# SPECIFICATIONS

## Receiver

| | | |
|---|---|---|
| Number of channels | GPS | 12 ch |
| | SBAS | 2 ch |
| RX frequency | GPS | 1575.42 MHz±1.023 MHz |
| Tracking code | GPS | C/A |
| | SBAS | 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 | | 0.1 sec |
| Beacon receiver | Frequency range | 283.5 to 325.0 kHz |
| (optional internal kit) | MSK rate | 25, 50, 100, 150, 200 bps |

\* Dependent on ionospheric activity and multipath

## Display Unit

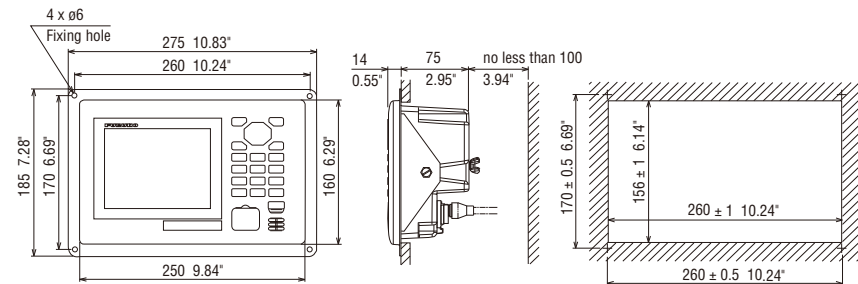| | | |
|---|---|---|
| Screen size | | 5.7" color LCD (116.16 mm x 87.12 mm) |
| Resolution | | 640 (H) x 480 (V) pixels (VGA) |
| Brightness | | 700 cd/m² |
| Display modes | | Plotter, Highway, Course, Data, Integrity |
| Plotter mode | Projection | Mercator |
| | Memory capacity | 1,000 points for 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 mode | | GNSS, Graph, Beacon |
| Alert | | Differential positioning interruption, HDOP overshoot, 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 |

## EQUIPMENT LIST

| | | | | |
|---|---|---|---|---|
| Standard | 1. Display Unit | GP-170 | 1 unit | |
| | 2. Antenna Unit | GPA-017S | 1 unit | |
| | | GPA-020S | 1 unit | |
| | | GPA-021S* | 1 unit | |
| | | (specify when ordering) | | |
| | | * Selectable when a beacon receiver is incorporated into a display unit. | | |
| | 3. Antenna Cables | Selectable from 15 m/30 m/40 m/50 m | | |
| | 4. Installation Materials and Spare Parts | | | |
| Option | 1. D-GPS Receiver Kit | OP20-33 | | |
| | 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 | | |

## Interface

| | | |
|---|---|---|
| Ports | | Serial ports: 2 ports (In/Out), 1 port (Out) IEC 61162-1, 1 port (In/Out) IEC 61162-2; Ethernet: 1 port IEC 61162-450; USB: 1 port (front panel) |
| Output | Serial | AAM, ALR, APA, APB, BOD, BWC, BWR, BWW, DTM, GBS, GGA, GLL, GNS, GRS, GSA, GST, GSV, MSK, MSS, POS, RMB, RMC, Rnn, RTE, VDR, VTG, WCV, WNC, WNR, WPL, XTE, ZDA, IIalr, pidat, GPals, GPxfr, GPalm, GPasc, GPdst, GPmr2, GPmsk, GPreq, GPrt2, GPtrp, GPrai, RTCM sc104 |
| | Ethernet | AAM, ALR, APB, BOD, BWC, BWR, BWW, DTM, GBS, GGA, GLL, GNS, GRS, GSA, GST, GSV, HBT, MSK, MSS, POS, RMB, RMC, RTE, VDR, VTG, WCV, WNC, WPL, XTE, ZDA,IIalr, pidat, GPals, GPxfr, GPalm, GPasc, GPdst, GPmr2, GPmsk, GPreq, GPrt2, GPtrp, GPrai, GPxfr, rminf |
| Input | Serial | ACK, DBT, DPT, HDG, HDM, HDT, MSK, MSS, MTW, THS, TLL, VBW, VHW, AGFPA, IIals, pireq, GPatt GPhve, CRQ |
| | Ethernet | ACK, DBT, DPT, HDG, HDM, HDY, MTW, THS, TLL, VBW, VHW, AGFPA, IIals, pireq, GPatt, GPhve, GPasc, GPdst, GPmr2, GPmsk, GPreq, GPtrp, GPalm, Gprai |

## 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 |

## POWER SUPPLY

12-24 VDC

## Display Unit

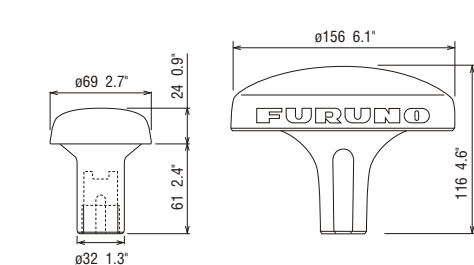### GP-170 (with an optional flush mount kit)
2.2 kg  4.9 lb (without DGPS beacon receiver)
2.4 kg  5.29 lb (with DGPS beacon receiver)

## Antenna Unit

### GPA-017S (for GPS)
0.15 kg  0.3 lb

### GPA-020S  (for GPS)
### GPA-021S  (for DGPS)
1.0 kg  2.2 lb

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www.furuno.com

# GPS
## Global Positioning System

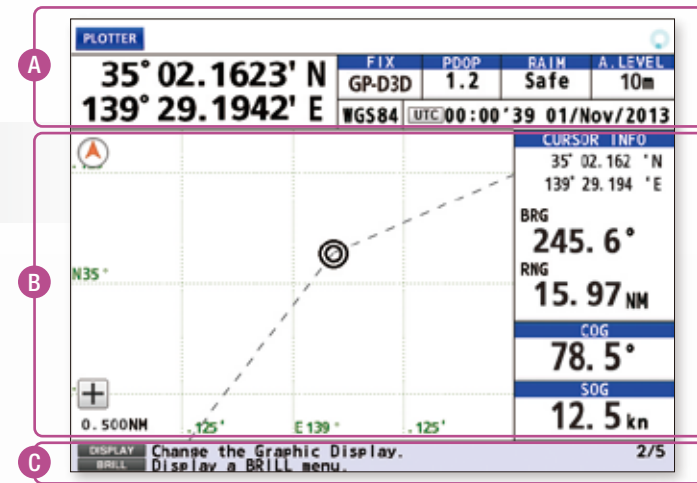# Highly stable and precise position fixing system for ocean going ships, large yachts, ferries and commercial vessels

▶ **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

▶ **Enhanced stability and precision in position fixing thanks to a highly sensitive antenna unit**
Enhanced noise rejection capabilities are incorporated in the GPS receiver, delivering anti-jamming function as well as high level of tolerance towards multi-path mitigation*
*the Antenna unit GPA-020S or GPA-021S is required

▶ **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**

▶ **USB port available on the front panel**
Routing data, menu setting, user setting can be exported/imported through USB jump drives

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

**A** 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.

**B** The area shows the information specific to the display mode currently selected. Please refer to each of the display modes for details.

**C** Guide to currently available actions is displayed. Under alert situation, the information about the most imminent alert is displayed.
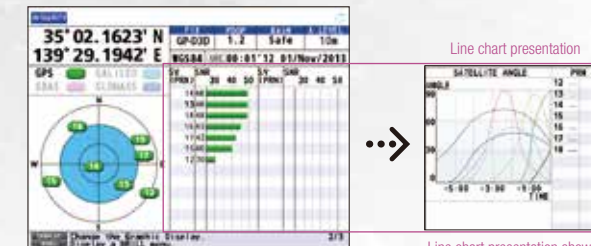
▶ **Dual configuration for back-up purpose to ensure system availability**
Information about waypoints, route and other data set by the operators on the one unit can be shared with the other unit for functional back-up

▶ **LAN interface available for efficient network integration into a bridge system, fully complying with IEC 61162-450, the new mandatory Ethernet communication standard**

▶ **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

## Plotter

**Information to be displayed:**
▶ Simplified plotter display
▶ Cursor information
▶ Contextual menu
▶ SOG/COG data boxes

## Integrity

Line chart presentation

Line chart presentation shows the SNR and satellite angles for the past six hours.

**Information to be displayed:**
▶ 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
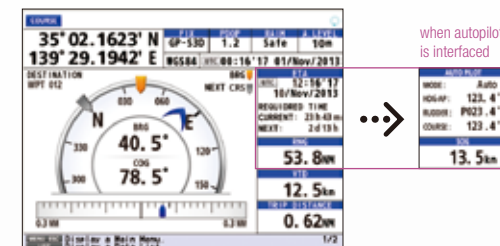▶ Detailed information about the beacon stations

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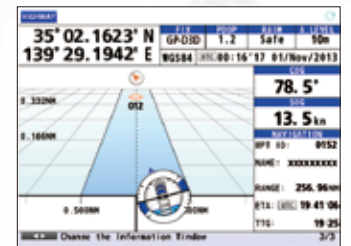
**Information to be displayed:**
▶ Course information
▶ SOG/COG data boxes
▶ User-preset cross track limit of deviation (XTE)
▶ Own ship gauge, showing the attitude of the ship, incl. pitch, roll and heave

## Course

when autopilot is interfaced

**Information to be displayed:**
▶ Graphical presentation of course information, incl. current waypoint, bearing to the destination, COG, XTE
▶ Estimated Time of Arrival data box, incl. required time to reach the current/next waypoints and range to the waypoint*
*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.
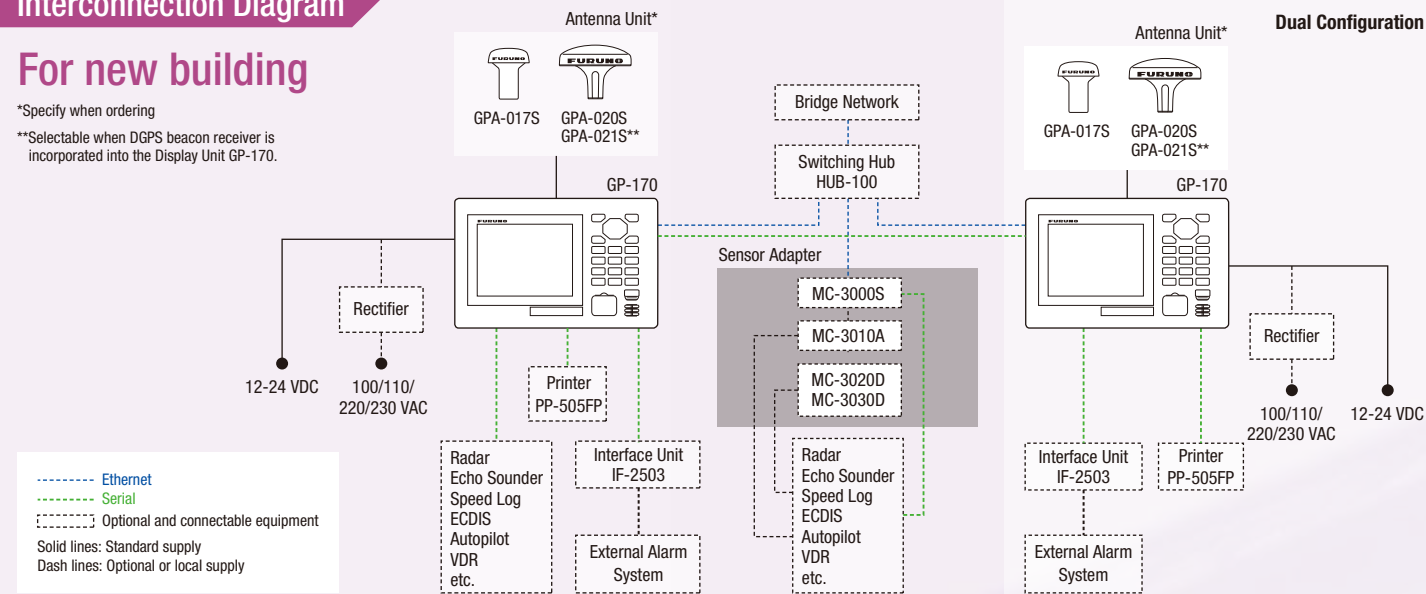▶ Velocity to destination
▶ Trip distance data

## Data
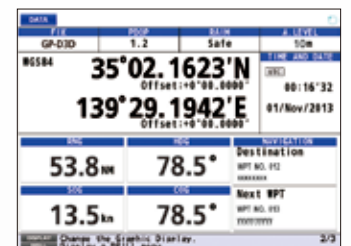
**Information to be displayed:**
▶ Navigation data boxes configurable according to the needs of the operators

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## Interconnection Diagram

### For new building

*Specify when ordering
**Selectable when DGPS beacon receiver is incorporated into the Display Unit GP-170.

Antenna Unit*
GPA-017S / GPA-020S GPA-021S**

GP-170

Rectifier
12-24 VDC / 100/110/ 220/230 VAC

Printer PP-505FP

Radar Echo Sounder Speed Log ECDIS Autopilot VDR etc.

Interface Unit IF-2503

External Alarm System

Bridge Network

Switching Hub HUB-100

Sensor Adapter
MC-3000S
MC-3010A
MC-3020D MC-3030D

Radar Echo Sounder Speed Log ECDIS Autopilot VDR etc.

**Dual Configuration**
Antenna Unit*
GPA-017S GPA-020S GPA-021S**

GP-170

Interface Unit IF-2503

Printer PP-505FP

Rectifier
100/110/ 220/230 VAC / 12-24 VDC

External Alarm System

- - - - Ethernet
- - - - Serial
Optional and connectable equipment
Solid lines: Standard supply
Dash lines: Optional or local supply

### 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*
GPA-017S / GPA-020S GPA-021S**

GP-170

Radar Echo Sounder Speed Log ECDIS Autopilot VDR etc.

Rectifier
12-24 VDC / 100/110/ 220/230 VAC

Printer PP-505FP

Interface Unit IF-2503

Interface Unit IF-2500

Radar Echo Sounder Speed Log ECDIS Autopilot VDR etc.

External Alarm System

**Dual Configuration**
Antenna Unit*
GPA-017S GPA-020S GPA-021S**

GP-170

Interface Unit IF-2503

Rectifier
100/110/ 220/230 VAC / 12-24 VDC

Printer PP-505FP

- - - - Ethernet
- - - - Serial
Optional and connectable equipment
Solid lines: Standard supply
Dash lines: Optional or local supply