

STANDARD HORIZON

Nothing takes to water like Standard Horizon

GSU-5H Smart DGPS Receiver



Owner's Manual

code: (EAH75X150-D290512e)



EAH75X150

TABLE OF CONTENTS

IMPORTANT INFORMATION 3
 CAUTION 3

1. SMART DGPS RECEIVER 4
 1.0 TECHNICAL SPECIFICATIONS 4
 1.0.0 Physical Characteristics 4
 1.0.1 Electrical Characteristics 4
 1.0.2 Performance 4
 1.0.3 Environmental Characteristics 5
 1.1 WIRING 5
 1.2 SOFTWARE INTERFACE 5
 1.3 MECHANICAL CHARACTERISTICS & MOUNTING 6
 1.3.0 Installing 6
 1.3.1 Dimensions 7

IMPORTANT INFORMATION

CAUTION

STANDARD HORIZON suggest that you read carefully this Owner's Manual and make sure you understand with its contents before using the SMART DGPS RECEIVER. For a safe navigation compare information received from GPS to all available navigation indications received from other electronic navigation nav aids that you carry on board.

Do not open the SMART DGPS RECEIVER as there are not user serviceable parts inside. Repairs should only be made by an authorized electronic technician, please contact your local dealer (any unauthorized repair could result in damage to the unit and this damage may not be covered by the warranty).

NOTE

We will not be liable for errors contained herein, or for incidental or consequential damages in connection with the performance or use of this material.

1. SMART DGPS RECEIVER

This SMART DGPS RECEIVER is based on a ultimate 32 + 18 channels GPS engine that delivers accuracy better than three meters by decoding the GPS correction signals from the satellite-based WAAS (*North America Wide Area Augmentation System*), EGNOS (*European Geostationary Navigation Overlay Service*), MSAS (*Asian Multi-Functional Satellite Augmentation System*), GAGAN (*Indian Geoaugmented Navigation*). The GPS engine, interface electronics and the passive antenna are enclosed inside the water-proof plastic housing. This provides advanced state of the art GPS performance in an easy to use package.

1.0 TECHNICAL SPECIFICATIONS

1.0.0 Physical Characteristics

- Color : Ivory white
- Dimensions : 3.82" (97mm) in diameter x 1.26" (32mm) in height (flush mounted) or 61.5mm on flag-pole mount
- Weight : 0.33 Pound (160 grams) without cable
- Cable : white 49.2 Ft (15m) 8x28AWG cable with 6 pins female connector

1.0.1 Electrical Characteristics

- Input Voltage : 10 Vdc to 35 Vdc unregulated
- Power Consumption : 0.8 W max
- Electrical Interface : TTL voltage levels, RS-232 polarity

1.0.2 Performance

- Receiver Architecture
 - Acquisition Engine : 32 Channels, > 1M Correlators
 - Tracking Engine : 18 Channels
- GNSS Systems
 - GPS : L1 C/A
 - GALILEO : L1
 - SBAS¹ : WAAS (North America), EGNOS (Europe), MSAS (Asia), GAGAN (Indian)
- Acquisition
 - Hot starts : 1 s outdoor 10 s indoor
 - Warm starts : 29s
 - Cold starts : 29s
- Update Rate : up to 4 Hz
- Accuracy
 - Standalone : 8.2Ft (2.5m) CEP²
 - With SBAS¹ : 6.5Ft (2.0m) CEP²

- Sensitivity
 - Tracking, Navigation : -160 dBm
 - Acquisition, Reacquisition : -160 dBm
 - Cold Starts : -145 dBm
- Output Format : NMEA-0183 Baud rate 4800 N81
- NMEA Output messages : GGA, RMC, GSA, GSV, TXT
- Geodetic Datum : WGS84

NOTE¹

SBAS = Satellite-Based Augmentation Systems.

NOTE²

CEP = Circular Error Probability: The radius of a horizontal circle, centered at the antenna's True position, containing 50% of the fixes.

1.0.3 Environmental Characteristics

- Operating Temperature : from 32°F to 140°F (from 0°C to +60°C)
- Storage Temperature : from -4°F to 185°F (from -20°C to +85°C)
- Relative Humidity : 95% non-condensing
- Water Resistance : IPX7

1.1 WIRING

See the following table for a functional description of each wire in the GPS cable.

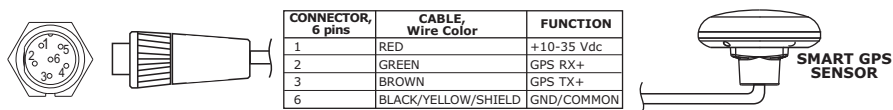


Figure 1.1 - GPS Connection

1.2 SOFTWARE INTERFACE

The GPS products interface protocol design is based on the National Marine Electronics Association's NMEA 0183 Standard For Interfacing Marine Electronic Devices. These standards are defined in "NMEA 0183 Version 3.01" (for more information see NMEA, www.nmea.org).

1.3.0 Installing

Choose a location for the antenna that has a clear view of the sky. Ensure there are no major obstructions or fixtures in the immediate proximity to the antenna. The antenna relies on direct "line of sight" satellite reception. If you are unsure that the chosen location is suitable it may be advisable to mount the antenna in a temporary manner to verify correct operation. The thread used on the antenna (1", 14 TPI) is an industry standard thread used on a wide range of mounting brackets, including the swivel joints commonly used for angled surfaces. Due to the manufacturing process of these mounting brackets you may see that there is some slop when tightening down the antenna to the bracket. This is of no concern however as the antenna must be tightened until the antenna stops rotating on the antenna mounting bracket.

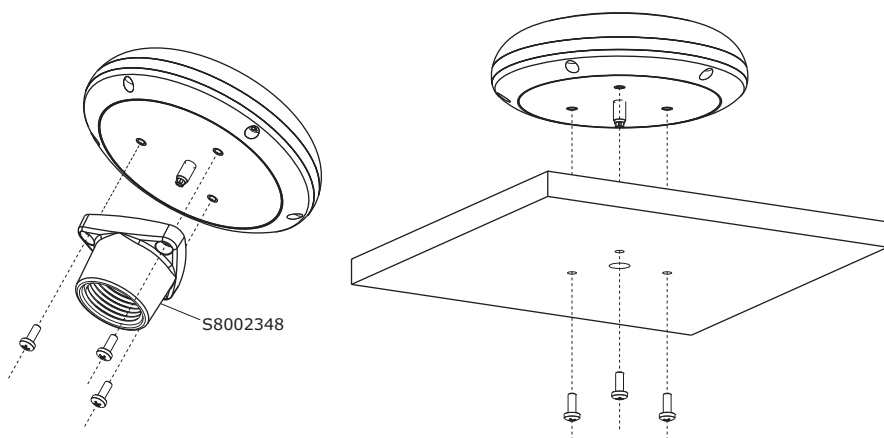


Figure 1.3.0 - Installing GPS Antenna

The antenna design also allows for easy flush mounting.

1. Apply the adhesive mounting template sheet in the area that was verified to receive satellite signal well.
2. Then, following template instruction, drill a 0,78" (20mm) hole and three 0,13" (3.2mm) holes.
3. Remove the template and let the cable go through the central hole.
4. Apply a small coat of RTV to the underside of the antenna.
5. Place the antenna and then screw it with the three M3 screws.

Another method:

1. Apply the adhesive mounting template sheet in the area that was verified to receive satellite signal well.
2. Then, following template instruction, drill a 0,78" (20mm) hole.
3. Apply RTV silicone to the underneath side of the antenna and glue the antenna to the flush mounting area.

Cutting Template EM016N560

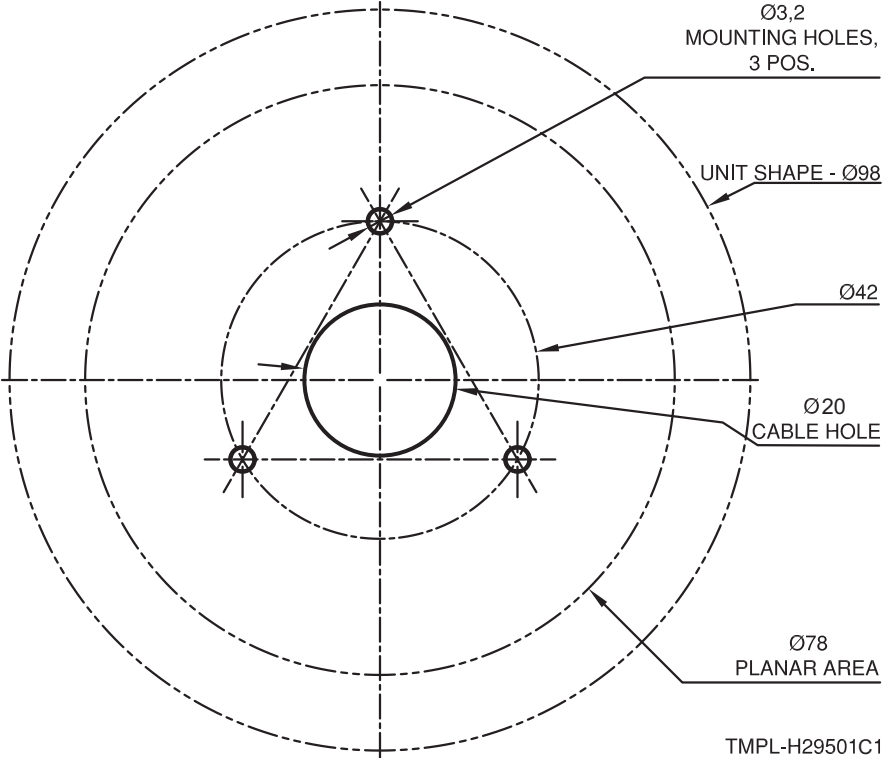


Figure 1.3.0a - GPS antenna: cutting template

1.3.1 Dimensions

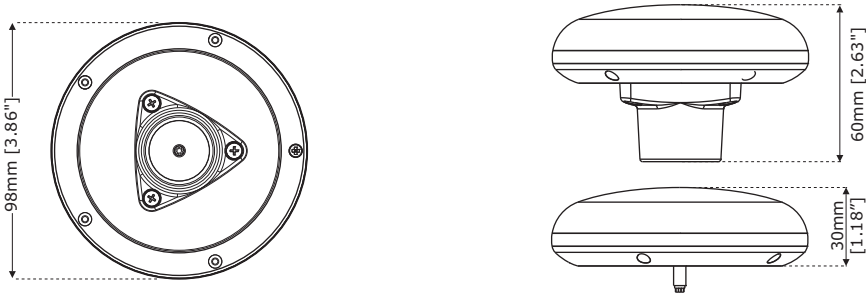


Figure 1.3.1 - GPS Antenna Dimensions

PLEASE NOTE

United States: To receive warranty service, the purchaser must deliver the Product, transportation and Insurance prepaid, to STANDARD HORIZON (Marine Division of YAESU USA) - Attention Factory Service - 6125 Phyllis Drive - Cypress, CA 90630, include proof of purchase indicating model, serial number and date of purchase. This warranty only extends to Products sold within the 50 States of the United States of America and the District of Columbia.

Europe: Contact details for warranty in Europe are available from the dealer in your country or from www.standardhorizon.co.uk where details of warranty terms and contact details for Europe can be obtained.

For Limited Warranty details outside United States and Europe, contact the dealer in your country.

STANDARD HORIZON LIMITED WARRANTY

STANDARD HORIZON (the Marine Division of YAESU USA) warrants, to the original purchaser only, each new Marine Product ("Product") manufactured and/or supplied by STANDARD HORIZON against defects in materials and workmanship under normal use and service for a period of 3 years from the date of purchase.

In the event of a defect, malfunction or failure of the Product during the warranty period, STANDARD HORIZON's liability for any breach of contract or any breach of express or implied warranties in connection with the sale of Products shall be limited solely to repair or replacement, at its option, of the Product or part(s) therein which, upon examination by STANDARD HORIZON, appear to be defective or not up to factory specifications. STANDARD HORIZON may, at its option, repair or replace parts or subassemblies with new or reconditioned parts and subassemblies.

STANDARD HORIZON will not warrant installation, maintenance or service of the Products. In all instances, STANDARD HORIZON's liability for damages shall not exceed the purchase price of the defective Product.

STANDARD HORIZON will pay all labor and replacement parts charges incurred in providing the warranty repair service except where purchaser abuse or other qualifying exceptions exist. The purchaser must pay any transportation expenses incurred in returning the Product to STANDARD HORIZON for service.

This limited warranty does not extend to any Product which has been subjected to misuse, neglect, accident, incorrect wiring by anyone other than STANDARD HORIZON, improper installation, or subjected to use in violation of instructions furnished by STANDARD HORIZON, nor does this warranty extend to Products on which the serial number has been removed, defaced, or changed. STANDARD HORIZON cannot be responsible in any way for ancillary equipment not furnished by STANDARD HORIZON which is attached to or used in connection with Products, or for the operation of the Product with any ancillary equipment, and all such equipment is expressly excluded from this warranty. STANDARD HORIZON disclaims liability for range, coverage, or operation of the Product and ancillary equipment as a whole under this warranty.

STANDARD HORIZON reserves the right to make changes or improvements in Products, during subsequent production, without incurring the obligation to install such changes or improvements on previously manufactured Products. The implied warranties which the law imposes on the sale of this Product are expressly LIMITED, in duration, to the time period specified above. STANDARD HORIZON shall not be liable under any circumstances for consequential damages resulting from the use and operation of this Product, or from the breach of this LIMITED WARRANTY, any implied warranties, or any contract with STANDARD HORIZON. IN CONNECTION WITH THE SALE OF ITS PRODUCTS, STANDARD HORIZON MAKES NO WARRANTIES, EXPRESS OR IMPLIED AS TO THE MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR OTHERWISE, EXCEPT AS EXPRESSLY SET FORTH HEREIN.

Some Countries in Europe and States of the USA do not allow the exclusion or limitation of incidental or consequential damages, or limitation on how an implied warranty lasts, so the above limitation or exclusions may not apply. This warranty provides specific rights, there may be other rights available which may vary between countries in Europe or from state to state within the USA.