

1 Power Supply System

1.1 Introduction of Power Supply System

DB-PS350 Tethered System can suitable for DJI Mavic M200, M300 RTK series, it convert single-phase AC power into DC high voltage , through the high-performance nickel alloy power supply wire transmission to the airborne power supply, power the aircraft continuously. With the use of spare batteries, it can achieve 12 hours of super long voyage continuous operation on the basis of ensuring safe flight.

The DB-PS350 Tethered System includes two parts: airborne power supply and take-up and pay-off machine which integrated with manual and automatic. The manual-automatic integration take-up and pay-off machine integrates ground power supply, high-performance power supply cable and automatic pay-off and take-up device. The highly integrated ground power supply system not only provides portability, but also ensures the quick implementation of automatic cable collection and pay-off of 100m cables. It can also reduce the impact and bending of the cable, which is an effective device to protect the cable.

1.2 Specifications For Airborne Power Supply

Item	Technical Parameters
Overall Dimension	125mm× 100mm× 100mm
Shell Material	Aviation aluminum alloy
Weight	500g
Power	Rated 3.0kw
Rated Input Voltage	380-420 VDC
Rated Output Voltage	36.5-52.5 VDC
Main rated output current	60A
Efficiency	95%
Overcurrent protection	The output current is greater than 65A, the airborne power supply automatic protection
Overvoltage protection	430v
Output short-circuit protection	Output short-circuit automatic protection, automatic recovery after troubleshooting.
Overtemperature protection function	After 80 °C, start temperature protection and turn off output.
Control and interface	Independent control the link LP12 aviation waterproof connector dedicated three core MR60 light interface.

1.3 Power Supply System Specification

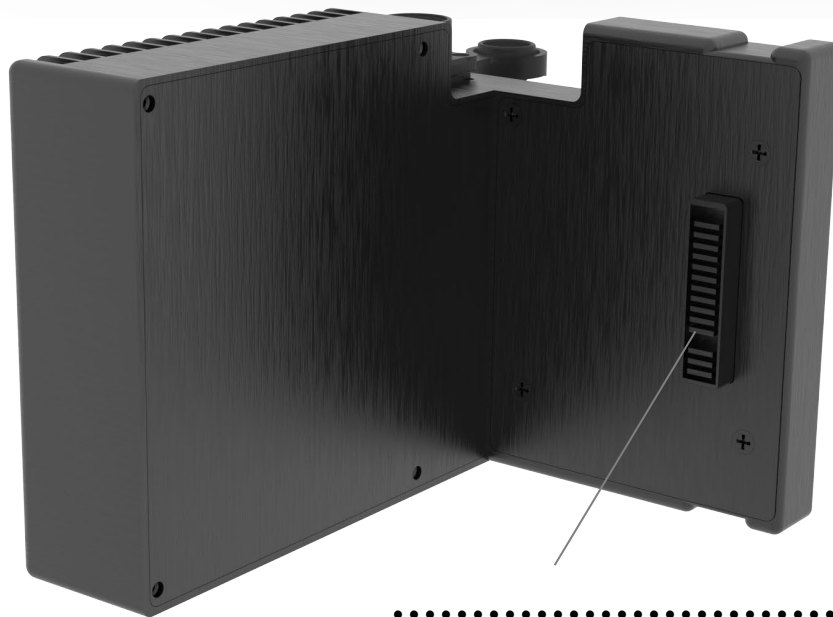
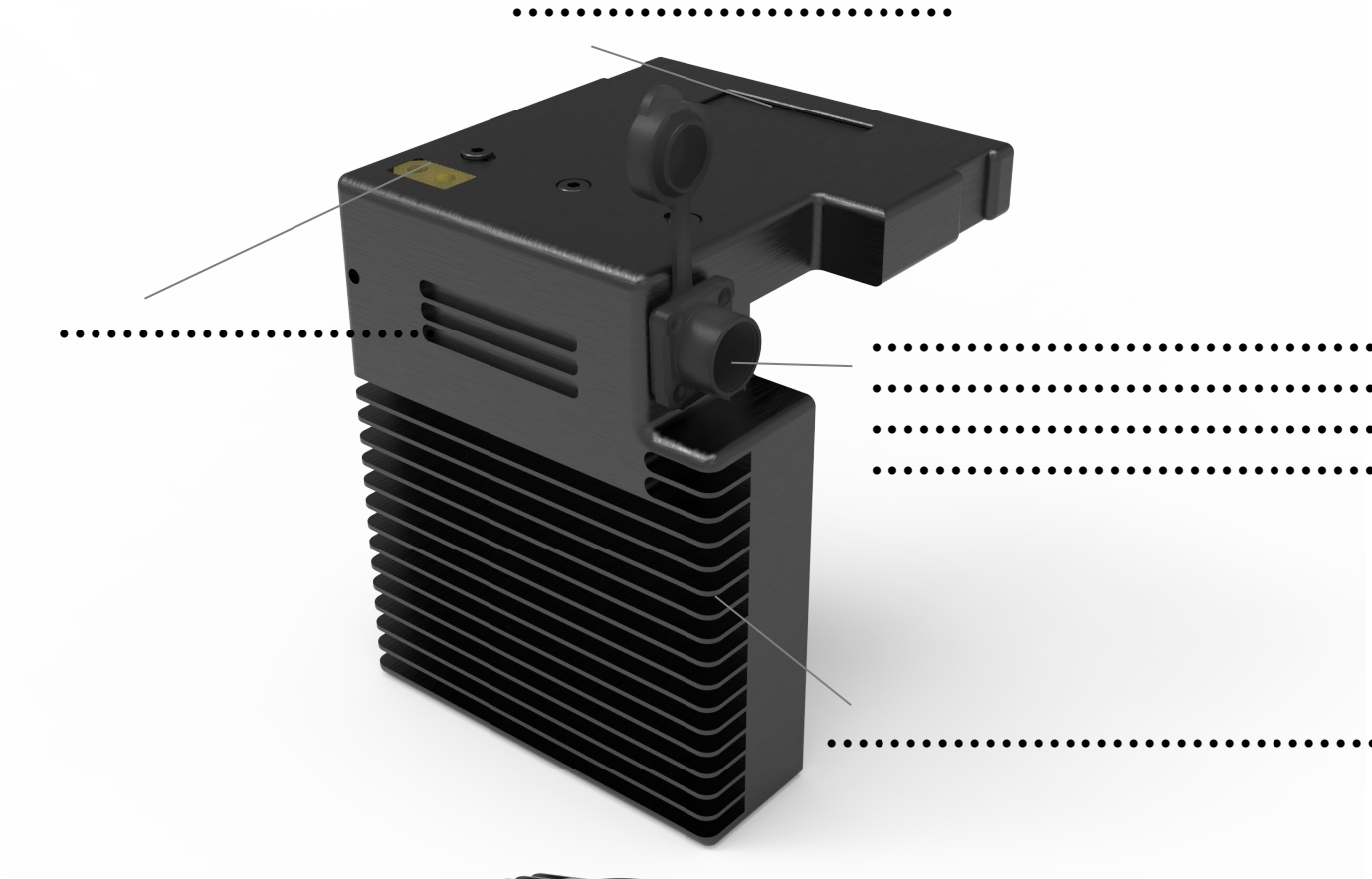
Item	Technical Parameters
Overall Dimensions	520mm× 435mm× 250mm
Shell Color	Black
Flame retardant grade	V1
Weight	<16kg (Included cable)
Power	Rated 3.0kw
Cable	110 meters cable, cable diameter less than 3 mm, over current capacity is more than 10A, the weight is less than 1.2 kg/hundred meters, tensile strength is greater than 20 kg, Withstand voltage 600V, internal resistance is less than 3.6 Ω / 100 m @ 20 °C
Rated Input Voltage	220 VAC+10%
Rated Working Frequency	50/60 hz
Output Voltage	280-430 VDC

1.4 Operating Environment Requirements

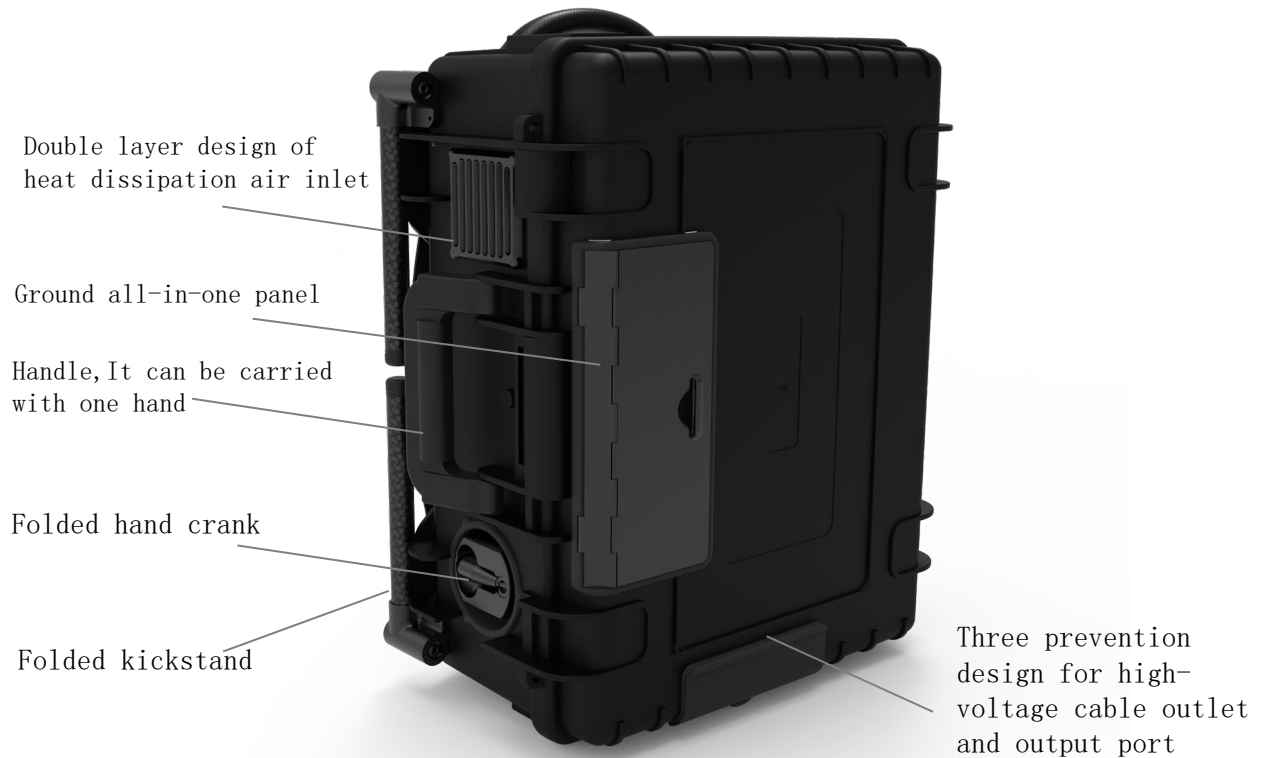
Item	Min Value	Max Value	Unit	Remarks
Operating temperature (ambient)	-20	50	• ...	
Operating temperature (shell temperature)	-20	80	• ...	Forced air cooling
Storage temperature	-40	80	• ...	
Relative humidity	5	95	%	
Storage humidity	5	95	%	No condensation
Atmospheric pressures	54	106	kPa	No condensation
Altitude	/	3000	m	

2. Operating Principle

2.1 Airborne Power Supply



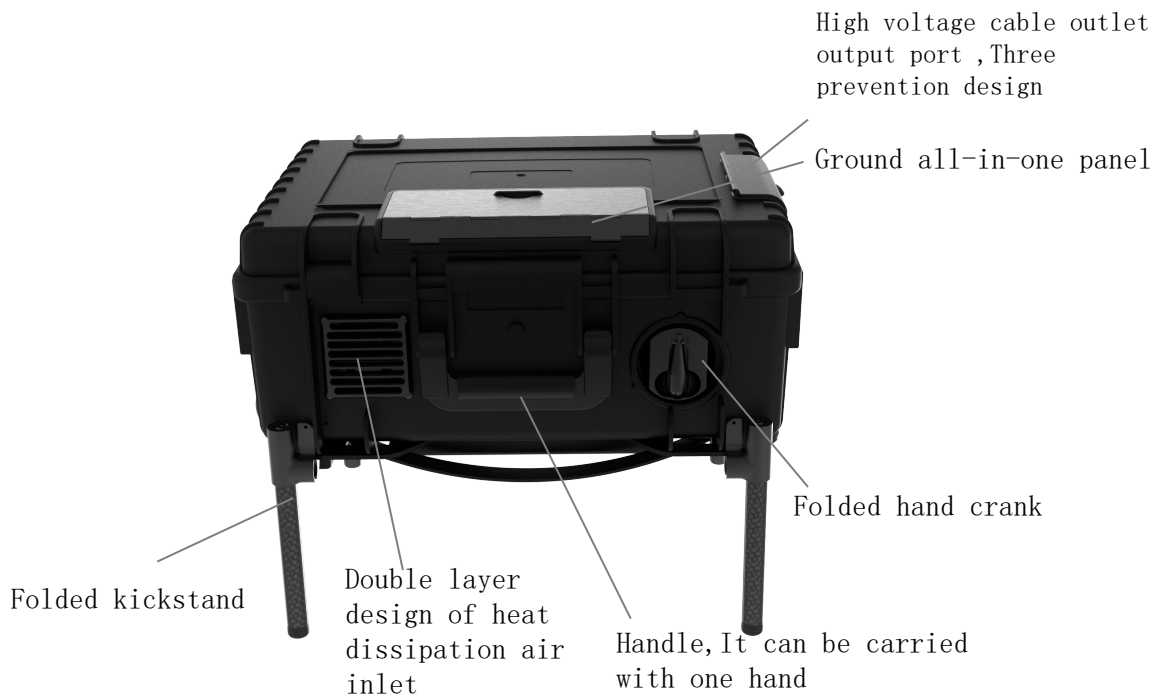
2.2 Function Introduction



Transportation Mode



Backpack Mode

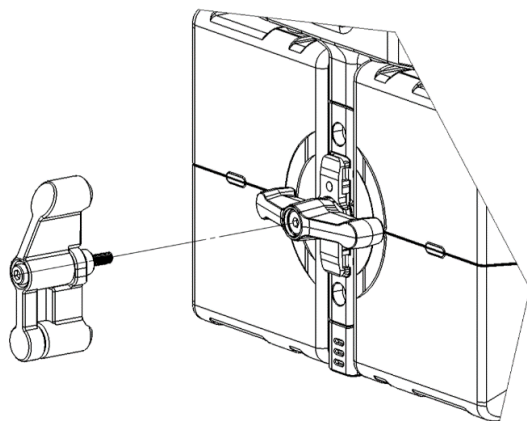


Working Mode

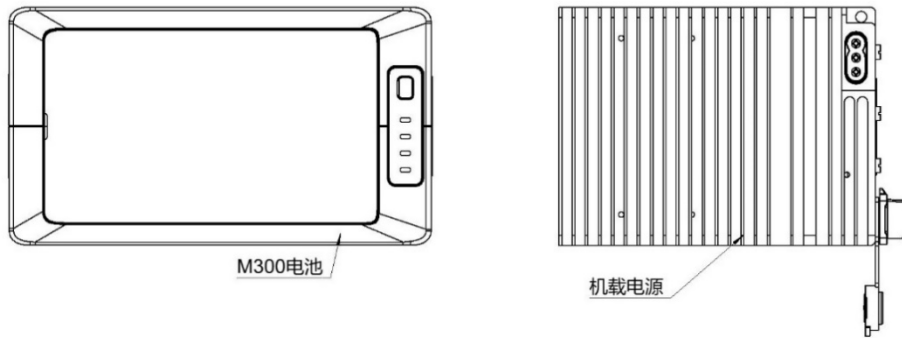
3.Method of Application

3.1.Installation of Airborne Power Supply

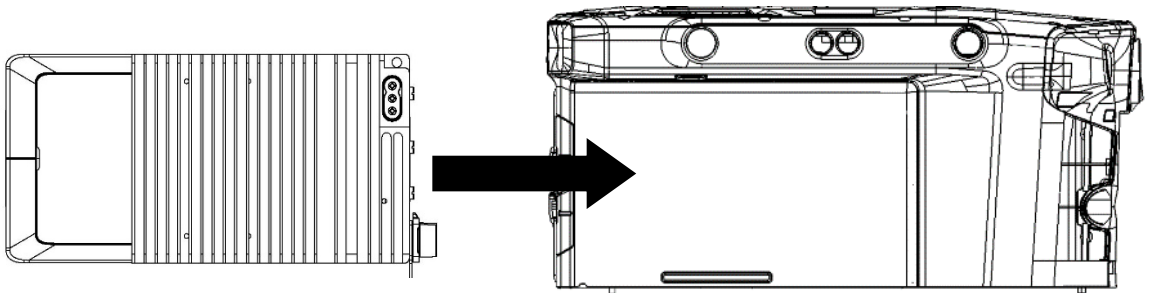
3.1.1 Use an H2.5 hexagon screwdriver to replace the M300 battery latch



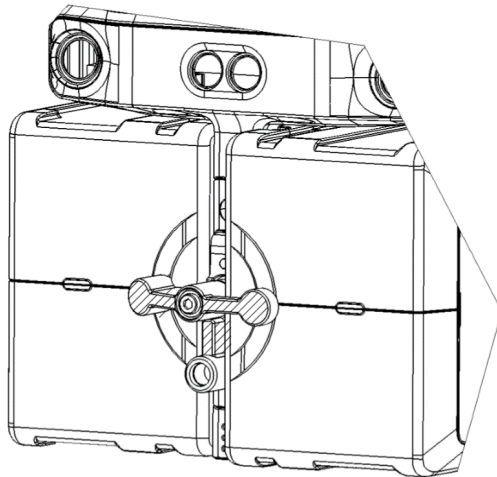
3.1.2 On the right side of the M300 aircraft battery, install the airborne power supply



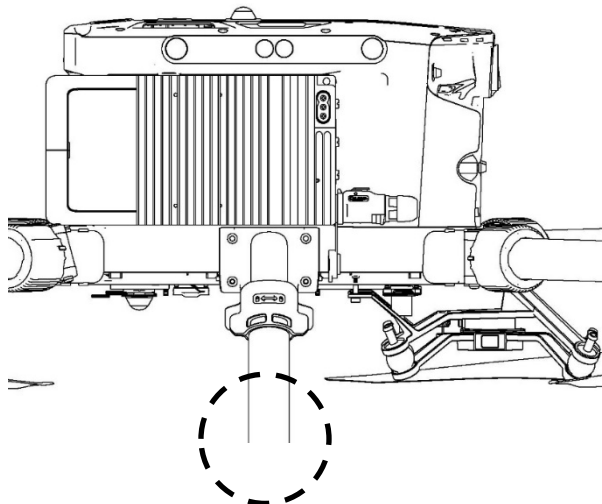
3.1.3 Install the right battery of the M300 aircraft and airborne power supply onto the aircraft



3.1.4 Lock the M300 aircraft battery latch.

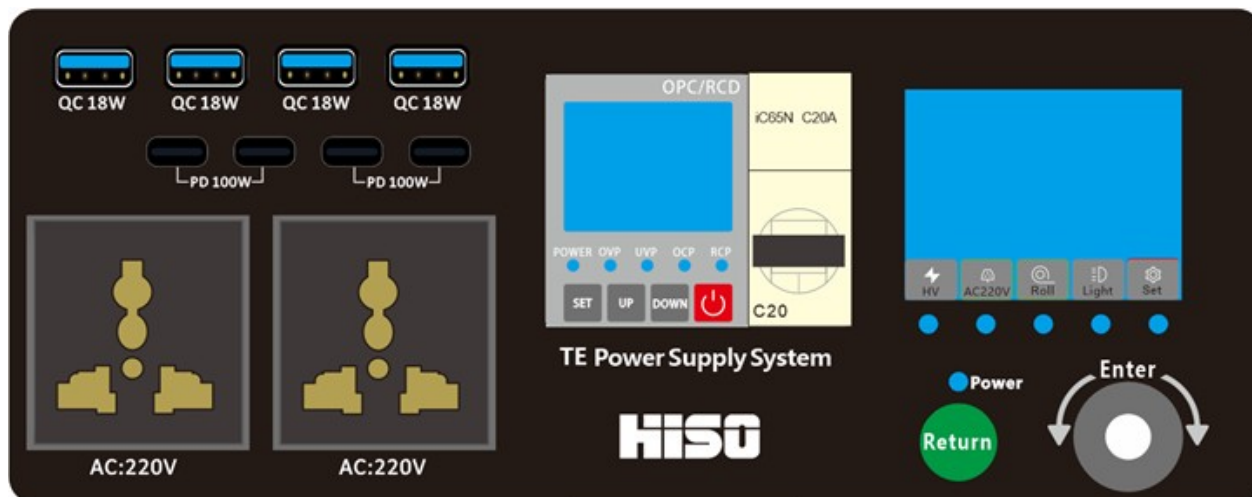


3.1.5 Tie straps on the aircraft legs and rotor rods to secure the tethered power cord.



3.2 Layout of ground all-in-one machine panel

Panel Diagram



3.2.1 Icon Description :

Tethered icon: Controls whether the power is on

AC220V icon: Controls whether AC220V is enabled

Take-up icon: Controls whether the pulled cable is retracted

Light icon: Control the lights on and off of the drone

Setting icon: Control parameters, click OK to enter the interface, you can modify the parameters

*Notice: The green light below indicates that the function is working, the off light indicates that it is not working, and the red light indicates that the function is selected

3.2.2 Button Description

The red light will move left and right when knob the panels left and right , Move to the icon of the function you want to perform,press the knob to confirm and the function will be turned on,press the knob again to cancel and the function will stop running,the green button is the return button.

3.3 Ground all-in-one machine instructions

3.3.1 The setting of system running interface

1. On the operating interface, rotate the knob to the position of the tethered power supply. Press the knob to indicate that the power supply is on. Press the knob again to stop the power supply.
2. On the operating interface, rotate the knob to the position of "Take up icon", press the knob to start retracting cable automatically, and press the button again to stop retracting cable.

Parameter Adjustment: Rotate the knob to the position of the "setting" icon, press the knob, then enter to the setting interface, then can adjust the "high pressure parameter" and "damping strength" and other data.

Defaulted Parameters:

- (1) Airborne voltage 405V:
- (2) Ground surface current limiting 6A:
- (3) Preset voltage 420V: Currently, the product range is only available in the 405-430V range.

Press the return button, and the screen returns to the running interface.

3.4 Instruction of UAV

Please refer to the operation manual of DJI matrice M300 RTK Series UAV.

3.5 Instruction of lamp control cable

The power supply system includes lamp control cable, which is connected to the Airborne power supply, and can control the light on and off through the panel or mobile phone. Four light boards can be installed at a time.



3.6 Using steps

- 3.6.1 Open the drone box and remove the drone.
- 3.6.2 Connect all cables according to requirements 3 and 4.
- 3.6.3 Plug the fully charged battery into the airborne power supply, then install the configured lamp control cable to the airborne power supply, And then they will be installed together on the plane (see the next page for details).



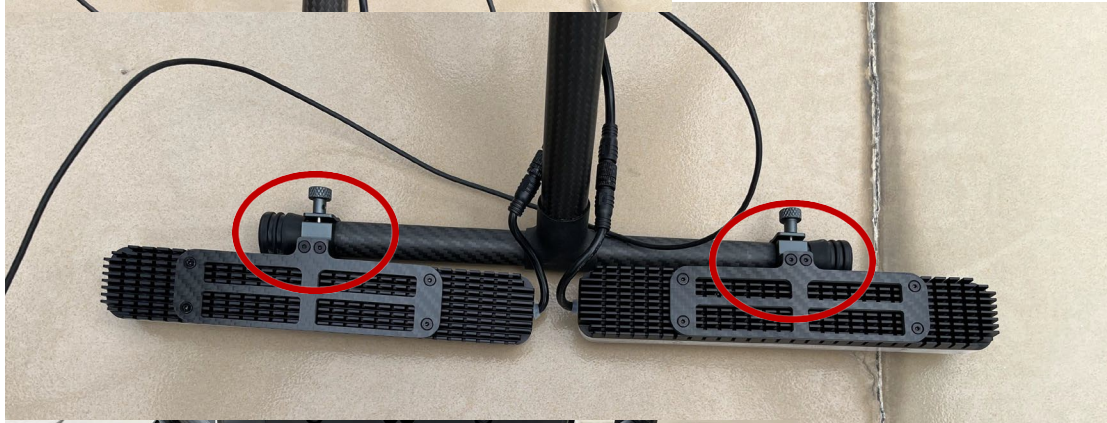
- 3.6.4 Expand the four arms of the drone
- 3.6.5 Install other accessories (pre installed)
- 3.6.6 Turn on the remote control
- 3.6.7 Wait for 10 seconds after power on and wait for the drone to startup
- 3.6.8 Connect the remote control to the drone (first,use the battery to check if the drone function is normal)
- 3.6.9 Check the status of the drone and restart it after troubleshooting. Only when the drone status is normal can the next step be taken.
- 3.6.10 Open the upper cover of the ground all-in-one machine, keep the ground all-in-one machine turned off, connect one end of the power line connector to the ground all-in-one machine, and the other end to the electric supply or motor plug.

Step 3 Details are as follows::

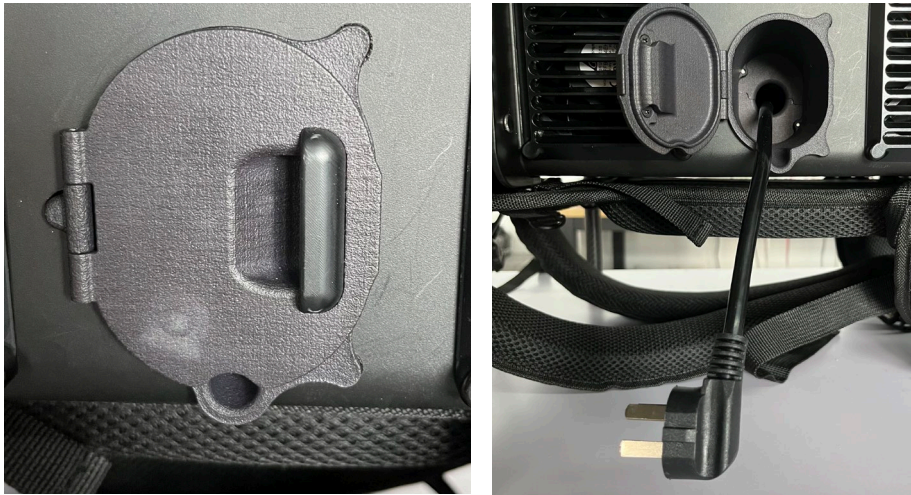
After the airborne with the light control cable installed is installed into the UAV, using adhesive tape to tie the cable to the drone support frame; Then the matrix light quick mounting frame is mounted on the support frame. (See the following figure for installation)



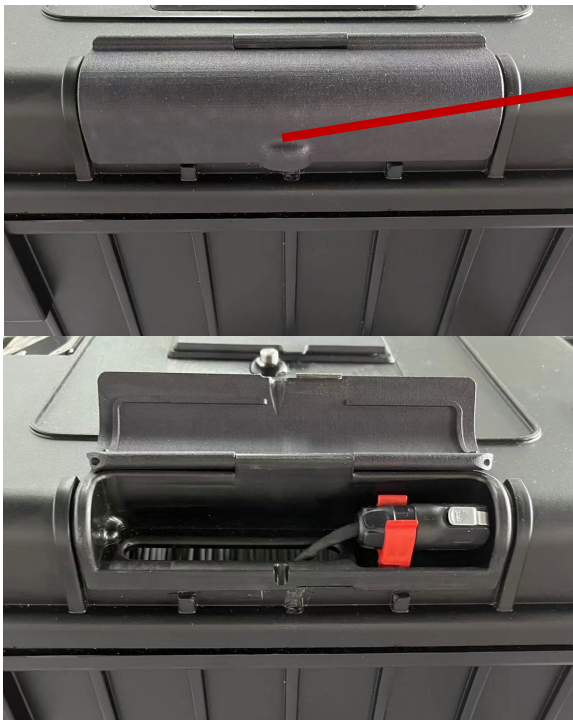
★ The cables on both sides must be bundled!!!



★ Same operation for the other side of kickstand

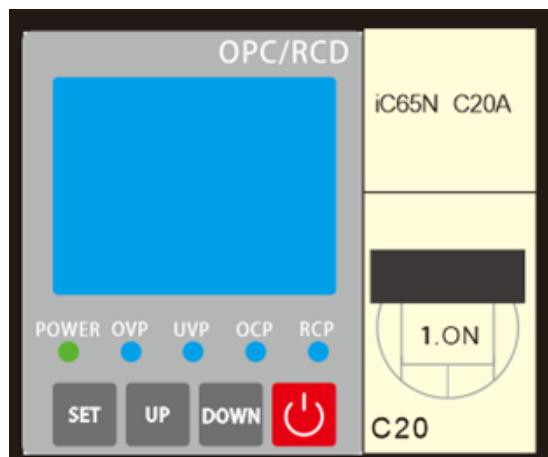
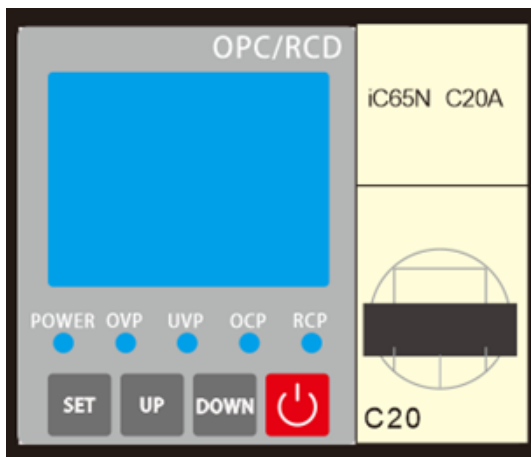


3.6.11 Pull out the ground integrated aircraft LP12 aviation plug for 5 meters and connect it to the UAV's airborne power supply LP12 aviation socket module. Ensure that the tethered cable is securely fixed to the support frame to prevent the blades from hitting the tethered cable during flight.

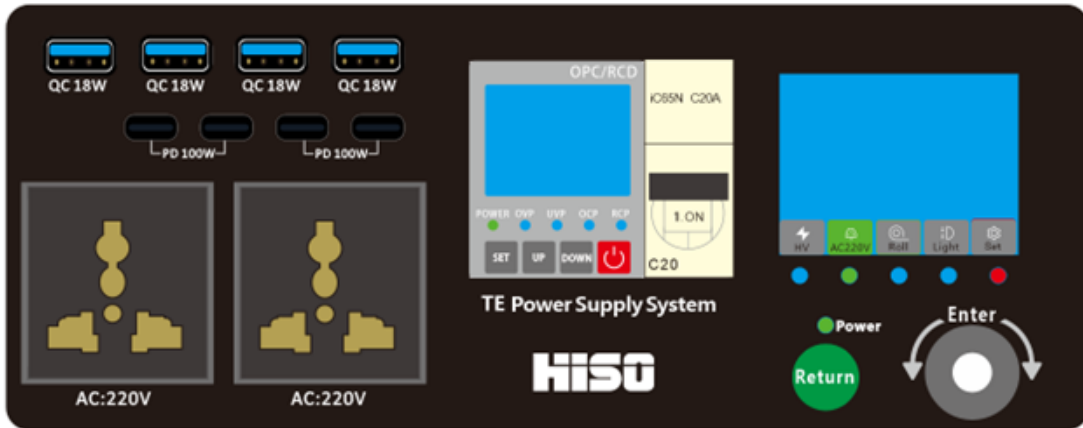


★ The opening method is to open outward

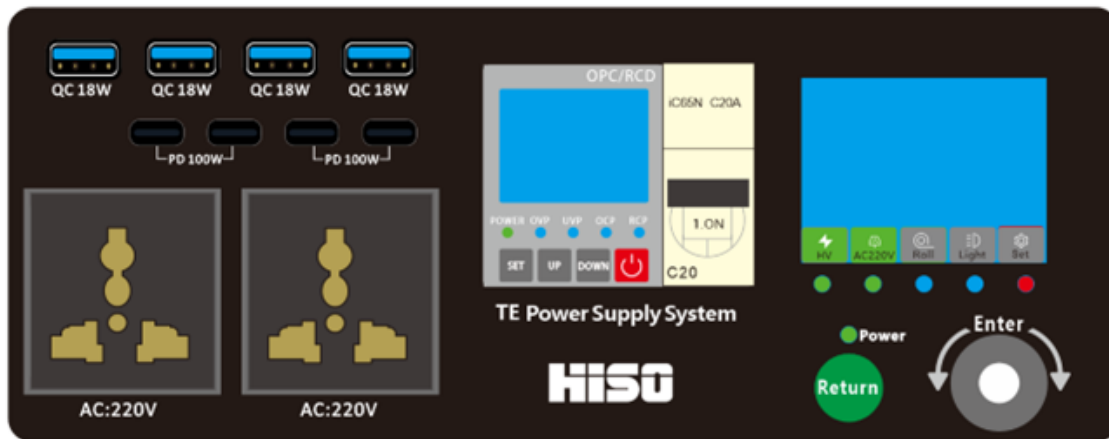
3.6.12 Turn on the ground power and air switch, press the red button observe if the control system startup normally, and then enter standby mode.



3.6.13 Open the control panel, briefly press first, and then long press the green return button.



3.6.14 When the tethered plug is connected to the mains or generator, turn on the ground source and control panel, and AC220V will contantly light up.

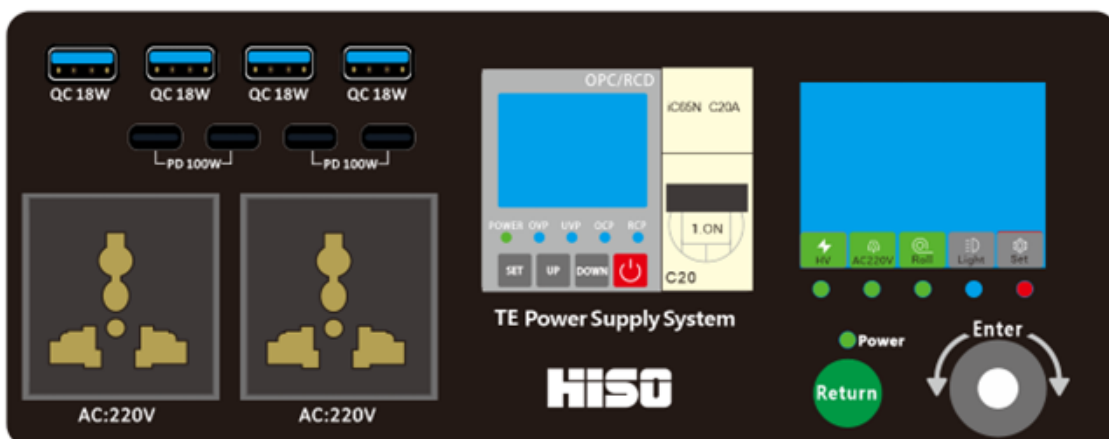


3.6.15 Turn the knob to the high pressure position, press OK to turn on the high pressure and start working.

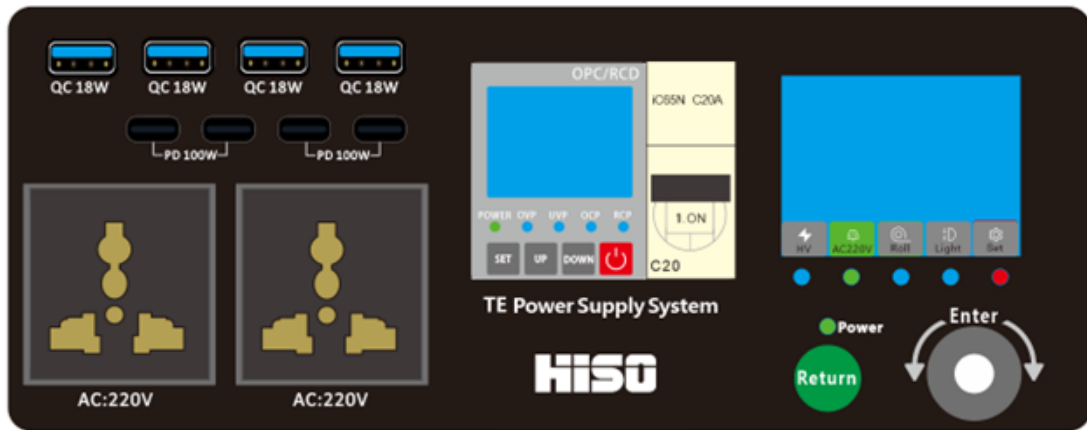
3.6.16 At this point, the drone can take off, please control the ascent speed at 1m/S.

3.6.17 After reaching the specified altitude, the UAV hovering.

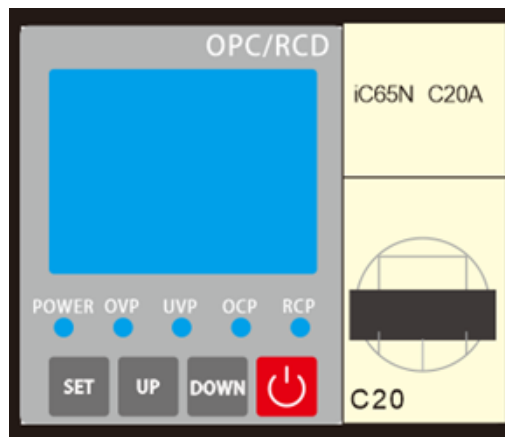
3.6.18 When the drone lands, rotate the knob to the position of take-up, press down the knob to start automatic take-up, and the UAV begin to descend with 1m/s speed. When the drone is about 2m above the ground, press down the knob to stop automatic take-up, and the drone lands.



3.6.17 Rotate the knob to the icon of the tethered power supply, press the knob to turn off the tethered power supply, and the power bulb goes off to enter the standby state.



3.6.18 Disconnect the ground all-in-one machine LP12 aviation plug from the airborne power supply LP12 aviation socket module of the drone. When the drone lands, the knob rotates to the take-up function. Press the knob to start the automatic take-up, and the excess cable is recovered. Turn off the air switch to complete the power off. Short press first and long press the return button to control the panel light machine, then long press the protector switch, and finally turn off the air switch to complete the power shutdown



3.6.19 Fold the drone and put the drone in the box.

4 Operating Environment

Control parameters	Temperature°C	Humidity R. H.	Altitude (m)
Working status	-10~45	5%~95%	<3000
Storage condition	-20~50	5%~90%	<3000