User Manual

Nedo Connect XP V2.5 ®

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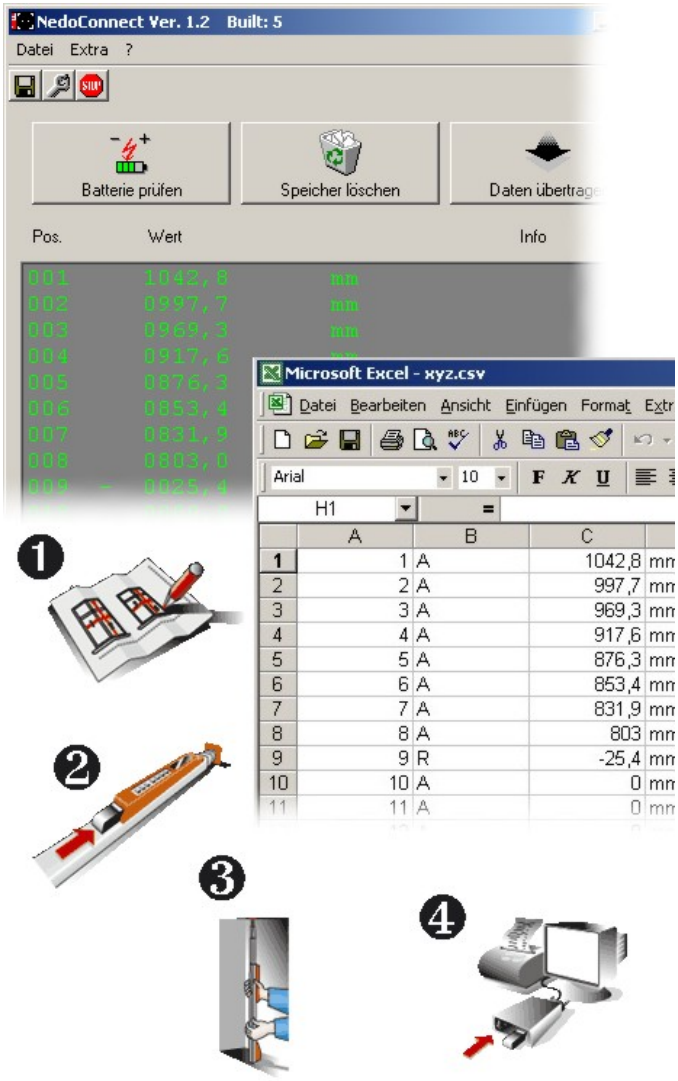


Revision History

Date	Version	Author	Comment
23.01.2003	1.0	tf	Initial creation
16.11.2005	2.0	rt	Added Online-Mode
04.11.2006	2.1	rt	Added debug mode
10.11.2008	2.5	rt	Added external Mode
10.02.2009	2.5.1	rt	Added french and spain lang.
19.07.2011	2.5.2	rt	Added Parameter /NOKDOT
03.05.2012	2.5.4	rt	Added Parameter /CLEAR

Content

1 Installation

- Connect the Nedo RAM-Interface to a free serial port.
- Start the software installation (see below).

1.1 Installing the Hardware

The Nedo RAM-Interface is supplied with a serial cable and a 9 pin Sub-D connector. For installation connect the interface to any free serial port. By standard the interface is set to the following parameters:

- 9600 baud
- 8 data bits
- No parity
- 1 stop bit

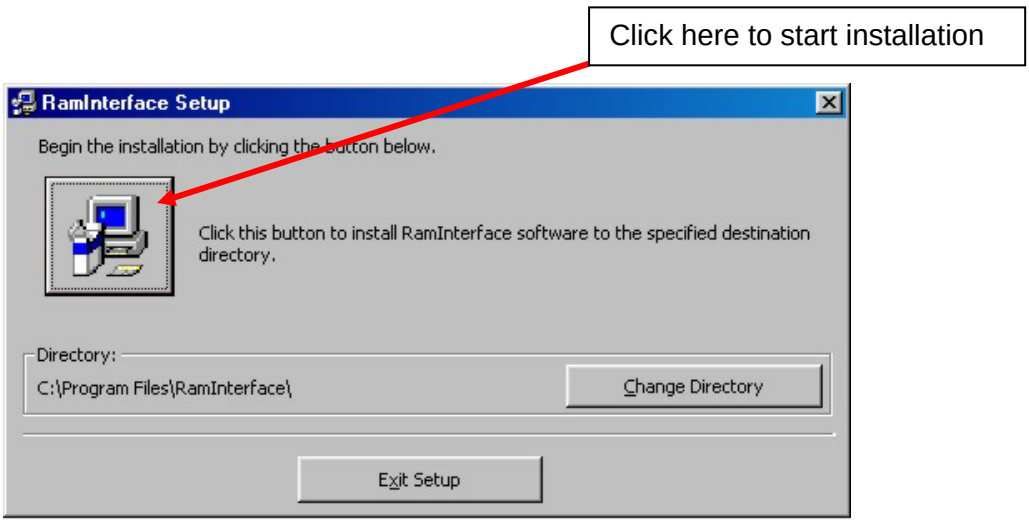
The software is set by default to the same parameters, so there is no need to adjust any settings. To speed up the data transfer, please see chapter 3.4.1 for further details.

1.2 Installing the Software

There are two ways to install the software:

- **CD installation**: The setup should start upon CD-ROM insertion. If not, please double click on ‘setup.exe’.
- **Web / download / email installation**: Please copy all files to a hard drive and double click on ‘setup.exe’.

When setup is launched, you will see the following message:



Please follow the instructions.

2 Selecting the Operating Mode

The Nedo Connect XP® software differentiates between two operating modes:

1. Offline mode:
   Intended for processing data with memory modules and RAM interface.

2. Online mode:
   Intended for continuous (online) data transmission from Nedo instruments to PC via RS232 data cable or Bluetooth module.

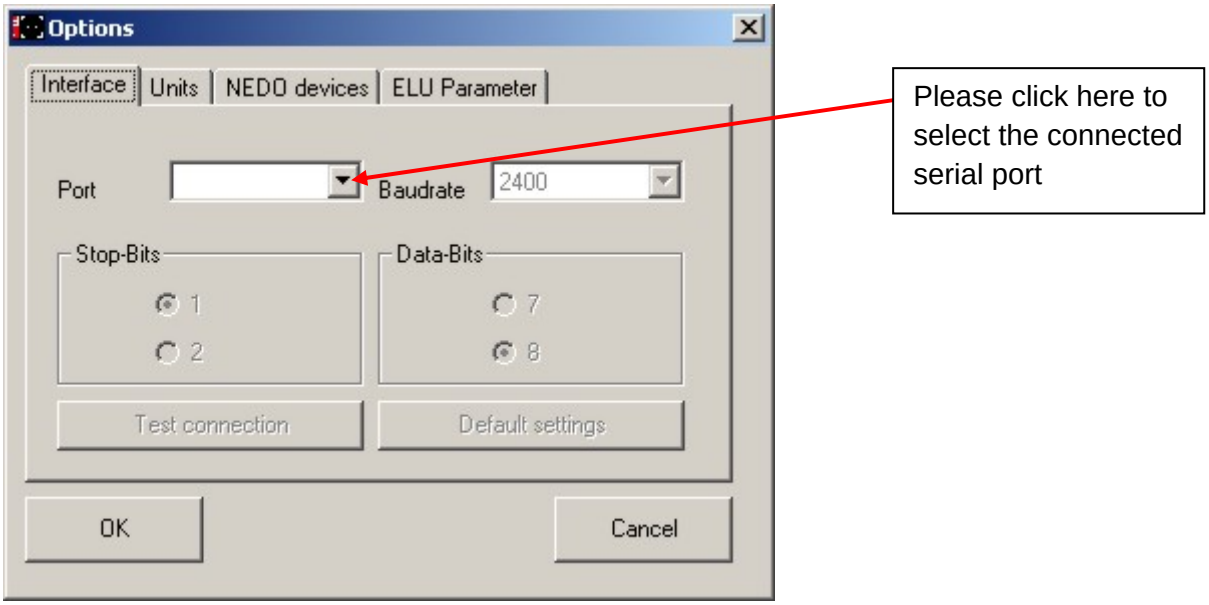
Select the appropriate operating mode by clicking on one of the two buttons. You can, of course, change to the other mode at any time.

3 Offline Mode (RAM-Interface)

3.1 First Start of Nedo Connect XP® in Offline Mode

When starting Nedo Connect XP® for the first time, the following message will appear.

After pressing any key, you will be asked to select the port to which the interface is connected:



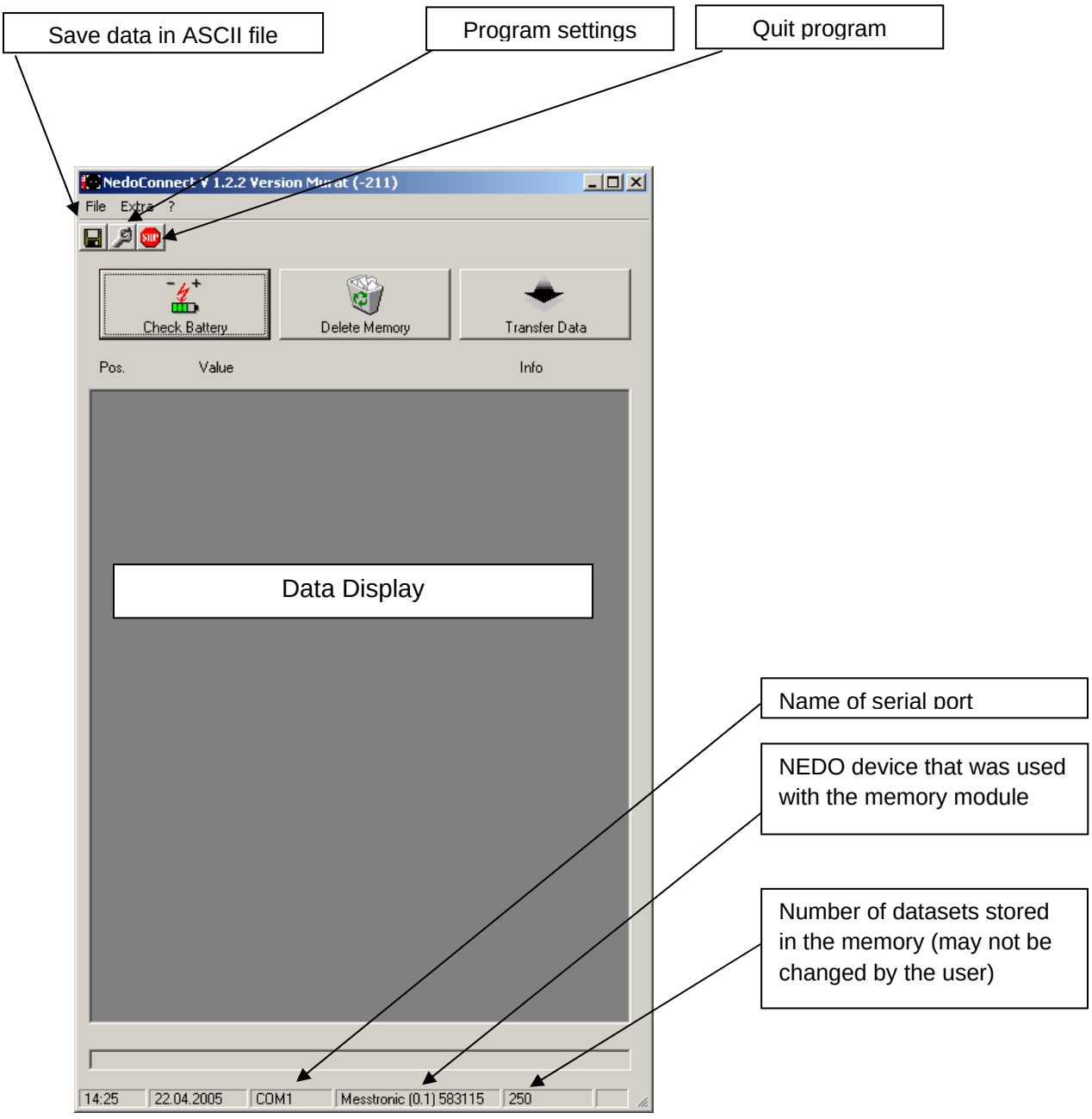
Please select the serial port by clicking on the drop down list. All other parameters need not to be adjusted, if the interface is still set to default (factory) settings (2400,n,8,1).

After having chosen the serial port, click on ‘test connection’ to check the connection. It may happen that a message like ‘communication error type x” appears. In this case, please retry to connect to the interface. If the interface is recognized by the software, the following message will appear:

The software is ready to work after pressing ‘OK’. If the matching serial port is not selected, Nedo Connect XP® will not be able to communicate with the Nedo interface.

3.2 Main Window

After successful installation, the following window will appear:



3.3 Functional Details

3.3.1 Testing the Battery

Click on the ‘Check Battery’ button to test the module’s battery.

If the battery is still OK, the following message will appear:

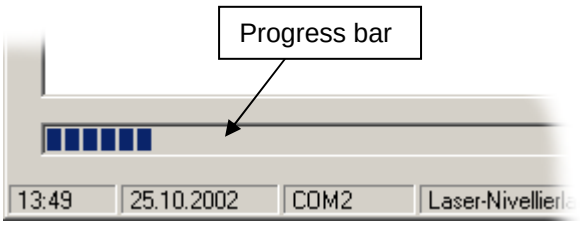
3.3.2 Deleting the Memory Module

Click on the ‘Delete Memory’ button to delete the contents of the memory module.

Please note:
All data will be lost when deleting the memory using the software as explained above!
Besides the measuring data there is an ID stored in the module that detects Nedo device used with the module. This ID will also be lost when using the ‘Delete Memory’ function of Nedo Connect XP®. Thus, it may be more efficient to delete the data on the module using the Nedo device (e.g. mEsstronic) and not the software. When deleting the data using the Nedo device, the memory module will be formatted and the ID will be kept in the memory module.

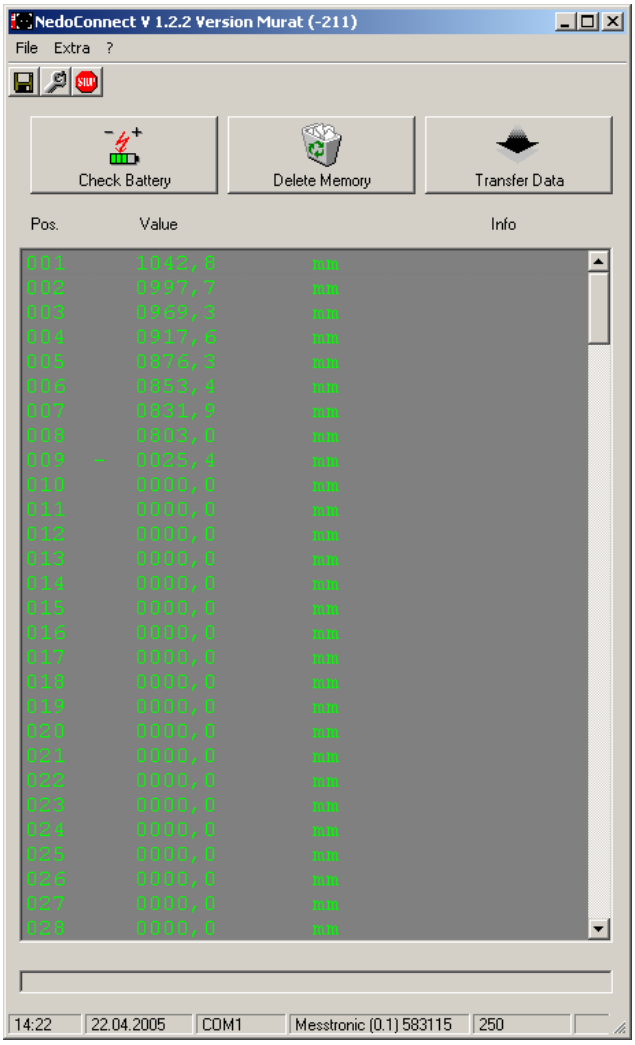
3.3.3 Transmitting Data

Click on the ‘Transfer Data’ button to transmit data from the interface to a PC. The transmission speed depends on the chosen baud rate: the higher the baud rate, the faster the transmission. The progress of the transmission is shown at the bottom of the main window.



Please note:
Remove the memory module from the interface to stop the transmission. A message will appear on the screen.
After a successful transmission of data, the following message will appear:

The transferred data will be displayed in the main window. If you wish to chose another unit system (imperial system [foot/inch] instead of metric) please see chapter 3.4.2 for details.



Explanation of the columns in the main window shown above:

Pos.	Position of stored value in memory module (identical to position displayed on Nedo device).
Value	Measured value displayed in the chosen unit system (metric or imperial system [foot/inch]). If the value is relative, an algebraic sign (+/-) is displayed.
Info	Depending on Nedo device used, additional information may appear (see below).

Please note:
A *relative* value is preceded with an algebraic sign (**+/-**), while an *absolute* value is not.

Following devices may generate additional notes in the ‘info’ column:

Nedo device	Possible note in ‘info’ column
Laser levelling staff 420215	**NN** (Value was stored based on sea level)
ELU-mEsstronic	**Cor. Value** (Measured value includes a correction value)

3.3.4 Storing of Values in a File

All transferred data (shown in the main window) may be stored in an ASCII file by choosing ‘Save’ in the menu or clicking on the  button. The structure of an ASCII file depends on the Nedo device used.

3.3.4.1 Regular Nedo mEsstronic 1.0mm 58x111 (3m, 5m and 8m)

The following examples show the structure of files with measured values in the metric and the imperial system:

Metric system

```
000   AA        0.700
001   AA        0.791
002   AA        0.885
003   AA        0.953
004   AA        1.037
005   AA        1.064
006   AA        1.007
007   RR       -0.046
008   RR        0.068
009   AA        0.985
```

Imperial system

```
000   AA       27.55 in      02 ft 03 17/32 in
001   AA       41.69 in      03 ft 05 11/16 in
002   AA       37.44 in      03 ft 01 07/16 in
003   AA       36.88 in      03 ft 00 07/08 in
004   AA       33.66 in      02 ft 09 21/32 in
005   AA       32.08 in      02 ft 08 01/16 in
006   AA       31.22 in      02 ft 07 07/32 in
007   AA       30.39 in      02 ft 06 03/08 in
008   AA       30.03 in      02 ft 06 01/32 in
009   AA       27.55 in      02 ft 03 17/32 in
```

Each line is structured as follows:

Metric system

Memory position	*Type of value*	*Algebraic sign*	*Measured value*	*Ending*
3 digits	2 characters	1	5 characters	2 characters
000 ... 510	AA = absolute RR = relative	- : negative relative value _ : positive relative value or absolute value	4 digits + 1 decimal point	CR+LF

Imperial system

Memory position	*Type of value*	*Algebraic sign*	*Measured value (decimal number)*	*Measured value (fraction)*	*Ending*
3 digits	2 characters	1	5 characters	16 characters	2 characters
000 ... 510	AA = absolute RR = relative	-: neg. relative value _: pos. relative value or absolute value	4 digits + 1 decimal point	Example: $2\,ft\,4\frac{5}{8}in$	CR+LF

Please note:

A decimal point (**.**) can be replaced by a comma (**,**). Please change setting in the menu: *Extra → Settings → Units*

3.3.4.2 Nedo mEsstronic 0.1mm 583115

The followings list shows an example of mEsstronic 0.1mm data. Currently, the software supports only metric values.

```
001   AR       0.0807 m
002   AR       0.0510 m
003   AR       0.1436 m
004   AR       0.0949 m
005   AR       0.0707 m
006   AR      -0.0619 m
007   AR      -0.1348 m
008   AR      -0.1974 m
011   AA       0.0000 m
```

Each line is structured as follows:

Memory position	*Type of value*	*Algebraic sign*	*Measured value*	*Ending*
3 digits	2 characters	1	5 characters	2 characters
001 ... 250	AA = absolute RR = relative	- : negative relative value _ : positive relative value or absolute value	5 digits + 1 decimal point	CR+LF

Please note:

A decimal point (**.**) can be replaced by a comma (**,**). Please change setting in the menu:
Extra → Settings → Units

3.3.4.3 ELU mEsstronic 0.1mm (250 datasets)

The following list shows an example of stored ELU data (metric values only).

```
001   AK       0.2966 m 110.00 120.00 130.00 140.00 Profil2    Auftrag1
002   AA       0.1800 m 110.00 120.00 130.00 140.00 Profil2    Auftrag1
003   AK       0.5692 m 110.00 120.00 130.00 140.00 Profil2    Auftrag1
004   AK       0.3730 m 110.00 120.00 130.00 140.00 Profil2    Auftrag1
005   AA       0.1927 m 110.00 120.00 130.00 140.00 Profil2    Auftrag1
006   AK       0.5272 m 110.00 120.00 130.00 140.00 Profil2    Auftrag1
007   AA       0.0000 m 110.00 120.00 130.00 140.00 Profil2    Auftrag1
```

Each line is structured as follows:

Memory position	*Type of value*	*Measured value*	*Measuring units*	*Agg1. schwenk*	*Agg1. Neig*	*Agg2. schwenk*	*Agg2. Neig*	*Profile*	*Job*	*Ending*
3 digits	2	6	Metre (m)	6	6	6	6	10	10	2 chars
001 ... 250	AA = no correction AK = correction	5 digits + decimal point		5 digits + 1 decimal point				10 characters		CR+LF

A decimal point (**.**) can be replaced by a comma (**,**). Please change setting in the menu:
Extra → Settings → Units

3.3.4.4 Nedo Height-Finder

The following list shows an example of Height-Finder data (metric values only).

```
193  AA      -0.1660 m
194  AA       0.1850 m
195  AA       0.4890 m
196  AR       0.2220 m
197  AR       0.6820 m
198  AR       0.5970 m
199  AR      -0.1560 m
```

Each line is structured as follows:

Memory position	*Type of value*	*Algebraic sign*	*Measured value*	*Measuring units*	*Ending*
3 digits	2 characters	1	6 characters	1 character	2 characters
001 ... 250	AA = absolute RR = relative	-: neg. rel. value _: pos. rel. value or abs. value	5 digits + 1 decimal point	Metre (m)	CR+LF

A decimal point (**.**) can be replaced by a comma (**,**). Please change setting in the menu:
Extra → Settings → Units

3.3.4.5 Nedo Laser Levelling Staff

The following list shows an example of laser levelling staff data (metric values only).

```
245 --  A      0000.000 m
246 --  A      0000.000 m
247 NN  R      0619.904 m
248 --  R      0000.111 m
249 NN  A      0621.397 m
250 --  A      0001.437 m
```

Each line is structured as follows:

Memory position	*Altitude*	*Type of value*	*Algebraic sign*	*Meas. value*	*Measuring units*	*Ending*
3 digits	2 characters	1 character	1	8 characters	1 character	2 characters
001 ... 250	NN: value stored at sea level -- : no sea level height	A: absolute value R: relative value	-: neg. rel. value _: pos. rel. value or abs. value	7 digits + 1decimal point	Metre (m)	CR+LF

A decimal point (**.**) can be replaced by a comma (**,**). Please change setting in the menu:
Extra → Settings → Units

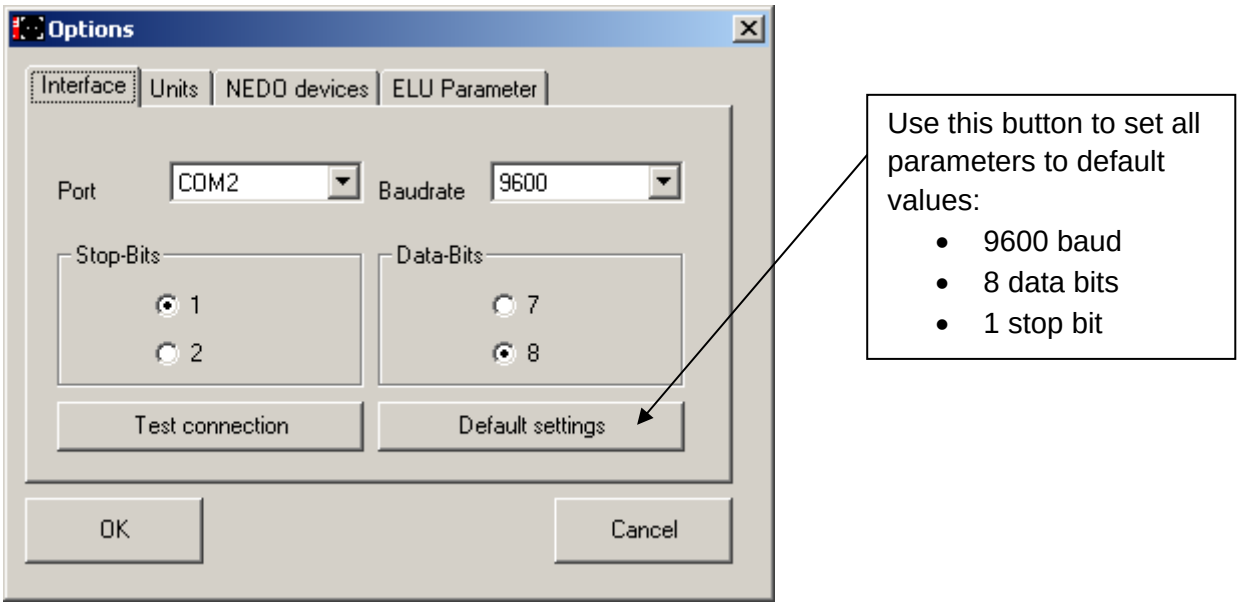
3.4 Settings

Various parameters can be changed in the settings windows. All changes will be stored even when the program is closed.
There are two ways to get to 'Settings':

- Menu: *Extra* → *Settings* or
- Click on 

3.4.1 Interface

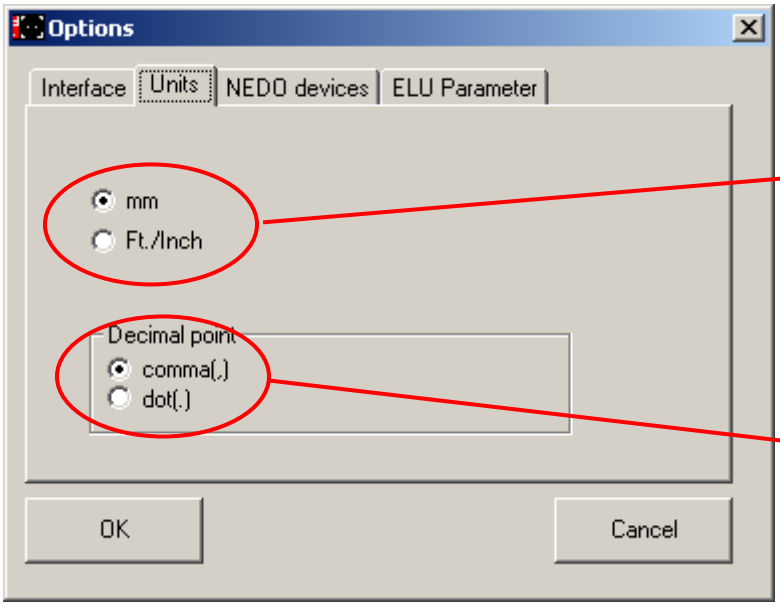
Besides selecting the serial port (see installation), there are more parameters that can be modified. The transfer speed can be increased by raising the baud rate. Please note that both, PC and interface have to be set to the same parameters. See the appendix for instructions to change the interface's settings.



3.4.2 Measuring Units

This dialog allows to modify the following:

- Dot (.) or comma (,) used for decimal numbers in *.dat files
- Change of the unit system (metric/imperial)



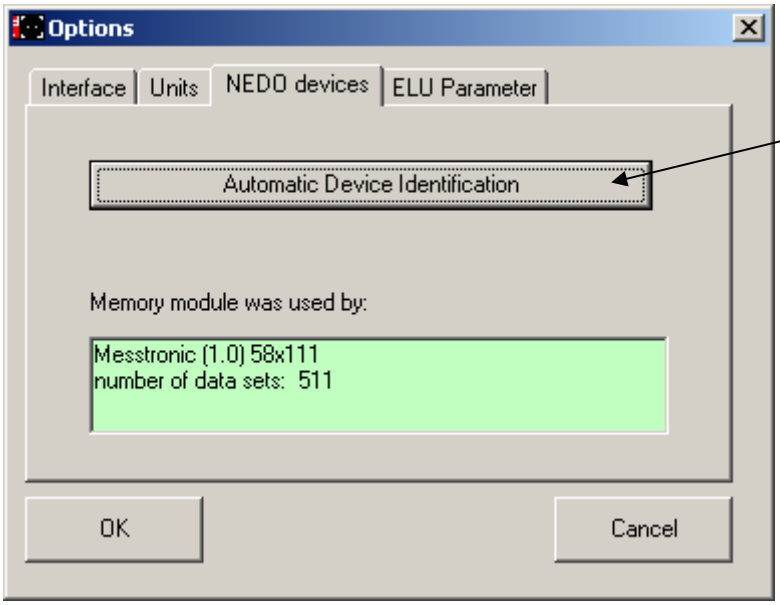
By default, the unit system is set to mm (metric) but can easily changed to ft/inch. The setting will be saved when the program is closed.

This option influences the data saved in a *.dat file. A decimal number will be written as:

- 42,50 in (comma)
- 42.50 in (dot)

3.4.3 Nedo Devices

All Nedo devices store an ID on the memory module. This ID allows to detect which Nedo device (e.g. mEsstronic) was used with the memory module. Click on 'Automatic Device Identification' to detect the data of the Nedo device stored on the memory module.

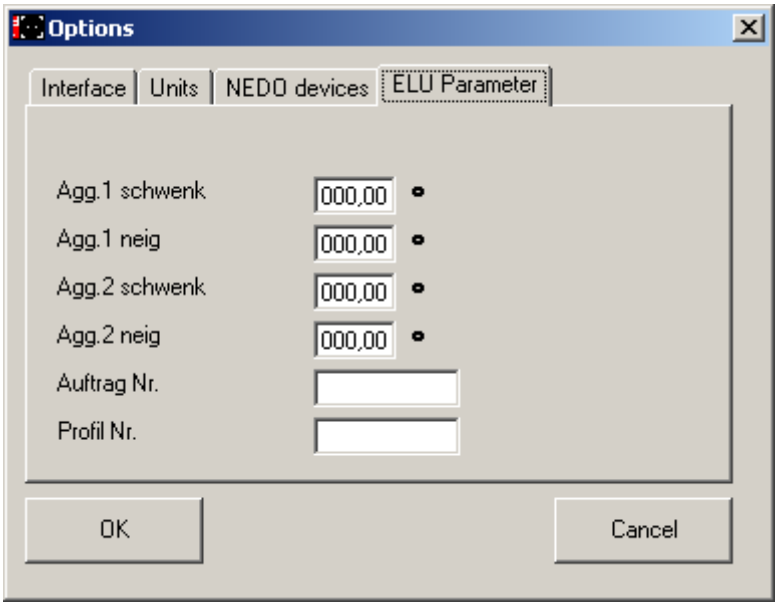


Automatic identification

The example above shows a memory module that was used with a mEsstronic 583111, and there are 511 datasets in the memory module's memory.

3.4.4 ELU Parameters

These parameters are exclusively used with the ELU mEsstronic 0.1mm. The parameters are added to each data line saved in a *.dat file .



3.5 Processing of Saved Data

For further processing of the saved data in other programs like Excel, only a few steps are necessary. When saving data to an ASCII file, another file is generated automatically. The of this file is identical to the name of the *.dat file but it uses the *.csv (comma separated values) ending. Files of this type may directly imported to an Microsoft Excel sheet. The *.dat file can be transferred to Excel as follows:

1. Start Microsoft Excel
2. Select menu → open file
3. Select: all file types (*.*)
4. Select the appropriate *.dat file
5. Follow the Microsoft Excel instructions

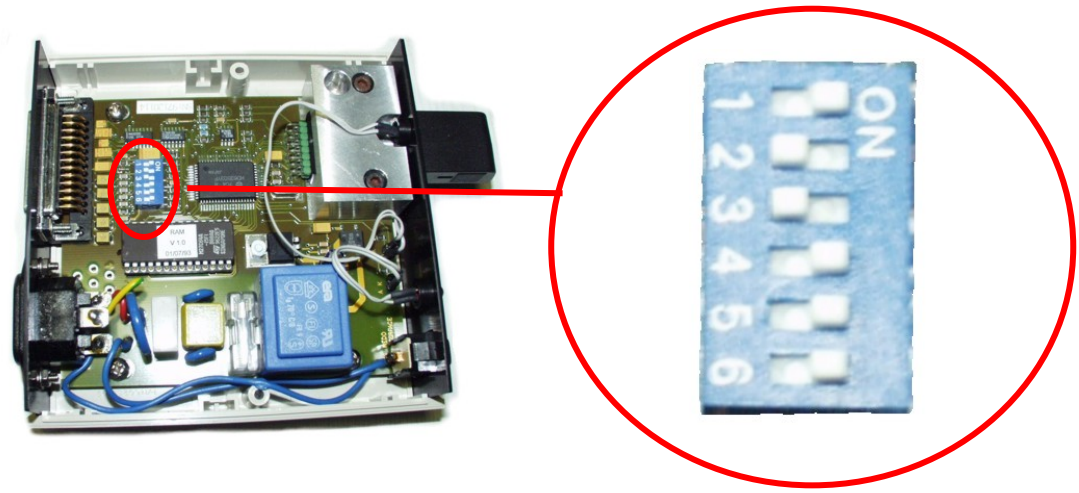
Please note:

- Select a fixed width
- Import starts at line 1

3.6 Interface Jumpers and Settings

Please note:

- Default settings are marked
- **DANGER: Remove the power chord prior to the opening of the housing!**



Stop bits	DIP 1
1	ON
2	OFF

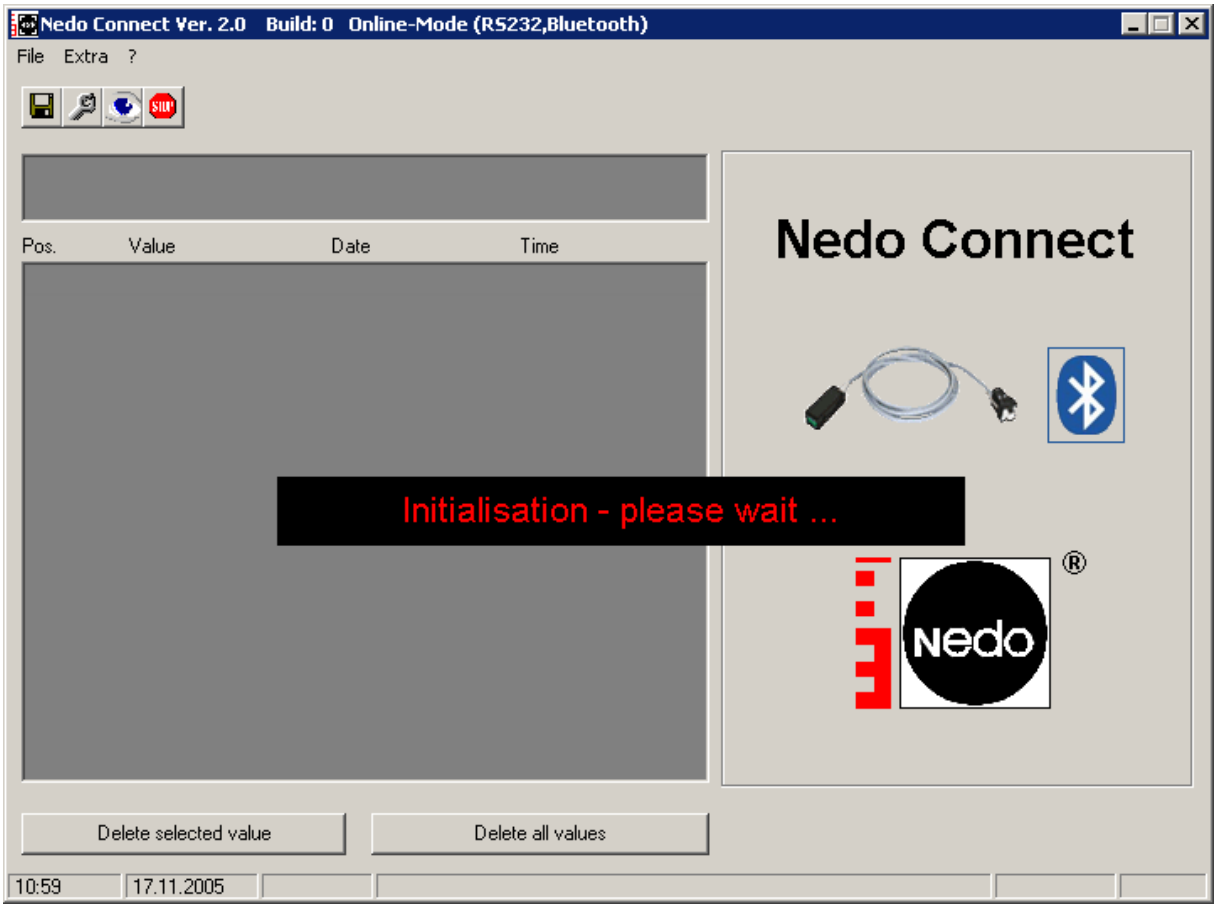
Data bits	DIP 2
7	ON
8	OFF

Parity	DIP 3	DIP 4
even	ON	ON
odd	ON	OFF
none	OFF	ON

Baud rate	DIP 5	DIP 6
9600	ON	ON
4800	ON	OFF
2400	OFF	ON
1200	OFF	OFF

4 Online Mode (Data Cable, Bluetooth)

After the start in the online mode, the following window will appear:

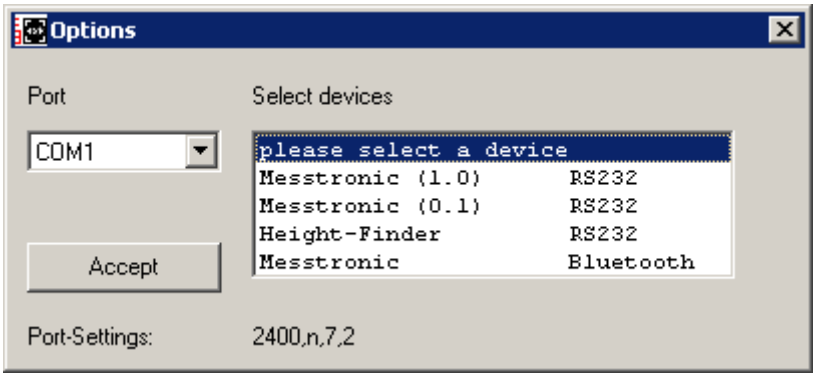


Please wait until initialisation is complete. During initialisation, the system determines the serial interfaces available on the PC and uploads their previous settings from the Windows registry.

4.1 First Start of Nedo Connect XP® in Online Mode

When Nedo Connect XP® is run for the first time, the following message will appear:

After pressing any key, you will be asked to select the appropriate device and the serial port to which the interface is connected. The following dialogue box will pop up automatically:



The appropriate interface parameters are automatically set by the program.
Confirm selection with the 'Accept' button.

Please note:
If a data connection via a Bluetooth module is selected, a Bluetooth connection between the PC and the Nedo instrument must be set up (pairing).

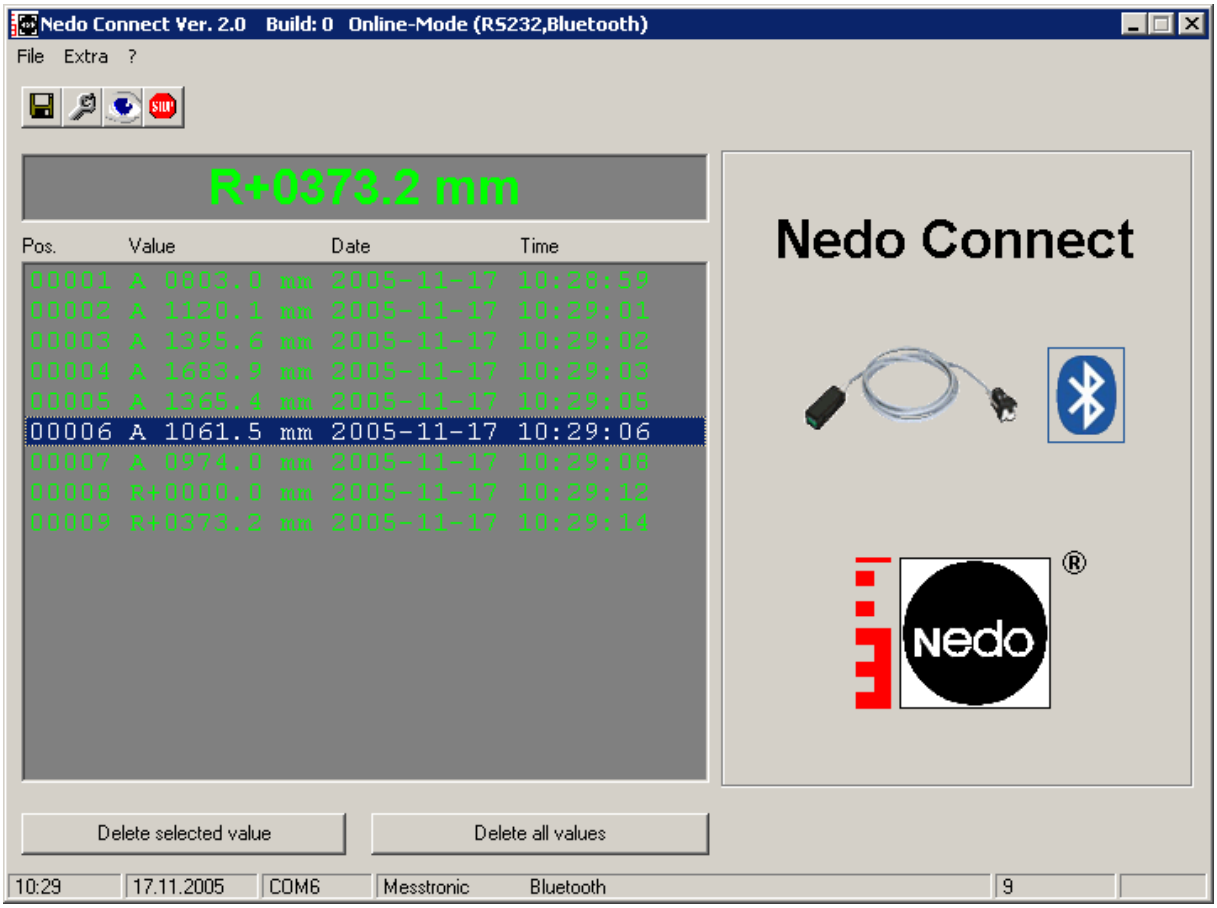
This process is carried out with the help of the Bluetooth software installed on your PC. This software is not included with Nedo Connect XP®. For further information, please read the description of your PC's Bluetooth interface. The Bluetooth password for all Nedo Bluetooth modules is always **0000.**

4.2 Devices Supported in Online Mode

The following Nedo devices are currently supported by Nedo Connect XP®:

- mEsstronic (all versions) via RS232 data cable
- mEsstronic with Bluetooth module
- Height-Finder via RS232 data cable

4.3 mEsstronic Main Window (Cable and Bluetooth Module)



4.3.1 Buttons

Save: Save list of measurements in a file

Options: Select device and interface

Display: Open an additional large display window for the current measurement

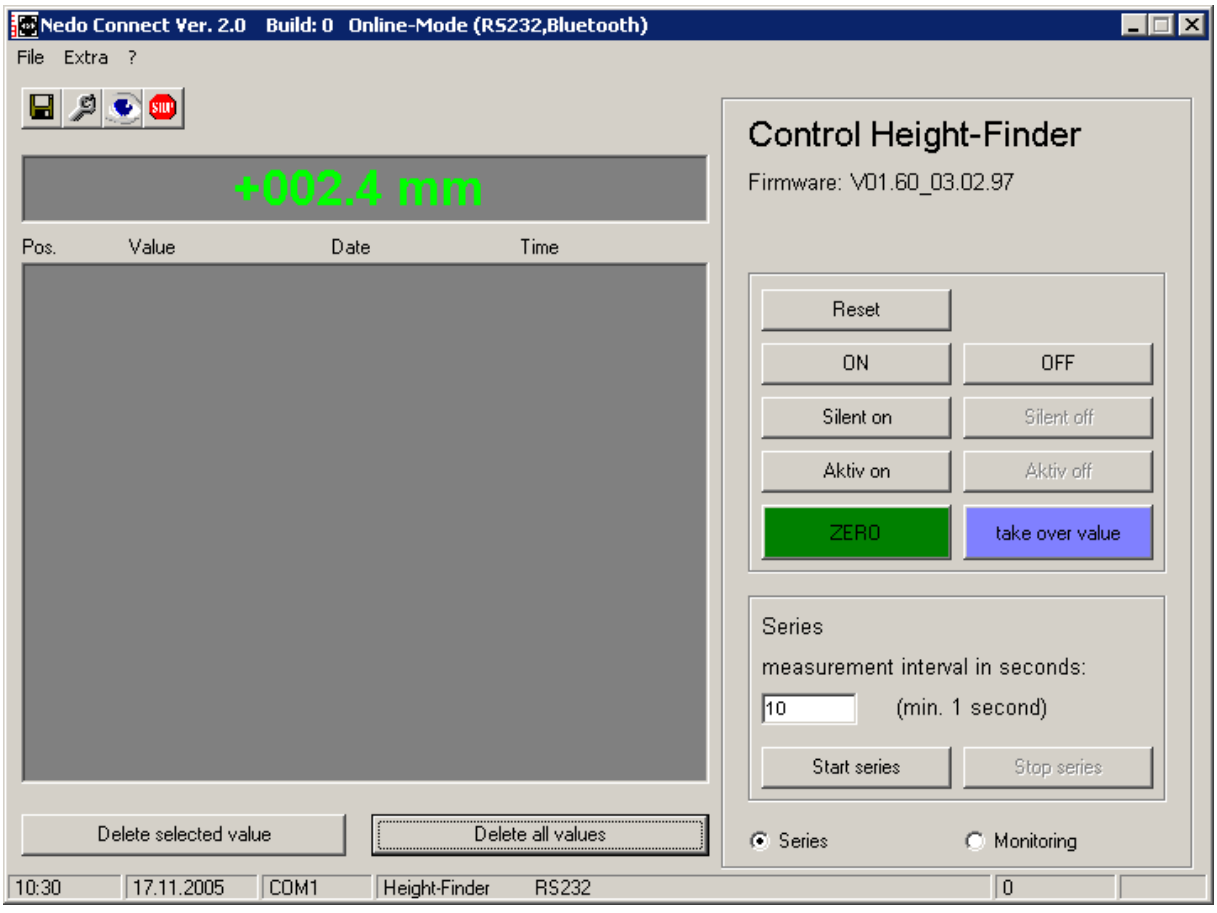
End: Quit program

4.3.2 Operation

When pressing the MEMORY button on the mEsstronic unit, the current measurement is transferred and displayed in Nedo Connect XP® and included in the list of measurements with its date and time.
A successful data transmission via the Bluetooth module is indicated by a short continuous illumination of the Bluetooth's LED.

The measured values are preceded either by an A or an R:
A → Absolute measurement
R → Relative measurement (ZERO button has been pressed)

4.4 Height-Finder Main Window (Cable)



The Height-Finder user interface provides a very wide range of functions, and is divided into three function blocks:

1. Sending of keyboard commands
2. Producing a series of measurements
3. Monitoring the measured values

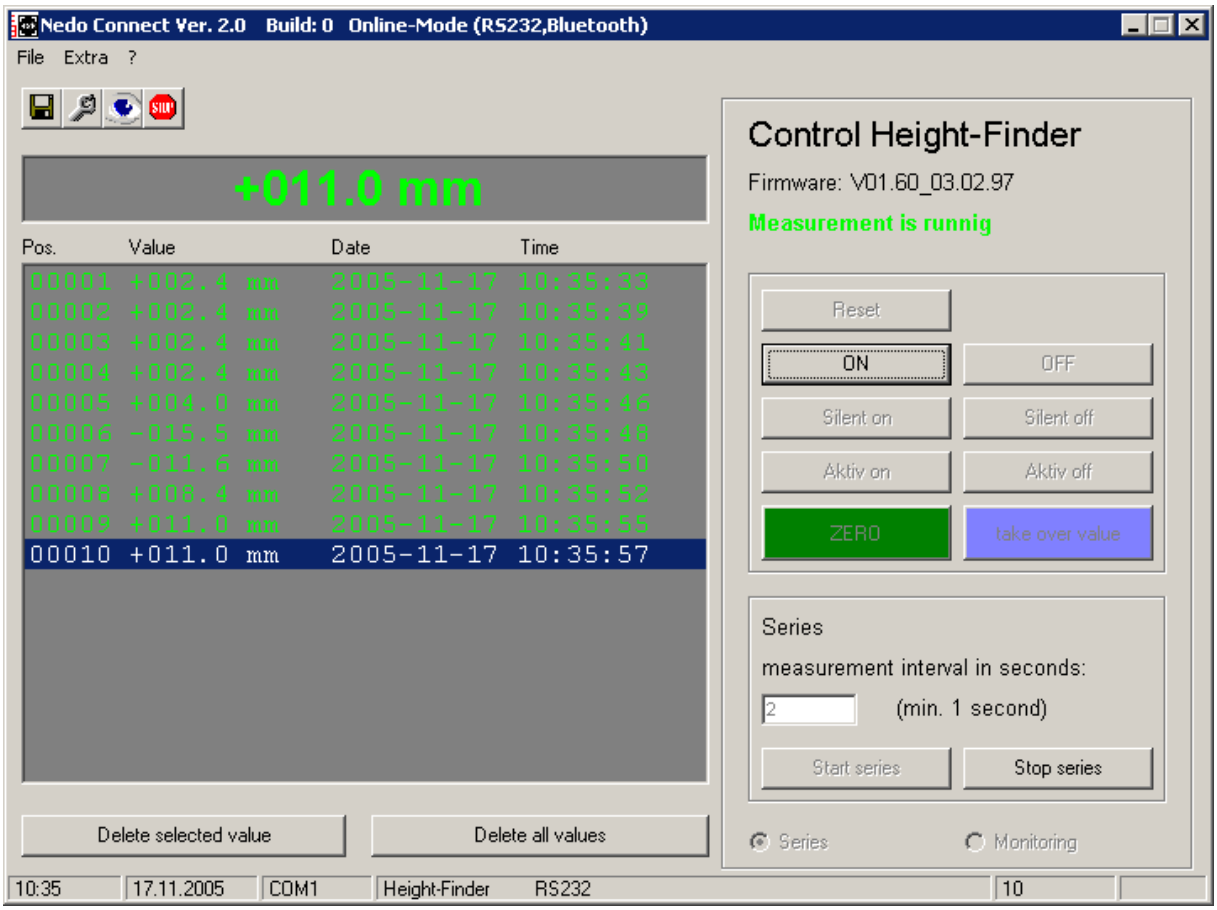
4.4.1 Sending of Keyboard Commands

4.4.1.1 Buttons

Reset	Reset Height-Finder to the switch-on state. This takes approximately 2 seconds. When this time has expired, the firmware version of the unit is displayed.
ON	Switch on Height-Finder. If the unit is already switched on and is in relative measuring mode (ZERO button has previously been pressed), the unit will be switched back to the absolute measuring mode.
OFF	Switch off Height-Finder.
Silent on	Height-Finder only sends measurements to PC on demand.
Silent off	Height-Finder continuously transmits current measurements to the PC (approx. 3 times a second). This is the preferred mode of operation: It is activated after resetting the unit, starting a series of measurements, or starting the monitoring mode.
Aktiv on	Inhibit transition from power-down mode to OFF mode after a 3-minute timeout. (Power saving function off).
Aktiv off	Enable transition from power-down mode to OFF mode. (Power saving function on).
ZERO	Switches unit to the relative measuring mode. The current measurement is used as the relative zero line.
ZERO (+002.4 mm)	The unit is in relative measuring mode. The measurement in brackets indicates the value at which the ZERO button was pressed (offset).
take over value	Currently displayed measurement is transferred to list of measurements.

4.4.2 Producing a Series of Measurements

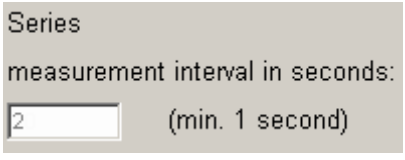
In this mode, the current measurements are transferred to the list of measurements in a certain time interval. The values can then be saved in a file using the ‘Save’ function, and be evaluated with Microsoft Excel for example.



4.4.2.1 Buttons and Input Boxes for Series of Measurements

Start or resume series of measurements.

Stop series of measurements. Use the ‘Start series’ button to resume the series.



Enter measuring interval in seconds (minimum value: 1 second).
In this example, the current measurement is transferred to the list of measurements every 2 seconds.

Caution: When taking measurements over a long period, do not define a too short measuring interval, as otherwise a large amount of measurement data will be generated that requires a correspondingly large amount of PC memory.

4.4.3 Monitoring Mode

This mode is used for continuously monitoring the height of buildings, bridges and the like by means of the Nedo Height-Finder.

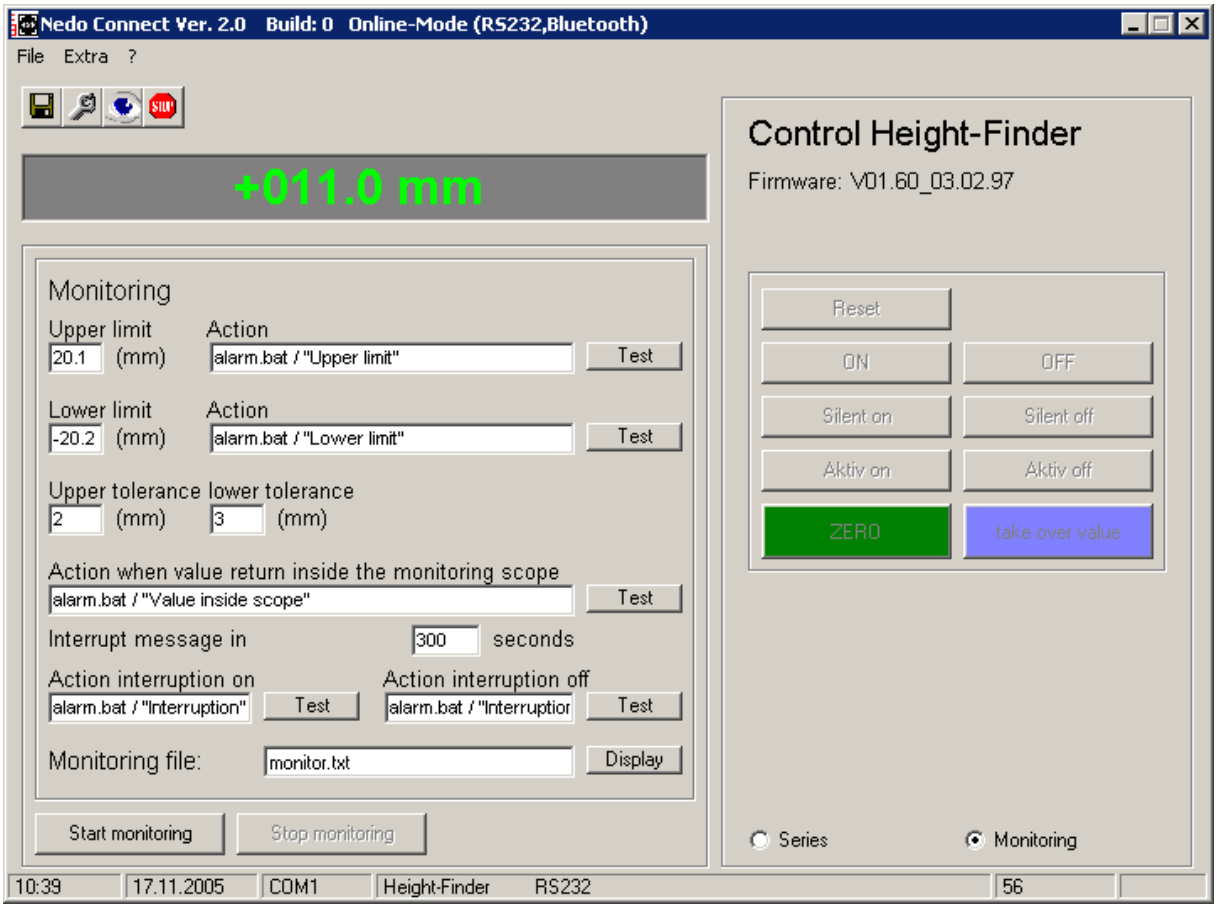
An upper and lower limit value can be entered. If the measurement exceeds these limits, Nedo Connect XP® will carry out the action that you have defined (computer program). All scenarios that occur can be logged in a text file.

The following scenarios are possible:

- Exceeding the defined upper limit
- Exceeding the defined lower limit
- Measurements are back within monitoring range
- Fault (laser beam is interrupted)
- Fault cleared

A different program for each of these scenarios can be defined. The program is then executed by Nedo Connect XP® (e.g. send an e-mail or SMS).

Example:



If the measurement received exceeds the upper limit of 20.1 mm, the program *alarm.bat* is executed with the parameter *"Upper limit"*.

The value set for the upper tolerance is 2 mm. When the received measurement falls below 18.1 mm again, Nedo Connect XP® will start the program *alarm.bat* with the parameter *"Value inside scope"*.
If the measurement received falls below the lower limit of -20.2 mm, the program *alarm.bat* is executed with the parameter *"Lower limit"*.

The value set for the lower tolerance is 3 mm. When the received measurement exceeds -17.2 mm again, Nedo Connect XP® will likewise start the program *alarm.bat* with the parameter *"Value inside scope"*.

If a failure occurs for 300 seconds or more, the program *alarm.bat* is executed with the parameter *"Interruption"*.
When the fault is cleared, Nedo Connect XP® starts the program *alarm.bat* with the parameter *"Interruption cleared".*

All events are recorded in the "monitoring.txt" file.

The defined programs can be started manually by means of the 

buttons, and thus, function tests can be carried out.

Please note:
The program file name and the associated program parameter must be separated by a “/”.

Example: alarm.bat / "Upper limit exceeded" or alarm.bat / -Fault

If no path is specified for the program or file name, the file path will be assumed to be the Nedo Connect XP® installation folder.

Monitoring is started by means of the 

button.

No more entries can be changed once monitoring has been started.
Only the 

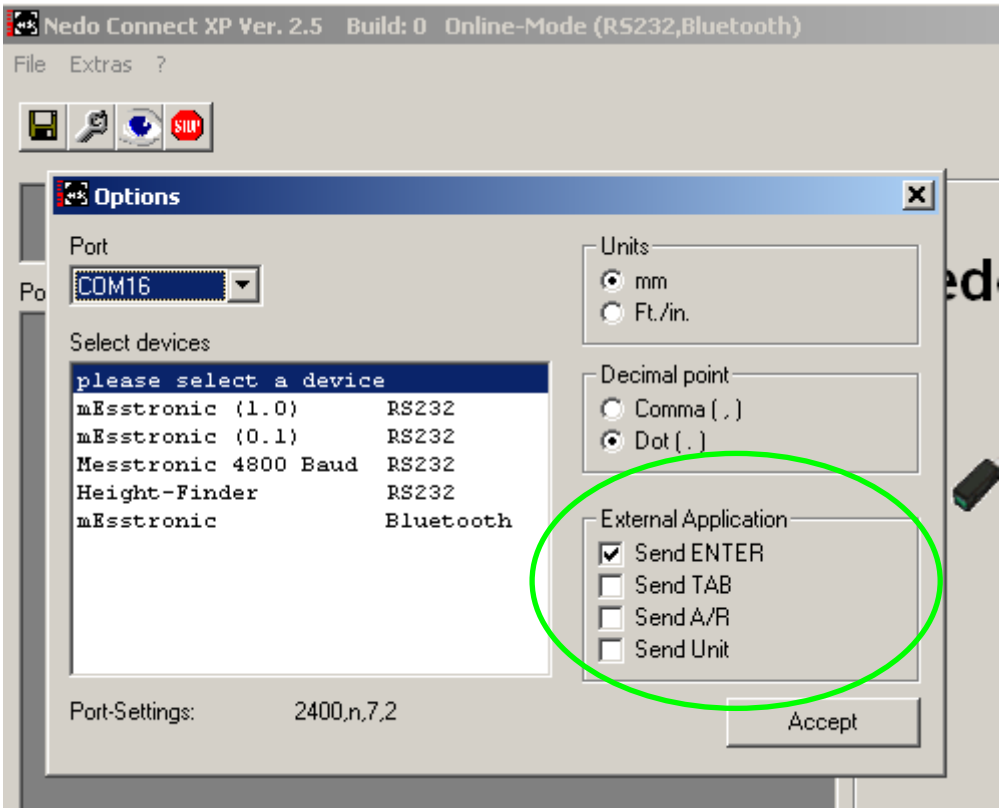
button is still active to display the log file.

4.5 Transfer current measurements in external applications

Since version 2.5 it is possible to transfer the values received by Bluetooth directly to other applications like MS-Excel ®.
To do this, you only have to set the cursor to the input field of your application.
The values are transferred to your application in the same way as you type it on your keyboard.

4.5.1 Settings

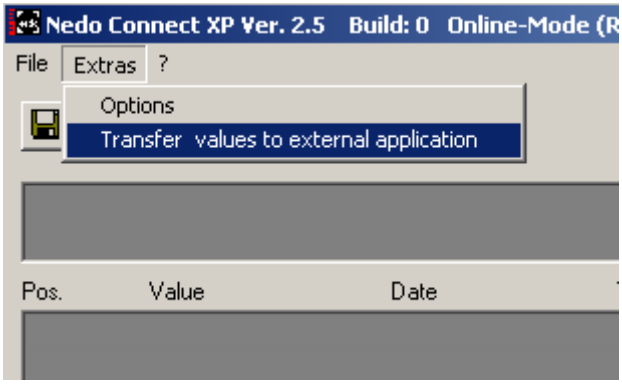
To define the format of the transferred values, click on the menu *Extras* → *Options* :



Send ENTER	After the value, the ENTER key is sent.
Send TAB	After the value, the TAB key is sent.
Send A/R	The identification for absolute respectively relative measuring will be sent additionally.
Send Unit	The measuring unit will be sent additionally (mm).

4.5.2 Activate “external application” mode

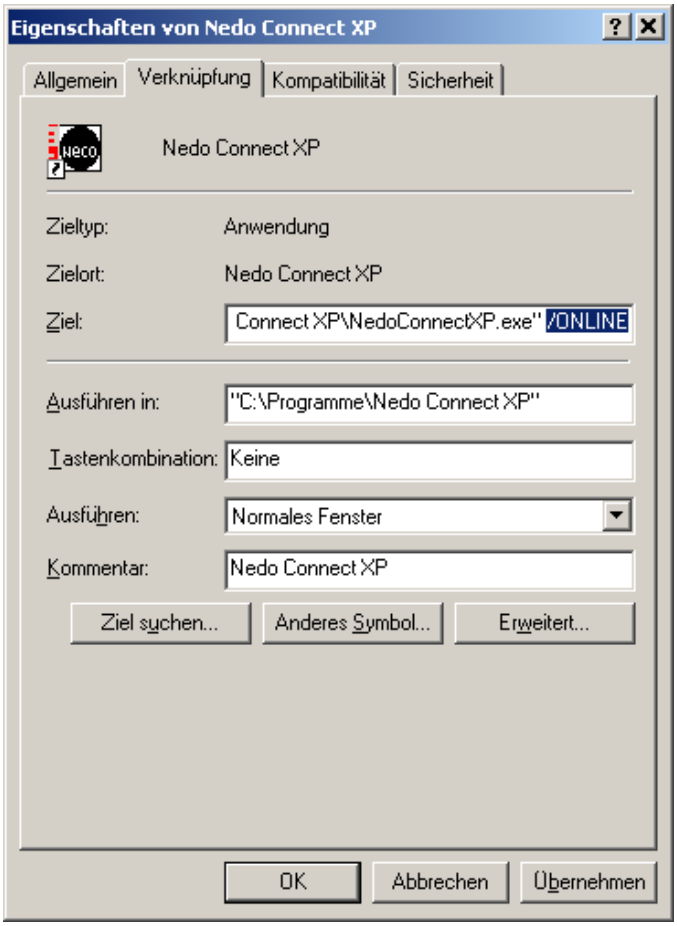
By menu item *Extras* → *Transfer values to external application* you can activate the transfer of the values to an external application:



Nedo Connect XP will be minimized and all the measuring values are transferred to your active application.
In this operation mode, the received measuring values are not stored by Nedo Connect XP.

5 Command line options

Nedo Connect XP can be started with command line parameters, witch you can set in the Nedo Connect XP program alias:



Following parameters are possible:

/ONLINE	Nedo Connect XP starts up in the ONLINE-Mode
/OFFLINE	Nedo Connect XP starts up in the OFFLINE-Mode
/EXTERN	Nedo Connect XP starts up in the ONLINE-Mode and transfers the values to your external application.
/DEUTSCH	Nedo Connect XP starts up in german language mode, independent of the operation system language
/ENGLISH	Nedo Connect XP starts up in english language mode, independent of the operation system language
/FRENCH	Nedo Connect XP starts up in french language mode, independent of the operation system language
/SPAIN	Nedo Connect XP starts up in spain language mode, independent of the operation system language
/DEBUG	This parameter is only for debugging and must not be used without our instruction.
/NOACK	The software do not send any acknowledgment to the BT-module
/NOKDOT	All values generally shown without a thousands separator
/CLEAR	Remove all application settings