PERSONAL SERVICE

Customers are Star-Oddi's best advisors. The Star-Oddi R&D department is constantly seeking new ways of optimization and products can be customized to fit individual requirements.

STAR-ODDI LTD.

Founded in Iceland in 1985, Star-Oddi has become recognized as one of the world's leading manufacturers of technology for research and industry.

Since 1993, Star-Oddi has been manufacturing the Data Storage Tag, a miniature data logger that we developed for a wide range of industrial and research use.

The company operates in the global marketplace. Our mission is to offer excellent quality, reliability and well designed, unique products.

THE SAGA OF STAR-ODDI (STJÖRNU-ODDI)

Oddi Helgason lived and worked in Flatey, Skjalfanda, in northern Iceland in the twelfth century. He was a hired labourer on a farm and differed from others by his outstanding knowledge. He used a lot of his time analyzing the movements of the sun, moon and stars that resulted in his nickname Star-Oddi.

Star-Oddi's work is considered to be the greatest engineering achievement of the Viking Age, enabling the Vikings to sail over long distances and find their way back home again. Later, scientists have shown that he made remarkably exact observations, centuries ahead of his time.
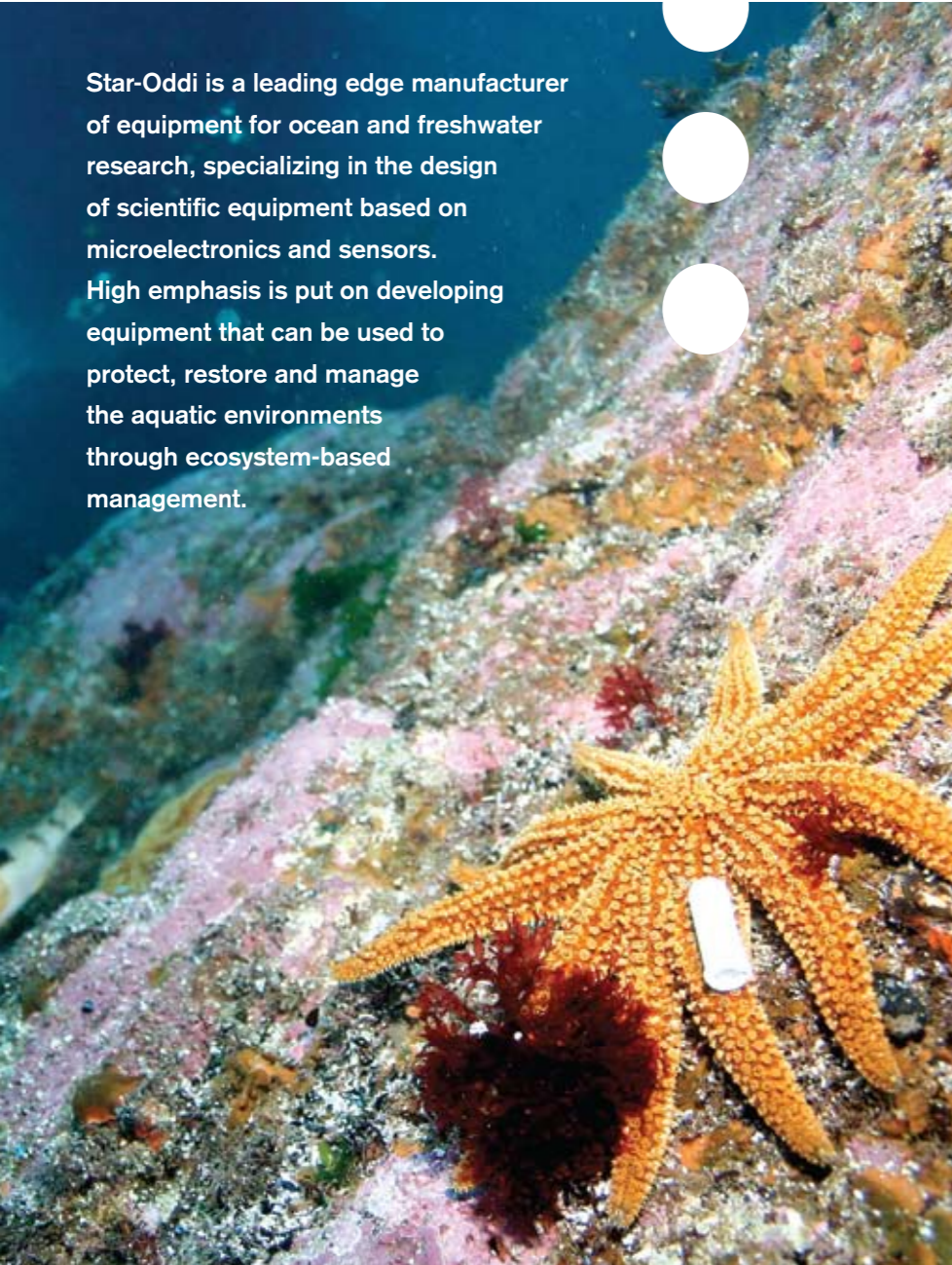
Data Storage Tags (DST)

STAR : ODDI

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Star-Oddi is a leading edge manufacturer of equipment for ocean and freshwater research, specializing in the design of scientific equipment based on microelectronics and sensors. High emphasis is put on developing equipment that can be used to protect, restore and manage the aquatic environments through ecosystem-based management.

DATA STORAGE TAGS (DSTs)

DSTs are originally developed for tagging fish and other animals living in saline and fresh waters. DSTs are used in analyzing e.g. the tagged animal's migration, distribution, feeding and spawning behavior, vertical/horizontal movements or geographic location. The loggers can be fastened externally or implanted in the animal. The DST housing is made of alumina, a biocompatible ceramic material that is not recognized as a foreign body by the animal's organism. DSTs can also be used as standalone loggers for environmental monitoring or attached to fishing gear and other underwater equipment.

All measured data is stored in the logger's internal memory. When the logger is recovered after the measuring period, recorded data is uploaded in the supporting SeaStar software where it can be viewed and analyzed in graphic and tabular form. The same logger can be reused as long as the battery lasts.

For recapture purposes customers can define their own text on the logger housing, giving information on e.g. where to return the tag, reward (if any), etc. If tagged internally, Star-Oddi can deliver the tag with a colorful plastic tube attached. The external plastic tube can easily be identified by e.g. fishermen.

SENSORS

TEMPERATURE

PRESSURE (DEPTH)

CONDUCTIVITY (SALINITY)

TILT

MAGNETIC FIELD STRENGTH (COMPASS)

ACOUSTIC RECEIVER

ACOUSTIC TRANSMITTER

PRODUCT FAMILY

The DST product family features three different sizes: centi, milli and micro. The DST loggers vary in size, memory size, battery life and sensors.
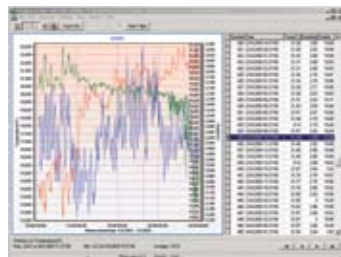
SEASTAR

SeaStar (for Windows©) is the graphic supporting software for all Star-Oddi loggers. The user sets the start time, start date and sampling interval in SeaStar before starting the recorder. Sampling interval can be set in second(s), minute(s) and/or hour(s).

With default programming all parameters are recorded at the same time. Optionally, it is possible to define different sampling intervals for the parameters (primary and secondary parameters/parameter pairs with different sampling frequency). With this option memory partitioning can be customized according to individual preferences.

DSTs can also be programmed with up to 7 different sampling intervals. These intervals can then be defined in a preferred order within a measurement sequence. Number of measurements is defined for each interval. The measurement sequence is repeated until the memory is full or the logger retrieved. Programming several sampling intervals in a sequence can be useful when more/fewer measurements are needed at certain time periods.

After recovering the DST(s), recorded data is uploaded in SeaStar, where the results can be analyzed in graphic and tabular form along with date and time. The logger can be reprogrammed and reused as long as the battery lasts. Data can be retrieved even after the logger's battery is empty.


SeaStar software

Multiple intervals

COMMUNICATION BOX

The Communication Box works as an interface for data transfer between the DSTs and a PC. Communication between a DST and the Communication Box is wireless. The Communication Box is connected to a PC using either a USB or RS-232C 9 pin serial cable. When a logger is connected to a PC the logger is powered through the Communication Box and is not using its internal battery.
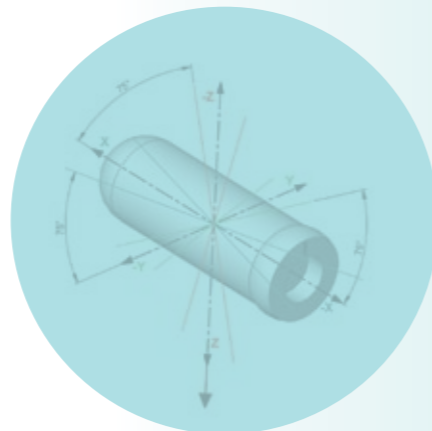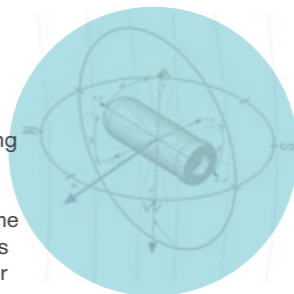
DSTs are being used in various fields and studies, such as:

- **Oceanography**
- **Marine biology**
- **Ichthyology**
- **Limnology**
- **Hydrology**
- **Geology**
- **Tagging projects (fish, crustaceans, turtles, birds, etc.)**
- **Aquaculture projects**
- **Studies on underwater equipment**

OTHER ACCESSORIES

There is a wide range of accessories for Star-Oddi products available. For fish and other animal tagging we provide special fastening and tag holder kits that make the tagging process easier and safer.

When DSTs are used as standalone loggers in harsh environments it is advised to use protective housings to protect the loggers from knocks and dents. Star-Oddi offers plastic protective housings for all logger sizes. Star-Oddi also manufactures a special adjustable protective housing especially designed for DSTs with tilt and magnetic field strength sensors.

Tag holder

PUR H housing

Tilt protective housing

SPECIAL FEATURES

For most DSTs Star-Oddi offers special features such as logic start/stop recording control, calibration outside standard ranges and memory extensions. For more information, please contact Star-Oddi or visit www.star-oddi.com.

DST TECHNICAL SPECIFICATIONS

	DST micro - T	DST micro - TD	DST milli -T	DST milli -TD	DST milli - L	DST centi - T	DST centi - TD	DST CT	DST CTD	DST pitch & roll	DST tilt	DST compass	DST comp-tilt	DST magnetic	GPS
Sensors	Temperature	Temperature, pressure (depth)	Temperature	Temperature, pressure (depth)	Temperature, pressure (depth)	Temperature	Temperature, pressure (depth)	Conductivity (salinity), temperature	Conductivity (salinity), temperature, pressure (depth)	Pitch & roll, temperature, pressure (depth)	Tilt (3-D), temperature, pressure (depth)	Magnetic field strength (2-D) (compass heading), temperature, pressure (depth)	Magnetic field strength (2-D) (compass heading), tilt (3-D), temperature, pressure	Magnetic field strength (3-D)(compass heading), tilt (3-D) temperature, pressure	Acoustic receiver, temperature, pressure (depth)
Size (diameter x length)	micro (8.3mm x 25.4mm)	micro (8.3mm x 25.4mm)	milli (12.5mm x 38.4mm)	milli (12.5mm x 38.4mm)	milli (12.5mm x 38.4mm)	centi (15mm x 46mm)	centi (15mm x 46mm)	centi (15mm x 46mm)	centi (15mm x 46mm)	centi (15mm x 46mm)	centi (15mm x 46mm)	centi (15mm x 46mm)	centi (15mm x 46mm)	centi (15mm x 46mm)	centi (15mm x 46mm)
weight (in air/in water)	3.3g / 1.9g	3.3g / 1.9g	9.2g / 5g	9.2g / 5g	9.2g / 5g	19g / 12g	19g / 12g	21g / 13g	21g / 13g	19g / 12g	19g / 12g	19g / 12g	19g / 12g	19g/12g	21g / 13g
Volume	1.4 cm³	1.4 cm³	4.7 cm³	4.7 cm³	4.7 cm³	8.1 cm³	8.1 cm³	8.1 cm³	8.1 cm³	8.1 cm³	8.1 cm³	8.1 cm³	8.1 cm³	8.1 cm³	8.1 cm³
Battery life	18 months*	18 months*	5 years*	3 years*	3 years*	7 years*	7 years*	4 years*	4 years*	6 years*	4 years*	2 years*	2 years*	18 months*	3 years*
Memory type	Non-volatile EEPROM	Non-volatile EEPROM	Non-volatile EEPROM	Non-volatile EEPROM	Non-volatile EEPROM	Non-volatile EEPROM	Non-volatile EEPROM	Non-volatile EEPROM	Non-volatile EEPROM	Non-volatile EEPROM	Non-volatile EEPROM	Non-volatile EEPROM	Non-volatile EEPROM	Non-volatile EEPROM	Non-volatile EEPROM
Memory capacity / size of one measurement (bytes)	65,214 bytes / temperature 1.5 bytes	65,214 bytes / temperature 1.5 bytes, pressure 1.5 bytes	65,375 bytes / temperature 1.5 bytes	65,375 bytes / temperature 1.5 bytes, pressure 1.5 bytes	65,375 bytes / temperature 1.5 bytes, pressure 1.5 bytes	261,819 bytes / temperature 1.5 bytes	261,819 bytes / temperature 1.5 bytes pressure 1.5 bytes	392,478 bytes / conductivity-temperature 3 bytes	392,478 bytes / conductivity-temperature-pressure 4,5 bytes	523,704 bytes / temperature-pressure 3 bytes, pitch&roll 3 bytes	261,564 bytes / temperature-pressure 3 bytes, tilt 6 bytes	523,704 bytes / temperature-pressure 3 bytes, compass 3 bytes	261,564 bytes / temperature-pressure 3 bytes, compass-tilt 10 bytes	261,564 bytes / temperature-pressure 3 bytes, compass (MFS)-tilt 13 bytes	261,741 bytes / temperature-pressure 3 bytes, GPS 1-58 bytes
Memory extension option			1,048,046 bytes (FLASH memory)	1,048,046 bytes (FLASH memory)	1,048,046 bytes (FLASH memory)	786,099 bytes (EEPROM memory)	786,099 bytes (EEPROM memory)								
Memory management	Custom programming	Custom programming	Custom programming	Custom programming	Custom programming	Custom programming	Custom programming	Custom programming	Custom programming	Custom programming	Custom programming	Custom programming	Custom programming	Custom programming	Custom programming
Clock	Real time clock, accuracy +/- 1 min/ month	Real time clock, accuracy +/- 1 min/month	Real time clock, accuracy +/- 1 min/ month	Real time clock, accuracy +/- 1 min/ month	Real time clock, accuracy +/- 1 min/ month	Real time clock, accuracy +/- 1 min/ month	Real time clock, accuracy +/- 1 min/ month	Real time clock, accuracy +/- 1 min/ month	Real time clock, accuracy +/- 1 min/ month	Real time clock, accuracy +/- 1 min/ month	Real time clock, accuracy +/- 1 min/ month	Real time clock, accuracy +/- 1 min/ month	Real time clock, accuracy +/- 1 min/ month	Real time clock, accuracy +/- 1 min/ month	Real time clock, accuracy +/- 1 min/ month
Data resolution	12 bits	12 bits	12 bits	12 bits	12 bits	12 bits	12 bits	12 bits	12 bits	12 bits	12 bits	12 bits/14 bits	12 bits	12 bits/14 bits	12 bits/14 bits	12 bits
Data retention	25 years	25 years	25 years	25 years	25 years	25 years	25 years	25 years	25 years	25 years	25 years	25 years	25 years	25 years	25 years
Temperature range	-1 to +40°C (30.2°F to 104°F)	-1 to +40°C (30.2°F to 104°F)	-1°C to +40°C (30°F to 104°F)	-1°C to +40°C (30°F to 104°F)	-1°C to +40°C (30°F to 104°F)	-1°C to +40°C (30°F to 104°F)	-1°C to +40°C (30°F to 104°F)	-1°C to +40°C (30°F to 104°F)	-1°C to +40°C (30°F to 104°F)	-1°C to +40°C (30°F to 104°F)	-1°C to +40°C (30°F to 104°F)	-1°C to +40°C (30°F to 104°F)	-1°C to +40°C (30°F to 104°F)	-1°C to +40°C (30°F to 104°F)	-1°C to +40°C (30°F to 104°F)
Temperature resolution	0.032°C (0.058°F)	0.032°C (0.058°F)	0.032°C (0.058°F)	0.032°C (0.058°F)	0.032°C (0.058°F)	0.032°C (0.058°F)	0.032°C (0.058°F)	0.032°C (0.058°F)	0.032°C (0.058°F)	0.032°C (0.058°F)	0.032°C (0.058°F)	0.032°C (0.058°F)	0.032°C (0.058°F)	0.032°C (0.058°F)	0.032°C (0.058°F)
Temperature accuracy	+/- 0.2 °C (+/- 0.36°F)	+/- 0.2 °C (+/- 0.36°F)	+/-0.1°C (0.18°F)	+/-0.1°C (0.18°F)	+/-0.1°C (0.18°F)	+/-0.1°C (0.18°F)	+/-0.1°C (0.18°F)	+/-0.1°C (0.18°F)	+/-0.1°C (0.18°F)	+/-0.1°C (0.18°F)	+/-0.1°C (0.18°F)	+/-0.1°C (0.18°F)	+/-0.1°C (0.18°F)	+/-0.1°C (0.18°F)	+/-0.1°C (0.18°F)
Temperature response time	Time constant (63%) reached in 10 sec.	Time constant (63%) reached in 10 sec.	Time constant (63%) reached in 12 sec.	Time constant (63%) reached in 12 sec.	Time constant (63%) reached in 12 sec.	Time constant (63%) reached in 20 sec.	Time constant (63%) reached in 20 sec.	Time constant (63%) reached in 20 sec.	Time constant (63%) reached in 20 sec.	Time constant (63%) reached in 20 sec.	Time constant (63%) reached in 20 sec.	Time constant (63%) reached in 20 sec.	Time constant (63%) reached in 20 sec.	Time constant (63%) reached in 20 sec.	Time constant (63%) reached in 20 sec.
Standard depth ranges (user defined)		150m, 300m, 1000m		20m, 50m, 100m, 250m, 500m, 800m	20m, 50m, 100m, 250m, 500m, 800m		30m, 50m, 100m, 270m, 800m, 1500m, 2000m, 3000m		100m, 500m, 1200m, 2000m	30m, 50m, 100m, 270m, 800m, 1500m, 2000m, 3000m	30m, 50m, 100m, 270m, 800m, 1500m, 2000m, 3000m	30m, 50m, 100m, 270m, 800m, 1500m, 2000m, 3000m	30m, 50m, 100m, 270m, 800m, 1500m, 2000m, 3000m	30m, 50m, 100m, 270m, 800m, 1500m, 2000m, 3000m	
Depth resolution		0.08% of selected range		0.03% of selected range	0.03% of selected range		0.03% of selected range		0.03% of selected range	0.03% of selected range	0.03% of selected range	0.03% of selected range	0.03% of selected range	0.03% of selected range	0.03% of selected range
Depth accuracy		+/- 0.5% of selected range		+/-0.4% of selected range	+/-0.8% of selected range		+/-0.4% of selected range		+/-0.4% of selected range	+/-0.4% of selected range	+/-0.4% of selected range	+/-0.4% of selected range	+/-0.4% of selected range	+/-0.4% of selected range	+/-0.4% of selected range
Depth response time		Immediate		Immediate	Immediate		Immediate		Immediate	Immediate	Immediate	Immediate	Immediate	Immediate	Immediate
Standard conductivity ranges (user defined)								1) 3 to 37 mS/cm 2) 10 to 50 mS/cm	1) 3 to 37 mS/cm 2) 10 to 50 mS/cm						
Conductivity resolution								0.015 mS/cm	0.015 mS/cm						
Conductivity accuracy								+/-0.8 mS/cm	+/-0.8 mS/cm						
Salinity resolution								0.02 PSU	0.02 PSU						
Salinity accuracy								+/- 0.75 PSU	+/-0.75 PSU						
Compass resolution												2°	1°	1°	
Compass accuracy												+/-25° (horizontal)	+/-15° (horizontal)	+/-15° (horizontal)	
Tilt resolution										0.3°	0.2°		0.2°	0.2°	
Tilt accuracy										+/-5°	+/-3°		+/-3°	+/-3°	
Tilt range										160° (+/-80°)	360°		360°	360°	
Magnetic field strength range														0 to 2 gauss	
Magnetic field strength resolution														100nT	
Magnetic field strength accuracy														+/-1000nT	

*For a sampling interval of 10 min.