SICAT**JMT**⁺

SICAT JMT⁺ *VERSION 1.0*

Instructions for use – English

Contents

1 FOREWORD

Welcome to the instructions for use for SICAT JMT$^+$ software. These instructions for use provide you with basic information on the operation of the software. It explains the installation and provides advice on the preparation of the measurement and data acquisition.

Please also consult the safety relevant information in the technical instructions for use, and keep all handbooks in the immediate proximity of the measurement system. The handbooks are a key component of the product and help you to operate the measurement system in the proper way.

SICAT GmbH & Co. KG assumes no liability for the infringement of personnel or patients and/or damage to the system that is caused by the failure to observe the information provided in the handbooks or the misuse of the measurement system.

Should you discover any errors when working with the instructions for use or if you have any suggestions, we will be thankful to hear from you at all times.

REGISTERED TRADEMARK

Differing brand names are made reference to in these instructions for use. All of these product names are only used for the purposes of clarification and for editorial reasons, and are trademarks of the corresponding companies. By using brand names, the trademarks themselves as well as the rights of the corresponding owners remain unaffected.

1.1 CONVENTIONS AND SYMBOLS USED

The following conventions are used in these instructions for use.

Warnings are as labelled follows:

⚠️ **WARNING**	Warning instructions designate a potential danger to the health and safety of users and/or patients. The instructions explain the type of danger and how it can be avoided.

Notices are identified as follows:

NOTICE	Notices designate a potential danger that can cause damage to or lead to the destruction of the device. The instructions explain the type of danger and how it can be avoided.

i Notices that are relevant to the completion of the measurement are labelled as such. The instructions for use are to be stored such that the information they contain are available to the user at all times.

COMMENTS ON CHANGES

To guarantee our product quality, we consistently try to further improve our product range. It may be the case that there may be an update to the software or hardware configuration after these instructions for use have been printed. It can therefore be the case that some of the illustrations differ from what you were actually given.

Please note, that a new version of these instructions for use is not released with every software release, as technical changes invisible to the user are often carried out in releases. You can download the latest version of the instructions for use in the service area on our homepage.
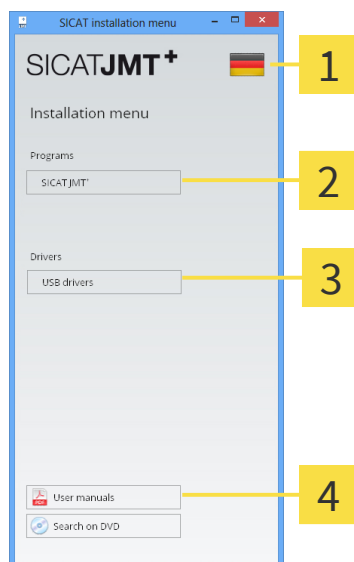
2 INSTALLATION

2.1 SYSTEM REQUIREMENTS SOFTWARE

- Processor: Intel Core2Duo (or comparable), at least 2.0GHz
- Internal memory: 4GB DDR2 RAM
- 3D-compatible graphics card: min. 512 MB, OpenGL 3.3, DirectX 9.0c (comp. Geforce GT 420/315M, AMD Radeon HD 6000/M Series)
- Color monitor, min. 1280x800 pixel
- Operating system:
    - Windows 7 64/32 bit
    - Windows 8 64/32 bit

2.2 INSTALLING THE SICAT JMT⁺ SOFTWARE

2.2.1 CD MENU

Upon running the SICAT JMT⁺ installation CD, the installation menu opens (if the automatic start feature does not initialize, please open the Windows Explorer and run the program file **Autoplay.exe**).


1 Select the display language here.

2 To be able to work with the SICAT JMT⁺ system, it is necessary to install SICAT JMT⁺. A specific order is not provided during the installation of several applications.

3 The USB drivers are only required if they were not correctly installed during the program installation.
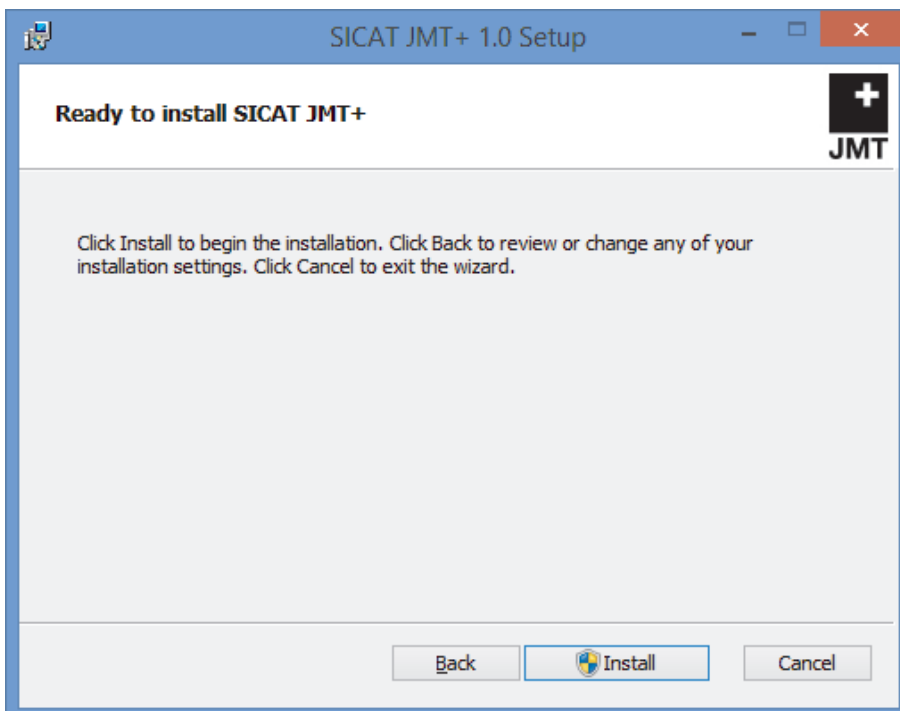
4 Instructions for use in digital form that you can open by clicking on the instructions for use are provided with the installation CD.
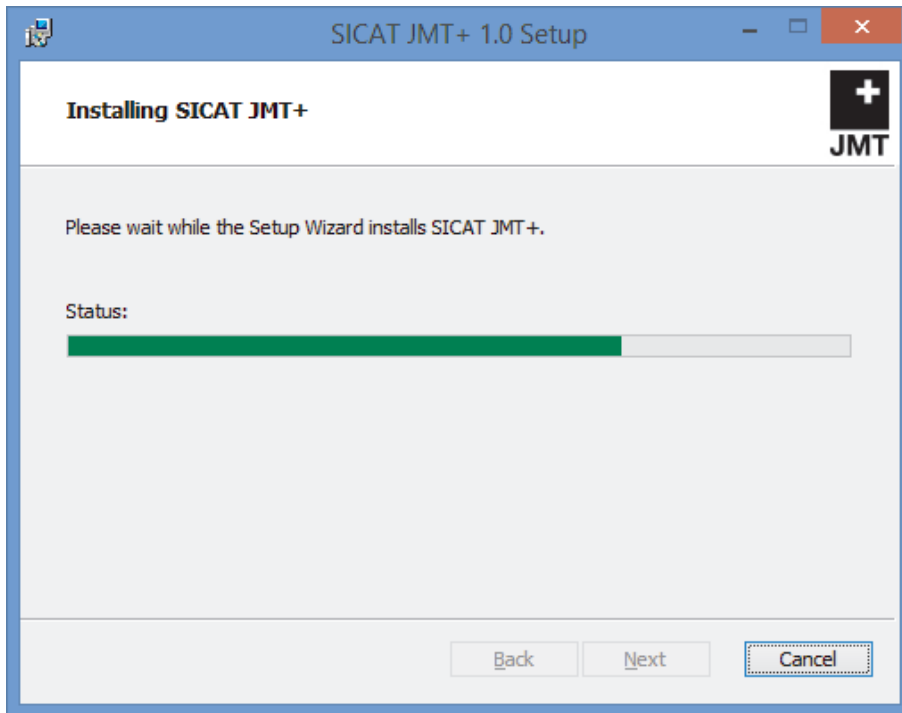
2.2.2 STEP-BY-STEP INSTALLATION

1. In the CD menu, click on **SICAT JMT⁺** (see *CD menu [▶ Page 5]*).
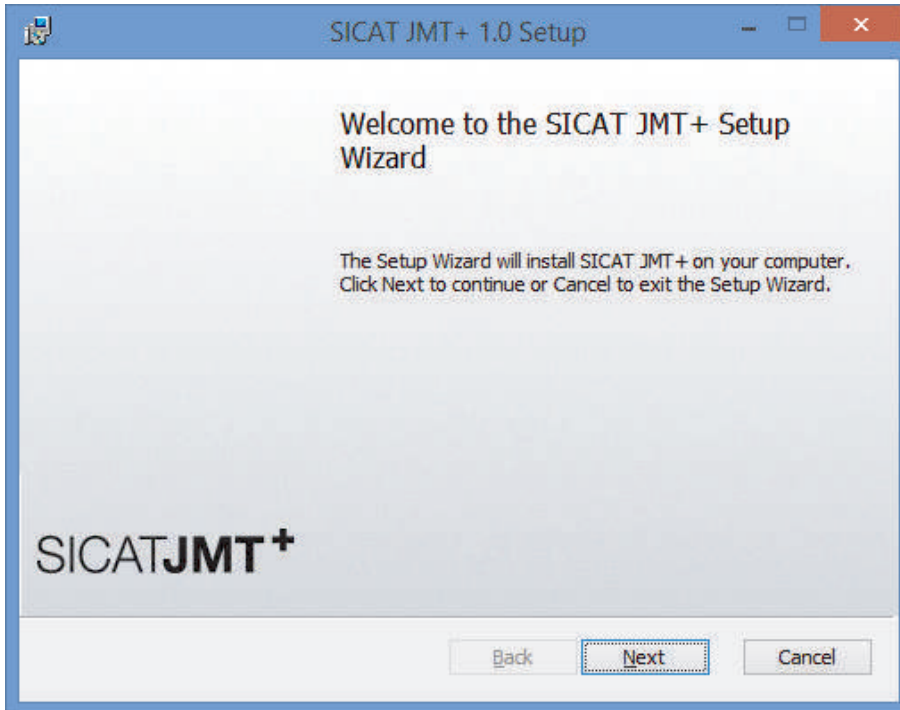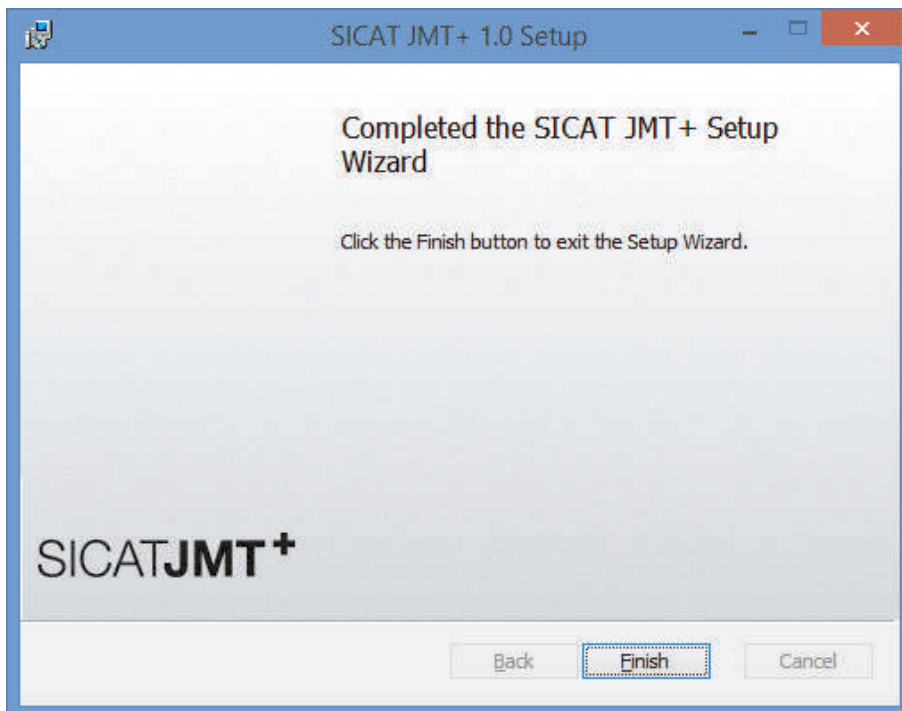

2. After that, please click on **Next** to start the installation.

3. Click on **Install** to start the installation and then confirm the prompt on the user account control.

▶ The installation process can take a few minutes.

▶ After the installation is complete, the following window opens:

4. Click on **Finish** to finish the installation.

▶ The software is now installed. A symbol with the name SICAT JMT⁺ was created on the desktop. To start the software you can either double click on this symbol or start **All Programs from the program group** > **SICAT** > **SICAT JMT+**.

i If you receive the prompt that your graphics hardware does not support OpenGL 3.3 during the installation, you cannot operate the software with this computer. Updating the graphics driver can be helpful in this case.

2.3 INSTALL DEVICE DRIVER

▪ In the CD menu, click on the driver that is to be installed (see *CD menu [▶ Page 5]*).

2.3.1 USB DRIVER

The USB driver required for the measurement platform is installed by Windows in the background after connecting the device and requires no special action. Please only carry out the installation of the USB driver if your PC does not have an internet connection and/or on the instruction of support staff.

3 THE PATIENT DATABASE

After the program starts, you are in the patient database.
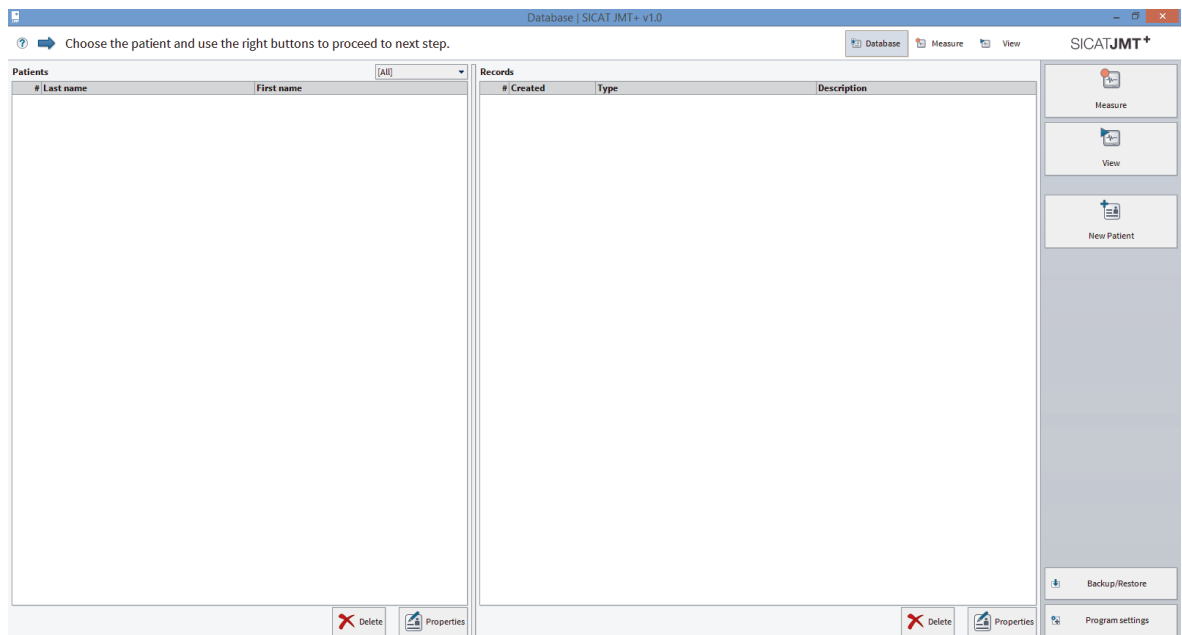
Here, you can manage the patients as well as the available measurements, and have access to import and export functions. In the following, please find a detailed description of the user interface.
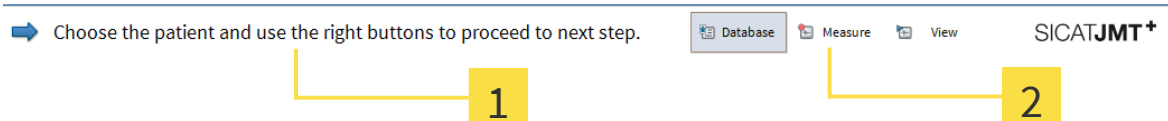
3.1 DATA BACKUP

⚠️ **WARNING**	The manufacturer SICAT GmbH & Co. KG expressly states that the user is alone responsible for completing a data backup. SICAT also recommends creating a regular backup of the patient database. The SICAT JMT+ database is located in the user directory

1. Windows 7: C:\ProgramData\SICAT\SICAT JMT+

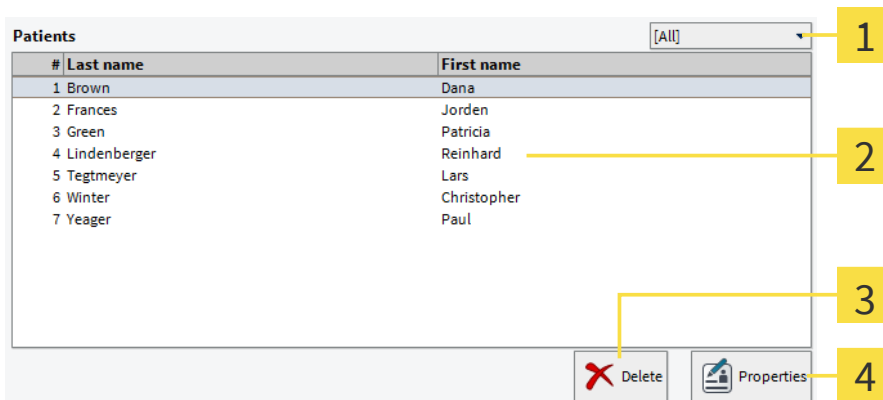2. Windows 8: C:\ProgramData\SICAT\SICAT JMT+

3.2 INFORMATION AND NAVIGATION

**1** **Hints** - Help and instructions on the operation of the software.

2 **Navigation** - You can see in which section of the program you are here. The currently active section is highlighted in color.

3.3 PATIENTS

1   **Filter function selection list** - Here you can select whether all patients should be displayed (standard setting), or only patients whom you have assigned the selected keyword in the patient properties.

2   **List of patients** - The patients are listed here. The currently active patient is highlighted in color.

3   **Delete patient** - After a special confirmation, the patient and all of the measurements assigned to them is irretrievably deleted.

4   **Edit patient file** - Clicking on **Properties** opens the patient file (see *Patient file / New patient [▶ Page 12]*).

3.4 RECORDS
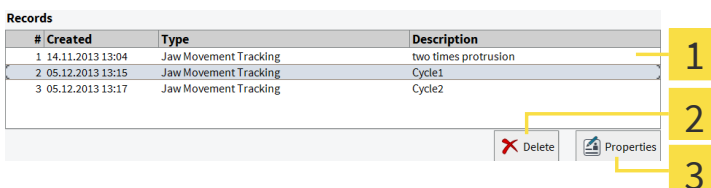
1   **List of records** - All of the records of the currently selected patient are listed here. The currently selected record is highlighted in color.

2   **Delete record** - After a special confirmation, the selected measurement is irretrievably deleted.

3   **Records properties** - Edit the description and comments on the record here (see *Record properties [▶ Page 16]*).

3.5 FUNCTIONS
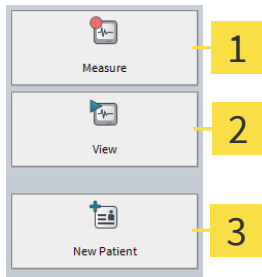
1   **Start new measurement** - One click leads you to the selection of the measuring application.

2   **View and edit measurement** - The currently selected measurement is opened for viewing and editing.

3   **New patient** - Click here to create a new patient.

3.6 PATIENT FILE / NEW PATIENT

If you create a new patient or edit the file for an existing patient (button **New Patient** or **Properties**), the following dialog opens:

The individual areas and their function are explained in brief as follows.

3.6.1 PROPERTIES

Properties	
First name	Christopher
Last name	Winter
Gender	⦿ Male ○ Female
Date of birth	01.01.1981 dd.mm.yyyy ▦
Code	54187871
Street	
City	
Postal code	
Country	Deutschland

Patient properties - Please enter the patient details here. The first name and surname and the gender are mandatory fields.

The **Code** field gives you the opportunity to assign the patient entry with a clear labelling.

3.6.2 GROUPS

Via this field, you can assign the patients to a group. You are then able to display patients from a specific group only in the database.
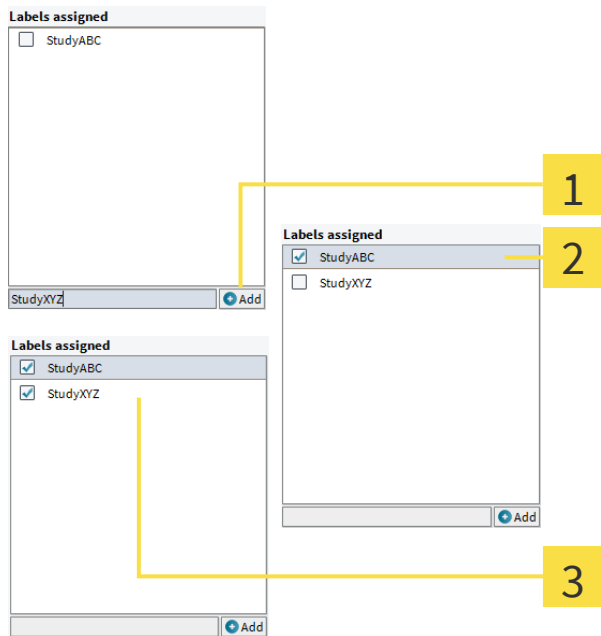

1   **Create new group** - Enter the name for the group that is to be created here and click on **Add**.

2   The newly added group is shown in the list. The check mark before it shows that the patient is assigned to this group.

3   **Assign patients to several groups** - By clicking on the check mark, you can complete or remove the assigning. Groups to that no more patients are assigned are removed automatically after leaving the dialog.
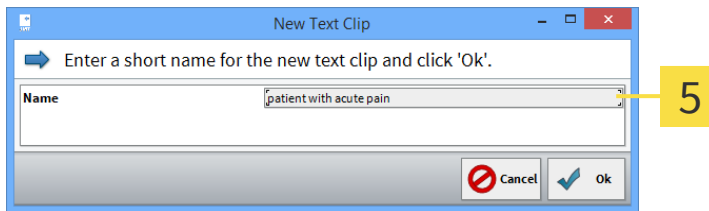
3.6.3 COMMENTS & CLIPS
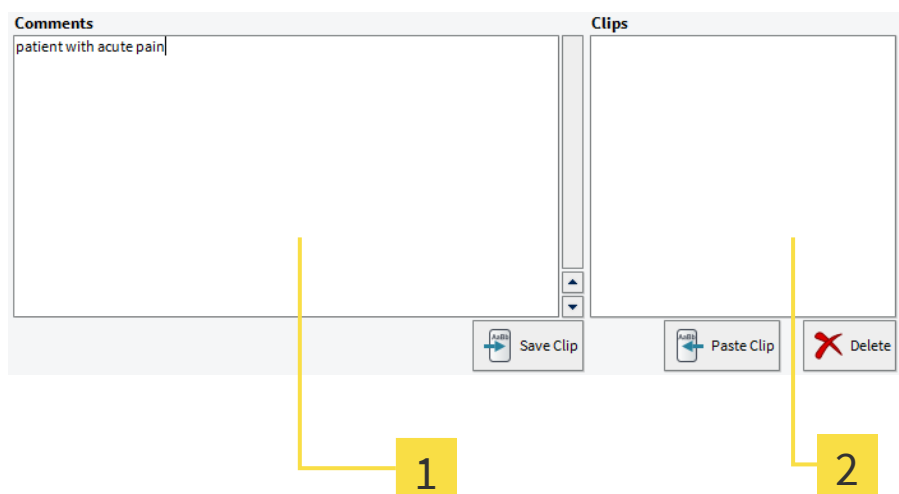
1   **Comments** - Write a random free text as a comment on this patient here.

2   **Clips** - This list contains all of the clips you defined.

CREATE CLIP
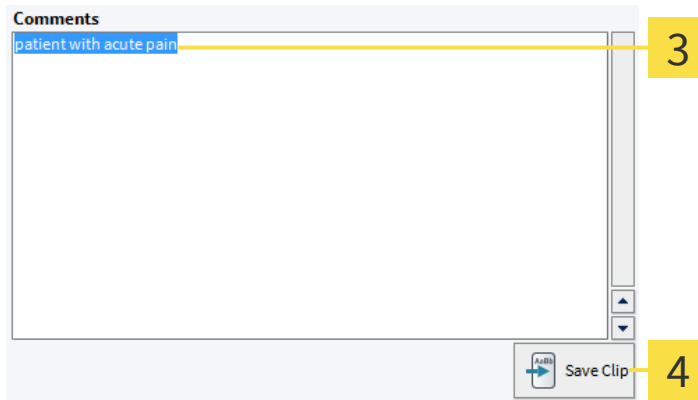
3 **Highlight text** - In the "comments" field, highlight the section of text you want to create as a clip.

4 **Save** - To create the highlighted section of text as a clip, click on **Save Clip**.

5 **New Text Clip** - In this dialog, you can specify a name for the clip; your selection will be adopted automatically as a suggestion. With **OK** the clip is created, and is shown in the list with the specified name.

PASTE CLIP
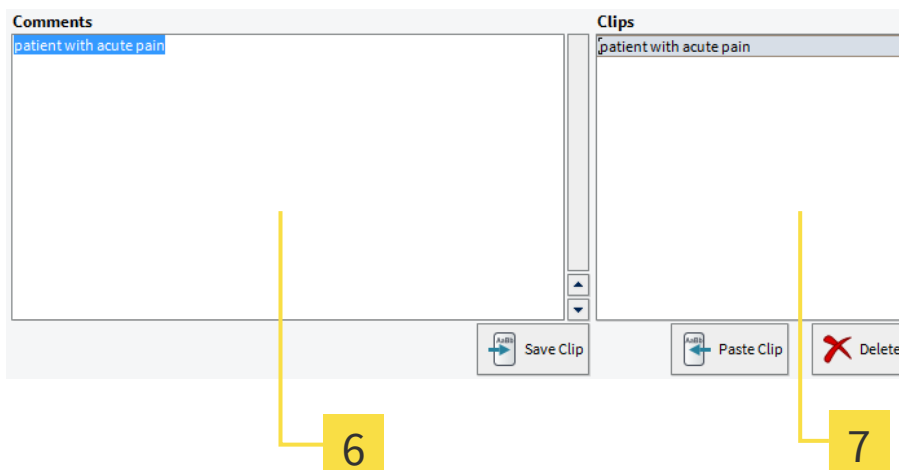
6 **Specify cursor position** - With a left click, position the cursor at the point at that you want to paste your clip.

7 **Paste selected clip** - With a left click, select a block from the list that you subsequently adopt in the current position in the comments field by clicking on **Paste Clip**.

3.7 RECORD PROPERTIES

You recall this dialog by clicking on **Properties** on the right under the list of records. You can change the description of the record and add comments for the record (see *Comments & clips [▶ Page 14]*). Clips are saved separately from those in the patient file.
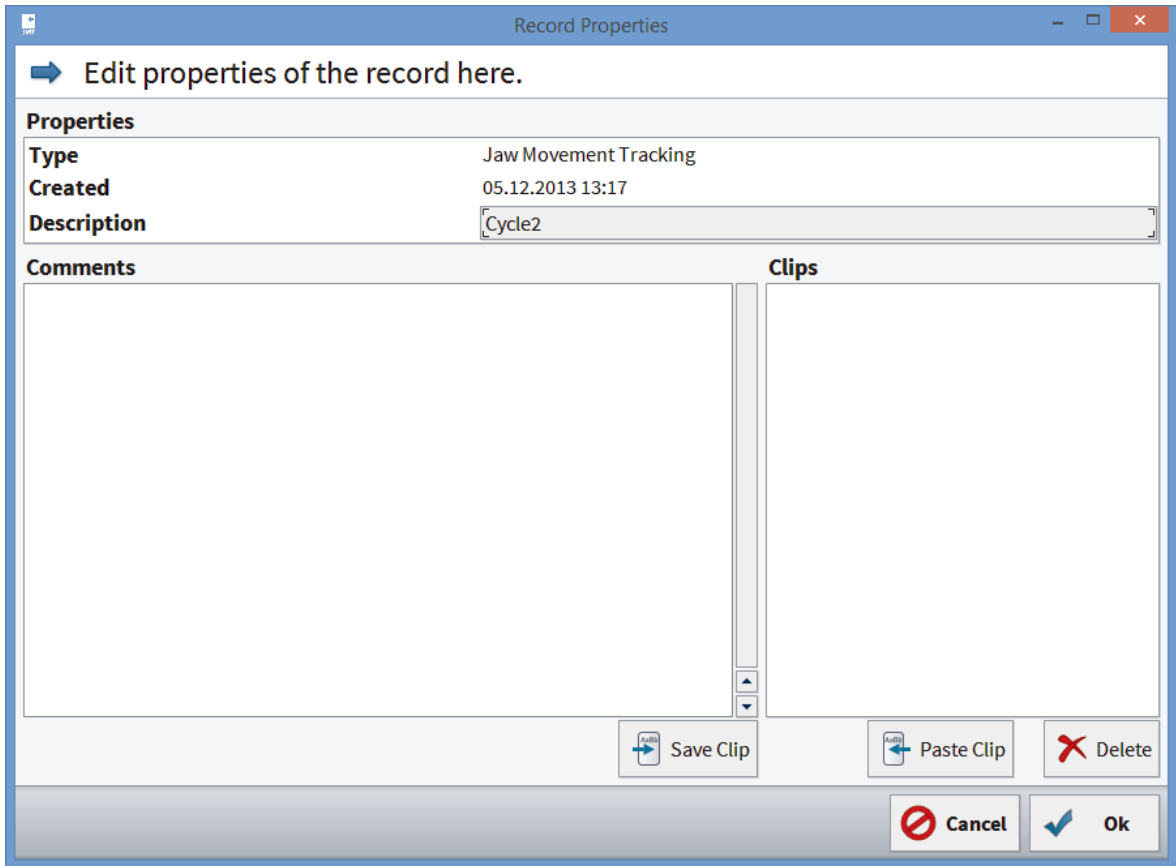

3.8 BACKUP PATIENT AND MEASUREMENT DATA

You can backup patient and measurement data from the patient database. You can adopt saved data in your database again with the "Restore" function.

This function also enables the exchanging of individual datasets, e.g. with colleagues who are also working with SICAT JMT⁺.
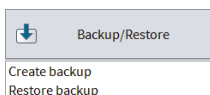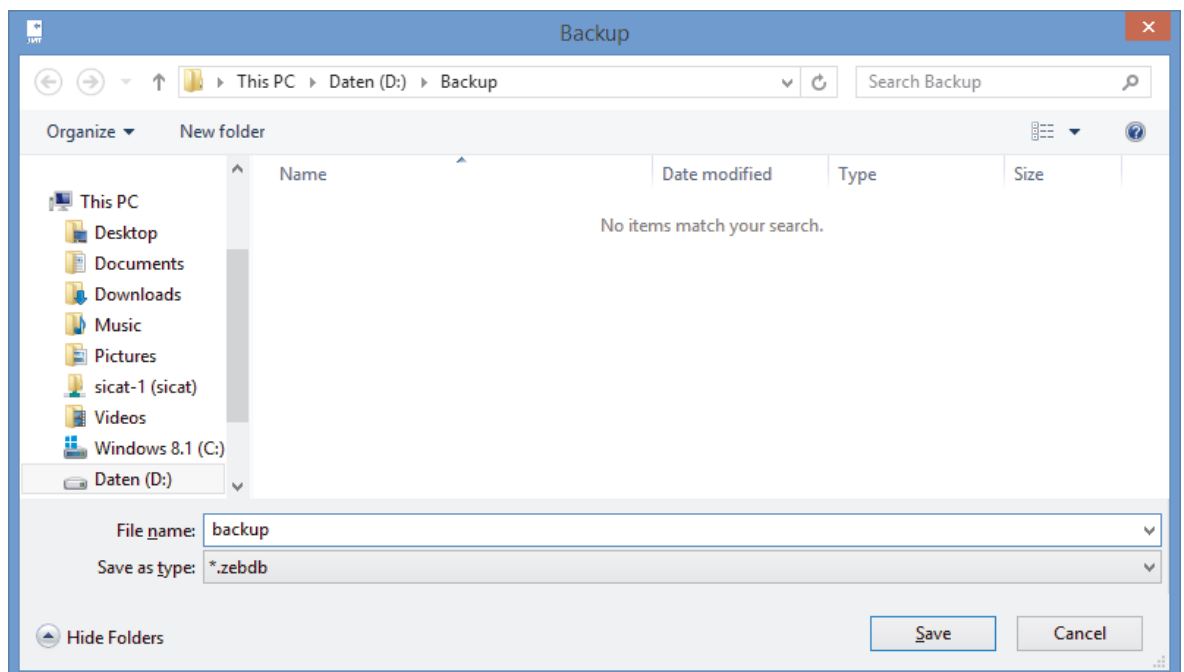
1. **Create backup...** - Click on the **Backup/restore** button on the below right in the function bar. Next, select **Create backup** from the list that is shown.
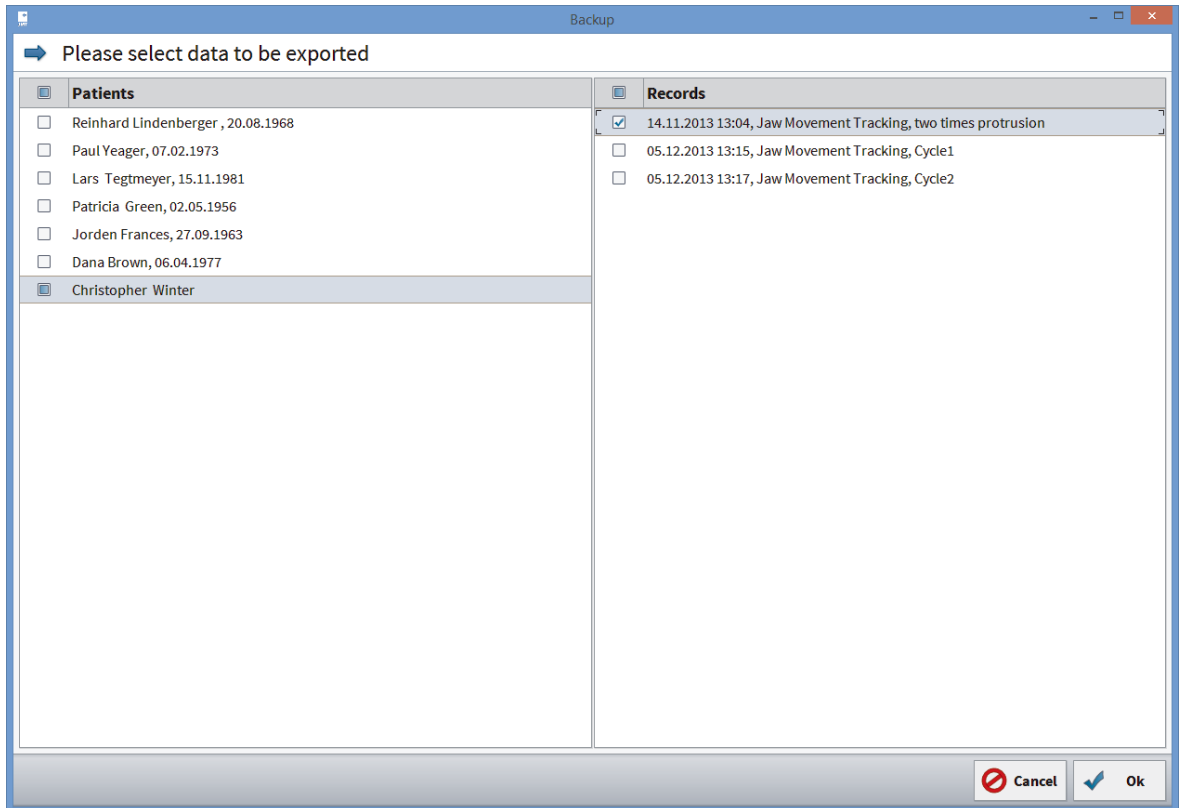
2. **Select datasets** - Apply the check mark before all the datasets to be exported. If you want to export all the measurements pertaining to a patient, just apply the check mark before the patient's name. If you click in a line with patient names, all the measurements for the patient are shown on the right hand side. You can then select them individually.


3. **Select the destination folder** - On your hard disk, navigate to the location at which the exported file should be saved. Give it a name and then click on **Save** to get to the data selection.
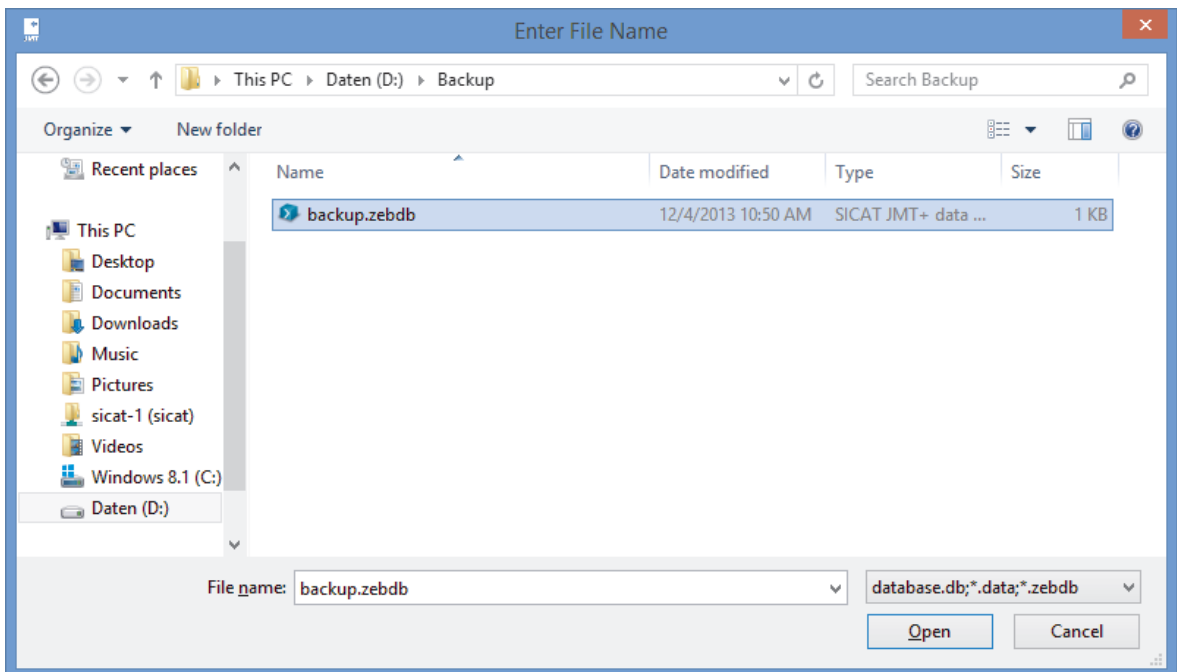
> ⚠️ **WARNING** Please note that the data backup does not take place automatically.

3.9 RESTORE A DATA BACKUP

You can save backed up patient and measurement data in the database. The exact procedure is described as follows:
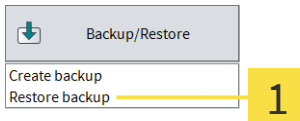

1. **Restore backup** - Click on the **Backup/restore** button on the below right in the function bar. Next, select **Restore backup** from the list that is shown.

2. **Search for and select data** - On your hard disk and/or other storage media connected to your computer, search for the datasets that you would like to import. The files you have to select depend on the format. For further information, see *Data formats [▶ Page 20]*.
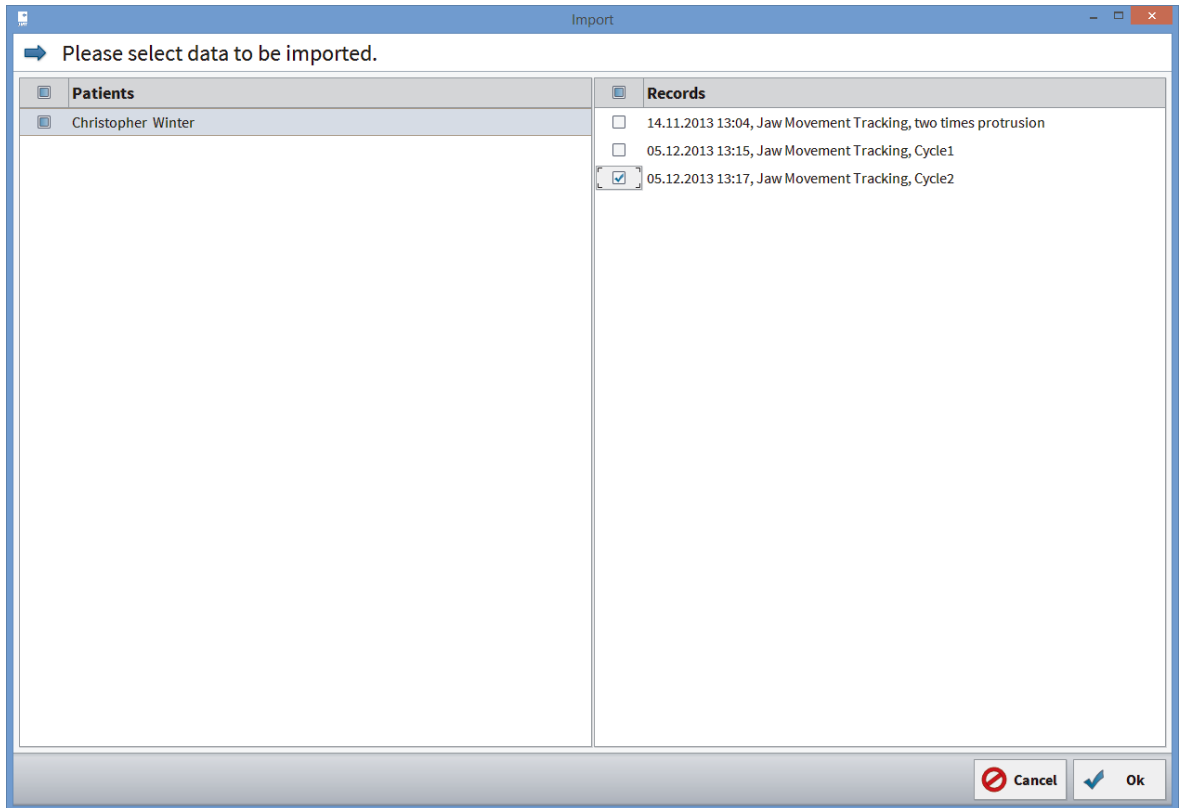
3. **Select datasets** - Apply the check mark before all the datasets to be imported. To adopt all patients from the backup, apply the check mark at **Patients** above the first column. If you want to import all the measurements pertaining to a patient, just apply the check mark before the patient's name. If you click in a line with patient names, all the measurements for the patient are shown on the right hand side. You can then select them individually.
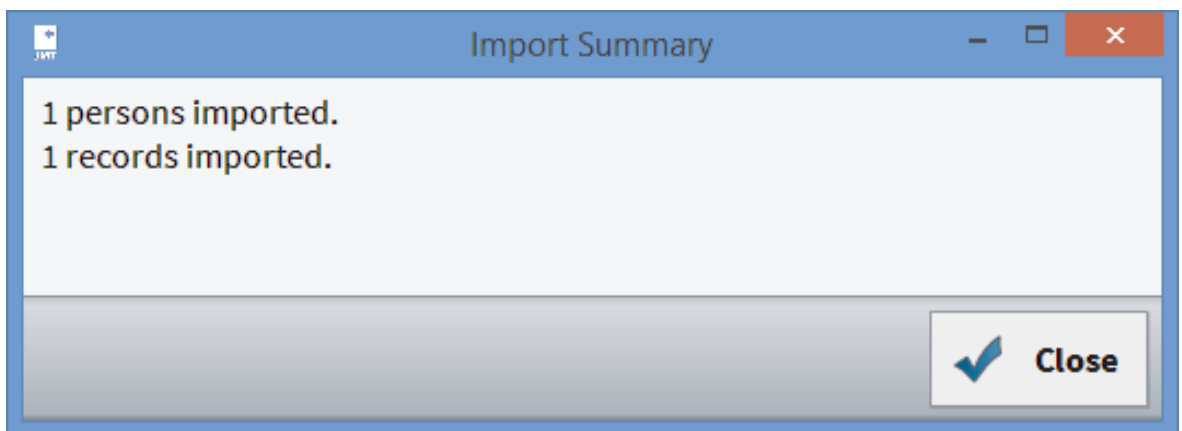
4. **Import Summary** - Subsequent to the completion of the data import, the dialog shows you a summary of how many patients and measurements were imported. Faulty datasets as well as patients and measurements are stated in the list that have already been created and were not therefore imported. Project names from the old software are assigned to the patients as a group with the prefix of "Project".
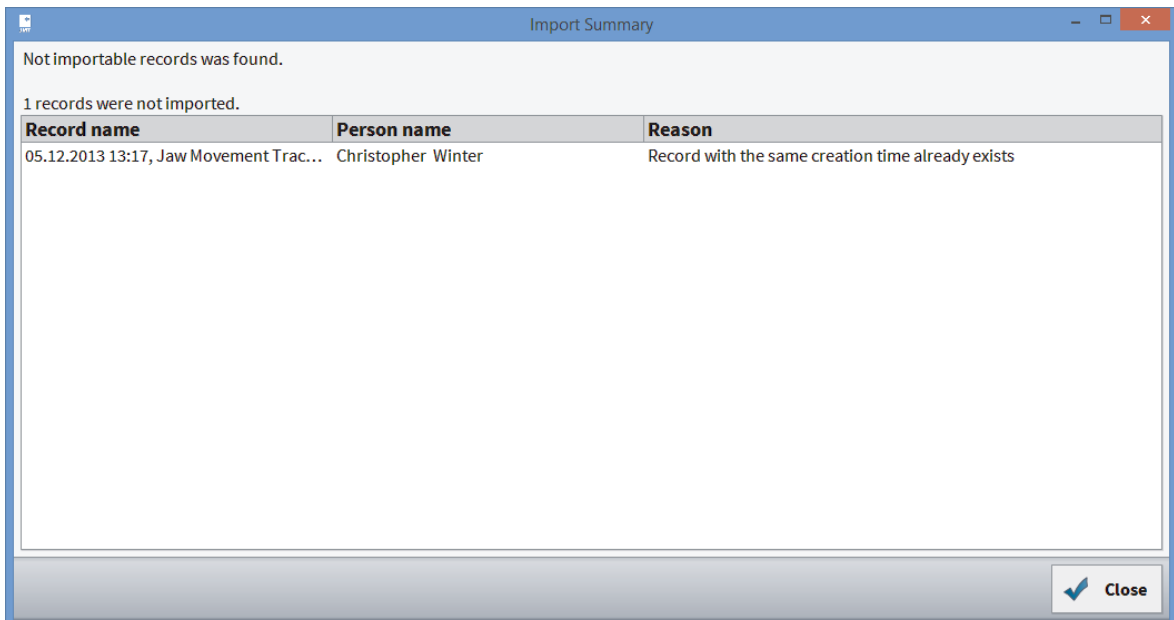
Errors/duplicates - If errors occur during the import or if you want to import datasets that are already available in your database, you will be shown a summary with corresponding information.
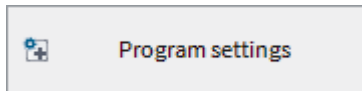
3.9.1 DATA FORMATS

- **.zebdb** - If you want to import data from old or new software packages, simply select the corresponding file with the ending .zebdb.
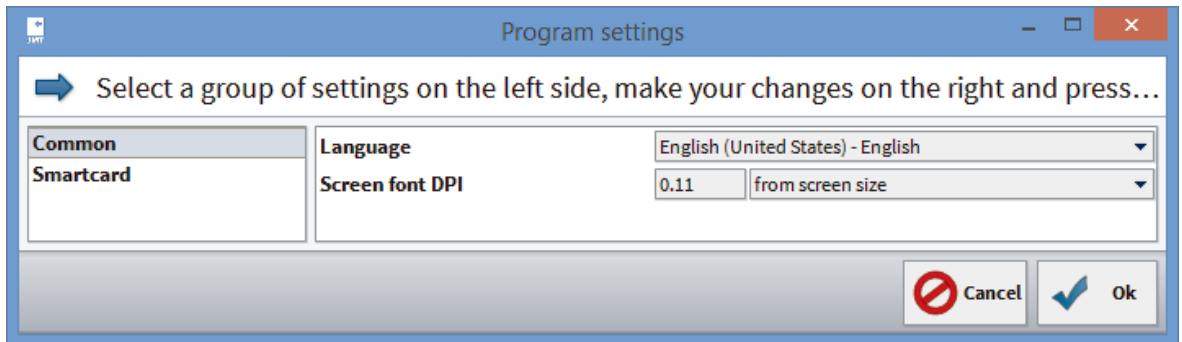
3.10 PROGRAM SETTINGS

Here, among others, you can change the language and apply settings for the smartcard reader.

3.10.1 COMMON SETTINGS

1. **Program settings...** - Click on the button on the below right in the function bar.

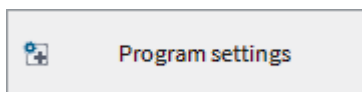2. **Select common settings** - Click on the left hand side on **Common**.

Language - Select the required translation of the program interface from the list.

Zoom factor - This factor determines the size of all elements displayed in the software: Select **fixed** in order to enter an individual value in the dpi unit in the input field. **From screen size** can be used as an alternative to the dpi setting. **From system** returns the value to the Window Standard.
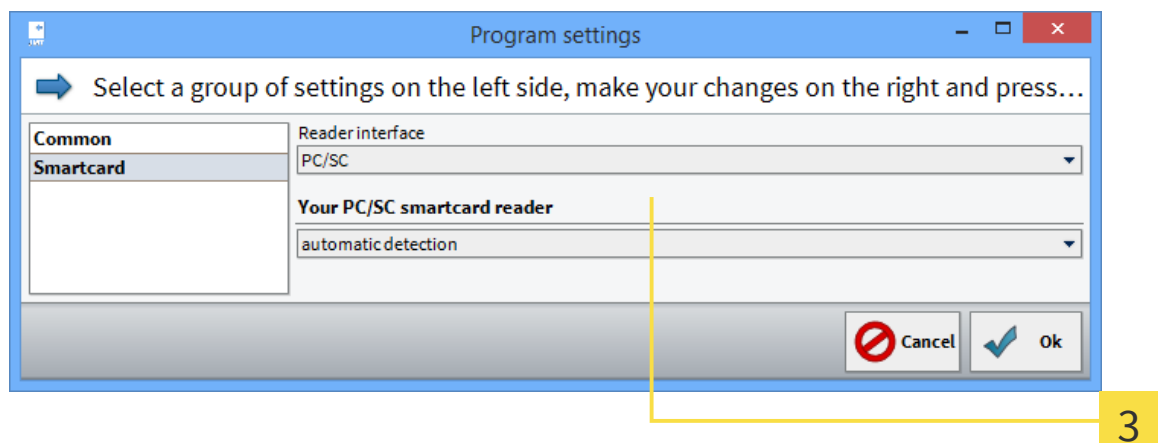
3.10.2 SMARTCARD

You can set up the smartcard reader here for health insurance cards / electronic health cards. The requirement for this is a SmartCard reader and/or special reader devices for health insurance cards, such as chip card keypads from the German manufacturer Cherry.

The old health insurance cards only work if the CT-API driver is installed.

1. **Program settings...** - Click on the button on the below right in the function bar.

2. **Select** the Smartcard entry on the left hand side.

3. **Select the interface** - On the right hand side, select the interface and/or the device with that you read the health insurance card and/or electronic health card. PC/SC for electronic health card CT-API for health insurance card and electronic health card. If you have selected PC/SC, confirm it with Close.

4. **CT-API** - CT-API can read health insurance cards and electronic health cards. The pre-set suggestion is the driver from the EHEALTH-BCS keypad G87-1504 from manufacturer Cherry. Next, click on **Browse** in order to select the corresponding dll file for your CPI-API driver.
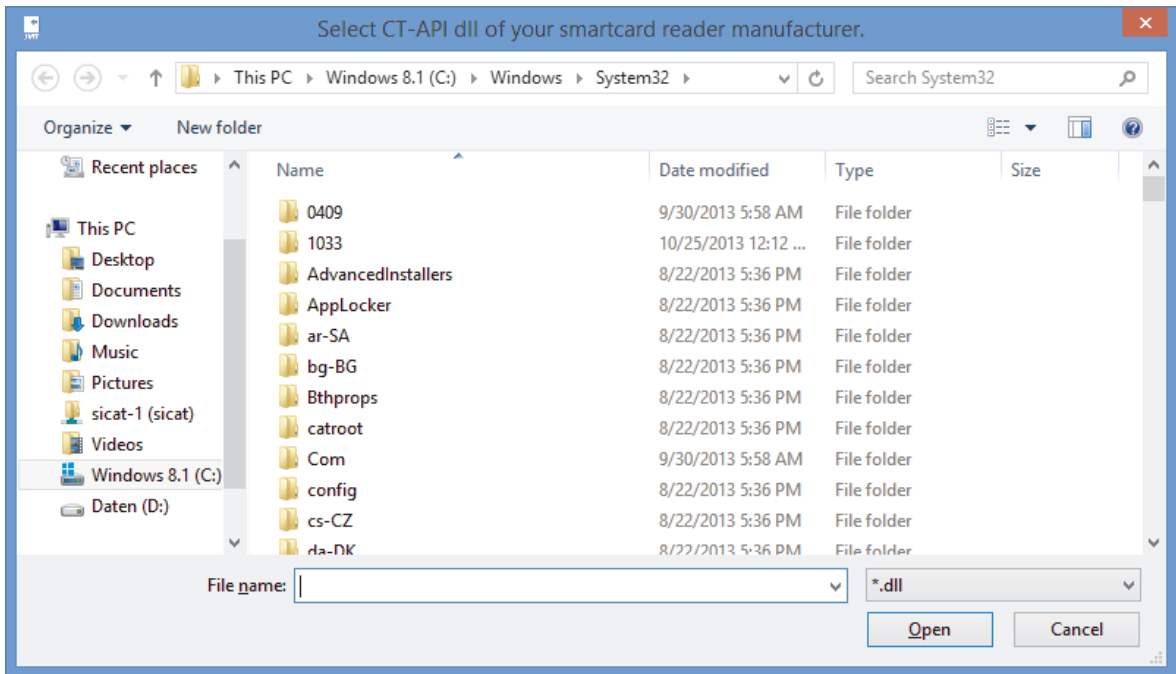

5. Select the **driver dll** - Select the corresponding CT-API driver on your hard disk. The details are in the handbook provided by the smartcard reader manufacturer.
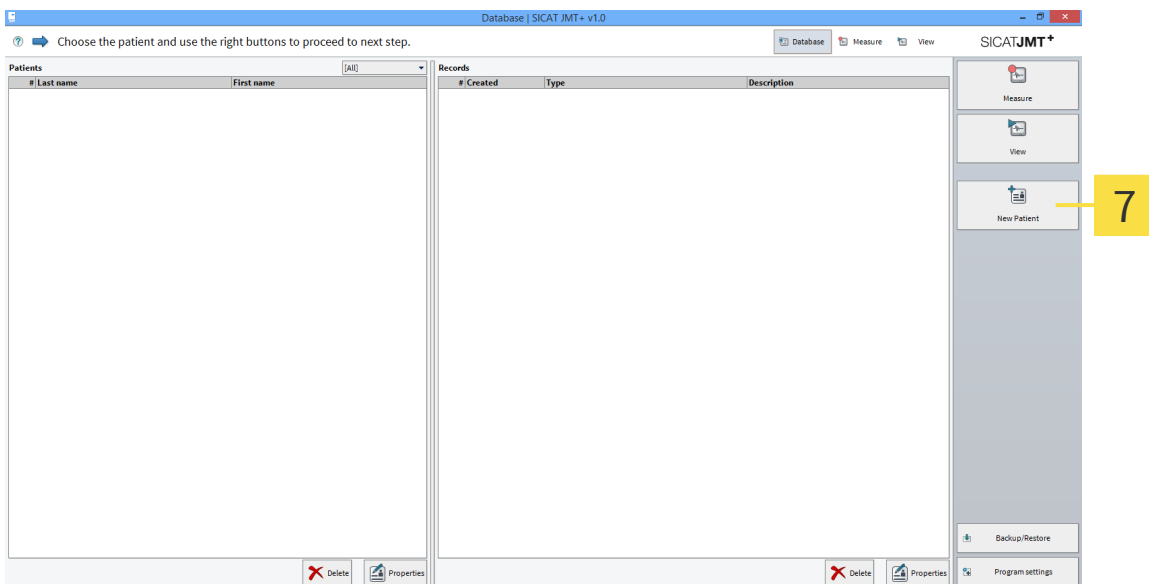

6. **Inserting the card** - Insert the card in the reader device.

7. **Creating new patients** - Click on **New patient** and the freely readable information on the card is automatically pasted onto the appropriate fields of the patient file.

4 DEVICE SETTINGS

Before you can use your measurement devices, you have to create a device profile (meaning one or several devices in a group). You can find these functions after clicking on **Measure** below right under **Hardware Setup**.
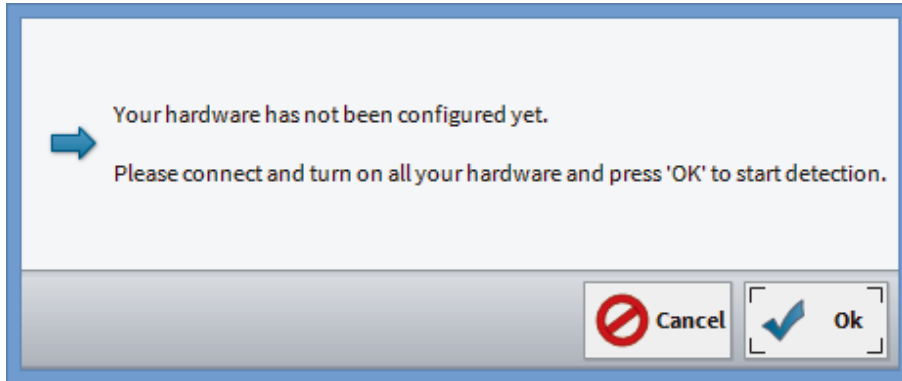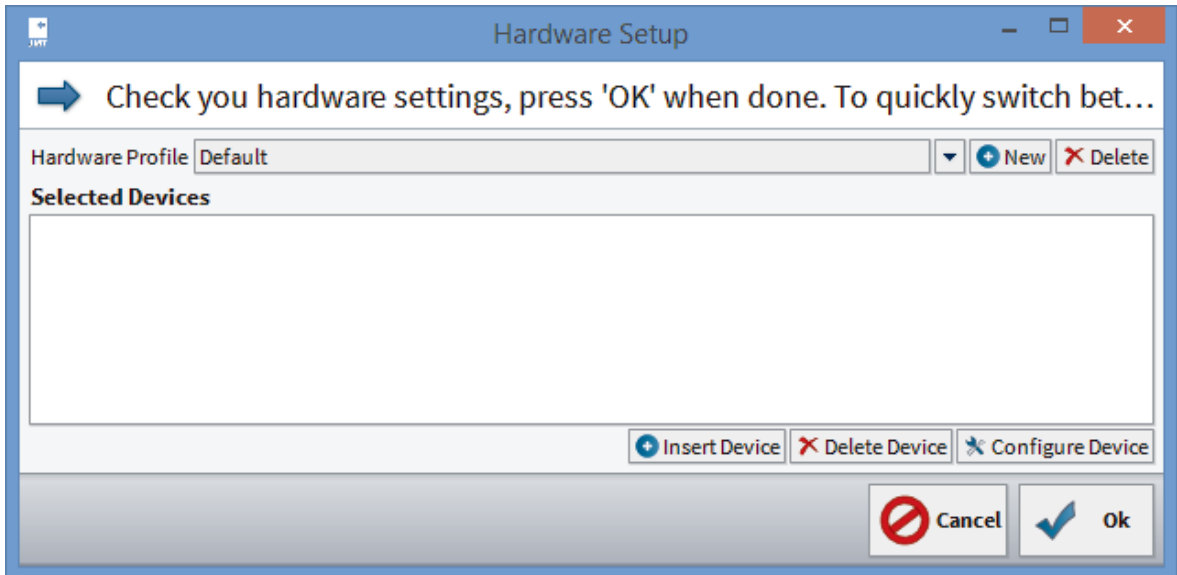

Automatic recognition - Connect all devices with the PC you want to use for the measurement. Next, confirm with **OK**.
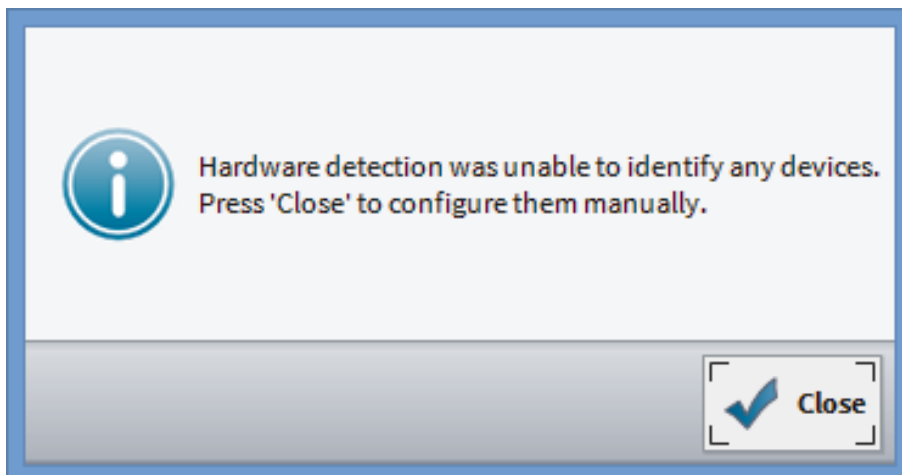
Devices recognition fails - It was not possible to recognize any devices. If you have already inserted the devices, please check the power supply.
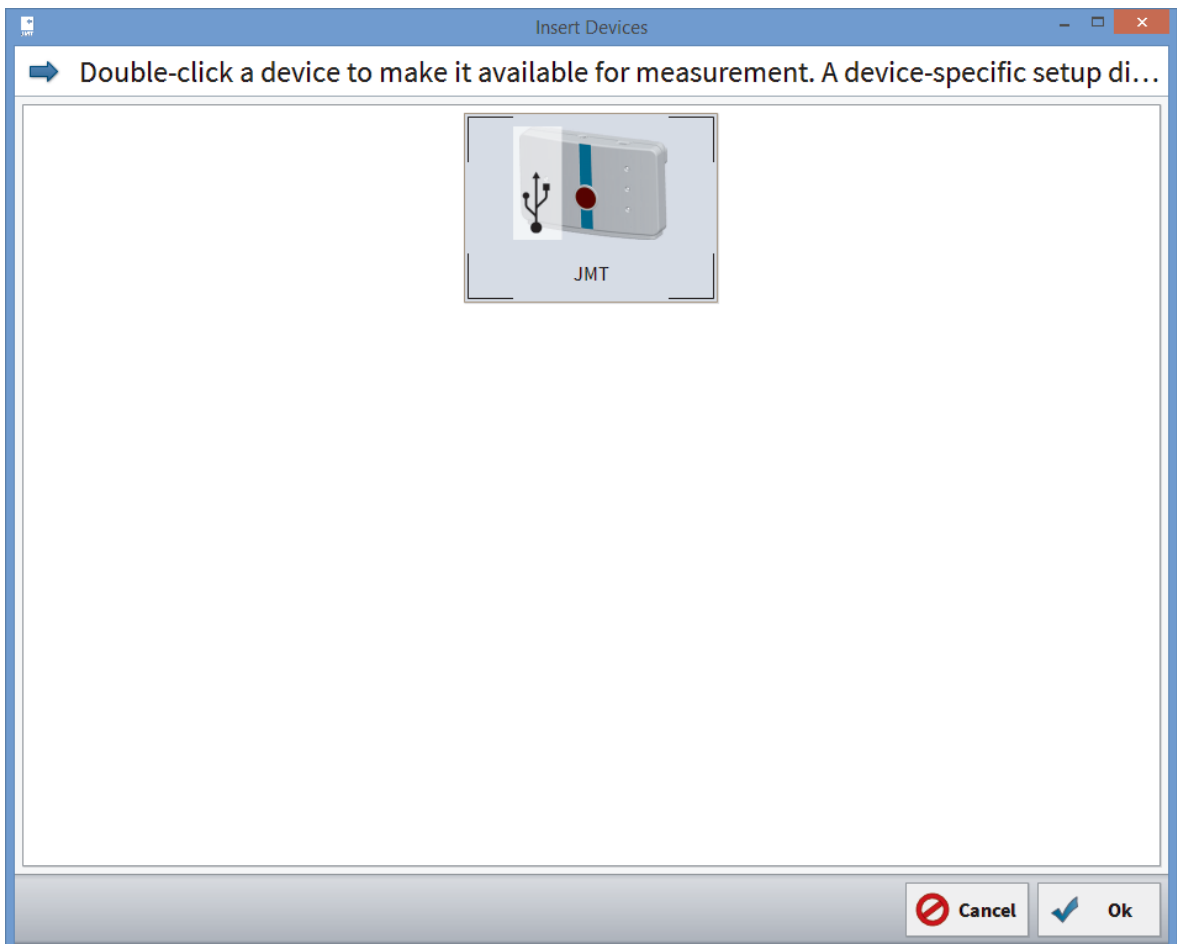
By clicking on **Close**, you can add the devices to a profile by hand.

SELECTING DEVICES MANUALLY

1. **Create device profile** - Also click on **Insert Device**.
   - ▶ A new window opens:

2. **Insert device** - In this dialog window, you are shown all of the recognized devices (and those activated according to your license). Please select the device that you want to add to your profile and click **OK**. Repeat this step until you have added all the devices with that you want to carry out your message.
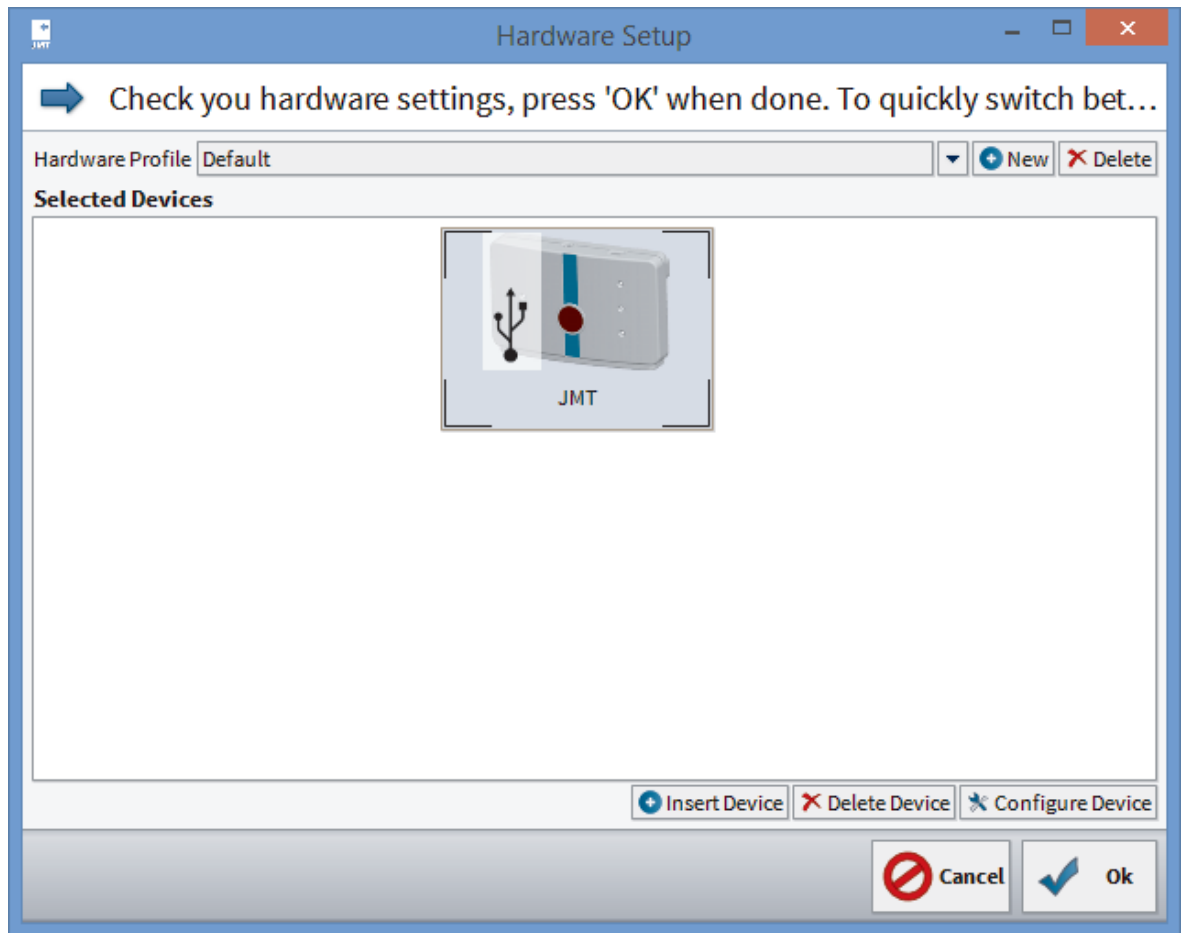
3. **Finished profile** - Once you have added all the devices you want to use for the measurement to the profile, you can add a name in the input field behind "Hardware Profile".

4. Next, click on **OK**.

5 JAW FUNCTION MEASUREMENT

With this software, you can carry out jaw motion recordings in combination with a SICAT JMT⁺ system.

5.1 PREPARE MEASUREMENT (MEASUREMENT SETTINGS)

Adjustments

Calculate kinematic axis	☑
Orbital point by pointer	☐

Face symmetry	0	1	2	3	4
Left eye corner	◉	○			
Right eye corner	◉	○			
Left mouth corner	◉	○			
Right mouth corner	◉	○			
Additional points	◉	○	○	○	○
Lines	◉	○	○	○	○

⬇ Move down   ⬆ Move up

Lower jaw positions

position 1

➕ Add   ✖ Delete   ⬆ Move up   ⬇ Move down

Movements	0	1	2	3	4
Live preview	○	◉			
Lateral left	○	◉	○	○	○
Lateral right	○	◉	○	○	○
Protrusion	○	◉	○	○	○
Opening	○	◉	○	○	○
Chewing	◉	○	○	○	○

⬇ Move down   ⬆ Move up

The **kinematic axis** is determined iteratively according to the greatest possible similarity of the condyle-opening path and the condyle-protrusion path.

The **orbital point** is activated for the reference to the axle-orbital level.

The **face symmetry** serves the specification of the individual anatomical points on the patient.

Under **positions**, it is possible to register individual points.

With the **movement settings**, the **live preview** is activated and the sequence of movements is specified in the measurement.

5.2 PREPARE MEASUREMENT (PATIENT)
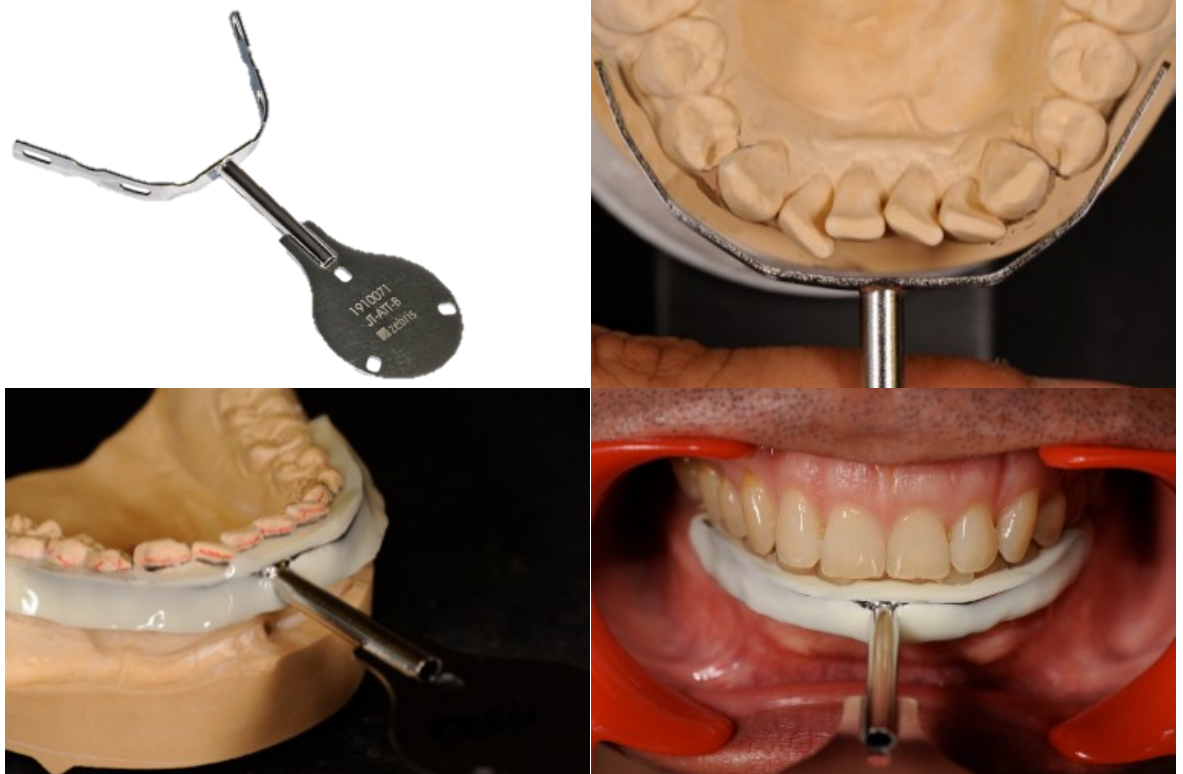

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The **T-attachment** is to be attached to the patient. It is adjusted to the LJ dental arch, supplemented with light-curing or auto-polymerizing composite, and adapted and hardened to the tooth surfaces in the plastic phase of this material.

With this procedure, the incisor surfaces of the upper jaw (UJ) teeth are not in contact with the attachment in order to guarantee an undisturbed functional sliding of the jaw in the occlusion. The production can take place in the dental laboratory and in the dental practice.

The connecting cup is adapted to the terminal occlusion prior to a measurement using bite registration material. In this context, the cup is initially filled with the registration material with the magnetic plate facing upwards and fitted in the patient for hardening in the UJ. After that, the same procedure takes place for the LJ side.

5.3 CARRY OUT MEASUREMENT (MEASUREMENT MODE)
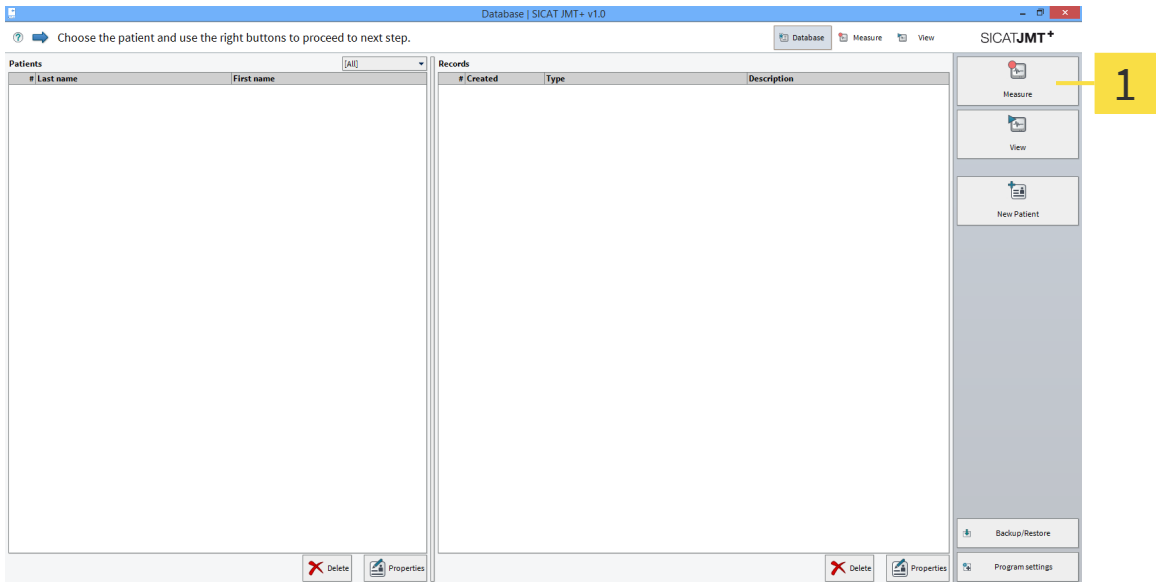
**1** **Database** - Click in the right hand function bar on **Measure**.
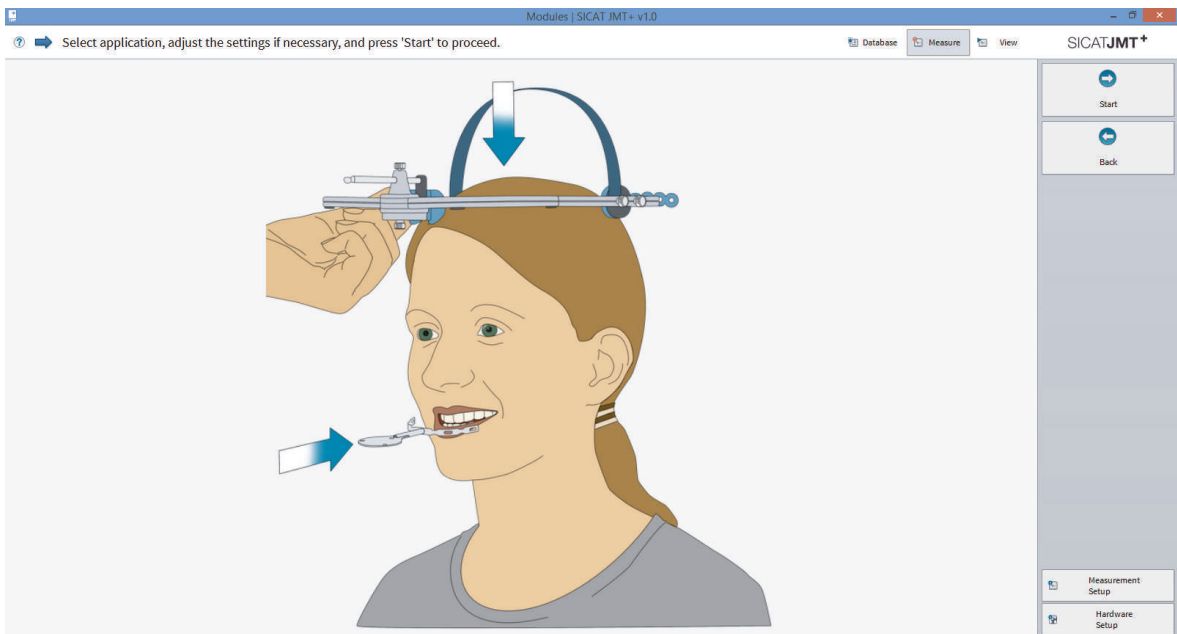
Preparation - the **upper jaw sensor** is to be positioned stably on the patient head. It is necessary to ensure that: the upper headband is on the patient's skull and the nose pads without stretching the skin in the nasion area. The elastic rear headband is tightened comfortably for the patient. Instruct your patient to betake the starting position, according to the method of examination.
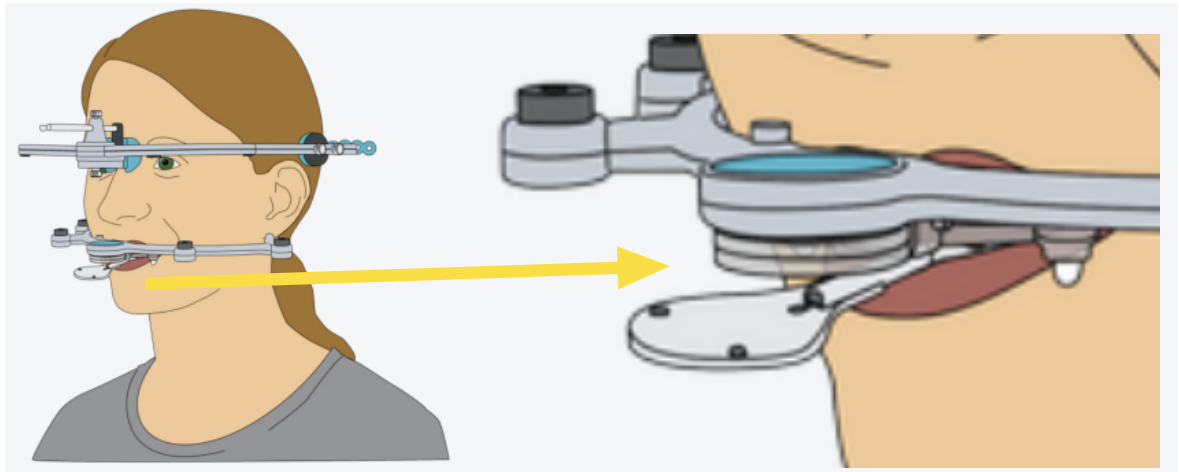
For the subsequent match procedure, in addition to the fixed attachment, the prepared connecting cup is also positioned on the patient over the occlusal impressions between the UJ and LJ. For the measurement procedure, the LJ sensor is positioned on the connecting adapter and initialized using the **Measure** button.
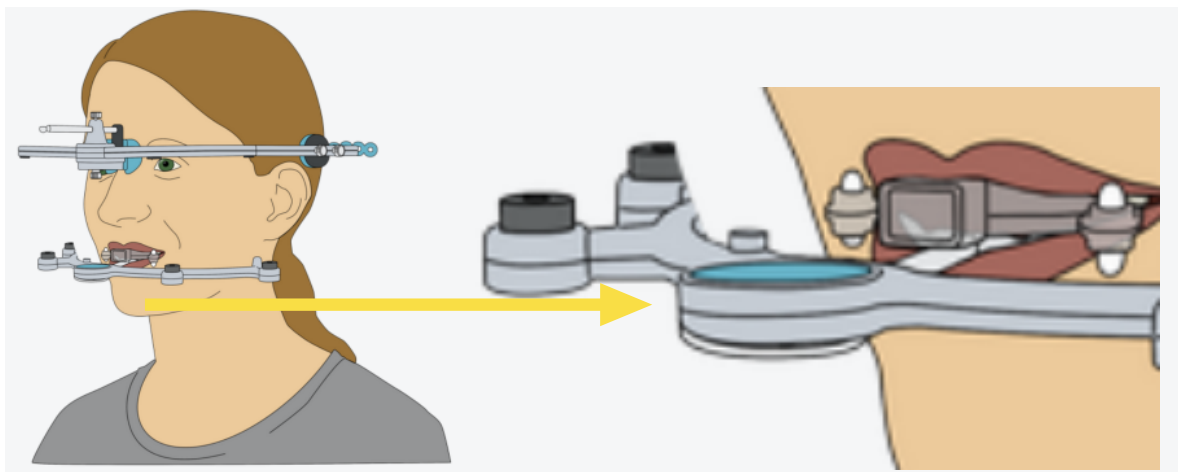
The patient stays in the bite registration position and the connecting adapter of the connecting cup is removed in order to enable the implementation of the LJ sensor technology on the T-attachment. The measurement procedure is initialized using the **Measure** button.
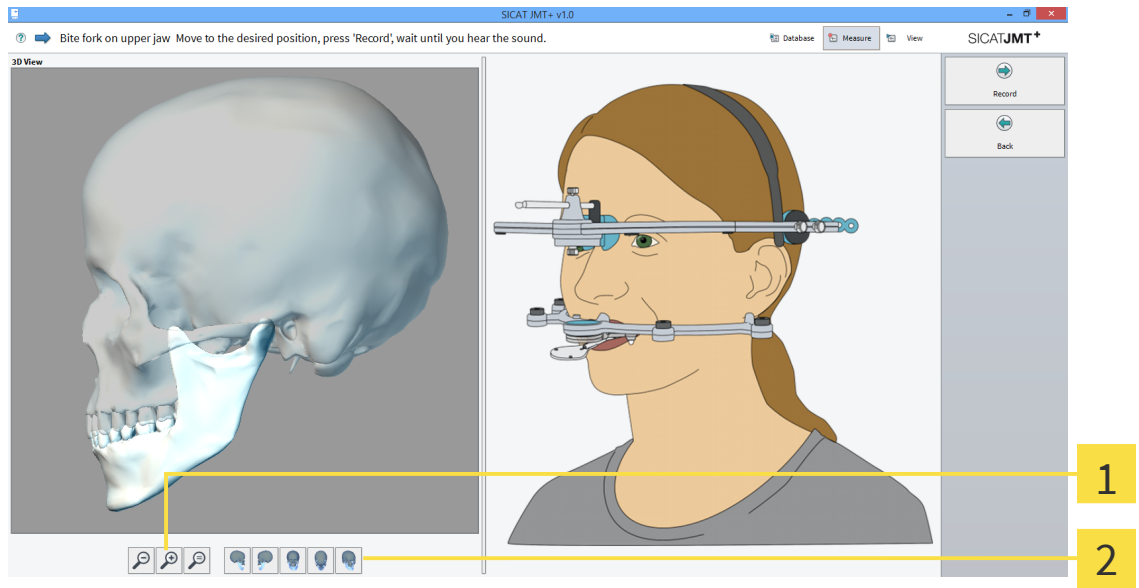

1 **Zoom function** - The zoom buttons serve the purpose of magnifying ("+" icon) or shrinking ("-" icon) the presentation of the skull. A left click in the 3D display before zooming determines the zooming in point. The magnifying glass with the "=" icon adjusts the graphic to the size of the window. It is also possible to zoom by turning the mouse wheel. In this way, the area displayed with the mouse is magnified or shrunk.

2 **Side view** - The buttons next to the zoom function enable the choice of view.

Live preview - In the live preview it is possible to display, inspect and illustrate movements to the patient without saving the measured values. Via the live preview, it is also possible to practice special functional movements with the patient. Please activate with **Start Preview**.
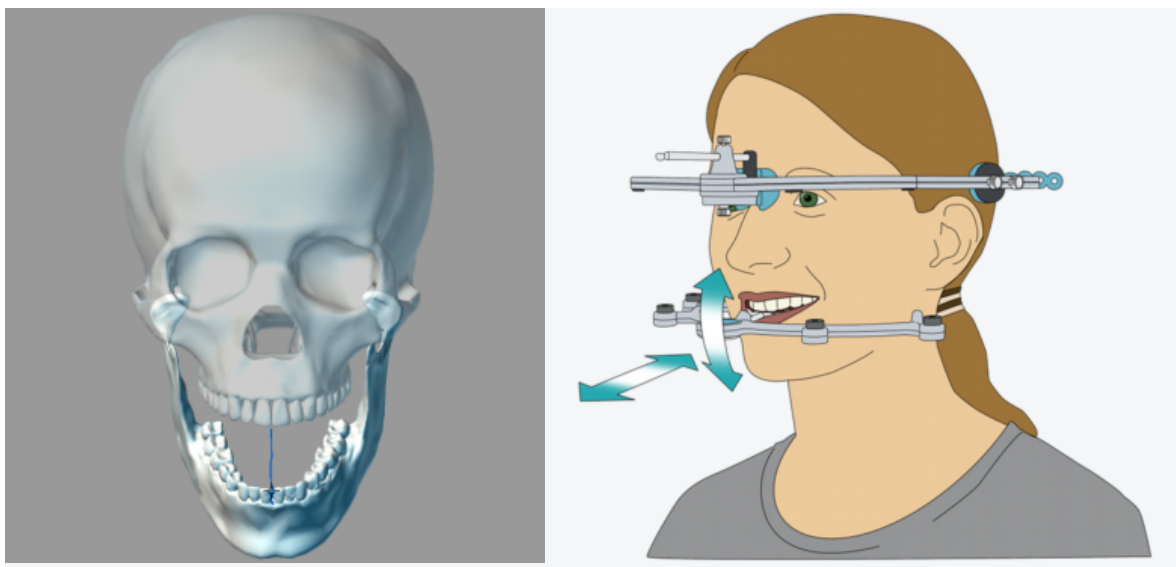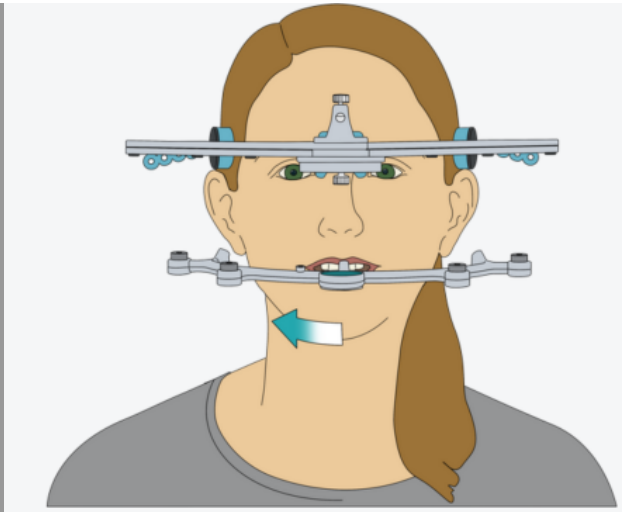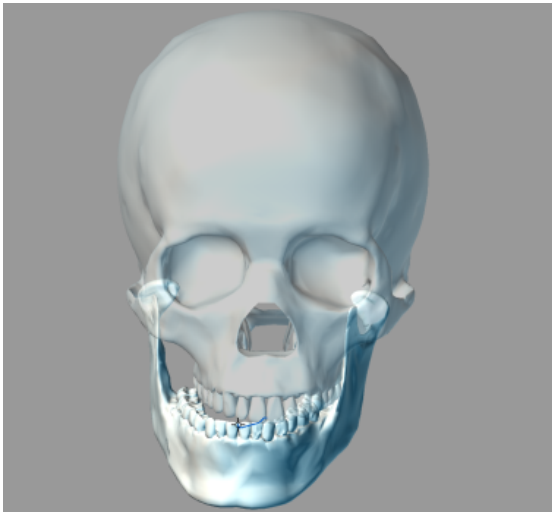

Measurement - In the settings menu, movement patterns can be selected (up to 4x) for repetitions. The selection and sequence of the movements can be changed and varied at random.
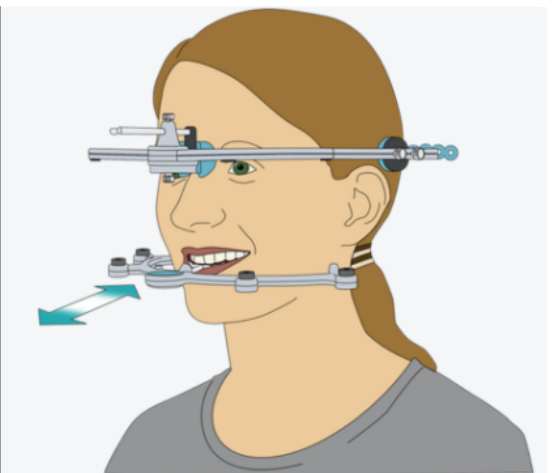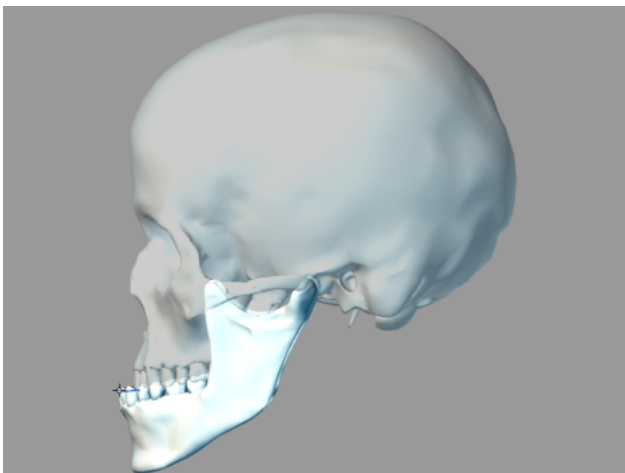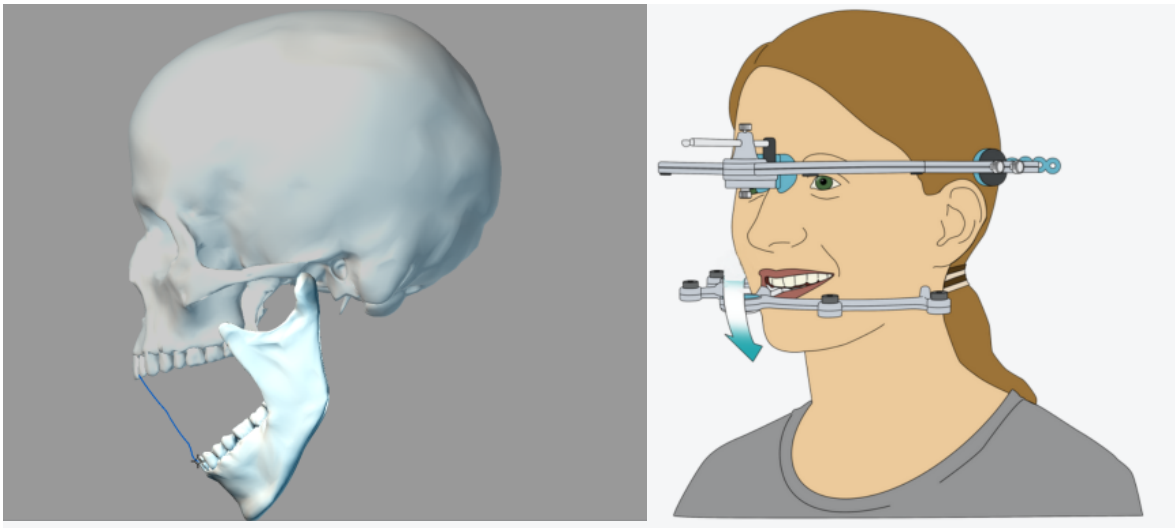
Lateral movement left
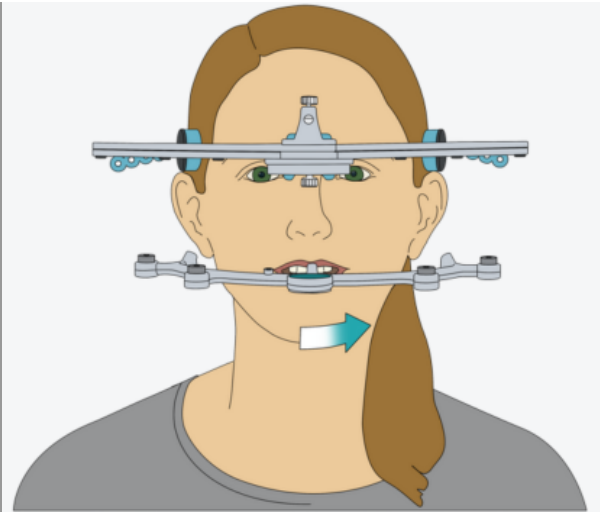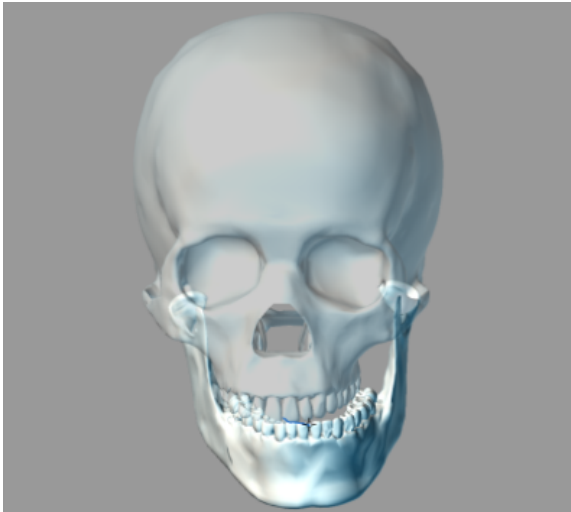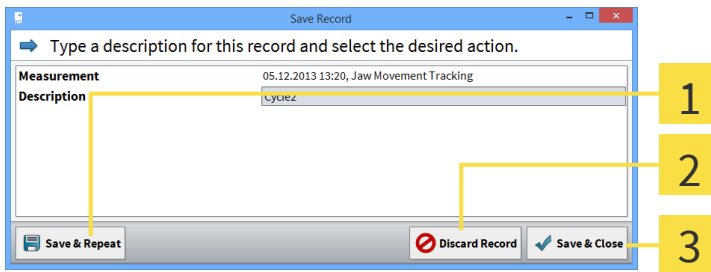

Lateral movement right

Protrusion movement

Opening movement

A dialog window opens after the end of the measurement:

1   **Save & Repeat** - The record is saved and the user returns to the preview mode in order to carry out a new measurement.

2   **Discard Record** - The record is discarded and the user returns to the preview mode in order to carry out a new measurement.

3   **Save & Close** - The record is saved and the user returns to the database.

5.4 EDIT MEASUREMENT (VIEW MODE)

In the "view" mode, you can view the measurements, play them back, and limit the measurement interval. The individual functions of the view mode are explained in detail as follows.
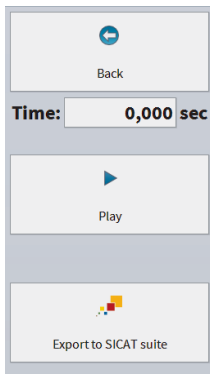
5.4.1 BASICS
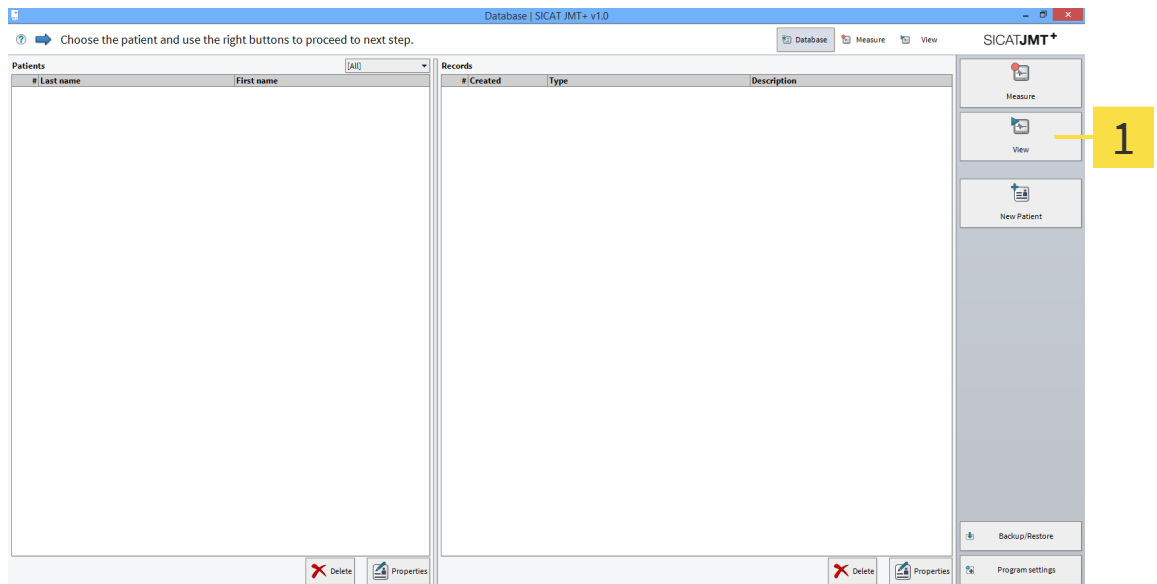
1   **Open measurement dataset** - Select a dataset in the measurements database and click in the right hand function bar on **View**.
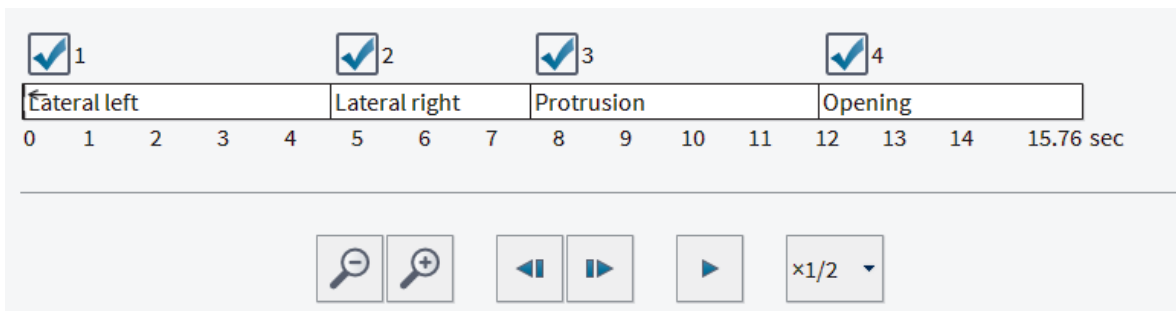
Playback mode view

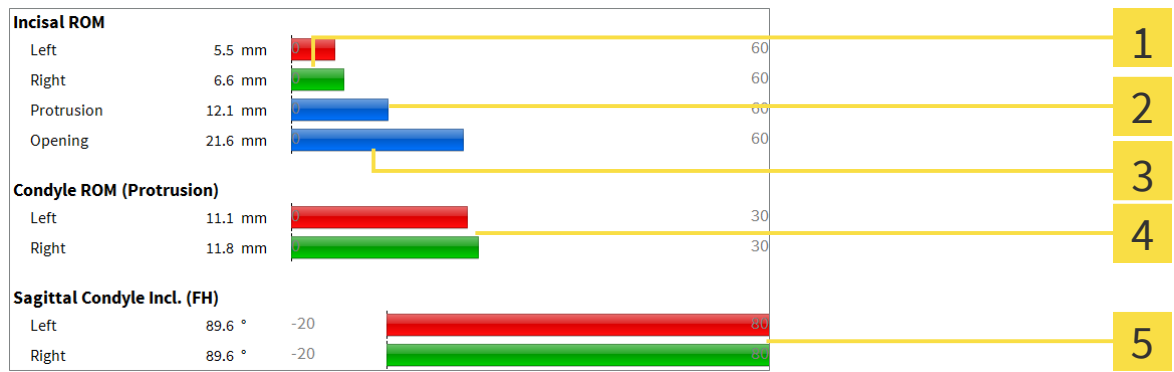| |
|---|
| ← Back |
| **Time:** 0,000 sec |
| ▶ Play |
| Export to SICAT suite |
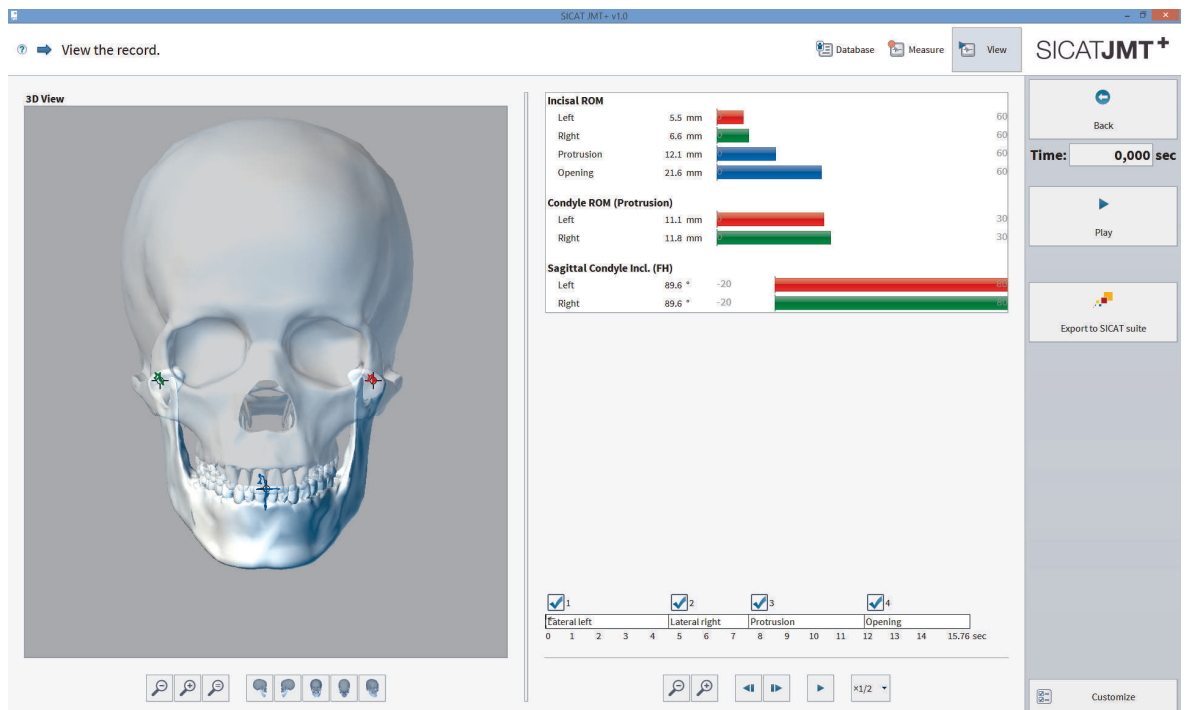
Playback measurement - The time display shows the currently shown point in time of the measurement in seconds. Click in the right hand function bar on **Play** in order to animate the graphically displayed skull in movement.

By clicking on **Back**, you return to the database.

☑ 1	☑ 2	☑ 3	☑ 4
Lateral left	Lateral right	Protrusion	Opening

0   1   2   3   4   5   6   7   8   9   10   11   12   13   14   15.76 sec

🔍⁻ 🔍⁺   ◀❘ ❘▶   ▶   ×1/2 ▾

**Time bar** - The actual point in time of the movement sequence shown is displayed here. In the fields shown above the time bar, using the **check mark** it is possible to show or hide movements. With Zoom **(+)** and **(-)** it is possible to view a specific time segment of the movement selectively and to analyze it. The real time presentation can be played back at up to 10x or 1/10 of the actual **speed**.

Bar charts

Incisal ROM					
Left	5.5 mm	0		60	1
Right	6.6 mm	0		60	
Protrusion	12.1 mm	0		60	2
Opening	21.6 mm	0		60	3
Condyle ROM (Protrusion)					
Left	11.1 mm	0		30	4
Right	11.8 mm	0		30	
Sagittal Condyle Incl. (FH)					
Left	89.6 °	-20		80	5
Right	89.6 °	-20		80	

1	Laterotrusion
2	Protrusion
3	Opening movement
4	Range of condyle motion
5	Condyle track inclination
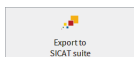
Data handover of xml file - Once the measurement is complete, by clicking on the **Export to SICAT Suite** button, the file is deposited and saved.
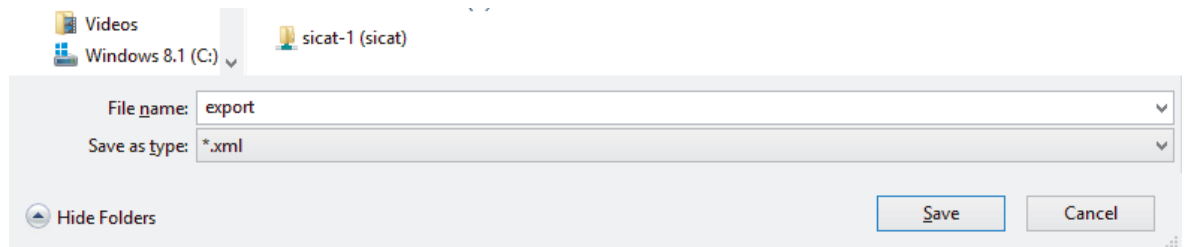
The document file is opened and the recorded movement data is saved as *.xml dataset after the entry of the file name.

6 TROUBLESHOOTING

This section lists the error messages that frequently occur due to incorrect operation, and offers some suggested solutions for them. If you receive such an error message, please start by following the suggested solutions in this list before contacting our support team.

The list does not claim to be complete.

6.1 COMMON

"3D view impossible, your graphics drive does not support OpenGL 3.3 (Irrlicht)."

"3D view cannot be created (OpenGL x.y)".

POSSIBLE CAUSE	SOLUTION
OpenGL 3.3 not supported / graphics drive was changed	During the software installation, a check takes place to ascertain whether your graphics hardware supports OpenGL 3.3 that is required for the correct implementation of the software. If you receive this error message after the installation, it may mean that you could have two graphics chips or your graphics driver has been changed in the intervening period. Systems that have two graphics chips normally offer a switching option, in the event of changing a driver, please complete an update to the graphics driver.

"Timeout reading from USB"

POSSIBLE CAUSE	SOLUTION
USB cable not plugged in	Connect the USB cable on your device with the PC.
Device not switched on	Switch the device on with the corresponding switch and/or create the power supply via the power supply unit. Please refer to the Hardware instructions for use for details.

GLOSSARY

Bite fork

A bite fork is a bite plate with radiopaque spherical markers that is used to match 3D X-ray data with jaw motion tracking data.

SICAT JMT$^+$

The SICAT JMT$^+$ records the motion of the lower jaw.

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7 CONTACT

Manufacturer

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53177 Bonn, Germany

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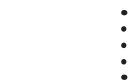Fax: +49 (0)228 / 854697-99

Email: info@sicat.com

http://www.sicat.com

$C \in 0197$

Item code number: 6458777

Change number: 000 000

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