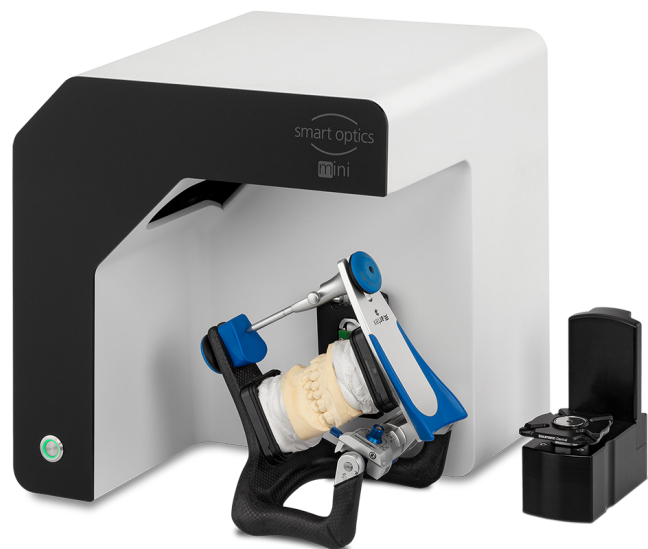


# Operating Manual



A product from smart optics Sensortechnik GmbH

## Legal notice

### FIRST-LEVEL SUPPORT FOR SMART OPTICS PRODUCTS

Find a smart optics reseller in your region:

Reseller locator [www.smartoptics.de/en/dental/reseller-locator/](http://www.smartoptics.de/en/dental/reseller-locator/)

or via the contact form [www.smartoptics.de/en/contact/](http://www.smartoptics.de/en/contact/)

Support and first-level support:

smart optics Help Center [support.smartoptics.de](http://support.smartoptics.de)

### CHANGES

We reserve the right to make changes to the product and to this documentation.

Current software version, catalog, flyer, instructions in the Download Center [www.smartoptics.de](http://www.smartoptics.de)

### BRANDS AND TRADEMARKS

Adesso Split	K. Baumann, DE-75210 Keltern
Artist/arTO	
Artex	Amann Girrbach AG, AT-6842 Koblach
exocad	exocad GmbH, DE-64293 Darmstadt
FlyCapture	Point Grey Research, Inc.
OnyxCeph3™	Image Instruments GmbH, DE-09125 Chemnitz
SILADENT	SILADENT Dr. Böhme & Schöps GmbH, DE-38644 Goslar
SilaPart	
Triple Tray	Premier Dental, Plymouth Meeting, PA 19462, US
Windows	Microsoft Corporation
.NET Framework	
Visual C++	



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# 1 Explanation of Symbols

## Symbols on the Device



Warning against electrical voltage



Conformity of the scanner with EU directives











USB connector



Hollow plug connector

## Symbols in these Instructions

Characters	Signal Word	Meaning
	Notice	Warning against possible:
	Danger	- Damage to property
	Warning	- Injuries (severe – moderate)
	Caution	- Injuries (minor)
		- Danger to life
▷		Action
—		Simple list
1.		Numbered list
		Cross-reference (link)
		smart optics Help Center (external link)
		Paid extension (module/accessory)
		Software function released
		Software function locked
		Important note

## 2 Technical Data

### Housing

Dimensions W × H × D	337 × 347 × 322 mm
Weight	9.5 kg
Rotary swivel unit	removable
Material	PUR, Acrylic, Aluminum Sheet
Color	black and white (matt)
Power switch	LED pressure switch

### E-Technology

Power supply	24 V DC
Power consumption	max. 60 W
Connections	1 × USB   1 × Power
USB cable	USB 3.0   1.8 m   Plug A/B
External power supply	2.5m   AC 110/230V

### Room Climate

Operating temperature	18°C – 30°C
Storage temperature	5°C – 50°C
Relative humidity	40 % – 60 %, max. 80 %

### Measuring

Resolution	1.6 Mpx
3D measurement technology	Stripe light triangulation, Blue Light LED
Measuring field XYZ $\triangleq$ max. object size	80 × 60 × 85 mm
Measurement accuracy acc. to ISO 12836	6 $\mu$ m

### System Requirements PC

PC (minimum)	CPU: i3 with 4 × 3.6 GHz   RAM: 16 GB   Port: USB 3.0 HDD: approx. 40 – 100 GB free   Graphics card RAM: 1 GB
PC (recommended)	CPU: i7 with 6 × 4.7 GHz   RAM: 32 GB   Port: USB 3.0 SSD: approx. 100 – 250 GB free   Graphics card RAM: 6 MB
Operating system	Windows 10 64-bit Windows 11 64-bit (recommended)
Interfaces	CAD software exocad® DentalCAD Orthodontics Software OnyxCeph <sup>3™</sup>

### 3 Scope of Delivery

smart optics mini, in addition:

- Universal plate with adhesive pads
- 3D calibration model
- External power supply
- USB cable (USB 3.0)

Data carrier with:

- Scan software dental scan
- Calibration data (scanner-specific)
- Manual

PC and screen are not in the scope of delivery.

### 4 General Safety Information

smart optics mini was developed according to applicable safety standards and produced with protective measures. Nevertheless, some residual risks cannot be ruled out.

#### 4.1 Intended Use

##### Use in Dental Technology

The scanner is to be used for:

- the three-dimensional optical measurement of human jaw models/jaw impressions,
- Reconstructions and archiving in prosthetics and orthodontics,
- Scans in occlusal relation with reference to the position of the skull,
- Scans of dental bite registers, dental modelling (wax-up) and screwable reference bodies (scan bodies).

#### 4.2 Scannable Materials

The materials must be firm, dimensionally stable, dry, light and opaque. Moving parts must be fixed. Reflective and dark surfaces must be matted with 3D scan spray.

### 4.3 User Qualification

To commission, install and operate the scanner, you need specialist knowledge of dental technology, in particular CAD/CAM technology, as well as knowledge of the scanner from operating instructions, instruction or training.

### 4.4 Protection against Injuries



#### WARNING

##### Electric shock, burns

Electric shock and burns can be caused by:

- defective electrical devices or cables (e.g. lack of insulation),
- wetness on electricity-carrying parts,
- electrical connections without earthing,
- overloaded wall sockets and lines.

- ▷ Use electrical equipment properly and have it checked regularly. Replace defective cables and power supplies.
- ▷ Disconnect the power supply from electricity when the scanner is not in operation.
- ▷ Do not use a defective scanner.



#### WARNING

##### Magnetic disturbance of electronic implants

Magnets are included in scanners (system plate) and accessories (adhesive discs).

- ▷ Persons with implants, e.g. heart pacemakers, may only operate scanners and accessories with medical permission.



#### WARNING

##### Stripe light as a triggering stimulus

In appropriately predisposed persons, stripe light can trigger migraines or epileptic seizures.

- ▷ Cover the opening during operation, e.g. with opaque foil.



**CAUTION**

**Pulling in of garments, jewelry, hair**

Loose garments, jewelry or hair can be pulled in by automatically moving components.

- ▷ At the scanner workstation, avoid scarves, ties, long chains, open long hair, etc.
- ▷ If something is pulled in, turn off the scanner immediately and disconnect the power supply from electricity.

## 4.5 Protection against Damage to Property



**NOTICE**

**Inaccurate measurements or device defect due to mechanical damage, soiling or incorrect cleaning of electronic components**

All electronic components, in particular the 3D sensor (LED projector, camera) and the contact surfaces of the rotary swivel unit, are sensitive to contact, dirt, moisture, cleaning agents and sharp-edged tools.

- ▷ Keep the scanner clean. Avoid, e.g., milling, grinding and sawing work nearby.
- ▷ Use 3D scan spray outside the scanner.
- ▷ If electronic components become dirty, do not clean them yourself. Contact the First Level Support.



**NOTICE**

**Data loss due to magnetic fields**

Data carriers, chip cards or technical devices can be disturbed by magnetic fields. Magnets are included in scanners (system plate) and accessories (adhesive discs).

- ▷ Keep a distance between interference-prone devices and magnets.



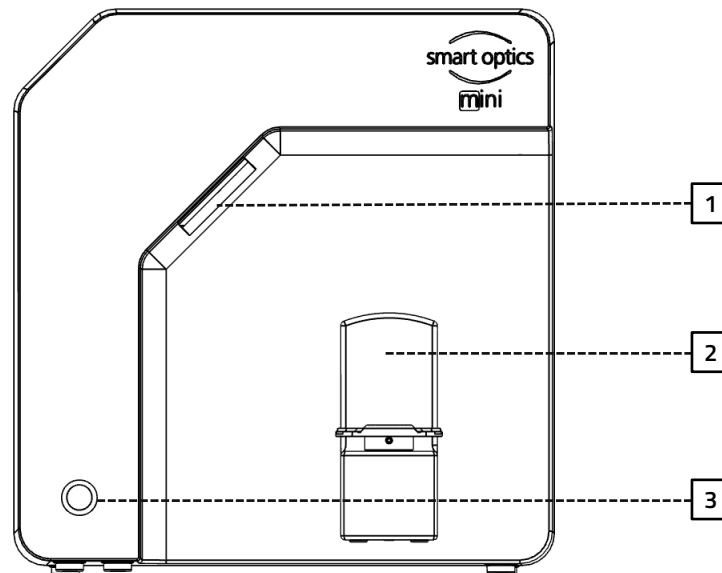
## 5 Components

### 5.1 Scanner

#### Front

**Key**

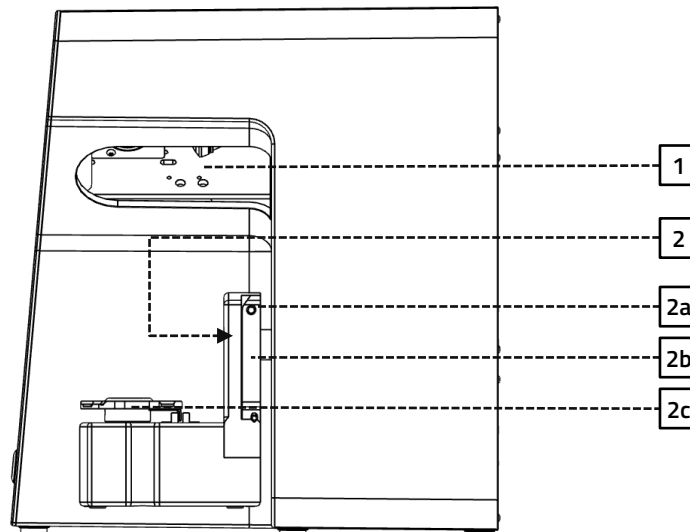
- 1 3D sensor  
(LED projector, camera)
- 2 Rotary swivel unit  
(removable)
- 3 LED pressure switch (ON/OFF)



#### Right Side

**Key**

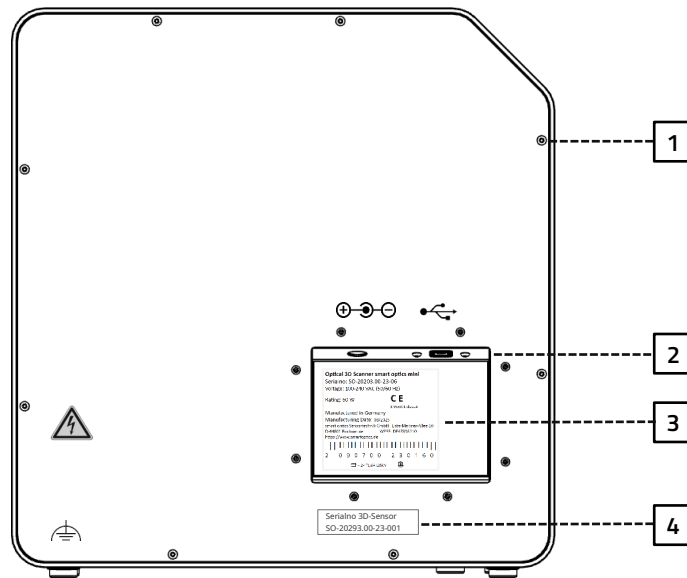
- 1 3D sensor  
(LED projector, camera)
- 2 Rotary swivel unit
- 2a Retaining pins (2 at the top,  
2 at the bottom)
- 2b Attachment plate for the  
rotary swivel unit
- 2c Base plate suitable for  
Splitex/Adesso Split®



### Rear

**Key**

- 1 Rear panel screw connection
- 2 Ports (power, USB)
- 3 Type plate
- 4 Sensor number



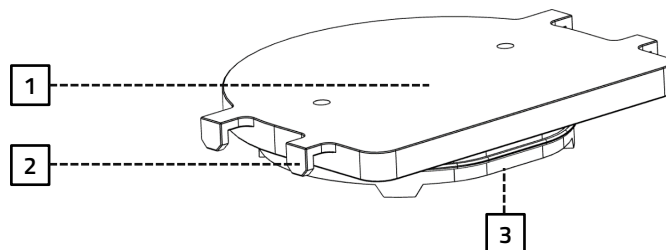
## 5.2 Accessories

### 5.2.1 Universal Plate

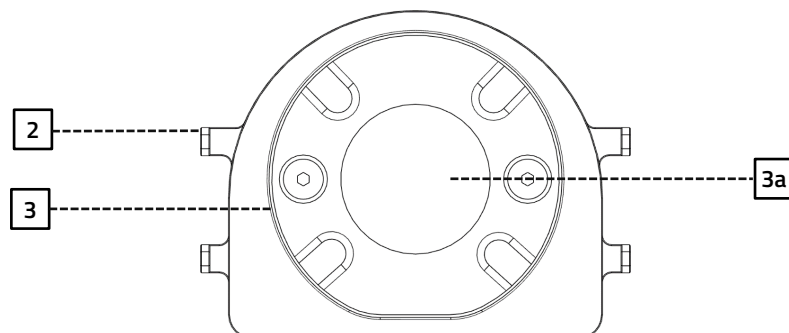
**Key**

- 1 Place for jaw models
- 2 Fixing hooks for rubber bands (simple occlusion)
- 3 Plate type Splitex/Adesso Split®
- 3a Magnetic adhesive disc

#### View from Above



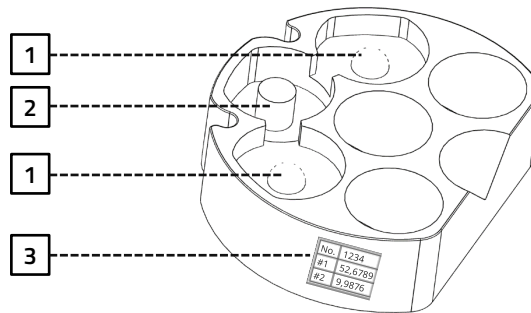
#### View from Underneath



### 5.2.2 3D Calibration Model

**Key**

- 1 Hemispheres (for distance measurement)
- 2 Cylinders (for height measurement)
- 3 Label with model number and reference values



## 6 Commissioning

### 6.1 Workplace

The scanner must be next to the PC, preferably on a laboratory table or professional work table.

**Check List**

Laboratory, factory, manufacturing	✓
Table	opaque, stable, low vibration
Place	337 × 347 × 322 mm (W × H × D)
Stability	2 × 9.5 kg
Indirect light	✓
Temperature	18°C – 30°C
Wet room areas	✗



**NOTICE**

**Inaccurate measurements or device defect due to non-compliance with workplace requirements**

- ▷ Avoid reflections on the measurement object. Protect the scan area in intense ambient light (artificial light, sunlight), e.g. with opaque foil.
- ▷ Keep the scanner clean. Avoid, e.g., milling, grinding and sawing work nearby.

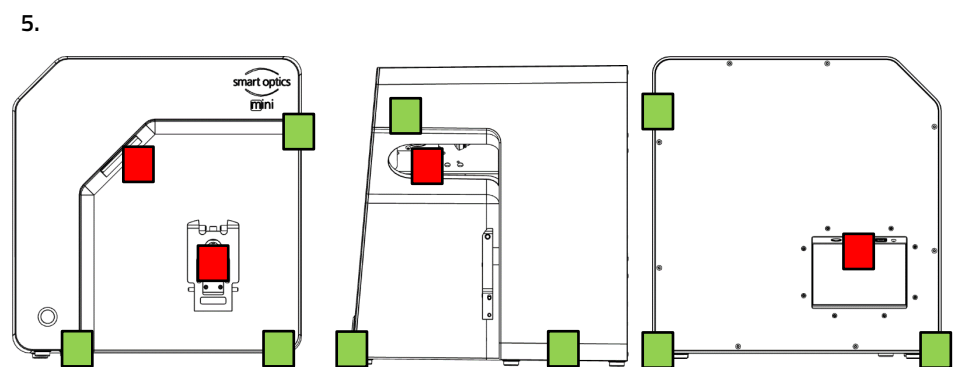
## 6.2 Unpacking

The original packaging is the best transport protection for scanners and accessories. Keep them for later transporting.



1. Check the delivery for visible damage and discoloration on the shock indicators (indicator label). Log and complain damages in accordance to the shipping terms.
2. Transport the box to the workplace.
3. Open the box from above and remove the padding material.
4. Remove the accessory boxes (stored on the side).
5. Grab under the scanner and lift it out of the box.
6. Place the scanner on the work table next to the PC (distance max. 2 meters).

Carrying points  
■ = allowed  
■ = prohibited



## 6.3 Connecting

### 6.3.1 Checklist Connections

Distance scanner – PC	max. 2 m
Sockets	min. 3
Power cable without power supply	✗
Extension cable	✓
Multi-plug	✓
Socket adapters	✓
USB Hub	✗
USB extension	✗



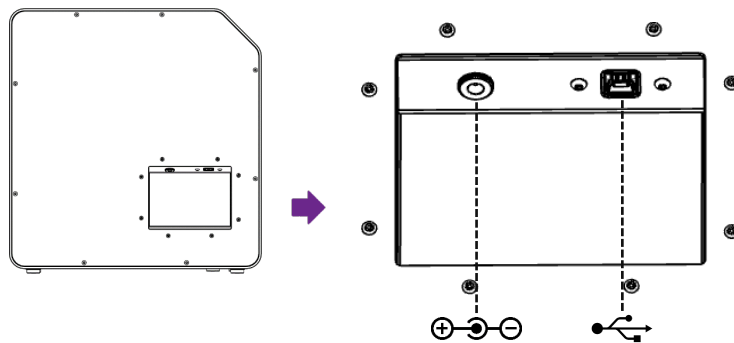
**NOTICE**

**Incorrect data transmission or device damage due to inappropriate cabling**

- ▷ USB Hubs, USB extensions and USB cables longer than 2 meters deteriorate the data transfer.
- ▷ The scanner requires an external power supply for the power connection.
- ▷ USB cables or power supplies with the same specification as the included ones are suitable as a replacement.

**6.3.2 Procedure**

1. Plug the USB and power connectors into the ports on the rear of the scanner.

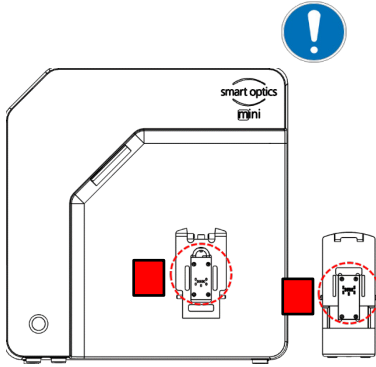


2. Connect the USB cable to a USB 3.0 port (blue) on the back of the PC.
3. Connect the plug-in power supply to the socket. If necessary, insert a socket adapter in between (not included).

💡 Once connected, the scanner can stand close to the wall.

### 6.3.3 Attaching the Rotary Swivel Unit

The rotary swivel unit is delivered separately in a box.



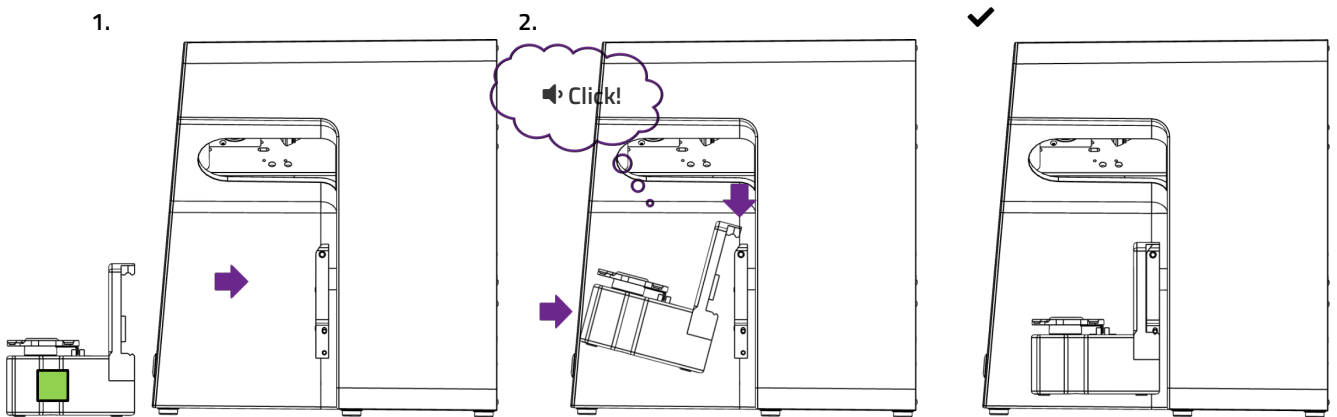
#### NOTICE

##### Malfunction due to damage to contact surfaces

The contact surfaces on the rotary swivel unit and on the attachment plate in the scanner are sensitive electronic components for the transmission of data and electricity.

- ▷ Do not touch the contact surfaces.
- ▷ Avoid soiling or mechanical damage.

1. For fixing in the scanner, hang the rotary swivel unit from above on the holding pins of the attachment plate.
2. Press against the rotary swivel unit to snap it into place on the lower retaining pins.



## 6.4 Installing

### 6.4.1 Requirements

- 5  Does the PC meet the [system requirements](#)?
- If you are using a notebook: connection to the electricity supply system is required.
- Are all updates for Windows and drivers installed?
- Does the virus protection allow the scan software to run?
- Does the Windows user have the right to run setups and apps?

## 6.4.2 Installation

1. Insert the scanner-specific data carrier into a suitable PC port and open the drive in Windows Explorer.
2. Execute the `dental Scan.exe` setup file by double-click.
3. Follow the instructions of the Installation Wizard.
4. Apply the default values. This simplifies the support and the setup of interfaces.



Desktop icon dental scan

- ✓ The program files are installed, an entry in the start menu and a desktop icon are available.

## 6.4.3 Upgrades



New versions of the scan software are available free of charge. smart optics recommends using the current version.

[www.smartoptics.de](http://www.smartoptics.de) | [Download Center](#) (Software + Release-Notes)

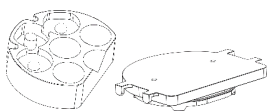
- ▷ Install an upgrade to the same destination folder as the previous version to replace it.

## 6.5 Calibration

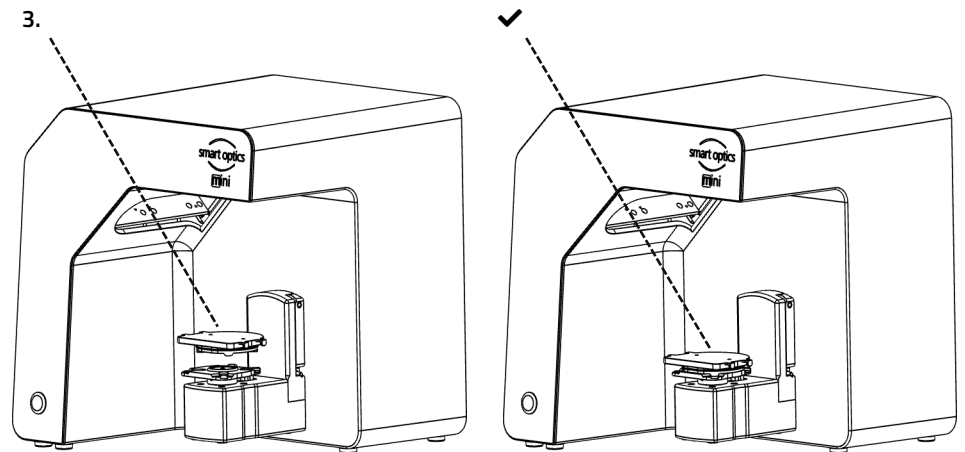
Calibration is a prerequisite for correct measurements and the last step of commissioning. For calibration you will need:

- the 3D calibration model,
- the universal plate with adhesive pads,
- the data carrier with scanner-specific calibration data.

### 6.5.1 Positioning the 3D Calibration Model



1. Cover the surface of the universal plate completely with adhesive pads, at least three strips (product from the scope of delivery or comparable specification, no other adhesive material).
2. Firmly press the 3D calibration model onto the universal plate (round to round, straight to straight).
3. Place the universal plate with the 3D calibration model on the base plate of the scanner (rounding inwards).



💡 The adhesive pads can remain on the universal plate.

### 6.5.2 Calibration Procedure

Calibration is mandatory for commissioning. How to proceed:

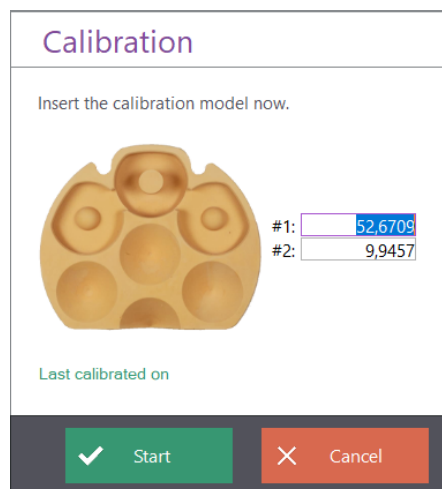
1. Turn on the scanner (front LED pressure switch).
2. Insert the scanner-specific data carrier into the PC port.
3. Start the scan software. You will be asked to identify the folder containing the calibration data.
4. Select the SO-20293... folder on the data carrier. After confirmation, the calibration data is automatically copied to the correct destination folder.
5. The scan software requires a calibration.
6. For #1 and #2, enter the values from the label of the 3D calibration model (exact values with commas and decimal places).



Desktop icon dental scan

Label with sample values

No.	1234
#1	52,6789
#2	9,9876




- 15 7. Now **position** the 3D calibration model.



8. Start the calibration. Wait until the final message.
- ✓ After successful calibration, you can start scanning.

### Data backup

-  23 Calibration data is not transferable to other scanners.

After initial installation, the calibration data are permanently available for operation and calibration.

File path:

C:\ProgramData\3D-Scanner\DeviceCharacteristics\Sensors

- ▷ Store the data carrier for possible reinstallation of the scanner.

## 7 Scanning

### 7.1 General Information

The information in this manual is focused on handling. Detailed instructions for scanning can be found integrated in the scan software or in the user manual.

Tips on specific projects can be found in an instruction or training.


#### Scanning with Attached Small Parts

Prosthetic small parts or modeling can be scanned on the jaw model:

- Mush bite as a representative of the antagonist jaw in scan mode **single jaw**,
  - Gingiva and wax-up for segments with corresponding marking,
  - Scan bodies for segments with the indication **implant**.
- ▷ Attach the small parts to the jaw model (with removable glue on a few points).

#### Mattifying the Scan Object with 3D Scan Spray

Reflective or dark scan objects must be matted with 3D scan spray (specified for dental technology, very finely grained).

-  Without matting, the scan result becomes worse. Use 3D scan spray outside the scanner.

- ▷ Spray the scan object thinly and evenly, do not touch the spray layer.

## Service Position of the Rotary Swivel Unit

When positioning scan objects, the rotary swivel unit can be moved unintentionally. As a result, the position of the rotary swivel unit stored in the scan software no longer corresponds to the actual position.



- ▷ Correct the position of the rotary swivel unit with the **Service Position** function (after positioning, before scanning).

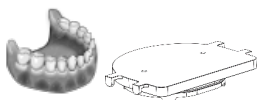
## 7.2 Scanning a Jaw Model

### 7.2.1 Jaw Model on Mounting Plate

Jaw models on a mounting plate of type Splitex/Adesso Split® with magnetic adhesive disc can be scanned without further mounting.

- ▷ Place the Splitex/Adesso Split® mounting plate directly on the base plate of the scanner.

### 7.2.2 Jaw Model on Universal Plate

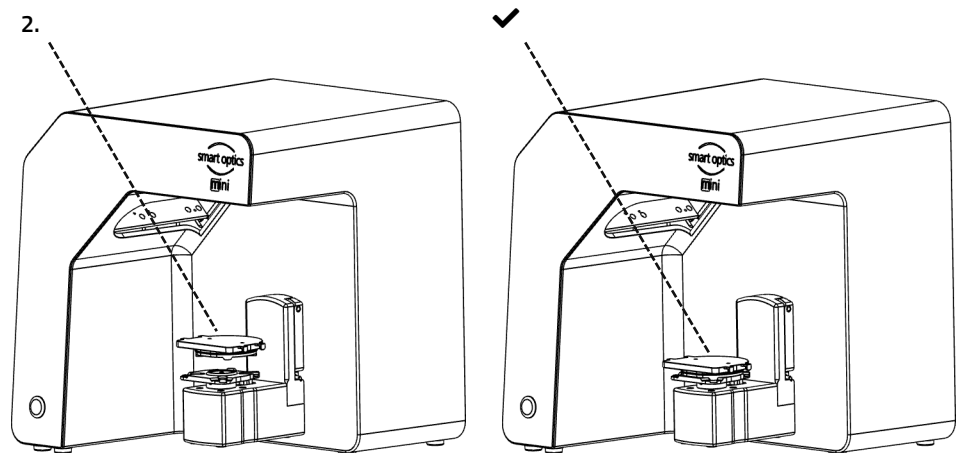


Jaw models without mounting plate and articulated jaw models on non-Splitex/Adesso Split® mounting plates are scanned on the universal plate.



The universal plate must be covered with at least three strips of adhesive pads.

1. Press the jaw model or mounting plate firmly onto the adhesive pads (bottom towards centre, dental arch towards rounding). Test the fixture by gently turning and tilting.
2. Place the universal plate on the base plate of the scanner (rounding inwards).



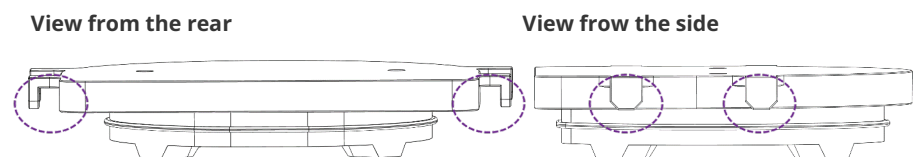
## 7.3 Jaw Models in Simple Occlusion

Jaw models in simple occlusion are scanned on the universal plate. The simple occlusion is closed with rubber bands (texture: new, stable, about 0.4 cm thick). Ring rubbers and cruciate rubbers are possible. The material does not interfere with the vestibular scan.

### Rubber Band Attachment

1. Loosely place the UJ model in occlusion on the LJ model.
2. Select one of the following methods:
  - min. 8.5 cm — Form a long rubber ring into an eight and place it buccally over the UJ model.
  - max. 8 cm — Place two short rubber rings x-shaped over the UJ model.
  - Place a cross rubber band around both jaw models so that the crosses are on top and underneath and the bands are tensioned in an x-shape.
3. Firmly press the connected jaw models onto the universal plate (with adhesive pads). Test the fixture by gently turning and tilting.
4. Wrap the rubbers around the hooks on the universal plate, if necessary, several times until the rubber is taut.

Hooks



## 7.4 Scanning Articulator

Mean-value vestibular scans can be created with all common articulators. With AMANN GIRRBACH Artex® and Baumann Dental Artist/arTO®, condyle-related vestibular scans are possible.

### 7.4.1 Articulator Workflow

The scan software guides you through the following steps:

- Removing the rotary swivel unit.
- Putting the articulator in front of the camera.
- Starting the scan (with timer).
- Removing the articulator.
- Reattaching the rotary swivel unit.

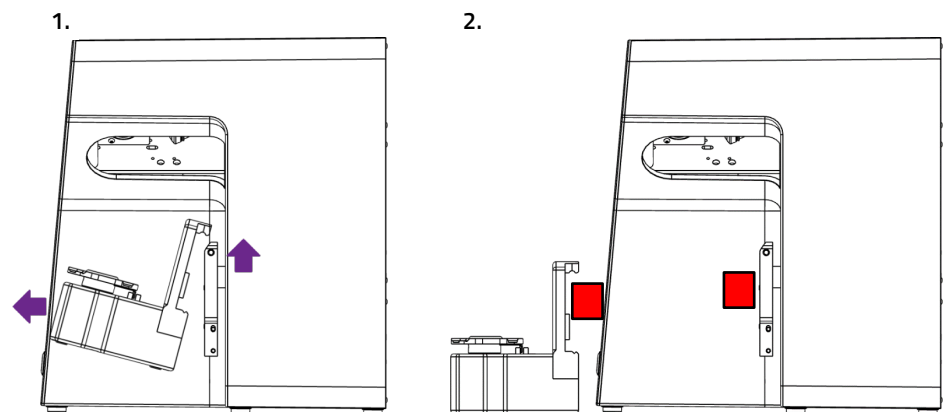
- 💡 You can change the steps positioning the articulator and starting the scan. With a little practice, you will save time. You can change the timer, i.e. the waiting time until the scan, in the software settings (5 seconds by default).

### 7.4.2 Rotary Swivel Unit

Wait until the scan software requires the rotary swivel unit to be removed.

1. Pull the rotary swivel unit off the attachment plate in the scanner (slightly forward, then lift off the holding pins).
2. Place the rotary swivel unit in a protected place.

- 💡 The contact surfaces must not be soiled or touched.

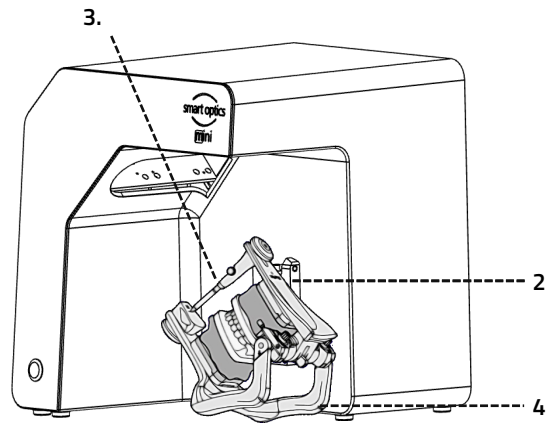


- 📄 14 After the scan, wait until the scan software requires the rotary swivel unit to be attached.

### 7.4.3 Positioning the Articulator

1. If necessary, remove the upper support pin.
2. Place the articulator before the attachment plate of the scanner.
3. Tilt the articulator so that the dental arch is facing the 3D sensor. Check the alignment in the scan software (live image).
4. Wait for the timer in the scan software. The articulator must remain motionless until measurement. The scan software reports when the articulator can be removed.

Image for illustrative purpose  
Artex Articulator



There are two different types of articulators. For example, Artex® can be presented to the sensor via the rear legs in a 45° position. Other articulators that do not have such a function must be held with both hands to be presented to the sensor.

## 8 Maintenance and Cleaning

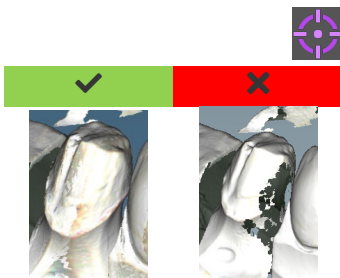
### 8.1 Maintenance

The prerequisite for accurate measurements is the **calibration** of the scanner.

Procedure and First Help



- ▷ Calibrate the scanner at the following intervals:
  - 1 × monthly (with automatic reminder) at constant operating temperatures and normal production quantities,
  - 1 × daily at changing operating temperatures and high production quantities,
  - after an upgrade,
  - after a transportation.
- ▷ Start an optional calibration from the **Extras** menu.
- ✓ The date of the last calibration is displayed and the last edited values are suggested.
- ▷ Calibrate even with diminishing scan results, e.g. with perforated data networks despite rescans.



## 8.2 Cleaning

The scanner is a high-precision measuring device and must be handled with care.

▷ Remove dust from surfaces, from the universal plate and the rotary swivel unit from the outside. For this purpose, the rotary swivel unit can remain in the scanner.



Contact First Level Support if a non-cleanable component is dirty.

Clean if Necessary	Never Clean
<ul style="list-style-type: none"> <li>— Surfaces (outside + inside)</li> <li>— Universal plate</li> <li>— Rotary swivel unit (external)</li> </ul>	<ul style="list-style-type: none"> <li>— 3D sensor (LED projector, camera)</li> <li>— Connections</li> <li>— Contact surfaces on rotary swivel unit and attachment plate</li> <li>— Inner components</li> </ul>
Suitable Agents	Unsuitable Agents
<ul style="list-style-type: none"> <li>— Cleaning cloth (smooth, lint-free, antistatic)</li> </ul>	<ul style="list-style-type: none"> <li>— Tools (knives, scrapers, brushes, brushes, etc.)</li> <li>— Chemical additives (e.g. cleaning agents, solvents and disinfectants)</li> <li>— Water</li> </ul>

## 9 Fault and Repair

You are not allowed to work with a defective scanner and defective accessories.

### 9.1 First Level Support

First Level Support is responsible for complex fault analyses and repairs.



[www.smartoptics.de](http://www.smartoptics.de)

If necessary, you can find a smart optics reseller in your region in our reseller locator for the dental sector.



**Due to improper repair, the scanner may no longer function as intended. Never repair it yourself.**

#### Support Request

For quick help in the case of support, the following information is important in addition to your contact details:

**Type of question**

- Error analysis
- Repair

**PC data**

- Model/design

**Scanner**

- Purchase date
- Serial number scanner, e.g.  
**Serialno SO-20203.00-23-006**
- Serial number 3D sensor, e.g.  
**Serialno 3D sensor  
SO-20293.00-23-001**

**Problem**

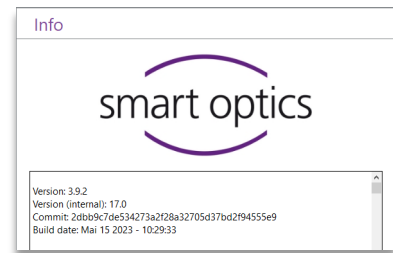
- Description of the fault or damage
- Measures taken so far

**Operating system**

- Windows version

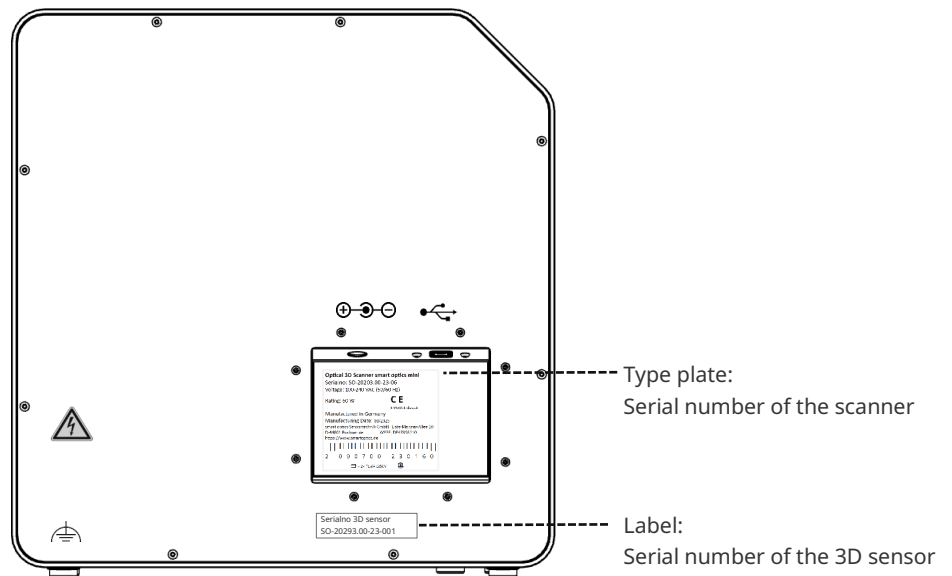
**Scan software**

- Version number (Extras | About)



**Serial Numbers**

The serial numbers can be found on the rear of the scanner. The first characters are fixed, the last individually.



## 9.2 First Help

The following measures can help to find the cause of a malfunction or fix the malfunction itself.




The smart optics Help Center offers further information in the areas of **Dental** and **Cross Product**.


If the problem persists, contact the First Level Support.

### 9.2.1 Base Check


#### Workplace

-  11  Is the indoor climate appropriate and constant?
- Is the work table suitable?
- Are scanners, accessories and work table clean?

#### Connections

-  12  Are all connections tight?
- Are the cables externally intact?
- Does the external power supply stay cool in the socket?
- Is the scanner connected directly to the PC?  
Cable max. 2 meters, no USB hub, no USB extension
- Does the USB port of the PC have version 3.0?  
Blue connection, version display in the device manager


#### Software Installation

-  15  Has the installation of the scan software been completed without error? If in doubt, install again.
- Were the PC, scanner and scan software restarted after installation?

### 9.2.2 Failed Calibration

If calibration fails, exact measurements are not possible. After initial installation, you will not be able to scan.

Try the following measures:

-  15, 21  Protect the scanner from direct light.
- Restart scan software and scanner.



Label with sample values

No.	1234
#1	52,6789
#2	9,9876

- ▷ Correct the entered values on comma and decimal places. Compare with the label on the 3D calibration model.
- ▷ Check if the calibration data matches the scanner:  
Serial number 3D sensor = name of the calibration data folder  
File path:  
C:\ProgramData\3D-Scanner\DeviceCharacteristics\Sensors  
If in doubt, rename the existing folder (prefix a character) and copy the folder from the data carrier again.
- ▷ Check the 3D calibration model for damages. Discolorations and damages to the edge are tolerable. In case of central damage, the 3D calibration model must be replaced.
- ▷ Check if there are any **connectivity problems**.

### 9.2.3 Hardware Problems

- ▷ In case of hardware problems, always contact First Level Support. Do not attempt to repair any hardware.

Signs can occur on various components, such as:

- Examples
- Rotary swivel unit
    - does not stop/does not move,
    - has dirty/damaged contact surfaces.
  - 3D sensor (LED projector, camera)
    - Component is dirty/damaged,
    - No live image appears in the scan software.
  - Motor
    - makes unusually loud noises,
    - Error message for engine control.

### 9.2.4 Connectivity Problems

Connectivity problems can result from a faulty USB connection, camera drivers, and unfavorable Windows settings.



The smart optics Help Center offers further information on these topics in the areas of **Cross Product** and **Dental**.

Signs of connection problems may include:

- Error message concerning the camera connection,
- Error message concerning the scanner connection,

- Failure of calibration,
- Measurement error despite correct procedure.
- ▷ If an error message appears with instructions, follow them.
- ▷ Exit the scan software, turn off scanner and PC. Disconnect the scanner from electricity and wait briefly before restarting.
- ▷ Remove unnecessary USB devices from the PC.
- ▷ Replace the USB port on the PC (blue port), if necessary, also the USB cable (USB 3.0).

## 9.2.5 Scan Problems

### Startup Problems



Further information on this topic can be found in the smart optics Help Center in the field of **Dental**.

Clarify in advance:



- Is the software installed correctly and completely?
- Has an upgrade of the scan software been installed?
- Has any other software been installed on the PC in the meantime?

### Scan results

Poor scan results or sudden loss of quality are some of the symptoms for software problems. Other causes can be:


- Is the scan area in sunlight/very bright artificial light?
- Does the **Plaster Appearance** setting match the scanned material?
- Is the **Quality** setting appropriately chosen for the application?
- Was dark or glossy material prepared with scan spray?
- Was the articulator motionless during the vestibular scan?

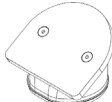


### Scan area

If the scan object does not appear in the 3D viewer of the scan software, the scan object is not positioned in the scan area.

- Articulator: Does the dental arch point exactly to the 3D sensor?  
Adjust the angle. Check the camera view in the live image.
- Jaw model: Articulated jaw models on mounting plates may be too high. Disconnect the jaw model from the base.

## 10 Paid Extensions

 The following extensions are available for smart optics mini:

Article	Designation	Description
90340	Impression holder	 Use with adhesive pads
90539	multiDie	 Use with adhesive pads
90543	smart optics Comfort Mode	 Speed update + software functions, use without special accessories

### 10.1 Unlocking

With a paid item, you will receive an activation code (at least 13 digits) to unlock the corresponding software functions.



1. Start the scan software. Close the project creation.
  2. Select **Extras ▶ Add activation code** and enter your activation code.
  3. Repeat the step for more activation codes.
  4. Restart the scan software.
- ✓ The functions are now unlocked. If not, repeat the steps to exclude a capture error.

#### Data Backup

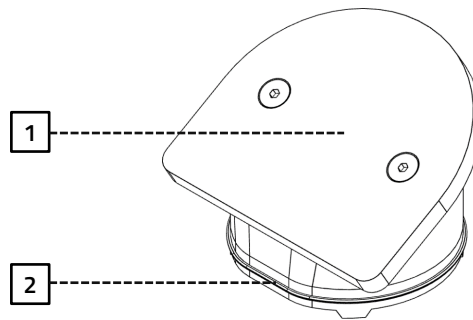
Activation codes are stored in the calibration data. They only apply to the sensor number of a single scanner.

- ▷ Keep the activation codes together with the data carrier from the scope of delivery.
- ▷ You must repeat the activation in case that you:
  - reinstall the scan software with calibration data,
  - re-copy the calibration data,
  - install the scan software on another PC (all from the data carrier).

## 10.2 Impression Holder

### Key

- 1 Space for impression tray
- 2 Plate type  
Splitex/Adesso Split®

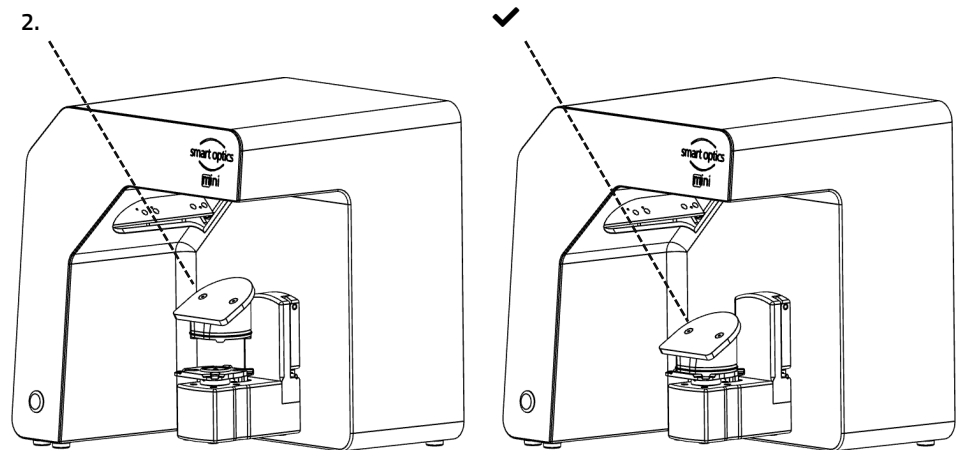


The impression holder is an extension for scanning full impressions and Triple Tray® impressions.



The impression holder must be covered with at least three strips of adhesive pads.

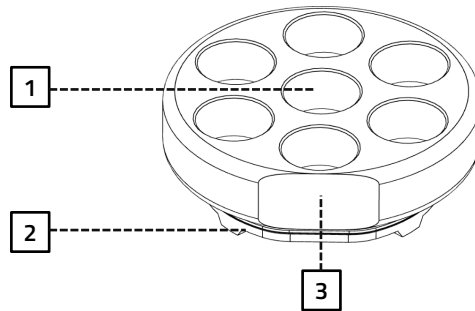
1. Press the impression tray firmly onto the adhesive pads (in the middle). Test the fixture by gently turning and tilting.
  - The handle of the full impression spoon must point to the high side, the dental arch to the low side.
  - A Triple Tray® impression must additionally point upwards with the required jaw.
2. Place the impression holder on the base plate of the scanner (deep side forward).



### 10.3 multiDie

**Key**

- 1 Slots for Single Segments
- 2 Plate Type  
Splitex/Adesso Split®
- 3 Marking, Position **0**



multiDie is an extension for the multiDie and multiDie+ presentation modes as well as for the multiCase project definition (scanning of individual segments from different treatment cases).

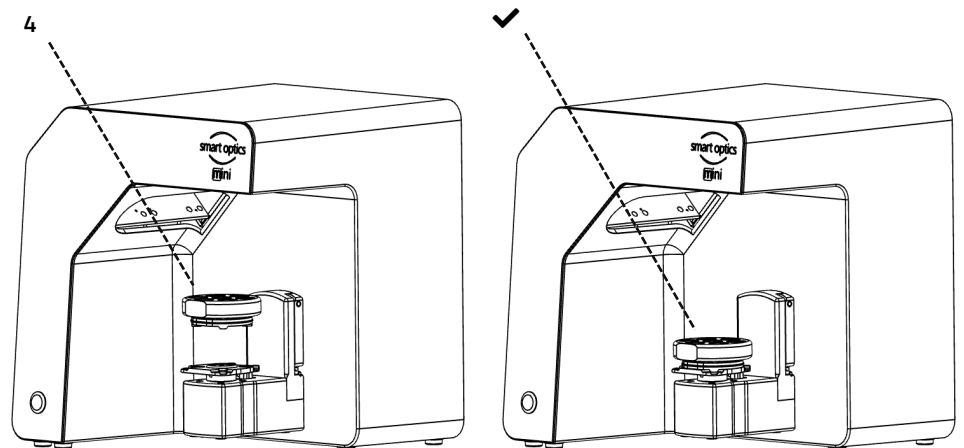
The individual segments must be tooth stump models without a model base and with metal pins.

1. Fill all slots with adhesive pads (up to the edge of the slots, not higher). The adhesive pads can remain permanently in the slots.
  2. Insert the metal pins into the slots so that all tooth stump models are straight and free (not tilted, without contact with the neighbor).
- ✓ The metal pins are fully in the slots, the models are above.



The buccal side faces outwards if possible.

3. Test the fixture by gently turning and tilting.
4. Place the multiDie adapter on the base plate of the scanner (position **0** forward).



## 10.4 smart optics Comfort Mode



The smart optics Comfort Mode is an extension consisting of a speed update and software functions (see [availability](#)). You do not need any special accessories for use.

### **Speed Update**

With the speed update, scan times and processing are around 25% faster.

### **Project Management**

- Auto articulation
- Free workflow "independDent Mode"
- Universal project

### **Correction Functions**

- Automatic cutting plane
- Correction scan
- Additional scan

Bright & Dark Mode


























Cache Folder

Colored/Monochrome Texture Scan

Verification step after each scan

## 10.5 Availability of Software Functions

Locked functions are grayed out in the scan software and displayed with a tooltip.

	Availability	Accessories
<b>Projects</b>		
Patient		Universal plate
Orthodontics		Universal plate
multiCase		multiDie adapter
Universal		Universal plate
<b>Presentation modes</b>		
Complete jaw		Universal plate
singleDie		Universal plate
secondDie		Universal plate
multiDie/multiDie+		multiDie adapter
<b>Vestibular scan</b>		
Simple occlusion		Universal plate
Articulator		—
Auto-articulation		—
<b>Texture scan</b>		
Monochrome		—
Colored		—
<b>Impressions</b>		
Full impressions		Impression holder
Triple Tray		Impression holder
<b>Cutting</b>		
Manual		—
Automatic cutting plane		—
<b>Correction</b>		
Rescan		—
Correction scan		—
Additional scan		—
<b>Settings</b>		
View mode		—
Cache directory		—
Check after each scan		—
<b>Workflows</b>		
Guided		—
independDent Mode		—

## 11 Disposal

### 11.1 Disposing of Packaging

You can dispose the packaging after the warranty has expired. smart optics recommends storing the packaging for transportation of the scanner.

### 11.2 Disposing of the Device



This symbol is for devices according to the European Directive 2002/96/EC for WEEE (Waste Electrical and Electronic Equipment).

WEEE registration number of smart optics: DE47893210

Electronic equipment is not for the household waste.

Disposal via a public disposal carrier is not possible, as the scanner is exclusively used commercially or industrially.

Send the scanner to the manufacturer for disposal or to your reseller if you are resident within the area of validity of the EU.



## 12 CE Conformity

smart optics Sensortechnik GmbH  
Lise-Meitner-Allee 10  
44801 Bochum, Germany

### Declaration of CE-Conformity

According to EU-regulation 2006/42/EG Appendix II A

We declare that the device identified below complies with the requirements of the EU guideline which regard to safety and physical health requirements both in concept and construction put in circulation.

This declaration becomes invalid in case of an unauthorized change of the device.

Device description:	Optical 3D scanner
Device type:	<b>3D-Scanner smart optics mini</b> (Art.Nr. 90534)
EU guidelines applicable:	Low voltage guideline (2014/35/EU) EMC guideline (2014/30/EG)

Harmonized standards applied:  
DIN EN 61010-1:2010 Safety requirements for electrical equipment for measurement, control, and laboratory use  
DIN EN 61326-1:2013 Electrical equipment for measurement, control and laboratory use – EMC requirements

The CE label was used first for this product in 2023.

Document prepared by: Jörg Friemel

Bochum, 04.07.2023

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ID: SO-20203-OMBA-90534-EN

