

R40

AIS Base Station



The R40 Base Station from Saab TransponderTech is the main component of a Physical AIS Shore Station as defined by IALA. Its main purpose is to receive data from and transmit data to AIS equipped vessels, travelling within the coverage area of the Base Station. This will give the possibility to monitor and follow ship movements in an efficient way. The R40 is installed either stand-alone or integrated in a network, such as the market leading Saab AIS Network.



- Type approved by BSH according to IEC 62320-1 test specification for AIS Base Stations
- Version compliant to IALA Recommendation A-124 is also available
- Third generation of AIS Base Station from Saab using the latest technology
- Excellent performance and reliability through joint development with airborne products
- Supports fully redundant configurations by advanced embedded Hot Standby functionality
- Full remote configuration and monitoring
- Advanced Windows based configuration and monitoring tool software included
- Selected by the majority of Maritime administrations and Port Operators through out the world

The R40 Base Station main characteristics

- Outstanding receiver sensitivity, better than -111 dBm
- Embedded Base Station Controller, enhancing functionality and flexibility
- MTBF >100 000 hours (derived from field experience and installations)
- Reception of all applicable AIS messages including Class B reports



SAAB

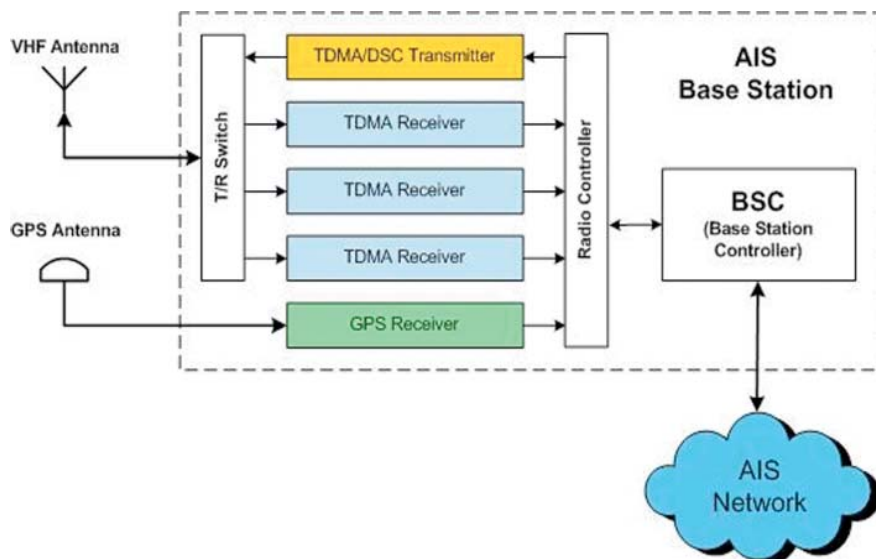
- Transmission of AIS messages
- Autonomous channel management capability for different geographical areas
- Hot Standby functionality
- Repeater functionality including repeat filtering
- Receive only mode
- Built in support for automatic transmission of AtoN reports (message 21) incl. information on offshore obstacles, e.g. oil platforms, wind farms etc.
- Special periodic repeat functionality of received AtoN reports
- Advanced evaluation of the AIS Data Link status such as SNR, RSSI, link load etc.
- Channel management via DSC



Design

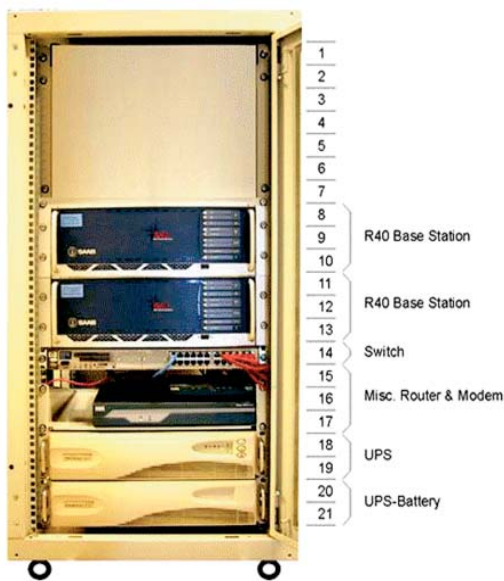
The R40 main parts are the VHF transceiver, GPS receiver, Radio Controller and a Base Station Controller. The transceiver unit contains three independent VHF receivers and one common transmitter which alternates its transmissions between the used chan-

nels. The internal GPS receiver's main task is to provide accurate time synchronisation. Several external interfaces are available for monitoring and control of the R40, such as RS232, RS422 and Ethernet.



Typical site installation

The R40 is designed for the highest availability and reliability, resulting in high performance and long trouble-free operation. Additionally it is possible to connect two R40 in a Hot Standby configuration without adding any extra hardware. Several important parameters are continuously evaluated in order to monitor the status of the units. This includes for example VSWR and VHF transmission data. The stand by unit immediately takes over if a fault is discovered. The picture below shows a typical Hot Standby installation on a Base Station Site.



Optional functionality

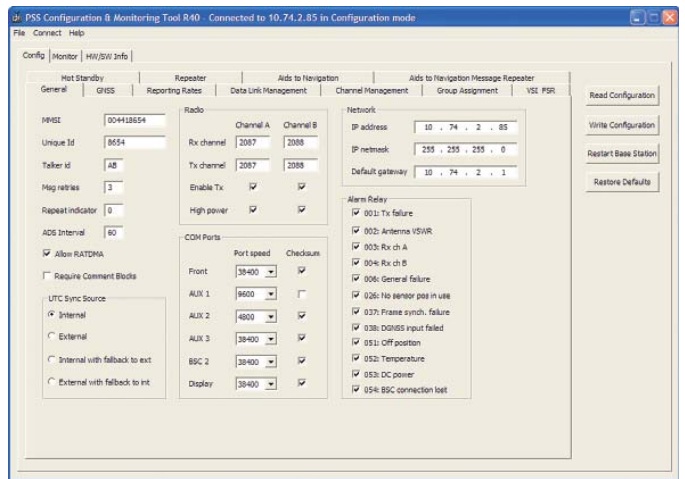
- Separate receive and transmit antenna interfaces
- Built in Reference GPS receiver, makes it possible to internally generate differential GPS corrections that can be transmitted on the AIS channels
- Third AIS receiver available for local use and special applications
- 1 PPS input for external timing

PSS Configuration & Monitoring Tool R40

The R40 is delivered with an advanced Windows based Configuration & Monitoring tool, PSS Tool. It is used for monitoring and configuration of the R40 AIS Base Station. Examples of operations performed by PSS Tool are configuration, upload of new software and monitoring of base station status. The PSS-tool can be used locally connected directly to the R40 or remotely via a TCP/IP network.

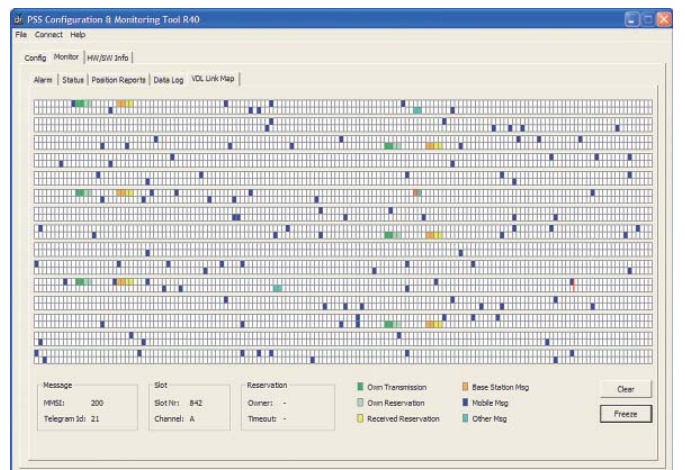
General Configuration

The picture below displays the main configuration page in PSS Tool which is used to set the basic configuration of the R40 Base Station.




VDL Link Map Viewer

PSS Tool provides a graphical view of the AIS VDL Link displaying sent/received messages and reservations. The user can select specific slots to view detailed information on what unit is using the slot and the type of message.



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<p>Physical Size W x H x D: 485x133x415 (mm) Rack Standard: 19", 3H Weight: 10 kg, (21,5 lbs)</p> <p>Power: Input (main) 100-240 VAC, 50-60 Hz Back-up: 24 VDC Power Consumption: AC 35 W (80 W peak) 24 VDC, 17 W (66 W peak)</p> <p>GPS Receiver: Receiver: 12 channels Frequency: L1 (1575 MHz) Update Rate: 1 Hz</p> <p>Electrical Interfaces 4 RS232 Data Ports (9-pin DSUB male) 2 RS422 Data Ports (9-pin DSUB male) Digital IO for alarm handling Ethernet (RJ-45) External GPS 1 PPS input GPS 50 ohm antenna connector (TNC female) VHF 50 ohm antenna connector (N female)</p> <p>Specification subject to change without notice</p>	<p>VHF Transceiver Frequency: 156-162.5 MHz Channel Bandwidth: Selectable 25/12.5 kHz Output power: 2/12.5 W ($\pm 20\%$) Bit Rate: 9600 bps Modulation: GMSK/FM One transmitter Three receivers Sensitivity < -111 dBm</p> <p>Environmental data Temperature: -15 °C to +55 °C (Operating) -55 °C to +85 °C (Storage)</p> <p>Applicable standards IEC 62320-1 AIS Base Stations IALA recommendation on AIS Shore Stations (A-124) ITU-R recommendation for AIS (ITU-R M.1371-1, 1371-2) IALA Technical Clarifications on ITU R M.1371 IMO Performance Standards for AIS (MSC 74 (69) Annex 3) ETSI Land Mobile Service standard (ETS 300 113)</p>	<p>IEC on Electrical Safety (IEC 60 950) IC (Industry Canada) on Maritime Radio (RSS-182) FCC part 15 subpart B regulations</p> <p>Type approvals BSH IEC 62320-1 R&TTE Directive 1999/5/C FCC part 15 subpart B</p> <p>Membership Organizations</p> 
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