

ARGOS Surface Beacon

ASB X

User Manual

Version 2.0

March 2011

**SiS Sensoren Instrumente Systeme GmbH
Mühlenkoppel 12
24222 Schwentinental
Germany
<http://www.sis-germany.com>**

Contents

- 1. General Information.....2**
 - 1.1 Description.....2**
 - 1.2 Switch Mode Power Supply.....2**
- 2. Operating Instructions.....3**
 - 2.1 Choosing Batteries for your Application.....3**
 - 2.2 Opening the Housing.....3**
 - 2.3 Insertion of Batteries.....4**
 - 2.4 Replacement of Moisture Absorbent.....4**
- 3. Principle of Operation.....4**
 - 3.1 MBM Operation.....4**
 - 3.3 Admission to the Argos System.....4**
- 4. Appendix.....5**
 - 4.1 Technical Specification.....5**
 - 4.2 Warranty and Support.....5**

List of Figures

- Figure 1: ASB X Dimensions.....2**

1. General Information

1.1 Description

The ASB X consists of a acetal resin (POM) tube closed by end caps.

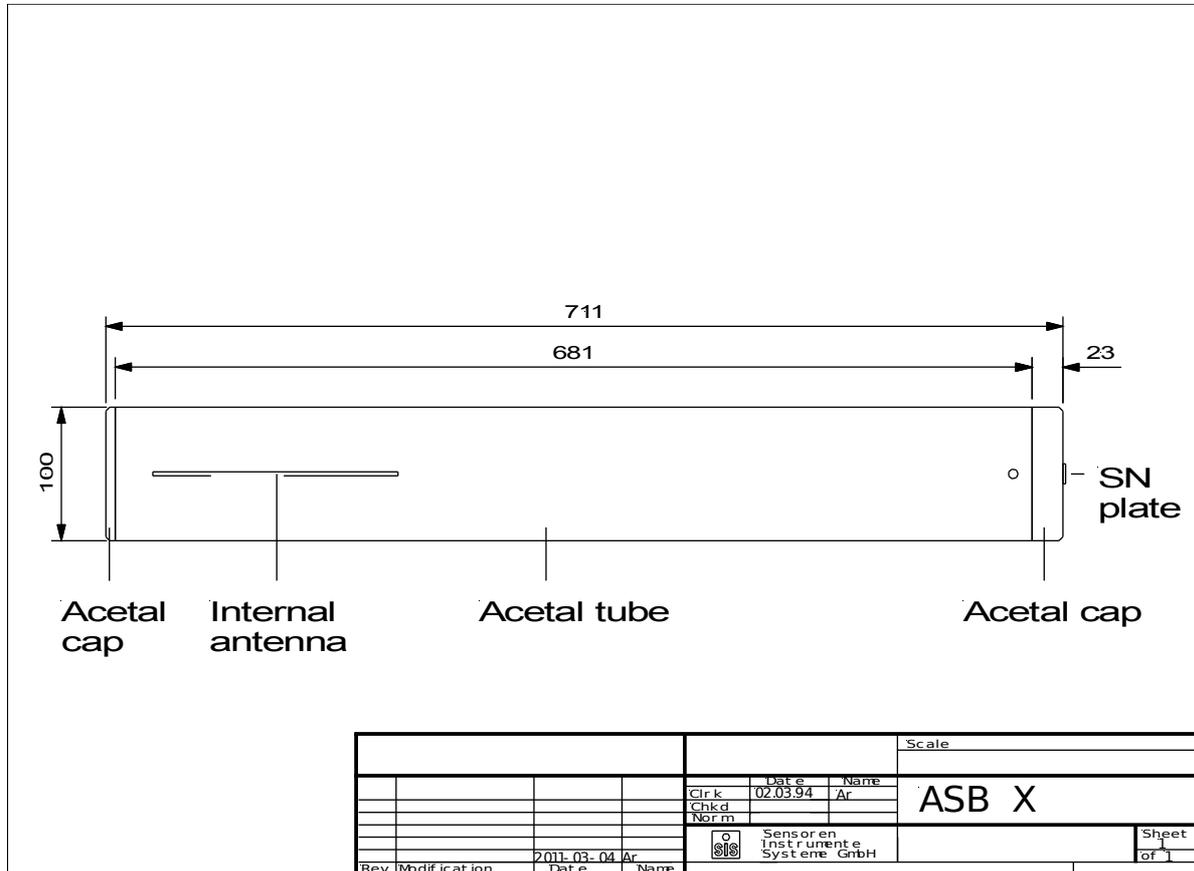


Figure 1: ASB X Dimensions

Inside the housing is a battery holder for two bundles of 5 batteries each in series, the PTT and the antenna. The batteries power the transmitter (PTT) via a switch mode power supply.

The ASB X is for surface applications. If you need a SMM for deep sea moorings please use the SMM 2000 or SMM 6000 X series, or for shallow water up to 500 m depths, use the SMM 500 X.

1.2 Switch Mode Power Supply

The ASB X instruments contain an internal switch mode power supply to allow usage of a wide range of battery types. The supply power is buffered to reduce peak current sourced from the batteries. This allows usage of batteries which can only source low currents and increases operation time by getting higher effective battery capacities.

2. Operating Instructions

2.1 Choosing Batteries for your Application

The cell voltage has to be between 0.8 V and 3.7 V allowing the usage of lithium batteries, alkaline batteries or nickel-metal hydride (NiMH) accumulators as well. For long term moorings in cold environment we recommend to use high quality lithium cells due to their high capacity and low self-discharge rate.

For calculation of battery lifetime use the average power consumption when surfaced. Divide the energy content of the 10 or 5 batteries by the mean power consumption (35 mW) of the beacon. The table shows typical transmission life times for different battery types when using 10 batteries:

Temperature	Li-SOCl ₂	Li-MnO ₂	Alkaline	NiMH
20 °C	557 days	475 days	230 days	30 days
0 °C	550 days	450 days	190 days	28 days
-30 °C	320 days	390 days	not applicable	not applicable

Li-SoCl₂ battery: Saft LSH20, Lithium-thionyl chloride, Size D, Capacity 13 Ah
Li-MnO₂ battery: Saft LM33550, Lithium-manganese dioxide, Size D, Capacity 13 Ah
Alkaline battery: Philips LR20, Green Alkaline, Size D, Capacity 13.2 Ah
NiMH battery: Duracell HR20, Nickel-metal hydride, Size D, Capacity 2.2 Ah

Please halve the times when using only 5 batteries.

The transmission time is reduced by self-discharge during the mooring time. The table shows typical shelf life times (storage time at 20 °C until the battery has 80% of its initial energy) for different battery types.

Li-SOCl ₂	Li-MnO ₂ , Li-SO ₂	Alkaline	NiCd	NiMH
10 – 20 years	10 years	5 - 7 years	80 days	18 - 20 days

NiCd (nickel-cadmium) accumulators are disallowed in the EC but are mentioned for comparison. The self-discharge rate is temperature dependant. With NiMH, the shelf life time is significantly longer at lower temperatures.

NOTE:

Insert only absolute identical cells (manufacturer, type, capacity, age, discharge state).

2.2 Opening the Housing

You open the housing by removing the lower end cap. The cap is fastened by two hexagon socket screws. For opening please screw clockwise thereby turning in the screw into the cap. This paradox solution - screwing in for opening and screwing out for fastening - has the advantage that you won't lose the small screws. When the instrument is opened, screws and end cap build one unit. You then may pull out the cap. When fastening the cap after closing, please note to screw the screws not too tight to avoid stronger stress to the acetal main housing.

The inner part is fastened at the main tube.

2.3 Insertion of Batteries

Don't open the housing by removing the upper cap. Open the housing by removing the lower cap. Put the instrument upside down on the floor and pull out the end cap.

You will now find a PVC disc, take it out and you will see two tubings in a PVC block and one contact pin. Put 5 pieces D type batteries into each tube, oriented with the minus terminal in direction of the antenna. If you want the instrument to operate after insertion of batteries close the housing by insertion of the end cap.

In case you only want to insert batteries but later want to operate, please place the PVC disk for isolation between batteries and cap.

2.4 Replacement of Moisture Absorbent

The printed circuit boards are protected by coating, but condensation of humidity should be avoided. When leaving the factory, the instrument is filled with dry argon gas and a small pack with moisture absorbent is placed in a slot between the battery holder and the at the lower end. We recommend filling with dry gas or replace the moisture absorbent after every opening of the housing. Normally together with battery replacement. With the instrument we deliver some packs with moisture absorbent sealed in a plastic bag and put in a tin.

3. Principle of Operation

3.1 MBM Operation

CLS Service Argos has developed a special service for monitoring the status of the moorings (MBM, Moored Buoy Monitoring). An alarm is generated if the buoy goes adrift. A warning that the watch circle is left will be send to the user by email or fax. A warning is also generated if no signal is received from the beacon. Users always may access data on-line via web interface and Telnet.

3.3 Admission to the Argos System

The user must fill out some forms and forward it to the Argos User Office:

- Argos System Use Agreement
- Service Contract/Order Form

Please see the Argos documentation for detailed information.

4. Appendix

4.1 Technical Specification

Water proof	10 m
Dimensions (l x d)	711 x 100 mm
Mass without batteries	6.7 kg
Displacement	5.6 dm ³
Power Supply	5 or 10 pcs. D cells resp.
Battery Types	NiMH, Alkaline, Lithium or Lithium Thionyl Chloride
Battery cell voltage	0.8 V - 3.7 V
Peak supply current	100 mA
Average power consumption	35 mW
Mooring life (1)	up to 6 months
Transmission life (2)	depending on the used batteries
Transmitter manufacturer	Elta
Transmitter model	HAL2
Output power	33 dBm (2 W)
Message Length (3)	32 bits
Repetition rate (4)	90 seconds
Transmit frequency	401.630 MHz

Notes:

1. Mooring life is limited to about 6 months by biofouling and the used batteries. See chapter 2.1, "Choosing Batteries for your Application", for detailed information about limitation by used batteries.
2. See chapter 2.1, "Choosing Batteries for your Application", for detailed information.
3. The ASB did not send any user data. Therefore, the message length is set to the minimum value of 32 bits. With Elta HAL2 transmitters, a prefix byte (typ. 25 hex, with 20-bit ID only), temperature (°C), supply voltage (mV / 64) and power indication (mV / 4) are send.
4. The default repetition rate is 90 seconds (recommended by Argos). Other rates (e.g. 60 seconds) can be programmed upon request.

4.2 Warranty and Support

SiS warrants this instrument to the original purchaser to be free of defects in material or manufacturing for a period of two years. Liability is limited to repair or replacement of the defective part which will be done without charge if the instrument is returned to our factory prepaid. This warranty does not apply to instruments subjected to misuse or tampering. No responsibility or warranty for consequential damage is included in the sale of this instrument.

SiS - Sensoren Instrumente Systeme GmbH
Mühlenkoppel 12, D-24222 Schwentinental, Germany
Tel.: +49-431-79972-0
Fax: +49-431-79972-11
Email: info@sis-germany.com
WWW: <http://www.sis-germany.com>