

# SMC IMU-00 Range

## Motion Sensors



The latest generation of the SMC IMU-00 range of Motion Sensors has been designed to meet the requirements from the Dynamic Positioning, offshore, marine and hydrographic industry. The IMU-00 range provides accurate motion measurement data in dynamic environments in a compact and robust design.

### Application

Development over 10 years has produced a Motion Sensor for applications from Dynamic Positioning systems, AHC Active Heave Compensated winches, Mega Yacht 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 accurate motion measurements in 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-00 Motion Sensors are individually calibrated and tested, in a calibration machine with a controlled temperature chamber in temperature 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 0.25° RMS
- Heave 5 cm or 5 %
- Velocities
- Accelerations
- Serial and Ethernet Communication
- Industry Protocols NMEA
- 2 years Warranty

### Environmental

The SMC IMU-00 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-00 Range

## Model Features

|               | IMU-007 | IMU-008 |
|---------------|---------|---------|
| Roll / Pitch  | Yes     | Yes     |
| Accelerations | Yes     | Yes     |
| Heave         | N/A     | Yes     |

## Performance

|   |                           |                           |
|---|---------------------------|---------------------------|
| Angle Accuracy static                                       | 0.2° RMS                  | 0.2° RMS                  |
| Angle Accuracy Dynamic<br>@ ±5° simultaneous roll and pitch | 0.25° RMS                 | 0.25° RMS                 |
| Angle range Roll/Pitch                                      | ± 30°                     | ± 30°                     |
| Heave Accuracy  | N/A                       | 5cm or 5%                 |
| Acceleration accuracy                                       | 0.05 m/s <sup>2</sup> RMS | 0.05 m/s <sup>2</sup> RMS |

## 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, HDC  
 SMC IMU Configuration software included  
 User selectable Output Protocols  
 User selectable Output Rate 1-200hz

## Physical

Dimensions (W x D x H) 134 x 134 x 67mm excl connector  
 Weight ~1 kg  
 Housing Material Titanium

## Environmental

Temperature -20° to +55° Celsius  
 Storage Temperature -40° to +65° Celsius  
 MTBF (computed) 50 000 hours  
 IP66 as standard; IP68 30 meter depth rated optional  
 Mounting on Horizontal surface

## 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

