
Using NRP-Z series Power sensors with LINUX

Rohde & Schwarz NRP-Z series USB Power sensors can be used under different operating systems. We supply drivers and utilities for both Microsoft Windows XP and LINUX Kernel 2.6. (For special purposes there is also an older driver for Kernel version 2.4 available)

This document describes how to install the necessary software to use the NRP-Z series Power sensors under LINUX Kernel 2.6. The supplied software package consists of different parts. There are

- a) a LINUX Kernel module called **nrpzmodule**
- b) a library which constitutes an API (Application Programming Interface) for the Power sensors (**libnrp.so**)
- c) a couple of programs to demonstrate the use of the API

In order to use any NRP-Z series Power sensor you first have to install our distribution software package. For this please follow the steps below:

1. The distribution software package is supplied as a **ZIP-compressed tar** archive (***.tgz** file). The filename normally looks like **NrpLinuxPckg_<release-date>**. Please save the file you received or downloaded in an appropriate directory, for example as **\$HOME/NrpLinuxPckg_20071031.tgz**
2. Select a destination directory where you want the NRP-Z Linux software to reside, for example:
/usr/local/src/NRP-Z

Commands:

```
$ sudo mkdir -p /usr/local/src/NRP-Z
$ cd /usr/local/src/NRP-Z
```

3. Extract the distribution software package

Command:

```
$ sudo tar xzf $HOME/NrpLinuxPckg_20071031.tgz
```

This creates some subdirectories

- | | |
|-------------------------|--|
| ./NrpLib | Base directory for installing driver and library |
| ./NrpzModule | Source code of the Linux Kernel module for our NRP-Z series Power sensors |
| ./demo_CallBacks | Demo program. This program shows the usage of callback functions in an application in order to asynchronously act on different events triggered by the |

Power sensor(s).

These events include connecting and disconnecting of sensors, data availability, command acceptance and error handling

- ./demo_ContAvMinMax** Demo program. Configures a sensor for continuous power average measurement with displaying of min/max values

- ./demo_TimeSlotGSM** This program demonstrate the measurement of a GSM signal by configuring the sensor to its timeslot mode

- ./demo_SpeedTest** Demo program. Issues 1000 single measurements and calculates the number of measurements per seconds

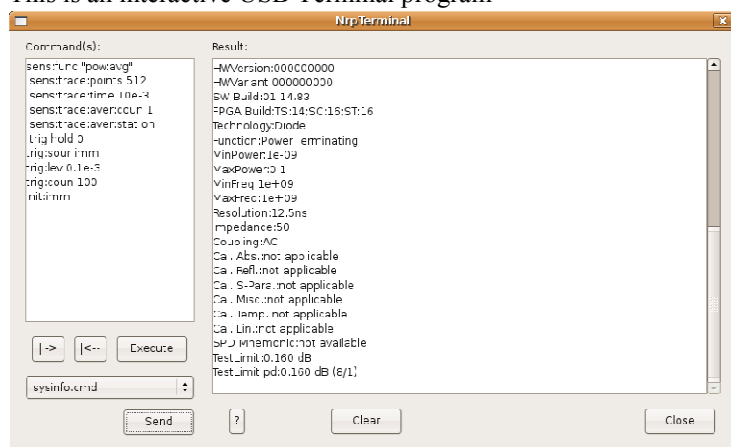
- ./demo_SpeedBuffered** Demo program. This programs starts ten times 1000 buffered measurements where the results become stored in an internal buffer of the sensor and will be transferred as an array of results after the measurements are done

- ./demo_rsnrpzContAv** Demo program showing the use of the high-level remote control driver 'rsnrpz' (librsnrpz.so) by configuring the sensor for continuous average measurement

- ./demo_rsnrpzBufferedMode** Demo program showing the use of the high-level remote control driver 'rsnrpz' (librsnrpz.so) by configuring and measuring in buffered mode

- ./NrpConsole** Demo program. This is an interactive Console application, which allows the user to send commands to a sensor easily

- ./NrpTerm** This is an interactive USB Terminal program



With NrpTerm it is possible to send one or more commands to an NRP-Z series Power sensor very user-friendly and see all the data sent by the sensor in a well arranged display. To start the program simply go into the **NrpTerm** directory and enter the program name **./NrpTerm** – Before you do so,

please finish the installation process first!

./PowerViewerPlus This is a full featured application which is capable of utilizing all available operation modes of the NRP-Z series Power sensors. Besides the basic measurement modes the program provides various additional high-level features (like **multi-channel** measurement and **data-logging**). With this application the user has a convenient tool for executing a wide range of power measurement tasks. - There is a detailed documentation in PDF format in the same directory. Please refer to this file to learn more about **PowerViewerPlus**

4. Change into the base directory **NrpLib**. From here you can issue a simple "**make**" command which compiles and installs the necessary modules, drivers and start/stop scripts (under **/usr/lib**, **/usr/include** and **/etc/init.d** respectively).

Commands:

```
$ cd NrpLib
$ sudo make
```

5. Now you can check whether everything worked and whether the NRP-Z Kernel module was installed and started correctly

Commands:

```
$ lsmod | grep nrp
```

If you want to install the NRP-Z Kernel module manually you could issue the command

```
$ sudo modprobe nrpzmodule
```

By the way, unloading the module is done by

```
$ sudo rmmod nrpzmodule
```

6. The above steps are sufficient to use Rohde & Schwarz NRP-Z series Power sensors under Linux. To test whether everything is okay so far, please proceed to using one or more of the supplied demo programs. For example:

Commands:

```
$ cd ../demo_ContAvMinMax
$ make
$ ./demo_ContAvMinMax
```

If you have any further questions, please contact juergen.geltinger@rohde-schwarz.com by E-Mail

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