



# SURF-100

## FIBER-OPTIC GYROCOMPASS

Attitude and Heading Reference System (AHRS)  
and Inertial Navigation System (INS)



### Performance

- high accuracy
- low settling time
- high reliability
- compact
- calibration free

*High level applications at sea for:*

**Military Vessels and Ships**

**Submarines**

Based on closed-loop, strap-down Fiber Optic Gyroscope technology to offer a cost effective, highly reliable solution.

## AHRS General features

|  |                                |
|--|--------------------------------|
| Settling time:                             | < 5 min. (in port)             |
| Full accuracy settling time:               | < 20 min. (all sea conditions) |
| Ship speed range:                          | - 20 kn < V < 70 kn            |
| Follow-up speed<br>(Roll, Pitch, Heading): | < 40°/s                        |

## AHRS Accuracies

|                       |  |
|-----------------------|--|
| Heading               | < 0.05° sec (lat) rms no GPS aiding<br>< 0.01° sec (lat) rms with GPS aiding |
| Roll / Pitch          | < 0.01° rms  |
| Heading resolution    | 0.01°  |
| Roll/Pitch resolution | 0.005°   |

## AHRS Range

|            |           |
|------------|-----------|
| Heading    | 0° ÷ 360° |
| Roll/Pitch | ± 45°     |

## INS accuracy - pure inertial

|          |                                       |
|----------|---------------------------------------|
| Position | 1Nm/12h CEP                           |
| Heave    | 0.05 m or 5% (whatever is bigger) rms |
| Velocity | < 0.3 kt rms                          |



## INTERFACES

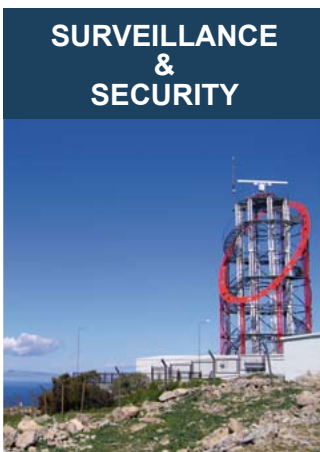
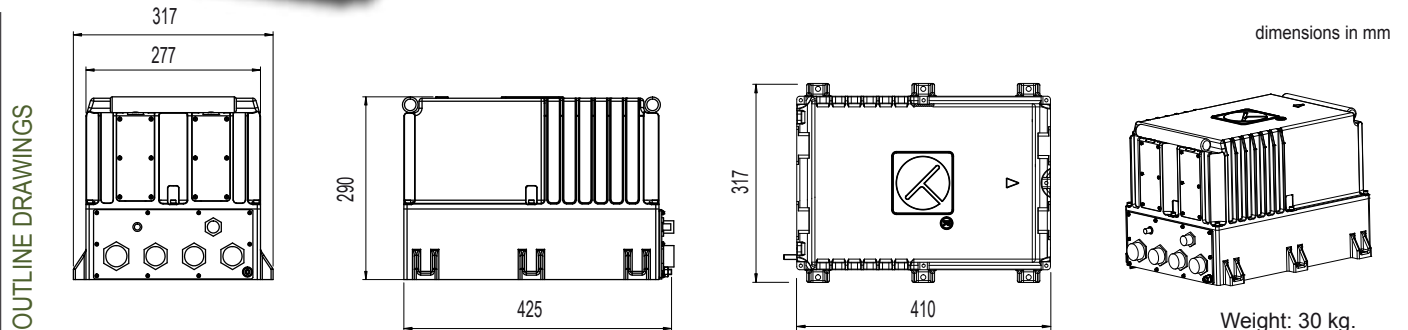
|   |   |
|---|---|
| Output serial:                              | 6 serial lines up to 100 Hz (200 Hz optional)   |
| Input serial:                               | 2 serial lines up to 100 Hz (200 Hz optional)   |
| I/O serial Display:                         | 1   |
| Output protocol:                            | NMEA 0183, binary   |
| I/O type:                                   | Serial RS232 and RS422  |
| USB   | 2 USB 2.0 Host  |
| Wireless (optional)                         | USB dongle for Wi-Fi, Bluetooth, modem HSDPA  |
| Ethernet LAN:                               | N. 1 available  |
| Input pps or pulse log                      | N. 2 available  |
| RF Input for internal GPS/Galileo receiver: | N. 2 available  |
| Synchro output (optional)                   | Attitude output: 115V AC, 400 Hz<br>Heading: 1x and 36x<br>Roll and Pitch: 2x and 36x or 4x and 36x |
| Synchro input (optional)                    | Log speed input: 115V AC, 400Hz   |

## ENVIRONMENTAL FEATURES

|                              |  |
|------------------------------|--|
| Operating temperature        | 0° C ÷ 55° C                             |
| Storage temperature          | -40° C ÷ 80° C                           |
| Damp heat                    | up to 95% at 40° C                       |
| Vibrations                   | MIL-STD -167-1A (type 1)                 |
| Shock                        | MIL-STD-901D (grade A, type A, class II) |
| Waterproof                   | in accordance with IP66 standard         |
| Electromagnetic interference | MIL-STD-461                              |
| MTBF                         | ≥ 50000 hours                            |

## POWER SUPPLY

|                   |   |
|-------------------|---|
| Voltage:          | 24 Vdc<br>115V 400 Hz Vac (optional for Synchro I/O)        |
| Power absorption: | < 40 W  |
| Protection:       | against over-voltage, low voltage and inversion of polarity |



This brochure should not be considered a contractual offer to sell. The specifications given herein may be changed by the manufacturer, GEM elettronica S.r.l., without notice.