S220TC Dual-Axis Triple-Sensor Electro-Optical Pod

1. Product Profile

S220TC optoelectronic pod consists of an uncooled infrared thermal camera, a 30x continuously zoomed visible camera, a laser illuminator, a two-axis servo-stabilized platform and an image processing component (auto identification and tracking). It is characterized by high precision and long acting distance, can be applied to medium and small-sized UAVs to accomplish day and night reconnaissance, surveillance and other tasks on the target area.

The optoelectronic pod realizes all-day detection, identification and tracking of ground targets by means of uncooled infrared thermal camera and visible light camera, and outputs real-time infrared and visible light video for the mission executives to view at the same time.

The pod has been adapted to a number of domestic mainstream flight control platforms, and can realize seamless docking with the flight control; and can be accessed to the Users' View Control Studio software platform, to assist the company to quickly complete the development of the unmanned aircraft system.

The optoelectronic pod is mainly used in reconnaissance, border patrol, personnel search and rescue, forest fire prevention and other scenarios.

2. Product Picture

Picture 1 product

3. Product Features

a) Equipped with automatic target identification and tracking capabilities.
b) Supports self-diagnosis and fault reporting functions.
c) Features 30x optical zoom for the visible-light camera.
d) Capable of infrared and visible spectrum detection; outputs both infrared and visible-light images.
e) The visible-light camera supports optical zoom, autofocus, manual focus, and low-light imaging.
f) Integrated with laser ranging and laser illumination functions.
g) Provides two-axis (azimuth and pitch) movement capability.
h) Supports multiple operation modes: automatic search, manual search, following, and tracking.
i) In manual search mode, it can receive commands from the control station and execute pod operations.
j) Capable of isolating carrier disturbances to stabilize the line of sight.
k) Supports target lock/unlock functionality; after locking, the target is tracked with a visual tracking frame in the output image.
l) Target tracking includes anti-interference capabilities against natural environmental factors.
m) Features memory tracking, allowing the system to re-acquire the target shortly after temporary loss.
n) Includes adjustable wavegate sizing functionality.
o) Supports tracking point switching.
p) Able to calculate target coordinates using laser range data, pod azimuth/pitch angles, and UAV attitude information.
q) Supports bidirectional communication with the control station via 100 Mbps Ethernet or RS422; transmits infrared and visible-light images, system status, camera status, and optical axis position.
r) Provides multi-channel video output interfaces, including HD-SDI and 100 Mbps network.
s) Supports both photo capturing and video recording functions.

4. Applications

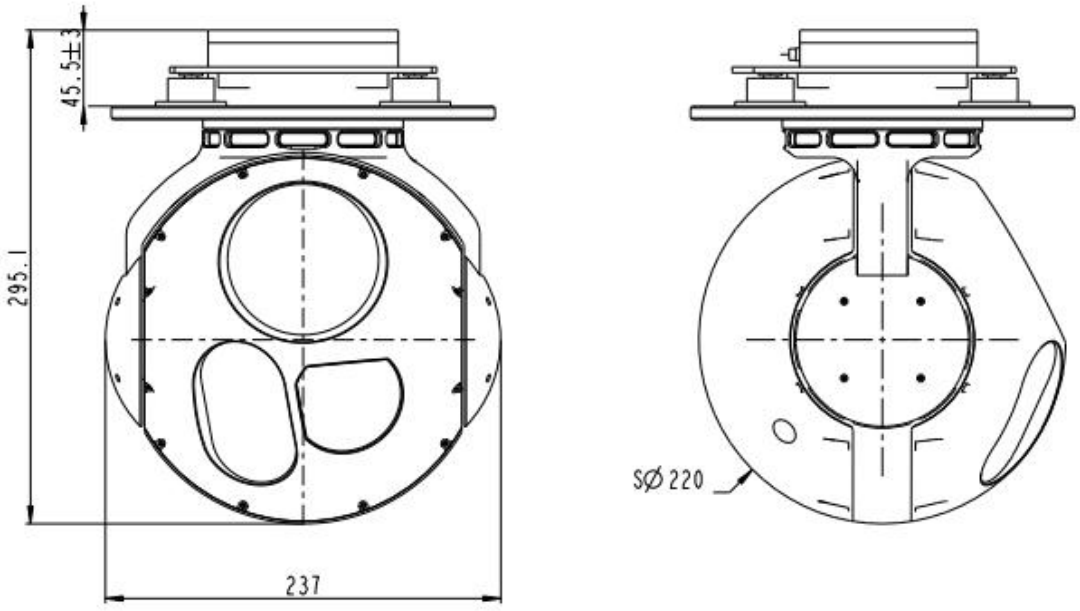
Dropped fixed-wing UAVs, rotary-wing UAVs, tethered UAVs, etc

.5. Main Technical Parameters

Model	S220TC
Thermal imaging camera	
Detector Type	Uncooled Focal Plane Detector
Operating Band	8μm～14μm
Detector Resolution	640×512
Image size	12μm
Lens focal length	75mm
Field of view	5.9°×4.7°
Noise Equivalent Temperature Difference	NETD≤50mK
Minimum Resolvable Temperature Difference	MRTD≤500mK
Visible Light Camera	
Resolution	1920×1080
Response Band	0.4μm～0.9μm
Image size	2.8μm
Optical zoom	30x
Hybrid zoom	60x
Focal length	4.3mm～129mm
Field of view	63.7°×35.8°～2.3°×1.3°
Zoom Method	Auto Focus, Manual Focus
Minimum Illumination	0.01Lux (B/W)
Laser Illuminator	
Wavelength	1064nm
Laser energy	≥40mJ
Laser pulse width	15ns±5ns
Laser Beam Scatter Angle	≤0.3mrad
Frequency	20Hz
Laser code	8 groups of codes can be pre-stored; accurate frequency code, variable interval code, pseudo-random code
Irradiation distance	≥4Km (under visibility ≥15Km)
Maximum distance	≥6km (under the condition of visibility ≥15Km)
Minimum distance	≤100m
Ranging accuracy	≤5m
Frequency	1～5Hz
Servo platform	
Azimuth angle	360°×n (360°continuous rotation)
Pitch angle	-115°～+90° (positive upward)
Frame Angle Accuracy	≤1mrad° (1σ)
Stabilization accuracy	≤40urad (1σ)
Maximum turning speed	Azimuth ≥60°/s, Pitch ≥60°/s

Maximum rotational acceleration	Azimuth ≥100°/s², pitch ≥100°/s²
Image processing components	
Automatic recognition	With human and vehicle target automatic identification number of targets ≥ 32
Target tracking	Target size ≥ 16 × 16
Tracking frame rate	≤50Hz
Image output	RTSP/UDP/RTMP optional, code rate 200kbps ~ 6Mbps can be set
System index	
Voltage range	20V～32VDC
Wattage	Stable power consumption: ≤60W
Weight	≤5Kg
Volume	220mm×237mm×295.1mm
Interfaces	
Control Interface	RS422/100Mbps
Video Interface	HD-SDI/100Mbps
Memory Interface	≤128G memory card (Micro SD card)
Picture Format	jpg format
Video Format	avi format
Environmental adaptability	
Operating Temperature	-20℃～＋60℃ (-40℃ optional)
Storage Temperature	-40℃～＋65℃
Vibration conditions	Acceleration of 2g; 30min in each of the three directions of vertical, horizontal and longitudinal.
Shock conditions	Peak acceleration 20g, duration 11ms
Protection class	Can fly in light and moderate rain

6. Dimensions and Interface



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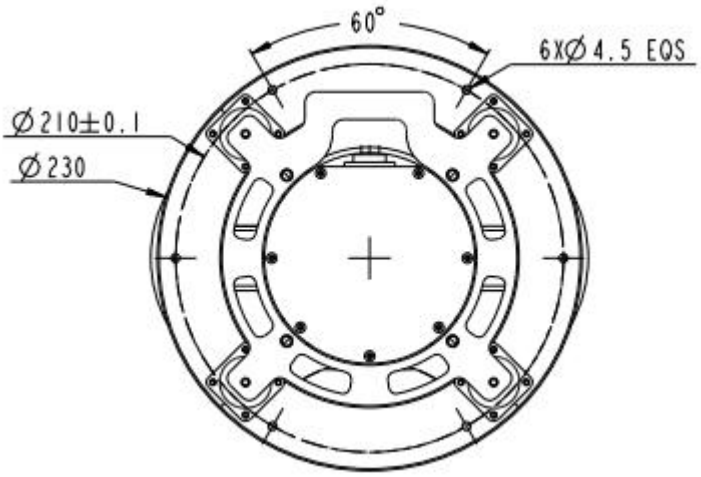

Picture 2 Product Dimensions