DST pitch & roll

Data Storage Tag pitch & roll

Overview

Dimensions (diameter x length): 15mm x 46mm Sensors: 2-D tilt (pitch and roll), temperature, pressure (depth) Standard temperature range: -1°C to +40°C Temperature accuracy: +/-0.1°C Depth ranges: 0.1m-30m, 0.1m-50m, 0.1m-100m, 1m-270m, 5m-800m, 5m-1500m, 10m-2000m or 10m-3000m Depth accuracy: +/-0.4% of selected range for 30m to 270m range, +/-0.6% of selected range for 800m to 3000m range Tilt angle pitch & roll: 160° (+/-80°) Tilt accuracy: +/-5° Memory size: 523,704 bytes (each pitch-roll 3 bytes, temp-depth 3 bytes) Battery life: 6 years Housing material: Alumina (implantable, biocompatible ceramic material)

Description

The DST pitch & roll is a miniature submersible data logger that measures and records temperature, pressure (depth) and relative pitch and roll (tilt angle) movements of the DST, with reference to the earth gravity. DST pitch & roll measures gravity movements in two directions. Recorded data is stored in the logger's internal memory with a real-time clock reference for each measurement.

The DST pitch & roll is supported by the SeaStar software and the Communication Box which serves as an interface between the logger and a PC. Communication between the logger and the Communication Box is wireless.

In SeaStar, the user sets the start time, start date and sampling interval before starting the recorder. Up to seven different intervals can be set for the same measurement sequence. This is especially useful when more frequent measurements are needed at a certain time period.

With default programming temperature, depth, pitch and roll are recorded at the same time. Optionally, temp-depth and pitch-roll can be set as primary and

secondary parameter pairs with different sampling frequency. That way memory partitioning can be customized according to individual preferences.

After recovering the DST recorded data is uploaded to SeaStar where results are displayed both in graphic and tabular form. After retrieving the data, the DST can be re-programmed and reused as long as the battery lasts. Since the tilt sensor is in fact an accelerometer the acceleration data are also displayed in the SeaStar software. Therefore both tilt angle data in degrees and acceleration data in m/s2 (meters per second per second) are shown.

A set of Communication Box and SeaStar software needs to be purchased with the first order. Star-Oddi also offers a specially designed protective housing of which the DST pitch & roll can be immobalised inside. When attached to fish a plate tag holder kit with wires and silicone pad are available.

For more information about accessories please click here.

Features on Request

Logic feature

Logic feature allows users to choose a depth limit where the logger starts and stops recording. The logger is in sleep mode while above the predetermined depth, saving memory and battery life. If the Logic feature is used in a logger all parameter measurements are taken at the same time – primary and secondary parameter settings are not possible. The logic feature is especially useful when used on marine mammals that spend their time both in waters and on land or when used on fishing gear, so that measurements are not stored when gear is on deck.

Temperature calibration outside standard range

Temperature calibration outside of standard range is available for all products on request.

Examples of Application

The DST pitch & roll can be used for analyzing movements of (marine) animals as well as for fishing gear and other underwater equipment.

The DST pitch & roll is suitable for studies in e.g. :

• Fish and marine animal tagging

- Studies on trawl doors and other fishing gear
- Orientation of AUVs, ROVs and other underwater equipment
- Any other field where temperature, pressure and pitch & roll recording is required.

Technical Specifications

Sensors	Pitch & roll, temperature and pressure (depth)*
Size (diameter x length)	15mm x 46mm
Housing material	Alumina (ceramic)
Weight (in air/in water)	in air: 19g in water: 12g
Memory type	Non-volatile EEPROM
Memory capacity	87,000 measurements per sensor (if all recorded simultaneously)
Memory capacity bytes	523,704 bytes / temperature-pressure 3 bytes, pitch & roll 3 bytes
Memory management	 Custom programming Primary and secondary parameter
Data resolution	12 bits
Temperature resolution	0.032°C (0.058°F)
Temperature accuracy	+/-0.1°C (0.18°F)
Tilt resolution	0.3°
Tilt accuracy	+/-5°
Temperature range	-1°C to +40°C (30°F to 104°F)***
Temperature response time	Time constant (63%) reached in 20 sec.
Standard depth ranges	0.1m-30m, 0.1m-50m, 0.1m-100m, 1m-270m, 5m-800m, 5m- 1500m, 10m-2000m, 10m-3000m
Depth resolution	0.03% of selected range
Depth accuracy	+/-0.4% of selected range for 30m to 270m range, +/-0.6% of

	selected range for 800m to 3000m range
Depth response time	Immediate
Data retention	25 years
Clock	Real time clock Accuracy +/-1 min/month
Sampling interval	In second(s), minute(s) or hour(s)
Number of different sampling intervals	1 to 7
Communications	Communication Box, RS-232C 9 pin serial or USB
Attachment hole	0.9 mm (in diameter)
Tilt range	+/-80° (160° span)
Pitch roll accuracy	+/-5°
Battery life	6 years**

* Pressure & temperature sensor optional.

** For sampling interval of 10 minutes; pitch&roll, temperature and pressure recorded simultaneously.

*** Outside ranges available upon request.

Specifications may change without notice.