

aSense INS

INTEGRATED GNSS/INS SYSTEMS

The aSense integrated GNSS/INS systems, combined with aSense MEMS IMUs and an all-constellation RTK-GNSS receiver, deliver precise position, velocity and orientation for land, air and maritime platforms as well as munition systems – with protection against GNSS jamming and spoofing, robust sensor fusion, rapid self-initialization, transfer alignment, AHRS, barometer integration and dual-antenna support.



	aSense210-INS	aSense310-INS	aSense320-INS
IMU	aSense110-IMU	aSense100-IMU	aSense120-IMU
Position accuracy (H/V)	1 m / 1.5 m	1 m / 1.5 m	1 m / 1.5 m
Position accuracy, RTK (H/V)	0.01 m / 0.02 m	0.01 m / 0.02 m	0.01 m / 0.02 m
Velocity accuracy	0.05 m/s	0.05 m/s	0.05 m/s
Pitch/roll accuracy	0.015°	0.1°	0.015°
Static/dynamic heading	— / 0.05°	1.0° / 0.15°	1.0° / 0.05°
GNSS heading (dual antenna, 1 m baseline)	—	0.15°	0.15°
AHRS + pressure sensor	✓	✓	✓
Odometer + speed log + air data	✓	✓	✓
Dual antenna	—	✓	✓
Transfer alignment	✓	✓	✓
Power / interface	5 V @ 175 mA · RS-422/485	5 V @ 175 mA · RS-422/485/UART	5 V @ 205 mA · RS-422/485/UART
Size / weight	60 × 68 × 22 mm · < 150 g	42.2 × 45 × 26.7 mm · < 200 g	78.7 × 70.1 × 26.1 mm · < 200 g

NAVIGATION IN GNSS-DENIED ENVIRONMENTS

When GNSS signals are lost or jammed, INS-only navigation drifts due to IMU bias and integration errors. The aSense families fuse external and internal aiding sources – Doppler radar, DVL, air/wind data, odometry, visual navigation and Radar/AIS, Radar/Coastal Map or Depth Sensor/Depth Map fusion – to correct INS estimates: reducing position drift, maintaining accuracy through outages longer than one hour, providing condition-independent velocity updates and correcting INS errors in high-dynamic maneuvers.

AIDING MATRIX

AIDING SOURCE	AIR	LAND	MARINE
Air speed / wind sensor	•	—	—
Optic flow	•	•	—
Radar Doppler velocity	•	•	•
Wheel odometer	—	•	—
Encoder	—	•	—
Speed log	—	—	•
Doppler velocity log (DVL)	—	—	•
Radar/AIS · Radar/Coastal Map · Depth Sensor/Depth Map	—	—	•

LAND

Armored & tactical vehicles, odometer/encoder aiding

AIR

UAVs, munitions – transfer alignment & air data aiding

MARINE

Vessels & USVs – speed log, DVL and radar aiding

RESILIENT NAVIGATION FOR YOUR PLATFORM

Tell us your platform and aiding sources – we'll configure the right aSense INS around it.