UNO

**Your partner for advise on and delivery of
Laboratory Animal Equipment!**

IDENTIFICATION

RFID TRANSPONDERS AND READERS

## Cost-Effective Animal Identification for Your Lab

Highly cost-effective, the UNO line of transponders and readers allow facilities large and small to utilize the benefits of RFID microchip identification methods to increase efficiencies and ensure proper animal identification during long term research studies.

Unlike other methods of animal identification such as tattoing and bar coding RFID implants have proven to be an ideal solution for long-term studies.

Available in three sizes (7mm, 8mm and 12mm), transponders come packaged in a sterile injector needle ready for use.

With these three sizes, transponders are available for animals in all sizes, with the 7mm transponder (PICO) even suitable for mousepups.

These small passive transponders require no power source and once implanted, remain within the animal for the duration of its life and can be easily detected with a corresponding reader which records the animals information. Once recorded, the information can be downloaded to a PC through a standard USB connection or Bluetooth connection* (depending on the reader used).
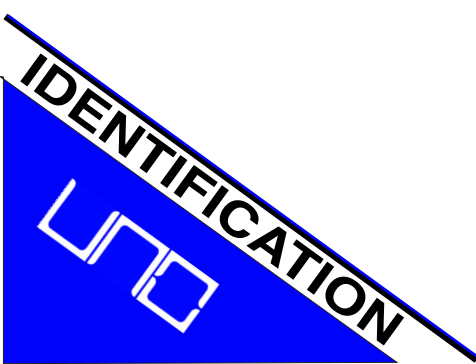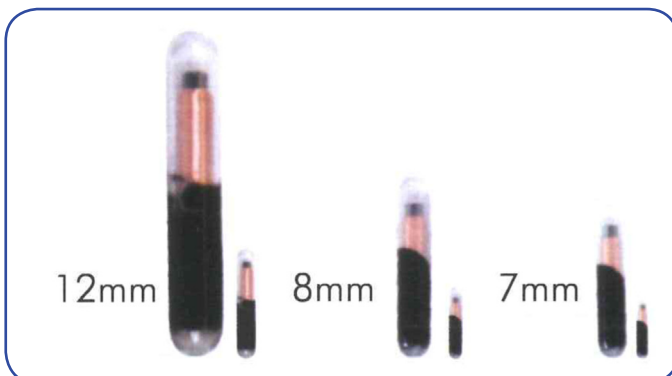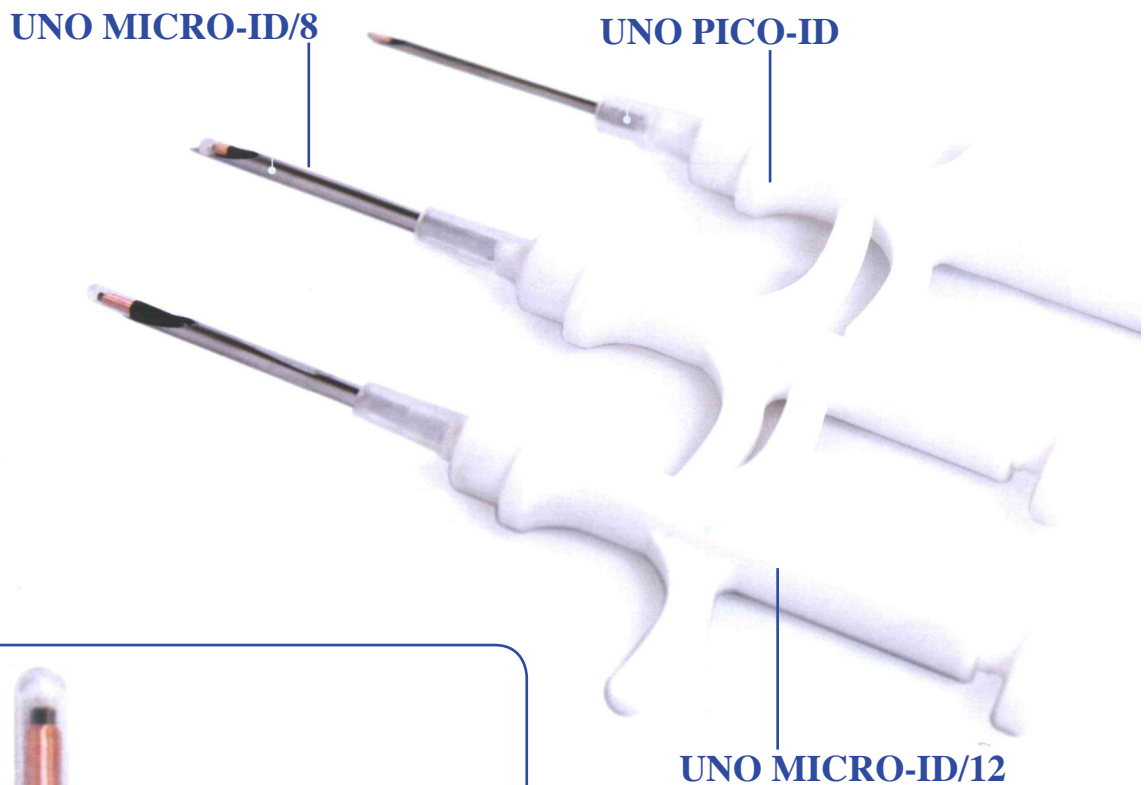
RFID TRANSPONDERS

UNO PICO-ID	7mm	x ø 1,25mm Transponder
UNO MICRO-ID/8	8mm	x ø 2,12mm Transponder
UNO MICRO-ID/12	12mm	x ø 2,12mm Transponder

Features:
- Passive transponder with no internal power supply. This allows the size to be minimized.
- Each transponder has a unique and universal ientification number.
- Supplied in a sterile package.
- Packaged inside an injector needle device.
- Sold in packages of 10.

Datasheets on the transponders are included further back in this binder.

UNO MICRO-ID/8   **UNO PICO-ID**

UNO MICRO-ID/12

12mm   8mm   7mm

Transponders shown enlarged for detail and actual size.

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RFID READERS

UNO offers a wide range of readers that can be used together with the UNO Transponders, from simple handheld readers that only give you information about the ID number read through reader that can be connected to a PC, till a complete set up that directly transfers the read information into a spreadsheet or other computer program.

The most commonly used readers are:

- **UNO PICO Reader**

- **COMPACTMAX**

- **LID 572 Pocket Reader**

- **UNO Petscan Pocket Reader**

- **UNO Universal Static Reader**

- **LAB MAX II Stationary Reader**

- **GES3S Reader**

- **LABMAX V Reader**

UNO also is able to supply custom made solutions, like integrating Identifying, Weighing and entering other required data in to your computer system.

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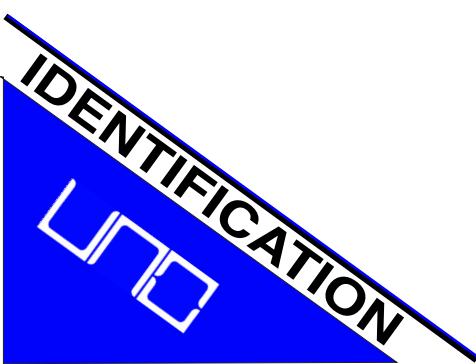
UNO PICO READER;
A Small Pocket Reader with lengthened antenna.

The UNO PICO reader is a small handheld reader with a lengthened antenna.
This antenna not only provides a better reading distance but because of its shape
also allows you to go into the animals homecage.

The UNO PICO Reader uses USB to communicate with a PC. The battery voltage
is realtime measured and shown on the LCD.

A Bluetooth module is optionally available.

Transponders that can be read:
- **UNO PICO ID Transponders**
- **UNO MICRO ID/8 Transponders**
- **UNO MICRO ID/12 Transponders**
- **Trovan® Unique & Flex**
- **ISO FDX-B**
- **Destron (Fecava)**
- **AVID**
- **ASK**
- **PSK1 and PSK2 Transponders**
- **AVID Encrypted tags.**

Standard version:
- **USB Port at bottom, USB1.1 and 2.0 compliant**
- **9600baud IrDa Infra serial port for serial communication**
- **LCD-Display with backlight**
- **Clock/Calender with lithium battery backup**
- **Windows 95/98/NT/XP/7 PC Software**

Optional:
- **Bluetooth wireless communication**

IDENTIFICATION

COMPACTMAX;
Pocket Reader

- **Best-in-class reading performances**
- **Extremely easy to use**
- **Slim and elegant design**
- **Pocket size, lightweight**
- **Long Lasting, rechargeable, lithium battery**
- **Bright color display**
- **Store up to 4'000 microchip codes**
- **Easily transfer codes to a PC**

COMPACT MAX the best of reading technology packed in a highly compact form factor. Thanks to its peripheral antenna, COMPACT MAX features best in class reading distances in a size small enough to fit comfortably into your pocket.
COMPACT MAX reads FDX-B (ISO) and FDX-A/Fecava microchips.
The scanner can be connected to a PC through its USB port and transfer microchip codes during or after the reading session. The connection is plug and play, with no set-up needed. COMPACT MAX has been designed with ergonomics and usability in mind. Its intuitive icon-based interface means reading microchips has never been easier.

Transponders that can be read:
- **UNO PICO ID Transponders**
- **UNO MICRO ID/8 Transponders**
- **UNO MICRO ID/12 Transponders**
- ISO FDX-A/Fecava
- ISO FDX-B (ISO)

Technical Data:
- Dimensions L160xW80xT20 mm
- Weight 170g
- Operating temperature -5degC to +55degC, 95% RH, non condensing
- Charging temperature +5degC to +45degC, 95% RH, non condensing
- Storage temperature -20degC to +65degC, 95% RH, non condensing
- Battery Li-ion (1250 mAh)
- Com interface USB (Mass storage, VCP and Keyboard wedge)
- Typical reading distance FDX-B (134.2 kHz) 12 cm
- FDX-A/Fecava (125 kHz) 8 cm
- Approved by CE/FCC
- National approval in Canada, Australia and New Zealand
- Standards ISO 11784/5 (FDX-B)
- Non-synchronizing transceiver

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UNO LID 572 READER;
A Small Pocket Reader with USB Interface.

The UNO LID 572 reader is a small handheld reader with a USB Module.
This reader is basicly the same as the UNO PICO Reader but without the lengthened antenna.
A Bluetooth module is optionally available.

Transponders that can be read:
- **UNO PICO ID Transponders**
- **UNO MICRO ID/8 Transponders**
- **UNO MICRO ID/12 Transponders**
- **Trovan® Unique & Flex**
- **ISO FDX-B**
- **Destron (Fecava)**
- **AVID**
- **ASK**
- **PSK1 and PSK2 Transponders**
- **AVID Encrypted tags.**

Standard version:
- **USB Port at bottom, USB1.1 and 2.0 compliant**
- **9600baud IrDa Infra serial port for serial communication**
- **LCD-Display with backlight**
- **Clock/Calender with lithium battery backup**
- **Pocket/belt clip**
- **Windows 95/98/NT/XP/7 PC Software**

Optional:
- **Bluetooth wireless communication**
- If you want a RS232 connection instead of the USB the LID 571 is available (without the Bluetooth option).

UNO UNIVERSAL STATIC READER

This stationary reader has a good reading distance with reader activation placed under software control or trigger controlled.

Transponders that can be read:

- **UNO PICO ID Transponders**
- **UNO MICRO ID/8 Transponders**
- **UNO MICRO ID/12 Transponders**
- **Trovan® Unique & Flex**
- **ISO FDX-B**
- **Destron (Fecava)**
- **AVID**
- **ASK**
- **PSK1 and PSK2 Transponders**
- **AVID Encrypted tags.**

Standard version:

- **Probe antenna (ANT613S)**
- **Reads automatically when transponder is nar antenna**
- **Needs regulated 12VDC ±5% linear power supply**
- **Relay output, selectable potential free or 12VDC no/nc.**
- **Buzzer on board**
- **512kb EEprom for data storage**
- **Windows NT/XP/Vista/7 PC software**
- **USB output for communication with Winwedge**
- **Dimensions: 25,5 x 18 x 8,5cm**
- **Weight: 1 Kg**

Available Antennas:

1. **External single coil probe antenna (ANT613S)**
2. **External Single Coil Antenna (ANT 616): To be positioned at the wall inside a laminar flow cabinet and the reader can be kept outside of the cabinet.**

1.   2.

LAB MAX III
Stationary reader with data interface

TECHNICAL DATA:

- Dimensions: 33.3 x 24 x 2.3 cm / 4.4 cm front / back
- Weight: 975 g
- Operating temperature: 0°C to +50°C
- Storage temperature: -25°C to +60°C
- Frequency: 134.2 kHz
- Power supply: 100-240 Volts
- Reading distance: Up to 25 cm
- Interfaces: USB port or RS232 serial connection
- Housing: White ABS, splash-proof surface, easy to clean
- Approved by: CE, FCC

IDENTIFICATION UNO

LAB MAX III

Stationary reader with data interface

Customer benefits:

- *Operation according to ISO Standards 11784/5*
- *Wide reading of transponders FDX-B*
- *Resistant to interference with noise detection indicator*
- *TFT color display*
- *Friendly user interface with menu setting options*
- *Beeper following successful reading*
- *USB and RS 232 interface*
- *Compatible protocol easy to adapt to any software*
- *Buffered reading mode for inhibiting the multi-reading of a transponder*

Product description:

Our portfolio of specialized RFID readers for labs is the perfect complement for studies and research projects where easy animal identification and animal welfare is paramount. The LAB MAX III is the ideal stationary reader for online data collection of various parameters as application of substances and measuring. Its wide reading range and the permanent reading display allow an effective and safe identification of the animal. The reader can be operated hands-free after switch-on and can be linked to any stationary or portable PC for data collection, either through the serial port or the USB port. This enables the user to fully concentrate on the observation and examination of the animals to be scanned. Our goal is to ensure that you can make quick, efficient and error-free work of the task of identifying hundreds, or even thousands of animals. In accordance with ISO standard 11784/5, the LAB MAX III reads ISO transponders (FDX-B). Once a code is read, it is displayed on the color screen display and an acoustic signal informs the user that a transponder has been correctly read. The reader is CE and FCC approved.

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UNO ISOMAX V

This lightweight and ergonomic shaped reader, is easy to handle. It stores upto 2000 codes in memory and it is possible to record date and time together with the transponder code.

Transponders that can be read:

- **UNO PICO ID Transponders**
- **UNO MICRO ID/8 Transponders**
- **UNO MICRO ID/12 Transponders**
- **Trovan® Unique & Flex**
- **ISO FDX-B**
- **HDX**
- **FDX-A (Fecava)**
- **AVID Encrypted tags.**

Standard version:

- **LCD Screen**
- **Power supply: rechargeable battery (12hrs)**
- **USB and RS232 output**
- **Dimensions: 330 x 160 x 40mm**
- **Weight: 450 Gr**

Optional:

Blue Tooth version.

UNO GES3S READER;
Universal portable reader

The Reader GES3S is a fully water-proof (IP 67 class) reader that reads all ISO HDX and FDX-A and FDX-B transponders in accordance to ISO standard 11784/5 and ISO 11784-AMB-1.

Transponders that can be read:
- **UNO PICO ID Transponders**
- **UNO MICRO ID/8 Transponders**
- **UNO MICRO ID/12 Transponders**
- **ISO FDX-B**
- **Trovan®**
- **AVID**

Standard version:
- **USB connection**
- **Bluetooth module**
- **with reader specific software**
- **LCD-Display with backlight**
- **Temperature in use: -5°C to +55°C**
- **Rechargeable battery: 3,7V/2500mAh Lithium polymer**
- **Memory > 1GB**

IDENTIFICATION

UNO WS-1
WEIGHING STATION

The WS-1 Weighing Station automatically scans RFID transponder tagged animals when weighed and reports the scan ID to the HM02Lab software together with the weight information. This way the Body Weight is entered into the HMbase database directly associate dto the animal in question.

Research Applications:
- **FOOD INTAKE SYSTEMS**
- **TOXICOLOGY STUDIES**
- **EFFICIENT IDENTIFACTION FOR LARGE SCALE**
- **OBESITY AND DIABETES 2 DRUG DEVELOPEMENT**

Benefits:

- Designed for automated Body Weight measurements
- Allow uninterrupted correlation between animal weight and -ID, directly stored in the database.
- ISO FDXB RFID tag identification of animal directly at scale
- SNUG 1500 standard scale
- Single USB connection connects RFID and Scale to Lab-PC
- LCD Backlight display, RFID LED Indicator
- Auto calibration
- Rechargeable battery: 3,7V/2500mAh Lithium polymer
- Memory > 1GB

Body weight entered directly into the database The WS-1 automatically weighs and scans RFID tagged animals and sends information to the HM02Lab application that directly associated the received data with the specific animal being weighed. This way human error is eliminated and the weighing proces made efficient and fast.

The animals are identified using ISO FDX-B RFID tags, UNO ISO MICRO-ID etc. Tagging is a safe way of identifying individual animals and integrated with HM System it can secure a fully automated tracking of animals through the entire experiment

Parameter	Abbreviation	Value	Unit	Note
Load capacity	Lmax	1000	g	
Load resolution	Lres	10	mg	
Load accuracy	Lacc	50	mg	
RFID reader frequency	F RFID	134,2	kHz	ISO FDXB
Cable connection	Con-Phys	USB		USB 1,0
Weight of station	WWS-1	5	Kg	
Dimensions of station	Footplate: 30,5 x 30,5cm Height: 40cm			

IDENTIFICATION

Data Loggers
for drug development in the biomedical industry

The Dataloggers are small implantable recorders that measure heart rate and/or temperature with high accuracy logging, where real-time data is stored in their internal memory, accessible after the trial. For several years these loggers have been used by the biomedical industry in virology, vaccinology and in studies that require accurate measurements. All DSTs are delivered with calibration certificates to ensure compliance with GLP.

Advantages at glance:

- **Logging**
- **Automatic measurements**
- **Small size**
- **Simple and cost effective**
- **Group, unconfined housing**

Small sized loggers - The Dataloggers are available in four different sizes. They vary in memory size and battery life.

	Nano	Micro	Milli	Centi
Dimensions	17mm x ø 6mm	25,4mm x ø8,3mm	39,5mm x ø13mm	46mm x ø15mm
Weight	1gr	3,3gr	11,8gr	19gr
Sensors	Temperature, temperature telemetry feature	Temperature, temperature telemetry feature AND/OR heart rate	Temperature, AND/OR heart rate	Temperature
Species	mice, gerbils, hamsters and other small research animals	rats, guinea pigs, ferrets, rabbits, cats, foxes and other larger research animals	non human primates, small ruminants (sheep, goat), dogs and other larger animals	bears, swine, cattle, horses and other larger animals

Heart rate measurements
The DST-HRT loggers, in micro and milli size simultaneously measure long term heart rate and core temperature. This makes them 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 leadless single channel ECG in which the electrodes are part of the housing material, making the logger especially easy to implant. The logger takes a burst measurement on any set time interval and calculates the mean heart rate for each recording. For validation purposes, each individual burst is graded with a certain quality index (QI) accessible in the accompanying application software.
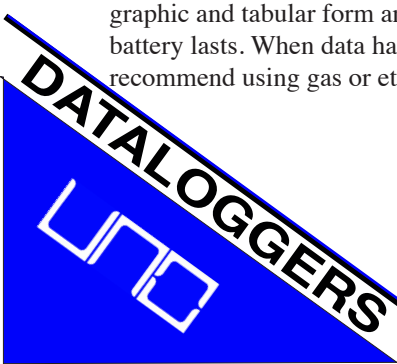
Temperature measurements
The DST temperature loggers in nano, micro, milli and centi cizes, are well suited for recording constant temperature throughout your research with no disturbance to the animal or the subject. Being able to measure core temperature without human interference reduces the stress placed on the animal circumventing any consequential fluctuations in the temperature profile. This may also result in a reduction of the number of laboratory animals used, with fewer animals needed to obtain reliable temperature data.

Compact leadless design
Researchers appreciate the loggers small size, high accuracy and biocompatible material suitable for implantation. With the completely leadless design of the loggers the implantation surgery becomes minimally invasive.

Easy to use and reusable
The Star-Oddi loggers are simple in use, from setup and surgery to data retrieval. The measurement data can be analyzed in graphic and tabular form and exported to most statistical analysis programs. The same logger can be reused as long as the battery lasts. When data has been retrieved the temperature logger can easily be sterilized and reset for new recordings. We recommend using gas or ethanol sterilization for our loggers.

DATALOGGERS
UNO

Key features

- Ideal for biomedical or animal welfare studies
- Constant and accurate temperature measurements
- Simple to use and cost effective
- Multiple animals in a cage (biomedical studies)
- Size only 17 mm x 6 mm, weighing only 1 g

Description

The DST nano-T is the world's smallest temperature data logger. Recorded data is stored in the logger's internal memory with a real time clock reference for each measurement.

The DST nano-T is supported by the Mercury software and the Communication Box which serves as an interface between the logger and a PC. When logger is placed in the Communication Box the wireless communication between logger and box can be established. In the software, the user sets the start time, start date and sampling interval before starting the recorder. Up to seven different intervals can be set for the same measurement sequence. This is especially useful when more frequent measurements are needed at a certain time period. After recovering the DST, recorded data is uploaded in the supporting software where results are displayed both in graphic and tabular form. After retrieving the data, the DST can be re-programmed and reused as long as the battery lasts.

A set of Communication Box and Mercury software needs to be purchased with the first order.

| TECHNICAL SPECIFICATION		
	Sensors	Temperature
	Size	17mm x ø 6mm
	Housing Material	Alumina and biocompatible epoxy
	Weight in air/in water	1 gram
	Memory type	Non-valotile EEPROM
	Memory capacity	43.476 measurements
	Memory capacity bytes	65,534 Bytes / temp 1,5 byte
	Memory management	Custom programming
	Data resolution	12 bits
	Temperature resolution	0,032°C
	Temperature accuracy	+/- 0,2°C
	Temperature range	5 to 45°C
	Temperature response time	Time constant (63%) reached in 5sec.
	Data retention	10 years
	Clock	Real time clock, accuracy +/- 1 min/month
	Sampling Interval	User specified in seconds, minutes or hours
	Number of different sampling intervals	1 to 7
	Communications	Communication box, RS232C 9 pin serial or USB
	Battery life	14 months - with a sampling interval of 10 min at room temp. Non-replaceable batteries.

Examples of Application

DST nano-T was designed to be used as an implantable thermo logger for wild and captive animals. DST nano-T is made of biocompatible materials (alumina and biocompatible epoxy) and its size and shape are ideal for implantation in small animals. The logger can also be fitted in tight spaces, small packages or vials, for e.g. heat studies or temperature monitoring. With its waterproof housing and carefully chosen materials the DST nano-T can be used for collecting temperature data underwater or in other liquids (tolerates chemicals well).

The DST nano-T temperature logger is suitable for studies within:
- Laboratory animal science
- Preclinical research, stability and toxicology studies
- Quality control (e.g. packaging)
- Tagging of small fish and animals
- Any use where ultra small and lightweight temperature recorder is required

DATALOGGERS UNO
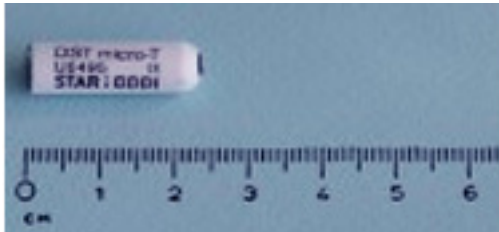
Key features

- Ideal for biomedical and animal welfare studies
- Reliable, constant and accurate measurements
- Simple to use and cost effective
- Multiple animals in a cage (biomedical studies)
- Biocompatible housing with dimensions 25.4 mm x 8.3 mm

Description

DST micro-T is a very small thermo logger. It measures and records temperature automatically with a customer defined interval. Data from the temperature probe is stored in the logger's internal memory with a real-time clock reference for each measurement and is retrieved after the study using a Communication Box. The temperature monitor can store up to 43,000 temperature measurements and has a battery life of circa 18 months (with sampling interval of 10 min). DST micro-T logger is easy to sterilize (gas sterilizer or 70% ethanol) and can be reused as long as the battery lasts, which makes the loggers very cost efficient. Each DST micro-T has its own five digit serial number permanently marked on the logger housing as well as placed in the logger's memory and provided with all downloaded data. DST micro-T is especially useful when you wish to record a comprehensive data set throughout your research with no disturbance to the animal or subject. The DST micro-T is supported by the Mercury software and the Communication Box which serves as an interface between the logger and a PC computer. Communication between the logger and the Communication Box is wireless when logger is placed in the Communication Box.

In the software, the user programs the start time, start date and sampling interval before the logger is implanted/deplolyed. A single interval is defined in seconds, minutes and hours. Optionally up to seven different intervals can be used within the same measurement sequence. The user defines the number of measurements they wish to record with each set interval at one time and the order these intervals are repeated in. This is especially useful when more frequent or rare measurements are needed at certain time periods. After recovering the DST, recorded data is uploaded in the software where the results are displayed both in graphic and tabular form. 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. When recorded data has been retrieved, the DST can be re-programmed and reused as long as the battery lasts.

A set of Communication Box and Mercury software needs to be purchased with the first order.

	Sensors	Temperature
TECHNICAL SPECIFICATION	Size	25,4mm x ø 8,3mm
	Housing Material	Alumina (Ceramic) and biocompatible epoxy
	Weight in air/in water	In Air: 3,3 gram / In water:1,9gram
	Memory type	Non-valotile EEPROM
	Memory capacity	43.477 measurements
	Memory capacity bytes	65,214 Bytes / temperature 1,5 bytes
	Memory management	Custom programming
	Data resolution	12 bits
	Temperature resolution	0,032°C
	Temperature accuracy	+/- 0,2°C
	Temperature range	5 to 45°C
	Temperature response time	Time constant (63%) reached in 8sec.
	Data retention	25 years
	Clock	Real time clock, accuracy +/- 1 min/month
	Sampling Interval	User specified in seconds, minutes or hours
	Number of different sampling intervals	Singel interval throughout the measuring period Or: Multiple intevals up to 7
	Communications	Communication box, RS232C 9 pin serial or USB
	Battery life	28 months - with a sampling interval of 10 min at room temp. Non-replaceable batteries.

The DST micro-T temperature logger is suitable for studies within e.g.:
- Laboratory animal science (antiretroviral, virology, toxicology)
- Preclinical research, stability and safety studies
- Packaging and quality control of medecine
- Any use where small size and accurate temperature measurements are of importance

Key features
- Biocompatible housing, ideal for implantation in animals for temperature monitoring
- Waterproof data logger up to 90 bar (900 m)
- Small dimensions 39.4 mm x 13 mm
- Large memory size of 87,000 measurements
- Long battery life, typically 5 years

Description

The DST milli-T is a small waterproof temperature data logger. Recorded data is stored in the logger's internal memory with a real time reference for each measurement. The DST milli-T is supported by the Mercury softwares and the Communication Box (data reader) which serves as an interface between the logger and a PC. Communication between the logger and the Communication Box is wireless.

In the software, the user sets the start time, start date and sampling interval before starting the recorder. After the measuring period the recorded data is uploaded into a PC computer through the Communication Box. Results are displayed both in graphic and tabular form in the SeaStar software. After retrieving the data, the DST can be re-programmed and reused as long as the battery lasts. Battery life can be several years, depending on sampling interval and usage. Battery is not replaceable.

A set of Communication Box and Mercury software needs to be purchased with the first order.

DST milli-T, DST milli-TD and DST milli-L (with pressure sensor) are available with an extended memory capacity (FLASH) that can store up to 682,000 temperature measurements.

TECHNICAL SPECIFICATION		
	Sensors	Temperature
	Size	39,4mm x ø 13mm
	Housing Material	Alumina (Ceramic)
	Weight in air/in water	In Air: 9,2 gram / In water: 5gram
	Memory type	Non-valotile EEPROM
	Memory capacity	87,000 measurements
	Memory capacity bytes	130,750 Bytes / temperature 1,5 bytes
	Memory management	Custom programming
	Data resolution	12 bits
	Temperature resolution	0,032°C
	Temperature accuracy	+/- 0,1°C
	Temperature range	5 to 45°C
	Temperature response time	Time constant (63%) reached in 12sec.
	Data retention	25 years
	Clock	Real time clock, accuracy +/- 1 min/month
	Sampling Interval	User specified in seconds, minutes or hours
	Number of different sampling intervals	1 to 7
	Communications	Communication box, RS232C 9 pin serial or USB
	Battery life	60 months - with a sampling interval of 10 min at room temp. Non-replaceable batteries.

The DST Milli-T temperature logger is suitable for studies within e.g.:
- Animal temperature monitoring
- Study of thermoclines in water columns
- Hydrology
- Ecosystems research
- Temperature measurements in liquids, vials etc.
- Pharmaceutical research studies
- Temperature measurements in air or soil

Key features

- Self-contained temperature logger ideal for use in environmental temperature monitoring
- High pressure survival up to 3000 m depth
- Biocompatible housing suitable for implantation in animals
- Long battery life of 9 years
- Small sized logger with dimensions 46 mm x 15 mm
- Large memory of 174,000 measurements (can be extended)

Description

The DST centi-T is a miniature submersible temperature data logger. Recorded data is stored in its internal memory with a real-time clock reference for each measurement.

The self-contained temperature logger is supported by the SeaStar software and the Communication Box which serves as an interface between the logger and a PC. Communication between the logger and the Communication Box is wireless.

In SeaStar, the user sets the start time, start date and sampling interval before starting the recorder. Up to seven different intervals can be set for the same measurement sequence. This is especially useful when more frequent measurements are needed at a certain time period.

After recovering the DST recorded data is uploaded via to SeaStar where results are displayed both in graphic and tabular form. After retrieving the data, the DST can be re-programmed and reused as long as the battery lasts.

A set of Communication Box and SeaStar software needs to be purchased with the first order.

TECHNICAL SPECIFICATION	Sensors	Temperature
	Size	46mm x ø 15mm
	Housing Material	Alumina (Ceramic)
	Weight in air/in water	In Air: 19 gram / In water:12gram
	Memory type	Non-valotile EEPROM
	Memory capacity	174,000 measurements
	Memory capacity bytes	261,819 Bytes / temperature 1,5 bytes
	Memory management	Custom programming
	Data resolution	12 bits
	Temperature resolution	0,032°C
	Temperature accuracy	+/- 0,1°C
	Temperature range	5 to 45°C
	Temperature response time	Time constant (63%) reached in 20sec.
	Data retention	25 years
	Clock	Real time clock, accuracy +/- 1 min/month
	Sampling Interval	User specified in seconds, minutes or hours
	Number of different sampling intervals	1 to 7
	Communications	Communication box, RS232C 9 pin serial or USB
	Battery life	108 months - with a sampling interval of 10 min at room temp. Non-replaceable batteries.

The DST centi-T temperature logger is suitable for studies within e.g.:

- Temperature fluctuations in animals
- Thermistor chain in water columns
- Temperature monitoring in oceans, rivers and lakes
- Agricultural research projects
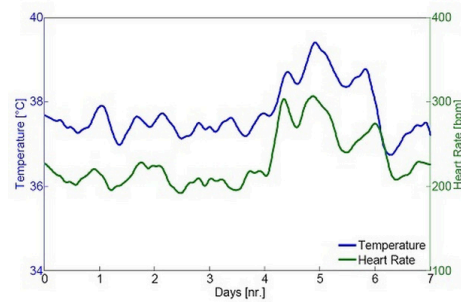- Aquaculture studies
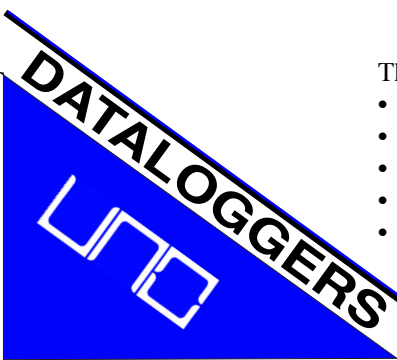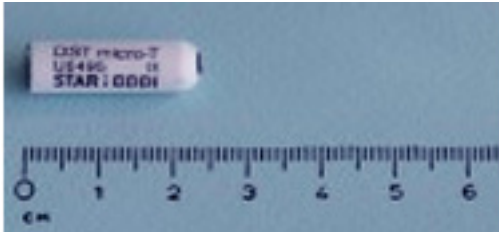
DATALOGGERS UNO

Key features

- Small, leadless logger (8.3mm x 25.4mm)
- Data stored in memory
- Automatic measurements
- Simple and cost effective
- Group and unconfined housing

Description

The heart rate sensor DST micro-HRT simultaneously measures long term heart rate and core temperature in animals. This makes it ideal for studies in which baseline and immunology responses are recorded, it's also suitable for toxicological, metabolic and thermoregulation studies. The heart rate is derived from a leadless single channel ECG in which the electrodes are part of the housing material, making the logger especially easy to implant. The logger then takes a burst measurement on any set time interval and calculates the mean heart rate for each recording. Each burst recording of heart rate consists of 600 measurements. For validation purposes, each individual burst is graded with a certain quality index (QI) accessible in the accompanying application software.

The heart rate sensor can store up to 21844 paired heart-temperature measurements and has a battery life of circa 3.5 months (with sampling interval of 10 min). The DST micro-HRT logger is easy to sterilize (gas sterilizer or 70% ethanol) and can be reused as long as the batteries last. Each DST micro-HRT has its own five digit serial number permanently marked on the logger housing as well as placed in the logger's memory and provided with all downloaded data. DST micro-HRT is especially useful when you wish to record a comprehensive data set throughout your research with no disturbance to the animal. Each logger comes with a calibration certificate.

Temperature and heart rate correlation

TECHNICAL SPECIFICATION	Sensors	Temperature
	Size	25,4mm x ø 8,3mm
	Housing Material	Alumina (Ceramic)
	Weight in air/in water	3,3g
	Memory type	Non-valotile EEPROM
	Memory capacity	43,690 measurements per sensor
	Data resolution	12 bits
	Temperature resolution	0,032°C
	Temperature accuracy	+/- 0,2°C
	Temperature range	5 to 45°C
	Data retention	25 Years
	Clock	Real time clock, accuracy +/- 1 min/month
	Sampling Interval	In Minute(s) or Hour (s)
	Number of sampling Intervals	-Single interval throughout measuring period -Or multiple intervals throughout period
	Communications	Communication box, RS232C 9 pin serial or USB
	Battery life	3,5 months - with a sampling interval of 10 min at room temp. Non-replaceable batteries

The DST micro-HRT is supported by the Mercury software and the Communication Box which serves as an interface between the logger and a PC computer. Communication between the logger and the Communication Box is wireless when logger is placed in the Communication Box.

In the software, the user programs the start time, start date and sampling interval before the logger is implanted. A single interval is defined in minutes or hours, fastest interval is 1 minute. Optionally it's possible to program with multiple intervals; up to seven different intervals can be used within the same measurement sequence. The user would then define the number of measurements to be recorded within each interval and thereby have more/less frequent measurements during specific time periods.

After recovering the DST, recorded data is uploaded in the software where the results are displayed both in graphic and tabular form. 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. When recorded data has been retrieved, the DST can be re-programmed and reused as long as the batteries last.
A set of Communication Box and Mercury software needs to be purchased with the first order.

DATALOGGERS UNO

Data Loggers
DST Milli-HRT - implantable heart rate and temperature logger
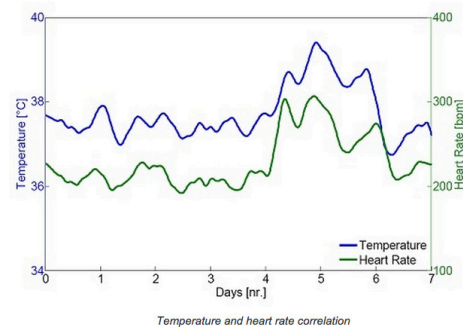

Key features
- Leadless and small (13mm x 39.5mm)
- Data stored in memory
- Automatic measurements
- Simple and cost effective
- Group and unconfined housing

Description

The heart rate logger DST milli-HRT simultaneously measures long term heart rate and core temperature in the animal. This makes it ideal for studies in which baseline and immunology responses are recorded. The logger is also suitable for toxicological, metabolic and thermoregulation studies. The heart rate is derived from a leadless single channel ECG (electrocardiogram) in which the electrodes are part of the housing material, making the logger especially easy to implant. For heart rate the logger takes a burst measurement on any set time interval and calculates the mean heart rate for each recording. Each recorded burst measurement consists of 600 measurements. For validation purposes, each individual burst is graded with a certain QI (quality index) accessible in the accompanying application software.

The heart beat logger can store up to 21844 heart rate and temperature measurements and has a battery life of circa 9.5 months (with sampling interval of 10 min). DST milli-HRT logger is easy to sterilize (gas sterilizer or 70% ethanol) and can be reused as long as the batteries last, which makes the logger very cost efficient. Each DST milli-HRT has its own five digit serial number permanently marked on the logger housing as well as placed in the logger's memory and provided with all downloaded data. DST milli-HRT is especially useful when a comprehensive data set throughout the research with no disturbance to the animal is needed. Each logger comes with a calibration certificate.


Temperature and heart rate correlation

TECHNICAL SPECIFICATION	Sensors	Temperature
	Size	39,4mm x ø 13mm
	Housing Material	Alumina (Ceramic)
	Weight in air/in water	11,8g
	Memory type	Non-valotile EEPROM
	Memory capacity	43,690 measurements per sensor
	Data resolution	12 bits
	Temperature resolution	0,032˚C
	Temperature accuracy	+/- 0,2˚C
	Temperature range	5 to 45˚C
	Data retention	25 Years
	Clock	Real time clock, accuracy +/- 1 min/month
	Sampling Interval	In Minute(s) or Hour (s)
	Number of sampling Intervals	-Single interval throughout measuring period -Or multiple intervals throughout period
	Communications	Communication box, RS232C 9 pin serial or USB
	Battery life	9,5 months - with a sampling interval of 10 min at room temp. Non-replaceable batteries

The DST milli-HRT is supported by the Mercury software and the Communication Box which serves as an interface between the logger and a PC computer. Communication between the logger and the Communication Box is wireless when logger is placed in the Communication Box.

In the software, the user programs the start time, start date and sampling interval before the logger is implanted/deployed. Fastest sampling interval is 1 minute. Optionally the loggers can be programmed with up to seven different intervals within a measurement sequence. The user defines the number of measurements for each of the interval so it's possible to have more/less frequent measurements during specific periods.
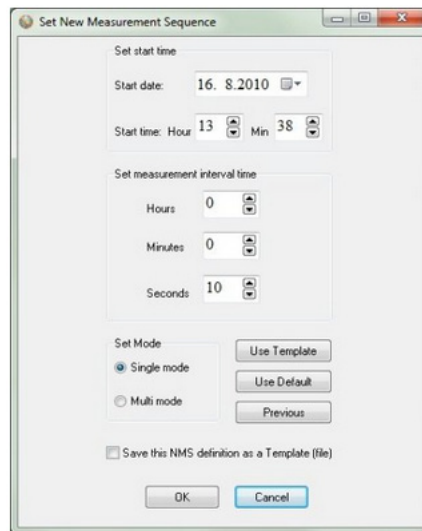
After recovering the DST, recorded data is uploaded in the software where the results are displayed both in graphic and tabular form. The software also provides the user with some basic statistic information on the data such as minimum and maximum values on defined area, median, average, distribution of values etc. When recorded data has been retrieved, the DST can be re-programmed and reused as long as the batteries last.

A set of Communication Box and Mercury software needs to be purchased with the first order.
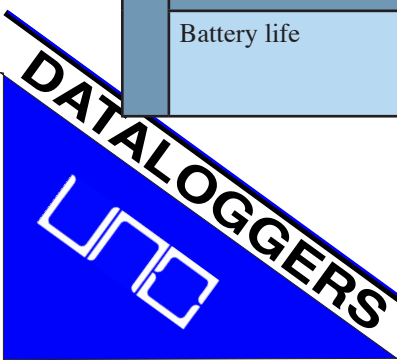
Overview

Mercury is our graphical Windows supporting software for the Pharmaceutical Industry. It is suitable for DST micro-T and DST nano-T. Just like our other software, Mercury offers various options for measurement setup and graphical and tabular view of retrieved data.

Description

In Mercury, the user sets the start time, start date and sampling interval before starting the recorder. A single interval can be defined, in second(s), minute(s) or hour(s).

Up to seven different intervals can be set for the same measurement sequence. Number of measurements is defined for each interval. This is especially useful when more frequent measurements are needed at certain time periods.

After recovering the DST, recorded data is uploaded to the software where the results are displayed in both graphic and tabular form.

Every 30 days, Mercury automatically searches for and downloads the latest updates to the software.

Data Loggers
REAL TIME TELEMETRY

KEY FEATURES
- Small, leadless logger (8.3mm x 25.4mm)
- Wireless transmission (telemetry) and logging of data
- Data stored in memory
- Automatic measurements
- Simple and cost effective
- Group and unconfined housing

Temperature and heart rate correlation
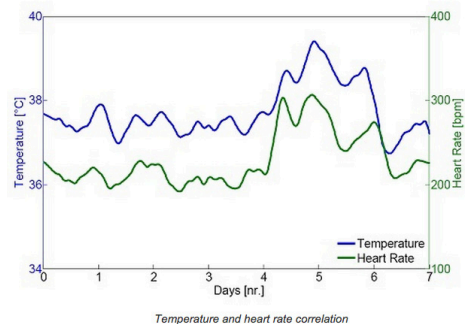
Description
The heart rate sensors DST...RF-HRT simultaneously measure long term heart rate and core temperature in animals. This makes them ideal for studies in which baseline and immunology responses are recorded, they are also suitable for toxicological, metabolic and thermoregulation studies. The heart rate is derived from a leadless single channel ECG in which the electrodes are part of the housing material, making the logger especially easy to implant. The logger then takes a burst measurement on any set time interval and calculates the mean heart rate for each recording. For validation purposes, each individual burst is graded with a certain quality index (QI) accessible in the accompanying application software.

Easy to use and reuseable
The heart rate sensor is simple in use, from setup and surgery to data transmission and retrival. DST ...RF-HRT logger is easy to sterilize (gas sterilizer or 70% ethanol) and can be reused as long as the batteries last, which makes the logger very cost efficient. Each DST ...RF-HRT has its own five digit serial number permanently marked on the logger housing as well as placed in the logger's memory and provided with all downloaded data. DST ....RF-HRT is especially useful when you wish to record a comprehensive data set throughout your research with no disturbance to the animal or subject. Each logger comes with a calibration certificate.

Easy to use and reuseable
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.
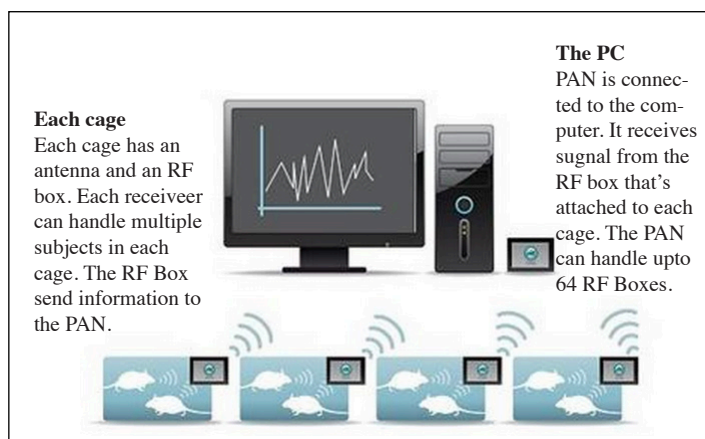
DATALOGGERS
UNO

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.

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

The PC
PAN is connected to the computer. It receives sugnal from the RF box that's attached to each cage. The PAN can handle upto 64 RF Boxes.

DST logger specs	DST NanoRF-T	DST MicroRF-T	DST microRF-HRT
Sensors	Temperature	Temperature	Heart rate, Temperature
Size: ø x length	6 x 17,5mm	8,3 x 25,4mm	8,3 x 25,4mm
Weight	1,3g	3,3g	3,3g
Battery Life	12 months*	21 months*	2,5months*
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
Transmission range to RF box.	20-30cm	20-30cm	20-30cm

PAN, receiver	
Size	85 x 75 x 25mm
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, Transceiver	
Size	85 x 75 x 25mm
Transmission range to PAN	20-30meters **
Transmission frequency	2,4GHz
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

DATALOGGERS UNO

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