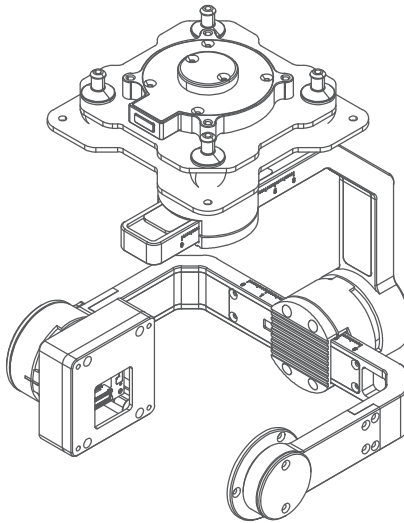
V-Port Mini Open Three-Axis Gimbal Platform

User Manual



For more details please scan the QR code or visit our website:
www.viewprotech.com

Product Precautions:

Electrical Safety: Do not short-circuit or miswire the pins of the gimbal and payload interfaces, otherwise permanent damage to the device may occur.

Payload Housing Material: An aluminum alloy housing is recommended for payload devices, which helps improve structural precision and heat dissipation.

Dimension Clearance: Design the payload dimensions reasonably to avoid mechanical interference during motor rotation in all directions.

Width Limit: The payload arm width is 80 mm. The overall width of the payload must not exceed this value, otherwise normal rotation will be affected.

Weight Limit: The total weight of the payload must not exceed 400 g. Overweight may damage the gimbal bracket or damping balls.

Center of Gravity: The center of gravity of the payload should lie on the axis of the mounting structure. Ensure all axes are balanced before use.

Fastening Check: Before use, make sure all payload modules and connecting cables are securely fastened and firmly connected.

Legends



Warning



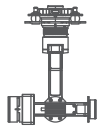
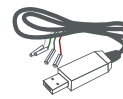
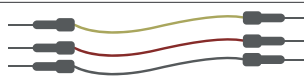
Important Note

1.Product Introduction

1.1 Introduction

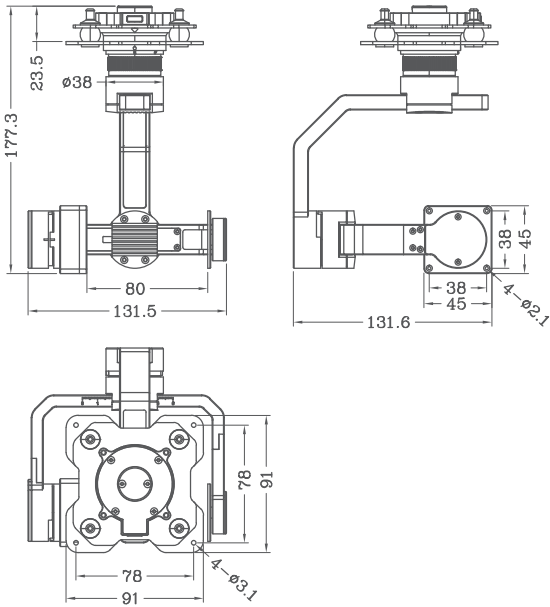
V-Port Mini is a highly integrated three-axis gimbal platform developed by Viewpro for unmanned vehicle systems. Building on excellent vibration resistance and attitude stabilization algorithms, it flexibly supports both upright and inverted mounting, and the yaw axis can rotate continuously through 360°, fully accommodating a wide variety of carriers such as various mobile platforms. Structurally, its open mechanical design allows users to define the payload according to the gimbal dimensions. For control, it provides three mainstream communication protocols — SBUS, PWM and UART — balancing compatibility and real-time response. In addition, the product supports minimal host-computer control and comes with a complete SDK package, enabling users to quickly complete host-computer software development and system integration. With such hardware-software synergy, V-Port Mini helps developers build highly customized gimbal-camera systems in an extremely short development cycle.

1.2 In the Box

Gimbal Platform×1		USB to TTL cable×1	
Aluminum Cylinder ×4		M3 screw ×8	
Power Line ×1			
PWM Control line ×1			
Serial port/S.bus Control line ×1			
Connect serial port line ×3			
Ethernet line ×1			

2. Installation Instruction

2.1 Overview



2.2 Installation

2.2.1 Gimbal Balance Adjustment

Step 1: Pitch-axis balancing

-Operation: with the payload in place, manually rotate the pitch axis.

-Check: after release, the payload does not drift or sag and can stay at any angle.

-Result: balancing is complete.

Step 2: Roll-axis leveling

-Loosen: loosen the four screws on the roll bracket (do not remove).

-Adjust: slide the bracket and rotate the roll axis.

-Check: it can stay still at any position after release.

- Secure: tighten the screws to lock the bracket.

Step 3: Yaw-axis leveling

- Loosen: loosen the four screws on the yaw bracket (do not remove).

- Adjust: slide the bracket and rotate the yaw axis.

- Check: it can stay still at any position after release.

- Secure: tighten the screws to lock the bracket.

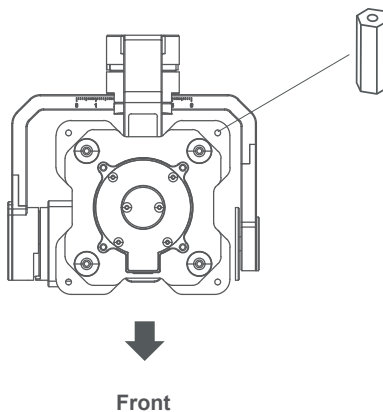
2.2.2 Gimbal Mounting Holes

Installation Guide

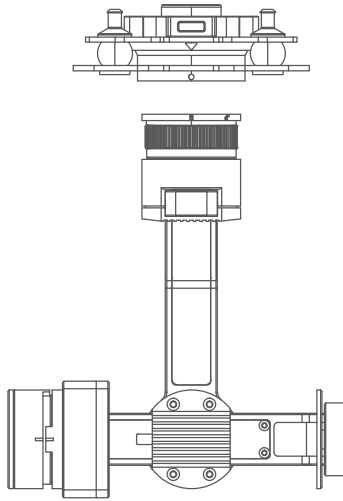
Direction alignment: align the mounting arrow on the yaw axis (i.e., the initial lens position at power-on) with the nose of the vehicle.

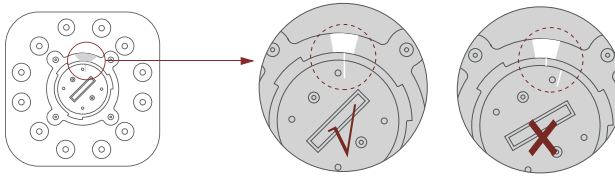
Damping plate side: use M3 screws to fasten one end of the aluminum standoff into the threaded holes on the underside of the damping plate.

Vehicle side: refer to the mounting plate hole-pattern dimension drawing, add mounting interfaces on the vehicle, and fasten the other end of the aluminum standoff to the vehicle body mounting plate.

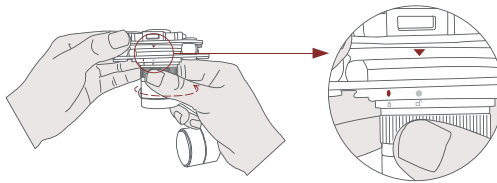


2.2.3 Quick-release Gimbal Assembly & Disassembly Diagram

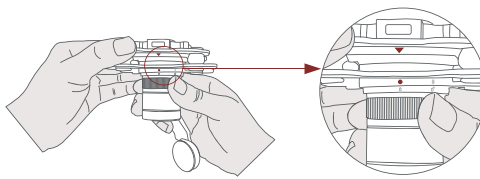




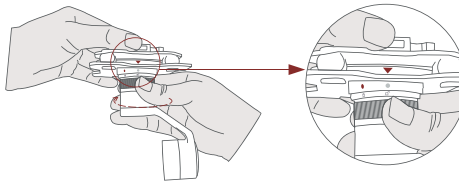
1.Make sure the two white stripes indicated in above picture are aligned with each other. If not aligned, please adjust it manually.



2. Align the white dot (unlock icon) to the red triangle (below unlock button), push the gimbal into the Viewport completely and then rotate the gimbal platform counter-clockwise.



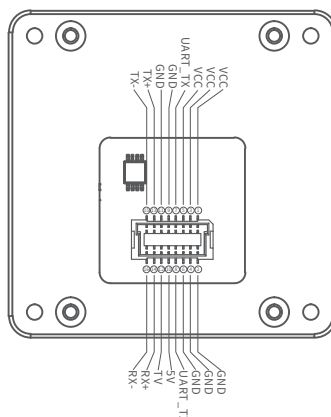
3.When you hear a "click" sound (red dot is aligned to the red triangle) means that the gimbal platform and Viewport has been locked.



4.To unlock the Viewport, you need to press on unlock button and rotate the gimbal platform clockwise till the white dot align to the red triangle. Then pull the gimbal out from the Viewport.

2.3 Hardware Interface

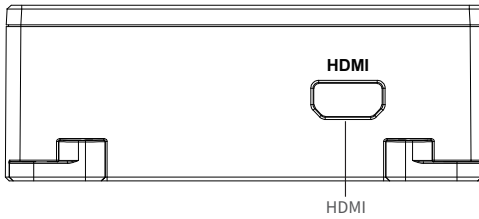
2.3.1 Payload Connector



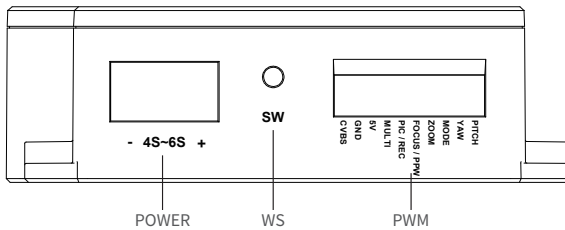
Pin No.	Signal Definition	Note
1, 3, 5	VCC	Powers mainstream payload devices: 12V/3A (max)
2, 4, 6	GND	
7	UART_TX	For payload serial-port control development, compatible with the ViewLink protocol. Check the protocol document for details.
8	UART_RX	
9	GND	
10	5V	Power for low-power payloads or auxiliary modules: 5V/800mA (max)
11	GND	
12	TV	Extended to the CVBS line of the gimbal control box interface for user-defined expansion.
13	TX+	Extended to the ETHERNET port of the gimbal control box interface, recommended for payload network video streaming. If the payload does not need an Ethernet port, it may be used for other purposes.
14	RX+	
15	TX-	
16	RX-	

2.3.2 Control Box Printing

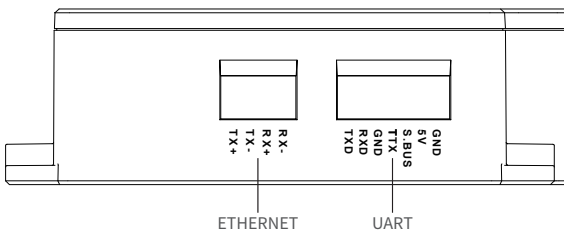
Front Side



Left Side



Right Side

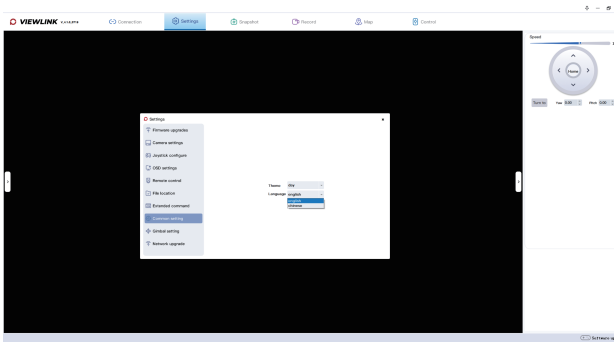


3. Product Control

3.1 Host-computer Software Installation

Viewlink is a professional and easy-to-use gimbal imaging and control software meticulously developed by Viewpro. It lets users easily enjoy the convenience and professionalism of gimbal control, while also providing settings and firmware upgrade functions. Its smooth imaging and rich features are compatible with all Viewpro gimbals. Viewpro offers a control SDK for your development.

3.2 Accessing Viewlink



【 Viewlink Interface 】

Theme Options: day / night

Language Options: Chinese / English

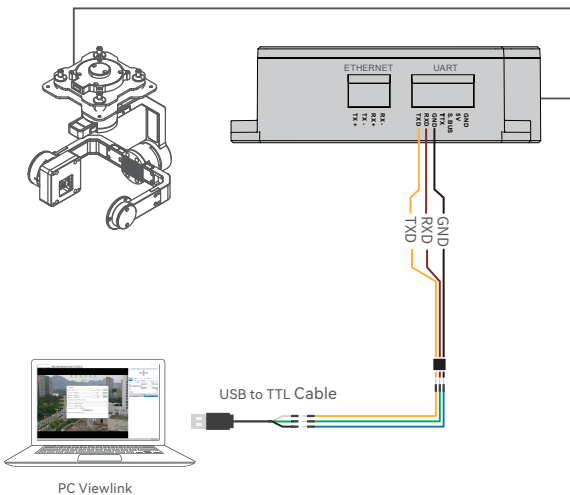
To apply changes, restart the software after selecting theme and language in “Common Settings.”

3.3 Device Connection

3.3.1 UART (Serial Port) Connection

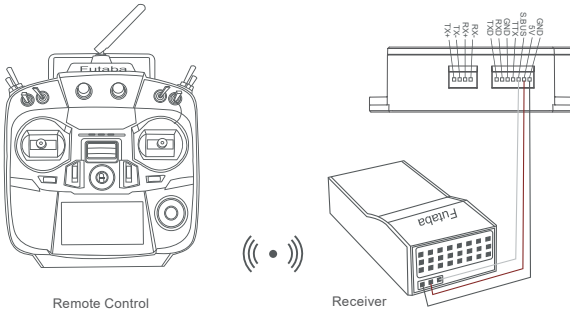
Gimbal		USB to TTL cable
TX	⟷	RX (white)
RX	⟷	TX (green)
GND	⟷	GND (black)

Baud Rate: 115200, 8, 1 TTL



【Serial to PC Direct Connection Diagram】

3.3.2 S.BUS Control



Remote Control

Receiver

Wiring Diagram

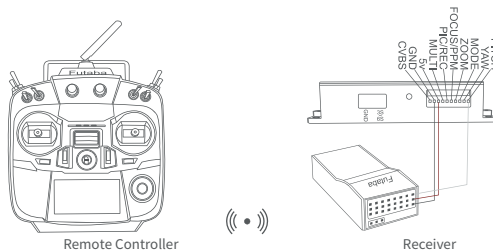
Channel Definition:

Function	Default Channel No. (1–15, configurable)	RC Signal Pulse Width Action	Reverse
Yaw Right / Yaw Left	Channel 7	1.5 ms – No action 1.5→1.1 ms – Yaw Left 1.5→1.9 ms – Yaw Right	Blue indicates the pulse-width response; click the gray half to reverse.
Pitch Up / Pitch Down	Channel 8	1.5 ms – No action 1.5→1.1 ms – Pitch Up 1.5→1.9 ms – Pitch Down	
Recenter / Speed Adjust	Channel 9	1.5 ms – No action 1.5→1.1 ms – Speed Down 1.5→1.9 ms – Recenter	

3.3.3 PWM Control

Control the functions of gimbal platform through the multiplex pulse width modulation signal outputted by PWM channel of the remote control receiver. The gimbal platformneeds 7 control channels of PWM at most. Users can choose the required function channels, and reduce some PWM channels accordingly in usage.

PWM Connection Diagram (Connect pitch channel as an example)



Connection Diagram

PWM Control Operation Instruction

1. Pitch Channel: Connect PWM Pitch channel to control Pitch by Joystick, rotary knob and 3-gear switch on remote control. Take 3-gear switch as an example.



Position 1

Low Gear
Pitch Up



Position 2

Middle Gear
Pitch Stop



Position 3

High Gear
Pitch Down

2. Yaw Channel: Connect PWM Yaw channel to control Yaw by Joystick, rotary knob and 3-gear switch on remote control. Take 3-gear switch as an example.



Position 1

Low Gear
Yaw Left



Position 2

Middle Gear
Yaw Stop



Position 3

High Gear
Yaw Right

3. Mode Channel: Connect PWM Mode channel to adjust speed control and One-key to Center. Take 3-gear switch as an example.



Position 1

Low Gear



Position 2

Middle Gear



Position 3

High Gear

Switch position 1: Low speed mode, control pitch / yaw to move at lowest speed;

Switch position 2: Middle speed mode, control pitch / yaw to move at middle speed;

Switch position 3: High speed mode, control pitch / yaw to move at highest speed.

(When it is controlled by rotary knob, the speed will change according to switch position)

Note: Additional functions of the Home channel

Single trigger: Gimbal returns to home position.

Two rapid consecutive triggers: Gimbal lens points vertically downward.

Three rapid consecutive triggers: Gimbal enters Heading Lock mode.

Four rapid consecutive triggers: Gimbal enters Follow mode.

4. Specification

Overall Specifications	
N.W.	420±10g
Product meas.	131.6*131.5*167.7mm
Input voltage	14.8V~25.2V
Quiescent Current	65mA @16V
Quiescent Power	1W
Working environment temp.	-20℃ ~ +50℃
IP Rating	IP4X
Control method	PWM / S.BUS / UART (TTL)
Gimbal Spec	
Mechanical Range	Pitch/Tilt:60°(Up) ~ 120°(Down), Roll:-90°~ 70°, Yaw/Pan: ±360°*N
Controllable Range	Pitch/Tilt: -45°~ 115°, Yaw/Pan: ±360°*N
Vibration angle	Pitch/Roll/Yaw: ±0.02°
Max. Angular Speed	500°/s
One-key to center	√

Adaptable Payload Parameters	
Max. Payload Weight	400g
Payload Width	80mm
Reserved Interfaces	4-pin extension cable (supports Ethernet connection and other functions)、UART(TTL)、Power Supply (10~12V)