ADVANCED TELEMETRY SYSTEMS

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# Operational Description of the ATS W300

The ATS W300 Wildlink-GTX collar collects GPS data and transmits the GPS data through the Globalstar satellite system to an ATS server that further processes the data for ATS clients. The W300 is powered by a 3.6V lithium battery pack. The main components of the W300 are a microcontroller that keeps track of time and manipulates received GPS data for transmission, a GPS receiver, and a satellite transmitter.

The microcontroller is operated at 3V and runs off of either a nominal 24.5 MHz internal oscillator or an external 32.768 kHz crystal. The majority of the microcontroller's time is spent keeping track of the current time. At preprogrammed times, the microcontroller activates the GPS receiver and waits for a GPS location to be determined. Once the GPS location is determined, the processor saves the location into a flash memory chip for later data transmission. Data transmissions also occur at preprogrammed times. Once it is time for a data transmission, the processor sends recently saved GPS data to the satellite transmitter and the satellite transmitter takes care of sending the data through the satellite network. In addition to the functions of obtaining GPS data and sending the data to a satellite transmitter, the microcontroller also monitors an accelerometer. There is an optional feature that can be programmed into the microcontroller that will initiate a satellite transmission when the accelerometer has not detected movement for a certain period of time.

The GPS receiver is operated at 1.8V and is activated at certain preprogrammed times during the day. It can obtain a maximum of 2 GPS locations per day and will actively receive data a maximum of 180 seconds per GPS fix attempt. The GPS receiver uses an active patch antenna that operates at 3V.

The satellite transmitter unit in the W300 is the Globalstar STX3. The satellite transmitter is operated at two different voltage levels. For digital communication, the transmitter uses 3V and for RF operation the transmitter uses 3.6 V. The antenna used for satellite transmissions is the API Technologies PA251615025SALF. Once a data transmission is initiated by the microcontroller, the STX3 operates independently of the microcontroller for up to twenty minutes. Once a transmission is initiated, the STX3 immediately attempts to send a transmission through the Globalstar satellite network. After that initial transmission, two more transmissions will be attempted at randomly determined times between five to ten minutes after the previous transmission occurred.

The only things the user has direct control over are the attachment of the collar to an animal and turning the device on and off. The collar has an adjustable circumference controlled by hardware fasteners that the user can adjust according to their needs. The collar is turned on and off via a magnet. To turn the collar on, the user must remove the magnet from the electronics. To turn the collar off, the magnet must be attached to the collar at the location indicated by two white dots.