GCS 7.0 & 51AP

User manual

Version：V1.0.1

Revision date：2018.10.13

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Dear customers:

Hello!

Thank you for purchasing and using Feiyu Tech's product. For you can use this product better, please read this introduction carefully before using this product.

Introduction

GCS 7.0 is designed for those plane which were installed the PandaIII Autopilot. This introduction aims to introduce the function of the GCS 7.0 to help the users configure the PandaIII Autopilot, plan and monitor their flight mission.

Attention

- *If you have any problem during using, you can contact us at any time.*

Disclaimer

- *Prohibit any user for any illegal purpose. Users will be responsible for all behaviors of purchase and use products.*
- *Our company assumes no liability for any risks related to or resulting from the debug and use of this software (Including the direct, indirect or third-party losses).*
- *The updating and changes of product firmware and program may cause changes in function descriptions in this user manual, please read the instructions carefully before upgrading the firmware and use the corresponding user manual. Feiyu Tech reserves the right to amend this manual and the terms and conditions of use the software at any time.*
- *This Agreement comes into effect automatically when the user uses this software.*

Technical Support

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Contents

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Part I.   Software Functions and Instructions

Goal of this section : Introduce the functions of

GCS7.0 and teach you how to use them.

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GCS 7.0 Interface Instruction

Goal of this section：Introduce the interface and function of the GCS7.0.

GCS 7.0 Constituent Part

1. **Map Area**：Display the plane current location and flight path.

2. **Mini Flight Monitoring**：A status window displays the plane current flight status.

3. **Function Tab**：Switch the software function.

4. **Tool Bar**：Be used to operate the map.

5. **Control Bar**：Send commander to the plane, such as **Take-off** and **Start mission**.

Tool Bar

Introduction : The buttons in **Tool Bar** are mainly used to perform some simple operations on the map. The functions of the buttons are explained below.

Zoom in : Zoom in map

Zoom out : Zoom out map

Marker : Place a marker on the map. Double click can clear the marker

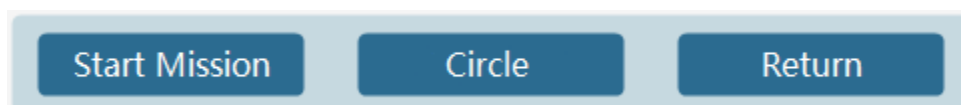**Measure :** Measure distance on the map. Double click can clear the trace

Centre : Centre map on plane

Clear : Clear the flight trace

Control Bar

Introduction : The buttons in **Control Bar** are mainly used to control the plane's flight.

Start Mission   Circle   Return

Instruction

Start Mission : The plane will perform the mission saved in Autopilot.

Circle : The plane will circle around the current position.

Return : The plane will stop any mission, then return to home point and circle around it.

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Functions Tab

Introduction : You can switch between different features by clicking the icon on the **Functions tab** to help you monitor, plan, and configure plane.
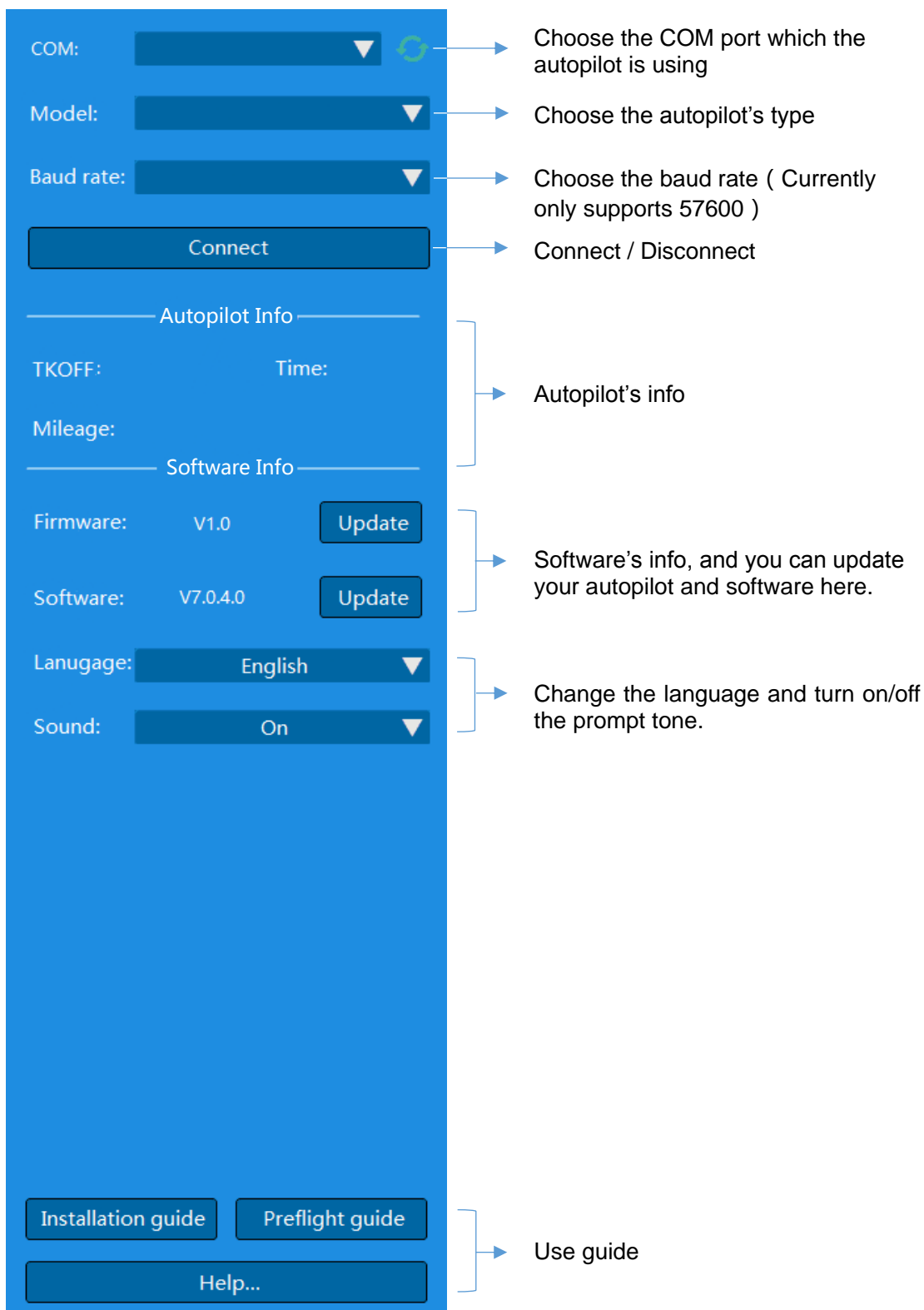
Button Description :

Home page : You can choose the type of the autopilot to connect, update the autopilot's firmware and software, find some products information.

Flight Monitoring : You can not only monitor plane flight in this tab, but also control its flight speed and altitude.

Landing Point : Set the home point and the landing point.

Mission Planner : Planning the flight mission

Waypoint : You can edit the information of each waypoint.

Data : Replay the plane's flight track, export the flight log and POS data.

Advanced Setting : You can further set the software and autopilot's parameters.

Map : Used to switch maps and download maps

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Home Page ⨍⌐

Introduction : In this tab, users can choose the autopilot's type to connect, or find some products information.

COM: ▼ 🔄	→ Choose the COM port which the autopilot is using
Model: ▼	→ Choose the autopilot's type
Baud rate: ▼	→ Choose the baud rate (Currently only supports 57600)
Connect	→ Connect / Disconnect

─────── Autopilot Info ───────

TKOFF :　　　　　　Time:

Mileage:

→ Autopilot's info

─────── Software Info ───────

Firmware:	V1.0	Update
Software:	V7.0.4.0	Update

→ Software's info, and you can update your autopilot and software here.

Lanugage:	English ▼
Sound:	On ▼

→ Change the language and turn on/off the prompt tone.

Installation guide	Preflight guide
Help...	

→ Use guide

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1) Autopilot Info

TKOFF : The numbers of take-offs.

Mileage : The total flight mileage.

Time : The total flight time.

2) Software Info

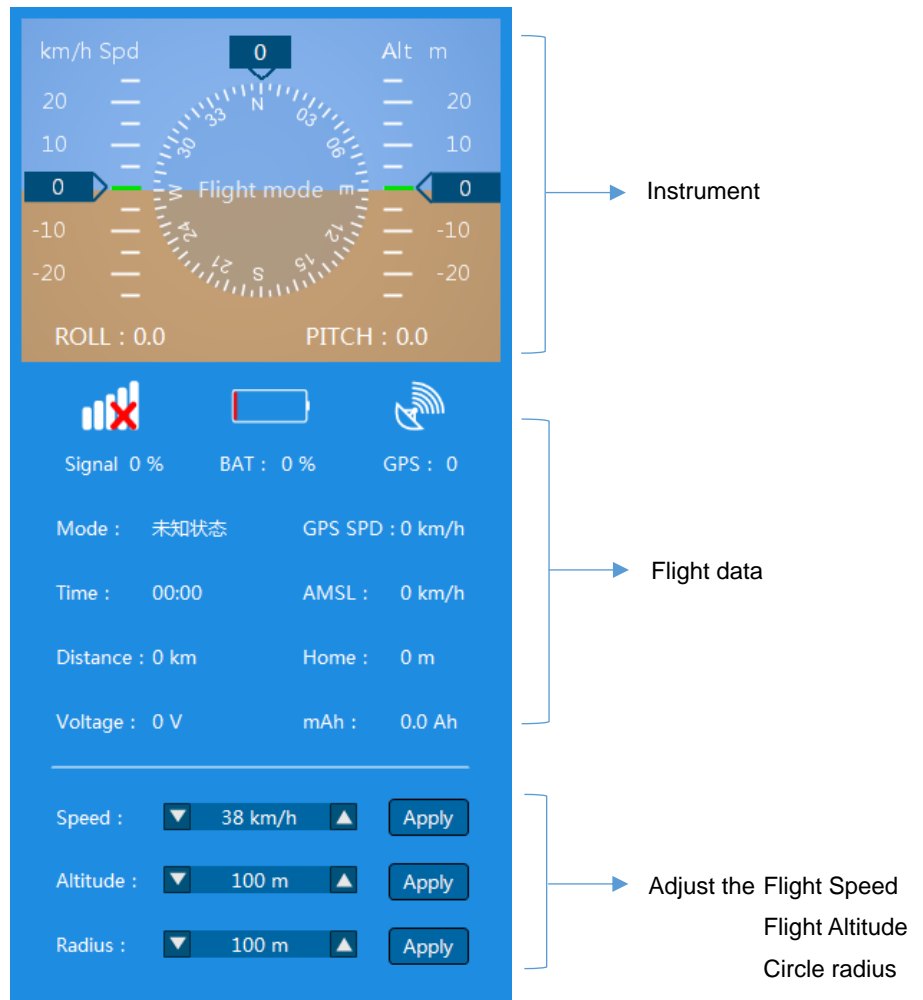If your computer connects with the internet, it will prompt you to download them or not after the GCS detected the new version of firmware and software. Please turn to **page 35** to see the step of upgrading the firmware.

3) Use Guide

After choosing the autopilot's type, users can open the **Installation guide** and **Preflight guide** to help themselves configure and prepare for their first flight.

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Flight Monitoring Tab ⌁

Introduction : In **Flight Monitoring Tab**, you can see the plane flight data during flying.

km/h Spd 0 Alt m ... ROLL : 0.0 PITCH : 0.0	→ Instrument
Signal 0 % BAT : 0 % GPS : 0 Mode : 未知状态 GPS SPD : 0 km/h Time : 00:00 AMSL : 0 km/h Distance : 0 km Home : 0 m Voltage : 0 V mAh : 0.0 Ah	→ Flight data

Speed : ▼ 38 km/h ▲ Apply
 Altitude : ▼ 100 m ▲ Apply
 Radius : ▼ 100 m ▲ Apply
	→ Adjust the Flight Speed
	        Flight Altitude
	        Circle radius

Instrument

- Pressure Altitude
- Motor lock, it will disappear after the autopilot was armed
- Airspeed
- Heading
- Roll → ROLL : 0.0   PITCH : 0.0 ← Pitch

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Instrument

Airspeed : The real-time flight speed measured by plane airspeed sensor.

Pressure Altitude : The real-time flight altitude of the plane (the vertical distance from the plane current

position to the energized position)

Heading : The angle between the axis of the plane body and the north pole of the earth.

Roll : The angle when plane rolls towards left or right.

Pitch : The angle between the axis of the plane body and horizontal plane.

Flight data

Signal : The communication quality between the plane and data radio.

BAT : Battery remaining capacity.

GPS : The amount of satellite that the plane GPS searched.

Mode : The current mode of the autopilot.

Time : The total flight time since the plane takes off.

Distance : The total flight distance since the plane takes off.

Voltage : The current voltage of the batteries.

GPS SPD : The flight speed of the plane relative to the ground.

AMSL : The altitude above sea level.

Home : The distance between the plane current location and home point.

mAh : The consumption of the batteries.

Speed / Altitude / Radius

Users can changed the plane's flight speed, altitude by input the value and click **Apply**.
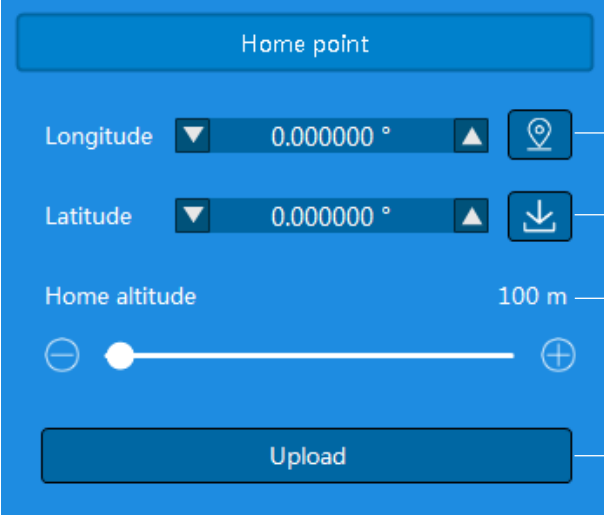
The **Radius** is be used to change the **Landing point**'s radius and the **Home point**'s radius. After changed it, users need to upload the point again to enable the change.

❗ **Note :** The input range of **Speed** is 36km/h~144km/h. In **Radius**, input **+** value represents clockwise, input **-** value represents anti-clockwise.

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Home Point

Introduction : In **Landing Point** tab, you can set the **Home point.** The following describes the buttons functions of the **Home point**.

1) Home Point

Home point	
Longitude ▼ 0.000000 ° ▲ ⊚	→ Positioning button, place a new **Home Point** on the map.
Latitude ▼ 0.000000 ° ▲ ↓	→ Record button, use the GPS current position as **Home Point**
Home altitude 100 m	→ Adjust the **Home point** altitude
⊖ ●————————— ⊕	
Upload	→ If you change the coordinates of **Home point**, please click this button to upload

> **Note :** 1. When the GPS is positioned, it will automatically record a home point at the current location.
> 2. **Home Point** also can be set by entering latitude and longitude.

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Mission Planner ☰

Introduction : In **Mission Planner tab**, you can plan the flight mission for your plane.
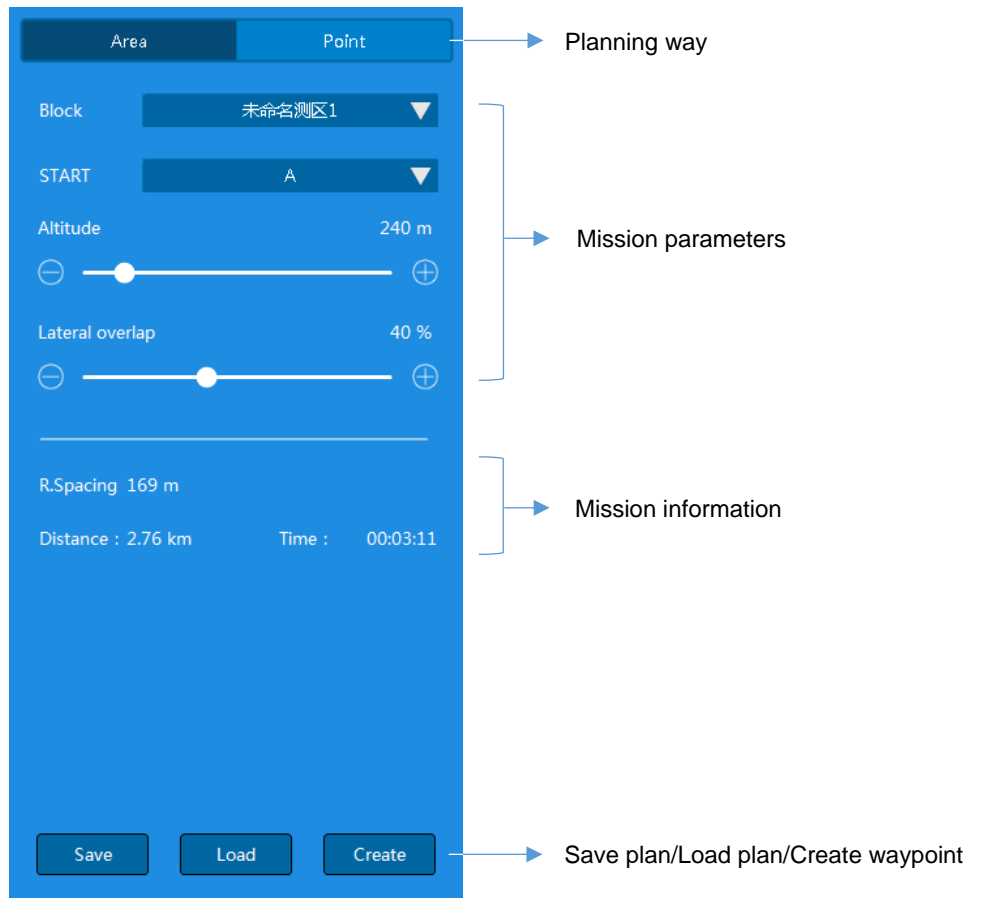
Planning way

GCS 7.0 has two mission plans, **Area Mapping** and **Line Mapping**. Users can choose according to their mission requirements.

Mission parameters

Block : Waypoints only can be planned after the block is created.

Start : Choose the first point that the plane enters the air routes.

Altitude : The altitude when plane flying along the air routes (The air route's altitude)

Lateral overlap : The percentage of overlap between the ground coverage of pictures from adjacent flight lines.

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3) Save plan / Load plan / Create waypoint

Click **Save plan** can save the air routes to your computer, click **load plan** can load the air route file from your computer, click **Create waypoint** can and create the waypoints on the map.

4) Mission information

R.Spacing：The distance between two adjacent routes

Distance：The estimated flight distance required for a plane to finish its mission

Time：The estimated flight time required for a plane to finish its mission

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Waypoint ⊙

Introduction: In **Waypoint Tab**, you can see the mission attributes of each waypoint, such as the altitude of the waypoint, whether to take pictures between the waypoints, the coordinates of the waypoints, etc. You can set parameters for one or more waypoint.

Waypoint ID / Altitude

ID	Alt	📷
1	240	
2	240	
3	240	
4	240	

Altitude	240 m
Longitude	109.406775
Latitude	25.276855

Change waypoint's altitude

Change waypoint's longitude and latitude.

➕ 🗑 | ⬆ ⬇ | 📍 | ➡

Function buttons

| Upload | Delete | Download |

Upload / Delete /Download

1) Function buttons

➕ **Insert** : Insert a new waypoint after this waypoint

🗑 **Delete :** Delete this waypoint

⬆ ⬇ **Move up / down :** Move up / down this waypoint

📍 **Pick :** Place a new waypoint on the map

➡ **Fly to :** Start Mission from this waypoint

2) Upload /Delete / Download

Click **Upload** can upload all waypoints to The Autopilot, click **Download** can download all waypoints from The Autopilot, click **Delete** can delete all waypoints from Autopilot.

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Data 📋

Introduction : **Data** Tab is mainly composed of two parts, **Replay** and **Log file**. In **Data** tab, you can replay flight trace, and download the log file.

1) Replay

Replay	Logfile
Name	
Mins	
Open	→ Load flight file for replaying

2) Log

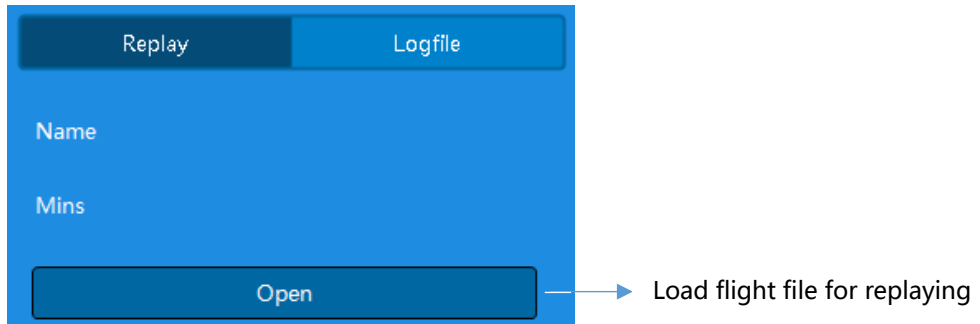|	Replay	Log file	
ID	Name	Size	
1	2018-06-12,15 : 36 : 22	125.6 MB	
2	2018-06-12,15 : 36 : 22	125.6 MB	
3	2018-06-12,15 : 36 : 22	125.6 MB	
4	2018-06-12,15 : 36 : 22	125.6 MB	
5	2018-06-12,15 : 36 : 22	125.6 MB	→ File list
6	2018-06-12,15 : 36 : 22	125.6 MB	
7	2018-06-12,15 : 36 : 22	125.6 MB	
8	2018-06-12,15 : 36 : 22	125.6 MB	
9	2018-06-12,15 : 36 : 22	125.6 MB	
10	2018-06-12,15 : 36 : 22	125.6 MB	

Refresh

Delete   Download Log → Download the log file

Refresh

Delete all log files in autopilot

❗ **Note :** The **log file** was saved in the log folder under the installation directory.

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Part II. PandaIII Autopilot

This section will explains the first installation and parameters

configuration of the PandaIII Autopilot

Autopilot Brief Introduction

Brief introduction : 51AP Autopilot is a model-level flight control system based on the 41AP. Compared with 41AP, it has a upgrade of hardware and algorithm, easy to configure and use. It integrates the OSD(On-Screen Display) system, can provides a perfect flight experience for flight enthusiasts, such as FPV, aerobatics, etc. At the same time, it has built-in reliable Failsafe mechanism, allowing users to enjoy an unparalleled operating experience without any worries.

Interface Diagram

Power module - **CS**

Camera - **VI**

Video transmitter - **VO**

Airspeed sensor - **AS**

Data radio - **UART1**

GPS module – **GPS**

RC Receiver – RC IN

If the GPS doesn't connected, there won't be any attitude data.

 ❗ **Note :** The Interface definition of the **UART** from the left to right is GND, +5V, TX, RX.

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FY-51AP OSD

Introduction : FY-51AP integrates the OSD module, supports PAL and NTSC video formats.

① ← ⓥ 15.4
② ← Ⓐ 2.3

W ────── N ────── E
⑤ ← 012
⑥ ← 🔒

🛰 17 → ⑧

③ ← 65

121 → ⑨

⑦ ← MISSION

④ ← ⏰ 00:23:15

N:22.683798
E:100.129032 → ⑩
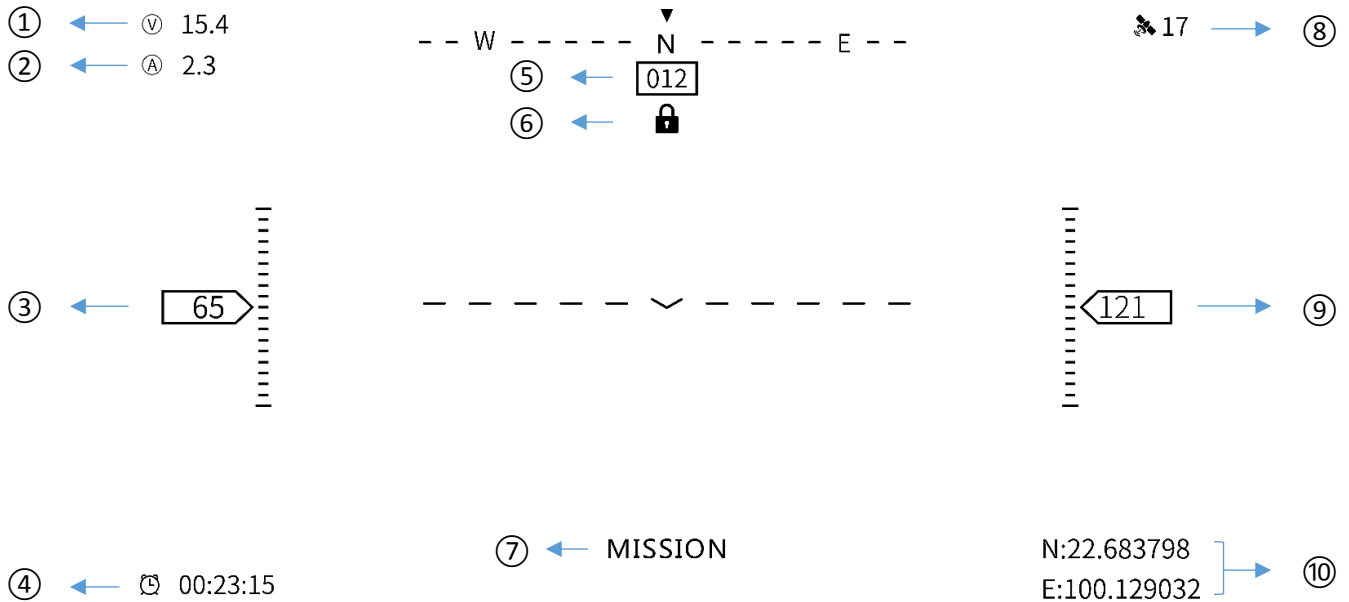
OSD Interface

1 : Voltage	**6 :** Motor lock
2 : Current	**7 :** Flight mode
3 : Flight altitude	**8 :** Satellite
4 : Total flight time	**9 :** Airspeed (m/s)
5 : Angle of Yaw	**10 :** Position

Flight mode

MANUAL : /	**MISSION : /**
STABILIZED : /	**RETURN : /**
3D : /	**Hold : /**
GPS : Fixed altitude and direction.	

⚠ **Note :** If the positioning accuracy is not enough, when autopilot is in **RETURN** or **Hold** mode, it will automatically switch to **GPS** mode.

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The Installation and Configuration of The Autopilot

Introduction : This section describes the installation and configuration of The Autopilot.

Installation

The Autopilot must be installed horizontally inside the fuselage according to the **Interface diagram**. During the installation process, it should be noticed that the direction of the arrow needs to be at an angle of 0°/90°/180°/270° to the axis of the fuselage, as shown in the following figure:

S1-S4 is the aileron, elevator, throttle, rudder (AIL, ELE, THR, RUD) interface. The autopilot supports aircraft with normal layout, Flying wing layout and V-tail layout. The wiring of each layout is as follows:

Normal layout : Use Y line to connect the two aileron servos to S1. Use Y line to connect the two elevator servos to S2. Then connect the ESC to S3, the rudder to S4;

Flying wing layout : Connect left aileron servo to S1, the right aileron servo to S2, the ESC to S3;

V-tail layout : Connect left aileron servo to S1, right aileron servo to S2, the ESC to S3, the left elevator&rudder mix control servo to S4, the right elevator&rudder mix control servo to S5.
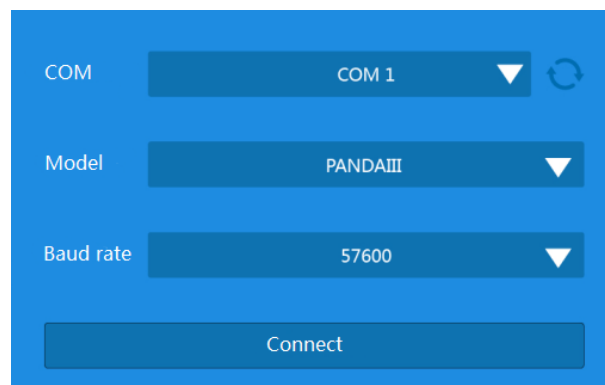
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Connect

Caution : Please use the battery to supply power before debugging.

OPTION 1 : Connect the Autopilot to the computer using the Micro USB cable. Start the GCS 7.0 software, select the **Model 51AP**, **Baud rate 57600** and **COM port**, and then click **Connect**.

OPTION 2 : Connect the GCS7.0 software's data radio to the computer, start the GCS 7.0 software, select the **Model 51AP**, **Baud rate 57600** and **COM port**, and then click **Connect**.

If built up connection successfully, users can see the data that the autopilot transmits to the software, and the autopilot light will flash blue. If the autopilot connects with the ESC, the ESC will prompt a **No motor signal detected** tone, indicating that the motor is locked, which can prevent the user from accidentally touching the throttle or button and causing the propeller to rotate and finally causes injury to user.

| COM	COM 1	
Model	PANDAⅢ	
Baud rate	57600	
Connect		

Basic Settings

In **Advanced Settings** → **Autopilot**, find **Model** and **Orientation**, and set according to the model of the user's plane, the software will prompt to restart the autopilot. After restart the autopilot, please set the installation direction of the autopilot. After setting, click the **Apply** to upload it to the autopilot.

Sensor Calibration

The **Compass**, **Gyroscope**, **Accelerometer**, **Neutral point**, **Airspeed sensor** and **Battery** are calibrated in sequence in the **Autopilot** → **Sensor Calibration**. When entering the corresponding calibration, the software will have corresponding operation prompts, and the user only needs to operate according to the operation prompts. After finishing all the calibrations, click the **Apply** to upload it to the autopilot.
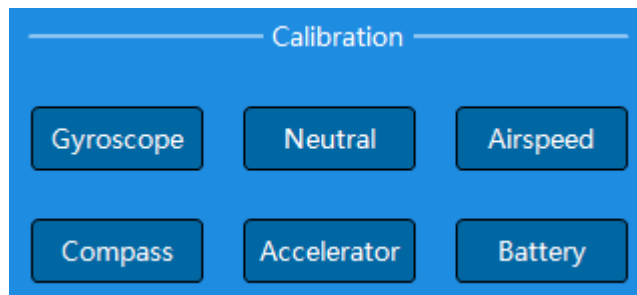
> **!** **Note :** 1. **Neutral point** records the pitch angle of the plane when it is flying horizontally. The calibration should base on the plane model.
> 2. After the calibration is completed, check the corresponding parameters to confirm that the parameters are correct.
> 3. The users need to do the calibration only when the autopilot is installed for the first time, or when the sensor measurement has a large error.

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PID

In **Advanced setting → PID**, the user can adjust the attitude of the plane. Choose the Roll or Pitch and click **Set** to confirm, then click **Read** to read the default value.

The following table is the recommended value for the 3 layouts

	Normal	Flying-Wing	V-Tail
Pitch D	0.08	0.15	0.08
Pitch P	0.5	0.55	0.5
Roll D	0.05	0.15	0.05
Roll P	0.5	0.7	0.5

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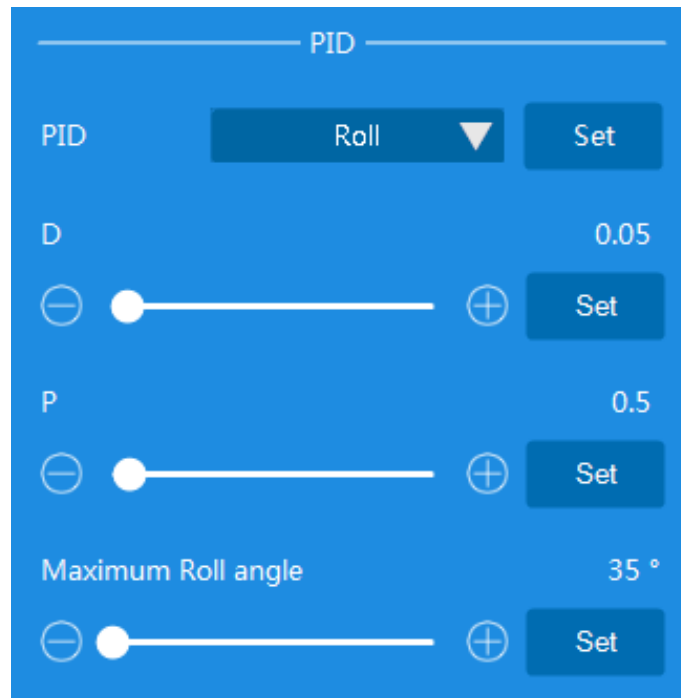
Remote Control Calibration

The **Remote Control Calibration** is aim to make the autopilot records the maximum and minimum values of the remote control channel. Please follow the software prompts to complete the calibration.

Then, set the function channel. It is aim to set the channel for RC to switch the autopilot's working mode. Finally, click the **Apply** to upload it to the autopilot. The CH5 supports RC / Stabilize / 3D /RTL / Hold / GPS mode, and the RC and Stabilize cannot be changed, users only can choose 3D / RTL / Hold / GPS.

Examination

After finishing all the settings, please click **Read** to check whether the parameters were set correctly.

Check the Installation direction and Model

Click **Read** to check the setting is correct or not. Raise the plane and make pitch and roll movement, and check through the instrument panel, whether the plane's movement is correct or not.

Check the Sensors

Measure the battery's voltage and compare with the value measured by the GCS to check whether the voltage is correct or not. Raise the plane and blow lightly to the airspeed sensor, check that whether the altitude and airspeed has changes or not. Make the plane and a compass point to a same direction, then check the value on the compass and compare with the instrument panel, whether the value is same or not.

Check the PID and Failsafe

Users can adjust the PID value for their first flight according to the **PID Control** in the following text. After finishing adjusting, please click Read to check whether the values were set correctly or not. Users can turn on/off the Failsafe function according themselves need. After finishing adjusting, please click Read to check whether the settings are correct or not.

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Check the Stabilize function and RC

Switch the mode to Stabilize and check whether the servos move correctly or not. If the servos movement are reversed, users can change the setting in **Servo**. Then use the Remote Controller to control the servo to check whether the servos movement are correct or not. If the servos movement are reversed, users can change the setting in **RC**.

> ❗ **Note :** User should make sure that the **Stabilize** function is correct first, then check the Remote Control function.

Check the Arm/Disarm function

After all the calibrations were finished, please switch to the **RC** page and follow the following step to test the motor lock function.

Mode 1 Remote Controller

Push the **Left stick** to the bottom right, and observe the RC CH3 is min, RC CH4 is max = **Arm**
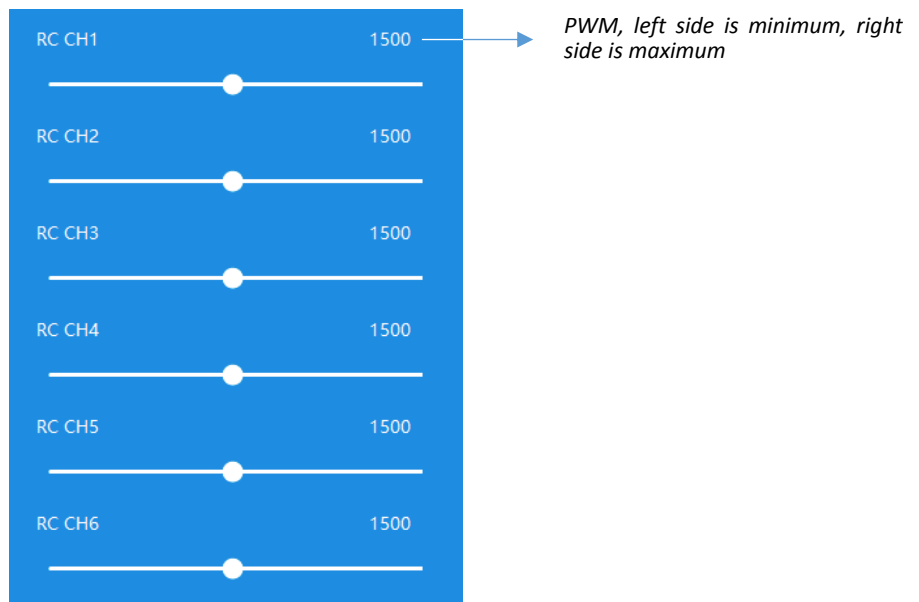Push the **Left stick** to the bottom left, and observe the RC CH3 is min, RC CH4 is min = **Disarm**

Mode 2 Remote Controller

Push the **Throttle** to the bottom, the **Left stick** to the bottom right, and observe the RC CH3 is min, RC CH4 is max = **Arm**
Push the **Throttle** to the bottom, the **Left stick** to the bottom left, and observe the RC CH3 is min, RC CH4 is min = **Disarm**

If you cannot arm the autopilot, please set reverse for Channel 3 / Channel 4 / Channel 3 and 4 on your Remote Controller until meet the above conditions.

RC CH1	1500
RC CH2	1500
RC CH3	1500
RC CH4	1500
RC CH5	1500
RC CH6	1500

PWM, left side is minimum, right side is maximum

> ❗ **Note :** 1.The calibration cannot be done after you arm the autopilot.
> 2.If you cannot use the remote controller to control the Throttle, please reboot the autopilot and try again.

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Part III.   Mission Plan

This section explains how to perform a mission

with GCS 7.0 software using a plane equipped with

a FY-51AP autopilot.

Step1 : Connect

Turn on your plane's power and the data radio, open the GCS 7.0, choose **Model 51AP**, **Baud rate (57600)** and **COM port**, and then **Connect** to build up the communication.

COM	COM 1 ▼ ↻
Model	PANDAIII ▼
Baud rate	57600 ▼
	Connect
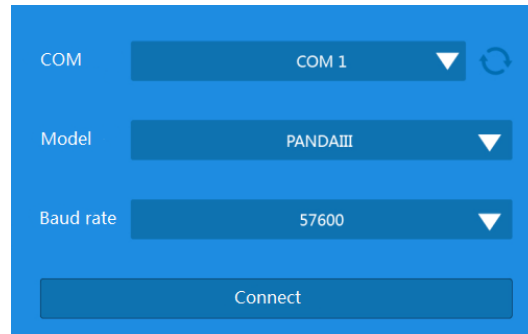
If built up connection successfully, you can see the prompt from the software and the data that the autopilot transmits to the software, and the autopilot light will flash blue. This time, the ESC will prompt a no motor signal detected tone, indicating that the motor is locked, which can prevent the user from accidentally touching the throttle or button and causing the propeller to rotate and finally causes injury to user.

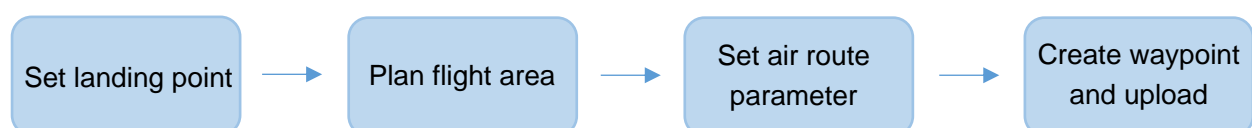**❗ Note :** COM port can be found in the device manager

Step2 : Select Map

Choose the map type in **Map** icon (This function needs the user's computer has a connection with the internet). You also can download the offline map at home and load it when you are outdoors.

❗ Note : You can also click **Load KML** button to download map and plan mission if you have KML files.

Step3 : Create a flight mission

The following tells you how to create a flight mission.

Set landing point → Plan flight area → Set air route parameter → Create waypoint and upload

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1) Set Home Point

The function of Home Point

When the users send command **Return**, the plane will fly to the **Home point** and circle around it. When the plane is powered and GPS is located, the software creates a **Home point** at the current location of the plane and displays it on the map.
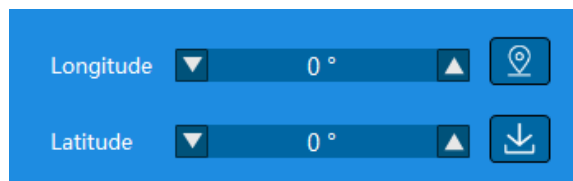

Set the Home point

Users have three ways to set the Home Point :

1.Use the GPS current coordinates as the Home Point's coordinates : Take the plane to the expected Home position, and then click [icon] to collect the coordinates of the Home Point. Then, the Home Point's location will display on the map area.

2.Choose Home Point by clicking on the map area : Click [icon] to select the location of the Home Point on the map. After the completion, the location of the Home Point will be displayed on the map area.

3.Input latitude and longitude coordinates :

After the input is completed, the location of the Home Point will be displayed on the map area.

Then, set the home altitude in the **Altitude**.

Click **Upload** to upload the landing route to the autopilot after finishing all settings.

> ⓘ **Note :** The radius of the plane circling around the home point can be modified in **Flight monitor tab** → **Circle radius**.

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2) Select route planning and create blocks

Firstly, click **Mission Plan icon** in Function Tab. Secondly, select a way to create your mission and build up a new block.
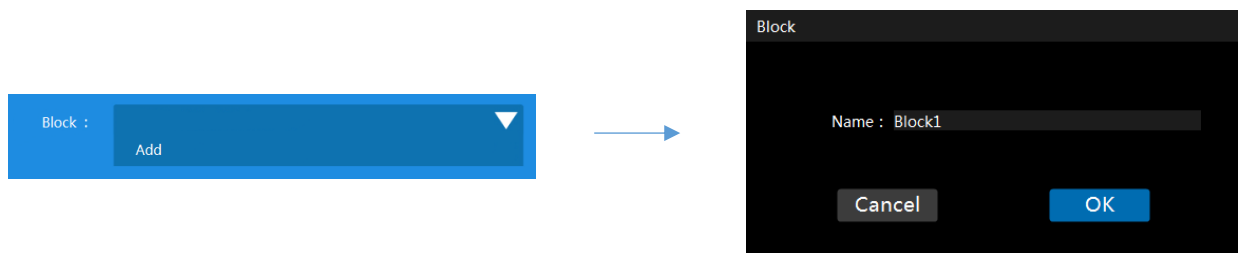
3) Draw a route

GCS 7.0 offers two ways for you to draw the route : **Area Mapping** and **Custom Mapping**. The following will explain the two ways and you can choose according to your aerial survey requirements.

Area Mapping

Click on map to create a rectangular area. Drag the edge of the planning area can stretch the rectangular area. Drag the central circular shadow area to move the planning area. Dragging the dots on the corners can rotate the planning area. Double click t the dots on the corners cam add a new planning point. In this case, you can change to the polygon area. You can drag these planning points to adjust the size and shape of the planning area.

> **Note :** The block can be deleted by clicking **X** button in the down drop menu of **Block**.

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Custom Mapping

Click on the map area to create waypoints.

After completing the route planning, click **Create**. At this time, the page will jump to the **Mission Information** tab, click Upload to upload the waypoints to autopilot.

> ! **Note :** Up to **64 waypoints** are available for generating.

> ! **Note :** It is recommended to click the **Delete** button after completing the waypoint upload, and then click the **Download** button to confirm whether the waypoints were uploaded successfully or not.

Step 4: Take-off, Start Mission and Landing

Take-off

Please push the **Left stick** to the bottom right to unlock the autopilot to arm the autopilot, then you can pull the throttle to the max position to take-off your plane. If you want to disarm the autopilot, please push the **Left stick** to the bottom left.

Start Mission

Click **Start Mission**, the plane will fly to the first waypoint and start auto-navigation flight. The red waypoint is the target waypoint, it means the plane will reach it.

Landing

After the mission is completed, the plane will circle around the last waypoint and waiting for the next command.

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Part IV.   Advanced Functions

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Continue Mission

Introduction : When the plane interrupts the mission for some reason, the user can use this function to let the plane return to the last unfinished mission.

How to return to the last unfinished mission

Download the last unfinished waypoints from the autopilot to the software.

If the last mission is interrupted between the no.5 and no.6 waypoint, click the no.5 waypoint to show the waypoint information, and click the button ![arrow] to send the command to start mission from this point.

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Failsafe Function

Introduction : The Autopilot has several built-in safety mechanisms to minimize plane damage in an accident.

## Low voltage warning

The user can set the warning voltage in **Advanced settings → Failsafe**. After the GCS7.0 software detects that the voltage reaches the set value, it will automatically prompt the user that the voltage is lower than the set value.
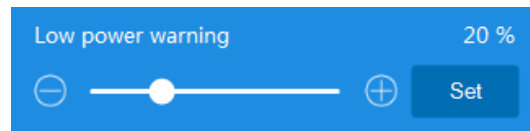

RC signal loss failsafe

When this function is enabled, **Auto return** function will be triggered automatically when the autopilot detects the loss of RC signal. The user can set how long it takes to trigger the return home function.This function is enabled by default. The function can be turned off if the value is set to **Off**.
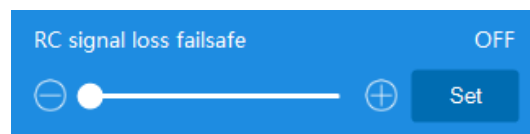

Datalink loss failsafe

When this function is enabled, **Auto return** function will be triggered automatically when the autopilot detects the loss of datalink. The user can set how long it takes to trigger the return home function.This function is enabled by default. The function can be turned off if the value is set to **Off**.
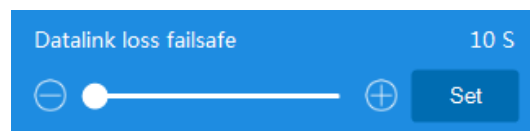
Geofence

In **Geofence**, users can setup the flight area's size. Once this function was turned on, the waypoints only can be planned in the flight area. **If the waypoints are beyond the flight area, then the Mission command will not be send to the autopilot successfully.**

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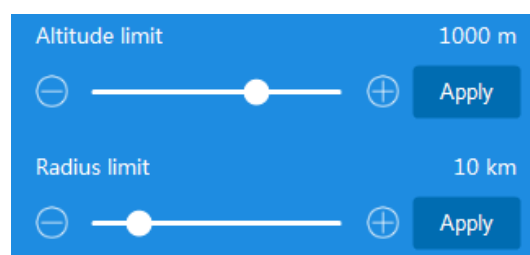
PID control

Flight accuracy control

In **Advanced setting** → **Mission** → **Accuracy factor**, the user can adjust the accuracy (deviation) of the plane flight route. If there is a deviation in the flight lines of the plane and the accuracy is not high, you could increase the value until the plane can accurately fly the route.

> **Note :** If the value is excessively lowered, the sensitivity of the relevant sensor may be too high, resulting in the plane's action amplitude being too intense, such as excessive movement during cornering.

PID control

In **Advanced setting** → **PID**, the user can adjust the attitude of the plane. Choose the Roll or Pitch and click **Set** to confirm, then click **Read** to read the default value.
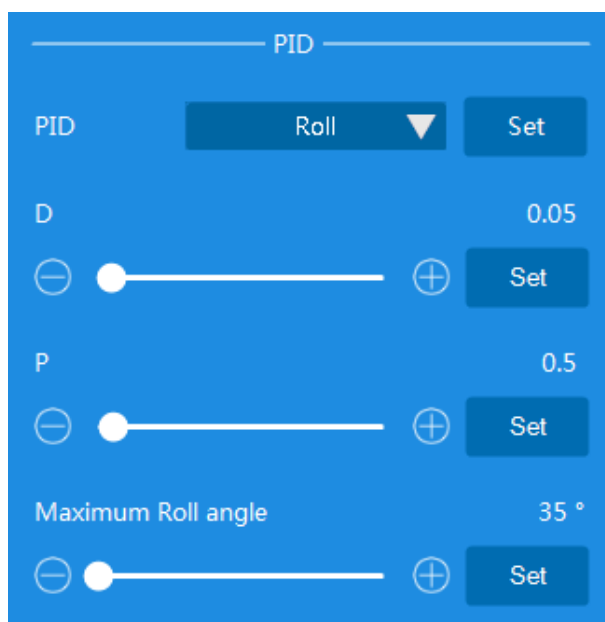
Proportion adjustment

The effect of the proportion is to adjust the system error correction's efforts. Increasing the proportionality factor will increases the efforts that the aircraft corrects errors and makes the flight attitude lock more precise. If the aircraft is controlled by a remote control, the effect is that the aircraft can quickly stabilize at the target attitude position. However, if increase this coefficient excessively, it will cause the control oscillation, which is reflected in the flight attitude will oscillate back and forth around the target posture, for example, the plane flies a "S" way along the line.

Damping adjustment

The effect of damping is to control the pre-judgment, correct the disturbance, and improve the response speed of the control. Increase the damping coefficient, the response speed of control is more obvious, the remote control operation is more sensitive, and the servos responds more timely. But if the coefficient is too large, the control response will overshoot, the specific phenomenon is that the control response is fast but the control result will be exceeded the target.

The following table is the recommended value for the 3 layouts

|	Normal	Flying-Wing	V-Tail
Pitch D	0.08	0.15	0.08
Pitch P	0.5	0.55	0.5
Roll D	0.05	0.15	0.05
Roll P	0.5	0.7	0.5

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Offline Map

Introduction : If users are inconvenient to use online map in outdoors, the offline map can be downloaded indoors in advance.
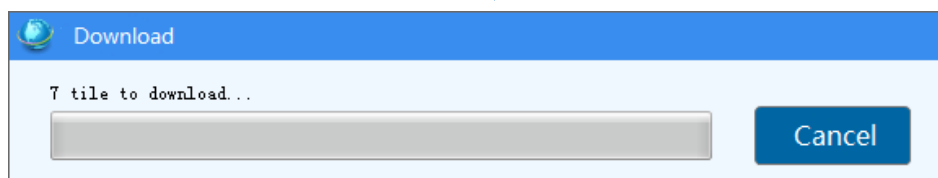
How to download offline map

Switch to the **Map** icon, use the left mouse button to select the area's upper left corner and bottom right corner, then choose the resolution and click **Download** button. The downloaded area will be automatically loaded the next time start the software.
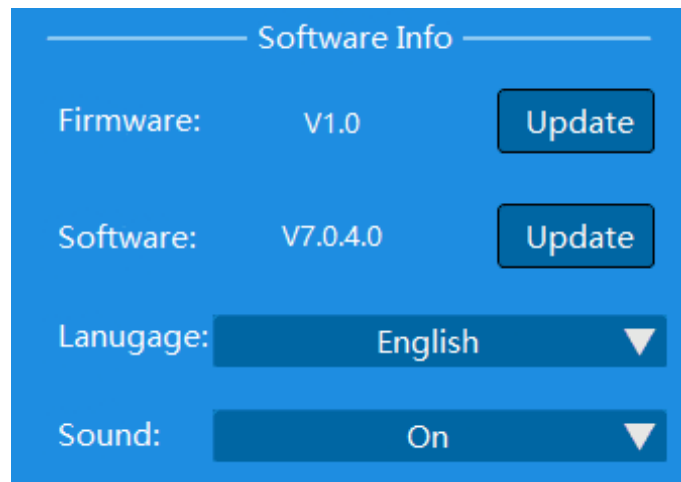

1. Select the area
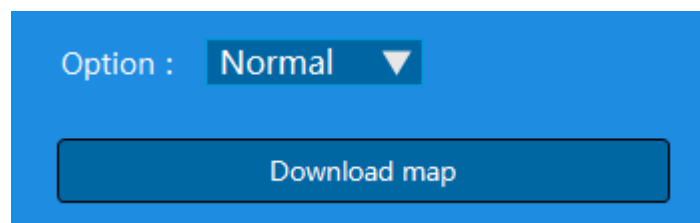
2. Choose the resolution and download the map

3. Waiting for the download completed

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Autopilot firmware update

First, find the **Firmware** option in Home page.

How to update the autopilot's firmware

Online update (Please make sure the computer is connected to the internet) :

Use the Micro USB to connect the Autopilot with computer and establish communication with GCS 7.0, then the GCS will prompt you to download them or not after it detected the new version of firmware and software. Follow the instructions to complete the update.

Offline update 1 :

Use the Micro USB to connect the Autopilot with computer and establish communication with GCS 7.0. Find the autopilot firmware which suffix is .fy and open it. After the progress bar shows 100% and prompts for a reboot to complete the firmware update.

Offline update 2 (Force update) :

Use the Micro USB to connect the Autopilot with computer. Find the autopilot firmware which suffix is .fy and open it. Follow the prompt, reinsert the Autopilot to enter the update progress. After the progress bar shows 100% and prompts for a reboot to complete the firmware update.

How to update the software

Open the GCS and **make sure the computer is connected to the internet**, it will detect and download the installation pack automatically.

> ❗ **Note :** 1. Please uninstall the Old GCS before installing the New GCS.
> 2. If you interrupt the download, you can click **Update** to download the installation pack again.

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