The latest generation of the SMC IMU-10 range of Motion Sensors has been designed to meet the requirements from the offshore, hydrographic and marine industry. The IMU-10 range provides high accuracy motion measurement data in dynamic environment in all areas from small vessels to large rigs in all weather conditions.

Application
Development over 15 years has produced a Motion Sensor for applications from Active Heave Crane systems, Dynamic Positioning systems, Helideck Monitoring and other various Roll, Pitch and Heave motion applications. The Motion Sensor data is suitable for any marine operation that requires attitude determination, motion compensation or dynamic positioning. The SMC Motion Sensors provide high accuracy motion measurements in all dynamic environments.

Function
Motion sensors or MRUs determine the orientation of an object relative to an inertial frame of reference or another body. The SMC Motion Sensor uses 3 accelerometers and 3 solid state MEMS gyroscopes which are integrated with a DSP, Digital Signal Processor, to output accurate real time pitch, roll and heave data with high dynamic accuracy when accelerations are present, in industry standard formats.

Calibration
All SMC IMU-10 Motion Sensors are individually calibrated and tested, in a calibration machine with a controlled temperature chamber in temperatures between 0 and +55 degrees Celsius.

Communication
The SMC Motion Sensor transmits data over UDP Ethernet and RS232/RS422 Serial communication. The SMC Motion Sensor accepts serial velocity and heading inputs for aiding during vessel turns.

Standard Supply
The SMC Motion Sensor is supplied with a data distribution unit, cables and windows-based user configuration software.

General
- Roll & Pitch 0.03° RMS
- Heave 5 cm or 5 %
- Velocities
- Accelerations
- Serial and Ethernet Communication
- Industry Protocols NMEA
- 2 years Warranty

Environmental
The SMC IMU-10 motion sensors are available as IP66 surface or IP68 submersible versions in a titanium casing. The durable construction ensures a Motion Sensor with an extremely high reliability in the most demanding marine environment.

About SMC
SMC is an ISO9001:2015 quality management certified company, manufacturing motion sensors and system integration software packages, such as Helideck Monitoring and Motion Monitoring systems, for the global marine industry.
# Specification SMC IMU-10 Range

## Model Features

<table>
<thead>
<tr>
<th>Feature</th>
<th>IMU-106</th>
<th>IMU-107</th>
<th>IMU-108</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roll / Pitch</td>
<td>N/A</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Accelerations</td>
<td>N/A</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Heave</td>
<td>Yes</td>
<td>N/A</td>
<td>Yes</td>
</tr>
</tbody>
</table>

## Performance

<table>
<thead>
<tr>
<th>Feature</th>
<th>IMU-106</th>
<th>IMU-107</th>
<th>IMU-108</th>
</tr>
</thead>
<tbody>
<tr>
<td>Angle Accuracy static</td>
<td>N/A</td>
<td>0.02º RMS</td>
<td>0.02º RMS</td>
</tr>
<tr>
<td>Angle Accuracy Dynamic @ ±5º simultaneous roll and pitch</td>
<td>N/A</td>
<td>0.03º RMS</td>
<td>0.03º RMS</td>
</tr>
<tr>
<td>Angle range Roll/Pitch</td>
<td>± 30º</td>
<td>± 30º</td>
<td>± 30º</td>
</tr>
<tr>
<td>Heave Accuracy</td>
<td>5cm or 5%</td>
<td>N/A</td>
<td>5cm or 5%</td>
</tr>
<tr>
<td>Acceleration accuracy</td>
<td>N/A</td>
<td>0.01 m/s² RMS</td>
<td>0.01 m/s² RMS</td>
</tr>
</tbody>
</table>

## Communication

- Ethernet 10/100 mbit. UDP and Modbus TCP/IP
- Com1: RS232 Bi-Directional
- Com2: RS422 Bi-Directional
- Com3: RS232 Data Output and Aiding input
- Com4: RS232 Aiding input only
- Analog output V or mA with remote converter (optional)
- Velocity input formats RMC, RMA, VTG, VBV, VHW; Heading input formats HDT, HDG
- SMC IMU Configuration software included
- User selectable Output Protocols
- User selectable Output Rate 1-200hz

## Physical

- Dimensions (W x H) Ø134 x 127mm excl connector
- Weight ~1.5 kg
- Housing Material Titanium

## Environmental

- Temperature -20º to +65º Celsius, outside 0º to +55º Celsius. 0.1º angle performance
- Storage Temperature -40º to +65º Celsius
- MTBF (computed) 50 000 hours
- IP66 as standard. IP68 30 meter depth rated optional
- Mounting Orientation Horizontal as standard or Vertical as option (factory set)

## Electrical

- Power requirements 12 - 30 VDC; 3 W, versions without ethernet 2 W
- Standard Complies with the IEC 60945

## Warranty & Support

- 2-year Limited Hardware & Software Warranty
- Free Technical & Hardware support