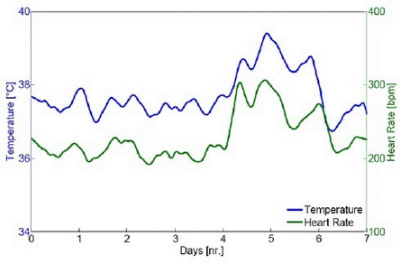
Data Loggers Real Time Telemetry

The Telemetry System

The telemetry system consists of seven components: DST ...RF-HRT telemetry data logger with a heart rate and temperature sensor, a RF box transreceiver 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-HRT is based on our DST micro-HRT 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 Gná, our online user software, as often as required by the researcher. The measurement data can be analysed in graphic and tabular form and exported to most statistical analysis programs. The software also provides the user with some basic statistic information on the data such as minimum and maximum values on defined area, median, average, distribution of values etc.

There can be up to 10 subjects in each cage. The RF box will receive the data from the DST microRF-HRT 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.



Temperature and heart rate correlation

Specifications

DST logger specs	DST NanoRF-T	DST MicroRF-T	DST MicroRF-HRT
Sensors	Temperature	Temperature	Temperature
Size: Ø x lenght	6 x 17,5 mm	8,3 x 25,4 mm	8,3 x 25,4 mm
Weight	1,3 g	3,3 g	3,3 g
Battery Life	12 months*	21 months*	2,5 months*
Memory Type	Non-volatile EE-PROM	Non-volatile EE-PROM	Non-volatile EE-PROM
Memory capacity	43476 measurements	43476 measurements	43690 measurements
Data resolution	12 bits	12 bits	12 bits
Min. measuring interval	1 min	1 min	1 min
Temperature range	5°C to 45°C	5°C to 45°C	5°C to 45°C
Temperature resolution	0,032°C	0,032°C	0,032°C
Temperature accuracy	+/- 0,2°C	+/- 0,2°C	+/-0,2°C
HR sampling Frequency	NA	NA	100-800Hz
Telemetry RF Frequency	500 kHz	500 kHz	500 kHz
Transmissinon range to RF box.	20-30 cm	20-30 cm	20-30 cm

PAN, receiver

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

RF box, Trensceiver

Size	85 x 75 x 25 mm
Transmission range to PAN	20-30 meters ***
Transmission frequency	2,4 GHz
Battery Life	up to 3 weeks, rechargable
Recharge Time	3-4 hours
Number of loggers per RF box	1-10
Antenna	Placed under the cage***

** For a sampling interval of 10min*
***Range may vary depending on laboratory configuration*
****Antenna can be made in another shape for other placement*

Ordering number

180000095	DST microRF-T Temperature recorder
180000096	DST nanoRF-T Temperature recorder
180000097	DST microRF-HRT Heart rate and temperature recorder
	Telemetry Accesories
180000091	communication box
180000099	Antenna, 1 per cage needed
180000100	RF Box Data receiver 1 per cage needed
180000101	PAN receiving Module, on eper PC
180000102	Mercury & GNA Software