INSTRUCTIONS FOR USE OF:

iM3® CR 8 VET IMAGE PLATE SCANNER

FOR VETERINARY USE ONLY

www.im3vet.com

CR 8 VET

EN

Installation and operating instructions

CE

UK CA

2182100300L41

iM3® DÜRR MEDICAL

2302V009

J1602 REV B

Contents

EN

Important information

Product description

Assembly

Operation

EN

Troubleshooting

Appendix

1 About this document

This Installation and Operating Instructions manual provides the information necessary for the setup, operation and routine care and maintenance of the CR 8 VET Imaging Plate Scanner. The manual forms an integral part of the device and conforms to the relevant version of the equipment and the technical standards valid at the time of installation. This manual, along with the quick start guide, should be thoroughly reviewed by veterinary professionals prior to scanning and processing digital images exposed on imaging plates. No retraining is necessary in the veterinary clinic unless there is new personnel. The English version of the installation and operating instructions is the original manual. All other languages are translations of the original manual. These instructions are valid for CR 8 VET, order number: 2182100001.

If the instructions and information in these installation and operating instructions are not followed, DÜRR MEDICAL 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 – dangerous high voltage

The warnings are structured as follows:

Signal Word
Description of type and source
Here you will find the possible consequences of ignoring the warning
› Follow 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

Refer to Operating Instructions.

Wear protective gloves.

Switch off and de-energise the unit (e.g. unplug from mains).

CE marked in accordance with 2014/35/EU (Low-Voltage Directive)

UK CA Conformity mark for the United Kingdom of Great Britain and Northern Ireland

Manufacturer

Dispose of correctly in accordance with EU Directive 2012/19/EU (WEEE).

Do not reuse

REF Order number

SN Serial number

Indicates IEC 60601-1 Class II, double insulated equipment

DC current

Non-ionizing electromagnetic radiation

This way up / store and transport in an upright position

Keep dry

Stacking limits

Lower and upper humidity limits

Lower and upper temperature limits

Lower and upper atmospheric pressure limits

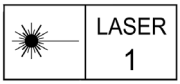
Fragile, handle with care

Keep away from sunlight

EN

Knowledge of Warnings and Cautions.

Users must exercise every precaution to ensure personnel safety, and be familiar with the warnings and cautions presented throughout this manual and summarized below.



- CR 8 VET contains a laser and is a Class 1 (IEC 60825) Laser Product. Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure. The laser is on only during an active scan.
- CR 8 VET becomes a Class 3B device when opened. Only a trained technician from an authorized dealer should remove a cover from the CR 8 VET. Direct eye contact with the output beam from the laser may cause serious damage and possible blindness.

ELECTRIC SHOCK RISK

- The power line cord is the main power disconnect.
- Use only the line cord provided with the unit.
- To avoid risk of electric shock, fire, short-circuit or dangerous emissions, never insert any metallic object into the equipment.
- Only use connection cable(s) delivered with the device.
- Check the device cables for possible damage before switching on. Damaged cables, plugs and sockets must be replaced before use.
- Only use the Mega Electronics power supply MDM065T-A240 provided with the unit as it is a critical part of the ME EQUIPMENT.

CAUTION

- While the CR 8 VET has been designed to minimize exposure of personnel to hazards, using the device not in conformance with the instructions specified in this manual may result in permanent failure of the unit or unsafe operation.
- Only trained professionals should use this device. Use of this device, other than as described in this manual, may result in injury.
- Before every use, the operator must check the functional safety and the condition of the device. The operator must be knowledgeable in the operation of the device.
- Operate CR 8 VET in dry environment. To prevent injury from fire or electrical shock, do not expose this appliance to rain or moisture.
- Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure
- The use of ACCESSORY equipment not complying with the equivalent safety requirements of this equipment may lead to a reduced level of safety of the resulting system.
- Use of ACCESSORIES or cables other than those specified or provided by the manufacturer may result in increased EMISSIONS or decreased IMMUNITY of the EQUIPMENT.
- Portable RF communications equipment (including peripherals such as antenna cables and external antennas) should be used no closer than 30 cm (12 in) to any part of the CR 8 VET including cables specified by the manufacturer. Otherwise, degradation of the performance of this equipment could result.

NOTICE

- Do not use damaged imaging plates. Damaged imaging plates may not provide reliable diagnostic images.
- Laser product compliance: CR 8 VET meets the requirements of IEC 60825-1 Ed. 3 (2014).
- EMC Compliance Requirements:
- The unit is intended for use in professional healthcare facilities (in accordance with IEC 60601-1-2). If the appliance is operated in another environment, potential effects on electromagnetic compatibility must be taken into account.
- Do not operate the unit in the vicinity of HF surgical instruments or MRT equipment.
- Maintain a minimum distance of at least 30 cm between the unit and other electronic devices
- Keep a minimum distance of 30 cm between the unit and mobile radio devices.
- Stacking or using the scanner adjacent to other equipment may violate EMC compliance and interfere with the scanner operation.
- The device transmits and receives RF at 13.56 mHz.
- Operate the scanner outside of the animal environment, at least 1.5 m away from the animal. Do not touch the device and the animal simultaneously.
- Imaging plate preparation: Completely clean and erase imaging plates before taking an X-ray exposure. See the imaging plate preparation section of this manual.
- Use care in handling imaging plates: Avoid fingerprints and scratching. Refer to the instructions provided with the imaging plate package for further information on handling.
- Equipment disposal. Disposal of CR 8 VET, including internal electronic circuitry and imaging plates must be accomplished only at the appropriate facilities for recovery and recycling. Make sure to dispose of such items in accordance with current federal, national, state and local government rules and regulations.
- Keep device dry. Do not spray solvents or liquid directly on the scanner.
- Insert imaging plate only.
- The EMISSIONS characteristics of this equipment make it suitable for use in industrial areas and hospitals (CISPR 11 class A). If it is used in a residential environment (for which CISPR class B is normally required) this equipment might not offer adequate protection to radio-frequency communication services. The user might need to take mitigation measures, such as relocating or re-orienting the equipment.

1.2 Copyright information

2 Safety

The CR 8 VET has been designed and constructed 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.

EN

2.1 Intended purpose

CR 8 VET

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

Light protection cover

The functions of the Light Protection Cover are:
– to protect the imaging plate from light and, hence, from accidental erasure
– to protect against cross contamination

2.2 Intended use

CR 8 VET

The unit may only be operated using accessories and optional articles manufactured by or branded with DÜRR MEDICAL.

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

Light protection cover

The Light Protection Cover is a disposable item designed exclusively for use with imaging plate scanners manufactured by or branded with DÜRR MEDICAL and imaging plates manufactured by or branded with DÜRR MEDICAL.

2.3 Improper use

CR 8 VET

This unit is not suitable for monitoring animals over longer periods of time. This unit must not be operated in operating theaters or similar rooms, in which dangers may arise from the combustion of flammable materials.

Light protection cover

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 bears the sole risk. Especially:
The multiple use of this accessory and reprocessing contrary to manufacturer's instructions.
The use of the accessory in combination with other than imaging plate scanners manufactured by or branded with DÜRR MEDICAL and imaging plates manufactured by or branded with DÜRR MEDICAL.

2.4 General safety information

› 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, repairs and upgrades must be carried out by DÜRR MEDICAL or by qualified personnel specifically approved and authorized by DÜRR MEDICAL.

2.6 Electrical safety

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

Observe the EMC rules concerning medical devices

› The unit is intended for use in professional healthcare facilities (in accordance with IEC 60601-1-2). If the appliance is operated in another environment, potential effects on electromagnetic compatibility must be taken into account.
› Do not operate the unit in the vicinity of HF surgical instruments or MRT equipment.
› Maintain a minimum distance of at least 30 cm between the unit and other electronic devices.
› Keep a minimum distance of 30 cm between the unit and mobile radio devices.
› Note that cable lengths and cable extensions have effects on electromagnetic compatibility.

› No maintenance measures are required to maintain the EMC basic safety.

NOTICE
Negative effects on the EMC due to non-authorised accessories

› Use only DÜRR MEDICAL parts or accessories specifically approved by DÜRR MEDICAL .

› Using any other accessories may result in increased electromagnetic interference emissions or the unit having reduced electromagnetic immunity, leading to an erroneous operation mode.

NOTICE
Erroneous operation mode due to use immediately adjacent to other devices or with other stacked devices

› Do not stack the unit together with other devices.

› If unavoidable, the unit and other devices should be monitored in order to ensure that they are working correctly.

NOTICE
Reduced performance characteristics due to insufficient distance between unit and portable HF communication devices

› Keep a distance of at least 30 cm between the unit (including parts and cables of the unit) and portable HF communication devices (wireless units) (including their accessories such as antenna cables and external antennas).

2.7 Essential performance characteristics

The CR 8 VET does not possess any significant performance characteristics as set out in IEC 60601-1 (EN 60601-1) section 4.3.

The unit complies with the requirements according to IEC 60601-1-2:2014.

2.8 Notification requirement of serious incident

The user is required to report to the manufacturer and the competent authority of the Member State, in which the user is established, any serious incident that has occurred in relation to the device.

2.9 Only use original parts

› Only use DÜRR MEDICAL parts or accessories and optional articles specifically approved by DÜRR MEDICAL. Only use only original wear parts and replacement parts.

DÜRR MEDICAL 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 articles or non-genuine wear parts / replacement parts (e.g. mains cable) can have a negative effect in terms of electrical safety and EMC.

2.10 Transport

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

If required, original packaging for the unit can be ordered from DÜRR MEDICAL.

DÜRR MEDICAL 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.

2.11 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 veterinary trade supplier.

Imaging plate

The imaging plate contains barium compounds.

› Dispose of the imaging plate properly in accordance with the locally applicable regulations.

› In Europe imaging plate according to waste code 20 03 01 "Mixed municipal waste".

2.12 Using imaging plates and light protection covers

› Only use CR 8 VET with DÜRR MEDICAL imaging plates and light protection covers.

2.13 Using software

› Only use Vet-Exam Pro imaging software that has been authorized by DÜRR MEDICAL.

› See Section 6 for the supported operating systems and computer requirements.

2.14 Protection from threats from the internet

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

› Use antivirus software and update it regularly. Look for evidence of possible virus infection and, if applicable, check with the antivirus software and remove the virus.

› Perform regular data backups.

› Restrict access to units to trustworthy users, e.g. via a user name and password.

› Make sure that only trustworthy content is downloaded. Only install software and firmware updates that have been authenticated by the manufacturer.

2.15 FCC Compliance Statement

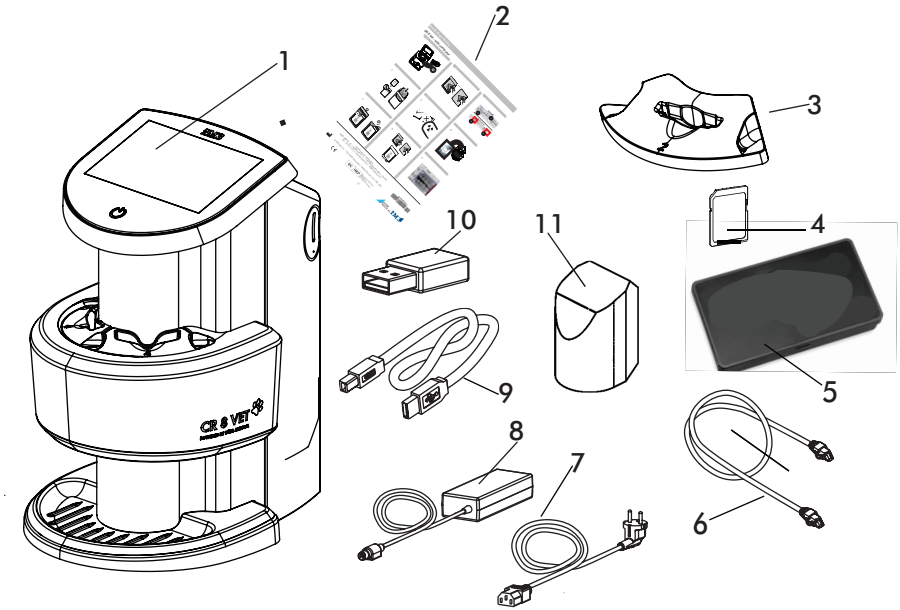
CAUTION: Changes or modifications not expressly approved could void authority to use this equipment This device complies with Part 15 of the FCC Rules. Operation to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

2.16 Industry Canada Statement

This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

3 Overview



1 CR 8 VET Imaging Plate Scanner
2 Quick Start Guide
3 Plate guide
4 SDHC memory card (installed)
5 Transfer box
6 Network cable
7 Country-specific detachable Mains cable
8 Power supply unit
9 USB cable
10 Wireless network adapter (installed)
11 Dust cover

EN

3.1 Scope of delivery

Unpack each component of CR 8 VET and inspect for physical damage such as scratched panels, damaged connectors, etc. If there is any damage, notify your DÜRR MEDICAL authorized dealer immediately so corrective action can be taken. Save all cartons and packing materials to protect CR 8 VET in the event that it is to be transported or shipped in the future. CR 8 VET system includes the basic unit and associated accessory kit as listed below. Verify that all listed items were received. If any item is missing, notify your dealer. The following items are included in the scope of delivery:

CR 8 VET
Imaging plate scanner . . .2182100001 (X810)
Accessory Kit containing:

– Power supply unit
– AC power cable EU
– Ethernet cable (unshielded)
– SDHC memory card
– WLAN stick (already installed)
– Plate guides size 2, 4/5, and 6
– Sample cleaning sheet
– Dust cover
– Transfer box
– CR 8 VET Quick Start Guide

3.2 Accessories

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

Imaging Plates:

IPX 2 x S0 (2 x 3 cm). 2134104050 (IPXS0)
IPX 2 x S1 (2 x 4 cm). 2134104150 (IPXS1)
IPX 4 x S2 (3 x 4 cm). 2134104250 (IPXS2)
IPX 2 x S3 (2,7 x 5,4 cm) . . 2134104350 (IPXS3)
IPX 1 x S4 (5,7 x 7,6 cm) . . 2134104450 (IPXS4)
IPX 1 x S4C (4.8 x 5.4 cm) . . . 2134104850 (IPXS4C)
IPX 1 x S5 (5,7 x 9.4 cm) . . 2134104550 (IPXS5)
IPX 1 x S6 (50,8 x 139,7 cm) 2134104650 (IPXS6)
IPX 2 x R3 (2,2 x 5,4 cm) . . 2134104750 (IPXS3)

3.3 Optional articles

The following articles can be used with the unit:

Wall bracket. 2182100018
. . . . . .(WB0118)

3.4 Consumables

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

IP Cleaning wipes carton with 10 boxes of 10 wipes. CCB351A0101 (X7190)

Cleaning sheets

-12 pieces 2182100016 (CS0128)

-25 pieces 2182100017 (CS0258)

Light protection covers:

S0 2x3 100 pcs
(format: 2 x 3 cm). . . . 2134-080-00 (X7101)

S1 2x4 100 pcs
(format: 2 x 4 cm). . . . 2134-081-00 (X7111)

S2 3x4 300 pcs
(format: 3 x 4 cm). . . . 2134-082-00 (X7122)

S3 2.7 x 5.4 100 pcs
(format: 2,7 x 5,4 cm). . 2134-083-00 (X7133)

S4 5,7 x 7,6 100 pcs
(format: 5,7 x 7,6 cm). . 2134-084-00 (X7144)

S4C 100 pcs
(format: 4.8 x 5.4 cm). . 2134108800 (XC140)

S5 100 pcs
(format: 5,7 x 9,4 cm). . 2134-085-00 (X7155)

S6 30 pcs
(format: 5,08 x 13,97 cm) . 2182100015 (X7166)

3.5 Wear parts & replacement parts

Plate guides:

Plate guides S0 / R3 . 2182100006 (PGSSR3)
Plate guide S1 . . . . 2182100007 (PG00S1)
Plate guide S2 . . . . 2182100008 (PG00S2)
Plate guide S3 . . . . 2182100009 (PG00S3)
Plate guides S4 / S5 . 2182100010 (PG0S4S5)
Plate guide S6 . . . . 2182100011 (PG00S6)

Please contact your authorized dealer or DÜRR MEDICAL for information about replacement parts.

4 Technical data

4.1 Imaging plate scanner

Power Unit Electrical Details		
Voltage	VAC	100 - 240
Frequency	Hz	50/60
Electrical Data CR 8 VET		
Voltage	VDC	24
Maximum Current	A	1.65
Power consumption	W	<39.6
Laser Source		
Laser class IEC 60825-1: 2014		3B
Wavelength	nm	635
Output	mW	< 10
CR 8 VET Physical Characteristics		
Dimensions (W x H x D)	cm	37.4 x 29.3 x 23.6
	in	14.7 X 11.5 X 9.3
Weight (approximate)	kg	8.0
	lb	17.64
Noise Levels		
Ready	db(A)	<40
Scanning	db(A)	<60
General Values		
Max feeding width for S4 imaging plates	cm	5.7
	in	2.24
Max feeding width for S6 imaging plates	cm	5.08 x 13.97
	in	2 x 5.5
Duty Cycle	%	100

EN

Technical data for the RFID module		
Frequency	MHz	13.56
Modulation		ASK
Maximum power	mW	400
Network connection		
LAN technology		Ethernet
Standard		IEEE 802.3u 100Base-TX
Data rate	Mbit/s	100
Connector		RJ45
Type of connection		Auto MDI-X
Type of cable		≥ CAT5 (unshielded)
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
	°F	+50 to +95
Air pressure	hPa	750 to 1060
	in Hg	22.15 to 31.30
Altitude	m	<2000
	ft	<6562
Humidity	%	20 to 80
Ambient conditions during storage and transport		
Temperature	°C	-20 to +60
	°F	-4 to +140
Air pressure	hPa	750 to 1060
	in Hg	22.15 to 31.30
Humidity	%	10 to 95

Classification	
Laser class (unit) in accordance with EN60825-1:2014	1
Electromagnetic compatibility (EMC) interference emission measurements	
High-frequency emissions in accordance with CISPR11	Group I
Interference voltage at the power supply connection CISPR11:2009+A1:2010	Class B
Electromagnetic interference radiation CISPR11:2009+A1:2010	Class A
Emission of harmonics IEC61000-3-2:2005+A1:2008+A2:2009	Class A
Voltage changes, voltage fluctuations and flicker emissions EC61000-3-3:2013	Compliant
Electromagnetic compatibility (EMC) interference immunity measurements cover	
Immunity to interference,discharge of static electricity IEC61000-4-2:2008 ± 8kV contact ± 2kV, ±4kV, ±8kV, ±15kV air	Compliant
Immunity to interference, high-frequency electromagnetic fields IEC61000-4-3:2006+A1:2007+A2:2010 3V/m 80MHz-2.7GHz 80%AMat1kHz	Compliant
Immunity to interference, near fields of wireless HF communication devices, IEC61000-4-3:2006+A1:2007+A2:2010 See immunity to interference table,near fields of wireless HF communication devices	Compliant

Immunity to interference table, near fields of wireless HF communication devices

Radio service	Frequency band MHz	Test level V/m
TETRA 400	380-390	27
GMRS 460 and FRS 460	430-470	28
LTE band 13, 17	704-787	9
GSM 800/900, TETRA 800, iDEN 820, CDMA 850 and LTE band 5	800-960	28
GSM 1800, CDMA 1900, GSM 1900, DECT, LTE band 1, 3, 4, 25 and UMTS	1700-1990	28
Bluetooth, WLAN802.11b/g/n, RFID2450 and LTEband7	2400-2570	28
WLAN802.11a/n	5100-5800	9

EN

Electromagnetic compatibility (EMC) interference immunity measurements supply input	
Immunity to interference, rapid transient bursts AC voltage grid IEC61000-4-4:2012 ±2k V 100 kHz repetition frequency	Compliant
Immunity to interference, surges IEC61000-4-5:2005 ±0.5 kV,±1kV	Compliant
Immunity to interference, line-conducted disturbances induced by high-frequency fields – AC voltage grid IEC61000-4-6:2013 3V 0.15-80 MHz 6V ISM frequency bands 0.15-80 MHz 80% AM at 1kHz	Compliant
Immunity to interference due to voltage dips, short interruptions and voltage variations IEC61000-4-11:2004	Compliant
Electromagnetic compatibility (EMC) Interference immunity measurements SIP/SOP	
Immunity to interference, discharge of static electricity IEC61000-4-2:2008 ±8 kV contact ±2 kV, ±4 kV, ±8 kV, ±15 kV air	Compliant
Immunity to interference, rapid transient bursts – I/O, SIP/SOP ports IEC61000-4-4:2012 ±2 kV 100 kHz repetition frequency	Compliant
Immunity to interference, line-conducted disturbances induced by high-frequency fields–SIP/SOP ports EC61000-4-6:2013 3V 0.15 - 80 MHz 6V ISM frequency bands 0.15 - 80 MHz 80% AM at 1 kHz	Compliant

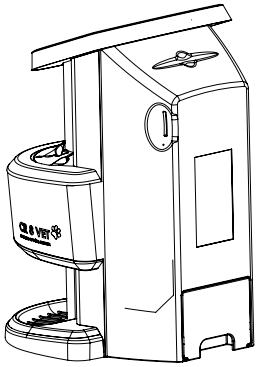
4.2 Imaging plate

Ambient conditions during operation		
Temperature	°C	18 to 45
	°F	64 to 113
Relative humidity	%	< 80
Ambient conditions during storage and transport		
Temperature	°C	< 33
	°F	< 91
Relative humidity	%	30 to 80
Dimensions of intraoral Imaging plates		
Size 0	mm	22 x 35
	in	0.86 x 1.38
Size 1	mm	24 x 40
	in	0.94 x 1.57
Size 2	mm	31 x 41
	in	1.22 x 1.61
Size 3	mm	27 x 54
	in	1.06 x 2.13
Size 4	mm	57 x 76
	in	2.24 x 2.99
Size 4C	mm	48 x 54
	in	1.89 x 2.13
Size 5	mm	57 x 94
	in	2.24 x 3.70
Size 6	mm	50.8 x 139.7
	in	2 x 5.5 in
Size R3	mm	54 x 22
	in	2.13 x 0.87

EN

4.3 Type plate

The type plate is located on the back cover of the device



REF Order number

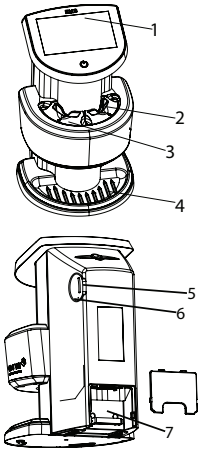
SN Serial number

4.4 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 Imaging plate scanner



1 User interface
2 Right imaging plate input slot
3 Left imaging plate input slot
4 Collection tray
5 Memory card slot
6 Factory reset button
7 Connection portal

Do not use the imaging plates and the scanner under bright light conditions.

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

The unit can be used in two different ways: via the Vet-Exam Pro imaging software installed on the PC or directly via the touch screen on the unit.

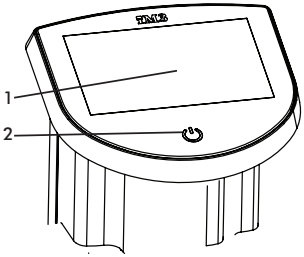
The transport mechanism guides the imaging plate through the device. The imaging plate is read using a laser inside the scanner unit. The scanned data is converted into a digital image. If a scanning job is started via the Vet-Exam Pro imaging software, the image is automatically transmitted to the computer.

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 imaging plate runs through the erasure unit. Image data still held on the imaging plate is erased with the aid of bright light.

The imaging plate is then ejected for re-use.

User interface



1 Touch screen
2 On/off switch

The user interface to the unit consists of an On/Off switch to control operating power and a touch screen. 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 with the tip of a finger.

The Help button is used to open a help page for the respective task page.

The Messages button is used to call up current messages.

ScanManager

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

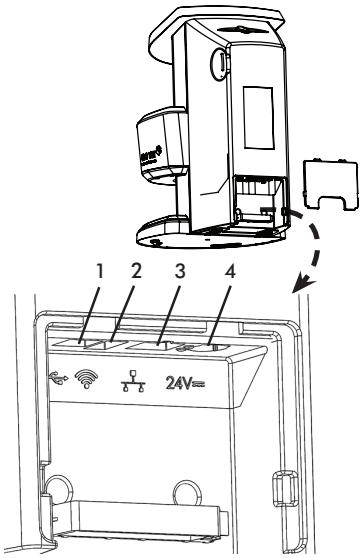
When the ScanManager is enabled, more than one X-ray job can be transmitted simultaneously to the unit from different computers. The unit manages the X-ray jobs in a queue from which the respective X-ray job can be selected using the touch screen and then executed.

Without ScanManager, the unit processes one X-ray job 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.

Be sure to give the various computers used unique names so it is known which computer the X-Ray job is coming from.

Connections

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



1 USB connection (for single computer)
2 USB connection (for WLAN stick)
3 Network connection
(use unshielded type Cat 5e cable only)
4 Power supply unit connection

5.2 Imaging plate

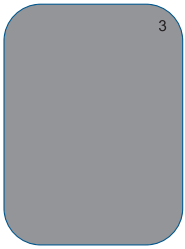
The imaging plate stores X-ray energy, which is re-emitted in the form of light after excitation by the laser. This light is then converted into image information in the imaging plate scanner.

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

When used properly, imaging plates can be exposed, read and erased several hundred times provided there is no mechanical damage. The imaging 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.

Use only imaging plates IPX made by DÜRR MEDICAL with the unit. The unit is unable to read any other types of imaging plates.

EN

Inactive side	Active side
	
White, printed with the word "back" and the size and manufacturer's information	Light blue, with positioning aid 3

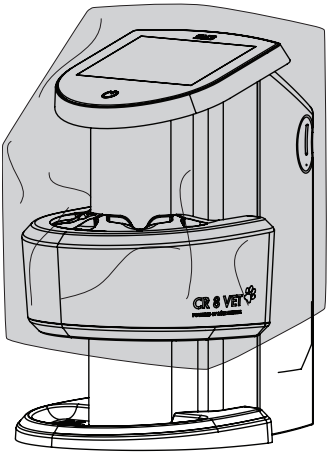
The positioning aid 3 is visible on the X-ray image and makes it easier to align the image correctly during diagnosis.

5.3 Light protection cover

The light protection cover protects the imaging plate against light.

5.4 Protection cover

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



NOTICE

Damage through user error.

Only qualified specialists or employees trained by iM3/DÜRR MEDICAL are permitted to install, connect and start using the unit.

NOTICE

Damage through physical shock.

During operation and the switching off process make sure that the unit is not moved in any way whatsoever, as the moving parts must be allowed to stop moving completely.

6 Requirements

6.1 Installation/setup room

- CR 8 VET should be set up in a closed, dry and well-ventilated room.
- Room temperature should not fall below +10°C (50°F) or exceed +35°C (95°F).

CAUTION

Danger of short circuit due to condensation.

CR 8 VET can only be put into operation once the unit has warmed up to room temperature and is dry.

- Do not install in a utility room, e.g. in a boiler room or in a wet room.
- Set up in ordinary room light. Avoid direct sunlight and bright interior lighting (more than 1000 lux) directly above the plate guide.
- There must be no source of interference in the room for set-up (e.g. strong magnetic field). Any such disturbances can interfere with the operation of the CR 8 VET.

In order to avoid problems when scanning the image data, CR 8 VET should be set up so that it will not be subject to knocks, vibration or similar.

6.2 Counter top/table set-up

- Provide a stable, flat counter top or table large enough for the scanner work area and able to support the weight of the unit (see 4 Technical data).
- Locate CR 8 VET no further than 1,8m/6 feet from an AC outlet.
- Make sure to leave the socket outlet easily accessible, so that the unit may be unplugged if necessary. The power supply adapter is the Mains disconnect device.
- Portable and mobile HF communication appliances can interfere with the effectiveness of electrical veterinary devices.
- Do not arrange the unit so that it is immediately next to, or stacked with other appliances. However, if the unit is operated immediately next to, or stacked with other appliances, make sure to check the unit carefully in the configuration selected to verify normal operation.

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.

6.4 Computer system requirements

The requirements for the computer systems can be found in the download area at www.duerr-medical.de (document no: 9000-608-100).

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 move the unit during operation.

Do not lift or move the unit by the top display assembly. Only lift the unit by the sides of the transport drum and/or the bottom base.

7.2 Setting up the unit

NOTICE
Risk of damage to sensitive components in the unit as a result of shocks or vibrations
› Do not move the unit during operation.

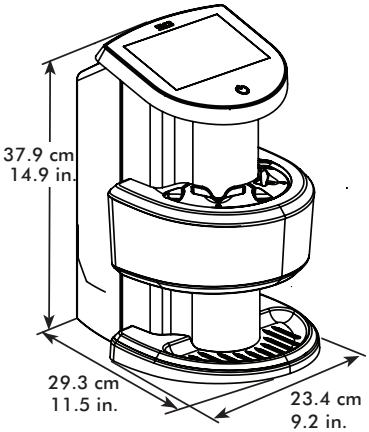
Portable and mobile HF communication appliances can interfere with the effectiveness of electrical devices.

› 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").

Unit dimensions



Setting the unit on a table

› Place the unit on a firm, horizontal surface.

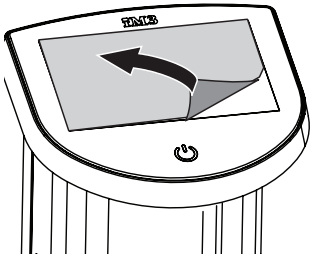
Installing the unit with wall mounting bracket

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

For details of the installation refer to the installation instructions for the wall mounting.

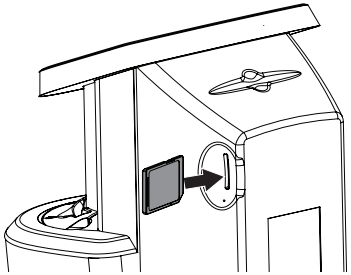
7.3 Removing the protective film

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



7.4 Checking the memory card

NOTICE
Data loss due to 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.



7.5 Software installation

CR 8 VET is designed to be installed by your authorized dealer. The user must provide appropriate and compliant computer hardware where Vet-Exam Pro imaging software is installed to operate the unit.

Smooth operation of the unit's hardware and software can be affected through specific hardware and software incompatibility on site at the client despite meeting system requirements. Where further systems are connected to the PC please note that this may change the system requirements. Observe the system requirements for all connected systems.

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.
› 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 set up in such a way that the plug can be easily accessed and unplugged if required.

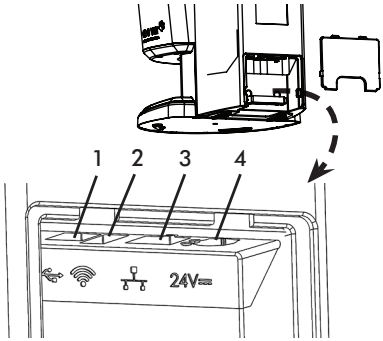
Requirements:

– 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 power supply unit type plate

Only the supplied power supply unit may be used.

› Remove the cover from the rear of the device.
› Attach the matching country-specific mains cable to the power supply unit.
› Plug the connecting plug of the power supply unit into the socket connection (item 4) of the device.
› Plug the mains plug into the power outlet.
› Install the rear cover.

The rear cover must be correctly fitted when the device is operated within the animal 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 an unshielded network cable or via WLAN.

Combining devices safely

– The device is designed for safe 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.
– If, for example, the following changes are made to the network, new risks can arise that require further analysis.
  - Changes in the IT network configuration
  - Connecting additional elements to the IT network
  - Removing elements form the IT network
  - "Upgrade" of devices that are connected to the IT network

EN

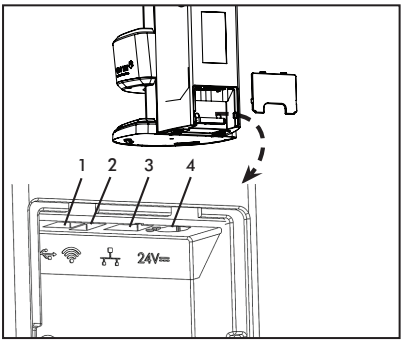
– The data connection utilizes part of the bandwidth of the network. Interactions with other medical devices cannot be completely ruled out. Apply the IEC 80001-1 standard for risk assessment.
– The device is not suitable for direct connection to the public Internet.

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 animal.
› 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.
› Observe the specifications of IEC 60601-1 (EN 60601-1) when connecting the appliance with other appliances, e.g. a PC system, both in and outside the animal environment. Only connect peripheral units (such as computers, monitors or printers) that conform at least to the requirements set out in IEC 60950-1 (EN 60950-1).
› The connected computer must conform to EN 55032 (class B) and EN 55024.

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 (item 3) of the device.



The rear cover must be correctly fitted when the device is operated within the animal 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.

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

The unit supports only the Vet-Exam Pro imaging software from DÜRR MEDICAL. The CR 8 VET unit only works with Vet-Exam Pro imaging software.

8.1 Configuring

Vet-ExamPro imaging software intallation

Always use the latest version of the Vet-Exam Pro imaging software when installing the device for the first time. Check the version of the Vet-Exam Pro software and ask your authorized dealer for the current version.

8.2 Configuring WLAN on the unit

If the unit is to be operated via WLAN, the WLAN stick included in the scope of delivery must be inserted into the USB connection on the back of the unit (see "Connections"). The connection to the unit then needs to be configured. Proper functioning is only ensured if the WLAN stick supplied by DÜRR MEDICAL is used.

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.

EN

8.3 X-ray unit settings

The exposure times listed in the table for a tube length of 20 cm were determined using a dental X-ray unit with a DC emitter (focal spot 0.7 mm; tube length 20 cm. The exposure times for a tube length of 30 cm were calculated from the exposure times for a tube length of 20 cm).

The following table shows the standard values for the exposure time for a house cat (approx. 6 kg) to a medium sized dog (approx. 20 kg).

	DC emitter, 7 mA Tube length 20 cm		DC emitter, 7 mA Tube length 30 cm	
	60 kV	70 kV	60 kV	70 kV
Upper jaw				
Incisors	0.1 s	0.08 s	0.2 s	0.16 s
Premolars	0.125 s	0.1 s	0.25 s	0.2 s
Molars	0.16 s	0.125 s	0.32 s	0.25 s
Lower jaw				
Incisors	0.1 s	0.08 s	0.2 s	0.16 s
Premolars	0.125 s	0.1 s	0.25 s	0.2 s
Molars	0.125 s	0.1 s	0.25 s	0.2 s

If 60 KV can be set on the X-ray unit, this setting is preferred. The standard exposure values for F-speed film (ie. g. Kodak Insight can be used.

› Carry out unit-specific checks and adjustments of the of the X-ray units based on the standard values.

8.4 Acceptance test

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.

Electrical safety checks

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

› Document the results.

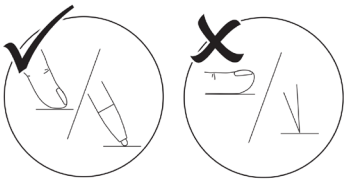
› Carry out and document the instruction and handover for the unit.

EN

9 Operating the touch screen

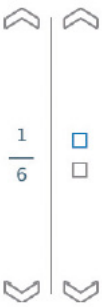
WARNING
Damage to the touch screen due to incorrect handling
- Only operate the touch screen using the tip of a finger.
- Do not use any sharp instrument (e.g. ballpoint pen) to operate the touch screen.
- Do not use the touch screen if scratched or cracked.
- Protect the touch screen from water.

Select a button or input field by tapping the touch screen with the tip of a finger. For further information on any window, select the Help field.



9.1 Navigating

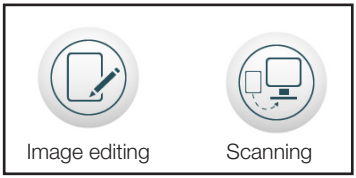
If the contents of the window cannot be completely displayed on the touch screen, a scroll bar appears. Touch, hold and slide the bar up or down to move the displayed section in the window. Scrolling may also be done by continuously pressing the arrow keys to move the displayed section up or down.



› Tap ⌄ or ⌃ to move the displayed section of the window.

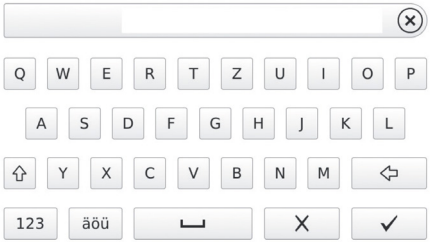
9.2 Using menus

The integrated menus within the main window contain additional commands that can be selected as required. Touch to open the menu.



9.3 Entering text in the field

Where fields require input, touch the field. The keyboard window will open.



123	Switch to numbers/special symbols
⇧	Shift key
äöü àêó	Switch to special characters
⇦	Delete
X	Cancel input and close window
✓	Confirm input and close window
␣	Space bar

9.4 Calling up messages on the screen

The Messages view shows a history of all previous messages. Messages are subdivided into the following categories:

Malfunction	Unit no longer works. When the error has been remedied, it may be necessary to acknowledge the error message.
Warning	After acknowledgment, the unit continues to work, but only with limited functions.
Information	Important operator information alert, e.g. about the current status of the device. The unit continues to operate.
Notice	Information for the operator. The unit continues to operate.
Fault-free operation	

Tap on Messages.

› This displays the message.

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

For more information about the message, tap on Help.

9.5 System settings

System settings can be viewed and edited via the touch screen icons listed below.

Language	Select the output language of the unit.
Date & Time	Edit date and time settings.
Network	View the MAC address of the unit. Edit the network and interface name. Activate or deactivate DHCP. Edit IP address, subnet mask and gateway.
Touch screen	Set the brightness of the monitor. Touch screen calibration.

Choosing the language

› Touch the required language.

› Touch OK.

Editing the Date & Time

› Touch Date and Time.

› Enter the values using the arrows.

› Touch OK.

If the unit is operated from a PC, the display of date and time is automatically synchronized with the selected regional display for the PC.

Editing settings for the network

› Touch Name.

› Enter the values via the keyboard.

› Touch Interface.

› Select LAN or WLAN via the arrows.

› Touch OK.

› Touch DHCP to activate or deactivate.

The IP address, subnet mask and gateway can only be edited if DHCP is deactivated

› Touch IP address, subnet mask and Gateway

› Enter values via the keyboard

EN

Editing settings for the touch screen

› Touch Brightness.
› Enter the values via the arrows.
› Touch OK.
› Touch Calibrate touch screen.
› Follow the instructions on the monitor.
› Touch OK.

9.6 Main menu

The following actions can be selected:

 Image editing	View and edit X-ray images saved on the SD card: brightness, contrast, rotate, invert, magnify, reduce. Delete X-ray image.
 Scanning	Scanning order starts with the specification of the animal and imaging information. X-ray image is stored on the SD card together with the image information under the name of the animal.

Image editing

› Touch Edit or touch the X-ray image twice in quick succession (double click).

Magnify or reduce the image

Touch the magnifying glass icon until the display ± appears in the magnifying glass.

Wipe across the X-ray image from left to right to magnify the image. The size ratio is displayed on the right next to the magnifying glass.

To reduce the image, wipe across the X-ray image from right to left.

Move the magnified image section

Touch the magnifying glass symbol until the display ± disappears.
Touch the X-ray image and move to the required image section.

Rotate the image anti-clockwise by 90°.

Rotate the image clockwise by 90°.

Rotate the image anti-clockwise by 180°.

View the histogram for the selected image section of the X-ray image.

The measurement area is within the square.
The number displays the maximum gray value in the center of the measurement area.

The red line displays the vertical gray value distribution.

The green line displays the horizontal gray value distribution.

Touch the histogram and move to the required image section.

To deactivate the histogram, touch the histogram pictogram in the menu.

Edit the brightness of the image.

To increase the brightness, move the controller to the left or touch the left arrow several times.

To reduce the brightness, move the controller to the right or touch the right arrow several times.

	Edit the contrast of the image. To increase the contrast, move the controller to the right or touch the right arrow several times. To reduce the contrast, move the controller to the left or touch the left arrow several times.
	Edit the gamma value of the image. To increase the gamma value, move the controller to the right or touch the right arrow several times. To reduce the contrast, move the controller to the left or touch the left arrow several times.
	Switch between the positive and negative display of the image.
	Vertically invert the image.
	Horizontally invert the image.
 	Display help.
	Save all changes.
	Undo last change.
	Cancel image processing All changes carried out after the last save are lost.

10 Light protection cover

10.1 Light protection cover use.

EN

› Protect the imaging plate from contamination and dirt.

› Protect the imaging plates from stray lights.

› Available in different sizes just like imaging plates. Select appropriate size (S0, S1, S2, S3, S4, S4C, S5, S6).

› R3 imaging plates use the #3 light protection covers.

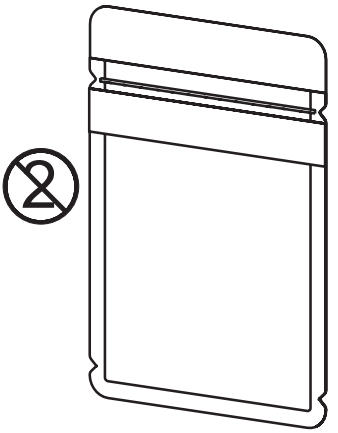
CAUTION
Loss of image information and functional interference on using the incorrect light protection covers

› Only use DÜRR MEDICAL imaging plates and light protection covers.

WARNING
Danger of cross contamination when not using the light protection cover or when using the light protection cover more than once.

› Do not use an imaging plate without a light protection cover.

› Do not use the light protection cover more than once.



Typical light protection cover

11 Imaging plates

11.1 General.

CR 8 VET is operated in combination with DÜRR MEDICAL imaging plates in size S0, S1, S2, S3, S4, S4C, S5, S6, and R3. (See 3.2 Accessories) Each size of imaging plate requires the matching light protection cover.

Imaging plates must only be read using an imaging plate scanner that is approved by DÜRR MEDICAL.

- Do not scratch the imaging plates.
- Do not subject the imaging plates to pressure from hard or pointed objects.
- Do not soil the imaging plates.
- Protect the imaging plates against sunlight and ultraviolet light.
- Store imaging plates in a light protection cover of the correct size.
- Imaging plates will be exposed when exposure to natural radiation and stray x-ray radiation.
- Protect erased and exposed imaging plates from X-ray interference.
- If the imaging plate has been stored for longer than one week, erase the imaging plate prior to use.
- Do not store imaging plates under hot or moist conditions. Observe the correct ambient conditions (see "4 Technical data").
- When used properly, imaging plates can be exposed, read and erased several hundred times provided there is no mechanical damage.

Replace the imaging plate if there are any signs of damage, e.g. if the protective layer is damaged or there are visible scratches that impair the quality of the diagnosis.

Also replace the imaging plate if the RFID tag is damaged or becoming detached.

Imaging plates that have a production or packaging defect will be replaced by DÜRR MEDICAL in the same quantity. Claims can only be accepted within 7 working days after receipt of the goods.

- Clean imaging plates properly (see "13 Cleaning and disinfection").

WARNING
Cross contamination risk when not using light protection covers or when using the covers more than once.

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

CAUTION
The image data on the imaging plate is not permanent.

- 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 imaging plates without the light protection cover.
- Do not subject an exposed imaging 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.

CAUTION
Imaging plates are toxic.

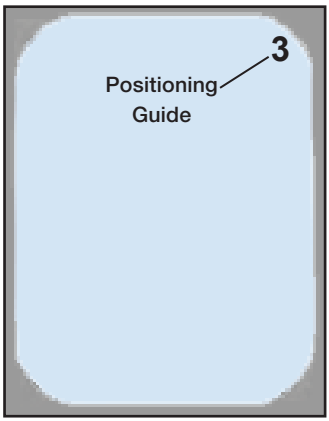
- Imaging plates that are not packed in a light protection cover can lead to poisoning when placed in the mouth or swallowed.
- Only place imaging plates in the animal's mouth in a light protection cover.
- Do not allow the animal to swallow the imaging plate or parts of it.
- If the imaging plate or parts of it have been swallowed, consult a specialist doctor immediately and remove the imaging plate.
- If the light protection cover has been damaged in the animal's mouth, rinse the mouth thoroughly with large amount of water. Do not allow the animal to swallow the water in the process.

EN

Exposure of the imaging plate must always be carried out on the active side:

› The active side is light blue. This side is also marked with an **“3”** positioning guide.
› The inactive side is white. This is printed with the size and manufacturer´s information. Furthermore, in one corner there is an **“3”**; this replaces the slight indentation found on conventional X-ray film. This positioning guide should always be set in the direction of the occlusal plane to allow easier orientation of the resulting X-ray image.

Printed Inactive Side



Tube or Active Sensitive Side

Typical Imaging Plate Configuration

11.2 Cleaning imaging plates.

For the best images, imaging plates should be handled carefully and kept clean. Use specially formulated DÜRR MEDICAL IP-Cleaning wipes, P/N: CCB351A0101 to clean all imaging plates. These single-use, extra soft, 100% polyester fabric wipes will not scratch or damage while safely removing dust, hair, dirt and smudges from the imaging plate surface. Use one wipe and clean imaging plates as follows:

› Gently wipe the IP-Cleaning wipe over the dry imaging plate surface. Wipe back and forth and then in a circular motion.

› Allow the imaging plate surface to air dry. Make sure that the imaging plate is completely dry before re-using.

CAUTION
Danger of imaging plate damage when using an autoclave.
› Do not use an autoclave.
› Always use standard infection control procedures when handling devices that contact the animal.

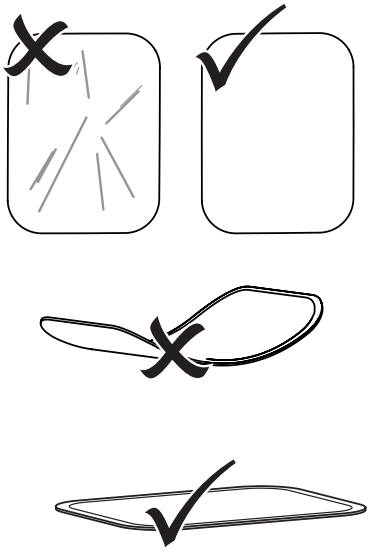
11.3 Working with imaging plates.

Imaging plates must be visibly checked for signs of damage. Damaged imaging plates (e.g. a torn outer layer, or visible scratches, which will affect the diagnostic quality) must be replaced.

- Imaging plates are flexible like X-ray film.
- Do not bend or subject to pressure.
- Do not scratch or get dirty.
- Do not put in an autoclave.
- Replace the imaging plate if the RFID tag is damaged or becomes detached.

11.4 Storing imaging plates.

- Store imaging plates in a dark place.
- Do not store in hot or moist conditions.
- Store intraoral imaging plates in a light protection cover of the appropriate size.
- If an imaging plate is stored for longer than 24 hours, then it should be erased again before the next X-ray exposure. See section 12.9.
- Protect from direct sunlight and ultraviolet beams.
- If stored in the X-ray room itself, then the imaging plates must be protected from pre-exposure caused by scattered X-ray radiation.



12 Scanning imaging plates

12.1 Preparing imaging plates.

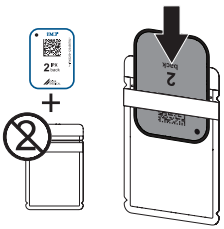
The light protection cover must be used only once and disposed of properly in accordance with local code.

EN

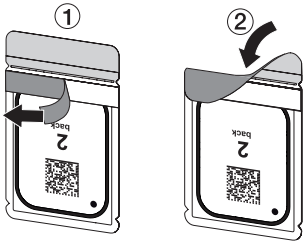
Completely insert the erased imaging plate into the light protection cover. The white (inactive) side of the imaging plate must be visible.

› The orientation letter "**3**", printed on the imaging plate, may be used for reference as you would use the dot on an intraoral X-ray film. A backwards "**3**" appearing in an image, is an indication that the image has been flipped.

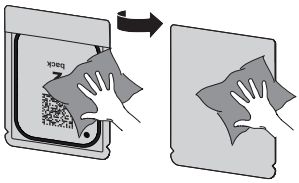
› If using holders with alligator clips, it is advisable to file down the points to avoid puncturing the light protection cover. It is important to take care not to puncture the light protection cover or damage the imaging plate .



› 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 suitable disinfectant wipe immediately before positioning it inside the animal's mouth (see 13.2).



› Allow the light protection cover to fully dry.

12.2 Take an X-ray image.

Put an image on the imaging plate by performing the following procedure.

› Place the erased intraoral imaging plate in the sealed light protection cover into the animal's mouth exactly as you would use X-ray film. Make sure the opaque side of the light protection cover is facing the tubehead.

› Take the exposure. The X-ray dose may typically be reduced by 80 - 85% of that required for D-speed intraoral film (depending on X-ray system used; the actual X-ray dose should be determined through experimentation).

› Record an X-ray image. The image data must be scanned within 30 minutes.

Make sure that the sensitive side of the imaging plate is facing down as it lands on the in the box (See View C below). If the imaging plate is not sensitive side down, TURN IT OVER IMMEDIATELY. Failure to do so may result in erasure of image data.

12.3 Preparing for scanning.

Use the transfer storage box when performing batch processing. Always keep the sensitive side away from any light source to minimize image loss.

› Disinfect the light protection cover (with imaging plate still inside).

› Remove gloves and wash any powder from hands. Powder on a imaging plate will degrade the image. Accumulation of powder in the scanner will lead to degrade performance.

› Lay the box on a flat surface near the CR 8 VET as shown by View A below. See View B and remove the exposed imaging plate from its washed and dried light protection cover as follows:

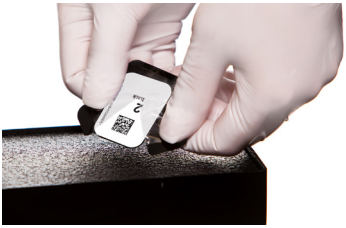
a. Hold the covered exposed imaging plate, with the printed side facing up, parallel to and about an inch above the transfer storage box or other container or cover.

b. Tear the light protection cover lengthwise starting at the notch to eject the imaging plate onto the box or surface.

› The imaging plate, shown by View C, is now ready to be scanned to read the image from the imaging plate.

Use of the transfer storage box is recommended to protect data loss when performing batch processing.

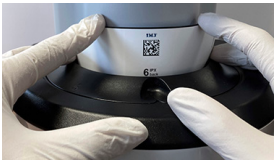
View A: Empty Transfer box



View B:
Ejecting imaging plate to transfer box

View C: Imaging plates ready for Scanning

Use 2 hands when inserting S6 Imaging plates for scanning as shown below.



View D: S6 Imaging plates Scanning

12.4 Image data scanning.

CR 8 VET can be used to scan in two different ways:

- Via user supplied imaging software (e.g. Vet-Exam Pro and a PC.
- Directly by using the touch screen and a Memory card (SDHC, max. 32 GB).

Each option is described below.

12.5 Scanning image data via a computer

Starting the imaging plate scanner and software:

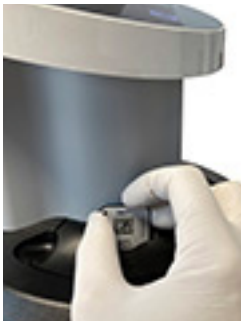
The scanning process using the Vet-Exam Pro imaging software as described For further information on using the imaging software, refer to the relevant manual.

Scan the imaging plate using a computer and imaging software by performing the following steps.

- Press the on/off switch to switch on the unit.
- Switch on the computer and monitor.
- Start the Vet-Exam Pro imaging software.
- Select the animal.
- Select the exposure values in the X-ray module.
- Set the required resolution.
- Click the Scan button.
- If ScanManager is enabled, select the X-ray job on the touch screen of the unit.

Result:

As shown below, an animation on the touch screen prompts for insertion of the imaging plate. Insert the imaging plate only when the bar above the animation is green.



EN

CAUTION
Damage to the touch screen due to incorrect handling
- Only operate the touch screen using the tip of a finger.
- Do not use any sharp instrument (e.g. ballpoint pen) to operate the touch screen.
- Protect the touch screen from water

12.6 Scanning image data via the touch screen

Refer to Section 9 for details on operating the touch screen. Select the Help field for further information on operating the unit via the touch screen. No PC connection is needed for scanning the image data when using the touch screen.

The images are 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 to read the memory card.

Before scanning the image data, the animal data and exposure settings of the image are acquired and saved with the image data. The X-ray image is stored on the SD card together with the image information under the name of the animal. If no animal data and exposure settings of the image are entered, the image is saved.

- Turn on the CR 8 VET at the on/off switch.
- On the touch screen, tap Scan.
- Enter the animal data.
- Select the image settings and scanning mode.
- An animation on the touch screen prompts for insertion of the imaging plate.
- Insert the imaging plate only when the bar above the animation is green.

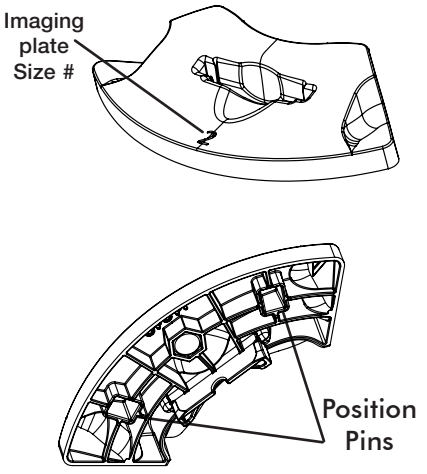
CAUTION
Use of LCD Screen
- The image that appears on the LCD during and after scanning should NEVER be used for diagnostic purposes.
- Do not form a diagnosis from any image appearing on the LCD screen.

CAUTION
Loss of image information and damage to the device can occur if using the incorrect plate guide.
- Always use the correct size of plate guide for the imaging plate being used.
- Before each scanning phase compare the size of imaging plate with the markings on the plate guide.

12.7 Changing the plate guide

- CR 8 VET can be used to scan imaging plate sizes S0, S1, S2, S3, S4, S4C, S5, S6, and R3.
- Each size of imaging plate requires the matching size plate guide.
- The size of the imaging plate is clearly marked on the plate guide.
- Remove the plate guide by simply lifting it from the transport.
- Install the plate guide by aligning the position pins and placing the guide into the guide holes. It will snap into place due to the magnet installed.

CAUTION
If a plate guide is removed, a warning message will appear on the LCD screen that the plate guide is missing.



Typical plate guide

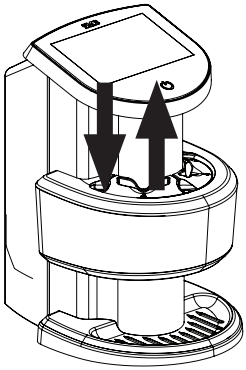


Plate guide installation and removal

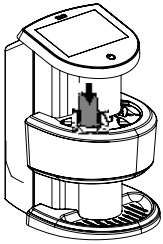
CAUTION
Loss of image data

- Image data on the imaging plate will be lost when exposed to light.
- Transfer the imaging plate from the light protection cover to the plate guide slot quickly.
- Always keep the sensitive side away from any light source to minimize image loss.

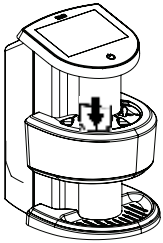
12.8 Scanning imaging plates.

Scan and erase a imaging plate as follows.

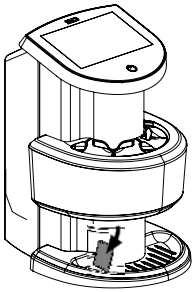
- Carefully open the transfer storage box.
- Grasp an imaging plate by the edges between the thumb and index finger.
- With the printed side facing you, carefully and quickly insert the imaging plate into the plate guide slot as far as possible as shown by 'Plate Feeding and Scanning' View A.
- Immediately press the imaging plate all the way down until the transport mechanism takes over moving the imaging plate on its own as shown by View B.
- Observe that the imaging plate drops onto the bottom outlet pad of the scanner as shown by View C.
- Repeat steps 1 through 5 to process additional imaging plates as necessary.
- Retrieve the processed (scanned and erased) imaging plates for reuse or storage. Make sure not to scratch the sensitive surface or nick the edges when removing from the scanner outlet.
- View and save each scanned image using the user-supplied imaging software.



View A. Imaging plate into plate guide slot.



View B. Transport mechanism moves the imaging plate.



View C.
Imaging plate drops onto the bottom outlet pad.

12.9 Erasing the image data.

After scanning the imaging plate passes automatically through the erasure unit. Image data still held on the imaging plate will be erased. Afterwards the imaging plate falls into the outlet pad.

Special erase mode. The imaging plate must be erased again if:

- The imaging plate has been stored and not used for longer than 24 hours.
- The data on the imaging plate has not been (completely) erased due to a malfunction of the CR 8 VET unit.

The special Erase mode enables the erasure unit to be activated alone. No image data will be transmitted to the software.

To erase again:
Choose the special Erase mode in the software and feed the imaging plate.

EN

13 Cleaning and disinfection

When cleaning and disinfecting the unit and its accessories, observe country-specific directives, standards and specifications for veterinary products as well as the specific specifications for veterinary practices and clinics.

NOTICE
The use of unsuitable agents and methods can damage the unit and accessories as well as adversely affect the health of animals.
Do not use any products based on phenolic compounds, halogen-releasing compounds, strong organic acids or oxygen-releasing compounds, as they may damage the materials.
- › DÜRR MEDICAL recommends that any soiling be removed with a soft, lint free cloth that has been dampened with cold tap water.
- › For disinfection, DÜRR MEDICAL recommends using 70% 2-propanol (isopropyl alcohol) on a soft, lint-free cloth.
- › Read the operating instructions for the disinfectants


Wear protective gloves.

13.1 Imaging 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, lint-free cloth that has been dampened with cold tap water.
- › Disinfect the surfaces using a disinfection wipe. Alternatively, use disinfectant on a soft, lint-free cloth.

13.2 Light protection cover

The surface of the light protection cover must be disinfected.
- › Disinfect the light protection cover using a disinfectant before and after placement.
- › Allow the light protection cover to completely dry before using it.

13.3 Imaging plate

Cleaning and disinfection wipes are not suitable for cleaning imaging plates and may cause damage to them.
Only use a cleaning agent that is compatible with the materials:
DÜRR MEDICAL recommends the imaging plate cleaning wipe (see "3.4 Consumables"). Only this product has been subjected to material compatibility testing by DÜRR MEDICAL.

NOTICE
Heat or humidity will damage the imaging plate.
- › Do not steam sterilize the imaging plate.
- › Do not immersion-disinfect the imaging plate.
- › Only use cleaning agents that are compatible with the materials.

13.4 Plate guides

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

NOTICE
Heat can damage plastic parts.
- › Do not use a thermal disinfector unit or steam sterilizer on any device.

13.5 Plate transfer box

Clean and disinfect the surface of the storage box and the internal imaging plate storage tray in the event of contamination or visible soiling.
- › Clean the surface of the storage box with a soft, lint-free cloth that has been dampened with cold tap water.
- › Disinfect the storage box using a disinfection wipe. Alternatively, use disinfectant on a soft, lint-free cloth.

14 Maintenance

14.1 Yearly scheduled maintenance.

Like all precision products, the CR 8 VET requires a certain amount of care on a regularly scheduled basis. A well-organized maintenance program aids dependable equipment operation and reduces problems to a minimum. Yearly service carried out by a DÜRR MEDICAL trained and certified technician will ensure continued uninterrupted operation. These routine checks help to detect general overall wear, and replacement of parts can often be made before a problem occurs.

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

Only trained specialists or personnel trained by DÜRR MEDICAL may service the unit.

The recommended maintenance intervals are based on using the device for 25 intraoral images per day on 220 working days per year.

Maintenance interval	Maintenance work
Annually	› Visually inspect the device.
	› Check the imaging 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.
	› Change the roller fixtures.
	› Change the drive belt.
	› Carry out a system check.

EN

15 Tips for operators and service technicians

Any repairs exceeding routine maintenance may only be carried out by qualified personnel or our service.

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

15.1 Poor X-ray image

Problem	Probable cause	Solution
No X-ray image shown on the monitor after scanning	Imaging plate not fed in straight and inactive side was scanned	› Scan the imaging plate again immediately, making sure you feed it in correctly in the process.
	Image data on the imaging plate has been erased, e.g. by ambient light	› Always scan the image data of the imaging plate as soon as possible.
	Fault on the unit	› Contact technician.
	No image data on imaging plate, imaging plate not exposed	› Expose the imaging plate.
	X-ray unit is faulty	› Contact 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 imaging plate has been exposed to ambient light	› Always scan the image data of the imaging plate as soon as possible.
	X-ray dose too low	› Check X-ray parameters
	Incorrect brightness/contrast settings in the software	› Adjust the brightness of the Xray image in the software.
X-ray image only shadowy	The X-ray dose on the imaging 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.
X-ray image is mirror inverted	Imaging plate incorrectly inserted in plate guide or light protection cover.	› Insert imaging plate correctly.
	Imaging plate not placed straight.	› Position the imaging plate correctly.

Problem	Probable cause	Solution
Ghosting or double exposure on X-ray image	Imaging plate exposed twice	› Only expose the imaging plate once
	Imaging plate not sufficiently erased	› Check the erasure unit for proper function. › Inform a service technician, if the problem persists.
X-ray image mirrored in one corner	Imaging plate bent during X-ray exposure	› Do not bend the imaging plate
Shadow on the X-ray image	Imaging plate removed from the light protection cover before scanning	› Do not handle imaging plates without a light protection cover. › Store the imaging plate in a light protection cover.
X-ray image cut off, part missing	A metal part of the X-ray tube is in front of the X-ray beam	› Recording an X-ray image, make sure there are no metal parts between the X-ray tube and the animal. › Check X-ray tube.
	Faulty edge masking in imaging software	› Deactivate edge masking.
Software unable to combine the data to make a complete image	The X-ray dose on the imaging plate was insufficient	› Increase X-ray dose.
	Unsuitable scanning mode selected	› Select a suitable scanning mode.
	Amplification (HV value) is set too low in the software	› Increase amplification (HV value).
	The setting for the threshold value is too high	› Reduce the threshold value
X-ray image has strips on image	Imaging plate has been pre-exposed, e.g. by natural radiation or stray X-ray radiation	› If the imaging plate has been stored for more than one week, erase the imaging plate prior to use.
	Parts of imaging plate exposed to light during handling	› Do not expose exposed imaging plates to bright light. › Scan image data within half an hour after the exposure.
	Imaging plate dirty or scratched	› Clean the imaging plate. › Replace scratched imaging plate.
Bright stripes in the scanning window	Too much incident ambient light during the scanning process	› Darken the room. › Turn the unit such that no light is directly incident on the input unit.
Horizontal, grey lines in the X-ray image, extending beyond the left and right image edge	Transport slipping	› Clean the transport mechanism, replace the transport belts if necessary.

EN

Problem	Probable cause	Solution
X-ray image is stretched lengthwise with bright, horizontal stripes	Wrong light protection cover or imaging plate used	› Only use original accessories.
X-ray image split vertically into two halves	Dirt in the laser slit (e.g. hair, dust	› Clean the laser slit.
X-ray image with small bright spots or clouding	Micro scratches on the imaging plate	› Replace the imaging plate.
Lamination of the imaging plate detaches at the edge	Wrong retainer system used	› Only use original imaging plate and film retainer systems.
	Imaging plate handled incorrectly	› Use the imaging plate correctly. › Comply with the operating instructions of the imaging plate and film retainer systems.

15.2 Software error.

Problem	Probable cause	Solution
Too much ambient light	Unit is exposed to too much light	› Darken the room. › Turn the unit such that no light can directly enter into the entry slot.
Over temperature	Laser or erasure unit too hot	› Switch the unit off and allow it to cool.
Erasure unit fault	LED defective	› Contact technician.
Imaging software fails to recognize the unit	Unit not switched on	› Switch the device on.
	Connecting cable between unit 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 error	› Contact technician.
	The IP address of the unit is being used by another unit	› Check the network settings (IP address and subnet mask) and assign a unique IP address to each unit. › Inform a service technician, if the problem persists.
Error message “E2490	The connection to the unit was interrupted while the software was still attempting to communicate with the unit	› Restore the connection to the unit. › Repeat the process.
Error during data transmission between unit and computer. Error message “CRC error timeout”	Connecting cable used is incorrect or too long	› Only use original cables.
Vet-Exam Pro detected that the wrong side of the imaging plate may have been exposed.	The imaging plate was exposed on the back (inactive) side while the X-ray was being taken.	Check the orientation and the image quality before making a diagnosis. When diagnosing the X-ray image, note that the X-ray image is displayed mirror-inverted.

EN

15.3 Fault on the unit.

Problem	Probable cause	Solution
Touch screen displays following warning: RFID Tag is missing, not valid or imaging plate size mismatch inserted. Please use correct imaging plate.	Using non-imaging plates IPX made by DÜRR MEDICAL	› Use only imaging plates IPX made by DÜRR MEDICAL .
Unit does not switch on	No mains voltage	› Check the mains cable and plug connection and replace if necessary › Check the power supply unit. › If the touch screen does not light up, replace the power supply. › Check the mains fuse in the building.
	On/Standby switch is defective	› Contact technician.
Unit switches off after a short time	Mains cable or power supply unit plug not inserted correctly	› Check mains cable and plug connections.
	Hardware defect	› Contact technician
	Mains supply voltage too low	› Check the mains supply voltage.
Loud noises lasting more than 30 secs after torn on	Radiation deflector defective	› Contact technician
Unit not responding	The unit has not yet completed the startup procedure	› Wait 20 - 30 seconds for the startup procedure to be completed.
	Unit is blocked by the firewall	› Enable the ports for the unit in the firewall settings.
Unit is on, touch screen does not display	Touch screen initialization fault Screen brightness set too dark Touch screen defective	› Switch the unit off and on again. › Update firmware › Increase touch screen brightness. › Contact technician
Imaging plate does not fit in input slot	Incorrect plate guide used	› Install corresponding plate guide for imaging plate size
Light protection cover slips	Wrong imaging plate input slot (too big) used	› Use the plate guide according to size use
Indicator for use does not ight up	Insert is not used correctly	› Use insert correctly.
Device and computer not working properly.	Network connection cable between device and computer not connected	› Check cable connection
	IP address of the device is used by another device	› Change network setting (IPAddress and subnet mask) › Assign every device a unique IP address.

15.4 Error messages on the touch screen.

Problem	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. › Contact technician.
Error code 1022	Subassembly not initialized	› Fault in software, update the software if required. › Contact 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 insertion slot.
Error code 1026	Incorrect acquisition mode	› 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	› Contact technician. › Check the belt drive. › Check for blockage, remove Imaging plate from unit.
Error code 1104	Erasure unit fault	› Contact technician. › Replace the erasure unit.
Error code 1153	Unit fault	› Switch the unit off and on again. › Update firmware.
Error code 1154	Internal data communication fault	› Switch the unit off and on again. › Update firmware.
Error code 1160	Final pentaprism assembly rotation speed not reached	› Contact technician. › Update firmware. › Replace the pentaprism assembly if the problem occurs regularly.
Error code 1170	SOL sensor time out Fault on the laser, SOL sensor or pentaprism assembly	› Contact technician. › Update firmware.
Error code 1172	SOL sensor time out Fault on the laser, SOL sensor or pentaprism assembly	› Inform a service technician. › Update the firmware.

EN

Problem	Probable cause	Solution
Error code 10000	Unit is exposed to too much light	› Darken the room. › Turn the unit such that no light can be directly incident in the entry slot.
Error code 10009	Internal communication error warning; unit remains ready for operation	› Update the firmware.
Error code 10017	Unit shuts 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	› Transmit 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 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 on again.
	Internal communication fault	› Switch the unit off and 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.

16 Scanning times

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

The time to image will depend largely on the computer system used and its workload. 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
Intra Size 4C (4,8 x 5,4)	78 s	25 s	20 s	10 s
Size 5 (5,7 x 9,4)	70 s	42 s	35 s	16 s
Size 6 (5.1 x 14.0)	39 s	24 s	19 s	10 s
Size R3 (2.2 x 5.4)	40 s	25 s	20 s	10 s

17 File size (uncompressed).

The actual file size will depend on the imaging plate format and the pixel size. File sizes stated are ap¬proximate 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	13.86MB	3.47 MB
Intra Size 4C (4,8 x 5,4)	31,64 MB	12,36 MB	7,91 MB	98 MB
Size 5 (5,7 x 9,4)	64.01 MB	25.01 MB	16.00 MB	4.00 MB
Size 6 (5.1 x 14.0)	87.16 MB	34.05 MB	21.79 MB	5.45 MB
Size R3 (2.2 x 5.4)	14.50 MB	5.66 MB	3.63 MB	0.91 MB

EN

Contact iM3

iM3 Pty ltd Australia
Southern Hemisphere including Asia
iM3 Pty ltd Australia
21 Chaplin Drive
Lane Cove NSW 2066
Australia
Fon: +61 2 9420 5766
Fax: +61 2 9420 5677
www.im3vet.com
sales@im3vet.com

iM3 Dental Limited
Europe, Russia, CIS countries, United Arab Emirates, North Africa
iM3 Dental Ltd
Unit 9, Block 4,
City North Business Park
Stamullen, Co. Meath
IRELAND
Fon: +353 16911277
www.im3vet.com
sales@im3dental.com

iM3 Inc. USA
America and Canada
iM3 Inc. USA
12414 NE 95th Street
Vancouver, WA 98682 USA
Fon: +1800 664 6348
Fax: +1 360 254 2940
www.im3vet.com
info@im3usa.com

Vertreiber/Distributor:
Australia/Corporate: iM3 Pty Ltd
Europe: iM3 Dental Limited
USA: iM3 Inc.
www.im3vet.com

Hersteller/Manufacturer:

Manufactured for DÜRR MEDICAL by
Air Techniques, Inc.
1295 Walt Whitman Road
Melville, New York, USA 11747- 3062

DÜRR NDT GmbH & Co. KG
Höpfigheimer Str. 22
74321 Bietigheim-Bissingen
Germany
Division DÜRR MEDICAL
www.duerr-medical.de
info@duerr-medical.de