Avidyne Corporation
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FAA Approved

Rotorcraft Flight Manual Supplement

For

_____
Make and Model Helicopter

with

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

and 700-00179-XXX

Registration No. _____

Serial No. _____

This supplement must be attached to the applicable FAA Approved Rotorcraft Flight Manual when Avidyne 700-00182-XXX Integrated Flight Display (IFD) and/or 700-00179-XXX Integrated Flight Display installed in accordance with STC SR00387BO. 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 Rotorcraft Flight Manual.

FAA Approved WILLIAM P WITZIG Digitally signed by WILLIAM P WITZIG Date: 2021.02.12 11:06:33 -05'00'

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

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LOG OF REVISIONS

Revision Number	*Revised Pages*	*Description of Revisions*	*FAA Approval*	*Date*
00	All	Initial Release	-	
01	6, 7, 18	Incorporate FAA comments	W. Witzig	12/12/2017
02	4, 7, 23	BK pilot guide references	W. Witzig	5/3/2019
03	4, 7, 22	Add additional Transponders to ADS-B Out Compliance	W. Witzig	2/12/2021

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

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Section 1 – General

This Rotorcraft 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 and IFD540) and processing to accomplish control, display, navigation and input/output to other avionic systems.

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.

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.

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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.

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

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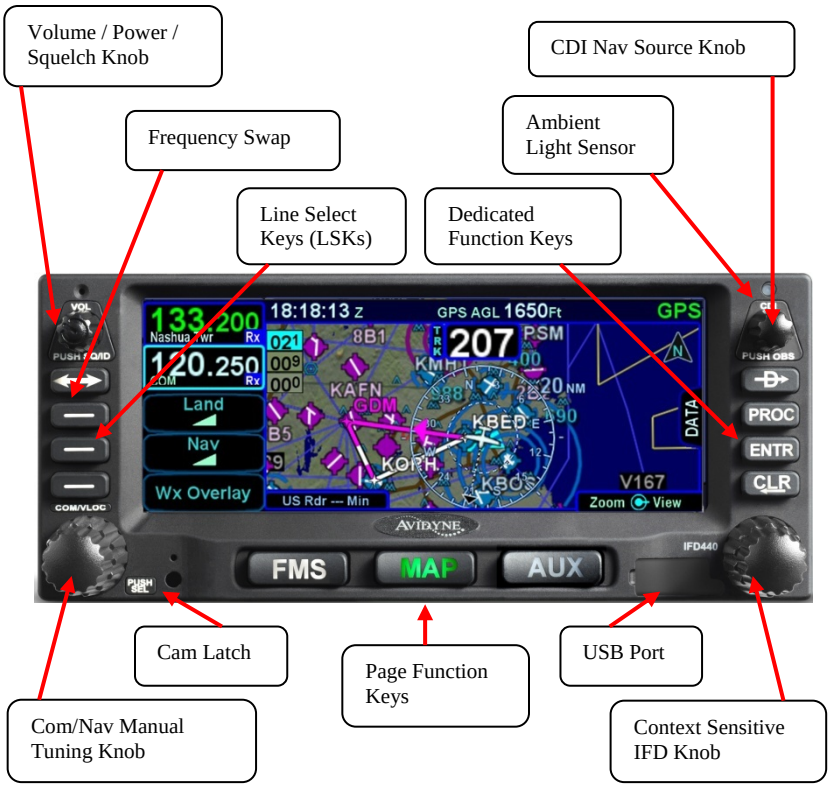
Figure 2. Avidyne IFD440 700-00179-XXX Integrated Flight Display (IFD).



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Section 2 – Limitations

1. The Avidyne IFD4XX and IFD5XX Integrated Flight Display 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
   must be available to the pilot during all flight operations.

2. The IFD4XX and/or IFD5XX installed with an approved GPS and/or VHF antenna, provides pilot and automatic flight control guidance for the following operations conducted under visual flight rules (VFR):
   - VHF and GPS navigation (IFD410 and IFD510 provide GPS guidance only)

3. IFR operations are prohibited. IFR procedures can be tuned or selected using IFD4XX and/or IFD5XX but cannot be used in IMC conditions unless separate IFR approval has been granted. The following procedures can be tuned or loaded but installation of IFD4XX and/or IFD5XX alone (via this STC) does not constitute approval for IFR operations:
   - ILS, Localizer, VOR (any VHF) procedures or approaches.
   - 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
   - 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 IFD4XX and/or IFD5XX, may serve as an RNAV alternate or substitute means of navigation for ground-based navigation aids that are out-of-service or unavailable. The pilot must abide by the State's rules of the air found in aeronautical information publications (AIP) for these operations. FAA AC 90-108 contains U.S. guidance for these operations.
5. 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.
6. 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.
7. The IFD integrates with separately approved system installations such navigation indicators, remote annunciators... Adherence to limitations in installation RFM supplements for those systems is mandatory.
8. The use of datalink, traffic and lightning sensor information displayed on the IFD4XX and IFD5XX must be in compliance with the approved RFM supplements for those systems.
9. 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.

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

The IFD5XX/4XX Forward Looking Terrain Alerting is not a TSO-C194 approved system and does not satisfy any part 91/135 HTAWS requirements.

Section 3 – Emergency Procedures

Loss of GPS
In the event of the loss of the IFD4XX or IFD5XX 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.

Loss of VHF Nav/Com
In the event of the loss of IFD440 or IFD540 VHF navigation, the pilot should revert to remaining navigation receiver. Part 91 Loss of Communication procedures (i.e light signals, transponder code…) should be followed.

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/RFM Emergency procedures are not affected by this installation.

To disable WiFi and Bluetooth on the IFD4XX/IFD5XX:

1. Press and hold the IFD4XX/IFD5XX power button/knob for 1 second (upper left bezel) ---------- OFF
2. Verify the WiFi and Bluetooth icons on the upper right of the display 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 YELLOW

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 exceedance 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/VNAV 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/VNAV Unavail. Use LNAV MDA	GPS integrity is insufficient for L/VNAV Approach	Transition to a non-L/VNAV approach and the appropriate minima.
VNAV Lost Use LNAV MDA	Excessive XTK or Low GPS Integrity for Vertical Guidance	Transition to LNAV minima.

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.

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.

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
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.
Short Text	**Long** Text	Comments
TIS Removed	TIS Traffic Removed	TIS traffic communications have ceased for >12 seconds
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 t aken immediately.
TAWS Fail	Invalid GPS Positon/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/RFM) 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.

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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 :

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

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

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Section 5 – Performance

No change from basic Handbook.

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Section 6 – Weight and Balance

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

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Section 7 – Systems Description

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

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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

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