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SCAN▸X® Duo

ScanX Duo
Digital Imaging System

Instruction Manual



AIR TECHNIQUES equipped for life®

ISO 13485 CERTIFICATION Intertek

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CONGRATULATIONS

Congratulations on your purchase of the ScanX® Duo Digital Imaging System, the chair-side imaging product from Air Techniques a leading manufacturer of dental, medical and veterinary equipment since 1962. The ScanX Duo is designed to process intraoral imaging plates only. See the Unpacking and Inspection section and the Technical Data section for details. ScanX Duo is hereafter referred to as ScanX in this manual. ScanX has been designed and manufactured using state-of-the-art technology to give many years of dependable service.

Using software that supports Intelligent Track Control allows ScanX to be operated by two users at the same time with different patients.

This manual covers the installation, operation and maintenance of ScanX. Review and follow the guidelines included in this manual to ensure that your ScanX gives the highest level of service.

Document	Part Number
Barrier Envelope (Size 0, 1, 2, 3 & 4) Instruction Sheet	73473

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This equipment has been designed to minimize exposure of personnel to hazards. While ScanX is designed for safe operation, certain precautions must be observed. Use of ScanX **not** in conformance with the instructions specified in this manual may result in permanent failure of the unit.

General Safety Information.

- ❑ Check with your authorized dealer for packing material requirements if it is necessary to return the product to the manufacturer. Correct packing guarantees optimal safety of the device during transport. Should it become necessary to return the device to the manufacturer during the warranty period, Air Techniques will not accept claims for damage arising from using incorrect packing materials.
- ❑ 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.
- ❑ This device is not to be used in any areas where the atmosphere could cause fire or explosion.

Markings.

The following terms or symbols are used on the equipment, on the serial number label or in this manual to denote information of special importance:



ScanX is a Class I Laser Product
[Class 1 Laser Product (IEC)]
This warning label identifies ScanX as such a product and describes the potential danger to humans in the event the product is opened during service. There is no laser radiation from this product when operated and maintained as instructed.
The Laser Product Accession Number is 0212282-00

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

CLASSIFIED C UL US

MEDICAL ELECTRICAL EQUIPMENT AS TO ELECTRICAL SHOCK, FIRE AND MECHANICAL HAZARDS ONLY IN ACCORDANCE WITH ANSI/ AAMI/ES 60601-1: 2005/R2012 (Am 3.1) and CSA C22.2 No. 60601-1: 2014 Control No. 66CA

Warns users that uninsulated voltage within the unit may be of sufficient magnitude to cause electric shock.

Indicates that the unit conforms with WEEE Directive 2002/96/EC and must be disposed of only at the appropriate facilities for recovery and recycling.

LASER 1

Identifies the name of the manufacturer.

Indicates date of manufacture.

EC REP Medical Device Safety Service
Schiffgraben 41
30175 Hannover, Germany

Indicates item used only once. Discard after use.

CE Indicates that the ScanX complies to the Medical Device Directive 93/42/EEC

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SAFETY NOTICE

Authorized Dealer Service Only.

The interior of ScanX is only accessible by removing hardware with tools. It should be opened and serviced only by an authorized dealer service technician. Failure to heed this warning may result in equipment damage or personal injury, and **will void any and all warranties**. Contact your authorized dealer for service information.

Use of Accessory Equipment.

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.

Consideration relating to the choice shall include:

- use of the ACCESSORY in the PATIENT VICINITY
- evidence that the safety certification of the ACCESSORY has been performed in accordance to the appropriate IEC60601-1 and/or IEC 60601-1-1 harmonized national standard.

Use of ACCESSORIES or cables other than those specified or provided by Air Techniques may result in increased EMISSIONS or decreased IMMUNITY of the EQUIPMENT.

Electrical Safety Notes.

- ❑ The power switch is the main power disconnect device.
- ❑ Use only the line cord provided with the unit.
- ❑ Use only grounded electrical connections.
- ❑ To avoid risk of electric shock, fire, short-circuit or dangerous emissions, never insert any metallic object into the equipment.
- ❑ Only use connection cable(s) delivered with the device.
- ❑ Check the device cables for possible damage before switching on. Damaged cables, plugs and sockets must be replaced before use.
- ❑ Never touch open supply outlets and patients simultaneously.
- ❑ Do not locate unit where it could be sprayed with water, or in a damp environment.

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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.

In this manual, the following definitions apply for all WARNINGS and CAUTION Statements:

WARNINGS: Any operation, procedure or practice, which, if not strictly observed, may result in injury or long-term health hazards to personnel.

CAUTIONS: Any operation, procedure or practice, which, if not strictly observed, may result in destruction of equipment or loss of effectiveness or damage to equipment and Phosphor Storage Plates.

WARNINGS -

Only trained professionals should use this device.

Federal law prohibits the sale of this device to individuals other than dental professionals. Use of this device, other than as described in this manual, may result in injury.

ScanX contains a laser and is a Class 1 [Class 1 (IEC)] 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.

Only a trained technician from an authorized dealer should remove a cover from ScanX.

Direct eye contact with the output beam from the laser may cause serious damage and possible blindness.

Do not open ScanX to maintain it.

Opening ScanX by removing any covers or components makes the equipment into a Class III b Laser Product. [Class 3B Laser Product (IEC)]. ScanX contains no user serviceable parts. If there is a service problem, contact your authorized dealer.

Operate ScanX in dry environment.

To prevent fire or electrical shock, do not expose this device to rain or moisture.

Do not use damaged Phosphor Storage Plates (PSPs).

Damaged PSPs may not provide reliable diagnostic images.

Hot Surface.

When using scanner continuously, the lower plate transport area may get hot. Avoid prolonged (10 seconds) skin contact with that area after scanning continuously for an extended period of time (more than 1 hour).

Do not reuse the Barrier Envelopes.

Dispose of used Barrier Envelopes in accordance with all local regulations.

Imaging Plates (PSPs) are toxic.

Never place an intraoral PSP in a patient's mouth without first enclosing it in a sealed barrier envelope. The patient should be cautioned not to bite, chew, or swallow the enveloped PSP. If a patient swallows such a PSP, contact a physician immediately.

Thoroughly rinse with running water any part of the body that comes in direct contact with the wet phosphor compound of the PSP.

Disposal of PSPs.

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

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SAFETY NOTICE

CAUTIONS -

Completely clean and erase PSPs before taking X-ray exposure.
See the *PLATE CARE & PREPARATION* section of this manual.

Minimize exposing an X-ray exposed PSP to light.
Transfer the PSP into the Inlet slot quickly to minimize exposure to light.

Use care in handling PSPs - Avoid fingerprints and scratching
Refer to the instructions provided with the PSP package for further information on handling.

Use of other manufacturer's imaging plates
Do not put PSPs designed for drum-type or other scanners into ScanX. The thickness (especially thicker ones) will cause damage.

IMPORTANT INFORMATION

General Notes.

- ❑ All instructions in this manual form an integral part of the unit. They must be kept close to the unit and in readiness whenever required. Precise observance of these instructions is a pre-condition for use of the unit for the intended purpose and for its correct operation. This manual should be passed on to any future purchaser or operator.
- ❑ Safety of the operator as well as trouble-free operation of the unit are only ensured if use is made of original equipment parts. Moreover, use may only be made of those accessories that are specified in the technical documentation or that have been expressly approved and released by Air Techniques for the intended purpose. Air Techniques cannot warranty for the safety or proper functioning of this unit in the case where parts or accessories are used that are not supplied by Air Techniques.
- ❑ There is no guarantee against damage arising where parts or accessories are used that are not supplied by Air Techniques.
- ❑ Observe the usage and storage conditions.
- ❑ Appliances which accumulate condensation or become wet through a change of temperature may only be operated after they are fully dry.
- ❑ Air Techniques regard themselves as being responsible for the equipment with regard to safety, reliability and proper functioning only if assembly, resetting, changes or modifications and repairs have been carried out by an authorized dealer and if the equipment is used in conformity with the instructions contained in this manual.
- ❑ The device conforms to the relevant safety standards valid at this time.
- ❑ Any reprinting of the technical documentation, in whole or in part, is subject to prior written approval by Air Techniques.

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Correct Usage

- ❑ Operation of ScanX may only be carried out by suitably qualified personnel.
- ❑ ScanX is only to be used in the processing of exposed PSPs.
- ❑ ScanX should be used in a room equipped for it.
- ❑ Room temperature should be in the range 10 to 40°C with relative humidity between 5 and 95%.
- ❑ If the device is brought into the room of operation from a cooler environment, condensation can build up. Do not connect the device until it has warmed up to room temperature and is absolutely dry.
- ❑ This room should be free of all possible interferences (e.g. strong magnetic fields), as these could affect the operation.
- ❑ ScanX may only be operated together with authorized software.
- ❑ Correct usage includes observing all installation and operating instructions and adherence to the set-up, operation and maintenance instructions.
- ❑ Any use, above and beyond that described in this manual as correct usage, will invalidate the warranty.

Incorrect Usage

- ❑ Any use that is not described in this manual as correct usage is considered as incorrect usage. The manufacturer is not to be held liable for any damage caused as a result of incorrect usage. The operator bears all risks.

PURPOSE OF THIS MANUAL

This manual provides the information necessary for the setup, operation and routine care and maintenance of ScanX® Duo Intraoral (P/N D1000) Digital Imaging System with In-Line Erase.

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 software.

SYSTEM DESCRIPTION

ScanX is a digital imaging system that utilizes reusable Phosphor Storage Plates (PSP) in place of X-ray film to produce diagnostic quality intraoral digital radiographs. ScanX produces a digital image by scanning PSPs, which have been exposed to X-rays. ScanX allows computer storage, processing, retrieval and display of the computed radiographic images utilizing a user supplied software 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.

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UNPACKING AND INSPECTION

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 the indicated main assembly and accessory kit as listed below. Verify that all listed items were received. If any item is missing, notify your dealer.

System Components

Description	Quantity
3-meter Power Cord	1
2-meter 2.0 USB Cable	1
Accessory Kit containing:	
Size 0 Phosphor Storage Plates	2
Size 2 Phosphor Storage Plates	6
Size 0 Barrier Envelopes	100
Size 2 Barrier Envelopes	300
Size 0 Plate Guide	1
Size 1 Plate Guide	1
Size 2 Plate Guide	2
Intraoral Plate Transfer Box	1
User Information Folder containing:	
Cleaning Sheets Sample Kit	1
ScanX Quick Start Guide	1
CD Disk containing Drivers, Utilities and Operator's Manual	1
PSP Cleaning Wipe Sample Pack	2

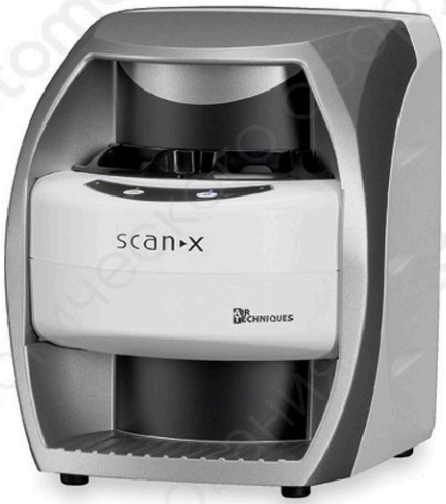


Figure 1. ScanX Duo Digital Imaging System

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COMPUTER SYSTEM REQUIREMENTS

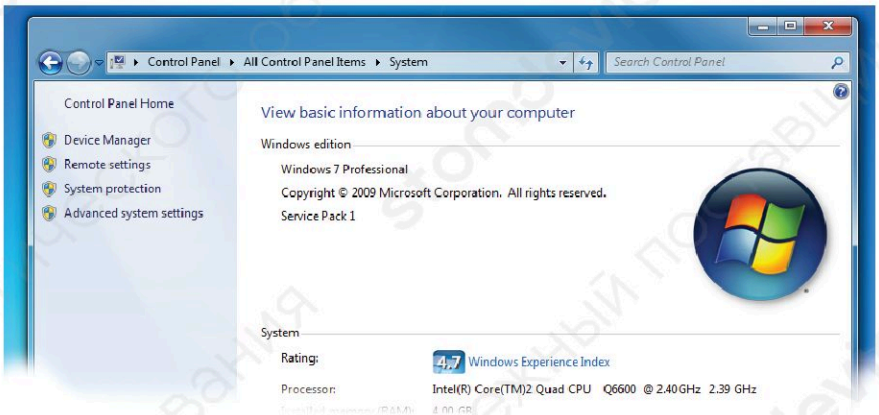
IMPORTANT: To operate ScanX, it must be connected to a compliant Computer System supplied by the customer. In addition, authorized Imaging Software, purchased from your dealer or other company, must be installed on the computer in order to operate ScanX. Contact your dealer for available Computer System and Software options.

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

CPU/Speed	Intel Pentium IV compatible, 1.4 GHz or faster required. 3.0 GHz Intel CORE2 recommended.
Operating System(s)	Microsoft Windows 7 Professional, Enterprise, or Ultimate with Service Pack 1 or later 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.
System RAM	1 GB Required. 2 GB recommended.
Hard Drive	At least 2 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.
Optical Drive	Drive capable of reading a CD-ROM is required.
Monitor	32-bit 1024 x 768 or higher resolution required. SVGA 24 inch, 1280 x 1024 or higher resolution, contrast ratio 10,000:1, .22 dot pitch recommended
Video Display Adapter	16 MB RAM required. 32 MB RAM or more recommended
USB Port/Version	USB 1.1 required. USB 2.0 or USB 3.0 high-speed port recommended
Keyboard, Mouse and Printer	Required.
Software	DirectX 9.0c with Direct Draw9.0 or later required. Compatible authorized third-party software or TWAIN compliant third-party software (not included with product) required.
Other	Backup device and Surge protector recommended.

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.



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CONTROLS AND INDICATORS

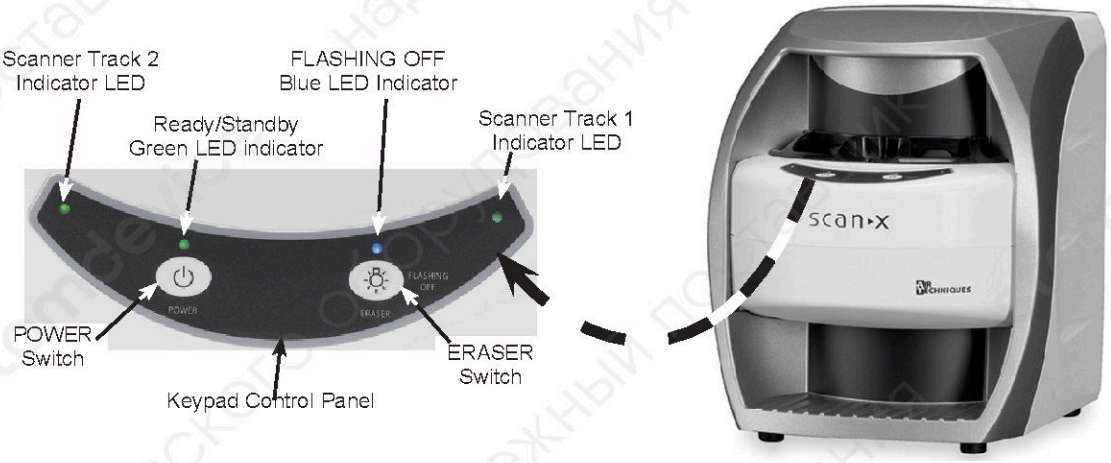
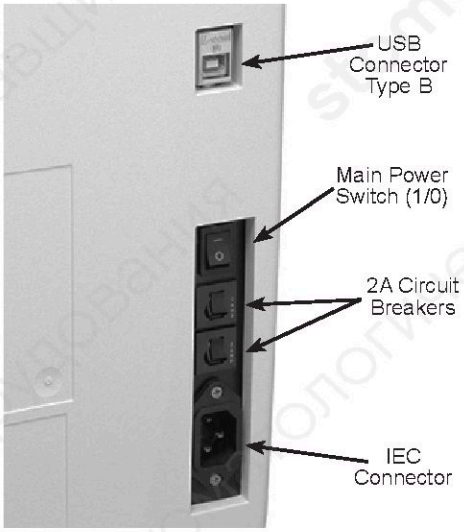


Figure 2. ScanX Duo Front Panel Controls and Indicators

Keypad Control Panel

POWER Switch	Toggles between the Standby and Ready mode as follows: 1. Press to switch from the Standby mode to the Ready mode. 2. Press and hold down for at least 2 seconds to switch to the Standby mode from the Ready mode.
Ready/Standby Green LED indicator	Illuminates green to indicate that ScanX is Ready for operation. When extinguished, it indicates that ScanX is in the Standby mode.
ERASER Switch	Toggles between turning the Erase function OFF and ON. This switch has no effect once the plate scanning or erasing starts.
FLASHING OFF Blue LED indicator	Illuminates steady blue to indicate that the Erase function is ON and PSPs will be erased after scanning. Flashes blue to indicate that the Erase function is OFF and PSPs will not be erased after scanning.
Scanner Tracks 1 & 2 Indicator LEDs	Illuminate green when the Scanner has been activated, indicating that a PSP can be fed into ScanX track. Illuminate yellow, indicating the PSP has been sensed and the Scanner is transporting the PSP in the associated track.



Item	Function
USB Connector Type B	Provides USB connection from the computer via the supplied USB Computer Connector Cable
Main Power Switch (1/0)	Controls the application of ScanX operating power.
2A Circuit Breakers	Protects against shorts in the internal electrical circuits.
IEC Connector	Provides connection of Mains outlet power via supplied line cord.

Figure 3. ScanX Duo Rear Panel Controls and Connectors

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Electrical Requirements:

Supply Voltage:	100 to 240VAC +/- 10%, 50/60 Hz
Supply Current:	2 A Maximum
Line Cord:	Country Specific 3 meters long

Physical Properties:

Depth	26 cm
Width	25 cm
Height	30 cm
Weight	10 kg

Environmental Conditions:

Unit in Operation	
Temperature:	10 to 40°C
Humidity:	5% to 95% RH
Heat emission	<40W
Storage and Transport	(Scanner and accessories)
Temperature:	-29 to 54°C
Humidity:	5% - 95% (Non-condensing)
Storage and Transport	(PSP Plate)
Temperature:	Maximum 33°C
Humidity:	Maximum 80% (Non-condensing)

Note: Resolution of ScanX is dependent on operating mode and specific imaging plate type used.

Optimal Resolution: up to 20 lp/mm

Compliance Data:

Laser Class:	Class I Laser Product (21 CFR 1040.10) Class 1 Laser Product IEC 60825-1, ED. 3, (2014)
Laser Product Report Accession Number:	0212282-00

Installation Category: I

Pollution Degree: 2

User Replacement Items: Line Cord, Plate Guides, PSPs and Computer Connector Cable

IEC 60601-1 Classification:

Class 1, No applied parts, Transportable, Continuous Operation,
Equipment not suitable for use in the presence of flammable anaesthetic mixture(s).

Electromagnetic Interference:

Electromagnetic interference between the equipment and other devices can occur. Do not use the equipment in close conjunction with sensitive devices, or devices creating high electromagnetic disturbances.

Electromagnetic Compatibility Conforms to IEC 60601-1-2 See Appendix A.

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ABBREVIATIONS

Abbreviations used in this manual are summarized below.

A	ampere(s)
AC or a.c.	alternating current
CD-ROM	compact disk, read-only memory
CFR	Code of Federal Regulations
CPU	central processing unit (your computer)
cm	centimeter
D	depth
GB	gigabyte ($2^{30} \approx 10^9$ bytes)
GHz	Gigahertz (10^9 of Hertz)
H	height
Hz	Hertz (cycles per second)
IEC	International Electro-technical Commission
IMS	Image Management Software
kg	kilogram (10^3 gram)
LED	Light emitting diode
lp/mm	line pair per mm
m	meter
lux	a measure of light intensity
MB	megabytes ($2^{20} \approx 10^6$ bytes)
mm	millimeter (10^{-3} m)
MONTH YYYY	date (Month, 4 digit year)
Phosphor	a luminescent material
PN	part number
PSP	phosphor storage plate (imaging plate)
RAM	random access memory
RH	relative humidity
SVGA	Super Video Graphics Array
USB	Universal Serial Bus
UL	Underwriters Laboratories
V	Volts
W	Watts, width
°C	degree Celsius

SITE SELECTION

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

- ❑ Lighting conditions: Set up the scanner in ordinary room light, however, direct sunlight and light fixture(s) above and near ScanX producing more than 400 lux of light at the PSP inlet must be avoided.
- ❑ Provide a stable, flat counter top large enough to hold the scanner.
- ❑ Locate the computer within 2 meters (length of USB cord provided).
- ❑ Locate ScanX no further than 3 meters (length of line cord provided) from a hospital grade grounded AC outlet.

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Note: Authorized Imaging Software, purchased from your dealer or other company, must be installed on the computer in order to operate ScanX.

ScanX Drivers and Utilities Installation

Before connecting ScanX to your computer or attempting to use it for the first time, run the Setup program on ScanX Drivers and Utilities Disk included with ScanX. Normally, this program runs automatically when the CD is inserted into the drive for the first time. If not, run the Setup program located in the root directory of the CD (typically ***D:\Autorun.exe***).

The Setup program guides you through updating the library files on your computer, which must be completed before ScanX will operate properly. More information can be found in the Installation Instructions and Notes file on ScanX Drivers and Utilities Disk included with ScanX.

ScanX Connection Procedure

Refer to Figure 4 and perform the following procedure to connect ScanX for operation for the first time.

1. Select a location that meets the SITE SELECTION guidelines.
2. Set up the computer according to the manufacturer's recommendations. Make sure that the computer meets all requirements listed on page 9.
3. Verify that an authorized Imaging Software is installed properly on the computer.
4. Verify that the supplied ScanX Drivers and Utilities Disk which contains the USB drivers was properly installed per instructions above.

   Note: Always make sure to use the same USB port whenever re-connection of the USB cable is necessary.
5. Connect the high speed USB cable between the USB Type B connector located on ScanX rear panel and the USB Type A connector located on the computer.

   Note: Connect the line cord to the ScanX DUO prior to plugging the line cord into the Mains outlet.
6. Connect the line cord between the AC outlet and the IEC connector located on the ScanX rear panel.
7. Place the scanner in the Standby mode by setting the main power switch to the ON (1) position.

ScanX Initialization

Perform the following steps to initialize the unit.

1. Switch the scanner from Standby to ON by pressing the membrane POWER switch (⏻) located on the Keypad Control Panel on the top of the scanner. Verify that both the green and blue LED indicators above the POWER and ERASER switches, respectively, illuminate.
2. With both the ScanX and computer turned on, Windows detects the ScanX as a new USB Device. Windows should automatically find the drivers installed from the ScanX Drivers and Utilities Disk.

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SYSTEM SETUP

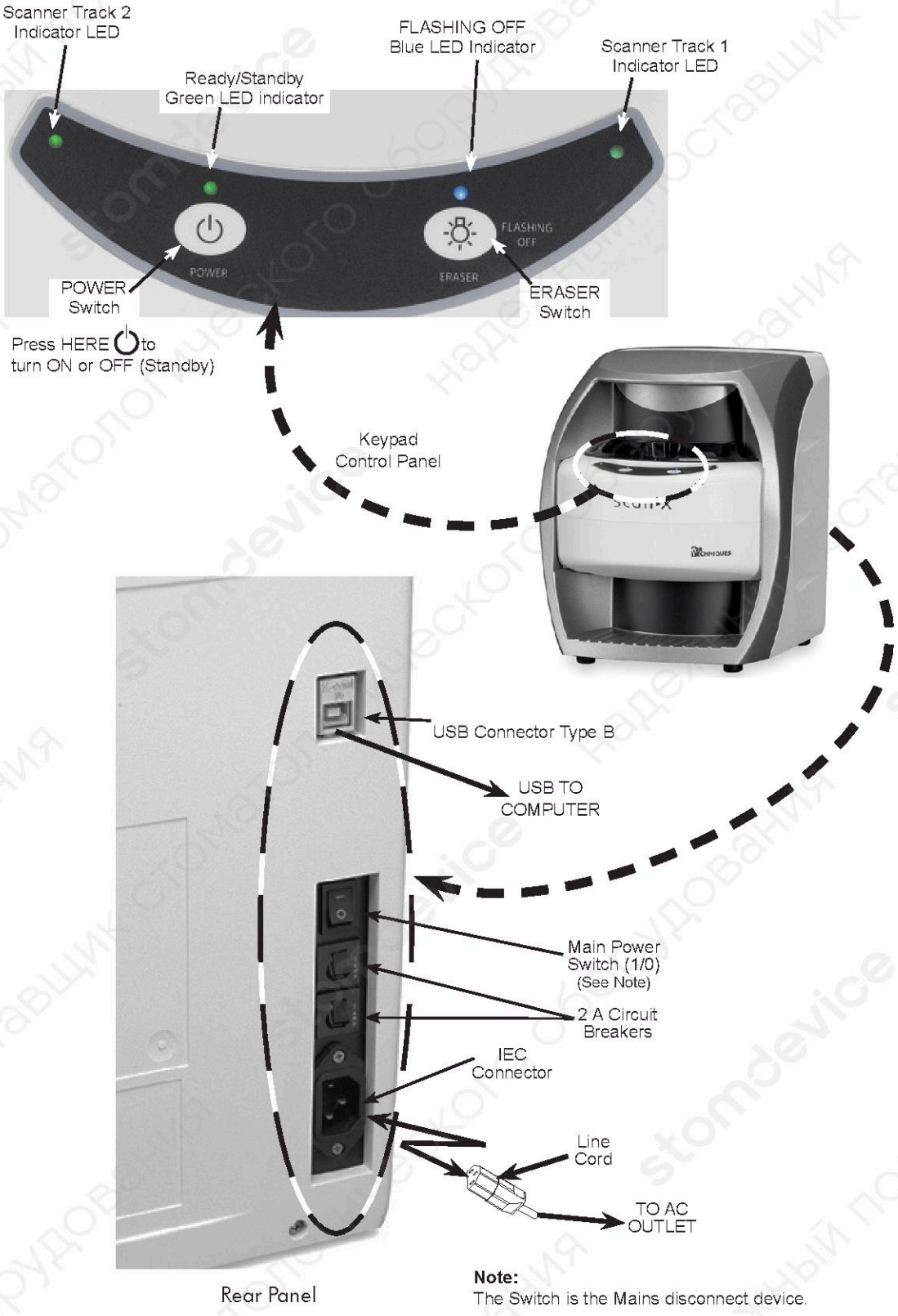


Figure 4. Typical ScanX Duo Installation

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Prior to performing the intraoral imaging procedures on the following pages, the user must be familiar with the care, handling and preparation of the Phosphor Storage Plate (PSP) in order to ensure successful image scanning. Figure 5 shows the configuration of a typical Intraoral Size #2 PSP.

Active side: The active side is light blue. This side is also marked with an "**a**" positioning guide.

Inactive side: The inactive side is black. 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.



Figure 5. Intraoral PSP Configuration

Handle PSPs with Care.

- ❑ Avoid scratching or soiling PSPs.
- ❑ Do not bend PSPs or apply unnecessary pressure.
- ❑ Do not store PSPs in a hot or moist area.
- ❑ Protect the PSPs from direct sunlight and ultraviolet rays.
- ❑ Pick up the PSPs using two fingers around the edges to avoid unnecessary contact with the plates.

CAUTION: Always use a Barrier Envelope for each Intraoral plate. Exercise care in handling the plate so as not to scratch the sensitive surface or nick the edges.

Plate Protection

When storing Intraoral PSPs use the plate transfer box. Place the PSP covered with a Barrier Envelope with the sensitive (front) side of the PSP facing down into this box for protection and safekeeping.

IMPORTANT: PSPs must always be erased prior to use.

Note: Use PSPs within 24 hours of last erasure. Repeat erasing process if PSPs have been stored longer than 24 hours.

Erase the PSP

Each Intraoral PSP should be used (i.e. X-ray exposed and scanned) **within 24 hours** of erasure since natural radiation will add noise to the PSP. Erase PSPs by simply using the ScanX In-Line Erase Feature. This can be accomplished using one of two methods as follows:

Note: Both erasing methods will result in an erased PSP suitable for reuse. The user will not observe any difference in ScanX operation when using either method.

Method #1

Perform the Imaging Procedures for PSPs on page 18. Except when performing step 4 of Activate Scanner procedure, select the Erase option from the installed authorized imaging software to activate ScanX. This method does **not** scan the plate and no image will be acquired.

Method #2.

Perform the normal Imaging Procedures for PSPs on page 18. This method scans the plate and the imaging software may acquire a "junk image" (scanned latent plate image) that should subsequently be deleted from the imaging software (image folder).

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PLATE CARE & PREPARATION

Cleaning Phosphor Storage Plates

For the best images, PSPs should be handled carefully and kept clean. Use specially formulated PSP Cleaning Wipes (P/N B8910) to clean all PSPs. 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. As shown by Figure 6, 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.



Figure 6. PSP Cleaning

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.

Disposal of Phosphor Storage Plates

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

Barrier Envelope Handling

Always guard against contamination by using standard infectious control procedures when handling individual barrier envelopes. It is best to discard suspected contaminated envelopes since no cleaning or disinfection procedure exist or are required for barrier envelopes.

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

Preparing Intraoral Plates for Patient Use

Insert the erased PSP 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. See Figures 7a - 7c below.



Figure 7a
Insert the PSP.



Figure 7b
Peel off the adhesive strip.



Figure 7c
Seal the Barrier Envelope.

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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. In addition, a backwards "a" (i.e. " ɐ"), 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.

3. Refer to Appendix B, X-ray unit settings, which provides standard recommended values. The dentist determines the individual setting of the exposure values.

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).
3. Wearing gloves, remove the exposed PSP from the patient's mouth and place to the side making sure the sensitive side of the barrier envelope is facing away from any light source.
4. Repeat steps 1 through 3 as necessary to complete the patient's X-ray series. When all necessary plates in the X-ray session have been exposed, prepare each plate by performing the procedure below.

Preparing the Exposed Plate for Scanner Processing

1. Disinfect the Barrier Envelope (with plate still inside) and your gloves 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.

   IMPORTANT: Be sure that the sensitive side of the PSP is facing down when it lands on the PSP Transfer box (See Figure 8, View C). If it is not sensitive side down, TURN IT OVER IMMEDIATELY. Failure to do so may result in erasure of the PSP.

3. Lay the PSP Transfer box on a flat surface near the ScanX as shown by Figure 8, View A.
4. As shown by Figure 8, 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 PSP Transfer box.
   b. Tear the envelope lengthwise starting at the notch to eject the PSP onto the PSP Transfer box.
5. As shown by Figure 8, View C, the PSP is now ready to be scanned to read the image from the PSP by performing the Intraoral Imaging Procedures.



View A
Empty Transfer box



View B
Ejecting PSP to Transfer box



View C
PSPs ready for Scanning

Figure 8. Preparing the Exposed Plate for Scanning

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IMAGING PROCEDURES

Configure the Intraoral Plate Guides. If the desired Plate Guides are not in place, install these Guides at this time. Do not operate the scanner without a full complement of two Guides in place. Any combination of Guides may be used. See Figure 9.

IMPORTANT:

Transfer the PSP from the PSP Transfer box to the Plate Guide slot quickly. Always keep the sensitive side away from any light source to minimize image loss.



Figure 9. ScanX with Plate Guides in Place.

Activate Scanner

Activate ScanX by performing the following procedures.

1. Make sure ScanX and computer components are correctly connected as shown in Figure 4.
2. Switch the scanner from Standby to ON by pressing the membrane POWER switch (⏻) located on the Keypad Control Panel on the top of the scanner.
3. Verify that both the green and blue LED indicators above the POWER and ERASER switches, respectively, illuminate. (Default mode has eraser ON.)
4. Use the user-supplied authorized Imaging Software to activate the Scanner and to select the desired image type and resolution.
5. Verify that the two Scanner track indicators illuminate green when the Scanner has been activated, indicating that PSPs can be fed into the corresponding Plate Guide.

Scanning and Erasing Plates

Scan and erase an intraoral PSP in one operation by performing the following procedures.

1. Grasp a PSP by long edges between your thumb and index finger. See Figure 10.
2. With printed side facing you, carefully and quickly insert the PSP into the corresponding Plate Guide slot as far as possible.
3. Immediately press the PSP all the way down with your fingertip (from position Figure 11 to position Figure 12) until the scanner's transport mechanism takes over and the PSP moves down on its own.
4. Verify that the track light illuminates yellow, indicating the Plate Guide slot is in use, the PSP has been sensed and the Scanner is transporting the PSP.



Figure 10.
PSP Pick-up.

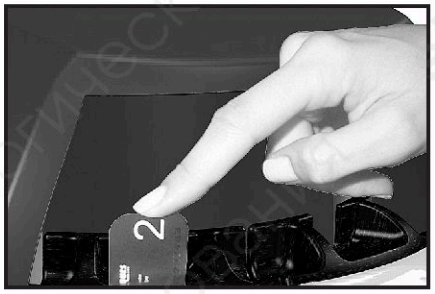


Figure 11
Feeding Intraoral Plate.

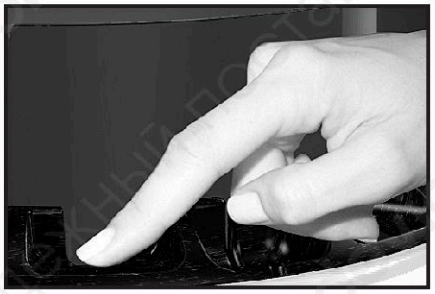


Figure 12
Fully Inserted Plate.

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Scanning and Erasing Plates (continued)

Note: Up to two PSPs can be processed simultaneously. One PSP at a time can be inserted into each Plate Guide as long as the corresponding track indicator light is illuminated green. The next PSP may be fed into a Plate Guide slot only after the corresponding track indicator LED changes from yellow to green.

5. Observe that a red glow emanates from the scanner exit slot.
6. Repeat steps 1 through 5 to process additional PSPs as necessary. Another PSP may be fed into any Plate Guide slot as long as the track indicator light illuminates green.
7. Observe that each scanned and erased PSP drops into the receiving tray at the bottom of the scanner. Since ScanX default operation is with the erase mode enabled (blue LED indicator above the ERASER switch is steadily illuminated), each PSP is erased and ready for reuse.
8. Observe that all transport indicators illuminate green and the red glow from the exit slot extinguish after the last PSP drops to the tray.

CAUTION: Always use exercise care in handling the PSPs so as not to scratch the sensitive surface or nick the edges.

9. 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.
10. View and save each scanned image using the user-supplied authorized Imaging Software.

IMPORTANT: PSPs will <u>not</u> be erased after scanning when operating ScanX with the eraser disabled. PSPs must always be erased prior to exposure to X-rays for new images.

Scanning Plates without Erasing

ScanX can be operated with the in-line eraser feature turned off. When the eraser mode is disabled, ScanX scans the same as when the eraser is enabled except that the PSPs are **<u>not</u>** erased after scanning. Scan an intraoral PSP without erasing the image by performing the following procedures.

1. Activate the scanner by performing the procedures on previous page.

Note: Upon activation, ScanX defaults with the eraser mode enabled. This must be disabled prior to scanning to prevent erasing of the scanned PSP.

2. Disable the eraser mode of operation by pressing the membrane ERASER switch located on the Keypad Control Panel. See Figure 13.
3. Verify that the blue LED indicator above the ERASER switch blinks blue to indicate that the Erase function is OFF. PSPs will **<u>not</u>** be erased after scanning.
4. Insert the exposed PSPs to be scanned into ScanX Plate Guides by performing the Scanning and Erasing Plates procedures provided on the previous page.
5. The scanned PSPs still contain latent images that require erasure. Make sure to erase each PSP prior to reuse for new images.

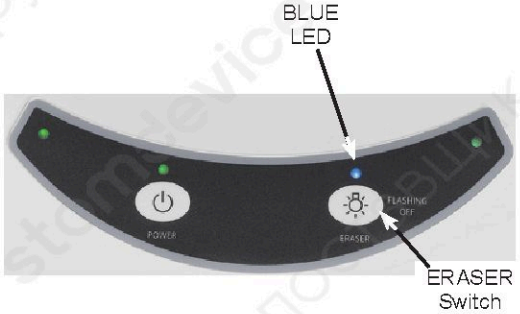


Figure 13.
ScanX Keypad Control Panel

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POWERING DOWN SYSTEM

IMPORTANT: Never power down the system during a scanning session.

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 membrane POWER switch on the Keypad Control Panel for approximately two seconds, until the green LED above the POWER switch extinguishes.
2. Turn OFF the main power to ScanX by placing the main power switch on the Built-In Control/ Connector panel to the OFF (O) position.

MAINTENANCE

Maintenance Procedures

ScanX is designed for many years of trouble-free operation. Maintenance as described herein is minimal.

IMPORTANT: Do **not** spray solvents or liquid directly on the scanner.

Cleaning ScanX

Turn off ScanX, disconnect the line cord from the Mains wall outlet and disconnect the computer connection cable from ScanX before cleaning. Wipe the outside surfaces with a soft paper towel dampened with a disinfectant solution or non-abrasive household cleaner. Be careful not to allow solvents TO RUN OR DRIP into the unit. This could cause damage to ScanX. Allow to air dry before plugging in or turning back on.

Disinfecting ScanX

No disinfection is required for ScanX.

Cleaning the Plate Guides

Wash the Plate Guides with a non-abrasive cleaner and water. Dry thoroughly.

IMPORTANT: Plate Guides must not be put in an autoclave.

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

Disinfecting the Plate Guides

There is no reason to routinely disinfect the Plate Guide unless contamination is suspected. If a Plate Guide has touched a contaminated surface, it may be immersed briefly in a cold sterilant according to sterilant manufacturers directions. After disinfection, clean and dry the Plate Guide using the instructions above.

Cleaning the Plate Transport

Over time, small debris and dust can accumulate in the plate transport mechanism causing a loss in image quality and possible damage to the PSPs.

To ensure optimal ScanX performance, the plate transport should be cleaned once per week using a new ScanX Cleaning Sheet each time. Sheets can be purchased from your dealer. Refer to ACCESSORIES page 24.

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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 or white 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 tray area or other surfaces that could cause scratching of the plate. Make sure to review the Plate Care and Preparation information provided on page 15 of this manual.

SCHEDULED MAINTENANCE

Like all precision products, 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. Routine checks help to detect general overall wear, and replacement of parts can often be made before a problem occurs. Adherence to the maintenance schedule will ensure that ScanX Digital Imaging System will continue performing at its best with uninterrupted service.

Understanding this, we have established two basic maintenance kits that will help insure continuous operation of ScanX Digital Imaging System. The kits and their associated parts number along with the recommended performance schedule are listed below. Please note that only a trained dealer technician should perform service that requires replacement of internal parts.

IMPORTANT: All service requiring access to the interior of the ScanX must be performed only by an authorized dealer service technician with the proper training.

Service Requirement	Schedule	Kit Part No.
Replace transport drive belts and springs	2 years	D1920
Replace complete transport belt drive belt assembly	4 years	D1932

IF YOU NEED ASSISTANCE

Air Techniques ScanX systems are designed and manufactured to high standards. They are easy to install and use and typically deliver high-quality performance. If any difficulties are encountered with this product, please contact Air Techniques Technical Support at +**1-516-433-7676**.

For additional information, contact your authorized dealer or visit our web site, **www.airtechniques.com**.

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TROUBLESHOOTING

	Trouble	Possible Cause	Corrective Action
1	No power No green light on membrane switch	• Not plugged in. • No power at Mains Outlet • ScanX has not been turned on. • Defective power supply	• Check the line cord connection is firmly plugged in. • Make sure outlet is grounded and has power. • Make sure that the main power switch is set to ON (1). • Call your Air Techniques dealer.
2	Green, Blue or Yellow indicator does not light.	• Defective light or circuitry.	• Call your Air Techniques dealer.
3	Image Management Software does not recognize ScanX when selected.	• Inadequate Computer System. • ScanX has not been turned on. • The computer connection cable is loose or defective. • The computer does not recognize that ScanX is connected. • ScanX hardware problem.	• Verify Computer requirements (Page 9). • Make sure that the POWER switch is set to ON and the green indicator light is lit. • Reconnect the cable. Check for tightness. Replace if necessary. • Verify that the Setup program was correctly installed (Page 13). Use different USB port. • Call your Air Techniques dealer.
4	Plate does not scan properly.	• The PSP was not pushed far enough into ScanX.	• Fully feed the PSP into the Plate Guide.
5	No image appears after scanning. **Important:** Do not allow the PSP to be exposed to light between taking an X-ray and scanning with the ScanX.	• The PSP fed backwards (printed side towards ScanX). • The PSP was erased prior to scanning. • X-ray source failed. • Hardware failure.	• If Eraser mode **was disabled** during scanning, quickly refeed the plate with the printed side out. If Eraser mode **was enabled** during scanning, retake image. • Feed the PSPs into the scanner immediately and quickly after removal from the Barrier Envelope. • Call your X-ray service dealer. • Call your Air Techniques dealer.

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	Trouble	Possible Cause	Corrective Action
6	Image is too dark.	• PSP has been overexposed	• Use software to adjust brightness. If this is not possible, retake image with proper (lower) exposure and a newly erased PSP.
7	Image appears skewed on monitor.	• PSP was fed skewed either behind or without a Plate Guide in place. • Plate Guide used was not the proper size.	• Verify that Plate Guide is in place and PSP is fed into slot. • Check PSP size and ensure that the correct Plate Guide is in place.
8	Image contains ghost images or shadows.	• PSP was not completely erased prior to use. • Imaging Plate was exposed with the back of the IP facing the tubehead. • PSP has been stored too long in barrier envelope or cassette. • Partial erasure of the image due to exposure to light during handling of the PSP	• Make sure ScanX is operating with eraser turned on (blue LED indicator above the ERASER switch is illuminated steadily). • Make sure the plates are inserted properly into the barrier envelope or cassette with the proper orientation to the X-ray source. • Do not store PSPs in barrier envelopes or cassettes for more than 24 hours. • Do not leave exposed PSPs in well lit areas. Even in barrier envelopes, some light may penetrate and partially erase the PSP. Transfer PSPs from their protective barriers to ScanX within one hour of exposure.
9	Image shows artifacts	• The PSP surface is not clean and has dirt, stains or scratches on it.	• Clean the PSP. If the PSP is scratched or stained, do not reuse.
10	PSP does not drop into the receiving tray	• PSP may have clung to the bottom of transport arch due to static electricity.	• Look below transport arch and gently touch the PSP to allow it to drop.

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ACCESSORIES

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
Dust Cover	1	D1300

Intraoral Phosphor Storage Plates

Size	Order No.	Qty
0	73445-0	2
1	73445-1	2
2	73445-2	4
3	73445-3	2
4	73445-4	1



PSP Cleaning Wipes

• PN B8910, Box of 50



Patented, Easy-Open Barrier Envelopes

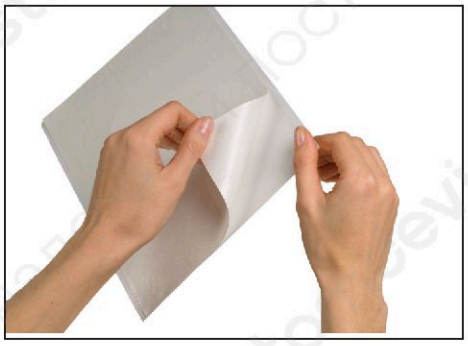
Size	Order No.	Qty
0	73248-0	100
1	73248-1	100
2	73248-2	300
2	73248-2K	1000
3	73248-3	100
4	73248-4	50



ScanX Cleaning Sheets

Description	Order No.	Qty
ScanX DUO Sheets	D1010	12
ScanX DUO Sheets	D1020	25

One re-usable Release Liner is included in each box of Sheets.



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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
2-meter 2.0 USB Cable	1	D5226

Plate Guides

Size	Order No.	Qty
0	73566-0	1
1	73566-1	1
2	73566-2	1
3	73566-3	1
4	73566-4	1



Plate Transfer Box

- PN 73470, Qty. 1



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WARRANTY

Warranty - ScanX Duo

ScanX Duo 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 Duo 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 of 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 Duo 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 Duo 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.

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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.

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 nearly 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	

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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.

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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	$d=1.16\sqrt{P}$
Rediated 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 electromagnet 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.

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Recommended Separation Distances 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 √P	d=1.16 √P	d=2.33 √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.

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Intraoral X-ray units

The indicated standard values are a recommendation, the dentist determines the individual setting of the exposure values.

A setting of 60 kV is preferred provided it can be set on the X-ray unit.

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

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

	DC radiator, 7 mA Tube length 20 cm					
	without X-ray field limitation		X-ray field limitation 0.8 x1.2 in^2 (20 x 30 mm^2)		X-ray field limitation 1.2 x 1.6 in^2 (30 x 40 mm^2)	
	60 kV	$mGycm^2$	60 kV	$mGycm^2$	60 kV	$mGycm^2$
Incisor	0.08 s	14.6	0.08 s	3.1	0.08 s	6.2
Premolar	0.12 s	21.9	0.12 s	4.6	0.12 s	9.3
Molar	0.17 s	31.1	0.17 s	6.6	0.17 s	13.2
Bite wing	0.18 s	32.9	0.18 s	7.0	0.18 s	14

	DC radiator, 6 mA Tube length 30 cm					
	without X-ray field limitation		X-ray field limitation 0.8 x1.2 in^2 (20 x 30 mm^2)		X-ray field limitation 1.2 x 1.6 in^2 (30 x 40 mm^2)	
	70 kV	$mGycm^2$	70 kV	$mGycm^2$	70 kV	$mGycm^2$
Incisor	0.13 s	11.8	0.13 s	2.5	0.13 s	5.0
Premolar	0.18 s	16.4	0.18 s	3.4	0.18 s	6.9
Molar	0.25 s	22.8	0.25 s	4.8	0.25 s	9.6
Bite wing	0.27 s	24.6	0.27 s	5.2	0.27 s	10.4

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APPENDIX B - X-RAY UNIT SETTINGS

The following table shows the standard values for the exposure time and the dose area product of a PSP for a pediatric patient

Children are more sensitive to radiation than adults Keep the exposure parameters as low as possible taking into consideration the image quality Refer also to the the FDA information on pediatric X-ray imaging (refer to the FDA website on this topic, see https://tinyurl com/FDAPediatric)

	DC radiator, 7 mA Tube length 20 cm					
	without X-ray field limitation		X-ray field limitation 0.8 x1.2 in^2 (20 x 30 mm^2)		X-ray field limitation 1.2 x 1.6 in^2 (30 x 40 mm^2)	
	60 kV	$mGycm^2$	60 kV	$mGycm^2$	60 kV	$mGycm^2$
Incisor	0.05 s	9.1	0.05 s	1.9	0.05 s	3.8
Premolar	0.07 s	12.8	0.07 s	2.7	0.07 s	5.4
Molar	0.11 s	20.1	0.11 s	4.2	0.11 s	8.5
Bite wing	0.11 s	20.1	0.11 s	4.2	0.11 s	8.5

	DC radiator, 6 mA Tube length 30 cm					
	without X-ray field limitation		X-ray field limitation 0.8 x1.2 in^2 (20 x 30 mm^2)		X-ray field limitation 1.2 x 1.6 in^2 (30 x 40 mm^2)	
	70 kV	$mGycm^2$	70 kV	$mGycm^2$	70 kV	$mGycm^2$
Incisor	0.08 s	7.3	0.08 s	1.5	0.08 s	3.1
Premolar	0.11 s	10.0	0.11 s	2.1	0.11 s	4.2
Molar	0.14 s	12.8	0.14 s	2.7	0.14 s	5.4
Bite wing	0.14 s	12.8	0.14 s	2.7	0.14 s	5.4

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