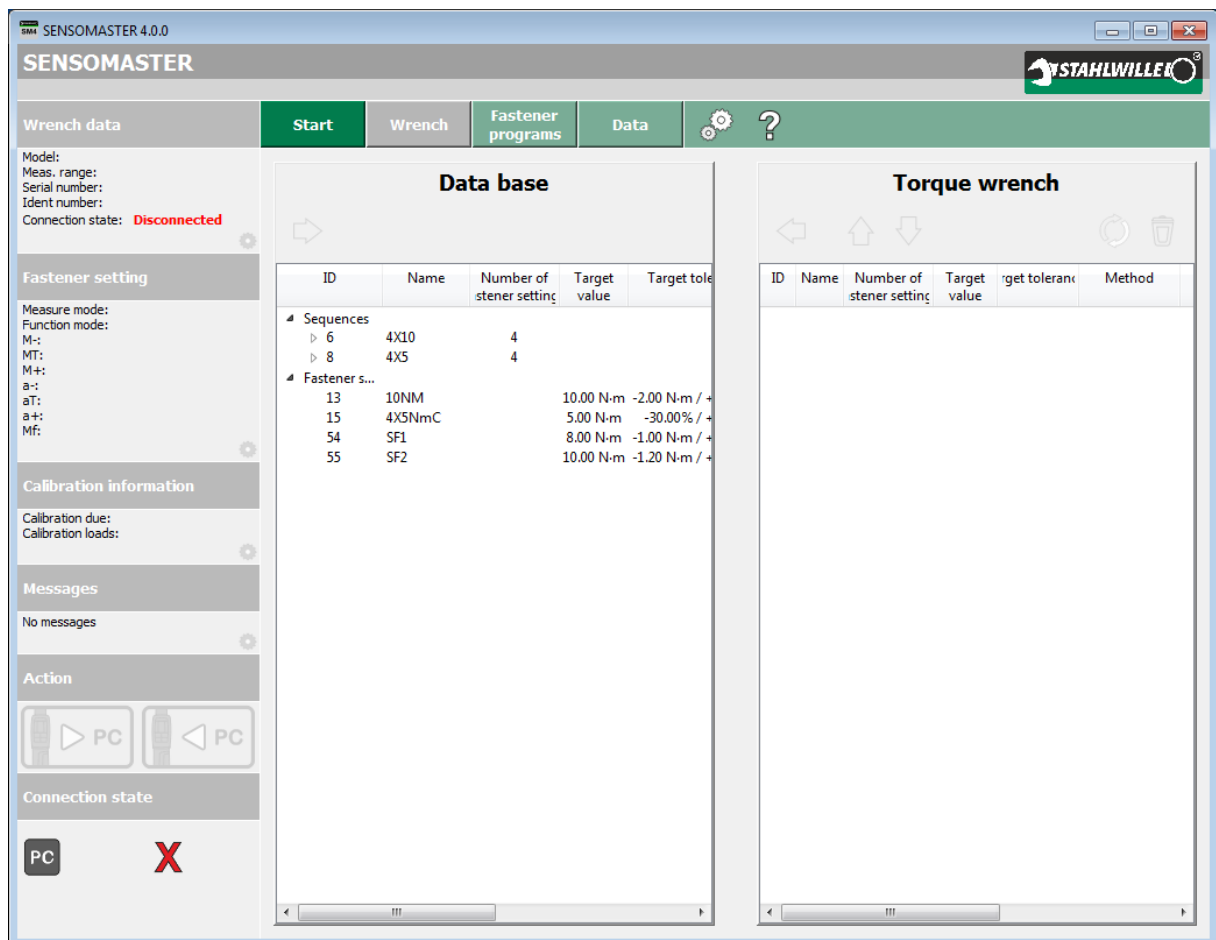


Topic: SENSOMASTER 4 Basic 4.0.0

SENSOMASTER 4 Basic

Translation of the original German

Operating Instructions



Operating Instructions date: 16.02.2016
Operating Instructions version: V4
Software version: V4.0.0 Basic

Topic: SENSOMASTER 4 Basic 4.0.0

1 Contents

1	Contents	2
2	Introduction	3
3	Target group and preconditions	4
4	System requirements	5
5	Definitions and abbreviations	6
6	Software interface and functions	10
6.1	Typographical conventions used in the Operating Instructions	10
6.2	General	11
6.2.1	Items in the information section	12
6.2.2	Items in the horizontal bar	14
6.2.3	Configuring the program	15
6.2.4	Program help	16
6.3	General operating methods	17
6.3.1	Selecting objects	17
6.3.2	Table functions	18
6.3.3	Preset target value for fasteners	18
6.3.4	Data export	19
6.3.5	Print	19
6.3.6	History of fasteners and work sequences	20
6.3.7	Data on the PC and on the torque wrench	21
6.4	Start workspace	22
6.4.1	Overview	22
6.4.2	Start workspace controls	23
6.5	Wrench workspace	24
6.5.1	Wrench workspace, direct settings tab	24
6.5.2	Controls, wrench workspace, direct settings tab	25
6.5.3	Wrench workspace, wrench settings tab	27
6.5.4	Controls, wrench workspace, wrench settings tab	28
6.6	Tightening programs workspace	30
6.6.1	Fasteners tab	30
6.6.2	Controls, tightening programs workspace, fasteners tab	31
6.6.3	Fasteners data table	33
6.6.4	Fastener dialogue box (create, edit, copy)	35
6.6.5	Controls, fasteners dialogue box	36
6.6.6	Fastener programs tab	39
6.6.7	Controls, fastener programs workspace, work sequence tab	40
6.6.8	The work sequences data table	41
6.6.9	Work sequence dialogue box (create, edit, copy)	43
6.6.10	Controls for the work sequence dialogue box	44
6.7	Data workspace	46
6.7.1	Controls for data workspace	47
6.7.2	Statistics dialogue	49
7	Installation	50
8	Appendix	53
8.1	Functional comparison of supported STAHLWILLE torque wrenches	53
9	Notes	54

Topic: SENSOMASTER 4 Basic 4.0.0

2 Introduction

This document describes the functions of the software and how to use it.

SENSOMASTER 4 Basic

SENSOMASTER 4 Basic supports all the electronic torque wrenches currently supplied by STAHLWILLE.

Please note: Not every torque wrench has the same range of functions. The 714 torque wrench, for instance, can be operated in the clicking or indicating mode, while the 713 torque wrench only offers the indicating mode.

The explanatory notes in this manual generally assume the maximum level of functionality of the torque wrench. If there are differences between individual torque wrenches, you will see this note:

Caution: Observe table of functions in the Appendix

The function table in the Appendix explains the differences in functionality between the various torque wrenches.

Note: References in these instructions to %left-click+or %right-click+assume your mouse is set up with the main mouse button on the left. If your mouse has the main button on the right and the secondary button on the left, please reverse those instructions.

Topic: SENSOMASTER 4 Basic 4.0.0

3 Target group and preconditions

The Operating Instructions are designed for these users:

- Those installing and administering the software
- Those creating, managing and deleting fasteners and work sequences
- Those programming the torque wrench settings
- Those transferring data from and to the torque wrenches
- Those working with torque wrenches and this software in service or production environments.

STAHLWILLE assumes that the operating instructions for the torque wrenches being used have been read and understood.

We also assume sufficient experience with the WINDOWS® operating system.

STAHLWILLE also assumes that the Operatives creating and editing fasteners and work sequences have the required technical knowledge and experience to define the parameters for these fasteners. STAHLWILLE cannot accept any liability for injury or damage resulting from incorrect fastener type settings. Responsibility for the choice of the most suitable tightening method and the corresponding parameters lies with the Operative.

Topic: SENSOMASTER 4 Basic 4.0.0

4 System requirements

Compatible torque wrench:	MANOSKOP® 714 Basic and 714i MANOSKOP® 730D SENSOTORK® 712 and 713 SENSOTORK® 701
Operating systems (OS):	WINDOWS® 7 WINDOWS® 8 and 8.1 WINDOWS® 10 The latest service packs are recommended
Processor:	Intel dual-core Atom or better
RAM:	min. 2 GB, but 4 GB recommended.
Free harddisk space:	min. 1 GB, but 2 GB recommended.
Screen resolution: recommended 1)	1024 x 768 pixels, 1280 x 1024 or better
Interfaces:	1 x USB port
Miscellaneous:	PDF reader for documents in PDF format Necessary for displaying software help files.

1) If a vertical resolution of 768 pixels is used, we recommend vertical positioning of the taskbar or selection of the "Hide taskbar automatically" option.

Topic: SENSOMASTER 4 Basic 4.0.0

5 Definitions and abbreviations

Term	Abbreviation	Explanation
Torque wrench		<p>An electronic torque wrench made by STAHLWILLE:</p> <ul style="list-style-type: none"> • MANOSKOP® 714 Basic and 714i • MANOSKOP® 730D • SENSOTORK® 712 and 713 • SENSOTORK® 701
Joint		<p>Complete parameter record for a single-stage tightening operation for a bolted connection. Those parameters will include at least the following points:</p> <ul style="list-style-type: none"> • Tightening method (e.g. torque) • Operating mode (e.g. clicking) • Unit of measure for torque (e.g. N·m) • Target torque (e.g. 120 N·m) • Tolerance range for evaluation (e.g. ±10 N·m) • Extension (e.g. 25 mm) <p>Advance warning threshold (e.g. 80%)</p>
Work sequence		<p>A work sequence will, typically, consist of several fasteners. The order of the fasteners within the sequence is strictly defined. This enables fasteners to be tightened in a predefined working sequence, for example the ten bolts in a cylinder head gasket.</p> <p>First, tighten each screw in the prescribed order using the torque method and then tighten them again in the same order with the angle method. This work sequence will then consist of 20 fasteners.</p> <p>Caution: Observe table of functions in the Appendix.</p>

Topic: SENSOMASTER 4 Basic 4.0.0

Term	Abbreviation	Explanation
Tightening method		<p>Fasteners can be tightened in a number of assembly processes. These assembly processes differ from each other as follows:</p> <ul style="list-style-type: none"> • Torque controlled • Angle controlled • Torque control with angle monitoring • Angle control with torque monitoring <p>Caution: Observe table of functions in the Appendix.</p>
Single-step tightening		<p>Each bolted connection is tightened using a parameter record.</p>
Operating mode		<p>Depending on the design, torque wrenches can have a number of operating modes:</p> <ul style="list-style-type: none"> • Torque • Tightening angle • Combined modes of operation: Torque backed up by angle Angle backed up by torque <p>In addition, there are a number of display and clicking options:</p> <ul style="list-style-type: none"> • Display of peak or track • Click active or inactive <p>Caution: Observe table of functions in the Appendix.</p>
Industrial torque wrench		<p>The fastener parameters are preset in the torque wrench and can only be modified using the SENSOMASTER software.</p> <p>This prevents inadvertent faulty setting of the parameters by the Operative.</p> <p>Caution: Observe table of functions in the Appendix.</p>

Topic: SENSOMASTER 4 Basic 4.0.0

Term	Abbreviation	Explanation
Multi-stage tightening		<p>When a bolted connection is tightened in several consecutive steps, either with the same or differing parameters.</p> <p>The ten screws in a cylinder-head gasket, for example, are first tightened one after the other in a prescribed sequence to a particular torque level. Then, they are tightened again in the same order with the angle tightening method.</p>
Joint data		Details recorded by the torque wrench during the tightening operation.
Beginning of torque measurement range	M_A	<p>Beginning of the torque measuring range of the torque wrench</p> <p>Example: for a 714/2, M_A is 2 N·m</p>
End of torque measuring range	M_E	<p>End of the torque measuring range of the torque wrench</p> <p>Example: for a 714/2, M_E is 20 N·m</p>
Target torque	M_T	Final torque level to which the bolted connection is to be tightened.
Lower torque tolerance limit	M_-	<p>Minimum torque value that is classed as OK during tightening. M_- can coincide with M_T.</p> <p>M_- is at least 80% of M_A.</p>
Upper torque tolerance limit	M_+	<p>Maximum torque value that is classed as OK during tightening. M_+ can coincide with M_T.</p> <p>M_+ is not more than 120% of M_E.</p>
Snug point	M_F	Torque level at which angle measurement begins.

Topic: SENSOMASTER 4 Basic 4.0.0

Term	Abbreviation	Explanation
Target angle	α_T	Tightening angle to which a bolted connection is to be tightened.
Lower angle tolerance limit	α_-	Minimum angle value that is classed as OK during tightening. α_- can coincide with α_T .
Upper angle tolerance limit	α_+	Maximum angle value that is classed as OK during tightening. α_+ can coincide with α_T .

Topic: SENSOMASTER 4 Basic 4.0.0

6 Software interface and functions

This section describes the graphical user interface (GUI) and software controls.

6.1 Typographical conventions used in the Operating Instructions

Where reference is made to the keys on the keyboard, the names of the keys are shown in angle brackets.

Example: **<Ctrl>** stands for the Control key,
<Shift> or **< >** stands for the Shift key

On-screen buttons are shown in square brackets.

Example: **[OK]** represents the OK button in a dialogue box

Items bearing a symbol and other items are shown with a capital initial.

Example: **Export** represents the entry in the context menu for exporting data.

Further important details are printed in **bold type**.

Topic: SENSOMASTER 4 Basic 4.0.0

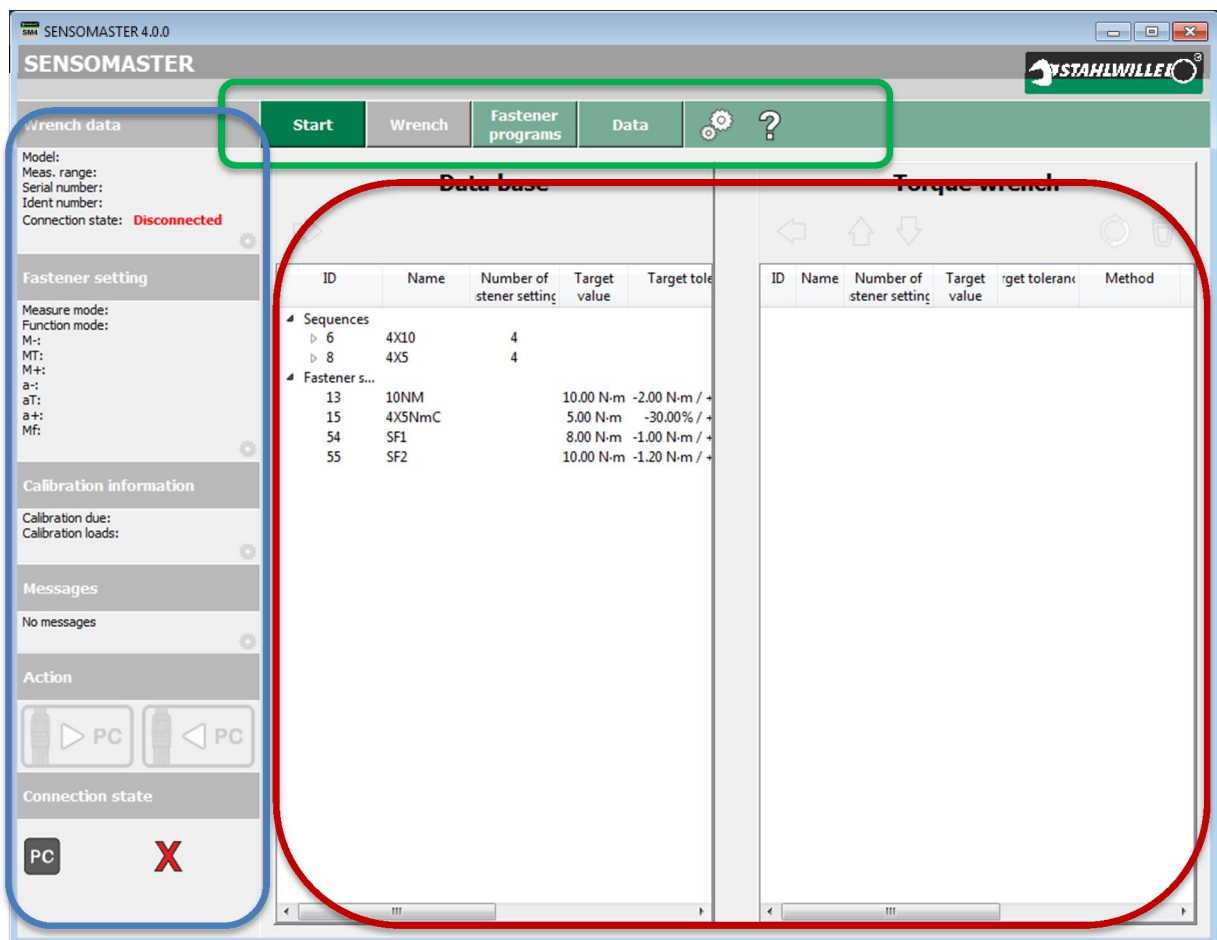
6.2 General

The program window has three sections.

The information section is a vertical pane on the left and is permanently displayed. This is where information on the torque wrench currently connected and its connection state is displayed. In addition, the buttons for writing and reading data are displayed (refer to 6.3).

In the horizontal section at the top there are the buttons for selecting the workspace and other buttons for program configuration and help.

In the middle on the right, there is the workspace showing the currently active readings. The details shown here will change depending on which buttons in the horizontal array of buttons have been pressed.

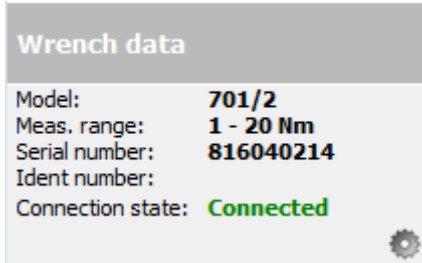
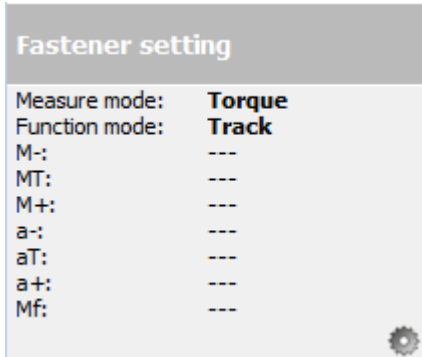
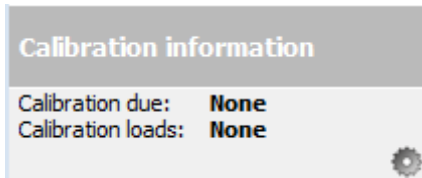



In the screenshot, the three sections are outlined in blue, green and red.


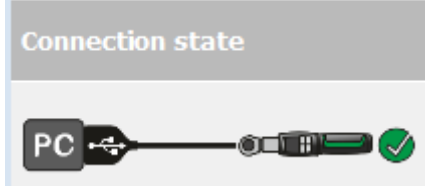
Topic: SENSOMASTER 4 Basic 4.0.0

6.2.1 Items in the information section

In the following example, a 701 torque wrench is connected.

Item	Representation	Description
Wrench data		<p>This section shows basic details of the torque wrench, such as the model and serial number.</p> <p>Click the gearwheel symbol to access the settings page direct.</p>
Fastener settings		<p>This shows the currently set direct fastener.</p> <p>Click the gearwheel symbol to access the settings page direct.</p>
Calibration information		<p>This shows the calibration state of the torque wrench.</p> <p>Click the gearwheel symbol to access the settings page direct.</p>
Messages		<p>This section shows any messages stored on the wrench, for example: Overload, Calibration expired etc.</p> <p>Click the gearwheel symbol to access the settings page direct.</p>

Topic: SENSOMASTER 4 Basic 4.0.0







Item	Representation	Description
Action buttons		<p>Use the left-hand button to download data from the torque wrench to display it on the PC.</p> <p>Use the right-hand button to upload any changes you have made to the torque wrench.</p> <p>If there are no changes to save (as shown in this example), the button will be greyed out.</p>
Connection status		<p>This view shows that the USB link between the PC and torque wrench is active.</p> <p>With torque wrench models 712, 713 and 730D, the symbol for the STAHLWILLE USB dongle will appear as soon as it is plugged in.</p>

Caution: Observe table of functions in the Appendix.

Topic: SENSOMASTER 4 Basic 4.0.0

6.2.2 Items in the horizontal bar

Use the buttons in this bar to select an active workspace, to start the dialogue for configuring the program or to load the Operating Instructions.

Item	Representation	Description
[Start]		Clicking this button will activate the Start workspace. When the software starts up, this selection is always automatically activated.
[Wrench]		Clicking this button activates the Wrench workspace. In that workspace, you can modify the direct settings and presets for the torque wrench currently connected.
[Fastener programs]		Clicking this button activates the Fastener programs workspace. Here you can manage fasteners and work sequences.
[Data]		Use this button to access the Data workspace. Here you will see the readings downloaded from the torque wrench for the individual tightening jobs.
[Configuration]		Clicking this button will initiate the program configuration dialogue. That will allow you to manage the basic settings for the software (refer to Chapter 6.1.3.).
[Help]		This button opens the help file installed during program installation (refer to Chapter 6.1.4).

Topic: SENSOMASTER 4 Basic 4.0.0

6.2.3 Configuring the program

The dialogue box for program configuration is basically split into two workspaces. The upper workspace displays static information, while in the lower workspace, settings can be adjusted.

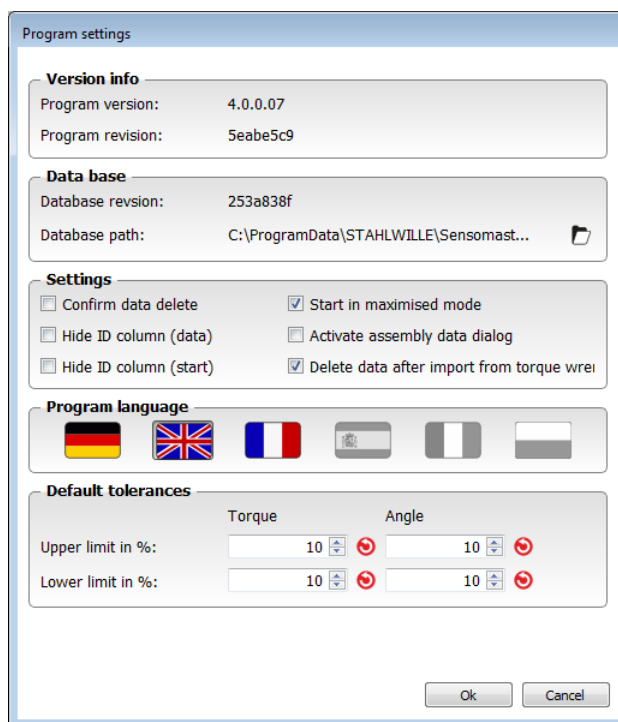
The information space shows information on the program and database versions. You will need this information if you contact our support.

In the settings workspace, you will find options you can activate and deactivate as you wish.

Amongst other things, you can select your preferred language for the user interface by clicking a flag symbol. This change becomes immediately active and does not require the software to be restarted.

Next, the default tolerance limits can be entered as a percentage. These prescribed values are then used whenever a new fastener is created.

Example of program configuration:



Please note: In your version of the software there may be additional options.

Your changes are confirmed and saved as soon as you click [OK] at the bottom of the screen. The dialogue box will then close automatically.

If you click [Cancel], any changes you have made will be ignored. The dialogue box will close.

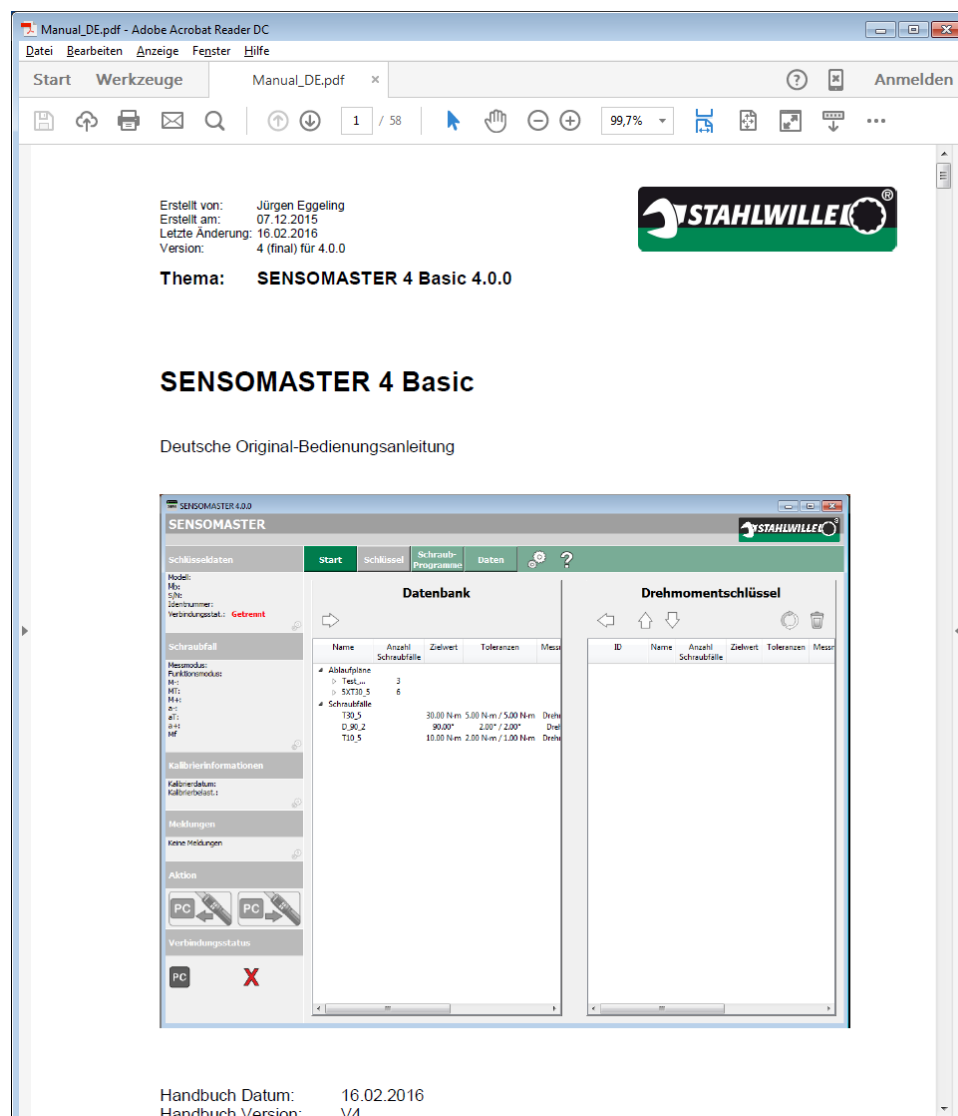
Topic: SENSOMASTER 4 Basic 4.0.0

6.2.4 Program help

The help file is displayed in the same language as the chosen user interface (GUI) language. If the GUI is set to English, for example, the help file will be in English.

The help file will display in the program set up on your computer as the default for displaying PDF files.

One example would be Adobe Acrobat Reader, showing the help file in German in this case.



Topic: SENSOMASTER 4 Basic 4.0.0

6.3 General operating methods

Below we describe those concepts that have been applied in the same way in several places in the software.

Please read this chapter carefully as it will enable you to use the software with the maximum efficiency.

6.3.1 Selecting objects

In order to perform any actions with the objects you see on the screen, you will have to select them first.

- To select **one** single object, just click it once (left-click) with the mouse.
- To select a contiguous **range of objects**, left-click the first in the list, hold the <Shift> or < > button down and left-click the last item in the list.
- To pick out individual items **that are not contiguous**, hold the <Ctrl> key down and left-click the individual items once each.

This method is compatible with the standard Windows convention as found in many other programs.

Once selected, objects are highlighted in green:

Name	Method	Author	Mode	Target torque	Target value	Tolerance	Remark	Direktschraubfall	Wrench type	Tol
T30_5	Torque	Eggeling, Juergen	Track	30	30.00 N-m	5.00 N-m / 5.00 N-m		No	714/4	5.00 N-m
D_90_2	Angle	Eggeling, Juergen	Track	-	90.00°	2.00° / 2.00°		No	714/1	
TD_20_5	Torque (+angle)	Eggeling, Juergen	Track	20	20.00 N-m	5.00 N-m / 5.00 N-m		No	714/4	5.00 N-m
T5_2	Torque	Eggeling, Juergen	Track	5	5.00 N-m	2.00 N-m / 2.00 N-m		No	714/1	2.00 N-m
Test_730D	Torque	Eggeling, Juergen	Track	55	55.00 N-m	-/-		No	730D/10	
Test_713	Torque	Eggeling, Juergen	Peak	60	60.00 N-m	5.00 N-m / 5.00 N-m		No	713/6	5.00 N-m
T20_10	Torque	Eggeling, Juergen	Track	21	21.00 N-m	10.00 N-m / 10.00 N-m		No	714/4	10.00 N-m

This selection method is used in all function areas of the software and is not explained in detail in the following chapters.

Topic: SENSOMASTER 4 Basic 4.0.0

6.3.2 Table functions

The data, e.g. fasteners or fastener details, is displayed by the program in tabular form. If you left-click the header of a column, the table is sorted by that column. If you left-click the header several times, the sort order toggles from ascending to descending and back.

The position of the other columns can be changed using the drag & drop principle to suit your preferences. A right-click in the table opens the context menu in which you can select which columns you wish to be displayed.

If you select more columns than the screen can display, a horizontal scroll bar will appear. If the table contains more data records (rows) than the screen can display, a vertical scroll bar will appear.

The first column contains the data record ID. This is a unique number used by the program to identify each data record. The display of the record IDs can be suppressed or activated in the program configuration window.

Some tables have additional functions that can be activated by a double-click. These functions are described in the context of the individual tables. Their aim is, generally, to simplify or accelerate operation of the software.

6.3.3 Preset target value for fasteners

A new feature in the SENSOMASTER 4 software compared with the predecessor is the display by default of the preset including its tolerance as the **target value and target tolerance**.

Previous versions of the software showed the torque, torque tolerance, angle, angle tolerance and the unit of measure of torque in separate columns. With torque-based fasteners, the columns for angle data remained empty, and vice versa for angle-based fasteners.

In the current version, the target value column shows the torque value (and unit of measure) for torque-based fasteners and the target angle for angle-based fasteners.

If a fastener is set for combined values, both are displayed. The base quantity is shown in first position, the back-up quantity second in parentheses.

Topic: SENSOMASTER 4 Basic 4.0.0

6.3.4 Data export

You can export objects from all lists.

The following output formats are available:

- .xls and .xlsx (Microsoft Excel or compatible programs)
- .csv (comma separated values, data interchange format)
- .ods (Open Office spreadsheet, Open Office or Libre Office)

The items exported will depend on what items are highlighted or filtered:

Selection	Export
Nothing highlighted, no filter	All the items will be exported.
Filter active, nothing highlighted	All the filtered items will be exported.
Filter inactive, items highlighted	All the highlighted items will be exported.
Filter inactive, items highlighted	Only the items that are both highlighted and filtered will be exported.

If only some of the possible columns in a table are displayed, only those columns can be exported.

To configure the columns, right-click the table. The context menu is now displayed where you can configure which columns are visible.

6.3.5 Print

The items printed will depend on what items are highlighted or filtered:

Selection	Printout
Nothing highlighted, no filter	All the items will be printed.
Filter active, nothing highlighted	All the filtered items will be printed.
Filter inactive, items highlighted	All the highlighted items will be printed.
Filter inactive, items highlighted	Only the items that are both highlighted and filtered will be printed.

If only some of the possible columns in a table are displayed, only those columns can be printed.

To configure the columns, right-click the table. The context menu is now displayed where you can configure which columns are visible.

The logic applicable to printing is exactly the same as that applicable to exports.

Topic: SENSOMASTER 4 Basic 4.0.0

6.3.6 History of fasteners and work sequences

The following comments apply equally to fasteners and work sequences.

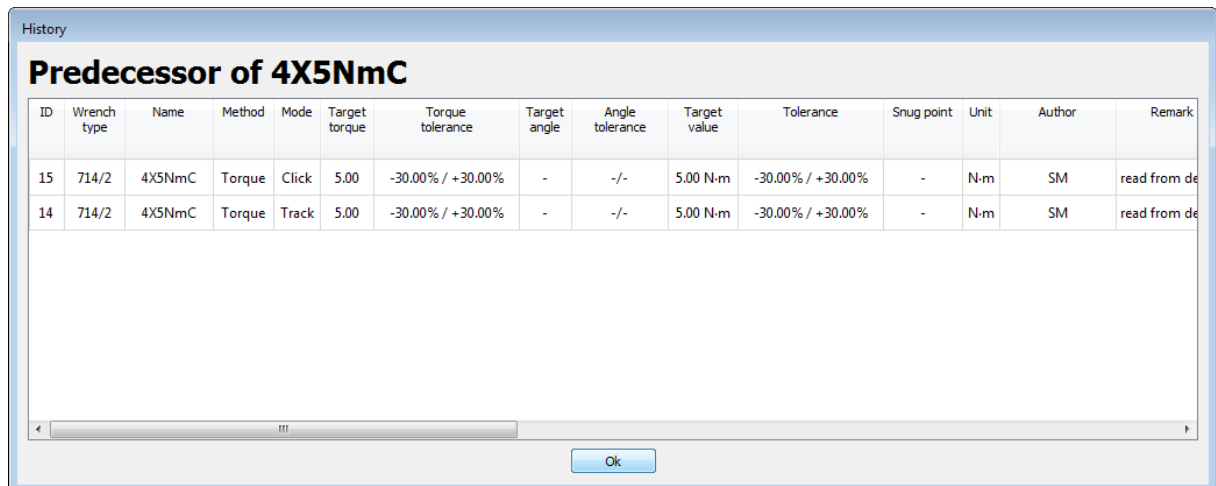
The software manages a history of these items. When you create a new fastener, for example, it is assigned Version 1. If you edit the fastener later, it is saved as Version 2, etcetera. You can see the version numbers in the fastener and sequence editor.

In addition to the version, the change date, author and a comment field are saved. The date is that of the system time, the author and comment fields are freely editable. If you do not define an author name, the system will automatically use the name of the current user in this field.

For documentation purposes, we recommend entering the reason for the change in the comments field.

Under the section for fastener programs, you will see that the tabs for the fasteners and work sequences have buttons which are used to open a dialogue box which will display the history of the selected fastener or work sequence.

Example: history of a fastener:



ID	Wrench type	Name	Method	Mode	Target torque	Torque tolerance	Target angle	Angle tolerance	Target value	Tolerance	Snug point	Unit	Author	Remark
15	714/2	4X5NmC	Torque	Click	5.00	-30.00% / +30.00%	-	-/-	5.00 N-m	-30.00% / +30.00%	-	N-m	SM	read from de
14	714/2	4X5NmC	Torque	Track	5.00	-30.00% / +30.00%	-	-/-	5.00 N-m	-30.00% / +30.00%	-	N-m	SM	read from de

With work sequences, it is also possible to display the fasteners making up the sequence by expanding the view.

Obsolete fasteners, i.e. fasteners that have been modified, are shown in yellow.

Topic: SENSOMASTER 4 Basic 4.0.0

Example: history of a work sequence

History							
Predecessor of 4X5							
ID	Name	Number of fastener settings	Author	Remark	Target value	Tolerance	Creation date
8	4X5	4	Eggeling, Juergen	Included fasten...			07.01.2016 11:11
15	4X5NmC		SM	read from device	5.00 N-m	-30.00% / +30.0...	07.01.2016 11:11
15	4X5NmC		SM	read from device	5.00 N-m	-30.00% / +30.0...	07.01.2016 11:11
15	4X5NmC		SM	read from device	5.00 N-m	-30.00% / +30.0...	07.01.2016 11:11
15	4X5NmC		SM	read from device	5.00 N-m	-30.00% / +30.0...	07.01.2016 11:11
7	4X5	4					07.01.2016 11:09
14	4X5NmC		SM	read from device	5.00 N-m	-30.00% / +30.0...	07.01.2016 11:09
14	4X5NmC		SM	read from device	5.00 N-m	-30.00% / +30.0...	07.01.2016 11:09
14	4X5NmC		SM	read from device	5.00 N-m	-30.00% / +30.0...	07.01.2016 11:09
14	4X5NmC		SM	read from device	5.00 N-m	-30.00% / +30.0...	07.01.2016 11:09

6.3.7 Data on the PC and on the torque wrench

Please note the following restrictions:

When you modify software settings for the torque wrench on the PC, they are **not** immediately modified on the wrench . they are still only stored in the PC RAM. Not until you click **Save** in the Actions workspace will they be transferred to the tool.

Caution: If you disconnect the torque wrench from the PC before this transfer has completed, your new settings will be lost.

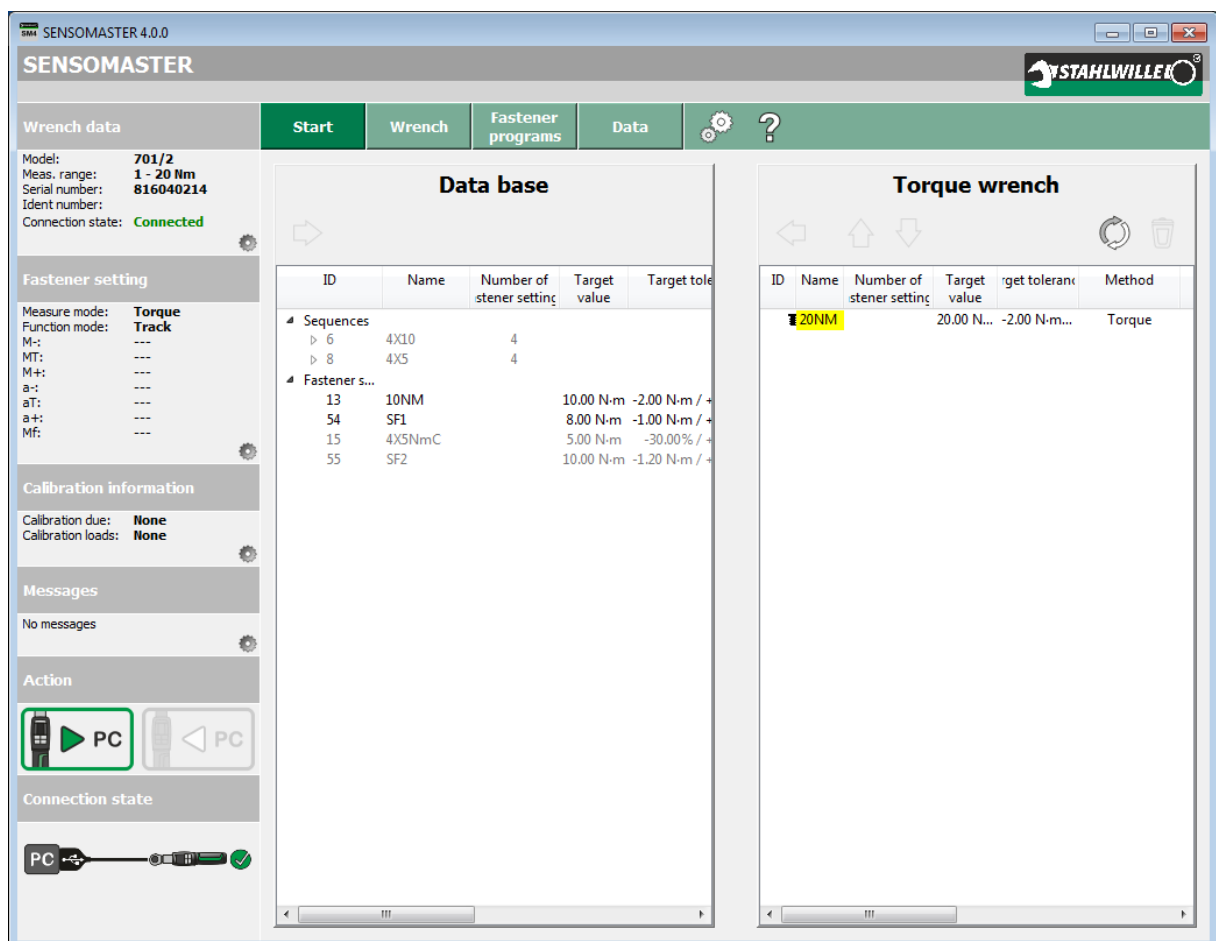
Topic: SENSOMASTER 4 Basic 4.0.0

6.4 Start workspace

6.4.1 Overview

This view is automatically shown when the software starts up. Most users will find that this is the most used view.

Fasteners and work sequences can be transferred to the torque wrench, manually copied from the torque wrench to the software database and work sequences and fasteners deleted from the wrench.

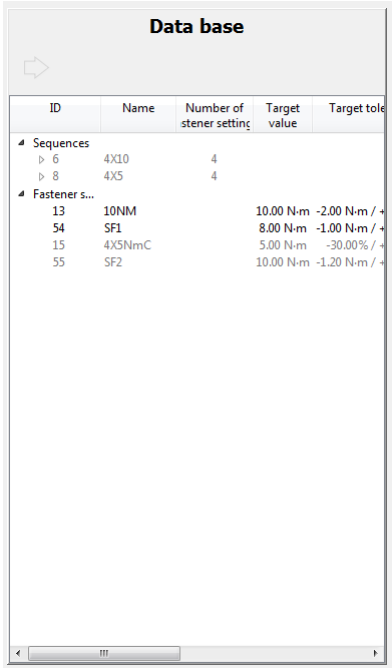
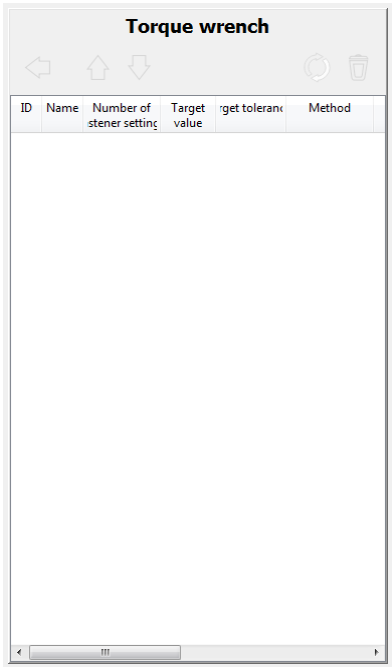


The table on the left shows the fasteners and work sequences currently stored in the database and the table on the right shows the work sequences and fasteners stored on the wrench.

If a different workspace is currently active, you can activate the Start workspace by clicking [Start] in the horizontal bar at the top.

Topic: SENSOMASTER 4 Basic 4.0.0

6.4.2 Start workspace controls

Item	Representation	Description
Database		<p>Here you can see the work sequences and fasteners available in the database.</p> <p>Presettings that are compatible with this torque wrench are shown in black, incompatible settings are greyed out.</p> <p>If required, the lists can be expanded or closed up by clicking the small triangle on the left.</p> <p>Selected objects are copied to the torque wrench by clicking the arrow at the top above the list.</p> <p>Alternatively, you can copy an entry to the torque wrench by double-clicking it.</p> <p>Changes are not actually copied to the wrench until you click Save.</p>
Torque wrenches		<p>Here you can see the work sequences and fasteners available on the torque wrench.</p> <p>If required, the lists can be displayed or hidden by clicking the small triangle on the left.</p> <p>Selected objects can be copied to the database.</p> <p>You can change the order in which the objects appear in the list by selecting an object and clicking the up and down arrows at the top above the list.</p> <p>Click the button bearing the circular arrows symbol to update the obsolete settings on the torque wrench with new ones from the database. Obsolete objects are highlighted in blue.</p> <p>Clicking the waste bin symbol will delete the object(s) selected.</p>

Topic: SENSOMASTER 4 Basic 4.0.0

6.5 Wrench workspace

In this section, you manage the direct settings (Direct settings tab) and the basic wrench settings (Wrench parameters tab).

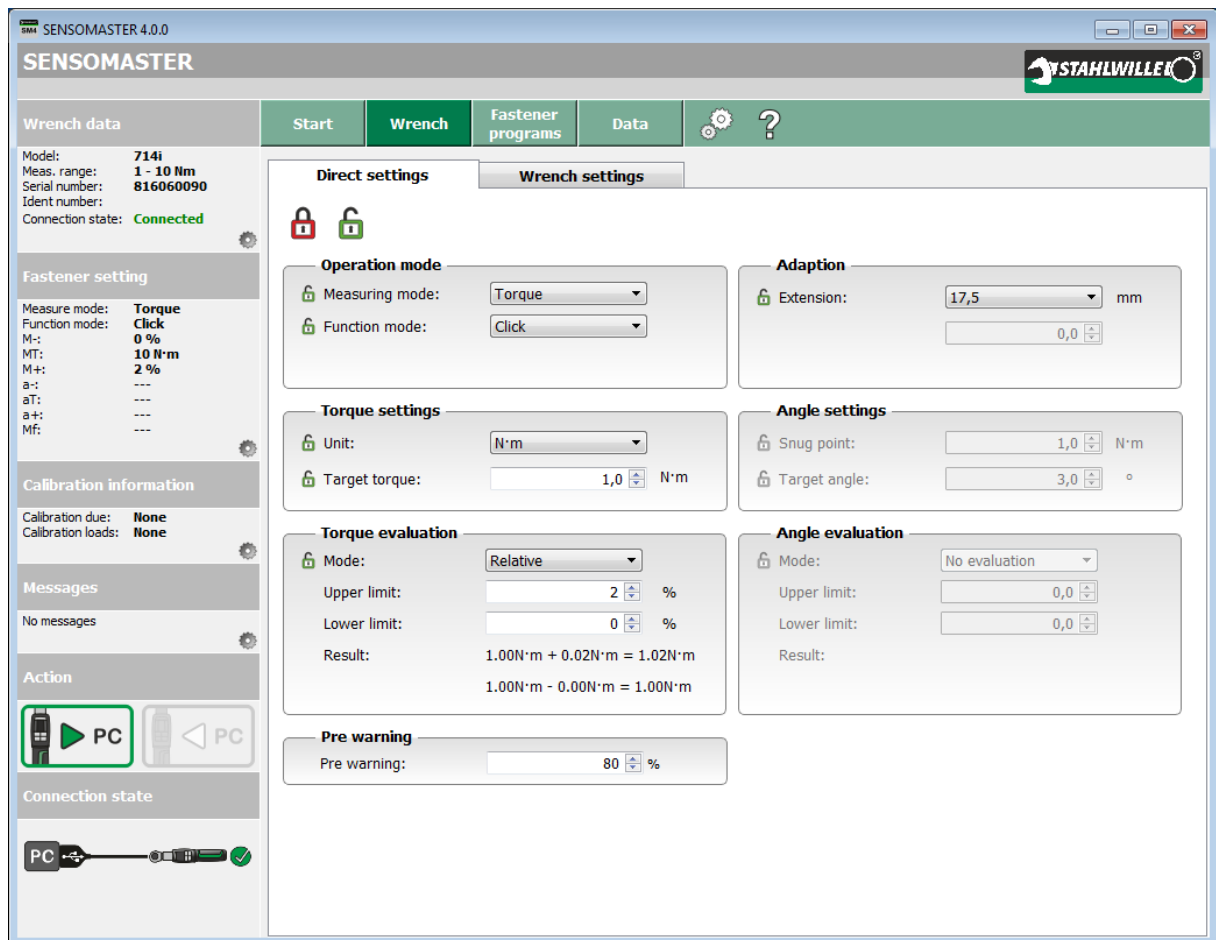
If a different workspace is currently active, you can activate this workspace by clicking [Wrench] in the horizontal bar at the top.

The workspace can be only selected if a torque wrench is connected. If no torque wrench is connected, the [Wrench] button is greyed out and cannot be selected.

The objects shown on the tabs will depend on the wrench that is connected and the content shown will differ accordingly.

6.5.1 Wrench workspace, direct settings tab

This tab is where the torque wrench direct mode is configured. In our example, we have connected a 714 torque wrench to the PC.


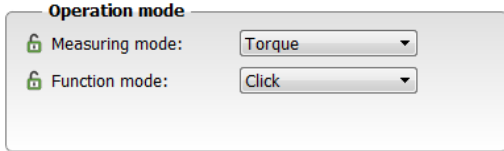
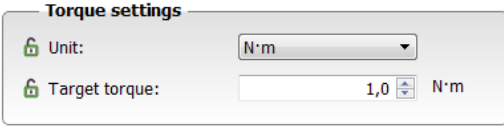
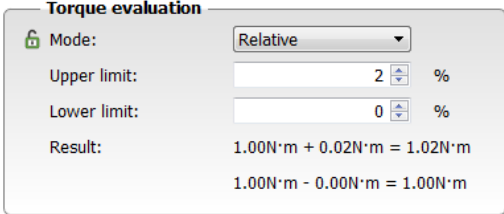


Topic: SENSOMASTER 4 Basic 4.0.0


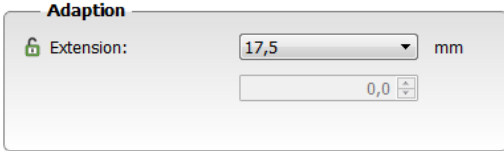

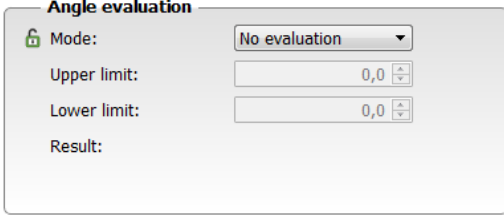
6.5.2 Controls, wrench workspace, direct settings tab

Caution: Observe table of functions in the Appendix.

In our example, we have connected a 714 torque wrench to the PC.

Item	Representation	Description
Global lock/unlock	<p style="text-align: center;">Direct settings</p> 	<p>You can click the padlock symbol to protect or unprotect all the settings on the torque wrench.</p> <p>Use the smaller lock symbols to enable or disable individual settings.</p>
Operating mode		<p>Here you can select the operating mode of the torque wrench, either torque, angle or combined mode.</p> <p>In addition, you can configure the click behaviour and peak value display.</p>
Torque		<p>This is where you can make torque settings if torque measurement is activated . i.e. the unit of measure and target torque level.</p>
Torque evaluation		<p>Decide here how the torque wrench is to evaluate the torque, if at all.</p> <p>In the example shown here, we have set two absolute values for the tolerance limits.</p> <p>The results are displayed and refreshed depending on the figures you select.</p>

Topic: SENSOMASTER 4 Basic 4.0.0

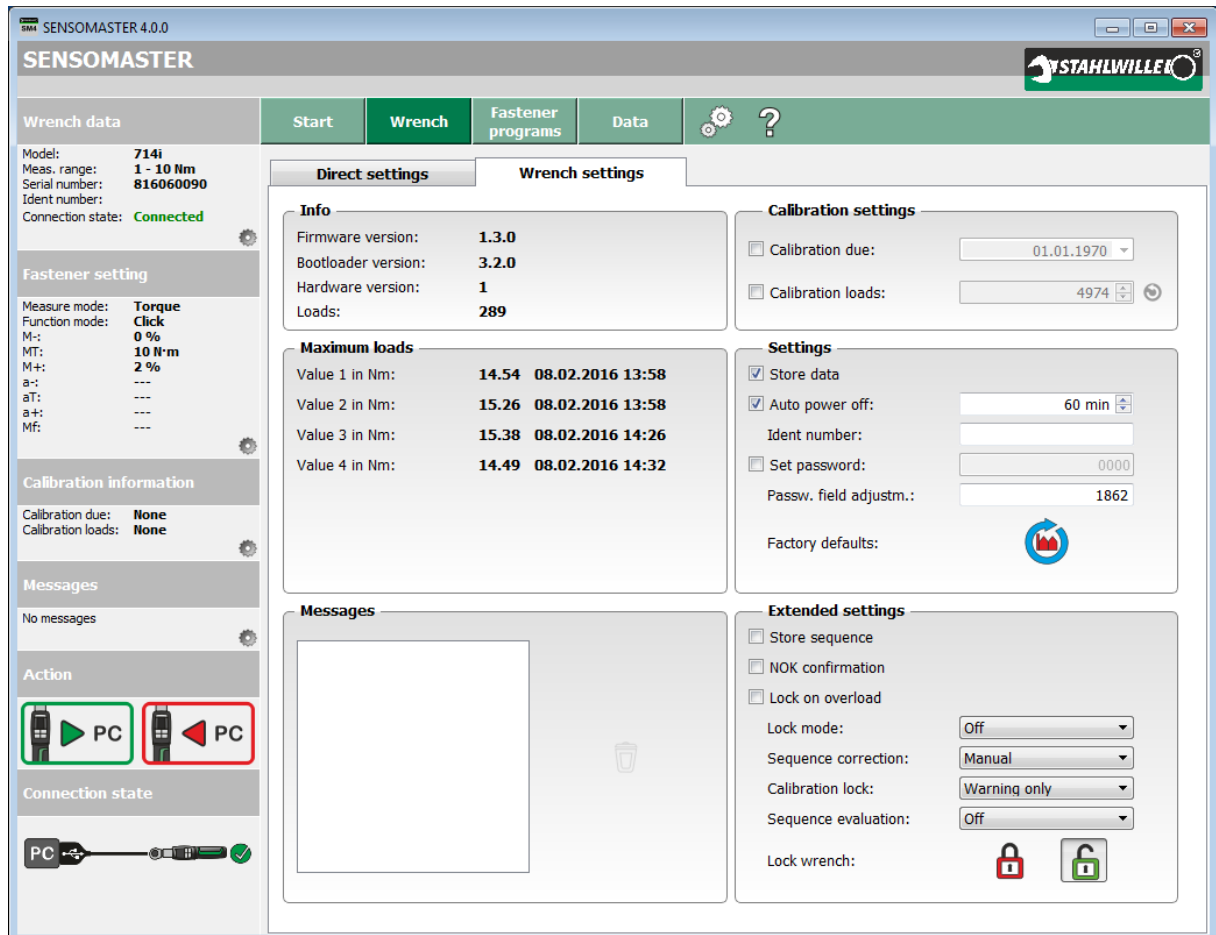
Item	Representation	Description
Advance warning threshold		<p>Enter the advance warning threshold here. When you reach the prewarning threshold, a yellow LED on the torque wrench will light up or, for a 714 torque wrench, the display colour will change to yellow.</p> <p>Caution: The advance warning threshold is always relative to the lower tolerance value.</p>
Socket tools		<p>If the torque wrench supports using different insert tools, you can define the extension value for the tool here.</p> <p>The upper selector box provides default values for STAHLWILLE tools. If you are using a special tool, you can enter the required extension in the input field below.</p> <p>Caution: Incorrect settings will result in incorrect readings.</p>
Angle		<p>If you have activated angle-controlled measurement, you can set the parameters here, i.e. snug point from which angle-controlled measurement is to start, and the target angle.</p> <p>The unit of measure is degrees and this cannot be changed.</p>
Angle evaluation		<p>Decide here how the torque wrench is to evaluate the angle, if at all.</p> <p>In the example shown here, we have set two absolute values for the tolerance limits.</p> <p>The results are displayed and refreshed depending on the figures you select.</p>

Topic: SENSOMASTER 4 Basic 4.0.0

6.5.3 Wrench workspace, wrench settings tab

On this tab, you can configure the additional settings for the torque wrench.

In our example, we have connected a 714i torque wrench to the PC.

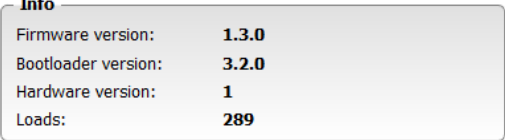
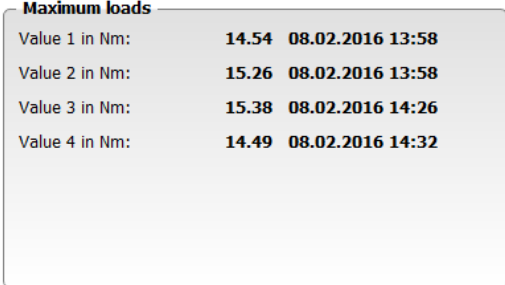
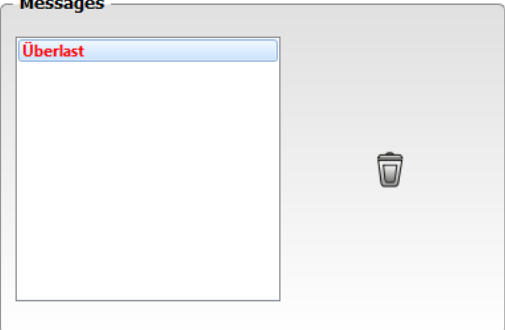


Topic: SENSOMASTER 4 Basic 4.0.0


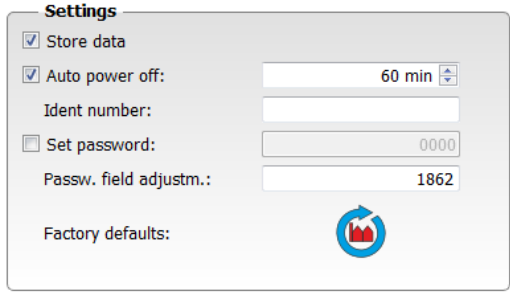
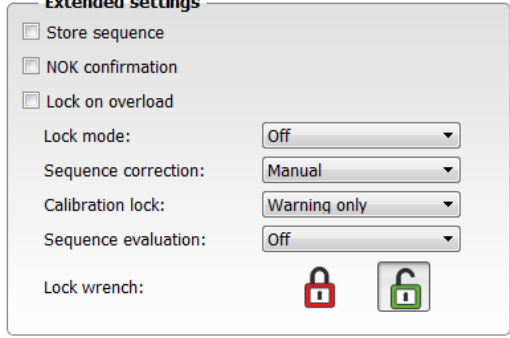
6.5.4 Controls, wrench workspace, wrench settings tab

Caution: Observe table of functions in the Appendix.

In our example, we have connected a 714i torque wrench to the PC.

Item	Representation	Description
Information		<p>This field displays the general information available on the torque wrench.</p> <p>The most important information is usually the torque wrench firmware version.</p>
Loads		<p>The 714 family of torque wrenches are equipped with an integrated memory for the four highest loads encountered by the tool.</p> <p>These counters cannot be deleted.</p>
Messages		<p>Here you can see any messages that are currently active on the torque wrench.</p> <p>In the example shown, the wrench has been subjected to an overload.</p> <p>To delete a message, select it in the list on the left and click the waste bin symbol.</p> <p>Finally, click the Save button to transfer the information to the wrench.</p>

Topic: SENSOMASTER 4 Basic 4.0.0

Item	Representation	Description
Calibration		<p>In this field, the settings for calibration are displayed and managed.</p> <p>The various torque wrenches offer different options here.</p> <p>With the 714, you can select a date and/or a number of load changes.</p>
Settings		<p>Here you will find all the remaining settings.</p> <p>Here, too, there are different options, depending on the torque wrench connected.</p> <p>Click the factory settings button to delete all data and settings stored on the torque wrench. The default data is then loaded.</p>
Extended settings		<p>Here you will find a number of special functions for industrial torque wrenches.</p> <p>These are currently available for the 714i torque wrench.</p>

Topic: SENSOMASTER 4 Basic 4.0.0

6.6 Tightening programs workspace

In this workspace, you can manage your fasteners and work sequences on separate tabs.

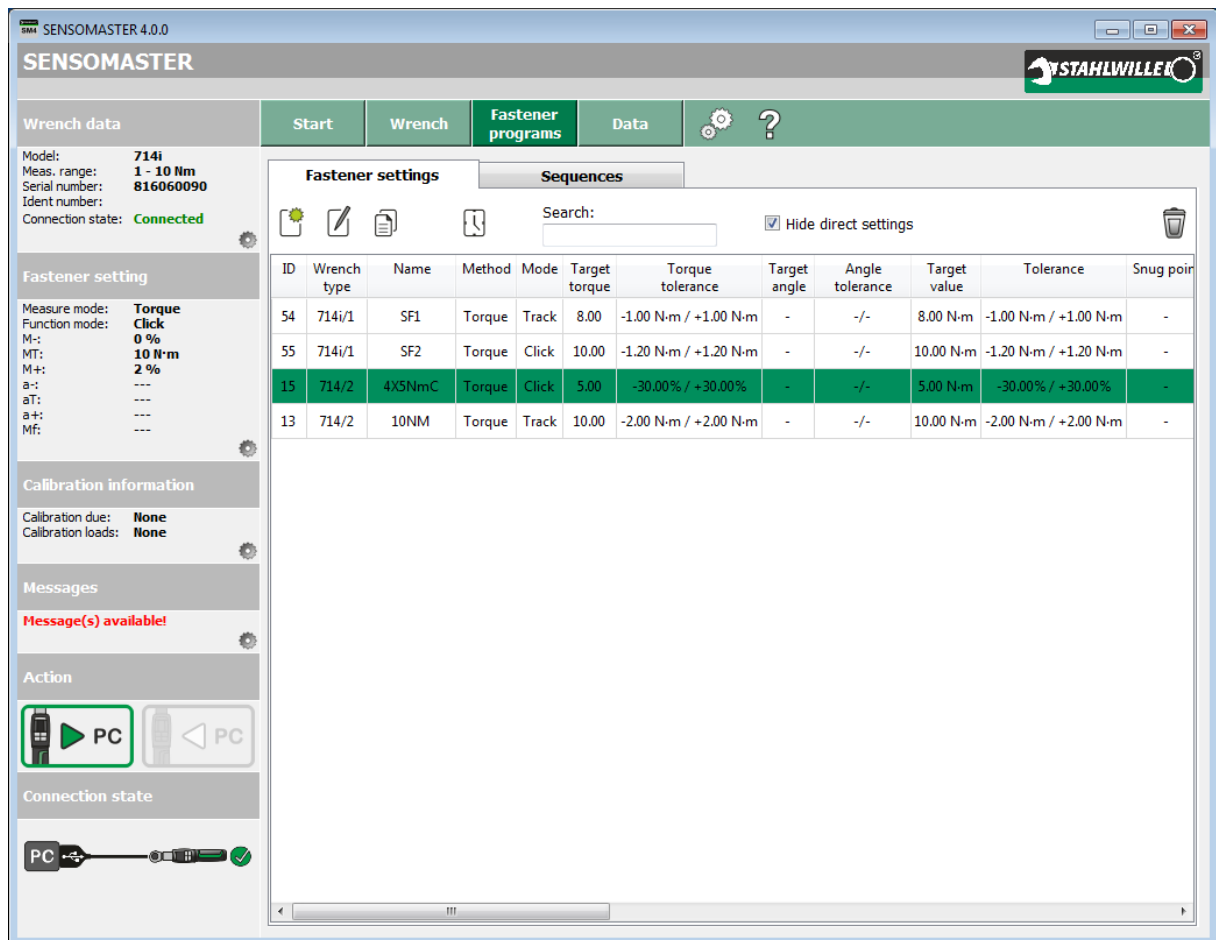
If a different workspace is currently active, you can activate this workspace by clicking [Tightening programs] in the horizontal bar at the top.

This workspace is displayed the same for all torque wrenches.

6.6.1 Fasteners tab

Use this tab to manage fasteners.

This section of the software can be used irrespective of whether a torque wrench is connected to the PC. If a torque wrench is connected, the software will assume that the fastener you are defining is intended for the attached wrench. This affects validation of the user's inputs (torque range, tolerances etc.). In this example, there is no torque wrench connected.



The screenshot shows the SENSOMASTER 4.0.0 software interface. The top bar includes tabs for Wrench data, Start, Wrench, Fastener programs (selected), and Data. The Fastener programs tab is active, displaying a table of fastener settings. The table has columns for ID, Wrench type, Name, Method, Mode, Target torque, Torque tolerance, Target angle, Angle tolerance, Target value, Tolerance, and Snug point. The table contains four rows of data, with the third row (ID 15) highlighted in green. The left sidebar shows various settings and status information, including Wrench data, Fastener setting, Calibration information, Messages, Action, and Connection state.

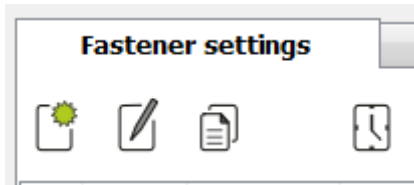
ID	Wrench type	Name	Method	Mode	Target torque	Torque tolerance	Target angle	Angle tolerance	Target value	Tolerance	Snug point
54	714i/1	SF1	Torque	Track	8.00	-1.00 N-m / +1.00 N-m	-	-/-	8.00 N-m	-1.00 N-m / +1.00 N-m	-
55	714i/1	SF2	Torque	Click	10.00	-1.20 N-m / +1.20 N-m	-	-/-	10.00 N-m	-1.20 N-m / +1.20 N-m	-
15	714/2	4XSNmC	Torque	Click	5.00	-30.00% / +30.00%	-	-/-	5.00 N-m	-30.00% / +30.00%	-
13	714/2	10NM	Torque	Track	10.00	-2.00 N-m / +2.00 N-m	-	-/-	10.00 N-m	-2.00 N-m / +2.00 N-m	-

Topic: SENSOMASTER 4 Basic 4.0.0


6.6.2 Controls, tightening programs workspace, fasteners tab

The controls are arranged horizontally above the data table.

A description of the data table itself is to be found in the next chapter.

Item	Representation	Description
Function keys		<p>At the top of the data table there are these four buttons on the left.</p> <p>From left to right:</p> <ul style="list-style-type: none"> - Create a new fastener - Edit fastener - Copy fastener - Display history of that fastener <p>For the last three functions, it is necessary that just one fastener is selected in the list.</p> <p>Alternatively, you can edit an entry by double-clicking it.</p>
Filter name	<p>Search:</p> <input type="text"/>	<p>If you enter the name, or part of the name, of a fastener, the list will be filtered to display only fasteners containing that string of characters.</p>
Option direct fasteners	<input checked="" type="checkbox"/> Hide direct settings	<p>Direct fasteners set up and used are also stored in the database.</p> <p>There is little point in editing these, which is why, by default, they are hidden.</p> <p>You can, however, make them visible by removing the tick.</p>

Topic: SENSOMASTER 4 Basic 4.0.0





Item	Representation	Description
Delete		<p>Use this button to delete selected fasteners from the database.</p> <p>In the main settings, you can configure the software so that you are asked to confirm deletions before they are actually carried out.</p>

Topic: SENSOMASTER 4 Basic 4.0.0

6.6.3 Fasteners data table

This table displays all fasteners stored in the database.

The appearance and content can be configured separately.

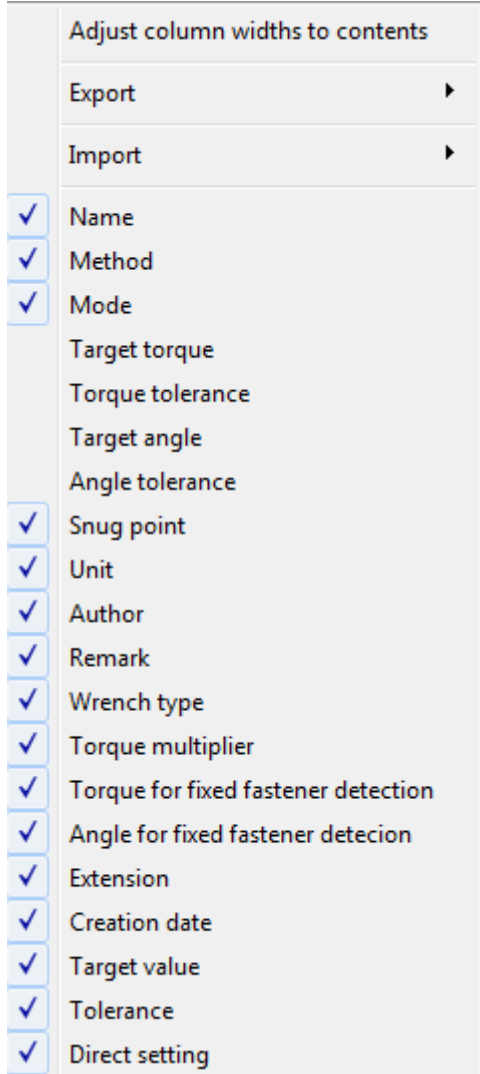
Fastener settings												
Sequences												
<div>     </div> <div> Search: <input type="text"/> <input checked="" type="checkbox"/> Hide direct settings </div>												
ID	Wrench type	Name	Method	Mode	Target value	Tolerance	Snug point	Unit	Author	Remark	Torque multiplier	Fixed fastener detection tool
54	714i/1	SF1	Torque	Track	8.00 N·m	-1.00 N·m / +1.00 N·m	-	N·m	SM	read from device	No	-
55	714i/1	SF2	Torque	Click	10.00 N·m	-1.20 N·m / +1.20 N·m	-	N·m	SM	read from device	No	-
15	714/2	4X5NmC	Torque	Click	5.00 N·m	-30.00% / +30.00%	-	N·m	SM	read from device	No	-
13	714/2	10NM	Torque	Track	10.00 N·m	-2.00 N·m / +2.00 N·m	-	N·m	SM	read from device	No	-

The previous representation required a lot of space and was less well-organised. The new target value representation shows the torque (or the angle of rotation, depending on the tightening method, including the unit) in the target value column.

If you would prefer to revert to the previous view, you can do so by changing the settings in the context menu configuration.

Topic: SENSOMASTER 4 Basic 4.0.0

This is the context menu for the fasteners table:

Item	Representation	Description
Context menu		<p>Select "Export" to see a submenu that enables you to export the currently selected items to a file in the format you select. If no items are highlighted, the complete table will be exported.</p> <p>Caution: hidden columns are not exported.</p> <p>Click Import to open a submenu which allows you to select the format and import data into the table from an existing file.</p> <p>The next list shows all the columns defined for the table and these can be individually activated or deactivated.</p>

Topic: SENSOMASTER 4 Basic 4.0.0

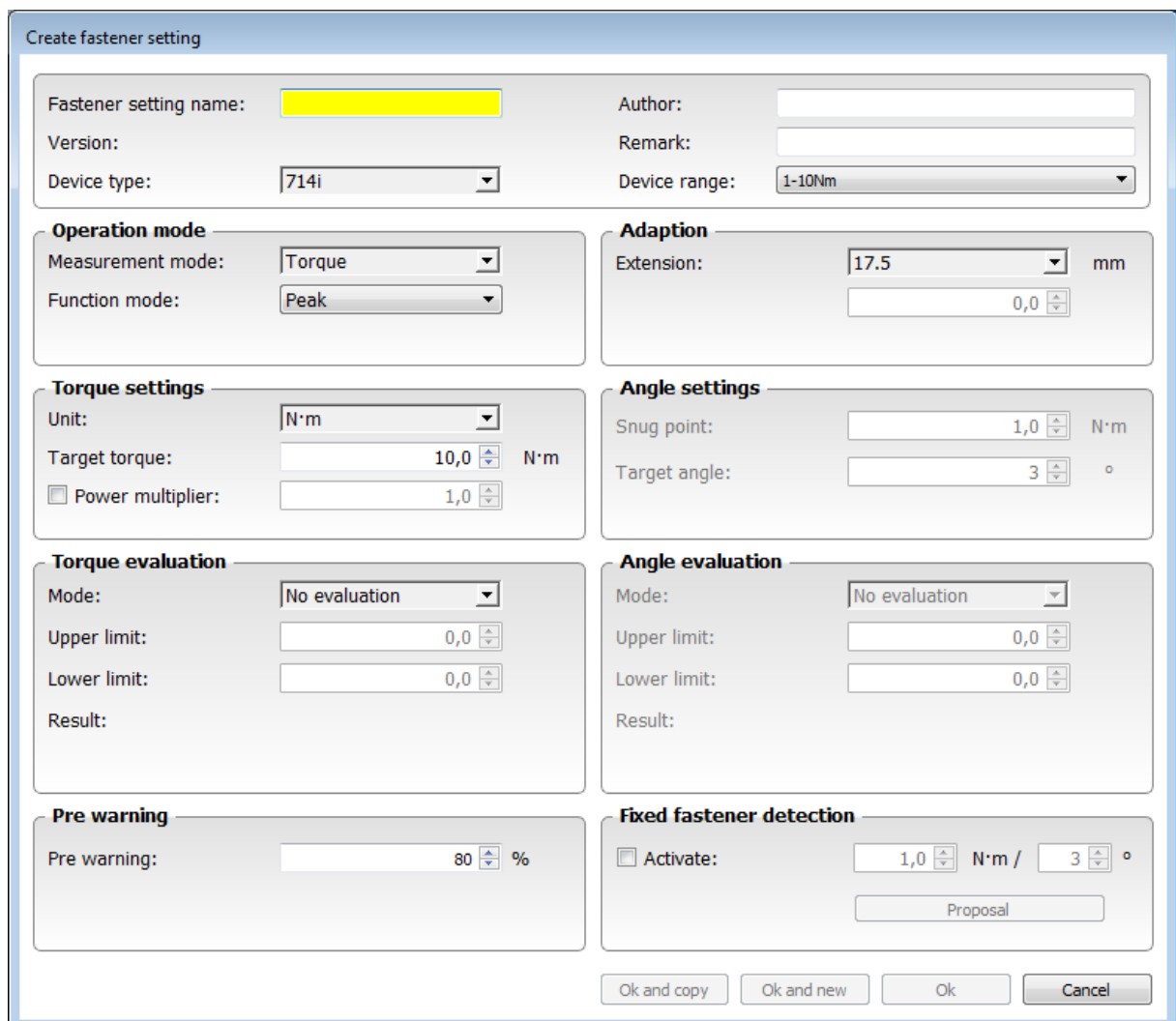
6.6.4 Fastener dialogue box (create, edit, copy)

There are three selection options here:

- New fastener => empty dialogue box
- Edit fastener => dialogue box filled with data from the fastener to be modified
- Copy fastener => dialogue box filled with data from the source fastener

The content of the dialogue depends on the torque wrench selected or connected.

In our example, you can see the dialogue for a new fastener using the 714i torque wrench connected.



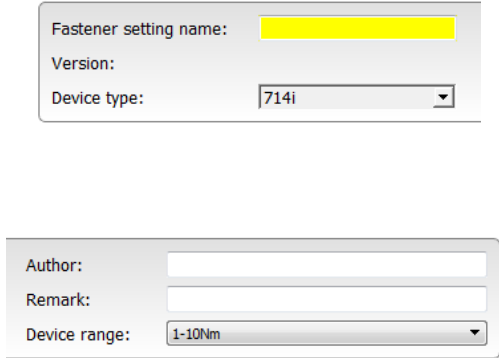
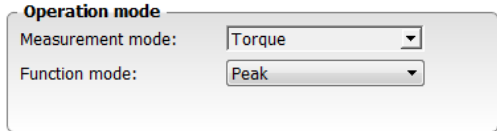
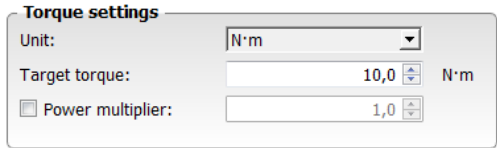
Since the torque wrench is connected, the system enters some of the tolerance limits and presets automatically.

Topic: SENSOMASTER 4 Basic 4.0.0

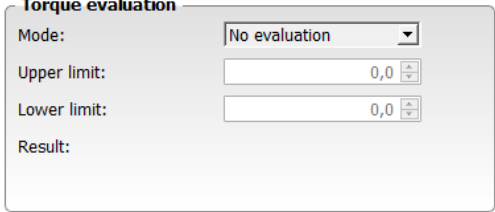

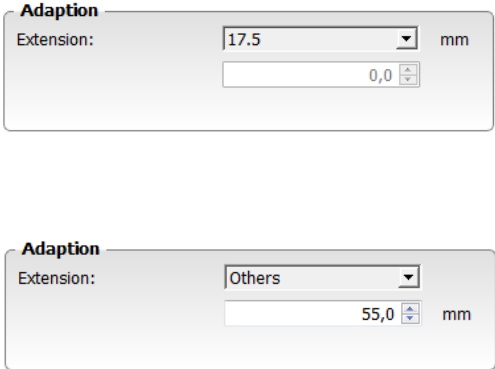
6.6.5 Controls, fasteners dialogue box

Caution: Observe table of functions in the Appendix.


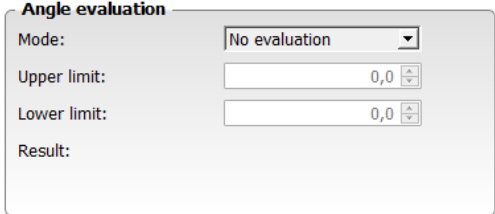

In our example, we have connected a 714i torque wrench to the PC.

Item	Representation	Description
Header		<p>The first step is always to decide on a unique name for the fastener setting. So each name can only exist once. The software will issue a warning if you try to use the same name for two fastener settings.</p> <p>In the tool type field, enter the torque wrench type and under wrench size, enter the correct size of the tool.</p> <p>The Author and Comments fields are optional. The data is stored together with the fastener. If you do not enter anything, the currently logged-in user will appear as the author.</p>
Operating mode		<p>Here, you select the operating mode of the torque wrench, such as torque, angle, or combined mode.</p> <p>In addition, you can configure the click behaviour and peak value display.</p> <p>If the peak value display is not enabled, the torque wrench will run in track mode.</p>
Torque		<p>If you have selected torque measurement, you can set the torquing parameters here: the unit of measure and target torque.</p>

Topic: SENSOMASTER 4 Basic 4.0.0

Item	Representation	Description
Torque evaluation		<p>Decide here how the torque wrench is to evaluate the torque, if at all.</p> <p>In the example shown here, we have set two absolute values for the tolerance limits.</p> <p>The results are displayed and refreshed depending on the figures you select.</p>
Advance warning threshold		<p>Enter the advance warning threshold here. When you reach the prewarning threshold, a yellow LED on the torque wrench will light up or the display colour will change to yellow.</p> <p>Caution: the advance warning threshold is always relative to the lower tolerance value.</p>
Socket tools		<p>If the torque wrench supports using different insert tools, you can define the extension value for the tool here.</p> <p>The upper selector box provides default values for STAHLWILLE tools. If you are using a special tool, you can enter the required extension in the input field below.</p> <p>Caution: incorrect settings will result in incorrect readings.</p>

Topic: SENSOMASTER 4 Basic 4.0.0

Item	Representation	Description
Angle		<p>If you have selected angle measurement, you can set the angle parameters here: snug point from which angle-controlled measurement is to start, and the target angle.</p> <p>The unit of measure is degrees and this cannot be changed.</p>
Angle evaluation		<p>Decide here how the torque wrench is to evaluate the angle, if at all.</p> <p>In the example shown here, we have set two absolute values for the tolerance limits.</p> <p>The results are displayed and refreshed depending on the figures you select.</p>
Buttons		<p>At the bottom edge of the screen, you will see four buttons:</p> <ul style="list-style-type: none"> - OK and copy - OK and new - OK - Cancel <p>The OK and Cancel buttons will close the window and either confirm (OK) or abort (Cancel) your entries, respectively.</p> <p>The OK and copy or OK and new buttons keep the dialogue box open so you can continue by creating a new fastener if you so wish.</p>

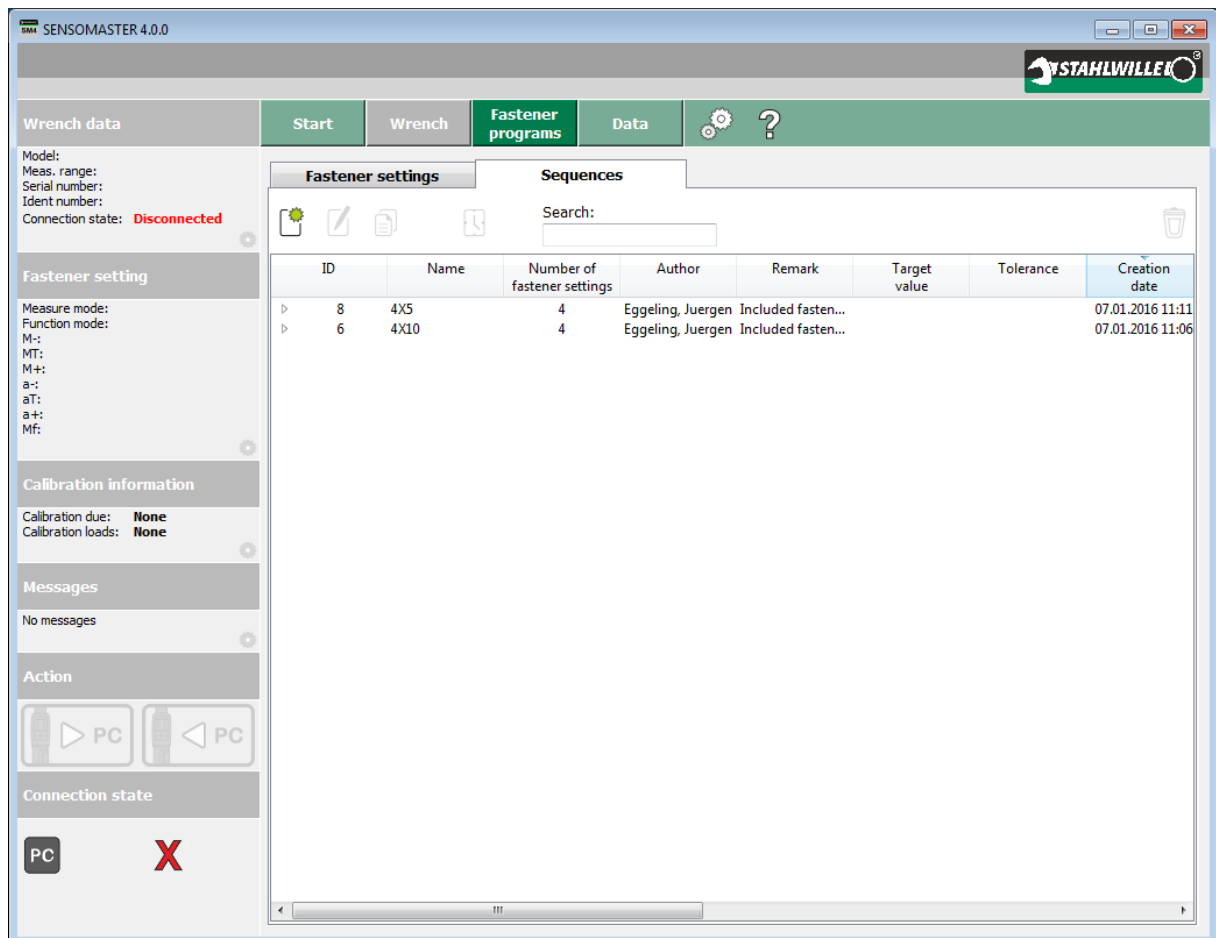
Topic: SENSOMASTER 4 Basic 4.0.0

6.6.6 Fastener programs tab

Use this tab to manage work sequences.

This section of the software can be used irrespective of whether a torque wrench is connected to the PC.

In this example, there is no torque wrench connected.

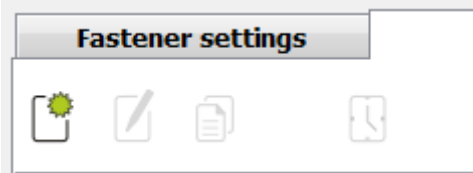
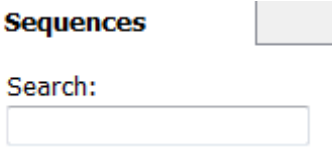



Topic: SENSOMASTER 4 Basic 4.0.0

6.6.7 Controls, fastener programs workspace, work sequence tab

The controls are arranged horizontally above the data table.

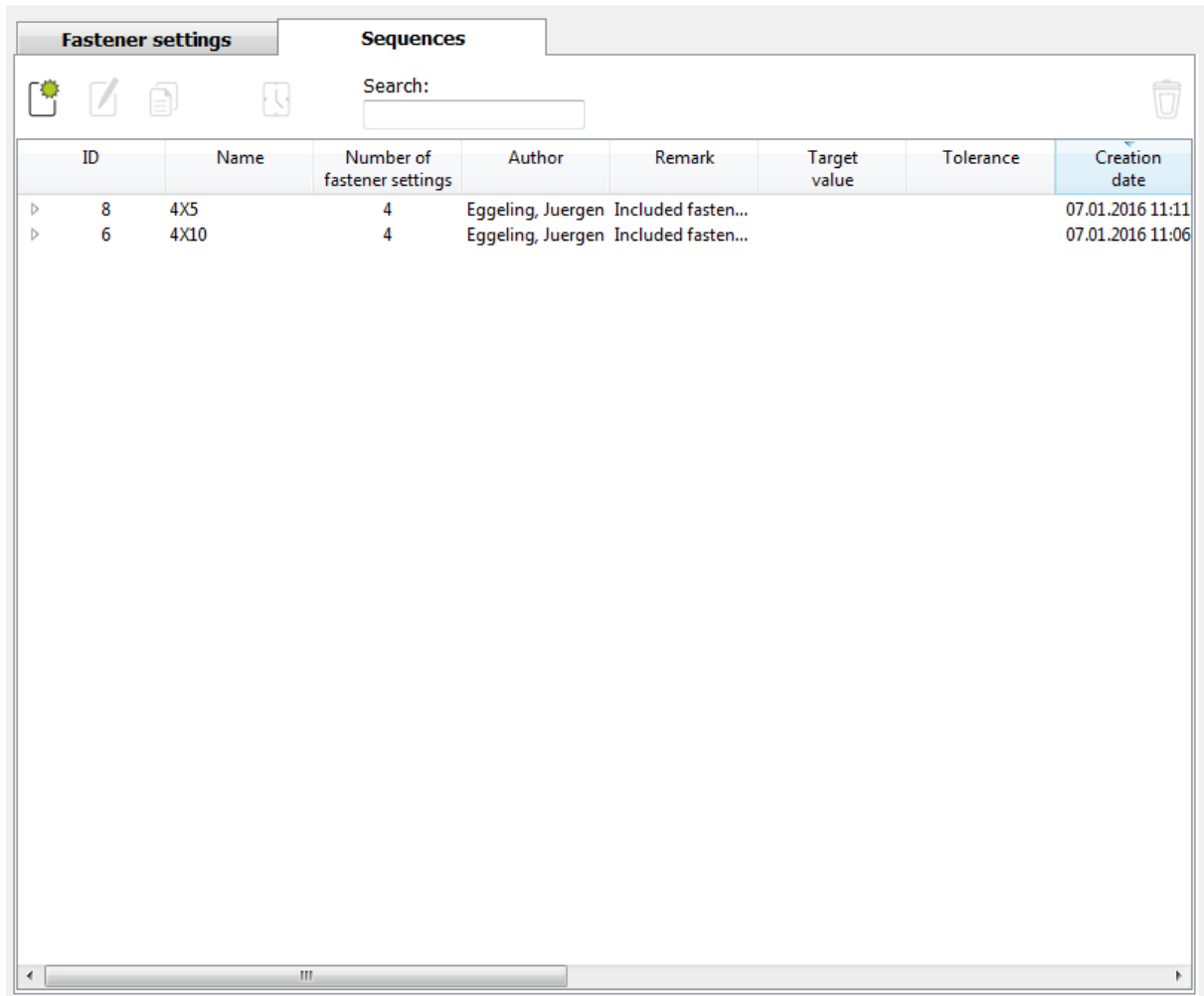
A description of the data table itself is to be found in the next chapter.

Item	Representation	Description
Function keys		<p>At the top of the data table there are these four buttons:</p> <p>From left to right:</p> <ul style="list-style-type: none"> - Create new work sequence - Edit existing work sequence - Copy work sequence - Display history of a work sequence <p>For the last three functions, it is necessary that just one work sequence is selected in the list.</p> <p>Alternatively, you can edit an entry by double-clicking it.</p>
Filter name		<p>If you enter the name, or part of the name, of a work sequence, the list will be filtered to display only work sequences containing that string of characters.</p>
Delete		<p>Clicking this button deletes the selected work sequences from the database.</p> <p>In the main settings, you can configure the software so that you are asked to confirm deletions before they are actually carried out.</p>

Topic: SENSOMASTER 4 Basic 4.0.0

6.6.8 The work sequences data table

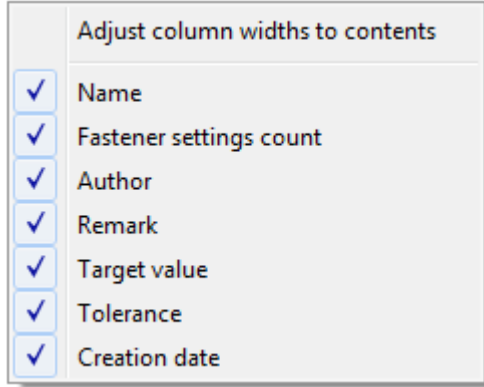
This table displays all the work sequences stored in the database.



ID	Name	Number of fastener settings	Author	Remark	Target value	Tolerance	Creation date
8	4X5	4	Eggeling, Juergen	Included fasten...			07.01.2016 11:11
6	4X10	4	Eggeling, Juergen	Included fasten...			07.01.2016 11:06

Topic: SENSOMASTER 4 Basic 4.0.0

This is the context menu for the work sequence:

Item	Representation	Description
Context menu		<p>Select "Export" to see a submenu that enables you to export the currently selected items to a file in the format you select. If no items are highlighted, the complete table will be exported.</p> <p>Caution: hidden columns are not exported.</p> <p>The next list shows all the columns defined for the table and these can be individually activated or deactivated.</p>

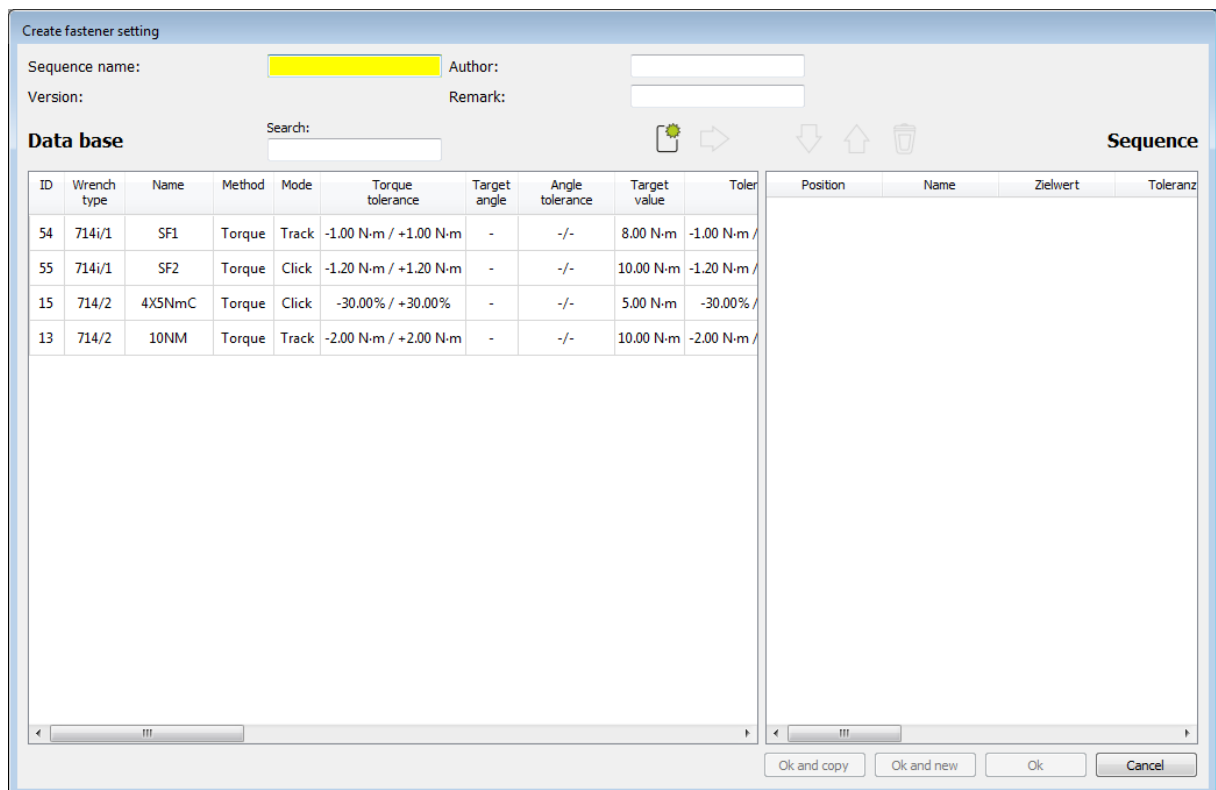
Topic: SENSOMASTER 4 Basic 4.0.0

6.6.9 Work sequence dialogue box (create, edit, copy)

There are three basic functions here:

- New work sequence => empty dialogue box
- Edit work sequence => dialogue box filled with data from the work sequence to be modified
- Copy work sequence => dialogue box filled with data from the source work sequence

Example of the dialogue box for a new work sequence:



ID	Wrench type	Name	Method	Mode	Torque tolerance	Target angle	Angle tolerance	Target value	Tolerance
54	714i/1	SF1	Torque	Track	-1.00 N-m / +1.00 N-m	-	-/-	8.00 N-m	-1.00 N-m /
55	714i/1	SF2	Torque	Click	-1.20 N-m / +1.20 N-m	-	-/-	10.00 N-m	-1.20 N-m /
15	714/2	4XSNmC	Torque	Click	-30.00% / +30.00%	-	-/-	5.00 N-m	-30.00% /
13	714/2	10NM	Torque	Track	-2.00 N-m / +2.00 N-m	-	-/-	10.00 N-m	-2.00 N-m /

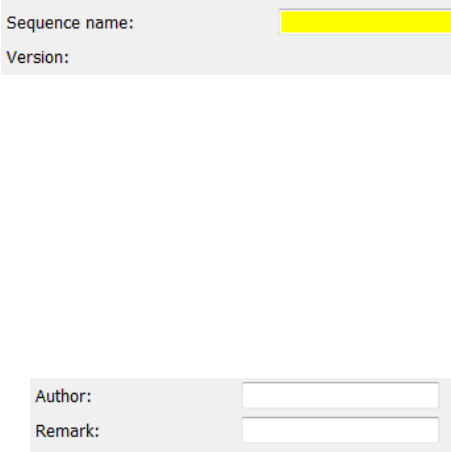
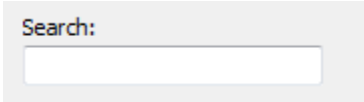




Position	Name	Zielwert	Toleranz
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On the left you can see all the fasteners currently stored in the database.
On the right, you will see all the fasteners assigned to the current work sequence.


In our example, no fasteners have yet been assigned to the work sequence.

Topic: SENSOMASTER 4 Basic 4.0.0

6.6.10 Controls for the work sequence dialogue box

Item	Representation	Description
Header		<p>The first step is always to decide on a unique name for the work sequence. So each name can only exist once. The software will issue a warning if you try to use the same name for two work sequences.</p> <p>The Author and Comments fields are optional. These details are stored with the work sequence. If you do not enter anything, the currently logged-in user will appear as the author.</p>
Search		<p>If you enter the name, or part of the name, of a fastener, the list will be filtered to display only fasteners containing that string of characters.</p>
New		<p>Click this button to create a new fastener from the work sequence dialogue.</p>
Copy fastener		<p>Click the right-facing arrow to copy the highlighted fasteners to the work sequence.</p>
Sequence		<p>Use the Up and Down arrows to move a selected fastener to a different position in the work sequence.</p>
Delete		<p>Click the waste bin symbol to delete the highlighted fastener from the work sequence.</p>

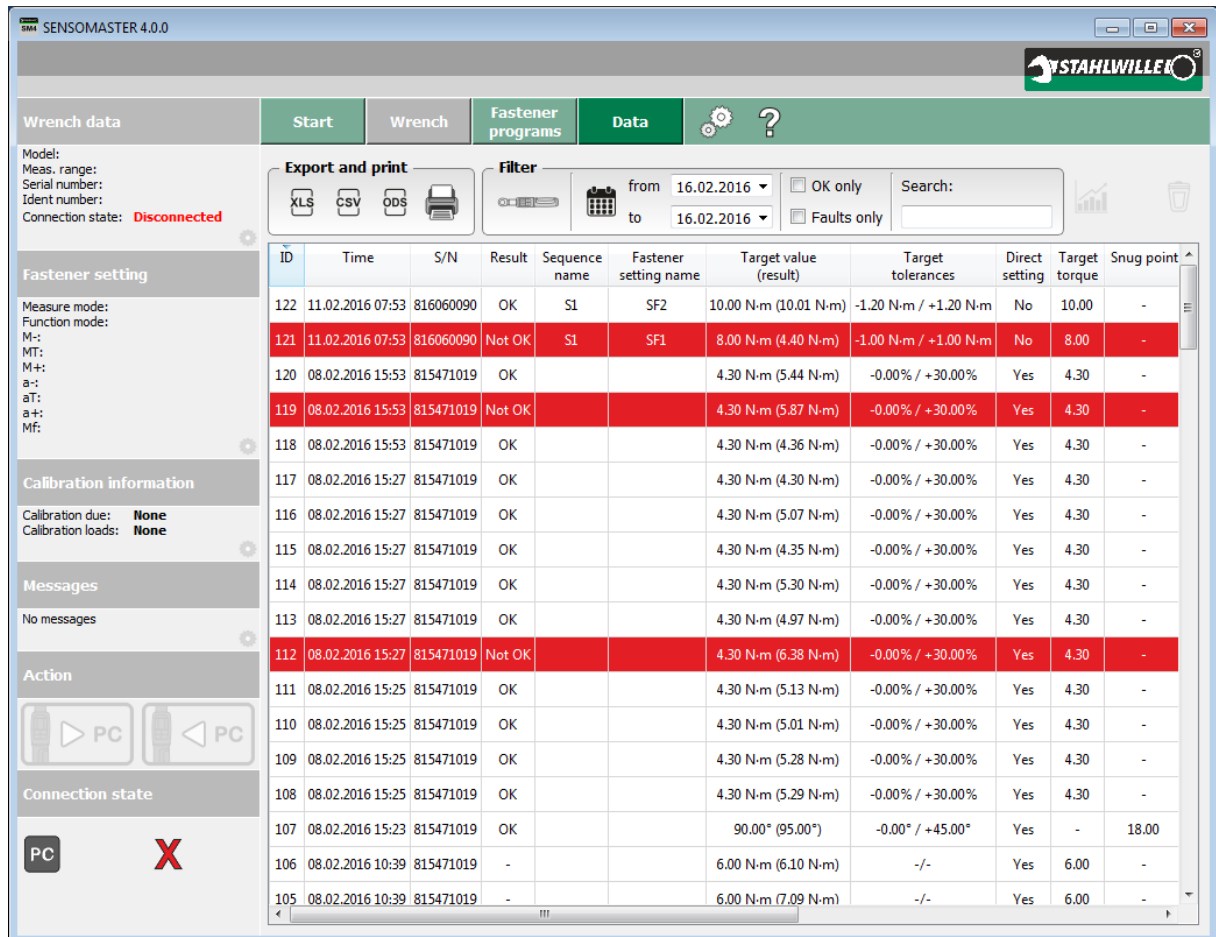
Topic: SENSOMASTER 4 Basic 4.0.0

Item	Representation	Description
Buttons		<p>At the bottom edge of the screen, you will see four buttons:</p> <ul style="list-style-type: none"> - OK and copy - OK and new - OK - Cancel <p>The OK and Cancel buttons will close the window and either confirm (OK) or abort (Cancel) your entries, respectively.</p> <p>The OK and copy or OK and new buttons keep the dialogue box open so you can continue by creating a new work sequence if you so wish.</p>

Topic: SENSOMASTER 4 Basic 4.0.0

6.7 Data workspace

This window displays the saved fastener data and allows it to be managed.




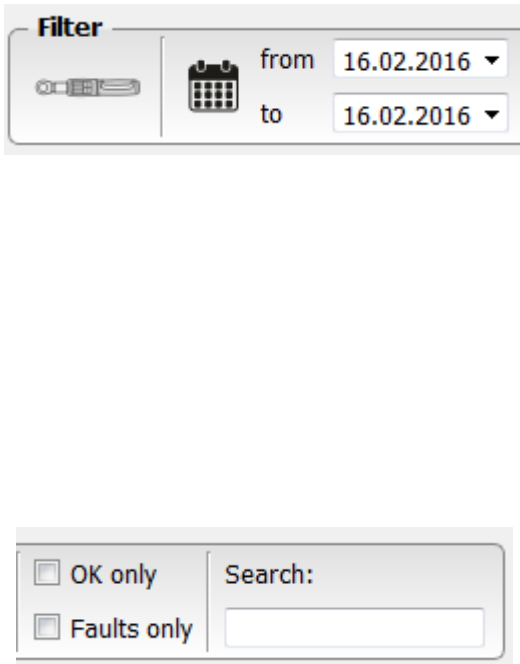

ID	Time	S/N	Result	Sequence name	Fastener setting name	Target value (result)	Target tolerances	Direct setting	Target torque	Snug point
122	11.02.2016 07:53	816060090	OK	S1	SF2	10.00 N-m (10.01 N-m)	-1.20 N-m / +1.20 N-m	No	10.00	-
121	11.02.2016 07:53	816060090	Not OK	S1	SF1	8.00 N-m (4.40 N-m)	-1.00 N-m / +1.00 N-m	No	8.00	-
120	08.02.2016 15:53	815471019	OK			4.30 N-m (5.44 N-m)	-0.00% / +30.00%	Yes	4.30	-
119	08.02.2016 15:53	815471019	Not OK			4.30 N-m (5.87 N-m)	-0.00% / +30.00%	Yes	4.30	-
118	08.02.2016 15:53	815471019	OK			4.30 N-m (4.36 N-m)	-0.00% / +30.00%	Yes	4.30	-
117	08.02.2016 15:27	815471019	OK			4.30 N-m (4.30 N-m)	-0.00% / +30.00%	Yes	4.30	-
116	08.02.2016 15:27	815471019	OK			4.30 N-m (5.07 N-m)	-0.00% / +30.00%	Yes	4.30	-
115	08.02.2016 15:27	815471019	OK			4.30 N-m (4.35 N-m)	-0.00% / +30.00%	Yes	4.30	-
114	08.02.2016 15:27	815471019	OK			4.30 N-m (5.30 N-m)	-0.00% / +30.00%	Yes	4.30	-
113	08.02.2016 15:27	815471019	OK			4.30 N-m (4.97 N-m)	-0.00% / +30.00%	Yes	4.30	-
112	08.02.2016 15:27	815471019	Not OK			4.30 N-m (6.38 N-m)	-0.00% / +30.00%	Yes	4.30	-
111	08.02.2016 15:25	815471019	OK			4.30 N-m (5.13 N-m)	-0.00% / +30.00%	Yes	4.30	-
110	08.02.2016 15:25	815471019	OK			4.30 N-m (5.01 N-m)	-0.00% / +30.00%	Yes	4.30	-
109	08.02.2016 15:25	815471019	OK			4.30 N-m (5.28 N-m)	-0.00% / +30.00%	Yes	4.30	-
108	08.02.2016 15:25	815471019	OK			4.30 N-m (5.29 N-m)	-0.00% / +30.00%	Yes	4.30	-
107	08.02.2016 15:23	815471019	OK			90.00° (95.00°)	-0.00° / +45.00°	Yes	-	18.00
106	08.02.2016 10:39	815471019	-			6.00 N-m (6.10 N-m)	-/-	Yes	6.00	-
105	08.02.2016 10:39	815471019	-			6.00 N-m (7.09 N-m)	-/-	Yes	6.00	-

Tightening operations that have been passed by the system as conforming are displayed as black on white. If an operation is non-conforming, it is highlighted in red.


The tightening operations table and many other tables can be configured to a large extent by the user.

Topic: SENSOMASTER 4 Basic 4.0.0

6.7.1 Controls for data workspace

Item	Representation	Description
Export / print		<p>Data from the data table is exported or printed more frequently than from other tables. For this reason, the export and print routines are not only available from the context menu, there are also dedicated buttons for these common tasks.</p> <p>The results are the same whether you use the context menu or the Export & Print buttons.</p>
Filters		<p>When a torque wrench is connected, by default only the data from that wrench will be displayed. This filter can be activated or deactivated by clicking the wrench symbol on or off. If no torque wrench is connected, the filter is not available and is greyed out.</p> <p>With the date setting you can filter data to display only a specified date range. Clicking the calendar icon activates or deactivates the filter.</p> <p>Use the tick boxes to display which fasteners are displayed: conforming, non-conforming or both categories together.</p> <p>You can enter a name in the blank field to define the filter and enable name searches.</p>
Statistics		<p>Click the statistics symbol to initiate the statistics dialogue using the selected fastener.</p>

Topic: SENSOMASTER 4 Basic 4.0.0

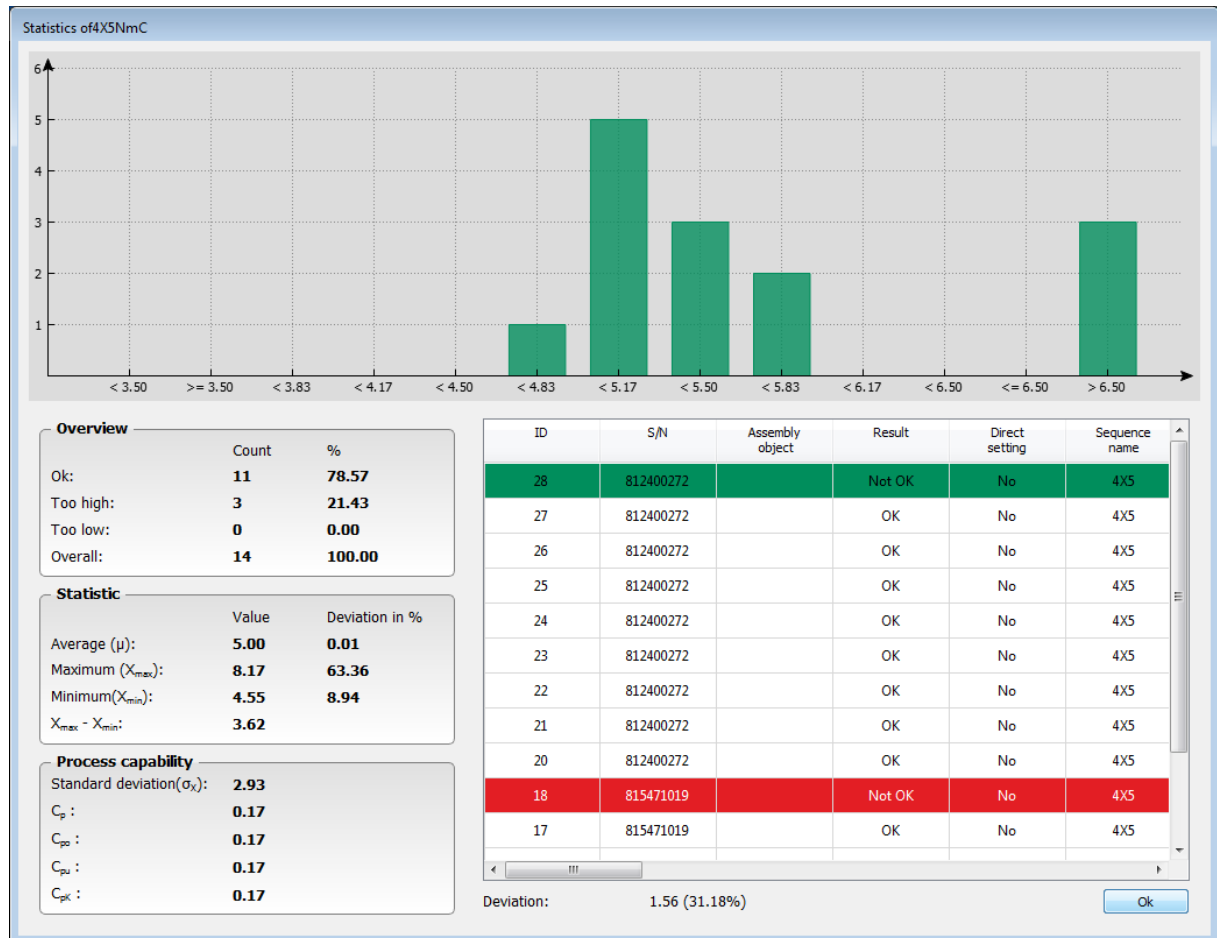
Item	Representation	Description
Delete		<p>Use the delete symbol to delete selected data records.</p> <p>In the main settings, you can configure the software so that you are asked to confirm deletions before they are actually carried out.</p>

Topic: SENSOMASTER 4 Basic 4.0.0

6.7.2 Statistics dialogue

When you select the data record for a fastener, the statistics button is enabled. If you now click that button, all the data assigned to that fastener is read and the statistics calculated. If a filter has been defined, it will be applied.

Example of statistics:



The graph breaks the X-axis down into twelve torque sections. The first block relates to all fasteners below the lower tolerance limit; the last block is for all fasteners over the upper tolerance limit. The remaining ten blocks subdivide the values from M- to M+. The height of the bars corresponds to the number of fasteners with values in that particular range.

At the bottom left you will find the calculation of the general statistical data and, in the bottom right-hand pane, all the selected fastener data in a table.

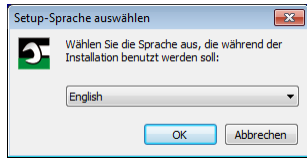
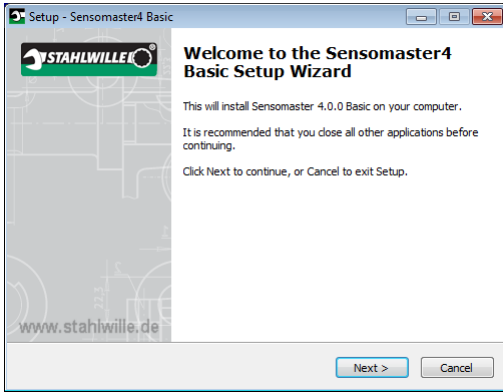
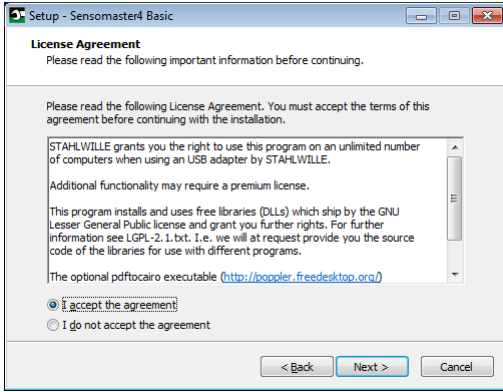
Click OK to close the dialogue box.

Topic: SENSOMASTER 4 Basic 4.0.0

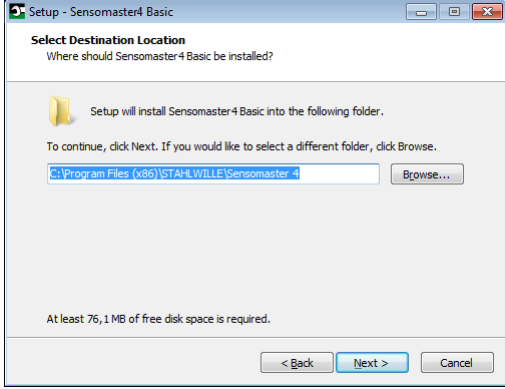
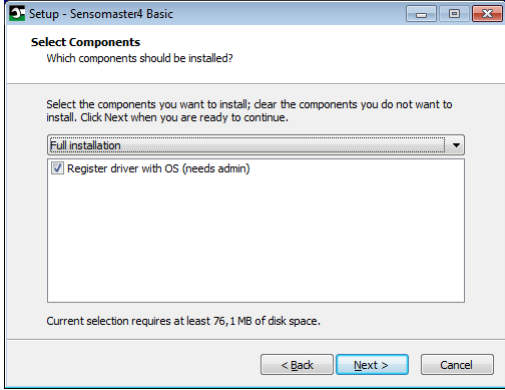
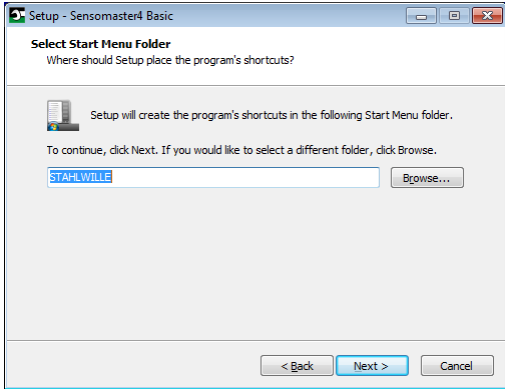
7 Installation

SENSOMASTER 4 Basic is provided in a choice of formats: on CD-ROM, a USB stick or as a web download. Run the installation program and follow the on-screen instructions. You will need administrator rights to install SENSOMASTER 4 Basic.

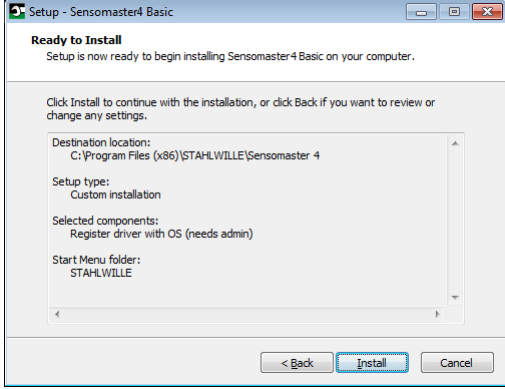
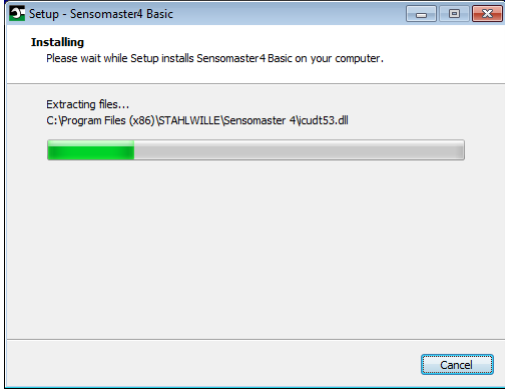
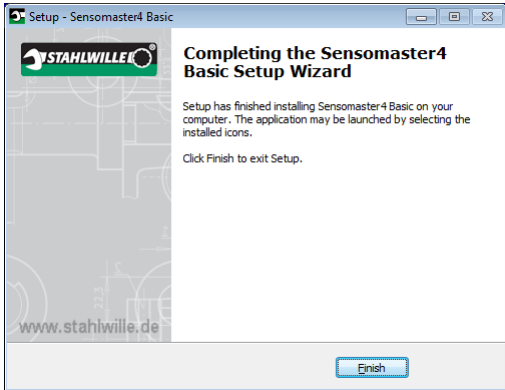
Below, we explain a typical installation.

Step	Dialogue box	Description
1		<p>After starting the set-up, select your preferred language for the installation program.</p> <p>This is not the same as the language of the program user interface.</p>
2		<p>You will see the welcome screen for the installation program.</p> <p>Click Continue.</p>
3		<p>To install the software you will to accept the licence conditions.</p> <p>Activate the appropriate tick box.</p> <p>Click Continue.</p>

Topic: SENSOMASTER 4 Basic 4.0.0

Step	Dialogue box	Description
4		<p>Select the installation location for the software. Ideally, it is best to accept the default.</p>
5		<p>Confirm that you wish to install the drivers.</p> <p>The drivers are required to communicate with the hardware.</p> <p>You need administrator rights to install drivers.</p> <p>Click Continue.</p>
6		<p>Confirm the creation of a program group.</p> <p>After installation has completed, you can launch the software from the program group.</p> <p>Click Continue.</p>

Topic: SENSOMASTER 4 Basic 4.0.0

Step	Dialogue box	Description
7		<p>Finally, you can see the summary.</p> <p>The installation will start as soon as you click Install.</p>
8		<p>While the setup wizard is installing the files, a green bar shows the progress of the installation.</p> <p>When all the files have been copied, the dialogue box will automatically close.</p> <p>Pressing Cancel will abort the installation. In this case, the software will not have installed correctly and will not work.</p>
9		<p>Installation has been completed successfully.</p> <p>Click Finish to close the final installation dialogue box.</p> <p>You can now launch the software from the Windows start menu.</p>

Topic: SENSOMASTER 4 Basic 4.0.0

8 Appendix

8.1 Functional comparison of supported STAHLWILLE torque wrenches

Characteristics of the torque wrench	712	713	730D	714	714i	701
Torque measurement	✓	✓	✓	✓	✓	✓
Angle-controlled measurement	X	✓	✓ ¹	✓	✓	X
Click mode	X	X	✓	✓	✓	X
Track display	✓	X	✓	✓	✓	✓
Peak display	✓	✓	✓	✓	✓	✓
Autom. shutdown	✓	✓	✓	✓	✓	✓
Sleep mode	X	X	X	X	X	✓
Load fasteners	✓	✓	✓ ³	✓	✓	✓ ²
Load work sequences	✓	✓	X	✓	✓	X
AutoSave on click	X	X	✓	✓	✓	X
Save messages	X	X	X	✓	✓	✓
Save ident number	✓	✓	✓ ⁴	✓	✓	✓

¹ Angle-controlled measurement is only possible using an external angle module.

² There is only one user fastener that can be loaded into the 701.

³ The 730D does not recognise any fasteners.
SENSOMASTER 4 does, however, permit fasteners to be uploaded in the direct mode.

⁴ The ident number for this torque wrench is a four-digit number.

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9 Notes

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Notes