FURUNO

WAAS
Wide Area Augmentation System

GPS/DGPS/WAAS VIDEOPLOTTER

with integral Echo Sounder

Models GP-3500/3500F

- **Accuracy enhanced with built-in WAAS**
- **10.4" high-definition TFT LCD for optimum viewing during daytime and nighttime**
- **Display of ship's tracks, waypoints and planned route on a precision electronic chart**
- **Dual interchangeable Card Slot Works with C-MAP*NT* Charts or NAVIONICS® Nav-Charts™/FURUNO MiniCharts**
- **Display modes including:**
  - **Course Plot**
  - **Nav Data**
  - **Compass**
- **Low-profile, space-saving display unit with GPS/WAAS combo antenna**
- **Stores up to 80,000 ship's tracks and marks, 3,500 waypoints, 200 planned routes**
- **50/200 kHz dual-frequency echo sounder, selection of 600 W or 1 kW (GP-3500F)**
- **Optional MiniMemory Card for storage of ship's tracks and marks**
- **Remote Controller available as option**

The future today with FURUNO's electronics technology.

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Catalogue No. N-855a

User friendly key arrangement and menu structure give straightforward operation for a wide variety of fishing vessels

The GP-3500 series is Furuno's new high performance GPS/DGPS/WAAS VideoPlotter designed for a wide variety of fishing vessels and pleasure craft. The compact, 12-channel antenna unit offers extremely accurate position fixes - 10 m for the basic GPS, 5 m for the DGPS and 3 m where WAAS (or EGNOS) is available.

The all-new processor ensures high-speed updating of graphic presentations including the electronic chart, the vessel's position and motion trend vector, track, waypoints, and so forth. Up to 80,000 ship's tracks, 3,500 waypoints and 200 planned routes can be stored in the internal memory.

Dual interchangeable card slot for chart and memory cards are provided on the front panel. The cartography is selectable among C-MAP*NT* Chart or Navionics® Nav-Chart™/Furuno MiniChart containing accurate coastlines, depth contours, place names, aids to navigation such as buoys, lighthouses, and other navigational marks.

The GP-3500F employs the dual frequency 50/200 kHz sounding module as standard. It presents detailed information on fish, fish schools and bottom. The range can be changed manually or automatically. When the range is changed, an entire echogram will be redrawn so that the contour line can be shown seamlessly. The GP-3500F incorporates unique target position output feature. It outputs the Lat/Lon position and depth of a target specified by cursor and temperature data (when a temperature sensor is connected) to the plotter display as a mark. The information is also stored in the internal memory.

Operation is simple and straightforward by using softkeys, enter knob and trackball. You can operate the navigator with great comfort thanks to its user-friendly design.

GPS/WAAS Antenna
GPA-017S

GP-3500: **GPS/DGPS/WAAS VideoPlotter**
GP-3500F: **GPS/DGPS/WAAS VideoPlotter with Echo Sounder**

Actual Size

WIDE:310 mm, HIGH:337 mm, DEPTH:120 mm

Variety of display modes

Course Plot

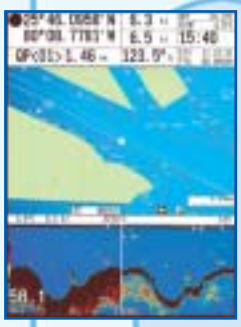
TM North-up mode

Course-up mode

Compass

Echo Sounder*

Combination of Course Plot and Echo Sounder*



*GP-3500F only

Selection of display modes

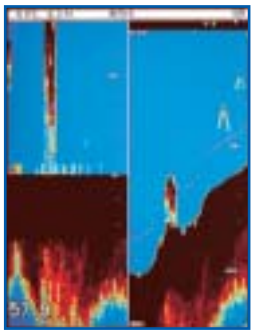
Mode selection is quite easy; push the "DISP" button and select the mode icon by using the "Enter knob". Up to 36 display modes including combination mode are available. The combination mode can be mixed and matched from primary display modes. The primary display modes consist of course plot, compass and sounding (GP-3500F only) mode. If those weren't enough, the operator can arrange the display layout in the menu.

Echo Sounder Display (GP-3500F)

The GP-3500F incorporates a dual-frequency, 600 W or 1 kW sounding transceiver. Acoustical pulses are emitted from the transducer fitted on the boat hull and echoes are received from fish and bottom. The 200 kHz pulses pinpoint fish schools in shallow water, while the 50 kHz pulses are advantageous to search deeper water. The A-scope display helps to evaluate echo strengths of targets in real time. The underwater scene can be displayed in a split screen with course plot or alone on the full size screen. A water temperature graph can be displayed by incorporating an optional water temperature sensor.

Dual Frequency and A-scope

A-scope



Bottom Discrimination

WAAS (Wide Area Augmentation System)

WAAS is a GPS navigation system with differential correction by means of geostationary satellites. The US FAA has been testing this system and expects commissioning WAAS in 2003. Similar systems, using Satellite-Based Augmentation Systems (SBAS), are under development in Japan (MSAS: MSAT Satellite-based Augmentation System) and Europe (EGNOS: European Geostationary Navigation Overlay System). They are said to be fully interoperable and compatible. MSAS and EGNOS are expected to become fully operational in 2004 or after.
As the WAAS utilizes the same frequency as the GPS, a single antenna can receive GPS and WAAS signals. Currently two Inmarsat GEO satellites are available for receiving the WAAS signal: AOR-W and POR. Major contributors of an error in a single frequency GPS system are receiver clock drift and signal delays by refraction. The WAAS reference stations on the earth monitor the GPS constellation and route GPS error data to the satellites via the master earth station. The Inmarsat or communication satellite broadcasts the differential corrections to marine and aviation users.

SPECIFICATIONS OF GP-3500/3500F

GPS RECEIVER CHARACTERISTICS

1. **Receiver Type** — Twelve discrete channels, C/A code, all-in-view, Integral WAAS receiver processor
2. **Receive Frequency** — L1 (1575.42 MHz)
3. **Accuracy** — GPS: 10 m (95%); DGPS: 5 m (95%); WAAS: 3 m (95%)
4. **Time to first fix** — 12 seconds typical (Warm start)
5. **Tracking Velocity** — 999 kt
6. **Geodetic System** — WGS-84, NAD-27, and others
7. **DGPS Capability** — Optional internal DGPS beacon receiver kit

PLOTTER CHARACTERISTICS

1. **Display**
   GP-3500: 10.4" TFT Color LCD, 480(W) x 640(H) pixels
   GP-3500F: 10.4" TFT Color Transflective LCD, 480(W) x 640(H) pixels
2. **Map Scale** — 0.125 to 1,024 nm
3. **Latitude Limits** — Between 85°N and 85°S
4. **Plot Interval** — 1 sec to 99 min 59 sec or 0.01 to 9.99 nm
5. **Display Modes** — Course plot, Nav Data, Compass Display
6. **Presentation Modes** — TM North-up, Course-up
7. **Memory Capacity** — Up to 80,000 points for ship's track points and marks.
   3500 waypoints and 200 planned routes (Max. 35 waypoints/route)
8. **Voyage Planning** — Waypoint navigation or route navigation
9. **Alarms** — Arrival/anchor watch, XTE, proximity alert, ship speed, depth*, water temperature**, fish***
   **GP-3500F or Depth sensor required.*
   Temperature sensor required.GP-3500F only.*
10. **Interface** (IEC-61162-1, NMEA 0183 ver. 1.5/2.0/3.0)
    Outputs: AAM, APB, BOD, BWC, DBT**, DPT**, GGA, GLL, MTW*, RMA, RMB, RMC, VTG, WPL, XTE, ZDA
    Inputs: DBT, DPT, HDG, HDM, HDT, GGA, GNS, GLL, MTW, RMA, RMC, TLL, TTM, VHW, VTG, ZDA
    **Depth sensor required **GP-3500F only*
11. **Cartography**
    FURUNO MiniChart, NAVIONICS® Nav-Chart™ or C-MAP*NT* Chart
    note: Choose from two units that accept either C-MAP*NT* Charts or Navionics® Nav-Chart™/Furuno MiniCharts when ordering.

ECHO SOUNDER

1. **Display Modes** — Normal (single- or dual-frequency), Bottom-lock, Bottom Zoom, Marker Zoom, A-scope
2. **Frequency** — 50 and 200 kHz
3. **Output Power** — 600 W/1 kW (specify when ordering)
4. **Basic Ranges** — 8 basic ranges customized to max 1200 m
5. **Range Shift** — 0 to 1200 m

ENVIRONMENTAL CONDITIONS (IEC 60945 testing)

1. **Temperature**
   Display Unit: -15°C to +55°C
   Antenna Unit: -25°C to +70°C
2. **Water resistance**
   Display Unit: IPX2 (IEC 60529), CFR46 (USCG)
   Antenna Unit: IPX6 (IEC 60529), CFR46 (USCG)

POWER SUPPLY

12 - 24 VDC, GP-3500: 25 W, GP-3500F: 30 W

EQUIPMENT LIST

Standard

1.	Display Unit GP-3500/3500F	1 unit
2.	Antenna Unit GP-017S	1 unit
3.	Antenna Cable 15 m	1 pc
4.	Installation Materials and Standard Spare Parts	1 set

Option

1. FURUNO MiniChart Card
2. Remote Controller
3. NMEA Cable 5/10 m MJ-A6SPF0012-050/100
4. Antenna Cable 30/50 m CP20-01700/01710
4. Antenna Mounting Base
   13-QA330 (Pipe mount), 13-QA310 (Offset bracket), 13-RC5160 (Handrail mount)
5. Rectifier PR-62 for 115/230 VAC mains
6. Temperature Sensor T-02MSB (GP-3500F)
7. Speed/Temperature Sensor ST-02MSB/ST-02PSB (GP-3500F)
8. Internal DGPS Beacon Receiver Kit GR7000A-3500-NN-019S
   (including Internal Beacon Receiver Board and DGPS Antenna Unit GP-019S)

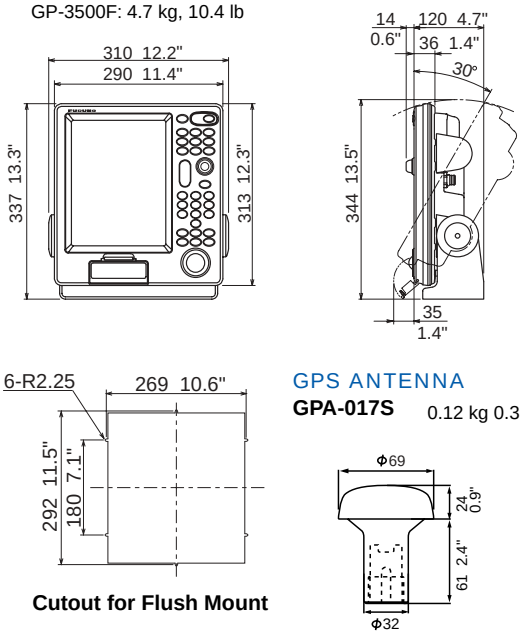
Transducers *(Specify when ordering GP-3500F)*

600 W
520-5PSD (Plastic thru-hull), 520-5MSD (Bronze thru-hull),
520-5PWD (Plastic transom), 525ST-MSD (Bronze thru-hull w/speed/temp sensor)
525ST-PWD (Plastic transom speed/temp sensor)

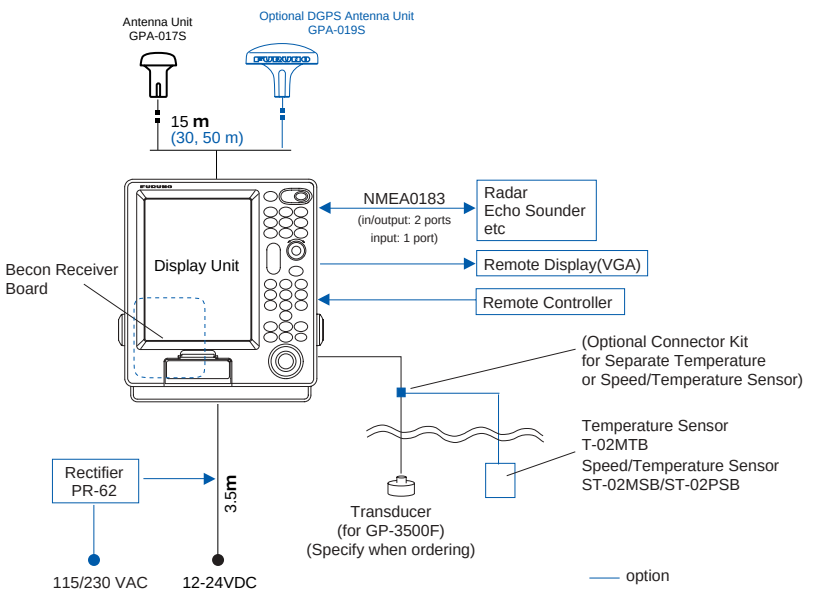
1 kW (Optional matching box MB-1000 required)
50B-6, 50B-6G, 200B-5, 200B-5S, 50/200-1T, 50/200-12M

DISPLAY UNIT

GP-3500: 4.5 kg, 9.9 lb
GP-3500F: 4.7 kg, 10.4 lb



INTERCONNECTION DIAGRAM



SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE

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04085Y Printed in Japan