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1. General

Symbols used

Warning

Intended purpose

Recording and management of X-ray images and their allocation to owner and animal.

Trademarks

Windows XP and Vista are registered trademarks of Microsoft Corp.
DirectXTM, DirectDrawTM are trademarks of Microsoft Corp.
All other brands and product names are trademarks or registered trademarks of the respective manufacturer.

Registration

As a registered user of the Vet-Exam Plus program you are entitled to all the program functions (according to the ordered package) and a broad range of technical support services. You have to activate the registration in the Vet-Exam Plus program, check the desired configuration, print out the registration form or make the necessary entries in the attached registration form if you do not have a printer connected. Then send the completed registration form to Dürr NDT by telefax, e-mail or surface mail.

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Dürr NDT will send you a valid release code for your system. The software is not copy-protected. However, only one copy may be produced for backup purposes. Any duplication or publication of the software or the software documentation is prohibited without the prior approval of Dürr NDT.

Storage of the data carriers

According to the manufacturers, protect from
– Direct magnetic radiation (permanent magnet or electromagnet)
– Temperature outside permitted range
– Humidity outside permitted range
– Damage (scratches, breakage, deformation, ...)

Data backups

We recommend you carry out a complete backup of the software already installed on the computer before installation of the software. When using the X-ray module (e.g. with CRScan), a regular backup of the Vet-Exam Plus database directory is crucial. Information on how to do this can be found in section "Information on data backup".

Effect on the computer

We do not assume liability for any effect on any software already installed on the computer.

Copyright

Copyright 2011 by Dürr NDT
License agreement for Vet-Exam Plus software

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– Dürr NDT GmbH & Co. KG assumes no liability for material damage or personal injury of any kind resulting from the use of the software.

Operation

General
The operation of the program follows the Windows conventions. Attention will be drawn to any special operations at the corresponding point in the manual.

Mouse

Click: Click left mouse key once and release it
Double click: Click left mouse key twice
Right click: Click right mouse key once and release it
Drag&Drop (drag left): Position mouse pointer on the object, press the left mouse key and keep it pressed while moving the mouse. Release the mouse key when reached the desired position.
Take&Drag&Drop: Click on object, move object by means of the mouse and release the object by clicking again.

The following description refers to the Windows default settings (right-hand mouse)

Click: Activate or initiate a function. Select a menu item or function.
Double click on the object: Activate object or image-related functions (e.g. image processing).
Right click: Load the context menu.
Drag&Drop: Move or copy objects between Drag&Drop-capable objects or applications.
Take&Drag&Drop: Draw graphic objects with start and end points. (e.g. luminance/contrast controls)

Keyboard
The keyboard can be used to select from Vet-Exam plus menus and to make inputs.
The main window is divided into:
1. Header bar (top)
2. Menu bar with the menus "File", "DICOM", "Examination", etc.
3. Modules (tab sheets) with the tabs "Patient", "X-ray", "Light table", etc.
4. Function bar (left-hand column)
5. Status bar (bottom) Max

The surgery name and the currently selected patient are displayed in the header bar.
The logged-in user and the last registered patient are shown in the status bar.

**Error log**

Errors or messages occurring during the program run are logged by a Logserver that is also started at each program start; the log is automatically written to a file on closing the program. These files (logx.rtf) can be found in directory ".\Vet-Exam plus\bin" can be consulted in the event of problems. The Logserver can be seen in the Windows taskbar in the bottom right-hand corner during the running of Vet-Exam plus.

You can view the Logserver by double clicking to show all the messages due to errors or warnings. Right clicking on the Logserver icon in the Windows taskbar allows you to quit the Logserver via the menu point "Quit".

Please do not exit the Logserver while Vet-Exam plus is running!
Dialog window

Question

A question window appears as a safety feature that allows you to confirm, deny or cancel an action.

Message

Messages give information relevant to an instruction that has been carried out.

Warning

A warning appears when an instruction could not be carried out or could only be carried out in part.

General Menus/Functions

Quit (File menu)

Returns to the login status to change user information or to end the program.

Pixel size

In this menu you can start examinations, switch between examinations and display or abort running examinations.
This function is generally used in conjunction with DICOM (see "Manual Vet-Exam plus DICOM", No. 9000-608-108/...). If necessary, you must order and release DICOM via the central release.
Configuration (Options menu)
Under this menu item you can show and hide the display of the configuration tab, with administrator rights you can create or edit new configurations for a module (e.g. a new user).

Contents (Help menu)
Contents.

Help (F1) (Help menu)
Displays help on the current module.

About Vet-Exam plus (Help menu)
Registration of the program and display of the registered modules and versions.

System Requirements

Hardware and Software
The PC and its components (monitors, printers, etc.) must conform to IEC 60950 (EN 60950). The safety demands on the PC system may differ, depending on the combination with other peripherals (video camera, scanner); further information can be found in the respective user manuals.

Operating systems are constantly developed further to meet the growing requirements of the users. Today Windows XP and Vista offer professional operating systems with sufficient multimedia functions. We recommend one of these operating systems for reasons of system stability and data security. If more systems are connected to the PC, the minimum requirements may change. Please note the minimum requirements for all connected systems.

PC
See document "Minimum requirements of computer systems for imaging"

Data backups
Archiving is not for data backups. It serves only for external storage of image data from the Vet-Exam plus database. The Vet-Exam plus database must be backed up with the daily data backup.

NTFS is urgently recommended as file system for the storage medium of the Vet-Exam plus database DBSDATA! An existing FAT32 file system can be converted to NTFS with the Convert.exe Windows program!
DirectX Version 8.x or higher

Extension for Dürr NDT X-ray recording system, CRScan
The Dürr NDT X-ray recording system, CRScan, uses important data whose loss may, in some cases, necessitate a new X-ray image. The program was designed to avoid data loss if possible. In order to guarantee this stability, the following minimum system requirements are demanded for operation of the Dürr NDT X-ray recording systems:
Long-term archiving system using storage media with long-term stability (MOD, WORM, CDR, DVD-RAM).
Recommended: MOD with high-speed PCI-SCSI-2 controller
Monitor
17" monitor with 0.26 mm pitch
Horizontal frequency to 92 kHz, vertical frequency to 160 Hz
TCO 95, MPR II, TÜV-GS, CE mark and X-ray Ordinance

Depending on the graphic card monitor combination used and its settings (e.g. resolution, depth of colour, contrast, brightness) the quality of the monitor display can be very different. Particularly the grey levels and the detail precision can differ. If the on-screen display of X-ray images is to be used for analysis purposes, it is necessary to determine during the consistency check whether the monitor has a sufficient display quality.

Printer
In principle, all printers that can be activated under WINDOWS

Installation

General
We recommend you carry out a complete backup of the software already installed on the computer before installation of the software. In order to install the software on your system, it must satisfy the data stipulated in chapter "System requirements".
Place the Vet-Exam plus CD-ROM into a suitable drive. The installation program is started automatically. If this is not the case, start the file install.exe from the root directory of the Vet-Exam plus CD-ROM.

Single workstation installation
To carry out a single workstation installation, select “Application and database” at the beginning of the installation. You will now be guided through the routine by the dialogs and can change the default paths suggested by the program. After successful installation you will find Vet-Exam plus under the item of the Windows start menu selected during the installation and as an icon on the desktop.

Network installation
If the program is installed in a network, all workstations need to be linked to the database drive in the same way.
You have to assign a drive letter to the server path (drive) at each workstation. This drive letter must be identical on each station. In order that there are no conflicts with existing drives, you should select a drive letter near the end of the alphabet (e.g. X, Y or Z). Keep in mind that all access rights for the new drives may have to be set.

First workstation / database
During the installation of the first workstation, select “Application and database” to set up the first workstation and at the same time the database on the server. All inputs up to the page “Database directory” of the installation refer to the local workstation installation. Now assign the database directory to the drive letter which was assigned to the server path before. The next window that appears is “Note for multi-workstation systems”. Please note down the path shown, because you will need it for the installation of other workstations. Select all remaining directories and complete the installation.

Other workstations
To install a further workstation for operation with the network database, select “Application only”. All inputs up to the page “Find database directory” of the installation refer to the local workstation installation. On this page, select the directory that was displayed during the database installation under “Note for multi-workstation systems”. Select the Vet-Exam plus symbol from the corresponding group of the start menu.
Notes on data backup

Necessity

A backup of the data is absolutely necessary since the failure of the system can lead to a loss of data. A data backup also protects you, however, against data losses caused by operator errors or destruction (fire, water, etc.) of the system. The data backup must not be confused with the Vet-Exam plus archiving, because only images with the corresponding data can be externally stored using the archiving function.

Vet-Exam plus data

The image and patient data of a Vet-Exam plus stand-alone standard installation can be found in the directory C:\Vet-Exam plus\dbsdata. If you have not used the standard installation, you can check in the configuration menu under tab "System Info" where the data have been stored. Details can be found in section “Configuration”.

Methods

If you wish to back up the data on your hard disk to a streamer tape or other backup medium (streamer, external hard disk, etc.), you do not necessarily have to copy all the files at every backup. Once installed, the program files (e.g. Microsoft Windows, Microsoft Excel, etc.) generally remain unchanged. It is not necessary to back them up on tape every day. On the other hand, it should be possible to restore all changes and new files of a working day at any time. You should organize your data backup optimally using a combination of the following backup methods.

Full Backup

All files are saved from all sub-directories of a selected drive. Every backup program allows certain files or directories to be excluded even from a full backup – e.g. the backup program proper (because this would have to be installed from the CD-ROM anyway in the event of a system crash) or temporary working directories.

Incremental Backup

An incremental backup - unlike a full backup – saves only those files which have been changed since the last backup. In addition to the file name and the file date, every file has an identifier or archive flag. In a full backup this identifier is deleted, it will be set again by each subsequent write access to the file. You can restore the condition of your PC to an arbitrary day by using a full backup. This is particularly useful if you notice a deficiency in a database or a virus infection some days later. The latest backup could include already deficient files. The incremental backup alone holds a risk however. In order to completely restore your PC, you first have to restore an old full backup. Then you have to read in all created incremental backups in succession. Only in this way is it possible to be sure that all changes are really reconstructed. This can be extremely time consuming. Therefore, it is useful to intelligently combine incremental backups and full backups.

Backup strategies

With a combination of full backups and incremental backups, you can restore the data at any time up to three months. Should even one backup media streamer tape be destroyed, the procedures described here guarantee that you will not be left with a loss of any great consequence – and never a total data loss. Only the changes of a single day may be lost. The procedures described are suitable, of course, for every backup medium, e.g. for Zip drives or streamer tapes. To ensure high data security, you will need nine streamer tapes (or changing media).
Label these as follows:

- Tape 1 : Monday
- Tape 2 : Tuesday
- Tape 3 : Wednesday
- Tape 4 : Thursday
- Tape 5 : Friday 1
- Tape 6 : Friday 2
- Tape 7 : Friday 3
- Tape 8 : Month 1
- Tape 9 : Month 2

Start with the backup on a Friday by writing one full write backup onto the Friday 1 tape. Carry out an incremental backup on the corresponding media on Monday, Tuesday, Wednesday and Thursday of the following week respectively. The following Friday start another full write backup, but this time use the Friday 2 tape. The following week write an incremental backup each day onto the Monday to Thursday tapes accordingly without deleting the backups already stored on these tapes. On the following Friday start a full backup again and use the Friday 3 tape for it. The schedule remains unchanged for the week after this; instead of the Friday 4 tape that is not available, use the Month 1 tape for the full backup. This backup schedule is repeated for a month, then write a full backup to the Month 2 tape. The cycle then begins again from the beginning. All media on which full backups have been written (Friday 1, Friday 2, Friday 3, Month 1 and Month 2) must be deleted or typed over before you can use them again. You should only delete the media with the incremental backups if the size of the incremental backups requires this every four weeks. Simply changing database files each day maximizes the incremental backups enormously. The data compression of the backup software also works more effectively here.

**Simplified Backup**

For smaller amounts of data this backup schedule can be simplified; then only four tapes are necessary. Label these as follows:

- Tape 1 : Monday / Wednesday
- Tape 2 : Tuesday / Thursday
- Tape 3 : Week 1
- Tape 4 : Week 2

Start with the backup on a Friday by writing one full write backup onto the week 1 tape. Carry out an incremental backup on the corresponding media on Monday and Wednesday to tape 1, on Tuesday and Thursday to tape 2. The following Friday start another full write backup, but this time use tape 4. The cycle starts from the beginning again. With this scheme the data of up to three weeks can be restored.

**Equipment**

Diskette drives are not suitable as back-up devices in Vet-Exam plus due to the data volume and the low data security. In principle any drive can be used for backup. Here are some examples:
- Tape drives (streamers)
- External hard disk drives (Syquest, Iomega, ...)
- Iomega Zip drive
- MO drives (Fujitsu, 3M, HP, ...)
- CD-Writer/-Rewriter
- DVD-RAM
- DVD-R
- DVD+R
- Blue-Ray disc (BD-R)
2. Configuration

Local activation of the software

In order to be able to use the software with the desired scope of functions, you must carry out the activation. Without activation, you can only manage 30 owners and animals even with the full range of functions of the software. Furthermore, only 50 program starts are possible.

To carry out the activation, proceed as follows.

Transmission of the registration data

Note that additional costs can accrue with the selection of the registration options. The prices can be found in the latest Dürr NDT price list or obtained from your dealer.

Start the software.

The "Vet-Exam plus" registration window appears.

You can also call up the registration window later in the "Help" menu with the menu item "About Vet-Exam plus".

Click on the "Register" button.

The "Activate" dialog window appears.
The buttons in the left area can be used to reach the further dialog window in order to enter the data.

**Form**

With this button you switch to the dialog window in which you enter the necessary order data. Enter the necessary data in the "Your address" field and in the "Serial numbers" field.

In the lower part of screen in the column "You wish to purchase", activate the check boxes of the modules you wish to activate. In the column "You now have" you will see any modules that have already been activated.

The Vet-Exam plus is selected as standard and must be activated.

Carry out the registration by telephone, per fax or per eMail.

For registration by telephone, keep the data on the order form and the "Station no." ready at hand. The station number is specified in the "System" field.

- Print order form
- Export order form
- Send the order form per eMail
Enter the release code centrally

Code

With this button, change to the dialog window in which you enter the "DBS Code" that you receive from Dürr NDT.

When you have received the code from Dürr NDT:
Start the Vet-Exam plus software and call up the registration window.
Click on the "Code" button.
Enter the "DBS Code".

The central activation code can be entered at any workstation in the network.
Confirm the input with "OK".
A message appears.

Confirm with "OK".
The dialog window for activation of the locally available modules appears.

Configuration of the modules

General
At the start of Vet-Exam plus the tab "Configuration" is deactivated. The tab "Configuration" is displayed by clicking the menu "Options/Display configuration" in the menu bar. Basic properties of Vet-Exam plus can be viewed and set under the "Configuration" tab.

Please note that incorrect settings may result in malfunction and loss of data!
**General**

Different people can be authorised to use Vet-Exam plus in the "Users" directory. Changes to user data can also be carried out here. There are a number of possibilities for differentiating between authorised surgery access and group practice access authorisation.

**Login needed**

If you deactivate the checkbox "Login required", the program start and fundamental alterations to functions and performance features of Vet-Exam plus can be made in Vet-Exam plus without the input of a password. With the help of the "Login required" checkbox, you can generally control the use of the device by authorised persons. The input of a password is then demanded during the start of Vet-Exam plus and for alterations to functions and performance features of Vet-Exam plus.
Meaning of the displayed dialog fields

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;Status&quot;:</td>
<td>Name of currently logged in operator</td>
</tr>
<tr>
<td>&quot;User&quot;:</td>
<td>List of already available operators of the selected surgery</td>
</tr>
<tr>
<td>&quot;Password&quot;:</td>
<td>Password of the operator</td>
</tr>
<tr>
<td>&quot;Full name&quot;:</td>
<td>Full name of the operator</td>
</tr>
<tr>
<td>&quot;Abbreviation&quot;:</td>
<td>Short form of the operator name</td>
</tr>
<tr>
<td>&quot;Standard surgery&quot;:</td>
<td>List of surgeries already created</td>
</tr>
<tr>
<td>&quot;Function&quot;:</td>
<td>List with function designations</td>
</tr>
<tr>
<td>&quot;Access rights&quot;:</td>
<td>List of access rights to surgeries</td>
</tr>
</tbody>
</table>

The Login window

The surgery of the selected user is displayed. In the event that the user is registered for more than one surgery (e.g. group practice), the appropriate surgery can now be selected from the list.

Entering passwords
If the names for user and password are identical, the password does not have to be entered at login (e.g. "User" = Brown, "Password" = Brown). If the checkbox is empty, you can start Vet-Exam plus without the input of a user and password. Please note that this option does not allow any security with regard to unauthorized access.

Change Operator

There are two ways of changing the active Vet-Exam plus user.

In the program
The active user is displayed in the status bar at bottom left. Clicking the "Name" when a user is logged in allows another user of the current surgery to be selected.

Starting and ending with Login window
End the program up to the login window. Choose the required operator name from the list displayed and enter the correct password. The surgery of the selected user is displayed. In the event that the user is registered for more than one surgery (e.g. group practice), the appropriate surgery can now be selected from the list. Confirm your selection by pressing the "Login" button. The operator is now logged in. The current operator name is now displayed at the bottom left of the screen.

If a user is not assigned to the current surgery, the system switches automatically to the surgery to which the user is assigned.
Edit Operator

You need the corresponding administrator rights for editing users and access rights in Vet-Exam plus. The edit mode is activated by clicking the "Edit operator data" button. The fields to be amended will be enabled and data can be changed.

Save operator

Save any change by clicking the button "Save new or edited/changed user data". The changes will be rejected by clicking the "Reject" button.

New Operator

You need the corresponding administrator rights for editing users and access rights in Vet-Exam plus. Clicking the button "Create new user " activates the edit mode and all text fields are emptied. Assign a surgery to each operator as this is the surgery name that Login automatically assigns. The allocation of access rights allows the operators levels of access to the program.

Delete Operator

You need the corresponding administrator rights for deleting users and access rights in Vet-Exam plus. Choose the appropriate operator name from the list. Click on the "Delete current user" button to start the deletion process.

The operator will be definitively deleted by clicking the button "Yes".

Authorized Access

The access rights can be set individually for each user in Vet-Exam plus. Care should be taken to allow only a small number of suitable users to have Administrator rights.

| *Administrator*: | Creating or editing user data  
|                 | Creating or editing surgery data  
|                 | Configuration                     |
| *Patient: Extra*: | Display additional information on the latest patient by pressing the "Info" button |
| *X-ray*: | Access rights to x-ray module |

By marking the individual function areas of Vet-Exam plus you can assign individual access rights to each user. If the "Administrator" function is assigned, this operator will have full access. If a user is to have access to several surgeries, click on a surgery name in the right-hand selection list.
Clicking on the button assigns the surgery to the user.

To delete an entry, click on a surgery name in the left-hand selection list and then click the button.

On completion, save the changes by clicking the button.

If you wish to reject the changes, clicking the button.

The directories for database, video and X-ray images are entered in the directory “Surgery”. This is necessary if you wish to create and manage further surgeries. The relevant databank paths for the different surgeries are set up here.
Directory structure within Vet-Exam plus

A database file directory ".\dbsdata" is created for each company (first surgery = \pr1\..., second surgery = \pr2\..., etc.). The corresponding database can be found in the subdirectory ".\database" in each surgery directory. The video images are also stored in subdirectory ".\Vidimg" and the X-ray images in subdirectory ".\Xrayimg" of the surgery directory. Each surgery is assigned a surgery identifier on creation of the surgery name.

Moving the database

The complete directory ".\dbsdata" can be shifted to another path (also in the network) using DB-TOOL. The directory ".\dbsdata" must then be linked to DBTOOL again at the other Vet-Exam plus stations.

New surgery

To create a new surgery, click the button "Create new surgery". All data fields will be cleared and you can enter a name for the new surgery or databank. The program paths will be automatically suggested. However, it is possible, to enter your own program paths. Repeat these steps for the X-ray path.

Save

Save any change by clicking the button "Save new or edited/changed surgery data". The changes will be rejected by clicking the "Reject" button.

Edit Surgery

To edit the current surgery data, click the button "Editsurgery data". You can now change the surgery name and assign the paths again. This is necessary if the position of the files has changed (directories were moved, backed up). On completion, changes are saved by clicking the "Save" button. The changes will be rejected by clicking the "Reject" button.

Delete surgery

Operators who have Administrator status are able to delete surgery data. Select the surgery to be deleted and press the button "Delet current surgery". The appropriate entry will be deleted.

Only the path instruction will be deleted and not the paths themselves. This must be carried out manually, in this case via Explorer.
Change surgery

To change to another surgery, click on the pull-down field next to the currently displayed surgery. A selection list is displayed with all the surgeries available in Vet-Exam plus. If available, select an item from the list and confirm with left click. To switch to the selected practice, click the button "Change Surgery". The current surgery is now displayed at the top of the screen.

Video

In the field "Image quality factor" you can set any value between 0 and 100. An image quality factor of 100 means that video recordings are saved virtually with no loss and with minimum compression. A lower value increases the amount of compression but decreases both the amount of memory required and the quality. The recommended quality factor = 70.

X-rays

In the field "Storage time" you can set how long X-ray images at to be stored in the database. X-rays produced within this period cannot be deleted. You can select whether the entry of X-ray parameters is necessary for an X-ray exposure or not with the "X-ray parameters are mandatory entries" checkbox. If you want to change these parameters later, the "X-ray parameters always changeable" checkbox must be set.

There are three methods of storage for X-ray images (the file size and image quality values are not fixed, they are dependent on a number of factors):

– No compression (100% file size)
– Loss-free compression (50–60% file size)
– Lossy compression (100% = 40–50% file size; 90% = 20–30% file size)

The compression ratio chosen will depend on national regulations concerning storage of dental images!

We recommend that "No compression" is set.

In general, the image loading time will increase the lower the compression ratio. With the lossy compression, an image quality factor of 100 means that the image information will be theoretically 100% restored.

The images must be saved loss-free to ensure a lasting evaluableity of the X-ray images.

Database

The path to the currently used database is displayed here and the surgery ID that is connected with this database.
Vet-Exam plus supports several national languages. Initial installation is carried out using German, English, French or Spanish. To switch to the required language, left click (left-hand mouse button) on the appropriate language in the upper table. Confirm the selection by pressing the "Change language" button (on the right-hand side, next to the "available languages" selection list). The changeover to the new language takes effect the next time the program is started! National languages not yet installed can be selected from the lower selection list with the left mouse key and then installed from the Vet-Exam plus CD by clicking the button "Install selected languages from CD" (on the right alongside the selection list "Install languages from CD").
Information such as memory occupancy and system utilisation is displayed on this page. The following fields can be edited by the Administrator. Press the "Edit systeminfo" button. The name of the computer can be edited. Each station computer should be assigned an individual and unique name for identification purposes when working in a network.

**Warning/Error Limits**

Warning or error limits can be set in the "Database" field or in the "image files" field. In the case of available memory not being sufficient and falling below a preset value, the system then sends a Warning message. In the case of the Error Limit being reached, no more new data or images can be entered.

Set the Warning Limit to a value that gives you sufficient time to react, for example, to rearrange data storage or provide a new data carrier.
The short cuts allow you to enter comments or evaluations in the image information box more quickly. The assignment of short cuts can be amended here. You can edit existing terms in the edit field under the selection box and add new terms by clicking the button "Create new short cut". The right field displays the key combinations entered. Save your inputs by clicking the button "Save short cuts". In order to delete an entry, select it from the list and click the button "Delete short cut" (recycle bin).
Settings for the individual program modules are made under the tab "Modules".

**Vet-Exam plus module (main module)**

**Directories tab**

Displays the program directories and position of the initializing files LDBS.INI and GDBS.INI.
Options tab

If the checkbox "Confirm program termination" is activated, the system asks again on closing Vet-Exam plus whether the program is really to be terminated. The module control allows you to activate or deactivate modules. Select the desired module and click the button "Activate module" (double-arrow to the right) or "Deactivate module" (double-arrow to the left).

Vet-Exam plus has to be started again after a change!

VDDS tab

The VDDS media port for communication with certain surgery administration programs can be configured using the "Active" checkbox. To do so, the VDDS media-capable patient administration program must also be selected in the list box. Currently it is possible to support patient transfer and the return of data such as type of image, object, and opt. X-ray parameters, but not images. The VDDS media port is currently only available in the Federal Republic of Germany!
Image processing tab

The settings of the image processing filters are reset to the factory settings. Current settings can be replaced.

User interface tab

The "Skin control" determines the appearance of the window frames and function elements. "Skin active": The appearance corresponds to the appearance selected in the operating system, e.g. "Windows classic". "Skin window frames": The frames of the dialog window in Vet-Exam plus are adapted to the appearance selected in the operating system. The two check marks under "Skin control" must not be removed. Under "Position of the function bar" you can set where the function bar is to be positioned. If the check box "Balloon tips active" is activated, tips are displayed at the mouse pointer when the mouse is pointed at a button.
Patient module

Under the tab "Extra fields" (Fig. left) you can select which or how many additional fields are to be displayed in the project tab and can edit their designations. Under the tab "Patient" you can select whether patients marked as hidden in the database are to be displayed again in the patient search list.

The automatic program change on activation of a patient can be set in a selectable module under the tab "Login". If you wish, for example, to jump immediately to the module "X-ray" when logging in a patient via an external program, then select "X-ray" and activate the check box "Automatically activate external patients". A login selection list is generated when several patients are handed over by an external program and the check box "Automatically activate external patients" is not activated. The list is then displayed under the patient tab during the patient import. Under the tab "Patient data import" you can activate the display of the button "Patient data import" under the patient tab. You can specify a file that is to be automatically loaded when the button is clicked.
Module video

The video properties field is used to set up the appropriate camera and mode of operation in the software. When several video sources are being used, the camera and operational mode for each can be set individually.

When a PCI-Busmaster-Framegrabber is being used, check that this is supported by the hardware.

Tab settings

When the function "automatic export images" is active, then every video recording saved to the database will also be copied to a designated path. Path selection, data format and other properties are set up in the dialogue "light table properties" using tab “Export/E-Mail/Export options” in the "Autoexport" mode.
Tab video source 1 and video source 2
Where only one camera is connected to the computer then the setting under the tab will be "Video Source 1". When a second camera is connected then this must be set up as "Video Source 2", as "Video Source 1" is reserved for the first camera.

Select the camera required under "Operational mode". If necessary check the installation and configuration instructions of the appliance.
Under "half frame used" select "Both (full frame)". When using the setting "full frame", check all images as horizontal stripes can appear on the images depending on performance and movement.

Tab WDM
"WDM-driver": All WDM-drivers installed in the system are displayed. The driver for VistaCam Digital is selected automatically.
"VistaCam Digital/VistaProof camera selection": All digital VistaCam that are connected are displayed.

Update camera list
Just click the appropriate field and the list of cameras connected will be updated.
"Reduce noise": to capture one image, a set number of images over a preset time period is first taken. From all these images one new image is calculated in which any interference is largely suppressed.

Tab Manual Release
The manual release is factory set.
If the standard settings are not as required then there are further setting possibilities which can be selected:
Light, Medium, Strong
Furthermore the profile (as far as standard profile) can be adapted.
X-ray module

X-ray tubes

"Name": Designation of the X-ray stations, list
"Manufacturer": Name of the manufacturer of the X-ray appliance
"Type": Name, type, serial number of the X-ray appliance or the source
"Category": Category of the X-ray appliance
"Owner"/"Address": Name and address of the owner

All mandatory fields must be completed. The parameters for different X-ray sources can be set under the tab "X-ray stations". By clicking on the button "Edit name or default parameter" you can set the name and the parameters of the current X-ray system. Click on the button "Create new X-ray station" to create a new X-ray system. The contents of the "Manufacturer", "Type", "Owner" and "Address" fields are automatically adopted in the forms of the checks.

For measurement purposes (length and angle measurement) in X-ray images, the image must be calibrated using a reference image object! The accuracy will depend greatly on the distortion of the projection onto the particular image viewer surface.

The parameter input is the same for both procedures described above. Select the category and then click on the button "Input parameters" to start the parameter input.

Standard values

In the section "Input values", enter the input values for current, voltage and exposure time and then click the button "Save value(s)" so that the values are saved. If you have installed several X-ray systems, you can take over the input values of other X-ray systems. Click with the left mouse key on the button in section "Copy default values". If available, select an item from the list and confirm with left click.
"Automatically open image processing" checkbox
If the check box "Automatically open image processing" is checked, the image processing box will be opened with the corresponding X-ray image standard functions immediately after an X-ray exposure.

Check box "Display X-ray data in the mask New image"
If this check box is checked, the X-ray parameters are displayed in the parameter mask of the X-ray modules and can be edited.

"Automatically export images" checkbox
If this checkbox has been selected, any saved images will automatically be exported additionally to the X-ray module. The export format for X-ray images and the export path is defined by the mode "Autoexport" that can be configured in the module Light table/Export e-mail/Export options.

Viewer module (light table)

You can enter your preferred processing software for your images under the tab "External image processing".

Under the tab "Image" you can select whether images marked in the database as hidden are to be displayed. The background colour of the light table can be selected.

Under the tab "Image selection box" you can set whether the image selection box is to be opened automatically on activation of the light table.
You can set the path for the Vet-Exam Intra image catalogue under the tab "Catalogue". The catalogue is available for the storage and subsequent calling up of a selection of example images which may be stored in a variety of addresses. The images can be loaded to the light table with the menu item "Light table/Load/Catalogue". Images on the light table can be saved to the catalogue with the Export function.

The export or sending of an image by e-mail can be configured under the tab "Export/e-mail".

Export options
The settings for Export and Email will be assigned the appropriate mode name. The mode name should therefore reflect the function as closely as possible, for example:

"AutoExport" Settings are used for the autoexport of X-ray and video images. This mode name is predefined and cannot be changed!

Create new mode
Edit mode

Further functions can be displayed using this symbol or can be hidden. This is possible only for users with administrator status!
Selection of the export path to which the images are to be saved. Not available with e-mail.

"Image status": Status of the image to be exported

Display/hide extended options

"To subdirectory ...": Images are saved to the export path subdirectory = Order number.

Set format, depth of colour and quality of the compressed image formats

"Save image info file": The image info file is saved to the image with the image file name+ -info.txt in the export path (Xnnnn-nnnnnnn. JPG-info.txt).

"With comment text": Image comment texts are written to the image info file.

For video and X-ray images it is possible to select an image format from a list. Depending on the format it is possible to select the colour intensity and the quality of compressed images. A “rule-of-thumb” for the quality of image which is available after compression of the image file:

- 100  – Original data
- 90   – Practically negligible losses
- 80   – Minor visible losses
- 70   – Visible losses

E-mail options (e-mail configuration mask)

The Export path field is no longer available under Email configuration. Should the image be too large to send by e-mail, cut out the relevant image detail with the Crop function and then send this detail. Check your IT directives for the largest image size that can be sent by e-mail.

Do not send large image files by Email! If any problems are encountered, select a larger compression ratio. Incomplete (i.e. subject to loss of quality) X-ray images must not be used for evaluation in Germany!
Archiving module

A double click on the archive symbol opens the configuration dialog of the archiving module. It consists essentially of two tabs: The tab "Data" for setting the archiving parameters, and the tab "Drives" with the parameters of the archiving drives. These settings are default values used by the Archiving module.

Archiving parameters

Check box "Archiving at this station"
You can define whether archiving is permitted at this workstation. For security reasons it is recommended that archiving is enabled at only one station! Transfer back is possible at all stations.

Check box "Archive video images"
Determine here whether you want to take video images into the long term archive.

Check box "Archive X-ray images"
Determine here whether you want to take X-ray images into the long term archive.

The images to be taken in consideration for archiving are defined as follows:
- All images within the blue time period are always selected for archiving.
- Images within the red time period are not selected for archiving.
- Images falling within the green time zone and fulfilling the criterion "Patient with at least n images" are selected for archiving.

Examples
Quarterly long-term archiving of all images:
Grey zone: 90 days
Green zone: 1 image
Red zone: 0 days

If you wish to save only patients with at least 10 images than 20 days' old on one medium if possible:
Grey zone: 90 days
Green zone: 10 image
Red zone: 20 days
Archiving drives

The archive module can manage 3 drives at most. These drives must be addressable by assigning drive letters. Before you can make any setting, you must register the drive in the archiving module by clicking on the "Drive active" check box.

The drives must be filled in ascending order (Drive-1, -2, -3)!

Procedure
– Choose the drive letter for the drive that you want to use for archiving or backing up (e.g. CD-ROM, CD-R). In a network, the drive that is to be used for archiving must be on the server computer.
– Choose the corresponding drive type for your drive in the selection box. Regarding data security a MO-drive type should be used for archiving.
– By filling out field "max. utilisation" you control the maximum percentage of drive capacity that may be used by the archiving module.

Example for drive configuration
"Archiving drive 1": If the write/read drive for archiving and reading back is the medium that has not yet been closed. In a network this drive must be installed on a server computer that can be accessed by all Vet-Exam Plus systems.
"Archiving drive 2" and "3": These can be a global CD-ROM drive on the server, a global CD-ROM jukebox or a local CD-ROM drive for reading copies of closed archive media. Using a local CD-ROM drive but does not allow fast access to long-term archived image data (without an expensive jukebox system)!
CRScan module

In this module the controller of the Vet-Exam Plus scanner can be configured and tested with the program CRScanConfig. Further functions available in this program may only be carried out by trained and qualified technicians. The program CRScanConfig offers the following functions:

**Standard functions**

- Check and set existing interface (connection)
- Read in and display (test) an exposed image plate
- Check ambient light conditions (Oscilloscope mode)

**Further functions**

- Adapt or expand existing parameter sets
- Carry out test functions of the scanner (System check/Manipulation)
- Create and save available and current test reports (System check/Reports)
- Calibrate

**Standard functions**

With the scanner connected, register "DeviceIDs" shows the respective electronic ID of the scanner.

The USB interface used is shown in register "Configuration".

In addition, a configuration can be selected via the list field "Standard mode" that is used automatically by the scanner.

The CRScanConfig program is started by clicking button "Configure".
CRNet module
The CRNetConfig is started by clicking module "CRNet".

DICOM module
Clicking the "DICOM" module calls up the configuration dialog for the DICOM interface. (Further information on the DICOM interface can be found in the "Vet-Exam DICOM manual", No. 9000-608-108-####.)
3. Patient record

General

Patient records can be opened, selected, amended or deleted using the patient index. All patient-related data and an overview of the existing recordings are shown under this tab.

Patient View

![Patient View](image)

Functions

Log in patient (Patient menu)

Clicking the button "Login/logout patient" logs in the currently selected patient in Vet-Exam Plus and his/her data are displayed in the status line. All functions can not be executed for the selected patient (Carry out image recording, View images on the light table, etc.). You can then select the previously logged in patient again by clicking on the patient entry in the status line without having to search for the patient again. The "Login/logout patient" button then switches to "Log out patient" again. If a new patient is selected and logged in, this new patient is shown in the status line. All externally imported patients are automatically registered!

Log out patient (Patient menu)

The currently logged in patient is logged out and all data fields are cleared.
Switch to previous patient

Switch to next patient

Save patient (Patient menu)
Saves the current changes to patient record.

Create new patient (Patient menu)
Click on the button "Create new patient" to create a new patient. Fill in the data form. You can save the patient by clicking the button "Save patient or changes". The field "Pat ID" is a mandatory field. If the mandatory field is not filled out or has been filled out improperly, an information window appears. You can also abort or reject the data recording by clicking the button "Reject input".

Edit patient data (Patient menu)
Click the "Edit patient data" button to change the patient data. Save your changes by clicking the button "Save patient or changes".

Reject changes (Patient menu)
Quit edit mode without saving the inputs.

Delete patient (Patient menu)
In order to delete a patient’s records, select the patient from the database and click the "Delete patient" button. The patient record thus selected will be deleted from the active database. If images of this patient are available in the database, you need to be aware that you cannot delete the patient during a deletion operation if there are X-ray images or archived recordings that need to be stored. In this case, the patient is hidden and is no longer displayed. The "Display hidden patients" check box must be activated in "Configuration/Module/Patient" so that you can select a hidden patient again. Hidden patients can then be displayed in the search list again (and in the "Hidden" column). The attribute "Hidden" is reset as soon as a hidden patient is selected. This patient can then be seen as normal again.

Display and record information (menu Patient/Info...)
You can record or change additional information on each patient in the fields "Important" and "Allergies/Remarks" in edit mode.
Search Patient

In order to find a patient in the database, click the appropriate index alphabet field for the patient.

All patients with this first letter are shown in the search window "Patient list". You can scroll through the list to select the desired patient. If the list contains several entries, enter more of the name in the "Search text" field. Start the search by clicking the "Search" button. In the search field you can select the "Pat ID" or the "Animal name" as search criterion in order to allow the patient selection via this number indicated by you or via the name.

You are also able to call up the extended search. Here you can enter "Owner", "Animal name", "Name extension" and "Vet" in order to limit the search results.

Start the search by pressing the enter key or clicking on the "Search" button. If you click the button "Search" (asterisk symbol) alongside the Pat-ID, all patients will be displayed.

Note: The Pat ID is a max. 15-digit character string that is evaluated from left to right!

For example: The search character string "001T-A0" produces a results list "001T-A0**", whereby * can be any character.
Import patient data

Clicking this button allows you to import the stored patient data from a file.

Create/Delete patient image

An image can only be created in edit mode. The image can either be taken directly using an available video source or selected and even deleted from an existing image file (BMP, JPEG, TIFF). Clicking the button "Start or freeze camera image" allows you to upload a photo of the patient from a video source or file and to save it in the patient file. Clicking the button "Delete patient image" allows you to delete the existing photo of the patient.

Call up images using the options window

Where there are various types of images available for one patient (e.g. Intraoral X-rays and video images), these can be selected and called up directly using the list in the options window. After clicking an entry to a tooth, for example, or marking the entry with a tick or check mark, the light table will appear with the image selection boxes and the chosen image.

Viewing intraoral X-ray images / video recordings / X ray images / other radiographs

Clicking the button displays the light table appears with the image selection box. Depending on the chosen tab the stored images or videos for that patient will be displayed.
Examination (Examinations menu)

Images and views for a patient that were taken on a given day, for a particular purpose or as part of a particular order are grouped together in an examination. The pixel size of the registered patient created last on the current day is always active. Via the Examination menu you can call up date for the current examination, switch between the examinations stored for a patient or create a new examination and call up individual work steps of an examination.

This function is generally used in conjunction with DICOM (see "Vet-Exam Plus DICOM" manual). If necessary, you must order and release DICOM via the central release.

Click "Examination Start / Change". The dialog window "Select examination or work step" appears with the corresponding information.

Start / change examination (Examination menu)

This function can be used to swap other pixel sizes to the registered patient. The coloured symbol with the magnifying glass appears in the status line if several examinations exist for a patient. If there is only one examination, the symbol appears grey.

Click on "Swap pixel size ..." in the "Pixel size" menu or on the symbol in the status line. The window for the selection of the individual examination requirements appears.
**View current**

This symbol in the status line allows you to view the work step for the current examination. The coloured symbol with the computer appears in the status line if there is a work step for a patient. If there is no work step, the symbol appears grey and deleted.

Click the symbol in the status line.

The window "Current work step" with the details appears.
Open order management

This symbol in the status line allows you to call up the order management. The symbol appears in the status line if there is a work step for a patient. If there is no work step, the symbol does not appear. Click the symbol in the status line.

The window "Order management" with the details appears.

You can start, finish, abort and delete the individual work steps and view the details for each entry in the list via the toolbar or the context menu.
4. Light table

General

The light table allows free arrangement of images selected. You have the possibility to choose between a preset order, to arrange images as required, to move, to enlarge and to process them.

Global Image Search

If no patient is selected when switching from the patient to the light table, then you can also work with all image data. For example, for a search for specific images.

! The process can take longer if all the images in the surgery are displayed in the image selection box.

View

[Image of a computer interface showing a light table with an x-ray image and selection options]
Functions

Load an image (Light table menu)
To load an image from the database onto the light table, click the "Open image selection box" button. The image selection box appears. If you double click with the left mouse key on an image in the image selection box, it is opened in full size on the light table. You now have the possibility of loading several images side-by-side onto the light table. Click on the desired image in the image selection box and Drag & Drop the image onto the light table. The image selection box disappears and you can drop the image in any position on the light table in "Free mode". In "fixed mode" you can drop the image only in an existing image frame. If no empty image frames are open on the light table, load a mask first. After putting the image in place, the image selection box appears again and you can open more images. Images can only be opened once. This is shown by the image information line which has a coloured background.

Store image (Image menu)
Stores the active image, or its changes, to the archive.

Gather images on the light table (Light table menu)
Several partial captures of an object can be combined as a complete image. By pressing the button, all of the open images with no borders on the light table are opened on a separate light table with a white background. The recorded images can be moved and rotated so that the respective edges overlap to match with one another. This makes it possible to create a large image of a single object from several partial recordings. The newly created layout can then be saved as a new image or as a group.

In this display mode, more buttons appear in the left-hand toolbar:

- Optimise image size
- Save layout as group
- End display mode (the view changes to light table again)
- Rotate clockwise/counter-clockwise
- Zoom in view
- Zoom out view

Clear Light Table (Light Table menu)
Clear the light table (all images and frames are removed)

Fixed mode (Light table menu)
Activate "Fixed mode" by clicking on the option "Fixed mode" in the "Light table" menu. The image frames cannot be moved in "Fixed mode". Using Drag & Drop, images can be moved from one image frame to the other. Move an image from its frame to a new frame that is occupied and release, the two images will switch places.
Freehand Mode (Light Table menu)
Activate free mode by clicking on the option "Fixed mode" again in the "Light Table" menu, which unlocks it. Images can be moved around on the light table in free mode.

Full screen
Shows current image without additional elements as Full Frame Groups

Groups
Individual images of a patient can be put into groups to e.g. combine the important image captures for a sitting or sitting sequence.

Save a group (Light table menu)
When the current sequence of images on the light table is to be saved, select from the light table menu the option "Save as Group". You will now be asked to assign a name to the new group. Information concerning the group can be entered in the window below. Then click "Save". A group thus saved, can be loaded or changed and then saved under the same or under a different name. The "Save layout as group" button is only visible if the images are moved together on the light table.

Load a group (Light table menu)
To load a group, select from the light table menu the option "Load mask/group". The load menu with the available groups will be opened and the required group can be selected from the list. Place the mouse cursor over the group name in the list and click the left mouse key, then click "Load mask/group".

Delete a group (Light table menu)
To delete a group, select the "Light table/Delete/Group" option in the menu. A selection box with the available groups is opened and the required group can be selected from the list. Position the mouse cursor over the group name in the list and press the left mouse button, then click "Delete".

Masks
A number of different masks (empty frames) can be organized on the light table simultaneously. Standard image arrangements, for example, can be quickly created in this way without having to sort the images on the light table.

Images which are within the image frames will not be saved! These masks are independent of the patient and are always available.

Save a Mask (Light Table menu)
To produce a new Mask, arrange the images in the desired sequence on the light table. Select from the light table menu the option "Save as Mask". You will now be asked to assign a name to the new mask. Then click "Save mask".
When saving, only the image frames without images are saved. If you want to load defined object image recordings automatically when loading the mask in the respective image frame, these image frames must be allocated with object type numbers before saving. You can achieve this by copying a corresponding available X-ray image (object type number) and inserting it again. The imported image must now be assigned the required object type by using the Image info function. This procedure must take place for all desired objects. After saving under an appropriate name this layout will be available for the automatic loading of all the newest, matching images.
Load Mask (Light Table menu)
For loading a mask, select from the light table menu the option "Load Mask". The load menu with the available masks will be opened and the required mask can be selected from the list. Place the mouse cursor over the name of the mask to be opened and click the left mouse key, then click "Load".

If you want the mask to automatically select the latest matching images, mark the appropriate option field "Load latest images".

Delete a Mask (Light Table menu)
To delete a mask, select the "Light table/Delete/Mask" option in the menu. A list with the available masks will be opened and the required mask can be selected from the list. Place the mouse cursor over the mask name in the list and push the left mouse button. Then click the delete field.

Load catalogue (Light table menu)
With command "Light table/Load/Catalogue", you can load an external image catalogue from a directory. In a catalogue, you can combine and call up several images in a project.

Image processing (Image menu)
You can edit an activated image by clicking on the "Edit active image" button or by double clicking on the image. Read more on the functions in "Image processing".

Print (Light Table, Image menu)
This option in the light table menu allows an image or number of images on the light table to be printed. For more information, read the manual in chapter "Printing" or in Help.

Image information (Image menu)
To enter, edit or display information on the active image, press the "Image information on active image" button. The image information box appears for the respective image. You can enter text information on the image in the "Comments" tab. The texts of the hotkeys can be copied to the text area with the right mouse key. The first comment can only be entered once and cannot be changed after saving.

The image type, image size, object type and object range are displayed on tab "Image info". By clicking on button "Selection" in the middle window area "Type", you can select where the image should be allocated and confirm your selection with "OK". In defining the object range, the previously selected main object is displayed with a blue background. All marked objects are displayed in text in the "Range" field.

You are provided with a view of the creation data for the image in the "Creation" tab. In addition, the operator responsible for the image is also listed. The previously entered values are shown in the "X-ray" tab and can be changed if necessary.

You can find information on the creation, the last change, the file name and the resolution in the "Image status" tab. Information transmitted by the DICOM interface can be found under tab "DICOM".

Delete an Image (Image menu)
An image can only be deleted when it has not yet been archived in the Vet-Exam Plus long-term archive and is not subject to any statutory storage period (e.g. X-rays)! At every image Vet-Exam Plus asks whether the image should only be hidden. That means that the image is no longer shown in the image selection box until the field "Display hidden images" is set in "Configuration/Module/Light table". As soon as the image is loaded on the light table, the hidden status is eliminated and it will always be displayed in the image selection box.
Drop Surface

If individual images or several images are moved out of the image selection box by means of Drag&Drop, then the following functions are displayed in a list for selection for the image or images.

- "Export...": Export image(s)
- "E-mail...": Send image(s) by e-mail
- "Image clipboard": Copy image selection box in the image clipboard

In order to send eMails an SMAPI Client (e. g. Outlook Express) must be installed!

Scan an image (Light table menu)

This menu item enables you to accept images from a TWAIN source (e. g. scanner). After the selection of this menu item, the Vet-Exam Plus scan window opens in which you can select the TWAIN source and activate the image acquisition. The number of images taken is shown. After closing the Vet-Exam Plus scan window, these images are displayed in turn on the light table. To put the image in the database, click on "Save active image" (Diskette). You must now assign an image type to the imported file, otherwise the image cannot be saved.

Activate an Image

Single left click activates the respective image. (The colour of the image bar changes to silver.)
Marking Images

Mark image with a red tick
How to mark an image:
– Individual images: Ctrl. button and mouse click in the image range
– All images: Mouse click in image range, call context menu "Mark/Mark all"
Eliminate the marking for individual images or all images in the same way.
The image to be marked in this way can be in the Image selection box or on the light table. If an image is marked from the light table, then the thumb image in the Image selection box will also be marked and vice versa. Several images can be marked at once.
An image or all images marked in the image selection box or on the light table can then be saved, saved as a group, deleted, exported, sent as e-mail or copied to the image store in the image selection box.
The functions for marked images ("Save", "Save as group", "Delete", "Export", "Send mail" and "Image store") are available via the following menus:
– Ctrl button + Drag&Drop
– Context menu/"All marked"
– Main menu/"Light table/All marked"

Import (File menu)
This menu function allows images to be imported. After the selection of this menu point, a load window opens, in which the respective image file can be selected. Then click the "Open" menu. The image is now depicted on the light table and can be processed. To put the image in the database, click on the "Save active image" button. You must now assign an image type to the imported file, otherwise the image cannot be saved.

Export (File menu)
This function allows images in various formats to be exported, e.g. to process these further or to make them available to others.

You can either confirm an available export mode (setting under "Configuration/Modules/Light Table") from the list and select or confirm the directory where it is to be sent. If you want to use a different mode than that proposed in the predefined Image status for export, this can be selected from the list of options under Image status. Detailed information concerning the image formats can be found under "Configuration/Modules/Light table/Export-Email." Further selection criteria are partly explained in the following section.
Export functions

**All images of the project**
- "Image type selection": Selection for video-/X-ray images
- "Image status": Image status of the exported image
  - Activate extended function view!
  - Only visible for users with administrator rights

**Images from ... to ...**
- "Selection criteria": Selection of the period of the images to be exported

**Selected image on viewer**
- Only the active image (blue image bar) is exported.

**Marked images on the light table**
- All images marked with a red checkmark are exported (Ctrl + left click).

The system administrator has the possibility of amending all the parameters for current image export using the further options menu point.
Any changes made to the current mode will not be stored. This can only be done under "Configuration/Modules/Light table/Export-Email"!
Image status

The five different image states "Original", "First save", "Diagnosis", "Last saved" and "Current status" can be exported.
All visible coloured graphic elements presented in the image on the light table will be added to the exported image (burned-in)!
The image processing box supports the following four levels of drawing, whose graphic elements can either be visibly presented singly (control box On) or all together (control box All) or be set as non-visible:

- Angle measurements
- Length measurements of lines and polygons
- Text, line and closed line elements

Examples of images exported under varying image status

<table>
<thead>
<tr>
<th>Display</th>
<th>Original status</th>
<th>Initial storage</th>
<th>Evaluation</th>
<th>Last stored image</th>
<th>Current status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not possible</td>
<td>Not visible</td>
<td>Not visible</td>
<td>Not visible</td>
<td>Not visible</td>
<td>Not visible</td>
</tr>
<tr>
<td>Not possible</td>
<td>Not visible</td>
<td>Not visible</td>
<td>Not visible</td>
<td>Not visible</td>
<td>Visible</td>
</tr>
<tr>
<td>Not possible</td>
<td>Not visible</td>
<td>Visible</td>
<td>Not visible</td>
<td>Not visible</td>
<td>Visible</td>
</tr>
</tbody>
</table>

Light table image

Export. image

Duplicate an image (Image menu)

Creates a duplicate of the active image on the light table.
Assign an image (Image menu)
Open the project list to allocate an image to another patient located in the project base. Archived images can no longer be reassigned!

Sort images (Light table menu)
Automatic sorting of all images which are on the light table at the moment.

Imaging (Light table menu)
The active image is transferred to an external image editing program as a call-up parameter. The external image editing program available must be entered in "Configuration/Modules /Light Table/Imaging. After ending the imaging program, the changed image is displayed on the light table and can be stored as a duplicate!

Image selection box
You can vary the size of the image selection box by dragging the box at the borders, edges or separation line of the image section. The size of the comment area can be adjusted by dragging the upper border of the comment field with the mouse (mouse pointer changes from arrow to double arrow. These settings are stored until the next change. The image selection box can be brought up to date under Context menu/Update (right click). This means that those images which may have been taken at other stations in the meantime are also displayed. The image selection box is displayed by pressing the "Open image selection box" button. The Image selection box enables you to choose the required image from those saved for displaying on the light table.

Example – single line

Display bar
Here, you can switch between the display of all images, a selection of images and the images on the image clipboard.

The image clipboard serves to store selected images temporarily. If images are sent to the light table (e.g. from patient, video or X-ray module), then they are stored on the image clipboard as copies. This allows immediate access to the images. It is also possible to copy a particular image from the image selection box or from the light table onto the image clipboard. The current content is deleted as soon as new images are copied into the image clipboard. The button "Image clipboard" is inactive when it contains no images.

The fields "All images", "Image selection" and "Images saved" brings up the image selection criteria "Video", "Intra", "X-Ray" and "Other" together with the number of images available. Clicking the button displays the images of the group in the image selection box.
Sort according to Date/Object type

The images can be sorted in the image selection box according to date of creation or to object type. Within the sorting according to object type images are also sorted according to date of creation. You can display particular images only by using a filter on the stored images. This is especially useful if a large number of images are created for a patient.

Advanced image selection filter

After clicking the button "Filter selection (detailed image search)", the expanded filter selection box is shown for all image types.

The schematic representation displays the available images. You can select these with a click. You can make separate selections so that only the desired images from the existing recordings are shown in the image selection box.
Additional selection criteria for filtering the display of images can be entered and activated for all types of image.
5. Video

General
The Video module allows you to set up, edit and save video recordings. The live image from the current video source is presented. Finished recordings or image sequences can be transferred to the light table for further viewing and editing.

View

Functions

Select video source
To select one of the two video sources, click one of the two buttons on the screen. For selection to be successful two cameras must be connected and configured in the "Video" module.

Freeze frame (Video Menu)
To create a freeze frame image of the selected video source, click the button "Live/Freeze Camera Image". The image is now stopped, i.e. frozen, and can now be processed under "Record Image" and added as image strip, enlarged to full frame under "Video Full Frame" or printed "Print current image". Click button "Live/Freeze Camera Image" again to return to live image.
Live image (Video Menu)
The live image option shows the current live view. Click option "Video full frame" to go to full screen shot without the operating level.

Record image (Video Menu)
To capture an image currently shown on the monitor, click "Record image". The image will now be added to the image strip and is already marked as saved. To capture additional images repeat procedure.

Save images (Video Menu)
All the marked images are saved to the database. Before you save images for the currently selected patient, you should make sure that the object type is allocated correctly (tooth numeration or type of image).

Save and open on the light table (Video menu)
All the marked images are saved to the database and transferred to the light table for possible editing. They appear there in the image file of the image selection box. Before you save images for the currently selected patient, you should make sure that the object type is allocated correctly (tooth numeration or type of image).

Edit (Image menu)
You can edit the active image by activating the editing box. To do this, press the "Edit image" button, double click in the image area or click with the right mouse button within the image to open the context menu and select "Edit image". The exact descriptions of the functions are available in the manual or in the online Help in chapter "Editing images".

Video colour controller
When viewing live images click on "Video colour controller to open a new menu in which video settings can be carried out and a profile selected.
The actual options presented by this menu will depend on the connected and installed hardware, some menu items will possibly not be available (marked grey).
Where a Framegrabber card is installed the selection source for the card can be carried out here. For further instructions please read the description supplied with your Framegrabber card.

Full screen (Video Menu)
The image currently being viewed in the main window can be viewed as a full screen shot either by clicking "Video Full Screen" or pressing the appropriate switch on the foot pedal (if present). Die Um- schaltung zur To return to normal view press foot switch again, right hand mouse click and choose full frame or press any key. This operation is not supported by every card. If your Framegrabber does not support this mode all program elements will be suppressed and only the video window (but not full screen) will be displayed.
Print (Print menu)
This menu option allows the printing of the current image in the video module. For more information, read the manual in chapter "Printing" or in Help.

Image information (Image menu)
To enter, edit or display information on the active image, press the "Image information on current image" button. This displays the image information box for the current image. You can enter text information on the image in the "Comments" tab. The texts of the hotkeys can be copied to the text area with the right mouse key. The first comment can only be entered once and cannot be changed after saving.

The page Image info displays image type, image size, object type (e.g. tooth number) and object area (e.g. dental region). Click "Selection" in the central screen section for selection, e.g. the number of the tooth of the main object, and confirm selection with "OK". When entering the object area the previously selected "Main object" is given a white background and other teeth within the image can be selected and marked. All marked objects are shown in text in the field "Range", whereby consecutive objects within a quadrant are displayed joined by a hyphen (e.g. 12,13,14 -> 12-14). You are provided with a view of the creation data for the image in the "Create" tab. In addition, the operator responsible for the image is also listed.

Image strip activation (Video Menu)
Click on an image in the image strip to display it in the main window. You can activate the previous image if you select menu option "Previous image" in menu "Video".

Mark image to be stored
There is a checkbox below the bottom border of the images which are displayed in the image strip. Clicking on this box allows the image to be selected or deselected for storing purposes.

Only images that are marked (with tick or check) are saved or transferred to the light table.

Assigning images
The object type (tooth number or recording type) and other information can be assigned to the images displayed in the image strip. To enter the object type either click the pull down menu at the bottom edge of the desired image in the image strip and choose the option from the list, or click on menu option "Current Image Information".
**Using the foot pedal switch**

The video module enables you to choose the functions to be carried out by using the foot pedal. The following functions can be assigned to the foot pedal by using the configuration menu Configuration/Module/Foot pedal:

- **Record** = Record image
- **Still / Live** = Freeze frame/ live image
- **Full** = Full screen image / Normal image view
- **Next** = Activate next image in image strip and display in main window
- **Still/Live+Record** = Freeze frame image/ live image + record
- **Print** = Print active image

**Keyboard operation**

All important functions can be selected using the keyboard. This means that control can be carried out using an external program.

Press ALT to activate the menu bar. Press the number corresponding to the menu name underlined with the required command. In the pop up menu, press the number corresponding to the menu name underlined with the required command.

For example:

- **Live** = ALT + 1 + 1
- **Still** = ALT + 1 + 2
- **Full** = ALT + 2 + 1
- **Activate** = ALT + 1 + 6
- **Print** = ALT + 2 + 4

**Manual operation**

The VistaCam Digital with manual release allows the important functions to be operated via the pressure sensitive ring of the manual capture ring. The following functions can be assigned using the configuration menu Configuration/Module/Video:

- **Record** = Record image
- **Still / Live** = Freeze frame/ live image
- **Full** = Full screen image / Normal image view
- **Next** = Activate next image in image strip and display in main window
- **Still/Live+Record** = Freeze frame image/ live image + record
- **Print** = Print active image
6. X-ray

General
In conjunction with the X-ray imaging system CRScan, X-ray images can be digitised and saved. Every X-ray image is allocated to the currently selected patient. All X-ray images are stored as original data and cannot be changed by Vet-Exam Plus. If X-ray images are edited with the image processing functions, this does not affect the original image. Information is simply added and can be undone any time as desired. If you have allocated an X-ray image to the wrong patient, it is possible to assign it to the correct patient. This can be carried out at the following two places: In the X-ray module, before saving with menu point "2nd image/Save under another patient", on the light table under the "Reassign image" menu item. The original data is then supplemented by the data of the person who carries out this action and the original patient.

Measurement of X-ray images
Using the editing module it is possible to measure X-ray images taken with a recorder (image plate, CRScan, transmitted-light scanner) only after calibration using a defined object (e.g. metal ball, metal pin). The measurement precision in this case, depends heavily on the positioning of the image plate (relative to the object and source of radiation). Please go to chapter "Image processing" and read the warning information on length and angle measurements.

Data backups
As a general rule, you should back up your data regularly. If the X-ray module is used (e.g. CRScan), a regular backup of the Vet-Exam Plus database file directory "..\dbsdata" is imperative! Please read the section "Information on data backup" in chapter "General" for further information.
Functions

**Take X-ray image (X-ray menu)**

Taking an X-ray image is initialised by clicking the "Take a new X-ray image" button.

**X-ray image configuration**

Before an X-ray exposure can be performed, the "Record image" dialog window appears, in which the recording parameters can be entered or selected. The standard recording mode for the selected X-ray imaging is displayed and can be changed (standard mode can be defined in "Configuration/Module/CR Scan"). An image object can be selected before or after the recording. In the left-hand lower corner of the window, the recording system is shown (red marking).

**Compulsory entry of X-ray recording parameters**

If the checkbox "X-ray parameters are mandatory" is checked in section "X-rays" under "Configuration/Company", at least the X-ray metering parameters (mA, kV, ms) have to be entered. At the latest when saving the entry you will be prompted to enter these once more (figure below on left) if these parameter fields contain no data (figure below on right). X-ray parameters can only be subsequently changed after saving the image if the checkbox "X-ray parameters are always modifiable" is checked in section "X-rays" under "Configuration/Surgery"!
Input of the X-ray parameters

Vet-Exam Plus proposes the exposure parameters if a saved recording exists for the selected object with the currently selected X-ray appliance. If this is the case, the existing values are used as the parameters. Otherwise Vet-Exam Plus uses the standard settings of the selected X-ray appliance for the object that are defined under "Configuration/Modules/X-rays". If you use different recording values for the X-ray device, these are to be entered manually.

The standard setting of established X-ray parameters can be set for each X-ray device and every object type under "Configuration/Module/X-ray". Please note that these standard settings can only be modified by users with the required access authorisation (administrator)!

Read an image

After entering the X-ray parameters, click on the "Read" button and a recording window appears.

CRScan recording window

CRScan goes to recording readiness (LEDs lit green), if the button "Start scan" is activated. As soon as image plates are read in the CRScan, this window shows the current line information and the image flow through CRScan in the recording window. Providing this window is not closed, further image plates can be fed into the system.
If problems (e.g. image plate not transported all the way out) occur during or after scanning, the scanning process can be ended and called up with the button “Error recovery” (Open-end spanner icon) for dialog “Problem solving”. Here you can control the film transport.

Using button "Switch delete function on or off", you can switch the delete function on the scanner on/off.

**Message "Light exposure too high"**

Avoid direct exposure to halogen lights and sunlight. Check lighting conditions (≤ 1000 Lux) at the input area of the scanner and reduce light in the close-up range if necessary.

While the recording window is displayed, all X-ray images that are recorded are shown in the image strip on the left.
The last image taken (blue background in the image strip) is shown large in the right-hand window and can be analysed with the image processing functions. By clicking on another image in the image strip, the active image can be changed. All images stored in the image strip also show a colour bar to the right: this displays the Dose Equivalent Value of the image. This value serves only as a guideline for the optimal setting of the dose parameters (only possible if there is no extreme overexposure or underexposure). A good setting is displayed with a green bar, a critical setting with a red bar. There is a lower and an upper critical limit (slash in the bar), as of which the bar colour is red.

**Procedure in the event of a red bar:**
Bar red and low: Increase X-ray dosage or amplification in recording system
Bar red and high: Reduce X-ray dosage or amplification in recording system

**Save images (X-ray menu)**

If you click on this button, all images that are selected and assigned to an object type are stored in the database. Before you save images for the currently selected patient, you should make sure that the object type is allocated correctly. If you discard an image, you must first remove the marking and answer the question on the following displayed dialog with "NO".

**Save and open on the light table (X-ray menu)**

If you click on this button, all images that are selected and assigned to an object type are stored and transferred to the light table for further processing. There they appear on the image clipboard of the image selection box and can be put on the light table using Drag&Drop. Before you save images for the currently selected patient, you should make sure that the object type is allocated correctly.

**Image processing (Image menu)**

You can process the active image by activating the processing box. To do this, press the "Image processing" button, double click in the image area or click with the right mouse button within the image to open the context menu and select "Image Processing". The exact descriptions of the functions are available in the manual or in the online Help in chapter "Image processing".

**Full screen**

You can also display the image in the main window in full screen mode by clicking on the "Full screen display" button. Switching to normal view is done with a right click with the Full frame context selection or with the ESC button.

**Print (Print menu)**

Click on the "Print" button to prepare the image for printing. Read more on the subject in the manual or in the online help in chapter "Printing".
Image information (Image menu)

To enter, edit or display information on the active image, press the "Image information on current image" button. This displays the image information box for the current image.

You can enter text information on the image in the "Comments" tab. The texts of the hotkeys can be copied to the text area with the right mouse key. The first comment can only be entered once and cannot be changed after saving.

The image type, image size, object type and object range are displayed on tab "Image info". By clicking on button "Selection" in the middle window area "Type", you can select where the image should be allocated and confirm your selection with "OK". In defining the object range, the previously selected main object is displayed with a blue background. All marked objects are shown in text in the field "Range", whereby combined objects are displayed within a rectangle between the start and end object for the range.

You are provided with a view of the creation data for the image in the "Creation" tab. In addition, the operator responsible for the image is also listed.

The previously entered values are shown in the "X-ray" tab and can be changed if necessary.

Rotate 90° clockwise

The active image is rotated by 90° to the right (clockwise).

Rotate 90° counterclockwise

The active image is rotated by 90° to the left (counterclockwise).

Rotate 180°

The active image is rotated by 180° to the left (counterclockwise).

Image activation (X-ray menu)

Click on an image in the image strip to display it in the main window. You can activate the previous image if you activate menu sub-point "Previous image" in menu "X-ray".

Mark image to be stored

There is a checkbox below the bottom border of the images which are displayed in the image strip. Clicking on this box allows the image to be selected or deselected for storing purposes. Only images that are checked are saved or transferred to the light table.
Assigning images

The images in the image bar can be assigned the X-ray image type, the object type, the X-ray parameter and other image information. Undefined object types should be assigned to X-ray-UNDEF! To define the object type, click on the button in the lower border of the desired image in the image strip and select the desired type in the dialog window "Select object type".

You can also click on button "Info" and define the image type via button "Selection" in the dialog window "Image information". Choose the appropriate register for the image and click the area on the schematic diagram to which the image should be assigned. The X-ray parameters and other image information can either be entered by clicking on the button in the lower border of the desired image in the image strip or with the "Info" button.

Assigning an image to another patient (Image menu)

If an image is not to be assigned to the active patient, you can assign the active image to a patient that can be selected from the patient list via the menu bar under "Save 2nd image/under another patient".
Defining brightness and contrast values new image captures with CRScan

The image processing box must be closed! After right clicking in the image area, you can activate the respective window in the context menu with menu point "Brightness/Contrast default definitions". The changes to brightness, contrast and gamma values are shown directly in the current image and can be saved for newly captured images of the same CRScan mode or for all modes of the same type.

"Settings of current image": Set desired brightness, contrast and gamma values.

Reset brightness, contrast and gamma values.

"Accept values for current mode": Save current setting values for the currently selected CRScan mode

"Accept values for all unknown modes": Save current setting values for all modes

What to do after a PC crash

If the computer crashes while you are in the X-ray program module during or after an X-ray recording, the images recorded are not lost! During the restart of Vet-Exam Plus, a message appears that generally indicates that there are still image data in the X-ray recording system or temporarily on the hard disk that have not been finally saved to the Vet-Exam Plus database.

After selecting the program part "X-ray", a dialog is displayed that informs you that there are still one or more images of a patient that have not been stored in the database. This dialog is only displayed if the image(s) found belong to the currently selected practice. The program will prompt you to select the correct patient so that the images can be read in.
X-Ray Report (X-Ray menu)

Under the "Options/X-ray report" menu item the X-ray report can be printed from any station or you can have a preview of the printout. All X-ray images created are displayed, including those marked as hidden.

Determining the time interval for printing

The X-ray report can be printed for a specific time interval. Enter the desired dates. Click the Preview button to display the X-ray report on the screen. If the intervals in the dialog are set to "Automatic", Vet-Exam Plus suggests the date of the last printout as "From date" and the date of the system clock as "To date". This list can be sorted alphabetically by patient name or chronologically. Additionally, selection can take place according to one or more X-ray appliances where the X-ray station information has been stored during X-ray processing. X-ray treatment without this X-ray station information is always displayed.

Example of an X-ray report
Function overview of the buttons

<table>
<thead>
<tr>
<th>Icon</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Page Display" /></td>
<td>Page display: display full page / set at 100% / enlarge to page width</td>
</tr>
<tr>
<td><img src="image" alt="Page Navigation" /></td>
<td>Page display: first page / previous page / next page / last page</td>
</tr>
<tr>
<td><img src="image" alt="Printer" /></td>
<td>Printer: open printer menu / configure printer</td>
</tr>
<tr>
<td><img src="image" alt="File" /></td>
<td>File: Open / Save</td>
</tr>
<tr>
<td><img src="image" alt="Preview" /></td>
<td>Preview: Close</td>
</tr>
</tbody>
</table>
7. Image processing

General
The Image Processing function allows the operator to control and amend the image parameters. There is also the possibility to add elements to the original image. These are then stored with the image, but can later be removed if necessary.

Graphic and image processing (toolbox)
The image processing is performed with dialog window "Toolbox". Many important functions can also be accessed directly via button in the right-hand function bar. The dialog window for image processing can be adapted in the start-up image.
Click on the "Process active image" button or on the "Image processing" entry in the "Image" menu. The dialog window appears.

Context menu
Right-click on the dialog window to open a context menu.

Unfold
The dialog window can be folded up partially or completely if not being used.
Right click on the dialog window.
Select "Unfold".
Three options can be selected here:
"Always open": The toolbox is not folded up.
"Half open": The additional functions are folded up.
"Fully closed": All functions are folded up.

Visibility
The dialog window can be made transparent over the background with option "Transparency". To have the function active, the option "Half open" must be selected in menu "Unfold".
Right click on the dialog window.
Select "Visibility".
Four levels can be selected here:
100%, 75%, 50%, 25%
Depending on the selected level, the dialog window is shown with transparency.
Note: The "Transparency" function only works in conjunction with the "Unfold" function. If the "Always open" option is selected in "Unfold", the "Transparency" function is automatically deactivated.
Overview of Functions

Function area with image processing functions
In the upper area of the image editing box, clicking on the appropriate symbol allows you to select either one of the global functions or one of the function groups.
In the upper area of the image editing box are shown the individual editing functions according to the function or function group selected.

Undo/restore last image processing function
Click the button "Undo/repeat last image operation" to revoke the last image processing function or to restore it by clicking again.

Load image status
Clicking button "Load image status" ("Main menu/Image" or "Image context menu") and select entry "Load image status". One of the currently available image statuses can be selected from the list and can be displayed on the screen.
An image can have one of the following four statuses:
– Last save: Image at last save process
– Evaluation status: Image when saving the initial comment (Diagnosis etc.) in the image info box
– First save: Image at initial save after the image creation in the X-ray module. If no image processing function (Rotate, brightness, contrast stretching etc.) was used on the original image, this image status corresponds with the original image.
– Original image: Image after the image capture
X-ray image – main functions

All the principal functions for image editing of X-ray images are displayed in the functional area. Further functions can be selected where necessary.

The settings for individual images can be altered using the sliding bars (brightness, contrast, gamma) as required.

Alternatively, you can change the brightness (horizontal mouse movement) and contrast (vertical mouse movement) intuitively in the active image (mouse icon in the image area: ) with the left mouse key pressed.

Evaluation support

The evaluation support is performed with the original data if the marking field "From original data" is set. In all other cases the filter is selected matching the current type.

Structures or objects in the image that are significant to the respective evaluation can be highlighted (contrast amplified) without decreasing the image sharpness. These interesting structures are seen at a glance within the image displayed.

The use of the following filters is limited to images up to a maximum size of 50 MBytes. To filter areas of larger images, the respective area can first be cut out using the crop function and then the cut-out area can be filtered.

By using the following filters, an optical change of the displayed edges is possible.

INTRA filter set

<table>
<thead>
<tr>
<th>Filter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intra</td>
<td>Intra (fine); Caries; Endo; Perio; Reduce Noise</td>
</tr>
</tbody>
</table>

X-Ray filter set

<table>
<thead>
<tr>
<th>Filter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>xray</td>
<td>e.g.: X-Ray 1, X-Ray 2, noise suppression etc.</td>
</tr>
</tbody>
</table>
**Image rotating & mirroring**

In addition, the mirroring functions are hidden and shown with the button.

Depending on which of the symbols has been selected, starting with the current image, the image will be rotated $90^\circ, 180^\circ$ or $270^\circ$.

The last rotation or mirroring can be revoked/repeated when clicking the pushbutton "Undo/repeat last image operation" (main functions).

**Zoom Tools**

The zoom tools allow you to view the complete image or, alternatively, a section of the image either enlarged or reduced in size.

![Zoom Tools](image)

- To display the image with a magnification factor, please press on the magnifying glass. Clicking the left mouse key within the image enlarges it, clicking the right mouse key reduces it.
- "Factor": Alternatively, you can enter or select percentages in the list field.
- Using function "Draw rectangle", you can draw a rectangle, displayed in the preview window as a yellow frame. You can move the yellow frame in the preview image with the mouse. In the image frame, this selected part can be displayed larger.
- With the function "Set image window size to image size", the frame is adapted for the magnified image.
- With the function "Adapt image to window size", the image is adapted to the frame size.
- With the function "Magnifying glass (local zoom window)" you are provided with a magnifying window on your image, which you can magnify and move as you wish. The zoom factor is selected using the sliding scale at the side of the screen.
Filter Functions

The filter functions can be selected by clicking the relevant active filter function symbol. Filter operations can be revoked/repeated by clicking the pushbutton "Undo/repeat last image operation" (main functions). To get back to the original image, please press the "Load image status" button in the upper selection bar. The original image can be restored after saving by clicking the "Load image status" button.

Drawing levels

The image processing box supports the following four levels of drawing, whose graphic elements can either be visibly presented singly (control box On) or all together (control box All) or be set as non-visible:

- Angle measurements
- Length measurements of lines and polygons
- Text, line and closed line elements
- CROP tool (cut-out of image parts)
- Line profile representation

Create graphic elements

In order to create a new graphic element, select the elements required and click the appropriate symbol. Define the start position of the element by clicking with the left mouse key on the desired image area. Now, you can change the size and alignment of your element by moving the mouse. It is locked with a single click of the left mouse key. After any creation the last used graphic element is always the active one. This is displayed by a dotted line surrounding the element and a hand as cursor. You can now change the parameters of the elements, for example colour, size, layout and background colour.
### Activate graphic elements

<table>
<thead>
<tr>
<th>Step</th>
<th>Instructions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Left click on element with pointer finger mouse cursor. Holding down the Ctrl key allows other graphic elements to be activated.</td>
</tr>
<tr>
<td>2.</td>
<td>Marking frame with drawing points of active element is visible</td>
</tr>
</tbody>
</table>

### Alter graphic element size

<table>
<thead>
<tr>
<th>Step</th>
<th>Instructions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Set pointer finger tip of the mouse cursor on a drawing point of the active element + Left click</td>
</tr>
<tr>
<td>2.</td>
<td>Double arrow mouse pointer appears. Determine element size with mouse movement + Left click to end.</td>
</tr>
<tr>
<td>3.</td>
<td>Link select mouse pointer (finger symbol) appears again.</td>
</tr>
</tbody>
</table>

### Move graphic element

<table>
<thead>
<tr>
<th>Step</th>
<th>Instructions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Left click on element with pointer finger mouse cursor.</td>
</tr>
<tr>
<td>2.</td>
<td>Hand mouse pointer appears. Move element with mouse movement + Left click to end.</td>
</tr>
<tr>
<td>3.</td>
<td>Link select mouse pointer (finger symbol) appears again.</td>
</tr>
</tbody>
</table>
Common functions at drawing level

"Delete...": Deletes active graphic elements
"Undo delete": Undoes the delete of active graphic elements
"Delete graphic": Deletes all graphic elements
"On" checkbox: Make current drawing level visible or invisible
"All" checkbox: Make all drawing levels visible or invisible

Text, line and closed line elements

"Pen": Pen colour can be set; Pen thickness can be set via list field
"Background": Colour of background pattern can be set; Background pattern can be set

"Text": Text can be input or changed
Text attributes: bold, underlined, colour, size
Length measurements of lines and polygons

**Line**:
- Create simple line
- Create polygonal line

**Length**: Define actual length of path and unit: pixels, cm, mm, inches
Attention: A calibration must always be carried out for cm, mm or inch!

**Calibration length**: Select or enter calibration length in the field.
- Accept calibration length
Attention: For unit = Pixels not possible!

In order to estimate lengths and angles in X-ray images, the image must be calibrated using a reference object. Despite calibration, this estimation does not indicate the accuracy of a measurement and must not be used as the measured result. The accuracy will depend greatly on the distortion of the object projection onto the particular image viewer surface. In video images, no estimation of lengths and angles can be done to scale!

**Calibration with an object of known size as reference object**

- Measure the defined reference object distance e.g. Unit = select mm and enter path.
- The calibration length must be selected!
  Set calibration length = 70.0 mm.
  Accept calibration length by clicking the button "Use selected line for length calibration".
- All future measurements will be based on this calibration.
  This calibration can be repeated at any time!
**Angle measurements**

- **Line**
- **Angle**

"Line": Create an angle
"Angle": Enclosed angle is displayed (in example: "85°")

**Create side 1**
Left click.
Drag route from A to B in the direction of the apex with the mouse.
End side 1 in point B with left click.

**Create side 2**
Left click at point C.
Drag the mouse from point C to point D.
End side 2 in point D with left click.

---

**CROP function**

The CROP function allows you to mark a section in an image and to save it as a new image.

- **Create rectangle (image section)**
- **Cut out section and save as a new image**
Line profile representation

The colour density values all along a line are shown. The desired line is drawn in the image window by using the "Create new line for profile analysis" button (screenshot -> Line). The line colour can be defined by clicking the "Pen colour" button (screenshot -> Pen). Clicking in the line profile window displays a cross cursor in the image window and in the line profile window. Moving the cross cursor in the line profile window displays the density values along the line. Both crosspointers are synchronised so the position in the image can be determined precisely. The current value of the intensity (density) and the position are shown. The scale value of the position depends on the scale settings (pixel, cm, mm).
Pseudo coloured image
You can set the pseudo colour using the sliders. The pseudo coloured image will not be stored! The basic colours can be selected individually to get your optimum of colour transitions by clicking on the stripe base colours within the colour you want to be replaced by another colour. The Windows colour selection box appears where you can select the new colour. The available colours are shown in the stripe mapped colours which can be extended using the sliders.

With button "Set standard", the base colours and the slide controller are reset to the standard values.
ROI histogram / Histogram functions

Both functions display the grey value distribution of the image. They allow, for example, the existing intensity values to be spread over the whole range. This way, differences in intensity that are too small to perceive with the human eye are intensified so that they can be detected.

16-bit grey scale images

16-bit grey scale images from CrScan: Low dosage = 0; High dosage = 65535
Histogram stretching
The histogram is shown in the upper area. Here you can perform a histogram stretch. The display is changed to grey scale during the process.

Optimally extended original images cannot be extended any further!

Procedure with histogram function:
Click on the black bar under the histogram and define the length with the left mouse key pressed.

Procedure with ROI histogram function:
If you only want to view a certain image area (ROI = "region of interest"):
Draw a frame in the image.
The contrast stretching area is then set with a minimum and maximum grey value within the drawn frame.

If you move the frame, the contrast stretching range is adapted automatically.
The levels of grey in the area of the black bar are always displayed at 256 grey levels for display on the monitor.

By pressing the "Set Standard" button the entire grey scale range is shown (bar extends across the entire area).
Histogram optimisation

In the lower area, you can perform a histogram optimisation. During the optimisation, the histogram of the image is changed ("Histogram equalisation"). The optimisation is defined using the slider control.

"Level": This slider control defines the height at which the peaks are cut off in the histogram.
"Left Peak": The setting of the slider control corresponds ideally with the grey value of the inner "Right Peak": Edge of the two peaks at the edge of the histogram. If both controls are not moved, the area is calculated automatically. The display on the right, next to the controller then shows "auto". If you move one of the two slider controls, this value is used instead of the calculated grey value.
"Weight Sqr.:" This slider control setting defines the weight (from 0 % to 100 %) of consideration of the root curve in the information of the histogram.

Procedure

Step 1: (with slider control "Level")
Reduce the contrast of the grey value range that corresponds with the peaks of the histogram curve, compared with a standard histogram equalisation.

Step 2: (with slider control "Left Peak" and "Right Peak")
Suppress peaks on the left and right edges of the histogram. These peaks correspond with the image border or the object background. In addition, the contrast area in the grey value range is decreased outside the value defined by the slider control.

Step 3: (with slider control "Weight Sqr.")
Average histogram.
8. Print

Setting up a printer

Before you start setting up a printer in Vet-Exam Plus, a printer should already have been installed under the Windows operating system. More information for setting up a printer under Windows is located in the Windows Online Help or in the Windows manual.

The setting up of a printer under Vet-Exam Plus has to be carried out at each workstation!

The dialogs or menu items described below can be activated if there is at least one image on the light table.

Calling up the Print dialog window

You have the following options to activate the Print dialog:

Select in the menu bar the menu item "Image/Print" or "Light table/Print".

Click the "Print" button.

A menu appears with the selections "Report", "Image" or "Complete light table".

Select a menu point.

A window appears with options "Print single image" or "Print light table" or "Print Report - Image" or "Print Report - light table". Choose between "Single image" or "Light table" if necessary.

With activated dialog window "Print": Click the folder "Options" in order to make further settings.
Printer / : Create new printer profile

- Click button "Create new printer profile".
- Click into the text field and name the new profile.
- Configure all settings as described from "Select printer profile".

"Printer" list field: Select printer profile

Click on the pull-down button and select the desired profile.

Select printer

Click on the printer button and select the desired printer.

Print type: Select print type

Single image:
The marked image is printed.

Light table:
All images on the light table are printed.

Images per line:
When activating the button "Images per line", the images for printing are sorted in lines and columns.

Print with drawing:
If a checkmark is set with "Print with drawings", drawings that were inserted with the toolbox are also printed.

Frame / Background colour:
Choose any colour for the image background.

Scale: Select output range and scale

X-ray images in original size:
If a checkmark is set with "X-ray images in original size", the images are printed in original size.

Light table:
The button "Light table" scales the printout of the entire light table to a full page.

Image only:
In activating the marking field "Image area", the smallest possible frame is determined to surround all images and the printout is scaled to a page.

Border (%):
The setting "Border (%)" determines the border width (relative to the image size) with which an image is surrounded. This has an effect on the print of several images, as it also defines the margin between the individual images.

Format": Select format

Select portrait or landscape format.
Annotation: Select information

In this selection field, the images for printing can be automatically supplemented with information, e.g. patient name, job number, etc.
• Click button "New annotation".
• Under "Position", select where the information is to appear.
• Select font, typeface and point size under "Character set".
• In the pull-down menu of the "Content" field, select the information that is to be supplemented. Multiple definitions are possible.
• Confirm with "OK".

"Preview" tab

Select the "Preview" tab to check the pre-settings.

⚠️ Depending on the used printer model, printer setting (e.g. fast-print mode at reduced quality) and paper grade, the quality of the printout can vary widely. These factors also influence the reproduction of details and number of grey levels. If printouts of X-ray images are to be used for diagnostic purposes it is necessary to check by printing out a grey scale test image (Vet-Exam Plus \GREYTEST) whether the print quality is acceptable.
9. Image archive

General
Unlike the backup function, which is designed to help you to restore the last backup level (working status) in the event of a total system failure, the purpose of the archive module is to build a long-term archive of the video and X-ray images and to permit direct access (random access) to the images archived. On the one hand, such a long-term archive reduces the storage requirements on the working partition while, on the other hand, it fulfils the legal requirements regarding the obligation to preserve X-ray images for a specified period.

A long-term archive should be created on a separate data storage medium (e.g. MO drive, CD burner). If you set up a long-term archive on a work partition, on which the operating system and other user programs are installed, there is a danger of there not being sufficient storage area for the operating system and any other possible programs. This may result in problems during program execution.

Immediately before or after an archiving process, a backup of the database directory ".dbsdata" must be performed so that all data can be restored consistently after an irreversible drive crash!

Suitable archiving drives and storage media
Based on the present state-of-the-art engineering, a magneto-optical drive, abbreviated MO drive, is to be recommended for long-term archiving. The manufacturer should guarantee data readability for up to 30 years. The access times to files are also reasonable. CD recorders are less suitable since the manufacturers can only guarantee a max. medium readability period of 10 years. Moreover, the life of a CD greatly depends on ambient conditions. Note that only CD burners that can be accessed with special driver software (e.g. Adaptec Direkt-CD > V2.0) can be used as a file system. The storage medium must be formatted before using.

While hard disk drives are a possible storage medium, they should only be used in cases of emergency or for testing since they are not suitable for long-term archiving! Tape drives are unsuitable for long-term archiving since they do not support direct access to data.

When archiving security-relevant X-ray images, the X-ray images must be recopied after the shelf-life of the media specified by the manufacturer has elapsed.

Archive management
The archive module tab contains the tabs "archiving", "restoring" and "delete medium". The field "Archive control" is located underneath. It contains the entry field "All images to", archiving mode "automatic" and "manual" and the button "Select current project" and "Select all projects".

Before starting an archive procedure, the archiving system must be configured properly ("Menu/Configuration/Module/Archiving").
"Images for archiving": Image list with project numbers and other information

Archive packet with date information, number of images and size

Archive drive (example) with available size

**Automatic creation of the archive image list**

As long as you are in automatic mode, the buttons "Select current project" and "Select all projects" are blocked and in the date filed "All images to", the date limit is displayed as the set value between the green and red area of the configuration setting. This is the mode of operation that should generally be used.

In the automatic mode described above, the program determines the images to be archived using the configuration setting. You can however change the time period in the area "Archiving control" with date field "All images to" for this archiving process.
Every date change must be confirmed with the button "Date OK?" so that the image list is updated.

Under this field is the image list "Images for archiving". This image list shows all the images that match the selection criteria. If at least one image to be archived is displayed, the archive module creates a package in the first field on the right. Click on this packet and Drag&Drop it to the desired archiving drive shown in the right-hand field. If no archive disk drive is present, then this must be configured under "Configuration/Module/Archive/Drive".

Manual creation of the archive image list

The manual and automatic archiving procedures differ only in that you define the project images to be archived yourself, from the list. Only select this operating mode if you want to do patient-oriented archive!

Here, you are provided with the two buttons "Select current patient" and "Select all patients". If the button "Select current patient" is deselected, you have either not selected a patient (Patient module) or there are no images that can be archived for the current time period.

Procedure

– You can select the patients as usual in the Explorer, also using the mouse, the Shift or Ctrl buttons or with the buttons already indicated.
– If you have selected at least one patient, the respective images are tied into an archive packet, which you, as already indicated, Drag&Drop onto the desired archive drive.
– Other procedures are the same as automatic archiving.

Closing of archive media

The program automatically closes each medium if the medium becomes full after or during an archival storage. If you want to close the medium in advance (e.g. a copy should be made), select the respective medium closing from the context menu. Display the context menu by clicking on the medium symbol in the drive display area with the right mouse button.

Labelling of archive media

Always label a new medium immediately after the first successful archival storage with the archiving number displayed below the medium in the field to the right. The first 6 numbers (from the left) are unique and should be recorded.

Copying of archive media

The archive medium to be copied must be closed to guarantee data consistency! Copies should be made for protection against data loss (due to mechanical destruction or disappearance of the original medium).
Archive drives

The second field contains the drive icons for the existing archive drives and information on their current status:

**Closed:** Each medium on which at least one archive has been stored can be closed. In this case click on it with the right mouse key to open a context menu which enables you to obtain additional information on the drive or to close the drive. Closed means that you cannot perform any further archiving procedures on this medium.

**Other surgery:** An Vet-Exam Plus archive data medium has been inserted whose archive does not belong to the current surgery.

**No write access**

The currently inserted storage medium does not permit write access. Any data already present on one of the archive medium can be read!

In the case of an MO disk or similar storage medium, this means that the write protection function has been activated. A recordable CD has been closed using the file system, or a CD-ROM drive has been configured.

**Indication of media ID and free storage capacity on this medium**

This medium may be used as the first one for the next archival storage. Should the capacity remaining be insufficient to hold all the data to be archived, you will need additional media to continue the archival storage. The number of media required is estimated before the archiving operation starts. The number of media indicated is the maximum number of media needed; this number will never be exceeded.

**No medium**

If an archiving drive does not contain a medium (e.g. no CD in CD-ROM drive), this is indicated by a thick diagonal line.

**Refresh drives**

Double clicking this field updates the drive display (e.g. after changing medium).
Archive buffer

Long-term archiving is based on a two-phase procedure. In the first step the images are copied to the archive medium and remain in the normal image archive (these images are referred to below as archive buffer) from where they can be uploaded again to Vet-Exam Plus at any time.

To do this, move the slide control to the right to determine the size of the storage space to be cleared. Then click on the "Delete" button to close the process.

The coloured bar shows the current memory allocation of the drive on which the surgery data are stored.

This bar consists of three sections identified by different colours:

- blue = unusable hard disk space
- olive = storage space occupied by archive buffer
- green = usable hard disk space

You should only delete these images in the archive buffer if you absolutely require memory on the drive (e.g. for new image captures).

In the following example, the slide control was moved to the right to clear 184951 Kbytes of the 404893 Kbyte archive buffer. This storage space is released (cleared) by clicking the "delete" button.
You are able to restore medium-based or patient-based. If a medium restore is to be performed, the archive module searches all drives configured for archive media. When restoring by patient, all archive media that belong to the currently selected patient are shown in the field "Select a medium" next to the list field and can be selected there. As a limitation, up to which day the images are to be restored can be entered via the date field. Once a medium has been selected, all matching images are displayed. The recording date, medium ID, image type and file name are shown for each image. After you have selected a medium, you can then restore all of the images shown in the list back into the archive buffer with the "Start" button.

The project-specific restore is always expedient when preparing the next surgery day(s). This always guarantees that all required images are always available on the drive and do not have to be tediously read during a sitting from archives on one or more media!
Cancellation of archive medium

Use this function only in case of loss of or damage to an archive medium or for a migration to larger storage media!

Only the image data of the archive medium still found in the archive buffer can be archived again after the cancellation. A cancelled archive medium must always be deleted before it can be used for archiving again. All registered archive media are displayed for selection. After selection the images on the medium are displayed that have been deleted and are therefore no longer in the archive buffer. These images will be lost if the archive medium is totally damaged or lost. If the archive medium is only partially defective, you must restore as much data as possible (function: Restore archive) before you cancel it.

All data must be restored for a migration to new archive media. (There must be sufficient drive space for images.) You must check that all the images are available before cancelling the medium. After that all the data can be archived on the new archive medium.