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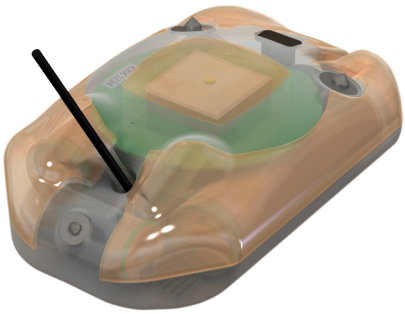
WILDLIFE COMPUTERS

SPLASH10-F FASTLOC® GPS TAGS PRODUCT SHEET



SPLASH10-F-297A

The SPLASH10-F is one of the available configurations of the SPLASH10 tag, which combines the Wildlife Computers Argos transmitter and Wildtrack Telemetry Fastloc® technology with the standard Mk10 archival tag. This versatile tag performs sub-second GPS acquisitions and transmits Fastloc and other data through the Argos satellite system. It has the standard SPLASH10 complement of sensors to measure depth, temperature, light-level and to differentiate wet or dry conditions. It has archival capabilities which include 1 GByte of memory.

Controller features

The controller in the SPLASH10-F has a low-power design that is optimized for long battery life. It contains a real-time clock, up to eight 12-bit analog-to-digital converters, 512 KBytes of low-power static RAM, support for FLASH data memory, and 128 KBytes of program FLASH memory. The operating code of the SPLASH10-F resides in this code memory and can be upgraded. This means it can always have the most up-to-date version of on-board software, regardless of when the tag was purchased.

Sensors

The SPLASH10-F is configured with multiple sensors. One or two bytes of memory are required to store each sensor reading depending on how the data compress.

Depth — A 12-bit analog-to-digital converter is used, which provides highly accurate measurements from −40 to +1000m, with 0.5m resolution and an accuracy of ±1% of the reading. In addition, measurements from 1000 to 1500m are made with a lesser degree of accuracy.

Internal Temperature — A 12-bit analog-to-digital converter is used, providing an actual measured range of −40 to +60°C, with 0.05°C resolution and an accuracy of ±0.1°C.

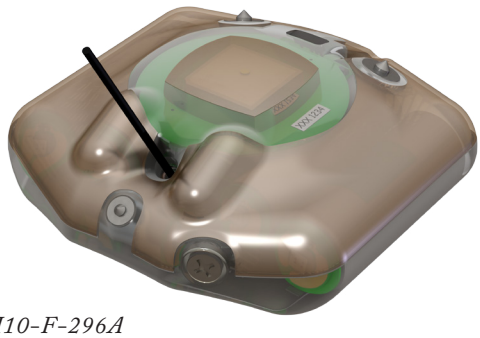
Light level — Light level is measured as irradiance at a wavelength of 550nm with a logarithmic range from 5 x 10−12 W.cm−2 to 5 x 10−2 W.cm−2. Bright sunshine is approximately 2 x 10−3 W.cm−2. Tests have shown the sensor to be able to identify dawn/dusk events down to 300m in clear waters.

Wet/Dry — The wet/dry sensor allows the tag to recognize when it is dry to control sampling and transmissions.

External Temperature — A 12-bit analog-to-digital converter is used, providing an actual measured range of −40 to +60°C, with 0.05°C resolution and an accuracy of ±0.1°C. Response time is less than 1 second.

User-programmable sampling protocols

Sampling is controlled by a user-specified sampling protocol. The researcher programs the rate at which each sensor is sampled, and whether or not sampling is suspended when the wet/dry sensor reads dry. Different channels can be sampled at different rates, so that slowly-changing sensor readings can be sampled less frequently than fast-changing sensor readings.



SPLASH10-F-296A

This is a small representation of our available tags.
Tag features and specifications subject to change without notice.

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SPLASH10-F Fastloc® GPS Tags Product Sheet – continued

Memory and data retention
Collected data are stored in non-volatile FLASH memory. Data are maintained for at least 25 years, even if the battery is exhausted. The amount of memory available for data storage is 1 GByte, which allows the SPLASH10-F to store at least 50 million samples (sensor readings). Each sample occupies one or two bytes of memory, depending on how the data compress. The memory will allow at least 5 years of data to be stored when sampling depth, temperature and light-level every 10 seconds.

Transmitter
The SPLASH10-F incorporates a specialized Argos transmitter developed by Wildlife Computers. It generates 0.5W of radiated power output. The high-efficiency and frequency stability of this transmitter maximize the quantity and quality of messages.

Transmitted data
Researchers can program the SPLASH10-F to selectively transmit time-at-depth, time-at-temperature, maximum depth and dive duration histograms, depth-temperature profiles, timelines, behavior and light-level curves. For the histograms, the researcher can configure the histogram collection period (1 to 24 hours) and bin ranges (up to 14 bins).

Many other parameters are user-programmable and provide the flexibility to customize data collection to best achieve different experimental objectives. The SPLASH10-F also transmits data collected from the Fastloc module. Each Fastloc location fits into a single Argos message.

Location accuracy
Service Argos provides the locations with best accuracy as good as ±250m. Additionally the data from the Fastloc module can be post-processed (with supplied software) to generate locations with GPS precision and typical accuracy of less than 50m.

Battery Life
Actual battery life depends on the sampling regime and temperature conditions. In calculating the power budget for the Wildlife Computers SPLASH10-F Argos/Fastloc GPS tags, the researcher needs to allow for both the Argos transmissions and Fastloc acquisitions. Since each deployment situation is different, we provide instructions for budgeting the available power to best benefit your application.

Tag activation
The SPLASH10-F will auto-deploy. The tag senses its environment using the wet/dry sensor. When in standby mode, tags will "auto-start" when the depth sensor reads a 20m change in depth or the wet/dry sensor senses a pre-set minimum change in conductivity. As with other Wildlife Computers tags, a magnet can be used to change or indicate the mode of the tag. The LED flash sequence indicates the current mode.

Communication
Wildlife Computers provides an interface to the SPLASH10-F that runs on a PC. This interface allows the user to set up the tag for deployment, and download the data after recovery.

Data decoding and analysis
Wildlife Computers-designed PC-based WC-DAP software helps collect, prepare, and analyze the data returned from the tag through Argos or from the tag's archive. DAP can automatically collect Argos data from the Argos servers, decompress the messages into readable data, generate CSV files of the data, generate KML files of the track for Google Earth, and generate PXP files for visualization and further processing by Igor Pro (Wavemetrics).

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