

Cinnamon Drones RID Broadcast Module User Manual

Version 1.03



IMPORTANT: Make sure to read the whole manual before using this broadcast module. Disregarding the information in this user manual can result in an incompliant module, or damage and/or injury. This document contains important information so that you can fly safely and be compliant. If you have questions or run into issues, please contact us at team@cinnamondrones.com.

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Quick Start Guide

IMPORTANT: Before operating with the module, ensure you have read through this user manual. It contains important information regarding compliance and safety. Failure to comply with this user manual or other unsafe practices can lead to safety hazards and failure to comply with the FAA RID ruling.

Quick Start: Using the Module:

1. Ensure battery is charged (see Battery Section)
2. Install module on aircraft (see Installation section)
3. Turn on module
4. Verify the module passes the Pre-Flight Safety Test (see PFST section)
5. Go fly!

Assembly Instructions

Pre-assembled:

No Assembly Required: Your module is pre-assembled for your convenience. Skip to the installation instructions in section 2.

Solder-yourself kit:

Follow Detailed Soldering Instructions:

- Review the detailed soldering instructions provided at cinnamondrones.com/rid-assembly-instructions.
- Ensure all components are securely attached before moving on to the installation phase.

Note: If you encounter any issues during assembly, contact our support team at team@cinnamondrones.com or visit cinnamondrones.com/rid-module-faq for assistance.

Installation Instructions

Attach Velcro:

- Attach the provided velcro strips securely to the bottom of both the module and the drone.

Install the Broadcast Module:

- Securely attach the broadcast module to the drone.
- Ensure the GPS receiver faces upward and is placed in a location where it can receive signals from satellites.
- It must be open to the sky and uncovered, but it does not necessarily need to be placed above all other components.
- Refer to Figure 1 for correct placement examples.



Figure 1: Good placement of module on sample drone. Notice that the module faces upward and is clear of obstructions. This will allow the module to get a GPS fix.

Important: Incorrect placement may lead to module malfunction. Confirm the position using third-party Remote ID scanner apps or alternative methods. See Pre-Flight Safety Test section for details on how to confirm placement of the module.

For further assistance or questions about module placement, contact our support team at team@cinnamondrones.com or visit cinnamondrones.com/rid-module-faq.

Limitations of the broadcast module:

- This module will not work as intended if the GPS receiver is not placed correctly. Incorrect placement can include placing the module upside-down or in a place on the drone where the GPS module does not have a good view of the sky (satellites). As every drone platform is different, it is the pilot's responsibility to verify that the broadcast module has been placed in a position where it receives enough signals to establish a valid GPS lock. This can be done using third party Remote ID scanner mobile applications and other methods. See the In-Flight Remote ID Monitoring section for further information on how to check GPS functionality. **Failure to correctly place and failure to check the quality of placement on the drone may lead to non-compliance of the FAA Remote ID ruling.**
- This module will not work as intended if the module is placed in a way that interferes with the module's omnidirectional broadcasting functionality. As every drone platform is different, it is the pilot's responsibility to verify that the module is placed in such a way that the omnidirectional broadcasting pattern is not blocked or shielded. This means that the module should be placed in a relatively open space on the drone, and not excessively surrounded or blocked by other components. Examples of good placement can be found in Figure 1. Verification can be done using third party Remote ID scanner mobile applications or other methods. See the In-Flight Remote ID Monitoring section for further information on how to check transmitting functionality. **Failure to correctly place and failure to check the quality of placement on the drone may lead to non-compliance of the FAA Remote ID ruling.**

Please let us know (team@cinnamondrones.com) or visit our website cinnamondrones.com/rid-module-faq if you have any questions about module placement or how to verify that the module is working as intended.

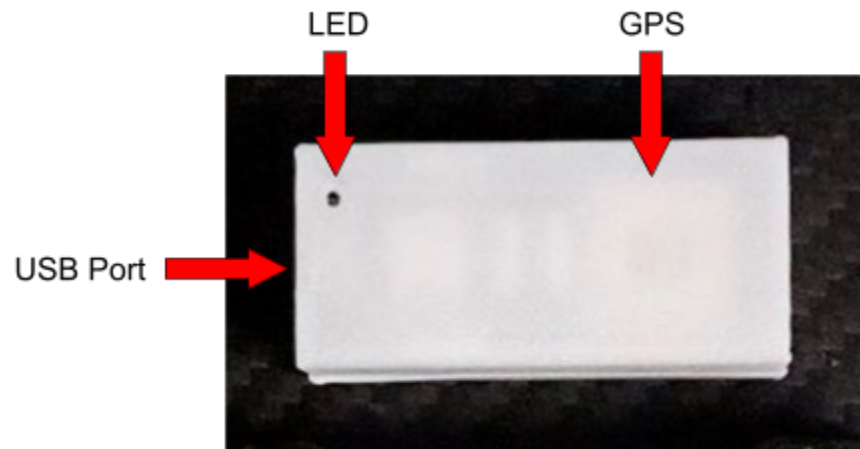
About the Module

Module LED flash patterns:

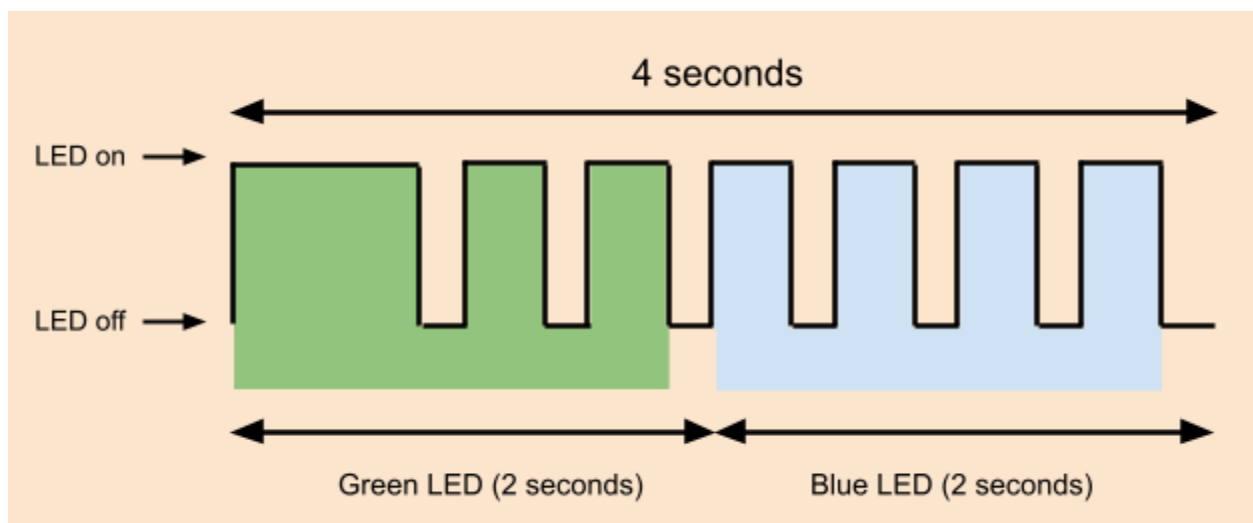
The module uses a multicolor LED to communicate information about:

- 1) the status of the Remote ID functionality (**green LED**)
- 2) the battery status (**blue LED**). See **Figure 2**.

Figure 2: The LED is located on the top of the module, next to the USB port. It is on the opposite side of the GPS module.

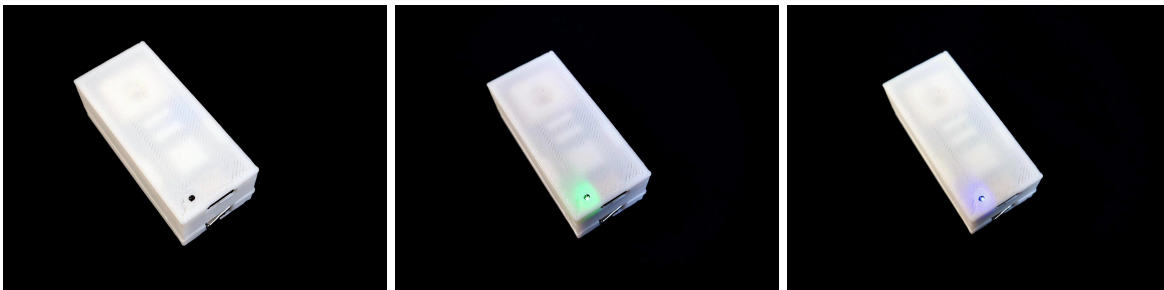


The flash pattern of the module repeats every 4 seconds. The Green LED will do its flash pattern first, followed by the Blue LED flash pattern. Example flash pattern is shown below.



Flash Pattern Table:

LED	Flash pattern	Meaning
Green LED	No flash	Module is powered off or dysfunctional
	1 long flash	Module is working. GPS fix not available yet.
	1 long flash, 1 short flash	Module is working. GPS is working. GPS fix not available yet.
	1 long flash, 2 long flashes	Module is working. GPS is working. GPS has location fix. Ready to fly!
Blue LED	Continuous flashing	Battery level low (<20% charge remaining). Do not use. Charge immediately.
	1 short flash	Low battery level (~30-50% charge)
	2 short flashes	Medium battery level (~50-75% charge)
	3 short flashes	Medium battery level (~75-90% charge)
	4 short flashes	High battery level (~90-100% charge)
	No flash, always on	Battery overcharged and unsafe. Do not use!



Photos above from left to right show the module with the lights off, the green light on, and the blue light on.

Battery charging:

This module has a built-in TI BQ25101, single-cell Lithium-polymer charging circuit. Follow all applicable safety regulations when charging your battery!

To charge the battery, connect the USB-C port on the module to an appropriate 5V power source (such as a laptop). The module will take about 1 hour to fully charge (from empty).

WARNING: Lithium-polymer batteries can be dangerous if handled incorrectly.

- NEVER leave your module charging unattended.
- NEVER store module and battery above 80°F.
- NEVER let positive and negative leads to touch.
- ALWAYS charge module in a fireproof container away from combustible material. NEVER charge on surfaces that can catch fire.
- ALWAYS inspect the module and battery before, after, and during charging. If there are signs of deforming, swelling, or damage, STOP charging and follow a proper procedure to dispose of the battery safely.
- NEVER charge a swollen or damaged battery. This will result in a fire.

Pre-Flight Safety Test (PFST)

What is the PFST?

Immediately after the user powers on the Remote ID module, the module automatically conducts a Pre-Flight Safety Test (PFST) to make sure the module is functioning correctly. This includes the GPS receiver and the Bluetooth transmitter. **Important:** *A complete PFST requires the pilot to use a handheld mobile app to verify that the transmission hardware is functioning properly.*

Quick Instructions:

How to know when the Remote ID module is ready to fly:

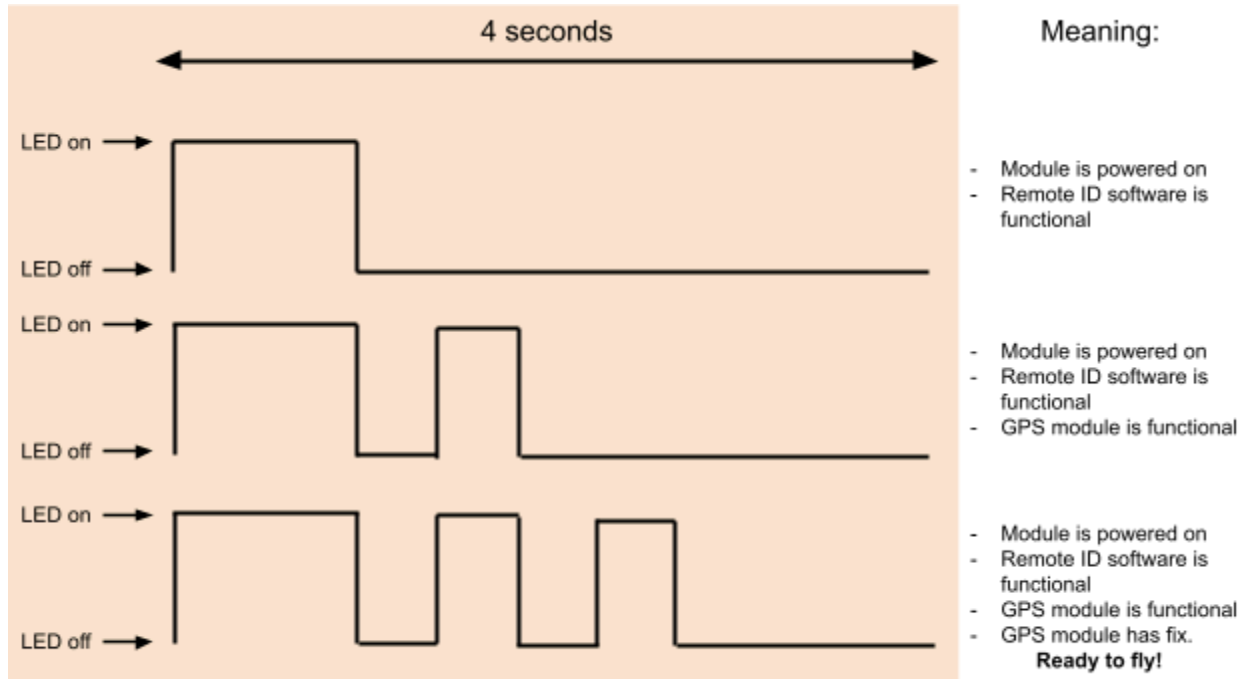
1. The green LED will flash **once long, and 2 short**, every 4 seconds. See the About the Module section for more information about the flash patterns.
2. A compatible Remote ID scanner app will show these indicators that the module is ready:
 - a. The module, with the serial number
 - b. **"Airborne"** in the "Status" field.
 - c. Position field updated with Latitude and Longitude (not Unknown).

Detailed Instructions:

A green LED is located on the top right corner of the module. This LED is a visual indicator of the status of the module.

On power up, the LED will flash one long flash every 4 seconds when Remote ID software has been verified and initialized. If the long LED does not flash, Remote ID software is not functioning properly and the module will not be compliant.

Green LED Flash Pattern Meaning:



Note that the takeoff position of the vehicle is defined at the place where the module begins to flash 2 times.

After verifying that the GPS module is working, use a Remote ID scanner app on your mobile phone to verify that the module's transmission hardware is functioning. The app should display the module and the correct information (GPS location, serial number, etc.), and should continuously be receiving messages. See In Flight Safety Monitoring.

Important: If the module does not show up on the mobile application, the module has not passed the PFST and is not compliant. Make sure the module is on, and restart the module, or use a different app. If you have further issues, please contact team@cinnamondrones.com.

What app should I use?

Apps are available for iOS and Android. Please note that some apps are under development. Since these apps are 3rd party apps, we cannot guarantee that they will function correctly. Our team has found that the most reliable app is the Drone Scanner app, available for Android and iOS devices. Note that some apps only scan for modules of a specific brand.

In-Flight Remote ID Monitoring

To ensure compliance during flight, the pilot should regularly check the health and status of the Remote ID functionality.

Quick Start: How do I monitor Remote ID module health during flight?

1. Use a compatible Remote ID scanner app
2. Check the “**Status**” field. This should say “Airborne”.
3. Check the “**Messages received**” field. This should be continually updating.
4. Check the “**Location**” field. This should have Latitude and Longitude information. It should not say “Unknown”.

If any of the fields described are incorrect, the broadcast module is no longer compliant. Land immediately, restart the module, and recheck the module health.

Important: The functionality of the module depends on good GPS reception. If flying in a place where GPS signals are degraded (i.e., under trees, in a canyon, between tall buildings), then **the module may not function correctly**. Consistently verify the health and status of the module when flying to ensure compliance.

Note: The module does not have a maximum range that it can transmit. If you are flying too far or too high away from the scanner, the above fields will not be updated regularly, and you will not be able to monitor status of the Remote ID module.

How to register your drone with the correct serial number

Please visit https://www.faa.gov/uas/getting_started/register_drone for more information on how to register your drone with the FAA. *You will need the serial number loaded into your module.*

What is my serial number?

Finding your serial number is easy, but you will need a Remote ID Scanner app. See the **What app should I use** section for more information on third party apps.

1. Once you have the module, turn it on.
2. Open a Scanner app on a personal device.
3. After locating your module, the serial number will be listed on the app. It will start with the numbers “2009A” followed by 12 more characters. All 17 characters make up your serial number.
 - a. For example: **2009A123456789012** would be a serial number
 - b. If using the Drone Scanner app, it is often listed in the “Operation Description” field. Note that 3rd party apps might change frequently.

If you need more help finding your serial number, please contact team@cinnamondrones.com for assistance.

Safety and Warnings

WARNING: Soldering can be dangerous. Take care to ensure proper ventilation of the work area and wear appropriate Personal Protective Equipment to avoid injury. If unsure or uncomfortable completing a task, ask for help.

WARNING: Lithium-polymer batteries can be dangerous if handled incorrectly.

- NEVER leave your module charging unattended.
- NEVER store module and battery above 80°F.
- NEVER let positive and negative leads to touch.
- ALWAYS charge the module in a fireproof container away from combustible material. NEVER charge on surfaces that can catch fire.
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