SIYI 思翼科技
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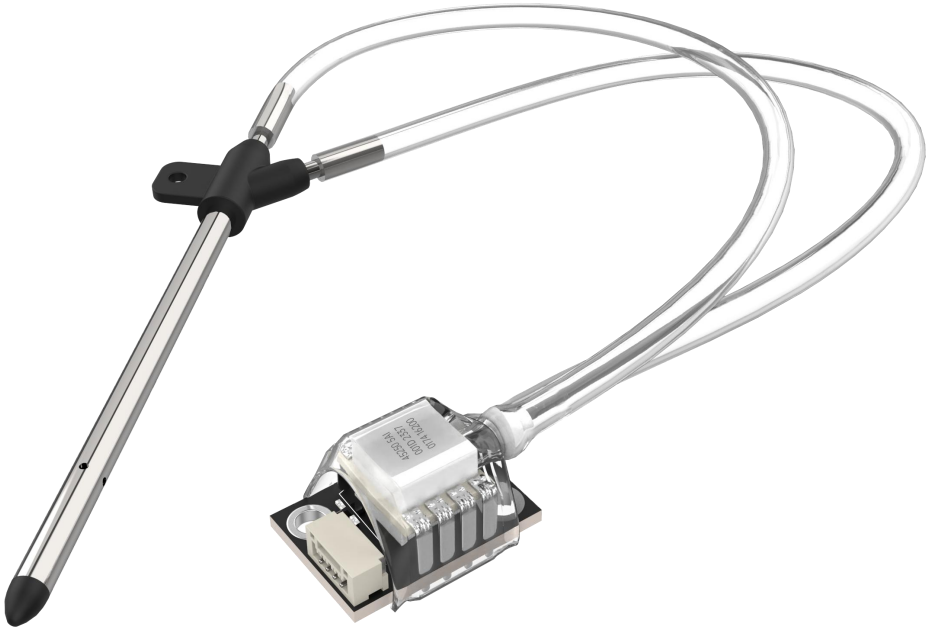
SIYI MS4525 Airspeed Sensor

User Manual



SIYI Technology (Shenzhen) Co., Ltd.

siyi.biz/en

Thank you for purchasing the products of SIYI Technology.

MS4525 Airspeed Sensor is the digital airspeed measurement module designed by SIYI for fixed-wing UAVs or vertical unmanned aerial vehicles. It measures the airspeed of the aircraft and ensures that the unmanned aerial vehicle avoids stall in windy environment, safely takes off and lands, and completes flight tasks. It is a necessary reliability component for fixed-wing UAVs and vertical unmanned aerial vehicles.

Also in order to bring you a good product experience, please check the user manual carefully before installing the machine. This manual can help you solve most of your usage questions. You can also visit the product-related pages of SIYI Technology's official website (https://siyi.biz/en), call SIYI Technology's official after-sales service center (400-838-2918) or send an email to the support@siyi.biz to directly consult SIYI Technology Engineers about product-related knowledge and feedback product problems.

Contact Us: SIYI Official Website *(https://siyi.biz/en)*

SIYI User Group - Facebook	
Facebook	
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Manual Version Update Record

Version Number	Update Date	Update Content
1.0	2024.11	Initial version

Contents

Reading Tips

Logo, icon

When reading the user manual, please pay special attention to the relevant contents marked as follows.

 **Hazards Dangerous operations likely to cause personal injury**

 **Warning Operation warning that may cause personal injury**

 **Be careful not to cause unnecessary property damage due to illegal operations.**

 **Prohibitions**  **must implement**  **precautions**

Security

The MS4525 Airspeed Sensor of SIYI is designed and manufactured for professional application scenarios. Necessary debugging has been completed before leaving the factory. Please do not disassemble or change its structure. The MS4525 Airspeed Sensor of SIYI has a precise structure. Operators need to have certain basic skills. Please use it carefully. Any unnecessary product damage caused by the irregular and irresponsible operation of this product, causing economic losses or even

personal injury to users or others, SIYI Technology does not assume any responsibility. Minors use this product must have a professional presence supervision and guidance. The products of SIYI Technology are designed for commercial scenarios and the use of SIYI products for military purposes is prohibited. Disassembly or modification of this product is prohibited without the permission of SIYI Technology.

Equipment idle, carrying, recycling

When the SIYI products you own are idle, or you want to carry SIYI products out of work, or the products have reached the end of their service life, please pay special attention to the following:

 **Danger**

SIYI products should be kept away from areas where children can easily touch when they are idle.

Please avoid placing SIYI products in an environment that is too hot (above 60 degrees Celsius) or too cold (below minus 20 degrees Celsius).

 **Attention**

Please avoid placing SIYI products in wet or dusty environments.

Please avoid operations that may damage components such as vibration or impact when carrying and transporting SIYI products.

Chapter 1 Product Introduction

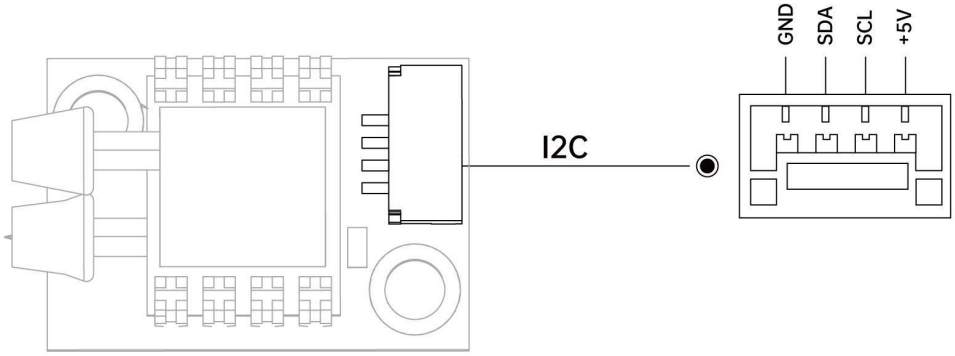
1.1 product characteristics

MS4525 Airspeed Sensor is the 1 digital airspeed measurement module designed by SIYI for fixed-wing UAVs or vertical unmanned aerial vehicles. It measures the airspeed of the aircraft and ensures that the unmanned aerial vehicle avoids stall in windy environment, safely takes off and lands, and completes flight tasks. It is a necessary reliability component for fixed-wing UAVs and vertical unmanned aerial vehicles.

Minimalist Mini Lightweight

Specially designed for the ecology of fixed-wing UAVs and vertical unmanned aerial vehicles, using minimalist design thinking, as small as a millimeter and as light as corn.

1.2 Interface and Definition



1.3 technical parameters

Technical parameters

Sensor	MS4525
Measurement accuracy	±0.25% SPAN
Working pressure	1 psi
Maximum pressure	20 psi
communication protocol interface	I2C
Support Firmware	Ardupilot, PX4
Operating voltage	4.5~5.5V
Working temperature	-25 to 75°C

Product size	L25mm x W16mm x H13mm
Product Weight	3g (excluding pitot tube and connecting wire)

1.4 List of items

1 x SIYI MS4525 Airspeed Sensor

1 x differential pitot tube

1 x GH 1.25MM 4in double-headed 1 positive and negative 28# silicone wire line L = 300MM

(Used to connect Airspeed Sensor I2C interface and flight control I2C interface)

1.5 Status Indicator Definitions

Power Indicator

● blue light is always on: module power supply is normal

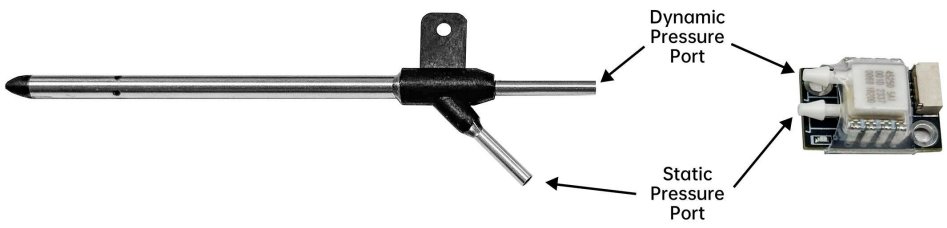
○ blue light extinguished: no power supply to module

Chapter 2 Installation and fixing

Use double-sided adhesive tape to paste the MS4525 Airspeed Sensor at the required position. The pitot tube should be installed in the airflow direction of the UAV (the nose or the left and right wings), with the air hole facing the front of the flight and away from the propeller to prevent the propeller from rotating.

2.1 Pitot tube connection

The MS4525 Airspeed Sensor is equipped with a silicone hose. The length of the hose can be cut according to the length required by the actual installation. The hose connection between the pitot tube and the airspeed module is shown in the figure below, and the same air inlet is connected together with the hose. The hoses in the engine room can be fixed on the bulkhead with adhesive tape. Be careful not to squeeze the hoses when arranging the pipes to prevent poor airflow and abnormal airspeed measurement.



Chapter 3 Use on ArduPlane

3.1 parameter settings

The airspeed sensor can be operated normally only after the flight control device is brushed into the ArduPlane (Fixed-Wing UAV firmware). Airspeed sensors are not supported on vehicles other than Fixed-Wing UAVs.

ARSPD_TYPE = 1 Configured Airspeed Sensor Type = I2C-MS4525D0

ARSPD_USE = 1 Configure whether the airspeed count value is used for actual flight control

ARSPD_BUS = 1 Airspeed Sensor I2C bus selection, generally the default is 1

After configuring the above parameters, restart the flight control, and observe whether there is any change in the airspeed value on the ground station. If there is any change, it means that the flight control has identified the airspeed sensor.

Note

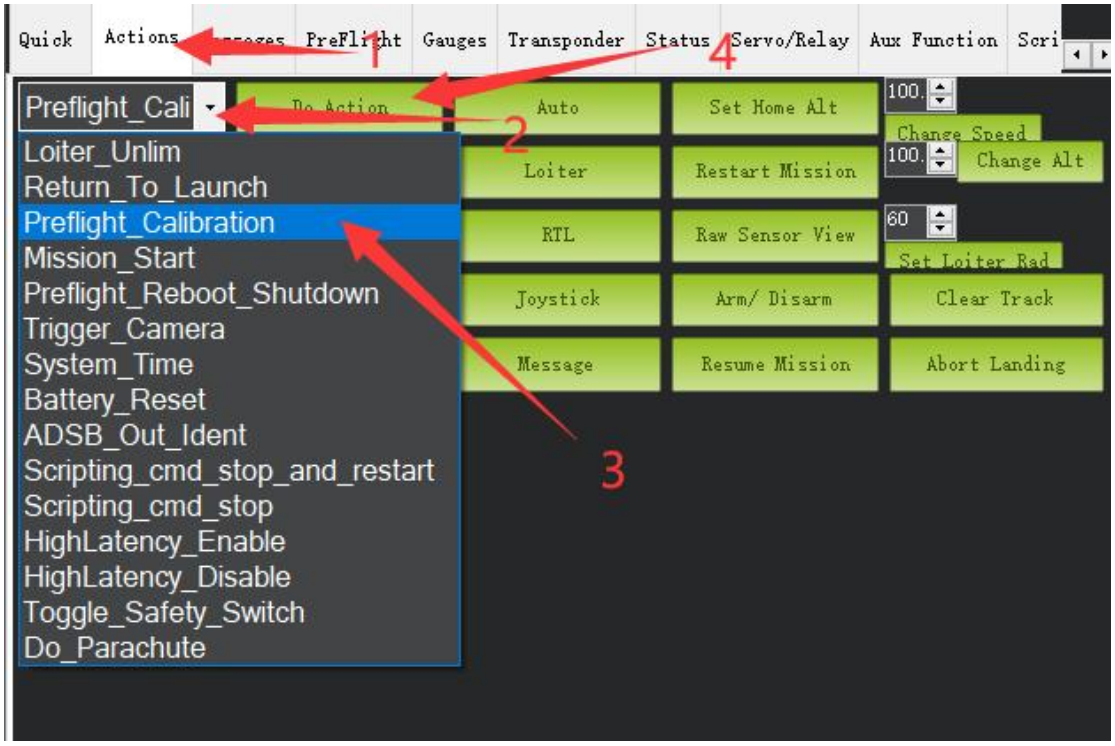
For more information: https://ardupilot.org/plane/docs/airspeed.html

3.2 Airspeed Sensor static calibration

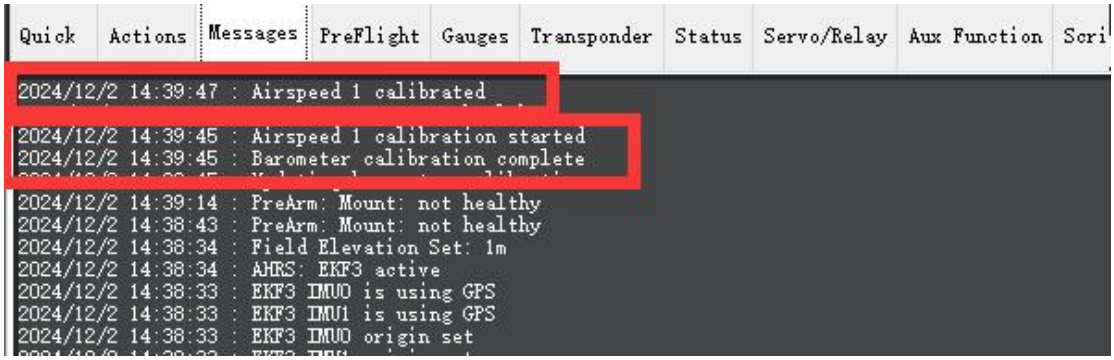
Airspeed static calibration must be performed before each takeoff.

Cover the pitot tube with your hand to block the effect of natural wind on the Airspeed Sensor, but do not block the Airspeed Sensor completely.

Select "PREFLIGHT CALIBRATE" in the MissionPlanner and click "Execute Action" to start calibration;



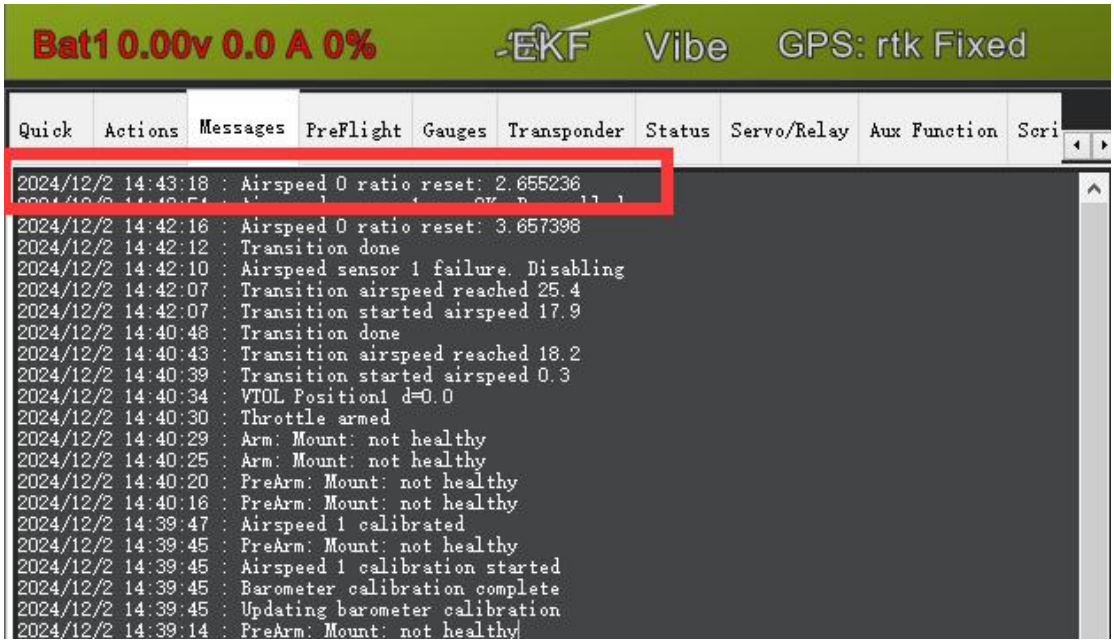
After the calibration is completed, the calibration complete text will be displayed in the "Message" column. Represents that the Airspeed Sensor is statically calibrated.



3.3 Airspeed Sensor Dynamic Calibration

ARSPD_AUTOCAL = 1 in all parameter table, write and save, and restart flight control. After restarting flight control, take off the airplane. Use the Loiter flight mode to automatically hover in the air for more than ten minutes. During the hover, the flight control will prompt to reset the Airspd ratio parameter. It means the flight control has completed the dynamic calibration. Check whether the ARSPD_RATIO value is within 1~3 after landing. If the ARSPD_RATIO is out of the range of 1 to 3, check the Airspeed Sensor pitot for normal installation or foreign matter.

You need to change the ARSPD_AUTOCAL to 0 after calibration.



Note

The Airspeed Sensor dynamic calibration must be done correctly to obtain the correct ARSPD_RATIO parameters. Otherwise, the airspeed will be inaccurate.

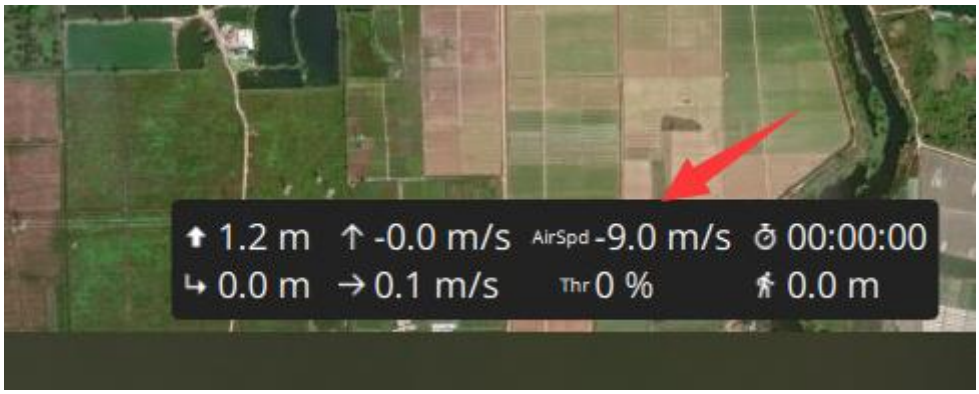
Chapter 4 Used on PX4

Parameter setting

The frame type is selected as Fixed-Wing UAV.

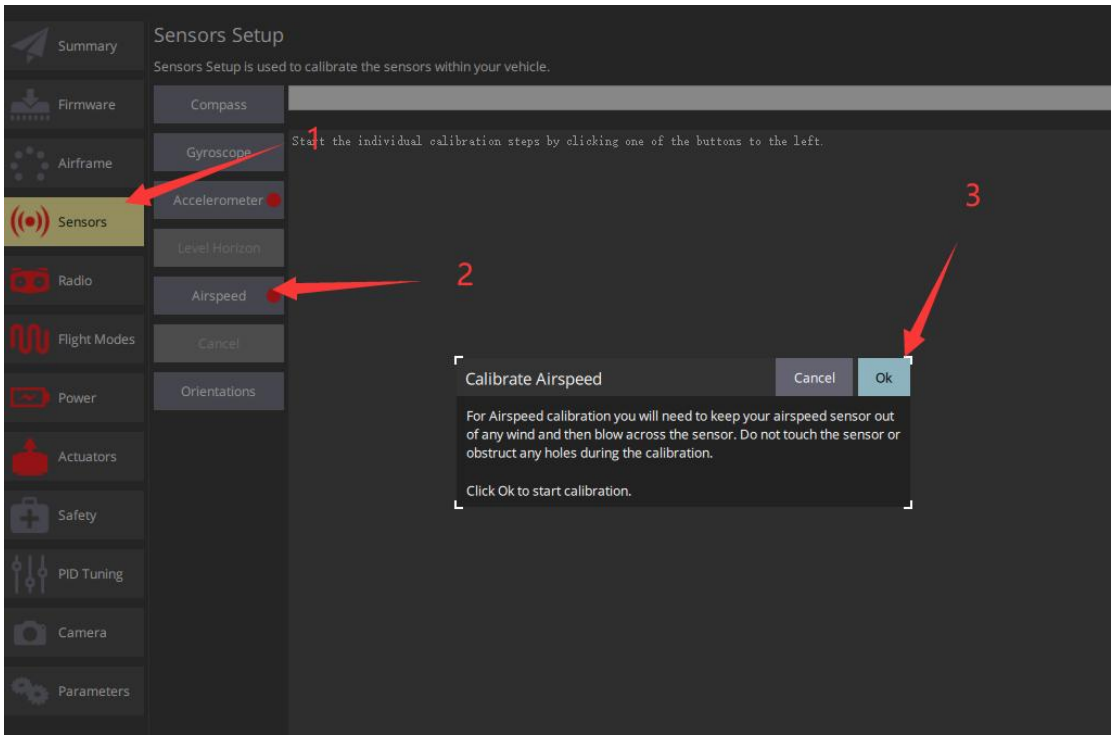
SENS_EN_MS4525DO = 1 ON MS4525DO airspeed sensor

After configuring this parameter, restart the flight control, and the airspeed data can be viewed on the QGC ground station.



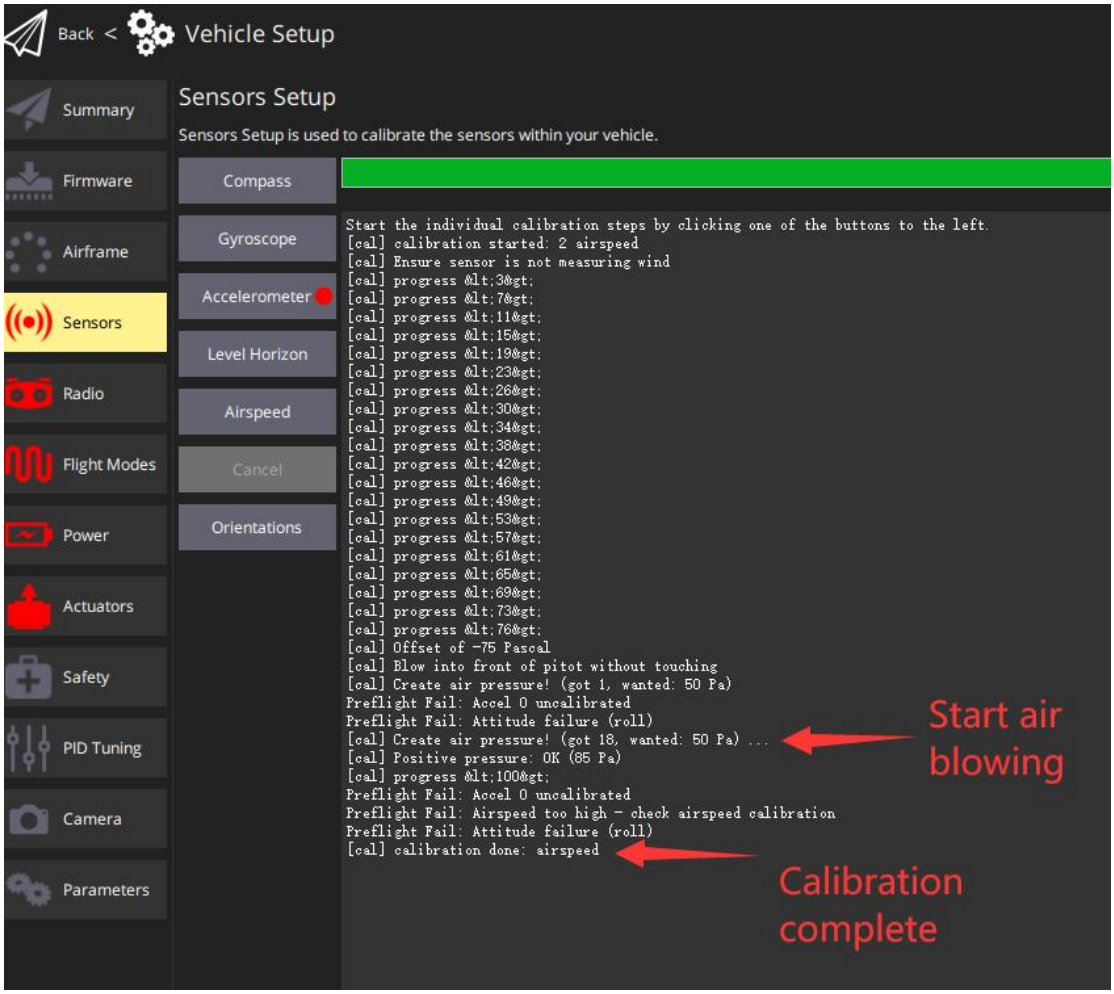
Calibrate airspeed sensor

Open the QGroundControl and connect the flight control.



Click the airspeed sensor button.

When the message "[cal] Blow into front of pitot without touching" appears on the calibration interface, blow air at the dynamic pressure port of the pitot tube. After the air pressure reaches 50Pa, the calibration can be completed.



For more information, please view: Airspeed Sensor | PX4 Documentation Tutorial

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Chapter 5 After Sales and Warranty

Please visit the SIYI Technology support page at Service and Support - SIYI Technology | Empowering and Building an Intelligent Robot Ecology for the latest after-sales and warranty information.