

**ELECTRONIC REVISION
CONTROLLED**

"Unrivaled Customer Satisfaction"

ROSEN
AVIATION

Media Ports



Technical Manual

Models 0700-20x

Technical Manual, Media Ports**© 2011–2012 by Rosen Aviation, LLC**

All Rights Reserved

The information contained herein is proprietary to Rosen Aviation, LLC. No part of this publication may be reproduced, transmitted, transcribed, stored in a retrieval system, or translated into any language in any form by any means without the written authorization from Rosen Aviation, LLC, except as allowed under copyright laws.

Disclaimer of Liability

The information contained in this document is subject to change without notice. Because we are continuously improving and adding features to our products, Rosen Aviation, LLC reserves the right to change specifications without prior notice. Rosen Aviation, LLC shall not be liable for technical or editorial errors or omissions contained herein.

Apple, the Apple logo, iPod touch, iPod classic, iPod nano, and iPhone are trademarks of Apple Inc., registered in the U.S. and other countries.

“Made for iPhone and iPhone logo” means that an electronic accessory has been designed to connect specifically to iPod and iPhone and has been certified by the developer to meet Apple performance standards. Apple is not responsible for the operation of this device or its compliance with safety and regulatory standards. Please note that the use of this accessory with iPod and iPhone may affect wireless performance.



Rosen Aviation, LLC
1020 Owen Loop South
Eugene, OR 97402
541.342.3802
888.668.4955
Fax: 541.342.4912

www.rosenaviation.com

Contents

1. INTRODUCTION	4
1.1. Additional System Materials.....	4
1.1.1. Connector Kits.....	5
2. SYSTEM INTEGRATION	5
3. INSTALLATION GUIDELINES	7
3.1. Cooling and Ventilation.....	7
4. PINOUTS	8
4.1. P1 Input / Output Connector	8
4.2. Ethernet Address Configuration.....	8
5. INITIAL POWER UP	9
5.1. Maintenance	10
5.1.1. Removing a Bezel	10
6. TECHNICAL REFERENCES AND SUPPORT	11
6.1. Troubleshooting.....	11
6.2. RTCA DO-160F Qualifications for Displays	12
6.3. Specifications.....	14
7. DEFINITIONS	15
8. REVISION HISTORY	15

1. INTRODUCTION

The Rosen Media Port is an auxiliary audio/video input panel that fits in the side console of passenger seats as part of an aircraft's in-flight entertainment system.

The panels contain a 30-pin iPod® dock connector as well as a separate feed-through style connection for use with one of three possible audio/video sources:

- Composite/RCA – (P/N **0700-203**)
- VGA – (P/N **0700-204**)
- HDMI – (P/N **0700-205**)

Made for:

- iPhone 4®, iPhone 3GS®, iPhone 3G®, and iPhone®
- iPod touch® (1st, 2nd, and 3rd generation)
- iPod nano® (3rd, 4th, and 5th generation)
- iPod classic®

The Media Port panels feature a micro USB port for software loading and an Ethernet port for optional control of an iPod from a cabin management system (CMS). To allow charging of an iPod or iPhone, the design converts standard 28V DC aircraft power down to 5V DC power.

The panel's basic internal circuitry allows passengers the option to control the iPod directly, or to control a docked iPod/iPhone from the CMS via the Ethernet interface. The dock will translate control commands received from the CMS into the appropriate commands for the iPod, and will likewise transmit response data from the iPod back to the CMS.

This manual provides general instructions about how to install all of the Media Port models onto your aircraft. It contains everything you need to know to wire the panels and confirm that they are functioning correctly.

For more information about Rosen's Media Ports, please contact Rosen Sales or Technical Support.

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

1.1. Additional System Materials

Documentation for the Rosen Media Ports is available on the Rosen website at www.rosenaviation.com.

- Outline & Installation Drawings for each model
- Technical Manual

From the [Rosen Aviation](http://www.rosenaviation.com) home page, select the **Products** tab and browse by product category. Please contact Technical Support if you cannot find the drawing you need.

1.1.1. Connector Kits

The following connector kits (sold separately) are recommended:

- Connector kit—13W3 male (P/N **0300-056**)
- Connector kit—RJ45 plug (P/N **0300-050**)
- VGA connector kit—HD15 male with backshell (P/N **0300-055**)
- DVI connector kit—male (P/N **0300-029**)

2. SYSTEM INTEGRATION

The Media Port panel acts as an input portal to interface audio/video source equipment with the cabin’s in-flight entertainment system. The electrical design, board circuitry, software, and iAP are identical on all three models of the Rosen Media Ports. The panels vary only by the secondary audio/video feed-through connection (Composite, VGA, or HDMI). The following diagrams show the different system interconnects.

The Composite Media Port consists of an iPod dock and a separate RCA input connector for a secondary Composite audio/video source. The panel has only one audio/video output, so it uses a basic network of source selection relays to feed through either the iPod or the RCA Composite audio/video data. It will default to output the RCA audio/video data until you connect an iPod, at which point the output will switch to the iPod data.

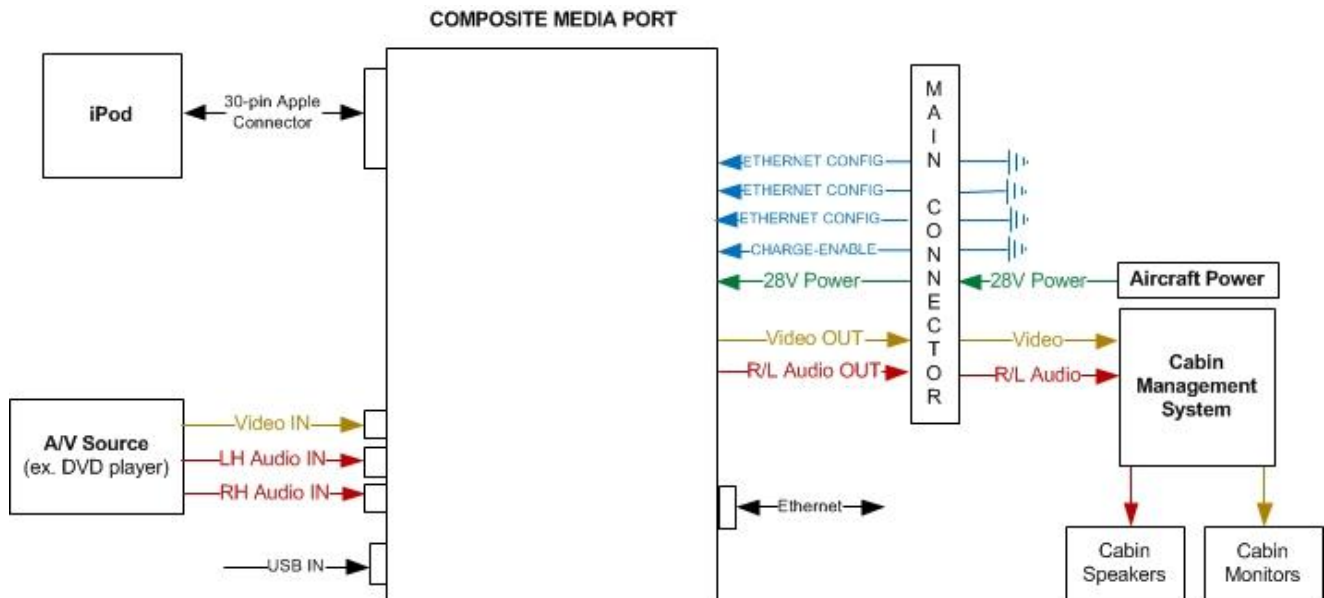


Figure 1 System diagram for Composite Media Port

The VGA Media Port consists of an iPod dock and a separate feed-through style VGA connector for RGB video. This panel has one dedicated audio/video output for the iPod and a separate dedicated output for the RGB video (such as a laptop). The VGA data feeds through independently of the relays, so that when the iPod is not installed, the relays are open.

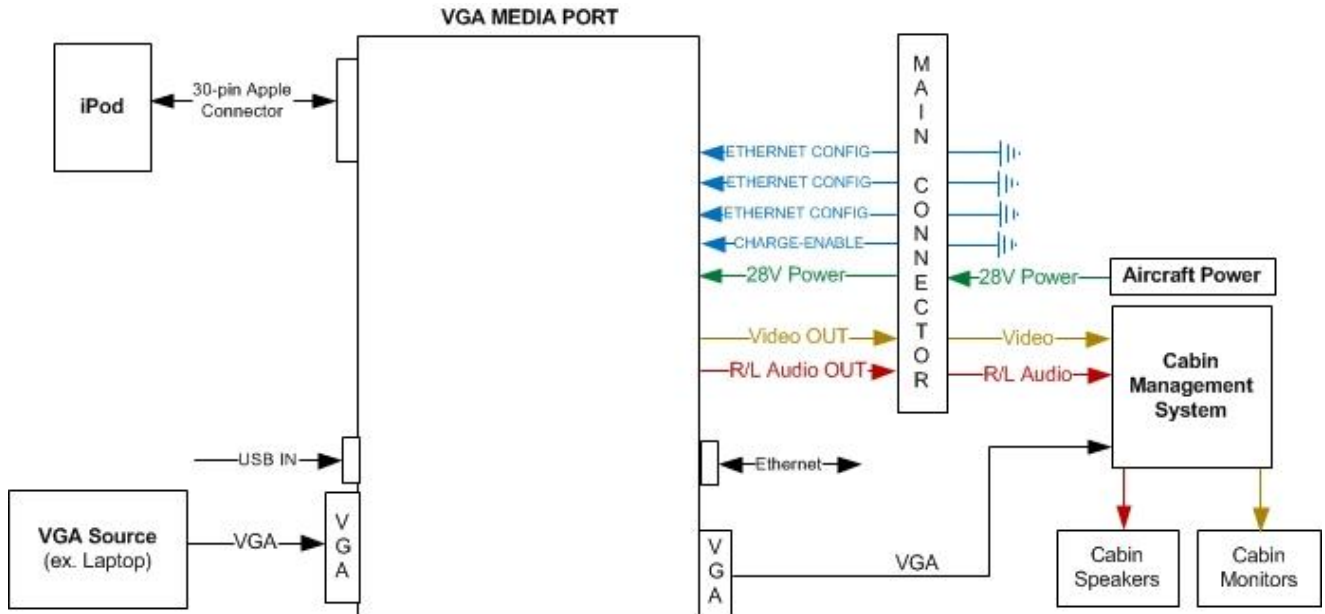


Figure 2 System diagram for VGA Media Port

The HDMI Media Port consists of an iPod dock, a composite video output, and a separate feed-through HDMI connector for high-definition audio/video output. The HDMI audio/video data feeds through independently of the relays, so that when the iPod is not installed, the relays are open.

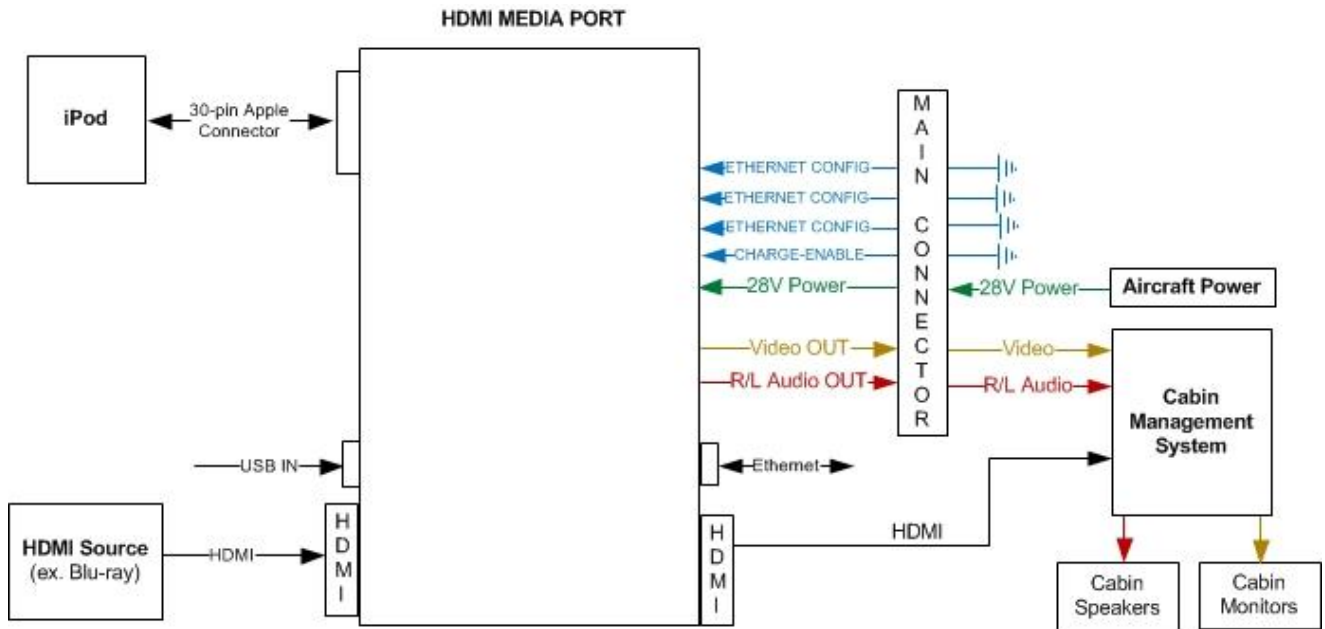


Figure 3 System diagram for HDMI Media Port

3. INSTALLATION GUIDELINES

Install the Media Ports horizontally (flat), so that the iPod rests in an upright (vertical) orientation when connected. No special mounting tools are required to install the panels. The following figures show the general dimensions for the Media Port panels. A cutout in the aircraft panel may be required and the use of a template or fixture may be necessary.

Outline and Installation drawings are available on Rosen’s website www.rosenaviation.com to assist in the installation process.

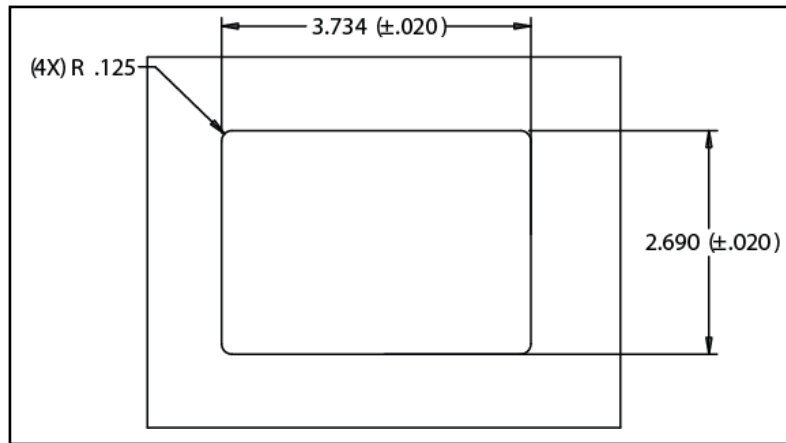


Figure 4 Cutout dimensions

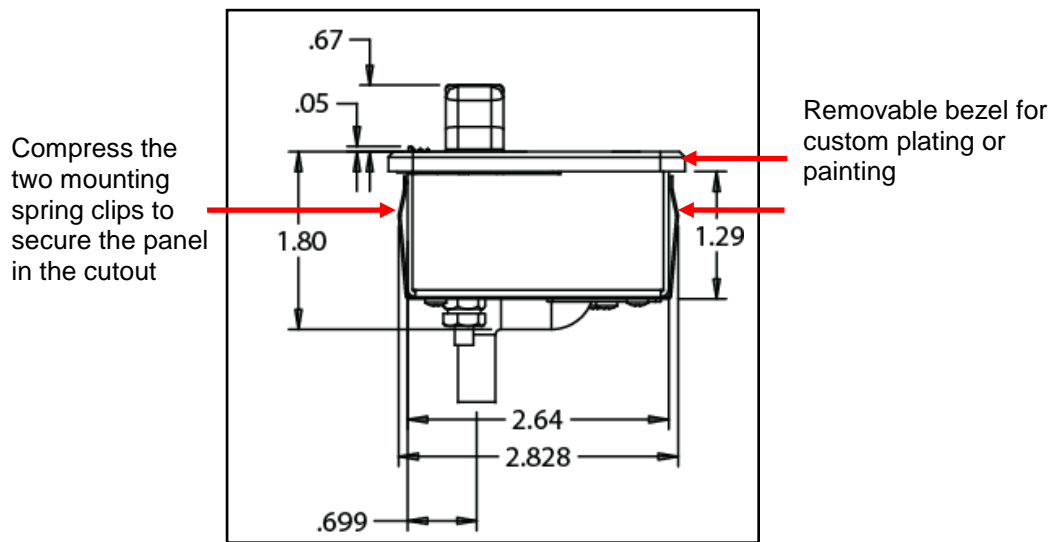


Figure 5 Side view dimensions of a Media Port panel

3.1. Cooling and Ventilation

The Media Port panels are cooled using natural convection and do not require any external forced-air cooling.

4. PINOUTS

There are several ways to connect Media Ports to an aircraft’s entertainment system.

Pay close attention to the pinout descriptions on the *Outline and Installation* drawings to assist in completing the wiring connections.

Note: Media Ports is for entertainment purposes only; connect to a non-critical power bus.

4.1. P1 Input / Output Connector

Connector Type: 13W3 female

Mate: 13W3 male

Rosen Connector Kit: 0300-056 (sold separately)

Pin #	Function
1	28V power
2	Audio left
3	Audio right
4	A/V return
5	Charge Config
6	28V return
7	GND
8	ETH Address Config 0
9	ETH Address Config 1
10	ETH Address Config 2
A1	Y
A2	Pb/Composite
A3	Pr

← Controls iPod charging

Notes:

Pin 5 The iPod will charge when this pin is set to GROUND, and it will not charge when set to OPEN.

4.2. Ethernet Address Configuration

You can configure the ethernet address of each Media Port unit for a different static IP address. The ethernet address is set via configuration strapping pins on the P1 Connector. The table below lists the available ethernet address configurations

Table 1 Ethernet address configurations

Unit	ETH Address Config 0 (P1-8)	ETH Address Config 1 (P1-9)	ETH Address Config 2 (P1-10)	Static IP Address
Address #1	Open	Open	GND	10.0.0.150
Address #2	Open	GND	Open	10.0.0.151
Address #3	Open	GND	GND	10.0.0.152
Address #4	GND	Open	Open	10.0.0.153
Address #5	GND	Open	GND	10.0.0.154
Address #6	GND	GND	Open	10.0.0.155
No Config	Open	Open	Open	NONE
DHCP	GND	GND	GND	Dynamic

Use the optional Ethernet port to control an iPod and Media Port from a cabin management system. To control these devices from a cabin management system via Ethernet, the cabin management system must implement the protocol as defined in the *Rosen Media Port Interface Control Document* (P/N **104046**). To obtain a copy, please contact Rosen Tech Support.

5. INITIAL POWER UP

To connect a Media Port:

1. Make sure to turn off the power before connecting the unit.
2. Ensure a positive ground connection on the Media Port's housing.
3. Connect 28VDC power and audio/video sources to the input/output connectors.
4. Connect the audio/video source to the rear connector. Confirm that audio/video plays on a display and through the speakers. For testing purposes, plug a laptop into the VGA Media Port or a Blu-ray player into the HDMI connector. For Composite, attach the video and audio to the Media Port's RCA input jacks, as shown below.

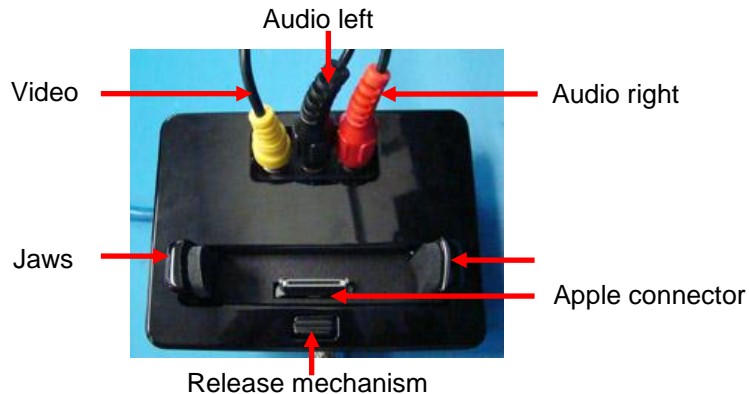


Figure 6 Media Port overview showing RCA input jacks

5. Connect an iPod or other Apple product to the Apple connector and squeeze both padded jaws snugly around the device using your thumb and index finger. These stabilize and protect your device in case of turbulence.

For the composite/RCA model, the panel will default to output audio/video from equipment connected to the RCA jack until you connect an iPod. Then the output will switch to the iPod audio/video data. If charging is configured, devices are charged automatically during streaming.

Note: The volume for recorded movies may be much lower than that of music.

NOTICE All iPod Touch 1st generation devices require iOS 3 to work properly with Media Ports.

6. To release the jaws, pull forward on the release mechanism button. The jaws will expand to allow easy removal of the Apple device.

NOTICE Do not plug or unplug the Media Port while power is applied. When cycling power, leave panel off for 20 seconds before restoring power.

5.1. Maintenance

The Media Ports do not require any periodic maintenance; however, take care not to spill any food or liquid on the Media Port. In case the panel gets wet:

1. Disconnect removable devices from the panel.
2. Blot away any excessive moisture with a clean, dry paper towel.
3. Remove the bezel with a non-marring, plastic tool.
4. Allow the Media Port to dry thoroughly before replacing the bezel and connecting any devices to it.

5.1.1. Removing a Bezel

You may need to remove a Media Port bezel for maintenance or for custom painting/plating. To remove a bezel:

1. Using a non-marring, plastic tool, gently lift up under both rear corners, as shown below. The bezel will pop off.



Figure 7 Bezel for a VGA Media Port

- To replace the bezel, bring the bezel and housing assemblies together, align the two mounting tabs with the recesses in the bezel (shown below) and the lip in the front slot, and press down on the two rear corners of the bezel to secure.



Two mounting tabs aligned with bezel recesses

Figure 8 Proper alignment of housing and bezel mounting tabs

6. TECHNICAL REFERENCES AND SUPPORT

➔ NOTICE

Always check the [Rosen Aviation](http://www.rosenaviation.com) website under the Products tab to ensure that you are working with the most current revision of technical documentation.

Table 2 Technical references

Product	Part Number	Location
Media Port Interface Control Document	104046	Rosen Technical Support
Outline & Installation Drawings	0700-20x	www.rosenaviation.com
Apple iOS 3 (operating system)	N/A	www.apple.com

6.1. Troubleshooting

If the Media Port does not function properly, refer to the following troubleshooting table for symptoms and possible solutions before contacting Rosen technical support.

Note: Always use an oscilloscope to verify the video signal. Always use a multimeter to verify voltages. Check actual results against the requirements described in this manual.

Table 3 Troubleshooting tips for Media Ports

Problem	Possible Solutions
Connected Apple device not charging	Ensure that the charging discrete input is set to GROUND. See Section 4.1, P1 Input / Output Connector on page 8.
Cannot control connected Apple device remotely	Ensure the IP configuration discrettes are set to match the desired IP address.
Unable to control an iPod touch (1 st generation)	An iPod touch (1 st generation) must have iOS 3 installed to work properly with Media Ports. Download the iOS 3 from www.apple.com/ .
No video from audio/video source connected to RCA jacks	Audio/video from the connected Apple device has priority over the audio/video from the RCA jacks. To receive audio/video from the RCA jacks, remove the Apple device from the Media Port.
Unable to control the connected Apple device using the Apple device user interface	To control audio/video using the Apple device user interface directly (no remote control from a cabin management system), the IP configuration discrettes must all be set to OPEN (Ethernet OFF).

6.2. RTCA DO-160F Qualifications for Displays

The table below shows the DO160 compliance of the Media Ports, unless otherwise noted. Omitted categories are not applicable to the product or its expected installation.

Table 4 DO 160 Level F test criteria

Description	Section	Category	Comments
Temperature and Altitude	4		
Ground Survival/Short-Time Operating Low Temp	4.5.1	A1	
Operating Low Temperature	4.5.2	A1	
Ground Survival/Short-Time Operating High Temp	4.5.3	A1	
Operating High Temperature	4.5.4	A1	
In-flight Loss of Cooling	4.5.5	N/A	Not applicable
Altitude	4.6.1	A1	
Decompression	4.6.2	N/R	Not required
Overpressure	4.6.3	N/R	Not required
Temperature Variation	5		
Temperature Variation	5.3.1	C	
Humidity	6		
Humidity	6.3.1	A	
Operational Shocks & Crash Safety	7		
Operational Shocks	7.2.1	B	
Crash Safety (Impulse)	7.3.2	B	
Crash Safety (Sustained)	7.3.3	B	

Description	Section	Category	Comments
Vibration	8		
Random Vibration – Fixed Wing Aircraft	8.5.2	S (Curve B)	
Explosion Proofness	9		
Explosion Proofness	9.0	N/A	Not applicable
Waterproofness	10		
Waterproofness	10.3.2	W	
Fluids Susceptibility	11		
Fluids Susceptibility	11.0	N/A	Not applicable
Sand and Dust	12		
Sand and Dust	12.0	N/A	Not applicable
Fungus Resistance	13		
Fungus Resistance	13.0	N/A	Not applicable
Salt Fog	14		
Salt Fog	14.0	N/A	Not applicable
Magnetic Effect	15		
Magnetic Effect	15.3	A	
Power Input	16		
Normal Operating Conditions (DC)	16.6.1		
Average Value Voltage (DC)	16.6.1.1	B	
Ripple Voltage (DC)	16.6.1.2	B	Test Covered in Section 18
Momentary Power Interruptions (DC)	16.6.1.3	B	
Normal Surge Voltage (DC)	16.6.1.4	B	
Engine Starting Under Voltage Operation (DC)	16.6.1.5	B	
Abnormal Operating Conditions	16.6.2		
Voltage Steady State (DC)	16.6.2.1	B	
Low Voltage Condition (DC)	16.6.2.2	B	
Momentary Under Voltage (DC)	16.6.2.3	B	
Abnormal Surge Voltage (DC)	16.6.2.4	B	
Voltage Spike	17		
Voltage Spike	17.4	B	
Audio Frequency Conducted Susceptibility	18		
AF Conducted Susceptibility- Power Inputs	18.3.1	B	
Induced Signal Susceptibility	19		
Induced Signal Susceptibility	19.0	N/R	Not required

Description	Section	Category	Comments
Radio Frequency Susceptibility	20		
Conducted Susceptibility (CS) – 10kHz to 400MHz	20.4	T	
Radiated Susceptibility (RS) – 100MHz to 18GHz	20.5	T	
Emission of Radio Frequency Energy	21		
Conducted RF Emission	21.4	M	
Radiated RF Emission	21.5	M	
Electrostatic Discharge (ESD)	25		
Electrostatic Discharge (ESD)	25.5	A	
Flammability	26	N/A	Flammability testing in accordance with 14 CFR 25.853 Appendix F

6.3. Specifications

Table 5 Media Ports panel performance specifications

Nominal Voltage/Current Draw	28VDC/50mA
Inrush Current	2A @ 200µsec
Op Voltage Range	18-32VDC
Maximum Current Draw	0.50 A
Power Consumption	14 W Max
Weight	Composite - .81 lbs. [0.37 kgs.] 10% VGA - .85 lbs. [0.39kgs.] 10% HDMI - .93 lbs. [0.42 kgs.] 10%

Table 6 Media Ports panel environmental specifications

Operating Temperature	-15°C – 55°C
Altitude	15,000ft
Humidity	95%RH
Vibration	1.48 grms
Power Input	DO-160F Cat B
Radio Frequency Susceptibility	DO-160F Cat T
Emission of RF Energy	DO-160F Cat M
Waterproofness	DO-160F Cat W

7. DEFINITIONS

- CFR** Code of Federal Regulations
- CMS** Cabin Management System
- DCV** Direct Current Volts – voltage from an aircraft battery or generator
- DHCP** Dynamic Host Configuration Protocol
- DVI** Digital Visual Interface
- HD** High Definition
- HDMI** High Definition Multimedia Interface
- iAP** Apple protocol for iPod, iPod touch, etc.
- P/N** Part Number
- RCA** (Radio Corporation of America) composite video & analog audio connection
- RGB** Red, Green, Blue
- R/L** Right/Left
- VGA** (Video Graphics Array) RGB video connection
- W** Watts

8. REVISION HISTORY



Revision E is limited to draft or prototype documents. Revisions I, O, Q, S, X and Z are not to be used.

Revision	Date	Revision Description	EC
A	08/31/11	Initial release	11544
B	06/06/12	Update pinout and IP address configurations	12-0315