

R3 AIS

Vessel Transponder for Universal AIS



The International Maritime Organisation (IMO) has mandated the use of Automatic Identification System (AIS) as part of the carriage requirement for ships in accordance with SOLAS Chapter V, regulation 19. (In force from July 1st 2002.)

The implementation of this system will substantially enhance safety at sea, as well as giving the Officer On Watch (OOV) onboard ships and the Vessel Traffic Services (VTS) operators improved situation awareness and collision avoidance.

The AIS is based upon a technology called **Self-Organised Time Division Multiple Access – SOTDMA** which allows for seamless operation worldwide. Saab TransponderTech has several years of experience in designing and manufacturing transponders based on SOTDMA technology. Our products fully comply with the international standards for AIS.

The R3 AIS Vessel Transponder has the following main features:

- ✦ Broadcast of Dynamic, Static and Voyage related information.
- ✦ Generation of AIS Long Range reply over Inmarsat C.
- ✦ Channel management capability for areas without access to the worldwide allocated AIS frequencies.
- ✦ Interface for connection to ship sensors e.g. Gyro, Rate of Turn, ECDIS, ECS, Radar.
- ✦ Graphic day and night display.
- ✦ Radar like display presenting 20 vessels in vicinity of own ship.
- ✦ Situation display with capability to view vessels in the most interesting sectors.
- ✦ Messaging display for generation and presentation of safely related text messages.
- ✦ Set-up display.
- ✦ Three channel VHF transceiver, (one transmitter, three receivers).
- ✦ 12 channel differential backup GPS.

Optional

- ✦ DGNSS capability (New DGNSS standard).
- ✦ Mounting Cassette for easy installation.

The AIS Transponder consists of radio transceiver unit, GPS receiver, controller unit and a Multiplexer-Key-board-and-Display (MKD) Unit.

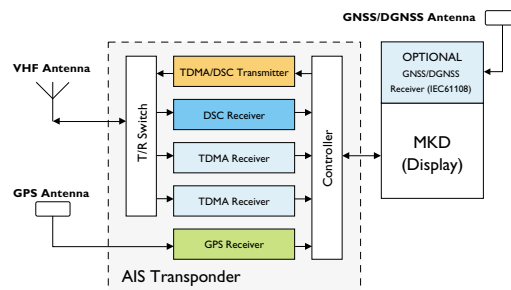
The transceiver contains three independent VHF receivers; two TDMA tunable receivers, one DSC receiver and one transmitter, which alternate its transmissions between the two operating TDMA channels. The transmitter can also be used to reply a DSC interrogation (ITU-R M.825-3, Annex 1).

The internal GPS receiver provides mainly accurate time synchronisation. It can also be used as a back-up source of Ships Speed-Over-Ground (SOG), Course-Over-Ground (COG) and Position information in case of failure of main sensors.



The controller creates and schedules data packets for transmission based on **Dynamic, Static and Voyage related** data. The messages sent out contains for example information about the Ship's name, call sign, position, heading, COG, SOG, rate-of-turn. It can also read and decode received data packets and output those for presentation on the MKD or external systems, such as Electronic Chart Systems (ECS/ECDIS) or Automatic Radar Plotting Aids (ARPA) systems.

The MKD are the interface to sensors (Gyro, GNSS, Logg etc.), Long-Range system and external presentation system.



It have also a User friendly interface for sending/receiving safety related messages, plotting of other ships on a radar like display (20 vessels), displaying informations about other vessels, sector vice in different bearings.

The MKD can be updated with a (optional) smart antenna to act as combined type approved GNSS unit (SOLAS Chapter V) and AIS display.

All ships within VHF range, equipped with an AIS transponder, can receive transmitted messages from other ships and plot the position of the ships with its speed, name, call sign, heading, course over ground etc. on the MKD and/or external plotting aids. This means that every ship within VHF radio coverage may be automatically plotted on the bridge. Differential corrections for enhanced GPS accuracy can be obtained from shore based stations, via the same AIS datalink, and from ship mounted beacon receivers.

Imagine the improvement in control, surveillance and safety...

A lot of companies have today interfaced their products (e.g. radar, ECDIS or ECS) to our transponders: However, companies implementing interface to our product increase constantly, so please visit our homepage at www.transpondertech.se for latest updated list of companies.

Physical		Electrical Interfaces		Standards IMO Performance Standard for AIS (MSC.74(69) Annex 3) ITU-R Recommendation for AIS (ITU-R M.1371-1) IEC Standard for Class A Shipborne Mobile Equipment IEC 61993-2 Draft IALA Recommendation on Technical Clarifications of Recommendation ITU-R M.1371-1, as applicable Draft IALA Guidelines on AIS, as applicable IEC 945 CE Approved Membership Organisations 
<i>Transponder:</i>		8 Data Ports	RS422	
Size W x H x L	152 x 88 x 210 mm	GPS antenna connector	(IEC 61162-1/2, NMEA-0183)	
Weight	2.8 kg	VHF radio antenna connector	TNC female (50 Ω)	
<i>Keyboard and Display:</i>		VHF radio antenna connector	BNC female (50 Ω)	
Size W x H x L	64 x 145 x 271 mm (Depth flush mounted 24.5 mm to wall)	Power & Data interfaces to be connected on rail terminals.		
Weight	1.3 kg	VHF Transceiver		
Power		Frequency	136 - 174 MHz	
Input	24 V DC / 1.0 Amp at 24 V	Channel bandwidth	25/12.5 kHz at 9 600 bps	
GPS Receiver <i>(internal back up)</i>		Channel separation	12.5 kHz	
Receiver	12 ch Differential	Output power	2/12.5 W (±20%)	
Frequency	L1, C/A code (SPS)	Bit rate	9600 bps	
Update Rate	Once per/sec, continuously	Interval between position reports	1-180 sec	
Accuracy		Modulation	GMSK/FM	
Position 50-100 m	w/o DGPS (SA on)	One transmitter		
Position 1-5 m	w DGPS	Three receivers		

Specifications subject to change without notice.

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