Z-1Mini

Intelligent 4K Full-Color Night Vision Micro Pod

Characteristics

- 4K-resolution visible light camera, powered by the AI-ISP full-color night vision imaging engine, delivers clear full-color images in low-light environments. Featuring AI-HDR, it ensures both highlights and shadow details remain vividly visible even in complex lighting scenarios with extreme brightness contrasts.

- Features AI multi-object detection and tracking, which can constantly track one of the persons and vehicles intelligently identified in the image.

- Micro 3-axis nonorthogonal mechanical stabilized structure reducing the weight down to 69g.

- Supports network, UART and S.BUS control and compatible with both private protocol and MAVLink protocol.

- Thanks to the Dual-IMU complementary algorithms with IMU temperature control and carrier AHRS fusion, the gimbal provides a stabilization accuracy at ±0.01°.

- Can be mounted onto multiple carriers, whether downward or upward.

- With the Dragonfly software, user can watch the image and control the pod without protocol ducking, and download photos and videos online as well.

- With the XF-QGC software, all the functions of the pod can be achieved in conjunction with an open source autopilot.

- Screen supports overlaying OSD information. Image supports EXIF saving. Live video stream and recording supports SEI saving. (The SEI functionality will be supported via subsequent firmware updates)

- 10~26.4 VDC wide voltage input.

Specifications

General	
Product Name	Z-1Mini
Dimensions	50.2 x 48.4 x 67.4mm
Weight	69g
Operating Voltage	10 ~ 26.4VDC
Power	4.5W (AVG) / 18W (Stall)
Mounting	Downward / Upward

Gimbal	
Gimbal Type	3-axis Nonorthogonal Mechanical Stabilization
Angular Accuracy	±0.01°
Max Stable Tilt Angle	45°
Controllable Range	Pitch: -105°~+145°, Yaw: ±160°
Max Rotation Speed	150°/s

Visible Light Camera		
Image Sensor	1/2.8-inch CMOS, Effective Pixels: 8.29M	
Lens	Actual Focal Length: 6.0mm (Equivalent focal length: 40.6mm) Aperture: f/1.0 HFOV: 54.7° VFOV: 30.2° DFOV: 63.2°	
Resolution	3840(H) x 2160(V)	
Pixel Size	1.45µm(H) x 1.45µm(V)	
Equivalent Digital Zoom Rate	8x	
Object Detection Distance	EN62676-4:2015	Person[1]: 175m; Light vehicle[2]: 230m; Large vehicle[3]: 491m
	Johnson Criteria	Person: 2069m; Light vehicle: 6345m; Large vehicle: 13517m
Object Identification Distance	EN62676-4:2015	Person: 35m; Light vehicle: 46m; Large vehicle: 98m
	Johnson Criteria	Person: 517m; Light vehicle: 1586m; Large vehicle: 3379m
Object Verification Distance	EN62676-4:2015	Person: 18m; Light vehicle: 23m; Large vehicle: 49m
	Johnson Criteria	Person: 259m; Light vehicle: 793m; Large vehicle: 1690m

AI Multi-object Detection & Tracking	
Object Size	16x16 ~ 128x128 px
Object Identification Delay	< 40ms
Tracking Speed	±32 px / field
Tracking Deviation Refresh Rate	30Hz
Tracking Deviation Output Delay	≤5ms

[1]   Reference dimension of person: 1.8x0.5m. Critical dimension under Johnson criteria is 0.75m

[2]   Reference dimension of light vehicle: 4.2x1.8m. Critical dimension under Johnson criteria is 2.3m

[3]   Reference dimension of large vehicle: 6.0x4.0m. Critical dimension under Johnson criteria is 4.9m

Image & Video		
Image Format	JPEG	
Maximum Image Resolution	3840 x 2160	
Video Format	MP4	
Maximum Video Resolution	Stream: 3840 x 2160 @30fps Recording: 1920 x 1080 @30fps (3840 x 2160 @ 30fps will be supported via subsequent firmware updates)	
OSD	Time, Camera attitude, Carrier coordinate, Magnification level, Storage status	
EXIF	Time, Camera attitude, Carrier coordinate, Resolution	
SEI	Will be supported via subsequent firmware updates	
Stream Encode Format	H.264 , H.265	
Stream Network Protocol	RTSP	
Average Stream Delay & FPS[4]	OSD OFF & target detection OFF	Dragonfly: 210ms QGC: 260ms FPS: 30
	OSD ON & target detection OFF	Dragonfly: 300ms QGC: 330ms FPS: 30
	OSD OFF & target detection ON	Dragonfly: 370ms QGC: 400ms FPS: 21
	OSD ON & target detection ON	Dragonfly: 530ms QGC: 600ms FPS: 13
Storage		
Supported SD Cards	Supports a U3/V30 or above MicroSD card with a capacity of up to 256GB	
Environment		
Operating Temperature	-20℃ ~ 50℃	
Storage Temperature	-40℃ ~ 60℃	
Operating Humidity	≤85%RH (Non-condensing)	

[4] Measured with the pod directly wired to a computer at 1x zoom ratio. When the zoom ratio exceeds 1x, video stream delay will increase and frame rates will decrease