G2110B/D GPS Collar Quick Guide
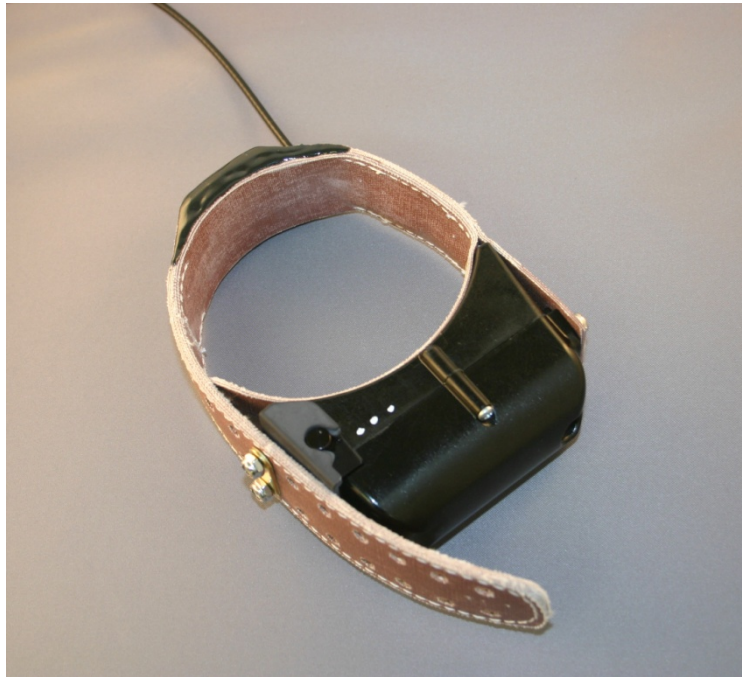
ATS

ADVANCED TELEMETRY SYSTEMS

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G2110B/D GPS COLLAR SYSTEM

The G2110B and G2110D GPS Collars are GPS store-on-board collars with a timed release mechanism. This quick guide is designed to get you started and answer important questions quickly.

INSTALLING WINCOLLAR

WinCollar software is a Windows® based program that allows you to view your collar's programming and download your collar's data. The program is normally supplied on compact disk (CD). To install, put the CD in the CD drive of your computer. The installation will begin. Follow instructions on your computer display for the remainder of the installation.   If the automatic install does not begin, select *start>run>browse*, select your CD drive, then *Setup.exe, Open* and *OK*. Follow the instructions. If any other

previous versions of this software are on the computer, remove it using
start>settings>control panel>add or remove programs.

TAKING THE FIRST GPS LOCATION

These collars last took a GPS location (or fix) at ATS in Isanti, Minnesota (45° 29.732'N, 93° 14.832'W). If your study location varies significantly (more than 200km) from its last location, the GPS will no longer be searching for the correct satellite set. The GPS receiver bases its search criteria on its last known location. In GPS language, this is known as a cold start. To initiate a cold start, a command needs to be sent to the collar via your computer using the WinCollar software.

To prepare your collar:

1. Set your receiver to collar's frequency. The frequency label will be on the end below the collar material. Remove the magnet. Wait for the startup pattern as described in item 11. This will take approximately 2 minutes.

    Caution: Repeated activation and deactivation of your GPS collars may induce an unintended firing of the explosive collar release mechanism. This could occur because, once the magnet is removed, the release mechanism is partially charged during a self test mode. Replacing the magnet on the collar forces the circuit to discharge. If the magnet is replaced too quickly after it has been removed, the circuit will not have had time to discharge to a safe level.

    To prevent this from occurring, once the activation magnet has been removed from the electronics, never place it back onto the collar to deactivate the electronics, until a minimum of five minutes have elapsed.

    At all times, exercise extreme care when removing the activation magnet from the collar, or when placing the magnet on the collar to deactivate it.

    Should an unintentional firing of the release mechanism occur, please contact ATS for additional instructions.

2. The port is located under the belting on the side opposite the release mechanism. Remove the lock nuts and the lift flap. Remove the port cover. Replace cover when set up is complete. This connector is fully sealed. The cover keeps debris out so the connections can be made to download the data when the collar is recovered.

3. Connect the yellow cable to the communications port of the GPS collar.
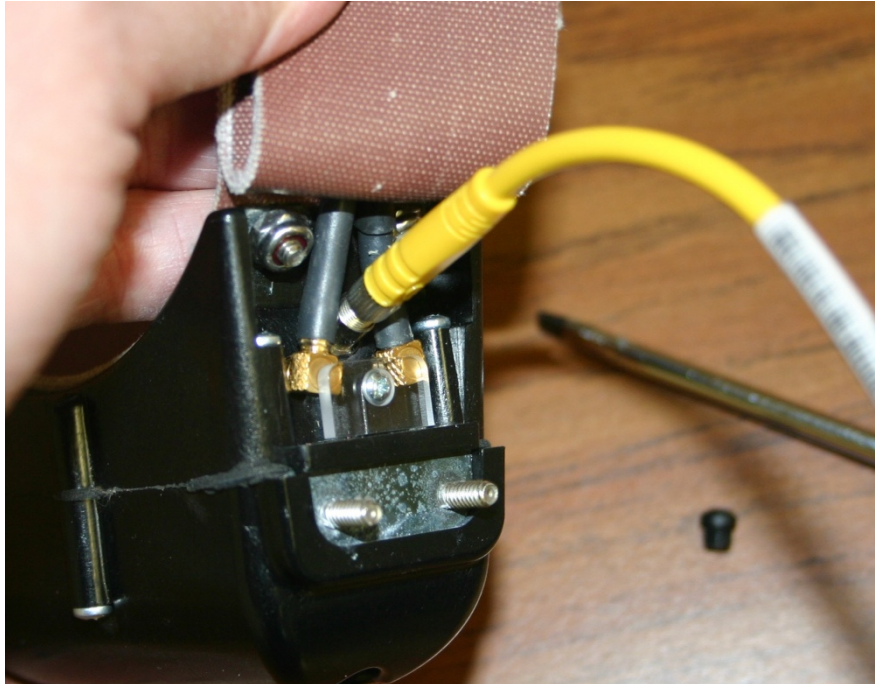
4. Plug the other end of the yellow download cable into the serial (com) port of your PC. If your PC does not have a serial port, use a USB serial adapter. Note: Only com port numbers 1 to 6 work with the WinCollar software.
5. Double click on the WinCollar icon. For information on using WinCollar, see Help on Menu Bar.
6. Select *Settings>Com Ports> Com1.* Com1 is normally the primary port, if you are using a different port, select the appropriate port.
7. Then select *Load Almanac* and *OK.*
8. Disconnect the yellow cable from the collar and replace the port cover. Place collar outside where it has an open sky view. Orient the collar so the GPS antenna (top) is up.
9. Wait 15 minutes.
10. Listen to the collar's VHF signal. Every 6th beep should be a double. This indicates the GPS receiver in the collar has recorded a location. If not, place the magnet on the side over the white dots to restart the collar and try again. Listen to the receiver to make sure the collar was reset. Note that sometimes the collar needs to be shaken (activity) for beeps at 60 ppm.
11. At start up there will be:
    ~ A packet beep (two 100 ms beeps)
    ~ Four second pause
    ~ A set of 5 – 15 triplet beeps at 60 ppm. The release mechanism circuit is being tested during these beeps.
    ~ A packet beep - if the test is successful. If it is unsuccessful, the collar goes silent (attempting GPS location). More information is given in Release Mechanism section on the failing of the release circuit test.
12. The collar is attempting a GPS location during the 60 – 120 second silent period. When location attempt is done, the transmitter will beep a double beep every sixth

beep if it was successful in obtaining a GPS location. If not successful, there will be only single beeps. In this case, connect the yellow cable to collar and repeat from step 7 one more time.
13. Replace the cover over the communication port.
14. Refasten the collar to the case and tighten nuts securely.

These steps can be done several hours before the collars are actually deployed. At deployment time, make sure to check that the collars are taking GPS locations before releasing the animal.

Note: ATS collars have an automatic 'Load Almanac' feature. The collar will repeat loading the almanac if a location has not been successfully acquired for a designated period of time. The default setting is 48 hours. However, this time is changed in certain circumstances. See *Period Between Almanac Fixes* on the Collar Configuration report included with your collar. This information can also be found in View Collar Configuration in the WinCollar software. The collar must be connected to the PC to retrieve the information.

DOWNLOADED DATA FORMAT

Year	Month	Day	Hour	Minute	Second	X		Y		Altitude	2D/3D
aaaa	bb	cc	dd	ee	ff	gg.ggggg		hhh.hhhhh	J	kkkk	m
2004	10	30	21	17	10	45.68298	N	93.85282	W	301	3

Satellite number												PDOP	HDOP	Temp	Activity	GPS on Time
nn	nn	nn	nn	nn	nn	nn	nn	nn	nn	nn	nn	pp.p	qq.q	rr.r	sssss	ttt
6	7	10	17	23	26	0	0	0	0	0	0	1.9	1.9	22.31	33	96

Where:

a=A number representing the year

b=A number from 1-12 representing UTC month

c=A number from 1-31 representing UTC day

d=A number from 0-23 representing UTC hour

e=A number from 0-59 representing UTC minute

f= A number from 0-59 representing UTC second

g= Latitude or UTM (Universal Transverse Mercator) easting coordinate (depending on what format was chosen) Latitude is followed by an 'S' or 'N'.

h= Longitude or UTM northing coordinate (depending on what format was chosen).

J= If UTM was chosen, this will appear giving the UTM zone. If longitude was chosen, it will be followed by a direction, 'E' or 'W'.

k= Altitude in meters above/below sea level (the maximum height recorded is 1954 meters; asterisks represent values out of range)

m= Fix type, 2=2D and 3=3D

n=A number from 1 to 32 representing the satellite PRN number

p= A number from 1.0 to 99.9 representing the Position Dilution of Precision (PDOP)

q= A number from 1.0 to 99.9 representing the Horizontal Dilution of Precision (HDOP)

r= A number from –30 to 99.9 representing temperature accurate to ± 2º Celsius

s= A number from 0 to 65,535 representing the cumulative count of tilt switch changes since the last acquired GPS location

t= A number from 0 to 300 representing the length of time in seconds the GPS receiver was on to determine the last location. A zero represents the data status at the end of a fifteen-minute almanac reading.

INTERPRETING THE TRANSMITTER BEEP PATTERNS

The GPS collar has an RF transmitter that can be used to locate the collar. This transmitter also sends data on the status of the collar. To save power, the transmitter can be programmed with a duty cycle to be off for specified intervals. To convey information this transmitter transmits different patterns. To hear these beep patterns, please refer to a file folder on the Wincollar CD entitled GPS Sound File. Open "What do these beeps mean.doc" and chose the pattern you want to hear. These files will work with either Real One® or Windows Media Player®.

TRACKING BEEPS are beeps occurring at the rate of 30, 40, 60 or 120 beeps per minute (ppm) and also a doublet pattern. The beep rate depends on the status of the collar.

The following are examples of different types of TRACKING BEEPS:

A DOUBLET PATTERN occurs every 6th beep when the last attempt by the GPS receiver to obtain a location was successful.

LOW BATTERY BEEPS are beeps at a rate of 40 ppm. They are transmitted in response to a low battery condition.

RELEASED BEEPS are beeps at 120 ppm. This rate indicates the collar has fired its drop-off mechanism. Activity beeps are allowed while the collar is in the 120 ppm state. The activity beeps should occur only if the collar has not fallen off the animal.

ACTIVITY BEEPS occur in a doublet pattern if the tilt switch changed state in the previous quarter second.

MORTALITY BEEPS are beeps typically occurring at a rate of 120 ppm. A slow mortality beep pattern at 20 ppm is also available. The collar will go into this mode if the activity counter has not changed in the number of hours preset by the user before the collars were deployed.

WATCHDOG BEEPS occur when a system check has indicated a problem. It is reset if no further errors occur within 48 hours. If WATCHDOG BEEPS occur for a period longer than 48 hours contact ATS. A WATCHDOG BEEP is an inversion of the tracking beeps. A single beep occurs wherever a doublet would normally occur and a doublet will occur wherever a single would have normally appeared.

The STARTUP BEEP PATTERN occurs when the magnet is removed from electronics module. The first two beeps are called a packet beep. Next, a four second pause followed by a set of 5 to 15 triplet beeps at 60 ppm, and a packet beep - if the release circuit test is successful.

Note: The transmitter will run 72 hours straight after the magnet is removed. It will follow the duty cycle after the 72 hours.

RELEASE MECHANISM

The release mechanism is standard on all ATS GPS collars. Releasing the collar permits you to retrieve and download GPS data. The release on this collar is a timed release. The number of days you selected for release is programmed for you at the factory. The countdown begins when the magnet is removed. If after that time, the magnet is placed on the housing, turning the collar "off," then the timer stops. This means that the collar release will be delayed during the time the collar is not functioning. *The countdown timer is not reset by cycling the collar electronics on and off.* The count-down can only be reset by re-initializing the collar electronics by downloading a program to the collar, using WinCollar software.

The release circuit is tested during the triple beep pattern heard when the magnet is removed from the collar. The only time the release circuit is tested is at startup. This is to ensure at deployment that the circuit is functioning properly. If the release circuit test failed, the collar functions as though it has been release from the animal. It will remain at 120 ppm and give unpatterned beeps when moved or shaken. DO NOT deploy the collar. Return it to ATS.
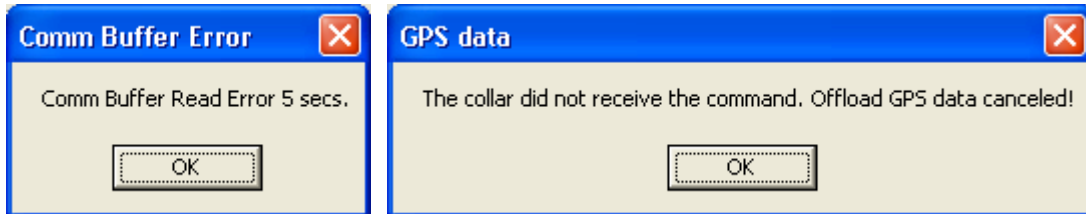
BATTERY VOLTAGE SENSOR

The system includes a low battery detection circuit. If the circuit detects low voltage, the microprocessor decreases use of components using the most power, such as GPS and the transmitter. When the GPS collar system is in low-battery mode, the transmitter pulses at a rate of 40 ppm. The main battery supply should support the remaining system for up to forty days after it is no longer able to support the GPS receiver.

When the main battery supply has been depleted, a backup battery supplies the system with power. The microprocessor monitors duration of backup battery usage. The GPS collar will release after the backup battery has been in use for 240 hours or 10 days.

TROUBLESHOOTING

COMMUNICATING WITH THE COLLAR AND COMPUTER:

Comm Buffer Error ✕

Comm Buffer Read Error 5 secs.

[OK]

GPS data ✕

The collar did not receive the command. Offload GPS data canceled!

[OK]

This means the computer did NOT get confirmation from the collar that the command was received. Things to check:

1. Can you hear the transmitter? If the collar is trying to take a GPS location, the transmitter is off. Communication cannot be established during a GPS location.

2. Is the magnet off of the collar? The magnet turns off all collar functions and the computer cannot communicate with the collar. Remove magnet and wait for collar to complete startup sequence.

3. Is the cable securely attached to the collar and the computer?

4. Is the correct communication port (com port) selected in the Wincollar software? To check, click on Settings, Com Port. If using a USB serial adapter, be sure that the com port number is between 1 and 6. Use software included with the adapter to change the com port number if higher than 6.

5. Is the com port of your computer being used by another software package? If so, close the software and try communication again. This is the message you will receive:

ATS XMODEM File Transfer ✕

Error: Port in use or doesn't exist !

[OK]
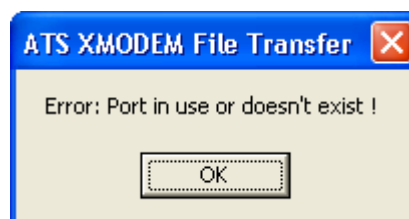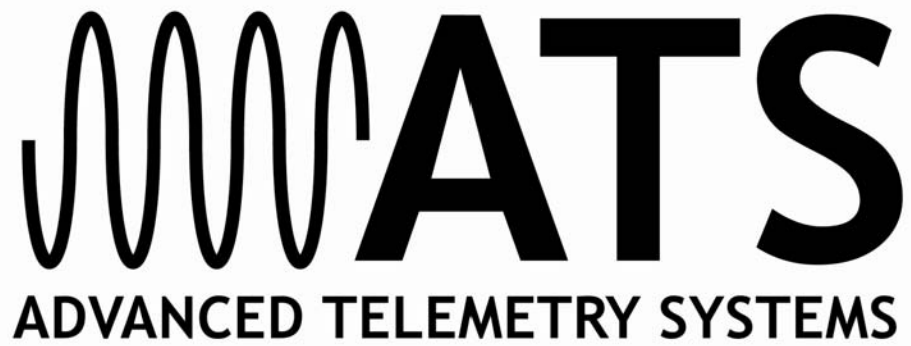
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