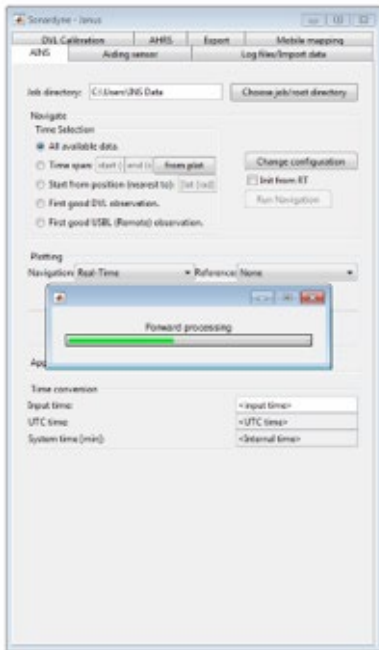
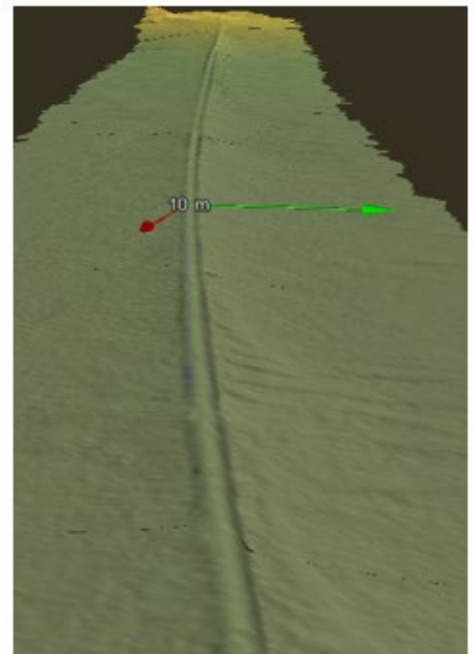


Datasheet

Janus – INS Post-Processing Software



Course Real-Time Navigation



Optimum Post-Processed Navigation

Janus is Sonardyne’s acoustically aided inertial navigation (SPRINT), Quality Control and Post-Processing software. A simple user interface allows quick and easy data editing, post-processing and data export to enhance real time navigation.

Janus utilises raw data from SPRINT and aiding sensors to both replicate the real-time navigation solution (forwards in time only) and significantly improve the navigation solution further using an advanced smoothed (forward and backwards) post-processed solution.

Janus provides proven centimetre-level dynamic navigation with SPRINT 700 INS, Syrinx DVL and 6G® LBL. Janus can also be used to improve and check navigation for SPRINT 300 and 500.

The real-time inertial navigation solution can be optimised using Janus’ outlier rejection functionality on all raw aiding sensor data and gives the user the ability to reconfigure the real-time settings to enable/disable sensors and to eliminate any systematic errors such as incorrect lever arms or mounting angles/incorrect error model.

Janus also exposes the aiding data availability, usage, rejection and reason. Janus displays the ‘health’ status of the INS algorithms, communication ports and internal electronics.

Post-processed aiding data not collected by the INS system in real-time can be imported.

Multiple navigation solutions can be stored and compared to help identify the optimum configuration.

Calibration of DVL-to-SPRINT mounting angles, latency and scale factor is performed with a post-processed forward/backward computation, with superior results than a real-time (forward only) computation.

There are Janus pre-defined navigation export formats available which are compatible with most third party survey suites and added flexibility to create custom export formats.

Janus can be upgraded from the basic (DVL calibration and QC) version to full post-processed navigation capability.

Typical Applications

- ROV and towfish positioning
- Hydrographic survey
- Offshore construction
- As-laid and out-of-straightness
- Multibeam survey
- Mobile (laser) mapping

Key Features

- Replication of real-time navigation and AHRS
- Kalman smoothed (forwards and backwards) post-processed optimum navigation solution
- Modify, improve or correct real-time subsea navigation

Specifications

Janus – INS Post-Processing Software

DVL Calibration Report



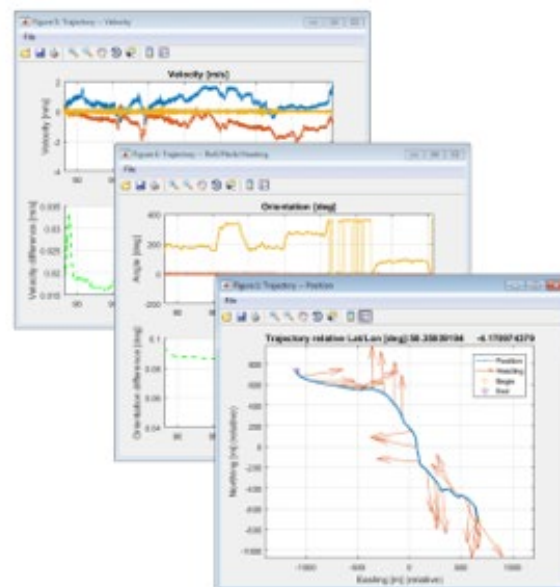
Settings:

Lever arms (CRP)	Forward (x) [m]	Starboard (y) [m]	Down (z) [m]
IMU	0	0	0
USBL	0	0	0
DVL	0	0	0.350

Settings	
Tidal correction	off
DVL sound velocity source	sensor
IMU mounting angle - a (roll) [°]	0
IMU mounting angle - b (pitch) [°]	0
IMU mounting angle - g (heading) [°]	0
USBL acoustic scale	1

Results:

DVL params	a (roll) [°]	b (pitch) [°]	g (heading) [°]	Scale factor error [%]	Latency [s]
Before	-179.900	0	90.000	0	0
Calculated	-179.937	0.911	-179.937	-0.260	0.018
Calculated Accuracy	0.094	0.116	0.144	0.214	



Feature	Janus – INS Post-Processing Software	
Aiding Data Supported	Subsea	USBL and LBL position, pressure depth, DVL, LBL ranges, zero velocity, sound velocity
	Surface	GNSS, zero mean depth
	Manual	Position and depth
	Tide	Automatic compensation from seabed Compatt 6 pressure sensor
	Import	Any of above
Configuration	Physical	Lever arms and mounting angles
	Observations	Pre-INS rejection filter Error model Manual values (e.g. manual sound velocity) Offsets (e.g. surface ambient pressure)
Outlier Rejection	Automatic	Pre-set or configurable thresholds
	Manual	User selectable from chart
Plots/Graphs	Navigation Trajectories	Position, north/east, depth, roll/pitch/heading, velocity
	Orientation	AHRS and INS
	Aiding Data Summaries	Availability, accepted, rejected (pre-filter and INS) or disabled
	Aiding Data Observations	Observation values, quality, residuals, rejection reason
	Time Synchronisation	Status, availability, time-between-sync, drift
	Bias Estimates	Angular rates, acceleration, DVL misalignment and scale factor
	Hardware Self-Test	Power, communication, internal sensors, INS and AHRS status
Calibrations	DVL	Mounting angles, latency and scale factor PDF calibration report and calibration file for SPRINT
	LBL (Sparse) Array	(Optional) SLAM array calibration
Navigation Export File	Formats	PSONNAV, xxGGA, Janus default, NavLab compatible, QINSy and custom
Upgrades	Remote	Time limited or perpetual
User PC Requirements	Operating System	Windows®XP, Windows 7 and Windows 10 (64-Bit recommended)
	Minimum Memory	8 GB+
	Minimum Processor	Intel® Core i7 2600 / 3.4 GHz processor (or similar)