pingRID Broadcast Module

User and Installation Guide

UAV-1007146-001
Rev A

1 Revision History

Revision	Date	Comments
A	2/23/2023	Initial release

2 Warnings / Disclaimers

All device operational procedures must be learned on the ground.

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.

3 Limited Warranty

uAvionix products are warranted to be free from defects in material and workmanship for one year from the installation of pingRID on the aircraft. For the duration of the warranty period, uAvionix, at its sole option, will repair or replace any product which fails in normal use. Such repairs or replacement will be made at no charge to the customer for parts or labor, provided that the customer shall be responsible for any transportation cost.

Restrictions: This warranty does not apply to cosmetic damage, consumable parts, damage caused by accident, abuse, misuse, fire or flood, theft, damage caused by unauthorized servicing, or product that has been modified or altered.

Disclaimer of Warranty: IN NO EVENT, SHALL UAVIONIX BE LIABLE FOR ANY INCIDENTAL, SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES, WHETHER RESULTING FROM THE USE, MISUSE OR INABILITY TO USE THE PRODUCT OR FROM DEFECTS IN THE PRODUCT. SOME STATES DO NOT ALLOW THE EXCLUSION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATIONS MAY NOT APPLY TO YOU.

Warranty Service: Warranty repair service shall be provided directly by uAvionix. Proof of purchase for the product from uAvionix or authorized reseller is required to obtain and better expedite warranty service.

Please email or call uAvionix support with a description of the problem you are experiencing. Also, please provide the model, serial number, shipping address and a daytime contact number.

You will be promptly contacted with further troubleshooting steps or return instructions. It is recommended to use a shipping method with tracking and insurance.

4 Table of Contents

5 Compliance and System Information

5.1 Compliance

This installation manual provides mechanical and electrical information necessary to install pingRID. It is not equivalent to an approved airframe-specific maintenance manual, installation design drawing, or installation data package. The content of this manual assumes use by competent and qualified personnel using standard maintenance procedures in accordance with Title 14 of the Code of Federal Regulation and other related accepted procedures. The conditions and tests required for approval of this article are minimum performance standards. Those installing this article either on or within a specific type or class of aircraft must determine that the aircraft installation conditions are within the standards which include any accepted integrated functions not specified by the standards.

5.2 Declarations of Compliance

pingRID complies with the following specifications when properly installed and interfaced with equipment as detailed in this guide.

Specification	Title
FR_Doc_2022-16997	Federal Register / Vol. 87, No. 154 Tracking number: RID-ASTM-F3586-22-NOA-22-01
ASTM F3586-22	Standard Practice for Remote ID Means of Compliance to Federal Aviation Administration regulation 14 CFR Part 89
ASTM F3411-22a	Standard Specification for Remote ID and Tracking

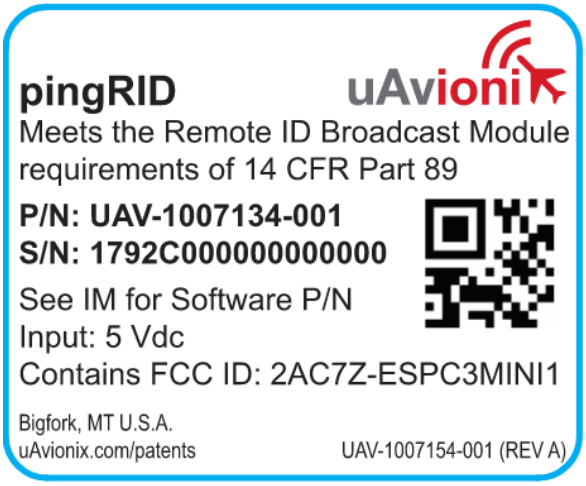
An FAA Declaration of Compliance to Part 89 Remote ID regulations has been accepted with tracking number RID000000132.

5.3 FCC ID

Model	FCC ID
Contains	2AC7Z-ESPC3MINI1

5.4 Device Marking

5.4.1 pingRID Hardware



5.4.2 pingRID Software

The software contained in the pingRID is identified by electronic marking. Reference Section 10.3 for information on determining the software part numbers.

5.5 Continued Airworthiness

Maintenance of pingRID is "on condition" only.

6 System Specifications

6.1 System Functionality

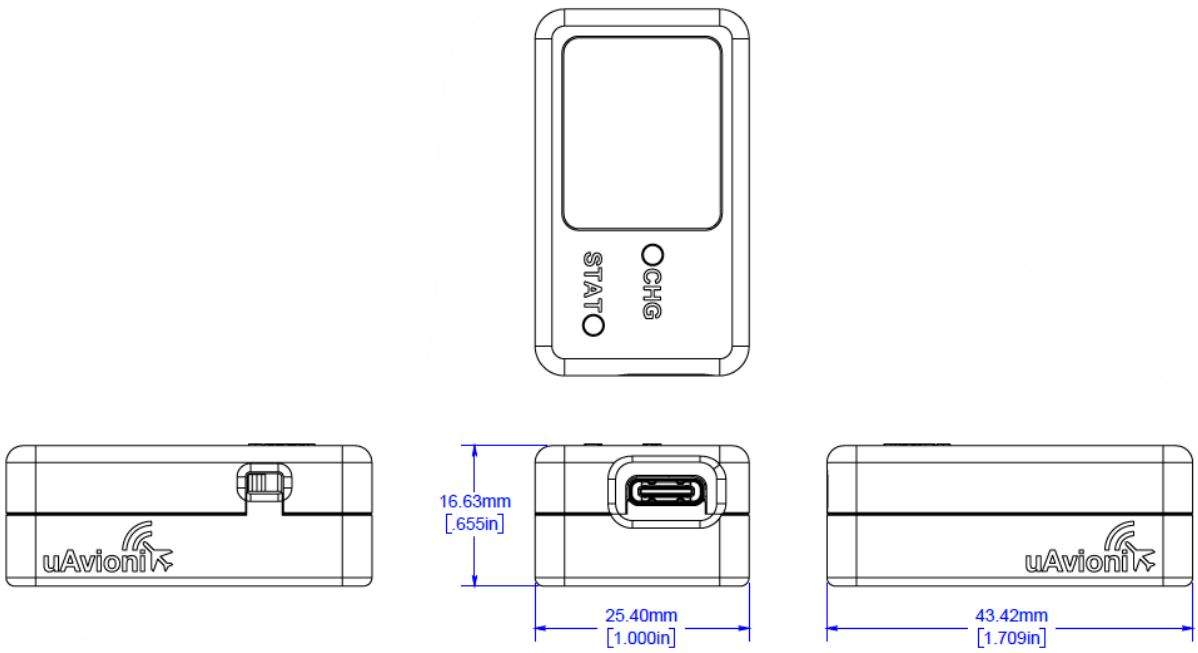
pingRID is a 14 CFR Part 89 compliant Remote Identification (RID) solution, implemented as a Broadcast Module. It transmits Bluetooth (BT4 Legacy and BT5 Long Range).

6.2 pingRID Specifications

6.2.1 Physical Specifications

Characteristics	Specifications
Width	1.000 in (25.40 mm)
Height	0.655 in (16.63 mm)
Depth	1.709 in (43.42 mm)
Weight	0.7 oz (21 grams)
Charge Connector	USB-C
Battery	Internal Li-ion

	740 mWh
Battery runtime	2 hours
Indicators	Charge LED Status LED
Power Switch	Mechanical On/Off



6.2.2 RID Transmitter Specifications

Characteristics	Specifications
Compliance	FAA 14 CFR Part 89 ASTM F3411-22a
Protocols	Bluetooth 4 Legacy Bluetooth 5 Long Range
Frequency	2402 MHz to 2480 MHz
Messages Transmitted	Basic ID - Pre-assigned Serial Number Location/Vector - Status - Track Direction - Speed - Vertical Speed - Latitude / Longitude

	- Geodetic Altitude - Timestamp System - Operator Location (takeoff) - Timestamp

6.2.3 GNSS Specifications

Characteristics	Specifications
Number of Channels	72
Constellations	GPS, GLONASS, SBAS, QZSS
Frequency	1575.42 MHz L1, C/A code
Sensitivity Tracking Reacquisition Cold Start Hot Start	 -165 dBm -158 dBm -146 dBm -155 dBm
Horizontal position accuracy	2 m RMS with SBAS
Velocity accuracy	0.05 m/s
Heading accuracy	0.3 degrees
TTFF (Time to First Fix) Cold start Hot start	 26 s 1 s
Position update interval	1 second (1 Hz)

6.2.4 Wi-Fi Management Interface Specification

Characteristics	Specifications
Standard	802.11b/g/n
Security	WPA2 PSK
Frequency	2.4 GHz
Protocol	HTTP port 80

6.2.5 System Interfaces

pingRID is a self-contained system. A USB-C port is provided to charge the device.

7 Installation

7.1 Unpacking and Inspecting

Carefully unpack the device and make a visual inspection of the unit for evidence of any damage incurred during shipment. If the unit is damaged, notify the shipping company to file a claim for the damage. To justify your claim, save the original shipping container and all packing materials.

7.2 Part Numbers

Item	P/N
pingRID Hardware	UAV-1007134-( )
pingRID Software	UAV-1007148-( )

7.3 Installation Materials and Tools

pingRID is provided with a 3M Dual-Lock™ fastener to quickly and safely provide attachment to the airframe.

7.4 Mounting

pingRID should be mounted in an accessible location using the include 3M Dual-Lock™ fasteners. Ensure the power switch is accessible for pre- and post-flight operation.

To ensure performance of the GNSS positioning system, the label side of pingRID **must** be facing the sky, with limited obstruction, during normal flight operations.

Typically, pingRID is powered by its internally battery which must be charged on the ground prior to use. Optionally, a USB-C cable providing 5V may be connected from an aircraft power source to pingRID and provide constant charge while in-flight.

7.5 Operational Check

Reference Section 11 for details on operating and confirming the status of the system. At a minimum, the device should be powered on and the status LED indicate that it ready for flight. Additional confirmation of status can be

made by connecting to the Wi-Fi management interface, or using a mobile application to examine received data from pingRID.

7.6 EMC Checkout

An EMC check should be performed after pingRID installation is complete. The EMC check verifies that the newly installed equipment is not producing interference to other avionics and that the existing avionics are not producing interference impacting pingRID. The testing assumes that a pingRID operational check has been completed and that the installed avionics are tested and in working condition.

1. Power on all avionics except the pingRID.
2. Verify all existing avionics are functioning properly.
3. After confirming all existing avionics are functioning properly, power off all existing equipment.
4. Power on pingRID and confirm proper operation and transmissions from pingRID.
5. Power on all existing avionics and repeat tests to confirm proper function.

8 Maintenance

The pingRID is not a user serviceable product. All service must be performed either by uAvionix or an authorized uAvionix repair center.

9 Care and Cautions

pingRID is not weatherproof and should not be operated in inclement weather.

pingRID should be regularly cleaned with a soft cloth micro-fiber rag. pingRID is not waterproof - do not use liquid cleaners, chemicals, or degreasers.

pingRID may not be painted.

10 System Configuration

No system configuration is required for typical installations. For advanced configuration, software update, or to read software part electronic marking, reference the following information.

10.1 Connect to pingRID Wi-Fi

When powered, pingRID serves as a Wi-Fi access point. The SSID of the pingRID is in the form pingRID_xxxx, for example pingRID_E749.

The pingRID Wi-Fi connection is secure. The WPA2 passphrase is written on an inclusion in your package, and should be entered exactly as printed. WPA2 passphrases are case sensitive.

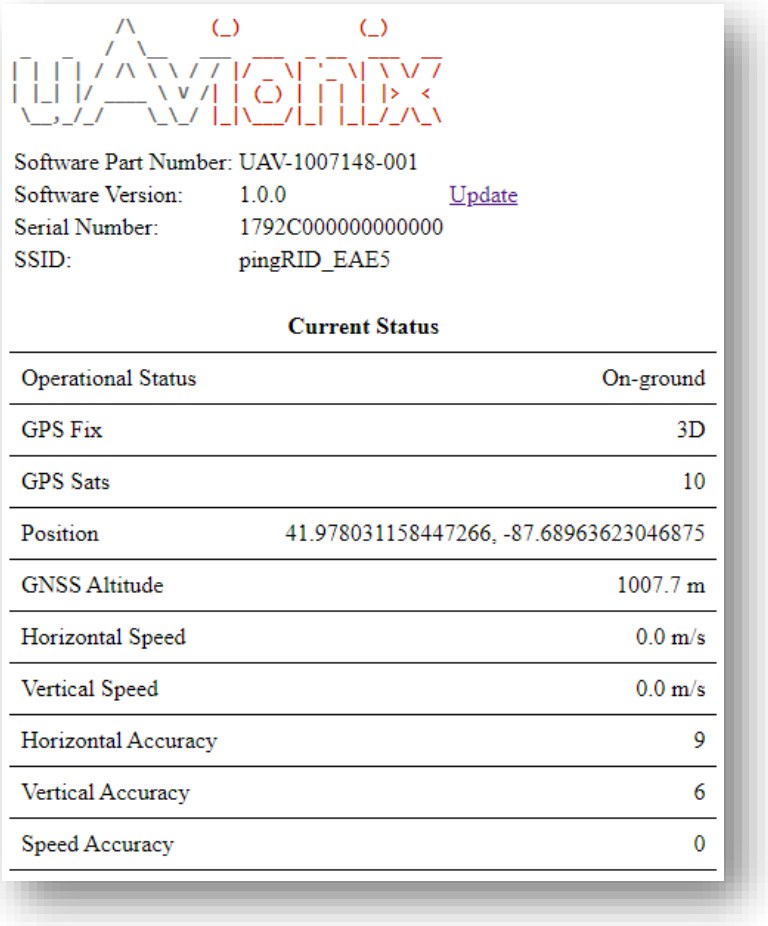
Power pingRID and connect using this information from the desired client device. This may be an iOS, Android, or Windows device, for example.

10.2 Status Web Page

Using a web browser such as Chrome, open the status web page at the following address:

http://192.168.4.1

The web page displays system configuration information and current status, as shown below. “Serial Number” is uniquely assigned to this Remote Identification Broadcast Module, and can be used to identify your aircraft for registration purposes.



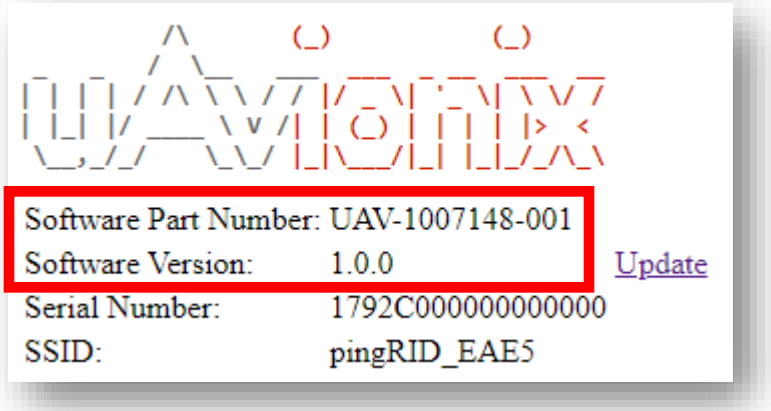
Software Part Number: UAV-1007148-001
Software Version: 1.0.0 Update
Serial Number: 1792C000000000000
SSID: pingRID_EAE5

Current Status

Operational Status	On-ground
GPS Fix	3D
GPS Sats	10
Position	41.978031158447266, -87.68963623046875
GNSS Altitude	1007.7 m
Horizontal Speed	0.0 m/s
Vertical Speed	0.0 m/s
Horizontal Accuracy	9
Vertical Accuracy	6
Speed Accuracy	0

10.3 Determine software part electronic marking

The current pingRID version information is displayed on the status web page:



Software Part Number: UAV-1007148-001
Software Version: 1.0.0 Update
Serial Number: 1792C000000000000
SSID: pingRID_EAE5

Annually, or as required, confirm the displayed “Software Part Number” and “Software Version” are current per Service Bulletins listed at:

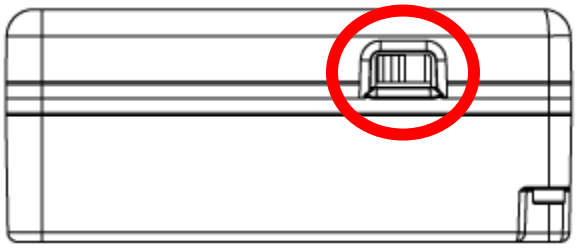
https://uavionix.com/support/pingrid/

If software is not current, apply Service Bulletins as appropriate to update the software.

11 Normal Operation

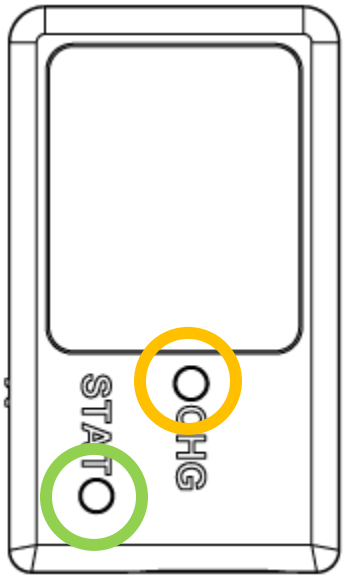
11.1 Indicators and Interfaces

11.1.1 Power Switch



The power switch is highlighted in red. The switch is shown in the Off position. Slide it towards the USB-C port to turn power On.

11.1.2 LED Indicators

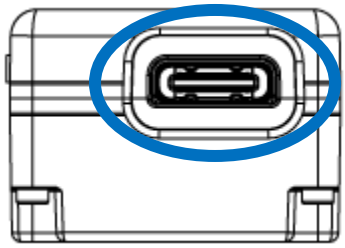


The charge LED is highlighted in orange. It will illuminate in orange while charging and extinguish when charging is complete.

The status LED is highlighted in green, and conveys the following information with a single green LED:

Status LED	Indication
Four quick flashes	Pre-flight Self-Test (PFST) failure – if indication persists contact uAvionix support.
Slow flashing	Acquiring position, do not take off. If indication persists, ensure line-of-sight to the sky.
Solid	Position acquired, ready for takeoff.
Two quick flashes	Takeoff detected, in flight.

11.1.3 USB-C Charge Port



The USB-C charge port is highlighted in blue.

11.2 Charging

To charge pingRID, connect a USB-C cable to the device. pingRID is compatible with USB chargers capable of providing 5V.

The charge LED will illuminate while charging and extinguish when charging is complete.

Ensure an appropriate level of charge has been provided prior to flight.

Optionally, a USB-C cable providing 5V may be connected from an aircraft power source to pingRID and provide constant charge while in-flight.

11.3 Pre-flight

Ensure the battery is fully, or appropriately charged for your mission. See Section 11.2.

Power on pingRID using the power switch as shown in Section 11.1.1. Ensure that the status LED has turned on – reference Section 11.1.2 for information on the LED indications.

To ensure compliance with 14 CFR Part 89, you must ensure that pingRID has a obtained a valid GNSS position prior to takeoff. This is indicated by a solid green status LED.

Once the status LED indicates solid green, continue remaining aircraft pre-flight checks and takeoff when ready, ensuring the LED continues to indicate solid green.

11.4 In-flight

Takeoff is detected by monitoring position and velocity. pingRID reports that takeoff location until the device has been power cycled. After takeoff is detected, the status LED will periodically flash to conserve power and reduce unwanted lighting emissions. Additionally, Wi-Fi is disabled upon takeoff.

Flight progress and broadcast Remote ID data may be monitored by using a variety of mobile device applications or ground receivers. For more details visit:

https://uavionix.com/

11.5 Post-flight

Power off pingRID using the power switch as shown in Section 11.1.1.

12 Support

For additional questions or support please visit:

https://www.uavionix.com/support/