

Resilient Navigation AIO

Alternative Navigation System for Autonomous and GNSS-Denied Operations

3 Layers of Protection

infiniDome Anti-Jamming

A compact add-on that protects GNSS against interference, making inputs $\sim 100\times$ more resilient, improving availability, and strengthening UAV navigation in challenged environments via HCINS integration.

Compact Inertial Navigation System (HCINS)

Using Honeywell inertial sensors and proprietary Kalman Filters, HCINS fuses multi-source data to deliver accurate position, velocity, and heading, even without external inputs.

Radar Velocity System (HRVS)

A compact mmWave radar providing velocity and range data to correct inertial drift. Combined with HCINS, it achieves $<3\%$ distance-travel error under full GNSS denial.

The partnership between Honeywell and infiniDome introduces a cutting-edge UAV navigation system, merging Honeywell's HCINS and HRVS with infiniDome's Anti Jamming technology. This fusion delivers steady, accurate navigation in GNSS-challenged and even fully denied conditions, making it the most robust UAV navigation solution globally.



Aura



LightHouse



SunStone



R-Navigation System

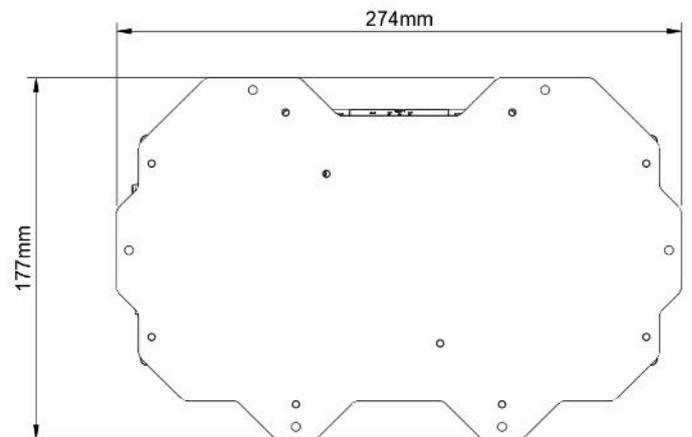
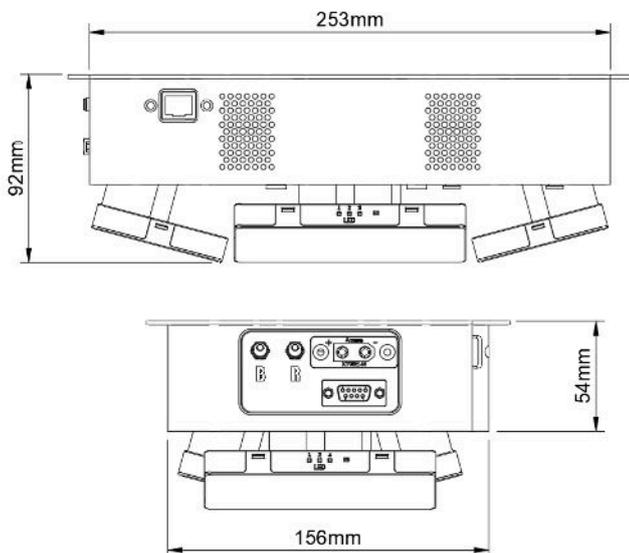


R-Navigation AIO

Resilient Navigation AIO module

Layers of Protection	GPSdome-SunStone	HCINS	HRVS
	GNSS frequency protection	MEMS based Inertial Measurement Unit	Radar Velocity System
Supported FW	Arducopter PX4*		
Weight	1200g (fully integrated module)		
Dimensions	274 x 177 x 92 mm		
Input Voltage	8-26 VDC	Power Consumption	7.8W
Mounting interface	6 x M4 Bolts		
Connectors	GNSS	Main Power	Serial UART
	GNSS:2 X SMA female	XT-90 Male	D-sub 9 pin Fe

*PX4 FW with lose loop integration



First Layer

of Protection – Anti Jamming

GPSdome-SunStone

- Null Steering Technology
- Protected Frequency: L1 and E1/L2/L5/G1
- Optional Secondary: L1 and E1/L2/L5/G1
- Passthrough: Choose two of L1 and E1/L2/L5/G1
- Latency: 100ns \pm 15ns (fixed)
- Waterproof Rating: IP65
- Operating Temperature Range: -40°C to +71°C
- Size: 80mmx78.5mmx28mm (Single)
80mmx78.5mmx33.5mm (Dual)
- Weight: 180g (Single) | 200g (Dual)
- Average Power Consumption: <2.7W



Scan for full datasheet
of GPSdome-SunStone



Second Layer

of Protection

Honeywell Compact Inertial Navigation System

- Small INS with dual GNSS receivers
- Horizontal drift after 30s GNSS outage with no aiding ~ 5m
- Navigation health monitor
- Latency: 100ns \pm 15ns (fixed)
- Size: 104mmx60mmx28mm
- Weight: 140g
- Max power consumption: <3W
- Not export controlled (ECCN: 7A994)



Scan for full datasheet
of HCINS



Third Layer of Protection

Honeywell Radar Velocity System

- 3D velocity aiding system
- CEP error of 1-3% distance traveled when integrated with HCINS
- Navigation health monitor
- 60GHZ / 80GHZ
- Size: 113mmx65mmx31mm
- Weight: 63g
- Max power consumption: <2W
- Not export controlled (ECCN: 6A998.a)



Scan for full datasheet
of HRVS



Proven Performance in Combat

Setup:

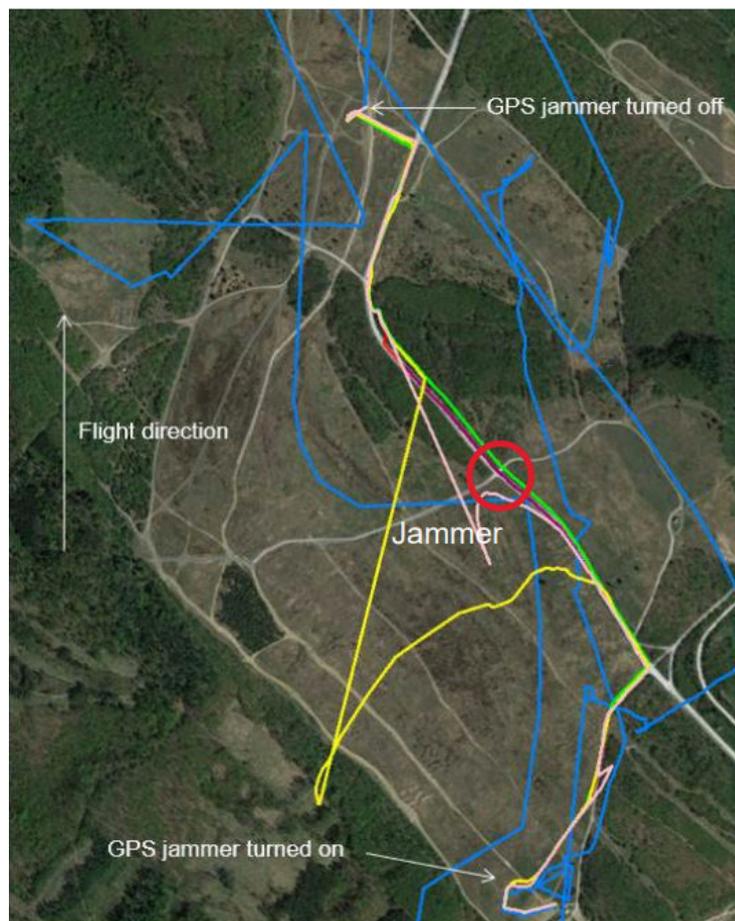
- 20W GPS jammer with omnidirectional antenna placed in the middle of the track (**Red Circle**).
- Jamming Level: Medium power GPS jamming.
- Flight speed 5 m/s.

Results:

- HCINS + GPSdome were able to provide reasonable position for half of the flight time, except for a 250m radius around the GPS jammer (**Pink** line).
- HCINS correctly rejected poor GPS measurements (**Pink & Purple** lines) and started to use the GPS position once it was available.
- HRVS is an important part of the system, able to maintain high navigation accuracy in case of higher GPS jamming conditions (**Purple** line).

Legend:

- **Green** – True Position.
- **Blue** – Unprotected Pixhawk GPS.
- **Yellow** – Protected by GPSdome (With GPS Aiding).
- **Pink** – GPSdome + HCINS (With GPS Aiding).
- **Purple** – GPSdome + HCINS + HRVS.
(No GPS aiding, Only HRVS aiding).



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