Z-9B_Ver4.0 Intelligent Multi-sensor Pod

Characteristics

- Features AI multi-object detection and tracking, which can constantly track one of the persons and vehicles intelligently identified in the image.
- Carries an 120x hybrid zoom camera, a thermal camera and a laser range finder.
- Laser lighting module ensures the cameras getting a clear image even in complete darkness.
- 3-axis orthogonal mechanical stabilized structure, is able to spin continually around its yaw axis
- Built-in GCU module makes the product more integrated.
- Supports network, UART and S.BUS control. Supports both private protocol and MAVlink protocol.
- Thanks to the Dual-IMU complementary algorithms with IMU temperature control and carrier AHRS fusion, the Z-9B 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.
- Screen supports overlaying OSD information such as latitude, longitude and altitude. Image supports shooting point coordinate EXIF save. Video stream supports SEI stacking.
- 20~53 VDC wide voltage input.

Specifications

General			
Product Name	Z-9B		
Dimensions	173 x 144 x 206mm		
Weight	1158g		
Operating Voltage	20 ~ 53 VDC		
Power	21.4W (AVG, ranging & light off) / 50.4W (Stall, ranging & light on)		
Mounting	Downward / Upward		
Target Positioning Accuracy[1]	Horizonal Error: 1.8m Vertical Error: 0.7m	@	Horizonal Distance: 105m Relative Height: 75m
	Horizonal Error: 17.4m Vertical Error: 6.7m	@	Horizonal Distance: 513m Relative Height: 119m
	Horizonal Error: 33.8m Vertical Error: 13.7m	@	Horizonal Distance: 1003m Relative Height: 246m
Gimbal			
Gimbal Type	3-axis orthogonal Mechanical Stabilization		
Angular Accuracy	±0.01°		
Controllable Range	Pitch: -120° ~ 55°, Roll: ±40°, Yaw: ±360°constantly		
Max Controllable Speed	±200°/s		
Zoom Camera			
Image Sensor	1/2.8-inch CMOS, Effective Pixels: 4.09M		
Lens	Actual Focal Length: 4.7~141mm (Equivalent focal length: 27.9~837mm) Aperture: f/1.5~f/4.0 HFOV: 59.5° ~ 2.2° VFOV: 35.8° ~ 1.2° DFOV: 66.6° ~ 2.5°		
Resolution	2688(H) x 1520(V)		
Pixel Size	2.0μm(H) x 2.0μm(V)		
Optical Zoom Rate	30x		
Equivalent Digital Zoom Rate	4x		
Object Detection Distance	EN62676-4:2015	Person[2]: 3283m; Light vehicle[3]: 4315m; Large vehicle[4]: 9192m	
	Johnson Criteria	Person: 37500m; Light vehicle: 115000m; Large vehicle: 245000m	
Object Identification Distance	EN62676-4:2015	Person: 657m; Light vehicle: 863m; Large vehicle: 1838m	
	Johnson Criteria	Person: 9375m; Light vehicle: 28750m; Large vehicle: 61250m	
Object Verification Distance	EN62676-4:2015	Person: 328m; Light vehicle: 432m; Large vehicle: 919m	
	Johnson Criteria	Person: 4688m; Light vehicle: 14375m; Large vehicle: 30625m	

[1] Measured by pod mounted on a dual antenna RTK positioned multicopter drone to a known coordinate point. The target positioning accuracy is influenced by carrier's positioning and orientation accuracy, angle between the direction of pod mounted and the heading of carrier, slant range, gradient of measurement line and air quality. The data is for reference only.

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

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

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

Thermal Camera		
Thermal Sensor	Uncooled VOx Microbolometer	
Lens	Focal Length: 25mm (Equivalent focal length: 93.2mm) Aperture: f/1.0 HFOV: 17.5° VFOV: 14.0° DFOV: 22.3°	
Resolution	640(H) x 512(V)	
Pixel Size	12μm(H) x 12μm(V)	
Equivalent Digital Zoom Rate	8x	
Spectral Band	8~14μm	
Sensitivity (NETD)	<50mk@F1.0@25℃	
Object Detection Distance	Johnson Criteria	Person: 1042m; Light vehicle: 3194m; Large vehicle:6806m
Object Identification Distance		Person: 260m; Light vehicle: 799m; Large vehicle: 1701m
Object Verification Distance		Person: 130m; Light vehicle: 399m; Large vehicle: 851m
Temperature Measurement	Optional (Temperature Measurement Type)	
Temperature Measurement Method	Spot Measurement, Area Measurement	
Temperature Measurement Range	-20°C~550°C	
Temperature Alert	High-temp Alert, Low-temp Alert	
Sun Burn Protection	Supported	
Palette	White Hot, Black Hot, Tint, Fulgurite, Iron Red, Hot Iron, Medical, Arctic, Rainbow 1, Rainbow 2	
Laser Range Finder		
Wavelength	905nm	
Max Laser Power	1mW	
Beam Angle	2.5mrad	
Beam Diameter	0.25m@100m	
Laser Safety	Class 1M (IEC 60825-1:2014)	
Measurement Accuracy	±0.3m (≤300m) / ±1.0m (>300m)	
Measurement Range	5-1800m (ϕ12m vertical surface with 20% reflectivity)	
Laser Lighting Module		
Wavelength	850±10nm	
Laser Power	0.8W x2	
Beam Angle	8°+30°	
Beam Diameter	14m+54m@100m	
Effective Illumination Distance	≤200m	
Laser Safety	Class 3B (IEC 60825-1:2014)	

AI Multi-object Detection & Tracking	
Object Identification Size	≥30x20 px
Object Identification Rate	≥85%
Object Identification Quantity	≤50
Target Tracking Size	16x16~256x256 px
Tracking Deviation Refresh Rate	30Hz
Tracking Deviation Output Delay	≤60ms
Target Pixel Error	≤±1 px
Tracking Speed	>24 px / frame
Target Memory Time	>5s
Image & Video	
Image Format	JPEG
Maximum Image Resolution	1920 x 1080
EXIF	Shooting point coordinate
Video Format	MP4
Maximum Video Resolution	Stream: 1920 x 1080 @25fps Recording: 1920 x 1080 @30fps
Stream Encode Format	H.264, H.265
Stream Network Protocol	RTSP
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)