


seeed studio  
2002 Series  
Recamera  
Gimbal



# seeed studio 2002 Series Recamera Gimbal User Manual

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# seeed studio

seeed studio 2002 Series Recamera Gimbal



**Product Usage Instructions**

**About reCamera Gimbal series**

The reCamera gimbal 2002 series is the first open-source camera control system, composed of one tiny AI camera – reCamera 2002w 8GB/64GB, and one compatible 2-Axis gimbal basement with 2 brushless motors. It is powered by an RISC-V Soc, providing 1 TOPS AI performance with video encoding at SMP @30 FPS. It offers a Lego-like self-assembly package and integrates the Sensecraft AI platform and Node-RED platform for smooth Node-based programming and pipeline construction, enabling rapid prototyping applications base on Yolo VS/V8/II, or self-training the model based on your own needs.

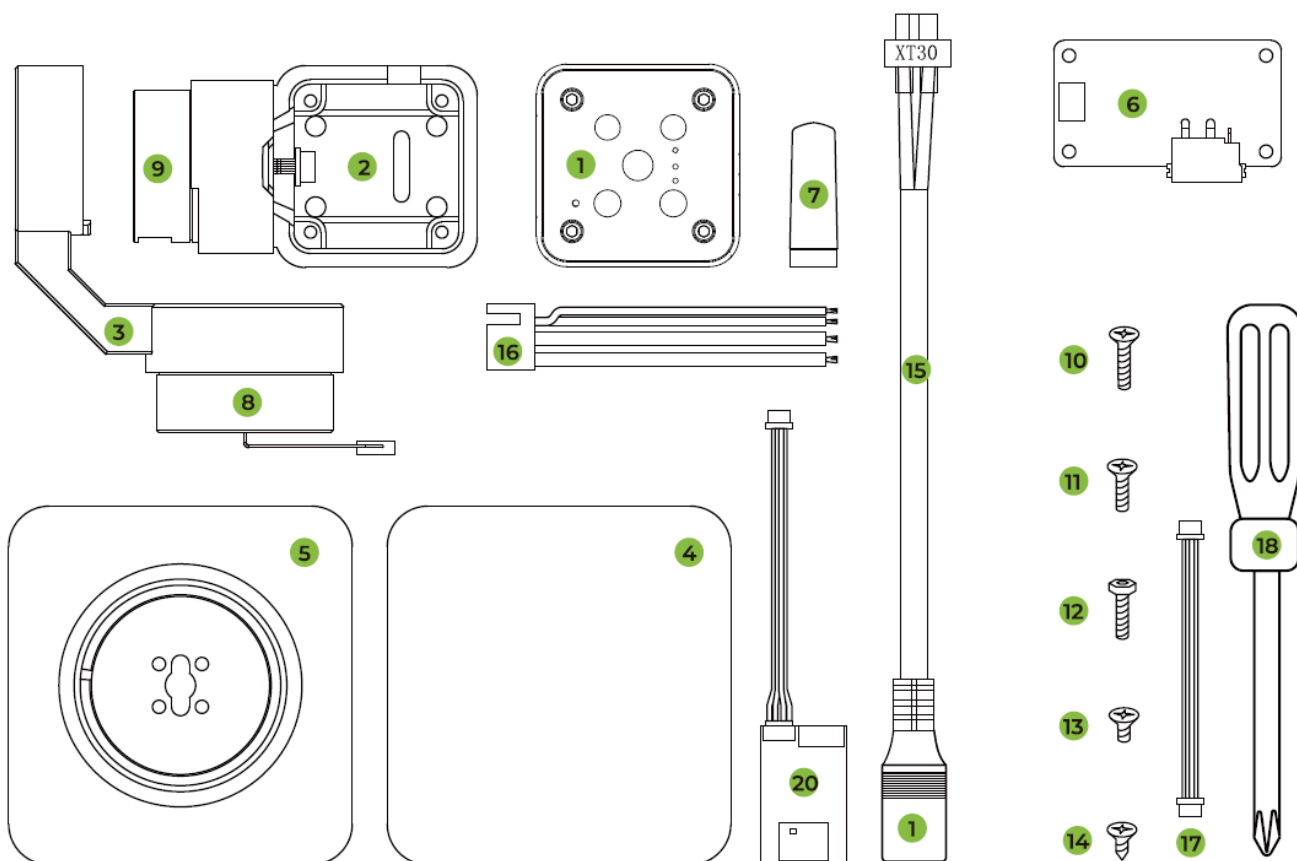
**reCamera Product Series**

	reCamera Gimbal 2002 w8GB	reCamera Gimbal 2002w64GB	reCamera 20028GB	reCamera 2002 64GB	reCamera 2002w8GB	reCamera 2002w64GB
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Core Board	Core 2002w 8GB	Core 2002w 64GB	Core 2002 8GB	Core 2002 64GB	Core 2002w 8GB	Core 2002w 64GB
Sensor Board	SI0I(OV5647)	SI0I(OV5647)	SI0I(OV5647)	SI0I(OV5647)	SI0I(OV5647)	SI0I(OV5647)
Base Board	B401	B401	BIOI	BIOI	BIOI	BIOI
Wireless (Wi-Fi/BT)	✓	✓			✓	✓
Mounting Method	Vertical	Vertical	Magnetic/Camera Bracket Mount	Magnetic/Camera Bracket Mount	Magnetic/Camera Bracket Mount	Magnetic/Camera Bracket Mount
Power Supply	DC Jack cable/XT30(2+2)	DC Jack cable/XT30(2+2)	Type-C cable	Type-C cable	Type-C cable	Type-C cable

## Part List

1. reCamera 2002w xl
2. reCamera Gimbal Head xl
3. reCamera Gimbal Arm xl
4. reCamera Gimbal Base Cover xl
5. reCamera Gimbal Base xl
6. Power Supply Board xl
7. Antenna xl
8. Motor MS3S06 xl
9. Motor MS3008 xl
10. Screw A(KAB3.0x10.0mm) xl
11. Screw B(KM2.0x6.0mm) xl
12. Screw C(M2.0x10.0mm) xl
13. Screw D(KM2.0x4.0mm) xl
14. Screw E(KA2.0x6.0mm) xl
15. DC Power Female Jack to XT30 Connector xl
16. XT30(2+2)-F Connector with Wire xl
17. Micro JST PH 2.0 6Pin Female to Female Wire xl
18. Screw Driver(M2.0xL55mm) xl
19. Hex Key xl
20. Motor Adapter Board xl
21. User Manual xl



## Specification

Processing System	
SOC	SG2002
CPU	C906@1GHz + C906@700MHz
AI Performance	1 Tops @ Int8
MCU	8051 @ 8KB SRAM
Operating System	Linux
Memory	256 MB
Video Encoder	5MP @ 30Fps
Basic	
Camera Sensor	OV5647
eMMC	8GB / 64GB
Power Supply	12V DC Jack to XT30 connector
Power Consumption(static)	12V,185mA;
Interface	
USB	USB 2.0 Type-C
Wireless	Wi-Fi 2.4G/5G Bluetooth 4.2/5.0
Button	1 x Reboot Button, 1 x User Button
Fill LEDs	4 x 0.3w White Light

LED	1 x Power Indicator, 2 x 10 programmable indicator	
Mic	On-Board Mic	
Speaker	External Speaker	
Motor Spec	MS3008	MS5306
<b>Turns</b>	54	60
<b>Rated Voltage(V)</b>	72	72
<b>Max Speed(rpm)</b>	2000	2700
<b>Rated Torque(N.m)</b>	0.04	0.05
<b>Rated Speed(rpm)</b>	7760	7250
<b>Rated Current(A)</b>	0.64	0.79
<b>Max Power(W)</b>	4.6	6.4
<b>Motor Poles</b>	74	
<b>Operating temperature (0C)</b>	-25~60	
<b>Motor Weight(g)</b>	49	63
<b>Drive Input Voltage (V)</b>	6~76	
<b>Communication</b>	CAN	
<b>Communication Frequency (Hz)</b>	CAN@7Mbps:2KHz	
<b>Encoder</b>	75 bit Magnetic Encoder	
<b>CAN Baud Rate</b>	700K, 725K, 250K, SOOK, 7M	

Control Mode	Open Loop(24KHz) /Speed Loop(4KHz) /Position Loop(2KHz)
<b>Ambient Conditions</b>	
Operating Temperature	-20~50 ℃
Operating Humidity	0~90%
<b>Others</b>	
Heat Dissipation	Fanless
Warranty	1 year
<b>Mechanical</b>	
Finished Product Dimension(W x H x D)	68x112x71mm
Enclosure	Polyamide(PA) Nylon
Weight(Net)	230g

## Assembly Guide

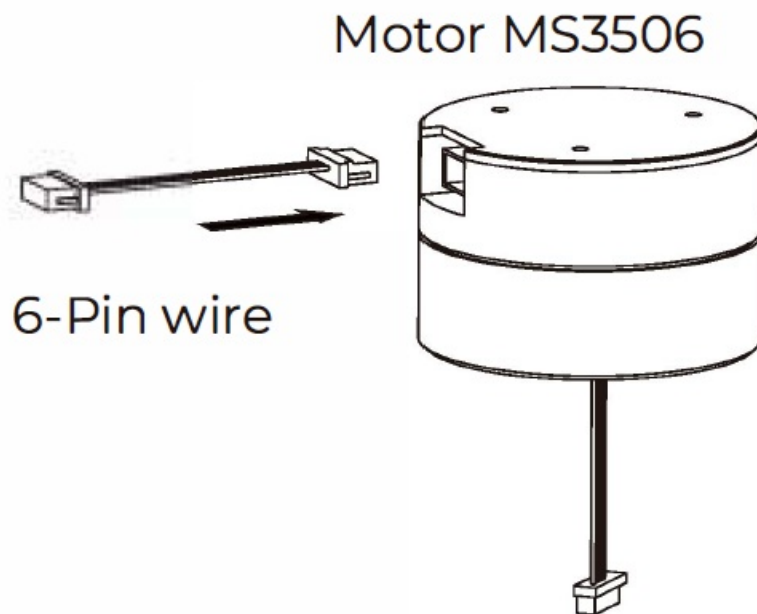
### Introduction

This reCamera gimbal utilized two high-performance and high-precision brushless DC motors to achieve a 2-axis gimbal stabilizer, capable of attaining pixel-level stability and enabling a smooth 350° rotation. This tutorial will guide you step by step to assemble all the components. Please first ensure that all components are included according to the part list, and then start assembling and DIV your first open-source brush less-motor AI camera Gimbal.

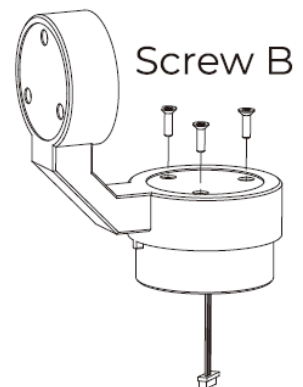
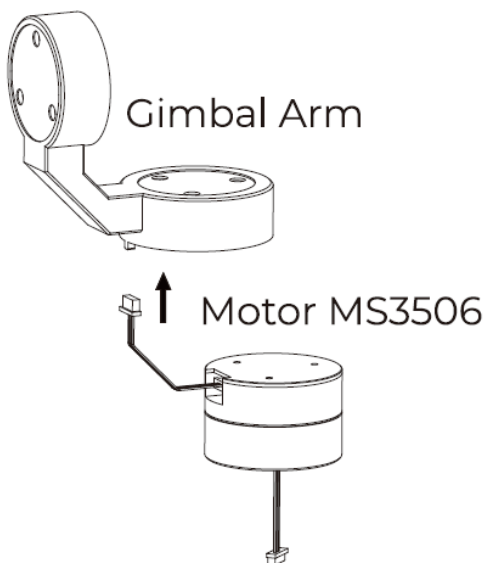
### Assembly Gimbal Arm

#### • Step 1

Insert the Micro JST PH 2.0 6-Pin Female to Female Wire into the JST connector of the Motor MS3506 in the correct direction.

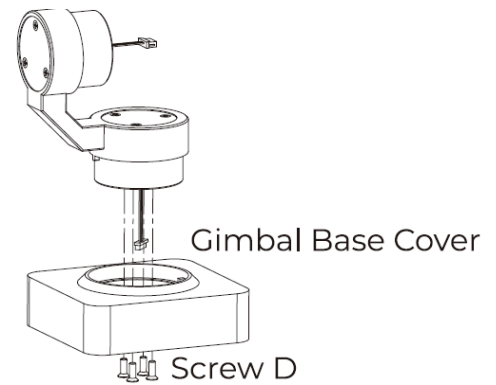
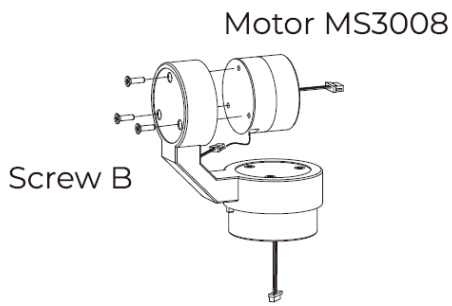


- **Step 2**  
Pass the 6-Pin wire from under the gimbal arm and pull it out.
- **Step 3**  
Use 3 x Screw B to attach Motor MS3506 to Gimbal Arm



- **Step 4**  
Connect the other end's JST Connector of the 6-Pin Wire to the Motor MS3008 and tighten it with Screw B.
- **Step 5**  
Pass the signal wire of the Motor MS3506 through the hole of the gimbal base cover and fix it with Screw D.
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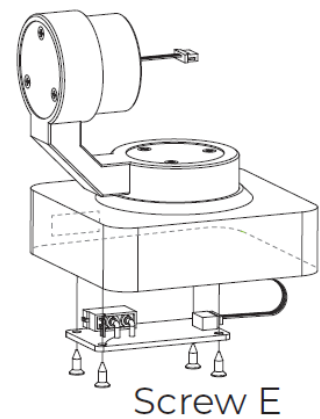
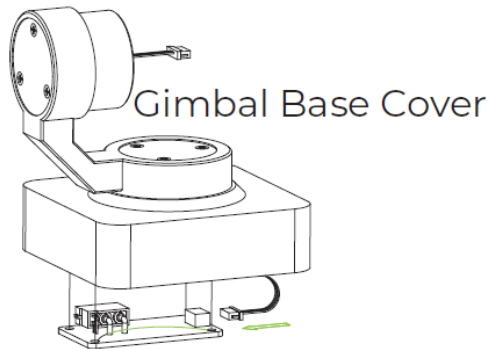
### Step 6

Connect the signal wire of Motor MS3506 to the power supply board. Place the power supply board inside the gimbal base cover.

### • Step 7

Make sure the power cable connector is facing outward in the hollow frame of the base cover (where there are marks for the power supply details), then tighten the board with Screw E

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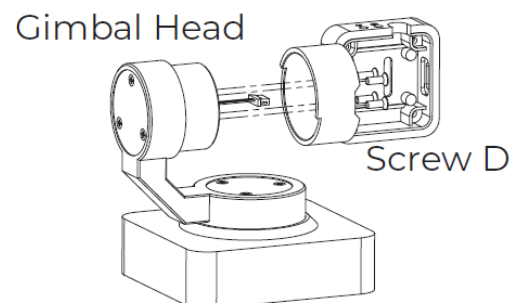
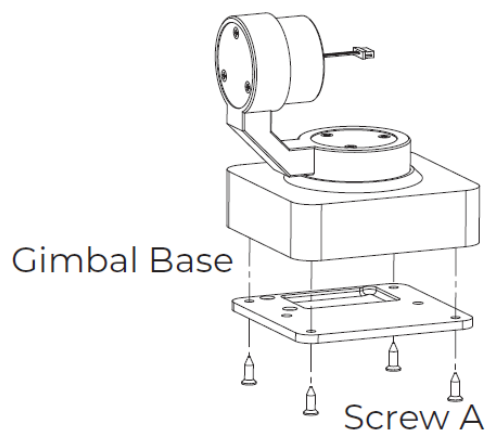


### Step 8

Position the gimbal base correctly and fix it with Screw A.

### • Step 9

Pass the signal wire of the Motor MS3008 through the hole of the gimbal head and tighten it with Screw D.

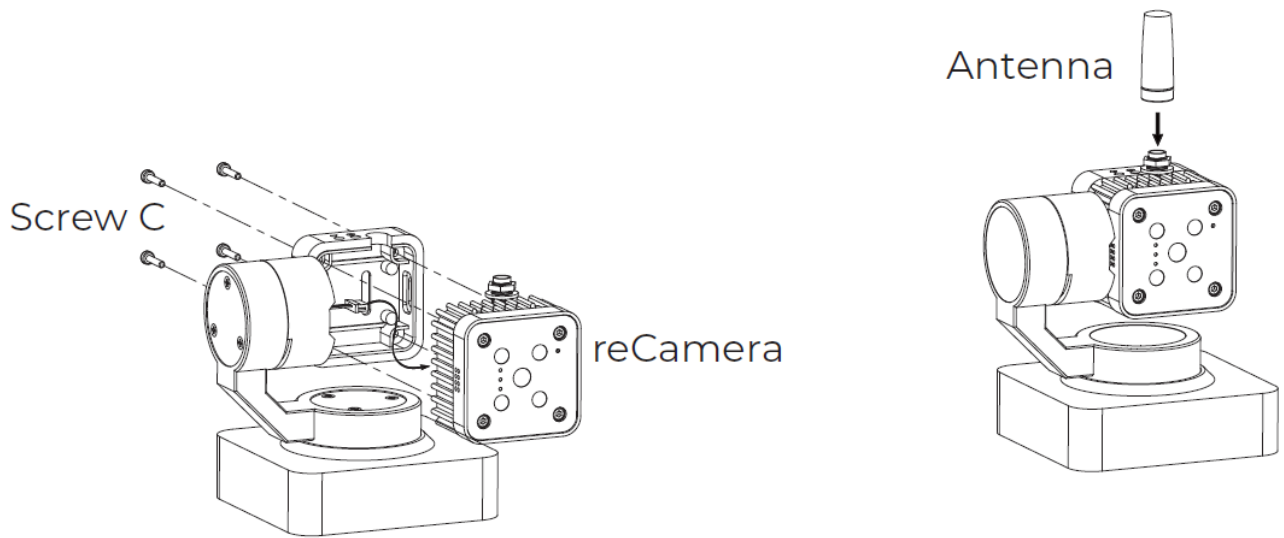


### • Step 10

Connect the other end of the signal wire to the reCamera 2002w and use Screw C to attach the reCamera to the gimbal head properly.

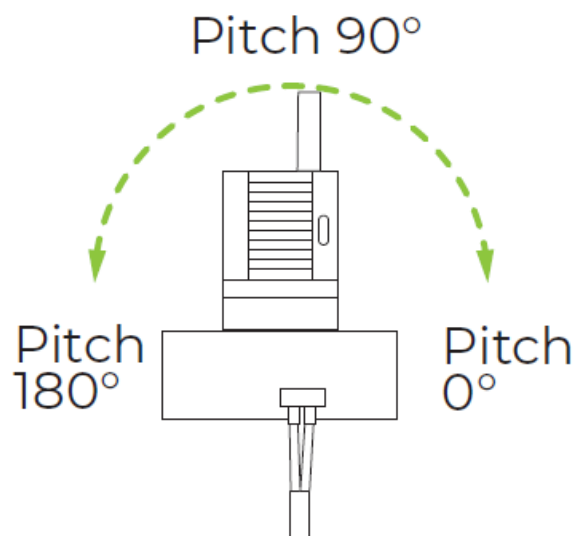
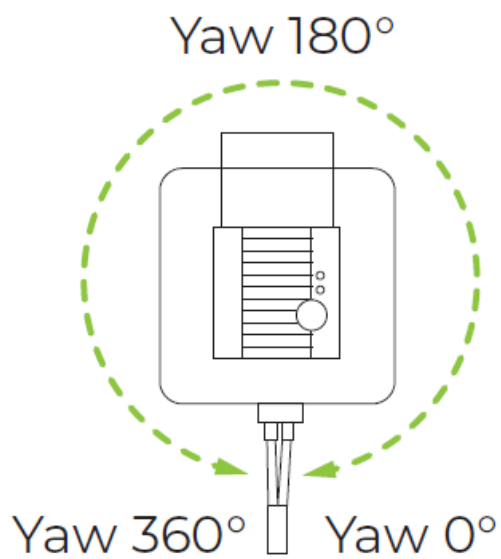
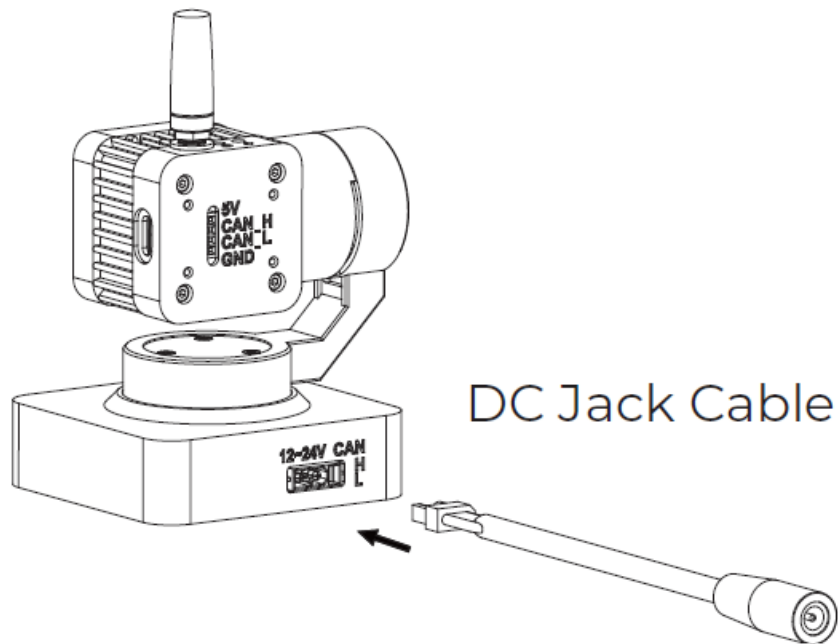
### • Step 11

Install the 5-cm antenna onto the antenna RF cable



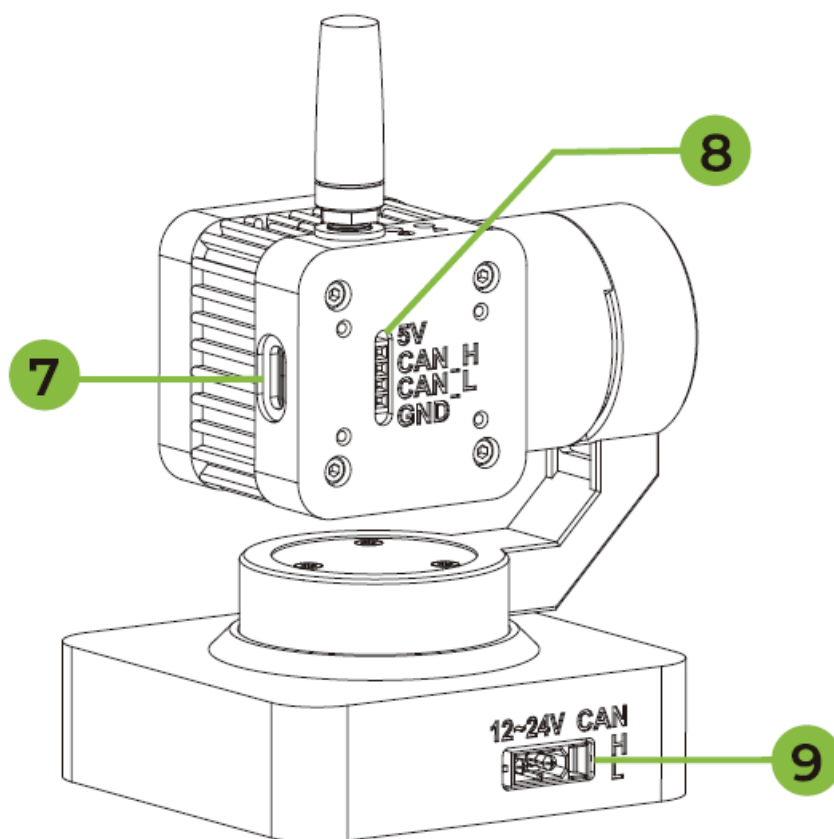
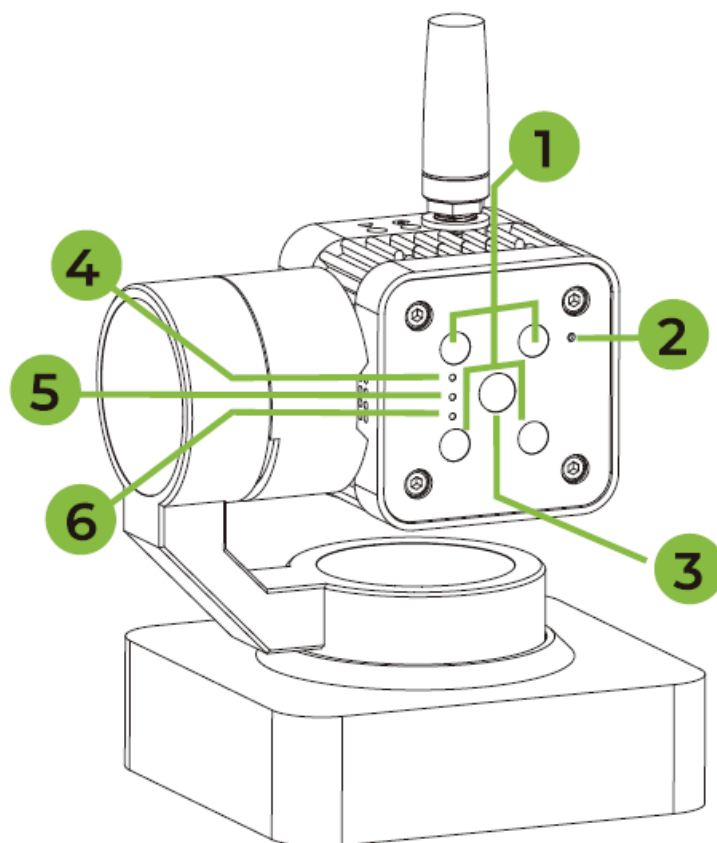
- **Step 12**

Connect the DC Jack Power Supply cable to XT30 Connector.



After assembly, when all screws are properly tightened, you should feel the physical limits of the pitch (0°–180°) and yaw (0°–360°) axes. When programming, we recommend add protective code/logic to limit yaw to 9°–340° and pitch to 9°–175° in order to prevent motor damage.

## Interface



- 1. Fill LEDs
- 2. Mic
- 3. Camera
- 4. User(R)

5. Power(G)
6. Disk(B)
7. USB Type-C
8. 2.54mm Female Pin Header
  - SV
  - CAN\_HIGH
  - CAN LOW
  - GND
9. XT30(2+2) Header

**Wiki/Github QR code:**

**Getting Started:**



**Node-RED Demo:**



**Gimbal 3D File:**



## **Port List**

- Port 22: Utilized for remote SSH login and is open.
- Port 53: Associated with DNS domain name resolution and is essential for web redirection. It is open by default.
- Port 80: Serves as the web dashboard interface for HTTP display of the Node-RED Application.
- Port 554: Employed for RTSP video streaming.
- Port 9090: Intended for web terminal access, which requires a password for login.
- Port 1880: Dedicated to Node-RED operations.

## **Warranty Terms and Conditions**

- This product is covered by a 1-year limited quality guarantee.
- Warranty coverage is limited to products purchased from the official Seeed Studio website or authorized distributors. Customers need to keep receipts and purchase vouchers.
- To apply for warranty service, please provide the purchased invoice and the device's serial number, and keep relevant documents safe.
- For more information on warranty terms, please visit <https://wiki.seeedstudio.com/reCamera-warranty>.

**Tech support email:**

If you encounter any issues while deploying or testing, please don't hesitate to contact our technical support team at [techsupport@seeed.io](mailto:techsupport@seeed.io), or refer to our online knowledge base, <https://wiki.seeedstudio.com>.

**Customized service email:**

For further information about customizations, welcome you to directly reach out at [edgeai@seeed.cc](mailto:edgeai@seeed.cc), we will provide prompt reply.

**Discord community:**

Welcome to join our official community, where you can exchange product-related questions and get relevant support.

<https://discord.seeed.cc>

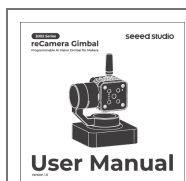
**Frequently Asked Questions**

- **Q: What should I do if the LEDs are not lighting up?**

A: Check the power supply connections and ensure they are properly connected. If the issue persists, contact customer support for further assistance.

- **Q: Can I use a different power supply with this product?**

A: It is recommended to use the specified power supply to ensure proper functioning and avoid damage to the product.

**Documents / Resources**

[seeed studio 2002 Series Recamera Gimbal](#) [pdf] User Manual  
SG2002, C906, OV5647, 2002 Series Recamera Gimbal, 2002 Series, Recamera Gimbal

**References**

- [User Manual](#)

[Manuals+](#), [Privacy Policy](#)

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