INS Integration

Status: UP-TO-DATE

Generated Mon Jan 12 2026 00:09:19

General Information

Project Name	INS Integration
Organization	Default
Mission Start (UTC)	Thu Jan 8 2026 06:07:52
Mission End (UTC)	Thu Jan 8 2026 06:21:11
Mission Duration	00:13:19
Location	Tanay, Rizal, Philippines

System Information

HARDWARE DETAILS

CPU	Intel(R) Xeon(R) Processor @ 2.50GHz
RAM	5.54 Go

SOFTWARE DETAILS

Operating System	Ubuntu 24.04.3 LTS
Computer Name	169.254.43.5
Qinertia Version	Qinertia 4.3.6492-stable
License	

Imported Data

Get details about the import process for each data source. Most importantly, you can check for data gaps and correct coverage.

Summary

TRUE HEADING (HDT)

Begin (UTC)	Thu Jan 8 2026 06:09:09
End (UTC)	Thu Jan 8 2026 06:20:31
Number Epochs	3332
Data Interval (Hz)	5.0
Coverage Ratio	82%
Status	Valid

INERTIAL MEASUREMENT UNIT (IMU)

Begin (UTC)	Thu Jan 8 2026 06:07:52
End (UTC)	Thu Jan 8 2026 06:21:10
Number Epochs	159801
Data Interval (Hz)	200.0
Coverage Ratio	100%
Status	Valid

REAL TIME GNSS POSITION (PVT)

Begin (UTC)	Thu Jan 8 2026 06:07:52
End (UTC)	Thu Jan 8 2026 06:21:10
Number Epochs	3995
Data Interval (Hz)	5.0
Coverage Ratio	99%
Status	Valid

RAW GNSS OBSERVABLES (RAW)

Begin (UTC)	Thu Jan 8 2026 06:07:52
End (UTC)	Thu Jan 8 2026 06:21:10
Number Epochs	799
Data Interval (Hz)	1.0
Coverage Ratio	99%
Status	Valid

Input Files

HDT

Path
/tmp/processing-data/b58237ce-ba71-42d0-8734-6404c6a942f5/input/20260108_06h_session.001

IMU

Path
/tmp/processing-data/b58237ce-ba71-42d0-8734-6404c6a942f5/input/20260108_06h_session.001

PVT

Path
/tmp/processing-data/b58237ce-ba71-42d0-8734-6404c6a942f5/input/20260108_06h_session.001

RAWGNSS

Path
/tmp/processing-data/b58237ce-ba71-42d0-8734-6404c6a942f5/input/20260108_06h_session.001

Processing Settings

Summary

This section details the settings to use for the processing such as the GNSS antenna lever arm or how the IMU is oriented within the vehicle.

If the report is generated from a real-time solution, and you have changed the settings read from the INS, the following settings could be inconsistent.

IMU Model Identifier	ekinoxMicroV1
IMU Name	Ekinox Micro v1
Processing Mode	Loose Coupling
Motion Profile	UAV

Description

Ekinox Micro is a rugged, high-performance (0.015° roll/pitch, 0.05 heading) miniature MEMS-based INS (MIL-STD-461/1275/810). It integrates a quad-constellation L1/L2 dual antenna GNSS receiver with jamming/spoofing monitoring and mitigation capabilities. Combining best-in-class SBG Systems IMU and navigation filters, it ensures accurate and reliable navigation even in harsh environments.

Details

REAL TIME GNSS POSITION (PVT)

Receiver Model	Ublox F9
Antenna Type	generic
Antenna Reference	ARP (Antenna Reference Point)
Antenna Height (m)	0.0
Primary Antenna Lever Arm (m)	[-0.004, 0.182, 0.02]

TRUE HEADING (HDT)

Receiver Model	Ublox F9
Antenna Type	generic
Antenna Reference	ARP (Antenna Reference Point)
Antenna Height (m)	0.0
Heading Mode	Dual Antenna (known lever arm)
Primary Antenna Lever Arm (m)	[-0.004, 0.182, 0.02]
Secondary Antenna Lever Arm (m)	[0.021, -0.224, 0.012]
Antenna Alignment (°)	Pitch: -1.127 Yaw: 86.476
Antenna Baseline (m)	0.407

INERTIAL MEASUREMENT UNIT (IMU)

Rough Alignment	X: Forward Y: Right Z: Down
Fine Alignment (°)	Roll: 0.0 Pitch: 0.0 Yaw: 0.0
Reference Point	Bare IMU
Reference Point Offset	[0.0, 0.0, 0.0]
Primary Lever Arm (m)	[-0.004, 0.182, 0.02]

Mechanical Parameters Estimation

Summary

A dedicated processing run has estimated the installation parameters such as the primary GNSS lever arm or the dual antenna heading alignment.
You can find below the result of this specific run and compare initial mechanical parameters with estimated ones.

GNSS Primary Lever Arm

LEVER ARM ESTIMATION

	X	Y	Z
Initial (m)	-0.004	0.182	0.020
Estimated (m)	0.092	0.135	-0.145
Stability (m)	0.001	0.001	0.009
Accuracy (m)	0.039	0.039	0.063
Quality	Medium	Medium	Poor

GNSS Secondary Lever Arm

DUAL ANTENNA ALIGNMENT

	Pitch	Yaw
Initial (deg)	-1.127	86.476
Estimated (deg)	-0.123	86.559
Stability (deg)	0.007	0.014
Accuracy (deg)	0.079	0.081
Quality	Medium	Medium

LEVER ARM ESTIMATION

	X	Y	Z
Initial (m)	0.021	-0.224	0.012
Estimated (m)	0.117	-0.274	-0.146

Geodesy

Summary

DEFINITIONS

Project CRS	EPSG:3857	WGS 84 / Pseudo-Mercator
Project Datum	EPSG:6326	World Geodetic System 1984 ensemble (WGS 84)
Project Effective Datum	EPSG:6326	World Geodetic System 1984 ensemble (WGS 84)
Origin Datum	EPSG:6326	World Geodetic System 1984 ensemble (WGS 84)
GNSS EphemerisDatum Datum (PPP)	EPSG:1322	International Terrestrial Reference Frame 2020 (ITRF2020)

TRANSFORMATIONS

Source	Target	Code	Method	Accuracy (m)	Selection

No transformation used.

Details

PROJECT COORDINATE REFERENCE SYSTEM

Datum	[EPSG:6326] World Geodetic System 1984 ensemble (WGS 84)
Ellipsoid	WGS 84
Geoid	egm08_25
Projection	Popular Visualisation Pseudo-Mercator

POPULAR VISUALISATION PSEUDO-MERCATOR

False easting	False northing	Latitude of natural origin	Longitude of natural origin
0	0	0	0

IMU

IMU STATUS SUMMARY

General Status	Good
Accelerometer Status	Good
Gyroscope Status	Good
Mean Temperature (°C)	37.4

IMU GENERAL STATUS

Missing data	0
Mean gravity	9.75 $m.s^{-2}$
Accelerometer out of range	0
Gyroscope out of range	0

IMU ACCELEROMETER STATUS

	X	Y	Z
Failed CBIT	0	0	0
Noise level	1024.75 mg	757.08 mg	672.87 mg
Estimated bias	-949.58 µg	-1302.4 µg	3.64 µg
Estimated scale factor	1568.99 ppm	-2282.64 ppm	0.0 ppm

IMU GYROSCOPE STATUS

	X	Y	Z
Failed CBIT	0	0	0
Noise level	11.43 °/s	21.64 °/s	16.7 °/s
Estimated bias	200.53 °/h	225.67 °/h	-45.59 °/h
Estimated scale factor	-9948.07 ppm	-6057.68 ppm	1878.53 ppm

Processed Solution

Summary

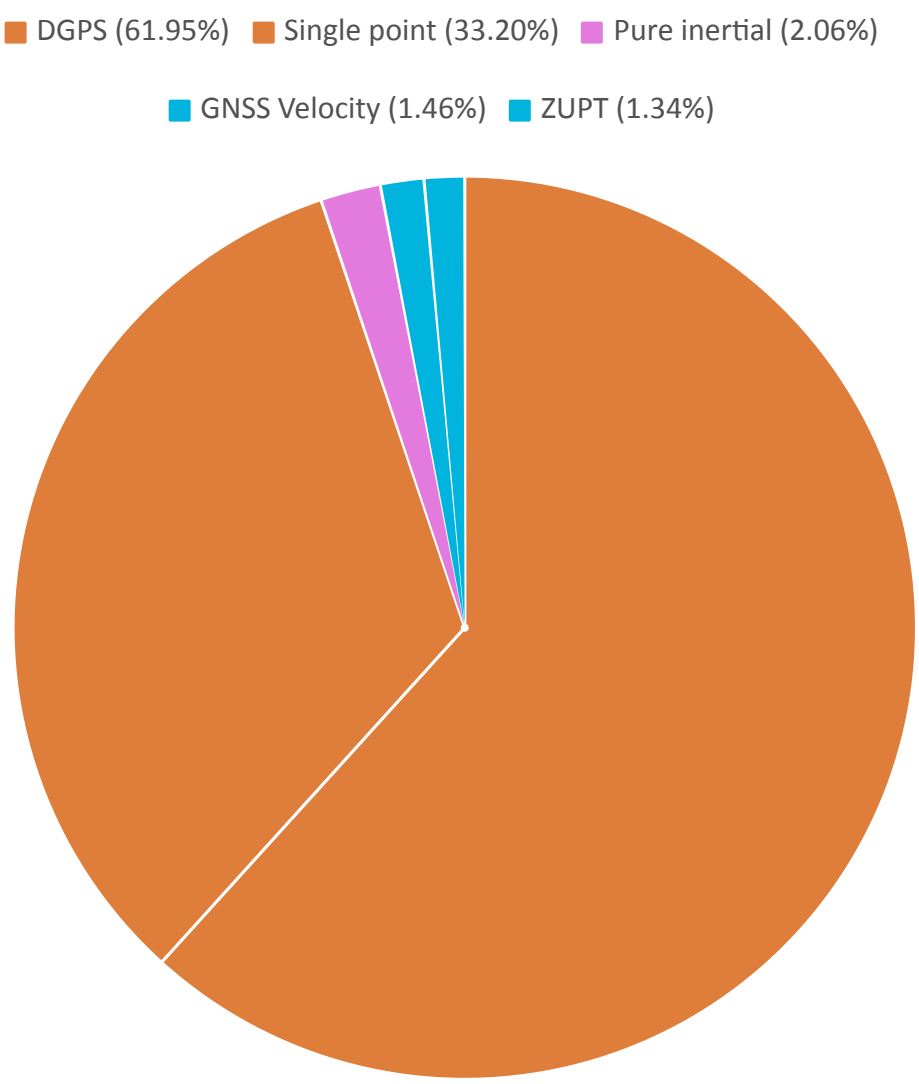
This section presents the processed GNSS/INS solution results and quality.

You can review the data (attitude, trajectory, ...) as well as check overall QC indicators and estimated accuracies.

Selected Dataset	Auto (Merged)
IMU Model	ekinoxMicroV1
Motion profile	UAV
Processing Mode	Loose Coupling
Passes Count	3
Including RTS Smoothing pass	No
First Epoch (UTC)	Thu Jan 8 2026 06:07:51
Last Epoch (UTC)	Thu Jan 8 2026 06:21:10
Ephemeris Used	broadcasted

Processing Started (Local)	Mon Jan 12 2026 00:09:10
Forward Duration (s)	5.9
Backward Duration (s)	5.9
Merge Duration (s)	2.0
Total Duration (s)	8.0

Solution Types



Accuracies

ESTIMATED POSITION ACCURACY

	Average	Std.	RMS	Min	Max
Horizontal (m)	0.646	0.527	0.834	0.359	4.888
Vertical (m)	0.354	0.175	0.395	0.234	1.092

ESTIMATED VELOCITY ACCURACY

	Average	Std.	RMS	Min	Max
Horizontal (m.s^-1)	0.0352	0.0332	0.0484	0.0143	0.2669
Vertical (m.s^-1)	0.0087	0.0029	0.0092	0.0065	0.0179

ESTIMATED ATTITUDE ACCURACY

	Average	Std.	RMS	Min	Max
Roll/Pitch (deg)	0.0155	0.007	0.017	0.0076	0.0426
Heading (deg)	0.1102	0.0224	0.1125	0.0898	0.1847

Separations

POSITION SEPARATION

	Average	Std.	RMS	Min	Max
Horizontal (m)	1.1988	1.029	1.5799	0.0081	6.9264
Vertical (m)	-0.5936	1.854	1.9467	-5.5931	2.5255

VELOCITY SEPARATION

	Average	Std.	RMS	Min	Max
Horizontal (m.s^-1)	0.1477	0.1321	0.1982	0.0001	0.6467
Vertical (m.s^-1)	-0.0046	0.1003	0.1004	-0.2344	0.1558

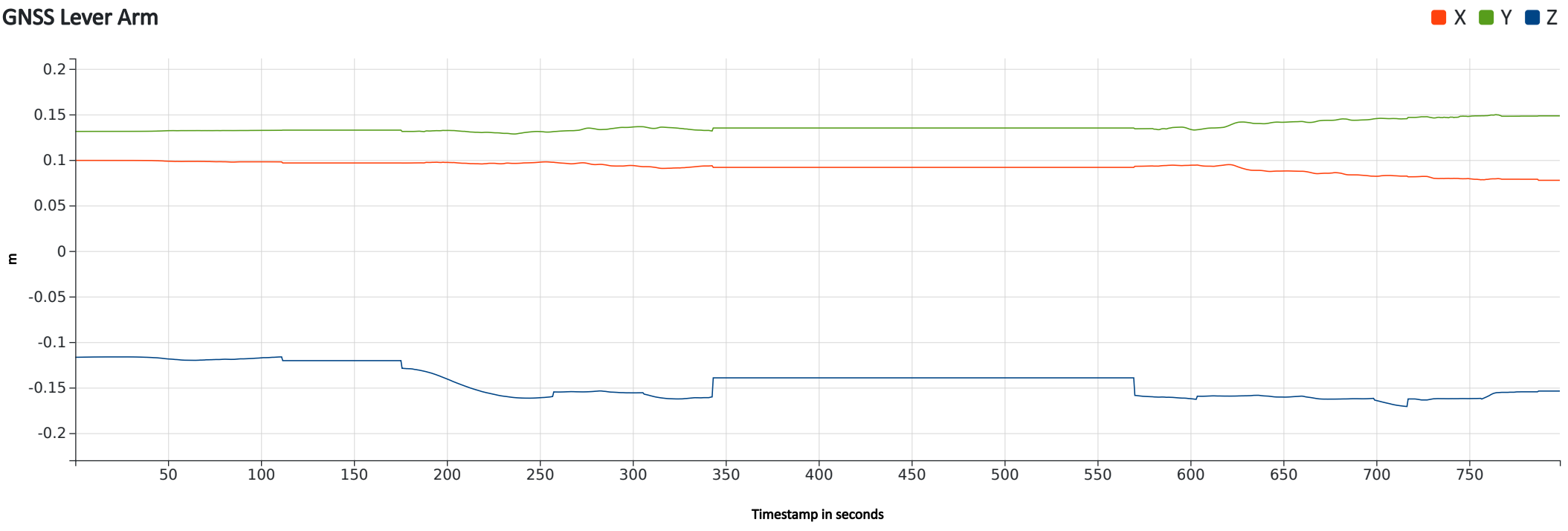
ATTITUDE SEPARATION

	Average	Std.	RMS	Min	Max
Roll/Pitch (deg)	0.035	0.075	0.0827	-0.1502	0.3235
Heading (deg)	0.1598	0.4174	0.4469	-0.6453	1.1545

Advanced INS QC

Estimated Lever Arms

GNSS Lever Arm



GNSS Alignment