



TORUK AP9

Fly with freedom · Shoot with passion



Larger body
Higher integration level



Symmetrical design for
better flight performance



Greater mobility



Higher and farther flight



Dual control
mode on camera

*Disclaimer: Product photo and specifications are subject to change without notice

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AEE AP9 User Manual

V1.0 2015.3

Please read this " User Manual " carefully before using AP9.

Conventions

Except when specifically stated, all AP9 features described in this manual are for Quadcopter Operating Modes.



Warning:

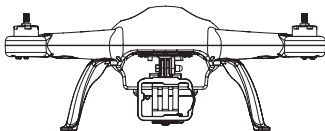
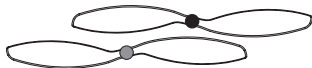
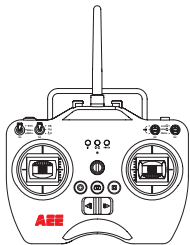
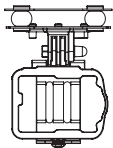
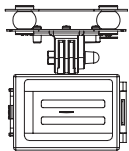
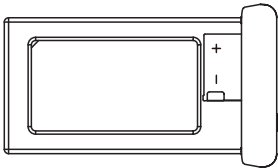
- (1) When installing the propellers, rotate the propellers strictly in the lock direction specified by the mark, and DO NOT apply too much force in order to avoid possible damage.
- (2) When removing the propellers, rotate the propellers strictly in the unlock direction specified by the mark, in order to avoid possible damage.

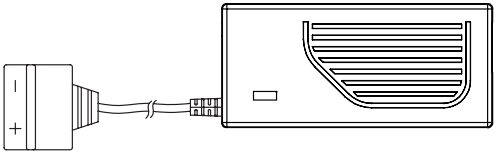
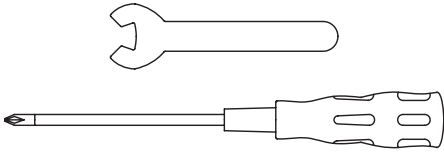
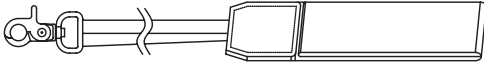
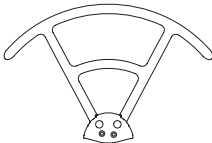
Overview

AP9 is a high-tech electronic product integrating flight control system. The camera can be mounted with a camera frame, which helps you easily capture clear and stable aerial videos and photos.

1 Kit Contents

Before using, please check all items inside the kit box.

No.	Name	Diagram	Quantity	Description
1	Quadcopter		1 pcs	
2	Propellers		4 pairs	4 pcs with black nuts; 4 pcs with gray nuts
3	Transmitter		1 pcs	
4	Q45 camera cage (mounted on the quadcopter before delivery)		1 set	AEE S50/S51/S60/S71/S70/ OM51S/OM60S/OR60S/OR71S/ S40 and other series of cameras can be mounted (Camera shall be purchased separately)
5	camera cage		1 set	GoPro G3 cameras can be mounted
6	Quadcopter Battery		1 pcs	Quadcopter power supply

7	Quadcopter Battery Charger		1 pcs	100-240V 50/60Hz
8	Tools		1 set	1pcs wrench - (for disassembling propeller) and 1pcs screwdriver (for assembling propeller guard)
9	AA batteries		4 pcs	For Transmitter power supply
10	Manuals		1 pcs	Including: AP9 User Manual , AP9 Quick Start Guide,Disclaimer
11	Lanyard		1 pcs	Transmitter Lanyard
12	Propeller Guards		1 set	4 pcs Propeller Guards
13	CD		1 pcs	Possesses relevant AP9 information (optional)

• Accessories you have received may vary due to different product customizations. Package contents are subject to change without further notice.

2 Quadcopter Introduction

Adopting compact integrated design, AP9 provides excellent flight control and aerial photography for outdoor low-altitude or large indoor spaces. You only need to follow simple installation steps before flight and taking aerial photos. You can control the quadcopter in real-time fashion with the transmitter . Featuring simple and flexible operating procedures, stable and reliable performance, AP9 is ideal for amateur or commercial photography.

Transmitter Device	Quadcopter External Components	Operating Modes	Quadcopter Internal Components
Transmitter with 2 joysticks, multi-channel	Power unit (motor &Propeller)	GPS mode Normal mode	Flight Control System Receiver ESC (Electronic Speed Control)

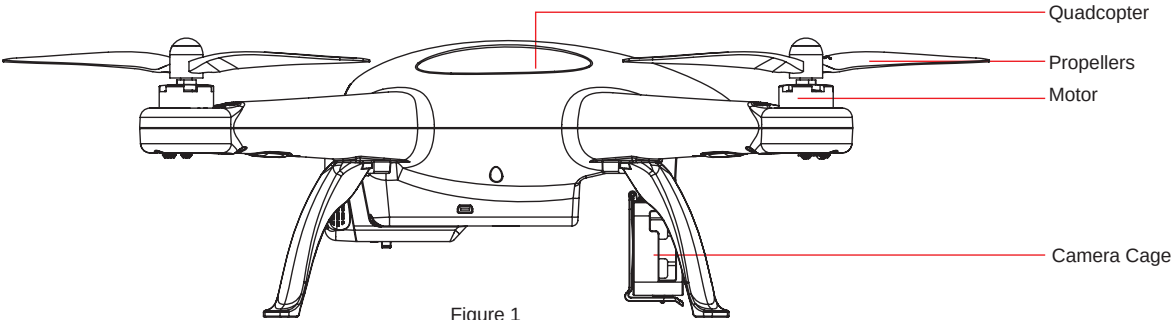


Figure 1

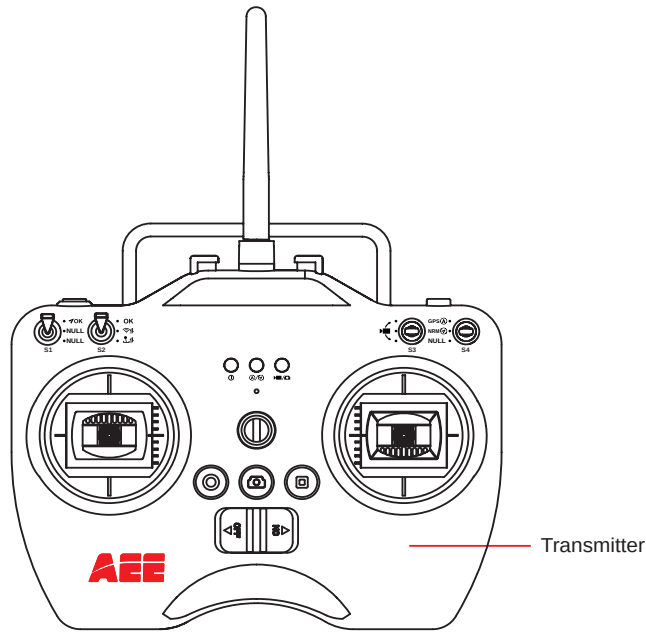


Figure2

Preparations before flight

Refer to the following for installing components and pre-flight quadcopter check.

1 Preparing Batteries

Ensure all device batteries are fully charged before operating AEE AP9.

Device	Power Supply
Transmitter	Load 4 AA batteries for power supply.
Quadcopter	Charge quadcopter batteries for power supply.

The following instructions are for the quadcopter battery.

1.1 Quadcopter Battery Introduction

The quadcopter battery (Figure 3) is a specifically designed battery for AP9 with charge and discharge management functionality, with 5300mAh capacity and voltage of 11.1V. Only use the dedicated quadcopter battery charger (Figure 4) provided by AEE, for charging.

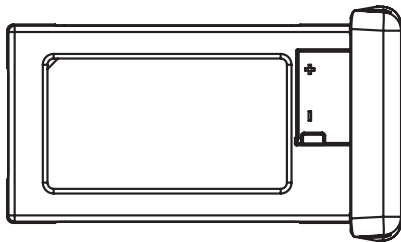


Figure3

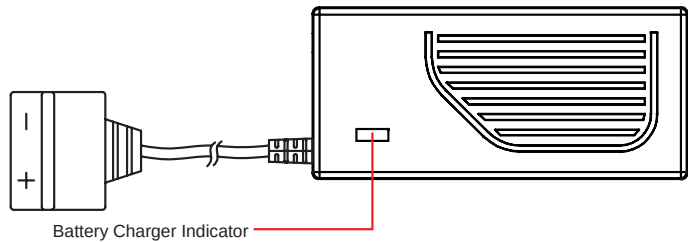


Figure4

Short press the Battery Level Check button (Figure 5). Battery Level LCD Segment Display displays appropriate battery level. Please fully charge the battery if it is less than two bars.

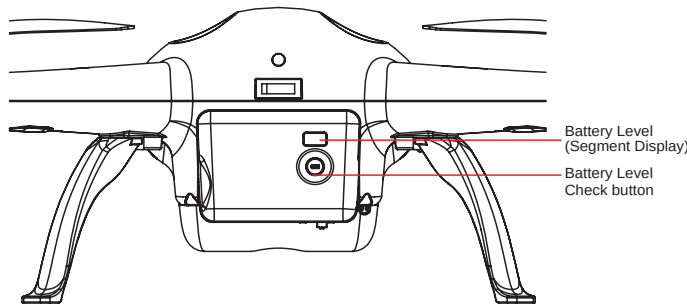


Figure 5

Battery Specifications

Type	Li-Po Battery
Capacity	5300mAh
Charging ambient temperature	0°C-50°C
Discharging ambient temperature	-20°C-50°C
Charge / discharge ambient relative humidity	< 80%

Please carefully read and strictly comply with this manual before use. Users take full responsibility for any problems caused due to failure to follow instructions.

1.2 Charging the Quadcopter battery

- (1) Connect the charger to an AC power source (100-240V, 50 / 60Hz). Please use a power adapter, if necessary.
- (2) While charging, the battery charger indicator turns red.
- (3) When the battery charger indicator turns green, the battery is fully charged. Disconnect the charger and battery when charging is complete.

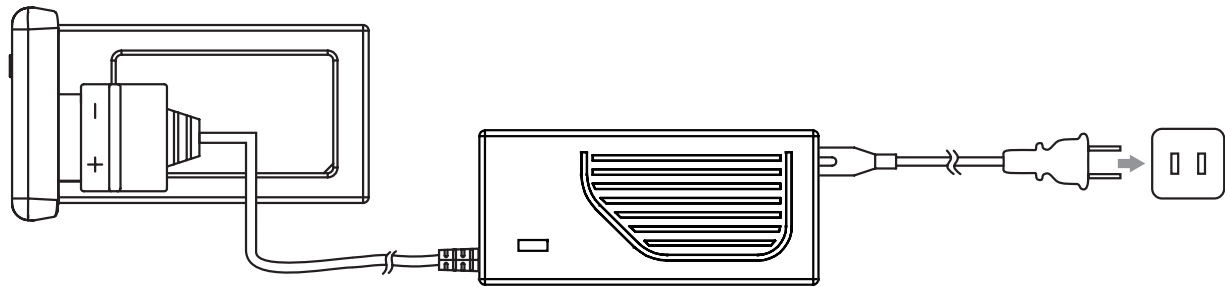


Figure 6

1.3 Quadcopter Battery Installation

Push the battery into the battery compartment in the correct direction (Figure 7). After the battery is properly installed, a “click” sound will be heard, indicating that the battery has been fastened.

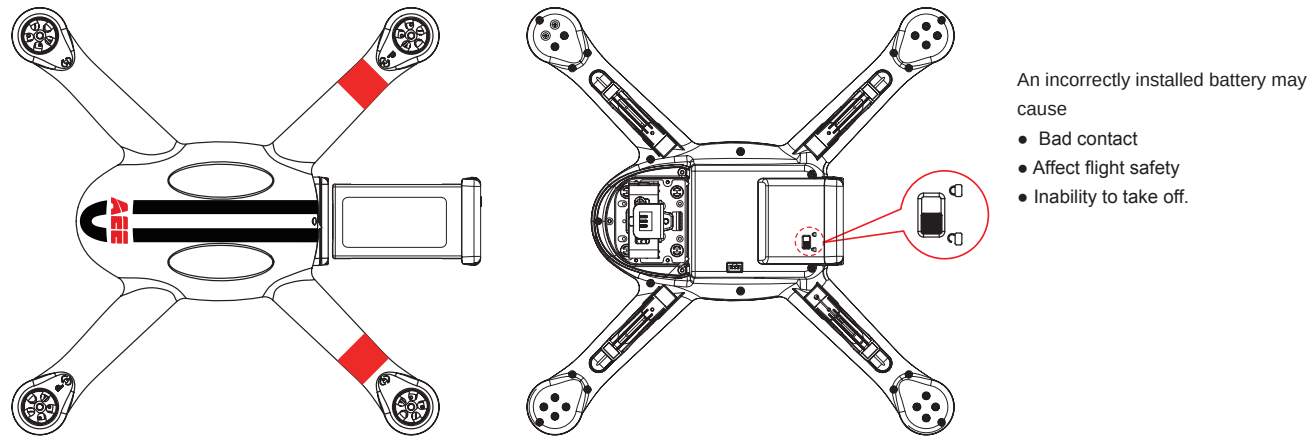


Figure 7

1.4 Caution

- (1) Do not directly pull out the battery when the Quadcopter is switched on as it may damage the power supply connector.
- (2) For long term storage, discharge the battery to 40%-50% power, and store in a specified battery box. Discharge/charge the battery once every three months to maintain battery life.
- (3) Replace the battery after it has been discharged over 300 times. Completely discharge a battery prior to disposal.
- (4) Replace the battery if your current battery swells up or is damaged in any way, to avoid fire and explosion.
- (5) Do not charge expanded or damaged batteries.
- (6) Pay attention while charging batteries to prevent accidents. Always charge batteries on a non-flammable surface, and never near any flammable materials.
- (7) Battery safety is extremely important. Please refer to Disclaimer for more precautions.

2 Preparing the Quadcopter

The quadcopter includes a built-in flight control system and motors etc.

2.1 Introduction

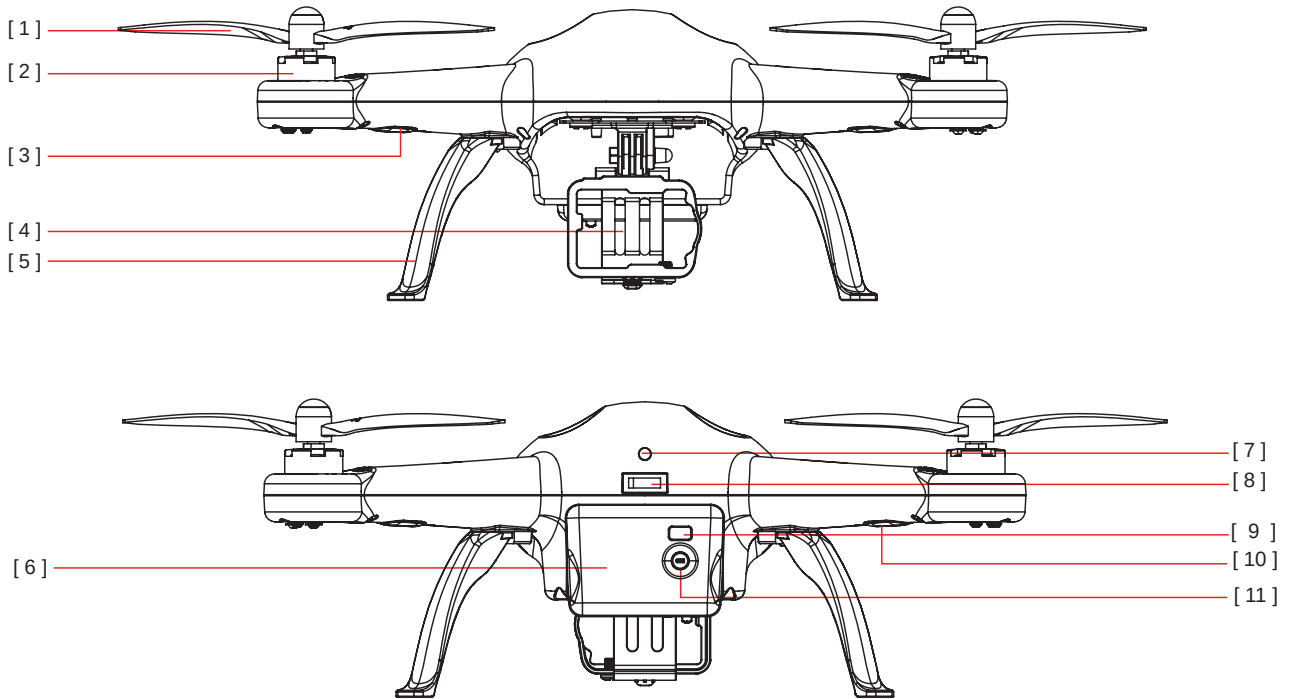


Figure8

- | | | |
|--|--------------------|-----------------------------------|
| [1] Propellers | [2] Motor | [3] Front Indicator |
| [4] Camera Cage | [5] Landing Gear | [6] Quadcopter Battery |
| [7] Tail Indicator | [8] Power switch | [9] Rear Indicator |
| [10] Battery Level LCD Segment Display | | [11] Battery Level Check button |

2.2 Flight Control System

AEE AP9 is equipped with AEE flight control system to provide incredible ease of use and stability. In addition to supporting basic flight maneuvers such as climb, descend, roll and pitch, it also supports failsafe protection, battery level alarms and other functions.

System Component Modules	Function
Master Controller	Core module of the flight control system. Connects and controls all modules together.
GPS & Compass	Used for positioning and navigation.
Indicator	Indicates current flight control system status. Used to navigate during night flight.

2.3 Flight Indicator

There are three Flight Indicators, namely, the Front indicator, Rear indicator and Tail indicator. When the Quadcopter switch is turned on, the LED Flight Indicators will be on. The Front indicator is green and the Rear indicator is red. (Hereafter use Green/Red Indicator to describe Front/Rear indicators respectively).

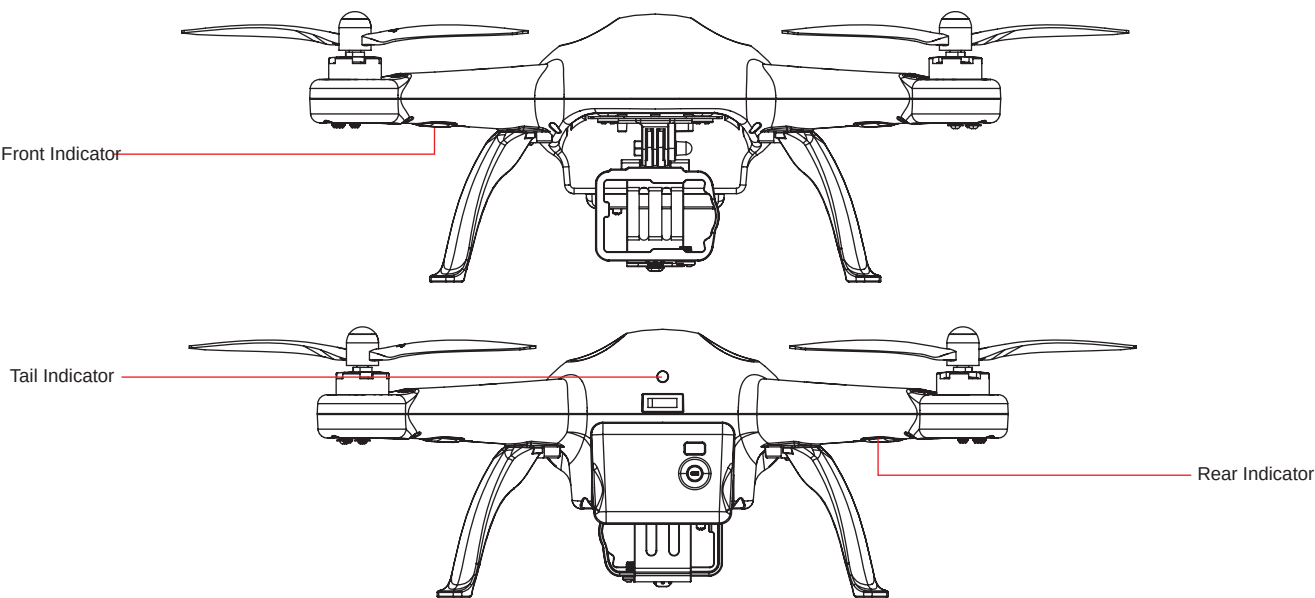


Figure9

AP9 LED Flight Indicators

MODE	
MODE	Tail Indicator (green)
GPS normal	
	Remains ON
GPS failed	
	Fast blink
WARNING & ERROR	
	Front Indicator (green)
1 st Level low battery alarm	
	Slow Blink(1s ON,1s OFF)
2 nd level low battery alarm	
	Fast blink twice per second
Compass abnormal	
	Fast blink
Accelerometer abnormal	
	Fast blink
Gyro abnormal	
	Remains ON
GPS Module abnormal	
	Remains ON
Barometer abnormal	
	Remains ON
COMPASS CALIBRATION INDICATOR	
	Front Indicator (green)
Compass calibration entered	
	Fast blink
Compass calibration started	
	OFF
Compass calibration Successful	
	Remains ON
Compass calibration Failed	
	Fast blink
	1second

• In case a serious error occurs, the Tail LED Indicator continues blinking in red. When accelerometer, GPS, compass or other abnormal status occurs, please refer to the solutions of Common Troubleshooting.

2.4 Install the Camera Frame

Two types of camera frame can be mounted on AP9 quadcopter: 1. S50/S51/S60/S71/S70/OM51S/OM60S/OR60S/OR71S/S40 and other series of cameras can be mounted in Q45. 2. G3 cameras can be mounted in Q44;

2.4.1 Install the Connector and Camera Cage:

- (1) Install the cage seat onto the quadcopter and lock the screws, as shown in Fig. 10 (a).
- (2) Install the camera frame onto the cage seat and lock the screws, as shown in Fig. 10 (b).

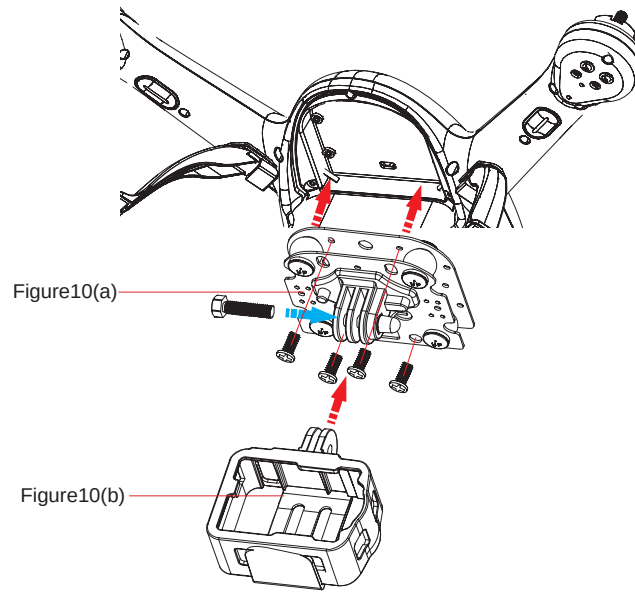
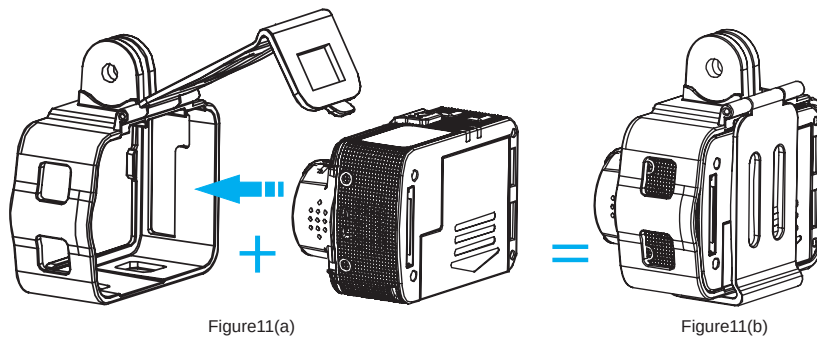


Figure10

2.4.1 Install the Connector and Camera Cage:

- (1) Install the camera into the camera cage, as shown in Fig. 11 (a); reverse installation shall be avoided.
- (2) Make sure the camera is installed in correct direction, and then lock the camera cage cover, as shown in Fig. 11 (b).

Note: The above figure is for Q45 camera cage; the same operation steps also apply to Q44.



3 Preparing Propellers

AEE AP9 adopts 10-inch propellers, with black and gray color propeller nuts. Propellers are consumable items. Please purchase these accessories separately, if necessary.

3.1 Introduction

Propellers	Gray (1045)	Black (1045 P)
Diagram		
Assembly Location	Attach to the motor shaft without "P" mark	Attach to the motor shaft with "P" mark
Installation Location	Lockup: Tighten propeller in this direction	
Symbol Description	Unlock: Loosen propeller in this direction	

3.2 Assembling Propellers

(As shown below) Prepare two propellers with gray nuts and two with black nuts. Attach propellers with gray nuts to motor shafts without "P" marks, and attach propellers with black nuts to motor shafts with "P" marks. Tighten propellers as per the appropriate locking direction.

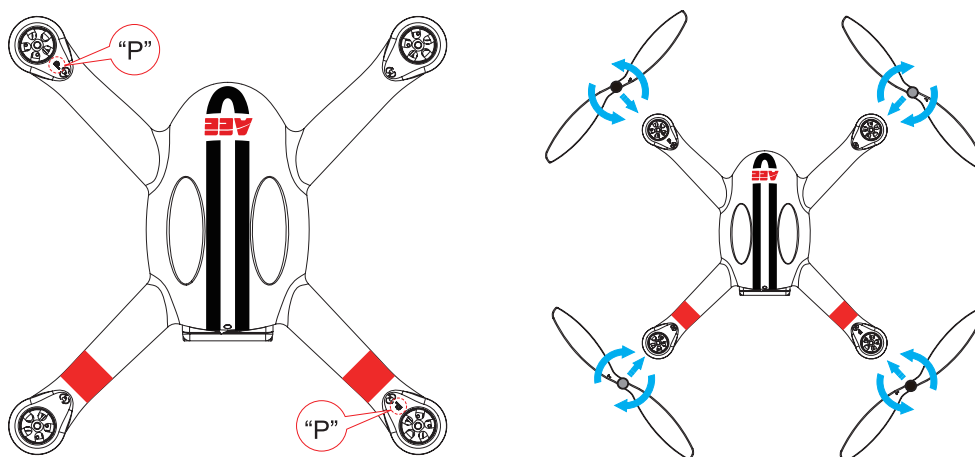


Figure12

- (1) Propellers are designed to self-tighten during flight; therefore do not tighten them excessively. Do not use glue on the threads.
- (2) Ensure propellers are attached in the correct position. The quadcopter cannot fly properly if the propellers are installed incorrectly. Wear protective gloves while installing as propellers are very thin and may cause accidental scratches.

3.3 Disassembling Propellers

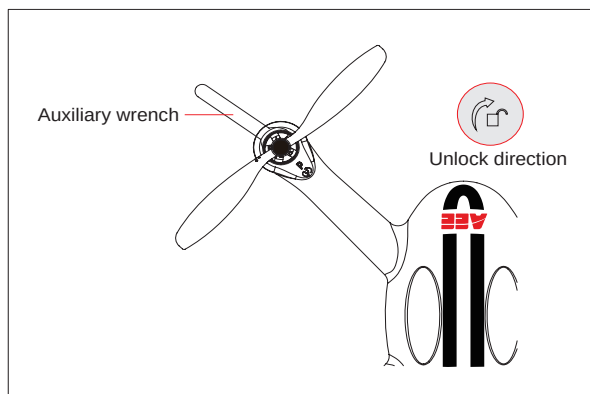


Figure13



As shown as in the Figure 13, prevent motor rotation by using the auxiliary wrench or your hand, then remove propeller by turning towards the unlock direction.

3.4 Precautions

- (1) Check whether propellers and motors are installed correctly and firmly before every flight.
- (2) Ensure that all propellers are in good condition before each flight. Replace aged, chipped or broken propellers.
- (3) To avoid injury, stand clear of and do not touch propellers or motors when they are spinning.
- (4) Only use original AEE propellers for a better and safer flight experience.



Warning :

- (1) When installing the propellers, rotate the propellers strictly in the lock direction specified by the mark, and DO NOT apply too much force in order to avoid possible damage.
- (2) When removing the propellers, rotate the propellers strictly in the unlock direction specified by the mark, in order to avoid possible damage.

4 Preparing the Transmitter

AEE AP9 Transmitter is paired with the Quadcopter receiver before delivery. The Transmitter is set to U.S. mode by default.

4.1 Introduction

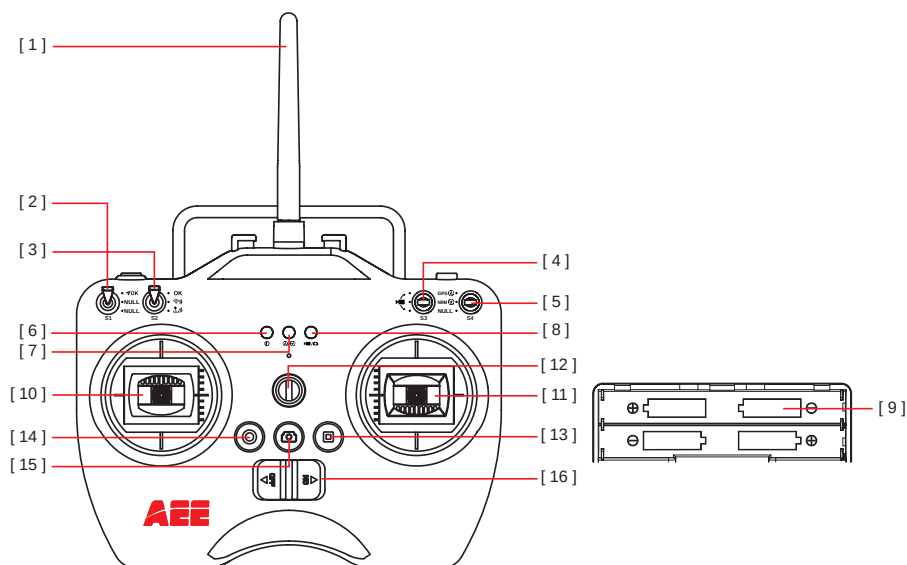


Figure14

- [1] Antenna [2] 3-position Switch S1 [3] 3-position Switch S2 [4] 3-position Switch S3
 [5] 3-position Switch S4 [6] Transmitter Power Indicator [7] Status indicator [8] Photo shooting & video recording indicator
 [9] Battery Compartment [10] Left Joystick ("Up & Down" controls Throttle, "Left & Right" controls Yaw)
 [11] Right Joystick ("Left & Right" controls Roll, "Front & Back " controls Pitch) [12] Strap Hole [13] Video Stop Button(Reserved function)
 [14] Strap Hole(Reserved function) [15] Airborne Shutter Button(Reserved function) [16] Transmitter Power Switch

Warning : To avoid accidental Injury, STAND CLEAR of and DO NOT touch propellers or motors when operating Transmitter.

Function definition for toggle switch S1~S4 as below:

S1	3 positions, 1. OK : Normal flight 2. Reserved for future upgrading 3. Reserved for future upgrading
S2	3 positions, 1. OK: Joystick calibration OK 2. (Reserved function) 3. Calibrating Joystick
S3	3 positions, related control to servo (Tilt up) Stop(middle) (Tilt down) Note: This function is not available on AP9.
S4	3 positions, 1. GPS mode 2. NRM : Normal mode 3. NULL : null (reserved)

4.2 Status Indicator on Transmitter

Upon startup of the quadcopter, you can judge the quadcopter status according to the status indicator on the Transmitter. As shown in Fig. 15; there are three indicators, including (from left to right): transmitter power indicator - red; status indicator - three color (red/green/blue);Photo shooting & video recording indicator - green.

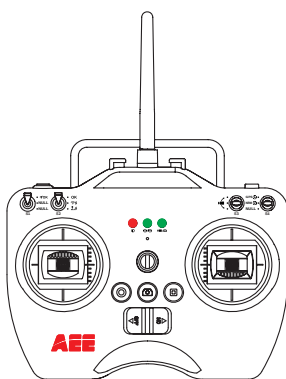


Figure15

Remote Control Indicators			
Designation	Power indicator	Status indicator (three-color) Red light /Green light /Blue light	Photo shooting & video recording indicator
Functional status	Red light ●	Red light ● /Green light ●/Blue light ●	Green light ●
Power on	Remaining on	NRM mode: blue light (continuous)	ON --> OFF
		GPS mode: green light --> red light --> green light (satellite searching successful) GPS mode: green light --> red light (satellite searching failed)	
NRM-->GPS	Remaining on	Satellite searching successful: blue light --> green light Satellite searching failed: blue light --> red light	OFF
GPS-->NRM	Remaining on	Satellite searching successful: green light --> blue light Satellite searching failed: red light --> blue light	OFF

- (1) When Transmitter battery power is low, a warning alert sounds.
 (2) When Quadcopter battery power is low, a warning alert also sounds.

4.3 Powering on the Transmitter

- (1) Load four AA batteries into the battery compartment. Pay attention to positive and negative directions.
- (2) Set S1 and S2 switches to the upper-most position and place both joysticks at the mid-point.
- (3) Toggle power switch to ON position, to switch on the Transmitter.
- (4) The power indicator remains ON in red color after the Transmitter is powered on.
 - Ensure transmitter' batteries have sufficient charge before each use. If there is low voltage, the Transmitter will prompt low power warning. Please replace batteries immediately.
 - Be sure to remove batteries from transmitter in case of long-term storage.
 - Remove depleted batteries and follow battery instructions for disposal or recycling.

Warning: Make sure not to touch the propellers when operating Transmitter.

4.4 Antenna Orientation

Keep the transmitter antenna pointing skyward, and ensure there are no obstacles between Transmitter and receiver antennas, to ensure maximum transmitter range during flight.

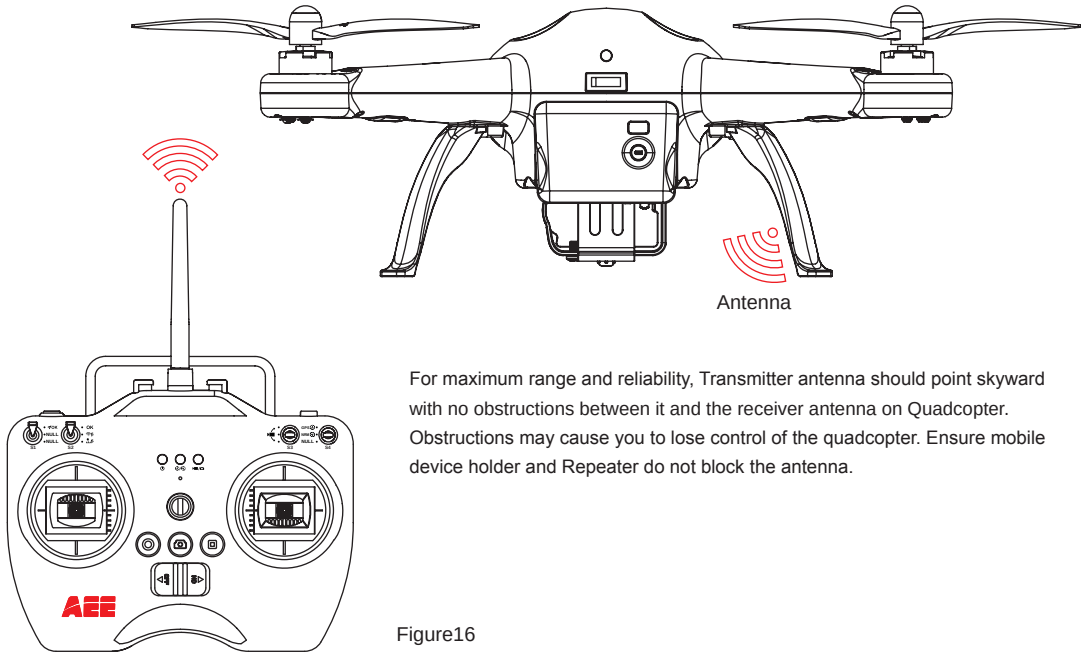


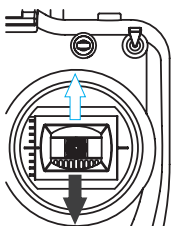
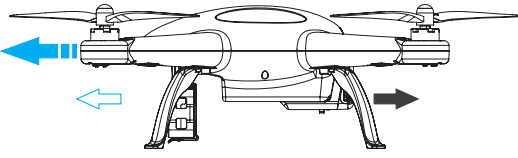
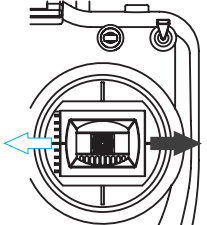
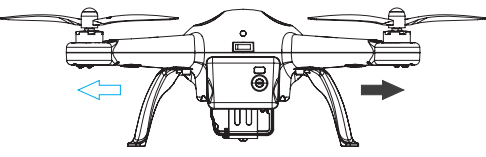
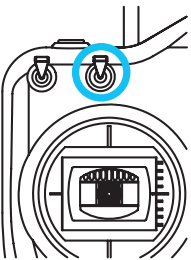
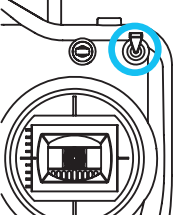
Figure16

4.5 Operating the Transmitter

Joystick at center / neutral: Control joysticks of transmitter are at the central position.

Joystick deviation distance:The distance the Transmitter joystick deviates from its center position.

Transmitter (U.S. Mode)	Quadcopter Direction(" indicates nose direction)	Operation Details
		Vertical movements on the left joystick control quadcopter elevation. Push the left joystick up to ascend and down to descend. When both joysticks are centered (neutral), the quadcopter will hover in place (height is automatically set). Push the left joystick upwards beyond the center (neutral) position to take off. (Push the left joystick slowly to prevent sudden and unexpected elevation).
		Horizontal movements on the left joystick, controls the rudder. Push left to rotate quadcopter counterclockwise and right for clockwise. If the joystick is centered, the quadcopter flies in the same direction without rotating. The joystick controls the quadcopter's rotating velocity. The more the joystick is moved the faster the quadcopter will rotate.

		Vertical movements on the right joystick, controls the quadcopter's forward & backward pitch. Push up to fly forward and down to fly backward. The quadcopter will keep level and straight if the joystick is centered. Push the joystick further to increase pitch angle and faster flight velocity.
		Horizontal movements on the right joystick control left and right pitch. Push left to fly left and right to fly right. The quadcopter will keep level and straight if the joystick is centered. Push the joystick further to increase pitch angle and faster flight velocity.
	 S2 • OK Position-1  S2 • 信号 Position-2  S2 • 校准 Position-3	S2 switch is used to calibrate joysticks position. Toggle S2 to Position-3, then power on the Transmitter. The photo capture status indicator (green) blinks. Then move both joysticks clockwise and counterclockwise twice, ensuring the joystick touches the maximum positions. After joystick calibration with the maximum stroke, the status indicator in the middle will go out; finally, turn S2 to position 1. The Video Indicator lights up (green), and calibration is completed.
	 S4 • GPS Position-1  S4 • NRM Position-2  S4 • NULL Position-3	S4 switch is the flight mode toggle switch. Position 1 (GPS) is GPS mode, Position 2 (NRM) is Normal mode, Position 3 (NULL) is Reserved function.

- In GPS mode, when all joysticks are in the neutral position, the quadcopter hovers at a fixed-point.
- In Normal mode, when all joysticks are in the neutral position, the quadcopter remains level, but may drift in a horizontal direction.
- When S4 switch to GPS Mode, the motors can not be turned on until GPS is ready (Tail indicator remains on).

4.6 Frequency Pairing between Transmitter and Receiver

The Transmitter and receiver are paired before delivery. Normally, you can skip this procedure and directly use the quadcopter. However, if you change the Transmitter or Receiver, frequency-pairing is required.

Frequency Pairing Procedures

- (1) Important: Be sure to remove propellers before pairing to avoid accidental injury.
- (2) First, power off the remote control, then power on the quadcopter. The front/rear indicators and tail indicator light up. When you hear a "beep" sound, power on the remote control, the power indicator lights up. When photo shooting & video recording indicator (green) lights up, the link between the remote control and quadcopter is successfully established.
- (3) If photo shooting & video recording indicator (green) doesn't light up, do the second step again.

Flight

After installation, please conduct flight training (for example: Flight simulator training or professional training). Ensure that all flights are carried out in a suitable environment.

Flight Environment Requirements

- (1) Do not use the quadcopter in severe weather conditions, such as strong winds (category 4 and above), snow, rain and fog.
- (2) Fly in an open area without tall buildings. Presence of large number of steel buildings in the area will affect the onboard compass.
- (3) Keep AP9 away from obstacles, people, power lines, trees, shelters, surface of the water, etc., during flight.
- (4) Reduce the chance of electromagnetic interference by not flying in areas with high levels of electromagnetism (such as near mobile phone base stations or towers).
- (5) This product cannot be used in The Antarctic Circle and The Arctic Circle.
- (6) Do not fly the quadcopter within restricted or no-fly zones, and abide by local laws or regulations.

Pre-flight Check:

- (1) Ensure Transmitter, Quadcopter are fully charged.
- (2) Ensure propellers are correctly assembled.
- (3) Ensure the Quadcopter, Transmitter and other equipment are working properly after powering on.
- (4) Check if motors start properly after the quadcopter is switched on. At this time, disassembling propellers is recommended for safety.

1 Compass Calibration

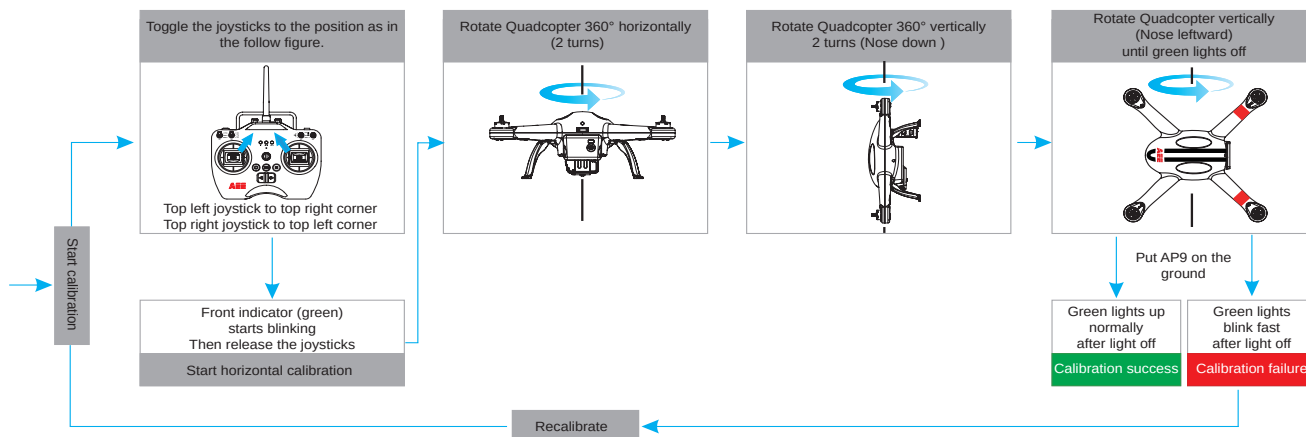
Compass calibration is required before first time use otherwise the system may not work properly, affecting flight safety. The compass is sensitive to electromagnetic interference from other electronic devices, which can cause abnormal compass data leading to poor flight performance or even flight failure. Regular calibration is required for optimum performance.

- Do not calibrate the compass in a strong magnetic field.
- Do not carry ferromagnetic material, such as keys, cell phones, etc., while calibrating the compass.

1.1 Calibration Procedures

Choose an open space to conduct calibration. Start the Transmitter and quadcopter and ensure they work properly.

Follow the below procedures to calibrate the compass:



Warning

Be sure to remove propellers before calibration, to avoid accidental injury or loss.

1.2 When to Recalibrate

- (1) When compass data is abnormal, front indicator (green) blinks fast.
- (2) The flight location is far from the place where last compass calibration was conducted.
- (3) There are changes in quadcopter's physical structure.
- (4) The quadcopter drifts a lot while flying , such as it flies along a circle when hovering.

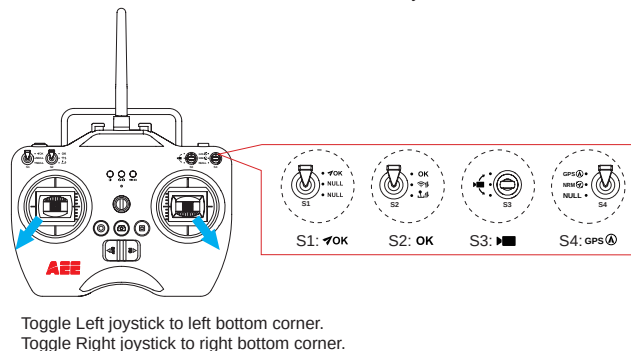
Warning

Be sure to remove propellers before calibrating to avoid accidental injury.

2 Starting / Stopping the Motor

2.1 Starting the motor

Toggle the joysticks as shown in the illustration (Combination joystick Command [CSC]) to start the motor. Release the joysticks simultaneously after the motors start, then the camera will start to record video automatically.



When S4 switch to GPS Mode,



the motors can not be turned on until GPS is ready .

Figure17

2.2 Stopping the Motors

There are two ways to stop the motors.

Method One (Figure 18): After the quadcopter lands, toggle the throttle joystick to the lowest position and then perform CSC, the motors will immediately stop. Release both joysticks after the motors stop.

Method 2 (Figure 19): After the quadcopter lands, toggle the left joystick to the lowest position and hold for 3 seconds to stop the motor.

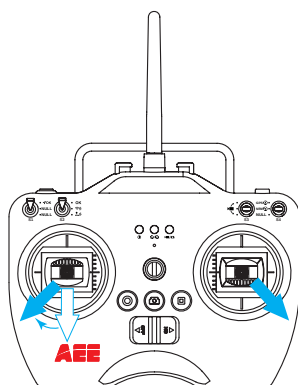


Figure 18

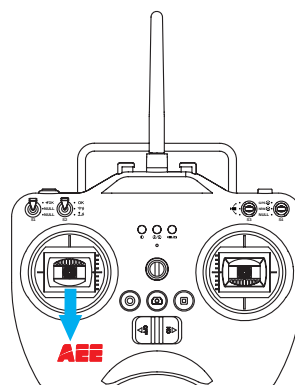


Figure 19

- Do not execute CSC during normal flight. This will stop the motors and cause the quadcopter to drop without control.
- Toggle the joysticks quickly and accurately when performing CSC. Release the joysticks simultaneously after the motors start or stops.
- Shutdown transmitter must be after the quadcopter power off. Otherwise, the quadcopter will enter the return mode, then may case the high-speed rotation of the propeller.

3 Basic Flight

3.1 Basic Flight Procedures

- (1) Place AP9 on a flat and open ground, and ensure Tail Indicator faces you.
 - (2) Power on the Transmitter and Quadcopter one after the other.
 - (3) Start the motors until the GPS signal is strong enough(the Tail indicator remains on) at GPS mode. Or, start the motors when the status indicator on Transmitter is blue at NRM mode.
 - (4) Push the left joystick up slowly for a smooth take-off. Please refer to Transmitter operation instructions for detailed operation procedures.
 - (5) To land, gently pull down the left joystick to make the quadcopter descend slowly to the ground.
 - (6) After landing, pull the left joystick to the lowest position and hold for more than 3 seconds until the motors stop.
 - (7) After motors stop, power off Quadcopter and the Transmitter one after the other.
- During flight if all 4 arm indicators slow blink or fast blink, it indicates the quadcopter has entered a low battery state. The Transmitter will also make an alarm sound, please refer to Low Battery Level Alarm Function for details.
 - It takes approximately 40~60 seconds, when the GPS signal is strong enough after the quadcopter power on.

3.2 Aerial Photography Tips and Tricks (If camera installed already)

- (1) Perform pre-flight checks.
- (2) Capture photos and record videos during safe flight status.
- (3) Capture photos and record videos in sunny weather with little wind.
- (4) Set camera settings as per shooting requirements, such as video resolution, picture size, etc.
- (5) Carry out a trial flight before actual flight to help plan the route and frame your photos and videos.
- (6) Push the joystick as slowly as possible during flight to ensure the quadcopter flies smoothly.

4 Failsafe Protections

If the Quadcopter loses connection with the Transmitter (i.e., you lose control), the Failsafe mode kicks in and the Automatic Flight Control system will control the Quadcopter, fly it back to the Home Point and land it safely. This reduces chances of losing or crashing the Quadcopter in case the Transmitter signal is lost.

- Home Point: Indicates the Quadcopter's position when the Quadcopter successfully scans the GPS signal.

4.1 Scenarios when Quadcopter enters Failsafe mode

- (1) When Transmitter is powered off.
- (2) The Quadcopter has flown beyond the effective range of the Transmitter signal.
- (3) There are obstructions between the Transmitter and the Quadcopter.
- (4) There is interference causing a signal problem with the Transmitter.

4.2 Failsafe Procedure

In case you lose control of the Quadcopter during flight, the Quadcopter will automatically follow the below operating procedures:

- (1) The Quadcopter automatically slows down and hovers in one location.
- (2) If the Quadcopter regains signal from the transmitter within 2 seconds, flight control returns to Normal mode, and the Quadcopter will not enter Failsafe mode and will not automatically fly back to the Home Point.
- (3) If the Quadcopter does not regain signal from the transmitter within 2 seconds, the Quadcopter enters Failsafe mode, and initiates automatic flight control to fly back to the Home Point. The Quadcopter will now continue to hover for 15 seconds and evaluate vertical Distance to the Home Point. If the Distance is less than 25 meters, the Quadcopter will fly up vertically to 25 meters higher than the Home Point, and then commence to return. When the Quadcopter reaches the Home Point it will hover for 5 seconds and then automatically land.

- To ensure the Quadcopter successfully flies back to the Home Point when it is in Failsafe mode, please take-off only after the Quadcopter successfully scans the GPS signal.
- The Quadcopter cannot automatically avoid obstacles in its path when it is flying in Failsafe mode.

4.3 How to regain control during Failsafe Procedures

When the Quadcopter is out of control, toggle the S4 switch on the transmitter several times to switch flight mode. Once the signal is restored, the transmitter will regain control, and you can continue to use the transmitter to operate the Quadcopter.

5 Low Battery Level Alarm Function

When quadcopter battery power is low, you must land as soon as possible, or else the quadcopter may lose power completely and crash, damaging the quadcopter or creating a dangerous situation. In order to prevent danger caused by low battery, AP9 defines Level 1 low voltage alarm (battery level under 50%) and Level 2 low voltage alarm (battery level under 20%), and sends alarms with indicators on the quadcopter and on the transmitter .

Battery Alarm	Flight indicator light status	Low Power risk prompt
Low Power alarm	4 arm indicators Slow Blink (blinks on and off in 1s intervals)	In level 1 alarm condition, Quadcopter flies normally for few minutes and then initiates Level 2 alarm. Be cautious while flying, keep the Quadcopter within sight and do not to fly too high or too far.
Severe Low Power alarm	4 arm indicators Fast Blink (blinks twice within 1s)	In level 2 alarm condition, Quadcopter flies normally for few minutes and then initiates Failsafe mode and commences to automatically land. Under such a situation, please return and land the Quadcopter as safely as possible, and do not push the throttle hard or make big movements during flight.

During low-Power automatic landing, you can regain control of the Quadcopter by switching the flight mode. However, do not do so repeatedly, as it may:

- 1) Reduce battery service life due to over discharge.
- 2) Quadcopter may crash due to insufficient Power.

Appendix

1 Description of Common Indicators

Normal State	
Front and Rear Indicators are ON; Tail Indicator remains on.	The GPS signal is strong enough.
Front and Rear indicators Remains ON, Tail Indicator Slow Blinks	Searching for GPS signals
Warnings and Abnormal State	
Front and Rear Indicators Slow Blinks	Low Power alarm (first-level low power alarm)
Front and Rear Indicators Fast Blink	Severe Low Power alarm (second-level low power alarm)

Above indicator descriptions refer to common LED indicator states. For specific details, please refer to "Prepare the Quadcopter" in section 2.3 Flight Indicators.

2 Specifications

Quadcopter	
Battery	5300mAh LiPo
Weight	1.35kg / 2.98lbs
Hovering Accuracy	Horizontal: $\pm 2.5\text{m}$ / 8.2ft , Vertical: $\pm 0.8\text{m}$ /2.62ft
Maximum Tilt Angle	30°
Maximum Climb / Descent Speed	Climb: 6 m/s (19.69ft/s); Descend: 4 m/s (13.12ft/s)
Maximum Flight Speed	20m/s(65.62ft/s)(Not recommended)
Diagonal Length	450mm / 1.48ft
Flight Time	20min
Transmitter	
Data Transfer Distance	>700m (2296ft)
Working Hours	8h
Operating Current / Voltage	150mA / 6V
Battery	4 AA Batteries

3 Common Troubleshooting

3.1 Solution for transmitter joysticks center (neutral) position errors

When there is a big error in neutral position of transmitter joysticks, the motors cannot start when performing CSC. Errors in Transmitter joysticks neutral position usually occur in two cases:

1. When quadcopter is ON and the joystick (except throttle) is not in neutral position-Solution: Move all Transmitter joysticks to neutral position, and re-start the quadcopter, to re-record the neutral position. If problem persists, it may be caused due to case.
2. Transmitter joysticks have been trimmed, leading to deviation in neutral position, i.e., there is a large asymmetry in quadcopter joystick position-Solution: Recalibrate the Transmitter .

a) Make sure the quadcopter is powered off. Toggle S2 to Position-3 :  , then power on the Transmitter. The photo capture indicator (green) blinks. Then move both joysticks clockwise and counterclockwise twice, ensuring the joystick touches the maximum positions. Afterwards, release the joystick and toggle S2 to

Position-1 :  , the Video Indicator lights up (green), and calibration is completed.

(b) Re-start the quadcopter, and pay attention whether or not it starts properly.

If the problem cannot be solved by the above methods, please send back the transmitter to our factory for repair.

3.2 How can quadcopter land smoothly?

Before performing CSC, pull down the left joystick to less than 5% of the joystick level, and then execute CSC. This way you can land the quadcopter smoothly.

Limited Warranty

AEE products are guaranteed against manufacturing defects, AEE's sole obligation in the event of such defects during this period is to repair or replace the defective part or product with a comparable part or product at AEE's sole discretion. Except for such repair or replacement, the sale, processing or other handling of this product is without warranty, condition or other liability even though the defect or loss is caused by negligence or other fault. Damage resulting from use, accident, or normal wear and tear is not covered by this or any warranty. AEE assumes no liability for any accident, injury, death, loss, or other claim related to or resulting from the use of this product. In no event shall AEE be liable for incidental or consequential damages relating to or resulting from the use of this product or any of its parts. Because of possible user resealing error, this product is not warranted against leakage in waterproof housing or any resulting damage. Returns or replacements of parts and/or products may be subject to shipping, handling, replacement and/or restocking fees.

If you are experiencing a problem with an AEE purchase, please contact our Customer Support Team by visiting our website www.aee.com .

For product warranty period and conditions, please refer to www.aee.com for details.

Tip: If you bought this product from an AEE authorized dealer, we would recommend that you first contact them for technical support issues

This User Manual is subject to change without prior notice.

You can check the official AEE website for the latest updated version.

FCC Information and Copyright

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules.

These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates,

uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference

to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does

cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is

encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

15.19 Labelling requirements.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference, and
- (2) this device must accept any interference received, including interference that may cause undesired operation.

changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

