

97050263  
rev. 002  
02/2013

**CE 0051**

## Instructions for use



ENGLISH (translation from the original in italian)

Blank page

## **Table of Contents**

<b>Introduction</b>	<b>5</b>
Conventions used in this manual .....	6
General warnings .....	6
Warning for use .....	7
Safety and hygiene .....	8
Maintenance and disposal .....	9
Warranty .....	10
Limited responsibility .....	10
Standards and classifications .....	10
Package contents and product parts .....	11
<b>Product identification</b>	<b>13</b>
Intraoral Scanner .....	14
Power supply .....	15
<b>Scanner system characteristics</b>	<b>17</b>
Environmental characteristics .....	18
Scanner characteristics .....	18
Power supply characteristics .....	18
Optical characteristics .....	18
Scanner holder .....	18
USB .....	19
Personal computer (optional) .....	19
<b>Cleaning and disinfection</b>	<b>21</b>
Applying the disposable hygienic protections .....	23
Warnings for disposal .....	24
<b>Preparing for use</b>	<b>25</b>
<b>Using the scanner</b>	<b>29</b>
<b>Troubleshooting</b>	<b>31</b>

Blank page

# 1

# Introduction

- **Conventions used in this manual**
- **General warnings**
- **Warnings for use**
- **Safety and hygiene**
- **Maintenance and disposal**
- **Warranty**
- **Limited responsibility**
- **Standards and classifications**
- **Package contents and product parts**

## INTRAORAL SCANNER - *Instructions for use*

The intraoral scanner is a portable medical device capable of three-dimensional scanning of dental arches generating a digital imprint better than a conventional silicon/alginate/hydrocolloid imprint in terms of marks, precision and accuracy. Thanks to a sophisticated optical system it allows obtaining a digital imprint of:

- stumps (after preparation), single crowns, 3, 4 or 5-element bridges;
- complete dental arches (for orthodontics);
- abutment from scanning for implant repositioning.

### Conventions used in this manual

Throughout this manual the term scanner will be used both to identify the handpiece and the 3D scanning system as a whole (the product), depending on the context. The following abbreviations are also used:

PC: Personal Computer

3D-Progress: technical product name, also referred to as scanner

MHT: Medical High Technologies S.p.A. a socio unico, Verona (VR), Italy – also referred to as the manufacturer

USB: Universal Serial Bus (data transfer system from devices to PC)

LAN: Local Area Network (PC)

W-LAN: Wireless LAN

### General warnings

- The intraoral scanner (system) and the relative software and drivers are developed and manufactured by MHT, Verona (IT), hereinafter referred to as the manufacturer.
- These instructions describe how to correctly and safely use the scanner. In order to use the scanner system, you need image acquisition and storage software. For software installation and use refer to the relative manual code 97050264. Please carefully read both manuals before starting to use the scanner.
- The purpose of scanning is to acquire and display digital imprints, similar to what was traditionally done with resin moulds. This operation does not in any way affect the diagnostic examination, which is assumed to have been carried out at the time the imprint is acquired, nor the subsequent treatment, such as prosthesis application, implants or orthodontic treatments which are decided and carried out by the orthodontist.
- No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without the prior permission of the manufacturer.
- MHT pursues a policy of continual improvement of its products, therefore, some specific instructions and images contained in this manual may differ from the product purchased. MHT reserves the right to make any modification to this manual without prior notice.
- The information, technical specifications and illustrations contained in this publication are not binding. The manufacturer reserves the right to make technical modifications and improvements without modifying these instructions.
- Warning: in observance of the privacy laws in force in numerous countries, suitably protect sensitive personal data and, moreover, before sending patient images or personal data via computer, informed consent must be obtained from the patients.
- The original text of this manual is in Italian.
- All the registered trademarks and the product names mentioned are the property of the respective owners.

Please pay particular attention to the sections in the manual where the following symbols appear:



Warnings regarding patient or operator safety.



Warnings regarding the risk of damaging the product, and particularly important warnings regarding the warranty.

## Warnings for use

- Electronic equipment may cause and suffer from interferences when used in proximity of other electromagnetic equipment, in particular mobile phones, personal computers equipped with W-LAN cards, microwave ovens. Avoid keeping the scanner and the PC intended for acquisition and storage of the scans in proximity of RF sources, such as W-LAN cards, other radio devices, home RF devices, microwave ovens; the recommended distance is at least 1 metre and at least 2 metres in the case of microwave ovens.
- It is recommended to install an up-to-date firewall and antivirus protection program on the PC and to use it exclusively for work purposes.
- In the event of malfunctioning of the PC during an intraoral scan (software or operating system crash or PC failure) the scan in progress will be interrupted and it might be impossible to retrieve it. Previous scans saved to the PC (database) will normally not be lost; nevertheless, if the damage to the PC is serious (mainly to the hard disk or the operating system in general) the scans saved might not be usable or viewable. It is advisable to regularly make backups of the scans you have made, keeping the backup of the database (or databases) on the PC up to date on secure and controlled mediums.
- For installation of the other system components (PC network, personal data storage and management software), it is advisable to contact specialised technicians.
- The USB connection the scanner uses is not a normal electrical connection, but requires specific USB 2.0 cables (recognisable by the marking USB 2.0 Hi-speed, see "Product identification"). The cable is type "A-B" (provided).



The 3D image acquisition system uses a fragile optical system sensitive to impact. Be very careful not to drop it during use or when housing it in its seat. Should the optical window break, the device becomes unusable.



The scanner can pick up relatively weak signals, therefore particularly intense electromagnetic disturbances may interfere with image acquisition. The scanner transmits the acquired images to the PC in real-time where they are processed and stored. Therefore, in the event of interferences, just restart the scanner to continue the acquisition without any risk to the patient or the operator, the only disadvantage being that the procedure will be completed with a few seconds' delay.



- The power supply and the PC generate heat, therefore, they should be used in a relatively ventilated position (not closed in a cabinet) ; pay particular attention to the support surface; use only hard and clean surfaces and avoid carpeting, mats, etc.
- Always use the key switch to turn off the scanner when it is not used and remove the key from the power supply to prevent unauthorised persons from using the instrument.
- Do not turn off the scanner during scanning; if you need to interrupt work, use the buttons on the scanner handpiece.
- Never disconnect the scanner cable from the power supply without first turning it off using the key, as you risk seriously damaging it.
- The warranty does not cover faults caused by tampering, improper use and evident negligence in use of the product.

## INTRAORAL SCANNER - *Instructions for use*

### Safety and hygiene

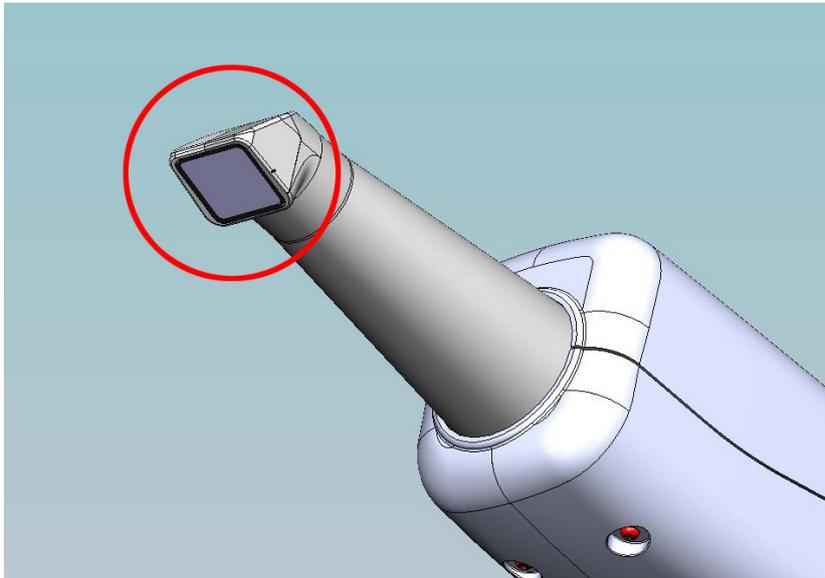


**Warning!** The scanner is a medical device for digital acquisition of dental imprints. It may only be used by qualified odontological staff. Do not use the system for purposes other than acquisition of endoral scans, and do not use it if you do not have the necessary knowledge in the odontological field.



**Warning!** In accordance with the 60825-1 standards, the device is a product containing an infrared laser. Infrared radiation is invisible to the human eye and for this reason might be dangerous. **Scrupulously follow the safety instructions below.**

- The instrument does not directly emit a laser beam (even though it contains a laser source). The outer casing of the instrument blocks light radiation emission, except through the acquisition window. This window is positioned at the front of the instrument circled red in the image below. Radiation is emitted only during scanning, i.e. from the moment you press the Start/Stop button to the moment when you press it again; this will be indicated by a yellow LED on the device keypad coming on.



- Always use safety goggles. Safety goggles must be worn by the operator, the assistant and the patient (and any other person in the room where the instrument is used) throughout acquisition. The goggles must have an optical density of at least 1, specifically for use with infrared sources (808 nm)
- Performing procedures different from those specified in this manual may cause exposure to dangerous levels of radiation.
- For any reason do not try to open the scanner casing.



**In order to prevent transmission of infectious diseases from patient to patient, it is essential to always use the disposable protections provided. The disposable protections are classified as Class IIa medical device and may not be replaced with others in a lower class. For spare disposable protections, contact the dealer that supplied the scanner. It is also essential to disinfect the product as described in the section "Cleaning and disinfection".**

- Cover all the components that will come into contact with the hands of the odontological staff with disposable protections, as they might be contaminated by indirect contact with the patient's mouth. In particular, be careful how you handle the mouse, keypad, PC and scanner handpiece.

- Some parts (USB cable, parts of the packaging, power cable) might cause suffocation if ingested or used improperly. Do not use improperly and keep away from children.
- Not suitable for use in the presence of flammable anaesthetic gas mixed with air, oxygen or nitrous oxide.
- Exclusively use the power supply provided with the device in compliance with the IEC 60601-1 standards.
- Even though the electromagnetic field irradiated by the instrument is insignificant, it is advisable NOT to use the product in proximity of life support equipment (e.g. pacemakers or heart stimulators) and hearing aids. Before using any electronic device in health facilities, always ascertain that it is compatible with the other equipment present.
- The PC used in connection with the scanner must be in conformity with standards IEC 60601-1, or IEC 60950 with insulation.
- Electric system where the device is installed must be in conformity with IEC 60364-7-710 standards.



**Warning! No part of the instrument requires maintenance by the user. Do not attempt to access the internal parts of the instrument or the power supply for any reason whatsoever. This may damage the delicate internal parts and expose you to serious risks (dangerous laser radiation and dangerous electrical voltage) and will make the warranty null and void.**

## Maintenance and disposal

- If you find or suspect any system malfunction, or should the casings be open, do not use the scanner on a patient and return it to the manufacturer or a Technical Service Centre. The device does not contain any parts that can be repaired by the user. In the event of a malfunction, do not attempt to carry out maintenance operations, but directly contact the manufacturer or his local distributor at the numbers indicated in the warranty certificate. If you need to return the device to the manufacturer or a Technical Service Centre, disinfect all the outer parts of the device using a specific product (see the section “Cleaning and disinfection”) and preferably return it in its original packaging.
- At the end of its lifetime, dispose of the device in accordance with the regulations in force. Given that there is a possibility of cross infections, disinfect all the outer parts of the device before disposal and separate the materials for differentiated waste collection.
- In accordance with Directives 2002/95/EC, 2002/96/EC 2003/108/EC, regarding reduced use of dangerous substances in electrical and electronic devices as well as waste disposal, do not dispose of the devices in the household waste but collect them separately. When you purchase a new device of equivalent type, the device that has come to the end of its lifetime must be returned to the distributor for disposal. As regards reuse, recycling and other forms of recovery of the above mentioned waste, the manufacturer performs the functions defined by the individual national legislations. Appropriate differentiated waste collection for subsequent recycling, treatment and disposal respectful of the environment contributes to preventing possible negative effects on the environment and health and encourages recycling of the materials of which the device is made up. The crossed-out bin symbol on the device indicates that the product must be collected separately from other waste at the end of its useful life. Abusive disposal of the product is liable to a fine as laid down in the individual national legislations.

## INTRAORAL SCANNER - *Instructions for use*

### Warranty

The manufacturer guarantees the safety, reliability and performance of the devices. The warranty is conditional on compliance with the following rules:

- **Observance of the conditions stated on the warranty certificate.**

The device must be used exclusively in accordance with the instructions given in this instruction manual.

Installation, repairs, calibration and in general all the operations that require opening the device covers must be carried out exclusively by technicians authorised by the manufacturer.



**WARNING! The manufacturer declines all responsibility for damage to persons and things if failing to observe this clause.**

### Limited responsibility

Under no circumstances will the manufacturer or its suppliers be responsible for direct or indirect damage (including damage for loss or failed earnings or savings, interruption of the activity, loss of information or data and other economic losses) to the user or third parties deriving from use or failed use of the software, even if the manufacturer has been notified of the possibility of such damage.

This limit of responsibility is applicable not only in cases where the software is not used according to the procedures indicated by the manufacturer, but also if the software is used in accordance with the instructions.

### Standards and classifications

The scanner is an optical system for three-dimensional scanning of dental arches classified in Class I in accordance with the CEI EN 60601-1 standards and Class IIa in accordance with the Medical Device Directive. The scanner and its accessories have been designed and constructed in conformity with the following standards:

93/42/EEC and subsequent amendments	Medical Device Directive.
IEC 60601-1	General requirements for safety of electromedical devices. Device designed to operate in the climatic conditions typically found in closed working environments in compliance with this standard.
IEC 60601-1-2	Electromedical devices: Electromagnetic compatibility – Requirements and tests.
IEC 60878	Graphic symbols for electromedical device functions.
UNI CEI EN ISO 14971	Medical devices – Application of risk management to medical devices.
IEC 60825-1	Safety of laser devices – Device classification and safety requirements.

Class IIa medical device in accordance with Directive 93/42/EEC and subsequent amendments.

Class 1 device with applied part type B in accordance with IEC 60601-1.

Class 3R invisible laser source in accordance with IEC 60825-1.

Neither the scanner (handpiece) nor the power supply are protected against penetration of liquids (IPX0 degree of protection).

Not suitable for use in the presence of flammable anaesthetic gas mixed with air, oxygen or nitrous oxide.

The device is suitable for continuous operation.

In compliance with the European and American regulations for electrical safety and electromagnetic interferences; therefore, it does not generate dangerous electromagnetic interferences and is not disturbed by the

emissions generated during operation of other devices.

**Package contents and product parts**

	<p><b>WARNING:</b> The package is made up in stacked layers. Check that you have taken out all the components before disposing of the packaging.</p>
	<p>Intraoral scanner.</p>
	<p>Power supply for intraoral scanner.</p>
	<p>Scanner holder.</p>
	<p>CD-ROM with software and drivers.</p>
	<p>USB 2.0 Hi-Speed® cable.</p>
	<p>Package of disposable hygienic protections.</p>
	<p>Warranty certificate.</p>
	<p>Declaration of conformity.</p>
	<p>Mains power cable (according to the destination country).</p>

## INTRAORAL SCANNER - *Instructions for use*

---

**Component parts of the medical device:**

- Scanner handpiece;
- Power supply interface;
- Reconstruction software.

**Accessories supplied with the product that do not form part of the medical device:**

- Power connection cable;
- USB cable;
- An adequate first supply of disposable hygienic protections;
- A tabletop handpiece holder.

**External parts required for the system as a whole that do not are part of the medical device and are not provided with the product:**

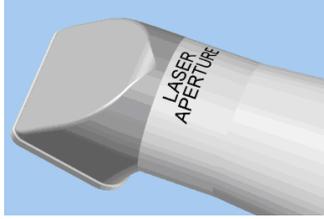
- Personal computer.

# 2

# Product identification

- **Intraoral scanner**
- **Power supply**

**Intraoral scanner**



The light radiation (laser) output window is indicated on the front of the handpiece (marking as an alternative).



The product identification symbols are indicated on the lower part of the scanner:

<b>XXXX XXXX</b>	Product identification serial number.
	Symbol: applied part type B.
	Symbol: dispose of the product in compliance with Directive 2002/96/EC.

**Power supply**



- The power supply is equipped with a key control to prevent unauthorised persons from using the instrument.
- Exclusively use the power supply provided with the product.



The product identification symbols are indicated on the lower part of the scanner power supply interface:

MHT SPA a socio unico, Via E. Fermi 22, 37135 Verona - ITALY	Name of the manufacturer and place of manufacture.
3D PROGRESS	Industrial product name.
Made in Italy	Country of manufacture.
Input: 100-240V 50/60 Hz 1.1-1.8A	Operating voltage and frequency and current absorbed.
Output: 12V  8.0 A	Output voltage and current (handpiece power supply).
	Warning: read the instruction manual.
<b>CE 0051</b>	Device in compliance with the requirements laid down in Directive 93/42/EEC and subsequent amendments.
SN xxxxxxx	Serial number .
	Date of manufacture (month/year).

The following is indicated on the front of the power supply:

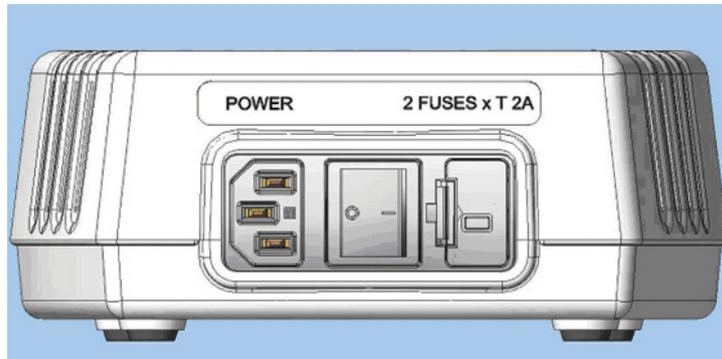
	Identification of the handpiece connector .
---	---

# INTRAORAL SCANNER - Instructions for use

# 2 Identification

	Identification of the connector for the USB cable to be connected to the PC.
	Warning: read the instruction manual.
	Key switch open.
	Key switch closed.
	Label with safety indications relating to the radiation emitted by the handpiece in compliance with IEC 60825-1.
	"Danger! Laser" label in conformity with IEC 60825-1.

The power connections are found on the rear of the power supply:



POWER	Connection for a power cable in compliance with IEC320-C13. For Europe: the cable must be in compliance with IEC 60601-1. For USA/Canada: the cable must be in compliance with CSA22.2 no.601.1-M90 + UL60601-1.
O I	Main power switch.
2 FUSES x T 2A	Main fuse identification: if necessary, replace the fuses only with ones of the same type.

The USB cable is marked with the following symbols:

	USB connection.
	Cable in compliance with USB 2.0 Hi-Speed standard.

# 3

# Scanner system characteristics

- **Environmental characteristics**
- **Scanner characteristics**
- **Power supply characteristics**
- **Optical characteristics**
- **Scanner holder**
- **USB**
- **Personal computer (optional)**

# INTRAORAL SCANNER - *Instructions for use*

The scanner has been designed to operate in the climatic conditions typically found in closed working environments in compliance with the IEC 60601-1 standards.

## Environmental characteristics

Operation:

- temperature  $+10^{\circ}\text{C} \div +35^{\circ}\text{C}$ ;
- RH humidity between 20% and 90%;
- Atmospheric pressure  $500 \div 1060$  hPa;

Storage:

- Temperature  $-10^{\circ}\text{C} \div +50^{\circ}\text{C}$ ;
- RH humidity between 0% and 100%;
- Atmospheric pressure  $500 \div 1060$  hPa.

## Scanner characteristics

- Power supply: by means of the specific power supply provided, 12VDC, max. 8A.
- Dimensions: 295 x 45 x 55mm (LxHxW).
- Weight: 720g excluding cable.
- USB: USB 2.0 High Speed.
- Native image: three-dimensional cloud of points.
- Export format: STL file.
- Optical window temperature (anti-misting):  $42^{\circ}\text{C} \pm 2^{\circ}\text{C}$ .
- Combined confocal microscopy with Moiré effect recognition.
- SmartPixel sensor.
- Special aspheric lenses.
- Single-frame acquisition time less than 1/10 of a second.
- Typical scanning speed: 14 scans/second.
- Real Time Stitching of the individual frames.
- Resolution (pixel) on the sensor: 144 x 90.
- Pixel size: 50 x 86 $\mu\text{m}$ .
- Resolution on the object (XxY): 66 $\mu\text{m}$  x 120 $\mu\text{m}$ .
- Scanning area (on the object-XxYxZ): 9.6 mm x 10.4 mm x 18 mm.

## Power supply characteristics

- Specifically for the intraoral scanner, it includes a power supply and USB interface.
- Mains voltage and current: universal power supply, 100-240 VAC, 50/60 Hz, 1.1-1.8 A.
- Output voltage and current: 12VDC -8.0 A
- Power cable type IEC320-C13 with plug according to the destination country.
- Weight: 1200 g.
- USB: USB 2.0 High Speed.

## Optical characteristics

- Invisible laser source in accordance with IEC 60825-1: class 3R.
- Power output: < 90mW.
- Emitted radiation wavelength: 808 nm.
- Protective goggles: Minimum optical density (OD) 1.
- Continuous emission during scanning.
- Beam with divergence (semi-angle) of 15°.

## Scanner holder

The tabletop holder provided is useful to put the scanner handpiece on when it is not operating. The holder must be positioned on a stable horizontal surface that guarantees safety against accidental dropping of the scanner.

### USB

- Standard USB cable type “B” - “A”.
- In compliance with the standard: USB 2.0 HIGH SPEED.
- Maximum length (without line amplifier hub): 4.5 metres.

### Personal computer (optional)

For the minimum requirements of the PC and the relative operating system, refer to the software manual code 97050264.

Blank page

# 4

# Cleaning and disinfection

- **Applying the disposable hygienic protections**
- **Warnings for disposal**

Cleaning is the first step necessary in any disinfection process.

The physical action of rubbing a surface with detergents and surface-active agents and rinsing with water removes a large number of microorganisms. If a surface is not cleaned first, the disinfection process cannot be successful.

When a surface cannot be adequately cleaned, it should be protected with barriers.



**WARNING!** The container of the electronic interface is not protected against penetration of liquids.

The outer parts of the device must be cleaned and disinfected using a product for hospital use with indications for HIV, HBV (low-level disinfectant) or tuberculocide (medium-level disinfectant) specifically for small surfaces. For use, follow the manufacturer's instructions.

The large variety of drugs and chemical products used in dentist's surgeries may damage the painted surfaces and the plastic parts. The tests and research conducted have demonstrated that the surfaces cannot be fully protected against attack of all the products found on the market. The aggressive effects of chemical products also depend on the time they stay on the surfaces. It is therefore important not to leave the product on the surfaces of the device for longer than the time indicated by the manufacturer.

Given the aggressiveness of the active ingredients used in disinfectants, it is recommended to use products that at maximum contain:

- **96% ethanol.** Concentration: maximum 30 g for every 100 g of disinfectant;
- **Propanol.** Concentration: maximum 20 g for every 100 g of disinfectant;
- **Combination of ethanol and propanol.** Concentration: the combination of the two must be at maximum 40 g for every 100 g of disinfectant.

The manufacturer has performed compatibility tests between the main disinfectants available on the market and the plastic materials used in the manufacture of its products.

The following products proved to be the least aggressive:

- Incidin Spezial ( Henkel Ecolab );
- Omnizid (Omnident);
- Plastisept ( ALPRO )(non- tuberculocide as not alcohol-based);
- RelyOn Virkosept (DuPont);
- Green & Clean SK ( Metasys )(non-tuberculocide as not alcohol-based).

These tests demonstrated that the above mentioned products can be used, provided that the following warnings are observed:



**WARNING!**

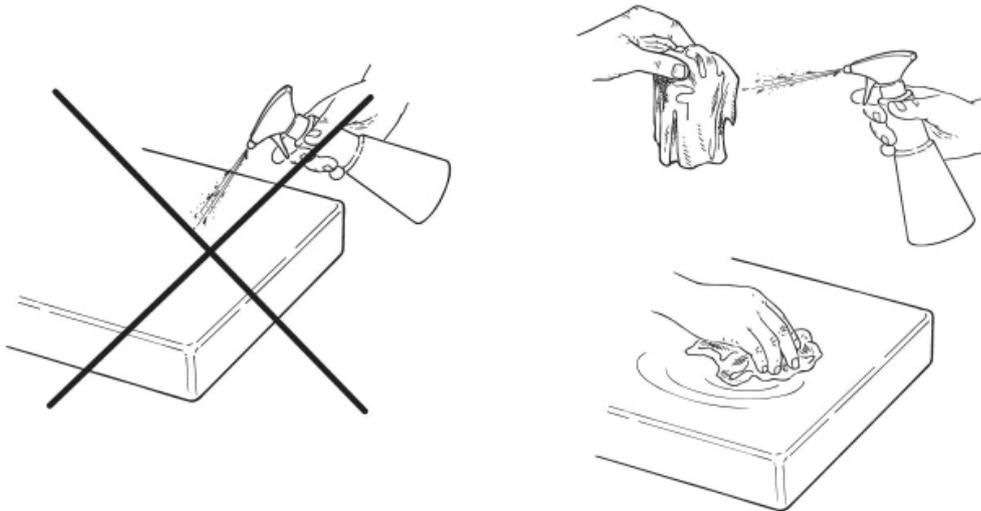
- Do not use products containing isopropyl alcohol (2-propanol, isopropanol).
- Do not use products containing sodium hypochlorite (bleach).
- Do not use products containing phenols.
- Do not spray the product directly on the device surfaces.
- Do not mix the above mentioned products with each other or with different liquids.
- Whatever product you use, follow the instructions given by the manufacturer.

### Cleaning and disinfection:

For cleaning and disinfection use disposable, soft, non-abrasive paper (do not use recycled paper) or sterile gauze.

Sponge cloths or any other re-usable materials are not recommended.

Never spray directly onto the surfaces, but moisten a soft cloth and use it to clean the surfaces of the device.



**WARNING!**

- To clean devices connected to the mains power supply, turn off the devices and disconnect the power supply before carrying out the cleaning and disinfection operations of the outer parts.
- Everything used for cleaning and disinfection must be thrown away after use. Dispose of the materials in accordance with the regulations in force.

**Applying the disposable hygienic protections**

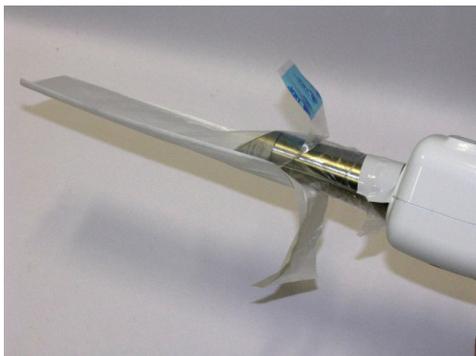


**Warning:** In order to prevent transmission of infectious diseases from patient to patient, it is essential to always use the disposable protections provided. The disposable protections are a Class IIa medical device and must be in compliance with the ISO10993-1 standards on biocompatibility. The disposable protections may not be replaced with others of inferior characteristics.

Place a disposable protection complete with its protective peel-off film on a flat surface. Insert the instrument in the disposable protection and push its tip to the bottom of the protection.



Remove the protective peel-off film.



The operation is now complete. When finished discard the disposable protections in “special” waste bins.



**Warning:** For proper functioning of the device, the protection must perfectly adhere to the surface of the optical window and may not have any wrinkles.



### Warnings for disposal

For disposal of intact containers of the disinfectant used, follow the manufacturer's instructions. Do not dump the product in the public sewerage and/or waterways.

# 5

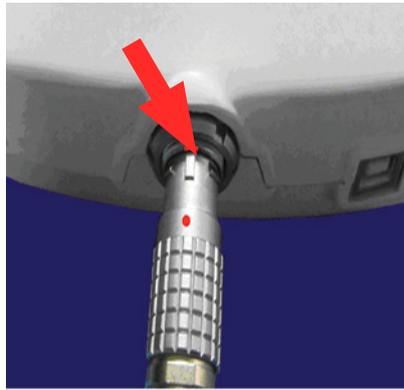
# Preparing for use

## INTRAORAL SCANNER - Instructions for use



**WARNING!** Before using the intraoral scanner for the first time, you need to install the software provided and the relative USB drivers. For no reason whatsoever connect the instrument to the PC before having installed the USB drivers.

The scanner is equipped with a dual-function cable: power supply and USB transfer. The cable leading from the instrument must be inserted in the power supply as shown in the photo.

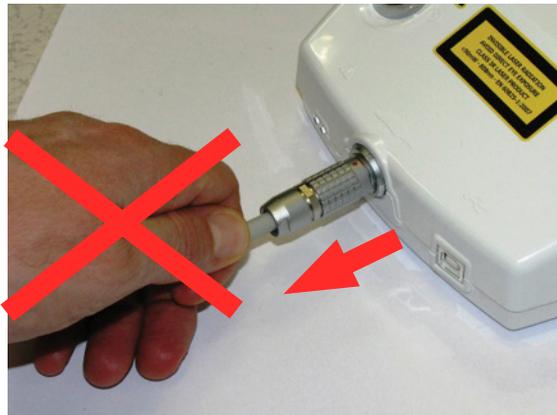


Position the red dot on the male connector (of the handpiece) so that it lines up with the red mark of the female connector (on the power supply).



**WARNING!**

Do not connect/disconnect the handpiece connector with the power supply on and do not pull on the cable as shown in the photo below to disconnect the handpiece:

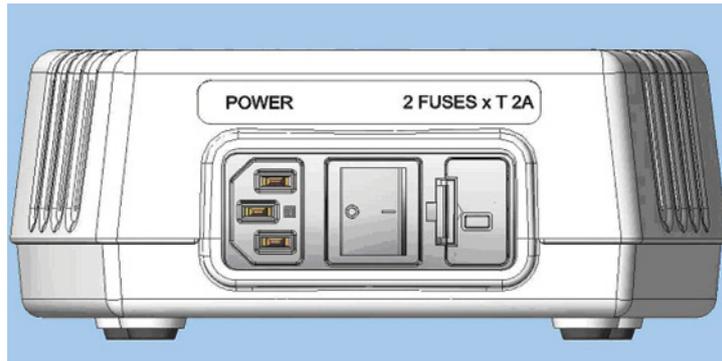


To remove the connector, slightly push the knurled body of the male connector backward to release it from the female connector.

The power supply must be connected to the mains using the power cable provided (as shown in the photo) after selecting the cable suited to the power sockets in your surgery.

5

Preparing



The power supply also has a USB port: connect the USB cable to the power supply and the PC as shown in the photo.



Blank page

# 6

# Using the scanner

## INTRAORAL SCANNER - Instructions for use

Use of the scanner is closely tied to the 3D image acquisition software.

- 1) Check that the power supply is connected to the mains with the dedicated cable and that it is connected to the USB port of the PC with the USB cable provided;
- 2) Check that the handpiece cable is properly connected;
- 3) Turn on the power switch on the rear of the power supply;
- 4) Insert the key in the front panel of the power supply and turn it clockwise. The key can only be removed when the switch is open (power supply off);

	Key switch open (OFF).
	Key switch closed (ON).

- 5) If everything is working properly, the green LED on the front panel of the power supply should come on and a few seconds later the blue LED. The green LED indicates that the handpiece is powered. The blue LED indicates that the USB connection has been established;
- 6) Put on protective goggles and have everyone in the room (patient, assistant, etc.) put them on;
- 7) Apply the disposable hygienic protection on the front of the handpiece as described in 4 above;
- 8) Start the 3D image acquisition software;
- 9) Only after carrying out the entire initial patient recording and treatment selection procedure, can you start scanning. The LED on the handpiece keypad will come on green when the device is ready for use. The LED comes on in different colours with the following meanings:
  - Green: handpiece ready;
  - Yellow: acquisition in progress (laser active);
  - Red: malfunction.

	<b>START/STOP key:</b> starts and pauses scanning.
	<b>ROTATE key:</b> rotates the image acquired by 180° - functions only when the scanner is in pause, otherwise it has no effect.
	<b>DELETE key:</b> allows deleting the last image acquired if you notice that you have scanned undesired elements (e.g. tongue, palate, etc.).

- 10) Do the scan according to the treatment requirements. During scanning, the LED on the handpiece keypad turns yellow to indicate laser activation;
- 11) For the scan acquisition procedures, refer to the software manual provided, code 97050264;
- 12) Scanning can be interrupted and resumed in succession (also several times) for 3D image acquisition requirements and for reasons of patient comfort. The software allows interrupting and resuming acquisition in a very easy and intuitive way;
- 13) When you have finished scanning, turn off the key switch and remove the key from the power supply panel;
- 14) Remove the disposable hygienic protection and dispose of it appropriately.

# 7

# Troubleshooting

	<b>Problem found</b>	<b>Possible causes</b>	<b>Solutions</b>
1.	Doubt about sensor functioning.	Dropping, knocking, general doubt.	Do not use the sensor on a patient but try 3D acquisition using an inanimate object.
2.	The USB connection does not seem to be working properly.	Defective cable, USB port on PC not working.	Replace the cable, change USB port.
3.	The green LED on the power supply does not come on.	Power cable not connected.	Connect the power cable to the power supply and the wall socket.
4.	The green LED on the power supply does not come on.	Power switch off.	Turn on the power switch on the rear of the power supply.
5.	The green LED on the power supply does not come on.	Key switch off.	Insert the key and turn on the switch on the front of the power supply.
6.	The green LED on the power supply does not come on.	Fuses burned.	Check the fuses in the rear panel next to the switch; if necessary, replace the fuses exclusively with ones of the same ratings.
7.	The green LED on the power supply does not come on.	After excluding all the causes above (3-4-5-6), you should assume a power supply fault.	Do not attempt to open the power supply. There might be dangerous voltage. Contact Technical Service.
8.	The blue LED on the power supply does not come on.	Failed or not working USB connection.	Check the USB connection between the power supply and the PC; check that the cable is in good condition.
9.	The blue LED on the power supply does not come on.	PC off.	Turn on the PC.
10.	The blue LED on the power supply does not come on.	PC USB port not working.	Test the PC USB port, for example, with a memory key.
11.	The blue LED on the power supply does not come on.	PC USB port unsuitable (not USB 2.0 Hi-Speed).	The ports of a PC do not always have the same technical characteristics. Check that the USB port of the PC is a USB 2.0 Hi-Speed; if necessary, use another USB port.

# 7

## Troubleshooting

12.	The blue LED on the power supply does not come on.	USB cable too long, use of extensions The maximum length of a USB connection should not exceed 4.5m.	Take out the extensions and use a good quality and not excessively long cable. For greater distances use cables equipped with an amplifier.
13.	The blue LED on the power supply does not come on.	After excluding all the causes above (8-9-10-11-12), you should assume a power supply or scanner fault.	Do not attempt to open the power supply or the scanner. There might be dangerous voltage. Contact Technical Service.
14.	The green LED on the scanner keypad does not come on.	Scanner not ready (no problem).	It is normal that at first starting, the LED on the handpiece keypad stays off until the software has gone into the acquisition phase.
15.	The green LED on the scanner keypad does not come on.	After excluding case 14, you should assume a malfunction of the scanner handpiece.	Do not attempt to open the power supply or the scanner. There might be dangerous voltage. Contact Technical Service.
16.	Starting scanning, the yellow LED on the scanner keypad does not come on and the scan does not appear on the PC screen.	Scanner malfunction.	Do not look into the optical window of the scanner. Danger: there might be invisible laser radiation. Contact Technical Service.
17.	Starting scanning, the yellow LED on the scanner keypad comes on, but the scan on the PC screen appears faded, noisy or illegible.	Optical acquisition problems, incorrect acquisition distance, optical window dirty, disposable hygienic protection dirty or badly positioned.	Do not look into the optical window of the scanner. Danger: there might be invisible laser radiation. Interrupt acquisition and check the optical window. If you cannot find anything evident, contact Technical Service.

18.	Starting scanning, the yellow LED on the scanner keypad comes on and the scan starts normally, but after a few seconds the scan appears faded, noisy or illegible.	Optical acquisition problems, the demisting heater of the optical window might not be working properly.	Do not look into the optical window of the scanner. Danger: there might be invisible laser radiation. Without interrupting acquisition, rest the tip of the scanner on the back of your hand and check the optical window temperature. It should be quite hot (approx. 40°C). If it is cold or if you cannot find anything evident, contact Technical Service.
19.	Scanner malfunction signalling.	Scanner malfunction.	Do not attempt to open the power supply or the scanner. There might be dangerous voltage. Contact Technical Service.

# INDEX

## Symbols

3D image 7, 30  
3D PROGRESS 15

## A

abutment 6  
Applying the disposable hygienic protections 3, 21, 23

## C

Cleaning 3, 8, 9, 21, 22

## D

DELETE key 30  
dental arches 6, 10

## E

element bridges 6  
Environmental characteristics 3, 17, 18

## G

General warnings 3, 5, 6

## H

handpiece 6, 7, 8, 10, 11, 12, 14, 15, 16, 18, 26, 30, 33  
hygienic protections 3, 11, 12, 21, 23

## I

intraoral 1, 6, 7, 11, 18, 26  
Intraoral 3, 11, 13, 14

## L

LAN 6, 7, 8, 9, 10, 11, 14, 15, 18, 19, 23, 24  
laser 8, 9, 10, 14, 18, 30, 33, 34  
Laser 16  
LED 8, 30, 32, 33, 34  
light radiation 8, 14  
Limited responsibility 10

## M

Maintenance and disposal 3, 5, 9  
MHT 6, 15, 35, 36

## N

## O

Optical characteristics 3, 17, 18

## P

Package contents and product parts 3, 5, 11  
PC 6, 7, 8, 9, 10, 11, 14, 15, 16, 18, 19, 23, 24, 26, 27, 30, 32, 33  
Personal Computer 6, 8, 9, 10, 11, 14, 15, 18, 19,

23, 24  
power supply 7, 9, 10, 15, 16, 18, 23, 26, 27, 30, 32, 33, 34  
Power supply 3, 11, 13, 15, 17, 18

## R

ROTATE key 30

## S

Safety and hygiene 8  
scanner 1, 6, 7, 8, 9, 10, 11, 15, 18, 26, 30, 33, 34  
Scanner 3, 11, 13, 14, 33, 34  
Scanner characteristics 3, 17, 18  
Scanner holder 3, 11, 17, 18  
single crowns 6  
software 6, 7, 10, 11, 19, 26, 30, 33  
Standards and classifications 3, 5, 10  
START/STOP key 30  
stumps 6

## T

Technical Service Centre 9  
the manufacturer 6, 9, 10, 15, 22, 24

## U

USB 3, 6, 7, 8, 9, 10, 11, 12, 14, 15, 16, 17, 18, 19, 23, 24, 26, 27, 30, 32, 33, 35

## W

Warnings for disposal 3, 21, 24  
Warnings for use 5, 6  
warranty 6, 7, 9, 10  
Warranty 3, 5, 10, 11  
W-LAN 6, 7, 8, 9, 10, 11, 14, 15, 18, 19, 23, 24

No part of this manual shall be copied or transmitted in any form without the prior written permission of MHT S.p.A a socio unico.

For any further information or technical problems contact the local distributor or the maker directly at:



**MHT SPA a socio unico** - Registered office  
Via Milano 12, 37024 Arbizzano di Negrar, Verona - ITALIA

**MHT SPA a socio unico** - Factory and offices

Via E. Fermi 22, 37135 Verona - ITALIA

Tel. (+39)0456020842 (+39)0456020843

Fax (+39)0456020196

For information write to: [info@mht.it](mailto:info@mht.it)

For technical support write to: [support@mht.it](mailto:support@mht.it)  
(Please include your name and the Serial Number of the device)

[www.mht.it](http://www.mht.it)  
[www.3dprogress.it](http://www.3dprogress.it)

Printed in Italy