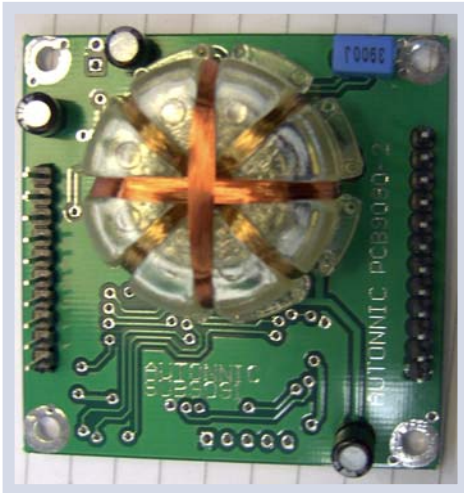




OEM COMPASS



FEATURES

- Complete OEM Compass
- Compact
- Low cost
- Remote inputs for Calibration and offset
- Auto-calibration
- With or Without Tilt compensation to 35° or 45°
- Analogue: Linear or SIN/COS
- Digital: NMEA-0183, SPI, FURUNO

APPLICATIONS

- Marine
- Automotive
- Robotics

ABSOLUTE MAXIMUM RATINGS

| PARAMETER | DESCRIPTION | NOTES | CONDITIONS | VALUE | UNIT |
|------------------------|--------------------------|-------|--|-------------|-------|
| θ_{STOR} | Storage Temp Range | | | -20 to +100 | °C |
| θ_{OPER} | Operating Temp Range | | | -20 to +65 | °C |
| | Shock Resistance | | Single impact | ±40 | G |
| | Vibration Resistance | | 60Hz, 10 Minutes | ±11 | G |
| | Climate Test | | +71°C, 95% Humidity -20°C, 85% Humidity | 6 | Hours |
| V_{CC} | Supply Voltage | | | 6 | Vdc |
| Φ_{MAX} | Operating Pressure Range | | 70°C | -0.3 to +3 | Bar |

PERFORMANCE

| PARAMETER | DESCRIPTION | NOTES | CONDITIONS | MIN | TYP | MAX | UNIT |
|--------------------------|------------------------------|-------|--------------|-----|-----|-----|---------|
| ERR_{OP} | Output error | 1 | | | 0.2 | | Degrees |
| | Output Change With Tilt | 2 | heel of ±35° | | | 2 | |
| | | 3 | heel of ±45° | | | 3 | |
| T_{PU} | Settling time after power-on | | | | | 3 | S |

NOTES: 1 After autocalibration 2 -35 3 -45

ORDER INFORMATION

| PART | DESCRIPTION |
|----------|-------------------|
| A4020-00 | OEM fixed Compass |
| A4020-35 | OEM 35deg Compass |
| A4020-45 | OEM 45deg Compass |

OPTIONS

B - connectors down
(default is up)
N – no analogue



ELECTRICAL CHARACTERISTICS AT 20°C

| PARAMETER | DESCRIPTION | NOTES | MIN | TYP | MAX | UNIT |
|---------------------|-------------------------|-------|-----|-----|-----|------------|
| V _{CC} | Supply Voltage | | 7 | 12 | 15 | V |
| I _{CC} | Current consumption | 5 | | 25 | 70 | mA |
| | NMEA Output Loads | | | 4 | | NMEA loads |
| I _{max-an} | Analogue output current | | | | 1 | mA |
| V _{in} | Digital input range | 1 | 2 | | 3 | V |
| I _{op} | Digital output current | 2 | | | 1 | mA |
| I _{cc} | | 3 | | | 2 | mA |
| I _{CC} | Current consumption | 4 | | 60 | | mA |

NOTES 1 <2 for low, >3v for hi 2 either source or sink 3 shut-down 4 during autocal 5 typ=average

DIGITAL OUTPUTS

Format D1: Standard NMEA-0183 sentence 'HDG': (Magnetic heading only)

\$HCHDM, x.x, M*ss<CR><LF> (M indicates Magnetic Heading, checksum ss as above)

Or \$HCHDT, x.x, M*ss<CR><LF> selected by Configuration Command

| COMMANDS | FUNCTION |
|----------------------------------|--|
| \$PATC, I IHDG, IAC<CR><LF> | Start auto-calibration |
| \$PATC, I IHDG, XCL<CR><LF> | Abort auto-calibration |
| \$PATC, I IHDG, OCV<CR><LF> | Reset all calibration data to factory default |
| \$PATC, I IHDG, AHD, x.x<CR><LF> | Set reference heading (0 to 359.9 degrees) |
| \$PATC, I IHDG, DHD, x.x<CR><LF> | Set heading damping (as percentage 0 to 100.0) |
| \$PATC, I IHDG, TXP, x.x<CR><LF> | Set NMEA-0183 output period in milliseconds. (in range 100 to 3000 ms- default is 100 ms) |
| \$PATC, I IHDG, CFG, x<CR><LF> | Configure output format HDG/HDT, checksum, serial number |

Format D2: Furuno code

Clocked on rising edge of 17kHz clock.(SPICK)

Data (SPID) set-up and hold: 30µs.

Connect /RTS to GND to start. Response is within 20µs to 30ms.

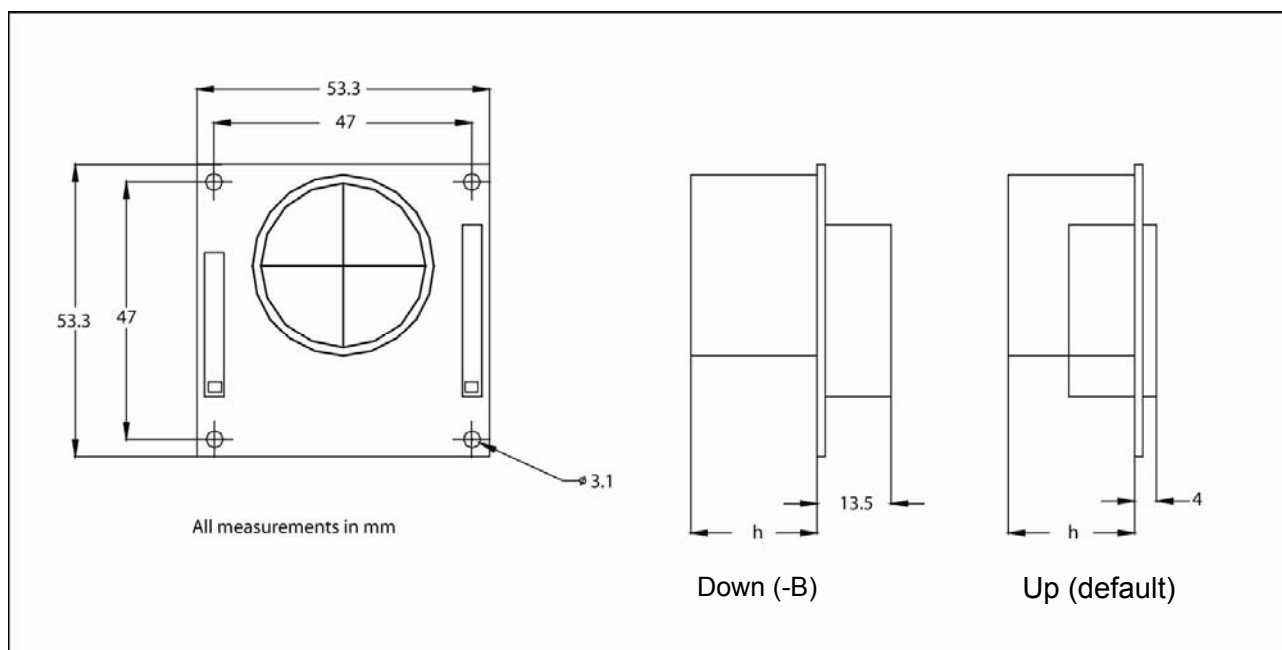
Maintain /RTS at GND for continuous Furuno output.

ANALOGUE OUTPUT

Analogue Format A1:

ANO1 = 2sinHDG + ANO3, ANO2 = 2cosHDG + ANO3, ANO3 = supply/2

ANO4 = 13.89mV/° (0-5v = 0 – 350°)



For the -00 h= 6
 For the -35 h=19
 For the -45 h=21

CONNECTIONS

| J1 | Header Block | | |
|-----|--------------|--------|----------------------------|
| Pin | In or Out | | |
| 1 | P | GND | Supply and signal ground |
| 2 | I | /AC | not Start auto-calibration |
| 3 | I | /SZ | not Set zero heading |
| 4 | I | /BRC | not Change bit-rate |
| 5 | I | /SD | not Shut-down |
| 6 | O | CE | Cal status output |
| 7 | I | ANI | Analogue Input |
| 8 | O | SO | Serial output |
| 9 | I | SI | Serial input |
| 10 | O | NMEAO | RS422 / NMEA-0183 O/P (+) |
| 11 | I | NMEAI- | RS422 / NMEA-0183 I/P (-) |
| 12 | I | NMEAI+ | RS422 / NMEA-0183 I/P (+) |

| J2 | Header Block | | |
|-----|--------------|-------|--------------------------|
| Pin | In or Out | | |
| 1 | O | ANO4 | Analogue Output 4 |
| 2 | O | ANO1 | Analogue Output 1 |
| 3 | O | ANO2 | Analogue Output 2 |
| 4 | O | ANO3 | Analogue Output 3 |
| 5 | | | n/c |
| 6 | O | SPICK | SPI/Furuno Clock |
| 7 | O | SPID | SPI/Furuno Data |
| 8 | I | /RTS | not Request SPI/Furuno |
| 9 | P | +5 | + supply |
| 10 | P | GND | Supply and signal ground |

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