Entegra Integrated Flight Display System Installation Manual

600-00160-000 REV: 20

Document Revisions

Date	Revision No.	Description
04/20/09	00	Initial Release per ECO-09-193
5/14/09	01	Release per ECO-09-256
6/30/09	02	Release per ECO 09-277
9/11/09	03	Release per ECO 09-377
11/06/09	04	Release per ECO-09-452
06/11/10	05	Release per ECO-10-118
09/28/10	06	Release per ECO-10-340
01/06/11	07	Release per ECO-10-404
02/23/11	08	Release per ECO-11-047
06/27/11	09	Release per ECO-11-183
08/29/11	10	Release per ECO-11-212
11/01/11	11	Release per ECO-11-382
09/21/12	12-A	Release per DCO-12-028
01/07/13	12	Release per ECO-12-314
02/04/14	13	Release per ECO-13-372
04/17/14	14	Release per ECO-14-111
11/07/14	15	Release per ECO-14-352
09/24/15	16	Release per ECO-15-378
11/18/15	17	Release per ECO-15-438
11/30/17	18	Release per ECO-17-265
11/18/18	19	Release per ECO-18-292
1/16/20	20	Release per ECO-20-006

This document is applicable to the Entegra Integrated Flight Display System.

The latest installation manuals are available to authorized dealers on the web at www.avidyne.com.

Table of Contents

1. General Information 1
1.1 Introduction 1
1.2 Product Description 1
1.3 Applicability 3
1.4 System Interconnect 7
1.5 Technical Specifications 8
1.5.1 IFD5000i Integrated Flight Display 8
1.5.2 ACD215 Control Display Unit 9
1.5.3 GPS723 WAAS Global Positioning Satellite (GPS) Receiver 10
1.5.4 DVX740 VHF Communications Transceiver 11
1.5.5 DVX740 VOR Receiver Specifications 11
1.5.6 DVX740 LOC/GS Receiver Specifications 12
1.5.7 MAG300 Magnetometer/OAT Sensor 13
1.5.8 ACM100 Aircraft Configuration Module (ACM) 13
1.6 Regulatory Compliance 14
1.6.1 Applicable TSOs 14
1.6.2 Partial Function TSOs 19
1.6.3 Non-TSO Functions 19
1.6.4 TSO Deviations 20
1.6.5 Software and Hardware Design Assurance Levels 26
1.7 Avidyne Supplied Material 28
1.7.1 Product Ship Kits 29
1.7.1.1 Cirrus R9 Ship Kits 29
1.7.1.2 Piper R9 Ship Kits 31
1.7.2 Aircraft Installation Kits 33

1.7.3 Activation Kits 39

1.8 3rd Party supplied equipment 40

1.8.1 GPS Antennas 40

1.8.2 S-Tec 55X Autopilot Software Upgrade 40

1.9 Optional equipment 41

1.9.1 Audio Panel 41

1.9.1.1 Avidyne AMX240 Audio Panel 41

1.9.1.2 PS Engineering Audio Panel 41

1.9.2 Transponder 41

1.9.2.1 Avidyne AXP322 Remote ADS-B Compliant Transponder 41

1.9.2.2 Avidyne AXP340 Panel Mount ADS-B Compliant Transponder 42

1.9.2.3 Becker Transponders 42

1.9.3 UAT Receiver 42

1.10 Documentation 42

2. Installation Instructions 43

2.1 Installation Limitations 43

2.2 Installation Considerations 43

2.3 Cooling 46

2.4 Mounting 46

2.5 Electrical and Sensor Interfaces 47

2.5.1 Integrated Flight Displays 47

2.5.2 Sensor Interface 47

2.5.3 Bezel Lighting 47

2.5.4 Wiring 47

2.5.5 ByteFlight Data Bus 48

2.6 Pitot-Static Interface 48

2.7 Enhanced Vision System 48
3. System Setup 49
3.1 IFD Configuration Setup 49
3.1.1 General Information 49
3.1.2 IFD Configuration Tool Setup 49
3.1.3 Configuring the IFDs 52
3.1.4 Post IFD Configuration Checkout 55
3.2 IRU Calibration 55
3.3 Air Data Unit 57
3.3.1 Testing 57
3.3.2 Calibration 58
3.4 Charts Database Loading 59
3.5 Navigation & Obstacle Database Loading 60
3.6 GPS Reset 61
3.7 AXP322 Transponder Configuration (Optional) 62
3.8 Radar Configuration 64
4. Post-Installation Checks and Calibrations 65
4.1 Lighting 65
4.2 NAV-COMM Ground Check 65
4.3 GPS Ground Check 65
4.4 Pitot-Static Leak Check 65
4.5 Electromagnetic Compatibility (EMC) Check 65
4.6 Magnetic Compass Swing 66
4.7 Fuel Quantity Calibration 68
4.7.1 Eight Point Calibration Procedure 68
4.7.2 Two Point Calibration Procedure 72
4.8 Sensors 75

4.8.1 Enhanced Vision System 75

4.9 Autopilots 75

4.9.1 S-Tec 55x Autopilot Computer 75

4.9.2 Avidyne DFC100 Autopilot Computer 75

4.10 Engine Data Acquisition Unit 75

4.10.1 Fuel Quantity Indicator Calibration (PA-46 and PA-32 Only) 75

4.10.2 EDC-33P-AVI Data Acquisition Unit Test 77

4.11 Emergency Locating Transmitter Position Data Test 77

4.12 Radar Configuration 78

5. System Flight Checks 80

5.1 Autopilot Inflight Setup and Checkout (S-TEC Autopilot Only) 80

5.2 System Checkout 81

5.3 Radar Flight Test 82

6. Cleaning the IFD and Control/Display Unit Screens 83

7. Factory Service Policies and Procedures 84

7.1 Technical Support 84

7.2 General Service Procedures 84

8. STC Permission 86

Appendix A: Environmental Qualification Forms 87

Appendix B: IFD Cutout and Outline Dimensions 91

Appendix C: Control Display Unit Outline Dimensions 95

Appendix D: 700-00011-000, Magnetometer/OAT Sensor Outline Dimensions 96

Appendix E: 700-00011-001, Magnetometer/OAT Sensor Outline Dimensions 97

Appendix F: Interconnect Diagrams 98

F-2 IFD5000i Power, Grounds, and Lighting Interconnect Diagram 99

F-3 STEC 55X Autopilot Interconnect Diagram 100

F-3 STEC 55X Autopilot Interconnect Diagram (Continued) 101

F-4 MAG300 Magnetometer Interconnect Diagram 102

F-5 Data Acquisition Unit (DAU) Interconnect Diagram 103

F-6 Signal Interface Unit (SIU) Interconnect Diagram 104

F-7 Avidyne AMX240 Audio Panel Interconnect Diagram 105

F-8 PS Engineering PMA8000B Audio Panel Interconnect Diagram 106

F-9 PS Engineering PMA8000 Audio Panel Interconnect Diagram 107

F-10 Garmin GMA340 Audio Panel Interconnect Diagram 108

F-11 MLB700 Weather Datalink Receiver Interconnect Diagram 109

F-12 Honeywell KGP560 EGPWS Interconnect Diagram 110

F-13 Avidyne AXP322 Transponder Diagram 111

F-14 Avidyne AXP340 Transponder Interconnect Diagram 112

F-15 Becker ATC 4401-2-250Mode C Transponder Diagram 113

F-16 Becker BXP-6402-1R - (01) Mode S Transponder Diagram 114

F-17 ACD215 Control Display Unit Interconnect Diagram (Two IFD5000i System) 115

F-18 DFC100 ByteFlight Diagram (Two IFD5000i System) 116

F-19 DFC100 Byteflight Diagram (Three Display) 117

F-20 SkyWatch TRC497/899 Traffic System Interconnect Diagram 118

F-21 Avidyne TAS6XX Traffic System Interconnect Diagram 119

F-22 Avidyne MLB100/SkyTrax100 ADS-B Weather Receiver Interconnect Diagram 120

F-23 L3 WX500 Stormscope Interconnect Diagram 121

F-24 TWX670 Lightning Sensor Interconnect Diagram 122

F-25 Bendix King KN62/62A/64 DME Transceiver Diagram 123

F-26 Bendix King KN63 DME Transceiver Diagram 124

F-27 Shadin ADF Converter Diagram 125

F-28 Chelton DFS 43A ADF System Diagram 126

F-29 RS-170 Video Input Diagram 127

F-30 EDC-33P-AVI DAU Diagram 128

F-31 406MHz ELT Diagram 129

F-32 RDR2000/2100 Diagram..... 130

Appendix G: Interface Control Data 131

Appendix H: IFD Aircraft Configuration Worksheet..... 132

1. General Information

1.1 Introduction

This manual contains information about the physical, mechanical, and electrical characteristics of the Avidyne Entegra Integrated Flight Display (IFD) System, and provides installation instructions for its components.

1.2 Product Description

The IFD system consists of the following:

- Two (2) IFD5000i Integrated Flight Displays (IFD) each including FMS [2], integral VHF NAV/COM Radio, WAAS capable GPS Receiver, and ADAHRS [3].
- One (1) ACD215 Control Display Unit for a method of entering flight plans, setting frequencies, setting bugs, and other miscellaneous controls.
- One (1) ACM100 Aircraft Configuration Module (ACM) for storage of avionics configuration such as sensor interface port configurations, aircraft type v-speeds, calibrations, and engine parameters. This component remains with the aircraft and is used by the IFDs for configuration data retrieval when replacing an IFD or ACR.
- Either One or Two MAG300 Magnetometers/OAT Sensors depending on the system installed [4].
- (Optional) One (1) IFD5000i Integrated Flight Display (IFD) with FMS. [7]

The Entegra IFD System supports integration with the following avionics:

- Avidyne TAS600/600A Series Traffic System
  - TAS600
  - TAS605/605A
  - TAS610
  - TAS615/615A
  - TAS620/620A
- L3 SkyWatch Traffic System
  - TRC497 (SkyWatch)
  - TRC899 (SkyWatch HP)
- Avidyne TWX670 Lighting Detection/Warning System
- Avidyne Data Acquisition Unit (DAU) 200-00073-000
- Avidyne Signal Interface Unit (SIU) 200-00031-000
- Avidyne DFC100 Autopilot Computer
- L3 WX500 Lighting Detection/Warning System
- Avidyne SkyTrax100 ADS-B Weather Receiver [8]

- Avidyne MLB700 Broadcast Weather Receiver
- Honeywell KGP560/860 EGPWS
- Avidyne AMX240 Audio Panel
- PS Engineering PMA8000 Audio Panel
  - P/N 050-890-0402, 050-890-0403 [5], or 050-890-0404 [6]
  - All other models
- Garmin GMA 340 Audio Panel
- Avidyne AXP322 ADS-B Transponder
- Avidyne AXP340 ADS-B Transponder
- Becker Mode C ATC 4401-2-250 Transponder
- Becker Mode S BXP-6402-1R-(01) Transponder
- Garmin GTX 327/330 Transponder
- Bendix King ADF
  - KR-87 with Shadin 933752-000 Converter
- Bendix King DME
  - KN62, KN62A, KN63, KN64
- Cobham/Artex ELT

Notes:

[1] FMS400 along with the dual WAAS capable GPS receivers support TSO-C146d Gamma 1 operations only. FMS900W along with the same dual WAAS capable GPS receivers support TSO- C146d Gamma 3 operations. Contact Avidyne for further product definition.

[2] FMS400 or the FMS900W can be installed.

[3] Either Single or Dual Installations.

[4] Only One Magnetometer is required when installing Single ADAHRS System.

[5] MP3 capable

[6] Bluetooth capable

[7] Only needed for three screen system

[8] ADS-B Traffic not supported. Previously referred to as MLB100

1.3 Applicability

This manual applies to the following part numbers:

Component	Model Number	Hardware Part Number	Software Part Number	SW Component Part Number	9.2 S/W Rev. #	9.2.1 S/W Rev. #	9.2.2 S/W Rev. #	9.2.3 S/W Rev. #	9.2.4 S/W Rev. #
Integrated Flight Display (IFD) Containing:	IFD5000i	700-00083-000 or -001		N/A	-				
Front Panel Services Module		710-00170-000	530-00208-000	- 510-00796-000 510-00239-001	02 02 00	02 02 00	02 02 00	02 02 00	02 02 00
Aircraft Computer Resource (ACR)[1]	ACR132	710-00110-001	530-00220-000	- 510-00275-000 510-00802-002 510-00799-001 510-00797-001 510-00240-001	01 01 01 01 02 01	02 02 01 01 02 01	03 03 02 01 02 01	04 04 02 01 02 01	05 05 02 01 02 01
VHF Comm/Nav Module[1]	DVX740	710-00060-000	530-00182-000	- 510-00775-001 510-00778-000 510-00237-000 510-00239-001	04 06 06 00 00	04 06 06 00 00	04 06 06 00 00	04 06 06 00 00	04 06 06 00 00
Data Concentrator Unit[1]	DCU160	710-00109-000	530-00207-000	- 510-00239-001 510-00800-001	01 00 01	01 00 01	01 00 01	01 00 01	01 00 01
WAAS GPS Module[1]	GPS723	710-00177-000	530-00196-000	- 510-00256-000 510-00257-000 510-00258-000 510-00259-000 510-00239-001	07 04 02 00 00 00	07 04 02 00 00 00	07 04 02 00 00 00	07 04 02 00 00 00	07 04 02 00 00 00
ADAHRS Module[1][2]	AHR310	710-00107-000	530-00209-000	- 510-00192-002 510-00065-004	01 01 00	01 01 00	01 01 00	01 01 00	01 01 00
Inertial Reference Unit (IRU)[2]	--	710-00101-000	NA	510-00773-000	01	01	01	01	01
Integrated Flight Display (IFD) Containing:	IFD5000i	700-00083-000 or -001		N/A	-				
Control Display Unit	ACD215	700-00150-002	530-00205-000	- 510-00803-000 510-00239-001	01 01 00	01 01 00	01 01 00	01 01 00	01 01 00

Component	Model Number	Hardware Part Number	Software Part Number	SW Component Part Number	9.2 S/W Rev. #	9.2.1 S/W Rev. #	9.2.2 S/W Rev. #	9.2.3 S/W Rev. #	9.2.4 S/W Rev. #
Aircraft Configuration Module	ACM100	700-00156-000		N/A	-	-	-	-	-
Magnetometer/OAT Assembly	MAG300	700-00011-000 and 700-00011-001		510-00064-000	-	-	-	-	-

Continued:

Component	Model Number	Hardware Part Number	Software Part Number (or later approved revision)	SW Component Part Number (or later approved revision)	9.3 S/W Rev. #	9.3.1 S/W Rev. #	9.3.3 S/W Rev. #
Integrated Flight Display (IFD) Containing:	IFD5000i	700-00083-000, -001 or -002		N/A	-	-	-
Front Panel Services Module		710-00170-000	530-00208-001	- 510-00796-001 510-00239-001	00 00 00	00 00 00	00 00 00
Aircraft Computer Resource (ACR)[1]	ACR132	710-00110-001	530-00221-000	 510-00278-000 510-00802-003 510-00799-005 510-00797-002 510-00240-001	00 00 00 00 00 02	01 01 01 01 00 02	02 03 02 01 00 02
VHF Comm/Nav Module[1][3]	DVX740	710-00060-001	530-00182-001	- 510-00775-001 510-00778-001 510-00237-000 510-00239-001	00 06 00 00 00	00 06 00 00 00	00 06 00 00 00
Data Concentrator Unit[1]	DCU160	710-00109-000	530-00207-001	- 510-00239-001 510-00800-002	00 00 00	00 00 00	00 00 00
WAAS GPS Module[1] [2][3]	GPS723	710-00177-000	530-00196-000	- 510-00256-000 510-00257-000 510-00258-000 510-00259-000 510-00239-001	07 04 02 00 00 00	07 04 02 00 00 00	08 05 02 00 01 00
ADAHRS Module[1][2][3]	AHR310	710-00107-000	530-00209-000	- 510-00192-002 510-00065-004	01 01 00	01 01 00	01 01 00

Component	Model Number	Hardware Part Number	Software Part Number (or later approved revision)	SW Component Part Number (or later approved revision)	9.3 S/W Rev. #	9.3.1 S/W Rev. #	9.3.3 S/W Rev. #
Inertial Reference Unit (IRU)[2][3]	--	710-00101-000	NA	510-00773-000	01	01	01
Control Display Unit	ACD215	700-00150-002	530-00205-001	- 510-00803-001 510-00239-001	00 00 00	00 00 00	00 00 00
Aircraft Configuration Module	ACM100	700-00156-000		N/A	-	-	-
Magnetometer/OAT Assembly	MAG300	700-00011-000 and 700-00011-001		510-00064-000	-	-	-

Continued:

Component	Model Number	Hardware Part Number	Software Part Number	SW Component Part Number	9.4.0 S/W Rev. #	9.4.1 S/W Rev. #	9.4.2 S/W Rev. #
Integrated Flight Display (IFD) Containing:	IFD5000i	700-00083-000, -001 or -002		N/A	-	-	-
Front Panel Services Module		710-00170-000	530-00208-001	- 510-00796-001 510-00239-001	00 00 00	00 00 00	00 00 00
Aircraft Computer Resource (ACR)[1]	ACR132	710-00110-001	530-00241-000	 510-00335-000 510-00336-000 510-00799-005 510-00797-002 510-00240-001	00 00 00 02 00 02	01 01 01 02 00 02	02 02 02 02 00 02
VHF Comm/Nav Module[1][2]	DVX740	710-00060-001	530-00182-002	- 510-00775-001 510-00316-000 510-00237-000 510-00239-001	00 07 04 00 00	00 07 04 00 00	00 07 04 00 00
Data Concentrator Unit[1]	DCU160	710-00109-000	530-00207-001	- 510-00239-001 510-00800-002	00 00 00	00 00 00	00 00 00

Component	Model Number	Hardware Part Number	Software Part Number	SW Component Part Number	9.4.0 S/W Rev. #	9.4.1 S/W Rev. #	9.4.2 S/W Rev. #
WAAS GPS Module[1][2]	GPS723	710-00177-000	530-00196-000	- 510-00256-000 510-00257-000 510-00258-000 510-00259-000 510-00239-001	08 05 02 00 01 00	08 05 02 00 01 00	08 05 02 00 01 00
ADAHRS Module[1][2]	AHR310	710-00107-000	530-00209-000	- 510-00192-002 510-00065-004	01 01 00	01 01 00	01 01 00
Inertial Reference Unit (IRU)[2]	--	710-00101-000	NA	510-00773-000	01	01	01
Control Display Unit	ACD215	700-00150-002	530-00205-001	- 510-00803-001 510-00239-001	00 00 00	00 00 00	00 00 00
Aircraft Configuration Module	ACM100	700-00156-000		N/A	-	-	-
Magnetometer/OAT Assembly	MAG300	700-00011-000 and 700-00011-001	530-00124-000	510-00064-000	-	-	-

Table 1: Entegra IFD System Product Part Numbers

[1] Modules are field replaceable components of the IFD

[2] Not included in 700-00083-001 IFD configuration.

[3] Not included in 700-00083-002 IFD configuration.

Contact Avidyne for Release 9.1.1 or earlier Software Part Numbers.

Release 9.3.2 was not released and is not a valid configuration.

1.4 System Interconnect

The following diagram depicts a typical system interconnect. Detail wiring interconnect information is described in Appendix F: Interconnect Diagrams

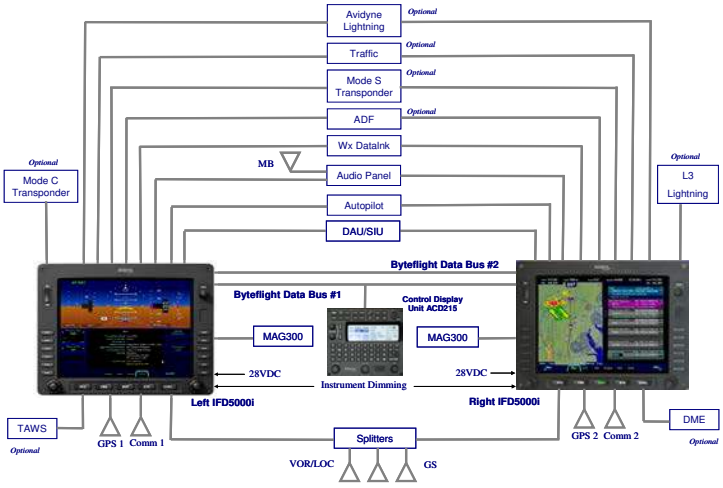


Figure 1: System Interconnect Diagram

Notes:

[1] Dual ADAHRS System shown.

1.5 Technical Specifications

1.5.1 IFD5000i Integrated Flight Display

Specification	Description/Requirement
Standard Features	
Display	262,144 Color, In-Plane-Switching (IPS), Thin Film Transistor TFT, LCD
Diagonal Size	10.4 inches
Resolution	XVGA (1024 x 768)
Interfaces	ARINC429, RS232, Analog & Discrete, Byteflight
Display Field of View	Display field of view in vertical and horizontal planes: 80 degrees minimum 89 degrees typical.
Physical Characteristics	
Weight	17.8 lbs (-000 configuration), 16.1 lbs (-001 configuration), 12.0 lbs (-002 configuration)
Height	See Appendix B
Width	See Appendix B
Depth	See Appendix B
Connectors (Aircraft Side)	P101 – CBC27W2F00000 (Positronic Industries) P102 – CBC17W2F00000 (Positronic Industries) P121 – M24308/2-291 (104-position HD-Dsub, female) P122 – M24308/2-288 (44-position HD-Dsub, female) P144 – M24308/4-266 (44-position HD-Dsub, male)‡
Electrical Requirements	
Voltage	18-32 Volts DC
Current	3.98 Amps Receive, 7.48 Amps Transmit @ 28VDC nominal
Dimming Bus	14V or 28 Volt DC Aircraft Dimming Bus
Cooling Requirement	Venting above the IFD is required. Maintain at least two inch clearance on top and bottom of IFD to permit adequate air flow.
Operating Limits	Appendix A – Environmental Qualification Form
TSOs	See Section 1.5

Table 2: IFD5000i IFD Specifications

‡ Connector is not needed for the 700-00083-002 Display

1.5.2 ACD215 Control Display Unit

Specification	Description/Requirement
Standard Features	
Display	LED display, F-STN, B&W mode, Transflective
Diagonal Size	4.4”
Resolution	240 x 64
Interfaces	Byteflight
Physical Characteristics	
Weight	2.3 lbs
Height	See Appendix C
Width	See Appendix C
Depth	See Appendix C
Connector (Aircraft Side)	P3010 – M24308/2-283 (25-position D-sub, female)
Electrical Requirements	
Voltage	18-32VDC
Current	0.65A @ 28VDC nominal
Dimming Bus	Provided by right side IFD
Cooling Requirement	None
Operating Limits	Appendix A – Environmental Qualification Form
TSOs	See Section 1.6

Table 3: ACD215 Control/Display Unit Specifications

1.5.3 GPS723 WAAS Global Positioning Satellite (GPS) Receiver

Specification	Description/Requirement
Channels	10 GPS and 2 WAAS
Velocity	Max velocity: 1,000 knots
TTFF (Time to First Fix)	less than 5 minutes
Reacquisition	20 seconds
Position Update Interval	0.2 sec
Lat/Lon Position Accuracy	<32 meter horizontal, <32 meter vertical
Fault Detection / RAIM	Navigation alert: 1 second
	FDE Time-to-alert: 8 seconds
	WAAS provided loss of integrity alert: 2 seconds
Sensitivity	GPS: -132dBm
	WAAS: -132dBm

Table 4: GPS723 WAAS GPS Specification

1.5.4 DVX740 VHF Communications Transceiver

Specification	Description/Requirement
Audio Output	65 mW into a 150 Ohm load (headphone or line out)
Audio Response	250 to 2500Hz within 6dB, down 18dB at 4kHz
AGC Characteristics	No more than 6dB variation from 10uV to 10mV
Sensitivity	2uV max for 6dB (S+N)/N with 1khz 30% mod
	8.33kHz Selectivity: 6dB at least ± 2.778kHz, 40dB no more than ± 7.37kHz
Spurious Response	10mV spurious signal produces no more output than a desired signal at 6dB (S+N)/N
Transmitter Power	16W minimum, 20W typical
Transmitter Duty Cycle	25% (maximum 1 min per 4 min)
Modulation Capability	70%
Carrier Noise Level	-42dB
Frequency Stability	2.5 ppm
Demodulation Audio Distortion	<12%
Sidetone Fidelity	300-2500 Hz (6dB bandwidth)
Demodulation Audio Response	300-2500 Hz

Table 5: DVX740 VHF Transceiver Specifications

1.5.5 DVX740 VOR Receiver Specifications

Specification	Description/Requirement
Selectivity	6dB at least ±17kHz, 40dB no more than ±80kHz
Sensitivity (flag):	5uV max
Sensitivity (aural):	5uV max for 6dB (S+N)/N with 1kHz 30% mod
Spurious Response	-60dB or better
VOR OBS Bearing Accuracy	± 2.0 degrees or better
Audio response	350 to 2500Hz within 6dB, down 20dB at <150Hz, >9kHz

Table 6: DVX740 VOR Specifications

1.5.6 DVX740 LOC/GS Receiver Specifications

Specification	Description/Requirement
Glideslope Receiver	
Selectivity	6dB at least ±10kHz, 40dB no more than ±200kHz
Sensitivity (flag)	10uV max
Spurious response	-60dB or better
Centering accuracy	0 ± 0.02 DDM or better
Deflection response:	67% of final value in 600msec
Localizer Receiver	
Selectivity	6dB at least ±17kHz, 40dB no more than ±80kHz
Sensitivity (flag):	10uV max
Sensitivity (aural)	10uV max for 20dB (S+N)/N with 1kHz 30%mod
Spurious response	-60dB or better
Centering accuracy	0 ± 0.007 DDM or better
Deflection response	67% of final value in 600msec
Audio response	350 to 2500Hz within 6dB, down 20dB at <150Hz, >9kHz

Table 7: DVX740 VOR/ILS Specifications

1.5.7 MAG300 Magnetometer/OAT Sensor

Specification	Description/Requirement
Standard Features	
Interfaces	RS-422
Physical Characteristics	
Weight	0.52 Lbs
Height	2.53”
Width	3.75”
Depth	3.75”
Electrical Requirements	
Voltage	24 VDC supplied by IFDs
Current	Included in IFD Value
Cooling Requirement	None
Operating Limits	Appendix A – Environmental Qualification Form
Regulatory Compliance	TSO-C6D, ETSO-C6D

Table 8: MAG300 Magnetometer/OAT Sensor Specifications

1.5.8 ACM100 Aircraft Configuration Module (ACM)

Specification	Description/Requirement
Physical Characteristics	
Weight	0.2 lbs
Height	0.625 inches
Width	1.25 inches
Depth	2.5 inches
Electrical Requirements	
Voltage	Provided by left side IFD
Current	Included in IFD value
Cooling Requirement	None
Operating Limits	Appendix A – Environmental Qualification Form
Regulatory Compliance	TSO-C113

Table 9: ACM100 Specifications

1.6 Regulatory Compliance

1.6.1 Applicable TSOs

This section identifies Technical Standard Orders (TSOs) applicable to the Entegra IFD system. The conditions and tests required for TSO approval of this article are minimum performance standards. It is the responsibility of those installing this article either on or within a specific type or class of aircraft to determine that the aircraft installation conditions are within the TSO standards. TSO articles must have separate approvals for installation in aircraft. The article may be installed only if performed under 14 CFR part 43 or the applicable airworthiness requirements.

TSO Number	Title	Type/ Categories	Ranges

TSO Number	Title	Type/ Categories	Ranges
TSO-C2d	Airspeed Instruments	Type B	Airspeed Indicating Range is 20 to 300 KIAS
TSO-C3e	Turn and Slip Instruments	Type II	Turn Error – Category A
TSO-C4c	Bank and Pitch Instruments		
TSO-C6e	Direction Instrument, Magnetic (Gyroscopically Stabilized)		
TSO-C8e	Vertical Velocity Instruments (Rate-of-Climb)	Type B	Vertical Velocity Indicating Range Is -4000 fpm to +4000 fpm
TSO-C10b	Altimeter, Pressure Actuated, Sensitive Type		Altitude Indicating Range is -1000 ft to 35000 ft
TSO-C34e	ILS Glide Slope Receiving Equipment Operating within the Radio Frequency Range of 328.6-335.4 Megahertz (MHz)		
TSO-C36e	Airborne ILS Localizer Receiving Equipment Operating within the Radio Frequency Range of 108-112 Megahertz (MHz)		
TSO-C40c	VOR Receiving Equipment Operating within the Radio Frequency Range of 108-117.95 Megahertz (MHz)		
TSO-C43c	Temperature Instruments		
TSO-C44c	Fuel Flowmeters		
TSO-C45b	Manifold Absolute Pressure Instruments	Type II	

TSO Number	Title	Type/ Categories	Ranges
TSO-C46a	Maximum Allowable Airspeed Indicator Systems		Airspeed Indicating Range is 20 to 300 KIAS Vmo is set automatically based on aircraft type selection when applicable
TSO-C47a	Pressure Instruments – Fuel Oil, and Hydraulic		Fire hazard N/A
TSO-C49b	Electric Tachometer: Magnetic Drag (Indicator and Generator)		Instrument range is determined automatically based on aircraft type selection
TSO-C52b	Flight Director Equipment		
TSO-C55a	Fuel and Oil Quantity Instruments		Type N/A Instrument range is determined automatically based on aircraft type selection Instrument accuracy is determined by sensor system
TSO-C63d	Airborne Weather Radar Equipment (Release 9.3 software only)		
TSO-C74d	Air Traffic Control Radar Beacon Systems (ATCRBS) Airborne Equipment		Class N/A

TSO Number	Title	Type/ Categories	Ranges
TSO-C88b	Automatic Pressure Altitude Reporting Code Generating Equipment		
TSO-C106	Air Data Computer		
TSO-C110a	Airborne Passive Thunderstorm Detection Equipment		
TSO-C112e	Air Traffic Control Radar Beacon System/Mode Select (ATCRBS/Mode S) Airborne Equipment		Class N/A
TSO-C113	Airborne Multipurpose Electronic Display		
TSO-C128a	Devices that Prevent Blocked Channels Used in Two-Way Radio Communications Due to Unintentional Transmissions		
TSO-C146d	Stand-Alone Airborne Navigation Equipment Using the Global Positioning System (GPS) Augmented by the Wide Area Augmentation System (WAAS).Airborne Supplemental Navigation Equipment Using the Global Positioning System (GPS)	Gamma 1 for FMS400 Gamma 3 for FMS900W	
TSO-C147	Traffic Advisory System (TAS) Airborne Equipment		Class A (Display functions only)
TSO-C151b	Terrain Awareness and Warning System	Caution and Warning Display (not SVS)	
TSO-C157b	Aircraft Flight Information Services – Broadcast (FIS-B) Datalink Systems and Equipment		
TSO-C165	Electronic Map Display Equipment for Graphical Depiction of Aircraft Position		

TSO Number	Title	Type/ Categories	Ranges
TSO-C169a	VHF Radio Communications Transceiver Equipment Operating Within The Radio Frequency Range 117.975 To 137.000 Megahertz		Class C, E, 3 and 5

Table 10: TSO Authorizations

TSO Number	Title
TSO-C6d	Direction Instrument, Magnetic (Gyroscopically Stabilized)

Table 11: MAG300 TSO Authorizations

1.6.2 Partial Function TSOs

For some of the functions for which TSO approval has been granted, Entegra only provides part of the functionality covered by the TSO. **Table 12** below lists those partial function TSOs along with the portion of the TSO functionality provided.

TSO Number	Partial Functionality
TSO-C6e	Requires the use of an external magnetometer
TSO-C43c	Display function only
TSO-C44c	Display function only
TSO-C45b	Display function only
TSO-C47a	Display function only
TSO-C49b	Display function only
TSO-C52b	Display function only
TSO-C55a	Display function only
TSO-C63d	Control/Display function only
TSO-C74d	Control/Display function only
TSO-C110a	Display function only
TSO-C112e	Display function only
TSO-C147	Display function only
TSO-C151b	Visual alert function only
TSO-C157b	Display functions only

Table 12: Partial Function TSOs

1.6.3 Non-TSO Functions

There are some functions performed by Entegra IFD System that are not covered by TSOs. It is the installer's responsibility to ensure that when the IFD is installed it will meet the required minimum performance standards for those functions. Those functions performed by the IFD but not covered by TSO are listed in Table 13. All non-TSO functions will function as intended and achieve their specified performance level when the Entegra IFD System is installed in accordance with these instructions or other instructions established by TC or STC.

Non-TSO Functions
Display of percent power
Lean assist function
Display of navigational charts
Display of checklists
Remote marker beacon indicator
Display of Trim Position
Display of Oxygen Quantity
Display of Ice Protection Fluid Quantity and Mode
Display of Vacuum Pressure for De-ice System
Display of CAS lamp panel
GPS position output to the ELT
Synthetic vision display
GPS position output to TAS-A system
G-meter Display

Table 13: Functions Not Covered by TSOs

1.6.4 TSO Deviations

Table 14 below lists the TSO deviations and a brief description of the nature of the deviation that have been granted for those applicable TSOs.

TSO	Deviation
TSO-C2d – Airspeed Indicator	Used current standard AS8019A rather than AS8019.
	Airspeed indicator not labeled. Format and location of airspeed indicator in compliance with "basic T" arrangement renders labeling unnecessary.
	Environmental qualification performed in accordance with DO-160E rather than DO-160B.
TSO-C4c – Bank and Pitch Instruments	Use current standard AS8001 rather than AS396B.
	Environmental qualification performed in accordance with DO-160E rather than DO-138.

TSO	Deviation
TSO-C6e – Gyrocompass	Compass rose minor tick marks are at 10 degree intervals rather than 5 degrees. Major tick marks are at 30 degree interval, as required. A digital readout with a resolution of 1 degree is also included.
TSO-C10b – Altimeter	Altimeter is presented as a tape rather than a dial.
	Configuration 1: Altimeter minor tick marks are presented every 100 feet (rather than every 20 feet), and major tick marks every 200 feet (rather than every 100 feet). Additional visual cues are presented at 500- and 1000-foot intervals and a digital readout with one foot precision is provided.
	Configuration 2: Altimeter minor tick marks are presented every 50 feet (rather than every 20 feet), and major tick marks every 100 feet (rather than every 100 feet). Additional visual cues are presented at 500- and 1000-foot intervals and a digital readout with one foot precision is provided.
	Configuration 3: Altimeter minor tick marks are presented every 10 meters (rather than every 20 feet), and major tick marks every 50 meters (rather than every 100 feet). Additional visual cues are presented at 100-meter intervals and a digital readout is provided.
	Background is ground/sky depiction rather than matte black. Non-interference with instrument readability has been verified.
	Attitude display is not labeled. Format and location of altimeter in compliance with "basic T" arrangement renders labeling unnecessary.
	Environmental qualification performed in accordance with DO-160E rather than AS392c.
TSO-C34e – ILS Glide Slope Receiving Equipment Operating within the Radio Frequency Range of 328.6-335.4 Megahertz (MHz)	Environmental qualification performed in accordance with DO-160E rather than DO-160B.

TSO	Deviation
TSO-C36e – Airborne ILS Localizer Receiving Equipment Operating within the Radio Frequency Range of 108-112 Megahertz (MHz)	Environmental qualification performed in accordance with DO-160E rather than DO-160B.
TSO-40c – VOR Receiving Equipment Operating within the Radio Frequency Range of 108-117.95 Megahertz (MHz)	Environmental qualification performed in accordance with DO-160E rather than DO-160B.
TSO-C43c – Temperature Instruments	Used current standard AS8005A rather than AS8005.
	Environmental qualification performed in accordance with DO-160E rather than DO-160C.
TSO-C44c – Fuel Flow meters	The fuel flow indicators will not use matte white material for all graduations, numerals, pointers and indications. Color coded indications are used where appropriate for rapid pilot recognition of exceedances.
	Environmental qualification performed in accordance with DO-160E only rather than a combination of AS407C and DO-160E. AS407C requirements apply to portions of the instrument not implemented by the Entegra IFD system.
TSO-C45b – Manifold Pressure Instruments	The manifold pressure gage title is “MAP” rather than "MANIFOLD PRESSURE" or "MANIF PRESS".
	The manifold pressure indicator will not use matte white color for all graduations, numerals, pointers and indication means. Color coded indications are used where appropriate for rapid pilot recognition of exceedances.
	Environmental qualification performed in accordance with DO-160E only rather than a combination of AS8042 and DO-160E. AS8042 requirements apply to portions of the instrument not implemented by the Entegra IFD system.
TSO-C46a – Maximum Allowable Airspeed Indicator Systems	Environmental qualification performed in accordance with DO160E rather than those contained in the TSO.

TSO	Deviation
TSO-C47a – Fuel, Oil and Hydraulic Pressure Instruments	The digital oil pressure indication will not use matte white color exclusively. Color coded indications are used where appropriate for rapid pilot recognition of exceedances.
	The oil pressure units titled 'PSI" are smaller text than the title of the gage rather than PSI being smaller.
	Environmental qualification performed in accordance with DO-160E only rather than a combination of AS408C and DO-160E. AS408C requirements apply to portions of the instrument not implemented by the Entegra IFD system.
TSO-C49b – Tachometer	Used current standard AS404C rather than AS404B.
	The digital tachometer indication will not use matte white color exclusively. Color coded indications are used where appropriate for rapid pilot recognition of exceedances.
	Tachometer indicator will have graduations every 100 rpm, which exceeds the required maximum of 2 1/2% of full scale, supplemented by a digital readout with a precision of 10 RPM.
	Environmental qualification performed in accordance with DO-160E rather than AS404C.
TSO-C52b – Flight Director Equipment	Selected heading and course are not displayed continuously under all modes of display. Various display features, alone and in combination, support the intent of the requirement.
	Environmental qualification performed in accordance with DO-160E rather than DO-160C.
TSO-C55a – Fuel and Oil Quantity Instruments	Environmental qualification performed in accordance with DO-160E rather than AS405C.
TSO-C74d – Air Traffic Control Beacon System (ATCRBS) Airborne Equipment	Environmental qualification performed in accordance with DO-160E rather than DO-160F, using test procedures appropriate to a display system.

TSO	Deviation
TSO-C106 – Air Data Computer	Used current standard AS8002A rather than AS8002.
	Environmental qualification performed in accordance with DO-160E rather than DO-160B.
TSO-C110a – Airborne Passive Thunderstorm Detection Equipment	Environmental qualification performed in accordance with DO-160E rather than DO-160B.
TSO-C112e – Air Traffic Control Radar Beacon System/Mode Selected (ATCRBS/Mode S) Airborne Equipment	Environmental qualification performed in accordance with DO-160E only rather than a combination of DO-181E and DO-160G. DO-181E requirements apply to portions of the instrument not implemented by the Entegra IFD system. DO-160E is appropriate for the equipment.
TSO-C113 – Airborne Multipurpose Electronic Display	Environmental qualification performed in accordance with DO-160E rather than DO-160A.
TSO-C147 – Traffic Advisory System (TAS) Airborne Equipment	Environmental qualification performed in accordance with DO-160E rather than DO-160D.
TSO-C151b – Terrain Awareness and Warning System	Environmental qualification performed in accordance with DO-160E rather than DO-160D.
TSO-C157b – Aircraft Flight Information Services – Broadcast (FIS-B) Data Link Systems and Equipment	Smoothing and scaling algorithms at high map ranges remove small patches of high-intensity NEXRAD returns in favor of surrounding lower-intensity returns rather than preserving them at all map ranges. The usability of the system for strategic weather avoidance is not compromised and a note in the Pilot Guide alerts the pilot to this characteristic of the system.
	The 12-hour and 24-hour winds and temperatures aloft information from an ADS-B receiver will not be displayed. The 6-hour forecast information is accessible on the FMS Info page.
	The product update unavailable reports from an ADS-B receiver are displayed with the text "FIS-B" and "Product Updates Unavailable" removed from the individual decoded text messages.

TSO	Deviation
	Environmental qualification performed in accordance with DO-160E rather than DO-160G.
TSO-C165 – Electronic Map Display Equipment for Graphical Depiction of Aircraft Position	De-cluttering not provided as required by the TSO on the Chart page due to the pre-composed nature of the Jeppesen charts. Careful content control and formatting of the Jeppesen charts makes de-cluttering unnecessary.
	Environmental qualification performed in accordance with DO-160E rather than DO-160D.

Table 14: TSO Deviations

1.6.5 Software and Hardware Design Assurance Levels

The Entegra IFD System contains software developed in accordance with DO-178B Level B, C, and D design assurance levels. The following table lists the functions of the system and their corresponding software design assurance levels. All complex electronic hardware devices were developed in compliance with DO-254 Level B.

The impact of any known software or hardware problems on proper installation of the Entegra IFD System is reflected in these instructions.

Component	Function	DO-178B Design Assurance Level
Integrated Flight Display Control Display Unit	Traffic	D
	Engine Instruments	C
	Lightning	C
	EVS	C
	Digital Moving Map (not including Terrain)	C
	Terrain	B
	Wx Datalink	D
	FMS	C
	PFD functions: Attitude Altimeter Vertical Speed TAS OAT Heading Marker Beacon	B
	PFD functions: CDI HSI Wind Vector Stick Map Localizer/Glideslope	C
	VHF Communication	C

Component	Function	DO-178B Design Assurance Level
	VHF Navigation	C
	GPS Navigation	C
	AP Display & Control	C
	Transponder Control & Display	C
	Master Warning and Caution and CAS	B
	EGPWS Alerts	D
	ADF Display and Control	C
	Charts	C
	Weather Radar	C
	SVS	B (PFD) C (Map)
	GPS output for ELT	D
	Checklist	C
	Maintenance Mode	D
	Trim Position Display	C
	Oxygen Quantity	C
	Ice Protection Fluid Quantity and Mode Display	C
	Vacuum Pressure	C
	Fuel Quantity	C
	Trim Indication	C

Component	Function	DO-178B Design Assurance Level
	GPS Output to ELT	B
	G-meter	C
Control Display Unit	VHF Radio Control, AP control, Transponder Control & Display	B
Magnetometer/OAT Assembly	Heading, OAT	B

Table 15: DO-178B Software Design Assurance Levels

1.7 Avidyne Supplied Material

The Entegra IFD System has several kits available:

1) Product Ship Kits

2) Aircraft Installation Kits

3) Optional Ship Kits

1.7.1 Product Ship Kits

1.7.1.1 Cirrus R9 Ship Kits

Note: Ship Kit content and/or Part Numbers may change without notice, verify before ordering.

Component	Ship Kit 850-00073-001 Dual ADAHRS System	Ship Kit 850-00073-004 Single ADAHRS System
IFD 700-00083-000	QTY 2	QTY 1 **[1]**
IFD (No ADAHRS) 700-00083-001		QTY 1
Magnetometer/OAT 700-00011-000 **[2]**	QTY 1	**[2] [3]**
Aircraft Configuration Module 700-00156-000	X	X
Control Display Unit 700-00150-002	X	X
USB Flash Drive	X	X
FMS900W **[6]**	X	X

Table 16: Cirrus Product Ship Kits

[1] The 700-00083-000 Part Numbered IFD must be installed in the Left position. The 700-00083-000 IFD must be connected to a Magnetometer/OAT Sensor and the aircraft's Pitot/Static System. For additional Pitot/Static Connectors order Ship Kit 820-00092-003. For additional Magnetometer/OAT Sensors order Ship Kit 850-00015-000.

[2] Magnetometer/Oat Sensor Installation Chart:

Existing Aircraft Configuration	Upgrading to Release 9 - Dual ADAHRS	Upgrading to Release 9 - Single ADAHRS
Aircraft with Avidyne Entegra Installed	Install one additional Mag/OAT Sensor (Relocate existing Mag/OAT Sensor and new Mag/OAT Sensor to the Dual Mag/OAT Bracket)	Connect to the Existing Mag/OAT Sensor. The Mag/OAT Sensor Does not need to be relocated
Aircraft without Avidyne Entegra Installed	Install two Mag/OAT Sensor in the Dual Mag. Bracket	Install one Mag/OAT Sensor in the Dual Mag. Bracket

Table 17: Magnetometer/OAT Installation Chart

[3] Requires one Magnetometer/OAT Sensor. Order additional Magnetometer/OAT Sensors as necessary.

[4] The Instructions for Continued Airworthiness, Flight Manual Supplement, STC Installation Data, and STC Form are available on the Avidyne Dealer website.

[5] Pilot Guide, Flight Manual Supplement, & USB thumb drives for data updates and Pilot Guide are not included in the ship kit. They are supplied to the airplane owner directly by Avidyne.

[6] Connect ONLY to WAAS GPS Antennas. See **Table 36** for approved antennas.

[7] Contact Avidyne for FMS400 ordering information. See **Table 37** for approved FMS400 antennas.

1.7.1.2 Piper R9 Ship Kits

Note: Ship Kit content and/or Part Numbers may change without notice, verify before ordering.

Component	Ship Kit 850-00073-008 Dual ADAHRS System	Ship Kit 850-00073-004 Single ADAHRS System
IFD 700-00083-000	QTY 2	QTY 1 **[1]**
IFD (No ADAHRS) 700-00083-001		QTY 1
Magnetometer/OAT 700-00011-001 **[2]**	QTY 1	**[2] [3]**
Aircraft Configuration Module 700-00156-000	X	X
Control Display Unit 700-00150-002	X	X
USB Flash Drive	X	X
FMS900W **[6]**	X	X

Table 18: Piper Product Ship Kits

[1] The 700-00083-000 Part Numbered IFD must be installed in the Left position. The 700-00083-000 IFD must be connected to a Magnetometer/OAT Sensor and the aircraft's Pitot/Static System. For additional Pitot/Static Connectors order Ship Kit 820-00092-003. For additional Magnetometer/OAT Sensors order Ship Kit 850-00015-001.

[2] Magnetometer/Oat Sensor Installation Chart:

Existing Aircraft Configuration	Upgrading to Release 9 - Dual ADAHRS	Upgrading to Release 9 - Single ADAHRS
Aircraft with Avidyne Entegra Installed	Install one additional Mag/OAT Sensor	Connect to the Existing Mag/OAT Sensor.

Table 19: Magnetometer/OAT Installation Chart

[3] Requires one Magnetometer/OAT Sensor. Order additional Magnetometer/OAT Sensors as necessary.

[4] The Instructions for Continued Airworthiness, Flight Manual Supplement, STC Installation Data, and STC Form are available on the Avidyne Dealer website.

[5] Pilot Guide, Flight Manual Supplement, & USB thumb drives for data updates and Pilot Guide are not included in the ship kit. They are supplied to the airplane owner directly by Avidyne.

[6] Connect ONLY to WAAS GPS Antennas. See Table 36 for approved antennas.

[7] Contact Avidyne for FMS400 Ordering information. See Table 37 for approved FMS400 antennas.

1.7.1.3 1.7.1.3 IFD5000i Three Screen Ship Kit

Component	Ship Kit 850-00073-010
IFD 700-00083-002	QTY 1

Table 20: 850-00073-010 Ship Kit

1.7.2 Aircraft Installation Kits

Several Installation Kits are available:

1) Cirrus 2X Dual ADAHRS Installation Kit – Ship Kit P/N 820-00092-000
2) Cirrus 2X Single ADAHRS Installation Kit – Ship Kit P/N 820-00092-002
3) Cirrus SR2X Instrument Panel Kit – Ship Kit P/N 820-00092-001
4) Pitot/Static Installation Kit - Ship Kit P/N 820-00092-003
    - This Kit contains 2 connectors. This Kit is needed for non-Avidyne PFD equipped aircraft when installing the R9.
5) Dual Magnetometer Bracket Installation Kit - Ship Kit P/N 820-00092-004
6) Magnetometer/OAT Sensor - Ship Kit P/N 850-00015-000
    - This Kit contains P/N 700-00011-000 Magnetometer/OAT Sensor. This Kit is needed for non-Avidyne PFD equipped aircraft when installing a dual ADAHRS packages.
7) Magnetometer/OAT Sensor - Ship Kit P/N 850-00015-001
    - This Kit contains P/N 700-00011-001 Magnetometer/OAT Sensor. This Kit is needed for non-Avidyne PFD equipped aircraft when installing a dual ADAHRS packages.
8) Magnetometer/OAT Connector - Ship Kit P/N 820-00092-005
    - This is the mating connector (aircraft side) for the 700-00011-000 or 700-00011-001 Magnetometer/OAT Sensor. This Kit is needed when installing a new Magnetometer/OAT Sensor. (Note: One connector is provided in some Product Ship Kits).
9) Adapter Harness Connectors - Ship Kit P/N 820-00092-006
    - This Kit is only need if installing the 100-00394-XXX Harness in a non-Avidyne PFD equipped Aircraft.
10) Magnetometer/OAT Sensor - Ship Kit P/N 850-00015-001 (Piper PA-46)
    - This Kit contains P/N 700-00011-001 Magnetometer/OAT Sensor.
11) Piper PA-46 – STC Installation Kit - Ship Kit P/N 820-00100-000
12) Piper PA-46 - Instrument Panel – Ship Kit 820-00100-001

1) Cirrus 2X Dual ADAHRS Installation Kit contains the following:

Nomenclature	Unit Part Number	Qty
Display Support Bracket	120-00820-000	1
Display Gusset	120-00821-000	1
Display Strap	120-00822-000	1
Display Doubler	120-00823-000	1
Magnetometer Bracket	120-00873-000	1
Coupling, Quick Disconnect	130-00215-000	2
Elbow Fitting – 90 degree	130-00216-000	2
Connector	RD15M00000	1
Connector	RD9F00000	1
Connector	RD9M00000	2
Connector	PLC18F0000	1
Connector	MS3126F12-10S	1
Backshell	D15000Z400	1
Backshell	D9000Z00	2
Backshell	D9000Z400	1
Contacts	FC114N	10

Table 21: Dual ADAHRS Installation Kit 820-00092-000

NOTE: The 820-00092-000 is a not a complete kit. Installers will need to order additional parts as necessary.

2) Cirrus 2X Single ADAHRS Installation Kit contains the following:

Nomenclature	Unit Part Number	Qty
Display Support Bracket	120-00820-000	1
Display Gusset	120-00821-000	1
Display Strap	120-00822-000	1
Display Doubler	120-00823-000	1
Connector	RD15M00000	1
Connector	PLC18F0000	1
Backshell	D15000Z400	1
Contacts	FC114N	10

Table 22: Single ADHARS Installation Kit 820-00092-002

NOTE: The 820-00092-002 is a not a complete kit. Installers will need to order additional parts as necessary.

3) Cirrus SR2X Instrument Panel Kit:

Nomenclature	Unit Part Number	Qty
Cirrus SR2X Inst. Panel	120-00836-000	1

Table 23: Cirrus 2X Instrument Panel Kit 820-00092-001

NOTE: The 120-00836-000 instrument panel is an incomplete instrument panel. The 120-00836-000 instrument panel only has the IFD mounting holes prefabricated. All other existing instrument panel holes must be fabricated by the Installer.

4) Pitot/Static Installation Kit:

Nomenclature	Unit Part Number	Qty
Female Elbow – 90 deg	130-00216-000	2
Coupling, Quick Disconnect	130-00215-000	2

Table 24: Pitot/Static Installation Kit 820-00092-003

5) Dual Magnetometer Bracket Installation Kit:

Nomenclature	Unit Part Number	Qty
Dual Magnetometer Bracket	120-00873-000	1

Table 25: Dual Magnetometer Bracket Kit 820-00092-004

6) Magnetometer/OAT Sensor Kit:

This is P/N 700-00011-000 Magnetometer/OAT Sensor.

Nomenclature	Unit Part Number	Qty
Magnetometer/OAT Sensor Kit	850-00015-000	1

Table 26: Magnetometer/OAT Sensor 850-00015-000

7) Magnetometer/OAT Sensor Kit:

This is P/N 700-00011-001 Magnetometer/OAT Sensor.

Nomenclature	Unit Part Number	Qty
Magnetometer/OAT Sensor Kit	850-00015-001	1

Table 27: Magnetometer/OAT Sensor 850-00015-001

8) Magnetometer/OAT Connector Kit:

This connector is the mating connector for the P/N 700-00011-000 and the 700-00011-001 Magnetometer/OAT Sensor (Aircraft Side).

Nomenclature	Unit Part Number	Qty
Connector	030-00203-000	1

Table 28: Magnetometer/OAT Connecter 820-00092-005

9) Adapter Harness Connector Kit:

Nomenclature	Unit Part Number	Qty
Connector	030-00357-000	1
Connector	030-00136-000	1

Table 29: Adapter Harness Connector Kit 820-00092-006

10) Magnetometer/OAT Sensor Kit:

This is P/N 700-00011-001 Magnetometer/OAT Sensor. (Piper PA-46)

Nomenclature	Unit Part Number	Qty
Magnetometer/OAT Sensor Kit	850-00015-001	1

Table 30: Magnetometer/OAT Sensor 850-00015-001

11) Piper PA-46 STC Installation Kit:

Nomenclature	Unit Part Number	Qty
Keyboard Mounting Plate	120-00923-000	2
Relay Mounting Bracket	120-00925-000	1
Transponder Mounting Bracket	120-00927-000	1
Center IFD Support Bracket	120-00928-000	1
Left IFD Tray Mounting Block	120-00929-000	3
Large Left IFD Tray Mounting Block	120-00929-001	1
Center Radio Stack Mounting Bracket	120-00931-000	1
Rear MLB700 Mounting Bracket	120-00933-000	1
Forward MLB700 Mounting Bracket	120-00934-000	1
Center IFD Support Bracket	120-00935-000	2
Control Shield	120-00936-000	1
Autopilot Tray Support Bracket, Right	120-00937-000	1

Nomenclature	Unit Part Number	Qty
Autopilot Tray Support Bracket, Left	120-00937-001	1
Connector, Circular, 10-Position, Female	030-00203-000	1
Contact, Female	030-00527-000	12
Connector, 24-Position, Female	030-00623-000	1
Female Elbow, 90 Degree, Nylon ¼"	130-00216-000	4
Coupling, Quick Disconnect, 1/8 NPT	130-00215-000	4
Contact, Female	030-00526-000	12
Contact, Female	030-00624-000	10
Contact, Male	030-00625-000	10
Contact, Female	030-00626-000	10
Terminal, Quick Disconnect	030-00629-000	5
Contact, Female	030-00627-000	2
Contact, Male	030-00628-000	2
Housing, LMD Splice	030-00632-000	2
Socket, Module, LMD	030-00631-000	2
Relay, Module, LMD	030-00630-000	2
Contact, Female	030-00633-000	8
Contact, Male	030-00634-000	8
Bracket, Wire Harness	120-00939-000	8

Table 31: PA-46 Installation Kit 820-00100-000

NOTE: The 820-00100-000 is a not a complete kit. Installers will need to order additional parts as necessary.

12) PA-46 Instrument Panel Kit:

Nomenclature	Unit Part Number	Qty
Piper PA-46 Inst. Panel	120-00919-000	1

Table 32: PA-46 Instrument Panel Kit 820-00100-001

NOTE: The 120-00919-000 instrument panel is an incomplete instrument panel. Some instrument panel holes may need to be fabricated by the Installer.

1.7.3 Activation Kits

The following kits are required to activate the associated functions.

1.7.3.1 Enhanced Vision System Activation Kit

This Kit is only needed if connecting the IFD to a RS-170 Video input. Contact Avidyne for more details.

EVS Software Activation Kit:

Nomenclature	Unit Part Number	Qty
Service Bulletin	601-00083-012	1
Activation Utility	055-00217-000	1

Table 33: Software Activation Kit 850-00073-503

Note: The IFD STC, 601-00083-012 Service Bulletin, or this manual does not constitute approval of the display or installation of the EVS system. The display of any RS-170 video must be evaluated and approved on the IFD Display.

1.7.3.2 Other Activation Kits

Nomenclature	Unit Part Number	Qty
SVS Activation Kit	850-00073-509	1

Table 34: SVS Activation Kit

Nomenclature	Unit Part Number	Qty
Wx Radar Activation Kit	850-00073-510	1

Table 35: Radar Activation Kit

1.8 3rd Party supplied equipment

1.8.1 GPS Antennas

The following WAAS antenna is approved for use for TSO-C146d Gamma 3 operation with the Entegra IFD System, including the FMS900W.

Part Number	Description	Supplier
CI 428-200	WAAS GPS Antenna	Comant

Table 36: FMS900W Compatible WAAS GPS Antenna

Note: Any TSO-C190 approved antenna may be used with the FMS900W.

In addition to the above, the following GPS antennas are approved for use for TSO- C146d Gamma 1 operation with the FMS400.

Part Number	Description	Supplier
GA56	GPS Antenna	Garmin
GA56A	GPS WAAS Antenna	Garmin
GA56W	GPS WAAS Antenna	Garmin
GA57	GPS WAAS and FIS Antenna	Garmin

Table 37: FMS400 Compatible GPS Antenna

1.8.2 S-Tec 55X Autopilot Software Upgrade

The S-Tec 55x requires both a hardware and software modification. The S-Tec 55X computer software must be updated to software code AF or later to be compatible with Entegra IFD System. The “AT” Hardware Modification must also be installed in the S-Tec 55x Autopilot Computer.

Note: The S-Tec 55X autopilot computer requires a software mod level as identified on the units S.W. mod label of “AF” and a S.W. version of 7 or higher to be compatible with the Entegra IFD. The S.W. version is displayed during the boot cycle of the autopilot computer. After applying power to the autopilot the initial boot page will display, blank out and then display the software version number. If the number is 7 or higher it has the AF mod and is compatible with the IFD’s.

1.9 Optional equipment

1.9.1 Audio Panel

1.9.1.1 Avidyne AMX240 Audio Panel

If installing the optional AMX240 Audio Panel contact Avidyne to order the following part number:

Nomenclature	Part Number	Qty	Comments
AMX240 Audio Panel Ship Kit	850-00218-000	1	

Table 38: Avidyne AMX240 Audio Panel Part Number

1.9.1.2 PS Engineering Audio Panel

If installing the optional PS Engineering Audio Panel, contact PS Engineering.

Nomenclature	Unit Part Number	Qty	Comments
Audio Panel	050-890-0402	1	
Audio Panel	050-890-0403	1	MP3 capable
Audio Panel	050-890-0404	1	Bluetooth Capable

Table 39: PS Engineering Audio Panel Part Numbers

Functionality

The following features are provided with the 050-890-0402, 050-890-0403, or 050-890-0404 PS Engineering audio panels. These features are not supported by the other compatible audio panels.

- Marker beacons indications displayed on IFD as well as audio panel.
- Monitor buttons (Mon1 and Mon2) when selected allow the user to monitor (listen only) the Standby frequencies of the Com1 and Com2 radio modules respectively.
- When a DME is installed in the aircraft the Mon2 button provides the ability to monitor the Morse code associated with the DME. DME audio will be routed to this channel (Mon2) instead of the Com2 Standby.
- Ability to display decoded active frequency.
- MP3 Player (050-890-0403 Only)
- Bluetooth Capable (050-890-0404 Only)

1.9.2 Transponder

1.9.2.1 Avidyne AXP322 Remote ADS-B Compliant Transponder

If installing the optional AXP322 Transponder contact Avidyne to order the following part number:

Nomenclature	Part Number	Qty	Comments
AXP322 Transponder Ship Kit	850-00222-000	1	

Table 40: Avidyne AXP322 Remote Transponder Part Number

1.9.2.2 Avidyne AXP340 Panel Mount ADS-B Compliant Transponder

If installing the optional AXP340 Transponder contact Avidyne for ordering the following part number:

Nomenclature	Part Number	Qty	Comments
AXP340 Transponder Ship Kit	850-00219-000	1	

Table 41: Avidyne AXP340 Transponder Part Number

1.9.2.3 Becker Transponders

If installing the optional Becker Mode C or Mode S Transponder, contact Becker Avionics USA.

Type	Part Number	Description	Model
Mode S	0588.695 915	Transponder, Mode-S, 250W 50,000 ft	BXP-6402-1R - (01)
Mode S	0572.942 915	Address Module, Becker Mode-S Transponder	AM 6400-1-(01)
Mode S	0586.064 954	Connector Kit, Crimp, BXP-640X	CK 6400 -C
Mode S	0604.054 954	Address Module, Programmer Kit	AMP 6400-2
Mode C or S	0556.726 284	MK4401 Mounting Tray	MK4401
Mode C	0548.847 915	Transponder, Mode C, 250W, 50,000 ft	ATC 4401-2-250
Mode C	0552.798 954	Connector Kit, Crimp, ATC 4401-X-XXX	CK 4401
Mode C or S	100-00405-00X	Transponder Wiring Harness [1]	NA

Table 42: Transponder Equipment Part Numbers

[1] Required when installing the Becker Mode C or S Transponder option. Installer to order direct from harness supplier. Contact Avidyne for details.

1.9.3 UAT Receiver

The following Ship Kits are available for ordering from Avidyne Corporation.

Note: Ship Kit content and/or Part numbers may change without notice, verify before ordering.

Component	Ship Kit
MLB100/SkyTrax100 UAT Receiver with ARINC429	850-00223-000
MLB100/SkyTrax100 UAT Receiver without ARINC429	850-00223-001

Table 43: Avidyne UAT Receiver Equipment Part Numbers

1.10 Documentation

All IFD Documentation is provided via the Avidyne Dealer Website, contact Avidyne for more details.

2. Installation Instructions

2.1 Installation Limitations

- The aircraft shall be equipped with stand-by airspeed, attitude, and altitude indicators as well as a magnetic compass. The stand-by instruments shall be located to require minimal effort to be viewed by the pilot.

- The standby attitude indicator shall be powered (electrically or pneumatically), separately from the left IFD, in the event of loss of primary power source to the left IFD.

- Primary flight display attitude display/determination functionality and GPS LPV Approach functionality are limited to Part 23, Class I, II, and III airplane installations. Note: Single ADAHRS installations are limited to Part 23, Class I and II.

- OAT probes must be installed in a Zone 3 lightning area (an area not subject to lightning attachment) as described in SAE ARP5414, “Aircraft Lighting Zoning”, dated December 1999.

- IFDs must not be installed into an instrument panel that is oriented more than 10 degrees from vertical.

- Minimum installation requires the following items:

    - Two IFD5000i Integrated Flight Displays

    - One ACD215 Control Display Unit

    - One MAG300 Magnetometers/OAT Sensor

    - One ACM100 Aircraft Configuration Module

- For Single ADAHRS installations, the IFD without an ADAHRS (p/n 700-00083-001) must be installed in the right side location.

- The IFD Synthetic Vision System with Forward Looking Terrain Alerting must not be installed in aircraft with an operational Terrain Awareness System (TAWS) as defined by TSO-C151. If the Avidyne Terrain Alerting and Forward Looking Terrain Alerting is installed and operating on the IFD System, any existing EGPWS/TAWS system must be disabled. The Terrain Alerting and Forward Looking Terrain Alerting on the IFD system is not a TSO-C151 system, and does not satisfy any Part 91/135 TAWS requirements.

- The Avidyne DFC100 Autopilot is required for SVS audio.

2.2 Installation Considerations

- Before you start, plan your installation by carefully reviewing all installation documentation, including mechanical and electrical instructions.

- Use the appendices found in this manual for guidance with system component dimensions, cutout dimensions, and wiring.

- Follow acceptable avionics installation practices per AC43.13-1B, AC43.13-2B, or later FAA approved revisions.
- VHF Radio installation instructions have been prepared to meet the guidance material defined in AC20-67B, “Airborne VHF Communications Equipment Installations”.
- Perform the structural aspects of the installation in accordance with AC43.13-2B, Chapter 1.
- An Electrical Load Analysis, in accordance with AC 43-13-1B, Chapter 11, must be accomplished to determine that the electrical limits of the specific aircraft are not exceeded. The Electrical Load Analysis, Functional Hazard Assessment and other certification requirements for the aircraft must remain in compliance.
- The panel assembly must include placard content equivalent to that existing prior to the modification.
- Other avionics required for approved flight operations, relocated as a result of this installation, must remain readily accessible to the pilot.
- Refer to MLB700 Installation Manual 600-00174-001 when installing the MLB700 Weather Datalink System.

IFD and Control/Display Unit

- Locate the left IFD and secondary instruments (airspeed indicator, altimeter, and attitude indicator) in the pilot’s primary field of view. The pilot’s primary field of view is defined as +/- 30 degrees horizontal cone measured from the centerline of the pilot’s seat forward, the seat adjusted for the pilot’s nominal eye position.
- Locate the right IFD in the panel so that the pilot can easily reach all controls.
- The Control/Display Unit is design to be console-mounted. The Control/Display Unit should be located with controls that can be easily reached, within the viewing angle of the display relative to the pilot’s nominal eye position.
- Locate the Control/Display Unit in the console so that the pilot can easily reach the controls.

Magnetometers/OAT Sensor

- Locate the magnetometers a minimum of 3 feet away from electromagnetic field generating disturbances that can be produced by equipment such as motors and pumps.
- Magnetometers must be collocated together, maintaining minimum of four inch separation from each other.
- Place the OAT probe sensors in free-air stream, away from the effects of engine exhaust. The OAT probe must be installed a minimum of 6 inches away from the magnetometer.
- Also see **Table 17** or **Table 19**.

WAAS GPS Navigation Antennas

- GPS antennas should be located no closer than two feet from VHF and other transmitting antennas.
- Select a location with unobstructed view of the sky above the aircraft in straight and level flight.
- Follow AC 20-138C "Airworthiness Approval of Global Navigation Satellite System (GNSS) Equipment" for additional installation information and guidelines.
- WAAS antennas previously installed in Cirrus aircraft, in accordance with Cirrus service bulletins SB2X-34-23 or SB 2X-34-24, are compatible with Entegra IFD System. Existing coaxes can be reused to connect to IFDs. Existing coax connectors are to be replaced with connectors as specified in approved Entegra installation data.
- All TSO-C190 approved WAAS-GPS antenna may be used with the FMS900W.

GPS Navigation Antennas

- GPS antennas should be located no closer than two feet from VHF and other transmitting antennas.
- Select a location with unobstructed view of the sky above the aircraft in straight and level flight.
- Follow AC 20-138C "Airworthiness Approval of Global Navigation Satellite System (GNSS) Equipment" for additional installation information and guidelines.
- FMS400 may use existing GPS antenna(s). See Table 37 for approved GPS antennas.

S-Tec 55X Autopilot

- The S-Tec 55X AP computer with software code "AF" or later is required with Release IFD System (see section 1.8.2).
- The S-Tec 55x AP computer must have the "AT" Hardware modification installed.

VHF Communication/Navigation Antennas

- The Entegra IFD System or later is designed to interface to existing VHF communication/navigation antennas. Existing coaxes can be reused to connect to IFDs. Existing coax connectors are to be replaced with connectors as specified in approved Entegra installation data.
- The VHF Communication Antennas should have minimum separation of 36" if possible. If installing dual VHF Communication systems, install one antenna on the top of the aircraft and one on the bottom of the aircraft is preferred.
- The VHF Communication antenna VSWR should be less than 3:1 over the radio-frequency range.

If installing new antennas, the antenna must meet the following TSOs:

- The VHF Communication Antenna should meet one of the following Technical Standard Orders (TSO): TSO-C37( ), TSO-C38( ), TSO-C169( ).
- The VOR/LOC Antenna should meet Technical Standard Order (TSO): TSO-C36( ), TSO-C40( ).
- The Glideslope Antenna should also be installed with a clear line of sight. The Glideslope Antenna should meet Technical Standard Order (TSO): TSO-C34( ).

2.3 Cooling

The IFD uses internal fans which provide adequate cooling. The IFDs require approximately 2 inches clearance, top and bottom, to allow for proper air circulation. Vent holes in the glareshield will be required if adequate clearance cannot be achieved.

2.4 Mounting

Integrated Flight Display

To install the IFDs make cutout holes in the instrument panel. See Appendix B: IFD Cutout Dimensions. The IFD is held in place with four captive #8-32 UNC, 9/16 long, hex socket cap head fasteners. Hole patterns and placements are illustrated in the corresponding appendices. A positive ground path must be established between the IFD chassis and airframe ground (≤10 milliohms).

Control Display Unit

The Control Display Unit is held in place with four #6-32, captive socket head screws. Hole patterns and placements are illustrated in the corresponding appendices. A positive ground path must be established between the Control/Display Unit housing and airframe ground (≤ 10 milliohms).

Magnetometer/OAT Sensors

The Magnetometers is held in place with three #6-32 brass screws. Hole patterns and placements are illustrated in the corresponding appendices. The OAT probes shall be mounted externally, in free-air stream, away from the effects of engine exhaust. The OAT sensor and magnetometer shall be physically isolated from aircraft ground. Electrical grounding is accomplished through the wiring harness. Magnetometers must be collocated, maintaining minimum four inches separation.

The OAT probe must be installed a minimum of 6 inches away from the magnetometer.

GPS Antennas

Refer to industry guidance for instructions on proper antenna and backing plate installation and sealing. Use the guidance in AC43.13-2b, Chapter 3. Additional installation approval is required for installing the GPS antenna on pressurized and composite aircraft.

The antenna is mounted as follows:

a) Identify the proper location for the antenna. Use the guidance in AC43.13-2b Chapter 3 to verify proper mechanical mounting.

b) Prior to installing the antenna on metal aircraft, clean the aircraft skin where the antenna will be mounted. Remove the paint externally and properly treat the area where the paint was removed with conductive Alodine or a similar corrosion protection material to assure a good electrical bond to the ground plane.

c) Drill holes for the connector and mounting screws in accordance with the Installation Instructions included with the antenna.

d) Mount the antenna on the outside of the aircraft using the screws identified.

e) The antenna must be mounted on the top of the aircraft.

f) An additional internal metallic ground plane of 12-inches or more is required for composite aircraft.

g) Seal the antenna base and the antenna screw holes per the Antenna Installation Instructions included with the antenna.

NOTE: Structural substantiation of the antenna locations is important and is responsibility of the installing agency. If a structural DER is necessary, the Aircraft Electronics Association is good source of information. The telephone number is +1 (816) 373-6565

Aircraft Configuration Module (ACM)

The ACM is physically connected to the left IFD, J103. Secure ACM lanyard to the IFD connector by placing the eye fitting on the screw between the wire clamps on the backshell.

2.5 Electrical and Sensor Interfaces

2.5.1 Integrated Flight Displays

Power to the IFD and Control/Display Unit is provided directly from the aircraft, there is no on/off switch. The IFD and Control/Display Unit can operate from 18 to 32 VDC.

2.5.2 Sensor Interface

See Appendix F for specific wiring interface instructions. **Note:** For Avidyne DFC100 Installations, reference the DFC100 STC Installation Data.

2.5.3 Bezel Lighting

Each IFD should be wired to a 0-28 VDC aircraft dimming bus (if equipped) to control the bezel button and knob backlight brightness via the cockpit panel brightness control. The dimming control of the Control/Display Unit is provided by the IFD. The dimming control of the Control/Display Unit is provided by the IFD.

2.5.4 Wiring

Wiring aspects of design, including wire type and size selection must conform to FAA AC 43.13-1B, Section 5, Electrical Wiring Rating. Wire conforming to MIL-W-22759/16 or MIL-C-27500 satisfies the burn requirements stated in Title 14 CFR §23.1359.

All wire harnesses must be installed and secured per FAA AC 43.13-1B. Any excess wire harness length must be safely routed, bundled with approved plastic cable ties, and safely secured.

Composite Aircraft may require metal overbraid over all wire harnesses that connect to the IFD System. For aircraft not on the R9 STC, contact the aircraft manufacturer for more information. If required, the copper metal overbraid must be a minimum 95% optical per ASTM-B-33. Note: Appendix F: Interconnect Diagrams, does not depict metal harness overbraid but it may be required.

2.5.5 ByteFlight Data Bus

Avidyne's ByteFlight Databus has unique set of interconnect requirements. Contact Avidyne for more information.

2.6 Pitot-Static Interface

IFDs with 700-00083-000 Part Numbers will connect directly to the aircraft pitot-static system. The connectors are included in the installation kit.

The Pitot (Pt) and Static (Ps) connections on the IFD are marked accordingly. In addition, the Pt connector on the IFD is colored red. It is recommended that the aircraft pitot connector also be color coded red to help assure correct connection. The installer must assure that the pitot and static connectors are fully seated. This is indicated by the engagement of the connector mounted locking bracket.

Pitot-static pneumatic lines must be installed so as to provide positive drainage (inhibit water entrapment as the low point(s) of the tubing runs).

2.7 Enhanced Vision System

The Enhanced Vision System (EVS) camera must be installed in a location where the attachment of the lightning channel is unlikely (i.e. SAE ARP5414 Zone 3). Otherwise, a video isolation transformer and/or metal overbraid will be required to keep the lightning transient levels 6 dB lower than the Equipment Transient Design Levels.

3. System Setup

The following sections describe the procedures for configuring the IFDs upon initial installation. There is no configuring of the Control/Display Unit required.

3.1 IFD Configuration Setup

3.1.1 General Information

The setup and configuring of the IFDs is designed to be a simple process. The initial configuration setting is performed via the IFD Configuration Tool. The IFD Configuration Tool is a software application that runs on a PC. Through a menu driven program, the IFD Configuration Tool will enable the installer to set the following data parameters. The data parameters will be stored onto the USB thumb drive, as one data file, for loading into the IFDs. The instructions for selecting aircraft and sensor configurations and establishing the data files are included in the following sections.

The IFD Configuration Tool will create a data file containing the following parameters:

- Aircraft tail and serial number
- Aircraft type
- V-speed values
- Airspeed dial indications
- Engine indication ranges and color banding
- Exceedances
- Avionics/sensor selection
- Aircraft normal and emergency checklist
- Number of ADAHRS

3.1.2 IFD Configuration Tool Setup

The following sections define the required material and procedures to creating the IFD configuration data file.

Required Material

- IFD Configuration Data Utility software (“IFD Configuration Tool.exe”), Avidyne part number 570-00117-XXX. The IFD Configuration Tool can be downloaded from the Avidyne Dealer website. **Note:** Table 44 below lists the appropriate IFD Configuration Data Utility for each IFD software version.

IFD Software Version[1]	IFD Configuration Data Utility Software (or later approved revision)
9.0.0.0	570-00117-001 Rev. 00
9.0.1.0	570-00117-001 Rev. 01
9.0.2.X	570-00117-002 Rev. 00
9.1.0.0	570-00117-003 Rev. 01
9.2.X.0[(2)]	570-00117-004 Rev. 00
9.3.0	570-00117-005 Rev. 01
9.4.0	570-00117-006 Rev.00
9.4.X	570-00117-006 Rev 02

Table 44: IFD Configuration Data Utility

[1] See **Table 1** for complete software part number.

[2] Piper PA-32 14-Volt Aircraft must install Software Part Number 500-00160-000, 500-00182-000, or 500-00183-000 on each IFD after running the IFD Configuration Data Utility. Reference Avidyne Document 601-00083-033 for installation procedure.

- A compatible USB flash device formatted to FAT32
- A PC running Windows 2000, Windows XP, Windows Vista, or Windows 7.

Creating the IFD Configuration File

1. Run the IFD Configuration Data Utility software:
   If the software is located on a USB Flash drive, browse to the drive and double click on "IFD Configuration Tool.exe".

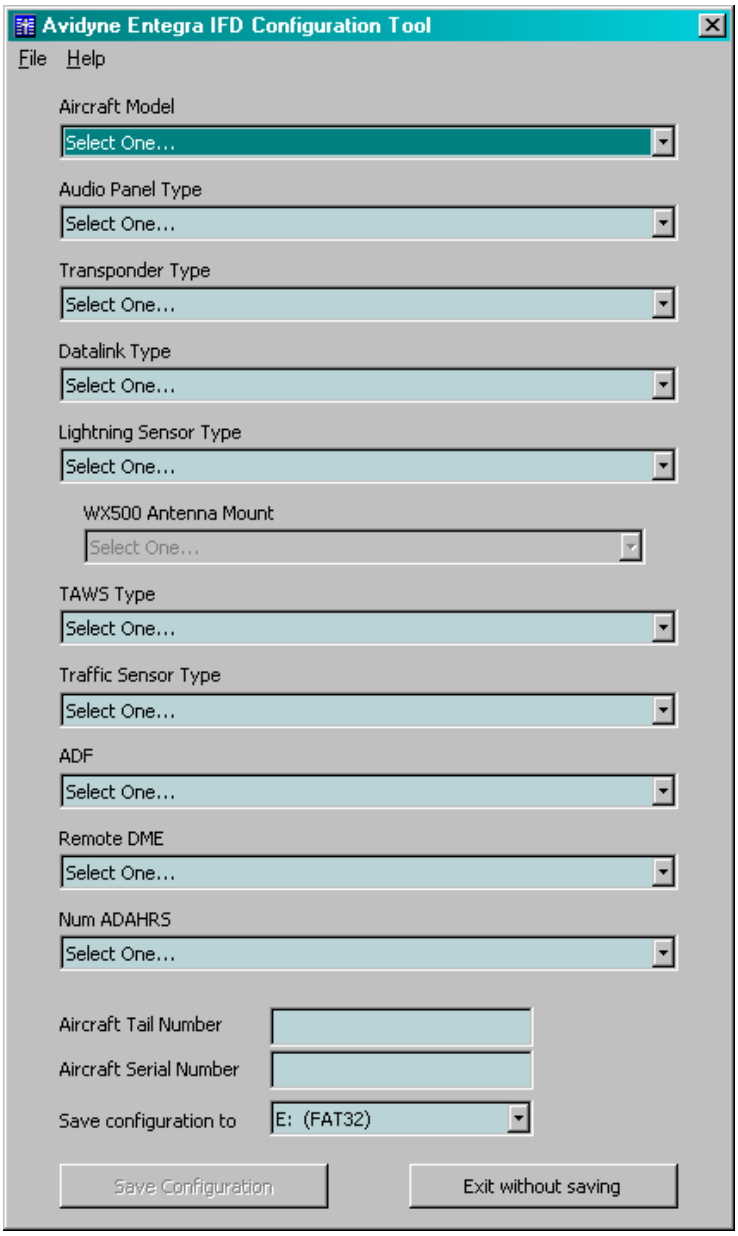


Figure 2: IFD Configuration Tool

2. Select the appropriate Aircraft Model from the drop down list.
   a) Do not select an aircraft model with "(NO DATA)" from the drop down.
   b) Contact Avidyne if the desired Aircraft Model is not listed.

3. Select the appropriate choices for Audio Panel Type, Transponder Type, Datalink Type, Lightning Sensor Type, WX500 Antenna Mount, Traffic Sensor Type, ADF, Remote DME, ADAHRS number, Autopilot, etc.
    a) Note that the "WX500 Antenna Mount" is only selectable if Stormscope WX-500 is selected as the Lightning Sensor Type.
    b) Enter the aircraft tail number. Include the country-specific prefix (e.g. "N123CD" for a US registered aircraft).
    c) Enter the aircraft serial number.
4. Select the appropriate TAWS type.

    Note that entering "None" will cause the IFD to use its own internal Terrain Awareness (TA) and Forward Looking Terrain Avoidance (FLTA) functions to display terrain-related cautions and warnings to the pilot. Entering a value other than "None" will cause the IFD to display caution and warning messages based on the external TAWS system and to suppress the internal TA and FLTA functions.

> **Note**: It is imperative that only one source of terrain cautions and warnings be enabled on the airplane so as to avoid the potential for conflicting information to be presented to the pilot. If a TAWS system is installed but the IFD's internal TA and FLTA functions are to be used for terrain avoidance, the TAWS system *must* be fully disabled. If a TAWS system is to be used, its type must be properly configured on the IFD so that the caution and warning indications generated by the TAWS system can be displayed to the pilot and so that the IFD's TA and FLTA functions will be inhibited.
>
> **Avidyne TA/FLTA is not an approved TSO-C151 EGPWS unit.**
>
> The IFD system supports a Honeywell KGP560/860 system only. All other external TAWS/EGPWS systems must be disabled if the internal TA and FLTA is operational on the IFD system.

5. Select the USB drive where the configuration file is to be saved to.
6. Press Save Configuration.

Note: The Save Configuration Button is only enabled after all fields have been completed. No active fields can be blanks and no drop downs can be "Select One…".

3.1.3 Configuring the IFDs

Assure Section 3.1.2 is performed prior to performing the following steps.

1. Perform power, ground, and lighting input checks prior to powering on the IFDs, Control Display Unit, and Magnetometer/OAT Sensor(s). NOTE: Damage to equipment may occur if improperly connected to the aircraft.

NOTE: After changing any of the IFDs configurations, the IFDs may display “IFD Fixing Setup” message, DO NOT Power down the IFD’s during this time period.

2. Power on the IFDs and allow it to initialize. This will take several minutes. Allow the ADAHRS box to disappear.
3. Insert the IFD Configuration Tool USB Flash Drive into the IFD USB port.
4. Press the SYS function key to display the System Page. Press on the right side of the SYS Function key to “tab” over to the Setup tab (See **Figure 3**).

Note: The Page Function Keys (bottom row of buttons) and the Line Select Keys (side buttons) have dual action detents. The following describes the use of these buttons.

Page Function Key (PFK)

Pressing any of the PFK buttons (either side of the button) selects the display and control of various functions. After pressing a PFK to display the indicated function, pressing either side of the PFK button navigates the tab menu located just above the function keys.

Line Select Key (LSK)

Pressing either side of the Line Select Keys (LSK) buttons will perform different actions as indicated by the graphical arrowhead shaped cues. These cues indicate which side of the button to press. There are some instances where there are no cues present. In these cases, pressing either side of the LSK will perform the indicated function.

Figure 3: System Setup Page

5. Select “Update Databases” LSK by pressing on either side of the button. Press the “Confirm” LSK after it appears. The screen will blank for several seconds before coming up in the “System Update Page”. After the IFD Configuration Tool USB flash has been recognized by the system, the system setup configuration file will be displayed.

6. Assure ‘System Update ” tab is selected, simultaneously press and hold the top left LSK, and third down from top left LSK buttons until the countdown timer in the upper right corner of the display counts down to zero seconds. The “Technician Maintenance Mode” ” page will be displayed.

7. Press the LSK “Proceed”.

8. Press the LSK “Check Disk”. Verify no errors are reported by the IFD. If errors are reported by the IFD, Contact Avidyne Technical Support for more information.

9. Select the Configuration file for the aircraft. Unselect any other aircraft configurations and/or databases, if listed.

10. Press the LSK “Proceed”. It may take several moments (as indicated by the moving airplane symbol) for the file to load. The words “Completed OK” will be displayed next to the file name. Along the top of the list the words “All items completed with no errors”.

NOTE: Do not remove the USB Flash Drive when the IFD is reading/writing to the USB Flash Drive.

11. Press LSK “Done”. A message “ACM initializing, please wait…” will be displayed. Updating of the ACM may take several minutes. **Note:** This only appears on IFDs with an ACM attached.

12. Upon completion of the ACM update, select “Done”. The IFD will blank for several seconds and will initialize. **Note:** This only appears on IFDs with an ACM attached.

13. Repeat Steps 1-12 on all other IFDs as necessary.

Note: Possible Error Conditions

- Error: “USB device is not formatted FAT32” appears in yellow text on the IFD

  Reason: The USB Flash drive is not formatted FAT32. On a PC, format the USB Flash drive with the FAT32 file system then repeat section 3.1.2 and 3.1.3.

- Error: “ERROR” appears next to the configuration load after being run on the IFD

  Reason: The loading of configuration data and checklist data did not complete correctly. Repeat section 3.1.2 and 3.1.3 using a different USB Flash drive. If the problem occurs again, contact Avidyne technical support.

- Error: The IFD does not recognize the USB Device. Re-boot the IFD and try the USB device again. If the problem persists, contact Avidyne Technical Support for more information.

- Error: All other error messages

  Reason: Other error messages may be indicative of a more serious problem. It is recommended that you contact Avidyne if any other error messages appear.

3.1.4 Post IFD Configuration Checkout

To confirm proper operation in an aircraft:

1. Apply avionics power and allow the IFDs to fully initialize. Verify neither IFD displays a Configuration Error during startup. If the IFD displays an error, contact Avidyne Technical Support for more information.

2. Go to the SYS page, and select the Setup tab on the IFDs.

3. Verify aircraft tail number is correctly displayed on the top of the SYS page.

4. Verify that the Aircraft make, model, and checklist version matches the appropriate aircraft configuration on the IFD Systems Status Page.

5. Go to the PFD page and select the Nav Display tab on all IFDs and verify that “Invalid V-Speeds” is not displayed next to the airspeed indicator.

6. Go to the SYS page, and select the Engine tab on all IFDs and verify that engine gauges are correctly displayed.

7. Go to the CHKL page on all IFDs, and select each checklist tab in turn to verify that all are available.

8. Retain the Tail-number specific configuration file. It may be used again on the same aircraft if certain IFD components are replaced.

9. Retain the IFD Configuration Data Utility software. It may be used again (with no limit) to create configuration files for other IFD equipped aircraft.

3.2 IRU Calibration

Assure section 3.1.2 “Configuring the IFDs” has been performed prior to performing this section.

This procedure calibrates the Internal Reference Units (IRU) in both IFDs to compensate for the aircraft’s instrument panel tilt angles. In the event the default calibration offset values stored in the IFDs do not adequately calibrate the IRUs, Avidyne personnel are authorized to change the default offset calibration values.

1. Allow both IFDs to align (approximately 3 minutes) until the ADAHRS countdown timer expires (on left IFD only) and is removed from the left display.

2. After initialization, the right IFD will display the engine page. Enter and confirm the initial fuel setting. When completed, press “Done”.

Note: The following procedure applies to *ALL* IFDs that contain ADAHRS.

3. Press the SYS function key on the IFD.

4. Select the “Setup” tab (See **Figure 3**).

5. Select “Update Databases” LSK by pressing on either side of the button. Press the “Confirm”. LSK after it appears. The screen will blank for several seconds before displaying the “System Update Page”

6. Assure ‘System Update ” tab is selected, simultaneously press and hold the top left LSK, and third down from top left LSK buttons until the countdown timer in the upper right corner of the display counts down to zero seconds. The “Technician Maintenance Mode” ” page will be displayed (see **Figure 4: Technician Maintenance Mode**).

Figure 4: Technician Maintenance Mode

7. Press “Proceed” LSK.

8. Press the right side of the “SYS” page function key to select the “Cal” tab. Select the right side of the “Cal Select” LSK until “IRU” appears. The “IRU Calibration” page will appear (see **Figure 5**).

Figure 5: IRU Calibration Page

9. Select “Restore Defaults”, verify the saved values are appropriate for the aircraft type (Contact Avidyne if needed) and then select “Save Offsets”. If the values shown are incorrect, enter the correct values and then select “Save Offsets”

10. Upon completion of the IRU calibration, the saved offset values will appear in the “Received Values” column, shaded in green. The words “IRU Calibration Completed” will be displayed below.

11. Select “Done” then power of the IFD for a minimum of 1 minute. Please note: The left IFD will update the ACM after selecting “Done”. Power down the IFD after this process is complete.

3.3 Air Data Unit

This Section describes testing and calibrating the Air Data Unit in the IFD. Only IFDs with Part Number 700-00083-000 requires testing.

3.3.1 Testing

The IFD Altimeter must be tested in accordance to 14 CFR Part 43 Appendix E and the aircraft maintenance manual. Reference the instructions below for specific testing information.

1. Altimeter Scale Error

   For the scale error tests of Appendix E (b)(1)(i) that utilize Table I, the first test point entry calls for setting a pressure altitude of –1000’ on the test equipment and noting the display readout on the unit under test is –1000’ +/- 20 feet. Initiate this test as published. If the digital altitude value displayed on the IFD falls within the specified tolerance, the test point is a pass.

If an "OUT OF RANGE" indication is displayed in the digital readout window of the IFD Altimeter Indicator, the tester shall decrease the target pressure in the test equipment in the smallest increment the particular test equipment can provide. This procedure is to continue until a valid pressure altitude value (non "OUT OF RANGE" indication) is displayed in the digital readout window of the IFD. Once this has occurred, as long as (a) the test equipment setting is between –1000' and –950', and (b) the digital altitude indication on the IFD is within +0/-20 feet of the value shown on the test equipment, the test point is a pass. Otherwise, the test point is a fail.

2. Barometric Scale Error

   For the barometric scale error test of Appendix E (b)(1)(vi) that utilize Table IV, this test must be conducted at a base pressure altitude of +2000' MSL or higher, using test equipment as necessary to establish the base altitude. At that point, the test shall be conducted as published, noting that the values given in Table IV are differences from the established base altitude.

3. Friction Test

   Friction testing as described in Appendix E (b)(1)(iv) shall be skipped in its entirety. This is a test designed to evaluate mechanical friction in pointers and has no applicability to electronic displays as in the case of the Integrated Flight Display.

3.3.2 Calibration

If an out of tolerance condition is observed when conducting air data testing described in Part 43 Appendix E, the error may be corrected by recalibrating the ADU.

To calibrate the ADU:

1. Connect an air data test set to the aircraft as instructed by the test set manufacturer.

2. Set the air data test set altitude to 10000 (Ten Thousand) feet MSL and the indicated airspeed (IAS) to 100 Knots.

3. Wait two minutes for the test setup to stabilize.

   Note: The following procedure can be performed on either IFD.

4. Press the SYS function key on the IFD.

5. Select the "Setup" tab (See Figure 3).

6. Select "Update Databases" LSK by pressing on either side of the button. Press the "Confirm". LSK after it appears. The screen will blank for several seconds before displaying the "System Update Page"

7. Assure 'System Update " tab is selected, simultaneously press and hold the top left LSK, and third down from top left LSK buttons until the countdown timer in the upper right corner of the display counts down to zero seconds. The "Technician Maintenance Mode" " page will be displayed.

8. Press “Proceed” LSK.

9. Press the right side of the “SYS” page function key to select the “Cal” tab. Select the right side of the “Cal Select” LSK until “ADU” appears. The “ADU Calibration” page will appear.

10. Press “Calibrate. If successful, “ADU Calibration Complete” will displayed.

11. Press LSK “Done”. The IFD blank for several seconds and will initialize.

    Note: The IFD will not correct for deviations that exceed 75 feet altitude or 4 Knots IAS. If you see the message: "ADU Cal Failed. Measured data too far out of specification to recalibrate", contact Avidyne Technical Support.

    Note: If you see the message, "ADU Cal Failed. No valid response received from Air Data Unit. Select “Done" to reinitialize the IFD. Wait 2 minutes for the air data to stabilize, and re-run the ADU Calibration. If it fails again, contact Avidyne Technical Support.

3.4 Charts Database Loading

This section is to be performed after downloading the customer’s Charts data via the Jeppesen JSUM procedure, to one of the Avidyne supplied USB thumb drives.

Note: Charts are only displayed on the right IFD.

1. Insert the USB thumb drive into the right IFD.

2. Power-up the right IFD and wait for it to initialize.

3. Press the “Sys” function key and tab over to “Setup”.

4. Press the “Update Databases” LSK and then select “Confirm”. A listing of uploadable files will be individually displayed and check marks may be visible next to each file name.

5. Use the “Select All”, “Un-select All” LSKs and the right-hand IFD knob as required to ensure check marks are associated with all the desired files to upload to the IFD.

6. Press the “Proceed” LSK to begin the file upload. A progress bar will be presented to help provide an idea of how much longer the upload will take. Typical upload times are:

   US Charts (170 MB+) – 11 min
   Worldwide Charts (430 MB+) – 27 min

   Note: A moving airplane symbol progress bar will indicate loading progress.

7. When completed, press the “Done” LSK which will restart the IFD into flight mode.

8. Verify no error message is displayed on the IFD(s) during power up. Verify all databases are correctly loaded.

Note: If error occurs during the loading of any database, the IFD will display an error message on the following IFD power up. The database must be reloaded.

3.5 Navigation & Obstacle Database Loading

This section is to be performed after downloading the Navigation and Obstacle data from Jeppesen JSUM to one of the Avidyne Supplied USB thumb drives..

The following steps are performed on both IFDs:

1. Insert the USB thumb drive into the IFD.

2. Power-up the IFD and wait for it to initialize.

3. Press the “Sys” function key and tab over to “Setup”.

4. Press the “Update Databases” LSK and then select “Confirm”. A listing of uploadable files will be individually displayed and check marks may be visible next to each file name.

5. Use the “Select All”, “Un-select All” LSKs and the right-hand IFD knob as required to ensure check marks are associated with all the desired files to upload to the IFD.

6. Press the “Proceed” LSK to begin the file upload. A progress bar will be presented to help provide an idea of how much longer the upload will take. Typical upload times are:

    - US Nav Data (8 MB) – 4 ½ min
    - Worldwide Nav Data (26 MB) – 15 min
    - US Obstacles (900 KB) – 10 sec

7. Press LSK “Done”. The IFD blank for several seconds and will initialize.

8. Verify no error message is displayed on the IFD(s) during power up. Verify all databases are correctly loaded.

Note: If error occurs during the loading of any database, the IFD will display an error message on the following IFD power up. The database must be reloaded.

3.6 GPS Reset

If either GPS Receiver is unable to calculate a position after >10 minutes outside with an unobstructed view of the sky, the GPS may need to be reset. GPS Resets are primarily needed when the GPS Receiver last position fix saved to the memory is >1000 miles from its current location.

1. Power-up both IFDs
2. On the right IFD, press the SYS function key, then select the 'Sensor' tab and switch to the GPS page.
3. On the left IFD, Press the SYS function key on the IFD.
4. Select the "Setup" tab (See Figure 3).
5. Select "Update Databases" LSK by pressing on either side of the button. Press the "Confirm". LSK after it appears. The screen will go blank for several seconds before displaying the "System Update Page"
6. Assure 'System Update " tab is selected, simultaneously press and hold the top left LSK, and third down from top left LSK buttons until the countdown timer in the upper right corner of the display counts down to zero seconds. The "Technician Maintenance Mode" page will be displayed (see **Figure 4: Technician Maintenance Mode**).
7. Press "Proceed" LSK.
8. Press the right side of the "SYS" page function key to select the System Status tab.
9. Press either "Reset GPS 1" or "Reset GPS 2".
    a) If GPS1 (in the left IFD) has no position, press the "Reset GPS 1" button. Confirm that the status for the IFD1 GPS changes to a red-X for several seconds on the Right IFD. If this does not occur, retry the action.
    b) If GPS2 (in the right IFD) has no position, press the "Reset GPS 2" button. Confirm that the status for the IFD2 GPS changes to a red-X for several seconds on the Right IFD. If this does not occur, retry the action.
10. Press LSK "Done" on the left IFD. The IFD go blank for several seconds and the IFD will return to Flight Mode.
11. Using the GPS Status page on the Right IFD, verify the GPS selected above has calculated a position. Perform Post-Installation Check per Section 4.3.

3.7 AXP322 Transponder Configuration (Optional)

The following steps are to be performed if an AXP322 transponder is installed.

Assure section 3.1.2 “Configuring the IFDs” has been performed prior to performing this section.

1. Assure the right IFD is powered off.
2. Press the SYS function key on the left IFD.
3. Select the “Setup” tab (See **Figure 3**).
4. Select “Update Databases” LSK by pressing on either side of the button. Press the “Confirm”. LSK after it appears. The screen will blank for several seconds before displaying the “System Update Page”
5. Assure ‘System Update ” tab is selected, simultaneously press and hold the top left LSK, and third down from top left LSK buttons until the countdown timer in the upper right corner of the display counts down to zero seconds. The “Technician Maintenance Mode” ” page will be displayed (see **Figure 4: Technician Maintenance Mode**).
6. Press “Proceed” LSK.
7. Press the right side of the “SYS” page function key to select the “Cal” tab. Select the right side of the “Cal Select” LSK until “XPDR” appears. The “AXP322 Configuration” page will appear (see **Figure 6 AXP322 Transponder Configuration Setup Page**)

Figure 6: AXP322 Transponder Configuration Setup Page

This page will configure the Avidyne AXP322 Remote transponder. Reference the AXP322 installation manual as needed. The transponder must be configured to operate.

Please note, it may take up to 3 minutes to update the transponder configuration after changing a parameter below.

8. Using the right outer knob to select the field and the inner knob to set the value proceed to enter the information as described in the table below.

Selection	Description
Hex Code	Enter the aircraft's Mode S Address issued by the registration authority. This code must be entered as a hexadecimal value.
A/C Width	Enter the aircraft's width in meters
A/C Length	Enter the aircraft's length in meters
GPS Lin. Offset	Enter the distance from the front of the aircraft to the GPS antenna in meters
1090 MHz Receiver	Enter "Yes" if the aircraft is equipped with 1090 MHz ADS-B In receiver[1]
UAT Receiver	Enter "Yes" if the aircraft is equipped with UAT ADS-B In receiver, “NO” if the aircraft is not equipped with a UAT ADS-B in receiver [1]
Squat Input	Enter the squat switch input type. Select "Avidyne".
A/C Class	Enter the aircraft category
A/C Speed	Enter the aircraft speed
GPS Lat. Offset	Enter the lateral distance in meters for the GPS antenna

Table 45: AXP322 Configuration Settings

Note:

1. Enter yes when installing a compatible ADS-B receiver

9. After completing all the settings press the “Done” LSK.
10. Power up the right IFD. The right IFD will receive the configuration settings from the left IFD after approximately 3 minutes.

3.8 Radar Configuration

The Radar configuration module for the RDR2000 should be configured as followed. (Extra Aircraft only)

OPERATION CONFIG:	STRUT OVERRIDE:	F [= False]
	TARGET ALERT:	T [= True]
	MAP GAIN ADJUST:	T [= True]
ANTENNA CONFIG:	ART CONNECTION INSTALLED TOP:	F [= False]
	MECHANICAL ANTENNA LIMIT:	100°
	ANTENNA SCAN CAPABILITY:	100°
CONTROLLER CONFIG:	SIDE 1:	1 [= EFIS 40/50 rev08]
	SIDE 2:	1 [= EFIS 40/50 rev08]
	SIDE 3:	1 [= EFIS 40/50 rev08]
SENSOR CONFIG:	GYRO CONFIG 429 AVAILABLE:	T [= True]
	ANALOG AVAILABLE:	F [= False]
	GYRO COMPENSATION REQ:	F [= False]
	REF LEVEL:	None

Dip switches:

#1	#2	#3	#4	#5	#6	#7	#8
ON	ON	OFF	ON	ON	OFF	ON	OFF

Table 46: Dip switch configuration for the EA 400-500

Dip switches #4 and #5 define the antenna size (10")

Dip switch #3 in the OFF position allows change of (some) configuration data by the controller.

4. Post-Installation Checks and Calibrations

This section will test the various functions of IFD. Prior to Starting this section, verify the IFDs are properly configured and not displaying any Caution/Warning Messages on the Status Page.

4.1 Lighting

1. Rotate the instrument lighting control rheostat through its full range of motion.

2. Verify the IFDs and Display/Control LED lights around all the bezel and knobs turn on and in balance with the rest of the instruments and control panels.

4.2 NAV-COMM Ground Check

1. Perform communication checks with local tower.

2. Perform VOR/ILS ramp tests.

4.3 GPS Ground Check

This section requires the aircraft to be outside with unobstructed view of the sky.

Note: The initial position acquisition can take up to 5 minutes. Subsequent GPS warm starts will take up to 20 seconds. If the GPS has not calculated a position after >10 minutes, the GPS may need to be Reset. See Section 3.6 for more details.

Once the GPS position has been acquired for each IFD, perform the following steps:

1. On the GPS Status page, verify that the lat/long agree with a known reference position.

2. View the GPS Status page and verify that at least 4 satellites have been acquired.

3. Verify the GPS satellite signal strength is not affected by VHF Communication or any other source.

4.4 Pitot-Static Leak Check

Perform a pitot-static leak check anytime the pitot-static ports are disconnected from (and then reconnected to) the IFDs. Ensure that you perform the pitot-static leak check in accordance with the specific Aircraft Maintenance Manual.

4.5 Electromagnetic Compatibility (EMC) Check

The EMC check verifies that all of the electronic systems installed on the aircraft are compatible. Operating the IFDs should not result in Nav flags, constant location lightning strikes, noise on COMM channels, or other phenomena.

Check the following systems:

- **Comm Radios**: Scan through radio channels to ensure there is no interference caused by the PFD. Check random frequencies from 118MHZ through 136.975MHZ as well as your local ground and tower frequencies to ensure there is no break in squelch due to the installation.

- **GPS**: Ensure that correct position displays and that there is no change in satellite signal strength.
- **Autopilot**: Ensure that autopilot self-test passes OK with the IFDs powered on.
- **Other Instruments**: Verify there is no adverse effect on other instruments with the IFDs powered on.

4.6 Magnetic Compass Swing

Note: Section 3.2 “IRU Calibration” must be performed prior to performing this section.

This section provides the steps for calibrating the magnetometers. The following steps will enable both magnetometers to be calibrated at the same time.

Ensure that:

- The calibration procedure is done in a known magnetically clean area at least 200 ft. from metal structures of any kind and not on surfaces that may contain underground fuel tanks or steel rebar (concrete ramp). Avidyne suggests using an approved compass rose for this procedure.
- Aircraft doors are closed.
- Flaps are in retracted position.
- The airplane is reasonably level (+/- 3 deg pitch and roll).

1. Turn battery switch to on. Consider attaching an external power cart until ready unless you are performing this calibration with the engine running and alternator(s) on. All other aircraft equipment shall be operating.
2. Allow both IFDs to align (approximately 3 minutes) until the ADAHRS countdown timer expires (on left IFD only) and is removed from the display.
3. Wait in the aligned state for an additional 10 minutes.
4. After initialization, the right IFD will display the engine page.
5. Enter and confirm the initial fuel setting. When completed, press “Done”.

Note: The following shall be performed on both IFDs.

6. Press the SYS function key on both IFDs.
7. Select the “Setup” tab (See **Figure 3**).
8. Select “Update Databases” LSK by pressing on either side of the button. Press the “Confirm”. LSK after it appears. The screen will blank for several seconds before displaying the “System Update Page”
9. Assure ‘System Update” tab is selected, simultaneously press and hold the top left LSK, and third down from top left LSK buttons until the countdown timer in the upper right

corner of the display indicates zero seconds. The “Technician Maintenance Mode” ” page will be displayed (see**Figure 6: AXP322 Transponder Configuration Setup Page**).

10. Press “Proceed” LSK.

11. Press the right side of the “SYS” page function key to select the “Cal” tab. The “Magnetometer Calibration” page will appear (see **Figure 7: Magnetometer Calibration Page**).

Figure 7: Magnetometer Calibration Page

12. Press the Perform “Calibrate Heading” button LSK.

13. Manually align or taxi the aircraft such that the centerline of the airplane is on magnetic north (360° ± 1° or less) heading as indicated by the Handheld Sight Compass operator standing front of the aircraft. It is critical that care is taken to fine-tune each calibration point to within 1 deg.

14. Follow the directions on the Magnetometer Calibration Page (press the Calibrate Heading button and wait until “Done” is displayed for that heading.

15. Repeat the procedure to align the centerline of the airplane on consecutive 30° headings (12 total calibration points) as indicated by the Handheld Sight Compass operator by manually reposition or taxiing the aircraft as required. Continue following the directions of the “Magnetometer Calibration” Page until complete (see **Figure 8: Magnetometer Calibration Complete**).

Figure 8: Magnetometer Calibration Complete

16. After the last heading point of 330° is calibrated the IFD will display the following message: "Magnetometer Calibration Complete. Press 'Done", wait for IFD to reboot, then power off IFD for 1 minute". After this message appears, wait approximately 10 seconds and power down the IFD for 1 minute.
17. After 1 minute power up the IFD an await for them to initialize.
18. Verify neither "Mag Cal 1 or 2 Required" caution message appears in the lower right hand corner of the display.
19. Verify heading accuracy of both left and right IFDs on cardinal headings (+/- 2 deg from right to left IFDs and 4 deg max. from compass rose or sight compass).
20. Contact Avidyne for additional installation instructions if the IFD's continue to have Heading errors.

4.7 Fuel Quantity Calibration

4.7.1 Eight Point Calibration Procedure

The following procedure only applies to R9 installations that include a fuel quantity indicator and a Electronics International EDC-33P. Refer to aircraft maintenance manual for applicability.

Notes:

1. The following procedure performs an eight point calibration on each fuel tank on each IFD.
2. During this procedure each tank should be filled separately. If applicable, cross fill valves should be closed.
3. The calibration procedure performed from the left IFD only.
4. Start with both tanks empty meaning zero usable fuel.
5. Tank 1 is left tank. Tank 2 is right tank.

Tank 1 and 2 FQ Calibration

1. Assure right IFD is off.

2. Assure EDC-33P is powered on.

3. Place the Left IFD in "Technician Mode" by performing the following steps:
    1) Select SYS function key and tab over to "Setup".
    2) Select "Update Databases".
    3) Select "Confirm".
    4) After the IFD boots up in Maintenance mode, press the top left and third from top left LSKs simultaneously. A count timer will appear in the upper left hand corner of the display starting at 3. Hold the LSKs down until "Technician Maintenance Mode" is displayed.

4. Select "Proceed".

5. Using the SYS function key tab over to "Cal".

6. Select "Fuel" in the "Cal Select" LSK.

7. Select "DAU" in the "Fuel Source" LSK.

8. Select "1" in the "Cal Tank" LSK.

9. Select "Empty" in the "Cal Point" LSK.

10. Assuring the tank is empty of usable fuel (only unusable fuel remains) select the "Accept Value" LSK. The "Current Raw" value and the "Saved Value" will agree. See **Figure 9:** for example of display.
    Note: Raw value may indicate different value from actual gallons pumped into tank since the raw values are not pre-calibrated. This is to be expected.
11. Select "1" in the "Cal Point" LSK.

12. Fill 8 gallons into Tank 1 as indicated by the fuel delivery system gauge.

13. Select the "Accept Value" LSK. See **Figure 10:** for example of display.

14. Select "2" in the "Cal Point" LSK.

15. Fill tank to 16 gallons into Tank 1 as indicated by the fuel delivery system gauge.

16. Select the "Accept Value" LSK.

17. Select "3" in the "Cal Point" LSK.

18. Fill tank to 24 gallons into Tank 1 as indicated by the fuel delivery system gauge.

19. Select the "Accept Value" LSK.

20. Select "4" in the "Cal Point" LSK.

21. Fill tank to 32 gallons into Tank 1 as indicated by the fuel delivery system gauge.

22. Select the “Accept Value” LSK.

23. Select “5” in the “Cal Point” LSK.

24. Fill tank to 40 gallons into Tank 1 as indicated by the fuel delivery system gauge.

25. Select the “Accept Value” LSK.

26. Select “6” in the “Cal Point” LSK.

27. Fill tank to 48 gallons into Tank 1 as indicated by the fuel delivery system gauge.

28. Select the “Accept Value” LSK.

29. Select “Full” in the “Cal Point” LSK.

30. Fill tank to Full gallons into Tank 1.

31. Select the “Accept Value” LSK. See **Figure 11:** for example of display.

32. Tank 1 calibration is completed.

33. Select “2” in the “Cal Tank” LSK and repeat above steps for Tank 2 calibration.

34. After both tank fuel quantities have been calibrated observe the message “Fuel Quantity Indicator Not calibrated” will be removed.
35. Select “Done”.

36. Power up the right IFD.

37. After both IFDs are powered up look for the cyan message “Fixing Setup” in the lower left hand corner of each display. It may take up to a minute to display the message.

38. After the “Fixing Setup” message is removed from both displays, cycle power on both IFDs. The right IFD now has the new calibration files. This can be confirmed by entering into Technician mode on both IFDs and comparing the 8 point “Saved Raw” values. After confirming the “Saved Raw” values agree then select “Done to exit maintenance mode.

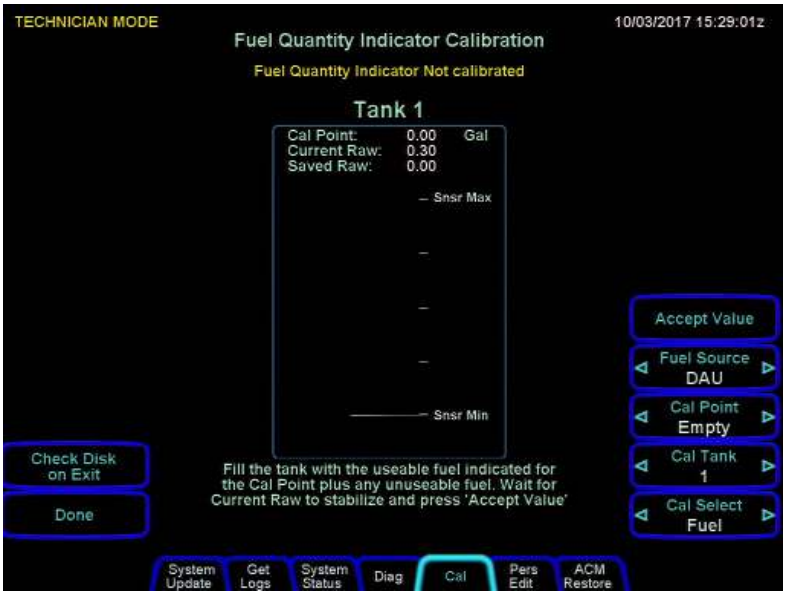


Figure 9: Empty Calibration Point Example

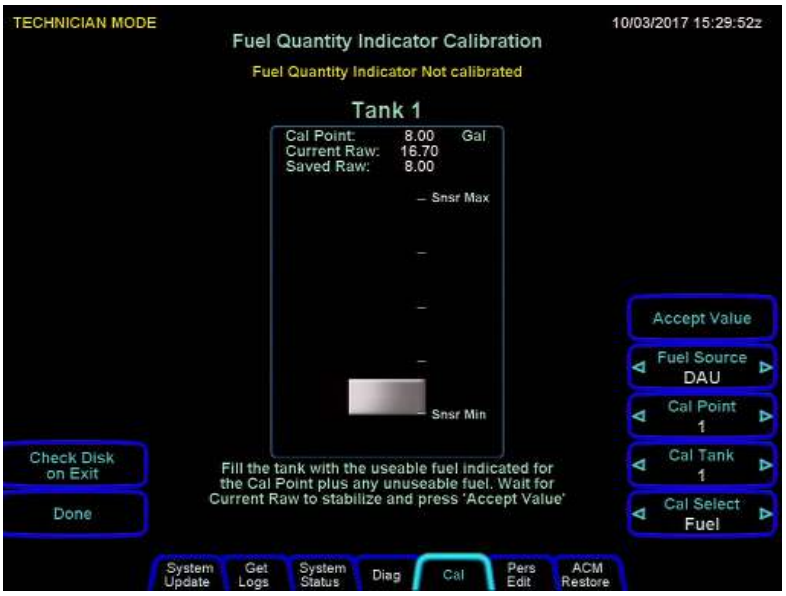


Figure 10: Calibration Point 1 Example

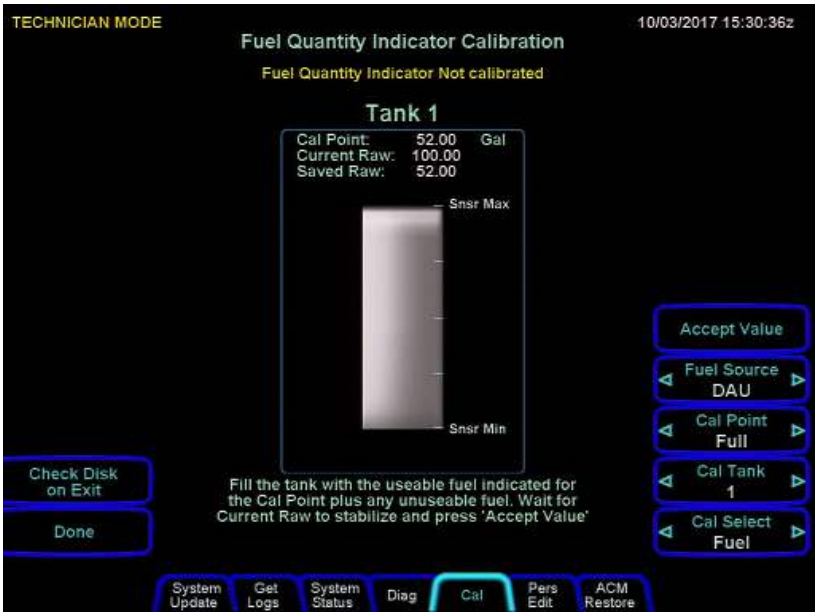


Figure 11: Full Calibration Point Example

4.7.2 Two Point Calibration Procedure

The following procedure only applies to R9 installations that include a fuel quantity indicator and a Electronics International EDC-33P. Refer to aircraft maintenance manual for applicability.

Notes:

1. The following procedure performs a two point calibration on each fuel tank on each IFD.
2. During this procedure each tank should be filled separately. If applicable, cross fill valves should be closed.
3. The calibration procedure performed from the left IFD only.
4. Start with both tanks empty meaning zero usable fuel.
5. Tank 1 is left tank. Tank 2 is right tank.

Tank 1 and 2 FQ Calibration

2. Assure right IFD is off.

3. Assure DAU (EDC-33P) is powered on.

4. Place the Left IFD in “Technician Mode” by performing the following steps:
   1. Select SYS function key and tab over to “Setup”.
   2. Select “Update Databases”.
   3. Select “Confirm”.
   4. After the IFD boots up in Maintenance mode, press the top left and third from top left LSKs simultaneously. A count timer will appear in the upper left hand corner of the display starting at 3. Hold the LSKs down until “Technician Maintenance Mode” is displayed.

4. Select “Proceed”.

5. Using the SYS function key tab over to “Cal”.

6. Select “Fuel” in the “Cal Select” LSK.

7. Select “DAU” in the “Fuel Source” LSK.

8. Select “1” in the “Cal Tank” LSK.

9. Select “Empty” in the “Cal Point” LSK.

10. Assuring the tank is empty of usable fuel (only unusable fuel remains) select the “Accept Value” LSK. The “Current Raw” value and the “Saved Value” will agree. See **Figure 12:**

Note: Raw value will indicate different value from actual gallons pumped into tank since the raw value are not pre-calibrated. This is to be expected.

11. Select “Full” in the “Cal Point” LSK.

12. Fill tank to Full gallons into Tank 1.

13. Select the “Accept Value” LSK.

14. Tank 1 calibration is completed.

15. Select “2” in the “Cal Tank” LSK and repeat above steps for Tank 2 calibration. See **Figure 13:**

16. After both tank fuel quantities have been calibrated observe the message “Fuel Quantity Indicator Not calibrated” will be removed.

17. Select “Done”.

18. Power up the right IFD.

19. After both IFDs are powered up look for the cyan message “Fixing Setup” in the lower left hand corner of each display. It may take up to a minute to display the message.

20. After the “Fixing Setup” message is removed from both displays, cycle power on both IFDs. The right IFD now has the new calibration files.

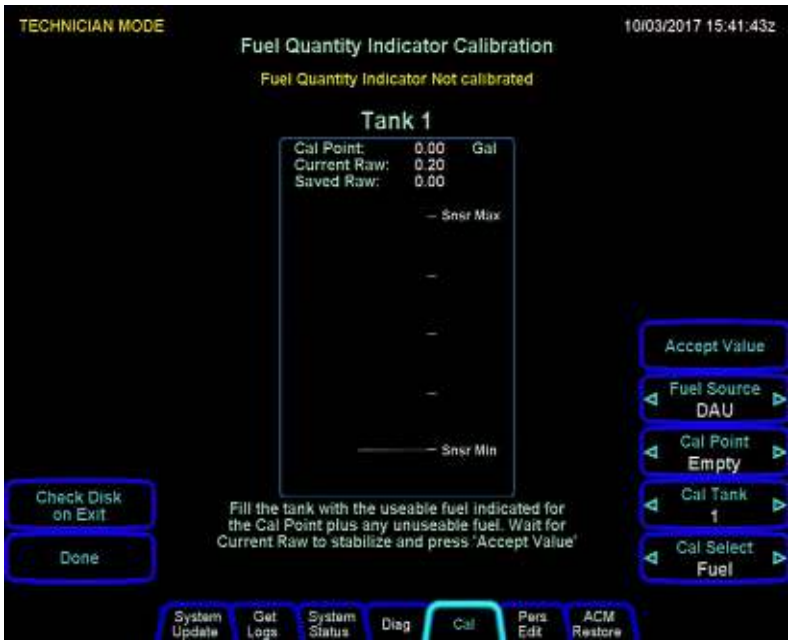


Figure 12: Empty Calibration Point Example

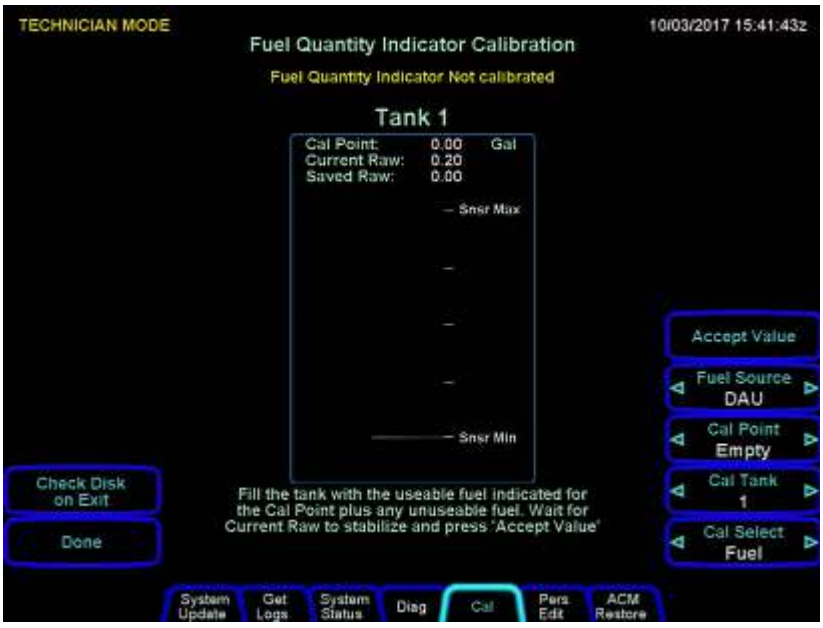


Figure 13:: Full Calibration Point Example

4.8 Sensors

Verify all Traffic, Lightning, Engine, and Weather sensors connected to IFD(s) are operating per the manufacturers' installation/maintenance manuals.

4.8.1 Enhanced Vision System

Verify the Enhanced Vision System (EVS) RS-170 Video is displayed on the IFD(s). Verify the IFD can adjust the brightness and contrast of the displayed EVS image.

4.9 Autopilots

4.9.1 S-Tec 55x Autopilot Computer

This section will align the VOR/LOC Navigation output from the IFD(s) to the Autopilot.

1. Power up the Left IFD and the S-Tec 55X.
2. Select NAV 1 on the Left IFD as the Primary Source.
3. Select NAV Mode on the S-Tec 55x Autopilot Computer.
4. Insert an appropriately sized screwdriver into the slotted hole on the Autopilot Computer front bezel and perform alignment procedure per the S-Tec 55x installation manual.

Note: This may take several minutes and several adjustments. Allow the Autopilot time to settle between adjustments.

4.9.2 Avidyne DFC100 Autopilot Computer

Reference the Avidyne DFC Series Autopilot's STC data for Post-Installation Setup and Checkout. **Note:** Inflight Calibrations are not required.

4.10 Engine Data Acquisition Unit

4.10.1 Fuel Quantity Indicator Calibration (PA-46 and PA-32 Only)

This section will describe calibrating the IFDs to the Mortiz DAU fuel probes.

1. Drain the aircrafts fuel tanks per the Aircraft Maintenance Manual (usable fuel only).
2. Level the Aircraft on the Lateral and Longitudinal Axis per the Aircraft Maintenance Manual.
3. Remove power from the Right IFD
4. Enter Maintenance Mode on the Left IFD
5. On the SYS Page, select the Calibration Tab

6. Select the Fuel Calibration Page

7. Select the DAU as the fuel source

8. Left Tank Empty Calibration

    a. Select Left Tank, Press "Cal Tank" LSK until "1" is displayed

    b. Press "Cal Point" LSK until "Empty" is shown

    c. Following Step B, a horizontal yellow line should be displayed at the zero mark on the Tank Calibration Graphic. If it is not, there may be a configuration issue. Reloading the aircraft configuration may be necessary, reference Section 3.1.2.

    d. Press the "Accept Value" LSK, if displayed

        If the "Accept Value" LSK is not displayed, the raw value may be outside the required tolerance for the fuel probe/sensor. Note the displayed raw value and the displayed LSKs and contact Avidyne Technical Support.

9. Right Tank Empty Calibration

    a. Select Right Tank, Press "Cal Tank" LSK until "2" is displayed

    b. Press "Cal Point" LSK until "Empty" is shown

    c. Following Step B, a horizontal yellow line should be displayed at the zero mark on the Tank Calibration Graphic. If it is not, there may be a configuration issue. Reloading the aircraft configuration may be necessary, reference Section 3.1.2.

    d. Press the "Accept Value" LSK, if displayed

        If the "Accept Value" LSK is not displayed, the raw value may be outside the required tolerance for the fuel probe/sensor. Note the displayed raw value and the displayed LSKs and contact Avidyne Technical Support.

10. Fill both tanks to the specified fuel quantity

11. Wait three minutes for the fuel to stabilize

12. Left Tank Full Calibration

    a. Select Left Tank, Press "Cal Tank" LSK until "1" is displayed

    b. Press "Cal Point" LSK until "Full" is shown

    c. Following Step B, a horizontal yellow line should be displayed at the full mark on the Tank Calibration Graphic. If it is not, there may be a configuration issue. Reloading the aircraft configuration may be necessary, reference Section 3.1.2.

    d. Press the "Accept Value" LSK, if displayed

If the "Accept Value" LSK is not displayed, the raw value may be outside the required tolerance for the fuel probe/sensor. Note the displayed raw value and the displayed LSKs and contact Avidyne Technical Support.

13. Right Tank Full Calibration

    a. Select Right Tank, Press "Cal Tank" LSK until "2" is displayed

    b. Press "Cal Point" LSK until "Full" is shown

    c. Following Step B, a horizontal yellow line should be displayed at the full mark on the Tank Calibration Graphic. If it is not, there may be a configuration issue. Reloading the aircraft configuration may be necessary, reference Section 3.1.2.

    d. Press the "Accept Value" LSK, if displayed

        If the "Accept Value" LSK is not displayed, the raw value may be outside the required tolerance for the fuel probe/sensor. Note the displayed raw value and the displayed LSKs and contact Avidyne Technical Support.

14. Exit maintenance mode and restart both boxes

15. Verify the IFD is indicating the correct fuel quantity

4.10.2 EDC-33P-AVI Data Acquisition Unit Test

Verify the following items are displayed on the IFD(s) (if available):

- TKS Fluid Level
- Oxygen Level
- Trim Position

4.11 Emergency Locating Transmitter Position Data Test

Caution: All Emergency Locating Transmitter (ELT) tests must be conducted per the ELT manufacturer's Installation/Maintenance Manual. DO NOT transmit a "live" 406 MHz Search and Rescue satellite message during the following testing.

Prior to beginning this test, position the aircraft outside with unobstructed view of the sky.

1. Power on both IFDs
2. On the Right IFD, verify the #1 GPS has calculated a GPS position
3. Verify the ELT is receiving the GPS position via the serial connection. Test the ELT per the manufacturer's instructions.

4.12 Radar Configuration

Preliminary Radar Setup

1. Power on the IFDs and select the radar page
2. Enter into Technician mode on the IFD connected directly to the radar. Note that the other IFDs will display “Radar Sensor Error”. This is normal and expected.
3. Press the “SYS” function key and Select the “Cal” page.
4. Press the “Cal Select” Line Select Key (LSK) until the radar calibration page is selected.
5. Press the “Radar’ LSK to place the radar into “Test”
6. Turn the left outer knob to the left until ‘gain Pot displays -31.0
7. Turn the left inner knob to the right until “15.00° ” is displayed in the “Tilt Setting” field.
8. Turn the right outer knob to the right to a range of 240 NM.
9. Press the “Diagnostics” LSK to “Enable” Diagnostics. Six Yellow faults shall quickly flash several times and then “-none-“ shall be displayed. This confirms that the radar has been placed into calibration mode.

Antenna Clearance Check

Turn the left outer knob to the left to obtain a value between -26.5 and -28.0 in the “Gain Pot” field. This will initiate the antenna clearance scan. The antenna will move to each of the extreme positions to determine that there is no interference with the antenna movement and all scan motors are working properly.

Calibrate Radar Pitch and Roll

1. Rotate the right inner knob to adjust the “Roll Trim” setting to “0.000°”.
2. Level aircraft.
3. Rotate the left outer knob to the right to obtain a value between -11 and -12. This will allow adjustment of the “Pitch Angle”.
4. Set the “Pitch Angle” to 0.0° +/- 1.0 degrees.
    a. To increment the value of the “Pitch Angle” use the left inner knob to change the “Tilt Setting” between 5 and 10. When the “Tilt Setting” is set between 5 and 10, the value of the “Pitch Angle” field will slowly increase.
    b. To decrement the value of the “Pitch Angle” use the left inner knob to change the “Tilt Setting” between -5 and -10. When the “Tilt Setting” is set between -5 and -10, the value of the “Pitch Angle” field will slowly decrease.
    c. When the desired setting is reached, quickly adjust the “Tilt Setting” to above 10 or below -10 to “lock in” the setting.
5. Rotate the left outer knob to the right to obtain a value between -7 and -9. This will allow adjustment of the “Roll Angle”.
6. Set the “Roll Angle” to 0.0° +/- 1.0 degrees.
    a. To increment the value of the “Roll Angle” use the left inner knob to change the “Tilt Setting” between 5 and 10. When the “Tilt Setting” is set between 5 and 10, the value of the “Roll Angle” field will slowly increase.

   b. To decrement the value of the “Roll Angle” use the left inner knob to change the “Tilt Setting” between -5 and -10. When the “Tilt Setting” is set between -5 and -10, the value of the “Roll Angle” field will slowly decrease.
   c. When the desired setting is reached, quickly adjust the “Tilt Setting” to above 10 or below -10 to “lock in” the setting.
7. To save the changes into the radar perform the following steps:
   a. Rotate the left outer knob to obtain a “Gain Pot” setting between -4 and -5.
   b. The “Faults” field shall display “Gyro Input”.
   c. Set the “Tilt Setting” to -15.00°. The “Faults” field shall flash indicating that the calibrations settings have been saved. If the save procedure is successful the “Gyro Input” fault will be removed and the “Scan Angle” will cycle through the entire number range. A “transmitter inhibit” fault shall be displayed in the “Faults” field.
8. Press the “Done” LSK to exist “Technician Mode”. After the IFD initializes the other IFDs will resume normal operation with the radar.

5. System Flight Checks

5.1 Autopilot Inflight Setup and Checkout (S-TEC Autopilot Only)

The following AP calibration procedure is performed on the right IFD only. This procedure will calibrate both IFDs.

Perform the following steps in-flight in smooth air.

1. Engage the S-TEC 55X in HDG and ALT mode and allow aircraft to stabilize on Heading. The Heading Bug and flight director may be offset slightly from the lubber line by several degrees.

2. Press the SYS function key to display the System Page. Press on the right side of the SYS Function key to select the "Setup" tab (See **Figure 3**).

3. Press the 'Setup" LSK until "Autopilot" is displayed (See **Figure 14:**).

Figure 14: Initial Autopilot Calibration Page

4. Press "Run Calibration" LSK only after all flight conditions for calibration have been met and follow the procedure on the display (see **Figure 15:**).

Figure 15: Autopilot Calibration Procedure Page

5. Upon completing the procedure above, verify the following:

    a. HDG mode accurately tracks the Heading Bug.

    b. Flight Director Command Bars are above the aircraft reference symbol with no gap between the two.

6. Engage NAV (without GPSS) mode on the autopilot.

7. Verify that NAV mode accurately tracks a VOR radial (a 1 to 2 needle width error is possible with a crosswind, if possible select a radial into or with the wind).

Autopilot calibration is now complete.

Note: If the autopilot does not track the Heading Bug or NAV mode correctly, repeat the steps in this procedure.

5.2 System Checkout

After completing all ground checks and required calibrations perform the following flight checks to confirm proper operation.

Note: Perform checks on both IFDs.

1. ADI alignment and air data, check left and right
2. Takeoff – verify airspeed response and check for mode changes on TAS, transponder
3. Perform communications checks using several ground stations
4. Verify nav reception, utilize KB nav tuning and PFD bearing pointers
5. Enter a multi-leg flight plan with destination airport
6. Fly at a minimum a GPS approach (FMS400), WAAS approach (FMS900W) , a VOR or LOC approach and an ILS approach

7. Utilize map, charts, weather overlay, info functions
8. Verify mode changes after landing – transponder, TAS, map on airport diagram
9. Utilize checklists

After completing all ground and flight tests, complete the IFD Aircraft Configuration Form in Appendix H. Attach it to the IFD Instructions for Continued Airworthiness (document number AVIFD-016, available on the Avidyne Dealer website) and install both documents into the aircraft records.

5.3 Radar Flight Test

Perform the stabilization flight test instructions found in the RDR2000 pilot's guide to determine if any Roll Trim setting adjustments are required. If required, proceed to the following steps to make adjustments to the Roll Trim setting.

Roll Offset Adjustment

1. Assure AP is disengaged.
2. Obtain an altitude of 10,000 feet.
3. Enter into Technician mode on the IFD connected directly to the radar. Note that the other IFDs will display "Radar Sensor Error". This is normal and expected. A USB drive plugged into the IFD will be required to place the IFD in maintenance mode.
4. Press the "SYS" function key and Select the "Cal" page.
5. Press the "Cal Select" LSK until the radar calibration page is selected.
6. Select the "Radar" LSK to enter into Ground Map mode.
7. Perform the stabilization steps in the RDR-2000 pilot guide and adjust the Roll trim setting as required.
8. Upon completion of the check exist Technician mode.

6. Cleaning the IFD and Control/Display Unit Screens

If the IFD5000i and/or the Control/Display screen should become dirty due to fingerprints or dust, clean the screen using the

following materials and methods:

- A clean, soft lint free cloth such as 3M Ultra-Brite Cloth # 2011 or similar.
- A cleaning solution composed of de-ionized water

Always apply the cleaning solution directly onto the cloth. **Never** spray cleaner directly onto the screen.

Using any other chemicals or materials voids the warranty.

7. Factory Service Policies and Procedures

7.1 Technical Support

Avidyne's website contains information that may assist the operator and installer with questions or problems with their Avidyne IFD System.

www.Avidyne.com

Technical support questions may be submitted, via the following:

- Email: techsupport@avidyne.com
- Fax: 781-402-7599
- Voice: 1-877-MyAviR9 (1-877-692-8479)

An Avidyne Technical Support Representative will respond as soon as possible. Avidyne business hours are:

- Monday through Friday: 8:00 AM to 5:30 PM Eastern Time

Please include the part number, revision number and serial number of the unit in all correspondences. For problem reporting, please provide as many details associated with the problem as possible.

For After Hours Technical Support, via the following:

- AOG Support: 877-900-4AOG (4264)

7.2 General Service Procedures

Repair of the IFD5000i are performed at authorized Part 145 service centers and the Avidyne factory.

Repair of the ACD215 and MAG300 are performed at the Avidyne factory only.

Prior to returning a unit for service, contact Avidyne at 1-877-MyAviR9 (1-877-692-8479) to obtain a Return Merchandise Authorization (RMA) number.

When calling or emailing for product-related help, please have the following information available:

1. Customer Name/Account Information IFD(s) Serial Numbers either read it from the label physically attached to back of IFD (need to partially remove the IFD to see it), or get it from the aircraft maintenance records.

2. IFD(s) Software Part Numbers press the "SYS" page function key and then tab over to the "Setup" tab. Record the "Software Version" and the "Flight Software Part Number". Also make a note of any other yellow text on that page.

3. Be prepared to download the aircraft flight logs and email/transmit them to Avidyne Customer Service.

4. The file system check function should only be used as directed by Avidyne support. Be prepared to use the "Check Disk" button on Technician pages.

Securely pack the unit in the Avidyne shipping carton, write the RMA number on the outside of the carton, and return it to the address provided by the Avidyne Customer Service Representative. Include your name, complete shipping address, daytime telephone number, a complete description of the problem, the desired return date, and shipping method.

If the shipping carton or other suitable foam packing is not available, contact Avidyne to arrange for packaging materials. Avidyne is not responsible for damage due to poorly packaged returns.

8. STC Permission

Avidyne Corporation hereby grants to all National Aviation Authority (FAA, CAA, JAA) approved installers the use of data from STC SA00282BO to install the Avidyne R9 System. This also includes any international validations of the STC (e.g. EASA, ANAC, etc). Copies of the STC data are available on the Avidyne website Technical Publications page or upon request. The latest data revisions are listed in Avidyne 700-00083-XXX Master Document List, AVIFD-006.

Installers must abide by the conditions and limitations stated in both the STC and in the Installation Manual in order to maintain compliance. The use of this data by itself does not constitute installation approval.

Appendix A: Environmental Qualification Forms

INTEGRATED FLIGHT DISPLAY PART NO: 700-00083-( )
MANUFACTURER: AVIDYNE CORPORATION
ADDRESS: 710 NORTH DRIVE, MELBOURNE, FL 34934

Table A1: DO-160E ENVIRONMENTAL QUALIFICATION

Environmental Tests	RTCA/DO-160E Section	Test Category
Temperature and Altitude	4.0	
Low Temp	4.5.2	Equipment qualified to Category D1
High Temp	4.5.3 & 4.5.4	Equipment qualified to Category D1
In-Flight Loss of Cooling	4.5.5	Equipment qualified to Category W
Altitude	4.6.1	Equipment qualified to Category D1
Decompression	4.6.2	Equipment qualified to Category A1
Overpressure	4.6.3	Equipment qualified to Category A1
Temperature Variation	5	Equipment qualified to Category B
Humidity	6	Equipment qualified to Category A
Operational Shocks & Crash Safety	7	Equipment qualified to Category B
Vibration	8	Equipment qualified to Category S, Curves B and M, Category H, Curve R
Explosive Atmosphere	9	Category X, no test performed
Waterproofness	10	Category X, no test performed
Fluids Susceptibility	11	Category X, no test performed
Sand and Dust	12	Category X, no test performed
Fungus Resistance	13	Category X, no test performed
Salt Spray	14	Category X, no test performed
Magnetic Effects	15	Equipment qualified to Class Z
Power Input	16	Equipment qualified to Category B
Voltage Spike	17	Equipment qualified to Category A
Audio Frequency Conducted Susceptibility	18	Equipment qualified to Category B
Induced Signal Susceptibility	19	Equipment qualified to Category ZC
Radio Frequency Susceptibility	20	Category W (conducted)/WR (radiated) [1] Category R (conducted)/ R (radiated)
Emission of Radio Frequency Energy	21	Equipment qualified to Category M
Lightning Induced Transient Susceptibility	22	Category B4KZZ (Power) and B3K55 (All other I/O) [1] Category (B3/B4)(K44/K55/G55)
Lightning Direct Effects	23	Category X, no test performed
Icing	24	Category X, no test performed
Electrostatic Discharge	25	Equipment qualified to Category A
Fire and Flammability	26	Category X, no test performed

[1] Wiring may require metal overbraided harness.

CONTROL DISPLAY UNIT PART NO: 700-00150-( )
MANUFACTURER: AVIDYNE CORPORATION
ADDRESS: 710 NORTH DRIVE, MELBOURNE, FL 34934

Table A2: DO-160E ENVIRONMENTAL QUALIFICATION TESTS

Environmental Tests	RTCA/DO-160E Section	Test Category
Temperature and Altitude		
Low Temp	4.5.1	Equipment qualified to Category A1D1
High Temp	4.5.2 & 4.5.3	Equipment qualified to Category A1D1
In-Flight Loss of Cooling	4.5.4	Category X, no test performed
Altitude	4.6.1	Equipment qualified to Category D1
Decompression	4.6.2	Equipment qualified to Category A1D1
Overpressure	4.6.3	Equipment qualified to Category A1D1
Temperature Variation	5	Equipment qualified to Category B
Humidity	6	Equipment qualified to Category A
Operational Shocks & Crash Safety	7	Equipment qualified to Category B
Vibration	8	Equipment qualified to Category S, Curves B and M, Category H, Curve R
Explosive Proofness	9	Category X, no test performed
Waterproofness	10	Category X, no test performed
Fluids Susceptibility	11	Category X, no test performed
Sand and Dust	12	Category X, no test performed
Fungus Resistance	13	Category X, no test performed
Salt Spray	14	Category X, no test performed
Magnetic Effects	15	Equipment qualified to Class Z
Power Input	16	Equipment qualified to Category B (except Engine Start Under Voltage)
Voltage Spike	17	Equipment qualified to Category A
Audio Frequency Conducted Susceptibility	18	Equipment qualified to Category B
Induced Signal Susceptibility	19	Equipment qualified to Category ZC
Radio Frequency Susceptibility	20	Equipment qualified to Category W (conducted)/W (radiated)
Emission of Radio Frequency Energy	21	Equipment qualified to Category M
Lightning Induced Transient Susceptibility	22	Category A3E3
Lightning Direct Effects	23	Category X, no test performed
Icing	24	Category X, no test performed
Electrostatic Discharge	25	Equipment qualified to Category A
Fire and Flammability	26	Category X, no test performed

MAGNETOMETER/OAT SENSOR NO: 700-00011-( )
MANUFACTURER: AVIDYNE CORPORATION
ADDRESS: 710 NORTH DRIVE, MELBOURNE, FL 34934

Table A3: DO160D ENVIRONMENTAL QUALIFICATION TESTS

Conditions	RTCA DO-160D Section	Conducted Test Category
Low Temp	4.5.1	Equipment qualified to Category D2
High Temp	4.5.2 & 4.5.3	Equipment qualified to Category D2
In-Flight Loss of Cooling	4.5.4	Equipment identified as Category X, no test performed
Altitude	4.6.1	Equipment qualified to Category D2
Decompression	4.6.2	Equipment identified as Category X, no test performed
Overpressure	4.6.3	Equipment identified as Category X, no test performed
Temperature Variation	5.0	Equipment qualified to Category B
Humidity	6.0	Equipment qualified to Category B
Operational Shocks & Crash Safety	7.0	Equipment qualified to Category D
Vibration	8.0	Equipment qualified to Category S, Curve M
Explosion Proofness	9.0	Equipment qualified to Category E
Waterproofness	10.0	Equipment identified as Category X, no test performed
Fluids Susceptibility	11.0	Equipment identified as Category X, no test performed
Sand and Dust	12.0	Equipment identified as Category X, no test performed
Fungus Resistance	13.0	Equipment identified as Category X, no test performed
Salt Spray	14.0	Equipment identified as Category X, no test performed
Magnetic Effects	15.0	Equipment qualified to Category A
Power Input	16.0	Equipment qualified to Category B (except Engine Start Undervoltage)
Voltage Spike	17.0	Equipment qualified to Category A
Audio Frequency Conducted Susceptibility	18.0	Equipment qualified to Category B
Induced Signal Susceptibility	19.0	Equipment qualified to Category Z
Radio Frequency Susceptibility	20.0	Equipment qualified to Category R (conducted)/R (radiated)[1]
Emission of Radio Frequency Energy	21.0	Equipment qualified to Category M
Lightning Induced Transient Susceptibility	22.0	Equipment qualified to level (ZZ)(K44/G55)[1]
Lightning Direct Effects	23.0	Equipment identified as Category X, no test performed
Icing	24.0	Equipment identified as Category X, no test performed
Electrostatic Discharge	25.0	Equipment qualified to Category A

[1] Tested per RTCA DO-160E

AIRCRAFT CONFIGURATION MODULE PART NO: 700-00156-( )
MANUFACTURER: AVIDYNE CORPORATION
ADDRESS: 55 OLD BEDFORD ROAD, LINCOLN, MA 01773

Table A4: DO-160E ENVIRONMENTAL QUALIFICATION TESTS

Environmental Tests	RTCA/DO-160E Section	Test Category
Temperature and Altitude	4.0	
Low Temp	4.5.2	Equipment qualified to Category D1
High Temp	4.5.3 & 4.5.4	Equipment qualified to Category D1
In-Flight Loss of Cooling	4.5.5	Equipment qualified to Category X
Altitude	4.6.1	Equipment qualified to Category D1
Decompression	4.6.2	Equipment qualified to Category D1
Overpressure	4.6.3	Equipment qualified to Category D1
Temperature Variation	5	Equipment qualified to Category B
Humidity	6	Equipment qualified to Category A
Operational Shocks & Crash Safety	7	Equipment qualified to Category B
Vibration	8	Equipment qualified to Category S, Curves B and M
Explosive Atmosphere	9	Category X, no test performed
Waterproofness	10	Category X, no test performed
Fluids Susceptibility	11	Category X, no test performed
Sand and Dust	12	Category X, no test performed
Fungus Resistance	13	Category X, no test performed
Salt Spray	14	Category X, no test performed
Magnetic Effects	15	Equipment qualified to Class Z
Power Input	16	Equipment qualified to Category B
Voltage Spike	17	Equipment qualified to Category A
Audio Frequency Conducted Susceptibility	18	Equipment qualified to Category B
Induced Signal Susceptibility	19	Equipment qualified to Category ZC
Radio Frequency Susceptibility	20	Equipment qualified to Category R (conducted)/ R (radiated)
Emission of Radio Frequency Energy	21	Equipment qualified to Category M
Lightning Induced Transient Susceptibility	22	Category (XXXXX)
Lightning Direct Effects	23	Category X, no test performed
Icing	24	Category X, no test performed
Electrostatic Discharge	25	Equipment qualified to Category A
Fire and Flammability	26	Category X, no test performed

Appendix B: IFD Cutout and Outline Dimensions

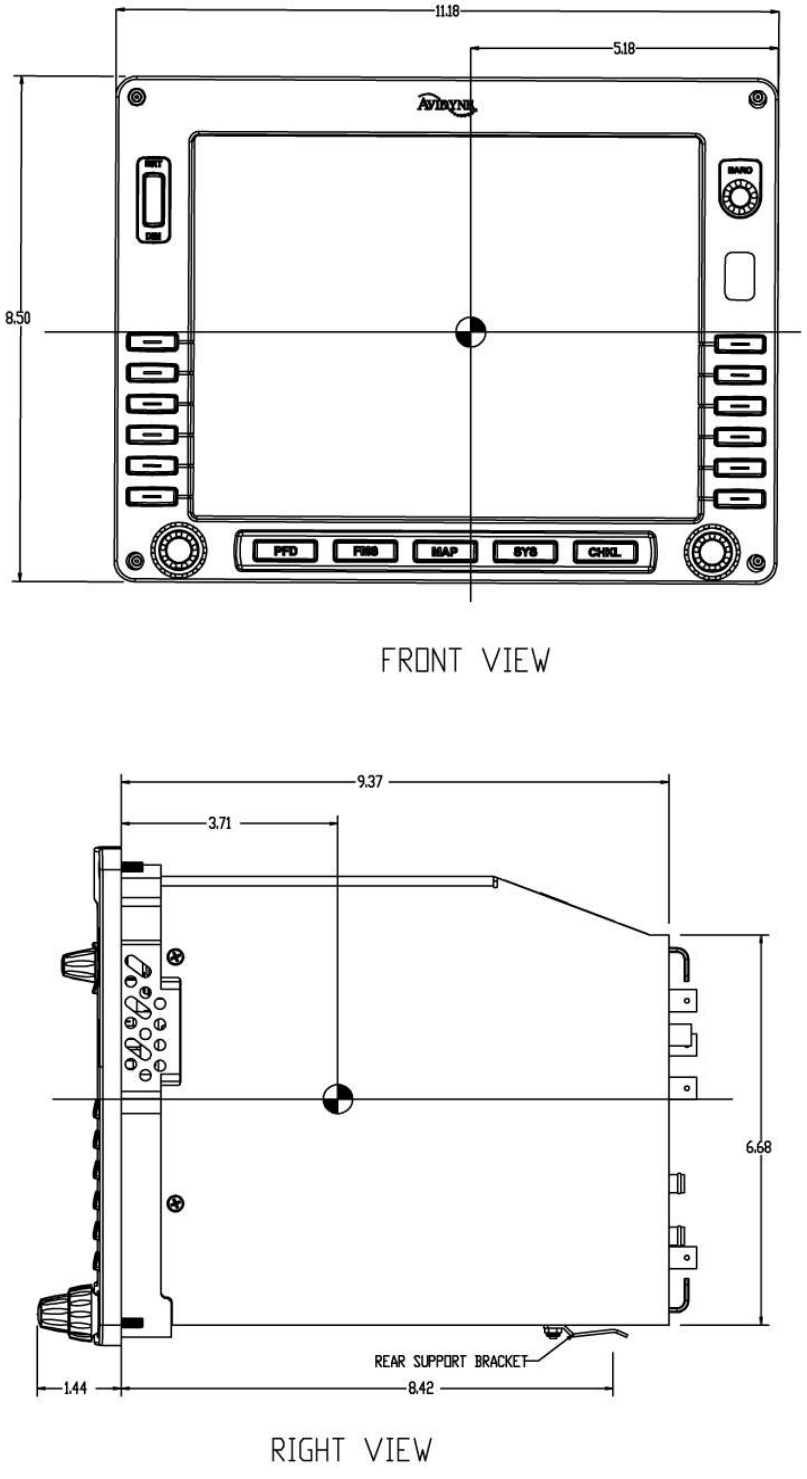


Figure B-1 Integrated Flight Display Front and Right Views

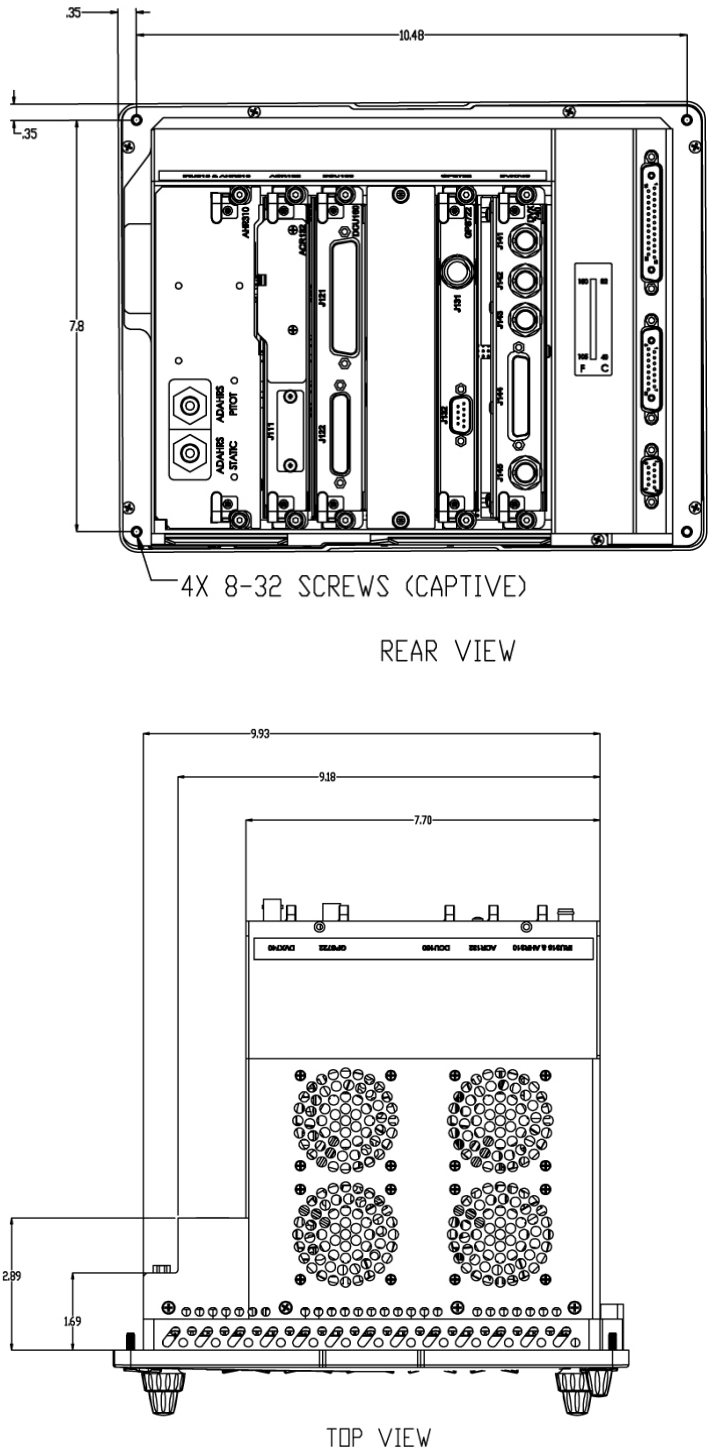


Figure B-2 Integrated Flight Display Rear and Top Views

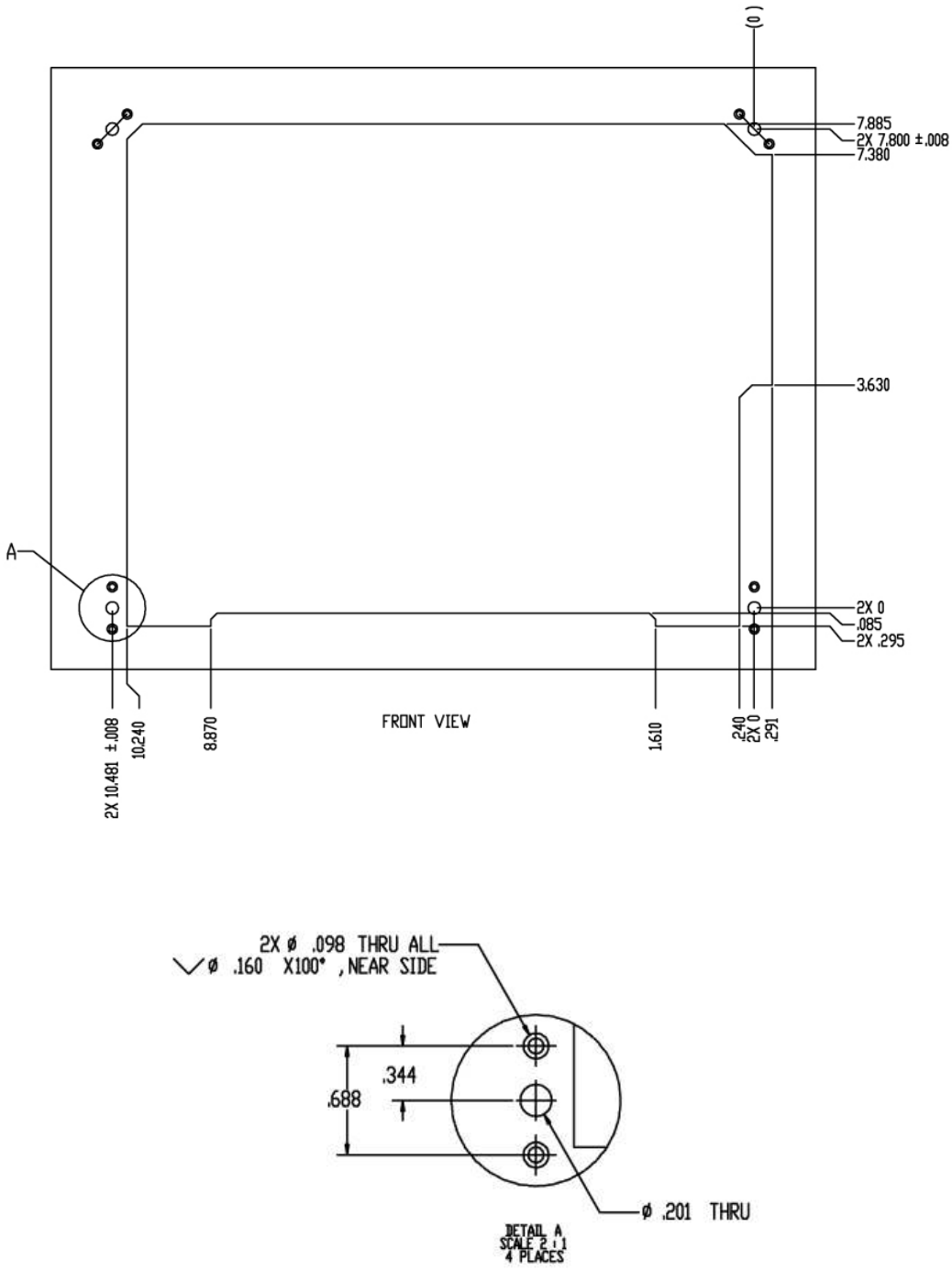


Figure B-3 Integrated Flight Display Instrument Panel Cutout

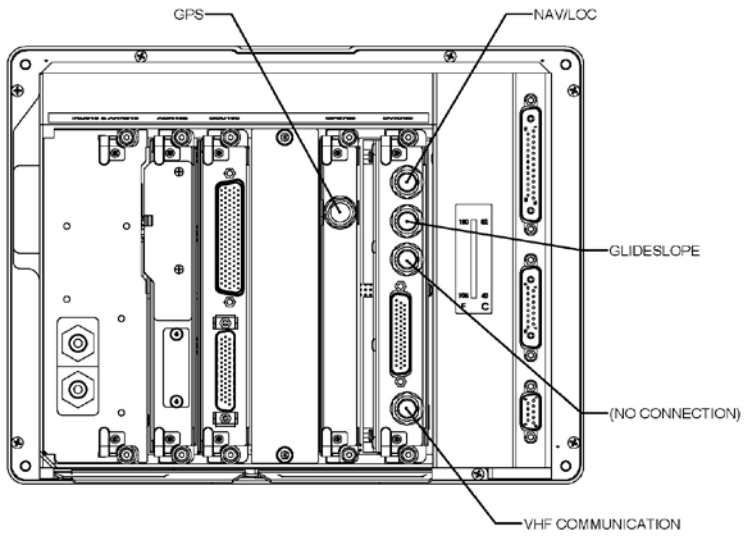


Figure B-4 Integrated Flight Display Coaxial Cable Connectors

Appendix C: Control Display Unit Outline Dimensions

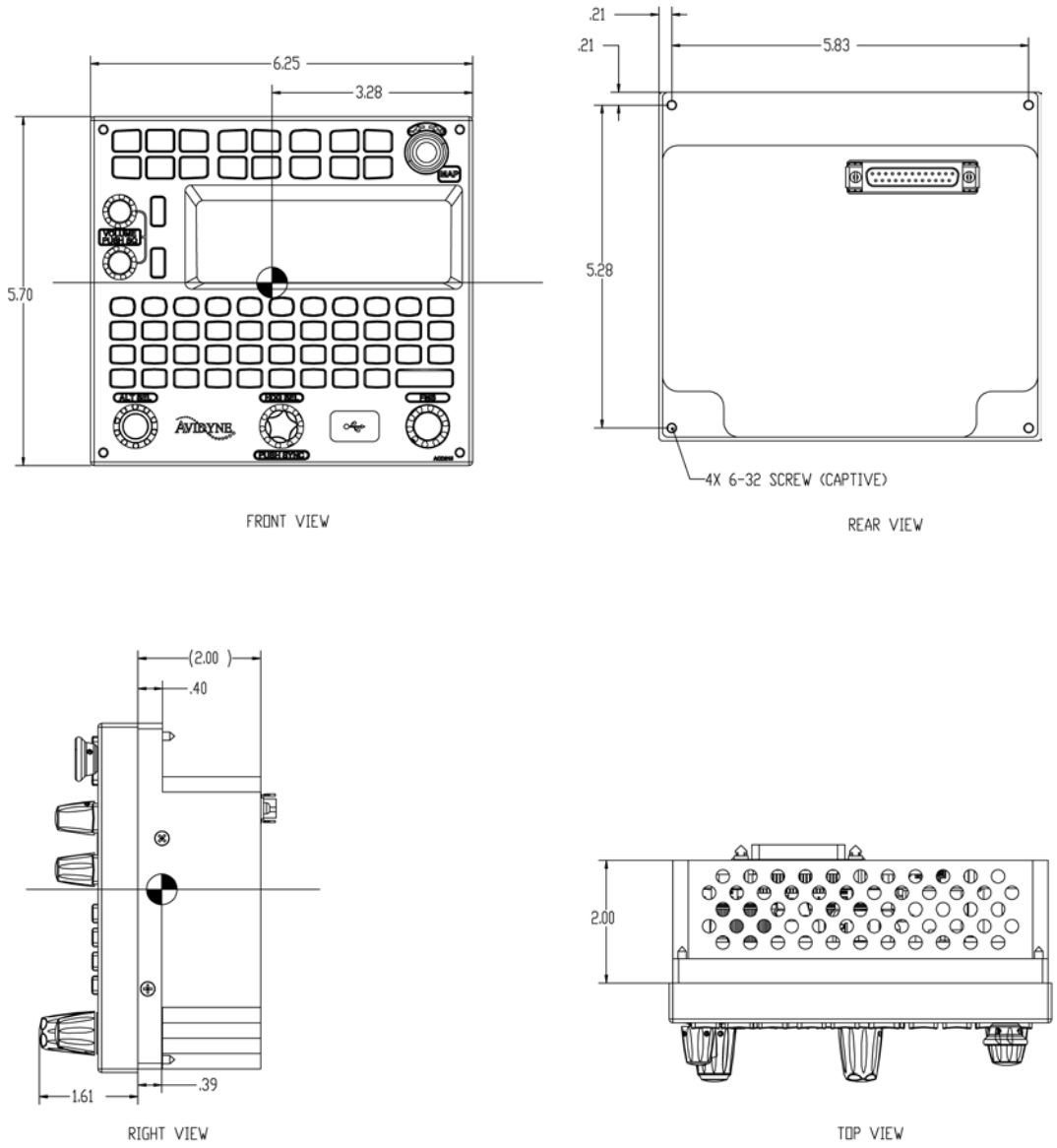


Figure C-1 Control Display Unit Outline Dimensions

Appendix D: 700-00011-000, Magnetometer/OAT Sensor Outline Dimensions

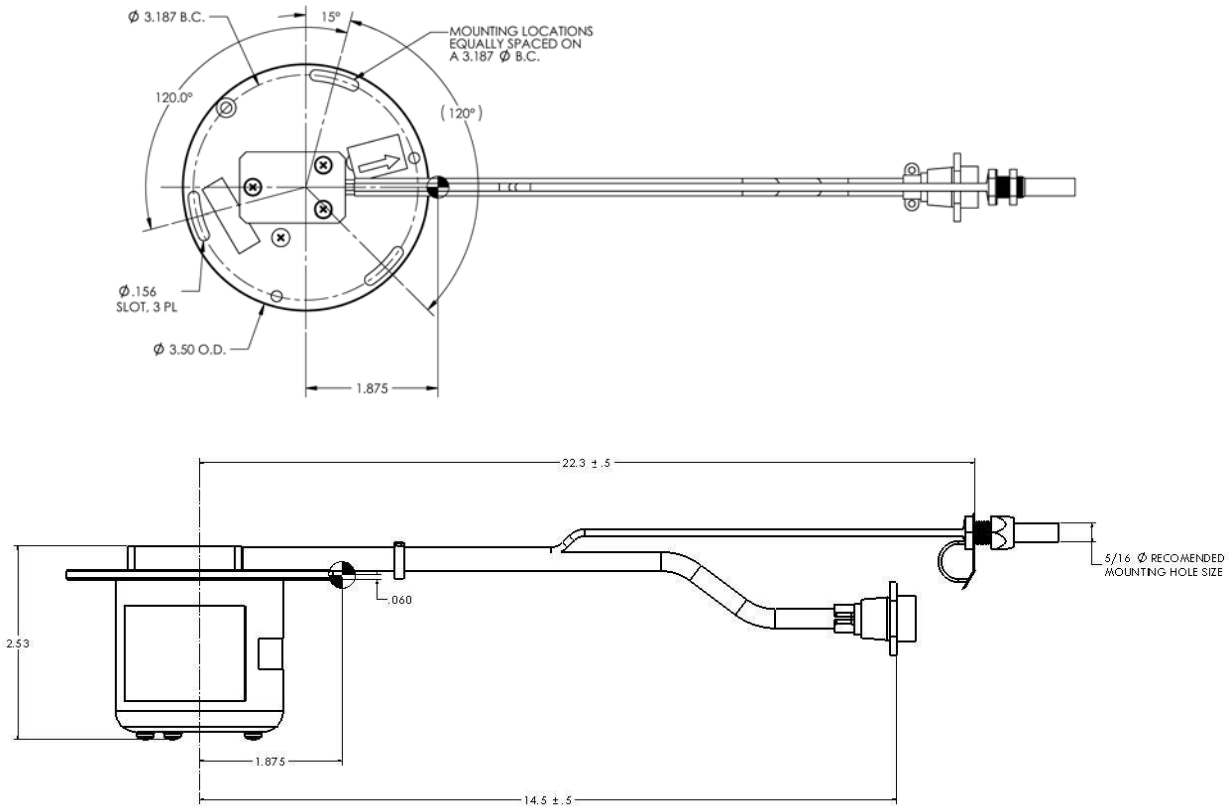


Figure D-1 Magnetometer/OAT Sensor Outline Dimensions

1. ARROW INDICATES FORWARD INSTALLATION DIRECTION.

2. CG SHOWN AS CABLES ARE SHOWN.

3. INSTALL OAT PROBE WITH NUT AND WASHER PROVIDED WITH ASSEMBLY AND LOCATE IN FREE AIR STREAM. THE OAT PROBE MUST BE INSTALLED A MINIMUM OF 6 INCHES FROM THE MAGNETOMETER.

4. MOUNT MAGNETOMETER WITH BRASS HARDWARE AS FOLLOWS:

- SCREWS: MS35214-28, QTY 3 [1]
- WASHERS: AN960C6, QTY 3 [1]
- LOCK NUTS: MS21044C06, QTY 3 [1]

OTHER BRASS FASTENING HARDWARE CAN BE SUBSTITUTED TO SUIT SPECIFIC INSTALLATION REQUIREMENTS.

5. OAT SENSOR AND MAGNETOMETER SHALL BE PHYSICALLY ISOLATED FROM AIRCRAFTGROUND. UNITS RECEIVE CHASSIS GROUNDING THROUGH WIRING HARNESS.

6. MAGNETOMETER AND OAT WIRE HARNESS IS SHOWN BENT FOR CLARITY BUT DIMENSIONS ABOVE INDICATE THE FULLY EXTENDED LENGHT.

Appendix E: 700-00011-001, Magnetometer/OAT Sensor Outline Dimensions

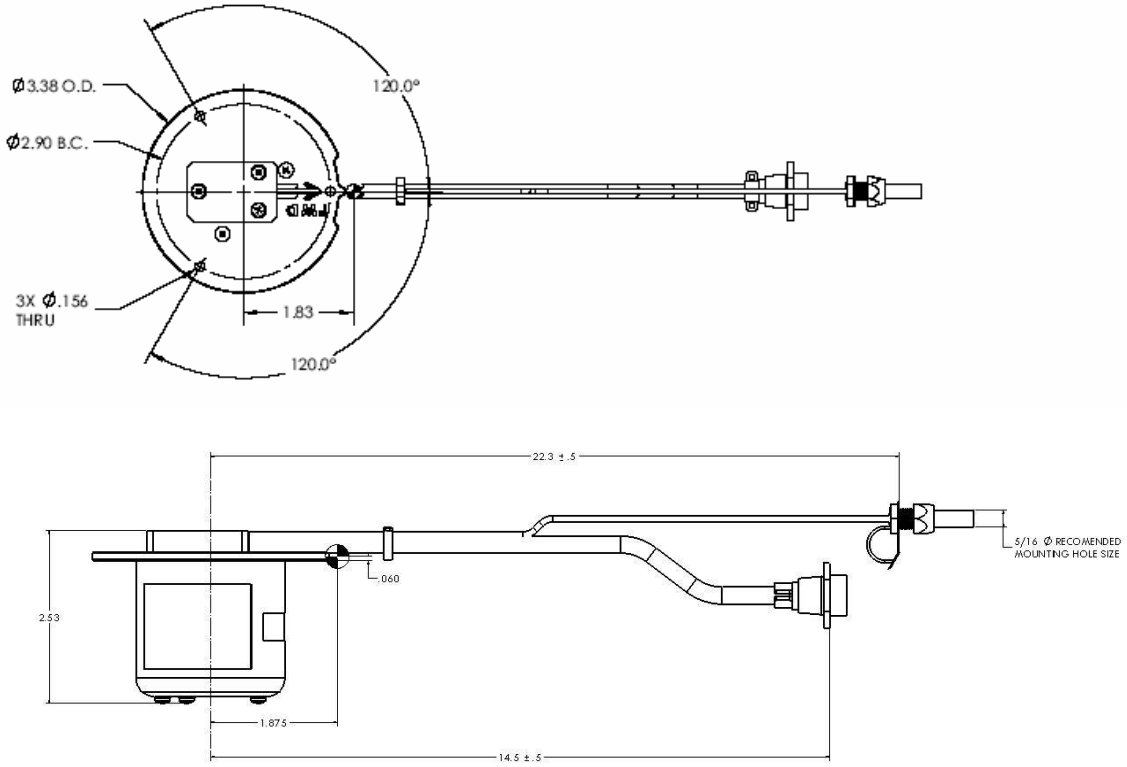


Figure E-1 Magnetometer/OAT Sensor Outline Dimensions

1. ARROW INDICATES FORWARD INSTALLATION DIRECTION.

2. CG SHOWN AS CABLES ARE SHOWN.

3. INSTALL OAT PROBE WITH NUT AND WASHER PROVIDED WITH ASSEMBLY AND LOCATE IN FREE AIR STREAM. THE OAT PROBE MUST BE INSTALLED A MINIMUM OF 6 INCHES FROM THE MAGNETOMETER.

4. MOUNT MAGNETOMETER WITH BRASS HARDWARE AS FOLLOWS:

- SCREWS: MS35214-28, QTY 3 [1]
- WASHERS: AN960C6, QTY 3 [1]
- LOCK NUTS: MS21044C06, QTY 3 [1]

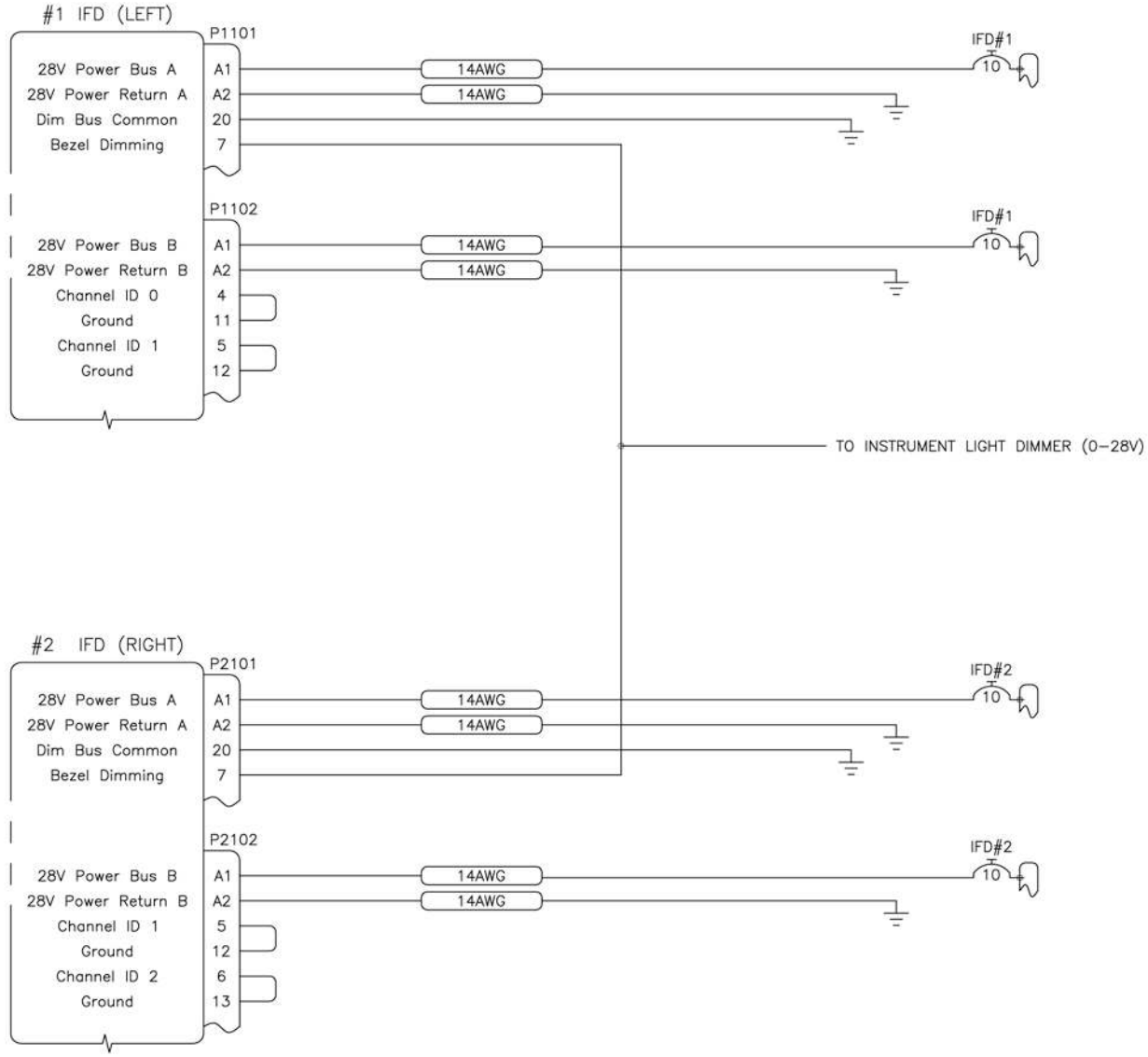
OTHER BRASS FASTENING HARDWARE CAN BE SUBSTITUTED TO SUIT SPECIFIC INSTALLATION REQUIREMENTS.

5. OAT SENSOR AND MAGNETOMETER SHALL BE PHYSICALLY ISOLATED FROM AIRCRAFTGROUND. UNITS RECEIVE CHASSIS GROUNDING THROUGH WIRING HARNESS.

6. MAGNETOMETER AND OAT WIRE HARNESS IS SHOWN BENT FOR CLARITY BUT DIMENSIONS ABOVE INDICATE THE FULLY EXTENDED LENGHT.

Appendix F: Interconnect Diagrams

F-1 IFD5000i Power, Grounds, Bezel Lighting Interconnect Diagram



NOTES:

1. ALL WIRE SHALL BE MIL–W–22759/16 (NON–SHIELDED) OR MIL–C–27500 (SHIELDED) OR EQUIVALENT UNLESS OTHERWISE NOTED.
2. ALL WIRES ARE 22AWG MINIMUM UNLESS OTHERWISE NOTED.
3. TERMINATE SHIELDS TO THE CONNECTOR BACKSHELL OR CHASSIS GROUND AS CLOSE TO CONNECTOR AS POSSIBLE.
4. HARNESS OVERBRAIDING NOT DEPICTED.
5. FOR MATING CONNECTOR AND BACKSHELL PART NUMBERS REFER TO THE CONNECTOR ID AND PIN OUT SECTION OF THIS INSTALL MANUAL.

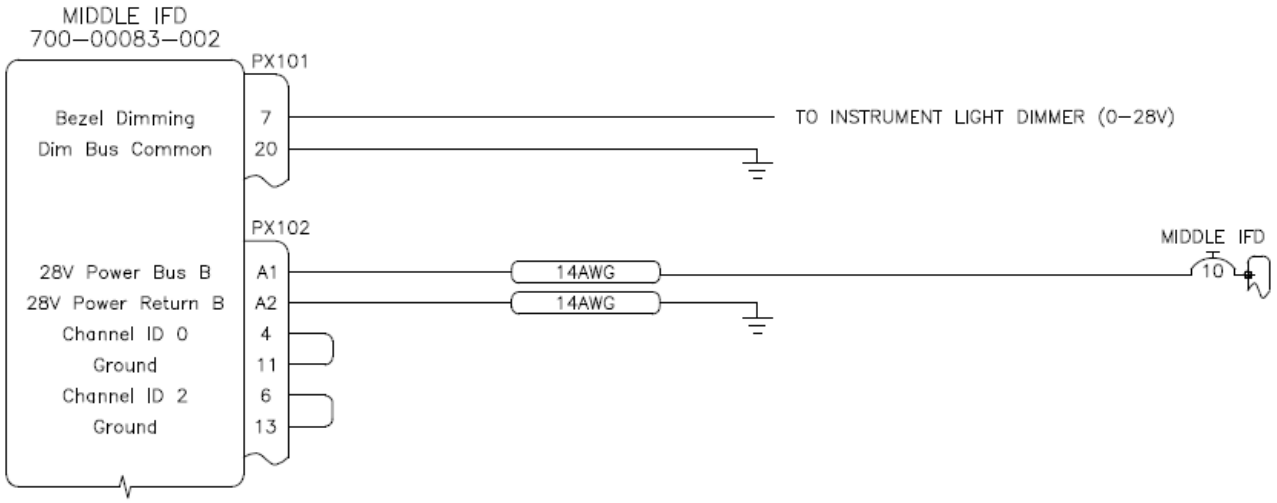
SYMBOLS:

△ INDICATES A SPECIFIC NOTE APPLIES.

TWISTED SHIELDED PAIR BYTE FLIGHT CABLE

SINGLE SHIELDED WIRE COAXIAL CABLE

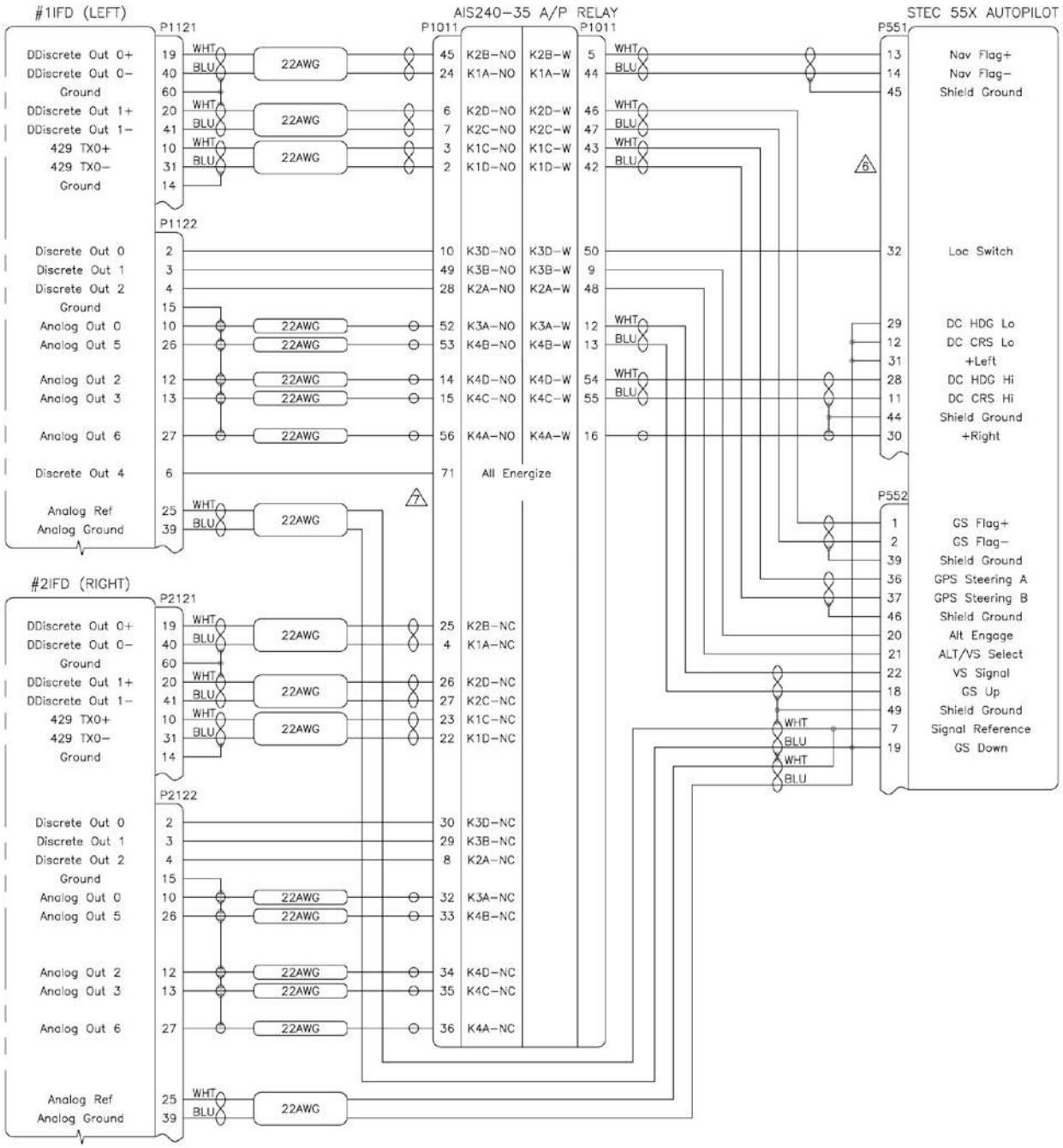
F-2 IFD5000i Power, Grounds, and Lighting Interconnect Diagram



NOTES:

1. ALL WIRE SHALL BE MIL–W–22759/16 (NON–SHIELDED) OR MIL–C–27500 (SHIELDED) OR EQUIVALENT UNLESS OTHERWISE NOTED.
2. ALL WIRES ARE 22AWG MINIMUM UNLESS OTHERWISE NOTED.
3. TERMINATE SHIELDS TO THE CONNECTOR BACKSHELL OR CHASSIS GROUND AS CLOSE TO CONNECTOR AS POSSIBLE.
4. HARNESS OVERBRAIDING NOT DEPICTED.
5. FOR MATING CONNECTOR AND BACKSHELL PART NUMBERS REFER TO THE CONNECTOR ID AND PIN OUT SECTION OF THIS INSTALL MANUAL.

F-3 STEC 55X Autopilot Interconnect Diagram



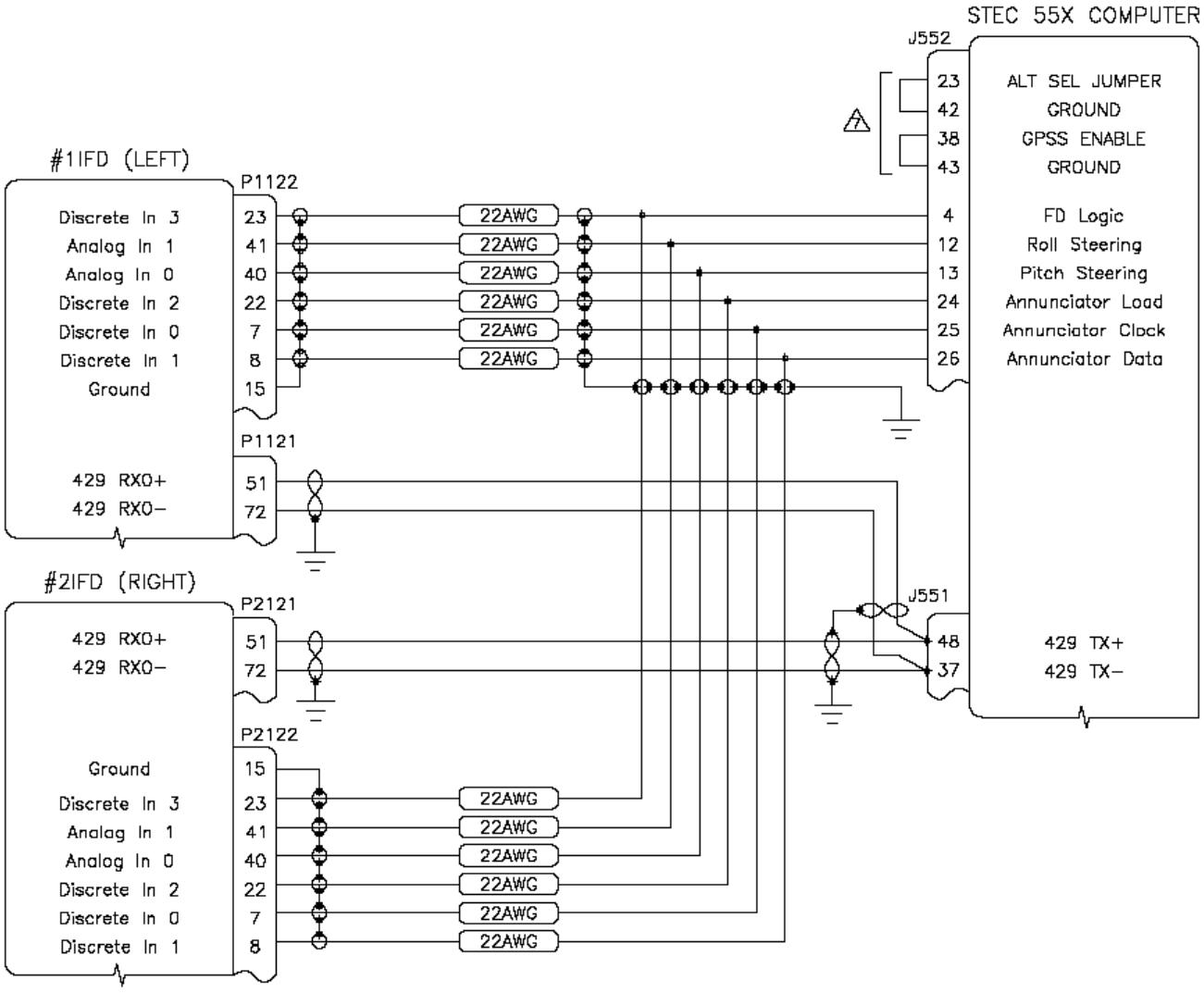
NOTES:

1. ALL WIRE SHALL BE MIL−W−22759/16 (NON−SHIELDED) OR MIL−C−27500 (SHIELDED) OR EQUIVALENT UNLESS OTHERWISE NOTED.
2. ALL WIRES ARE 22AWG MINIMUM UNLESS OTHERWISE NOTED. 24AWG ACCEPTABLE FOR SHIELD WIRES.
3. TERMINATE SHIELDS TO THE CONNECTOR BACKSHELL OR CHASSIS GROUND AS CLOSE TO CONNECTOR AS POSSIBLE.
4. HARNESS OVERBRAIDING NOT DEPICTED.
5. FOR MATING CONNECTOR AND BACKSHELL PART NUMBERS REFER TO THE CONNECTOR ID AND PIN OUT SECTION OF THIS INSTALL MANUAL.

⚠6 REFERENCE STEC 55X INSTALLATION MANUAL FOR FULL INTERCONNECT OF AUTOPILOT. THE STEC 55X AUTOPILOT COMPUTER MUST BE CONFIGURED FOR KCS 55A HEADING SYSTEM.

⚠7 PIN 72 28V RELAY POWER TO AUTOPILOT BREAKER NOT SHOWN.

F-3 STEC 55X Autopilot Interconnect Diagram (Continued)



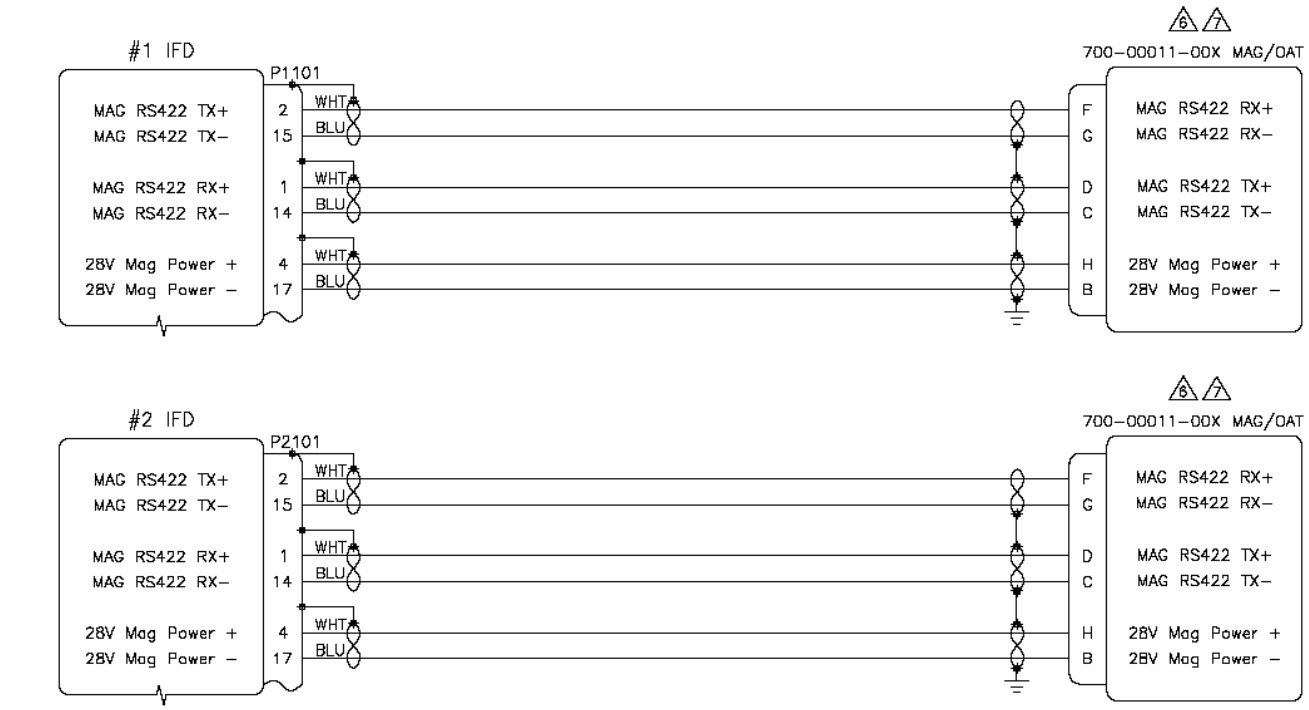
NOTES:

1. ALL WIRE SHALL BE MIL−W−22759/16 (NON−SHIELDED) OR MIL−C−27500 (SHIELDED) OR EQUIVALENT UNLESS OTHERWISE NOTED.
2. ALL WIRES ARE 22AWG MINIMUM UNLESS OTHERWISE NOTED. 24AWG ACCEPTABLE FOR SHIELD WIRES.
3. TERMINATE SHIELDS TO THE CONNECTOR BACKSHELL OR CHASSIS GROUND AS CLOSE TO CONNECTOR AS POSSIBLE.
4. HARNESS OVERBRAIDING NOT DEPICTED.
5. FOR MATING CONNECTOR AND BACKSHELL PART NUMBERS REFER TO THE CONNECTOR ID AND PIN OUT SECTION OF THIS INSTALL MANUAL.

⚠6 REFERENCE STEC 55X INSTALLATION MANUAL FOR FULL INTERCONNECT OF AUTOPILOT. THE STEC 55X AUTOPILOT COMPUTER MUST BE CONFIGURE FOR KCS 55A HEADING SYSTEM.

⚠7 JUMPERS MUST BE INSTALLED.

F-4 MAG300 Magnetometer Interconnect Diagram

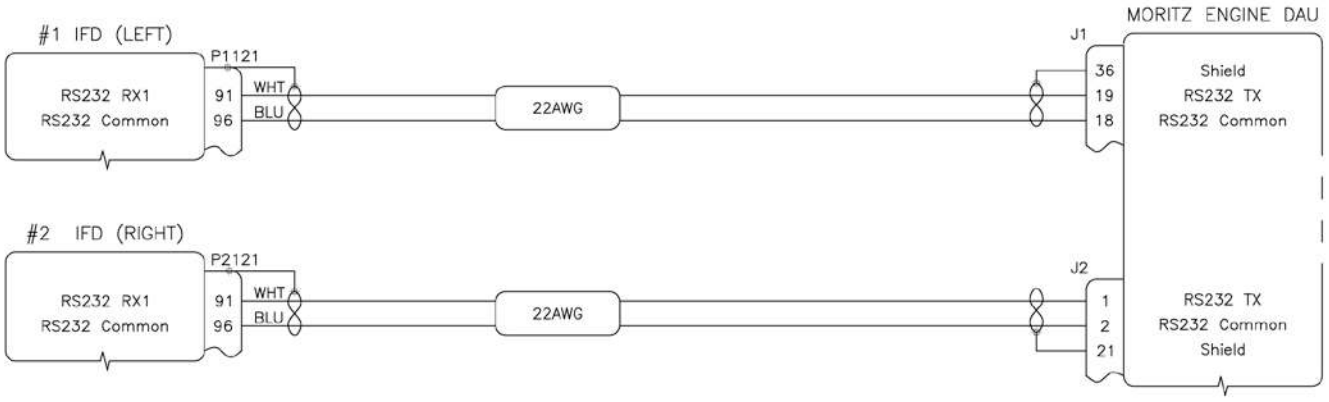


NOTES:

1. ALL WIRE SHALL BE MIL−W−22759/16 (NON−SHIELDED) OR MIL−C−27500 (SHIELDED) OR EQUIVALENT UNLESS OTHERWISE NOTED.
2. ALL WIRES ARE 22AWG MINIMUM UNLESS OTHERWISE NOTED. 24AWG ACCEPTABLE FOR SHIELD WIRES.
3. TERMINATE SHIELDS TO THE CONNECTOR BACKSHELL OR CHASSIS GROUND AS CLOSE TO CONNECTOR AS POSSIBLE.
4. HARNESS OVERBRAIDING NOT DEPICTED.
5. FOR MATING CONNECTOR AND BACKSHELL PART NUMBERS REFER TO THE CONNECTOR ID AND PIN OUT SECTION OF THIS INSTALL MANUAL.
6. ONE MAG/OAT ASSEMBLY (AVIDYNE P/N 700−00011−00X) REQUIRED FOR EACH P/N 700−00083−000 IFD.
7. REFER TO THE APPROPRIATE SECTION OF THIS INSTALLATION MANUAL FOR MAGNETOMETER INSTALLATION INSTRUCTIONS AND CALIBRATION PROCEDURES.
8. DO NOT CONNECT P/N 700−00083−001 IFDs TO A MAG/OAT SENSOR.

Also See **Table 17** or **Table 19** for additional installation details.

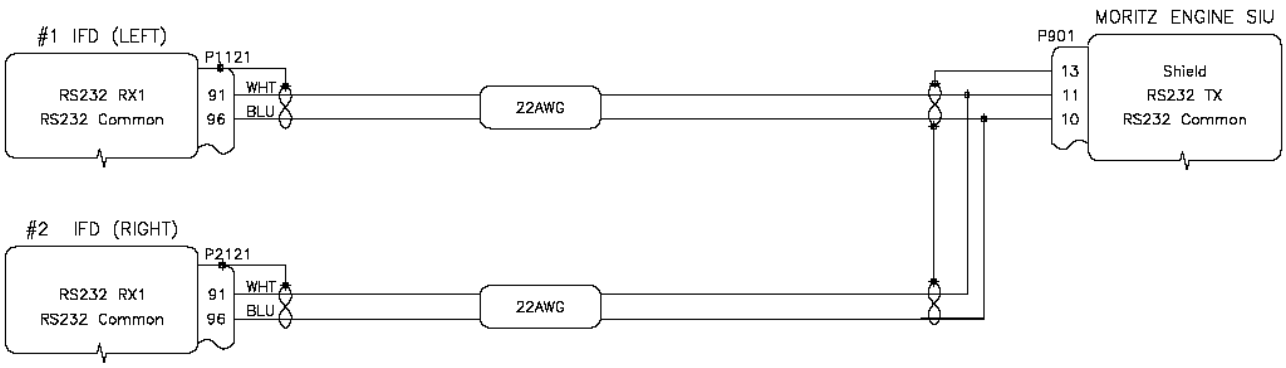
F-5 Data Acquisition Unit (DAU) Interconnect Diagram



NOTES:

1. ALL WIRE SHALL BE MIL-W-22759/16 (NON-SHIELDED) OR MIL-C-27500 (SHIELDED) OR EQUIVALENT UNLESS OTHERWISE NOTED.
2. ALL WIRES ARE 22AWG MINIMUM UNLESS OTHERWISE NOTED. 24AWG ACCEPTABLE FOR SHIELD WIRES.
3. TERMINATE SHIELDS TO THE CONNECTOR BACKSHELL OR CHASSIS GROUND AS CLOSE TO CONNECTOR AS POSSIBLE.
4. HARNESS OVERBRAIDING NOT DEPICTED.
5. FOR MATING CONNECTOR AND BACKSHELL PART NUMBERS REFER TO THE CONNECTOR ID AND PIN OUT SECTION OF THIS INSTALL MANUAL.

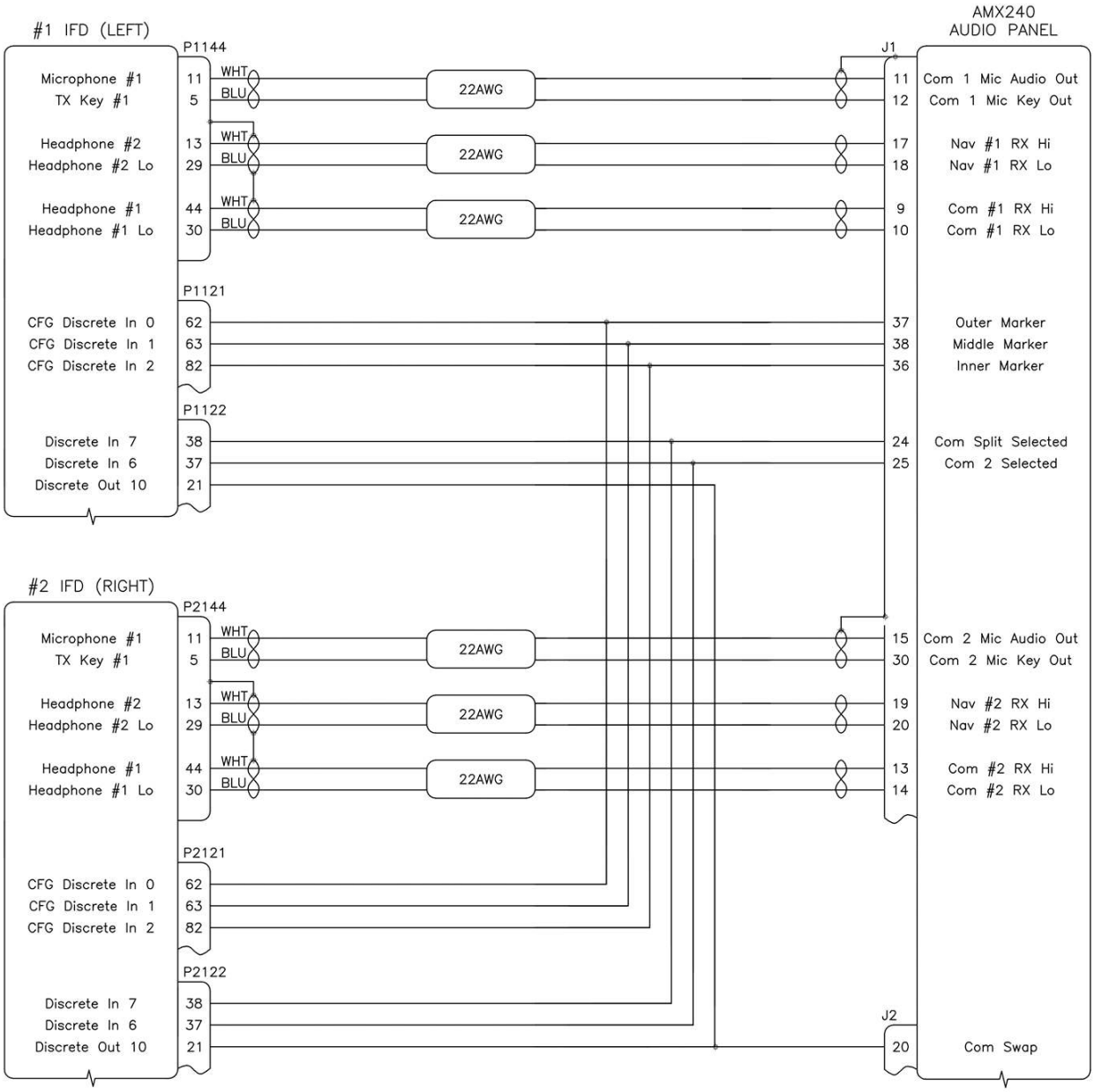
F-6 Signal Interface Unit (SIU) Interconnect Diagram



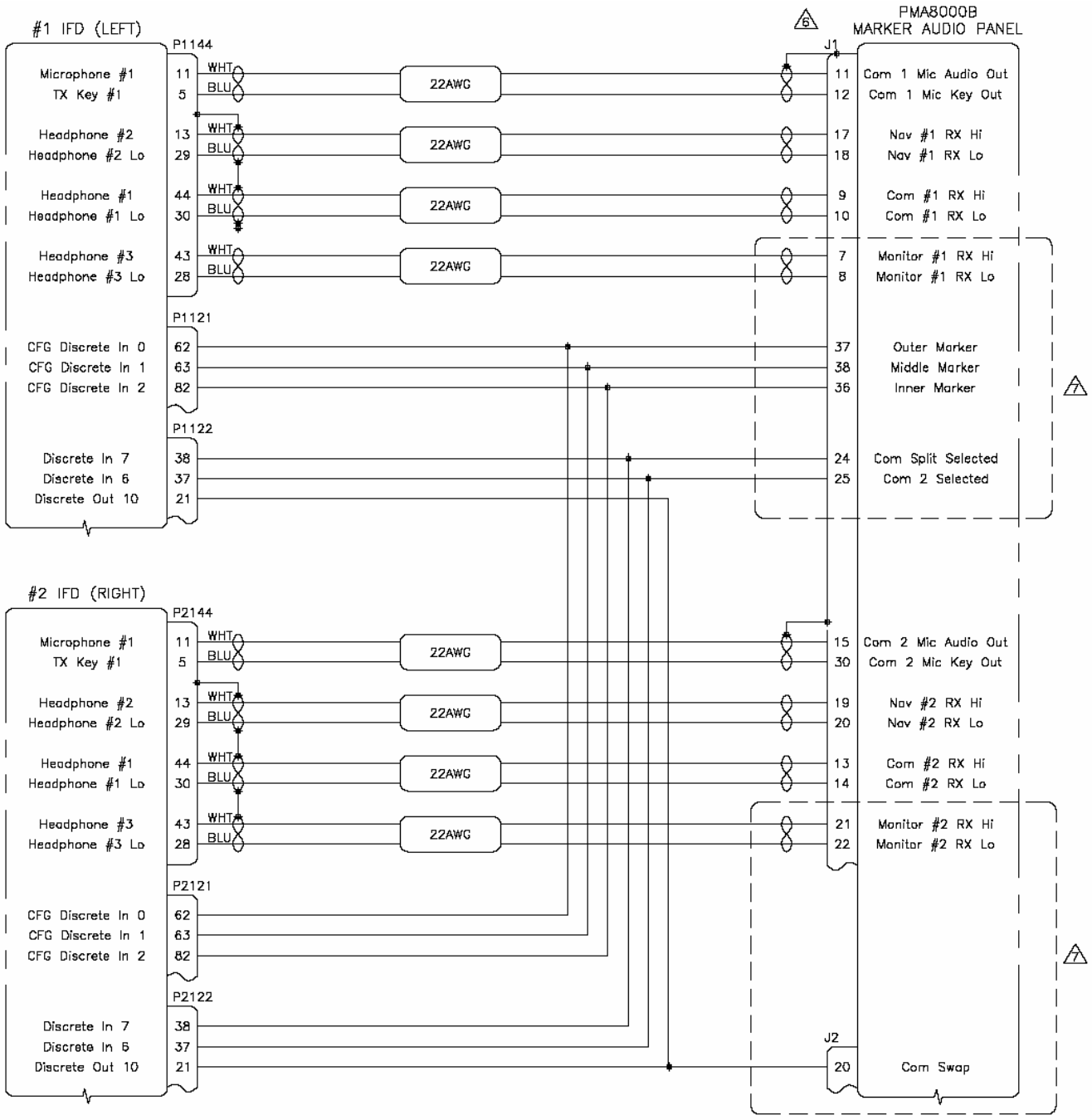
NOTES:

1. ALL WIRE SHALL BE MIL-W-22759/16 (NON-SHIELDED) OR MIL-C-27500 (SHIELDED) OR EQUIVALENT UNLESS OTHERWISE NOTED.
2. ALL WIRES ARE 22AWG MINIMUM UNLESS OTHERWISE NOTED. 24AWG ACCEPTABLE FOR SHIELD WIRES.
3. TERMINATE SHIELDS TO THE CONNECTOR BACKSHELL OR CHASSIS GROUND AS CLOSE TO CONNECTOR AS POSSIBLE.
4. HARNESS OVERBRAIDING NOT DEPICTED.
5. ALL EXISTING ENGINE INSTRUMENTS MUST BE RETAINED.

F-7 Avidyne AMX240 Audio Panel Interconnect Diagram



F-8 PS Engineering PMA8000B Audio Panel Interconnect Diagram



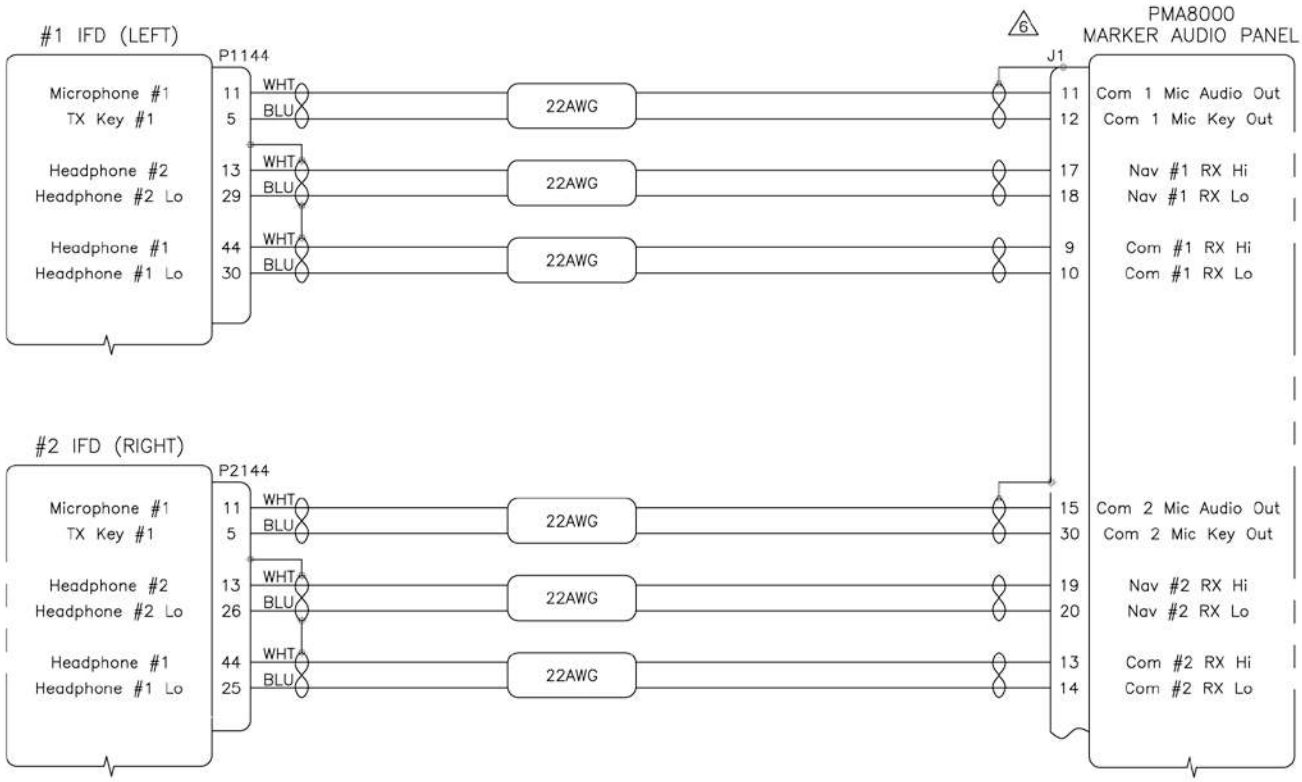
NOTES:

1. ALL WIRE SHALL BE MIL-W-22759/16 (NON-SHIELDED) OR MIL-C-27500 (SHIELDED) OR EQUIVALENT UNLESS OTHERWISE NOTED.
2. ALL WIRES ARE 22AWG MINIMUM UNLESS OTHERWISE NOTED. 24AWG ACCEPTABLE FOR SHIELD WIRES.
3. TERMINATE SHIELDS TO THE CONNECTOR BACKSHELL OR CHASSIS GROUND AS CLOSE TO CONNECTOR AS POSSIBLE.
4. HARNESS OVERBRAIDING NOT DEPICTED.
5. FOR MATING CONNECTOR AND BACKSHELL PART NUMBERS REFER TO THE CONNECTOR ID AND PIN OUT SECTION OF THIS INSTALL MANUAL.

⚠6 REFERENCE PS ENGINEERING PMA8000B INSTALLATION MANUAL FOR FULL INTERCONNECT OF MARKER AUDIO PANEL.

⚠7 ONLY CONNECT TO PS ENGINEERING 8000B AUDIO PANELS WITH P/N 050-890-0402 050-890-0403 OR 050-890-0404.

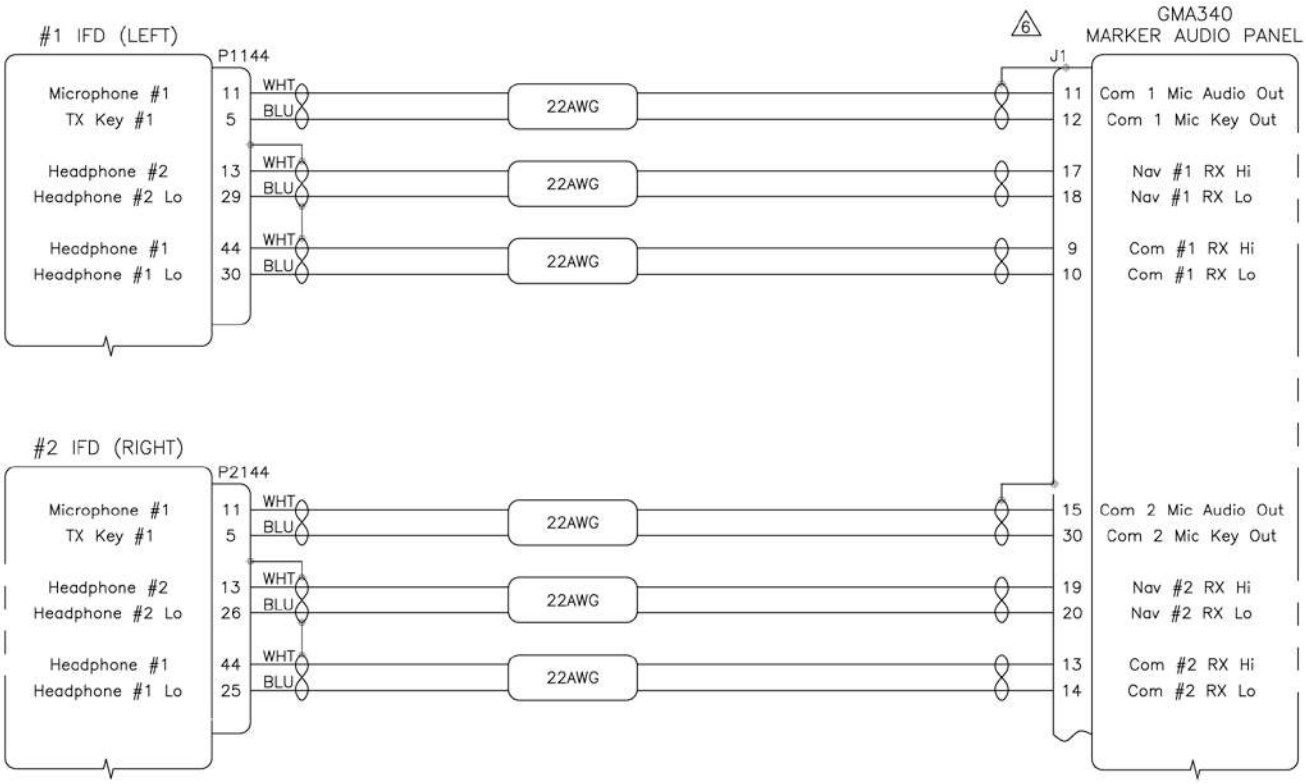
F-9 PS Engineering PMA8000 Audio Panel Interconnect Diagram



NOTES:

1. ALL WIRE SHALL BE MIL-W-22759/16 (NON-SHIELDED) OR MIL-C-27500 (SHIELDED) OR EQUIVALENT UNLESS OTHERWISE NOTED.
2. ALL WIRES ARE 22AWG MINIMUM UNLESS OTHERWISE NOTED. 24AWG ACCEPTABLE FOR SHIELD WIRES.
3. TERMINATE SHIELDS TO THE CONNECTOR BACKSHELL OR CHASSIS GROUND AS CLOSE TO CONNECTOR AS POSSIBLE.
4. HARNESS OVERBRAIDING NOT DEPICTED.
5. FOR MATING CONNECTOR AND BACKSHELL PART NUMBERS REFER TO THE CONNECTOR ID AND PIN OUT SECTION OF THIS INSTALL MANUAL.
6. REFERENCE GARMIN PS ENGINEERING PMA8000 MANUAL FOR FULL INTERCONNECT OF MARKER AUDIO PANEL.

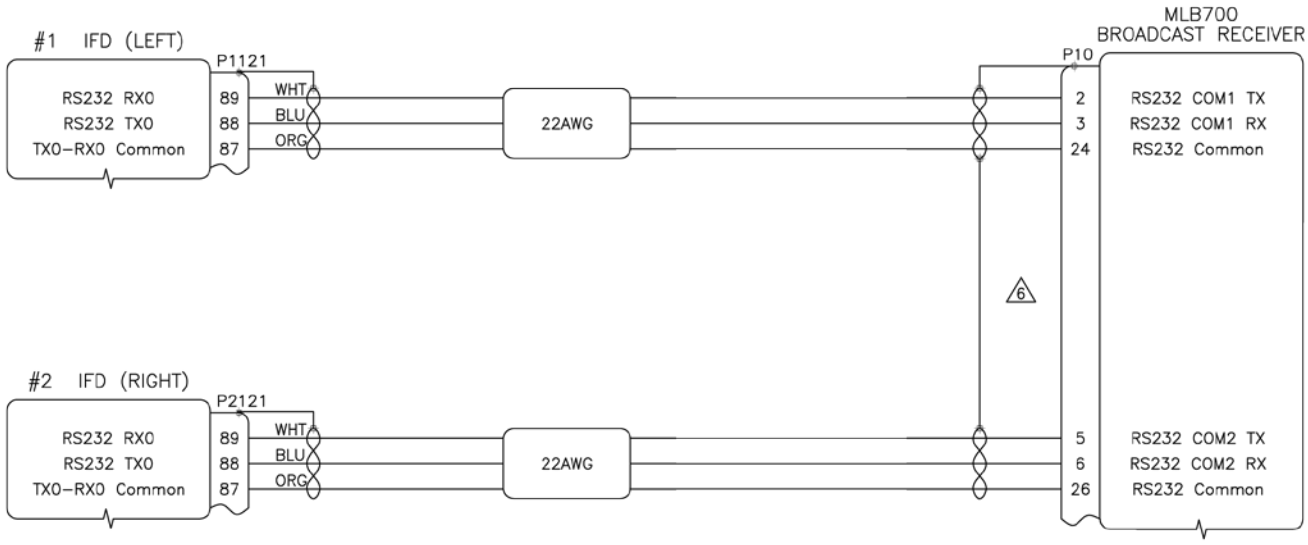
F-10 Garmin GMA340 Audio Panel Interconnect Diagram



NOTES:

1. ALL WIRE SHALL BE MIL-W-22759/16 (NON-SHIELDED) OR MIL-C-27500 (SHIELDED) OR EQUIVALENT UNLESS OTHERWISE NOTED.
2. ALL WIRES ARE 22AWG MINIMUM UNLESS OTHERWISE NOTED. 24AWG ACCEPTABLE FOR SHIELD WIRES.
3. TERMINATE SHIELDS TO THE CONNECTOR BACKSHELL OR CHASSIS GROUND AS CLOSE TO CONNECTOR AS POSSIBLE.
4. HARNESS OVERBRAIDING NOT DEPICTED.
5. FOR MATING CONNECTOR AND BACKSHELL PART NUMBERS REFER TO THE CONNECTOR ID AND PIN OUT SECTION OF THIS INSTALL MANUAL.
6. REFERENCE GARMIN GMA340 INSTALLATION MANUAL FOR FULL INTERCONNECT OF MARKER AUDIO PANEL.

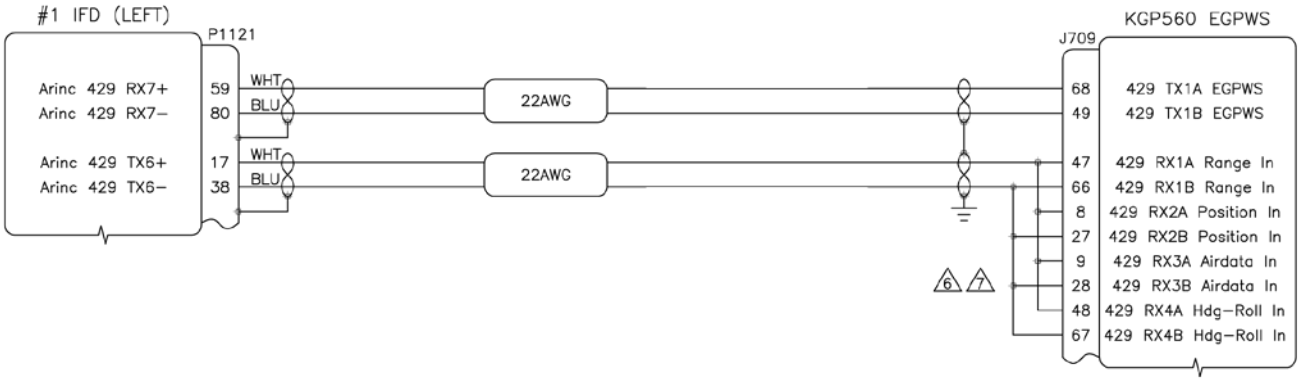
F-11 MLB700 Weather Datalink Receiver Interconnect Diagram



NOTES:

1. ALL WIRE SHALL BE MIL-W-22759/16 (NON-SHIELDED) OR MIL-C-27500 (SHIELDED) OR EQUIVALENT UNLESS OTHERWISE NOTED.
2. ALL WIRES ARE 22AWG MINIMUM UNLESS OTHERWISE NOTED. 24AWG ACCEPTABLE FOR SHIELD WIRES.
3. TERMINATE SHIELDS TO THE CONNECTOR BACKSHELL OR CHASSIS GROUND AS CLOSE TO CONNECTOR AS POSSIBLE.
4. HARNESS OVERBRAIDING NOT DEPICTED.
5. FOR MATING CONNECTOR AND BACKSHELL PART NUMBERS REFER TO THE CONNECTOR ID AND PIN OUT SECTION OF THIS INSTALL MANUAL.
6. REFERENCE AVIDYNE MLB700 INSTALLATION MANUAL FOR FULL INTERCONNECT OF MULTILINK BROADCAST RECEIVER.

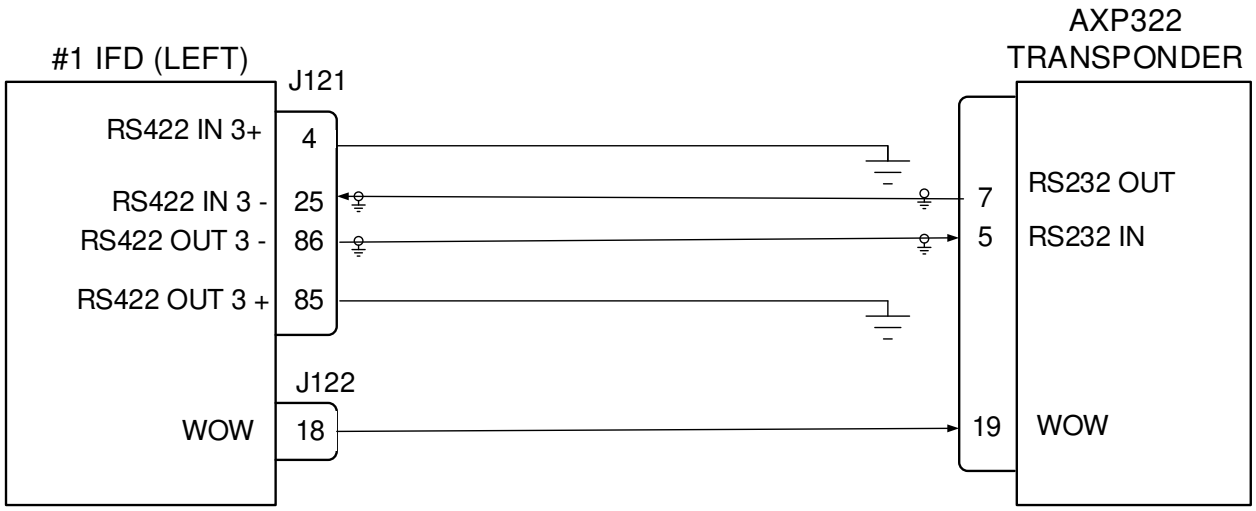
F-12 Honeywell KGP560 EGPWS Interconnect Diagram



NOTES:

1. ALL WIRE SHALL BE MIL−W−22759/16 (NON−SHIELDED) OR MIL−C−27500 (SHIELDED) OR EQUIVALENT UNLESS OTHERWISE NOTED.
2. ALL WIRES ARE 22AWG MINIMUM UNLESS OTHERWISE NOTED. 24AWG ACCEPTABLE FOR SHIELD WIRES.
3. TERMINATE SHIELDS TO THE CONNECTOR BACKSHELL OR CHASSIS GROUND AS CLOSE TO CONNECTOR AS POSSIBLE.
4. HARNESS OVERBRAIDING NOT DEPICTED.
5. FOR MATING CONNECTOR AND BACKSHELL PART NUMBERS REFER TO THE CONNECTOR ID AND PIN OUT SECTION OF THIS INSTALL MANUAL.
6. REFERENCE HONEYWELL KGP560 INSTALLATION MANUAL FOR FULL INTERCONNECT OF EGPWS.
7. JUMPERS TO BE 6 INCHES OR LESS.
8. THE KGP560 EGPWS MUST BE CONFIGURED FOR THE IFD INPUTS. REFERENCE THE KGP560 INSTALLATION MANUAL AS NECESSARY.

F-13 Avidyne AXP322 Transponder Diagram



NOTES:

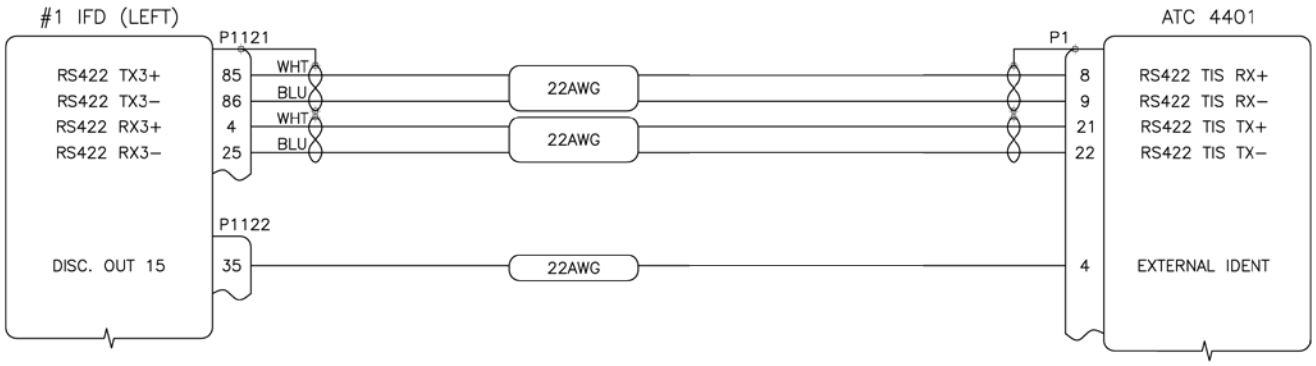
1. ALL WIRES SHALL BE 22 GUAGE MIL-C-27500 (SHIELDED) OR EQIVALENT
2. TERMINATE SHIELDS TO THE CONNECTOR BACKSHELL OR CHASSIS GROUND AS CLOSE TO CONNECTOR AS POSSIBLE
3. REFER TO AVIDYNE AXP322 INSTALLATION MANUAL 600-00312-00 FOR FURTHER AXP322 INSTALLATION INSTRUCTIONS

F-14 Avidyne AXP340 Transponder Interconnect Diagram

NOTES:

1. ALL WIRES SHALL BE 22 GUAGE MIL-C-27500 (SHIELDED) OR EQIVALENT
2. TERMINATE SHIELDS TO THE CONNECTOR BACKSHELL OR CHASSIS GROUND AS CLOSE TO CONNECTOR AS POSSIBLE
3. REFER TO AVIDYNE AXP340 INSTALLATION MANUAL 600-00308-00 FOR FURTHER AXP340 INSTALLATION INSTRUCTIONS
4. WOW SIGNAL FROM IFD IS "GROUND ON GROUND"

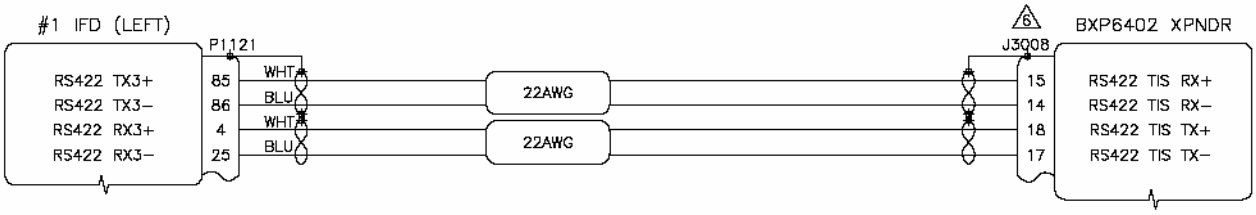
F-15 Becker ATC 4401-2-250Mode C Transponder Diagram



NOTES:

1. ALL WIRE SHALL BE MIL−W−22759/16 (NON−SHIELDED) OR MIL−C−27500 (SHIELDED) OR EQUIVALENT UNLESS OTHERWISE NOTED.
2. ALL WIRES ARE 22AWG MINIMUM UNLESS OTHERWISE NOTED. 24AWG ACCEPTABLE FOR SHIELD WIRES.
3. TERMINATE SHIELDS TO THE CONNECTOR BACKSHELL OR CHASSIS GROUND AS CLOSE TO CONNECTOR AS POSSIBLE.
4. HARNESS OVERBRAIDING NOT DEPICTED.
5. FOR MATING CONNECTOR AND BACKSHELL PART NUMBERS REFER TO THE CONNECTOR ID AND PIN OUT SECTION OF THIS INSTALL MANUAL.
6. REFERENCE BECKER ATC4401 INSTALLATION MANUAL FOR FULL INTERCONNECT OF TRANSPONDER.
7. THE BECKER ATC4401 REQUIRES A SEPERATE ALTITUDE ENCODER.

F-16 Becker BXP-6402-1R - (01) Mode S Transponder Diagram

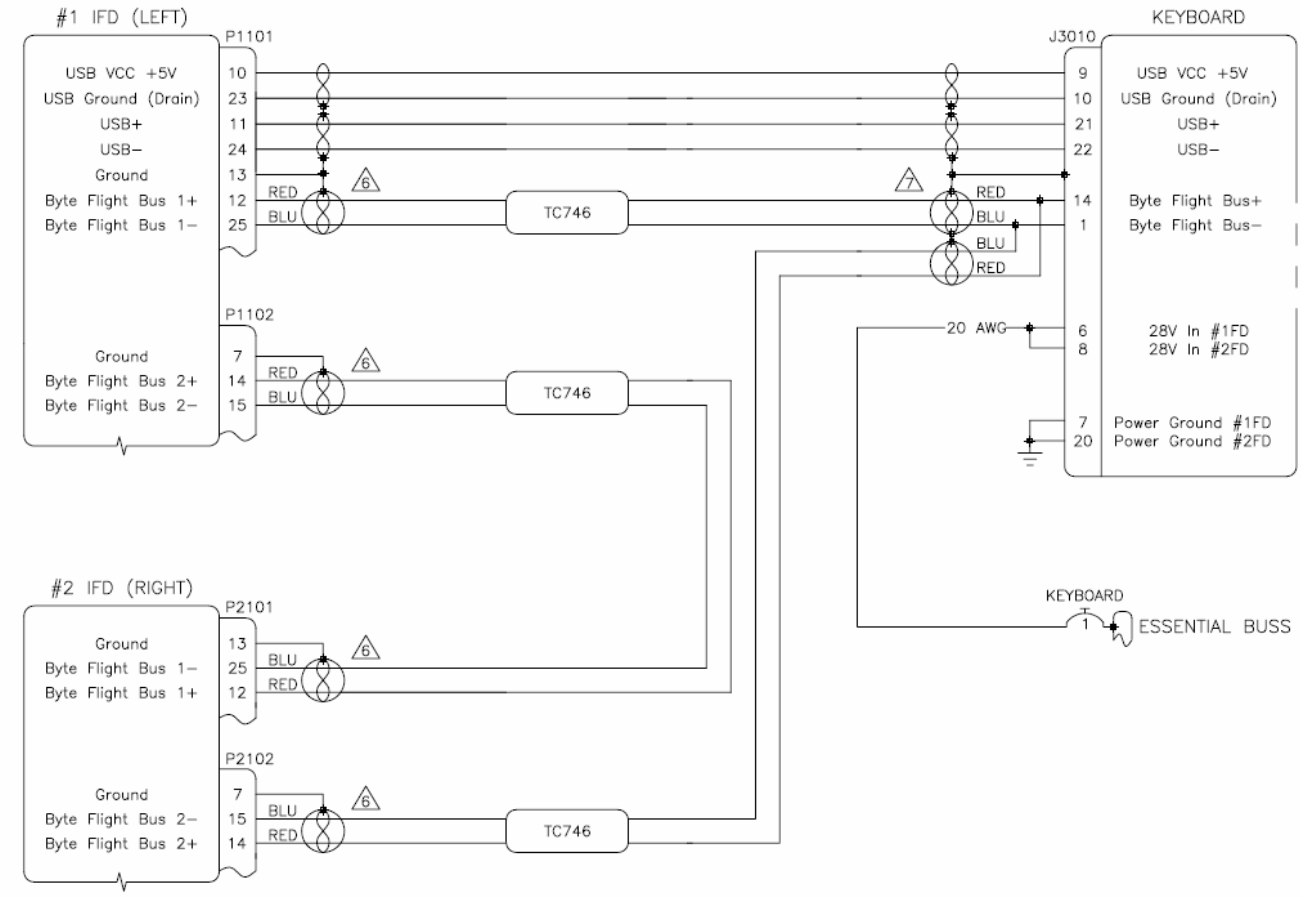


NOTES:

1. ALL WIRE SHALL BE MIL−W−22759/16 (NON−SHIELDED) OR MIL−C−27500 (SHIELDED) OR EQUIVALENT UNLESS OTHERWISE NOTED.
2. ALL WIRES ARE 22AWG MINIMUM UNLESS OTHERWISE NOTED. 24AWG ACCEPTABLE FOR SHIELD WIRES.
3. TERMINATE SHIELDS TO THE CONNECTOR BACKSHELL OR CHASSIS GROUND AS CLOSE TO CONNECTOR AS POSSIBLE.
4. HARNESS OVERBRAIDING NOT DEPICTED.
5. FOR MATING CONNECTOR AND BACKSHELL PART NUMBERS REFER TO THE CONNECTOR ID AND PIN OUT SECTION OF THIS INSTALL MANUAL.

⚠6 REFERENCE BECKER BXP6402 INSTALLATION MANUAL FOR FULL INTERCONNECT OF TRANSPONDER.

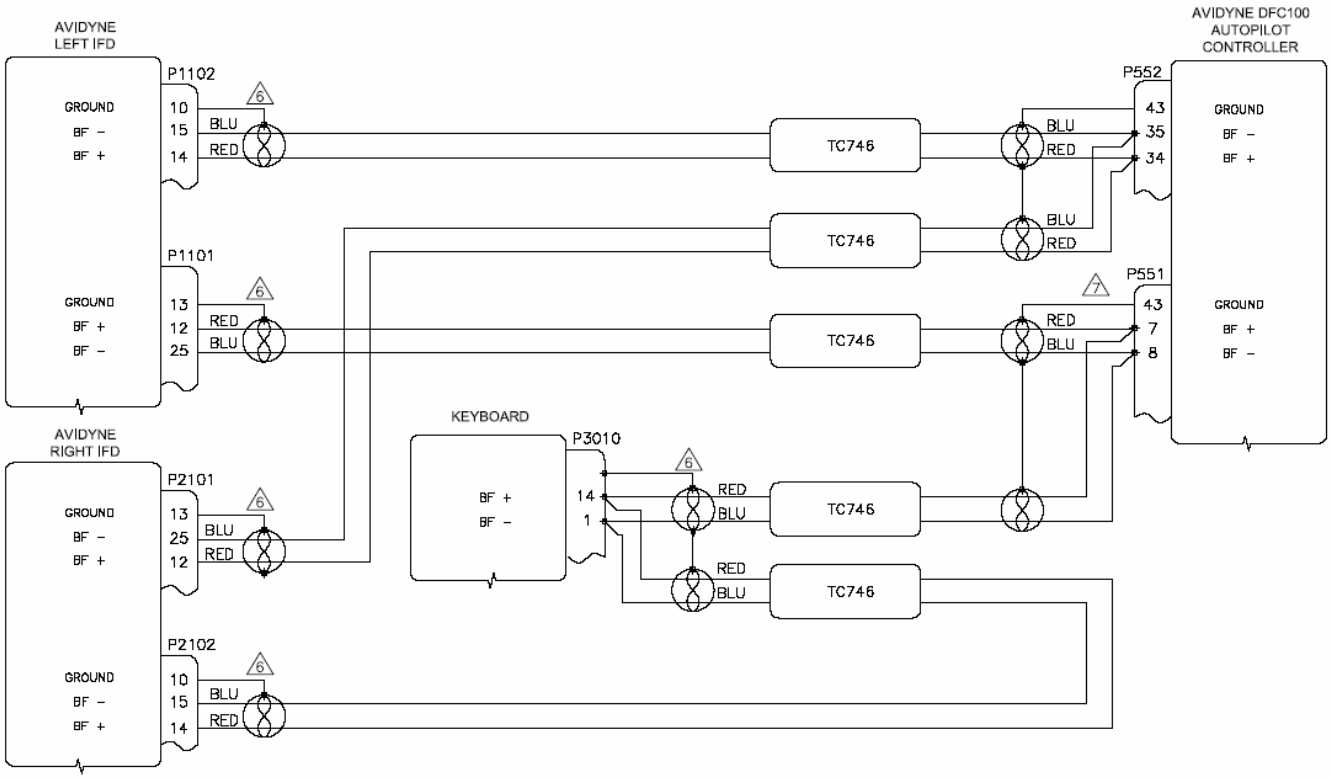
F-17 ACD215 Control Display Unit Interconnect Diagram (Two IFD5000i System)



NOTES:

1. ALL WIRE SHALL BE MIL−W−22759/16 (NON−SHIELDED) OR MIL−C−27500 (SHIELDED) OR EQUIVALENT UNLESS OTHERWISE NOTED.
2. ALL WIRES ARE 22AWG MINIMUM UNLESS OTHERWISE NOTED. 24AWG ACCEPTABLE FOR SHIELD WIRES.
3. TERMINATE SHIELDS TO THE CONNECTOR BACKSHELL OR CHASSIS GROUND AS CLOSE TO CONNECTOR AS POSSIBLE.
4. HARNESS OVERBRAIDING NOT DEPICTED.
5. FOR MATING CONNECTOR AND BACKSHELL PART NUMBERS REFER TO THE CONNECTOR ID AND PIN OUT SECTION OF THIS INSTALL MANUAL.
6. THERMAX TC746, 120 OHM SHIELDED TWISTED PAIR MUST BE USED FOR BYTEFLIGHT CABLE.
7. MAINTAIN CONSTANT MATCHED UNSHIELDED LEAD LENGTHS AND KEEP AS SHORT AS POSSIBLE WHILE MAINTAINING WORKABILITY.

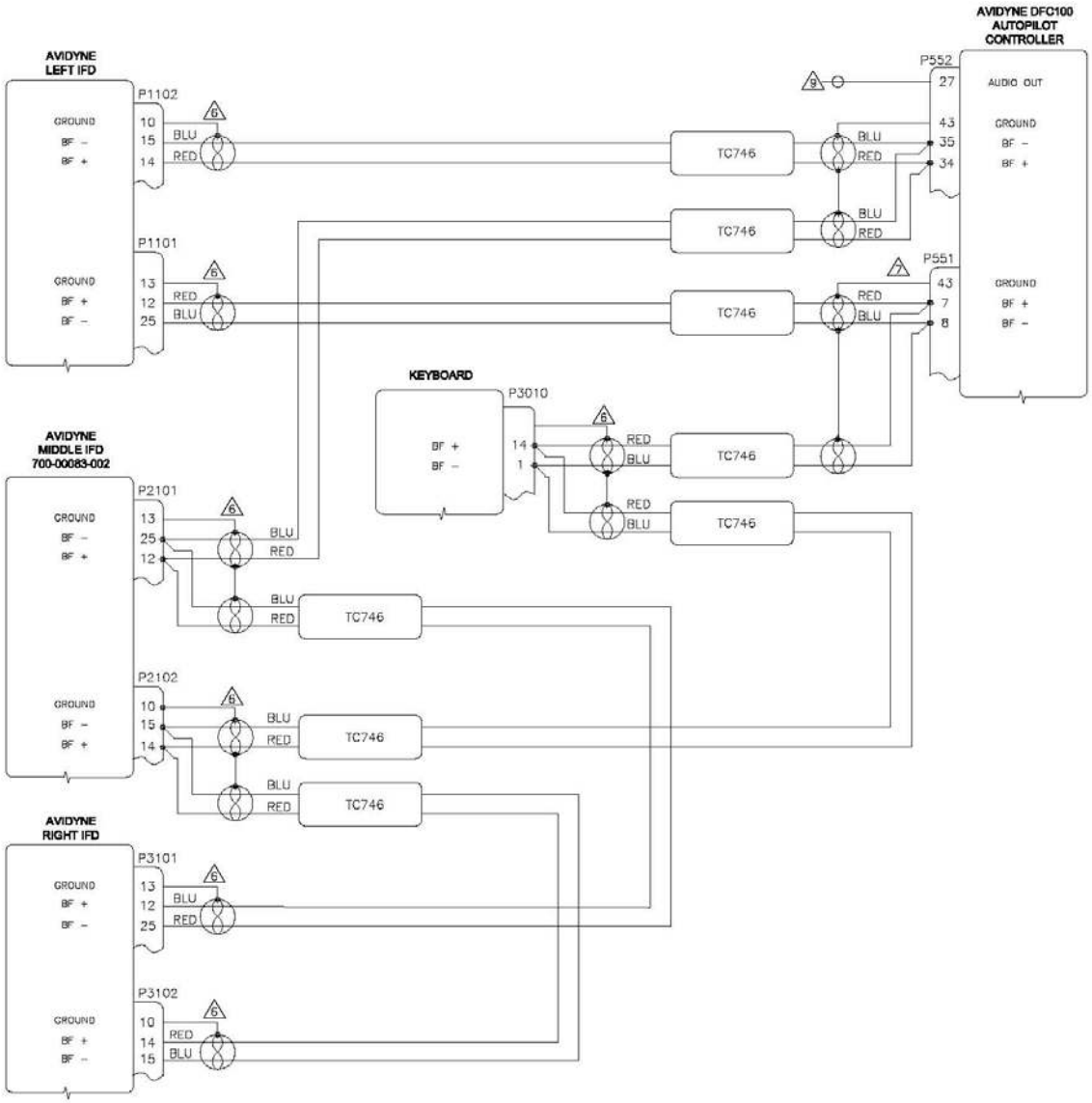
F-18 DFC100 ByteFlight Diagram (Two IFD5000i System)



NOTES:

1. ALL WIRE SHALL BE MIL–W–22759/16 (NON–SHIELDED) OR MIL–C–27500 (SHIELDED) OR EQUIVALENT UNLESS OTHERWISE NOTED.
2. ALL WIRES ARE 22AWG MINIMUM UNLESS OTHERWISE NOTED. 24AWG ACCEPTABLE FOR SHIELD WIRES.
3. TERMINATE SHIELDS TO THE CONNECTOR BACKSHELL OR CHASSIS GROUND AS CLOSE TO CONNECTOR AS POSSIBLE.
4. HARNESS OVERBRAIDING NOT DEPICTED.
5. FOR MATING CONNECTOR AND BACKSHELL PART NUMBERS REFER TO THE CONNECTOR ID AND PIN OUT SECTION OF THIS INSTALL MANUAL.
6. THERMAX TC746, 120 OHM SHIELDED TWISTED PAIR MUST BE USED FOR BYTEFLIGHT CABLE.
7. MAINTAIN CONSTANT MATCHED UNSHIELDED LEAD LENGTHS AND KEEP AS SHORT AS POSSIBLE (<1 INCH) WHILE MAINTAINING WORKABILITY.

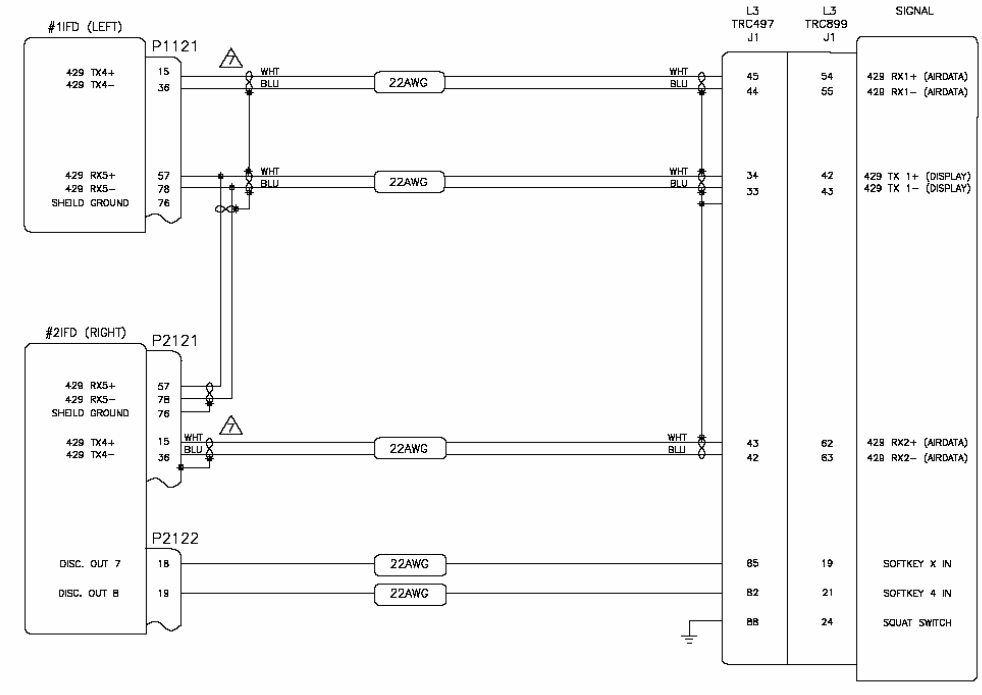
F-19 DFC100 Byteflight Diagram (Three Display)



NOTES:

1. ALL WIRE SHALL BE MIL-W-22759/16 (NON-SHIELDED) OR MIL-C-27500 (SHIELDED) OR EQUIVALENT UNLESS OTHERWISE NOTED.
2. ALL WIRES ARE 22AWG MINIMUM UNLESS OTHERWISE NOTED. 24AWG ACCEPTABLE FOR SHIELD WIRES.
3. TERMINATE SHIELDS TO THE CONNECTOR BACKSHELL OR CHASSIS GROUND AS CLOSE TO CONNECTOR AS POSSIBLE.
4. HARNESS OVERBRAIDING NOT DEPICTED.
5. FOR MATING CONNECTOR AND BACKSHELL PART NUMBERS REFER TO THE CONNECTOR ID AND PIN OUT SECTION OF THIS INSTALL MANUAL.
6. THERMAX TC746, 120 OHM SHIELDED TWISTED PAIR MUST BE USED FOR BYTEFLIGHT CABLE.
7. MAINTAIN CONSTANT MATCHED UNSHIELDED LEAD LENGTHS AND KEEP AS SHORT AS POSSIBLE (<1 INCH) WHILE MAINTAINING WORKABILITY.
8. BYTEFLIGHT WIRES FOR EACH DATABUS MUST BE LESS THAN 50 FEET IN TOTAL LENGTH.
9. IF SVS SYSTEM IS INSTALLED ON THE IFD, CONNECT THE DFC100 AUDIO TO AN UNMUTED/UNSWITCH INPUT ON THE AUDIO PANEL.

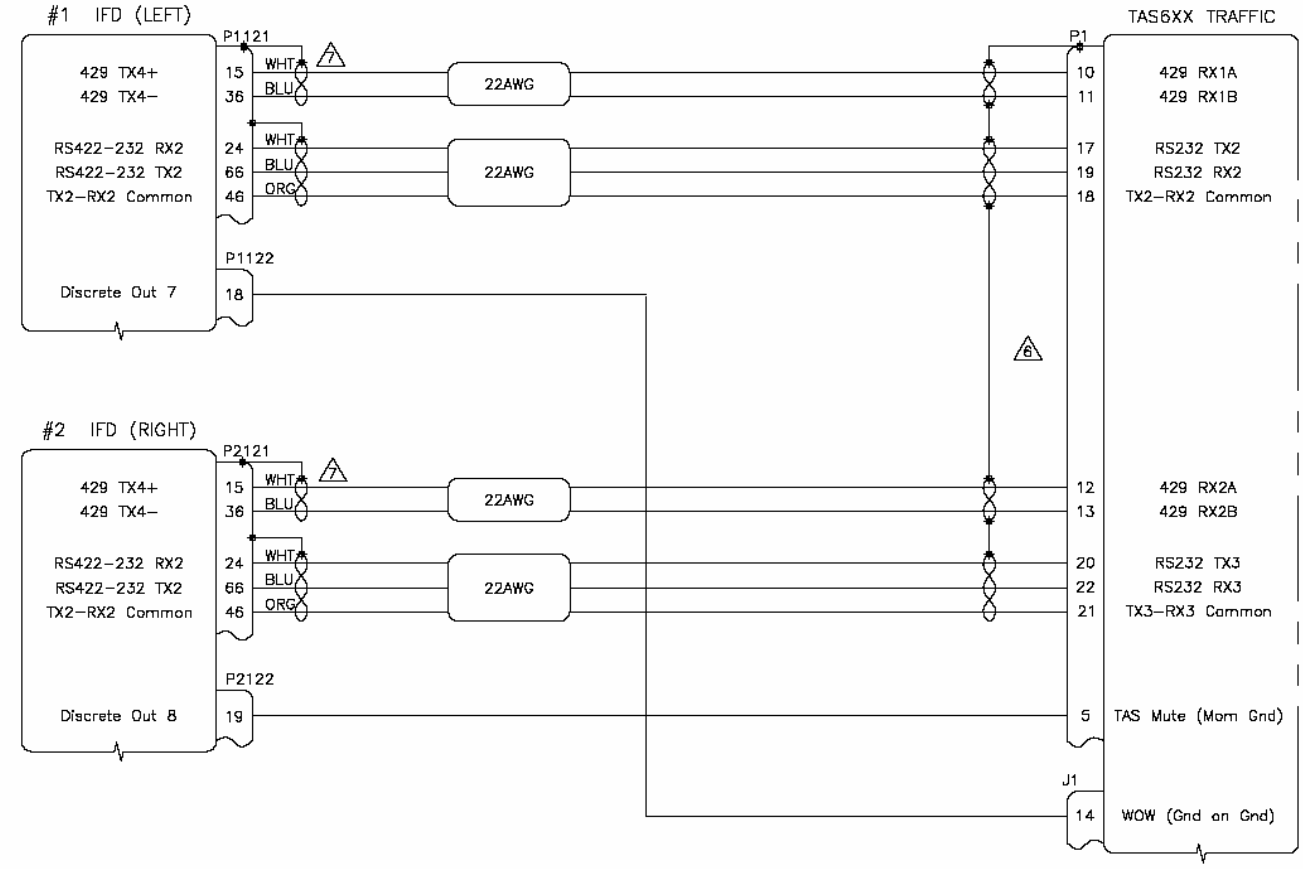
F-20 SkyWatch TRC497/899 Traffic System Interconnect Diagram



NOTES:

1. ALL WIRE SHALL BE MIL-W-22759/16 (NON-SHIELDED) OR MIL-C-27500 (SHIELDED) OR EQUIVALENT UNLESS OTHERWISE NOTED.
2. ALL WIRES ARE 22AWG MINIMUM UNLESS OTHERWISE NOTED. 24AWG ACCEPTABLE FOR SHIELD WIRES.
3. TERMINATE SHIELDS TO THE CONNECTOR BACKSHELL OR CHASSIS GROUND AS CLOSE TO CONNECTOR AS POSSIBLE.
4. HARNESS OVERBRAIDING NOT DEPICTED.
5. FOR MATING CONNECTOR AND BACKSHELL PART NUMBERS REFER TO THE CONNECTOR ID AND PIN OUT SECTION OF THIS INSTALL MANUAL.
6. REFERENCE L3 SKYWATCH INSTALLATION MANUAL FOR FULL INTERCONNECT OF TRAFFIC ADVISORY SYSTEM.
7. 429 TX4 MAY ALSO BE USED FOR OTHER SYSTEMS.

F-21 Avidyne TAS6XX Traffic System Interconnect Diagram



NOTES:

1. ALL WIRE SHALL BE MIL–W–22759/16 (NON–SHIELDED) OR MIL–C–27500 (SHIELDED) OR EQUIVALENT UNLESS OTHERWISE NOTED.
2. ALL WIRES ARE 22AWG MINIMUM UNLESS OTHERWISE NOTED. 24AWG ACCEPTABLE FOR SHIELD WIRES.
3. TERMINATE SHIELDS TO THE CONNECTOR BACKSHELL OR CHASSIS GROUND AS CLOSE TO CONNECTOR AS POSSIBLE.
4. HARNESS OVERBRAIDING NOT DEPICTED.
5. FOR MATING CONNECTOR AND BACKSHELL PART NUMBERS REFER TO THE CONNECTOR ID AND PIN OUT SECTION OF THIS INSTALL MANUAL.

6 REFERENCE AVIDYNE TAS6XO INSTALLATION MANUAL FOR FULL INTERCONNECT OF TRAFFIC ADVISORY SYSTEM.

7 429 TX4 MAY ALSO BE USED FOR OTHER SYSTEMS.

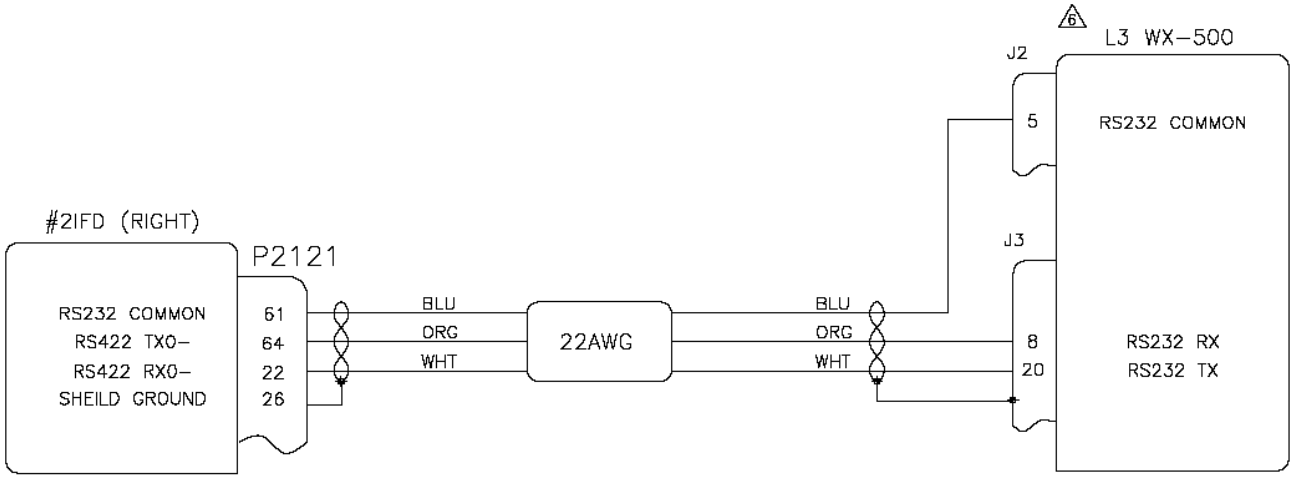
F-22 Avidyne MLB100/SkyTrax100 ADS-B Weather Receiver Interconnect Diagram

NOTES:

1. ALL WIRES SHALL BE 22 GUAGE MIL-C-27500 (SHIELDED) OR EQIVALENT.

2. TERMINATE SHIELDS TO THE CONNECTOR BACKSHELL OR CHASSIS GROUND AS CLOSE TO CONNECTOR AS POSSIBLE.
3. USING THE R9 CONFIGURATION TOOL SELECT “Avidyne ADS-B WX” FOR CONFIGURING THE R9 IFD.

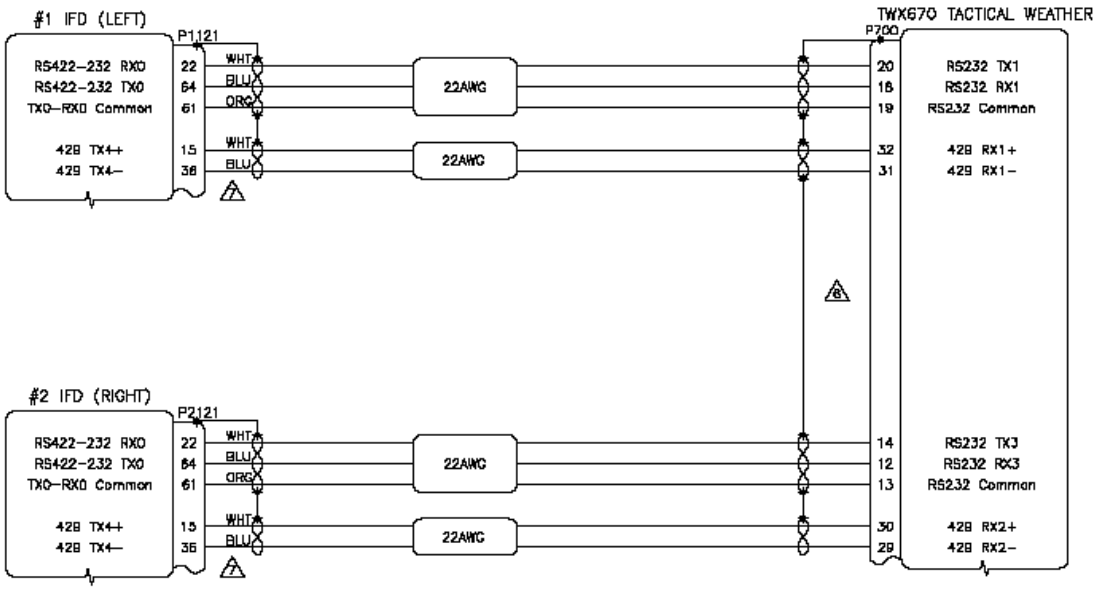
F-23 L3 WX500 Stormscope Interconnect Diagram



NOTES:

1. ALL WIRE SHALL BE MIL−W−22759/16 (NON−SHIELDED) OR MIL−C−27500 (SHIELDED) OR EQUIVALENT UNLESS OTHERWISE NOTED.
2. ALL WIRES ARE 22AWG MINIMUM UNLESS OTHERWISE NOTED. 24AWG ACCEPTABLE FOR SHIELD WIRES.
3. TERMINATE SHIELDS TO THE CONNECTOR BACKSHELL OR CHASSIS GROUND AS CLOSE TO CONNECTOR AS POSSIBLE.
4. HARNESS OVERBRAIDING NOT DEPICTED.
5. FOR MATING CONNECTOR AND BACKSHELL PART NUMBERS REFER TO THE CONNECTOR ID AND PIN OUT SECTION OF THIS INSTALL MANUAL.
6. REFERENCE L3 WX−500 INSTALLATION MANUAL FOR FULL INTERCONNECT INFORMATION.

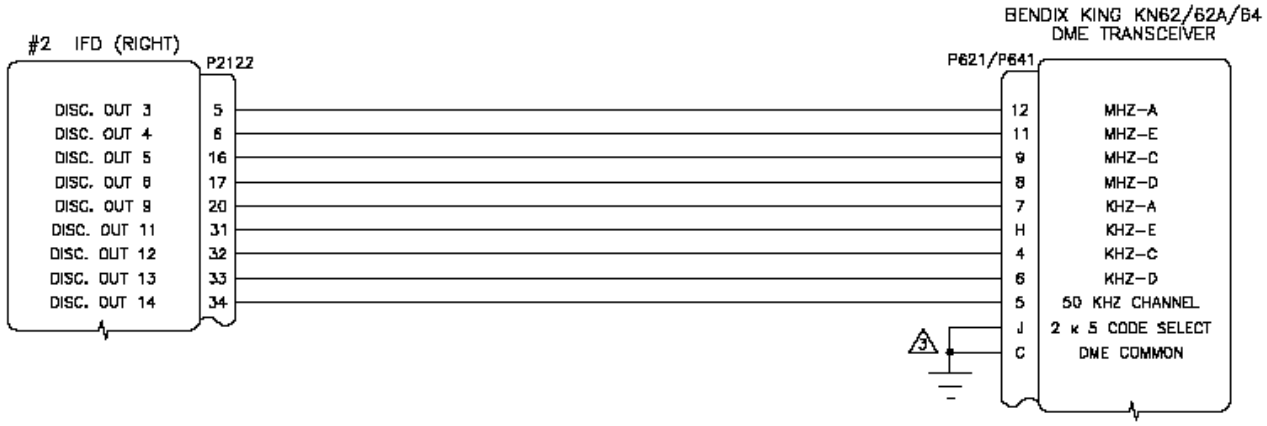
F-24 TWX670 Lightning Sensor Interconnect Diagram



NOTES:

1. ALL WIRE SHALL BE MIL-W-22759/16 (NON-SHIELDED) OR MIL-C-27500 (SHIELDED) OR EQUIVALENT UNLESS OTHERWISE NOTED.
2. ALL WIRES ARE 22AWG MINIMUM UNLESS OTHERWISE NOTED. 24AWG ACCEPTABLE FOR SHIELD WIRES.
3. TERMINATE SHIELDS TO THE CONNECTOR BACKSHELL OR CHASSIS GROUND AS CLOSE TO CONNECTOR AS POSSIBLE.
4. HARNESS OVERBRAIDING NOT DEPICTED.
5. FOR MATING CONNECTOR AND BACKSHELL PART NUMBERS REFER TO THE CONNECTOR ID AND PIN OUT SECTION OF THIS INSTALL MANUAL.
6. REFERENCE AVIDYNE TWX670 INSTALLATION MANUAL FOR FULL INTERCONNECT OF TACTICAL WEATHER DETECTION SYSTEM. ANY DISPLAY PORT ON THE TWX RECEIVER MAY BE USED.
7. 429 TX4 MAY ALSO BE PARALLELED TO OTHER SYSTEMS.

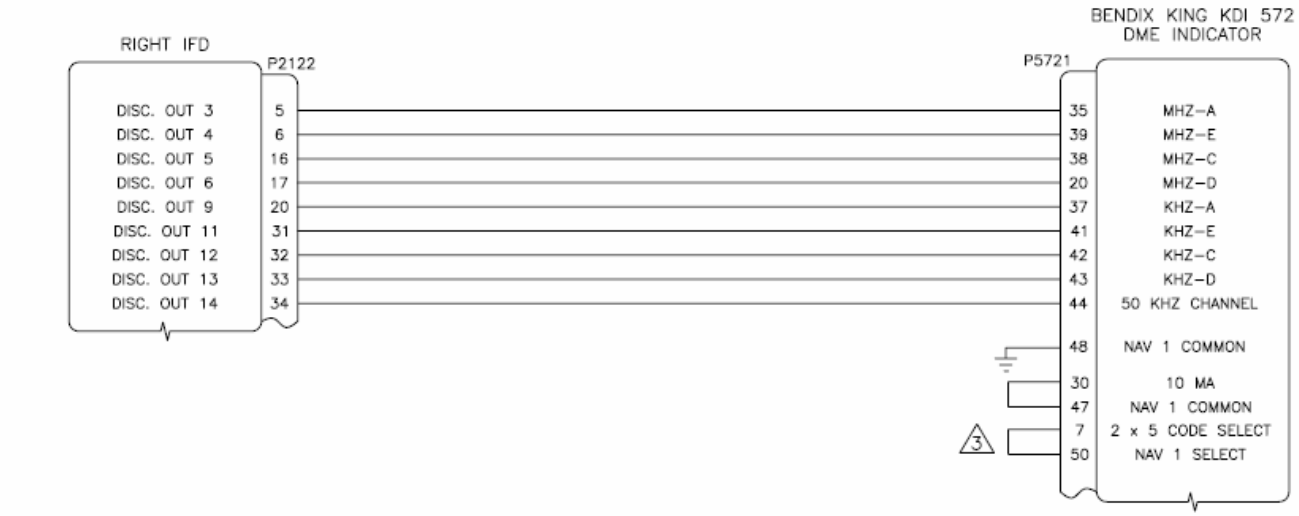
F-25 Bendix King KN62/62A/64 DME Transceiver Diagram



NOTES:

1. ALL WIRE SHALL BE MIL-W-22759/16 (NON-SHIELDED) OR MIL-C-27500 (SHIELDED) OR EQUIVALENT UNLESS OTHERWISE NOTED.
2. ALL WIRES ARE 22AWG MINIMUM UNLESS OTHERWISE NOTED. 24AWG ACCEPTABLE FOR SHIELD WIRES.
3. THE DME TRANSCEIVER MUST BE CONFIGURED FOR 2X5 CODE.
4. HARNESS OVERBRAIDING NOT DEPICTED.

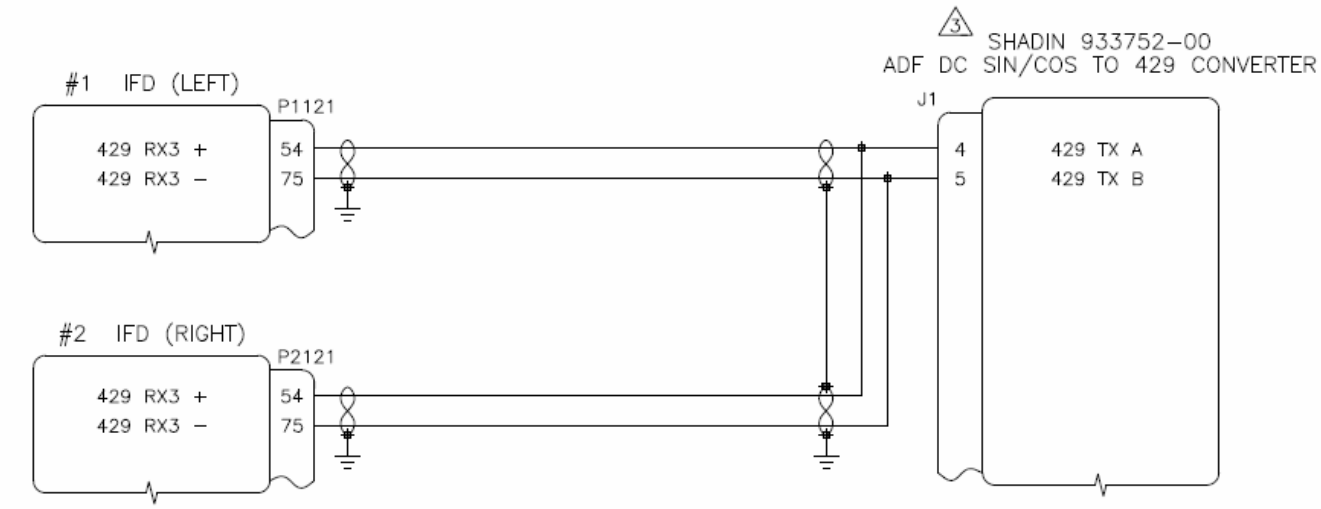
F-26 Bendix King KN63 DME Transceiver Diagram



NOTES:

1. ALL WIRE SHALL BE MIL-W-22759/16 (NON-SHIELDED) OR MIL-C-27500 (SHIELDED) OR EQUIVALENT UNLESS OTHERWISE NOTED.
2. ALL WIRES ARE 22AWG MINIMUM UNLESS OTHERWISE NOTED. 24AWG ACCEPTABLE FOR SHIELD WIRES.
3. THE DME TRANSCEIVER MUST BE CONFIGURED FOR 2X5 CODE.
4. HARNESS OVERBRAIDING NOT DEPICTED.

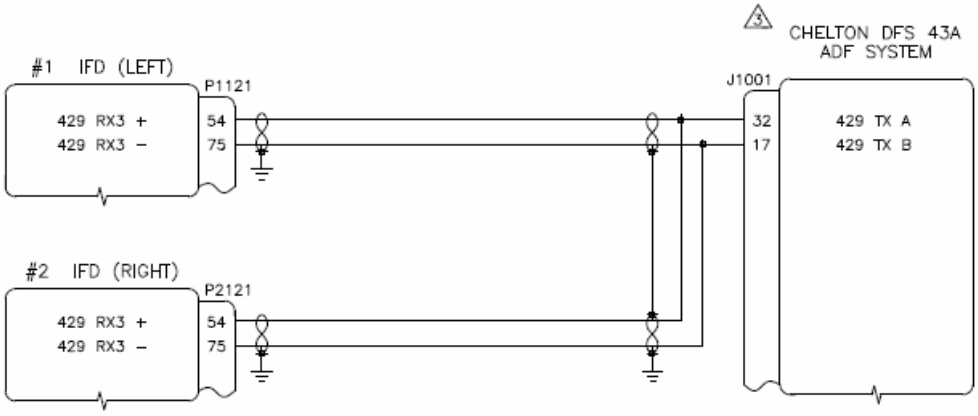
F-27 Shadin ADF Converter Diagram



NOTES:

1. ALL WIRE SHALL BE MIL-W-22759/16 (NON-SHIELDED) OR MIL-C-27500 (SHIELDED) OR EQUIVALENT UNLESS OTHERWISE NOTED.
2. ALL WIRES ARE 22AWG MINIMUM UNLESS OTHERWISE NOTED. 24AWG ACCEPTABLE FOR SHIELD WIRES.
3. REFER TO SHADIN 933752-000 INSTALLATION MANUAL FOR WIRING INFORMATION RELATED TO THE KR-87 ADF. CONFIGURE SHADIN CONVERTER TO OUTPUT SDI BITS = 01.

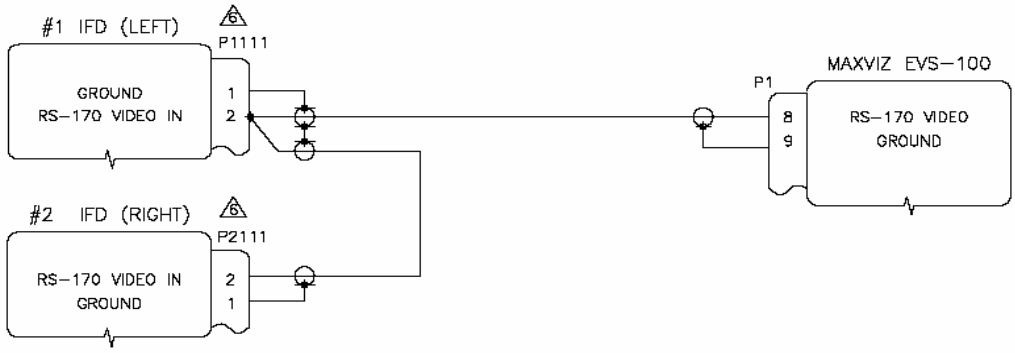
F-28 Chelton DFS 43A ADF System Diagram



NOTES:

1. ALL WIRE SHALL BE MIL–W–22759/16 (NON–SHIELDED) OR MIL–C–27500 (SHIELDED) OR EQUIVALENT UNLESS OTHERWISE NOTED.
2. ALL WIRES ARE 22AWG MINIMUM UNLESS OTHERWISE NOTED. 24AWG ACCEPTABLE FOR SHIELD WIRES.
3. REFER TO THE DFS–43A INSTALLATION MANUAL FOR ADDITIONAL WIRING INFORMATION.
4. HARNESS OVERBRAID NOT DEPICTED.

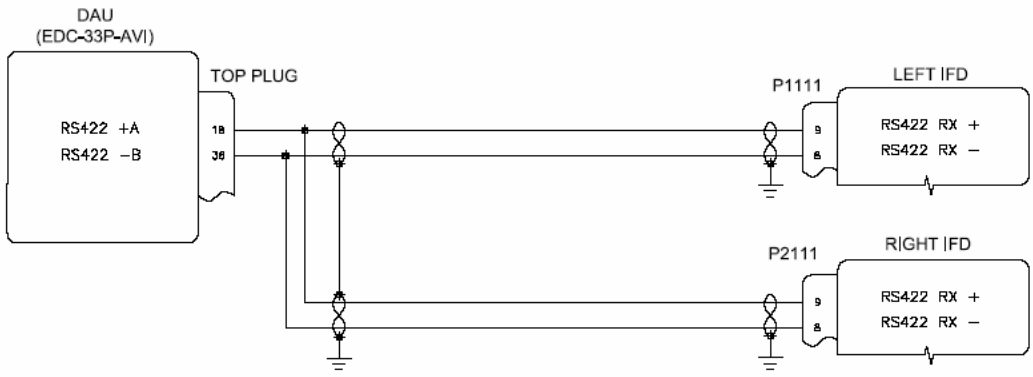
F-29 RS-170 Video Input Diagram



NOTES:

1. 75 OHM DOUBLE SHIELDED COAXIAL CABLE MUST BE USED FOR THE RS-170 VIDEO CABLE (PIC V76261 OR SIMILAR).
2. THE IFD AVIONICS COMPUTING RESOURCE (ACR) MUST BE 32D-00111-003 REV. 7 OR LATER.
3. THE IFD REQUIRES 510-00798-001 (9.1) OR LATER ACR FLIGHT SOFTWARE AND THE EVS ACTIVATION UTILITY (SHIP KIT 850-00073-503) TO DISPLAY RS-170 VIDEO.
4. THE ENHANCED VISION SYSTEM CAMERA REQUIRES A SEPARATE INSTALLATION APPROVAL. THE CAMERA MUST BE INSTALLED IN A LOCATION WHERE LIGHTNING ATTACHMENT IS UNLIKELY (I.E. SAE ARP5414 ZONE 3). IF THE CAMERA IS INSTALLED IN A LOCATION WHERE LIGHTNING ATTACHMENT IS MORE LIKELY, INSTALLATION MITIGATION WILL BE REQUIRED (E.G. VIDEO ISOLATION TRANSFORMER). THE LIGHTNING TRANSIENTS LEVELS MUST BE 6 dB LESS THAN THE EQUIPMENT TRANSIENT DESIGN LEVELS.
5. THE IFD CAN BE CONNECTED TO ANY RS-170 COMPLIANT DEVICES.

F-30 EDC-33P-AVI DAU Diagram



NOTES:

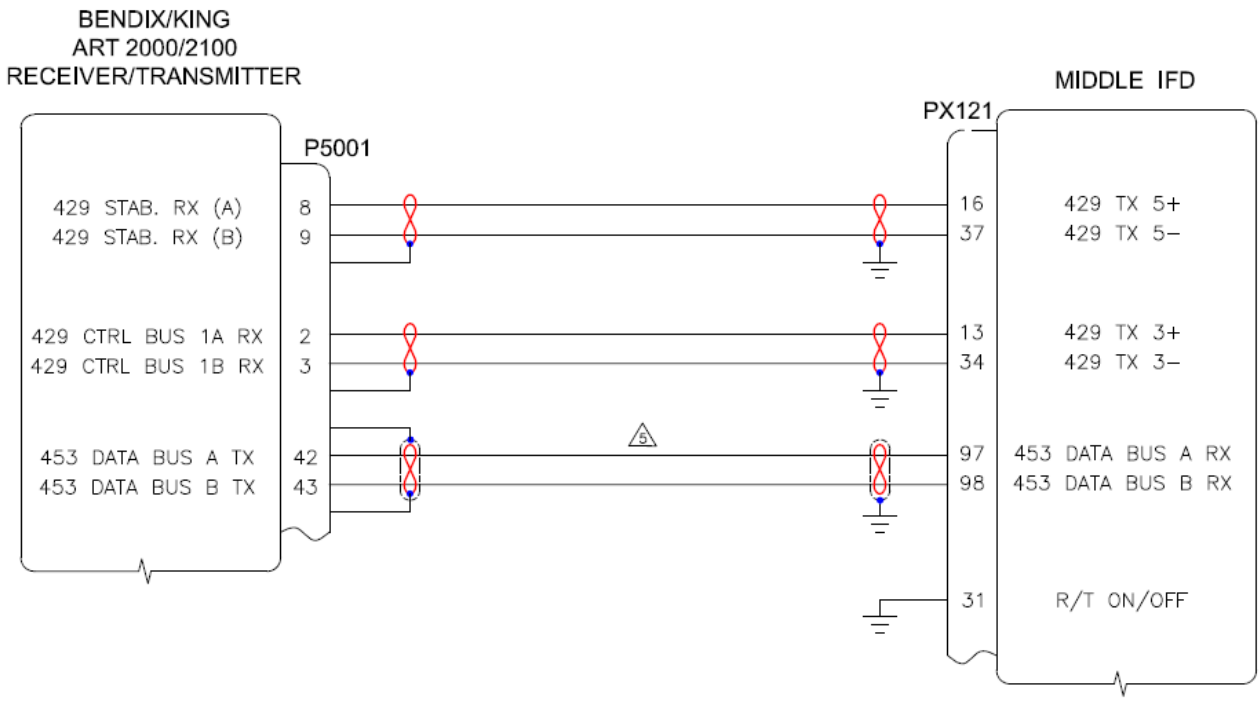
1. ALL WIRE SHALL BE MIL–W–22759/16 (NON–SHIELDED) OR MIL–C–27500 (SHIELDED) OR EQUIVALENT UNLESS OTHERWISE NOTED.
2. ALL WIRES ARE 22AWG MINIMUM UNLESS OTHERWISE NOTED. 24AWG ACCEPTABLE FOR SHIELD WIRES.
3. TERMINATE SHIELDS TO THE CONNECTOR BACKSHELL OR CHASSIS GROUND AS CLOSE TO CONNECTOR AS POSSIBLE.
4. HARNESS OVERBRAIDING NOT DEPICTED.

F-31 406MHz ELT Diagram

NOTES:

1. ALL WIRE SHALL BE MIL-W-22759/16 (NON-SHIELDED) OR MIL-C-27500 (SHIELDED) OR EQUIVALENT UNLESS OTHERWISE NOTED.
2. ALL WIRES ARE 22AWG MINIMUM UNLESS OTHERWISE NOTED. 24AWG ACCEPTABLE FOR SHIELD WIRES.
3. TERMINATE SHIELDS TO THE CONNECTOR BACKSHELL OR CHASSIS GROUND AS CLOSE TO CONNECTOR AS POSSIBLE.
4. HARNESS OVERBRAIDING NOT DEPICTED.

F-32 RDR2000/2100 Diagram



NOTES:

1. ALL WIRE SHALL BE MIL–W–22759/16 (NON–SHIELDED) OR MIL–C–27500 (SHIELDED) OR EQUIVALENT UNLESS OTHERWISE NOTED.
2. ALL WIRES ARE 22AWG MINIMUM UNLESS OTHERWISE NOTED. 24AWG ACCEPTABLE FOR SHIELD WIRES.
3. TERMINATE SHIELDS TO THE CONNECTOR BACKSHELL OR CHASSIS GROUND AS CLOSE TO CONNECTOR AS POSSIBLE.
4. HARNESS OVERBRAIDING NOT DEPICTED.
5. CABLE MUST BE BENDIX/KING P/N 024–00064–0000.
6. VERIFY AIRCRAFT LIGHTNING ACTUAL TRANSIENT LEVEL IS 6 DB LESS THAN THE EQUIPMENT TRANSIENT DESIGN LEVELS.

Appendix G: Interface Control Data

Table: G1 ARINC 429 Transmit Out Messages

Arinc 429 Out 4 (J121-15,36) - Both IFDs			
Low Speed			
Data	**Label**	**Format**	**Transmission Period**
Uncorrected Barometric Altitude	203	ARINC 429 BNR	100-160 ms
Barometric Correction (In-Hg)	235	ARINC 429 BCD	125-185 ms
Latitude	310	GAMA ARINC 429 BNR	200-260 ms
Longitude	311	GAMA ARINC 429 BNR	200-260 ms
Ground Speed	312	GAMA ARINC 429 BNR	60-100 ms
Track Angle (True)	313	GAMA ARINC 429 BNR	60-100 ms
Magnetic Heading	320	ARINC 429 BNR	60-100 ms

Arinc 429 Out 0 (J121-10,31) - Both IFDs			
High Speed			
Data	**Label**	**Format**	**Transmission Period**
GPSS Bank Angle	121	ARINC 429 BNR	60-100 ms
Ground Speed	312	ARINC 429 BNR	60-100 ms
Autopilot Mode Discretes	271	STEC Format	60-100 ms

Arinc 429 Out 6 (J121-17,38) - Left IFD Only			
Low Speed			
Data	**Label**	**Format**	**Transmission Period**
Uncorrected Barometric Altitude	203	ARINC 429 BNR	60-100 ms
Corrected Barometric Altitude	204	ARINC 429 BNR	60-100 ms
Barometric Rate	212	ARINC 429 BNR	60-100 ms
Static Air Temperature	213	ARINC 429 BNR	60-100 ms
Latitude	110	ARINC 429, 743 Format BNR	200-260 ms
Longitude	111	ARINC 429, 743 Format BNR	200-260 ms
GPS Hor. Int. Limit	130	ARINC 429, 743 Format BNR+Discrete	200-260 ms
Geometric Altitude (WGS-84)	76	ARINC 429, 743 Format BNR	200-260 ms
VFOM	136	ARINC 429, 743 Format BNR	200-260 ms
HFOM	247	ARINC 429, 743 Format BNR	200-260 ms
VFOM from VDOP	102	ARINC 429, 743 Format BNR	200-260 ms
HFOM from HDOP	101	ARINC 429, 743 Format BNR	200-260 ms
Ground Speed	112	ARINC 429, 743 Format BNR	200-260 ms
Track Angle	103	ARINC 429, 743 Format BNR	200-260 ms
Vertical Velocity	165	ARINC 429, 743 Format BNR	200-260 ms
North/South Velocity	166	ARINC 429, 743 Format BNR	200-260 ms
East/West Velocity	174	ARINC 429, 743 Format BNR	200-260 ms
Sensor Status	273	ARINC 429, 743 Format Discrete	200-260 ms
Roll Angle	325	ARINC 429 BNR	60-100 ms
Magnetic Heading	320	ARINC 429 BNR	60-100 ms

Note: IFD ARINC Out 4 and Out 6 does not meet ARINC 429 specification for transmit rate.

Appendix H: IFD Aircraft Configuration Worksheet

IFD Aircraft Configuration Sheet

Aircraft Description

Aircraft Make: _____

Aircraft Model: _____

Aircraft Serial Number: _____

IFD Aircraft Configuration

Audio Panel: _____

Transponder: _____

Datalink: _____

Lightning: _____

Wx500 Antenna Mount: _____

TAWS: _____

Traffic: _____

ADF: _____

DME: _____

Number of ADAHRS: _____

FMS Installed: _____

Enhanced Vision System: _____

Autopilot: _____

Radar: _____

IRU Calibration Numbers

	Left	Center	Right
Roll:		N/A	
Pitch:		N/A	
Yaw:		N/A	

Software

Orginal S/W P/N: _____

Upgrade p/n: _____

Upgrade p/n: _____

Upgrade p/n: _____

Upgrade p/n: _____

Notes:

WARRANTY: AVIDYNE WARRANTS THE PRODUCT MANUFACTURED BY IT AGAINST DEFECTS IN MATERIAL AND WORKMANSHIP FOR A PERIOD OF TWENTY-FOUR (24) MONTHS FROM DELIVERY TO THE INSTALLER. A COMPLETE COPY OF THE WARRANTY DATA IS ACCESSIBLE VIA THIS WEB ADDRESS:
HTTP://WWW.AVIDYNE.COM/SUPPORT/WARRANTY.ASP

SOFTWARE LICENSE: AVIDYNE CORPORATION (“AVIDYNE”) IS WILLING TO LICENSE THIS SOFTWARE, AND RELATED MATERIALS (THE “SOFTWARE”) ONLY ON THE CONDITION THE USER AGREES TO THE TERMS OF THE PUBLISHED SOFTWARE LICENSE WHICH CAN BE ACCESSED VIA THIS WEB ADDRESS:
HTTP://WWW.AVIDYNE.COM/SUPPORT/LICENSE.ASP