APOLLO DI

Operating Instructions

This product is covered by one or more of the following US patents:

- US 7612870
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Dear Customer,

Thank you for purchasing your APOLLO Di® from Sirona.

This unit enables you to create digital exposures and to transmit these to your dental laboratory.

Improper use and handling can create hazards and cause damage. Please therefore read and follow these operating instructions carefully. Always keep them within easy reach.

Also pay attention to the safety instructions to prevent personal injury and material damage.

Your
APOLLO DI team

1.1 Contact information

Customer service center

In the event of technical queries, please use our online contact form at www.sirona.com. In the navigation bar, go to the menu commands "CONTACT" / "Customer Service Center" and then click the "CONTACT FORM FOR TECHNICAL QUESTIONS" button.

Manufacturer's address

Sirona Dental Systems GmbH
Fabrikstrasse 31
64625 Bensheim
Germany

Phone: +49 (0) 6251/16-0
Fax: +49 (0) 6251/16-2591
e-mail: contact@sirona.com
www.sirona.com
2 General information

Please read this document completely and follow the instructions exactly. You should always keep it within reach.

Original language of the present document: German

2.1 Legend

Manufacturer

Article number

Serial number

Batch number

Internal name for identifying the product.

Year of manufacture

Expiration date

Warning: Hot surface

Product disposal symbol (see "Disposal [→ 41]").

Unit generates and transmits radio frequency energy.
This product is a medical device in accordance with Council Directive 93/42/EEC.

Temperature limits
Information on the packaging: The limit values apply to shipping and storage.
Information on the unit: The limit values apply to operation.

Humidity limits
Information on the packaging: The limit values apply to shipping and storage.
Information on the unit: The limit values apply to operation.

Follow the operating instructions.
To ensure safe operation of the unit, the user must follow the operating instructions.

Observe the service instructions.

Operating Instructions in electronic form

Type B applied parts
3 General description

3.1 Certification

CE mark


NOTICE

CE mark for connected products

Further products which are connected to this unit must also bear the CE mark.

Compliance

Anyone creating or changing a medical electrical system through a combination with other devices in accordance with standard EN 60601-1-1:2001 based on 60601-1-1:2000 (specification for the safety of medical electrical systems)/UL 60601-1 Part 1: first edition 2003 is responsible for ensuring that the requirements of these standards are met to the full extent in order to ensure the safety of patients, operators and the environment.

CSA mark
3.2 Intended use

APOLLO DI is a medical device to scan the topographic characteristics of teeth. It offers a digital process for using the exposures in the computer-supported construction and manufacturing of restorative dentures in the laboratory.

This unit must not be used for any other purpose. If the unit is used for any purpose other than the one mentioned above, it may be damaged.

Intended use also includes compliance with these Operating Instructions and the relevant maintenance instructions.

⚠️ CAUTION

Follow the instructions

If the instructions for operating the unit described in this document are not observed, the intended protection of the user may be impaired.

For the USA only

CAUTION: Federal law (USA) restricts sale of this device to or on the order of a physician, dentist, or licensed practitioner.
4 Safety

4.1 Basic safety information

4.1.1 Prerequisites

**NOTICE**

**Important information on building installation**

In order to prevent the risk of an electric shock, this unit must only be connected to a supply mains with a ground wire.

The building installation must be performed by a qualified expert in compliance with the national regulations. DIN VDE 0100-710 applies in Germany.

**NOTICE**

**Restrictions regarding installation site**

The system is not intended for operation in areas subject to explosion hazards.

**NOTICE**

**Do not damage the unit!**

The unit can be damaged if opened improperly.

It is expressly prohibited to open the unit with tools!

4.1.2 Connecting the unit

Perform connection by following the directions given in the present operating instructions.
4.1.3 General safety information

⚠️ CAUTION
Electric shock
Do not touch the camera plug or camera bushing while you are touching the patient.

⚠️ CAUTION
Do not damage the monitor
DO NOT touch the screen with sharp or pointed objects.
If the monitor is damaged, prevent any leaking liquid from coming into contact with your skin, mucous membranes (eyes, mouth), or foodstuffs and be careful not to inhale any escaping vapors.
Rinse any parts of your body or items of clothing already contaminated by the liquid with ample amounts of water and soap.

⚠️ CAUTION
Note on electromagnetic effects:
This system may be operated in a residential area provided that it is used under the responsibility of a medical specialist.

⚠️ NOTICE
Install only approved software
To prevent interference with the runtime reliability of the program, only approved software may be installed.

⚠️ NOTICE
Ventilation openings must not be obstructed.

⚠️ CAUTION
Only use dead storage devices
Only use dead storage devices with this unit. Dead storage devices include the USB stick for the camera, which is used to load the camera's calibration data, or other USB sticks for backing up data files. The use of other live or dead peripheral units is not permitted.
Do not use any battery-operated storage devices or storage devices that are connected to the power supply.
4.1.4 Modifications to the unit

Modifications to this unit which might affect the safety of the system owner, patients or other persons are prohibited by law!

For reasons of product safety, this product may be operated only with original Sirona accessories or third-party accessories expressly approved by Sirona. The user is responsible for any damage resulting from the use of non-approved accessories.

4.1.5 Movement and stability of the unit

**NOTICE**

**The unit can overturn or slip away**

For reasons of tilt stability, the unit must be pulled by its side handles when being moved. If you push the unit, obstacles on the floor could block its wheels, thus causing it to overturn.

The wheels of the unit have brakes which can be locked to ensure secure positioning. If the unit is steeply inclined or standing on a slippery surface and lateral forces are acting on it, it may slide even though the wheel brakes are locked.

➢ Always make sure that the unit's footprint is a flat, nonskid surface.

4.1.6 Maintenance and repair

As manufacturers of dental instruments and laboratory equipment, we can assume responsibility for the safety properties of the unit only if the following points are observed:

As distributors of dental instruments and laboratory equipment, we can assume responsibility for the safety properties of the unit only if the following points are observed:

- The maintenance and repair of this unit may be performed only by or by agencies authorized by .
- Components which have failed and influence the safety of the unit must be replaced with original (OEM) spare parts.

Please request a certificate whenever you have such work performed. It should include:

- The type and scope of work.
- Any changes made in the rated parameters or working range.
- Date, name of company and signature.

4.1.7 Accessories

In order to ensure product safety, this device may be operated only with original Sirona accessories or third-party accessories expressly approved by Sirona. The user is responsible for any damage resulting from the use of non-approved accessories.
4.2 Safety labels

Plug connections of external interfaces

⚠️ CAUTION
Additional devices connected to external interfaces must be tested according to the relevant standards, e.g.:
They must be installed outside of the patient area (a radius of 1.5 m surrounding the patient).

⚠️ CAUTION
Low voltages are applied to the sockets for connecting external interfaces.
➢ Do not touch the pins of the connectors.

NOTICE
The externally connected cables must not be subjected to pulling stress.

Heater plate

⚠️ CAUTION
Risk of burns due to hot surface!
➢ Never touch the heater plate (A)!

4.3 Wireless phone interference with equipment

The use of mobile wireless phones in practice or hospital environments must be prohibited to ensure safe operation of the unit.
4.4 **Radio interference**

APOLLO DI is Wi-Fi-compatible. It is designed for transmissions (sending and receiving) in various frequency ranges from 2412.0 MHz to 5825.0 MHz.

By intercepting the transmissions, the Wi-Fi module determines which system frequencies are available and then operates in the available ranges.

The Wi-Fi module transmits at a maximum power of 0.12 W.

The system can cause radio interference or interrupt the operation of units in the vicinity.

If necessary, take measures to remedy this, for example realign or move the APOLLO DI acquisition unit or shield the location.

4.5 **Making backup copies**

To increase the system's data security and protect themselves against data losses, users should make backup copies of the data regularly.
5 Technical information

5.1 Technical data

Type designation
Rated line voltage 100-240 V ~ / 50/60Hz
Nominal current 3.0A to 2.0A
Type of protection against electric shock Class I device
Type of protection against electric shock (camera) Type B applied part
Degree of protection against ingress of water Ordinary device (without protection against ingress of water)
Degree of contamination 2
Installation category II
Operating mode Continuous operation

Transport and storage conditions

Temperature -29 °C to +60 °C
(-20 °F to +140 °F)
Relative humidity 30% to 90%
Air pressure 700hPa - 1060hPa

Operating conditions

Ambient temperature 12°C to 30°C
(54° F to 80° F)
Relative humidity 40% to 50%
No condensation
Air pressure 700hPa - 1060hPa
Operating altitude ≤ 3000m

Dimensions and weight

Dimensions W x H x D in mm 490 x 1170 x 410
in inches 19 ¼ x 46 ½ x 16 ½
Weight
- Total weight, approx. 30 kg (67 lbs)
- Approx. weight without stand: 15 kg (34 lbs)
- Approx. weight of stand: 15 kg (33 lbs)
5.2 Electromagnetic compatibility

5.2.1 Electromagnetic emission

The UNIT is intended for operation in the electromagnetic environment specified below.

The customer or user of the UNIT should make sure that it is used in such an environment.

<table>
<thead>
<tr>
<th>Emission measurement</th>
<th>Conformity</th>
<th>Electromagnetic environment - guidelines</th>
</tr>
</thead>
<tbody>
<tr>
<td>RF emissions according to CISPR 11</td>
<td>Group 1</td>
<td>The UNIT uses RF energy only for its internal function. Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment.</td>
</tr>
<tr>
<td>RF emissions according to CISPR 11</td>
<td>Class B</td>
<td>The UNIT is intended for use in all facilities, including residential areas and in any facilities connected directly to a public power supply providing electricity to buildings used for residential purposes.</td>
</tr>
<tr>
<td>Harmonics according to IEC 61000-3-2</td>
<td>Class A</td>
<td>coincidence</td>
</tr>
<tr>
<td>Voltage fluctuations / flicker according to IEC 61000-3-3</td>
<td>coincidence</td>
<td></td>
</tr>
</tbody>
</table>
## 5.2.2 Interference immunity

The **UNIT** is intended for operation in the electromagnetic environment specified below.

The customer or user of the **UNIT** should make sure that it is used in such an environment.

<table>
<thead>
<tr>
<th>Interference immunity tests</th>
<th>IEC 60601-1-2 Test level</th>
<th>Compliance level</th>
<th>Electromagnetic environment – guidelines</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electrostatic discharge (ESD) according to IEC 61000-4-2</td>
<td>± 6 kV contact ± 8 kV air</td>
<td>± 6 kV contact ± 8 kV air</td>
<td>Floors should be wood, concrete, or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30%.</td>
</tr>
<tr>
<td>Electrical fast transient/burst according to IEC 61000-4-4</td>
<td>± 1 kV for input and output lines ± 2 kV for power supply lines</td>
<td>± 1 kV for input and output lines ± 2 kV for power supply lines</td>
<td>The quality of the line power supply should be that of a typical commercial or hospital environment.</td>
</tr>
<tr>
<td>Surge voltages according to IEC 61000-4-5</td>
<td>± 1 kV differential mode voltage ± 2 kV common mode voltage</td>
<td>± 1 kV differential mode voltage ± 2 kV common mode voltage</td>
<td>The quality of the line power supply should be that of a typical commercial or hospital environment.</td>
</tr>
<tr>
<td>Voltage dips, short interruptions and variations of the power supply according to IEC 61000-4-11</td>
<td>&lt;5% $U_T$ for ½ period (&gt;95% dip of $U_T$) 40% $U_T$ for 5 periods (60% dip of $U_T$) 70% $U_T$ for 25 periods (30% dip of $U_T$) &lt;5% $U_T$ for 5 sec. (&gt;95% dip of $U_T$)</td>
<td>&lt;5% $U_T$ for ½ period (&gt;95% dip of $U_T$) 40% $U_T$ for 5 periods (60% dip of $U_T$) 70% $U_T$ for 25 periods (30% dip of $U_T$) &lt;5% $U_T$ for 5 sec. (&gt;95% dip of $U_T$)</td>
<td>The quality of the line power supply should be that of a typical commercial or hospital environment.</td>
</tr>
<tr>
<td>Magnetic field of power frequencies (50/60 Hz) according to IEC 61000-4-8</td>
<td>3 A/m</td>
<td>3 A/m</td>
<td>Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment.</td>
</tr>
</tbody>
</table>

Remarks: $U_T$ is the AC supply voltage prior to application of the test level.
<table>
<thead>
<tr>
<th>Interference immunity tests</th>
<th>IEC 60601-1-2 Test level</th>
<th>Compliance level</th>
<th>Electromagnetic environment – guidelines</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conducted RF interference</td>
<td></td>
<td>3 V&lt;sub&gt;eff&lt;/sub&gt;</td>
<td>[ d = \sqrt[1.2]{P} ]</td>
</tr>
<tr>
<td>IEC 61000-4-6</td>
<td>3 V&lt;sub&gt;eff&lt;/sub&gt;</td>
<td></td>
<td>at 80 MHz to 800 MHz</td>
</tr>
<tr>
<td></td>
<td>150 kHz to 80 MHz</td>
<td></td>
<td>at 800 MHz to 2.5 GHz</td>
</tr>
<tr>
<td>Radiated RF interference</td>
<td>3 V/m</td>
<td>3 V/m</td>
<td>[ d = \sqrt[2.3]{P} ]</td>
</tr>
<tr>
<td>IEC 61000-4-3</td>
<td>80 MHz to 800 MHz</td>
<td></td>
<td>at 80 MHz to 800 MHz</td>
</tr>
<tr>
<td></td>
<td>800 MHz to 2.5 GHz</td>
<td></td>
<td>at 800 MHz to 2.5 GHz</td>
</tr>
</tbody>
</table>

\[ P \] is the nominal transmitter output in watts (W) specified by the transmitter manufacturer and \( d \) is the recommended working clearance in meters (m).

Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey\(^1\) should be less than the compliance level\(^2\) in each frequency range.

Interference is possible in the vicinity of equipment bearing the following graphic symbol.

Remark 1
The higher frequency range applies at 80 MHz and 800 MHz.

Remark 2
These guidelines may not be applicable in all cases. The propagation of electromagnetic waves is influenced by their absorption and reflection by buildings, objects and persons.

1. Field strengths from fixed transmitters, such as base stations for radio (cellular/cordless) telephones and land mobile radios, amateur radio, AM/FM radio and TV broadcasts, cannot be predicted theoretically with accuracy. An investigation of the location is recommended to determine the electromagnetic environment resulting from stationary RF transmitters. If the measured field strength in the location in which the UNIT is used exceeds the applicable RF compliance level specified above, the UNIT should be observed to verify normal operation. If unusual performance characteristics are observed, it may be necessary to take additional measures such as reorientation or repositioning of the UNIT.

2. Over the frequency range 150kHz to 80 MHz, field strengths should be less than 3 V/m.
5.2.3 Working clearances

The UNIT is intended for operation in an electromagnetic environment, where radiated RF interference is checked. The customer or the user of the UNIT can help prevent electromagnetic interference by duly observing the minimum distances between portable and/or mobile RF communication devices (transmitters) and the UNIT. These values may vary according to the output power of the relevant communication device as specified below.

<table>
<thead>
<tr>
<th>Rated maximum output power of transmitter [W]</th>
<th>Working clearance according to transmission frequency [m]</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>150 kHz to 80 MHz</td>
</tr>
<tr>
<td></td>
<td>( d = [1.2] \sqrt{P} )</td>
</tr>
<tr>
<td>0.01</td>
<td>0.12</td>
</tr>
<tr>
<td>0.1</td>
<td>0.38</td>
</tr>
<tr>
<td>1</td>
<td>1.2</td>
</tr>
<tr>
<td>10</td>
<td>3.8</td>
</tr>
<tr>
<td>100</td>
<td>12</td>
</tr>
</tbody>
</table>

For transmitters whose maximum nominal output is not specified in the above table, the recommended working clearance \( d \) in meters (m) can be determined using the equation in the corresponding column, where \( P \) is the maximum nominal output of the transmitter in watts (W) specified by the transmitter manufacturer.

Remark 1

An additional factor of 10/3 is applied when calculating the recommended working clearance between transmitters in the 80 MHz to 2.3 GHz frequency range in order to reduce the probability that a mobile/portable communication device unintentionally brought into the patient area could lead to interference.

Remark 2

These guidelines may not be applicable in all cases. The propagation of electromagnetic waves is influenced by their absorption and reflection by buildings, objects and persons.
6 Installation and startup

6.1 Transport and unpacking

All products from are carefully checked prior to shipment. Please perform an incoming inspection immediately after delivery.

1. Check the delivery note to ensure that the consignment is complete.
2. Check whether the product shows any visible signs of damage.

**NOTICE**

<table>
<thead>
<tr>
<th>Damage during transport</th>
</tr>
</thead>
<tbody>
<tr>
<td>If the product was damaged during transport, please contact your carrying agent.</td>
</tr>
</tbody>
</table>

If return shipment is required, please use the original packaging for shipment.

To prevent damage to the unit, the stand must be removed during transport of the unit.

The unit is delivered in two packages for this reason.

6.2 Disposal of packaging materials

The packaging must be disposed of in compliance with the relevant national regulations. Please observe the regulations applicable in your country.

6.3 Scope of supply

The detailed scope of supply is specified in the document "Checklist".
6.4 Initial startup

6.4.1 Installation

When installing the system, make sure that there is enough space to allow proper operation.

- Position the computer so that the camera cable is long enough to reach the patient.
- There must be enough space behind the computer to ensure adequate ventilation. The ventilation openings on the back of the computer must not be covered.
- The power cable must be easily accessible so that it can be pulled out easily in an emergency.

Make sure that the environment fulfills the electromagnetic requirements (EMC) (Electromagnetic compatibility [→ 15]).

Bear in mind that portable and mobile HF communications devices (such as cell phones, Bluetooth, etc.) can interfere with electrical medical devices.

The system must not adjoin other units or be stacked with other devices. Should this be necessary, however, check that the system is functioning normally.

6.4.2 Controls and functional elements

Overview

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Main switch ON / OFF</td>
</tr>
<tr>
<td>B</td>
<td>Multi-touch screen</td>
</tr>
<tr>
<td>C</td>
<td>Camera</td>
</tr>
</tbody>
</table>
Camera

- A: Start or stop exposure
- B: Reset camera error

Rear side of the unit

- A: USB port
- B: Cable to camera heater
- C: Camera cable
- D: Power cable
- E: Ventilation grid
**Camera heater**

A Camera heater

**Fuses and Wi-Fi antennas**

A Main fuse  
B Heater fuse  
C Wi-Fi antennas

**Data interface**

⚠ **CAUTION**

Electric shock  
Do not touch the USB data interface and the patient at the same time.

⚠ **CAUTION**

Only use dead storage devices  
Only use dead storage devices with this unit. Dead storage devices include the USB stick for the camera, which is used to load the camera's calibration data, or other USB sticks for backing up data files. The use of other live or dead peripheral units is not permitted. Do not use any battery-operated storage devices or storage devices that are connected to the power supply.

A Data interface

The supplied USB stick contains camera coefficients, which are required when connecting the camera to the unit.
### Switching the unit on

**NOTICE**

Do not put the unit into operation at low temperatures!

If you move the unit to the operating site from a cold environment, condensation may form and result in a short circuit.

- Install the unit at room temperature.
- Wait until the unit has reached room temperature and is absolutely dry (for at least one hour)
- The unit is dry and can be put into operation.

**CAUTION**

Use only the supplied power cord

Use only the power cord supplied by Sirona to connect the acquisition unit to the power supply.

- The camera is connected to the unit.
- The unit is switched on at the main switch.

1. Press on the ON button (A).
   - **NOTICE!** Switching the unit off at the ON button during operation may cause data loss and PC malfunctions. Always switch the unit off as described in the chapter "Switching the units off".
   - The operating system is launched.

2. Start the APOLLO DI application by tapping the APOLLO DI button twice.

### Switching the unit off

**NOTICE**

Proper shutdown procedure

The operating system must always be shut down properly to prevent data loss.

1. Exit all programs.
2. Shut down the operating system via the Windows interface.
   - Press the ON button (A).
   - The unit goes into stand-by

   **Tip:** the unit is on stand-by and is still connected to the power. To disconnect the unit from the power supply, you have to pull out the power cable.
6.4.5 **Integrating the unit in a wireless network**

To connect the unit to the Internet, the unit is equipped with a wireless LAN adapter. The Internet connection enables you to transmit cases to the dental laboratory.

**IMPORTANT**

**Connection to the Internet**

Connecting to the Internet can entail risks for the unit or other units in the network, such as loss of data protection or malware.

The network operator is responsible for identifying, examining, and limiting these risks. This inspection must be carried out each time network settings are altered, units are removed or added, or network units are updated.

**Requirements for the wireless network**

- Practice network with Internet connection
  The Internet connection must be operated by an external Internet service provider.
- Internet connection with broadband speed, e.g. DSL, T1, or mobile telephony.

**Wireless network via Internet router**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Internet</td>
</tr>
<tr>
<td>B</td>
<td>Internet router</td>
</tr>
<tr>
<td>C</td>
<td>Wireless connection</td>
</tr>
</tbody>
</table>
Wireless network via existing practice network

![Diagram](image)

<p>| | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Internet</td>
<td>B</td>
<td>Internet router</td>
<td>C</td>
<td>Network switch</td>
</tr>
<tr>
<td>D</td>
<td>Access point</td>
<td>E</td>
<td>Wireless connection</td>
<td>F</td>
<td>Practice network</td>
</tr>
</tbody>
</table>

**Connecting the unit to the wireless network**

✔ The unit is switched on.

1. Tap the network symbol (A) on the Windows taskbar.
   - The list of available wireless network is displayed.

2. Tap the desired wireless network.

3. If necessary, enter the password and tap the "OK" button. Use the Windows keyboard to do this (Integrating the unit in a wireless network [→ 25]).
   - The unit is connected to the wireless network.

**Calling up the Windows keyboard**

1. Tap the left outer edge of the screen.
   - The edge of the keyboard is displayed.

2. Move the keyboard to the center of the screen.

You can move the keyboard on the screen. To do this, touch the top edge of the keyboard and drag it to the desired position.
6.4.6 Connecting the camera to the unit

The APOLLO DI camera was developed for use with APOLLO DI. It is not compatible with another unit.

The supplied camera is connected to the unit at the factory. You can connect the camera to the unit yourself if the camera has been replaced or it has not been connected.

Checking the connection

1. Check that the cable between the unit and the camera is connected.
2. Start the "APOLLO DI" software.
   - If the "Acquisition" phase remains inactive, check the camera connection and restart the software.

Making the connection

Check the connection before reconnecting the camera to the unit.

✔ When starting the software and applying the subsequent changes to the "Acquisition" phase, instead of the camera symbol, a question mark highlighted in red appears.

1. Connect the supplied USB stick to the unit.
2. Open Windows Explorer and navigate to the content of the USB stick.
3. Open the "binary" folder.
   - The contents of the "binary" folder are displayed.
4. Drag your finger over every file in the folder.
   - The contents are now selected.
5. Tap on one file and keep your finger pressed down on the screen.
   - The context menu opens.
6. Tap the "Copy" command.
7. Change to the "C:\Programs\Sirona\APOLLODI\2Dto3D" folder.
8. Tap the folder and keep your finger pressed down on the screen.
   - The context menu opens.
9. Tap the "Paste" command.
10. Remove the USB stick.
11. Restart the "APOLLO DI" software.
7 Operation

7.1 General

Test the system before starting an exposure. It must not be damaged. The system must be complete and ready for scanning.

Pay particular attention to the camera enclosure and the unit. It must not be damaged, distorted, or cracked. Cables and power cables must not be cut or damaged in any other way.

Prior to use

Check the camera prior to each use.

- The camera must be in good condition and must not show any visible signs of damage.
- The camera cable and the strain relief must not be frayed at the ends or damaged in any other way.

Do not use the camera if it is damaged. Do not repair the camera yourself. Contact your dealer if the sensor shows visible signs of damage.

Check the unit prior to each use.

- The unit must be in good condition and must not show any visible signs of damage.
  Check each side of the enclosure for cracks, deformation, or other signs of damage.

Do not use the unit if it is damaged. Do not repair the unit yourself. Contact your dealer if the unit, camera, or power cable show visible signs of damage.

⚠️ CAUTION

Injuries due to damaged units

Undetected damage to the unit or camera may cause injuries to the patient or user.

➢ Inspect the enclosure of the unit and camera properly.

IMPORTANT

Do not pull on the camera cable

Do not pull on the camera cable if it does not reach the patient.

➢ Check whether you can move the camera sufficiently prior to use.
➢ If necessary, reposition the unit.
7.2 Preparations

7.2.1 Preparing patients

Tooth surface

The surface of the preparation is captured with an especially fast and precisely functioning optical measuring technique. This measuring technique requires a non-glare, diffusely reflecting surface. The surface must be covered with a thin, opaque coating in order to obtain even light dispersion, exclude blinding effects and obtain clear surface definition. This is the precondition for a high-contrast image and good optical acquisition.

NOTICE

Thin and even coating

The accuracy of the scan is impaired if the contrast agent coating is too thick. If the contrast agent coating is too thin, the tooth is not sufficiently covered, making the scan difficult or impossible.

➢ Try to deposit as thin and even a coating as possible on all surfaces, especially in the edge and marginal regions.

7.2.2 APOLLO DI SpeedSpray

IMPORTANT

Read the Operating Instructions

Read the Operating Instructions enclosed with the product before using the "APOLLO DI SpeedSpray® contrast agent.

Use the APOLLO DI SpeedSpray aerosol spray as the contrast agent when using APOLLO DI.

1. Clean and dry the surface to be coated.
2. Place the spray head with cannula/nozzle onto the spray can.
3. Check that the cannula/nozzle is seated correctly before each use by pulling it gently.
4. Shake the container before use.
5. Cover the scanning area with the spray in a targeted manner. The cannula/nozzle can be rotated as required to enable optimal coating from all directions. Keep the can upright for this. The spray nozzle should be held approx. 10-15 mm away from the object.
6. Take an exposure with the camera as usual.
7. After taking the exposure, clean the surface with an air/water spray.
8. Replace the cannula/nozzle after each use.
7.2.3 Marking the cervical step

The cervical and lateral edges are coated from the proximal direction. If the cervical step is located at the same height as the edge of the gingiva, the spray may cover the borderline between these two structures.

This boundary can be marked again by running a fine probe along the step or laterally pulling a rubber cofferdam.

Before you start spraying, you can loosely insert dental floss and then carefully remove it again.

---

**CAUTION**

Dispose of contrast agent nozzle after use

The contrast agent nozzle must not be reused.

➢ You must dispose of the contrast agent nozzle correctly after each use.

---

**NOTICE**

Avoid applying too much or not enough coating. We recommend blowing the object clean with compressed air after spraying.

---

7.3 Preparing the camera

The APOLLO DI camera is a precision measurement tool and must be well protected during use, storage, and transport.

If the camera is used improperly or dropped, send the camera to Sirona for repair or replacement.

Before starting the scanning procedure, make sure that the camera has been cleaned and disinfected in accordance with the cleaning and disinfection instructions. Use a camera sheath.

The camera sheath is used once and then thrown away. It protects the camera body and makes cleaning and disinfection after the exposure easier.

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Product</th>
<th>Order Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>TiDi®</td>
<td>Single-use sheath</td>
<td>64 41 344</td>
</tr>
</tbody>
</table>
Using the camera sheath

1. Hold onto the sheath and insert the camera between the white flap and the protective foil. The optical side of the camera must face to the right.

2. Slowly guide the camera into the camera sheath until the camera head reaches the end of the sheath. Make sure that you do not push too hard and damage the camera sheath.
3. Pull the protective foil off.
4. Carefully push the camera towards the end of the sheath so that the sheath fits firmly.

**IMPORTANT**
The sheath only protects the camera body from dirt. The camera window is not covered by the sheath. The LEDs may be covered.

**CAUTION**
Follow the cleaning and disinfection instructions in order to avoid cross-contamination between patients.

**CAUTION**
Dispose of camera sheath after use
The camera sheath must not be reused.
➢ You must dispose of the camera sheath correctly after use.
7.4 Scanning with the camera

**CAUTION**

Hot surface!
The mirror sleeve of the camera is preheated in the camera holder (A). When removing the camera from its holder, the surface temperature of the mirror sleeve can be up to 51 °C. This may cause an unpleasant heat sensation on contacting a person's skin or mucous membrane. These temperatures will not damage anyone's skin or mucosal membrane.

After removing the camera from the camera holder, the temperature of the mirror sleeve drops within a number of minutes (< 2 minutes) to less than 43 °C. The camera is therefore suitable for use in the patient's mouth for an unlimited period of time.

If the patient is particularly sensitive to heat, allow the camera to cool down further.

Following use, always place the camera in the camera holder.

When switching on the system, the camera needs to warm up for 15 - 20 minutes. If the sapphire glass of the camera is not sufficiently warm, it may steam up during the exposure. As such, it is not possible to carry out the exposure.

**NOTICE**

Image brightness
The image brightness during the exposure is controlled automatically so that there is always optimum image brightness, largely independent of the distance between the camera and the tooth.

The surroundings of the tooth to be scanned should be as weakly illuminated as possible. Avoid any type of external light. Switch off the operating light.

**IMPORTANT**

Do not use cotton rolls in the scan area
Do not use any cotton rolls or other moving parts in the vicinity of the scan area.
Should any pieces of cotton roll contaminate this area, the acquisitions will be inaccurate.

Principle of data acquisition
For data acquisition, the 3D model is developed externally based on 3D data that has already been acquired. You cannot therefore scan a molar and then switch to an incisor if the 3D data between these two teeth is not scanned.

Rapid camera movements can cause the system to lose its position.

Therefore, do not interrupt the exposure area and guide the camera with smooth movements.
Preparing the exposure

✔ The teeth are blown dry and the APOLLO DI-SpeedSpray has been applied as described in the operating instructions.

1. Change to phase "Acquisition".

2. Press the black LED button to exit sleep mode and to activate the LEDs.
   - The camera is ready for scanning.
   - A live image appears which can be used to look around the patient's mouth.

3. Take the camera from its holder.

4. Position the camera over the relevant part for which an exposure is to be taken. **Important:** Do not start to take the exposure yet. Check whether the red error LED (D) on the edge of the bottom side of the camera is lit. If it is, press the button to reset the error (B). If the red error LED does not go out, proceed as described in the chapter "Troubleshooting [→ 39]".
   If you start the exposure before the camera has been positioned, the scanned areas cannot be aligned. This results in a scanning error and the procedure cannot be continued.
Scanning

The software starts automatically in the image catalog where the preparation is located.

1. Bring the camera on the occlusion into position and hold the camera still when pressing the white start/stop key (A) on the camera to start the scan.
   - During the continuous data acquisition, a 3D model is generated automatically on the screen. Use both windows on the screen to navigate. If the camera loses its position, the cross on the left of the exposure screen is highlighted in red. In this case, move the camera to any area which has already been scanned, preferably an occlusal surface. The scanning procedure continues.

2. Scan the occlusal surface first of all. For this scan rapidly from distal to mesial, e.g. from 47 to 43. Next tilt the camera 45 to 90 degrees before scanning the vestibular / buccal surfaces and the lingual or palatinal surfaces.
   - Avoid repeatedly scanning areas that have already been scanned.

3. To check during the scan whether all areas have been recorded, you can stop the scan via the black key on the camera (B) without causing the model to be calculated. To continue with the scan, press the black key on the camera (B) once again. The scanning procedure continues. If the powder layer has e.g. been applied through tongue exposure, you need to terminate the scan via the white Start/Stop key (A), respray and then start a new scan.

4. The preparation itself, as well as the proximal surfaces of the neighboring teeth, must be recorded completely. Decide how many you scan with the dental technician. When using virtual articulators in lab software, a scan up to the contralateral canine tooth is recommended. You can simply rescans any missing information. The software will reconcile the different scans with each other.

5. To end the scan, press the white key (A).

Tip: Do not scan a full jaw in one go, but divide it up into 2-3 sub-scans. There must be a sufficient overlap between the scans in order for the individual sub-scans to be reconciled. 2-3 teeth generally suffice as an overlap.

Checking the model for completeness

Make sure that the entire surface of the prepared tooth has been scanned and incorporated into the 3D model.

As you are unable to work with the 3D model during the exposure, check the model afterwards as follows:

1. Take the camera out of the mouth and press the black button to switch off the lights.
2. Carefully check the 3D model for completeness by rotating, moving, or changing the size of the model.
3. If the 3D model is incomplete, switch the lights in the mouth on using the black button.
4. Take more exposures.
### Scanning the opposing jaw

1. Select the image catalog for the opposing jaw.
2. Scan the occlusal, buccal, and lingual areas of the opposing jaw. Scan tooth by tooth from distal to mesial, as with scanning the preparation. Tilt the camera and avoid scanning large loops.
3. Tap the “Stop Scan” button to end the scanning procedure.
   - Tap the “Pause Scan” button to interrupt the scanning procedure.
   - The program calculates the data.

### Scanning the buccal area

1. Select the buccal image catalog.
2. Scan the buccal area of the upper and lower jaw with the jaw closed.
3. Scan 3-4 teeth with the gingival section.
4. Tap the “Stop Scan” button to end the scanning procedure.
   - Tap the “Pause Scan” button to interrupt the scanning procedure.
   - The program calculates the data.

### Editing exposures

If you have taken several exposures for the same jaw, these exposures are merged to create one 3D model.

You can edit the individual exposures, for example, you can assign them to another jaw, cut them, or delete them.

The editing functions are described in the Image catalog section.

### Proceeding with the scanning procedure

1. Press the “Start Scan” button.
   - The scanning procedure begins.
2. Proceed with the scanning procedure as described above.
8 Maintenance

8.1 General maintenance

**WARNING**

Danger of touching live parts

If the housing is damaged, there is a possibility of touching live parts inside the unit. If the housing is damaged, the unit must be put and left out of operation until it has been professionally repaired.

**NOTICE**

Regular inspection

Some countries have legal regulations which require regular safety inspections of electrical devices or systems by the operator.

Sirona would like to draw your attention to the fact that a so-called "retest" (repeat test) must be carried out for the APOLLO DI acquisition unit every three years at the latest.

8.2 Cleaning and care

8.2.1 Surfaces

**Cleaning**

**NOTICE**

Do not allow liquids to penetrate into the ventilation slots!

➢ Do not use any wet cloths.

**NOTICE**

Never use corrosive cleaning agents, wax or solvents.

Clean the unit regularly using a soft cloth moistened with water.

Do not use any colored cloths for cleaning, since they may cause discoloration of the surfaces, e.g. in combination with disinfectants!

**Protection against medicaments**

Due to their high concentrations and the substances they contain, many medicaments can dissolve, etch, bleach or discolor surfaces.

**NOTICE**

The only way to prevent damage is to wipe off medicaments immediately with a damp cloth and a cleaning agent!
8.2.2 Camera

The APOLLO DI is a very sensitive optical device and must therefore be handled with the utmost care. Protect the camera window against scratching and clean it with a lint-free rag.

The camera is cleaned and disinfected in two stages:

1. Cleaning
2. Disinfecting

The camera can be removed from the unit to make cleaning and disinfecting easier.

<table>
<thead>
<tr>
<th>CAUTION</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>After each use</strong></td>
</tr>
<tr>
<td>Clean and disinfect the camera after each patient.</td>
</tr>
<tr>
<td>➢ Follow the instructions on cleaning and disinfection in order to avoid cross-contamination between patients.</td>
</tr>
</tbody>
</table>

Cleaning the camera

✔ Remove the camera sheath and dispose of it in accordance with the regulations.
1. Prepare the disinfectant in accordance with the manufacturer's instructions.
2. Immerse a clean, soft cloth into the prepared solution.
3. Wring out the cloth until it is only damp.
4. Wipe the surfaces using the cloth.
5. Rinse the cloth using clean tap water.
6. Wring out the cloth until it is only damp.
7. Wipe the surfaces using the cloth.
8. Dry the camera using a clean, soft cloth.
9. Inspect the camera for any visible signs of contamination. Repeat the cleaning process if necessary.

Disinfecting

✔ The camera has been cleaned.
1. Prepare the disinfectant in accordance with the manufacturer's instructions.
2. Immerse a clean, soft cloth into the prepared solution.
3. Wet all surfaces and allow the solution to take effect for 10 minutes.
4. Moisten a clean, soft cloth with tap water.
5. Wipe all surfaces using the cloth.
6. Rinse out the lens area with approx. 1 liter of deionized water.
7. Dry the camera using a sterile cloth.
Sterilizing

**CAUTION**

If the camera is dropped accidentally, check whether the camera window is damaged. If the camera is damaged, it must no longer be used on patients.

The camera must be recalibrated.

**NOTICE**

Not sterilizable!

Do not sterilize the camera or the video cable!

---

8.2.3 Care and cleaning agents

**NOTICE**

Approved care, cleaning, and disinfecting agents

Use only care, cleaning and disinfecting agents approved by Sirona!

Approved care and cleaning agents

<table>
<thead>
<tr>
<th>Not approved in the USA</th>
<th>Approved in the USA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dürr</td>
<td>Biotrol</td>
</tr>
<tr>
<td>• FD 312</td>
<td>• Birex SE®</td>
</tr>
</tbody>
</table>
## Troubleshooting

<table>
<thead>
<tr>
<th>Problem</th>
<th>Possible solution</th>
</tr>
</thead>
</table>
| Unit cannot be turned on.                                               | ● Check whether the power cable is plugged in.  
● Press the unit's ON/OFF switch.  
● If the problem persists, disconnect the unit from the power supply and check the fuses. |
| The camera heater does not heat.                                        | ● Check whether the camera is connected correctly.  
● Check the heater's fuse.                                                                                                                              |
| The fuse has blown.                                                     | NOTICE! Replacing the fuse may cause damage to the unit.  
● Switch the unit off and disconnect it from the power supply.  
● Have the fuse replaced by trained, specialist personnel or a service engineer.                                                                   |
| Only applies to the APOLLO DI Connect software: If the "Acquisition" phase remains inactive. | ● Check the camera connection and restart the software.                                                                                              |
| The exposure cannot be performed.                                       | ● Check whether the software is displaying the "Acquisition" phase.  
● Check whether the camera is switched on.  
● Check whether the camera is indicating an error.  
● Press the Start/Stop button on the camera. The camera may only be switched on when it is positioned over the dental area concerned.  
● Check whether the teeth are covered with APOLLO DI SpeedSpray in line with the instructions.                                                                 |
<table>
<thead>
<tr>
<th>Problem</th>
<th>Possible solution</th>
</tr>
</thead>
</table>
| Camera indicates an error (red LED on the bottom edge of the camera). | • Press the button to reset the error on the camera.  
• If the error persists, wait 5 minutes and then press the button to reset the error once again.  
• If the error persists, switch the unit off and restart it. |
| No connection can be established to the Internet portal. | • Check the connection to the wireless network.  
• Check the Internet connection.  
• Restore the connection to the wireless network if necessary (see Integrating the unit in a wireless network [→ 24]).  
• Briefly disconnect the wireless network router from the power supply. Restart APOLLO DI. |
10 Disposal

In accordance with Directive 2012/19/EU and national disposal regulations regarding old electrical and electronic devices, please be advised that such items must be disposed of in a special way within the European Union (EU). These regulations require environmentally friendly usage/disposal of old electrical and electronic devices. Such items must not be disposed of as domestic refuse. This has been expressed using the icon of the “crossed out trash can” since March 24, 2006, amongst other methods.

Disposal procedure

We feel responsible for our products from the first idea to their disposal. For this reason, we give you an option to return our old electronic and electrical devices.

If you wish to dispose of your devices, please proceed as follows:

In Germany

To initiate return of the electrical device, please send a disposal request to enretec GmbH. You have the following options here:

- Use the “Returning an electrical device” button under the “eom” menu item on the enretec GmbH homepage (www.enretec.de).
- Alternatively, you can also contact enretec GmbH directly.

enretec GmbH
Kanalstraße 17
16727 Velten
Tel.: +49 3304 3919-500
E-Mail: eom@enretec.de

In accordance with the national disposal regulations regarding old electrical and electronic devices (ElektroG), as the manufacturer, we assume the costs for disposing of the electrical and electronic devices in question. Disassembly, transport and packaging costs shall be borne by the owner/operator.

Prior to disassembly/disposal of the product, it must be fully prepared (cleaned/disinfected/sterilized).

If your unit is not permanently installed, it will be collected from the practice. If it is permanently installed, it will be picked up curbside at your address by appointment.

Other countries

For country-specific information on disposal, contact your local dental dealers.
We reserve the right to make any alterations which may be required due to technical improvements.