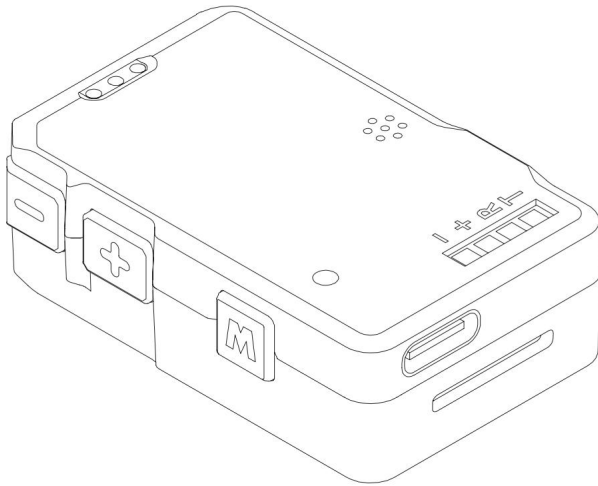


Head tracking module

User Manual



Reading Tips - Symbol Explanation



Important Notes



Operation prompts



Vocabulary Explanation and Reference Information

Version History

date	Document Version
2024.05.30	V1.0

Product Precautions

1. Ensure the charging power supply of the head tracking module is within the specified range (5VDC), otherwise it may cause abnormal equipment operation.

It may be damaged or broken.

2. Never short-circuit the positive and negative terminals of the expansion interface, as this will damage the device. 3.

Always refer to the user manual and install the interface cables according to the specified wiring sequence; otherwise, it may cause malfunctions in the device.

It may be damaged or broken.

4. Before use, please ensure all installation modules and connecting cables are securely fastened and all components are functioning properly. 5. Do not modify

or disassemble this product in any way to avoid product malfunction. Any product problems caused by modification or disassembly will not be covered under warranty.

Table of contents

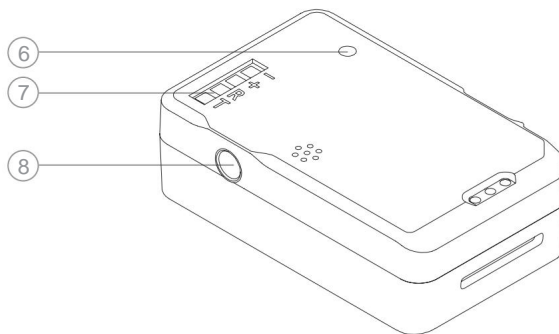
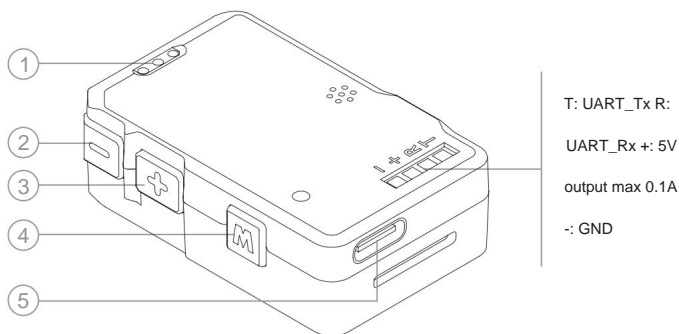
Product Overview	1
Component	1
Introduction Installation	2
and Use Installation Head	2
Tracking	2
Module Charging Power	2
On/Off Calibration and Firmware	3
Upgrade Connecting Head	3
Tracking Module Calibration	4
Head Tracking	5
Module Firmware	6
Upgrade Control Gimbal Direct Connection Control	6
PPM Control	6
Gimbal Mode Switching	7
and Gimbal Follow Sensitivity	7
Adjustment Appendix 1 Parameter Table	7

Product Overview

The head-tracking module supports motion control. When installed on FPV video glasses, it can control the gimbal or aircraft by following the user's head, providing an immersive, high-quality first-person control

experience. The head-tracking module supports PPM output and serial data output (115200 baud rate, 8N1), and can achieve wireless control of the gimbal or aircraft via remote control link or data transmission link.

Component Introduction



1. Battery indicator

light 3. Gimbal sensitivity + button

5. Charging/upgrade interface

7. Expansion interface

2. Gimbal Sensitivity - Button 4.

Mode Switch Button 6.

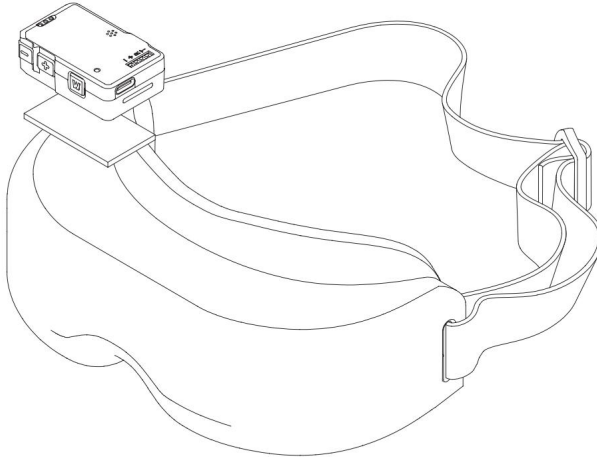
Charging Indicator 8.

PPM Output Interface

Installation and Use

Install head tracking module

Use Velcro or double-sided tape to secure the head tracking module to the FPV goggles; there are no requirements for the installation position or direction.



Charge

Use a Type-C cable to charge the head tracking module. A solid red charging indicator light shows that charging is in progress, and a solid green light shows that charging is complete.

When the head tracking module's battery is low, it will emit a buzzer alarm sound. At this time, the head tracking module can continue to work for 30 minutes.



For some brands of dual Type-C data cables, there may be situations where the device cannot be charged. You can try replacing it with a Type-A to

Type-C data cable to charge the device.

Power on/off

A short press of the mode switch button will illuminate the battery indicator light to show the current battery level.

A short press of the mode switch button followed by a long press for more than 2 seconds will turn the head tracking module on or off.

Calibration and Firmware Upgrade

Use the head tracking debugging software CwHeadTracker to calibrate the head tracking module and upgrade the firmware.



Before performing calibration or firmware upgrade, please ensure that the corresponding driver software is installed on your computer.

Connector Tracking Module

1. Power on the head tracking module and connect it to the computer using a Type-C data cable.
2. Run the upgrade software CwHeadTracker, select the COM port corresponding to the head tracking module, and click "Start Debugging".



For some brands of dual Type-C data cables, there may be situations where the head tracking module cannot be recognized. You can try replacing it with a Type-A to Type-C interface data cable.

Calibration head tracking module



The head tracking module has undergone rigorous calibration before leaving the factory. Do not perform acceleration calibration, gyroscope calibration, or magnetic compass calibration unless absolutely necessary.

To perform acceleration

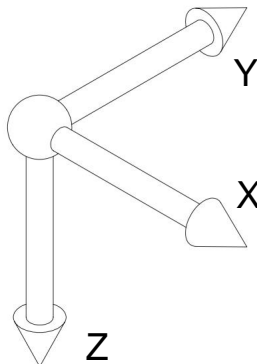
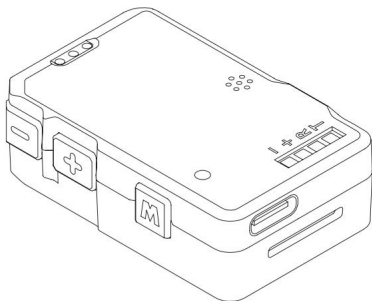
calibration, click "Acceleration Calibration," place any facet of the head tracking module on a horizontal plane, and observe the progress bar at the bottom of the software interface. Once the progress bar finishes, switch to the next facet until all six faces of the head tracking module are calibrated. Clicking "Exit Current Calibration" during the calibration process will cancel the calibration without affecting previous calibration data.

To calibrate the

gyroscope, click "Gyroscope Calibration" and keep the head tracking module stationary until the software indicates successful calibration. Clicking "Exit Current Calibration" during the calibration process will cancel the calibration without affecting previous calibration data.

To calibrate the magnetic

compass, keep the head tracking module's Z-axis vertical. Click "Magnetic Compass Calibration," rotate the head tracking module in the XY plane, and observe the progress bar at the bottom of the software interface. After the progress bar completes, rotate the module 90° and rotate it in either the XZ or YZ plane until the software indicates successful calibration. Clicking "Exit Current Calibration" during the calibration process will cancel the calibration without affecting previous calibration data.



Do not calibrate the magnetic compass in areas with strong magnetic field interference or near large ferromagnetic objects, as this may affect the calibration results.

To calibrate the pointing

axis, keep the FPV glasses' line of sight vertically downward and click "Pointing Axis Calibration" until the software indicates successful calibration.

To zero the attitude

angle, click "Zero Attitude Angle." At this point, the attitude of the head-tracking module will correspond to the gimbal's zero position. Alternatively, you can press and hold the mode button on the head-tracking module for more than 2 seconds to zero the attitude angle.

Firmware upgrade

After the head tracking module successfully connects to the CwHeadTracker software, click "Open", select the firmware file, click "Upgrade", and then press and hold the mode switch button until the firmware upgrade is complete.



During the upgrade process, you must keep the mode switch button pressed and held; otherwise, the upgrade will fail. If the upgrade fails, please press and hold the mode switch button and try upgrading again.

Control pan-tilt unit

Direct control

When the head tracking module is connected to the data transmission module and the PTZ uses an integrated baseboard, the head tracking module can directly control the PTZ without going through the remote control link. In this case, the PTZ S.BUS/CRSF control, PWM control, and MAVLink control are disabled. See the "Head Tracking Data Transmission System User Manual" for details.

PPM control

Connect the remote controller to the PPM output interface of the head-tracking module using the training cable. The head-tracking module can then control the pan/tilt unit via the remote control link. The PPM outputs the following 5 channels by default:

CH4: Gimbal Roll Control

CH5: Gimbal Pitch Control

CH6: Gimbal Pointing Control

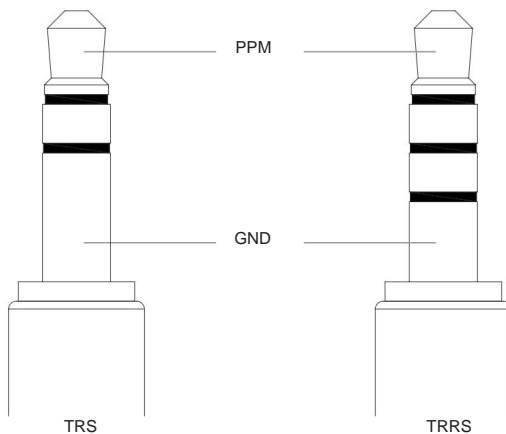
CH7: Gimbal Mode Switching

CH8: Gimbal Follow Sensitivity Adjustment

The forward and reverse directions, mapping relationships, magnification, and neutral point (unit: μ s) of the above PPM channels can be configured in the head tracking debugging software CwHeadTracker, or they can be configured in the remote control.



The coach cable is not included in the package. Users need to provide their own coach cable with a 3.5mm TRS or TRRS audio plug.



PTZ mode switching

With the head-tracking module powered on, a short press of the mode switch button will switch the gimbal's operating mode. Gimbal Operating Mode

For a detailed explanation, please refer to the "C-20T User Manual".

Gimbal tracking sensitivity adjustment

With the gimbal tracking module powered on, a short press of the gimbal sensitivity +/- button will increase/decrease the gimbal tracking sensitivity.

One lower setting, 11 settings in total. Press and hold the gimbal sensitivity +/- button for more than 2 seconds, the gimbal follow sensitivity will directly...

Switch to the highest/lowest setting. For a detailed explanation of gimbal follow sensitivity, please refer to the "C-20T User Manual".

Appendix 1 Parameter Table

Size,	45 x 28.2 x 14.2mm
weight,	16g
built-in battery,	lithium polymer battery, 1.11Wh (3.7V, 300mAh).
battery life,	Approximately 3 hours (measured in a 25°C laboratory environment with the head tracking data transmission module installed).
charging method	5VDC 1A