English
2023

smart optics

DENTAL CATALOG

#workScanBalance

GERMAN ENGINEERING | ATTENTION TO THE DETAILS | QUALITY | PRECISION | DURABILITY



www.smartoptics.de



SMART OPTICS

Are you looking for a smart 3D dental scanner? Don’t look any further! smart optics has the perfect solution.

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WELCOME

GERMAN ENGINEERING

“We rely on 'Made in Germany' quality for our scanners. All of our dental products are maintenance-free, dependable and affordable for businesses of all sizes. We do our best every day to find the ideal solution for our partners and customers. Our work focuses on our own quality requirements and ultimately on the 'happy owner of a dental prosthesis'. This is proven by the low repair rate of our 3D scanners. For this reason I am particularly proud of my team, which makes smart optics what it is: competent and purposeful."

Dipl. Ing. Jörg Friemel, CEO
smart optics Sensortechnik GmbH

SMART OPTICS

HOME OF 3D SCANNERS

MANUFACTURER OF DEPENDABLE
3D DENTAL SCANNERS

OEM

Would you like your own product design
for one of our models?
We deliver it to you according to your
ideas and specifications.

MADE IN GERMANY

Our aim is to produce always the best
possible quality and to enable efficient
work processes for our customers.

36 MONTH WARRANTY

A technical failure is always painful.
We help quickly, reliably
and competently.

ISO CERTIFIED

Guaranteed best quality.
With us you know where you stand,
because smart optics is of course
ISO certified.

Our products have firmly established themselves in the dental industry due to their performance and quality. Our long-standing experience and the constant exchange with our customers help us to further develop our products in a customer, quality and future oriented manner. Fulfilling customer requirements and finding new, innovative solutions are our daily challenges and therefore part of our core competence. For us, the EN ISO 13485 standard is not only mandatory for the design and manufacture of medical products but also part of our quality commitment and promise. The DIN EN ISO 9001 standard, on the other hand, represents the cornerstone of our conduct. The application of ISO 9001 takes place on a purely voluntary basis and without any legal requirement. All our products have a 36-month warranty. Highest precision in scanning results is ensured by strict compliance with ISO standard 12836 and technical data become comparable.

QUALITY



QUALITY CONTROL

At smart optics, quality and service always comply with the ISO 9001 and 13485 standards. The Bochum-based company measures and documents the precision of all its scanners using all procedures stipulated by ISO 12836.

Quality Management System

Quality Management System for Medical Devices

THE UNKNOWN DANGER

Blue Light Hazard

Modern 3D scanners capture an object more precisely and in greater detail. They often use blue light is to make measurements, which at high intensities can lead to irreversible eye damage. This rises the question for many users as to whether dental 3D scanners with blue measuring light pose a risk. The reading below, written by Dr. Christoph Prall (Head of Development, Research and Innovation at smart optics) and Dipl.-Ing. Jörg Friemel (CEO of smart optics) gives answers and explains what it means when a 3D scanner is assigned to a risk group in accordance with DIN EN 62471. It also summarizes the most important criteria for safe scanning.

The most important information for you: All dental scanners manufactured by smart optics are not assigned to any risk group and can be operated without hesitation.

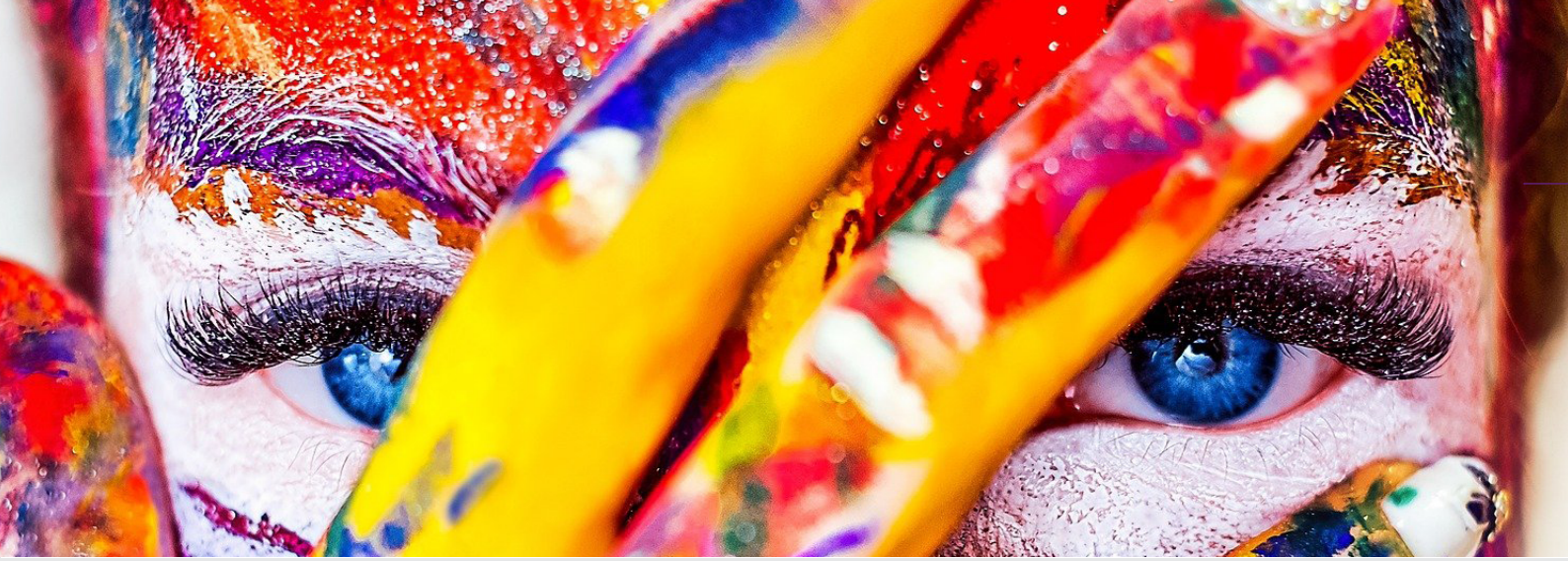
Excerpt from
5/21 - dental dialogue - issue 22, pp. 54 - 59

Dental 3D Scanner - A risk factor?

A contribution by Dr Christoph Prall, Dipl.-Ing. Jörg Friemel

While blue light has long symbolized technical innovation, the focus is increasingly shifting to its harmful effects on the human eye. This is also of significance in everyday dental laboratory work, where 3D scanners with intense blue light sources are increasingly used. Here, the onus is on manufacturers and laboratory owners to ensure health and occupational safety.

Modern artificial light sources, such as light-emitting diodes (LEDs), can generate light in the visible spectral range and thus the blue spectral range very efficiently and with high power. With wavelengths of 400 nm to 490 nm (nanometers), blue LEDs are not far from ultraviolet light (UV light), which starts at a wavelength below 380 nm or 400 nm, depending on the standard considered. It should therefore come as no surprise that blue light is potentially hazardous to the human eye. The harmful effects of UV light on the eyes and skin are well known. However, the photochemical retinal hazard of blue light—photoretinitis—is often overlooked because the human eye perceives blue light as less intense compared to green or yellow light of the same intensity. This deceptive perception of hazard potential is also known as the blue light hazard. ***[...]***



LIFE IS COLORFUL

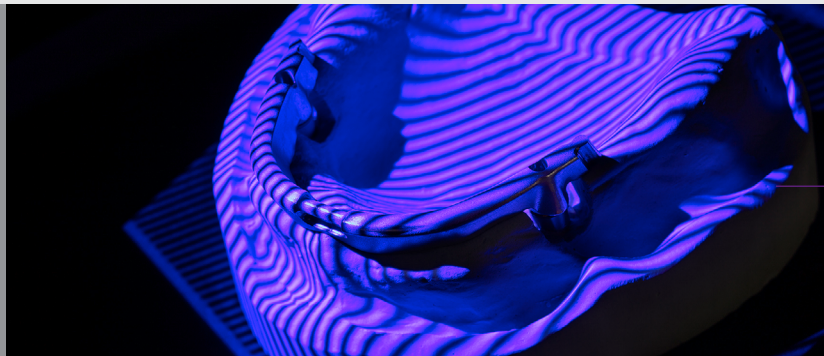
[...] USE OF BLUE LIGHT IN DENTAL 3D SCANNERS

In recent years, pure blue light has been widely used in dental technology to digitize 3D dental objects. The technical reasons for this are the lower chromatic aberration and reduced diffraction effects of the images captured by a 3D sensor. These optical effects, which can lead to blurring, are less pronounced with blue light. Additionally, 3D scanners are increasingly manufactured with an open design to improve operating convenience and ensure that the scanned object can be changed out quickly. During the scanning process, this may increase the blue light exposure experienced by the operator and the surrounding workstations. ***[...]***

When used as intended, our scanners do not pose a photobiological hazard and are therefore not assigned to any risk group pursuant to IEC 62471 (exempt group). No further occupational health and safety measures are required for safe operation.

ARE YOU INTERESTED?

For more information please visit:
https://www.smartoptics.de/en/technical-article-blue-light-hazard/



3D DESKTOP SCANNERS

Vinyl Series



The compact design with the distinctive cube shape is a characteristic feature of smart optics Vinyl scanners. The series owes its name to the large black system plate, strikingly reminiscent of a turntable. Equipped with a fully automatic Z-axis and a user-friendly 180° opening, the dental desktop scanners provide convenient space for all dental objects, from individual segments through jaw models, full and partial impressions (also of toothless jaws) up to articulators of various brands. Highest quality combined with German engineering, reliability in harmony with longevity – these are the requirements that smart optics accomplishes with the Vinyl Series. Tried and tested LED sensor technology and smart motorization allow high-precision, fast measurements. Technical innovations from our own research as well as the implementation of customer requests ensure that the Vinyl Series evolves constantly to meet the growing demands both of today and the future.



Vinyl UXD Detail

The Vinyl series offers a suitable model for every need:

- **Vinyl Open Air** – to be used in orthodontics or smaller laboratories.
- **Vinyl High Resolution** – equipped extensively for demanding dental applications.
- **Vinyl UXD** – for special requirements concerning performance and comfort.

The extensive range of accessories for models and impressions can be added or purchased later for both basic and additional modules. Thanks to the multisplit base plate, which is standard for all smart optics dental scanners, same-system models and articulators do not require any accessories. It goes without saying that all Vinyl scanners are supplied with the powerful dental Scan software - including interfaces to prestigious industry software, first and foremost exocad DentalCAD. In conjunction with the open dental Scan system, Vinyl scanners offer another advantage by working not only as first-class dental scanners, but also as clever universal scanners for objects within the size of the measuring field.

VINYL UXD



PARTICULARITY

The name of the model Vinyl UXD (User Experience Design) says it all, because the UX module of the high-performance scanner opens up special operating possibilities.

The secret of the UX module is revealed inside the Vinyl UXD and is almost inconspicuous from the outside: UX stereo cameras allow monitoring the interior of the scanner, with a dedicated UX projector projecting spots of light and symbols that serve as assistance and buttons that can be operated intuitively by means of hand gestures. The system plate takes over a second function for the UX module: A UX projection surface comes into being where otherwise there would be the space for models and impressions. As a result, the PC - as control centre for the software – can safely move a little into the background. Thanks to the enlarged system plate of the Vinyl UXD, larger articulators can also be easily placed inside the scanner.

Concerning measurement technology, the Vinyl UXD features two 3.2 megapixel cameras and highly sensitive industrial 3D sensors with blue light technology, ensuring outstanding depth of focus and scanning accuracy. Thus, a deeper coverage of the interdental spaces is guaranteed. And the Vinyl UXD also scans especially quickly.

The Vinyl UXD - a scanner in a class of its own.

DATA SHEET

FEATURES

- ✓ HR and LR-Modus
- ✓ Selective camera mode
- ✓ Articulator scan
- ✓ Auto-articulation
- ✓ Twin Tray model scan
- ✓ Impressionscan
- ✓ Triple Tray® impression scan
- Baltic Denture System® *Accessories required
- ✓ secondDie
- ✓ multiDie/multiDie+
- ✓ Visual Z-axis control
- ✓ Automatic section plane
- ✓ Additional scan
- ✓ Correction scan
- ✓ Monochrome texture scan
- ✓ Colour texture scan
- ✓ Universal project
- ✓ multiCase project
- ✓ Orthodontic project
- ✓ Bright & Dark Mode

HARDWARE

- ✓ UX module
- ✓ AI controlled Z-axis
- — Fully automated Z-axis
- ✓ Articulator system plate **XL**
- — LED status bar
- ✓ High-quality material housing
- ✓ 3D sensor unit (projector & camera)
- — Touchscreen
- ✓ Lid

MEASURING SPEED		
Complete Jaw	12 | 10 | 22[1]	12 | 12 | 24[2]
Single Stump	25 | 6 | 31[1]	26 | 14 | 40[2]
3-Unit Bridge	40 | 15 | 55[1]	45 | 31 | 76[2]

[1] One camera, LR mode
[2] Two cameras, HR mode
Specification: Scanning | Matching | Total

DEVICE INFORMATION	
Amount of cameras	4
Camera pixels	2 × 3.2 MP 2 × 1.0 MP
Amount of projectors	3
Accuracy (acc. ISO 12836)	4 µm
Output data format	PLY, STL
Light source	Blue light LED
Measuring technology	Stripe light triangulation
Measurement field (X × Y × Z)	Camera 1: 80 × 60 × 82 mm Camera 2: 88 × 63 × 82 mm
Dimensions (W x H x D)	455 × 430 × 420 mm
Weight	25 kg
Connections	1 × USB 1 × Power
Supply voltage	100 – 240 V AC 50/60 Hz
Warranty	36 months

SCOPE OF DELIVERY

Vinyl UXD
Mains cable | USB cable | Accessory case

Accessory case:
3D calibration model | Object holder | Universalplate | multiDie adapter | Triple Tray® impression holder | 4-tooth bar (Twin Tray) | Adhesive pads | Data carrier (dental Scan, calibration data)

VINYL

High Resolution



PARTICULARITY

Attention to the details and performance - these are the outstanding features of the Vinyl High Resolution. Its characteristics are the blue light LED and a 3.2 megapixel camera. A status LED in the Z-axis above the system plate completes the overall picture of the characteristic black and white Vinyl cube, which has a vertically opening lid to protect against dust and stray light.

The extensive range of accessories, supplied in a practical hard case, ensures that the Vinyl High Resolution can be used for a wide range of dental work. The Vinyl HR is therefore predestined for multi-element implant work or complex bar constructions.

If speed is more important than high-resolution scans, the option of switching off the "HR mode" within the scan software is available. Overall accuracy is excellent, even when the HR mode is deactivated.

The Vinyl High Resolution - the ideal partner for those who want more.

DATA SHEET

FEATURES

- ✓ HR and LR-Modus
- — Selective camera mode
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- ✓ Impressionscan
- ✓ Triple Tray® impression scan
- 🔑 Baltic Denture System® *Accessories required
- ✓ secondDie
- ✓ multiDie/multiDie+
- ✓ Visual Z-axis control
- ✓ Automatic section plane
- ✓ Additional scan
- ✓ Correction scan
- ✓ Monochrome texture scan
- ✓ Colour texture scan
- ✓ Universal project
- ✓ multiCase project
- ✓ Orthodontic project
- ✓ Bright & Dark Mode

HARDWARE

- — UX module
- — AI controlled Z-axis
- ✓ Fully automated Z-axis
- ✓ Articulator system plate **L**
- ✓ LED status bar
- ✓ High-quality material housing
- ✓ 3D sensor unit (projector & camera)
- ✓ Touchscreen
- ✓ Lid

MEASURING SPEED	
Complete Jaw	Scanning: 18 sec. Matching: 17 sec. Total: 35 sec.*
Single Stump	Scanning: 35 sec. Matching: 14 sec. Total: 49 sec.*
3-Unit Bridge	Scanning: 50 sec. Matching: 25 sec. Total: 75 sec.*

* Measuring values in the HR mode

DEVICE INFORMATION	
Amount of cameras	1
Camera pixels	3.2 MP
Amount of projectors	1
Accuracy (acc. ISO 12836)	4 µm
Output data format	PLY, STL
Light source	Blue light LED
Measuring technology	Stripe light triangulation
Measurement field (X × Y × Z)	80 × 60 × 85 mm
Dimensions (W x H x D)	455 × 430 × 435 mm
Weight	25 kg
Connections	1 × USB 1 × Power
Supply voltage	100 – 240 V AC 50/60 Hz
Warranty	36 months

SCOPE OF DELIVERY

Vinyl High Resolution |
Mains cable | USB cable |Accessory case

Accessory case:
3D calibration model |Object holder |Universalplate |
multiDie adapter | Triple Tray® impression holder |
4-tooth bar (Twin Tray) | Adhesive pads |
Data carrier (dental Scan, calibration data)

VINYL

Open Air



PARTICULARITY

Scanning on an open stage - this is the motto of the Vinyl Open Air, because this Vinyl scanner is completely open. Technically it is up to date thanks to the suitable 1.3 megapixel camera and the structured light triangulation with white light LEDs.

As the most affordable model of the Vinyl series, the Open Air comes with a basic set of accessories. It doesn't take more than this to work on projects with common dental indications or orthodontic cases - including articulator scans.

The Vinyl Open Air - a scanner not only for routine work.

DATA SHEET

FEATURES

- ✓ HR and LR-Modus
- — Selective camera mode
- ✓ Articulator scan
- ✓ Auto-articulation
- 🔑 Twin Tray model scan
- ✓ Impressionscan
- 🔑 Triple Tray® impression scan
- 🔑 Baltic Denture System® *Accessories required
- ✓ secondDie
- 🔑 multiDie/multiDie+
- ✓ Visual Z-axis control
- ✓ Automatic section plane
- ✓ Additional scan
- ✓ Correction scan
- ✓ Monochrome texture scan
- ✓ Colour texture scan
- ✓ Universal project
- 🔑 multiCase project
- ✓ Orthodontic project
- ✓ Bright & Dark Mode

HARDWARE

- — UX module
- — AI controlled Z-axis
- ✓ Fully automated Z-axis
- ✓ Articulator system plate **L**
- — LED status bar
- ✓ High-quality material housing
- ✓ 3D sensor unit (projector & camera)
- ✓ Touchscreen
- — Lid

MEASURING SPEED	
Complete Jaw	Scanning: 16 sec. Matching: 13 sec. Total: 29 sec.
Single Stump	Scanning: 33 sec. Matching: 8 sec. Total: 41 sec.
3-Unit Bridge	Scanning: 45 sec. Matching: 22 sec. Total: 67 sec.

DEVICE INFORMATION	
Amount of cameras	1
Camera pixels	1.3 MP
Amount of projectors	1
Accuracy (acc. ISO 12836)	6 µm
Output data format	PLY, STL
Light source	White light LED
Measuring technology	Stripe light triangulation
Measurement field (X × Y × Z)	80 × 60 × 85 mm
Dimensions (W x H x D)	455 × 430 × 435 mm
Weight	23 kg
Connections	1 × USB 1 × Power
Supply voltage	100 – 240 V AC 50/60 Hz
Warranty	36 months

SCOPE OF DELIVERY

Vinyl Open Air
Mains cable | USB cable | 3D calibration model |
Object holder | Data carrier (dental Scan, calibration data)

scanBox



The fully automatic 3D desktop scanner is impressive with its modern look and its space-saving dimensions. The scanBox is suitable for everyone new to the digital CAD/CAM world, but also for professionals who wish to produce quickly, easily and affordably.

The scanBox is particularly interesting for users who have a reasonable volume of orders in crown and bridge technology. Thanks to the intelligent dental Scan scanning software, the small scanBox can even keep up with its larger Vinyl series colleagues in many application cases. Thus, the lack of space for articulators can be compensated for by auto-articulation under certain conditions. Essential features for dental scans are of course included in the scope of delivery of the scanBox, e.g. the time-saving secondDie or the monochrome texture scan, which allows to digitize markings on the models in a single colour. The scope of functions of the scanBox can be further expanded by purchasing modules and accessories, for example, for scanning partial Triple Tray® impressions. Needless to say, the scanBox can also be fully used with the exocad®DentalCAD market leader.

The scanBox is also a reliable universal scanner that can be used in any industry thanks to the universal mode in the dental Scan scanning software. Using very simple methods, it is possible to scan objects the size of the measuring field. The final 3D models are exported by dental Scan in system-open end formats and can therefore be further processed easily in various CAD applications.

DATA SHEET

FEATURES

- ✓ HR and LR-Modus
- — Selective camera mode
- — Articulator scan
- ✓ Auto-articulation
- — Twin Tray model scan
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- 🔑 Triple Tray® impression scan
- 🔑 Baltic Denture System® *Accessories required
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- ✓ Monochrome texture scan
- — Colour texture scan
- ✓ Universal project
- 🔑 multiCase project
- ✓ Orthodontic project
- ✓ Bright & Dark Mode

HARDWARE

- — UX module
- — AI controlled Z-axis
- — Fully automated Z-axis
- — Articulator system plate **L**
- — LED status bar
- ✓ High-quality material housing
- ✓ 3D sensor unit (projector & camera)
- — Touchscreen
- — Lid

MEASURING SPEED	
Complete Jaw	Scanning: 19 sec. Matching: 16 sec. Total: 35 sec.
Single Stump	Scanning: 32 sec. Matching: 12 sec. Total: 44 sec.
3-Unit Bridge	Scanning: 48 sec. Matching: 25 sec. Total: 73 sec.

DEVICE INFORMATION	
Amount of cameras	1
Camera pixels	1.3 MP
Amount of projectors	1
Accuracy (acc. ISO 12836)	6 µm
Output data format	PLY, STL
Light source	White light LED
Measuring technology	Stripe light triangulation
Measurement field (X × Y × Z)	80 × 60 × 85 mm
Dimensions (W x H x D)	360 × 310 × 390 mm
Weight	11 kg
Connections	1 × USB 1 × Power
Supply voltage	100 – 240 V AC 50/60 Hz
Warranty	36 months

SCOPE OF DELIVERY

scanBox
Mains cable | USB cable | 3D calibration model |
Universal plate | Adhesive pads |
Data carrier (dental Scan, calibration data)



Intro

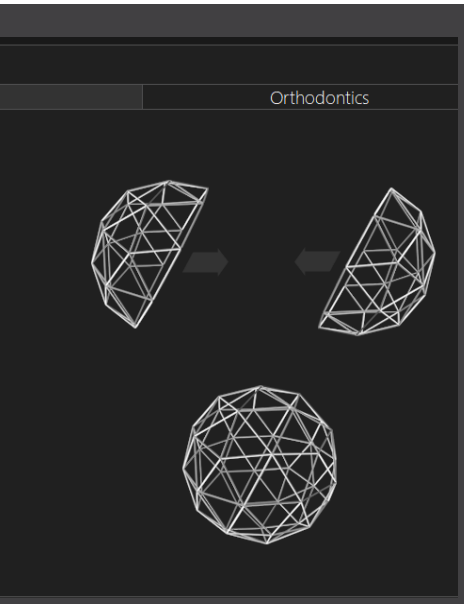
Smart. Fast. Stable.

All smart optics 3D dental scanners are equipped with the dental Scan scanning software. The technical dental know-how of our experts is included in the development of our scanning software – from practice to practice.

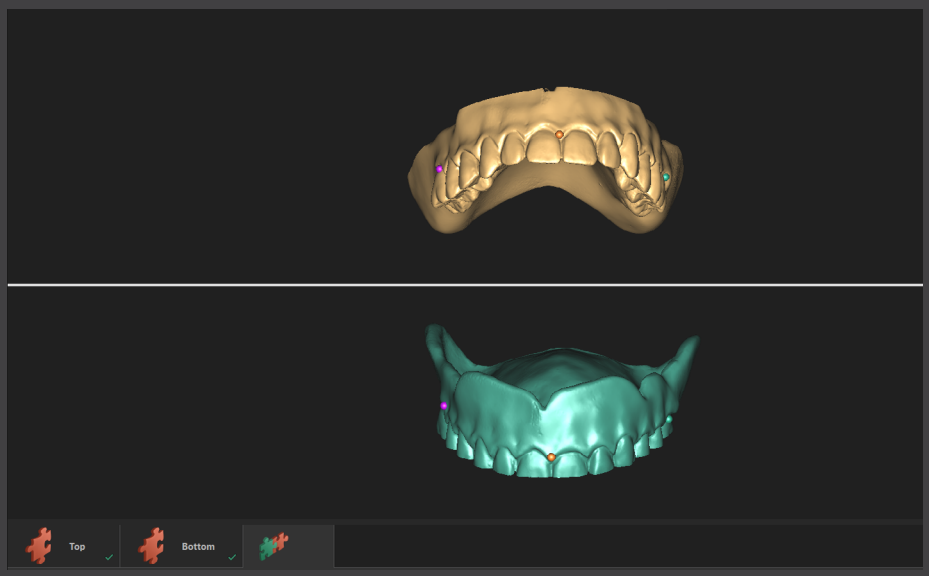
dental Scan - a modern, clean and tidy design. Controls and tools are arranged in a clear and practical way. The 3D viewer offers different views that allow a good overview and thus optimal processing of the scan data. The software also scores points in terms of functionality.

Project management with dental Scan

The clearly structured project management system is at the centre of dental Scan. Dental work with extensive dentist's specifications can be defined just as easily as orthodontic applications or multiCase projects consisting of various individual stumps. Needless to say, projects from external CAD software such as exocad® DentalCAD can be transferred to the scanning software with the corresponding definitions. dental Scan ensures a smooth transfer of the scan data to the dental CAD software.



Universal



Combine

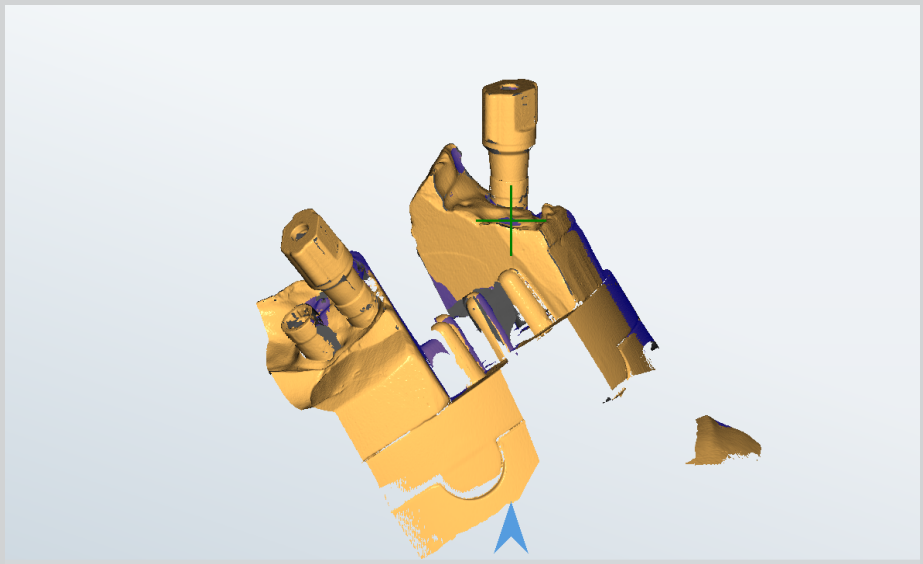
Everything is possible: dental scan objects

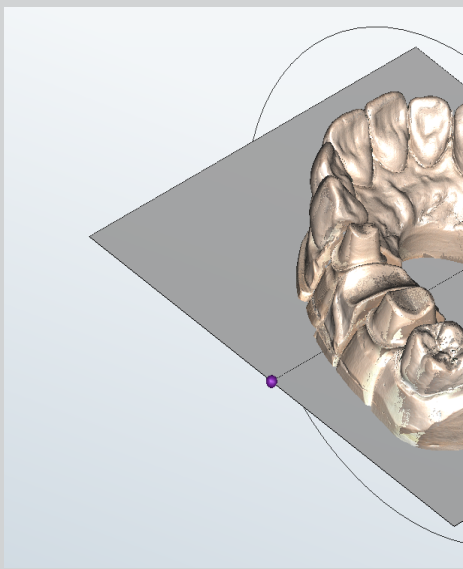
dental Scan supports whole jaw models and partial models, complete and partial impressions. To digitize the occlusion, whole jaw models can be scanned by means of a simple attachment or in an articulator. Impressions of toothless jaws can also be digitized with dental scan. dental Scan offers its own workflows for special solutions that require special scanner accessories, such as Twin Tray, Triple Tray® or Baltic Denture-System®.

Everything is easy: guided workflows

In dental Scan, workflows are guided and accompanied by instructions, so that all work steps can be completed in an effective sequence. A deviation from the guidance for a self-chosen sequence is possible, with just a few exceptions. This allows the quick and comfortable capture of individual tooth positions for completion of the scan data.

Outlines of different colours, which are important for the production of model cast prostheses, for example, can be digitized by colored texture scans (depending on the scanner); the monochrome texture scan is available for simple markings.





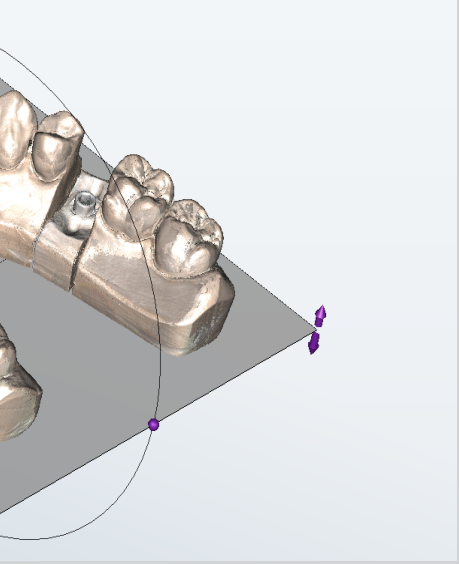
Rescan

Scanning with a bite:
Articulator scans and auto-articulation

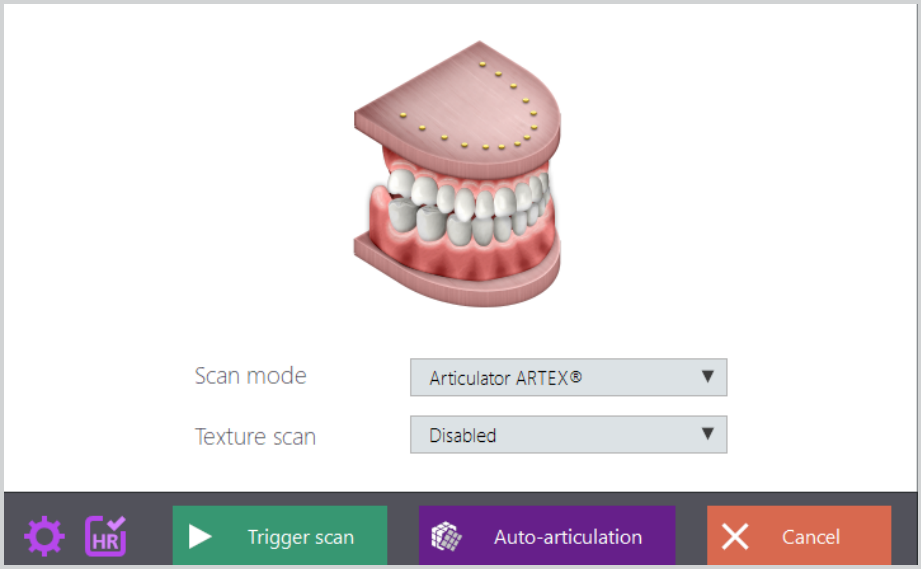
By means of the scanning of articulators, the position data of jaws in occlusion can be scanned condyle-related, saving time and efforts. Auto-articulation even allows the occlusion to be calculated without scanning the physical articulator.

Everything correct!

dental Scan has a number of correction functions: Immediately after scanning, the unneeded base area can be removed using the automatic section plane. Additional cutting tools are available for individually selected areas. If a model shows punctual damage, the affected area in the original scan can be replaced by a correction scan after the surface has been cut. The set of correction functions includes rescanning as well as the automatic completion of missing data and the informative addition of global scans.



Cutting Plane



Vestibular

Universal scans for a variety of purposes

With the universal scan bonus function, dental Scan creates global scans of objects. Objects the size of the measuring field, outside the dental field, can be digitized effortlessly. As a rule, one scan per object side is sufficient. The scan data are available in common 3D file formats and can easily be further processed and printed using open 3D modelling software.

smart optics constantly improves dental Scan to increase its ease of use and to integrate new functionalities. We recommend all users to benefit from the regularly released upgrades.

By the way: dental Scan upgrades are available free of charge for all previous versions.

The current version can always be found on the smart optics website under "Downloads". https://www.smartoptics.de/en/dental/dental-scan/

COMPATIBILITY	
Scanners	Vinyl UXD, Vinyl High Resolution, Vinyl Open Air, Vinyl and scanBox
Scanning software	dental Scan
Dental technology	exocad® DentalCAD
Model cast prosteses	all open systems
Orthodontics	all open systems
Full Denture	Baltic Denture System

MORE SMART OPTICS

smart optics

Watching tutorials, reading news
or finding a reseller
is very easy with us!

Would you like access to more product information? No problem at all. At the smart optics University you can watch tutorials on dental Scan and real-time scans of our dental scanners.

University

Tutorials
https://www.smartoptics.de/dsoe

The website provides you with news about products and the company. If you don't want to miss anything, you can subscribe to the smart optics newsletter and receive information about release notes, events, etc. on a topic-related basis.

Website

News
https://www.smartoptics.de/dove
https://www.smartoptics.de/en/newsletter/

Are you looking for a reseller near you? We have many sales partners, both nationally and internationally, from whom you can order smart optics products.

smart optics Partners

Find a reseller
https://www.smartoptics.de/dree



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