Falcom STEPP II

Getting Started

Preliminary

Version 1.00

Index of contents

Version history:

Version number	Author	Changes
1.00	Fadil Beqiri	**Initial version**

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0 Introduction

This guide explains the basic steps for getting started with STEPP II terminal. The STEPP II GSM/GPRS/GPS device allows a quick and uncomplicated configuration and evaluation by the user via local RS232-interface (directly connected to the serial port) or remotely via air interface.
With Windows™ Hyperterminal application (utility that is pre-installed on all versions of Windows 98, 98SE, Windows ME, Windows NT, Windows 2000 and Windows-XP) it is possible to request GPS position data, and to execute a range of configurations.
The Falcom STEPP II can also be configured using the Configurator 2.0 software. The software description can be found in a separated manual, file name is "Stepp_configurator_2.2.pdf" delivered on the CD.

0.1 Used abbreviations

Abbreviation	Description
GPS	Global Positioning System
NMEA	National Maritime Electronics Association
GSM	Global Standard for Mobile Communications
GPI	General Propose Input
CRLF	Carriage Return/Line Feed
bps	Bit per Second

0.2 Related documents

1. SiRF binary and NMEA protocol specification;
   www.falcom.de/Service/Manuals/SiRF
2. SiRFDemo software and SiRFflash programming utility;
   www.falcom.de/Service/Manuals/SiRF
3. stepp_II_hardware_manual.pdf
4. "Configurator 2.0" Configuration software
5. stepp_II_software_2.0RC1_manual.pdf
6. stepp_II_software_1.6.2_manual.pdf

1 Getting started

1.1 Overview of STEPP II Starter Kit

The Stepp II device can be obtained as a single unit or as part of a starter kit. The device has two antenna plugs, one for GSM and one for GPS. The device has a slot where a GSM SIM should be inserted. The SIM card should be used for GSM communication to the device. The device also has a Molex Micro-Fit 3.0 socket and an AMP INFOPORT Series III header. The Molex socket gives access to the power input and signals such as the inputs, outputs The AMP header gives access to signals such as the microphone, the speaker and the RS232 serial connection.
The Stepp II Starter Kit provides an environment for evaluating and configuring the Stepp II device. The kit can be used to emulate the final hardware setup used when the device is installed. Connecting the device to the evaluation board gives easy access to the device.
Image 2 gives an overview of the variety of components contained in Falcom's STEPP II Starter Kit:

- Falcom STEPP II device with built-in bracket
- GSM/GPS antenna
- AC/DC adapter (European standard 220 AC / 12V DC)
- Evaluation box (This Eval-Board is not the same one to previous STEPP evaluation board)
- 16-pin configuration cable with MOLEX plug connection
- Cable with 15-pin AMP and DB15 plug connection
- Audio cable
- 1,5m power cable
- Modem cable set with DB9 plug connection
- Handsfree loudspeaker and microphone
- CD with
  - Configuration software STEPPconfig
  - Hardware description
  - Software description

Image 1: Scope of items in STEPP II Starter Kit.

The evaluation box has the following connection ports (see image 3):

- Input for power supply (10 to 32V DC)
- DB9 serial interface for PC COM Port
- Audio cable with DB15 plug connection to connect with 15-pin AMP connector of STEPP II Terminal
- Configuration cable with 16-pin Molex connection to connect with 16-pin Molex Connector of STEPP II Terminal
- 8-pin RJ45 audio (MIC N1 and MIC P1, see hardware description ("stepp_II_hardware_manual") OUTPUT for alarm channel
- MIC/SPK INPUT/OUTPUT (SPK2 and MIC2, see hardware description ("stepp_II_hardware_manual") – connections for voice channel
- 4 LEDs to signalise the status of the digital outputs 1 to 4 of the STEPP II
- 9 switches to test the digital inputs 1 to 4, as well as IGN (ignition) and to switch ON/OFF various device functions such as V+, ACCU OFF, MIC intern and BOOT on the STEPP II Terminal (see "stepp_II_hardware_manual" for detailed information).
- Potentiometer to test analogue inputs 1 and 2.
- MIC 1 INPUT alarm microphone.

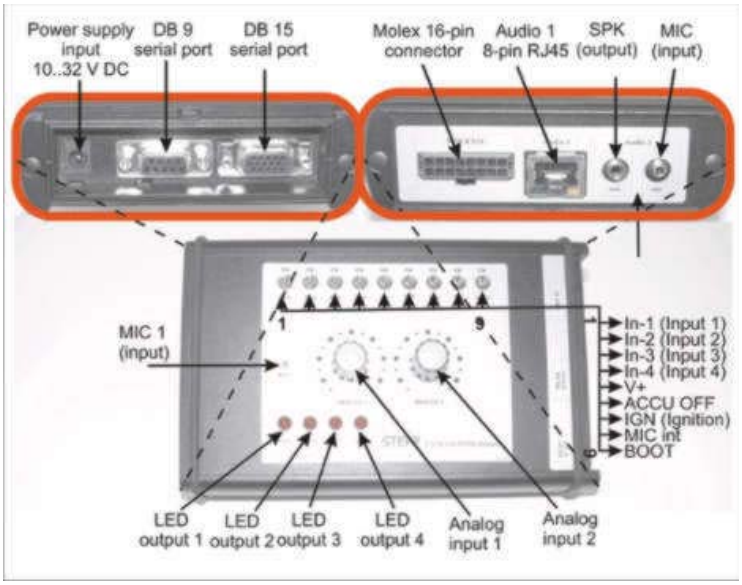


Image 2: Connections of evaluation box

Descriptions on the output pins and the hardware of the connections on the STEPP II are provided in "stepp_II_hardware_manual.pdf" chapter "Hardware Interfaces".

1.1.1 Installing the STEPP II Starter Kit steps

In general, be sure not to turn on the STEPP II terminal module while it is out of the operating range of voltage and temperature stated described in the hardware manual.

The kit can be setup using the procedure below.

WARNING: Please do not use the previous Stepp Eval-Board (Starter-Kit for STEPP) for STEPP II terminal. The STEPP II Eval-Board has a built-in Li-Ion battery which is directly linked to the "ACCU ON/OFF" switches placed in the Eval-board and to the VBAT+ pin of STEPP II. This pin (on the STEPP II) has in no case to be connected neither to the operating voltage nor to the GND, else you will damage your terminal.

1. Connect both antenna plugs to the corresponding plugs on the Stepp II device.
2. Connect the AMP connector on the cable to the AMP header on the Stepp device. Connect the DB15 plug on the other end of the cable to the respective socket on the evaluation board.
3. Connect a Molex plug on the cable to the socket on the STEPP II device. Connect the plug on the other end of the cable to the respective socket on the evaluation board.
4. Connect the speaker and microphone to the respective sockets on the evaluation board.
5. Use the serial cable to connect the evaluation board to a serial port on the PC.
6. Insert the SIM card into the SIM interface of the STEPP II
7. Connect the power module to the evaluation board and to the ac power supply.

1.2 Terminal emulator setup

Please ensure that the STEPP II terminal is properly connected to the Eval-Board and to the host device. Make sure that the STEPP II terminal is powered on and the GSM LED indicator on the front side of device flashes.
The example below is based on the Windows™ Hyperterminal, because of it is a supplement tool which is also licensed by purchased Windows™. The STEPP II can also be configured by using any other Terminal-Program. The instructions below describe how to use the STEPP II (operating with Firmware V1.6.2 or V2.0RC1) with a PC running Windows 2000.
On the first time power-up you can use a terminal software which allows the communication with a modem via RS232 serial port. On Windows 2000, starts the HyperTerminal program.

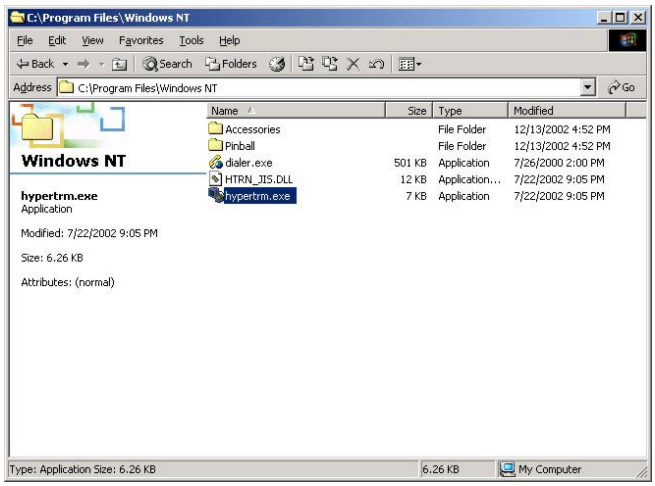


Figure 3: Using Microsoft Windows™ Hyper Terminal

Assign the name for a new session on the displayed window (e.g STEPP_II).

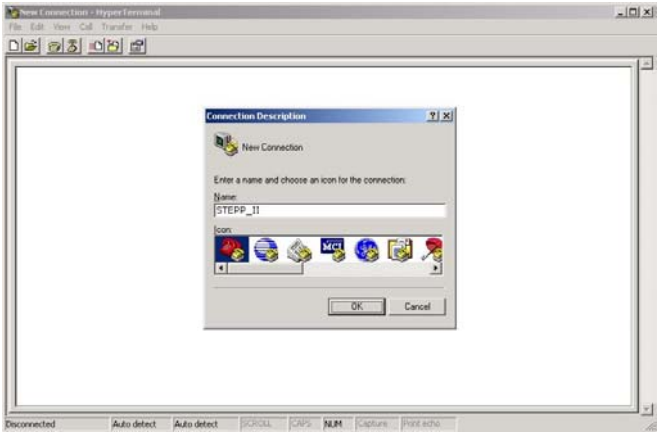


Figure 4: Assign the name for a new session

Choose the correct COM Port and baud rate settings (9600bps, 8 bit, no parity bit, 1 stop bit).

Hint 1: To control the STEPP II operating with firmware "V2.0RC1", use the following pre-defined factory settings:

57600	bps
8	Data bits
No	Parity bit
1	Stop bit
None	Flow control.

Hint 2: To control the STEPP II operating with firmware "STEPP II Firmware V1.6.2", use the following pre-defined factory settings

9600	bps
8	Data bits
No	Parity bit
1	Stop bit
None	Flow control.

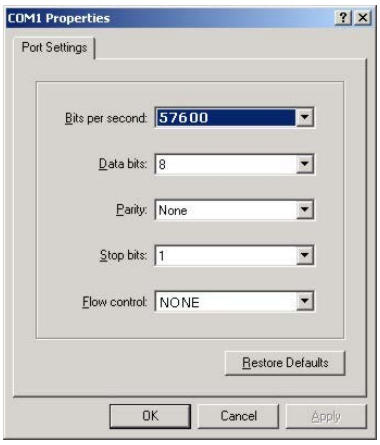


Figure 5: COM Port transmission settings

If a connection to the STEPP II terminal is established, the transmitted protocols will be displayed.

Please note that, if the embedded GPS reciver of the STEPP II device (operating with 2.0RC1 firmware) is **unable** to calculate a valid position due to the satellites on view (less then 3 satellites) it stops the start-up procedure (no GPS messages will be displayed in the terminal program) and it goes into the sleep state. In that case, please, change the location of the GPS antenna and restart your STEPP II device. In order to evaluate the GPS receiver, if valid positions are being received, see section 1.2.1.

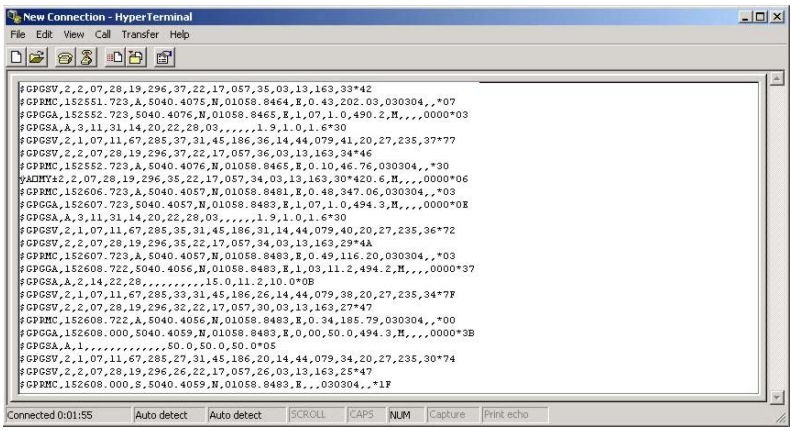


Figure 6: COM Port transmission settings

To sent a command to the STEPP II terminal while the GPS messages are being displayed on the terminal program, the default configurations of terminal program has to be changed. To do this, click the **property** button. Then select the S**ettings** tab sheet, and then click on **ASCI setup...** button to start the ASCI Setup dialog box.

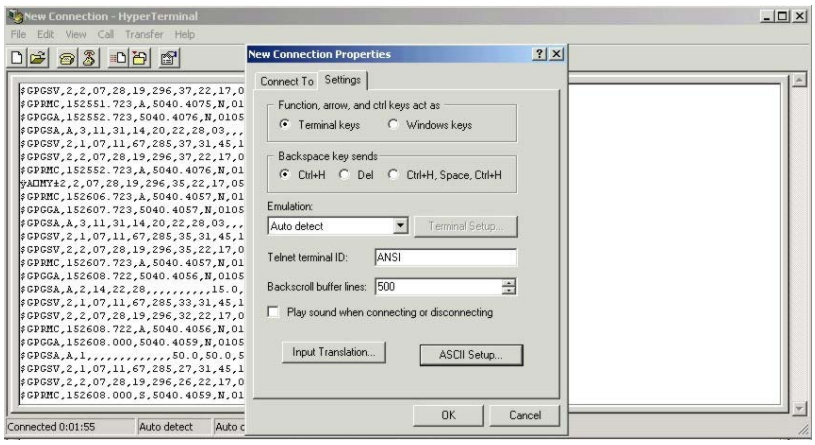


Figure 7: Connections properties.

On the appeared dialog box select the check box captioned **"send line ends with line feeds",** click on **OK** button and close the opened dialog box**.**

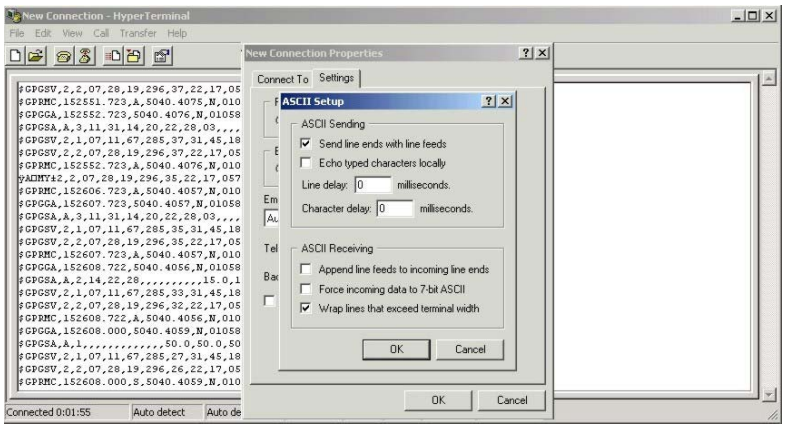


Figure 8: Change the default setting

Now open a text file (**txt** extended file) and write "**$PSRF108,PIN=3333*68**" command which has to be sent to the STEPP II terminal (e.g see the figure below). The value "3333" of PIN parameter has to correspond to the PIN number of your SIM Card, which is provided by your mobile phone service provider. Please note that, after the command is written, press the **enter** key to complete the command (<CR><LF>), else the command will be ignored from the STEPP II terminal. Save the opened file, for example "example .txt" and then close it. Please, remember file directory. Note that, this command is available using the "V2.0RC1" firmware, only. Using the "1.6.2" firmware other command has to be written into the text file.

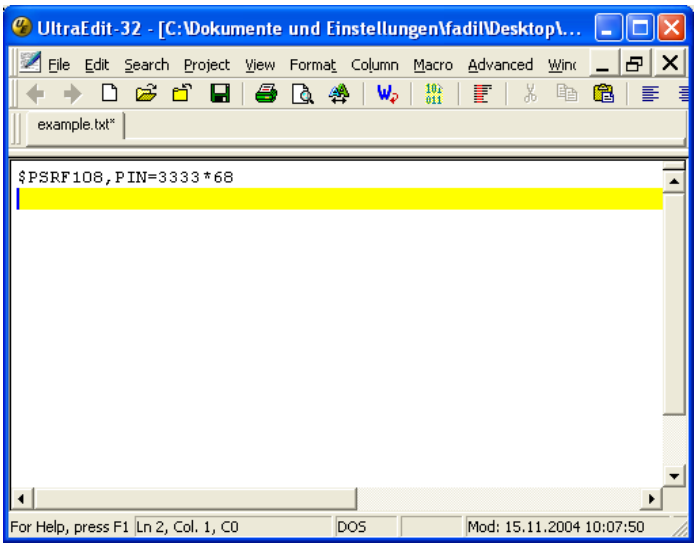


Figure 9: Write the command on the text file.

In order to sent the command to the terminal you have to tranfer the saved text file with included command. Click the **Transfer** on the Hyperterminal menu and select **Send text file...** .

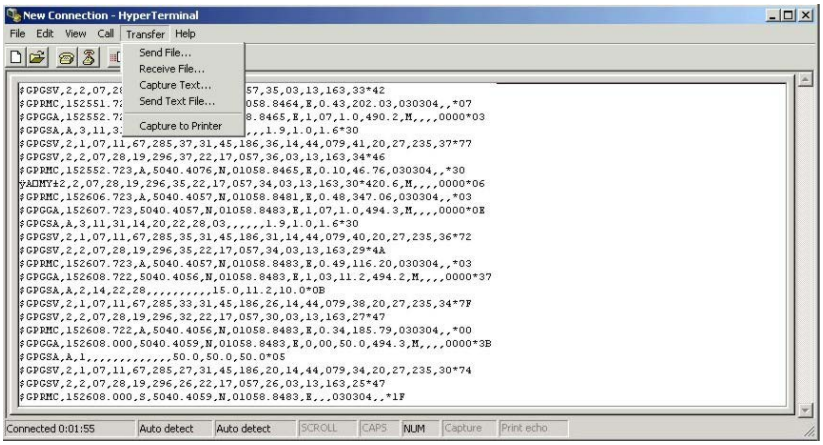


Figure 10: Start the transfer program.

Select the saved text file “example.txt” from its directory and click the **open** button. Now the command(s) included in the text file is automatically sent to the connected STEPP II terminal.

Note that, after the text file is sent to the device and it is accepted from the device as well (command is written without single mistake), it writes the user defined value onto the internal FLASH and it will be displayed upon request. Sending the “$PSRF108,CNF*49” command to the STEPP II terminal, it responds only changed configuration (changed from the user) while the GPS messages are being displayed. To find the received configurations from the STEPP II use the vertical and horizontal scroll bars of terminal. The default settings will be not displayed.

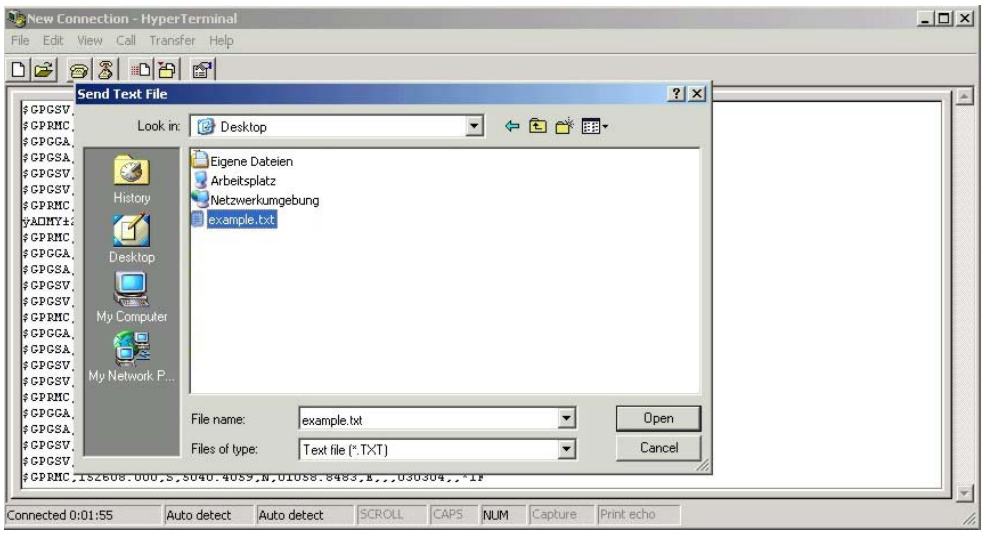


Figure 11: Sending the command

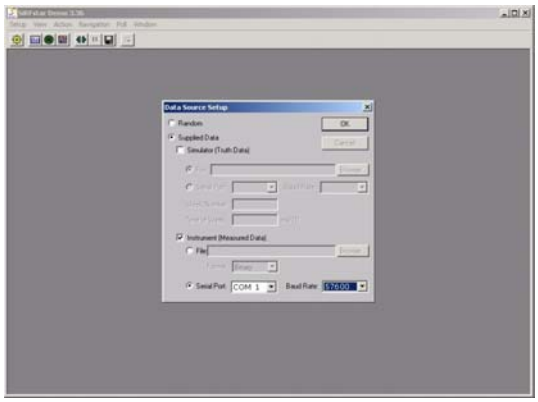
More information how to test the Falcom STEPP II operating with firmware V2.0RC1 can be found in a separated manual. Section 1.3 on the "stepp_II_software_2.0RC1_manual.pdf" user manual describes how to configure and poll the current state of the STEPP II remotely via a TCP server connection.

1.2.1 Evaluating the STEPP II locally, using SiRFDemo software

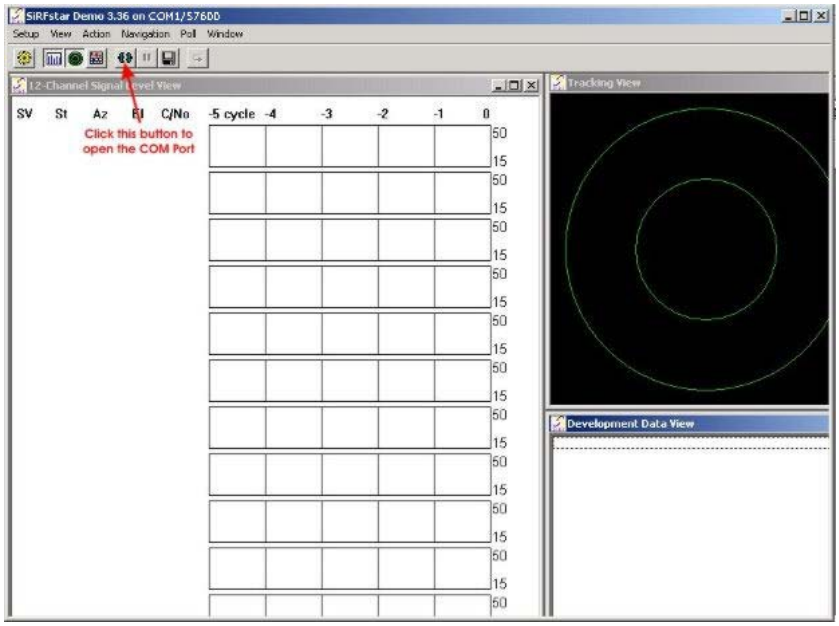
After you've connected the STEPP II to one of the avalible ports on your PC, please, install the SiRFdemo software which is available on the CD or download it from Falcom's Website:

➔ www.falcom.de/service/downloads/SiRF/SiRFdemo.zip

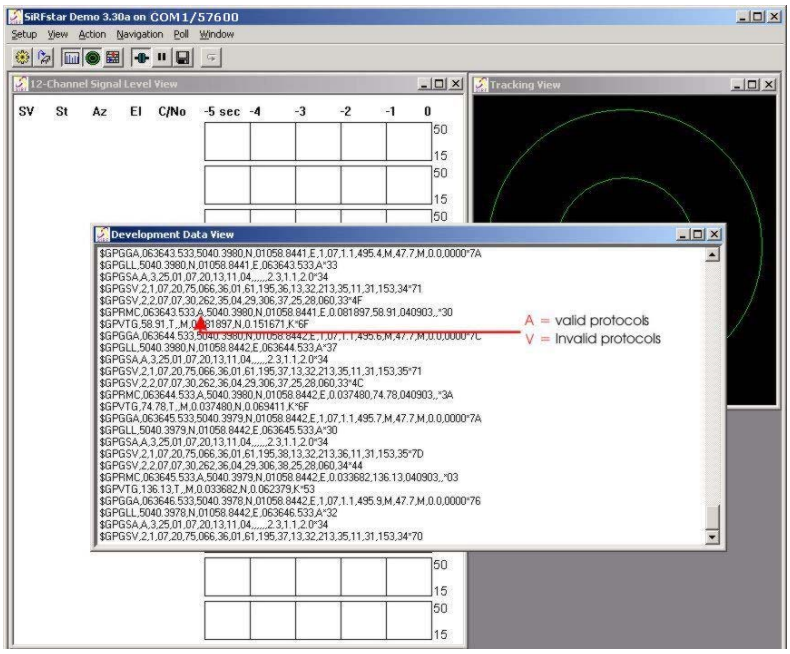
1. Run the SiRFdemo software by double clicking the **SiRFdemo.exe** file. The SiRFdemo program will be automatically installed onto your computer.
2. To start the SiRFdemo software, either double-click on the **SiRFdemo.exe** installed file or if you have created a shortcut on your desktop, double-click the **SiRFdemo.exe**.
3. The SiRFdemo software will appear as follow:
   - ✓ Before running the software, make sure that your PC is recognizing the STEPP II properly. In order to receive the valid positions for the current location of the device, please, place the GPS antenna to the sky (no obstacles).
   - ✓ On the activated **Data Source Setup** window, select the COM (e.g. COM1) for SiRFdemo program. Using V2.0RC1 firmware set the baud rate to 57600 bps. See figure below. Using STEPP II 1.6.2 firmware set the baud rate to 9600 bps.



✓ Click the icon on toolbar by the up-down button (marked button in figure below) the program will automatically detect the selected COM port and starts evaluating.



✓ The output messages can be viewed in the **Development Data** screen. For a description of NMEA messages please download from Falcom's Website the "**SiRFmessages.pdf**" file. The valid/invalid protocols can be recognized in the $GPRMC protocol as shown in figure below. The capital letter **A** means, incoming protocols are valid and the capital letter **V** means, incoming protocols are invalid.



✓ For more detailed information about the using of SiRFdemo software, please download the **SiRFdemo.pdf** manual, which is also available on our web page.

2 How to update the new firmware into the STEPP

In order to allow users of Falcom STEPP II to utilize new released firmware, a program has to be available to update the on-board Flash-Memory. The new firmware and an update program are distributed electronically via Internet or CD.

Important note: Please write down the important existing configuration settings for the Falcom STEPP II using the current firmware. The update procedure of a new firmware erases the whole internal flash memory and the presettings stored on it will absolutely erased, too.

WARNING !!!

In oder to evaluate and test both the 1.6.2 and 2.0RC1 firmware on the same STEPP II terminal, the first serial port (GSM) and second serial port (GPS) must be configured to the same bit rate. Whereby the bit rate of GPS serial port will be specified from the used firmware. If the STEPP II device has been started-up with firmware 2.0RC1, the communication between GSM and GPS serial ports is fixed at the 57600 bit rate (due to the used firmware operation task). This setting is stored in the non-volatile memory of GSM part and will be used whenever the engine is powered up again. If you reprogram the FLASH with the firmware 1.6.2 or greater version the communication between GSM and GPS serial ports has to be specified to 9600 bit rate (due to the used firmware operation task). The GSM serial port baudrate is read from the non-volatile memory and automatically set to the 57600 bps. So the communication to the GSM could not be performed.
In order to change and specify the bit rate to the required firmware operation, at first shut down the TCP-connection using PSRF111,stop (if such connection already exist), and then the command:

PSRF111,autobaud //*set the baudrate between GSM and GPS core to 0.*

should several times be sent until the following message appears:

$[g] GSM compatibility mode entered for 1.6.x

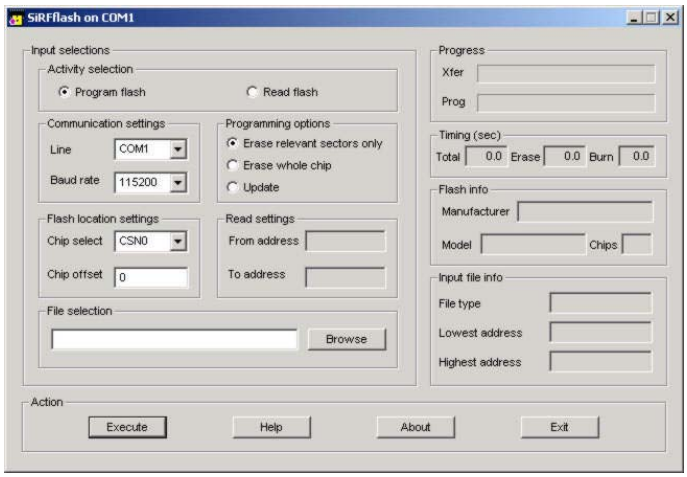
After the modem has been set in the autobauding mode, then other firmware such as the 1.6.2 and greater version can be flashed in the FLASH memory of target device.

In order to update a new Falcom STEPP II firmware, please, follow step-by-step the instructions described below:

- Point your web browser to www.falcom.de, go to service ➔ firmware ➔ Falcom STEPP II and download the "**stepp_sw_x.zip"** file. The folder "**sirf_flash**" and the new firmware are included in this zip file. Unzip the **stepp_sw_x.zip** file.
- If Falcom STEPP II terminal is still not connected to the STEPP-STARTERKIT, connect it, else go to the next step.
- The update procedure takes place if the target system (Falcom STEPP II) is reset in the internal update mode. Therefore, if the terminal is

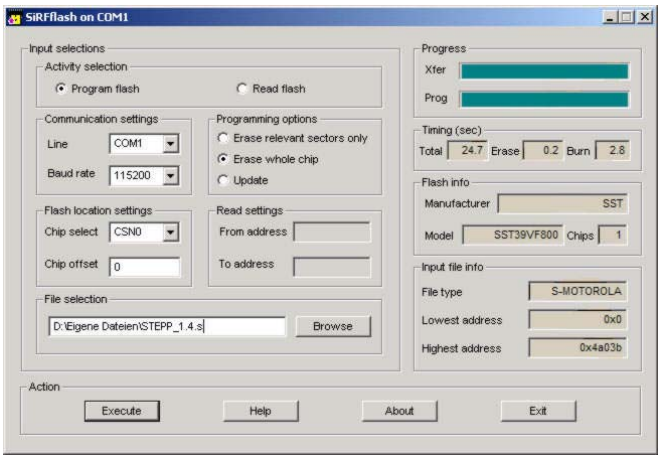
powered on, power it down (means, turn off the switches ACCU OFF, V+ and BOOT, on the STEPP II EVAL-BOARD).

- First turn on the switch BOOT (this enables update mode), and then turn on the switches ACCU OFF and V+. The system is now in the update mode.
- Start "SiRFflash.exe" program from the folder "**sirf_flash"** by double clicking the icon. The Dialog Window shown below appears.
- Make sure that the serial port of EVAL-BOARD is properly connected to one of the available COM ports on your PC (i.e. COM1).



- Please, refer to the figure below for the following points. Select the Program flash radio button in the Activity selection box
- Select the Line where your Falcom STEPP II is connected (i.e COM1) and Baud rate (115200) in the Communication settings box.
- Select the Chip select (CSN0) and Chip offset (0) in the Flash location settings box.
- Choose the download file (the new firmware "*.S" is included in the **stepp_sw_x.zip** file) by using the Browse button into the File selection box.
- Select Erase whole chip, in the Programming options box.
- Press Execute button to start the flash update programming.
- The current positions of the programming progress will be displayed in the Progress bar and the Total, Erase and Burn process will be shown in the Timing box.

  Note: Do not interrupt this procedure. A partially reprogrammed flash memory could lead to invalid operation of the terminal and permanent damage of the components.
- If an error is generated by clicking the Execute button or during flash programming, check cables and retry the operation or click the help button to get the troubleshooting described in the help file of SirfFlash program.



If download has been completed successfully, power down the Falcom STEPP II (turn off the switches ACCU OFF, V+ and BOOT). Your Falcom STEPP II is ready to run with the new firmware. The Falcom STEPP II with the new firmware is automatically started at the next power up (turn on the switches ACCU OFF, V+). A complete configuration has to be done.

For further evaluation of the updated firmware in the FLSH memory of target device, please refer to the corresponding documentation, which is included on the delivering CD.