# AG22 Manual SMC

## 1. Introduction

AG22 is easy to use flight controller, designed for fixed-wing hobbyist. It can detect and compensate for labile factor of aircraft during flight to make the flight more stable. There is autolevel mode to self-stabilize the flying for beginners, release the beginner's tensions during flight, and improve the flight skill quickly.

## 2. Product Features

- Compact size, lightweight design.
- 32-bit ARM processor.
- 3-axis gyro + 3-axis accelerometer MEMS sensors.
- Support SBUS receiver, simplifying the cables.
- Independent R & D, excellent performance.
- 3 modes: autolevel, gyro on, and gyro off mode.
- Support general wing, flying wing, v-tail and etc.
- Support dual aileron flap aileron mixing function.
- PC client software to set parameters.

## 3. Technical Parameters

Dimensions: 32mm × 23mm × 15mm

Weight: 7g (excluding cable)

Working temperature: -30 ～ 60 ℃

Input voltage: DC 4.2V ~ 7.4V

## 4. Package Contents

AG22 flight control × 1

Single signal cable × 2, 3 signal cable × 1

USB setting module and connect cable × 1

Double sided adhesive tape × 1

## 5. Remote equipment needs

If the transmitter is only four channels, AG22 will work in autolevel mode. Five or more channels transmitter is recommended, which can set different flight modes.
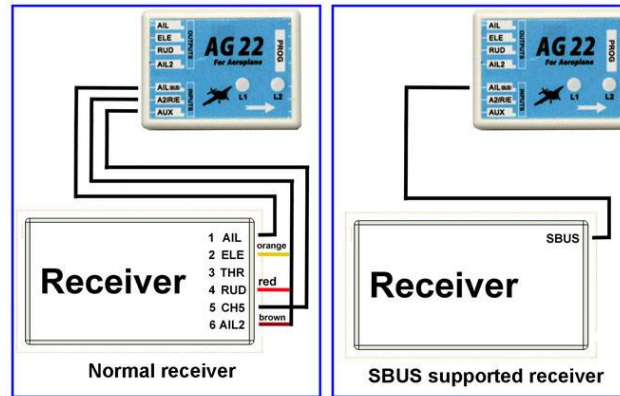
## 6. AG22 Connection

- Connect diagram of receiver and servos as follows:

| outputs | | | | inputs | | |
|---|---|---|---|---|---|---|
| Ail | Ele | Rud | Ail2 | Ail (SBUS) | Ele | Aux |
| + | + | + | + | + | Rud | + |
| - | - | - | - | - | Ail2 | - |

- **Connection with the receiver**

Connection of AG22 to receivers as below.



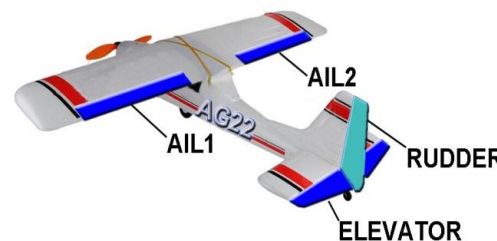Normal receiver | SBUS supported receiver

Note: When use the SBUS receiver, the channel must be allocated on the remote control as shown below

| Channel | CH1 | CH2 | CH3 | CH4 | CH5 | CH6 |
|---|---|---|---|---|---|---|
| Function | Aileron | Elevator | Throttle | Rudder | Gear | Aileron2 |

- **Connection with the servos**

### a) Single and dual aileron fixed-wing aircraft



| AG22 output | Single aileron | Double aileron |
|---|---|---|
| Ail | Ail1 | Ail1 |
| Ele | Elevator | Elevator |
| Rud | Rudder | Rudder |
| Ail2 | X | Ail2 |

### b) Fly wing
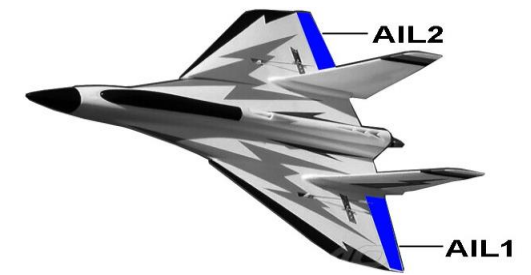


| AG22 output | Fly wing |
|---|---|
| Ail | Ail1 |
| Ele | Ail2 |
| Rud | X |
| Ail2 | X |

### c) V tail
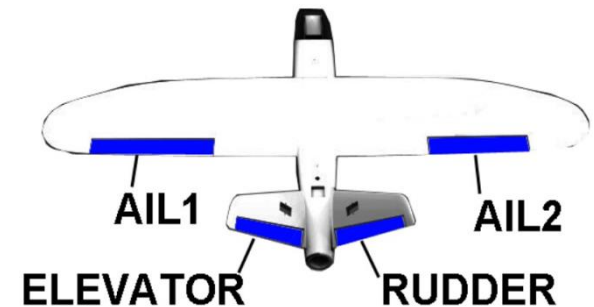


| AG22 output | Single V-tail | Double V-tail |
|---|---|---|
| Ail | Ail1 | Ail1 |
| Ele | Elevator | Elevator |
| Rud | Rudder | Rudder |
| Ail2 | X | Ail2 |

## 7. Power Supply

AG22 supports 4.2v ~ 7.4v voltage power supply, sharing power with the receiver, you can choose ESC BEC or external BEC as power supply.

## 8. Installation and setting

- **Flight controller installation**

The flight control surfaces should be parallel with the horizontal elevator, making sure the controller point to the plane head direction. AG22 supports four mounting directions, you can set it by the PC software.

- **Aircraft type setting**

Please select the your model type in the AG22 (Note: Whatever the aircraft type is, the transmitter is always set as ordinary aircraft type, the flying wing or V tail mixing control are set in AG22). If you choose a dual aileron models, be sure to open the aileron 2 channel in transmitter (if required flap aileron mixing function, please set it in the transmitter).

- **AUX (flight mode selection) channel settings**

Connect AG22 AUX to channel 5 on the transmitter, using a three-stage switch control of the channel, the flight mode switch position shown as following table:

| Switch position | low | middle | high |
|---|---|---|---|
| Pulse width | 950-1250us | 1350-1650us | 1750-2050us |
| Flight mode | Gyro off | Gyro on | Autolevel |

- **Receiver type setting**

  Select your receiver type in the AG22 software

- **Power on AG22 instruction**

  Follow strictly following instructions to power on

➢ a. Power on the transmitter

➢ b. Place aircraft on the ground (not necessary in horizontal level), never put it in hands to power on

➢ c. Plug in the airplane battery

➢ d. Green LED flashing（leave the plane still and don't move transmitter sticks）

➢ e. When initialization is completed, Green light is on. If red light is on, there is a problem with the input signal

- **The transmitter NOR/REV setting**

Switch AUX stick to low (gyro off mode), move the transmitter sticks to determine the NOR or REV of each channel. If the move is reversed, please reverse on the transmitter. Adjust trim of transmitter to set the servos in neutral position.

- **Flight Control positive and negative settings**

  The following settings are correct in the case of compensation direction, AG22 will try to compensate for offset of the aircraft.

  When the body tilted to the left in fast moving, AG22 should control left aileron down and right aileron up to move aircraft to its original position.
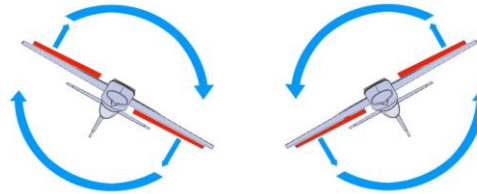
When head sinking in fast moving, AG22 elevator should be controlled up to its original position.
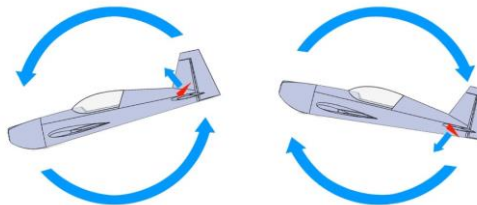
When the head swing left in fast moving, AG22 should control rudder to the right to restore the airplane heading to the original position
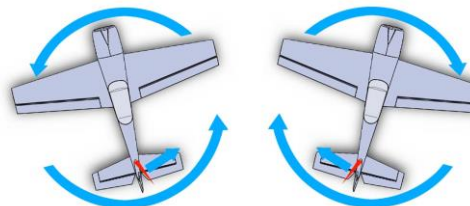
- **Sensitivity and angular speed limit settings**

  Sensitivity of flight control directly affects flight status, if sense of rudder is too high, it will cause the body trembling. If sensitivity is too low, it will affect stability of aircraft. Angular speed limit will affect the handle, if it is too high, aircraft will be too flexible, if it is too low, aircraft reacts lowly. In general, sport model requires small sensitivity and high angular speed, gliding models require higher sensitivity and lower angular speed, the trainer in practice is between the two models.

- **Augmentation lock settings**

  Augmentation locking feature allows aircraft to maintain aircraft's attitude better. Even if aircraft is not adjusted well, when augmentation lock is on, it can maintain the aircraft heading stably.

- **Angle limit**

  This feature limits aircraft maximum roll and pitch angle in autolevel mode, the limit can be adjusted.

- **Angle trimming**

  This function compensates for angular deviation of AG22 in autolevel mode (since installation surface is not accurate), you can adjust the angle (15 ° or less) by PC software, or manually adjust it with following steps:

1 fly in the autolevel model.

2 Adjust transmitter trim to make aircraft flying in horizontal level.

3 landing aircraft, do not power off.

4 Quickly toggle AUX stick more than 6 times. The angle of trim will be saved to AG22.

5 If necessary, repeat steps 2, 3 and 4 to adjust trim.

6 When done, restore transmitter trim to original value and re-power on to avoid the trim affect the flight in other mode.

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