

VistaScan Mini View

EN



Installation and operating instructions

CE

2142100002L02



 **DÜRR
DENTAL**

1802V005

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Important information

1 About this document

These installation and operating instructions represent part of the unit.

 If the instructions and information in these installation and operating instructions are not followed, Dürr Dental will not be able to offer any warranty or assume any liability for the safe operation and the safe functioning of the unit.

1.1 Warnings and symbols

Warnings

The warnings in this document are intended to draw your attention to possible injury to persons or damage to machinery.

The following warning symbols are used:

-  General warning symbol
-  Warning – risk of dangerous electric voltages
-  Warning - laser beam

The warnings are structured as follows:

 **SIGNAL WORD**
Description of the type and source of danger

Here you will find the possible consequences of ignoring the warning

- › Follow these measures to avoid the danger.

The signal word differentiates between four levels of danger:

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

Other symbols

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

-  Note, e.g. specific instructions regarding efficient and cost-effective use of the unit.
-  Please read all of the accompanying documents.
-  Wear protective gloves.
-  Switch off and de-energise the device (e. g. unplug from mains).
-  CE labelling
-  Manufacturer
-  Dispose of correctly in accordance with EU Directive 2012/19/EU (WEEE).
-  Do not reuse
-  **REF** Order number
-  **SN** Serial number

1.2 Copyright information

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

The Installation and Operating Instructions must not be copied or reprinted, neither in full nor in part, without written authorisation from Dürr Dental.

2 Safety

Dürr Dental has designed and constructed this unit so that when used properly and for the intended purpose it does not pose any danger to people or property. Nevertheless, residual risks can remain. You should therefore observe the following notes.

2.1 Intended purpose

VistaScan Mini View

The unit is intended exclusively for use in dental applications for the scanning and processing of image data on an image plate.

Light protection cover

The light protection cover protects the image plate against light.

Bite protector

The bite protector protects the image plate against mechanical damage.

2.2 Intended use

VistaScan Mini

The unit may only be operated using accessories and optional accessories specifically approved by Dürr Dental.

The unit may only be cleaned using the disinfectants and cleaning agents specified or approved by Dürr Dental.

Light protection cover

The light protection cover is a disposable item.

The light protection cover is designed exclusively for use with Dürr Dental image plate scanners and Dürr Dental image plates in dental applications.

Bite protector

The bite protector is a disposable item.

The bite protector is intended solely for use with Dürr Dental image plates and Dürr Dental light protection covers in dental applications.

2.3 Improper usage

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

This unit is not suitable for monitoring patients over longer periods of time.

This unit must not be operated in operating theatres or similar rooms, in which dangers may arise from the combustion of flammable materials.

The touch screen only shows a preview, which provides an initial impression of the X-ray image. For purposes of diagnosis the X-ray image must be viewed on a diagnostic monitor. The preview of the X-ray image on the touch screen is not suitable for the purposes of diagnosis.

2.4 General safety notes

- › Always comply with the specifications of all guidelines, laws, and other rules and regulations applicable at the site of operation for the operation of this unit.
- › Check the function and condition of the unit prior to every use.
- › Do not convert or modify the unit.
- › Comply with the specifications of the Installation and Operating Instructions.
- › The Installation and Operating Instructions must be accessible to all operators of the unit at all times.

2.5 Specialist personnel

Operation

Unit operating personnel must ensure safe and correct handling based on their training and knowledge.

- › Instruct or have every user instructed in handling the unit.

Installation and repairs

- › Installation, readjustments, alterations, upgrades and repairs must be carried out by Dürr Dental or by qualified personnel specifically approved and authorized by Dürr Dental.

2.6 Protection from electric shock

- › Comply with all the relevant electrical safety regulations when working on the unit.
- › Never touch the patient and unshielded plug connections on the device at the same time.
- › Replace any damaged cables or plugs immediately.

Observe the EMC rules concerning medical devices

- › Observe specific precautionary measures relating to electromagnetic compatibility (EMC) for medical devices, see "18 Information about EMC in accordance with EN 60601-1-2".

2.7 Only use original parts

- › Only use Dürr Dental parts or accessories and special accessories specifically approved by Dürr Dental.
- › Only use only original wear parts and replacement parts.



Dürr Dental accepts no liability for damages or injury resulting from the use of non-approved accessories or optional accessories, or from the use of non-original wear parts or replacement parts.

The use of non-approved accessories, optional accessories or non-genuine wear parts / replacement parts (e.g. mains cable) can have a negative effect in terms of electrical safety and EMC.

2.8 Transport

The original packaging provides optimum protection for the unit during transport.

If required, original packaging for the unit can be ordered from Dürr Dental.



Dürr Dental will not accept any responsibility or liability for damage occurring during transport due to the use of incorrect packaging, even where the unit is still under guarantee.

- › Only transport the unit in its original packaging.
- › Keep the packing materials out of the reach of children.
- › Do not expose the unit to any strong vibrations or shocks.

2.9 Disposal

Unit



The unit must be disposed of properly. Within the European Union, the unit must be disposed of in accordance with EU Directive 2012/19/EU (WEEE).

- › If you have any questions about the correct disposal of parts, please contact your dental trade supplier.

Image plate

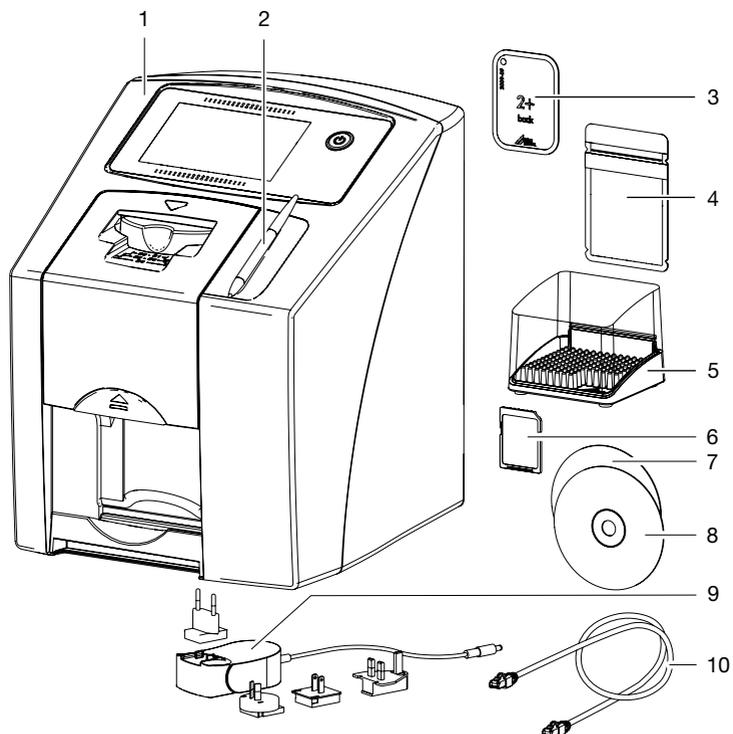
The image plate contains barium compounds.

- › Dispose of the image plate properly in accordance with the locally applicable regulations.
- › In Europe, dispose of the image plate in accordance with waste code 090199 "Wastes not otherwise specified". Disposal as domestic waste is possible.



3 Overview

EN



- 1 VistaScan Mini View image plate scanner
- 2 Stylus
- 3 Image plate intraoral
- 4 Light protection cover intraoral
- 5 Storage box
- 6 SDHC memory card (fitted in the unit)
- 7 DBSWIN imaging software DVD
- 8 VistaSoft imaging software DVD
- 9 Power supply unit with country-specific adapter
- 10 Network cable

3.1 Scope of delivery

The following items are included in the scope of delivery (possible variations due to country-specific requirements and/or import regulations):

VistaScan Mini View image plate scanner	2142-01
VistaScan Mini View image plate scanner	2142-05
VistaScan Mini View image plate scanner	2142-07
VistaScan Mini View image plate scanner	2142-08
VistaScan Mini View image plate scanner	2142-71
– VistaScan Mini View basic unit	
– Power supply unit	
– Network cable	
– SDHC memory card	
– Stylus	
– VistaSoft imaging software DVD	
– DBSWIN imaging software DVD	
– Image plates:	
– Size 0	
– Size 2	
– Light protection covers Plus:	
– Size 0	
– Size 2	
– Storage box	
– Protection cover	
– Image plate cleaning wipes	
– Installation and operating instructions	
– Quick start instructions	

3.2 Accessories

The following items are required for operation of the device, depending on the application:

SDHC memory card 9000-134-18

Image plates

Plus image plate, size 0 2 x 3 cm (2 pcs.)	2130-040-50
Plus image plate, size 1 2 x 4 cm (2 pc.)	2130-041-50
Plus image plate, size 2 3 x 4 cm (4 pcs.)	2130-042-50
Plus image plate, size 2 3 x 4 cm (12 pcs.)	2130-042-55
Plus image plate, size 3 2.7 x 5.4 cm (2 pcs.)	2130-043-50
Plus image plate, size 4 5.7 x 7.6 cm (1 pc.)	2130-044-50
Plus ID image plate, size 0 2 x 3 cm (2 pcs.)	2130-040-60
Plus ID image plate, size 2 3 x 4 cm (4 pcs.)	2130-042-60

Light protection covers

Light Protection Cover Plus size 0 2 x 3 cm (100 pcs.)	2130-080-00
Light Protection Cover Plus size 1 2 x 4 cm (100 pcs.)	2130-081-00
Light Protection Cover Plus size 2 3 x 4 cm (300 pcs.)	2130-082-00
Light Protection Cover Plus size 2 3 x 4 cm (1000 pcs.)	2130-082-55
Light Protection Cover Plus size 3 2.7 x 5.4 cm (100 pcs.)	2130-083-00
Light Protection Cover Plus size 4 5.7 x 7.6 cm (100 pcs.)	2130-084-00
Light Protection Cover Plus size 0, white 2 x 3 cm (100 pcs.)	2130-080-50
Light Protection Cover Plus size 2, white 3 x 4 cm (300 pcs.)	2130-082-50

3.3 Optional accessories

The following optional articles can be used with the unit:

- Wall bracket2141-001-00
- Storage box2141-002-00
- Bite protector, size 4 (100 pcs) . . .2130-074-03
- Image plate and film holder system set2130-981-50
- Image plate and film holder system conversion set for endo-exposures2130-981-51
- Copper dot set, self-adhesive2130-006-00
- Mobile Connect (for using apps for mobile appliances, e.g. Dürr Dental Imaging iPad app)2100-725-12FC

Commissioning and intraoral constancy tests

- Intra / extra digital test body2121-060-54

3.4 Consumables

The following materials are consumed during operation of the device and must be reordered separately:

Cleaning and disinfection

- Image plate cleaning wipes (10 pcs.) CCB351B1001
- FD 350 Classic disinfection wipes CDF35CA0140
- FD 333 rapid surface disinfectant CDF333C6150
- FD 322 rapid surface disinfectant CDF322C6150
- FD 366 quick-acting disinfectant for sensitive surfaces CDF366C6150

Light protection covers

see "3.2 Accessories"

3.5 Wear parts and replacement parts

Image plates

see "3.2 Accessories"



Information about replacement parts is available from the portal for authorised specialist dealers at: www.duerrdental.net.

4 Technical data

4.1 Image plate scanner

Electrical data for the device		
Voltage	V DC	24
Max. current consumption	A	1.25
Output	W	< 30
Type of protection		IP20
Electrical data – power supply unit		
Voltage	V AC	100 - 240
Frequency	Hz	50/60
Protection class		II
Type of protection		IP20
Over-voltage category		II
Output	W	< 40
Max. current consumption	A	0.8
Classification		
Medical Devices Directive (93/42/EEC)		Class I
Laser class (unit) in accordance with EN 60825-1		1
Laser source		
Laser class in accordance with EN 60825-1		3B
Wavelength λ	nm	635
Output	mW	10
Noise level		
Ready to scan	dB(A)	approx. 37
During scanning	dB(A)	approx. 55
General technical data		
Dimensions (W x H x D)	mm	226 x 275 x 243
Weight	kg	approx. 7
Heat output	W	< 40
Duty cycle S2 (in accordance with VDE 0530-1)	min	25
Duty cycle S6 (in accordance with VDE 0530-1)	%	25
Pixel size (selectable)	μm	12.5 - 50
Max. theoretical resolution	Line pairs/ mm (Lp/mm)	approx. 40

Network connection

LAN technology		Ethernet
Standard		IEEE 802.3u 100Base-TX
Data rate	Mbit/s	100
Connector		RJ45
Type of connection		Auto MDI-X
Cable type		≥ CAT5

WLAN connection

WLAN technology		IEEE 802.11b/g
Encryption		WPA, WPA2

Memory card

Type		SDHC
Maximum memory capacity	GB	32
File system		FAT32
Performance class	Class	≥ 4

Ambient conditions during operation

Temperature	°C	+10 to +35
Relative humidity	%	20 - 80
Air pressure	hPa	750 - 1060
Height above sea level	m	< 2000

Ambient conditions during storage and transport

Temperature	°C	-20 to 60
Relative humidity	%	10 - 95
Air pressure	hPa	750 - 1060
Height above sea level	m	< 16000

4.2 Image plate

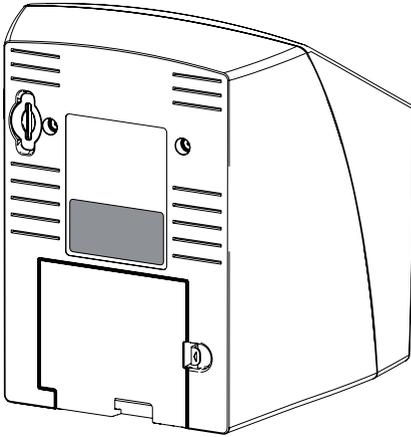
Classification		
Medical Devices Directive (93/42/EEC)		Class IIa
Ambient conditions during operation		
Temperature	°C	18 - 45
Relative humidity	%	< 80
Ambient conditions during storage and transport		
Temperature	°C	< 33
Relative humidity	%	< 80
Dimensions of intraoral image plates		
Size 0	mm	22 x 35
Size 1	mm	24 x 40
Size 2	mm	31 x 41
Size 3	mm	27 x 54
Size 4	mm	57 x 76

4.3 Light protection cover

Classification		
Medical Devices Directive (93/42/EEC)		Class I

4.4 Type plate

The type plate is located on the rear of the device.



REF Order number

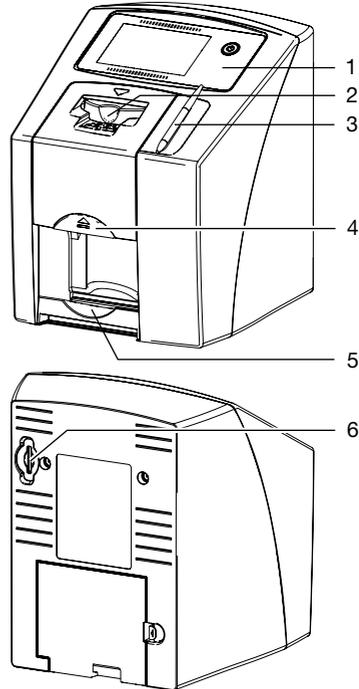
SN Serial number

4.5 Evaluation of conformity

This device has been subjected to conformity acceptance testing in accordance with the current relevant European Union guidelines. This equipment conforms to all relevant requirements.

5 Operation

5.1 Image plate scanner



- 1 Operating elements
- 2 Input unit
- 3 Stylus
- 4 Release key
- 5 Collection tray
- 6 Memory card slot

The image plate scanner is used to read image data stored on the image plate.

The unit can be used in two different ways: via the imaging software (e.g. VistaSoft) on a PC or directly via the touch screen on the unit.

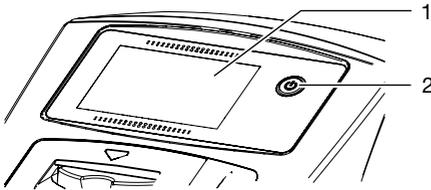
The transport mechanism guides the image plate through the device. The image plate is read using a laser inside the scanner unit. The scanned data is converted into a digital image.

If a scanning job is started via the imaging software, the image is automatically transmitted to the computer.

If a scanning job is started via the touch screen, the image is saved to the memory card and then needs to be transferred to the computer.

After scanning, the image plate runs through the erasure unit. Image data still held on the image plate is erased with the aid of bright light. The image plate is then ejected for re-use.

Operating elements



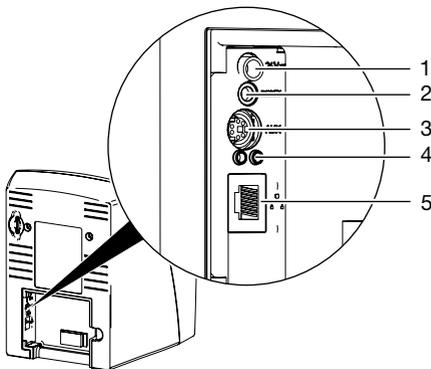
- 1 Touch screen
- 2 On / off switch

The touch screen allows the unit to be operated when it is not connected to a computer. Instructions can be entered on the touch screen either with the tip of a finger or the stylus.

The **Help** button can be used to open a help page for the relevant screen. The **Messages** button can be used to recall current messages.

Connections

The connections are located on the rear of the unit, underneath the cover.



- 1 Connection for power supply unit
- 2 Reset button
- 3 AUX connection for diagnostic units
- 4 Network connection status LEDs
- 5 Network connection

ScanManager

When the ScanManager is enabled, more than one X-ray job can be transmitted to the unit from different computers simultaneously. The unit manages the X-ray jobs in a waiting list from which the required X-ray job can be selected using the touch screen and then executed.

Without ScanManager the unit processes one image at a time and is blocked until this job has been completed. During this time no further X-ray jobs can be transmitted to the unit from other computers.



ScanManager can be enabled via **Settings > System Settings > Operating Mode**.

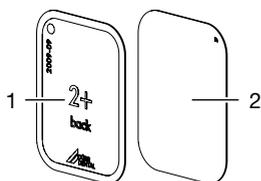
5.2 Image plate

The image plate stores X-ray energy, which is re-emitted in the form of light after excitation via the laser. This light is then converted to image information in the image plate scanner.

The image plate has an active side and an inactive side. The image plate must always be exposed on the active side.

When used properly, image plates can be exposed, read and erased several hundred times provided there is no mechanical damage. The image plate must be replaced if there are any signs of damage, e.g. if the protective layer is damaged or there are visible scratches that could interfere with the diagnosis.

Intraoral

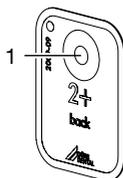


- 1 Inactive side Black, printed with the word "back" and the size and manufacturer's information
- 2 Active side Light blue, with positioning aid 

The positioning aid  is visible on the X-ray image and makes it easier to align the image correctly during diagnosis.

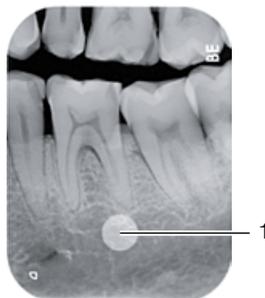
Exposure from the wrong side

A marker is attached to the inactive side of the image plate.



- 1 Marker

If the image plate has been exposed from the wrong side, the marker is visible as a shadow in the X-ray image.



- 1 Marker visible as a shadow

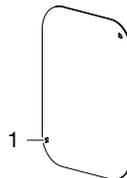
The image can be corrected by mirroring it in the software. If a diagnosis is not possible in the area of the marker then the image will need to be acquired again.

 With the aid of the copper dots set you can retrospectively add a marker to image plates (see "3.3 Optional accessories").

Clear assignment of image plate to image (Image Plate Plus ID only)

On the Image Plate Plus ID there is also a hexadecimal code on the image plate in addition to the marker. This code can be seen in the X-ray image.

This code allows you to clearly assign the correct image plate to the X-ray image.



- 1 Hexadecimal code

5.3 Light protection cover

The light protection cover provides several protective functions for the intraoral image plate:

- Protection against sunlight and UV light, and therefore protection against accidental erasure
- Protection against mechanical damage
- Protection against contamination and soiling

The light protection cover is a disposable item.

5.4 Stylus

The touch screen can be operated using the stylus as an alternative to the tip of a finger.

5.5 Protection cover

The protective cover protects the device against dust and dirt, for example during extended periods in which it is not in use.



5.6 Storage box

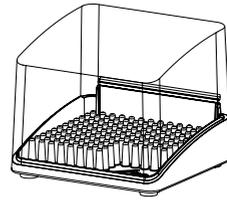
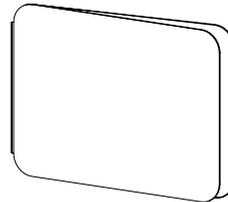


Image plates packaged in light protection covers can be stored in the storage box until they are next used. The storage box protects the image plate and the light protection cover against contamination and dirt.

5.7 Bite protector (optional)



The bite protector protects the image plate size 4 as well as the light protection cover against heavy mechanical damage, e.g. if the patient bites down too hard during the X-ray exposure.



Only qualified specialists or employees trained by Dürr Dental are permitted to install, connect and start using the unit.

6 Requirements

6.1 Installation/setup room

The room chosen for set up must fulfil the following requirements:

- Closed, dry, well-ventilated room
- It should not be a room made for another purpose (e.g. boiler room or wet cell).
- Max. light intensity 1000 Lux, no direct sunlight at the place of installation of the unit
- There should be no large fields of interference (e.g. strong magnetic fields) present that can interfere with the correct operation of the unit.
- Refer to the requirements for environmental conditions in "4 Technical data".

6.2 System requirements



The system requirements for the computer systems can be found in the download area at www.duerrdental.com (document no. 9000-618-148).

6.3 Monitor

The monitor must comply with the requirements for digital X-ray with a high light intensity and wide contrast range.

Strong ambient light, sunlight falling directly onto the monitor and reflections can make it harder or even impossible to perform a diagnosis based on the X-ray images.

7 Installation

7.1 Carrying the unit



NOTICE

Risk of damage to sensitive components in the unit as a result of shocks or vibrations

- › Do not expose the unit to any strong vibrations or shocks.
- › Do not move the unit during operation.

7.2 Setting up the unit

Portable and mobile HF communication appliances can interfere with the effectiveness of electrical medical devices.

- › Do not stack the unit next to or together with other appliances.
- › If, however, this unit is operated next to other units or stacked with other units, monitor the unit carefully in the configuration selected in order to ensure normal operation.

The unit can be set up as a tabletop unit or mounted on a wall using the wall bracket.

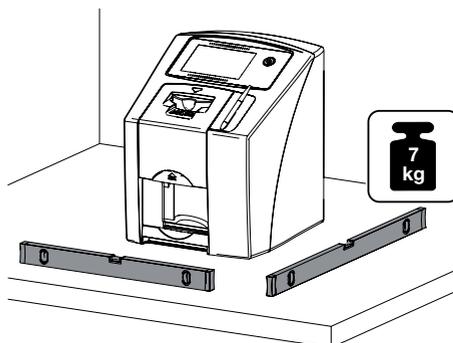
The load-bearing capacity of the table or wall must be suitable for the weight of the unit (see "4 Technical data").

Setting the unit on a table



To prevent errors when scanning the image data, install the unit so it is not exposed to vibrations.

- › Place the unit on a firm, horizontal surface.



Installing the unit with the wall mounting bracket

The unit can be mounted on a wall with the wall mounting bracket (see "3.3 Optional accessories").



For installation refer to the installation instructions for the wall mounting (order number 9000-618-162)

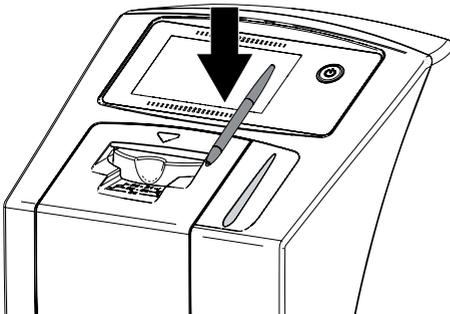
7.3 Removing the protective film from the touch screen

- › Grasp one corner of the protective touch screen film and peel it off carefully.



7.4 Attaching the stylus

- › The stylus is held on the unit by a magnet. Place the stylus in the indentation provided.



7.5 Checking the memory card

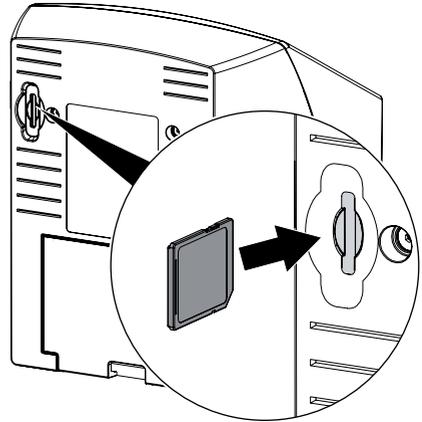


NOTICE

Loss of image data due to unexpected insertion or removal of the memory card

- › Only insert or remove the memory card when unit is switched off.

- › Check whether the memory card has been inserted in the unit correctly. If the memory card has been inserted in the unit incorrectly, take it out again and re-insert it properly.



7.6 Electrical connections

Safety when making electrical connections

- › The device must only be connected to a correctly installed power outlet.
- › Do not place non-fixed multi-socket units on the floor. Follow the requirements in section 16 of IEC 60601-1 (EN 60601-1).
- › Do not operate any other systems using the same multiple socket.
- › Make sure that none of the electrical cables leading to the unit are under any mechanical tension.
- › Before initial start-up check that the mains supply voltage and the voltage stated on the type plate match (see also "4. Technical data").

Connecting the unit to the mains supply

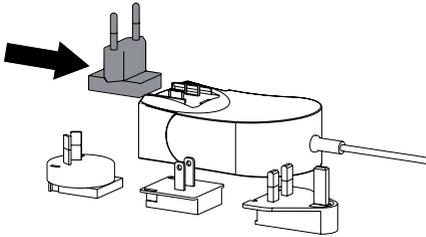


The unit has no main power switch. For this reason it is important that the unit is be set up in such a way that the plug can be easily accessed and unplugged if required.

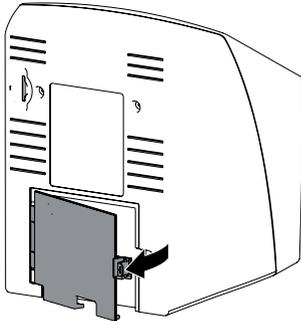
Requirements:

- Properly installed power outlet close to the unit (observe the max. mains cable length)
- Easily accessible power outlet
- Mains voltage must match the information shown on the type plate of the power supply unit

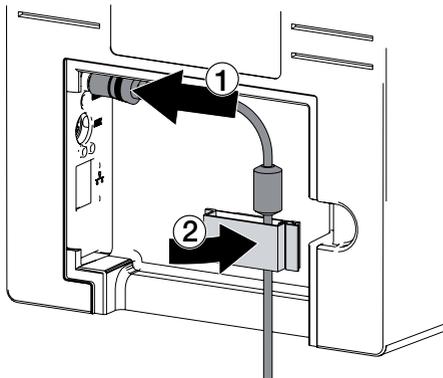
- › Attach the matching country-specific adapter to the power supply unit.



- › Remove the cover from the rear of the device.



- › Plug in the connecting plug of the power supply unit into the socket connection of the device.
- › Secure the cable with a cable clip.



- › Plug the mains plug into the power outlet.
- › Refit the cover.

 The cover on the rear must be correctly fitted when the device is operated within the patient environment.

7.7 Connecting the device to the network

Purpose of the network connection

The network connection is used to exchange information or control signals between the unit and a software installed on a computer, in order to, e. g.:

- Display parameters
- Select operating modes
- Indicate messages and error situations
- Change unit settings
- Activate test functions
- Transmit data for archiving
- Provide documents concerning the units

The unit can be connected to the network with a network cable or via WLAN.

 For information on connection via WLAN see "8.1 Installing and configuring the unit".

Combining devices safely

- › Safety and essential performance features are independent of the network. The device is designed for operation independent of a network. However, some of the functions are not available in this case.
- › Incorrect manual configuration can lead to significant network problems. The expert knowledge of a network administrator is required for configuration.
- › The data connection utilizes part of the bandwidth of the network. Interactions with other medical devices cannot be completely excluded. Apply the IEC 80001-1 standard for risk assessment.
- › The device is not suitable for direct connection to the public internet.

Take care when connecting units together or to parts of other systems as there is always an element of risk (e.g. due to leakage currents).

- › Only connect units when there can be no question of danger to operator or to patient.
- › Only connect units when it is safe to do so and when there is no risk of damage or harm to the surroundings.
- › If it is not 100% clear from the unit data sheet that such connections can be safely made or if you are in any doubt, always get a suitably qualified person (e.g. the manufacturer) to verify that the setup is safe.

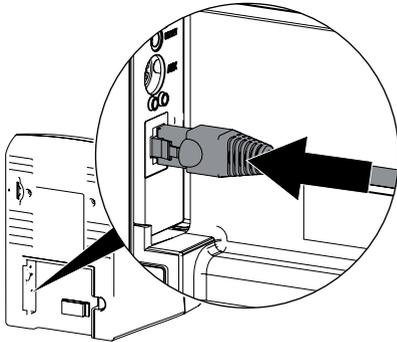
- › Always comply with the relevant requirements from IEC 60601-1-1 (EN 60601-1-1) when connecting the unit to other appliances, e.g. to a computer system, both inside and outside of the patient environment.
- › Only connect peripheral units (e.g. computer, monitor, printer) that conform at least to the requirements set out in IEC 60950-1 (EN 60950-1).



A copy of the system manufacturer's declaration in accordance with Article 12 of Directive 93/42/EEC can be found in our download section at www.duerrendental.com (document no. 9000-461-264).

Connecting the unit via the network cable

- › Remove the cover from the rear of the device.
- › Connect the supplied network cable to the network connection of the device.



- › Refit the cover.



The cover on the rear must be correctly fitted when the device is operated within the patient environment.

8 Commissioning



NOTICE

Short circuit due to the build up of condensation

- › Do not switch on the unit until it has warmed up to room temperature and it is dry.

8.1 Installing and configuring the unit

The unit supports the following imaging programs:

- VistaSoft from Dürr Dental
- VistaConnect from Dürr Dental
- DBSWIN from Dürr Dental
- VistaEasy from Dürr Dental
- Third-party software on request

Configuring the network

Network configuration

Various options are available for network configuration:

- Automatic configuration via DHCP.
- Automatic configuration via Auto-IP for direct connection of unit and computer.
- Manual configuration.
- › Configure the network settings of the unit using the software or, if applicable, the touch screen.
- › Check the firewall and release the ports, if applicable.

Network protocols and ports

Port	Purpose	Service
45123 UDP, 45124 UDP	Unit recognition and configuration	
2006 TCP	Unit data	
514 ¹⁾ UDP	Event protocol data	Syslog
2005 TCP, 23 TCP	Diagnosis	Telnet, SSH

- ¹⁾ The port can vary depending on the configuration.



When the unit is first connected to a computer, it applies the language and time settings of the computer.

Configuring WLAN on the unit

If the unit is to be operated via WLAN, the connection to the unit needs to be configured.

i In order to establish a secure WLAN connection, we recommend encrypting the WLAN network with WPA2.

The quality and transmission range of the WLAN connection can be reduced by environmental conditions (e.g. thick walls, other WLAN devices). When selecting a suitable location for set up, take the signal strength into consideration.

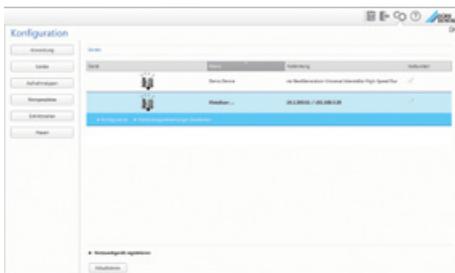
Requirements:

- You need to be logged-in on the unit as Administrator or Service Technician (**Settings > Access Levels > Administrator/Service Technician**).
- > Check the WLAN settings with you Network Administrator.
- > Tap the following on the touch screen: **Settings > System Settings > Network**.
- > Under **Interface** select the option **WLAN** and confirm with **OK**.
- > Configure the WLAN.
- > Confirm with **OK**.

Configuring the unit in VistaSoft

Configuration is performed directly in VistaSoft.

- > **Settings > Select the unit.**
- > Mark the connected unit in the list.



- > Click on **Edit connection settings**.
- > The unit name (designation) can be changed and information queried working under **General**.
- > An IP address can be entered manually and DHCP can be activated / deactivated working under **Connection**.
- > Extended functions e. g. IP address 2 can be set working under **Extended**.

Entering a fixed IP address (recommended)

i To reset the network settings, keep the unit reset key pressed for 15 - 20 seconds while switching on.

- > Working under **Connection**, deactivate DHCP.
- > Enter the IP address, subnet mask and gateway.
- > Navigate back to **Units** via the navigation bar or close Flyout using **Close**.
The configuration is saved.

Testing the device

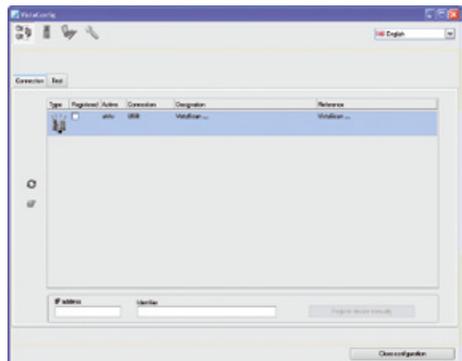
You can scan in an X-ray image to check that the unit is properly connected.

- > Open VistaSoft.
- > Create an X-ray station for the connected unit.
- > Log-in the demo patient (patient ID: DEMO0001).
- > Select the image type (e. g. Intraoral).
- > Scan an image plate, see "11.2 Scanning the image data via a computer".

Configuring the appliance in DBSWIN

Configuration is carried out using VistaNetConfig, which is automatically installed during installation of DBSWIN or VistaEasy.

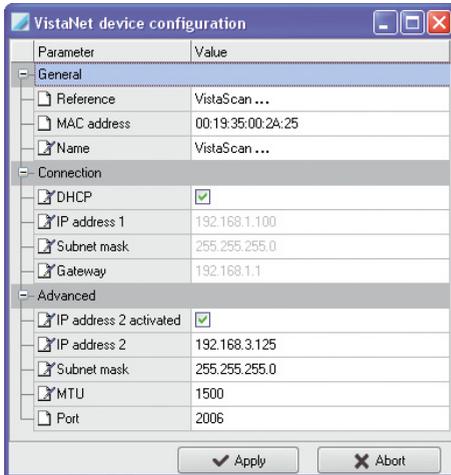
- > Select **Start > All Programs > Dürr Dental > VistaConfig > VistaNetConfig**.



- > Click **Refresh**.
The list of connected units is updated.
- > Activate the connected unit in the **Registered** column.
You can also register multiple units.

The *VistaNet device configuration* window allows you to change the device name (*name*), manually enter an IP address or call up information.

> Click .



- > If necessary change the *name*.
- > Click **Apply** to save the configuration.

Entering a fixed IP address (recommended)



To reset the network settings, keep the unit reset key pressed for 15 - 20 seconds while switching on.

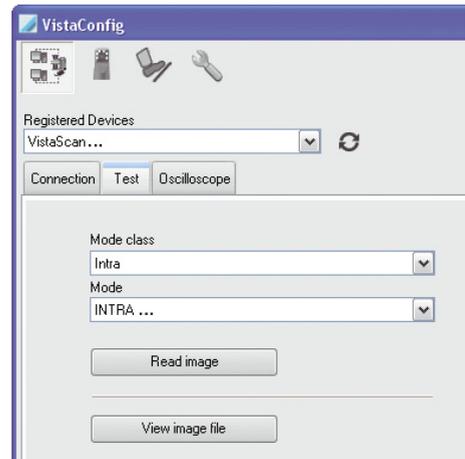
- > Deactivate **DHCP**.
- > Enter the IP address, subnet mask and gateway.
- > Click on **Apply**.

The configuration is saved.

Testing the device

You can scan in an X-ray image to check that the unit is properly connected.

- > Select the **Test** tab.



- > Select the unit from the *Registered Units* list.
- > Select the mode class.
- > Select the mode.
- > Click on **Scan Image**.
- > Scan an image plate, see "11.2 Scanning the image data via a computer".

8.2 X-ray unit settings

Intraoral X-ray units



If 60 kV can be set on the X-ray unit, this setting is preferred.

The standard exposure values for F-speed film (e. g. Kodak Insight) can be used.

The following table shows the standard values for the exposure time and the dose area product of an image plate for an adult patient.

	DC emitter, 7 mA Tube length 20 cm					
	Without X-ray field limitation		X-ray field limitation 2x3		X-ray field limitation 3x4	
	60 kV	mGycm ²	60 kV	mGycm ²	60 kV	mGycm ²
Incisors	0.08 s	14.6	0.08 s	3.1	0.08 s	6.2
Premolars	0.12 s	21.9	0.12 s	4.6	0.12 s	9.3
Molars	0.17 s	31.1	0.17 s	6.6	0.17 s	13.2
Bite wing	0.18 s	32.9	0.18 s	7.0	0.18 s	14

	DC emitter, 6 mA Tube length 30 cm					
	Without X-ray field limitation		X-ray field limitation 2x3		X-ray field limitation 3x4	
	70 kV	mGycm ²	70 kV	mGycm ²	70 kV	mGycm ²
Incisors	0.13 s	11.8	0.13 s	2.5	0.13 s	5.0
Premolars	0.18 s	16.4	0.18 s	3.4	0.18 s	6.9
Molars	0.25 s	22.8	0.25 s	4.8	0.25 s	9.6
Bite wing	0.27 s	24.6	0.27 s	5.2	0.27 s	10.4

The following table shows the standard values for the exposure time and the dose area product of an image plate for a child patient.

	DC emitter, 7 mA Tube length 20 cm					
	Without X-ray field limitation		X-ray field limitation 2x3		X-ray field limitation 3x4	
	60 kV	mGycm ²	60 kV	mGycm ²	60 kV	mGycm ²
Incisors	0.05 s	9.1	0.05 s	1.9	0.05 s	3.8
Premolars	0.07 s	12.8	0.07 s	2.7	0.07 s	5.4
Molars	0.11 s	20.1	0.11 s	4.2	0.11 s	8.5
Bite wing	0.11 s	20.1	0.11 s	4.2	0.11 s	8.5

	DC emitter, 6 mA Tube length 30 cm					
	Without X-ray field limitation		X-ray field limitation 2x3		X-ray field limitation 3x4	
	70 kV	mGycm ²	70 kV	mGycm ²	70 kV	mGycm ²
Incisors	0.08 s	7.3	0.08 s	1.5	0.08 s	3.1
Premolars	0.11 s	10.0	0.11 s	2.1	0.11 s	4.2
Molars	0.14 s	12.8	0.14 s	2.7	0.14 s	5.4
Bite wing	0.14 s	12.8	0.14 s	2.7	0.14 s	5.4

- › Check and adjust the specific X-ray unit in accordance with the standard values.

8.3 Acceptance tests

The required tests (e.g. acceptance tests) must be carried out in accordance with local rules and regulations.

- › Find out which tests are required.
- › Carry out testing in accordance with local rules and regulations.

Acceptance test



The Intra / Extra Digital test body is required for acceptance tests with the image plate and sensor as receivers, and possibly also the corresponding test body holder.

- › Before the unit is started up and used for the first time, the acceptance test of the X-ray system must be carried out in accordance with national regulations.
The constancy tests, which must be carried out at regular intervals by the surgery personnel, are based on the results of the acceptance test.

Electrical safety checks

- › Carry out the electrical safety check according to the national law (e. g. in accordance with IEC 62353).
- › Document the results.



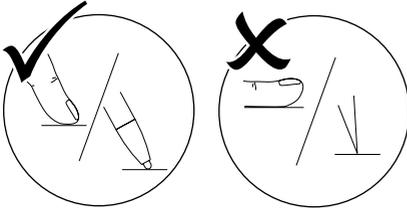
9 Operating the touch screen



NOTICE Damage to the touch screen due to incorrect handling

- > Only operate the touch screen using your fingertips or the stylus.
- > Do not use a sharp instrument (e.g. ballpoint pen) to operate the touch screen.
- > Protect the touch screen against water.

- > Operate the touch screen by tapping it with a fingertip or the stylus to select a menu or input field.



- > For further information about any window tap on the *Help* field.

9.1 Navigating

If the contents of the window cannot be completely displayed on the touch screen, a scroll bar appears.



- > Tap or to move the displayed section of the window.

9.2 Using menus

The menu integrated in the main window contain additional commands, which can be selected as required.

- > To open the menu, touch .

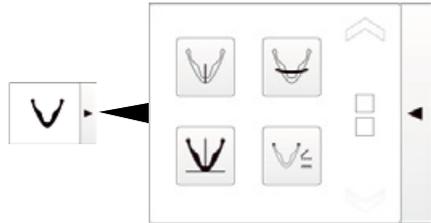


Figure 1: Example: expanded menu

- > Select a command.

9.3 Entering text in the field

- > If an input is required, you can type information into the relevant field.

The keyboard-window will open.



	Switch to numbers/special characters
	Shift key
	Switch to German mutated vowels ("umlauts")
	Delete
	Cancel input and close keyboard
	Confirm input and close keyboard
	Space bar

9.4 Calling up messages on the touch screen

The **Messages** view shows an overview of all previous messages. Here, the messages are divided into the following categories:

	Malfunction	Unit will no longer function. When the error has been remedied, it may be necessary to acknowledge the error message.
	Notice	After acknowledgement the unit will continue to work, but only with limited functions.
	Note	Important information for the operator, e.g. about the current status of the device. The unit continues to operate.
	Information	Information for the operator. The unit continues to operate.
	Normal operation	

› Tap on **Messages**.

The message is displayed. If there are several messages, the most current with the highest priority is displayed first.

› For more information about the message, touch **Help**.

10 Correct use of image plates



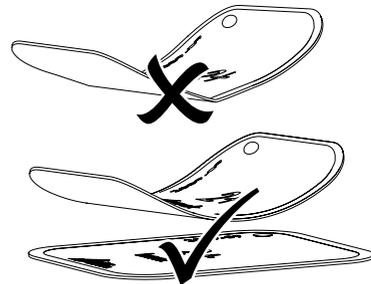
CAUTION

Image plates are toxic

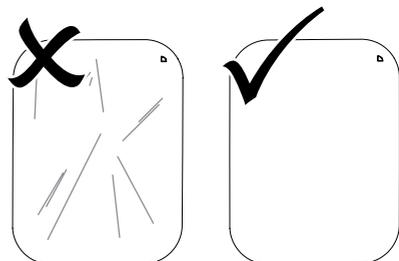
Image plates that are not packed in a light protection cover can lead to poisoning when placed in the mouth or swallowed.

- › Only place image plates in the patient's mouth in a light protection cover.
- › Do not swallow the image plate or parts of it.
- › If the image plate or parts of it have been swallowed, consult a specialist doctor immediately and remove the image plate.
- › If the light protection cover has been damaged in the patient's mouth, rinse the mouth thoroughly with lots of water. Do not swallow the water in the process.

- › Image plates are flexible like X-ray film. However, the image plates should not be bent.



- › Do not scratch the image plates. Do not subject the image plates to pressure from hard or pointed objects.



- › Do not soil the image plates.
- › Protect the image plates against sunlight and ultraviolet light.

Store image plates in a light protection cover or foil cassette of the correct size.

- › Image plates will be pre-exposed on exposure to natural radiation and stray x-ray radiation. Protect erased and exposed image plates from X-ray interference.

If the image plate has been stored for longer than one week, erase the image plate prior to use.

- › Do not store image plates under hot or moist conditions. Observe the correct ambient conditions (see "4.2 Image plate").
- › When used properly, image plates can be exposed, read and erased several hundred times provided there is no mechanical damage.

Replace the image plate if there are any signs of damage (e.g. protective layer is damaged or visible scratches) that could interfere with the diagnosis.

- › Image plates that have a production or packaging defect will be replaced by Dürr Dental in the same quantity. Claims can only be accepted within 7 working days after receipt of the goods.
- › Clean image plates properly (see "12.3 Image plate").

11 Operation



CAUTION

The image data on the image plate is not permanent.

The image data is altered by light, natural X-ray radiation and scattered X-ray radiation. This will lead to a reduction in diagnostic information and clarity.

- › Read the image data within 30 minutes of exposure.
- › Never handle exposed image plates without the light protection cover.
- › Do not subject an exposed image plate to X-ray radiation before or after the scanning process.
- › Do not X-ray during the scanning process if the unit is in the same room as the X-ray tube.

11.1 X-ray



The procedure is described using a size 2 Image Plate Plus as an example.

Required accessories:

- Image plate
- Light protection cover the same size as the image plate



WARNING

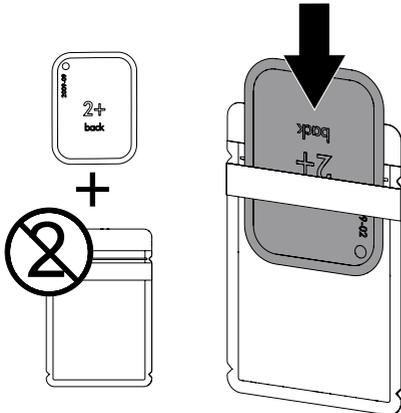
Risk of cross contamination when not using the light protection cover or when using the light protection cover more than once

- › Do not use an image plate without a light protection cover.
- › Do not use the light protection cover more than once (disposable item).

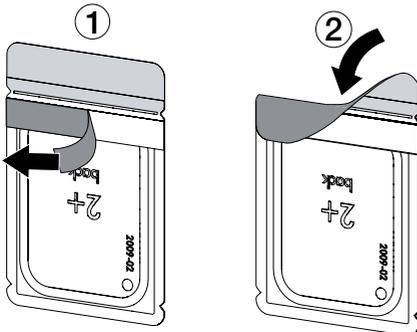
Preparing the X-ray

- The image plate has been cleaned.
- The image plate is not damaged.
- The marker (if present) is stuck in the correct position on the image plate. If the marker peels off, replace the image plate.
- › If using it for the first time or if it has been stored for over a week: erase the image plate (see "11.4 Erasing the image plate").

- › Completely slide the image plate into the light protection cover. The black (inactive) side of the image plate must be visible.

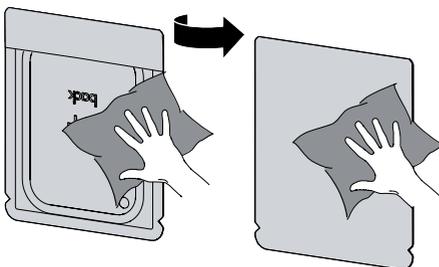


- › Pull off the adhesive strip, fold down the flap and close the light protection cover tightly by pressing together firmly.



- › The light protection cover must be disinfected using a disinfectant wipe immediately before it is positioned inside the patient's mouth (e.g. with Dürr FD 350).

Alternatively, a spray disinfectant (e.g. FD 322, FD 333, FD 366 sensitive) can be used on a soft, lint-free cloth.



- › In the case of image plates Plus size 4, place the bite protector around the light protection cover with image plate if necessary.

Taking the X-ray



NOTICE

Damage to the image plate caused by a sharp-edged holding system

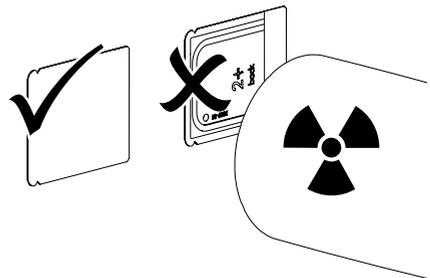
- › Only use holding systems that will not damage the light protection cover or the image plates in any way.
- › Do not use holding systems with sharp edges.



Wear protective gloves.

- › Place the image plate in the light protection cover into the patient's mouth.

When doing this, make sure that the active side of the image plate points towards the X-ray tube.



- › Set the exposure time and setting values on the X-ray unit (see "8.2 X-ray unit settings").
- › Record an X-ray image.
The image data must be scanned within 30 minutes.

Preparing for scanning



CAUTION

Light erases the image data on the image plate

- › Never handle exposed image plates without the light protection cover.



Wear protective gloves.

- › Remove the image plate with the light protection cover from the patient's mouth.

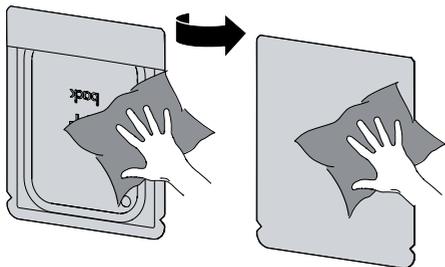


WARNING
Contamination of the unit

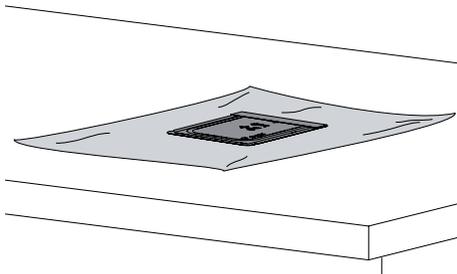
› Clean and disinfect the light protection cover before removing the image plate.

- › In the event of heavy soiling, e.g. from blood, dry clean the light protection cover and protective gloves, e.g. wipe with a clean cellulose cloth.
- › Disinfect the light protection cover and protective gloves with a disinfection wipe (e.g. FD 350).

Alternatively, a spray disinfectant (e.g. FD 322, FD 333) can be used on a soft, lint-free cloth.



- › Place the light protection cover with the image plate on the disinfection wipe.



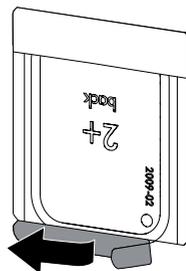
- › Allow the light protection cover to fully dry.
- › Pull off the protective gloves, disinfect and clean the hands.



NOTICE
Powder from the protective gloves on the image plate can damage the unit during scanning

› Completely clean all traces of the protective glove powder from your hands before handling the image plate.

- › Tear off the light protection cover.



11.2 Scanning the image data via a computer

Starting the image plate scanner and software



The reading-out process is described using the VistaSoft imaging software. For further information on using the imaging software, refer to the relevant manual.

- › Press the on / off switch  to switch on the device.
- › Switch on the computer and monitor.
- › Start VistaSoft.
- › Select the patient.
- › Select the corresponding image type in the menu bar.
- › Select the device.
- › Set acquisition mode.
Recording starts directly.
- › When ScanManager is enabled the X-ray jobs can be selected via the touch screen of the unit.

Result:

The touch screen will display an animated visual symbol requesting insertion of the image plate.



Only insert the image plate when the bar above the animated sequence has turned to green.

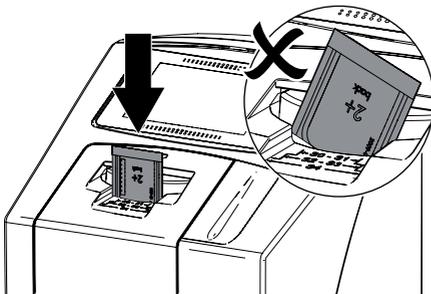


Figure 2: Example of the animation requesting insertion of the image plate

Scanning the image plate

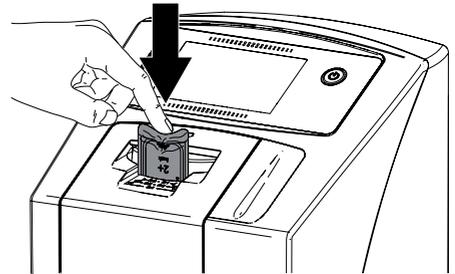
 To avoid the mix up of X-ray images, only scan the X-ray images from the selected patient.

- › Place the light protection cover with the image plate centrally and straight onto the input unit. The opened side of the light protection cover faces down, the inactive side of the image plate faces the operator.



The fixing mechanism moves forwards automatically and takes hold of the light protection cover with image plate.

- › Slide the image plate out of its light protection cover downwards into the device until the image plate is automatically drawn in.

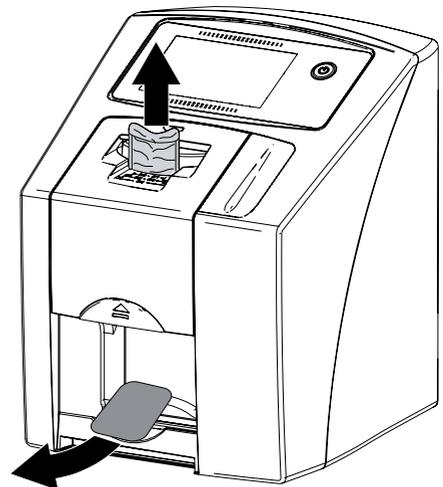


The light protection cover is held in place by the fixing mechanism and is not transported into the unit.

Scanning progress is displayed on the touch screen. The image data is automatically transmitted to the imaging software.

After it has been scanned, the image plate is erased and drops into the collection tray.

- › Save the X-ray image.
- › Remove the empty light protection cover.
- › Remove the image plate and prepare it for taking a new X-ray.



11.3 Scanning image data via the touch screen on the unit

Starting the image plate scanner

When scanning the image data via the touch screen, there is no need for a PC connection. The image data is stored locally on the memory card. In order to transfer the image data to the imaging software, the unit must be connected to a computer.

Scanning via the touch screen can be done in two ways:



Scanning:

Before scanning the image data, the patient data and exposure settings of the image are entered and then saved with the image data.

If no patient data and exposure settings of the image are entered then the image is saved to a folder with date and time.



Rapid scanning:

The image data is saved to a folder with the date and time and no additional information.



Use **Help** on the touch screen for further information on operating the unit via the touch screen.

Requirements:

- Memory card (SDHC, max. 32 GB) in the slot on the unit.
- > Press to switch on the unit.

Start scanning:

- > On the touch screen tap on **Scan**.
- > Enter the patient data.
- > Select the image settings and scanning mode.

The touch screen will display an animated visual symbol requesting insertion of the image plate.



Only insert the image plate when the bar above the animated sequence has turned to green.



Figure 3: Example of the animation requesting insertion of the image plate

Start rapid scanning:

- > On the touch screen tap on **Rapid scan**.
- > Select the scanning mode.

The touch screen will display an animated visual symbol requesting insertion of the image plate.



Only insert the image plate when the bar above the animated sequence has turned to green.

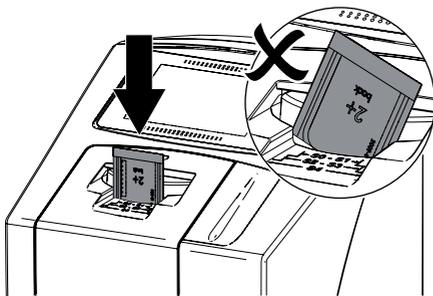


Figure 4: Example of the animation requesting insertion of the image plate

Scanning the image plate

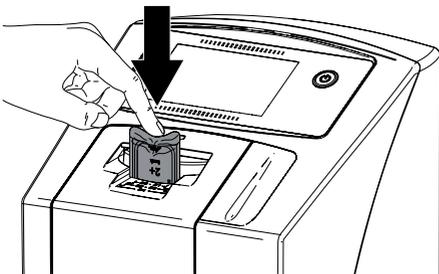
 To avoid the mix up of X-ray images, only scan the X-ray images from the selected patient.

- › Place the light protection cover with the image plate centrally and straight onto the input unit. The opened side of the light protection cover faces down, the inactive side of the image plate faces the operator.



The fixing mechanism moves forwards automatically and takes hold of the light protection cover with image plate.

- › Slide the image plate out of its light protection cover downwards into the device until the image plate is automatically drawn in.



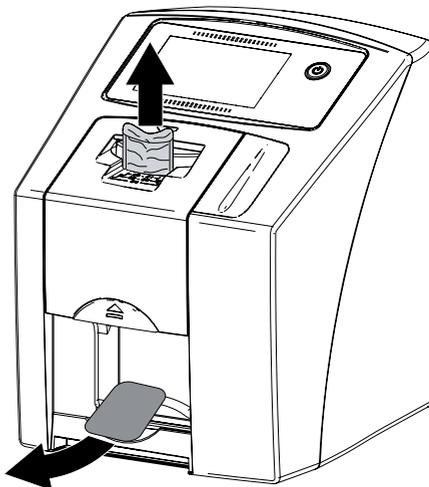
The light protection cover is held in place by the fixing mechanism and is not transported into the unit.

Scanning progress is displayed on the touch screen. The image data is automatically saved to the memory card.

 The touch screen only shows a preview, which provides an initial impression of the X-ray image. For purposes of diagnosis the X-ray image must be viewed on a diagnostic monitor.

After it has been scanned, the image plate is erased and drops into the collection tray.

- › Remove the empty light protection cover.
- › Remove the image plate and prepare it for taking a new X-ray.



Transmitting image data to the computer

X-ray images generated via the touch screen on the unit are saved to the SD card. These X-ray images can be imported to the imaging software via a network connection (e.g. VistaSoft).

- › Connect the unit to the network.
- › Start the imaging software.
- › Start the image import via the imaging software (further information can be found in the manual of the imaging software).
- › Save the image data.

The image data on the memory card is erased automatically as soon as the transfer has been successfully completed.

11.4 Erasing the image plate

The image data is automatically erased after scanning.

If you do not want the image data to be erased, this function can be disabled for the current scanning process by selecting **Disable erasing light** on the touch screen of the unit.

The special **ERASE** mode only activates the erasure unit of the image plate scanner. No image data is read.

The image plate needs to be erased using the special mode in the following cases:

- The first time the image plate is used, or if it is stored for longer than a week.
- Due to an error, the image data on the image plate has not been erased (software error message).

Erasing the image plate via a computer

- › Select the special **ERASE** mode in the software.
- › Scan the image plate (see "11.2 Scanning the image data via a computer").

Erasing the image plate via the touch screen

- › On the touch screen tap on **Rapid scan**.
- › Select the scanning mode **ERASE**.
- › Scan the image plate (see "11.3 Scanning image data via the touch screen on the unit").

11.5 Switch off the unit.

- › Press the on/off switch  for 3 seconds. As soon as the unit has shut down it switches off completely. The touch screen is off.

Use of a protective cover

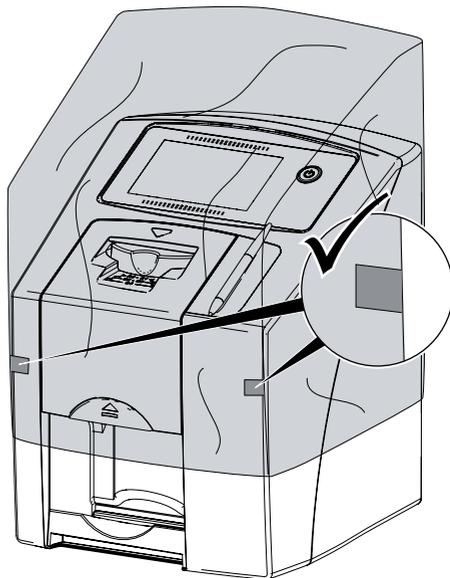
The protective cover protects the device against dirt and dust during extended periods in which it is not used.



WARNING

Danger of suffocation

- › Store the protective cover out of the reach of children.
- › Pull the protective cover over the device so that it is completely covered. Make sure that the markings are at the front.



- › Store the protective cover in a safe place when it is not in use.

12 Cleaning and disinfection

Unless specified otherwise, use the following cleaning agents and disinfectants for the device and its accessories:

- FD 322 rapid surface disinfectant
- FD 333 rapid surface disinfectant
- FD 350 Disinfection wipes
- FD 366 quick-acting disinfectant for sensitive surfaces



NOTICE

The use of unsuitable agents and methods can damage the unit and accessories.

- › Only use the disinfectants and cleaning agents specified or approved by Dürr Dental.
- › Comply with the specifications contained in the the operating instructions of the disinfectants and cleaning agents.



Wear protective gloves.

12.1 Image plate scanner

Unit surfaces

The unit surface must be cleaned and disinfected of any contamination or visible soiling.



NOTICE

Liquid can cause damage to the unit.

- › Do not spray the unit with cleaning and disinfectant agents.
 - › Make sure that liquid does not get inside the unit.
- › Remove any soiling with a soft, damp, lint-free cloth.
- › Disinfect the surfaces using a disinfection wipe. Alternatively, use a spray disinfectant on a soft, lint-free wipe. Comply with the operating instructions for the disinfectant when doing this.

Input unit

The input unit must be cleaned and disinfected if there are indications of contamination or visible dirt.

Use the following cleaning and disinfecting immersion disinfectants:

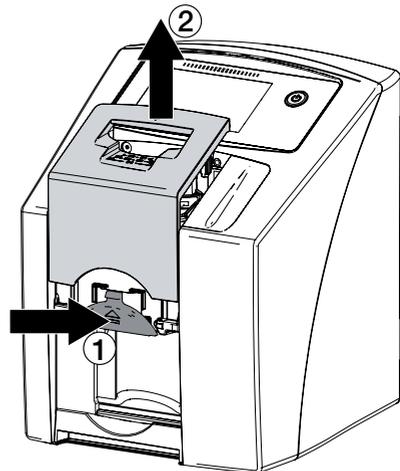
- ID 213 Instrument disinfection
- ID 212
- ID 212 forte



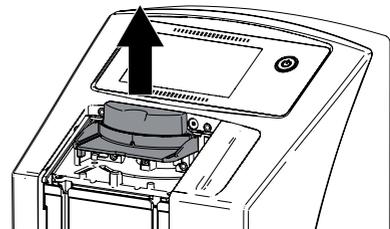
NOTICE

Heat can damage plastic parts.

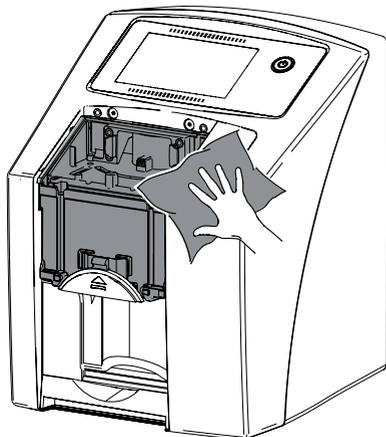
- › Do not use a thermal disinfector or steam steriliser on any parts of the device.
- › Touch  on the touch screen. The fixing mechanism moves into the cleaning position.
- › Press the release button and remove the cover upwards at the same time.



- › Remove the fixing mechanism by moving it upwards.



- › Clean the cover, fixing mechanism and inside parts with a moist, soft, lint-free cloth.



- › Disinfect the cover, fixing mechanism and inside parts with a disinfection wipe. Alternatively, use a spray disinfectant on a soft, lint-free wipe. Comply with the operating instructions for the disinfectant when doing this.

The cover and fixing mechanism can also be disinfected in an immersion disinfection system.

- › Remount the fixing mechanism.
- › Remount the cover.
- › Touch **OK** on the touch screen. The fixing mechanism moves into the starting position.

12.2 Light protection cover

The surface of the unit must be cleaned and disinfected if it is contaminated or visibly soiled.

- › Disinfect the light protection cover using a disinfection wipe before and after placement. Alternatively, use a spray disinfectant on a soft, lint-free wipe. Comply with the operating instructions for the disinfectant when doing this.
- › Allow the light protection cover to completely dry before using it.

12.3 Image plate

Use the following cleaning agents only:

- Image plate cleaning wipes



NOTICE

Heat or humidity will damage the image plate.

- › Do not steam sterilise the image plate.
- › Do not immersion-disinfect the image plate.
- › Only use approved cleaning agents.
- › Soiling on both sides of the image plate should be cleaned off with a soft, lint-free wipe prior to every use.
- › Remove resistant or dried on dirt with the image plate cleaning wipe. When doing this, observe the instructions for use for the cleaning wipe.
- › Allow the image plate to completely dry before using it.

12.4 Stylus

The stylus can be cleaned in the same way as the unit (see "12.1 Image plate scanner").

13 Maintenance

13.1 Recommended maintenance schedule



Only trained specialists or personnel trained by Dürr Dental may service the unit.



Prior to working on the device or in case of danger, disconnect it from the mains (e. g. pull the mains plug).

The recommended maintenance intervals are based on using the device for 15 intraoral images per day and 220 working days per year.

Maintenance interval	Maintenance work
Annually	<ul style="list-style-type: none"> › Visually inspect the device. › Check the image plates for signs of scratches and change if necessary. › Check the belt drives, transport belts and springs, and replace if necessary. › Remove dust and dirt from accessible parts. › Carry out a system check.
Every 3 years	<ul style="list-style-type: none"> › Change the wiper blade set. › Change the roller fixtures. › Change the drive belt.



14 Tips for operators and service technicians



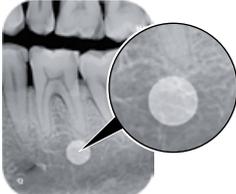
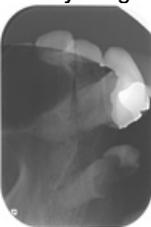
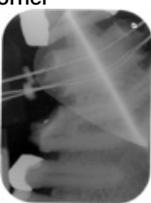
Any repairs above and beyond routine maintenance must only be carried out by suitably qualified personnel or by one of our service technicians.



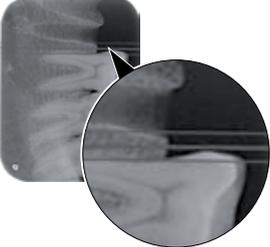
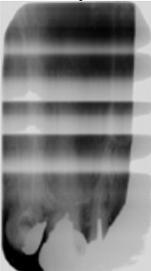
Prior to working on the device or in case of danger, disconnect it from the mains (e. g. pull the mains plug).

14.1 Poor X-ray image

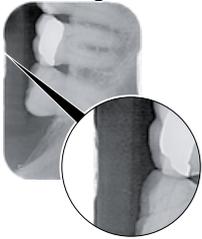
Fault	Probable cause	Solution
X-ray image does not appear on the monitor after scanning	Image plate inserted the wrong way round, inactive side was scanned	› Scan the image plate again immediately, making sure you feed it in correctly in the process.
	Image data on the image plate has been erased, e.g. by ambient light	› Always scan the image data of the image plate as quickly as possible.
	Fault on the unit	› Inform a Service Technician.
	No image data on image plate, image plate not exposed	› Expose the image plate.
	X-ray unit is faulty	› Inform a Service Technician.
X-ray image too dark	X-ray dose too high	› Check X-ray parameters.
	Incorrect brightness/contrast settings in the software	› Adjust the brightness of the X-ray image in the software.
X-ray image too bright	Exposed image plate has been exposed to ambient light	› Always scan the image data of the image plate as quickly as possible.
	X-ray dose too low	› Check X-ray parameters.
	Incorrect brightness/contrast settings in the software	› Adjust the brightness of the X-ray image in the software.
X-ray image only shadowy	The X-ray dose on the image plate was insufficient	› Increase X-ray dose.
	Amplification (HV value) is set too low in the software	› Increase amplification (HV value).
	Unsuitable scanning mode selected	› Select a suitable scanning mode.
	The setting for the threshold value is too high	› Reduce the threshold value.

Fault	Probable cause	Solution
<p>Top or bottom bulge in the X-ray image</p> 	<p>Image plate fed in off-centre and at an angle</p>	<ul style="list-style-type: none"> ➤ Check the error code on the touch screen. ➤ Insert the image plate centrally and straight.
<p>X-ray image is mirror-inverted</p>	<p>Image plate exposed on the wrong side.</p>	<ul style="list-style-type: none"> ➤ Insert the image plate correctly in the light protection cover. ➤ Position the image plate correctly.
<p>Round shadow on the X-ray image</p> 	<p>Plus ID image plate (with marker) exposed on the wrong side</p>	<ul style="list-style-type: none"> ➤ When taking an X-ray, make sure that the active side faces towards the X-ray tube.
<p>Ghosting or double exposure on X-ray image</p> 	<p>Image plate exposed twice</p> <hr/> <p>Image plate not sufficiently erased</p>	<ul style="list-style-type: none"> ➤ Only expose the image plate once. <hr/> <ul style="list-style-type: none"> ➤ Check the erasure unit is working correctly. ➤ Inform a service technician if the problem persists.
<p>X-ray image mirrored in one corner</p> 	<p>Image plate bent during X-ray exposure</p>	<ul style="list-style-type: none"> ➤ Do not bend the image plate.

Fault	Probable cause	Solution
<p>Shadow on the X-ray image</p> 	<p>Image plate removed from the light protection cover before scanning</p>	<ul style="list-style-type: none"> ➤ Do not handle image plates without a light protection cover. ➤ Store the image plate in a light protection cover.
<p>X-ray image cut off, part missing</p> 	<p>The metal part of the X-ray tube is in front of the X-ray beam</p> <p>Faulty edge masking in imaging software</p>	<ul style="list-style-type: none"> ➤ When taking an X-ray, make sure there are no metal parts between the X-ray tube and the patient. ➤ Check X-ray tube. ➤ Deactivate edge masking.
<p>Software unable to combine the data to make a complete image</p>	<p>The X-ray dose on the image plate was insufficient</p> <p>Amplification (HV value) is set too low in the software</p> <p>Unsuitable scanning mode selected</p> <p>The setting for the threshold value is too high</p>	<ul style="list-style-type: none"> ➤ Increase X-ray dose. ➤ Increase amplification (HV value). ➤ Select a suitable scanning mode. ➤ Reduce the threshold value.
<p>X-ray image has strips on image</p>	<p>Image plate has been pre-exposed, e.g. by natural radiation or stray X-ray radiation</p> <p>Parts of image plate exposed to light during handling</p> <p>Image plate dirty or scratched</p>	<ul style="list-style-type: none"> ➤ If the image plate has been stored for longer than one week, erase the image plate prior to use. ➤ Do not expose used image plates to bright light. ➤ Scan image data within half an hour after the exposure. ➤ Clean the image plate. ➤ Replace scratched image plates.
<p>Light strips in the scanning window</p>	<p>Too much incident ambient light during the scanning process</p>	<ul style="list-style-type: none"> ➤ Darken the room. ➤ Turn the unit so that the light does not fall directly onto the input unit.

Fault	Probable cause	Solution
<p>Horizontal, grey lines on the X-ray image, extending beyond the left and right image edge</p> 	<p>Transport slipping</p>	<p>➤ Clean the transport mechanism, replace the transport belts if necessary.</p>
<p>X-ray image is stretched lengthwise with bright, horizontal stripes</p> 	<p>Incorrect light protection cover or image plate used</p>	<p>➤ Only use original accessories.</p>
<p>X-ray image split vertically into two halves</p> 	<p>Dirt in the laser slit (e.g. hair, dust)</p>	<p>➤ Clean the laser slit.</p>
<p>X-ray image with small bright spots or clouding</p>	<p>Micro scratches on the image plate</p>	<p>➤ Replace the image plate.</p>

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Fault	Probable cause	Solution
Lamination of the image plate becoming detached at the edge 	Incorrect retainer system used	› Only use original image plates and film retainer systems.
	Image plate handled incorrectly.	› Use the image plate correctly. › Observe the operating instructions for the image plates and film retainer systems.

14.2 Software error

Fault	Probable cause	Solution
"Too much ambient light"	Unit exposed to too much light	› Darken the room. › Turn the unit so that no light can fall directly into the entry slot.
"Incorrect power supply unit"	Incorrect power supply unit connected	› Use the supplied power supply unit.
"Overtemperature"	Laser or erasure unit too hot	› Switch off the unit and allow it to cool.
"Erasure unit fault"	LED defective	› Inform a Service Technician.
Imaging software does not recognise the unit	Unit not switched on	› Switch on the unit.
	Connecting cable between device and computer not correctly connected	› Check the connecting cable.
	Computer does not detect any connection to the unit.	› Check the connecting cable. › Check the network settings (IP address and subnet mask).
	Hardware fault	› Inform a Service Technician.
	The IP address of the device is being used by another unit	› Check the network settings (IP address and subnet mask) and assign a unique IP address to every device. › Inform a service technician if the problem persists.

Fault	Probable cause	Solution
The unit does not appear in the options list in Vista-Config	Unit is connected behind a router	<ul style="list-style-type: none"> › Configure the IP address without an intermediate router on the unit. › Reconnect the router. › Manually enter the IP address in VistaConfig and register the unit.
	The IP address of the device is being used by another unit	<ul style="list-style-type: none"> › Check the network settings (IP address and subnet mask) and assign a unique IP address to every device. › Inform a service technician if the problem persists.
The unit appears in the VistaConfig options list but connection is not possible	Subnet masks of the computer and the unit do not match	<ul style="list-style-type: none"> › Check subnet masks, adjust if necessary.
Error message "E2490"	The connection to the unit was interrupted while the software was still attempting to communicate with the unit	<ul style="list-style-type: none"> › Restore the connection to the unit. › Repeat the process.

14.3 Fault on the unit

Fault	Probable cause	Solution
Unit does not switch on	No mains voltage	<ul style="list-style-type: none"> › Check the mains cable and plug connection and replace if necessary. › Check the power supply unit. › If the green status LED does not light up, replace the power supply unit. › Check the mains fuse in the building.
	On / off switch is defective	<ul style="list-style-type: none"> › Inform a Service Technician.
Unit switches back off after a short time	Mains cable or power supply unit plug not inserted correctly	<ul style="list-style-type: none"> › Check the mains cable and plug connections.
	Hardware fault	<ul style="list-style-type: none"> › Inform a Service Technician.
	Mains supply voltage too low	<ul style="list-style-type: none"> › Check the mains voltage.
Unit is on, but there is no display on the touch screen	Touch screen initialisation fault	<ul style="list-style-type: none"> › Switch the unit off and back on again.
	Touch screen brightness set too dark	<ul style="list-style-type: none"> › Update the firmware. › Increase the brightness of the touch screen.
	Touch screen defective	<ul style="list-style-type: none"> › Inform a Service Technician.

Fault	Probable cause	Solution
Loud operating noises after switching on lasting more than 30 seconds	Radiation deflector defective	› Inform a Service Technician.
Unit not responding	The unit has not yet completed the startup procedure	› After switching on, wait 20 - 30 seconds until the startup procedure has finished.
	Unit is blocked by the firewall	› Enable the ports for the unit in the firewall settings.
Network connection has been disconnected	Distance to WLAN router too great	› Set up the unit closer to the WLAN router.
	Walls between WLAN router and unit too thick	› Set up the unit closer to the WLAN router.
	Another WLAN network is affecting the operation of the unit's WLAN network	› Change the frequency range of the WLAN network.
	Connecting cable between device and computer not correctly connected	› Check the connection cable.
	The IP address of the device is being used by another unit	› Check the network settings (IP address and subnet mask) and assign a unique IP address to every device. › Inform a service technician if the problem persists.

14.4 Error messages on the touch screen

Fault	Probable cause	Solution
Error code 1008	Connection interrupted	› Update the firmware.
Error code 1010	Temperature of unit too high	› Allow the unit to cool down.
		› Inform a Service Technician.
Error code 1022	Subassembly not initialised	› Fault in software, update the software if required. › Inform a Service Technician.
Error code 1024	Internal data communication fault	› Switch the unit off and back on again.
		› Update the firmware.
		› Darken the room.
		› Turn the unit so that no light can fall directly into the entry slot.

Fault	Probable cause	Solution
Error code 1026	Incorrect acquisition mode	<ul style="list-style-type: none"> › Select a different acquisition mode › Inform a Service Technician. › Update the firmware. › Reset the scanning modes to the factory settings via the unit interface or the Imaging Software.
Error code 1100	Permitted time for scan process exceeded	<ul style="list-style-type: none"> › Inform a Service Technician. › Check the belt drive. › Check for blockage, remove image plate from unit.
Error code 1104	Erasure unit fault	<ul style="list-style-type: none"> › Inform a Service Technician. › Replace the erasure unit.
Error code 1116	Drive feed blocked	<ul style="list-style-type: none"> › Remove the blockage. › Inform a Service Technician.
Error code 1117	Feed position error	<ul style="list-style-type: none"> › Inform a Service Technician. › Check the feed (ease of movement, drive belts).
Error code 1118	Input unit cover open	<ul style="list-style-type: none"> › Close the cover. › Deactivate cleaning mode.
Error code 1121	Input unit fixing mechanism missing	<ul style="list-style-type: none"> › Insert the fixation mechanism. › Deactivate cleaning mode.
Error code 1153	Unit fault	<ul style="list-style-type: none"> › Switch the unit off and back on again. › Update the firmware.
Error code 1154	Internal data communication fault	<ul style="list-style-type: none"> › Switch the unit off and back on again. › Update the firmware.
Error code 1160	Final radiation deflector rotation speed not attained	<ul style="list-style-type: none"> › Inform a Service Technician. › Update the firmware. › Replace the radiation deflector subassembly if the problem occurs regularly.
Error code -1171	Fault on laser	<ul style="list-style-type: none"> › Send the unit for repair.
Error code 1172	SOL sensor timeout Fault on the laser, SOL sensor or radiation deflector assembly	<ul style="list-style-type: none"> › Inform a Service Technician. › Update the firmware.
Error code 10000	Unit exposed to too much light	<ul style="list-style-type: none"> › Darken the room. › Turn the unit so that no light can fall directly into the entry slot.
Error code 10009	Internal communication error warning; unit remains ready for operation	<ul style="list-style-type: none"> › Update the firmware.

Fault	Probable cause	Solution
Error code 10015	Image plate fed in off-centre	› Insert the image plate centrally.
Error code 10017	Unit shutting down	› Wait until the unit has shut down completely.
Error code 2	System error during startup of the unit	› Switch the unit off and back on again. › Update the firmware.
Error code 78	Memory card full	› Transfer the image data to the computer. › Insert an empty memory card.
	Fault during memory cleanup	› Press and hold the reset button while switching on the unit. › Update the firmware. › Press and hold the reset button while switching on the unit.
Firmware not running	A firmware update has been carried out.	› Switch the unit off and back on again.
	Internal communication fault	› Switch the unit off and back on again.
Settings (e.g. language) reset after unit restart	Faulty configuration file	› Update the firmware. › Reset the configuration to the factory settings and reconfigure.
Warning message during shutdown of the unit	Not a malfunction	› Update the firmware.



15 Settings menu layout

Device Information ¹	Unit data		
	Dealer information		
	Report		
Access level ¹	Operator		
	Administrator		
	Service Technician		
	Factory Technician		
System settings ²	Language	German (DE) English (EN) ...	
	Date & time	Date Time	
	Network	MAC address	
		Name	
		Interface	LAN WLAN
		DHCP	
		IP address	
		Subnet mask	
		Gateway	
	Settings for image acquisition workflow	Patient ID	
		Surname	
		First name	
		Date of birth	
		Pregnancy	
		Comment	
		X-ray parameters	
	X-ray stations	Room 1	
		Room 2	
		...	
	Acquisition type	INTRA	
		Child	
		...	
Touch screen	Brightness		
	Touch screen calibration		
Standby time	Standby time		
	Standby		
Operating mode	ScanManager		

Service menu ³	Test			
	Scanning modes	Edit scanning modes		
		Display scanning modes		
	Maintenance	Firmware update		
		Reset maintenance interval		
	Diagnosis	Statistics		
		Manipulation	Transport settings	
			Service mode	
			Sensors	
		Oscilloscope		
		Check touch screen		
	Display test images			
	Messages			
Factory settings				

- ¹ Visible from access level *Operator* or higher
- ² Visible from access level *Administrator* or higher
- ³ Visible from access level *Service Technician* or higher

16 Scanning times

The scanning time corresponds to the time taken for complete scanning of image data and depends on image plate format and pixel size.

The time to image will depend largely on the computer system used and its work load. Times stated are approximate.

Theoretical resolution (LP/mm)	40	25	20	10
Pixel size (µm)	12.5	20	25	50
Intra Size 0 (2 x 3)	26 s	16 s	13 s	6 s
Intra Size 1 (2 x 4)	32 s	20 s	16 s	8 s
Intra Size 2 (3 x 4)	32 s	20 s	16 s	8 s
Intra Size 3 (2.7 x 5.4)	40 s	25 s	20 s	10 s
Intra Size 4 (5.7 x 7.6)	53 s	33 s	27 s	14 s

17 File sizes (uncompressed)

The actual file size will depend on the image plate format and the pixel size. File sizes stated are approximate and have been rounded upwards.

Suitable compression methods can considerably reduce the file size without loss of data.

Theoretical resolution (LP/mm)	40	25	20	10
Pixel size (μm)	12.5	20	25	50
Intra Size 0 (2 x 3)	9.86 MB	3.85 MB	2.46 MB	0.62 MB
Intra Size 1 (2 x 4)	12.29 MB	4.80 MB	3.07 MB	0.77 MB
Intra Size 2 (3 x 4)	16.27 MB	6.36 MB	4.07 MB	1.02 MB
Intra Size 3 (2.7 x 5.4)	19.01 MB	7.43 MB	4.75 MB	1.19 MB
Intra Size 4 (5.7 x 7.6)	55.45 MB	21.66 MB	13.86 MB	3.47 MB

18 Information about EMC in accordance with EN 60601-1-2

18.1 General notes

The information in this leaflet includes excerpts from the relevant European standards for electrical, medical devices. It must be observed when installing Dürr Dental devices or combining them with products of other manufacturers. If you are uncertain about anything, please refer to the complete standard.

18.2 Abbreviations

EMC	Electromagnetic compatibility
HF	High frequency
U_T	Rated voltage of the device (supply voltage)
V_1, V_2	Compliance level for the test in acc. with IEC 61000-4-6
E_1	Compliance level for the test in acc. with IEC61000-4-3
P	Rated power of the transmitter in Watts (W) in accordance with the specifications of the transmitter manufacturer
d	Recommended safety distance in metres (m)

18.3 Guidelines and manufacturer's information

Electromagnetic emissions for all devices and systems

The device is designed for operation in an electromagnetic environment as specified below. The customer or operator of the device should ensure that the device is operated in such an environment.

Interference emission measurements	Compliance	Electromagnetic environment - guidelines
HF emissions in accordance with CISPR 11	Group 1	The unit uses HF energy exclusively for internal functions. For this reason, HF emissions are very low and it is unlikely that any interference will be caused to neighbouring electronic devices.
HF emissions in accordance with CISPR 11	Class B	The device is suitable for use in all facilities including those in living areas and areas that are directly connected to the public mains electricity supply that also supplies buildings used for residential purposes.
Harmonics in acc. with IEC 61000-3-2	Not applicable	
Voltage fluctuations/flickers in acc. with IEC 61000-3-3	Not applicable	

Resistance to electromagnetic interference (immunity) for all devices and systems

The device is designed for use in electromagnetic environments specified below. The customer or operator of the device should ensure that the device is operated such an environment.

Interference immunity tests	IEC 60601 - test level	Compliance level	Electromagnetic environment - guidelines
Electrostatic discharge (ESD) in acc. with IEC 61000-4-2	±6 kV contact discharge ±8 kV air discharge	±6 kV contact discharge ±8 kV air discharge	Floors should be made of wood or cement, or covered with ceramic tiles. If the floor is covered by synthetic material, then the relative humidity must be at least 30%.
Electrical fast transient/burst immunity test in accordance with IEC 61000-4-4	±2 kV for mains cables ±1 kV for input and output cables	±2 kV for mains cables ±1 kV for input and output cables	The quality of the supply voltage should correspond to a typical commercial or hospital environment.
Voltage surge in accordance with IEC 61000-4-5	±1 kV voltage outer conductor/outer conductor ±2 kV voltage outer conductor/earth	±1 kV push-pull voltage ±2 kV common mode voltage	The quality of the supply voltage should correspond to a typical commercial or hospital environment.
Voltage drops, short-term interruptions and fluctuations of the supply voltage in accordance with IEC 61000-4-11	< 5% U_T (> 95% drop in U_T) for 1/2 period 40% U_T (60% drop in U_T) for 5 periods 70% U_T (30% drop in U_T) for 25 periods < 5% U_T (> 95% drop in U_T) for 5 s	< 5% U_T (> 95% drop in U_T) for 1/2 period 40% U_T (60% drop in U_T) for 5 periods 70% U_T (30% drop in U_T) for 25 periods < 5% U_T (> 95% drop in U_T) for 5 s	The quality of the supply voltage should correspond to a typical commercial or hospital environment. If the operator of the device needs the unit to continue working even if the mains power supply is interrupted, we recommend powering the device from an uninterruptible power supply (UPS) or from a battery.
Magnetic field for a supply frequency (50/60 Hz) in accordance with IEC 61000-4-8	3 A/m	3 A/m	The magnetic fields at electrical frequency should be within the range of typical values encountered in a commercial or hospital environment.

Table 1: Resistance to electromagnetic interference (immunity) for all devices and systems

Electromagnetic interference immunity for devices or systems that are not life-sustaining

Portable and mobile communication devices should not be used any closer to the unit (including cables) than the recommended safety distance, which is calculated based on the applicable formula for the transmission frequency.

Interference immunity tests	IEC 60601 - test level	Compliance level	Recommended safety distance
Conducted HF disturbance variables in accordance with IEC 61000-4-6	$3 V_{\text{eff}}$, 150 kHz to 80 MHz	$[V_1] = 3 \text{ V}$	$d = 1.2 \cdot \sqrt{P}$
Emitted HF disturbance variables in accordance with IEC 61000-4-3	3 V/m 80 MHz to 2.5 GHz	$[E_1] = 4 \text{ V/m}$	$d = 0.9 \cdot \sqrt{P}$ for 80 MHz to 800 MHz $d = 1.8 \cdot \sqrt{P}$ for 800 MHz to 2.5 GHz

P Rated power of the transmitter in Watts (W) in accordance with the specifications of the transmitter manufacturer

d Recommended safety distance in metres (m)



The field strength of stationary communication devices should be lower than the compliance level for all frequencies based on inspections on site^{a, b}

Interference is possible in the environment of units that have the following symbols.

Comment 1 The higher frequency range applies for 80 MHz and 800 MHz.

Comment 2 These guidelines may not apply in all cases. The propagation of electromagnetic radiation is affected by absorption and reflection on the building, objects and people.

^a The field strength of stationary transmitters, such as the base stations of mobile phones and land mobile radios, amateur radio stations, AM and FM radio and television broadcasters, for example, cannot be accurately predicted theoretically. In order to determine the electromagnetic environment with regard to stationary transmitters, a study of electromagnetic phenomena at the site should be considered. If the measured field strength at the location where the unit is used exceeds the compliance levels stated above, the unit should be monitored to verify that it works as intended. If unusual performance characteristics are observed additional measures may be required, such as a changing the orientation of the unit or moving it to a different location.

^b Over the frequency range of 150 kHz to 80 MHz, the field strength should be less than $[V_1]$ V/m.

Recommended safety distance between portable and mobile HF communication devices and the unit

The device is designed for use in the electromagnetic environments specified below, in which the HF disturbance variables are controlled. The customer or the operator of the device can help to prevent electromagnetic interference by maintaining the minimum distances between mobile HF communication equipment (transmitters) and the device as recommended below in accordance with the maximum output line of the communication equipment.

Rated power of the transmitter (W)	Safety distance based on the transmission frequency (m)		
	150 kHz to 80 MHz $d = 1.2 \cdot \sqrt{P}$	80 MHz to 800 MHz $d = 1.2 \cdot \sqrt{P}$	800 MHz to 2.5 GHz $d = 2.3 \cdot \sqrt{P}$
0.01	0.12	0.12	0.23
0.1	0.38	0.38	0.73
1	1.2	1.2	2.3
10	3.8	3.8	7.3
100	12	12	23

Table 2: Recommended safety distance between portable and mobile HF communication devices and the unit

For transmitters whose maximum rated power is not specified in the table shown above, the recommended safety distance d in metres (m) can be determined from the formula that belongs to the respective column where P is the maximum rated power of the transmitter in watts (W) in accordance with the specifications of the transmitter manufacturer.

Comment 1 The higher frequency range applies for 80 MHz and 800 MHz.

Comment 2 These guidelines may not apply in all cases. The propagation of electromagnetic waves is affected by absorption and reflection on the building, objects and people.



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