded Module (with boom)

For information on modes of operation dip switch settings, see “Set Mono or Left Only Mode” on page 25.

For information on configuring the speaker volume, see “Configure the Speaker Volume” on page 24.

To **install the Ascend headset for aircraft use**, do the following:

- Step 1** Plug the **headset** into the aircraft console. See “Install the Dual Plug Headset in an Aircraft” on page 16 or “Install the XLR Plug Headset in an Aircraft” on page 17.
- Step 2** Adjust the **headset** for proper fit and comfort. See “Headset Adjustment and Sizing” on page 21.
- Step 3** Adjust the **boom mic** for proper use. See “Boom Mic Adjustment” on page 22.
- Step 4** Turn on **ANR** (if equipped). See “Turn the ANR On/Off (ANR Capable Headset Only)” on page 23.

Install the Dual Plug Headset in an Aircraft

To **install the dual plug headset in an aircraft** to the following:

1. Insert the **Microphone plug** into the microphone jack on the aircraft console.
2. Insert the **Headphone plug** into the headphone jack on the aircraft console.

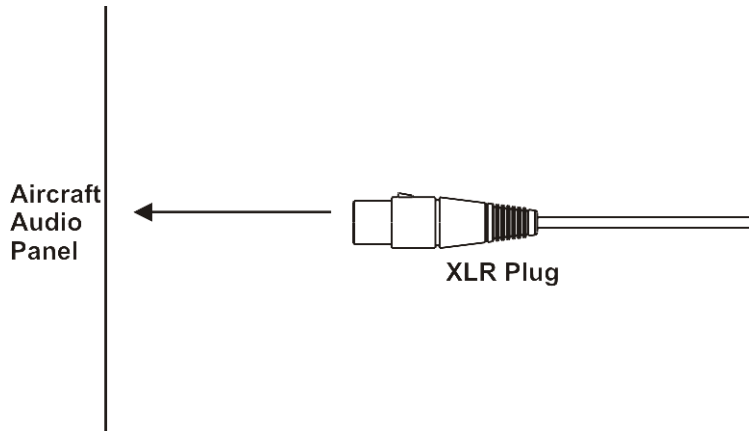


For a detailed dual plug wiring diagram, see Figure 24 on page 35.

Install the XLR Plug Headset in an Aircraft

To **install the XLR plug headset in an aircraft**, do the following:

- > Insert the **XLR plug** into the XLR jack on the aircraft audio panel.



For a detailed XLR plug wiring diagram, see Figure 25 on page 35.

Audio Input Installation

The Ascend headset can also be used to listen to music, GPS information, etc.

CAUTION: Be sure to check the volume setting on the audio device you are using to ensure the audio level will not cause any damage when turned on.

To **use the Ascend headset for audio input**, do the following:

NOTE: The battery module is only needed when you want to use the ANR feature with the audio input configuration.

- Step 1** If necessary, install the **battery module** into the headset. See “Battery Module” on page 31.
- Step 2** Install the **audio input module**.
- Step 3** Adjust the **headset** for proper fit and comfort. See “Headset Adjustment and Sizing” on page 21.
- Step 4** Turn on **ANR** (if equipped). See “Turn the ANR On/Off (ANR Capable Headset Only)” on page 23.

Operation and Maintenance

Operation Instructions

Remove and Replace Modules

All input modules, batteries, filler modules, etc. are removed and replaced the same way.

IMPORTANT: When removing a module, put only enough pressure on the module release button to pop the module out. The module release button is designed to be used with fingers only. Do not use any sharp objects or tools to press the module release button.

To **remove a module**, do the following:

1. Press the **module release button** located at the bottom of the ear shell.
The module pops up from the ear shell.

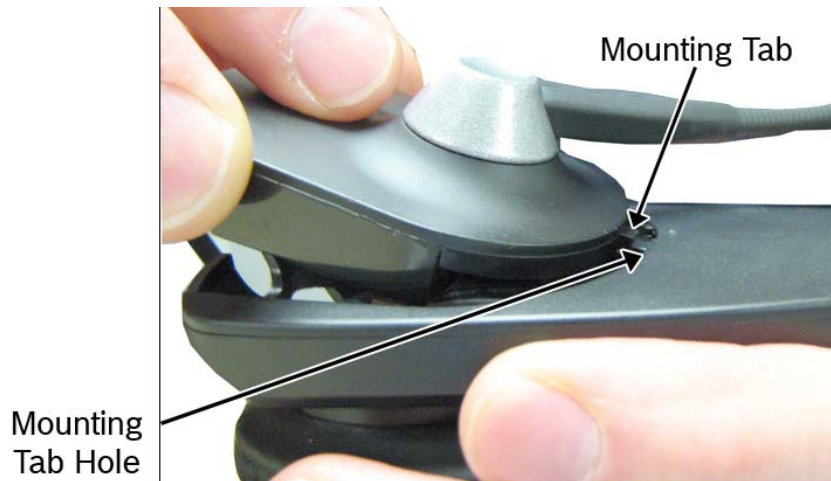


- Slide the **module** out and up taking care to clear the mounting tab from the mounting tab hole.



To **replace a module**, do the following:

- Align the **mounting tab** with the mounting tab hole.



- Slide the **module** into place.
- Press down on the **module**, snapping it into the ear shell.



Headset Adjustment and Sizing

The headset should fit comfortably over the head and ears without pinching or gapping. A comfortable fit is conducive to effective and pleasant use.



FIGURE 19. Proper Headset Placement

To **adjust the headband size**, do the following:

1. With the headset resting securely on the top of the head, slide the **ear shell up and down** to center the ear cup over the ear.
2. Swivel the **ear shell left or right** to position the ear cup straight on the ear.



Boom Mic Adjustment

From the factory, the boom mic is installed on the left side of the headset. However, you can interchange the boom mic for right-side use, see “Remove and Replace Modules” on page 19.

For best clarity, place the boom mic as close to the mouth as possible and speak into the mic (see Figure 20).



FIGURE 20. Boom Mic Movement

Turn the ANR On/Off (ANR Capable Headset Only)

ANR is used to reduce unwanted noise in the headset from the surrounding environment. The ANR switch is located on the left ear shell, as seen in Figure 21.

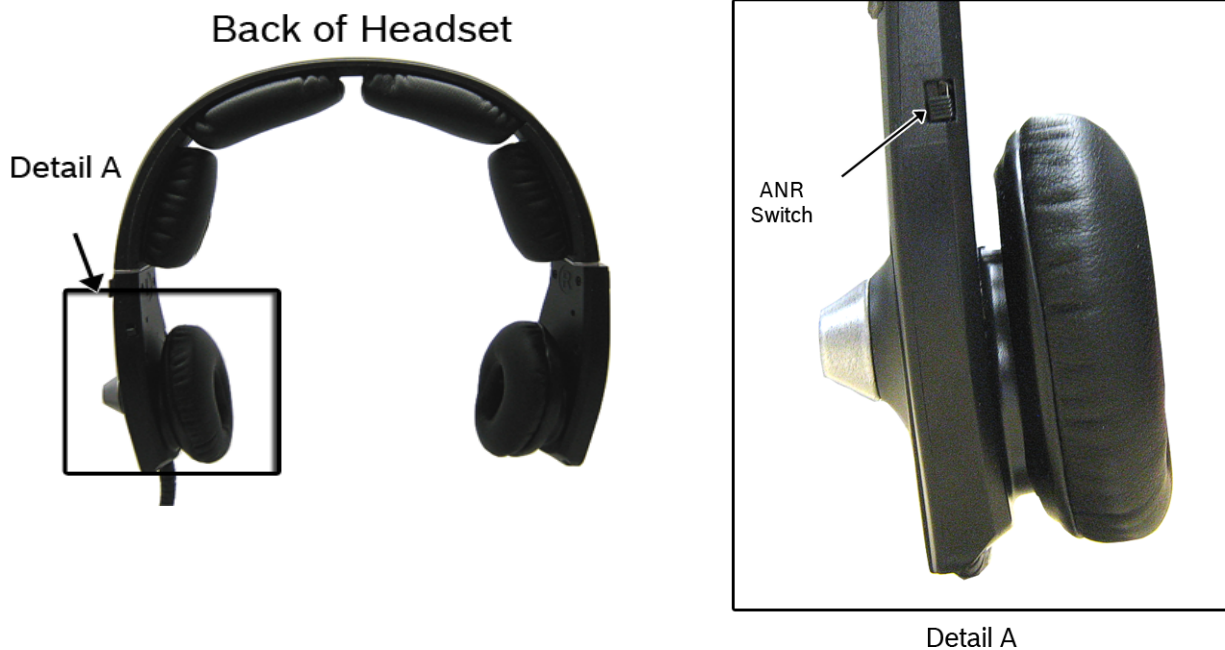


FIGURE 21. ANR Switch

To **turn ANR on**, do the following:

- > On the left ear cup, move the **ANR switch** to the up position (indicated by 1 on the label).

To **turn ANR off**, do the following:

1. On the left ear cup, move the **ANR switch** to the down position (indicated by 0 on the label).
2. Remove **battery** to conserve battery power when not in use.

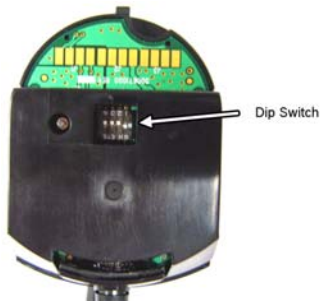
Configure the Speaker Volume

Speaker Volume is configured using dip switch settings located on the main board of the headset. The switch bank is located on the boom mic module and the listen only module.

To **access the dip switches**, do the following:

NOTE: Dip switches are located on the boom mic module and the listen only module. This feature is not available on the audio input module.

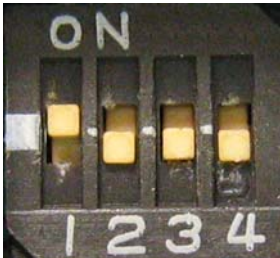
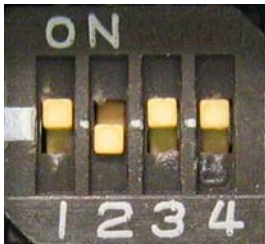
- > Locate the **dip switch window** on the back of either the boom mic module or the listen only module.



Dip Switch Settings

NOTE: The two (2) right-most switches are used to configure speaker volume.

TABLE 1. Speaker Volume Dip Switch Settings

Dip Switch	Description
	Intensified Volume
	Normal Volume

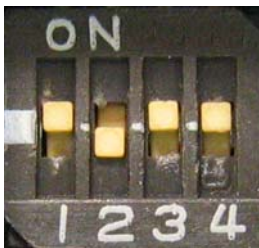
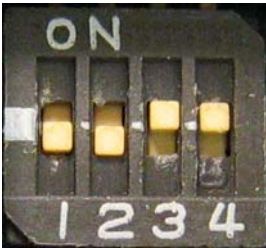
Set Mono or Left Only Mode

Audio on the headset can be configured to be heard either Mono or Left Only. This means it can come from both sides of the headset or from the left side only. This configuration is done through setting dip switches located on the interface module.

Dip Switch Settings

NOTE: The two (2) left-most switches are used to configure mono or left only operation.

TABLE 2. Mono or Left Only Dip Switch Settings

Dip Switch		Description
		Mono Mode
		Left Only Mode

To **configure mono or left only on the headset**, do the following:

- > Using Table 2 on page 25, set the **dip switches** to the mode of operation desired.

Replace the Earcup and Headband Cushion

There are two (2) cushion replacement points on the Ascend Headset; two (2) ear cup cushions for dual-sided headsets (one (1) ear cup cushion for single-sided headsets) and one (1) headband cushion.

To **replace the ear cup cushion**, do the following:

1. Grasp the **old ear cushion** and pull it **off the ear cup**.
2. Starting at the top of the ear cup, place the **top part of the back flap of the new ear cushion** over the top lip of the ear cup.

NOTE: The ear cup cushion hole orients to the bottom of the ear cup.



3. Using your fingers, work the **back flap of the ear cushion** around the ear cup.
4. Carefully pull the **bottom of the ear cushion** over the bottom lip of the ear cup.

To **replace the one-cushion version headband cushion**, do the following:

1. Grasp the **headband cushion**.
2. Pull the **old cushion** off the headband.



3. Align the **new headband cushion (loop)** to the headband loop material.
4. Firmly press **the new headband cushion** in place.

To **replace the three-cushion version headband cushion**, do the following:

1. Grasp the **headband cushion**.
2. Pull the **old cushion** off the headband.

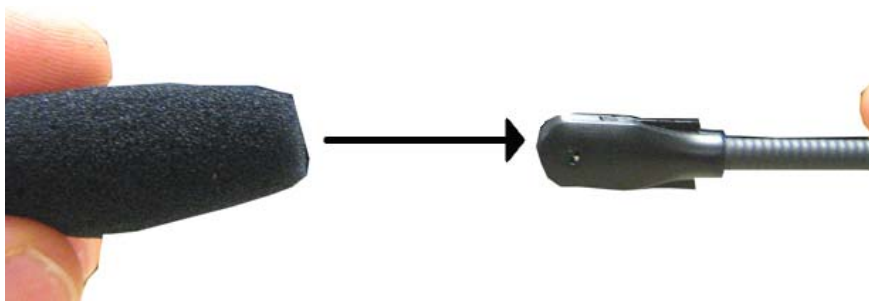


3. Align the **new top cushion** to the top of the headband.
4. Align the **right side cushion** to the right side of the headband.
5. Align the **left side cushion** to the left side of the headband.
6. Firmly press the **new headband cushions** in place.

Replace the Windscreen

To **replace the wind screen**, do the following:

1. Remove the **existing windscreen** from the boom mic and throw away.
2. Gently push the **new windscreen** over the boom mic.



Adjust Microphone Gain

The microphone gain has been factory-adjusted to the nominal level required for aviation use, and should not require adjustment. Any changes to the microphone gain should be done by a qualified avionics technician.

NOTE: Adjustments should be made in small increments.

To **adjust the gain trimmer**, do the following:

1. Insert a **small, flathead screwdriver** through the access hole in the boom mic module.



2. Turn the **gain pot clockwise** to increase the gain.
OR
Turn the **gain pot counterclockwise** to decrease the gain.

Care and Maintenance

Clean the Headset

When cleaning your headset, do the following:

- use a soft, slightly damp cloth (water only).
- if necessary, a mild mix of soapy water may be used.

IMPORTANT: Excessive water can damage the headset and cause short circuits electrical components of the unit. Do not use solvents or chemicals when cleaning your headset as it may cause damage or inoperability.

Store/Transport the Headset

For storing or transporting your Ascend headset, use the protective carrying case the headset is shipped in. For placement of the headset in the carrying case, see Figure 22.



FIGURE 22. Carrying Case

Battery Module

Battery Module

The battery module is only used to:

- provide power for the ANR when the aircraft does not
- provide power for the ANR when not connected to the aircraft
- provide enhanced audio quality when the audio input module is installed.

Replace the Battery

A battery is required only when you are not plugged into a power source, such as an aircraft audio panel, to power the ANR.

CAUTION: If this is the first time using the batteries, see “Charge the Battery” on page 32.

The batteries can be installed on either ear cup (the left or right).

To **replace a battery module**, do the following:

1. Align the **mounting tab with the mounting tab hole**.
2. Slide the **battery module** into place.
3. Press down on the **battery module**, snapping it into the ear shell.

Charge the Battery

IMPORTANT: Before installing the battery for the first time, charge the battery for at least an hour and a half to ensure a fully charged unit. A fully charged battery lasts approximately 40 hours between charges.



FIGURE 23. Battery Charger Reference Diagram

The battery charger has an LED, shown in Figure 23, that displays two (2) color states:

Green LED – The charger is on.

Red LED – The battery is being charged. Once the battery is done charging, the green LED appears.

NOTE: If the battery is damaged and not able to charge, the red LED does not display.

The power module for the battery charger comes with the US connection adaptor as standard. There are three (3) optional connection adapters (Euro, UK, and Australian), known as the world adapters.

To **change the connection adapter for the power module**, do the following:

1. While pressing the adapter lock, turn the adapter **counter-clockwise** to release the adapter.



2. Replace the **current adapter** with the desired power module adapter.
3. Turn the new adapter **clockwise** to lock it in place.

To **charge a battery**, do the following:

1. Plug the **power supply** into an electrical outlet.
2. Attach the **power supply** to the charger.
The LED lights green.



3. Align the **mounting tab** with the **mounting tab hole** on the battery charger.



4. Slide the **battery module** into place.
5. Press down on the **battery module**, snapping it into the battery module.
The LED lights red while the battery is charging, and lights green when it is finished charging.



Wiring Diagrams

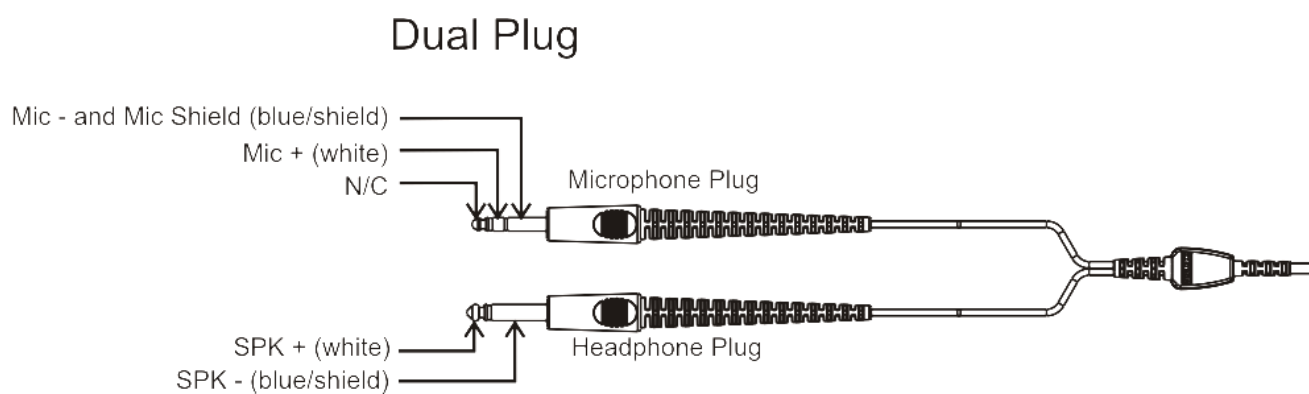


FIGURE 24. Dual Plug Wiring Diagram

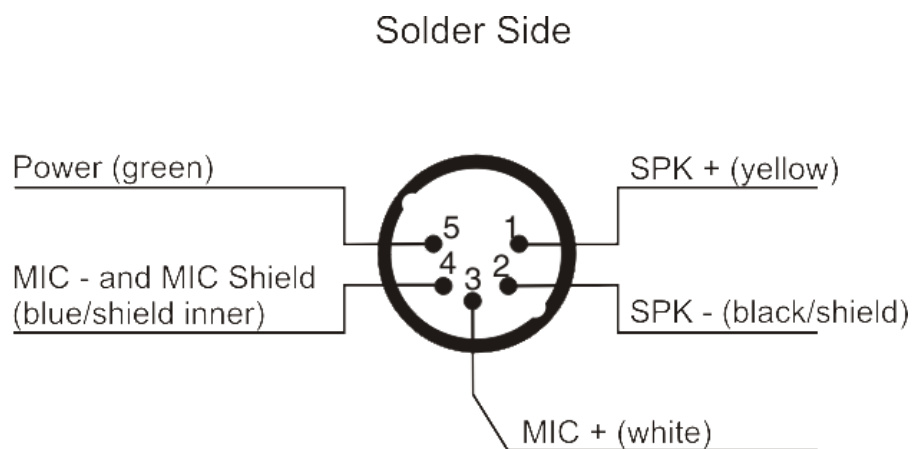


FIGURE 25. 5-Pin XLR (male) Wiring Diagram

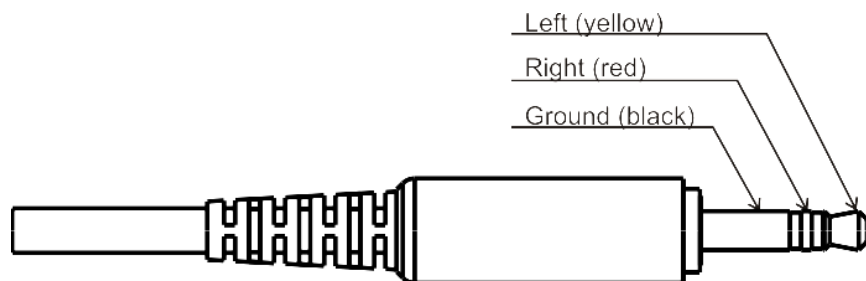


FIGURE 26. Music/Entertainment Module Connector Wiring Diagram

Specifications

Specifications

Headset

XLR panel power / input power

6mA @ 28Vdc

Speaker

Frequency Response

±6dB, 350Hz - 3kHz

Distortion

<10% @ 110dB SPL, 350Hz - 3kHz

Sensitivity

90 ±5dB SPL/mW (standard volume setting)

Impedance at Plug

600Ω ±20%

Overload

300mW @ 1kHz, 8hr

Acoustic Quality

No spurious sounds with 10mW to speaker, 350Hz - 6kHz

Headsets and Handsets with Active Circuits

Meets speaker requirements with ANR on or off.

Microphone

Frequency Response

100Hz - 10kHz per DO-214 fig.2-1

Distortion

<5% @ 114dB SPL, 350Hz - 6kHz

Sensitivity

-28 ±3dBV/Pa @1kHz

Noise Level

<1mV RMS

Headset/handset Isolation

<2mV at mic with 10mW to speaker

Insulation Resistance

>10M Ω between exposed materials and electrical circuit

Cord*Flexibility*

No damage when coiled

Connector Flexibility

>25,000 cycles

Pullout Strength

>10kg

Drop Resistance

No failures after 12 drops from 1m onto concrete floor

Final Distortion

Meets mic and speaker distortion requirements after applicable environmental tests of DO-160

Noise Reduction (where applicable)

Up to 12dB noise reduction between 100Hz to 2000kHz

Receives power from boom microphone connection (microphone equipped versions only)

Plugs*Dual Plug:*

Headphone plug: .250" diameter, 2 conductor plug

Tip: SPK + (white)

Sleeve: SPK - (black/shield)

Microphone plug: .206" diameter, 3 conductor plug

Ring: Mic + (white)

Sleeve: Mic - and Mic Shield (blue/shield)

Tip: N/C

XLR Plug

5-pin, male plug

Pin 1 SPK + (yellow)

Pin 2 SPK - (black/shield outer)

Pin 3 Mic + (white)

Pin 4 Mic - and Mic Shield (blue/shield inner)

Pin 5 Power (green)

Music Plug

3.5mm, 3 conductor plug

Tip: Left (yellow)

Ring: Right (red)

Sleeve: Ground (black)

Gross Weight

5 – 8 oz (no battery)

Cord Length

1.8m (straight)

Color

Black

Troubleshooting and FAQs

My ANR (Active Noise Reduction) is no longer working.	• Verify the headset is plugged in. • Verify the ANR switch is in the on position. • If using a battery, verify the battery is charged. • If you have verified the previous bullets, then send the unit in for repair.
My headset does not work with my cell phone or MP3 player.	• Verify the cord for the device is plugged in firmly.
I need parts for my headset.	• Contact technical support for the part number you are looking for.
Technical Support phone number	• 1.800.898.6723
I want to repair my headset at home.	• We have custom developed test equipment which is required to qualify the product and is not available outside of the factory. Home repair may void TSO requirements.
How long will it take my headset to be repaired?	Repair duration is usually 7 to 10 working days plus shipping time back to the customer.

Available Accessories

Ear Cushion, Pair	PRD000253000
Microphone Windscreen	PRD000253001
Headband Pad	PRD000253002
Battery	PRD000253003
Battery Charger North America	PRD000253004
World Power Supply Adapters	PRD000253005
Audio Input Cable	PRD000253006
Single-Sided Passive Headset Frame Assembly	PRD000253007
Double-Sided Passive Headset Frame Assembly	PRD000253008
Analog ANR Headset Frame Assembly	PRD000253009
Cord and Electret Microphone Module, PJ Connectors	PRD000253010
Cord and Electret Microphone Module, XLR Connector	PRD000253011
Cord Module, No Microphone, PJ Connectors	PRD000253012
Cord Module, No Microphone, XLR Connector	PRD000253013
Filler Module	PRD000253014
Temple Pad	PRD000253015
Carrying Case	PRD000253016
Headband Pad, 3-piece	PRD000253017

Bosch Security Systems, Inc.

Telex Headsets

Phone: 1.800.898.6723 (technical support)

Email: repair.lincoln@us.bosch.com

Website: www.telex.com/us/aviation/line