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FAA-APPROVED

AIRPLANE FLIGHT MANUAL SUPPLEMENT

for the

uAvionix AV-30-C

as installed on

Airplane Make and Model per AML Number SA00410BO

Registration Number: _____

Serial Number: _____

This supplement must be attached to the FAA-approved Airplane Flight Manual when the AV-30-C is installed in accordance with Supplemental Type Certificate (STC) SA00410BO.

The information contained herein supplements the basic manual only in those areas listed. For limitations, procedures, performance and loading information not contained in this supplement, consult the FAA-approved Airplane Flight Manual, markings, or placards.

FAA Approved: Charles M. Wilcox, Flight Test Pilot, AIR-712, *for*
Manager, Flight Test & Human Factors Branch, AIR-710
Federal Aviation Administration

Date: 21 May 2025

Charles M Wilcox, Flight Test Pilot

Digitally signed by Charles M Wilcox, Flight Test Pilot
Date: 2025.05.21 11:24:46 -05'00'

Log of Revisions

Revision No.	Pages Affected	Description	FAA Approved	Date
A	All	Initial release	Not FAA approved	4/24/2020
B	7	Added note regarding AoA operation.	Not FAA approved	8/7/2020
C	1, 17	Changed FAA approval contact. Updated document revisions.	W. Witzig, FAA, AIR711	8/26/2020
D	1, 4-8, 10-11, 13-20	Changed FAA approval contact. Update system description and interfaces. Add PED limitation. Add AV-Mag, transponder, and MFD functionality.	C. Wilcox FTP, AIR-712	4/2/2024
E	4-9 10-19	Changed FAA approved contact. Add acronym glossary. Update system description. Add AV-HSI, AV-APA functionality.	C. Wilcox FTP, AIR-712	5/21/2025

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ACRONYMS AND ABBREVIATIONS

The following acronym and abbreviation glossary is applicable to this Airplane Flight Manual Supplement.

ADS-B	Automatic Dependent Surveillance - Broadcast
AI	Attitude Indicator
AoA	Angle of Attack
APA	Analog Port Adapter
CDI	Course Deviation Indicator
CFR	Code of Federal Regulations
DALT	Density Altitude
DG	Directional Gyro
DG ADJ	Directional Gyro Adjust
DG HDG	Directional Gyro Heading
FAA	Federal Aviation Administration
GPS	Global Positioning System
HSI	Horizontal Situation Indicator
IFR	Instrument Flight Rules
ILS	Instrument Landing System
LOI	Loss of Integrity
MFD	Multi-Function Display
OAT	Outside Air Temperature
PED	Portable Electronic Device
TAS	True Airspeed
TBX	tailBeaconX
VDC	Volts Direct Current
VFR	Visual Flight Rules
VOR	Very High Frequency Omnidirectional Range
Wi-Fi	Wireless Fidelity

1 GENERAL

1.1 AV-30-C

The uAvionix AV-30-C is a fully digital multi-mode instrument that mounts in the legacy 3 1/8" round instrument panel. It can be field configured as either an Attitude Indicator (AI) Directional Gyro (DG), Multi-Function Display (MFD) or Course Deviation Indicator (CDI). The AV-30-C contains dual-precision inertial and pressure sensors and allows for a wide variety of pilot customization.

The AV-30-C performs the following functions:

Primary Functions:

- Primary Attitude (AI Mode)
- Primary Slip (AI Mode)
- Primary Direction of Flight Indication (DG Mode)
- Primary Navigation Information (with optional AV-HSI)

Supplemental Functions:

- Indicated Airspeed
- Altitude
- Rate of Turn
- V-Speeds
- Angle Of Attack
- Vertical Trend
- Vertical Speed
- Set Altitude
- Heading
- Bus Voltage
- G Load
- Outside Air Temp
- True Airspeed
- Density Altitude
- GPS Navigator Waypoint Data

- GPS Navigator Nav Data
- GPS Navigator Route Line
- Heading Bug
- MFD Traffic Page with AV-Link
- Transponder Control (AI / DG Mode)

Audio and Visual Alerting Functions:

- AoA Alerting
- G Limit Alerting
- Excessive Roll Alerting
- Attitude Miscompare (with optional AV-HSI)
- Set Altitude Alerting
- Over/Under Voltage
- Carbon Monoxide Alert with AV-Link and Sentry

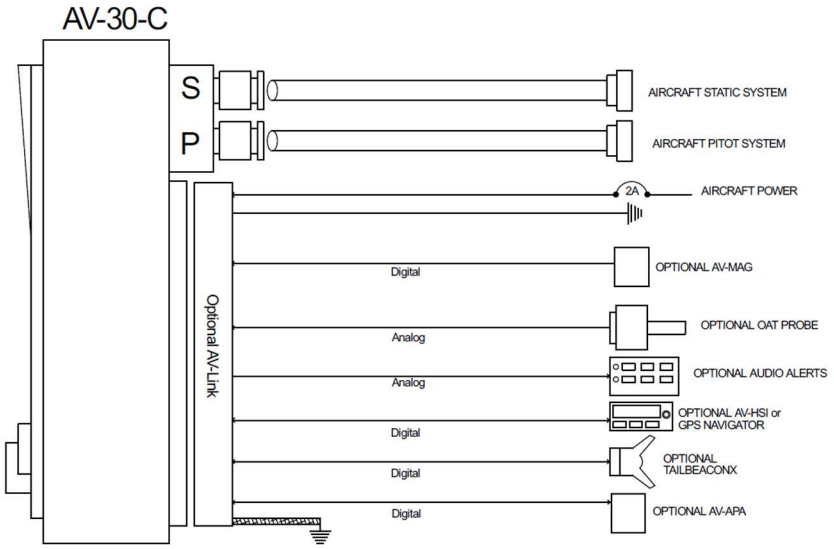
Misc. Functions:

- Internal Battery Operation
- Auto / Manual Brightness

1.2 Required / Optional Equipment

The following describes each of the AV-30-C system interconnects for AI, DG, MFD, and CDI installation configurations. Note that some interfaces are optional in each installation.

No audio outputs are supported when installed as a DG, MFD or CDI. Temperature related air-data related parameters are only available when the optional OAT probe is equipped.



AV-30-C Aircraft Systems Interfaces

This AV-30 installation includes the following accessories:

- ☐ OAT Probe – enables display of outside air temperature, true airspeed, and density altitude. OAT probe is connected to:
  - ☐ AV-30 in AI position
  - ☐ AV-30 in DG position
  - ☐ Other _____

- ☐ BeaconX Transponder – AV-30 is a control head for the beacon family of transponders. Transponder is connected to:
  - ☐ AV-30 in AI position
  - ☐ AV-30 in DG position
  - ☐ Other _____

- ☐ AV-MAG – directional gyro is aided by external magnetometer. AV-MAG is connected to:
  - ☐ AV-30 in AI position
  - ☐ AV-30 in DG position
  - ☐ Other _____

☐ AV-Link – MFD mode displaying ADS-B traffic is available. AV-Link is connected to:
- ☐ AV-30 in AI position
- ☐ AV-30 in DG position
- ☐ Other _____

☐ AV-APA – AV-30 outputs heading information to analog autopilot. AV-APA is connected to:
- ☐ AV-30 in AI position
- ☐ AV-30 in DG position
- ☐ Other _____

☐ AV-HSI – AV-30 provides primary display of navigation information. The AV-HSI is connected to:
- ☐ AV-30 in AI position
- ☐ AV-30 in DG position
- ☐ Other _____

This AV-30 installation interfaces with third-party equipment providing the following navigation capabilities:

☐ VFR-only GPS navigator providing advisory-only navigation guidance

☐ IFR-capable GPS navigator providing lateral guidance but not vertical guidance

☐ IFR-capable GPS navigator providing lateral and vertical guidance

☐ VOR/ILS receiver providing lateral and vertical guidance

This AV-30 installation interfaces with third-party autopilot providing the following flight control capabilities:

☐ Analog autopilot connected to AV-APA, providing lateral guidance

- Digital autopilot connected to AV-HSI, providing heading, course, barometric altitude, and set altitude.

1.3 Capabilities

The AV-30-C is approved for primary attitude, slip, and direction of flight. The AV-30-C is also approved to control select transponders. All other functionality is supplemental in nature. Additionally, the AV-30-C has the following functional limitations:

Attitude Rate Limit	±250 Degrees / Second
Attitude Operational Range	360° Roll, 180° Pitch
Attitude Accuracy	1° Static, 2.5° Dynamic
Airspeed Operational Range	40 to 300 Knots
Altitude Operational Range	-1,000 to +25,000 Feet

Note: For aircraft capable of acrobatic flight, the Angle Of Attack indication may become unreliable for operation in inverted flight and maneuvers exceeding ±8 G.

When utilizing an optional AV-Link, the AV-30-C can receive and displaying ADS-B traffic information from non-certified equipment (portable receivers) over Wi-Fi. Traffic information is for advisory use only and does not replace a required system.

When utilizing an optional AV-APA, the AV-30-C can provide turn guidance to select legacy autopilots.

When utilizing an optional AV-HSI, the AV-30-C is approved as a primary navigation display, displaying both course and glideslope indication from GPS and VOR/ILS navigators.

The AV-30-C includes an internal battery that has been tested and verified to provide 30 minutes of operational capacity (with reserve), and meets the requirements defined in 14 CFR 23.1311(a)(5) and 23.1353(h), allowing independent operation from the primary electrical power system.

2 LIMITATIONS

The following limitations apply to the AV-30 and accessories:

- The AV-30-C must be using software version 3.0.1 or later for this Airplane Flight Manual Supplement to be applicable.
- The stick map on the DG Arc page must not be used as the primary or sole means of navigation or course guidance. It is for advisory use only.
- When interfacing with a third-party autopilot or navigator, the operating limitations of that equipment must be observed. Reference the Flight Manual Supplement for your autopilot and/or navigator.
- When using the AV-Link with a non-certified ADS-B source, in accordance with 14 CFR 91.21(b)(5) and 91.21(c), the aircraft operator must determine that the use of any Portable Electronic Device (PED) does not interfere with the navigation or communication system of the aircraft.

3 EMERGENCY PROCEDURES

3.1 Attitude Indicator Failure

If an attitude indicator failure occurs, any other AV-30 in the aircraft can be switched to the reversionary AI page. The reversionary AI page is the last page available in all AV-30 modes and is accessible by pressing the right button until the last page is displayed.

Reversionary AI (with transponder control)

If in instrument meteorological conditions and no other AV-30 or standby attitude indicator is available, use instrument cross-scan to maintain attitude. Seek VFR conditions or land as soon as practical.

3A ABNORMAL PROCEDURES

3A.1 Battery Transition

In the event of an in-flight loss of electrical power when airspeed is over 40 knots, the unit will automatically transition to battery operation with no pilot action required.

If airspeed is 40 knots or below (as computed by pitot static data and optional GPS), the unit will initiate a timed shut-down sequence and prompt if the shutdown should be aborted. Pressing any knob or button will abort the shutdown and return to operation on battery.

When running on battery, pressing and holding the left and right button simultaneously will force a shutdown. It is not possible to start the AV-30-C on battery only.

The optional AV-Mag is powered by the AV-30-C internal battery and will continue to function normally on battery.

The optional AV-Link is not powered by the AV-30-C internal battery. Traffic functions will not be available during power loss.

3A.1.1 On Battery Annunciation and Charge Status

An amber ON BATTERY annunciation will be presented when operating on battery, and a minimum of 30 minutes of unit operation will be available.

On Battery Operation

The battery charge state is shown in percentage. An internal battery charger will re-charge the battery if bus voltage is above approximately 10 VDC. The battery charge icon (presented adjacent to the battery charge state), will be illuminated during the charge cycle.

Battery Charge Status

3A.2 Loss of AV-Mag

If the AV-30-C is equipped with the AV-Mag remote magnetometer, and a magnetometer error is detected, a “NO MAG” flag will be displayed and the AV-30-C will fall back to an unaided directional gyro. The directional gyro heading must be set periodically to match the aircraft compass.

Similarly, if the AV-Mag calibration was not properly performed or is lost, a “MAG CAL” flag will be displayed on the AV-30-C, which falls back to an unaided directional gyro functionality.

3A.3 Loss of AV-APA

If the AV-30-C is configured to use the AV-APA, a “NO AP” flag will be displayed if the AV-30-C cannot communicate with the AV-APA or if an autopilot mode is selected for which the required data is not available (example: a GPS autopilot mode is selected but GPS is not available).

This flag indicates that AV-30-C guidance to the autopilot is not available.

If using an autopilot mode that is tracking GPS, verify that GPS is available on the AV-30-C. If this does not resolve the flag, discontinue use of the autopilot and hand-fly the aircraft.

Note that the AV-APA is not powered by the AV-30-C's battery. Autopilot functionality will not be available during aircraft power loss.

3A.4 Loss of AV-HSI

When equipped with an optional AV-HSI, if the AV-HSI loses power or fails, navigation data from the AV-HSI will time out. On the DG HSI page a "NO DATA" annunciation will be shown, indicating that navigation data is not available. On the AI or CDI modes, navigation data will not be displayed. Use alternate navigation sources if available. Seek VFR conditions.

3A.5 Attitude Miscompare

When equipped with an optional AV-HSI connected to multiple AV-30-C, the AV-HSI automatically compares the attitude solution independently calculated by each AV-30-C and will alert with a "CHK ATTITUDE" alert if the attitude solutions disagree.

Use standby instruments. If the alert doesn't resolve itself seek VFR conditions or land as soon as practical.

3A.6 GPS Data Failure

GPS data failure may be indicated by one of the following:

- Loss of GPS course or glidepath indications on AI, DG, or CDI.
- GPS data replaced with “---"
- Amber LOI (Loss of Integrity) indication on AI, DG, or CDI.
- “NO DATA” or “NO GPS” indication on AI, DG, or CDI.

Use alternate navigation source (VOR/ILS) if available, refer directly to the GPS navigator for guidance.

3A.7 VHF Navigation (VOR/ILS) Data Failure

GPS data failure may be indicated by one of the following:

- Loss of bearing pointer, course or glideslope indications on AI, DG, or CDI.
- Navigation data replaced with “---"

Use alternate navigation source (GPS) if available, refer directly to the navigation receiver for guidance.

4 NORMAL PROCEDURES

4.1 Before Takeoff

1. Review AV-30 screen(s) for any flags or alerts.
2. If departing into IFR or planned IFR conditions, ensure AV-30 battery indicator shows 95% or greater.
3. If interfaced with a GPS navigator, verify correct GPS self-test indication on the AV-30. Reference GPS manual for details.
4. If displaying altitude on the AV-30, adjust the baro setting to match local barometric pressure.
5. If displaying directional gyro on the AV-30, verify DG matches the magnetic compass.

5 PERFORMANCE

No change.

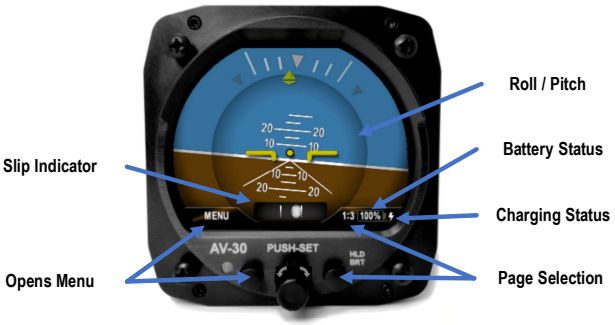
6 WEIGHT AND BALANCE

No change.

7 SYSTEM DESCRIPTION

7.1 AI Mode – Basic Components

The following figure shows the basic AI with all customizable data overlay fields turned off.



Basic AI Mode User Interface

Roll, Pitch and Slip cannot be disabled, but may be shown in various color and style formats depending on customization settings.

If equipped with an optional AV-HSI, lateral and vertical guidance can be displayed in this mode.

There are three independently customizable pages which are selected round-robin fashion by sequentially pressing the Page Selection button (shown as page 1 of 3 in the figures above). Each page can be configured to show various supplemental parameters as overlays.

A fourth, fully decluttered page allows all supplemental information to be hidden, leaving just attitude and slip displayed.

7.2 AI Mode – Initial Startup

On initial startup the red ALIGN flag will flash indicating that the attitude is still stabilizing. Remain stationary until the flag is extinguished.

AI Mode, Attitude Indicator Align Indication

When the ALIGN flag is displayed, the presented attitude may be incorrect.

7.3 DG Mode – Non-Slaved Heading Mode

The following figure shows the non-slaved DG heading mode (DG HDG). The heading must be manually adjusted to correspond with the magnetic heading as indicated by the compass on the aircraft.

This heading must be occasionally corrected as drift will occur.

Basic DG Mode User Interface

The current heading is adjusted by pressing the PUSH-SET button until the DG ADJ setting is shown. Rotating the knob will adjust the heading.

DG HDG Adjustment

If the installation has an AV-Mag external magnetometer, the AV-MAG aids the DG solution, reducing DG drift. DG ADJ is still available if changes are required.

Six textual fields are available for customization and can show various parameters depending on pilot preferences.

Non-Slaved Heading is available as a tape in the AI Mode or on the Rose, HSI, or Arc pages of the DG mode.

7.4 DG Mode – GPS HSI Mode

The display type can also be configured to show GPS nav data when connected to an external GPS navigator and presented in the traditional HSI format. The heading source can be non-slaved DG or slaved to the GPS track.

GPS HSI Mode

If equipped with an optional AV-HSI, vertical guidance will be displayed when available from a GPS or ILS navigator.

7.5 DG Mode – GPS Arc Mode

The display type can also be configured to show the GPS flight plan in an Arc mode, showing a map style presentation of the current and subsequent flight plan legs. The heading source ban be non-slaved DG or slaved to the GPS track.

GPS Arc Mode

When in the Arc display mode, the display scale is adjusted by rotating the rotary knob and represents the display distance from the own-ship icon to the outer compass ring.

If no GPS navigational data is available, the GPS track will be shown at 000, and either “NO GPS” or “NO DATA” will be displayed.

The moving-map style GPS navigational data is not precise enough to be used for IFR navigation and should be used for situational awareness only

7.6 MFD Mode – Traffic Display

When equipped with an optional AV-Link and a Wi-Fi connected ADS-B source, the display can be configured to show traffic in the Multi-Function Display (MFD) mode.

MFD Mode

When in the MFD mode, the display scale is adjusted by rotating the rotary knob.

The MFD mode will display “NO DATA” if no ADS-B source is detected.

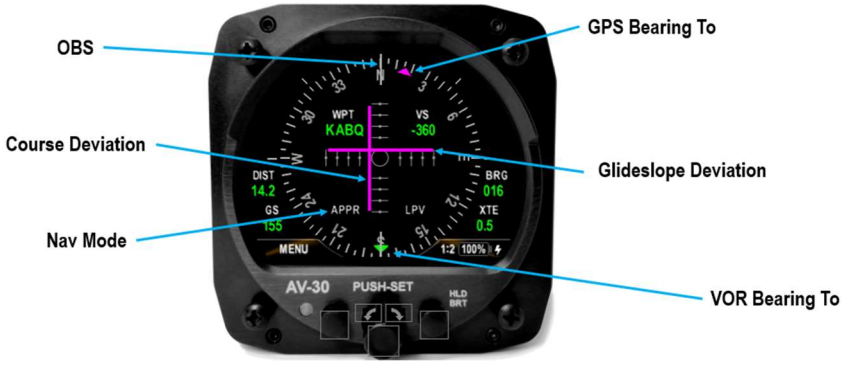
Traffic displayed is not from certified sources and is for advisory use only. Traffic display does not replace the pilot’s responsibility to see and avoid other traffic.

Aircraft operators operating under 14 CFR Part 91 are advised of their responsibilities under 14 CFR §91.21(b)(5) and §91.21(c) to determine that their portable ADS-B source will not cause interference with the navigation or communication system of the aircraft.

7.7 CDI Mode

When equipped with an optional AV-HSI, the display can be configured to display lateral and vertical course guidance in a traditional CDI

format. In this format, GPS guidance will be displayed in magenta and VOR/ILS guidance will be displayed in green.



CDI Mode

7.8 Transponder Control

When connected to an optional tailBeaconX or other compatible transponder, the AV-30-C can be used for transponder control.

Complete transponder data is displayed on the reversionary (AI) page in any mode. The squawk code may optionally be selected for display on additional pages.

Transponder Control

Squawk code may be entered using the PUSH-SET menu on the reversionary AI page or on any page that has the squawk code displayed. Flight ID may be entered using the PUSH-SET menu on the reversionary AI page.

7.9 PUSH-SET Window

The PUSH-SET window is activated by pushing the main rotary knob in momentarily.

This will activate a window along the bottom of the display allowing various parameters to be adjusted with the rotary knob. Pushing the rotary knob after a value has been adjusted will accept the modified value.

The parameters that can be adjusted will vary based on the mode of the unit and the current configuration of the display. The following indicates how BARO is adjusted when altitude has been configured for display:

PUSH-SET Example - Baro

The set of items available in the PUSH-SET menu is dependent on the display mode and the configuration of the AV-30-C.

7.10 Additional Operational Aspects

- Air data and attitude will not be available when the red ALIGN flag is shown.

- If altitude configured for display, the initial BARO setting will be reverse computed from the last known field elevation, reducing the amount of adjustment required. The BARO field will be shown in gray while this is occurring.

- Non-Slaved Heading mode requires the pilot to set the initial heading and occasionally correct the heading based on the wet compass. The system will initialize to the last set heading on shutdown. The AV-Mag, if equipped, aids the heading and reduces the need to correct the heading.

- When connected to a GPS using RS-232, navigation guidance is for VFR operations only. No vertical deviations are shown, and lateral deviations are not scaled for approach / IFR operations.

- The moving map displayed in GPS Arc mode is for situational awareness only. The drawn lines may not be used for navigation.

- The currently displayed GPS track may optionally be gyroscopically stabilized, allow smoother operation when in turns. This option is configured in the pilot accessible Setup Menu (GPS Track Stabilization).

- Air data / temperature related parameters (TAS, DALT, OAT) are only available if the AV-30-C has been connected to an OAT probe, otherwise they will not be selectable for display.

7.11 Related Documentation Operational Aspects

The uAvionix AV-30-C documents, part numbers, and revisions listed below contain additional information regarding system operation installation and continued maintenance.

Part Number	Revision	Title
UAV-1003946-001	I (or subsequent)	AV-30-C Pilot's Guide
UAV-1003947-001	P (or subsequent)	AV-30-C Installation Manual
UAV-1004045-001	E (or subsequent)	AV-30-C Instructions for Continued Airworthiness