IP68 NMEA 2000 GYRO HEADING SENSOR

FEATURES

- Solid-state Gyro + Fluxgate
- NMEA-2000 compatible
- 2 Axis Tilt compensation to 45°
- 12V Supply 1 LEN
- Auto calibration button
- Set zero button
- IP68 -   see note 1

APPLICATIONS

- Marine Compass
- Radar "North up"
- Autopilots
- AIS
- Course Watch

ABSOLUTE MAXIMUM RATINGS

PARAMETER	DESCRIPTION	NOTES	CONDITIONS	VALUE	UNIT
Θ_{STOR}	Storage Temp Range			-20 to +100	°C
Θ_{OPER}	Operating Temp Range		Vcc = 12v	-20 to +60	°C
	Shock Resistance		Single impact	±40	G
	Vibration Resistance		60Hz, 10 Minutes	±11	G
V_{CC}	Supply Voltage		At 40degC	30	Vdc
P_{MAX}	Operating Pressure Range	2		-0.5 to +2	Bar

PERFORMANCE

PARAMETER	DESCRIPTION	NOTES	CONDITIONS	MIN	TYP	MAX	UNIT
t_{PU}	Time to valid output		After power-on			4	s
ERR_{OP}	Output error	3	heel of 0°		0.3	1	
	Output Change With Tilt	4	heel of 35°			2	Degrees
		4	heel of 45°			4	

Notes
1. 2 day immersion at 1.2m
2. Can be shipped at 0Bar
3. After auto-calibration with original error not more than 20˚
4. In addition to error at 0 degrees of tilt

ORDER INFORMATION

PART	DESCRIPTION	SHIPPING WEIGHT
A5060	2K Gyro Heading Sensor	120g

ELECTRICAL CHARACTERISTICS AT 20°C

PARAMETER	DESCRIPTION	NOTES	MIN	TYP	MAX	UNIT
V_{CC}	Supply Voltage		8	12	30	Vdc
I_{CC}	Current consumption			25		mA
LEN	NMEA Backbone Load			1		LEN

INSTALLATION

This compass is a complete NMEA 2000 heading sensor for displays and devices which require a magnetic heading such as Autopilots.

In addition to the sensitive fluxgate magnetometer the sensor include a solid-state gyro for rapid changes of heading.

The A5060 contains a fluxgate with floating core surrounded by high-precision interface circuits which allow a microprocessor to acquire field strength from two orthogonal sensors of the horizontal component of the Earth's magnetic field.

In addition, the Rate-of-Turn data from an angular accelerometer is used to derive heading updates during periods of rapid change. At other times the fluxgate's long-term precision is used to maintain the best heading.

The processor calculates the vector from these values, then it uses a calibration table to correct for local field disturbance errors and offsets the result.

This table is created during the autocalibration process. It's status is indicated by the LED as follows:

Four flash   uncalibrated
Double flash   calibrated
Single flash   being calibrated
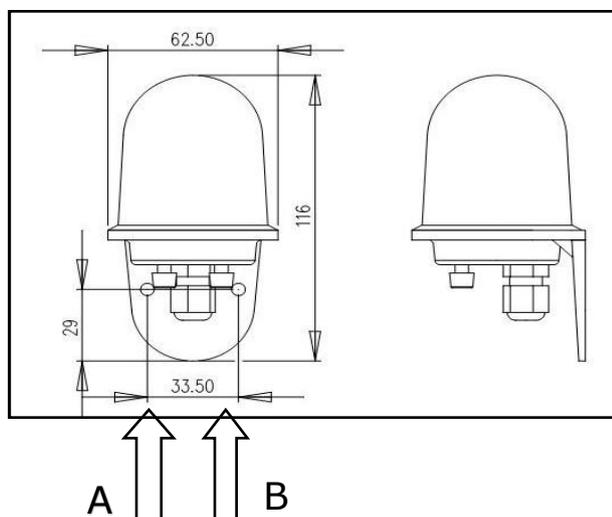
Calibration is done by arranging that the vessel is rotating at a fixed angular speed - typically by locking the wheel while the engine is at a low rate. A speed of 90seconds per circle is ideal. Button A is pressed and the angular motion should continue for some 400° afterwards. The light should change from continuous to a double-flash.

The compass is fixed to the chassis of the vessel or vehicle in the upright position using the fixing holes shown. It does not matter which way it faces as the azimuth can be set to North at any time or, if the azimuth is known, then the A5060 may be rotated before fixing to North using a protractor. Button B is then pressed and the compass can be mounted.

Just like any other magnetic compass the A5060 has to be installed in the best place. It is housed in a water-resistant enclosure so it can be mounted outside a steel hull. It's accuracy may be affected by the iron in a boat, or by magnetic field 'noise' from a switching power supply or local strong DC currents. Care should be taken to make sure the compass is not situated too close to a power supply.

Note that the output from the A5060 takes several seconds to stabilize after power is applied.

CONNECTIONS

Standard NMEA-2000 Plug on 1m Micro-C cable
        netH,   netL,   +12V,   GND

NMEA-2000 PGNs

OUTPUT
Standard Compass PGN 127250 every 100ms

INPUT
Set North using proprietary PGN 61184.

BUTTONS
Button A is ZERO which assigns the current azimuth the value of 0.0°

Button B is CAL which starts the autocalibration process.

BOTH buttons are pressed together to cancel a bad calibration

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