

# Resilient Navigation DATASHEET

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 blend delivers steady, accurate navigation in GNSS-challenged conditions, making it the most robust UAV navigation solution globally.



## Alternative Navigation System for Autonomous and GNSS-Denied Operations

### 3 Layers of Protection

#### **Anti-Jamming (GPSdome)**

A small-sized, add-on device that provides protection against GNSS interference, making the GNSS input ~50x more resilient to attacks, boosting GNSS data availability and strengthening the UAV's navigation source even in highly challenged environments through integration with HCINS's advanced logic.

#### **Compat Inertial Navigation System (HCINS)**

Leveraging Honeywell's inertial navigation sensors and algorithms, the HCINS fuses data from multiple sources with proprietary Kalman Filters to determine location, velocity, and heading in a compact, lightweight unit. With a MEMS-based IMU, it ensures accurate navigation even without external inputs.

#### **Radar Velocity System (HRVS)**

A compact radar-based system, uses mmWave technology to provide range, velocity, and angle data, compensating for drift in the inertial system. Paired with HCINS, it achieves less than 3% error, even in full GNSS denial.





## First Layer of Protection – Anti Jamming

### GPSdome-SunStone

**\*Preliminary specifications**

- Null Steering Technology
- Protected Frequency: One frequency band
- Optional Secondary Protected Frequency
- Latency: 100ns  $\pm$ 15ns (fixed)
- Waterproof Rating: IP65
- Operating Temperature Range: -40°C to +85°C
- Size: 80mmx79mmx28mm
- Weight: 100g
- Peak Power Consumption: <2.7W



Scan for full Preliminary datasheet  
of GPSdome-SunStone

OR

### GPSdome2

- Null Steering Technology
  - Protection from 3 jamming directions simultaneously
  - Dual Band Protection
  - Latency: ~100ns
  - Waterproof Rating: IP65
  - Operating Temperature Range: -30°C to + 71°C
  - Size: 99mmx95mmx56mm
  - Weight: 500g
  - Peak Power Consumption: <16W
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- Dual use (non-ITAR) (ECCN: 7A005.b)



Scan for full datasheet  
of GPSdome2

## 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)



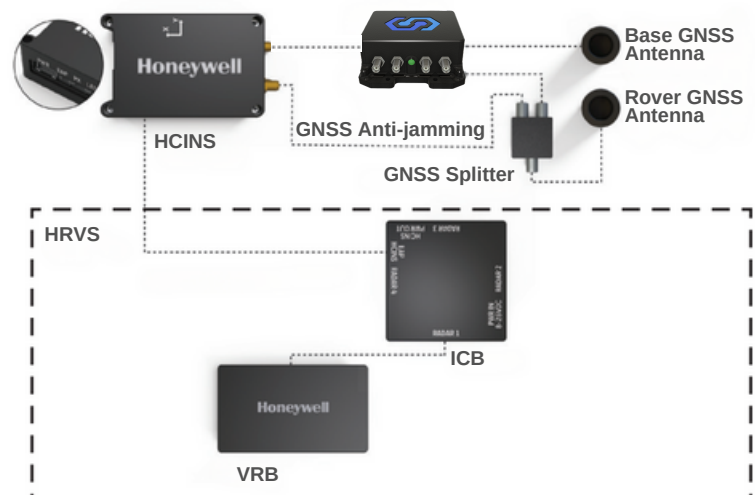
## Third Layer of Protection

### 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)



### Interconnections diagram



# Proven Performance in Combat

## Setup:

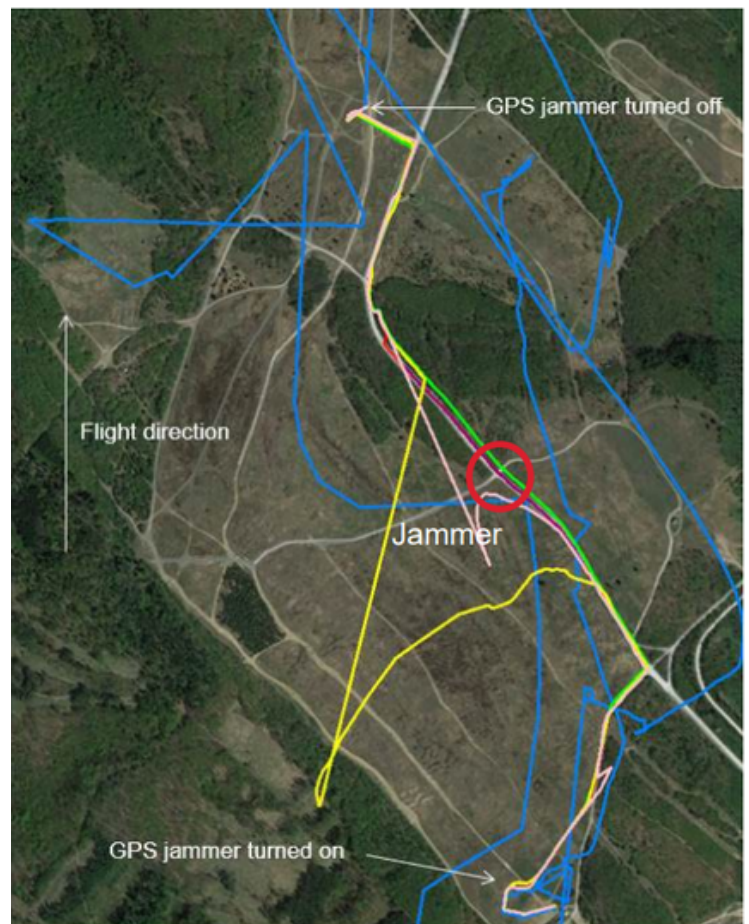
- 20W GPS jammer with omnidirectional antenna placed in the middle of the track (**Red Circle**).
- Jamming Level: Medium power GPS jamming.
- Flight speed 5 m/s.

## 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).



**infiniDome, Ltd**

7 Ha'eshel St. Industrial Park (South), P.O. Box 3358, Caesarea 3079504, Israel  
info@infinidome.com • www.infinidome.com