Thank you for purchasing this RCTimer product. Please strictly follow these steps to mount and connect this Flight Controller on your aircraft, as well as to install the Assistant Software on your computer.
Index

Index....................................................................................................................................................... 2
Instruction............................................................................................................................................... 3
  Disclaimer & Warning............................................................................................................................. 3
Assembly & Connection........................................................................................................................... 4
The connect leads................................................................................................................................ 6
Armed Speed ........................................................................................................................................7
USB Driver ............................................................................................................................................... 7
Firmware upgrade................................................................................................................................ 8
Initialization settings.............................................................................................................................. 9
First Flight ...............................................................................................................................................10
Remote Calibration..............................................................................................................................11
LED Description.....................................................................................................................................12
Assembly Checking List........................................................................................................................13
IOC Mode..............................................................................................................................................13
RTL (Return To Land).............................................................................................................................14
Specifications........................................................................................................................................15
**Instruction**

**Disclaimer & Warning**

Please read this disclaimer carefully before using the product. By using this product, you hereby agree to this disclaimer and signify that you have read them fully. **THIS PRODUCT IS NOT APPROVED FOR USE UNDER THE AGE OF 18.**

This product is an autopilot system designed for serious multi-rotor enthusiasts providing excellent self-leveling and maintaining altitude, which aids in relieving the stress of flying RC multi-rotors for both professional and hobby applications. Despite the system having a built-in autopilot system and our efforts in making the operation of the controller as safe as possible when the main power battery is connected, you must remove all propellers when calibrating and setting parameters. Make sure all connections are good, and keep children and animals at a safe distance at all times. RCTimer accepts no liability for damage(s) or injuries incurred directly or indirectly from the use of this product in the following conditions:

1. Damage(s) or injuries incurred when users are drunk, taking drugs, drug anesthesia, dizziness, fatigue, nausea and any other conditions no matter physically or mentally that could impair your ability.
2. Damage(s) or injuries caused by subjective intentional operations. Any mental damage compensation caused by accident.
3. Failure to follow the guidance of the manual to assemble or operate.
4. Malfunctions caused by refit or replacement with non-RCTimer and parts.
5. Damage(s) or injuries caused by improper operation or subjective misjudgment.
6. Damage(s) or injuries caused by mechanical failures due to erosion, aging.
7. Damage(s) or injuries caused by continued flying after low voltage protection alarm is triggered.
8. Damage(s) or injuries caused by knowingly flying the aircraft in abnormal condition (such as water, oil, soil, sand and other unknown material ingress into the aircraft or the assembly is not completed, the main components have obvious faults, obvious defect or missing accessories).
9. Damage(s) or injuries caused by flying in the following situations such as the aircraft in magnetic interference area, radio interference area, government regulated no-fly zones or the pilot is in backlight, blocked, fuzzy sight, and poor eyesight is not suitable for operating and other conditions not suitable for operating.
10. Damage(s) or injuries caused by using in bad weather, such as a rainy day or windy (more than moderate breeze), snow, hail, lightning, tornadoes, hurricanes etc.
11. Damage(s) or injuries caused when the aircraft is in the following situations: collision, fire, explosion, floods, tsunamis, subsidence, ice trapped, avalanche, debris flow, landslide, earthquake, etc.
12. Damage(s) or injuries caused by infringement such as any data, audio or video material recorded by the use of aircraft.
13. Damage(s) or injuries caused by the misuse of the battery, protection circuit, RC model and battery chargers.
14. Other losses that are not covered by the scope of RCTimer liability.
Assembly & Connection

In the Box:
Main controller X1, GPS X1, GPS Bracket X1, LED X1, Servo Cable X6, Micro-USB Cable X1, 3M Adhesive Tape.

Port Description

### Port Description

- A: For roll control (left/right)
- E: For pitch control (front/back)
- T: For throttle control
- R: For rudder control
- X1: For 3-Position Control Model Switch (Stabilize Mode/Alt Hold Mode/GPS Mode)
- X2: For 3-Position Control Model Switch (OFF/IOC Mode/RTL Mode)
- X3: For SBus/Futaba 2-6 Series RX compatible /gain tuning / IOC switch
- O1: Reserved
- O2: For OSD Port

![Main Controller Diagram](image)

- **Main Controller**
- **GPS:** Connect to GPS module
- **LED:** Connect to LED module
- **Firmware upgrade Key**
- **Pointing to the aircraft nose**

![Port Descriptions](image)
GPS/Compass

Pointing to the aircraft nose direction

Connect to GPS port of Main Controller

LED module

Micro-USB: PC connection for parameter configuration and firmware upgrade

2S~6S: Powered by 2S~6S LiPo (7.4V~26.0V)

GPS: Connect to Main Controller GPS port

BEC & Vsensor Output: Connect to VIN Port on Main Controller
The connect leads

LED / PMU Module
The LED / PMU Module has 3 sets connect leads:
Please solder the Red and Black silicon wires to Power Distribution Board, it support 2-6S, can’t be over 28V.
Please connect White/Red/Black lead to the VIN (Voltage In) of Main Controller; it supports the Power to FC from the battery.
Connect the white connector to LED port of the Main Controller; it is for the signal connection on LED/USB

GPS / Compass Module
Connect GPS lead to GPS Port on Main Controller.

A/E/T/R of the forward in Main Controller stands for Aileron / Elevator / Throttle / rudder channel; you can choose a 3-position switch as control mode switch in X1 or X2.
X1: 3-Position Control Model Switch (Stabilize Mode/Alt Hold Mode/GPS Mode)
X2: 3-Position Control Model Switch (OFF/IOC Mode/RTL Mode)
X3: SBUS Input channel, supported Futaba 2/6 series Receiver;
O1: Reserved, not used currently;
O2: OSD Port.

M1 ~ M8 are ESC signal output port, please follow the parameters tuning tool sequence to connect.
<Warning> Verify Positive and Negative Polarity on the Main controller
<Warning> All ESCs must be calibrated before connecting to the Main controller, this not provided by the Main controller.

**Armed Speed:**

- **OFF**: 1000μs
- **LOW**: 1100μs
- **HIGH**: 1200μs

**USB Driver**

USB driver download


Please check the COM Port under the device manager of your PC after installed the USB driver, the COM port need under 10, if not please revised it.
Firmware upgrade

Press the inside hole key of main control, connected USB, the LED state is "red - green - blue" by cycle, release the upgrade key, then it has upgraded into the model (if not please retry this step). Open the firmware upgrade tool:

(To depress the upgrade button while applying USB connection then load the Upgrade tool)

Click "Open Firmware File", select the file"*.fcu"

Click "Scan", and select your COM port.

<Warning> Make sure the COM number \( \leq 10 \), otherwise please change it to \( \leq 10 \).

Click "Connect" the upgrade starting now, the details will be display in black window. The LED will blink white in this processing.

Click “Disconnect” when the message box is displayed Finished, and close the Firmware uploader.
Initialization settings

You MUST right click on the Atlas Assistant .exe file and select “Run as Administrator”

Please check your COM port via “Refresh”, click “Connect”, then you can view the Sensor Date, Firmware version, the voltage etc.

Please follow this step when powered the first time

1. Select the flight mode, save it, connect ESCs to the corresponding M1~M8 on the Main controller.

2. Select the remote control signal type “PWM”, “SBUS” or “PPM” and save it.

3. Remote controller Calibration
Click “Start RC Stick Calibration”, the LED light blue, move the control sticks and all switches on your transmitter to their limits of travel and observe the results on the radio calibration bars. Please click “Stop RC Stick Calibration” after Calibration (the slider up when you push up the stick, the slider to left when you push the stick to left, if not please change it via the reverse function in remote controller.

4. Hold your Multi-rotor horizontal, click “IMU Calibration”, or via remote controller do this (check in back)

Check the “Parameter Adj” in the flight controller tool, please set the value of low voltage warning, the default value is “10.8”, it is Warning voltage is lower than 10.8V (10.8V can be regarded as the total voltage of 3S battery in each section of the average 3.6V), the LED blinking RED when “low voltage warning”.

![Flight Controller Tool](image)

After Assembly, please learn the stick combined movement functions description: Based on Mode2 (Left Hand Throttle)

**FIRST Flight**

Please use all of the DEFAULT data except Low Voltage when you first flight, check the station of Aircraft, if the Aircraft is shake, please turn down GYRO Gain and AUX Gain, test again, if flight well, then go up the AUX, until the Aircraft smooth also.

**The default data:**  **Gyro :** 16 / **AUX :** 7.8 / **Alt :** 12

If your Aircraft is 450mm size, you can use: **GYRO/AUX/ALT :** 16/6.8/14
**Calibration**

IMU Calibration: please follow the below icon and check the LED state. Left stick UP and LEFT, Right stick don't touch, LED turns BLUE. Wait until LED goes GREEN, release left stick.

MAG Calibration: please follow the below icon and hold 1 second, reset the stick and it entered the calibration mode, the indicator will show a faint blue.

Then around all-axis of rotation multi-rotor copter. Rotating your Multi-rotor three axis around the gravitational force line (about 360 degrees)

Until completely blue calibration is complete, you can exit the calibration mode follow the below icon.
Throttle unlock icon:

After throttle unlock, the propellers should spin at a low speed, if not or high speed rotation, please throttle calibration again.

Throttle lock icon:

LED Description for more LED details:

Always switch on the transmitter first, then power on multi-rotor!

GPS Signal Status LED Indicator
None ● GPS Signal is Best;
● GPS Signal is Well;
●● GPS Signal is Bad;
●●● GPS Signal is Worst.

<Warning> Recommend you use the “GPS Mode” and “RTL” when Red LED is not blinking.

Low voltage warning
●●●●●● LED warning, the Low-Voltage Alert is to indicate that the battery cannot provide enough power for the aircraft, in order to warn you to land the aircraft ASAP.

Extreme Caution, you should land your aircraft ASAP to prevent your aircraft from crashing or other harmful consequences!!!

MAG interference warning
●●●
When the GPS is abnormal, the Main controller will tell you by the LED blinking Yellow (●●●) alternately, disable the GPS Module, and automatically enter the Alt Hold Mode.

LED Signal
- ●●●: Stabilize Mode
- ●: GPS Mode
- ●: IOC Mode
- ●: RTL Mode

Assembly Checking List

Please check each item, to insure your safety.

Any of the following mistakes will lead to a dangerous accident, double check all these items:
(1) Rotation direction of motors
(2) Confirm connections between the motor and the ESC
(3) Confirm correct installation of Main controller
(4) Confirm connections between the main controller and ESC.
(5) Proper Propeller installation
(6) The aircraft will not unlock under the GPS Mode
(7) Magnetic Fields near the compass

IOC Mode

Intelligent Orientation Control (IOC) Flight Mode (with GPS module)
Definition of Forward Direction:
Multirotor will fly toward the Stick Direction, independent of the Nose Heading

In, Course Lock flying, the forward direction is the same as the nose direction. All the following requirements are met: the autopilot system is in ATTI. + Alt-Hold or GPS Mode.
**RTL (Return To Land)**

Ensure the aircraft has no Red LED warning, GPS is working well, switch to RTL. You can have the throttle in any position while in Return To Launch mode.

The aircraft will be Ascend 20 meter when RTL starting:

Upon Arrival Home and Landed, turn off the RTL switch.

**NOTE:**
During RTL process, you can still maneuver the aircraft when moving the sticks. When you free the control sticks, RTL will continue home, but the throttle sticks is unable in RTL.
### Specifications

#### Features
- Easily-useable
- Seven type Multi-rotor supported
- External LED module with build-in PMU
- No compass need during stab mode
- Manual controllable during RTH and Auto Landing, avoiding accidents
- Compass disturbance alert
- Low voltage alert

#### Flight Performance (can be effected by mechanical performance and payloads)

<table>
<thead>
<tr>
<th>Feature</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hovering Accuracy (GPS Mode)</td>
<td>Horizontal ±2M</td>
</tr>
<tr>
<td></td>
<td>Vertical ±1M</td>
</tr>
<tr>
<td>Max Tilt Angle</td>
<td>30°</td>
</tr>
<tr>
<td>Max Horizontal Speed</td>
<td>6M/s</td>
</tr>
<tr>
<td>Max Ascent Speed</td>
<td>3.2M/s</td>
</tr>
<tr>
<td>Max Descent Speed</td>
<td>2.5M/s</td>
</tr>
<tr>
<td>Wind Resistance</td>
<td>Continue 6~8M/s</td>
</tr>
<tr>
<td></td>
<td>Gust 10~12M/s</td>
</tr>
</tbody>
</table>

#### Electrical & Mechanical Input Voltage Range:

<table>
<thead>
<tr>
<th>Device</th>
<th>Voltage Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAIN Controller</td>
<td>4.5~5.5V</td>
</tr>
<tr>
<td>LED Module</td>
<td>7~28V</td>
</tr>
</tbody>
</table>

#### Dimension / Weight

<table>
<thead>
<tr>
<th>Device</th>
<th>Dimension</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAIN Controller</td>
<td>46.5x34.5x15.3mm</td>
<td>19.7g</td>
</tr>
<tr>
<td>GPS Module</td>
<td>50x50mm</td>
<td>30.0g</td>
</tr>
<tr>
<td>LED Module</td>
<td>33.2x24.9x8.5mm</td>
<td>16.9g</td>
</tr>
</tbody>
</table>