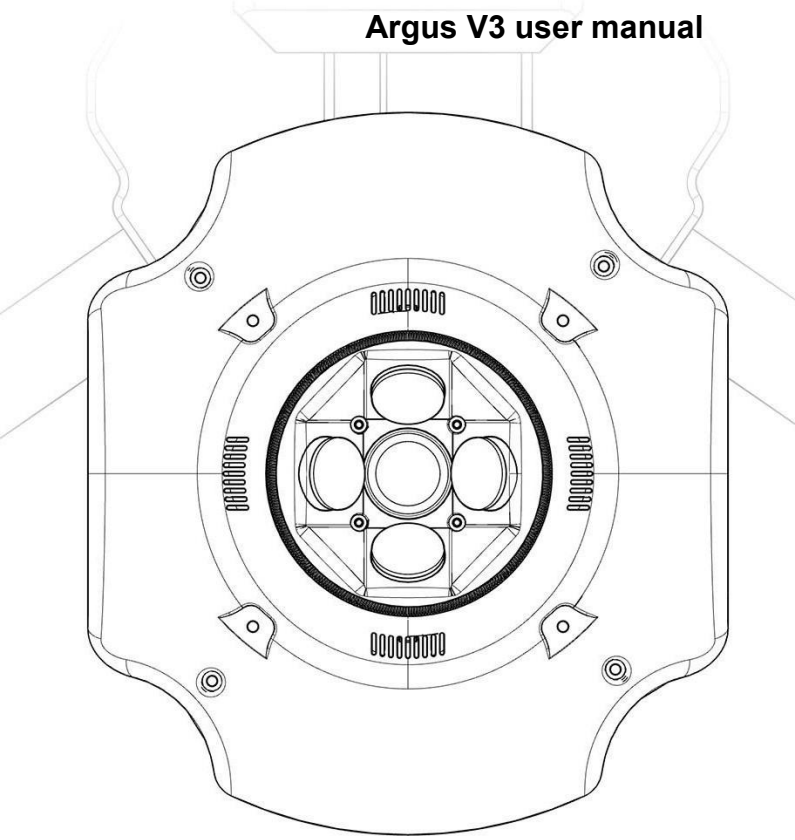
Argus V3 user manual



Reading tips

Symbol description

⚠ important Operation tips Vocabulary, reference

Install MS CCS Pro

In the process of using the product, it is necessary to install the official software MS CCS pro.

MS CCS Pro requires Windows 7 or windows 10.

⚠ **warning**

In order to avoid the danger of fire and electric shock and ensure the long-term stable operation of the product, please store the product in a dry and cool place, avoid exposure to the sun and high temperature and humidity.
As the lens and sensor are sensitive equipment, please dry the equipment after the operation in rainy or humid environment, so as to avoid mildew of electronic components and lens.

⚠ attention

Complete equipment

To ensure the quality of image acquisition, please keep the lens clean. Please use the lens carefully.
The internal circuit connection is complex, please do not disassemble the tilt camera system without authorization, so as to avoid problems such as failure and short circuit, which may affect the use.
Please avoid rough use, decomposition, modification, physical impact of the product, or impact of the product due to hammering, dropping or trampling.
Please try to avoid disassembling and assembling the uvmirror in outdoor environment, so as to avoid dust entering the fuselage and affecting the imaging quality。

Overview

Argus V3, the system adopts the world recognized best five lens tilt photography system. which supports DJI psdk synchronously. Besides, it is compatible with various kinds of UAVs in the market and matches with rich accessories.

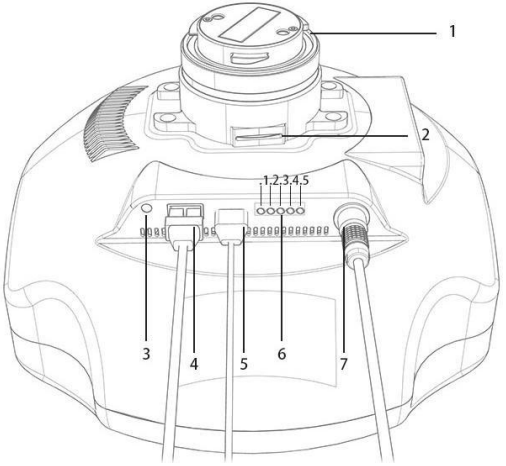
Installation requirements

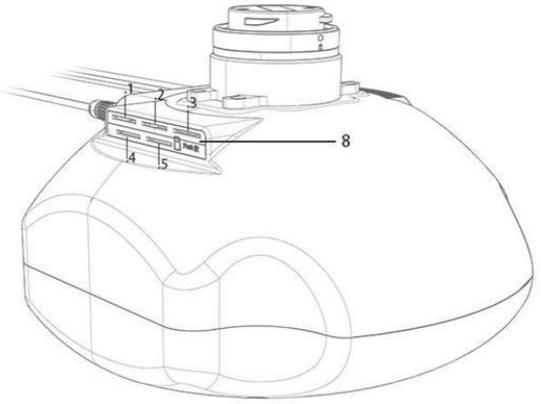
DJI psdk UAV adaptation scheme provides SKYPORT adapter ring and PTZ seamless coupling control.
Non DJI psdk models provide fast mount board scheme, which is convenient for connecting with UAV fuselage. Quick mount board supports most models on the market, and special models can be customized.

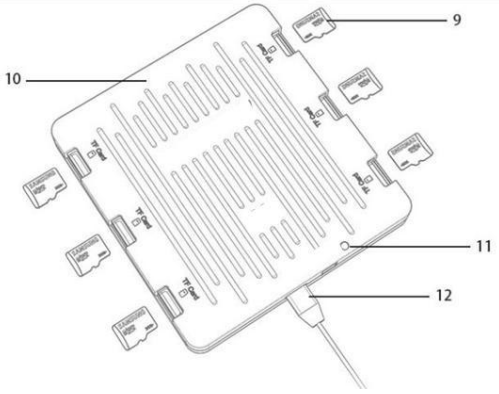
The system supports DJI psdk coupling control, automatic interval exposure control and external PWM Or high and low level (the level control is changed by software) signal control. Connect the photo jack at the main control end of the control line to the main control signal output port. The photo control port must be connected to the corresponding main control signal port (different master control output ports are different, please connect according to the corresponding interface).
At least enough space should be reserved under the fuselage for the Argus V3 host.

In order to prevent the tripod from being photographed in flight shooting, it is recommended to use electric retractable landing gear or large landing gear.
The main engine of Argus V3 is 0.58kg. In order to ensure flight safety, it is recommended to select the aircraft with the maximum payload of more than 1.8kg.

Meet Argus V3







1.	DJI Skyport	8.	Data TF card
2.	POS TF card	.1	MSCAM_D TF card
3.	Power indicator light	.2	MSCAM_F TF card
4.	External power supply line	.3	MSCAM_R TF card
5.	Data wire (type C)	.4	MSCAM_B TF card
6.	Camera indicator light	.5	MSCAM_L TF card
.1	MSCAM_D indicator light	9.	TF card
.2	MSCAM_F indicator light	10.	HUB module
.3	MSCAM_R indicator light	11.	HUB indicator light
.4	MSCAM_B indicator light	12.	Data wire (type C3.0)
.5	MSCAM_L indicator light		
7.	Photo trigger &PPK Feedback signal wire		

Catalog

Power supply

Use the standard power supply line Argus V3 to connect with the external battery or UAV.
DJI SKYPORT adapter ring can directly power the camera.
Power on (30v-12v) and on / off.
Argus is powered by external power interface or external battery. After the power supply interface is connected, the blue light of the fuselage power indicator is always on.
When the power line is pulled out / the DJI SKYPORT adapter ring is disconnected or the aircraft is turned off, the indicator light is turned off.

⚠ Please do not unplug the power during the camera shooting.

Installation to UAV/Drone

Be sure to install the Argus V3 to the UAV/Drone when the Argus V3 is not powered on

DJI PSDK Installation

1. Position the Argus V3 SKYPORT adapter ring at the bottom of the DJI psdk interface。
2. Install SKYPORT adapter ring with white dot mark corresponding to interface red dot mark, and rotate Argus V3 to connect red dot mark of adapter ring to complete installation.

Installation of quick mounting pan tilt

1. Fix the Argus V3 quick mount pan tilt on the bottom of the aircraft and lock it with screws。
2. Press the buttons on both sides of the pan tilt mount.
3. The top connector of Argus V3 pushes the hook into the empty slot of the mount, and releases the buttons on both sides of the mount to complete the hook.
4. Adjust the tilt and the position of the aircraft center of gravity by tightening the screws of Argus V3 pan tilt.

Before flight operation, check that Argus V3 has been correctly installed on the Argus V3 at the aircraft end, and adjust the center of gravity to ensure that the Argus V3 quick mount latch pops up and is stuck into the hole of the quick mount plate.

Be sure to adjust the center of gravity when Argus V3 is not powered and the fuselage is stable.

Use Argus V3

Power on state

After the power supply is connected, the power indicator light of the fuselage is always on, the status indicator of each camera will automatically detect and flash once, and once again when the detection is completed. When the indicator lights of each camera are off, the camera will enter the working state.

Pull out the power supply connector to enter the shutdown state, and all indicator lights are off.

If it is found that the indicator light of the camera is not flashing, that is, the indicator light corresponding to the camera is working abnormally and data cannot be recorded.

⚠ After connecting the power supply, please disconnect the power supply before the Argus V3 starts and completes the self-test. If the power is cut off during the start-up process, the camera can not record data after starting again.

Indicator light

The power indicator is always on after the power supply is connected, and off after the power supply is disconnected.

The camera indicator is used to indicate the status of Argus V3 cameras, and the power indicator is used to show whether the power supply is normal.

○ Indicates that the LED is off ✺ It indicates that the LED lamp flashes regularly during the indication process

● Indicates that the LED is always on during the indication Process

Camera LED	Power LED	Status
○	○	Power not plugged in
✺ ○ ✺ ○	●	Power plugged in
○	●	Camera on
✺ ○	●	Camera records data

Trigger control

The DJI psdk UAV is installed through the SKYPORT adapter ring, and can be directly controlled by the DJI standard ground station software.

Argus V3 signal aviation socket provides two modes of control, level signal and PWM signal. Aviation plug lead is connected to flight control shooting signal socket, which can be controlled by flight control ground station software.

The trigger mode of signal is modified by MS CCS Pro software.

Read data

There is a TF card slot for storing data on the side of Argus V3. Insert the original TF card into each card slot according to the number, and then turn on the power supply to control the host to record data.

(Note: Windows 7 users should wait patiently for the computer to read the driver)

Read 5 camera data drive letters, and correspond to the drive letter data according to the lens number.

Formatting the drive letter and inserting it into the host computer does not affect the data record.

Working condition

DJI UAV can support psdk installation through SKYPORT adapter ring. Normal UAV flight control needs to support level signal or PWM signal trigger.

Flight control trigger mode

PWM trigger signal specification:
Trigger: 1900ms
Reset: 1050ms
Signal duration: 500ms-1000ms
Level signal specification:
Trigger: falling edge / rising edge(3.3-0v)
Signal duration: ≥ 10ms

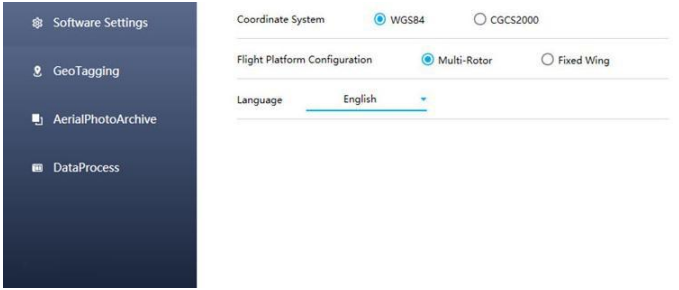
USB connection to MS CCS Pro

Please make sure that the control software MS CCS Pro is installed on the PC side and then carry out the following operations.
Data line access to parameter adjustment port -- running MS CCS Pro -- camera setting options -- connecting equipment

It is not necessary to connect the power supply to modify the host parameters through the data line connection software.

Software operation

MS CCS Pro Operation interface



1 Software settings

Global settings

1.1 Coordinate system

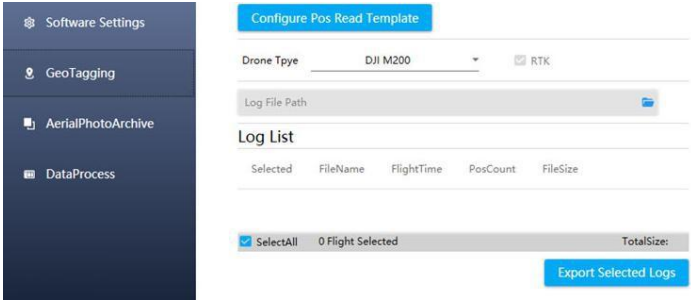
Set the geographic coordinate system of the original pos data

1.2 UAV/Drone type

Select the type of UAV; when grouping sorties, the multi rotor will use 30 seconds to group, and the fixed wing will use 120 seconds to group.

1.3 Language settings

Switch between Chinese and English.



2 Geotagging

The original pos file is transformed into a pos file that can be recognized and read by the software

2.1 Configure POS read template

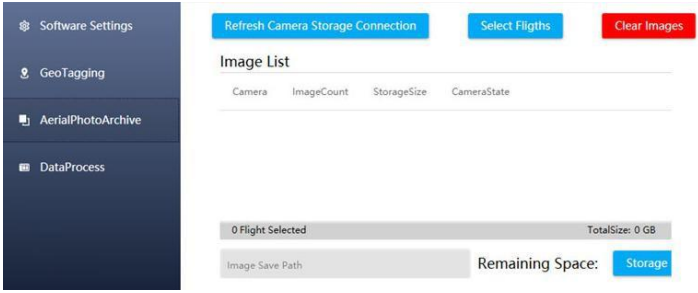
Import the original pose data and select the folder where the pose file is located.

2.2 UAV/Drone type

Select the UAV type corresponding to the imported pose data. If the current imported pose data is not supported, you can configure it by yourself through the pose template

2.3 Export selected log

Export the selected log to the destination folder.



3 Aerial film filing

Get camera photos, generate sorties and export to local.

3.1 Refresh camera storage connection

Read camera photos and generate sorties.

3.2 Select sorties

Select the sorties that need to be exported locally.

3.3 Empty photos

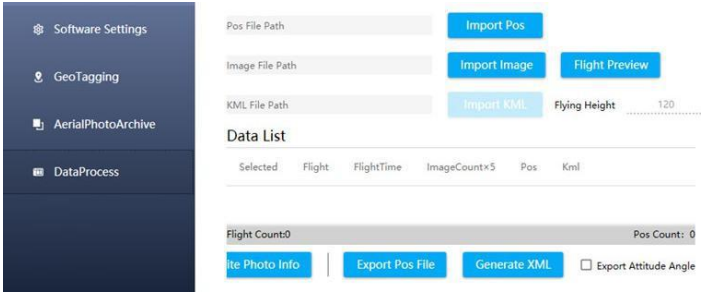
Delete all photos of the camera.

3.4 Storage path

Select the save path for the export sorties.

3.5 Perform export

Copy the photos locally.



4 Data processing

Match pose data for sorties; export data files that pix4d

4.1 Pos import

Import the mslog generated in the geotagging phase.

4.2 Image import

Import the sorties generated in the aerial photo archiving stage.

4.3 Sortie Preview

3D display of pos data

4.4 KML import

Import KML file to eliminate useless photos.

4.5 Pix4D photo archiving

Check one or more sorties, merge the selected sorties into one sortie, and write the pos data to the photos.

4.6 Write photo information

Check one or more sorties and write camera distortion information and pose data to the photos of selected sorties for the use of DJI intelligent map.

4.7 Export POS file

Check one or more sorties to export the CSV file containing photo name and pose data; if merge CSV is checked during export, the five shot CSV file will be merged into one CSV file.

4.8 GenerateXML

Check one or more sorties to generate XML files

Introduction to route planning skills

Basic route planning requirements

Overlap degree

The overlap degree is divided into course overlap degree and side overlap degree. The course overlap degree refers to the image overlap degree in the direction consistent with the flight direction, and the side direction refers to the image overlap degree between two adjacent routes;

In the process of route setting, the course overlap determines the number of images and the interval of photographing, and the side overlap determines the number of routes. Generally, the two overlap degrees can be set as the same. If it is necessary to reduce the amount of data or adjust the flight efficiency of a single flight, a single value can be used.

Trim

The overlapping degree of foundation is not recommended to be less than 65%, and the common overlap is 75%, and it is not recommended to exceed the maximum The overlap degree determines the reference data of ground image in the restoration process. Theoretically, increasing the overlap degree can increase the accuracy of the model. However, if the overlap degree is too large, it will reduce the field efficiency and increase the amount of data processing in the later stage, and the increase of model accuracy is not obvious, so please make reasonable adjustment according to the actual needs.

Flight altitude

In order to ensure the integrity of data acquisition, the general flight altitude can refer to a standard: (altitude of the highest point in the survey area - the height of the take-off point) × 2, which is used as the standard flight altitude. This is to ensure that the data of the high point in the survey area can be collected completely. If it is ideal to take off at the highest point or higher place in the survey area, the altitude setting only needs to consider the ground resolution and flight safety In addition, the ground resolution can be ensured by changing the focal length of the lens;

Exception: when the standard flight height cannot meet the ground resolution required by the project, in order to ensure the ground resolution first, we can split the survey area and collect the higher area separately. When collecting separately, we can adjust the 2 times in the formula to 1.5 times, and increase the overlap to 85% to ensure the data integrity of the higher area; in case of high mountain height and large slope area, ladder type stratified flight can be adopted to ensure the overall model accuracy and ground resolution.

Flight area planning

First of all, it is necessary to determine the key flight area. Due to the acquisition method of oblique photography, the 3D image data of the edge area are generally lack of data with poor accuracy. Therefore, we must put the key area in the center of the flight area when planning the flight area, and set the minimum range as the edge extension of the key area 1 In the post-processing process, the edge area can be cut off.

Flight altitude, ground resolution and camera interval reference:

Fixed value: overlap 75%, flying speed 5m / s, focal length 32mm

Ground resolution: 2cm

Flight height: 160m

Photo interval: 5.5s

Ground resolution: 5cm

Altitude: 390m

Photo interval: 13.37s

The above parameters are for reference only.

Emergency treatment of fault problems

The following contents are used to guide the maintenance operators to deal with simple maintenance problems.

Common problem	Methods of resolution
Unable to power on	Please check whether the power supply voltage is up to standard. The minimum normal working voltage is 12.6V.
The number of images is not consistent with the planning images of the ground station	When the ground station system calculates the expected number of photos taken by the route It is calculated according to the ideal state of uniform speed. However, due to the speed change and distance error in the actual flight process of UAV, there will be a certain gap, which is a normal phenomenon. Please match the number of images with the number of POS, and delete the start-up self-test photos and other non active triggered photos.
There is a difference in the number of photos between shots	Under normal circumstances, the number of photos taken by the five lenses should be the same. If there is any inconsistency, it may be caused by the following reasons: 1. After the power supply is turned on quickly and frequently, the camera can not correctly identify the memory card and cannot record the data, trigger the camera to take photos,

	observe the camera status indicator light, if there is a non flashing indicator light corresponding to the camera, the data cannot be recorded, By restarting the camera and waiting for the self-test to be completed, the observation indicator light will be on normally to avoid data loss. 2. Due to the insufficient setting of the external control signal duration, the external signal cannot support the complete exposure of all cameras. The solution to the problem can adjust the duration of the external control signal to the standard time specified in the manual, which can generally ensure the complete triggering of all movements. 3. Due to insufficient external power supply, there is not enough power to drive the synchronous exposure of five movements. Generally, when the voltage of the aircraft is too low during flight, the power supply of the tilt camera is insufficient due to the large part of the power of the aircraft's main power.

Specifications

Machine specification	
Number of shots	5
Tilt angle	0°X1 & 45°X4
Dimensions	148*167*86mm
Weight	580g

Power supply mode	Airborne / independent power supply
Minimum photo interval	0.2s
Support flight control system	All flight control, (PWM signals and level signals)
Lens group configuration	25-35mm or full35mm
Power on self test	Yes
Working state of five channel camera	real-time display
Storage capacity	640G(can be added)
Data access mode	Unified access
Data export speed	350MB/S
working temperature	-22-55℃
Attitude information	Read the uav original log to generate attitude information
PPK(optional)	The default refresh rate of centimeter level positioning is 5Hz and the maximum is 20Hz
Feedback signal	Support five independent feedback channels
Software kit	MS CCS PRO

Working voltage	12.6-36v
Maximum power consumption	30W
Protection level	IP54
Argus V3 PSDK	
DJI Skyport	Yes
Five independent POS	support
free image control point（1：500）	support
App camera working state feedback	support
DJI Terra	support
Pos Storage mode	Local TF card
Time synchronization	support
Five way photo app display	support
M300 carrying endurance	About 45min
Weight	610g
Imaging data	

Effective pixel of single lens	24.3 million pixels, total pixels > 120 million
CMOS Size	22.3mm*14.9mm
Sensor specifications	APS-C
Photo size	6000x4000Pix
Setting parameters	
Shooting mode	M
ISO	Auto（100-800）
Aperture	F5.6
External battery	
Type	Lithium polymer power cell(LIPO)
Battery capacity	12600mah
Voltage	24V
Charging ambient temperature	-10℃～50℃
Operating ambient temperature	**-20℃～+75℃**