

F290 Inertial Navigation System

Precision Attitude & Positioning

Accurate, Reliable Motion and Positioning Data within a Compact & Ruggedized IP67 Rated Housing

The F290 is a GNSS-aided inertial attitude and positioning solution designed to support rapid deployment and repeatable installation for hydrographic, multibeam, and marine survey operations.

The system integrates high-performance GNSS technology, precision accelerometers, and gyroscopes with advanced navigation algorithms to deliver accurate positioning, heading, and motion data in demanding offshore environments.

To further simplify installation for rapid vessel deployments, a pre-calibrated housing accessory with a preset 1m or 2m baseline is available separately to significantly reduce the installation and calibration phases of operation. F290 is managed through an intuitive web-based interface, providing configuration, control, monitoring, and data processing functions.



Some of the F290 benefits available are:



High Accuracy

High Accuracy Position, Heading, Heave, Pitch and Roll at up to 100Hz, in a single compact unit



Compatibility

Compatible with HYPACK, QINSy, CARIS and other navigation packages



Improved Heading Lock Stabilization

Improved heading lock stability for consistent and reliable orientation performance in dynamic marine environments.



Position & Heading Seeding

All systems are GPS, GLONASS, BeiDou, GALILEO and QZSS capable for position and heading seeding



High Performance at all Times

Maintains exceptional performance and accuracy in environments with poor or intermittent GNSS reception.



NTRIP Client

Built-In NTRIP Client capable of receiving GNSS Corrections over internet



Reduced Installation Time

Streamlined Installation process minimizes setup time and operational delays



IHO Survey Standard

Adherence to International Hydrographic Organization (IHO) survey standards, with F290 directly supported in leading Hydrographic Survey Applications



Easy to Use Web Interface

Ability to store multiple different profiles and recall these instantly - ideal for survey teams with multiple vessels



Slow Moving Platform Applications

Enables accurate operation on slow-moving and non-moving platforms using a pre-calibrated housing option.



Waterproof Housing rated to IP67 Standards

Rugged IP67-rated enclosure for reliable operation in harsh marine environments



Highly Competitive Price

Cost-effective solution delivering survey-grade performance and reliability

The F290 combines advanced GNSS and inertial technologies within a single compact unit, reducing installation complexity while providing a complete source of navigation and motion-reference data. High-rate outputs of position, heading, pitch, roll, and heave support a wide range of hydrographic, geophysical, and marine construction applications where reliable motion compensation is essential.

Beyond its precise positioning, heading and motion sensing capabilities, the F290 incorporates our proven iHeave (intelligent heave) technology, delivering advanced heave compensation directly within the system without the need for top-side processing or software. In many parts of the world, hydrographic survey is severely affected by low frequency ocean swells often up to 70 seconds long, resulting in distortions in bathymetric measurements. Conventional techniques for real-time heave measurement can only offer limited accuracy and are insensitive to ocean swells exceeding 10 to 20 seconds. The inbuilt iHeave algorithm analyzes the raw motion data and allows a more accurate determination of the real heave motion experienced by a vessel, and enables the output of precise heave values for all ocean swells.

Engineered to adapt to diverse vessel configurations, the system supports simultaneous connections to multiple sensors through Ethernet and serial interfaces. Flexible lever-arm management allows accurate referencing of equipment installed at different locations onboard, while dedicated Centre of Gravity (COG) modelling further refines motion calculations and improves overall measurement quality.

Operational efficiency is enhanced through rapid heading alignment, enabling the system to become survey-ready in a matter of minutes. The browser-based management environment simplifies deployment and fleet-wide standardization by allowing users to create, save, and instantly recall vessel-specific configurations, reducing setup time between projects. The close integration of inertial and satellite-derived measurements provides resilient performance in challenging operating conditions, maintaining reliable outputs during periods of degraded GNSS availability. This architecture helps minimize downtime and delivers consistent data quality throughout a survey mission.

Designed for straightforward integration into existing workflows, the F290 supports industry-standard data formats and interfaces and is compatible with leading hydrographic packages, including HYPACK, Qinsy, and CARIS. This enables survey teams to incorporate the system quickly without requiring significant changes to established acquisition or processing procedures.



Example Applications where the F290 Inertial Navigation System plays a core component include:



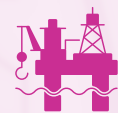
Hydrographic Survey



Bridge & Dam Inspections



Dredging



Offshore Renewable Energy



Port & Harbor Security



Environmental Survey



Shipping Channel Survey



Marine Laser Scan Survey

Positional Accuracy	0.04m with Atlas Global Correction Service 0.008 m + 1 ppm with L1/L2 RTK Correction 0.30 m with DGPS Correction 0.30 m with SBAS Correction 1.20 m No Correction
Roll and Pitch (1 σ)	0.02°
True Heading (1 σ)	0.04° (2 m baseline) 0.025° (4 m baseline)
Heave (1 σ)	5 cm or 5% (on-line) 3.5 cm or 3.5% (iHeave)
Velocity (1 σ)	0.014 m/s
Dimensions	127 mm x 155 mm x 113 mm (5" x 6.1" x 4.4")
Weight	2.2 kg (4.9 lbs)
Power	9 - 36 VDC, 15 W (110 - 240 VAC adapter supplied)
Power and Data Cable	5m standard (or 20m, or 50m optional) (16.40 ft standard (or 65.62 ft, or 164.04 ft optional))
Antennas	Multi-Frequency, Multi-GNSS, SBAS and Atlas corrections capable
Antenna Cables	15 m (49.2 ft) standard 30 m (98.4 ft) optional
Operating Temperature	-10° to 60° C (14° to 140° F)
Waterproof	IP67 Rated Maximum depth of 1m up to 30 minutes (When power and antenna connectors are mated)
Vibration	0.1g ² /Hz, 5-500 Hz
Interfaces	
Ethernet 100 Mbit	Full control and configuration, high speed data output (COMPAC), NTRIP corrections User-configurable for position, heading and attitude strings. Choose from: TSS1, TSSHHRP, EM1000, EM3000, COMPAC, GGA, GSA, GST, GSV, GKG, HDT, PASHR, PRDID, PTCF, RMC, ROT, VTG, UTC, ZDA, PPS and SPD.
Serial Port 1	User-configurable for position, heading and attitude strings. Choose from: TSS1, TSSHHRP, EM1000, EM3000, COMPAC, GGA, GSA, GST, GSV, GKG, HDT, PASHR, PRDID, PTCF, RMC, ROT, VTG, UTC, ZDA, PPS and SPD.
Serial Port 2 & 3	As Serial Port 1
GNSS Correction Port	Correction input (DGPS, RTK) Formats: RTCM 2.1/2.2/2.3/3.0/3.1; CMR, CMR+
Other	1 PPS on BNC

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