



# Simrad HS70

## GPS Compass - heading and positioning smart antenna

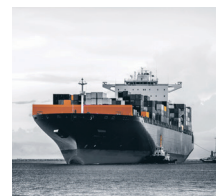
The Simrad HS70 brings a series of new features to a traditional heading sensor including rate of turn, heave, pitch and roll output (pitch and roll only on NMEA2000). The HS70 uses SBAS (WAAS, EGNOS, MSAS, etc.) for differential GPS positioning providing a low cost, yet highly effective heading and position based smart antenna. The rugged and low profile enclosure provides two multipath-resistant antennas for accuracy, portability and simple installation. The maintenance free smart antenna, measuring only 40cm/16", mounts easily to a flat surface or pole.



### Main Features:

- Provides heading, positioning, rate of turn, heave, roll (only on NMEA2000), and pitch (only on NMEA2000)
- SimNet/NMEA2000 or NMEA0183 communication
- All in one antenna –no black box needed
- Excellent in-band and out-of-band interference rejection
- 0.75 degree heading accuracy in amazingly small form factor
- Extremely quick time-to-first-fix
- Differential positioning accuracy of <1.0 m, 95% of the time
- Integrated gyro and tilt sensors deliver fast start-up times and provide heading updates during temporary loss of GPS
- SBAS compatible (WAAS, EGNOS, MSAS, etc.)
- COAST™ technology maintains GPS differentially - corrected positioning for 40 minutes after loss of differential signal.
- NMEA 0183: 6 to 36 VDC, NMEA 2000: 12V DC

Technical specifications overleaf.



# Technical Specifications

## GPS SENSOR SPECIFICATIONS

| Item                  | Specification                                                                                             |
|-----------------------|-----------------------------------------------------------------------------------------------------------|
| Receiver type         | L1, C/A code with carrier phase smoothing                                                                 |
| Channels              | Two 12-channel, parallel tracking<br>(Two 10-channel when tracking SBAS)                                  |
| SBAS tracking         | 2-channel, parallel tracking                                                                              |
| Update rate           | Standard 10 Hz, optional 20 Hz (position and heading)                                                     |
| Horizontal accuracy   | < 1.0 m 95% confidence (DGPS)<br>< 4.0 m 95% confidence (autonomous, no SA <sup>2</sup> )                 |
| Heading accuracy      | < 0.75° rms<br>Normal operation: GPS<br>Coasting (no GPS): Gyro                                           |
| Heave accuracy        | < 30 cm rms <sup>5</sup><br>Normal operation: GPS<br>Coasting (no GPS): None                              |
| Pitch accuracy        | < 1.5° rms<br>Normal operation: GPS<br>Coasting (no GPS): Inertial sensor                                 |
| Roll accuracy         | < 1.5° rms using accelerometer<br>Normal operation: Inertial sensor<br>Coasting (no GPS): Inertial sensor |
| Rate of turn          | 90°/s maximum                                                                                             |
| Cold start            | < 60 s typical (no almanac or RTC)                                                                        |
| Warm start            | < 20 s typical (almanac and RTC)                                                                          |
| Hot start             | < 10 s typical (almanac, RTC, and position)                                                               |
| Heading fix           | < 10 s typical (valid position)                                                                           |
| Compass safe distance | 30 cm (11.8 in) <sup>4</sup>                                                                              |
| Maximum speed         | 1,850 kph (999 kts)                                                                                       |
| Maximum altitude      | 18,288 m (60,000 ft)                                                                                      |

## COMMUNICATION SPECIFICATIONS

| Item                    | Specification                                                                          |
|-------------------------|----------------------------------------------------------------------------------------|
| Serial ports            | 2 full-duplex RS-232                                                                   |
| Baud rates              | 4800, 9600, 19200, 38400, 57600, 115200 (with programming cable - Simrad dealers only) |
| Correction I/O protocol | RTCM SC-104                                                                            |
| Data I/O protocol       | NMEA 0183, NMEA 2000                                                                   |

## POWER SPECIFICATIONS

| Item                        | Specification                                                    |
|-----------------------------|------------------------------------------------------------------|
| Input voltage               | NMEA 0183: 6 to 36 VDC<br>NMEA 2000: 12V DC                      |
| Power consumption           | ~ 3 W nominal                                                    |
| Current consumption         | 320 mA @ 9 VDC<br>240 mA @ 12 VDC (NMEA 2000)<br>180 mA @ 16 VDC |
| Power isolation             | Isolated to enclosure                                            |
| Reverse polarity protection | Yes                                                              |

DISTRIBUTED BY:

  
**www.mackaymarine.com**  
marinesales@mackaymarine.com  
+1 281 479 1515  
service@mackaymarine.com  
+1 281 478 6245

## MECHANICAL SPECIFICATIONS

| Item                              | Specification                                                               |
|-----------------------------------|-----------------------------------------------------------------------------|
| Enclosure                         | UV resistant, white plastic, AES HW 600G, non-corrosive, self extinguishing |
| Dimensions (not including mounts) | 41.7 L x 15.8 W x 6.9 H (cm)<br>16.4 L x 6.2 W x 2.7 H (in)                 |
| Weight                            | ~ 1.50 kg (3.3 lb)                                                          |

## ENVIRONMENTAL SPECIFICATIONS

| Item                  | Specification                          |
|-----------------------|----------------------------------------|
| Operating temperature | -30°C to +70°C (-22°F to +158°F)       |
| Storage temperature   | -40°C to +85°C (-40°F to +185°F)       |
| Humidity              | 95% non-condensing                     |
| Vibration             | IEC 60945                              |
| Compliance            | FCC Part 15, Subpart B; IEC 60945 (CE) |
| Weather               | IEC 60945, exposed                     |

<sup>1</sup> Depends on multipath environment, number of satellites in view, satellite geometry, ionospheric activity, and use of SBAS

<sup>2</sup> Depends on multipath environment, number of satellites in view, satellite geometry, and ionospheric activity

<sup>3</sup> IEC 60945 Standard

<sup>4</sup> Based on a 40 second time constant

|          | NMEA 0183 |             | NMEA 2000 |                          |
|----------|-----------|-------------|-----------|--------------------------|
| Time     | 1 Hz      | ZDA Message | 1 Hz      | 126992 PGN               |
| Heading  | 10 Hz     | HDT Message | 10 Hz     | 127250 PGN               |
| ROT      | 10 Hz     | ROT Message | 10 Hz     | 127251 PGN               |
| Attitude | 1 Hz      | HEV Message | 1 Hz      | 127257 PGN               |
| Mag Var  | 1 Hz      | HDG Message | 1 Hz      | 127258 PGN               |
| Speed    | 1 Hz      | VTG Message | 1 Hz      | 127259 PGN               |
| Position | 1 Hz      | GGA Message | 10 Hz     | 129025 PGN               |
| COG, SOG | 1 Hz      | VTG Message | 4 Hz      | 129026 PGN               |
| Sat Data | 1 Hz      | GGA Message | 1 Hz      | 129539 PGN<br>129540 PGN |

