

UAV Pilot Positioning Solution



The Unmanned Aerial Vehicle (UAV) pilot positioning solution aims to address the challenge of detecting UAV pilots in scenarios without broadcast protocols (DID and RID).

By mounting high-precision radio direction-finding equipment on UAVs, it horizontally and vertically triangulates the target signal source (UAV controller) in the air, determining potential target areas and displaying them on a map. Visual searching of target areas combined with AI recognition assists in discovering UAV pilots.

Additionally, our SOA100 UAV is equipped with anti-radio interference capabilities and stable flight navigation without GNSS, ensuring the solution's stable operation in complex radio environments.

Overview

The solution consists of SOA100 anti-interference UAV, STA100 radio detection module, and a high-definition gimbal camera.



Wide
detection
range



High-
precision
detection and
positioning



Long-range
observation
with HD camera



Detection of
UAV pilots and
jamming
sources



Precise
navigation
without
GNSS

After takeoff, the SOA100 will rotate once to collect surrounding signals and display the coverage results on the map. Users can select target areas for closer observation. The radio detection module continuously detects target signals and optimizes range accuracy during the approach. Subsequently, the gimbal camera combined with AI recognition assists in visually searching for potential targets within the target area and allows for position calibration through waypoint marking.



Specifications

UAV Pilot Positioning Solution

SOA100 UAV

size	1205 x 980 x 278 mm (unfolded with blades) 455 x 263 x 248 mm (folded without blades)	Hover time	> 30 minutes
Overall weight	6.63kg (Includes battery, gimbal, radio detection module, and propellers.)	Maximum flight time	>32min
Maximum takeoff weight	8.4kg	Video transmission distance	> 6km

STA100 Radio Detection Module

Size	112mm * 122mm * 55mm	Directional detection angle accuracy	≤ 3 ° (RMS)
Weight	707.5g	Simultaneously detect quantity	≥ 6
Typical targets:	DJI Mavic, Air, Mini series; Autel Evo series	Operating temperature	-20 °C~50 °C
Detectable spectrum range:	2.4, 5.2, and 5.8 GHz	Protection level	IP65
Detection distance :	3km (under visibility conditions)	Power consumption of the STA100	≤ 20w
Detection success rate: ≥ 99%		Basic function	Pilot positioning/interference source positioning

Gimbal

Weight	344g	Protection level	IP43
Size	87 * 147 * 82mm	Recognition distance	License plate recognition distance>250m Human recognition distance>800m
Mechanical scope	Pitch:-135 ° to 135 °/Roll:-50 ° to 50 °/Heading:-100 ° to 100 °	Stability	3-axis mechanical gimbal (pitch, roll, yaw)
Soft control range	Pitch:-90° to 90 °/Heading:-90 ° to 90 °	Max. control speed	200 ° /s
Angular vibration range	<0.005 degrees		
Interface	Gimbal interface: USB type-C, micro SD / UAV interface: PSDK port, with serial port and USB port for external use/ OSDK port, PCIE and USB2.0 for external use		

Basic function	AI recognition	Visible Light: Target detection mAP > 90%; Infrared: Target detection mAP > 70%	
	Targets locking	Supports humans, vehicles, and boats. The gimbal locks onto the target, rotating to follow it while hovering, ensuring the target remains centered in the frame.	
	Target positioning	Positioning accuracy: 5m	

Thermal imaging	Detector	Detector type	Uncooled vanadium oxide	Response band	8-14um
		Resolution	640 * 512 p25	Noise Equivalent Temperature Difference (NETD)	≤ 50mK@25 °C, F#1.0
		Pixel spacing	12um		
	Lens	Focal length	9.1mm	Size	17.3mm * 17.3mm * 23.25mm
		Field of view angle	61°	Weight	15g ± 0.5
		Aperture	f/1.0		

Wide angle camera	Sensor	Model	IMX586	Effective Pixels	48million
		Optical dimensions	1/2"	Pixel size	0. 8um
	Lens	DFOV	84°	Aperture	f/2.8
		35mm equivalent focal length	24mm	AF	Fixed focus

Telephoto camera	Sensor	Model	IMX586	Effective Pixels	48 millionat night, 12.5million
		Optical dimensions	1/2"	Pixel size	0. 8um
	Lens	Zoom range	2.7x~160x smooth zoom,with an accuracy of 0.1x, 10x optical zoom, 20x hybrid zoom,and160x digital zoom		
		Focal length	11.8-43.3mm	Aperture	f2.8-f4.8
		35mm equivalent focal length	64-234mm	FOV	40-10.3°
		AF focusing	Stepper motor focusing CAF		

Laser ranging	laser ranging	1.2km	Distance measurement accuracy	1m
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