R30 AIS
Base Station Transponder

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 (OOW) 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 R30 AIS Base Station transponder has the following main features:

- Broadcast of Base Station report message.
- Channel management capability for areas without access to the worldwide allocated AIS frequencies (Not DSC channel management). Channel assignment for three areas. Gives the possibility to change transmission frequencies on all AIS Vessel transponders autonomously within three different geographical areas. The change of frequency functionality can also be controlled from an external application.
- Point to point or broadcast text message (SMS) functionality.
- Binary message functionality for special applications.
- Possibility to increase the reporting rate on vessel stations (assigned mode). Assignment of vessel, aids to navigation or airborne transponders into assigned transmission schedules.
- FATDMA (Fixed Access Time Dvision Multiple Access) communication functionality that makes the AIS Base Station transponder transmit at specified intervals for secondary synchronization.
- Reservation of timeslots for two adjacent AIS Base Station transponders.
- Easy configuration and status check by windows based Configuration software.
- Two channel VHF transceiver, (one transmitter, two receivers).
- Selectable transmit and receiving modes.
- With a so called VTS Surveillance Footprint the AIS Base Station transponder can also broadcast targets obtained by radars or other AIS Base Station transponders. An input telegram with up to 7 targets/per telegram can be broadcasted on the data link, enabling transponders equipped vessels to monitor radar targets or AIS targets obtained by the shore station that are out of their own coverage.
- 12 channel differential GPS.

Optional

- Possibility for hot standby functionality.
- Possibility for separated receive and transmit antenna locations.
- Possibility for remote configuration and monitoring.
- Broadcast of differential corrections via the VHF data link to vessel transponders.
- The AIS Base Station transponder can also be configured to re-broadcast all messages received over the data link at next available time slot like a repeater. This functionality is useful if a relay of position messages is desired at e.g. positions where extended coverage is needed.

The R30 AIS Base Station transponder is a standard 19" rack module that includes the transponder, power supply converter and optionally DGPS Reference Station. With a reference station installed, the base station transponder broadcast differential corrections to transponders within VHF range. This transponder is intended for land installations, either as stand-alone units or in networks.
The R30 AIS Base Station transponder consists of radio transceiver unit, GPS-receiver, controller unit.

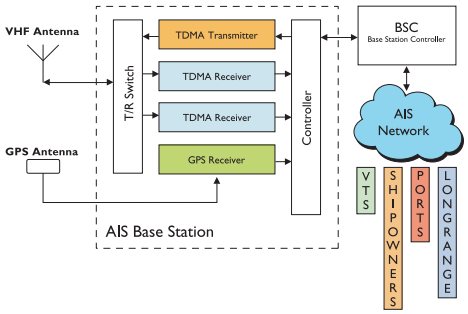
The transceiver contains two independent VHF receivers; two TDMA tunable receivers, which alternate its transmissions between the two operating TDMA channels.
The internal GPS-receiver provides mainly accurate time synchronisation.

The controller creates and schedules data packets for transmission based on Base Station report message data.

The messages sent out contains for example information about the Base Stations id, position, UTC time for synchronization and information about DGNSS correction type and source. It can also read and decode received data packets and output those for presentation on a external systems, such as Vessel traffic Service (VTS) or Electronic Chart Systems (ECS ECDIS).

The R30 AIS Base Station transponder will receive all data from AIS equipped vessel traveling within the coverage of the base station site. This will give the competent authority or other users the possibility to monitor and follow information from the ship movements along a littoral states coastline.

Imagine the improvement in control, surveillance and safety…



The R30 AIS Base Station and BL-10 Base Station Controller

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

Base Station Transponder:
Size W x H x D: 482.6 x 176.3 x 363 mm
Rack Standard: 19", 4 H
Weight: 8.6 kg

Power

Input (main) 85–264 V AC, 47–440 Hz
Back up 12 V DC
Power consumption: 25 W average/50 W peak

GPS Receiver

Receiver 12 ch Differential
Frequency L1, C/A code (SPS)
Update Rate Once per/sec, continuously
This receiver is used for time signal purpose

Electrical Interfaces

4 Data Ports RS232/422/485
Bit rate ≤115 kbit/sec

Electrical Interfaces continued

Display port (IEC 61162-1/2, NMEA-0183)
Aux Port
Configuration Port
DGPS Port (OPTIONAL)

GPS antenna connector TNC female (50 Ω)
VHF antenna connector N female (50 Ω)
Data ports 9 pin D-Sub Male
Power 3 pin T65

VHF Transceiver

Frequency 136–174 MHz
Channel bandwidth 25 kHz at 9600 bps
Channel separation 12.5 kHz
Output power 2/12.5 W (±20%)
Bit rate 9600 bps
Interval between position reports 1–60 sec
Modulation GMSK/FM
One transmitter
Two receivers

Applicable Standards

IMO Performance Standard for AIS (MSC.74(69) Annex 3)
ITU-R Recommendation for AIS (ITU-R M.1371-1)
IALA Recommendation on Technical Clarifications of Recommendation ITU-R M.1371-1, as applicable
IALA Technical Guidelines on AIS, as applicable
IEC 60950 (All nations)

Approvals

CE Approved
EN 300113
OFTA

Membership Organisations

Specifications subject to change without notice.

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