



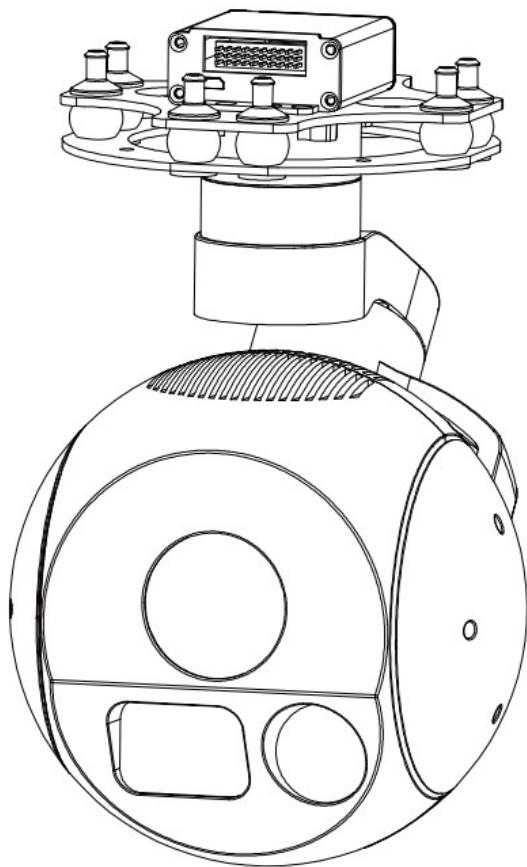
# Viewpro A30TR AI 30x EO + IR Dual-Sensor Laser Rangefinder Object Tracking Gimbal Camera User Manual

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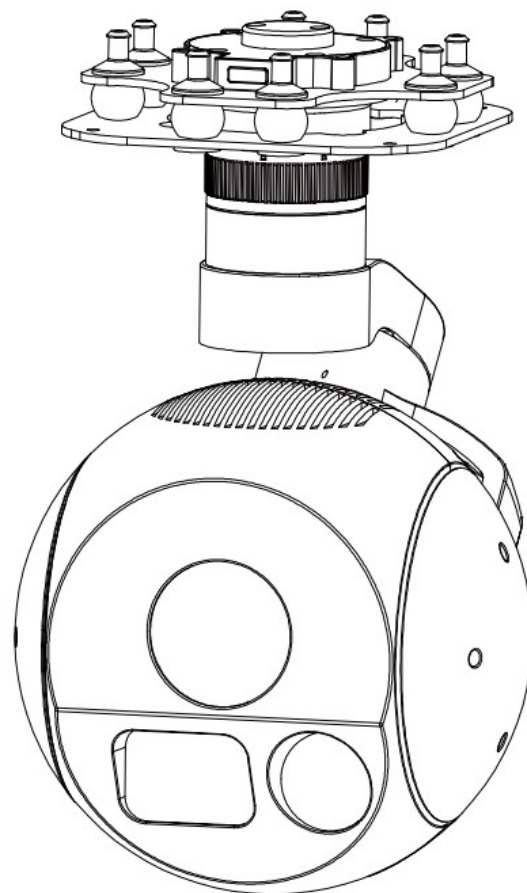


# Viewpro

**A30TR AI 30x EO + IR Dual-Sensor Laser Rangefinder  
Object Tracking Gimbal Camera  
User Manual**



Standard Version



Viewport Version



<http://www.viewprotech.com>

For more details please scan the QR code or visit our website: [www.viewprotech.com](http://www.viewprotech.com)

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Disclaimer and Warning

Congratulations on purchasing your new Viewports product. Please read this entire document carefully. Failure to read or follow instructions and warnings in this document may result in damage to your Viewport product. Disassemble the gimbal camera by user is not permitted, as which may cause the camera does not work normally. Viewports accepts no liability for damage, injury or any legal responsibility incurred directly or indirectly from the use of this project. The user shall observe safe and lawful practices including, but no limited to, those set forth in the manual.

Legends

	
Warning	Important Note

Product Introduction

Introduction

A30TR is a 3-axis dual-sensor AI gimbal camera with laser rangefinder, which integrated with an AI object identification and tracking module, features 30x optical zoom, 19mm 640\*512 IR thermal and 1500m Laser rangefinder.

The highlight of A30TR is the AI object identification and tracking module, with which A30TR can realize car, human automatic recognition and tracking, the simultaneous detection quantity of objects are more than 10. A30TR supports IR thermal and EO PIP switch, IR color palette switch, photographing and video, target tracking, thermal digital zoom and so on, also Geo-tagging is supported.

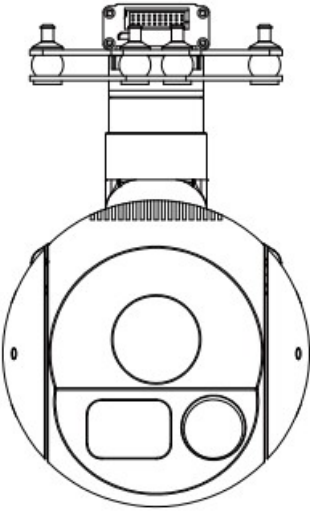
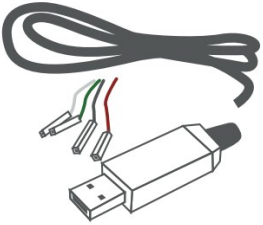
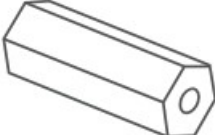
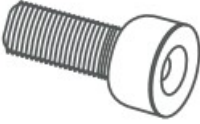

Features aluminum alloy housing and anti-interference, the 3 axis gimbal can achieve stabilization in yaw, roll and pitch. The integrated design of damping system can greatly reduce mechanical vibration.

A30TR is widely used in UAV industries of public security, electric power, fire fighting, disaster prevention, emergency monitoring and inspection, search and rescue, zoom aerial photography and other industrial applications.

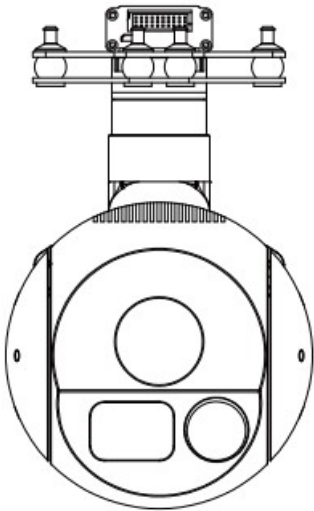
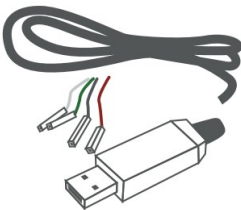
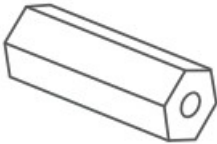
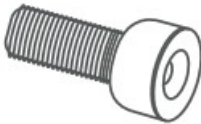







- New Rich OSD Display
- Simultaneous detection quantity  $\geq 10$  targets

#### In the Box

<p>Gimbal Camera x 1 pc</p>		<p>USB to TTL Cable x 1 pc</p>	
<p>Copper Cylinder x 4 pcs</p>		<p>M3 Screw x 8 pcs</p>	
<p>Power Cable x 1 pc</p>			

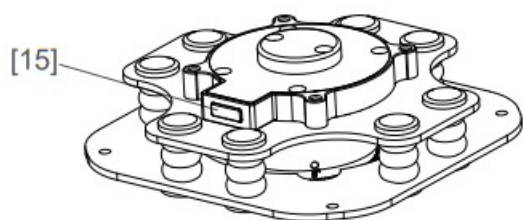
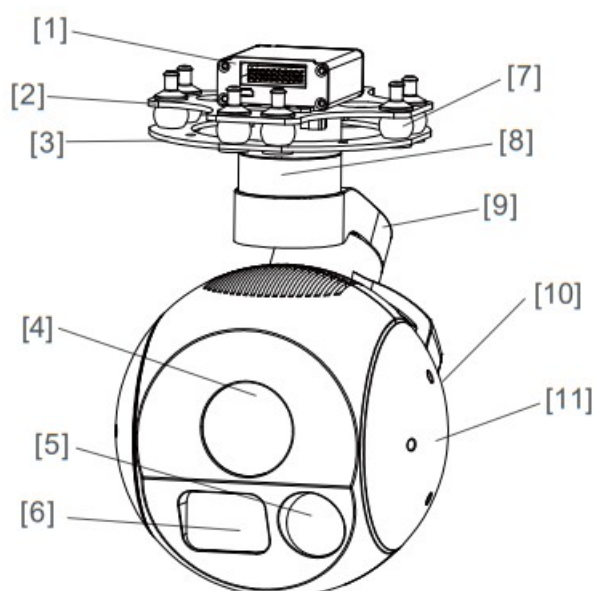
#### B. Viewport Version

Gimbal Camera x 1 pc		USB to TTL Cable x 1 pc	
Copper Cylinder x 4 pcs		M3 Screw x 8 pcs	
Power Cable x 1 pc			
PWM Control Cable x 1 pc			
TTL / S.BUS Control Cable x 1 pc			
TTL Connect Cable x 3 pcs			
Ethernet Cable x 1 pc			

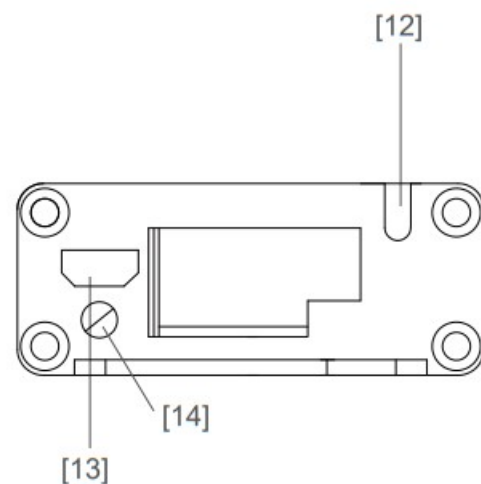
## Installation Instruction

### 2.1 Overview

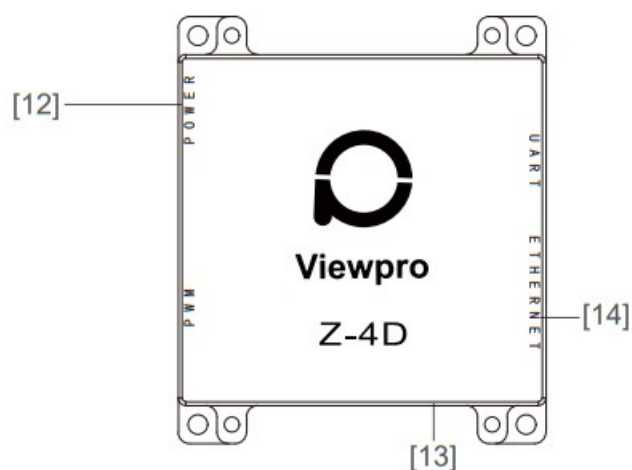




**Viewport**



**Control Box Back Side  
(Standard Version)**

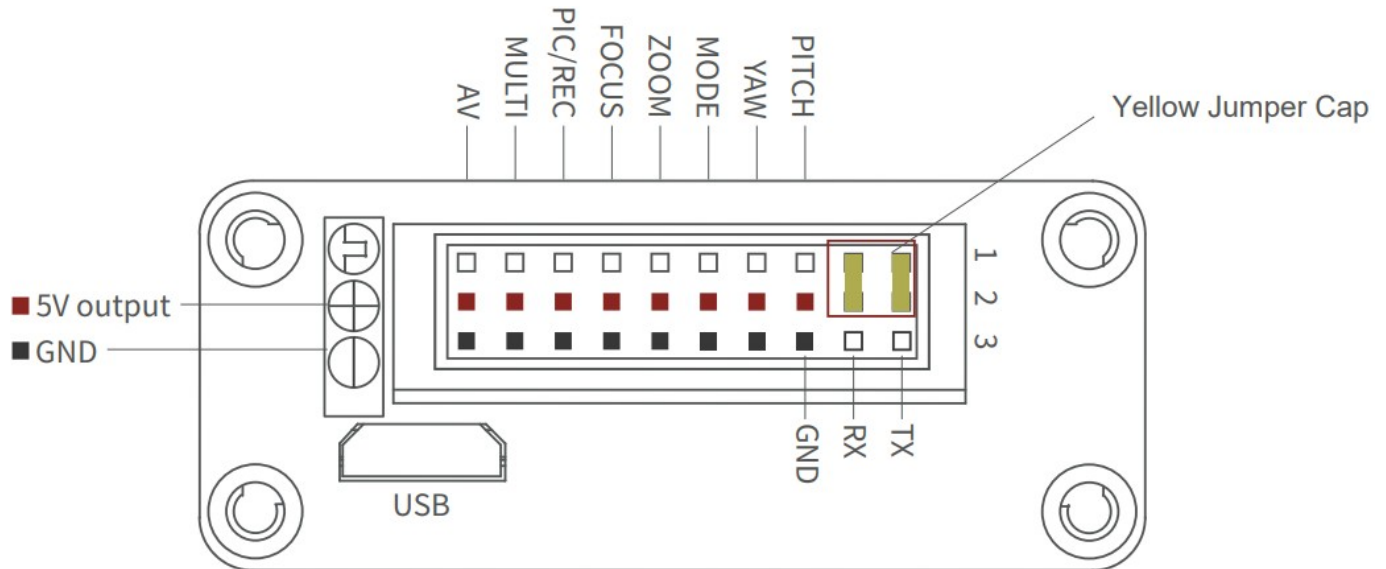


**(Viewport Version)**

1. Control box
2. Upper damping board
3. Lower damping board
4. FHD zoom camera
5. Infrared thermal camera
6. Laser rangefinder
7. Damping ball
8. Yaw axis motor
9. Roll axis motor
10. TF card slot
11. Pitch axis motor
12. 3-6S power interface
13. Micro HDMI interface
14. Ethernet interface
15. Viewport unlock button

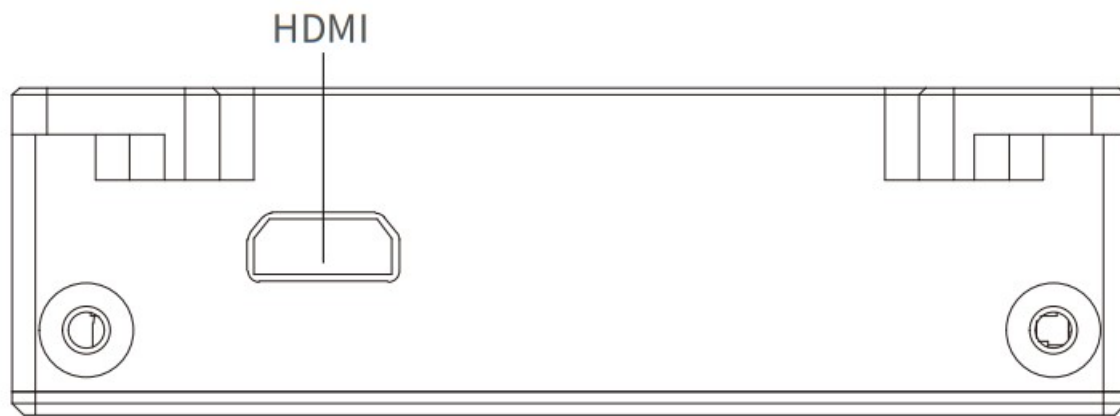
- Please ensure that there isn't any obstacle while the motor rotating.
- Please remove the obstacle immediately if gimbal camera is blocked during rotation.
- Don't use laser ranging against glass within 5meters.
- Don't put the infrared thermal camera towards the sun, magma, laser, etc. in case any burn to the camera.

### 2.2.1 Control Box Printing (Standard Version)

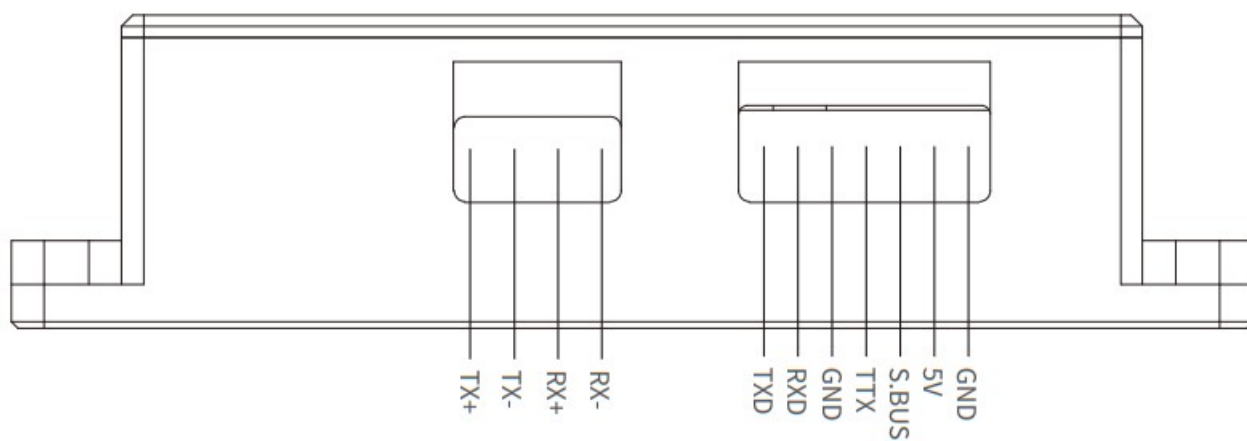


- The input voltage cannot be higher than 6S.
- The pin insertion interface cannot be connected with power supply.
- The yellow jumper cap cannot be removed

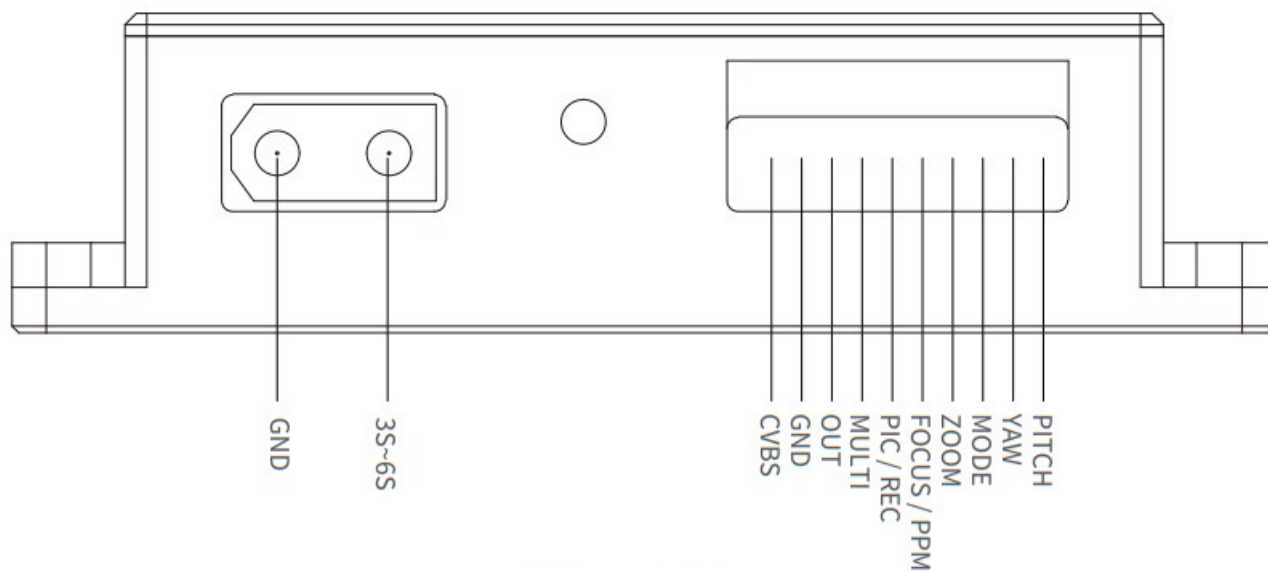
### 2.2.2 Control Box Printing (Viewport Version)



Front Side



Left Side

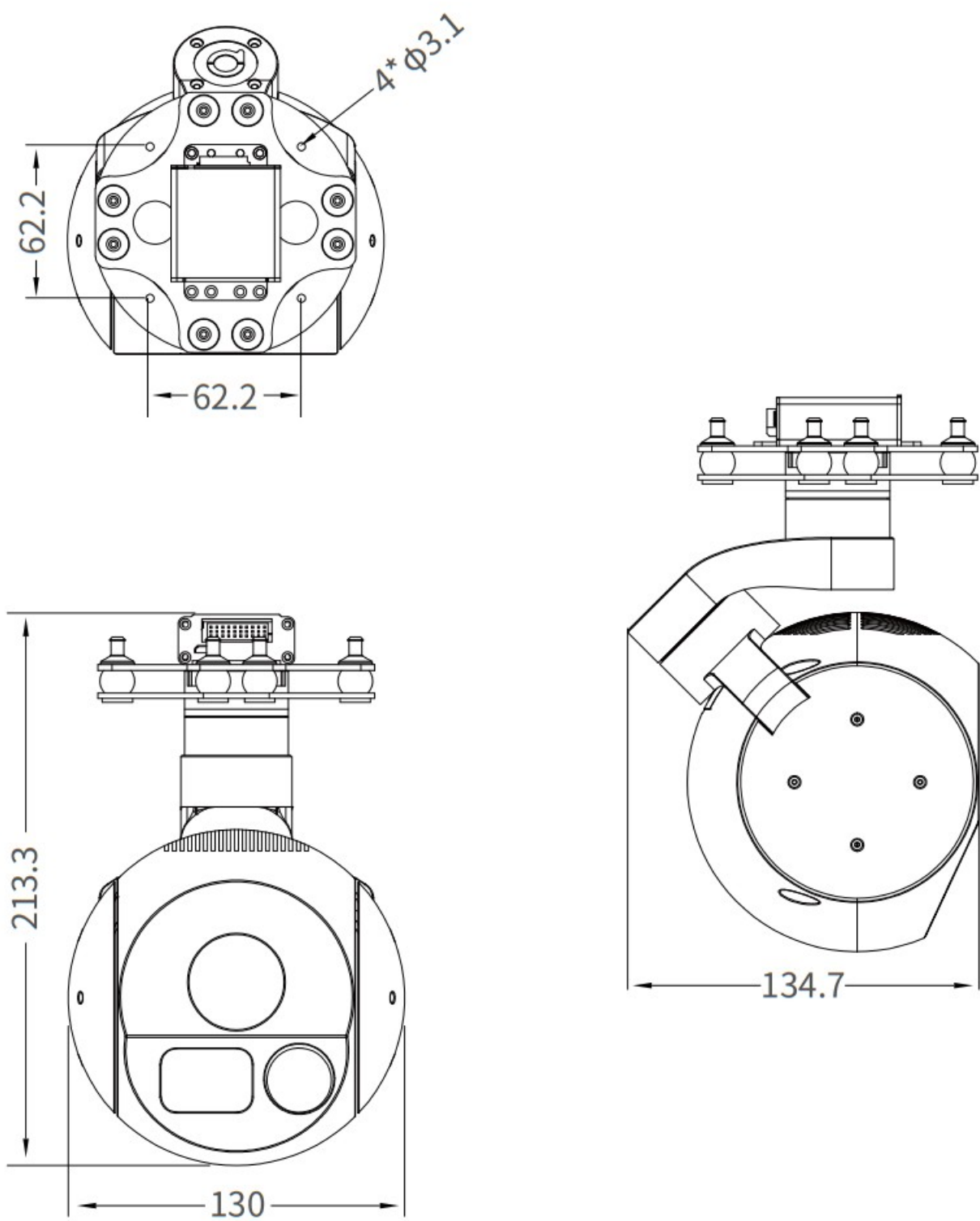


Right Side

### 2.3 Device Dimensions (Standard Version)

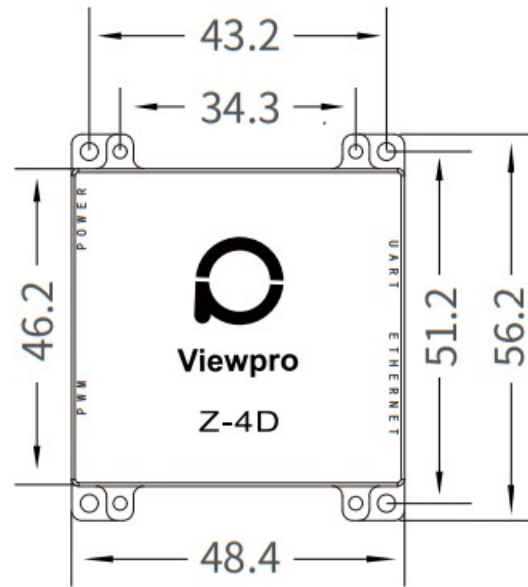
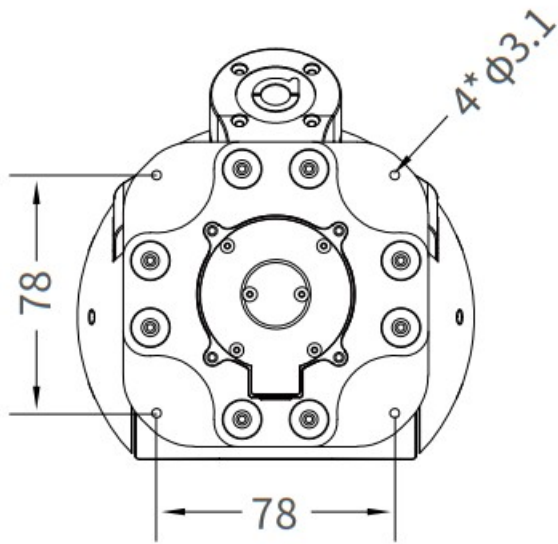


Unit: mm

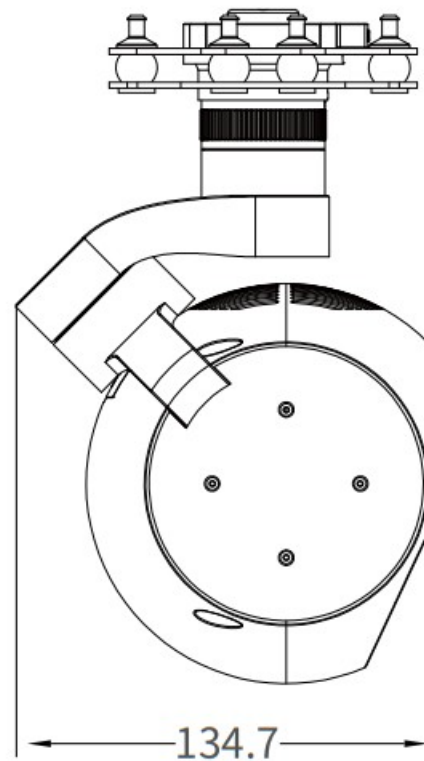
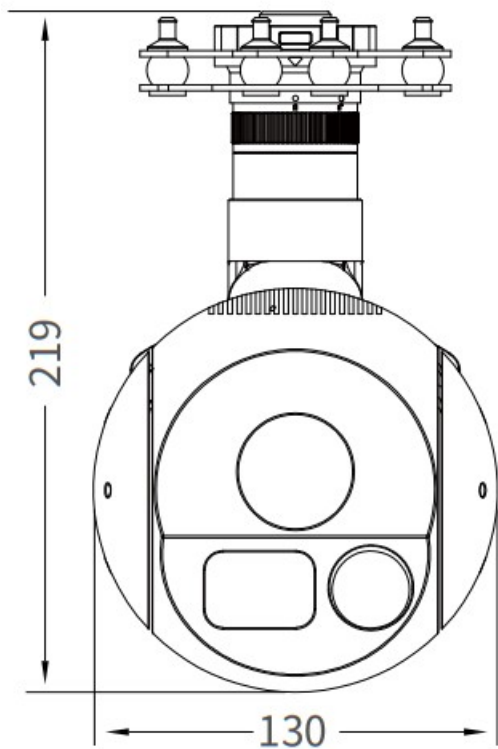


2.3 Device Dimensions (Viewport Version)

Unit: mm

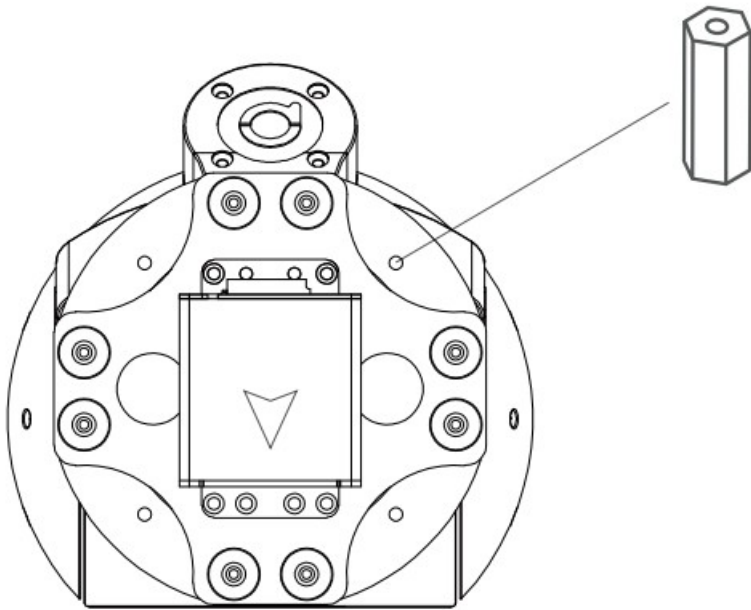


Control Box



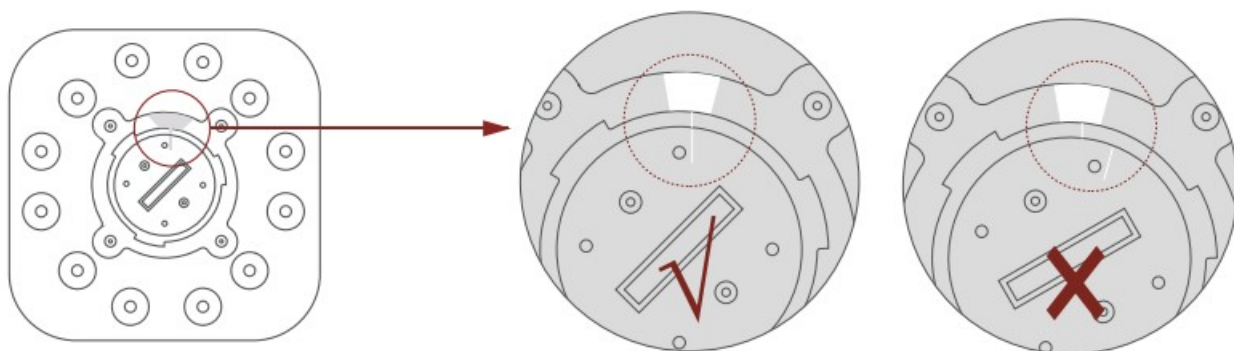
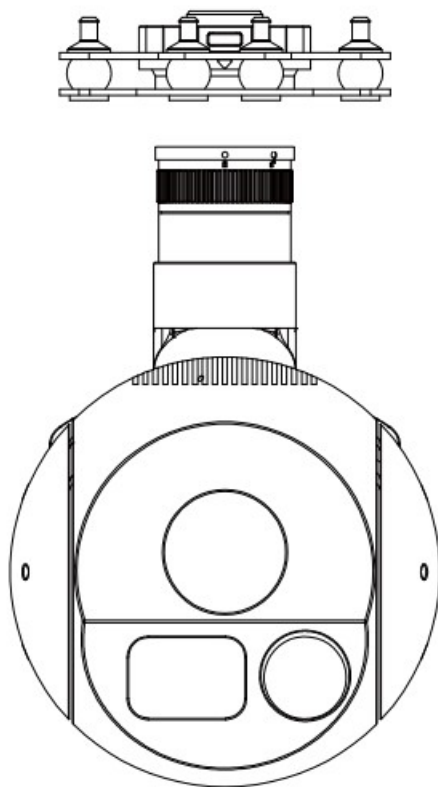
## 2.4 Install Mounting Part

1. Find out the arrow on the gimbal which indicating the yaw heading of the payload (i.e. the lens direction when the camera power on), and synchronize with the direction specified by the UAV.
2. Fix one end of the copper cylinder on the screw hole of lower damping board, and use M3 screw to fasten it.
3. According to the provided screw hole dimension you can make suitable mounting holes on the UAV mounting board, and fixes the other end of the copper cylinder on the mounting board of the UAV (Viewport version is the same).

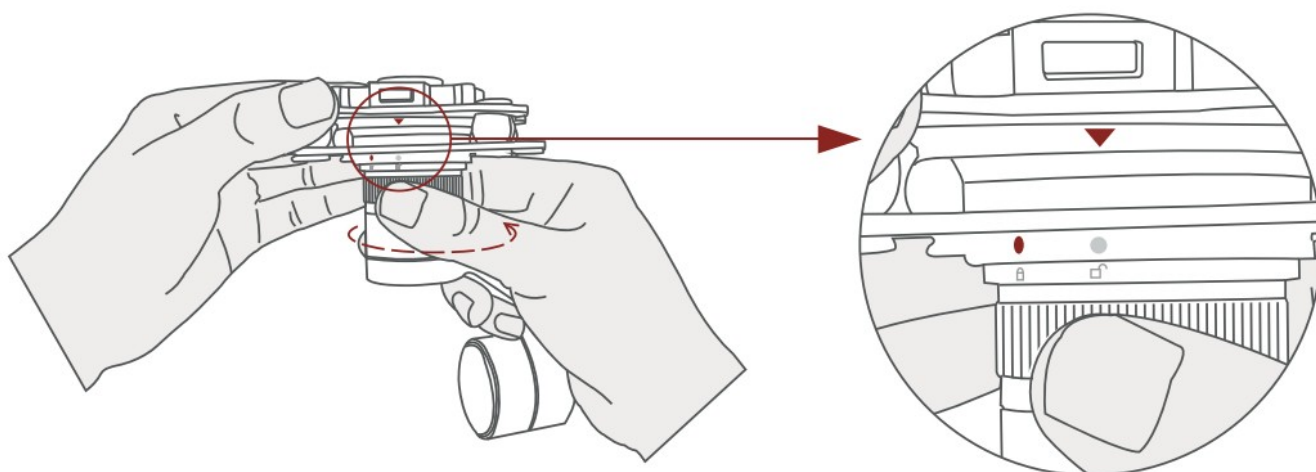


Front

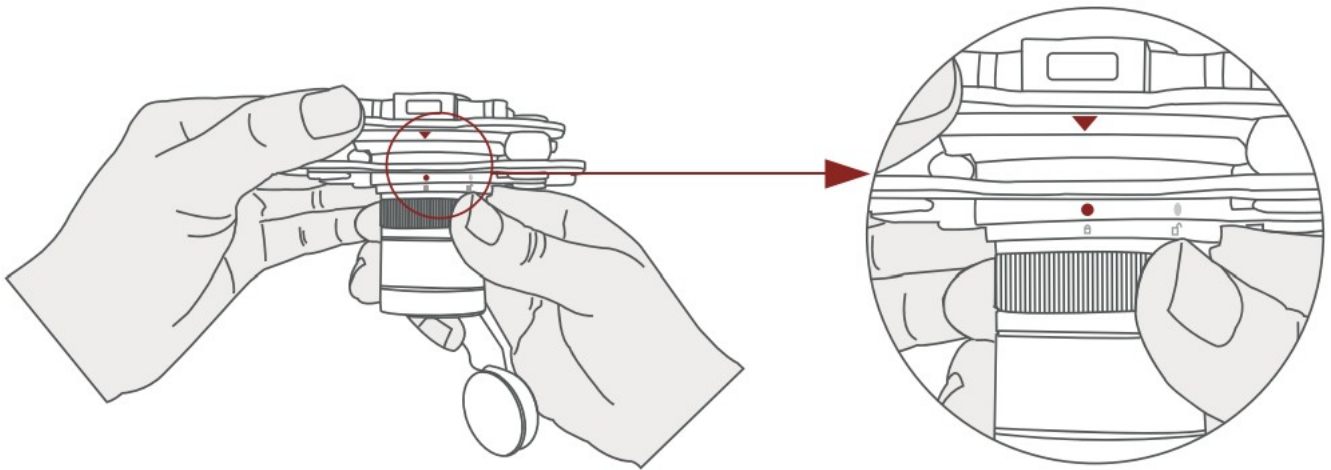
## 2.5 Viewport Release Instruction



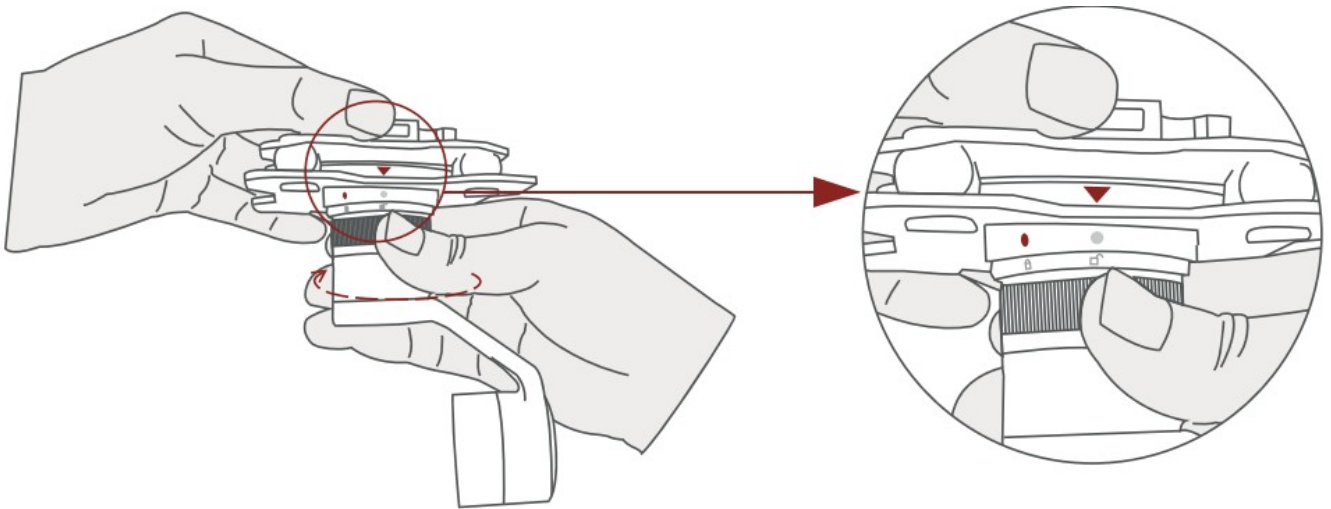
1. Make sure the two white stripes indicated in above picture are aligned with each other. (If the stripes are not aligned to each other, please pinch the connector part and turn it to left manually)



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 camera anticlockwise.



3. When you hear “click” sound (when red dot is aligned to the red triangle) means the gimbal camera and Viewport has been locked.



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

## 2.6 Install TF Card

TF (Micro SD card): Install the TF card to the card slot (Re. 2.1 Overview). Support max 128GB. Request Class 10 (10m/s) transmission speed or higher and FAT32 or exFAT format.

- Make sure device is power off when inserting the TF card, hot plugging is not supported.

## 2.7 Image Output Interface

HDMI: Micro HDMI output, HD 1080P 60/30fps, 1080P 60fps as default. (Optional)

Ethernet: Ethernet/IP output interface, support RTSP/RTMP/UDP/ONVIF video streaming.

Default: RTSP output, IP address:

RTSP: //192.168.2.119:554, output resolution: 1080P, frame rate:

30fps, bit rate: 4M. (Optional) AV: no AV output

- Above output mode is optional. Please subject to your actual product.
- When using user interface software Viewlink for network connection, the network of external device (computer) should be the IP address: 192.168.2.2 (choose the last byte among 2~254, can not be 119 same as the gimbal), subnet mask: 255.255.255.0, Default gateway: 192.168.2.1, and all firewalls of the computer must be closed. Then enter the IP address of the gimbal camera, Open Video, the video stream can be outputted.

## Signal Control



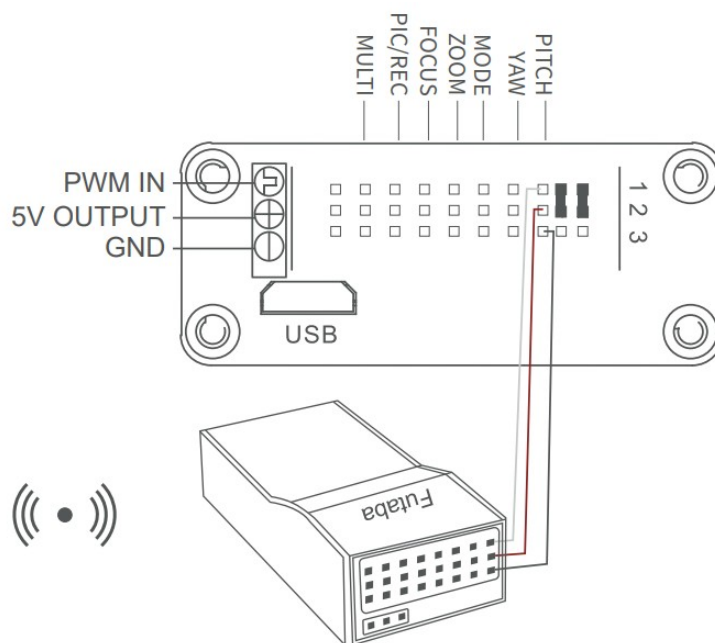
### 3.1 PWM Control

Control the gimbal camera functions by the multiplex pulse width modulation signal outputted by PWM channel of the remote control receiver. The camera needs up to 6 control channels of PWM (to expand tracking function use up to 7 PWM channels). You can choose needed functions according to actual usage to reduce the required number of PWM channels.

#### 3.1.1 PWM Connection Diagram (Connect pitch channel as example)



Remote Controller

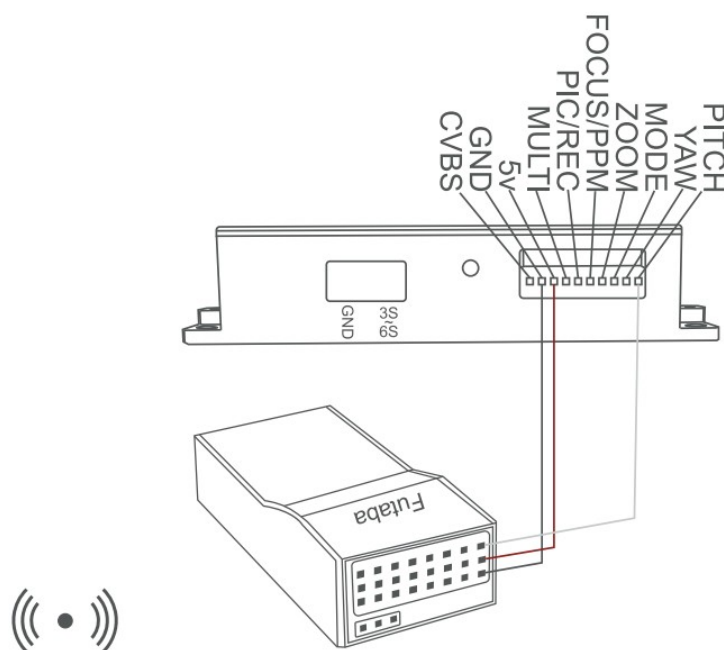


Receiver

#### Connection Diagram (Standard Version)



Remote Controller




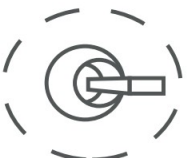
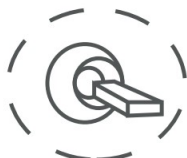
Receiver

#### Connection Diagram (Viewport Version)


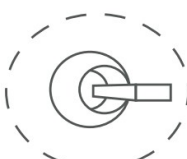

### 3.1.2 PWM Control Operation Instruction






1. Pitch (PWM Pitch channel in to control Pitch. Joystick, rotary knob or 3-gear switch on remote control are optional. 3-gear switch as example.)

		
Position 1	Position 2	Position 3
Low Gear Pitch Up		
		<div>Middle Gear Pitch Stop</div> <div>High Gear Pitch Down</div>

- 2) Yaw (PWM Yaw channel in to control Yaw. Joystick, rotary knob or 3-gear switch on remote control are optional. 3-gear switch as example.)

		
Position 1	Position 2	Position 3
Low Gear Yaw Left		
		<div>Middle Gear Yaw Stop</div> <div>High Gear Yaw Right</div>

- 3) Mode (PWM Mode channel in to adjust speed control/one key to Home position etc functions. Rotary knob or 3-gear switch on remote control are optional. 3-gear switch as example.)

		
Position 1	Position 2	Position 3
Low Gear		
		<div>Middle Gear</div> <div>High Gear</div>

Position 1: Low speed mode, control pitch / yaw with this mode at lowest speed

Position 2: Middle speed mode, control pitch / yaw with this mode at middle speed

Position 3: High speed mode, control pitch / yaw with this mode at highest speed

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

#### 4) Function of continuous switching:

3.1) Operate 1 time continuously and quickly, from position 2 – 3, to Home position.


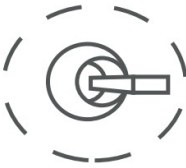
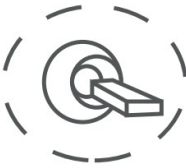
3.2) Operate 2 times continuously and quickly, from position 2 – 3 – 2 – 3, the camera lens looks vertically down.

3.3) Operate 3 times continuously and quickly, from position 2 – 3 – 2 – 3 – 2 – 3, to disable Follow Yaw Mode


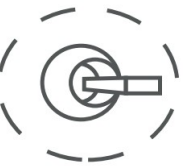

(gimbal yaw not follows by frame)

3.4) Operate 4 times continuously and quickly, from position 2 – 3 – 2 – 3 – 2 – 3 – 2 – 3, to enable Follow Yaw Mode (gimbal yaw follows by frame)

5) Zoom (PWM Zoom channel in to control Zoom. Joystick, rotary knob or 3-gear switch on remote control are optional. 3-gear switch as example.)

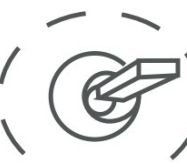


				
Position 1	Position 2	Position 3		
Low Gear Zoom Out			Middle Gear Stop Zoom	High Gear Zoom In

6) Focus (PWM Focus channel is to control PIP, IR color palette switch, 3-gear switch as example.)

				
Position 1	Position 2	Position 3		
Low Gear PIP switch			Middle Gear	High Gear IR color palette switch

Switch from Position 2 to 1: Picture in Picture. EO+IR , IR+EO, EO only, IR only. Switch from Position 2 to 3: IR color switching: white hot, black hot, pseudo color

7) Pic/Rec (PWM Pic/Rec channel in to control take picture and record. Joystick, rotary knob or 3-gear switch on remote control are optional. 3-gear switch as example.)

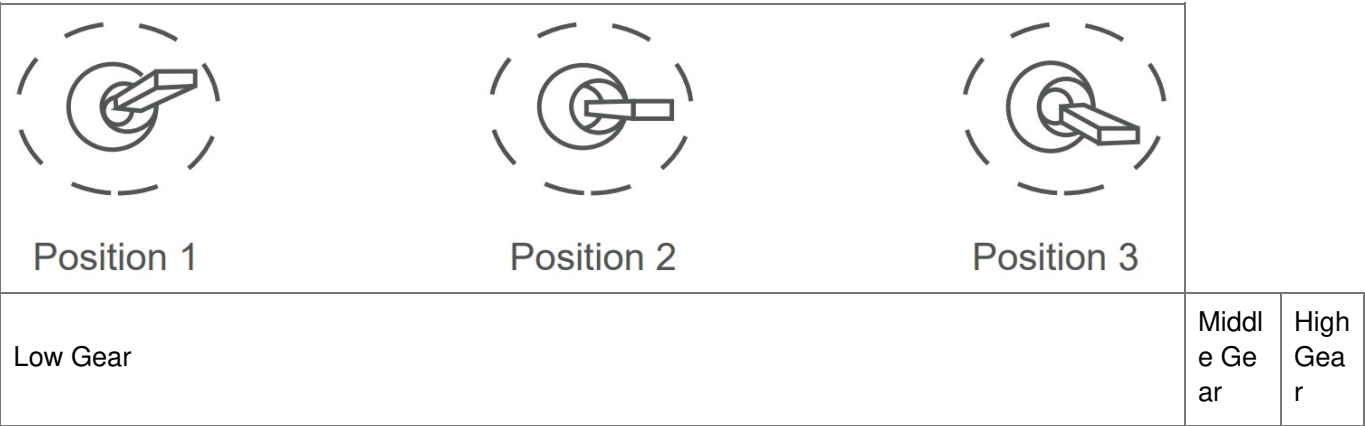
				
Position 1	Position 2	Position 3		
Low Gear			Middle Gear	High Gear

Switch from Position 2 to 1: Take a picture

- OSD display 'REC IMG' a second.
- Switch from Position 2 to 3: Start record / repeat operation to stop record

- Start record, the OSD display rec hh:mm:ss.
- Stop record, the OSD display STBY.

8) Multi: IR digital zoom / tracking control



Switch from Position 2 to 1: IR digital zoom, 1x~4x  
Switch from Position 2 to 3:

- Exit the tracking, display the cross cursor. Adjust the cross cursor to lock target object and start tracking

Switch from Position 3 to 2:

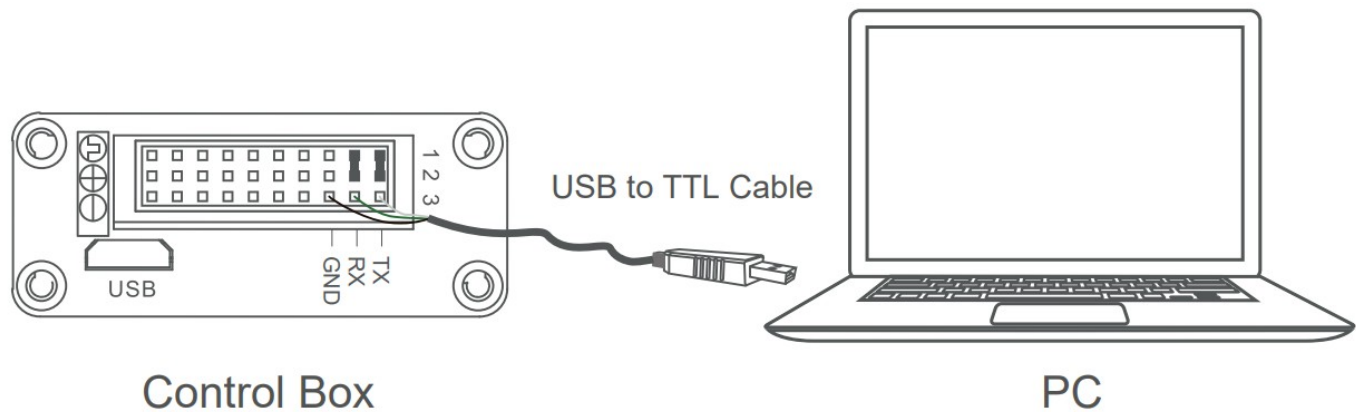
- Cancel tracking

3.2 Serial Port / TTL Control

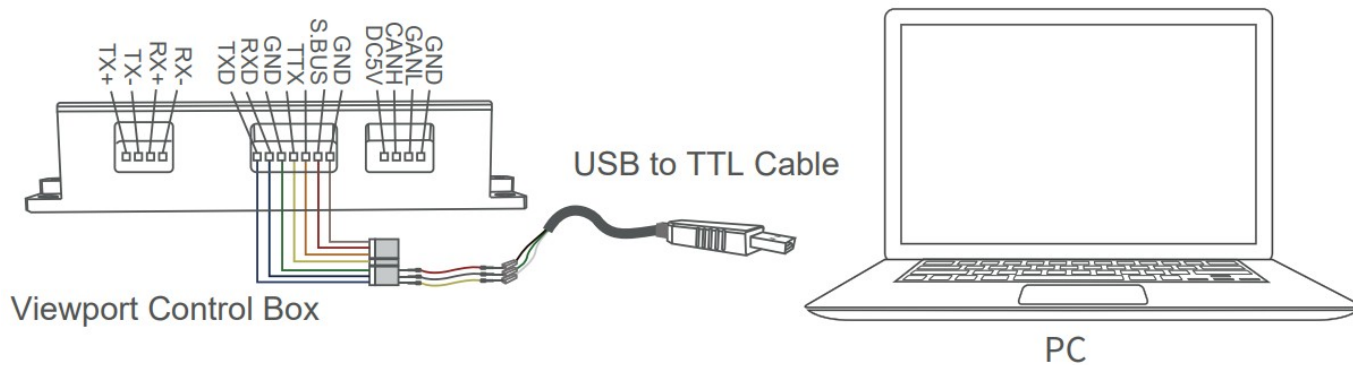
TTL communication requirements: TTL signal is 3.3V, baud rate: 115200, data bit 8, stop bit 1, no parity, HEX send and receive.

Connection Diagram (PC – USB to TTL Cable- Gimbal Camera as example):

Gimbal Camera Cable RX (White) TX RX GND TX (Green) GND (Black)



Connection Diagram Standard Version



Connection Diagram Viewport Version

### Diagram of USB to TTL Cable:

Connect the camera to the upper computer by USB to TTL cable (Adopt connection method of TX to RX, RX to TX, GND to GND at Dupont ends of the provided USB to TTL cable, connect to the specified TTL of the gimbal, and the USB end of the cable connect to computer).

Install View link control software to test the functions directly. Users may choose to develop their own software, please contact technical support for TTL control protocol file.

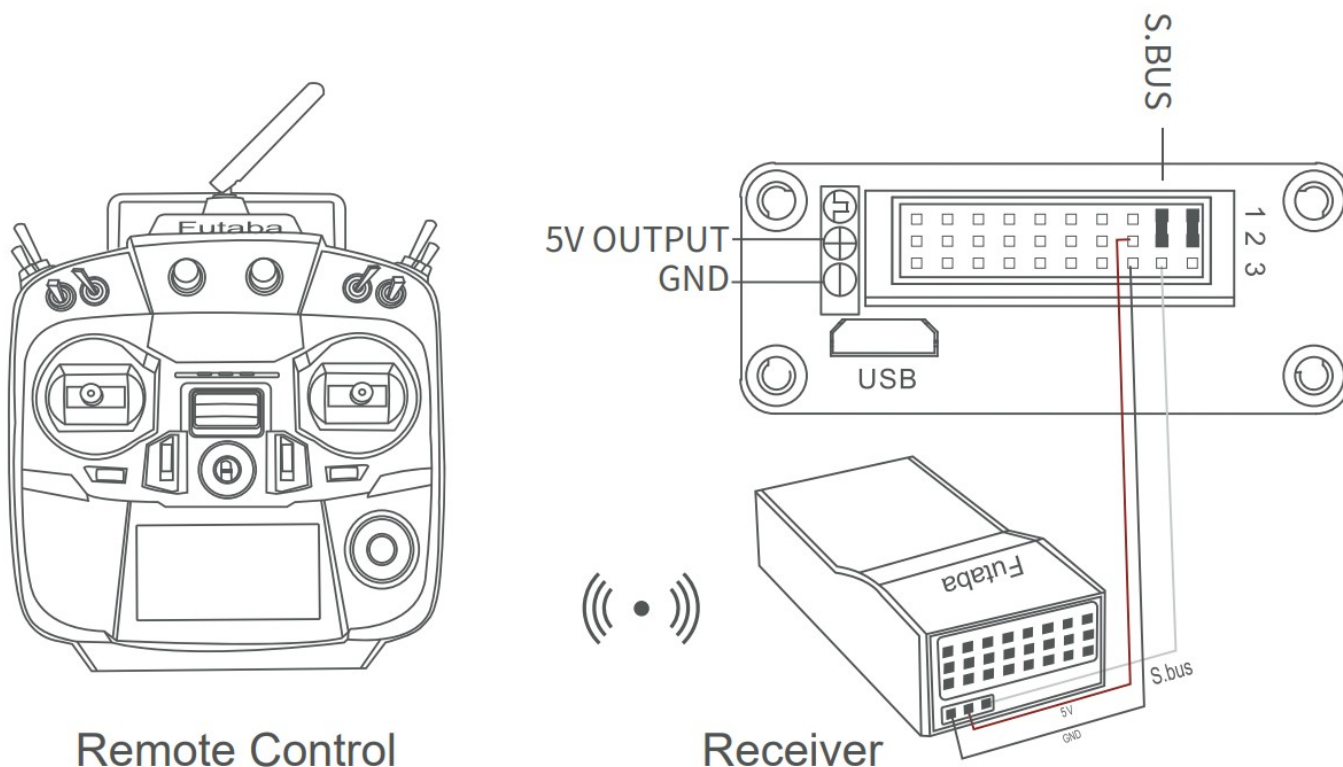
View Link is a user interface developed by Viewpro for Viewpro gimbal cameras, you can download it from Viewport website ([www.viewprotech.com](http://www.viewprotech.com)) or ask distributors for installation package.

- Connect serial port of gimbal to pins, DO NOT connect with power supply.
- The default baud rate of serial port is 115200, which can be changed according to the docking equipment.

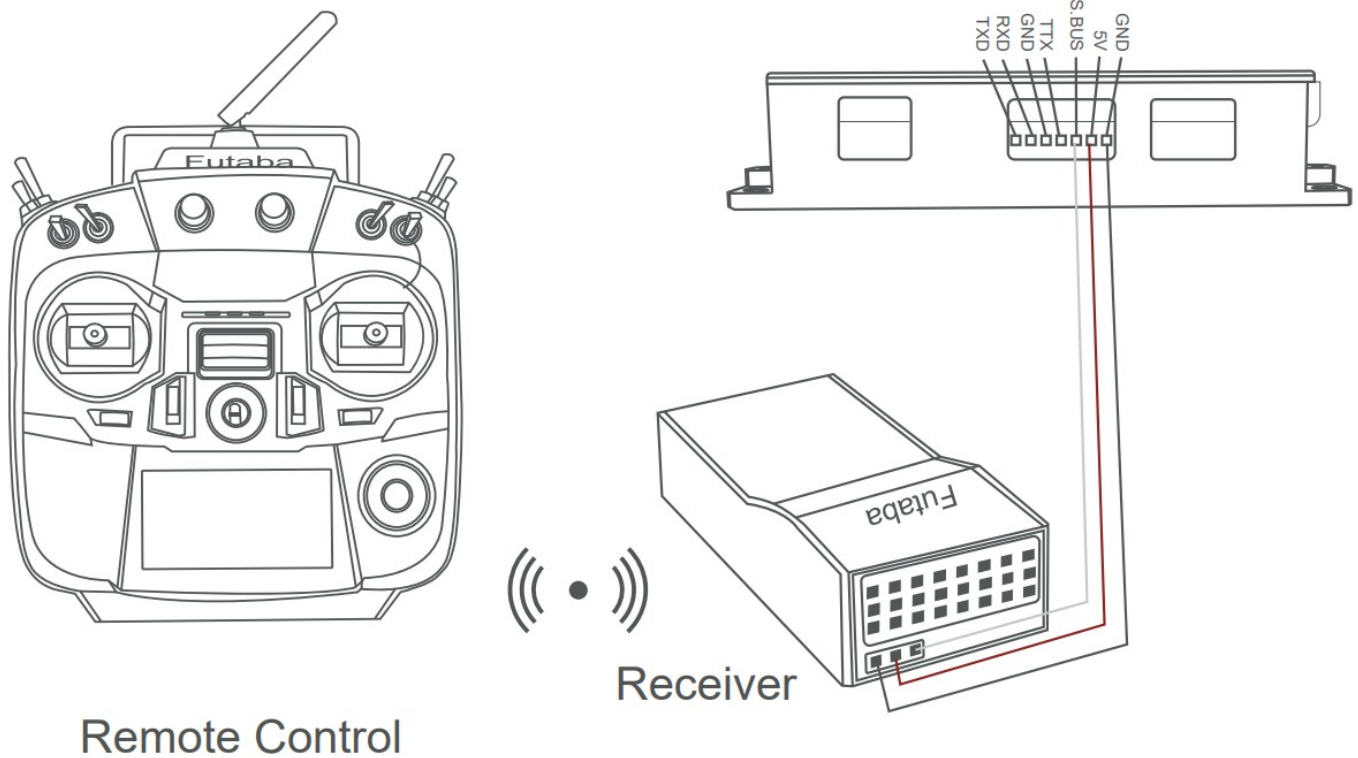
### 3.3 S.BUS Control

Control the gimbal camera functions by one combining signals. Connect the external Subs to Sabu's port on the control box, and the external Subs signal GND connect to the GND interface of the control box.

Wiring Diagram (Take Futaba remote control for example):



Wiring Diagram Standard Version



### Wiring Diagram Viewport Version

Sabu's control mode: default Sabu's signal channel 9-15 to control gimbal camera functions (the function of channel is consistent with corresponding channel in PWM function description)

Channel 9: Yaw Control

Channel 10: Pitch Control

Channel 11: Mode Control

Channel 12: Zoom Control

Channel 13: Focus Control

Channel 14: Pic/Rec Control

Channel 15: Multi Backup

- User can set the channels by setting serial command according to the actual requirement. The Sabu's channel position can be arranged in any sequence within channel 1-15 to connect with the flight controller or remote control.
- TTL control and Subs control cannot coexist at the same time for standard version. The default control is TTL if no requirement. The user can set to Sabu's control if needed (please contact with our technical support for the setting instruction.)

### 3.4 TCP control

For Viewpro gimbal cameras with Ethernet output, the default IP address is: 192.168.2.119, control port: 2000.

You can send the corresponding protocol to realize TCP control after connecting.

The TCP control protocol is [Frame header: EB + command ID: 90 + data body (serial port protocol) + Checksum (CS = body checksum, checksum is calculated as a sum of all bytes of data body modulo 256)]. Or directly use UI View link to control after TCP connection.

### 3.5 Laser Rangefinder

A30TR build-in infrared (IR) laser rangefinder, can resolve the geo graphic position and distance of the object automatically after GPS signal is synced from the UAV. The target is the object in the middle point of the screen.

1. A30TR default boot turn off laser range finder, can open it in View link Manually.

2. If you don't use View link, pls send below serial port commands to set the laser rangefinder:  
Continuous ranging: AA 55 0D 01 FF Single Use: 55 AA DC 05 1C 20 00 39 Turn off again: AA 55 0D 00 FF
3. Some points might cause the distance show 0:
  - A. The distance is out of range (5 to 1500 meters).
  - B. The IR laser rangefinder can't get distance information from reflective object (glass, water, rain) or over-inclined object.

## Specification

Hardware Parameter	
Working voltage	12V
Input voltage	3S ~ 6S
Output voltage	5V (connect with PWM)
Dynamic current	1000~1300mA @ 12V
Idle current	1000mA @ 12V
Working environment temp	-20°C ~ +60°C
Output	micro HDMI(1080P 30/60fps) / IP (1080p/720p 30/60fps)
Local-storage	TF card (Up to 128G, class 10, FAT32 or ex FAT format)
Photo storage format	JPG(1920*1080)
Video storage format	MP4 (1080P 30fps/60fps)
Control method	PWM / TTL / S.BUS / TCP(IP output)
Gimbal Spec	
Mechanical Range	Pitch/Tilt: -60° 150°, Roll: ±45° Yaw/Pan: ±300° / ±360°*N (IP output version)



Controllable Range	Pitch/Tilt: -45° 90°, Yaw/Pan: ±290° / ±360°*N (IP output version)
Vibration angle	Pitch/Roll: ±0.02°, Yaw ±0.02°
One-key to center	√
<b>Camera spec</b>	
Imager Sensor	SONY 1/2.8" "Exmor R" CMOS
Picture quality	Full HD 1080 (1920*1080)
Effective pixel	2.13MP
Lens optical zoom	30x, F=4.3~129mm
Digital zoom	12x (360x with optical zoom)
Min object distance	10mm(wide end) to 1200mm(tele end). Default 300mm
Horizontal viewing angle	1080p mode: 63.7°(wide end) ~ 2.3°(tele end)
Sync system	Internal
S/N ratio	more than 50dB
Min illumination	Color <a href="#">0.01lux@F1.6</a>
Exposure control	Auto, Manual, Priority mode(shutter priority & iris priority), Bright, EV compensation, Slow AE
Gain	Auto/Manual 0dB to 50.0dB(0 to 28 steps + 2 steep/ total 15 steps) Max. Gain Limit 10.7 dB to 50.0dB (6 to 28 steps + 2 step/ total 12 steps)

White balance	Auto, ATW, Indoor, Outdoor, One Push WB, Manual WB, Outdoor Auto, Sodium Vapor Lamp (Fix/Auto/Outdoor Auto)
Shutter speed	1/1s to 1/10,000s, 22 steps
Backlight compensation	Yes
Aperture control	16 steps
Defog	Yes
OSD	Yes
<b>IR Thermal Imager Spec</b>	
Focus Length	19mm
Coating Film	DLC
Horizontal FOV	22.9°
Vertical FOV	18.4°
Diagonal FOV	29.0°
Recognize Distance (Man : 1.8×0.5m)	792 meters
Verified Distance (Man: 1.8×0.5m)	198 meters
Detective Distance (Car: 4.2×1.8m)	99 meters
Recognize Distance (Car: 4.2×1.8m)	2428 meters

Recognize Distance (Car: 4.2×1.8m)	607 meters
Verified Distance (Car: 4.2×1.8m)	303 meters
Working mode	Uncooled long wave (8μm~14μm) thermal imager
Detector pixel	640*512
Pixel size	12μm
Focusing method	Athermal prime lens
NETD	<a href="#"><u>≤50mK@F.0</u></a> @25°C
Color palette	White, iron red, pseudo color
Digital zoom	1x ~ 8x
Sync correct time	Yes
<b>EO / IR Camera Object Tracking</b>	
Update rate of deviation pixel	30Hz
Output delay of deviation pixel	<30ms
Minimum object contrast	5%
SNR	4
Minimum object size	16*16 pixel
Maximum object size	256*256 pixel

Tracking speed	<32 pixel/frame
Object memory time	100 frames
<b>IR Laser Rangefinder</b>	
Range	5~1500 meters
Resolution	0.5m
Working current	80mA max
Light Beam	905nm pulse laser
Divergent Angle	3 mrad
Laser pulse frequency	1HZ
Power	1 mW (safe for eye)
Ranging mode	Pulse
Location Resolving	Latitude and longitude of target
Rangefinder	Target distance measuring
<b>EO Camera AI Recognition Performance</b>	
Targets type	Car and human
Simultaneous detection quantity	≥ 10 targets
Min contrast ratio	5%
Min target size	5×5 pixel
Car detection rate	≥85%

False alarm rate	≤10%
<b>Packing Information</b>	
N.W.	1198g (Viewport version)
Product meas.	130*134.7*213.3mm (Standard version) 130*134.7*219mm (Viewport version)
Accessories	1pc gimbal camera device, screws, copper cylinders, damping balls, 1pc USB to TTL cable / High quality plastic box with foam cushion
G.W.	2928g
Package meas.	350*300*250mm

## FAQ

### What outputs does HDMI have

– A: HDMI 1080P 60fps(default)/HDMI 1080P 30fps

## Does A30TR support taking photos during recording?

– A: Yes

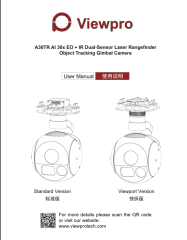
## How to set the video storage format of A30TR?

– A: When the IP output resolution is set to 1280\*720, the storage resolution is 1920\*1080; Storage resolution is 1920\*1080 when the IP output resolution is set to 1920\*1080;

– The video frame rate saved in the TF card is the same with the one set during IP output, 30fps and 60fps are optional.



## Documents / Resources

 <p>The image shows the cover of the user manual for the Viewpro A30TR AI 30x EO + IR Dual-Sensor Laser Rangefinder Object Tracking Gimbal Camera. It features the Viewpro logo, the product name, and two small images of the camera unit. Text on the cover includes 'User Manual', 'A30TR AI 30x EO + IR Dual-Sensor Laser Rangefinder Object Tracking Gimbal Camera', and a QR code.</p>	<p><a href="#">Viewpro A30TR AI 30x EO + IR Dual-Sensor Laser Rangefinder Object Tracking Gimbal Camera [pdf] User Manual</a></p> <p>A30TR AI 30x EO IR Dual-Sensor Laser Rangefinder Object Tracking Gimbal Camera, A30TR AI, 30x EO IR Dual-Sensor Laser Rangefinder Object Tracking Gimbal Camera, Rangefinder Object Tracking Gimbal Camera, Object Tracking Gimbal Camera, Gimbal Camera, Camera</p>
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## References

- [Shenzhen Viewpro Technology Co., Ltd.](#)