Z-2 Mini

Intelligent 4K Full-Color Night Vision Dual-Sensor Micro Pod

HOVAERO
UAV INNOVATIONS

Specifications

General	
Product Name	Z-2Mini
Dimensions	59 x 48.4 x 85.7mm
Weight	110g
Operating Voltage	10~ 26.4VDC
Power	6.5W (AVG) / 20W (Stall)
Mounting	Downward / Upward

Gimbal	
Gimbal Type	3-axis Nonorthogonal Mechanical Stabilization
Angular Accuracy	$\pm0.01°$
Controllable Range	Pitch: -135°～+100°, Roll: $\pm50°$, Yaw: $\pm150°$
Max Controllable Speed	$\pm200°$/s

Fixed 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

Thermal Camera		
Thermal Sensor	Uncooled VOx Microbolometer	
Lens	Actual Focal Length: 10.0mm (Equivalent focal length: 112.7mm) Aperture: f/1.0 HFOV: 17.5° VFOV: 13.2° DFOV: 21.8°	
Resolution	256(H) x 192(V)	
Pixel Size	12µm(H) x 12µm(V)	
Spectral Band	8~14µm	
Sensitivity (NETD)	<50mk@25℃	
Object Detection Distance		Person: 417m; Light vehicle: 1278m; Large vehicle: 2722m
Object Identification Distance	Johnson Criteria	Person: 188m; Light vehicle: 575m; Large vehicle: 1225m
Object Verification Distance		Person: 94m; Light vehicle: 288m; Large vehicle: 613m

[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

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

Image & Video	
Image Format	JPEG
Maximum Image Resolution	3840 x 2160
EXIF	Shooting point coordinate
Video Format	MP4
Maximum Video Resolution	Stream: 1920 x 1080
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)

Z-2 Pro

Intelligent Full-Color Night Vision Dual-Sensor Micro Pod

Specifications

General	
Product Name	Z-2Pro
Dimensions	62 x 53 x 85.5mm
Weight	125g
Operating Voltage	10~ 26.4VDC
Power	6.5W (AVG) / 20W (Stall)
Mounting	Downward / Upward

Gimbal	
Gimbal Type	3-axis Nonorthogonal Mechanical Stabilization
Angular Accuracy	$\pm0.01°$
Controllable Range	Pitch: -130°~+100°, Roll: $\pm50°$, Yaw: $\pm145°$
Max Rotation Speed	$\pm200°$/s

Fixed Camera		
Image Sensor	1/2.7-inch CMOS, Effective Pixels: 4.97M	
Lens	Actual Focal Length: 6.0mm (Equivalent focal length: 38.2mm) Aperture: f/1.0 HFOV: 60.5° VFOV: 36.4° DFOV: 67.6°	
Resolution	2960(H) x 1666(V)	
Pixel Size	2.0µm(H) x 2.0µm(V)	
Equivalent Digital Zoom Rate	6x	
Object Detection Distance	EN62676-4:2015	Person[1]: 131m; Light vehicle[2]: 173m; Large vehicle[3]: 368m
	Johnson Criteria	Person: 1500m; Light vehicle: 4600m; Large vehicle: 9800m
Object Identification Distance	EN62676-4:2015	Person: 26m; Light vehicle: 35m; Large vehicle: 74m
	Johnson Criteria	Person: 375m; Light vehicle: 1150m; Large vehicle: 2450m
Object Verification Distance	EN62676-4:2015	Person: 13m; Light vehicle: 17m; Large vehicle: 37m
	Johnson Criteria	Person: 188m; Light vehicle: 575m; Large vehicle: 1225m

Thermal Camera		
Thermal Sensor	Uncooled VOx Microbolometer	
Lens	Actual Focal Length: 9.1mm (Equivalent focal length: 40.0mm) Aperture: f/1.0 HFOV: 48.3° VFOV: 38.7° DFOV: 62.2°	
Resolution	640(H) x 512(V)	
Pixel Size	12µm(H) x 12µm(V)	
Spectral Band	8~14µm	
Sensitivity (NETD)	<40mk@25℃	
Object Detection Distance		Person: 379m; Light vehicle: 1163m; Large vehicle: 2477m
Object Identification Distance	Johnson Criteria	Person: 95m; Light vehicle: 291m; Large vehicle: 619m
Object Verification Distance		Person: 47m; Light vehicle:145m; Large vehicle: 310m

[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

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

Image & Video	
Image Format	JPEG
Maximum Image Resolution	2944 x 1664
Video Format	MP4
Maximum Video Resolution	Stream: 2944 x 1664 @30fps Recording: 2944 x 1664 @30fps
OSD	Time, Camera attitude, Target/Carrier coordinate,
EXIF	Time, Camera attitude, Target coordinate, Carrier coordinate, Target distance, Resolution
SEI	Refer to User Manual
Stream Encode Format	H.264，H.265
Stream Network Protocol	RTSP

Storage	
	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)

D-90 AI

Intelligent Multi-sensor Spherical Pod

HOVAERO+
UAV INNOVATIONS

Specifications

General

Product Name	D-90Pro
Dimensions	96.4 x 96 x 147mm
Weight	620g
Operating Voltage	20 ~ 53 VDC
Power	10.5W (AVG, ranging off) / 55W (Stall, ranging on)
Mounting	Downward / Upward

Target Positioning Accuracy[	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 Nonorthogonal Mechanical Stabilization
Angular Accuracy	$\pm 0.01°$
Controllable Range	Pitch: -175° ～+105°, Roll: $\pm 50°$, Yaw: $\pm 360°$ constantly
Max Controllable Speed	$\pm 200°$/s

Zoom Camera

Image Sensor	1/2.8-inch CMOS; Effective Pixels: 8.29M
Lens	Focal Length: 5.5~54.7mm (Equivalent focal length: 37.2~370.5mm) Aperture: f/1.8~f/2.6 HFOV: 53.9° ～5.8° VFOV: 31.9° ～3.3° DFOV: 60.5° ～6.7°
Resolution	3840(H) x 2160(V)
Pixel Pitch	2.9μm(H) x 2.9μm(V)
Optical Zoom Rate	10x
Equivalent Digital Zoom Rate	6x

Object Detection Distance	EN62676-4:2015	Person[2]: 1651m; Light vehicle[3]: 2170m; Large vehicle[4]: 4624m
	Johnson Criteria	Person: 18862m; Light vehicle: 57844m; Large vehicle: 123232m
Object Identification Distance	EN62676-4:2015	Person: 330m; Light vehicle: 434m; Large vehicle: 925m
	Johnson Criteria	Person: 4716m; Light vehicle: 14461m; Large vehicle: 30808m
Object Verification Distance	EN62676-4:2015	Person: 165m; Light vehicle: 217m; Large vehicle: 462m
	Johnson Criteria	Person: 2358m; Light vehicle: 7231m; Large vehicle: 15404m

[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,

Thermal Camera

Thermal Sensor	Uncooled VOx Microbolometer
Lens	Focal Length: 19mm (Equivalent focal length: 83.6mm) Aperture: f/1.0 HFOV: 22.9° VFOV: 18.4° DFOV: 29.0°
Resolution	640(H) x 512(V)
Pixel Pitch	12μm(H) x 12μm(V)
Equivalent Digital Zoom Rate	8x
Spectral Band	8~14μm
Sensitivity (NETD)	<50mk@f1.0@25°C

Object Detection Distance		Person: 750m; Light vehicle: 2300m; Large vehicle: 4900m
Object Identification Distance	Johnson Criteria	Person: 188m; Light vehicle: 575m; Large vehicle: 1225m
Object Verification Distance		Person: 94m; Light vehicle: 288m; Large vehicle: 613m

Temperature Measurement	Optional (Thermometry Type)
Temperature Measurement Method	Spot Measurement, Area Measurement
Temperature Measurement Range	High Gain: -20°C~150°C Low Gain: 0°C~550°C
Temperature Alert	High-temp Alert, Low-temp Alert
Sun Burn Protection	Supported[5]
Palette	White Hot, Black Hot, Tint, Fulgurite, Iron Red, Hot Iron, Medical, Arctic, Rainbow 1, Rainbow 2

D-90 AI

Intelligent Multi-sensor Spherical Pod

Specifications

Laser Range Finder	
Wavelength	905nm
Max Laser Power	1mW
Beam Angle	3.5mrad
Beam Diameter	0.35m@100m
Laser Safety	Class 1M (IEC 60825-1:2014)
Measurement Accuracy	±1.0m
Measurement Range	5-1200m (φ12m vertical surface with 20% reflectivity)
AI Multi-object Detection & Tracking (Optional AICore)	
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 D	≤60ms
Target Pixel Error	≤±1 px
Tracking Speed	>24 px / frame
Target Memory Time	>5s

[5] Do not expose the thermal camera lens to a strong energy source such as

Image & Video	
Image Format	JPEG
Maximum Image Resolution	Internal memory: 3840 x 2160 SD card: 1920 x 1080
EXIF	Shooting point coordinate
Video Format	MP4
Maximum Video Resolution	Stream: 1920 x 1080P @25fps
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)

ADTi 24mp

Intelligent 4K Full-Color Night Vision Multi-Sensor Spherical Pod

Specifications

IMAGE SENSOR	Sony CMOS 24.3MP
FOV	Diagonal 93° / Horizontal 84.5°
VIDEO RESOLUTION	1920x1080 (60p/60i/30p/24p) 1440x1080 (30p) 640x480 (30p)
PHOTO RESOLUTION	6000 x 4000 (24.0 MP, 3:2), 6000 x 3376 (20.3 MP, 16:9), 4240 x 2832 (12.0 MP, 3:2), 4240 x 2400 (10.2 MP, Other), 3008 x 2000 (6.0 MP, 3:2), 3008 x 1688 (5.1 MP, 16:9),
FOCAL LENGTH	35mm (APS-C)
IMAGE FORMAT	JPEG, RAW, RAW+JPEG
VIDEO FORMAT	XAVC S/AVCHD 2.0 / MP4
WORKING TEMPERATURE	-10 ~ 40 ℃