



Snelflight Ghost RC System



Thank you for purchasing the Snelflight Ghost RC system. Comprising a specially commissioned version of the MC6 6-channel transmitter and full-range receiver, the system is very easy to use and excellent value for money. It is specifically designed for Naza-based multi-rotor aircraft, with a 3-position switch on channel 5 and a rotary control on channel 6 for use with extra equipment such as a camera gimbal. The joysticks are smooth and positive, and binding is extremely quick and easy.



Features

- 1) Six channels
- 2) Four proportional joystick channels plus a 3-position switch pre-calibrated for the DJI Naza
- 3) Self-centring throttle for barometric height control systems
- 4) Rotary proportional control on channel 6
- 5) Electronic trims
- 6) Elevon and V-Tail mixing
- 7) Frequency Hopping Spread Spectrum (FHSS) technology
- 8) Quick binding and link-up
- 9) Built-in antenna

IMPORTANT SAFETY NOTICE

- Do not operate radio controlled models at night or in wet weather. Water can permanently damage many of the components of the radio system, possibly causing loss of control. Rain also inhibits 2.4GHz signal propagation.
- Only fly at designated RC flying fields. Fly at safe distances away from people, buildings, electrical lines or other hazards. Failure to observe these precautions could result in injury and/or property damage.
- During flight preparations, lie the transmitter on its back to prevent it from falling over and pushing up the throttle stick. This is a surprisingly common accident.
- Do not allow fuel or oil to contact plastic parts. They may melt when exposed to such materials.
- Do not make adjustments to the radio system while the engine is running, unless absolutely necessary.
- Check transmitter and receiver batteries frequently. Land immediately if the transmitter power LED turns red, or if erratic reception is experienced.
- Radio controlled models are not toys. Never leave models or related equipment within reach of children.
- ALWAYS REMEMBER THAT YOU ARE RESPONSIBLE FOR THE SAFE ASSEMBLY AND OPERATION OF YOUR RADIO CONTROLLED MODEL.

1) Transmitter

The diagram below shows the key features of the transmitter.



- 1) **Power switch:** Slide up to turn on, down to turn off. Shown in the off position.
- 2) **Set-up switches:** Note the positions shown, needed for Naza controllers as shipped. For other models channel reversing switches are provided, along with selections for V-Tail and Elevon mixing.
- 3) **Pitch/Roll joystick:** The aircraft will tilt in the direction that this joystick is moved.
- 4) **Throttle/Yaw joystick:** Moving this joystick up or down will change the motor speed, causing the aircraft to climb or descend. Left or right movements will steer the aircraft in the horizontal plane (like the rudder on a boat).
- 5) **One of four trim controls:** These adjust the joystick centre neutral points. If the aircraft constantly drifts in one direction then the related trim should be adjusted the opposite way. The trims are of the electronic type, which work with repeated clicks in the desired direction. At each click the trim advances slightly, and a short bleep is heard. The bleep is longer when the centre position is reached. At each endpoint, the bleep sounds continuously until the button is released.
- 6) **Channel 6 rotary control:** This can be used to adjust the angle of a camera, etc.
- 7) **Flight mode switch:** On a Naza system, this switch selects between GPS mode, attitude-only "ATTI" mode and Manual flight. The switch endpoints are pre-set to operate the Naza correctly.
- 8) **Power status light:** Shows green when the power is on. Flashes red with audible beeping to indicate low battery.

2) Receiver

The receiver has six channels, and may be powered via any of the channel output sockets. It has a green LED to indicate reception of the transmitter signal. The antenna is short, as is typical in 2.4GHz systems. Please note that the silver tip section is the active part. This should be positioned in an exposed location within the model, away from carbon fibre components.

The receiver can operate on a supply of 4.5 – 6.5V. For reliable, safe operation it is important to ensure that the voltage does not drop below 4.5V at any time. For a model with servos, we recommend using a voltmeter to check that the voltage remains above 4.5V even when all servos are heavily loaded by manually applying back pressure against the control surfaces.

3) Binding the Receiver to the Transmitter

To establish a link when using the system for the first time, the transmitter and receiver need to be bound together. After this, the receiver will not respond to another transmitter unless re-bound. Binding is carried out as follows:

- 1) Connect the special binding plug to the receiver pins labelled "BATT/BIND".
- 2) Power up the receiver – its green light will flash.
- 3) Switch on the transmitter.
- 4) Wait for the receiver's green light to turn off.
- 5) Remove the binding plug – the green light turns on again. Done!

4) Receiver Failsafe System

If no radio signal is present, the receiver will generate output pulses but their positions will default to centre (1.5ms pulse width), for all channels including the throttle. The only exception is the channel 5 switch, whose position will default to a pulse width of about 0.8ms. This is shorter than the minimum operating pulse width which is transmitted. It will trigger a Naza to enter its failsafe mode in which the aircraft will

auto-land. Please note that the receiver does not learn new failsafe positions during binding – the failsafe positions are fixed. **Always test the failsafe behaviour carefully after setting up a model.**

A note about non-Naza models: Because the receiver failsafe sets the throttle position to centre, in the majority of cases it will be necessary to set up the model's motor throttle to operate from centre stick up to maximum –i.e. only half of the joystick's range can be used, even if the self-centre spring is removed. This is very important, so that the motor will go to minimum power in the event of radio signal loss. Some ESCs will allow this, and a glow engine throttle can be mechanically arranged to operate over the required servo range. This limitation can only be avoided if a separate means is used to make the aircraft safe in the absence of a radio signal, as on the Naza. For example, a servo could be connected to Channel 5, and used to mechanically operate an engine kill-switch at the failsafe pulse width of 0.8ms.

5) Specifications

Transmitter

Channels	6
Transmitting frequency	2.4GHz
Modulation type	FHSS
Nominal current drain	100mA
Power supply	8 x AA battery
Output power	100mW
Channel centres	1.5ms

Receiver

Channels	6
Receiving frequency	2.4GHz
Power supply	4.5 – 6.5V
Range	> 1000 yards
Weight	5.5g
Antenna lead length	14cm

Channel throws and directions (Normal switch settings)

Channel 1 Aileron:	1.5 ± 0.4ms, right = short pulses
Channel 2 Elevator:	1.5 ± 0.4ms, backwards (up) = short pulses
Channel 3 Throttle:	1.5 ± 0.4ms, forwards (increase) = short pulses
Channel 4 Rudder:	1.5 ± 0.4ms, left = short pulses
Channel 5 Switch:	1.5 ± 0.3ms, forwards = short pulses
Channel 6 Rotary:	1.5 ± 0.5ms, anticlockwise = short pulses

