



Surf zone application



Scour monitoring



Harbour survey

ASM - IV

This instrument was primarily developed for high resolution measurements bed load concentrations (ocean/river locations). It records a profile of reflections and the dynamic parameters that are created in the measuring plane by solid particles moving in a multiphase current. It provides an independent contribution to the complex questions which arise from the context of transport of solids in the connecting layer between the bottom, the mud layer and the main body of water.

The instrument operates with backscatter infrared sensors (850 nm) embedded in a stainless steel (titanium) rod. The sensors are placed on an active board at a distance of 10 mm. This means that approx. 100 sensors are mounted per meter.

Each sensor consists of an infrared transmitter and a detector. The sample volume to be detected depends on the density of the suspension and can be 10 cm³. The maximum distance of particles to be sampled can be 100 mm max. The sample time for each pair of sensors is 20 µs for 1 second.

Optical day light filters and a non visual light transmitting source prevent interference by other light sources. This makes the instrument suitable for locations like tidal areas with dry periods. The instrument contains three additional sensors.

- An inclinometer for two directions will give the actual angle between ground and the instrument.
- A pressure gauge senses the actual depth of the location of the instrument and it gives information about tides.
- A temperature sensor detects the temperature of the steel housing which is related to the water temperature.

Activation and power supply for the sensors as well as the data transmitter are controlled by a battery powered central unit, sealed-in the head of the instrument. It consists of a microprocessor, a data memory, the additional sensors and the energy supply. An IRDA communication unit and a RS 485 sub connector manage the data transfer between the instrument and a PC, without opening the ASM housing.

The energy consumption of the instrument is very low and < 6 mAs. That means one 9V block alkaline battery will provide the necessary energy for 2 months, assuming a sample rate of 10 measurements every 5 minutes, or the energy for a standby status of approx. 6 months. The capacity of 8MB in the standard model will provide a measuring time of approx. 4 weeks in total, without weakening the battery.

The microprocessor carries out all tasks necessary for control. Incoming data is processed by the microprocessor and stored in the memory.

The software ASMA is needed to communicate with the instrument and analyse the raw data

Specifications

- Measuring method: optical
- Sensors: backscatter infrared sensors (850nm)
Spectral bandwidth 35 nm
- Sensor spacing: 10 mm
- Number of sensors: 100 per meter
- Measuring section: 0.96 m (Type S), 1.44 m (Type N), 1.92 m (Type L)
- Length of instrument: 1.9 m (Type S), 2.4 m (Type N), 2.9 m (Type L)
- Dimensions of the instrument:
 - Sensor area: 30 mm (Type -S, -N), 35mm (Type -L) diameter
 - Head: 57 mm diameter
- Connector type: Subconn MCBH4M
- Measuring frequency: 1 sec. minimum
- Sampling no. rate: 255 samples maximum
- Memory capacity: 8MB
- Measuring range: 50...50,000 mg/l sand (d50=250µm)
5...5,000 mg/l mud (d50=20µm)
0...2000 NTU (FTU) formazin standard
- Energy supplies:
 - Main supply: one alkaline 9 V block battery (minimum)
two lithium 9 V block battery for maximum energy source
 - Memory backup: Lithium 3 V battery
- Weight: 8 kg (Type -S), 9.5 kg (Type -N), 15 kg (Type -L)
- Ambient temperature: -5 +40°C