



JUPITER AVIONICS
C O R P O R A T I O N

EQJAC™ -001

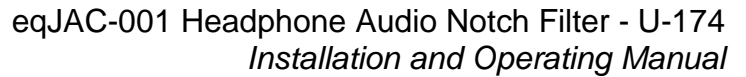
Headphone Audio Notch Filter - U-174



Installation and Operating Manual

Rev B

Jupiter Avionics Corporation
1959 Kirschner Road
Kelowna BC
Canada V1Y 4N7
Tel: +1 778 478 2232
Toll-Free: 1 855 478 2232
www.jupiteravionics.com



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eqJAC-001 Headphone Audio Notch Filter - U-174

SECTION 1 - DESCRIPTION

1.1 System Overview

The eqJAC-001 Headphone Audio Notch filter allows the user to manually select a narrow band of unwanted frequencies to be removed from the headphone audio.

1.2 Features Overview

The eqJAC-001 unit features an industry standard helicopter headset pin-out to allow plug and play operation.

The eqJAC-001 plugs in-line between the User's headset cord and the aircraft intercom system headset connector.

The eqJAC-001 supports a single control to adjust the center frequency of the notch filter.

The eqJAC-001 supports an automatic on/off power function that senses the intercom microphone bias voltage allowing the user to unplug the unit from the aircraft to turn power off.

1.3 Inputs and Outputs

Refer to the eqJAC-001 [connector map](#) for the mating connector designators and pin assignments for the input and output signals.

1.3.1 Inputs

Name	Qty	Type
MIC INPUT HI/LO	2	Audio signal
PHONES INPUT HI/LO	2	Audio signal

1.3.2 Outputs

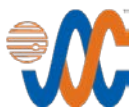
Name	Qty	Type
MIC OUTPUT HI/LO	2	Audio signal
PHONES OUTPUT HI/LO	2	Audio signal

1.4 Specifications

1.4.1 Electrical Specifications

Power Input

Primary nominal bias voltage	12 Vdc
Maximum bias voltage	16 Vdc
Minimum bias voltage	10 Vdc
Battery nominal voltage	± 3 Vdc
Battery minimum voltage	± 2 Vdc
Battery current	185 mA max



1.4.1.1 Audio Performance

Rated Input Level

PHONE INPUT audio rated input level 6. 7 Vrms \pm 10%

Rated Output Power

PHONE OUTPUT rated output level 6. 7 Vrms \pm 10% into 150 Ω

Audio Frequency Response

PHONE OUTPUT \leq 3dB from 240 to 1450 Hz

Distortion Characteristics

PHONE OUTPUT distortion at rated power \leq 10 % THD + N

PHONE OUTPUT distortion at 10% of rated power \leq 3 % THD + N

Input Impedance

PHONE INPUT impedance 1000 $\Omega \pm$ 10%

Audio Noise Level without Signal

below the rated output by \geq 60 dB

1.4.1.2 Audio Performance, Other

Phones output circuitry type shall be single ended

1.4.2 Mechanical Specifications

Height		1.07 in [27.2 mm] max
Length (Excluding connectors)		4.1 in [104.1 mm] max
Width		2.49 in [63.3 mm] max
Weight (Including Batteries)		0.63 lb [0.29 kg] max Black
Material		Polycarbonate plastic
Connectors (2):	J1	One U-174/ U
	J2	One U-92A / U
Mounting		inserted into U-92A / U jack
Bonding		N/A
Installation kit part number		N/A

eqJAC-001 Headphone Audio Notch Filter - U-174

SECTION 2 – INSTALLATION

2.1 Introduction

This section contains unpacking and inspection procedures, installation information, and post-installation checks.

2.2 Continued Airworthiness

Maintenance of the eqJAC-001 is on condition only. Scheduled inspection and/or periodic maintenance of this unit is not required.

2.3 Unpacking and Inspecting Equipment

Unpack the equipment carefully. Check for shipping damage and report any problems to the relevant carrier. Confirm that the Authorized Release Certificate or Certificate of Conformance is included. Complete the on-line warranty card from the Jupiter Avionics Corporation (JAC) website - www.jupiteravionics.com/warranty

2.3.1 Warranty

This product manufactured by JAC is warranted to be free of defects in workmanship or performance for 1 year from the date of purchase from an approved JAC dealer or agency. This warranty covers the cost of all materials and labour to repair or replace the unit, but does not include the cost of transporting the defective unit to and from JAC or its designated warranty repair centre, or of removing and replacing the defective unit in the aircraft. This warranty does not cover failures due to abuse, misuse, accident, incorrect battery use, or unauthorized alteration or repairs.

If the on-line warranty card is not completed, the product will be warranted from the date of manufacture.

Contact JAC for return authorization, and for any questions regarding this warranty and how it applies to your unit(s). JAC is the final arbiter concerning warranty issues.

2.4 Installation Procedures



WARNING: Loud noise can cause hearing damage. Set the headset volume to minimum before conducting tests, and slowly increase the volume to a comfortable listening level.



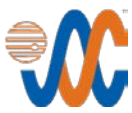
CAUTION: The power input circuitry of the unit may be damaged if the installation does not conform to the wiring instructions in this manual.

2.4.1 Installation Limitations

Those installing the eqJAC, on or in a specific type or class of aircraft, must determine that the aircraft installation conditions meet standards. The eqJAC may be installed only by following the applicable airworthiness requirements.

2.4.2 Cabling and Wiring

The eqJAC plugs directly into a standard aircraft audio system headset connector. All wires to said connector shall be selected in accordance with the original aircraft manufacturer's maintenance instructions, or AC43.13-1B Change 1, Paragraphs 11-76 through 11-78. Unshielded wire types shall qualify to MIL-W-22759 as specified in AC43.13-1B Change 1, Paragraphs 11-85, 11-86, and listed in Table 11-11. Follow the Connector Map in Appendix A of this manual.



2.4.3 Mechanical Installation

The eqJAC-001 is mounted via insertion into a U-92A/U Jack. It requires no direct cooling.

2.4.4 Post Installation Checks

Do not attach this unit until the following conditions are met:

- a) Ensure that the batteries are new or fully charged

2.4.4.1 Power on Checks.

Power up the aircraft's systems and confirm normal operation of all functions of the eqJAC. Refer to Section 3 (Operation) for specific operational details.

- a) Begin with a headset attached. Confirm correct operation for both Mic and phones output. Do not proceed until the headsets are functioning correctly.
- b) Unusual buzzes, hums or other background audio are symptomatic of multiple grounds, or noisy external systems such as blowers or pumps sharing wiring with the audio system.

2.5 Installation Kit

The eqJAC-001 does not require an installation kit.

2.6 Installation Drawings

The drawings and documents required for Installation can be found in [Appendix A](#) of this manual.

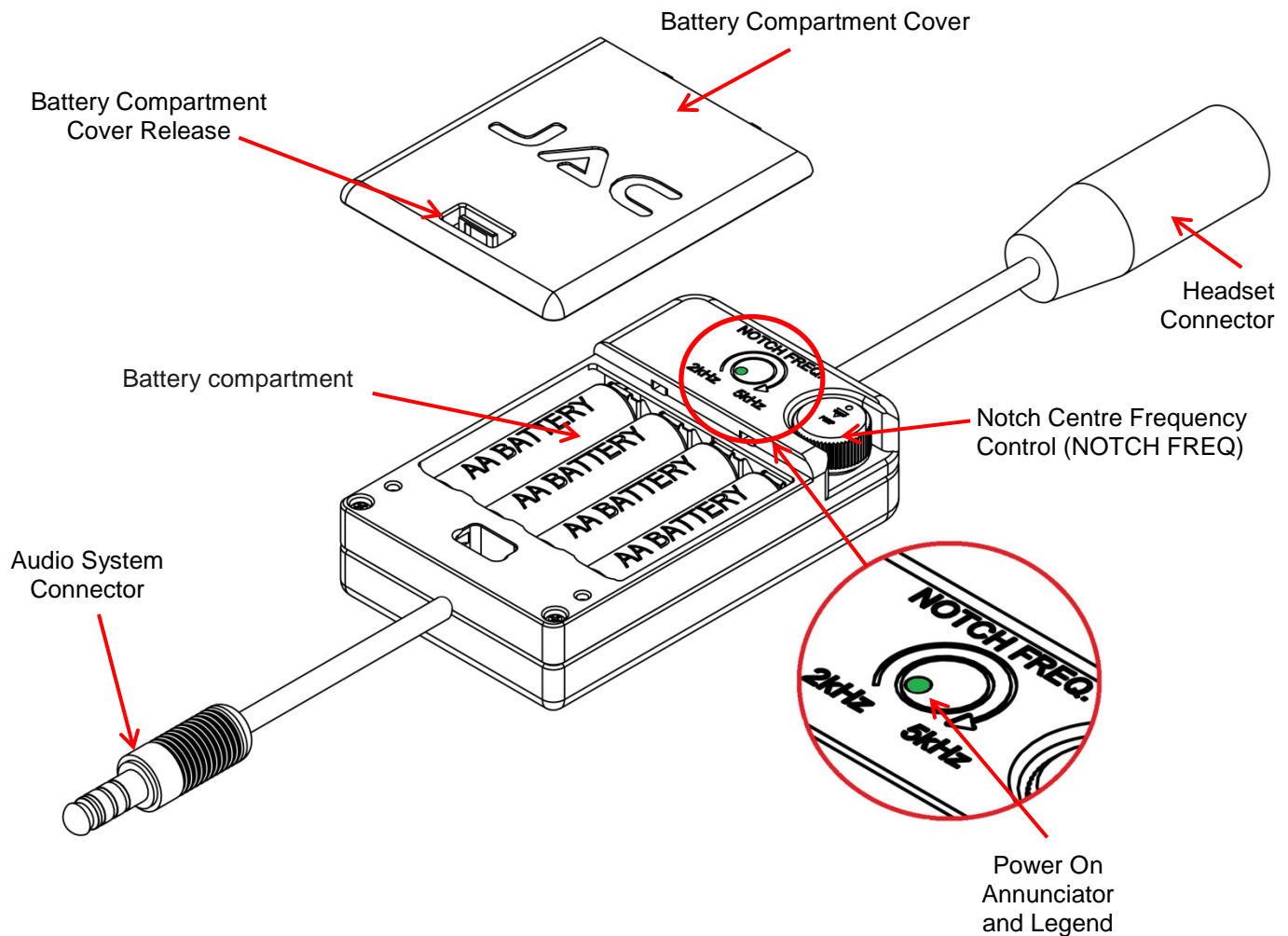
eqJAC-001 Headphone Audio Notch Filter - U-174

SECTION 3 – OPERATION

3.1 Introduction

This section contains the operating instructions for the eqJAC-001.

3.2 Controls and Annunciators



3.2.1 Power On Annunciator

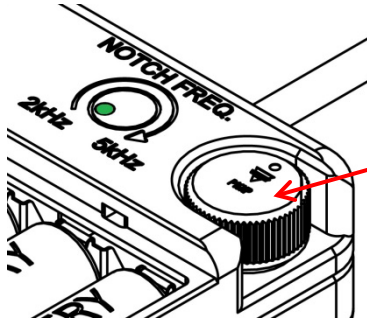
When the eqJAC-001 is connected to an aircraft intercom system and the internal batteries are charged, the Power On Annunciator (green) will illuminate.



Note: If the eqJAC-001 internal batteries are allowed to fully discharge, the Power On light will be dark, and there will be a complete loss of phones audio in the attached headset. If this happens, the headset should be unplugged from the eqJAC-001 and plugged directly into the aircraft audio system.



3.2.2 Notch Center Frequency Control (NOTCH FREQ)



The Notch Center Frequency control is a rotary control that allows the user to adjust the center position of the filtered frequencies. The legend (NOTCH FREQ) to the left of the control indicates the adjustment range (from 2 to 5 kHz).

Rotating the control clockwise (cw) will increase the selected notch frequency, and rotating counterclockwise (ccw) will decrease the notch frequency.

3.3 Operation

3.3.1 Microphone Operation

The eqJAC-001 functions when the Mic Bias from the Intercom System is detected, and allows the MIC INPUT audio to be routed directly to the MIC OUTPUT.

3.3.2 Phone Operation

The eqJAC-001 PHONE INPUT has unity gain to the PHONE OUTPUT with the exception of the filtered frequencies.

3.4 Batteries

The eqJAC-001 requires four AA batteries. JAC recommends 2000 mAh (or higher) NiMH or alkaline batteries to obtain the typical battery life.

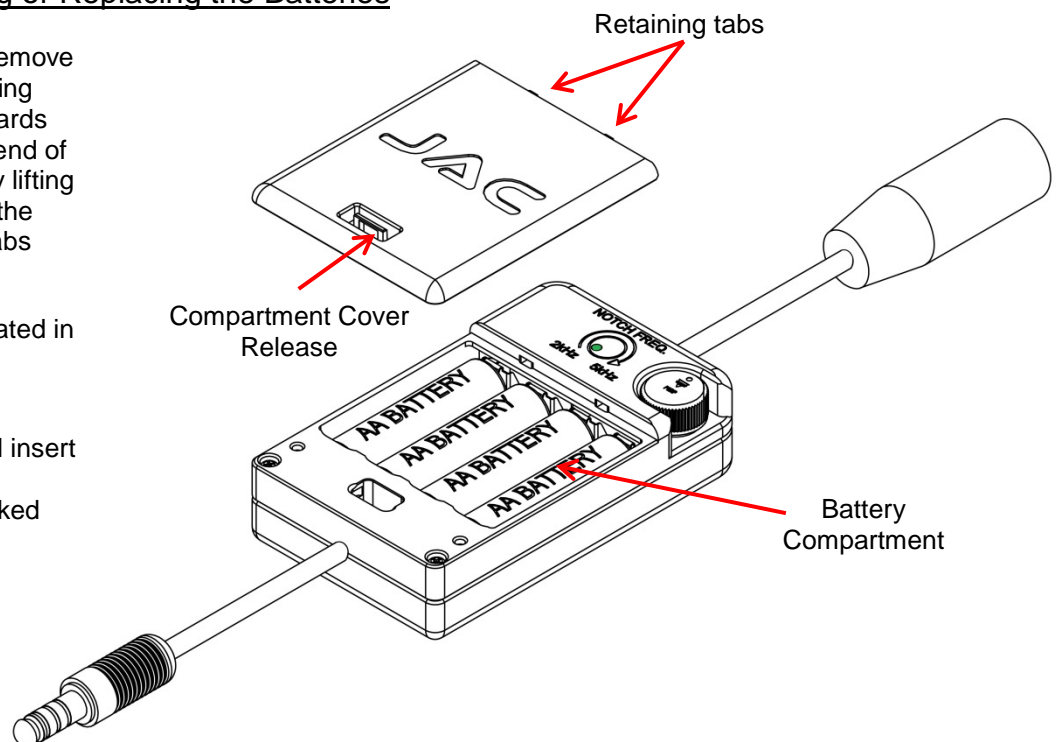
Removal of the batteries WILL NOT change any internal configuration of the unit.

3.4.1 Inserting or Replacing the Batteries

To replace the batteries, remove the battery cover by pressing the battery lid release towards the logo, lifting the lower end of the cover, and then gently lifting the lid up and away from the body to release the two tabs from the retaining slots.

The four batteries are located in a compartment below the cover.

Remove the batteries and insert fully charged batteries, matching the polarity marked on the battery holder.





3.4.2 Battery Life

The operating duration of the eqJAC-001 with fully charged batteries before battery replacement is required is **typically >10 hours @ rated audio level**. Battery life depends on the following factors:

Charge capacity of the batteries installed:

The higher the capacity of the batteries, typically specified as 2000 to 2400 mAh (milliamp-hours), the longer the battery life.

The type of batteries installed and the operating temperature:

During low temperature operation, rechargeable batteries will lose capacity. When operating in low temperatures use alkaline batteries for a longer battery life.







The phones volume level and usage rate:

The lower the volume level and the less often audio is output to the phones, the longer the battery life.

3.4.3 Battery Cautions and Warnings








CAUTION: Follow these guidelines to prolong battery life and minimize the risk of unit malfunction.

-  Do not leave rechargeable batteries uncharged for long periods of time.
-  Do not leave rechargeable batteries charging for extended periods (more than 48 hours)
-  To ensure that the unit functions correctly, insert the new batteries with the positive and negative poles aligned as indicated in the battery compartment.
-  When replacing the batteries, use only new or fully charged batteries.
-  Do not mix old and new batteries as this can cause battery leakage and/or damage to the unit.
-  Do not mix battery types.



WARNING: Follow these guidelines to prolong battery life, and minimize the risk of fire, chemical burns, electrolyte leaks and/or injury.

-  **FOLLOW** the manufacturer's instructions for care and disposal of batteries.
-  **DO NOT** use sharp objects to remove the batteries.
-  **DO NOT** disassemble, puncture, burn or in any other way damage the batteries.
-  **DO NOT** let children handle the batteries.
-  **USE ONLY** recommended replacement batteries.

Installation and Operating Manual

Appendix A - Installation Drawings

A1 Introduction

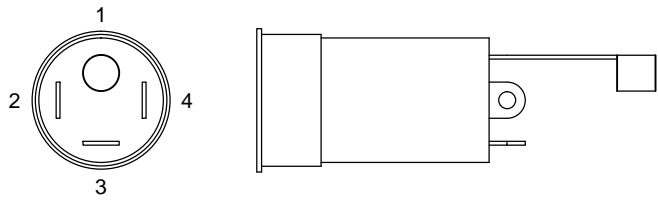
The drawings necessary for installation and troubleshooting of the eqJAC-001 Headphone Audio Notch Filter – U-174 are in this Appendix, as listed below.

A2 Installation Drawings

DOCUMENT	Rev
eqJAC-001 Connector Map	B
eqJAC-001 Interconnect	B
eqJAC-001 Mechanical Installation	B

Aircraft Connector

P1
TJT-120 or U-92A/U
MATING CONNECTOR

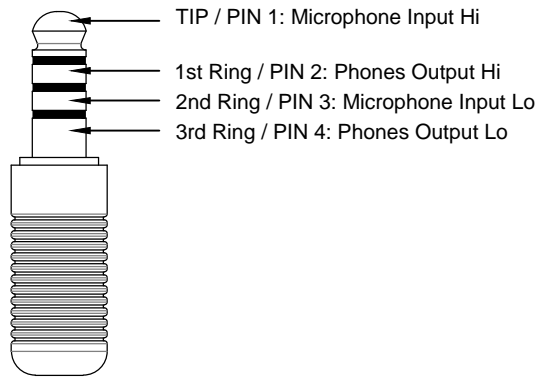


PIN 1: Microphone Output Hi
PIN 2: Phones Input Hi
PIN 3: Microphone Output Lo
PIN 4: Phones Input Lo



View of Aircraft mating connector

Headset Connector

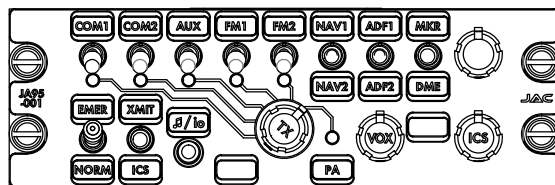
P2
U174/U or U-93A/U
MATING CONNECTOR



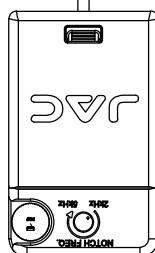
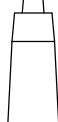
View of Headset mating connector

PREPARED	TAT			
CHECKED				
APPROVED		TITLE Headphone Audio Notch Filter - U-174		
CONFIDENTIAL & PROPRIETARY TO JUPITER AVIONICS CORP.		NCAGE CODE L00N3	PART NO. eqJAC-001	SHEET 1/1
		DOC NO. eqJAC-001 Connector Map Rev B.dwg		

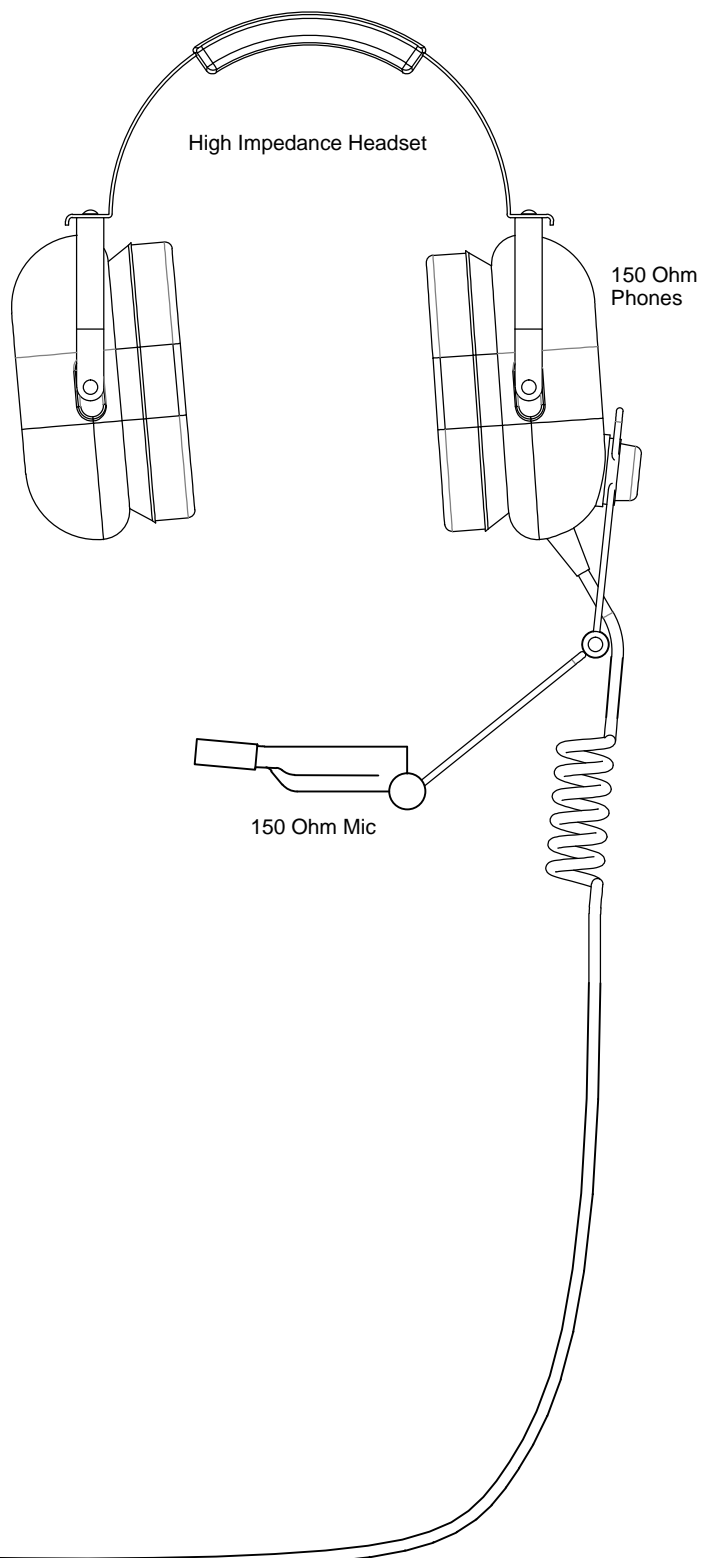
Aircraft Intercom System




Aircraft Headset Jack



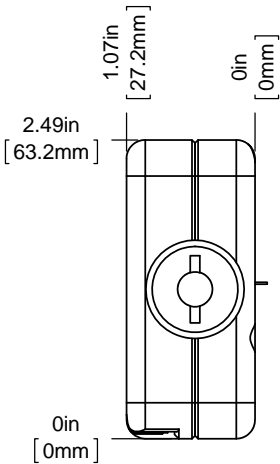
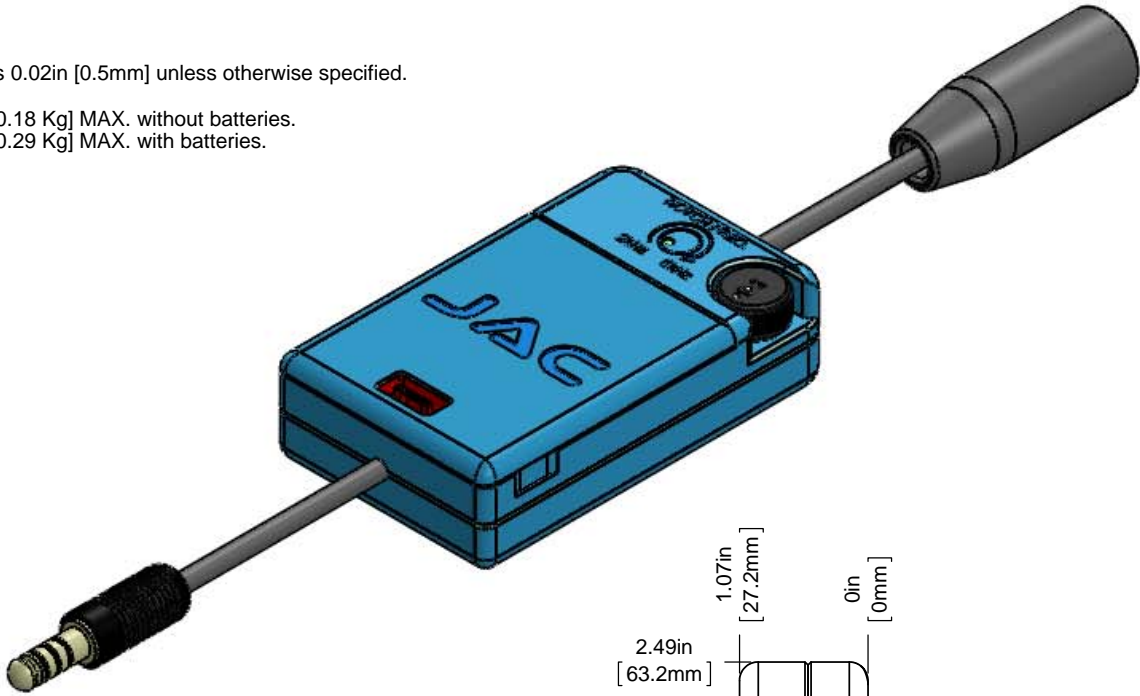
eqJAC-001
Headphone Audio
Notch Filter



PREPARED	TAT			
CHECKED	JAC 10-10-18 AH			
APPROVED	JAC 10-11-18 KDV	TITLE Headphone Audio Notch Filter - U-174		
CONFIDENTIAL & PROPRIETARY TO JUPITER AVIONICS CORP.		NCAGE CODE L00N3	PART NO. eqJAC-001	SHEET 1/1
		DOC NO. eqJAC-001 Interconnect Rev B.dwg		

Notes:

1. All dimensions 0.02in [0.5mm] unless otherwise specified.
2. Weight:
0.40 lbs [0.18 Kg] MAX. without batteries.
0.63 lbs [0.29 Kg] MAX. with batteries.

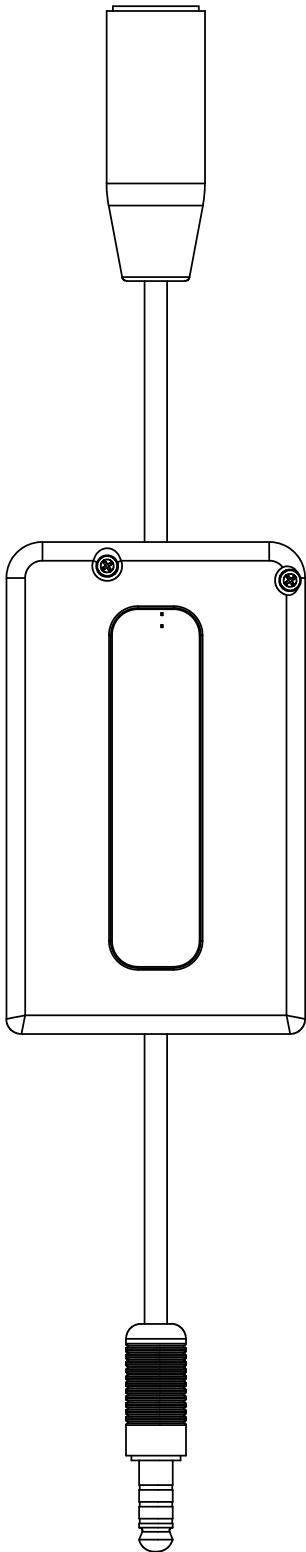
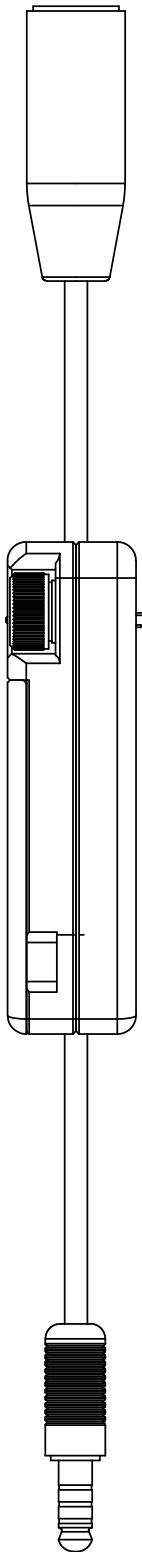
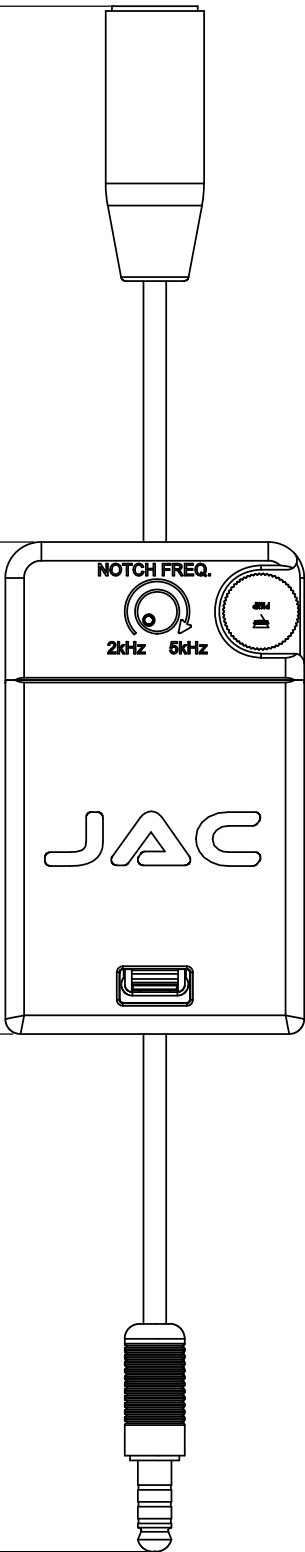


4.00in MAX
[101.6mm MAX]

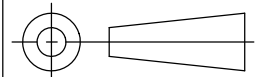
0in
[0mm]

4.10in
[104.1mm]

8.00in MAX
[203.2mm MAX]



UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
ANGLES ARE IN DEGREES
TOLERANCES:
1 DEC PLACE: ± 0.1
2 DEC PLACE: ± 0.01
3 DEC PLACE: ± 0.005
ANGLES: ± 0.5 DEG



MATERIAL: N/A
FINISH: N/A

PREPARED
CHECKED
APPROVED

TAT
JAC
10-10-18
AH
JAC
10-11-18
KDV

CONFIDENTIAL & PROPRIETARY
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DRAWING NOT TO SCALE



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CORPORATION

TITLE

Headphone Audio Notch Filter - U-174

NCAGE CODE
L00N3

PART NO.
eqJAC-001

SHEET
1/1

DOC. NO.
eqJAC-001 Mechanical installation Rev B.SLDDRW