Highly stable and reliable going ships, large yachts,

- Ideal position sensor for Radar, AIS, ECDIS, autopilot, echo sounder and other navigation and communications equipment
- Full compliance with IMO MSC. 112 (73) and IEC 61108-1: performance and testing standards for GPS receiver
- Newly designed GPS chip and antenna unit deliver enhanced stability and precision in position fixing
- USB port available on the front panel
- 10 Hz position update rate (position updated every 0.1 second) making steady own ship position tracking possible
- Full compliance with IMO MSC. 112 (73) and IEC 61108-1:
- Augmentation to enhance precision by utilizing SBAS (Satellite-Based Augmentation System) and DGPS (an optional DGPS radio beacon receiver as well as GPA-021S antenna unit required)
- Fully complies with IMO MSC. 114 (73) and IEC 61108-4: performance and testing standards for DGPS radio beacon receiver
- 10 Hz position update rate (position updated every 0.1 second) making steady own ship position tracking possible
- 5.7” color LCD (with 640 x 480 pixels) for data presentation
- USB port available on the front panel
- Routing data, menu setting, user setting can be exported/imported through USB jump drives

- Dual configuration for back-up purpose to ensure system availability
- Information about waypoints, route and other data set by the operators on the one unit can be shared with the other unit for functional back-up
- BAM (Bridge Alert Management) ready
- Meets the specific requirements for alerts and interconnection with Bridge Alert Management in IMO MSC.302 (87)
- LAN interface available for efficient network integration into a bridge system
- The GP-170 is fully Light Weight Ethernet (IEC 61162-450) compatible
- 5.7” color LCD (with 640 x 480 pixels) for data presentation
- Simplified menu operation
- The operator can navigate through the menu tree either by pressing the cursor pad or pressing the corresponding numbers on the numeric keypad to the menu items
- Enhanced route planning/management function available
- Comprehensive range of voyage information to be incorporated in routes
- Streamlined route creation through combination with an external PC
- Sharing the active route information with ECDIS to supplement the ECDIS route monitoring capability

Variety of display modes available:
Plotter, Course, Highway, Data and Integrity

- Basic positioning data such as own ship position data, its data integrity, time, etc., are presented. Also, display mode as well as notice icons are displayed.
- The area shows the information specific to the display mode currently selected. Please refer to each of the display modes for details.
- Guide to currently available actions is displayed. Under alert situation, the information about the most imminent alert is displayed.

Interconnection Diagram
For new building

*Specify when ordering
**Select when DGPS beacon receiver is incorporated into the Display Unit GP-170.
Position fixing system for ocean ferries and commercial vessels

**Plotter**
- Simplified plotter display
- Cursor information
- Contextual menu
- SOG/COG data boxes

**Integrity**
- Skyplot presentation of currently viewable satellites
- Status on GNSS/SBAS satellite signal reception; incl. signal strength/signal to noise ratio (in bar/line charts)
- Elevation angles of the available satellites
- Detailed information about the beacon stations

**Highway**
- Course information
- SOG/COG data boxes
- User-preset cross track limit of deviation (XTE)
- Own ship gauge, showing the attitude of the ship, incl. pitch, roll and heave

**Data**
- Navigation data boxes configurable according to the needs of the operators

**For retrofitting**
- Specify when ordering. The GPA-019S from the GP-150 previously installed can be used. If type-approved DGPS is required, please replace it with GPA-021S.
- Selectable when DGPS beacon receiver is incorporated into the Display Unit GP-170.

![Antenna Unit](image)

<table>
<thead>
<tr>
<th>Information to be displayed:</th>
<th>GPA-017S</th>
<th>GPA-020S</th>
<th>GPA-021S**</th>
</tr>
</thead>
<tbody>
<tr>
<td>Graphical presentation of course information, incl. current waypoint, bearing to the destination, COG, XTE</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Estimated Time of Arrival data box, incl. required time to reach the current/next waypoints and range to the waypoint*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>*when autopilot is interfaced, the following information is shown in the data boxes: Autopilot status data box, incl. mode, ship’s heading, rudder angle, and COG, and SOG data box.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Velocity to destination</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trip distance data</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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![External Alarm Interface Unit](image)

For retrofittng:
- **Serial**
- **Optional and connectable equipment**
- **Standard supply**
- **Optional or local supply**

**Vincent**
- 12-24 VDC
- 100/110/220/230 VAC

**IF-2503**
- 12-24 VDC
- 100/110/220/230 VAC

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*Specify when ordering. The GPA-019S from the GP-150 previously installed can be used. If type-approved DGPS is required, please replace it with GPA-021S. Selectable when DGPS beacon receiver is incorporated into the Display Unit GP-170.*
### SPECIFICATIONS

**GPS NAVIGATOR**

**Receiver**
- **Number of channels:** GPS 12 ch
- **RX frequency:** GPS 1575.42 MHz
- **Tracking code:** GPS C/A
- **Accuracy:**
  - GPS not exceeding 10 m (2 drms, HDOP<4)
  - DGPS not exceeding 5 m (2 drms, HDOP<4)
  - WAAS not exceeding 3 m (2 drms, HDOP<4)
  - MSAS not exceeding 7 m (2 drms, HDOP<4)
- **Tracking velocity:** 1,000 kn
- **Position fixing time:** 90 sec when cold start
- **Position update rate:** every 1 sec (standard); every 0.1 sec (max.)

**Beacon receiver**
- **Frequency range:** 283.5 to 325.0 kHz
- **MSK rate:** 25, 50, 100, 150, 200 bps

**EQUIPMENT LIST**

- **Display Unit:**
  - GP-170 1 unit
  - GPA-017S 1 unit
  - GPA-020S 1 unit
  - GPA-021S* 1 unit

**Option**
- **1. DGPS Receiver Kit:** OP20-42
- **2. Antenna Cable:** 15 m/30 m/40 m/50 m
- **3. Network Cable:** 3 m with waterproof connector MOD-WPAS0001-030+
- **4. Flush Mount Kit:** OP20-40/41
- **5. Antenna Base:** NO. 13-QA330/NO. 13 QA310/NO. 13-RC5160
- **6. Interface Unit:** IF-2503
- **7. Rectifier:** PR-62, PR-240

**POWER SUPPLY**
- **12-24 VDC**

**ENVIRONMENT**

- **Temperature:** Display Unit: -15°C to +55°C
  - Antenna Unit: -25°C to +70°C
- **Relative humidity:** 95% or less at 40°C
- **Degree of protection:** Display Unit: IP25
  - Antenna Unit: IP56

**Display Unit**
- **Screen size:** 5.7" color LCD (116.16 mm x 87.12 mm)
- **Resolution:** 640 (H) x 480 (V) pixels (VGA)
- **Brightness:** 700 cd/m²
- **Display modes:** Plotter, Highway, Course, Data, Integrity
- **Plotter mode:** Projection, Mercator
- **Memory capacity:** 1,000 points for ship’s track with comments up to 20 characters; 2,000 points for waypoints; 100 routes (containing up to 1,000 waypoints per 1 route)
- **Integrity modes:** GNSS, Graph, Beacon
- **Alert:** Differential positioning interruption, HDOP overshot, own ship positioning fail, own ship position lost, BEACON signal lost, BEACON malfunction, antenna short-circuit
- **Notice:** Arrival and anchor watch, XTE, Speed, Trip
- **Integrity indication:** Safe, Unsafe, Caution

**Antenna Unit**
- **Model:** GPA-017S (for GPS)
- **Model:** GPA-020S  (for GPS)
- **Model:** GPA-021S* (for DGPS)

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SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE