



IP68 GYRO COMPASS



FEATURES

- IP68 - see note 1
- NMEA-0183
- Furuno / SPI
- 2 Axis Tilt compensation to 45°
- Solid-state yaw sensor
- 8-30 V Supply
- Rich command set
- Rate-of-Turn sentence (HFROT/HEROT)
- Auto calibration button
- Set zero button

APPLICATIONS

- Autopilots
- Marine and Vehicle Compass
- Radar "North up"
- AIS

Heading output is derived by integrating the rate output from a MEMS yaw accelerometer or 'gyro' which is drift-corrected by a fluxgate magnetometer with pitch and roll compensation up to 45°.

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 | 3 | After power-on | | | 4 | s |
| ERR _{OP} | Output error | 4 | heel of 0° | | 0.3 | 1 | Degrees |
| | Output Change With Tilt | 5 | heel of 35° | | | 2 | |
| | | 5 | heel of 45° | | | 4 | |

Notes

1. 2 day immersion at 1.2m
2. There is a command to delay data until after this time
3. After auto-calibration with original error not more than 20degrees
4. In addition to error at 0 degrees of tilt
- 5.

ORDER INFORMATION

| PART | DESCRIPTION | SHIPPING WEIGHT |
|--------|-------------------------|-----------------|
| A5040A | IP68 Compass 15m cable | 1.0kg |
| A5040B | IP68 Compass 7.5m cable | 500g |
| A5040C | IP68 Compass 1m cable | 120g |



ELECTRICAL CHARACTERISTICS AT 20°C

| PARAMETER | DESCRIPTION | NOTES | MIN | TYP | MAX | UNIT |
|---------------------|---------------------|----------------|-----|-------|-----|------------|
| V _{CC} | Supply Voltage | | 8 | 12-24 | 30 | Vdc |
| I _{CC} | Current consumption | | | 25 | | mA |
| | NMEA Output Load | | | 4 | | NMEA loads |
| I _{O(max)} | Furuno output load | Data and clock | | | 1 | mA |

NMEA-0183 OUTPUT FORMAT (software subject to change)

The output from the compass is a standard NMEA-0183 sentence which can be configured to be in one of several standard forms: Eg: \$HCHDG, hhh.h, , , , *ss<CR><LF> or \$HCHDT, hhh.h, T<CR><LF>

where hhh.h represents the magnetic heading with one decimal place of precision, i.e: 000.0 to 359.9 degrees. The two HEX digits, ss, are a checksum. Serial output is RS422, 4800 Baud, 8 data bits, 1 stop bit, no parity.

An option is to include \$HFROT, zxxx.x, A*cc<CR><LF> (or ...HEROT...)

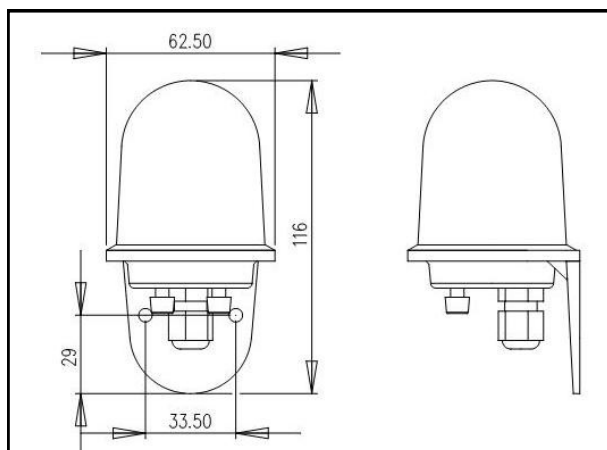
The compass may be configured via several proprietary input sentences, and will reply with an 'Acknowledge' output sentence \$PATC, HCHDG, ACK <CR> <LF> when any of the sentences listed below are received.

SOME COMMAND EXAMPLES

\$PATC, IIHDG, IAC (or XCL<CR><LF>
 \$PATC, IIHDG, 0CV <CR><LF>
 \$PATC, IIHDG, AHD, fff.f<CR><LF>
 \$PATC, IIHDG, DHD, ddd.d<CR><LF>
 \$PATC, IIHDG, TXP, mmmm<CR><LF>

FUNCTION

Start (or stop) magnetic auto-calibration
 Reset all calibration data to factory default
 Set reference heading (f = 0 to 359.9 degrees)
 Set heading damping (d = 0 to 100.0%)
 Set NMEA-0183 output sentence interval
 (in range m=100 to 3000 ms- default is 100 ms)
Also commands for:
 LED on/off, sentence structure, checksum, serial number, autocal status and power-up delay.



CONNECTIONS

| | | |
|----------|------------------------------|--------------|
| 1 Red | power | +8-30v |
| 2 Yellow | output | Furuno Clock |
| 3 Brown | input | NMEA IN- |
| 4 White | input | NMEA IN+ |
| 5 Black | signal | GND |
| 6 Green | output | NMEA OUT+ |
| 7 Blue | power | GND |
| 8 Violet | output | Furuno Data |
| 9 Screen | - NOT connected inside A5022 | |