

# SAAB TRANSPONDERTECH

## AIS SOLUTIONS



SAFETY  
NAVIGATION  
AWARENESS



[www.transpondertech.se](http://www.transpondertech.se)



**SAAB**



Saab TransponderTech has more than 10 years of experience in developing, manufacturing and supporting marine and airborne transponder solutions.

**Saab TransponderTech is the leading supplier to the world market of front-edge AIS solutions for maritime and aviation applications. Being a fully owned subsidiary of the Saab Corporation in Sweden, we are building on 75 years of experience in avionics, space, defence and high-end commercial applications.**

Our product portfolio includes certified mobile AIS products for ships and airworthy versions for aircraft, DGPS navigation products, AIS base stations including radio networks, backbone server networks and display systems for maritime administrations and port authorities.

Our personnel have broad experience in system design, technical real-time systems, radio design, data communication and software development, which enable us to deliver the most advanced products and systems in the marketplace.

We have now supplied more than 10,000 mobile AIS systems world-wide and installed AIS base station systems in more than 30 countries. These are supported by our global network of Service Stations. For avionics customers we can offer direct 24/7 support via resources within the Saab Aircraft network.

Some 50,000 ships around the world have installed AIS transponders and the number is growing steadily. In addition to this, a large number of ports and maritime authorities are operating either a smaller number of AIS base stations or more comprehensive networks of AIS base stations. This will attract new user groups to AIS.

**The AIS implementation will play an important role in enhancing safety and security at sea, in ports and in coastal areas.**



### Ship-to-shore

AIS base stations are being established to monitor the movement of vessels through the area. These stations may simply monitor AIS transmissions from ships passing by, or may actively interrogate vessels via the AIS channels, requesting data such as identification, destination, ETA, type of cargo and other information. Base stations can also be used for

### What is AIS?

AIS is an automatic broadcast transponder system through which ships, helicopters or aircraft continuously transmit their identity, position, (altitude), course, speed and other data to all other ships, aircraft and shore side base stations in its vicinity, on a common VHF radio channel. The unique communications scheme in AIS allows these data transmissions to take place independently, without the need for a master controller. Received data can be stored and displayed in various ways on the AIS equipment.

AIS is designed for the following applications:

- Ship-to-ship mode for enhancing safety at sea
- Ship-to-shore as a means for authorities and other users to obtain information about a ship and its cargo
- Traffic management when integrated with a Vessel Traffic System (VTS)
- Search and Rescue (SAR) operations, which includes the use of special airborne AIS systems

### Ship-to-ship data exchange

The primary operating mode for AIS will be autonomous ship-to-ship reporting. Each ship transmits its data to all other AIS-equipped ships within VHF range. Position and other data are fed automatically from the ship's sensors into the AIS system, where the data is formatted and transmitted in a short data burst on one of two global VHF channels. When received by other ships, the data is decoded and displayed to the officer on watch, who can view AIS reports from all other AIS-equipped ships within range. AIS messages are automatically transmitted every few seconds, to keep the information up to date.

shore-to-ship transmissions, e.g. to send notices to mariners, hydrographic information and local weather forecasts. Multiple AIS base stations and repeaters may be networked for extended coverage and functionality.

The AIS technology enables port authorities and maritime administrations to monitor the movement of hazardous cargoes and to control commercial fishing operations in their territorial waters. AIS data can be logged automatically for playback when investigating an accident, oil spill or other disaster or event. AIS will also be a useful tool in search and rescue (SAR) operations, allowing SAR coordinators to monitor the movements of all surface ships, aircraft and helicopters involved in the rescue operation.

### Traffic management via AIS/VTS

AIS systems are often integrated with shore-based Vessel Traffic Systems (VTS). In this scenario AIS provides a powerful tool for monitoring and controlling the movement of vessels through restricted harbours and waterways. The AIS data can be displayed on an electronic chart background for a visual representation of ship movement and/or as an AIS overlay on the radar picture.

### Search and Rescue

AIS is an ideal tool for SAR and other marine avionics operations. AIS base stations, helicopters equipped with special airborne AIS and ships can coordinate their efforts more efficiently with AIS. Saab is the world leader in airworthy AIS solutions. **The automatic update of all AIS information provides an excellent tool for situation awareness in the aircraft or helicopter.**

### The Saab R4 Ship's AIS system

**The SAAB R4 AIS vessel transponder is unique in terms of reliability, cost effectiveness and versatility. It has all applicable type approvals and is sold with a valid license for the SOTDMA technology. Our network of service and support partners ensures assistance to our customers in all major ports around the world. Saab AIS is the obvious choice for fleet operators, mariners and maritime authorities worldwide.**

### The mariner's preferred choice

AIS products from SAAB are specifically designed to support the mariner in mission-critical decision making. The R4 Class A transponder will satisfy all carriage requirements, but more importantly it will provide better situation awareness to the officer on watch. In the smaller vessel, the unique simplicity and versatility of the man-machine interface will allow the operator to carry out all important tasks required to operate the AIS system, using the multipurpose display unit only. In the integrated

bridge system, the R4 will feed reliable data to virtually any electronic chart system and/or radar, and thus vastly improve the quality of the information presented. Predefined safety-related text messages will assist in quickly notifying other ships and VTS stations in distress situations. Furthermore, the R4 vessel transponder offers unprecedented VHF radio coverage, thus allowing the mariner to see further ahead.

### The ship owner's preferred choice

When making a vendor selection for AIS, product reliability is a key decision criterion. There have already been cases where authorities have forced ships to stay moored due to a malfunctioning AIS Transponder, resulting in tremendous cost to the operator. At Saab, we are well aware of this fact and have designed our products to the highest quality standards. In the unlikely event of a system failure, all users of SAAB AIS technology supplied by SAAB or one of our OEM partners will have access to our comprehensive network of support partners worldwide.



### The Saab R4 DGPS and GPS systems

The R4 navigation products are IMO-, Wheelmark and US Coast Guard-compliant and can be installed as either stand-alone Navigation Systems or as additions to existing Saab AIS systems. The navigation products from Saab are self-monitoring and extremely user friendly. They perform continuous RAIM (Receiver Autonomous Integrity Monitoring) calculations. This allows the Officer Of the

Watch (OOW) to set the required navigation accuracy for any stage of the journey and the R4 Navigation System will give continuous feedback on whether the accuracy requirement is being met.

The system consists of a Control and Display unit, similar to the R4 AIS and a separate DGPS or GPS receiver unit. Differential GPS is achieved either via IALA beacons or satellite based corrections (WAAS, EGNOS etc.)

### The Saab R4A Airborne AIS system

SAAB supplies transponders for installation in aircraft and helicopters, with different levels of integration to existing avionic systems or separate control and display systems. Benefits for the crew include enhanced SAR operations, easy surveillance, automatic tracking, improved situation awareness and shore-based mission control.



The R4A AIS Transponder is an ITU-R M.1371-1-based SAR AIS transponder can also be used for tactical communications. It can operate either in normal AIS mode, as a SAR station or in one of several tactical modes, allowing tactical communications on separate channels.

Options include Secure, i.e. encryption of data transmitted on tactical channels, extended DSC support and support for ARINC 429 messages. It can also be set in Receive-only (Silent) mode.

The R4A was developed in accordance with RTCA 178B level D to ensure the quality and reliability of the operation and possibilities to interconnect with other systems.

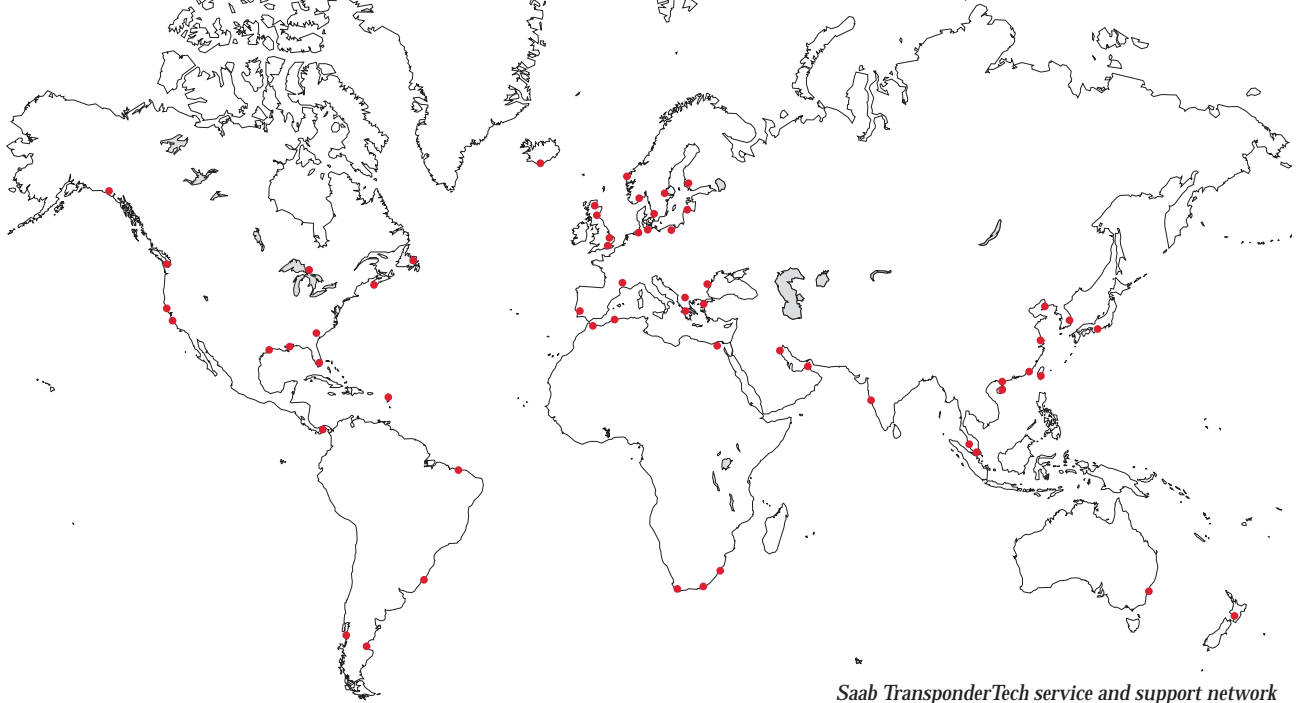
**The R4A is Qualified to DO160D categories for "Helicopter" and "Fixed wing, Turbojet and Turbofan (subsonic and supersonic)"** in conjunction with "Fuselage" and "Instrument Panel, console and Equipment Rack". This means that the transponder can be installed in most compartments of an aircraft.

R4A Airborne AIS Transponder applications include:

- Monitoring of Surface Traffic. Tracking of different AIS equipped vessels.
- Maritime Surveillance/Coast Guard Patrol. When combined with radar target information, coast guards can find vessels without AIS or faulty AIS parameters, thus increasing security.
- Search and Rescue (SAR); helps locate vessels in distress.
- Homing for Maritime Helicopter Operations; find the ship or offshore platform that the helicopter is supposed to land on.
- Fleet Management; to keep track of a fleet of helicopters serving oil-rigs, for example.
- Mission Control and Coordination; helps in SAR operations involving several helicopters as well as military operations.



*Saab R4A airborne AIS transponder*



*Saab TransponderTech service and support network*

## Service and Support

### Ship's products

Saab TransponderTech has established a network of some 60 Service stations in 30 countries around the world. Details with contact information can be found on our website [www.transpondertech.se](http://www.transpondertech.se). Most of these service stations stock spares and products, for immediate replacement onboard. If not they can usually get spares within 24 hours.

Most of our Service Stations are also authorised Saab TransponderTech Dealers who can help replace substandard

equipment with our type-approved solutions, at short notice.

Saab TransponderTech has central warehouses in Sweden and Virginia, USA.

### Airborne products

Support is provided from our own locations in Sweden and USA and through a number of Saab Aircraft Service Representatives.

Special AOG arrangements can be agreed from case to case.

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