

Sauter GmbH

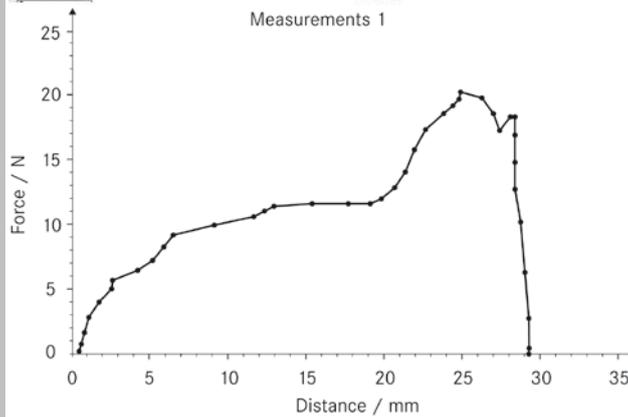
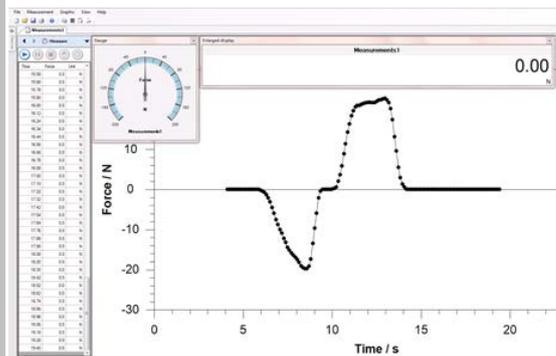
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User Manual Software

SAUTER AFH LD

V. 1.0
08/2017
GB



PROFESSIONAL MEASUREMENTS

AFH LD-BA-e-1710



SAUTER AFH LD

V. 1.0 08/2017

User Manual

Software AFH LD

Welcome to AFH LD

The AFH LD software is used to transmit data from Sauter dynamometer to your computer. It enables you to save the measurement data as an XML file and thus to import them to any software compatible with XML. Additionally, it allows for a graphic presentation of the measurement data and for saving them as a graphic file.

What's new?

Version 2.0.0.X enables you to control the measuring station through AFH LD (only for FH and FL devices), search for newly connected measuring instruments and define the emergency trip. Furthermore, the software may be used along with SAUTER's LD distance meters. The software allows you to switch between force or path measurements.

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1 System requirements

AFH LD is designed for Microsoft Windows and requires special system software and equipment. The software is distributed as a standard installation package. For more information on software installation, see “Installation”.

Equipment:

- computer compatible with IBM,
- minimum one serial port (RS-232) or USB-to-serial port converter,
- 256 MB RAM,
- 10 MB of available disk space,
- SAUTER measuring station, LD distance meter and dynamometer.

Operating system:

Microsoft Windows 2000/XP/Vista/7/8/10 (32 or 64 bits)

Other requirements:

NET Framework 2.0

2 Installation

The AFH LD software is distributed as a standard installation package. The product is designed for Microsoft Windows (Windows XP, Windows 7, Windows 8, Windows 10) and requires special system software and equipment (see “System requirements”).

How to install AFH LD?

Start the setup program (“Setup”) on the CD and proceed as per the instructions given by the Setup Assistant. In Windows Vista/7/8/10, the user account must have administrator authorisation. When the installation program is started, you will see a request to select the software installation language. Options: English, German.

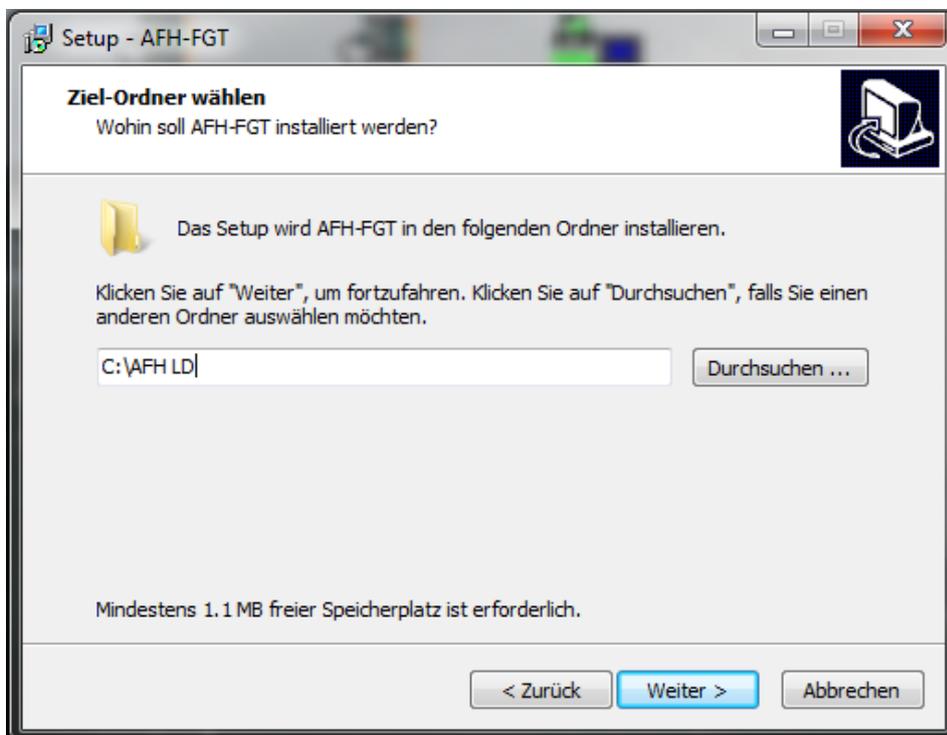


Choose the desired language and press OK.

Then you will see the Setup Assistant configuration window.



Press "Next" to view the dialog box with target folder selection. Here you can change the folder where the AFH LD software will be installed.



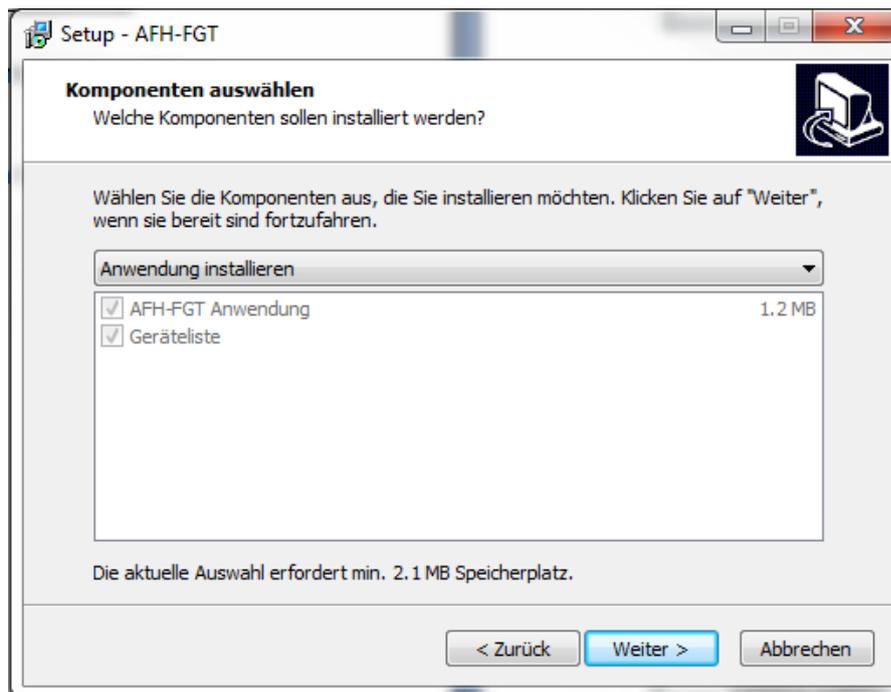
In the next window, you can choose the type of installation.

Options:

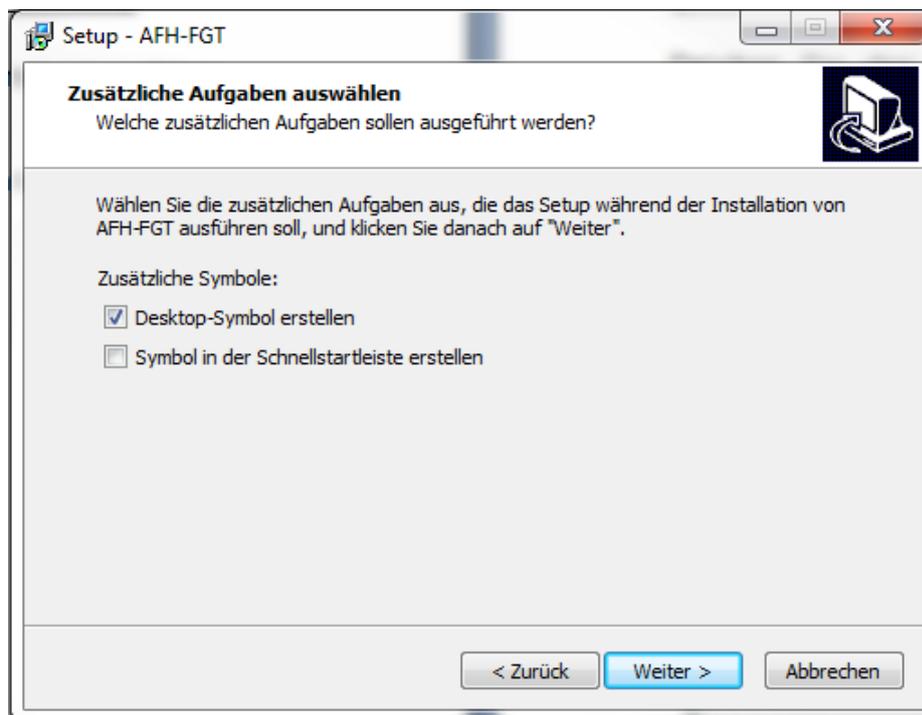
Installation of the application and an appropriate list of devices.

AFH_LD-BA-e-1710

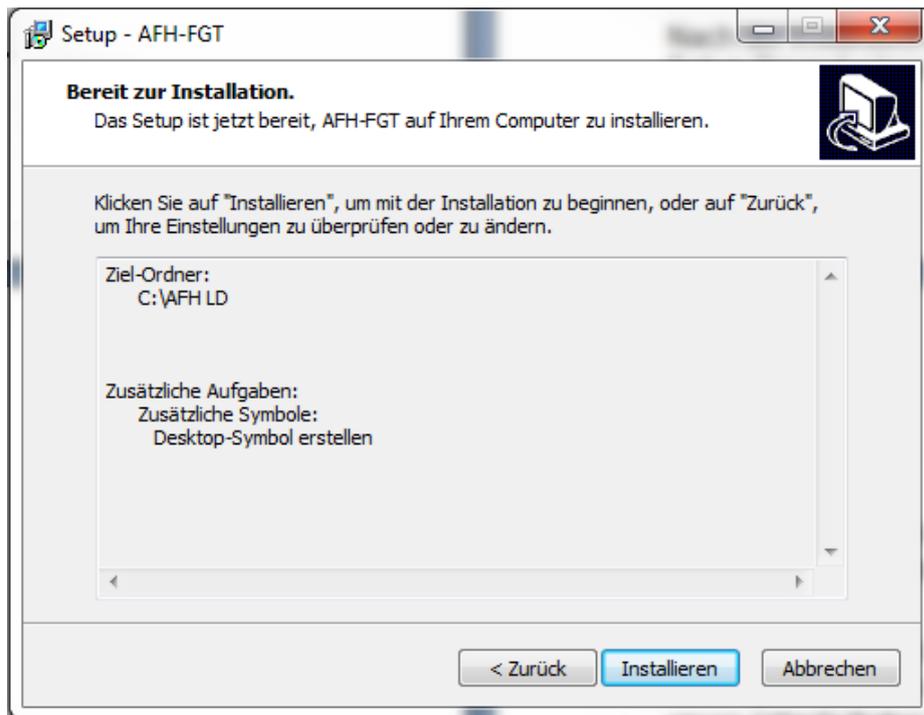
Device List Installation → only the device list will be installed.



Press "Next" and choose if you want to create the desktop and/or task bar icon.



In the next window, you will see the summary of installation options. Press "Install" to install the application.



Once installed, you can start AFH LD to complete the setup procedure.



Click "Finish" to complete the installation process.

3 Equipment installation



Install the software on the computer.

Connect:

the dynamometer by a serial cable, directly to the (FH) measuring station's equipment port or by a USB cable directly to the computer, depending on the type;

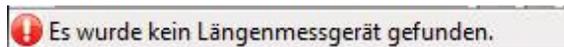
the distance meter directly to the computer by a USB cable;

the measuring station to the computer by a serial cable. If the COM 1 port is unavailable, you can use the RS-232/USB converter.

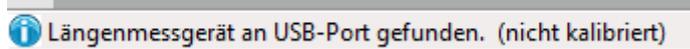
Switch on all devices.

Start the application.

During start-up, the application will search the computer's serial ports to detect SAUTER dynamometers and distance meters. If no distance meter is found, a message will be shown in the status bar.



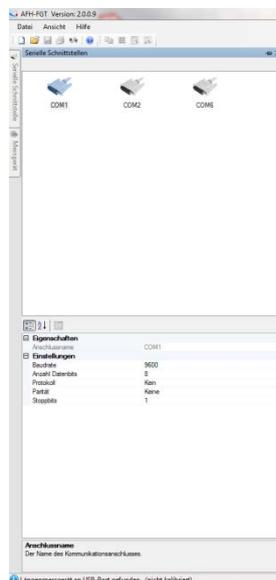
Otherwise, if a distance meter is found, the following message will be shown:



4 Main features

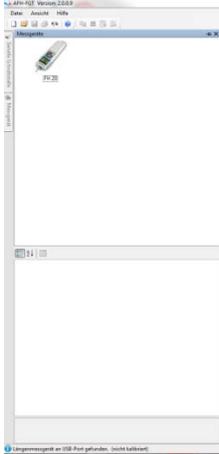
The description below is a summary of important and interesting characteristics of AFH LD.

4.1 Serial Interface window



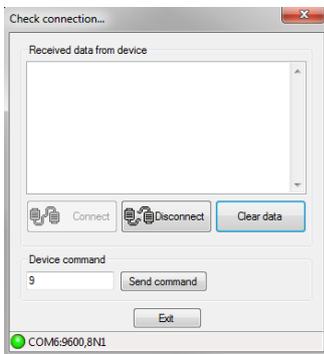
This window shows the information on the interfaces detected. It allows you to modify the parameters. However, this is not necessary, as the parameters are automatically adjusted to the peripherals. Incorrect parameters may affect the software functions.

4.2 Measuring Instruments window



View the “Measuring Instruments” window to manage the measuring instruments. It allows you to create or remove measuring instruments, to change their parameters, or to control the connection with a measuring instrument. If the measuring instrument management window is not shown, you can view it by clicking View→Measuring Instruments.

4.3 Control of connection with measuring instrument



To check the connection with a measuring instrument, view the “Check connection” dialog box. You can do it by double-clicking the equipment icon or by right-clicking the equipment icon and choosing “Check connection” from the context menu.

4.4 Control of measuring station



To enable a manual control of the measuring station using AFH LD, view the dialog box “Control of Measuring Station”. The dialog box can also be viewed by clicking View→Measuring Station in the main menu.

4.5 Measurement series recording

To record a series of measurements, create a new measurement document by clicking File→New.

After the application records a measurement series containing over 500,000 measuring points, no new measurement series can be opened.

5 List of all features

The following list includes all characteristic features of the AFH LD software. Detailed description of all individual features is provided in section “User interface”.

5.1 Basic features

- Recording of several series of measurements: force/time and/or force-path
- Management of serial interfaces
- Management of measuring instruments
- Viewing and printing of the recorded measurement data in a single chart
- Saving the recorded measurement series as an XML
- Multilingual user interface (see “Installation”) with contextual help
- - Modern user interface, simultaneous work with several charts using tabs — see “User interface”

5.2 Measurement series recording

- - Possibility to record several series of measurements (force-time and/or force-path) — (measurement series of up to 500,000 measured values must be recorded individually)
- Printing and print preview of displayed measurement data
- Analogue view of the current value
- View of the chart including all measurement series with the zoom function

5.3 Saving/export

- XML: Click “Save” or “Save As” to save the measurement data as an XML file.
- EMF: Click “Save Image As” to save the measurement data as an EMF file.
- PNG: Click “Save Image As” to save the measurement data as a PNG file.
- BMP: Click “Save Image As” to save the measurement data as a BMP file.

Licence

This product is distributed as a licence for one user (see “Licence Agreement”).

6 User interface

The objective of this section is to provide summarised information on the way of using and the functionality of the application depending on the menu.

If you do not find the needed support in this section, try to find it in section “How to...?”.

Basic elements of user interface

- Main menu
- Tab bar
- Status bar

Other windows and dialog boxes

- Control of Measuring Station
- Serial Interfaces
- Devices
- Settings
- Analogue Display
- Large-Size Display
- "About the Application..." dialog box

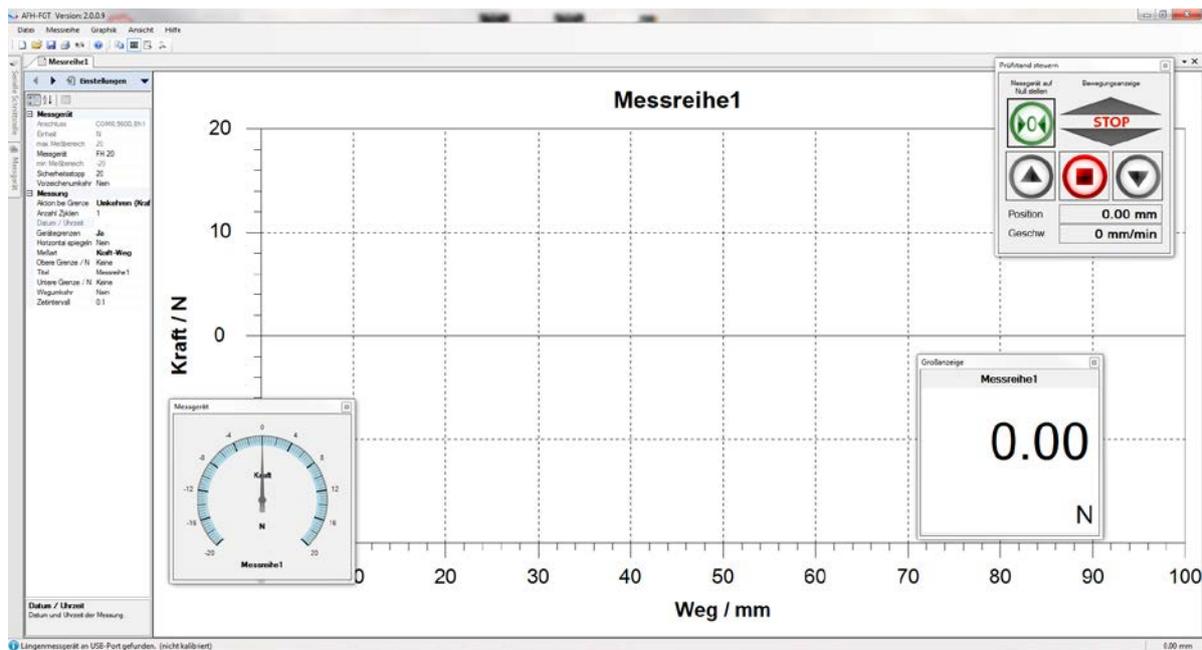
Add-ins

The way of interpreting different device protocols is managed in separate parts of the software (add-ins). An add-in is available for each special type of device.

Use the "Settings" dialog box to download the current add-ins.

7 Basic elements of user interface

The picture below presents the basic elements of the user interface in AFH LD.



Review of user interface elements

- Main menu
- Toolbars
- Tab bar
- Graphic region
- Properties window
- Status bar

7.1 Main menu

The main menu consists of the following submenus:



- File
- Measurement Series
- Image
- View
- Help

7.1.1 File

The “File” menu includes the following commands:

- New — creates a new document
- Open — opens an existing document
- Close — closes an existing document
- Save — saves the current document under its file name
- Save As — saves the current document under a different name
- Page Settings — allows you to choose a print format
- Print — prints out the current document
- Print Preview — allows you to preview the document to be printed
- Exit — closes the AFH LD application

7.1.2 New

New command (“File” menu)

Use this command to create a new document in AFH LD. Use the command “Open” to open an existing document.

Shortcut

Toolbar: → 

Keyboard: → Ctrl+N

7.1.3 Open

Open command (“File” menu)

Use this command to open an existing document in a new window. You can open several windows at the same time. The “Window List” menu is used to switch between documents.

You can open new documents by clicking “New”.

Shortcut:

Toolbar: → 

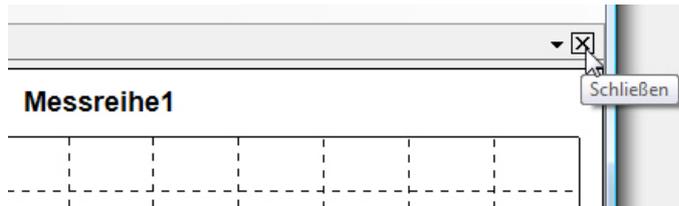
Keyboard: → Ctrl+O

7.1.4 Close

Close command ("File" menu)

Use this command to close all windows showing the current document. Before the document is closed, AFH LD will recommend saving all changes made in the document. If you save the document without saving the changes, you will lose all the changes made after the last saving. Before closing a document without a name, AFH LD will show a dialog box where you can give a name to the document and then save it.

You may also use the icon "Close" as shown below:



7.1.5 Save

Save command ("File" menu)

Use this command to save the current document under its current name. If the document is saved for the first time, AFH LD will display the dialog box "Save As", where you can name the document. To change the name or folder of an existing document, click "Save As".

Shortcut

Toolbar: → 

Keyboard: → Ctrl+S

7.1.6 Save As

Save As command ("File" menu)

Use this command to give a name to the current document and then save it. AFH LD will show the dialog box "Save As", which allows you to enter the document name. To save the document under its current name, click "Save".

"Save As" dialog box

You can specify the location and name of a document to be saved using the following data entry fields:

- File Name: Enter a new name to save the document under a different name. AFH LD will supplement the file name by the extension shown in "File Type".
- Drive: Choose the drive where the file is to be saved.
- Folder: Choose the folder where the file is to be saved.
- Network: Use this option to enable connection to your own network.

7.1.7 Search Measuring Instruments

Search Measuring Instruments command ("File" menu)

Use this command to search newly connected measuring instruments and serial interfaces.

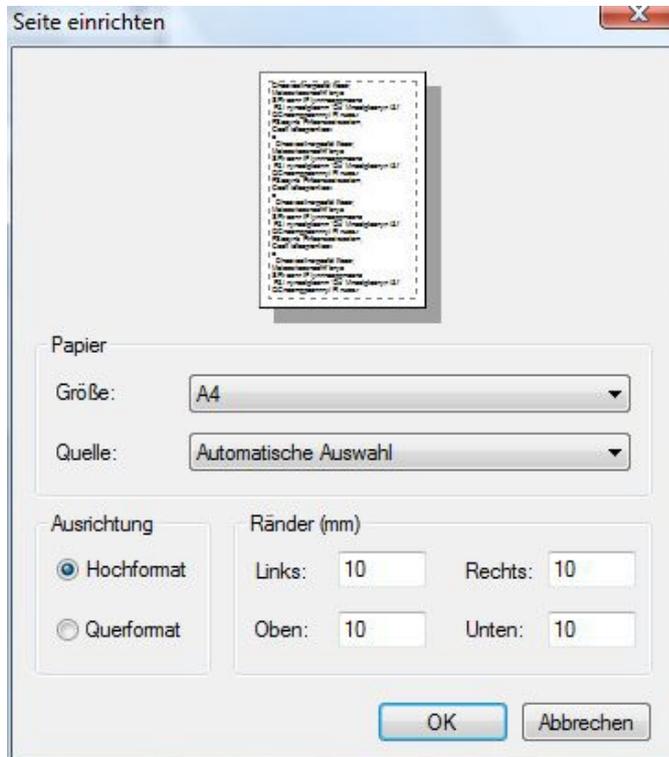
Shortcut

Toolbar: → 

7.1.8 Page Settings

Page Settings command (“File” menu)

This dialog box is used to change the settings of the printer and paper format.



7.1.9 Print

Print command (“File” menu)

Use this command to print the document. If you click this option, the application will show the printer dialog box, where you can select the number of pages, printer and its settings.

Shortcut

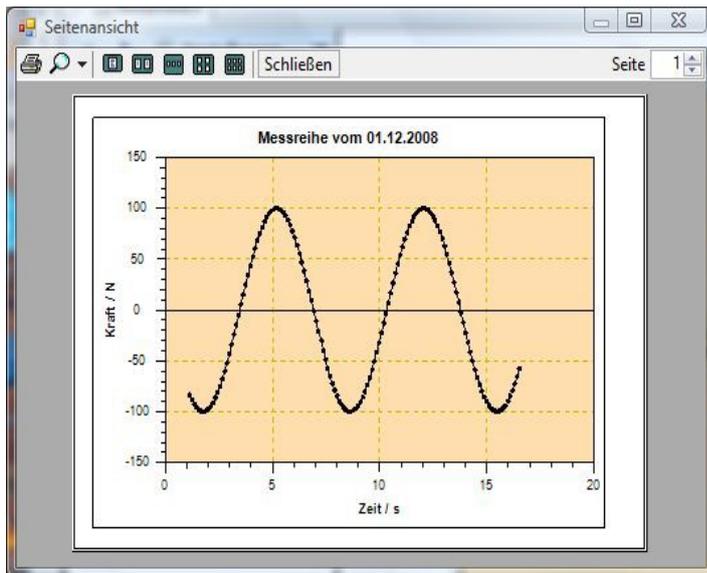
Toolbar: → 

Keyboard: → Ctrl+P

7.1.10 Print Preview

Print Preview command (“File” menu)

Use this dialog box to see what the printed document will look like on the page.



7.2 Measurement series

The **Measurement Series** menu includes the following commands:

- Start: starts the recording of measurement data
- Stop: stops the recording of measurement data
- Finish: completes the recording of measurement data
- Manual Dispatch: sends defined device control commands to the measuring instrument
- Time-Controlled Dispatch: sends defined device control commands to the measuring instrument at regular intervals

The commands are also available on the “Measurements” toolbar:



Force/Time measurements



Force/Path measurements

7.2.1 Image

The **Image** menu includes the following commands:

- Show Tab: shows and hides the tab in the image window
- Save Image As: saves the image as a file (EMF, PNG, BMP)
- Copy: copies the graphic region to the Windows clipboard

7.2.2 View

The **View** menu includes the following commands used to manage the serial interfaces and measuring instruments, and to change the program settings:

- Serial Interfaces: shows or hides the window for serial interface management
- Measuring Instruments: shows or hides the window for serial interface management

- Settings: opens the window for program settings management
- Status Bar: shows or hides the status bar
- Measuring Station: shows or hides the “Measuring Station” dialog box

7.2.3 Help

The **Help** menu includes the following commands:

- Contents: shows the contents of the help file
- Index: shows the index of the help file
- Find: allows you to search specific entries in the help file
- About the Application...: shows further information about AFH LD

8 Toolbars

AFH LD provides two different toolbars. One includes the main menu commands, and the other one – graphic commands.



8.1 Main menu commands

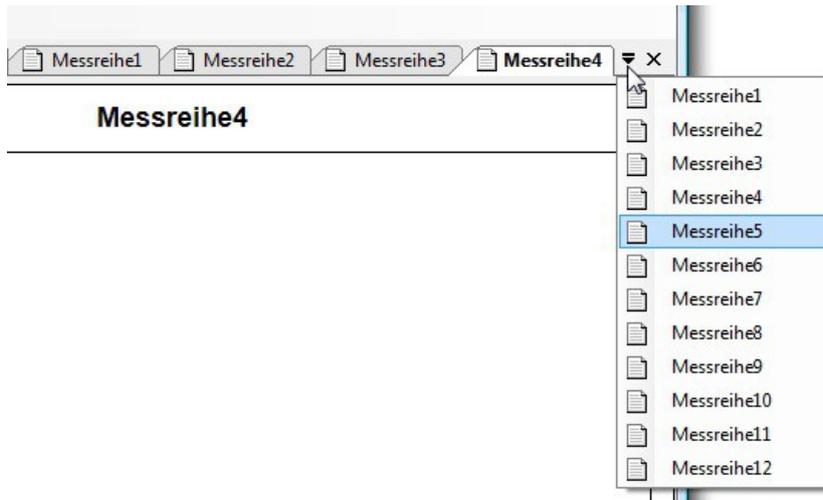
- - New — creates a new document
- - Open — opens a new document
- - Save — saves the active document under its file name
- - Print — prints the active document
- - Search Measuring Instruments — searches the recently connected measuring instruments
- - Help — shows the help file

8.2 Graphic commands

- - Copy — copies the image to the Windows clipboard
- - Tab — shows or hides the tab in the image window
- - Show All — shows the whole measurement series in the image window
- - Show Previous — restores the previous image size

8.3 Window bar

Use this menu to switch between different windows.



8.4 Tab bar

The tab bar is used to switch between the opened documents with measurement series.



It allows you to switch between the visible tabs (screens) or to remove them from the window list (close).

You can switch between documents with the mouse or using the keyboard, by clicking **Ctrl+Tab** or **Shift+Ctrl+Tab**.

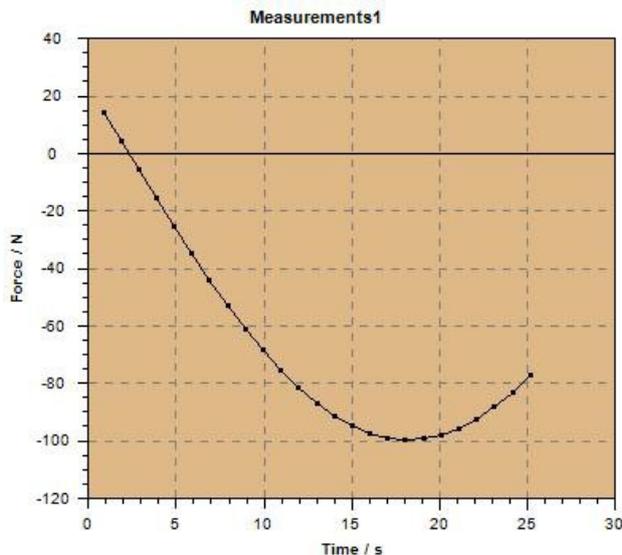
Use Ctrl+F4 to close a tab (screen). You can change the order of tabs by dragging them with the mouse.

Right-clicking a tab will open the context menu, where you can display the current measured value in the analogue or enlarged view.

- – Measuring Instrument: shows the current measured value as an indication of the analogue measuring instrument
- – Large-Size Display: shows the current measured value in its own window, with zoom

8.5 Graphic view

In the graphic view, the measurement series is shown as a chart. The appearance can be changed using the “Settings” dialog box. It allows you to adjust the background colour, chart colour, etc.



8.6 Status bar

The status bar is displayed by the bottom edge of the AFH LD window. You can show or hide the status bar by clicking “Status Bar” in the “View” menu.

8.7 Other windows and dialog boxes

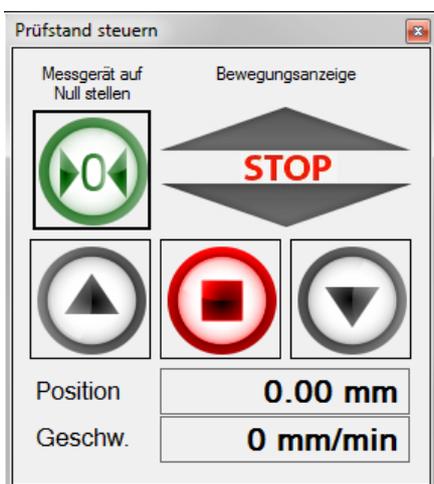
The application includes other windows and dialog boxes, which are not described in the previous sections. Here you will find the links to appropriate sections.

You should pay a particular attention to the dialog box “Settings”.

8.8 List of windows and dialog boxes

- “Measuring Station” dialog box
- Serial Interfaces
- Measuring Instruments
- Settings
- “About the Application...” dialog box

8.9 Dialog box for controlling the measuring station



This dialog box is used to control the measuring station. It is only available if a distance meter is detected during software start-up.

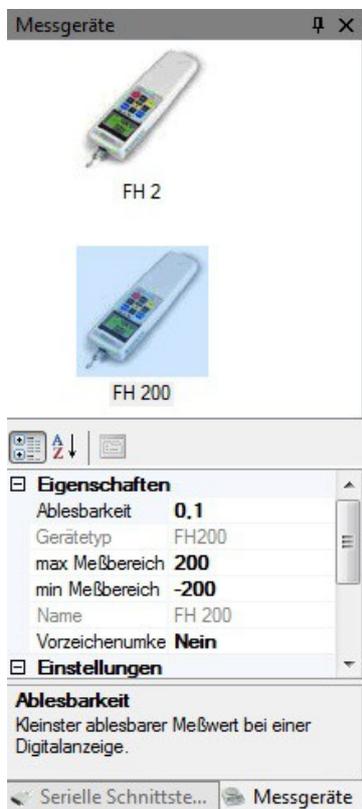
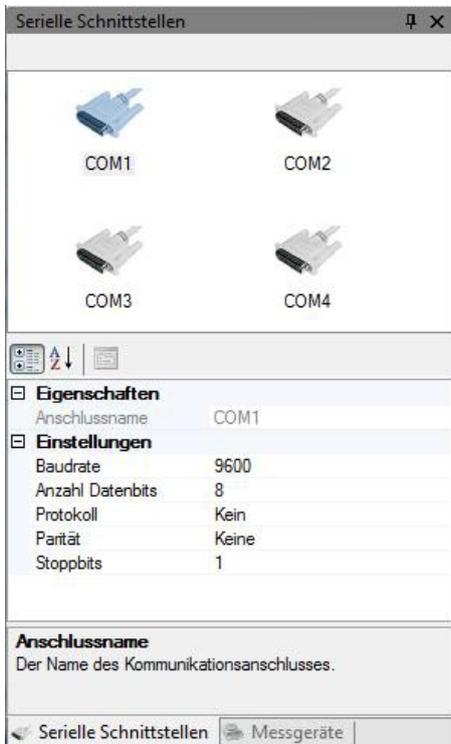
The dialog box contains three keys used to control the motion of the measuring station, one key to reset the dynamometer, and an indicator showing the current direction of the measuring station. Additionally, it displays the measuring station's position and calculated speed.

Hint:

After you connect the device and start AFH LD, close and restart the program or select “Search Measuring Instruments” to detect the measuring instruments.

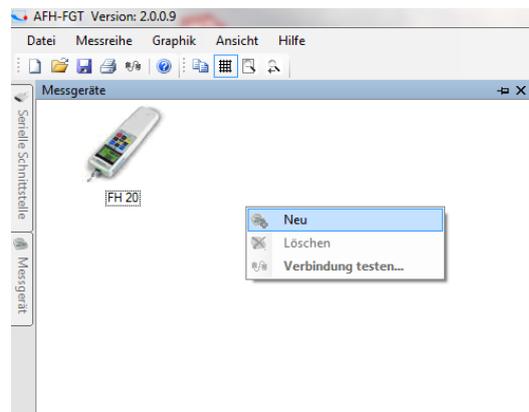
8.10 Serial Interfaces

This window shows all available serial interfaces of your computer. Select the appropriate interface to view or change the settings. This will allow you to adjust the corresponding settings in the lower window.



8.11 Measuring Instruments

This window shows all the measuring instruments created. To change the properties of an individual device, select the device and adjust its properties. By right-clicking the window you can add a new measuring instrument.



8.12 Settings

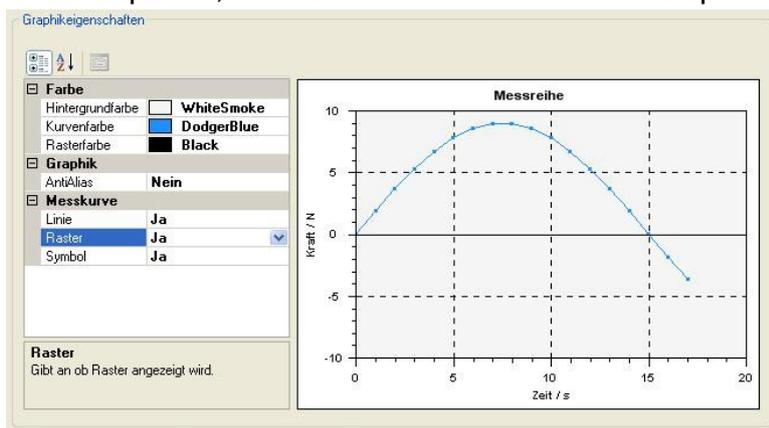
In the “Settings” dialog box, you can change the application parameters. Some parameters (e.g. the ones used to change the device properties) are saved automatically, and other (chart appearance) are available additionally from the AFH LD toolbar. However, all the most important settings can be found in this dialog box.

The dialog box is divided into different categories (Image, View, Add-In) depending on the contents and parameter importance. This section contains the descriptions of each category and parameter.

8.13 Image

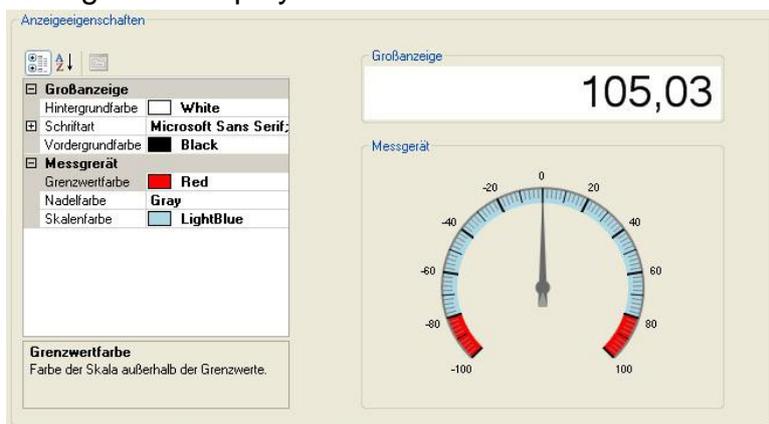
Used to change the background of graphic image, the colour of the measurement curve or of the grid.

- Image — switches on/off the edge smoothing function to improve the quality of the measurement curve
- Measurement Curve — shows/hides the grid, shows/hides the lines between measurement points, shows the measured values as spot symbols



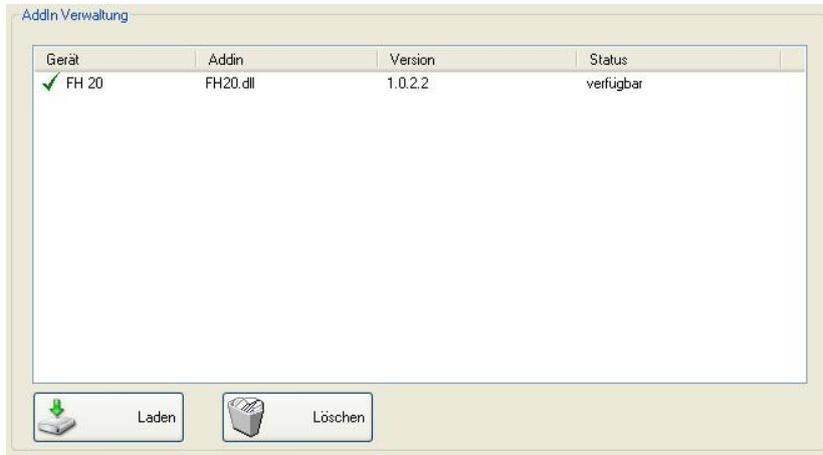
8.13.1 Display

- Measuring Instrument — adjusts the colour of the limit value, scale and the hand of the analogue measuring instruments
- Large-Size Display — used to choose the background colour, type and size of font on the large-size display



8.13.2 Add-In

- **Load** — downloads the current add-ins to interpret the measuring instruments' protocols (Internet connection required)
- **Delete** — deletes the unnecessary add-ins from the hard disk

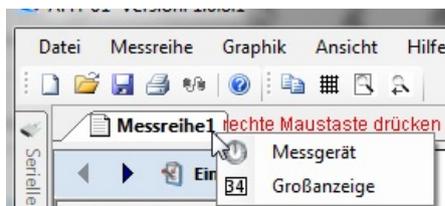


8.13.3 Analogue Indication

In this window, the current measured value is shown as an analogue measuring instrument. You can mark the range of limit values by choosing a different colour in the “Settings” dialogue box.



Right-click the measurement series to activate the window.



8.13.4 Enlarged Indication

In this window, the current measured value is shown in the enlarged form. You can change the font type and colour in the “Settings” dialog box.

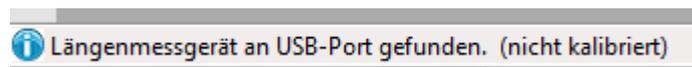


8.14 About the Application...

 This dialog box shows the logo, version and all additional information about AFH LD.

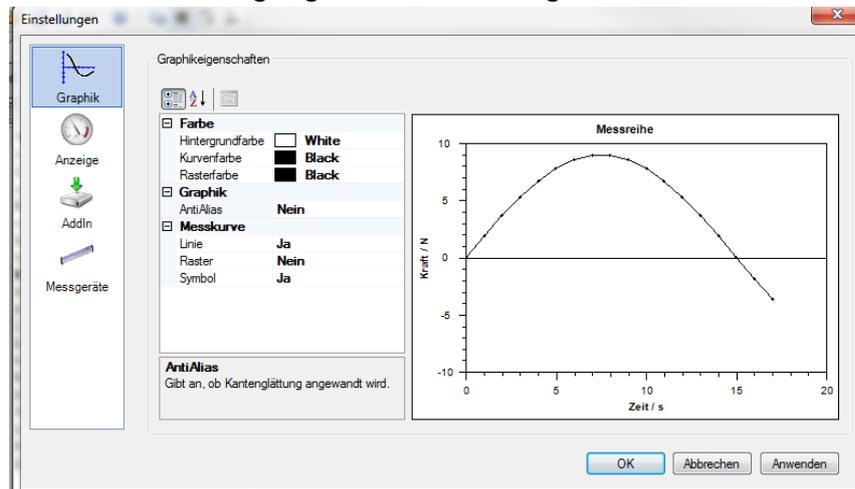
9 Calibration

Before measuring, you must calibrate the distance meter. To this end, the delivered package includes a 100 mm calibration bar used for calibration.

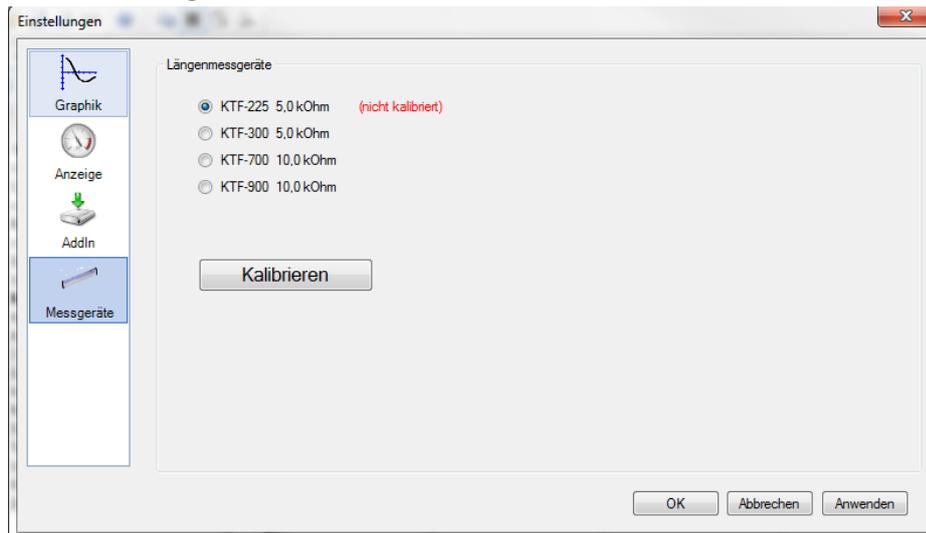


To perform the calibration, proceed as follows.

In View --> Settings, go to the following table.



In "Measuring Instruments"

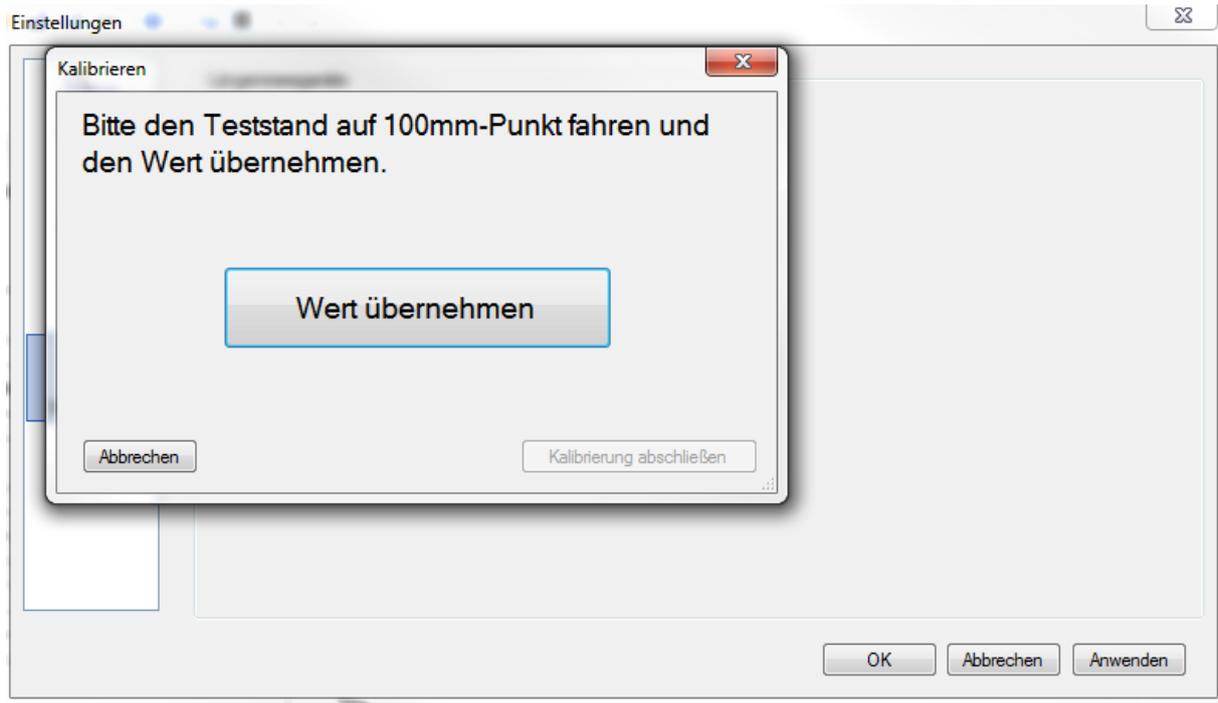


select the appropriate distance meter. The number indicates the length [mm] for which the distance meter may be used.

To start the calibration, move the measuring station to its lowest position.



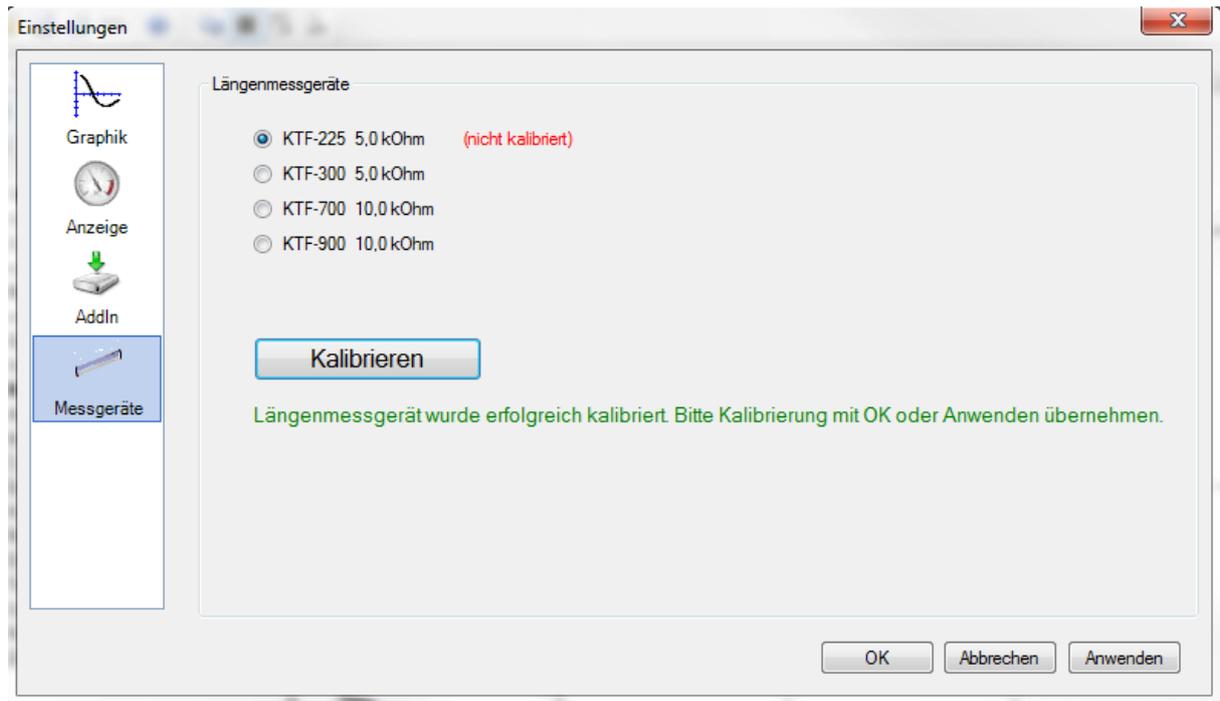
Then press “Apply Value”.



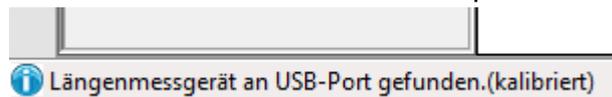
Then move the measuring station by 100 mm up. While the measuring station is slowly lowered, position the calibration bar in such a way that after being moved by 100 mm it causes the limit switch to deactivate. (Caution! Risk of crushing)
Press “Apply Value”.



Press "Finish Calibration". Remove the calibration bar.



Press OK. The calibration is complete.



You will see the status on the lower left side.

The values will be saved and will remain available after the next start-up of the application, until the next calibration. We recommend a new calibration after a long period of downtime or if any deviations are detected. Now everything is ready for initial measurement.

10 Initial measurement (recurring measurement)

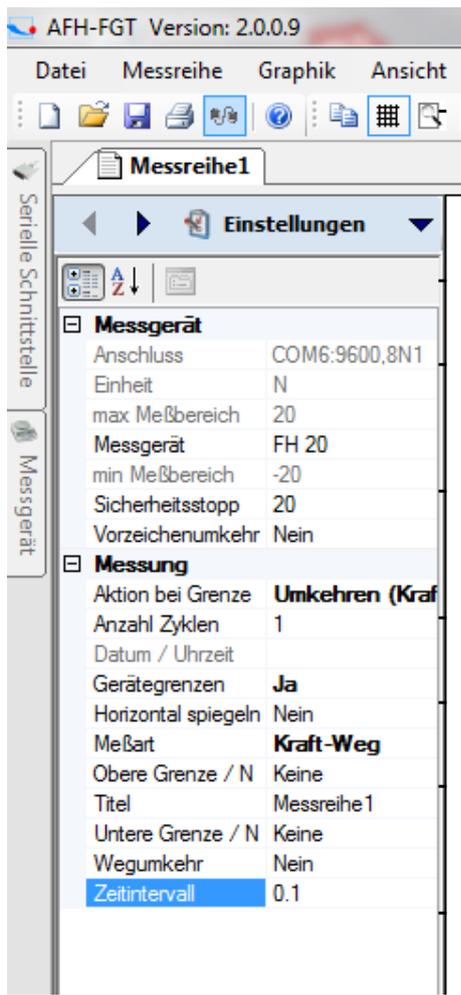
Create a new measurement series document.



Choose the measuring instrument to be used (if the device is not displayed, you can add it in the "Measuring Instruments" window; see section 8.11).



In “Settings” you can set the following parameters.



Measuring Instrument: here you can select the measuring instrument from the pull-down menu.

Emergency Trip: here you can set the value where the measuring station will trip in case of emergency (do not set a value that exceeds the maximum load of the dynamometer).

Change Number Sign: changes the direction in which the curve is displayed.

Switch at Limit: here you can force a change of direction after passing a certain path or after reaching a preset force.

Cycles: here you can set the number of cycles. In case of high values (> 10,000), the software can run more slowly.

Device Limits: here you can generally specify whether the limit values should be applied.

Horizontal Reflection: activates the mirror reflection of the measurement curve.

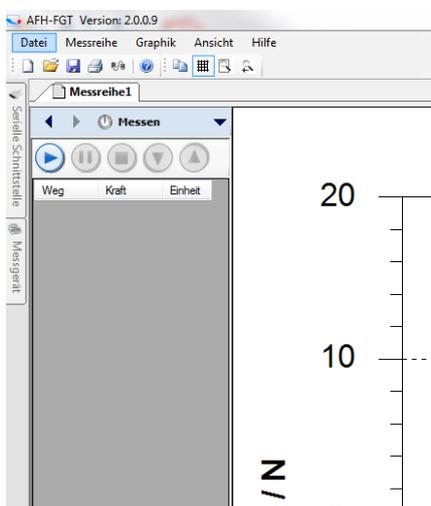
Measurement Type: here you can select the Force/Path or Force/Time measurements, or memory readout.

Upper Limit: here you can enter the force or path value.

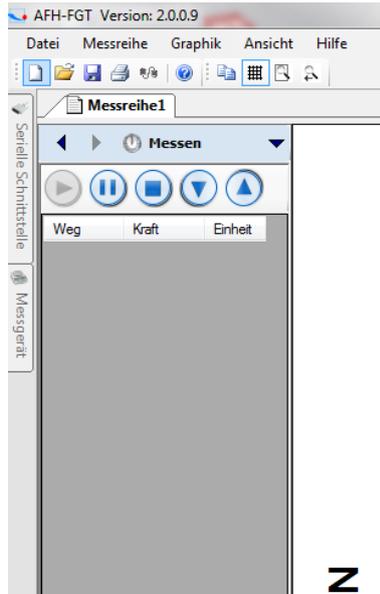
Title: here you can name the measurement.

- Lower Limit: here you can enter the force or path value.
- Path Reversal: Yes or No.
- Time Interval: here you can set the cycles in which the program will record the measurement data.

Then continue the measurement by pressing .

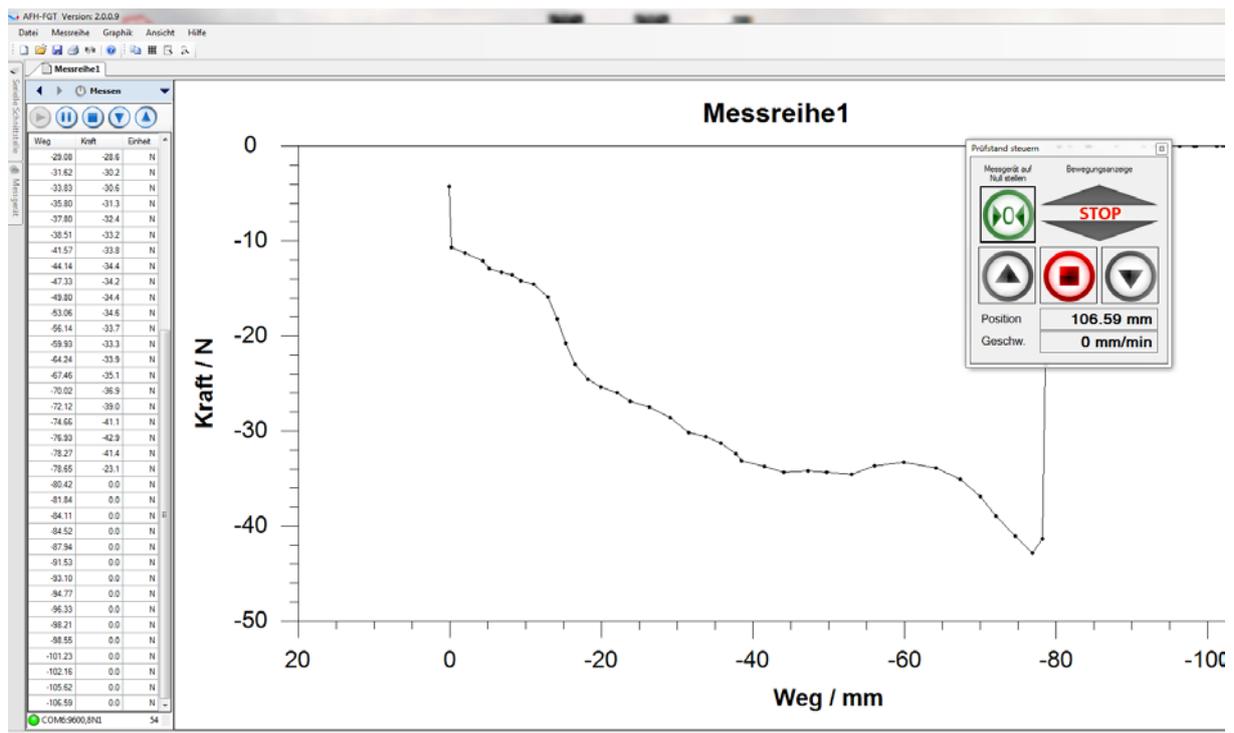


Press the right arrow key.



Z

Start the measurement by pressing the up or down arrow key. The measuring station will start moving and transmitting the data to the software.



Once the measurement is completed, you can save the results in any location.

To complete the measurement: stop it, save the data, close the program and switch off all devices.