

NAZA HELI

Quick Start Guide

V1.0

Please strictly follow these steps to mount and connect the NAZA-H system on your helicopter, as well as to install the Assistant Software on your computer.

The NAZA-H is very sensitive to vibrations and excessive vibration may impact the normal operation of the system. If you experience excessive vibration on your helicopter, please adjust the rpm of the main rotor to reduce the vibration or find other causes for the vibration, and then you can continue to fly.

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NAZA-H has achieved CE, FCC and RoHS certification.

*This manual is only for basic assembly and configuration; you can obtain more details and advanced instructions when using the assistant software. To assure you have the latest information, please visit our website and download the latest manual and current software version.

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NAZA-H Introduction

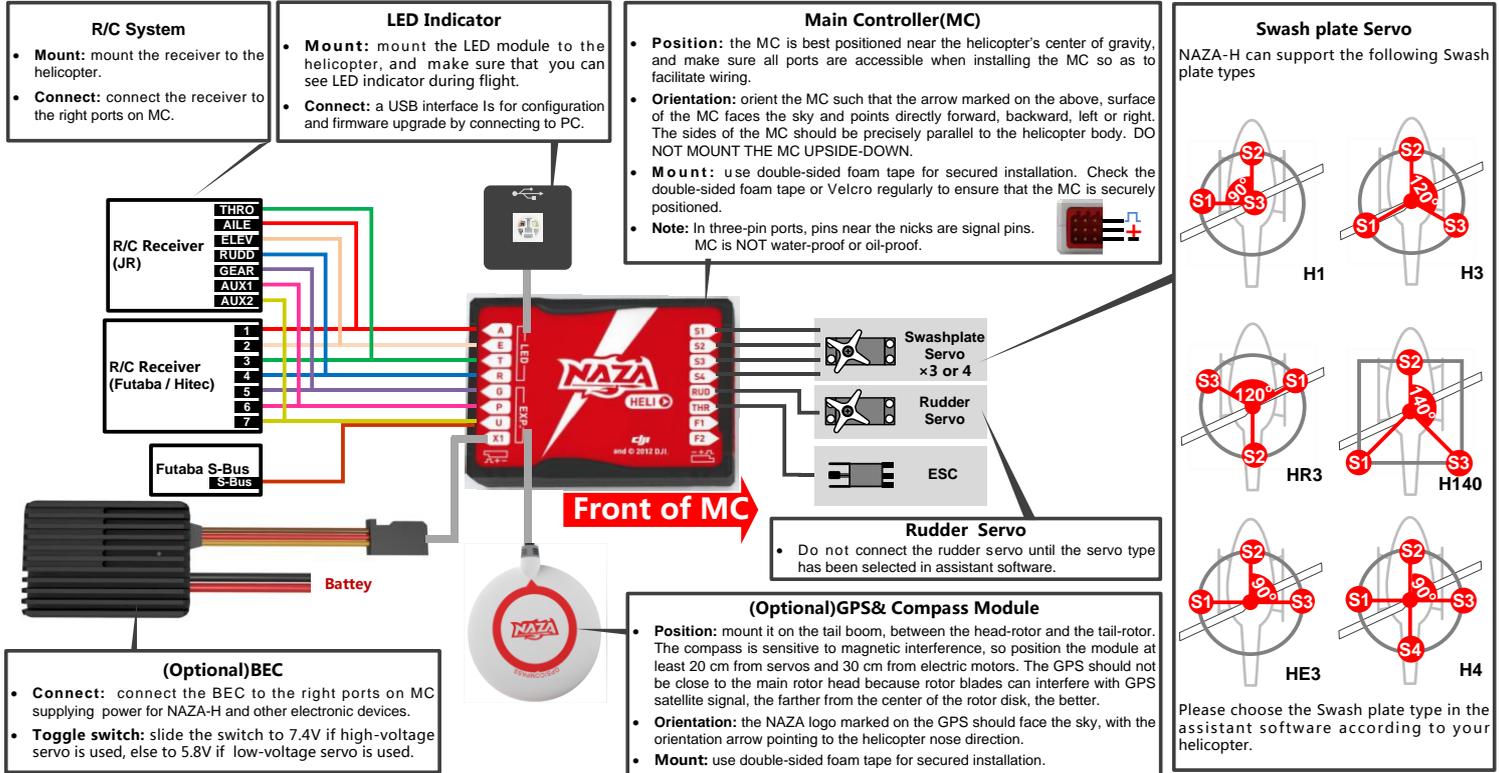
The NAZA-H includes Manual Mode, ATTI. Mode and GPS ATTI. Mode (optional). It is a flight control system designed for all helicopter enthusiasts with the functions of self-leveling, built-in tail gyro and position holding in the GPS mode, which completely takes the stress out of flying R/C helicopters for both professional and hobby applications. Standard NAZA-H includes the main controller and LED indicator with optional GPS module and BEC module. It can be installed in a variety of models, from small to large electric helicopters, including 450 , 500 , 600 and 700 Electric Helicopter.

Procedure Steps

NO.	Steps	Description	Page
Step1	Assemble	Assemble NAZA-H components and receiver to the helicopter, and connect the receiver, main controller, LED Indicator. GPS & Compass module, BEC module (optional).	Assembly ----4
Step2	Install Software and Driver	Please download the DJI Driver Installer and the NAZA-H assistant software from the DJI website and then install them to your PC.	Software and Driver Installation ----5
Step3	Use Assistant Software	Configure the helicopter according to the setup wizard, including the following procedures: choose receiver type, set control mode switch, calibration of the remote control, choose the rotor and the swashplate type, etc. Configure the common parameters, such as autopilot parameter, alarm voltage, etc.	Assistant Software Usage ----5
Step4	Calibrate Digital Compass	If the GPS module is used, toggle the control mode switch from Manual Mode to GPS ATTI. Mode to enter the calibration mode and finish calibration.	Digital Compass Calibration ----6
Step5	Know the Auto Trim Flight	Please complete the auto trim flight in calm air weather, after first assembly and after mechanical adjustment.	Auto Trim Flight Knowledge----7
Step6	Know the control mode	Make sure you have a good understanding about the working features of the three control modes.	Control Mode Knowledge----8
Step7	Test Flight	Please strictly follow the procedures during the flight test for all the flight modes.	Test Flight ----9

Step 1 Assembly

Install the main controller, LED module and receiver to the helicopter, and connect according to the following diagram. GPS & Compass(optional), BEC module (optional).



Step2 Software and Driver Installation

- STEP1** Please download driver [DJI Driver Installer.exe](#) and assistant software from DJI website.
- STEP2** Connect the NAZA-H and the PC via USB cable, power on the NAZA-H system.
- STEP3** Run [DJI Driver Installer.exe](#), and follow the instructions strictly to finish installation.
- STEP4** Run assistant software installer, and follow the instructions strictly to finish installation.

Step3 Assistant Software Usage

- STEP1** Connect the NAZA-H to the PC with a Micro-USB cable. DO NOT break the connection until setup is finished.
- STEP2** Run the NAZA-H Assistant Software.
- STEP3** If the communication indicator is on, please double check the connections and driver installation; otherwise if the indicator is blinking, go to next step.
- STEP4** Select [Info](#)→[Software](#) and [Firmware](#). Check whether the assistant software and the firmware upgrade are available. If available, please upgrade the assistant software and the firmware by referring to the appendix. Otherwise, go to next step.
- STEP5** Select [Setup](#). Please follow step-by-step for your first-time-configuration.
- STEP6** Select [Common](#) and fill in the required values. You can click the [Advanced](#) option for more parameter settings.
- STEP7** Check your R/C transmitter channels through the channel monitor. Monitor the servo battery and main battery voltages. Choose and set the warning voltage for servo battery and main battery. Make sure the helicopter parameters set by the setup wizard are correct. Observe the tail gyro gain settings indicated in the status bar at the bottom of the software window.

Tips:

Please make sure to set the tail gyro gain using the R/C transmitter, using the G channel of NAZA-H main controller.

Step4 Digital Compass Calibration

Please calibrate the compass using the following steps, if the GPS module is used, else skip.

STEP1 Quickly switch the control mode switch from **Manual Mode** to **GPS ATTI. Mode** for 6 to 10 times (Manual Mode -> GPS ATTI. Mode -> Manual Mode is one time) and the LED indicator will be constantly on in yellow ●.

STEP2 Rotate you helicopter around its horizontal axis until the LED lights green ● constantly.

STEP3 While the green LED ● is constantly on, hold your helicopter vertically and rotate it around its vertical axis, keep rotating until the green LED ● is off, meaning the calibration is finished.



STEP4 After you finished the calibration, the LED indicator will show whether the calibration is successful or not:

- If calibration was successful, calibration mode will exit automatically.
- If the LED keeps blinking red ● quickly, the calibration has failed. Switch the control mode switch one time to cancel the current calibration, and then re-start from the step 1 for re-calibration.

Important:

- Please complete the calibration in an open area.
- If you keep having calibration failure, it might suggest that there is very strong magnetic interference around the GPS & Compass module, please avoid flying in this area.

Step5 Auto Trim Flight Knowledge (Only for Flybarless)

Auto Trim flight is to eliminate any bias of the mechanical neutral position, in order to achieve better 3D flight performance, especially rotation flight performance. Please complete the auto trim flight in calm air weather, after the first successful test / trim flight and after mechanical adjustment.

Tips:

- Auto Trim flight is only for *flybarless* types of helicopter.
- You may not need to do auto trim flight if the mechanical neutral position is precise enough or only for normal flight (non 3D).

STEP1 Make sure all connections are correct and connected firmly, and all batteries are fully charged and then turn on the R/C system.

STEP2 Quickly switch the G channel switch from Tail Locked to Non Tail Locked for 3 to 5 times.

STEP3 The red LED is on and the tail starts the initialization movement, DO NOT moves the helicopter or the TX sticks during this time.

STEP4 Take-off and hover your helicopter in Manual Mode, using as little R/C transmitter stick movement as possible during this hover flight.

STEP5 Hover the helicopter for about 1~2 minutes until the red LED turns off, and the system will exit from the auto trim flight mode.

STEP6 You may now fly your helicopter without power cycling.

Step6 Control Mode Knowledge

When you use the NAZA-H system, there are three control modes for selection. NAZA-H can work in Manual Mode and ATTI. Mode without a GPS module. After connection to the GPS module, GPS ATTI. Mode is available. Please pay attention because the GPS ATTI. Mode is dependent on the number of GPS satellites acquired by the main controller.

Different control modes will give you different flight performances. Please make sure you understand the features and differences of the three control modes.

Manual Mode

- In Manual Mode, all the operation is the same as normal helicopter, depending on experience.
- It is appropriate for 3D flight. Select Manual Mode for Auto Rotation flight.

ATTI. Mode /GPS ATTI. Mode

- The Roll and Pitch stick command from the R/C TX corresponds to the Roll and Pitch angle of the helicopter.
- The Yaw stick command from the R/C TX corresponds to the rotation velocity of the helicopter and the rotation velocity is slower than in Manual Mode.
- When you switch to ATTI. Mode or GPS ATTI. Mode, the NAZA will record the hover pitch stick position. The command of this stick now corresponds to the vertical velocity of the helicopter.
- In GPS ATTI. Mode, keep the Tx sticks at the center position, the helicopter will hold position in the horizontal direction.
- When you switch to ATTI. Mode or GPS ATTI. Mode, the NAZA will record the throttle position. The throttle will hold this position while in ATTI. Mode or GPS ATTI. Mode, so the motor rotation speed cannot be changed. The motor will not stop even if the throttle stick is at the bottom position. Please switch to the Manual Mode if you need to change the motor rotate speed or even stop the motor.
- Has the function of auto level fail safe and low-voltage alarm.

How to enter the different control mode?

STEP1 Use a 3-position switch on the TX as mode control switch.

STEP2 Make sure to take off the helicopter in Manual Mode in every flight.

STEP3 Hover the helicopter if the Manual Mode flight is normal. Release all joysticks and then flip the control mode switch to the ATTI. Mode or GPS ATTI. Mode, **the Tx stick neutral positions are recorded automatically.**

Note: Do not move any Tx joystick when switching the mode switch, and do not switch the mode switch while the helicopter is flying inverted.

* This is the standard way to enter the ATTI. Mode and the GPS ATTI. Mode, please refer to the assistant software for more details.

Step7 Test Flight

Note :

- When the system is powered on, DO NOT move your helicopter or sticks on the R/C transmitter until the system initialization has finished (about 5 seconds).
- Do NOT move any command sticks during the system start and self-check procedure! Please contact us if the last four green blinks are abnormal.
- You may need to adjust the gain of the tail gyro using the R/C transmitter.
- For the first flight of a **flybarless** helicopter, please finish the Auto Trim flight after you have completed a successful test / trim flight.
- Do not enter ATTI. Mode /GPS ATTI. Mode flight immediately after violent 3Dflight.
- Make sure the compass has been calibrated before GPS ATTI. Mode flight.
- Read the LED description in the appendix get more accurate understanding of the controller.

First, carry out Manual Mode Test Flight (Adjust the tail gyro gain in Manual Mode if required.)

STEP1 Make sure all connections are correct and firm, and all batteries are fully charged and then turn on the R/C transmitter.

STEP2 Place your helicopter on a horizontal surface and power on the NAZA-H and electric devices on the helicopter, except the brushless motor controller.

STEP3 Check the LED indicator, if red LED blinks quickly & continually, connect to the PC for checking.

STEP4 Slide the control mode switch on your R/C transmitter to make sure it is working properly, refer to the LED indicator for the MODE selection.

STEP5 If everything is checked without any problems, switch to **Manual Mode**, move all the sticks on your R/C transmitter to check that the helicopter is responding correctly to your commands.

STEP6 Take-off and fly your helicopter in **Manual Mode**.

Select ATTI. Mode Test Flight if Manual Mode Test Flight is successful

STEP7 Hover your helicopter, and switch to **ATTI. Mode**.

STEP8 Finish and land the helicopter.

Select GPS ATTI. Mode Test Flight if GPS module is used (Make sure that all the autopilot parameters have been configured in the [Common](#) page of the Assistant Software.)

STEP9 Switch to GPS ATTI. Mode, make sure the green LED is blinking.

STEP10 Red LED maybe blink, which indicates that the NAZA-H is still acquiring GPS satellite signals, wait until the red LED is off, meaning the NAZA-H have found more than 7 GPS satellites.

STEP11 Switch the system to **Manual Mode** and take-off and fly your helicopter in **Manual Mode**.

STEP12 Hover your helicopter, and switch to **GPS ATTI. Mode**.

STEP13 Finish and land the helicopter.

Tips :

Please avoid using the system in urban area with many high buildings, tunnels or under bridges, where the GPS signal is most likely to be lost.

Appendix

Firmware & Assistant Software Upgrade

Please follow the procedure for software and firmware upgrade; otherwise the NAZA-H might not work properly.

- STEP1** Make sure your computer is connected to the Internet.
- STEP2** Please close all the other applications during the firmware upgrade, including anti-virus software and firewall.
- STEP3** Make sure the power supply is securely connected. DO NOT un-plug the power supply until firmware upgrade has finished.
- STEP4** Connect NAZA-H to PC with Micro-USB cable, DO NOT break connection until firmware upgrade is finished.
- STEP5** Run Software and wait for connection.
- STEP6** Select **Info** → **Software** and **Firmware**.
- STEP7** DJI server will check your current software and firmware version, and get the latest software and firmware prepared for the unit.
- STEP8** If there is a software version more up-to-date than your current version, you will be able to click to download the new version. Please re-install the assistant software follow the prompts
- STEP9** If there is a firmware version more up-to-date than your current version, you will be able to click to update them. Wait until Assistant software shows “finished”. Click **OK** and power cycle the unit after at least 5 seconds.
- STEP10** Your unit is now up-to-date.

Note:

- After firmware upgrade, please re-configure the NAZA-H using Assistant software.
- If the network or DJI server is busy, try again later with above procedures.
- If firmware upgrade failed, NAZA-H will enter **waiting for firmware upgrade status** automatically, please try again with the above procedures.
- You may be asked to register by filling in the contact information before upgrade.

Ports Description

MC	
	Stick operation, for cyclic roll or left/right
	Stick operation, for cyclic pitch or front/back
	Stick operation, for throttle control
	Stick operation, for rudder control
	Switch operation, for gyro sense adjusting
	Stick operation, for collective pitch or up/down
	Switch operation, for Control Mode Switch
	For Voltage Monitor (Connect to BEC module)
	To #1 swashplate servo
	To #2 swashplate servo
	To #3 swashplate servo
	To #4 swashplate servo
	To ESC
	To rudder servo
	Reserved
	Reserved
	LED port, for LED wire connection of LED Module
	GPS port, for GPS module wire connection
LED Module	
LED Cable	LED cable, to MC's LED port
	Micro-B USB port: PC connection for configuration and firmware upgrades
BEC Module (Optional)	
Switch	A 2-position switch which is selection for high-voltage or low-voltage servos, and provides voltage detection function at the same time. <ul style="list-style-type: none">● 7.4V: high-voltage servo● 5.8V: low-voltage servo
BEC Cable	To MC X1 port.
Power Supply Cable	For battery connection

Specifications

Mechanical & Electrical Parameters

Part	Size(mm)	Weight (g)	Operating temperature	Input Voltage(V)	Consumption(W)	Specified Output(W)
MC	45.5x31.5x18.5	25		4.8-8.4	1.5 (300mA@5V)	----
BEC	39x 27.5x12.7	37	-10°C ~ 50°C	11 ~52	7.4V: 0.25(10mA@25V) 5.8V: 0.375 (15mA@25V)	37(5A@7.4V) 29 (5A@5.8V)
LED	25 x 25x7	13.4		4.8-8.4	0.3(60mA@5V)	----
GPS	46 (diameter) x9	21.3		4.8-8.4	0.3(60mA@5V)	----

Hardware Functions Supported

Supported Helicopter Types 450 , 500 , 600 , 700 Electric Helicopter

Supported Swashplate Types H1 , 120° , 140° , Four Servo 90°

Supported Servo Output Analog 50Hz(1520us center point)

Digital 145Hz (1520us center point)

Tail Servo Output

Analog 50Hz(1520us center point)

Digital 333Hz/560Hz(760us center point)

Digital 125Hz/165Hz/270Hz/333Hz(1520us center point)

Recommended Power Supply LiPo Battery

Input Channel 8

Output Channel 8

Assistant Software System Requirement XP 32,64; Win7 32,64

Software Functions Supported

Autopilot System Manual Mode / ATTI. Mode / GPS ATTI. Mode (with GPS module)

Built-In Functions

- Tail Gyro
- Flybarless supported
- Low-voltage Alarm (RX voltage and Motor voltage if using the DJI BEC)
- Auto Hover or Level Fail Safe
- S-Bus/PPM Receiver Supported

Performance Parameters

Performance	Manual Mode	ATTI. Mode	GPS ATTI. Mode
Wind Resistance	----	----	<4 level (By the heli)
Hovering accuracy	----	----	Vertical: ± 0.8m, horizontal:± 2.5m
Flight height limit	R/C range	R/C range	R/C range
Max Yaw Angular Velocity	450 deg/s	130 deg/s	130 deg/s
Max Tilt Angle	None	45 deg	<45 deg(By flight velocity)
Max Ascent / Descent	None (By the heli)	6m/s(By the heli)	6m/s(By the heli)