Manuals+ — User Manuals Simplified.
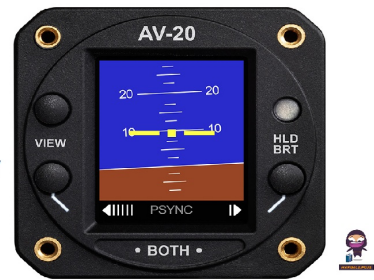

AV-20-E Display
TailBeaconX
Interface

uAvionix AV-20-E Display TailBeaconX Interface Instruction Manual

Contents

uAvionix AV-20-E Display TailBeaconX Interface

Product Information

Specifications

- Product Name: AV-20-E
- Software Version: 1.7.1
- Manufacturer: uAvionix Corporation
- Weight: Not specified
- Operating System Compatibility: Windows 7 or later

Product Usage Instructions

Applicability

This Service Bulletin applies to the uAvionix AV-20-E UAV-1003626-001, with operating software releases 1.6.5 or earlier.

Verification Process:

1. Navigate to the SETUP page.
2. Press both left and right buttons simultaneously.
3. Highlight SYSTEM INFO with the up or down buttons on the left.
4. Enter the SYSTEM INFO screen by pressing the 'SEL' button on the right.

5. If the SW VERSION displayed is 1.6.5 or earlier, proceed with this Service Bulletin.

Description

This Service Bulletin provides instructions for loading uAvionix AV-20-E UAV-1003626-001 with updated software release 1.7.1.

Time Required

For field software update, up to 90 minutes is required to perform this update procedure.

Required Items

- Windows PC running Windows 7 or later
- Available serial port or appropriate USB to RS-232 converter
- Female DB-9 with solder or crimp terminals + 7 female pins
- Male DB-9 with solder or crimp terminals + 2 male pins
- 22-24 AWG wire
- uAvionix AV Update Tool for Windows (UAV-1005199-001)
- AV-20-E Software as shown in Table 4 Software Update Files

Software Update Files

Download the software update file below:

- Filename: UAV-1004134-002-av20e-1_7_155c62c2.bin
- Version: 1.7.1
- SW Part Number: UAV-1004134-003
- SHA1 Hash: 72c4bc083482008dd67617884a9a1955ca146d9d

Frequently Asked Questions

- **Q: Is the software update compatible with all operating systems?**
  - A: The software update is compatible with Windows 7 or later operating systems.
- **Q: How long does it take to perform the software update?**
  - A: Up to 90 minutes are required for the field software update procedure.
- **Q: What items are required for the AV-20-E software update?**
  - A: The required items include a Windows PC, serial port or USB to RS-232 converter, DB-9 connectors, wire, AV Update Tool, and the software update file.

Product Information

2021-2024 uAvionix Corporation. All rights reserved.

- uAvionix Corporation

- Bigfork, MT
- **www.uavionix.com**
- **support@uavionix.com**

Patent **uavionix.com/patents**

Revision History

Revision	Date	Comments
A	6/28/2024	Initial release

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. These items are controlled by the U.S. Government and authorized for export only to the country of ultimate destination for use by the ultimate consignee or end-user(s) herein identified. They may not be resold, transferred, or otherwise disposed of, to any other country or to any person other than the authorized ultimate consignee or end-user(s), either in their original form or after being incorporated into other items, without first obtaining approval from the U.S. government or as otherwise authorized by U.S. law and regulations.

Planning Information

Applicability

This Service Bulletin applies to the uAvionix AV-20-E UAV-1003626-001, with operating software releases 1.6.5 or earlier. Use Table 1 to determine applicability of the software update.

Hardware P/N Marking	Applicability
UAV-1003626-001	Verify by procedure

Parts identified above as "Verify by procedure" may have software released

or earlier installed. To determine what version of the software is installed:

1. Navigate to the SETUP page.
2. Press both left and right buttons simultaneously.
3. Highlight SYSTEM INFO with the up or down buttons on the left.

4. Enter the SYSTEM INFO screen by pressing the 'SEL' button on the right.

5. If the SW VERSION displayed is 1.6.5 or earlier proceed with this Service Bulletin.

Description

This Service Bulletin provides instructions for loading uAvionix AV-20-E UAV-1003626-001 with updated software release 1.7.1.

Time Required

For field software update, up to 90 minutes is required to perform this update procedure.

Weight and Balance

- No change.

Electrical Load Data

- No change.

Applicable Publications

The following documents are applicable to the software release 1.7.1

Title	Part Number	Revision
AV-20-E Installation Manual	UAV-1004048-001	A
AV-20-E Pilot's Guide	UAV-1004049-001	A

Required Items

AV-20-E updates are performed using a Windows PC with a serial port and appropriate cable. The following items are required

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-8P6F or similar
2	Female DB-9 with solder or crimp terminals + 7 female pins
1	Male DB-9 with solder or crimp terminals + 2 male pins
4'	22-24 AWG wire
1	uAvionix AV Update Tool for Windows (UAV-1005199-001)
1	AV-20-E Software as shown in Table 4 Software Update Files.

Download the software update file below.

Filename	Version	SW Part Number	SHA1 Hash
UAV-1004134-002-av20e-1_7_1-55c62c2.bin	1.7.1	UAV-1004134-003	72c4bc083482008dd67617884a9a1955ca146d9d

uAvionix software update files are available for download from the uAvionix

Support website at no charge, at:

- **https://uavionix.com/articles/av-20-e-service-bulletin-softwareupgrade-1-7-1/**

Click on the link in the section AV-20-E v1.7.1 Firmware and save it to your Windows PC or laptop. The uAvionix AV Update Tool is available on the website linked above in the section AV Update Tool. Download it to your PC. 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.

Update Notes

AV-20-E configuration settings will be preserved during the update procedure when possible. However, please take note of all settings before performing the update, and verify settings are correct after the update has been applied. Additional configuration settings have been added. See the installation manual for details for each setting. If pitot and static lines were not previously connected, ensure appropriate approval and connect the lines now to ensure full performance and functionality. Ensure you are running a previous version of AV-20-E software. Specifically, your AV-20-E should currently be running 1.6.5 or earlier.

Update Procedure

Serial Update Preparation

1. If the AV-20-E is connected to a tailBeaconX, it must be disconnected to update software. The update uses the same serial port pins as the tailBeaconX. You must also disable tailBeaconX in software as described in § 8.2.
2. If a tailBeaconX is installed, skip to step 4. If tailBeaconX is not installed, add wires to pins 3 and 4 to the AV-20-E harness. Add an additional ground wire to either the existing ground on the AV-20-E harness (pin 9) or attach the ground wire directly to aircraft ground.
3. Connect the other end of these new wires to a female DB-9 connector. Upon completion of wiring, connect the new assembly to an available serial port or USB serial adapter.
4. If a tailBeaconX is installed, we recommend building a new "Go Between" wiring harness just for updating software rather than modifying the existing harness. An example is shown in Figure 1. The wiring schematic is shown in Figure 2.
5. Connect the serial+USB cable to your PC and the harness, connect the harness to the AV-20 and apply power.
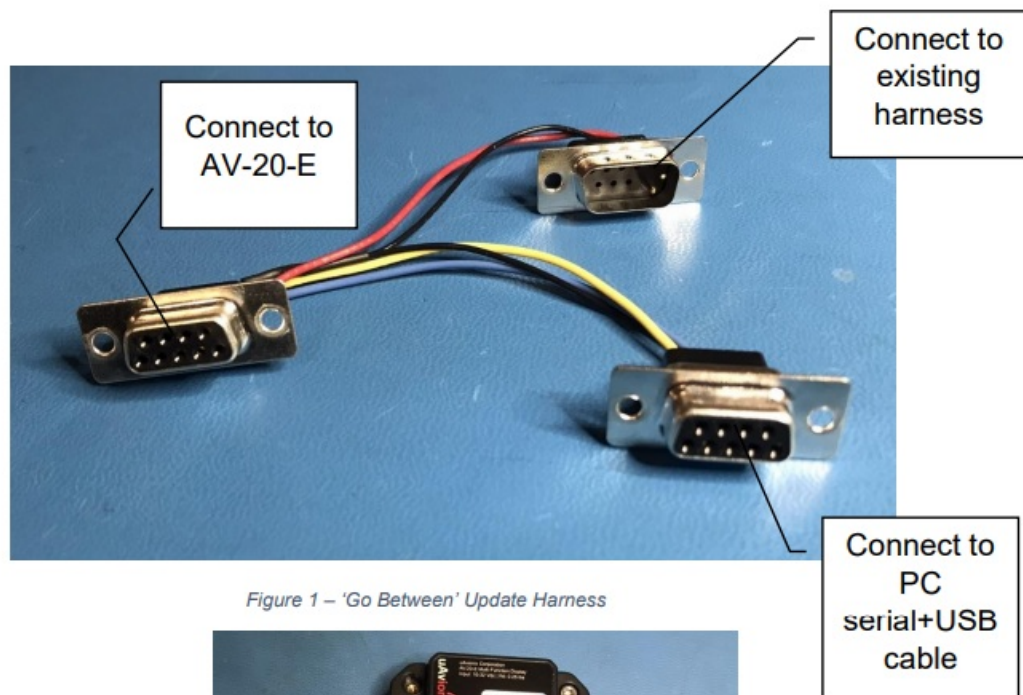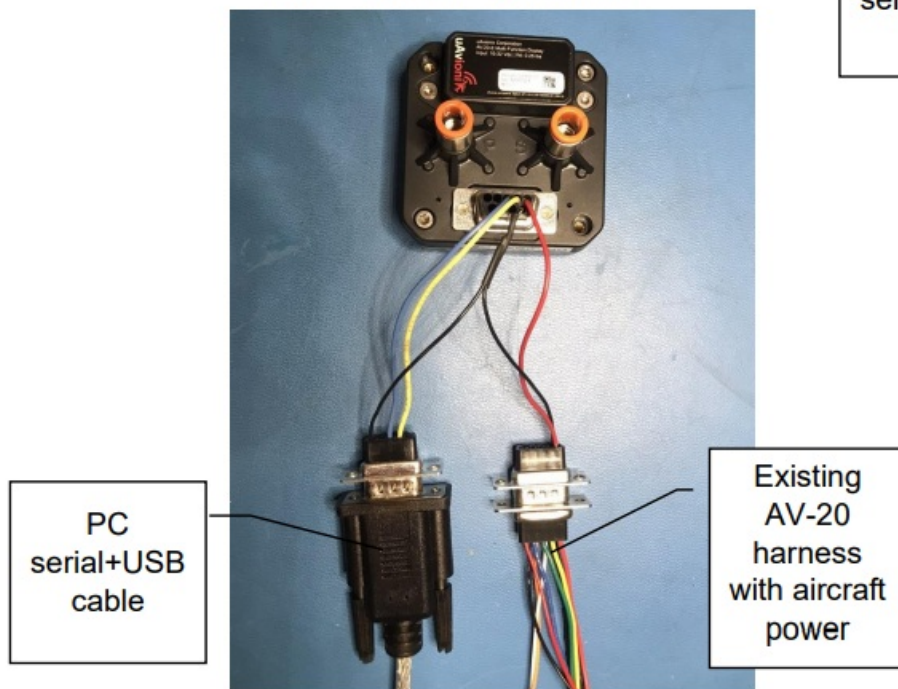
Connect to AV-20-E

Connect to existing harness

Connect to PC serial+USB cable

Figure 1 – 'Go Between' Update Harness

PC serial+USB cable
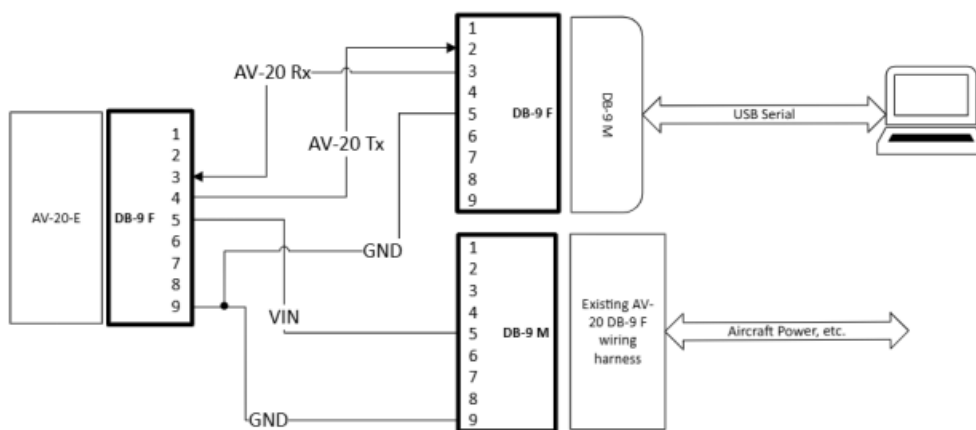
Existing AV-20 harness with aircraft power

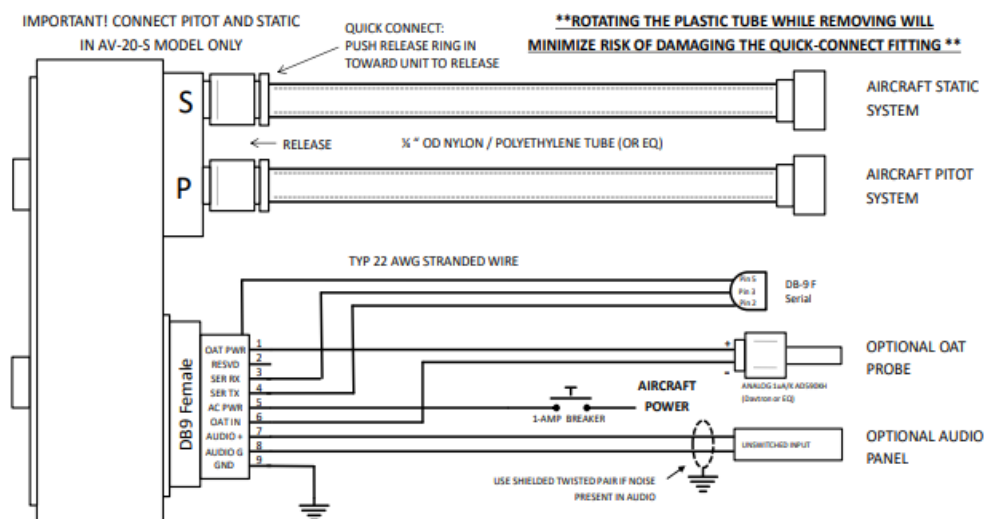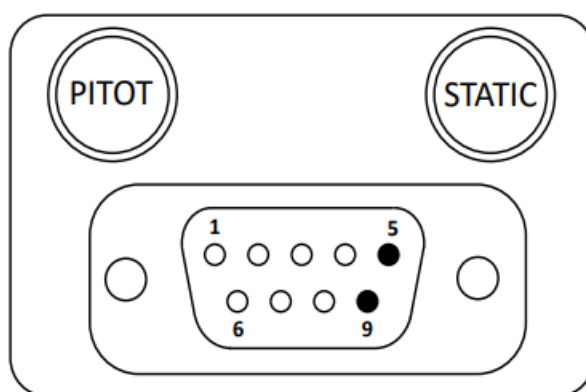Figure 2 'Go Between' Update Harness Schematic

Figure 3 – Wiring Diagram

Figure 4 – Unit Connections – DB-9, Male Connector – Rear View

All connections are provided on the single 9-Pin D-sub connector and the two pneumatic fittings

Pin	Function	Type	Comment
1	OAT Supply	Output	OAT Sensor Supply Line
2	Serial Input	Input	Reserved
3	AV-XPORT Input	Input	RS-232 Software Update
4	AV-XPORT Output	Output	RS-232 Software Update
5	Power	Power	+12 to +28 VDC
6	OAT Sensor	Input	OAT Sensor Input
7	Audio H	Output	Altitude Alerts / Other
8	Audio L	Output	To Audio Panel Ground
9	Ground	Power	To Aircraft Ground

Table 5 – AV-20-E DB-9 Male Connector Pinou

| Pin	Function
1	
2	Serial Output
3	Serial Input
4	
5	Ground
6	
7	
8	
9	

Table 6 – Standard DB-9 Female Pinout for reference

Serial Update Procedure

1. Connect the AV-20-E to the Windows PC through the DB-9 connection previously installed in Section 8.1.
2. Apply power to the AV-20-E.
3. Go to the SETUP page and scroll down to PAGE ENABLE.
4. If the XPDR CTRL page is enabled, disable it and power cycle the AV- 20-E. This step is required for the AV Updater application to detect the AV-20-E.
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".
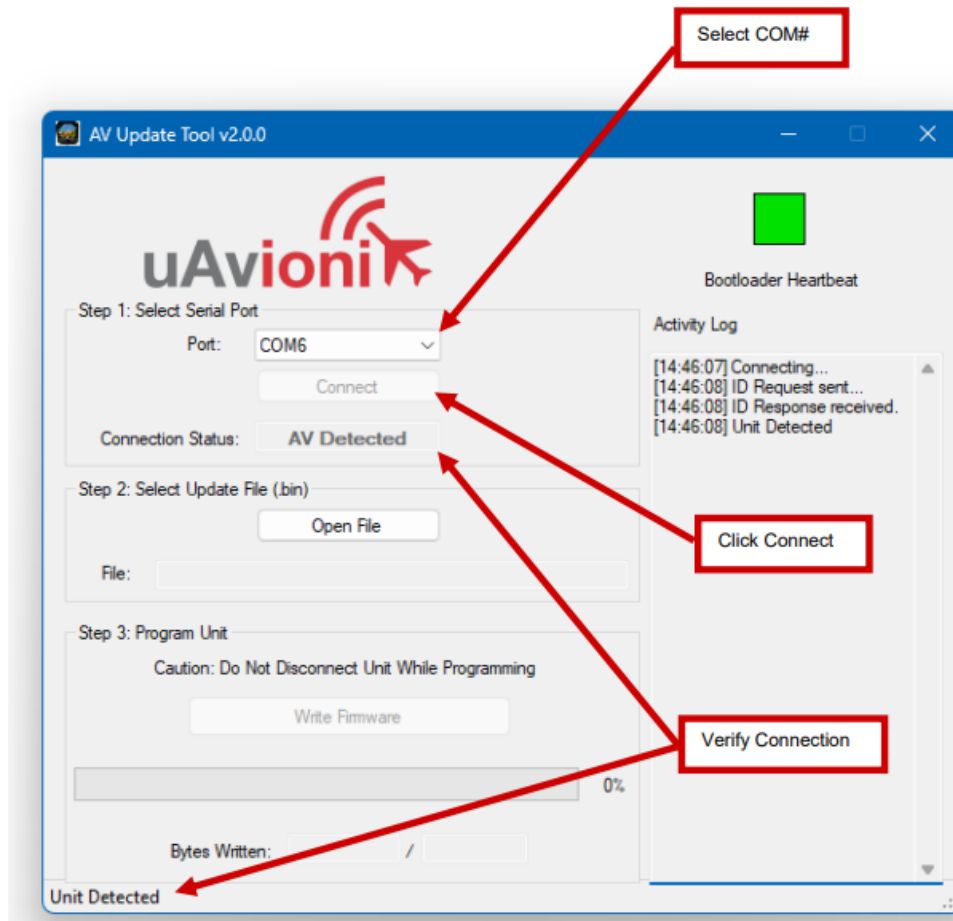
7. Proper connection has been made when the message "Unit Detected" has appeared on the bottom left corner of the AV Updater Tool. The screen on the AV-20-E will go black for the remainder of this procedure. If "Unit Detected" does not appear, re-check your wired connections or contact uAvionix Support for additional guidance.

8. Once proper connection has been made, select the software file toupload to the AV-20-E by clicking "Open File" and selecting the previously downloaded software file as identified in Table 4. Note that you need to select "AV-20 Update Files" in the lower right corner
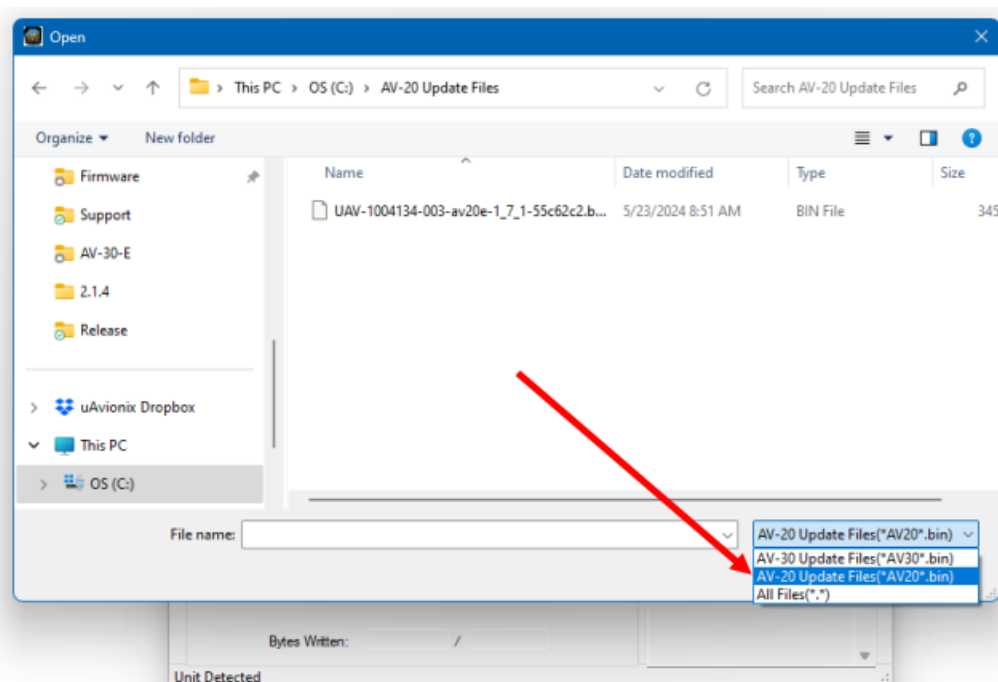
A confirmation dialog will appear with the filename and a calculated SHA1 hash. To confirm integrity of the file, compare the displayed SHA1 hash tothat in Table 4. Note that the hash is not case sensitive.
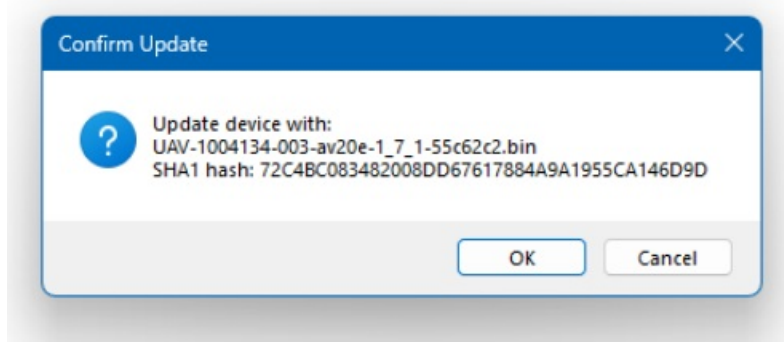
When confirmed, press OK and the main dialog will re-appear.
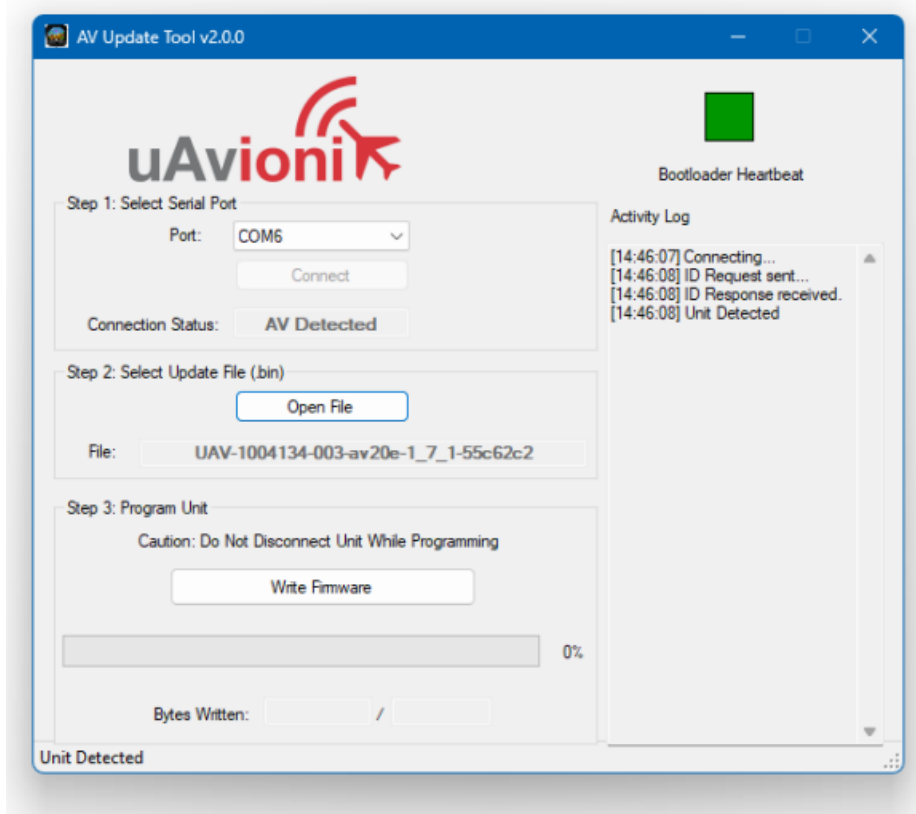
Press "Write Firmware" to begin the upload.

DO NOT POWER OFF THE AV-20-E OR CLOSE THE UPDATER TOOL UNTIL THE UPDATE IS COMPLETE.
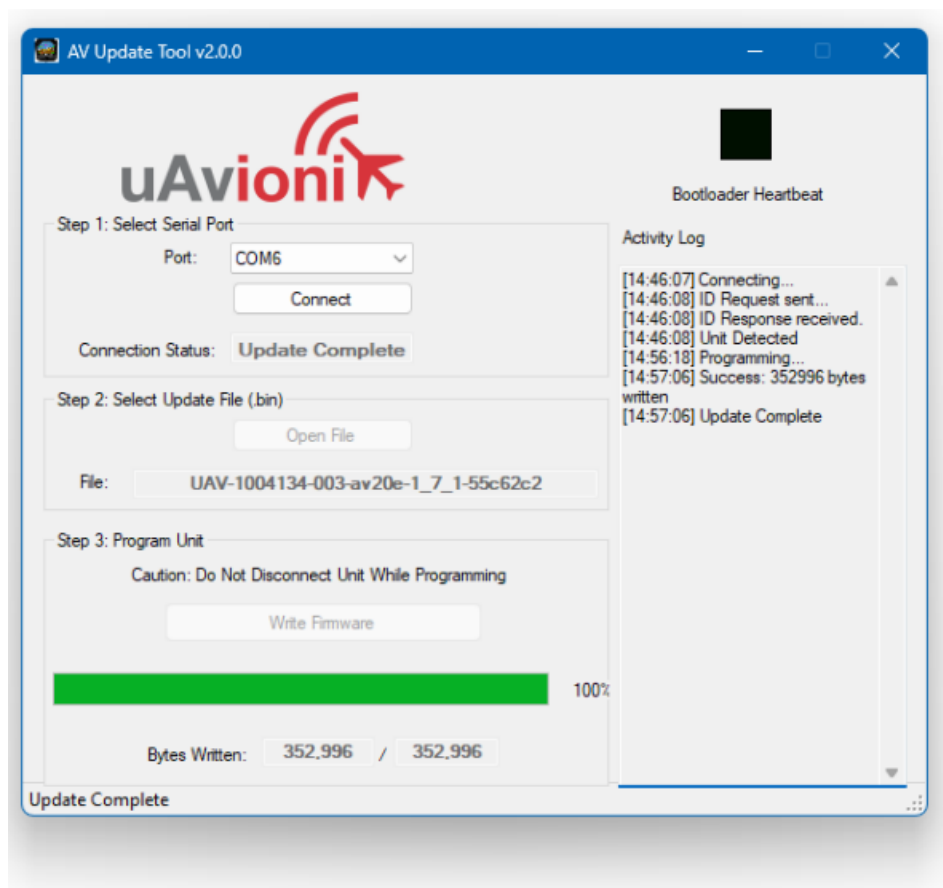
Figure 8-5 AV Update Tool

- When the AV Update Tool displays "100%" and the lower status reads "Update Complete" the process is complete.
- The unit will automatically restart. Upon restart of the unit, verify the startup screen indicates the updated software version.

  THE SCREEN OF THE AV-20-E WILL GO BLACK WHILE THE DEVICE REBOOTS, THIS BEHAVIOR IS NORMAL AND THE STARTUP SCREEN WILL APPEAR AFTER REBOOTING.
- If the unit was removed to perform the update it can now be reinstalled as per the installation manual.
- Any new wiring added for the update process should be properly secured.
- If the XPDR CTRL page was disabled in step 4, re-enable it now and power cycle the AV-20-E.
- Following the completion of update, follow Section 10 to perform required post-installation procedures.

Troubleshooting

The following steps are to aid in identifying update issues

Issue	Possible Reason and Remedy
Update Tool	
	Disable Transponder
	– On SETUP screen, under PAGE ENABLE, turn off the XPDR page (red X). Re-enable it after the update.

Update Tool does not connect.	Check wiring. – AV-20-E must be powered separately from serial cable. Serial end of cable does not provide power. – Check pinouts. – Check signal ground wire.
	Check COM port. – Does a new COM port get created when the cable is plugged into the USB port? Try another port or check for a Windows device driver problem. Follow cable manufacturer instructions. – Are you using the COM port associated with the USB cable? – Are you using the recommended USB cable? – Is another application using this COM port?
Unit has black screen after update	Update was interrupted before it could complete – Boot into bootloader mode as follows: – Press and hold bottom left and right buttons while powering up. – Hold for 10 seconds before releasing – Retry the update with the updater tool – Make sure power stays on during the update
	Device settings may need to be reset – Hold upper and lower left buttons while powering up. – Release buttons after splash screen has cleared
	Contact Product Support
Calibration Operations	
Pitot Zero will not run	Device detects airborne condition based on vibration – Isolate the device from strong vibration sources like air data test sets, machinery, etc.
Airspeed trim will not run	Device detects airborne condition based on vibration – Isolate the device from strong vibration sources like air data test sets, machinery, etc.
Hard Calibration will not run	Device detects airborne condition based on airspeed – Run Pitot-Zero operation first, then retry hard Calibration – Calibrate airspeed trim, then retry

	Device detects airborne condition based on airspeed	
Altitude trim will not run	–	Run Pitot-Zero operation first, then retry altitude trim
	–	Calibrate airspeed trim, then retry

Post-Update Operation	
Transponder page missing	On SETUP screen, under PAGE ENABLE, turn on the XPDR page (green checkmark).
VFR Squawk Code unexpected	Using the skyBeacon phone/tablet application, check that the tailBeaconX has a default squawk code that is the desired VFR squawk code.

Post-Accomplishment Verification and Actions

Verify Update Versions

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

1. Navigate to the SETUP page.
2. Press both left and right buttons simultaneously.
3. Highlight SYSTEM INFO with the up or down buttons on the left.
4. Enter the SYSTEM INFO screen by pressing the 'SEL' button on the right.
5. If the SW VERSION displayed is 1.7.1, the update is verified.

If the new software version is not 1.7.1, contact uAvionix Support.

System Checkout

Review the settings in the aircraft log book and verify that the AV-20-E settings are intact. Review the "AV-20-E Installation Manual" UAV- 1004048-001 Rev A §9 Instructions for Continued Maintenance & Operation prior to returning to service. Version 1.7.1 and greater uses pitot-static data to assist the attitude algorithm. Performing the Air Data – Pitot Zero procedure found in the Installation Manual is particularly important. It is strongly recommended to execute a Hard Cal calibration procedure and to calibrate airspeed and altitude with an air data test set in addition to the Pitot-Zero.

Support

For additional questions or support please visit:

- **http://www.uavionix.com/support/**

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-1007941-001 Rev A to install software v1.7.1 for AV- 20-E UAV-1003626-(___), has been complied with.

A copy of this form may be submitted by visiting:

- **https://uavionix.com/logbook/**

Date:	By:
Aircraft Information	
Make:	Model:
Serial Number:	Registration Number:
AV-20-E Information	
Serial Number:	
Hardware Part Number:	UAV-1003626-_____
Customer Information	
Name:	
Email:	
Telephone:	

Documents / Resources

	uAvionix AV-20-E Display TailBeaconX Interface [pdf] Instruction Manual AV-20-E, AV-20-E Display TailBeaconX Interface, AV-20-E, Display TailBeaconX Interface, TailBeaconX Interface, Interface

References

- **Patents - uAvionix**
- **uAvionix | Connecting Everything That Flies**
- **uAvionix | Connecting Everything That Flies**
- **Support - uAvionix**
- **Maintenance Record - uAvionix**
- **User Manual**