



MR210 RACING QUAD USER MANUAL

Highlights

- True 'X' frame, agile and swift
- High performance MindRacer flight controller with 168MHz floating point processor, super fast and accurate
- 10:1 maximum thrust-to-weight ratio
- Full modularized, soldering-free structure design. DroneCode compliant sockets

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Important

Do NOT fly MR210 near any people or animal as it may cause serious damage to human or animal body.

Keep MR210 away from any buildings, vehicles, private properties or public facilities.

Pilots need to keep themselves from MR210 at an safe distance at least 15 meters during the flight.



Physical

	MR210
WheelBase	210mm diagonal
Weight	254g (w/o battery)
Propellers	5030 x2, 5030R x2
Flight controller / Processor	MindRacer v1.2 / STM32F427
IMU / Redundancy	10DOF / N
Motor	2204/2300KV brushless
ESC	30A BLHeli
Video transmitter	5.8GHz 32CH
Camera	Sony 600TVL PAL/NTSC
GPS support (optional)	Y
Optical Flow support (optional)	Y
Lidar support (optional)	N
Battery	1300mAh/4S

Quick Installation

MindRacer 210mm racing quad comes within bind-n-fly package. All components you need to install before flying simply are:

1. propellers
2. video transmitter antenna
3. battery

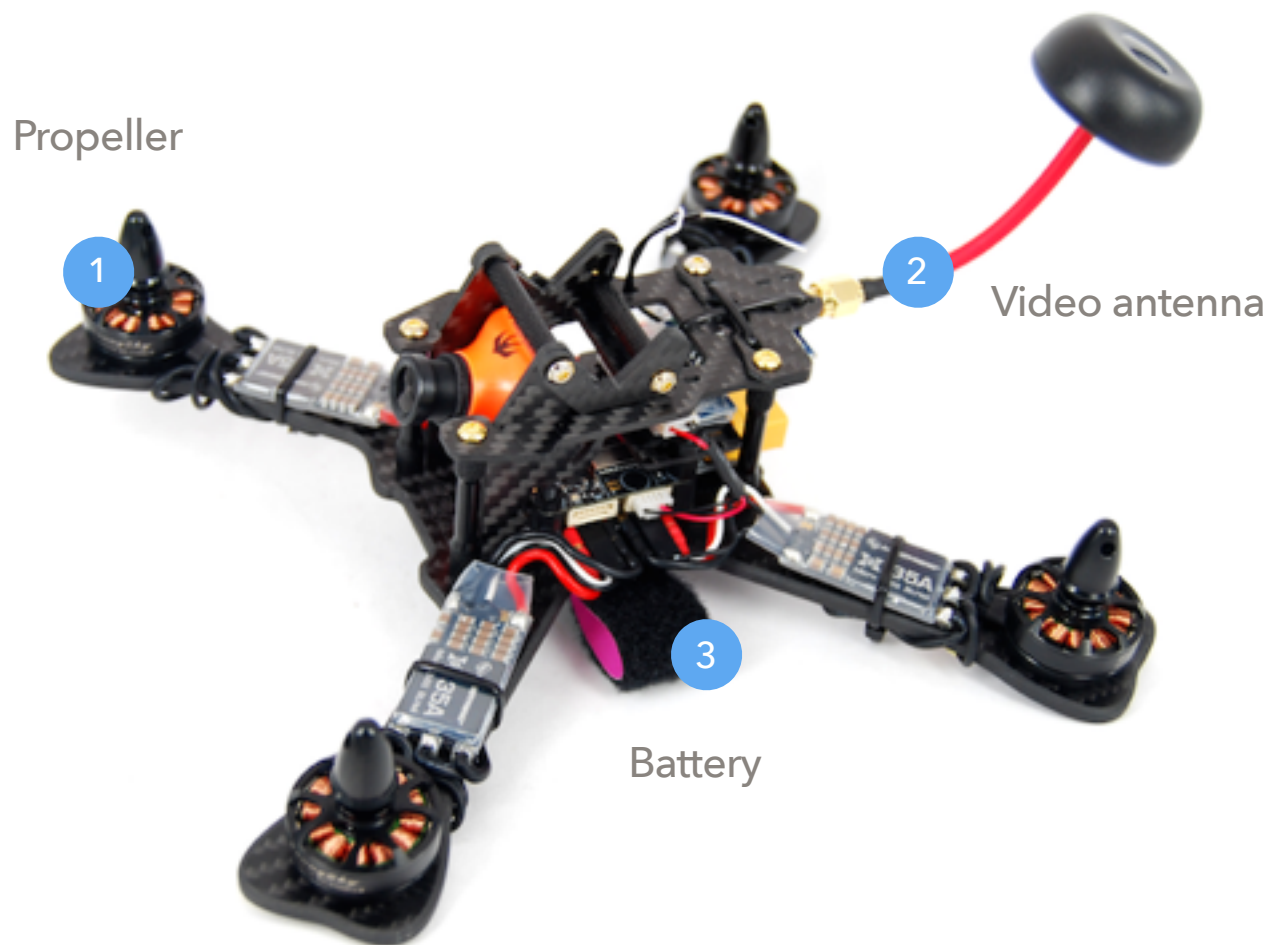


Fig. 1 Quick installation

- Install the propellers

The propellers need to be installed in specified order as in Fig. 2. It is important to notice that installing into wrong position will make the copter overturned and may cause serious harm. The 2 pull propellers should be installed on motor 1 & 2 (clockwise - cw), while the 2 push propellers (marked with 'R') should be installed on motor 3 & 4 (counter clockwise - ccw).

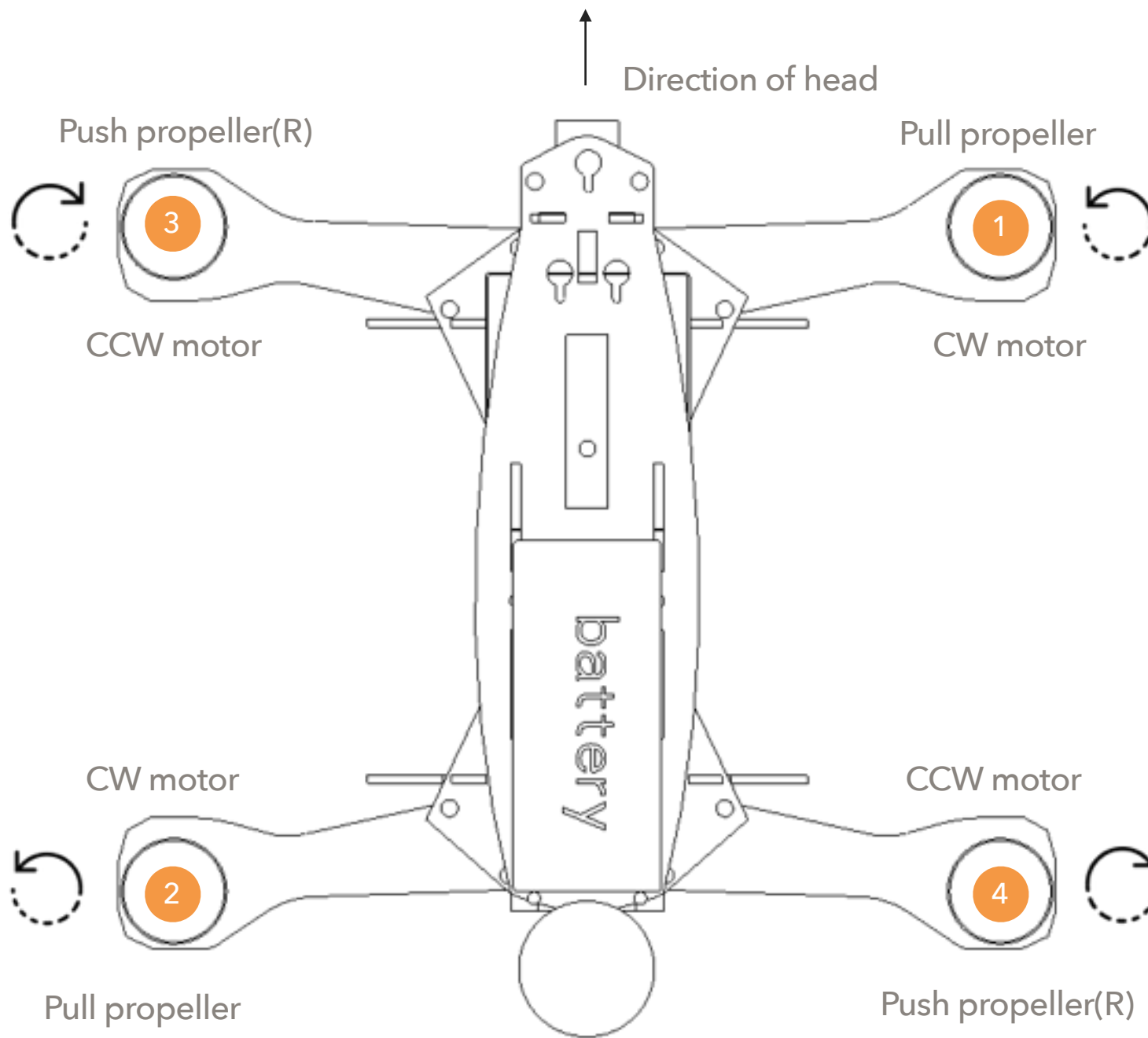


Fig. 2 Install propellers

- Install the video transmitter antenna

The video transmitter antenna is mounted onto the drone via a SMA socket on top tail of the drone. You can easily screw on the antenna by hand.

Important: you have to install the video antenna before power on the drone, or the video transmitter might be damaged.

- Install the battery

The battery should be mounted on the bottom of drone. The bottom surface of battery and the top surface of drone are all attached with nylon fastener tape by default. Place the battery on the position of the nylon fastener tape, and give light push on the battery to make sure it is fastened solidly. Fasten the pre-installed nylon belt around the battery to enhance the mount.

After mounted plug the battery connect to the power head on the tail of drone.

Power On/Off

Once the battery is connected to the power head of drone, all parts will be powered on. The motors may beep several times during the process, wait for the main LED on flight controller turn to breathing blue and the drone is now ready for command.

Disconnect the battery when you finished a flight.

RC Pairing

The remote controller needs to be paired with the drone before it can control the drone to fly. By default, the remote controller comes together with the drone is already been paired with copter so you can skip this step.

However there do have cases you may need to re-pair and do some setting with the remote controller. MR210 can come with several different options that match different type of remote controllers. Please refer to the guide of each type of remote controller for detailed instruction on how to do pairing/re-pairing and common settings when necessary.

Remote controllers may come with MR210 include (but not limited to) FrSky Taranis X9D/PLUS, RadioLink AT9/S, Spectrum DX series, or FlySky i6 series.

[FrSky Taranis X9D/PLUS pairing and setting instructions](#)

[RadioLink AT9/S pairing and setting instructions](#)

[Spectrum DX series pairing instructions](#)

[FlySky AFHDS2A series \(PPM\) pairing instructions](#)

If you want to use other remote controllers with MR210, you will need to check and follow the vendor's guides of that remote controller.

Arm/Disarm

Warning: before arm, please make sure no obstacle can be occluded with drone's spinning propeller.

Note: by default MR210 uses mode 2 (throttle on left) remote controller. All guides below will be based on left throttle pattern.

After the remote controller is powered on and paired, lower the throttle stick to the low-right corner for a few seconds. The propeller will start to spin at a minimum speed. The drone is then in armed state and ready to take off.

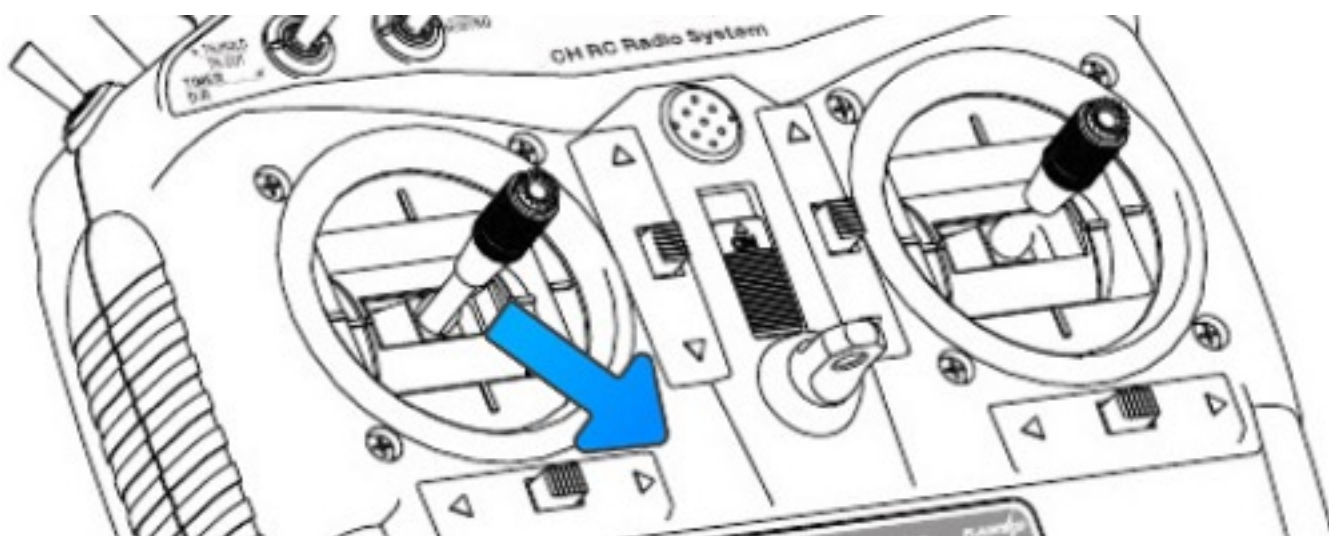


Fig. 3 Arming

To disarm, lower the throttle stick to the low-left corner for a few seconds, the propellers will stop spinning.

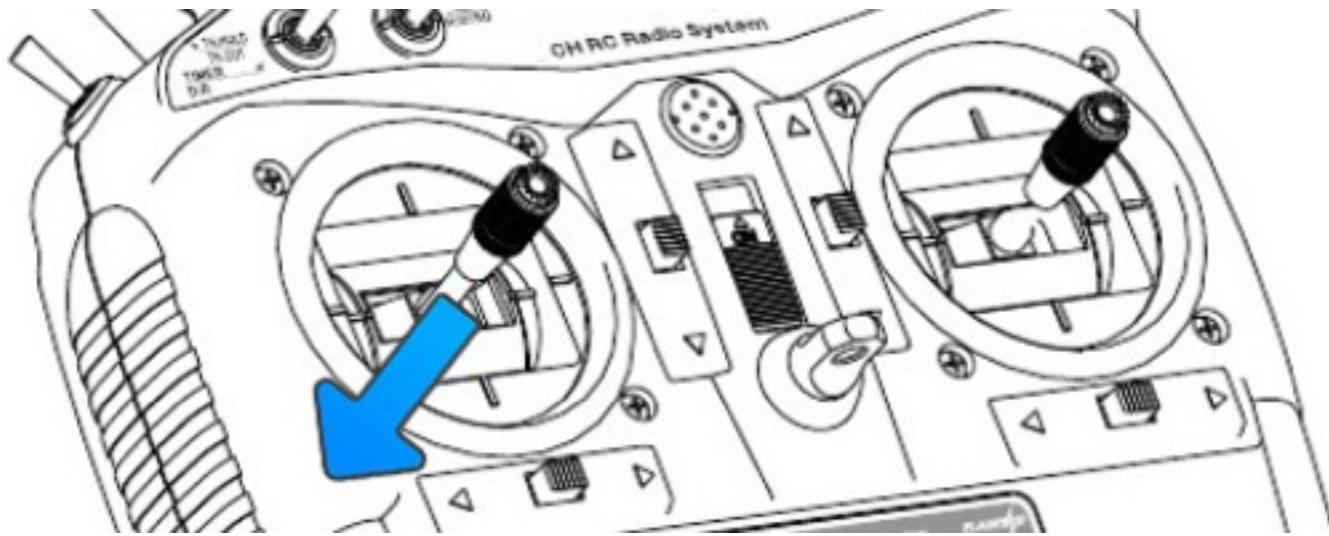


Fig. 4 Disarming

Select Flight Mode

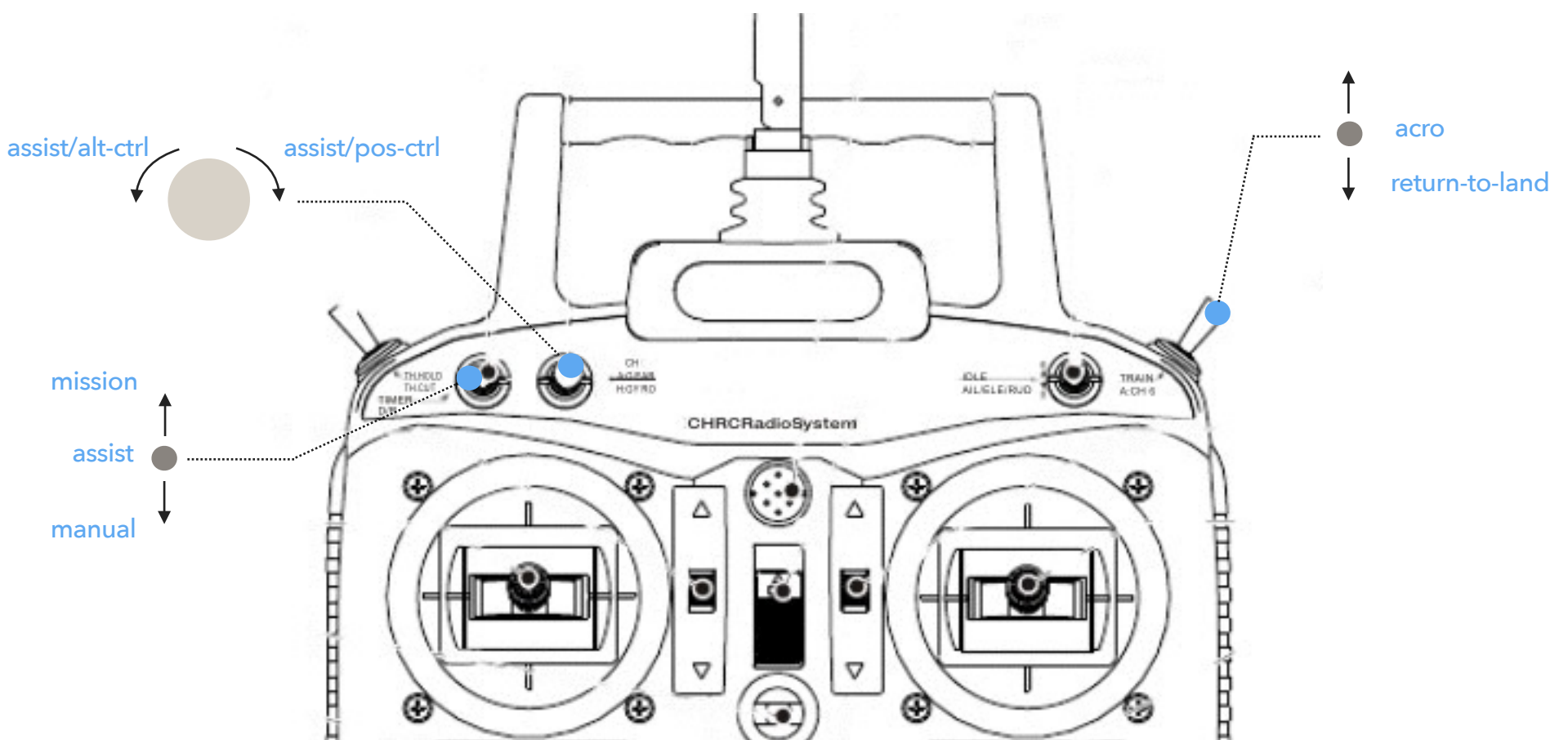


Fig. 5 select flight modes

Flight modes is pre-set on remote controller as in Fig.5. By default 4 flight modes are configurable through remote controller: manual, assist/altitude control, assist/position control, and acro mode.

The modes can be chosen by switches in the remote controller (use WFLY/7 remote controller as an example) as in Fig. 5.

For beginners, manual mode is a good start point, as the drone will auto stabilize its attitude during the flight which makes it easier for pilots to control. When pilots eventually get more and more experienced then can switch to acro mode for a real racing.

Switch layout on different remote controllers are usually different. You can change the layout of mode switches or define more flight modes through QGroundControl. Please refer to MindRacer User Guide document for details.

Flight Black Box - Using a SD Card

MindRacer has a micro SD (TF) card slot. MindRacer will record flight data into the SD card. It is important for reproducing flight course either for training or maintenance purpose. So it is strongly recommended that user inserting a SD card before take off.

The SD card must be formatted with FAT32.

FPV Camera and Display

FPV camera video transmitter needs to be paired with receiver before flight. The channels of transmitter is set by a push button on the transmitter, with LED indicator showing the current selected channel and band. The default channel setting for transmitter is C8(5945MHz).

By default you do not need to adjust any of the setting as during manufacture the default display kit has been paired with the transmitter. In case you want to change the setting or use a different receiver than default display kit, you need to access the the switch group on the video transmitter board.

Note during a racing match, you need to make sure your video transmitter channel setting does not interfere with others.

The detailed frequency and channels settings are listed below (Fig. 6).

Frequency	A	B	C	D	E
CH1	5740MHz	5733MHz	5705MHz	5865MHz	5658MHz
CH2	5760MHz	5752MHz	5685MHz	5845MHz	5695MHz
CH3	5780MHz	5771MHz	5665MHz	5825MHz	5732MHz
CH4	5800MHz	5790MHz	5645MHz	5805MHz	5769MHz
CH5	5820MHz	5809MHz	5885MHz	5785MHz	5806MHz
CH6	5840MHz	5828MHz	5905MHz	5765MHz	5843MHz
CH7	5860MHz	5847MHz	5925MHz	5745MHz	5880MHz
CH8	5860MHz	5866MHz	5945MHz	5725MHz	5917MHz

Fig. 6 frequency and channel settings

Pilots use FPV goggles to receive video streams from drone's camera. The goggles needs to be correctly setup before it can receive video. Please check and follow goggles vendor's guide to set it up. By default the goggles needs to be tuned to the same frequency of MR210's transmitter (5945MHz) to work properly.

Connect to Ground Station

As a professional flight controller, MindRacer has hundreds of parameters that user can tune. Using QGroundControl software from computer is the best way to carefully adjust these parameters.

QGroundControl is a free software that anyone can download and use it on the fly. It can be downloaded from <http://www.qgroundcontrol.org>. Currently it can support all major PC OS platforms including Windows, MacOS, Linux, etc. Select the right version for your OS.

To connect, launch QGroundControl on your PC (Fig. 6).



Fig. 7 Launch QGroundControl

Power OFF the drone first. Use a micro-USB cable to connect the 'USB' port of MindRacer to a PC USB port. The MindRacer flight controller should be powered on. Wait for a few seconds until the flight controllers main LED turns in to any stable color.

Click on the 'Wifi' icon on the up-right corner, and select the displayed drone name to connect (QGC V2.9.x and above can do auto connection so no 'Wifi' icon anymore and you do not need to click on any button anymore). After connecting is successful, the ground station will update its UI with drone's status information.

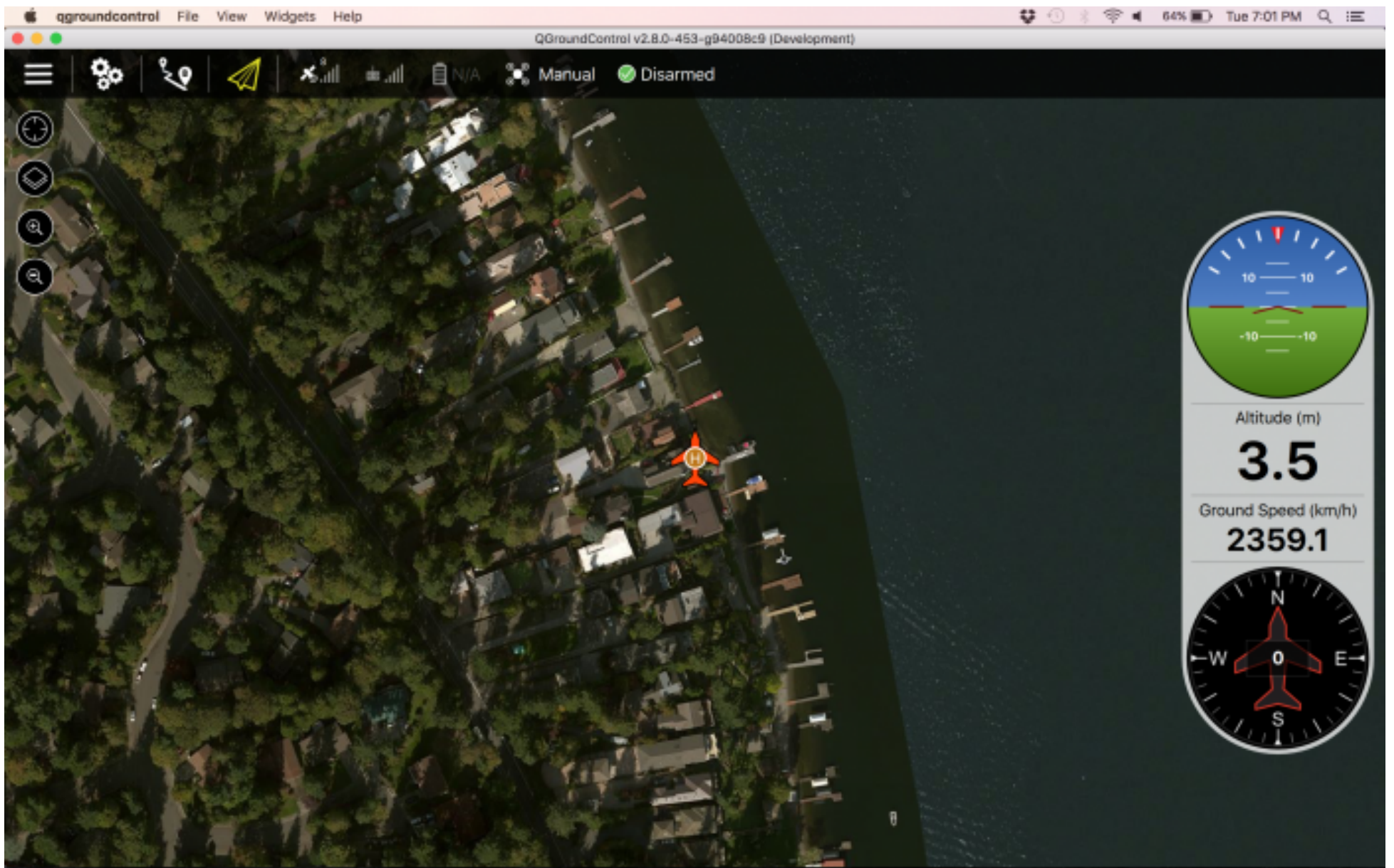


Fig. 8 drone status information

Calibrate New Remote Controller in QGC

In case you need to re-calibrate your remote controller, and configure the flight modes as in Fig. 5, you can do this in QGC as depicted in Fig. 9.

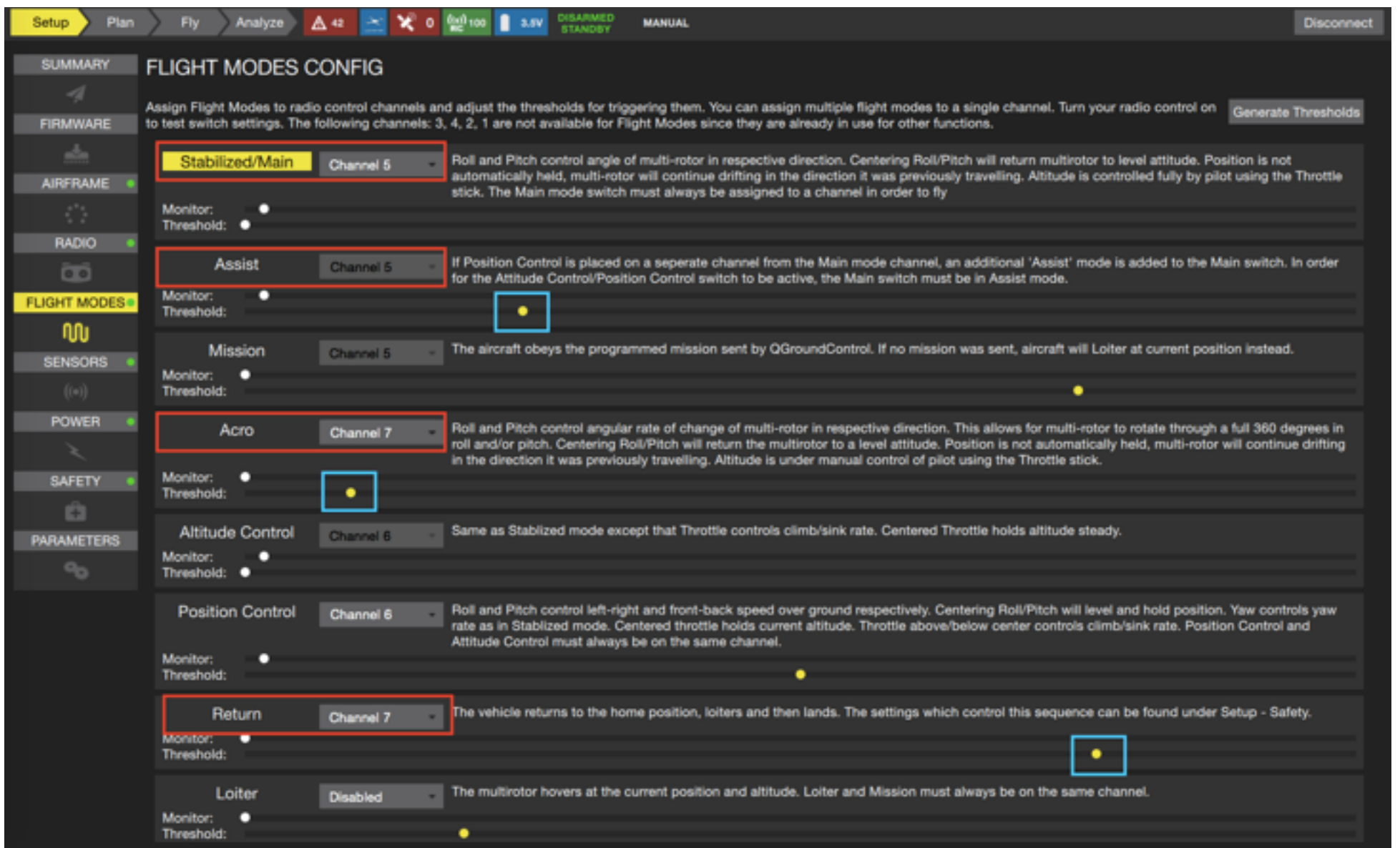


Fig. 9 Re-calibrate remote controller and configure flight modes

Color LED Indicator

The main LED indicator is a tricolor LED and can show different status information with the combination of different colors and blinks. The status information it indicates is listed below:

LED color	meaning (status)	remark
Solid any color	Armed	
Breathing any color	Standby	
Amber	Low battery or Failsafe	(Return to home, etc)
Blue	GPS not locked	
Green	GPS Locked	
Fast Blink & Red	Arming error	
Blink & Red	Other error	
Transitional Green	Mode switch success	

Fig. 10 LED indicator

Support

Please visit www.mindpx.org for more information. If you have any technical issues related to our products, please post on MindClub forum club.mindpx.net to ask for help, Or you can send email to support@mindpx.net.

Where to buy

You can buy MindRacer or related accessories/spare parts at [AirMind Store](#) .