

DST loggers specifications	DST nanoRF-T	DST microRF-T	DST microRF-HRT
<b>Sensors</b>	Temperature	Temperature	Heart rate, temperature
<b>Size: diameter x length</b>	6mm x 17.5mm	8.3mm x 25.4mm	8.3mm x 25.4mm
<b>Weight</b>	1.3g	3.3g	3.3g
<b>Battery life</b>	12 months*	21 months*	2,5 months*
<b>Memory type</b>	Non-volatile EE-PROM	Non-volatile EE-PROM	Non-volatile EE-PROM
<b>Memory capacity</b>	43476 measurements	43476 measurements	43690 measurements
<b>Data resolution</b>	12 bits	12 bits	12 bits
<b>Min. measuring interval</b>	1 min	1 min	1 min
<b>Temperature range</b>	5°C to 45°C (32°F to 113°F)	5°C to 45°C (32°F to 113°F)	5°C to 45°C (32°F to 113°F)
<b>Temperature resolution</b>	0.032°C (0.058°F)	0.032°C (0.058°F)	0.032°C (0.058°F)
<b>Temperature accuracy</b>	+/- 0.2 °C (+/- 0.36°F)	+/- 0.2 °C (+/- 0.36°F)	+/- 0.2 °C (+/- 0.36°F)
<b>HR sampling freq.</b>			100-800Hz
<b>Telemetry RF freq.</b>	500 KHz	500 KHz	500 KHz
<b>Transmission range to RF box</b>	20 - 30cm (7.9-11.8")	20 - 30cm (7.9-11.8")	20 - 30cm (7.9-11.8")

RF Box, transceiver	
<b>Size</b>	85mm x 75mm x 25mm
<b>Transmission range to PAN</b>	20 - 30meters (65.6 - 98.4ft)**
<b>Transmission frequency</b>	2.4 GHz
<b>Battery life</b>	up to 3 weeks, rechargeable
<b>Recharge time</b>	3-4 hours
<b>Number of loggers per RF box</b>	1-10
<b>Antenna</b>	Placed under the cage***

PAN, receiver	
<b>Size</b>	85mm x 75mm x 25mm
<b>Total number of RF boxes per PAN</b>	64
<b>Total number of loggers per PAN</b>	640
<b>PAN communication protocol</b>	MiWi
<b>Channels</b>	16, software determined
<b>Power supply for PAN</b>	12VDC
<b>Software required</b>	Gná

Mercury & Gná	
<b>Platform, application software</b>	Windows XP or newer

\* For a sampling interval of 10 min.

\*\* Range may vary depending on laboratory configuration

\*\*\* Antenna can be made in another shape for other placement  
Specifications are subject to change without notice

#### COMMITMENT TO THE 3RS

The 3Rs ethical framework is implemented by Star-Oddi in its DST biomedical loggers series. Being able to measure core body temperature without human interference reduces the stress placed on the animal avoiding consequential fluctuations in the temperature profile. This can reduce the number of laboratory animals used, with fewer animals needed to get reliable temperature data. The DST-HRT is the only leadless heart rate monitor on the market which minimizes wound pain and trauma of implantation for the animal.

#### 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 industrial use.

Since 1993, Star-Oddi has been manufacturing the Data Storage Tag (DST), a miniature data logger. DST's are ideal for various types of research where small reliable loggers are needed.



## STAR : ODDI

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# Real Time Telemetry

RELIABLE AND PRACTICAL  
RESEARCH DATA



#### ADVANTAGES AT A GLANCE

- Small, leadless loggers
- Data also stored in memory
- Simple and cost-effective
- Group, unconfined housing

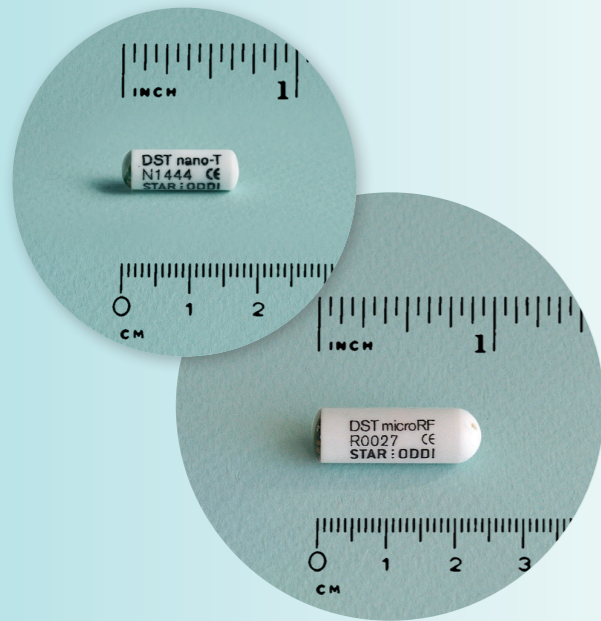
## STAR : ODDI

Logging Life Science

[www.star-oddi.com](http://www.star-oddi.com)

Star-Oddi is a leading manufacturer of biomedical research equipment, specializing in the design of temperature and heart rate sensors that are miniaturized, reliable and practical.

The Star-Oddi telemetry system offers both real time telemetry and data logging. It is ideal for studies where integrity and repeatability of the study is important. Using a telemetry logger eliminates all caging restrictions and reduces start-up and labor costs.



#### IDEAL FOR BIOMEDICAL STUDIES

For several years, the loggers have been used in studies that require automatic accurate measurements, such as in virology, vaccinology and other related studies. Researchers appreciate the loggers' small size, high accuracy and biocompatible material suitable for implantation. The data is viewed in real time telemetry from group housed animals, as well as being stored in memory. We recommend using gas or ethanol sterilization for our loggers.

#### HEART RATE MEASUREMENTS

The heart rate loggers measure long term heart rate and core temperature. They are ideal for studies in which baseline and immunology responses are recorded; they are also suitable for toxicological, metabolic and thermoregulation studies. The heart rate is derived from a single channel ECG, by taking burst measurements and calculating the mean heart rate for each recording.

#### TEMPERATURE MEASUREMENTS

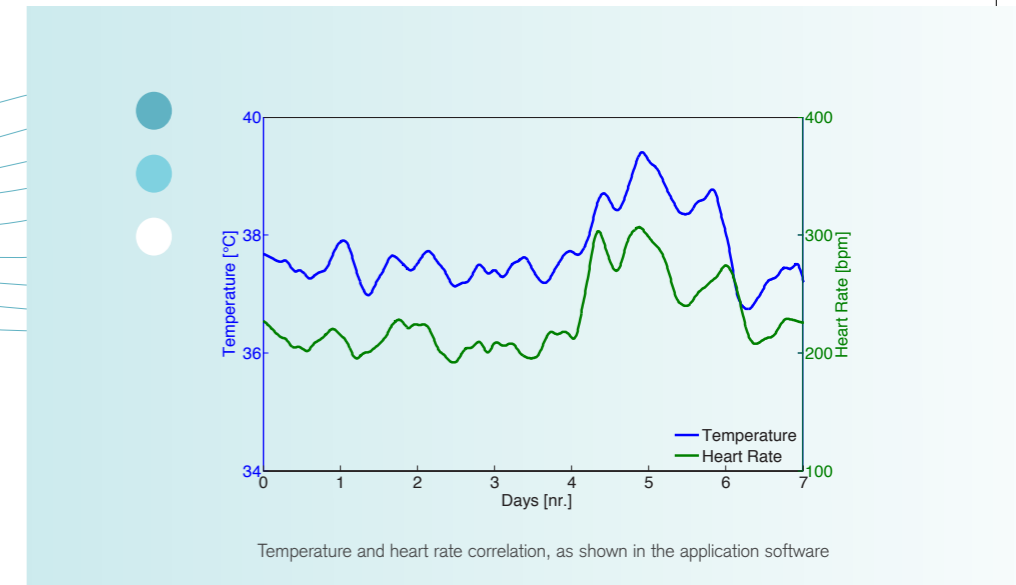
The temperature loggers are well suited for constant temperature recording and giving comprehensive data throughout your research with no disturbance to the animal. Measuring temperature without human interference reduces stress placed on the animal, minimising fluctuations in the temperature profile.

#### EASY TO USE AND REUSABLE

The Star-Oddi telemetry loggers are simple in use, from setup and surgery to data retrieval. Each cage is fitted with a transceiver box and an antenna which transmits the data to a Personal Area Network (PAN). The PAN is connected to a PC computer which displays the data in real time. The PAN can be placed in a different room making online monitoring easier. After use, the recorded data can be uploaded in the Mercury software, where the results can be further analyzed in graphic and tabular form. When data has been retrieved the logger can easily be sterilized and reset for new recordings.

All DSTs are delivered with calibration certificates to ensure compliance with GLP.

Scientific publications using Star-Oddi's loggers are available at: [www.star-oddi.com/biomedical/publications](http://www.star-oddi.com/biomedical/publications)



#### The Star-Oddi telemetry system



**The PC**  
PAN is connected to the computer. It receives signal from the RF box that's attached to each cage. The pan can handle up to 64 RF boxes.

#### Each cage

Each cage has an antenna and an RF box. Each receiver can handle multiple subjects in each cage. The RF box sends information to the PAN.



Telemetry System

