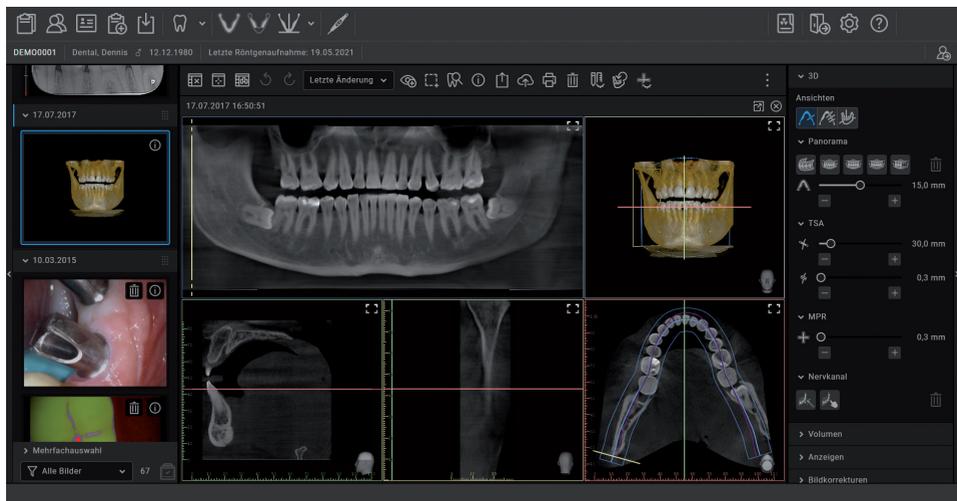


VisionX 3.0



EN-US Manual



RxOnly



2-11-0200001L29 E7303 2210V012

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Important information

This manual applies to VisionX, order number: E7300, from version 3.0.20.

This manual forms part of the software. It corresponds to the version of the software and the technical standards valid at the time of initial market release.



Air Techniques accepts no liability or responsibility for safe operation of this device and the software if the notes and instructions contained in this manual are not observed.

The German manual represents the original instructions. All other languages are translations of the original manual.

All circuits, processes, names, software programs, and devices mentioned in this document are protected by copyright.

The installation and operating instructions must not be copied or reprinted, neither in full nor in part, without written authorization from Air Techniques.

1 Warnings and symbols

The warning notes in this document highlight possible injury to persons or damage to machinery.

They are marked with the following warning symbols:



General warning symbol

The warnings are structured as follows:



SIGNAL WORD

Description of type and source of danger

Here you will find the possible consequences of ignoring the warning

- › Follow these measures to avoid the danger.

The signal word differentiates between different levels of danger:

- **DANGER**
Direct danger of severe injury or death
- **WARNING**
Possible danger of severe injury or death
- **CAUTION**
Risk of minor injuries
- **NOTICE**
Risk of extensive material/property damage

These symbols are used in the document and on or in the unit:



Note, e.g. specific instructions regarding the efficient use of the unit.



Take note of the accompanying electronic documents.



CE labeling with the number of the notified body

Rxonly

Caution: By virtue of Federal Law, the software may only be sold to dentists or bought on behalf of a dentist.



Medical device



Part number



Batch name



Health Industry Bar Code (HIBC)



Manufacturer



Distributor

Action instructions are identified specifically in this document:

- › Perform this action.

2 Safety

Air Techniques developed the software appropriately such that hazards are effectively ruled out if the software is used in accordance with its normal use.

Despite this, the following residual risks can remain:

- Personal injury due to incorrect use/misuse
- Personal injury due to malfunction

The sale or prescription of this software by a medical practitioner is subject to the restrictions of the applicable Federal Acts. The software may be used only under permanent supervision by a dentist or licensed medical practitioner.

Rx_{only} Caution: By virtue of Federal Law, the software may only be sold to dentists or bought on behalf of a dentist.

2.1 Classification

Classification

Medical Device Class (MDR)	IIb
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FDA classification (CFR Title 21)	II
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2.2 Intended use

The software features functions for recording, displaying, analysing, diagnosing, managing and sending digital or digitised 2D and 3D images and videos in dental practices and specialist dental clinics.

2.3 Indications for use

The software is intended for the viewing and diagnosis of image data in relation to dental issues. Its proper use is documented in the operating instructions of the corresponding image-generating systems.

Image-generating systems that can be used with the software include optical video cameras, digital X-ray cameras, image plate scanners, extraoral X-ray devices, intraoral scanners and TWAIN compatible image sources.

The software must only be used by authorized healthcare professionals in dental areas for the following tasks:

- Filter optimisation of the display of 2D and 3D images for improved diagnosis
- Acquisition, storage, management, display, analysis, editing and supporting diagnosis of digital/digitised 2D and 3D images and videos
- Forwarding of images and additional data to external software (third-party software)

The software is not intended for mammography use.

2.4 Improper use

The software must not be used for the following:

- Performance of measurements on images that are not suitable for this purpose due to the way in which the images were created. The software does not provide a measuring function due to the unavoidable geometric image properties of X-ray images. Here, displayed values are only intended to serve as guide values. This also applies after use of the calibration function.
- Use for contraindicated purposes for the image-generating system. The operating instructions of the image-generating system must be followed here.

Any other usage or usage beyond this scope is deemed to be improper. The manufacturer accepts no liability for damages resulting from this. In these cases the user/operator will bear the sole risk.

The software is not intended for mammography use.

2.5 Functions

The patient data can be copied from external programs via defined interfaces.

The 2D or 3D image data is saved for the selected patient in a database and can be displayed in an optimized manner to help with diagnosis.

Different views for reconstructed X-ray image layers (MPR) and 3D volumes from 3D image data are available.

Image data can be imported and exported in various graphics formats together with the metadata or sent to external programs via defined interfa-

ces.

VisionX can be used both as a single workstation system and as a multi-station system in client/server operation.

2.6 Specialist personnel

Persons using the software must be able to guarantee safe and correct operation based on their training and experience.

- › Make sure each user is trained in the use of the software.
- › All installation, resetting, alteration, expansion, and repair work must be carried out either by Air Techniques personnel or by a suitably qualified person approved by Air Techniques.

2.7 Protection from cybersecurity threats

The software is installed on a computer that can be connected to the Internet. Therefore, the system needs to be protected from threats from the Internet.

- › Use antivirus software and update it regularly. Look for evidence of possible virus infection and, if applicable, check with the antivirus software and remove the virus.
- › Use, properly configure, and regularly update your firewall.
- › Update the computer's operating system regularly.
- › Perform regular data backups.
- › Provide access to computers to authorized users only, e.g., by means of user name and password.
- › Make sure that only trustworthy contents are downloaded. Only install software and firmware updates that have been authenticated by the manufacturer.

2.8 Using the software in an IT network

Running the software on an IT network can lead to previously unknown risks for patients, users and third parties.

It is recommended that you identify, analyze, evaluate and control these risks. Apply the IEC 80001-1 standard for risk assessment. Incorrect manual configuration can lead to significant network problems. The expert knowledge of a network administrator is required for configuration.

If, e. g., the following changes are made to the network, new risks can arise that require further analysis:

- Changes in the IT network configuration
- Adding components (hardware or software) to the IT network
- Removing components from the IT network
- "Updating" components in the IT network
- "Upgrading" components in the IT network

2.9 Notification requirement of serious incidents

The operator/patient has to report any serious incident related the product to the manufacturer and the competent authority of the Member State, in which the operator and/or patient is established/resident.

3 Software license agreement (EULA)

for Dürr Dental VisionX Software ("Agreement")

You should carefully read the following terms and conditions before opening this program package or clicking the accept button. To the extent permitted by law, clicking on the "Accept" button during the installation of the Software (defined below) indicates your acceptance of these terms and conditions. If you do not agree with them, you should promptly return this media package unopened for a full refund and refrain from downloading the Software. You assume responsibility for the selection of this program to achieve your intended results, and for the installation, use and results obtained from the Software.

THE SOFTWARE PROGRAM IS A PROPRIETARY PRODUCT OF DÜRR DENTAL SE ("Dürr Dental"), AND IS PROTECTED BY COPYRIGHT LAWS. TITLE TO THE SOFTWARE, OR ANY COPY, MODIFICATION, OR MERGED PORTION OF THIS PROGRAM SHALL AT ALL TIMES REMAIN WITH DÜRR DENTAL SE.

Definitions.

"Object Code" means a form of computer program resulting from the compilation or other processing of Source Code by a computer into machine language or intermediate code, and thus is a form that would not be convenient to human understanding of the program logic, but which is appropriate for the construction and linking of binary executable modules, as well as for the execution by a computer.

"Software" means the VisionX computer software in Object Code only and the drivers and interfaces ordered by you under the terms and conditions of this Agreement.

"Source Code" means a human readable form of computer program showing the computer language instructions comprising the program, from which Object Code can be produced, in which the program logic may be deduced by a human being, and from which a printed listing can be made by processing it with a computer.

Grant of License.

Dürr Dental grants to you a nonexclusive, non-transferable license to use the Software solely for the purpose of medical device software in the dental market ("Licensed Application"). Title to

the Software shall remain with Dürr Dental at all times. You do not have the right to modify or adapt or change the Software, or its intended use.

This Agreement does not grant you any rights to trademarks or service marks of Dürr Dental.

Updates / Upgrades

The license of the Software does not entitle you to updates or upgrades. The Software is maintained by Dürr Dental at its sole discretion through updates (current versions) and upgrades (further developments and functional extensions). At the discretion of Dürr Dental, updates to the Software may be provided free of charge.

Upgrades are always subject to a charge. The prices for upgrades and upgrades are based on the current price list of Dürr Dental. In order to receive notices of upgrades, you must complete and return the enclosed registration form.

Rights of Duplication and Transfer.

The Software constitutes single-use software. Each license for single-use software permits a single copy to be stored on hard disk and loaded for execution on a single designated type of workstation and operating system (platform). It is your responsibility to assure that single-use software is not moved to a second workstation until it has been completely removed from the first. You may not use, copy, modify, or transfer the Software, in whole or in part, except as expressly provided for in §4(3) and §4(4) of this Agreement. If you do transfer possession of any copy of the Software to another party except as expressly provided herein, your license is automatically terminated.

You may copy the Software only in the following instances:

- (a) to the extent that such duplication is necessary to use the Software for the Licensed Application including the installation of the program from the original data carrier on the hard drive of the hardware used, as well as loading the program into the main memory;
- (b) within the limits of the medical practice network owned by you. If additional modules are licensed by you for individual workstations (e.g., DICOM), the use and reproduction rights for such additional modules are based on the specific terms and conditions for each additional module.

(c) for backup purposes in support of your licensed use of the Software, provided however that you may create and store only one single backup copy at a time and the backup copy is to be clearly identified as a backup copy.

The transfer or sublicensing by you of the Software to a third party are strictly prohibited unless such other party agrees in writing to accept the terms and conditions of this Agreement. If you transfer the Software, you must simultaneously either (a) transfer all copies, modifications or merged portions, in whatever form, to the same party, or (b) destroy those copies not transferred.

Recompilation and Reverse Engineering.

Copyright notices, serial numbers as well as other identifying features of the Software may not be removed or modified.

You may not decompile, disassemble, or otherwise reverse engineer the Software without the prior express written consent of Dürr Dental.

Ownership of Software.

By your acceptance of this Agreement, you acknowledge and agree that:

(a) Title to and all rights of ownership in the Software, and all copies of the Software, remain with Dürr Dental;

(b) The Software contains and is comprised of Dürr Dental's trade secrets and other proprietary, confidential information; and

(c) You will not sell, lease, lend, transfer, assign, hypothecate, or otherwise distribute the Software except as expressly authorized in this Agreement.

Export.

You agree not to export any copy of the Licensed Software, directly or indirectly, to any country outside the United States of America without prior approval by the Office of Export Administration of the United States Department of Commerce, Washington, D.C. 20230 and appropriate approvals, registrations, and medical device license are obtained from each foreign country.

Limited Warranty.

Dürr Dental warrants for a period of ninety (90) days from the date of shipment that, under normal use, the Software delivery media will be free of defects in material and workmanship and will perform substantially in accordance with the accompanying materials provided by Dürr Dental ("90-Day Limited Warranty"). You acknowledge

and agree that Dürr Dental will satisfy this warranty if Dürr Dental corrects errors which appear in the Software or in the user manuals reported to Dürr Dental during the warranty period.

DÜRR DENTAL SE DOES NOT WARRANT THAT THE SOFTWARE WILL MEET YOUR REQUIREMENTS, AND UNDER NO CIRCUMSTANCES DOES DÜRR DENTAL WARRANT THAT ANY DÜRR DENTAL SE PRODUCT WILL OPERATE UNINTERRUPTED OR ERROR FREE.

Any supplements or updates to the Software, including without limitation, any service packs or hot fixes provided to you after the expiration of the 90-Day Limited Warranty period are not covered by any warranty or condition, express, implied or statutory.

The foregoing warranties are void if failure of a warranted item results, directly or indirectly, from an unauthorized modification to a warranted item; an unauthorized attempt to repair a warranted item; or misuse of a warranted item, including without limitation use of warranted item under abnormal operating conditions or without routinely maintaining a warranted item.

This Limited Warranty is void if failure of the Software has resulted from accident, abuse, misapplication, abnormal use or a virus.

This Limited Warranty is only applicable if you acquired the Software directly from Dürr Dental. Except for the Limited Warranty and to the maximum extent permitted by applicable law, Dürr Dental provides the Software and support services (if any) "as is" and with all faults, and hereby disclaims all other warranties and conditions, whether express, implied or statutory, including, but not limited to, any (if any) implied warranties, duties or conditions of merchantability, of fitness for a particular purpose, of reliability or availability, of accuracy or completeness of responses, of results, of workmanlike effort, of lack of viruses, and of lack of negligence, all with regard to the Software, and the provision of or failure to provide support or other services, information, Software, and related content through the Software or otherwise arising out of the use of the Software. Also, there is no warranty or condition of title quiet enjoyment, quiet possession, correspondence to description or non-infringement with regard to this Software.

Remedies.

To the extent permitted by applicable law, your exclusive remedy for any breach of this Limited Warranty or for any other breach of this Agreement or for any other liability relating to the Software shall be, at Dürr Dental's option:

- (a) return of the amount paid (if any) for the Software, or
- (b) repair or replacement of the Software, that does not meet this Limited Warranty and that is returned to Dürr Dental with a copy of your receipt.

To receive your remedy, you must send written notice along with the Software medium and an explanation of the claimed error to the following address:

Air Techniques, Inc
1295 Walt Whitman Road
Melville, New York 11747
United States of America

Within a commercially reasonable period of time after receipt of your written notice, Dürr Dental will notify you of your remedy pursuant to §9(1). You will receive the remedy elected by Dürr Dental without charge, except that you are responsible for any expenses you may incur such as the cost of shipping the medium to Dürr Dental pursuant to §9(2).

All replacement products provided by Dürr Dental are warranted for the longer of (a) the remainder of the original warranty period or (b) thirty (30) days after delivery of the replacement.

If you are outside the United States and Canada, these remedies and product support services offered by Dürr Dental are available without proof of purchase from an authorized international source.

You understand and agree that the remedies set forth in this §9 are the exclusive remedies available to you.

Liability Limitation.

To the maximum extent permitted by applicable law, in no event shall Dürr Dental be liable for any special, incidental, punitive, indirect, or consequential damages whatsoever (including, but not limited to, damages for loss of profits or confidential or other information, for business interruption, for personal injury, for loss of privacy, for failure to meet any duty including of good faith or of reasonable care, for negligence, and for any other pecuniary or other loss whatsoever) arising out of or in any way related to the use of or inability to use the Software, the provision of or failure to provide support or other services, infor-

mation, Software, and related content through the Software or otherwise arising out of the use of the Software, or otherwise under or in connection with any provision of this Agreement, regardless of the cause of the damages and the legal basis for liability.

Liability regarding data loss shall be limited to the typical recovery efforts that would be required in case of regular and appropriate making of backup copies.

Termination.

The term of this Agreement shall commence on the date executed by Dürr Dental, and shall continue unless earlier terminated as provided in this §11.

Dürr Dental may immediately terminate this Agreement and all rights and licenses granted under this Agreement in the Event of Breach. Notwithstanding any other provision of this Agreement, the occurrence of any of the following events shall, at the option of Dürr Dental, constitute an Event of Breach under this Agreement entitling Dürr Dental to terminate this Agreement immediately:

- (a) If you breach any term of this Agreement;
- (b) If a petition or action shall be filed or taken by or against you under any law dealing with insolvency, bankruptcy, or suspension of payment;
- (c) If a receiver is appointed over any of your assets;
- (d) If you enter into a deed or arrangement, or makes an assignment for the benefit of creditors; or
- (e) If you cease to function as a going concern, or an order is made or a resolution passed to that effect except for the purposes of amalgamation or reorganization.

You are required to notify Dürr Dental immediately upon the occurrence of any of the foregoing Events of Breach.

Upon termination of this Agreement, you agree to immediately cease using the Software and promptly return to Dürr Dental and make no further use of the Software and other materials provided to you under this Agreement.

This Agreement is executory in nature and so long as you have any continuing obligations under this agreement, Dürr Dental shall be entitled to protect the Software from breaches of this Agreement. Dürr Dental reserves the right to repossess, after a thirty (30) calendar day notice period in which you fails to cure any such breach,

the Software. This right shall continue to subsist notwithstanding the termination of this Agreement and is without prejudice to any accrued rights of Dürr Dental under this Agreement.

Demo Versions.

Subject to restrictions, Dürr Dental offers you the possibility to use demonstration versions of the Software ("Demo Versions") free of charge to test the Software. You may change from the Demo Version of the full version of the Software by activating the full version with the registration. Upon activation you will incur the standard costs for the acquisition of the Software from Dürr Dental or the respective seller.

You agree to test the Demo Version at your own risk. Dürr Dental assumes no liability for Demo Versions and disclaims all warranties, express and implied.

Maintenance and Service Work.

This §13 applies to maintenance and service work provided by Dürr Dental ("Work") relating to the Software which you have installed:

The prices for such Work shall be based on the current price list of Dürr Dental unless such Work is performed under a warranty set forth in §8 of this Agreement.

Invoices issued by Dürr Dental for the Work are payable two weeks after invoice date.

§§ 8, 9, 10 and 11 shall apply to the Work.

You will perform a complete data backup of all your data prior to Dürr Dental beginning the Work, so that complete recovery of the operator's data is possible within a reasonable period of time.

If the Work is performed via a remote data transfer system without physical contact to the operator's hardware ("Remote Maintenance"), then you will be responsible for installation of the third party's remote maintenance program on your hardware, and in particular for adherence to the license terms of the remote maintenance program. You will also be responsible for providing the required connection of your hardware and software to the remote data transfer system. Dürr Dental shall not be liable for damage resulting from disturbances of the remote data transfer system or for damage resulting from unauthorized access of third parties to the operator's hardware and software.

Final Provisions.

You agree to maintain the confidentiality of any confidential or proprietary information of Dürr Dental received by you during the term of, or prior to entering into, this Agreement. You agree not to use the Dürr Dental's confidential information for any purpose except as strictly necessary to use the Software pursuant to this Agreement. Modifications, amendments and specifications of this Agreement require the written form to be valid. The same applies for the modification or amendment of this written form requirement. If one or several provisions of this Agreement are invalid or unenforceable, this does not affect the validity of the remaining provisions. The invalid or unenforceable provision shall be replaced by such a provision as comes closest to the intended effect of the invalid or unenforceable provision.

This is a license agreement. No agency, partnership, joint venture, or other joint relationship is expressly or implicitly created by it.

This Agreement is governed by the Laws of the State of New York, USA excluding any conflicts of law provisions. The parties agree that the United Nations Convention on Contracts for the International Sale of Goods will not apply to this Agreement.

All disputes arising out of this Agreement shall be settled by binding arbitration before a single arbitrator in accordance with the Commercial Arbitration Rules of the American Arbitration Association (AAA). The arbitration will be conducted in the State of New York, USA, and the decision of the Arbitrator will be final, and may be reduced to judgment in any court of competent jurisdiction. Each party shall bear its own costs and expenses in connection with an arbitration proceeding.

This Agreement is the entire agreement between you and Dürr Dental relating to the Software and the Work (if any) and they supersede all prior or contemporaneous oral or written communications, proposals and representations with respect to the Software or any other subject matter covered by this Agreement. To the extent the terms of any Dürr Dental policies or programs for support services conflict with the terms of this Agreement, the terms of this Agreement shall control. If any provision of this Agreement is held to be void, invalid, unenforceable or illegal, the other provisions shall continue in full force and effect.

4 System requirements



The following information merely states the requirements for the computer system. Even if the stated system requirements are met, correct operation of the Air Techniques hardware/software can still be disrupted by specific hardware and software features on the customer side. In these cases, Air Techniques assumes no liability for ensuring the trouble-free operation of the Air Techniques hardware/software.

The connection of additional systems to the PC may change the system requirements. Comply with the system requirements of all connected systems.

Valid from version 3.0.10, order number: E7300

CPU:	≥ Intel Core i3
RAM:	≥ 4 GB For automatic nerve canal proposal: ≥ 8 GB
Operating systems:	Operating system 64-bit: Microsoft Windows 10 (Pro or higher) Microsoft Windows 11 (Pro or higher) Microsoft Windows Server 2019 Microsoft Windows Server 2022
Hard disk:	Workstation (without database) ≥ 50 GB The database memory requirements depend on the number of images taken at the surgery in question. (Camera image: approx. 1 MB, X-ray image: approx. 2 MB – 10 MB, CBCT: 200 – 300 MB)
Data backup:	Daily data back-up
Installation media:	DVD-ROM or download
Interface:	Ethernet ≥ 100 Mbit/s
Graphics card:	Resolution ≥ 1280 x 1024 Depth of color 32-bit, 16.7 million colors For viewing 3D X-ray images: NVIDIA GeForce ≥ 1 GB For automatic nerve canal proposal: NVIDIA GeForce ≥ 4 GB For acquiring 3D X-ray images see requirements of the X-ray units (ProVecta 3D Prime)
Diagnostic monitor:	In accordance with DIN 6868-157, room category 5 or 6 (depending on the requirements)
Notes:	Data migration is possible from an existing DBSWIN installation in VisionX from DBSWIN 5.11 or higher.



Information about the system requirements of supported devices can be found on the data carrier (*Display system requirements* in the Start menu) or in the download area at www.airtechniques.com (document no. E7201).



Installation

This section covers the installation and configuration of the software ready for use in the default configuration.

In addition, it also covers uninstallation and migration of data from DBSWIN to VisionX.



The installation, configuration, and migration of data from DBSWIN must only be performed by Air Techniques or by a person or company authorized to do so by Air Techniques.

The Start menu of the installation package of VisionX offers various options:

Install VisionX	Installation of the VisionX software is started.
Display system requirements	The PDF file with the system requirements is opened. If no PDF viewing software is installed on the computer, Adobe Reader can be installed via the Start menu.
Show the manual and installation instructions	The PDF file of the manual is opened. If no PDF viewing software is installed on the computer, Adobe Reader can be installed via the Start menu.
Install Image Bridge	Plugin for imaging software (e.g. Sidexis) to control imaging devices from Air Techniques (ScanX, SensorX, CamX).
Display ReadMe	Information regarding the current software version is displayed.
Open Air Techniques website	The website of Air Techniques is opened in the default browser (Internet connection required).

5 Installing the software

Depending on the application, the imaging software can be installed in different ways.

	Description	Special information
Single workstation installation	Both the software and the database are installed locally on a computer.	
Multi-station installation	<p>The software is installed on several clients (computers). The database is installed centrally on a server, which is then accessed by the clients.</p> <ul style="list-style-type: none"> – All clients are connected to a network. – The server is connected to the same network as the clients. 	<p>Port 3113 is used by default. If it is occupied the next free port is used instead.</p> <p>The ports that are used can be adapted in the configuration (see "65.2 Workstation" and "65.4 Connection settings").</p>
Terminal server installation	The software is installed on a terminal server, which is accessed by multiple clients that can use the software via terminal sessions.	<p>The following can be chosen as the environment variable:</p> <ul style="list-style-type: none"> – Client name – Username <p>A local client installation is required in order to use USB devices.</p>

To ensure that the multi-station installation and terminal server installation run smoothly without any problems, the following order must be adhered to:

1. Install the software and database on the server
2. Start the software on the server
3. Install the clients and establish a connection to the database

The choice of operating mode (single workstation, server, or client/terminal server) is made the first time the software is started (see "5.3 Launching the software for the first time").

5.1 Preparing for the installation

Before installing the software, we recommend you perform a complete data backup for the software already installed on the computer.

We also recommend that you uninstall any antivirus software while you are performing the installation.

To prevent accidental triggering of antivirus alarms and in order to increase speed, we recommend excluding the following directories from the antivirus scan after installation:

- C:\ProgramData\Air Techniques\VisionX (for server, client, and single workstation installation)
- C:\VisionXData (for server and single workstation installation)
- C:\Program Files (x86)\Air Techniques
- C:\Program Files\Air Techniques

The directories stated above refer to a default installation. However, they may be different if you select different directories during installation. The system time of the computer must not be changed during the installation. For this reason, we recommend manually setting the system time during installation or disabling the Windows timer service.



The system time can be reset after installation of the software.

The imaging software uses the system time of the computer as a reference for the acquisition time of the images. In order to prevent faulty documentation of the images, the system time of the computer should be checked regularly.

5.2 Installing the software



The choice of operating mode (single workstation, server, or client/terminal server) is not made until the software is started for the first time (see "5.3 Launching the software for the first time").

- › Download the current VisionX installation package:

www.airtechniques.com/drivers



- › Open the installation package (VisionX_*.iso).

- › Start the *Start.exe* file in the installation directory.
- › Click *Install VisionX*.
- › Select the installation language you require.
- › Accept the License Agreement.
- › Accept the Data Privacy Statement.
- › Specify the installation directory.
 - The software is located in the installation directory.
 - The path can be amended by clicking on ...
- › Select the installation data directory.
 - The installation data directory must not reference a network path. It contains and saves all the software settings (e.g., window sizes, window positions, etc.). It does not contain the image data database. This will be created and queried when the software is launched for the first time.
 - The path can be amended by clicking on ...
- › Enable all devices that are to be installed in order to work with them on this computer.
 - The device drivers are automatically installed, there is no need for manual driver installation. The devices can be used immediately after installation.
 - When *ProVecta 3D Prime* is selected, the computer is checked against the system requirements. If the minimum requirements are not met, a notice is displayed and the installation can be continued with or without the additional ProVecta 3D Prime component. We recommend that you do not install ProVecta 3D Prime.
- › Activate the optional component if it is to be installed.
 - MobileConnect: software for connecting the Air Techniques Imaging iPad app with the VisionX database



MobileConnect cannot be combined with ProVecta 3D Prime.

- › In the overview, check the installation directories, components, and devices that are to be installed.
 - If an entry needs to be changed again, click **Back** to navigate to the relevant place and change the entry.

- › Click **Install**.
The software will then be installed. VisionX Inspect is installed additionally (software for performing and archiving acceptance tests and consistency checks on the image reproduction and X-ray system).
- › Click **Finish** to complete the installation.
- › Continue with "5.3 Launching the software for the first time".

5.3 Launching the software for the first time

The installation is completed when the software is run for the first time.

Here, two settings are chosen that cannot be changed again afterwards:

- Operating mode (single workstation, server, or client/terminal server):
Depending on the operating mode, the system then either creates the database or sets up the connection to the database on the server. In the case of a terminal server installation, the environment variable (client name or username) is defined.
- Region:
Some settings are made along with the region, e.g., dental notation, patient search, and retention period for X-ray images. The settings are recommendations and can be changed individually according to need in the configuration. The selection of the region cannot be changed later on.

In addition, a practice needs to be created the first time the system is started up (single workstation or server).

If a DBSWIN installation is present, the data from the existing DBSWIN installation can also be migrated at the same time:

If the practice is already present from DBSWIN then it will be copied across as a result of the data migration.

Launching the software without an existing DBSWIN installation

Starting the software (server or single workstation)

- › Launch the software (see "12 Starting the software").
- › Under **Select Operating Mode** select the option **Single workstation** or **Server**.
- › Click **Next**.

- › Select a region.
Some settings are selected once along with the region in the software, e.g., dental notation, patient search, and retention period for X-ray images. The settings are recommendations and can be changed according to need in the configuration.
- › Click **Next**.
- › Specify a path for the basic data directory.
- › Click **Next**.
An empty database is created.
- › Assign an administrator password (recommended) or activate the option **Continue without user management**.
- › In the **Create practice** window fill in all the mandatory fields, see also "70.1 Configuring".
- › Check the database path and image path and adjust them if necessary.
The practice database is saved under the database path.
The images for the practice are saved under the image path.
Both directories must be located on a local drive. Network drives are not permitted.
- › Click **Next**.
A summary will be displayed.
- › Click **Finish**.
- › Click **OK** to confirm the installation of Vision Monitor.
The Vision Monitor software for monitoring of connected devices is downloaded and installed. If no Internet connection is available, the software can be downloaded and installed later on.

Starting the software (client)

- › Launch the software (see "12 Starting the software").
- › Under **Select Operating Mode**, select the **Client** option.
- › Click **Next**.
- › Enter the IP address or computer name under which the database is installed under **Server**.
- › Enter the port that is to be used.
- › Click **Next**.

Launching the software with an existing DBSWIN installation

Starting the software (server or single workstation)

If data is to be migrated from an existing DBSWIN installation, then the following must be taken into account before starting VisionX for the first time:

- DBSWIN version 5.11 or higher must be installed – update to a higher version if necessary.
- Images archived in DBSWIN cannot be migrated – retrieve any images as required.
- DBSWIN must be closed.

› Launch the software (see "12 Starting the software").

› If data is to be migrated from an existing DBSWIN installation, launch the import by clicking **Integration of DBSWIN Data and Settings**.

For more information on migration see "5.4 Migrating the data of a DBSWIN installation". VisionX detects the DBSWIN installation (single workstation, client, server, terminal server) and migrates the necessary data. If DBSWIN is installed as a single workstation, VisionX is configured as a server. After the import it is not necessary to select an operating mode or set up a practice. Here, the DBSWIN installation is not changed or deleted.

› If there is to be no data migration from the existing DBSWIN installation, skip the migration step by clicking **Skip Integration**.

No data migration will take place. The operating mode and practice will need to be set up manually.

› Select a region.

Some settings are selected once along with the region in the software, e.g., dental notation, patient search, and retention period for X-ray images. The settings are recommendations and can be changed according to need in the configuration.

› Click **Next**.

› Specify a path for the image data database.

› Click **Next**.

› Check the database path and image path of the practice(s) and change them if necessary. The practice database is saved under the database path.

The images for the practice are saved under the image path.

› Click **Next**.

› Assign an administrator password (recommended) or activate the option **Continue without user management**.

› Click **Next**.

A summary will be displayed.

› Click **Finish**.

› Click **OK** to confirm the installation of Vision Monitor.

The Vision Monitor software for monitoring of connected devices is downloaded and installed. If no Internet connection is available, the software can be downloaded and installed later on.

Starting the software (client)

If data is to be migrated from an existing DBSWIN installation, then the following must be taken into account before starting VisionX for the first time:

- DBSWIN version 5.11 or higher must be installed – update to a higher version if necessary.
- Images archived in DBSWIN cannot be migrated – retrieve any images as required.
- DBSWIN must be closed.

› Launch the software (see "12 Starting the software").

› If data is to be migrated from an existing DBSWIN installation, launch the import by clicking **Integration of DBSWIN Data and Settings**.

For more information on migration see "5.4 Migrating the data of a DBSWIN installation". VisionX detects the DBSWIN installation (single workstation, client, server, terminal server) and migrates the necessary data. If DBSWIN is installed as a client, VisionX is also configured as a client. After the import it is not necessary to select an operating mode or set up a practice. Here, the DBSWIN installation is not changed or deleted.

› If there is to be no data migration from the existing DBSWIN installation, skip the migration step by clicking **Skip Integration**.

No data migration will take place. The operating mode and practice will need to be set up manually.

› Click **Next**.

A summary will be displayed.

› Click **Finish**.

5.4 Migrating the data of a DBSWIN installation

With VisionX you have the option of a one-off migration of certain settings and data from an existing DBSWIN installation. Different data will be migrated depending on how DBSWIN is installed.

- "Migrating the data of a DBSWIN single workstation installation"
- "Migrating the data of a DBSWIN server installation"
- "Migrating the data of a DBSWIN client installation"

The VisionX operating mode is executed automatically in accordance with the DBSWIN configuration present:

DBSWIN operating mode	VisionX operating mode
Client	Client
Server	Server
Single station	Server

The following must be noted for the migration:

- DBSWIN version 5.11 or higher
- Data migration is performed once from DBSWIN to VisionX. Afterwards, you can continue working with DBSWIN, but there will be no further alignment of data with VisionX.
- The DBSWIN installation is not changed.
- Images are not copied to the VisionX database. They remain preserved in the DBSWIN directories. VisionX creates references to these directories.
- Video films are not managed by VisionX and can only be displayed as a preview image, but they cannot be played back.
- Annotations contained in the images can be edited in VisionX, if they are supported by VisionX. Annotations that are not supported, e.g., text annotations, are displayed only.
- The user management is not transferred. Users need to be created again in VisionX.

Once the migration has been completed, a summary is displayed with information regarding any problems.



We recommend uninstalling DBSWIN after successful migration. When doing this, the DBSData directory must not be deleted.

It is possible to move the DBSData directory from DBSWIN to the VisionXData directory of VisionX (see "74.1 Moving the DBSData directory"). As a result of this, only one directory needs to be backed up.

Migrating the data of a DBSWIN single workstation installation

With a VisionX single workstation installation, the following data will be migrated from DBSWIN:

Client data:

- Server address (the port is not imported because a different port is used in VisionX)
- Import path for the patient import
- VDDS-media settings (active, referenced practice management program, support for level 6)
- If a diagnostic workstation: Monitor tests

Server data:

- Address of the DBSWIN database
- Practices and practice settings
- Patients and patient fields
- Patient image data (X-ray and video)
The object type from DBSWIN is assigned in VisionX to an acquisition type and an image type
- Templates (layouts) for views

Migrating the data of a DBSWIN server installation

With a VisionX server installation, the following data will be migrated from DBSWIN:

- Address of the DBSWIN database
- Practices and practice settings
- Patients and patient fields
- Patient image data (X-ray and video)
The object type from DBSWIN is assigned in VisionX to an acquisition type and an image type
- Templates (layouts) for views

No client configuration is migrated.

Migrating the data of a DBSWIN client installation

With a VisionX client installation, the following data will be migrated from DBSWIN:

- Server address (the port is not imported because a different port is used in VisionX)
- Import path for the patient import
- VDDS-media settings (active, referenced practice management program, support for level 6)
- If a diagnostic workstation: Monitor tests

6 Data backup

Regular data backups of the VisionX database and image directories are absolutely essential. This applies particularly in cases where there is a legal retention period for X-ray images and an X-ray unit is used with VisionX (e.g., ScanX, SensorX, ProVecta S-Pan and ProVecta 3D Prime). For a full data backup the following directories must be backed up:

- C:\ProgramData\Air Techniques\VisionX (for server, client, and single workstation installation)
- C:\VisionXData (for server and single workstation installation)

The directories stated above refer to a default installation. However, they may be different if you select different directories during installation. We recommend backing up the above directories via your practice backup. You can request instructions on how to proceed from your system administrator.

7 Licensing

Without a valid license file, the software can be used in the demo version. Here, 30 patients can be created in the software with full functionality. From the 30th patient, a 30-day deadline applies within which further patients can be created. Once this deadline has expired, it will no longer be possible to use the software without a valid license file.

With VisionX Inspect, unlimited acceptance checks and partial acceptance checks are possible without a valid license file in demo mode. A license file is required for the second consistency check of an X-ray station and for the monitor test.



If you wish to move the server or perform a single workstation installation on a different computer, you will need to request a new license file (free of charge).

Licensing depends on whether or not the license file is already present:

- If the license file exists: "7.1 Licensing with a licensing file"
- If the license file must be ordered: "7.2 Licensing without a licensing file"

The license file contains information about the licensed modules. If additional modules are required at a later time, then the licensing process needs to be performed again.

The following modules are available:

VisionX Basic	Basic software functions
VisionX X-ray	Taking an X-ray image (Acquisition types of the Intraoral, panoramic, and Cephalometric mode classes)
VisionX Video	Making a video recording (Acquisition types of the Video and Spectra mode classes)
VisionX MobileConnect	Show images on VisionX Imaging iPad app
VisionX Inspect	Configuring and performing the consistency checks and acceptance tests
VisionX 3D	Making, importing, and displaying a CBCT recording (Acquisition types of the CBCT module class)
VisionX DICOM Starter	Sharing images with DICOM systems
VisionX DICOM Print	Outputting images on DICOM printers
VisionX Basic Dental Workflow	Interface to practice management program
VisionX Connect	Acquisition and transmission of X-ray and video images at the request of third-party software (restricted configuration, see "32 VisionX Connect")

When working with a multi-station installation, the VisionX 3D module is administered as a so-called floating license, meaning that the license is only required if a 3D recording has been started or a 3D recording is opened on the light table. Once the patient is logged out, the license is released again and can be used on another workstation.

In a multi-station installation, the VisionX DICOM Starter module is also administered as a floating license, meaning that the license is only required if the workstation is logged in as a DICOM workstation.

7.1 Licensing with a licensing file

➤ On the right-hand side of the patient bar (see "11.1 Software interface") click on the reference *Trial version: xx patient(s) and xx day(s) remaining*.

If you cannot see this information about the trial version, you can also call up the licensing information under  > *Application*.

➤ In the *Licensing* area, click *Import New License File...* and open the license file.

➤ Click *Restart*. Changes to the license key only take effect after the software is restarted.

7.2 Licensing without a licensing file

- › On the right-hand side of the patient bar (see "11.1 Software interface") click on the reference *Trial version: xx patient(s) and xx day(s) remaining*.
If you cannot see this information about the trial version, you can also call up the licensing information under  > *Application*.
- › Click *Licensing*.
- › Click *Obtain New License...*
- › In the *Registration* window, activate all the modules you wish to order under *Modules*.
- › Check whether or not all connected/installed devices are being displayed under *Serial Numbers*.
 Serial number (SN) and reference number (REF) are located on the type plate of the unit.
- › If not all of the connected/installed devices are being displayed, click *Update*. The list of devices is then updated.
If all of the connected/installed devices are still not being displayed properly, click *Add Device* and manually enter the serial number and reference number.
- › Fill in at least all of the mandatory fields under *Address data*, *Dealer*, and *E-mail*.
- › Confirm that permission has been granted to use the given data for job processing and customer service purposes.
Otherwise it will not be possible to license the imaging software.
- › Click *Register via Internet* to send the registration.
or
Click *Export Registration Data* to export the registration in XML format to a local directory. Send the XML file to registration hotline (e-mail address see > *Help*).
The registration hotline will generate a license file from the submitted data. Depending on how busy the hotline is, this may take a short time. The license file will be sent via e-mail.
- › Navigate back to *Application* via the navigation bar.
- › In the *Licensing* area, click *Import New License File...* and open the license file.
- › Click *Restart*. Changes to the license key only take effect after the software is restarted.

8 Software updates

 Licensing costs may be incurred for updating the software.

During a software update, the user data (e.g., image data, patient data, device configurations, X-ray stations, licensing information, and motor checks) is preserved.

In the case of a multi-station installation, the software needs to be updated on the server and on all clients. Note the following sequence:

1. Shut down all clients (shuts down software in task bar).
 2. Update the software on the server.
 3. Update the software on clients.
- › Connect the data carrier containing the installation package to the computer or save the downloaded installation package locally.
 - › Start the **Start.exe** file in the installation directory.
 - › Click **Install VisionX**.
 - › Select the option **Change which program features are installed**, and confirm with **Next**.
 - › Select the required components.
The previously installed components are pre-selected.
MobileConnect: software for connecting the VisionX Imaging iPad app with the VisionX database

 MobileConnect cannot be combined with ProVecta 3D Prime.

- › Check all the check boxes for the devices that are to be installed in order to work with them on this computer. The previously installed devices are pre-selected.
The device drivers are automatically installed, there is no need for manual driver installation. The devices can be used immediately after installation.
When **ProVecta 3D Prime** is selected, the computer is checked against the system requirements. If the minimum requirements are not met, a notice is displayed and the installation can be continued with or without the additional ProVecta 3D Prime component.

- › In the overview, check the components and devices that are to be installed.
If an entry needs to be changed again, click **Back** to navigate to the relevant place and change the entry.
- › Once you see the message to the effect that the software is ready to install, click **Change**. The software is updated.
- › Click **Finish** to complete the installation.

9 Repairing the software

If the software installation is faulty, for example, if files are missing or damaged, the installation can be repaired.

All configuration and application data is retained during the repair.

- › Connect the data carrier with the installation package to the computer or, optionally, save the downloaded installation package locally.
- › Start the **Start.exe** file in the installation directory.
- › Click **Install VisionX**.
- › Select the option **Repair installation errors** and confirm with **Continue**.
- › Click **Finish** to complete the installation.

10 Uninstalling the software

The VisionX software package essentially consists of two components:

- The VisionX software itself
- Database

The following conditions must be fulfilled in order to uninstall the software:

- ✓ Shutdown the software
- ✓ All patient data and the database (incl. X-ray images, etc.) must be backed up

The directories that need to be backed up may vary depending on your specific installation. You can contact our hotline to check that all patient data and the database are backed up.

The software is uninstalled via the control panel of the operating system:

- › In **Control Panel**, select the program VisionX.
- › Click **Uninstall**.
- › In the dialog window, select the option **Uninstall** and confirm with **Continue**. VisionX is being uninstalled.

First steps

This section describes the initial steps that need to be taken in order to use the imaging software.



CAUTION

Risk of data loss due to incorrect configuration

- › Configuration must only be carried out either by Air Techniques personnel or by a suitably qualified person approved by Air Techniques.

The following configurations are required in order to work with the software:

- "22.1 Create practice"
- "24 Adding devices"
- "25.1 Creating an X-ray station"

* Only required if there is an X-ray station obligation

The following configurations may be required (depending on the connected devices and connections to/from third-party software) in order to use the software:

- "26.1 Configuring image acquisition types"
- "Acceptance and consistency check"
- "21 Accelerating the image display for 3D images"
- "23.1 Create user"
- "27 Importing implant packages"
- "28 VisionX MobileConnect"
- "29 Configuring the interface to the practice management program"
- "30 Configuring the DICOM/BDW interface"
- "31 Configuring features"

11 Notes on use



Some software functions (e.g. configuration, acceptance check) depend on the access rights of the registered user, also refer to "71.1 Definition of user roles".

Software help functions can be accessed either via the context-sensitive help in specific sections or via the start page.

Opening the context-sensitive software help:

- › Press the **F1** key.
The cursor changes to .
- › Click in the area for which help is required (e.g., Toolbox).
The software help opens in a separate window in the required section (e.g., Toolbox).

Opening the software help function via the start page:

- › Click on > .
- The software help opens in a separate window with the start page.

The "saving concept" does not require the user to actively save data (e.g., via a **Save** button). The data that has been entered or changed will automatically be saved when a flyout is closed. Active saving in a flyout is only required in special cases, e.g., during acceptance tests.

- › Click to close the flyout.
or
Use the mouse cursor to click next to the active flyout.
or
Switch to a higher level in the navigation bar. The data that has been entered or changed will automatically be saved. The flyout will be closed.
- › If you do not want to save the data that has been entered or changed, click **Discard changes**.
The changes are reset. The flyout remains open.

11.1 Software interface



- 1 "Menu bar"
- 2 "Patient data bar"
- 3 "Light table menu"
- 4 "Image inspector"
- 5 "Light table"
- 6 "Toolbox"
- 7 "Status bar"



The software interface is described in the default configuration. Its appearance may differ from this depending on how it is configured.

Menu bar

The menu bar is always divided into two sections:

Left-hand section

-  Job administration (see "36 Managing jobs")
- 
-  Display cloud cases (see "47 Using VisionX Connect")
-  Patient management (see "33 Managing patient data")
- 
-  Image importing (see "38 Importing images")
-  X-ray image, by acquisition type (see "37 Acquiring images")
- 
- 
- 
-  Video acquisition (see "37.7 Creating a video image with an intraoral camera")
-  Create 3Shape case

Right-hand section

-  X-ray report (see "43 Displaying the X-ray report")
-  Logging-out the registered user and practice (see "44 Changing practice (surgery)")
-  Configuration (see "Configuration overview")
-  Help
 -  Display help
 -  Create support file (see "46 Creating a support file")
 -  Supported devices
 -  Show Info dialog

Patient data bar

The patient data bar is always divided into two sections:

- Left-hand section
 - Information about the currently selected patient (see "14 Managing patient data")
- Right-hand section
 - "14.5 Logging out of a patient record"

In addition, the following information is also displayed in the patient data bar where present/configured:

- Information for the active job
- Reminders if checks are due

Light table menu

The light table menu features various commands for the images displayed on the light table:

-  "Clearing the light table"
-  "Using fixed/free image arrangement"
- 
-  Locking/unlocking the light table
With free image arrangement, the position and size of the image frames on the light table can be locked (see "Using fixed/free image arrangement").
-  "Views and layouts"
-  "Creating a screenshot of the light table"
-  "35.4 Transferring images to the practice management program" (only visible if the VDDS media interface is activated, see "69 Interfaces")
-  Repeat or undo actions
- 
-  Create user-defined image state (see "Displaying and managing the image state")
-  "Creating a screenshot of the active image"
-  "35.2 Entering indication and diagnosis"
-  "Editing image information on the light table"

	"39.1 Exporting images"
	"42.1 Uploading an image to the cloud"
	"39.2 Exporting an image to an external application"
	"35.3 Transferring an image to PACS"
	"41 Printing images"
	"35.6 Delete an image"
	"Displaying/hiding annotations and measurements"
	"Resetting all MPR and TSA planes"
	"Hiding/showing all MPR/TSA lines and the panoramic curve"
	Opens a selection list with further commands:
	"35.5 Re-assigning an image to a patient"
	"40.2 Managing default image settings"

Image inspector

The "Image inspector" is divided into three sections:

- Preview window:
Can only be viewed if new images have been recorded
- Image archive for the patient record you are logged into:
All images are grouped according to the date on which they were recorded.
- Processing and filtering images from the image archive:
 - "Multiple selection"
 - "Filtering images"



If the retention period required by law is activated (see "70.1 Configuring"), then X-ray images cannot be deleted until this period has expired.

In the **preview window** you can open the troubleshooting via  if a device error occurs during image acquisition. Not all devices support this function. The scope of the troubleshooting options depends on the connected device.



The following information on each image is displayed in the **Image archive**, if present:

- 1 Blue frame, if the image is displayed on the light table
- 2 Delete image from archive
- 3 Display image information
- 4 Evaluation of the automatic phosphor storage plate quality check
- 5 User's image evaluation
- 6 Image uploaded to cloud
- 7 Derived image (screenshot)
- 8 Dose indicator
- 9 Teeth displayed

If corresponding information is available, the dose indicator is displayed next to each X-ray image as a colored bar. The dose indicator serves as a guide value for optimum adjustment of the dosage parameters. This shows whether there is a risk of under or over-exposing the image, i.e., whether low or high gray values can no longer be displayed, resulting in a loss of image information. If the dosage parameters are set to the correct values, this is indicated by a green bar – if not, this is indicated by a red bar. Borderline settings are indicated with a yellow bar.

- | | | |
|---------------------|----|---|
| Bar is red and high | -> | Decrease X-ray dosage or amplification of the recording system |
| Bar yellow and high | -> | Slightly decrease X-ray dosage or amplification of the recording system |

Green bar	->	X-ray dosage and amplification of the recording system are OK
Bar yellow and low	->	Slightly increase X-ray dosage or amplification of recording system
Bar is red and low	->	Increase X-ray dosage or amplification of recording system

The dose indicator cannot be displayed for the following devices/images:

- ProVecta S-Pan
- ProVecta S-Pan Ceph
- ProVecta 3D Prime
- ProVecta 3D Prime Ceph
- Video Images

Different actions are available in the **image archive** for the X-ray images and video images:

- "34 Displaying images"
- "Editing image information in the "Image inspector""
- "Multiple selection"
- "Filtering images"
- "35.6 Delete an image"

Light table

All images selected in the "Image inspector" are displayed on the light table.

If you click on an image on the light table, a header appears with the image acquisition date and, if available in the image information, the X-ray parameters and the tooth. The header also contains buttons for the following actions:

-  Maximize image on light table
-  Minimize image on light table
-  Maximize image to full screen
-  Close image

With CBCT images (3D), different views are shown (e.g., volume view, pano view, axial slice, see "3D"). The views of the CBCT image can be individually maximized. The name of the view is then also displayed in the header (e.g., axial, sagittal).

 To increase the size of the light table, the "Image inspector" (to the left) and the toolbox (to the right) can be collapsed. To do this, click on the side bar.

Toolbox

The toolbox contains the various tools and filters required for image processing (see "40.1 Toolbox"). The tools on offer differ depending on the image type.

Status bar

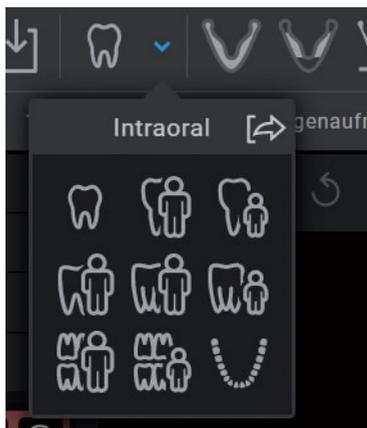
The following information is displayed in the status bar:

- Status message
- Progress display
- Notifications
- Pending PACS transfers

A new status message will pulse blue-gray for around 3 seconds. During image acquisition, device status messages are also displayed. Whenever activities are running in the background, a flyout showing all ongoing activities can be displayed by clicking on the progress bar of the status message.

General control elements

Flyouts



Flyouts open for various buttons (e.g., Patient, Configuration or Image Information) – as well as providing information, data can be entered or changed in these flyouts.

There are different ways to close the flyout again: By clicking on  or by clicking outside the flyout. The data that has been entered or changed will automatically be saved when a flyout is closed.

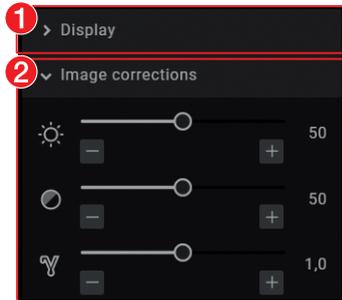
If a flyout has multiple levels a navigation bar will be displayed. This bar will allow you to switch directly to the higher levels.

Interfaces > Image export modes > Autoexport

If information is missing or invalid in a field, the field is outlined in orange and marked with .

The inputs are checked when a flyout is closed or when you switch to a higher level of the flyout. If information is missing or values are invalid (e.g., outside a defined value range) then the flyout cannot be changed or you will not be able to switch to a higher level. You will either need to correct the inputs or discard the changes first.

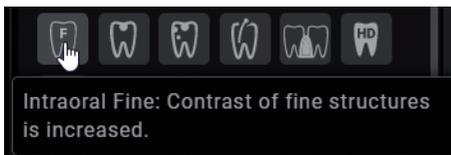
Groupings of functions and images



- 1 Function group *View* (closed)
- 2 Function group *Image corrections* (open)

Images and functions are grouped in the "Image inspector" and in the toolbox. The groups can be opened or closed by clicking the group title.

Quick information



Quick information with a brief explanation is saved for the buttons on the software interface. If you briefly hover with the mouse cursor over a button the quick information will be displayed.

11.2 User support

When certain actions are performed or certain events occur, the imaging software will display a

notification. This notification will appear as a flyout in the bottom right-hand corner. After around 5 seconds, the notification will automatically disappear. The type of notification is identified by the symbol denoting one of the following categories:

-  Fault
-  Notice
-  Information

In addition, a progress bar is shown in the status bar for actions that take a little time.

If a device error or a device warning occurs during the acquisition of images, a dialog window appears that needs to be confirmed. Device information appears as a message.

Displaying notifications again:

 **Notifications** will only be displayed if there actually are any notifications. A notification counter (blue number) will also be displayed.

- > Click **Notifications** in the status bar. All notifications that are no older than 24 hours will be displayed again in the flyout. Notifications that are more than 24 hours old can only be called up in the configuration (see "User notification").

Delete notification:

- > Click **Delete notifications**. All notifications will be deleted from the list on the flyout.

 The notifications can still be retrieved from the system configuration after they have been deleted (see "User notification").

12 Starting the software

After installation, the Windows Start menu includes the following items:

VisionX

Air Techniques	Opens the homepage of Air Techniques
Documentation	Opens the software manual
Remote support	Starts remote support by Air Techniques via Teamviewer
pcvisit	Launches remote support via pcvisit
Create support file	Creates a support file
VisionX	Starts up the imaging software
VisionX ServerManager (single workstation and server installation only)	Starts up the software for data backup

VisionX Inspect

VisionX Inspect	Starts up the software for acceptance and consistency checks
-----------------	--

There are two ways to launch the software:

- By clicking on the icon on the desktop
- Via the Start menu: **Start > All Programs > VisionX > VisionX**

If the software is already running in the background, the software can be opened.

Starting the software:

- › Double-click on the icon on the desktop
or

Select the relevant item from the Start menu.

The software opens (the software is already running in the background):

- › Use the right mouse key to click on the Software symbol in the task bar.
- › Click on **Open Software**.
VisionX is started.
- › If user management is activated, choose the user and enter the password.
- › If multiple practices have been created, select the required practice.
- › Click **Login**.



CAUTION

Risk of data loss due to incorrect configuration

- › Configuration must only be carried out either by Air Techniques personnel or by a suitably qualified person approved by Air Techniques.

The following configurations are required in order to work with the software:

- "22.1 Create practice"
- "24 Adding devices"
- "25.1 Creating an X-ray station"

* Only required if there is an X-ray station obligation

The following configurations may be required (depending on the connected devices and connections to/from third-party software) in order to use the software:

- "26.1 Configuring image acquisition types"
- "Acceptance and consistency check"
- "21 Accelerating the image display for 3D images"
- "23.1 Create user"
- "27 Importing implant packages"
- "28 VisionX MobileConnect"
- "29 Configuring the interface to the practice management program"
- "30 Configuring the DICOM/BDW interface"
- "31 Configuring features"

13 Closing the software

When the main window of the software is closed, the software continues to run in the background. With this, processing of some actions, e.g. tasks from VisionX Connect, can continue.

You can shutdown the software in the system tray.

Close software:

- › Close the main window.
Changes are saved, the patient and the practice are logged out.

Shutdown the software:

- › In the system tray, use the right mouse key to click on the VisionX icon.
- › In the context menu, click *Shutdown*.

14 Managing patient data



CAUTION

Personal injury is possible due to wrong assignment of image data to a patient

- › Check the right assignment of the image data (e. g., during image import, change of patient data, or new assignment of image data to a patient).
- › Observe the information displayed in the software.

Every image that is managed in the software is assigned to a patient.

To create or import new images, you must be logged into the record for the patient they relate to (see "14.3 Searching for and registering a patient").

In the patient management section, there are two ways of managing patient data:

- The patient data can be directly managed in the software itself (see "14.1 Creating patient")
- The patient data can be imported from the practice management program (see "14.2 Importing patient data")

14.1 Creating patient

Once the software has been launched, the *Patient Records* flyout is automatically opened and a new patient record can be created.

- › To open the flyout, click  in the menu bar.
- › Click  on the right-hand side of the search field.

The flyout for creating a new patient record will open.



Fields marked  are mandatory fields and must be completed.

The mandatory fields can be selected in the configuration.

- › Fill in all fields or at least the mandatory fields.

- › Click  to close the flyout.

The patient record will be created and you will be automatically logged into it.

If a patient is already logged in, this patient will be logged-out automatically when another patient is logged in. Here, all image acquisitions must be finished and all mandatory information for the images must have been entered.

14.2 Importing patient data

Requirements:

- ✓ Import directory for patient data from a practice management program is configured (see "69 Interfaces")
- ✓ No image acquisition (X-ray, video) is running on the workstation where the patient data is to be imported

- › Save the patient data from the practice management program to the import directory (for details, see instructions of the practice management program).

If a patient is not logged-in in the imaging software, the patient will be registered automatically.

If you are already logged into another patient's record, a notification will appear and **Patient record awaiting log-in** will appear in the patient data bar.

- › To log-in the patient whose data has been sent from the practice management program, click **Patient record awaiting log-in** in the patient data bar.

If a patient is already logged in, this patient will be logged-out automatically when the other patient is logged in. Here, all image acquisitions must be finished and all mandatory information for the images must have been entered.

14.3 Searching for and registering a patient

In order to create or import images, you must be logged into a patient record.

The **Patient records** flyout will open automatically when the software is launched.

If a patient is already logged in, this patient will be logged-out automatically when another patient is logged in. Here, all image acquisitions must be finished and all mandatory information for the images must have been entered.

The list **Recently viewed patient records** shows the last 10 patients who were logged in (with the most recent log-in date first). In the case of multi-

station installations, the list is global across all workstations. The list of last logged-in patients can also be deactivated, see "65.2 Workstation". The search values in the patient data can be limited to patient ID and name in the selection field. Otherwise, all fields of the patient data are used in the search.

- › Click .

The **Patient records** flyout will open.

- › If the patient record you are looking for has been logged into very recently, you can select it from the **Recently viewed patient records** list.

or

- › Enter the patient details into the search field (e.g., patient number, name, or date of birth).

To enter numbers with the screen keyboard, click on .

The search results will be displayed, either immediately or after pressing the enter key or , in the list below the search field (depends on the configuration, see "70 Practices"). They can be sorted by clicking on the column head.

- › Highlight the patient record you require in the list and click  to log in.

Alternatively you can open the patient by double-clicking the list entry.

You are now logged into the patient record.

Relevant data for the patient is displayed in the patient data bar. The image archive of the patient appears in the "Image inspector".

14.4 Editing patient data



If the patient was imported from a practice management program via the VDDMedia interface or via patimport.txt, or via the DICOM interface, then it will not be possible to edit all the patient data.

Requirements:

- ✓ Patient is logged in

- › Click .

The **Patient data** flyout will open.



Fields marked  are mandatory fields and must be completed.

Different fields may be mandatory fields, depending on the configuration.

- › Change the patient data you want to amend.

14.5 Logging out of a patient record

If the patient imaging is complete, you can log out of the patient's record.

When you log into another patient's record, you will automatically be logged out of the previous patient's record.

Requirements:

- ✓ The patient imaging must be complete.
- ✓ All of the mandatory information for the acquired images has been entered.
- › Click  in the patient data bar.

15 Importing X-ray images

Requirements:

- ✓ Patient is logged in
- ✓ No other image acquisitions are in progress (X-ray or video)
- › In the menu bar, click the desired image acquisition type (e. g. ,  for the preferred intraoral image).
Via  you can call up further acquisition types that belong to the grouping.
The acquisition types in the favorites may differ depending the configuration (see "26 Acquisition types").



Depending on the configuration of the acquisition types (see "67 Acquisition types"), the software is either immediately ready for the X-ray acquisition, or you will first need to select the acquisition source and the image acquisition mode.

- › Select the acquisition source and image acquisition mode and enter any X-ray parameters as required (if they are not already defined in the configuration).
- › Produce or import an X-ray exposure.
Image acquisition will now start. The preview window opens up.
The image state or a preview of the image is shown in the preview window.
The image is automatically saved.
- › Produce or import further X-ray exposures if required.

- › Once you have finished recording the last image, click *Finish imaging*. The preview window is closed. All acquired images are transferred to the image archive of the logged on patient. The newest images appear at the top of the image archive. From there, the images can then be opened on the light table and edited (see "18 Editing an image"). Similarly, indications can be entered via the functions in the light table menu, or the image information can be edited (see "35 Managing images").



With ProVecta 3D Prime and ProVecta S-Pan Ceph, the X-ray parameters are automatically transferred by the device and cannot be altered.

- › If the X-ray parameters have not been entered or pre-selected in the configuration (see "68.2 Parameters") and the *X-ray parameters mandatory* function is activated (see "70.1 Configuring"), then the X-ray parameters will need to be entered separately for each image under .

If the X-ray parameters have been entered or they are pre-selected in the configuration, the X-ray parameters are automatically adopted for the first imported image. If the pre-selected parameters are also to be applied to the other images, go to *Image information* for each image and click the button *Apply X-ray parameters*.

In addition, where applicable you should also select the tooth (multiple selection is possible) under *Dental notation system* and select the corresponding image acquisition type under *Image acquisition type* for which the image was created. By placing the marker in the dental notation system, the image acquisition type is also automatically selected if it has not already been selected beforehand.

16 Creating a video image

A separate imaging window will open for video images. The imaging window is made up of the preview window and the image inspector. If the camera is active, the live image from the camera can be seen in the preview window. If the camera is not active an animation is shown in the preview window.

If the symbol  is displayed in the upper right corner of a Spectra exposure, the boost filter is active (see also "65.9 Boost filter"). Only the currently acquired images are displayed in the image inspector. When the imaging window is closed the images are transferred to the image archive of the patient.

Requirements:

- ✓ Patient is logged in
- ✓ No other image acquisitions are in progress (X-ray or video)
- › Click on  in the menu bar. The image acquisition window opens. If a camera has already been pre-selected in the configuration (see "66.2 CamX"), then the video preview can be seen. If no camera is pre-selected, then a device needs to be selected. If the camera is not active, an animation is shown in the preview window.
- › If the video preview is not visible, select the device in the image bar.
- › If an animation is shown in the imaging window, activate the camera (e.g., take it out from the handpiece holder or attach an interchangeable head).
- › Click  to expand the video image to full screen if necessary.
- › Depending on the camera or the interchangeable head used, the video settings for the preview can be adjusted via  (see "Adjusting the video settings").
- › If the camera supports the live caries filter, then the video preview can be switched between prophylaxis view  and caries view .

- › Position the camera and take a freeze-frame shot using the capture ring or by clicking . The acquired images are automatically saved for the logged-in patient and displayed in the image inspector.
For Spectra images, select the caries view  or the prophylaxis view .
- If there is too much ambient light during acquisition of a Spectra image,  is displayed. The caries filter cannot be used with this image.
- › To view an image again in the preview window, select the image in the image inspector.
- › Delete images that are not required by clicking .
- › Enter image information via  (only the dentition type and the dental notation are available in the image inspector). The image information can be edited or an Indication can be entered later on via the functions in the light table menu (see "40 Editing images").
- › Use the capture ring or click on  to return to the video preview.
- › Once you have finished recording the last image, click **Finish imaging**.
The imaging window will be closed. All images are displayed in the image archive of the logged-in patient. From there, the images can then be opened on the light table and edited (see "40.1 Toolbox").

17 Displaying images

Requirements:

- ✓ Patient is logged in
- ✓ The patient images are in the "Image inspector"

Displaying one or more images on the light table (multiple selection closed):

- › Click to select the relevant preview image in the "Image inspector".

or

Click the preview image in the "Image Inspector" and drag and drop it to the light table.

The image will be displayed on the light table and highlighted with a blue frame in the "Image inspector".

Multiple selected images will be displayed next to and above and below one another on the light table, and they are highlighted with a blue frame in the "Image inspector". The available space on the light table will be divided up dynamically between all of the images.

Displaying multiple images on the light table (multiple selection open):

- › In the "Image inspector", click on **Multiple selection** to open the function group and activate the multiple selection.

- Select the corresponding images with a click. Alternatively, enable the check box in the date row to select all images for the day. The images are marked with .
- Click  to load the marked images to the light table.
 - or
 - Click and hold your mouse button on one of the selected preview images in the "Image inspector" and then move it to the light table (drag & drop). The images will be displayed next to and above and below one another on the light table. The available space on the light table will be divided up dynamically between all of the images.

Displaying all of the images from a single day on the light table:

- Move the mouse cursor over the required date row in the "Image inspector". The  section will appear in the right-hand part of the date row. This shows that the date row can be moved.
- Click on the date row with the left-hand mouse button and hold.
- Drag the date row onto the light table and release the left-hand mouse button. All the images from the day will be displayed next to and above and below one another on the light table, and highlighted in color in the "Image inspector". The light table will dynamically divide the available space between all the images.

18 Editing an image

The following navigation aids can generally be used:

- Mouse wheel: Zoom in/zoom out image section
- Right mouse button: Move image section

The images can be edited using the tools from the toolbox in order to highlight details and facilitate diagnosis. The editing tools available depend on the image type.

The following types of image processing are possible on an X-ray image (2D):

- "Display"
- "Image corrections"
- "Filter"
- "Histogram"
- "Measurements"
- "Drawings"
- "Edge mask"
- "Implants"
- "Annotations"

The following types of image processing are possible on an CBCT image (3D):

- "3D"
- "Display"
- "Image corrections"
- "Filter"
- "Histogram"
- "Measurements"
- "Drawings"
- "Implants"
- "Annotations"

The following types of image processing are possible in a CBCT view (2D derived from 3D):

- "Display"
- "Image corrections"
- "Drawings"
- "Annotations"

The following types of image processing are possible on a video image:

- "Display"
- "Filter" (for Spectra images only)
- "Image corrections" (not for Spectra images)
- "Measurements"
- "Drawings"
- "Annotations"



The changes to the image will be saved alongside the original image as the **Last change**. In the light table menu you can use the selection list to display the **Original** and the **Original image** (original with pre-selected image processing steps). See also "Displaying and managing the image state".

- › Click on the image on the light table.
- › Edit the image as required using the tools from the toolbox.
- › Either close the image on the light table or click somewhere else on the light table to save the image processing.

19 Exporting images

Various predefined image export modes and a user-defined export are available for image exporting. The predefined modes can be adapted (see "Image export modes..."). The following settings can be selected during the user-defined export (see also "Image export modes..."):

- Destination type
- File path
- File name
- Image status
- 2D/3D X-ray format or video format
- Anonymization of the data
- Embed viewer

The selected settings for the user-defined export are saved locally and can be reused during the next export.

The images can also be exported to a data carrier, see "Creating a patient medium".

- › Click  in the light table menu.
 - The selection list for the image export mode will open.
- › Select the correct image export mode.
 - The selected image will be exported to the defined path.

More than one image can be exported at a time using the **Multiple selection** function in the "Image inspector" (see "Multiple selection").



Configuration



CAUTION

Risk of data loss due to incorrect configuration

- › Configuration must only be carried out either by Air Techniques personnel or by a suitably qualified person approved by Air Techniques.

The following configurations are required in order to work with the software:

- "22.1 Create practice"
- "24 Adding devices"
- "25.1 Creating an X-ray station"

* Only required if there is an X-ray station obligation

The following configurations may be required (depending on the connected devices and connections to/from third-party software) in order to use the software:

- "20 Changing the display language"
- "21 Accelerating the image display for 3D images"
- "23 User"
- "26 Acquisition types"
- "27 Importing implant packages"
- "28 VisionX MobileConnect"
- "29 Configuring the interface to the practice management program"
- "30 Configuring the DICOM/BDW interface"
- "31.3 Interface to external applications"



Interface descriptions for connection of software and hardware from third-party manufacturers are available on request from techservice@airtechniques.com.

The DICOM declaration of conformity is available to download from the download area of www.airtechniques.com.

› Click *Workstation...*

› In the *Display* area, go to *Display language:* and use the menu to select the required language.

› Click *Restart*.

The imaging software will be restarted so that the changes become effective.

20 Changing the display language

The imaging software supports many different languages. This can be changed in the configuration.

› Click .

› Click *Application*.

21 Accelerating the image display for 3D images

The image display can be accelerated for a smoother display of CBCT images (3D) (depending on the graphics card in the workstation).



The GPU-accelerated display can also be activated when a 3D image is first opened.

- › Click .
- › Click *Application > Workstation...*
- › Under *Display*, check the box next to *GPU-accelerated screen display*.
- › Restart the software to activate the changes.

22 Practices

In the practice configuration you can create, configure, and delete practices.

- › Click .
- › Click *Practices*.

22.1 Create practice

You will need to create at least one practice before you can work with the imaging software. This query is displayed once, when you launch the software for the first time.

- › Enter the name of the practice under *Name*.
- › Enter the complete address of the practice under *Address*.
- › Under *Database path*, you can change the path under which the database is saved for the practice.
- › Under *Image path*, you can change the path under which the images are saved for the practice.
- › Click *Next* to save the practice.

Result:

The practice will then appear in the list of practices.

Creating a further practice

If the workstation is used by multiple practices, these can be created and then easily changed afterwards (see "44 Changing practice (surgery)").

- › Click *Create practice...*
- › Enter the information in the fields.
- › Click  or *Practices*.
The practice will then appear in the list of practices.

22.2 Configuring the practice

Once you have created practices they can be configured. Configuration options include e.g., settings for the retention period for X-ray images or database settings.

- › Select the practice you wish to configure.
- › Click *Configure*.

The configuration options are described in more detail under "70.1 Configuring".

22.3 Deleting a practice

It is generally possible to delete practices once they have been created.

A practice can only be deleted if the following requirements are met:

- No patient data available
 - No user logged into this practice
 - The practice is not the main practice of a user
 - At least one other practice remains in the system after deleting
- › Select the practice you wish to delete.
 - › Click **Delete**.
 - › Click **Delete** to confirm that you want to delete the practice.

23 User

The user management controls the access of different users to the software and the image database. For each image, the user creating the image is documented. If multiple practices have been set up, different access rights for different practices may be assigned to the users.

The user management is optional. An administrator password can be assigned when the software is started for the first time. By doing this, a standard user with administrator rights is created initially. Alternatively, the user management can be deactivated. Then no user login window appears when the software is started.



Deactivating the user management is a requirement in order to use the minimal interface of VisionX Connect.

There are four different user roles with different access rights:

- Administrator
- Dentist
- Radiographer
- Standard

The following functions are restricted to user roles. All other functions are unrestricted and can also be used by the default user.

Function	Administrator	Dentist	Radiographer
Edit configuration	●		
Starting the ServerManager	●		
Performing an acceptance test	●		
Manage default image setting	●	●	
Deleting patient	●	●	
Delete image	●	●	
- Light table: Delete active X-ray image			
- Multiple selection: Delete selected X-ray images			
Change indication	●	●	
Changing image information, recording date and time	●	●	●
Start image creation	●	●	●
Performing a consistency check	●	●	●
Import image	●	●	●
Reassign image	●	●	●*
Transfer image to PACS partner	●	●	●

*Authorization can be deactivated, see "70 Practices".

Users can be created, configured and deleted in the configuration.

› Click .

› Click *User*.

Result:

The list of existing users opens.

23.1 Create user

A default user (Admin) with administrator rights is created during the first start-up of the software. Additional users can be created.

The user management is optional. It is recommended for the following requirements:

- Documentation of the person who recorded an image
- User rights management, e.g. deletion of images
- If there are multiple practices: Different access rights of the users to different practices

- › Click **Create user**.
- › Under **User name**, enter the name (possibly first name or initials).
- › Under **Full name**, enter the first and last name of the user.
- › Enter the **Password**. The password must be at least 4 characters in length.
- › Under **Confirm password**, repeat the password.
- › Select the **Main practice**.
- › While scrolling, click **+**.
- › Select the **Practice name**.
- › Select a role.
For further information, you may wish to click **Show role definitions...**
- › Click on **Create**.

Result:

The user is shown in the list of users.



Remember to also protect the automatically created default user (Admin) with a password (see "23.2 Edit user").

23.2 Edit user

- › In the list, click on the user to be edited.
- › Click **Edit user**.
- › Change information concerning the user.
- › If you do not intend to change the password, do not complete the fields, **Password** and **Confirm password**.
- › To delete a role in a practice, click **⏏**.
- › Click **Edit** so save the changes made.

23.3 Deleting a user



There must be at least one user with administrator rights for each practice.

- › In the list, click on the user to be deleted.
- › Click **Delete**.
- › Confirm the deletion in the dialog window.

24 Adding devices

All devices that are connected with the software are displayed in the list of devices.

The following conditions must be fulfilled in order to display the devices that are connected to the software in the list of devices:

- ✓ Devices are connected to the network or workstation.
- ✓ Devices are switched on.
- ✓ The additional component for the corresponding device is installed (see "24.2 Installing additional components").

 The list of supported devices (already installed additional components) can be queried under  >  *Supported devices*.

You can sort the list of devices by clicking in the corresponding column of the header row. If a device is not yet fully configured and therefore cannot yet be used, then the row is marked with the  icon.

If all of the requirements are met, then the devices can be displayed in the list of devices and configured. The connection to the software is established automatically.

- > Click .
- > Click *Devices*.

24.1 Connecting devices

All connected devices appear automatically in the list of devices. If this is not the case you will need to add the device manually (see "Manually adding a device").

 The exact process for installation and configuration of a device is described in the operating instructions/installation instructions of the device.

 On TWAIN devices, you first need to complete the device settings (see "Device settings") to use the device and in order to be able to create an X-ray station.

The check in the check box next to *Connected* shows that the device is connected to the software.

Manually adding a device

If a connected device is not displayed in the list of devices, then you will need to manually register it.

- ✓ The IP address of the device is known
- > Click *Register network device*.
- > Enter the IP address of the device.
- > Click *Add device*.

Result:

The system will search for the device in the network and then display it in the list of devices.

24.2 Installing additional components

If the additional component of a device was not installed at the same time during the initial installation process then you will need to reinstall this additional component afterwards.

To do this, proceed in the same way as for the initial installation (see "5 Installing the software").

- > During the course of the installation, select the device you wish to reinstall.
- > Perform the installation.
 - The missing additional components will be reinstalled.
 - The device drivers are installed automatically.

24.3 Using the device with VisionX Connect

Video device:

- > To allow a video device to be used with VisionX Connect, activate the option *Use in VisionX Connect*.

X-ray device:

- > To allow an X-ray device to be used with VisionX Connect, click on *X-ray station settings*.
- > On the X-ray stations configuration page locate the X-ray device in the list and activate the option *Use in VisionX Connect*.

25 X-ray stations

If there is a legal requirement for the recording of X-ray data and the *X-ray stations* option is enabled under *Configuration > Application*, then you will need to create X-ray stations.

An X-ray station always comprises the following:

- Image creation device
- Operator information

Here, e.g., an X-ray emitter can be combined with different phosphor storage plate scanners or one phosphor storage plate scanner can be combined with different X-ray emitters into multiple X-ray stations.

The X-ray station that is marked as the favorite in the list of X-ray stations is displayed first in the selection list when the X-ray image acquisition is started.



If an X-ray station is to be permanently assigned to an image type, this can be set up in the acquisition type configuration (see "26.1 Configuring image acquisition types").

If there is no X-ray station obligation and the *Manually create X-ray stations* option under *Configuration > Application* is disabled (default setting), then the X-ray station will be automatically created in the background when a device is created, and no further configuration is required. In the X-ray station configuration, you can create, configure, and delete X-ray stations.

› Click .

› Click *X-ray stations*.

25.1 Creating an X-ray station

If there is a legal requirement for recording X-ray data then the process will depend on the image acquisition device:

- "Creating an X-ray station using the wizard"
 - ProVecta S-Pan
 - ProVecta S-Pan Ceph
 - ProVecta 3D Prime
 - ProVecta 3D Prime Ceph
- "Creating an X-ray station manually"
 - All ScanX units
 - SensorX
 - Cephalometric/panoramic devices without digital image receiver (e.g., with phosphor storage plate)
 - TWAIN devices

If there is no legal requirement for the recording of X-ray data, the option *Create X-ray stations manually* can be deactivated in *Configuration > Application*. As a result, the X-ray station will be automatically created in the background when a device is created, and no further configuration is required (see "Automatic creation of X-ray stations").

Creating an X-ray station using the wizard

› Click *Automatic search*.

The wizard will open.

› Select an X-ray station from the list.

If the X-ray station is not in the list, this means that the device still needs to be connected to the software (see "24 Adding devices").

› Enter the name and address of the operator.

The data for the current practice is pre-assigned to the operator information.

› Click *OK* to close the wizard.

Result:

The X-ray station will be displayed in the list of X-ray stations.

The information about the X-ray emitter for the created X-ray station has been automatically generated. The X-ray station can be configured via *Configure* (see "25.2 Configuring an X-ray station").

If an X-ray station already exists with this X-ray unit, the system will not overwrite the configuration of the X-ray station; instead, a further X-ray station will be created.

Creating an X-ray station manually

› Click *Create X-ray station...*

› Under *General*, enter the name of the X-ray station and the information about the operator.

The data for the current practice is pre-assigned to the operator information.

› Under *X-ray emitter*, assign the X-ray emitter with which the X-ray images will be created.

If the required X-ray emitter is not available in the list, then you will need to create it via *Create X-ray emitter...* (See "Create X-ray emitter...").

- › Under *Image acquisition device*, select the device with which the X-ray images will be imported.
The selection list will only contain the matching image acquisition devices for the X-ray emitter. If the image acquisition device is not in the list, this means that the device still needs to be connected to the software (see "24 Adding devices").
- › At  or go to the navigation bar and click *X-ray stations*.
The X-ray station will be displayed in the list of X-ray stations.

Automatic creation of X-ray stations

- › Under  > *Application* > *Configuration*, disable the option *Manually create X-ray stations*. One or more X-ray stations are automatically created for each device.
- › If further devices are connected at a later date, go to  > *Devices* and click *Update*.
or
In the preview window of the "Image inspector", go to *Select image acquisition source* and click .
One or more X-ray stations are automatically created for each newly connected device.

25.2 Configuring an X-ray station

 If the configuration of an X-ray station is changed, it may be necessary to perform a new full or partial acceptance test.

- › Select the required X-ray station in the list.
- › Click *Configure*.
- › Under *General*, enter the name of the X-ray station and the information about the operator.
- › Under *X-ray emitter*, assign the X-ray emitter with which the X-ray images will be created. If the required X-ray emitter is not available in the list, then you will need to create it via *Create X-ray emitter...* (see "Create X-ray emitter...").
- › Under *Image acquisition device*, select the device with which the X-ray images will be imported.
The selection list will only contain the matching image acquisition devices for the X-ray emitter. If the image acquisition device is not in the list, this means that the device still needs to be connected to the software (see "24 Adding devices").

Create X-ray emitter...

If there is a mandatory X-ray station requirement, then an X-ray emitter must be assigned to every X-ray station.

- › Click *Create X-ray emitter...*
- › Fill in all text fields (where possible).
- › Under *Category* select the category (Intraoral, Panoramic, Cephalometric) for the X-ray emitter.
- › Click on the X-ray station name in the navigation bar (go back one level) to save the information.

25.3 Entering recommended values for X-ray parameters

Depending on the device, you can enter recommended values for the X-ray parameters for each image acquisition type of an X-ray station. It makes the work easier if the X-ray images are always taken with the same values. The recommended values for the X-ray parameters are entered automatically for the first image, but can still be adjusted if required. Depending on the device, should you have any further images of the same exposure, the X-ray parameters will need to be entered manually.

The recommended values are optional. Individual parameters can also be left empty.

If recommended values are entered they are displayed in the preview window in the recording mode.

 It is not possible to enter recommended values in X-ray stations with ProVecta S-Pan and ProVecta 3D Prime. With these units, the X-ray parameters are transferred directly.

- › Select the required X-ray station in the list.
- › Click *Parameters*.
- › Enter the required recommended values for each image acquisition type.
- › If one or more values are to be used for all image acquisition types, select the image acquisition type and click *Apply to all*.

25.4 Deleting an X-ray station

- › Select the required X-ray station in the list.
- › Click *Delete*.
- › Confirm the deletion in the dialog window.

26 Acquisition types

The image acquisition types define the use of the acquisition source and the acquisition mode for the different X-ray images and video recordings (e.g., Intraoral, Video).

The list of image acquisition types is predefined based on the enabled software modules (e.g., Video, X-ray). The assignment of acquisition source and image acquisition mode can be configured (see "26.1 Configuring image acquisition types").

The image acquisition types marked as *Favorite* appear as a button in the menu bar.

If the acquisition source and the image acquisition mode are fixed for an image acquisition type, the image acquisition will start immediately as soon as the image acquisition type is clicked in the menu bar.



The configuration of image acquisition types and the selection of favorites is always saved locally on the computer.

26.1 Configuring image acquisition types

The list of image acquisition types is predefined. For every image acquisition type you can set which acquisition source (image acquisition device) and which image acquisition mode are to be used to generate the image.

- › Click .
- › Click *Acquisition types*.
- › Select the required image acquisition type in the list.
- › Click *Configure*.
- › Under *Acquisition source* select whether the device is to be manually selected for each image acquisition, or whether a specific device or the last used device should be selected. If the image acquisition device is not in the list, this means that the device still needs to be connected to the software (see "24 Adding devices").
- › The selected mode is displayed under *Image acquisition mode*. Click ... to change the mode. The image acquisition mode depends on the selected acquisition source.
- › If the image acquisition type is to be displayed in the menu bar, check the check box next to *Favorite*.

Result:

The configuration is active for the next image acquisition with this image acquisition type. The option *Restore default settings* can be used to reset the configuration of an image acquisition mode.

27 Importing implant packages

Implant models from different manufacturers can be imported. The implant models can be schematically inserted in the images (see "Implants"). Air Techniques offers implant packages from different manufacturers.

- › Click  > *Application*.
- › Under *Implants*, click *Import...*
- › Select the implant package and click *Open*.

The implant models are imported.

When performing a fresh import of the implant package of a manufacturer, the implant models are updated.

Implants stored in the software which are no longer available from a certain manufacturer are deleted. The previous use of these implants in the images is not changed.

28 VisionX MobileConnect

The MobileConnect software component configures and connects the VisionX database with the Air Techniques imaging app. The images saved in the VisionX database are transferred via MobileConnect to the iPad and displayed. If multiple users or practices are set up in VisionX then a login in MobileConnect is also required.

For a multi-station installation, it is sufficient to install MobileConnect on one workstation.

When MobileConnect is active,  appears in the Windows taskbar.

To be able to use the Air Techniques Imaging iPad app you will first need to enter the connection data in the iPad app.

Requirements:

- ✓ The software component *MobileConnect* is installed on the workstation (activated during installation of VisionX).

- › Right-click .

- › In the context menu, click **?**.

The MobileConnect help function opens.

- › Enter the connection settings in the Imaging iPad app (*IP address, IP port, user name, password*).

If the MobileConnect module is not yet licensed, a watermark is displayed on the images displayed on the imaging iPad app.

- › Activate MobileConnect (see "7 Licensing").

As soon as the MobileConnect module has been activated and both VisionX and MobileConnect have been restarted, the watermark disappears from the images in the imaging iPad app.

29 Configuring the interface to the practice management program

BDW and VDDS-media are available as interfaces to the practice management program.

29.1 Configuring the BDW interface to the practice management program

BDW (BDW = Basic Dental Workflow) is an interface between the practice management program and the imaging software. It can be used to exchange patient data and image data between the practice management program and the imaging software. The practice management software can produce jobs that can be opened in the imaging software.

Requirements:

- ✓ Practice management program installed
- ✓ BDW interface configured in the practice management program
- ✓ A valid license for VisionX BDW is present (see "7 Licensing")
- › Click  > *Interfaces*.
- › In *DICOM/BDW* activate the option *Basic Dental Workflow*.
- › Under  > *Practices* enter the BDW practice ID.
- › To import the practice management software as a BDW partner, under  > *Interfaces* click *DICOM/BDW partner ... Import BDWpartner*.

All BDW partners present in the directory %PROGRAMDATA%\VDDS_BDW will be imported. If a BDW partner has several roles (PACS, RIS), a BDW partner is created for each role.

The RIS query is pre-configured automatically and can be adapted according to need.

29.2 Configuring VDDS-media interface to practice management program

The VDDS-media interface (VDDS = Verband Deutscher Dentalsoftwareunternehmen, Association of German Dental Software Developers) is an interface between the practice management program and the imaging software. It can be used to exchange patient data and image data between

the practice management program and the imaging software. The imaging software can be opened from within the practice management program.

The interface options depend on the practice management program used. The imaging software supports levels 1 to 6 of the VDDS interface.

Requirements:

- ✓ Practice management program installed
- ✓ VDDS interface configured in the practice management program
- ✓ VDDS multimedia interface activated in the practice management program (where supported)
- › Click  > *Interfaces*.
- › In *VDDS-media*, activate the option *Use VDDS*.
- › Select the referenced practice management program from the selection list.
- › If the practice management program supports level 6, activate the option. If level 6 is activated, then the updates of image data can be triggered directly in the imaging software.

30 Configuring the DICOM/BDW interface

 The meanings of the abbreviations used here are explained under "75 Abbreviations used".

The configuration of the DICOM/BDW interface varies depending on the application.

- Recall jobs from an RIS:
 - › "Creating an RIS partner"
 - › "Configuring the RIS query"
- Return jobs to a PACS:
 - › "Creating a PACS partner"
- Print images on a DICOM printer:
 - "30.4 Configuring the DICOM printer"

In the configuration of the DICOM/BDW interface, the DICOM partner (RIS, PACS, printer) can be created, configured, and deleted.

- › Click .
- › Click *Interfaces*.

30.1 Defining a workstation as a DICOM workstation

In order to be able to use the DICOM functionality, at least one workstation has to be defined as a DICOM workstation.

- › In the *DICOM/BDW* area, check *DICOM Workstation*:

The workstation will be defined as a DICOM workstation.

As soon as a practice is logged in on a workstation that has been defined as a DICOM workstation, a license will be locked. Once the practice logs off, the license will be unlocked again.

30.2 Configuring the RIS connection



CAUTION

Personal injury is possible due to wrong assignment of image data to a patient

- › Check the right assignment of the image data (e. g., during image import, change of patient data, or new assignment of image data to a patient).
- › Observe the information displayed in the software.

If multiple RIS partners exist, a patient must possess the same unique patient ID for all RIS partners. Otherwise the same RIS partner would have been configured on each DICOM workstation. Examples:

- An existing RIS partner is replaced by a new RIS partner. The patients of the old RIS partner are stored in the imaging software. When the patients of the new RIS partner are imported, it is possible that different patients are assigned the same patient ID.
- DICOM workstations have different RIS partners. DICOM workstation A is linked to RIS partner A. DICOM workstation B is linked to RIS partner B. But both DICOM workstations share patient data through the imaging software. This means that different patients may have the same patient ID.

Creating an RIS partner

DICOM communication can only take place between known workstations (DICOM partners). A list of all the created DICOM partners is displayed in the *DICOM Partners...* configuration.

- › Click *DICOM Partners...*
- › Click *Create DICOM Partner...*
- › Under *General Settings*, enter the connection data for the DICOM partner.
The meaning of the various fields is described under "DICOM/BDW Partner...".
Under *Role:*, you must select *RIS (Modality Worklist SCP)*.
- › Click *Start Test*.
The imaging software will carry out a connection test and check whether the RIS system can be reached using the values entered.
An RIS query has to be configured so that jobs can be called up from the RIS (see "Configuring the RIS query").

Configuring the RIS query

Requirements:

- ✓ At least one RIS partner has been created ("Creating an RIS partner")
- › Click *RIS query...*
- › Under *RIS Partners:*, select an existing RIS partner on which the query is to be started.
- › Enter or select your desired query parameters (see "RIS query...").

Testing the RIS query:

- › Close the configuration.
- › Open the *Job Overview* (see "36 Managing jobs").
- › Click *RIS Query*.
- › Check whether the parameters you set result in the desired query.

Deleting RIS partners

Requirements:

- ✓ The DICOM partner to be deleted is not being used
- › Click *DICOM/BDW Partners...*
- › Select the desired DICOM partner.
- › Click *Delete*.

- › In the dialog window, confirm with *Delete*.
The DICOM partner will be deleted.

30.3 Configuring the PACS connection

Creating a PACS partner

- › Click *DICOM/BDW Partners...*
- › Click *Create DICOM Partner...*
- › Under *General Settings*, enter the connection data for the DICOM partner.
The meaning of the various fields is described under "DICOM/BDW Partner...".
Under *Role:*, you must select *PACS (Storage SCP)*.
- › Click *Start Test*.
The imaging software will carry out a connection test and check whether the PACS system can be reached using the values entered.



If multiple image states of a single image are to be transferred to the PACS, one PACS partner has to be created for each image state.

- › Under *Transfer Settings*, tell the system which image state and which format are to be used for transferring the images.
If you check *Anonymization of the Data:*, the data will be made anonymous prior to being transferred to the PACS.
If you check *Send Automatically:*, the imaging software will transfer the recorded images automatically as soon as the job is finished. Otherwise the images must be transferred manually to the PACS (see "39.1 Exporting images").

Deleting PACS partners

Requirements:

- ✓ The DICOM partner to be deleted is not being used
- › Click *DICOM/BDW Partners...*
- › Select the desired DICOM partner.
- › Click *Delete*.
- › In the dialog window, confirm with *Delete*.
The DICOM partner will be deleted.

30.4 Configuring the DICOM printer

Creating the DICOM printer

- › Click *DICOM/BDW Partners...*

- › Click **Create DICOM Partner...**
- › Under **General Settings**, enter the connection data for the DICOM partner.
The meaning of the various fields is described under "Configuring".
- › Select **Role: Printer**.
- › Select the model from the selection list.
The model name is automatically entered under **Name**.
- › Click **Start Test**.
The imaging software performs a connection test and checks whether the printer can be contacted using the values entered.
- › Select **Print settings**, see "Configuring".
- › Close the flyout.

Deleting the DICOM printer

Requirements:

- ✓ The DICOM partner to be deleted is not being used
- › Click **DICOM/BDW Partners...**
- › Select the desired DICOM partner.
- › Click **Delete**.
- › In the dialog window, confirm with **Delete**.
The DICOM partner will be deleted.

30.5 Assigning DICOM attributes to certain acquisition types

The imaging software allows you to assign certain DICOM attributes to an acquisition type (instance, DICOM attribute *IO* to the acquisition type *Intra*). Depending on the configuration of the imaging software, this will cause acquisition to begin directly using the appropriate acquisition type. If no appropriate assignment is found, or if no assignment has been made, the standard assignment will be used:

DICOM attribute	Meaning	Acquisition type
No DICOM attribute present		Undefined
OT	Other type	
CR	Computed Radiography	
DX	Digital Radiography	
DICOM attribute is not one of the attributes below		
IO	Intra Oral X-ray	Intraoral
XC	External Camera Photography	Video
ES	Endoscopy	Video
PX	Panoramic X-ray	Panoramic Standard
CT	Computed Tomography	CBCT

- › Click *Assignment of Acquisition Types...*
- › In the upper section, select the DICOM attribute used for assignment.
- › In the lower section, click on +.
- › Under *Acquisition Type*, select the acquisition type to which you wish to assign a DICOM attribute.
- › Under *Values*, enter the DICOM attribute you wish to use for the acquisition type.
- › If you want to add further assignments, click directly on +.
If you do not wish to add any more assignments, click on  or *Interfaces*.

Deleting an assignment

The assignment of DICOM attributes to an acquisition type can be deleted.

- › Click **Assignment of Acquisition Types....**
- › Find the assignment in the list and click .

30.6 Customising the job list

When working with DICOM jobs, you can configure which DICOM attributes are to be displayed in the job list.

List	The attribute is shown as a column in the job list
Details	The attribute is shown in the DICOM area when a job is selected
Hidden	The attribute will not be displayed

- › Click on **Show Job List....**
A list containing all DICOM attributes will appear.
- › In the **Visibility** area, select how you wish to have the DICOM attribute displayed.

31 Configuring features

Features contain special functions of the software as well as individually set up interfaces to external applications (third-party software). The Feature settings are practice-specific.

- › Click .
- › Click **Features**.
- › In the **Practice** selection list, select the desired practice.

Image rotation:

- › Click **Image Rotation > Configure**.
- › In order to rotate intraoral X-ray images automatically, activate the option **Perform image rotation automatically**.

Automatic phosphor storage plate quality check:

- › Click **Automatic Phosphor Storage Plate Quality Check > Configure**.
- › Select the option **Activate automatic phosphor storage plate quality check** to detect phosphor storage plate wear automatically. This function is only possible for IDX phosphor storage plates in conjunction with a phosphor storage plate scanner that can read the RFID chip.

Nerve canal proposal:

- › In order to have nerve canal proposals calculated (**Create nerve canal proposal** button in the toolbox, see "Nerve canal"), activate the option **Enable calculation of nerve canal proposals**.
- › If the nerve canal proposal is to be created directly during X-ray imaging, activate the option **Automatically calculate nerve canal during acquisition**.

Tooth detection:

- › Click **Tooth detection > Configure**.
- › To automatically select the teeth during intraoral image acquisitions, activate the option **Perform automatic tooth detection on intraoral images**.
Image rotation is also required in addition for tooth detection. If required, the feature **Image rotation** is also activated at the same time.

31.1 Setting up the cloud



VisionX Cloud cannot be used in all countries.

Information on using the cloud is available under "42 Using VisionX Cloud".

In the cloud configuration you can create a new cloud account, link an existing cloud account with the imaging software, or remove an existing cloud link.

- › Click .
- › Click **Features**.
- › In the *Practice* selection list, select the desired practice.
- › Click *VisionX Cloud > Configure*.

Creating a new cloud account

A cloud account must be created in order to use VisionX Cloud.

If you already have a cloud account, you can simply link it to a practice in the imaging software (see "Linking a practice with an existing cloud account").

- › Click **Create new cloud account...**
- › Fill in all the fields.
- › Read and accept the data protection notice. The cloud can only be used if the data protection notice is accepted.

- › Click on **Create**.

The cloud account is created.

The icon  in the status bar indicates that the imaging software has been successfully linked with the cloud. If the link up failed, this will be indicated by the icon .



You will need to confirm your email address before using the cloud for the first time. For this purpose an email containing a confirmation link will be sent to the email address you entered. In addition, you must accept the license agreement (EULA) when logging in for the first time. If the license agreement is changed, you need to accept the changes by entering your cloud password.

Linking a practice with an existing cloud account

If you already have a cloud account, you can simply link it to a practice in the imaging software.

- › In the *Use existing VisionX Cloud account* area, enter the email address and password for the cloud account.

- › Click **Link**.

The cloud account is linked with the practice. The icon  in the status bar indicates that the imaging software has been successfully linked with the cloud. If the link up failed, this will be indicated by the icon .

Configuring the cloud account

After creating the cloud account you can configure it (for example by completing the profile or selecting a package).

- › Click  > **Features**.
- › In the *Practice* selection list, select the desired practice.
- › Click *VisionX Cloud > Configuration*. The configuration opens.
- › Click **Manage subscription**.
or
Open the Internet site *visionxcloud.com* directly in your browser.
The VisionX Cloud user interface opens.
- › Enter your login details.
- › Edit your account settings, e.g. enter an invoicing address or select a package.

Unlinking the cloud account

If the cloud is no longer needed the link can be removed.

- › Click  > **Features**.
- › In the *Practice* selection list, select the desired practice.
- › Click *VisionX Cloud > Configuration*. The configuration opens.
- › Click **Unlink**.
The link from the practice to the cloud is canceled.
This will not delete your account.

31.2 3Shape integration

This feature can be used to link the imaging software to 3Shape TRIOS in Dental Desktop (3DD).

- › Click .
- › Click **Features**.
- › In the *Practice* selection list, select the desired practice.
- › Click *3Shape integration > Configure*.
- › Select the option **Activate 3Shape integration**.
- › Enter the URL, username, and user password for the Dental Desktop software.
- › Click **Test connection** to check the connection settings.

› Click **Save**.

Result:

In the menu bar the following button appears:



31.3 Interface to external applications

This function is used to transfer images to an external application. The external application is started automatically and the image will be transferred. Whether or not the image will be loaded in the external application primarily depends on the functions available in the external application. In the configuration you can create, configure, and delete external applications.

› Click .

› Click **Features**.

› In the *Practice* selection list, select the desired practice.

Add external application

› Click **Add external application**.

› Under *Name of external application*:, choose any name you wish for the external application.

› Under *Executable path*:, enter the path to the EXE file of the external application.

› Under *Parameters*: select the parameters that are to be transferred to the external application along with the image.

Multiple parameters can be selected here. You may choose from among the various parameters found in the selection list. Clicking on a further parameter will automatically add it to the existing parameters (see "72.7 Add external application").

As a minimum, the parameters "%PathToFile%" or "%PathToFolder%" must be selected. You can also set the image state and formats for the different image types (see "72.7 Add external application").

› If the exported data should not contain patient information, activate the option **Anonymization of the data before export**.

› At  or go to the navigation bar and click **Features**.

The external application will appear in the Features list.

Settings for SICAT Implant

To connect to SICAT Implant, use the following settings:

External application name:	SICAT Implant
Executable path:	C:\Program Files\SICAT\SICAT Suite\SicatSuite.exe
Parameters:	-input "%PathToFile%"
Image status	Initial view

Configuring an external application

› Select the desired external application in the list.

› Click **Configuration**.

› Edit the entries you wish to change (see "72.7 Add external application").

› At  or go to the navigation bar and click **Features**.

The change is saved.

Deleting an external application

› Select the desired external application in the list.

› Click **Delete**.

› Confirm the deletion in the dialog window.

32 VisionX Connect

To use the VisionX Connect module, you need the following:

- › Configuring the devices, see "24 Adding devices".
- › When configuring the practice (*Configuration > Practices > Configure*), select *Patient ID* under *Settings > Mandatory Fields*.



Before using VisionX Connect, make sure that VistaEasy is not present.

If necessary uninstall VistaEasy.

Images that have been acquired with VisionX Connect can be displayed and edited before being transferred to the external application. A minimal interface is also available that just transmits the images. When configuring VisionX Connect ("69.2 VisionX Connect") select the option *Use minimal VisionX Connect UI* to enable this feature.

32.1 Restrictions using the minimal VisionX Connect UI

The minimal interface can only be used if the following conditions are met:

- Only one practice has been set up
- User management is deactivated (only one user created, without a password)
- X-ray parameters are not mandatory (see "70 Practices")



Operation

The section titled "Operation" explains how to operate the imaging software once you have gotten started (see "33 Managing patient data" to find out how to get started).

33 Managing patient data

This section explains how to manage patient data.



CAUTION

Personal injury is possible due to wrong assignment of image data to a patient

- › Check the right assignment of the image data (e. g., during image import, change of patient data, or new assignment of image data to a patient).
- › Observe the information displayed in the software.

33.1 Creating patient

A patient can always be created unless an image acquisition is currently in progress. Once the software has been launched, the *Patient Records* flyout is automatically opened and a new patient record can be created.

- › To open the flyout, click  in the menu bar.
- › Click  on the right-hand side of the search field.

The flyout for creating a new patient record will open.



Fields marked  are mandatory fields and must be completed.

The mandatory fields can be selected in the configuration.

- › Fill in all fields or at least the mandatory fields.

- › Click  to close the flyout.

The patient record will be created and you will be automatically logged into it.

If a patient is already logged in, this patient will be logged-out automatically when another patient is logged in. Here, all image acquisitions must be finished and all mandatory information for the images must have been entered.

33.2 Importing patient data

The patient data can be imported individually from a practice management program. If you are not logged into a patient record, you will automatically be logged into the patient's record when you import their data.

There are two ways to import patient data into the imaging software (see "69 Interfaces"):

- "Importing patient data with patimport.txt"
- "Importing patient data via the VDDS media interface"

Importing patient data with patimport.txt

Requirements:

- ✓ Import directory for patient data from a practice management program is configured (see "69 Interfaces")
- ✓ No image acquisition (X-ray, video) is running on the workstation where the patient data is to be imported

- › Save the patient data from the practice management program to the import directory (for details, see instructions of the practice management program).

If a patient is not logged-in in the imaging software, the patient will be registered automatically.

If you are already logged into another patient's record, a notification will appear and **Patient record awaiting log-in** will appear in the patient data bar.

- › To log-in the patient whose data has been sent from the practice management program, click **Patient record awaiting log-in** in the patient data bar.

If a patient is already logged in, this patient will be logged-out automatically when the other patient is logged in. Here, all image acquisitions must be finished and all mandatory information for the images must have been entered.

Importing patient data via the VDDS media interface

Requirements:

- ✓ VDDS-media interface is configured in the imaging software and in the practice management program (see "69 Interfaces")
- ✓ No image acquisition (X-ray, video) is running on the workstation where the patient data is to be imported

- › Send the patient data from the practice management program to the imaging software (for details, see instructions of the practice management program).

If a patient is not logged-in in the imaging software, the patient will be registered automatically.

If a patient from another practice is to be logged in, then the practice is changed automatically.

If you are already logged into another patient's record, a notification will appear and **Patient record awaiting log-in** will appear in the patient data bar.

- › To log into the record for the patient whose data has been sent from the practice management program, click **Patient record awaiting log-in** in the patient data bar.

If a patient is already logged in, this patient will be logged-out automatically when the other patient is logged in. Here, all image acquisitions must be finished and all mandatory information for the images must have been entered.

33.3 Searching for and registering a patient

In order to create or import images, you must be logged into a patient record.

The **Patient records** flyout will open automatically when the software is launched.

If a patient is already logged in, this patient will be logged-out automatically when another patient is logged in. Here, all image acquisitions must be finished and all mandatory information for the images must have been entered.

The list **Recently viewed patient records** shows the last 10 patients who were logged in (with the most recent log-in date first). In the case of multi-station installations, the list is global across all workstations. The list of last logged-in patients can also be deactivated, see "65.2 Workstation". The search values in the patient data can be limited to patient ID and name in the selection field. Otherwise, all fields of the patient data are used in the search.

- › Click .

The **Patient records** flyout will open.

- › If the patient record you are looking for has been logged into very recently, you can select it from the **Recently viewed patient records** list.

or

- › Enter the patient details into the search field (e.g., patient number, name, or date of birth). To enter numbers with the screen keyboard, click on . The search results will be displayed, either immediately or after pressing the enter key or , in the list below the search field (depends on the configuration, see "70.1 Configuring"). They can be sorted by clicking on the column head.
- › Highlight the patient record you require in the list and click  to log in. Alternatively you can open the patient by double-clicking the list entry. You are now logged into the patient record. Relevant data for the patient is displayed in the patient data bar. The image archive of the patient appears in the "Image inspector".

33.4 Editing patient data

 If the patient was imported from a practice management program via the VDDS-media interface or via patimport.txt, or via the DICOM interface, then it will not be possible to edit all the patient data.

Requirements:

- ✓ Patient is logged in
- › Click . The **Patient data** flyout will open.

 Fields marked  are mandatory fields and must be completed. Different fields may be mandatory fields, depending on the configuration.

- › Change the patient data you want to amend.

33.5 Logging out of a patient record

If the patient imaging is complete, you can log out of the patient's record. When you log into another patient's record, you will automatically be logged out of the previous patient's record.

Requirements:

- ✓ The patient imaging must be complete.
- ✓ All of the mandatory information for the acquired images has been entered.
- › Click  in the patient data bar.

33.6 Deleting a patient

Provided certain requirements are met, it is possible to delete a patient. When a patient's record is deleted, their images will be deleted with it.

The following conditions must be fulfilled in order to delete a patient:

- ✓ The patient must not be logged in at any other workstation.
- ✓ There must not be any X-ray images with a legal retention period that has not yet expired (see "70.1 Configuring").
- › Click . The **Patient records** flyout will open.
- › If the patient record you are looking for has been logged into very recently, you can select it from the **Recently viewed patient records** list. or
- › Enter the patient details into the search field (e.g., patient number, name, or date of birth). The search results will be displayed immediately in the list below the search field.
- › Highlight the patient record in the list.
- › Click .
- › Confirm the popup checking that you definitely wish to delete the patient.

Result:

The patient's record and all their images will be deleted.

34 Displaying images

A preview of all of a patient's images will be displayed in the "34.1 Image inspector". The images are grouped according to the date on which they were recorded.

To view or edit the images, they can be opened on the "34.2 Light table".

34.1 Image inspector

The "Image inspector" comprises the image archive with all of the images of the logged-in patient and the multiple selection and filter tools. The images in the image archive are grouped according to the date on which they were recorded.

If new images are recorded, the preview window will also be displayed above the image archive. The grading is displayed if the image quality has been graded in the image information:

-  Very good
-  Acceptable
-  Not acceptable

For X-ray images acquired with an IDX phosphor storage plate, the evaluation of the automatic phosphor storage plate quality check (grade A to E) is displayed, see "72.2 Automatic phosphor storage plate quality check".

The following actions can be performed with the images in the image archive:

- Opening the image on the light table (see "Displaying images")
- "Editing image information in the "Image inspector""
- "35.3 Transferring an image to PACS"
- Opening, exporting, or deleting multiple images together (see "35.7 Multiple selection")
- "Filtering images"
- "35.6 Delete an image"

Displaying images

Requirements:

- ✓ Patient is logged in
- ✓ The patient images are in the "Image inspector"

Displaying one or more images on the light table (multiple selection closed):

- › Click to select the relevant preview image in the "Image inspector".

or

Click the preview image in the "Image Inspector" and drag and drop it to the light table.

The image will be displayed on the light table and highlighted with a blue frame in the "Image inspector".

Multiple selected images will be displayed next to and above and below one another on the light table, and they are highlighted with a blue frame in the "Image inspector". The available space on the light table will be divided up dynamically between all of the images.

Displaying multiple images on the light table (multiple selection open):

- › In the "Image inspector", click on **Multiple selection** to open the function group and activate the multiple selection.
- › Select the corresponding images with a click. Alternatively, enable the check box in the date row to select all images for the day. The images are marked with .
- › Click  to load the marked images to the light table.

or

Click and hold your mouse button on one of the selected preview images in the "Image inspector" and then move it to the light table (drag & drop).

The images will be displayed next to and above and below one another on the light table. The available space on the light table will be divided up dynamically between all of the images.

Displaying all of the images from a single day on the light table:

- › Move the mouse cursor over the required date row in the "Image inspector". The  section will appear in the right-hand part of the date row. This shows that the date row can be moved.
- › Click on the date row with the left-hand mouse button and hold.

- › Drag the date row onto the light table and release the left-hand mouse button. All the images from the day will be displayed next to and above and below one another on the light table, and highlighted in color in the "Image inspector". The light table will dynamically divide the available space between all the images.

Editing image information in the "Image inspector"

Information on each of the images can be displayed and edited in the "Image inspector".

- › Click .

The image information will be displayed in a fly-out.

Certain information (e. g. , the dental notation system) can also be edited.

Similarly, the image information can also be displayed and edited on the light table (see "35.1 Displaying and editing image information").

Multiple selection

One or more images can be edited using the "Image inspector's" multiple selection tool without the images being open on the light table.

Opening multiple selection:

- › Click on *Multiple selection* to open the function group.

- › Check the check box next to the preview image for each image that is to undergo further processing using the multiple selection tool.

The check box can also be activated in the data bar. This selects all images recorded on the same day.

Exporting images:

- › Click .

The selection list for the image export mode will open.

- › Select the correct image export mode.

The image-export modes can be modified (see "Configuring"). The user-defined export can be adjusted for every export, and the chosen settings are saved locally for the next use.

The images can also be exported to a data carrier, see "Creating a patient medium".

The selected images will be exported to the defined path.

You can also use the light table to export a single image (see "39.1 Exporting images").

Loading to light table:

- › Click .

- › Click *Load*.

All selected images will be loaded to the light table.

Delete:

- › Click .

- › A prompt will be displayed to check whether you definitely want to delete the selected images.

- › Confirm the question.

The images are then permanently deleted.

X-ray images that are still within their legally required retention period cannot be deleted.

A notification message is displayed.

Transfer to practice management program (if the VDDS-media interface is enabled):

- › Click .

The selected images are transferred to the practice management program.

Filtering images

Over time, the dental practice and patient records will accumulate a large number of different images. The images can be filtered so that you can quickly find the images you require. The following filters can be applied:

	All images	All images recorded for a particular patient will be displayed
	Date range	All images recorded during the selected time frame will be displayed.
	Image types	All images of the selected image type for a particular patient will be displayed (multiple selection possible).
	No Indication	All images will be displayed for which no Indication is entered.
	No findings	All images for which no diagnosis is entered will be displayed.
	Acquisition types	All images are displayed that were created with the selected image acquisition type (multiple selection possible).
	No tooth assignment	All images are displayed for which no tooth is selected in the dental notation system, as well as the images that have no dental notation system in their properties (e.g., Pano image).
	Dental notation	All images are displayed on which the filter selection matches the assigned teeth in the dental notation system. If several teeth are selected for the filtering, then all images are displayed that are assigned to at least one of these teeth.
	Image assessment	All images with the selected image grading are displayed (multiple selection possible).

The filters cannot be combined with each other.

Upon a change of the filter, the software remembers the settings (except to date range). If the filter is selected again, it is pre-set already.

Select filter:

- › Click in the selection box next to the filter symbol .
- › A drop-down list of filtering options is displayed.
- › Select a filter.

Depending on the filter selected, further information may need to be entered.

- › Enter the information required (e. g., "Date from ... to" or "Image type").

With **Image types**, all images highlighted in blue will be displayed. Image types that you do not want displayed must be deselected (gray).

All images with the selected filter properties will be displayed.

Clearing filters:

- › To clear the selected filter, select **All images**.

Modifying filter properties:

- › Click the filter symbol (e.g.  .

The properties can be modified in the flyout.

34.2 Light table

All images selected in the "Image inspector" are displayed on the light table.

 If the VDDS-media interface is enabled, then the display of an image can also be triggered via the practice management program. Here, the corresponding patient is logged in via the imaging software and the image is opened on the light table.

Displaying images

Requirements:

- ✓ Patient is logged in
- ✓ The patient images are in the "Image inspector"

Displaying one or more images on the light table (multiple selection closed):

- › Click to select the relevant preview image in the "Image inspector".
- or
- Click the preview image in the "Image Inspector" and drag and drop it to the light table.

The image will be displayed on the light table and highlighted with a blue frame in the "Image inspector".

Multiple selected images will be displayed next to and above and below one another on the light table, and they are highlighted with a blue frame in the "Image inspector". The available space on the light table will be divided up dynamically between all of the images.

Displaying multiple images on the light table (multiple selection open):

- › In the "Image inspector", click on **Multiple selection** to open the function group and activate the multiple selection.

- › Select the corresponding images with a click. Alternatively, enable the check box in the date row to select all images for the day. The images are marked with .

- › Click  to load the marked images to the light table.

or

- Click and hold your mouse button on one of the selected preview images in the "Image inspector" and then move it to the light table (drag & drop).

The images will be displayed next to and above and below one another on the light table. The available space on the light table will be divided up dynamically between all of the images.

Displaying all of the images from a single day on the light table:

- › Move the mouse cursor over the required date row in the "Image inspector".

The  section will appear in the right-hand part of the date row. This shows that the date row can be moved.

- › Click on the date row with the left-hand mouse button and hold.

- › Drag the date row onto the light table and release the left-hand mouse button.

All the images from the day will be displayed next to and above and below one another on the light table, and highlighted in color in the "Image inspector". The light table will dynamically divide the available space between all the images.

Using fixed/free image arrangement

Displaying multiple images on the light table, the images can be arranged in a variety of ways.



Fixed image arrangement (default):

The image frames are arranged according to a fixed grid on the light table depending on the number of image frames.



Free image arrangement:

The images can be positioned freely on the light table. The size of the image frames can be scaled freely.

The position and size of the image frames on the light table can be locked using .

The image frames can be scaled freely and positioned on the light table with .

The most recently selected image arrangement mode remains unchanged when you switch between patients or restart the software.

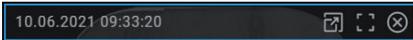
- › Click  in order to switch to free image arrangement on the light table.
- › Click  in order to switch to fixed image arrangement on the light table.

Maximizing an image

If more than one image is open on the light table, these will be displayed next to and above and below one another. Each of these images can be maximized for a detailed view.

Maximize image on light table:

- › Click the required image to select it.
The image bar appears at the top edge of the image.



This shows that the image is active.

- › Click .
Alternatively, you can also double-click on the image to maximize it.
The image will be expanded to fit the light table.
- › To reduce the size of the image, click on .
Alternatively, you can also double-click on the image to minimize it.
The image will be displayed in the original size again, next to the other open images.

Maximize image to full screen:

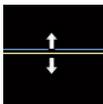
- › Click .
The image will be enlarged to fill the screen.
- › Exit full-screen mode by pressing the **Esc** key on your keyboard.
The image will be displayed in the original size again, next to the other open images.

Resizing views (only for CBCT)

The views of a CBCT image are opened in a default size. You can resize them as you wish to suit the particular application and your personal preferences. View sizes are not saved. When opened the next time, the CBCT image will again appear in the default size.

Resizing views horizontally:

- › Move your mouse cursor over the horizontal view divider.



- › Press and hold the left mouse button to resize the view.

Resizing views vertically:

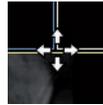
- › Move your mouse cursor over the vertical view divider.



- › Press and hold the left mouse button to resize the view.

Resizing views horizontally and vertically at the same time:

- › Move your mouse cursor over a point where the horizontal and vertical view dividers meet.



- › Press and hold the left mouse button to resize the view.

Enlarging and moving image details

The whole image is displayed when it is opened on the light table. To view details, the image can be magnified (zoom). The image detail displayed can be moved around within the frame.

- › Click on the required image on the light table to select it.
- › Adjust your view of the image detail using the zoom tools in the toolbox (see "Display") or by scrolling with the mouse wheel.
- › To move the image detail displayed, click and hold the image with the right-hand mouse button and drag it within the frame.

Editing image information on the light table

Information on each of the images can be displayed and edited on the light table.

- › In the light table menu (see "11.1 Software interface") click on  **Image information**.
The image information will be displayed in a fly-out.
Certain information (e. g. , the dental notation system) can also be edited.
Similarly, the image information can also be displayed and edited in the "Image inspector" (see "Editing image information in the "Image inspector"").

Closing an image

- › Click the image on the light table.

› Click .

Result:

The image is removed from the light table. The image processing is saved. The current view is saved as image state **Last Change** and displayed as a preview image in the "Image inspector".

Clearing the light table

If there are too many images open on the light table, or if the light table needs to be cleared to make way for new images, you can make all the images disappear from the light table.

- › Click  in the light table menu.
 - All images will disappear from the light table.
 - The changes that have been made will be saved for each image.

Views and layouts

 **Views and layouts** can be used to display multiple images of a patient in a particular arrangement on the light table. The views are saved for the patient.

Various predefined layouts are available for setting up the views.

A layout defines the number, size, and position of the frames on the light table. The pre-defined layouts can be edited and additional layouts can be created. In a multi-station installation, the layouts are saved centrally and are available on all workstations.

Image properties can be assigned to the frames of a layout in the frame settings (image type, acquisition type, teeth). The image properties are displayed in the empty frames of the layout.



- 1 Image properties of the frame (in this example: image type = intraoral, acquisition type = intraoral bite wing, adult)

2 Number of the frame

The numbers of the frames indicate the order in which the frames are filled. If an image series is started (see "37.9 Creating an image series"), the newly created images are inserted directly in the view following the numbering sequence of the frames.

If the option **Fill frame with current images** is activated, the existing images are assigned to the frames with the corresponding image information when a new view is created.

Creating views

The views are created on the basis of layouts in which the number, position, and properties of the images are predefined.

The frames of a view can be filled with existing images from the image inspector or with newly created images (see also "Editing layouts").

- › Click .
 - The **Views** flyout opens.
 - › If the images are to be assigned automatically in the image inspector, activate the option **Fill frame with current images**.

- › Click on the respective layout in **New view**.

The view is loaded onto the light table.

If the option **Fill frame with current images** is activated, images already present in the image inspector are inserted with the corresponding image information into the frames. If the option is deactivated, the frames in the view are empty and can be filled with existing images from the image inspector or with newly created images.

- › In the image inspector, click on the image you wish to display in this frame. Or use Drag & Drop to pull the image into the respective frame.
 - Alternatively create a new image.
 - The image is displayed in the frame and the next frame becomes active.
- › Assign the next image from the image inspector to the frame or create the next image.
- › In order to delete a frame from the view, click  in the empty frame.

- › Continue the process until all of the frames are filled with images.
The view is saved by date and layout name if any of the following events occurs:
 - You clear the light table 
 - You load a different or new view
 - Close the patient record
 - You log out of the practice
 - You close the software

Managing views

Existing views can be loaded on the light table, where they can be modified and deleted.

Loading an existing view on the light table:

- › Click .
- The **Views** flyout opens.
- › In **Available views**, click the required view.

Changing a view:

- › In order to exchange an image in a frame, pull the image from the image inspector into the frame using Drag & Drop.
- › In order to remove an image from the view, click  inside the frame.
The frame is maintained and can be filled with another image.
- › In order to delete the frame from the view, click  in the empty frame.
The frame is deleted from the view.

Saving and closing views:

- › Click .
- or
- Load a different or new view.
- or
- Log-out a patient or practice.
- or
- Close the software.

Delete view:

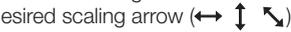
- › Click .
- › In the required view, click .
- The view is then deleted. The images used in the view are retained.

Creating a new empty layout

- › Click .
- The **Views** flyout opens.
- › Click **Empty layout**.
The empty light table is displayed. The **Layout** group in the toolbox opens.
- › In the toolbox, enter the layout name in the field.

- › Click **Add frame**.

An empty frame is created with a sequential number on the light table.

- › To change the size of the frame, move the mouse cursor over the edge of the frame. When the desired scaling arrow () is displayed, press the left mouse button and change the size of the frame while keeping the mouse button pressed.
- › To move the frame, left-click in the header row of the frame. Holding the mouse button. pressed () , drag the frame to the desired point and release the mouse button.
- › Click  in order to assign image properties (image type, acquisition type, teeth) to the frame.
The **Frame settings** window opens. These frame settings are used to assign the respective images when you create a new view with the **Fill frame with current images** option.
- › Assign image properties and save by clicking **OK**.
- › Create additional frames and display them on the light table.
- › To redefine the numbering (sequence for the image series), click **Resort frames**.

Click the header bars of the frames in the desired sequence.
The new numbering is displayed in the header bar of the frames.

- › Enter a name for the new layout in the **Name** field.
The name of the layout can be seen in the **View** flyout. If no name is entered, a name is assigned automatically (**New layout name**).
- › In order to save the layout, click **Apply**.
This saves and closes the layout.

Creating a new layout based on the current arrangement on the light table

- › Click .
- The **Views** flyout opens.
- › In **Create new layout**, enter the name in the field provided.

› Click *From light table*.

The layout is added under *New view* and can be used right away to create a view.

Editing layouts

› Click .

The *Views* flyout opens.

› For this layout, under *New view*, click on .

The layout opens on the light table.

› Editing frames and frame settings.

› Changing the name of the layout, if needed.

› Click *Apply*.

This saves and closes the layout.

Changes made to an existing layout affect future views only. Views set up earlier with this layout remain unchanged.



Changes made to predefined layouts can be made undone using *Restore factory layouts*.

Creating a screenshot of the light table

If multiple images are open on the light table, it is possible to create a screenshot of the complete light table.

The screenshot contains all images as displayed on the light table (incl. comments) as well as any empty frames if applicable. The image bars of the individual bars are not included in the screenshot. The screenshot is saved in the image inspector under the current date and is marked with  (derived image). It can be selected in the image

inspector, opened on the light table, and exported.

› Click .

A screenshot of the complete light table is created and saved with the current date.

Displaying and managing the image state

Depending on the image processing, certain image states are saved for every image. These can be called up for each image.

The following image states can be saved for the image:

- **Last change:** Last changes made to the image using the editing tools in the toolbox; this is automatically saved when the user switches to a different image state, when the image is removed from the light table, or when the patient is logged out.
- **Original image:** Original image, configured image processing from the X-ray station has been applied (see "68.3 Image processing:")
- **Original:** Image from the device including normalization (e.g., inversion, mirroring)
- **Diagnosis:** Image view saved with the diagnosis
- **User-defined image state:** View is saved with date and time, can be deleted again.

Displaying the image state:

› Select the required image state from the selection list.

The saved image state is displayed on the light table.

Saving user-defined image states:

› Click .

The view is displayed with date and time in the list of image states.

Editing the name of a user-defined image state:

› Click .

You can edit the date and time. Free text is permitted.

Deleting user-defined image states:

› Click on the selection list.

The list with the saved image states appears.

› In the list, click on  next to the user-defined image state.

Creating a screenshot of the active image

It is possible to create a screenshot of an image that is open on the light table.

The screenshot is saved in the image inspector directly under the original image and is marked with . It contains only the representation of the

image that was displayed on the light table at the time the screenshot was taken. It is given the same recording date as the original image. The image information is also copied over.

The screenshot can be selected in the image inspector and opened on the light table.

› Click .

A screenshot of the image currently open on the light table is created and saved.

Displaying/hiding annotations and measurements

Depending on whether or not annotations or measurements have been added to an image, you can hide or show them.

The first click hides the added annotations and measurements. A second click shows them again.

› If annotations or measurements are present, click on .

The annotations and measurements are hidden.

› Click .

The annotations and measurements are shown again.

Resetting all MPR and TSA planes

If the slice planes in a CBCT image have been changed, then they can be accurately restored to their axial, sagittal, and coronal orientations. With panoramic views and TSA views, the axial slice plane is restored to the plane on which the panoramic curve was originally defined.

› Click .

Hiding/showing all MPR/TSA lines and the panoramic curve

In CBCT images, the slice lines in the MPR and TSA slices and the pano view can be shown and hidden in the light table menu. The slice planes are always displayed in the volume view.

› Click  to fade in the lines.

› Click  to display the lines.

35 Managing images

The following different kinds of information can be saved for each image:

- Image information (e.g., patient, dental notation system, image size, X-ray dose, device)
- Diagnosis (indications, comments)

The image information can be displayed and edited.

35.1 Displaying and editing image information

The image information can be displayed via the image inspector or the light table menu.

The image information is split into different areas depending on the image type:

Dental notation	<p>Assignment of the image to one or more teeth</p> <p>If the <i>Tooth detection</i> feature is activated (pre-selected), the visible teeth are automatically selected on intraoral images. The selection needs to be checked. With the dental notation system  Adult teeth the <i>Detect tooth</i> function can be used to perform automatic tooth detection again.</p> <p>The version of the dental notation system (FDI, UNS, Palmer) is defined in the configuration (see "65.6 Dental notation").</p>
X-ray parameters	<p>Properties of the X-ray image</p> <p>Depending on the image acquisition device, the values are entered manually or transferred by the device.</p> <p>The X-ray parameters can be defined as mandatory fields (see "22.2 Configuring the practice"). Then they need to be filled in before a patient can be logged out or an image can be exported.</p>
Acquisition type	<p>Information about the image acquisition mode and acquisition source of an X-ray image that are used</p>
Image assessment	<p>The quality of an image can be graded as <i>Very good</i>, <i>Acceptable</i>, or <i>Not acceptable</i></p>

Findings	Documentation of the diagnosis Once the flyout has been closed the diagnosis can no longer be changed, but the comments can still be changed. A diagnosis view of the image is saved along with the diagnosis.
Image details	Details about the image cannot be changed.

 The X-ray parameters can be changed as long as the patient is logged in and the image has not been exported. When you log out from the patient or export the image, the X-ray data is finally saved and can then no longer be changed.
In the case of images created with ProVecta S-Pan or ProVecta 3D Prime, the parameters entered by the device (e.g. X-ray parameters, acquisition type, or restoration) cannot be changed.

- › Select an image in the image inspector.
or
Click on the image on the light table.
- › Click  in the light table menu or click on the preview image in the image inspector.
The *Image information* flyout will open.
- › Change the data as required.
Under *Image acquisition type* you can only choose the image acquisition types for the mode class selected during creation of the image.
If the image acquisition type is changed then the saved recommended values for the X-ray parameters can be applied.
- › Under *Dental notation system*, click on one or multiple teeth to select them.
To select more than one tooth at the same time, click on a tooth and keep the mouse button pressed. Then move the mouse cursor over more teeth while keeping the mouse button pressed.
To cancel the marking of a tooth, click on the tooth again.
The dental notation system can change between milk teeth and adult teeth.



› Click  to close the flyout.

 If the image has been matched to the wrong patient's record, it can be re-assigned (see "35.5 Re-assigning an image to a patient").

35.2 Entering indication and diagnosis

A diagnosis, comprising indication, findings and comments, can be added to each image. A "diagnosis" view of the image is saved along with the diagnosis, and can be retrieved via the light table menu (see "Light table menu"). The entry in the *Diagnosis* field is saved by user-name and can no longer be changed after the flyout has been closed. Indication and comments can still be changed.

 In the *Diagnosis* flyout, you can activate the option *Automatically open this window for this image*. In this way, when the image is opened on the light table, the *Diagnosis* flyout is always displayed as well. The setting applies only to this image and can be changed at any time.

- › Click in the light table menu on  or .
- The *Diagnosis* or *Image information* flyout will open.
- › Enter indication, findings and comments.
- › Close the flyout.
- › If the diagnosis has been entered in the *Diagnosis* field, confirm the diagnosis with *Save* in the dialog window.
- › If the registered user is not authorized to write in the *Diagnosis* field, have a user with corresponding authorization authorize the entry in the dialog window (see "71.1 Definition of user roles").
- › Click *Discard* to close the flyout without saving.
- › Click *Cancel* to return to editing the flyout.

35.3 Transferring an image to PACS

This function makes it simple to transfer images to a PACS. The PACS must be configured for this (see "30.3 Configuring the PACS connection"). For images acquired without an active DICOM job (but with defined RIS partner and RIS query), the following options are available for transferring them to the PACS:

- Sending images without job data to PACS
- Send images later via the pending transfer list
- Assigning images to RIS job and send to PACS

Multiple images can be exported using the *Multiple Selection* function in the "Image inspector" (see "Multiple selection").

If the transfer to PACS does not succeed, the transfers will be saved in a list (see "Pending transfers to PACS partner").

Sending images without job data to PACS:

- › Click  in the light table menu.
- › Select the desired PACS.
- › Click on *Send Without Job Data to PACS*.
The image is sent to the PACS without reference to data so that it can be integrated into the clinical workflow. The image is not assigned to any specific examination, requested procedure, job number, or other data provided by the RIS.

Sending images later via the pending transfer list:

- › Click  in the light table menu.
- › Select the desired PACS.
- › Click on *Add to Pending Transfers*.
The image will not be sent at this time. It will be added to the list of pending transfers and sent at a later time, e. g., when the RIS is active again and a corresponding RIS job can be assigned.

Assigning images to RIS job and send to PACS:

- › Click  in the light table menu.
- › Select the desired PACS.



CAUTION

Personal injury is possible due to wrong assignment of image data to a patient

- › Check the right assignment of the image data (e. g., during image import, change of patient data, or new assignment of image data to a patient).
 - › Observe the information displayed in the software.
- › In the section *Assign to RIS Job and Send to PACS*, select the appropriate RIS job. The list can be updated with *RIS Query*.
 - › Click on *Assign RIS Job*.
The image will be sent to the PACS with reference to the data of the selected RIS job.

User-defined transfer to PACS partner

If you want to transfer images with different transfer settings to a configured PACS, you can use the function *User-Defined Transfer to PACS Partner*.

- › Click  in the light table menu.
- › Select *User-Defined Transfer to PACS Partner*.
- › In the flyout that opens, select the desired PACS.
- › Under *Transfer Settings* select the desired image settings.
- › Click *Send*.
The selected image with the different transfer settings will be sent to the PACS. If the transfer to PACS does not succeed, the transfers will be saved in a list (see "Pending transfers to PACS partner").

Pending transfers to PACS partner

If the images cannot be transferred to the PACS (e. g., due to failed connection to network or server/PACS), they will be saved in a list. In addition, the *Notifications* flyout will appear.

- › In the bottom right, click on .
- › A list with the pending transfers will open.
- › Select one transfer and click on *Details*.
The details will be shown with information on the transfer error.
- › Remedy the transfer error (e. g., re-establish connection to network or server/PACS).

- › If you wish to have all pending transfers sent to the PACS again, click **Retry All**.
If you only want to retry one transfer, select it in the list and click **Retry**.
The transfer will be restarted.
- Deleting a pending transfer:**
- › In the list, select the transfer you wish to delete and click **Delete**.
The transfer will be canceled and the image will not be transferred again to the PACS.

35.4 Transferring images to the practice management program

 This function is only visible if the VDDS media interface is enabled (see "69 Interfaces").

If an image acquisition request is sent from the practice management program to the imaging software, the new images and changes to the image information of existing images can be sent to the practice management program without logging out from the patient record. When you log out the patient or close the imaging software, the new images and changes to the image information are automatically sent to

the practice management program if the VDDS-media interface is enabled.

The button  is active if new images from a VDDS image acquisition request are present.

- › Click  in the light table menu.
The images and image information are transferred to the practice management software. You cannot continue working during the transfer.

35.5 Re-assigning an image to a patient

If images have been saved under the wrong patient's record, they can be reassigned to the correct patient's record on the light table.

 **CAUTION**
Personal injury is possible due to wrong assignment of image data to a patient

- › Check the right assignment of the image data (e. g., during image import, change of patient data, or new assignment of image data to a patient).
- › Observe the information displayed in the software.

- › In the light table menu, click  and then . The search window for the patient records is displayed in a flyout.
- › Search for the patient record under **Recently viewed patient records**.
If the patient record is not listed under **Recently viewed patient records**, you can search the patient database via the search field.

- › Highlight the patient record you require in the list and click  to select it.
The image is matched to the selected patient record.
If the VDDS-media interface is enabled, the change will be automatically transferred to the practice management program.

35.6 Delete an image

If images are no longer required, they can be deleted.

In the image archive, the button  is displayed on the image if the image can be deleted.



X-ray images recorded with the software cannot be deleted until the retention period required by law has expired (see "70.1 Configuring").

- › In the image archive, click  on the image.
or
If the image is open on the light table, go to the light table menu and click .
- If it is possible to delete the selected image, you will be asked whether you really want to delete it.
- › Answer **Yes** to confirm.
The image will be permanently deleted.

35.7 Multiple selection

One or more images can be edited using the "Image inspector's" multiple selection tool without the images being open on the light table.

Opening multiple selection:

- › Click on **Multiple selection** to open the function group.

- › Check the check box next to the preview image for each image that is to undergo further processing using the multiple selection tool.
The check box can also be activated in the data bar. This selects all images recorded on the same day.

Exporting images:

- › Click .
- The selection list for the image export mode will open.
- › Select the correct image export mode.
The image-export modes can be modified (see "Configuring"). The user-defined export can be adjusted for every export, and the chosen settings are saved locally for the next use.
The images can also be exported to a data carrier, see "Creating a patient medium".
The selected images will be exported to the defined path.
You can also use the light table to export a single image (see "Configuring").

Loading to light table:

- › Click .
- › Click **Load**.
All selected images will be loaded to the light table.

Delete:

- › Click .
- › A prompt will be displayed to check whether you definitely want to delete the selected images.
- › Confirm the question.
The images are then permanently deleted.
X-ray images that are still within their legally required retention period cannot be deleted.
A notification message is displayed.

Transfer to practice management program (if the VDDS-media interface is enabled):

- › Click .
The selected images are transferred to the practice management program.

36 Managing jobs

For every pending image acquisition, you can create a job that can then be accepted and edited via the job overview at every workstation of a multi-station installation.

This allows the jobs to be processed at the workstation to which the corresponding image acquisition device is connected.

The jobs are listed in the job overview.



36.1 Displaying a job overview

All pending jobs (VisionX and DICOM) are listed in the job overview. If several practices have been created then only the jobs for the currently logged-in practice are visible. Jobs that have been accepted at a different workstation are not displayed (this applies to VisionX jobs only – DICOM jobs remain visible). DICOM jobs are only displayed if the workstation has been defined as a DICOM workstation.

If there are any BDW jobs from another practice, the number of open jobs of the other practice is displayed at the end of the job overview. Click on this information to switch to another practice.

The job states are indicated by means of an icon. A distinction is made between VisionX and DICOM jobs:

VisionX job	DICOM job	Description
		New job
		Job active
		Job paused
		Job completed
		Job cancelled

The jobs can be sorted by column (e.g., date, image acquisition type).

In addition, the following filters are available (in the upper area, click on **Show options**):

Show favorites only: If this is activated, jobs will only be displayed for the X-ray stations that have been marked as favorites for this workstation.

Show completed and canceled jobs: If this option is not enabled, only jobs with the **New**, **Active** (own workstation only), or **Paused** states will be displayed. If enabled, jobs with the **Finished** or **Canceled** states will also be displayed.

The filter settings are saved separately for each workstation.

- › In the menu bar, click on job overview. The flyout **Jobs** opens.
- › Select the job in the list to view the details for a job. The job details are displayed.

36.2 Creating a job

A new image acquisition job can be created in two ways depending on whether or not the patient is currently logged in.

Only jobs within the imaging software can be created. For DICOM jobs, the imaging software can only be used to process jobs but not to create them.

- › If the patient is logged in: Click in the menu bar. or If the patient is not logged in: Select the patient in the patient management and click . The flyout **Create job** opens.
- › Select the image acquisition type. If the **Favorites** view is enabled under **Displayed image acquisition types**, only the image acquisition types that are defined as favorites for the workstation are displayed. If the selection **All** is enabled, all available image acquisition types are displayed.
- › Select the acquisition source with which the job is to be performed. If **Any acquisition source** is selected, the acquisition source is not defined until the job is carried out.
- › Add comments as required. The comments are also displayed in the job overview.

- › Close the flyout.

The job appears as a planned job  in the job overview, see "36.1 Displaying a job overview". If a workstation is linked in the X-ray station (see "68.4 Job management"), the job is automatically accepted and the recording unit is ready in standby.

36.3 Editing a job

Requirements:

- ✓ No other image acquisitions are in progress (X-ray or video)

Accepting a job:

- › Click on  in the menu bar.

The flyout **Jobs** opens.

- › Select the job you wish to edit from the list. Jobs with the **New** or **Paused** state can be accepted.

DICOM jobs can also be accepted if they have the **Finished** or **Canceled** states.

DICOM jobs must be loaded by the RIS via **RIS Query** unless the automatic query option is enabled (see "Configuring the RIS query").

If the automatic query option is disabled, update the list regularly using **RIS Query**.

The job details are displayed.

- › Click .

or

Double-click the job in the list.

The image acquisition is started; if necessary, you will still need to select the acquisition source and acquisition mode.

The job disappears from the list on the other workstations.

If the job is a DICOM job, the patient's data will be passed to the imaging software.



The information about the active job can be called up in the patient data bar under **Job information**.

Interrupting the job processing:

- › Click  in the patient data bar.

The job is interrupted. It can be continued from any workstation of a multi-station installation.

- › To continue processing the paused job, re-accept the job in the  job overview.

Complete job:



The job can only be finished if all mandatory information for the acquired images has been entered.

- › Click  in the patient data bar.

Depending on the configuration, the job will also be automatically finished when a new job is accepted, the patient or practice is logged out, or the imaging software is closed down.

36.4 Canceling a job

A job can only be canceled if it has the  **Waiting** or  **Paused** state.



In the **Jobs** flyout, the canceled jobs are also displayed if the option **Show finished and canceled jobs** has been activated.

- › Click on  in the menu bar.

The flyout **Jobs** opens.

- › Select the job you wish to cancel from the list. The job details are displayed.

- › Click .

The job is canceled.

37 Acquiring images

The imaging software allows the user to create or import X-ray and video images using the connected devices.

 Before the recording of an X-ray image of a female patient can be started, a dialog window with a pregnancy query is shown. This query is shown only once while the female patient is logged in.

The *Pregnancy query* can also be disabled, see "70.1 Configuring". As a matter of rule, the dentist is responsible for the query.

37.1 Importing X-ray images using ScanX

Requirements:

- ✓ Patient is logged in.
- ✓ No other image acquisitions are in progress (X-ray or video).
- › In the menu bar, click the desired image acquisition type (e. g. ,  for the preferred intraoral image).
Via  you can call up further acquisition types that belong to the grouping.
The acquisition types in the favorites may differ depending the configuration (see "67.1 Configuring").

 Depending on the configuration of the acquisition types (see "67 Acquisition types"), the software is either immediately ready for the X-ray acquisition, or you will first need to select the acquisition source and the image acquisition mode.

- › Select the acquisition source and image acquisition mode and enter any X-ray parameters as required (if they are not already defined in the configuration).
- › Import the X-ray image at the phosphor storage plate scanner.

 For more information, see the installation and operating instructions for the device.

Image acquisition will now start. The preview window opens up.

The image state or a preview of the image is shown in the preview window.

The image is automatically saved.

- › Import further images if required.

- › Once you have finished recording the last image, click *Finish imaging*.

The preview window is closed. All acquired images are transferred to the image archive of the logged on patient. The newest images appear at the top of the image archive.

If automatic image rotation is enabled, the software will check the orientation of the image during the transfer of intraoral images to the image archive and then rotate the image as required. The rotation can be made undone, see "40 Editing images".

Afterwards, the images can be opened on the light table and edited from the image archive (see "40 Editing images"). Similarly, indications can be entered via the functions in the light table menu, or the image information can be edited (see "35 Managing images").

- › If the image is marked with  in the image archive, enter the X-ray parameters (see "Entering X-ray parameters/image information").

Entering X-ray parameters/image information

If the X-ray parameters have not been entered or pre-selected in the configuration (see "25.3 Entering recommended values for X-ray parameters") and the *X-ray parameters mandatory* function is activated (see "70 Practices"), then the X-ray parameters will need to be entered separately for each image under .

If the X-ray parameters have been entered or they are pre-selected in the configuration, the X-ray parameters are automatically adopted for the first imported image. These values can also be applied to the other images.

All fields marked with  are mandatory fields and must be filled in.

- › Click .
- The *Image information* flyout will open.

- › Enter the X-ray parameters.
If the X-ray parameters have been entered or they are pre-selected in the configuration, the X-ray parameters are automatically adopted for the first imported image. If the pre-selected parameters are also to be applied to the other images, go to *Image information* for each image and click the button *Apply values*.

- › It is optionally also possible to mark the tooth under *Dental notation system* (multiple selection is possible).
By placing the marker in the dental notation system, the image acquisition type is also automatically selected if it has not already been selected beforehand.
- › Optionally select the corresponding image acquisition type under *Image acquisition type*.
- › Click  to close the flyout.

37.2 Creating an X-ray image with ScanX in the SmartScan workflow

With the aid of ScanX Smart Reader, IDX phosphor storage plates can be directly assigned to a patient. The images are then automatically assigned to this patient when they are scanned. A SmartScan-capable phosphor storage plate scanner is required for scanning (refer to the installation and operating instructions for the device).

The assignment of the phosphor storage plate to a patient remains active for a maximum of 8 hours and is deleted as soon as the image has been scanned and assigned to the patient. The status of the Smart Reader can be seen from the status indicator, see "Status indicator Smart Reader"

Requirements:

- ✓ Smart Reader is connected, status indicator lights up blue
- ✓ SmartScan workflow () present in the menu bar.
- ✓ Phosphor storage plate scanner is SmartScan-capable.
- ✓ Patient is logged in.
- ✓ No other image acquisitions are in progress (X-ray or video).
- › Click on () in the menu bar.
The dialog window opens.
Status indicator Smart Reader lights up green .
- › If multiple X-ray stations have been created for a phosphor storage plate scanner, select the X-ray emitter.

- › Hold up the phosphor storage plate to the Smart Reader.
The phosphor storage plate is assigned to the logged-in patient.
Status indicator Smart Reader lights up green , a rising audible signal sounds  (if configured).
It is also possible to assign multiple phosphor storage plates to the patient. The dialog window shows the number of phosphor storage plates that are currently assigned to the patient.
- › Create the X-ray images.
- › Import the X-ray image at the phosphor storage plate scanner.



For more information, see the installation and operating instructions for the device.

The image is transferred to the image archive of the assigned patient. The most recent image appears at the top of the image archive.

- › Import further images if required.
If automatic image rotation is enabled, the software will check the orientation of the image during the transfer of intraoral images to the image archive and then rotate the image as required. The rotation can be made undone, see "Display".
Afterwards, the images can be opened on the light table and edited from the image archive (see "40 Editing images"). Similarly, indications can be entered via the functions in the light table menu, or the image information can be edited (see "35.1 Displaying and editing image information").
- › If the image is marked with  in the image archive, enter the X-ray parameters (see "Entering X-ray parameters/image information").

Assigning unassigned images

If phosphor storage plates have been scanned in the SmartScan workflow without being assigned to a patient, an additional button will appear in the menu bar: (). The number of images that have not been assigned is shown in orange.

- › Click ().
- › In the dialog window, select one or (if applicable) multiple images and click *Assign to logged-in patient*.
or
- › In the dialog window, click *Assign to a different patient* and select the patient.

Checking the generated X-ray station

If no X-ray station has been created yet with the X-ray emitter and image acquisition device being used, a new X-ray station is generated when the image is scanned.

On the light table, a warning symbol  appears next to the image that was created with the generated X-ray station.

This X-ray station must be checked and enabled.

- › In the patient bar, click **Generated X-ray station present**.
- › In the dialog window, click **Configure X-ray stations...**
The **X-ray stations** configuration opens.
- › Select the generated X-ray station and click **Configure**.
- › Check the configuration and make any changes as required.
- › Click **Enable X-ray station**.

Deleting the assignment of the phosphor storage plate

The assignment of phosphor storage plates to a patient or to all patients in a practice can be deleted. If this is done, all the patient information associated with the phosphor storage plate is lost.

This function is only available to the user roles X-ray assistant, Dentist, and Administrator.

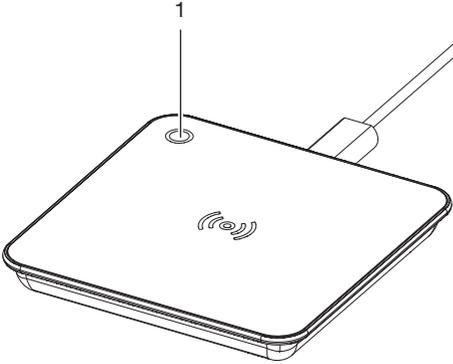
- › Click **(i)**.
The flyout shows how many phosphor storage plates are assigned to the logged-in patient.
- › Click **Delete assignments**.
- › Click **This patient** to cancel the assignment of the phosphor storage plates to the logged-in patient.
- › Click **All patients** to cancel the assignment of the phosphor storage plates to all patients in the practice.



If an X-ray image is already present on the phosphor storage plate, it can still be scanned, see "Assigning unassigned images" or "37.1 Importing X-ray images using ScanX".

Status indicator Smart Reader

The status indicator of the Smart Reader forwards the following status messages. In addition, audible signals can be activated in the configuration, see "65.2 Workstation".



1 Status LED

Status LED	Audible signal	Meaning
	Blue	Connected to computer
	Green	Ready – expecting a phosphor storage plate for scanning
	Green  (2 rising notes)	Phosphor storage plate detected and assigned to the patient
	Briefly orange, then yellow  (2 identical tones)	Phosphor storage plate has already been assigned to another patient › Refer to the notes in the imaging software
	Green  (2x 2 rising notes)	Phosphor storage plate has been successfully assigned to another patient
	Pink	An error has occurred. › Disconnect and reconnect the device. › Inform a service technician if necessary.

37.3 Taking an X-ray image using ProVecta S-Pan

 The image can only be taken with the reconstruction PC that is directly connected to the image acquisition device. After the image has been saved in the database, the image can be viewed and edited at all workstations.

Requirements:

- ✓ VisionX is started.
- ✓ Patient is logged in.
- ✓ No other image acquisitions are in progress (X-ray or video).
- › In the menu bar, click on the required image (e.g.  for a standard panoramic image). Via  you can call up further acquisition types that belong to the grouping.

 Depending on how the image acquisition types are configured, the acquisition of the X-ray image will start either immediately or you will first need to select an X-ray station.

- › If image acquisition does not begin automatically, select the X-ray station. The patient type, jaw arch, and imaging program parameters are pre-selected according to the patient.
- › Check the parameters (see also "Parameter overview").



- › Click on Parameters to open the flyout for setting the parameters. The changed parameters are immediately synchronized with the device.
- › If the pre-selected parameters are correct, continue to work directly on the device.

The image state or progress is shown in the preview window.

The image is automatically saved.

 For information about operating the X-ray image acquisition device, refer to the operating instructions of the device.

- › If the option *Automatically adopt S-PAN image* is disabled in the configuration (see "Device settings"), select the image from the image selection (S-PAN or PAN).

The selected image is saved, the other one is discarded.

If the option is enabled (pre-selected) then the S-PAN image is automatically adopted.

The preview window is closed. The image is transferred to the image archive of the logged on patient. The newest image appears at the top of the image archive. From there, the images can then be opened on the light table and edited (see "40 Editing images"). In addition, the image information can be edited or an indication can be entered via the functions in the light table menu (see "35 Managing images").

Parameter overview

Patient type

The selection of patient type depends on the patient's size and/or head circumference. This means that the preset patient type may need to be changed, if necessary.

The X-ray parameters are preset using the patient type.

If a child is selected, then the X-ray parameters are different:

- Reduced dose
- Shorter circulation time
- Smaller radiation field

	Tall, well-built patient
	Adult male
	Adult female
	Child (< 13 years of age)

Pano type

Multiple layers are recorded with the S-PAN technology. The optimum Pano recording is produced by selecting the sharpest layer for the horizontal and vertical image areas and then merging these image areas into a single image. S-PAN is preset.

S-PAN



S-PAN

PAN



PAN

Image quality



HD panoramic images
An improved signal/noise ratio is achieved via an extended exposure time.



SD panoramic images
This setting is used for standard images.

Jaw arch

The selected jaw shape affects the rotational behavior of the C-shaped arm during image acquisition. This enables an image with an ideal layer position to be captured even on a particularly narrow or wide jaw.



Normal jaw arch



Narrow jaw arch



Wide jaw arch



Child's jaw arch

Acquisition program, adult

 The selection of the acquisition programs depends on the image acquisition device.

For panoramic images of children, the size of the radiation field is reduced with the aid of an additional collimator. The radiation dose is significantly reduced for this image.

Panoramic images



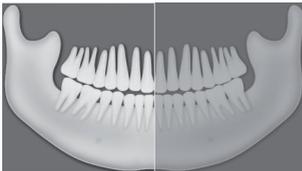
Standard

The standard panoramic image records the complete dental area with ascending dental branches and jaw joints.



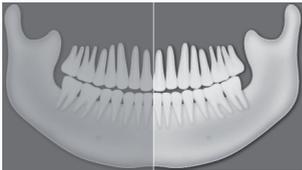
Front

The image shows a reduced dental area without ascending dental branches.



Right

The image only shows the right dental area.



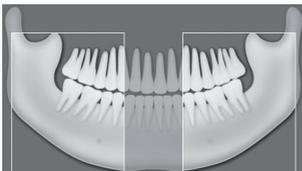
Left

The image only shows the left dental area.



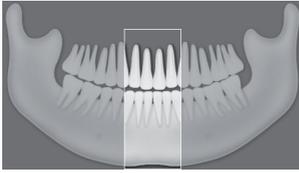
Orthogonal

The image shows the complete dental area and is generated perpendicular to the maxillary arch. This prevents overlapping crowns.

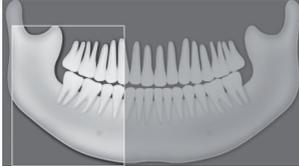


Bitewing

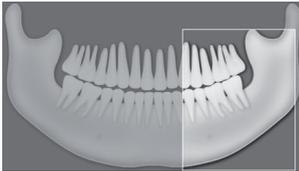
The image shows the lateral dental area with a size limited to the bite wings.

Panoramic images**Bite wing front**

The image shows the anterior dental area with a size limited to the bite wings.

**Bite wing right**

The image shows the right posterior region with a size limited to the bite wings.

**Bite wing left**

The image shows the left posterior region with a size limited to the bite wings.

Temporomandibular imaging**Maxillary joint, lateral**

The image shows the lateral maxillary joints for an open and closed mouth in 4-fold depiction in one image.

**Maxillary joint, PA**

The image shows the posterior-anterior maxillary joints for an open and closed mouth in 4-fold depiction in one image.

Sinus images**Sinus, lateral**

The X-ray image shows the lateral sinuses.

Sinus images



Sinus, PA

The X-ray image shows the posterior-anterior sinuses.

Cephalometric exposures



Head, full lateral

"HD" image quality has been preselected by the user.

The X-ray image shows the patient's head.

Head, lateral

The image shows the forehead of the patient.

The acquisition program can be changed in the "Settings", *see the installation instructions*.



Head, PA

The image shows the posterior/anterior cranium.

It is suitable for semi-axial cranial images and provides a cranial eccentric overview.



SMV

The image shows the cranium in a submentovertebral projection. It is suitable for recording the jaw arch and the jaw joints, for example.

Cephalometric exposures

**Waters View**

This view is suitable for recording the articular head in the mandibular joint socket, for example.

**Carpus**

The image shows the carpus of the patient. It is suitable for providing conclusions on the growth stage of the body/jaw.

Acquisition program, child

For panoramic images of children, the size of the radiation field is reduced with the aid of an additional collimator. The radiation dose is significantly reduced for this image.

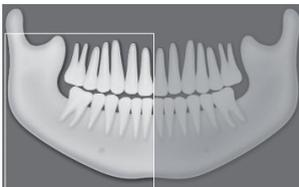
Panoramic images

**Standard**

The standard panoramic image records the complete dental area with ascending dental branches and jaw joints.

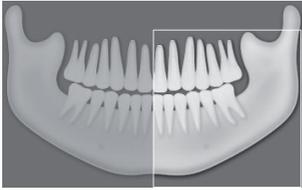
**Front**

The image shows a reduced dental area without ascending dental branches.

**Right**

The image only shows the right dental area.

Panoramic images



Left

The image only shows the left dental area.

37.4 Taking an X-ray image using ProVecta 3D Prime



The image can only be taken with the reconstruction PC that is directly connected to the image acquisition device. After the image has been saved in the database, the image can be viewed and edited at all workstations.

Requirements:

- ✓ VisionX is started.
- ✓ Patient is logged in.
- ✓ No other image acquisitions are in progress (X-ray or video).
- › Click on the required image in the menu bar (e.g.  for a CBCT image). Use  to call up further acquisition types that belong to the grouping. e.g.  for 5x5 maxillary molar right (see "Acquisition types").



Depending on how the image acquisition types are configured, the acquisition of the X-ray image will start either immediately or you will first need to select an X-ray station.

- › If image acquisition does not begin automatically, select the X-ray station. The parameters, imaging volume, and patient shape are pre-selected according to the patient.
- › Check the parameters (see also "Parameter overview").



- › Single-click on  to open the flyout for setting the parameters. The changed parameters are immediately synchronized with the device.
- › If the pre-selected parameters are correct, continue to work directly on the device.

The image state or progress is shown in the preview window.



For information about operating the X-ray image acquisition device, refer to the operating instructions of the device.

The image is automatically saved.

The preview window is closed. All acquired images are transferred to the image archive of the logged on patient. The newest images appear at the top of the image archive. From there, the images can then be opened on the

light table and edited (see "40 Editing images"). Similarly, indications can be entered via the functions in the light table menu, or the image information can be edited (see "35 Managing images").

Parameter overview

Acquisition types



The selection of the acquisition programs depends on the image acquisition device.

CBCT images



CBCT

The CBCT image shows the jaw area.

The size of the jaw area shown depends on the selected image volume.

Resolution*: 200 µm



CBCT 5x5 Maxilla Front

The X-ray image depicts the front region of the maxilla with a volume of 5x5 cm.

Resolution*: 120 µm



CBCT 5x5 Maxilla Premolar left

The X-ray image depicts the left premolar region of the maxilla with a volume of 5x5 cm.

Resolution*: 120 µm



CBCT 5x5 Maxilla Premolar right

The X-ray image depicts the right premolar region of the maxilla with a volume of 5x5 cm.

Resolution*: 120 µm



CBCT 5x5 Maxilla Molar left

The X-ray image depicts the left molar region of the maxilla with a volume of 5x5 cm.

Resolution*: 120 µm



CBCT 5x5 Maxilla Molar right

The X-ray image depicts the right molar region of the maxilla with a volume of 5x5 cm.

Resolution*: 120 µm



CBCT 5x5 Mandible Front

The X-ray image depicts the front region of the mandible with a volume of 5x5 cm.

Resolution*: 120 µm



CBCT 5x5 Mandible Premolar left

The X-ray image depicts the left premolar region of the mandible with a volume of 5x5 cm.

Resolution*: 120 µm



CBCT 5x5 Mandible Premolar right

The X-ray image depicts the right premolar region of the mandible with a volume of 5x5 cm.

Resolution*: 120 µm



CBCT 5x5 Mandible Molar left

The X-ray image depicts the left molar region of the mandible with a volume of 5x5 cm.

Resolution*: 120 µm



CBCT 5x5 Mandible Molar right

The X-ray image depicts the right molar region of the mandible with a volume of 5x5 cm.

Resolution*: 120 µm

* The resolution can be changed to 80 μm in the service menu of the device.

For panoramic images of children, the size of the radiation field is reduced with the aid of an additional collimator. The radiation dose is significantly reduced for this image.

Panoramic images



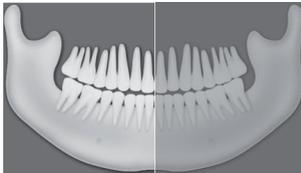
Standard

The standard panoramic image records the complete dental area with ascending dental branches and jaw joints.



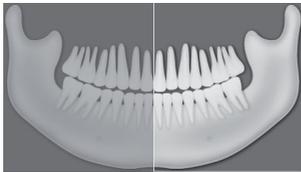
Front

The image shows a reduced dental area without ascending dental branches.



Right

The image only shows the right dental area.



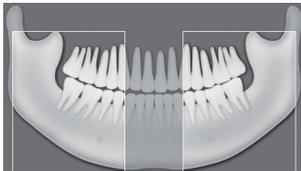
Left

The image only shows the left dental area.



Orthogonal

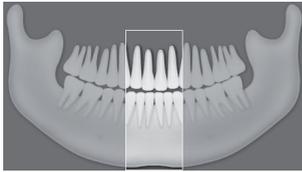
The image shows the complete dental area and is generated perpendicular to the maxillary arch. This prevents overlapping crowns.



Bitewing

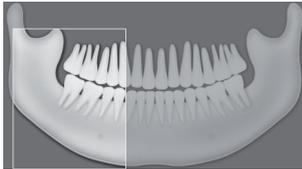
The image shows the lateral dental area with a size limited to the bite wings.

Panoramic images



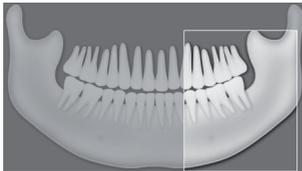
Bite wing front

The image shows the anterior dental area with a size limited to the bite wings.



Bite wing right

The image shows the right posterior region with a size limited to the bite wings.



Bite wing left

The image shows the left posterior region with a size limited to the bite wings.

Temporomandibular imaging



Maxillary joint, lateral

The image shows the lateral maxillary joints for an open and closed mouth in 4-fold depiction in one image.



Maxillary joint, PA

The image shows the posterior-anterior maxillary joints for an open and closed mouth in 4-fold depiction in one image.

Sinus images



Sinus, lateral

The X-ray image shows the lateral sinuses.

Sinus images**Sinus, PA**

The X-ray image shows the posterior-anterior sinuses.

Cephalometric exposures**Head, full lateral**

"HD" image quality has been preselected by the user.

The X-ray image shows the patient's head.

Head, lateral

The image shows the forehead of the patient.

The acquisition program can be changed in the "Settings", see *the installation instructions*.

**Head, PA**

The image shows the posterior/anterior cranium. It is suitable for semi-axial cranial images and provides a cranial eccentric overview.

**SMV**

The image shows the cranium in a submentovertebral projection. It is suitable for recording the jaw arch and the jaw joints, for example.

Cephalometric exposures



Waters View

This view is suitable for recording the articular head in the mandibular joint socket, for example.



Carpus

The image shows the carpus of the patient. It is suitable for providing conclusions on the growth stage of the body/jaw.

Image volume

The selection of the image volume will depend on the patient's size or their head circumference.



Standard image volume for adults

The image acquisition covers a cylindrical region (diameter approx. 10 cm, height approx. 8.5 cm).



Smaller image volume for children

The image acquisition covers a cylindrical region (diameter approx. 10 cm, height approx. 7 cm).

Image quality



An improved signal/noise ratio is achieved via an extended exposure time and a higher dosage.



This setting is used for standard images.

Patient shape

The selection of patient type depends on the patient's size and/or head circumference. This means that the preset patient type may need to be changed, if necessary.

The X-ray parameters are preset using the patient type.

If a child is selected, then the X-ray parameters are different:

- Reduced dose
- Shorter circulation time
- Smaller radiation field



Tall, well-built patient



Adult male



Adult female



Child (< 13 years of age)

Jaw arch

The selected jaw shape affects the rotational behavior of the C-shaped arm during image acquisition. This enables an image with an ideal layer position to be captured even on a particularly narrow or wide jaw.



Normal jaw arch



Narrow jaw arch



Wide jaw arch



Child's jaw arch

37.5 Recording an X-ray image with SensorX



Each SensorX sensor requires individual calibration data. This data is enclosed with the sensor on a calibration data carrier and needs to be installed for each sensor.

Requirements:

- ✓ Patient is logged in.
- ✓ No other image acquisitions are in progress (X-ray or video).
- › In the menu bar, click the desired image acquisition type (e. g. ,  for the preferred intraoral image).

Via  you can call up further acquisition types that belong to the grouping.

The acquisition types in the favorites may differ depending the configuration (see "67.1 Configuring").



Depending on the configuration of the acquisition types (see "67 Acquisition types"), the software is either immediately ready for the X-ray acquisition, or you will first need to select the acquisition source and the image acquisition mode.

- › Select the acquisition source and image acquisition mode and enter any X-ray parameters as required (if they are not already defined in the configuration).
- › Record an X-ray image.



For more information, see the installation and operating instructions for the device.

Image acquisition will now start. The preview window opens up.

The image state or a preview of the image is shown in the preview window.

The image is automatically saved.

- › Import further images if required.

- › Once you have finished recording the last image, click *Finish imaging*. The preview window is closed. All acquired images are transferred to the image archive of the logged on patient. The newest images appear at the top of the image archive. During the transfer of intraoral images into the image archive, the software checks the orientation of the image and might rotate the image. The rotation can be made undone, see "40 Editing images". Afterwards, the images can be opened on the light table and edited from the image archive (see "40 Editing images"). Similarly, indications can be entered via the functions in the light table menu, or the image information can be edited (see "35 Managing images").
- › If the X-ray parameters have not been entered or pre-selected in the configuration (see "68.3 Image processing:") and the *X-ray parameters mandatory* function is activated (see "70.1 Configuring"), then the X-ray parameters will need to be entered separately for each image under . If the X-ray parameters have been entered or they are pre-selected in the configuration, the X-ray parameters are automatically adopted for the first imported image. If the pre-selected parameters are also to be applied to the other images, go to *Image information* for each image and click the button *Apply values*. In addition, where applicable you should also select the tooth (multiple selection is possible) under *Dental notation system* and select the corresponding image acquisition type under *Image acquisition type* for which the image was created. By placing the marker in the dental notation system, the image acquisition type is also automatically selected if it has not already been selected beforehand.

37.6 Taking an X-ray image with a TWAIN device

Requirements:

- ✓ Patient is logged in
- ✓ No other image acquisitions are in progress (X-ray or video)

- › In the menu bar, click the desired image acquisition type (e. g. ,  for the preferred intraoral image). Via  you can call up further acquisition types that belong to the grouping. The acquisition types in the favorites may differ depending the configuration (see "67.1 Configuring").

 Depending on the configuration of the acquisition types (see "67 Acquisition types"), the software is either immediately ready for the X-ray acquisition, or you will first need to select the acquisition source and the image acquisition mode.

- › Select the acquisition source. The TWAIN logo is displayed in the preview window. The software of the TWAIN device opens.
- › Produce or import an X-ray image on the device.

 For more information, see the installation and operating instructions for the device.

The image is automatically saved. The image is transferred to the image archive of the logged on patient. The newest images appear at the top of the image archive. From there, the image can be opened and edited on the light table (see "40 Editing images"). Similarly, indications can be entered via the functions in the light table menu, or the image information can be edited (see "35 Managing images").

- › If an image acquisition needs to be canceled, e.g., due to a device fault, click  >  in the preview window. The image acquisition is canceled. During the next image acquisition with the TWAIN device, the image transfer will be repeated if necessary, and it is possible that the image will be assigned to the wrong patient.
- › Import further images if required.

› If the X-ray parameters have not been entered or pre-selected in the configuration (see "Parameters") and the *X-ray parameters mandatory* function is activated (see "70.1 Configuring"), then the X-ray parameters will need to be entered separately for each image under .

If the X-ray parameters have been entered or they have been pre-selected in the configuration, the X-ray parameters are automatically adopted for the first imported image. If the pre-selected parameters are also to be applied to the other images, go to *Image information* for each image and click the button *Apply values*. In addition, where applicable you should also select the tooth (multiple selection is possible) under *Dental notation system* and select the corresponding image acquisition type under *Image acquisition type* for which the image was created. By placing the marker in the dental notation system, the image acquisition type is also automatically selected if it has not already been selected beforehand.

37.7 Creating a video image with an intraoral camera

A separate imaging window will open for video images. The imaging window is made up of the preview window and the image inspector. If the camera is active, the live image from the camera can be seen in the preview window. If the camera is not active an animation is shown in the preview window.

If the symbol  is displayed in the upper right corner of a Spectra exposure, the boost filter is active (see also "65.9 Boost filter"). Only the currently acquired images are displayed in the image inspector. When the imaging window is closed the images are transferred to the image archive of the patient.

Requirements:

- ✓ Patient is logged in
- ✓ No other image acquisitions are in progress (X-ray or video)

› Click on  in the menu bar.

The image acquisition window opens. If a camera has already been pre-selected in the configuration (see "66.2 CamX"), then the video preview can be seen. If no camera is pre-selected, then a device needs to be selected. If the camera is not active, an animation is shown in the preview window.

- › If the video preview is not visible, select the device in the image bar.
- › If an animation is shown in the imaging window, activate the camera (e.g., take it out from the handpiece holder or attach an interchangeable head).
- › Click  to expand the video image to full screen if necessary.
- › Depending on the camera or the interchangeable head used, the video settings for the preview can be adjusted via  (see "Adjusting the video settings").
- › If the camera supports the live caries filter, then the video preview can be switched between prophylaxis view  and caries view .
- › Position the camera and take a freeze-frame shot using the capture ring or by clicking . The acquired images are automatically saved for the logged-in patient and displayed in the image inspector. For Spectra images, select the caries view  or the prophylaxis view . If there is too much ambient light during acquisition of a Spectra image,  is displayed. The caries filter cannot be used with this image.
- › To view an image again in the preview window, select the image in the image inspector.
- › Delete images that are not required by clicking .
- › Enter image information via  (only the dentition type and the dental notation are available in the image inspector). The image information can be edited or an Indication can be entered later on via the functions in the light table menu (see "34.2 Light table").
- › Use the capture ring or click on  to return to the video preview.

- › Once you have finished recording the last image, click *Finish imaging*. The imaging window will be closed. All images are displayed in the image archive of the logged-in patient. From there, the images can then be opened on the light table and edited (see "40 Editing images").

Adjusting the video settings

Depending on the camera used, the video settings can be adjusted in the preview window.

-  **Brightness** Adjust the brightness of the preview image with the slider
-  **Contrast** Adjust the contrast of the preview image with the slider
-  **Saturation** Adjust the saturation of the preview image with the slider
-  **Sharpness** Adjust the sharpness of the preview image with the slider
-  **Gamma** Adjust the gamma value of the preview image with the slider
-  **Res** Adjust the resolution of the preview image

The video settings are reset to the standard values with *Reset*.

37.8 Recording a video with a TWAIN device

A separate imaging window will open for video images. The imaging window is made up of the preview window and the image inspector. Moreover, the software of the TWAIN device opens.

The TWAIN logo is displayed in the preview window.

Only the currently acquired images are displayed in the image inspector. When the imaging window is closed the images are transferred to the image archive of the patient.

Requirements:

- ✓ Patient is logged in
- ✓ No other image acquisitions are in progress (X-ray or video)

- › Click on  in the menu bar. The image acquisition window opens.
- › Select the TWAIN source *Video DataSource* in the image bar. The software of the TWAIN device opens.
- › Record a still image with the camera software. The recorded image is automatically saved to the registered patient and is displayed in the preview window and in the image inspector.
- › To view an image again in the preview window, select the image in the image inspector.
- › Delete images that are not required by clicking .
- › Enter image information via  (only the dentition type and the dental notation are available in the image inspector). The image information can be edited or an Indication can be entered later on via the functions in the light table menu (see "35.1 Displaying and editing image information").
- › Record additional still images with the camera software.
- › Close the camera software after the last image acquisition. The imaging window will be closed. All images are displayed in the image archive of the logged-in patient. From there, the images can then be opened on the light table and edited (see "40 Editing images").

37.9 Creating an image series

An image series is used to combine the newly acquired X-ray or video images directly in a view. The view can be reopened at any time, see "Creating views".

The existing layouts and views can be managed via the light table menu, see "Views and layouts".

- › Click  in the light table menu.

- › Select a layout under *New view*.

When doing this, make sure that the option *Fill frame with current images* is deactivated. A new view is opened on the light table. The first frame is active.



If required, it is also possible to activate a different frame (e.g. #3). Afterwards the next free frame will then be free (e.g. #4).

- › Create an image for the active frame. The image is inserted in the active frame. The next frame is active. If the image class of the acquired image does not match the image class of the frame, the image is marked with .
- › Create further images until all frames are filled.
- › If a frame is not required, close the frame with  and remove it from the view.
- › To save and close the view, click . The view can be opened again, changed, or deleted, see "26 Acquisition types".

38 Importing images

An image can be imported into the software in any of the following ways:

- "38.1 Importing image data via drag & drop"
- "38.2 Importing image files (single image import)"
- "38.6 Importing an image from the image cache (cache image import)"
- "38.4 Importing the DICOMDIR directory (DICOMDIR import)"
- "38.5 Importing an image from the device memory (stand-alone/retrieve)"
- "38.3 Importing CBCT series (DICOM series import)"

Patient metadata can be saved along with the image, allowing the image to be saved under a new patient record or allowing it to be matched to the relevant patient record that already exists. In addition, the image can also be matched to an existing patient record.

Depending on the information saved with the image, the image may be matched to an existing patient record, or a new patient record can also be created.

The following file formats can be imported:

- DICOM (*.dcm)
- PNG (*.png)
- TIFF (*.tif, *.tiff)
- JPEG (*.jpg)
- JPEG 2000 (*.jp2, *.j2k)
- Bitmap (*.bmp)
- XTF (original image state) (*.xtf)
- VTF (*.vtf)
- XYZ (*.xyz)

In addition, a DICOM series, i.e., a directory with individual layer images, can be imported. However, the DICOM series must have been taken with an Air Techniques X-ray unit.

38.1 Importing image data via drag & drop

Individual images or directories can be imported via drag & drop.

- › Select one or more image files in a directory. or Select a directory containing image files.

- › Click and hold down the mouse button and drag the files into the window of the imaging software (drag & drop).
The dropzone appears above the software interface.
- › Release the mouse button.
The **Image import** flyout opens.
- › Select the image type for the image.
- › Enter the recording date.
If multiple images do not have a recording date, it is possible to define a global recording date for them in the upper area of the flyout.
- › If you want to match the image to the patient record you are logged into, click **Import to current patient record**.
- › If the image contains patient data that you want to transfer into the software, click **Import via image information** to import.
- › If you want to match the image to another patient record, click **Import to a different patient record** and select the patient record.
- › If multiple images are imported from different patients, only activate the images of one patient in the structure and import them for this patient.
The **Image import** flyout remains open.
The remaining images can then be assigned to a different patient.

38.2 Importing image files (single image import)

- › Click on  in the menu bar.
- › In the **Image import** flyout, click on .
- › Select one or more image files.
- › Click **Open**.
- › Select the image type for the image.
- › A separate image acquisition date can be entered for each image.
If there are images without an image acquisition date, it is possible to define a global acquisition date for them in the upper area of the flyout.
- › If you want to match the image to the patient record you are logged into, click **Import to current patient record**.
- › If the image contains patient data that you want to transfer into the software, click **Import via image information** to import.

- › If you want to match the image to another patient record, click **Import to a different patient record** and select the patient record.

38.3 Importing CBCT series (DICOM series import)

CBCT images that are available as a series of DICOM files (CT Image Storage or Enhanced CT Image Storage) can be imported (layers are stored individually in a directory).

CBCT images that exist as a single DICOM file (only one file with the extension “.dcm”) can be imported with  (see “38.2 Importing image files (single image import)”).

Requirements:

- ✓ The VisionX 3D module has been licensed
- › Click on  in the menu bar.
- › In the **Image import** flyout, click on .
- › Select a directory.
- › Click **Open**.
- › If you want to match the image to the patient record you are logged into, click **Import to current patient record**.
- › If the image contains patient data that you want to transfer into the software, click **Import via image information** to import.
- › If you want to match the image to another patient record, click **Import to a different patient record** and select the patient record.

38.4 Importing the DICOMDIR directory (DICOMDIR import)

- › Click  in the ribbon.
- › In the **Image import** flyout, click on .
- › Select the DICOMDIR directory that is to be imported.
- › In the flyout, select the images that are to be imported.
On the right-hand side you will see the images that are being imported.
- › If necessary, select the image type.
- › A separate image acquisition date can be entered for each image.
If there are images without an image acquisition date, it is possible to define a global acquisition date for them in the upper area of the flyout.
Images without an acquisition date are not imported.

› If you want to assign the images contained in the directory to the patient record you are logged into, click *Import to current patient record*.

If you want to assign the images contained in the directory to a different patient, click *Import to a different patient record*.

If the included patient data is to be used, click on *Import via image information* to import.

› Select one or more image files.

› If you want to match the image to the patient record you are logged into, click *Import to current patient record*.

› If you want to match the image to another patient record, click *Import to a different patient record* and select the patient record.

38.5 Importing an image from the device memory (stand-alone/retrieve)

› Click  in the ribbon.

› In the *Image import* flyout, click on .

› Select the required device.

› In the flyout, select the images that are to be imported.

On the right-hand side you will see the images that are being imported.

› If necessary, select the image type.

› A separate image acquisition date can be entered for each image.

If there are images without an image acquisition date, it is possible to define a global acquisition date for them in the upper area of the flyout.

Images without an acquisition date are not imported.

› If you want to assign the images contained in the directory to the patient record you are logged into, click *Import to current patient record*.

If you want to assign the images contained in the directory to a different patient, click *Import to a different patient record*.

If the included patient data is to be used, click on *Import via image information* to import.

38.6 Importing an image from the image cache (cache image import)

If it is not possible to transfer an image to the server after it is created, then it is saved in the image cache of the workstation (see "65.1 Image cache").

The import from the image cache can then be manually triggered from the workstation.

› Click  in the ribbon.

› In the *Image import* flyout, click on .

39 Exporting images

39.1 Exporting images

Various predefined image export modes and a user-defined export are available for image exporting. The predefined modes can be adapted (see "Image export modes..."). The following settings can be selected during the user-defined export (see also "Image export modes..."):

- Destination type
- File path
- File name
- Image status
- 2D/3D X-ray format or video format
- Anonymization of the data
- Embed viewer

The selected settings for the user-defined export are saved locally and can be reused during the next export.

The images can also be exported to a data carrier, see "Creating a patient medium".

- › Click  in the light table menu.
The selection list for the image export mode will open.
- › Select the correct image export mode.
The selected image will be exported to the defined path.
More than one image can be exported at a time using the **Multiple selection** function in the "Image inspector" (see "Multiple selection").

Creating a patient medium

If the computer has a CD/DVD burner, you can burn individual images or multiple images for a patient onto a data carrier (CD or DVD). In addition to the images, you can also burn a viewer onto the data carrier as well (see "Image export modes...").

Exporting individual images from the light table to a patient medium:

- › Select an image on the light table.

- › In the light table menu, click  > *Patient medium*.

The data will be saved to the burning directory of the CD/DVD burner (e.g., *DVD-RW drive (E:)*) or to the virtual burning directory.

- › Change to the burning directory and click **Burn to data carrier**.
You may also use your own burning software instead. For this, the data from the imaging software is also placed in a directory. This directory will be identified in the notifications. You can then use your own burning software to burn the data from this directory onto a CD/DVD.
- › Insert the data carrier and follow the instructions in the disc burning software.

Exporting multiple images from the light table to a patient medium (Windows):

- › In the multiple selection, choose all images that are to be exported.
- › In the multiple selection, click  > *Patient medium*.
The data will be saved to the burning directory of the CD/DVD burner (e.g., *DVD-RW drive (E:)*) or to the virtual burning directory.
- › Change to the burning directory and click **Burn to data carrier**.
You may also use your own burning software instead. For this, the data from the imaging software is also placed in a directory. This directory will be identified in the notifications. You can then use your own burning software to burn the data from this directory onto a CD/DVD.
- › Insert the data carrier and follow the instructions in the disc burning software.

39.2 Exporting an image to an external application

This function is used to transfer any image to an external application. The image is saved to a temporary folder. When the external application is launched, the image is automatically loaded to the external application.

Requirements:

- ✓ External application has been added to the configuration (see "Add external application")
- ✓ At least one image is opened on the light table (see "34 Displaying images")

- › Click  in the light table menu.
If more than one external application has been configured, a selection list will open.
If only one external application has been configured, the image will be transferred immediately.
- › Select the desired external application.
The selected image will be transferred to the external application. During transfer, the imaging software is disabled for other operations.
Work can continue once the transfer has been successfully completed.

40 Editing images

The images can be edited on the light table (see "40.1 Toolbox").

In addition, default image settings can be saved for each X-ray station, so that every time a new image is recorded, it is automatically displayed on the light table with these settings (see "40.2 Managing default image settings").

40.1 Toolbox

The toolbox contains tools for editing the images on the light table.

The tools are divided into the following groups and can be expanded or collapsed by clicking



The selection of tools depends on the image selected on the light table.

Once it has been edited, the image is saved with the preview in the "Image inspector" as soon as another image is selected on the light table or the image is cleared from the light table.



The changes to the image will be saved alongside the original image. The original image (*Original image*) can be displayed again by clicking on the selection list in the light table menu.

3D

In cone beam computed tomography (CBCT), three-dimensional volume data is reconstructed from a large number of individual two-dimensional X-ray images. These 3D renderings are used for display purposes only and can be viewed and evaluated in different views and slices.

There are three different views (see "Navigating in CBCT images (3D)") based on multiplanar reconstruction (MPR). Alongside the volume view, the MPR view shows three slices: The axial, sagittal, and coronal slices. These slices can be individually modified.

In the panoramic view, the axial and sagittal slice are shown as well as the panoramic view (similar to a 2D panoramic X-ray image) and a transversal layer image (TSA).

With the TSA view, the axial slice, the panoramic view, and also several transversal layer images are displayed. The number of TSA views can be adjusted.

Navigating in CBCT images (3D)

Various functions can be used to navigate through the slice planes/layers in the CBCT images. With the aid of these functions, the slice planes can be moved or rotated in such a way that the important regions can be made visible for the examination.

In the illustration below, all of the navigation functions have been made visible. Depending on the view (panoramic, TSA, MPR) and slice plane, not all of the functions may be available.

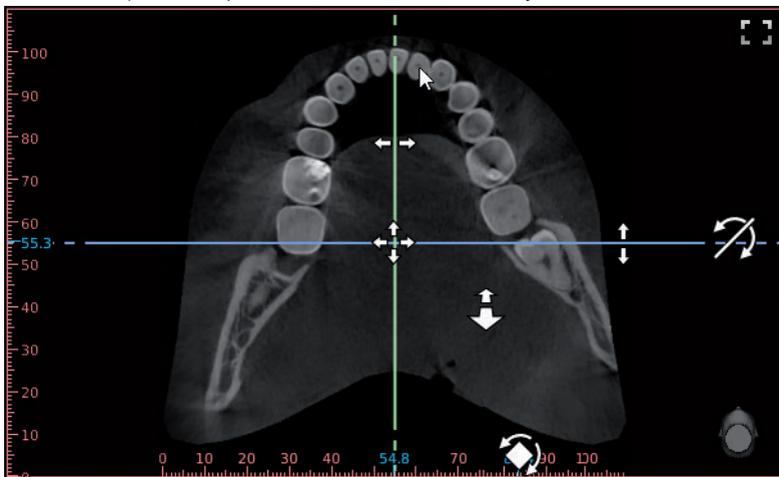


Fig. 1: Example image showing all of the navigation functions

	Jump to this point	Double-clicking in a view (except in the volume view) will take you to the corresponding point in the volume. The slice planes in all views are shifted accordingly.
	Moving individual slice planes	Press and hold the left mouse button on a slice plane to drag it horizontally/vertically.
	Moving two slice planes together	Press and hold the left mouse button on the intersection between two slice planes to move them together at the same time.
	Rotating slice planes	Press and hold the left mouse button on the dotted edge of a slice plane to rotate it.

	Tilting slice planes	Press and hold the left mouse button in the edge region of the view to tilt the slice pane.
	Scrolling through the layers	Press and hold the left mouse button in a free area in the view to scroll through the layers. You can also press and hold the shift key and then use your mouse wheel to scroll through the layers. This function is useful if you are using the left mouse button to set anchor points (for example, when setting a nerve canal).

An orientation button showing the current viewing angle onto the patient is displayed at the bottom right of every view .



The standard orientation of the slice planes can be restored in the light table menu .

The view can be changed in the volume view. The slice planes are displayed in the volume view, but they cannot be changed here.

	Moving image sections	Press and hold the right mouse button to move the image section upwards/downwards or to the left/right. You can also hold the shift key and use your right mouse button to move the image section up/down and left/right. This function is useful if you are using the right mouse button to set anchor points (for example, when setting a nerve canal).
	Rotating the view	Press and hold the left mouse button to rotate the view.
Increasing/decreasing the detail in size (zoom)		Rotate the mouse wheel or use the zoom tools in the toolbox (see "Display") to increase or reduce the image section. If the option <i>Same zoom in all views</i> is enabled in the toolbox under <i>Display</i> , the details increase/decrease in size in all views synchronously.

The orientation head always displays the current viewing angle onto the patient. In the volume view the viewing angle can be selected directly via the orientation head:



Orientation head front

Move the mouse cursor onto the orientation head. The views onto the orientation head are displayed and can be clicked on to select them.



Orientation head rear



Orientation head left



Orientation head right



Orientation head top



Orientation head bottom

Display

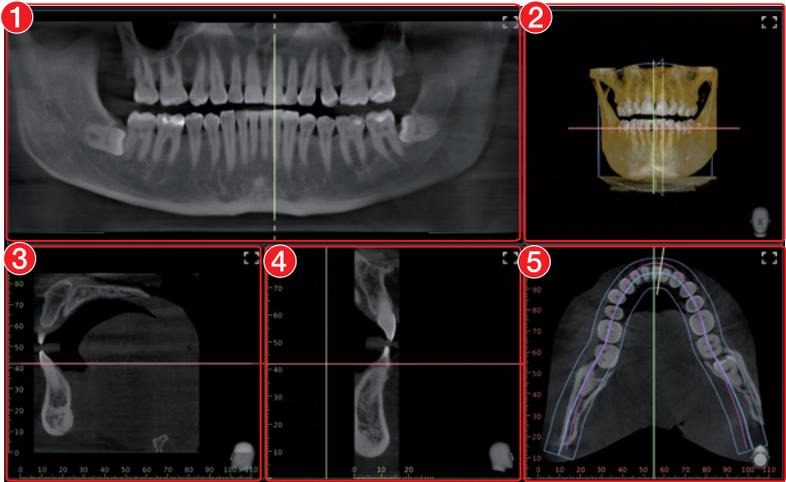
In cone beam computed tomography (CBCT), three-dimensional volume data is reconstructed from a large number of individual two-dimensional X-ray images (layer images). Different views are available for evaluation of the data. These views can be selected under **View**.

Panoramic view



In the panoramic view, a panoramic view is also displayed in addition to the slices. This panoramic view is calculated on the basis of the panoramic curve along the jaw arch. In addition, a slice of a transversal layer image (TSA slice) is displayed, which is calculated orthogonally to the panoramic curve.

Every CBCT image is initially opened in the panoramic view.



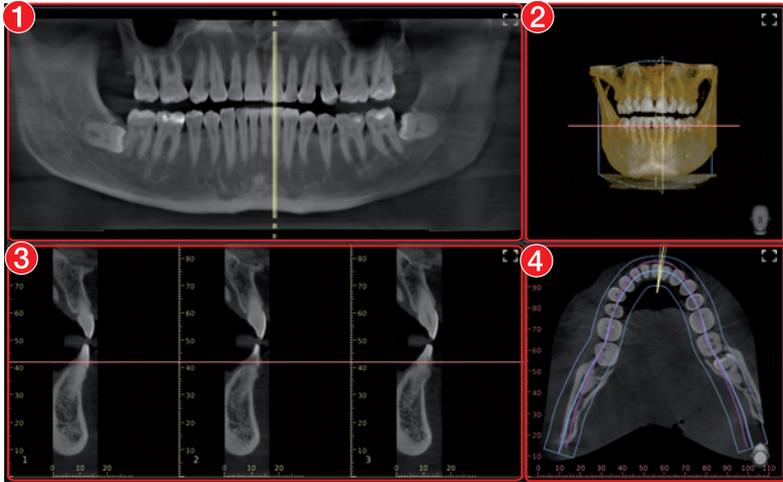
- 1 Panoramic view (calculated along the jaw arch)
- 2 Volume view
- 3 Sagittal MPR slice (view from left/right)
- 4 TSA slice (orthogonal to the panoramic curve)
- 5 Axial MPR slice (view from the top/bottom)

TSA view



With the TSA view, several transversal layer images (TSA) are displayed in addition to the panoramic view.

The TSA slices are numbered (bottom left). The numbering allows adjacent TSA slices to be recognized, which makes drawing the nerve canal easier.

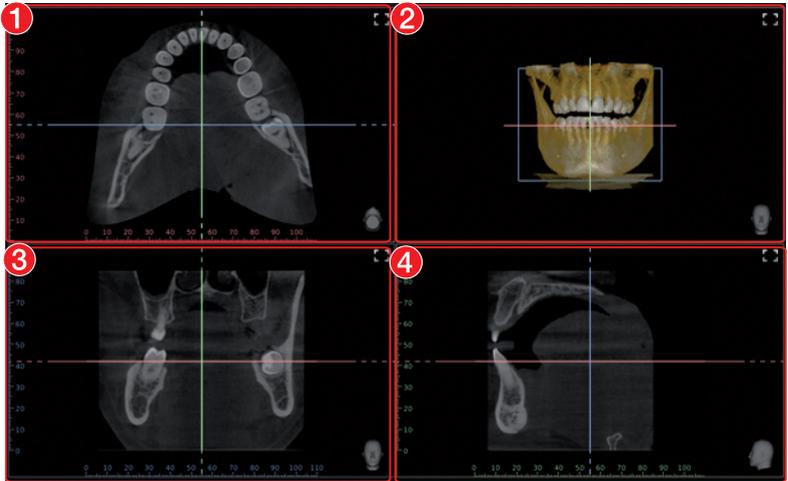


- 1 Panoramic view (calculated along the jaw arch)
- 2 Volume view
- 3 TSA slices (orthogonal to the panoramic curve); the number of slices can be chosen via the layout
- 4 Axial MPR slice (view from the top/bottom)

If the mouse cursor is positioned above one of the TSA slices, this TSA slice is highlighted in color in the other views.

MPR view

With the multiplanar reconstruction (MPR), any two-dimensional layer and slice images can be displayed.



- 1 Axial MPR slice (view from the top/bottom)
- 2 Volume view
- 3 Coronal MPR slice (view from the front/rear)
- 4 Sagittal MPR slice (view from left/right)

Panoramic

	Anatomically adjusted panoramic curve	Anatomically adjusted curve shape is automatically placed on the axial layers running through the mandible and maxilla. The anatomically adjusted curve cannot be changed.
	Standard panoramic curve, lower jaw	The standard curve form is automatically positioned on an axial layer that extends through the lower jaw
	Standard panoramic curve, upper jaw	The standard curve form is automatically positioned on an axial layer that extends through the upper jaw
	Standard panoramic curve on current slice plane	The standard curve form is manually positioned on the current axial slice. The center point of the jaw arch is manually positioned by the user.
	User-defined panoramic curve on current slice plane	A free curve form is manually positioned on the current axial slice. The individual points of the panoramic curve are manually positioned one after the other.
	Abort creation of user-defined panoramic curve	During creation of the user-defined panoramic curve, the points that have already been positioned are deleted again.
	Panoramic thickness	The layer thickness of the panoramic curve can be freely adjusted with a slider. With a lower thickness the panoramic view is sharper but noisier. As the thickness increases, the noise is reduced but the panoramic view appears less sharp. As the thickness increases, the panoramic view also approaches the character of a panoramic X-ray image (2D).

The panoramic curve (except for the anatomically adjusted panoramic curve) can be moved and edited once it has been positioned.

The panoramic curve is also shown in the annotations.

Position the panoramic curve automatically:

- › Click  (anatomically adjusted),  (maxilla), or  (mandible).

The standard panoramic curve is positioned. The panoramic view is calculated.

Positioning standard panoramic curve on current slice plane:

- › Adjust the slice plane in the axial MPR slice.

- › Click .

- › In the axial MPR slice, click on the center point of the jaw arch.

The standard panoramic curve is positioned. The panoramic view is calculated.

Creating a user-defined panoramic curve:

- › Adjust the slice plane in the axial MPR slice.

- › Click .

- › In the axial MPR slice, left-click on the edge of the jaw arch.

- › Position the further points of the jaw arch with the left mouse button.

- › Place the end point of the jaw arch with the right mouse button.

The panoramic view is calculated.

Moving a panoramic curve:

- › Press and hold the left mouse button on the line of the panoramic curve (not on a point) and move the curve.

The entire panoramic curve is moved. The active layer is moved at the same time in parallel.

Editing a panoramic curve:

- › To move a point of the panoramic curve, press and hold the mouse button on the point and drag it.

- › To add a point, press the Ctrl key and left-click on the panoramic curve between the points.
- › To delete a point, press the Ctrl key and left-click on the point on the panoramic curve.
- › To scale the panoramic curve, press the Shift key, left-click on the panoramic curve, and hold the button pressed while increasing/reducing the panoramic curve.

TSA

	Select TSA layout	Flyout for selection of the layouts or the number of transversal slices that are to be displayed (maximum of 6 rows x 10 columns)
	TSA distance	With the aid of a slider, the distance between the transversal slices can be changed (0.2 mm - 10.0 mm).
	TSA length	With the aid of a slider, the length of the transversal slices can be changed (2 mm - 200 mm).
	TSA width	With the aid of a slider, the width of the transversal slices can be changed (0.1 mm - 10.0 mm).

The TSA settings are saved when the user switches to a different view, closes the image, or exits the software.

Selecting the TSA layout:

- › Click .
- The flyout with the matrix for selection of the TSA views opens.
- › Move the mouse cursor over the matrix.
- › When the required TSA views are selected (marked blue), click on the matrix.

Result:

The TSA slices are displayed and shown in the other views.

Moving TSA slices:

- › In the panoramic view or the axial slice, use the left mouse button  to move the TSA slices.
All TSA slices are moved together along the panoramic curve.

Tilting TSA slices:

- › In the panoramic view, use the left mouse button  to tilt the TSA slices in the dotted area.
The TSA slices can be tilted by a maximum of $\pm 75^\circ$.
TSA slices are tilted together in parallel. The position of the TSA slices is also displayed in the volume view, but cannot be changed in this view.

MPR

	Thickness of MPR slices	The thickness of the MPR slices can be changed with the slider. The lower the thickness, the sharper but the noisier the slice. The higher the thickness, the lower the noise but the less sharp the slice.
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The adjustment always applies to all slices (sagittal, coronal, axial) of an MPR view. The set thickness is saved when the user switches to a different view, closes the image, or exits the software.

Nerve canal

	Create a nerve canal proposal	A proposal for the position of the nerve canal is calculated automatically (only visible if the calculation of the nerve canal proposal is activated in the configuration, see "72.4 Nerve canal proposal"). The proposal must be verified by a trained professional.
	Draw nerve canal in image	The nerve canal can be drawn in all two-dimensional views (panoramic view and slices). The individual anchor points of the nerve canal are manually positioned one after the other. Once the nerve canal has been drawn, it is visible as a semitransparent "tube" in all views, including the volume view. It is saved as an annotation.
	Deleting a nerve canal	Deletes a nerve canal that has already been created. To do this, the nerve canal must be selected in a view or in the annotations.



In the list of annotations, the drawn nerve canal can be called up again. When it is called up, the slices and the panoramic view are reset to the representation in which the nerve canal was drawn.

The nerve canal can be drawn in all two-dimensional views (slices and panoramic view) and is displayed in all views (including the volume view).

A nerve canal proposal can be calculated automatically (see also "31 Configuring features").



WARNING

Nerve canal may be displayed or drawn incorrectly

The nerve may be damaged during the treatment.

- › Use the nerve canal as drawn for orientation purposes only.
- › Keep an eye on the actual course of the nerve canal during the treatment.

Calculate a nerve canal proposal:

- › Click .

The nerve canal proposal is created automatically. The proposal must be verified by a trained professional.

Draw nerve canal manually:

- › Click .
- › Left-click with the mouse to position the anchor points of the nerve canal. You can also hold the shift key and use your mouse wheel to scroll through the layers.
- › Set the last anchor point with the right mouse button.

Editing the nerve canal:

- › To move an anchor point of the nerve canal, click on the anchor point, hold the mouse button, and move the point.
- › To add an anchor point, press the Ctrl key and left-click on the nerve canal between the anchor points.
- › To delete an anchor point, press the Ctrl key and left-click on the point of the nerve canal.

Changing the display of the nerve canal:

- › To change the color and thickness, select the nerve canal in the annotations and click .

Deleting a nerve canal:

- › Select the nerve canal in a two-dimensional view or in the annotations.
- › Click .

Volume

There are different display options in the volume view:

X-ray	Simulated X-ray projection image
Maximum value	Simulated X-ray projection image; the brightest point is shown for every image point in the viewing direction
Iso layer	View of the volume combining two opaque surfaces: soft tissue (brown) and bone structures (white)
3D	3D rendering
User-defined	3D rendering with simulated illumination. Skin tissue and muscle tissue are displayed in addition.

In the **3D** and **User-defined** views, different tissue types are shown with different colors. The visibility of the tissue types can be adjusted with the relevant slider.

Tissue types in the **3D** view:

- Bone
- Dentine
- Enamel
- Metal

Tissue types in the **User-defined** view:

- Skin
- Muscle
- Bone
- Dentine
- Enamel
- Metal

The colors for the tissue types can each be chosen via a flyout in the **User-defined** view.

Slice

Slice	Display of the slice planes in the volume view	
	Show slice plane edges only	Only the edges of the slice planes are displayed (may be masked by the volume display).
	Show slice planes with semitransparent surface	The slice planes are displayed with color-filled surfaces (may be masked by the volume display or other slice planes).
	Hide slice planes	The slice planes are not visible.
Axial		Region above or below the slice plane is hidden.
Sagittal		Region to the left or right of the slice plane is hidden.
No slice		Everything is visible, all regions are displayed.
Reverse		Hidden regions are inverted (top/bottom or left/right).

Display

These tools allow you to alter the image view.

The zoom tools change the size of the image display on the light table. The settings are not saved.

The settings for rotating and inverting an image are saved.

The zoom tools in CBCT images (3D) can be used for all views. If the option *Same zoom in all views* is enabled, then all views, except panoramic and volume view, are displayed at the same zoom factor. If the option is disabled, each view can be changed individually. The tools for image rotation and mirroring are not available for CBCT images (for information on how to rotate a slice, refer to "Navigating in CBCT images (3D)").

Zoom



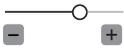
This matches the size of the image to the size of the window.



This magnifies the image so that one screen pixel equals one image pixel. Is displayed centered in the window.

58% ▾

The current zoom factor is displayed. A defined zoom factor can be selected.



The zoom can be adjusted to any required setting via the slider. You can also use the mouse wheel to adjust the zoom.

Rotate image



Rotate the image counterclockwise by 90°.



Rotate the image clockwise by 90°.

Mirroring



Horizontally invert the image



Vertically invert the image

Image corrections

The image brightness, contrast, and gamma can be corrected. The changes made to the sliders are visible in the image.



Adjust the image brightness



Adjust the image contrast



Adjust the image gamma value
 < 1: Bright areas become darker
 > 1: Dark areas become brighter

Mouse pointer icon

Brightness and contrast can also be changed directly in the image using the left mouse button. For this purpose, go to *Toolbox > Image corrections* and enable the option *Mouse mode*.

When the left mouse button is held down, making horizontal motions over the image changes the brightness, while vertical motions adjust the contrast. The sliders in the toolbox move along accordingly.

This option can be enabled separately for 2D X-ray/video images and for 3D X-ray images. It is preset for 2D X-ray/video images.

Filter

Filters facilitate diagnosis when analyzing X-ray images by highlighting interesting structures so that they can be more easily identified. Here, there are different filters for the different image types (intra, panoramic, cephalometric, etc.).

Depending on the X-ray image type, the matching filters are automatically displayed in the toolbox.

Filters for intra X-ray images

	Intraoral Fine	This increases the contrast for fine structures.
	Intraoral Caries 1	This increases the contrast for areas in which caries can be found. Fine structures are emphasized.
	Intraoral Caries 2	This increases the contrast for areas in which caries can be found. Coarser structures are emphasized.
	Intraoral Endo	For optimal visualization of the file in the root canal.
	Intraoral Perio	The contrast is increased in areas of the periodontal spaces.
	Intraoral High Diagnostic	Increased contrast for optimal visualization of objects of a specific size.
	Intraoral Noise Suppression	This cancels disruptive image noise and maintains image sharpness.

Filters for panoramic X-ray images

	Panoramic Fine	This increases the contrast for fine structures.
	Panoramic Standard	This increases the contrast for relatively coarse structures.
	Panoramic High Diagnostic	Increased contrast for optimal visualization of objects of a specific size.
	Panoramic Noise Suppression	This cancels disruptive image noise and maintains image sharpness.

Filters for cephalometric X-ray images

	Cephalometric Fine	This increases the contrast for fine structures.
	Cephalometric 1	This increases the contrast for relatively coarse structures.

Filters for cephalometric X-ray images

	Cephalometric PA	Posterior-anterior: View from back to front; this considerably increases the contrast for coarse structures.
	Cephalometric High Diagnostic-10	Increased contrast for optimal visualization of 10 mm objects.
	Cephalometric High Diagnostic 5s	Increased contrast for optimal visualization of 5 mm objects. Subsequent image sharpening via unsharp mask filter.
	Cephalometric High Diagnostic 5g	Increased contrast for optimal visualization of 5 mm objects. Subsequent image sharpening via Gaussian filter.
	Cephalometric Noise Suppression	This cancels disruptive image noise and maintains image sharpness.

Filters for cephalometric X-ray images

	Invert	The brightness values are inverted. The filter can be combined with any other filter for X-ray images.
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On video images, filters are only available for images taken with the Spectra camera.

Filters for video images recorded with a Spectra camera

	Caries filter	Analyzes the autofluorescence of the substances. The color scale and the numeric values provide reliable information on carious lesions. The color scheme legend can be called up with  .
	Prophylaxis view	Original image recorded by the Spectra camera

Histogram

The histogram shows the brightness distribution of the image.

Histogram windowing allows you to alter the image's gray scale values. The **black limit** shows the percentage of gray scale values changing to black, and the **white limit** shows the percentage of gray scale values changing to white. The limits can be altered to suit your requirements. The settings you have applied will be immediately apparent in the X-ray image on the light table.

The changes this makes to the image emphasize structures that are otherwise too small to be distinguished by the human eye so that they can now be identified.

If a filter is used then the histogram is automatically recalculated.

The image processing can be saved along with the changes you have made (see "40.2 Managing default image settings"). To prevent the quality of future X-ray images being impaired excessively by the saved image processing, both limits are restricted to 10% on saving.

Editing a histogram:

- › Use the two sliders to adjust the black and white limits.
- › To move the entire selected range between the black and white limits, click  in the middle of the region and move it with the mouse button pressed.

Measurements

The following must be taken into account for measurements depending on the image:

- The size and resolution of the image depend on the image acquisition device (refer to the operating instructions of the relevant device).
- **2D X-ray image:** In order to estimate lengths and angles in 2D X-ray images, the image needs to be calibrated with the aid of a reference image object. Despite calibration, this estimation is not as accurate as a measurement and must not be used as a measured result. The accuracy depends greatly on the projection distortion of the object on the image detector area.
- **Video image:** In video images, no scaled estimation of lengths and angles is possible.
- **Panoramic X-ray images** are not suitable for measuring due to the projection technique used.
- **CBCT images (3D):** The calibration is calculated geometrically. Measurements are only possible in the slices (axial, sagittal, coronal, and TSA), not in the volume view or panoramic view. The length and angular values in displayed layers (MRI) are calculated on the basis of the voxel dimensions defined in the 3D image data record (measuring unit, e.g., mm). The accuracy with regard to the anatomical relationships is dependent on these voxel dimensions. The values calculated in the software therefore only reflect the relationships of the voxel data in defined accuracy. The display accuracy is equivalent to 50% of the last decimal place (e.g. if the resolution is 0.1 mm then the accuracy is 0.05 mm).

The following measurements can be performed:



Simple line (start and end point)



Polyline (start, intermediate point and end point)



Angle (between two straight lines)

The measurements are saved as an annotation. The image needs to be calibrated for the measurements. The symbol shows the calibration type:



Calibration, geometrically calculated: The known geometry of the image acquisition system (e.g., resolution of the image acquisition mode, magnification factor) is incorporated in the calculation.



Calibration with a reference object: The known size of a reference object included in the image has been measured and saved. The reference object must be located in the direct area of the area being measured during imaging.

Rulers can be displayed on calibrated images. Rulers are not available for uncalibrated images or for the measurement unit pixels (px).



Show rulers



Hide rulers

Performing calibration with a reference object:



WARNING

Incorrect measurement result due to projection distortion or incorrect calibration

- › Perform calibration with a reference object.
- › Keep the projection distortion as low as possible during the X-ray acquisition.
- › Do not use a panoramic image for the measurement.

- › Click .
- › In the image, click on the start point with the left mouse button.
- › Click with the left mouse button on the end point.
- › Under **Tools** and **Calibration**, enter the actual length of the measured length (e.g., the diameter of a steel sphere).

- › Click .

The values are copied to the image.

Measuring a simple line:

- › Click .
- › In the image, click on the start point with the left mouse button.
- › Click with the left mouse button on the end point. The measured result is displayed directly on the measurement line.

Measuring a polyline:

- › Click .
- › In the image, click on the start point with the left mouse button.
- › Use the left mouse button to add as many intermediate points as you want.
- › Click with the right mouse button on the end point. The measured result for the overall distance is displayed directly on the measurement line.

Measuring an angle:

- › Click .
- › In the image, click on the start point of the first straight line with the left mouse button.
- › Click with the left mouse button on the end point of the first straight line.
- › Click on the start point of the second straight line with the left mouse button.
- › Click with the left mouse button on the end point of the second straight line. The angle between the two straight lines is displayed.

Editing a measurement:

- › In the image, click on the measurement with the left mouse button. This activates the measurement and the anchor points are displayed.
- › To move the anchor point, click on the anchor point with the left mouse button , hold the mouse button, and move it.

Changing the display of the measurement:

- › To change the color and line thickness, select the measurement in the **Annotations** and click .

Delete measurement:

- › Mark the measurement in **Annotations** in order to activate it.
- › Click .

Drawings

Drawings can be inserted into the image. All drawings are saved as annotations.

The following drawing tools are available:



Create free-hand drawing



Create a line



Create an arrow



Create a rectangle



Create an ellipse

Create free-hand drawing:

- › Click .
- › In the image, click on the start point of the free-hand drawing using the left mouse button.
- › Keep left mouse button down and create a freehand drawing.
- › Release the mouse button to finish the free-hand drawing.
The mouse cursor retains the function of the free-hand drawing.
- › To create a second free-hand drawing, press the left mouse button and keep it pressed while you draw.
- › To finish the free-hand drawing, press the right mouse button.

Create a line:

- › Click .
- › In the image, click on the start point of the line using the left mouse button.
- › Click on the end point of the line using the left mouse button.

Create an arrow:

- › Click .
- › In the image, click on the start point of the arrow using the left mouse button.
- › Click on the endpoint of the arrow using the left mouse button.

Create a rectangle:

- › Click .
- › Click in the image with the left mouse button to place the first corner of the rectangle.

- › Move the mouse cursor.
A preview of the rectangle is displayed.
- › Click with the left mouse button to define the size of the rectangle.

Create an ellipse:

- › Click .
- › In the image, click on the start point of the ellipse using the left mouse button.
- › Move the mouse cursor.
A preview of the ellipse is displayed.
- › Click with the left mouse button to define the size of the ellipse.

Shifting the drawing:

- › In the image, click on the drawing using the left mouse button.
This activates the drawing and the anchor points are displayed.
- › Keep the mouse cursor  pressed and shift the drawing.
- › Release the mouse button.

Editing the drawing:

- › In the image, click on the drawing using the left mouse button.
This activates the drawing and the anchor points are displayed.



The anchor points of pre-hand drawings cannot be edited.

- › To move the anchor point, click on the anchor point with the left mouse button , hold the mouse button, and move it.

Changing the display of the drawing:

- › To change the color and line thickness, select the drawing in *Annotations* and click .

Deleting the drawing:

- › Mark the drawing in *Annotations* in order to activate it.
- › Click .

Edge mask

X-ray images can be masked at the edges to prevent the occurrence of effects that may hinder diagnosis. The area beyond the edge mask is hidden.

The edge mask can be activated or deactivated. The edge mask is automatically activated for intraoral X-ray images.

The edge mask and background color can be configured for every X-ray station.

Implants

For visualization purposes, implants can be schematically inserted in two-dimensional and three-dimensional images. This function is included in VisionX Basic.

In a CBCT image the implant can only be added in the slices and in the panoramic view, but not in the volume view. It is shown in all slices and views if it is in the indicated view or slice.

There are two types of implants that can be inserted:



Standard implant (length and diameter can be freely defined)



Implant from manufacturer's database
At www.airtechniques.com in the **Services/Download Center**, Air Techniques offers free downloads of implant packages for various manufacturers.

The implant is depicted as a cylinder (standard implant) or as a 3D model (manufacturer implant, see "27 Importing implant packages"). If the implant is activated then it can be aligned via the two control points (circles).



Fig. 2: Depiction of a standard implant

The implant is saved as an annotation. With standard implants it is possible to change the size and color of the implant, while on manufacturer's implants only the color can be changed (see "Annotations").

Inserting a standard implant:

- › Click .
- The implant is displayed schematically with the mouse cursor.
- › Use the left mouse button to click on the required point in the image.
- The implant is positioned. It is displayed as a cylinder with a diameter of 5 mm and a length of 10 mm. The size, color, and position can be changed (see "Annotations").

Inserting a manufacturer's implant:

- › Click .
- The flyout for selection of the implant opens.
- › Select the manufacturer, product, and model.

- › Click **Select implant**.

The flyout closes, the implant is displayed schematically with the mouse cursor.

- › Use the left mouse button to click on the required point in the image.

The implant is positioned. It is shown with the manufacturer's dimensions. The color can be changed (see "Annotations").

Deleting an implant:

- › Click on the implant to activate it.
- › Click .
- or
- Press the Delete key.

Moving an implant:

- › Move the mouse cursor over the implant. The mouse cursor changes to .
- › Click on the implant between the control points.
- › Hold the mouse button pressed and move the implant.
- › Release the mouse button in the desired position.

Rotating an implant:

- › Click on the implant to activate it.
- › Click on a control point, hold the mouse button pressed, and rotate the control point around the other control point.
- › With the Alt key pressed, click on the implant and hold the mouse button to rotate the implant around its longitudinal axis.
- › Release the mouse button once the desired position is reached.

Annotations

All measurements, nerve canals, and implants of an image are saved as annotations. The annotations are displayed in the list and can be called up again.

When an annotation is called up on a 3D image, the views/slices return to the view in which the annotations were drawn.

Every measurement is indicated in the list with the type, color, and numerical value.

Type of annotation	
	Simple line
	Polyline
	Angle

Type of annotation

Nerve canal (3D only)



Implant



Panoramic curve

Displaying an annotation in the image:

- › Click on an annotation in the list.
If the annotation cannot be shown in the current view, the annotation cannot be selected.

Changing the display of an annotation:

- › Click on  at an annotation in the list.
The flyout opens.
- › Select the color.
- › For lines: select the line thickness.
- › For nerve canals: adjust the diameter of the line.
- › For implants: adjust the diameter and length.
- › Click outside the flyout to close it.

Editing an annotation:

- › Click on an annotation in the list or an annotation in the image.
The anchor points of the annotation are visible.
- › Move the mouse cursor over one of the anchor points of the annotation.
The mouse cursor changes to .
- › Press and hold the left mouse button and drag the anchor point to the required position.
- › Release the mouse button.

Shifting an annotation:

- › Click on an annotation in the list or an annotation in the image.
The anchor points of the annotation are visible.
- › Click on the annotation between the anchor points.
The mouse cursor changes to .
- › Press and hold the left mouse button and drag the annotation to the required position.
- › Release the mouse button.

Delete annotation:

- › Click .
- This deletes the annotation. The deletion cannot be undone.

40.2 Managing default image settings

Default image processing settings are saved for every X-ray station (see also "68.3 Image processing:"). Every newly created image will automatically be displayed on the light table with these default settings.

The default settings can also be saved via the light table menu with the settings on an image:

- › Edit an image as required on the light table.
- › In the light table menu, click  and then .
- The image processing settings will be displayed.
- › Click **Save** to save the image processing settings.
- › Click **Cancel** to discard the image processing settings.

41 Printing images

Images that are open on the light table can be printed using the *Print images* function.

The following print settings can be selected in the dialog window:

Printer:	Select printer. An additional printer can be set up in the configuration (see "30.4 Configuring the DICOM printer").
Original image size:	Prints the images at original size, only calibrated images can be selected. If necessary you may need to adjust the paper size in the printer settings. If the image is too large for the printing format, the image will be cut off.
Landscape format:	Switches the printing layout from portrait to landscape.
Color:	Prints the images in color. Black/white printing if this is disabled.
Copies:	Enter the number of copies. The default is 1.
Printer view:	
Active image	The active image on the light table (image highlighted, frame visible) is printed.
Image area	All images that are open on the light table are printed. The arrangement is equivalent to the arrangement on the light table.
Light table	The light table is printed with all images that are open. The arrangement is equivalent to the arrangement on the light table. Unlike <i>Image area</i> , the entire light table is printed including the areas in which there is no image frame.
Tabular	Prints all images on the light table. The number of columns can be set under <i>Images per line</i> .
Print settings	For DICOM printers only: printer settings for the current printing job. To change the print settings generally, see "Configuring".
Annotations	Information concerning image, patient and practice that can be printed as well
Box contents	Selection list of the information, given as placeholders (%...%) and the current information is entered while printing
Position	The annotations can be positioned with respect to the image (e.g. top left image corner) and with respect to the page (e.g. header)
Size	Font size of the annotations

The print settings can be saved as a profile, see "41.2 Using print profiles".

› Click .

The *Print images* dialog window opens.

› Select the respective printer using the *Select...* button.

› Select the print settings as desired.

› If needed, set Annotations, see "41.1 Setting Annotations for print output".

The print preview is updated after each change made in the print settings. To check this, the image detail of the print preview can be enlarged with the scroll wheel and can be shifted around with the right mouse button pressed. As long as the dialog window is open, the print preview is updated even changes are made on the light table.

› Click the button *Print* to start the print job.



In CBCT images (3D) *Active image* is the only available print preview. Auxiliary lines and rulers are not printed.

41.1 Setting Annotations for print output

Annotations (e.g. patient name, tooth, diagnosis) can be added while printing. The set Annotations remain unchanged in the dialog window.

- › Unfold the Annotations group in the *Print images* dialog window.
- › Click .
- › Select content, position and size.
- › To add additional lines, click  again and select content, position and size.
- › To change the sequence of annotations, click .
- › To delete an annotations line, click .

41.2 Using print profiles

There are two predefined profiles for which print settings are on file:

- Color printing
- Grayscale printing

Changes made to the print settings are saved to the active profile when the dialog window is closed. The profiles are saved by practice.

Additional print profiles can be created, changed and deleted.

- › Select profile in the selection list.

Creating a new profile:

- › On 
 - A profile named *New print profile* has been created and is active.
- › Change profile name and print settings as desired.

Rename profile:

- › Click  next to the profile name.
- › Change profile name.
- › Press the enter key to save the change made.
- › Press the ESC key to undo the change made.

Duplicating a profile:

- › Select the profile to be copied.
- › Click Duplicate.
- › The duplicated profile is active. The profile name is suffixed, e.g. with (1).

Delete profile:

- › Select profile.
- › Click .

42 Using VisionX Cloud

With VisionX Cloud, image acquisitions can be uploaded to the VisionX Cloud. Using the uploaded image data, recipients can view and discuss the image data.

Recipients can access the VisionX Cloud via a browser.



CAUTION

Personal injury possible due to modified images or data (cyber security)

- › Do not use the data for diagnostic purposes.

Notes on data protection:

- The data is anonymized before being transferred to the cloud. As a result, it is impossible for recipients to establish a link between the data and the patient.
- A secure protocol (HTTPS) is used for data transfer.



Because it is possible to upload image data in lossy file formats to the VisionX Cloud (e.g. JPEG), no diagnosis can be made.



Uploaded image acquisitions are deleted after 30 days. As a result, the VisionX Cloud is not suitable for archiving.

A cloud case is created for each image that is uploaded to the cloud. The cloud cases can be viewed using the overview at any workstation of a multi-station installation. To do so, the practice through which the image acquisition was uploaded to the cloud must be logged in to the workstation.

The recipients for whom the image data is being uploaded to the cloud can access the cloud via a browser.

42.1 Uploading an image to the cloud

A cloud case is generated every time image acquisitions are uploaded.

The *Multiple selection* function in the image inspector can be used to simultaneously upload multiple images to the cloud (see "35.7 Multiple

selection"). Here, only a single cloud case is saved for all selected images.

Requirements:

- ✓ Practice is linked with the cloud (see "31.1 Setting up the cloud")

- ✓ Enough data space is available

Uploading an individual image acquisition to the cloud:

- › Click  in the light table menu. A flyout will open.
- › Enter the e-mail address of the recipient. It is also possible to enter multiple e-mail addresses. Keep in mind that posted comments can be read by all subscribers.
- › If you want you can enter a comment for the recipients.



Do not include any patient data in the comment as this would compromise anonymity.

- › Select the image status and format. These settings depend on the relevant image type and may not be available in some cases.
- › Click **Upload**. The image is uploaded to the cloud. All uploaded images are marked with the icon  in the image inspector. The recipient receives an e-mail containing a link to the cloud case.

Uploading multiple image acquisitions as a single cloud case:

- › In the image inspector click on **Multiple selection** to open the function group.
- › Tick the check box next to the preview image for every X-ray image that is to be uploaded.
- › In **Multiple selection** click on . A flyout will open.
- › Enter the e-mail address of the recipient. It is also possible to enter multiple e-mail addresses. Keep in mind that posted comments can be read by all subscribers.
- › If you want you can enter a comment for the recipients.



Do not include any patient data in the comment as this would compromise anonymity.

- › Select the image status and format. These settings depend on the relevant image type and may not be available in some cases.
- › Click **Upload**. The images are uploaded to the cloud as a single case. All uploaded images are marked with the icon  in the image inspector. The recipient receives an e-mail containing a link to the cloud case.

42.2 Searching for and displaying cloud cases

All of the cloud cases are displayed in the overview. If multiple practices have been created then only the cloud cases for the currently logged-in practice will be visible.

New comments are shown in the menu bar by means of a button with counter.

The amount of data space remaining is shown in the upper right-hand corner of the overview. The available amount depends on the selected data plan.



Display VisionX Cloud cases



Counter for new comments

- › In the menu bar, click on **Display VisionX Cloud cases**. The **VisionX Cloud cases** flyout opens.
- › If the flyout has already been open for some time, click on **Refresh**. The list of cloud cases is reloaded. This will also display any cloud cases that have been created in the meantime at other workstations.
- › If you are looking for a cloud case for a particular patient, enter the details of the patient in the search field (e.g. patient number, name, or date of birth). This search operates in a similar way to a search for a patient in the patient management tool (see "33.3 Searching for and registering a patient"). The cloud cases can be sorted by columns (e.g. creation date, name).
- › If a cloud case is selected then the details are displayed. Here you can view the preview images and read or post comments (see "42.3 Editing a cloud case").

42.3 Editing a cloud case

The properties and preview images of the updated image data can be displayed for every cloud case. The comments can be read and new comments can be added.

- › Select a cloud case in the list (see "42.2 Searching for and displaying cloud cases").
- › Click on *Display*.
The details of the cloud case are displayed in the flyout.

Writing a comment:

- › Click in the lower part of the text field and write a comment.
- › Click *Send*.
The comment is added to the list of comments. The comments are listed in descending order (oldest at the top, the newest comment at the bottom).

42.4 Deleting a cloud case

- › Click on  in the menu bar.
The *VisionX Cloud cases* flyout opens.
- › From the list, select the cloud case you wish to delete.
The details of the cloud case are displayed.
- › Click *Delete*.
The cloud case is deleted.

43 Displaying the X-ray report

The X-ray report displays all images, along with the date, exposure values, X-ray station, and indications.

- › Click  in the ribbon.
The *X-ray report* flyout will open.
- › Select the sorting method you require.
- › If necessary, activate the check boxes for the time period (from...to).
A beginning and end date can be entered. If the check box has been deactivated (default option), all images will be included.
- › If necessary, check the *X-ray stations* box.
After checking the *X-ray stations* box, you have to enable the X-ray stations you require. If this box has been checked, the X-ray report will be created for the selected X-ray stations. If this check box has been deactivated (default option), all X-ray stations will be included when the report is created.
- › If necessary, check the *Patient record* box.
Once you have checked this box you can search for the patient record you require. The procedure for searching for patient records is the same as the search procedure in the patient data management (see "14.3 Searching for and registering a patient").
If this box has been checked, the X-ray report will be created for the selected patient records. If this box has been deactivated (default setting), all patient records will be included when the report is created.
- › Click on *Show report*.
The X-ray report will be displayed with the selected settings.

44 Changing practice (surgery)

If multiple practices (surgeries) have been created, you can switch between them.

The following conditions must be fulfilled in order to switch practice:

- ✓ No active X-ray image
- ✓ No active video acquisition
- › Click .
The practice is logged out and the log-in screen opens.
- › Under **Practice**, select the practice you wish to log in.
- › If user management is activated, select the user and enter the password.
- › Click **Login**.

45 Using the VDDS-media interface to practice management program



CAUTION

Personal injury is possible due to wrong assignment of image data to a patient

- › Check the right assignment of the image data (e. g., during image import, change of patient data, or new assignment of image data to a patient).
- › Observe the information displayed in the software.

Depending on the options available in the practice management program (PVS), patient data and image data can be exchanged via the VDDS media interface between the imaging software and the practice management program:

- For information on importing patient data from PVS into the imaging software and requesting image acquisitions, see "33.2 Importing patient data".
- For information on opening a patient image from PVS in the imaging software, see "33.2 Importing patient data".
- For information on transferring images from the imaging software to PVS and transferring changes to images (see "35.4 Transferring images to the practice management program", "35.7 Multiple selection").

The VDDS media interface must be configured in the practice management program and in the imaging software for this purpose (see "69 Interfaces").



For information about the configuration and handling of the interface in the practice management program, please refer to the relevant PVS handbook.

46 Creating a support file

In the event of a fault a support file can be created. This can be forwarded to the support/service technician for diagnosis.

- › Click the entry in the start menu **Start > All programs > VisionX > Create support file**.
or
Click  >  in the software.
A .safe file with all the required files and data is created on the desktop.
This file is encrypted to protect it during transmission in case it contains any personal data.
- › Send the file created in this way to the support/service technician.

47 Using VisionX Connect

 VisionX Connect can only be used if the requirements in terms of the configuration are met, see "32 VisionX Connect".

VisionXConnect receives orders from third-party software (third-party applications) to generate images from Air Techniques imaging device systems.

The job data is transferred from the retrieving third-party software to VisionX. VisionX creates a new VisionX Connect patient on the basis of the job data or assigns the job to an existing patient. If the option **Complete patient data** is activated (see "69.2 VisionX Connect") and the third-party software fails to supply a complete patient data record, the patient data is requested in a flyout:

- Patient ID
- First name
- Last name
- Date of birth

If the job data does not contain any patient data and the option **Complete patient data** is deactivated, then the new patient is created as follows:

- Name: VisionX Connect Patient
- Patient ID: Date and time of the task
(YYYYMMDD-HHMMSS)
- Date of birth: Date of the task

If no patient is logged in, the VisionX Connect patient opens automatically and starts image acquisition. When the VisionX Connect order is completed, the VisionX Connect patient is logged out and the the image data defined in the order is exported. It can then be imported by the third-party software.

If **Automatic dose calculation** is activated (see "70 Practices") and the X-ray image acquisition device supports the function, then the image receiver dose is also sent to the third-party software together with the image data.

If the minimal interface is activated in the configuration (see "32 VisionX Connect") and the software interface is closed (only active in the task bar), only the minimal interface will open for a VisionX Connect order (see "47.2 Using the minimal VisionX Connect UI"). The logging in/out of the patient then happens in the background. The retention period for the image data from VisionX Connect can be adjusted, see "70 Practices".

47.1 Creating an image with VisionX Connect

Requirements:

- ✓ No patient registered
- › Start job from third-party software to VisionX Connect.
The patient is logged in. Acquisition starts.
- › If the patient data is incomplete, add the missing patient data as required.
- › If not defined in the job, select image type, image source and image mode.
- › Create image, also see "37 Acquiring images".
- › Edit the image as required using the tools from the toolbox, see "40 Editing images".
- › Click *VisionX Close Connect order*.

Result:

The image data is exported to the third-party software.
The patient is logged out.

47.2 Using the minimal VisionX Connect UI

Requirements:

- ✓ Software interface closed (active in the taskbar)
- › Start job from third-party software to VisionX Connect.
The minimal interface opens. Acquisition starts.
- › If not defined in the job, select image type, image source and image mode.
- › Create image, also see "37 Acquiring images".
- › Click on *End acquisition*.

Result:

The image data is exported to the third-party software. The minimal interface is closed.
A Windows notification informs you that the order is finished.
If the condition/status of the phosphor storage plate changes during the automatic phosphor storage plate quality check, a Windows notification appears.

47.3 Importing images

Importing an image from the device memory (stand-alone/retrieve)

If an image is present in the device memory of a device, it can be imported to the active VisionX Connect order.

- › Start job from third-party software to VisionX Connect.
The patient is logged in. Acquisition starts.
- › In the image acquisition window click .
- › Select the unit.
- › In the flyout, select the images that are to be imported.
- › Click *Transmit to third-party application*.

Result:

The image data is exported to the third-party software.
The patient is logged out.

Importing an image from the image cache (cache image import)

If it is not possible to transfer an image to the server or to the third-party software after it is created, then the image will be saved in the image cache of the workstation (see "65.1 Image cache").

- › Start job from third-party software to VisionX Connect.
The patient is logged in.
- › In the image acquisition window click .
- › In the flyout, select the images that are to be imported.
- › Click *Transmit to third-party application*.

Result:

The image data is exported to the third-party software.
The patient is logged out.

48 Using 3Shape integration

If the feature “3Shape integration” is activated (see "72.1 3shape integration"), then VisionX can be used to initiate a surface scan with a 3Shape intraoral scanner. This 3Shape case is linked to the patient in VisionX and can be opened via the image inspector in 3Shape.

48.1 Creating a 3Shape case

Requirements:

- ✓ Patient is logged in
- ✓ 3Shape integration active
- › Click on  in the menu bar.
- › If multiple 3Shape Dental Desktop clients are available then select the required client in the flyout.
The patient is created/opened in 3Shape. A new 3Shape case is created.
- › Create a surface scan in 3Shape.

Result:

After the next login for the patient the 3Shape case is displayed in the image inspector.

48.2 Opening a 3Shape case

3Shape cases that have been created via the 3Shape integration are called up during login of the patient and displayed in the image inspector with the 3Shape symbol. The data is managed in 3Shape and can be opened at any time again in 3Shape via the image inspector.

Requirements:

- ✓ Patient is logged in
- ✓ 3Shape integration active
- › Click on the 3Shape case in the image inspector.
- › If multiple 3Shape Dental Desktop clients are available then select the required client in the flyout.

Result:

The case is opened in 3Shape and can be edited.



Acceptance and consistency check

With VisionX Inspect, it is possible to perform acceptance checks, consistency checks, and partial acceptance checks on the image reproduction and X-ray system in full. No third-party software is required for this.

With VisionX Inspect, you can carry out the following checks:

- Acceptance test of the image reproduction and X-ray system
 - "52 Performing an acceptance test"
- Consistency check of the image reproduction and X-ray system
 - "53 Performing a consistency check"
- Partial acceptance test of the image reproduction and X-ray system
 - "54 Performing a partial acceptance test"

Here, VisionX Inspect detects which device is being checked and adapts the check that is to be performed to the requirements of the device.

VisionX Inspect offers the additional opportunity to check the condition of the phosphor storage plates:

- "57 Performing a plate surface quality check"

The following standards are primarily applicable to the acceptance test:

- DIN 6868-151 Acceptance test in accordance with German X-Ray Ordinance (RöV) on dental X-ray equipment
- DIN 6868-161: Acceptance test in accordance with German X-Ray Ordinance (RöV) of dental X-ray units for digital volume tomography
- DIN 6868-157: Acceptance test and consistency check of the image playback system

The following standards are primarily applicable to the consistency check:

- DIN 6868-5: Consistency check in accordance with German X-Ray Ordinance (RöV) of dental X-ray equipment
- DIN 6868-15: Consistency check in accordance with German X-Ray Ordinance (RöV) of dental X-ray equipment for digital volume tomography
- DIN 6868-157: Acceptance test and consistency check of the image playback system

The following guidelines and ordinances apply as well:

- German X-Ray Ordinance (Röntgenverordnung, RöV)
- Guidelines for Expert Qualifications (Sachverständigen-Richtlinie, SV-RL)
- Quality Assurance Guidelines (Qualitätssicherung-Richtlinie, QS-RL)
- Specialist Knowledge Guidelines (Fachkunde-Richtlinie, FK-RL)

49 Notes on use

From the start page of VisionX Inspect, you can switch directly to the different checks and to the configuration screen.

The left-hand part of the menu bar contains the navigation bar.

This bar will allow you to switch directly to the higher levels.

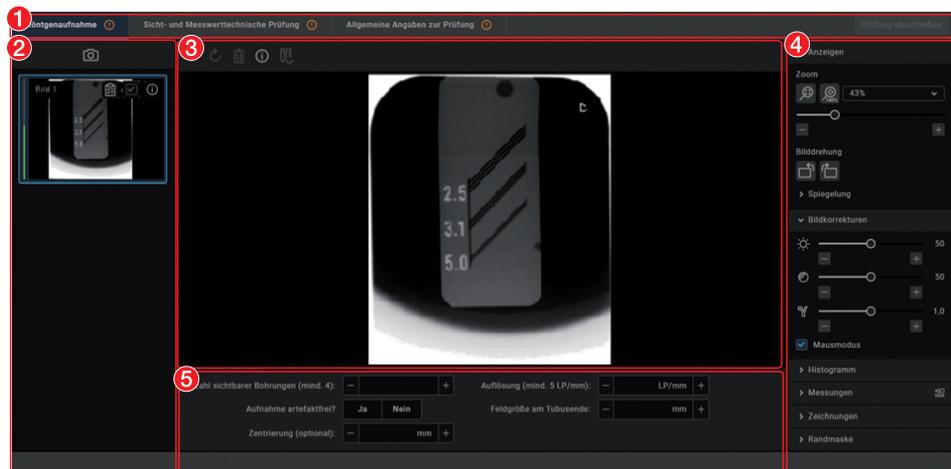
The checks open as a list of all previous checks. If a check has not yet been completed, it is marked with  and can be processed further.

The checks comprise several registration cards. If any information is missing in a registration card, then the registration card is marked with .

49.1 X-ray image

The checks of the X-ray system (acceptance test, partial acceptance test, and consistency check) are made up of various registration cards. A check always opens with the *X-ray image acquisition* registration card.

The X-ray image acquisition registration tab has a similar layout as the user interface of the imaging software.



- 1 Registration cards for the check
- 2 "Image inspector"
- 3 "Light table"
- 4 "Toolbox"
- 5 Image details

Image inspector

All of the images for the current check are displayed in the image inspector. The image designation is displayed on the images if it is entered in the image information . It is possible to select the reference image and edit image information as long as the check has not yet been completed.

-  Displaying and edit image information
-  Image is the reference image for the check
- Image is not the reference image for the check

Light table

If an image is selected in the image inspector (blue surround), then this image is displayed on the light table. Only one image can be displayed at a time on the light table of the acceptance tests and consistency checks. CBCT images are always displayed as an axial MPR slice. You can navigate in the view using the mouse:

	Scrolling through the layers	Press and hold the left mouse button in the view to scroll through the layers. The number of the layer is displayed on the bottom left-hand during scrolling.
	Tilting slice planes	Press and hold the left mouse button in the edge region of the view to turn the slice plane.

Questions and details for the active image are displayed under the light table. The light table menu features various commands for the images displayed on the light table:

	Repeat or undo actions
	Delete image
	Displaying and edit image information
	Display the currently acquired image and the reference image side by side or one above the other (for the consistency

 check only)

 Display or hide measurements



Toolbox

The toolbox contains tools for editing the images on the light table.

The tools are divided into the following groups and can be expanded or collapsed by clicking

- >:
- "Display"
- "Image corrections"
- "Histogram"
- "Measurements"
- "Drawings"
- "Edge mask"
- "Dose equivalent" (only if equivalent dose measurements are enabled in the configuration)
- "Dose calibration"

The edited image is saved with the preview in the image inspector as soon as the user switches to the next registration card of the check or the check itself is closed.

Display

These tools allow you to alter the image view. The zoom tools change the size of the image display on the light table. The settings are not saved.

The settings for rotating and inverting an image are saved.

The zoom tools in CBCT images (3D) can be used for all views. If the option **Same zoom in all views** is enabled, then all views, except panoramic and volume view, are displayed at the same zoom factor. If the option is disabled, each view can be changed individually. The tools for image rotation and mirroring are not available for CBCT images (for information on how to rotate a slice, refer to "Navigating in CBCT images (3D)").

Zoom

-  This matches the size of the image to the size of the window.
-  This magnifies the image so that one screen pixel equals one image pixel. Is displayed centered in the window.

Zoom

 The current zoom factor is displayed. A defined zoom factor can be selected.

 The zoom can be adjusted to any required setting via the slider. You can also use the mouse wheel to adjust the zoom.

Rotate image

 Rotate the image counterclockwise by 90°.

 Rotate the image clockwise by 90°.

Mirroring

 Horizontally invert the image

 Vertically invert the image

Image corrections

The image brightness, contrast, and gamma can be corrected. The changes made to the sliders are visible in the image.

 Adjust the image brightness

 Adjust the image contrast

 Adjust the image gamma value
 < 1: Bright areas become darker
 > 1: Dark areas become brighter

Mouse pointer icon

 Brightness and contrast can also be changed directly in the image using the left mouse button. For this purpose, go to **Toolbox > Image corrections** and enable the option **Mouse mode**.

When the left mouse button is held down, making horizontal motions over the image changes the brightness, while vertical motions adjust the contrast. The sliders in the toolbox move along accordingly.

This option can be enabled separately for 2D X-ray/video images and for 3D X-ray images. It is preset for 2D X-ray/video images.

Histogram

The histogram shows the brightness distribution of the image.

Histogram windowing allows you to alter the image's gray scale values. The **black limit** shows the percentage of gray scale values changing to black, and the **white limit** shows the percentage of gray scale values changing to white. The limits can be altered to suit your requirements. The settings you have applied will be immediately apparent in the X-ray image on the light table.

The changes this makes to the image emphasize structures that are otherwise too small to be distinguished by the human eye so that they can now be identified.

If a filter is used then the histogram is automatically recalculated.

The image processing can be saved along with the changes you have made (see "40.2 Managing default image settings"). To prevent the quality of future X-ray images being impaired excessively by the saved image processing, both limits are restricted to 10% on saving.

Editing a histogram:

- › Use the two sliders to adjust the black and white limits.
- › To move the entire selected range between the black and white limits, click  in the middle of the region and move it with the mouse button pressed.

Measurements

The following must be taken into account for measurements depending on the image:

- The size and resolution of the image depend on the image acquisition device (refer to the operating instructions of the relevant device).
- **2D X-ray image:** In order to estimate lengths and angles in 2D X-ray images, the image needs to be calibrated with the aid of a reference image object. Despite calibration, this estimation is not as accurate as a measurement and must not be used as a measured result. The accuracy depends greatly on the projection distortion of the object on the image detector area.
- **Video image:** In video images, no scaled estimation of lengths and angles is possible.
- **Panoramic X-ray images** are not suitable for measuring due to the projection technique used.
- **CBCT images (3D):** The calibration is calculated geometrically. Measurements are only possible in the slices (axial, sagittal, coronal, and TSA), not in the volume view or panoramic view. The length and angular values in displayed layers (MRI) are calculated on the basis of the voxel dimensions defined in the 3D image data record (measuring unit, e.g., mm). The accuracy with regard to the anatomical relationships is dependent on these voxel dimensions. The values calculated in the software therefore only reflect the relationships of the voxel data in defined accuracy. The display accuracy is equivalent to 50% of the last decimal place (e.g. if the resolution is 0.1 mm then the accuracy is 0.05 mm).

The following measurements can be performed:

	Simple line (start and end point)
	Polyline (start, intermediate point and end point)
	Angle (between two straight lines)

The measurements are saved as an annotation. The image needs to be calibrated for the measurements. The symbol shows the calibration type:

	Calibration, geometrically calculated: The known geometry of the image acquisition system (e.g., resolution of
---	---

the image acquisition mode, magnification factor) is incorporated in the calculation.



Calibration with a reference object:
The known size of a reference object included in the image has been measured and saved.
The reference object must be located in the direct area of the area being measured during imaging.

Rulers can be displayed on calibrated images. Rulers are not available for uncalibrated images or for the measurement unit pixels (px).



Show rulers



Hide rulers

Performing calibration with a reference object:



WARNING

Incorrect measurement result due to projection distortion or incorrect calibration

- › Perform calibration with a reference object.
- › Keep the projection distortion as low as possible during the X-ray acquisition.
- › Do not use a panoramic image for the measurement.

- › Click .
- › In the image, click on the start point with the left mouse button.
- › Click with the left mouse button on the end point.
- › Under *Tools* and *Calibration*, enter the actual length of the measured length (e.g., the diameter of a steel sphere).
- › Click .
The values are copied to the image.

Measuring a simple line:

- › Click .
- › In the image, click on the start point with the left mouse button.

- › Click with the left mouse button on the end point.
The measured result is displayed directly on the measurement line.

Measuring a polyline:

- › Click .
- › In the image, click on the start point with the left mouse button.
- › Use the left mouse button to add as many intermediate points as you want.
- › Click with the right mouse button on the end point.
The measured result for the overall distance is displayed directly on the measurement line.

Measuring an angle:

- › Click .
- › In the image, click on the start point of the first straight line with the left mouse button.
- › Click with the left mouse button on the end point of the first straight line.
- › Click on the start point of the second straight line with the left mouse button.
- › Click with the left mouse button on the end point of the second straight line.
The angle between the two straight lines is displayed.

Editing a measurement:

- › In the image, click on the measurement with the left mouse button.
This activates the measurement and the anchor points are displayed.
- › To move the anchor point, click on the anchor point with the left mouse button , hold the mouse button, and move it.

Changing the display of the measurement:

- › To change the color and line thickness, select the measurement in the *Annotations* and click .

Delete measurement:

- › Mark the measurement in *Annotations* in order to activate it.
- › Click .

Drawings

Drawings can be inserted into the image. All drawings are saved as annotations. The following drawing tools are available:



Create free-hand drawing



Create a line



Create an arrow



Create a rectangle



Create an ellipse

Create free-hand drawing:

- › Click .
- › In the image, click on the start point of the free-hand drawing using the left mouse button.
- › Keep left mouse button down and create a freehand drawing.
- › Release the mouse button to finish the free-hand drawing.
The mouse cursor retains the function of the free-hand drawing.
- › To create a second free-hand drawing, press the left mouse button and keep it pressed while you draw.
- › To finish the free-hand drawing, press the right mouse button.

Create a line:

- › Click .
- › In the image, click on the start point of the line using the left mouse button.
- › Click on the end point of the line using the left mouse button.

Create an arrow:

- › Click .
- › In the image, click on the start point of the arrow using the left mouse button.
- › Click on the endpoint of the arrow using the left mouse button.

Create a rectangle:

- › Click .
- › Click in the image with the left mouse button to place the first corner of the rectangle.
- › Move the mouse cursor.
A preview of the rectangle is displayed.
- › Click with the left mouse button to define the size of the rectangle.

Create an ellipse:

- › Click .
- › In the image, click on the start point of the ellipse using the left mouse button.

- › Move the mouse cursor.
A preview of the ellipse is displayed.
- › Click with the left mouse button to define the size of the ellipse.

Shifting the drawing:

- › In the image, click on the drawing using the left mouse button.
This activates the drawing and the anchor points are displayed.
- › Keep the mouse cursor  pressed and shift the drawing.
- › Release the mouse button.

Editing the drawing:

- › In the image, click on the drawing using the left mouse button.
This activates the drawing and the anchor points are displayed.



The anchor points of pre-hand drawings cannot be edited.

- › To move the anchor point, click on the anchor point with the left mouse button , hold the mouse button, and move it.

Changing the display of the drawing:

- › To change the color and line thickness, select the drawing in *Annotations* and click .

Deleting the drawing:

- › Mark the drawing in *Annotations* in order to activate it.
- › Click .

Edge mask

X-ray images can be masked at the edges to prevent the occurrence of effects that may hinder diagnosis. The area beyond the edge mask is hidden.

The edge mask can be activated or deactivated. The edge mask is automatically activated for intraoral X-ray images.

The edge mask and background color can be configured for every X-ray station.

Dose equivalent

If the option *Enable equivalent dose measurement* is enabled in the configuration, then the tool *Equivalent dose* is present in the toolbox (this option is disabled by default, see also "Acceptance and consistency check"). With this tool the equivalent dose values are measured during the X-ray image acquisition for the accept-

ance test and for the consistency checks, and compared with each other. Measurement of the dose equivalents in imported aperture images or CBCT images is not feasible.

Dose equivalent measurement:

- › In the toolbox, open the Equivalent Dose tool group.
- › Click .
- › Move the mouse cursor over the image on the light table.
The mouse cursor changes to a pipette .
- › Click on the defined point in the test image.
The value is applied as the *Measured equivalent dose*.
The position of the measurement is marked with a yellow border. The border is also visible in the reference image of the consistency check.

Dose calibration

If the option *Calibration for automatic calculation of image receiver dose* is activated during the acceptance check with *Apply* then the tool *Dose calibration* is available in the toolbox.

This can be used to calibrate the image acquisition device (provided it supports this function) so that the image receiver dose is automatically determined and documented in the X-ray report for every image acquisition with this device (in accordance with StrlSchV / Radiation Protection Regulation § 114 section 1).

Dose calibration:

- › In the toolbox, open the tool group *Dose calibration*.
- › Click .
- › The mouse pointer changes to a frame .
- › Move the mouse pointer over the image on the light table.
- › In the image, click the dark rectangle at the top right, refer also to the note  in the toolbox.
The calibration factor is determined with which the image receiver dose is automatically calculated.

Displaying and editing image information

The image information can be displayed via the image inspector or the light table menu.

Certain information (e.g., X-ray parameters, image designation) can also be edited. The image information at the bottom of the flyout cannot be changed. The X-ray parameters can be defined as mandatory fields (see "65.8 X-ray

stations"). If these fields are not completed, the symbol for the image information  is displayed with a red surround.

 The information can only be changed if the test has not yet been completed.

- › Select an image in the image inspector.
or
Click on the image on the light table.
- › Click  in the light table menu or click on the preview image in the image inspector.
The *Image information* flyout will open.
- › Change the data as required.
- › Close the flyout with  or click outside the flyout.
The image information is saved.

Importing aperture images

Aperture images can be imported for acceptance checks and partial acceptance checks on a CBCT, panoramic, or cephalometric X-ray system as well as for consistency checks on a CBCT X-ray system.

The following file formats can be imported:

- DICOM (*.dcm)
- PNG (*.png)
- TIFF (*.tif, *.tiff)
- JPEG (*.jpg)
- JPEG 2000 (*.jp2, *.j2k)
- Bitmap (*.bmp)
- XTF (original image state) (*.xtf)
- › Click .
- › Select the aperture images.
- › Click *Open*.

49.2 Due checks

The software checks the validity of the checks and reminds you when checks are due (provided this has been configured, see "Acceptance and consistency check").

If no checks are present or the checks are no longer valid the following message appears in the menu bar: *Tests are due*.

50 Starting VisionX Inspect

There are two ways to launch the software:

- By clicking on the icon on the desktop
- Via the Start menu: *Start > All Programs > VisionX Inspect > VisionX Inspect*

Requirements:

- ✓ VisionX is configured (it has been opened for the first time)
- ✓ VisionX is not running
- › Double-click on the icon on the desktop
or
Select the relevant item from the Start menu.

51 Configuring VisionX Inspect

The following configurations are required in order to perform acceptance tests and consistency checks with VisionX Inspect:

- "51.1 Creating X-ray stations"
- "51.2 Configuring the monitor check"

For information about further configuration options, refer to "58 VisionX Inspect configuration overview"



If a corresponding configuration is already present in VisionX, e.g., X-ray stations, this will be adopted by VisionX Inspect.

51.1 Creating X-ray stations

The X-ray stations from VisionX are automatically displayed in VisionX Inspect.

If X-ray stations are created in VisionX Inspect, they are displayed automatically in VisionX.

An X-ray station always comprises the following:

- X-ray emitter
- Image creation device
- Operator information

Here, e.g., an X-ray emitter can be combined with different phosphor storage plate scanners or one phosphor storage plate scanner can be combined with different X-ray emitters into multiple X-ray stations.

The X-ray station marked as the favorite is displayed first in the selection list when the tests are started.

In the X-ray station configuration, you can create, configure, and delete X-ray stations. This works in exactly the same way as in the imaging software. See "25 X-ray stations".

- › Click on **X-ray stations** on the start page.
or
Click  > **X-ray stations**.

See also:

- "25.1 Creating an X-ray station"
- "25.2 Configuring an X-ray station"
- "25.3 Entering recommended values for X-ray parameters"
- "25.4 Deleting an X-ray station"

51.2 Configuring the monitor check

If the workstation is a diagnosis station, the monitor check must be performed at regular intervals.

The basic setting that the workstation is a diagnosis station is performed in the configuration , see "Acceptance and consistency check". In the case of a multi-station installation, the monitor checks are stored centrally on the server.

The configuration opens up when you start the monitor check for the first time.

The configuration can be called up at any time from the start window of the monitor test via the **Configuration** button.

In the configuration you can edit information about the workstation in the practice/clinic. These are saved and reused during subsequent tests.

System tab:

- › Enter all of the information for the practice/clinic.
- › Under **Room class**, check the option **Diagnostic workstation (RK5)** or **Treatment room (RK6)**, depending on the room in which the monitors are located.
- › Under **Check cycles**, choose the required check and enter to the right of it the frequency at which you want the check to be performed.
- › Under **Warm-up phase**, enter the time after which the checks can be started at the earliest.
- › Place a check next to DIN 6868-57 if the checks are to be carried out in accordance with this standard. By default checks are performed in accordance with DIN 6868-157.

Monitor tab:

- › Under **Monitor**, select the monitor for which the subsequent settings are to be made. Click on **Identify** to display a logo on the corresponding monitor.
- › Check all entries and correct or add information as required. In some cases, older monitors may not provide all the information.

Acquisition source tab:

- › Enter the software used (including the version) in the area **Application software**.
- › Click **Save** to close the configuration.

52 Performing an acceptance test

A complete acceptance test comprises the acceptance test of the image reproduction system and the acceptance test of the X-ray system. The acceptance test needs to be carried out at the following times:

- Before starting up an X-ray system for the first time
- When moving the system to a different location
- If the operating company changes (additional expert qualifications are required in this case)

 The acceptance test of the X-ray system must be performed by a certified service technician with proven expertise and specialist knowledge.

52.1 Performing the acceptance test for the image reproduction system

The main goals of the acceptance check for the image reproduction system (IRS) in accordance with DIN 6868-157 are:

- Ensuring that the required image quality is achieved with the lowest possible radiation exposure
- Defining the operator and device data
- Determining and assessing the luminous density and light intensity of the image reproduction device and its surroundings
- Visual assessment via test images
- Defining reference values for the constancy test

› Click **Monitor test**.

› Under **User**, enter the name of the tester.

› Under **Monitor**, select the monitor for which the test is to be performed.

› Select the required test.

DIN 6868-157: Acceptance check, acceptance

check of multiple monitors

DIN 6868-57: Acceptance check

› Click **Start**.

The test is started.

› Answer the questions based on the test images.

› Click **Continue** to proceed with the wizard.

› Once the monitor test has been completed, close it.

52.2 Performing the acceptance test for the X-ray system

The main goals of the acceptance test of the X-ray system are:

- Ensuring that the required image quality is achieved with the lowest possible radiation exposure
- Defining the operator and device data
- Defining reference values for the constancy test
- Quality assurance of the system

 You can exit the acceptance test at any time using the navigation bar. This interrupts an ongoing acceptance test, but the test can be continued at a later point in time.

Creating a new acceptance test:

› Click **Acceptance test**.

› Click **New acceptance test**.

 An access code is required in order to perform an acceptance test and a partial acceptance test.

The access code is made up of the current date (day and month) in reverse sequence. For example: May 3 = 03.05. Access code: "5030"

› Enter the access code.

› Under **X-ray station**, select the X-ray station for which an acceptance test is to be performed.

The image acquisition device and the X-ray emitter are displayed.

› If the image receiver dose is to be calculated automatically (in accordance with StrlSchV / Radiation Protection Regulation § 114 section 1), under **Calibration for automatic calculation of image receiver dose** select **Apply**. (Refer also to the practice configuration "70.1 Configuring")

If the image acquisition device has already been calibrated at the factory, this option is **not required**.

If the image acquisition device has already been calibrated, this option is no longer available for selection.

- › Under **Resolution**, select the monitor with which the acceptance test is to be performed.
If the connected monitor is not displayed then you can also enter the resolution manually instead.
- › Enter the brightness and contrast of the monitor under **Brightness/contrast**.
- › If all of the data has been correctly entered, click **Start acceptance test**.
The acceptance test opens with the **X-ray image acquisition** registration card. You can change between the individual registration cards at any time.



The questions posed in the acceptance test depend on the X-ray system.

Taking and checking an X-ray image:

- › Under **X-ray image acquisition**, click on .
Image acquisition will now start. The preview window opens up. The image acquisition mode is saved as a fixed setting for ScanX, SensorX, ProVecta S-Pan, and ProVecta 3D Prime. With ProVecta S-Pan and ProVecta 3D Prime, the specified current and voltage can be changed on the device if necessary.
- › Import all images.

- › Once you have finished recording the last image, click **Finish imaging**.
The preview window is closed. All acquired images are transferred to the image archive. From there, the images can then be opened on the light table and edited. It is also possible to edit the image information (see "Displaying and editing image information") or delete images.
The image processing saved in the X-ray station is automatically applied to the images. If the image acquisition device defines its own image processing settings, then these are used.
The first image is automatically marked as a reference image. Alternatively, you can use the check box  to select any other image as a reference image.



As long as the acceptance test has not been completed, new images can be imported at any time.

- › If the X-ray parameters have not been entered automatically (by the device or with the suggested values from the X-ray station), enter the X-ray parameters in the image information .
- › If the option **Enable equivalent dose measurement** is active, then measure the equivalent dose, see "Dose equivalent".
- › To calibrate the image receiver dose (automatic calculation of dose), perform the dose calibration – see "Dose calibration".
- › To enter the X-ray parameters for all images of the acceptance test, click **Apply to all images**.
When you exit the **X-ray image acquisition** registration card, the X-ray parameters are saved and can no longer be changed.
- › Answer all of the questions in the lower area. In order to answer the questions, you can change the images using the tools in the toolbox (see "40.1 Toolbox").
- › Import aperture images if necessary (see "Importing aperture images").

Visual inspection and test measurement:

- › Change to **Visual test and measurement test**.

- › Answer all the questions and enter the measured values.

Entering general information:

- › Change to **General information about the test**.

- › Fill in all the fields.

Completing the acceptance test:



The test can only be completed if all fields have been properly filled in. If the mandatory fields are not filled in or they are only filled in partially, the symbol appears next to the tabs.

- › Save the acceptance test by clicking on **Finish test**.

The test is completed and saved. Once this has been done it cannot be changed any more.

53 Performing a consistency check

A complete consistency check comprises the consistency check of the image reproduction system and the consistency check of the X-ray system.

53.1 Performing a consistency check on the image reproduction system

The consistency check on the image reproduction system (IRS) in accordance with DIN 6868-157 comprises two different test procedures, which are normally performed every working day and on a yearly basis.

Daily test: visual inspection of a test image on the image reproduction device

Yearly test: measurement of the luminous density and illuminance of the image reproduction device and its surroundings (based on the requirements of the acceptance test)

- › Click **Monitor test**.
- › Under **User**, enter the name of the tester.
- › Under **Monitor**, select the monitor for which the test is to be performed.
- › Select the required test.
 - DIN 6868-157: Daily testing, 6-monthly testing, yearly testing
 - DIN 6868-57: Daily testing, monthly testing
- › Click **Start**.
 - The test is started.
- › Answer the questions based on the test image.
- › Click **Continue** to proceed with the wizard.
- › Once the monitor test has been completed, close it.

53.2 Performing a consistency check on the X-ray system

Consistency checking is carried out by taking X-ray exposures of the test phantom using the same dosing parameters as used for the acceptance test (benchmark values). The recorded consistency test image (test image) is compared with the X-ray image of the acceptance test (reference image), and the measurements are checked for possible deviations from the benchmark values (reference values). The consistency check image is clearly labeled by the software.

The requisite tests are determined by local rules and regulations. Carry out testing in accordance with local rules and regulations.

 You can exit the consistency check at any time using the navigation bar. This discards the commenced consistency check and the check cannot be continued at a later point in time.

 A consistency check can only be performed if a completed valid acceptance test/partial acceptance test result is available.

Creating a new consistency check:

- › Click **Consistency check**.
- › Click **New consistency check**.
The window **Start new consistency check** opens.
- › Under **X-ray station**, select the X-ray station for which a consistency check is to be performed.
The image acquisition device and the X-ray emitter are displayed.
- › Click **Start consistency check**.
The consistency check opens with the registration card **X-ray image acquisition**. You can change between the individual registration cards at any time.

If comments were entered by the tester during the acceptance test, these are displayed in a flyout. These comments can be opened again at any time via **Acceptance test comments**.

 The questions posed in the consistency check depend on the X-ray system.

Taking and checking an X-ray:

 New images can be imported at any time. In this case, the previously imported image is overwritten.

- › Under **X-ray image acquisition**, click on . Image acquisition will now start. The preview window opens up.
The acquisition mode of the reference image is used as the acquisition mode for the consistency check.
- › Import the image.

- › Click on **Stop acquisition**.

The preview window is closed. The image is automatically opened on the light table. If an image is already present on the light table, this is discarded and replaced by the new image. The image can be edited. Similarly, the image information can be edited via the functions in the light table menu (see "Editing image information in the "Image inspector"").

The same image processing with which the reference image was processed is automatically applied to the image.

The X-ray parameters from the reference image or from the image acquisition device (if the device also sends the X-ray parameters to the device) are applied.

- › Answer all of the questions in the lower area. The image of the consistency check and the reference image of the acceptance test are depicted on the light table (except for CBCT) for the purposes of image comparison.
- › If the option **Enable equivalent dose measurement** is active, then measure the equivalent dose, see "Dose equivalent".
- › On CBCT X-ray systems import aperture images if necessary (see "Importing aperture images").

Visual inspection and test measurement:

- › Change to **Visual test and measurement test**.
- › Answer all of the questions.
In order to answer the questions, you can change the images using the tools in the toolbox (see "40.1 Toolbox").

Finalize a consistency check:

 The test can only be completed if all fields have been properly filled in. If the mandatory fields are not completed or only partially completed,  is shown next to the tabs.

- › Save the consistency check by clicking on **Complete check**.
The test is completed and saved. Once this has been done it cannot be changed any more.

54 Performing a partial acceptance test

The scope of a partial acceptance test is defined by the scope and context of changes made to the system. Depending on the nature of the changes, a constancy test or overlapping measurement may be sufficient to ensure that the relevant criteria are met.

The pertinent details are part of the Guidelines for Expert Qualifications (Sachverständigen-Richtlinie, SV-RL) and the Quality Assurance Guidelines (Qualitätssicherung-Richtlinie, QS-RL).

 A partial acceptance test can only be performed if a completed acceptance test result or partial acceptance test result is available.

In this case, the partial acceptance test is pre-populated with the data from the previous test (last acceptance or partial acceptance test). You only need to edit entries that need to be changed.

Creating a partial acceptance test:

- › Click **Partial acceptance test**.
- › Click **New partial acceptance test**.

 An access code is required in order to perform an acceptance test and a partial acceptance test.

The access code is made up of the current date (day and month) in reverse sequence. For example: May 3 = 03.05. Access code: "5030"

- › Enter the access code.
- › Working under **X-ray station**, select the X-ray station for which a partial acceptance test is to be performed.
The image acquisition device and the X-ray emitter are displayed.
- › Under **Resolution** and **Brightness/contrast**, check that the data is correct. If necessary, select or enter the correct data.

- › If all of the data has been correctly entered, click **Start partial acceptance test**.
The partial acceptance test opens with the **X-ray image acquisition** registration card. You can change between the individual registration cards at any time.

 The questions posed in the partial acceptance test depend on the X-ray system.

Taking and checking an X-ray image:

- › Under **X-ray image acquisition**, click on .
Image acquisition will now start. The preview window opens up. The image acquisition mode is saved as a fixed setting for ScanX, SensorX, ProVecta S-Pan, and ProVecta 3D Prime.
- › Import all images.
- › Once you have finished recording the last image, click **Finish imaging**.
The preview window is closed. All acquired images are transferred to the image archive. From there, the images can then be opened on the light table and edited. It is also possible to edit the image information (see "Displaying and editing image information") or delete images.

The image processing saved in the X-ray station is automatically applied to the images. If the image acquisition device defines its own image processing settings, then these are used.

The first image is automatically marked as a reference image. Alternatively, you can use the check box  to select any other image as a reference image.

 As long as the acceptance test has not been completed, new images can be imported at any time.

- › If the X-ray parameters have not been entered automatically (by the device or with the suggested values from the X-ray station), enter the X-ray parameters in the image information .
- › To enter the X-ray parameters for all images of the partial acceptance test, click **Apply to all images**.
When you exit the **X-ray image acquisition** registration card, the X-ray parameters are saved and can no longer be changed.

- › Check all of the questions in the lower area. If necessary, select or enter the correct data. In order to answer the questions, you can change the images using the tools in the toolbox (see "40.1 Toolbox").

- › Import aperture images if necessary (see "Importing aperture images").

Visual inspection and test measurement:

- › Change to *Visual test and measurement test*.

- › Check all of the questions. If necessary, select or enter the correct data.

Entering general information:

- › Change to *General information about the test*.

- › Fill in all the fields.

Completing a partial acceptance test:



The test can only be completed if all fields have been properly filled in. If the mandatory fields are not filled in or they are only filled in partially, the symbol  appears next to the tabs.

- › Save the partial acceptance test by clicking on *Finish test*.

The test is completed and saved. Once this has been done it cannot be changed any more.

55 Managing the X-ray system tests and checks

The tests and checks that have been performed are managed separately depending on the type (acceptance test, partial acceptance test, consistency check).

If the last test/check performed is no longer valid or the test/check is not yet complete, then it is marked with .

55.1 Viewing the test/check

- › Click *Acceptance test*, *Partial acceptance test*, or *Consistency check*.

- › Select the required test/check.

- › Click *Display*.

Alternatively, you can also double-click on a test/check to view it.

The test/check is opened.

Changes can be made to the image, but they will not be saved.

55.2 Exporting tests/checks

Exporting individual tests/checks

- › Click *Acceptance test*, *Partial acceptance test*, or *Consistency check*.

- › Select the required test/check.

- › Click on *Export*.

The test export dialog opens.

- › Select the file path.

As VisionX Inspect exports individual files, we recommend that you set up a new folder and specify this as the target folder.

- › Select the image format.

- › If, during checks of a CBCT X-ray unit, all of the 3D X-ray images are to be exported as well, activate the *Export complete volume* option.

› Click on **Export**.

The summary of the test is exported as a PDF file together with the image in the selected format.

When conducting checks of a CBCT X-ray unit, an image acquisition of two layers is exported for every check: an MTF layer and a homogeneity layer. The annotations and number of the layers are also outputted. The aperture images are also exported. If the **Export complete volume** option is activated, the 3D X-ray image is also exported as a DICOM data record.

Exporting all tests/checks for an X-ray station

If you wish to export more than just one test/check, then it is possible to export all of the tests/checks for an X-ray station at once.

Requirements:

- ✓ At least one completed test/check is available

› Click .

- › Select the required X-ray station.

- › Select the file path.

The tests/checks are saved in individual folders in the directory.

- › Select the image format.

- › If, during checks of a CBCT X-ray unit, all of the 3D X-ray images are to be exported as well, activate the **Export complete volume** option.

› Click on **Export**.

The summary of the test is exported as a PDF file together with the image in the selected format.

When conducting checks of a CBCT X-ray unit, an image acquisition of two layers is exported for every check: an MTF layer and a homogeneity layer. The annotations and number of the layers are also outputted. The aperture images are also exported. If the **Export complete volume** option is activated, the 3D X-ray images are also exported as a DICOM data record.

55.3 Printing a test/check

- › Click **Acceptance test**, **Partial acceptance test**, or **Consistency check**.

- › Select the required test/check.

- › Click **Print**.

The print dialog opens.

- › Select the required printer and change any settings as required.

- › Click **Print**.

The summary of the test is printed out. The image is not printed out with this.

55.4 Deleting a test/check

Acceptance tests and partial acceptance tests can be deleted only if they have not been completed yet.

Consistency checks can be deleted at any time.

- › Click **Acceptance test**, **Partial acceptance test**, or **Consistency check**.

- › Select the required test/check.

- › Click **Delete**.



Acceptance and partial acceptance tests can only be deleted after an access code has been entered.

The access code is made up of the current date (day and month) in reverse sequence. For example: 03. May = 03.05.

Access code: "5030"

- › Enter the access code.

The test/check is deleted.

56 Managing the tests of the image reproduction system

- › Click *Monitor test*.
- › Click *Reports*.
- › Select the time period for which you wish to see the reports displayed.
- › Under *Monitor*, select the monitor for which the tests are to be displayed. The filtered results are displayed in the list.
- › Select the required test.

Viewing the test:

- › Click *Details*.
Alternatively, you can also double-click on a test to open it.
The summary of the test is opened.

Exporting a test:

- › Click *Export to...*
The test export dialog opens.
- › Select the file path.
- › Click on *Save*.

The summary of the test is exported as a PDF file.

Printing a test:

- › Click *Details*.
Alternatively, you can also double-click on a test to open it.
The summary of the test is opened.
- › Click *Print*.
The print dialog opens.
- › Select the required printer and change any settings as required.
- › Click *Print*.
The summary of the test is printed out.

57 Performing a plate surface quality check

The plate surface quality check checks the phosphor storage plates for damage and scratches, and provides a recommendation for when the phosphor storage plate should be replaced. We recommend performing the plate surface quality check at regular intervals.



Should damage or wear be visible in areas of the phosphor storage plate that are relevant for diagnostics, the phosphor storage plate should be replaced regardless of the result of the plate surface quality check.

The test images can be furnished with the phosphor storage plate identification. As a result, the condition of the phosphor storage plate over time is visible in the overview if checks are performed regularly.

The check result is assessed as follows:

- | | |
|---|---|
| A | Phosphor storage plate is new, no need for further action. |
| B | Phosphor storage plate is in good condition, no need for further action. |
| C | Phosphor storage plate shows signs of wear. Monitor and check again soon. |
| D | The plate shows clear signs of wear, speedy replacement is recommended. |
| E | The plate shows heavy wear, replacement is recommended urgently. |
| X | Unable to perform phosphor storage plate quality check. Please note the correct dose. |

The following steps are required to perform a plate surface quality check:

- "57.1 Creating a homogeneous test image"
- "57.2 Scanning and checking the phosphor storage plate"

The completed plate surface quality checks can be viewed and deleted, see "57.3 Management of plate surface quality checks".

57.1 Creating a homogeneous test image

- › Place the phosphor storage plate on a level surface at a distance of approximately 12 cm (equivalent to the diameter of a CD) from the X-ray tube. In doing this, make sure that the active side of the phosphor storage plate faces the X-ray tube.
- › Set the exposure time and setting values for a molar X-ray image on the X-ray unit.
- › Scan the phosphor storage plate immediately (after no more than 30 minutes), see "57.2 Scanning and checking the phosphor storage plate".

57.2 Scanning and checking the phosphor storage plate



You need a ScanX phosphor storage plate scanner to scan the phosphor storage plate.

- › On the start page, click *Plate surface quality check*.
- › Click *Scan plate*.
- › Select the acquisition source.
- › Scanning the phosphor storage plate. The image is displayed in the image inspector and on the light table. The assessment (A–E) is shown on the bottom right of the preview image and in the toolbox. The dose indicator shows whether or not the exposure of the phosphor storage plate for the quality check was correct.
- › Click  in the preview image to enter the phosphor storage plate ID. Phosphor storage plate IDs that have been entered previously can be selected in the selection list. With ScanX Edge, the phosphor storage plate ID is entered automatically.
- › In order to view the image on the light table in more detail, the tools of the toolbox (show, image corrections, histogram) can be used. The changes are not saved.

- › Click *Exit from plate surface quality check*. The overview of the plate surface quality check is displayed.

Repeating the plate surface quality check (assessed as X):

- › If the assessment of the image is X, it was not possible to perform the plate surface image check due to faulty exposure. Evenly expose the phosphor storage plate again. Adjust the exposure according to the dose indicator of the first image.
- › Scan the phosphor storage plate immediately (after no more than 30 minutes).

57.3 Management of plate surface quality checks

- › Click *Plate surface quality check*. The overview lists all checks that have been done, sorted by phosphor storage plate ID. *Viewing all test images for an phosphor storage plate ID:*
 - › Mark the corresponding phosphor storage plate ID in the overview. All checks done for this phosphor storage plate ID are displayed, including their dates and results.
 - › To open the test images, click *Display image on light table*. The light table opens. The image inspector shows all preview images for the phosphor storage plate ID. The images can be displayed individually on the light table.
- Exporting a test image:*
 - › Mark the corresponding phosphor storage plate ID in the overview. All checks done for this phosphor storage plate ID are displayed, including their dates and results.
 - › To open the test images, click *Display image on light table*. The light table opens. The image inspector shows all preview images for the phosphor storage plate ID.
 - › Click on the preview image to display it on the light table.
 - › Click .
 - › Select the file path and image format.

- › Click on *Export*.
The test image is exported. Changes to the image, e.g., brightness or contrast, are not included.

Deleting a test image:

- › Mark the corresponding phosphor storage plate ID in the overview.
All checks done for this phosphor storage plate ID are displayed, including their dates and results.
- › To open the test images, click *Display image on light table*.
The light table opens. The image inspector shows all preview images for the phosphor storage plate ID.
- › Click on the preview image to display it on the light table.
- › Click .
The image is deleted immediately.

Deleting an phosphor storage plate with phosphor storage plate ID from the plate surface quality check:

- › Mark the corresponding phosphor storage plate ID.
- › Click *Delete plate*.
- › Confirm the deletion in the dialog window.

58 VisionX Inspect configuration overview

In the configuration, the software and connected devices can be configured. The configuration is divided into the following parts:

- "58.1 Application"
- "58.2 Devices"
- "58.3 X-ray stations"



Available configurations in VisionX that are also valid for VisionX Inspect will be applied, e.g., X-ray stations.

If user management is activated in VisionX then it is also valid for VisionX Inspect. The login window opens during startup.

The password can only be changed in VisionX.

58.1 Application

Under *Application* you can adjust general settings for the software (e. g. , the language used in the software, licensing, duration of validity of the acceptance tests and consistency checks).

Workstation

Workstation	
Name of the workstation:	A name can be assigned to this workstation.
Port for local services:	Port used within the software; it can be changed in the event of any conflicts with other software. Default port: 3113

Display

Display scaling:	If a new scale has been selected, the software will now be displayed entirely according to this scale. In the process, all windows, fonts, icons, etc., are made larger or smaller. The change is applied without a restart and remains active after a restart.
UI style:	Standard: All font styles are used. Narrow: No bold font styles are used (e. g., default for Japan region).
Display language:	The display language can be selected via the selection list. The software needs to be restarted after the change has been made.
GPU-accelerated image display:	If GPU acceleration is enabled, then certain calculations are handled by the graphics processor. In some areas, this can make the image appear more quickly. The software needs to be restarted after the change has been made. Minimum system requirements: <ul style="list-style-type: none"> - Graphics memory ≥ 512 MB - OpenGL 2.1

Translation	
The interface texts in the software can be individually modified if required.	
Language:	The language for translation can be chosen via the selection list.
User-defined translations: exporting	An XLIFF file is exported to the desktop by clicking on "Export". This can be adjusted and imported again according to your individual wishes.

Translation	The interface texts in the software can be individually modified if required.
User-defined translations: importing	The adjusted XLIFF file can be selected and imported by clicking on "Import".

Protocol settings

User notification

Click *User notifications* to display all user notifications. These can be sorted in ascending or descending order according to date or notification content.

Licensing

Without a valid license file, the software can be used in the demo version. Here, 30 patients can be created in the software with full functionality. From the 30th patient, a 30-day deadline applies within which further patients can be created. Once this deadline has expired, it will no longer be possible to use the software without a valid license file.

With VisionX Inspect, unlimited acceptance checks and partial acceptance checks are possible without a valid license file in demo mode. A license file is required for the second consistency check of an X-ray station and for the monitor test.



If you wish to move the server or perform a single workstation installation on a different computer, you will need to request a new license file (free of charge).

Licensing depends on whether or not the license file is already present:

- If the license file exists: "7.1 Licensing with a licensing file"
- If the license file must be ordered: "7.2 Licensing without a licensing file"

The license file contains information about the licensed modules. If additional modules are required at a later time, then the licensing process needs to be performed again.

The following modules are available:

VisionX Basic	Basic software functions
VisionX X-ray	Taking an X-ray image (Acquisition types of the Intraoral, panoramic, and Cephalometric mode classes)
VisionX Video	Making a video recording (Acquisition types of the Video and Spectra mode classes)
VisionX MobileConnect	Show images on VisionX Imaging iPad app
VisionX Inspect	Configuring and performing the consistency checks and acceptance tests
VisionX 3D	Making, importing, and displaying a CBCT recording (Acquisition types of the CBCT module class)
VisionX DICOM Starter	Sharing images with DICOM systems
VisionX DICOM Print	Outputting images on DICOM printers
VisionX Basic Dental Workflow	Interface to practice management program
VisionX Connect	Acquisition and transmission of X-ray and video images at the request of third-party software (restricted configuration, see "32 VisionX Connect")

When working with a multi-station installation, the VisionX 3D module is administered as a so-called floating license, meaning that the license is only required if a 3D recording has been started or a 3D recording is opened on the light table. Once the patient is logged out, the license is released again and can be used on another workstation.

In a multi-station installation, the VisionX DICOM Starter module is also administered as a floating license, meaning that the license is only required if the workstation is logged in as a DICOM workstation.

Purchase new license file ...	A new license file can be ordered.
Station number:	Unique number of the workstation
Modules	List of modules that can be licensed
Module	Name of the software module
Registered	Yes: The module is already licensed. No: The module is not yet licensed. Quantity: Number of existing floating licenses
Order	Check if you wish to license this module. For floating licenses, specify the number of licenses needed. With a multi-station installation, the 3D license is only needed for a workstation if the module will be used there. DICOM is only needed if the workstation is logged in as a DICOM workstation.
Serial numbers	Information on the devices The connected devices are listed automatically.
Unit	Name of the device
Serial number	Serial number of the device
Reference number	Order number of the device
Add device	Add device manually if it is not recognized automatically
Update	Update the list with all connected devices that are switched on.
Address data	Address data of the practice
Dealer	Address data of the dealer

Import new license file

Import new license file: An existing license file can be imported here.

Acceptance and consistency check

Display warning if no check is available:	A warning is shown if no acceptance test has been performed yet.
Activating equivalent dose measurements:	This should be activated if equivalent dose measurements are required for acceptance tests in accordance with national legislation (e.g., in Austria). In the toolbox, the group <i>Equivalent dose</i> is then also displayed.
Workstation is used for diagnosis:	If this function is activated then the monitor test must be performed for this workstation. Each time VisionX is started, VisionX Inspect checks whether or not a monitor test needs to be performed. If VisionX is open for longer than 24 hours, then a check is also performed. If a monitor test is due, this is started automatically.

Under *Warning mode...* you can adjust the warning mode for acceptance and consistency checks (see "Warning mode").

Warning mode

Period of validity

Intraoral:	This defines the period of validity for the consistency check for intraoral image reproduction systems and X-ray systems.
Extraoral:	This defines the period of validity for the consistency check for extraoral image reproduction systems and X-ray systems.

58.2 Devices

A list of all connected devices is displayed in the **Devices** configuration. It corresponds to the configuration in VisionX.



Changes to the unit configuration are also directly valid in VisionX.

Devices

Unit	This shows a preview image of the connected device (where present).
Name	Name of the device
Link	Specifies the connection settings
Connection status	Specifies whether the device is currently connected and can be used
Use in VisionX Connect	For video: Option for activating the device for VisionX Connect For X-ray: Switch to the configuration X-ray stations

The configuration of the devices in VisionX Inspect does not differ from the configuration of the devices in VisionX (see "66 Devices").

58.3 X-ray stations

A list of all the created X-ray stations is displayed in the **X-ray stations** configuration.

The list shows the following properties of the X-ray stations:

Name	Name of the X-ray station, can be changed in Configure .
Owner	Operator of the X-ray station, can be changed in Configure .
Category	X-ray emitter category (e.g., intraoral)
Favorite	This X-ray station is displayed first in the selection list when the X-ray image acquisition is started.
Use in VisionX Connect	Device is visible via VisionX Connect for third-party application. (only with VisionX Connect license)
Linked workstation	Workstation that automatically accepts a new job.

The list can be sorted by clicking in the headline of the corresponding column.

The following possible settings depend on the device.

You can create a new X-ray station either manually or using the wizard. If there is a legal requirement for recording X-ray data then the process will depend on the image acquisition device:

- Creating an X-ray station using the wizard
 - ProVecta S-Pan
 - ProVecta S-Pan Ceph
 - ProVecta 3D Prime
 - ProVecta 3D Prime Ceph
- Creating an X-ray station manually
 - All ScanX units
 - SensorX
 - Cephalometric/panoramic devices without digital image receiver (e.g., with phosphor storage plate)
 - TWAIN devices



Changes to the configuration of the X-ray stations in VisionX Inspect are also directly valid in VisionX.

Configuring

General

Name:	Name of the X-ray station All X-ray stations must be clearly and uniquely named. A name must not be used more than once.
Operator:	Name of the operator
Address:	Address of the operator

X-ray emitter

Selection	Selection list showing the created X-ray emitters. A new X-ray emitter can be created by clicking Create X-ray emitter... You can click on Configure to change the configuration of an X-ray emitter that has already been created. The category (e.g., intraoral) cannot be changed. You can delete an X-ray emitter via Delete provided it is not being used by an X-ray station.
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Image creation device

Device:	Select a device from the selection list
Magnification:	Magnification depends on the X-ray emitter and the assigned image type. The value must be between 1.0 and 10.0. When you select an X-ray emitter, a default value is suggested: <ul style="list-style-type: none"> - Intra: 1.05 - Pano: 1.25 - Ceph: 1.1
Activating calculation of the image receiver dose:	If the image acquisition device supports automatic calculation of the image receiver dose from the image data, manual entry of the X-ray parameters is no longer necessary. The setting Automatic calculation of image receiver dose from image data must also be activated in the practice configuration, see "70 Practices".

Parameters

Depending on the image acquisition device and the X-ray emitter assigned to the X-ray station, different suggested values can be defined for the X-ray parameters for each image acquisition type. It makes the work easier if the X-ray images are always taken with the same values. The X-ray parameters are automatically saved with the image information (see "37.1 Importing X-ray images using ScanX"). They can be adjusted here as required. The proposed values for the X-ray parameters are only entered automatically for the first image. If there are further images from the same image acquisition then the X-ray parameters can be copied from the first image with **Apply values** or they can be manually entered. When configuring the various acquisition types, you can apply the values from another X-ray station that uses similar or identical values. This saves you the trouble of entering each value separately since you only need to change those values that are different. To do so, go to the area in the lower section labeled **Apply Parameters from this X-ray Station:**, then select the X-ray station whose values you wish to use and click **Apply**.

Image processing:

For every image created with this X-ray station, the predefined image processing steps are performed automatically.

The image processing steps can be changed on the light table and saved (see "40.2 Managing default image settings"). The values are only displayed in the configuration.

You can click on **Restore default settings** to reset any changes made in the image processing steps.

Filter

Selected filter:	Predefined filters that support diagnosis (see "Filter")
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Windowing

Settings for image corrections and histogram

Limit white:	Percentage of grayscales converted to white
Limit black:	Percentage of grayscales converted to black
Brightness:	Brightness of the image
Contrast:	Contrast of the image
Gamma:	< 1: Bright areas become darker > 1: Dark areas become brighter

Display

Mirroring:	Horizontal or vertical inversion of the image
------------	---

Annotation

Edge mask:	Image masking; the area outside the mask is hidden
Grayscale:	Color of the edge mask; choose between 0 (black) and 255 (white)

Deleting

- › Select the required X-ray station in the list.
- › Click **Delete**.
- › Confirm the deletion in the dialog window.

 ServerManager **CAUTION****Data loss due to hardware defect or software problems after operating system update**

- › Perform regular data backups of the imaging software database
- › Save the images separately on a regular basis. The images themselves are not a part of the ServerManager backup.

You can use the ServerManager to generate and restore backups of the imaging software database. An automatic backup can be configured for regular data protection. The last 20 backups are always saved; older backups are deleted.

The backup covers the following data:

- Patient data
- Practice data
- Image information (only for meta data; not the images themselves)

The backup is saved with the time and date.

With a multi-station installation, the ServerManager can only be accessed on the workstation which has been configured as a server.

In addition, the imaging software database can be changed using the ServerManager (e. , when migrating to a new server).

59 Starting the ServerManager

Requirements:

- ✓ VisionX and VisionX Inspect have not been started.
- › Click on *Start > All Programs > VisionX > VisionX ServerManager.*

60 Creating a manual backup

- › Click on  *Create new backup.* During the backup, a dialog window is displayed with a progress bar. A notification in the dialog window is displayed once the backup has been completed.

61 Restoring the backup

Requirements:

- ✓ VisionX and VisionX Inspect have been closed on all workstations.



CAUTION

Data loss

All the data generated after the backup is no longer available after the backup has been restored.

- › Before restoring the backup, ensure that the new data has been backed up separately.
 - › Import the new data of the backup restoration separately.
- › Click on  *Restore the existing backup*.
A dialog window with the list of available backups opens. The backups are marked with the date and time.
 - › Select the backup and click on *Restore*.
A notification appears once the backup has been restored.

62 Configuring the automatic backup

The automatic backup generates a backup at regular intervals. The interval can be set.

VisionX and VisionX Inspect must be closed on all workstations during the backup. We recommend that you select a time for the automatic backup at which you are not working with the software.

The workstation on which the backup is generated (server or single workstation) must be running at the set time and the *VisionX Service* Windows service must not be closed. (The service starts automatically when the computer is started.)

Setting and activating the backup:

- › Click on  *Configure automatic backup*.
The dialog window opens.
- › Click on *Activated*.
- › Set the interval and starting time. The figures can be entered via the keyboard or using the arrow keys or the mouse wheel.
The starting time of the next automatic backup is displayed under *Last and next backup*.
- › Click on *Activate automatic backup*.
The dialog window is closed.

Deactivating the backup:

- › Click on  *Configure automatic backup*.
The dialog window opens.
- › Click on *Deactivated*.
- › Click on *Deactivate automatic backup*.

63 Changing the database

You can use this function to change the database directories. This may be necessary if the database is to be moved to a new server, for example.

Requirements:

- ✓ VisionX and VisionX Inspect have been closed on all workstations.



This function is described using the VisionX default directories.

The database directory may be different in a user-defined installation.

- › Copy the VisionXData directory (default: C:\VisionXData) from the old server to the new server.
- › Click .
- › Select or enter the path of the new VisionXData directory.
- › Click *Next*.
- › Check the practice paths and change them as required.
- › Click *Apply*.
The database directories will be changed to the new directory.

64 Reconstruct database

This function makes it possible to reconstruct images that are not displayed in the imaging software because the corresponding entry in the database is missing.

The images are listed and displayed, and can then be transmitted to the database.

Before the “Reconstruct database” function is executed, an action is selected for each image:



Transmit image to database



Permanently delete image



Ignore image

- › Click *Reconstruct database*.
If data is available for the reconstruction then the window *Reconstruct database* opens. The data is structured by practice and patient.
- › Click on an image to view the preview image, the available patient data, and the image information.
- › Click *Transmit* to reconstruct the image and import it to the database of the imaging software.
The image is marked with .
- › Click *Delete* to permanently delete the image. The image is marked with .
- › Click *Ignore* to leave the image in the reconstruction directory.
The image is marked with .
- › Click *Apply*.
After the reconstruction process is completed a report is displayed.
- › Click *Return to main screen* to exit the reconstruction.

 Configuration overview

In the configuration, the software and connected devices can be configured. Configuration  is only available to the user role of Administrator.



With a multi-station installation, the software can be configured at any workstation (client). The central settings (e.g., X-ray stations, image acquisition types, users) are then available at all workstations.

65 Application

See also:

- "20 Changing the display language"

Under **Application** you can adjust general settings for the software (e. g. , the language used in the software, licensing, dental notation system).

65.1 Image cache

Recorded images that have been lost due to connection problems during the transfer from the workstation to the server can be restored from the image cache. In the image cache settings, the retention period and memory limits can be specified.

The settings for the image caches apply locally to one workstation.

Image cache

Retention period for X-ray images:

Images that have not been successfully transmitted are always retained in the image cache even if no retention period is defined. If a time is entered under **Retention period for X-ray images**, then all images (successfully and unsuccessfully transmitted) are retained for this additional period in the image cache and then deleted.

Examples:

- 0 days: The acquired images are immediately deleted once they have been successfully transmitted.
- 3 days: After successful transfer, the acquired images are stored for a further 3 days in the image cache and then deleted.

Memory warning limit:

The available memory space is determined each time the imaging software is launched and before any images are imported. If the amount of memory space remaining is below the set memory warning limit, the imaging software will issue a warning in a separate window. Work can be continued.

Image cache

Memory error limit:

The available memory space is determined each time the imaging software is launched and before any images are imported. If the amount of memory space remaining is below the set memory error limit, the imaging software will issue a warning in a separate window. You can carry on working with certain restrictions. You cannot create any images, but you can view existing ones. In addition, you can log into and out of patient records.

65.2 Workstation

Workstation

Name of the workstation:

A name can be assigned to this workstation.

Port for local services:

Port used within the software; it can be changed in the event of any conflicts with other software.
Default port: 3113

Display

Display scaling:

If a new scale has been selected, the software will now be displayed entirely according to this scale. In the process, all windows, fonts, icons, etc., are made larger or smaller. The change is applied without a restart and remains active after a restart.

UI style:

Standard: All font styles are used.
Narrow: No bold font styles are used (e. g., default for Japan region).

Display language:

The display language can be selected via the selection list. The software needs to be restarted after the change has been made.

GPU-accelerated image display:

If GPU acceleration is enabled, then certain calculations are handled by the graphics processor. In some areas, this can make the image appear more quickly. The software needs to be restarted after the change has been made.
Minimum system requirements:
– Graphics memory \geq 512 MB
– OpenGL 2.1

VisionX settings

Display last registered patients:

If the option is activated, the list of patients that were last registered is displayed in the patient flyout.

Translation

The interface texts in the software can be individually modified if required.

Language:

The language for translation can be chosen via the selection list.

User-defined translations:
exporting

An XLIFF file is exported to the desktop by clicking on "Export". This can be adjusted and imported again according to your individual wishes.

Translation	The interface texts in the software can be individually modified if required.
User-defined translations: importing	The adjusted XLIFF file can be selected and imported by clicking on "Import".
VisionX Smart Reader	
Activating sound notification:	The Smart Reader uses an audible sound to indicate that it has detected an IDX phosphor storage plate.

65.3 Implants



Only implant packages with the file extension ".ddi" can be imported.

In Downloads at www.airtechniques.com Air Techniques offers implant packages for different manufacturers.

Importing implant package...	Implant models can be imported (see "27 Importing implant packages"). They are available in the toolbox <i>Implants</i> and can be added to images schematically. The implant models are saved centrally and are available on all the workstations in the practice.
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65.4 Connection settings

These server settings vary depending on whether the workstation is configured as a client or a server.
Workstation configured as **server**:

Server settings	
Server service port:	Port for communications with the server service. This port is used in single workstation and multi-station installations. Default port: 3113

Workstation configured as **Client**:

Server:	IP address of the server
Change server	Opens a dialog window for setting the server connection. Server: IP address of the server Port: server service on which the server is set.

65.5 Protocol settings

User notification

Click *User notifications* to display all user notifications. These can be sorted in ascending or descending order according to date or notification content.

65.6 Dental notation

Go to the selection list to select which dental notation system is to be used:

- FDI (dental notation system of the Fédération Dentaire Internationale)
- UNS (Universal Numbering System)
- Palmer (Zsigmondy-Palmer System)

65.7 Licensing

Without a valid license file, the software can be used in the demo version. Here, 30 patients can be created in the software with full functionality. From the 30th patient, a 30-day deadline applies within which further patients can be created. Once this deadline has expired, it will no longer be possible to use the software without a valid license file.

With VisionX Inspect, unlimited acceptance checks and partial acceptance checks are possible without a valid license file in demo mode. A license file is required for the second consistency check of an X-ray station and for the monitor test.

 If you wish to move the server or perform a single workstation installation on a different computer, you will need to request a new license file (free of charge).

Licensing depends on whether or not the license file is already present:

- If the license file exists: "7.1 Licensing with a licensing file"
- If the license file must be ordered: "7.2 Licensing without a licensing file"

The license file contains information about the licensed modules. If additional modules are required at a later time, then the licensing process needs to be performed again.

The following modules are available:

VisionX Basic	Basic software functions
VisionX X-ray	Taking an X-ray image (Acquisition types of the Intraoral, panoramic, and Cephalometric mode classes)
VisionX Video	Making a video recording (Acquisition types of the Video and Spectra mode classes)
VisionX MobileConnect	Show images on VisionX Imaging iPad app
VisionX Inspect	Configuring and performing the consistency checks and acceptance tests
VisionX 3D	Making, importing, and displaying a CBCT recording (Acquisition types of the CBCT module class)
VisionX DICOM Starter	Sharing images with DICOM systems
VisionX DICOM Print	Outputting images on DICOM printers
VisionX Basic Dental Workflow	Interface to practice management program
VisionX Connect	Acquisition and transmission of X-ray and video images at the request of third-party software (restricted configuration, see "32 VisionX Connect")

When working with a multi-station installation, the VisionX 3D module is administered as a so-called floating license, meaning that the license is only required if a 3D recording has been started or a 3D recording is opened on the light table. Once the patient is logged out, the license is released again and can be used on another workstation.

In a multi-station installation, the VisionX DICOM Starter module is also administered as a floating license, meaning that the license is only required if the workstation is logged in as a DICOM workstation.

Purchase new license file ...	A new license file can be ordered.
Station number:	Unique number of the workstation
Modules	List of modules that can be licensed
Module	Name of the software module
Registered	Yes: The module is already licensed. No: The module is not yet licensed. Quantity: Number of existing floating licenses

Purchase new license file ...	A new license file can be ordered.
Order	Check if you wish to license this module. For floating licenses, specify the number of licenses needed. With a multi-station installation, the 3D license is only needed for a workstation if the module will be used there. DICOM is only needed if the workstation is logged in as a DICOM workstation.
Serial numbers	Information on the devices The connected devices are listed automatically.
Unit	Name of the device
Serial number	Serial number of the device
Reference number	Order number of the device
Add device	Add device manually if it is not recognized automatically
Update	Update the list with all connected devices that are switched on.
Address data	Address data of the practice
Dealer	Address data of the dealer

Import new license file

Import new license file: An existing license file can be imported here.

65.8 X-ray stations

If there is a legal requirement to record X-ray data, then the box must be checked (this option is pre-selected, depending on the region selected during the first start). As a result, the X-ray stations need to be manually set up and configured (see "68 X-ray stations").

In addition, various information (investigated part of the body, technical adjustment parameters of the X-ray emitter, etc.) need to be entered as specified in the German X-Ray Ordinance.

If there is no legal requirement to record X-ray data, then the check mark can be omitted. As a result, the matching X-ray stations are automatically created in the background for every device. No further configuration is required for these. During the importing of X-ray images, the corresponding device can then be selected.

For example, three X-ray stations are created for the ScanX Intraoral View / ScanX Classic View as the device supports three different modes:

- Intra
- Pano
- Ceph

65.9 Boost filter

Activate boost filter for Spectra J Series:	Gain filter for better analysis by the caries filter When the boost filter is active (preset), the  symbol is burned into the image in the upper right corner.
---	--

66 Devices

See also:

- "24 Adding devices"

A list of all connected devices is displayed in the *Devices* configuration.

Devices	
Unit	This shows a preview image of the connected device (where present)
Name	Name of the device
Link	Specifies the connection settings
Connection status	Specifies whether the device is currently connected and can be used
Use in VisionX Connect	For video: Option for activating the device for VisionX Connect For X-ray: Switches to the configuration <i>X-ray stations</i>

How a device is configured depends on the device type.

If a device is selected in the displayed list, a selection of the following options appears below it:

- Configure
- Edit connection settings

The available sub-menus vary according to which device was marked in the list.

With *Register network device*, you can connect a device with the software via its IP address.

If the configuration of the device is opened via *Configure*, then a display of the device and the name of the device are shown.

If the firmware is out of date and needs to be updated, a corresponding message is displayed.

Depending on the device type, various sub-menus for the configuration are displayed underneath this.

66.1 ScanX

Configuring



WARNING

All settings made can have a direct influence on the image quality and the functions of the devices.

- › Changes must only be made either by Air Techniques personnel or by a suitably qualified person approved by Air Techniques.
- › Check and, if necessary, correct the changed image quality by importing a test X-ray image.



Depending on the device, some functions may not be available.

Acquisition modes

All acquisition modes that are available on the selected device are listed under **Acquisition mode**:. Once you have selected an acquisition mode from the list, you can implement various settings in the tree directory. They vary depending on the connected device and can depend on the installed firmware version.

Duplicate is used to create a copy of the image acquisition mode.

You can delete the image acquisition mode by clicking on **Delete**.

At least one acquisition mode must always be defined. If only the acquisition mode for this device exists, then it must not be deleted.

All acquisition modes for a device can be imported or exported ( > **Import Acquisition Modes** or  > **Export Acquisition Modes**).

During the import, any existing acquisition modes are overwritten and new acquisition modes are created additionally.

A folder is created on the desktop during the export.

All acquisition modes of a device can be reset to the default settings ( > **Reset all acquisition modes to default settings**).

Firmware



CAUTION

Equipment damage from an incorrect firmware update

Image acquisition not possible

- › Only trained specialists or personnel trained by Air Techniques may perform a firmware update.

Firmware

Current version:	The firmware installed on the device is displayed.
New version:	If a new firmware version is selected via Select firmware file , the data for this version is displayed.
Note:	Information concerning the installation and the selected firmware file is displayed (e.g., selected firmware file is older than the one installed on the device; selected firmware file is not compatible with the version installed on the device).
Expected duration:	The expected duration of the update is displayed.

Device settings

All device settings that are available on the selected device are listed under **Device settings**. In the tree directory, various settings can be adjusted. They vary depending on the connected device and can depend on the installed firmware version.

Device settings

Standby settings	If this function is activated then the device will switch to standby mode after the selected time.
------------------	--

Oscilloscope

The current ambient brightness or the incidence of extraneous light into the connected device is displayed under **Oscilloscope**.

Report

The report file saved on the device is displayed under **Report**. Use **Export** to save the report file under **C:\ProgramData\Air Techniques\VisionX\Data\DiagnosticLogs** with the name **device_reports.log**. This can be forwarded to the support/service technician for diagnosis.

In addition, after the report file has been created, a support file can be created (see "46 Creating a support file"). This then also contains the report file in addition to the log files.

Maintenance

Under **Maintenance**, a range of different device parameters are displayed or the service tool can be started (depending on the connected device).

The actual value and the target value are displayed for the device parameters. Defective components or malfunctions can be identified with their help. Similarly, various maintenance functions are displayed that can be used to check the function of components.

Configuring the device password

On devices with this function, communication between the device and the imaging software is password-protected.

If special requirements exist, this password can be changed in the software. When the password is changed, the new password is transmitted to the device.

If the passwords on the device and in the imaging software do not match then the password will need to be entered.



If the device is reset to its default factory settings (e.g. after repairs), this will also reset the password to the default password.

The default password is: 123456.

Editing connection settings

For a connected ScanX, general connection settings can be queried and changed in the structure tree, e.g., IP address, subnet mask, gateway.



The IP address 2 can be queried and changed under **Advanced**. Where possible, this should not be changed as it acts as an "emergency IP address" if the IP address 1 is lost. The IP address 2 must only be adjusted if there is a conflict with another IP address available in the network. The changed IP address should then be noted and stored by the device. If the IP address 2 is also lost, the device must be reset to the factory settings – this causes all settings to be lost.

66.2 CamX

Configuring

Firmware



CAUTION

Equipment damage from an incorrect firmware update

Image acquisition not possible

- › Only trained specialists or personnel trained by Air Techniques may perform a firmware update.

Firmware

Current version:	The firmware installed on the device is displayed.
New version:	If a new firmware version is selected via <i>Select firmware file</i> , the data for this version is displayed.
Note:	Information concerning the installation and the selected firmware file is displayed (e.g., selected firmware file is older than the one installed on the device; selected firmware file is not compatible with the version installed on the device).
Expected duration:	The expected duration of the update is displayed.

Device settings

All device settings that are available on the selected device are listed under *Device settings*. In the tree directory, various settings can be adjusted. They vary depending on the connected device and can depend on the installed firmware version.

Acquisition settings

Camera triggering	Time when the still image is created if the trigger button is pressed: <ul style="list-style-type: none"> – Upon pressing (preset) – On releasing
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Standby settings

Standby time	Time until automatic switch-off if the camera is not moved. Preset: 2 minutes
Automatic wake-up	The camera switches on as soon as the image acquisition window is opened in the software.

Report

The report file saved on the device is displayed under *Report*. Use *Export* to save the report file under *C:\ProgramData\Air Techniques\VisionX\Data\DiagnosticLogs* with the name *device_reports.log*. This can be forwarded to the support/service technician for diagnosis.

In addition, after the report file has been created, a support file can be created (see "46 Creating a support file"). This then also contains the report file in addition to the log files.

Maintenance

Various signals can be checked with the aid of a status display under *Maintenance* (depending on the connected device).

66.3 SensorX



Each SensorX sensor requires individual calibration data. This data is enclosed with the sensor on a calibration data carrier and needs to be installed for each sensor.

Configuring



WARNING

All settings made can have a direct influence on the image quality and the functions of the devices.

- › Changes must only be made either by Air Techniques personnel or by a suitably qualified person approved by Air Techniques.
- › Check and, if necessary, correct the changed image quality by importing a test X-ray image.



Depending on the device, some functions may not be available.

Acquisition modes

All acquisition modes that are available on the selected device are listed under *Acquisition mode*:. Once you have selected an acquisition mode from the list, you can implement various settings in the tree directory. These vary depending on the connected device.

Duplicate is used to create a copy of the image acquisition mode.

You can delete the image acquisition mode by clicking on *Delete*.

At least one acquisition mode must always be defined. If only the acquisition mode for this device exists, then it must not be deleted.

All acquisition modes for a device can be imported or exported (: > *Import Acquisition Modes* or : > *Export Acquisition Modes*).

During the import, any existing acquisition modes are overwritten and new acquisition modes are created additionally.

A folder is created on the desktop during the export.

All acquisition modes of a device can be reset to the default settings (: > *Reset all acquisition modes to default settings*).

Report

The report file saved on the device is displayed under *Report*. Use *Export* to save the report file under *C:\ProgramData\Air Techniques\VisionX\Data\DiagnosticLogs* with the name *device_reports.log*. This can be forwarded to the support/service technician for diagnosis.

In addition, after the report file has been created, a support file can be created (see "46 Creating a support file"). This then also contains the report file in addition to the log files.

66.4 ProVecta S-Pan

Configuring



WARNING

All settings made can have a direct influence on the image quality and the functions of the devices.

- › Changes must only be made either by Air Techniques personnel or by a suitably qualified person approved by Air Techniques.
- › Check and, if necessary, correct the changed image quality by importing a test X-ray image.



Depending on the device, some functions may not be available.

Device settings

All device settings that are available on the selected device are listed under *Device settings*. In the tree directory, various settings can be adjusted. They vary depending on the connected device and can depend on the installed firmware version.

Panoramic settings

Accept S-PAN image automatically	<p>If this function is enabled, then only the S-PAN image is transmitted to VisionX.</p> <p>If this function is disabled, then the S-PAN image and the standard image are transmitted to VisionX. During import, you will then need to decide which image is to be saved in VisionX. The other image is then discarded.</p>
Use patient type 'Child' until the age of	The age up to which the patient type 'Child' can be used during image acquisition can be adjusted.

Report

The report file saved on the device is displayed under *Report*. Use *Export* to save the report file under `C:\ProgramData\Air Techniques\VisionX\Data\DiagnosticLogs` with the name *device_reports.log*. This can be forwarded to the support/service technician for diagnosis. In addition, after the report file has been created, a support file can be created (see "46 Creating a support file"). This then also contains the report file in addition to the log files.

Maintenance

You can launch the configuration programs AISU and DDIPS by navigating to *Maintenance* and then *Calibration* in the structure tree. These programs are described in detail in the installation instructions of the device.

Editing connection settings

With a ProVecta S-Pan connected, general connection settings for the connected device can be queried and changed in the structure tree, e.g., operating mode.

66.5 ProVecta 3D Prime

Configuring



WARNING

All settings made can have a direct influence on the image quality and the functions of the devices.

- › Changes must only be made either by Air Techniques personnel or by a suitably qualified person approved by Air Techniques.
- › Check and, if necessary, correct the changed image quality by importing a test X-ray image.



Depending on the device, some functions may not be available.

Report

The report file saved on the device is displayed under *Report*. Use *Export* to save the report file under *C:\ProgramData\Air Techniques\VisionX\Data\DiagnosticLogs* with the name *device_reports.log*. This can be forwarded to the support/service technician for diagnosis.

In addition, after the report file has been created, a support file can be created (see "46 Creating a support file"). This then also contains the report file in addition to the log files.

66.6 TWAIN device

Configuring



WARNING

All settings made can have a direct influence on the image quality and the functions of the devices.

- › Changes must only be made either by Air Techniques personnel or by a suitably qualified person approved by Air Techniques.
- › Check and, if necessary, correct the changed image quality by importing a test X-ray image.



Depending on the device, some functions may not be available.

Device settings

Under *Device settings* you will see a listing of all of the device settings. In the tree directory, various settings can be adjusted.

TWAIN settings

Intraoral:	If the TWAIN source supplies an "intra" image, then a check mark needs to be placed next to <i>Intraoral</i> :. Multiple selection is possible.
Panoramic:	If the TWAIN source supplies a "pano" image, then a check mark needs to be placed next to <i>Panoramic</i> :. Multiple selection is possible.
Ceph:	If the TWAIN source supplies a cephalometric image, then a check mark needs to be placed next to <i>Ceph</i> :. Multiple selection is possible.
Video:	If the TWAIN source supplies a video image, the tick needs to be placed next to <i>Video</i> :.
Serial number:	The serial number of the TWAIN source must be entered.
Item number:	The item number of the TWAIN source must be entered.

Report

Under *Report* you will see the report file of the TWAIN source. Use *Export* to save the report file under *C:\ProgramData\Air Techniques\VisionX\Data\DiagnosticLogs* with the name *device_reports.log*. This can be forwarded to the support/service technician for diagnosis.

In addition, after the report file has been created, a support file can be created (see "46 Creating a support file"). This then also contains the report file in addition to the log files.

67 Acquisition types

See also:

- "26.1 Configuring image acquisition types"

In the upper area, the last used image acquisition types for X-rays and video are displayed.

All available image acquisition types in the current configuration are displayed under **Image acquisition types**. Only the image types for the licensed modules (X-ray and video) are displayed (see "7 Licensing").

Click on an image acquisition type to select it and then click **Configure**. The configuration of the acquisition type can be adapted to the individual requirements here.

67.1 Configuring

Mode class:	Each image acquisition type is assigned to a mode class. The mode classes group the image acquisition types, e.g., into intraoral images (<i>Intra</i>) or panoramic images (<i>Pano</i>).
Acquisition source:	<p>Last acquisition source used The last used X-ray station is entered automatically when using the image acquisition type.</p> <p>Manually selected acquisition source The X-ray station to be used must be manually selected when using the image acquisition type.</p> <p>All created X-ray stations are displayed in the list. The X-ray stations marked as favorites appear first in the list. If an X-ray station is selected, this X-ray station is automatically entered when the image acquisition type is used.</p>
Acquisition mode:	<p>Last mode used The last used mode is entered automatically when using the image acquisition type.</p> <p>Default mode The default mode for the image acquisition type is entered automatically when using the image acquisition type.</p>
Favorite:	If an image acquisition type is marked as a favorite, then it appears as a button in the menu bar, from where it can be used directly.

68 X-ray stations

If there is a legal requirement for recording X-ray data then the process will depend on the image acquisition device:

- "Creating an X-ray station using the wizard"
 - ProVecta S-Pan
 - ProVecta S-Pan Ceph
 - ProVecta 3D Prime
 - ProVecta 3D Prime Ceph
- "Creating an X-ray station manually"
 - All ScanX units
 - SensorX
 - Cephalometric/panoramic devices without digital image receiver (e.g., with phosphor storage plate)
 - TWAIN devices

If there is no legal requirement for the recording of X-ray data, the option *Create X-ray stations manually* can be deactivated in *Configuration > Application*. As a result, the X-ray station will be automatically created in the background when a device is created, and no further configuration is required (see "Automatic creation of X-ray stations").

See also:

- "25.1 Creating an X-ray station"
- "25.2 Configuring an X-ray station"
- "25.4 Deleting an X-ray station"

A list of all the created X-ray stations is displayed in the *X-ray stations* configuration.

The list shows the following properties of the X-ray stations:

Name	Name of the X-ray station, can be changed in <i>Configure</i> .
Owner	Operator of the X-ray station, can be changed in <i>Configure</i> .
Category	X-ray emitter category (e.g., intraoral)
Favorite	This X-ray station is displayed first in the selection list when the X-ray image acquisition is started.
Use in VisionX Connect	Device is visible via VisionX Connect for third-party application. (only with VisionX Connect license)
Linked workstation	Workstation that automatically accepts a new job.

The list can be sorted by clicking in the headline of the corresponding column.

The following possible settings depend on the device.

68.1 Configuring

General	
Name:	Name of the X-ray station All X-ray stations must be clearly and uniquely named. A name must not be used more than once.
Operator:	Name of the operator
Address:	Address of the operator

X-ray emitter

Selection Selection list showing the created X-ray emitters.
 A new X-ray emitter can be created by clicking **Create X-ray emitter...**
 You can click on **Configure** to change the configuration of an X-ray emitter that has already been created. The category (e.g., intraoral) cannot be changed.
 You can delete an X-ray emitter via **Delete** provided it is not being used by an X-ray station.

Image creation device

Device: Select a device from the selection list

Magnification: Magnification depends on the X-ray emitter and the assigned image type. The value must be between 1.0 and 10.0.
 When you select an X-ray emitter, a default value is suggested:
 – Intra: 1.05
 – Pano: 1.25
 – Ceph: 1.1

Activating calculation of the image receiver dose: If the image acquisition device supports automatic calculation of the image receiver dose from the image data, manual entry of the X-ray parameters is no longer necessary.
 The setting **Automatic calculation of image receiver dose from image data** must also be activated in the practice configuration, see "70 Practices".

68.2 Parameters

Depending on the image acquisition device and the X-ray emitter assigned to the X-ray station, different suggested values can be defined for the X-ray parameters for each image acquisition type. It makes the work easier if the X-ray images are always taken with the same values. The X-ray parameters are automatically saved with the image information (see "37.1 Importing X-ray images using ScanX"). They can be adjusted here as required. The proposed values for the X-ray parameters are only entered automatically for the first image. If there are further images from the same image acquisition then the X-ray parameters can be copied from the first image with **Apply values** or they can be manually entered. When configuring the various acquisition types, you can apply the values from another X-ray station that uses similar or identical values. This saves you the trouble of entering each value separately since you only need to change those values that are different. To do so, go to the area in the lower section labeled **Apply Parameters from this X-ray Station:**, then select the X-ray station whose values you wish to use and click **Apply**.

68.3 Image processing:

For every image created with this X-ray station, the predefined image processing steps are performed automatically.

The image processing steps can be changed on the light table and saved (see "40.2 Managing default image settings"). The values are only displayed in the configuration.

You can click on **Restore default settings** to reset any changes made in the image processing steps.

Filter

Selected filter: Predefined filters that support diagnosis (see "Filter")

Windowing Settings for image corrections and histogram

Limit white: Percentage of grayscales converted to white

Windowing	Settings for image corrections and histogram
Limit black:	Percentage of grayscales converted to black
Brightness:	Brightness of the image
Contrast:	Contrast of the image
Gamma:	< 1: Bright areas become darker > 1: Dark areas become brighter

Display	
Mirroring:	Horizontal or vertical inversion of the image

Annotation	
Edge mask:	Image masking; the area outside the mask is hidden
Grayscale:	Color of the edge mask; choose between 0 (black) and 255 (white)

68.4 Job management

Default adoption workstation: If a workstation has been selected from the selection list, the workstation automatically accepts the job.
With jobs for images with ProVecta S-Pan or ProVecta 3D Prime, the device goes directly into recording standby.

68.5 Deleting

- › Select the required X-ray station in the list.
- › Click *Delete*.
- › Confirm the deletion in the dialog window.

69 Interfaces

Under *Interfaces* you can activate and configure the interfaces, e.g., to the practice management system.



It is recommended that the practice management system is configured first.

VDDS media	Data exchange with practice management system via VDDS media interface
Use VDDS:	If this option is enabled, patient data can be transmitted from a practice management system and images can be transferred back to the practice management system.
Referenced practice management system:	Select this via the selection list of the practice management system used.
Support level 6 (call of the import module):	If this option is enabled then changes made to an image will be automatically transferred to the practice management system.
Patient import	Direct copying of patient data from the practice management system
Import path:	Import directory for patient data in the patimport.txt format. This path must be specified as an export path in the practice management system.
Image export	Exports the images into directories and sends them to the practice management system
Auto-export X-ray:	If this option is enabled, the X-ray images that have been imported, along with the relevant patient data, will automatically be saved to a defined directory.
Auto-export video:	If this option is enabled, the video images that have been created, along with the relevant patient data, will automatically be saved to a defined directory.
Image export modes...	Opens the configuration for the image export modes (see "Image export modes...").
DICOM/BDW	Data exchange via the DICOM interface
DICOM workstation:	Defines the workstation as a DICOM workstation. This allows the DICOM functionality to be used on this workstation (see "30.1 Defining a workstation as a DICOM workstation").
DICOM Print:	You can output X-ray images on DICOM printers at this workstation.
Basic Dental Workflow:	The interface to the practice management software is active at this workstation.
DICOM/BDW Partner...	Opens the configuration of the DICOM/BDW partners (see "DICOM/BDW Partner...").
RIS query...	Opens the configuration of the RIS query (see "RIS query...").
Assignment of acquisition types...	DICOM attributes can be assigned to certain acquisition types in the imaging software (see "Assignment of acquisition types...").

DICOM/BDW	Data exchange via the DICOM interface
Display job list...	Specifies which attributes are to be displayed in the job list (see "Show job list...").
Job management	Job management settings
Automatic completion of job:	Specifies what happens to a job in progress if the patient is logged out or if another job is started: <ul style="list-style-type: none"> – Ask – Complete automatically – Mark as paused – Complete when images have been acquired
Retention period for data of a finished job:	Specifies for how many days the job data (not the image or patient data) of a finished job will be retained.
Standard selection list:	Specifies whether the patient list or job list should be opened.

69.1 Image export

Image export modes...

A number of different image export modes can be set, defining the image status, file format, and export path. Some image export modes are set by default and can be modified.

The image export modes are saved on a practice-specific basis for all workstations.

Image export mode  can be selected in the image export in the light table menu and in the image inspector under *multiple selection*. In addition to the configured image export modes, images can also be individually exported with the user-defined export.

Auto export defines which image files are to be exported when logging out of a patient record or when exporting images manually. To do this, the image export interface must be configured accordingly (see "69 Interfaces"). If the *Diagnosis* image status has been set, auto exporting will only be performed if a diagnosis has been saved and the image view that goes with it is present.

When you click on an image export mode in the list displayed, the following options will appear below it:

- **Configure**: Allows you to display and change settings for the highlighted mode (see "Configuring").
- **Duplicate**: Duplicates the mode.
The details for the duplicated mode can then be modified.
- **Delete**: Deletes the highlighted image export mode.

Create image export mode... can be used to create a new image export mode (see "Configuring").

Configuring

The settings for the highlighted export mode can be displayed and changed under **Configure**.

Configure	
Name:	A name can be assigned to this export mode.
A name can be assigned to this export mode.	Go to the selection list to choose whether the software is to export an image file or a DICOMDIR file.

Configure

File path:	<p>The software exports the selected image to this path.</p> <p>Go to the <i>Placeholder</i> selection list to add predefined placeholders (e. g., patient name) to the file path. The software then adds the corresponding values to the file path.</p> <p>As the export modes are applied to all workstations, we recommend also using the placeholders in the file path. This ensures that the stated file paths work on all workstations.</p> <p>Go to <i>Preview</i> to see an example of how the file path and file name will look when you export images.</p> <p>The placeholder <i>%DiscWriter%</i> is used to save the data to a burning directory for a CD/DVD. The actual burning process then needs to be started using separate disc burning software.</p>
File name:	<p>Go to the <i>Placeholder</i> selection list to add predefined placeholders (e. g., patient name) to the file name. The software then adds the corresponding values to the file name.</p> <p>We recommend separating the placeholders with underscores. This makes the file name easier to read.</p>
Preview:	A preview is shown as an example of how the file path and file name will look with the settings you have chosen.
Image status:	<p>Go to the selection list to set how the image is to be exported.</p> <ul style="list-style-type: none"> – Current: The image will be exported in its current status. – Original image: The image will be exported as it was originally recorded, irrespective of how it has been edited since being recorded. – Last change: The image will be exported as it is after the most recent change. – Diagnosis: The image will be exported in the image view for which an Indication has been entered.
2D X-ray format:	The export format for the 2D X-ray images can be set via the selection list.
3D X-ray format:	<p>The export format for the 3D X-ray images can be set via the selection list.</p> <p>DICOM: DICOM data record</p> <p>DICOM series: individual layer images of the DICOM data record</p> <p>DICOM 2D view: screenshot of the panoramic view</p>
Video format:	Go to the selection list to set the export format for the video recordings.
Surface scan format:	The export format for the surface scans can be set via the selection list.
Anonymization of the data:	Removes all personal data during export, making it impossible to match the image to a patient.
Auto-export:	<p>If the box is checked then this image export mode is made available as the automatic export option.</p> <p>Auto exporting for videos or X-rays also needs to be enabled under <i>Interfaces</i> for this.</p>
Expand existing DICOMDIR	An existing DICOMDIR directory is expanded with the new data instead of the directory being deleted and re-created.

Configure

Embed viewer DICOM viewing software is also exported into the DICOMDIR directory.

69.2 VisionX Connect

Patient data

Complete patient data Requirement for maintaining an X-ray control book in the imaging software

If a third party application fails to provide a complete patient data record, the patient data must be manually completed prior to the start of the image acquisition process.

A patient data record consists of at least:

- Patient ID
- First name
- Last name
- Date of birth

Display

Using the minimal VisionX Connect user interface: Images are transferred directly to the third-party software. Displaying and editing the images is then only possible in the third-party software.

The minimal interface can only be used if the following conditions apply:

- Only one practice has been set up
- User management is deactivated (only one user created, without a password)
- X-ray parameters are not mandatory (see "70 Practices")

Always display VisionX windows on top: The Visionx window remains on top, in front of the third-party software.

X-ray image

Use default acquisition type: Image acquisition jobs are automatically started with the default acquisition type. The acquisition type can be manually changed during image acquisition.

Image export

Create BMP file: Select file formats to be created if the third-party software does not provide a file format

Create PNG file:

Create XYZ file:

69.3 DICOM/BDW

Selection of DICOM/BDW functionality is workstation-specific. The required license is managed as a floating license for multi-user installations.

DICOM workstation: Sharing images with DICOM systems

DICOM Print: Outputting images on DICOM printers

Basic Dental Workflow: Interface to practice management program

DICOM/BDW Partner...

See also:

- "30 Configuring the DICOM/BDW interface"

A list of all the DICOM/BDW partners (PACS, RIS and printers) that have been created is displayed in the *DICOM/BDW Partners...* configuration.

Name:	Display name for the DICOM/BDW partner
Role:	Shows whether the connection is an RIS or a PACS connection or a printer
Partner AE Title:	AE Title of the DICOM/BDW partner
Own AE Title:	AE Title of workstation In DICOM, either the automatically generated name or a user-defined name can be selected.
Host:	IP address or host name of DICOM/BDW partner
Port:	Port of the DICOM/BDW partner
Connection test (C-ECHO):	Starts a connection test to the DICOM/BDW partner

If a DICOM partner is marked in the displayed list, options for selection will appear underneath that may include the following:

- "Configuring"
- Delete (see "Deleting RIS partners" or "Deleting PACS partners")

Configuring

The settings for the highlighted DICOM partner can be displayed and changed under *Configure*.

General settings

Name:	Display name for the RIS/PACS/printer connection
Role:	You can use the selection list to choose whether a RIS or a PACS connection or a connection to a printer is to be established to the DICOM partner.
Partner AE Title:	DICOM Application Entity Title (AE Title) set for the DICOM partner
Own AE Title	DICOM Application Entity Title (AE Title) of this workstation
Host:	IP address or host name of DICOM partner
Port:	Port of DICOM partner
Connection test (C-ECHO):	Starts a connection test to the DICOM partner

Print settings

Medium type:	Selection of the printing medium (paper, film)
Film orientation:	Selection of the orientation (portrait or landscape)
Film size:	Selection list corresponds to the DICOM standard
Film destination:	Collection tray, corresponds to the DICOM standard
Grayscale bit depth:	Number of bits per pixel
Priority:	Determines the position of the print job in the queue
Decimate / crop:	Processing of the image if it is too large for the print medium
Magnification type:	Processing of the image if it is smaller than the print medium

Print settings

Smoothing type:	Type of smoothing upon cubic magnification (max. 16 characters)
Edge density:	Density of the area around the image or between images
Polarity:	Selection whether to print the image normally or inverted
Trim:	Printing of bordering frames if supported by the printer
Configuration:	Additional printer-specific configuration setting (max. 1024 characters). See the manual of the respective printer

Transfer settings (only for PACS)

Image status	The selected image state will be exported. For explanations of the image states, see "Image export modes..."
2D X-ray format:	2D X-ray images are always exported in the DICOM format. The format cannot be changed.
3D X-ray format:	The export format for the 3D X-ray images can be set via the selection list. For explanations of the image states, see "Image export modes..."
Video format:	Go to the selection list to set the export format for the video recordings.
Anonymization of the data:	Removes all personal data during export, making it impossible to match the image to a patient.
Send automatically:	The imaging software will transfer the recorded images automatically to the PACS as soon as the job is finished. Otherwise the images must be transferred manually to the PACS (see "35.3 Transferring an image to PACS").

RIS query...

The settings for the highlighted DICOM partner can be displayed and changed under *Configure*.

RIS query

RIS-/BDW partner:	The selection list can be used to select an RIS partner. The job list is queried from this RIS partner. If no RIS partner has yet been created, see "Configuring the RIS query".
AE Title:	DICOM Application Entity Title (AE Title) for which the job has been planned. <i>Any</i> means: All jobs

RIS query

Type of device:	The selection list can be used to select a device type for which jobs have been created. The following device types are available for selection: <ul style="list-style-type: none"> – Any – IO (Intra-Oral Radiography) – CR (Computed Radiography) – PX (Panoramic X-Ray) – CT (Computed Tomography) – DX (Digital Radiography) – XC (External Camera Photography) – User-defined Any means: All jobs User-defined means: At least one user-defined device type must be entered into the text field.
Attending physician:	Name of the person scheduled to perform the job.
Start date:	Narrows the search to jobs planned for a certain date or date interval.
Maximum number of elements:	Maximum number of jobs displayed.
Automatic update:	If the function is set to At Regular Intervals , then you must set an interval (in minutes). This will cause the selection list to be updated at the defined interval.

Assignment of acquisition types...

See also:

- "30.5 Assigning DICOM attributes to certain acquisition types"

The imaging software allows you to assign certain DICOM attributes to an acquisition type (instance, DICOM attribute *IO* to the acquisition type *Intra*). Depending on the configuration of the imaging software, this will cause acquisition to begin directly using the appropriate acquisition type. If no appropriate assignment is found, or if no assignment has been made, the standard assignment will be used:

DICOM attribute	Meaning	Acquisition type
No DICOM attribute present		Undefined
OT	Other type	
CR	Computed Radiography	
DX	Digital Radiography	
DICOM attribute is not one of the attributes below		
IO	Intra Oral X-ray	Intraoral
XC	External Camera Photography	Video
ES	Endoscopy	Video
PX	Panoramic X-ray	Panoramic Standard
CT	Computed Tomography	CBCT

Show job list...

See also:

- "30.6 Customising the job list"

When working with DICOM jobs, you can configure which DICOM attributes are to be displayed in the job list.

List	The attribute is shown as a column in the job list
Details	The attribute is shown in the <i>DICOM</i> area when a job is selected
Hidden	The attribute will not be displayed

69.4 Job management

Automatic finishing of job:	<p>Specifies what happens to the jobs when they are closed.</p> <ul style="list-style-type: none"> - Ask: The imaging software asks whether the job should be paused or finished. - Finish automatically: The job will be automatically finished when it is closed (due to patient change, program termination, or start of another DICOM job, example). - Mark as paused: The job will be automatically paused when it is closed (due to patient change, program termination, or start of another DICOM job, example). - Finish when images have been acquired: The job will be automatically finished when images are present.
Delete finished or canceled jobs after:	<p>Specifies how many days the system will wait before deleting finished or canceled jobs.</p>
Default selection list:	<p>Specifies which selection list will be opened by default (e. , when launching the imaging software).</p> <ul style="list-style-type: none"> - Patients: The <i>Select patient</i> flyout will be opened by default. - Jobs: The <i>Jobs</i> flyout will be opened by default (practical when using DICOM).

70 Practices

A list of all the created practices will be displayed in the *Practices* configuration. The settings for a practice can be changed via "70.1 Configuring".

See also:

- "22.1 Create practice"
- "22.2 Configuring the practice"
- "22.3 Deleting a practice"

70.1 Configuring

General	
Name:	Name of the practice Every practice must be clearly and uniquely named. A name must not be used more than once.
Address:	Address of the operator
BDW practice ID:	Identification number of the practice, must be consistent with the ID in the practice management program.
Settings	
Use retention period for X-rays:	If the retention period for X-ray images has been enabled, the X-ray images cannot be deleted until the retention period entered has expired.
Retention period for X-ray images:	Period during which the acquired X-ray images cannot be deleted. The X-ray images cannot be deleted until the retention period has expired. The retention period begins at the start of the patient's 18th year. X-ray images cannot be deleted before this. Some countries have a legally defined retention period for X-ray images. Example: In Germany, a retention period of 10 years applies. The X-ray image for a 16-year-old patient cannot be deleted until a period of 12 years has elapsed.
Delete VisionX Connect patients automatically:	Temporary patients automatically created by VisionX Connect are automatically deleted after the retention period and additional time period.
Additional period for VisionX Connect:	Time period after which the VisionX Connect data is deleted if the option <i>Automatically delete VisionX Connect patients</i> is activated. Video images are deleted immediately after this period. For X-ray images, this period is in addition to the retention period. In the case of short additional delays, this function should only be used if the third-party application can ensure that the image data is stored there permanently.
Mandatory fields:	Via the selection list you can choose whether the <i>Patient ID</i> or <i>Name and date of birth</i> are mandatory fields. When a new patient record is created, the mandatory fields must always be completed. If this is not done, the patient record cannot be created. <i>Patient ID</i> is required for VisionX Connect.
Allow changes to image creation date:	If this box is checked, the image acquisition date can be changed retrospectively.
X-ray parameters are mandatory entries:	If this box is checked, then the X-ray parameters must be entered during the X-ray exposure.

Settings

Calibration for automatic calculation of image receiver dose	If the check box is ticked and if the image acquisition device supports the function, the image receiver dose is calculated automatically from the image data. It is then not necessary to manually enter the X-ray parameters for every X-ray image acquisition. Depending on the device, a calibration is performed for this purpose as required during the acceptance test.
Import warning for images from external sources:	If the box is checked, then when an imported image is opened on the light table a warning is displayed to show that the image was created with an external device.
Check pregnancy status before starting image creation:	If the check box is activated, the <i>Pregnancy query</i> dialog window is shown before an X-ray image of a female patient is started.

Database

Storage format:	Newly acquired or imported images can be saved without compression or with lossless compression. When creating a new practice, the default setting is <i>Lossless compression</i> . This makes the saving and loading of images noticeably faster.
Warning limit for memory space:	The available memory space for the database is determined every time the software is launched. If the amount of memory space remaining has fallen below the set warning threshold, the software will issue a warning in the form of a pop-up. Work can be continued. The value is determined according to the additional device components that are installed and is preset.
Error limit for memory space:	The available memory space for the database is determined every time the software is launched. If the amount of memory space remaining has fallen below the set error threshold, the software will issue a warning in the form of a separate window. You can carry on working with certain restrictions. You cannot create any images, but you can view existing ones. In addition, you can log into and out of patient records. The value is determined according to the additional device components that are installed and is preset.
Database path:	This shows the path under which the database has been installed.
Image path:	This shows the path under which the images are saved.
DBSWIN X-ray path:	This is only visible if data has been imported from a DBSWIN installation. This shows the path in which the DBSData X-ray images from DBSWIN are located. If the <i>DBSData</i> folder is moved, the path can be adjusted here.
DBSWIN video path:	This is only visible if data has been imported from a DBSWIN installation. This shows the path in which the DBSData X-ray images from DBSWIN are located. If the <i>DBSData</i> folder is moved, the path can be adjusted here.

Patient search

Search mode:	Immediately: The search results are displayed immediately after the input is made Upon confirmation: The search results are displayed only after the enter key is pressed or after clicking  .
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Patient data

Patient details form:	For Japan, special fields of patient data are stored and can be enabled here, e.g., prefecture, Japanese date of birth format. In addition, depending on the text field, the imaging software switches the input method of Windows automatically to alphanumerical, Hiragana, or Katakana.
Patient birth date format:	Date (short): displays short date, e. g. , 08.04.1975 Date (long): displays long date, e. g. Tuesday, 08 April 1975 or for the Japan region

Rights

X-ray assistant can reassign images:	The authorization to reassign images from one patient to another patient can be deactivated for the role of X-ray assistant.
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70.2 Deleting

It is generally possible to delete practices once they have been created.

A practice can only be deleted if the following requirements are met:

- No patient data available
 - No user logged into this practice
 - The practice is not the main practice of a user
 - At least one other practice remains in the system after deleting
- › Select the practice you wish to delete.
- › Click **Delete**.
- › Click **Delete** to confirm that you want to delete the practice.

71 User

A list with all users that have been created and the assigned access rights is shown in the User configuration. Users can be created, edited or deleted.

71.1 Definition of user roles

There are four different user roles with different access rights:

- Administrator
- Dentist
- Radiographer
- Standard

The following functions are restricted to user roles. All other functions are unrestricted and can also be used by the default user.

Function	Administrator	Dentist	Radiographer
Edit configuration	•		
Starting the ServerManager	•		
Performing an acceptance test	•		
Manage default image setting	•	•	
Deleting patient	•	•	
Delete image	•	•	
- Light table: Delete active X-ray image			
- Multiple selection: Delete selected X-ray images			
Change indication	•	•	
Changing image information, recording date and time	•	•	•
Start image creation	•	•	•
Performing a consistency check	•	•	•
Import image	•	•	•
Reassign image	•	•	•*
Transfer image to PACS partner	•	•	•

*Authorization can be deactivated, see "70 Practices".

71.2 Edit user

General	
User name:	Name of the user Each user must be uniquely named. A name must not be used more than once.
Full name:	First and last name of the user
Password:	The password must consist of at least 4 characters.
Confirm password:	Repeat of the password
Main practice:	Assigned practice

Roles

Name of dental office	Selection list of the practices that have been created, also refer to "22.1 Create practice"
Roles	Selection list of the user roles, see "71.1 Definition of user roles"

71.3 Deleting a user



There must be at least one user with administrator rights for each practice.

- › In the list, click on the user to be deleted.
- › Click *Delete*.
- › Confirm the deletion in the dialog window.

71.4 Deactivate user management

User management can be deactivated for example in order to use the minimal Connect interface. Here, all created users and all assignments of rights in all practices are deleted. The button is only active if one or more users with passwords have been created.



It cannot be undone if the users are deleted.

- › Click *Deactivate user management...*
- › Enter the password to confirm deactivation.
All users have been deleted. The default user *Admin* (without password) is created and logged in.

72 Features

Features contain special functions of the software as well as individually set up interfaces to external applications (third-party software). These Feature settings are practice-specific.

› In the *Practice* selection list, select the desired practice.

72.1 3shape integration

Configuration

Activating 3Shape integration:	Activates the connection to 3Shape TRIOS in Dental Desktop (3DD)
Dental Desktop URL:	URL of the installed software 3Shape TRIOS
Dental Desktop user name:	Login username for 3Shape TRIOS
Dental Desktop user password:	Login password for 3Shape TRIOS
Test connection	Tests the connection to 3Shape TRIOS

72.2 Automatic phosphor storage plate quality check

Settings for the automatic phosphor storage plate quality check

Activate automatic phosphor storage plate quality check:	The phosphor storage plate wear is calculated automatically based on the last 20 images taken. The condition of the phosphor storage plate is rated from A (as good as new) to E (heavily worn). Only possible for IDX phosphor storage plates in conjunction with a phosphor storage plate scanner that can read the RFID chip.
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72.3 Image rotation

Image rotation

Perform image rotation automatically:	Intraoral X-ray images are automatically rotated immediately after acquisition. Only for intraoral X-ray images with ScanX.
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72.4 Nerve canal proposal

Settings for nerve canal proposal

Activate calculation of the nerve canal proposal:	Automated proposal for the position of the nerve canal in CBCT images.
Automatically calculate nerve canal during acquisition:	The nerve canal proposal is calculated during acquisition. If this option is not activated, the nerve canal proposal can be drawn in using the toolbox.

72.5 VisionX Cloud

Create new VisionX Cloud account	When you create a cloud account you automatically sign up for a subscription. This is free to use for the first year. More information about the subscription can be found in the cloud user interface.
Last name:	Personal data of the cloud account holder
First name(s):	
Street:	
Postal code:	
Town/city:	
Country:	
E-mail:	E-mail address to be used for cloud access
Password:	Password for cloud access
Repeat password:	Password for cloud access
Create	Data is transmitted, the account is created. You will need to confirm your email address before using the cloud for the first time. For this purpose an email containing a confirmation link will be sent to the email address you entered.

Use existing VisionX Cloud account	
E-mail:	E-mail address associated with the cloud account
Password:	Password for the cloud account
Reset password:	A browser window opens in which the password can be reset.
Manage subscription	The user interface of the cloud (visionxcloud.com) is opened in the browser. After the login, information about the current subscription and data usage is displayed. The subscription (data package) can be changed or canceled. Further information about the profile (e.g. billing address) can be changed.
Link:	Once an e-mail address and a password have been entered, the practice can be connected to the cloud account (see "Linking a practice with an existing cloud account").
Unlink:	The link to the cloud account is removed (see "Unlinking the cloud account").

72.6 Tooth detection

Tooth detection	
Performing automatic tooth detection on intraoral images:	All visible teeth on intraoral X-ray images are automatically selected. Tooth detection is performed automatically, immediately after acquisition of the X-ray image. The result needs to be checked. In the case of X-ray images taken on children (younger than 12 at the time of image acquisition) this function is not available. The image rotation feature is required additionally for this function (see "72.3 Image rotation"). If required, image rotation is also activated at the same time.

72.7 Add external application

External application settings

Name:	Any name you desire for the external application
Path:	Path to EXE file of the external application
Parameters:	<p>Parameters that are to be passed on to the external application along with the image.</p> <ul style="list-style-type: none"> – Patient ID – Patient's last name – Patient's first name – Date of birth (system based) – Date of birth (yyyymmdd) – Path to image – Path to folder <p>Multiple parameters can be selected here. Clicking on a further parameter will automatically add it to the existing parameters. As a minimum, the parameters "%PathToFile%" or "%PathToFolder%" must be selected.</p>
Image status	<p>Go to the selection list to set how the image is to be exported.</p> <ul style="list-style-type: none"> – Current: The image will be exported in its current status. – Original image: The image will be exported as it was originally recorded, irrespective of how it has been edited since being recorded. – Last change: The image will be exported as it is after the most recent change. – Diagnosis: The image will be exported in the image view for which an Indication has been entered.
2D X-ray format:	The export format for the 2D X-ray images can be set via the selection list.
3D X-ray format:	<p>The export format for the 3D X-ray images can be set via the selection list.</p> <p>DICOM: DICOM data record DICOM series: individual layer images of the DICOM data record DICOM 2D view: screenshot of the panoramic view</p>
Video format:	Go to the selection list to set the export format for the video recordings.
Anonymization of the data:	Removes all personal data during export, making it impossible to match the image to a patient.

? Troubleshooting

73 Tips for operators and service technicians

Error	Possible cause	Remedy
Practice cannot be deleted	User is logged in at this practice	› Log out all users from the practice.
	The practice is the main practice of a user	› Switch main practice of all users to a different practice.
	Patient data available for the practice	› Delete all patient data for the practice; save if necessary.
	Only this practice has been created in the software. At least one practice must be created.	› Create a new practice. Then the practice can be deleted.
The device is not displayed in the list of devices	Device is not connected to the network/workstation	› Check the connection; reconnect if necessary.
	Unit not switched on	› Switch the device on.
	An additional component for the corresponding device is not installed.	› Install the additional component, see "24.2 Installing additional components".
	The device and the version of the imaging software are not compatible	› Install a version of the imaging software that is compatible with the device
Transmission of an image from ProVecta 3D Prime to the software was unsuccessful	Reconstruction failed or software crashed.	› Restart the imaging software. › Start image recovery.

Appendix

74 Tips for Service Technicians

 The following descriptions are intended solely for Service Technicians.

74.1 Moving the DBSData directory

In order to simplify the data backup process, the DBSData directory of DBSWIN can be moved to the VisionXData directory of VisionX with the aid of the Server Manager. The DBSData directory was not changed during the migration of data to VisionX.

There are generally two options:

- "Moving the DBSData directory to a different server"
- "Moving the DBSData directory to a different location on the same server"

Moving the DBSData directory to a different server

Moving the DBSData directory

The following conditions must be fulfilled in order to successfully move the DBSData directory:

- ✓ No DBSWIN client started

 The process of moving the DBSData directory refers to the default installation of DBSWIN and VisionX. In some cases the individual paths may differ from the actual installation.

- › Launch the Server Manager via **Start > All Programs > Air Techniques > DBSWIN > Server Manager** on the computer acting as the DBSWIN server.
- › Click .
- › Click .
The database is deactivated.
- › Click .
- › Click .

- › Under **Local path**: enter the local path of the VisionXData directory (default: C:\VisionXData) or a subfolder you have created yourself and click **OK** to confirm.
The local path is copied and the global path is automatically entered.
- › Click **OK** to adopt the settings.
- › Click .
The database is activated again.

Adjusting paths in VisionX

- › Launch VisionX on the computer acting as the server.
If VisionX has been configured for a single workstation, start the single workstation installation.
- › Click .
- › Click **Practices**.
- › Select the required practice.
- › Click **Configure**.

 The following paths apply to a default installation of DBSWIN with one practice.

- › In the **Database** area under **DBSWIN X-ray path**: enter the new path to the directory within the moved DBSData directory that contains the X-ray images (C:\DBS\DBSData\pr1\Xraylmg).
- › In the **Database** area under **DBSWIN video path**: enter the new path to the directory within the moved DBSData directory that contains the video images (C:\DBS\DBSData\pr1\Widlmg).
- › Restart VisionX.

Adjusting paths in DBSWIN

- Once the DBSData directory has been moved, DBSWIN can be uninstalled. If you wish to continue using DBSWIN, the new server needs to be changed in DBSWIN.
- › Launch DBSWIN on the computer acting as the server.
 - › Display the configuration via **Options > Display configuration**.
 - › Open the connection settings via **Configuration > Change server**.
 - › Enter the IP address and the port of the new server.
 - › Click **Connect**.
DBSWIN searches for the DBSData directory on the new server. When the directory is found, a green dot appears under **Connect**. The connection has been established.
 - › Click **OK** to save the settings.

- › Launch DBSWIN on all clients.
DBSWIN shows that no connection to the server can be established.
- › Enter the IP address and the port of the new server.
- › Click **Connect**.
DBSWIN searches for the new server. When the directory is found, a green dot appears under **Connect**. The connection has been established.
- › Click **OK** to save the settings.

Moving the DBSData directory to a different location on the same server

Moving the DBSData directory

The following conditions must be fulfilled in order to successfully move the DBSData directory:

- ✓ No DBSWIN client started



The process of moving the DBSData directory refers to the default installation of DBSWIN and VisionX. In some cases the individual paths may differ from the actual installation.

- › Launch the Server Manager via **Start > All Programs > Air Techniques > DBSWIN > Server Manager** on the computer acting as the DBSWIN server.
- › Click .
- › Click .
The database is deactivated.
- › Click .
- › Click .
- › Under **Local path**: enter the local path of the VisionXData directory (default: C:\VisionXData) or a subfolder you have created yourself and click **OK** to confirm.
The local path is copied and the global path is automatically entered.
- › Click **OK** to adopt the settings.
- › Click .
The database is activated again.

Adjusting paths in VisionX

- › Launch VisionX on the computer acting as the server.
If VisionX has been configured for a single workstation, start the single workstation installation.
- › Click .
- › Click **Practices**.
- › Select the required practice.

- › Click **Configure**.



The following paths apply to a default installation of DBSWIN with one practice.

- › In the **Database** area under **DBSWIN X-ray path**: enter the new path to the directory within the moved DBSData directory that contains the X-ray images (C:\DBS\DBSData\pr1\XrayImg).
- › In the **Database** area under **DBSWIN video path**: enter the new path to the directory within the moved DBSData directory that contains the video images (C:\DBS\DBSData\pr1\VidImg).
- › Restart VisionX.

75 Abbreviations used

Abbreviation	Explanation
AE	<p>Application Entity</p> <p>The Application Entity is a functional component within a system that is a user and/or provider (SCU/SCP) of one or more DICOM services. Every AE uses a unique AE Title for identification.</p>
BDW	<p>Basic Dental Workflow</p> <p>Open standard for the exchange of information between practice management program and imaging software</p>
DICOM	<p>Digital Information and Communications in Medicine</p> <p>Open standard governing the storage and exchange of information in medical image data management</p>
RIS	<p>Radiology Information System</p> <p>Electronic data processing system for the documentation and management of medical and administrative data in the field of radiology</p>
PACS	<p>Picture Archiving and Communication System</p> <p>Picture archiving and communication system built on computers and networks</p>
SCP	<p>Service Class Provider</p> <p>Defines the DICOM services and their role as server</p>
SCU	<p>Service Class User</p> <p>Defines the DICOM services and their role as client</p>

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Parts of the product are based on third-party image libraries with a large number of available licenses that are not covered by the EULA. Those that require a reproduction of the license text in the distribution are listed below.

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- "76.2 MIT License"
- "76.3 DCMTK licencija"
- "76.4 GLEW License"
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- FTGL library
- LibUsbDotNet library
- Qt framework

Parts of the product are based on the work of the Independent JPEG Group.

Some free software licenses request but do not require confirmation of software use. We would like to express our gratitude to the following people and projects for their contributions to this product:

- zlib compression library (Jean-loup Gailly, Mark Adler, and Team)
- libpng graphics library (Glenn Randers-Pehrson and Team)
- LibTIFF library (Glenn Randers-Pehrson and Team)
- SQLite database engine (D. Richard Hipp and Team)

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This license applies to the following redistributed libraries and files:

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