Overview

The Geonautics International TAG - T1 is a purpose built low power GPS logger for covert tracking. The unit is self contained, running on 3 standard "AA" alkaline batteries, and has an inbuilt transceiver for remote downloading.

Features of the TAG - T1 include:

▪ Small, self contained, ruggedized, splash proof unit

▪ GPS logging (over 100,000 points)

▪ Inbuilt motion sensing

▪ Very low power consumption

▪ Uses standard "AA" alkaline batteries

▪ Power management of individual components

▪ Downloads via RF transceiver with a range of up to 100m (near line of sight).

▪ No *"self originating"* RF transmissions - (i.e. the device transmits only on request)

▪ No interference between units in the same vicinity

The data downloaded from TAG - T1's can be used in conjunction with any of Geonautics' *Surveillance Net* tracking packages.

Hardware - Downloader

The TAG-T1 downloader has 3 external connectors:

- DB25 Serial connector for PC communications
- 9v battery snap for power
- Single pin 00 series Lemo connector for a RF antenna

The TAG - T1 downloader has 2 leds that provide information about the state of the device.

- Upon power-up both the yellow and red leds will flash alternately for approximately 3 seconds.
- The yellow led represents receive mode and will turn off when the device is transmitting.
- The red led lights when a received packet is started and turns off when the receive packet ends and is verified. Unverified packets cause the red led to remain on until the next verified packet is received.

NOTE 1: In normal operation the yellow led should appear to shimmer as the packets are dispatched. When errors occur the red led will appear to flash much slower than when good data is being received.

NOTE 2: It is important to see the start-up sequence of the downloader to ensure correct operation. If sequence is not seen, remove and reapply power.

Specifications

GENERAL

Housing	D25 shell
Dimension	56mm x 54mm x 16mm
Weight	40 grams
Storage Temp.	-40 deg C to 125 deg C
Operating Temp.	-20 deg C to 85 deg C
RF antenna	916.5MHz GSM antenna

POWER

Power supply	1 x 9v (PP3) Battery
Vin Range	+6v to +16v

SLEEP AND TRANSCEIVER POWER

Transceiver Listen Mode	8mA
Transceiver Talk Mode	12mA

Hardware - Logger

The TAG-T1 has 2 external connectors:

- Single pin 00 series lemo connector for the RF antenna.
- SMB connector for the GPS antenna.

Specifications

GENERAL

Housing	Milled Aluminium Box
Dimension	60mm x 70mm x 34mm
Weight	200 grams
Storage Temp.	-40 deg C to 125 deg C
Operating Temp.	-20 deg C to 85 deg C
GPS Antenna	3.3v active antenna
RF antenna	916.5MHz GSM antenna

POWER

Power supply	3 x AA alkaline batteries
Vin Range	+3.6v to +4.5v

SLEEP AND TRANSCEIVER POWER

Sleep	<2mA
Transceiver Listen Mode	8mA
Transceiver Talk Mode	12mA

GPS POWER

GPS 5% Duty cycle	16mA

(300ms On-time)	
GPS 10% Duty cycle (300ms On-time)	22mA
GPS 10% Duty cycle (200ms On-time)	27mA
GPS 20% Duty cycle (200ms On-time)	49mA

FCC Compliance Statement

Warning

Changes or modifications to this unit not expressly approved by the party responsible for the compliance could void the user's authority to operate this equipment.

Note

This device complies with Part 15 of 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.

Model Number: TAG-T1
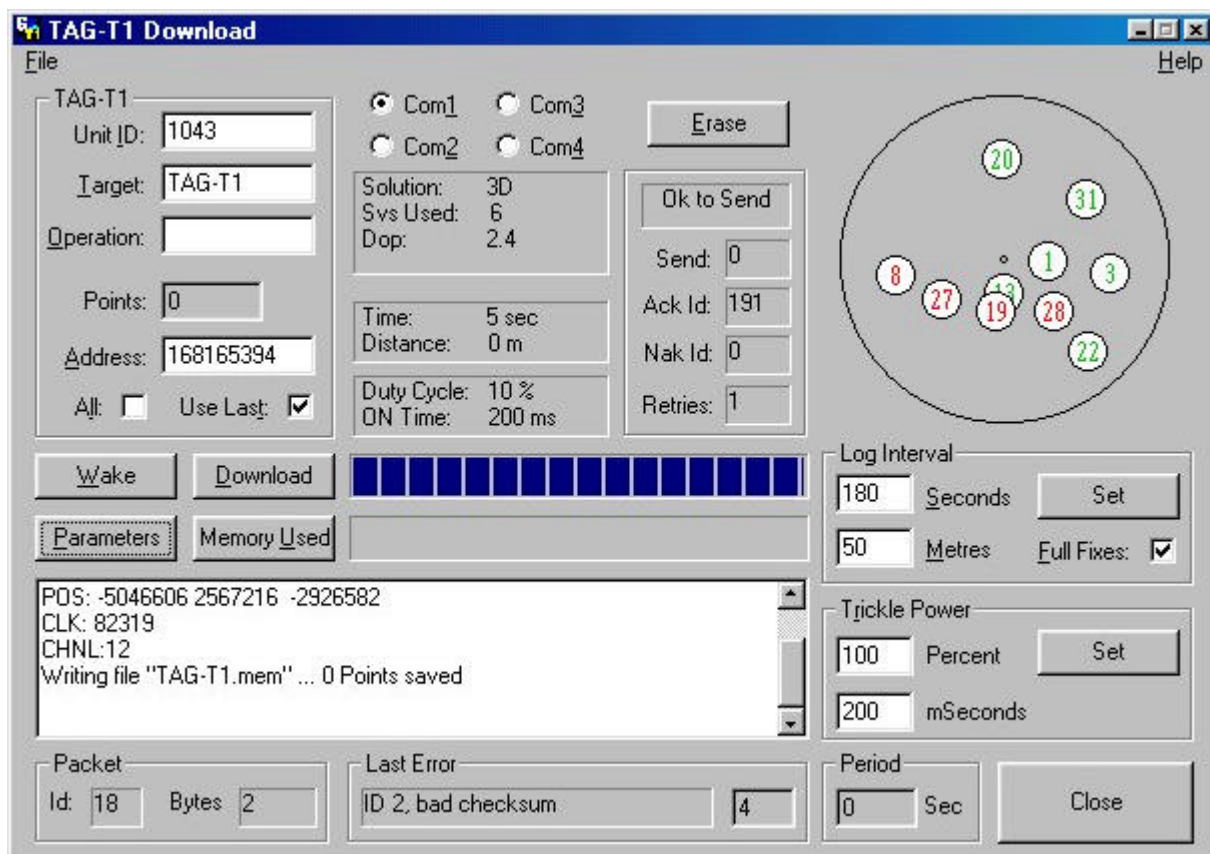
FCC IDENTIFIER: P6K-T1-DLOGGER
Name of Grantee: Geonautics International, Inc.
Equipment Class: Part 15 Low Power Transceiver, Rx Verified

Geonautics International, Inc.
100 North Central Expressway Suite 500
Richardson,TX75080

Software

The *TAG-T1 Downloader* software package is used to control and download Geonautics TAG-T1's. The program allows full control over power settings and GPS tracking options.

Getting Started

Prior to running the program make sure the TAG-T1 downloader is plugged into the relevant serial communications port and that power is applied to the device.
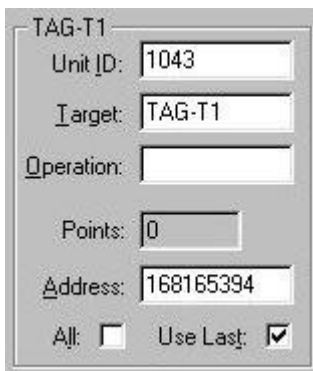
When the program is running select the *"Serial Port"* to which the downloader is attached. You are now ready to configure and or download the TAG-T1.

Using the Program

The TAG-T1 software consists of a single screen allowing the operator to configure and download previously collected data from the unit. The following pages provide information on the fields and values related to the screen.

AREA 1

The panel on the top left of the screen serves as the Identifier related to the TAG-T1 unit.

Unit Id:	Contains the unique identifier associated with the TAG-T1 unit. This number is used to **Wake** a particular device.
Target:	This can be edited to label the target. This label is used for a file name for the downloaded positions. The example shown here creates the filename *TAG-T1.mem* in the current directory.
Operation:	This is the operation label. Both the target and operation label are stored with every logged point in the memory file.
Points:	Number of downloaded points.
Address:	Address of the last downloaded block of logged positions. The address is used as the starting point for the next download unless **All** is checked.
All:	When checked and the **Download** button is pushed, All logged points will be downloaded from the TAG-T1. This is the equivalent to making Address=0.
Use Last:	When checked, **Download** uses the last known position as the starting position for the incoming stored data. When unchecked it requires a FULL GPS position to be downloaded before storing logs. This parameter has little effect when FULL fixes are being stored.

AREA 2

Directly below the Identifier panel are four (4) buttons controlling the download functions of the unit.

Wake:	This button initiates the software so that communications
Download:	Initiates the actual download function. This button will stay
Parameters:	Interrogates the beacon for its log interval and trickle power settings.
Memory Used:	Requests the number of logged points stored on the beacon. This
Progress Bar 1:	This bar indicates the progress of the current download and

	erase commands. A full bar shows that the operation is complete.
Progress Bar 2:	This bar indicates the number of stored positions on the beacon. A full bar represents 100% full.

AREA 3

Immediately to the right of the Identifier panel is the communication panel. This area contains communication related parameters and information.

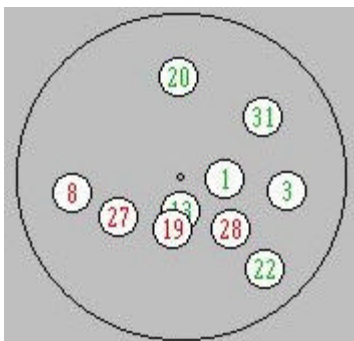|	
Com1.	These buttons select the
Panel 1	Solution information from the GPS
Panel 2	Current GPS logging interval
Panel 3	Current Power management parameters.
Erase	This button allows the operator to Erase
OK to	This window shows the current state of
Send:	Current packet ID being sent
Ack Id:	Packet ID of last command sent to GPS
Nak Id:	Packet ID of last command sent to the

	GPS and not acknowledged.
Retries:	Number of times the current command has been sent.

NOTE: Other messages that can appear in the "OK to Send" window are:

- Waiting (program waiting to send data)
- Sending (program sending data)
- GPS Sleep (GPS can not receive data at the moment)
- Ok to Send (GPS has awoken and is ready to receive data

AREA 4

This area provides an overview of the Satellites which the Tag-T1 unit is able to 'see' during the data collection phase.

Red Numbers	Sattellites in view but NOTbeing used in the GPS position
Green Numbers	Sattellites in view AND being used in the GPS position

NOTE: The dot in the middle is the TAG-T1, with the circle denoting vertically above. The circle denotes the horizon with NORTH to the top.

AREA 5

This area provides the parameters of Logging Intervals associated with the TAG-T1

Seconds	Indicates the number of seconds between logged points. To disable this parameter, set to 0.	
Metres	Indicates the interval in metres for when a log point will be created. To disable this parameter, set to 0.	
Set	After entering the values for **Seconds** and **Metres** press the **Set** button to transfer the parameters to the TAG-T1. The Set button will 'pop' back out when the command has been successfully completed.	
Full Fixes	When selected, this stores the full Lat Long of the logged point. When unchecked a delta fix is stored which only stores the difference to the last logged position. Delta fixes can be harmful if the first logged positions data gets corrupted rendering all future points unusable.	

NOTE: Basically the above settings indicate that a full fix position will be logged every 50m while moving, but when the vehicle is stationary the device will log a point every 180secs, while the TAG-T1 is still receiving shocks/movement.

AREA 6

This area provides the parameters associated with the Duty Cycle of the GPS inside the TAG-T1

Percent	Indicates the duty cycle in a percentage format.
MSeconds	Indicates the number of milliseconds that the RF section of the GPS is 'ON'
Set	The Set button activates the parameters set. When parameter is set the button will 'pop' back out.

NOTE: Default settings are for 10% 200ms. This indicates that the RF section of the GPS is

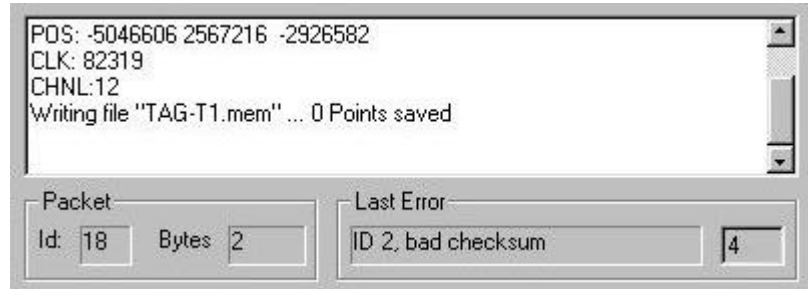"ON" for 200ms every 2 seconds, giving a duty cycle of 10%.

AREA 7

This area provides for a 1 second timer which counts the seconds since the last command was commenced. The timer stops on completion of the command.

	Sec	When a wake up condition occurs this second counter provides the time taken so far to attempt to wake the device.During commands this provides the numbers of seconds between retries.
	Close	This button will close the application program.

AREA 8

This area provides an overview window showing the data being transmitted by the GPS in the TAG-T1. This area is logged to a file for later analysis. This file is named "Download (date).Log".

	Packet ID	ID Number of the last received packet.
	Packet Bytes	Number of bytes contained in the last received packet.
	Last Error	Indicates the packet ID and reason for the last received error packet. The 4 is a counter that increments as errors are received by the program.

NOTE: The 'writing file' notification is printed as downloading occurs telling the user the number of points stored and which file they are stored in.

Contact Information

Australia & Other

GMT +10

Geonautics International Pty Ltd
27 Balaclava Street
Woolloongabba, Qld 4102 AUSTRALIA
Tel: + 61 7 3891 7800
Fax:: + 61 7 3891 7811

Web: http://www.geonautics.com
Email: sales@geonautics.com

Canada & United States

GMT -5

OpsCentre Ltd
PO Box 1497
Waterdown, Ontario L0R 2H0
CANADA
Tel: + 1 905 690 6772
Fax: + 1 888 824 5619
fuline@compuserve.com

United Kingdom & Europe

GMT 0

Micromill Electronics Limited
Leydene House, Waterberry Drive
Waterlooville, Hants PO7 7XX
UNITED KINGDOM
Tel: + 44 239 236 6600
Fax: + 44 239 236 6673
sales@micromill.co.uk