**Holybro HT03-V3-433 433Mhz Telemetry Radio**

# Holybro HT03-V3-433 433Mhz Telemetry Radio Instructions



Contents



## Holybro HT03-V3-433 433Mhz Telemetry Radio


## Specifications

- **Frequency:** 433MHz
- **Receiver Sensitivity:** -121 dBm
- **Transmit Power:** Up to 20dBm (100mW)
- **Air Data Rates:** Up to 250kbps
- **Modulation:** GFSK

## Overview

A Holybro Telemetry Radio is a small, light and inexpensive open-source radio platform that typically allows ranges of better than 300m “out of the box” (the range can be extended to several kilometres with the use of a patch antenna on the ground). The radio uses open-source firmware which has been specially designed to work well with MAVLink packets and to be integrated with the Mission Planner, Copter, Rover and Plane.
The radios can be 433Mhz and you should purchase the model that is appropriate for your country/region.

## Circuit Description

Holybro Telemetry Radio based on Silicon Labs’ Si1000, is a Wireless MCU that combines high-performance wireless connectivity and ultra-low power microcontroller processing into a small 5 mm x 7 mm form factor. Support for major frequency bands in the 433MHz range is provided including an integrated advanced packet handling engine and the ability to realize a link budget of up to 121 dB. The devices have been optimized to minimize energy consumption for battery-backed applications by minimizing TX, RX, active, and sleep mode current as well as supporting fast wake-up times.

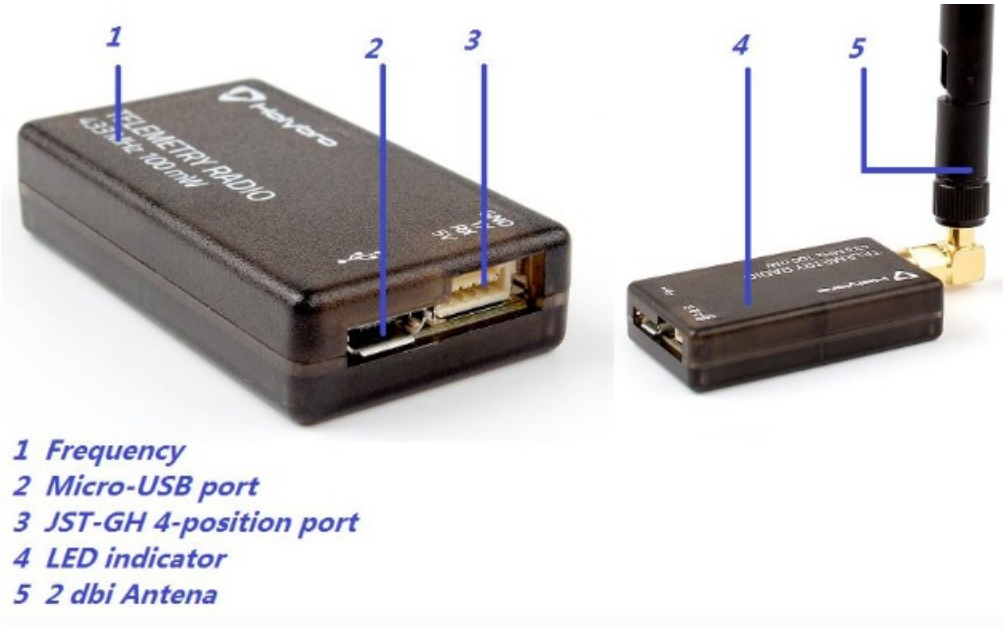
The main features of the Holybro Radio are listed below:

- Available in 433MHz
- Receiver sensitivity to -121 dBm

- Transmit power up to 20dBm (100mW)
- Transparent serial link
- Air data rates up to 250kbps
- MAVLink protocol framing and status reporting
- Frequency hopping spread spectrum (FHSS)
- Adaptive time division multiplexing (TDM)
- Support for LBT and AFA
- Configurable duty cycle
- Built-in error correcting code (can correct up to 25% of data bit errors)
- AT commands for radio configuration
- RT commands for remote radio configuration
- GFSK modulation

The FT230X is a USB-to-serial UART interface data transfer chip. It gives the radio the ability to connect to a USB host device.

## Port Description




**Status LEDs**
The radios have 2 status LEDs, one red and one green. The meaning of the different LED states is:

- Green LED blinking – searching for another radio
- Green LED solid – link is established with another radio
- Red LED flashing – transmitting data
- Red LED solid – in firmware update mode

## Connecting

**Connecting to Pixhawk**
Use the 4-pin JST-GH connector that should have come with the radio to connect the radio to your Pixhawk's "Telem 1" ("Telem 2" can also be used but the default recommendation is "Telem1").

**Connecting to a PC**
Connecting the radio to your Windows PC is as simple as connecting the micro USB cable (which should have been included with the radio) to your PC. The necessary drivers should be installed automatically and the radio will appear as a new “USB Serial Port” in the Windows Device Manager under Ports (COM & LPT). The Mission Planner’s COM Port selection drop-down should also contain the same new COM port.

## FCC STATEMENT

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

**Warning:** Changes or modifications not expressly approved by the party responsible for compliance could void the user’s authority to operate the equipment.

**NOTE**: This equipment has been tested and found to comply with the limits for a Class B digital device, under Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used by the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

**FCC Radiation Exposure Statement:**
The device has been evaluated to meet general RF exposure requirements. The device can be used in portable exposure conditions without restriction.

## FAQ

- **Q: What is the range of the telemetry radio?**
  - **A:** The telemetry radio typically allows ranges of better than 300m out of the box and can be extended to several kilometers with the use of a patch antenna on the ground.
- **Q: How do I know if the radio is successfully connected to another device?**
  - **A:** The green LED will be solid when the link is established with another radio.
- **Q: Can I use Telem 2 port on Pixhawk instead of Telem 1?**
  - **A:** Yes, Telem 2 can also be used, but the default recommendation is Telem 1.

## Documents / Resources

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|---|---|
|  | **Holybro HT03-V3-433 433Mhz Telemetry Radio** [pdf] Instructions<br>HT03-V3-433, HT03-V3-433 433Mhz Telemetry Radio, 433Mhz Telemetry Radio, Telemetry Radio, Radio |

## References

- **User Manual**