Rovins 9-DVL

All-in-one combined Inertial Navigation System and Doppler Velocity Log system



The Rovins 9-DVL embeds in a compact design an Inertial Navigation System (INS) from Exail based on the most compact high-performance Inertial Measurement Unit (Exail UmiX IMU) and a DVL from Nortek Group. The tight integration of the IMU and DVL raw sensor data allows for higher levels of accuracy and reliability. With no need for calibration, the Rovins 9-DVL can be integrated into all types of underwater vehicles to a depth of 6,000 m.

FEATURES

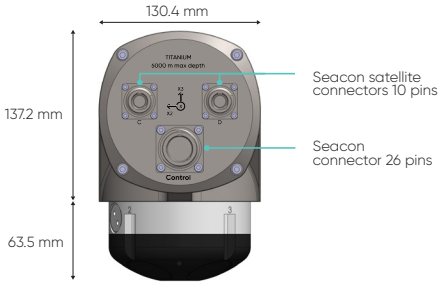
- All-in-one high-accuracy 3D positioning with heading, roll, pitch and bottom velocities
- Unique horizontal and compact design
- UmiX INS and 500 KhZ DVL tightly coupled cutting-edge technologies
- Optimized interface and direct access to DVL main functionalities
- FOG, unique strap-down technology
- Multiple interfaces up to 6,000 m water depth (USBL, LBL, Ramses)

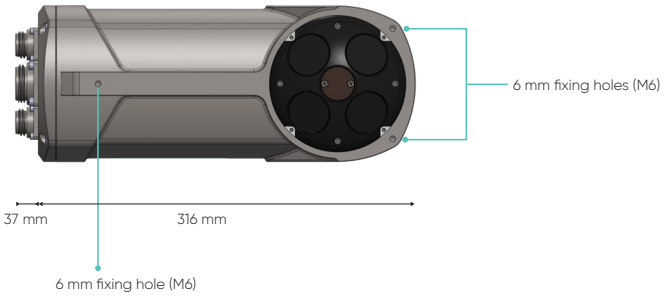
BENEFITS

- Accurate georeferenced position and attitude at high frequency
- Technology based on Exail's in-house technology
- Easy integration in all subsea vehicles
- Cost effective and hassle-free solution
- Calibration-free
- Low power consumption
- Additional connectors available depending on requirements
- Robust to harsh environment, shock and vibration proof

APPLICATIONS

- Ummaned Underwater Vehicles (UUV)
- Remotely Operated Vehicles (ROV)
- Uncrewed Surface Vehicles (USV)
- Towfish positionning (Sonar, ROTV)
- Mine countermeasures (MCM)
- Subsea Metrology, IRM, Survey





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TECHNICAL SPECIFICATIONS

Performance/Characteristics

Position accuracy [1]	
Rovins 9-DVL straight line performance	0.1 %TD (CEP 50)
Rovins 9-DVL optimal performances in typical conditions	0.02 %TD (CEP 50)
No aiding for 60 s / 120 s / > 8 hrs	0.6 m / 2.3 m / 0.47 Nm/h (CEP50)
Heading accuracy [2][3][4]	
With GNSS (or USBL/LBL)	0.05 deg secant latitude RMS
Roll and pitch dynamic accuracy (no aiding)	0.01 deg RMS
DVL Bottom velocity	
Single ping std @ 3 m/s	0.5 cm/s
Long-term accuracy	±0.1 % / ±0.1 cm/s

Operating range/Environment

Operating/Storage temperature	-4 °C to 40 °C / -20 °C to 60 °C
Rotation rate dynamic range	Up to 450 deg/Sec
Acceleration dynamic range	±30 g
MTBF	High MTBF – 100,000 hrs
Heading/Roll/Pitch	0 to +360 deg / ±180 deg / ±90 deg
Depth rating	6,000 m
DVL min/max altitude	0.3 / 175 m

Physical characteristics

Dimensions (Ø x L x H)	130,4 x 353 x 200,7 mm
Weight in air/water	12,8 kg / 7,9 kg
Material	Titanium
Mounting (Ø in mm) [5]	3 x Ø M6
Connectors	1 x 26 pins, 2 x 10 pins SEACON

Interfaces

Sensors	GNSS / USBL / LBL / DVL / EMLOG / DEPTH / CTD / SVP
Serial	5 ports : RS422 or RS232
Ethernet	10/100 Mbits, UDP/TCP (client / server) / web server (GUI)
Pulse	1 input for PPS / 1 output PPS / 1 DVL Sync pulse
Input/Output	Configurable 7i / 5o, Industry standards: NMEA, ASCII, Exail STD BIN etc... more than 130 output protocols
Baud rates	Up to 576 kbaud
Data output rate	0.1 Hz to 200 Hz
Power supply/Consumption[6]	24 VDC (20 - 32 V) / < 20 W

(1) CEP, 50 % Circular Error Probability.
(2) Typical performances, dependent on external sensor characteristics.
(3) RMS Values.
(4) Secant Latitude = 1 /Cosine Latitude.
(5) Bottom up mounting max penetration 8 mm.
(6) Rovins 9-DVL own powerconsumption, not taking into account external sensors consumption, typical value @ 24 V and ambient temperature.

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