Optical Flow Module APM

Overview

Copter, Plane and Rover support Optical Flow Sensors. These are camera modules that use ground texture and visible features to determine aircraft ground velocity.

Key Takeaways

APM flight controllers with an optical flow module enable drones to maintain precise position and stable hover, even in GPS-limited environments.

Overview of AP

M and Optical Flow IntegrationAPM (ArduPilot) modules, such as APM2. 6 or APM2. 52, are flight control systems designed for multirotor drones.

When paired with an optical flow sensor, they enhance position hold accuracy by detecting ground movement and adjusting the drone's position in real time. This is particularly useful for indoor flight, urban areas, or locations with weak GPS signals, where traditional GPS-based stabilization may fail.

How Optical Flow Works

An optical flow sensor is a small camera module that tracks ground texture and visible features to calculate the drone's motion relative to the surface. The sensor typically includes: ADNS-3080 optical sensor with high-speed motion detection and up to 6400 fps update rate. Lens assembly (commonly 8mm, replaceable) for focusing on the ground.

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Image processing circuitry to convert visual data into velocity and position estimates. The sensor works best in environments with moderate lighting and visible surface texture, and it may perform poorly in dimly lit or reflective conditions. Benefits of Using Optical Flow with APMStable hover and precise position control without GPS.

Improved indoor flight performance, enabling drones to maintain a fixed position near walls or obstacles. Enhanced aerial photography and surveying, as the drone can hold position accurately for capturing images or mapping. Odometry and obstacle avoidance capabilities for advanced flight maneuvers.

Setup and Calibration

Connect the optical flow module to a compatible APM flight controller using the provided cables. Install the latest firmware on the APM controller to ensure compatibility with the sensor. Calibrate the sensor by rotating the drone in roll and pitch axes while keeping the sensor centered on the ground, then analyze log data to verify proper readings.

Configure EK

F parameters to use optical flow as the primary horizontal position source, optionally disabling GPS arming checks for indoor or GPS-denied flights. Test in a safe, open area to confirm improved position hold and hover stability.

Practical Applications

Indoor drone operations where GPS is unavailable. Aerial photography and videography, ensuring minimal drift. Automated missions requiring precise navigation and hover.

Research and surveying in environments with limited satellite coverage. Using an APM with an optical flow module significantly enhances drone stability and control, making it a valuable upgrade for hobbyists and professionals who require precise positioning in challenging environments.

Article Content

Optical Flow Sensors (landingpage) — Copter documentation

Copter, Plane and Rover support Optical Flow Sensors. These are camera modules that use ground texture and visible features to determine aircraft ground velocity. Select the links below for

Optical Flow Sensor Module APM 2.5 2.6 2.8

This board comes with the ADNS3080 mouse sensor and a lens-mount assembly that can let your vehicles use some pretty cool features such as horizontal

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Optical Flow Sensor v10 Module for APM 2.5 2.6 2.8 Flight Control ...

Description:- To improve the precision when you can''t use GPS, APM: Copter now support optical Flow V1.0 based on mouse sensorProbelms:- Sensor can only work under good lighting condition- Using

Optical Flow Sensor V1.0 Module for APM 2.5 2.6 2.8

- Rotate sensor will make sensor in disorder. 1x Optical Flow Sensor V1.0. - Sensor can only work under good lighting condition.

ADNS-3080 Optical Flow Sensor Module Horizontal Movement

ADNS-3080 is based on optical navigation technology. It measures position changes optically to obtain continuous surface images and determines movement mathematically. It includes an image

PMW3901 Optical Flow Sensor

The Holybro PMW3901 Optical Flow Sensor is a UART version of PMW3901 module with built in BEC. It comes pre-solder with 6pin JST GH connector made to

Optical Flow Sensor Testing and Setup — Copter documentation

Optical Flow Sensor Testing and Setup Be sure you have setup the sensor specific parameters according to its wiki page. If the sensor is mounted to a stabilized gimbal or mount, set

CX20 OPTICAL FLOW FOR APM 2.6

Adding a Optical Flow Sensor v10 Module for APM 2.5 2.6 2.8 Flight Control Update Version.ADNS3080 Mouse Sensorenable of_loiter mode and OF log instructionsI...

Optical flow sensor MTF-02P 6 meters ranging optical flow integrated ...

Optical flow sensor MTF-02P 6 meters ranging optical flow integrated module drone compatible with INAV APM PX4 Ardupilot 5.0 1 Review □ 66 sold US $18.76 5% off US $19.75 Tax excluded, add at

Cheerson CX-OF Optical Flow — Copter documentation

Cheerson CX-OF Optical Flow The Cheerson CX-OF optical flow sensor is a lightweight and low cost optical flow sensor which can be used to improve horizontal position control especially in GPS

Optical Flow Sensor v10 Module for APM 2.5 2.6 2.8

Optical Flow Sensor v10 Module for APM 2.5 2.6 2.8 Flight Control Update Version to United States via Special Line for Large Volume Parcel

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Indoor mini-quad with APM, sonar and optical flow

Arduflyer (APM 2.5) is $80 from RCTimer. Camera is at €50 in Germany, video TX is another expensive item at solid €80. Graupner GR-12S - €35, RCTimer 433MHz

Optical Flow Image Sensor Position Measuring Module

Buy Optical Flow Image Sensor Position Measuring Module ADNS 3080 CJMCU-110 APM2.52/2.6 CMOS CCD Flight Controller from UGE Electronics Egypt.

Optical Flow Sensor Spot Hovering Control Flight Position Holding ...

Buy Optical Flow Sensor Spot Hovering Control Flight Position Holding Steady Module Board VS Cheerson CX-OF Support APM at Aliexpress for . Find more 26, 200001407 and 200001385 products.

A wide-range bridge deflection measurement method based on

To address this problem, a bridge deflection measurement method based on adaptive pixel matching and improved phase-based optical flow (APM-IPOF) is proposed.

Understanding APM Modules: A Comprehensive Review and

This blog explains what APM modules are and how they enhance position hold accuracy in drones. It details their function with flight controllers like APM2.6 and APM2.52, using optical flow sensors for

1PCS Optical Flow Sensor Module Spot Hovering Control ...

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Users Manual Optical flow s

1 Introduction This is the optical flow sensor board that is based on the optical effect of mouse sensor that allows you hover with your mulit-rotor platform at low altitudes (like indoor environment) without

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