AIS 3410
Automatic Identification System
"Unknown vessel on my starboard bow..." radio communications like this are a commonplace occurrence for the officer on watch during night time, especially in coastal waters.

The weak link in the past generations of ARPA electronics is the inability to identify a single radar target when multiple contacts are being tracked and a visual identification is impossible.

To identify a target by the means of VHF contains a lot of guess work with no guarantee for success. It leads to confusion and is an important factor for many collisions and near-collisions. This uncertainty belongs now to the past. The Automatic Identification System AIS provides now the missing link to the collision avoidance electronics.

It supports the officer on watch by providing detailed target and traffic information in real time to be displayed on navigation displays.

SAM Electronics as the leading system integrator was one of the first companies implementing AIS information in its navigation equipment. Since the first trials in 1997 SAM Electronics has developed not only a fully IMO compliant AIS transponder but also the full periphery for the display and operation of AIS on versatile navigation equipment.

In 2009 SAM Electronics introduce the second generation of AIS class A transponder onto market. The new **AIS 3410** is developed based on the experience of several thousand installed AIS transponder in the last 7 years. It is compliant with the latest performance standard for Automatic Identification Systems (AIS) IEC 61993 and completely exchangeable to its predecessor UAIS DEBEG 3400. The smaller dimensions and lower weight of the **AIS 3410** transponder lead to a compact design and simplify the installation of the equipment. Additionally a Low Power Mode with a transmitting power of 1 W for tanker according to TSG (Tanker Safety Guide) and ISGOTT (International Safety Guide for Oil Tankers and Terminal) is implemented.
The **AIS 3410** is a unique equipment which supports the officer on watch by providing detailed target and traffic information. To optimise the benefits of the AIS the information will be displayed on the main navigation equipment, the RADARPILOT 1x00 series, the RADARPILOT 9x00 ARPA series and the CHARTPILOT 93xx / 11xx series.

The transponder transmits own ship’s data like position, course, speed and identification and receives the same information from other AIS transponders within VHF range.

The officer on watch will have not only accurate course, speed and distance in real time of each vessel around, but also ship’s identification and if available rate of turn.

As well as other vessels also VTS stations and aids to navigation like buoys and light vessels can be equipped with a transponder.

Even for shore based stations the **AIS 3410** offers possibilities e.g. for fleet management by providing an interface to the long range communication, allowing the transmission of ship’s own data via SATCOM.

The **AIS 3410** is also type approved as GPS position sensor, i.e. it can be connected to the navigation system as back-up GPS.

**AIS 3410** is completely exchangeable to its predecessor UAIS DEBEG 3400
- Easier to install due to smaller dimensions and lower weight
- Low Power Mode with 1 W for tanker according Tanker Safety Guide (TSG) and International Safety Guide for Oil Tankers and Terminal (ISGOTT)

**User Benefits**

The AIS 3410 works full autonomously and allows the nautical officer to:
- Identify each radar target by its correlated AIS identification
- Merge AIS target with ARPA target data (on request)
- Contact other vessels directly via DSC or VHF by using the call sign or MMSI number
- Receive an instant overview of the traffic situation and manoeuvres of other vessels
- Coordinate actions of collision avoidance without delay
- Concentrate on navigation and collision avoidance in coastal waters, because additional workload due to communication, VHF messages to the VTS at the reporting points and other vessels is done by the AIS automatically
- Get detailed target information even when no radar contact is available due to restricted environmental conditions
- Compensate radar problems like target swopping or inaccurate heading information
- Reach automatically aids to navigation for the area where the vessel is operating
- Get real time ROT-information
The **AIS 3410** operates in the SOTDMA (Self Organised Time Division Multiple Access) mode, which means the transponder is organising its transmissions autonomously by means of time slots based on a common reference system.

Using the UTC time signal transmitted by GPS as a reference a frame of one minute length is divided in 2225 single time slots. The transmission of one AIS data telegram should take normally one time slot. The maximum number of slots to be occupied for longer telegrams is five.

For initialisation of its VHF transmissions the AIS transponder is monitoring the time slots occupied by other transponder and starts transmitting in a free slot. The process of selecting the time slot and entering the system is fully automatically with no operator action necessary.

The transponder is operating normally in the full autonomous broadcast mode, but can be switched to assigned and polling mode. The latter two modes will be activated by a competent authority responsible for traffic monitoring.
The **AIS 3410** is suitable for integration into bridge systems or for retrofit. Depending on the installed equipment different options and features are available. The flexible system architecture allows it to customise the installation depending on the needs of our customers.

In an Integrated Bridge System the display of the AIS data and the operation of the transponder takes place at the navigation workplace. This can be the display of the RADARPILLOT 1x00, the RADARPILLOT 9x00 ARPA or the CHARTPILOT 93xx / 11xx series. The information will be available on all installed radar and ECDIS displays.

AIS targets will be displayed and treated like ARPA targets using functions as acquired target and display data. If an AIS target is correlating with an ARPA target, both targets will be merged to avoid clutter on the PPI.

All systems offer user friendly and self explaining user interfaces to operate the transponder without additional workload.

All displays are type approved by BSH as Minimum Keyboard Display.
**AIS 3410**

**Technical Data**

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**Area for cable inlet**

**Grounding M6**

**Cover not shown**

**Space required for service**

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### General
- Housing IP22
- Operating temp.: -15...+55°C (DIN EN 60945)
- Humidity: Max. 95% at 40°C
- Voltage (supply): 24 VDC ±20%
  - -> 19.2 ... 28.8 V (DIN EN 60945)
- Current (consumer): Typ. 0.76 A at 24 V, max. 2.5 A (momentarily during transmission)

### GPS Receiver
- Receiver: Single board receiver
- Channels: 16, parallel
- Time to first fix:
  - Hot start <3,5 s
  - Warm start 33 s
  - Cold start 36 s
- Navigation modes: 3-D and 2-D
- Accuracy: position 2.5 m CEP

### VHF Transceiver
- The Transceiver corresponds to EN 61993-2
- Transmitting power: 1/2/12.5 W
- Input sensitivity: -107 dBm (AIS and DSC)