SMART RADIO SR161/SR162/SR162G AIS RECEIVER

OPERATION & INSTALLATION MANUAL

INTRODUCTION

Thank you for choosing the Smart Radio AIS Receiver. The SR161 and SR162 receivers are high quality AIS receivers that use VHF technology. These units make it possible to receive information from ships, buoys, lighthouses, SAR helicopters, coast guard units, pilot boats, weather stations, etc. that are equipped with Automatic Identification System (AIS) transponders. According to current AMO and SOLAS regulations, all ships above 300 gross tons are required to carry AIS. This means that your receiver will detect many ships and navigational hazards or information providers, enhancing your navigation safety.

The SR161 is a single channel radio receiver that can scan between the two AIS frequencies and is designed to automatically use the frequency that has the best radio reception. The SR162 is a true dual channel receiver and is able to receive information from both AIS frequencies simultaneously. The SR162G includes all of the features of the SR162 and also includes an integrated GPS module. These three products share the same capabilities for most other features; therefore they are covered together in this manual.

It is very important that you read this manual before you install and use your Smart Radio AIS Receiver.

GLOSSARY

To make it easier to read the manual, we will begin by introducing commonly used abbreviations:

TERM	DEFINITION
AIS	Automatic Identification System
ATC	Air Traffic Control
DGPS	Differential Global Positioning System
ECDIS	Electronic Chart Display and Information System
ETA	Estimated Time of Arrival
GPS	Global Positioning System
GALILEO	European equivalent to GPS
GNSS	Global Navigation Satellite System
IMO	International Maritime Organization
NM	Nautical Mile = 1852 m
RX	Receive/Receiver
SOLAS	Safety Of Life At Sea
SOTDMA/STDMA	Self Organized Time Division Multiple Access
VHF	Very High Frequency
VTS	Vessel Traffic Services (Like ATC but for ships)

CONDITIONS

Before using the SR161 or SR162 product from Smart Radio Holdings Limited, it is important that you read and fully understand the installation manual and its instructions. Only proceed with the installation if you are confident that you will be able to do so.

Smart Radio Holdings Limited cannot be held liable for any injury or damage caused by, during or because of the installation of the unit. These AIS receivers are to be used at your own risk. Please be advised that AIS data depends on the full co-operation of other users and systems.

An AIS receiver is a navigation aid and works in co-operation with other similar systems, such as radar, visual lookout, etc. The user should both inspect the receiver installation and check on its operational quality regularly. Remember that navigation and life at sea always require proper seamanship and an AIS receiver is not a replacement for such qualities.

NOT ALL VESSELS CARRY AIS. IT IS THEREFORE IMPORTANT TO KEEP PROPER LOOKOUT AT ALL TIMES AND TO USE ALL AVAILABLE MEANS TO AVOID COLLISIONS AND ACCIDENTS.

WARRANTY

The SR161 and SR162 units are developed and manufactured to meet high technical requirements and user demands. If installed correctly and maintained regularly, your SR161/SR162 should provide you with several years of operation and be a very useful product. For further warranty information, please contact either Milltech Marine Inc. or Smart Radio Holdings Limited.

Warranty conditions

- The warranty belongs to the purchaser of the product and cannot be handed over to a third party or person.
- The warranty is not valid if the serial number is missing, the seal is broken, or if the SR161/SR162 has been incorrectly installed. The warranty is not valid if: the instructions for connection have not been followed, incorrect usage has caused faults, the product has been modified, or serviced by a non-authorized individual.
- **NOTE: DO NOT OPEN THE UNIT OR ATTEMPT TO SERVICE THE UNIT YOURSELF. IF THE SEAL IS BROKEN ON THE UNIT, YOU WILL INVALIDATE THE WARRANTY IT WILL NOT BE COVERED FOR REPAIR OR REPLACEMENT.**
- Smart Radio Holdings Limited acknowledges that at delivery, each SR161/SR162 has been tested and found operational.
- Smart Radio Holdings Limited agrees to repair or replace any faulty unit at no cost, according to the conditions set forth during a period of one (1) year from day of purchase.
- The warranty includes replacement or repair of a faulty unit due to flawed components or errors relating to the production of the product.
- The warranty covers costs for parts, labor, and return shipment. It does not include shipment to the repair facility.
- Smart Radio Holdings Limited will never be liable under the warranty conditions for incorrect use, misuse, and incidental, indirect or consequential damages of the SR161/SR162.
- Proof of purchase is required for any warranty claim of the SR161/SR162.

Warranty procedures

Smart Radio Holdings Limited repairs and replaces faulty parts or units. The customer is responsible for transport of the defective part or unit to Smart Radio or its retailer.

Warranty claims shall be made to the place where SR161/SR162 was purchased or directly to Smart Radio Holdings Limited through mail, fax or e-mail to our support department.

Other issues

Proper seamanship and common sense are essential when using a SR161 or SR162 receiver and the product shall only be used as a navigation aid. Smart Radio Holdings Limited reserves the right to change the specification of the product without prior notice.

IF YOU ARE UNABLE TO ACCEPT THE TERMS ABOVE, PLEASE RETURN THE SR161 OR SR162 TO YOUR RETAILER FOR FULL CREDIT BEFORE OPENING AND USING.

SUPPORT

If you need support, please contact Milltech Marine or your reseller where you acquired the product.

Milltech Marine can be contacted at:

Email: info@milltechmarine.com

Phone: +1 425 818-5246

Fax: +1 425 484-6218

The manufacturer can also provide direct support:

Email: smartradio@sz.net.cn

Fax: +86 755 88367618.

INFORMATION ABOUT AIS

General

AIS (Automatic Identification System) is the name of a system that enables ships to identify other ships and to monitor their movements. The AIS system offers the mariner more information about ships in the vicinity than what is provided by radar. AIS provides information about a ship's identity (name, call sign, IMO number and MMSI) and size, even for ships behind islands or otherwise undetectable by radar.

AIS is used to enhance safety for life at sea, improve safety and efficiency in navigation and to protect the marine environment.

AIS information transmitted from a ship contains of three (3) main types:

1. Static data that was programmed into the AIS equipment at installation. This only needs to be changed if the ship changes its name, flag or undergoes a major refit where size or ship type is changed

2. Dynamic data containing information that is automatically updated from ship sensors, such as the heading from the compass or position and speed from GPS equipment. Also, navigational status belongs to the group of dynamic data, but is updated manually by the crew.

3. Voyage related data that manually is updated by the crew along the voyage.

Initially, AIS was also referred to as UAIS or as the 4S transponder system (meaning Ship to Ship and Ship to Shore).

In 1998 IMO adopted a performance standard for AIS within the SOLAS requirement that described in general how AIS should work. Below follows a brief description of the main requirements for AIS from the performance standard:

- Automatically provide information to AIS land stations, other ships and airborne units such as search and rescue (SAR) helicopters about the ships identity, type of ship, position, course, speed, navigational status (e.g. under way using engine, at anchor) and other important safety related information.

- Be able to receive the same type of information from other ships.

- Be able to monitor and track other ships.

- Exchange information with land based AIS systems.

AIS is an automatic system that continuously and simultaneously transmits on two channels in the maritime VHF frequency band.

AIS can handle several reports in a rapid continuous sequence. To accomplish this AIS uses a technique called Self Organized Time Division Multiple Access (SOTDMA) that guarantees high transmission safety and operational robustness.

AIS also allows for other types of information from sensors such as a gyro compass, GPS and echo sounders to be transmitted automatically.

Important areas where AIS is used are:

- Information exchange between ships within VHF range (normally 20-30 NM) to enhance safety at sea and to improve situation awareness.

- Information exchange between ships and AIS land stations as a VTS that controls and monitors maritime traffic in an area.

- Automatic reporting in areas with mandatory reporting of different kinds.

- Exchange of safety related information between ships, and between ships and land stations.

- Services like real-time weather information, identity and position of navigation aids.

Short technical description of AIS

AIS operates primarily on two dedicated VHF-frequencies (AIS1 – 161.975 MHz and AIS2 – 162.025 MHz). In areas where these two channels are unavailable, AIS can automatically switch to other alternatively available frequencies.

AIS uses two VHF radio channels, where the information is transmitted in short data packages or slots in predefined and synchronized time frames. The dynamic information (position, speed, heading etc) is transmitted in intervals from 2 seconds up to 10 seconds, depending on the speed and maneuvers of the transmitting ship where the AIS is mounted. Static and voyage related information (type of ship, size, cargo, destination etc.) is transmitted every six minutes or upon request from other units. Position, course and speed are normally collected from the same sensor systems that provide the information used in radar navigation or ECDIS, and this is normally based on GPS or DGPS. All ships within VHF coverage will be able to receive AIS data, and authorities that have installed networks with coastal AIS coverage can receive the information. The capacity for ships to report is defined by the IMO performance standard to a minimum of 2000 data packages or slots per minute. ITU (the Technical Standard for the Universal AIS) has doubled this and has provided AIS with 4500 data packages or slots per minute. The transmission is based on the SOTDMA (Self-organized Time Division Multiple Access) technique. This allows the system to be overloaded by up to 500% and still give almost a 100% message throughput between ships closer together than 8 to 20 nautical miles. In the case of system overload, close targets will be selected in favor of distant targets. In reality, the system capacity is unlimited and allows for a large number of ships to communicate simultaneously.

Limitations with AIS

You should always be aware that not all ships (e.g. pleasure craft, fishing boats, warships, some coastal stations and VTS centers) will be equipped with AIS. Ships that have been mandated to carry AIS may also, under certain conditions, turn off their AIS equipment at the master's discretion. Therefore it is important to be aware that the information that AIS provides might not be a full and complete picture of the situation around your ship.

Users of AIS must also be aware that transmission of false data can occur and that this can be hazardous not only to your own ship, but to others as well. The user is responsible for all data that is entered into the system and for information provided by external sensors. The accuracy of received AIS data is only as good as the information transmitted from the source of information.

You should always be aware that incorrectly configured or calibrated ship sensors (positions, speed or heading sensors) could lead to the transmission of false information. Faulty information from another ship can cause dangerous situations.

SMART RADIO SR161/SR162/SR162G AIS RECEIVER

General description

With your SR161/SR162/SR162G you will be able to "see" other AIS equipped ships within your VHF coverage area. The transmitted information includes ship's name, call sign, heading, speed, course, destination and type. The SR161/SR162 complies with the NMEA 0183 and IEC 61161-1 standards, and can be connected to any electronic chart system or radar system that supports these formats and has the capacity to display AIS targets and

data. The installation is quick and easy since it only requires proper setup of a power connection, a VHF antenna and a data cable to your display system. SR161/SR162 is a good complement to radar, since ships with AIS transponders will be easy to identify on the radar screen.

Technical specification

The SR161 unit is a compact, two-channel scanning receiver with a synthesized VHF receiver that operates in the maritime VHF frequency band. It has been designed to receive and decode transmissions from other AIS transceivers. When the SR161 detects that there is strong interference in the receiving AIS channel, it will switch to the alternative AIS channel for better performance.

The SR162 unit is similar to the SR161 with one major exception. It is a true two-channel receiver and therefore is able to receive information from both AIS channels simultaneously. It then consolidates the data stream from both channels and transfers the result as output on the serial port.

The SR162G unit has all of the features of the SR162 but also includes an integrated 12 channel GPS receiver. The GPS receiver connects to the included active GPS antenna via a dedicated GPS port on the SR162. The serial data stream from the SR162G includes AIS vessel traffic information from both AIS channels and GPS position information.

Electrical data

>Power: 9 - 15 volt DC
>Power consumption: 1.5 watts

Data output

>Data Speed: 38400 baud (default)
>Format: NMEA 0183 version 3
>NMEA output data format: VDM, standard GPS sentences (SR162G only)

Receiver

>Frequency: AIS1 161.975 MHz, AIS2 162.025 MHz
>Sensitivity: -112dBm
>Antenna impedance: 50 ohm
>GPS: 12 channel integrated GPS receiver (SR162G only)

Physical data

>L x W x H: 115 x 75 x 28 (mm)
>Weight: 400g
>Antenna Connectors: VHF BNC, GPS antenna port (SR162G only)
>Data output port: 9 pin D-sub connector RS-232 serial

HOW TO INSTALL THE SR161/SR162/SR162G AIS RECEIVER

Introduction

SR161/SR162 is easy to install. You will need antenna cables and connectors for a VHF antenna (not included) and access to 12 volt DC power. When this is in place, your SR161/SR162 can easily be connected to your PC or any other type of supported display system, such as a chart plotter that supports RS232. Please be aware that the software that you use to display AIS data must be compatible with the standard messages that AIS provides on its data output port. The data output port sends serial data through a serial cable to the display system so that AIS targets can be displayed.

The SR162G includes an integrated GPS unit, a connection port for a GPS antenna and an active GPS antenna.

NOTE: Before connecting the AIS receiver to a computer or chart plotter, please ensure that the power is OFF to the AIS receiver while making the connection. Once you are sure that the wiring to the external device is correct, proceed with powering on the AIS receiver. Failure to follow these instructions can result in damage to the AIS receiver.

Installation

This section describes the most important information you need to install your SR161/SR162 receiver. You should read the entire manual to get a full understanding of how to install and operate your SR161/SR162.

If you want your SR161/SR162 to operate with monitoring software, chart plotter, or PC-based software, please do the following:

Checking your material

Check that you have received all the equipment with your SR161/SR162 and that the delivered equipment has not been damaged during delivery. If the equipment has been damaged, please contact your reseller or our support.

Installing your receiver

SR161/SR162 is designed to be installed in a protected indoor environment and needs to be placed where it is well protected from humidity and water. Do not place SR161/SR162 close to generators or compressors (e.g. refrigerators) since they can interfere with reception. Normally a suitable placement of the SR161/SR162 is together with other types of navigation equipment and the PC or chart plotter that will be used to display the AIS data. A position close to an accessible power outlet is a good idea. SR161/SR162 also contains led indicators for AIS reception on both channels and output on the data port; therefore it is a good idea to have these indicators visible to ensure performance and functionality. SR161/SR162 is easy to mount on the bulkhead or on panels.

Antenna installation

Install the VHF antenna at a suitable position onboard (see further information below).

The shortest possible antenna cabling should be used. The cable type selected should be based on the cable length to avoid power loss. All connectors should be properly joined to avoid power loss and thoroughly sealed with self-amalgamating rubber tape to avoid humidity in the connectors. Excessive humidity may interfere with the correct operation of the SR161/SR162.

Quick guide for cable selection:

Length	Cable types
< 10 m cables	RG58C/U
> 10 m cables	RG213/U

VHF antenna

SR161/SR162 is not delivered with a VHF antenna since requirements for the antenna and cables can be different in various types of installations. Milltech Marine does sell a short portable VHF antenna that may be appropriate for short range applications. A VHF antenna

is necessary for the AIS receiver to work properly. VHF antennas can normally be provided by marine electronic shops. The antenna cable type should be at least RG58C/U or better.

The VHF antenna installation is often a compromise of the following requirements:

- Separation between different antennas
- Free line of sight 360 degrees
- Antenna height

Antenna separation

The AIS receiver uses frequencies in the upper part of the maritime band. Normally channel 87B, AIS 1 (161.975 MHz) and channel 88B, AIS 2 (162.025 MHz). AIS frequencies are situated in the duplex band close to coastal stations transmit channels. To avoid interference, separate the SR161/SR162 antenna as much as possible from the VHF radio antenna. This will be best accomplished if the antennas are placed at different heights or on different sides of the mast or boat. An active VHF splitter can also be used as an effective solution for antenna placement. Milltech Marine sells an active VHF antenna splitter that has been specially designed to work with the Smart Radio AIS receiver family of products.

Line of sight

To have the best possible reception for the SR161/SR162 place the antenna with free line of sight around the full horizon. Larger objects can block the signals from certain directions.

Antenna height

AIS uses frequencies in the maritime VHF band. The area of coverage in this frequency band is almost the same as line of sight. This means that the higher you put your antenna, the longer range you will have.

The VHF antenna should be of a standard marine type for full functionality of the SR161/SR162.

- Antenna type: Vertical radiator
- Antenna gain: 0 – 3 dBd
- Impedance: 50 ohm

The VHF antenna for the SR161/SR162 should be placed as high as possible and with proper separation from other transmitting antenna equipment onboard. A suitable solution is to use an active VHF antenna splitter that allows you to use existing VHF antenna installations. The VHF splitter solution will save both time and installation cost, and an existing VHF antenna is normally already placed on the most favorable onboard location. Active VHF antenna splitters are available from Milltech Marine as an optional accessory.

The VHF antenna connection should be connected to the right connector (BNC) on the SR161/SR162.

GPS antenna (SR162G only)

The SR162G includes a magnet mount active GPS antenna with a 16 foot cable that attaches to the SR162G unit. The GPS antenna should be installed in a location that has a clear line of sight to the sky.

Simply connect the GPS cable to the port that is labeled GPS on the SR162G unit.

Power

Connect the SR161/SR162 to 12 volts DC via a 0.5A fuse. The SR161/SR162 comes with a power cable already fitted with a fuse, and with a 2-pole DC connector that locks automatically when fitted.

- Red cable is positive
- Black cable is negative

When SR161/SR162 is connected to 12 volts DC the DATA led indicator should flash green momentarily.

Connection to external GPS

The SR161/SR162 can be connected to an external GPS sensor to provide position data through the SR161/SR162 AIS receiver. This is useful since it means that you can use one port on your display system. It will also solve the problem of having different data speeds from the GPS (normally 4800 baud) and AIS (38400 baud). The SR161/SR162 automatically mixes the GPS and the AIS data and outputs a seamless stream of data into your display system, presenting your own position and AIS information. The SR161/SR162 will not filter any data from the external GPS and will output the full throughput of all transmitted data from the GPS. The connection is made in the following way.

SR161/SR162	RS232 port	Data
2	2	Data output - 38400 baud to computer
3	3	Data input – 4800 baud from GPS
5	5	Signal ground

The connection can be made with a splitter that takes data from the GPS into the SR161/SR162 AIS receiver on pin 3 and transmits data from the SR161/SR162 AIS receiver to the display system on pin 2 as shown. Milltech Marine sells cables to address this need. See www.milltechmarine.com for more information.

Connection to PC

Use the included serial cable for the RS232 serial connection. Connect the cable to the connector on the SR161/SR162 and then to the PC or chart plotter port. If your PC does not have a serial port, a Serial to USB converter can be used. (If a serial cable other than the included one is used, it should use the same pin-to-pin connection i.e. 2-2, 3-3, 5-5)

Start your navigation system or plotter and set the baud rate to 38400 baud on the serial port where you connect your SR161/SR162.

Note: If you do not have any AIS software you can use the HyperTerminal program supplied with Windows. This can be found by selecting:

Start → Programs → Accessories → Communications → HyperTerminal

Set the COM port for:

- Baud rate: 38400 baud
- Data bit: 8
- Parity: None
- Stop bits: 1

When your port is set to receive data as described above, you should be able to see NMEA data for AIS, with the VDM label, following normal NMEA structure. Make sure you hit "Call" to connect Hyperterminal to the port. For example:

```
!AIVDM,1,1,,B,169?;>000089Jap<nvS<2r2d0H<q,0*13
!AIVDM,1,1,,B,177CQd800q`9C8D<n4A=L:bf0D0o,0*0E
!AIVDM,1,1,,B,D04SGT1@qNL8,0*1F
!AIVDM,1,1,,B,19NWp8h00289HGt<nii`L4Jl0<0k,0*67
```

If you are using the SR162G product or have integrated a GPS data feed into the SR161 or SR162, then you will see data that includes GPS information as well as AIS information.

Connection to a Chartplotter

The Smart Radio AIS Receiver can be used with most chart plotters that support RS232 and other RS232 equipment that supports AIS. Ensure that your chartplotter supports AIS and RS232 serial data connections. These receivers will not work with chartplotters that expect true NMEA RS422 signals, such as Raymarine models. Contact your chartplotter manufacturer to confirm that AIS data and displaying AIS targets is supported by your model or if an upgrade is available.

You will need to connect wires from pins 2 (data) and 5 (ground) on the AIS Receiver to the data input on the chartplotter. Use an Ohm meter to ensure that the wire connected to pin 2 of the AIS Receiver serial output is connected to the terminal on the chartplotter for "data in" and pin 5 from the AIS Receiver is connected to the ground terminal on the chartplotter. Do not connect pin 3 to any connection on the chartplotter. When looking at a DB9 male serial connector with the pins facing you, pin 2 is the second from the left on the top row and pin 5 is the pin furthest to the right on the top row. If you are using the cable that came with your Smart Radio AIS Receiver and have cut it to expose the bare wires, the BROWN wire is normally connected to pin 2 or data out and the YELLOW wire is normally connected to pin 5 or ground. **HOWEVER**, please double check this with an Ohm meter before connecting your equipment together. We cannot guarantee this color coding is correct as serial cable manufacturers do not follow a color coding standard. Connecting the wrong wires can damage your AIS Receiver, your chart plotter or both.

Next, ensure that the baud rate for the inbound data port on the chartplotter is set to 38400 baud. This is sometimes referred to as a "high speed serial" setting (e.g. on some Garmin models). See the instructions with your chartplotter for information on how to do this.

If your chartplotter supports AIS but does not support inbound data at 38400 baud, then you will need to change the baud rate on the AIS Receiver to match the supported baud rate on the chartplotter. This is usually 4800 baud. To change the baud rate on the AIS Receiver to 4800 baud, do the following:

1) Disconnect the VHF antenna from the AIS Receiver.

2) Connect the AIS Receiver to a computer running a terminal emulation package such as Hyperterminal and set it to the correct COM port and baud rate (38400).

3) In the terminal emulation session, hit <SPACE> then <ENTER>. You should see something similar to the following on the screen:
   ```
   SR162 AIS Receiver
   RECE FRQ      R1F1619750
   RECE FRQ      R2F1620250
   INT RATE      I38400
   &
   ```

4) Enter the following in the terminal window to switch the unit to 4800 baud:
   ```
   I4800
   ```

5) Hit <ENTER> and then "Q" to save the change.

6) Turn the power off to the AIS Receiver. Reset the baud rate in your terminal emulation package to 4800 baud. Turn the power on again to the AIS Receiver. Hit <SPACE> then <ENTER> to ensure that the new baud rate is active.

7) The receiver should now be operating at the new baud rate. Reconnect it to the chartplotter and test for AIS functionality.

In some cases, the chartplotter will not display any indication that AIS is working except to display vessels on the screen if you are in range of transponders. Be sure to test your chartplotter in an area where transponder signals can be received.

Programming new settings for the AIS receiver

Certain settings for the Smart Radio AIS Receiver can be changed by the user by entering Programming Mode.

To enter Programming Mode, you first must ensure that the AIS Receiver is properly connected to computer. Use HyperTerminal or another terminal emulation package with the following settings: COM port = the port the AIS receiver is connected to, baud rate = 38400 baud, data bit = 8, parity = None, stop bits = 1. Supply power to the AIS Receiver. In the terminal session, press the "SPACE" key then the "ENTER" key. The screen will display:

```
SR162 AIS Receiver
RECE FRQ    R1F1619750
RECE FRQ    R2F1620250
INT RATE    I38400
&
```

To change selected parameters, just input the right half of the information line with the new setting that you wish to use followed by the "ENTER" key. For example, to change the AIS1 frequency to 156.5250Mhz, input:

```
R1F1565250
```

And then press "ENTER". If the command is accepted, a "&" will be displayed. To change the RS232 baud rate to 4800 baud, input:

```
I4800
```

After checking that the parameter is properly set using "SPACE" followed by "ENTER", press "Q" to save the changed parameters and to put the AIS Receiver back into Receiver Mode. Turn the unit off and on once it has been reprogrammed.

Note: If you have changed the RS232 interface baud rate, be sure to set your navigation software or device communications settings to the new baud rate as well. Also, if you need to program the unit again, be sure to set the terminal emulation package with the correct baud rate.

Operational Guidelines for SR161/SR162

SR161/SR162 has two (2) led indicators to help with status monitoring of the AIS receiver.

The A/B light flashes **RED** when the SR161/SR162 is receiving data on the AIS radio channels. In some cases, spurious transmissions can cause this LED to flash even if no AIS data is being output.

The DATA light flashes **GREEN** only when the SR161/SR162 is transferring data to your application on the data port. The DATA LED will also light momentarily when power is turned on to the receiver. If no vessels are within range, then the LED will not flash. You may need to reduce the ambient light and look at the LED straight on in order to verify that it is flashing. Each flash is very short in duration and corresponds to a data packet being transmitted over the serial port.

If the A/B light shows a constant light it means that there is interference on one or both of the frequencies. You need to investigate the cause of the problem.

SR161/SR162 offers several ways to enhance navigational safety as a complement to radar and electronic charting systems. With an AIS receiver, you will improve safety during navigation in low visibility or at night. At sea, AIS provides enhancement to using radar alone, especially during rain, snow and sea clutter conditions. With AIS, it is also possible to "see" behind islands and areas blocked by land.

Several Maritime authorities will also transmit safety related information using land based AIS networks. These are messages that will contain information about sudden threats in fairways, navigational warnings, meteorological data, etc. Meteorological information will also be transmitted in real-time from certain strategic positions along coastlines. These

broadcasts will contain information such as wind speed, wind direction, water level, temperature, currents, and tides.

AIS transponders will transmit the following data that can be received from your unit:

Static Information	Dynamic Information	Voyage related Information
Name	Position	Destination
Type of ship	Speed Over Ground	Depth
Call sign	Course Over Ground	ETA
MMSI number	Rate Of Turn	Navigational Status
IMO number	Heading	Size

Note: Some ships may not have properly programmed their AIS transponders and parts of the above-mentioned information can be missing.