WILDLIFE GPS BUYER'S GUIDE

THINGS TO KNOW BEFORE YOU BUY

BY QUINTIN KERMEEN | AUGUST 1ST, 2024

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THE STARTING POINT

WEIGHT

This is where we start, knowing the maximum product weight that your study species can reasonably carry. This is always our first question. If you don't know, we can help you find out. The old 5% rule is no longer valid. That rule came about in the 1970s when tracking collars were so big and heavy that only very large animals could carry them anyway. A 2 kg skunk should not be equipped with a 100 gram GPS collar. That's 5%. 35 grams is more reasonable, under 2%. But what about 2.5%? That might not be too heavy but it is grotesquely bulky for a 2 kg animal. This is just one example, give us a call and we'll talk you through it. +1 925-798-1942

BATTERY LIFE

Often the second question that we ask is what battery life you're going to need. People often have a range of acceptable battery life. There are many things that affect battery life. Think about the habitat and mean temperature, we're going to give you a worst case scenario battery life and work backward, with you, from there.

EXPECTED GPS PERFORMANCE

You will have likely already thought about how much GPS data you need. This is the final piece of the first puzzle. By the time we know your maximum allowable product weight and your desired battery life, habitat and mean temperature, knowing your expected GPS performance will establish whether or not we can help you. We are happy to have this discussion with you and there is no pressure to buy so don't hesitate to email us to arrange a time to talk. quintin_kermeen@telemetrysolutions.com

ATTACHMENT AND DESIGN

Attachment can go one of four ways, it might be obvious like a fox wearing a GPS collar. Or you may have so much experience with a specific attachment method that you tell us exactly what you want. Or, like a beaver researcher we supplied some years ago, you may want to try a couple of different attachment methods. Then there is the final option, where we have to come up with a new attachment method and we work together to decide on a final method.

PRACTICAL CONSIDERATIONS

PRIMARY VERSUS RECHARGEABLE BATTERIES

Telemetry Solutions uses both types of batteries depending upon the application. Generally, if you can tolerate the weight of the primary battery, they are a far better choice. Here are a few important considerations regarding primary and rechargeable batteries.

- The lightest rechargeable battery that we can use weighs less than 2 grams.
- The lightest primary battery that we use that can provide enough current to power the GPS weighs 9 grams.
- Gram for gram, primary batteries are 6 times more energy dense than rechargeable batteries
- A rechargeable battery with the same capacity as a primary battery will have a very big footprint rendering it unusable
- At -10° C. the rechargeable batteries will stop producing current sufficient to operate the GPS
- Rechargeable batteries can be tested to confirm they capacity, primary batteries cannot be

We are happy to provide you with a deeper and more clear understanding of batteries. Please feel free to call us at +1 925-798-1942

DATA ACQUISITION

We have 5 product lines, Nano, Nano Enhanced, Small, Medium and Large GPS. All of our product lines offer automatic, long-range* radio, data download to a mobile base station. Medium and Large GPS also offer data transfer by the Iridium satellite communication system. In other words, they include both systems radio and satellite download.

However, the products that have the radio download can transmit to an Iridium enabled base station. That means that if the base station is within range of the GPS for the radio download, the data collected by the base station can then transmit that data to you by satellite. Like all of our base stations, this base station can be externally powered by a solar charged battery pack. Please call or email to set up an appointment for a no-pressure, fact finding conversation at either +1 925-798-1942 or quintin_kermeen@telemetrysolutions.com

*The range varies depending on conditions, the maximum reported range is 40 km. However, it is extremely rare that conditions for this length download will exist. Please contact us for clarity.

CUSTOMER SUPPORT

Even with the informational videos and user manuals that are available, from time to time you may have questions. Sometimes your questions need to be answered right away and it might be after hours, on a weekend or holiday. That is why Telemetry Solutions provides customer support 365 days per year. And sales inquiries from Australians are often answered Sunday evening in California. We do everything we can to close the gap created by the distance from each other.

DELIVERY TIME

A normal delivery time is from 3 - 4 weeks after the order is placed with all order details and payment information. However, some orders can be done in as little as 2 weeks.

THE NITTY GRITTY

GPS SCHEDULING

You create your own GPS schedule, whether that be a simple repeat interval or a complex schedule of specific times in the day. Create up to twenty, unique, daily GPS schedules and apply them to any days in the year and subsequent years. You can schedule days with no GPS positioning if you like. Please watch this video to understand https://www.youtube.com/watch?v=uNFW_qkeaQI

POSITION ACCURACY

"Oh what a tangled web we weave

When first we practice to deceive"

-Sir Walter Scott, 1808

Telemetry companies do not make the GPS chipsets used in their products. They incorporate into their products, chipsets manufactured by other companies. Those chips come with a factory datasheet that specifies accuracy. A typical line from the chipset manufacturer datasheet may read "Accuracy of < 1.5m 95% of the time" But this has nothing to do with the accuracy of the GPS positions output by the devices that you deploy on wild animals. If the GPS chipset accuracy is being quoted as the GPS wildlife product accuracy, we need to talk. Call Quintin at +1-925-798-1942

VHF TRANSMITTER OR NO VHF TRANSMITTER

Traditionally GPS collars include a VHF transmitter. All of the Telemetry Solutions GPS devices have a UHF (not VHF) radio download device that has more range than the VHF transmitter. To track the VHF, you need a directional antenna and a VHF receiver. But do you need it? Do you need to track the VHF transmitter? In order to get the data download, the answer is; No, you do not. However, almost everyone still asks for the VHF to be included. The VHF almost always uses a battery separate from the GPS, therefore we are adding weight to include the VHF transmitter. Take this into consideration if you are unsure whether or not you really need the VHF transmitter. We can help you decide, using the widget on our website, please What's App Quintin at +1-925-356-1972

SOLAR POWER

It sounds attractive doesn't it? But is your study species one that spends a lot of time in the sun? Solar panel power harvesting is very good when the solar panel is in the sun. But we need to look very hard at how long your species is in the sun and how that will affect the panels' ability to charge the battery and provide you with the amount of data you need. To get clarification, please email us at sales@telemetrysolutions.com

RAW ACCELEROMETER OUTPUT VERSUS ACTIVITY REPORTS

All Telemetry Solutions GPS products include a 3-axis accelerometer that can provide you with motion information. The raw accelerometer data is massive and does not transmit remotely. You must recover the GPS device in order to get the raw accelerometer data. However, there is a better way.

Rather than just collect and store raw accelerometer data, we can work with you to create activity reports and transmit that information remotely. The reports are based on a massive amount of accelerometer data that are then categorized according to what you needed to detect and then we store the resultant declaration and transmit it. Depending upon the specific behavior the GPS is detecting for you, the reports are customized.

SENSORS: SMART GPS, SMART TEMPERATURE, SMART WATER, TURTLE SWIM/WALK DETECTION, TEMPERATURE LOGGER

Sensors can do a lot for your datasets! Do not be shy about using the sensor features that affect the GPS schedule.

SMART GPS

We had one client who got 9 times more battery life than predicted, just by using Smart GPS. Smart GPS relies upon the accelerometer informing the microprocessor regarding the amount of movement between scheduled GPS positions. Please contact Quintin at +1-925-356-1972 to learn more.

SMART TEMPERATURE

Smart Temperature uses the temperature sensor to inform the GPS schedule. Users set up the temperature increase or decrease that triggers multiple GPS positions that were not in the original GPS schedule. Very useful to determine when lizards emerge from cool spots into the sun.

SMART WATER

Smart water utilizes a water detector sensor to affect the GPS schedule. If the animal and the GPS are underwater there is no point turning on the GPS. But you won't know when to schedule GPS positions for the GPS to only turn on when the GPS is out of the water. The water sensor takes care of this and allows you to program the GPS to stay off if water is detected when a GPS position is scheduled. Then, after that the sensor will continue to detect the presence or absence of water and turn on the GPS or keep it off accordingly. Finally, you can choose to force the GPS on after X number of the sensor detecting water. It is complicated and we give you the opportunity to set up the water sensor actions as you wish. To learn more, please call Quintin at +1-925-798-1942 or email quintin_kermeen@telemetrysolutions.com to schedule a Zoom or phone call.

SWIM/WALK DETECTION

If you are trying to find turtles' nests and you can only have a very lightweight GPS device, we need a way to be sure the GPS only turns on when the turtle is walking, not when the turtle is swimming. Our accelerometer/gyroscope sensor can detect a swimming turtle with 99% accuracy. As for walking, the accuracy is lower. But then, as the user, you get to program about 10 different settings that determine how the sensor will inform the microprocessor regarding turning on the GPS in different scenarios. It is complicated but we are happy to explain it to you. Please email sales@telemetrysolutions.com to schedule a no pressure, informational phone call or Zoom. We're happy to help.

D.I.Y

In the past, we did offer a D.I.Y. solution. It turned out to be a bit too much for most folks who purchased it. However, you still have the opportunity to do battery refurbishments yourself. It is not complicated but it does require time and skill. There is also the possibility that you will destroy the GPS device altogether. Please use the What'sApp widget on our website to contact Quintin at +1-925-356-1972 to schedule a talk about whether or not you should attempt this when the time comes.

LIVE TRACKING

The live tracking of wildlife or captive animals is now possible without having to rely on large batteries or long information gaps. The system is fully automated and flexible. Our Hallux GPS app allows the users to not only track an animal and see its location in real time, but also to review a log after that fact, and share that log with anyone. For more information, please call Quintin at +1-972-798-1942

WRAPPING UP

REFERENCES

With their permission, we are always happy to share with you previous users' contact information. Please call and ask, +1-925-798-1942

REFURBISHMENT

With the exception of GPS pods, all of our GPS devices can be refurbished. Some users have refurbished their GPS devices up to 5 times, getting 6 uses from a single device.

QUALITY ASSURANCE

This is really an interesting topic. Every product that we build is tested 3 different times. 2 during the production process and 1 time after the production is complete. But then we don't just ship your order to you, there is another big step in the quality assurance process. There are 40 specific points we check, these are not GPS positioning itself but rather range from double checking the information on the product label to making sure the bluetooth is operating to checking that we didn't use too much battery during the production testing process.

This system was developed by an employee named Matt McDermott. He came to us in the autumn of 2008 and he was one of the most clever and forward thinking employees we have ever had. He identified a problem and offered solutions. Now Amazon has him.

WARRANTY

Technically, our warranty protects you from manufacturing defects for 1-year from the time of purchase. In 28 years in business, we have never turned our back on a client that went up to 2 years before getting back to us with a problem. In effect, we appear to have a 2-year warranty.

PRICE

We have GPS products ranging from $350 - $2900, the price depends upon many factors. For a price quote, please call Quintin at *1-925-356-1942 or send a What'sApp to the same number to set up a call.

ABOUT THE AUTHOR

Quintin Kermeen started in the wildlife telemetry industry at age 15 in 1979. Mopping the floors, cleaning the bathrooms and winding tuning coils by hand! In 1996, in order to have control of the company he works for, he started Telemetry Solutions. After reselling GPS manufactured by another company for the first 8 years, he experienced such poor product quality from their offerings that he undertook to develop a Telemetry Solutions GPS product line. That has been moving forward since 2007.

His focus is to provide products that do what we say they will do for projects that will have a good result from the product. And when the suspicion is that our products will not satisfy a clients' needs, he tells you! All of our clients have directx access to Quintin. His personal mobile number is throughout this document, +1-925-356-1972