

ZAi-40X Pro Tri-sensor AI Gimbal Camera

Technical Specifications Datasheet

1. General Specifications

Product Weight	990g
Product Dimensions	125 * 134.5 * 204.7 mm
Input Voltage	14.8V ~ 25.2V
Dynamic Current	700 ~ 1500mA @ 16V
Power Consumption	Average: 11.2W, Peak: 24W
Operating Temperature	-20°C ~ +50°C
IP Rating	IP4X
Video Output	Micro HDMI (1080P 30fps/60fps) / IP (RTSP/UDP 720p/1080p 30fps H.264)
Storage	TF card (up to 256G, read/write speed Class 10 or above, formatted as FAT32)
Image Format (TF Card)	JPG (1920*1080)
Video Format (TF Card)	MP4 (1080P @ 30fps)
Control Interface	PWM / S.BUS / UART (TTL) / TCP / UDP

2. Gimbal Specifications

Mechanical Range	Pitch: -60° to ~130° Roll: ±40° Yaw: ±300° / ±360°*N (Network output version only)
Software Limit Range	Pitch: -45° to ~125° Yaw: ±290° / 360°*N (Network output version)
Angular Vibration Range	Pitch / Roll / Yaw: ±0.02°
One-key Center	Supported (✓)

3. Camera Specifications

Image Sensor	1/2.8-inch Sony CMOS
Effective Pixels	Approx. 2.13 million pixels
Lens	40x Optical Zoom f = 4.25mm (wide) to 170.0mm (tele) F1.6 to F4.95
Digital Zoom	32x
FOV (Diagonal, Horizontal, Vertical)	D: 73.80° (wide) to 2.16° (tele) H: 66.37° (wide) to 1.90° (tele) V: 39.58° (wide) to 1.11° (tele)
Minimum Object Distance	0.1 / 1.5 / 3.0 / 5.0 / 10.0 m
Minimum Illumination	Normal Mode: Color (1/30s, 79.5dB): 0.01 lux B/W (1/30s, 79.5dB): 0.002 lux High Sensitivity Mode: Color (1/1s, 79.5dB): 0.001 lux B/W (1/1s, 79.5dB): 0.0002 lux
S/N Ratio	≥ 50dB
Focus System	Auto / One-push Auto Focus / Manual
White Balance	Auto
Shutter Speed	1/1 sec to 1/30,000 sec
Exposure Control	Auto / Manual / Priority Mode (Shutter priority & Aperture priority)
Backlight Compensation	Supported
Auto ICR	Supported
Progressive Scan Mode	Supported
Image Stabilizer	Supported
Defog	Supported

4. Thermal Imaging Specifications

Lens Focal Length	19mm
Focal Field of View (FOV)	Horizontal: 22.9° Vertical: 18.4° Diagonal: 29.0°
Detection / Recognition / Verification Distance (Human: 1.8×0.5m)	Detection: 792m Recognition: 198m Verification: 99m
Detection / Recognition / Verification Distance (Vehicle: 4.2×1.8m)	Detection: 2428m Recognition: 607m Verification: 303m
Operating Mode	Uncooled long-wave (8μm ~ 14μm)
Detector Resolution	640 * 512
Pixel Pitch	12μm
Focusing Mode	Athermalization, free focus
NETD	≤ 50mK @ F1.0 @ 25°C
Color Palettes	White Hot, Black Hot, Ironbow
Digital Zoom	1x - 8x
Temperature Measurement (Optional)	Range: -20°C ~ +150°C, +100°C ~ +550°C Accuracy: ±2°C or ±3% (whichever is greater) @ 23°C±3°C, Measurement Distance 5m

5. Laser Rangefinder Specifications

Effective Range	Vehicle: ≥ 3000m Human: ≥ 2000m
Minimum Range	15m
Range Accuracy	±1m
Measurement Frequency	1 ~ 10Hz
Wavelength	1535 ± 5 nm
Divergence Angle	~0.6 mrad
Measurement Logic	Measures the distance of the two-point target indicated by the center position of the output screen

6. Tracking Performance Specifications

Deviation Pixel Update Rate	30Hz
Deviation Pixel Output Delay	< 30ms
Minimum Target Contrast	5%
Minimum SNR	4
Minimum Target Size	16 * 16 pixels
Maximum Target Size	256 * 256 pixels
Tracking Speed	±48 pixels/frame
Target Memory Time	100 frames

7. AI Recognition Performance

Computing Power	1T
Target Types	Human, Vehicle
Max Simultaneous Targets	≥ 10 targets
Contrast	≥ 5%
Minimum Target Size	5 * 5 pixels
Vehicle Detection Probability	≥ 85%
False Alarm Rate	< 10%

8. Special Features

OSD	Display or hide
Image Attributes	Supported
Network Card Writing	HTTP to read pictures, download videos
Screen Display	EO+IR / IR / EO+IR / EO / IR
Dual Video Stream Output (Optional)	Supported (one channel EO output, one channel IR output; default configuration does not support recording video)