AIS 300S

KONGSBERG

Automatic Identification System - special operations

The AIS 300S is an AIS Class A receiver built to support special operations. It utilises the AIS technology beyond standard AIS functionality and is a powerful tool for maritime operations. It can be configured to output a set of virtual AIS objects that can describe an area of operation, both dynamic and static. This area of operation can be the rectangle constituting the streamer area behind a seismic vessel or a safety area around an offshore operation. The implementation is based on relevant international standards ensuring compatibility with existing presentation systems.

AIS for special operations

In some operations, the activity is below the surface, such as for operations involving remotely operated underwater vehicles (ROV), dredgers for excavation or seismic streamer operations. This constitutes an operational problem and there are risks related to some main issues:

- Vessels coming in conflict with the operation and damage to vessels or equipment because of this
- Damage to underwater equipment in the operation area
- Unwanted interference with the maritime operation resulting in financial loss because of delays or mission abort

Even if all vessels are carrying standard AIS Class A equipment, AIS capabilities can be used to better support navigation in areas where special operations are taking place. Complex operations such as coordinated lifting or towing activities, are also target applications for the AIS 300S.

An effective way to warn vessels in the Area Of Responsibility (AOR) about actual movements below the surface or inside an invisible AOR, is by use of AIS and a virtual approach. On-board the seismic vessel, tug, dredger or the vessel operating the ROV, there are control/status systems which keep track of the underwater equipment. Information, such as position of these submerged objects, can be transferred to the AIS system and embedded in the AIS message used for virtual AIS transmission.

For a seismic operation the spread might be described by several virtual AIS objects. Vessels receiving the transmissions will get a real-time update of underwater movements and use this information in coordinated activities or to avoid the moving structure.

On a presentation system, such as ECDIS, RADAR or dedicated decision support display, the virtual AIS information will appear like an icon with an attached text string. By selecting the icon, more information will be available and the virtual AIS target will hence be a carrier of information. Further, AIS can also be used as data carrier for distribution of important operational data such as weather data, hydrographic information and mooring tension values.

Vessel specific notifications

The AIS 300S is delivered with a feature for transmission of automatic notifications. Area filters can be applied to the AIS data stream. If a vessel enters the area, an addressed user configurable text message will be transmitted to the vessel. The message can for example contain information about the on-going operation. The intention is to reduce the amount of VHF voice communication and release more time for the operators to focus on the operation.

FEATURES

- Automatic transmission of warnings and notifications related to a special operation
- Virtual marking of an area of operations, such as:
  * Seismic surveying
  * Towing and lifting
  * Dredging
  * Remotely operated underwater vehicles (ROV)
- Transmits VHF Data Link commands to all AIS receivers or specific vessels in the operation area
- Distribution of special messages and operational specific data (meteorological data and hydrographic information, mooring line tension etc.)
- Built-in Windows user interface for area configuration
- Sensitivity better than -115 dBm
- Built-in storage capability of AIS raw data
- SNMP v2
- WEB interface for remote configuration and software update
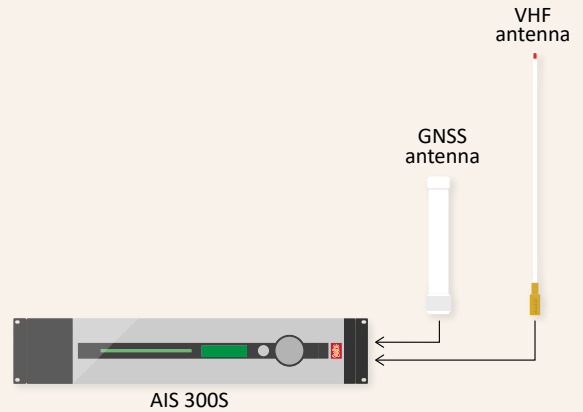
AIS 300S

Technical specifications

AIS 300S

Interfaces
Communication ports	RS-422/RS-232 incl. RTCM input
Message formats	NMEA
LAN	100 Mbps BaseT Ethernet

Radio module
VHF transmitter	12.5 W or 1 W (remote switchable)
VHF antenna	N-connector, 50 ohm
GNSS antenna	N-connector, 50 ohm
Sensitivity	Better than -115 dBm
Bandwidth	25 kHz
Frequencies	156.025 - 162.025 MHz
	Default Ch. 87B (161.975 MHz)
	Default Ch. 88B (162.025 MHz)
Protocol	SOTDMA/RATDMA/ITDMA

Weights and dimensions
AIS 300S Unit	5.2 kg, 89 mm x 485 mm x 345 mm
GPS antenna	0.15 kg, 230 mm x 33 mm
VHF antenna	1.0 kg, 1250 mm

Power specifications
AIS 300S Unit
Input voltage	100 - 240 VAC (50 - 60 Hz)
Power consumption	Average 30 W, peak 55 W
GPS antenna	5 VDC from AIS Unit

### Environmental specifications
Operating temperature range
AIS 300S Unit	-15 °C - +55 °C
GPS antenna	-50 °C - +70 °C
VHF antenna	-55 °C - +70 °C

Humidity
AIS 300S Unit	< 95 % relative, non-condensing
GPS antenna	100 %, hermetically sealed
VHF antenna	100 %, hermetically sealed

Standards and regulations
Environmental	IEC/EN 60945-1:2002 (HW platform)
Electrical safety	IEC/EN 61010-1:2010
Electromagnetic compatibility	IEC/EN 60945:2002
	ETSI/EN 301 489-1 (V1.8.1)
	ETSI/EN 301 489-5 (V1.3.1)
AIS AtoN	IEC 62320-2 (relevant parts of)
Electrical interface	IEC 61162-1:2010/IEC 61162-2:1998
IALA recommendation	A-124
Radio	IEC 61993-2:2012 (relevant parts of)
	ITU-R M. 1371-5
MTBF (hours)	>100.000 (designed to meet)
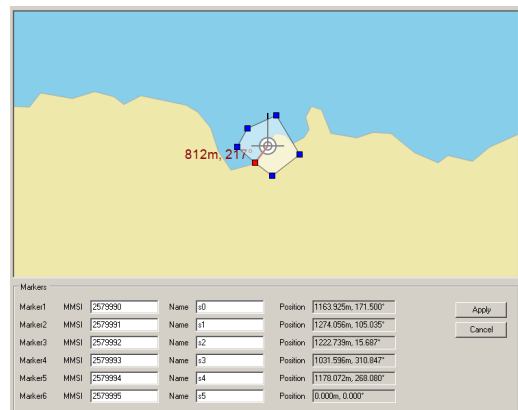
User interface for definition of virtual marking