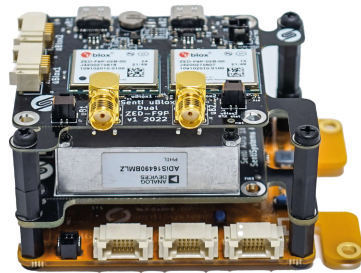




## Inertial Navigation System (INS) Payload



### Introduction

The Inertial Navigation System (INS) Payload is an extendable, fully synchronized, plug-and-play Inertial Navigation System. The INS Payload can easily be synchronized to external triggers or generate triggers for perception sensors such as cameras or LiDARs.

### Payload Summary

The INS Payload includes the following:

- SentiBoard
- uBlox F9P Dual GNSS
- Xsens MTI600-series IMU
- Connector cables
- Position, Velocity, Attitude and Time (PVAT)
- SentiUtils software and libraries for ROS, C/C++, Python and Matlab

Additional options are:

- GNSS antennas
- Synchronization with other sensors (Visual, LiDAR etc.)

SentiSystems Payloads are *sensor agnostic*, refer to Supported Sensors for an overview the sensors and Linux Host computers we have integrated so far.

## Dimensions

Length	8.5 cm
Width	6.3 cm
Height	4.7 cm

## Performance

Parameter	Condition/Direction	Value RMS
Roll/Pitch	Static	0.2 deg
Roll/Pitch	Dynamic	0.5 deg
Yaw	Dynamic	1.0 deg
Position	Horizontal	1.0 m
Position	vertical	2.0 m
Velocity	3D	0.05 m/s
Output rates	Pos, Vel, Att	<400Hz

## SentiUtils Software

The INS Payload ships with the SentiUtils software. SentiUtils includes sensor parsers, frame-to-trigger synchronization, clock filtering, and sensor monitoring. SentiUtils is a real-time host application connecting the sensors to your favourite middleware. SentiUtils support the following middlewares:

- ROS1
- ROS2
- Dune

SentiUtils can also be integrated with custom frameworks through a socket-based interface carrying SentiSystems Protobuf messages.

## Applications

- Positioning and navigation
- UAVs
- USVs
- AGVs

- Vessels
- Agriculture
- Automotive

## **SentiSystems Payloads**

The SentiSystems Payloads are fully integrated plug-and-play sensor payloads. Using the SentiBoard technology the sensor events are timestamped to a sub-microsecond accuracy. Sensors can be upgraded or replaced without any hardware or software updates and without sacrificing timestamp accuracy. Integrating new and custom sensors and signals is done on request.