



AV-30-E

Service Bulletin

Software Upgrade to 2.3.3



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Patent uavionix.com/patents

1 Revision History

Revision	Date	Comments
A	9/2/2022	Initial release
B	9/27/2022	Fixed broken section reference
C	9/29/2022	Corrected the software checksum value in Table 5-1

2 Warnings / Disclaimers

uAvionix is not liable for damages arising from the use or misuse of this product.

This equipment is classified by the United States Department of Commerce's Bureau of Industry and Security (BIS) as Export Control Classification Number (ECCN) 7A994.

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4 Planning Information

4.1 Applicability

This Service Bulletin applies to uAvionix AV-30-E UAV-1004035-001 and UAV-1004035-002 with operating software release 2.3.2 or earlier. For improvement in DG function, the unit must be connected to pitot and static if not already connected. Use Table 4-1 to determine applicability of the software update.

Hardware P/N Marking	Applicability
UAV-1004035-001	Verify by procedure
UAV-1004035-002	Verify by procedure

Table 4-1 Applicability

Parts identified above as “Verify by procedure” may have software release 2.3.2 or previous installed. To determine what version of software is installed:

1. Push and hold center rotary knob while powering up unit until the uAvionix startup screen appears.



2. Push and release the left button under the MENU until the “INSTALL / ROT TO SEL” appears.
3. Rotate knob until you see “SW VERSION”
4. If the version displayed is 2.3.2 or earlier proceed with this Service Bulletin.

4.2 Description

This Service Bulletin provides instructions for loading uAvionix AV-30-E UAV-1004035-001 and UAV-1004035-002 with updated software release 2.3.3.

This software release (2.3.3) has the following changes:

- Adds a 'Ground Test Mode' command for testing a BeaconX transponder
- Adds support for the Trio Pro Pilot digital autopilot
- Adds additional direction modes for digital autopilots
- Autopilot controls added to 'PUSH-SET' menu
- Modifies Set Vertical Speed and Set Altitude automatic settings during autopilot flight
- Adds support for connecting a BeaconX transponder in parallel between two AV-30-Es
- Adds the ability to switch from DG to MFD displays when the DG function is locked
- Prevents field calibration data from being reset on a hard reset command.
- Adds display of altitude, barometer setting, and vertical speed on DG screens
- Magnetometer calibration warning changed to "MAG CAL" instead of "NO MAG"
- True airspeed units now set independently from Indicated airspeed units
- Baro adjustment (AI screens) and heading bug adjustment (DG screens) now available via direct turn of encoder (initial push not needed)
- When using a BeaconX as a GPS, the HSI screen no longer shows "NO COURSE"

For increased performance in DG mode, the pitot and static shall be connected if not already installed.

4.3 Time Required

For Internal Magnetometer addition, unit must be returned to uAvionix to update hardware.

For software only update in the field, up to 90 minutes is required to perform this update procedure. Additional time may be required if pitot and static connections are not installed.

For AV-Mag External Magnetometer installation, the installation time will vary. Calibration time will vary depending on the aircraft and the location.

4.4 Weight and Balance

No change.

4.5 Electrical Load Data

No change.

4.6 Applicable Publications

The following documents are applicable to the software release 2.3.3.

Title	Part Number	Revision
AV-30-E Installation Manual	UAV-1004234-001	F
AV-30-E Pilot's Guide	UAV-1004233-001	G

5 Required Items

There are two methods available to perform the update. The first involves a Windows PC and serial port, the second uses the optional AV-Link-E device over Wi-Fi.

Both methods require you to download the software update file below.

Filename	Version	SW Part Number	Checksum	SHA1 Hash
UAV-1004037-006-av30e-2_3_3-4216d18.bin	2.3.3	UAV-1004037-006	A0A5647C	9acb52f4f4a2 29540517336 a9222416043 fb81ad

Table 5-1 Software Update Files

uAvionix software update files are available for download from the uAvionix Support website at no charge, at:

<https://uavionix.com/av-30-e-service-bulletin-software-upgrade-2-3-3/>

Click on the link in the section **AV-30-E v2.3.3 Firmware** and save it to your PC or mobile device.

Ensure the software and any necessary update tools have been downloaded prior to visiting the aircraft. An internet connection is required to download the software and application. An internet connection is not required to perform the update.

5.1 Windows PC with Serial Port

The following items are required to perform the update when using a Windows PC with serial cable:

Quantity	Description
1	Windows PC running Windows 7 or later
1	Available serial port or appropriate USB to RS-232 converter Examples: FTDI, Parallax 28030, Sabrent CB-DB9P or similar (See https://uavionix.com/support/av-30-e-support/ for the recommended USB to Serial Cable)
1	Female DB-9 with solder or crimp terminals
2	Female terminals suitable for the installed DB-15
4'	22-24 AWG wire

1	uAvionix AV Update Tool: UAV-1005199-001 (Windows application)
1	AV-30-E Software as shown in Table 5-1 Software Update Files

The uAvionix AV Update Tool is available on the website linked above in the section **AV Update Tool**. Download it to your PC.

5.2 AV-Link-E

The following items are required to perform the update when using AV-Link-E over Wi-Fi:

Quantity	Description
1	PC or mobile device
1	uAvionix AV-Link-E (UAV-1004413-001 or UAV-1004414-001) running software version 0.2.39 or later.
1	AV-30-E Software as shown in Table 5-1 Software Update Files

AV-Link-E software version 0.2.39 is required. The uAvionix software update files are available for download from the uAvionix Support website at no charge, at:

<https://uavionix.com/av-link-e-service-bulletin-software-upgrade-0-2-39/>

Follow the instructions in AV-Link-E Service Bulletin Upgrade to 0.2.39 UAV-1006731-001 Rev A.pdf to update the AV-Link-E to version 0.2.39.

6 Update Notes

All AV-30-E configuration settings will be preserved during the update procedure. However, please take note of all settings before performing the update, and verify settings are correct after the update has been applied.

If pitot and static lines were not previously connected, connect the lines now to ensure full performance and functionality.

Ensure you are running a previous version of AV-30-E software. Specifically, your AV-30-E should currently be running 2.3.2 or earlier.

There are two approved methods for update of the AV-30-E. The AV-30-E can be updated using either a traditional direct serial connection or the AV-Link-E can be used to update the AV-30-E via wireless interface. Either method is suitable, the choice is installer preference or equipment availability. The AV-Link-E can be removed after update.

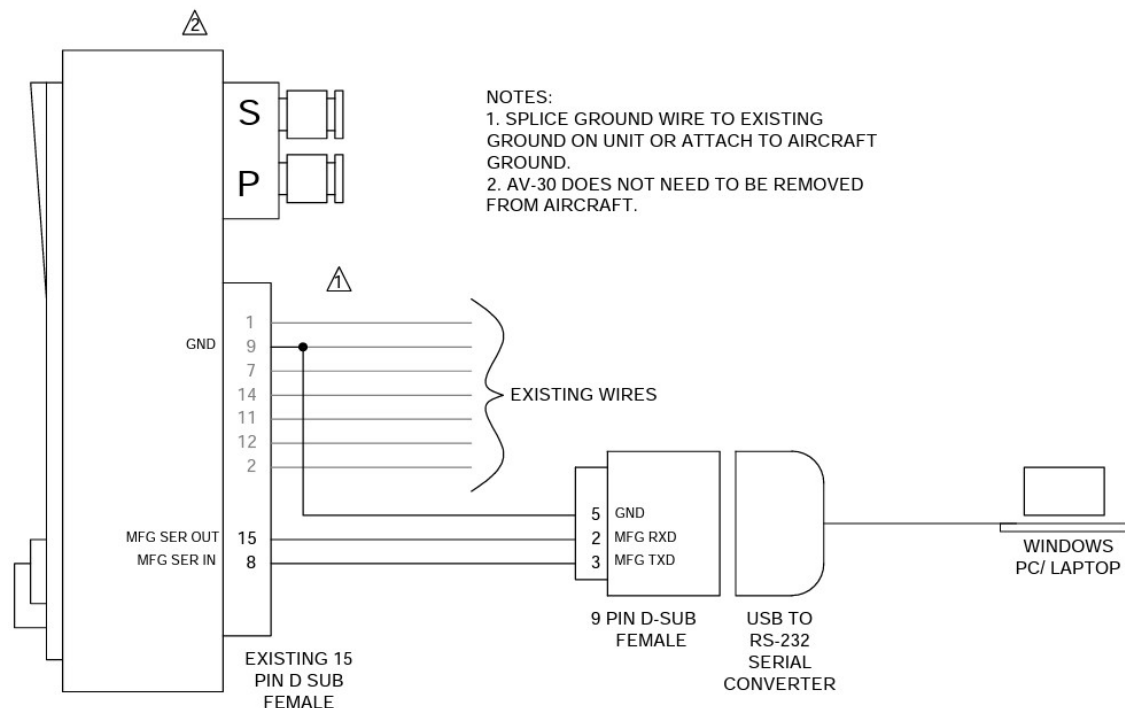
If performing the update using PC serial connection, proceed to Section 7.

If performing the update using the AV-Link-E, first verify that it is running software version 0.2.39 or later then proceed to Section 8. If the AV-Link-E is running version 0.2.38 or earlier, update the AV-Link-E to version 0.2.39 before proceeding. Refer to section 5.2 for links to AV-Link-E version 0.2.39 upgrade files.

7 PC Serial Update

7.1 Serial Update Preparation

1. Add wires to pins 8 and 15 to the AV-30-E harness if not already connected. Add an additional ground wire to either the existing ground from the AV-30-E harness or ground the new wire directly to aircraft ground.
2. Connect the new wires to the DB-9 connector as shown below. Upon completion of wiring, connect the new assembly to an available serial port or USB serial adapter.

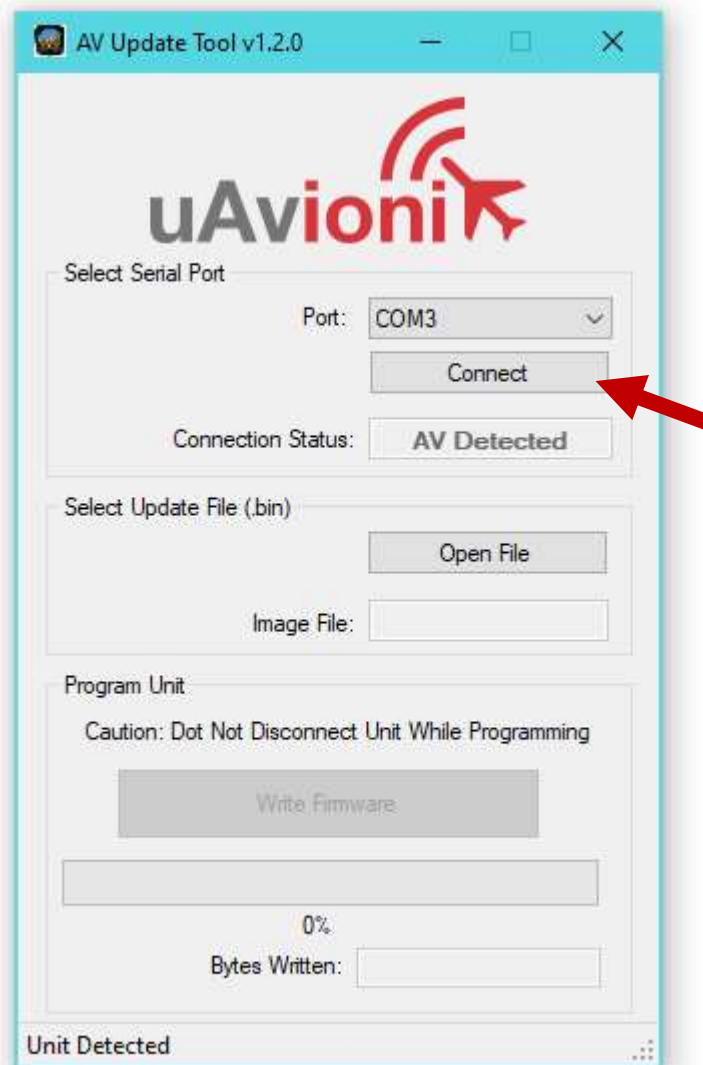


Note: AV-Link-E must not be installed if performing an update using the PC serial update procedure.

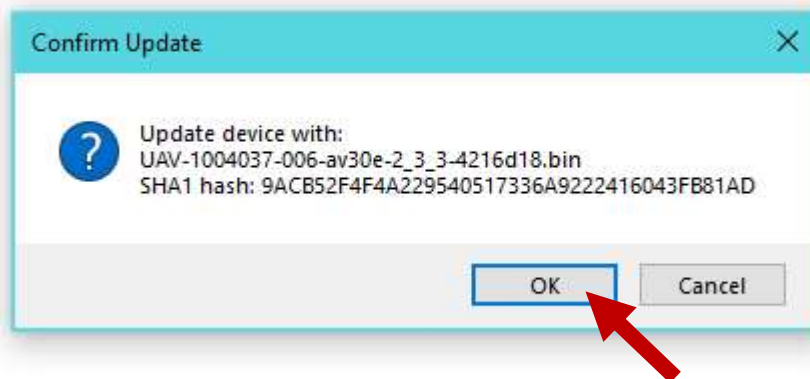
7.2 Serial Update Procedure

3. Connect the AV-30-E to the Windows PC through the DB-9 connection previously installed in Section 7.1.

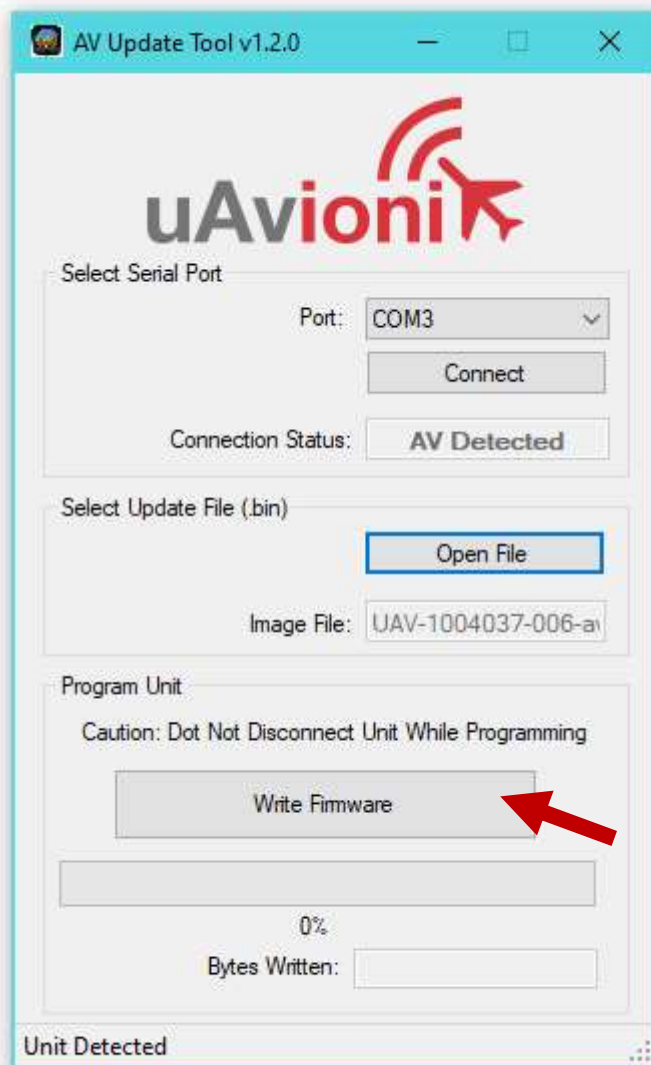
4. Apply power to the AV-30-E. Do not interrupt power during the update process.
5. Launch the previously downloaded AV Updater application.
6. On the AV Updater tool, select the appropriate COM Port from the dropdown menu and click “Connect”.



5. Proper connection has been made when the message “Unit Detected” has appeared on the bottom left corner of the AV Updater Tool. The screen on the AV-30-E will go black for the remainder of this procedure. If “Unit Detected” does not appear, contact uAvionix Support for additional guidance.
6. Once proper connection has been made, select the firmware file to upload to the AV-30-E by clicking “Open File” and selecting the previously downloaded firmware file as identified in Table 5-1 Software Update Files. A confirmation dialog will appear with the filename and a calculated SHA1 hash. To confirm integrity of the file, compare the displayed SHA1 hash to that in Table 5-1 Software Update Files. Note that the hash is not case sensitive.



7. When confirmed, press OK and the main dialog will re-appear.



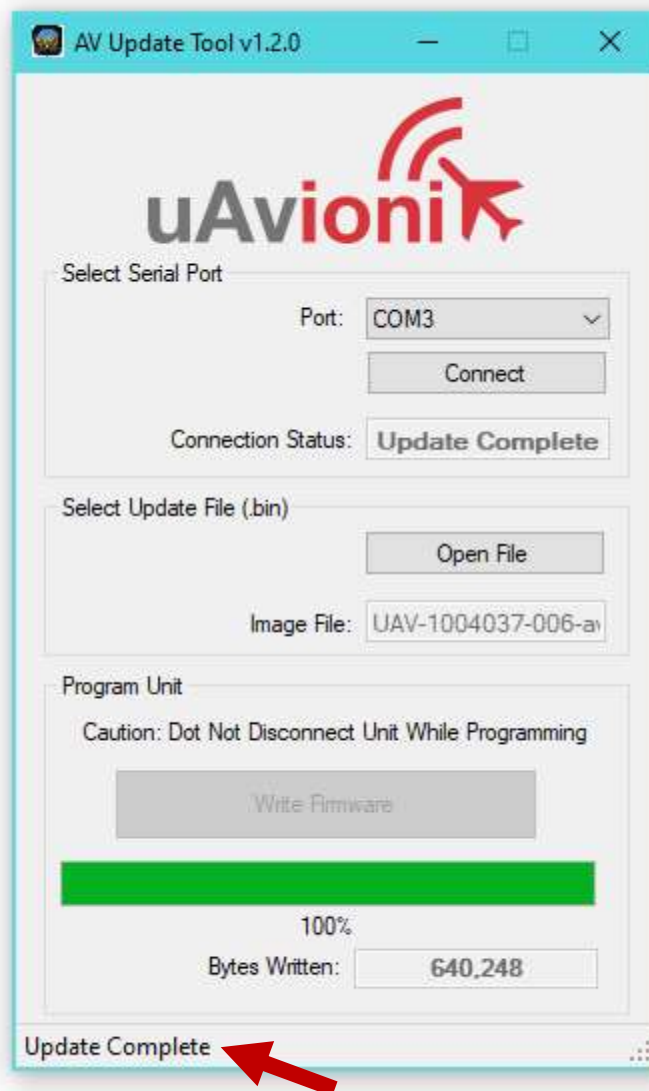
8. Select “Write Firmware” to begin the upload.



DO NOT POWER OFF THE AV-30-E OR CLOSE THE UPDATER TOOL UNTIL THE UPDATE IS COMPLETE.



THE SCREEN OF THE AV-30-E WILL GO BLACK DURING THE UPDATE. THIS BEHAVIOR IS NORMAL AND THE STARTUP SCREEN WILL APPEAR AFTER REBOOTING.



9. When the AV Update Tool displays “100%” and the lower status reads “Update Complete” the process is complete.
10. The unit will automatically restart. Upon restart of the unit, verify the startup screen indicates the updated software version.
11. If the unit was removed to perform the update it can now be reinstalled as per the installation manual.
12. Any new wiring added for the update process should be properly secured.

13. Following the completion of the update, follow Section 9 to perform required post-installation procedures.

8 Update via AV-Link-E

The AV-Link-E is a wireless bridge that extends the functionality of the AV-30-E. One of the functions AV-Link-E provides is the ability to update software on the AV-30-E through a web interface. AV-Link-E software version 0.2.39 is required for this update. Before proceeding, verify that the AV-Link-E is running software version 0.2.39 or later. If the AV-Link-E is running version 0.2.38 or earlier, do not proceed. Update the AV-Link-E to version 0.2.39 according to the instruction links in section 5.2.

8.1 Preparation for Update via AV-Link-E

If AV-Link-E is already installed in the aircraft, proceed to Section 8.2.

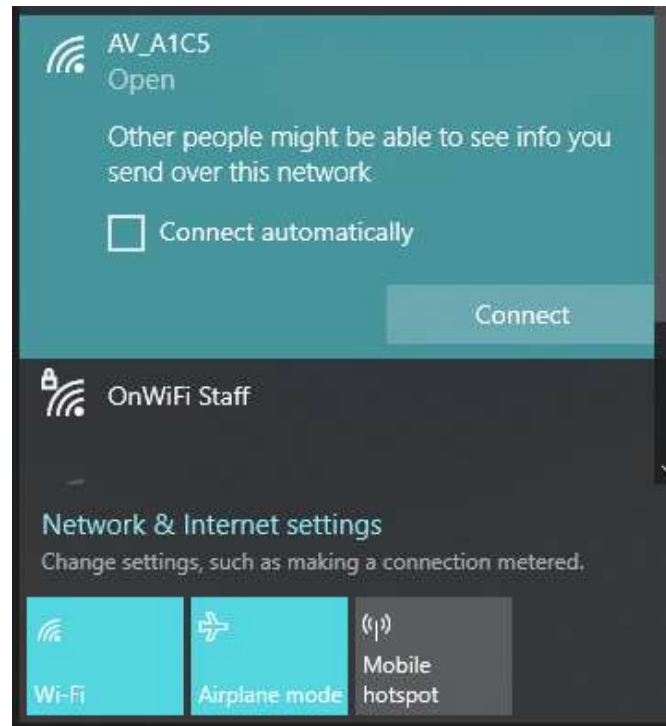
If AV-Link-E is available but not installed, follow the installation procedure as described in “AV-30-E Installation Manual” UAV-1004234-001 Rev E (or latest available), Section 11.1.

8.2 Procedure for Update via AV-Link-E

After the AV-Link-E and AV-30-E have been installed, AV-30-E firmware updates can be performed using the AV-Link-E web interface. The web interface is accessible through any PC or mobile device. Ensure the PC or device has the AV-30-E software listed in Table 5-1 Software Update Files downloaded and available.

The following instructions show the update procedure when using a Windows PC. Apply the same procedures, modified as necessary, when using an alternate installation PC or device.

1. Apply power to the AV-30-E and AV-Link-E. Do not interrupt power during the update process.
2. If using an Apple iPhone or iPad, you must put the device into Airplane Mode, then turn on Wi-Fi only.
3. Connect a PC to the AV-Link-E Wi-Fi Network. This will be displayed as AV_#### where #### will be 4 random characters ranging from 0-8 and A-F.



4. In a Web Browser (such as Google Chrome) navigate to the AV-Link-E home page via the following URL:

192.168.4.1

A page similar to shown on the right should appear.

5. At the bottom of the page select *AV Firmware Update*

The screenshot shows a web browser window titled "AVLink Main Device Page" with the address bar displaying "192.168.4.1". The page content is organized into three main sections:

- Settings:** A table with the following data:

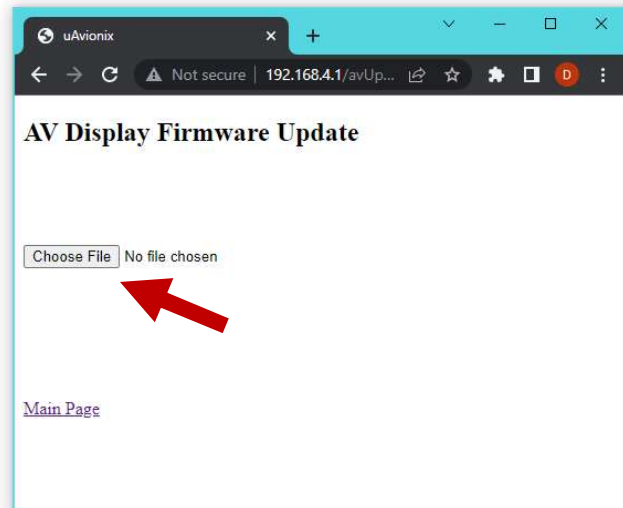
Settings	
Firmware	0.2.39-AVLink
AVLink SSID	AV_A1C5
Clients	1
ADS-B Receiver	Stratus3020039
	Waiting to scan
- Status:** A table with the following data:

Status	
ICAO Address	000000
Callsign	-----
GPS Fix	None
GPS Satellites	0
Position	---
Altitude (GNSS)	---
Altitude (Baro)	---
- Device Information:** A table with the following data:

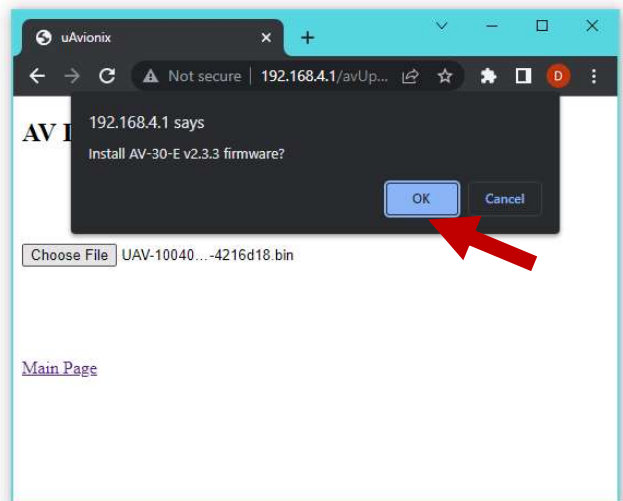
Device Information		
Hardware	Version	Serial Number
AV-Link	0.2.39	1073509840
AV-30	2.3.2	6071784765700518000

At the bottom of the page, there are three links: [Wi-Fi Settings](#), [Statistics](#), and [AV Firmware Update](#). A red arrow points to the [AV Firmware Update](#) link.

6. On the AV Display Firmware Update page select *Choose File* then select the previously downloaded AV-30 firmware.



7. Once the file has been selected you will be prompted with “Install AV-30-E v2.3.3 firmware?” Press *OK* to proceed.



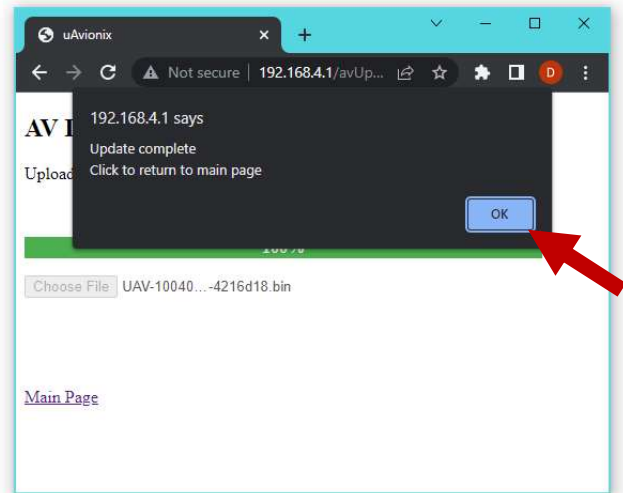
The screen on the AV-30-E will go black during the update.

Apple iPhones and iPads will show 100% on the status bar very quickly but the update is not complete until you see the “Update complete” message.

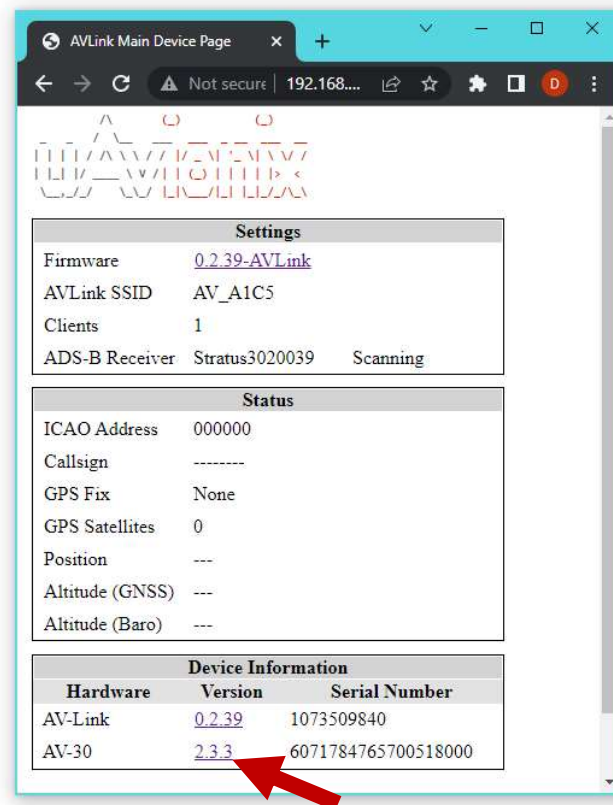
DO NOT power off the unit or close the web browser until the update is complete.

The AV-30-E will restart when complete and the AV-Link-E home page will be displayed in the web browser.

You should expect the update to take less than 5 minutes. If it takes longer, please call uAvionix technical support for assistance.



8. Upon restart of the AV-30-E, verify the startup screen indicates the updated software version.



9 Post-Accomplishment Verification and Actions

On restart, verify that the startup screen displays the correct version number. Access the Installation Menu to complete post-accomplishment verification steps.

1. To enable access to the Installation Menu, ensure the unit is completely turned off. Push and hold the main control knob in while power is applied.



2. Keep the knob pushed until the startup screen displays, and then release.
3. Ensure the unit is in AI or DG mode; select the mode by pushing and holding the center knob until the mode display changes.
4. In AI or DG mode, push and release the left button under the MENU until the “INSTALL / ROT TO SEL” appears.



5. Rotate the knob until you see “SW PART NUM”. Confirm part number matches that shown in Table 5-1 Software Update Files.
6. Rotate the knob until you see “SW VERSION”. Confirm version matches that shown in Table 5-1 Software Update Files.
7. Rotate the knob until you see “SW CHECKSUM”. Confirm checksum matches that shown in Table 5-1 Software Update Files. Note that the checksum is not case sensitive.

If all software fields match, continue with these instructions. Otherwise, contact uAvionix Support.

The following sections detail new Installation Menu options and should be reviewed and set appropriately for your aircraft. Access the Installation Menu and rotate the center knob to select these settings.

9.1 SERIAL 2

Follow the procedure in Section 9 to access the Installation Menu. Rotate the center knob until “SERIAL 2” is displayed. If this value is changed to “AEROCRUIZE” or “PRO PILOT”, the AV-30 will communicate with an autopilot. The SERIAL 2 setting is verified if the AUTOPILOT setting in the PUSH-SET rotary knob menu is visible. Push and release the center knob five times to see the AUTOPILOT setting. See the AV-30 Pilot’s Guide UAV-1004233-001 Rev F for further details.

9.2 SERIAL 3

Follow the procedure in Section 9 to access the Installation Menu. Rotate the center knob until “SERIAL 3” is displayed. SERIAL 3 will be set to “AVLINK” after update. This will enable the AV-Link-E MFD screen. If no AV-Link-E is installed, this setting should be set to NONE.

9.3 SERIAL 4

Follow the procedure in Section 9 to access the Installation Menu. Rotate the center knob until “SERIAL 4” is displayed. SERIAL 4 will be set to “NONE” after update. If you change the value to AVMAG, this will enable the AV-Mag external magnetometer and its associated installation menus. If no AV-Mag is installed, this setting should be set to NONE.

9.4 AID MODE

There are 4 options for the AID MODE. With the internal magnetometer installed (P/N UAV-1004035-002), you can choose from 3 of those options. Note that the internal magnetometer function AID MODE options are only available when the AV-Mag External Magnetometer is not installed.

- None = Magnetometer will not be referenced.
- MAG1 = Internal magnetometer provides correction data to DG
- MAG2 = Internal magnetometer provides correction data to DG and aiding to core AHRS algorithm
- AVMAG = Not available for use with internal magnetometer (automatically selected when AV-Mag external magnetometer installed)

Follow the procedure in Section 9 to access the Installation Menu. Rotate the center knob until “AID MODE” is displayed. If the hardware addition of the internal magnetometer is found then you will have a choice of NONE, MAG 1, and MAG 2. If the internal magnetometer is not automatically detected, only “NONE” will be displayed.



The factory setting for non-magnetometer equipped units is NONE, and the factory setting for magnetometer equipped units is MAG1. Leave the AID Mode set to the default, unless otherwise direct by uAvionix Support.

To change the AID MODE, push and release the center knob then rotate the knob to select your choice of magnetometer aiding. Push and release the center knob to confirm and save.

If the AV-Mag external magnetometer is installed, (P/N UAV-1006321-001), only one AID MODE option is allowed and cannot be changed:

- AVMAG = AV-Mag external magnetometer provides continuous aiding data to DG and aiding to core AHRS algorithm.

Follow the procedure in Section 9 to access the Installation Menu. Rotate the center knob until “SERIAL 4” is displayed. To change, push and release the center knob then rotate the knob to select “AVMAG”. Push and release the center knob to confirm and save your choice. Confirm that AID MODE is set to AVMAG by rotating to knob until “AID MODE” is displayed. Push and release the left button to exit the Installation Menu.



9.5 VIBE MONITOR

The Vibration Monitor can be used, with assistance from uAvionix support, to troubleshoot installation issues or unusual aircraft conditions. **Running the Vibration Check is highly recommended to complete this Service Bulletin updating from operating software release 2.0.3 or earlier.**

The monitor can be accessed by selecting “VIBE MONITOR” from the Installation Menu. Follow the procedure in Section 9 to access the Installation Menu. Rotate the center knob until “VIBE MONITOR” is displayed. Push and release the center knob to start monitoring current and peak vibrations in the accelerometer and gyroscopic sensors.



Record the data on the screen to share with uAvionix Support. Push and release the center knob again to stop monitoring vibration and return to the Installation Menu.

9.6 GYRO CAL

As units age or experience unusual conditions, the precision gyroscopic sensors may need to be re-calibrated. This can be accomplished in the field using the procedure noted here. **Running the Gyro Calibration procedure is required to complete this Service Bulletin updating from operating software release 2.0.3 or earlier**, and can be run periodically to respond to higher rates of observed DG drift.

For more information on Gyro Calibration, reference the procedure as described in “AV-30-E Installation Manual” UAV-1004234-001 Rev E (or latest available), Section 13.2.2.



To perform the calibration, the aircraft must be completely motionless and on the ground. It should be located in a hangar and must not be affected by wind or other sources of aircraft movement. If unable to perform the procedure while standing outside the aircraft, do not leave the aircraft during the procedure.

The Gyro Calibration feature can be accessed by selecting “GYRO CAL” from the Installation Menu. At least 15 minutes of warmup is required before performing a Gyro Calibration. Follow the procedure in Section 9 to access the Installation Menu.

1. Ensure the aircraft is completely motionless and on the ground during the next several steps.
2. In the Installation Menu, rotate the center knob until “GYRO CAL” is displayed. Push and release the center knob to enter calibration mode. If sufficient warmup time has not elapsed, a “Not ready to calibrate” message and countdown will be indicated. Otherwise, initiate calibration by pushing the right button.



3. “Calibration in progress” will be displayed with a percentage complete.



AV-30-E will indicate “Calibration successfully completed Press DONE”.

Push the left button under “DONE” and the calibration will be complete. If an error is shown, repeat the calibration process.

9.7 MAG CAL

Each type of magnetometer, internal and external, has its own calibration procedure. The internal magnetometer uses an in-flight procedure and the external magnetometer uses an on-ground 12-point compass procedure. The AV-30-E will retain all calibration after a software update. Starting with version 2.3.3 a hard reset will no longer reset the calibration data. Internal magnetometer and external magnetometer calibration data are stored separately.

If your installation includes an AV-Mag external magnetometer, skip the internal magnetometer calibration and proceed to section 9.7.2.

9.7.1 Internal Magnetometer

If the AV-30 has an internal magnetometer, then an initial, Internal Mag Calibration may need to be completed. This need will be indicated by a red flag indicating “MAG CAL”, once the “ALIGN” flag extinguishes.



For more information on Mag Calibration, reference the procedure as described in “AV-30-E Installation Manual” UAV-1004234-001 Rev F (or latest available), Section 13.2.3.

The Mag Calibration feature can be accessed by selecting “INT MAG CAL” from the Installation Menu. Follow the procedure in Section 9 to access the Installation Menu.

1. The Mag Calibration must take place in-flight. It cannot be performed on the ground. Ensure the Installation Menu is accessible before departure.
2. Once established in flight, access the Installation Menu, and rotate the center knob until “INT MAG CAL” is displayed. Push and release the center knob to enter calibration mode. Confirm by pushing the right button.



3. Fly for 10 minutes. Four, 360-degree standard rate turns will need to be completed. Each turn will represent 25% of the total.
4. Click the left button under “Done” when completed. Once successfully completed the red “MAG CAL” flag will extinguish. If the calibration failed, please retry the procedure.

9.7.2 AV-Mag External Magnetometer

If the AV-30-E installation has AV-Mag an external magnetometer, then an initial AV-Mag Calibration may need to be completed. This need will be indicated by a red flag indicating “MAG CAL”, once the “ALIGN” flag extinguishes.



For more information on AV-Mag Calibration, reference the procedure as described in “AV-30-E Installation Manual” UAV-1004234-001 Rev F (or latest available), Section 13.2.4.

1. The AV-Mag Calibration must take place on ground. A suitable method of alignment to 12 compass headings and a level ground location free of magnetic interference is required.
2. Access the Installation Menu, and rotate the center knob until “AVMAG CAL” is displayed. Push and release the center knob to enter calibration mode. Confirm by pushing the right button.

3. Follow the on-screen instructions, pressing the right button once the aircraft is oriented to heading 360. Keep the aircraft as motionless as possible at each of the headings while the “Calibration in progress” message is displayed.

10 System Checkout

Perform the System Checkout procedure as described in “AV-30-E Installation Manual” UAV-1004234-001 Section 13.2 prior to returning to service.

11 Support

For additional questions or support please visit:

<http://www.uavionix.com/support/>

12 Maintenance Record

When post-accomplishment verification and system checkout is completed, make appropriate entries in the Aircraft Maintenance Log Book.

Maintenance Record

Service Bulletin UAV-1005757-005 Rev C to install software v2.3.3 for AV-30-E UAV-1004035-006, has been complied with.



A copy of this form must be submitted by visiting:

<https://uavionix.com/logbook/>

Date:	By:
Aircraft Information	
Make:	Model:
Serial Number:	Registration Number:
AV-30-E Information	
Serial Number:	
Hardware Part Number:	UAV-1004035-_____
Customer Information	
Name:	
Email:	
Telephone:	