AOEXO SkyPatrol Series D-125AI Tri-Spectrum Gimbal (XF Platform)

深圳市飞雄科技有限公司

Shenzhen AOEXO Technology Co., Ltd.

Product Positioning: Tactical-Grade Full-Domain Perception System

Core Technological Innovations

[Hyper-Range Fusion Architecture]

• Industry-first "Optical-Thermal-Range" tri-source synergy system (Fusion 7.0)

• 120X Hybrid Zoom (HyperZoom 120X: Optical/Digital/AI triple enhancement)

• Real-time multispectral calibration (visible/thermal/laser ranging error ≤0.12m)

[NightOps Combat Hub]

• Tactical laser rangefinder module (TacticalLaser Pro)

- Moving target trajectory prediction (carrier speed/altitude/attitude triple compensation)

- Stealth mapping mode (AES-256 encrypted laser datalink)

• Thermal analysis system (-20°C~550°C wide-range measurement, 0.03°C sensitivity)

Enhanced Features

[Smart Combat System]

• 6th-gen AI tracking framework (AI 6.0)
  - Tri-spectrum cross-validation (pedestrian/vehicle/thermal signature libraries)
  - 70% environmental resistance improvement (dust/rain/fog scenarios)
• MIL-STD information enhancement
  - Tactical OSD overlay (lat/long/altitude/laser data/temperature)
  - SEI stream combat tags (real-time tactical annotation for command systems)

[Military-Grade Platform]

• Spherical three-axis stabilization (patented non-orthogonal design)
  - 360°xN continuous rotation (40% wind resistance improvement)
  - Dual-IMU compensation (±0.01° accuracy, MIL-STD-810H certified)
• MIL-STD power system (20-53VDC adaptive stabilization + EMP shielding)

[Control Ecosystem]

• Dragonfly Recon Pro Suite
  - Tri-spectrum PIP combat view (visible/thermal/laser switching)
  - Protocol converter (MAVLink/S.BUS/RTSP auto-adaptation)
  - Tamper-proof media library (blockchain metadata authentication)
• QGC Tactical Suite
  - Laser trajectory simulation
  - Multispectral threat assessment matrix

Technical Specifications

General Parameters

Parameter	Specification
Product Name	AOEXO SkyPatrol Series D-125AI Tri-Spectrum Gimbal (XF Platform)
Dimensions	142 × 125 × 187mm
Weight	1,055g
Operating Voltage	20 – 53 VDC
Power Consumption	10.7W (idle, ranging off)/40.0W (peak, ranging on)
Installation	Upright/Inverted

Positioning Accuracy [1]

Horizontal Error	Vertical Error	@ Horizontal Distance	@ Relative Altitude
1.8m	0.7m	105m	75m
17.4m	6.7m	513m	119m
33.8m	13.7m	1003m	246m

[1] Measured with gimbal mounted on dual-antenna RTK UAV. Accuracy affected by carrier positioning, installation angle, slant range, and environmental factors. Data for reference only.

Gimbal Parameters

Parameter	Specification
Type	Non-orthogonal Three-Axis Stabilization
Stabilization Accuracy	±0.01°
Controllable Range	Pitch: -120°~+40°; Roll: ±40°; Yaw: ±360° Continuous
Max Rotation Speed	Pitch/Roll/Yaw: ±200°/s

Zoom Camera

Parameter	Specification
Image Sensor	1/2.8" CMOS, 4.09MP
Focal Length	4.7–141mm (27.9–837mm equivalent)
Aperture	f/1.5–f/4.0
FOV	H:59.5°~2.2°, V:35.8°~1.2°, D:66.6°~2.5°
Resolution	2688×1520
Pixel Size	2.0μm×2.0μm
Optical Zoom	30×
Digital Zoom	4× Equivalent

Target Detection (EN62676-4:2015 Johnson's Criteria)

Metric	Detection	Recognition	Verification
Pedestrian [2]	37,500m	9,375m	4,688m
Small Vehicle [3]	115,000m	28,750m	14,375m
Large Vehicle [4]	245,000m	61,250m	30,625m

Reference Sizes:

[2] Pedestrian: 1.8×0.5m (0.75m critical size)

[3] Small Vehicle: 4.2×1.8m (2.3m critical size)

[4] Large Vehicle: 6.0×4.0m (4.9m critical size)

Thermal Imaging Camera

Parameter	Specification
Sensor Type	Uncooled VOx Microbolometer
Focal Length	25mm (93.2mm equivalent)
Aperture	f/1.0
FOV	H:17.5°, V:14.0°, D:22.3°
Resolution	640×512
Pixel Size	12μm×12μm
Digital Zoom	8× Equivalent
Spectral Range	8–14μm
NETD	<50mK @f/1.0 @25°C
Temperature Measurement	Point/Area Analysis
Temperature Range	High Gain: -20°C~150°C; Low Gain: 0°C~550°C
Alarm Functions	High/Low Temperature Alerts
Color Palettes	White Hot, Black Hot, Iron, Lava, Arctic, etc.

[5] WARNING: Avoid pointing thermal camera at high-energy sources (sun/lasers). Max target temperature: 600°C.

Laser Rangefinder

Parameter	Specification
Wavelength	905nm
Max Power	1mW
Beam Divergence	2.5mrad
Spot Diameter	0.25m @100m
Eye Safety	Class 1M (IEC 60825-1:2014)
Accuracy	±0.3m (≤300m)/±1.0m (>300m)
Range	5–2,000m (12m target, 20% reflectivity)

AI Tracking

Parameter	Specification
Target Size	16×16–256×256 px
Recognition Rate	≥85%
Max Targets	≤50
Update Rate	30Hz
Output Latency	≤60ms
Tracking Speed	>24 px/Frame
Target Memory	>5s

Photo & Video

Parameter	Specification
Photo Format	JPEG
Max Photo Resolution	1920×1080
EXIF Data	Geolocation Coordinates
Video Format	MP4
Max Video Resolution	1920×1080 @30fps (Recording)/25fps (Streaming)
Codecs	H.264/H.265
Streaming Protocol	RTSP

Storage

Parameter	Specification
Supported Media	microSD Card (Max 256GB, U3/V30 or higher)

Environmental

Parameter	Specification
Operating Temperature	-20℃ to 50℃
Storage Temperature	-40℃ to 60℃
Humidity	≤85% RH (Non-condensing)

Industry Solutions

[Tri-Spectrum Tactical Matrix]

- **Border Security Edition**:
  - AI-powered intrusion prediction + laser tagging
  - Night thermal stealth scanning
- **Fire Rescue Edition**:
  - Flame penetration algorithm (smoke imaging enhancement)
  - Life sign thermal detection
- **Power Inspection Edition**:
  - Equipment temperature trend analysis
  - Laser safety distance alert