

project:  
GPS simulator  
author:  
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## General

GPSSIMUL version 1.0 was originally written as a simple test tool for developing PC software for GPS communications using the NMEA protocol. Today we have reached version 3.0.

The basic function of the program is to generate a number of different NMEA sentences, and to send these sentences over a standard RS232C link to a receiver, in many cases another PC, in user-selectable intervals. The GPS simulator position data is updated in regular intervals. The user has entered initially the parameters "course" and "speed", making the GPS simulator virtually moving. All parameters can be changed in "real time", so that a realistic NMEA output will be achieved. The data transmission is bi-directional.

The program can be used to workbench test various other NMEA devices that have been designed to exchange data with a GPS, like autopilots and chart plotters, without the need to physically connect a GPS device and drive around with the whole set to see the position data change in the GPS!

It can also be very useful to evaluate PC software programs that acquire or send GPS data, like PC chart plotting programs like Seaclear or WinGPS. In this case you can a.o. see yourself move over the map!

In order exchange NMEA data, you either need two PC's or a PC and another NMEA device connected to the PC serial communication port (Com1-Com4). It is also possible to run GPSSIMUL and another program on one and the same PC using 2 serial ports cross-connected. I tried this method with success using Com1 for a charting program and Com2 with GPSSIMUL.

## Connection

To connect two PC's locally (or 1 PC using 2 comm ports), a simple cable is needed. It is sometimes called a cross cable, and sometimes it is also called a null-modem cable. Most computer shops will sell these cables.

The cable should be configured as shown below, using either DB25 connectors or DE9 connectors, and using at least these 3 wires:

	<u>pin</u>		<u>pin</u>	
<b>DB25 connector:</b>				
Xmit	2	—————	3	Rcve
Rcve	3	—————	2	Xmit
signal ground	7	—————	7	signal ground
<b>DE9 connector:</b>				
Xmit	3	—————	2	Rcve
Rcve	2	—————	3	Xmit
signal ground	5	—————	5	signal ground

To connect other NMEA devices, check the documentation of the device for the correct cable configuration.

If you are new on NMEA, it might be a good idea to check out Peter Bennets NMEA faq first before continuing. The URL is <http://vancouver-webpages.com/peter>.

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## **Using the program.**

After you have made the connection to the other PC or NMEA device, you can run the program. You can also run the program of course without a physical connection. This way you can for example create a log file for analysis or for uploading to a receiver later. The log file is a standard ASCII text file that can be opened with any Ascii text editor like Notepad.

The user interface looks a little bit like a real GPS device. On the left side you find buttons for setting up the simulator, for starting the log and for toggling the trace window on and off. On the right side you find the start button, the hold/continue button and the exit button.

The operation of the program is simple. Pushing the set-up toggle button opens a window where you can fill in the initialisation parameters. You can always open this window to change any parameters, even when the program is running. Take care however with the communication settings, these are by default set to NMEA standard. (4800,8,1,N), using COM1.

The program defaults to the system time and date as UTC. You have of course the option to set the UTC offset to get a more realistic output for the location you are living.

In the set up screen you can also indicate which NMEA sentences you like to transmit to the listener, and whether a checksum should be added or not. Any or all of the following sentences are supported: \$GPGLL, \$GPRMC, \$GPVTG, \$GPZDA, \$GPGGA, \$GPGSA. (If you don't understand this, please read Peter's faq!). You can also set the transmit interval in seconds, that is the speed the transmission takes place. Default is 1 burst per second.

When you click "Start", the simulator starts transmitting. The sentences are also (optionally) displayed in the trace window, so you can see what data is transmitted. You can switch the trace window off if you like. The hold/continue button does what it says: it suspends the transmission to give you for example the opportunity to analyse the data in the trace window.

Note that the data transmission is bi-directional (duplex), and that data received by the GPSSIMUL is written to the log file and displayed in the trace window the moment it is received.

GPSSIMUL can also be used as listener. This means that you can connect your GPS to a PC (using the appropriate cable) where GPSSIMUL is running, and it will receive all data transmitted by the GPS. Also non-NMEA data will be received, for example data according the Garmin protocol if the proper communications parameters are set. Again, you can log all received data in a log file when the log file option is selected.

I hope you will benefit using the program. For questions, comments, suggestions for improvement etc. you can email me any time. Send your email to: [info@sailsoft.nl](mailto:info@sailsoft.nl). Check also our web site: <http://www.sailsoft.nl>.

## **Registering the program.**

As long as you have not entered a valid license number and key, the program will show a reminder at start-up. You can bypass this reminder by running the program in demo mode. In demo mode the number of NMEA sentences output is limited to 50 per run.

To buy a license please visit the Sailsoft website (<http://www.sailsoft.nl/PricesPayment.htm>) You will receive a license number and a license key in return by email.

/Ger Rietman  
Sailsoft

PS: If you are a professional and need more NMEA functionality please feel free to download and try NemaTalker!