SPECIFICATIONS

GENERAL

Standards
IMO A.694(17), IMO MSC.74(69) Annex 3,
IEC 61993-2, ITU-R M.1371-1, ITU-R M.825-3(DSC)

Ship reporting capacity
2000 reports per minute, 4500 reports per minute on two channels

TRANSPONDER UNIT

TX/RX Frequency	156.025 MHz to 162.025 MHz
RX1:	Default CH87B (161.975 MHz)
RX2:	Default CH88B (162.025 MHz)
Output Power	2 W/ 12.5 W selectable
DSC Receiver	CH70 fixed, 156.525 MHz, G2B, 1200 bps
Bandwidth	25 kHz/ 12.5 kHz

DISPLAY UNIT

Screen Size	4.5" monochrome LCD,
Effective Viewing Angle	95 (H) x 60 (V) mm,
Pixel Number	120 (H) x 64 (V)

GPS RECEIVER

Receiving Channels	12 channels parallel, 12 satellites tracking
Rx Frequency/Rx Code	1575.42 MHz, C/A code
Position Fixing System	All in view, 8-state Kalman filter
Position Accuracy	10 m (HDOP ≦ 4)

INTERFACE

COM 1 - 4*	IEC 61162-1/61162-2
Input:	VSD, SSD, ABM, BBM, ACA, ACK, AIR, DTM, GBS, GGA, GLL, GNS, HDT, LRF, LRI, OSD, RMC, ROT, VBW, VTG
Output:	VDM, VDO, ABK, ACA, ALR, TXT, LR1, LR2, LR3, LRF, LRI

*Note: COM 4 also functions as SENSOR input.

SENSOR (input)	IEC 61162-1/61162-2
COM 4 - 6	
Input:	DTM, GNS, GLL, GGA, RMC, VBW, VTG, OSD, HDT, GBS, ROT
AD-10	AD-10 format (FURUNO gyro format)
External Beacon	RS-232C
PC	RS-232C
Alarm Output	Contact closure

POWER SUPPLY

Transponder Unit	12-24 VDC: 7 - 3.5 A
Display Unit	12-24 VDC: 0.3 - 0.15 A
AC/DC Power Supply Unit PR-240 (option):	100-115/200-230 VAC, 1 Ø, 50/60 Hz

ENVIRONMENT

Temperature	
GPS Antenna Unit	-25°C to +70°C
Other Units	-15°C to +55°C

Waterproofing (IEC 60529)
Antenna Unit IPX6

Vibration (IEC 60945 ed.4)

EQUIPMENT LIST

Standard

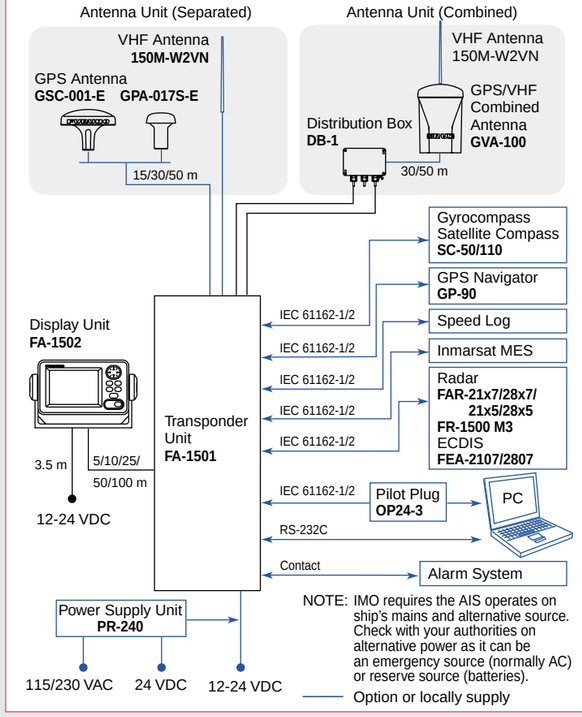
1.	Transponder Unit FA-1501	1 unit
2.	Display Unit FA-1502	1 unit
3.	GPS Antenna Unit GSC-001-E, GPA-017S-E or GPS/VHF Combined Antenna Unit GVA-100 with Distribution Box DB-1	1 unit
4.	Installation Materials	1 set

Option

1. VHF Antenna Unit 150M-W2VN with bracket
2. Antenna Cable Kit
   For GPS/VHF Combined Antenna GVA-100
   OP-00-00000: 30 m, OP-00-0000: 50 m
   For GSC-001and GPA-017S
   TNC-PS-3D-15: 15 m, CP-20-02700: 30 m, CP-20-02710: 50 m
3. Antenna Base
   CP20-01111: Pipe mount, No. 13-QA310: Offset bracket,
   No. 13-QA330: Deck mount, No. 13-RC5160: Handrail mount
4. Cable between Display and Transponder Unit
   MJ-A10SPF0012-050/100/250/500/1000: 5/10/25/50/100 m
5. Flush Mount Kit OP20-29: F type, OP20-17: S type
6. Pilot Plug OP24-3
7. Software for PC
8. Power Supply Unit PR-240

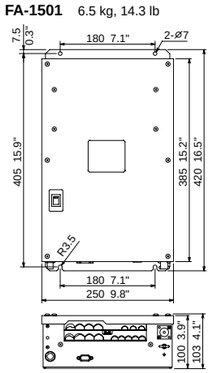
Note: IMO requires the AIS operates on ship's mains (115/230 VAC) and alternative source, then a PR-240 is required. Check with your authorities for alternative power as it can be an emergency source (AC generator) or reserve source (batteries).

INTERCONNECTION DIAGRAM



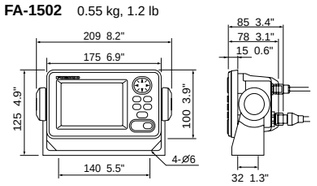
Transponder Unit

FA-1501 6.5 kg, 14.3 lb



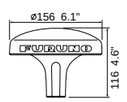
Display Unit

FA-1502 0.55 kg, 1.2 lb

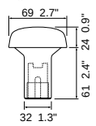


GPS Antenna

GSC-001 1.0 kg, 2.2 lb

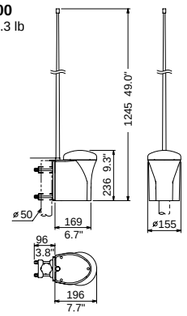


GPA-017 0.15 kg, 0.3 lb



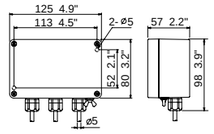
GPS/VHF Combined Antenna

GVA-100 3.3 kg, 7.3 lb



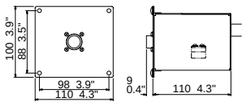
Distribution Box

DB-1 0.7 kg, 1.54 lb



Pilot Plug (Option)

OP24-3 0.5 kg, 1.1 lb



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FURUNO DEEPSEA WORLD

FURUNO

AIS
Automatic Identification System

AIS

FA-150

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AIS

Automatic Identification System

Enhances the reliability from previously released the FA-100

A Class-A Universal Automatic Identification System (U-AIS) transponder, the FA-150 is designed to improve the navigation safety by supporting efficient observation of other AIS fitted ships. The FA-150 complies with relevant international regulations and standards (e.g., IMO, ITU-R, IEC) as well as national class requirements.

The FA-150 carries out real-time exchange of the navigation and ship data among own ship and other AIS-fitted ships or coastal stations within the VHF coverage. The information to be exchanged includes: static, dynamic, voyage related data as well as short safety-related massages.

The FA-150 consists of VHF/GPS antennas, a transponder unit, a display unit and other associated units. The transponder unit contains a VHF transmitter, two TDMA receivers, a DSC channel 70 receiver and an internal GPS receiver. Two TDMA receivers keep receiving two VHF channels for handling of huge AIS information. The internal GPS receiver provides UTC reference for system synchronization. It also gives position, COG and SOG when the main positioning sensor fails.

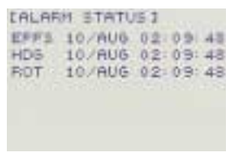
The FA-150 can be interfaced with Radar and ECDIS for displaying for the AIS information on them. No dedicated interface unit is required for the connection with the latest FURUNO radar FAR-21x7/28x7 series or ECDIS FEA-2107/2807 series. Also, the WAGO connector, which is employed to the transponder unit, remarkably simplifies the interface and set-up.

Automatic Identification System

FA-150

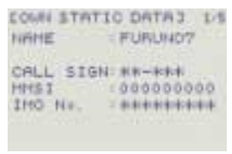
Target list

Plotter



Alarm status

Own dynamic data



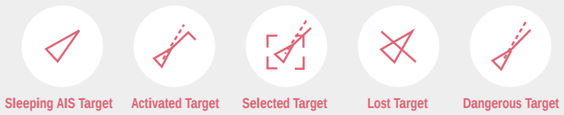
Own static data

AIS features include:

- **Ship-to-ship mode for collision avoidance**
- **A means for coastal stations to obtain information about a ship and its cargo**
- **VTS tool, i.e., ship-to-shore traffic management**

AIS enhances detection of other ships and AtoN (aids to navigation) on radar and ECDIS screen.

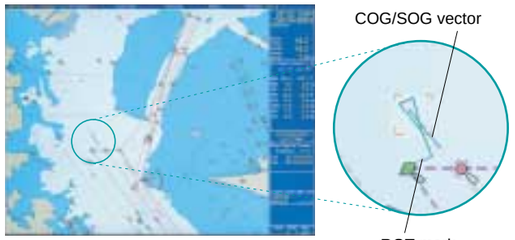
- **AIS targets are visible even if they are behind large ships, islands or points.**
- **AIS targets are not obscured by the sea clutter and rain clutter.**
- **Possible to predict course change of large ship by displaying ROT at tip of COG/SOG vector.**



AIS COG/SOG vector changes its length with speed and adjustable in cycle time. ROT mark is viewable at the COG/SOG vector tip when a target ship is equipped with a FURUNO satellite compass SC-50/110 or gyrocompass which can talk ROT serial sentence.

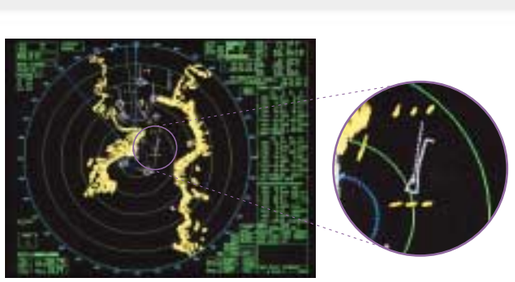
ECDIS
Electronic Chart Display and Information System

FEA-2107: 20.1" LCD
FEA-2807: 23.1" LCD



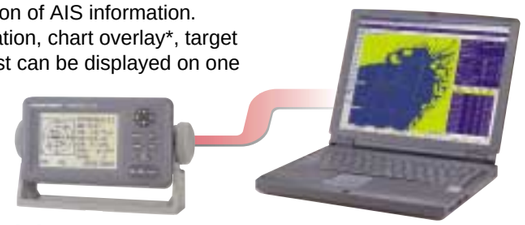
RADAR
Automatic Radar Plotting Aid

FAR-21x7 series: 20.1" LCD
FAR-28x7 series: 23.1" LCD



PC software (Available in the near future)

Optional PC software is available to facilitate comprehensive observation of AIS information. With this software application, chart overlay*, target information and targets list can be displayed on one display. *Required chart data



Implementation schedule

(MSC.73 adopted on 5 December 2001 and Amendments adopted on 13 December 2002 by the Conference of Contracting Governments to the SOLAS 1974)

New building	All ships of ≥300 GT on international voyages	
	Cargo ships ≥500 GT not on international voyages	
	Passenger ships irrespective of size on all voyages	
Ships not on international voyages constructed before 1 July 2002	Passenger ships	Before 1 July 2008
	Ships, over than passenger ≥500 GT	

Information to be exchanged

- **Static Data**
  - MMSI (Maritime Mobile Service Identity)
  - IMO number (Where available)
  - Call sign & name
  - Length and beam
  - Type of ship
  - Location of position-fixing antenna on the ship
- **Dynamic data**
  - Ship's position with accuracy
  - Indication and integrity status
  - UTC
  - Course over ground (COG)
  - Speed over ground (SOG)
  - Heading
  - Navigation status (manual input)
  - Rate of turn (where available)
  - Update rates Dependent on speed and course alternation (2 s – 3 min)
- **Voyage related data**
  - Ship's draft
  - Hazardous cargo (type)
  - Destination and ETA (at masters discretion)
- **Short safety-related messages**
  - Free messages