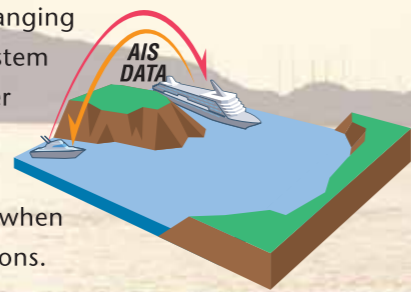# exchange that can be utilized

What is AIS?

The Automatic Identification System (AIS) improves the safety level of boating by exchanging information about the status of your ship with other AIS-equipped craft nearby. The system utilizes VHF broadcasts to handle information about the surrounding area, such as other craft and buoys and other aids-to-navigation.

The AIS data includes target position, course and speed over ground, allowing you to foresee the course changes of particular targets. AIS targets are constantly visible even when they are shrouded in fog, in darkness, behind headlands, river bends or other obstructions.

AIS DATA

Comparison between Class-A and Class-B

	Class-A	Class-B
Vessel applied	SOLAS vessel	Non-SOLAS vessel
Access scheme	SOTDMA (Self Organized Time Division Multiple Access) Reserves a particular time slot and negotiates the use of that time slot with other Class-A vessels within radio range.	CSTDMA (Carrier Sensing Time Division Multiple Access) Uses any time slot as and when it is available. If no slot is available, Class-B AIS tries to access to the slot again after a pre-set time.
Frequency Range	156.025 - 162.025 MHz	156.025 - 162.025 MHz (Same as Class-A)
Update Interval	Variable by ship speed and course	2-step fixing by ship speed
	Ships status "at anchor" and not moving faster than 3 kt — 3 min.	
	Ships status "at anchor" and moving faster than 3 kt — 10 sec.	
	Ships operating in SOLAS mode, moving 0 - 14 kt — 10 sec.	Moving less than 2 kt: 3 min.
	Ship operating in SOLAS mode, moving 0 - 14 kt and changing course — 3 1/3 sec.	Moving faster than 2 kt: 30 sec.
	Ship operating in SOLAS mode, moving 14 - 23 kt — 6 sec.	
	Ship operating in SOLAS mode, moving 14 - 23 kt and changing course — 2 sec.	
	Ship operating in SOLAS mode, moving faster 23 kt — 2 sec.	
	Ship operating in SOLAS mode, moving faster 23 kt and changing course — 2 sec.	

▶ Fully satisfies the technical standards for Class-B AIS, IEC 62287-1

▶ Receives both Class-A and Class-B AIS information

▶ Enhances safe navigation by exchanging critical navigation information from AIS-equipped vessels nearby

▶ Greatly improves the level of the situational awareness even in fog, darkness or congested waterways

▶ Outputs data to NavNet 3D, NavNet vx2 and PC through Ethernet

▶ Flexible integration with various AIS compatible radar and chart plotters

▶ AIS Viewer software for PC (Standard supply)

▶ Sturdy design mounts easily on a bulkhead

SPECIFICATIONS OF FA-50

STANDARDS
IMO MSC.140(76), IEC 62287-1, ITU-R M.1371-2, DSC ITU R M.825-3, IEC 60945 Ed.4

TRANSPONDER UNIT
TX/RX Frequency   156.025 MHz to 162.025 MHz

GPS RECEIVER
Receiving Channels   12 channels parallel, 12 satellites tracking
Rx Frequency   1575.42 MHz
Rx Code   C/A code
Position Accuracy   10 m (HDOP ≤4)

INTERFACE
COM   RS-422/IEC 61162-1
Ethernet   10/100BASE-T
 Input: ACK, BBM, DTM, GBS, GGA, GLL, GNS, HDT, OSD, RMC, SSD, VBW, VSD, VTG, AIQ, DSC, DSE, PFEC
 Output: VDM, VDO, ABK, ACA, ACS, ALR, TXT, PFEC

POWER SUPPLY
12-24 VDC 2.0-1.0 A

ENVIRONMENT
Temprature
 Transponder Unit: -15 to +55°C
 Antenna Unit: -30 to +70°C
Waterproofing
 Transponder Unit: IP20
 Antenna Unit: IPx6

EQUIPMENT LIST
Standard
1. AIS Transponder FA-50
2. GPS Antenna GPA-017S or GPS/VHF Combined Antenna GVA-100-T with Distribution Box DB-1 (Optional VHF antenna is needed.)
3. AIS Viewer FAISPC-MX
4. Installation Materials and Spare Parts

Option
1. VHF Antenna 150M-W2VN
2. Antenna Cable Set (30/50 m)
3. Antenna Base
4. Power Supply Unit PR-240
5. LAN Cable (2/10 m) for the connection with a PC
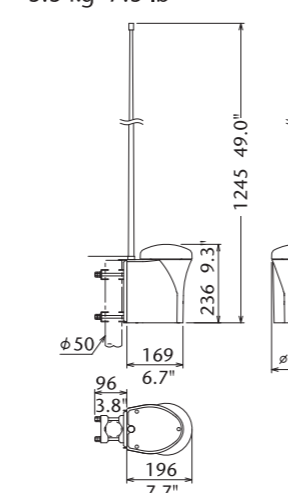6. LAN Cable (1/5/10/20/30 m) for the connection with NavNet vx2
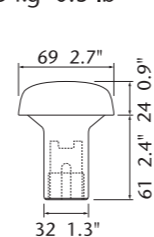
AIS TRANSPONDER FA-50
1.7 kg 3.7 lb
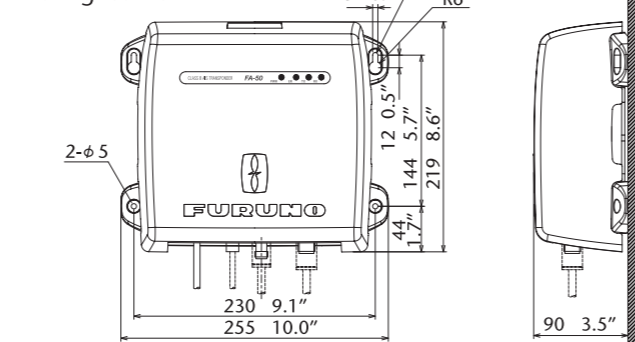
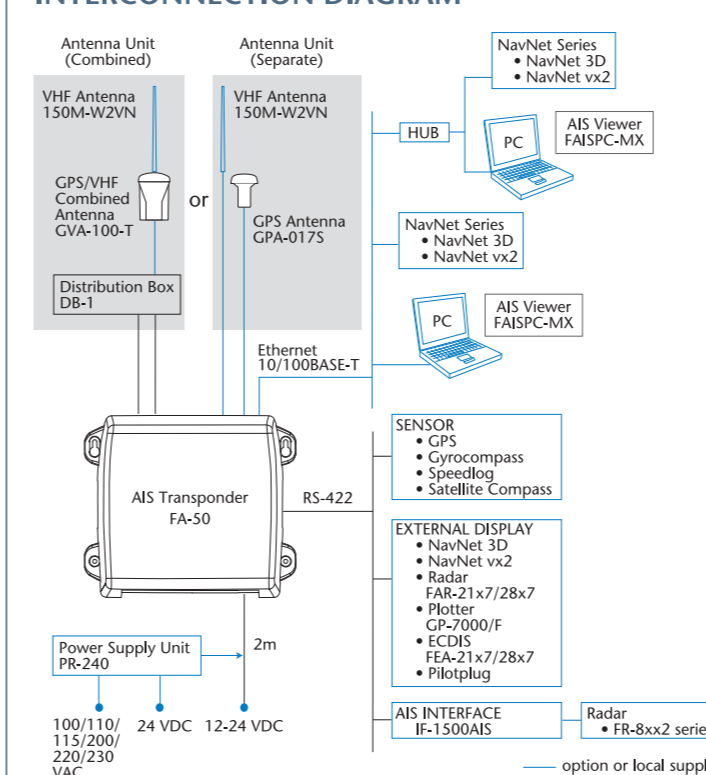### GPS/VHF Combined Antenna GVA-100-T
3.3 kg 7.3 lb

GPS Antenna GPA-017S
0.15 kg 0.3 lb

INTERCONNECTION DIAGRAM

* Usually FA-50 uses the internal GPS. When connecting the external GPS, use one which satisfies the followings.
 1) Outputs DTM sentence. (WGS-84 can be chosen.)
 2) Outputs GBS sentence.
 3) Outputs sentences with the mode indicator;
   GNS: Ver. 3.0 or later   GLL: Ver. 2.0 or later   GGA: Ver. 2.0 or later   RMC: Ver. 1.5 or later
 4) The measured result of internal and external GPSs should be within 26 m. (These antenna should be located within 6 m.)

TRADEMARK REGISTERED MARCA REGISTRADA
SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE

FA-50
CLASS B AIS TRANSPONDER

NAVnet 3D Connect

FURUNO

The FA-50 offers accurate information exchange that can be utilized for collision avoidance

LAN

LAN

NMEA 0183

FA-50
CLASS B AIS TRANSPONDER

FA-50
CLASS B AIS TRANSPONDER

with GPS antenna
GPA-017S

NAVnet 3D

AIS target   AIS information

When placing a cursor onto the AIS target, an AIS data window will pop up to display the following data of the target: Ship's name, COG, SOG, CPA, TCPA, Range and Bearing.

NavNet vx2 can also be interfaced to the FA-50

NAVnet vx2

AIS info on NOAA chart
Rough raster chart is already installed. Also, additional charts can be installed into this viewer.

COG/SOG vector

AIS Viewer for PC
(Standard supply)
The software can be upgraded to a full version of MaxSea Navigation Software or MaxSea-NavNet Software.

Past track line   AIS target data for the selected vessel

FURUNO's FA-50 class-B AIS transponder receives navigation data from AIS-equipped vessels nearby that can be utilized to aid in safe navigation. Also, the FA-50 transmits own ship's information to the vessels around, which also aids in collision avoidance.

AIS utilizes a VHF data link to exchange own ship information with other AIS-equipped vessels around. The FA-50 incorporates the received AIS information into radar, a chart plotter and other graphic display options such as a PC to improve situational awareness. AIS targets on the screens are

shown with SOG/COG vector, which greatly assists you in grasping the surrounding situation even in the midst of congested waterways. Also, Closest Point of Approach (CPA) and Time to Closest Point of Approach (TCPA) can be computed and displayed on the radar/chart plotter screens.

The FA-50 feeds AIS data to the NavNet 3D and vx2 series or a PC with FURUNO's AIS Viewer software interfaced through Ethernet. The FA-50 can also be interfaced with a FURUNO chart plotter and radar via NMEA 0183 format to supplement information to the onboard navigation system.

Information to be received

Dynamic Data
- Ship's position
- Coordinated universal time (UTC)
- Course over ground (COG)
- Speed over ground (SOG)
- Rate of turn (ROT)
- Heading
- Navigation status*

Static Data
- MMSI (Maritime Mobile Service Identity)
- IMO number*
- Ship's name
- Type of ship
- Call sign
- Length and beam
- Location of position-fixing antenna on the ship

Voyage Related Data
- Ship's draft*
- Hazardous cargo
- Destination and ETA*

Safety-related messages

* Class-A AIS only

Information to be transmitted

Dynamic Data
- Ship's position
- Coordinated universal time (UTC)
- Course over ground (COG)
- Speed over ground (SOG)
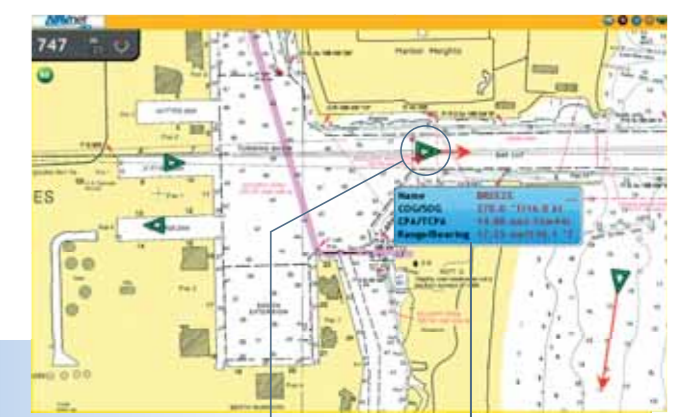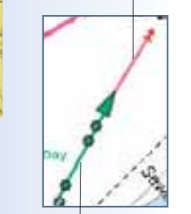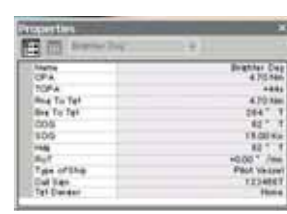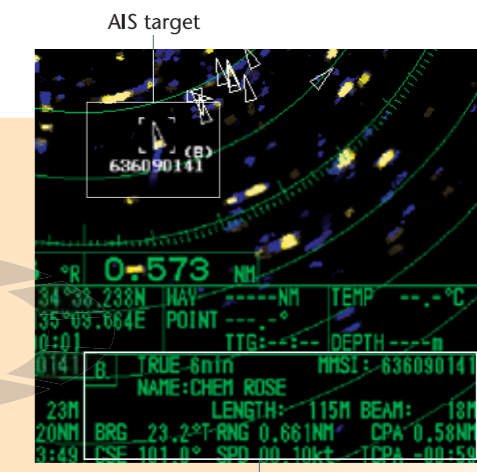- Heading

Static Data
- MMSI (Maritime Mobile Service Identity)
- Ship's name
- Type of ship
- Cargo
- Call sign

- Length and beam
- Location of position-fixing antenna on the ship

Radar FR-8xx2 series
When interfacing with FR-8xx2 series, optional AIS interface IF-1500AIS is needed.

AIS target

AIS information

AIS target symbol
COG/SOG vector changes its length according to SOG.
ROT mark is viewable when the target vessel sends the information.
Past track dots enables you to evaluate the target's action.

COG/SOG vector   ROT mark

Past track dots