

SCAN▶X®

ScanX Touch

ScanX Duo Touch

PN - J1100

PN - J1200

Image Plate Scanners

Installation and Operating Instructions



Intertek

CONTENTS

Important Information

1. About this Manual	5
1.1 Introduction	5
1.2 Warnings and symbols	5
1.3 Copyright information	8
2. Safety	9
2.1 Intended use	9
2.2 Improper use	9
2.3 General safety information	9
2.4 Qualified personnel	9
2.5 Protection from electrical shock	9
2.6 Only use genuine parts	9
2.7 Transport	10
2.8 Disposal	10
2.9 Using plates and barrier envelopes	10
2.10 Using software	10
2.11 Protection from cybersecurity threats	10

Product Description

3. Overview	11
3.1 Scope of delivery	11
4. Technical Data	12
4.1 Image plate scanners	12
4.2 Phosphor storage plate	16
4.3 Barrier envelope	16
4.4 Model identification plate	17
5. Function	18
5.1 Image plate scanners	18
5.2 Functional description	18
5.3 Phosphor storage plate	19
5.4 Barrier envelope	20
5.5 Transfer box	20
5.6 Stylus	20

Installation

6. Requirements	21
6.1 Installation/set-up room	21
6.2 Counter top/table set-up	21
6.3 Monitor	21
6.4 Computer system requirements	22
6.5 Computer system required components	22
6.6 Recommended components	22
6.7 System properties	23

7. Installation	23
7.1 Carrying the scanner	23
7.2 ScanX dimensions	23
7.3 Software installation	24
7.4 Connecting appliances securely	24
7.5 Electrical connection	24
7.6 Connect ScanX for operation	25
8. Initial start-up	26
8.1 Installing and configuring ScanX	26
8.2 Configuring X-ray devices	28

Operation

9. Operating the touch screen	29
9.1 Navigating	29
9.2 Using menus	29
9.3 Entering text in a field	29
9.4 Calling up messages on the touch screen	30
9.5 System settings	30
9.6 Main menu	31
10. Barrier Envelope	34
10.1 Barrier envelope use	34
10.2 Barrier envelope handling	34
11. Plates	34
11.1 General	34
11.2 Working with plates	35
11.3 Storing plates	35
11.4 Cleaning phosphor storage plates	36
11.5 Disinfecting the phosphor storage plates	36
11.6 Disposal of phosphor storage plates	36
11.7 Preparing intraoral plates for patient use	36
11.8 Take an X-ray image	37
12. Plate Scanning with ScanX	37
12.1 Changing the inlet guide	37
12.2 Scanner plate processing	37
12.3 Preparing single and multiple exposed plates for scanner processing	38
12.4 Scanning multiple plates	39
12.5 Erasing the image data	39
12.6 Image data scanning	41
12.7 Scanning image data via a computer	41
12.8 Scanning image data via the touch screen	42
12.9 Image recovery	43

CONTENTS

13. Disinfection and Cleaning	44
14. Maintenance.....	44
14.1 Yearly scheduled maintenance	44
14.2 Phosphor storage plates	44
14.3 Check image quality	44

Troubleshooting

15. Troubleshooting	46
15.1 Poor X-ray image.....	46
15.2 Software error.....	49
15.3 Fault on the unit.....	51
15.4 Error messages on the touch screen.....	52

Storage

16. Device Shutdown and Storage	54
16.1 Powering down system.....	54
16.2 Protective dust cover installation.....	54

Parts

17. Replacement and Accessory Parts	54
17.1 Replacement parts	54
17.2 Accessory and consumable parts.....	54
17.3 Transfer storage box, PN 73470.....	55
17.4 Intraoral phosphor storage plates.....	55
17.5 Patented, easy-open barrier envelopes.....	55
17.6 Box of 50 PSP cleaning wipes, B8910	55

Appendix

A-1. Scanning Times	56
A-2. File Size (uncompressed).....	56
B-1. Electromagnetic Compatibility (EMC) Compliance Information	57
B-2. Manufacturer's Guidance and Declaration - Electromagnetic Emissions.....	57
B-3. B-3. Recommended Separation Distances Between Equipment	60

Warranty	61
-----------------------	-----------

Online Registration.....	61
---------------------------------	-----------

1. About this Manual

This Installation and Operating Instructions manual provides the information necessary for the setup, operation and routine care and maintenance of the ScanX® Touch and ScanX® Duo Touch Image Plate Scanners (PNs J1100 and J1200). 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 is not to be used as a replacement for training in radiography.

For information regarding the computer system and imaging software, refer to the appropriate documentation provided with your computer hardware and third party software.

Review and follow the guidelines included in this manual to ensure that your ScanX gives the highest level of service. For product support and information on the ScanX, contact your authorized dealer; or visit the web site, www.airtechniques.com.

1.1 Introduction

Congratulations on your purchase of the ScanX® Touch or ScanX® Duo Touch Image Plate Scanner, the chair-side imaging device from Air Techniques, a leading manufacturer of dental, medical and veterinary equipment since 1962. The ScanX® Touch processes one imaging plate while ScanX® Duo Touch processes two at a time. The devices are hereafter referred to as ScanX in this manual. The ScanX is designed to process intraoral imaging plates only. ScanX has been manufactured using state-of-the-art technology to give many years of dependable service. See the sections Unpacking and Inspection and Technical Data for details.

ScanX allows multi room dental clinics to produce digital radiographs within seconds using a flexible PSP. The workflow is supported by a touch screen, for job handling (ScanManager, Patient information), preview and stand alone work. ScanX produces the digital diagnostic quality intraoral image by scanning PSPs, which have been exposed to X-rays. Using software that supports Intelligent Track Control allows ScanX to be operated by two users at the same time with different patients.

ScanX can also work independently. If the IT network goes down, the user can still scan and save X-ray images. The images are temporarily placed in the internal memory and are later transferred to the office database. This makes the device ideally suited to provide a mobile solution when it is necessary to visit the patient outside the office.

Additionally, ScanX allows computer storage, processing, retrieval and display of the processed images utilizing a user supplied software (e.g. DBSWIN) and computer. An additional feature of ScanX consists of an in-line plate eraser function that removes the latent image from the plate immediately after scanning. This design provides an efficient one-operation scanning and erasing process leaving the user with a PSP ready for the next X-ray procedure.

1.2 Warnings and symbols.

Warnings -

The following warnings in this document are used to draw attention to possible injury to persons or damage to equipment.



Voltage hazard that can be a caution or warning depending on the magnitude of the risk.



General warning symbol is a symbol that indicates a hazard. It is composed of an equilateral triangle surrounding an exclamation mark. The safety alert symbol shall not be used to alert persons of property damage only accidents.



Warning - laser beam hazard.



SIGNAL WORD

Description of the type and source of danger.

Here you will find the possible results of ignoring the warning.

➤ Follow these measures to avoid the danger.

IMPORTANT INFORMATION

The signal word differentiates between four levels of danger:

- ❑ **DANGER:** Indicates immediate danger of severe injury or death.
- ❑ **WARNING:** Indicates possible danger of severe injury or death.
- ❑ **CAUTION:** Indicates risk of minor injuries.
- ❑ **NOTICE:** Indicates information is considered important, but not hazard-related (e.g. messages relating to risk of extensive material/property damage). The safety alert symbol shall not be used with this signal word. When a signal word is used for messages relating to property damage, NOTICE is the choice of signal word.

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.



- ScanX contains a laser and is a Class 1 [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.
- Alerts user that Scanx becomes a Class 3B device when opened. Only a trained technician from an authorized dealer should remove a cover from the ScanX. 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 device.
- 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.



ELECTRIC
SHOCK
RISK

- Check the device cables for possible damage before switching on. Damaged cables, plugs and sockets must be replaced before use.
- Never touch open supply outlets.
- Do not locate unit where it could be sprayed with water, or in a damp environment.



Caution



Caution



Caution



Caution



Warning



Caution



Warning



Warning

- While the ScanX 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 ScanX 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, transducers and cables other than those specified or provided by the manufacturer of this equipment could result in increased electromagnetic emissions or decreased electromagnetic immunity of this equipment and result in improper operation.
- 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 ScanX including cables specified by the manufacturer. Otherwise, degradation of the performance of this equipment could result.

Knowledge of Notices.

The following Notices are used in this manual to denote risk of extensive material/property damage or information of special importance in scanner operation:

NOTICE**Do Not Attempt Internal Service.**

All repairs above and beyond simple maintenance may only be carried out by a suitably qualified person approved by Air Techniques.

Contact your local authorized dealer for service.
Failure to heed this directive may result in damage to equipment and voiding the warranty.

NOTICE

- Do not use damaged PSPs. Damaged PSPs may not provide reliable diagnostic images.
- Laser product compliance: Air Techniques 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.
- Use USB cables not exceeding 3 m to connect between the computer and the scanner. Cable lengths greater than 3 m may violate EMC compliance.
- 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.

NOTICE

- Operate the scanner outside of the patient environment, at least 1.5 m away from the patient. Do not touch the device and the patient simultaneously.
- PSP preparation: Completely clean and erase PSPs before taking an X-ray exposure. See the PSP PREPARATION section of this manual.
- Use care in handling PSPs: Avoid fingerprints and scratching. Refer to the instructions provided with the PSP package for further information on handling.
- Equipment disposal. Disposal of ScanX units, including internal electronic circuitry and PSPs 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 PSP only. Avoid damage to the ScanX transport by making sure that the PSP barrier envelope does not get pulled into the transport along with the PSP.

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.

IMPORTANT INFORMATION

Markings and Other Symbols

The following markings or symbols are used on the equipment or throughout this manual to denote information of special importance:



Note, e.g. specific instructions regarding efficient and cost-effective use of the unit.



Wear hand protection.



Do not reuse



Alerts users to important Operating and Maintenance instructions. Read carefully to avoid any problems.



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



Indicates that the ScanX is a UL Classified product.



CE-labeling.



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



Indicates date of manufacture



Identifies the name of the manufacturer.

Manufacturer:

Air Techniques, Inc.
1295 Walt Whitman Road
Melville, New York 11747 USA

1.3 Copyright information

All circuits, processes, names, software programs and appliances quoted are protected under industrial property rights. Printing or copying of these Installation and Operating Instructions, even excerpts thereof, may only be carried out with the written approval of Air Techniques.

2 Safety

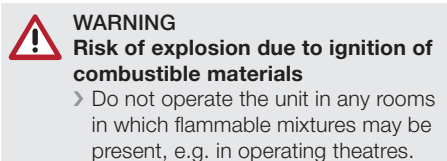
The unit has been developed and designed appropriately such that hazards are largely excluded if the unit is used in accordance with its intended use. Nevertheless, residual hazards may remain. Therefore, please note the following.

2.1 Intended use

The unit is intended to be used for scanning and processing digital images exposed on Phosphor Storage Plates (PSPs) in human dental applications.

2.2 Improper use

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



2.3 General safety information

- ☐ When operating this device always observe all guidelines, laws, and other rules and regulations that are applicable at the site of operation
- ☐ Prior to each use, check condition of the device and make sure it is in perfect working order.
- ☐ Do not convert or modify the units.
- ☐ Observe the Installation and Operating Instructions.
- ☐ Make the Installation and Operating Instructions available to the person operating the device at all times

2.4 Qualified personnel

Operation

Persons who operate the units must ensure safe and correct handling based on their training and knowledge. Make sure to instruct or have every user instructed in handling the unit.

Installation and repairs

- ☐ All installation, resetting, alteration, expansion and repair must be carried out either by authorized dealer personnel or by a suitably qualified person approved by Air Techniques.

2.5 Protection from electric shock

- ☐ When working on the units observe all the relevant electrical safety regulations.
- ☐ Immediately replace any damaged cables or plugs.



Air Techniques accepts no liability for damage or injury resulting where accessories or special accessories or where non-original parts or spare parts not specifically approved have been used.

2.6 Only use genuine parts

- ☐ Only parts specified by Air Techniques or specifically approved accessories and special accessories may be used with this appliance.
- ☐ Only use original working parts and spare parts.

IMPORTANT INFORMATION



Air Techniques cannot be held responsible for any damage to the unit resulting from transport in unsuitable packaging; this is also valid during the period of guarantee.

2.7 Transport

Only the original packing ensures optimum protection for the appliance during transport. Where required original unit packing for this unit can be ordered from Air Techniques.

- ☐ Only transport the unit in its original packing.
- ☐ Keep all packaging away from children.
- ☐ Do not expose the unit to any strong vibrations or shocks

2.8 Disposal Unit

Dispose of the unit correctly. The unit must be disposed of only at the appropriate facilities for recovery and recycling in accordance with the locally applicable regulations.

PSP The PSP contains barium compounds.

- ☐ Dispose of the image plate properly in accordance with the locally applicable regulations.

2.9 Using Plates and Barrier Envelopes

- ☐ Only use ScanX with Air Techniques plates and barrier envelopes.
- ☐ Plates and barrier envelopes from other manufacturers can lead to loss of image data or poor quality images, interference with correct operation and greater wear of the ScanX.

2.10 Using software

- ☐ Only use imaging software that has been authorized by Air Techniques. Further information can be found on our web site **www.airtechniques.com**.
- ☐ See Section 7 for the supported operating systems and computer requirements.

2.11 Protection from cybersecurity threats

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.
- ☐ Provide access to units only to trustworthy users, e.g. by means of user name and password.
- ☐ Make sure that only trustworthy contents are downloaded. Install manufacturer-authenticated software and firmware updates only.

2.12 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 is subject 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.

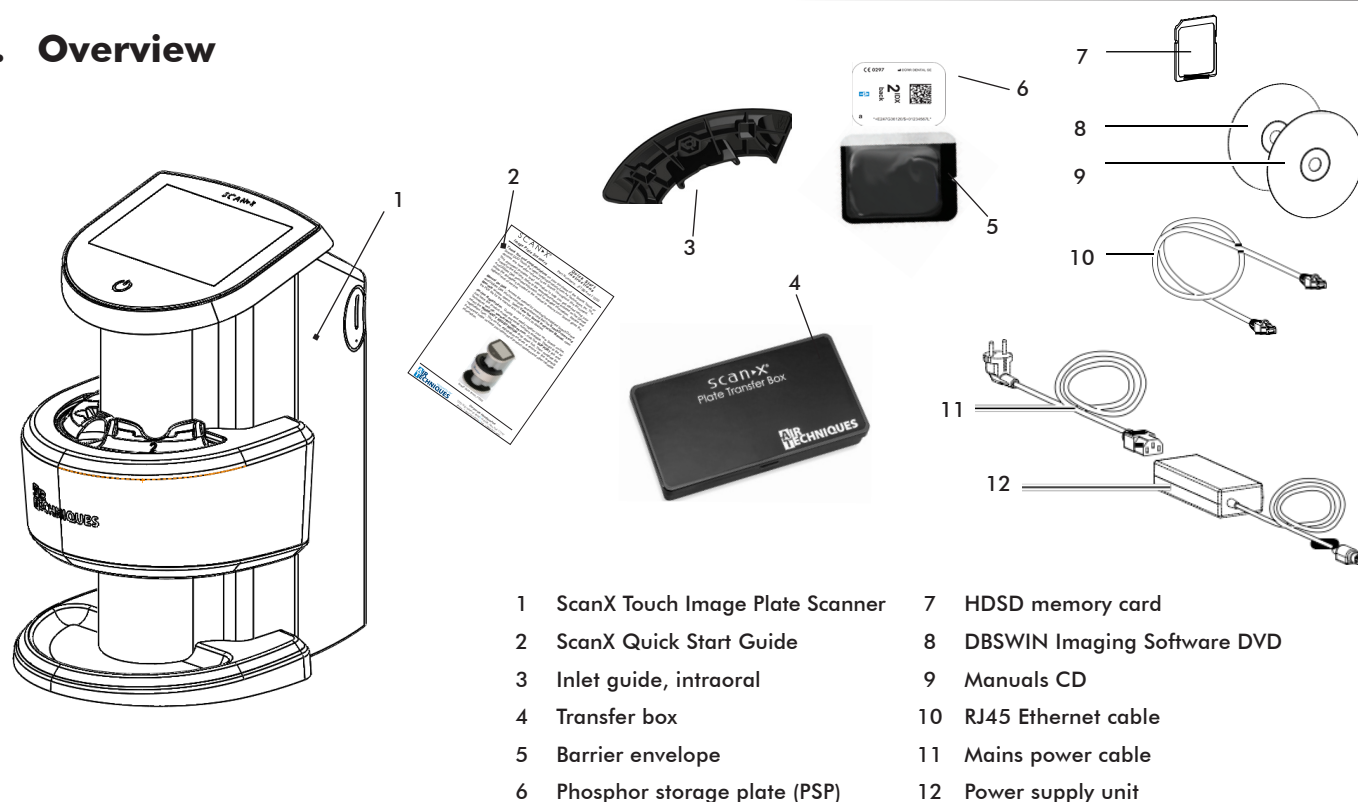
2.13 Industry Canada Statement

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.

PRODUCT DESCRIPTION

3. Overview



The use of equipment and components not complying with the equivalent safety requirements of those specifically listed under accessories may lead to a reduced level of safety of the system.

3.1 Scope of delivery.

Unpack each component of ScanX and inspect for physical damage such as scratched panels, damaged connectors, etc. If there is any damage, notify your Air Techniques authorized dealer immediately so corrective action can be taken. Save all cartons and packing materials to protect ScanX in the event that it is to be transported or shipped in the future. ScanX consists of either the Touch or Duo Touch main assembly and accessory kit as listed below. Verify that all listed items were received. If any item is missing, notify your dealer.

ScanX Touch basic unit J1100 or J1200

ScanX Touch Image Plate Scanner, PN J1100

ScanX Duo Touch Image Plate Scanner, PN J1200

ScanX Quick Start Guide

Accessory Kit depending on variant containing:

External 24 VDC Power Supply Adapter/Cable
Ethernet Cable

HDSD Memory Card ($\geq 8\text{GB}$)

Size #0, #2, #3 and #4 Inlet Guides

(1 each for Touch unit or 2 each for Duo unit)

Phosphor Storage Plates IDX Size 2

Phosphor Storage Plates IDX Size 0

Size #2 Barrier Envelopes (Box of 300)

Size #0 Barrier Envelopes (Box of 100)

Touch Screen Stylus (magnetized for storage on unit)

User Information Folder containing:

CD containing drivers, utilities & manual

DVD Tutorial Video

DBSWIN Imaging Software

ScanX PSP IP Ethanol Wipe

PRODUCT DESCRIPTION**4. Technical Data****4.1 Image plate scanners**

Power Unit Electrical Details		J1100	J1200
Voltage	VAC	100 - 240	100-240
Maximum fluctuation in rated voltage	%	+/- 10	
Frequency	Hz	50/60	
Maximum Current	A	0.35-0.15	0.46-0.19
Electrical Data ScanX		J1100	J1200
Voltage	VDC	24	
Maximum fluctuation in rated current	%	+/- 10	
Maximum Current	A	1.25	1.65
Power consumption	W	<30	<39.6
Duty Cycle			
S2	min	25	
S6	%	25	
ScanX Physical Characteristics			
Dimensions (W x H x D)	in	8.7 X 12.6 X 10.6	
	cm	22 X 32 X 27	
Weight (approximate)	lbs	17.6	
	kg	8.0	
Noise Levels			
Ready	db(A)	<40	
Scanning	db(A)	<60	
General Values			
Medical appliance category		1	
Laser protection class		IEC 60825-1 Ed. 3 (2014))	
Wavelength		635 nm10 mW EN 60825-1:2006-04	
Heat radiation	W	<40	
Pixel size can be selected from range	μm	21 to 50	
Maximum Resolution (depending on plate) horizontal/vertical	Lp/mm	13/20	
Conformity Acceptance Procedure			
Medical device		2007/47/EC	
Barrier envelope Medical device classification		I	
Plate Medical device classification		IIa	
EMC			
Conducted HF - disturbance V ₁ according to IEC 61000-4-6	V _{eff}	3	
Radiated HF - disturbance V ₁ according to IEC 61000-4-3	V _{eff}	4	

PRODUCT DESCRIPTION**Technical data for the RFID module**

Frequency	MHz	13.56
Modulation		ASK
Max. 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

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	° F	50 to 95
	°C	+10 to +35
Air pressure	in Hg	22 to 31
	mB	750 to 1060
Altitude	ft.	<6562
	m	<2000
Humidity	%	20 to 80

Ambient conditions during storage and transport

Temperature	° F	-4 to 140
	°C	-20 to +60
Air pressure	in Hg	22 to 31
	mB	750 to 1060
Altitude	ft	<52493
	m	<16000
Humidity	%	10 to 95

Manufacturer

Air Techniques, Inc.
 1295 Walt Whitman Road
 Melville, New York 11747-3062, USA
www.airtechniques.com

PRODUCT DESCRIPTION

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

PRODUCT DESCRIPTION**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
--	-----------

PRODUCT DESCRIPTION**4.2 Phosphor storage plate**

Classification		
Medical Devices Directive (2007/47/EC)		Class IIa
Medical Device (FDA)		Class I
Ambient conditions during operation		
Temperature	°F	64 to 113
	°C	18 to 45
Relative humidity	%	< 80
Ambient conditions during storage and transport		
Temperature	°F	< 91
	°C	< 33
Relative humidity	%	< 80
Dimensions of intraoral PSPs		
Size 0	in	0.87 x 1.4
	mm	22 x 35
Size 1	in	0.94 x 1.6
	mm	24 x 40
Size 2	in	1.2 x 1.6
	mm	31 x 41
Size 3	in	1.1 x 2.1
	mm	27 x 54
Size 4	in	2.2 x 3
	mm	57 x 76

4.3 Barrier envelope

Classification	
Medical Devices Directive (2007/47/EC)	Class I
Medical Device (FDA)	Class I

The model identification plate is located on the back cover of the unit.

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.

This Class A digital apparatus complies with IEC 60601-1 Edition 3.1 (2012) / EN 60601-1:2006 + A1:2013 + A12:2014, IEC 60601-1-2, 3RD edition (see Appendix B) and IEC 60601-1-2, 4th edition.

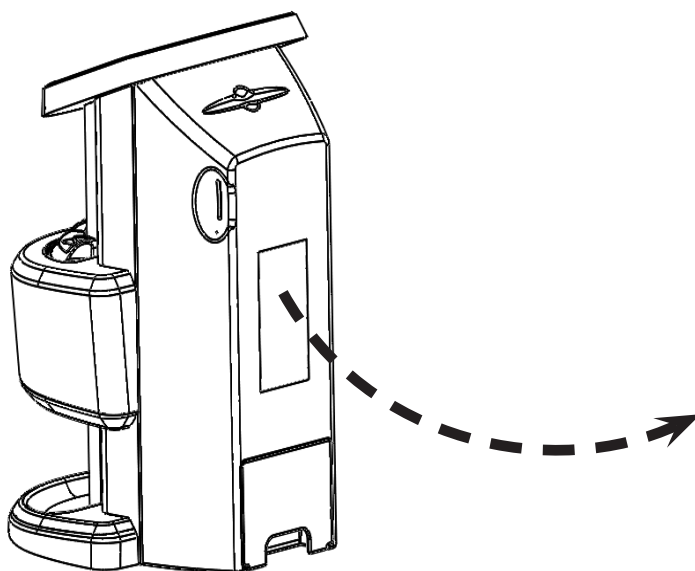
This equipment has been tested and found to comply with the limits for a class A digital device, pursuant to Part 15 of the FCC rules.

FCC Part 15 Subpart C, Section 15.225/IC RSS-210 Radiated Spurious and Bandedge, EN 300 330.

IEEE C95.1- MPE Calculation - ANSI C95.1-RSS-102 EN 301 489-1/EN 301 489-17

These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of these equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Complies with FDA performance standards for laser products except for deviations pursuant to Laser Notice No. 50, date (June 24,2007).



MODEL	SCANX DUO TOUCH
CAT	J1200
REF	J1205
SN	PROTO B4
	NOVEMBER 2017
VOLTS	24 V 
AMPS	1.65 A
POWER	39.6 W

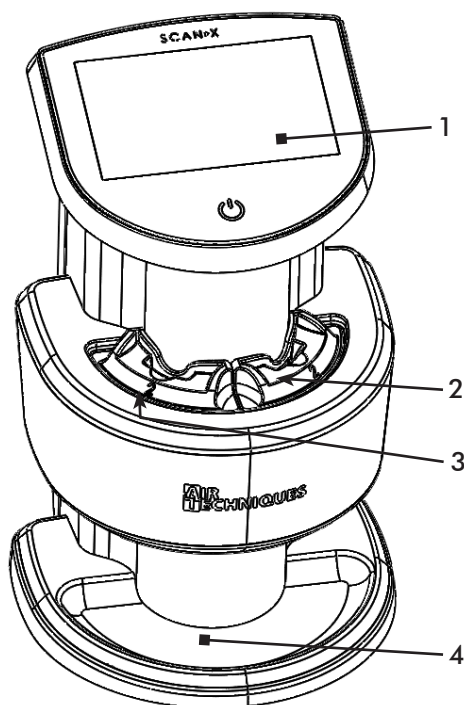


SN Serial number

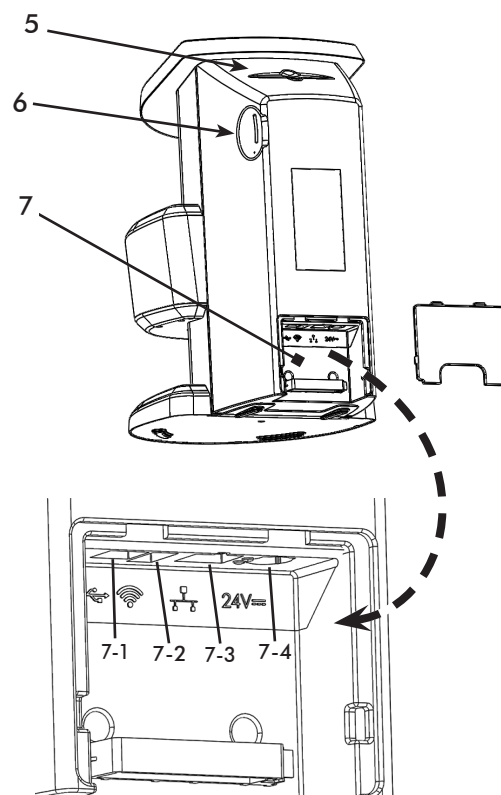
PRODUCT DESCRIPTION

5. Function

5.1 Image plate scanners



- 1 User interface
- 2 & 3 Plate insertion slots
(2 slots for Duo Touch units & 1 slot for Touch units)
- 4 Tray liner
- 5 Stylus
- 6 Memory card slot
- 7 Connection portal



Connections

The connections are located on the Connection portal at the rear of the unit as listed below and shown to the right.

- 7-1 Type B USB connection
- 7-2 Type A USB connection
- 7-3 RJ45 Ethernet connection
- 7-4 24 VDC Power supply unit connection

5.2 Functional description.

The ScanX is a self-contained digital imaging scanner/eraser system used to read image data stored from reusable photostimulable or Phosphor Storage Plates (PSP). ScanX Duo Touch is capable of simultaneously scanning up to two imaging plates (depending on the sizes) at the same resolution. ScanX Touch units can scan one imaging plate at a time.

The transport mechanism guides the imaging plate through the unit. The imaging plate is read using an internal laser scanner. The scanned data is converted into a digital image. Image processing occurs in two different ways: via user supplied imaging software (e.g. DBSWIN) or directly by the touch screen. When a started via the imaging software, the image is automatically transmitted to the PC. Consequently, when a scanning job is started via the touch screen, the image is saved to the memory card and must subsequently be transmitted to the PC. In addition to immediate display of the resultant images, the software allows image enhancement processing, storage (hard drive or CD), and sharing/retrieval.

After scanning, the imaging plate runs through the erasure section of the unit. Any image data remaining on the imaging plate is erased using a strong light source. The imaging plate is then released for further use.

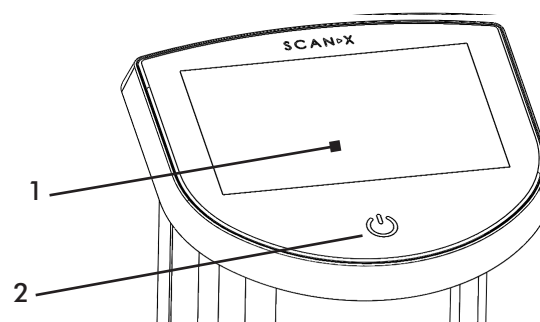
PRODUCT DESCRIPTION

User interface

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 either with the tip of a finger or the stylus.

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.



- 1 Touch screen
- 2 On/off switch



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

ScanManager

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.

5.3 Phosphor storage plate

The phosphor storage plate (PSP) 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 PSP has an active side and an inactive side. The PSP must always be exposed on the active side.

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

1 Inactive side is Black where size and other information is printed.

2 Active side is light blue, with positioning aid **a**

Positioning aid **a** is visible on the x-ray image and makes orientation easier during diagnosis



PRODUCT DESCRIPTION

5.4 Barrier envelope

The barrier envelope is a disposable item and provides several protective functions for the intraoral PSP:

- ☐ Protection against sunlight and UV light, and therefore protection against accidental erasure.
- ☐ Protection against mechanical damage
- ☐ Protection against contamination and soiling the barrier envelope.
- ☐ Available in different sizes just like plates. Select appropriate size (Size #0, #1 or #2).

5.5 Transfer box

Protects the PSP during typical day-to-day use and storage. The transfer box also protects the PSP image against light source damage when they are moved from the patient to the unit.

5.6 Stylus

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



Typical Air Techniques
Barrier Envelope



Typical Air Techniques
Transfer Box



Only suitably qualified personnel should set up, install or operate ScanX.



Damage through shock.
During operation and the switching off process (blue and green operational LEDs blinking alternately) ensure 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.

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



Danger of short circuit due to condensation.
ScanX 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 800 lux) directly above the inlet 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 ScanX.



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

6.2 Counter top/table set-up.

ScanX may be located almost anywhere in the office. Follow these guidelines for optimum performance:

- ☐ 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 the computer within 6 feet (length of USB cord provided).
- ☐ Locate ScanX no further than 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 medical devices.



Warning: Placement of ScanX with or near other equipment may effect operation. Verify normal operation for selected setup configuration.

- ☐ 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.

Monitors designed for digital X-ray processes with a higher light intensity and broad contrast range should be used. Strong room lighting, direct sunlight and reflections all serve to reduce the diagnostic capabilities of the X-ray exposures.

INSTALLATION

6.4. Computer system requirements



ScanX must be connected to a compliant Computer System supplied by the customer. In addition, authorized third party imaging management software, purchased from your dealer or other company, must be installed on the computer in order to operate ScanX.

Smooth operation of Air Techniques 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.

6.5 Computer system required components

The minimum computer system, computer and monitor, requirements necessary to operate ScanX are listed below.

Operating System:	Microsoft Windows 7 Professional, Enterprise, or Ultimate with Service Pack 1 for an Intel 32-bit or an Intel 64-bit extended (x64) processor; Microsoft Windows 8.1 Professional or Enterprise for an Intel 64-bit extended (x64) processor; or Microsoft Windows 10 Professional or Enterprise for an Intel 64-bit extended (x64) processor.
CPU/Speed:	Pentium-4, 1.4 GHz or faster required. Celeron and Duron not supported. 3.0 GHz Intel CORE2 recommended.
USB Port/Version:	USB 2.0 or later
Hard Drive:	At least 10 GB of free space is required to install the software. At least 200 MB of free space is required to start scanning. 500 GB recommended.
System RAM:	1 GB required. 2 GB recommended.
Image Management Software:	VistaEasy & DBSWIN supplied or other compatible authorized third party software (not included with product).
SDRAM:	User Accessible SDRAM Slot Reader
Optical Drive:	Device capable of reading a CD-ROM required
Requirements:	Must be IEC 60601-1 or IEC 60950 compliant

6.6 Recommended components

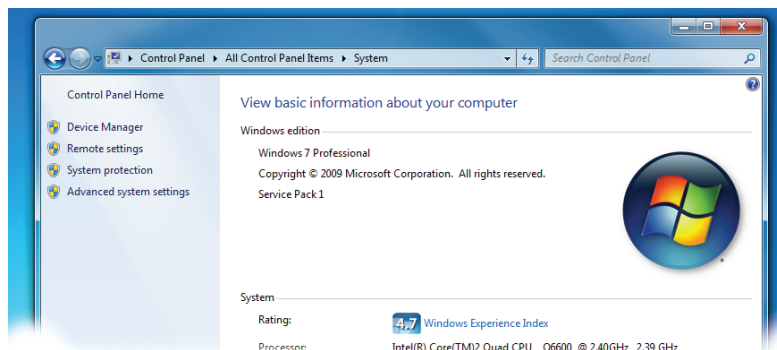
The items listed below are recommended (but not required) computer system components to aide in ScanX operation

Monitor	SXGA, 1280 x 1024 or higher resolution, contrast ratio 10,000:1, .22 dot pitch
Video Display Adapter:	32 MB RAM
Peripherals:	Standard Keyboard & Mouse Backup Device External Surge Protector Power supply backup

6.7 System properties.

If unsure of the operating system version installed, check that it meets the necessary requirements by checking the **System Settings** window as shown to the right.

The **System Settings** window can also be opened from the **Control Panel** button. Just press the **Start** button and select **Control Panel** and then click the **System** icon.



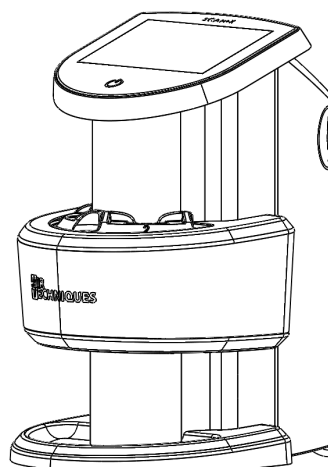
7. Installation

7.1 Carrying the scanner.

NOTICE

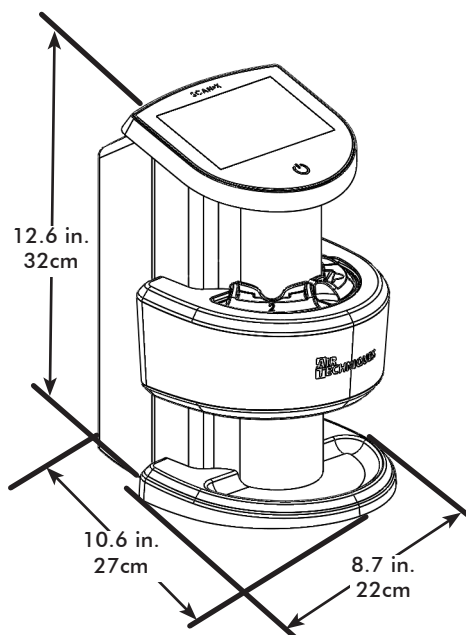
Damage to sensitive appliance components from shocks

- Do not expose the appliance to any strong shocks.
- Do not move the ScanX during operation.
- Only carry the unit by the bottom collector base.
- Do not hold or apply pressure to the transport cover or touch screen.



7.2 ScanX dimensions.

The dimensions of both the Single and Dual units are shown below.



INSTALLATION

7.3 Software installation.

ScanX is designed to be installed by your authorized dealer. The user must provide appropriate and compliant computer hardware where DBSWIN or an authorized third-party imaging program is installed to operate ScanX. Smooth operation of the ScanX 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.

NOTICE

Safety when making the electrical connection

- The unit may only be connected to a correctly installed socket-outlet
- Do not operate any other systems via the same multi-outlet socket
- Make sure the connection lines to the unit are not subject to any mechanical tension

7.4 Connecting appliances securely

Danger can arise when connecting devices together or to parts of systems (eg through leakage currents)

- ☐ Only connect appliances together when there can be no danger to the operator or to the patient
- ☐ Only connect devices when there can be no environmental impairment through such interconnection
- ☐ When it is not clear from the appliance data sheets that such connection will cause no danger, then a qualified expert should be consulted to ensure no danger (eg one of the product manufacturers)
- ☐ Only connect peripheral units (eg computer, monitor, printer) which conform to the standard IEC 60950-1 (EN 60950-1) as a minimum.

7.5 Electrical connection

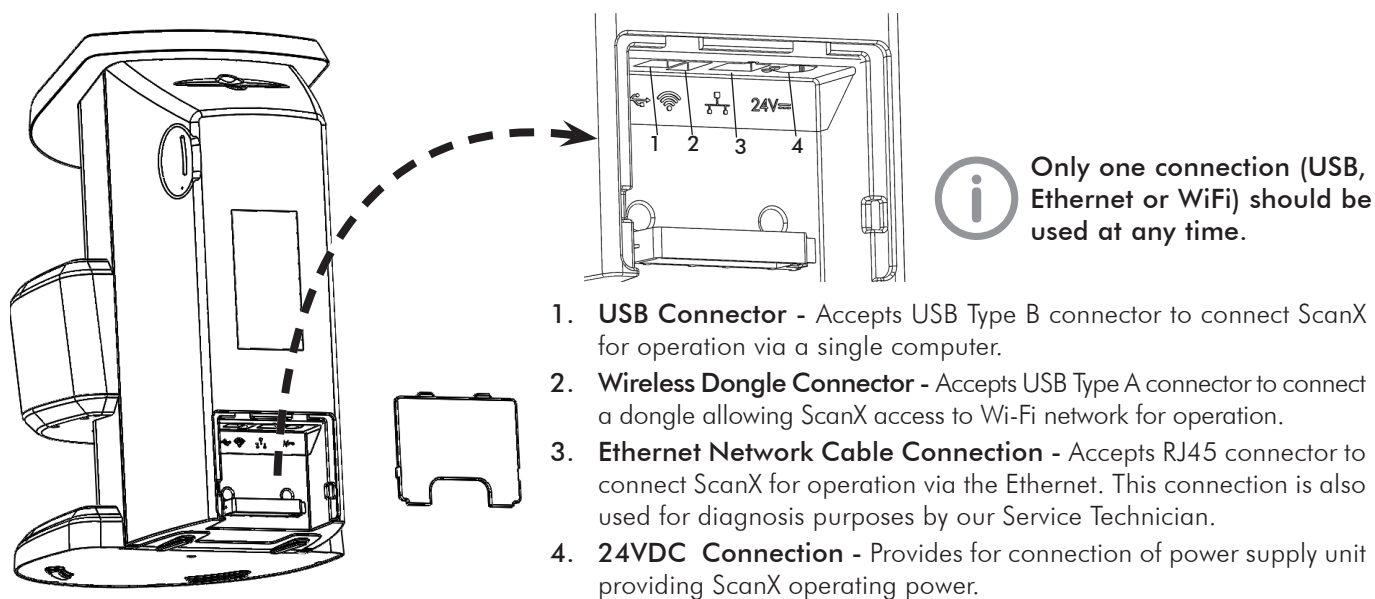
Perform the following steps to connect the ScanX to the facility Mains. Before initial start-up, check the supply voltage with the voltage information on the model identification plate (see also "4 Technical Data").

1. Make sure that the adapter connector is properly installed. Install the connector if necessary. Remove the cover on the rear of ScanX.



Connect the 24VDC Power Supply Adapter to ScanX prior to plugging it into the Mains outlet.

2. Connect the 24VDC Power Supply Adapter Output Connection Cable to the Inlet Power Jack (item 4) located on ScanX rear panel as shown by the ScanX Rear Panel Connection Ports illustration.
3. Connect the 24VDC Power Supply Adapter to the Mains outlet.
4. Replace and secure the rear cover making sure that it is correctly fitted.



ScanX Rear Panel Connection Ports

7.6 Connect ScanX for operation.

ScanX may be connected for operation using USB, Ethernet or Wi-Fi connections. Only one connection should be used at any time. Refer to the ScanX Rear Panel Connection Ports illustration above and perform the connection as necessary.

Connect ScanX with USB.

Remove the cover on the rear of ScanX and connect the supplied USB cable between to the unit's USB connection port, item 1, and the computer. Replace and secure the rear cover making sure that it is correctly fitted.



See 8.1, installing and configuring ScanX for information on connecting to an Ethernet or Wi-Fi network.

Connect ScanX with Wi-Fi dongle.

Remove the cover on the rear of ScanX and connect the supplied Wi-Fi dongle to the unit's wireless dongle connection port, item 2. Replace and secure the rear cover making sure that it is correctly fitted.

Connect ScanX with Ethernet cable.

Remove the cover on the rear of ScanX and connect the supplied Ethernet cable between the unit's Ethernet network connection port, item 3 and the facility network connector. Replace and secure the rear cover making sure that it is correctly fitted.

8. Initial start-up

**NOTICE****Short circuit due to build up of condensation**

- The appliance can only be put into operation once it has warmed up to room temperature and it is dry.

8.1 Installing and configuring ScanX

The unit supports the following imaging programs:

- ☐ DBSWIN
- ☐ VistaEasy
- ☐ Third-party software on request



When the device is first connected to a computer, it adopts the language and time of the computer

Configuring the network

Perform the following steps to Configure the network. Before initial start-up, check the supply voltage with the voltage information on the model identification plate (see also “4 Technical Data”).

1. Switch on the network devices (router, PC, switch).



When using the Windows firewall, do not enable TCP port 2006 and UDP port 514 since enabling the ports is covered during the driver installation process.

2. Check that TCP port 2006 and UDP port 514 is released in the firewall; release if necessary.

Network configuration

Various options are available for network configuration:

1. Automatic configuration via DHCP.
2. Automatic configuration via Auto-IP for direct connection of device and computer.
3. Manual configuration.
4. Configure the network settings of the device using the software or, if applicable, the touch screen.
5. Check the firewall and release the ports, if applicable.

Configuring ScanX

Configuration is carried out using VistaConfig, which is automatically installed with the installation of DBSWIN or VistaEasy. Once VistaEasy is installed, the ScanX must be registered with the program to allow the device to work. Configure the device by performing the following steps.

1. Click the Windows Start button and select All Programs.
2. Select the Air Techniques listing and observe that the VistaEasy option appears.
3. Click VistaEasy to expand the option. Notice that the VistaEasy and VistaConfig options appear.
4. Select the VistaConfig option and observe that the VistaConfig window opens.
5. With the connection tab selected, click on the Refresh tool and observe that the list of connected devices updates. If the device isn't found, perform the following. Otherwise continue to step 6.
 - a enter the IP address manually and click Register device manually.
 - b click Register device manually.
 - c Activate the connected device in the Registered column.
 - d Use the ScanX device configuration window to change the device name, (name), to manually enter an IP address and to request information.



Several units can be registered. The VistaNet unit configuration window allows changes to the unit name (name), manually enter an IP address, and information call up.

6. After connection, activate the unit by checking the Registered column for the device.



Enter a fixed IP address (recommended)

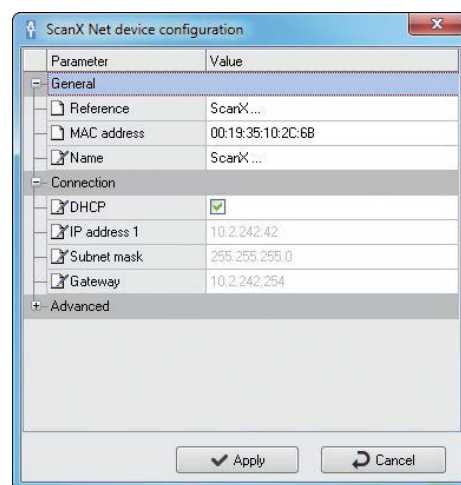
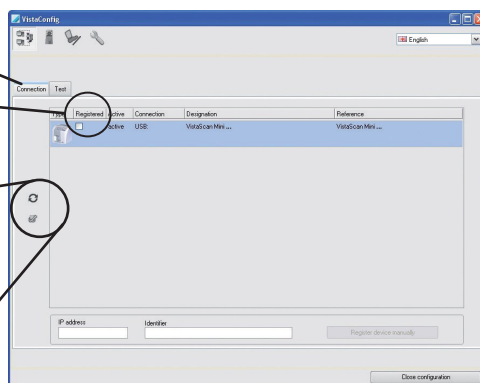
7. Click the Wrench Icon button and observe that the VistaConfig window changes showing VistaNetConfig window setting options device configuration.
8. Configure ScanX as follows:
 - a Deactivate DHCP by un-checking the associated box.
 - b Enter IP address, subnet mask and gateway
9. Click Apply to save the configuration.

Connection Tab

Registered
Check Box

Refresh
Icon

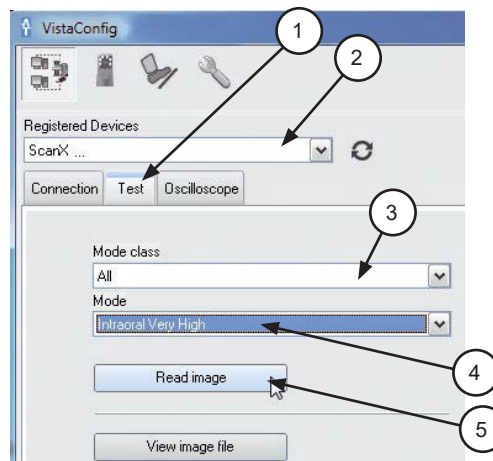
Wrench
Icon



Testing ScanX

Make sure the unit is properly connected by scanning an exposed image plate by performing the following steps from the VistaConfig window.

1. Select the Test tab.
2. Select the unit from the Registered Devices selection list
3. Select the mode class.
4. Set the scan mode.
5. Click Read Image.



INSTALLATION

8.2 Configuring X-ray devices

Intraoral X-ray appliances



Where 60 kV can be set on the x-ray unit, this setting is preferred. The standard exposure values for F-speed film (e. g. Kodak Insight) can be used.

The following table lists the standard values for the imaging plate exposure time of an adult patient.

Adult	DC radiator, 7 mA Tube length 20 cm		DC radiator, 6 mA Tube length 30 cm	
	60 kV	μGy	70 kV	μGy
Incisor	0.08 s	107	0.13 s	109
Premolar	0.12 s	156	0.18 s	147
Molar	0.17 s	215	0.25 s	207
Bite wing	0.18 s	227	0.27 s	223



Children are more sensitive to radiation than adults. Keep the exposure parameters as low as possible taking into consideration the image quality. Also refer to the information on pediatric x-ray imaging of the FDA (<http://www.fda.gov/Radiation-Emitting-Products/RadiationEmitting-ProductsandProcedures/MedicalImaging/ucm298899.htm>)

The following table lists the standard values for the imaging plate exposure time of an child patient.

Child	DC radiator, 7 mA Tube length 20 cm		DC radiator, 6 mA Tube length 30 cm	
	60 kV	μGy	70 kV	μGy
Incisor	0.05 s	67	0.08	67
Premolar	0.07 s	94	0.11 s	93
Molar	0.11 s	146	0.14 s	144
Bite wing	0.11 s	146	0.14 s	144



WARNING

Damage to the touch screen due to incorrect handling

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

9. Operating the touch screen

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

9.1 Navigating

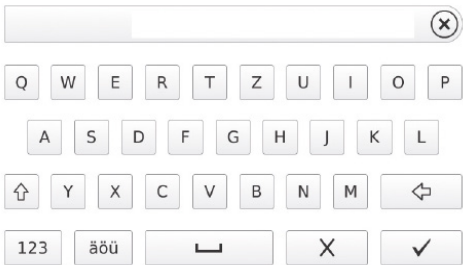
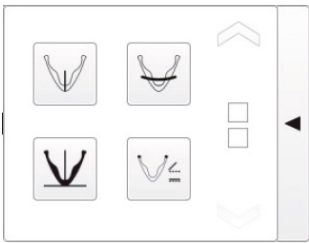
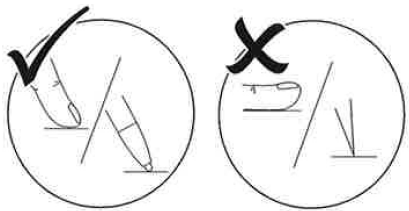
If the contents of the window cannot be completely displayed on the touch screen, a scroll bar appears. Touch, hold and slide the bar up or down to move the displayed section in the window. Scrolling may also be done by continuously pressing the arrow keys to move the displayed section up or down.

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 umlauts
↵	Delete
X	Cancel input and close window
✓	Confirm input and close window
␣	Space bar

OPERATION

9.4 Calling up messages on the touch screen

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

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

The following information listed below can be viewed and edited here.

	Language	Select the output language of the unit: English, German
	Date & Time	Edit the settings concerning date and time
	Network	View the MAC address of the unit Edit the name of the network and interface 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

1. Touch the required language.
2. Touch **OK**.

Editing the Date & Time

1. Touch **Date** and **Time**.
2. Enter the values using the arrows.
3. 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

1. Touch **Name**.
2. Enter the values via the keyboard.
3. Touch **Interface**.
4. Select **LAN** or **WLAN** via the arrows.
5. Touch **OK**.
6. 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

Editing settings for the touch screen

1. Touch **Brightness**.
2. Enter the values via the arrows.
3. Touch **OK**.
4. Touch **Calibrate** touch screen.
5. Follow the instructions on the monitor.
6. 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 patient and imaging information X-ray image is stored on the SD card together with the image information under the name of the patient.
	Intra Rapid Rapid scanning	The scanning order starts without specification of the patient and image information The X-ray image is stored on the SD card in a folder with date and time.

OPERATION

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 $\pm$ appears in the magnifying glass.

To magnify the image, wipe across the X-ray image from left to right. 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 $\pm$ 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 clockwise by 90°



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 grey value distribution.

The green line displays the horizontal grey 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. Barrier Envelope

10.1 Barrier envelope use.

- ☐ Protect the plate from contamination and dirt.
- ☐ Protect the plates from stray light.
- ☐ Available in different sizes just like plates. Select appropriate size (Size #0, #1 #2 #3 or #4).



WARNING

Danger of cross contamination when not using the barrier envelope or when using the barrier envelope more than once.

- Do not use a plate without a barrier envelope.
- Do not use the barrier envelope more than once



CAUTION

Loss of image information and functional interference on using the incorrect barrier envelopes

- Only use Air Techniques plates and envelopes.



Typical Air Techniques
Barrier Envelope

11. Plates

11.1 General.



CAUTION

Loss of image information and functional interference can occur when using the incorrect plates.

- Only use Air Techniques Plates.

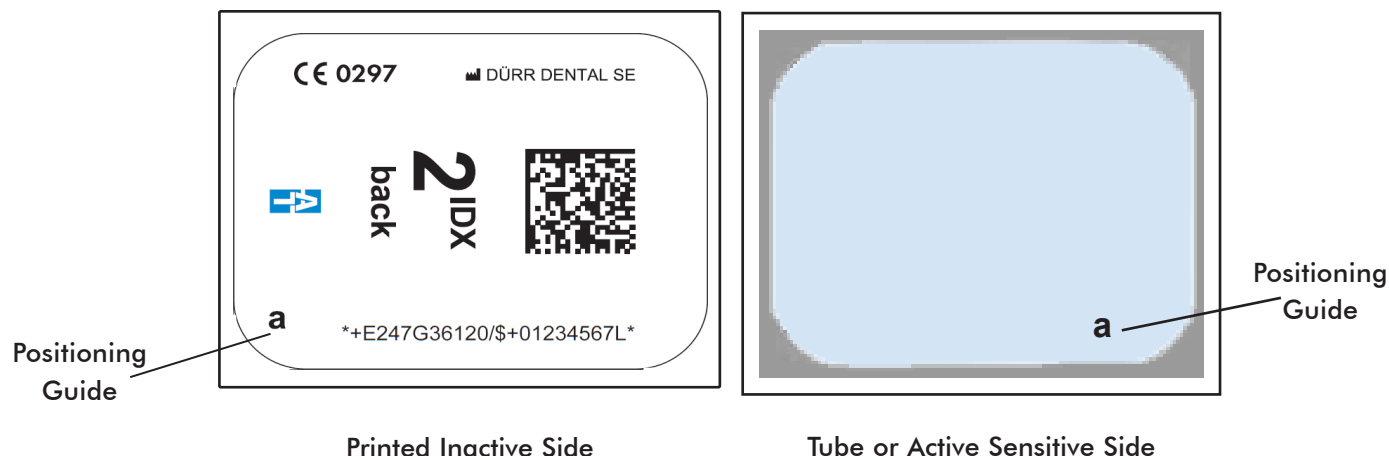
ScanX is operated in combination with Air Techniques plates in size #0, #1 #2 #3 or #4. (See 4.1, System Components.) Each size of plate requires the matching barrier envelope. Exposure of the plate must always be carried out on the active side:

Active side:

- ☐ The active side is light blue. This side is also marked with an “a” positioning guide.

Inactive side:

- ☐ The inactive side is white. This is printed with the size and manufacturer’s information. Furthermore, in one corner there is an “a”; 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.



Typical Air Techniques Size #2 Plate Configuration

11.2 Working with plates.

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

- ☐ 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 plate if the RFID tag is damaged or becomes detached.

11.3 Storing plates.

- ☐ Store plates in a dark place.
- ☐ Do not store in hot or moist conditions.
- ☐ Store intraoral plates in a barrier envelope of the appropriate size.
- ☐ If a plate is stored for longer than 24 hours, then it should be erased again before the next X-ray exposure. See section 13.8.
- ☐ Protect from direct sunlight and ultraviolet beams.
- ☐ If stored in the X-ray room itself then the plates must be protected from pre-exposure caused by scattered X-ray radiation.

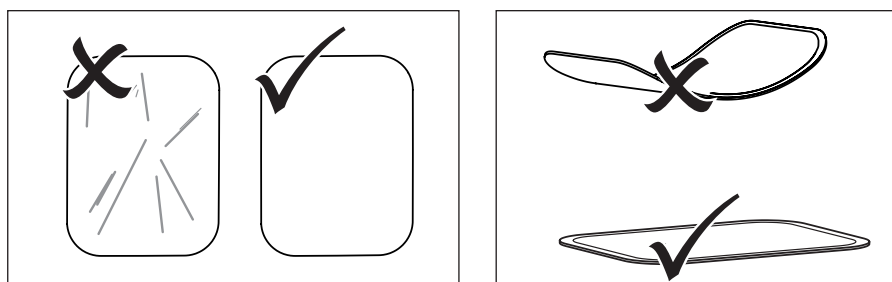


Plate Handling

11.4 Cleaning phosphor storage plates.

For the best images, plates should be handled carefully and kept clean. Use specially formulated PSP Cleaning Wipes (P/N B8910) to clean all 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 surface. Use one wipe and clean plates as follows:

1. Gently wipe the PSP Cleaning Wipe over the dry Plate surface. Wipe back and forth and then in a circular motion.
2. Allow the plate surface to air dry. Make sure that the PSP is completely dry before re-using.



PSP Cleaning



Plate must not be put in an autoclave.

Always use standard infection control procedures when handling devices that contact the patient.

11.5 Disinfecting the phosphor storage plates.

There is no reason to routinely disinfect the PSPs unless contamination is suspected. If a PSP has touched a contaminated surface, it may be immersed briefly in a cold sterilant (such as a 2% Gluteraldehyde solution) according to sterilant manufacturers directions. Do not immerse the plate if there is any evidence of deep scratches in the surface of the plate or nicks in the edges of the plate. After disinfection, clean and dry the plate using the instructions above.

11.6 Disposal of phosphor storage plates.

Consult with your federal, national, state and local government, for rules and regulations on disposal of Phosphor Storage Plates.



The Barrier Envelope must be used only once and disposed of properly in accordance with local code.

11.7 Preparing intraoral plates for patient use.

Insert the erased plate into the barrier envelope so the printed side of the PSP is visible through the transparent side of the envelope. Peel off the adhesive strip and seal the envelope.



View A.
Insert the Plate.



View B.
Peel off the adhesive strip.



View C.
Seal the Barrier Envelope.

Sealing the Plate in the Barrier Envelope

- Note:** 1. The orientation letter “a”, printed on the PSP, may be used for reference as you would use the dot on an intraoral X-ray film. A backwards “a” (i.e. “s”), appearing in an image, is an indication that the image has been flipped.
2. If using holders with alligator clips, it is advisable to file down the points to avoid puncturing the Barrier Envelope. It is important to take care not to puncture the Barrier Envelope or damage the PSP.

11.8 Take an X-ray image.

Put an image on the PSP by performing the following procedure.

1. Place the erased intraoral PSP in the sealed Barrier Envelope into the patient's mouth exactly as you would use X-ray film. Make sure the opaque side of the Barrier Envelope is facing the tubehead.
2. 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).



CAUTION

Loss of image information and damage to the device can occur if using the incorrect inlet guide.

- Always use the correct size of inlet guide for the plate being used.
- Before each scanning phase compare the size of plate with the markings on the inlet guide.

12. Plate Scanning with ScanX

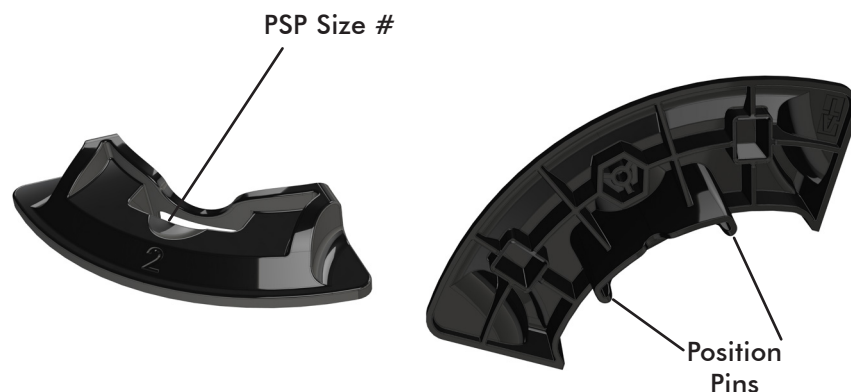
12.1 Changing the inlet guide.

- ☐ ScanX can be used to scan plates Size #0, Size #1, Size #2, Size #3 and Size #4.
- ☐ Each size of plate requires the matching size inlet guide. Size #0 guide accepts Size #0 PSPs while Size #2 guide accepts both Size #1 and Size #2 plates.
- ☐ The size of the plate is clearly marked on the inlet guide.
- ☐ Remove the inlet guide by simply lifting it from the transport.
- ☐ Install the inlet guide by aligning the position pins and placing the guide into the guide holes. It will snap into place due to the magnet installed.

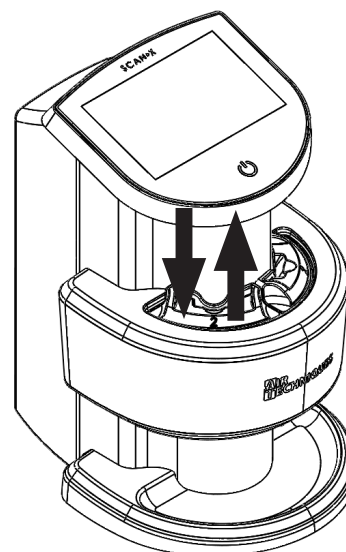


CAUTION

If an inlet guide is removed, a warning message will appear on the LCD screen that the guide is missing. If you hit **Confirm** on the screen, the device will continue to function normally.



View A. Typical inlet guide



View B. Inlet guide installation and removal.

12.2 Scanner plate processing.

Using the ScanX, the user has the option to perform single plate processing or batch processing depending on their needs. Paragraph 12.3 provides the single plate and batch processing procedure.



Loss of image data

Image data on the plate will be lost when exposed to light. Transfer the PSP from the Barrier Envelope to the Inlet Guide slot quickly. Always keep the sensitive side away from any light source to minimize image loss.



Use of the optional Transfer Storage Box is recommended to protect data loss when performing batch processing.

12.3 Preparing single and multiple exposed plates for scanner processing.

Use the optional Transfer Storage Box when performing batch processing. Keep the exposed plate away from light once removed from the barrier envelope. Always keep the sensitive side away from any light source to minimize image loss.

1. Disinfect the Barrier Envelope (with plate still inside) by washing with disinfectant hand soap and water. Dry the Barrier Envelope thoroughly.
2. Remove gloves and wash any powder from hands. Powder on a PSP will degrade the image, and an accumulation of powder in the scanner will lead to degradation of scanner performance.

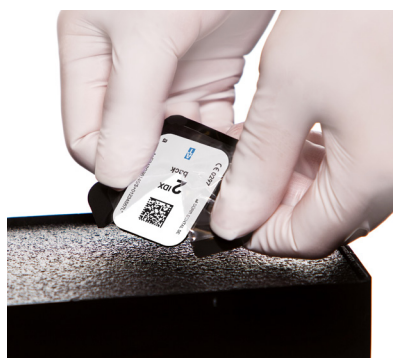


When using optional transfer box, be sure that the sensitive side of the PSP is facing down as it lands on the in the box (See View C below). If the plate is not sensitive side down, **TURN IT OVER IMMEDIATELY**. Failure to do so may result in erasure of the PSP.

3. Lay the box on a flat surface near the ScanX as shown by View A below.
4. As shown by View B, remove the exposed PSP from its washed and dried envelope as follows:
 - a. Hold the enveloped exposed PSP, with the printed side facing up, parallel to and about an inch above the Transfer Storage Box or some other container or cover.
 - b. Tear the envelope lengthwise starting at the notch to eject the PSP onto the box or surface.
5. As shown by View C, the PSP is now ready to be scanned to read the image from the PSP by performing scanning procedures.



View A: Empty Transfer box



View B:
Ejecting PSP to Transfer box



View C: PSPs ready for Scanning

Preparing the Exposed Plate for Scanning

**Loss of Image Data**

Image data on the plate will be lost when exposed to light. Transfer the PSP from the transfer box to the inlet guide slot quickly. Always keep the sensitive side away from any light source to minimize image loss.



Make sure that the user-supplied imaging software is set to scan and the green control LED on the scanner is lit .

12.4 Scanning multiple plates.

Scan and erase a plate as follows.

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

**Erasing the image plate:**

The image data is erased automatically after scanning.

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

12.5 Erasing the image data.

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

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

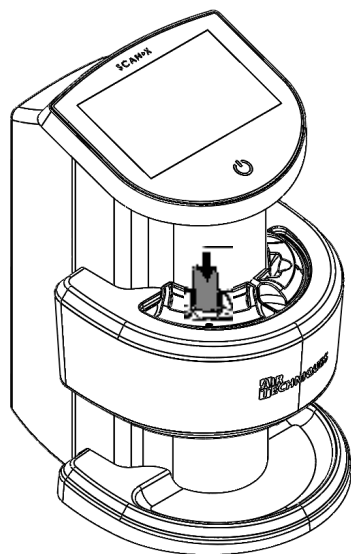
- ☐ The plate has been stored and not used for longer than 24 hours.
- ☐ The data on the plate has not been (completely) erased due to a malfunction of the ScanX.



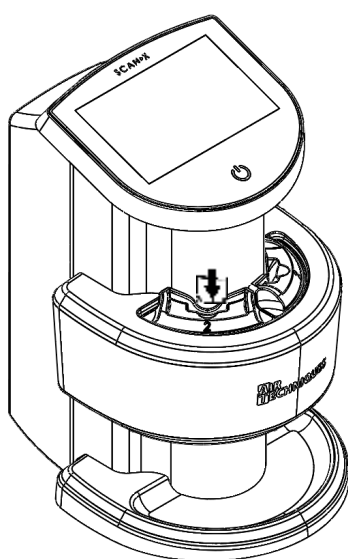
The special Erase mode enables the erasure unit in ScanX to be activated alone. No image data will be transmitted to the software.

To erase again:

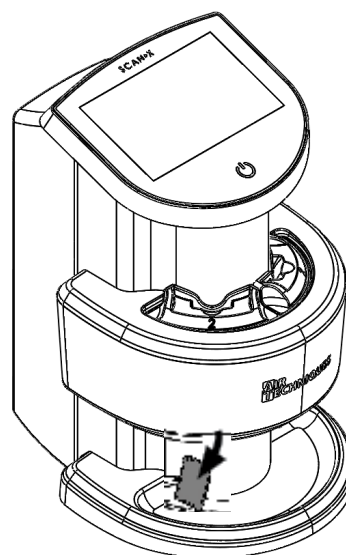
Choose the special Erase mode in the software and feed the plate.



View A. Plate insertion into the inlet guide slot.



View B. Plate transport mechanism moves the plate.



View C. Plate drops onto the bottom outlet pad.

Plate Feeding and Scanning

12.6 Image data scanning.

ScanX can be used to scan in two different ways:

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

Each option is described below.

12.7 Scanning image data via a computer

Starting the imaging plate scanner and software:



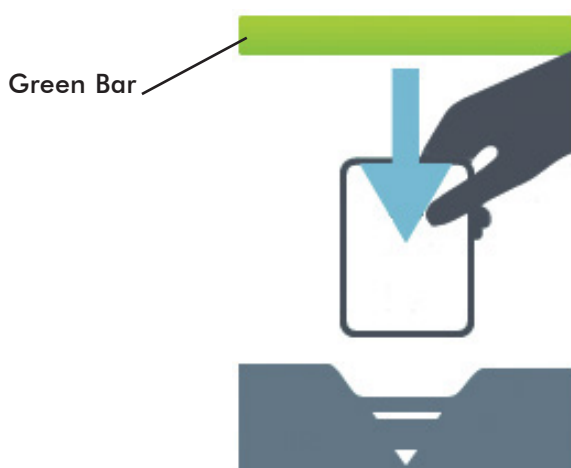
The scanning process using the DBSWIN or other third party imaging software is described. For further information on using the imaging software, refer to the relevant manual.

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

1. Press the on/off switch to switch on the unit.
2. Switch on the computer and monitor.
3. Start the imaging software (DBSWIN).
4. Select the patient.
5. Select the exposure values in the X-ray module.
6. Set the required resolution.
7. Click the Scan button.
8. 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.



Example animation prompting for imaging plate insertion

**NOTICE**

Damage to the touch screen due to incorrect handling

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

12.8 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. There are two options for scanning via the touch screen:



The touch screen scanning modes differ in that the Scan mode starts with the patient and image information while the Rapid Scan mode scans without patient and image information entered. The specification of the patient and imaging information can be added to previously scanned images as necessary.

Scan mode.

Before scanning the image data, the patient 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 patient. If no patient data and exposure settings of the image are entered, the image is saved.

1. Turn on the ScanX at the on/off switch.
2. On the touch screen, tap **Scan**.
3. Enter the patient data. (See note.)
4. Select the image settings and scanning mode.
5. An animation on the touch screen prompts for insertion of the imaging plate.
6. Insert the imaging plate only when the bar above the animation is green.

Rapid scan mode. (See note.)

The scanning order starts **without** specification of the patient and image information. The X-ray image is stored on the SD card saved to a folder with the date and time and no additional information.

1. Turn on the ScanX at the on/off switch.
2. On the touch screen, tap on **Rapid scan**.
3. Select the scanning mode.
4. An animation on the touch screen prompts for insertion of the imaging plate.
5. Insert the imaging plate only when the bar above the animation is green.

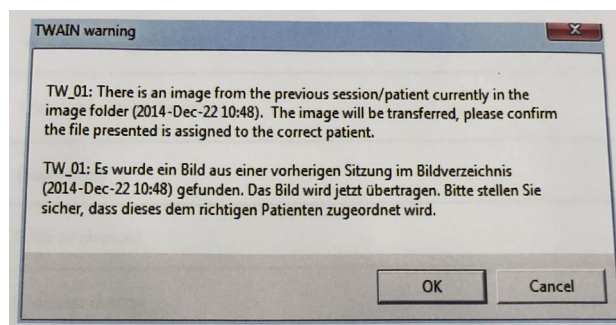
**Use of LCD Screen**

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.

12.9 Image recovery.

After scanning image data via a computer.

If an image transfer is terminated prematurely, a message will appear when you next try to acquire an image. Please ensure that the image is properly assigned to the correct patient.

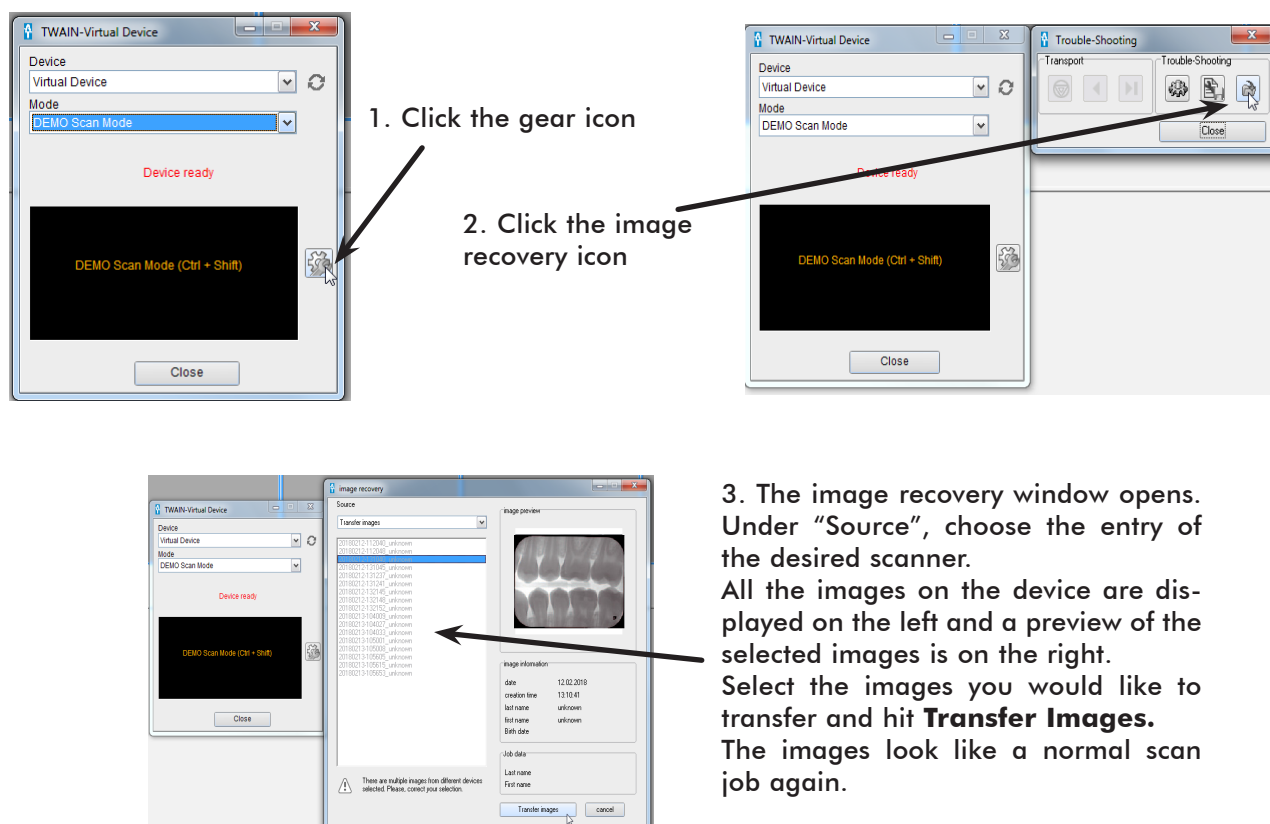


If the image belongs to the current patient record, click **OK** to accept the image into the patient record.

If the image does not belong to the current patient record, click **Cancel** to exit TWAIN, keeping the image for the next acquisition. This allows for the opportunity to select the correct patient record.

Image Recovery via Stand-Alone Mode (SD card) and VistaEasy TWAIN Interface.

Follow the steps below to recover images. It is important that you are aware of the date that the images were taken in order to transfer the correct ones.



3. The image recovery window opens. Under "Source", choose the entry of the desired scanner.

All the images on the device are displayed on the left and a preview of the selected images is on the right.

Select the images you would like to transfer and hit **Transfer Images**.

The images look like a normal scan job again.

13. Disinfection and Cleaning



Only use disinfection and cleaning agents specifically approved or manufactured by Air Techniques. Other cleaning agents and disinfectants could damage the ScanX and its accessories.



Damage to ScanX:

Do not spray disinfection or cleaning solutions on ScanX. Do not allow fluids to enter the unit.

Where the appliance surfaces show signs of contamination or visible dirt, clean and disinfect the unit.

- ☐ Switch ScanX off by pressing the ON/OFF switch for 2 seconds.
Wait until the unit has run through the off cycle and has completely shut down.
- ☐ Clean the outside of ScanX, dust cover and transfer box using a damp cloth, and then use a disinfection wipe.
- ☐ Unlock the inlet guide by pressing the locking catch and lift the inlet guide upwards at the same time and remove.



Damage to ScanX

No ScanX parts should ever be disinfected using a thermal disinfection unit or with the autoclave. The plastic parts will be destroyed by the heat!

- ☐ Internal parts can be cleaned using a damp cloth, and then disinfected using a disinfection wipe.
- ☐ Install the inlet guide.

14. Maintenance

14.1 Yearly scheduled maintenance.

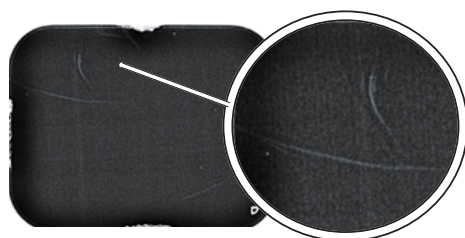
Like all precision products, the ScanX requires a certain amount of care on a regularly scheduled basis. A well-organized maintenance program aids dependable equipment operation and reduces problems to a minimum. Yearly service carried out by an Air Techniques trained and certified technician will ensure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

14.2 Phosphor storage plates (PSPs).

PSP's are subject to "wear" on the black side during normal handling and use. They can appear scratched, while the sensitive blue side remains relatively "smooth". This scratched look on the black side has absolutely no effect on the quality of the image and should be expected under normal conditions. If the phosphor side is scratched make sure the plates are being handled properly and not being dragged from ScanX outlet pad area or other surfaces that could cause scratching of the plate. Make sure to review the Plates information provided by section 12 of this manual.

14.3 Check image quality

To assure the image quality, the unit must be subjected to maintenance (see "13.1 Recommended maintenance schedule") and regular cleaning and disinfection (see "12. Cleaning and disinfection") and the image quality of the PSP and X-ray system need to be checked



PSP with scratches

Inspection interval**Action**

Daily / before each use

Clean the PSP, if applicable

Check the PSP for scratches. If there are scratches on the surface, take a homogeneous test image (see Check the PSP with a homogeneous test image), replace the PSP, if applicable.

Keep an eye on the image quality with each X-ray image taken, also refer to 15.1 Poor X-ray image.

Monthly

Take a homogeneous test image of the PSP (refer to "Check the PSP with a homogeneous test image"). If scratches or artifacts are visible in the image that may possibly have an adverse effect on the diagnostics, replace the PSP.

Every 3 months

Check X-ray system

Take an X-ray image with a test body (not supplied). Check the image for homogeneity, resolution, contrast and artifacts, refer to Check X-ray system.

Check the PSP with a homogeneous test image

Scratches on the surface of the PSP may be visible in the X-ray image and may impair the ability to diagnose the X-ray images. If scratches are visible in the image that may impair the diagnostics, the PSP must be discarded.

1. Place the PSP on a level surface at a distance of approximately 30 cm from the X-ray tube. Doing this, make sure that the active side of the PSP faces the X-ray tube.
2. Set the exposure time and setting values on the X-ray unit for a molar x-ray image (see "8.2 Configuring x-ray devices").
3. Scan the PSP with the PSP scanner at high resolution.
4. Check the image for homogeneity.
5. No scratches visible in the image: PSP can still be used.
6. Scratch is visible in the image: discard the PSP.

Check X-ray system

To check the X-ray system, take an X-ray image with the test body (refer to "3.3 Special accessories"). This can be used to check the image produced with the X-ray system for homogeneity, resolution, contrast and artifacts.

1. Make sure to comply with the instructions for use of the test body and take an X-ray image with the test body.
2. Read the PSP.
3. Check the image for homogeneity, resolution, contrast and artifacts.
4. If errors are visible in the image, contact a service technician.

15. Troubleshooting



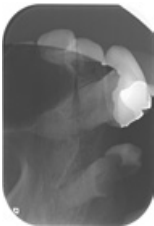
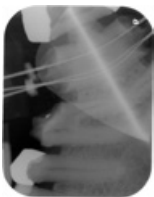
Any repairs above and beyond routine maintenance may only be done by suitably qualified personnel or by one of our service technicians



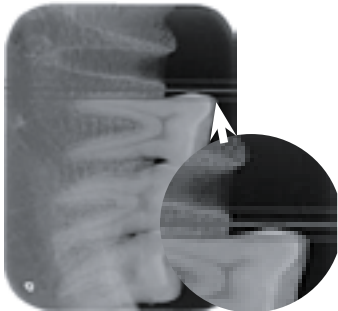
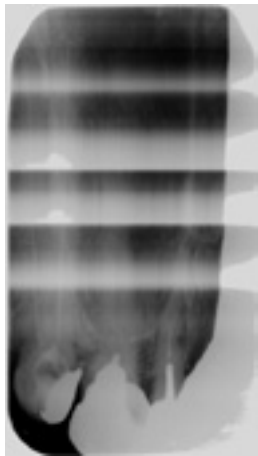
Prior to working on the device or in case of danger, disconnect it from the mains (e. g. pull the mains plug).

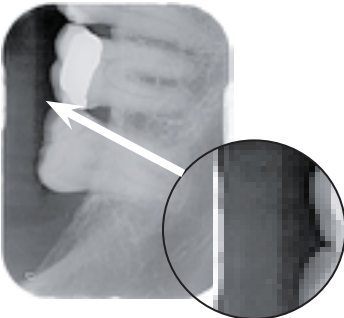
15.1 Poor X-ray image.

Problem	Probable cause	Solution
X-ray image does not appear on the monitor after scanning	PSP not fed in straight and inactive side was scanned	• Scan the PSP again immediately, making sure you feed it in correctly in the process.
	Image data on the PSP has been erased, e.g. by ambient light	• Always scan the image data of the PSP as soon as possible.
	Fault on the unit	• Contact technician.
	No image data on PSP, PSP not exposed	• Expose the PSP.
	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 PSP has been exposed to ambient light	• Always scan the image data of the PSP 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 PSP 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	PSP incorrectly inserted in inlet guide or barrier envelope.	• Insert PSP correctly.
	PSP not placed straight.	• Position the PSP correctly.

Problem	Probable cause	Solution
Ghosting or double exposure on X-ray image 	PSP exposed twice PSP not sufficiently erased	• Only expose the PSP once • Check the erasure unit for proper function. • Inform a service technician, if the problem persists.
X-ray image mirrored in one corner 	PSP bent during X-ray exposure	• Do not bend the PSP
Shadow on the X-ray image 	PSP removed from the barrier envelope before scanning	• Do not handle PSPs without a barrier envelope. • Store the PSP in a barrier envelope.
X-ray image cut off, part missing 	A metal part of the X-ray tube is in front of the X-ray beam Faulty edge masking in imaging software	• Recording an X-ray image, make sure there are no metal parts between the X-ray tube and the patient. • Check X-ray tube. • Deactivate edge masking.
Software unable to combine the data to make a complete image	The X-ray dose on the PSP was insufficient Amplification (HV value) is set too low in the software Unsuitable scanning mode selected The setting for the threshold value is too high	• Increase X-ray dose. • Increase amplification (HV value). • Select a suitable scanning mode. • Reduce the threshold value

TROUBLESHOOTING

Problem	Probable cause	Solution
X-ray image has strips on image	PSP has been pre-exposed, e.g. by natural radiation or stray X-ray radiation	• If the PSP has been stored for more than one week, erase the PSP prior to use.
	Parts of PSP exposed to light during handling	• Do not expose exposed PSPs to bright light. • Scan image data within half an hour after the exposure.
	PSP dirty or scratched	• Clean the PSP. • Replace scratched PSP.
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.
		
X-ray image is stretched lengthwise with bright, horizontal stripes	Wrong barrier envelope or PSP used	• Only use original accessories.
		

Problem	Probable cause	Solution
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 PSP	• Replace the PSP.
	Lamination of the PSP detaches at the edge	• Only use original PSP and film retainer systems.
	Wrong retainer system used	• Use the PSP correctly.
	PSP handled incorrectly	• Comply with the operating instructions of the PSP 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.
Overtemperature	Laser or erasure unit too hot	• Switch the unit off and allow it to cool.
Erasure unit fault	LED defective	• Contact technician.

TROUBLESHOOTING

Problem	Probable cause	Solution
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.
The unit does not appear in the VistaConfig selection list	Unit is connected downstream of a router	• Configure the IP address without an intermediate router on the unit. • Reconnect the router. • Manually enter the IP address in VistaConfig and register the unit.
	The IP address of the 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.
The unit appears in the VistaConfig selection list, but connection is not possible	Subnet masks of the computer and the unit do not match	• Check subnet masks, adjust if necessary.
Error message "E2490"	The connection to the unit was interrupted while the software was still attempting to communicate with the unit	• 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.

15.3 Fault on the unit.

Problem	Probable cause	Solution
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/off switch is defective	• Contact technician.
Unit switches off again after a short time	Mains cable or power supply unit plug not inserted correctly	• Check the mains cable and plug connections.
	Hardware defect	• Contact technician
	Mains supply voltage too low	• Check the mains supply voltage.
Loud operating noises after switching on lasting for more than 30 seconds	Radiation deflector defective	• Contact technician
Unit not responding	The unit has not yet completed the startup procedure	• After switching the unit on, 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, but there is no display on the touch screen	Touch screen initialization fault	• Switch the unit off and on again.
	Touch screen brightness set too dark	• Update firmware • Increase the brightness of the touch screen.
	Touch screen defective	• Contact technician

TROUBLESHOOTING**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 PSP from unit.
Error code 1104	Erase 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 timeout Fault on the laser, SOL sensor or pentaprism assembly	• Contact technician. • Update firmware.
Error code 1172	SOL sensor timeout Fault on the laser, SOL sensor or pentaprism assembly	• Inform a service technician. • Update the firmware.

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. Device Shutdown and Storage



Never power down the system during a scanning session.

16.1 Powering down system.

ScanX is designed to be left on continuously during the active day. At the end of the day, or whenever desired, power down the system as follows:

1. Switch the ScanX from ON to Standby by pressing and holding the ON/OFF button (⏻) on the Control Panel for approximately 2 seconds, until the green LED extinguishes.
2. Remove the main power to ScanX by disconnecting the power supply adapter plug from the main power outlet socket.



CAUTION
 Danger of suffocation
 Keep the protective cover away from children.

16.2 Protective dust cover installation.

- ☐ Pull the protective cover, with the yellow marking towards the front, forwards over the unit until it is completely covered.
- ☐ Store the protective cover in a clean dry place when not in use.

PARTS

17. Replacement and Accessory Parts

17.1 Replacement parts.

The following lists the ordering number and description of available external parts that can be replaced by the user to keep the ScanX operational. Please note that only a trained dealer technician should perform service that requires replacement of internal parts. Contact your authorized dealer for information.

Description	Quantity	Order Number
24V, Power Supply Adapter	1	G8115
6-Foot USB 2.0 Cable	1	B3554
Dust Cover	1	G8150

17.2 Accessory and consumable parts.

The following lists the ordering number and description for accessory components and consumable items available to use and maintain the ScanX to meet your professional needs. Contact your authorized dealer for information.

Description	Quantity	Order Number
15-Ft Computer Connector Cable, USB	1	B5027
ScanX Cleaning Sheets	12	G8030
	25	G8035
Barrier Film	1 roll of 900 sheets	G8195

17.3 Transfer storage box, PN 73470.

Protects the Phosphor Storage plates in every day use and storage. Also used to shield plates from light when transferring plates from patient to ScanX during batch processing.

17.4 Intraoral phosphor storage plates.

Size	Order Number	Quantity
0	G3620	2
1	G3621	2
2	G3622	4
3	G3623	2
4	G3624	1

17.5 Patented, Easy-Open Barrier Envelopes

Size	Order Number	Quantity
0	73248-0	100
1	73248-1	100
2	73248-2	300
2	73248-2K	1000
3	73248-3	100
4	73248-4	50

17.6 Box of 50 PSP Cleaning Wipes, PN B8910.

Specially formulated PSP Cleaning Wipes are used to clean all plates. These single-use, extra soft, 100% polyester fabric wipes plates will not scratch or damage while safely removing dust, hair, dirt and smudges from the imaging surface.

APPENDIX A - X-RAY UNIT SETTINGS

A-1. Scanning Times

Time taken to complete scanning process of image data depending on plate format and the pixel size. The times stated are approximate and will depend on the PC system and its current work load.

Scan mode	Intraoral Very High	Intraoral Standard
Theor. Resolution LP/mm	23.8	10
Pixel size μm	21	50
Size #0	20 s	8 s
Size #2	22 s	10 s

A-2. File Size (uncompressed)

File sizes in MB - will depend largely on the actual plate format and the pixel size.

The file sizes here are approximate sizes which have been rounded up. The file sizes can be considerably reduced by using a suitable compression program.

Scan mode	Intraoral Very High	Intraoral Standard
Theor. Resolution LP/mm	23.8	10
Pixel size μm	21	50
Size #0	3.4	0.6
Size #2	5.6	1.0

B-1. Electromagnetic Compatibility (EMC) Compliance Information

The following provides the EMC technical data used to show that each ScanX is designed and manufactured to meet the electromagnetic requirements of International standard IEC 60601-1-2 as shown below. The user should ensure that the ScanX unit is indeed used within this environment to ensure that the system will perform as intended.

- ☐ Portable and mobile RF communications equipment can affect ScanX operation.
- ☐ Use of accessories or cables other than those specified or provided by Air Techniques may result in increased ScanX emissions and decreased ScanX immunity.
- ☐ The ScanX should not be used adjacent to or stacked with other equipment that may interfere with proper ScanX operation.

B-2. Manufacturer's Guidance and Declaration - Electromagnetic Emissions

The ScanX is intended to be used within the electromagnetic environment specified below. The user of the ScanX should assure that it is used in such an environment.

Emissions test	Compliance	Electromagnetic Environment - Guidance
RF emissions CISPR 11	Group 1	The ScanX uses radio-electrical energy only for its internal subsystems. Therefore, it emits very low energy and is not likely to interfere with nearby electronic devices.
RF emissions CISPR 11	Class A	The ScanX is suitable for use in all establishments other than domestic, and may be used in domestic establishments and those directly connected to the public low voltage power supply network that supplies buildings used for domestic purposes, provided that the following warning is heeded: Warning: This equipment is intended for use by healthcare professionals only. This equipment may cause radio interference or may disrupt the operation of nearby equipment. It may be necessary to take mitigation measures, such as reorienting or relocating the ScanX or shielding the location.
Harmonic emissions EN 61000-3-2	Class A	
Voltage fluctuations/flicker EN 61000-3-3	Complies	

Manufacturer's Guidance and Declaration - Electromagnetic Immunity

The ScanX is intended to be used within the electromagnetic environment specified below. The user of the ScanX should assure that it is used in such an environment.			
Immunity Test	IEC 60601 Test Level	Compliance Level	Electromagnetic Environment - Guidance
Electrostatic Discharge (ESD) IEC 61000-4-2	± 6kV contact ± 8kV air	± 6kV ± 8kV	Floors should be wood, concrete or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30%.
Electrical fast transient/burst IEC 61000-4-4	± 2 kV for power supply lines ± 1 kV for Input/output lines	± 2kV ± 1kV	Mains power quality should be that of typical commercial or hospital environment.
Surge IEC 61000-4-5	± 1 kV line(s) to line(s) ± 2 kV line(s) to earth	± 1kV N/A	Mains power quality should be that of typical commercial or hospital environment.
Voltage dips, short interruptions and voltage variations on power supply input lines IEC 61000-4-11	<5% Ur (>95% dip in Ur) for 0.5 cycle 40% Ur (60% dip in Ur) for 5 cycles 70% Ur (30% dip in Ur) for 25 cycles <5% Ur (>95% dip in Ur) for 5 s	<5% Ur - 10ms 40% Ur - 100ms 70% Ur - 500ms <5% Ur - 5 s	Mains power quality should be that of typical commercial or hospital environment. If the user of the ScanX requires continuous operation during power mains interruptions in the main power supply, it is recommended that the ScanX be powered from an uninterruptible power supply providing emergency power.
Power frequency (50/60Hz) magnetic field IEC 61000-4-8	3 A/m	3A/m	Power frequency magnetic fields should be at levels characteristic of a typical location within a typical commercial or hospital environment.

Note: Ur is the a. c. mains voltage prior to application of the test level.

Manufacturer's Guidance and Declaration- Electromagnetic Immunity

The ScanX is intended to be used in the electromagnetic environment specified below. The user of the ScanX should assure that it is used in such an environment.			
Immunity Test	IEC 60601 Level	Compliance Level	Electromagnetic Environment - Guidance
			Portable and mobile RF communication equipment should be used no closer to any part of the ScanX, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter. Recommended separation distance:
Conducted RF IEC 61000-4-6	3 Vrms 150 kHz to 80 MHz	3 V	$d=1.16 \sqrt{P}$
Radiated RF IEC 61000-4-3	3V/m 80 MHz to 2.5 GHz	3 V/m	$d=1.16 \sqrt{P}$ 80 MHz to 800 MHz $d=2.33 \sqrt{P}$ 800 MHz to 2.5 GHz where P is the maximum output power of the transmitter in Watts (W) according to the transmitter manufacturer and d is the recommended separation distance in meters (m).
			Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey, a should be less than the compliance level in each frequency b. Interference can occur nearby devices bearing the following symbol: 

Note 1: At 800 MHz, the higher frequency range applies.

Note 2: These guidelines may not apply in all situations.

Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.

- a Field strengths from fixed transmitters, such as base stations for radio (cellular/cordless) telephone and land mobile radios, AM and FM radio broadcast, and TV broadcast can not be predicted theoretically with accuracy. To assess the electromagnetic environment due to fixed RF transmitters, an electromagnetic site survey should be considered. If the measured field strength in the location in which the ScanX is used exceeds the applicable RF compliance level above, the ScanX should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as re-orienting or relocating the ScanX.
- b Over the frequency range 150 kHz to 80 MHz, field strengths should be less than 3 V/m.

B-3. Recommended Separation Distances Between Equipment

Distance Between the Portable and Mobile RF Communications Equipment

The ScanX is intended for use in an electromagnetic environment in which radiated RF interferences are controlled. The user of the ScanX can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the ScanX such as recommended below, according to the maximum output power of the communications equipment.

Maximum assigned output power of the transmitter W	Separation distance as a function of the transmitter's frequency m		
	150 kHz to 80 MHz	80 MHz to 800 MHz	800 MHz to 2.5 GHz
	$d=1.16 \sqrt{P}$	$d=1.16 \sqrt{P}$	$d=2.33 \sqrt{P}$
0.01	0.116	0.116	0.233
0.1	0.366	0.366	0.736
1	1.16	1.16	2.33
10	3.66	3.66	7.36
100	11.6	11.6	23.3

For transmitters rated at a maximum output power not listed above, the recommended separation distance (d) in meters (m) can be established by using the equation applicable to the frequency of the transmitter, where P is the maximum output power rating of the transmitter in Watts (W) according to the transmitter manufacturer.

Note 1: At 80 and 800 MHz, the higher frequency range applies.

Note 2: These guidelines may not apply in all situations.

Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.

Warranty - ScanX

ScanX is warranted to be free from defects in material and workmanship from the date of installation for a period of 2 years (24 months). ScanX is designed solely for use in a dental office environment and this warranty is not applicable to other applications.

All part and component returns and replacement equipment under warranty require a Return Materials Authorization (RMA). Warranty returns must be received within three months of the RMA issue date. Items returned without an RMA, or included with other products for which an RMA has been issued, may be returned to the customer at the discretion of Air Techniques.

Any item returned under warranty, will be repaired or replaced at our option at no charge provided that our inspection shall indicate it to have been defective. Air Techniques, Inc. is not liable for indirect or consequential damages or loss of any nature in connection with this equipment. Dealer labor, shipping and handling charges are not covered by this warranty.

Warranty credit will not be applied to product returns that exhibit damage due to shipping, misuse, careless handling or repairs by unauthorized service personnel. Credit, or partial credit, will not be issued until product/parts have been received and assessed. Warranty is void if product is installed or serviced by anyone other than authorized Air Techniques dealer service personnel. This warranty is void if ScanX is operated with any covers removed.

This warranty is in lieu of all other warranties expressed or implied. No representative or person is authorized to assume for us any liability in connection with the sale of our equipment.

Warranty - Phosphor Storage Plates

The Air Techniques Phosphor Storage Plates (PSPs) are designed for use with ScanX and will be replaced for a period of 30 days from the date of purchase if defective in manufacturing or packaging.

ONLINE REGISTRATION

Quickly and easily register your new ScanX online. Just have your product model and serial numbers available. Then go to the Air Techniques web site, www.airtechniques.com, click the **Warranty Registration** link at the top of the page and complete the registration form. This online registration ensures a record for the warranty period and helps us keep you informed of product updates and other valuable information.

NOTES

[illegible]

[illegible]

For over 50 years, Air Techniques has been a leading innovator and manufacturer of dental products. Our priority is ensuring complete satisfaction by manufacturing reliable products and providing excellent customer and technical support. Whether the need is digital imaging, utility room equipment or merchandise, Air Techniques can provide the solution via our network of authorized professional dealers. Proudly designed, tested and manufactured in the U.S., our products are helping dental professionals take their practices to the next level.

Air Techniques' family of quality products for the dental professional include:

- ❑ **Digital Imaging**
 - Digital Radiography
 - Intraoral Camera
 - Caries Detection Aid
 - Intraoral X-ray
 - Film Processors

- ❑ **Utility Room**
 - Dry Vacuums
 - Wet Vacuums
 - Air Compressors
 - Amalgam Separator
 - Utility Accessories
 - Utility Packages

- ❑ **Merchandise**
 - Surface Disinfectant
 - Enzymatic Cleaner
 - Hand Sanitizer and Lotion
 - Waterline Cleaner
 - Evacuation System Cleaner
 - Imaging Accessories
 - Chemistry
 - Processor Accessories

Corporate Headquarters

1295 Walt Whitman Road | Melville, New York 11747- 3062 | Phone: 1-800-247-8324 | Fax: 1-888-247-8481

www.airtechniques.com

