IDA 2 /
NRA Series

Utility Programs Description

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1 Before you start

1.1. System requirements and installation

The applications described here were compiled in C# programming language under .Net 2.0 and VisualStudio 2008. The following system requirements must be met for the applications to run:

IBM PC/AT compatible computer	
Processor	Intel Pentium® Processor 1 GHz or above.
Operating system	Windows® XP SP2 or above (Vista, Windows® 7)
RAM	At least 512 MB
Hard drive	At least 20 MB free space
Monitor	Video adapter and monitor resolution: XGA (1024 x 768 pixels) or better. Color depth: True color (24 bit) or better.
Interface	USB virtual COM port, Network: Ethernet 10Base-T/100Base-TX (RJ-45) or better.
Microsoft® .Net framework	Microsoft .NET Framework 2.0 Redistributable or above.

The applications are installed by simply copying the EXE files into a folder of your choice on the hard disk. No changes are made to the system and no entries are made in the registry.

If the folder used is not write-protected or subject to any access restrictions, the last program settings used will be saved there in a configuration file.

Simply delete the relevant application and configuration files to uninstall the applications.

1.2. The user interface

To make the programs easier to operate, the main window for all the demo applications is practically identical and contains the following elements:

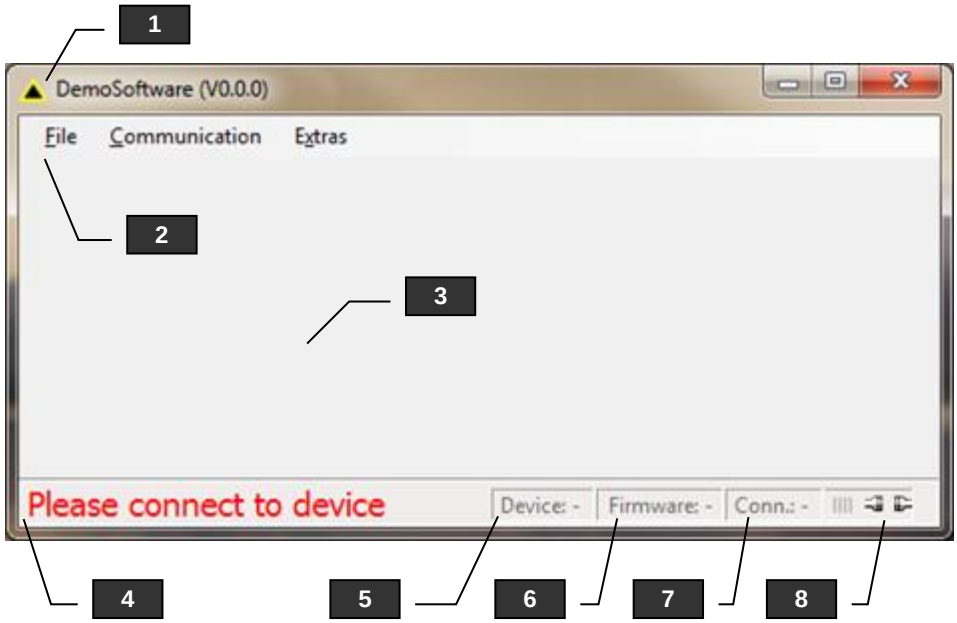

Figure 1: Demo software – Main window

1) Title bar:

The title bar consists of the Narda logo, the program name and version number.

2) Main menu bar:

You can configure and create log files using the commands in the main menu bar (see Figure 1.2). In some applications, you can also save current settings and measurement parameters in a configuration file, and load them from this file again. You can also make settings affecting data communications (see 1.3) and close the program using the “Exit” command.

3) Application specific components:

This section contains application specific elements.

4) Status message:

The status message gives you the latest information on how the application is running.

5) Device:

This box contains the device name and serial number when the connection has been made to the device.

6) Firmware:

This box contains the device firmware version number when the connection has been made to the device.

7) Conn.:

This box shows whether the connection type chosen is the serial interface or a TCP/IP network connection.

8) Connection status:

You can see the current status of the connection here.

1.3. Connecting to the device

You can select the type of connection, set the connection parameters, initiate connection, disconnect, or shut down a connected device using the “Communication” command in the main menu bar.

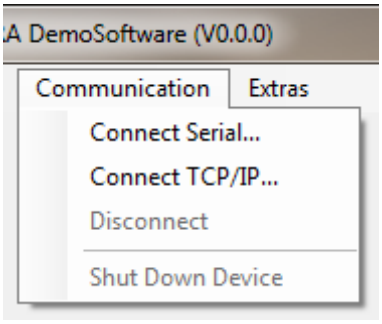

Figure 2: Main menu -> Communication

To make a connection using the serial interface (USB virtual COM port), select the “Connect Serial…” command. This opens a dialog box where you can select the port that is to be used. If the port required is not shown immediately, this may be because the device is still booting up. Once the device is fully operational, the relevant COM port will be shown when you open the port selection list again.

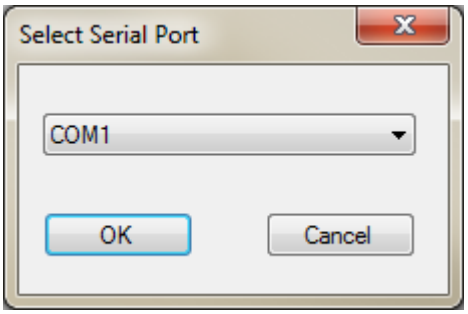

Figure 3: Setting up a serial connection

Click on “OK” to start the connection set up procedure.

To make a network connection, select the “TCP/IP…” menu command. This opens a dialog box where you can specify the IP address of the NRA/IDA and a port number. The accessibility of the device on a TCP/IP connection should be tested first using a PING command. Remote port 55555 is set by default.

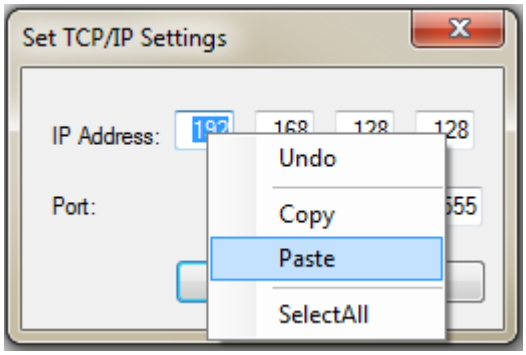

Figure 4: Inserting an IP address

Tip

You can paste the IP address from the clipboard.

To paste in the IP address from the clipboard, right click on one of the IP address fields and select “Paste” in the context menu that opens. You can also use the key combination “Ctrl + V”.

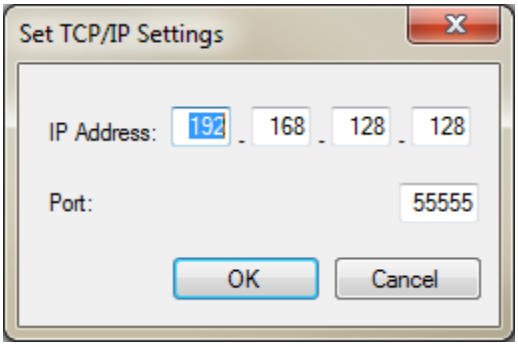

Figure 5: Setting up a network connection

Click on “OK” to start the connection set up procedure.

You can disconnect an existing connection using the “Disconnect” command.

You can shut down the connected NRA/IDA using the “Shutdown Device” menu command.

Tip

Check the connection if menu commands are grayed out.

If a menu command cannot be selected or is grayed out, this may mean that the connection has not been made or another connection is already present.

1.4. Recording communication with the device in a log file

The applications described here provide the facility for recording the communication between the PC software and the device in a text file, which is called a log file. This allows you to see the commands and the order in which they were used during execution of the program. The log file also gives you information about the times taken to execute the commands.

You should configure the logging function before starting it to prevent the log file from becoming unclear and unnecessarily large.

To do this, click on “Extras” in the main menu and then on the “Options…” command:

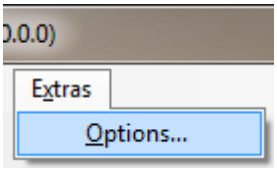

Figure 6: Main menu bar -> Extras

Select the “Logfile” tab in the dialog box that is displayed.

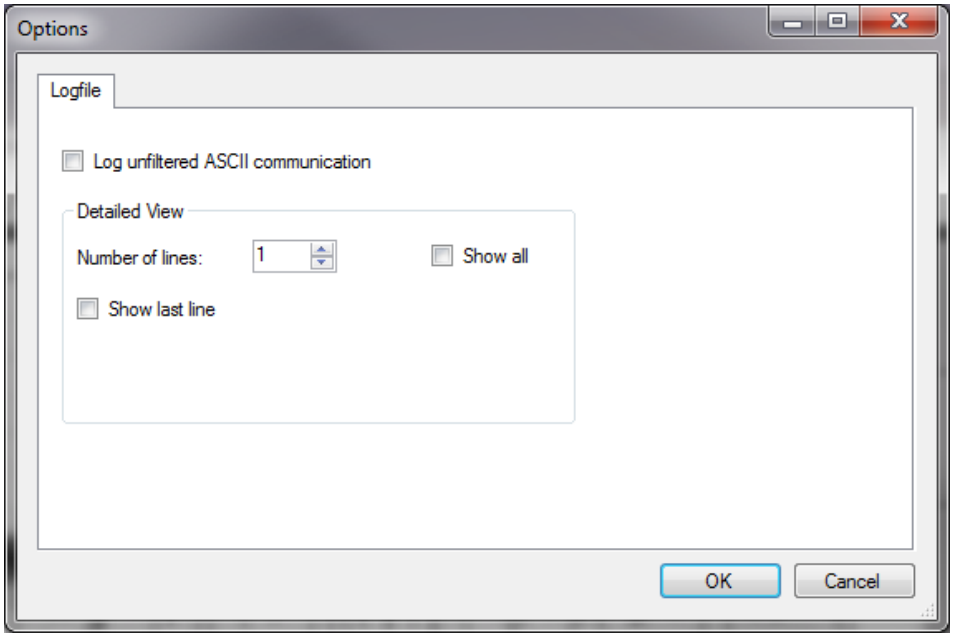

Figure 7: Main menu -> Extras -> Options

Note

Only run the logging function for a short time if necessary, to prevent the log file from getting too large and possibly filling the hard drive.

Select the “Log unfiltered ASCII communication” check bow if you want to record all the communication data without filtering it. All the other options will be grayed out when you do this. The log file should be opened using WordPad, not the Editor, because there is no adjustment in text formatting.

In this mode particularly, you need to make sure that you stop the logging function soon enough because the size of the log file can get very large very quickly.

In most cases, it is better to uncheck the “Log unfiltered ASCII communication” check box and limit the number of lines per log file entry. You can do this using the “Number of lines” entry box. The last line of each entry is also recorded if you check the “Show last line” check box.

If you select the “Show all” check box, all the lines in each entry are recorded. The text formatting is adjusted here, in contrast with “Log unfiltered ASCII communication” mode.

An example of a possible log file is shown in Figure 8.

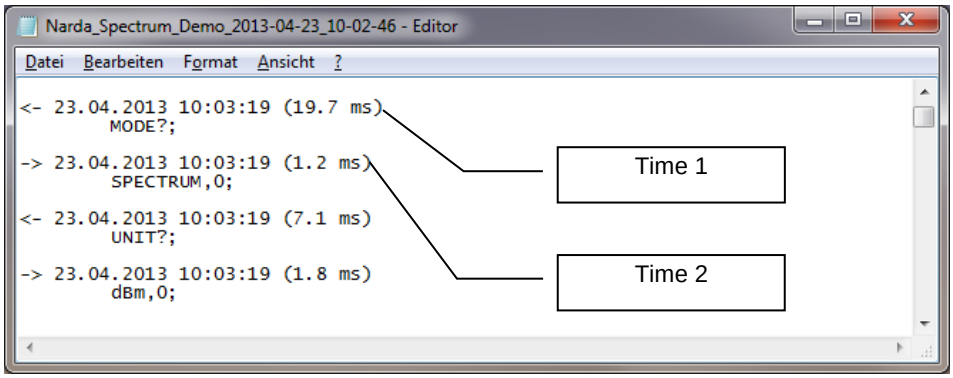

Figure 8: Log file opened using MS Editor

The left-facing arrows (←) indicate that the text shown was sent from the PC software to the NRA/IDA. The time shown (Time 1) indicates the time between two commands.

Text sent from the NRA/IDA to the PC is indicated by a right-facing arrow (→). The time shown (Time 2) comprises:

- the time to transmit the command from the PC to the NRA/IDA
- the processing time in the NRA/IDA
- the time to transmit the result data from the NRA/IDA to the PC

Some formatting characters are added to the actual data to improve clarity (see Figure 9).

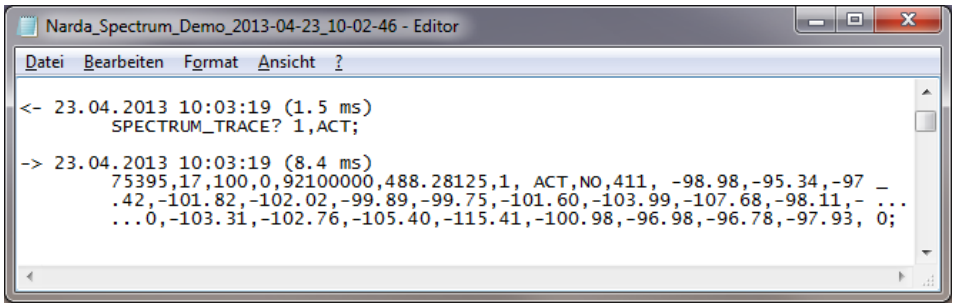

Figure 9: Log file with the options: "Number of lines" = 3 and "Show last line"

The underline "_" indicates that a line feed has been inserted to improve clarity.

If a line ends with an ellipsis "…" this indicates that more data exist for this entry but that the number of lines per entry has been limited.

If a line starts with an ellipsis "…" this indicates that the "Show last line" option has been selected and data preceding this line has been omitted because the number of lines per entry has been limited.

When you have selected the options you want, you can start the logging function by clicking on the "Start Communication Log…" command under "File" in the main menu. You can specify a folder and a file name after you select this command.

The logging function stops automatically and closes the file when you stop the application. You can also stop the logging function by clicking on the "Stop Communication Log" command under "File" in the main menu.

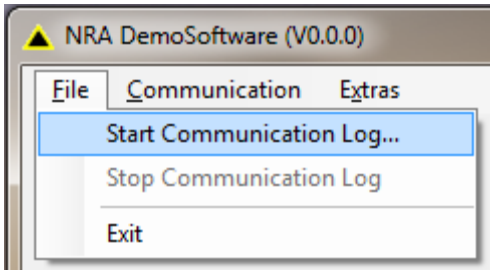

Figure 10: Main menu -> File

2 Narda Configurator

Tip

If the device IP address is unknown, make a USB connection and read out the IP address.

You can use the Narda Configurator as a convenient tool for configuring the NRA/IDA network adapter. If unknown, the device IP address can be determined using the Configurator connected via USB.

You can also use the Configurator to synchronize the system times of the PC and the NRA/IDA.

⇨ Start the application Narda_Configurator.exe

↳ All the fields are shown grayed out because you have not made a connection to the device yet.

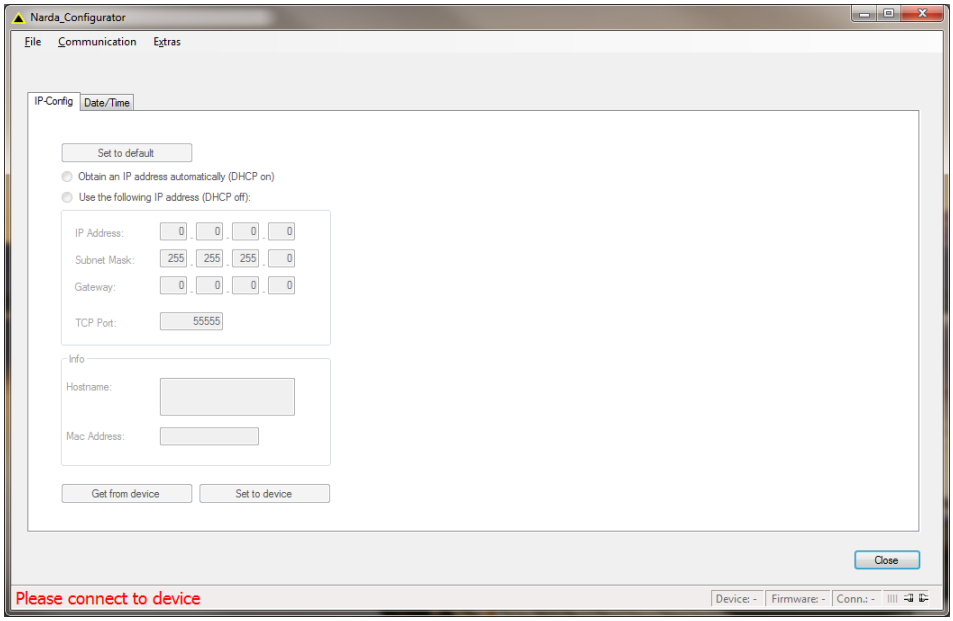

Figure 11: Narda Configurator → Start page

2.1. Connecting the device

To make a connection to the device:

⇨ Select the “Connect Serial…” or “Connect TCP/IP…” command under “Communication” in the main menu.

↳ Refer to section 1.3 "Connecting to the device" for more information.

2.2. Network configuration

The network settings are shown as soon as you have successfully made a connection to the device.

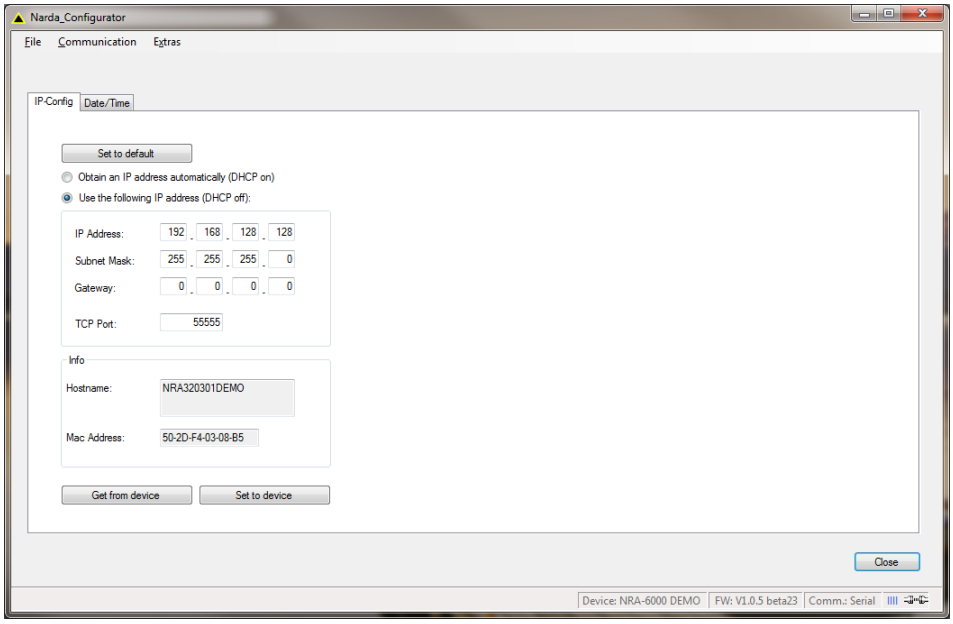

Figure 12: Narda Configurator → Network configuration

Tip

You can copy the IP address on to the clipboard and use it to set up the connection.

To copy the IP address or the TCP port number, right-click in the box you want to copy.

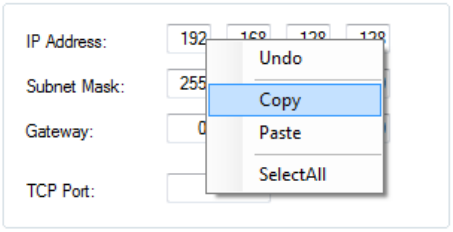

Figure 13: Copying the IP address

Then select the “Copy” command from the context menu that opens. You can then use the IP address copied in this way to set up a connection by entering it in the “Set TCP/IP settings” dialog box (see 1.3, Figure 5).

Note

In case the Subnet Mask shows 0.0.0.0 you need to enter a valid mask (e.g. 255.255.255.0).

At the first level, the device operates as TCP server and is able to accept a connection. When it is put into operation, you must make sure that the device is operating in the same subnet and that no firewall or network gateway etc. prevents data communication.

A DHCP server (e.g. in the form of a router) must also be present if you want to use the DHCP service.

Some network settings can only be changed manually when the option “Use the following IP address (DHCP off)” is selected.

Click on the “Set to default” button to set all entry boxes to their default values. To transfer these values to the device, confirm by clicking on the “Set to device” button.

2.3. Date / time synchronization

The device real time clock (RTC) may differ from that of the control computer (PC). Synchronization with the PC clock is necessary for functions that require the correct time and date. This synchronization function is included as an example in the Configurator.

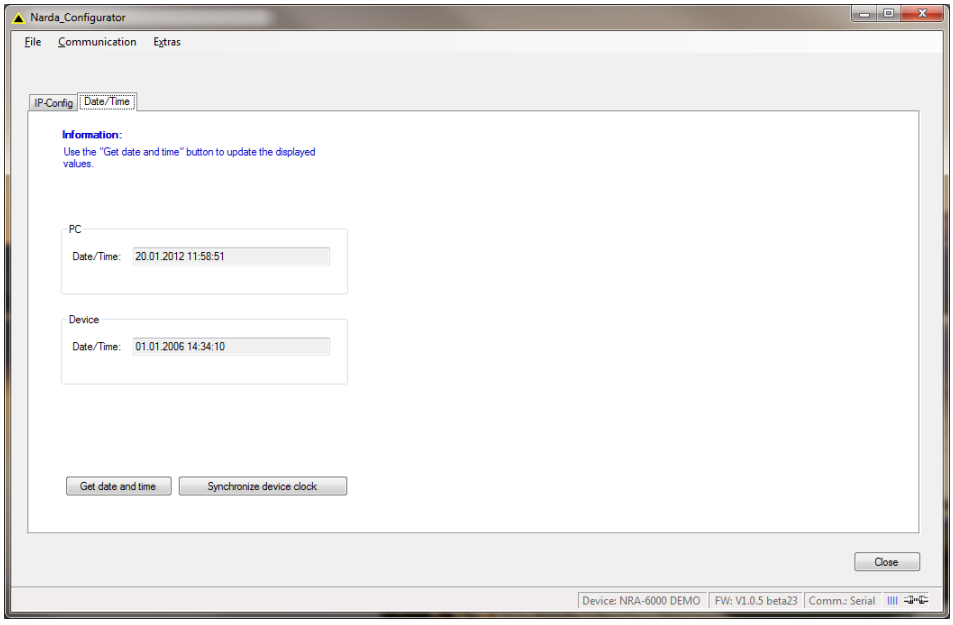

Figure 14: Narda Configurator -> Date / time synchronization

3 Narda Remote GUI

Narda_Remote_GUI is not a measuring device software application. It only reads and displays as pixel graphics the virtual screen data generated by the NRA/IDA. It also simulates keypad entries. Measurement data are not, however, exchanged!

⇨ Start the Narda_Remote_GUI.exe application.

↳ After starting, an empty device screen display appears, since a device is not connected.

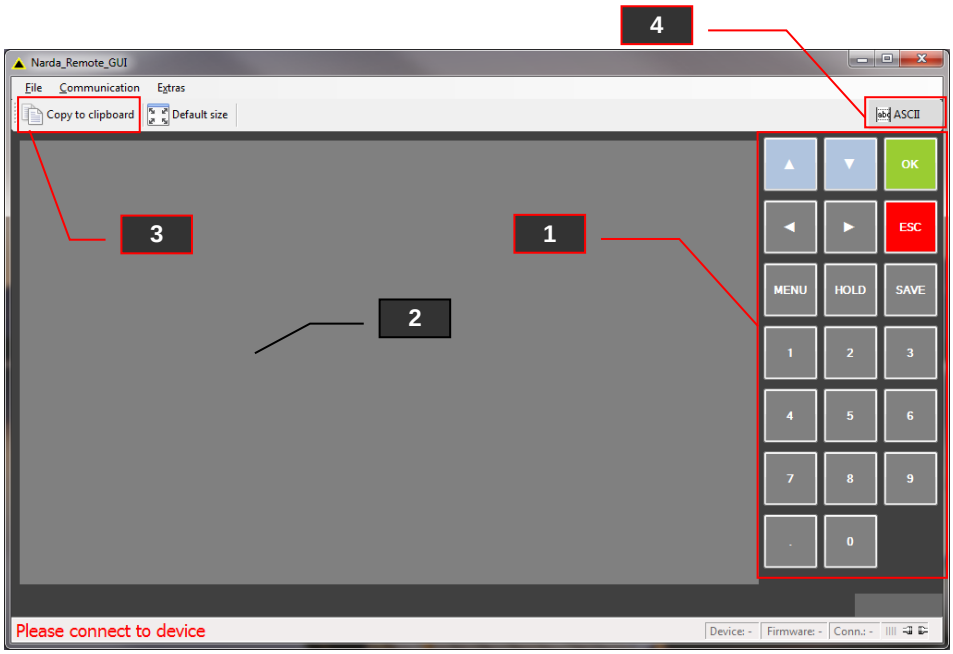

Figure 15: Narda_Remote_GUI – Overview of control elements

Figure 15 shows the schematic arrangement of the user interface. The numbers have the following meanings:

1.) Virtual device keypad:

This simulates the NRA/IDA device keypad.

2.) Virtual device display:

If connection to the NRA/IDA is successful, a virtual device display screen will appear here.

3.) Copy to clipboard:

The “Copy to clipboard” button copies the virtual device display to the clipboard.

4.) Binary/ASCII button:

Enables switching between binary and ASCII text transfer modes (see 3.2).

3.1. Connecting the device

To make a connection to the device:

⇨ Select the “Connect Serial…” or “Connect TCP/IP…” command under “Communication” in the main menu.

↳ For more information, refer to Chapter 1.3 “Connecting to the device”

3.2. ASCII / Binary mode

Image data can be transferred to the PC in different ways.

ASCII mode: The pixel values are transferred as “plain text”.

Binary mode: All the image data are transferred in a binary structure. This type of transfer produces compact data packets, so less data has to be transferred.

The Binary/ASCII toggle button is used to switch between the two modes (Figure 15.4).

3.3. Using the virtual device display

The buttons in sections “1” and “2” (see Figure 16) can be operated using the mouse when a connection has been made successfully. You cannot enter anything in the diagram or the simulated device screen.

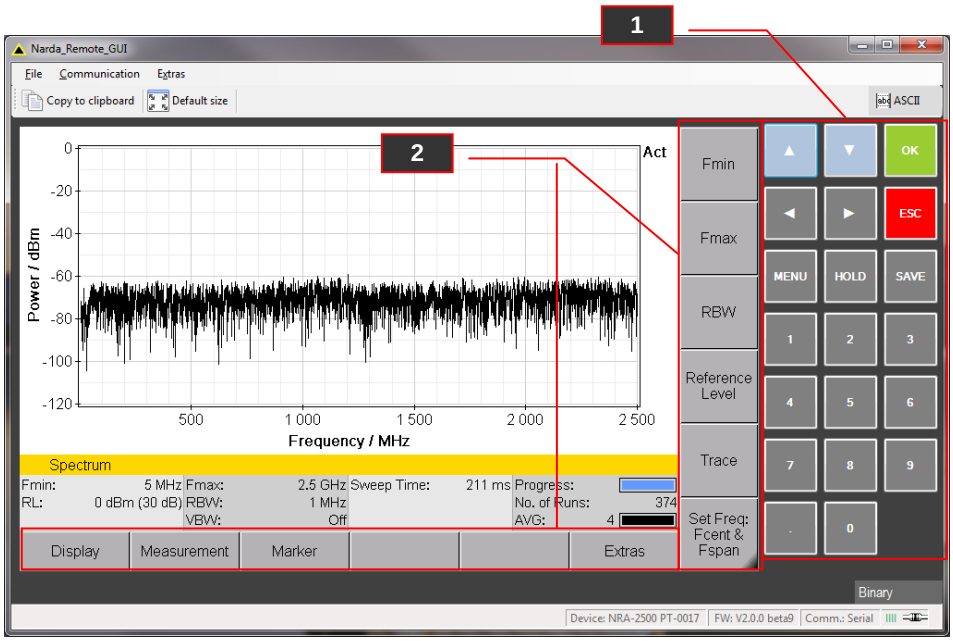

Figure 16: Narda_Remote_GUI - Operation

The mouse scrolling wheel is useful for operating the markers and navigating through lists.

4 Narda Device Finder

The “Narda Device Finder” is an auxiliary application that can search for and list the NRA/IDA devices in the network, as long as the devices have an active connection to the network being searched.

4.1. The user interface

The functions of the “Narda Device Finder” are very different to those of the other demo applications, particularly with regard to the setting up of the connection. This is reflected in the user interface (Figure 17), which consists of the following elements:

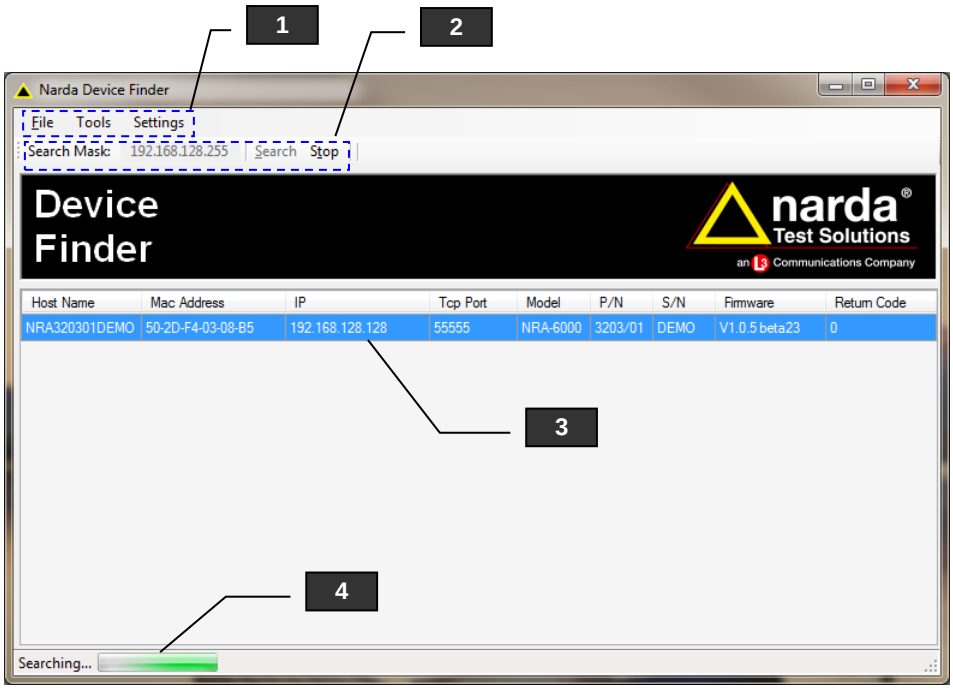

Figure 17: Narda Device Finder

1) Main menu:

You can close the application, execute device-dependent functions, and change the application settings from the main menu.

2.) Search menu:

The Search menu displays the current search mask setting and allows you to start or stop a search.

3) Result list:

The devices found are displayed in the result list.

4) Status:

The status bar shows the current status of the application.

4.2. Find devices

To find the NRA/IDA devices connected to the network:

⇨ Select “Search” in the Search menu ("2" in Figure 17).

↳ The status bar ("4" in Figure 17) shows if a new search has been started.

⇨ You can stop the search at any time by clicking on the “Stop” command in the Search menu.

If devices present in the network are not recognized, this may be e.g. because the search mask ("2" in Figure 17) needs to be changed, or a longer search is necessary (see 4.4 Changing application settings).

4.3. Performing a device-specific action

You can perform various actions on the devices shown in the result list.

To perform a device-specific action:

⇨ Right-click on a device in the result list ("3" in Figure 17).

↳ Select the desired action from the context menu that opens (Figure 18).

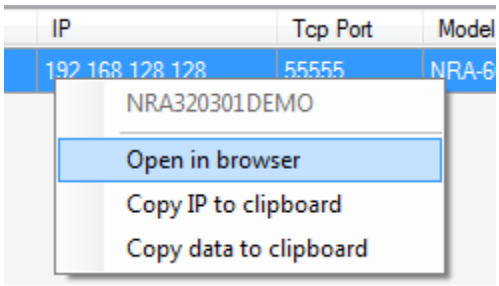

Figure 18: Device → Context menu

or

⇨ Mark the desired device in the result list by left-clicking on it

⇨ Select the “Tools” menu from the main menu ("1" in Figure 17)

↳ Select the desired action

Double click on a device in the result list to open that device’s “Web Server” in your default browser.

4.4. Changing application settings

You can configure the search mask and specify the length of the search in the “Application settings”.

To change the “Application settings”:

⇨ Select “Settings” in the main menu ("1" in Figure 17)

↳ A dialog box opens. You can change the application settings here.

Common

The “Common” tab contains a numerical field where you can enter the minimum search time in seconds. You can enter values between 5 seconds and 5 minutes.

Network

The network mask can be adjusted on the “Network” tab.

If no devices are found despite changing the application settings, you may need to change the network card configuration, and / or correct the firewall settings and / or the network settings of the devices.

5 Glossary

COM port	Designates the name of the serial interface of the PC.
DHCP	The Dynamic Host Configuration Protocol (DHCP) enables a server to automatically assign the network configuration to clients.
Firmware	Firmware is the software that is embedded in electronic equipment – in this case, the internal software of the NRA/IDA.
IP address	An IP address is a unique computer network address based on the Internet protocol (IP), which is assigned to each device connected to the network (e.g. the Internet) enabling the device to be addressed and therefore accessed (similar to the house number in a postal address).
TCP port	The TCP port number is part of the device network address. It indicates the application for which the data are intended. The TCP port number is thus comparable to the name of the recipient (addressee) in the analogy of a postal address.