

NAVS-MS300DK

Surface & Underwater Navigation Position System

High-performance INS/DVL integrated navigation system
for AUV, ROV and marine engineering vessels



Side exit

Top exit

Overview

The NAVS-MS300DK surface and underwater navigation positioning system integrates Inertial Navigation System (INS) and Doppler Velocity Log (DVL) with an all-in-one compact design. It can measure heading, attitude, velocity and position information of underwater moving carriers in real-time with high accuracy. The unit is compatible with most AUVs, ROVs and marine engineering vessels.

Core Advantages

- Autonomous dynamic north-seeking, underwater navigation, fully autonomous and all-weather operation
- Integrated compact design featuring low power consumption, small footprint and competitive cost
- Dedicated Kalman filter deeply fuses data from INS, DVL, USBL and GNSS, delivering high precision and excellent system stability

Applications

- **Marine Resource Exploration**
Serving the offshore oil & gas industry for seabed survey and geological exploration to locate oil and gas fields; supporting rig installation, subsea pipeline and port facility construction; enabling inspection and preventive maintenance for energy platforms, mooring equipment and subsea pipelines.
 - **Underwater Engineering Operations**
Compatible with various subsea auxiliary sensors including GNSS and USBL to realize long-range high-precision positioning. Suitable for search, rescue and salvage operations in seas, rivers and lakes.
- ROV / AUV / DPV Navigation**
Enables unmanned underwater platforms to carry out missions rapidly. It streamlines seabed investigation, inspection and data acquisition while reducing disturbances to the marine hydrological environment.

Technical Specifications (Export-release Version, License-free)

Item	NAVS-MS300DK-EX (License-free)
Alignment Performance	
Alignment Time	Static ≤5 min; Dynamic ≤15 min
Heading Accuracy (RMS)	2°secL (Pure-inertial static alignment); 2.5°secL (Pure-inertial, Sea State 1); 3°secL (Pure-inertial, Sea State 3)
Roll & Pitch Accuracy	<0.6°
Position Accuracy	GNSS aided: <2 m; INS/DVL (speed ≤15 knots): <1% D; INS (15-30 knots, surface-only option): <1.5% D; INS (30-70 knots, surface-only option): <3% D
Velocity Accuracy	0.1 m/s
Rotation Dynamic Range	Heading: 0-360°; Roll: ±180°; Pitch: ±90°
Doppler Velocity Log (DVL)	
Max Bottom-Track Altitude	40 m (typical; Not applicable in silty or weed-infested waters)
Min Bottom-Track Altitude	0.2 m
Velocity Measurement Range	±9 m/s
Long-term Accuracy	±1% ±1 cm/s
Accelerometer	
Measurement Range	±10 g
Bias Stability	0.025 mg
Gyroscope	
Measurement Range	±200°/s (±300°/s available upon custom request)
Bias Stability	1°/h (10 s smoothing)
Physical Attributes	
Dimension	Φ98 mm×104 mm / Φ115 mm×115 mm (excluding connector)
Weight	<2 kg (in air, excluding package and cable)
Operating Temperature	-5°C ~ +60°C
Storage Temperature	-50°C ~ +70°C
Depth Rating	300 m
Interface & Electrical Parameters	
Data Output Rate	1-200 Hz, configurable
Serial Interface	RS422 or RS232
Baud Rate	230400
Input Power	18-30 VDC
Power Consumption	<10 W

Technical Specifications (Standard Version, Export License Required)

Item	NAVS-MS300DK-STD (License-Required)
Alignment Performance	
Alignment Time	Static ≤5 min; Dynamic ≤15 min
Heading Accuracy (RMS)	<0.2°secL (Pure-inertial static alignment); <0.3°secL (Pure-inertial, Sea State 1); <0.5°secL (Pure-inertial, Sea State 3)
Roll & Pitch Accuracy	<0.02°
Position Accuracy	GNSS aided: <2 m; INS/DVL (speed ≤15 knots): <0.5% D; INS (15-30 knots, surface-only option): <1% D; INS (30-70 knots, surface-only option): <3% D
Velocity Accuracy	0.05 m/s
Rotation Dynamic Range	Heading: 0-360°; Roll: ±180°; Pitch: ±90°
Doppler Velocity Log (DVL)	
Max Bottom-Track Altitude	40 m (typical; Not applicable in silty or weed-infested waters)
Min Bottom-Track Altitude	0.2 m
Velocity Measurement Range	±9 m/s
Long-term Accuracy	±0.4% ±0.4 cm/s
Accelerometer	
Measurement Range	±10 g
Bias Stability	0.025 mg
Gyroscope	
Measurement Range	±200°/s (±300°/s available upon custom request)
Bias Stability	0.1°/h (10 s smoothing)
Physical Attributes	
Dimension	Φ98 mm×104 mm / Φ115 mm×115 mm (excluding connector)
Weight	<2 kg (in air, excluding package and cable)
Operating Temperature	-5°C ~ +60°C
Storage Temperature	-50°C ~ +70°C
Depth Rating	300 m
Interface & Electrical Parameters	
Data Output Rate	1-200 Hz, configurable
Serial Interface	RS422 or RS232
Baud Rate	230400
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Dimensions&Connector

