

# DST microRF - temperature telemetry

Real time telemetry temperature logger

## Overview

### Advantages at a glance:

- Real time temperature data
- Reliable and accurate measurements
- Simple and cost effective
- Multiple animals in a cage



## Description

### Reliable

**Reliable measurements** - The DST microRF temperature implant gives the users the benefit of both real time telemetry and logging at the same time.

**Accurate temperature readings** - handling of test subjects is minimised, reducing stress placed upon the animal and giving more accurate temperature readings. The automatic measurements eliminate human interference and errors caused during temperature readings.

**Constant measurements** - The logger provides constant and frequent measurements and the researcher can define the temperature measurements as often as once per minute.

**Note:** The system is well suited for preclinical research and designed for monitoring temperature in laboratory animals. It is not intended for data transmission in underwater environments.

### Practical

**Simple and cost-effective** - Implementing the Star-Oddi temperature telemetry system is straightforward and switching cost is minimal. The loggers can be reused as long as the battery lasts.

**Minimally invasive surgery** - Due to the small size of the temperature logger surgery is minimally invasive, which reduces mortality and recovery time.

**Allows group housing** - Each cage can hold multiple animals as cross-talk is minimized.

### Easy to use

**Setup of the system is simple** - the researcher can easily define the start time and sampling interval of the loggers. Once surgery of the test subjects is concluded, each cage is fitted with a transceiver box and an antenna. The transceiver box transmits the data to an online user software, which can be placed wherever needed.

**Easy view and analysis of measurements** - temperature readings can be monitored online and analysed in graphic and tabular form using Star-Oddi's software.

### Additional information

The telemetry system consists of seven components: DST microRF telemetry data logger with temperature sensor, a RF box transceiver module placed on each cage, an antenna placed on each cage, a Personal Area Network (PAN) controller which is the receiving module connected to a computer, Communication Box which serves as an interface between the logger and the PC, and Mercury and Gná application software. The DST microRF is based on our DST micro-T and gives the users the benefit of both continuous logging and telemetry. The logger can be programmed to record temperature as often as once per minute. It will store those data points in its memory and transmit the data to GNA our online user software, as often as required by the researcher.



There can be up to 10 subjects in each cage. The RF box will receive the data from the DST micro-RF and transmit it to PAN. The software takes care of minimizing cross talk and even if that does happen all transmissions have the individual logger's ID attached.

Each telemetry system needs to have a PAN to receive the data from the RF boxes. It is connected to the computer using a serial cable and a USB converter. How far the PAN can be placed away from the RF box varies greatly on the configuration of the lab but in most cases it will transmit about 20-30 meters.

### Technical Specifications

<b>Sensors</b>	Temperature (telemetry)
<b>Size (diameter x length)</b>	8.3mm x 25.4mm
<b>Housing material</b>	Alumina (ceramic) and biocompatible epoxy
<b>Weight (in air/in water)</b>	In air: 3.3g / In water: 1.9g
<b>Memory type</b>	Non-volatile EEPROM
<b>Memory capacity</b>	43476 measurements
<b>Data resolution</b>	12 bits
<b>Temperature resolution</b>	0.032°C (0.058°F)
<b>Temperature accuracy</b>	+/-0.2°C (+/-0.36°F)
<b>Temperature range</b>	5°C to 45°C (41°F to 113°F)
<b>Temperature response time</b>	Time constant (63%) reached in 10 sec
<b>Data retention</b>	25 years
<b>Clock</b>	Real time clock Accuracy +/-1min/month
<b>Sampling interval</b>	In minute(s), or hour(s)
<b>Communications</b>	Wireless RF (radio frequency)
<b>Operation temperature</b>	-23°C to +85°C
<b>Battery life</b>	15 months @ 10 min. sampling interval 25 months @ 1 hour sampling interval

Specifications may change without notice.

