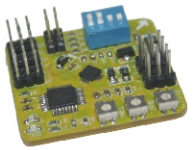
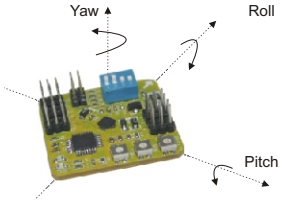
Thanks for purchasing this Multi copter Controller Series. I86 is a flight control board especially developed for remote Control Multi copters. Its working principle is to measure the angular speed of the aircraft rotating around reference axis of Pitch, Roll, Yaw, and make necessary correction automatically, so as to maintain the stability of the aircraft during flight.



I86 uses AVR high-performance, low-power 8-bit micro controller and High-precision MEMS digital three-axis gyro from ST Microelectronics. It offers advantages of good stability, flexibility, impact-resistant ability and reliability.

【Features】

1. 8 Multi copter Types are in support including Aero Copter. Dual Copter. Tri Copter. Quad+4Copter. Quad×4 Copter. Hex Copter. H6 Copter and Y6 Copter, which could be easily switched through on-board DIP-Switches;
2. 2 Flight Modes to choose from, including Normal Mode and Sport Mode, which could be easily switched through on-board DIP-Switches;
3. Maximum of 6 PWM output channels, compatible with most Electronic Speed Controllers (ESC) and servos;
4. Independent gyro gain adjustment for Pitch, Roll and Yaw;
5. Basic setting function including stick centering and ESC throttle calibration;
6. Blue and Red LED for working status display and error report;
7. Convenient firmware upgrade.



【Special Note】

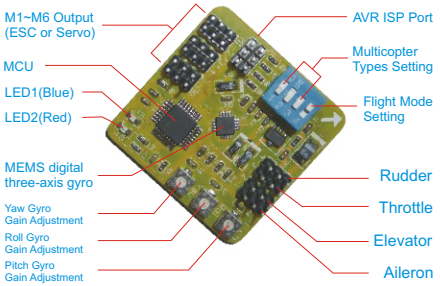
Remote Control Models are NOT toys, The high-whirling propeller of aircraft is very dangerous, therefore please carry out debugging and test flight in open space far away from the crowd. The beginner should be directed by someone experienced. The effect of flight depends on many factors, and the control board just makes necessary adjustment and correction, but it cannot totally take the place of other devices. To better use your multicopter controller, please take the following suggestions into consideration:

- Read this instruction manual carefully to understand the product's feature, installation, setting method, etc.;
- Choose high-precision, good-quality stander;
- Choose high-linear, quick-response ESCs or servos;
- Take all measures to reduce vibration, avoiding disturbance to the controller caused by mechanical shock;
- Upgrade the firmware as soon as releases new version.

【Specifications】

Input Voltage:	4 V to 6 V
Input Signal:	50 Hz standard PPM signal
PWM Frequency:	400 Hz for ESC, 50 Hz for Servo
Gyro: Scale:	±500 dps. ODR:800 Hz
Operating Temperature:	-40 ℃ to + 85 ℃
Dimension:	40 mm×40 mm
Weight:	8 g

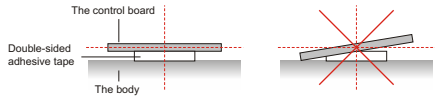
Overview of I86



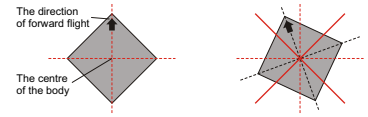
【Installation & Wiring】

VERY IMPORTANT! Please use the supplied double-sided adhesive tape for installation. Application of two pieces of tape is recommended to better reduce the vibration. Firmly fix the control board in the centre of the body. The board must also be mounted with the white arrow facing the direction of forward flight. Incorrect or careless installation might harm the performance of the Multi copter controller or even result in complete failure.

Side View

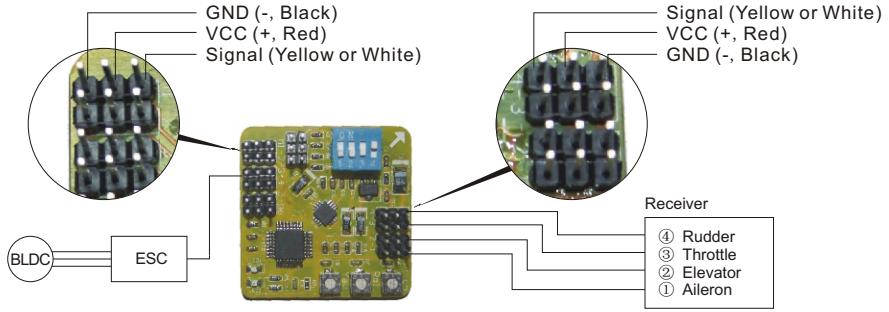


Top View



Connect the channels (Aileron, Elevator, Throttle and Rudder) from your receiver to the pins on the board marked No.1 to 4 and plug the ESCs or servos onto the pins M1 to M6 in the correct order according to the Multi copter Type you select (see P4 "Supported Multi copter Types"). When connecting, please pay attention to the colors of wires to avoid anti-plug. The WHITE(or YELLOW)signal wires should be connected corresponding to the inner pins on the board, the RED(VCC)wires to the center pins, and the BLACK (GND) wires to the pins on the outer edge of your board, as shown below:

Wiring Diagram



【Multi copter Types & Flight Mode Selection】

I86 has a 4-bit DIP-Switch for Multi copter Type and Flight Mode selection, the first three bits for Multi copter Type selection and the last bit for Flight Mode selection. VERY IMPORTANT! Please repower the controller to make the newly-selected mode effective.

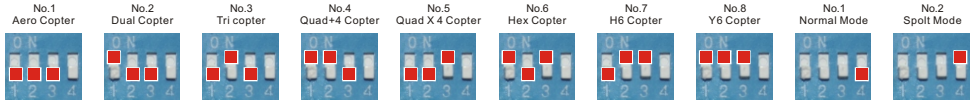
Multi copter Types Setting Table

No.	Multicopter Types	SW1	Sw2	SW3	Sw4
1	Aero Copter	0	0	0	X
2	Dual Copter	1	0	0	X
3	Tri copter	0	1	0	X
4	Quad+4 Copter	1	1	0	X
5	Quad X 4 Copter ▲	0	0	1	X
6	Hex Copter	1	0	1	X
7	H6 Copter	0	1	1	X
8	Y6 Copter	1	1	1	X

Flight Mode Setting Table

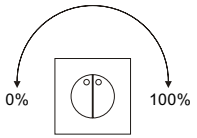
No.	Flight Mode	SW1	Sw2	SW3	Sw4
1	Normal Mode (Recommended for beginners) ▲	X	X	X	0
2	Sport Mode	X	X	X	1

Notes:"0" represents "OFF","1" represents "ON","X" representes influence- proof for the mode set. i.e. Modes between Normal and Sport are either available for any Multi copter Types; "▲ the default setting.



【Gyro Gain Adjustment】

I86 offers three Trimming Potentiometers to control the gyro gain of pitch, roll and yaw, Clockwise for increase, anticlockwise for decrease. Please adjust the gain to meet Your needs. The adjustment becomes effective immediately and you don't need to restart it. For your safety, please do not readjust the gain until all the propellers become motionless.



【Stick Centering】

VERY IMPORTANT! Since different transmitter has different signal range, we strongly suggest you apply this function to calibrate channel range after first-time installation or application of new radio system. N6 will automatically calculate and save the range of PPM signal from the four channels of your receiver in order to provide better linearity afterwards in daily usage.

Step 1 Turn pitch pot to 0% position, Roll and Yaw to about 50% as shown on the right:

Step 2 Turn on the transmitter, put the trimming buttons of all channels to zero, move throttle stick to the bottom position, the other stick stay in the middle position;

Step 3 Connect the battery pack to ESC or receiver. You will see the blue and red led flash simultaneously for once. Wait about 1 second. Sync fast flash of both blue

and red led represents that the system has been calibrating signals. After the calibration has been succeeded, the blue led will turn ON while the red turn OFF, please disconnect the battery pack and restore the pitch pot in order to avoid entering this setting mode when restart the controller.

【ESC Throttle Calibration】

VERY IMPORTANT! We strongly suggest you apply this function to obtain Best throttle linearity at the very beginning of using N6 or application of new ESCs.

Step 1 Turn roll pot to 0% position, Pitch and Yaw to about 50% as shown on the right:

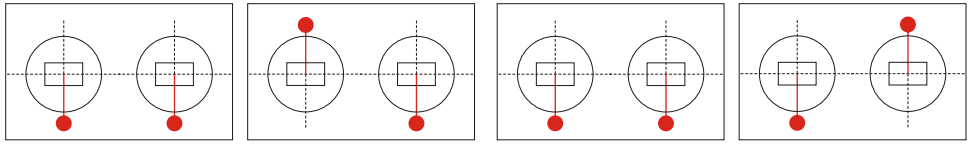
Step 2 Turn on the transmitter, move throttle stick to the top position;

Step 3 Connect the battery pack to ESC or receiver. You will see the blue and red led flash simultaneously for twice. Wait about 1 second. The blue led will turn ON while the red turn OFF, which shows that N6 is ready to output pwm signal to ESCs. Please move the throttle stick to the bottom when the tones of throttle range highest point has been confirmed. Specific construction shall be referred to the manual of your ESC. After the set up has been completed, please disconnect the battery pack and restore the roll pot to avoid entering this setting mode when restarting the controller.

【Throttle Locking & Unlocking】

For security, the output to ESCs will be locked after power on the controller except Aero Copter type. Pease unlock previously before flying and lock back after landing. The blue led will turn ON when unlocking is confirmed and vice versa. Please follow the below illustrations of gestures for unlocking and locking process. The gestures should keep at least **2 seconds** to be effective.

Unlocking (Mode-1) Locking (Mode-1) Unlocking (Mode-3) Locking (Mode-3)



Mode-1: Elevator and Rudder sticks are on the left, Aileron and Throttle sticks are on the right;
Mode-3: Throttle and Rudder sticks are on the left, Aileron and Elevator sticks are on the right.

If unlocking doesn't succeed, try the following steps for a double check:

(1) Check the connection of the receiver and the control board;
(2) Check the direction of the throttle channel. Please refer to the function menu of “servo-Reverse” of your radio system;
(3) Try to apply stick centering setting function again, see P2 “Stick Centering”,
(4) Try to turn the throttle trimming button of your transmitter down a little bit;
(5) Problem still unsolved? Contact our service center immediately.

【LED Indicator Description】

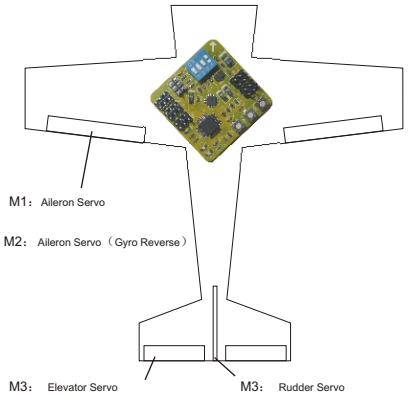
Colors	Way of display	Description
Blue	Flash N times when power on	Self-test success, N stands for the Multicopter Type chosen, see P2 “Multicopter Types Setting Table”
	Solid ON	Throttle unlocked, ready for flight.
	Solid OFF	Throttle locked, please unlock before flying.
Red	Solid ON	Undefined Multicopter Type, please double check the correctness of the DIP-Switch, see P2.
	Slow Flash: “Flash------Flash------.....”	No signal input, please check whether the transmitter is on.
	“ Fast Flash: Flash---	The throttle stick is not in the lowest position, please move the throttle stick to the bottom position.
	2 short 1 long: “Flash--Flash------Flash---Flash------. ....”	Gyro self-test failure.
Red and Blue	Fast flash simultaneously for once	Entering the stick centering function, see P2.
	Fast flash simultaneously for twice	Entering the ESC throttle calibration function, see P2.

Slow Flash: 1 Second or longer, Fast Flash: 1/5 Second or shorter.

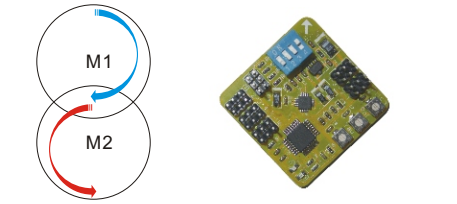
【Supported Multicopter Types】

Notes: Under the Aero Copter Multi copter Type, the throttle channel of the receiver is directly connected to the ESC. The throttle locking or unlocking manipulation is not necessary in this case.

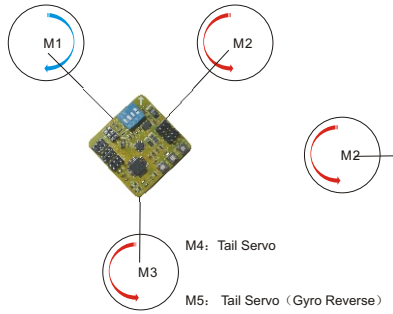
Aero Copter



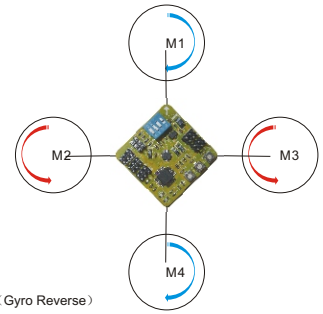
Dual Copter



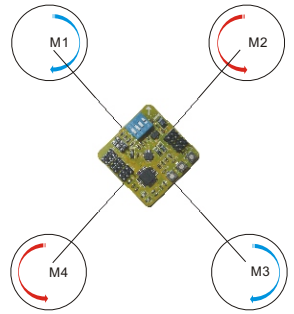
Tricopter



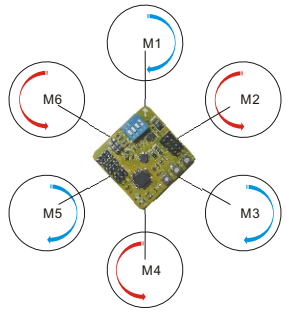
Quad+4Copter



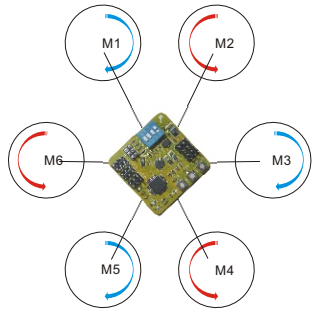
QuadX4Copter



HexCopter



H6Copter



Y6Copter