Data Storage Tags (DST)

HIGH PERFORMANCE – SMALL SIZE

ADVANTAGES AT A GLANCE

- **Small data loggers**
- **For ocean and animal research**
- **Multiple sensors available**
- **Long battery life**

STAR : ODDI

Logging Life Science

www.star-oddi.com

FISH AND MARINE ANIMAL RESEARCH

With Star-Oddi's focus on small sized loggers, high pressure survival up to 3000m and long battery life up to 9 years, the DSTs are designed in size and shape for implantation or external tagging of fish and marine animals. DSTs are used in analyzing the tagged animal's migration, distribution, feeding and spawning behavior, vertical/horizontal movements and 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 object by the animal.

ENVIRONMENTAL AND EQUIPMENT MONITORING

Star-Oddi's DSTs are widely used as stand-alone loggers for environmental monitoring or attached to fishing gear or other underwater equipment. All measured data is stored in the logger's internal memory. When the logger is retrieved after the measuring period, recorded data is uploaded in the supporting software where it can be viewed and analyzed in graphic and tabular form. The same logger can be reused as long as the batteries last.

SENSORS

TEMPERATURE

PRESSURE
(DEPTH)

CONDUCTIVITY
(SALINITY)

TILT

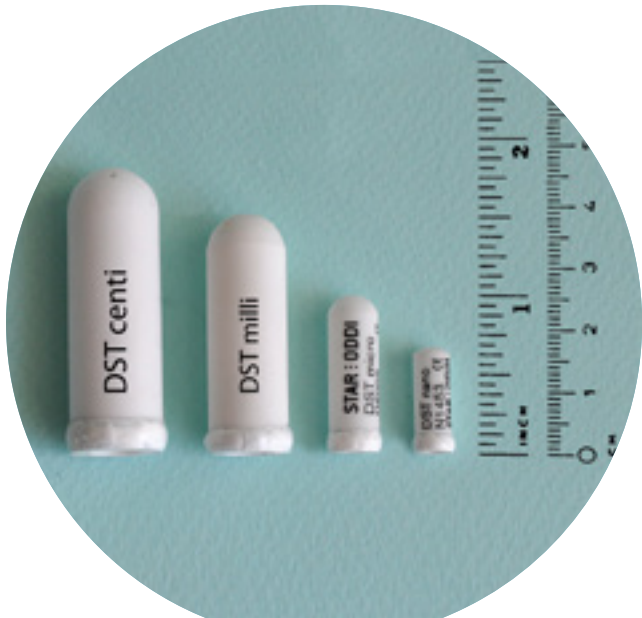MAGNETIC FIELD
STRENGTH
(COMPASS)

LIGHT
INTENSITY

HEART RATE

ACCELERATION

SMALL SIZED LOGGERS

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

SEASTAR - GRAPHIC SUPPORTING SOFTWARE

SeaStar is the application software for starting the DSTs, downloading and analysing data. The user sets the start time, start date and sampling interval in SeaStar before starting the logger. Sampling interval can be set in seconds, minutes or hours.

FAST SAMPLING

It is possible to take burst measurements in selected logger types, up to 10 recordings per second. With default programming all parameters are recorded at the same time. It is possible to define different sampling intervals for the parameters (primary and secondary parameters/parameter pairs with different sampling frequency).

MULTIPLE INTERVALS

The DSTs can be programmed with up to 7 different sampling intervals. Number of measurements are 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.

REPROGRAMMABLE AND REUSABLE

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 batteries last. SeaStar reports an estimated battery life upon connection with a DST. It also calculates energy consumption for sampling interval settings and timing when memory fills.
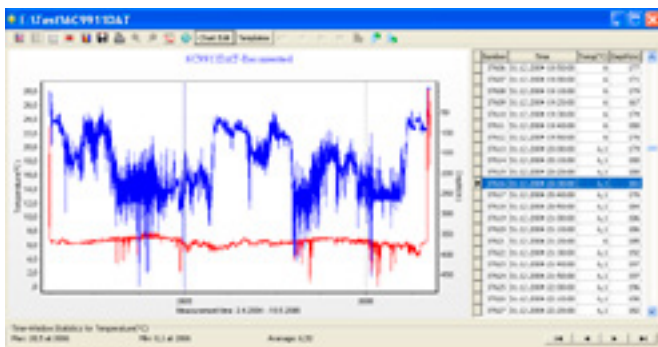
Depth and temperature data table and graph displayed in SeaStar

COMMUNICATION BOX

The Communication Box works as an interface for data transfer between the DST and a PC. Communication between the DST and the Communication Box is wireless when the DST sits in the box.

TAG HOLDER KITS

For external tagging of fish we provide special fastening and tag holder kits that make the tagging process easier and safer. Floats for the DSTs are available, both for implantation and external tagging.

PROTECTIVE HOUSINGS FOR FLEXIBLE MOUNTING

When the DSTs are used as standalone loggers in harsh environments it is advised to use protective housings to protect the loggers and to give more flexible mounting options. Star-Oddi offers plastic protective housings for all logger sizes. A stainless steel housing is also available to give extra protection when used on trawls for example. Anti-biofouling copper mesh is available for the CTD/CT loggers.
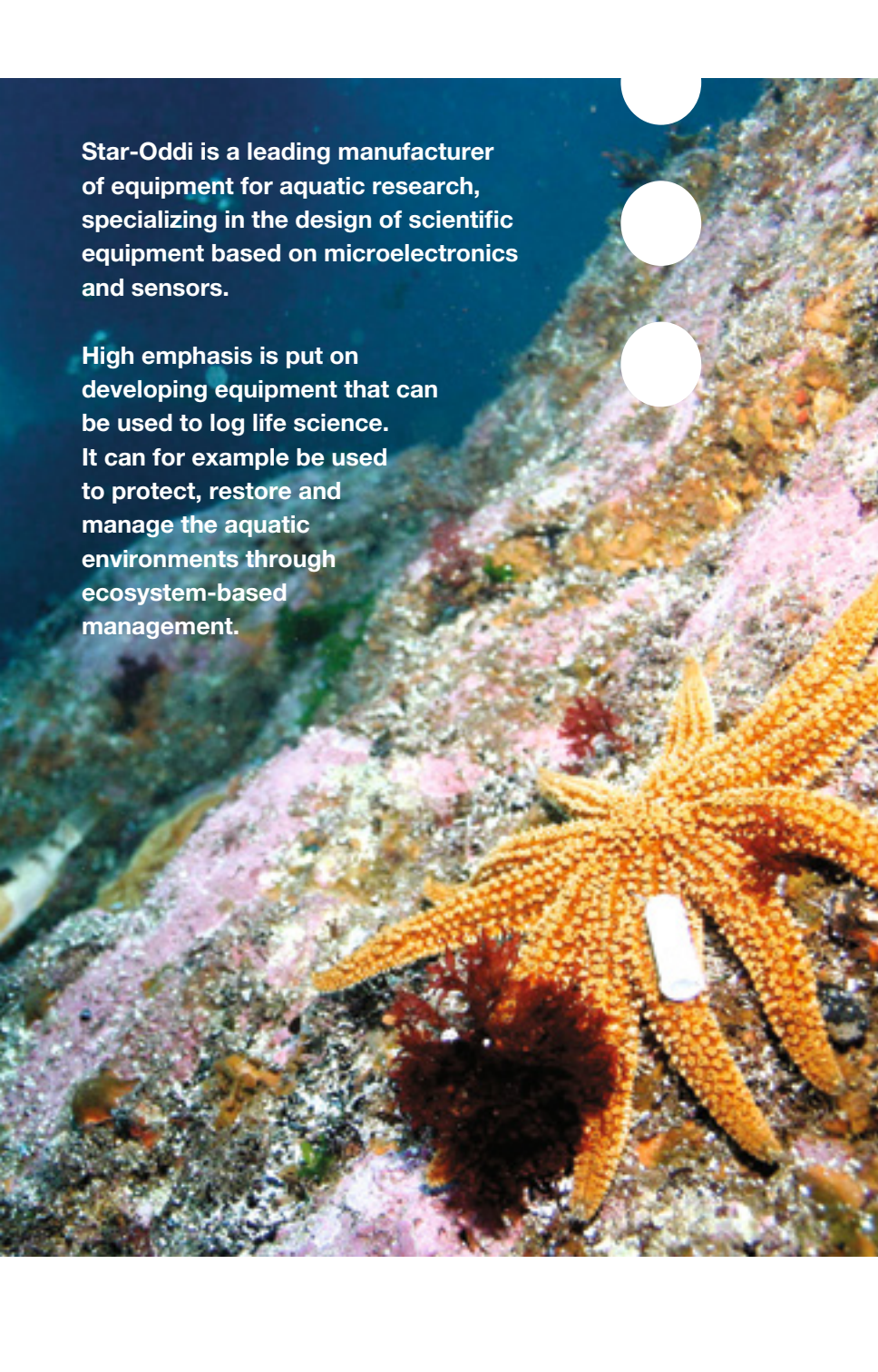
Tag holder   Protective housing   Housing for tilt sensor

START/STOP RECORDING

With the conductivity/salinity sensor it is possible to have a saltwater switch, making it only record data when salinity is detected. Depth sensor can also be predefined with a depth limit where recordings start when above and stop when below that limit. This is especially useful when logging on fishing gear to save memory size when logger is on deck.

Star-Oddi is a leading manufacturer of equipment for aquatic 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 log life science. It can for example be used to protect, restore and manage the aquatic environments through ecosystem-based management.
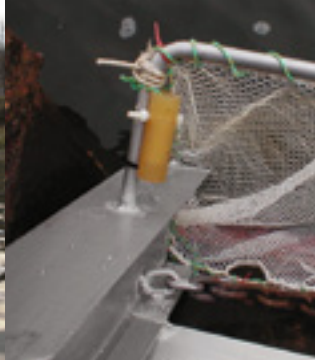
DST TECHNICAL SPECIFICATIONS

	DST nano-T	DST micro-TD / micro-T
Sensors	Temperature	Temperature Pressure (Depth)
Size: diameter x length	6mm x 17mm	8.3mm x 25.4mm
Weight (in air / in water)	1g / 0.8g	3.3g / 1.9g
Battery life	14 months*	28 months*
Total number of measurements	43,477 measurements	87,906 measurements**
Memory capacity in bytes / size of one measurement in bytes	65,216 bytes / temperature 1.5 bytes	130,746 bytes / temperature 1.5 bytes, pressure 1.5 bytes
Memory increase (optional)		
Fastest possible sampling	1 sec.	1 sec.
Data resolution	12 bits	12 bits
Temperature range	-1°C to 40°C (30.2°F to 104°F)**	-1 to 40°C (30.2°F to 104°F)**
Temperature resolution	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)
Temperature response time	Time constant (63%) reached in 5 sec.	Time constant (63%) reached in 8 sec.
Standard depth/pressure ranges (user defined)		150m, 300m, 1000m
Depth/pressure resolution		0.08% of selected range
Depth/pressure accuracy		+/- 0.6% of selected range
Depth/pressure response time		Immediate
Standard conductivity ranges (user defined)		
Conductivity resolution		
Conductivity accuracy		
Salinity resolution		
Salinity accuracy		
Compass resolution		
Compass accuracy		
Tilt resolution		
Tilt accuracy		
Tilt range		
Magnetic field strength range		
Magnetic field strength resolution		
Magnetic field strength accuracy		

DST milli-TD / milli-F / milli-T	DST centi-TD / centi-T	DST CTD / CT
Temperature Pressure (Depth)	Temperature Pressure (Depth)	Conductivity (Salinity) Temperature Pressure (Depth)
13mm x 39.4mm	15mm x 46mm	15mm x 50mm
13g / 5g	19g / 12g	21g / 13g
3 years*	9 years*	4 years*
87,168 or 1,398,100 measurements**	174,546 or 524,066 measurements**	261,652 measurements**
130,750 or 2,097,152 bytes / temp. 1.5 bytes, pressure 1.5 bytes	261,819 or 786,100 bytes / temp 1.5 bytes, pressure 1.5 bytes	392,478 bytes / conductivity-temperature-pressure 4,5 bytes
1,398,100 measurements (DST milli-F)**	524,066 measurements**	
0.1 sec. (in DST milli-F)	0,1 sec.	1 sec.
12 bits	12 bits	12 bits
-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)
0.032°C (0.058°F)	0.032°C (0.058°F)	0.032°C (0.058°F)
+/- 0.1°C (0.18°F)	+/- 0.1°C (0.18°F)	+/- 0.1°C (0.18°F)
Time constant (63%) reached in 12 sec.	Time constant (63%) reached in 20 sec.	Time constant (63%) reached in 20 sec.
50m, 100m, 250m, 500m, 800m	50m, 100m, 270m, 800m, 1500m, 3000m	100m, 500m, 1200m, 2400m
0.03% of selected range	0.03% of selected range	0.03% of selected range
+/- 0.6% of selected range	+/- 0.6% of selected range	+/- 0.6% of selected range
Immediate	Immediate	Immediate
		1) 0.3 to 5 mS/cm 2) 3 to 37 mS/cm 3) 13 to 63 mS/cm
		0.01 mS/cm
		+/-4% of calibration range (worst case +/-1.4 mS/cm for range 3-37 mS/cm)
		0.02 PSU
		+/-4% of salinity value

*For a sampling interval of 10 min. Batteries are non-replaceable   **Divided between the number of sensors

DST tilt	DST magnetic
3D Tilt Temperature Pressure (Depth)	3D Magnetic field strength-Compass heading 3D Tilt Temperature Pressure (Depth)
15mm x 46mm	15mm x 46mm
19g / 12g	19g / 12g
4 years*	3 years*
87,195 measurements**	104,634 measurements**
392,379 bytes / temperature-pressure 3 bytes, tilt 6 bytes	392,379 bytes / temperature-pressure 3 bytes, compass (MFS)-tilt 12 bytes
0,2 sec.	1 sec.
TD 12 bits / tilt 14 bits	TD & magnetic 12 bits / tilt 14 bits
-1°C to 40°C (30°F to 104°F)**	-1°C to 40°C (30°F to 104°F)**
0.032°C (0.058°F)	0.032°C (0.058°F)
+/- 0.1°C (0.18°F)	+/- 0.1°C (0.18°F)
Time constant (63%) reached in 20 sec.	Time constant (63%) reached in 20 sec.
50m, 100m, 270m, 800m, 1500m, 3000m	50m, 100m, 270m, 800m, 1500m, 3000m
0.03% of selected range	0.03% of selected range
+/- 0.6% of selected range	+/- 0.6% of selected range
Immediate	Immediate
	1°
	+/- 15°
0.05°	0.2°
+/- 3°	+/- 3°
+/-90°	+/-90°
	0 to 2 gauss
	100nT
	+/-300nT
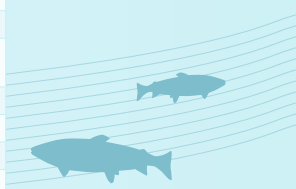
Specifications are subject to change without notice

HIGH PERFORMANCE – SMALL SIZE
Star-Oddi has 25 years of experience making small, high performing loggers for oceanographic, fish and marine animal studies.
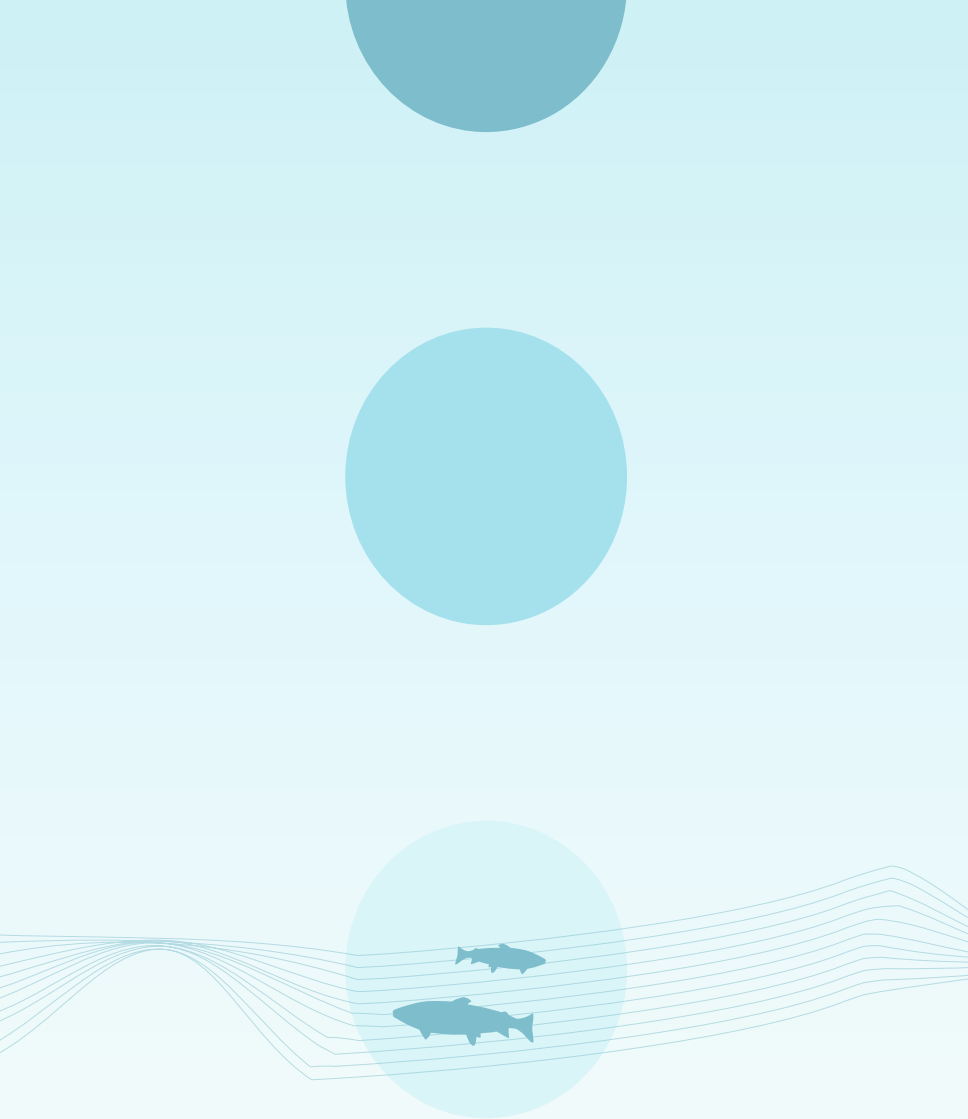
COMMITTED TO PROVIDING SMALL RELIABLE LOGGERS
We are focused on making wide selection of long lasting and small loggers, never compromising on reliability.

PERSONAL SERVICE
We put great emphasis on personal service and technical assistance before and after deployment.

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