# MINIPAT POP-UP TAG PRODUCT SHEET

The MiniPAT is a pop-up satellite archival tag used to study movements, habitat utilization, and post-release survival of pelagic animals. Developed with a focus on reliability, ruggedness, and ease of use, the MiniPAT features a stable low-drag shape, a robust urethane nose, and pinger for radio tracking recovery. Sensor data are collected during deployment, and archived in onboard memory. Then on a pre-set date, the tag releases from its host animal, surfaces, and uploads a summary of the archived data to Argos satellites.

## Transmitted Data Products

### Time Series
The MiniPAT has the ability to send time series depth and/or temperature data through Argos. Sampling interval options range from 75 seconds to 10 minutes.

### Summary Messages
Traditional Time-at-Temperature and Time-at-Depth histograms are available as well as Depth-Temperature Profile summaries (PDTs) which describe the water column. Also available, and exclusive to the MiniPAT, are Mixed Layer messages which describe the amount of time the animal spends in the mixed layer, the temperature of the mixed-layer, and the depth of the thermocline.

### Dawn/Dusk Curves
Dawn and dusk light level curves, corrected for attenuation due to depth, are generated daily. Geolocation calculations use these light curves to calculate animal horizontal habitat utilization and movement.
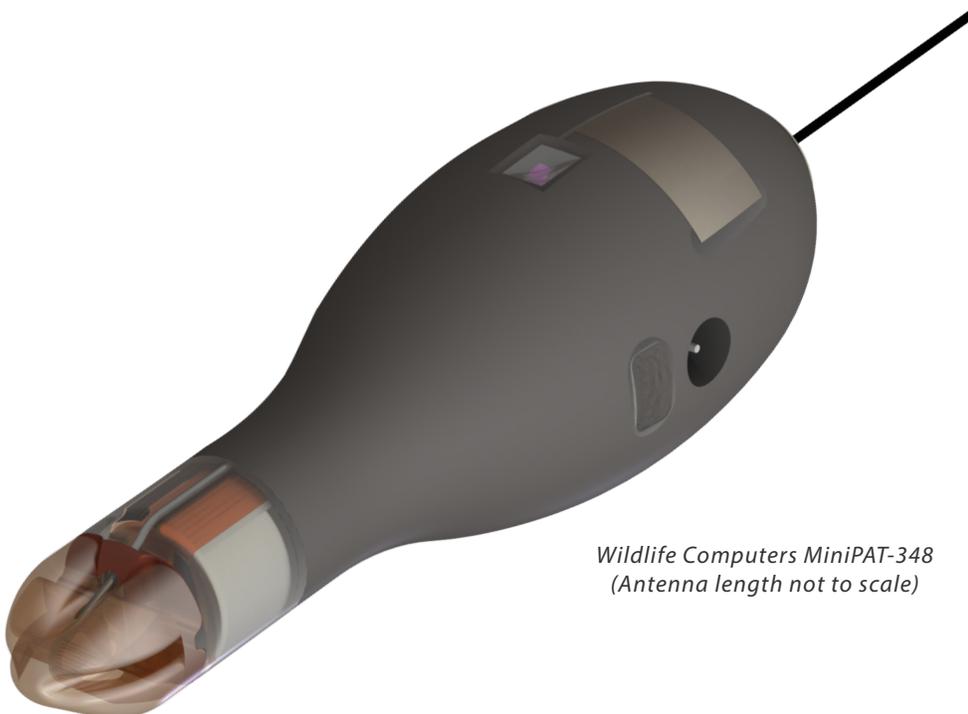


*Wildlife Computers MiniPAT-348*
*(Antenna length not to scale)*

*Tag features and specifications subject to change without notice.*

## Key Features

### Flexible programming
MiniPAT deployments can be tailored to achieve unique experimental objectives. With a myriad of data products available and flexible programing options, the researcher has the power to customize and prioritize data transmission to capture the information that's most significant for their project.

### Onboard archive
A complete record of depth, temperature, acceleration and light-level observations are stored onboard the tag. Should the MiniPAT be recovered, you get back the full archive.

### Recovery pinger
With a direction al antenna and receiver the MiniPAT can be located and recovered. Once the tag is in-hand, the entire archive is available for download.

### Premature release and mortality detection
The MiniPAT monitors for constant depth, a state which implies the tag is floating at the surface or sitting on the sea floor. If constant-depth conditions are met, release is activated. Thus the MiniPAT will transmit even in the event of attachment failure, animal mortality or unexpected animal behavior. This feature minimizes the chance that something will damage the tag between the premature release event and the programed pop-up date.

### Robust nose with copper fouling protection
New in 2015, the MiniPAT nose is made of durable urethane making for a highly reliable and robust attachment point. Copper protects against fouling at the parting line between the nose and tag body.

### Crush-depth prevention
A release is triggered if the tag ventures below 1400 meters. This helps maximize the probability of data recovery in the case of animal mortality.

### Adaptive transmission schedule
Unlike other pop-up tags, the MiniPAT message creation and transmission schedule is adaptive. Intelligent, responsive software waits until after pop-up to package data messages for transmission. This allows the tag to send as much data as possible given the release date and helps determine the cause of premature release events.

### The Portal Advantage
The MiniPAT is supported by the Data Portal, a collection of data management tools and services. Developed specifically for the display and investigation of data from Wildlife Computers tag, the Data Portal streamlines the processes of acquiring, preserving, and sharing data.

## Technical Specifications

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| Dimensions | 124 mm (length) x 38 mm (diameter) |
| Weight in air | 60 grams |
| Pressure rating | 2000 m |
| Memory | 16 Mbytes |
| Operating Frequency | 401.678 MHz |
| Operating Life | Up to 2 years |
| Sensors | Light, Acceleration, Pressure, Temperature, Wet/Dry |
| Light | $10^{-2}$ to $10^{-10}$ W/cm$^2$ at 440 nm |
| Pressure | Range: 1700 m  / Resolution: 0.5 m |
| Temperature | Range: -20 to 50° C  / Resolution: 0.05° C |
| Communication | Via USB Port using Wildlife Computers USB Communications Cable |

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