



ATS
W300 *Wildlink*-GTX Collar

User's Manual



IMPORTANT: Your W300 Collar HAS NOT BEEN PROGRAMMED for operation (unless specially ordered). You must program it in order for it to function.

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Section 1. Introduction

Thank you for purchasing an ATS W300 *Wildlink*-GTX Collar. By default the data service for the W300 collar has been activated during shipping and is ready for use immediately. Please contact ATS if the W300 will not be used for an extended time, so that we can temporarily deactivate the data service.

The W300 may need to be programmed prior to deployment, depending on its configuration when leaving the factory. The software you received with the W300, *ATSFixes* for Satellite Collars, will guide you through the programming process, if needed. Complete *help* documentation is available within the different software pages, indicated by the “?” icon. Click on the icon for *help* details.

The magnet you see attached to the W300 with yellow tape keeps it turned off, albeit running at a lower current. While you are not using your W300, leave the magnet attached to conserve battery life.

The W300 requires the W100 *Wildlink* Remote Comm Module, PN 17621 (Figure 1) in order to communicate with a PC for programming and data uploads.



Figure 1. ATS W100 Wildlink Comm. Module, PN 17621 (with USB cable)

IMPORTANT: Depending on how the collar has been ordered, it may or may not have been shipped from the factory pre-programmed. **If your collar(s) have not been pre-programmed, you must program the collar for it to function.**

Please note that the Globalstar data service for the collar(s) was activated when your collars left the factory. Contact ATS if you do not plan to field the collar(s) for an extended period of time.

Section 2. Theory of Operation

The W300 consists of five different assemblies:

- 1) The collar belting and attachment mechanism
- 2) A potted electronics assembly with integrated VHF transmitter and attendant antenna
- 3) A potted battery pack assembly
- 4) A GPS receiver system with antenna, and
- 5) A Globalstar satellite transmission system with antenna.

The collar belting provides a means of attaching the collar to an animal. Ideally, the circumference of the collar will be selected such that the antennas of the potted electronics assembly are facing up towards the sky versus facing sideways towards the horizon.

The W300 does not come standard with a drop-off mechanism to release the collar, as it is designed to be a single-use. **NOTE: The W300 is not refurbishable.**

The potted electronics assembly consists of the microcontroller used to control the system, the magnetically activated on-off mechanism that enables/disables the collar, an accelerometer that notifies the microcontroller whenever a movement is detected, and a memory chip that saves GPS data.

The W300 is shipped with a magnet taped into place with yellow vinyl tape on the outside of the potted electronics assembly (over the two white dots, as shown in Figure 2). With the magnet attached, the unit is turned off and in a low power sleep mode.



Figure 2. White dots indicating magnet placement on the potted electronics assembly.

While the magnet is attached to the collar, it is running at the lowest current drain possible. Removing the magnet from the collar will turn on the transmitter. If communicating with the W300, magnet removal will also initiate communication between the collar and the PC. Otherwise, magnet removal will also result in an automatic 5 minutes of VHF beeps regardless of the collar's program.

The potted battery pack assembly consists of a “D” sized lithium thionyl chloride battery. There is also an AA-sized capacitor to provide additional power as required.

The GPS receiver system is contained within the potted electronics assembly. It includes a GPS receiver chip and a GPS antenna.

The Globalstar satellite transmission system is also contained within the potted electronics assembly and contains a Globalstar Simplex device for transmitting one way data and also a satellite antenna.

Section 3. Using ATSFixes

Installing ATSFixes for Satellite Collars Software

To install ATSFixes for Satellite Collars Software, double click on the setup.exe file found on the CD supplied with the W300. The software will be installed on your computer, and you can find it later under the programs list on your computer.

The installation for the ATSFixes for Satellite Collars software will create some folders on the C: (hard) drive of your computer. Once you have created a program and uploaded it to a W300, an xml file will be created and added to the folders. The file contains all the information for the

program that was uploaded to the W300, including the serial number of the collar. If you ever have doubts about how you programmed a W300 or what VHF frequency the W300 is transmitting on, you can look up the information in this file. This file is stored in the C:/Advanced Telemetry Systems, Inc./GPS/GPS_COLLAR_PROGRAMS folder with filename format GpsProgramXXXXXX.xml where XXXXXX is the serial number of the W300.

Wildlink Module Setup

The *Wildlink* module driver must be installed prior to using ATSFixes for Satellite Collars to program the W300. To install the driver, go to the CP210x_VCP_Windows folder found in the supplied CD and double click on the executable that pertains to your PC:

- CP210xVCPInstaller_x86 (Windows XP, Windows Vista, Windows 7, and Windows 8 32bit systems)
- CP210xVCPInstaller_x64 (any Windows 64 bit systems)

Follow the instructions on the screen. Restart your computer if necessary.

Programming Your W300

The collar program you create for the W300 will control the GPS fix schedule and VHF transmitter operation. All settings are the same for each year i.e. different years cannot have unique program schedules.

Life Estimation

The ATSFixes for Satellite Collars Programming Software will estimate the life that you can expect from your W300. If you need more life from your W300 than what is estimated, you can go back and adjust the program to give your W300 a longer life. **Note: Calculations for life estimates assume that the batteries are new.**

Steps to Start GPS Collar Programming

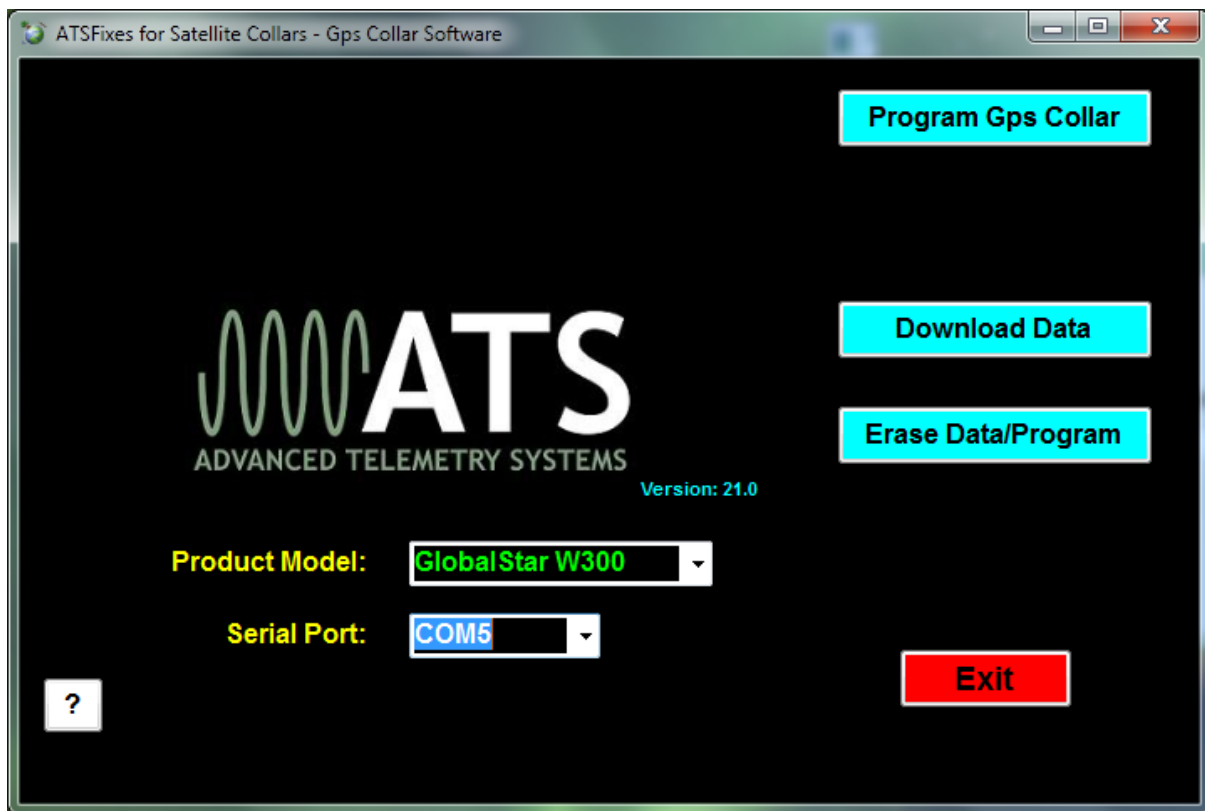


Figure 3. ATSFixes for Satellite Collars

To load a program into the W300, the *Wildlink* module will need to be connected (via USB port) to the PC running the ATSFixes for Satellite Collars software, and the W300 will need to be within one meter of the *Wildlink* module. Note: Remove magnet prior to programming.

Follow these steps to program your collar:

1. Connect the W100 Remote Comm module to your PC using the supplied USB cable.
2. Open the ATSFixes for Satellite Collars Software. It should look similar to Figure 3. The software will recognize all serial ports available when starting, indicated by a flashing sentence “Scanning for ports”. **Note:** The software will not proceed without an available COM port. A “Test Port” button is available to test that the USB connection is operating with an available communication port.
3. For the Product Model listing, select the GlobalStar W300 option.

4. For the Serial Port option select the COM port associated with the *Wildlink* module. A guess and check may be used to determine the correct COM port to use (not preferred) or Windows' Device Manager tool can be used to determine which COM port should be selected. The *Wildlink* module will be associated with whichever port the 'Silicon Labs CP210x' COM port is listed under.
5. Click on the *Program GPS Collar* button to start creating a program for the W300.
6. Fill in the information in each step of the *ATSFixes* for Satellite Collars software. Each section has a help button, indicated as "?", if needed. Note that no offset exists to distinguish between standard time and daylight savings time. Even if your study area has daylight savings time during all or part of your study, the resulting data results will be without daylight savings time taken into account.
7. When programming the GPS schedule, there are two possible frequency/interval options: one fix every 12 hours or 24 hours. The time to start taking the fix or fixes must also be selected. For every 24 hours, there is a choice of 00:00 to 23:00 while for every 12 hours, there is a choice of 00:00 to 11:00 with the second fix occurring 12 hours after the first fix.
8. There is also a "Shifting Option for Fix Start" available if you wish to collect fixes at different times every day.

The shifting option cycles the starting hour of the fix every day. For a 24 hour GPS interval with shifting option, if the fix time for the current day is at 00:00, then the fix time for the next day will be at 01:00, and the day after that 02:00, etc., all the way up to 23:00 and cycle back to 0000. For a 12 hour GPS interval, the fix time changes will be similar except that it will only cycle to 11:00 before it cycles back to 00:00 and the second fix of the day will occur 12 hours after the first fix of the day.

The scheduled hour (in GMT) of the first fix of the day can be determined by the following calculation:

(Last two digits of ATS serial number + Julian day) modulo GPS schedule interval (12 or 24).

For example, given the last two digits of the serial number are 12, and the collar clock is currently day 123, and for a GPS schedule interval of 12 hours, we have: $(12 + 123) \bmod 12 = 3$ (135 is divisible by 12 eleven times, with a remainder of 3). The first fix will occur at 03:00 GMT and the second fix time will occur at 15:00.

9. After the fix schedule program has been configured with *ATSFixes* for Satellite Collars, it can be loaded into the W300. To start this process, click on the *Program Collar* button in the Choose Fix Schedule page. Click OK on the following dialog box, and then touch

the magnet to the W300 at the location of the two white dots and remove (see Figure 2). Touching the magnet to the collar tells the collar that the PC will be sending information to it.

10. When programming is complete, there will be a beep and a message to the PC's screen.
Note: programs may not be named and saved when using *ATSFixes* with the model W300.

Programming Multiple Collars

After programming your first collar, an easy method is available to download the same program to additional collars. You will see a dialog box pop-up asking if you wish to program another collar. Click on No, quit, or Yes, program another. Then you will be prompted to touch the magnet to the next collar you wish to program, and the program will be uploaded without having to step through the initial programming steps.

Reprogramming a W300

If you want to change the program of a W300, you will need to first erase the current program (and any stored data). Use the Erase Data/Program button to erase the program and data currently in the W300 before reprogramming it. **Be sure that you have first downloaded any stored data you wish to keep.**

Section 4. Operating the W300

Interpreting the VHF Beacon Beep Patterns

The W300 includes a VHF transmitter that can be used to locate the collar and/or determine its status. The VHF transmitter can be scheduled to run continuously or only during certain hours of the day. It can be programmed to stay off for up to 23 hours each day in order to extend the life of the W300.

The VHF transmitter also has some obligatory beep patterns which you will hear regardless of whether the transmitter was scheduled to be active or not. The different beep patterns the VHF transmitter uses are based on either a 48 pulses per minute (ppm) rate, or a 27 ppm rate. To your ear, 48 ppm will sound like one beep per second. The 27 ppm rate will sound like one beep per every two seconds. Some beep patterns have double or triple pulses, which are used to indicate various operating conditions to the listener.

If the VHF transmitter is scheduled to operate, the collar operating condition is indicated by the beep patterns below:

Normal VHF = 48 ppm.

Mortality VHF = 27 ppm (double pulse and then single pulse, repeating).

Last GPS fix successful = Normal VHF (48 ppm) with a double pulse on the 6th pulse.

Last GPS fix failed = Normal VHF (48 ppm).

Obligatory beep patterns (do not follow the scheduled duty cycle) indicate the following operating conditions:

Reset/Startup/Not programmed Collars = Slow triple pulse and then single pulse at 48ppm.

After pulling off magnet = Double pulse VHF at 48 ppm for a period of 5 minutes *only*. After the 5 minutes have elapsed, the collar will revert to its regularly scheduled VHF beep pattern.

Note: The VHF transmitter will not be operating while the collar is downloading a program, obtaining GPS fixes, transmitting data via satellite, or uploading data to a PC.

GPS Operation

During a GPS fix attempt, the VHF transmitter will be silent. A GPS attempt may last as long as the setting that was selected during programming but may also be shorter depending on the W300's view of the sky. Whether the fix attempt was successful or not will be indicated by the VHF beep pattern that follows the attempt. *You will only hear these beep patterns if the VHF transmitter was scheduled to beep during this time.*

Satellite Transmission Operation

If a W300 successfully obtains a GPS fix, it will attempt to transmit the data to the Globalstar network. If the W300 is successful in transmitting data to Globalstar, new data will be available on the atsdat.com website. If the W300 is not able to obtain a successful fix, the W300 will send data to the Globalstar network at an hour time determined by the serial number of the W300. This time is determined by the following formula:

(Last two digits of ATS serial number) modulo 24

For 24 hour transmission schedules, a transmission will be attempted every day at this hour. For 48 or 72 hour schedules, transmissions will take place every two or three days, respectively.

When prompted to send a transmission, the W300 will attempt to transmit the same set of data three times. The W300 transmits data on the Globalstar satellite system using a Globalstar simplex device (carrier frequency 1611.25 and 1616.25 MHz). The antenna the W300 uses is a patch antenna situated at the top of the potted electronics assembly.

Mortality

If you enabled mortality during programming, should a mortality be detected (via the integrated sensor, checked every second) the W300 will immediately attempt a transmission indicating a mortality. If successful, you will receive an email to let you know that the W300 is in mortality.

Note: if the satellite antennas do not have an adequate view of the sky, a transmission may not be successful. In addition to mortality emails, the VHF will change to the Mortality VHF and, if a duty cycle was created during programming, will follow the duty cycle until activity is detected or a higher priority event occurs (such as a low battery). In order for the W300 to exit mortality mode, the W300 must undergo thirty seconds of activity. (The thirty seconds of activity does not have to be consecutive, but must occur within the mortality period chosen.)

Section 5. W300 Collar Attachment

The size of the W300 collar is determined by selecting different sets of holes for the collar adjustment bracket to go through. The W300 provides a certain range of sizing options. This range allows optimum operation of the collar. *Going outside of this range by not using the provided attachment holes may drastically affect performance.*

To adjust the collar and/or attach the collar to an animal, the procedure is as follows (see Figure 4 for illustration):

1. First remove the collar adjustment bracket nuts and plate from the collar adjustment bracket. Keep the collar adjustment bracket in the short flap of the collar.
2. Wrap the collar around the animal's neck and into place.
3. Observe the set of holes on the adjustment flap that line up best with the adjustment bracket such as to maintain a desired tension level on the animal's neck.
4. Place the collar attachment bracket through the adjustment flap and through the brass bracket and tighten the collar adjustment bracket nuts using the provided nut driver. Do not over-tighten as this may damage the collar adjustment bracket.
5. Finally ensure that the case nuts and squib nuts have been tightened before releasing the animal.

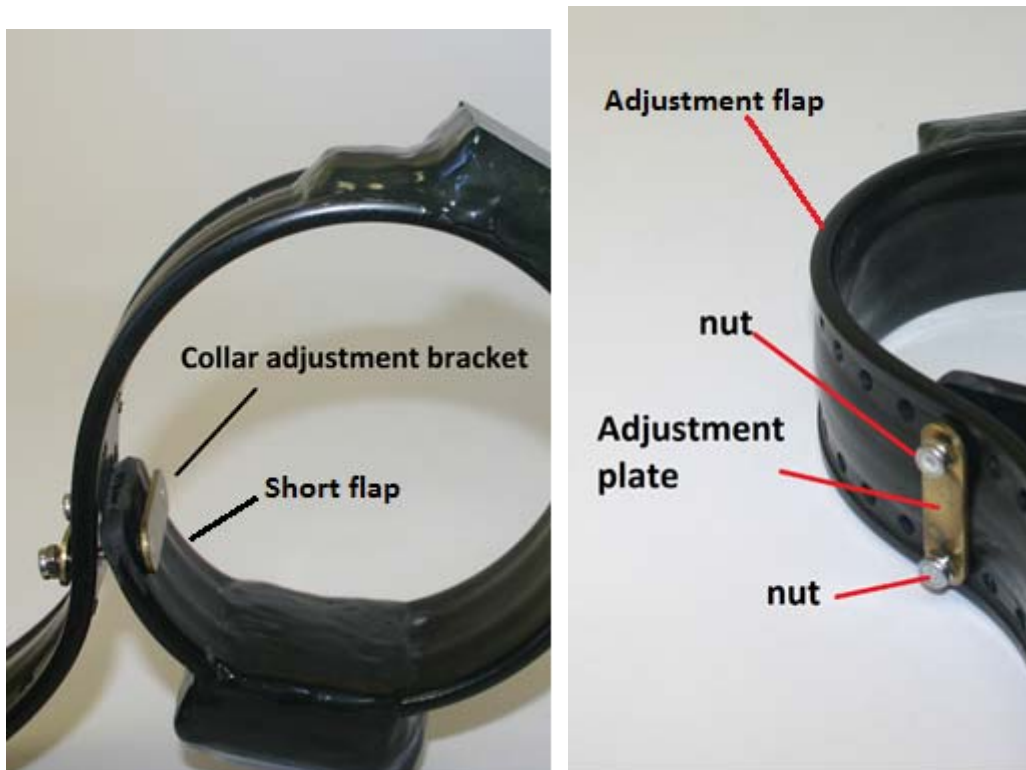


Figure 4. W300 adjustment hardware

Section 6. Obtaining Data

There are two ways that the data for the W300 can be obtained. The data can be obtained by accessing the atsdat.com website with the proper username and password, or the data can be downloaded using *ATSFixes* for Satellite Collars in conjunction with the W100 Remote Comm Module.

Obtaining Data Via Website

The website for checking data for the W300 is www.atsdat.com. To access the site, you will need a username and password. Please contact ATS to obtain an account if you do not already have one. Once logged in to the website, you can download/view data the W300 has successfully transmitted. The data download options are either download all data, or download only data that hasn't already been downloaded/viewed. The website also groups W300 collars according to several categories that may need immediate attention (e.g. low battery, mortality).

Obtaining Data Via ATSFixes

If the W300 can be retrieved, ATSFixes for Satellite Collars can download data from the W300 using the *Download Data* button, provided that battery power has not been exhausted. **Note: Data obtained in this manner is all the data that the W300 has acquired, and may not match the data available on the website.**

Steps for downloading data from the W300

1. Connect the ATS W100 Remote Comm module to a USB port on the PC.
2. Open the ATSFixes for Satellite Collars Programming Software.
3. Select the GlobalStar W300 as the Product Model option.
4. Select the appropriate Serial Port option.
6. Click the Download Data button.
7. The next window prompts you to select the data option you would like to download. For the normal W300, choose “Fix Data” as the option, and click Continue.
8. Swipe the magnet across the location of the two white dots as shown in Figure 2 (Note that white dots may have come off during deployment. Swiping the magnet across the area will still initiate PC communication.)
9. When programming is complete a “Download Complete” message will appear.

After Downloading Data

Data files downloaded from the W300 are stored on your computer in the C:/Advanced Telemetry Systems, Inc/GPS/ folder. The filename is DxxxxxxJJJ-HHmm.txt where xxxxxx is the serial number of the W300, JJJ is the Julian date the data was downloaded, and HHmm is the hour and minutes data was downloaded.

For instance, D030086_FS_313-1134.txt represents a data file for W300 with SN 030086 for originally programmed schedule data. The date and time of download was on the 313th day of the year at 11:34 local computer time.

Data Block Format

Data will be saved with the following format:

Year,Day,Hour,Minutes,Status,Latitude,Longitude,Hdop,Num_of_sats,Fix_time,2D/3D where:

Year = Year

Day = Julian day (001-365, or 366 for leap year)

Hour =Hour (00-23)

Minutes = Minute (00-59)

Status = GPS fix status (0 = will never be logged, 1 = attempted but timed out, 2 = attempted and successful, 3 = next fix that will be taken, 4 = fix not taken, collar in low battery)

Latitude = Latitude (+/-dd.ddddd, decimal degrees)

Longitude = Longitude (+/-ddd.ddddd, decimal degrees)

Hdop = horizontal dilution of precision

Num_of_sats = Number of satellites used in achieving GPS fix

Fix_time =Number of seconds needed to achieve GPS fix

2D/3D = Dimension of GPS fix (2 or 3)

Section 7. Regulatory

FCC ID: TZF-W300

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy, and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment OFF and ON, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

WARNING: Changes or modifications not expressly approved by Globalstar may render the device non-compliant to FCC and other regulatory body standards for operation and may void the user's authority to operate the equipment.

IC: 7659A-W300

This device complies with IC RSS-170.

This device complies with ICES-003.

This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Cet appareil est conforme à la norme RSS Industrie Canada exempt de licence. Son fonctionnement est soumis aux deux conditions suivantes: (1) cet appareil ne doit pas provoquer d'interférences et (2) cet appareil doit accepter toute interférence, y compris les interférences pouvant causer un mauvais fonctionnement du dispositif.

Section 8. Warranty and Service

The W300 is warranted for one year from the time of shipment. **The W300 is not refurbishable.**

Should you encounter any difficulty during operation of your W300, please contact ATS Sales and Service at 763.444.9267 during normal business hours. This and other ATS User Manuals are available for download from the ATS website, at www.atstrack.com.