HEIDENHAIN

QUADRA-CHEK 2000 Demo

User's Manual

Evaluation Unit

Contents

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Fundamentals

1.1 Overview

This chapter contains information about the product and these instructions.

1.2 Information on the product

1.2.1 Demo software for demonstration of the device functions

QUADRA-CHEK 2000 Demo is a software application you can install on a computer independently of the device. QUADRA-CHEK 2000 Demo helps you to become familiar with, try out or present the functions of the device.

1.2.2 Demo software features

Because of the missing hardware environment the range of features of the demo software does not correspond to the complete functional range of the device.

With QUADRA-CHEK 2000 Demo you can try out or present the following features:

- "Conducting a measurement"
- "Displaying and editing the measurement results"
- "Creating a measurement report"

The following features cannot be tried out or presented with QUADRA-CHEK 2000 Demo:

- Connecting measuring devices
- Measuring with an OED sensor
- Connecting a network drive
- Connecting a USB mass storage device
- Connecting a printer

1.3 Intended use

The products of the QUADRA-CHEK 2000 series are advanced digital evaluation electronics for the measurement of 2-D features in metrology applications. The products are used primarily on measuring machines as well as profile projectors.

QUADRA-CHEK 2000 Demo is a software product for demonstration of the basic features of the QUADRA-CHEK 2000 series products. QUADRA-CHEK 2000 Demo may be used only for presentation, training or testing purposes.

1.4 Improper use

QUADRA-CHEK 2000 Demo is not intended for any use other than the intended use. Any use for other purposes is prohibited, specifically:

- For productive purposes in production systems
- As part of production systems

1.5 Notes on reading the documentation

Have you found any errors or would you like to suggest changes?

We are continuously striving to improve our documentation for you. Please help us by sending your suggestions to the following e-mail address:

userdoc@heidenhain.de

1.6 Symbols and fonts used for marking text

In these instructions the following symbols and fonts are used for marking text:

Depiction	Meaning
▶ ... > ...	Identifies an action and the result of this action Example: ▶ Tap **OK** > The message is closed
■ ... ■ ...	Identifies an item of a list Example: ■ TTL interface ■ EnDat interface ■ ...
Bold	Identifies menus, displays and buttons Example: ▶ Tap **Shut down** > The operating system shuts down ▶ Turn the power switch off

2

Software installation

2.1   Overview

This chapter provides all of the information needed for downloading and properly installing QUADRA-CHEK 2000 Demo on a computer.

2.2   Downloading the installation file

Before you can install the demo software on a computer, you need to download an installation file from the HEIDENHAIN Portal.

> **i**   To download the installation file from the HEIDENHAIN Portal, you need access rights to the **Software** portal folder in the directory of the appropriate product.
>
> If you do not have access rights to the Portal's **Software** folder, you can request the access rights from your HEIDENHAIN contact person.

▶ Download the latest version of QUADRA-CHEK 2000 Demo here: **www.heidenhain.de**
▶ Select the download folder of your browser
▶ Unpack the downloaded file with the extension **.zip** into a temporary storage folder
> The following files will be unpacked into the temporary storage folder:
  ◾ Installation file with the extension **.exe**
  ◾ File **DemoBackup.mcc**

2.3   System requirements

If you want to install QUADRA-CHEK 2000 Demo on a computer, the computer system must meet the following requirements:
◾ Microsoft Windows 7 or higher
◾ Screen resolution of at least 1280 × 800 recommended

2.4   Installing QUADRA-CHEK 2000 Demo under Microsoft Windows

▶ Select the temporary storage folder into which you unpacked the downloaded file with the **.zip** extension
Further information: "Downloading the installation file", Page 12

▶ Run the installation file with the extension **.exe**

> The installation wizard is opened:
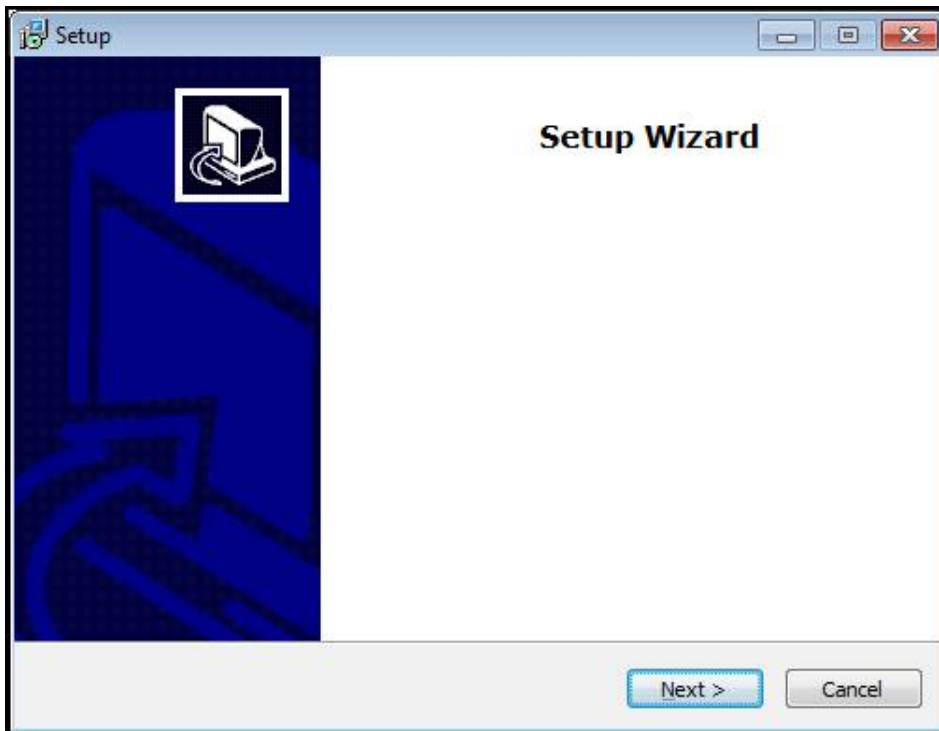
Figure 1: **Installation wizard**

▶ Click **Next**

▶ In the **License Agreement** installation step, accept the terms of the license

▶ Click **Next**

> ℹ️ In the **Select Destination Location** installation step, the installation wizard suggests a storage location. We recommend retaining the suggested storage location.

▶ In the **Select Destination Location** installation step, select the storage location to which you want to save QUADRA-CHEK 2000 Demo

▶ Click **Next**

> ℹ️ In the **Select Components** installation step, the ScreenshotClient program is also installed by default. ScreenshotClient enables you to take screenshots of the active screen.
>
> If you want to install ScreenshotClient
>
>   ▶ In the **Select Components** installation step, leave the default settings unchanged
>
> **Further information:** "ScreenshotClient", Page 83

▶ In the **Select Components** installation step:

t

- Select the type of installation
- Activate or deactivate the option **Screenshot Utility**
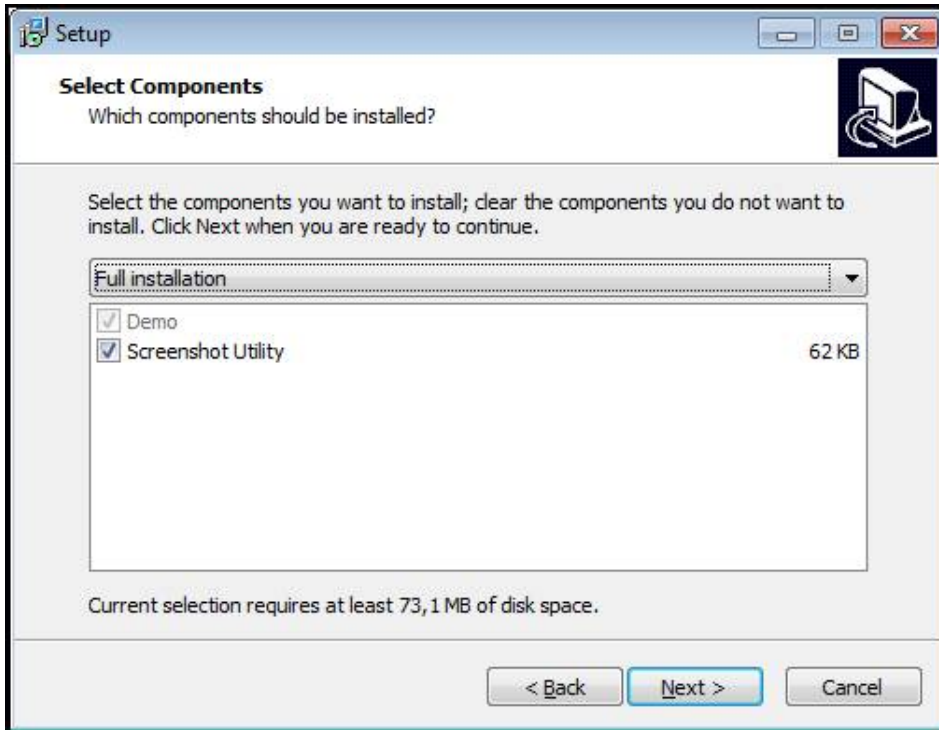
Figure 2: Installation wizard with activated options **Demo software** and **Screenshot Utility**

▶ Click **Next**

▶ In the **Select Start Menu Folder** installation step, select the storage location at which you want to create the start menu folder

▶ Click **Next**

▶ In the **Select Additional Tasks** installation step, select or deselect **Desktop icon**

▶ Click **Next**

▶ Click **Install**

> Installation starts—the status of installation is shown in the progress bar

▶ After installation has been completed successfully, use **Finish** to close the installation wizard

> The program has been successfully installed on your computer

2.5 Uninstalling QUADRA-CHEK 2000 Demo

▶ Select the following in succession in Microsoft Windows:
- ■ **Start**
- ■ **All programs**
- ■ **HEIDENHAIN**
- ■ **QUADRA-CHEK 2000 Demo**

▶ Click **Uninstall**

> The uninstallation wizard opens

▶ To confirm uninstalling, click **Yes**

> Unistallation starts, and the progress bar indicates the status of the unistallation process

▶ After uninstallation has been completed successfully, close the uninstallation wizard with **OK**

> The program has been successfully removed from your computer

3

Basic operation

3.1 Overview

This chapter describes the user interface, operating elements, and basic functions of QUADRA-CHEK 2000 Demo.

3.2 Using the touchscreen and input devices

3.2.1 Touchscreen and input devices

The operating elements on the user interface from QUADRA-CHEK 2000 Demo are operated via a touchscreen or a connected mouse.

To enter data, you can use the screen keyboard of the touchscreen or a connected keyboard.

3.2.2 Gestures and mouse actions

To activate, switch or move the operating elements of the user interface, you can use QUADRA-CHEK 2000 Demo's touchscreen or a mouse. Gestures are used to operate the touchscreen and the mouse.

> **i** The gestures for operating the touchscreen may differ from the gestures for operating the mouse.
>
> If the gestures for operating the touchscreen differ from those for operating the mouse, then these instructions describe both operating options as alternative actions.
>
> The alternative actions for operating the touchscreen or the mouse are identified by the following symbols:
>
> Operation using the touchscreen
>
> Operation using the mouse

The following overview describes the different gestures for operating the touchscreen or the mouse:

Tapping

Means touching the screen briefly with your fingertip

Means pressing the left mouse button once

The actions initiated by tapping include

- Selection of menus, features or parameters
- Entering characters with the screen keyboard
- Closing dialogs
- Displaying and hiding the main menu in the **Measure** menu
- Displaying and hiding the Inspector in the **Measure** menu

Holding (long press)

| | Means touching the screen and holding your finger(s) on it for a few seconds |
| | Means pressing the left mouse button once and holding it down |

The actions initiated by holding are

- Quickly changing the values in input fields with plus and minus buttons

Dragging

| | Is a combination of long press and then swipe, moving a finger over the touchscreen when at least the starting point of motion is defined |
| | Means pressing the left mouse button once and holding it down while moving the mouse; at least the starting point of the motion is defined |

The actions initiated by dragging include

- Scrolling through lists and texts
- Opening the **Details** dialog in the Inspector

Two-finger drag

| | Refers to the movement of two fingers across the touchscreen when at least the starting point of the movement is clearly defined |
| | Refers to pressing the right mouse button once and holding it down while moving the mouse; at least the starting point of the movement is defined |

Two-finger dragging initiates the following action

- In the **Measure** menu, moving the features view within the workspace

3.3   General operating elements and functions

The operating elements described below are available for configuration and operating the product via the touchscreen or input devices.

Screen keyboard

With the screen keyboard, you can enter text into the input fields of the user interface. The displayed screen keyboard is either numeric or alphanumeric, depending on the input field.

▶ To enter values, tap an input field
> The input field is highlighted
> The screen keyboard is displayed
▶ Enter text or numbers
> In some input fields, a green check mark indicates that the entry is correct
> If the entry is incomplete or incorrect, a red exclamation mark is displayed. The entry cannot be concluded in this case
▶ To apply the values, confirm the entry with **RET**
> The values are displayed
> The screen keyboard disappears

Input fields with plus and minus buttons

To adjust a numerical value, use the **+** (plus) and **-** (minus) buttons to the left and right of the numerical value.

− 500 +	▶ Tap **+** or **-** until the desired value is displayed
	▶ Long-press **+** or **-** to scroll through the values more quickly
	> The selected value is displayed

Toggle switch

Use the toggle switch to switch between functions.

mm / inch	▶ Tap the desired function
	> The active function is shown in green
	> The inactive function is shown in light gray

Slide switch

With the sliding switch, you can activate or deactivate a function.

ON	▶ Drag the slider to the desired position
	or
	▶ Tap the slider
	> The function is activated or deactivated

Slider

Use the slider (horizontal or vertical) to continuously adjust values.

| | ▶ Drag the slider to the desired position |
| | > The selected value is displayed graphically or in percent |

Drop-down list

Buttons that open drop-down lists are indicated by a triangle pointing down.

1 Vpp ▼	▶ Tap the button
1 Vpp	> The drop-down list opens
11 µApp	> The active entry is highlighted in green
	▶ Tap the desired entry
	> The selected entry is applied

Undo

With this button, you can undo the last action.

Processes that have already been concluded cannot be undone.

↶	▶ Tap **Undo**
	> The last action is undone

Add
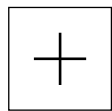
+	▶ To add a feature, tap **Add**
	> The new feature is added

Close
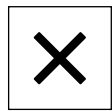
✕	▶ Tap **Close** to close a dialog

Confirm
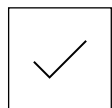
✓	▶ Tap **Confirm** to conclude an activity

Back
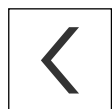
‹	▶ Tap **Back** to return to the higher level in the menu structure

3.4   QUADRA-CHEK 2000 Demo – startup and shut-down

3.4.1   Starting QUADRA-CHEK 2000 Demo

> **i** Before using QUADRA-CHEK 2000 Demo, you need to perform the steps for configuring the software.

QC
- ▶ Tap **QUADRA-CHEK 2000 Demo** on the Microsoft Windows desktop

or

- ▶ Select the following in succession in Microsoft Windows:
  - ▪ **Start**
  - ▪ **All programs**
  - ▪ **HEIDENHAIN**
  - ▪ **QUADRA-CHEK 2000 Demo**

> **i** Two executable files with different modes of appearance are available:
> - ▪ **QUADRA-CHEK 2000 Demo**: starts within a Microsoft Windows window
> - ▪ **QUADRA-CHEK 2000 Demo (full screen)**: starts in full-screen mode

QC
- ▶ Tap **QUADRA-CHEK 2000 Demo** or **QUADRA-CHEK 2000 Demo (full screen)**
- > QUADRA-CHEK 2000 Demo starts an output window in the background. The output window is not relevant for operation and is closed again when QUADRA-CHEK 2000 Demo is shut down
- > QUADRA-CHEK 2000 Demo starts the user interface with the **User login** menu

Figure 3: **User login** menu

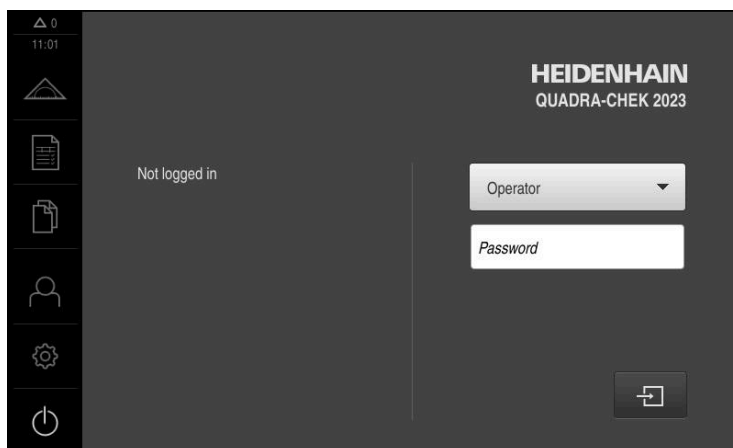### 3.4.2 Shutting down QUADRA-CHEK 2000 Demo

▶ Tap **Switch off** in the main menu

▶ Tap **Shut down**
> QUADRA-CHEK 2000 Demo is shut down

> ℹ️ To shut down QUADRA-CHEK 2000 Demo in the Microsoft Windows window, also use the **Switch-off** menu.
>
> If you use **Close** to close the Microsoft Windows window, all settings will be lost.

3.5 User login and logout

In the **User login** menu, you can log in and out of the product as a user.

Only one user can be logged in to the product at a time. The logged-in user is displayed. Before a new user can log in, the logged-in user has to log out.

> ℹ️ The product provides various authorization levels that grant the user full or restricted access to management and operation functionality.

3.5.1 User login

▶ Tap **User login** in the main menu
▶ In the drop-down list, select the **OEM** user
▶ Tap the **Password** input field
▶ Enter the "**oem**" password of the **OEM** user
▶ Confirm entry with **RET**
▶ Tap **Log in**
> The user is logged in and the **Measure** menu is displayed

The user login icon in the main menu shows whether the logged-in user has extended authorizations.

Icon	Authorization level
	Standard authorizations (user type **operator**)
	Extended authorizations (all other user types)

3.5.2   User logout

▶ Tap **User login** in the main menu

▶ Tap **Log out**
> The user is logged out
> All functions of the main menu are inactive, except for **Switch off**
> The product can only be used again after a user has logged in

3.6   Setting the language

The user interface language is English. You can change to another language, if desired.

▶ Tap **Settings** in the main menu

▶ Tap **User**
> The logged-in user is indicated by a check mark
▶ Select the logged-in user
> The language selected for the user is indicated by a national flag in the **Language** drop-down list
▶ Select the flag for the desired language from the **Language** drop-down list
> The user interface is displayed in the selected language

3.7   User interface

3.7.1   User interface after Startup

User interface after startup

If automatic user login is active and the last user who logged in was of the **Operator** type, the **Measure** menu with the workspace and the Inspector is displayed after the product has started up.

If automatic user login is not active, the product opens the **User login** menu.

Further information: "User login menu", Page 31

3.7.2 Main menu of the user interface

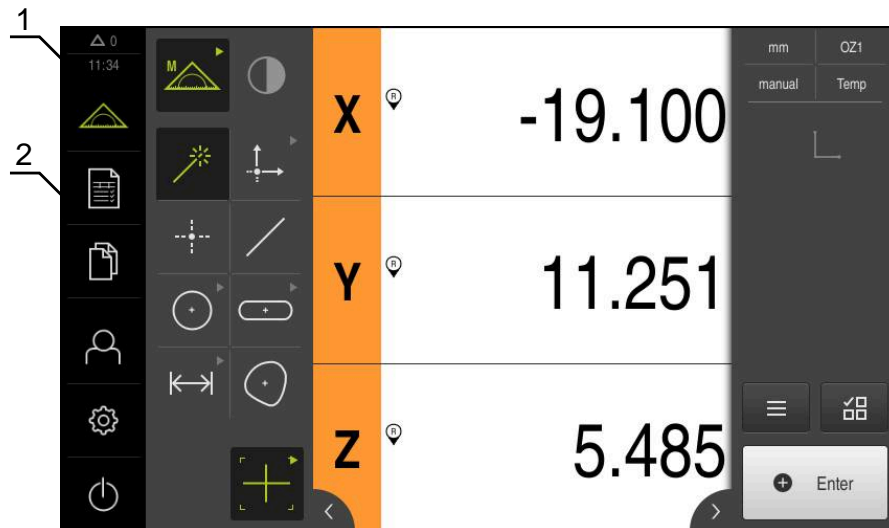**User interface with QUADRA-CHEK 2000 OED software option**

1
2

Figure 4: User interface with QUADRA-CHEK 2000 OED software option

1 Message display area, which displays the time and the number of unclosed messages
2 Main menu with operating elements

Main menu controls

The main menu is displayed regardless of the activated software options.

Control	Function
△3	**Message**
	Display of an overview of all messages as well as the number of messages that have not been closed
△	**Measure**
	Manual measurement, construction, or definition of features by using measuring programs and predefined geometries
	Further information: "Measure menu", Page 26
☰	**Measurement report**
	Creation of measurement reports based on templates
	Further information: "Measurement report menu", Page 29
⬚	**File management**
	Management of the files that are available on the product
	Further information: "File management menu", Page 30
👤	**User login**
	Login and logout of the user
	Further information: "User login menu", Page 31

Control	Function
⚙	**Settings** Settings of the product, such as setting up users, configuring sensors or updating the firmware **Further information:** "Settings menu ", Page 32
⏻	**Switch-off** Shutdown of the operating system or activation of power-saving mode **Further information:** "Switch-off menu", Page 33

3.7.3 Measure menu

Activation

▲

▶ Tap **Measure** in the main menu
> The user interface for measuring, constructing, and defining is displayed

Measure menu with QUADRA-CHEK 2000 OED software option
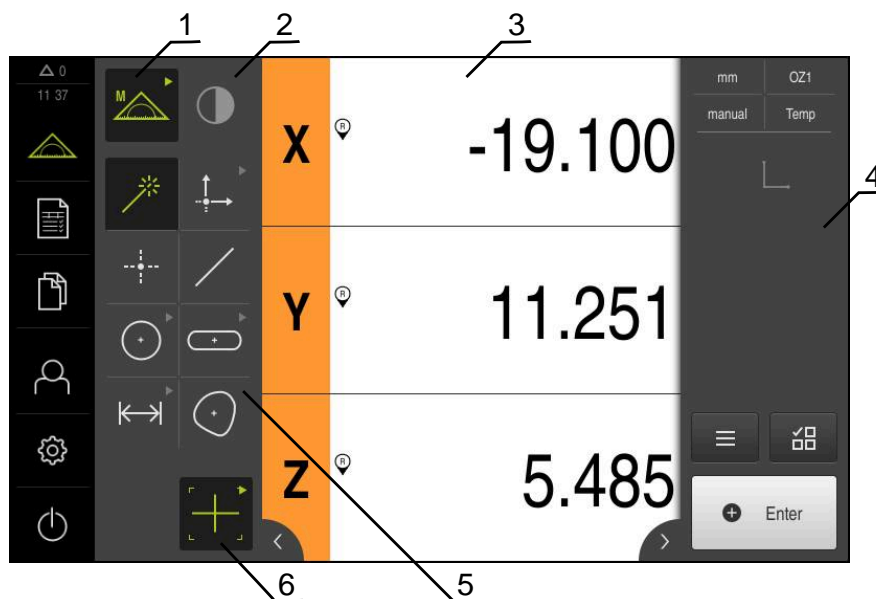
Figure 5: **Measure** menu with QUADRA-CHEK 2000 OED software option

1 The function palette provides functions for manual measuring and defining. The selected function is displayed as an active operating element.
2 The sensor palette contains the optional sensors (e.g., OED). It is only visible if the software option is active.
3 The workspace displays, for example, the position display or the input area for constructing and defining features.
4 The Inspector contains the quick access menu, the position preview, the features preview, and the feature list or the program step list. The feature list contains the features that have been measured, constructed, or defined.
5 The geometry palette provides all of the geometries for manual measuring, constructing, and defining. The geometries are partially combined into geometry groups. The selected geometry is displayed as an active feature. The geometries available on the geometry palette depend on the selected function.
6 The tool palette provides the measuring tools required for conducting the selected measurement.

Function palette

In the function palette, you can select the function to be used for creating a new feature.

Selecting the function

▶ Tap the control showing the current function, e.g. **Manual measuring**

> The function palette displays the available functions

▶ Select the desired function

Controls of the function palette

Manual measuring	Defining
Measure	Define

Further information: "Manual measuring function", Page 33
Further information: "The Define function", Page 37

Sensor palette (software option)

The sensor palette allows you to select the sensor to be used for measuring point acquisition. If only one sensor is available, it will be selected automatically.

Prerequisites

- The sensor is connected to the product
- The corresponding software option has been enabled

Controls of the sensor palette

Optical edge detection (OED)

Further information: "Controls for measuring with an OED sensor", Page 34

Geometry palette

The geometry palette allows you to select the geometry to be measured, constructed, or defined. As an alternative, you can use the automatic geometry detection function called **Measure Magic**. The geometries available on the geometry palette depend on the selected function and the activated sensor.

Selecting geometry

Some geometries are grouped. Grouped controls are identified by an arrow.

▶ If a control is grouped, tap the control that shows an arrow

> All controls of the group are available for selection

▶ Select the desired geometry

Controls of the geometry palette

Measure Magic

Zero point   **Alignment**   **Reference plane**

Prerequisite for **Reference plane**: The Z axis must have been configured

Point

Line

Circle   **Arc**   **Ellipse**

Slot   **Rectangle**

Distance   **Angle**

Blob

Tool palette (sensor-specific)

In the tool palette, select the measuring tool to be used for the measuring point acquisition. In the **Measuring tool settings** dialog, you can configure the measuring tools.

Prerequisites

- A sensor must have been activated (software option)

Selecting the measuring tool

▶ Tap the control showing the current measuring tool, e.g. the crosshairs
> The tool palette shows all available measuring tools and displays the **Measuring tool settings** dialog
▶ Select the desired measuring tool
▶ Change the measuring tool settings, if required
▶ Tap **Close**
> Your changes are applied

Further information: "Overview of the OED measuring tools", Page 35

3.7.4 Measurement report menu

Activation

▶ Tap **Measurement report** in the main menu
> The user interface for displaying and creating the measurement reports appears
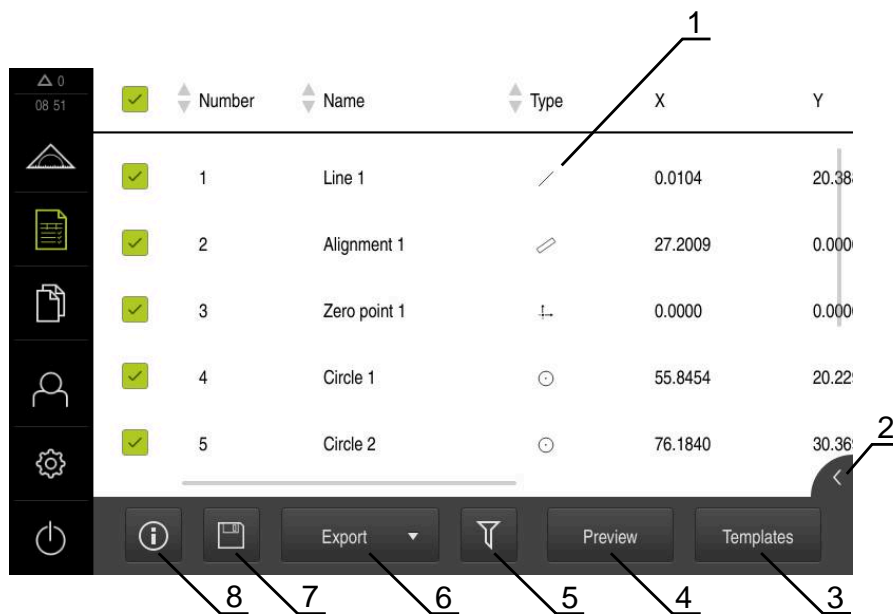
Short description

Figure 6: **Measurement report** menu

1 List of default templates
2 Preview of the selected template
3 Display of information on the selected template

The **Measurement report** menu shows a list of the measured features, depending on the selected measurement report template.

In the **Measurement report** menu, you can select the contents and template to be used for your measurement reports. Measurement reports can be saved, exported, and printed.

3.7.5 File management menu

Activation

▶ Tap **File management** in the main menu
> The user interface for file management is displayed

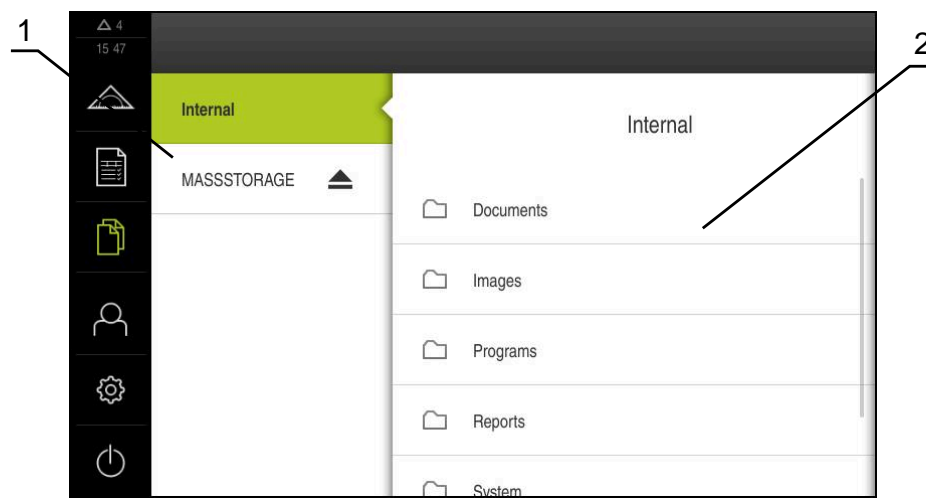**Short description**

Figure 7: **File management** menu

1 List of available storage locations
2 List of folders in the selected storage location

The **File management** menu shows an overview of the files stored in the product's memory.

3.7.6 User login menu

Activation

▶ Tap **User login** in the main menu
> The user interface for user login and logout is displayed
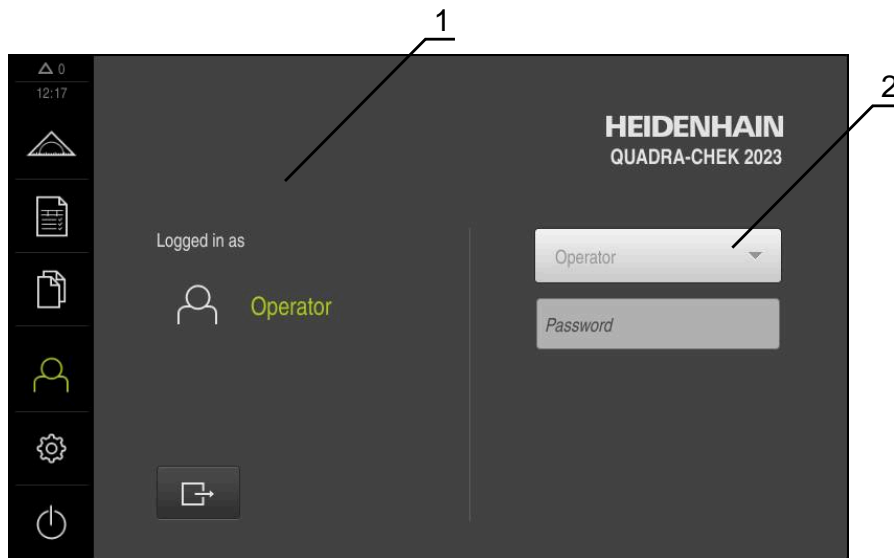
Short description

Figure 8: **User login** menu

1 Display of the logged-in user
2 User login

The **User login** menu shows the logged-in user in the column on the left. The login of a new user is displayed in the right-hand column.

To log in another user, the logged-in user must first log out.

Further information: "User login and logout", Page 23

3.7.7   Settings menu

Activation

▶ Tap **Settings** in the main menu
> The user interface for the product settings is displayed

Short description
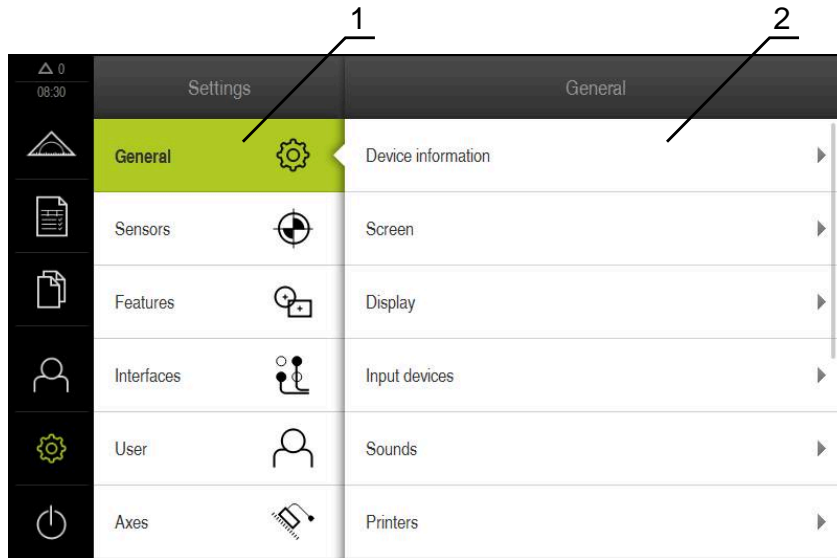

Figure 9: **Settings** menu

1 List of setting options
2 List of setting parameters

The **Settings** menu shows all options for configuring the product. With the setting parameters, you can adapt the product to on-site requirements.

> ℹ The product provides various authorization levels that grant the user full or restricted access to management and operation functionality.

3.7.8 Switch-off menu

Activation

▶ Tap **Switch off** in the main menu

> The operating elements for shutting down the operating system, for activating the energy-saving mode and for activating the cleaning mode are displayed

Short description

The **Switch off** menu provides the following options:

Operating element	Function
	Shut down
	Shuts down QUADRA-CHEK 2000 Demo
	Energy saving mode
	Switches the screen off and puts the operating system into energy-saving mode
	Cleaning mode
	Switches the screen off; the operating system continues unchanged

Further information: "QUADRA-CHEK 2000 Demo – startup and shut-down", Page 22

3.8 Manual measuring function

With the **Manual measuring** function, you can perform the following operations on a feature:

- Measure, i.e. create from acquired measuring points
- Construct, i.e. create from existing features

> For a detailed description of these activities, please refer to the "Measurement," "Measurement evaluation", and "Measurement report" chapters in the QUADRA-CHEK 2000 operating instructions.

3.8.1   Measuring features

To measure a contour, such as a circle, acquire measuring points distributed on the contour. Depending on the type of geometry selected, a certain number of measuring points must be acquired. The positions of these measuring points refer to the coordinate system selected on the product. The product calculates a new feature from the acquired measuring points (point cloud).

To acquire measuring points manually, e.g. by using crosshairs at the measuring microscope or profile projector, proceed as follows:
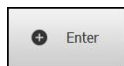
▶ Tap **Measure** in the main menu

▶ Select **Manual measuring** in the function palette

▶ Select the desired geometry in the geometry palette e.g. **Circle**

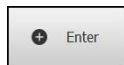▶ On the measuring machine, move to the desired position on the measured object

▶ To acquire the measuring point, tap **Enter** in the Inspector

> A new feature is added to the feature list. The symbol of the feature corresponds to the selected geometry
> The number of acquired measuring points is shown next to the symbol

▶ Move to next measuring point

▶ To acquire the measuring point, tap **Enter** in the Inspector

▶ To acquire more measuring points, repeat these steps

> When the minimum number of measuring points for the selected geometry has been reached, the **Finish** button appears in the new feature

▶ Tap **Finish** to complete the measuring point acquisition

> The feature is calculated based on the acquired measuring points

> The measurement result preview appears

3.8.2   Measurement with a sensor

For measuring point acquisition, you can use an OED sensor on the measuring machine, such as an optical waveguide (QUADRA-CHEK 2000 OED software option).

Once a sensor is activated, the associated measuring tools (tool palette) are available.

3.8.3   Controls for measuring with an OED sensor

Prerequisites
- The OED sensor has been activated (software option)

Overview of the OED measuring tools

If an OED sensor is activated, the tool palette includes the following measuring tools.

Symbol	Measuring tool	Functions and characteristics
Crosshair	Crosshair	▪ Manual acquisition of single measuring points ▪ No automatic acquisition of light-to-dark transitions
OED	OED	▪ Active measuring tool ▪ Acquisition of light-to-dark transitions ▪ Buffering of a single measuring point (manual confirmation required) If the OED sensor traverses an edge, a measuring point is buffered in the clipboard. If the OED sensor traverses a further edge, the buffered measuring point is overwritten. By tapping **Enter**, the previously buffered measuring point is added to the feature calculation.
Auto OED	Auto OED	▪ Active measuring tool ▪ Automatic acquisition of measuring points, e.g. on circles and circular arcs ▪ Acquisition of light-to-dark transitions If the OED sensor traverses an edge, a measuring point is automatically acquired and added to the feature calculation.

Configuring OED measuring tools

In the **Measuring tool settings** dialog, you can adjust the contrast settings and the OED offset settings using a teach sequence. These settings apply to all OED measuring tools, regardless of which measuring tool was selected for the teach sequence. All changes are transferred to the **Settings** menu.
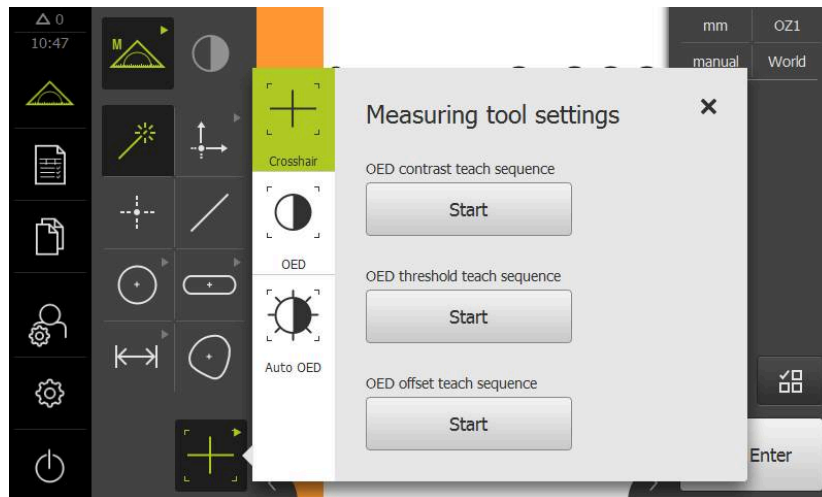

Figure 10: **Measuring tool settings** dialog for OED measuring tools

▶ In the quick access menu, select the magnification that is set on the measuring machine

▶ In the **tool palette**, select any desired OED measuring tool, e.g. **Auto OED**

> The **Measuring tool settings** dialog shows the available parameters

▶ Determine the desired parameters during the teach sequence

▶ Tap **Close** to close the dialog

> The parameters are saved for the selected magnification

▶ Repeat this procedure for all available magnifications

Operating element	Meaning
Start	**OED contrast teach sequence** Starts the teach sequence for adjusting the contrast settings to the current light conditions
Start	**OED threshold teach sequence** Starts the teach sequence for adjusting the threshold settings for edge detection
Start	**OED offset teach sequence** Starts the teach sequence for determining the offset between the crosshairs and the OED sensor

3.9 The Define function

Activation

▶ Tap **Measure** in the main menu

▶ Select **Define** in the function palette

> The controls and input fields of the **Define** function are displayed
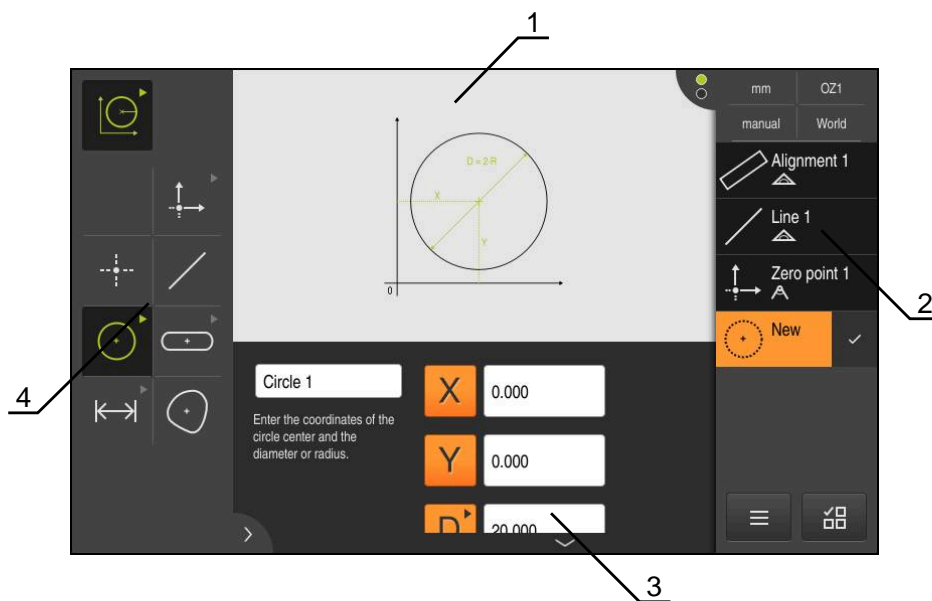

Figure 11: The **Define** function with **circle** geometry

1 Display of the geometry
2 Feature list in the Inspector
3 Input fields for the geometry parameters
4 Geometry parameters

For a detailed description of these activities, please refer to the "Measurement," "Measurement evaluation", and "Measurement report" chapters in the QUADRA-CHEK 2000 operating instructions.

3.10 Position display

The unit's position display shows the axis positions and additional information about the configured axes (if applicable).

3.10.1 Operating elements of the position display

Symbol	Meaning
X	Axis key
	Axis key functions:
	■ Tapping the axis key: Opens the position value input field
	■ Holding down the axis key: sets the current position as zero point
®	Reference mark search performed successfully
®	Reference mark search not performed or no reference mark detected

3.11 Customizing the workspace

In the **Measure** menu, you can enlarge the workspace by hiding the main menu, the submenu, or the Inspector. In addition, there are several ways to customize the features view.

Activation

▶ Tap **Measure** in the main menu
> The user interface for measuring, constructing, and defining is displayed

3.11.1 Hiding and showing the main menu and submenu

▶ Tap the **tab**
> The main menu is hidden
▶ Tap the **tab** again
> The submenu is hidden
> The arrow changes direction
▶ To show the submenu, tap the **tab**
▶ To show the main menu, tap the **tab** again

3.11.2 Hiding or displaying the Inspector

The Inspector can only be hidden when using the **Manual measuring** function.

▶ Tap the **tab**
> The Inspector is hidden
> The arrow changes direction
▶ To display the Inspector, tap the **tab**
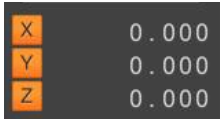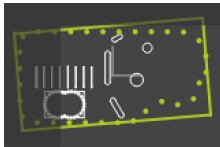
3.12 Using the Inspector

The Inspector is only available in the **Measure** menu.

Activation

▶ Tap **Measure** in the main menu

> The user interface for measuring, constructing, and defining is displayed

3.12.1 Controls of the Inspector

Control	Function
mm / VZ1 / manual / World	**Quick access menu** The quick access menu displays the current settings for manual measuring, constructing, and defining: ■ Unit for linear values (Millimeters or Inch) ■ Magnification used ■ Type of measuring point acquisition (automatic or manual) ■ Coordinate system used ▶ To adjust the settings of the quick access menu, tap the quick access menu
X 0.000 / Y 0.000 / Z 0.000	**Position preview** The position preview displays the current axis positions. If no reference mark search has been performed, the axis positions are displayed in red. ▶ To display the position preview in the workspace, tap the **Position preview** > The position display is now shown in the workspace > The current content of the workspace is displayed in the Inspector
	Features preview The features preview displays a reduced view of the measured, constructed, and defined features. ▶ To display the features view in the workspace, tap the **Features preview** > The features view is now shown in the workspace > The current content of the workspace is displayed in the Inspector
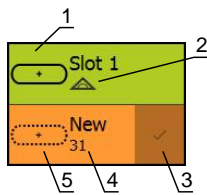
Control	Function
	Feature list The feature list lists all measured, constructed, or defined features. The feature list provides the following information: ■ **1:** Feature with symbol, name, and consecutive number ■ **2:** Function that was used for creating the feature

Symbol	Meaning
	Measured feature
	Constructed feature
	Defined feature

■ **3:** Completes the measuring point acquisition

■ **4:** Number of measuring points that have been acquired

■ **5:** Newly acquired feature with symbol

Each feature contains details on the measurement results as well as selectable tolerances.

▶ To display the measured values and adjust the tolerances, drag a feature into the workspace

> The **Details** dialog with its **Overview** and **Tolerance** tabs opens in the workspace

▶ To select or deselect features, tap the features one after another

> The selected features are highlighted in green

▶ To delete a feature, drag the feature to the right and out of the Inspector
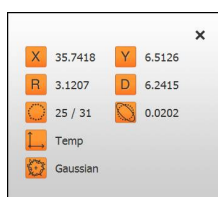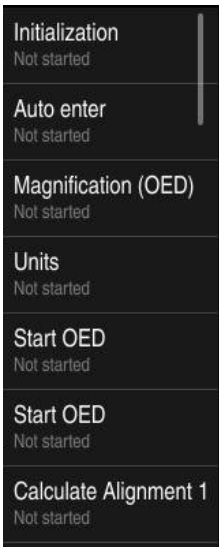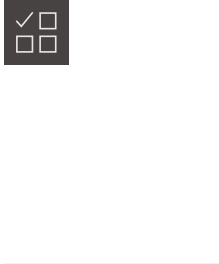
Measurement result preview

After completion of a measurement process, the measurement result preview appears in the workspace and displays information about the measured feature. For each geometry type, it is possible to define the parameters to be displayed in the measurement result preview. Which parameters are available depends on the specific geometry type.

You can send contents from the measurement result preview to a computer via the RS-232 interface.

> 📖 For a detailed description of the measured-value output, please refer to the "Measurement evaluation" chapter in the QUADRA-CHEK 2000 Operating Instructions.

Control	Function
Initialization Not started Auto enter Not started Magnification (OED) Not started Units Not started Start OED Not started Start OED Not started Calculate Alignment 1 Not started	**Program step list** The program step list shows all actions that occur during the measurement. It is displayed instead of the feature list in the Inspector. The program steps can be combined and saved as a measuring program.
	Auxiliary functions The auxiliary functions include the following: ■ Switching the display between feature list and program step list ■ Creating, saving, and opening a program ■ Calling the program control in the workspace ■ Opening and saving a coordinate system ■ Deleting selected features or all features from the feature list
	Feature selection Multiple selection of features of the same geometry type ▶ Tap **Feature selection** ▶ To select all features of a geometry type in the feature list, tap the desired geometry type ▶ Confirm with **OK** > The selected features are highlighted in green
Enter Enter	**Enter** Acquisition of measuring points with the following options: ■ If measuring point acquisition is deactivated, then the measuring points will be acquired manually ■ If automatic measuring point acquisition is active, then a red dot will be shown in the control. The measuring points will be acquired after expiration of the set dead time

3.12.2 Expanding the feature list or program step list

If the feature list or program step list includes at least one feature or program step, it can be expanded.

▶ Tap the switch
> The feature list or program step list is expanded
> The lower switch is displayed in green

▶ Tap the switch
> The previous view will be restored
> The upper switch is displayed in green

4

Software configuration

4.1 Overview

> ℹ️ Make sure that you have read and understood the "Basic operation" chapter before carrying out the actions described below.
> **Further information:** "Basic operation", Page 17

Before you can use QUADRA-CHEK 2000 Demo correctly after successful installation, you need to configure QUADRA-CHEK 2000 Demo. This chapter describes how to perform the following settings:

- Activating a license key
- Copying the configuration file
- Uploading the configuration data
- Setting the language
- Selecting the product version (optional)

4.2 Activating a license key

With QUADRA-CHEK 2000 Demo you can also simulate properties and functions that depend on a software option. To do so, you must enable the software option with a license key. The required license key is stored in a license file in the QUADRA-CHEK 2000 Demo folder structure.

You must read in the license file in order to enable the available software options.

⚙️
- ▶ Tap **Settings** in the main menu
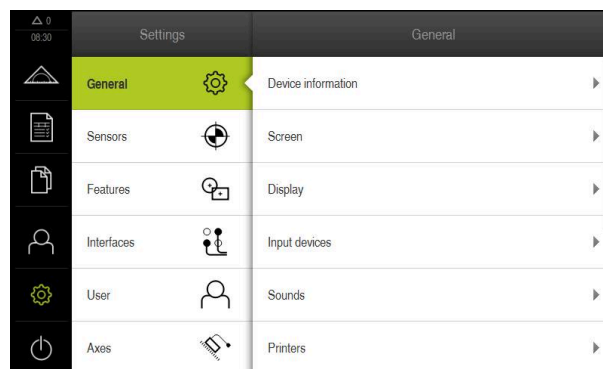- \> The device settings are displayed

Figure 12: **Settings** menu

▶ Tap **Service**

▶ Open in succession:

■ **Software options**

■ **Activate options**

■ Tap **Read license file**

▶ In the dialog, select the storage location:

■ Select **Internal**

■ Select **User**

▶ Select the **PcDemoLicense.xml** license file

▶ Confirm your selection with **Select**

▶ Tap **OK**

> The license key is activated

▶ Tap **OK**

> You are prompted to restart the device

▶ Restart

> The functions depending on the software options are available

4.3 Copying the configuration file

Before you can load the configuration data in QUADRA-CHEK 2000 Demo, you must first copy the downloaded configuration file **DemoBackup.mcc** to an area that can be accessed by QUADRA-CHEK 2000 Demo.

▶ Move to the temporary storage folder

▶ For example, copy the configuration file **DemoBackup.mcc** to the following folder: **C:** ▶ **HEIDENHAIN** ▶ **[product name]** ▶ **ProductsMGE5** ▶ **Metrology** ▶ **[product abbreviation]** ▶ **user** ▶ **User**

> 🛈 In order for QUADRA-CHEK 2000 Demo to access the configuration file **DemoBackup.mcc**, you must retain the following part of the path when you save the file: ▶ **[product name]** ▶ **ProductsMGE5** ▶ **Metrology** ▶ **[product abbreviation]** ▶ **user** ▶ **User**.

> The configuration file can be accessed by QUADRA-CHEK 2000 Demo

4.4 Uploading the configuration data

> ℹ️ Before you can upload the configuration data, you must first activate the license key.
>
> **Further information:** "Activating a license key", Page 44

In order to configure QUADRA-CHEK 2000 Demo for use on the computer, you must upload the **DemoBackup.mcc** configuration file.

⚙️
- ▶ Tap **Settings** in the main menu
- > The product settings are displayed
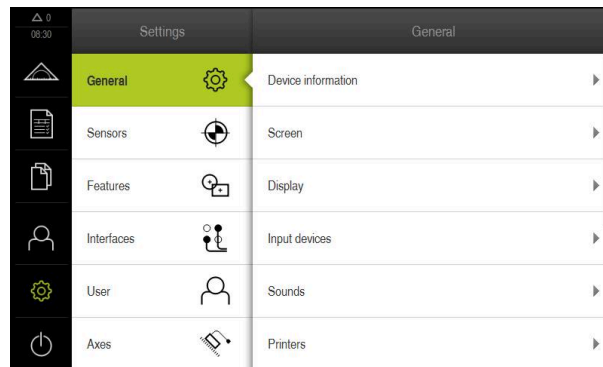
Figure 13: **Settings** menu

🔧
- ▶ Tap **Service**
- ▶ Open in succession:
  - ▪ **Back up and restore**
  - ▪ **Restore settings**
  - ▪ **Complete restoration**
- ▶ In the dialog, select the storage location:
  - ▪ **Internal**
  - ▪ **User**
- ▶ Select the **DemoBackup.mcc** configuration file
- ▶ Confirm your selection with **Select**
- > The settings are applied
- > You are prompted to close the application
- ▶ Tap **OK**
- > QUADRA-CHEK 2000 Demo is closed, and the Microsoft Windows window is closed
- ▶ Restart QUADRA-CHEK 2000 Demo
- > QUADRA-CHEK 2000 Demo is now ready for use

4.5 Setting the language

The user interface language is English. You can change to another language, if desired.

▶ Tap **Settings** in the main menu

▶ Tap **User**
> The logged-in user is indicated by a check mark
▶ Select the logged-in user
> The language selected for the user is indicated by a national flag in the **Language** drop-down list
▶ Select the flag for the desired language from the **Language** drop-down list
> The user interface is displayed in the selected language

4.6 Selecting the product version (optional)

QUADRA-CHEK 2000 is available in different versions. These versions differ in their interfaces for connectible encoders:

- QUADRA-CHEK 2013 version for encoders with 1 V_{PP} interface
- QUADRA-CHEK 2023 version for encoders with TTL interface
- The QUADRA-CHEK 2093 version for encoders with various interfaces (1 V_{PP} and TTL)

In the **Settings** menu, you can select the version that is to be simulated with QUADRA-CHEK 2000 Demo

▶ Tap **Settings** in the main menu

▶ Tap **Service**
▶ Tap **Product designation**
▶ Select the desired version
> You are now prompted to perform a restart
> QUADRA-CHEK 2000 Demo is ready for use in the desired version

5

Quick Start

5.1 Overview

In this chapter an example is used to describe the steps of a typical measuring sequence. The steps range e.g. from aligning the measured object and measuring the features through to creating the measurement report.

> For a detailed description of these activities, please refer to the "Measurement," "Measurement evaluation", and "Measurement report" chapters in the QUADRA-CHEK 2000 operating instructions.

> Make sure that you have read and understood the "Basic operation" chapter before carrying out the actions described below.
> **Further information:** "Basic operation", Page 17

5.2 Conducting a measurement

5.2.1 Measuring with an OED sensor

> The measurements shown here cannot be simulated with QUADRA-CHEK 2000 Demo, because the corresponding measuring point acquisition is not possible without an encoder and a sensor. However, you can use the descriptions to familiarize yourself with the most important functions and the user interface.

For the measurement of edges and contours with an OED sensor, various measuring tools are available to you for the acquisition of measuring points.
Further information: "Overview of the OED measuring tools", Page 35

Aligning the measured object

Before you can evaluate the measuring points, you need to align the measured object. During this process, the coordinate system of the measured object (workpiece coordinate system) is determined, which is specified in the technical drawing.

This makes it possible to compare the measured values with the data in the technical drawing and assess them.
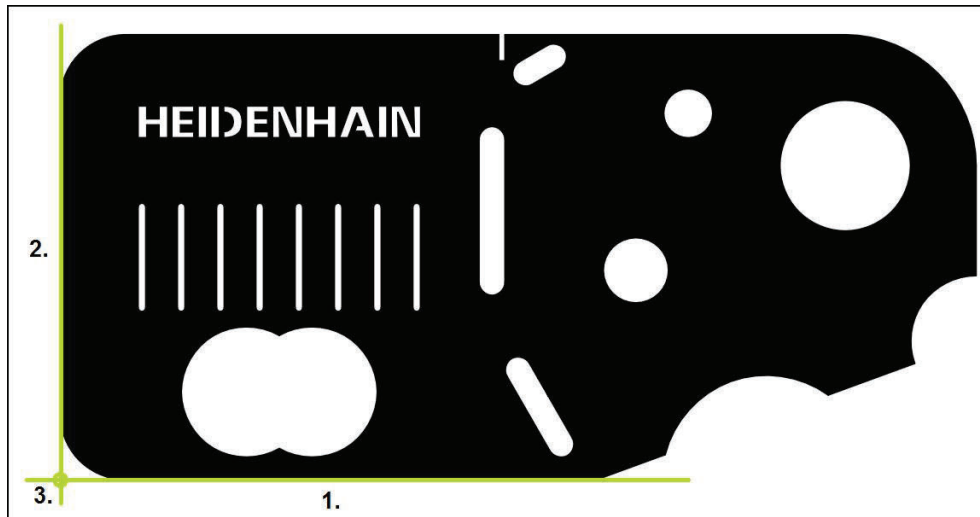

Figure 14: Example of aligning a 2-D demo part

Measured objects are usually aligned in the following steps:

1 Measuring the alignment
2 Measuring a straight line
3 Constructing the zero point

Measuring the alignment

Define the reference edge for the alignment according to the technical drawing.

▶ Tap **Measure** in the main menu

▶ Select **Manual measuring** in the function palette

▶ If multiple sensors are available, select **OED sensor** in the sensor palette
> The geometry palette and the OED measuring tools are now displayed
> The workspace now shows the position display
▶ In the quick access menu, select the magnification that is set on the measuring machine

▶ Select **Alignment** in the geometry palette

▶ Select **Auto OED** in the tool palette
▶ Cross over the reference edge multiple times with the OED sensor
> A new feature is displayed in the feature list
> A new measuring point is added for each pass over the reference edge

> ℹ️ Distribute the measuring points along the entire length of the edge. This minimizes the angular error.

▶ Tap **Finish** in the new feature
> The alignment is displayed in the feature list
> The measurement result preview is now displayed

Figure 15: **Alignment** feature in the feature list with **Measurement result preview**

Measuring a straight line

Measure a straight line as the second reference edge.

▶ Select **Line** in the geometry palette

▶ Select **Auto OED** in the tool palette
▶ Cross over the reference edge multiple times with the OED sensor
> A new feature is displayed in the feature list
> A new measuring point is added for each pass over the reference edge

> **i** Distribute the measuring points along the entire length of the edge. This minimizes the angular error.

▶ Tap **Finish** in the new feature
> The straight line is displayed in the feature list
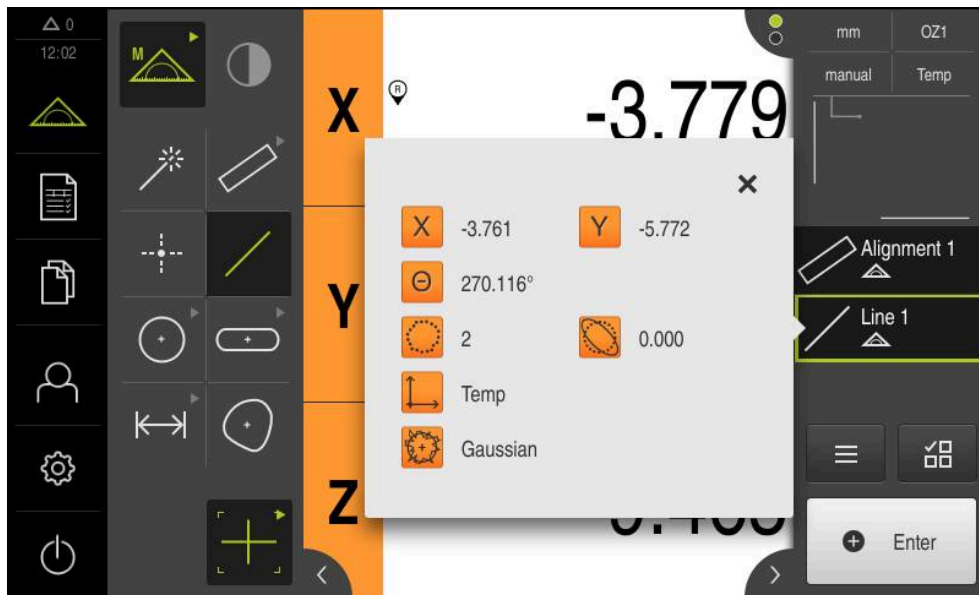> The measurement result preview appears

Figure 16: **Line** feature in the feature list with **Measurement result preview**

Constructing the zero point

Construct the zero point at the point of intersection between the alignment and the straight line.

▶ Select **Zero point** in the geometry palette
▶ Select the **Alignment** and **Line** features in the Inspector or in the features view
> The selected features are displayed in green
> A new feature is displayed in the feature list

▶ Tap **Finish** in the new feature
> The zero point is displayed in the feature list
> The workpiece coordinate system for the measured object has been determined
▶ Tap **Features preview**
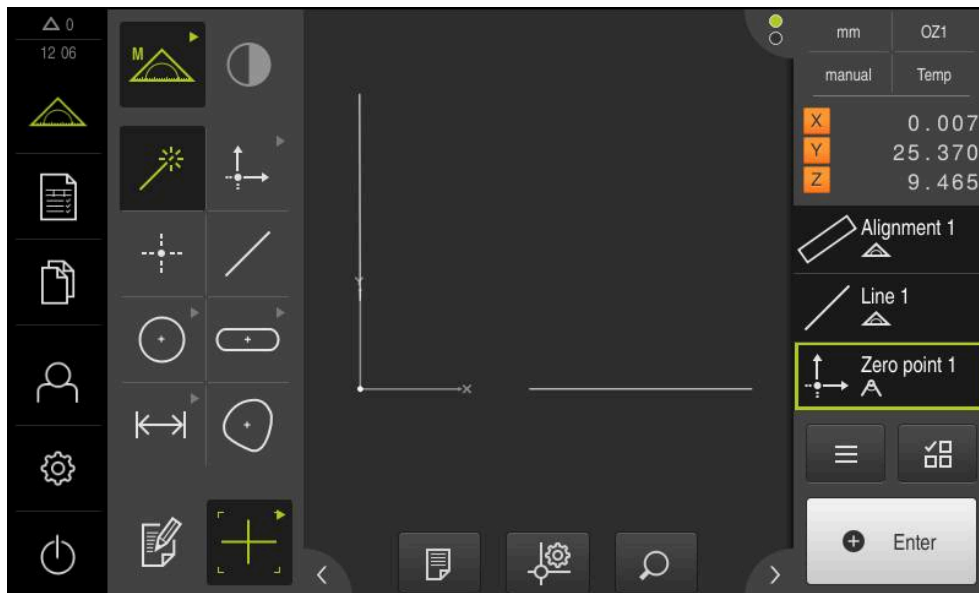> The coordinate system is shown in the workspace

Figure 17: Workspace with zero point displayed in the coordinate system

Measuring features

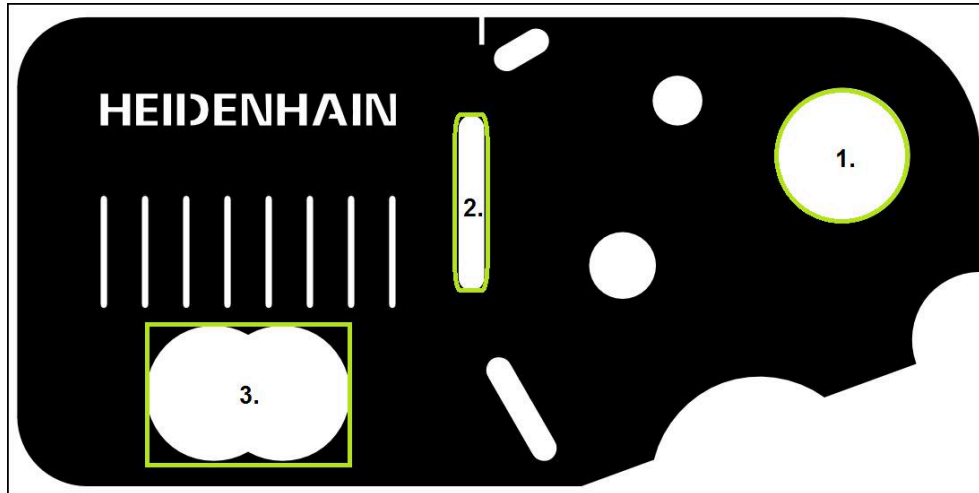To measure features, you can use the geometries of the geometry palette.

Figure 18: Examples of measuring a 2-D demo part

The section below describes measuring the following features:
1 Circle
2 Slot
3 Blob

Measuring a circle

A minimum of three measuring points is required to measure a circle. For measuring point acquisition, you can use the **OED** measuring tool, for example.

▶ Tap **Measure** in the main menu

▶ Select **Manual measuring** in the function palette

▶ If multiple sensors are available, select **OED sensor** in the sensor palette
> The geometry palette and the OED measuring tools are displayed
> The workspace now shows the position display
▶ In the quick access menu, select the magnification that is set on the measuring machine
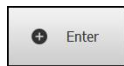▶ Select **Measure Magic** in the geometry palette

or

▶ Select **Circle** in the geometry palette

▶ Select **OED** in the tool palette
▶ With the OED sensor, traverse the edge of the circle
> The product records the measuring point and saves it to the clipboard

▶ To confirm the measuring point acquisition, tap **Enter** in the Inspector

> A new feature is displayed in the feature list

> ℹ️ If the OED sensor traverses an edge, a measuring point is recorded in the clipboard.
>
> To add the measuring point to the point cloud of the feature, tap **Enter** in the Inspector.

▶ To acquire more measuring points, repeat these steps

▶ Tap **Finish** in the new feature

> The circle is displayed in the feature list
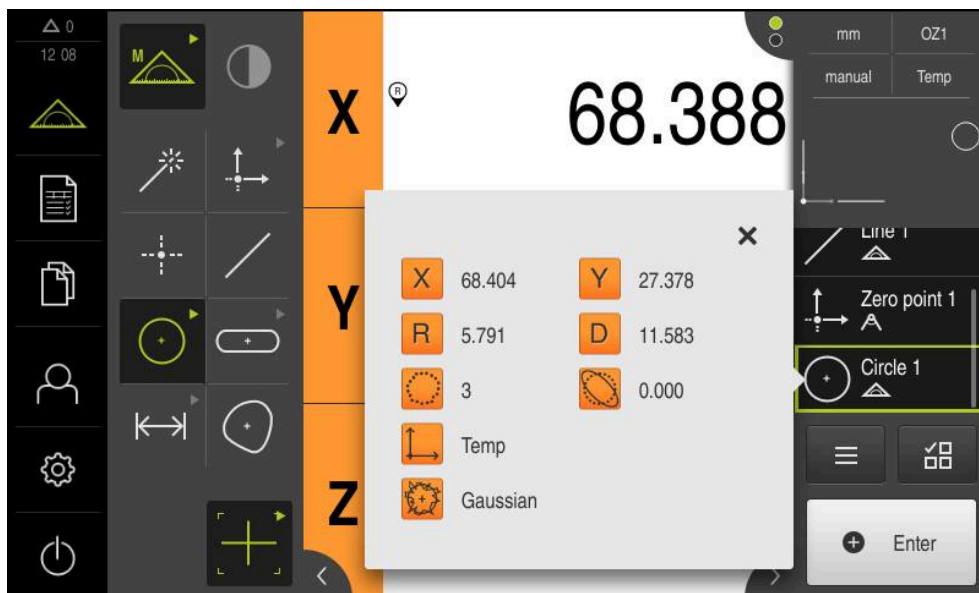
> The measurement result preview appears

Figure 19: **Circle** feature in the feature list with **Measurement result preview**

Measuring a slot

A minimum of five measuring points is required in order to measure a slot.
To measure point acquisition, you can use the **Auto OED** measuring tool, for
example. Place at least two measuring points on the first long side and at least
one measuring point on the second long side, and on each arc of the slot.

▶ Select **Slot** in the geometry palette

▶ Select **Auto OED** in the tool palette
▶ Cross over the edge of the slot multiple times with the OED sensor
> A new feature is displayed in the feature list
> A new measuring point is added each time the edge is traversed

> **i** Distribute the measuring points along the entire length of the first long side, if possible.

▶ Tap **Finish** in the new feature
> The slot is displayed in the feature list
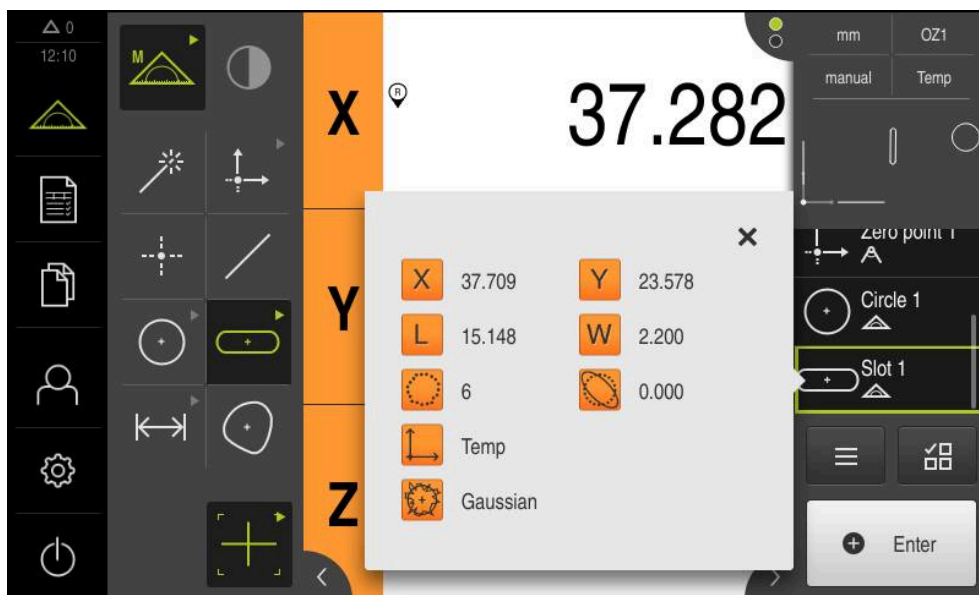> The measurement result preview is now displayed

Figure 20: **Slot** feature in the feature list with **Measurement result preview**

Measuring a blob

A minimum of three measuring points is required to measure a blob. For measuring point acquisition, you can use the **Auto OED** measuring tool, for example. Multiple measuring points are automatically distributed along the entire contour according to the specified settings.

▶ Select **Blob** in the geometry palette

▶ Select **Auto OED** in the tool palette
▶ Cross over the edge of the blob multiple times with the OED sensor
> A new feature is displayed in the feature list
> A new measuring point is added each time the edge is traversed

> **ⓘ** Distribute the measuring points as evenly as possible along the contour of the feature.

▶ Tap **Finish** in the new feature
> The blob is displayed in the feature list
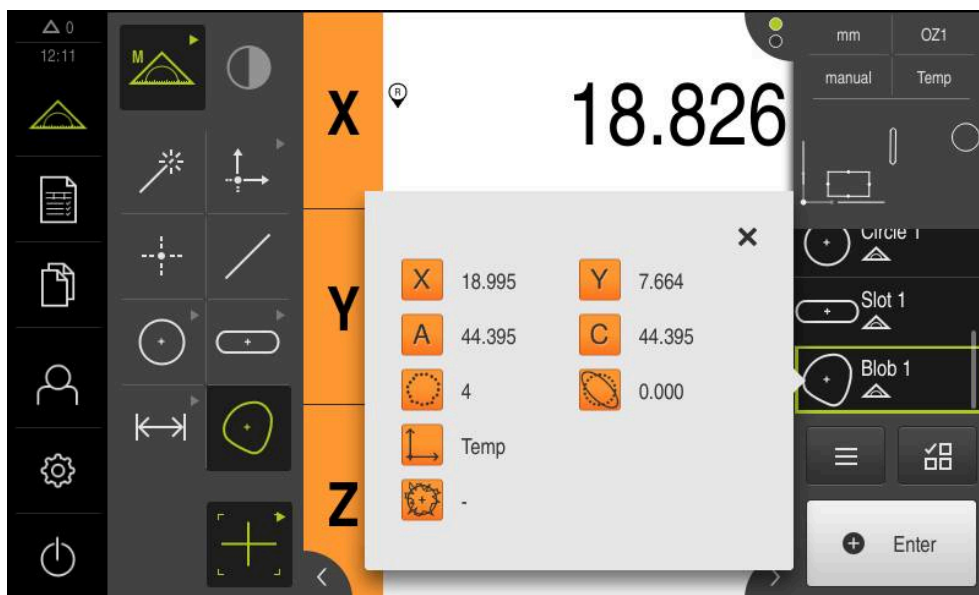> The measurement result preview is now displayed

Figure 21: **Blob** feature in the feature list with **Measurement result preview**

5.2.2 Deleting features

If the measurement fails, one or more features can be deleted from the feature list.

> **ℹ** Reference features, such as a zero point, alignment, or reference plane, cannot be deleted as long as other features are referenced to them.

▶ Select the desired features from the feature list
> The selected features are displayed in green
▶ Tap **Auxiliary functions** in the Inspector
▶ Tap **Delete selection**
▶ To delete all features, tap **Delete all**
▶ Tap **Close** to close the miscellaneous functions

5.3 Displaying and editing the measurement results

Each measured feature can be evaluated and edited in the **Details** dialog.

▶ To open the **Details** dialog, drag the corresponding feature from the feature list into the workspace
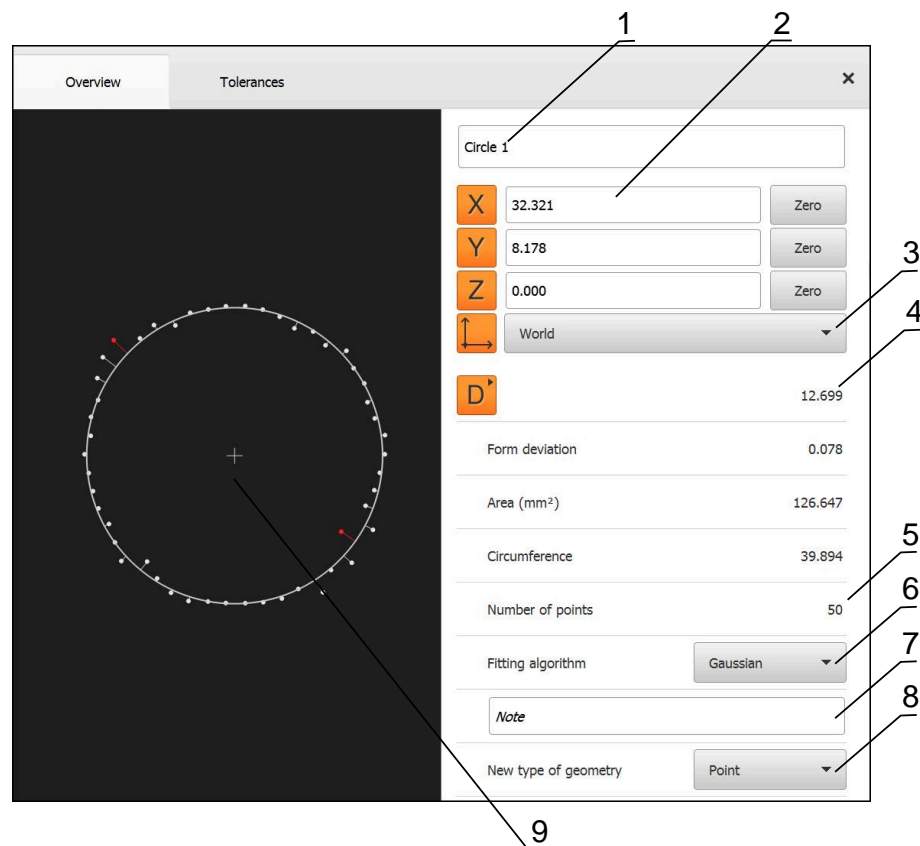
Short description

Figure 22: **Overview** tab in the **Details** dialog

1 Name of the feature
2 Axis positions of the center point
3 Coordinate system referenced by the coordinate values of the feature
4 Feature parameter, depending on the geometry type: For the circle geometry type, it is possible to toggle between radius and diameter
5 Number of measuring points used for calculating the feature
6 Fitting algorithm used for calculating the feature; depends on the geometry and the number of measuring points
7 **Note** text field; if annotations are active, its contents will be shown in the features view
8 List of geometry types to which the feature can be converted
9 View of the measuring points and the shape

5.3.1 Renaming a feature

▶ Drag the feature from the feature list into the workspace
> The **Details** dialog appears with the **Overview** tab selected
▶ Tap the input field containing the current name
▶ Enter a new name for the feature
▶ Confirm entry with **RET**
> The new name is displayed in the feature list
▶ Tap **Close** to close the dialog

5.3.2 Selecting the Fitting algorithm

You can adjust the fitting algorithm depending on the measured feature. The Gaussian fitting algorithm is used by default.

▶ Drag a feature, e.g., a **Circle**, from the features list into the workspace
> The **Details** dialog appears with the **Overview** tab selected
> The fitting algorithm used is shown in the **Fitting algorithm** drop-down list
▶ In the **Fitting algorithm** drop-down list, select the desired fitting algorithm (e.g., **Min. circumscribed**)
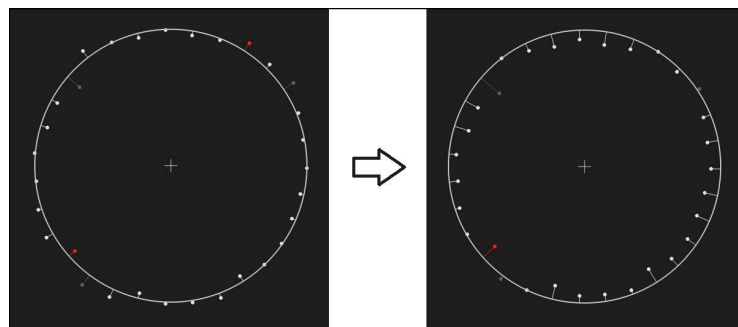> The feature is displayed according to the selected fitting algorithm

Figure 23: **Circle** feature with new fitting algorithm

▶ Tap **Close** to close the dialog

5.3.3 Converting a feature

The feature can be converted to a different type of geometry. The list of possible geometry types is provided as a drop-down list in the **Details** dialog.

▶ Drag the **Slot** feature from the feature list into the workspace

> The **Details** dialog appears with the **Overview** tab selected

> The geometry type of the feature is displayed

▶ In the **New type of geometry** drop-down list, select the **Point** geometry type

> ℹ The **2-D profile** geometry type is currently not yet supported.
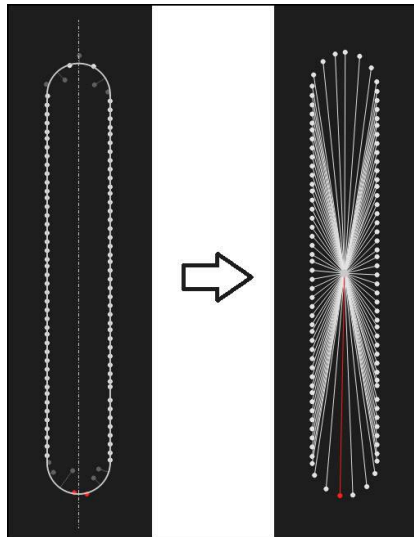
> The feature is displayed in the new form

Figure 24: Type of geometry changed from **Slot** to **Point**

▶ Tap **Close** to close the dialog

5.3.4 Changing Tolerances

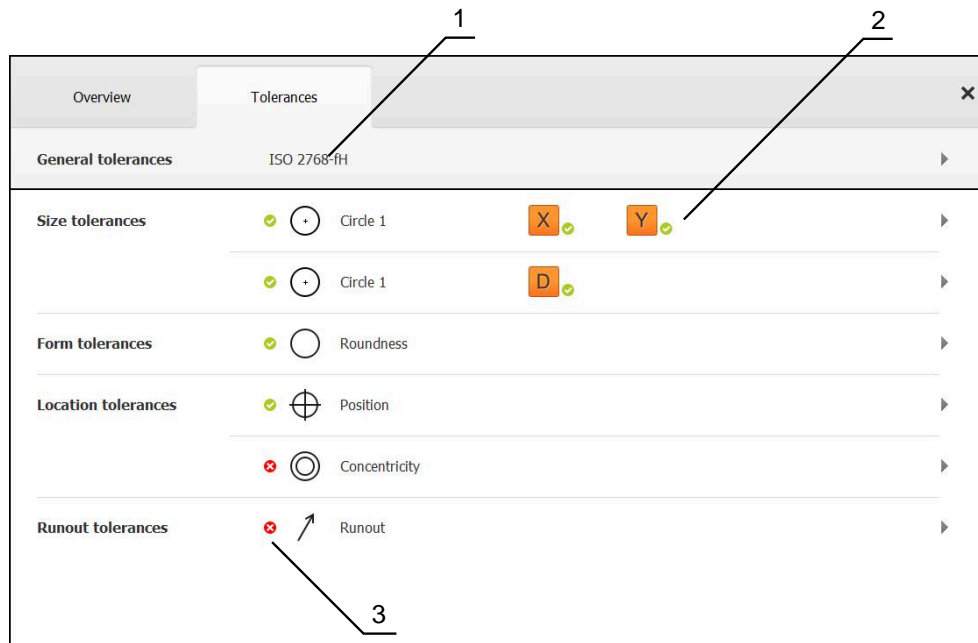On the **Tolerances** tab, you can adjust the tolerances for a measured feature. The tolerances are grouped.

Figure 25: **Details** dialog with **Tolerances** tab

1 Display of general tolerance
2 List of tolerances, depending on feature
3 Status of the tolerance: Active and within the tolerance or active and outside the tolerance

In the **Tolerances** tab, you can define the geometrical tolerancing of a feature. The tolerances are grouped.

▶ Drag a feature (e.g., **Circle**) from the feature list into the workspace
> The **Details** dialog appears with the **Overview** tab selected
▶ Tap the **Tolerances** tab
> The tab for tolerancing the selected feature is displayed
▶ Tap the **X** size tolerance
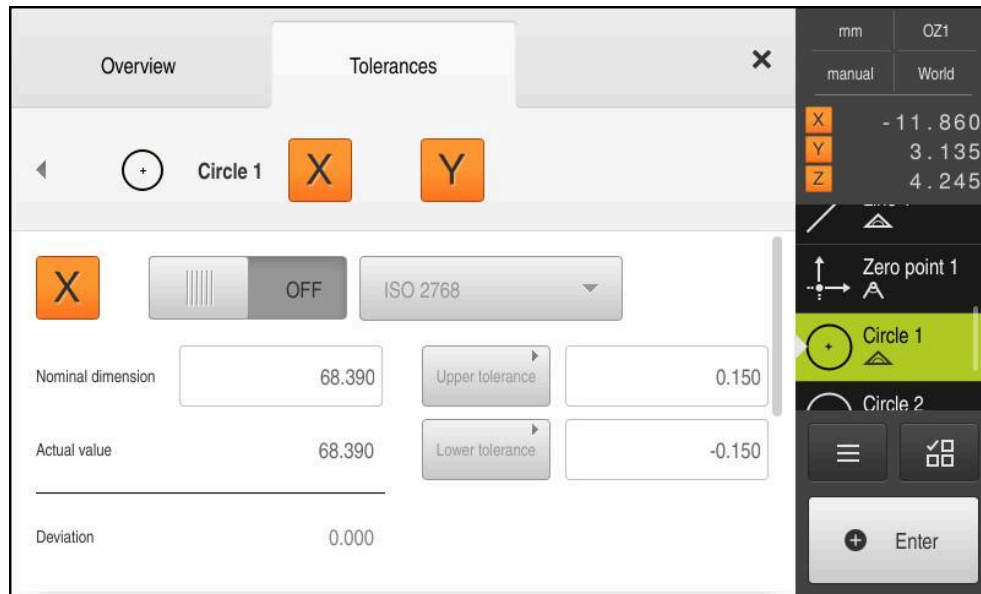> An overview of the selected size tolerance appears

Figure 26: **Size tolerance** overview with activated **X** size tolerance

▶ Activate tolerancing of the measured value with the **ON/OFF** slider

> The selection and input fields become active

▶ Tap the **Nominal dimension** input field and enter **76.2**

▶ Confirm your input with **RET**

▶ Tap the **Upper tolerance** input field and enter **0.1**

▶ Confirm your input with **RET**

▶ Tap the **Lower tolerance** input field and enter **0.1**

▶ Confirm your input with **RET**

> The nominal value is shown in red if it is out of tolerance

> The nominal value is shown in green if it is within tolerance

▶ Tap **Back**

> The **Tolerances** tab is displayed

> The results of the tolerance check are shown in the **Tolerances** tab and, after the dialog has been closed, are displayed in the feature list, using the following symbols:

✅	Activated tolerances are maintained
❌	One or more activated tolerances are exceeded

5.3.5 Adding annotations

You can add an annotation to every feature in the features view (e.g., measurement information or informational texts).
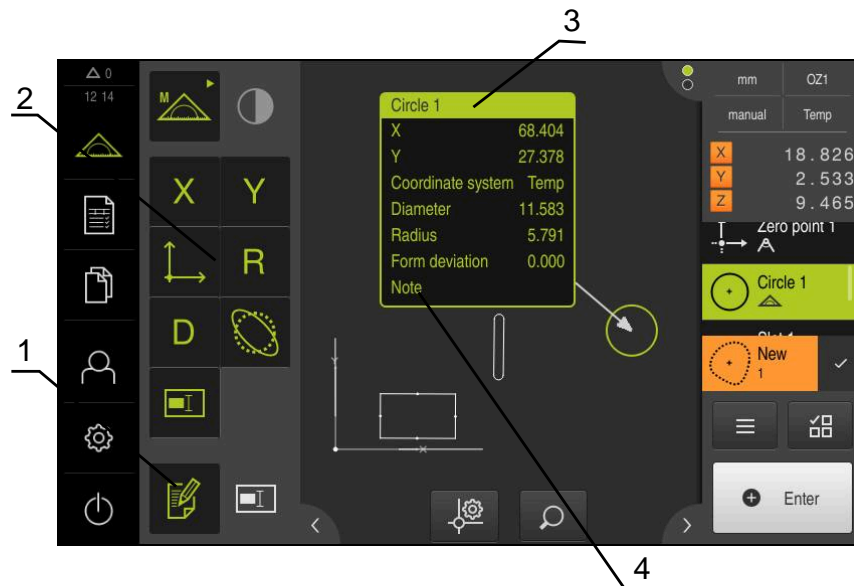

Figure 27: Operating elements for annotations and feature with annotations

1 **Edit annotations** operating element
2 Operating elements for adding annotations
3 Measurement information
4 Explanatory text

5.4 Creating a measurement report

The following steps are necessary to create a measurement report:
- "Selecting the features and the template"
- "Entering information on the measuring task"
- "Selecting document settings"
- "Saving a measurement report"
- "Exporting or printing a measurement report"

5.4.1 Selecting the features and the template

> Tap **Measurement report** in the main menu
> The list of measured features is displayed, based on the measurement report template that was selected last
> All features in the list are activated and the boxes are displayed in green
> To change the measurement report template, tap **Templates**
> Select the desired measurement report template
> Tap **OK**
> The list of measured features is adapted to the selected measurement report template

Filtering features

You can filter the feature list in the **Features** menu by various criteria. This means that only features meeting the filter criteria are displayed, e.g., only circles with a specific minimum diameter. You can use any combination of filters.

> The filter function controls how the feature list is displayed. It does not affect the contents of the measurement report.

▶ Tap **Filter**

▶ Select the desired filter criterion in the dialog
▶ Select the operator
▶ Select the function
▶ Tap **Close** to activate the filter criteria

Filtercriterion	Operator	Function
Type	Is	Only features of the selected geometry type are shown.
	Is not	Only features of geometry types that are not selected are shown.
Size	Equal	Only features of the specified size are shown.
	Greater than	Only features that are larger than the specified size are shown.
	Less than	Only features that are smaller than the specified size are shown.
Tolerance	Is	Only features that fulfill the selected characteristic are shown.
	Is not	Only features that do not fulfill the selected characteristic are shown.
Creation type	Is	Only features that fulfill the selected characteristic are shown.
	Is not	Only features that do not fulfill the selected characteristic are shown.

5.4.2 Entering information on the measuring task

> ⓘ The available information depends on the configuration of the template.

- ▶ Tap **Information**
- ▶ In the **Job** input field, enter **Demo1** to identify the measurement job
- ▶ Confirm your input with **RET**
- ▶ Enter the part number **681047-02** of the measured object into the **Part number** input field
- ▶ Confirm your input with **RET**
- ▶ Tap **Close** to close the dialog

5.4.3 Selecting document settings

- ▶ Tap **Information**
- ▶ Tap the **Document** tab
- ▶ In the **Date and time format** drop-down list, select the **YYYY-MM-DD hh:mm** (date and time) format
- ▶ Tap **Close** to close the dialog

5.4.4 Opening previews

You can display both the features and the measurement report in a preview.

Opening the features preview

▶ Tap the **tab**
> The features preview opens
> The arrow changes direction
▶ To close the features preview, tap the **tab**

If you added annotations to your features, they will also be shown in the features preview.

Further information: "Adding annotations", Page 65

Opening the measurement report preview

▶ Tap **Preview**
> The measurement report preview opens
▶ To browse the pages, tap the left or right edge of the preview pane
▶ Tap **Close** to close the preview

5.4.5 Saving a measurement report

Measurement reports are saved in the XMR data format.

▶ Tap **Save as**
▶ In the dialog, select the storage location, e.g. **Internal/Reports**
▶ Enter a name for the measurement report
▶ Confirm your input with **RET**
▶ Tap **Save as**
> The measurement report is saved

> 🛈 The XMR data format has been changed for the current firmware version. You can no longer open or edit files saved in the XMR data format of the previous version.

5.4.6 Exporting or printing a measurement report

You can export measurement reports as a PDF file.

Exporting the measurement report

▶ In the **Export** drop-down list, select the **Export as PDF** export format
▶ Select the **Internal/Reports** storage location in the dialog
▶ Enter the name **Demo1** for the measurement report
▶ Confirm the entry with **RET**
▶ Tap **Save as**
> The measurement report is exported in the selected format and stored in the storage location

5.4.7 Opening a measurement report

In the **File management** main menu, you can open the saved report.

▶ Tap **File management** in the main menu

▶ Select the **Internal/Reports** storage location

▶ Select the desired **Demo1.pdf** file

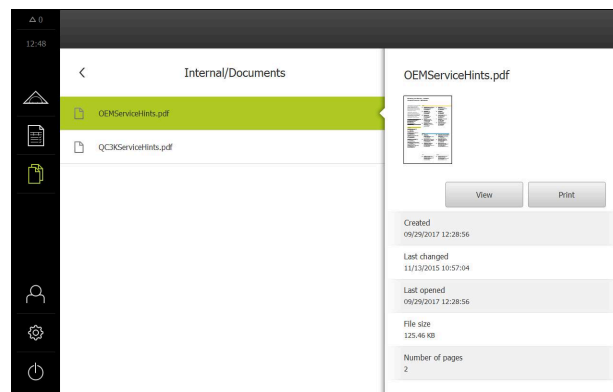> A preview image as well as information about the file are displayed

Figure 28: Preview of the measurement report and file information

▶ To display the measurement report, tap **View**

> The file contents are displayed

▶ Tap **Close** to close the view

6

**Measurement
report template**

6.1 Overview

This chapter describes how you can create your own measurement report templates with QUADRA-CHEK 2000 Demo and transfer them to your unit so that you can use the templates for creating measurement reports on your unit.

> **i** Make sure that you have read and understood the "Basic operation" chapter before carrying out the actions described below.
>
> **Further information:** "Basic operation", Page 17

Short description

In the **Measurement report** menu, you can create detailed reports for your measuring tasks. You can document one or more measured features in a measurement report. The measurement reports can be printed, exported and saved. For the creation of measurement reports, you can choose between several standard templates.

With the QUADRA-CHEK 2000 Demo PC software, you can create your own report templates and then transfer them to your unit. Your own custom templates then appear next to the standard templates in the **Measurement report** menu and can be used for creating measurement reports.

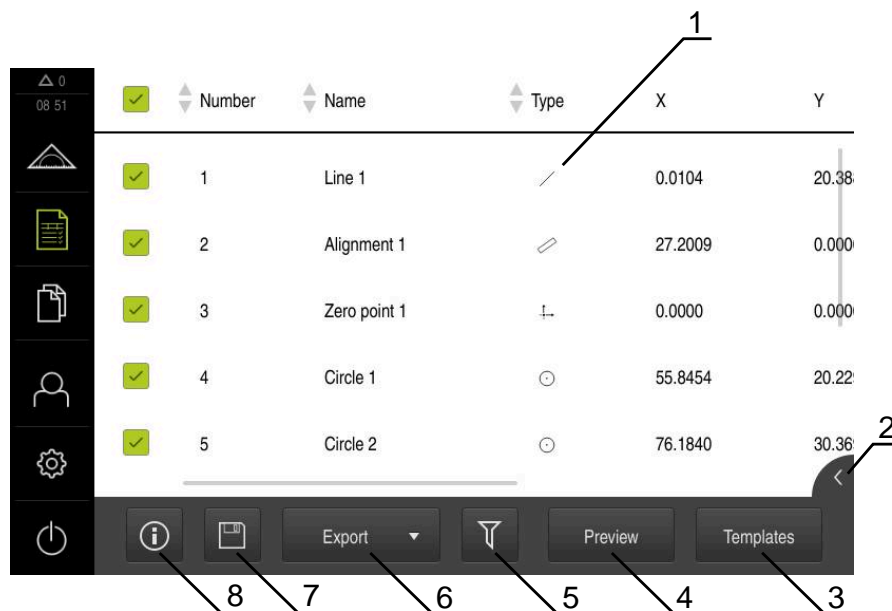### Activation

▶ Tap **Measurement report** in the main menu

Figure 29: **Measurement report** menu

1 List of default templates
2 Preview of the selected template
3 Display of information on the selected template

6.2 Creating and editing a template

With the editor, you can create or edit your own templates for measurement reports.

The following steps are necessary to create a new template:

- Opening a new template with the editor
- Editing the default settings for the measurement report
- Configuring the page header
- Configuring the report header
- Defining the data for the measurement report
- Saving the template

6.2.1 Opening a new template with the editor

A new template can be added or created from existing templates.

▶ Tap **Measurement report** in the main menu

▶ Maximize the window of the software on the computer screen

▶ Tap **Templates**

> The **Add** button appears in the list of templates

▶ Tap **Add** to create a new template

> The **Default settings** for the new template are displayed

Figure 30: Editor for measurement report templates

1 Template areas
2 Form fields in the layout
3 List of form fields
4 Grid controls for displaying and hiding the auxiliary lines in the editor

Hiding or displaying auxiliary lines

A grid of auxiliary lines is displayed in the background to help you align the fields in the form. The auxiliary line grid is not printed.

> ℹ️ The grid of auxiliary lines is always active. All fields of the form are automatically aligned with it.

▶ Tap **Grid** to display or hide the grid of auxiliary lines

6.2.2 Editing the default settings for the measurement report

▶ Select the default template to be used as the basis from the **Template** drop-down list

▶ To adjust the unit of measurement for linear measurement values, select the desired unit of measurement in the **Unit for linear values** drop-down list

- ▪ **Millimeters**: Display in millimeters
- ▪ **Inch**: Display in inches

▶ To reduce or increase the number of displayed **Decimal places for linear values**, tap **-** or **+**

▶ To adjust the unit of measurement for angular values, select the desired unit of measurement in the **Unit for angular values** drop-down list

- ▪ **Decimal degrees**: Display in degrees
- ▪ **Radian**: Display in radians
- ▪ **Deg-Min-Sec**: Display in degrees, minutes, and seconds

▶ To adjust the format for the date and time, select the desired format in the **Date and time format** drop-down list

- ▪ **hh:mm DD-MM-YYYY**: Time and date
- ▪ **hh:mm YYYY-MM-DD**: Time and date
- ▪ **YYYY-MM-DD hh:mm**: Date and time

▶ To customize the print format for the template, select the corresponding settings in the drop-down lists of the following parameters:

- ▪ **Duplex printing**
- ▪ **Page header**
- ▪ **Header of data chart**
- ▪ **Paper size**
- ▪ **Orientation**

▶ Use the **ON/OFF** slider to activate or deactivate the display of the following elements:

- ▪ **Display page header**
- ▪ **Display report header**
- ▪ **Display feature view** (with annotations)

6.2.3 Configuring the page header

> 📍 The menu is only available if the **Display page header** setting is active in the **Default settings** menu.

The form fields listed below can be added to the **Page header** of the measurement report. During the creation of the measurement report, the form fields are filled according to the entries made.
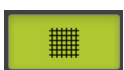
Form field	Meaning and application
Timestamp	The date and time are added.
Job	The job name is added.
User name	The user name is added.
Part number	The part number is added.
Fixed text	Fixed text is added to the template. ▶ Tap the **Fixed text** form field in the template > An input field opens ▶ Enter the desired text ▶ To close the input field, tap anywhere outside the input field
Variable text	Variable text is added. You can type the variable text into the template. When creating the measurement report, you can overwrite the text as needed.
Logo	A logo is added. ▶ Tap the **Logo** form field in the template > A dialog appears ▶ Select the desired logo in its storage location ▶ Tap **OK** to close the dialog > The logo is added to the template

Adding or removing fields

▶ To add or remove a form field, tap it in the list of form fields
> Active form fields are identified by a check mark
> By tapping it, you add the form field to the template at its default position or remove it from the template

Resizing a form field

You can adjust the size of the form field using the square handles at the corner of the field.

▶ Tap **Grid** to use auxiliary lines for easy alignment
▶ Drag the square handle of the corresponding form field to the desired size
> The change to the form field is applied

Positioning a form field

You can position the form fields in the template according to your own preferences.

▶ Tap **Grid** to use auxiliary lines for easy alignment
▶ Drag the form field to the desired position in the template
> The change to the form field is applied

6.2.4   Configuring the report header

ℹ   The menu is only available if the **Display report header** parameter is active in the **Default settings** menu.

Adding or removing form fields

The form fields listed below can be added to the **Report header** of the measurement report. During the creation of the measurement report, the form fields are filled according to the entries made.

Form field	Meaning and application
Timestamp	The date and time are added.
Job	The job name is added.
User name	The user name is added.
Part number	The part number is added.
Fixed text	Fixed text is added to the template. ▶ Tap the **Fixed text** form field in the template > An input field opens ▶ Enter text ▶ To close the input field, tap anywhere outside the input field
Variable text	Variable text is added. You can type the variable text into the template. When creating the measurement report, you can overwrite the text as needed.
Logo	A logo is added. ▶ Tap the **Logo** form field in the template > A dialog appears ▶ Select the desired logo in its storage location ▶ Tap **Select** to close the dialog > The logo is added to the template
Omitted features	The number of measured features that are not displayed in the measurement report is added.
Failed tolerances	The number of features that are out of tolerance is added.
Product designation	The product designation of the device is added.
Serial number	The serial number of the product is added.
Firmware version	The firmware version currently installed on the product is added.

Adding or removing fields

▶ To add or remove a form field, tap it in the list of form fields
> Active form fields are identified by a check mark
> By tapping it, you add the form field to the template at its default position or remove it from the template

Resizing a form field

You can adjust the size of the form field using the square handles at the corner of the field.

▶ Tap **Grid** to use auxiliary lines for easy alignment
▶ Drag the square handle of the corresponding form field to the desired size
> The change to the form field is applied

Positioning a form field

You can position the form fields in the template according to your own preferences.

▶ Tap **Grid** to use auxiliary lines for easy alignment
▶ Drag the form field to the desired position in the template
> The change to the form field is applied

6.2.5   Defining data for a measurement report

The form fields listed below can be added to the data table of the measurement report. During the creation of the measurement report, the data is filled in according to the entries made and depending on the measured features.

Form field	Meaning and application
Name	The name of the feature is added.
Type	The feature type is added.
Number	The number of the feature is added.
Cartesian position	The position in Cartesian coordinates is added.
Polar position	The position in polar coordinates is added.
X	The X coordinate (Cartesian) is added.
Y	The Y coordinate (Cartesian) is added.
Z	The Z coordinate (Cartesian) is added.
X distance	For features of the **Distance** geometry type, the distance on the X axis is added
Y distance	For features of the **Distance** geometry type, the distance on the Y-axis is added.
Z distance	For features of the **Distance** geometry type, the distance on the Z axis is added.
Coordinate system	The coordinate system used for the feature is added.
r	The radial coordinate (polar) is added.
φ	The angular coordinate (polar) is added.
Size	The main dimension of the feature (e.g., the length of a straight line) is added.
Length	The length of the feature is added.
Width	The width of the feature is added.
Radius	The radius of the feature is added.
Diameter	The diameter of the feature is added.
Angle	The angle of the feature is added. For features of the **Arc** geometry type, the angle, starting angle and end angle are entered.
Fitting algorithm	The fitting algorithm applied to the feature is inserted.
No. of points / parent features	For measured features, the number of measuring points is added. For constructed features, the number of parent features is added.
Form deviation	The maximum deviation from the calculated ideal geometry is added.

> **ℹ**   Applies only to features that have been measured using more than the mathematically required number of points.

Form field	Meaning and application
Creation type	The symbol of the process used for creating the feature is added (measuring, constructing, or defining).
Tolerance general state	The overall status of all of the tolerances that have been applied to the feature are added (e. g., **Passed**, if all of the individual tolerances are good).
Tolerance type	The tolerance types applied to the feature are added.
Tolerance state	The states of the tolerances applied to the feature are added.
Tol. fitting algorithm	The fitting algorithm used in the tolerance check is added. Whether a tolerance fitting algorithm is used depends on the geometry type.
Nom. dimension / Tolerance zone	The nominal dimension or the value of the tolerance zone of a tolerance applying to a feature is added.
Actual value	The actual dimension of a tolerance applied to the feature is added.
Deviation	The difference between nominal dimension and actual dimension is added.
Lower tolerance	The lower tolerance limit of a tolerance applied to the feature is added.
Upper tolerance	The upper tolerance limit of a tolerance applied to the feature is added.
Lower limit	The lower limit of a tolerance applied to the feature is added.
Upper limit	The upper limit of a tolerance applied to the feature is added.
Trend [-/+++]	The trend of the deviation is added. The tolerance zone is divided into seven segments. The result is assigned to the corresponding segment. The corresponding segment is shown as a trend: ■ Segment -3: **---** ■ Segment -2: **--** ■ Segment -1: **-** ■ Segment 0: **.** ■ Segment +1: **+** ■ Segment +2: **++** ■ Segment +3: **+++**
Reference, bonus	The reference feature of a tolerance applied to the feature is added. If a material requirement is being used, the existing tolerance bonus is added.

Adding or removing fields
- ▶ To add or remove a form field, tap the **form field** in the list
- > Active form fields are identified by a check mark
- > By tapping it, you add the form field as a column to the data table, or remove it from the data table

Changing the column order

The order of the columns in the data table is controlled via a separate dialog.
- ▶ Tap and hold the desired column in the table
- > A dialog opens.
- ▶ To change the position of a column in the dialog, drag its name to the desired position
- ▶ To swap the positions of two columns, tap their names successively as indicated in the wizard
- > The changes to the data table are applied

Changing the column widths

To adjust the width of the columns in the data table, use the diamond-shaped handles.

- ▶ Tap **Grid** to use auxiliary lines for easy alignment
- ▶ Adjust the column width by dragging the diamond-shaped handles
- > Columns that are outside the print area are marked red
- > The changes to the data table are applied

6.2.6 Saving a template

The templates are saved in the XMT data format.

- ▶ To save the template, tap **Save as**
- > The **Save as** dialog appears
- ▶ Select the storage location (e. g., **Internal/Reports**)
- ▶ Enter a name for the template
- ▶ Confirm entry with **RET**
- ▶ Tap **Save as**
- > The template is saved and can be used for measurement reports

> ⓘ The XMT data format has been changed for the current firmware version. Files saved in the XMT data format of the previous version can no longer be used. However, you can still open these templates and then adapt and save them as required.

6.2.7 Exiting or canceling the creation of a template

> **ⓘ** When creating a template, you need to save the template before closing it. Otherwise, the editing process will be canceled and the changes will be discarded.
> **Further information:** "Saving a template", Page 80

✕
- ▶ Tap **Close** to exit or cancel the creation of the template or measurement report
- ▶ Tap **OK** to close the message
- > The editor is closed

6.3 Transferring a measurement report template to the unit

You can transfer a measurement report template from a computer to the unit over a network or via a USB mass storage device.

Storing a file to a network drive or USB mass storage device

- ▶ In your computer's file storage area, navigate to the folder in which have saved the measurement report template (e.g., **C: ▶ HEIDENHAIN ▶ [product designation] ▶ ProductsMGE5 ▶ [product code] ▶ user ▶ Reports ▶ custom_templates**
- ▶ Copy the file to a network drive or USB mass storage device

Import the file into the unit

- ▶ Tap **File management** in the main menu
- ▶ On the USB mass storage device or network drive, navigate to the file you want to import
- ▶ Drag the icon of the file to the right
- > The operating elements are displayed
- ▶ To copy the file, tap **Copy file**
- ▶ In the dialog, select the following storage location: **▶ Internal ▶ Reports ▶ custom_templates**
- ▶ Tap **Select**
- > The file is stored on the product
- > The template appears in the **Measurement report** menu and can be used for creating measurement reports

7

ScreenshotClient

7.1 Overview

The standard installation of QUADRA-CHEK 2000 Demo also contains the ScreenshotClient program. With ScreenshotClient, you can take screenshots of the demo software or the unit.

This chapter describes how ScreenshotClient is configured and used.

7.2 Information about ScreenshotClient

With ScreenshotClient, you can take screenshots of the active screen of the demo software or the unit from a computer. Before taking a screenshot, select the desired user interface language, as well as the file name and the location where you want to store the screenshots.

ScreenshotClient creates image files of the desired screen:

- In .PNG format
- With the configured name
- With the appropriate language code
- With the time information of year, month, day, hour, minute, and second
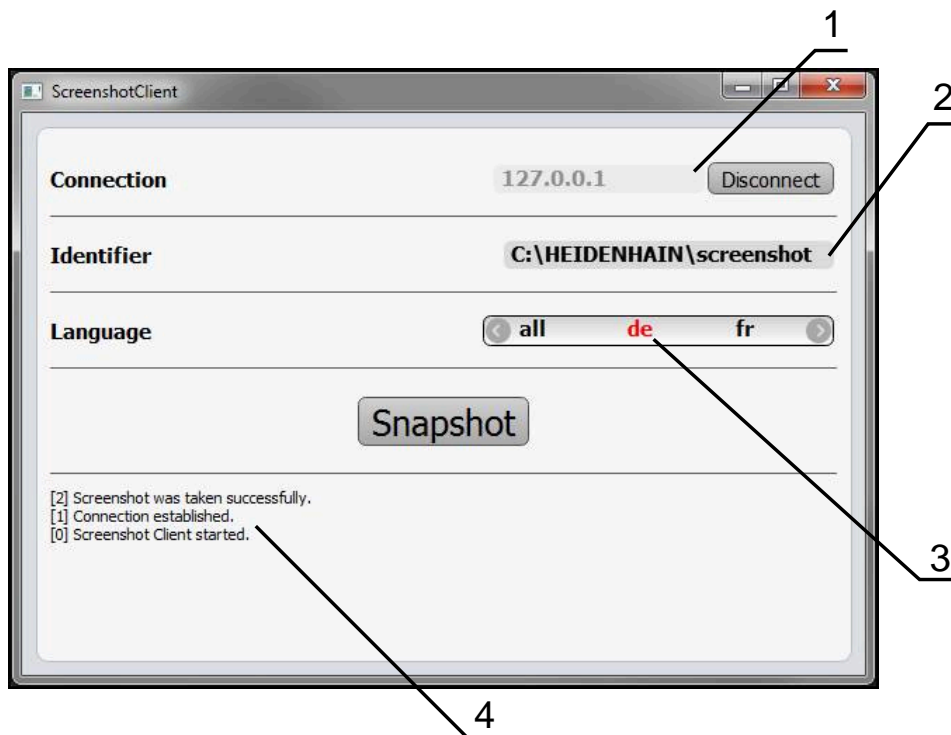
Figure 31: ScreenshotClient user interface

1 Connection status
2 File path and file name
3 Language selection
4 Status messages

7.3 Starting ScreenshotClient

▶ Select in succession in Microsoft Windows:
- ■ **Start**
- ■ **All programs**
- ■ **HEIDENHAIN**
- ■ **QUADRA-CHEK 2000 Demo**
- ■ **ScreenshotClient**

> ScreenshotClient is started:

Figure 32: ScreenshotClient has been started (not connected yet)

> You can now connect ScreenshotClient with the demo software or the product

7.4 Connecting ScreenshotClient with the demo software

> ℹ️ Before establishing a connection with ScreenshotClient, first start the demo software or switch on the unit. Otherwise ScreenshotClient will show the status message **Connection close.** when trying to connect.

▶ Start the demo software if you have not already done so
Further information: "Starting QUADRA-CHEK 2000 Demo", Page 22

▶ Tap **Connect**

> A connection with the demo software is established

> The status message is updated

> The **Identifier** and **Language** input fields become active

7.5 Connecting ScreenshotClient with the unit

Prerequisite: The network must be configured on the device.

> 📖 For detailed information on configuring the network at the unit, please refer to the "Setup" chapter in the operating instructions of QUADRA-CHEK 2000.

> ℹ️ Before establishing a connection with ScreenshotClient, first start the demo software or switch on the unit. Otherwise ScreenshotClient will show the status message **Connection close.** when trying to connect.

- ▶ Switch on the unit if you have not already done so
- ▶ Enter the **IPv4 address** of the interface in the **Connection** input field.
  You will find the address in the device settings under:
  Interfaces ► Network ►
- ▶ Tap **Connect**
- > A connection with the unit is established
- > The status message is updated
- > The **Identifier** and **Language** input fields become active

7.6 Configuring ScreenshotClient for taking screenshots

Once you have started ScreenshotClient, you can make the following configurations:

- ▪ Location at which screenshots are stored, and what the file names are
- ▪ User interface language in which the screenshots are created

7.6.1 Configuring the storage location and file name for screenshots

By default, ScreenshotClient saves screenshots to the following storage location:

C: ► HEIDENHAIN ► [product designation] ► ProductsMGE5 ► Metrology ► [product code] ► sources ► [file name]

You can define a different storage location, if necessary.

- ▶ Tap the **Identifier** input field
- ▶ Enter the path to the storage location and the name for the screenshots into the **Identifier** input field

> ℹ️ Use the following syntax to enter the path and file name for screenshots:
> **[drive]:\[folder]\[file name]**

- > ScreenshotClient will save all screenshots to the storage location entered

7.6.2 Configuring the user interface language of screenshots

The **Language** input field shows all of the user interface languages available for the demo software or the unit. Once you have selected a language code, ScreenshotClient will take screenshots in the corresponding language.

> **i** The user interface language you are using in the demo software or on the unit does not have any effect on the screenshots. Screenshots are always created in the language that you have selected in ScreenshotClient.

Screenshots in the desired user interface language

To take screenshots in a desired user interface language

- ▶ Use the arrow keys to select the desired language code in the **Language** input field
- > The selected language code is shown in red
- > ScreenshotClient creates the screenshots in the desired user interface language

Screenshots of all available user interface languages

To create screenshots in all available user interface languages

- ▶ Use the arrow keys to select **all** in the **Language** input field
- > The **all** language code is shown in red
- > ScreenshotClient creates the screenshots in all available user interface languages

7.7   Creating screenshots

▶ In the demo software or on the unit, call the view from which you would like to take a screenshot

▶ Switch to **ScreenshotClient**

▶ Tap **Snapshot**

> The screenshot is created and saved to the configured storage location

> 🛈 The screenshot is saved in the format [file name]_[language code]_[YYYYMMDDhhmmss] (e.g. **screenshot_en_20170125114100**)

> The status message is updated:
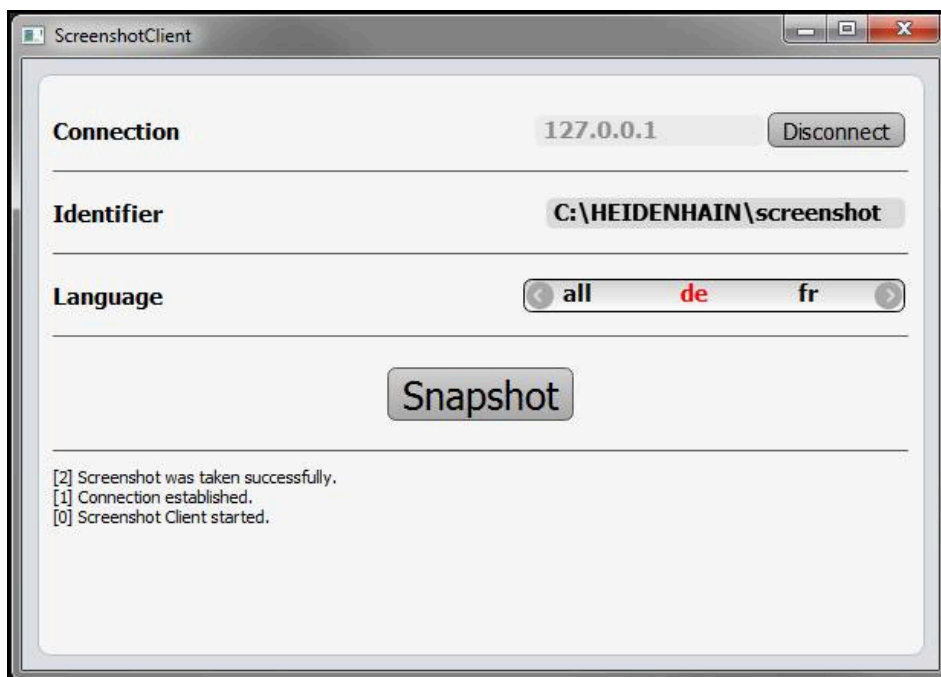
Figure 33: ScreenshotClient after screenshot has been created successfully

7.8   Exiting ScreenshotClient

▶ Tap **Disconnect**

> The connection to the demo software or the unit is terminated

▶ Tap **Close**

> ScreenshotClient is exited

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HEIDENHAIN