



September 20, 2011

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A handwritten signature in black ink, appearing to read "Thomas P Harper". The signature is fluid and cursive, with a long horizontal stroke extending to the right.

Thomas P Harper

Director, Marketing

Avidyne Corporation



United States of America
Department of Transportation
Federal Aviation Administration

Supplemental Type Certificate

Number SA00343BO

This certificate issued to:

Avidyne Corporation
4 Middlesex Green, Suite 221
561 Virginia Road
Concord, MA 01742

certifies that the change in the type design for the following product with the limitations and conditions therefore as specified hereon meets the airworthiness requirements of Part 23 of the Federal Aviation Regulations.

Original Product - Type Certificate Number: See attached FAA Approved Model List (AML), Document No. AVIFD-318, Revision 01, FAA approved on June 18, 2015, or later
Make: AVIFD-318, Revision 01, FAA approved on June 18, 2015, or later
Model: FAA approved revision, for the list of approved airplane models, applicable installation data requirements, and specific limitations.

Description of Type Design Change:

Installation of a single configuration or of a dual configuration Avidyne Corporation Integrated Flight Display, Model IFD5XX and/or Model IFD4XX, loaded with Release 10.1 software (or later FAA approved release), in accordance with Avidyne Corporation Master Document List (MDL), Document Number AVIFD-306, Revision 04, dated May 27, 2015, or later FAA approved revision.

Limitations and Conditions: See Page 2

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

Date of Application: February 14, 2013

Date reissued:

Date of Issuance: July 24, 2014

Date amended: June 18, 2015, March 6, 2017

By direction of the Administrator

Signature _____
Nicholas Faust

Acting Manager, Boston Aircraft Certification Office
Title _____

Any alteration of this certificate is punishable by a fine of not exceeding \$1,000, or imprisonment not exceeding 3 years, or both. This certificate may be transferred or made available to third persons by licensing agreements in accordance with 14 CFR 21.47. Possession of this Supplemental Type Certificate (STC) document by persons other than the STC holder does not constitute rights to the design data nor to alter an aircraft, aircraft engine, or propeller. The STC's supporting documentation (drawings, instructions, specifications, flight manual supplements, etc.) is the property of the STC holder. An STC holder who allows a person to use the STC to alter an aircraft, aircraft engine, or propeller must provide that person with written permission acceptable to the FAA. (Ref. 14 CFR 21.120).

**SUPPLEMENTAL TYPE CERTIFICATE, FAA FORM 8110-2
(CONTINUED)**

INSTRUCTIONS: The transfer endorsement below may be used to notify the appropriate FAA Aircraft Certification Office of the transfer of this Supplemental Type Certificate. The FAA will reissue the certificate in the name of the transferee and forward it to him.

***TRANSFER
ENDORSEMENT***

*Transfer the ownership of Supplemental Type Certificate
Number:*

To *(Name of transferee)*

(Address of transferee)

(Number and street)

(City, State, and ZIP Code)

From *(Name of
grantor)*

(Address of grantor)

(Number and street)

(City, State, and ZIP Code)

Extent of Authority (if licensing agreement):

Date of Transfer:

Signature of grantor:



United States of America
Department of Transportation
Federal Aviation Administration

Supplemental Type Certificate

Number SA00343BO

March 6, 2017

Limitations and Conditions:

1. Operation must be in accordance with the Avidyne Corporation Aircraft Flight Manual Supplement (AFMS) Document Number 600-00298-000, Revision 02, FAA approved on June 18, 2015, or later FAA approved revision.
The AFMS must be carried in the aircraft during all flights.
2. Maintenance must be in accordance with Instructions for Continued Airworthiness (ICA), Document Number AVIFD-315, Revision 06, dated March 04, 2015, or later FAA accepted revision.
The ICA must be made available to the operator at the time of installation.
3. The compatible approved software for the IFD4XX and IFD5XX are identified in the installation manual identified on the approved MDL.
4. Model IFD4XX and/or Model IFD5XX can interface only with proven compatible avionics systems as identified by vendor name and model number in Avidyne Corporation Installation Manual Section 2.3, Document Number 600-00299-000, Revision 04, dated April 09, 2015, or later FAA approved revision.
5. Compatibility of this design with previously approved modifications must be determined by the installer.

Certification Basis:

Based on 14 CFR § 21.115 and § 21.101, and the FAA policy for design changes that are identified as not significant in FAA Order 8110.48, the certification basis for the Make Model aircraft is as follows:

- a. The type certification basis for parts **not changed or not affected** by the change is shown on the applicable TCDS.

(continued on Page 4 of 4)

Any alteration of this certificate is punishable by a fine of not exceeding \$1,000, or imprisonment not exceeding 3 years, or both. This certificate may be transferred or made available to third persons by licensing agreements in accordance with 14 CFR 21.47. Possession of this Supplemental Type Certificate (STC) document by persons other than the STC holder does not constitute rights to the design data nor to alter an aircraft, aircraft engine, or propeller. The STC's supporting documentation (drawings, instructions, specifications, flight manual supplements, etc.) is the property of the STC holder. An STC holder who allows a person to use the STC to alter an aircraft, aircraft engine, or propeller must provide that person with written permission acceptable to the FAA. (Ref. 14 CFR 21.120).



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Certification Basis: (continued from Page 4 of 5)

- b. The modification certification basis for parts **changed or affected** by the change since the reference application date, February 14, 2013, is based upon part 23 as amended by Amendment 23-62 as follows:

Regulations at the latest amendment 23-0 through 23-62

23.301(a), 23.303, 23.305, 23.307(a), 23.337, 23.473(d)(g), 23.561(a)(b)(3)(e), 23.601, 23.603, 23.605, 23.607(b), 23.609, 23.611, 23.613, 23.627, 23.771(a), 23.773(a)(2), 23.777(a)(b), 23.853(a), 23.867(b), 23.301, 23.1306(b), 23.1307, 23.1308(b), 23.1309, 23.1311(a)(1)(2)(3)(4)(6)(7), 23.1321(a)(c)(e), 23.1322, 23.1329(h), 23.1331(a)(b)(1), 23.1351(a), 23.1353(h), 23.1357(a)(b)(c)(d), 23.1359(c), 23.1365(a)(b)(d)(e), 23.1367, 23.1381, 23.1431(a)(b)(d)(e), 23.1501, 23.1523, 23.1525, 23.1529, 23.1541 (a)(2)(b), 23.1555(a)(b), 23.1559(c)(d), 23.1581(a)(b)(c)(f), 23.1583(h)(m), 23.1585(j)

Regulations at an intermediate amendment

None

Regulations at the amendment level in the applicable TCDS

None

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Any alteration of this certificate is punishable by a fine of not exceeding \$1,000, or imprisonment not exceeding 3 years, or both. This certificate may be transferred or made available to third persons by licensing agreements in accordance with 14 CFR 21.47. Possession of this Supplemental Type Certificate (STC) document by persons other than the STC holder does not constitute rights to the design data nor to alter an aircraft, aircraft engine, or propeller. The STC's supporting documentation (drawings, instructions, specifications, flight manual supplements, etc.) is the property of the STC holder. An STC holder who allows a person to use the STC to alter an aircraft, aircraft engine, or propeller must provide that person with written permission acceptable to the FAA. (Ref. 14 CFR 21.120).

***Avidyne 700-00182-XXX and 700-00179-XXX
Integrated Flight Display
Instructions for Continued Airworthiness***

As installed in

Cirrus SR20
(Make and Model Airplane)

Reg. No. N100BW S/N 1538

**AVIDYNE
CORPORATION**

**Avidyne Corporation
4 Middlesex Green, Suite 221
561 Virginia Road
Concord MA 01742**

Important Notice

With respect to the AML STC, the physical mounting of antennas are specifically excluded from the approval in the case of installations on the pressure vessel of pressurized aircraft or composite aircraft unless approved data is listed in the Master Document List of the STC.

Document Revision History

Document Number		AVIFD-315	Control Category	
Revision	Description	ECO	Date	
00	Initial Release	ECO-13-199	08/30/13	
01	AEG Comments	ECO-13-350	09/27/13	
02	Update Part Numbers	ECO-13-405	01/20/14	
03	Removing ADS-B	ECO-14-059	03/03/14	
04	Added 700-00179-XXX	ECO-15-129	03/20/15	
05	AEG Comments	ECO-15-169	04/22/15	
06	FAA Comments	ECO-15-193	05/05/15	
07	Update f or Release 10.2. Added IFD410, IFD510, IFD545, IFD550, ARS troubleshooting instructions and IFD550 figure	ECO-16-326	12/21/16	
08	Address AEG comments sections 2, 6, 7	ECO-17-013	01/18/17	
09	Add additional configuration to table1, section 1.5	ECO-19-050	04/17/19	

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1. Introduction

This document identifies the Instructions for Continued Airworthiness (ICA) for the modification of the aircraft listed in AVIFD-318 Integrated Flight Display STC Approved Model List by installation of an Avidyne 700-00182-XXX (IFD5XX) and/or 700-00179-XXX (IFD4XX) Integrated Flight Display.

This ICA satisfies the requirements of 14 CFR 23.1529.

Modification of an aircraft by this Supplemental Type Certificate obligates the aircraft operator to include the maintenance information provided by this document in the operator's Aircraft Maintenance Manual and the operator's Aircraft Scheduled Maintenance Program.

1.1 Applicability

This document applies to aircraft altered by the installation of the following equipment. Equipment should be installed using data listed in 700-00182-XXX/700-00179-XXX Integrated Flight Display Master Document List, document number AVIFD-306:

Table 1 IFD Part Number Variants

Part Number	Description
700-00179-010 700-00179-710	INTEGRATED FLIGHT DISPLAY, IFD410, BLACK BEZEL
700-00179-110 700-00179-810	INTEGRATED FLIGHT DISPLAY, IFD410, GREY BEZEL
700-00179-000 700-00179-700	INTEGRATED FLIGHT DISPLAY, IFD440, BLACK BEZEL
700-00179-100 700-00179-800	INTEGRATED FLIGHT DISPLAY, IFD540, GREY BEZEL
700-00182-010 700-00182-710	INTEGRATED FLIGHT DISPLAY, IFD510, BLACK BEZEL
700-00182-110 700-00182-810	INTEGRATED FLIGHT DISPLAY, IFD510, GREY BEZEL
700-00182-000 700-00182-700	INTEGRATED FLIGHT DISPLAY, IFD540, BLACK BEZEL
700-00182-001 700-00182-701	INTEGRATED FLIGHT DISPLAY, IFD540, BLACK BEZEL WITH VIDEO

Part Number	Description
700-00182-002	INTEGRATED FLIGHT DISPLAY, IFD540, BLACK BEZEL, 16W VHF
700-00182-100 700-00182-800	INTEGRATED FLIGHT DISPLAY, IFD540, GREY BEZEL
700-00182-101 700-00182-801	INTEGRATED FLIGHT DISPLAY, IFD540, GREY BEZEL WITH VIDEO
700-00182-102	INTEGRATED FLIGHT DISPLAY, IFD540, GREY BEZEL, 16W VHF
700-00182-030 700-00182-730	INTEGRATED FLIGHT DISPLAY, IFD545, BLACK BEZEL
700-00182-031 700-00182-731	INTEGRATED FLIGHT DISPLAY, IFD545, BLACK BEZEL, WITH VIDEO
700-00182-130 700-00182-830	INTEGRATED FLIGHT DISPLAY, IFD545, GREY BEZEL
700-00182-131 700-00182-831	INTEGRATED FLIGHT DISPLAY, IFD545, GREY BEZEL, WITH VIDEO
700-00182-020 700-00182-720	INTEGRATED FLIGHT DISPLAY, IFD550, BLACK BEZEL
700-00182-021 700-00182-721	INTEGRATED FLIGHT DISPLAY, IFD550, BLACK BEZEL, WITH VIDEO
700-00182-120 700-00182-820	INTEGRATED FLIGHT DISPLAY, IFD545, GREY BEZEL
700-00182-121 700-00182-821	INTEGRATED FLIGHT DISPLAY, IFD550, GREY BEZEL, WITH VIDEO

1.2 Definitions and Abbreviations

AML - Approved Model List

ARS - Attitude Reference Sensor

ICA - Instructions for Continued Airworthiness

IFD - Integrated Flight Display

STC - Supplemental Type Certificate

AMM - Aircraft Maintenance Manual

1.3 Precautions

This section is not applicable.

1.4 Units of Measure

This section is not applicable.

1.5 Referenced Publications

Document Number	Title
600-00299-000	IFD5XX/IFD4XX Installation Manual
600-00300-001	IFD5XX Series Pilot's Guide
600-00304-000	IFD4XX Series Pilot's Guide
89000039-010	Bendix King AeroNav 900 and 910 Pilot's Guide
89000041-008	Bendix King AeroNav 800 Pilot's Guide
600-00317-000	IFD550 and IFD545 Pilot's Guide
600-00318-000	IFD510 Pilot's Guide
600-00319-000	IFD410 Pilot's Guide

1.6 Distribution

This Instruction for Continued Airworthiness is to be furnished with new production IFD systems and is to become part of the permanent aircraft records upon installation.

A current revision of this ICA shall be available on the Avidyne website at www.avidyne.com (Technical Publications in the Products section).

In the event of a service bulletin or other circumstances that require an update, Avidyne will notify the contact as listed on the owner registration.

2. Description

The IFD system is a panel mounted integrated system that provides navigation, communication, and multifunction display capability in one display. The IFD5XX/IFD4XX can display information from a wide variety of aircraft sensors. The IFD's are available in the following variations:

IFD540 - AeroNav 900	Baseline 5.7" Display unit with GPS/NAV/COM
IFD550 - AeroNav 910	Same as IFD540 but with integral attitude reference sensor ARS, add'l page button (SVS)
IFD545 -	Same as IFD540 but with integral attitude reference sensor ARS, add'l page button (SVS) without NAV/COM functions, GPS only, left knob removed
IFD510 -	Same as IFD540 but without NAV/COM functions, GPS only, left knob removed
IFD440 - AeroNav 800	Baseline 4.8" Display unit with GPS/NAV/COM
IFD410 -	Same as IFD440 but without NAV/COM functions, GPS only, left knob removed

The IFD410 and IFD440 can be a plug-and-play replacement for the Garmin GNS4XX series of NAV/COM/GPS units.

The IFD510, IFD545, IFD540 and IFD550 can be a plug-and-play replacement for the Garmin GNS5XX series of NAV/COM/GPS units.

When replacing a Garmin unit, follow the existing approved ICA, STC manual, or OEM instructions.

2.1 Equipment Locations

The installer should indicate on the outlines below the locations for the following items at the time of installation: IFD5XX/IFD4XX unit, wire harness location and routing, coaxial cables, and antennas. Use Figure 1 for single engine airplanes or Figure 2 for multi engine airplanes.

Garmin 430 Unit Removed and IFD4xx Replaced 430 kept existing Rack + Harness

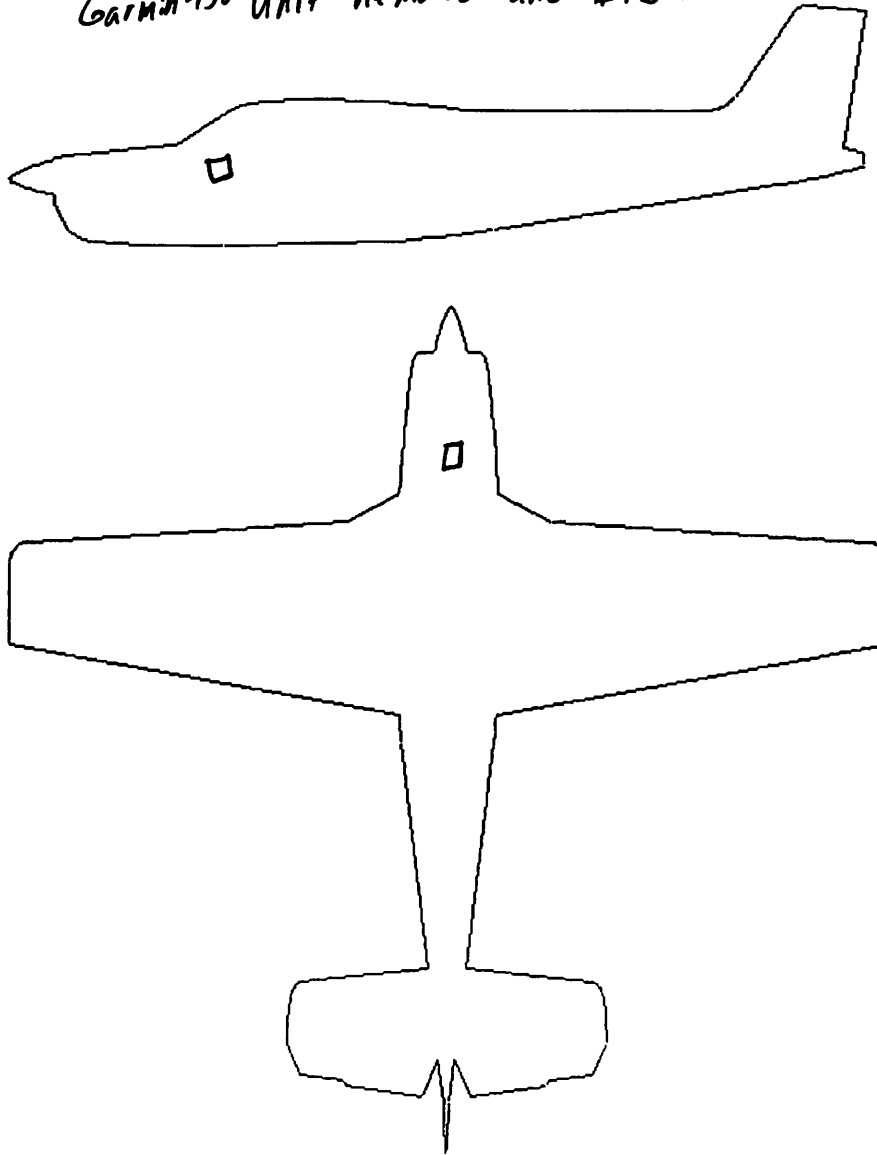


Figure 1: IFD5XX/IFD4XX Location - Single Engine

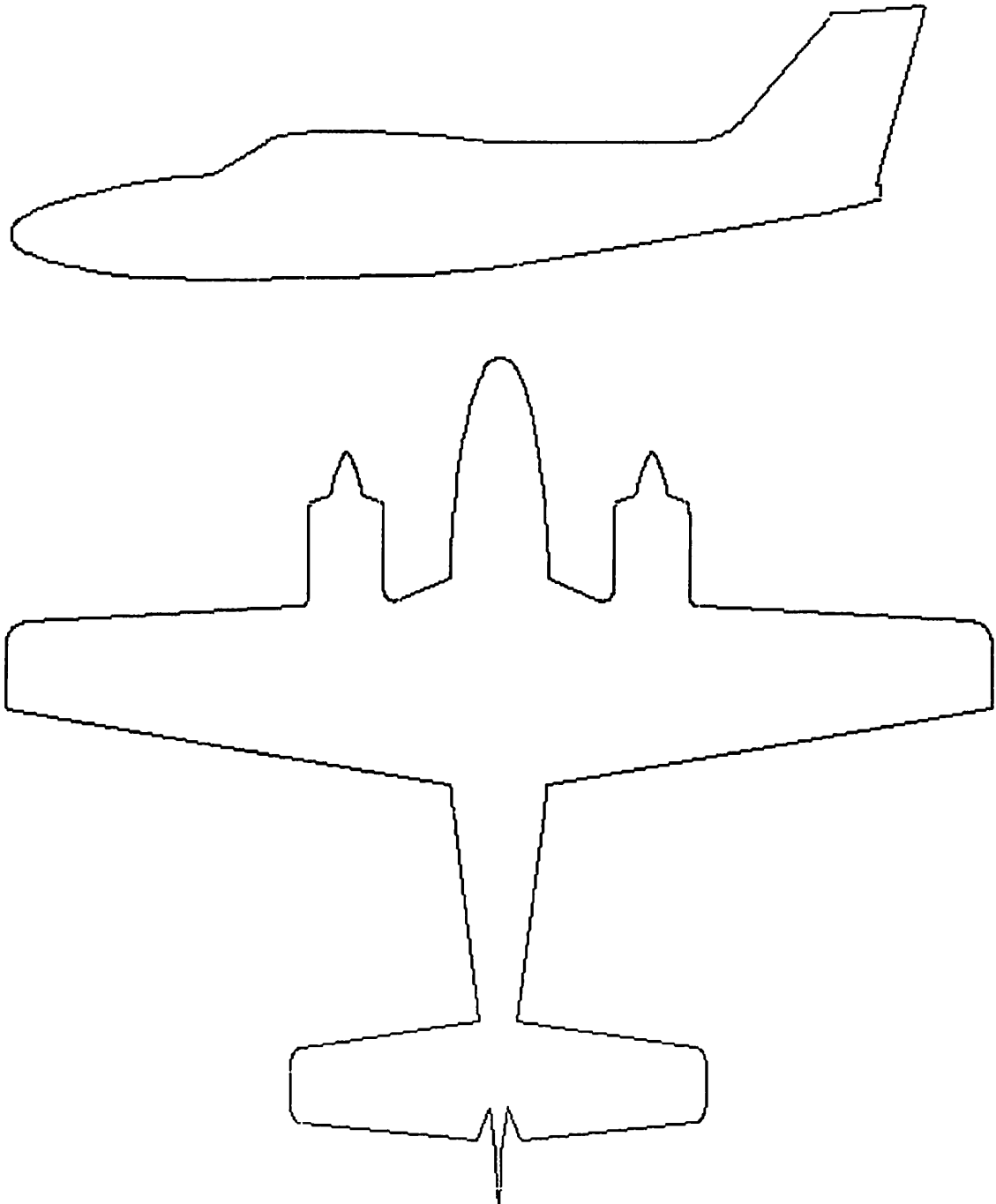


Figure 2: IFD5XX/IFD4XX Location – Multi Engine

3. Control and Operation Information

The IFD5XX/IFD4XX System can be controlled using the button and knobs on the bezel of the unit. Alternately, some functions can be controlled using the touch-screen on the unit's display.



Figure 3: IFD540/510 Unit

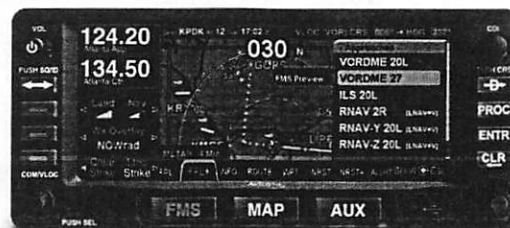


Figure 4: IFD4XX Unit



Figure 5: IFD545/550 Unit

3.1 Page Function Keys

The 3 buttons along the bottom of the IFD bezel are called Page Function Keys. Each key is labeled by function:

- **FMS (Flight Management System)**
- **Map (Moving Map)**
- **AUX (Auxiliary Pages)**

Each page has a number of associated tabs. Each Page Function key has a left and right rocker nature to it. Select the page of interest by pressing the middle of the Page Function Key and navigate through the available tabs by pressing the left or right.

3.2 Line Select Keys

Line Select Keys, typically abbreviated to LSK, are the buttons found along the left side of the bezel. A label, just inside the bezel – adjacent to the physical LSK, indicates the function of the LSK. Pressing the LSK or the label either performs the labeled action or changes the state. For the cases where there is a list of selectable options, browse the list by repeatedly pressing the LSK or label.

4. Servicing Information

The 700-00182-XXX and 700-00179-XXX IFD can only be serviced by qualified and properly rated facility.

5. Maintenance Instructions

Other than the scheduled and periodic inspection tasks discussed below, maintenance of the Avidyne IFD5XX/IFD4XX is based on condition and function only; no other periodic maintenance is required.

5.1 Scheduled Maintenance

The following tasks may be required on the IFD5XX/IFD4XX:

- a. If the IFD5XX/IFD4XX is providing GPS position to the ELT, every 12 months verify the Emergency Locator Transmitter (ELT) is operating correctly per the ELT maintenance instructions.

5.2 Recommended periodic scheduled servicing tasks

There are no life limited components in the IFD5XX/4XX that require scheduled inspection or service. Perform the following inspections during annual/100 hour maintenance interval to establish airworthy condition and function.

1. During any maintenance activities involving the IFD System perform (i.e. IFD removal, cable repair...) a post-installation check as described in Installation Manual, Integrated Flight Display Installation Manual 600-00299-000.
2. Visually inspect (no magnification required) wire/bundle, coaxial cables, overbraid (if installed), and routing for evidence of damage, chafing, grounding, security, bonding, integrity of shields, and connector backshell condition.
3. Visually inspect (no magnification required) the mechanical installation for any defects or damage to the aircraft structure or to the IFD5XX/IFD4XX.
4. Visually inspect (no magnification required) the GPS, COM, NAV, and Glideslope antennas. Verify bonding of the antennas is no greater than 2.5 milliohm.
5. Verify that the bonding between the aircraft and each unit of the IFD system should have a resistance no greater than 2.5 milliohm as described in the Integrated Flight Display Installation Manual 600-00299-000.
6. Verify that all mandatory Service Alerts and/or Service Bulletins for the IFD System have been accomplished. (This can be done using the internet at www.avidyne.com).

5.3 Software Upgrade

The following procedures should be followed when performing optional or mandatory software change to the IFD System:

1. Acquire the software image and associated loading procedure from the manufacturer.
2. Verify the software part number configuration before and after maintenance is performed on the airborne equipment using the loading procedure instructions.
3. It is the responsibility of maintenance personnel to ensure the identified part is recorded in the necessary maintenance logs.
4. It is the maintenance personnel's responsibility to ensure that the software part identification has been logged. When new software is loaded into the unit, the correct software part number should be verified according to the instructions accompanying the software change before the unit is returned to service. Hardware versions are identified on the data label by brackets following the main part number.
5. Changes to software part number, version, and/or operational characteristics should be reflected in the Operator's Manual, Aircraft Flight Manual, Aircraft Flight Manual Supplement, and/or any other appropriate document.

6. Troubleshooting Information

Refer to the manufacturers' installation and user's manuals to assist in troubleshooting. The following items present common installation problems and recommended actions for the Avidyne IFD5XX/IFD4XX System.

Component	Trouble	Probable Cause	Solution
GPS	The IFD5XX/IFD4XX is not computing a position	Aircraft is not positioned in a location to receive GPS satellites	Move aircraft to a better location
		GPS Antenna System	Check Antenna coaxial cables for proper assembly
			Check or replace the GPS antenna
	The GPS Signal Levels drop when avionics are turned on.	Noise interference from other avionics	Turn off all avionics off, then turn on each piece one at time to isolate the interference to the
	The GPS signal levels are very low.	Antenna	Verify the GPS antenna is connected to the correct antenna
			Repair or Replace antenna
		Antenna shaded from satellites	Move aircraft to a better location
		Interference from avionics	Re-route GPS antenna system away from sources of interference.
VHF Communication	VHF Communication transceiver is not transmitting	The PTT input is not being grounded	Check PTT input to the IFD5XX/IFD4XX
	VHF Communication transceiver power is low	VSWR too high	Check VSWR is less than 3:1
		Coaxial Cable	Repair or replace coaxial cable
		Antenna	Repair or Replace VHF Com antenna
Navigation Receiver	VHF Navigation Receiver not receiving VOR/LOC station	VHF Navigation station not tuned correctly.	Tune the IFD5XX/IFD4XX to the correct station
		Antenna	Repair or Replace Antenna
		Diplexer	Repair or Replace Diplexer
		Coaxial Cables	Repair or Replace Cable
Attitude Reference System (ARS) (IFD545/550)	The pitch ladder and horizon are replaced with Red X	ARS Failure	Replace IFD
RMI pointer	RMI not displaying indicating	Wiring	Check wiring

Component	Trouble	Probable Cause	Solution
	correctly	Desired RMI not selected	Select the IFD5XX/IFD4XX on the RMI
		VHF Navigation station not tuned correctly.	Tune the IFD5XX/IFD4XX to the correct station
DME	IFD5XX/IFD4XX is not tuning the DME correctly	IFD5XX/IFD4XX configuration	Verify the IFD5XX/IFD4XX is configured for the correct DME
		Wiring	Check wiring
		VHF Navigation station not tuned correctly	Tune the IFD5XX/IFD4XX to the correct station
ARINC device	ARINC 429 is not receiving / transmitting data from the IFD5XX/IFD4XX	Wiring	Make sure wire harness is connected. Check the wire harness and repair or replace if needed.
		IFD5XX/IFD4XX configuration	Verify the IFD5XX/IFD4XX is configured for the ARINC device Verify the ARINC 429 device speed is set correctly on the IFD5XX/IFD4XX
RS-232 device	ARINC 429 is not receiving / transmitting data from the IFD5XX/IFD4XX	Wiring	Make sure wire harness is connected. Check the wire harness and repair or replace if needed.
		IFD5XX/IFD4XX configuration	Verify the IFD5XX/IFD4XX is configured for the RS-232 device Verify the RS-232 device speed is set correctly on the IFD5XX/IFD4XX
Battery Replacement	Battery Annunciation on IFD540/440	The IFD540/440 internal battery has failed	Contact Avidyne for Repair

7. Removal and Replacement Information

Removal and replacement instructions, including system set-up and installation verification, are contained in the Integrated Flight Display Installation Manual. Unit removal, installation, setup and checkout should be performed by an Avidyne Authorized Service Center.

Caution: Prior to removing any piece of electronic equipment, aircraft power must be removed from the system.

7.1 IFD5XX/IFD4XX Removal

1. Insert a 3/32" hex wrench into the hole on the front panel on the IFD5XX/IFD4XX and engage locking screw.
2. Turn the locking screw counter-clockwise to loosen locking cam. Cam will move the unit out 1/4" and disengage the electrical connectors.
3. Remove unit from tray.

7.2 IFD5XX/IFD4XX Installation

1. Slide the IFD5XX/IFD4XX unit into the tray.
2. Insert a 3/32" hex wrench into the hole on the front panel on the IFD5XX/IFD4XX and engage locking screw.
3. Turn the locking screw clockwise to tighten the locking cam until the unit is flush to the tray.
4. Perform post-installation verification per Section 7.7.

7.3 GPS Antenna Removal

1. Remove sealant from around the base of the antenna.
2. Disconnect coaxial cable
3. Remove fasteners from antenna
4. Lift antenna clear of fuselage

7.4 GPS Antenna Installation

1. Position antenna on aircraft
2. Attach antenna to fuselage with fasteners
3. Verify the GPS antenna is bonded to the airframe. With the coaxial cable disconnected, the bond between the antenna base plate and the aircraft metallic skin must measure ≤ 2.5 milliohm
4. Seal any minor gaps between the antenna base plate or gasket and the aircraft skin with RTV silicone adhesive sealant
5. Connect GPS coaxial cable
6. Perform post-installation verification per Section 7.7.

14. Revision

Revisions to this document shall be coordinated through the Boston Aircraft Certification Office, the Kansas City AEG, and the STC holder. If you would like to be notified of future revisions to this manual please furnish the information listed below:

Name

Address

City, State, and ZIP Code

Part Number of Manual

Current Revision Status of the Manual

E-mail address

Phone Number

Please submit this information to:

Avidyne Corporation

4 Middlesex Green, Suite 221

561 Virginia Road

Concord MA 01742

15. Assistance

For questions or assistance regarding this ICA, contact Avidyne Corporation.

16. Implementation and Record Keeping

This ICA must be incorporated into applicable section for aircraft inspections, 91.409 for annual/100 hour inspections or 135.419 for FAA approved alternate inspections.

Avidyne Corporation
4 Middlesex Green - Suite 221
561 Virginia Road
Concord MA 01742

FAA Approved
Airplane Flight Manual Supplement

For

Cirrus SR20
Make and Model Airplane

with

Avidyne Integrated Flight Displays p/n 700-00182-XXX and 700-00179-XXX

Registration No. N100BW

Serial No. 1538

This supplement must be attached to the applicable FAA Approved Airplane Flight Manual when Avidyne 700-00182-XXX Integrated Flight Display (IFD) and/or 700-00179-XXX Integrated Flight Display installed in accordance with STC SA00343BO. The information contained herein supplements or supersedes the basic manual only in those areas listed. For limitations and procedures not contained in this supplement consult the basic Airplane Flight Manual.

FAA Approved

WILLIAM P
WITZIG

Digitally signed by WILLIAM P
WITZIG
Date: 2021.02.17 09:04:23
+0500

William Witzig
Manager, Northeast Flight Test Section
Federal Aviation Administration Burlington, MA

Page 1 of 26
P/N 600-00298-000
Rev. 00

FAA Approved: February 17, 2021

LOG OF REVISIONS

Revision Number	Revised Pages	Description of Revisions	FAA Approval	Date
00	ALL	Initial Release	Robert Mann	Jul 24 2014
01	Pages 1,2, 3, 4, 5, 6, 7, 8, 9, 11, 15, 16, 17, 18, 21	Add IFD440 and Software Release 10.1.0.0	-	-
02	Pages 13, 14, 19	AEG comments	Robert Mann	Jun 18 2015
03	Pages 2, 3, 4, 7, 8, 9, 10, 11, 12, 13, 18, 19, 20, 21, 24	Add models IFD410, IFD510, IFD545, IFD550 and software version 10.2	-	-
04	Pages 4 - 24	Added 91.227 compliance statement	-	-
05	Pages 11, 13, 22	Added limitation regarding use of radar display, added EmProc for disabling wireless connectivity.ACO comments incorporated	Anthony Pigott	Mar 06 2017
06	Pages 13	Added note regarding IFD4XX FLTA aural alert conflicts with other sensors	Anthony Pigott	Mar 20 2017
07	Pages 4, 5, 8, 26	Added TDR ADS-B out compliance statement, BK pilot guide references, ADS-B in only limitations	W. Witzig	May 03 2019
08	Pages 4, 8, 26	Add ADS-B out configurations. Revise normal operations description	W. Witzig	Oct 01 2019
09	Page 4	Add additional Transponders to ADS-B Out Compliance	W. Witzig	Feb 17 2021

A vertical black line in the margin shows revised portions of affected pages.

Section 1 – General

This airplane is equipped with an Avidyne p/n 700-00182-XXX IFD5XX Integrated Flight Display (IFD) and /or Avidyne p/n 700-00179-XXX IFD4XX Integrated Flight Display. Both part numbers may be referred to in this document as simply IFD.

The IFD contains a GPS (SBAS) receiver (all IFD models), VHF Nav/Com transceiver (IFD440, IFD540 and IFD550) and processing to accomplish control, display, navigation and input/output to other avionic systems. The IFD 545 and IFD550 include an internal ARS and are capable of displaying attitude information and ego-centric synthetic vision (SVS).

GPS/SBAS TSO-C146c Class 3 Operation

The IFD4XX and IFD5XX has airworthiness approval for navigation using GPS and SBAS (Satellite Based Augmentation System complying with ICAO Annex 10) for IFR en route, terminal area, and non-precision approach operations (“GPS”, “or GPS”, and “RNAV (GPS)” approaches). The IFD4XX and IFD5XX are approved for approach procedures with vertical guidance including “LPV” and “LNAV/VNAV” and approaches without vertical guidance including “LP” and “LNAV”.

The IFD4XX and IFD5XX comply with the requirements for GPS Class II oceanic and remote navigation (RNP-10) and (RNP-4) without time limitations. A second navigation source may be required for these operations to meet availability requirements.

Database Accuracy and Completeness

The operator is responsible to ensure that the navigation data used in the unit has the accuracy, resolution, and timeliness appropriate for the purpose of the flight operation being conducted. Using navigation data from an Avidyne authorized supplier will ensure that the navigation data has the same accuracy and resolution provided by official sources, in a format compatible with the intended function of the unit.

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Avidyne requests that any observed database discrepancies are reported. These discrepancies may be in the form of an incorrect procedure, incorrectly identified terrain, obstacles, navigation fixes, or any other displayed item used for navigation or communication in the air or on the ground. Use the Service Hotline listed on the back cover of the IFD4XX and IFD5XX Pilot Guides.

Avidyne accurately processes and validates the database data, but cannot guarantee the accuracy and completeness of the data provided by various state sources and their suppliers.

Avidyne Corporation holds a FAA Type 2 Letter of Acceptance (LOA) in accordance with AC 20-153 for database integrity, quality, and database management practices for the navigation database. Flight crew and operators can view the LOA at www.avidyne.com.

ADS-B OUT Compliance

The IFD4XX and/or IFD5XX installed per this STC in conjunction with the following transponders/ UAT transceivers have been shown to meet the equipment requirements of 14 CFR 91.227 for ADS-B OUT:

ACSS NXT-700
Avidyne AXP340, AXP322
Becker BXT6553
Bendix King KT74
Bendix King MST 70B
Collins TDR94(D)
Garmin GTX330ES
Garmin GTX335/345
Garmin GTX3000
Trig TT31, TT22
Bendix King KXP80

IFD4XX and IFD5XX have been approved for ADS-B Out compliance with other transponders under separate installation approvals (STCs). Check the aircraft's transponder or UAT transceiver AFMS for the statement above indicating ADS-B out compliance for the navigator and transmitter combination.

ADS-B In Only

The IFD4XX and/or IFD5XX installed per this STC may be interfaced with an ADS-B UAT or 1090MHz receiver (ADS-B In) that does not provide ADS-B out capability. If no ADS-B out system

is installed, this installation will not be able to receive TIS-B client status, and will not receive ADS-R or TIS-B broadcasts from ATC unless the aircraft is in the same area as a valid TIS-B client broadcasting that it has ADS-B In capability.

Figure 1. Avidyne IFD540 700-00182-XXX Integrated Flight Display (IFD).

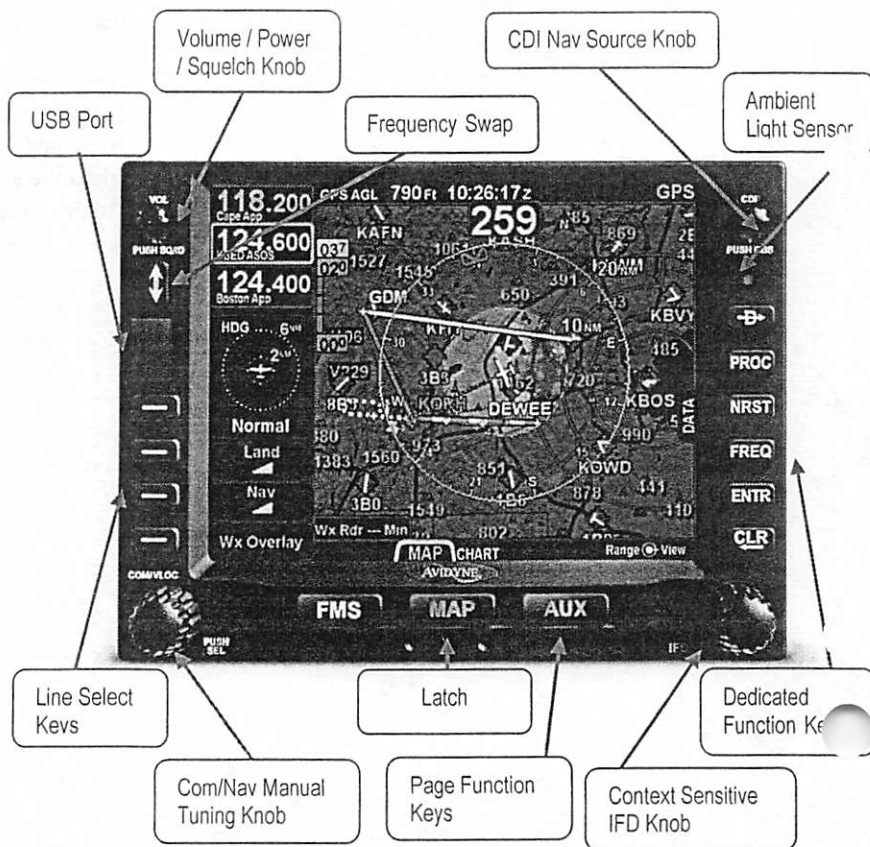
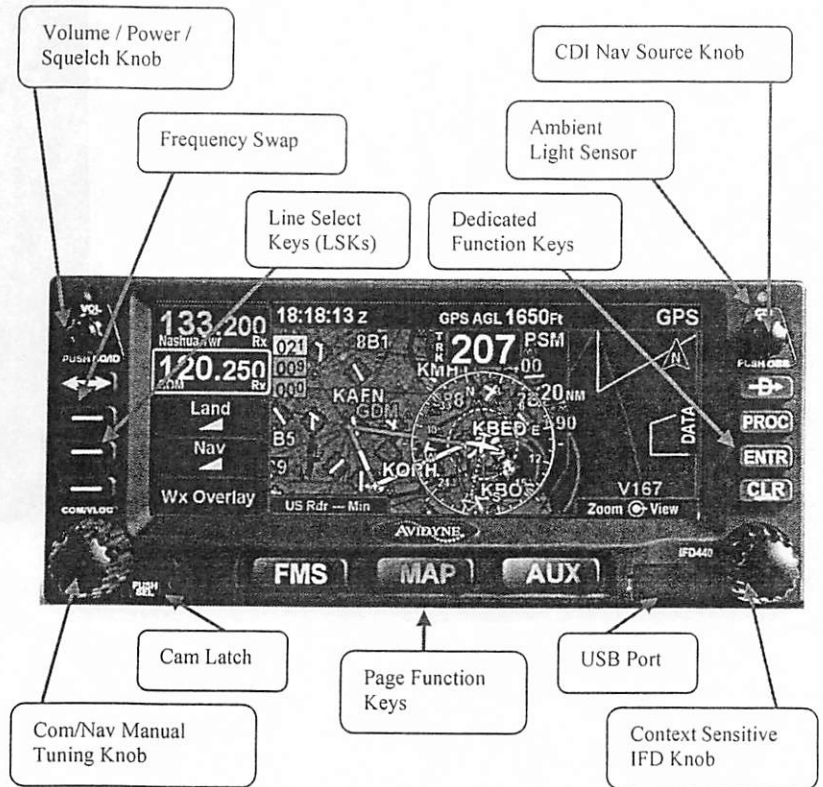


Figure 2. Avidyne IFD440 700-00179-XXX Integrated Flight Display (IFD).



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Figure 3. Avidyne IFD550 700-00182-XXX Integrated Flight Display Ego-centric SVS.



Section 2 – Limitations

1. The appropriate IFD4XX and IFD5XX Integrated Flight Display Pilot Guides must be available to the pilot during all flight operations:
 - P/N 600-00300-001 for the IFD5XX Series
 - P/N 600-00304-000 for the IFD4XX Series
 - P/N 89000039-010 Bendix King AeroNav 900 and 910
 - P/N 89000041-008 Bendix King AeroNav 800

2. For Class I airplanes (single engine, piston, under 6,000# GTOW), a single IFD5XX or IFD4XX is sufficient for flight under instrument flight rules (IFR). IFR is prohibited when the GPS or VHF navigation receiver is inoperable unless the airplane has an additional approved GPS and/or VHF receiver.

For all other Airplanes (Class II, III and IV), dual VHF communications transceivers and dual GPS or VHF Navigation receivers are required for flight under instrument flight rules (IFR). One communication transceiver, or one GPS receiver, or one VHF navigation receiver may be inoperable for IFR flight.

In all airplanes, an approved navigation display (external CDI, HSI, or EHSI) is required for flight under instrument flight rules (IFR).

3. The IFD4XX and/or IFD5XX installed with an SBAS approved antenna, provides pilot and automatic flight control guidance for the following operations conducted under instrument flight rules (IFR):
 - VOR, LOC, ILS instrument approach procedures (procedures using VHF radio guidance) – IFD440, IFD540, IFD550 only
 - RNP instrument approach procedures using the following lines of minima:
 - LNAV minima (including when using advisory vertical guidance from the system);
 - LNAV/VNAV minima;

- LPV minima; and
- LP minima.

Note: The U.S. titles RNP instrument approach procedures "RNAV (GPS) Rwy XX". Other States may use similar titling or may title these procedures "RNAV (GNSS) Rwy XX".

- RNP terminal procedures, including RNP arrival procedures and RNP departure procedures.
- RNAV terminal procedures, including RNAV arrival procedures and RNAV departure procedures.

The IFD4XX and/or IFD5XX when installed with a non-SBAS antenna, provide pilot and automatic flight control guidance for the following operations conducted under instrument flight rules (IFR):

- VOR, LOC, ILS procedures (procedures using VHF radio guidance) – IFD440, IFD540, IFD550 only;
 - RNP instrument approach procedures using the following lines of minima:
 - LNAV minima.
 - RNP terminal procedures, including RNP arrival procedures and RNP departure procedures.
 - RNAV terminal procedures, including RNAV arrival procedures and RNAV departure procedures.
4. When GPS is available, the IFD440 and/or IFD540/550, may serve as an RNAV alternate or substitute means of navigation for ground-based navigation aids that are out-of-service or unavailable.
 5. GPS/SBAS based IFR enroute, oceanic, and terminal navigation is prohibited unless current Navigation and Procedure databases are installed.
 6. Use of RNP terminal operations and RNP instrument approach procedures containing RF leg segments (identified on the approach plate) is prohibited.
 7. In areas where SBAS coverage is not available, the pilot must check RAIM availability.

8. The Avidyne moving map display provides visual depiction of the aircraft's own-ship, GPS position on a moving map for situational awareness (SA) purposes only. The pilot shall not use the moving map display as a sole means of navigation. The external CDI, HSI, or EHSI display must be used as the primary navigation instrument.
9. The Avidyne electronic checklists display supplements the Pilot Operating Handbook checklists and are advisory only. The pilot shall not use the electronic checklists as the primary set of on-board aircraft checklists. FAA Approved Flight Manual paper checklist must be available to the pilot as the primary reference.
10. The IFD integrates with separately approved system installations such navigation indicators, remote annunciators. Adherence to limitations in installation AFM supplements for those systems is mandatory.
11. The use of datalink, traffic and lightning sensor information displayed on the IFD4XX and IFD5XX must be in compliance with the approved AFM supplements for those systems.
12. Gloves may not be used to operate the IFD4XX and IFD5XX touch functions unless the Glove Qualification Procedure located in the IFD4XX/IFD5XX Pilot's Guides has been successfully completed.
13. The IFD545 and IFD550 may not be used for primary attitude information or standby attitude information (If required by type design). The IFD545 and/or IFD550 may only be used as a secondary (non-required) source for attitude information.

NOTE

The IFD545 and/or IFD550 may be used in conjunction with air data and turn rate indicators in determining if a primary or standby attitude source has failed e.g. in the case of primary/standby attitude indicator mis-compare.

14. The IFD545 and/or IFD550 may not be used for primary navigation deviation information (horizontal or vertical). The IFD545 and/or IFD550 may only be used as a secondary (non-required) source for this information.
15. The Avidyne IFD4XX and IFD5XX may only be operated in IMC conditions as a radar display when used in conjunction with an independent lightning detection and display system (Approved Thunderstorm Detection Equipment).

CAUTION

Terrain information shown on the MAP page display is provided to the pilot as an aid to situational awareness. The MAP page terrain color representations should not be used as a sole basis for terrain avoidance.

CAUTION

Traffic information shown on the Map page display is provided to the pilot as an aid to visually acquiring traffic. Pilots should maneuver their aircraft based only on ATC guidance or positive visual acquisition of the conflicting traffic. Avoidance maneuvers should not be made based only on a Traffic Advisory.

CAUTION

In IFD545 and IFD550 units the inertial reference accelerometers may be irreparably damaged by exposure to temperatures below -40°C. The units are capable of operating at -40°C, but exposure to temperatures below this, even when powered off, can stress the parts internally causing a detectable and annunciated failure of the sensors.

Section 3 – Emergency Procedures

Loss of GPS

In the event of the loss of the IFD440 or IFD540 GPS receiver, the FMS will enter dead reckoning mode for 5 minutes, after that all FMS functions are lost and the ownship is removed from map depictions. The pilot should revert to remaining navigation receiver (required for IFR operations).

Loss of VHF Nav/Com

In the event of the loss of IFD440, IFD540 or IFD550 VHF navigation, the pilot should revert to remaining navigation receiver (required for IFR operations).

Warning Messages

Caution and warning messages provided by the IFD4XX and IFD5XX are related to functions performed by the IFD4XX and IFD5XX and are additional to the caution and warning annunciation system provided by the aircraft.

NOTE

The original caution and warning annunciator panel remains as the primary indication. POH/AFM Emergency procedures are not affected by this installation.

CAUTION

IFD4XX units lack an audio inhibit output to preclude other sensors aural alerts from sounding while IFD4XX forward looking terrain awareness (FLTA) aural alerts are issued. Simultaneous alerts are possible. Example; a TIS-B aural traffic alert could be issued at the same time as an FLTA terrain or obstacle aural caution or warning.

To Disable WiFi/Bluetooth Connectivity on IFD4XX/IFD5XX:

1. Press and hold the IFD4xx/IFD5XX power button/knob for 1 second (upper left bezel) -----
2. ALLOW/IGNORE WiFi Bluetooth dropdown is presented. Press IGNORE----- Dropdown is removed
3. Verify the WiFi and Bluetooth icons on the upper right of the display are removed----- Extinguish

Caution Messages

The Caution and Warning panel is not altered as part of this modification and remains the primary means of providing Caution and Warning messages.

Caution and Warning messages are provided in the following table:

EXCEEDANCES | WARNINGS RED

Short Text	Long Text	Comments
Terrain Pull-Up*	Terrain Pull-Up	The FLTA algorithm has detected an imminent ground collision - Initiate an immediate recovery maneuver.
Warning Obstacle*	Warning Obstacle	The FLTA algorithm has detected an imminent obstacle collision. Initiate an immediate recovery maneuver.
Unit Overtemp – Unit Unreliable	Unit Overtemp: <internal component name> Unit reliability in question – Get IFD serviced	One or more of the internal components has exceeded its maximum design temperature and reliability cannot be ensured until the unit is tested by the Avidyne Service Center. Contact the Avidyne Service Center or a local dealer for service. This message will be present on every subsequent power cycle until reset by the Avidyne Service Center.
Low Volts – off in <countdown from 60> sec	Low Volts – IFD powers down in <countdown from 60> sec	Main supply voltage has fallen below 9 VDC. Contact a local dealer for service.
Pull Up	Excessive Descent Rate	The TAWS Excessive Descent Rate algorithm has detected a CFIT potential – initiate an immediate recovery maneuver.

EXCEEDANCES | CAUTIONS

Short Text	Long Text	Comments
Caution Terrain*	Caution Terrain	The FLTA algorithm is predicting a likely ground collision within approximately 60 seconds – initiate a proper recovery maneuver.
Caution Obstacle*	Caution Obstacle	The FLTA algorithm is predicting a likely obstacle collision with approximately 60 seconds – initiate a proper recovery maneuver.
GPS Integrity Lost	GPS Integrity Lost – Crosscheck Nav	This is alerting about imminent exceedence of horizontal fault detection limits or protection levels. Crosscheck the nav solution and determine the best course of action. If on a GPS based approach, Missed Approach is required.
GPS Fault Dead Reckoning	Position updated via dead reckoning	The system will use the last known position and groundspeed (and heading if available) to estimate the aircraft position following loss of GPS for up to 5 minutes. Since Dead Reckoning assumes no directional or groundspeed change, it will not be reliable even during those first 5 minutes if either or both of these factors have changed. Execute a missed approach if this occurs while performing a GPS based approach. Use an alternate GPS or VHF navigation receiver.

Short Text	Long Text	Comments
GPS Fault No Position	No position available	The navigation solution cannot compute a position, typically after dead reckoning has expired. Execute a missed approach if this occurs while performing a GPS based approach. Use an alternate GPS or VHF navigation receiver.
Configuration Error	Configuration Error – IFD Requires Service	The configuration of the IFD or the devices to which it is communicating with has changed or experienced an error. Contact the Avidyne Service Center or a local dealer for service.
LPV Unavailable Use L/NAVA DA	GPS integrity is insufficient for LPV Approach	Transition to a non-LPV approach and the appropriate minima if possible. Otherwise execute a missed approach.
LPV Unavailable Use LNAV MDA	GPS integrity is insufficient for LPV Approach	Transition to a non-LPV approach and the appropriate minima if possible. Otherwise execute a missed approach.
LP Unavailable Use LNAV MDA	GPS integrity is insufficient for LP Approach	Transition to a non-LP approach and the appropriate minima.
L/NAVA Unavail. Use LNAV MDA	GPS integrity is insufficient for L/NAVA Approach	Transition to a non-L/NAVA approach and the appropriate minima.
VNAVA Lost Use LNAV MDA	Excessive XTK or Low GPS Integrity for Vertical Guidance	Transition to LNAV minima.

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Short Text	Long Text	Comments
Check Altitude Too Low	Aircraft is below the glide slope altitude at FAF	Correct aircraft altitude as required to safely conduct the approach or initiate a climb to a published safe altitude and abort the approach.
Traffic Sensor Fault*	No communication with traffic sensor (local) OR Traffic sensor has failed (global)	Contact a local dealer for service.
Traffic <Low High> <Bearing in clock direction> <Distance in NM>*	Traffic [Brg (e.g. 1:00)] [dist (e.g. 2 NM)] [alt (e.g. 200 ft)]	Traffic advisories - Alert to be used to facilitate visual acquisition of traffic. Pilots should maneuver their aircraft based only on ATC guidance or positive visual acquisition of the conflicting traffic.
Traffic <Low High> <Distance in NM>*	Traffic <Distance in NM> <Signed relative altitude in feet> FT	Traffic advisories with no bearing information – Alert to be used to facilitate visual acquisition of traffic. Pilots should maneuver their aircraft based only on ATC guidance or positive visual acquisition of the conflicting traffic.

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Short Text	Long Text	Comments
Traffic <Bearing in clock direction> <distance in NM>*	Traffic <bearing in clock direction> <distance in NM>	Traffic advisories with no relative altitude information – Alert to be used to facilitate visual acquisition of traffic. Pilots should maneuver their aircraft based only on ATC guidance or positive visual acquisition of the conflicting traffic.
Traffic <distance in NM>*	Traffic <distance in NM>	Traffic advisories with no relative altitude information and no bearing – Alert to be used to facilitate visual acquisition of traffic. Pilots should maneuver their aircraft based only on ATC guidance or positive visual acquisition of the conflicting traffic.
COM TX Fault	Transmitter Fault, No TX Ability	Transition to a backup VHF com radio (if available) or initiate lost communication procedures. Contact the Avidyne Service Center or a dealer for service.
COM Stuck TX	Stuck Mic Timeout, Transmitter Disabled	Requires 35 seconds of continuous transmission. Verify the PTT is stuck and contact a dealer for service as required.

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Short Text	Long Text	Comments
No Comm with VHF	No communication with the VHF radio	Transition to a backup VHF com radio (if available) or initiate lost communication procedures. Contact the Avidyne Service Center or a dealer for service.
Unit Overtemp – Check cooling	Unit Overtemp: <internal component identification>	One or more of the internal components has exceeded 80°C. Contact the Avidyne Service Center or a dealer for service – consider adding a source of cooling and/or improving air flow in/around the IFD.
Low Volts	Backlight reduced to 25%	Main supply voltage has fallen to approximately 11VDC. Check the aircraft alternators are on and functional. Consider load shedding the power bus that is powering the IFD.
Manual Sequence Req'd	Altitude invalid – leg will not auto sequence	In basic E-M aircraft where the IFD does not have altitude input, this message will appear when the FMS active leg is a Heading→Altitude leg. In this case, the FMS flight plan will need to be manually sequenced to the next leg. Failure to do so will keep the FMS flying the heading indefinitely.
Heading Lost	Using ground track for SVS	Indicates loss of the TVV and the aircraft reference symbol ("wedge") now points at ground track, not aircraft heading. "TRK" will also be displayed below the digital compass on the SVS page.

Short Text	Long Text	Comments
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No ADS-B Position	AXP322 Lost GPS Position Data	ADS-B position data had previously been valid and then transitions to invalid. Check the ADS-B position source device.
Xpndr Fault	AXP322 Transponder Fault	Any fault other than loss of ADS-B GPS position. Contact the Avidyne Service Center if this persists across power cycles.
No Comm With Xpdr	No Communication with Remote Transponder	No data has been received from the remote transponder for greater than 2 seconds. Contact the Avidyne Service Center if this persists across power cycles.
Radar: Echos Ahead	Radar: Heavy Echos Ahead	Generated when a number of red and/or magenta echos are present within the area $\pm 22^\circ$ off the nose of the aircraft at the current displayed radar range.
Radar: Target Alert	Radar: Target Alert Detected	Alerts the pilot to the presence of a significant weather cell that exists beyond the currently selected display range.
Radar Sensor Fault	No Communication with Radar Sensor, or; Radar Data is Invalid, or; Sensor mode is [selected] Selected mode is [reported], or; Radar fault code: any active fault codes.	No data is received from the sensor for at least 2 seconds, or; The data stream from the radar contains information that the data stream should not be used, or; If the requested mode and the reported mode do not match, or; Any specific fault code is active from the sensor.
Short Text	Long Text	Comments
TIS Removed	TIS Traffic Removed	TIS traffic communications have ceased for >12 seconds

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TIS Unavailable	TIS Traffic Unavailable	No TIS ground station is available or communications have ceased for >60 seconds
Too Low, Terrain	Premature Descent, below glide path	TAWS PDA algorithm has determined the aircraft is below glide path.
Sink Rate	Excessive Descent Rate	TAWS EDR algorithm has determined a potential CFIT scenario is developing – recover the aircraft
Don't Sink	Negative climb rate or altitude loss	TAWS NCR algorithm has determined corrective action should be taken immediately.
TAWS Fail	Invalid GPS Position/Velocity	The GPS solution is lost or the GPS velocity quality parameters drop below required accuracy limits. A "bing-bong" chime is played if this condition occurs. Contact the Avidyne Service Center if this persists across power cycles.
TAWS System Failure	TAWS Failed Self-Test [reason why]	TAWS failed self-test for the reason provided and TAWS will be degraded or not available for the power cycle. Contact the Avidyne Service Center if this persists across power cycles.

The pilot should utilize available instruments/data displays to verify message(s) and take appropriate action(s) (ref POH/AFM) by selection of alternate systems or settings. Invalid messages generally indicate a failed sensor and that other messages associated with that system will be unavailable. Caution messages indicate the possibility of a pilot action.

Section 4 – Normal Procedures

To Activate the IFD4XX/IFD5XX :

1. Verify IFD circuit breakers (2) ----- IN
2. Verify Battery Master Switch ----- ON
3. Avionics or Radio Master (if equipped) ----- ON

To Deactivate the IFD4XX/IFD5XX :

4. Avionics or Radio Master (if equipped) ----- OFF
or
5. Press and hold the Power Knob ----- OFF

IMC Operations with Weather Radar

1. While operating in IMC conditions with weather radar active, activate lightning detection system and monitor. Correlate lightning strike information with painted radar information to confirm proper system operation.
2. In the event that radar data and lightning do not coincide, contact ATC for the latest severe weather information.

Also see Avidyne IFD4XX/IFD5XX Pilot's Guides for Normal operation procedures.

Section 5 – Performance

No change from basic Handbook.

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Section 6 – Weight and Balance

No change from basic Handbook. See AFM/POH for current weight and balance for this aircraft.

Section 7 – Systems Description

See Avidyne IFD4XX and IFD5XX FMS/GPS/Nav/Com Pilot
Guides

P/N 600-00300-001 for the IFD5XX Series

P/N 600-00304-000 for the IFD4XX Series

P/N 89000039-010 Bendix King AeroNav 900 and 910

P/N 89000041-008 Bendix King AeroNav 800