

Even this notty problem can be solved!

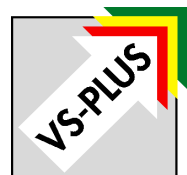


VS-GPS: GPS-Based Trip Evaluation

Version 1

User Manual for the Collector

A product of Verkehrs-Systeme AG



VS-GPS is available at the following places:

PB Farradyne
3206 Tower Oaks Blvd.
Rockville, Maryland 20852
www.pbfarradyne.com



Verkehrs-Systeme AG
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1 Introduction

VS-GPS is a GPS-based trip evaluation system. It collects vehicle position data using a commercially available PDA (Personal Digital Assistant) together with a GPS antenna. It can be used both for public transport and for individual traffic data collection and evaluation.

Alternatively, the data can also be collected on a portable PC. This document describes both Collectors, on a PDA or on a portable PC.

The mobile equipment (the PDA) records the position data of a vehicle each second. Additionally, a reason for a possible delay or any waypoint information can be stored by pushing pre-defined keys.

After the recording phase, the data can be evaluated and presented in different diagram and text formats.

This is done with the program VS-GPS Analyzer that is described in a separate document

2 VS-GPS Collector on the PDA

Install the program on the PDA by running the installation program on a Windows computer connected to the PDA.

2.1 License control



If there is no license file, the license number input screen is shown. The correct license number is calculated with the hardware ID and the personal key. You will receive either a license file or a license number with a personal key from your vendor.

The program will start after a successful input of license number and personally key.

Otherwise the program will be terminated.

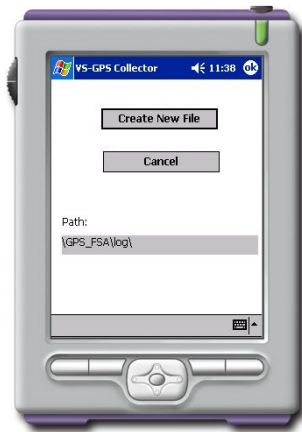
2.2 Main window



If not log file has been created yet, the "Start" button cannot be pressed. In this case, the "New File" button has to be pressed first.

If the log file has already been created, pressing the "Start" button leads to the log and input window.

2.3 File dialog



The log files are written to the path shown in the "Path" field. The path can be changed in the INI file, as described later.

"Create New File" creates a new log file within this path. The file name is random.

2.4 Log and input window



The log and input window shows all keys that have been configured in the INI file. The names of the keys should not exceed 9 letters. A maximum of 12 keys can be displayed.

As soon as this window is shown, the data from the GPS antenna is received and recorded. As long as no data is received yet from the antenna, the program is waiting.

Closing the window terminates the recording. The main window will be shown again, and as long as the main window is not closed, a next recording can be added to the last one within the same file as if there had not been any interruption.

2.5 Files

The following files and directories must be present in the directory "GPS_FSA" after installation:



log



GPS_Collector.ini



GPS_Collector.lic



VS-GPS Kollektor.exe

2.5.1 License file

GPS_Collector.lic is the license file. If you receive a license file, you have to copy it to the directory GPS_FSA. This file contains the license data in order to avoid showing the license control dialog.

2.5.2 INI file

GPS_Collector.ini is the INI file and has to be copied in the directory GPS_FSA if you have made modifications to it on a PC. If you want to edit the INI file, here is a short introduction into the German terms:

- **Pfad:** absolute path, where to put the log files. The backslash at the end is optional
- **Sprache:** Possible languages: deutsch (German), english
- **Variablen:** Variables, there must not be a space between the variable name, the "=" and the beginning of the value.

- **Tasten:** Number of keys to be displayed in the input and log window, maximum is 12.
- Follow the 12 keys. Only the 9 first characters are displayed.

The following figure shows the INI file used for the keys displayed in the example above:

```
[GPS_FSA]
Pfad=\GPS_FSA\log
Sprache=english

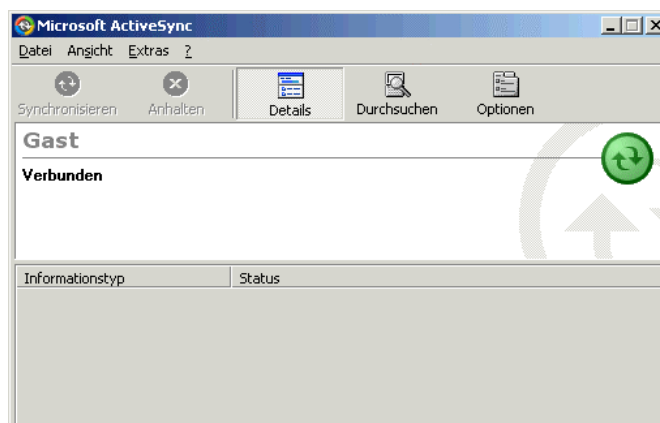
[Variablen]
Tasten=12
1=Start
2=Stop
3=Wait
4=Jam beg
5=Jam end
6=Rd work
7=Light
8=Ped
9=Client
10=Ref 1
11=Ref 2
12=Ref 3
```

2.6 Data transmission from the PDA to the PC

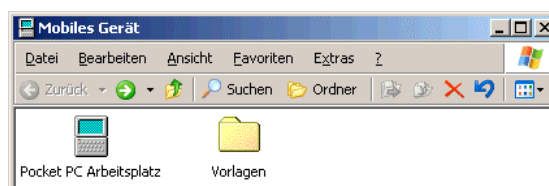
Connect the PDA to the PC. There are two possibilities for transferring the recorded data to the PC.

2.6.1 Microsoft Active Sync

As soon as the PDA is connected to the PC, Microsoft Active Sync is popping up with the following window (sorry for the German screen dumps):



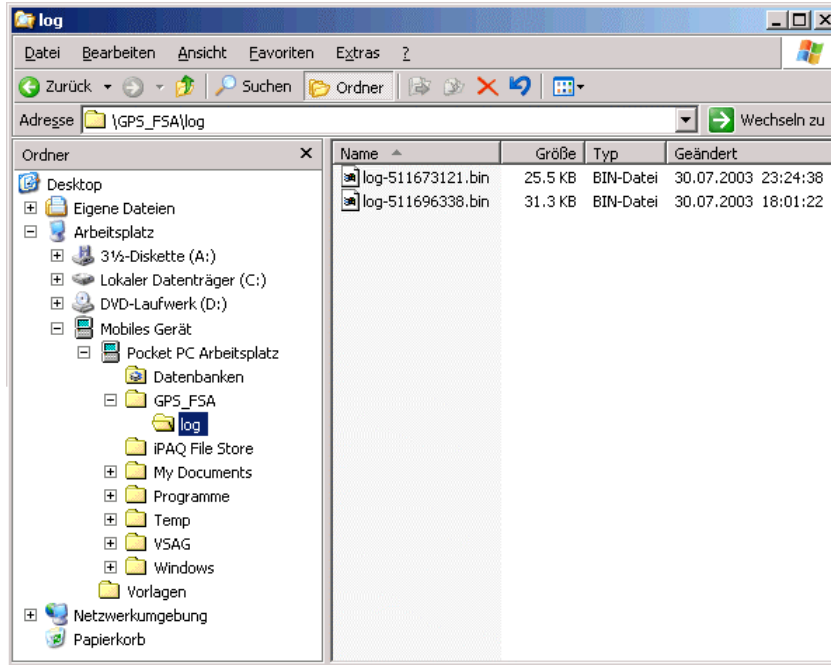
Click on "search" ("Durchsuchen"). This action opens the following window:



Click on "Pocket PC Workspace" ("Pocket PC Arbeitsplatz"), then on "GPS_FSA" and finally on "log". The same directory can also be reached as described in the following section.

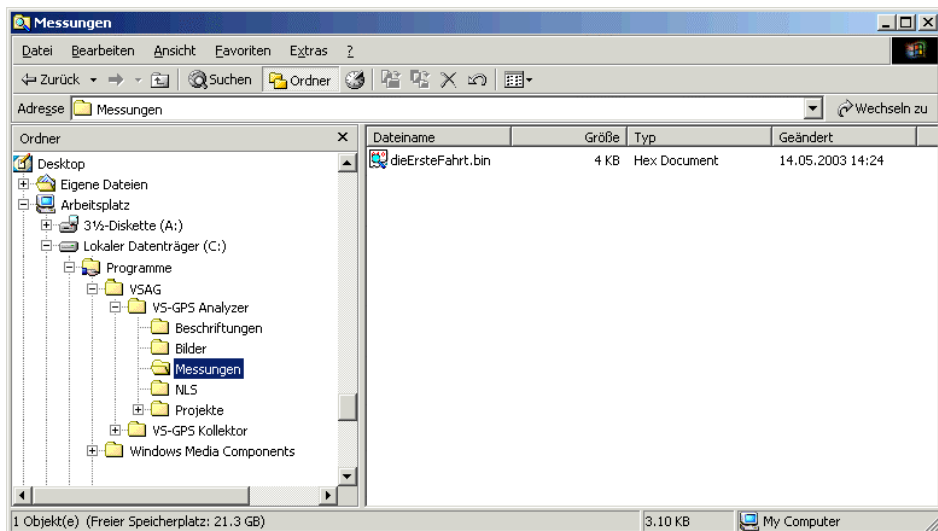
2.6.2 Windows Explorer

Open the Windows Explorer. When the PDA connected to the PC, a drive is visible named "Mobile Equipment" ("Mobiles Gerät"). The recorded data can be found within this directory as shown in the following screenshot. You can apply normal data operations to these files like copy, delete etc.



2.6.3 Copy

Finally copy the log data into the directory "measurements" of the VS-GPS Analyzer:



3 VS-GPS Collector on a portable PC

3.1 Antenna connection

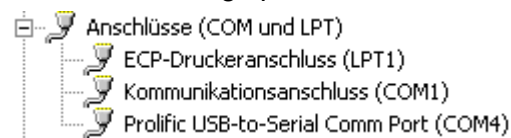
The GPS antenna can be connected to the computer via a serial or an USB port.

3.1.1 USB port

Best and easiest is connecting the GPS antenna to the USB port. The operating system has to be configured in such a way that the antenna can be accessed by a virtual serial port.

Normally this configuration happens automatically when the antenna is connected to the computer for the first time (plug-and-play). During the configuration you will be asked to provide the correct driver. The system chooses normally COM4 or COM3 for the virtual serial port.

The configuration can be found after installation in the Hardware Manager within the Settings panel:



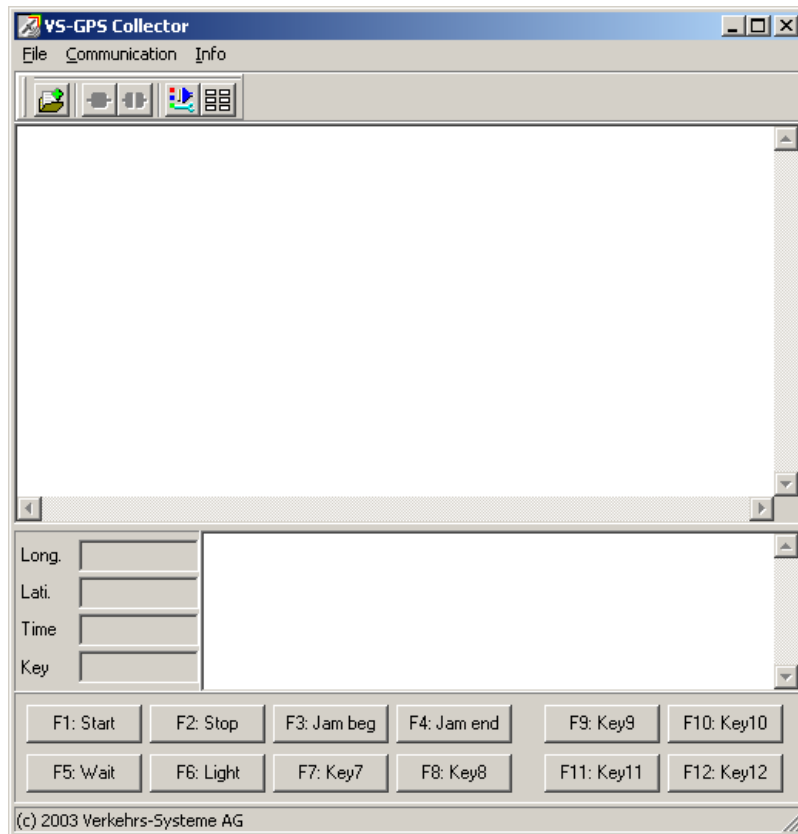
3.1.2 Serial port

The serial port does not provide voltage. Therefore when connecting the antenna to the serial port, there must be provided an additional external power supply. Use the PS2 port that normally is used by the mouse.

3.2 Program features

Start the program. Make sure that the GPS antenna is connected to the computer. The main window has the following areas:

- **Menu bar:** control the program here or exit the program.
- **Tool bar:** the most important functions can be called from here with a simple mouse click on a tool button. All functions in the tool bar can also be selected by using the menu bar.
- **Receive window:** logs whatever the antenna sends to the computer.
- **Received information:** below the receive window at the left side – shows the last valid information.
- **Send window:** at the right of the received information area – send configuration commands to the antenna. Normally you will not use this feature. Refer to the antenna guide for a list of commands.
- **Keys:** This area shows the function keys you can use for giving additional information to the log file while the GPS positions are recorded. You can either hit the function keys or click on the buttons.
- **Status line:** shows the communication state.

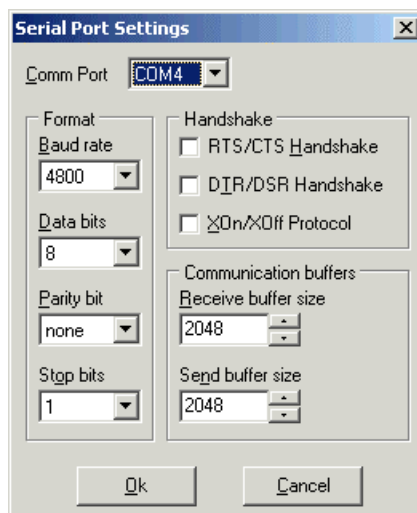


3.2.1 Serial port settings

When connecting the antenna to the computer for the first time, please verify that the serial port is properly configured. Choose the menu item "Communication – Serial port" or press the fourth button in the tool bar from the left.

- Choose the correct communication port; here, COM4 is configured, i.e. the virtual serial port for the USB port.
- Choose the correct transmission speed. The factory-set default value for the GPS antenna is normally 4800 baud.
- Check if the other values are set as shown in the next screen dump.

If the communication with the GPS antenna does not work, please refer to the GPS antenna documentation in order to obtain the correct serial port settings.



3.2.2 Assign protocol file

Choose the menu item "File – Recording to" or click the first button from the left on the tool bar. Assign the protocol file name. It is possible to overwrite an existing file; you will be warned before deletion of the old file.

- Normally the file name termination is ".bin". By choosing this mode, the data is recorded in a compressed format, and the function key press information can be added to the file. The function key press events contain information about special observed events.
- If you choose the ".txt" termination, the antenna data is logged as it arrives on the input port. It corresponds to the NMEA standard and is formatted in ASCII text. Unfortunately no keys can be logged in this mode, and the log file becomes much larger. The advantage of this format is that the data can be re-used by other programs understanding GPS data according to the NMEA standard format.

The VS-GPS Analyzer supports both protocol formats.

3.2.3 Recording

3.2.3.1 Start recording

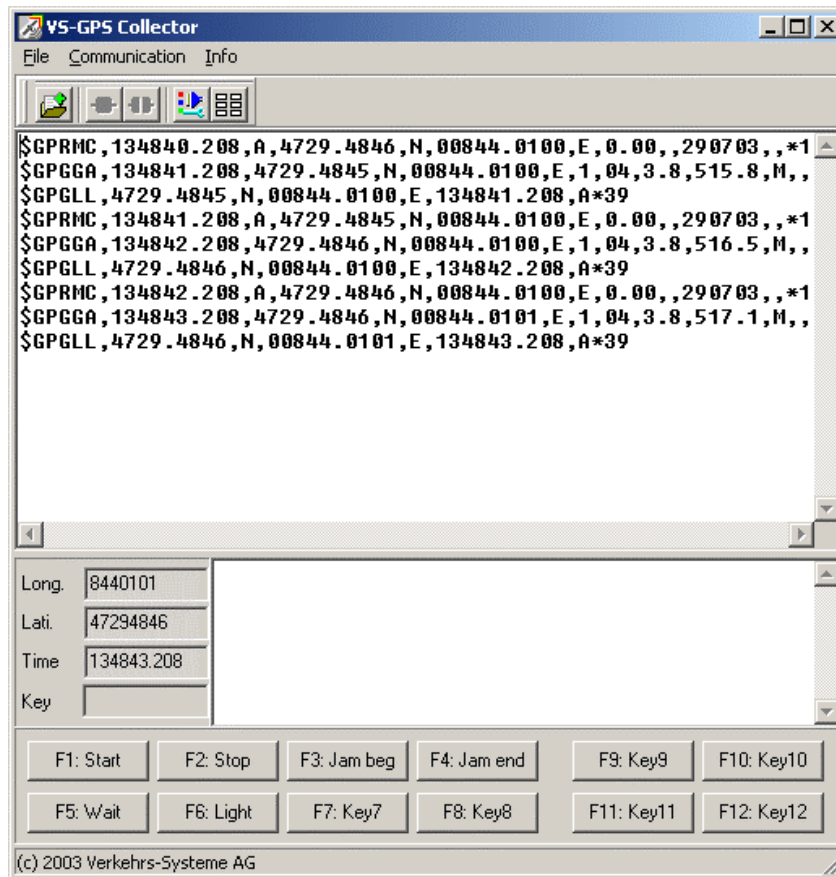
Choose the menu item "Communication – Connect" or press the second button from left on the tool bar. This activates the antenna, and the logging is started.

You will see the following in the main window:

- **Receive window:** You can watch the telegrams arriving. Normally there should be three lines per second, each of them starting with a different mnemonic.
- **Received information:** You can see longitude, latitude and time read from the last valid telegram.
 - Longitude and latitude: the last two digits are hundreds of a second, the next two digits are the seconds, the next two the minutes, and finally the remaining leftmost digits are the degrees (1 or 2 digits):
 - The latitude 47°29.4846' is shown as 47294846
 - Positive latitudes are on the northern hemisphere, negative on the southern hemisphere
 - Positive longitudes are east of Greenwich, negative longitudes west of Greenwich
 - Time: this is the satellite time, i.e. UTC time (Coordinated Universal Time, also known as GMT – Greenwich Mean Time).

If you press a key, its number appears in the "Key" field until the key press information has been written to the log file.

- **Status line:** Shows the length of the last received telegram.



If there is no protocol showing on the receive window, either the antenna is badly connected or a port setting is wrong.

3.2.3.2 Terminate recording

Choose the menu item "Communication – Disconnect" or push the third button from left on the tool bar. This deactivates the antenna and stops the protocol process.

3.2.4 Key assignment

The function key assignment is user-definable. Choose the menu item "Communication – Function keys" or push the most right button on the tool bar.

Choose a file that ends on ".ini". This file can be configured in the VS-GPS Analyzer (see there under "Inscription" or "Reference points").