P139-HD

DIGITAL AUDIO SYSTEM

BELL 204 / 212/ 412
INSTALLATION

MDL GA212 Rev A STC SR02270SE

19717 62ND Ave. South, Suite E-101, Kent, WA 98032 Tel: 800 546 2210 or +1 253 395 9105 Fax 800 546 2220

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Continuing past this page constitutes acceptance of the above agreement.

(End of Agreement)

United States of America

Department of Transportation - Federal Aviation Administration

Supplemental Type Certificate

Number SR02270SE

This certificate, issued to

Eagle Copters USA, Inc.
19717 62nd Avenue South, Suite E-101
Kent, WA 98032

*certifies that the change in the type design for the following product with the limitations and conditions therefore as specified hereon meets the airworthiness requirements of Part * of the * Regulations.*

Original Product—Type Certificate Number: * See attached Federal Aviation Administration (FAA)
Make: Approved Model List (AML) SR02270SE for approved
Model: rotorcraft models and applicable airworthiness regulations

Description of the Type Design Change: Fabrication and installation of Geneva Aviation Audio System per Geneva Aviation Master Drawing List as listed on AML SR02270SE. This modification must be inspected and maintained in accordance with the FAA-accepted Instructions for Continued Airworthiness (ICA) as listed on AML SR02270SE.

Limitations and Conditions: Approval of this change in type design applies to the rotorcraft listed on AML SR02270SE only. This approval should not be extended to other rotorcraft of this model on which other previously approved modifications are incorporated, unless it is determined that the relationship between this change and any of those other changes in type design will introduce no adverse effect upon the airworthiness of that rotorcraft. Rotorcraft modified in accordance with this supplemental type certificate must be operated in accordance with a copy of the FAA-approved Rotorcraft Flight Manual Supplement (RFMS) as listed on AML SR02270SE. A copy of this certificate, the AML, the MDL, the RFMS, and the ICA must be maintained as part of the permanent records of the modified rotorcraft.

If the holder agrees to permit another person to use this certificate to alter the product, the holder shall give the other person written evidence of that permission.

This certificate and the supporting data which is the basis for approval shall remain in effect until surrendered, suspended, revoked, or a termination date is otherwise established by the Administrator of the Federal Aviation Administration.

Date of application: March 12, 2013
Date of issuance: April 19, 2013
Date reissued: September 29, 2014
Date amended:

FEDERAL AVIATION ADMINISTRATION

By direction of the Administrator

(Signature)

for Manager, Seattle Aircraft Certification Office
(Title)

Any alteration of this certificate is punishable by a fine of not exceeding $1,000, or imprisonment not exceeding 3 years, or both.

This certificate may be transferred in accordance with FAR 21.47.

FEDERAL AVIATION ADMINISTRATION (FAA) APPROVED MODEL LIST (AML) SR02270SE
FOR
INSTALLATION OF A GENEVA AUDIO SYSTEM

ISSUE DATE: April 19, 2013

ITEM	ROTORCRAFT MAKE	ROTORCRAFT MODEL	ORIGINAL TC NUMBER	CERTIFICATION BASIS FOR ALTERATION	FAA APPROVED MASTER DRAWING LIST		FAA APPROVED ROTORCRAFT FLIGHT MANUAL SUPPLEMENT		INSTRUCTIONS FOR CONTINUED AIRWORTHINESS		AML REV DATE
					Drawing	Revision*	Number	Revision*	Number	Revision**	
1.	Airbus Helicopters Deutschland GmbH	MBB-BK 117 A-1, MBB-BK 117 A-3, MBB-BK 117 A-4, MBB-BK 117 B-1, MBB-BK 117 B-2, MBB-BK 117 C-1, MBB-BK 117 C-2	H13EU	FAR 29	GA212	Revision A, dated 6/13/13	GA212-2	Revision A, dated 10/22/13	ICA212-3	Revision NC, dated 3/25/13	9/29/14
2.	Bell	212, 412, 412EP, 412CF	H4SW	FAR 29	GA212	Revision A, dated 6/13/13	GA212-1	Revision A, dated 10/22/13	ICA212-1	Revision NC, dated 3/25/13	11/7/13
3.	Bell	204B, 205A, 205A-1, & 205B	H1SW	FAR 29	GA212	Revision A, dated 6/13/13	GA212-1	Revision A, dated 10/22/13	ICA212-1	Revision NC, dated 3/25/13	11/7/13
4.	Bell	214B, 214B-1	H6SW	FAR 29	GA212	Revision A, dated 6/13/13	GA212-1	Revision A, dated 10/22/13	ICA212-1	Revision NC, dated 3/25/13	11/7/13
5.	Bell	214ST	H10SW	FAR 29	GA212	Revision A, dated 6/13/13	GA212-1	Revision A, dated 10/22/13	ICA212-1	Revision NC, dated 3/25/13	11/7/13

* Or later FAA Approved Revision
**Or later FAA Accepted Revision

FAA Approved: _____
for Manager, Seattle Aircraft Certification Office

AMENDED: November 7, 2013; September 29, 2014
REISSUED:

MASTER DRAWING LIST

GA212 Rev A Dated 6/13/2013

AUDIO SYSTEM

NOTE: **X** IN LR COLUMN INDICATES CHANGE FROM LAST REVISION LEVEL.

LR	DRAWING NO.	TOTAL SHT	REV	DATE	DESCRIPTION
	GA212-3	15	NC	3/25/13	P139-HD Bell 204 – 412 Installation Manual
X	GA212-4	16	A	6/13/13	P139-HD EC145 Installation Manual
	GA1-2TP	7	C	5/13/12	EMI Test Procedure
	G12019	1	C	05/09/06	Cable, GNET, Standard
	G12100	3	D	11/21/07	Connector And Wire Part List
	G12260	1	--	9/23/03	SWIF12T
	G12347	1	--	3/14/03	Auxiliary Control Module
	G13000	1	D	11/30/12	P139-HD Router
	G13004	13	F	12/03/12	P139-HD Audio System Wiring Diagrams
	G13006-2	1	B	1/13/12	Clip
	G13006-4	1	A	1/13/12	Doubler
	G13008	1	--	3/02/12	P139-HD Bell 204 – 412 Installation
	G13009	1	--	1/13/12	Tray Assy
	G13009-1	1	A	4/11/12	Tray
	G13009-2	1	A	4/11/12	Brace
	G13009-3	1	--	1/13/12	Shim
	G13045	1	--	10/14/09	Audio Mixing Amplifier
	G13046	3	A	11/03/09	Audio Mixing Amplifier Installation
	G13115	1	A	10/15/12	Control Panel
	G13116	1	A	10/15/12	Control Panel

LOG OF REVISIONS

REVISION LEVEL	DATE OF REVISION	PAGES	DESCRIPTION OF CHANGE	APPROVAL
--	3/25/13	All Pages	Initial Release	CLB
A	6/13/13	All	Removed EC135 Model from STC by: Revising GA212-1, GA212-2 and GA212-4, Removed ICA212-2, G130130 series drawings.	CLB

JUM/92/14

743

April 22, 2014

Mr. Vince Massey
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Subject: ECO-1518 GA212

Enclosed is ECO-1518 Rev – Dated 3/26/2014 for MDL GA212 Rev A Audio System STC: SR02270SE. This ECO corrects minor changes to the drawings listed in the ECO list. Specifically:

- G13004: Rewrote EMERG/NORMAL notes on sht 13 for clarity.
- G13115: Revised labeling notes to engineering standards.
- G13116: Revised labeling notes to engineering standards.
- G13121: Corrected part number on back shell on sht 2.

I certify that Geneva Aviation, Inc. has shown compliance with all the applicable requirements, as identified in the Statements Of Compliance With Airworthiness Standards (8110-3 forms) signed by DER Verl Herd submitted with this data. Please provide Geneva with an approval for ECO-1518. Please contact me if you need any additional information.

Best Regards,

Chris Bonar
Engineer Manager

(enclosures)

FILE CODE:
8110.1.a.(2).STC SR02270SE

FAA ACTION
Seattle Aircraft Certification Office
☐Approve ☐EASA CS ☐JARs
☐Reject ☐CARs ☐CFRs
☐Acknowledge ☐Concur ☒Accept
TSO/Project #s N/A
Comments: DER APPROVED DATA

Branch #	Concurrence	Date

Vince Massey 6475 4/28/14
FAA Staff Spec. Phone Date
for A. Bonar x6546 4/29/14
SACO Manager Phone Date
AS/1305/14/533
Action Stamp #

ENGINEERING CHANGE ORDER

Date: 3/26/2014

ECO No: ECO- 1518 **Rev:** --

STC: SR02270SE **MDL:** GA212 **Rev:** A

STC Title: Audio System

Effective for: ☑Production; or ☐Listed Aircraft Only:

Primary Document Effected: See list below

Description of Change: Minor changes to drawings listed

Detailed Explanation:

This ECO corrects minor changes to the drawings listed.

G13004: Rewrote EMERG/NORMAL notes on sht 13 for clarity.

G13115: Revised labeling notes to engineering standards.

G13116: Revised labeling notes to engineering standards.

G13121: Corrected part number on back shell on sht 2.

ECO DOCUMENT LIST

NOTE: **X** in CH (change) column indicates change from last revision level.
Documents with multiple pages, that have a different revision level on some pages, are listed by individual pages on this list.

CH	DOC No.	PAGES	REV	DATE	DESCRIPTION
X	G13004	13	G	3/26/14	P139-HD Audio System Wiring Diagrams
X	G13115	1	B	3/26/14	Audio Control Panel
X	G13116	1	B	3/26/14	Audio Control Panel
X	G13121	3	A	3/26/14	Audio Mixer Installation Instructions

ECO LOG OF REVISIONS

REVISION LEVEL	DATE OF REVISION	PAGES	DESCRIPTION OF CHANGE	APPROVAL
-	3/26/2014	ALL	Initial Release	CLB

JVM/11/5/14

GENEVA AVIATION

May 22, 2014

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Subject: ECO-1520 GA212

Enclosed is ECO-1520 Rev – Dated 5/08/2014 for MDL GA212 Rev A Audio System STC: SR02270SE. This ECO defines three audio system configurations as follows:

- P139-HD (D) Uses Router G13000 in a "Dual-board" configuration. This is the standard audio system that was previously specified in the STC and is shown in the diagrams. The G13000 is the primary router used throughout the instructions.

- P139-HD (S) has been added as an optional system configuration. It uses Router G13000 in a "Single-board" configuration that uses the same case as the dual-board router, but with only one audio board installed. These two routers share the same installation and wiring drawings.

- P139-HD (T) has been added as an optional system configuration. It uses Router G13160 and is a "Three board" router. This installation replaces wiring drawing G13004 with drawing G13162. Installation of this router is performed the same as the others two routers with slight changes in the mounting hardware as noted in the instructions. The G13160 router supports more radios, control panels and headsets than what the G13000 provides.

This change is considered a minor change since the primary functionality of the system has not changed; there is negligible change to weight, balance and power consumption; and there are no changes required for the RFMS.

In addition, I have updated ICA212-1 Rev A & ICA212-3 Rev A to match the current approved STC data. Due to their size I have not printed them, but instead provide them on the enclosed data CD for your records.

I certify that Geneva Aviation, Inc. has shown compliance with all the applicable requirements, as identified in the Statements Of Compliance With Airworthiness Standards (8110-3 forms) signed by DER Verl Herd and DER Jeremey McClenahan submitted with this data. Please provide Geneva with an approval for ECO-1520 and for the revised ICA's. Please contact me if you need any additional information.

Best Regards,

Chris Bonar
Engineer Manager

(enclosures)

FAA ACTION
Seattle Aircraft Certification Office
☒Approve ☐EASA CS ☐JARs
☐Reject ☐CARs ☒CFRs
☐Acknowledge ☐Concur ☐Accept
TSO/Project #s N/A
Comments: THE LISTED ICA'S ARE ACCEPTED.
Branch # Concurrence Date
Vince Massey x6475 5/25/14
FAA Staff Spec. Phone Date
for DYT x6468 6/25/2014
SACO Manager Phone Date
45/13 05/14/933
Action Stamp #

FILE CODE:
8110.1.a(2). STC SR02270SE

ENGINEERING CHANGE ORDER

Date: 5/08/2014

ECO No: ECO- 1520 **Rev:** --

STC: SR02270SE **MDL:** GA212 **Rev:** A

STC Title: Audio System

Effective for: ☑Production; or ☐Listed Aircraft Only:

Primary Document Effected: See list below

Description of Change: Adds audio system configurations STC

Detailed Explanation:

This ECO defines three audio system configurations as follows:

- P139-HD (D) Uses Router G13000 in a "Dual-board" configuration. This is the standard audio system that was previously specified in the STC and is shown in the diagrams. The G13000 is the primary router used throughout the instructions.
- P139-HD (S) has been added as an optional system configuration. It uses Router G13000 in a "Single-board" configuration that uses the same case as the dual-board router, but with only one audio board installed. These two routers share the same installation and wiring drawings.
- P139-HD (T) has been added as an optional system configuration. It uses Router G13160 and is a "Three board" router. This installation replaces wiring drawing G13004 with drawing G13162. Installation of this router is performed the same as the others two routers with slight changes in the mounting hardware as noted in the instructions. The G13160 router supports more radios, control panels and headsets than what the G13000 provides.

This change is considered a minor change since the primary functionality of the system has not changed; there is negligible change to weight, balance and power consumption; and there are no changes required for the RFMS.

To support this change:

GA212-3 & GA212-4 have been revised to: add Section 1.3 defining the configurations; Revised the wording throughout the manual to define the installation differences between the different configurations. Updated the control panels section to show just the current panels offered. Figures throughout the manual have been updated for continuity.

G13004 has been updated to change the headset numbering scheme and to add external power for additional control panels.

G13160 Router drawing has been added for the three board router.

G13161 Tray has been added to be used in place of Tray G13009 for the G13160 Router.

G13161-1, -2, -3, & -4 detail drawings have been added.

G13162 wiring diagrams have been added to be used in place of G13004 for the G13160 Router.

ECO DOCUMENT LIST

NOTE: **X** in CH (change) column indicates change from last revision level. Documents with multiple pages, that have a different revision level on some pages, are listed by individual pages on this list.

CH	DOC No.	PAGES	REV	DATE	DESCRIPTION
X	GA212-3	18	A	4/23/14	P139-HD Installation Instructions, Bell 204/412
X	GA212-4	17	B	4/23/14	P139-HD Installation Instructions, EC145
X	G13004	13	H	4/24/14	P139-HD Audio System Wiring Diagrams
X	G13160	1	--	12/9/13	P139-HD 3-Board Router
X	G13161	1	--	12/12/13	Wide Tray Assy
X	G13161-1	1	--	12/12/13	Wide Tray
X	G13161-2	1	--	12/12/13	Wide Brace
X	G13161-3	1	--	12/12/13	Wide Shim
X	G13161-4	1	--	12/12/13	Wide Clip
X	G13162	13	--	3/27/14	P139-HD Audio System Wiring Diagrams

ECO LOG OF REVISIONS

REVISION LEVEL	DATE OF REVISION	PAGES	DESCRIPTION OF CHANGE	APPROVAL
-	5/08/2014	ALL	Initial Release	CLB

JVM/204/14

August 28, 2014

Mr. Vince Massey
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Subject: ECO-1532 GA212

Enclosed is ECO-1532 Rev – Dated 8/13/2014 for MDL GA212 Rev A Audio System STC: SR02270SE. This ECO updates Audio Routers G13000 and G13160 to change the rated operating voltage from 10 – 30 VDC to 14 – 32 VDC to improve their operating efficiency.

I certify that Geneva Aviation, Inc. has shown compliance with all the applicable requirements, as identified in the Statements Of Compliance With Airworthiness Standards (8110-3 form) signed by Systems DER Verl Herd submitted with this data. Please provide Geneva with an approval for ECO-1532. Please contact me if you need any additional information.

Best Regards,

Chris Bonar
Engineer Manager

(enclosures)

FAA ACTION
Seattle Aircraft Certification Office
☐Approve ☐EASA CS ☐JARs
☐Reject ☐CARs ☒CFRs
☐Acknowledge ☐Concur ☒Accept
TSO/Project #s N/A
Comments:

Branch #	Concurrence	Date

Vince Massey 6475 9/3/14
FAA Staff Spec. Phone Date
for D. Lang x 6546 9/3/14
SACO Manager Phone Date
AS/1305/14/1365
Action Stamp #

FILE CODE:
8110.1.a(2).SR02270SE

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

STATEMENT OF COMPLIANCE WITH AIRWORTHINESS STANDARDS

1. DATE: August 16, 2014

AIRCRAFT OR AIRCRAFT COMPONENT IDENTIFICATION

2. MAKE	3. MODEL NO.	4. TYPE (*Aircraft, Engine, Propeller, etc.*)	5. NAME OF APPLICANT
See Below	See Below	Helicopter	Geneva Aviation Kent, WA

LIST OF DATA

6. IDENTIFICATION	7. TITLE
	Make: Airbus Helicopters Deutschland, Models: MBB-BK 117 A-1, A-3, A-4, B-1, B-2, C-1, C-2 Make: Bell, Models: 204B, 205A, 205A-1, 205B, 212, 214B, 214B-1, 214ST, 412, 412EP, 412CF
ECO-1532 Rev -, Dated 08/13/14	ECO against Audio Master Drawing List GA212, Rev A
	Notes: 1.This 8110-3 approves the design aspects of the avionics/electrical data only. 2.This ECO changed the router operating voltage from 10-30 VDC to 14-32 VDC.

8. PURPOSE OF DATA

To show compliance with 14 CFR pertaining to a change to STC SR02270SE.

9. APPLICABLE REQUIREMENTS (*List specific sections*)

14 CFR: 29.1301(a,b,c) Amdt 29-0

10. CERTIFICATION – Under authority vested by direction of the Administrator and in accordance with conditions and limitations of appointment under 14CFR Part 183, data listed above and on attached sheets numbered XXXXXXXXX have been examined in accordance with established procedures and found to comply with applicable requirements of the Airworthiness Standards Listed.

I (~~We~~) Therefore

☐ Recommend approval of these data

☒ Approve these data

11. SIGNATURE(S) OF DESIGNATED ENGINEERING REPRESENTATIVE(S)	12. DESIGNATION NUMBER(S)	13. CLASSIFICATION(S)
Verl Herd	DERT-710121-SW	Electrical Systems & Equipment

ENGINEERING CHANGE ORDER

Date: 8/13/2014

ECO No: ECO- 1532 **Rev:** --

STC: SR02270SE **MDL:** GA212 **Rev:** A

STC Title: Audio System

Effective for: ☑Production; or ☐Listed Aircraft Only:

Primary Document Effected: See list below

Description of Change: Updates Routers

Detailed Explanation:

This ECO updates Audio Routers G13000 and G13160 to change the operating voltage from 10 – 30 VDC to 14 – 32 VDC.

ECO DOCUMENT LIST

NOTE: **X** in CH (change) column indicates change from last revision level. Documents with multiple pages, that have a different revision level on some pages, are listed by individual pages on this list.

CH	DOC No.	PAGES	REV	DATE	DESCRIPTION
X	G13000	1	E	8/13/14	P139-HD Router
X	G13160	1	A	8/13/14	P139-HD 3 Board Router

ECO LOG OF REVISIONS

REVISION LEVEL	DATE OF REVISION	PAGES	DESCRIPTION OF CHANGE	APPROVAL
-	8/13/2014	ALL	Initial Release	CLB

ROTORCRAFT
FLIGHT MANUAL SUPPLEMENT
for
Bell Model
204/205/212/214/412 Series
Helicopters

Registration Number:_____

Serial Number: _____

The Geneva Aviation **P139-HD Digital Audio System** installed in accordance with **STC SR02270SE** requires this supplement to be included in the FAA Approved Rotorcraft Flight Manual for the aircraft.

This supplement only adds to the basic Rotorcraft Flight Manual. For limitations, normal procedures, emergency procedures and performance information not contained herein, consult the FAA Approved Rotorcraft Flight Manual.

FAA Approval: _____
for Manager,
Seattle Aircraft Certification Office

 OCT 22 2013

LOG OF REVISIONS

Rev. Level	Date	Description
NC	3/25/2013	Initial Release
A	6/13/2013	Added detail to functions

Note:

The approval for the revision is implemented by the FAA Approval signature on the cover page.

OCT 2 2 2013

TABLE OF CONTENTS

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1. GENERAL INFORMATION

1.1. This aircraft has the Geneva Aviation P139HD Digital Audio System installed. This audio system controls the Intercom System (ICS) and the transmit/receive audio sources to and from the radios.

1.2. The audio system uses serial data control panels linked to a centralized Router unit to which each radio source is connected.

2. LIMITATIONS

No Limitations

3. NORMAL PROCEDURES

3.1. Power to the Audio System is supplied by two circuit breakers, AUD 1 and AUD 2. One is located on Essential Bus #1 and the second is located on Essential Bus #2. These Buses are controlled by the aircraft's standard systems for these Buses.

3.2. Control Panel operation:

3.2.1. The rotary knob for each channel adjusts the volume level for that channel. Rotating the knob CCW decreases the volume.

3.2.2. Depressing the rotary knob and allowing it to pop out enables the channel. Depressing the rotary knob into the locked position disables the audio channel.

3.2.3. Depressing the button below each rotary knob toggles selection of a particular audio channel as the active transmitter. This audio channel will also be heard, whether or not the rotary knob is in the out (ON) position or the in (OFF) position. The associated LED is illuminated to indicate when a channel has been selected as the active transmitter.

3.2.4. A transmitter audio channel can be de-selected by selecting another transmitter or by pressing the button a second time. The LED associated with the channel will go out.

3.2.5. To activate the intercom system, press the ICS rotary knob so it pops out to the (ON) position. The earphone audio is controlled by the rotary knob; the microphone is energized by depressing the ICS key switch. For the pilot this means depressing the cyclic trigger to the first detent, for the copilot it can be either the cyclic trigger or foot switch. Additionally, the ICS / TX switch on the G13115 or G13116 audio control panels may be used. Forward (up) is ICS Key, Aft (down) is TX Key. For the passengers, a headset adapter cable with switches, or the VOX knob on the passenger audio control panel may be turned fully CW for "Hot Mic". For non-shared audio panels such as the pilot and co-pilot panels, "Hot Mic" is achieved by rotating the VOX knob fully CW. To Disable VOX turn knob fully CCW. After adjusting, the rotary knob may be depressed to prevent nudging if desired. Depressing this knob will not defeat the VOX function.

3.3. For the pilot and co-pilot locations, the second detent of the cyclic trigger switch always keys the #1 VHF Comm Radio in the pilot's location and #2 VHF Comm Radio in the co-pilot's location regardless of the audio panel selection.

3.4. For the pilot and co-pilots locations, a cyclic switch is dedicated for Audio Panel Transmit. This switch will key the radio selected on the audio panel. Familiarize yourself with the locations of the switches as this location on the cyclic will change dependent on the configuration of the system installed in the rotorcraft. In the co-pilots location, an optional foot switch may have been installed for this function as well.

3.5. For passengers, the selected transmitter keying is accomplished with the appropriate push button switch on the headset adapter cable.

 OCT 2 2 2013

3.6. Setting Volume Levels: If volume levels are not set correctly, audio crosstalk and distortion may result.

3.6.1. To set volume levels correctly:

a. Permanently adjust headset volume controls to maximum loudness.
b. Set the audio panels volume controls to midrange. Verify that the Master Volume control is centered as well.
c. Adjust audio source (radio, etc.) to a comfortable level.
d. Use audio panel controls for adjusting listener's volume.
e. Please note that the Master Volume Control increases or decreases the audio level for all audio sources on the panel with the exception of the ICS Volume.

3.6.2. Crosstalk and distortion are the result of the audio source (radio, etc.) volume being excessive. This is normally a result of the headset volume control being turned down and/or the audio panel volumes being turned down, and the radio volume being up too loud.

OCT 2 2 2013

4. EMERGENCY PROCEDURES

4.1. In the event of a complete of failure of the audio system, the pilot's mic and ear phone will automatically be connected directly to the #1 VHF Comm Radio. The co-pilot's mic and ear phone will automatically be connected directly to the #2 VHF Comm Radio. Keying the transmitter is accomplished by depressing the trigger switch to the second detent as always in both the pilot and co-pilot locations. Volume control is possible using the volume control on the radio itself. All other audio functions for all users will be inoperable with the exception of ICS between the pilot and co-pilot. Keyed ICS between the pilot and co-pilot will remain active as long as power is present through either the AUD 1 or AUD 2 circuit breakers. No volume or VOX control is possible for the ICS under this condition and is a fixed level. All aircraft audio alert tones will be heard in all emergency and isolated modes at the pilot and co-pilot locations.

4.2. In the event of a loss of power to the audio system, the pilot's mic and ear phone will automatically be connected directly to the #1 VHF Comm Radio. The co-pilot's mic and ear phone will automatically be connected directly to the #2 VHF Comm Radio. Keying the transmitter is accomplished by depressing the trigger switch to the second detent as always in both the pilot and co-pilot locations. Receive audio for #1 VHF and #2 VHF Comm Radios will only be adjustable at the radio itself. All other audio functions for all users will be inoperable. All aircraft audio alert tones will be heard in all emergency and isolated modes at the pilot and co-pilot locations.

4.3. In the event of a malfunctioning audio system, the pilot's EMERG / NORMAL switch is located on both G13115 and G13116 type control panels, when placed in EMERG (Emergency) position, it will connect the pilot exclusively to #1 VHF Comm radio with the only effect to other occupants being the elimination of #1 VHF Comm radio access and the pilot's ICS audio between the pilot and other occupants. All aircraft audio alert tones will be heard in the EMERG (Emergency) mode at the pilot and co-pilot locations.

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4.4. In the event of a malfunctioning audio system, the co-pilot's EMERG / NORMAL switch is located on both G13115 and G13116 type control panels, when placed in EMERG (Emergency) position, it will connect the co-pilot exclusively to #2 VHF Comm radio with the only effect to other occupants being the elimination of #2 VHF Comm radio access and the co-pilot's ICS audio between the co-pilot and other occupants. All aircraft audio alert tones will be heard in the EMERG (Emergency) mode at the pilot and co-pilot locations.

4.5. In the event of generator failure or for any other reason that the electrical load must be reduced. The system is connected to the Essential Buss #1 and Essential Buss #2 and can be deactivated by pulling the AUD 1 and AUD 2 circuit breakers located on the overhead console. Pulling both circuit breakers will result in the pilot being isolated to the #1 VHF Comm Radio and the co-pilot being isolated to the #2 VHF Comm Radio automatically with no further action. No other audio system functions will be operable.

5. PERFORMANCE

No change to basic Rotorcraft Flight Manual.

OCT 22 2013

GA212-3
Revision A, 4/23/2014

P139-HD Digital Audio System
Bell 204 / 412 Installation Manual

1.0 INTRODUCTION

1.1. This document provides general information and instructions for the installation of the Geneva P139-HD Digital Audio System, under STC SR02270SE.

1.2. Installation is to be accomplished in accordance with Geneva Aviation instructions. Throughout the installation of this product it is necessary to utilize proper aviation practices. Be sure that the installation of this product is in compliance with the aircraft manufacturer's limitations and also that it is done in accordance FAA publication, AC 43.13-1B, Acceptable Methods, Techniques and Practices, Aircraft Inspection and Repair. These rules from the AC apply :

A. All wire to be 22 AWG unless otherwise specified.
B. Unshielded wire per MIL-W-22759/16; Shielded wire per MIL-M27500-xxTGxT14 ; xx- indicates wire gauge, x- indicates number of conductors.
C. Route and support wiring harness IAW AC 43.13-1b, Chapter 11 Section 8, Paragraph 11-96.
D. Clamp wiring harness IAW AC 43.13-1b, Chapter 11, Section 11, Paragraph 11-146.
E. Clamp and route wiring harness around movable controls IAW AC 43.13-1b, Chapter 11, Section 9, Paragraph 11-125.
F. Wiring and harness to be separated IAW AC 43.13-1b, Chapter 11, Section 8, Paragraph a 11-105 & 11-106.
G. Install service loops at harness terminations IAW AC 43.13-1b, Chapter 11, Section 9, Paragraph 11-139.
H. Install grounding connections and bonding IAW AC 43.13-1b, Chapter 11, Section 15, Paragraph 11-186 & 11-189.

Before installing any of the components, first read through all of the documentation to become familiar with the installation requirements. This installation requires a completed FAA Form 337 and appropriate log book entries.

Prior to installing each component, record weight and mounting location in the aircraft's weight and balance record.

This product is provided with an FAA STC for certain aircraft models. If your installation is not covered by one of the models listed on the STC, then you may need to obtain a field approval from your local FAA Flight Standards District Office (FSDO).

The P139-HD Digital Audio Router contains no user serviceable internal components. Do not disassemble router or the factory warranty will be voided. For service, return the unit to Geneva Aviation.

1.3. There are three types of P139-HD Audio Systems that the installer may choose to install at their discretion.

1.3.1. P139-HD (D) Uses Router G13000 in a “Dual-board” configuration and is shown in the diagrams and is the router used throughout the instructions.

1.3.2. P139-HD (S) Uses Router G13000 in a “Single-board” configuration that uses the same case as the dual-board router, but with only one audio board installed. These two routers share the same installation and wiring drawings.

1.3.3. P139-HD (T) uses Router G13160 and is a “Three board” router. This installation replaces wiring drawing G13004 with drawing G13162. Installation of this router is performed the in the same manner as the other two routers with slight changes in the mounting hardware as noted in the instructions.

1.4. Prior to installation of this system, it is the responsibility of the installer to confirm by analysis or measurement, that the additional power requirement will not exceed the capacity of the avionics bus or the aircraft’s electrical system. Power consumption for this audio system is 5 amps at 28 volts. The system is designed to use redundant power sources, both coming from the master avionics bus. For each supply line, use a separate 5 amp fuse or circuit breaker on a 28 volt aircraft and separate ground lines to two separate ground points. Refer to G13004 for wire harness details. The system will support supply voltages of 14 – 32 VDC.

1.5. DC Power connections for the Audio System are listed in Table 1 by model. Serial number breaks relative to those models are also referenced where applicable differences in electrical configuration warrant different interconnects for DC Power. It is the installer’s responsibility to evaluate the applicability of the data in Table 1 prior to installation of the Audio System. It is also the responsibility of the installer to ensure that the installation does not interfere with any existing approved electrical modifications relative to installation of the Audio System or any associated electrical bus.

Table 1 Model Specific Notes

Model	Condition and Interconnect Method	Reference Attachment
Bell 204B	Does not exceed current limits of existing factory configuration. Verify Compliance using Section 1.3	BHT-204B-M&O ELA Chart 9-8 and Graph 9-6.
S/N: 2001-2060	Remove Existing ICS Amplifier and Speaker Amplifier 5 Amp Circuit Breakers. Install single 5 Amp CB for Geneva Audio System to the existing 28V DC Bus.	BHT-204B-M&O Page 11-38 and 11-46.
S/N: 2061-Sub	Remove Existing AirComm Audio System 5 Amp Circuit Breakers. Install single 5 Amp CB for Geneva Audio System to the existing 28V DC Bus.	BHT-204B-M&O Page 11-38 and 11-46.
Bell 205	Does not exceed current limits of existing factory configuration. Verify Compliance using Section 1.3	BHT-205A1-MM-2 Section 96 Page 9-13 and Figure 9-2.
S/N: All	Use Existing Pilot Audio Panel 5 Amp Circuit Breaker on 28V DC Bus #2. Connect Power #1 of Geneva Audio System to this Breaker. Use Existing Co-Pilot Audio Panel 5 Amp Circuit Breaker on 28V DC Bus #1. Connect Power #2 of Geneva Audio System to this Breaker. Note: This configuration provides redundant power from 2 separate buses.	BHT-205A1-MM-2 Section 98. Figure 98-7 Sht 1.
Bell 212	Does not exceed current limits of existing factory configuration. Verify Compliance using Section 1.3	BHT-212-MM-10 Chapter 96. Para. 96-1, 96-1A, 96-2A, 96-2B. BHT-212-MM-10 Chapter 98. Figure 98-7.
S/N: 30504-30553	Remove Existing Pilot Intercom 1 Amp Circuit Breaker and Cabin Intercom 1 Amp Circuit Breaker on 28V DC Bus #1. Install a single 5 Amp Circuit Breaker. Connect Power #1 of Geneva Audio System to this Breaker. Remove Existing Co-Pilot Intercom 1 Amp Circuit Breaker and Speaker Amplifier 3 Amp Circuit Breaker on 28V DC Bus #2. Install single 5 Amp Circuit Breaker. Connect Power #2 of Geneva Audio System to this Breaker.	BHT-212-MM-10 Chapter 98. Figure 98-8 Sht 4.
S/N: 30554-Sub.	Remove Existing Pilot Intercom 1 Amp Circuit Breaker and Cabin Intercom 1 Amp Circuit Breaker on 28V DC Bus #1. Install a single 5 Amp Circuit Breaker. Connect Power #1 of Geneva Audio System to this Breaker. Remove Existing Co-Pilot Intercom 1 Amp Circuit Breaker on 28V DC Bus #2. Install single 5 Amp Circuit Breaker. Connect Power #2 of Geneva Audio System to this Breaker. Note: This configuration provides redundant power from 2 separate buses.	BHT-212-MM-10 Chapter 98. Figure 98-9 Shts 8 & 9.

Table 1 Model Specific Notes cont.

Model	Condition and Interconnect Method	Reference Attachment
Bell 214	Does not exceed current limits of existing factory configuration. Verify Compliance using Section 1.3	BHT-214ST-FM Page 1-16. BHT-214ST-MM-10 Chapter 96. Figure 96-1.
S/N: All	Use Existing Pilot ICS 5 Amp Circuit Breaker on 28V DC Emergency Bus #2. Connect Power #1 of Geneva Audio System to this Breaker. Use Existing Co-Pilot ICS 5 Amp Circuit Breaker on 28V DC Essential Bus #1. Connect Power #2 of Geneva Audio System to this Breaker. Note: This configuration provides redundant power from 2 separate buses.	BHT-214ST-MM-10 Chapter 98. Figure 98-29 Shts 5 & 7.
Bell 412	Does not exceed current limits of existing factory configuration. Verify Compliance using Section 1.3	BHT-412-MM-12 Chapter 98. Section 98-08. Figure 98-8.
S/N: All	Use Existing Pilot ICS 5 Amp Circuit Breaker on 28V DC Emergency Bus #2. Connect Power #1 of Geneva Audio System to this Breaker. Use Existing Co-Pilot ICS 5 Amp Circuit Breaker on 28V DC Essential Bus #1. Connect Power #2 of Geneva Audio System to this Breaker. Note: This configuration provides redundant power from 2 separate buses.	BHT-412-MM-11 Chapter 97. Figure 97-7. Sheet 1. Figure 97-8. Sheet 2.

1.6. The internal power supply of the router is sufficient to power six audio control panels. If the installation calls for more than six panels, the additional panels must be powered from a separate circuit breaker to the Router. Refer to G13004 sheet 12 for more information.

The FAA requirement regarding the securing of wire bundles using nonmetallic clamps is addressed by the use of nylon cable ties. The part numbers and description of these ties is as follows:

Following the guidelines in AC43.13-1B, cable ties are attached at a maximum of 4” spacing and ties are attached to nylon cable tie anchors, as necessary.

Cat. No.	UPC	Body Width In.	Length In.	Max. Wire Bundle Dia. In.	Military Standard Part No.	Tensile Strength Lb.
TY23M	**82436**	**.091**	**3.62**	**.625**	**MS3367-4**	**18**
TY24M	**82447**	**.140**	**5.50**	**1.125**	**MS3367-5**	**40**
TY25M	**82457**	**.184**	**7.31**	**1.750**	**MS3367-1**	**50**

1.7. The aircraft into which this product will be installed may be a new aircraft or an aircraft that has been in service. The configuration of the wiring and

cabling will vary from aircraft to aircraft. The installation of the Geneva Aviation Audio System should use existing wire and cable runs when possible as it will not interfere with the existing aircraft wiring.

1.8. These instructions call out cables by reference to the drawing that defines the cable construction details. The installer may, at the installer's discretion, substitute connectors, wire type, and connection details, so long as the final installations operate correctly and meets FAA standards.

1.9. The Router features a COM1 Isolate mode that automatically connects the pilot's headset and mic switches directly to COM1 in the event of power loss or failure of the Audio Router. The pilot may also activate the COM1 Direct mode using the EMERG/NORMAL switch on the G13115 and G13116 control panels. This feature may also be set up for the Copilot to activate a COM2 Isolate mode using the EMERG/NORMAL switch on the copilot control panel.

1.10. For Non-Pilot positions, Control Panels G13115NS or G13116NS may be used. The panels do not have an internal COM1, COM2 isolate switch. For these panels, do not connect to the COM1 or COM2 circuits shown in wiring diagrams G13004.

2.0 System Overview

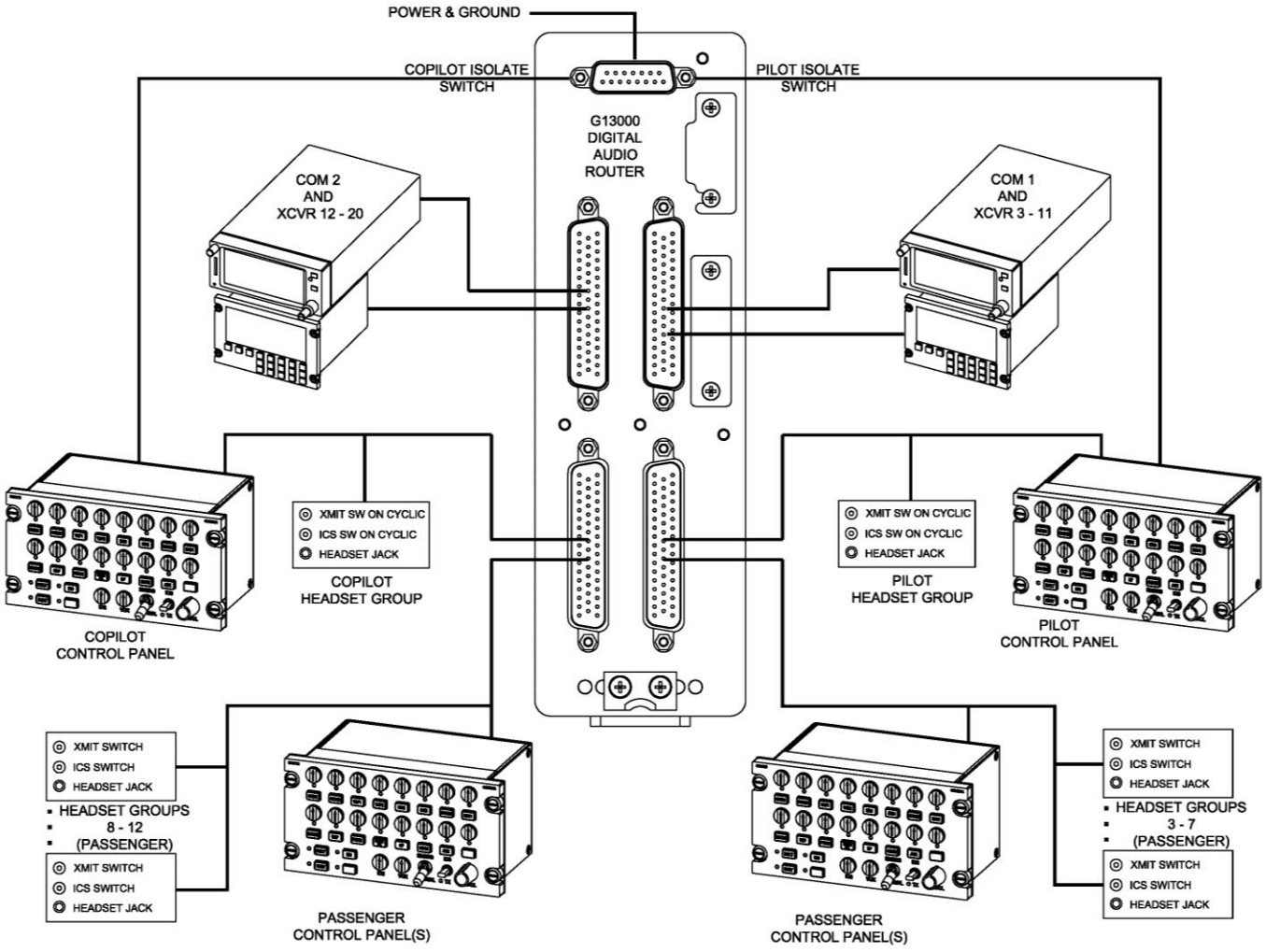


Figure 1

Digital Audio System Overview

2.1. The schematic shown in Figure 1 is a typical system. The installer may, at the installer's discretion, add or remove radios, control panels, headset groups, or ICS and Transmit PTT switches as needed.

2.2. Control Panels G13115 and G13116 may be used interchangeably, depending on the control functions desired and number of radios installed.

2.3. It is the installer's responsibility to document the system configuration as installed for maintenance purposes.

3.0 Component Installation & Hookup

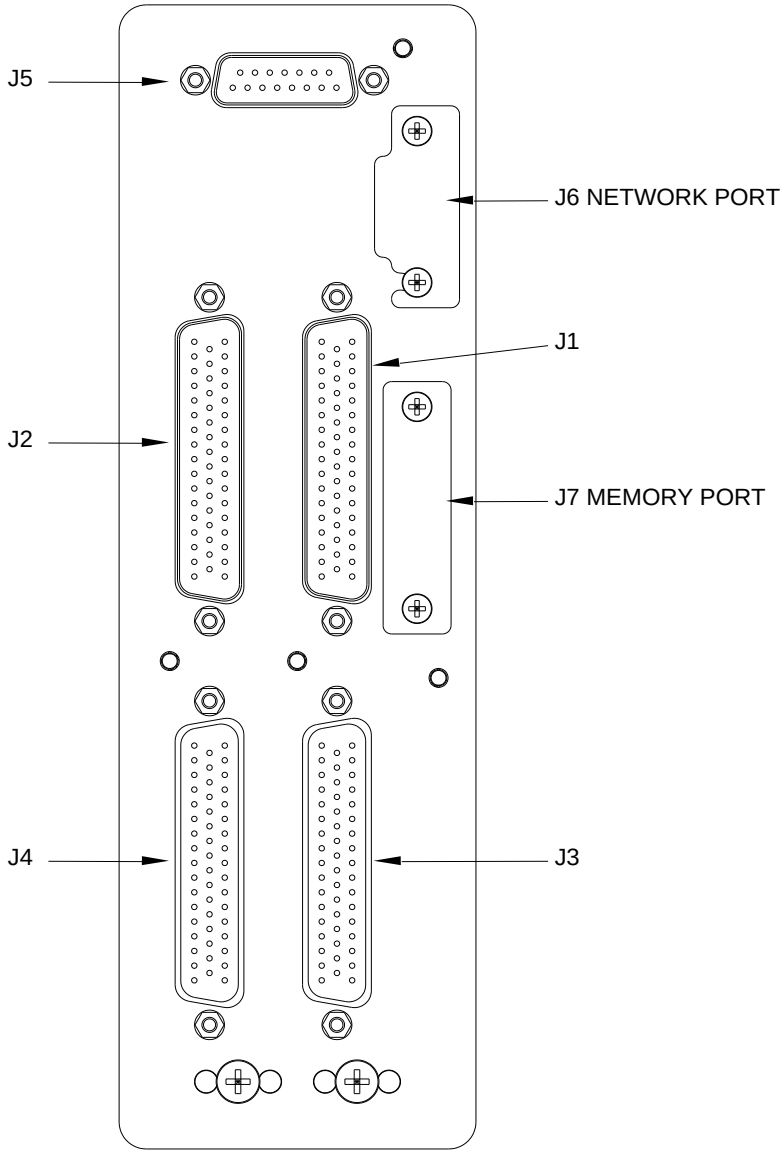


Figure 2

G13000 Router Connector Layout

3.1. G13000 Router Connections (see Figure 2)

3.1.1. J1 is used to connect COM1 and radios XCVR3 – XCVR11.

3.1.2. J2 is used to connect COM2 and radios XCVR12 – XCVR20.

3.1.3. J3 is used to connect the Pilot's control panel, Pilot's headset group, headset groups 3 – 7 and passenger control panels.

3.1.4. J4 is used to connect the Copilot's control panel, Copilot's headset group, headset groups 8 – 12 and additional passenger control panels.

3.1.5. J5 is used to connect power, ground, Pilot's COM1 Isolate, and Copilot's COM2 Isolate.

3.1.6. J6 is a network port used for system configuration adjustment.

3.1.7. J7 is a memory card slot used for storing system configuration data onto removable media.

3.1.8. The Router contains no user serviceable internal components. Do not disassemble router or the factory warranty will be voided. Return the unit to Geneva Aviation for service.

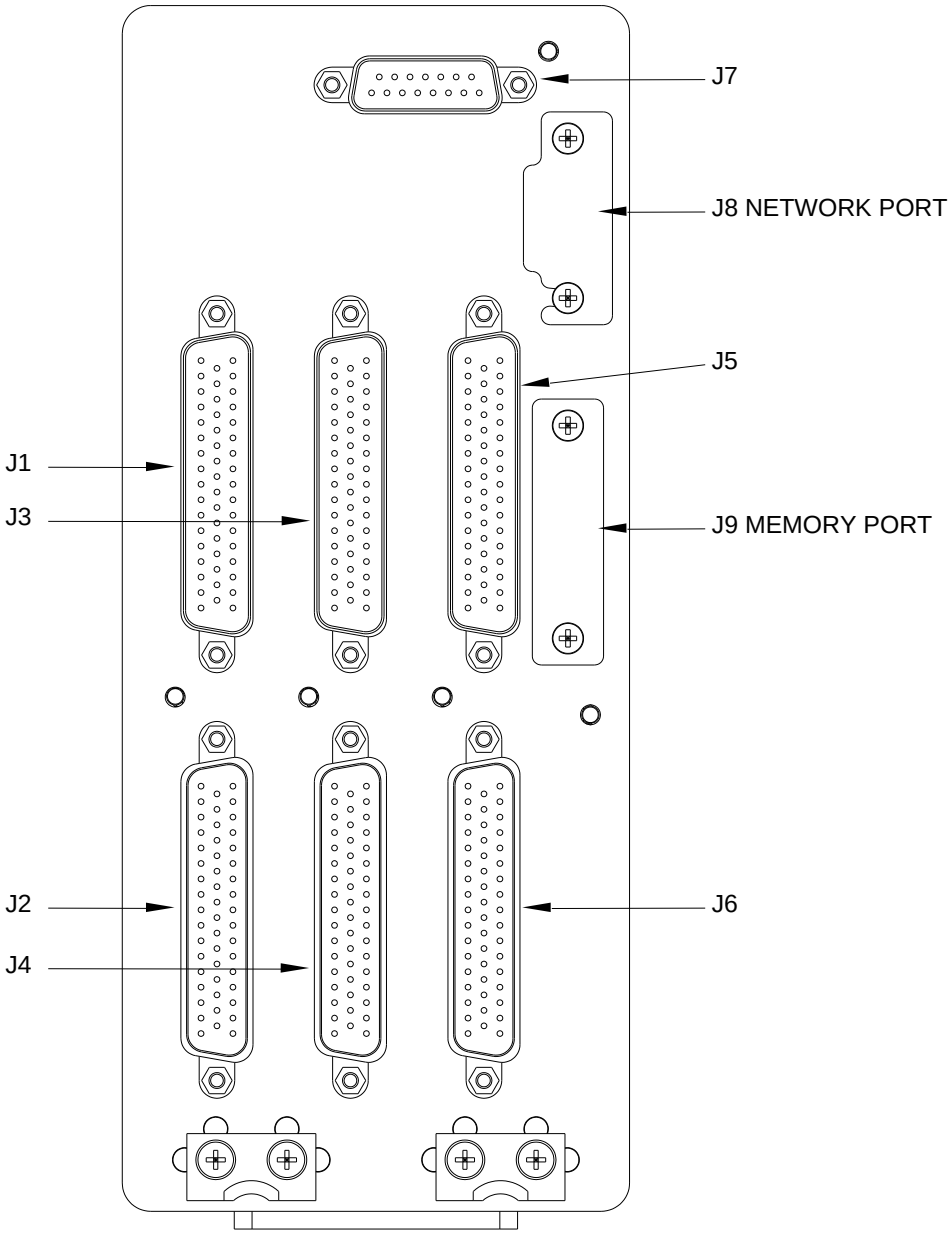


Figure 3

G13160 Router Connector Layout

3.2. G13160 Router Connections (see Figure 3)

3.2.1. J1 is used to connect radios COM1 and radios XCVR3 – XCVR11.

3.2.2. J2 is used to connect the Pilot's control panel, Pilot's headset group, headset groups 3 – 7 and passenger control panels.

3.2.3. J3 is used to connect radios COM2 and radios XCVR12 – XCVR20.

3.2.4. J4 is used to connect the Copilot's control panel, Copilot's headset group, headset groups 8 – 12 and additional passenger control panels.

3.2.5. J5 is used to connect radios XCVR21 – XCVR30.

3.2.6. J6 is used to connect headset groups 13 – 18 and additional passenger control panels.

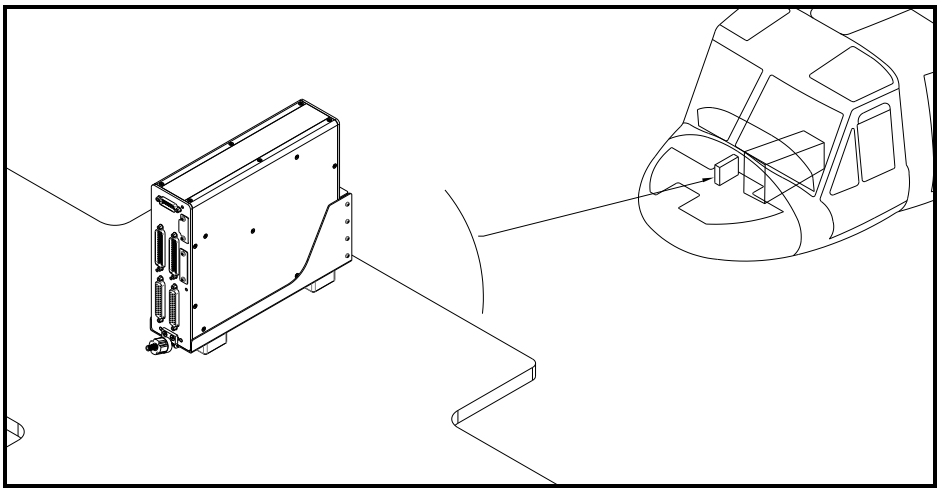
3.2.7. J7 is used to connect power, ground, Pilot's COM1 Isolate, and Copilot's COM2 Isolate.

3.2.8. J8 is a network port used for system configuration adjustment.

3.2.9. J9 is a memory card slot used for storing system configuration data onto removable media.

3.2.10. The Router contains no user serviceable internal components. Do not disassemble router or the factory warranty will be voided. Return the unit to Geneva Aviation for service.

3.3. Component Installation & Hookup



Router Installation in Avionics Shelf

3.3.1. Refer to drawing G13008 for installing the Router into the FWD Avionics Shelf.

3.3.2. Note: for the G13160 Router replace in G13008 the following items: G13009 with G13161; G13009-3 with G13161-3; G13006-2 with G13161-4 and use (3) MS24693S51 screws to install; use (2) NAS622CE2 Support Hooks.

3.3.3. Location shown is for reference only. The exact placement is dependant on other pre-existing equipment installed. It is the installer's responsibility to make sure this installation does not interfere with other installed equipment.

3.3.4. Optionally, the installer may, at the installer's discretion, install the router box into an alternate avionics bay or load rated structure. Its precise location is not critical to its function, however, it should not be located in an area that is exposed to the environment as the case is not environmentally sealed. Do not install near AC Inverters, or near other sources of heavy EMI.

3.3.5. For Router G13000, refer to drawing G13004 for the detailed wiring schematic used in this installation. For Router G13160, refer to drawing G13162 for the detailed wiring schematic used in this installation.

3.3.6. Be sure to carefully document the Radios and Control panels as installed and their related connections for future maintenance and troubleshooting purposes.

3.4. Control Panels

3.4.1. The Control Panels mount onto standard DZUS rails and should be mounted in locations designed for standard avionics mounting. The control panels connect to the router via the 4-wire GNET bus.

3.4.2. There can be more than one of these control panels in any combination connected to the system. Each audio board has two GNET ports giving 2, 4, 6 GNET ports for the P139 (S)/(D)/(T) routers respectively. If the configuration calls for more control panels than there are available GNET ports on the router, connect J1 of each control panel to a GNET port in parallel for pins 1 – 4. Pins 5 – 9 will be unique ID for each control panel connector. See G13004 sheet 9 for details.

3.4.3. The pilot control panel also controls the COM1 Isolate function. Optionally the copilot control panel controls the COM2 isolate function. See Section 1.8 for more information.

3.5. Control Panels G13115 & G13115NS

3.5.1. The G13115 & G13115NS Control panels provide separate transmit, receive and volume controls for up to 16 radios or other devices, as well as crew intercom functions and optionally installer-defined special functions. The G13115NS version does not have an EMERG/NORMAL switch and must not be used as a pilot or copilot primary panel.

3.6. Control Panels G13116 & G13116NS

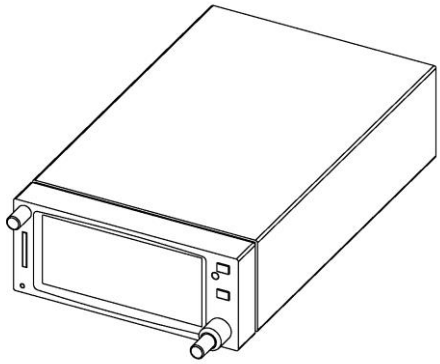
3.6.1. The G13116 & G13116NS Control panels provide separate transmit, receive and volume controls for up to 8 radios or other devices, as well as crew intercom functions and optionally installer-defined special functions. The G13116NS version does not have an EMERG/NORMAL switch and must not be used as a pilot or copilot primary panel.

3.7. Headset Ports

3.7.1. The Pilot and Copilot Headset Group consists of the headset jack, ICS switch and transmit switches on the cyclic and/or foot switches.

3.7.2. For each passenger, a unique Passenger Headset Group is needed. The Passenger Headset Group consists of the passenger's headset jack, an ICS switch and a transmit switch.

3.8. COM1, COM2 and other radio ports



3.8.1. The G13000 digital audio router supports up to 20 radios and the G13160 router supports up to 30 radios. Each radio should be installed in accordance with the manufacturer's instructions.

3.8.2. For the G13000 the following connections are available:

3.8.2.1. The COM1 radio connects to J1 on the Router along with radios XCVR3 - XCVR11 (refer to G13004 sheet 4).

3.8.2.2. The COM2 radio connects to J2 on the router along with radios XCVR12 - XCVR20 (refer to G13004 sheet 5).

3.8.3. For the G13160 the following connections are available:

3.8.3.1. The COM1 radio connects to J1 on the Router along with radios XCVR3 - XCVR11 (refer to G13162 sheet 5).

3.8.3.2. The COM2 radio connects to J3 on the router along with radio ports XCVR12 - XCVR20 (refer to G13162 sheet 6).

3.8.3.3. Radios XCVR21 - XCVR30 connect to J5 on the router (refer to G13162 sheet 7).

3.8.4. While the term radio is used throughout this document, any type of audio device can be connected, such as tape recorders, scanners, telephones, hand-held radios, etc.

There is normally no need for any type of universal radio adapter between an audio device and the router.

4.0 Functional Check

4.1. Perform a check of all power and ground leads to confirm they are connected properly before applying power to the system. Incorrect wiring may cause damage to the units.

4.2. Connect headset adapter cables, headsets and switches. Apply power to audio system, radios and related accessories. Activate ICS and confirm proper operation. Place ‘PILOT EMERG/NORMAL’ switch in ‘EMERG’ position. Key transmit switch and confirm proper operation of COM1.

4.3. Place the ‘PILOT EMERG/NORMAL’ switch in ‘NORMAL’ position and check all transceivers, receivers and audio devices.

4.4. If the system is equipped with a ‘COPILOT EMERG/NORMAL’ switch, repeat the steps in sections 4.2 and 4.3 for Copilot position and COM2 respectively.

4.5. Check all pilot, copilot and passenger audio control panels for proper audio levels and operation. Should adjustments be required, follow the instructions in document GA063-3.

5.0 Load Analysis

5.1. At the completion of the installation of the audio system, the installer shall perform a load analysis test of the electrical branch circuit that powers the audio system, and also the entire aircraft electrical load, to confirm that the addition of the audio system will not cause an overload to the electrical branch circuit or the aircraft generator.

5.2. The current shall be measured using a properly calibrated ammeter. A clamp-on amp meter, such as Amprobe Instrument model number ACDC-600A, or equivalent will make this job easier.

5.3. Perform the branch circuit load analysis test by powering up all equipment that is intended to be operated at the same time on the branch circuit that the audio system is connected to. Additionally, key the three highest power communication transmitters at the same time, if possible, while the current measurements are being taken.

5.4. Measure the current of the branch circuit powering the audio system, by clamping the meter around the branch circuit wire near its origin. Confirm that the current draw during the above described test conditions is less than the current limiter (fuse or circuit breaker) rating for that branch circuit.

5.5. If the current draw is greater than the current limiter rating, it becomes the installer's responsibility to re-distribute some of the other equipment powered by this branch circuit to another suitable branch circuit, in order to reduce the load on the audio system's branch circuit to less than the current limiter rating.

5.6. Once the branch circuit loads are within limits, test the current load for the entire aircraft while all power for the aircraft is being supplied by the aircraft generator, battery, or external power source. Perform this load analysis test by powering up all equipment on the aircraft that is intended to be operated at the same time as the audio system. Additionally, key the three highest power communication transmitters at the same time, if possible, while the current measurements are being taken. Clamp the ammeter around the power source. Confirm that the current draw during the above described test is less than the generator rating.

5.7. Upon satisfactory completion of these load analysis tests, make an aircraft logbook entry that these tests have been performed satisfactorily in accordance with this STC.

6.0 Interference Test Procedure

6.1. Perform electrical interference test using GA1-2TP test procedure.

7.0 Final Inspection

7.1. Perform final inspection of installation confirming:

7.1.1. There are no chaffing issues.

7.1.2. There are no mechanical interference issues.

7.1.3. Security of fasteners.

7.1.4. Removal of all tools.

7.1.5. Chips, shavings and other debris are removed.

7.1.6. Proper reassembly of aircraft.

7.1.7. Aircraft is airworthy prior to returning to service.

8.0 FAA Requirements

8.1. Amend the weight and balance records and make the necessary log book entry. Complete an FAA form 337 showing the installation of this equipment in accordance with the STC instructions and submit one copy to the FAA and one copy to the aircraft owner. File all data and a copy of the STC with the aircraft records.

LOG OF REVISIONS

REVISION LEVEL	DATE OF REVISION	PAGES	DESCRIPTION OF CHANGE	APPROVAL
NC	3/25/13	All Pages	Initial Release	CLB
A	4/23/14	ALL	Added G13160 3-Board Router	CLB

GA1-2TP
REV: C
5/13/2012

EMI Test Procedure

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LOG OF REVISIONS

REVISION LEVEL	DATE OF REVISION	PAGES	DESCRIPTION OF CHANGE	APPROVAL
-	8/08/1997	ALL	Initial Release	GLH
A	9/08/1997	2	Added “LIST OF REVISIONS” Page	GLH
B	10/16/1998	3, 4	Added coverage for FADEC aircraft under Scope. Revised procedure under Transponder test.	GLH
C	5/13/2012	ALL	Revised Scope to remove FADEC references; Revised FAR references to CFR; Updated checklist for “other” equipment; Updated format of document to current standards;	CLB

Scope

This document is a test plan to be used to establish that newly installed electrical equipment does not interfere with essential aircraft equipment in any way that would impair safety of flight of the aircraft. Satisfactory completion of this test plan confirms that the newly installed equipment satisfies the EMI requirements of the Federal Aviation Administration. This test plan is applicable to FAR part 29 Rotorcraft.

Applicable Documents

CFR 29.1309(c), 29.1351(b)(1), 29.1351(b)(2) and AC25-10 Paragraph 5, sections: (m)(4) & (n).

Witnessing of EMI Test

This test shall be witnessed by someone who is authorized by the FAA to return the aircraft to service. This would include an FAA licensed Avionics Technician, A&P Mechanic, Inspector of Airworthiness, or the Repair Station's Director of Maintenance. In addition, an FAA representative, such as a DAR or DER may witness the test.

Equipment Under Test

The newly installed Equipment Under Test (EUT) by this test plan shall be in proper working order throughout the test. If the EUT fails during this test, then this test shall be repeated with the EUT in proper working order.

Test Procedure

Testing shall normally be conducted with the aircraft running on the ground, or with battery or external ground power where appropriate. In the event that an aircraft system or component can only be evaluated for the effects of interference with the aircraft in flight, then the evaluation of that system or component shall be conducted with the aircraft in flight. Testing conducted with the aircraft in flight shall be performed with safety of flight in mind and with only necessary personnel on board.

Testing shall be conducted on the aircraft with all aircraft systems and equipment operating normally, and cycled as necessary to conduct the test. The EUT shall be operated normally. The EUT shall be cycled on and off. The EUT shall also be cycled through all of its operating modes.

Each aircraft system or component being evaluated for the effects of EMI will be observed as the EUT is cycled. A transient motion or flicker is acceptable provided no permanent deviation is established. There can be no stand-off conditions displayed on an instrument. In the case of audio equipment being evaluated for the effects of EMI, a change in the audio (such as background noise) that does not interfere with the intended purpose of the audio is acceptable.

For each aircraft system or component being evaluated for the effects of EMI, mark the item as PASS or FAIL based upon the outcome of this test procedure.

If an aircraft system or component being evaluated for the effects of EMI Fails this test procedure, then corrective action must be taken to reduce the interference to an acceptable level which allows the aircraft system or component being evaluated for the effects of EMI to PASS this test. When re-testing after corrective action, the only tests to be repeated are the tests that Failed previously. Items that previously Passed do not need to be re-tested, unless the method of corrective action results in changes to the EUT, which might cause the EUT to Fail previously Passed items. Mark the N/A __ field on the re-test test plan for the items that previously Passed and are not being re-tested.

Items To Evaluate

The following is a list of aircraft systems or components that must be evaluated for the effects of EMI if they are installed and are to be used at the same time as the EUT. If the item listed below is not installed or otherwise not applicable, then mark the N/A __ field.

Engine Temperature Indicator	N/A __	Pass __	Fail __
Engine RPM Indicator	N/A __	Pass __	Fail __
Engine Torque Indicator	N/A __	Pass __	Fail __
Engine Fuel Control	N/A __	Pass __	Fail __
Engine Oil Pressure Indicator	N/A __	Pass __	Fail __
Engine Oil Temperature Indicator	N/A __	Pass __	Fail __
Rotor RPM Indicator	N/A __	Pass __	Fail __
Fuel Quantity Indicator	N/A __	Pass __	Fail __
Fuel Pressure Indicator	N/A __	Pass __	Fail __
Generator Voltage Indicator	N/A __	Pass __	Fail __
Battery Voltage Indicator	N/A __	Pass __	Fail __
Directional Gyro / Heading Indicator	N/A __	Pass __	Fail __
Attitude Indicator	N/A __	Pass __	Fail __
Turn and Bank Indicator	N/A __	Pass __	Fail __
Annunciator Indicators	N/A __	Pass __	Fail __
Flight Time Hour Meter	N/A __	Pass __	Fail __
Warning Horn	N/A __	Pass __	Fail __
Outside Air Temperature Indicator	N/A __	Pass __	Fail __

Transponder N/A __ Pass __ Fail __

Set controls to mode C code 1200, or other code assigned by ATC. Cycle EUT and confirm proper data transmitted, either by use of transponder ground test equipment, or by confirmation from ATC of proper reception of correct data. Check for proper operation of reply light.

VOR N/A __ Pass __ Fail __

Set Voice/Ident to Voice. Check frequencies for audible interference sounds. Set local VOR frequency for full needle displacement. Adjust course select knob for gradual reduction of needle displacement to half, fourth, and zero. Note stability at each displacement and that zero can be achieved without a standoff.

DME N/A __ Pass __ Fail __

Perform self test with EUT cycled. Note that no skips in miles display occurs. Observe that mile indications do not drift and there is no audible interference in Ident tone.

Magnetic Compass N/A __ Pass __ Fail __

Swing compass and adjust with EUT operating normally. If EUT causes erratic operation of magnetic compass, then mark compass as Fail.

VHF Communications System N/A __ Pass __ Fail __

Tune each comm receiver to a low, middle, and high frequency within its frequency range. Listen for audio interference. Transmit on low, middle, and high frequencies. Listen on an external receiver for audio interference.

GPS Navigation Receiver N/A __ Pass __ Fail __

Check for proper operation. Observe signal to noise ratio readings to determine if reception is interfered with.

Crew Interphone System N/A __ Pass __ Fail __

Check for normal operation of the interphone system. Listen for excessive background noise.

ADF N/A __ Pass __ Fail __

Check for needle offset. Listen for audio interference.

Glide Slope/LOC N/A __ Pass __ Fail __

Check for needle offset. Perform test using TAC/30b or equivalent ground test equipment, or during flight while established on an ILS glide slope.

Radio Altimeter N/A __ Pass __ Fail __

Perform test with appropriate ground test equipment, or check reading in flight.

The space below is provided to include additional systems or devices not listed previously. These would include any Transceivers, Nav Aids, Radar, or Auto Pilot systems. Use the Manufacturers test procedures for each component listed with the EUT operating normally.

Other Equipment: _____ N/A __ Pass __ Fail __

Describe test: _____

_____

Other Equipment: _____ N/A __ Pass __ Fail __

Describe test: _____

_____

Other Equipment: _____ N/A __ Pass __ Fail __

Describe test: _____

_____

Other Equipment: _____ N/A __ Pass __ Fail __

Describe test: _____

_____

Other Equipment: _____ N/A __ Pass __ Fail __

Describe test: _____

_____

Other Equipment: _____ N/A __ Pass __ Fail __

Describe test: _____

_____

Other Equipment: _____ N/A __ Pass __ Fail __

Describe test: _____

_____

Other Equipment: _____ N/A __ Pass __ Fail __

Describe test: _____

_____

Other Equipment: _____ N/A __ Pass __ Fail __

Describe test: _____

_____

Other Equipment: _____ N/A __ Pass __ Fail __

Describe test: _____

_____

Other Equipment: _____ N/A __ Pass __ Fail __

Describe test: _____

_____

Aircraft Tested:

Model _____, Registration _____, Serial Number _____

Location of Test _____, Date _____

Equipment Under Test:

List: MODEL, PART NUMBER, SERIAL NUMBER

_____

_____

_____

_____

_____

_____

_____

_____

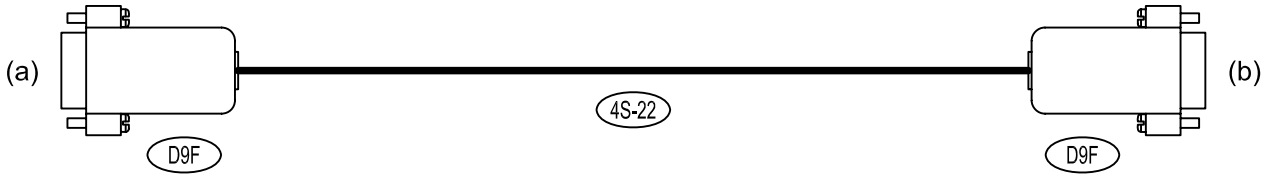
Test performed by _____
Name Credentials

Test witnessed by _____
Name Credentials

I hereby certify that I have witnessed the above documented test and that the results documented above reflect my observations.

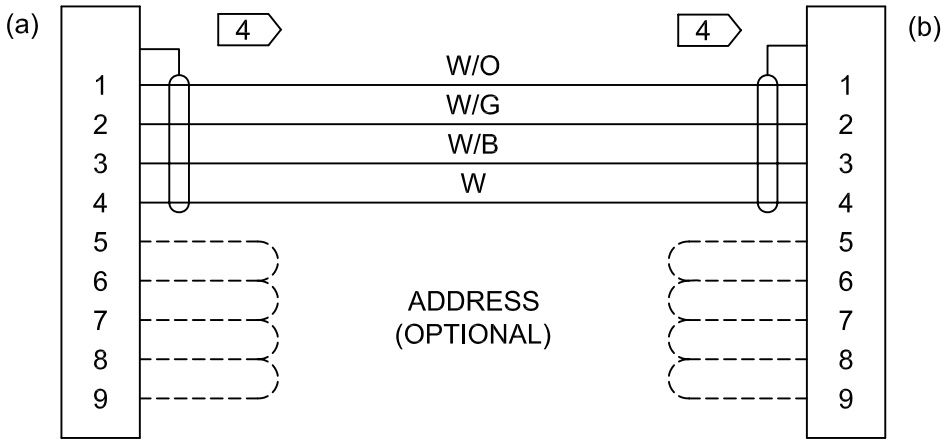
_____ _____
Signature Date

REVISIONS			
REV	DESCRIPTION	APPROVED	DATE
B	UPDATED DRAWING VISUALLY	CB	1/4/02
C	CORRECTED GROUNDING, UPDATED DRAWING VISUALLY, CHANGED NOTES, BORDER & GENEVA LOGO	XY	5/9/06



CONNECT THE FOLLOWING PINS TOGETHER
FOR GNET ADDRESSING AS SPECIFIED IN
SYSTEM REQUIREMENTS

0 = 5-6-7-8-9	8 = 5-6-7-9
1 = 6-7-8-9	9 = 6-7-9
2 = 5-7-8-9	A = 5-7-9
3 = 7-8-9	B = 7-9
4 = 5-6-8-9	C = 5-6-9
5 = 6-8-9	D = 6-9
6 = 5-8-9	E = 5-9
7 = 8-9	F = NONE



NOTES

1. REFER TO GEVEVA DOCUMENT G12100 TO IDENTIFY MATERIALS LABELED ON THIS DRAWING.
2. REFER TO GENEVA DOCUMENT G12101 FOR FABRICATION AND INSPECTION INFORMATION.
3. REFER TO GENEVA DOCUMENT FOR WIRE ROUTING IN APPROPRIATE STC FOR LENGTH AND ROUTING INFORMATION REQUIRED TO FABRICATE A PARTICULAR DASH NUMBER.
4. USE M22759/16-24-9 24GA WIRE 1.5" LONG FOR ADDRESSING.
5. LEAVE ADDRESS PINS DISCONNECTED UNLESS INSTRUCTED OTHERWISE.

BREAK SHARP EDGES
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ARE:
FRACTIONS ±1/8" DECIMAL .X ±.050 .XX ±.030 .XXX ±.010 ANGLES ±2°

DESIGNED	DT	DATE 4/8/97
DRAWN		DATE
CHECKED		DATE
APPROVED	MH	DATE 4/8/97

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GENEVA AVIATION

TITLE
CABLE, GNET, STANDARD

DRAWING NUMBER G12019	REV C		
PRO NO GA182	SIZE A	SHEET 1 of 1	

REVISIONS			
REV	DESCRIPTION	APPROVED	DATE
A	UPDATED DRAWING VISUALLY	CB	1/9/03
B	REPLACED VENDOR PART NUMBERS WITH MANUFACTURER PART NUMBERS, ADDED ADDITIONAL PART NUMBERS TO 18A, ADDED NOTES	CB	6/15/05
C	UPDATED DRAWING VISUALLY, ADDED SEVERAL PARTS, VERIFIED ALL PARTS, CHANGED NOTES, BORDER & GENEVA LOGO	XY	5/9/06
D	UPDATED PART NUMBERS FOR RoHS COMPLIANCE	GA	11/21/07

D9F OR 9F

9 POSITION FEMALE D SUBMINIATURE CONNECTOR
CONNECTOR: TYCO/AMP 1757820-1
CONTACTS: TYCO/AMP 205090-1
BACKSHELL: KOBICONN 156-3009-E

D9M OR 9M

9 POSITION MALE D SUBMINIATURE CONNECTOR
CONNECTOR: TYCO/AMP 1757819-1
CONTACTS: TYCO/AMP 205089-1
BACKSHELL: KOBICONN 156-3009-E

D15F OR 15F

15 POSITION FEMALE D SUBMINIATURE CONNECTOR
CONNECTOR: TYCO/AMP 1757820-21
CONTACTS: TYCO/AMP 205090-1
BACKSHELL: KOBICONN 156-3015-E

D15M OR 15M

15 POSITION MALE D SUBMINIATURE CONNECTOR
CONNECTOR: TYCO/AMP 1757819-2
CONTACTS: TYCO/AMP 205089-1
BACKSHELL: KOBICONN 156-3015-E

D25F OR 25F

25 POSITION FEMALE D SUBMINIATURE CONNECTOR
CONNECTOR: TYCO/AMP 1757820-3
CONTACTS: TYCO/AMP 205090-1
BACKSHELL: KOBICONN 156-3025-E

D25M OR 25M

25 POSITION MALE D SUBMINIATURE CONNECTOR
CONNECTOR: TYCO/AMP 1757819-3
CONTACTS: TYCO/AMP 205089-1
BACKSHELL: KOBICONN 156-3025-E

D37F OR 37F

37 POSITION FEMALE D SUBMINIATURE CONNECTOR
CONNECTOR: TYCO/AMP 1757820-4
CONTACTS: TYCO/AMP 205090-1
BACKSHELL: KOBICONN 156-3037-E

D37M OR 37M

37 POSITION MALE D SUBMINIATURE CONNECTOR
CONNECTOR: TYCO/AMP 1757819-4
CONTACTS: TYCO/AMP 205089-1
BACKSHELL: KOBICONN 156-3037-E

D15FS OR 15FS

15 POSITION FEMALE D SUBMINIATURE CONNECTOR, SOLDER CUP
CONNECTOR: TYCO/AMP 5-747909-2
BACKSHELL: KOBICONN 156-3015-E

15HMS

15 POSITION MALE D SUBMINIATURE CONNECTOR, SOLDER CUP, HIGH DENSITY
CONNECTOR: NORCOMP 180-015-103L001
BACKSHELL: KOBICONN 156-3009-E

U92

U92/UA HELICOPTER HEADSET JACK
BULKHEAD: NEXUS TJ-120
INLINE: NEXUS TJ-102

2F

2 POSITION FEMALE MATE-N-LOK CONNECTOR
CONNECTOR: TYCO/AMP 1-480318-0
CONTACTS: TYCO/AMP 60617-1

2M

2 POSITION MALE MATE-N-LOK CONNECTOR
CONNECTOR: TYCO/AMP 1-480319-0
CONTACTS: TYCO/AMP 60618-1

4F3

3 POSITION FEMALE INLINE XLR CONNECTOR
DELTRON 712-0300

4F4

4 POSITION FEMALE INLINE XLR CONNECTOR
DELTRON 712-0400

4F5

5 POSITION FEMALE INLINE XLR CONNECTOR
DELTRON 712-0500

4M3

3 POSITION MALE INLINE XLR CONNECTOR
DELTRON 713-0300

4M4

4 POSITION MALE INLINE XLR CONNECTOR
DELTRON 713-0400

NOTES

1. GENERIC COMPONENTS LISTED ABOVE MAY BE SUBSTITUTED AT THE INSTALLER'S DISCRETION.
2. ALL COMPONENTS LISTED ABOVE MAY BE SUBSTITUTED WITH A COMPONENT OF THE SAME TYPE THAT MATCHES OR EXCEEDS THE CURRENT AND FIRE RATINGS OF THE COMPONENT LISTED.
3. THE FOLLOWING ARE CONSIDERED GENERIC COMPONENTS: HOODS, BACKSHELLS, XLR CONNECTORS, BNC CONNECTORS (BE SURE TO MATCH IMPEDANCE AND CABLE TYPE), AUDIO CONNECTORS AND CONNECTOR MOUNTING HARDWARE (SCREWS, NUTS, LATCHING HARDWARE, ETC.)
4. COMPONENT COLOR IS OPTIONAL

BREAK SHARP EDGES
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ARE:
FRACTIONS ±1/8" DECIMAL .X ±.050 .XX ±.030 .XXX ±.010 ANGLES ±2°

DESIGNED	DT	DATE	2/24/98
DRAWN		DATE	
CHECKED		DATE	
APPROVED	MH	DATE	4/3/98

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GENEVA AVIATION

TITLE
CONNECTOR AND WIRE PART LIST

DRAWING NUMBER	G12100	REV	D
PRO NO	GA182	SIZE	A
SHEET	1 OF 3		

REVISIONS			
REV	DESCRIPTION	APPROVED	DATE
A	UPDATED DRAWING VISUALLY	CB	1/9/03
B	REPLACED VENDOR PART NUMBERS WITH MANUFACTURER PART NUMBERS, ADDED ADDITIONAL PART NUMBERS TO 18A, ADDED NOTES	CB	6/15/05
C	UPDATED DRAWING VISUALLY, ADDED SEVERAL PARTS, VERIFIED ALL PARTS, CHANGED NOTES, ADDED PAGE 3, BORDER & GENEVA LOGO	XY	5/9/06
D	UPDATED PART NUMBERS FOR RoHS COMPLIANCE	GA	11/21/07

4M5	5 POSITION MALE INLINE XLR CONNECTOR DELTRON 713-0300
5F3	3 POSITION FEMALE BULKHEAD XLR CONNECTOR DELTRON 724-0300
5F4	4 POSITION FEMALE BULKHEAD XLR CONNECTOR DELTRON 724-0400
5F5	5 POSITION FEMALE BULKHEAD XLR CONNECTOR DELTRON 724-0500
5M3	3 POSITION MALE BULKHEAD XLR CONNECTOR DELTRON 725-0300
5M4	4 POSITION MALE BULKHEAD XLR CONNECTOR DELTRON 725-0400
5M5	5 POSITION MALE BULKHEAD XLR CONNECTOR DELTRON 725-0500
4A	4 POSITION FEMALE CIRCULAR CONNECTOR HIROSE HR10A-7P-4S(73)
6A	BNC CONNECTOR, COAXIAL, 75Ω KINGS 2065-11-9
6B	BNC CONNECTOR, TRIAXIAL, 50Ω TYCO/AMP 5225395-1
7B	CANNON PLUG AMPHENOL INDUSTRIAL MS3116F8-4S
7C	CANNON PLUG AMPHENOL INDUSTRIAL MS3116F12-10S
8A	1/8" MONO AUDIO CONNECTOR KOBICONN 171-1041
8B	2.5MM DC POWER PLUG KOBICONN 171-0702-EX
8C	2.1MM DC POWER PLUG KOBICONN 171-3217-EX
9A	RCA PLUG DELTRON 333-0000
10A	RIGHT ANGLE SMA CONNECTOR, COAXIAL, 50Ω AMPHENOL 901-9873
11A	RING TERMINAL, RED, #6 TYCO/AMP 36152
12A	RING TERMINAL, RED, #6 TYCO/AMP 36152
15A	16 POSITION IDC SOCKET CONNECTOR CONNECTOR: TYCO 1658621-3 STRAIN RELIEF: TYCO 499252-8
16A	2MM DOUBLE ROW CONNECTOR HIROSE DF11-10DS-2C
17A	8C SILVER SATIN CABLE KOBICONN 172-UL8010-E
18A	COAXIAL CABLE, 75Ù GEPCO VDM250
18B	COAXIAL CABLE, 50Ù MIL-C-17/060 (RG-142)
18C	TRIAXIAL CABLE, 50Ù BELDEN 9222
19A	QUAD STAR MICROPHONE CABLE GEPCO MP1201
1U-8	SINGLE CONDUCTOR UNSHIELDED, 8 GAGE MIL-W-22759/16-8-9
1U-10	SINGLE CONDUCTOR UNSHIELDED, 10 GAGE MIL-W-22759/16-10-9
1U-16	SINGLE CONDUCTOR UNSHIELDED, 16 GAGE MIL-W-22759/16-16-9

NOTES

1. GENERIC COMPONENTS LISTED ABOVE MAY BE SUBSTITUTED AT THE INSTALLER'S DISCRETION.
2. ALL COMPONENTS LISTED ABOVE MAY BE SUBSTITUTED WITH A COMPONENT OF THE SAME TYPE THAT MATCHES OR EXCEEDS THE CURRENT AND FIRE RATINGS OF THE COMPONENT LISTED.
3. THE FOLLOWING ARE CONSIDERED GENERIC COMPONENTS: HOODS, BACKSHELLS, XLR CONNECTORS, BNC CONNECTORS (BE SURE TO MATCH IMPEDANCE AND CABLE TYPE), AUDIO CONNECTORS AND CONNECTOR MOUNTING HARDWARE (SCREWS, NUTS, LATCHING HARDWARE, ETC.)
4. COMPONENT COLOR IS OPTIONAL

BREAK SHARP EDGES

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

TOLERANCES ARE:

FRACTIONS	DECIMAL	ANGLES
±1/8"	.X ±.050	±2°
	.XX ±.030	
	.XXX ±.010	

DESIGNED	DT	DATE 2/24/98
DRAWN		DATE
CHECKED		DATE
APPROVED	MH	DATE 4/3/98

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GENEVA AVIATION

TITLE
CONNECTOR AND WIRE PART LIST

DRAWING NUMBER G12100	REV D		
PRO NO GA182	SIZE A	SHEET 2 OF 3	

REVISIONS			
REV	DESCRIPTION	APPROVED	DATE
A	UPDATED DRAWING VISUALLY	CB	1/9/03
B	REPLACED VENDOR PART NUMBERS WITH MANUFACTURER PART NUMBERS, ADDED ADDITIONAL PART NUMBERS TO 18A, ADDED NOTES	CB	6/15/05
C	UPDATED DRAWING VISUALLY, ADDED SEVERAL PARTS, VERIFIED ALL PARTS, CHANGED NOTES, ADDED PAGE 3, BORDER & GENEVA LOGO	XY	5/9/06
D	UPDATED PART NUMBERS FOR RoHS COMPLIANCE	GA	11/21/07

1U-18	SINGLE CONDUCTOR UNSHIELDED, 18 GAGE MIL-W-22759/16-18-9
1U-20	SINGLE CONDUCTOR UNSHIELDED, 20 GAGE MIL-W-22759/16-20-9
1U-22	SINGLE CONDUCTOR UNSHIELDED, 22 GAGE MIL-W-22759/16-22-9
1U-24	SINGLE CONDUCTOR UNSHIELDED, 24 GAGE MIL-W-22759/16-24-9
1S-10	SINGLE CONDUCTOR SHIELDED, 10 GAGE MIL-DTL-27500-10TG1T14
1S-14	SINGLE CONDUCTOR SHIELDED, 14 GAGE MIL-DTL-27500-14TG1T14
1S-16	SINGLE CONDUCTOR SHIELDED, 16 GAGE MIL-DTL-27500-16TG1T14
1S-18	SINGLE CONDUCTOR SHIELDED, 18 GAGE MIL-DTL-27500-18TG1T14
1S-20	SINGLE CONDUCTOR SHIELDED, 20 GAGE MIL-DTL-27500-20TG1T14
1S-22	SINGLE CONDUCTOR SHIELDED, 22 GAGE MIL-DTL-27500-22TG1T14
2S-20	SHIELDED TWISTED PAIR, 20 GAGE MIL-DTL-27500-20TG2T14
2S-22	SHIELDED TWISTED PAIR, 22 GAGE MIL-DTL-27500-22TG2T14
3S-22	SHIELDED TWISTED TRIPLE, 22 GAGE MIL-DTL-27500-22TG3T14
4S-22	SHIELDED TWISTED QUAD, 22 GAGE MIL-DTL-27500-22TG4T14
15S-22	15 CONDUCTOR SHIELDED, 22 GAGE WIREMASTERS WMTZWAAF247
16U-28	16 CONDUCTOR RIBBON CABLE, 28 GAGE 3M 3365/16SF

NOTES

1. GENERIC COMPONENTS LISTED ABOVE MAY BE SUBSTITUTED AT THE INSTALLER'S DISCRETION.
2. ALL COMPONENTS LISTED ABOVE MAY BE SUBSTITUTED WITH A COMPONENT OF THE SAME TYPE THAT MATCHES OR EXCEEDS THE CURRENT AND FIRE RATINGS OF THE COMPONENT LISTED.
3. THE FOLLOWING ARE CONSIDERED GENERIC COMPONENTS: HOODS, BACKSHELLS, XLR CONNECTORS, BNC CONNECTORS (BE SURE TO MATCH IMPEDANCE AND CABLE TYPE), AUDIO CONNECTORS AND CONNECTOR MOUNTING HARDWARE (SCREWS, NUTS, LATCHING HARDWARE, ETC.)
4. COMPONENT COLOR IS OPTIONAL

BREAK SHARP EDGES

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

TOLERANCES ARE:

FRACTIONS	DECIMAL	ANGLES
±1/8"	.X ±.050	±2°
	.XX ±.030	
	.XXX ±.010	

DESIGNED		DATE
DRAWN	MS	DATE 5/9/06
CHECKED		DATE
APPROVED		DATE

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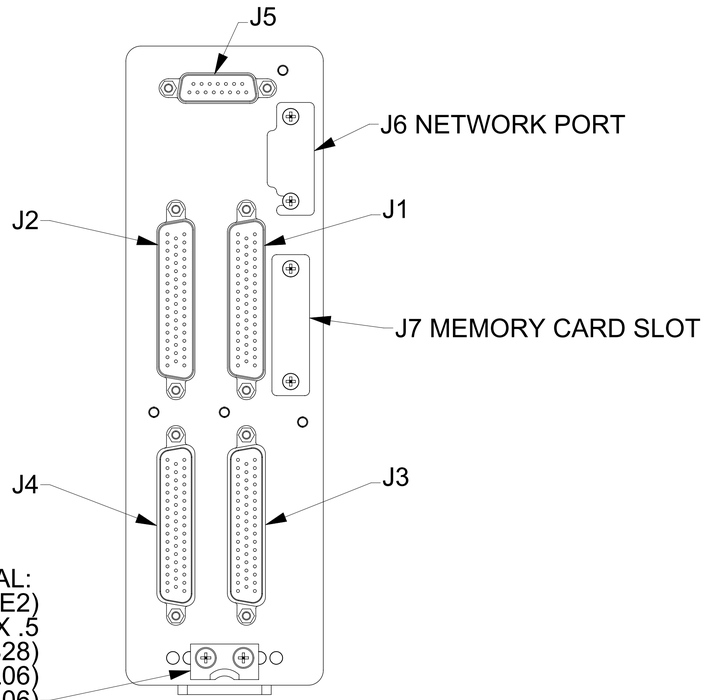
GENEVA AVIATION

TITLE
CONNECTOR AND WIRE PART LIST

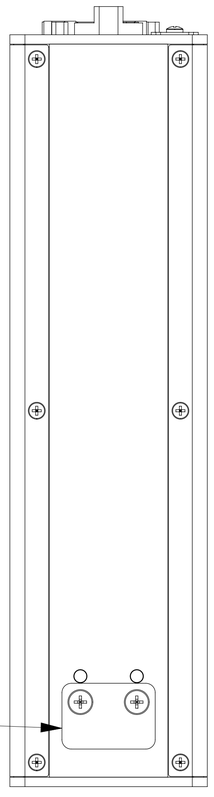
DRAWING NUMBER	G12100	REV	D		
PRO NO	GA182	SIZE	A	SHEET	3 OF 3

REVISIONS		
REV	DESCRIPTION	APPROVED/DATE
A	REVISED LABEL ON J7	5/12/09 CLB
B	ADDED SINGLE BOARD CONFIGURATION NOTE	6/10/11 CLB
C	REVISED FRONT SCREWS FOR G13009 TRAY	1/13/12 CLB
D	ADDED OPTIONAL FRONT AND BOTTOM CLIPS FOR TRAY INSTALLATION	11/30/12 CLB
E	VOLTAGE RANGE WAS 10 - 30 VDC	08/13/14 CLB

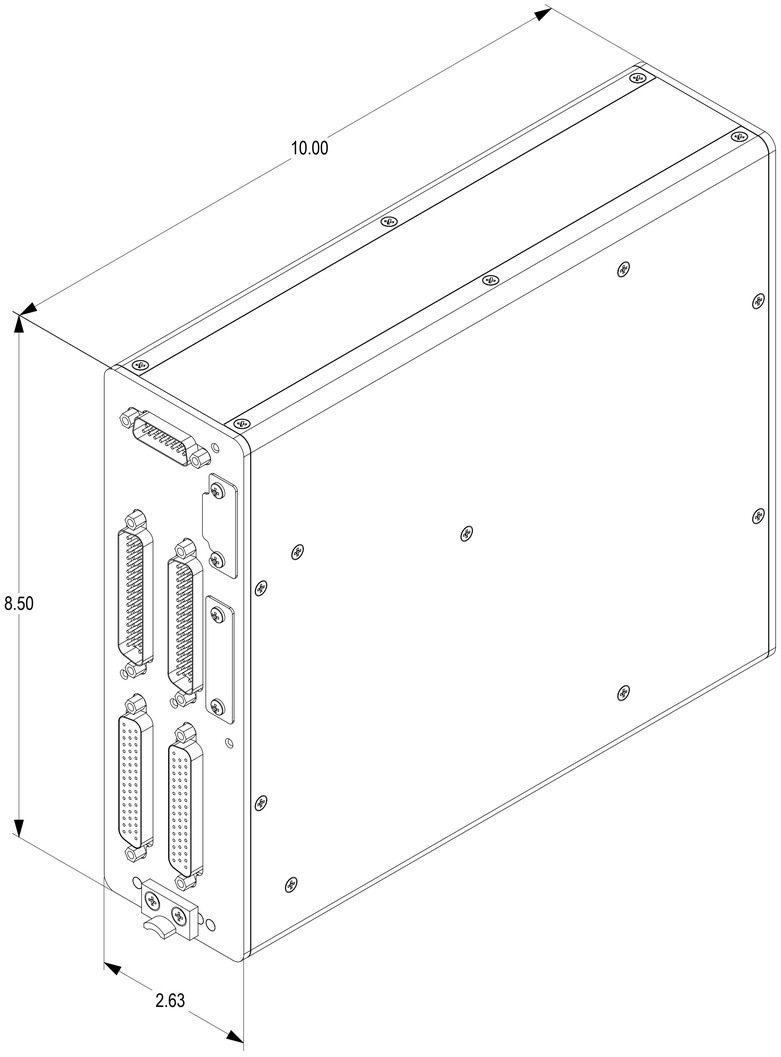
G13000 P139-HD ROUTER
WEIGHT = 5 LBS MAX
POWER = 5 AMPS MAX
VOLTAGE = 14 - 32 VDC



OPTIONAL:
SUPPORT HOOK (NAS622CE2)
INSTALLED WITH (2) #6-32 X .5
FLAT HEAD SCREWS (MS24693S28)
AND NUTPLATES (MS21071L06)
OR LOCKNUTS (MS21042L06)



OPTIONAL:
CLIP G13006-2
INSTALLED WITH (2) #8-32 X .62
FLAT HEAD SCREWS (MS24693S51)
AND NUTPLATES (MS21059L08)



OPTIONAL SINGLE AUDIO BOARD CONFIGURATION:
J1 AND J3 ARE REPLACED WITH COVER PLATE G13000-9

BREAK SHARP EDGES

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

TOLERANCES ARE:

FRACTIONS ±1/8" DECIMAL .X ±.050 .XX ±.030 .XXX ±.010 ANGLES ±2°

DRAWN	CLB	DATE	10/30/08
CHECKED		DATE	
Design		DATE	
Approval	CLB	DATE	10/30/08

GENEVA AVIATION

Title: P139-HD ROUTER

Drawing Number G13000 | REV E

Pro No: GA182/212 | SIZE D | Scale: 1:1 | Sheet 1 of 1

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AUDIO BOARD OPTIONS:

The P139-HD can be set up in one of two configurations:
-- Dual Audio Board system with 4 audio connectors J1, J2, J3, J4
-- Single Audio Board with 2 audio connectors J2 and J4

Pages 1, 11 and 12 are common to all installations.
Wiring diagrams for the Dual Audio Board system are found on pages 2 through 7
Wiring diagrams for the Single Audio Board system are found on pages 8 through 10

	REVISION		
REV	DESCRIPTION	DATE	APPROVAL
A	Changed Connector Part Numbers	5/28/09	GA
B	Added Single Audio Board Option	6/10/11	GA
C	Added Wiring for G13115/G13116 Control Panel	3/02/12	GA
D	Added Alert Tone Information for EC135, EC145	4/16/12	SJC
E	Fixed Drawing Errors. Added G13115NS and G13116NS	10/29/12	SJC
F	Updated for Installation in Bell Medium Helicopters	12/3/12	SJC
G	Rewrote EMERG/NORMAL notes for clarity. Removed support for older control panels.	3/26/14	SJC
H	Changed headset numbering scheme Added external power for additional control panels.	4/24/14	SJC

Wiring Diagram for using pysical switches on G13115/G13116 Control heads is on page 13. G13115NS or G13116NS may be substituted in any location besides Pilot or Co-Pilots locaction or may be used in any location if they are not the primary audio panel.

NOTES:

1. Unless otherwise noted: All wires are 22 AWG; all shielded wire is MIL-DTL-27500; all unshielded wire is MIL-W-22759/16.
2. All Bonding and Grounding will be I/A/W AC 43.13-1B, Chapter 11, Section 15.

△3 Ground the shield return to the metal connector backshell if used, or otherwise to the metal connector housing.

△4 SPARE KEY line function and connections are installer defined and depend on the specific system configuration.

△5 D50M connector assembly consists of: Tyco/AMP housing 205170-1 or 1757819-5; Tyco/AMP pin contacts 205089-1; Cinch backshell DD-24661-34; 2ea. Cinch Screwlocks D20420-0. Alternate Backshell: Conec 165X10179X.

△6 D50F connector assembly consists of: Tyco/AMP housing 205169-1 or 1757820-5; Tyco/AMP socket contacts 205090-1; Cinch backshell DD-24661-34; 2ea. Cinch Screwlocks D20420-0. Alternate Backshell: Conec 165X10179X.

△7 D9F connector assembly consists of: Tyco/AMP housing 205161-1 or 1757820-1; Tyco/AMP socket contacts 205090-1; Cinch backshell DE-24657-30; 2ea. Cinch Screwlocks D20419-46. Alternate Backshell: Conec 165X10139X.

△8 When COM1DIR (P5, Pin 10) is not grounded, the Pilot headset is in EMERGENCY mode and the following lines are diverted:
- HEADSET 1 connects directly to RX1, RX11 (Unswitched Alert Tones) and the emergency intercom.
- MIC 1 connects directly to TX1 and the emergency Intercom.
- XMIT KEY 1 and PLT COM1 KEY connect to TX KEY 1.
- ICS KEY 1 keys the emergency intercom, if at least one Power Input Circuit Breaker to the G13000 Audio Router has power.
- TX11 (CVR) transmits HEADSET1, MIC1 and Emergency Intercom if at least one Power Input Circuit Breaker to the G13000 Audio Router has power.

When COM2DIR (P5, Pin 11) is not grounded, the Copilot headset is in EMERGENCY mode and the following lines are diverted:
- HEADSET 2 connects directly to RX2, RX20 (Unswitched Alert Tones) and the emergency intercom.
- MIC 2 connects directly to TX2, and the emergency Intercom.
- XMIT KEY 2 and CPLT COM2 KEY connect to TX KEY 2.
- ICS KEY 2 keys the emergency intercom, if at least one Power Input Circuit Breaker to the G13000 Audio Router has power.
- TX20 (CVR) transmits HEADSET2, MIC2 and Emergency Intercom if at least one Power Input Circuit Breaker to the G13000 Audio Router has power.

△9 TERMINAL BLOCK assembly consists of: Deutsch block CTJ122E05E; Deutsch socket contacts CTS-S22/22 or M39029/22-191. A GNET channel that is connected to only one control panel or other device may be wired directly without using a terminal block.

△10 D15FS connector preferred assembly consists of: Tyco/AMP housing 205163-1 or 1757820-2; Tyco/AMP socket contacts 205090-1; Cinch backshell DA-24658-31; 2ea. Cinch Screwlocks D20419-46. Alternate Backshell: Conec P/N: 165X10149X. Splices on 20 AWG wire shall also be 20 AWG, length 3 inches maximum. Alternate assembly consists of: Kobiconn Solder-Cup Connector 156-1315(T-E) and Cinch backshell DA-24658-31; 2ea. Cinch Screwlocks D20419-46. Alternate Backshell: Conec P/N: 165X10179X. Conductors shown with splices may be implemented by soldering the supply wire to both pins after soldering and insulating the adjacent connections.

△11 The Audio System works with a range of supply voltages, as specified in the installation instructions. Breaker ratings and wire sizes shown are for 28V systems. For 12V systems, the breaker ratings must be increased to 10A and the size of the shielded supply and ground wires must be increased to 18 AWG. The splice wires at P5 remain at 20 AWG.

△12 D9M connector assembly consists of: Tyco/AMP housing 205162-1 or 1757819-1; Tyco/AMP socket contacts 205089-1; Cinch backshell DE-24657-30; 2ea. Cinch Screwlocks D20419-46. Alternate Backshell: Conec 165X10139X.

△13 The COM1DIR pin MUST be wired to an appropriate switch to control Emergency Mode for the pilot headset. Emergency Mode is mandatory when the G13000 Audio Router is used as the primary audio system. See notes on sheet 13.

△14 For EC135 connect alert tone ports to TB9 of factory wiring. See Eurocopter Maint.Manual WDM for detail.
For EC145 connect alert tone ports to TB55028 of factory wiring. See Eurocopter Maint. Manual WDM for detail.
For Bell 204, 205, 214 and 412 connect alert tone ports to 8Z1P3. See Bell Maint. Manual BHT-xx-MM for detail.

DEFINITIONS:

N/C: MAKE NO CONNECTION. The pin is not connected to anything internally and therefore shall have no connection externally

RESERVED: MAKE NO CONNECTION. Internal circuitry may be added in the future, or may be present and relevant for testing but not relevant to operation for flight.

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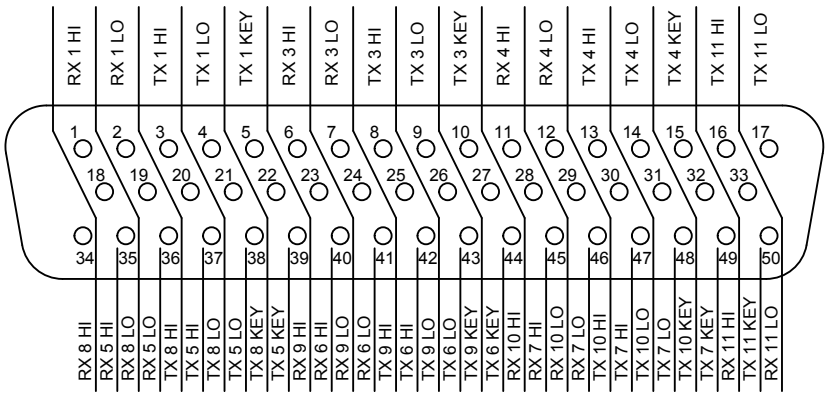
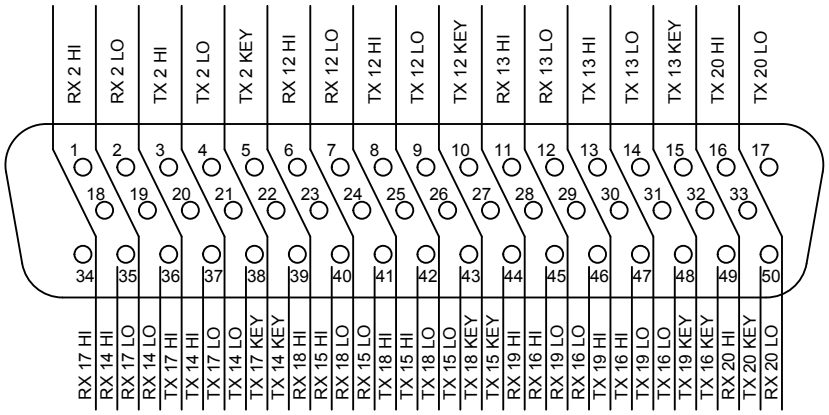
DRAWN RBH	DATE 10/30/08	TITLE	
CHECKED JSW	DATE 10/30/08	P139-HD AUDIO SYSTEM WIRING DIAGRAMS - NOTES	
APPROVAL CLB	DATE 10/30/08		
PRO NO. GA182	SHT. 1 of 13	DWG NO. G13004	REV. H

REVISION			
REV	DESCRIPTION	DATE	APPROVAL
See sheet 1 for revision history			



P1
D50F
6



P2
D50F
6

NOTE: VIEW IS FROM REAR OF AIRFRAME CONNECTOR

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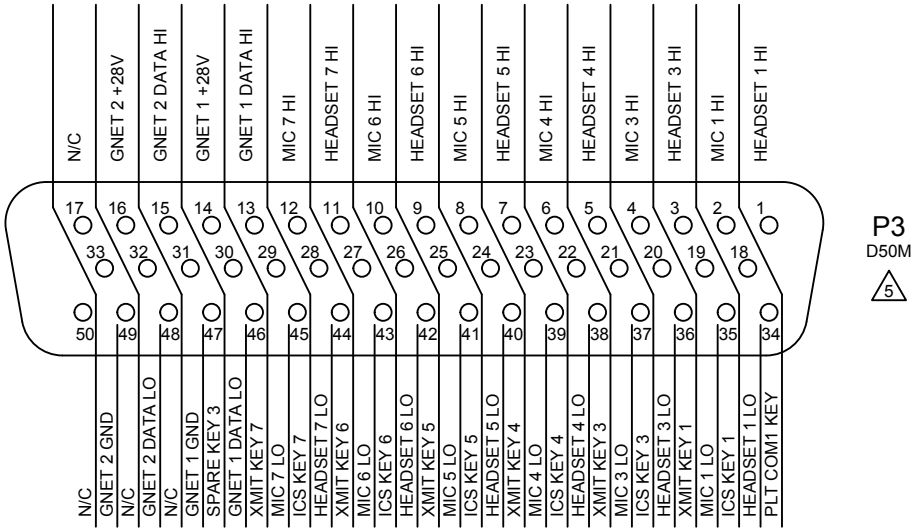
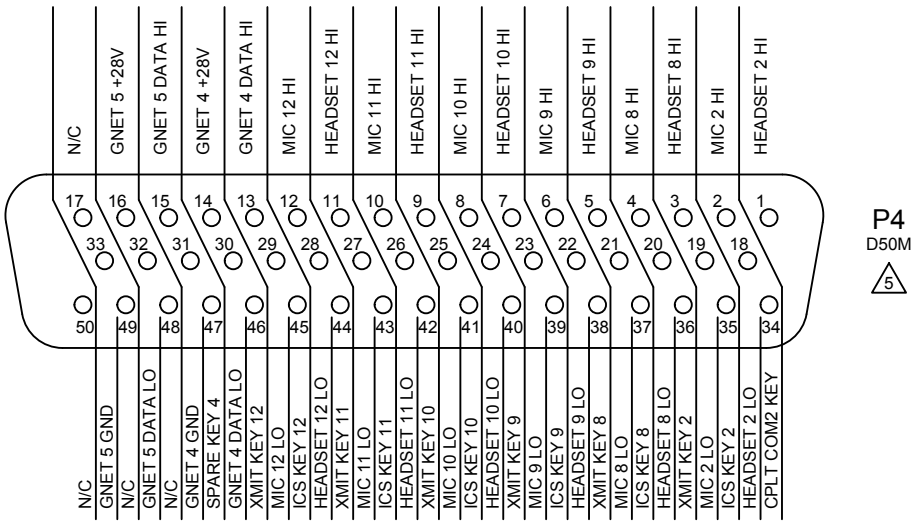
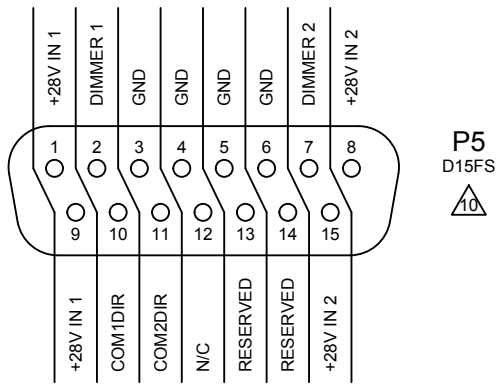
DRAWN RBH	DATE 10/30/08	TITLE P139-HD AUDIO SYSTEM P1 P2 PLUGS DUAL-BOARD	
CHECKED JSW	DATE 10/30/08		
APPROVAL CLB	DATE 10/30/08		
PRO NO. GA182	SHT. 2 of 13	DWG NO. G13004	REV. H

REVISION			
REV	DESCRIPTION	DATE	APPROVAL
See sheet 1 for revision history			







NOTE: VIEW IS FROM REAR OF AIRFRAME CONNECTOR

GENEVA AVIATION www.genevaaviation.com	DRAWN RBH	DATE 10/30/08	TITLE P139-HD AUDIO SYSTEM P3 P4 P5 PLUGS DUAL-BOARD
	CHECKED JSW	DATE 10/30/08	
	APPROVAL CLB	DATE 10/30/08	
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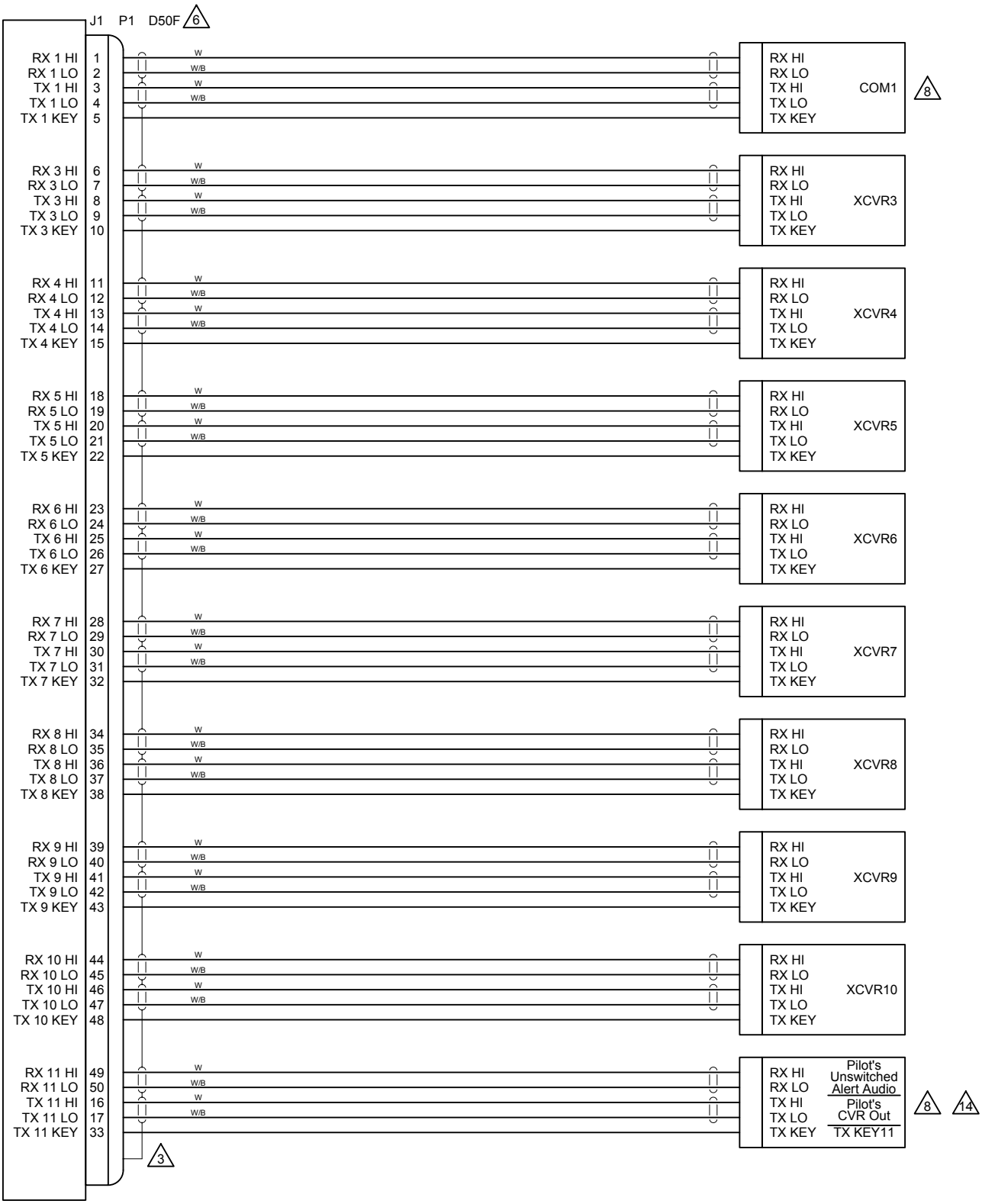
REVISION			
REV	DESCRIPTION	DATE	APPROVAL
See sheet 1 for revision history			



GENEVA AVIATION www.genevaaviation.com	DRAWN RBH	DATE 10/30/08	TITLE P139-HD AUDIO SYSTEM ROUTER J1 DUAL-BOARD
	CHECKED JSW	DATE 10/30/08	
	APPROVAL CLB	DATE 10/30/08	
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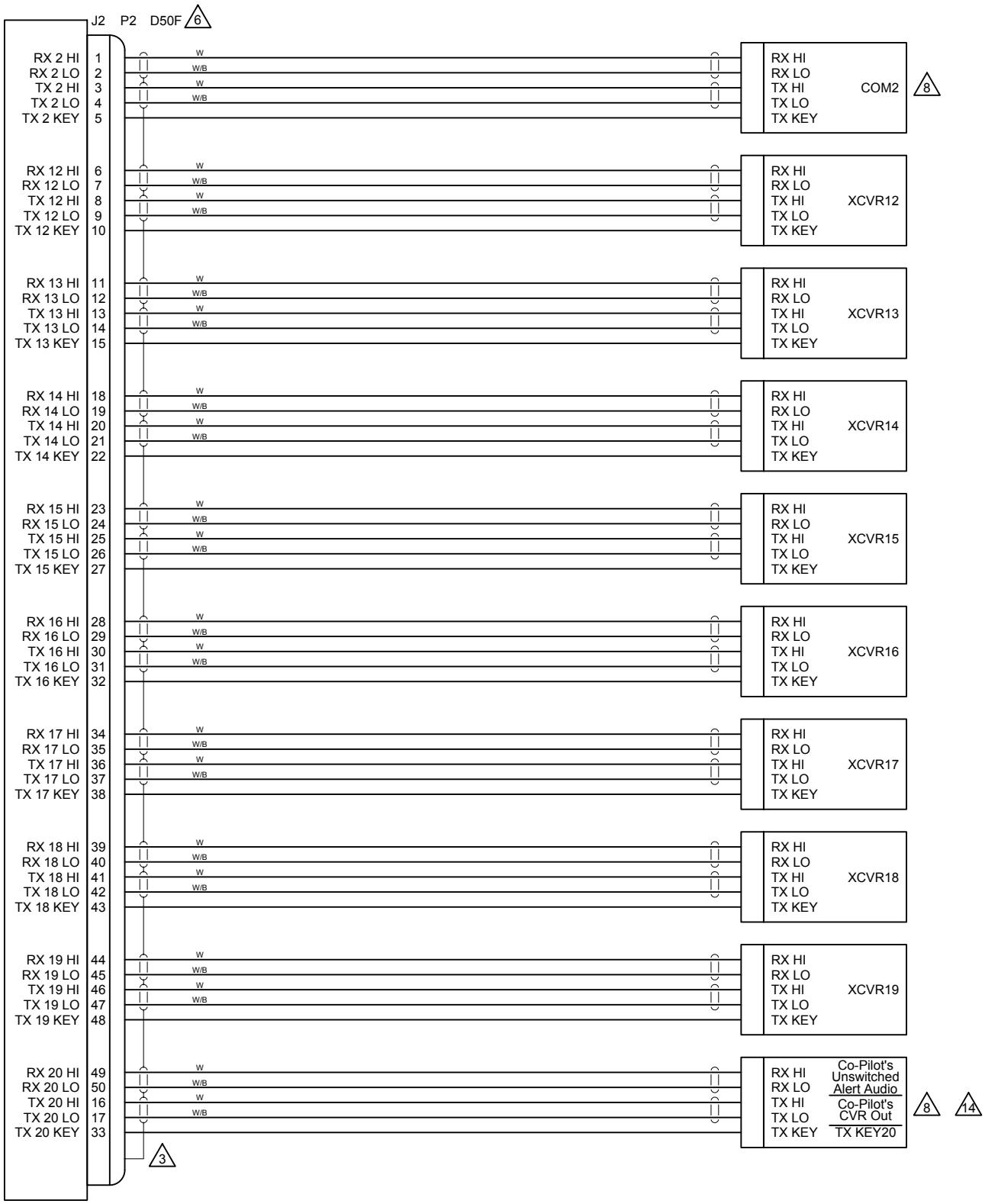
REVISION			
REV	DESCRIPTION	DATE	APPROVAL
See sheet 1 for revision history			



GENEVA AVIATION www.genevaaviation.com	DRAWN RBH	DATE 10/30/08	TITLE P139-HD AUDIO SYSTEM ROUTER J2 DUAL-BOARD
	CHECKED JSW	DATE 10/30/08	
	APPROVAL CLB	DATE 10/30/08	
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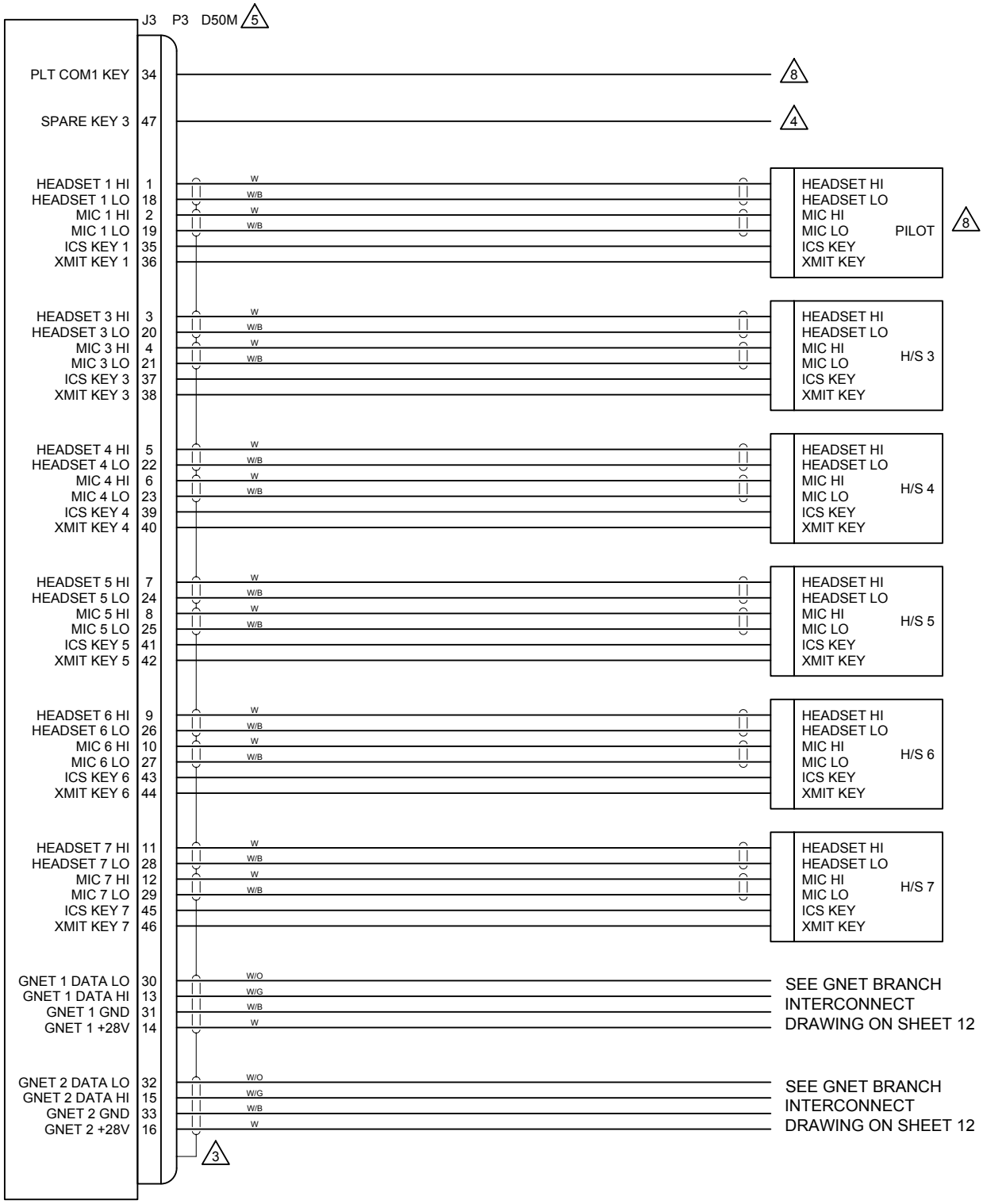
REVISION			
REV	DESCRIPTION	DATE	APPROVAL
See sheet 1 for revision history			



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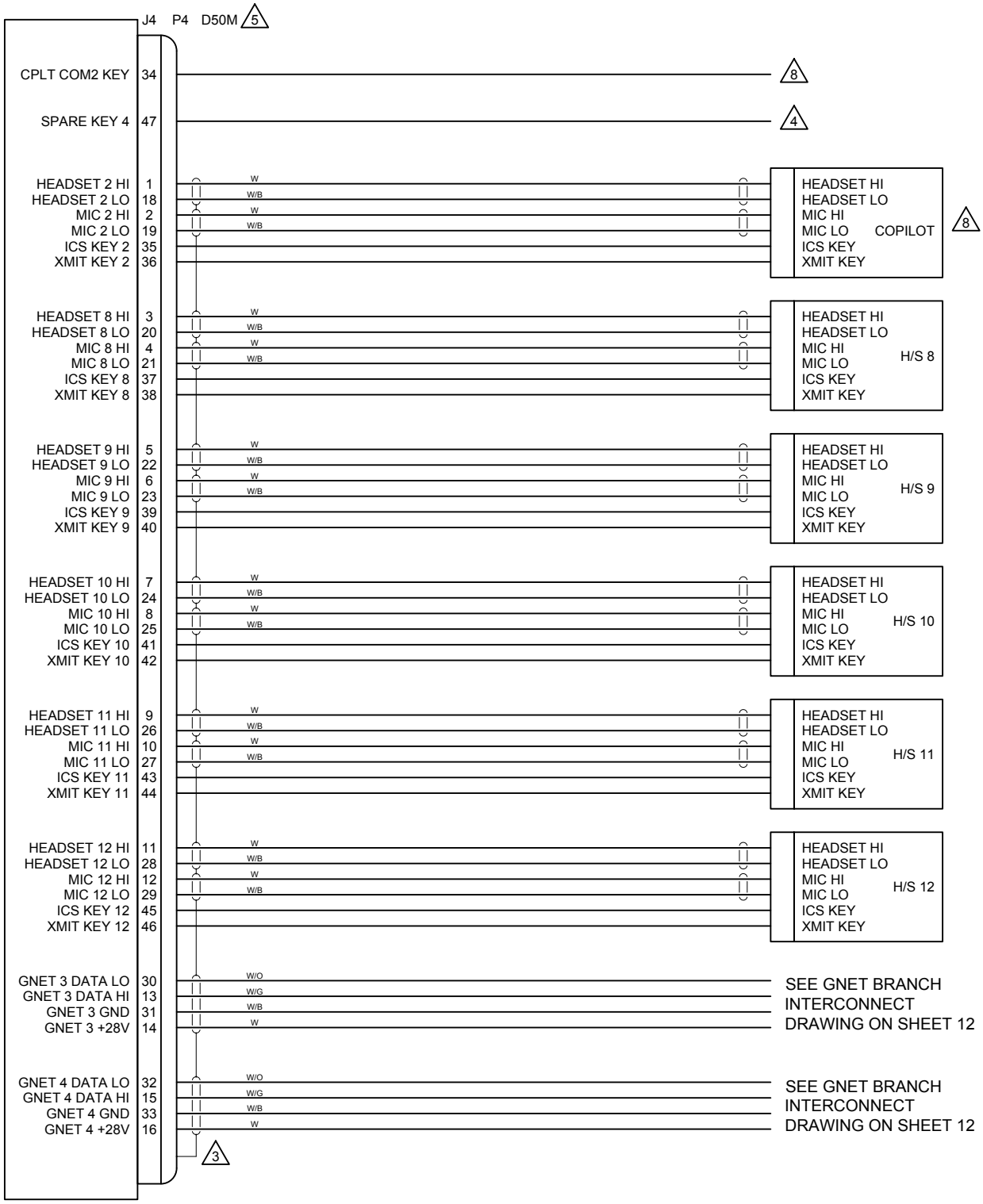
CHECKED JSW	DATE 10/30/08	P139-HD AUDIO SYSTEM ROUTER J3 DUAL-BOARD	
APPROVAL CLB	DATE 10/30/08		
PRO NO. GA182	SHT. 6 of 13	DWG NO. G13004	REV. H

REVISION			
REV	DESCRIPTION	DATE	APPROVAL
See sheet 1 for revision history			



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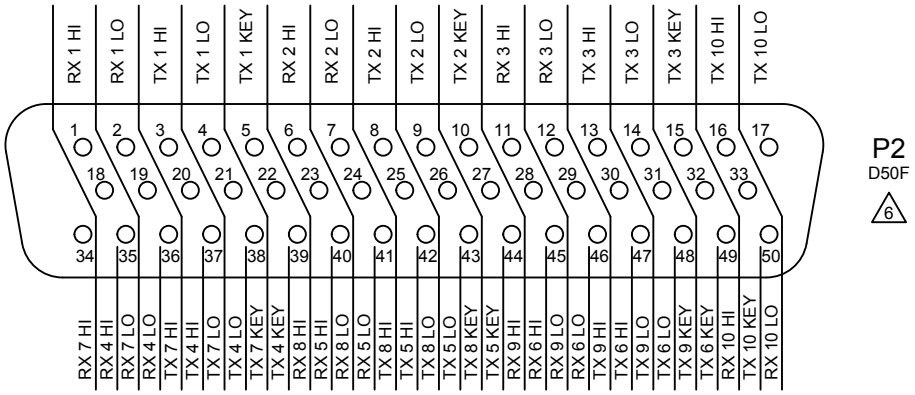
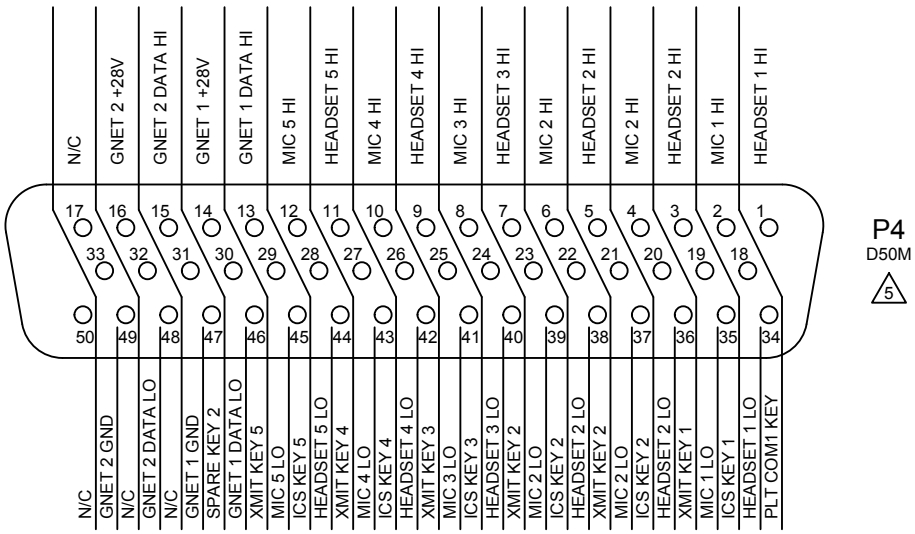
CHECKED JSW	DATE 10/30/08	P139-HD AUDIO SYSTEM ROUTER J4 DUAL-BOARD	
APPROVAL CLB	DATE 10/30/08		
PRO NO. GA182	SHT. 7 of 13	DWG NO. G13004	REV. H

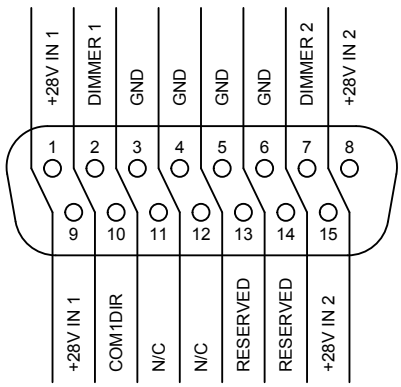
REVISION			
REV	DESCRIPTION	DATE	APPROVAL
See sheet 1 for revision history			



P2
D50F
6



P4
D50M
5



P5
D15FS
10

NOTE: VIEW IS FROM REAR OF AIRFRAME CONNECTOR

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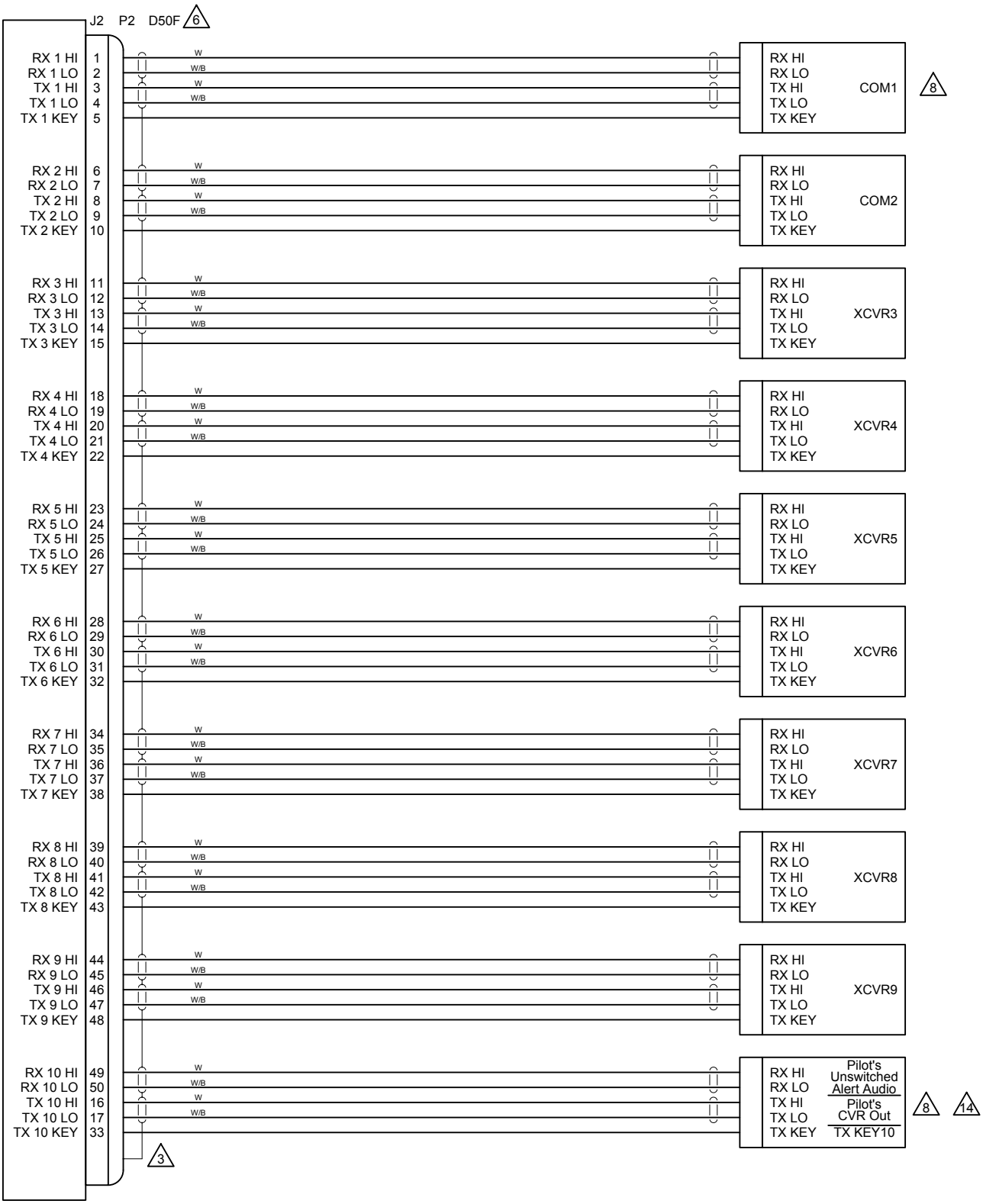
DRAWN RBH	DATE 10/30/08	TITLE	
CHECKED JSW	DATE 10/30/08	P139-HD AUDIO SYSTEM	
APPROVAL CLB	DATE 10/30/08	P2 P4 P5 PLUGS SINGLE-BOARD	
PRO NO. GA182	SHT. 8 of 13	DWG NO. G13004	REV. H

REVISION			
REV	DESCRIPTION	DATE	APPROVAL
See sheet 1 for revision history			



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	CHECKED JSW	DATE 10/30/08	
	APPROVAL CLB	DATE 10/30/08	
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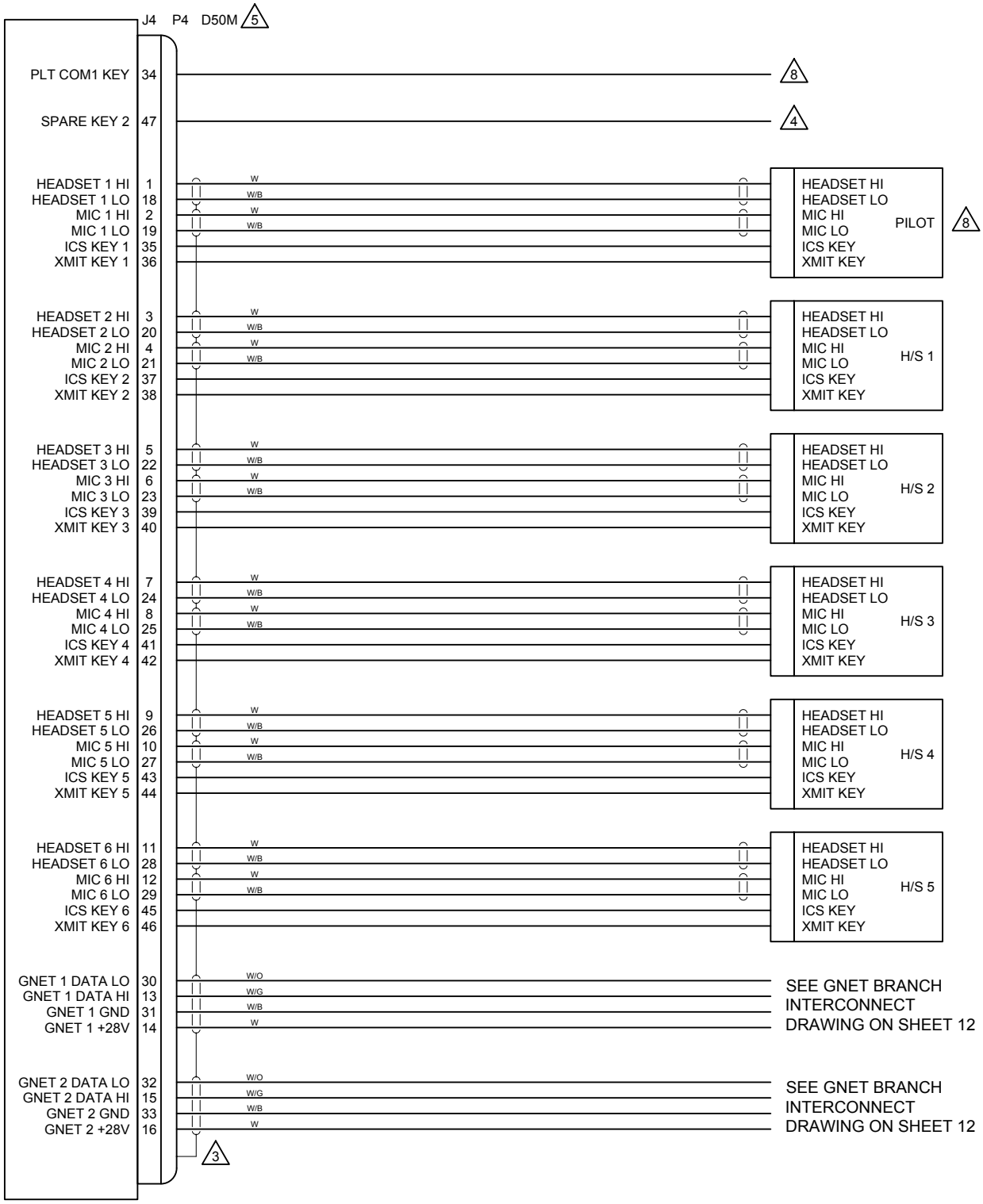
REVISION			
REV	DESCRIPTION	DATE	APPROVAL
See sheet 1 for revision history			



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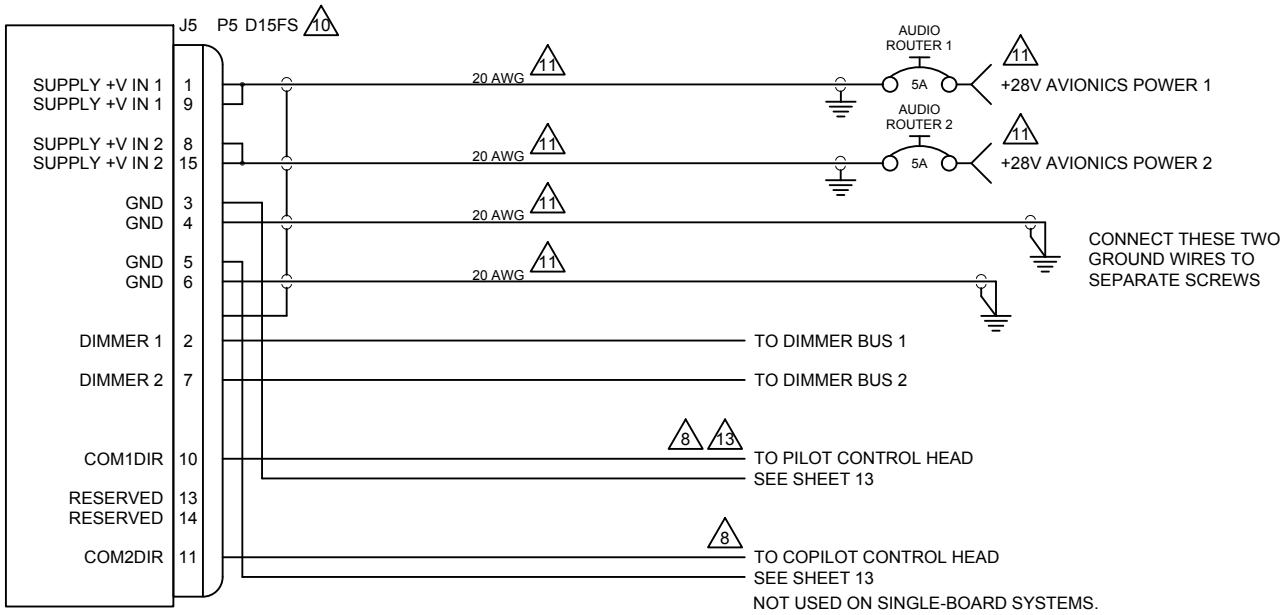
DRAWN	RBH	DATE	10/30/08
CHECKED	JSW	DATE	10/30/08
APPROVAL	CLB	DATE	10/30/08
PRO NO.	GA182	SHT.	10 of 13

TITLE: P139-HD AUDIO SYSTEM ROUTER J4 SINGLE-BOARD

DWG NO. G13004 REV. H

	REVISION		
REV	DESCRIPTION	DATE	APPROVAL
See sheet 1 for revision history			



GENEVA AVIATION www.genevaaviation.com	DRAWN RBH	DATE 10/30/08	TITLE P139-HD AUDIO SYSTEM ROUTER J5 CONNECTIONS
	CHECKED JSW	DATE 10/30/08	
	APPROVAL CLB	DATE 10/30/08	
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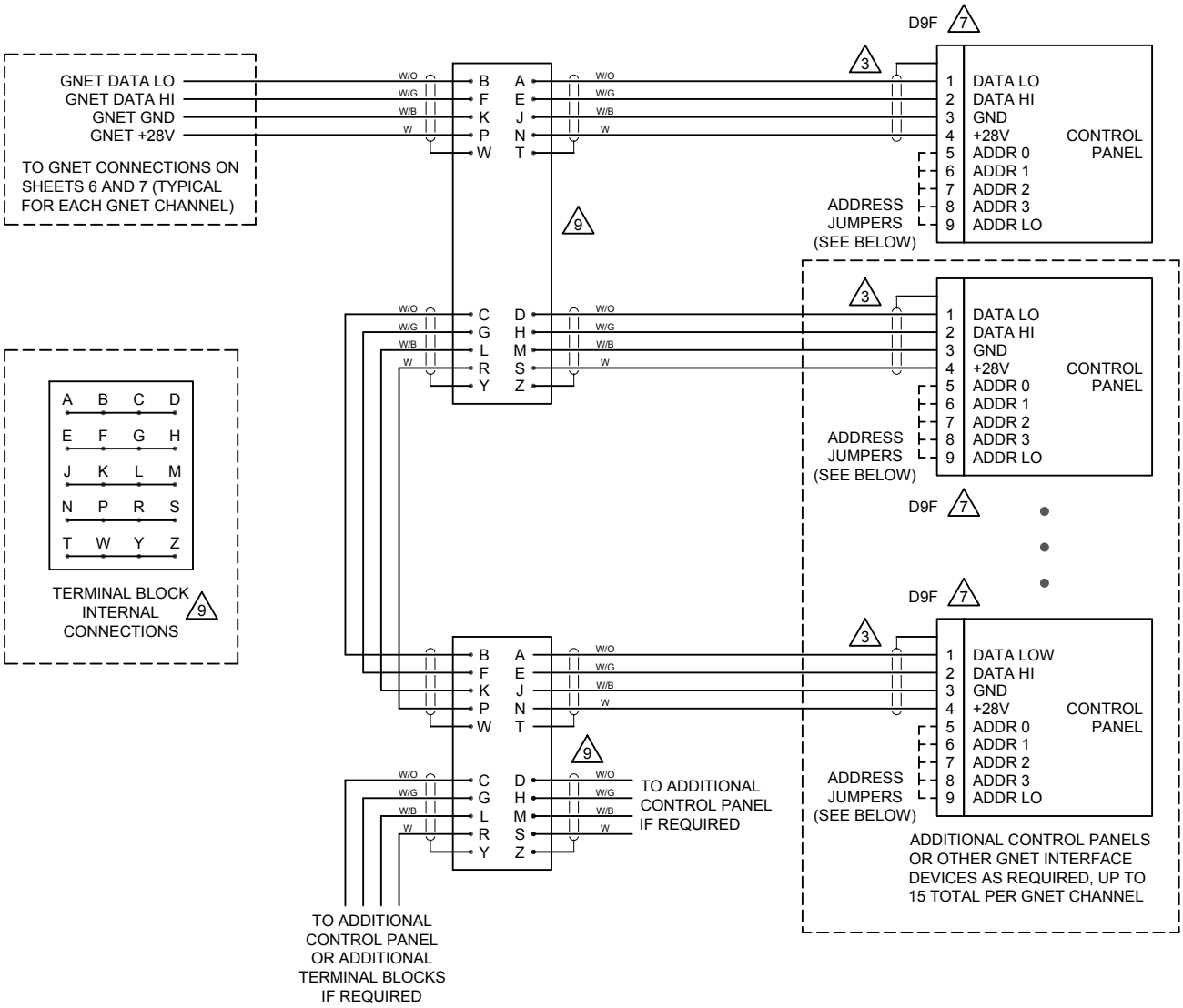
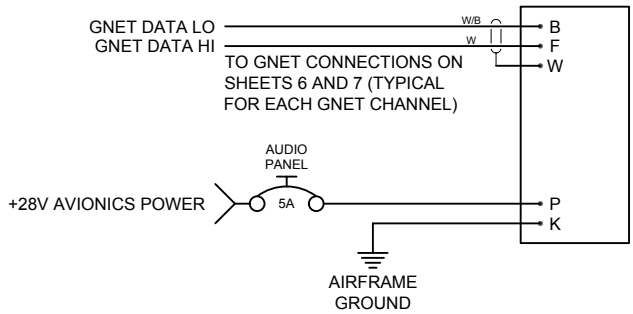
REV	REVISION	DATE	APPROVAL
	See sheet 1 for revision history		



GNET EXTERNAL POWER:

IF THE AUDIO SYSTEM HAS MORE THAN 6 CONTROL PANELS AN EXTERNAL POWER SOURCE FOR THE ADDITIONAL PANELS MUST BE PROVIDED. UP TO 12 ADDITIONAL CONTROL PANELS MAY BE POWERED FROM EACH EXTERNAL 5A BREAKER.



GNET ADDRESS JUMPERS:

FOR EVERY CONTROL PANEL OR OTHER PERIPHERAL DEVICE CONNECTED TO A PARTICULAR GNET CHANNEL, A UNIQUE DEVICE ADDRESS FROM "1" TO "9" OR "A" TO "F" MUST BE WIRED INTO THE CONNECTOR. THE ADDRESS FOR EACH DEVICE ON EACH GNET CHANNEL IS DEFINED IN THE SYSTEM CONFIGURATION SOFTWARE FOR THE SPECIFIC INSTALLATION.

USING 24 AWG WIRE 1.5" LONG FOR EACH JUMPER, CONNECT THE FOLLOWING PINS TOGETHER FOR GNET ADDRESSING FOR EACH CONNECTOR, AS SPECIFIED IN THE SYSTEM CONFIGURATION REQUIREMENTS. MAKE NO CONNECTIONS TO UNLISTED PINS.

"1" = 6-7-8-9	"5" = 6-8-9	"9" = 6-7-9	"D" = 6-9
"2" = 5-7-8-9	"6" = 5-8-9	"A" = 5-7-9	"E" = 5-9
"3" = 7-8-9	"7" = 8-9	"B" = 7-9	"F" = NONE
"4" = 5-6-8-9	"8" = 5-6-7-9	"C" = 5-6-9	

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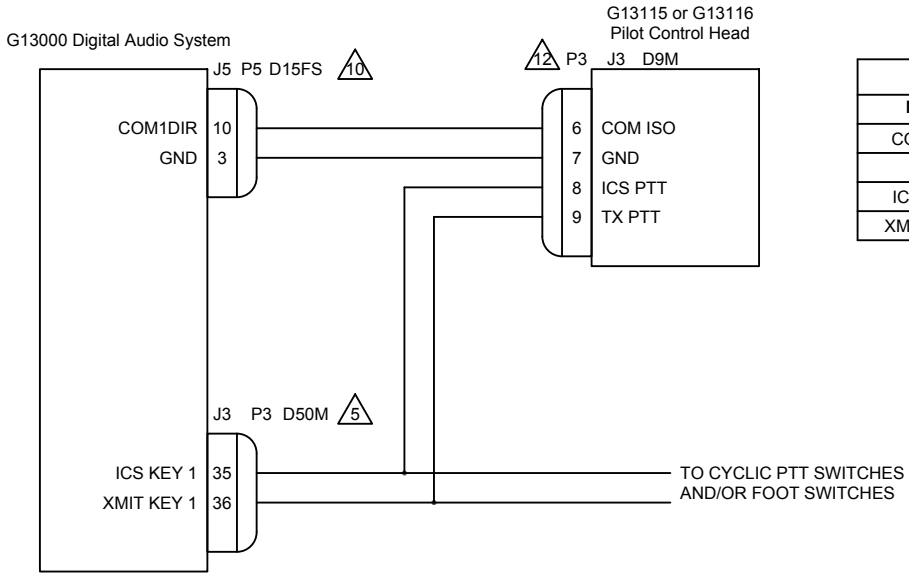
DRAWN	RBH	DATE	10/30/08
CHECKED	JSW	DATE	10/30/08
APPROVAL	CLB	DATE	10/30/08
PRO NO.	GA182	SHT.	12 of 13

TITLE: P139-HD AUDIO SYSTEM GNET INTERCONNECTS

DWG NO. G13004 REV. H



Copilot Pin Assignment

NAME	G13115/6	G13000
COM2DIR	J3 pin 6	J5 pin 11
GND	J3 Pin 7	J5 pin 5
ICS KEY2	J3 pin 8	J4 pin 35
XMIT KEY 2	J3 Pin 9	J4 pin 36

The G13115 and G13116 control heads thave two electromechanical toggle switches on the front panel; an EMERG/NORMAL locking toggle switch, and a 3-position momentary switch for ICS/OFF/TX PTT. When each switch is "on" the appropriate pin on the J3 connector is connected to GND, pin 7.

The above wiring illustrates the use of the EMER/NORMAL switch on the Pilot's G13116/G13116 control head to control the Emergency Mode operation for the pilot headset. The operation of the Digital Audio System in Emergency Mode is detailed in NOTE 8 on G13004 sheet 1.

The pilot control head MUST be wired to COM1DIR as shown if this is the primary audio system installed. ONLY if the audio system is installed as a secondary may the connection be omitted and the COM1DIR pin on the G13000 be connected to ground.

In most installations, the copilot control head will be wired to COM2DIR, connecting to the appropriate pins as shown in the above table. Exceptions are if the audio system is not the primary audio system or if the HEADSET 2 port is not at a location used by flight crew. In these situations the COM2DIR pin on the G13000 should be connected to ground.

On a single-board system there is no copilot Emergency Mode, and the COM2DIR pin is not connected.

The EMERG/NORMAL switch is only connected for the pilot and copilot control head.

The ICS PTT and TX PTT pins on the copilot control head should be connected in parallel with the appropriate PTT switches on the copilot cyclic and/or foot switches.

In all other crew positions the ICS PTT and TX PTT pins on the associated control head may be connected in parallel with the appropriate PTT switches for that headset.

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REVISIONS		
REV	DESCRIPTION	APPROVED/DATE

1. LOCATE TRAY G13009 TO AVOID EXISTING STRUCTURES AND DEVICES INSTALLED. ORIENTATION OF THE TRAY IS AT THE INSTALLERS DESCRETION.

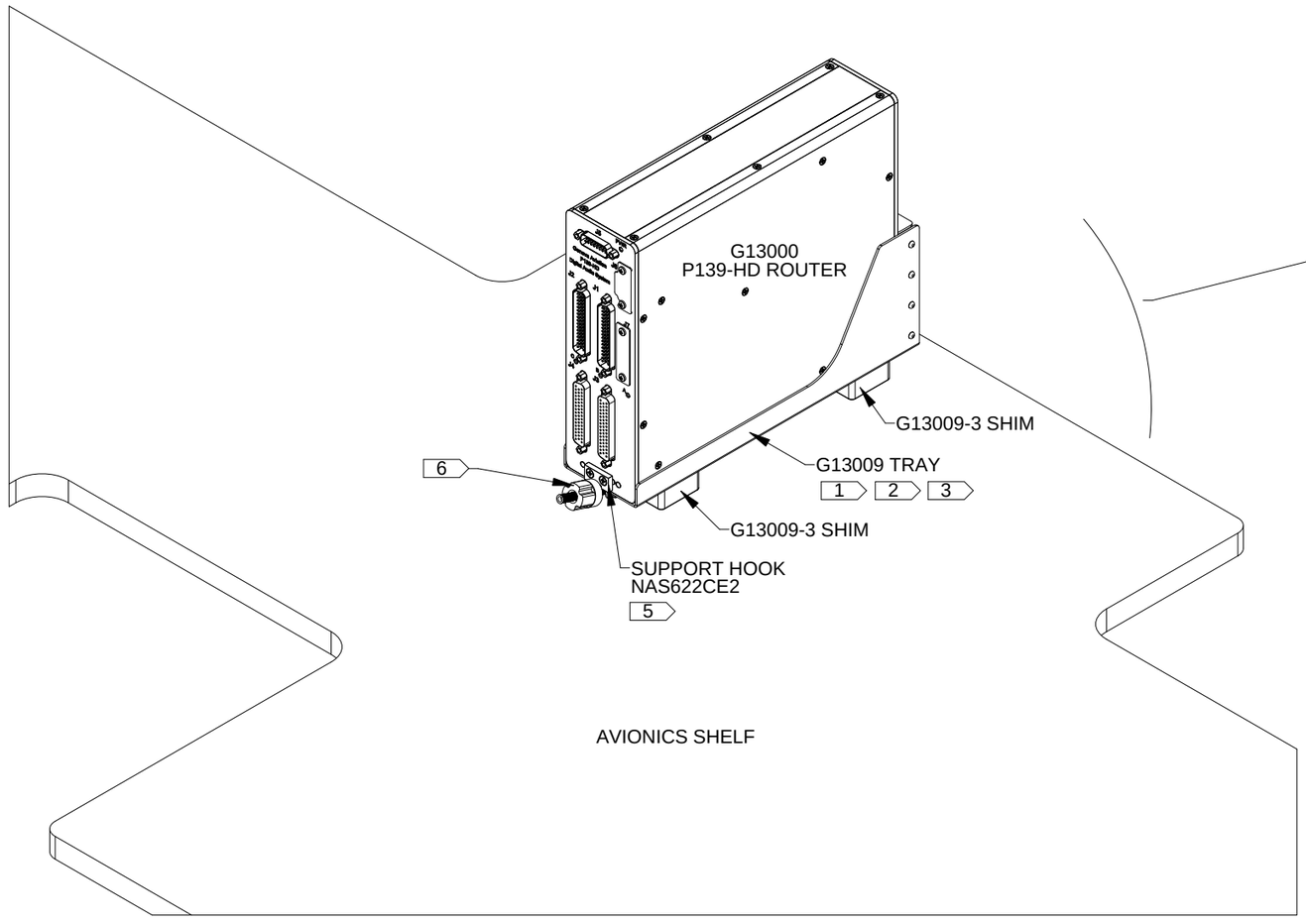
2. USING TRAY AS A GUIDE, LAYOUT AND INSTALL (4) #10-32 INSERTS, NAS1832-3-3, BELL 80-004-2-12 OR 80-005-2-12. INSTALL INSERTS IN ACCORDANCE WITH BELL REPAIR MANUAL.

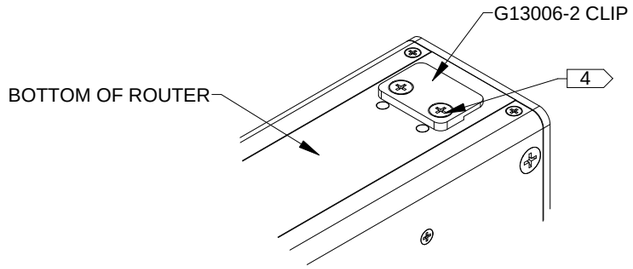
3. MOUNT TRAY TO DECK USING (2) SHIMS G13009-3 AND (4) MS24693S276 #10 x 1.0 FLAT HEAD SCREWS.

4. INSTALL CLIP G13006-2 TO BASE OF ROUTER USING (2) #8-32 X .62 FLAT HEAD SCREWS (MS24693S51)

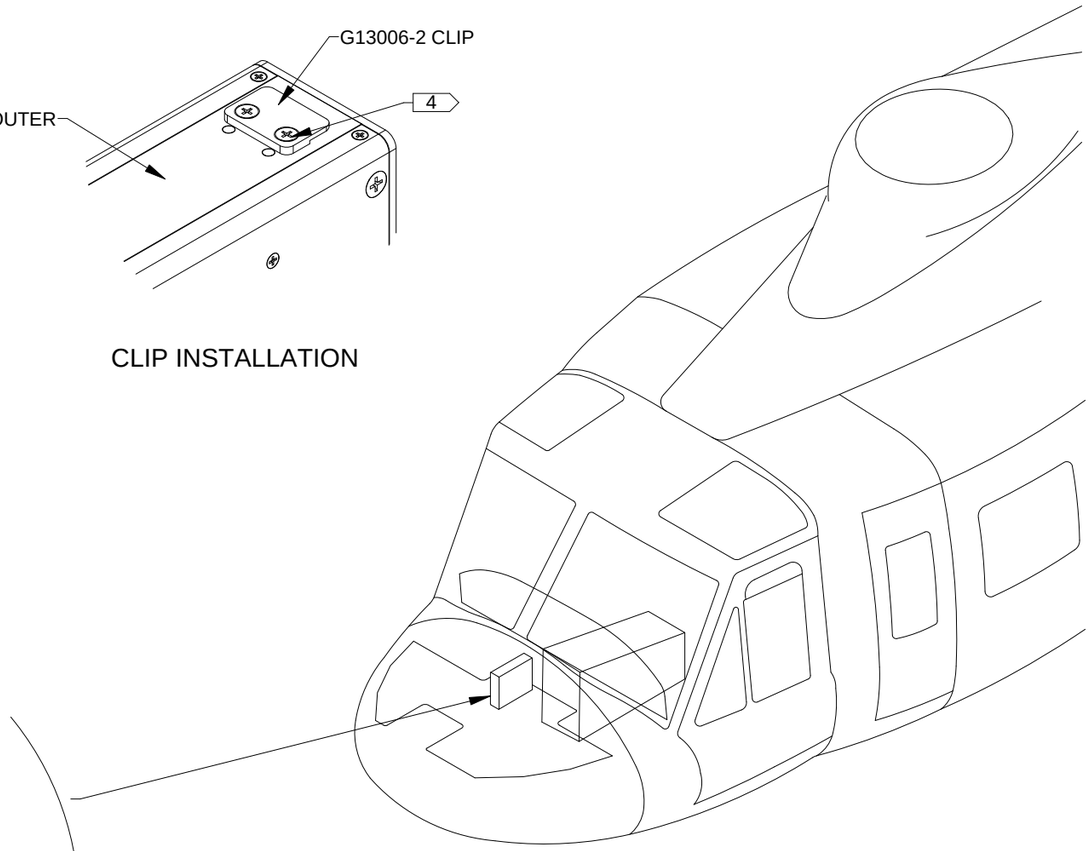
5. INSTALL SUPPORT HOOK NAS622CE2 TO FRONT OF ROUTER USING (2) #6-32 x .5 FLAT HEAD SCREWS MS24693S28.

6. SECURE ROUTER TO TRAY





CLIP INSTALLATION



INSTALLATION INSTRUCTIONS

THIS INSTALLATION PROVIDES MOUNTING PROVISIONS FOR THE G13000 P139-HD ROUTER IN THE FWD AVIONICS BAY FOR BELL 204, 205, 212, 214 & 412 SERIES HELICOPTERS.

LOCATION SHOWN IS FOR REFERENCE ONLY, EXACT PLACEMENT IS DEPENDENT ON OTHER PRE-EXISTING INSTALLED EQUIPMENT. IT IS THE INSTALLERS RESPONSIBILITY TO MAKE SURE THIS INSTALLATION DOES NOT INTERFERE WITH OTHER INSTALLED EQUIPMENT.

MAINTAIN 2 E/D EDGE MARGIN FOR ALL MOUNTING HOLES.

WEIGHT OF INSTALLED COMPONENTS INCLUDING ROUTER BOX = 5.0 LBS

ARM IS DEPENDENT ON MOUNTING LOCATION

BREAK SHARP EDGES

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

TOLERANCES ARE:

FRACTIONS ±1/8" DECIMAL .X ±.050 .XX ±.030 .XXX ±.010 ANGLES ±2°

DRAWN	CLB	DATE	3/02/12
CHECKED		DATE	
Design		DATE	
Approval	CLB	DATE	3/02/12

GENEVA AVIATION

Title: P139-HD BELL 204 - 412 INSTALLATION

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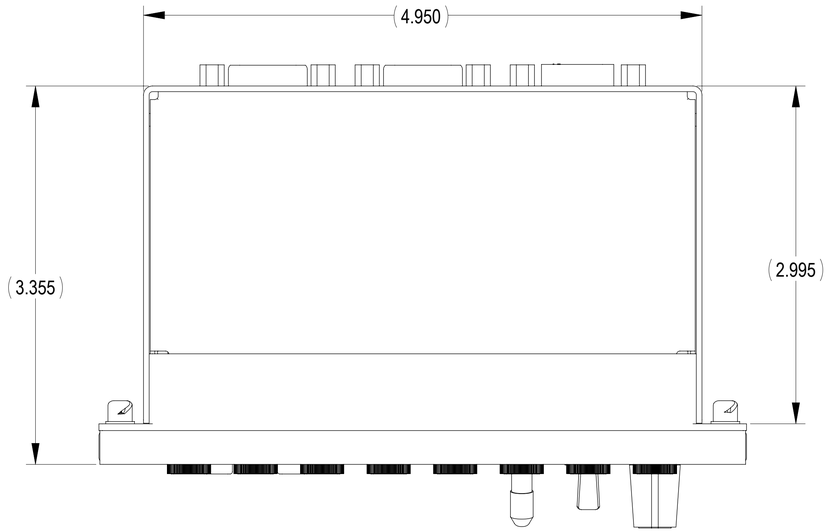
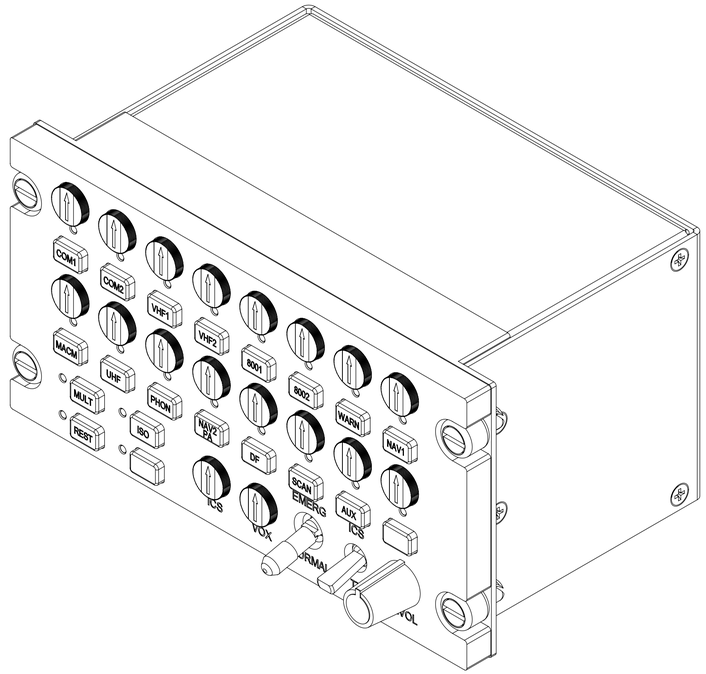
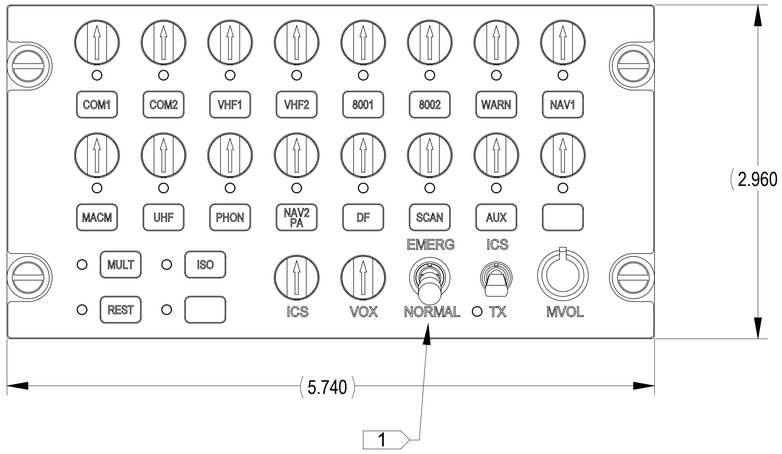
Drawing Number: G13008 REV: --

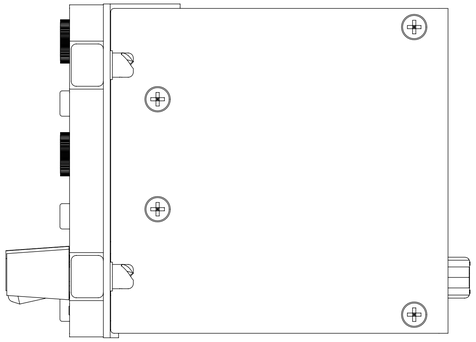
Pro No: GA182 SIZE: D Scale: 1:1 Sheet 1 of 1

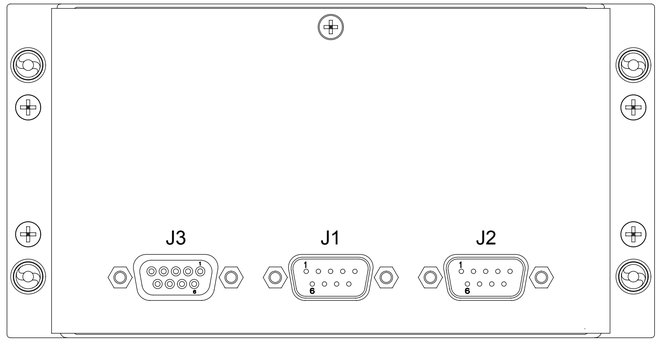
REVISIONS		
REV	DESCRIPTION	APPROVED/DATE
A	ADDED P/N G13115NS	10/15/12 CLB
B	REVISED NOTES	3/26/14 CLB











P/N G13115 : AS SHOWN

1 P/N G13115NS : REPLACE SWITCH WITH HEYCO HOLE PLUG #2603

NOTES:

BUTTON LABELS SHOWN ARE FOR REFERENCE ONLY AND ARE INSTALLER DEFINED

POWER: 28 VDC @ 250mA MAX

WEIGHT: 1.50 LBS MAX

OPTIONAL: TEXT MAY BE ENGRAVED, STAMPED OR PRINTED ON PART AS DESIRED

BREAK SHARP EDGES

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

TOLERANCES ARE:

FRACTIONS ±1/8" DECIMAL .X ±.050 .XX ±.030 .XXX ±.010 ANGLES ±2°

DRAWN	CLB	DATE	6/01/12
CHECKED		DATE	
Design		DATE	
Approval	CLB	DATE	6/01/12

GENEVA AVIATION

Title: CONTROL PANEL

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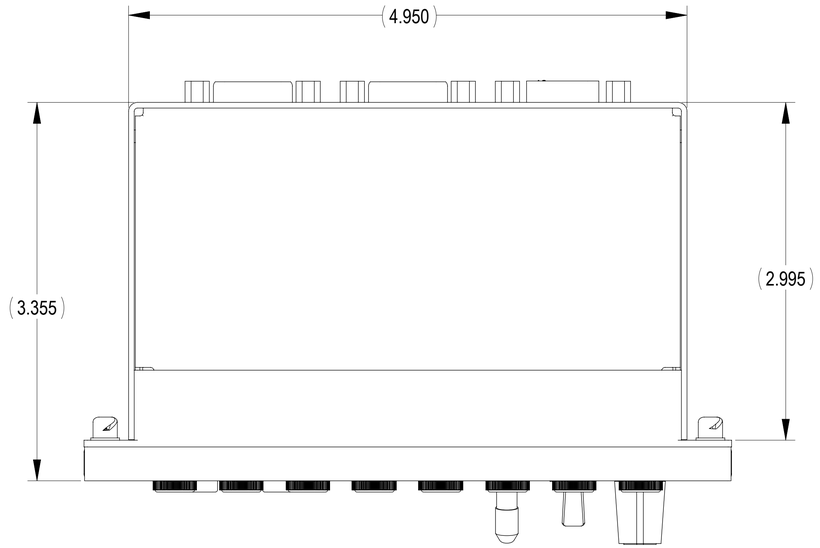
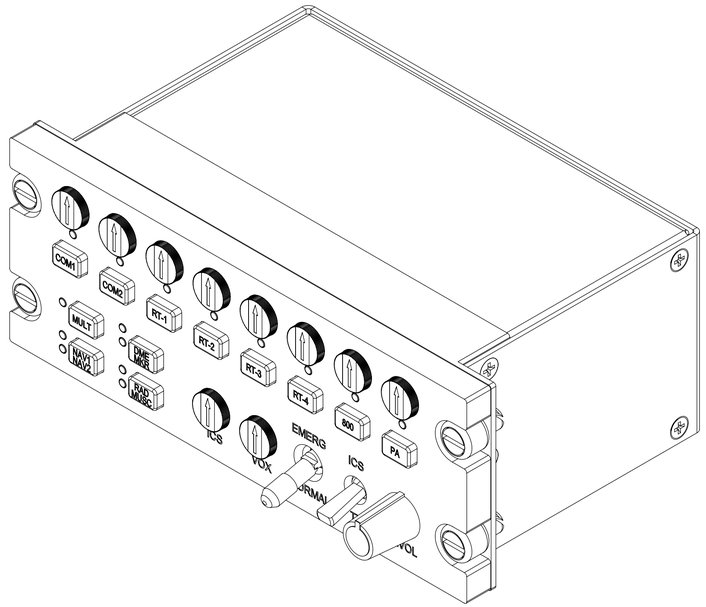
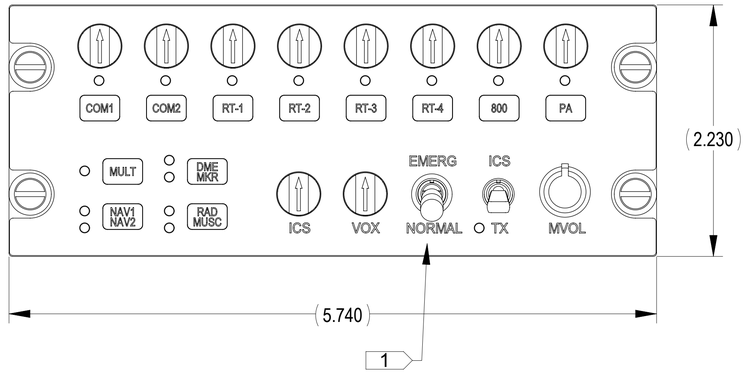
Drawing Number G13115 REV B

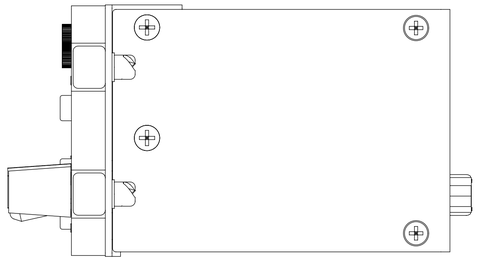
Pro No: GA182 SIZE D Scale: NONE Sheet 1 of 1

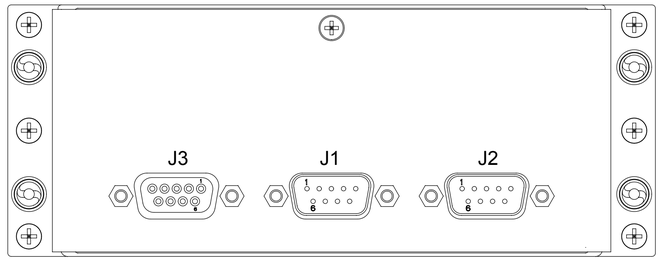
REVISIONS		
REV	DESCRIPTION	APPROVED/DATE
A	ADDED P/N G13116NS	10/15/12 CLB
B	REVISED NOTES	3/26/14 CLB











P/N G13116 : AS SHOWN

1 P/N G13116NS : REPLACE SWITCH WITH HEYCO HOLE PLUG #2603

NOTES:

BUTTON LABELS SHOWN ARE FOR REFERENCE ONLY AND ARE INSTALLER DEFINED

POWER: 28VDC @ 250mA MAX

WEIGHT: 1.25 LBS MAX

OPTIONAL: TEXT MAY BE ENGRAVED, STAMPED OR PRINTED ON PART AS DESIRED

BREAK SHARP EDGES

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

TOLERANCES ARE:

FRACTIONS ±1/8" DECIMAL .X ±.050 .XX ±.030 .XXX ±.010 ANGLES ±2°

DRAWN	CLB	DATE	6/01/12
CHECKED		DATE	
Design		DATE	
Approval	CLB	DATE	6/01/12

GENEVA AVIATION

Title: CONTROL PANEL

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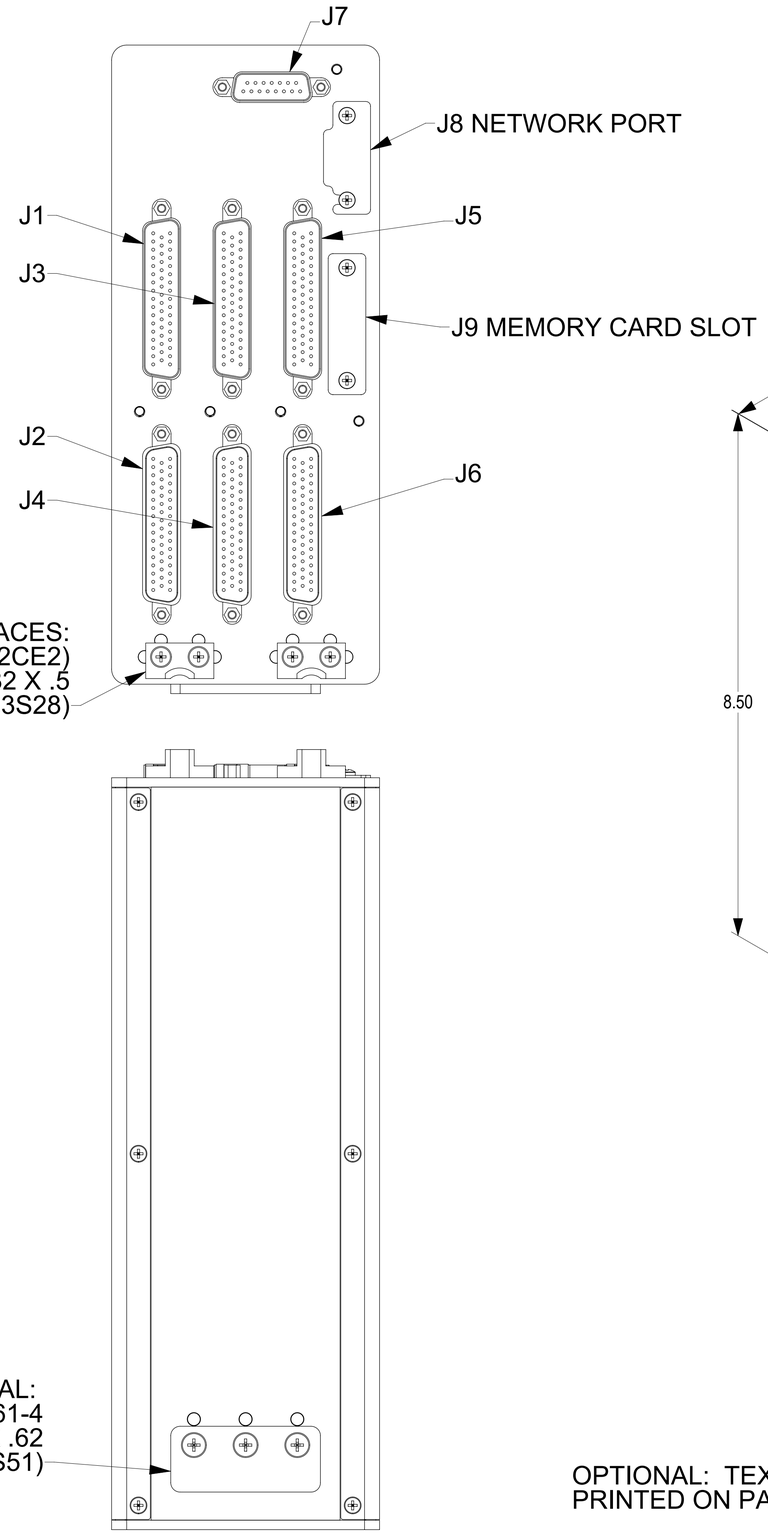
Drawing Number	REV
G13116	B

Pro No:	SIZE	Scale:	Sheet
GA182	D	NONE	1 of 1

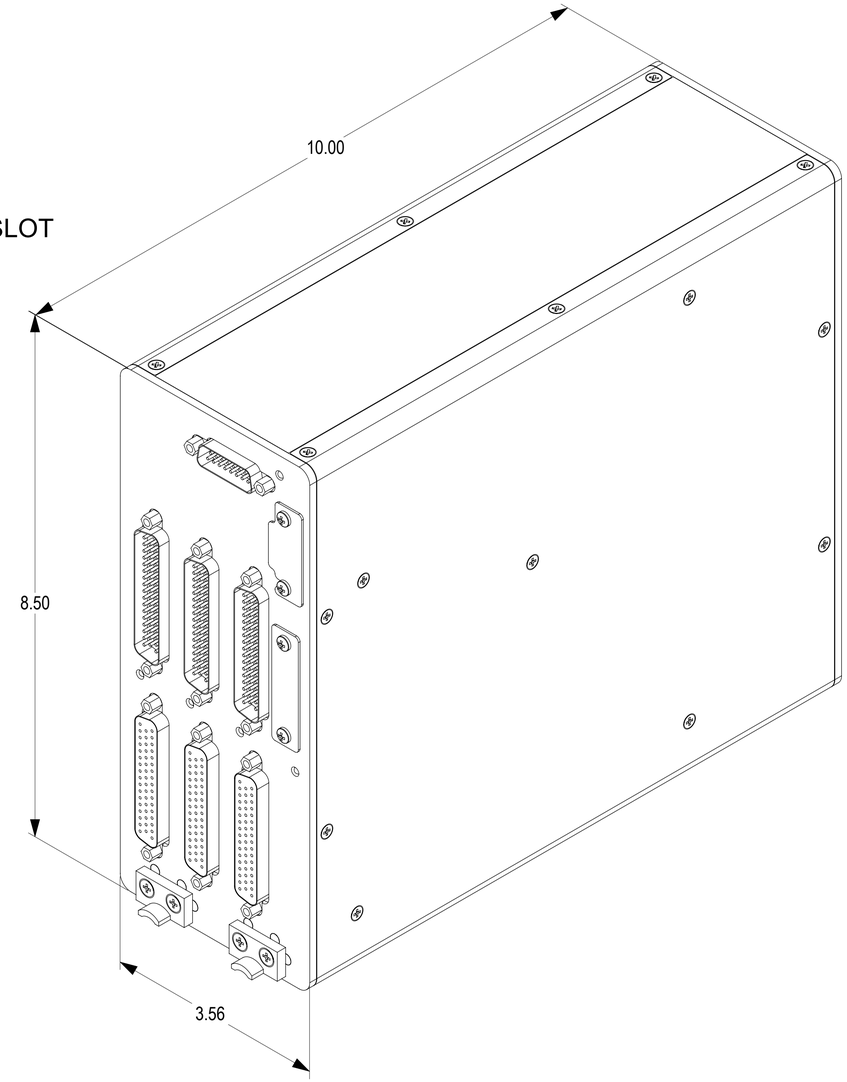
REVISIONS		
REV	DESCRIPTION	APPROVED/DATE
A	VOLTAGE RANGE WAS 10 - 30 VDC	08/13/14 CLB

G13160 P139-HD
3 BOARD ROUTER
WEIGHT = 5.3 LBS MAX
POWER = 5 AMPS MAX
VOLTAGE = 14 - 32 VDC



OPTIONAL (2) PLACES:
SUPPORT HOOK (NAS622CE2)
INSTALLED WITH (2) #6-32 X .5
FLAT HEAD SCREWS (MS24693S28)

OPTIONAL:
CLIP G13161-4
INSTALLED WITH (3) #8-32 X .62
FLAT HEAD SCREWS (MS24693S51)



OPTIONAL: TEXT MAY BE ENGRAVED, STAMPED OR PRINTED ON PART AS DESIRED

BREAK SHARP EDGES

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

TOLERANCES ARE:

FRACTIONS ±1/8" DECIMAL .X ±.050 .XX ±.030 .XXX ±.010 ANGLES ±2°

DRAWN	CLB	DATE 12/9/13
CHECKED		DATE
Design		DATE
Approval	CLB	DATE 12/9/13

GENEVA AVIATION

Title: P139-HD 3 BOARD ROUTER

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Drawing Number G13160 REV A

Pro No: GA182 SIZE D Scale: 1:1 Sheet 1 of 1

NOTES:

1. Unless otherwise noted: All wires are 22 AWG; all shielded wire is MIL-DTL-27500; all unshielded wire is MIL-W-22759/16.
2. All Bonding and Grounding will be I/A/W AC 43.13-1B, Chapter 11, Section 15.

△3 Ground the shield return to the metal connector backshell if used, or otherwise to the metal connector housing.

△4 SPARE KEY line function and connections are installer defined and depend on the specific system configuration.

△5 D50M connector assembly consists of: Tyco/AMP housing 205170-1 or 1757819-5; Tyco/AMP pin contacts 205089-1; Cinch backshell DD-24661-34; 2ea. Cinch Screwlocks D20420-0. Alternate Backshell: Conec 165X10179X.

△6 D50F connector assembly consists of: Tyco/AMP housing 205169-1 or 1757820-5; Tyco/AMP socket contacts 205090-1; Cinch backshell DD-24661-34; 2ea. Cinch Screwlocks D20420-0. Alternate Backshell: Conec 165X10179X.

△7 D9F connector assembly consists of: Tyco/AMP housing 205161-1 or 1757820-1; Tyco/AMP socket contacts 205090-1; Cinch backshell DE-24657-30; 2ea. Cinch Screwlocks D20419-46. Alternate Backshell: Conec 165X10139X.

△8 When COM1DIR (P5, Pin 10) is not grounded, the Pilot headset is in EMERGENCY mode and the following lines are diverted:
- HEADSET 1 connects directly to RX1, RX11 (Unswitched Alert Tones) and the emergency intercom.
- MIC 1 connects directly to TX1 and the emergency Intercom.
- XMIT KEY 1 and PLT COM1 KEY connect to TX KEY 1.
- ICS KEY 1 keys the emergency intercom, if at least one Power Input Circuit Breaker to the G13000 Audio Router has power.
- TX11 (CVR) transmits HEADSET1, MIC1 and Emergency Intercom if at least one Power Input Circuit Breaker to the G13000 Audio Router has power.

When COM2DIR (P5, Pin 11) is not grounded, both the Copilot headset and Headset 13 are in EMERGENCY mode and the following lines are diverted:
- HEADSET 2 connects directly to RX 2, RX 20 (Unswitched Alert Tones) and the emergency intercom.
- MIC 2 connects directly to TX 2, and the emergency Intercom.
- XMIT KEY 2 and CPLT COM2 KEY connect to TX KEY 2.
- ICS KEY 2 keys the emergency intercom, if at least one Power Input Circuit Breaker to the G13000 Audio Router has power.
- TX20 (CVR) transmits HEADSET 2, MIC 2 and Emergency Intercom if at least one Power Input Circuit Breaker to the G13000 Audio Router has power.

- HEADSET 13 connects directly to RX 21, RX 30 and the emergency intercom.
- MIC 13 connects directly to TX 21, and the emergency Intercom.
- XMIT KEY 13 and HS13 TX21 KEY connect to TX KEY 21.
- ICS KEY 13 keys the emergency intercom, if at least one Power Input Circuit Breaker to the G13000 Audio Router has power.
- TX 30 transmits HEADSET 13, MIC 13 and Emergency Intercom if at least one Power Input Circuit Breaker to the G13000 Audio Router has power.

△9 TERMINAL BLOCK assembly consists of: Deutsch block CTJ122E05E; Deutsch socket contacts CTS-S22/22 or M39029/22-191. A GNET channel that is connected to only one control panel or other device may be wired directly without using a terminal block.

△10 D15FS connector preferred assembly consists of: Tyco/AMP housing 205163-1 or 1757820-2; Tyco/AMP socket contacts 205090-1; Cinch backshell DA-24658-31; 2ea. Cinch Screwlocks D20419-46. Alternate Backshell: Conec P/N: 165X10149X. Splices on 20 AWG wire shall also be 20 AWG, length 3 inches maximum. Alternate assembly consists of: Kobiconn Solder-Cup Connector 156-1315(T-E) and Cinch backshell DA-24658-31; 2ea. Cinch Screwlocks D20419-46. Alternate Backshell: Conec P/N: 165X10179X. Conductors shown with splices may be implemented by soldering the supply wire to both pins after soldering and insulating the adjacent connections.

△11 The Audio System works with a range of supply voltages, as specified in the installation instructions. Breaker ratings and wire sizes shown are for 28V systems. For 12V systems, the breaker ratings must be increased to 10A and the size of the shielded supply and ground wires must be increased to 18 AWG. The splice wires at P5 remain at 20 AWG.

△12 D9M connector assembly consists of: Tyco/AMP housing 205162-1 or 1757819-1; Tyco/AMP socket contacts 205089-1; Cinch backshell DE-24657-30; 2ea. Cinch Screwlocks D20419-46. Alternate Backshell: Conec 165X10139X.

△13 The COM1DIR pin MUST be wired to an appropriate switch to control Emergency Mode for the pilot headset. Emergency Mode is mandatory when the G13000 Audio Router is used as the primary audio system. See notes on sheet 13.

△14 For EC135 connect alert tone ports to TB9 of factory wiring. See Eurocopter Maint.Manual WDM for detail.
For EC145 connect alert tone ports to TB55028 of factory wiring. See Eurocopter Maint. Manual WDM for detail.
For Bell 204, 205, 214 and 412 connect alert tone ports to 8Z1P3. See Bell Maint. Manual BHT-xx-MM for detail.

DEFINITIONS:

N/C: MAKE NO CONNECTION. The pin is not connected to anything internally and therefore shall have no connection externally

RESERVED: MAKE NO CONNECTION. Internal circuitry may be added in the future, or may be present and relevant for testing but not relevant to operation for flight.

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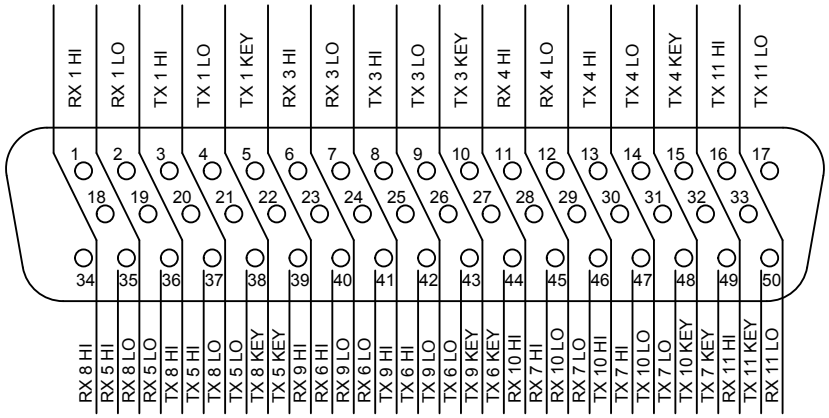
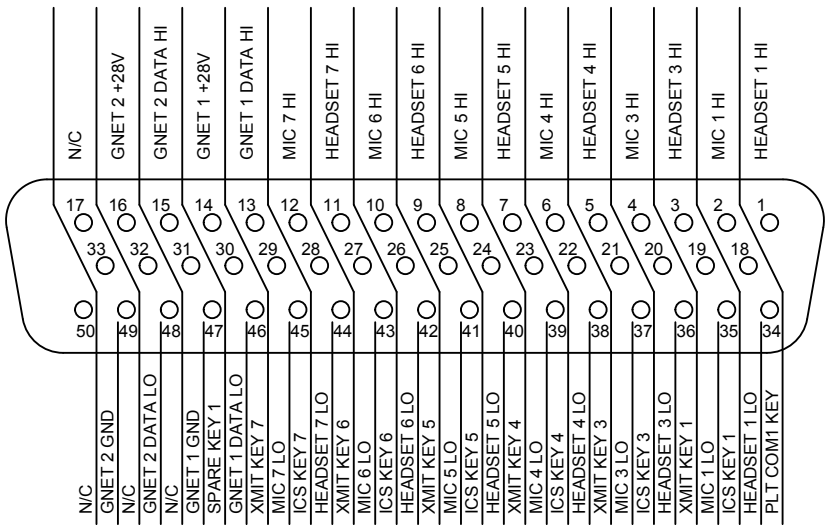
REVISION			
REV	DESCRIPTION	DATE	APPROVAL
See sheet 1 for revision history			





NOTE: VIEW IS FROM REAR OF AIRFRAME CONNECTOR

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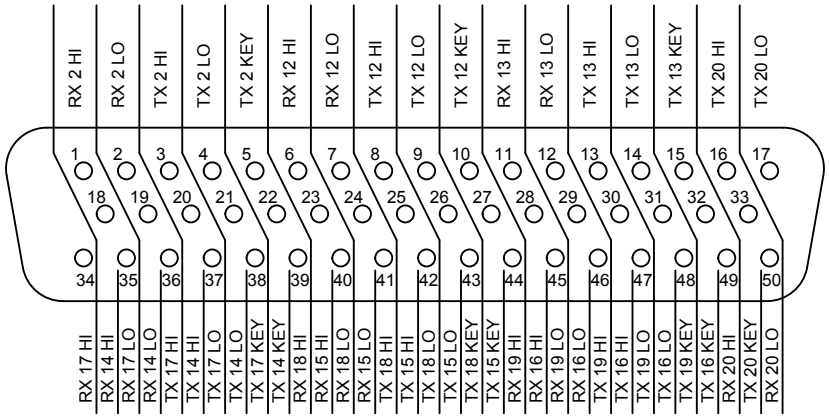
DRAWN	GA	DATE	3/27/14
CHECKED	SJC	DATE	3/27/14
APPROVAL	CLB	DATE	3/27/14
PRO NO.	GA182	SHT.	2 of 13

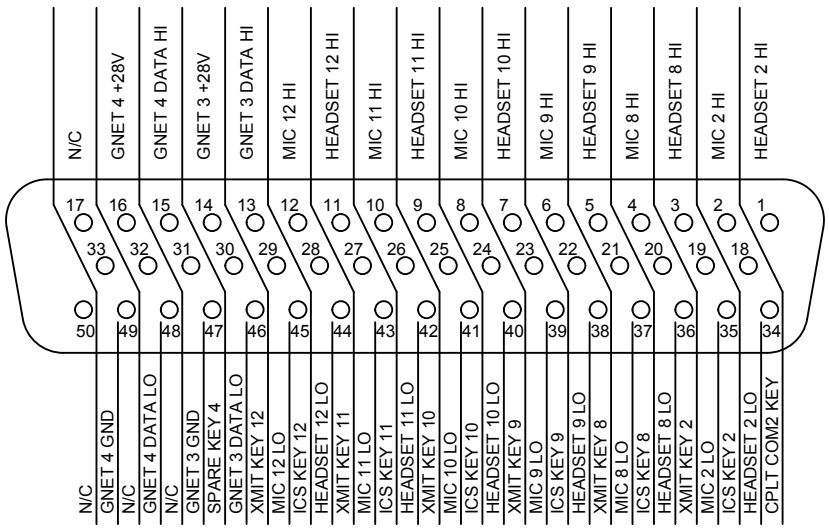
TITLE: P139-HD AUDIO SYSTEM
P1 P2 PLUGS

DWG NO. G13162 REV. --

REVISION			
REV	DESCRIPTION	DATE	APPROVAL
See sheet 1 for revision history			



P3
D50F
6



P4
D50M
5

NOTE: VIEW IS FROM REAR OF AIRFRAME CONNECTOR

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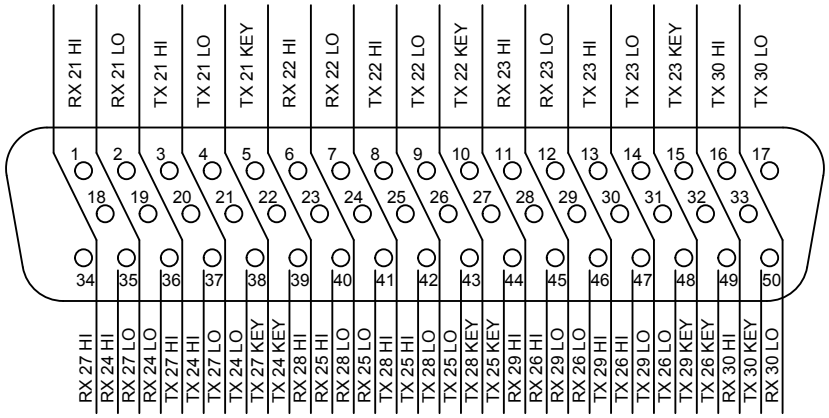
CHECKED	SJC	DATE	3/27/14
APPROVAL	CLB	DATE	3/27/14
PRO NO.	GA182	SHT.	3 of 13

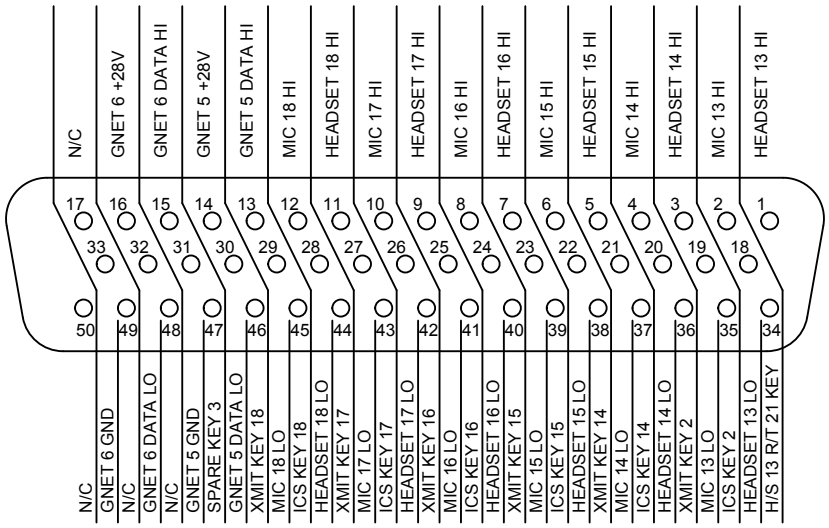
TITLE: P139-HD AUDIO SYSTEM
P3 P4 PLUGS

DWG NO. G13162 REV. --

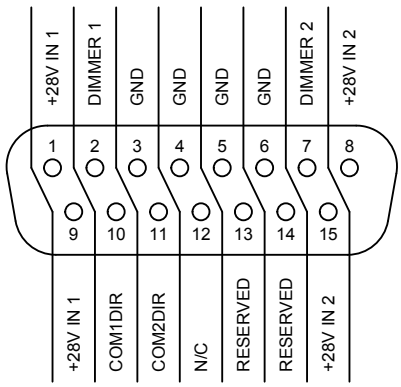
REVISION			
REV	DESCRIPTION	DATE	APPROVAL
See sheet 1 for revision history			



P5
D50F
△6



P6
D50M
△5



P7
D15FS
△10

NOTE: VIEW IS FROM REAR OF AIRFRAME CONNECTOR

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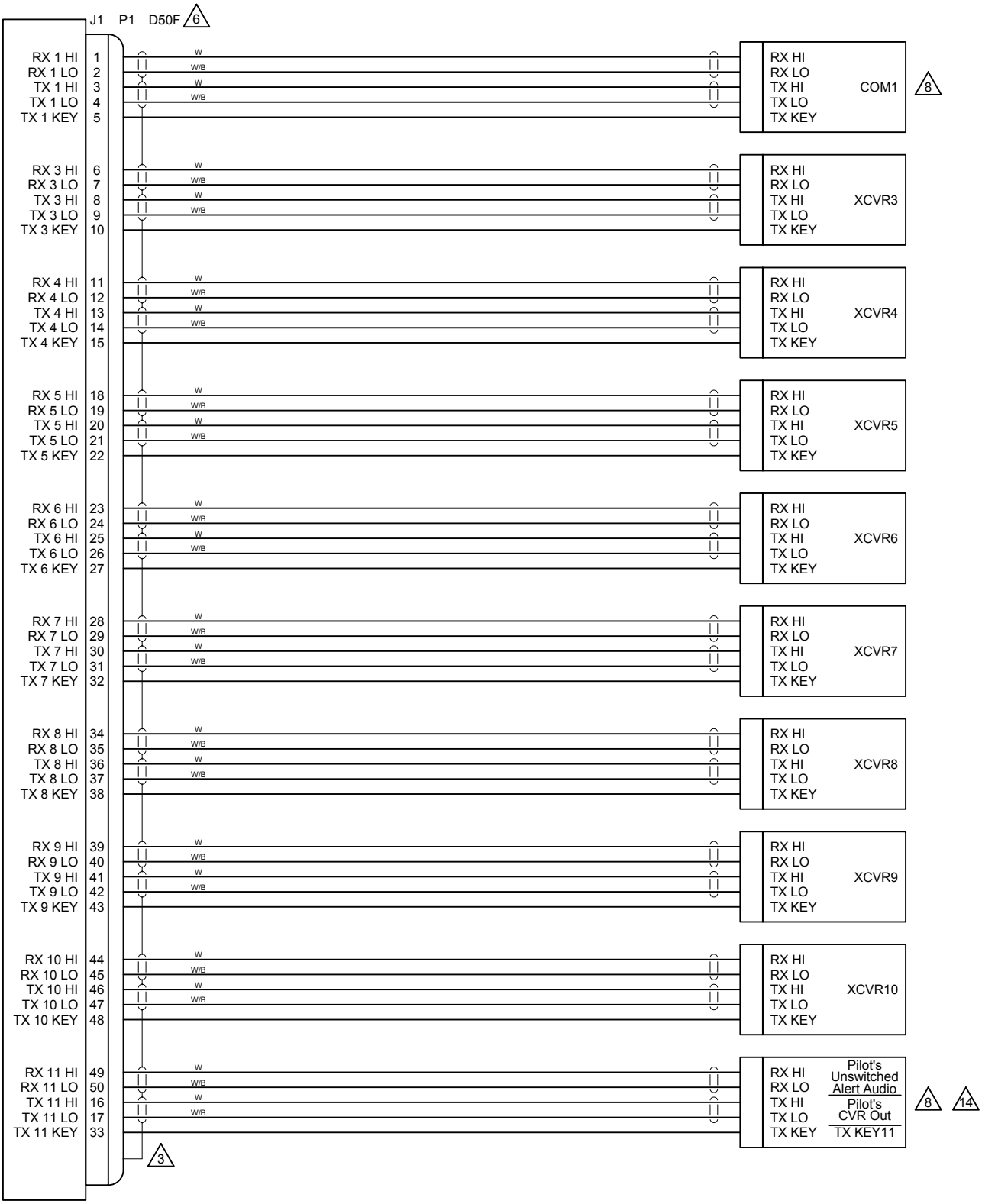
DRAWN	GA	DATE	3/27/14
CHECKED	SCJ	DATE	3/27/14
APPROVAL	CLB	DATE	3/27/14
PRO NO.	GA182	SHT.	4 of 13

TITLE: P139-HD AUDIO SYSTEM
P5 P6 P7 PLUGS

DWG NO. G13162 REV. --

REV	REVISION DESCRIPTION	DATE	APPROVAL
	See sheet 1 for revision history		



GENEVA AVIATION www.genevaaviation.com	DRAWN GA	DATE 3/27/14	TITLE P139-HD AUDIO SYSTEM ROUTER J1
	CHECKED SJC	DATE 3/27/14	
	APPROVAL CLB	DATE 3/27/14	
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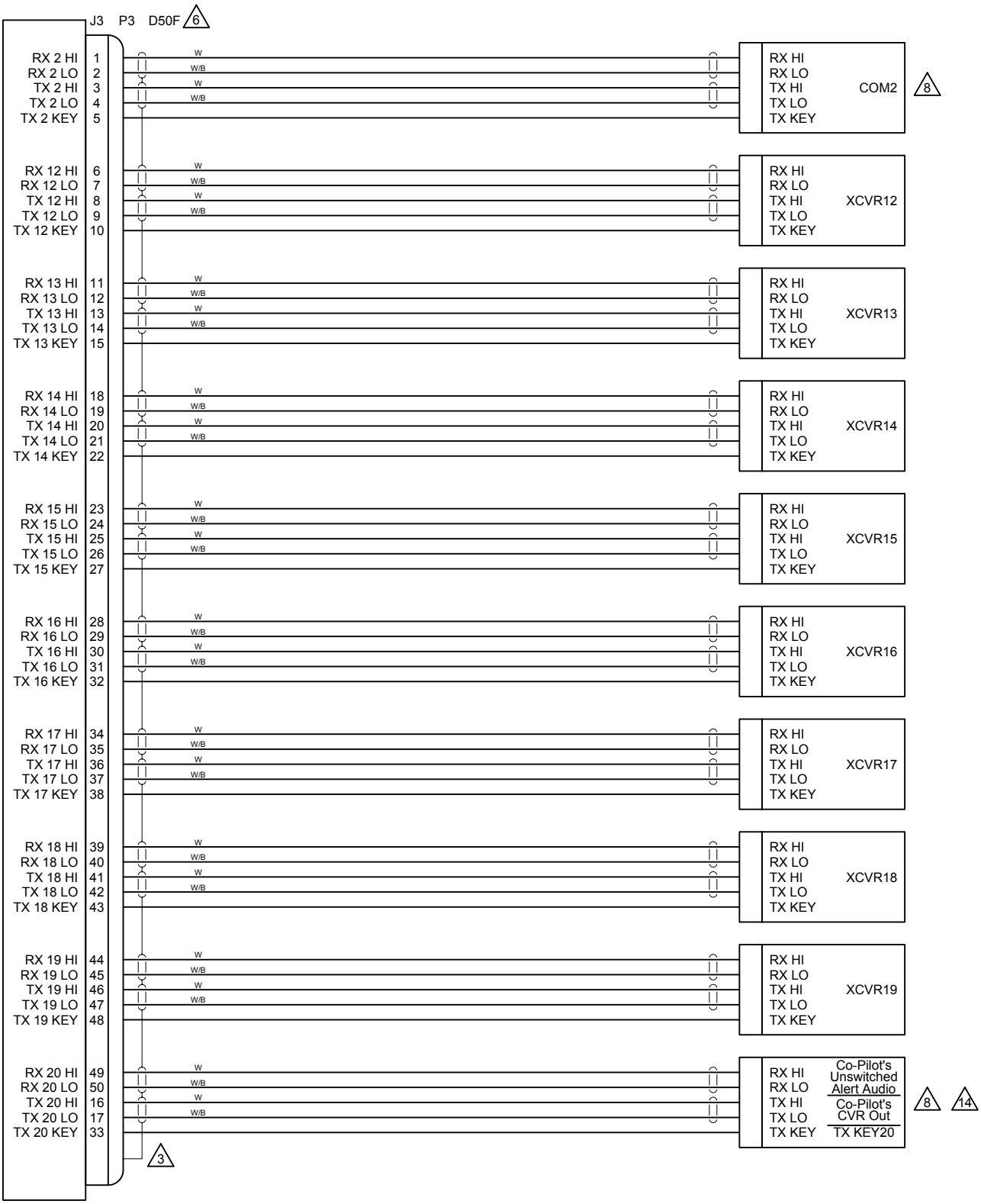
REV	REVISION DESCRIPTION	DATE	APPROVAL
	See sheet 1 for revision history		



GENEVA AVIATION www.genevaaviation.com	DRAWN GA	DATE 3/27/14	TITLE P139-HD AUDIO SYSTEM ROUTER J3
	CHECKED SJC	DATE 3/27/14	
	APPROVAL CLB	DATE 3/27/14	
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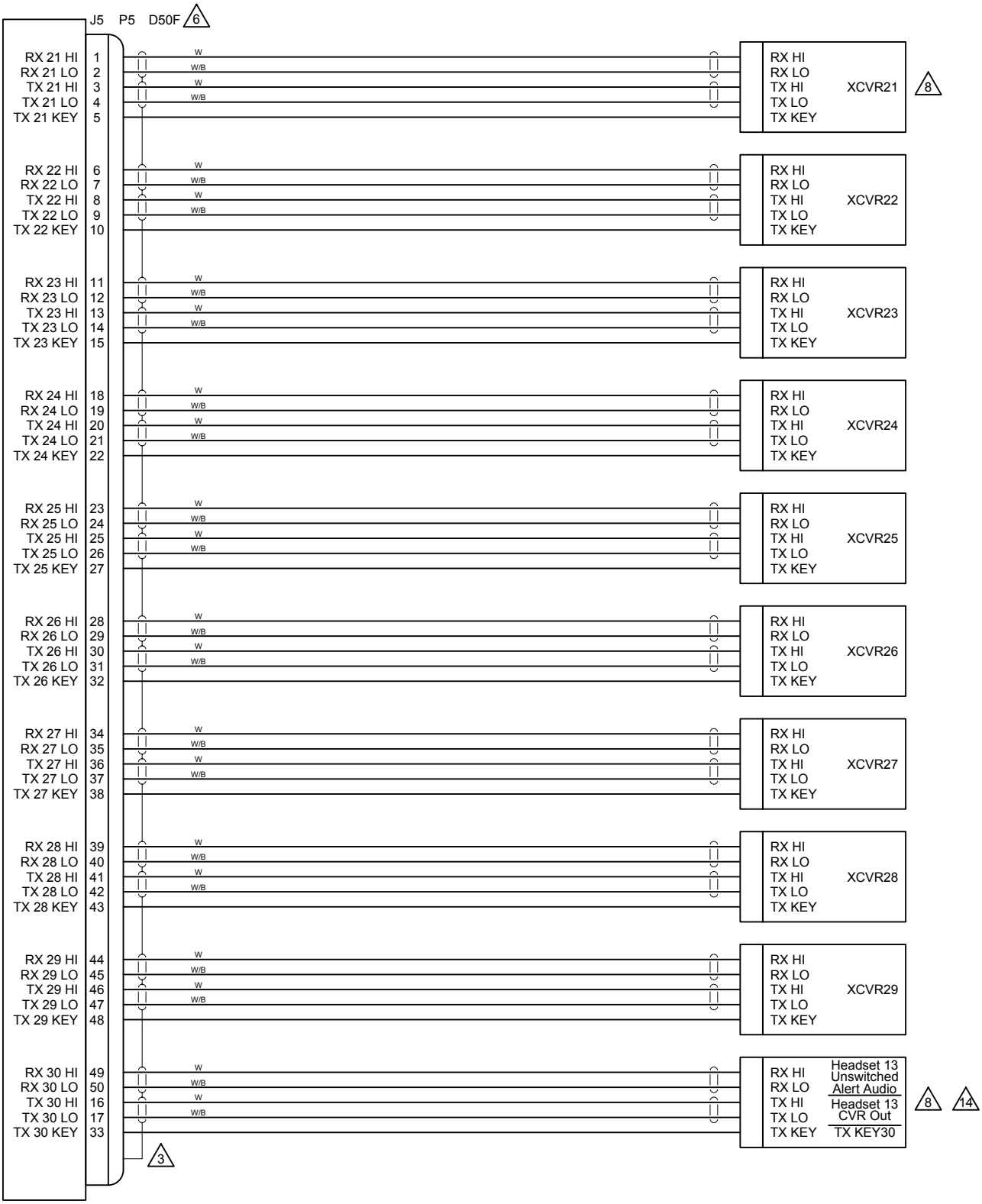
REV	REVISION DESCRIPTION	DATE	APPROVAL
	See sheet 1 for revision history		



GENEVA AVIATION www.genevaaviation.com	DRAWN GA	DATE 3/27/14	TITLE P139-HD AUDIO SYSTEM ROUTER J5
	CHECKED SJC	DATE 3/27/14	
	APPROVAL CLB	DATE 3/27/14	
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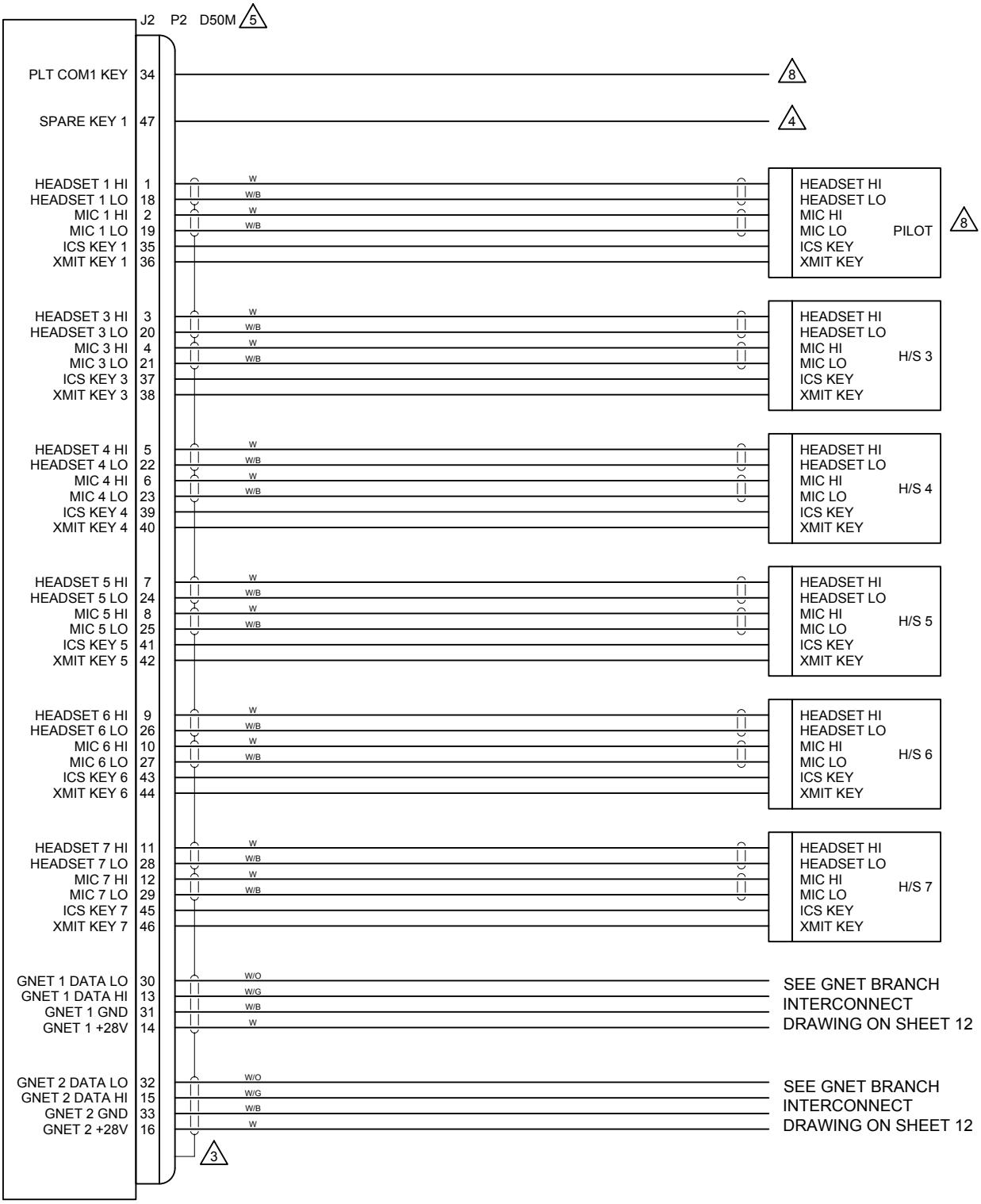
REVISION			
REV	DESCRIPTION	DATE	APPROVAL
See sheet 1 for revision history			



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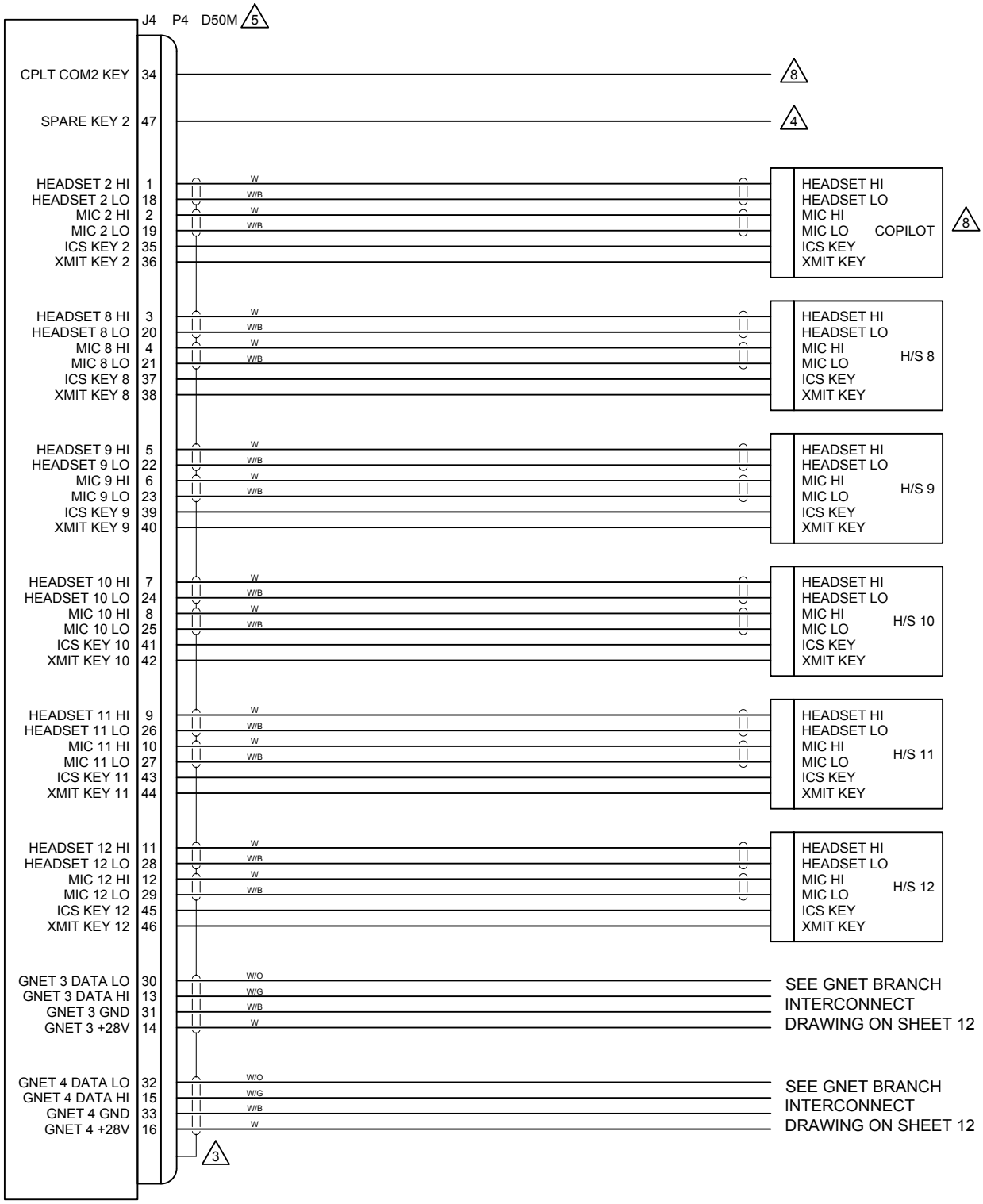
GENEVA AVIATION www.genevaaviation.com	DRAWN GA	DATE 3/27/14	TITLE P139-HD AUDIO SYSTEM ROUTER J2
	CHECKED SJC	DATE 3/27/14	
	APPROVAL CLB	DATE 3/27/14	
	PRO NO. GA182	SHT. 8 of 13	DWG NO. G13162 REV. --

REVISION			
REV	DESCRIPTION	DATE	APPROVAL
See sheet 1 for revision history			



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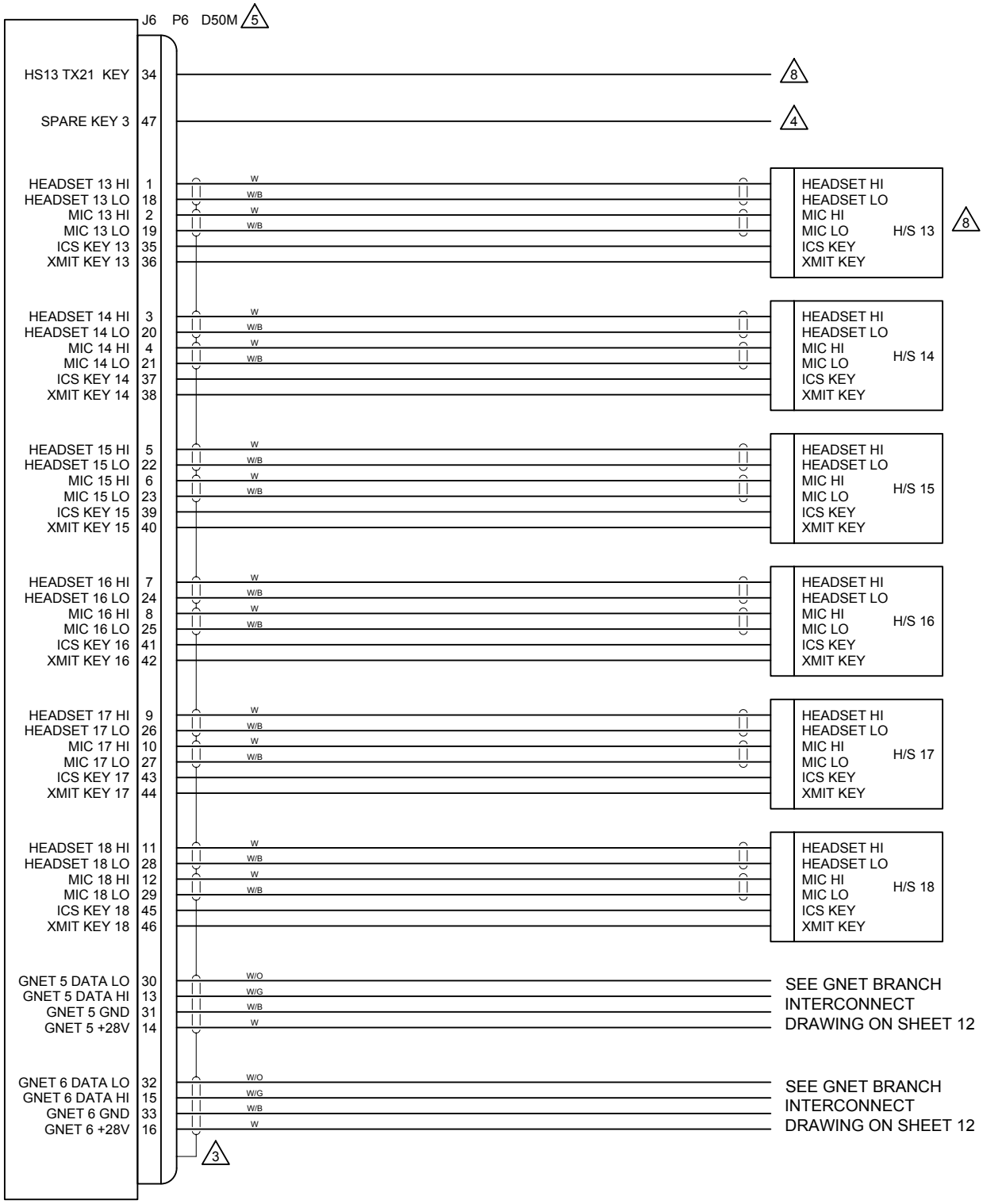
DRAWN	GA	DATE	3/27/14
CHECKED	SJC	DATE	3/27/14
APPROVAL	CLB	DATE	3/27/14
PRO NO.	GA182	SHT.	9 of 13

TITLE: P139-HD AUDIO SYSTEM ROUTER J4

DWG NO. G13162 REV. --

REVISION			
REV	DESCRIPTION	DATE	APPROVAL
See sheet 1 for revision history			



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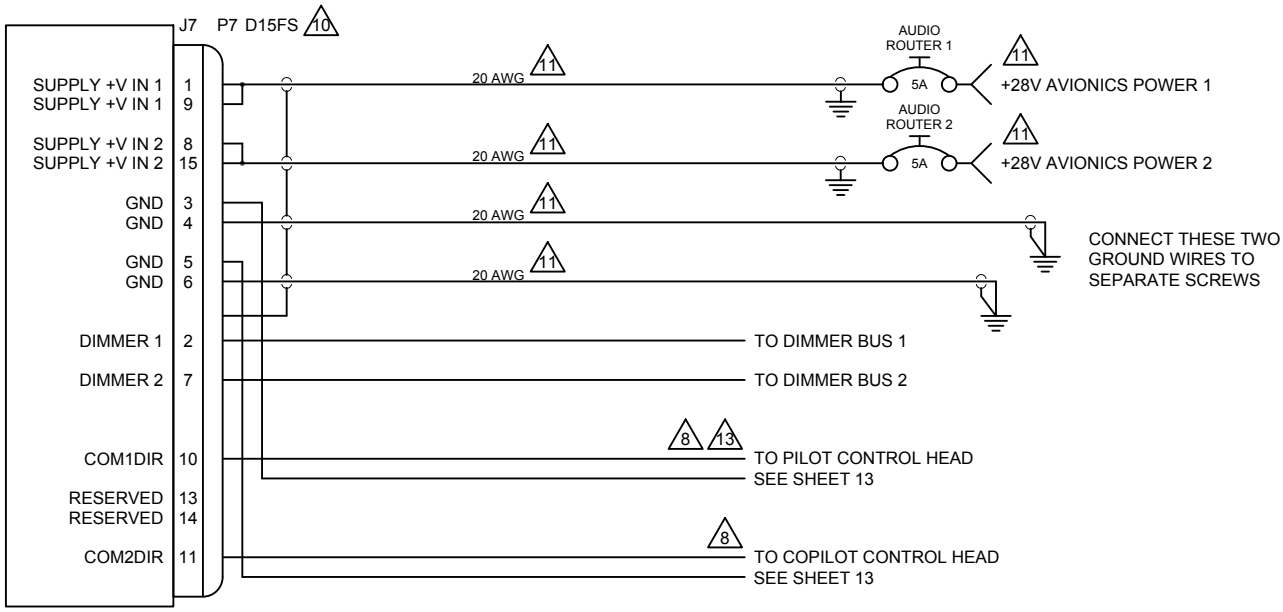
DRAWN	GA	DATE	3/27/14
CHECKED	SJC	DATE	3/27/14
APPROVAL	CLB	DATE	3/27/14
PRO NO.	GA182	SHT.	10 of 13

TITLE: P139-HD AUDIO SYSTEM ROUTER J6

DWG NO. G13162 REV. --

REVISION			
REV	DESCRIPTION	DATE	APPROVAL
See sheet 1 for revision history			



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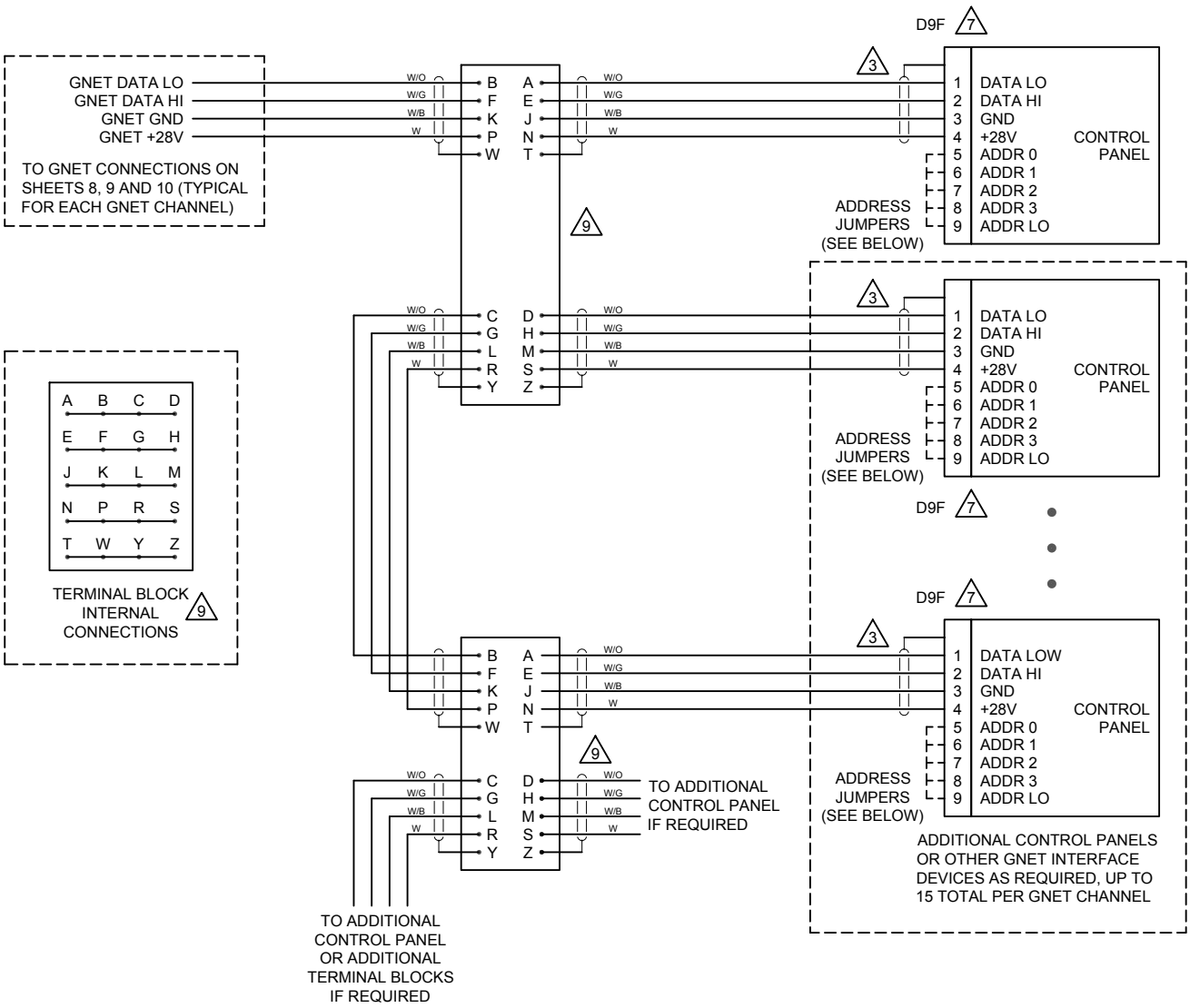
DRAWN	GA	DATE	3/27/14
CHECKED	SJC	DATE	3/27/14
APPROVAL	CLB	DATE	3/27/14
PRO NO.	GA182	SHT.	11of 13

TITLE: P139-HD AUDIO SYSTEM ROUTER J7 CONNECTIONS

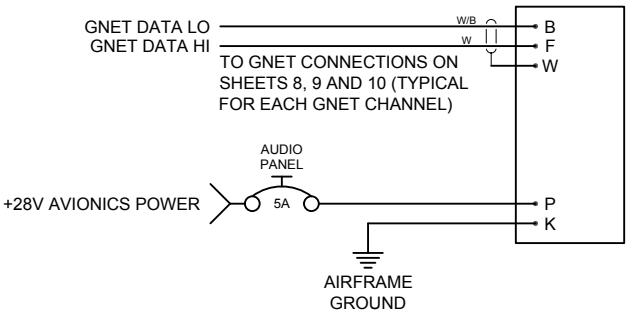
DWG NO. G13162 REV. --

REV	REVISION	DATE	APPROVAL
	See sheet 1 for revision history		



GNET EXTERNAL POWER:

IF THE AUDIO SYSTEM HAS MORE THAN 6 CONTROL PANELS AN EXTERNAL POWER SOURCE FOR THE ADDITIONAL PANELS MUST BE PROVIDED. UP TO 12 ADDITIONAL CONTROL PANELS MAY BE POWERED FROM EACH EXTERNAL 5A BREAKER.



GNET ADDRESS JUMPERS:

FOR EVERY CONTROL PANEL OR OTHER PERIPHERAL DEVICE CONNECTED TO A PARTICULAR GNET CHANNEL, A UNIQUE DEVICE ADDRESS FROM "1" TO "9" OR "A" TO "F" MUST BE WIRED INTO THE CONNECTOR. THE ADDRESS FOR EACH DEVICE ON EACH GNET CHANNEL IS DEFINED IN THE SYSTEM CONFIGURATION SOFTWARE FOR THE SPECIFIC INSTALLATION.

USING 24 AWG WIRE 1.5" LONG FOR EACH JUMPER, CONNECT THE FOLLOWING PINS TOGETHER FOR GNET ADDRESSING FOR EACH CONNECTOR, AS SPECIFIED IN THE SYSTEM CONFIGURATION REQUIREMENTS. MAKE NO CONNECTIONS TO UNLISTED PINS.

"1" = 6-7-8-9	"5" = 6-8-9	"9" = 6-7-9	"D" = 6-9
"2" = 5-7-8-9	"6" = 5-8-9	"A" = 5-7-9	"E" = 5-9
"3" = 7-8-9	"7" = 8-9	"B" = 7-9	"F" = NONE
"4" = 5-6-8-9	"8" = 5-6-7-9	"C" = 5-6-9	

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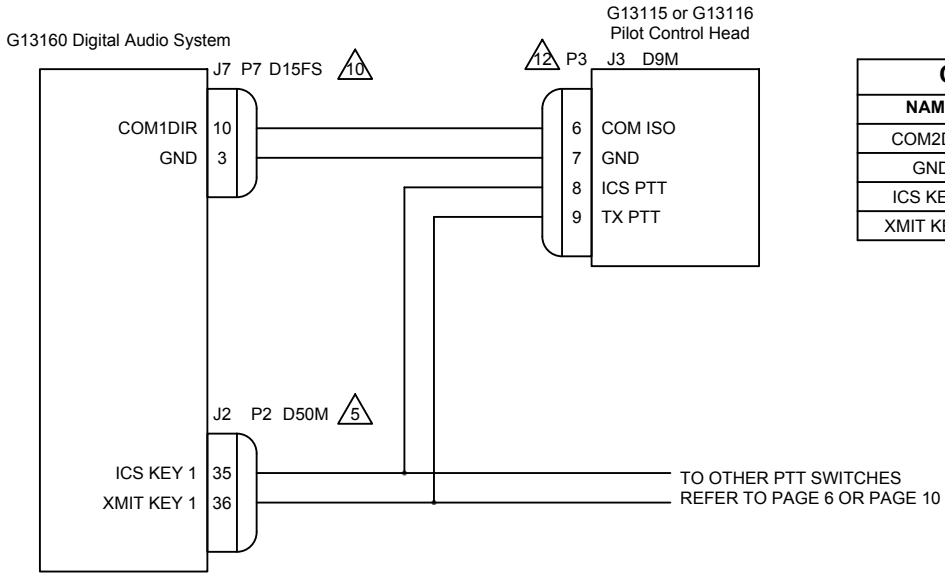
DRAWN	GA	DATE	3/27/14
CHECKED	SJC	DATE	3/27/14
APPROVAL	CLB	DATE	3/27/14
PRO NO.	GA182	SHT.	12 of 13

TITLE: P139-HD AUDIO SYSTEM GNET INTERCONNECTS

DWG NO. G13162 REV. --



Copilot Pin Assignment

NAME	G13115/6	G13160
COM2DIR	J3 pin 6	J7 pin 11
GND	J3 Pin 7	J7 pin 5
ICS KEY2	J3 pin 8	J4 pin 35
XMIT KEY 2	J3 Pin 9	J4 pin 36

The G13115 and G13116 control heads thave two electromechanical toggle switches on the front panel; an EMERG/NORMAL locking toggle switch, and a 3-position momentary switch for ICS/OFF/TX PTT. When each switch is "on" the appropriate pin on the J3 connector is connected to GND, pin 7.

The above wiring illustrates the use of the EMER/NORMAL switch on the Pilot's G13116/G13116 control head to control the Emergency Mode operation for the pilot headset. The operation of the Digital Audio System in Emergency Mode is detailed in NOTE 8 on G13162 sheet 1.

The pilot control head MUST be wired to COM1DIR as shown if this is the primary audio system installed. ONLY if the audio system is installed as a secondary may the connection be omitted and the COM1DIR pin on the G13160 be connected to ground.

In most installations, the copilot control head will be wired to COM2DIR, connecting to the appropriate pins as shown in the above table. Exceptions are if the audio system is not the primary audio system or if the HEADSET 2 port is not at a location used by flight crew. In these situations the COM2DIR pin on the G13160 should be connected to ground.

NOTE: When the Copilot goes into Emergency Mode, Headset Port 13 and Radio Ports 21 and 30 will also go into emergency mode as detailed in NOTE 8 on G13162 sheet 1.

The EMERG/NORMAL switch is only connected for the pilot and copilot control head.

The ICS PTT and TX PTT pins on the copilot control head should be connected in parallel with the appropriate PTT switches on the copilot cyclic and/or foot switches.

In all other crew positions the ICS PTT and TX PTT pins on the associated control head may be connected in parallel with the appropriate PTT switches for that headset.

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