User Manual

Installation and Operation

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SendCom User Manual

Document No. SendCom2.20a.mnl.doc,
May 2005

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1 General Information

This program is used to communicate with GEOLON-Dataloggers via the RS232 interface for interactive configuration and for displaying recorded data on the PC screen.

1.1 Operating Systems and related Issues

SendCom is a Java-application that works on both Linux and Windows operating systems. The only prerequisite is that the Java Runtime Engine (JRE) is installed on the PC. We recommend using our customized KNOPPIX-CD, which allows running Linux and SendCom on most PC-configurations without the need to install Linux or SendCom on that PC. However, if you want a permanent installation of SendCom, or want to use MS Windows, just follow the steps below.

2 Installation

2.1 Obtaining the Software

SendCom can either be found on the Utility-CD supplied with our data loggers, or it can be downloaded from our website. Please copy the files to a folder on your local hardrive.

2.2 Installing on a Linux System

2.2.1 Unpacking the files

Unzip the file sendcom_ver_x.xx.zip (if you already have installed java)
or sendcom_ver_x.xx_java.zip (if you do not have installed java already).

This will produce a temporary hierarchy with a top level directory sendcom.
(E.g.: /tmp/sendcom)

2.2.2 Java Installation

In order to use the SendCom software, J2RE (Java run time engine only) or J2SDK (complete system development kit) must be installed on your computer. Please follow the installations instructions in either 1.2.2.1. OR 1.2.2.2. according to your needs.

2.2.2.1 Installing for JRE, if not already installed

Please check whether a JRE is installed on your computer. If not, you can get the JRE for your version of Linux from Sun Microsystems at:

http://java.sun.com/products/plugin/downloads/index.html

To install and configure Java in Linux, please follow the instructions provided at:

http://java.sun.com/j2se/1.4.2/jre/install.html

For the purposes of this paper, it will be assumed that you have installed a JRE, which by default is located in:

/usr/java/j2re1.4.2_04/

And java is then located in:

/usr/java/j2re1.4.2_04/bin/

Check the path to your java-interpreter with "which java". If your setup is different, please adjust accordingly. Please note, that newer versions of Java might have become available meanwhile, which will also work with SendCom.

2.2.2.2 Installing for Java SDK, if not already installed

Please check, if a SDK is installed on your computer. If not, you can get the SDK for your version of linux from Sun Microsystems at:

http://java.sun.com/j2se/1.4.2/download.html

If you cannot get access to the sun site, you will find the corresponding file in the folder:

<sendcom>/drivers_4_linux/java/j2sdk-1_4_2_04-linux-i586-rpm.bin

To install and configure Java in Linux, please follow the instructions provided at:

http://java.sun.com/j2se/1.4.2/install.html

For the purposes of this paper, it will be assumed that you have installed the SDK, which by default is located in:

/usr/java/j2sdk1.4.2_04/

And java then is located in:

/usr/java/j2sdk1.4.2_04/bin/

Check the path to your java-interpreter with "which java". If your setup is different, please adjust accordingly.

2.2.3 Installing the drivers

2.2.3.1 If you use JRE

Copy librxtxSerial.so to your <JRE>/lib/ext directory.

Example:
cp /tmp/sendcom/drivers_4_linux/librxtxSerial.so /usr/java/j2re1.4.2_04/lib/ext

Copy RXTXcomm.jar to your <JRE>/lib/ext directory.

Example:
cp /tmp/sendcom/drivers_4_linux/RXTXcom.jar /usr/java/j2re1.4.2_04/jre/lib/ext

2.2.3.2 If you use J2SDK:

Copy librxtxSerial.so to your <SDK>/jre/lib/ext directory.

Example:
cp /tmp/sendcom/drivers_4_linux/librxtxSerial.so /usr/java/j2sdk1.4.2_04/jre/lib/ext
Copy RXTXcomm.jar to your <SDK>/jre/lib/ext directory.

Example:
cp /tmp/sendcom/drivers_4_linux/RXTXcom.jar /usr/java/j2sdk1.4.2_04/jre/lib/ext

2.2.3.3 Clean up installation files

You may now remove the installation files from the temporary folder

Example:
rm -R /tmp/sendcom

2.3 Installing on a Windows System (2000 or XP)

2.3.1 Unpacking the files

Unzip the file *sendcom_ver_x.xx.zip* (if you already have installed java) or *sendcom_ver_x.xx_java.zip* (if you do not have installed java already). This will produce a temporary hierarchy with a top level directory ***sendcom.*** (E.g.: ***C:\sendcom***)

2.3.2 Java Installation

In order to use the SendCom software, a J2RE (Java runtime engine only) must be installed on your computer. Please follow the instructions in 1.3.3 if you don´t have a JRE installed.

2.3.2.1 Installing JRE, if not installed already

Please check, if a JRE is installed on your computer. In the case it is not, then you can obtain a JRE for your version of Windows from **Sun Microsystems** at

http://java.sun.com/products/plugin/downloads/index.html

If you cannot get access to the sun site, you will find the corresponding file in the folder:
*<sendcom>/*drivers_4_windows/java/ *j2re-1_4_2_03-windows-i586-p.exe*

(E.g.: C:\sendcom\drivers_4_windows\java\j2re-1_4_2_03-windows-i586-p.exe) Please note, that there might be newer versions of the Java Runtime Engine available from Sun Microsystems. These will also work with SendCom.

2.3.3 Copying the drivers

Copy rxtxSerial.dll to your <JRE>\bin directory.

Example:
(E.g.: if you extracted the files into the folder C:\sendcom and java has been installed to the default location)

copy c:\sendcom\drivers_4_windows\rxtxSerial.dll c:\Programme\Java\jre1.4.2_03\bin
(for German Windows)

copy c:\sendcom\drivers_4_windows\rxtxSerial.dll c:\Program Files\Java\jre1.4.2_03\bin
(for English Windows)

2.3.4 Copy RXTXcomm.jar to your <JRE>\lib\ext directory

Example:
(E.g.: if you extracted the files into the folder C:\sendcom and java has been installed to the default location)

copy c:\sendcom\drivers_4_windows\RXTXcomm.jar c:\Programme\Java\jre1.4.2_03\lib\ext
(for German Windows)

copy c:\sendcom\drivers_4_windows\RXTXcomm.jar c:\Program Files\Java\jre1.4.2_03\lib\ext
(for English Windows)

2.3.5 Copy sendcom.jar to your <sendcom> directory

If you already have a previously installed version of sendcom, just overwrite the **SendCom.jar** file in your **<sendcom>** folder. Otherwise, please create a new folder, e.g. c:\Programme\sendcom

Example:
(E.g.: if you extracted the files into the folder C:\sendcom)

copy c:\sendcom\SendCom.jar c:\Programme\sendcom
(for German Windows)

copy c:\sendcom\SendCom.jar c:\Program Files\sendcom
(for English Windows)

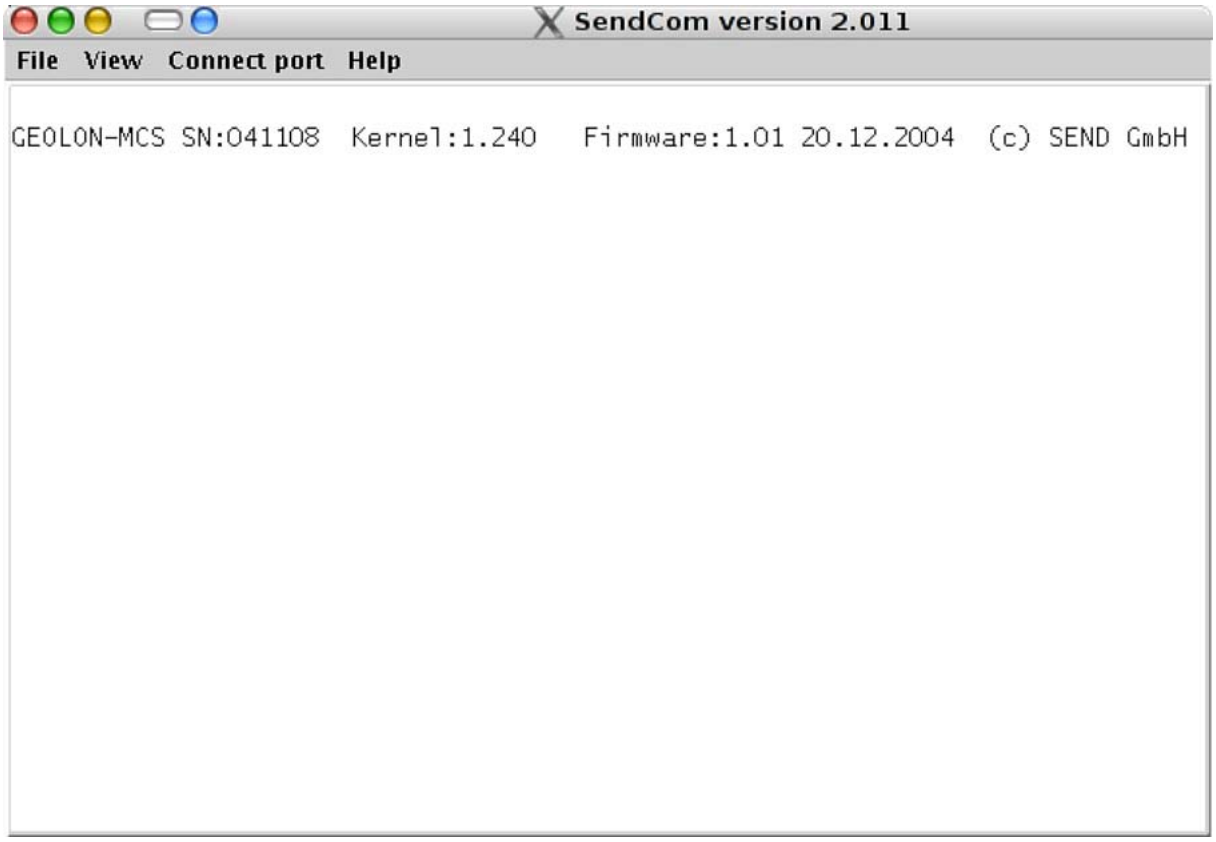
2.3.6 Delete temporary directory *sendcom*

2.3.7 Optionally, you can add SendCom.jar to your classpath:

set CLASSPATH=c:\Programme\sendcom\sendcom.jar;%classpath%

3 Using Sendcom

SendCom starts up with a window like this:



The window frame and menu bar on your PC may look different from this, depending on the settings of the desktop you are using, e.g. Windows or Linux with Gnome, KDE, etc.

3.1 The Menu Bar

3.1.1 The File menu

The file menu allows uploading of system files to the GEOLON loggers, saving the logfile to the local harddisk and leaving the programm.

3.1.1.1 Load

This function brings up a file selection window, where you can navigate to the location of a firmware update, user programm or other system files for your GEOLON logger. The file will automatically be transferred from the local drive to the logger´s storage device. You can also use the drag & drop feature of your operating system by simply dragging the desired file into the SendCom window.

3.1.1.2 Save logfile

This functions brings up another file selection window, where you can select a destination folder and filename for the SendCom logfile of your session on your local drives. The Logfile will contain all commands and responses which have been issued so far.

3.1.1.3 Exit

This function terminates SendCom and clears the DTR signal for the GEOLON logger. The same is achieved by clicking on the “close” box in the upper right corner of the window.

3.1.2 The View menu

The view menu allows the selection of additional display areas and windows, which are used less frequently in typical mission preparation sessions.

3.1.2.1 Show window

This is the most important additional window, since it displays the aquisition data in realtime from either of the recorders channels. The functions of the show window are described in an own section of this manual.

3.1.2.2 System messages

When this option is selected, a new window area is displayed at the bottom of the main window. Here you can find the current communication parameters and other system information.

3.1.2.3 Status

When this option is selected, a new window area is displayed at the bottom of the main window. If the system messages also are activated, the status window area will be placed underneath the system message area. The information displayed in this area reflects internal parameters of the GEOLON logger and is usually only of interest for factory maintenance and debugging purposes.

3.1.3 The Connect Port menu

3.1.3.1 COM1..[COMn] or /dev/ttyS0..[/dev/ttySn]

By default, SENDCOM uses COM1 (on Windows) or /dev/ttyS0 (on Linux) as its communication port. If you want to connect to a different port, you can select the appropriate port here. Sendcom lists only those ports which are not currently occupied by other applications, so your desired port may not show up at all. You may want to close interferring applications to free the port and then use the “Rescan ports” to refresh the port list.

3.1.3.2 Rescan Ports

If you are missing COM-ports in the list of available ports, they might be occupied by other applications. SendCom can only detect and list free ports, which are not occupied by other programs. If you decide to free an occupied port, you must use the Rescan Ports function to refresh the list of available ports to make the freed port available for SendCom.

3.1.4 The Help menu

The Help menu gives you information how to contact SEND Signal Elektronik GmbH for support and other issues, as well as information that may be useful for us to solve these issues.

3.1.4.1 About SendCom

This opens a new window, which displays our contact information like phone numbers, email addresses on the “About” page. The “Details” page gives information about the version number of SendCom and the Java engine used for compilation.

3.2 The Command Window

The command window is the main part of SendCom. All commands send to the GEOLON device and its responses will be displayed here and written to the logfile when logging is activated. Please consult your GEOLON manual for details about the possible configuration procedures and commands. Commands are generally sent by typing them on the computer keyboard, like it is done with a regular terminal program. Keystrokes will not appear on the screen unless they have been properly received and echoed by the connected device. Some functions and commands have been assigned to certain keys to make things a bit easier. Please refer to the “function keys” section for details.

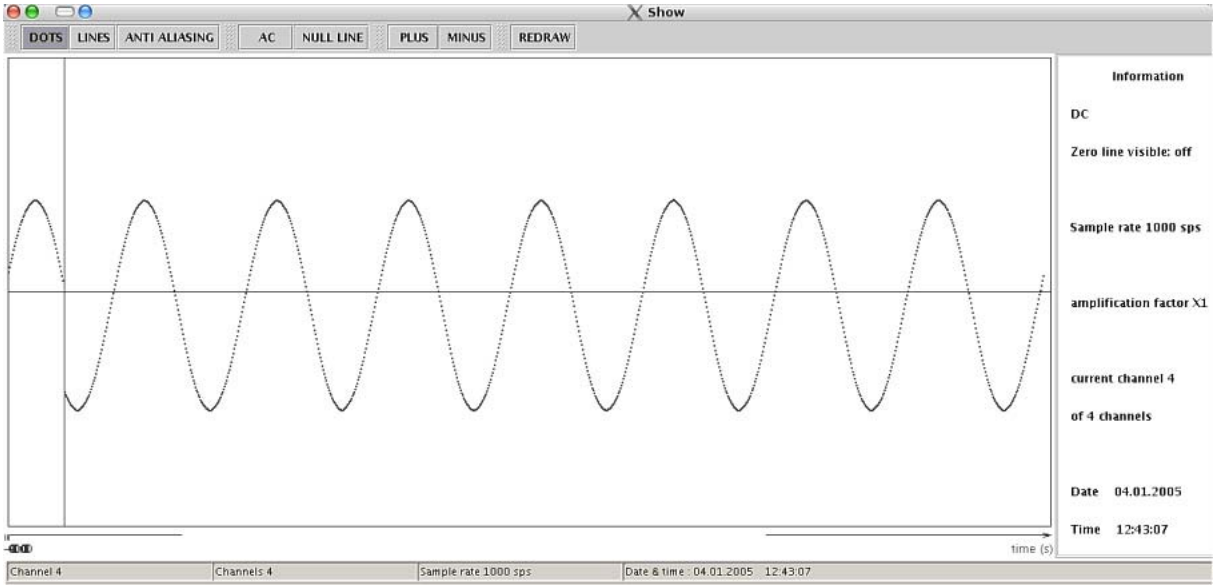
3.3 The Show Window

The show window displays the data of a single channel from a GEOLON recorder in realtime. Though the window can be opened anytime from the view menu, it can only display data after the appropriate command has been issued to the logging device. Consequently, just issuing this command will also open the show window automatically.

The **SHOW** command can be used to display the current signals of a selected channel. SHOW may be used to check the proper operation of the sensor electronics prior to starting an experiment.

Usage:
***<string>* SHOW**
displays data of channel <string>, so <string> selects the channel to be displayed.
^C (ctrl-C) will terminate the command.

Example:
4 SHOW <*enter*>
This opens the show window (if not open already) and displays the data from channel number four, as shown below.



On the top menu bar of the show window, activated options are indicated by highlighting the respective buttons. In the example displayed above, the option DOTS is activated. DOTS sets the display to dots only. Other options are:

LINES:	data points will be connected with lines
ANTIALIASING:	evens out steps which are generated due to insufficient screen resolution.
AC:	in AC mode, any DC offset will be removed
NULL LINE:	although the null line will be displayed as grey line already, this option activates a modus in which each second data dot will be set to null and marks the null line
PLUS:	Amplifies current signal by a factor of 2
MINUS:	Attenuates current signal by factor of 2
REDRAW:	Redraws the screen, use in case of display artifacts

Depending on the type of data logger connected, additional information will be displayed in the information window on the right.

Due to the limited transfer rate of the RS232 interface, a delay in displaying the signals can occur at sampling rates of 500 Hz and higher, also depending on PC properties. Not all data can be displayed for these frequencies, resulting in a small time gap between two redraws of the screen.

3.4 Function Keys

In order to make frequently used commands better accessible, some of them have been assigned to the function keys F1 to F12 on your PC keyboard. Again, some of these keys are only needed for debugging and support issues by the SEND staff, the others speed up typical mission preparation steps.

F1 Displays the list of function key assigned commands
F2 ?forth - For service purposes only
F3 1 load - For service purposes only
F4 application - For service purposes only
F5 hex - sets number display to hex
F6 decimal - sets number display to decimal
F7 boot - reboots data logger
F8 settings - displays the current settings of the data logger
F9 1 show - displays the current data from channel one in show window
F10 2 show - displays the current data from channel two in show window
F11 3 show - displays the current data from channel three in show window
F12 4 show - displays the current data from channel four in show window

3.5 Exiting the SHOW window and SENDCOM

Please click on the X button on the right top corner of the window for closing the SHOW window. You can also press CTRL-C in the Command Window to close the SHOW window.

To exit SENDCOM you can either click on the exit option in the file submenu or click on the X button on the right top corner of the SENDCOM window.

4 Troubleshooting

4.1 Error: No Class Definition for SendCom

If you get the following error:

java -jar SendCom.jar
Exception in thread "main" ***java.lang.NoClassDefFoundError:*** *SendCom*

then you have not added the SDK to the classpath. Just add the SDK to the classpath, or type on your command line:

<PATH_TO_J2SDK_BIN>/java -jar SendCom.jar

Example:
/usr/java/j2sdk1.4.2_04/bin/java -jar SendCom.jar

4.2 Error: Illegal use of nonvirtual function call

If you get the following error:

Exception in thread "main" java.lang.VerifyError: (class: gnu/io/RXTXPort$SerialOutputStream, method: write signature: ([BII)V) Illegal use of nonvirtual function call
at gnu.io.RXTXPort.<init>(RXTXPort.java)
at gnu.io.RXTXCommDriver.getCommPort(RXTXCommDriver.java)
at javax.comm.CommPortIdentifier.open(CommPortIdentifier.java:547)

or something like that, then you can work around it by adding **-noverify** to your command line.

Usage:
java -classpath <PATH_TO_SENDCOM> -noverify <PATH_TO_SENDCOM>/SendCom.jar

Example:
java -classpath /usr/sendcom -noverify /usr/sendcom/SendCom.jar

4.3 Error: Class Cast Exception thrown

If you get the following error:

java.lang.ClassCastException thrown while loading gnu.io.RXTXCommDriver

or a similiar error message, then you probably have to delete older versions of the com drivers from your computer:

Example for Linux:
rm -r /usr/java/j2sdk1.4.2_04/jre/lib/i386/libParallel.so

rm -r /usr/java/j2sdk1.4.2_04/jre/lib/i386/libSerial.so

rm -r /usr/java/j2sdk1.4.2_04/jre/lib/ext/jcl.jar

rm -r /usr/java/j2sdk1.4.2_04/jre/lib/javax.comm.properties

Example for Windows:
del <path to java>/jre/lib/i386/libParallel.so

del <path to java>/jre/lib/i386/libSerial.so

del <path to java>/jre/lib/ext/jcl.jar

del <path to java> /jre/lib/javax.comm.properties

4.4 Error: No Class Definition for EventListener

If you get this quite impressive error:

Exception in thread "main" java.lang.NoClassDefFoundError:
gnu/io/SerialPortEventListener
at java.lang.ClassLoader.defineClass0(Native Method)
at java.lang.ClassLoader.defineClass(ClassLoader.java:537)
at java.security.SecureClassLoader.defineClass(SecureClassLoader.java:123)
at java.net.URLClassLoader.defineClass(URLClassLoader.java:251)
at java.net.URLClassLoader.access$100(URLClassLoader.java:55)
at java.net.URLClassLoader$1.run(URLClassLoader.java:194)
at java.security.AccessController.doPrivileged(Native Method)
at java.net.URLClassLoader.findClass(URLClassLoader.java:187)
at java.lang.ClassLoader.loadClass(ClassLoader.java:289)
at sun.misc.Launcher$AppClassLoader.loadClass(Launcher.java:274)
at java.lang.ClassLoader.loadClass(ClassLoader.java:235)
at java.lang.ClassLoader.loadClassInternal(ClassLoader.java:302)

or something similiar, the drivers probably have not been installed properly. Please check the *<SDK>/jre/lib/ext* directory for the presence of *librxtxSerial.so* and *RXTXcomm.jar* . If neccessary, repeat step 1.2.3 and, if required, 1.2.4.

4.5 SendCom will not start for a normal user

This applies to Linux users only:

- Change permissions for ***/dev/ttyS**** or ***/dev/tts/**** with the following commands:
  chmod g+rw /dev/ttyS or chmod g+rw /dev/tts/**
  chgrp tty /dev/ttyS or chgrp tty /dev/tts/**

- Add your user to a group like ***/dev/ttyS**** or ***/dev/tts/**** (tty) with the *kuser* utility.

- Change permissions for ***/var/lock*** with the follwoing command:
  chmod g+rw /var/lock

- Add your user to a group like */var/lock* (uucp) with the *kuser* utility.