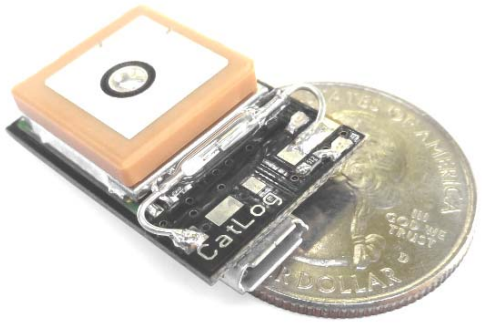
Overview



Used in thousands of GPS tags around the world CatLog became the standard GPS data recorder for wildlife bio-tagging.
The device will record the position in an adjustable time interval. The movement profile can later be displayed on a map or exported to use with other software.

Generation 2 of the CatLog has been specifically optimized for scientific use while still maintaining an excellent performance to cost balance.

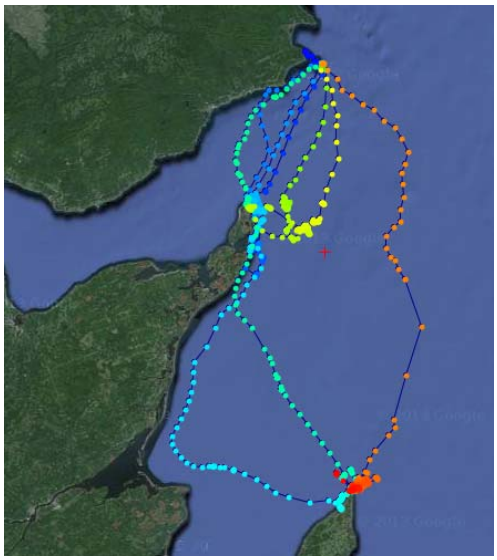
Its low power consumption combined with small dimensions, low weight and high accuracy makes it an ideal device for domestic and wildlife animal observation.

Optimized for scientific use, CatLog offers the following features:

- Magnetic switch to activate and deactivate it
- Choice of different enclosures to withstand seawater and tough conditions
- Optimized weight and operation time by scalable battery size
- Lots of configuration options to get the best results for your project needs.
- Retrieval option
- Advanced scheduler (dual time table)
- Ready for alternative energy supply (self containing system)

The recorded data is stored in an open text format that can be used by most 3rd party programs.

However, CatLog has also its own visualization software. This allows the user to analyze the recorded data as well as to apply multi-level filters or export only certain portions of the whole data set.
It also allows visualizing position accuracy estimates which is one specific feature of the Gen2 CatLog.



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Functional Features

The CatLog GPS logger offers a large number of features to get a maximum of field operation time and handling convenience:

Logistics	• Each device can be named by the user – no more confusion with lost markings • Simplified setup - copy one configuration to all your devices. • Automatic batch processing to work through a high number of devices in short time
Handling	• Option to prevent device from getting manually turned off improves reliability in the field. • Automatic start at defined date – the device will be in energy conserving deep sleep mode until a certain date.
Energy supply	• Works with different battery chemistries with adjustable shutdown thresholds. • Advanced power management allows operating from renewable energy sources. The device will automatically resume operation once batteries are recharged.
Logging	• Asynchronous (standard) or synchronous logging mode. Synchronous logging is required if positions of multiple devices need to be considered at the same time. • Logging of additional data (temperature, time to position fix [TTF], PDOP, velocity)
Operation	• Advanced scheduler function that defines operation in hourly or daily patterns. It also enables the use of different recording intervals, e.g. have an energy conserving recording during the night and a higher recording interval during daytime. • Adjustable timeout in case of unfavorable reception conditions will help preserve energy. Handy for animals that are under water or underground for certain times. Backup logging event is possible in such cases to not miss a position. Or the device can be turned off for a certain period after detecting problematic reception conditions. • Options to balance accuracy versus energy consumption. • Speed triggered logging interval. Switches to a fast interval when an adjustable speed threshold is exceeded.
Recovery	• Recovery feature after defined date – allows easy retrieval in a colony or in a known migration area. This function can also trigger a separation unit.

Enclosures

Our GPS solution is very modular. There is a selection of different enclosures to fit the project needs. The table below will give you an overview of enclosures and their typical characteristics.

Enclosure	Water resistant	Dive proof	Weight	Size	Mechanical rigid	Battery capacity	Costs	Best use	Example picture
ThermoSeal	Yes	Yes <50m	L	S	L	Low <1Ah	L	Birds	
Epoxy potted	Yes	Yes <500m	M	S	H	Low <1Ah	H	Birds, Turtle	
Drybox	Yes	Yes <10m	H	L	H	High 3-12Ah	H	Cattle, Horse	
Tube	Yes	Yes <10m	H	L	H	High 3-9Ah	M	Cattle, Sheep, Hogs	
Boxed	Yes	No	M	M	H	Low <2Ah	M	Dogs, cats	

L = Low, M=Medium, H=High

Specification

Device weight and dimensions

Electronics without battery and enclosure

Antenna Type	Weight	Size
Patch antenna	6g	27 x 20 x 8 mm
Chip antenna	2.1g	30 x 21 x 4mm
Wire antenna	2.3g	22 x 21 x 4mm, 90mm wire

Battery

Rechargeable Lithium Polymer

Capacity	Operation**	Dimension*	Weight
<160mAh	tbd	tbd	
160mAh	30h	30 x 20 x 4mm	+4g
380mAh	80h	35 x 25 x 5mm	+7.3g
450mAh	100h	50 x 25 x 5mm	+9.8g
750mAh	160h	40 x 30 x 7mm	+16g
3000mAh	650h	n/a	+50g

* for reference only, actual size depends on available cells
** based on 30s capture interval, 3D lock, LED on

Enclosure

Type	Weight***
ThermoSeal (Sealed shrink tubing)	+2 g (Patch) +1.3 g (Chip)
Epoxy resin	+11g (380mAh) +14g (750mAh)
Drybox	+190g
Tube	+55g

*** may vary with battery size

Operation temperature	-20 to +60 degrees Celsius (based on Lithium Polymer chemistry)
Dive depth	See enclosure matrix. Note: no GPS position under water
Activation	Magnetic switch, automatic start timer, mechanical switch (optional)
Status visualization	2 LED lights (can be turned off for concealed operation)
GPS chipset	MediaTek 33 (66 Channel, -165dbm)
Satellite System	GPS, GLONASS (with chip antenna)
Position accuracy	5-10m
Position logging interval	Adjustable 5s – 24h. Weekly scheduling mode available. 2 different logging intervals
Recorded data	Time, position, altitude, HDOP, PDOP, temperature, TTFF, speed
Storage capacity	Up to 400.000 positions (110.000 positions below hardware version 5)
Interface	Serial Micro USB
Operating system	Windows, Mac OS (using Windows VM)
Export data format	CSV (Excel), GPX, Text

Internal parameters

Supply voltage	3.0 – 4.1V
Max. current draw	40mA
Charge current	Adjustable by hardware
Shutdown voltage	Adjustable by software

Firmware Version and Supported Features

	Firmware version									
Feature	**<1.2**	**<2.3**	**2.3**	**2.4**	**2.5**	**3.0**	**3.1**	**Tbd**	**Tbd**	**Tbd**
Scheduler with 2 different interval settings	-	✓	✓	✓	✓	✓	✓			
Delayed start, recovery mode after certain date	-	✓	✓	✓	✓	✓	✓			
Adjustable battery thresholds (shutdown, restart)	-	-	✓	✓	✓	✓	✓			
Blackout option if no position could be acquired		-	-	✓	✓	✓	✓			
Logging of additional data (temperature, time to position fix [TTF])	-	-	-	✓	✓	✓	✓			
Data logging enabled even if no position available	-	-	-	✓	✓	✓	✓			
Charge while in operation	-	-	-	-	✓	✓	✓			
Speed triggered interval	-	-	-	-	-	✓	✓			
Realtime Position Synchronization	-	-	-	-	-	-	✓			

We offer the service to update your devices to the latest firmware version (as far as hardware version permits)

Recorded Positions vs. Battery Capacity

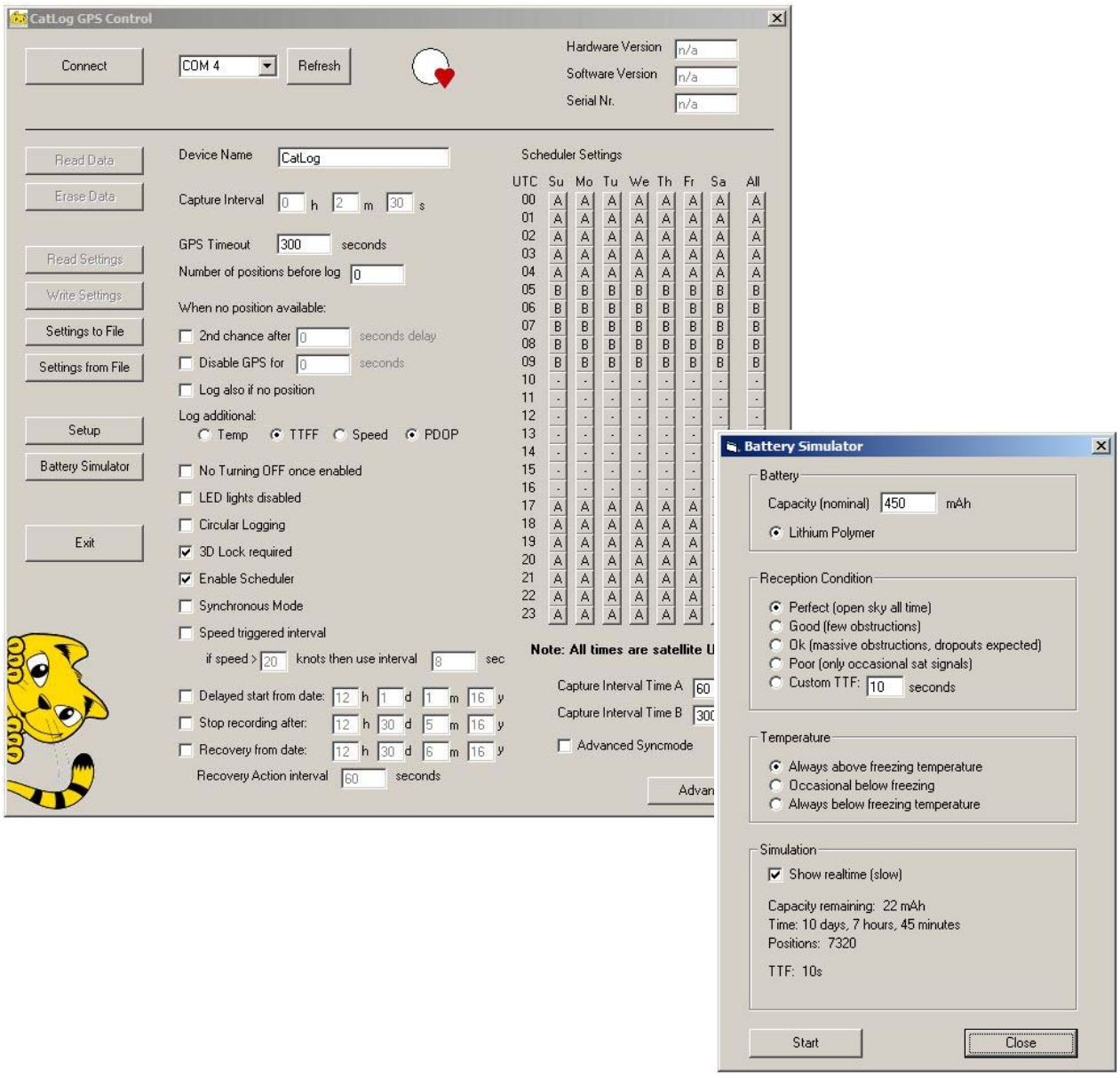
tbd.

Recorded Positions vs. Interval Rate

tbd.

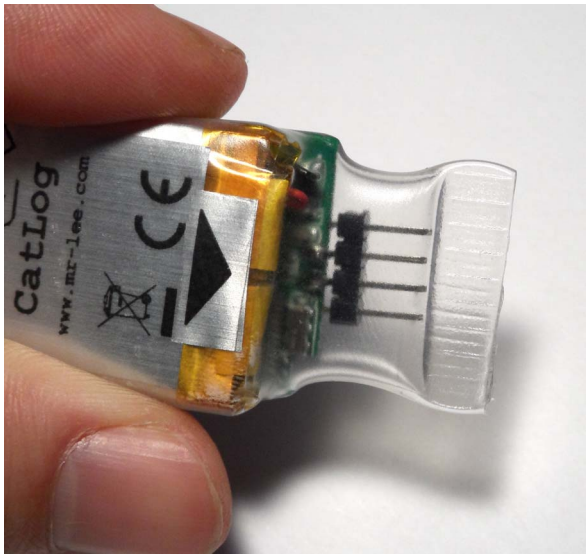
Control Center Software

Have full control of your devices! CatLog Control Center runs on both Windows and Mac OS platforms (using Windows VM).
Load and save settings, optimized workflow if you have to deal with high number of devices. Sophisticated and Industry first battery simulator allows you to find the optimal settings for your project needs.



ThermoSeal Enclosure

One key feature of the CatLog-S is the ThermoSeal enclosure that offers the best environmental protection for the least weight. It is a special heat shrink tubing with outstanding characteristics.

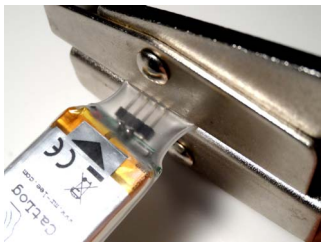


ThermoSeal™ Features:

- Provides reliable water tightness and is absolutely corrosion and pressure resistant.
- Reusable seal, just heat it up to open it and seal it again with heat !
- Sufficient wall thickness to mechanically protect the device
- Sticks to tape for universal deployment
- Allows to create special attachment fixtures
- Cheap, clean, economic, simple !

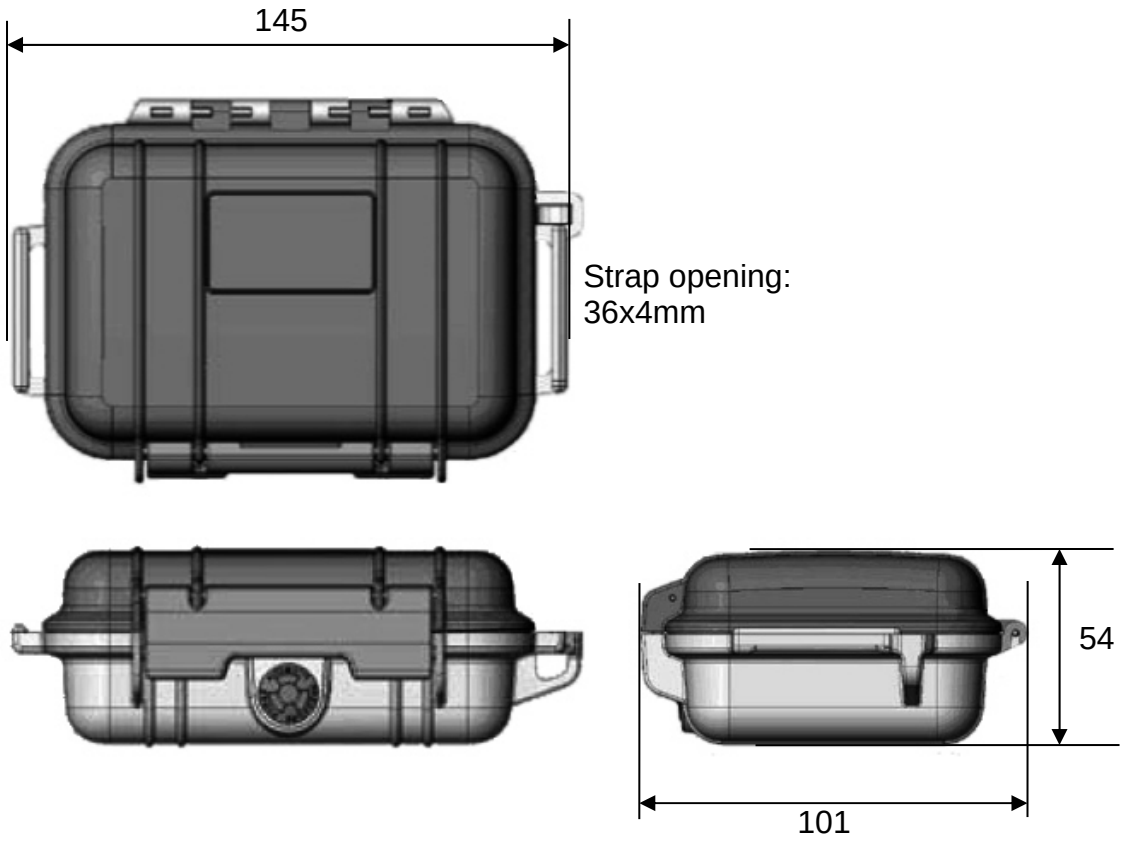
Seal temperature range: 160-200 degrees Celsius (320 – 390 Fahrenheit)



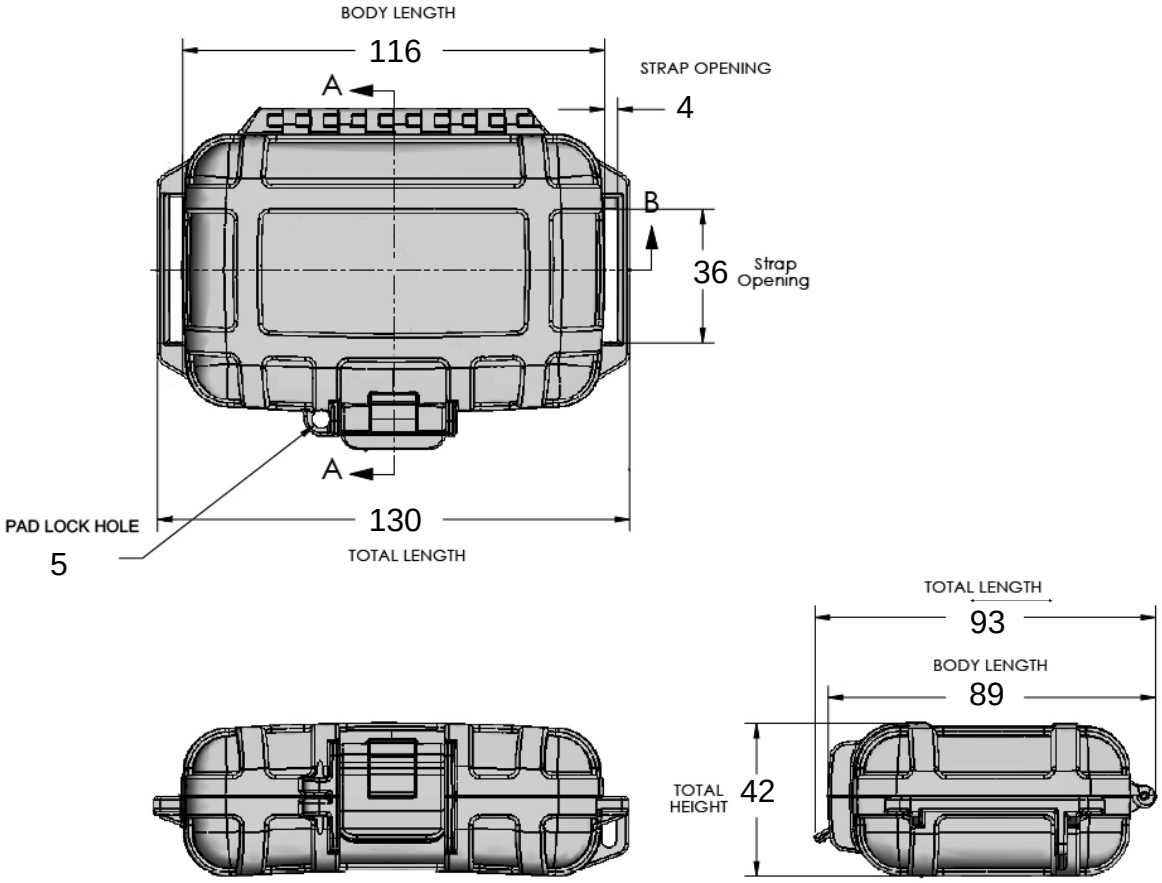



Process description is part of the CatLog-S User Manual.

Drybox Enclosure Type 1010 Drawings



Drybox Enclosure Type 1000 Drawings



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