Simple Flexible Accessible

Small implantable physio-loggers

STAR : ODDI

Logging Life Science

Advantages at a glance

Minimally invasive, simple to set up and implant

Stress-free, accurate measurements

Biocompatible and reusable

Long battery life

High performance, small size

Available parameters in each size

Physio loggers

Choose parameters:

Heart rate Activity Temperature	Heart rate Activity Temperature	Heart rate Temperature

Activity and Temperature loggers

Choose parameters:

Activity Temperature	Activity Temperature	Activity Temperature	Temperature

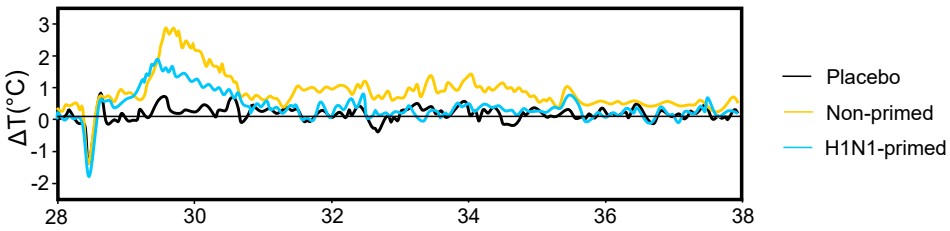
Temperature

Undisturbed core body temperature

Record core body temperature throughout your study with no disturbance to the study animal. Identify physiological changes for a few hours up to weeks or years in studies including circadian rhythm and thermoregulation studies.

Suitable for animals from 20g

The temperature loggers come in four sizes, the smallest weighing 1.3g. This makes the loggers suitable for a wide range of animal sizes from as light as 20g.



Temperature data from ferrets for three groups. Temperature is displayed as meanadeviation from baseline in 30min intervals from the day of H2N2 infection until day 38 (n=5-6). Image inspired from [1].

	DST nano-T	DST micro-T	DST milli-T	DST centi-T
Size	6 mm x 17 mm	8.3 mm x 25.4 mm	13 mm x 39.4 mm	15 mm x 46 mm
Weight	1.3g	3.3g	12g	19g
Battery life*	14 months	28 months	5 years	9 years
Memory capacity per sensor	87.166 measurements	65.535 measurements	1.398.100 measurements	174.000 measurements
Minimum measurement interval	1 second	1 second	1 second	1 second
Temperature range**	5 to 45°C	5 to 45°C	5 to 45°C	5 to 45°C
Temperature resolution	0.032°C (0.058°F)	0.003°C (0.0054°F)	0.032°C (0.058°F)	0.032°C (0.058°F)
Temperature accuracy	+/-0.2°C (+/-0.36°F)	+/-0.06°C (+/-0.11°F)	+/-0.1°C (+/-0.18°F)	+/-0.1°C (+/-0.18°F)

* With sampling interval of 10 min at room temp
** Outside ranges available upon request

[1] van de Ven, K., de Heij, F., van Dijken, H. et al. Systemic and respiratory T-cells induced by seasonal H1N1 influenza protect against pandemic H2N2 in ferrets. Commun Biol 3, 564 (2020).

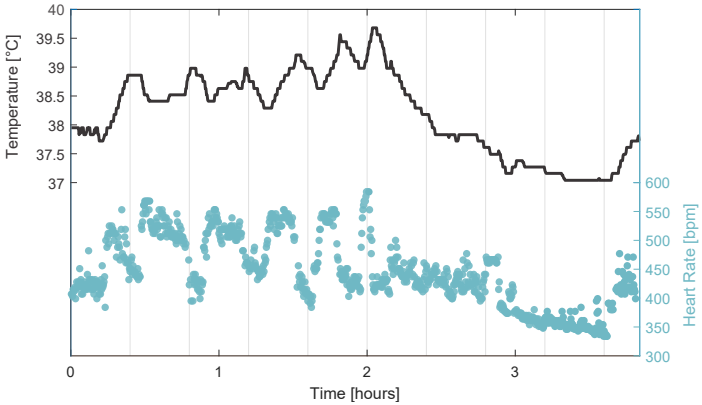
Heart Rate & Temperature

Long-term heart rate and body temperature

Measure heart rate and body temperature simultaneously. Apply to a variety of studies including circadian rhythm, stress response and baseline metabolic studies.

Suitable for measuring a wide range of heart rates

The heart rate measurements are derived from a leadless single channel ECG. The electrodes are part of the housing, making the loggers easy to implant and explant. The loggers can measure heart rates ranging from 5 bpm to 1022 bpm and can record extended ECG records for periods where slow heart rates are expected.



Heart Rate and temperature data for laboratory rats (Sprague-Dawley) during a cardiovascular screening.

	DST micro-HRT	DST milli-HRT	DST centi-HRT
Size	8.3 mm x 25.4 mm	13 mm x 39.4 mm	15 mm x 46 mm
Weight	3.3g	12g	19g
Battery life*	3 months	8.5 months	19 months
Memory capacity per sensor	87.381 measurements, 349 ECG buffer measurements	699.051 measurements, 2785 ECG buffer measurements	699.051 measurements, 2785 ECG buffer measurements
Minimum measurement interval	30 seconds	30 seconds	30 seconds
Temperature range**	5 to 45°C	5 to 45°C	5 to 45°C
Temperature resolution	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)	+/-0.2°C (+/-0.36°F)
HR sampling frequency	80-800 Hz	80-800 Hz	80-800 Hz
Duration of HR measurement	600 or 1500 ECG sample	600 or 1500 ECG sample	600 or 1500 ECG sample

* With sampling interval of 10 min
** Outside ranges available upon request

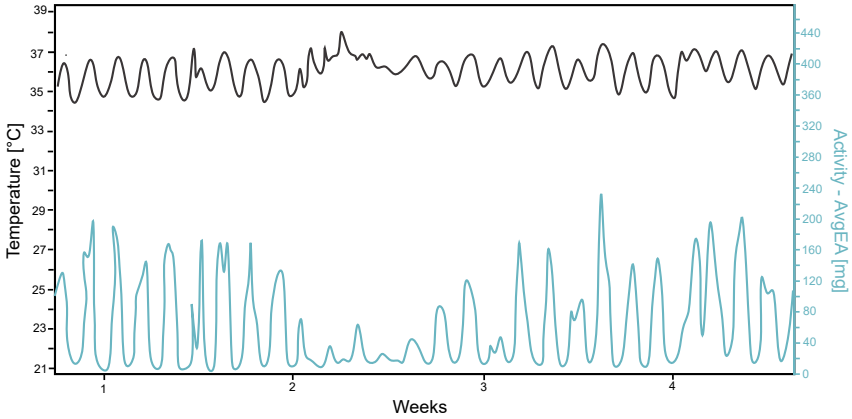
Activity & Temperature

Overview of changes in activity over time

Measure acceleration derived activity in three dimensions, in addition to temperature. This provides an overview of changes in the study animals' activity over time, ranging from a few days up to weeks or years.

Quantify behavior and respiration

The loggers provide several statistical parameters as well as raw acceleration data that can be used to calculate respiration rate in most animal models.



Temperature and Activity data from a Baboon during an infection study showing fever and lethargy. Activity levels are displayed as hourly average of AvgEA values.

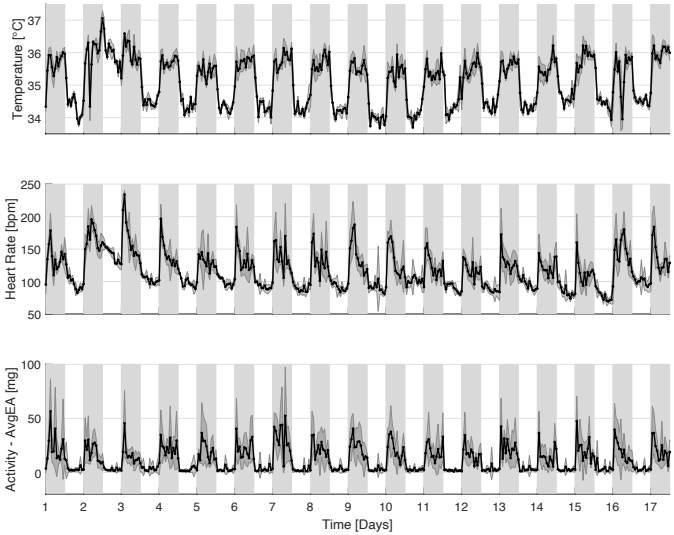
	DST micro-ACT	DST milli-ACT	DST centi-ACT
Size	8.3 mm x 25.4 mm	13 mm x 39.4 mm	15 mm x 46 mm
Weight	3.3g	12g	19g
Battery life*	19 - 154 days	2 - 17 months	3 – 26.5 months
Memory capacity per sensor***	52.429 measurements	104.856 measurements	104.856 measurements
Minimum measurement interval	2 minutes	2 minutes	2 minutes
Temperature range**	5 to 45°C	5 to 45°C	5 to 45°C
Temperature resolution	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)	+/-0.2°C (+/-0.36°F)
Acceleration sampling interval	0.03Hz-10Hz	0.03Hz-10Hz	0.03Hz-10Hz
Acceleration resolution	2 mg	2 mg	2 mg
Duration of ACT measurement	1 minute	1 minute	1 minute

* For 1Hz sampling requency over 1 min, sampling interval 1-20 min, activity and temperature recorded simultaneously
** Outside ranges available upon request
*** If all parameters are recorded simultaneously

Heart Rate & Activity & Temperature

Overview of changes in activity over time

Measuring three parameters in one device makes it easy to identify correlation between heart rate, activity, and temperature. This makes the loggers ideal for studies including stress response, hibernation, and studies on animals' response to extreme temperatures.



Data recorded with DST milli-HRT-ACT in Cynomolgus Macaque during an vaccine efficacy trial.
Data for temperature, heart rate and activity are shown as hourly averages (± SD).

	DST milli-HRT ACT	DST centi-HRT ACT
Size	13 mm x 39.4 mm	15 mm x 46 mm
Weight	12g	19g
Battery life*	1 – 7.5 months	2 - 17 months
Memory capacity per sensor***	99.863 measurements	99.863 measurements
Minimum measurement interval	2 min (T+HR+ACT, T+HR, T+ACT)	2 min (T+HR+ACT, T+HR, T+ACT)
Temperature range**	5 to 45°C	5 to 45°C
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)
HR sampling frequency	80-800 Hz	80-800 Hz
Acceleration sampling interval	0.03Hz-10Hz	0.03Hz-10Hz
Acceleration resolution	2 mg	2 mg
Duration of ACT measurement	1 minute	1 minute
Duration of HR measurement	600 – 1500 ECG samples	600 – 1500 ECG samples

* For sampling interval of 2-20 minutes; ECG sampled at 600Hz, Activity 1Hz over 1 minute.
** Outside ranges available upon request
*** If all parameters are recorded simultaneously

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