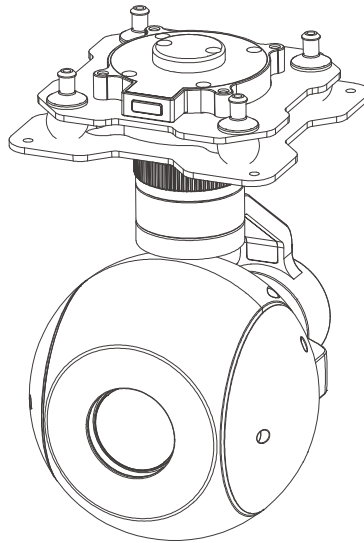
A10 Pro 10x EO AI Tracking Gimbal Camera

User Manual



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

Warning

Thank you for purchasing Viewpro product. Please read this user manual carefully to make sure the correct operation of this product. Failure to follow instructions and operate in accordance with the instruction in this user manual may damage the product. Do not disassemble or assemble the product by yourself, otherwise it may be damage or not work properly. Viewpro has no ability for any damage that caused by users' incorrect operation, installation and reassembling in directly or indirectly.

Note

Warning

Important Note

Important

1. Please keep the camera in a dry environment to avoid fogging of the lens due to excessive humidity. If the lens is foggy, turn it on for a while and wait for the fog to dissipate.

2. when cleaning the camera lens, be sure to use a soft and dry cleaning cloth to wipe the surface.

3. Do not plug or remove the TF card with power on; After inserting and removing the TF card, make sure that the TF rubber plug is tightly covered to prevent the self-test from failing.

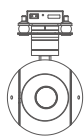
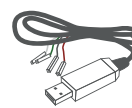
1.Product Introduction

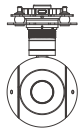
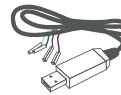
1.1 Introduction

A10 Pro is a high-precision 3-axis enhanced stability gimbal with a 5.13m pixel 10x optical zoom camera. It supports EO zoom, photography, record, target tracking and AI detection of vehicle and human. OSD can display the yaw and pitch angle of the giambal camera, zooming times, FOV and tracking box. When input the external GPS and time, the GPS latitude and longitude, altitude, and real-time time will be displayed on screen. OSD on or off is optional. GPS coordinate and shooting time can be saved in image file. The gimbal can achieve stabilization in three directions: yaw, roll and pitch. The integrated design of damping system and gimbal can greatly reduce mechanical vibration.

A10 Pro widely used in UAV applications in public security, electric power, fire fighting, zoom aerial photography and other industries

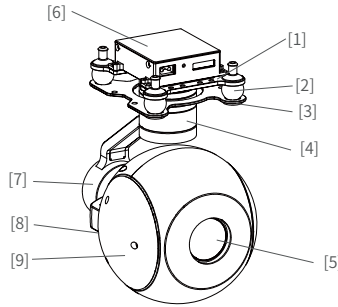
1.2 Packing List

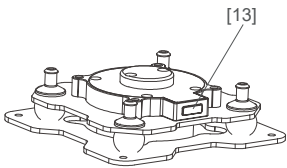
A. Standard Version			
Gimbal ×1		USB to TTL ×1	
Aluminum Cylinder ×4		M3 screw ×8	

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

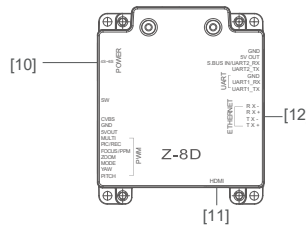
2.Install Instruction

2.1 Overview





Viewport

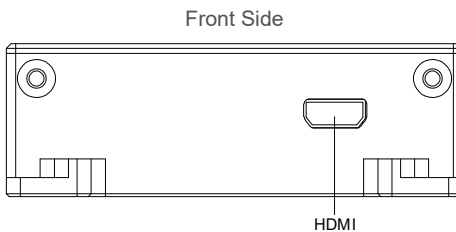


Control Box

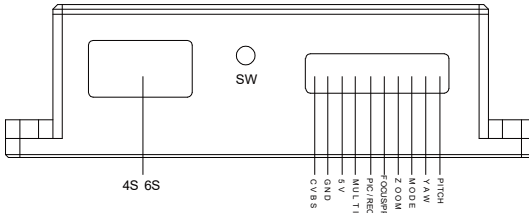
[1] Control box
[2] Upper damping ball
[3] Damping ball
[4] Lower damping ball
[5] Yaw axis motor
[6] FHD zoom camera
[7] Rolling axis motor
[8] TF card slot
[9] Pitch axis motor
[10] 4S-6S power interface
[11] Micro HDMI interface
[12] Ethernet interface
[13] Viewport unlock button

- Please make sure that the motor is not blocked by any objects during rotation, and if the gimbal is blocked during rotation, please remove the obstacle immediately.

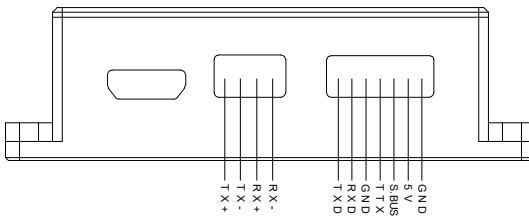
2.2.1 Control Box Printing (Standard Version)



Left Side



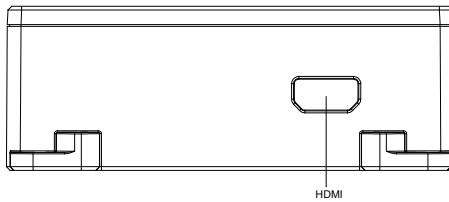
Right Side



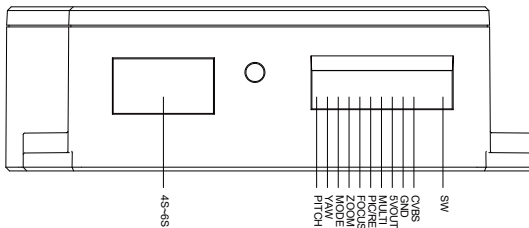
- The input voltage cannot be higher than 6S.
- The pin insertion interface cannot be connected with power supply.
- The yellow jumper cap cannot be removed.

2.2.2 Control Box Printing (Viewport Version)

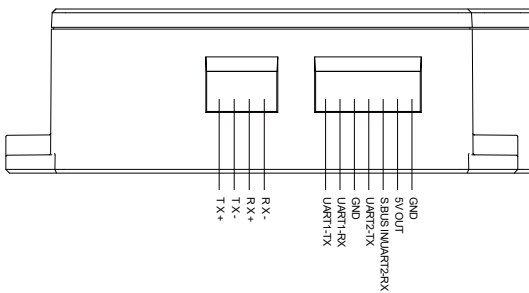
Front Side



Left Side

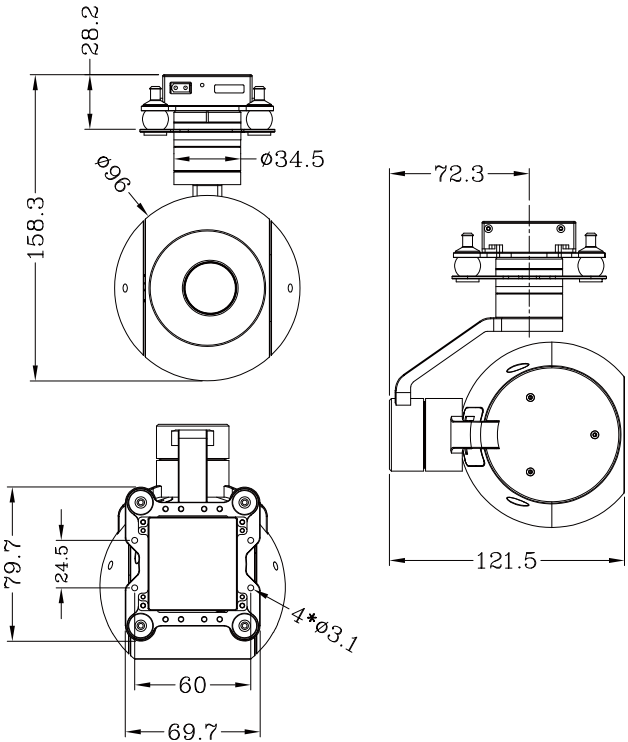


Right Side



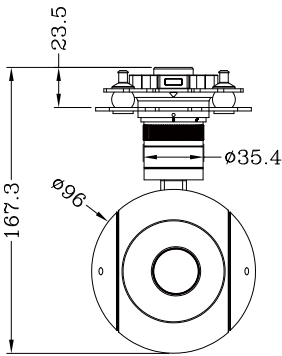
2.3.1 Device Dimensions (Standard Version)

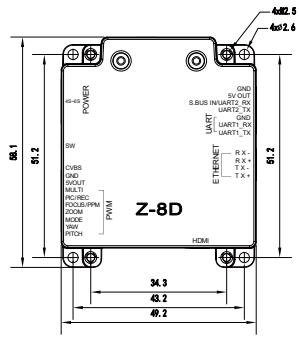
Unit: mm



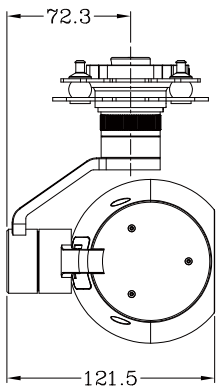
2.3.2 Device Dimensions (Viewport Version)

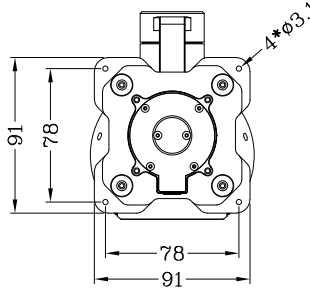
Unit: mm





Control Box



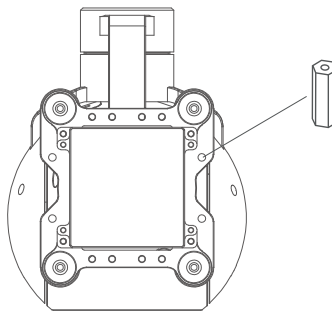


2.4 Mounting Part Installation

(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.

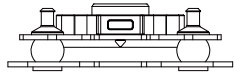
(2) Fix one end of the copper cylinder on the screw hole of lower damping board, and use M3 screw to fasten it.

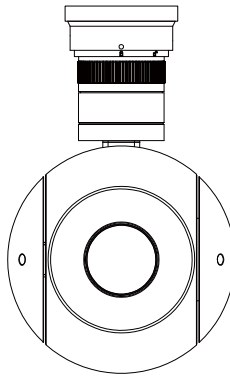
(3) According to the provided screw hole dimension you can make suitable mounting holes on the UAV mounting board, and fixes the other end of the copper cylinder on the mounting board of the UAV (Viewport version is the same).

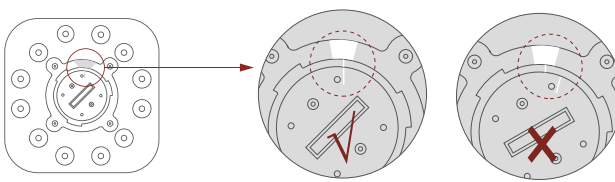


Front

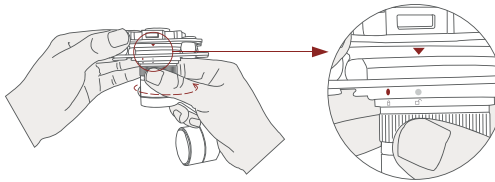
2.5 Viewport Release Instruction



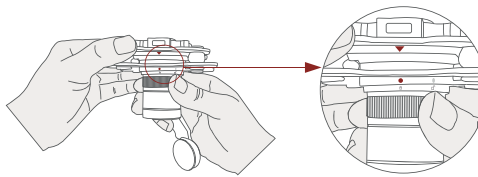




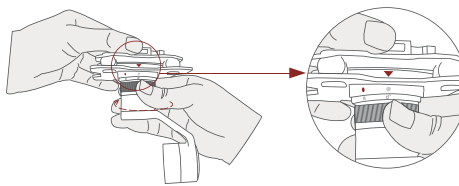
1. Make sure the two white stripes indicated in above picture are aligned with each other. (If the stripes are not aligned to each other, please pinch the connector part and turn it to left manually)



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 anti-clockwise.



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. Press down the "Remove button" on the quick release plate, rotate the pod clockwise, and the white dot and triangle are in a vertical state to unlock.

2.6 TF Card Installation

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 Interface

Description of all image output interfaces in the gimbal:
HDMI :Micro HDMI interface, HD output 1080P 60/30fps, default output 1080P60fps;

Network: Network output interface, default output RTSP format, IP address: rtsp://192.168.2.119:554, resolution 1080P, frame rate 30fps, code stream 4M;

AV: This model has no analog signal output;

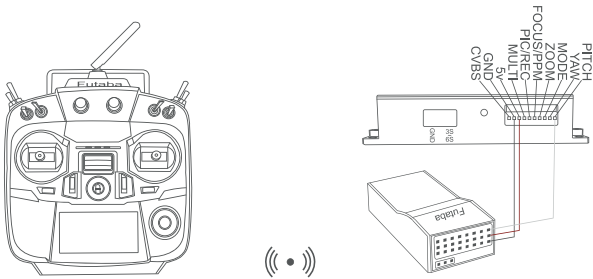
- Above output mode is optional. Please subject your actual product.
- When using user interface software Viewlink for network connection, the network of external device (computer) should be the IP address: 192.168.2.2 (choose the last byte among 2~254, can not be 119 same as the gimbal), subnet mask: 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.

3. 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 Coonection (Connect Pitch channel as an example)



Connection Diagram

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

Low Gear
Pitch Up

Position 2

Middle Gear
Pitch Stop

Position 3

High Gear
Pitch Down

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

Low Gear
Yaw Left

Position 2

Middle Gear
Yaw Stop

Position 3

High Gear
Yaw Right

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

Low Gear

Position 2

Middle Gear

Position 3

High Gear

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:

4-1) Operate 1 time continuously and quickly, from position 2 - 3, to Home position.

4-2) Operate 2 times continuously and quickly, from position 2 - 3 - 2 - 3, the camera lens looks vertically down.

4-3) 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)

4-4) 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

Low Gear
Zoom Out

Position 2

Middle Gear
Stop Zoom

Position 3

High Gear
Zoom In

6) Focus (not functional for this channel)

7) Pic/Rec Channel: Connect PWM Pic/Rec channel to control “Photograph” and “Record” by Joystick, rotary knob and 3-gear switch on remote control. Take 3-gear switch as an example.

Position 1

Low Gear

Position 2

Middle Gear

Position 3

High Gear

Switch from Position 2 to 1 to take a picture.

- OSD display “IMG PHOTOING” at the left top corner and the picture is stored in TF card.

Switch from Position 2 to 3 to start “ Record ” , and repeat the operation to stop recording.

- During recording, OSD display information of “REC 00 00 00”, as current recording time, and the remaining capacity of TF card. It will show the “TFXXXMB” when stop recording. When the storage capacity of TF card is full , “TF FULL” is shown on screen. If no TF card is inserted, “ NO TF” is shown on screen. Please insert the TF card before using.

8) Backup Channel (Multi Back up channel, control digital zoom / tracking function, Optional knob, three-position switch, take three-position switch as an example)

Position 1

Low Gear

Position 2

Middle Gear

Position 3

High Gear

Switch from position 2 to position 1: cancel tracking

Switch from position 2 to position 3: A lock box appears in the center of the screen to start tracking the target

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.

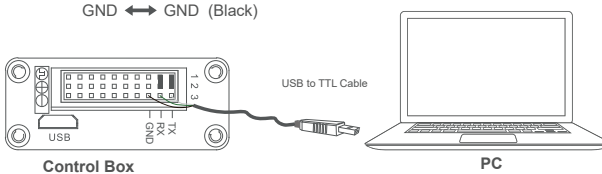
Connection Diagram (PC - USB to TTL Cable- Gimbal Camera as example):

Gimbal Camera **Cable**

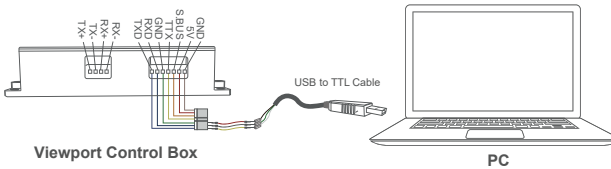
TX ⟷ RX (White)

RX ⟷ TX (Green)

GND ⟷ GND (Black)



Connection Diagram



Connection Diagram

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

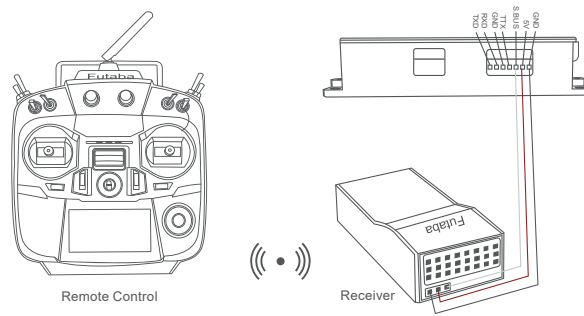
ViewLink is a user interface developed by Viewpro for Viewpro gimbal cameras, you can download it from Viewpro website (www.viewprotech.com) or ask distributors for installation package.

- 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 S.Bus to S.Bus port on the control box, and the external S.bus signal GND connect to the GND interface of the control box.

Wiring Diagram (Take Futaba remote control for example):



Wiring Diagram

S.Bus control mode: default S.Bus signal channel 7-13 to control gimbal camera functions (the function of channel is consistent with the corresponding channel in PWM function description)

Channel 7: Yaw Control
Channel 8: Pitch Control
Channel 9: Mode Control
Channel 10: Zoom Control
Channel 11: Focus Control
Channel 12: Pic/Rec Control
Channel 13: Multi Backup

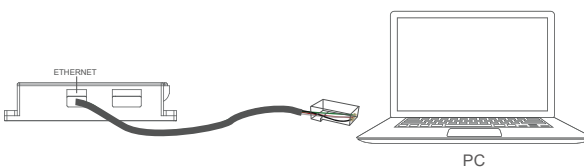
- User can set the channels by setting serial command according to the actual requirement. The S.Bus channel position can be arranged in any sequence within channel 1-15 to connect with the flight controller or remote control.

- TTL control and S.bus control cannot coexist at the same time for standard version. The defualt control is TTL if no requirement. The user can set to S.bus control if needed (please contact with our technical support for the setting instruction.)

3.4 TCP control

If the gimbal is shipped with a network port output, the default IP address is 192.168.2.119, and the control port is 2000. After connection, send the corresponding TCP protocol to control the gimbal.

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 Viewlink to control after TCP connection.



Ethernet wiring diagram

4.Specifications

General Parameters	
Working Voltage	16V
Input voltage	4S ~ 6S
Output voltage	5V (connect with PWM)
Dynamic current	520~1300mA @ 16V
Working environment temp.	-20°C ~ +60°C
Output	micro HDMI(1080P 30fps/60fps) / IP (RTSP/ UDP 720p/1080p 30fps)
Local-storage	SD card (Up to 128G,class 10, FAT32 or ex FAT format)
Photo storage format	JPG(1920*1080)
Video storage format	MP4 (1080P 30fps)
Card reading online	HTTP Card Read
Geotagging	Support, display time and GPS coordinate in picture exif
Control Method	PWM / TTL / S.BUS/ TCP(IP output version)/ UDP(IP output version)
Gimbal Spce	
Angle scope of structure design	Pitch/Tilt: ±120°, Roll: ±70°, Yaw/Pan: ±300° / ±360°*N (IP output version)
Angle scope of software design	Pitch angle: -45°～90°, Yaw angle: ±290° / ±360°*N (IP output version)

Vibration angle	Pitch/Rolling/Yaw angle：±0.02°
One-key to center	√
Camera spec	
Imager Sensor	1/2.8" SONY CMOS Sensor
Total pixel	5.13MP
Picture quality	Full HD 1080 (1920*1080)
Optical zoom	10x, f = 4.7mm ~ 47mm, F1.7~F3.1
Digital zoom	32x
Angle of View (H)	69.9°(Wide end) ~ 8.7° (Tele end)
Min target distance	0.1 / 1.5 / 3.0 / 5.0 / 10.0 m
Min illumination	Color(1/30s, 72.0dB): 0.02 lux , BW(1/30s, 72.0dB): 0.005lux Color DSS(1/1s, 72.0dB): 0.002 lux , BW DSS(1/1s, 72.0dB): 0.0005 lux
White balance	Auto / One Push / Manual / Indoor / Outdoor
Shutter speed	1/1sec ~ 1/100,000 sec
Focus	Auto / One Push / Manual
Iris	0 ~ 20 steps
Exposure	Auto / Manual / Priority Mode (Shutter priority & aperture priority)
Sync system	Progressive Scan
Sync. System Internal	Internal
Backlight compensation	Yes

Auto ICR	Yes
Image stabilization	Yes
Defog	Yes
EO Camera Object Tracking	
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	±48 pixel/frame
Object memory time	100 frames
EO Camera AI Performance	
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%
Packing Imformation	

N.W.	660g(Viewport version with Viewport)
Product meas.	121.5*96*161.1mm / 121.5*96*167.3mm (Viewport Version)

5.FAQ

1.What is the video output mode of the A10 Pro HDMI?
Answer: HDMI1080P60fps (default) / HDMI1080P30fps

2.Does A10 Pro support taking picture during video recording?
Answer: Yes.

3.How does A10 Pro store photos and videos?
Answer: The photo resolution saved in the TF card is 1920 * 1080, and the video is 1080P30fps.

4.What target does A10 Pro can detect ?
Answer: Vehicle and human.

This user manual is subject to update without notice. For details, please visit http://www.viewprotech.com/index.php to get the latest product information.
Technical support : support@viewprotech.com