

ISTRA24 mmWave Radar

Product Manual

2023-5-29



List

| | |
|------------------------------------|---|
| Disclaimer..... | 2 |
| NOTE | 2 |
| Overview..... | 2 |
| Technical Parameters..... | 3 |
| Pinouts..... | 3 |
| Connect to flight controller | 4 |
| Set flight control parameters..... | 5 |
| View data..... | 5 |
| More information..... | 6 |

Disclaimer

Please read the manual carefully before using it to make sure that you can use it correctly and safely. You need to install and use this product in strict accordance with the instructions. CUAV is not liable for any loss due to improper use. This manual is only used as a user guide. The company reserves the right to modify and improve the product details and instructions. The relevant data shall be subject to the data provided by our staff. CUAV does not guarantee the accuracy and reliability of the contents of the document.

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NOTE

- ▶ Please abide by local laws and regulations and do not fly in the no-fly zone.
- ▶ It is forbidden to fly near the airport.
- ▶ It is forbidden to fly in sensitive areas such as crowded places, military and administrative institutions, traffic roads, etc.

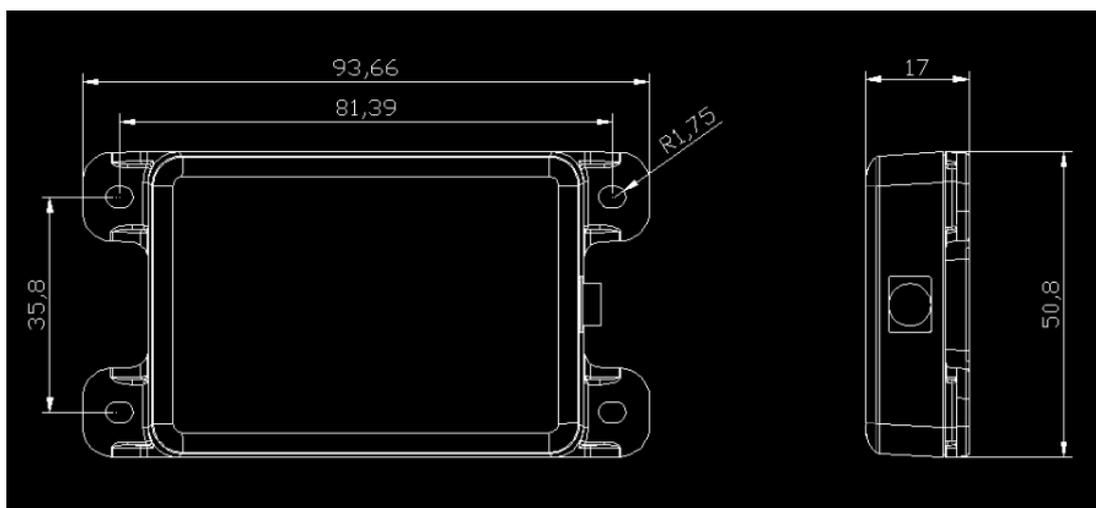
Overview

ISTRA24 is a high-performance ultra-small ranging radar for UAV altitude determination. It adopts an original antenna design, and through ultra-efficient signal processing algorithms and high-sensitivity real-time signal processing methods based on time domain, frequency domain and phase synthesis, it can greatly reduce the physical size of the radar module and facilitate the integration of the radar module into the UAV. In the fuselage structure, new possibilities are opened up for the UAV industry. This millimeter-wave ranging radar can achieve accurate altitude measurement in the height range of 0.2 to 50m, providing great convenience for drones to maintain altitude and follow terrain.

Main application: long-endurance UAVs such as VTOL, especially landing in different places; can also be used for precise altitude maintenance and terrain following flight

Technical Parameters

| Item | Parameter |
|---------------------------------------|--|
| Transmitting frequency | 24.0~24.25GHz |
| Transmitting power (EIRP) | 20dBm |
| System | Frequency Modulated Continuous Wave |
| Hardware interface | URAT-TTL |
| Operating Voltage | 4.5~5.5V(recommend: 5V) |
| Working current | 200~275mA; Typical value: 220Ma@5V |
| Altitude-fixing range | 0.2~50m |
| Update rate | 50Hz |
| Transmit antenna | Tilt angle: 20° Azimuthal angle: 31° sidelobe: -19dB |
| Receive antenna | Tilt angle: 20° Azimuthal angle: 31° sidelobe: -19dB |
| Compatible flight controller firmware | ArduPilot 3.6 and later |
| Operating temperature | -40~80°C |
| Weight | 63.8g |



Pinouts

ISTRA24 is factory adapted to V5+/X7 and other flight controller pin definitions; no need to modify the

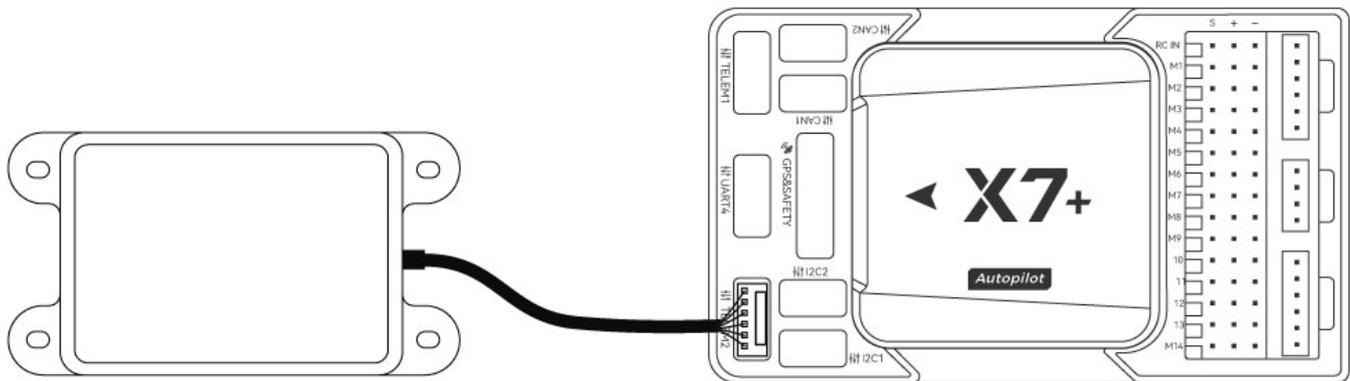
definition; if it is used on other flight controllers, please check the line sequence first; incorrect wiring will cause irreversible damage to the module.



| Serial number | Pin | Wire color | Remark |
|---------------|-------|------------|-------------------|
| 1 | 5V+ | Red | |
| 2 | RX | White | |
| 3 | TX | Blue | |
| 4 | CAN_H | Yellow | Not yet supported |
| 5 | CAN_L | Green | Not yet supported |
| 6 | GND | Black | |

Connect to flight controller

Take X7+ as an example:



NOTE: ISTR24 can be connected to any interface of TELEM1/TELEM2/UART4.

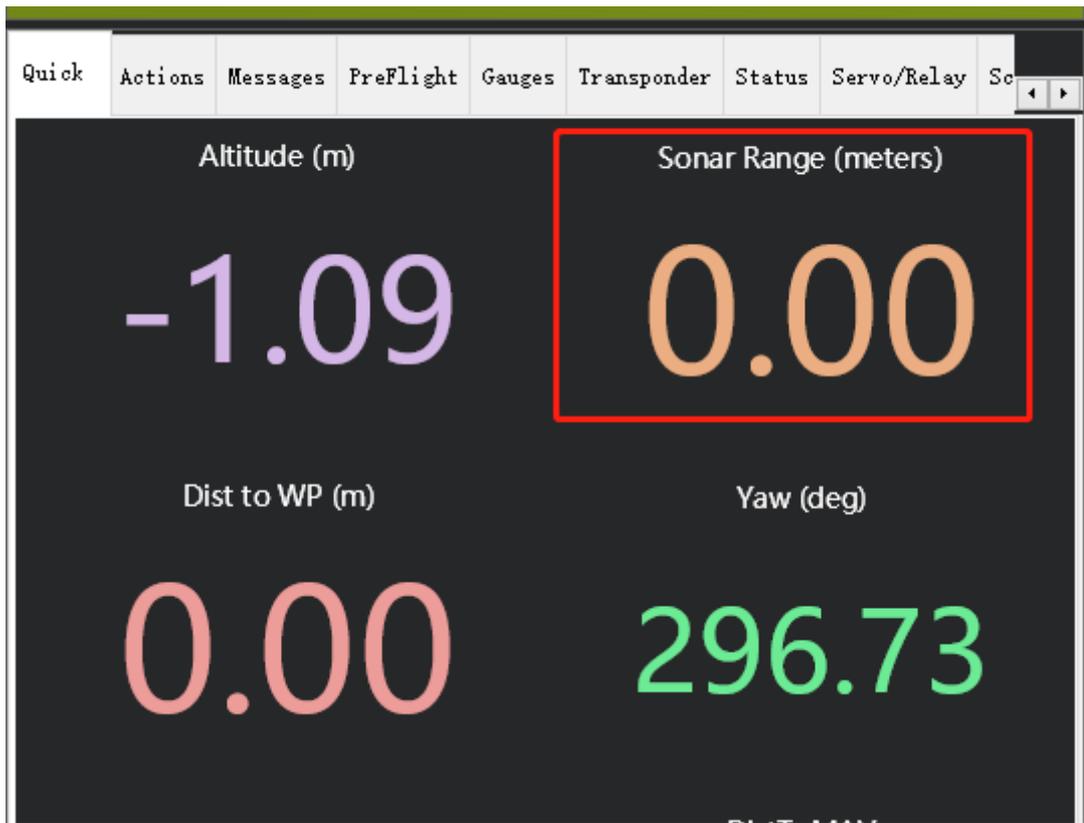
Set flight controller parameters

Open Mission planner>Configuration>All Parameter Table; set the following parameters and save and restart

- RNFND1_TYPE=27
- RNFND1_ORIENT=25 (install down)
- RNFND1_MIN_CM=20 (Range finder minimum distance)
- RNFND1_MAX_CM=5000 (The maximum distance for which the rangefinder is reliable)
- SERIAL2_BAUD=115200 (TELEM2; Can be set to other SERIAL)
- SERIAL2_PROTOCOL=9 (Lidar)
- RNFND1_GNDCLEAR = 10 (The distance in centimeters from the rangefinder to the ground when the vehicle landed. This value depends on how you mounted your rangefinder.

View data

Open Mission planner > Flight Data > Quick Preview > Double-click any tab to set Sonarrange to see the radar distance data



More information

CUAV official website: <http://www.cuav.net>

For more usage and machine assembly guides, please visit the Documentation Center: doc.cuav.net