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ROSEN
AVIATION

Digital Wireless Headphone System



Technical Manual

Headphones Model 0500-100

Transmitter Model 0700-009

Technical Manual, Digital Wireless Headphone System**© 2008 by Rosen Aviation, LLC****All Rights Reserved**

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1. INTRODUCTION

The Digital Wireless Headphone System consists of a 5.8 GHz transmitter and 5.8 GHz headphones. The transmitter features three audio inputs and a pilot microphone input. The pilot microphone input will override the other inputs when active. The unit is designed to integrate into any entertainment system with analog audio capability.

This guide describes general configuration information for the Rosen Wireless Headphone Transmitter with any audio source equipment to supplement the Outline & Installation Drawing (P/N **0700-009-CD**).

Note: Only trained and qualified personnel should perform installation and service.

1.1. Unpacking

The parts shipped with the 5.8 GHz Digital Wireless Transmitter include:

- One 5.8 GHz digital audio transmitter (P/N **0700-009**)
- One connector kit (P/N **0300-043**)
- Transmitter Outline & Installation Drawing (P/N **0700-009-CD**)

The parts shipped with the 5.8 GHz Digital Wireless Headphones include:

- One set of 5.8 GHz Digital Wireless Headphones (P/N **0500-100**)
- Two AA batteries (P/N **BAT-AA**)
- One User's Guide (P/N **102302**)



The *Outline & Installation* drawing is also available at www.rosenaviation.com.

From the [Rosen Aviation](http://www.rosenaviation.com) home page, select **Support** → **Drawings and Pinouts**, and then look under A/V Distribution for the Wireless Transmitter.

2. CONNECTING THE TRANSMITTER

The transmitter provides interfaces to connect three audio sources and the pilot microphone. Use the pinout descriptions on page 2 of the Outline & Installation drawing to assist in the wiring process. Pay close attention to the pinout information while completing wiring connections.

Note: The wireless transmitter & headphones are for entertainment purposes only; connect the transmitter to the non-critical power bus.

3. WIRELESS TRANSMITTER CONNECTOR

Table 1 Wireless Transmitter J1 Connector

Pin #	Signal	Comment
1	28 Volts	Power
2	Audio #1 Left Signal	Input
3	Audio #1 Right Signal	Input
4	Audio #2 Left Signal	Input
5	Audio #2 Right Signal	Input
6	Audio #3 Left Signal	Input
7	Audio #3 Right Signal	Input
8	Microphone Signal	Input
9	PA Override	Momentary or Constant Ground
10	28 Volt Return	GND
11	Audio #1 Left Return	Input
12	Audio #1 Right Return	Input
13	Audio #2 Left Return	Input
14	Audio #2 Right Return	Input
15	Audio #3 Left Return	Input
16	Audio #3 Right Return	Input
17	Microphone Return	Input
18	Reserved	Reserved
19	Reserved	Reserved
20	Reserved	Reserved
21	Reserved	Reserved
22	Reserved	Reserved
23	Reserved	Reserved
24	Reserved	Reserved
25	Reserved	Reserved
26	Reserved	Reserved

4. PLACING THE TRANSMITTER

The wall-mounted transmitter must be mounted with the J1 connector pointing toward the ceiling of the aircraft cabin. It can be placed behind a bulkhead or other wall, as long as the bulkhead or wall is made of composite or wood material.



Figure 1 Digital wireless headphone transmitter

5. INSERTING THE BATTERIES INTO THE HEADPHONES

There are two battery compartments, one in each earpiece.

1. To open the battery compartment, press the center of outer edge of either earpiece firmly – the battery compartment lid will pop open.
2. Insert the battery by pressing the bottom of the battery down against the spring at the bottom of the battery compartment. The battery should snap into place.
3. To remove the battery, pull the top of the battery down against the spring at the bottom of the battery compartment.
4. Close the battery compartment by pushing the middle section of the lid.

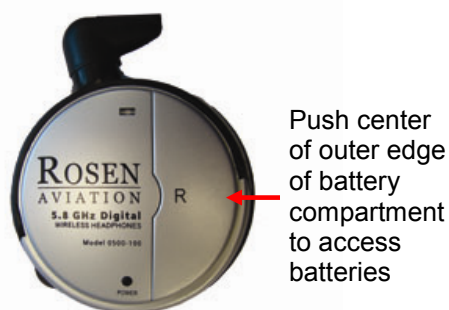


Figure 2 Right earpiece



Figure 3 Open battery compartment

Note: Never leave batteries inside the headphones for long periods of time to prevent damage to the headphones from leaking batteries.

6. OPERATING THE HEADPHONES

The aircraft must be powered up before the headphones will function. Set the volume control of the headphones to minimum. Press the power button on the headphones. Once the headphones detect a signal, the LED indicator on the headphones will turn green and the transmitter will transmit the audio signal. If no signal is detected, the LED indicator will be red.



Turn on the headphones and slowly increase the volume, using the volume control on the headphones to adjust the volume to the desired level.

Switch between the audio sources using the small channel select switch on the headphones. How the transmitter is installed determines what sources are available.

After each use, be sure to switch off the headphones to extend battery life.

When the headphones detect no signal for more than one minute, the headphones will power off and the LED indicator will go out. Reactivate the headphones by pressing the power button.

7. TECHNICAL REFERENCES AND SUPPORT

7.1. Troubleshooting

If the transmitter or headphones do not function properly, refer to the following troubleshooting tips for symptoms and possible solutions before contacting Rosen Aviation field support.

Table 2 Troubleshooting tips and solutions

Problem	What to Do
The transmitter power indicator is not lit	<ul style="list-style-type: none">• Check the wiring to ensure that 28V is present on pin 1
No audio at headphones	<ul style="list-style-type: none">• Ensure batteries are inserted properly• Slowly increase volume at the headphones
Audio drops out intermittently	<ul style="list-style-type: none">• Eliminate possible causes of strong interference• Check battery voltage or replace batteries

7.2. DO-160E Qualifications

Table 3 DO-160E qualifications

Description	DO-160E Section	Transmitter DO-160E Category	Headphones DO-160E Category
Temperature and Altitude	4.0	A1	A1
Temperature Variation	5.0	C	C
Humidity	6.0	A	A
Operational Shocks & Crash Safety	7.0	B	N/A
Vibration	8.0	S, Curve B	N/A
Magnetic Effect	15.0	Z	Z
Power Input	16.0	Z/B	N/A
Voltage Spike	17.0	A	N/A
Audio Frequency Conducted Susceptibility – Power Inputs	18.0	Z	N/A
Induced Signal Susceptibility	19.0	AC	AC
Radio Frequency Susceptibility (Radiated & Conducted)	20.0	T	T
Emission of Radio Frequency Energy (Radiated & Conducted)	21.0	B	B
Electrostatic Discharge (ESD)	25.0	A	A
Fire, Flammability	26.0	N/A	N/A

8. SPECIFICATIONS

Table 4 Wireless headphone specifications

Type	Dynamic, closed
Operating Time	Maximum 100 hours with two AA batteries
Frequency Response	19.7 kHz
Power Requirements	Two AA batteries (included)
Maximum Sound Pressure Level	120 dB
Warranty	2-year

Table 5 Wireless transmitter specifications

Audio Transmission Method	Digital
Transmitter Frequency	5.8 GHz
Signal-to-Noise ratio (A-weighted)	Min. 90 dB
Dynamic Range	Typ. 100 dB
Channel Separation	Min. 85 dB
Harmonic Distortion	Max. -85 dB
Transmitter Operating Range	20 meters in direction of transmitted signal within the aircraft cabin

9. REGULATORY APPROVALS

9.1. FCC Part 15 Requirements

FCC ID PMJTRO2

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: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

10. REVISION HISTORY

Revision	Date	Revision Description	EC #
A	12/23/08	Initial release	08532
B	TBD	Added regulatory approvals	TBD