

Intelligent Gyro Compass

Solid State Motion Reference and Heading Sensor



Applications

- Inertially stable ROV/AUV heading sensor
- Motion Reference Unit (MRU)
- Auto heading applications
- Replacement for magnetically slaved gyro
- Replacement for flux gate compasses

The Tritech Intelligent Gyro Compass (iGC) combines three angular rate gyros with three orthogonal DC accelerometers and three orthogonal magnetometers. This makes the iGC an invaluable heading sensor and Motion Reference Unit (MRU) for numerous ROV and AUV navigation applications. The iGC can operate as a stand-alone device or be further enhanced by using alongside the Tritech Intelligent Fibre-Optic Gyro (iFG).

Benefits

- High shock rating
- Minimal maintenance costs
- User selectable output
- More accurate than flux gate compasses

Features

- Serial interface
- Inertially filtered
- Three angular rate gyros
- Three orthogonal magnetometers

The Intelligent Gyro Compass (iGC) provides essential movement data not available from widely used magnetically slaved gyro and flux gate compasses. Designed in a compact 4000m depth rated housing the iGC incorporates a 9 sensor orientation processor, a proprietary interface and protocol converter.

Operating over the full 360° of angular motion on three axes, the iGC provides orientation matrix and quaternion formats. These may be used directly, but are normally converted to an industry standard navigation output telegram. This can be configured by the user to match a number of common heading sensors.

Key Specification	
Orientation Range	360° full scale, all axes
Angular velocity range	±300° per second
Accuracy	Better than 1°
Dimensions	121mm x 79mm / 4.77in x 3.12in (4000m) 128mm x 93mm / 5.10in x 3.67in (6000m)
Weight in water	0.45kg / 1.00lbs or 0.80kg / 1.77lbs

Heading Properties	
Orientation range	360° full scale, all axes
Angular velocity range	±300° per second
Sensor resolution	16 bits
Dynamic compensation	Close loop digital control (0 - 50Hz)
Orientation resolution	<0.1°
Accuracy	Better than 1°
Temperature drift	±0.025% per °C
Linearity	0.23% full scale (tested in static conditions)
Repeatability	0.2°
Range	Gyros: ±300° per second Accelerometers: ±5g Magnetometers: ±250µT

Electrical and Communication	
Processed output	NMEA 0183 Proprietary iGC ROV specific hardware interface via separate interface card
Digital outputs	RS232 or RS485
Analogue output	Optional analogue output and external synchronisation PCB
Output data rate	Up to 20Hz
Serial data rate	All standard rates from 1200Bd to 115.2kBd
Power requirement	24V DC at 100mA

Physical specification	
Depth rating	4000m / 13,124ft or 6000m / 19,686ft
Weight in air	0.95kg / 2.10lbs or 1.50kg / 3.31lbs
Weight in water	0.45kg / 1.00lbs or 0.80kg / 1.77lbs
Temperature rating (operating)	-40°C to 75°C / -40°F to 167°F

Specification subject to change in line with Trittech's policy of continual product development