Service Manual

SmartDR Fusion

SOUND Expertise. Canon Reliability.

Supports the Canon AX-C4343W panel

SM0004, Rev. A

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Notices

The Smart DR® Fusion digital x-ray imaging system is a high resolution digital imaging system intended to replace conventional film techniques, or existing digital systems, in multipurpose or dedicated applications.

Reasonable precautions have been taken in the preparation of this book, but Sound®assumes no responsibility for errors or omissions or for damage resulting from the use of the information contained herein. For improvement of product performance, supplementation, or follow-up of information, the contents of this manual are subject to change without notice.

Standards and compliance

CE for Low Voltage Directive 2006/95/EC, EMC Directive 2004/108/EC
TUV Lab Tested
CAN/CSA-C22.2 No. 60601-1 & 61010-1
IEC 60601-1, 60601-1-2, 61010-1
AAMI ES60601-1

It is the responsibility of the system integrator to ensure detectors are CE marked for use in the European Union.

This product conforms to the necessary IEC standards for patient safety & isolation as-shipped from the factory. The end user and/or the installer is responsible to ensure that when connected, as a system with other devices, this product meets all the rules of IEC 60601-1 Clause 16.

Statement of Intended Use

The Smart DR® Fusion digital x-ray imaging system is a high resolution digital imaging system intended to replace conventional film techniques, or existing digital systems, in multipurpose or dedicated applications specified below. The digital x-ray imaging system enables an operator to acquire, display, process, export images to portable media and send images over a network for long-term storage. Image processing algorithms enable the operator to bring out diagnostic details difficult to see using conventional imaging techniques. Images can be stored locally for temporary storage. The product has the ability to interface with a variety of flat panel image receptors. The major system components include an image receptor, computer, monitor and imaging software.

The digital x-ray imaging system is intended for use by a veterinary technologist or other trained person under the supervision of a veterinarian. The target population will be equine, canine, feline, (small) mammal, primate, avian, and reptile undergoing medical diagnostic imaging for reasons that were judged to be medically necessary by a competent veterinary practitioner.

Warning: Do not modify this equipment without authorization by Sound Technologies, Inc.

Warning: Ne pas modifier cet équipement sans l'autorisation de Sound Technologies, Inc.

Operating principle

The essential performance of the Smart DR® Fusion system is to synchronize the image acquisition of the digital receptor with the X-ray beam of the host X-ray system to capture, display and archive quality images of the intended anatomy, with reasonable patient exposure to X-rays.

The Smart DR® Fusion digital imaging system uses a solid-state X-ray detector to capture digital images of anatomy penetrated by an incident X-ray beam. A host X-ray system generates the X-ray beam, which passes through a patient and strikes the detector of Smart DR® Fusion. The detector converts the X-ray energy to digital image data that is then passed to the Smart DR® Fusion computer. The computer processes the image data, displays the image to the user, and provides temporary storage for image data and associated patient information, which can be imported from a worklist or entered manually. When the user has finished applying processing, annotation, and measurement features of Smart DR® Premier software, the images can be archived or printed to appropriate DICOM-compliant devices.s

Intended User Profile

The digital x-ray system is intended for use in general radiographic examinations and applications (excluding fluoroscopy) by a veterinary technologist or other trained person under the supervision of a veterinarian.

There are no user-serviceable parts inside the digital x-ray system or subsystem components. Refer all repair needs to a service organization that has been trained and authorized by Sound Technologies, Inc.

Intended Patient Population

The target population is equine, canine, feline, (small) mammal, primate, avian, and reptile undergoing medical diagnostic imaging for reasons that were judged to be medically necessary by a competent veterinary practitioner. The x-ray system is intended for veterinary applications only and is not for use on humans.

Intended Anatomy

The x-ray system may be used to image any part or area of the target population's anatomy that can be imaged with x-ray radiation, with or without a contrast agent.

Maintenance and cleaning

See Chapter 12. Maintenance and cleaning on page 166, for information about maintaining and cleaning the system components.

Trademarks

Sound®and Sound FUSION EQUINE DR® II are trademarks and Smart DR® Fusion is a registered trademark of Sound Technologies, Inc. The Intel Core™ i5 Processor is a trademark of Intel, Santa Clara, Calif. The Dual Band Wireless-AC 7260 is a product of Intel. Windows is a registered trademark of Microsoft Corporation in the United States and other countries; AX-C4343W panel, Canon name and Canon logo are trademarks or brand names of Canon Inc; All other trademarks are properties of their respective companies.

Information symbols

Related and Supplemental Information

The following documents are part of the product library or provide supplemental information on this product.

Table 1: Related and supplemental information

Title	Description	Part number
Smart DR® Fusion User Manual	This manual together with Sound Technologies, Inc. training gives radiologic technologists the step-by-step instructions that they need to acquire, review, and store images with the x-ray system.	UM0004
Smart DR® Fusion Service Manual	This manual, combined with manufacturer-provided training classes, supplies the information that a service technician requires to set up, configure, calibrate, and diagnose a Sound Technologies, Inc. x-ray system.	SM0004
Smart DR® Premier online help	See the online/training help for videos and text that describes the most common tasks in the user interface. The help is context sensitive and can be launched from the digital radiography system software user interface by clicking the hamburger menu in the main tool bar of the screen to access the SmartDR Premier application.	Not applicable. The online help is installed with the product.

Revision History

The following table shows when this document has been revised and a description of the major updates for each revision.

Table 2: Document revisions

Revision letter	Issue date	ECO number	Changes made
A	02/15/2023		Initial release.

Information symbols

Informational symbols are used in the Sound Technologies, Inc. imaging system documentation and on some labeling.

Table 3: Informative markings: Documents and equipment

Symbol	Title/Meaning	Standard/Reference
	Notice. An important aspect of Sound Technologies, Inc. imaging system operation is presented.	N/A. Used in operator and service manuals to note important information
	Caution. On product, indicates need to consult instructions for use for important cautionary information.	ISO 15223-1:2012/5.4.4
	Warning. General warning.	IEC 60601-1:2012/Table D.2 No. 2
	Read accompanying documents or instructions for use.	IEC 60601-1:2005/Table D.2, No. 10
	The date of manufacture is adjacent to this symbol.	ISO 15223-1:2012/5.1.3
	The manufacturer's serial number is displayed with this symbol.	ISO 15223-1:2012/5.1.7
	The procedure requires making X-ray exposures and producing radiation. Follow safety precautions when operating the X-ray system.	Warning: IEC 60601-1:2012/Table D.2 No. 2; Ionizing Radiation: IEC TR 60878, No. ISO 361; ISO 7010-W003
	Earthing terminal Grounding terminal	IEC 60417-5019; IEC 60601-1/7219

Symbol	Title/Meaning	Standard/Reference

	Warning. Warning, electricity	IEC-60601-1:2012, Table D-2, No. 3; IEC 60601-1/7.2.14, 7.3.2
	Dangerous voltage. Indicates hazard from dangerous voltages.	IEC 60417-5036
	Non-ionizing electromagnetic radiation. Indicates elevated or potentially hazardous levels on non-ionizing electromagnetic radiation.	IEC 60417-5140
	The manufacturer's catalog number (model number) is displayed with this symbol.	ISO 15223-1:2012/5.1.6
	The name and address of the manufacturer is displayed with this symbol. The date of manufacture may also be included with this information.	ISO 15223-1:2012/5.1.1

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Chapter 1

System Overview

Contents

This chapter provides a high-level overview of the x-ray system to orient you to the more detailed tasks involved in installing, configuring, using and maintaining the system. Your Smart DR® Fusion uses Sound Smart DR® Premier software. More detailed tasks and information is provided later in the manual.

System overview diagram with Canon AX-C4343W panel

Figure 1: Canon AX-C4343W panel with AIO PC, Wired Configuration

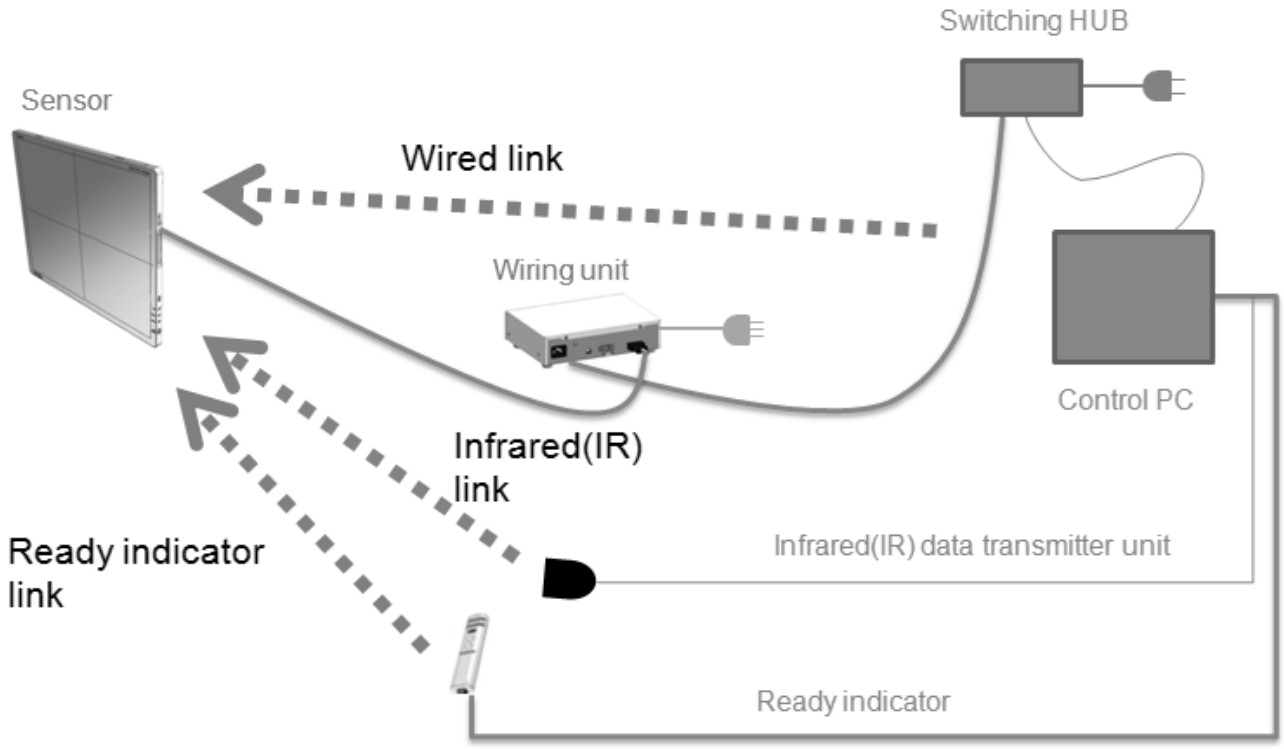
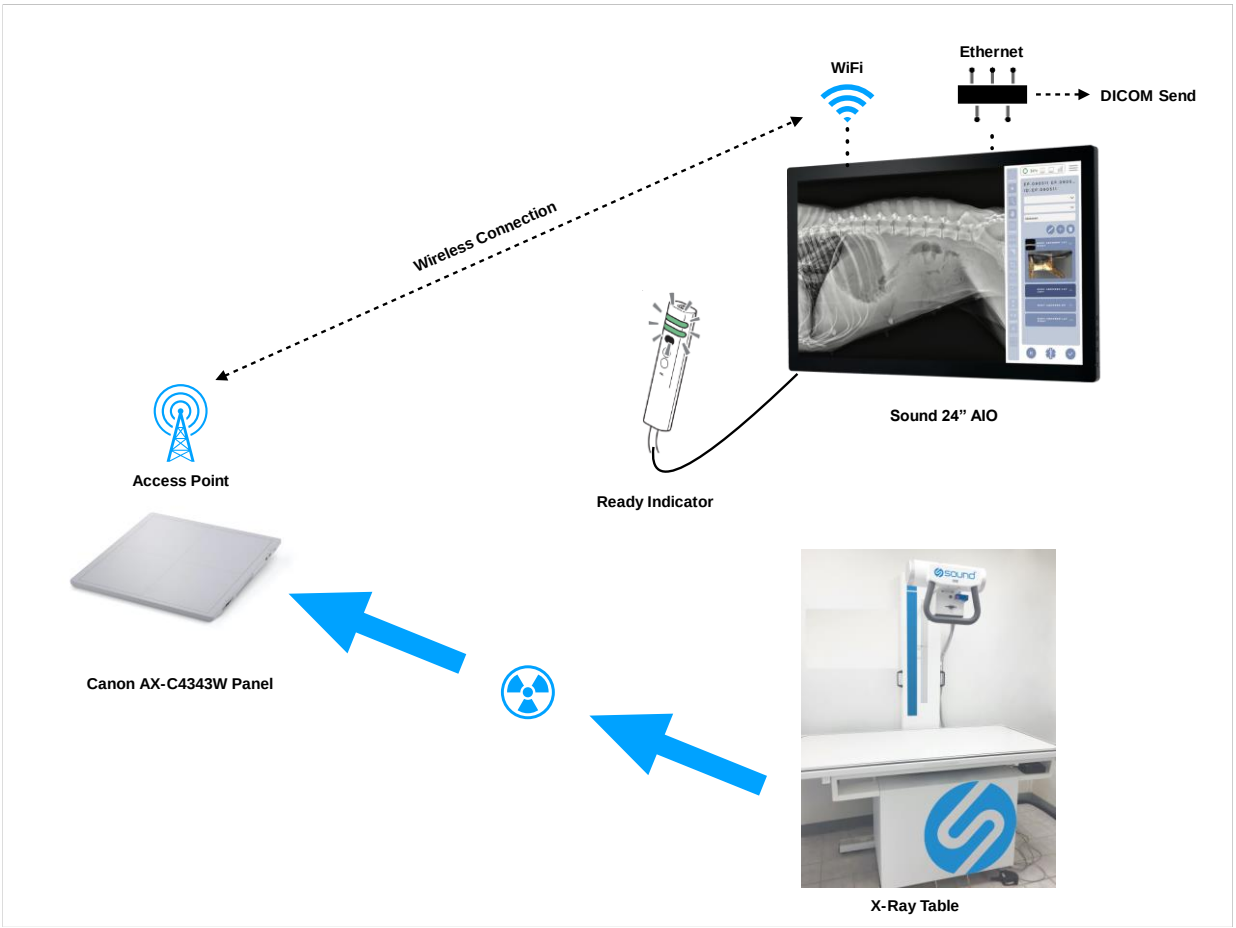


Figure 2: Canon AX-C4343W panel with AIO PC, Wireless Configuration



Hardware Part Numbers

The Smart DR® Fusion system includes the following hardware components.

Table 4: Supported hardware

Hardware components	Details	Part number
Sound 24" AIO PC w/stand	Includes Windows 10 Enterprise, Smart DR Premier Software, MusicaVET Image Processing, SmartPACS Software, and Edimax USB WiFi Adapter.	20-797/20-801
Canon AX-C4343W CsI panel detector	The panel comes with 2 batteries	91-446
I/R detector check-in for Canon with ready indicator		10-426

Canon dual-bay battery charger		10-137
Power Box for 810C/710C		10-394
Wiring Cable for 810C/710C		10-393
Sound FUSION DR Recovery Media Kit	Recovery media (thumb drive) and case	70-880
Smart DR® Premier Accessory Kit	Included Bluetooth keyboard and mouse.	74-872

SOUND 24” AIO PC w/Stand

The SOUND 24” AIO PC provides a rugged platform for the Smart DR® Premier software. The AIO PC contains the following components:

- Intel® 6th Generation Core™ i5-6500TE quad, 2.3 GHz processor
- 1TB solid state drive (SSD)
- 8GB RAM
- Built-in WiFi 802.11ac, 2.4GHz/ 5GHz dual band
- 24” Full-HD LED-blacklight screen, capacitive touch display
- 1920 x 1080 pixels
- Fanless
- VESA-mountable for flexibility in mounting and deployment

Figure 3: SOUND 24” AIO PC w/Stand

SOUND 24” AIO technical specifications

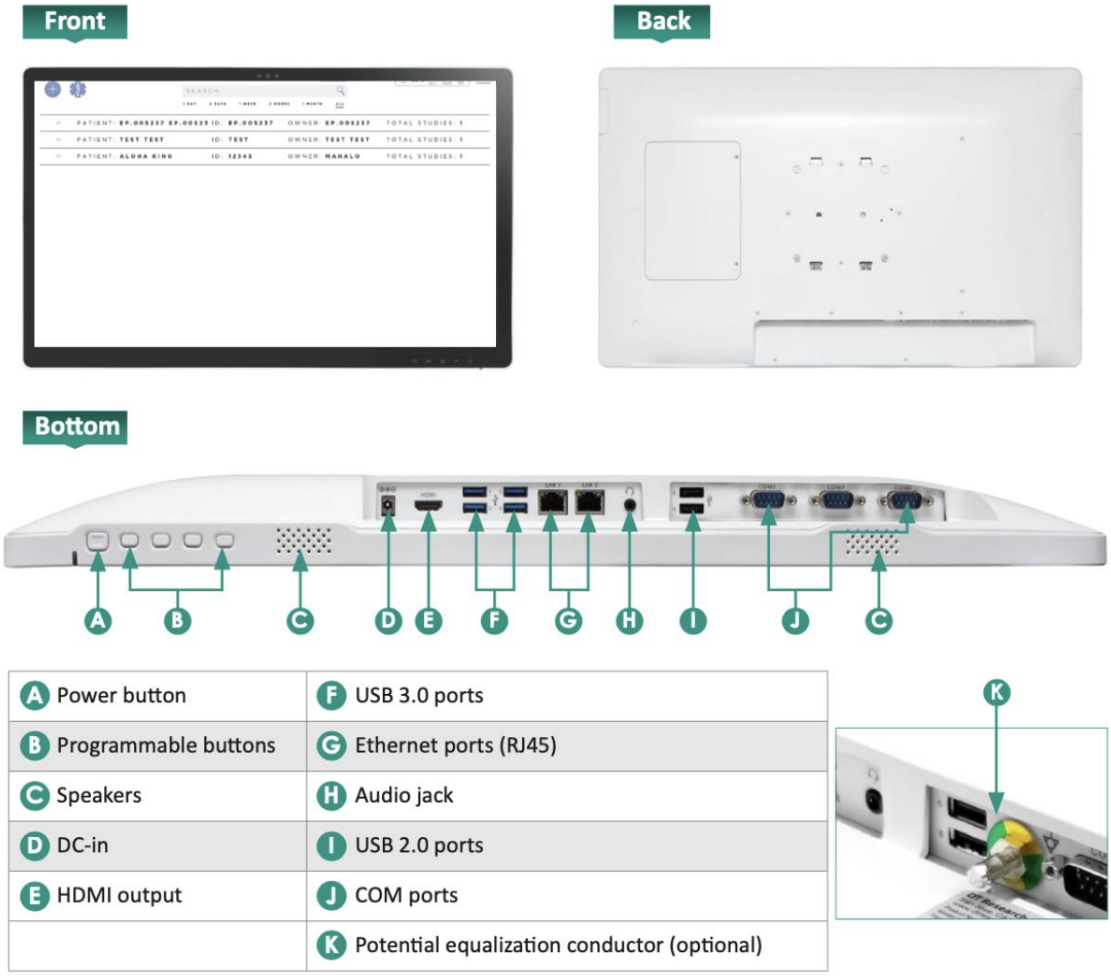
Table 5: SOUND 24” AIO technical specifications

Parameter	Description
CPU	Intel® 6th Generation Core™ i5-6500TE quad, 2.3 GHz processor
RAM	8GB
Storage	1TB solid state drive (SSD)
Display	23.8” TFT-LCD screen with capacitive multi-touch
Display resolution	1920 x 1080 pixels
WLAN	Wi-Fi 802.11ac, 2.4GHz/ 5GHz dual band
Bluetooth	Bluetooth 4.0 LE
Ports	HDMI (1), USB 3.0 (4), USB 2.3 (2), RJ-45 for Ethernet (2), COM Port (3)
AC/DC adapter	Input: 100-240VAC Output: 19VDC, 6.31A
Fan/Fanless	Fanless
Enclosure	Aluminum alloy, anti-microbial coating
Dimensions (H x W x D)	13.7in x 22.3in x 1.8 in (350mm x 567mm x 45mm) w/o stand 16.9in x 22.3in x 8.3in (431mm x 567mm x 212mm) w/ stand
Weight	23.6lbs/ 10.7kg (with stand) 17.6lbs/ 8kg (without stand)
Water Resistance	Front panel: IP65 Enclosure: IPX2
Regulatory	UL60601-1, FCC Part 18 Class B, RoHS compliant
Temperature	Operating: 0°C to 40°C (32°F to 104°F)[1] Storage: -20°C to 60°C (-4°F to 140°F)
Humidity	0% – 90% non-condensing

Sound 24” AIO controls and connectors

Sound 24” AIO controls, indicators, and connectors

Figure 4: Sound 24” AIO controls, indicators, and connectors



A Power button	F USB 3.0 ports
B Programmable buttons	G Ethernet ports (RJ45)
C Speakers	H Audio jack
D DC-in	I USB 2.0 ports
E HDMI output	J COM ports
	K Potential equalization conductor (optional)

Table 6: SOUND 24” AIO controls, indicators, and connectors

Item	Description
A	Power button
B	Programmable buttons
C	Speakers
D	DC-in
E	HDMI output

F	USB 3.0 ports
G	Ethernet ports (RJ45)
H	Audio jack
I	USB 2.3 ports
J	COM ports
K	Potential equalization conductor (optional)

Canon AX-C4343W Detector Specifications

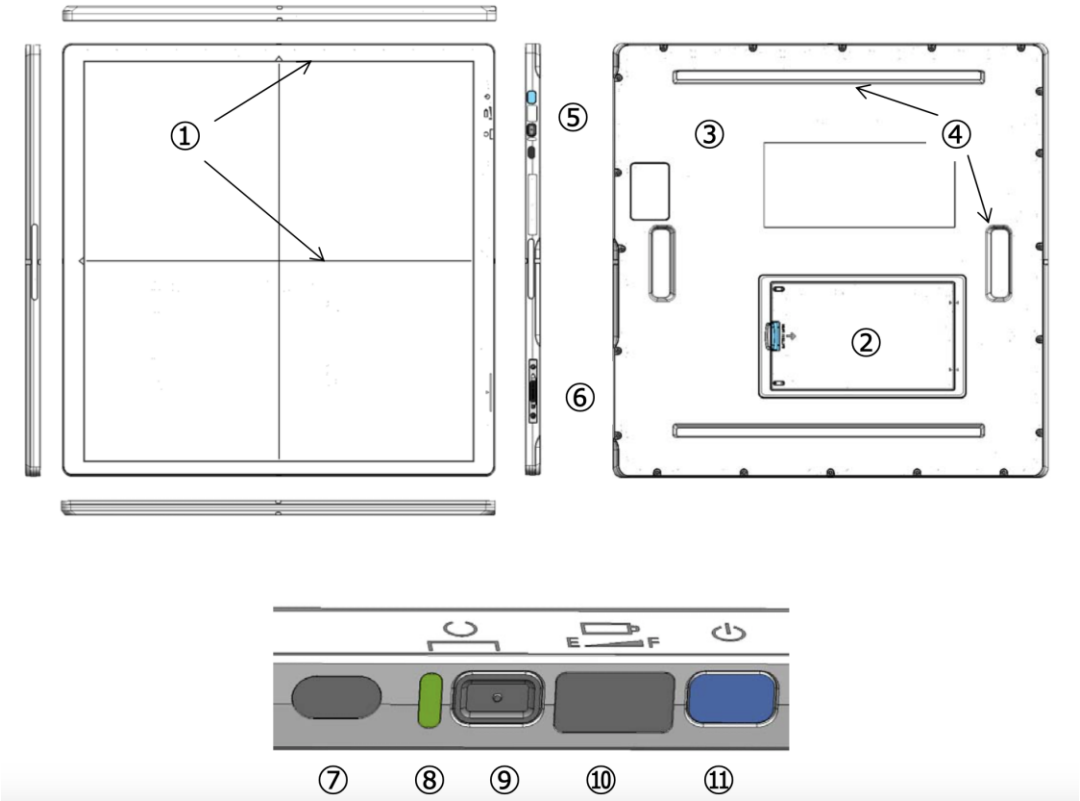
The Smart DR® Fusion x-ray system can include the AX-C4343W panel. The x-ray panel comes with the following components:

- 2 batteries
- battery charger (optional)
- ready indicator
- sensor cable
- multi-box

Table 7: AX-C4343W technical specifications

Parameter	Description
FPD	Cesium Iodide (Csi) scintillator + Amorphous silicon (a-Si) Photodiode
Dimensions	460mm x 460mm x 15.7mm 18in x 18in x .6in
Weight	3.7kg – including a battery pack 8.15lbs
Imaging area size	415mm x 426mm
Image format	16bits grayscale
Pixel pitch	125um
International Protection standard	IP57
Load-bearing	310kg: Entire surface 100kg: Φ40mm
Network Interface	Wireless: IEEE 802.11a/b/g/n 2.4GHz/5GHz Tethered: IEEE 802.3u 100Base-Tx
Temperature	+5°C to +40°C
Humidity	30% to 85% - without condensation
Rated Power Supply	100 – 240Vac input voltage
Applicable Grid	34, 40, 52*, 60lp/cm (*Recommended) (34 and 40lp/cm have restrictions **)
Wireless	Powered by the battery pack

Figure 5: AX-C4343W panel part names and functions



	Name	Description
①	Mark of the effective imaging region	Indicates the effective imaging region and the center of FPD.
②	Battery Cover	Cover to secure the waterproofness of the battery part.(A battery pack is put on inside.)
③	Rear Cover	Cover to remove at the time of the access to an internal unit.
④	Recess	Hollows for carrying a FPD (4 Places)
⑤	Function	Power Supply, Infrared communications for Ready and linl operation,the LED for power supply and the battery residual quantity.
⑥	Cable connentor	Connector to connect a wire ring cable and a PC connection cable.IPX4 is supported while connecting to FPD. The distance from the photography department edge to the I/F center to wire is common with AR-C3543W
⑦	Infrared communications department	Infrared communications department for link operation with the systems of the specifications point.
⑧	READY LED	LED for displaying the state of the FPD. During lighting, photography is possible
⑨	READY Switch	Switch for changing a FPD t to use to another. By pushing it down, a FPD becomes available. (LED turns on)
⑩	POWER LED	When a power supply is supplied, LED turns on depending on a battery residual quantity. It performs residual quantity indication of the battery
⑪	POWER switch	Power switch of the FPD.

Canon AX-Series Wireless Communications

Figure 6: AX-Series Wireless Communications

Wireless connection is established between the internal wireless module of this product and a laptop computer or a wireless access point.
This product supports IEEE 802.11a/b/g/n (Frequency band: 2.4 GHz/5 GHz). The available frequency band and channel vary depending on the system requirements and the radio frequency regulations in the country or region where you purchased the device.

Important

Note that the radio frequency channel configured for indoor use may not be usable in outdoor areas, depending on local radio frequency regulations.

Important

When configuring other wireless LAN equipment, do not use the same radio frequency (channel) that is selected for this product. Otherwise, an interference between the two pieces of equipment may occur and may result in a decline in transmission speed and other troubles.

Important

Before introducing other wireless equipment to the same environment where this product is set up, consult with the equipment system engineer.

Important

Do not cover the wireless module on the detector with your hands or place obstacles in the way of the wireless access point. Otherwise, the properties of wireless communication, such as the throughput and operable distance, may decrease.

Canon AX-Series Battery Specifications

Figure 7: AX-Series Panel Battery Specifications

Specifications

Product name (model number):
BATTERY PACK LB-4A

Type: Lithium ion battery

Operation temperature:
5°C to 35°C

Operation humidity:
85% Rh or less

Rated voltage: 11.1 V DC

Capacity: Typ. 1660 mAh / Min. 1600 mAh

Charging current: 1.6 A

Charging time: Approx. 150 minutes* (full discharge to full charge)**

Cycle life: Approx. 300 cycle (full discharge to full charge)

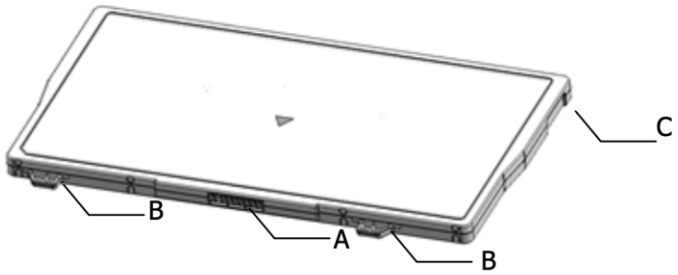
Dimensions and mass:
Approx. 93 x 162 x 7 mm
(excluding projecting parts)
Approx. 160 g

* When charging the battery pack using the Battery Charger BC-1A

** When the battery pack is charged fully (full discharge to full charge) at an ambient temperature of 25°C

- All specifications above are based on Canon's testing standards.
- The specifications and exterior are subject to change without notice.

Figure 8: Battery pack part names and functions



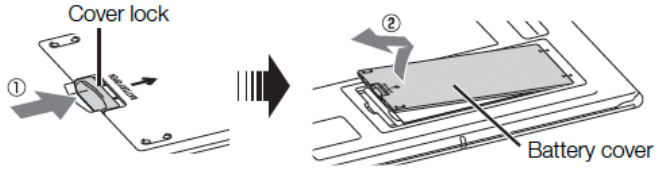
	Name	Description
A	Terminal	DC outlet and management circuit terminals
B	Terminal guards	Protects the connector part
C	Reverse insert prevention	Asymmetrical design to prevent reverse attachment

Figure 9: Attaching and removing the battery pack for the AX-Series

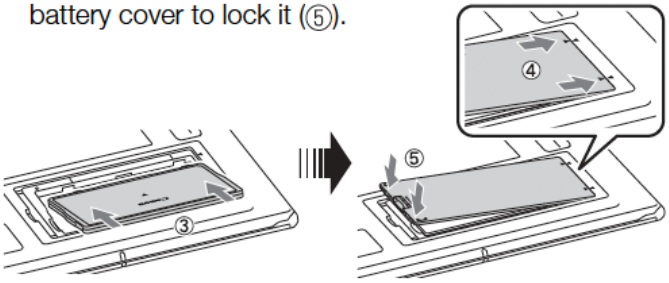
Attaching or removing the battery pack

Attaching the battery pack

Press and hold the battery cover lock (①) to release the lock, then lift up and pull out the battery cover (②).

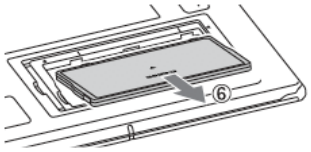


Insert the battery pack fully (③). Insert the battery cover fully (④) and press down on the front of the battery cover to lock it (⑤).



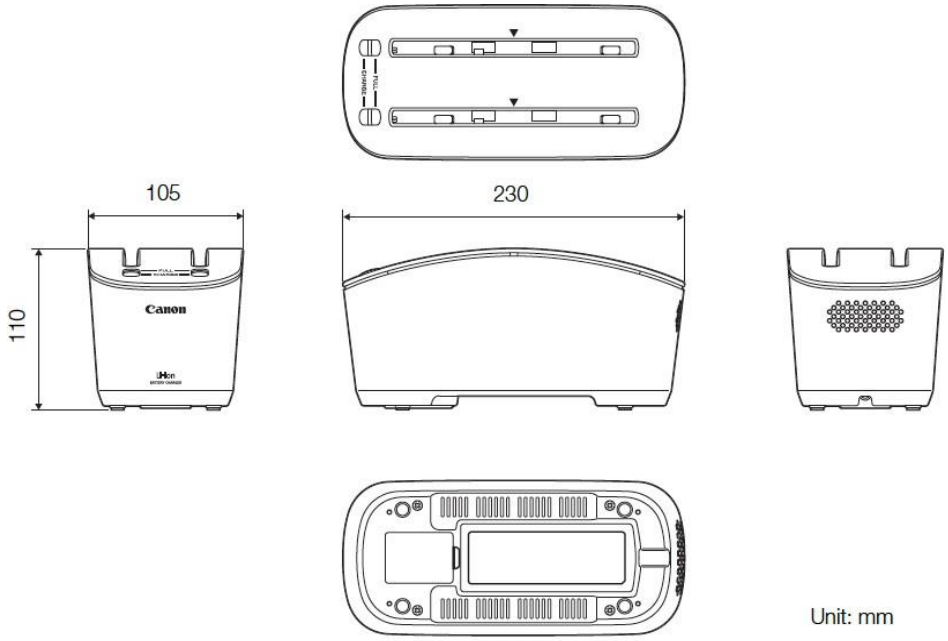
Removing the battery pack

For details on how to remove the battery cover, refer to "Attaching the battery pack."
To remove the battery pack, pull the edge to remove the battery pack (⑥).



- For details, refer to the User's Manual for the CXDI detector.

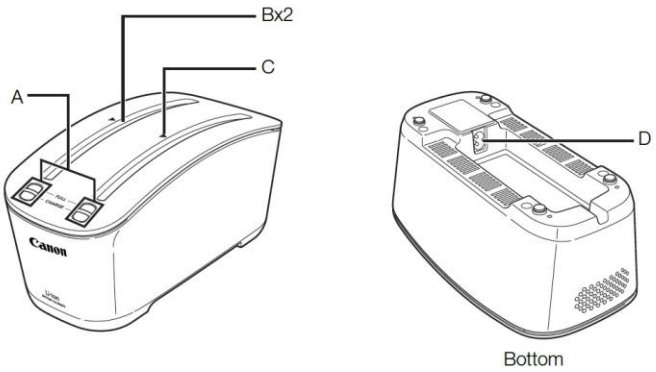
Figure 10: AX-Series battery charger dimensions



- All specifications above are based on Canon's testing standards.
- The specifications and exterior are subject to change without notice.

Figure 11: AX-Series battery charger parts name and functions

Battery charger



A	**Charge status lamps** **FULL** **CHARGE**	Light up when the batteries are fully charged. Light up when the batteries are being charged. **Information** See Charge status (→ page 12) for confirmation of other statuses.
B	**Battery insertion slot**	Accepts the Battery Pack LB-1A.
C	**Direction marker**	Serves as an index mark for inserting the batteries correctly to the slot.
D	**Power cord socket**	Accepts the supplied power cord.

Canon AX-Series Battery Charger Specifications

Figure 12: Canon AX-Series battery charger technical specifications

Specifications

Main specifications

Usage:	Dedicated battery charger for the Battery Pack LB-1A*
Battery charging slot:	2 slots (two battery packs can be charged at one time)
Rated input:	100-240 V AC, 50/60 Hz, 0.7-0.37 A, 70-90 VA
Rated output:	12.33 V DC/1.2 A
Charging time:	Approx. 3 hours (full discharge to full charge)**
Operation temperature and humidity range:	5 to 35°C / 20 to 85% RH
Storage temperature and humidity range:	-30 to 60°C / 10 to 85% RH
Dimensions and mass:	Approx. 105 x 230 x 110 mm Approx. 780 g (excl. power cord)
* Battery Pack LB-1A:	Lithium ion Capacity: Typ. 2490 mAh / Min. 2400 mAh

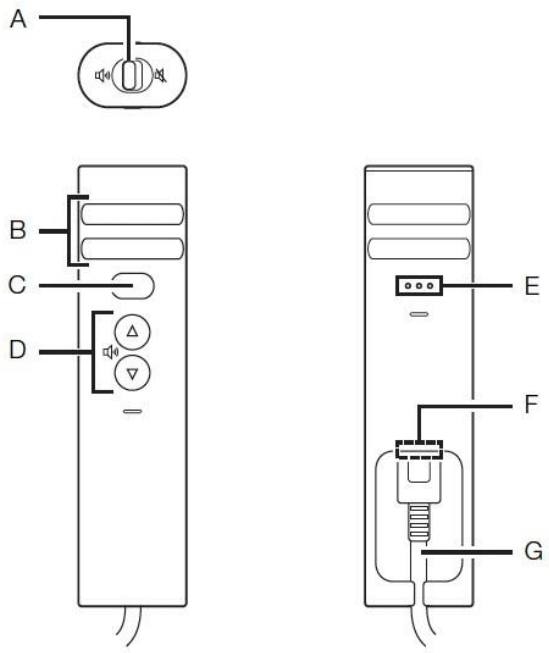
** When the battery pack is charged fully (full discharge to full charge) at an ambient temperature of 25°C.

Figure 13: Ready Indicator part names and functions

The ready indicator is connected to the image-capture computer via USB and is attached using the hook-and-loop fastener in a place where it can be easily seen.
The LED lamps on the detector light up when the detector is in exposure ready status. As the available image-capturing time (maximum 10 minutes) after the detector is changed to exposure ready status, is reduced to 5 minutes remaining, 1 minute remaining and 10 seconds remaining, or when the X-rays are received by the detector, the detector beeps, or the LED lamps on the detector light up or flash. The volume can be controlled or set to mute.
This unit is used as an interface of the image-capture computer for infrared communication with the detector, which registers the detector to the laptop computer.

Important

Do not install the ready indicator such a position that its IR data port faces the monitor, reflector, or other IR data communication equipment, except for the detector.



A	**Mute switch**	Slide to 🔇 to enable the mute function, and to 🔊 to disable the mute function.
B	**LED status indicator**	Lights up or flashes to indicate detector status, detector registration, and connection status.
C	**IR data port**	Communication port for the detector link (registration/ connection)
D	**Volume button**	Click ▲ to turn up the volume, and ▼ to turn down the volume.
E	**Speaker**	A beeping sound is emitted from the speaker openings.
F	**Micro USB connector**	Connector for the micro USB cable (Micro B type)
G	**Micro USB cable**	Connect to the image-capture computer.

Figure 14: Ready Indicator dimensions

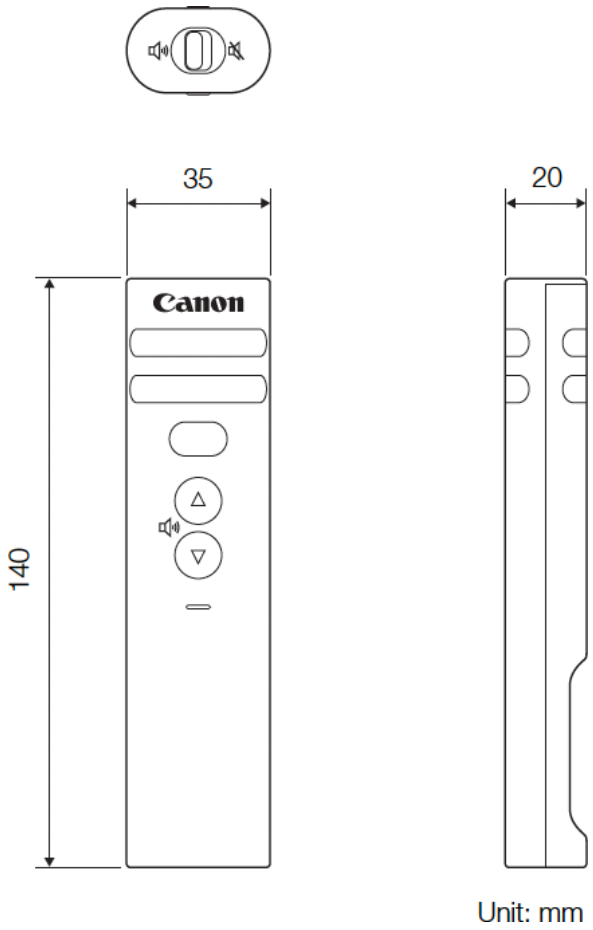
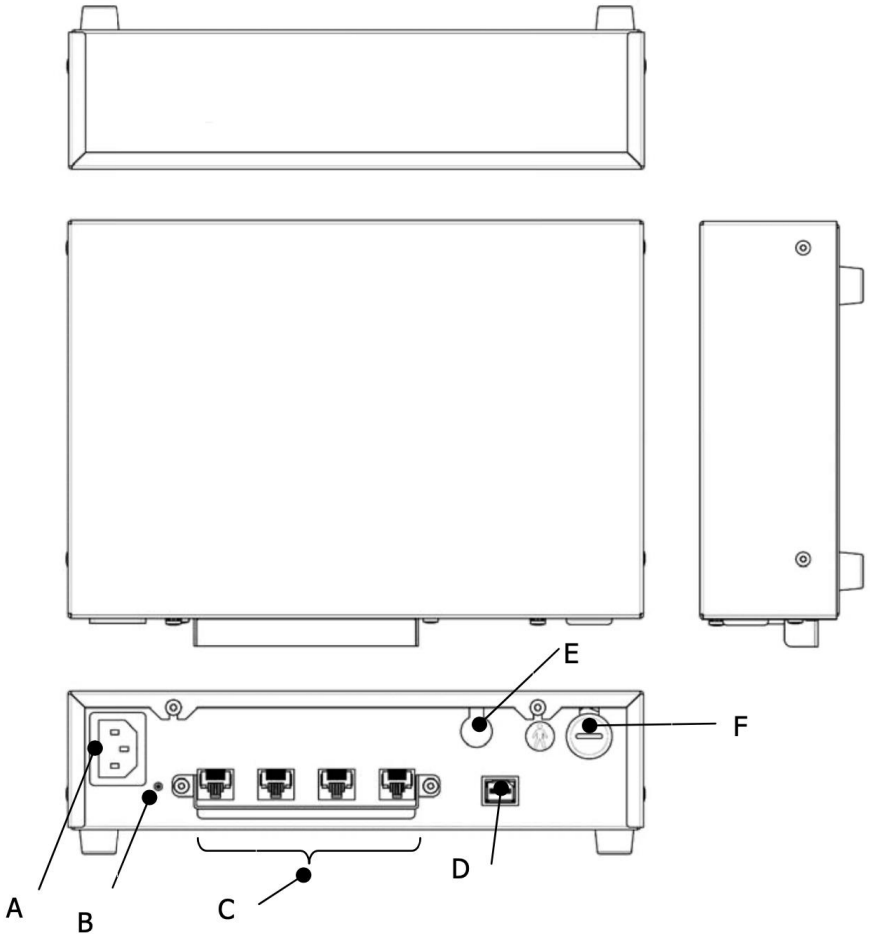


Figure 15: Multi-box part names and functions



	Name	Description
A	AC Inlet	Connect AC main cord
B	LED	Lights up when multi box is ON
C	Ethernet cable connector	Port for Ethernet cable connection
D	Connector for SI	Port for Status Indicator Connection
E	Installation point of XIF cable	XIF cable is drawn from here and is connected to the internal board and is fixed

Figure 16: Multi-box physical dimensions

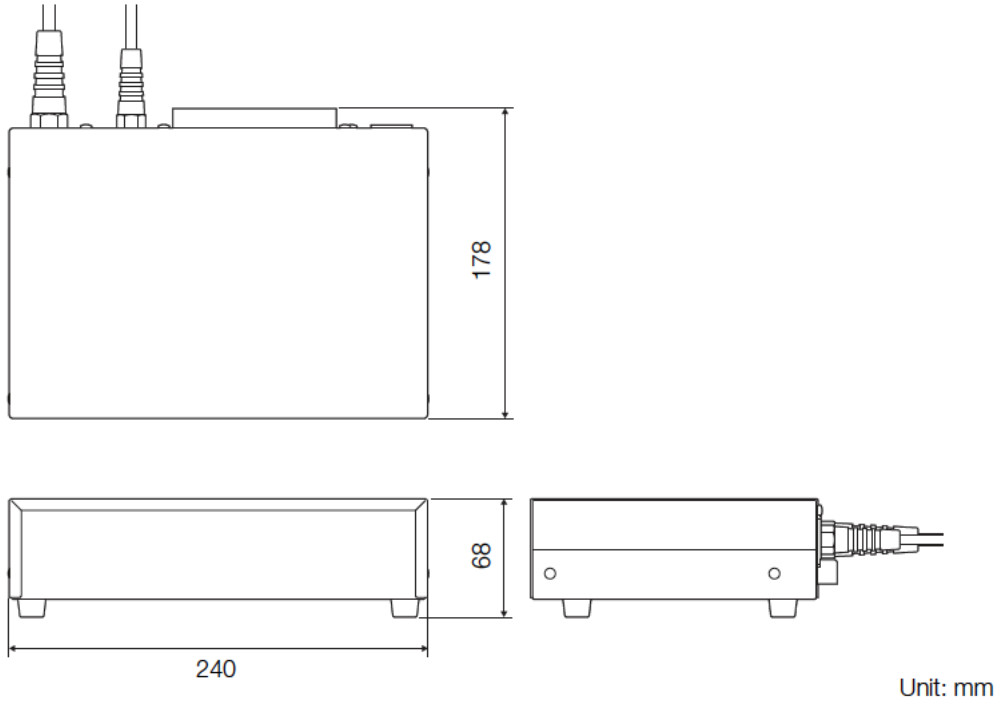
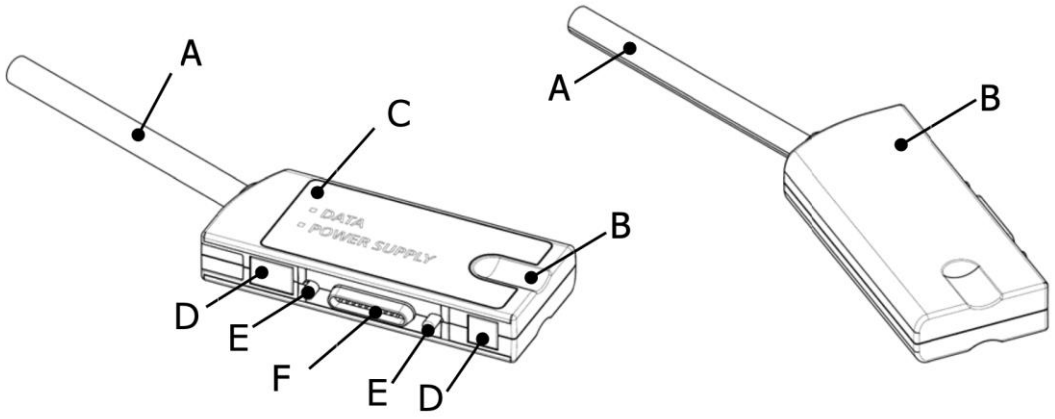
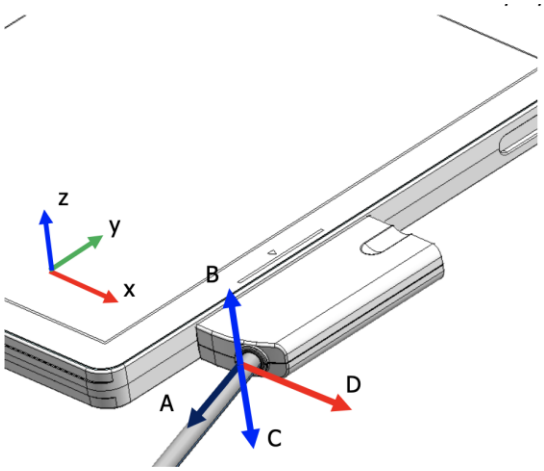


Figure 17: Sensor cable part names and functions



	Name	Description
A	Cable	15 Core cable for Ethernet connection, DC Power supply, Status Indicator / Charge Indicator signal transmission
B	Connector shell	Connector shell of magnesium die-casting
C	Connector label	Shows the purpose of this cable (data communication, power feed)
D	Magnet	Magnet which holds the connector fitting
E	Guide pin	Pin which guides the connector fitting
F	Port	Port for electrical connection. Spring probes are used for the superior durability.

Figure 18: Unmating force

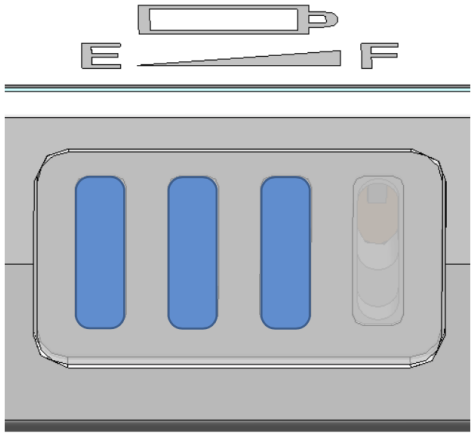


Forcing direction	Unmating force [N]
A	13-18
B	More than 20
C	More than 20
D	4-8

Note: Above is the initial state, it may change due to abrasion caused by the attachment and detachment of connector. The direction of B and C is interfered with taking off to prevent a dropout by the erroneous operation. Therefore, it may be damaged when excessive force applied.

Tethered charging and LED indication

- When the remain capacity of the battery is less than (the charge upper limit value – 10)%, the battery is charged. The charge upper limit value is selectable from 100%, 80%, 60%.
- During battery charging, battery temperature, charging voltage, charging current, charging time will be monitoring. Malfunction of any of these may cause errors.
- The FDP (Flat Panel Detector) will stop charging when an error occurs but can still take images.
- The errors disappear when the battery pack is put on and taken off.
- Charging status is displayed by four blue LED's on the FPD.



Charge capacity	Operating condition	LED indication				Remark
		LED1	LED2	LED3	LED4	
76~100%	Charging	○	○	○	☆	
	Battery feeding	○	○	○	○	
51~75%	Charging	○	○	☆	-	
	Battery feeding	○	○	○	-	
26~50%	Charging	○	☆	-	-	
	Battery feeding	○	○	-	-	
5~25%	Charging	☆	-	-	-	
	Battery feeding	○	-	-	-	
0~4%	Charging	☆	-	-	-	
	Battery feeding	★	-	-	-	

○:turn on, ☆:blinking gradually(4 sec. period), ★:blinking(1 sec. period)

Table 8: AX-C4343W RF transmitter specifications

Frequency band	IEEE Standard		Frequency(MHz)	Modulation	Effective radiated power(dBm)
2.4GHz	802.11b		2412-2462	DSSS	17
	802.11g			OFDM	
	802.11n	HT20			
	802.11n	HT40	2422-2452		16
5GHz	802.11a		5180-5240	OFDM	17.5
	802.11n	HT20	5260-5320		
			5500-5700 5745-5825		
	802.11n	HT40	5190-5230 5270-5310 5510-5670 5755-5795		

Note: The channel range code of FPD must be set to 0x0011.

System Restore Thumb Drive

The system backup thumb drive is used to create a ghost backup of the system after it has been configured with the site's settings. It can then be used to restore a system to the desired settings when necessary.

Figure 19: FUSION DR Recovery media

Software

The following software is supported for use with this x-ray system.

- Microsoft Windows 10 LTSB Embedded
- Sound Smart DR®Premier
- Sound Smart PACS®1.4.1 and higher
- MusicaVET Image Processing

Chapter

2

Safety, Warranty, and Licensing Information

Contents

Your Smart DR® Fusion x-ray system uses the Sound Smart DR®Premier software. All information and instructions contained in this document are intended to promote safe and effective installation, service and maintenance of the x-ray system. Observe all warnings provided in documentation and labeling and follow all instructions precisely to avoid potential injury to users, patients, or other personnel, malfunction of the equipment, or damage to the x-ray system components.

All components of the x-ray system are designed and suitable for use in close proximity to patients. The system and associated components are commonly placed and in use within 6 feet (1.8m) of the patient.

Do not connect any other equipment or parts to the x-ray system without the express authorization of the manufacturer.

Caution: Federal law restricts this device to sale by or on the order of a licensed veterinarian.

Caution: La loi fédérale restreint vente de cet appareil par ou sur l'ordre d'un vétérinaire agréé.

Pre-installation Site Survey

Ensure that this survey is completed and submitted before the day of installation.

Sound Technologies, Inc. requires that dealers of our products assess the facilities into which the x-ray system will be installed. We give them a short form, the Pre-installation Site Survey, to complete. They submit the survey to Sound Technologies, Inc., and it helps us to send the correct equipment. This survey is helpful to the installer of the system, too. Therefore, if you do not have the completed version of the Pre-installation Site Survey, check with the administrator of the organization that purchased the x-ray system. If necessary, contact Sound Technologies, Inc. to see if a copy was submitted or if you have any questions or problems.

If you require a blank copy of the Pre-installation Site Survey, it is available, with password protection, on the Sound Technologies, Inc. website. Select the Pre-installation Site Survey that matches Sound Technologies, Inc..

Service Technician Training

All service technicians conducting installation, service, and maintenance of the x-ray system must be properly trained and certified through a Sound Technologies, Inc.-authorized program.

All service technicians conducting installation, service, and maintenance of the x-ray system, system must be properly trained and certified through a Sound Technologies, Inc.-authorized program. Failure to meet these obligations may result in charges for phone support and

voiding of warranties. Service technicians may be required to substantiate their training at time of call or warranty base request.

Electromagnetic compatibility

The system complies with EN 60601-1-2 fourth edition (2014) Section 5. Prevent the potential risk of electromagnetic interference between this equipment and other devices.

The system is intended for use in the electromagnetic environment in which radiated disturbances are controlled. The customer or user of the system can help to prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment and the system as recommended below, according to the maximum output power of the communications equipment.

The system has been tested for electromagnetic compatibility (EMC) compliance, but interference can still occur in an electromagnetically noisy environment. Maintain a suitable distance between electrical devices to prevent cross-interference. The PC cabinet should be placed as far as possible from any device that generates large amounts of electromagnetic disturbance.

Caution: Medical electrical equipment requires special precautions to maintain electromagnetic compatibility. The system must be installed and put into service according to the EMC information provided in this document. Portable and mobile RF communications equipment can affect medical electrical equipment.

Caution: Les appareils électromédicaux requièrent des précautions particulières pour maintenir la compatibilité électromagnétique. Le système doit être installé et mis en service conformément aux informations EMC fournies dans ce document. Les équipements de communication RF portables et mobiles peuvent affecter les équipements électromédicaux.

Caution: Failure to avoid RF interference while operating Sound SmartDR®Fusion may cause failure of the digital imaging system to capture or store images.

Caution: Défaut d'éviter les interférences RF lors de l'utilisation Sound SMART DR Fusion peut provoquer une défaillance du système d'imagerie numérique pour capturer ou stocker des images.

Warning: 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.

Warning: L'utilisation d'accessoires, de transducteurs et de câbles autres que ceux spécifiés ou fournis par le fabricant de cet équipement pourrait entraîner une augmentation des
émissions électromagnétiques ou une diminution de l'immunité électromagnétique de cet équipement et entraîner une mauvaise opération.

Emissions, immunity, and separation distances

The tables in this topic provide guidance for emissions, immunity, and separation distances. Follow these guidelines when installing and maintaining the X-raysystem.

Warning: Portable RF communications equipment (including peripherals such as antenna cables and external antennas)should be used no closer than 30 cm (12 inches) to any part of theSound SMART DR® Fusion system, including cables specified by the manufacturer.

Use the following guidance tables for emissions and separation distances:

Table 9: Emissions — Smart DR® Fusion equipment and systems

Emissions test	Compliance	Electromagnetic environment guidance
RF emissions CISPR 11	Group 1	Smart DR® Fusion uses RF energy only for its internal function; therefore, its RF emissions are very low and unlikely to cause any interference in nearby electronic equipment.
RF emissions CISPR 11	Class A or B	Class A
Harmonics IEC 61000-3-2	Class A, B, C, D or NA	Class A
Flicker IEC 61000-3-3	Complies or NA	Complies
		Smart DR® Fusion is suitable for use in all establishments other than domestic and those directly connected to public low-voltage power supply network that supplies buildings used for domestic purposes.

Table 10: Electromagnetic Immunity — All equipment and systems not life-supporting

Immunity test	EN/IEC 60601 test level	Compliance level	Electromagnetic environment — guidance
ESD EN/IEC 61000-4-2	±8 kV contact ±15 kV air	±8 kV contact ±15 kV air	Floors should be wood, concrete, or ceramic tile. If floors are synthetic, relative humidity should be at least 30%.
EFT EN/IEC 61000-4-4	±2 kV mains ±1 kV I/Os	±2 kV mains ±1 kV I/Os	Mains power quality should be that of a typical commercial or hospital environment

Immunity test	EN/IEC 60601 test level	Compliance level	Electromagnetic environment — guidance
Surge EN/IEC 61000-4-5	±1 kV differential ±2 kV common	±1 kV differential ±2 kV common	Mains power quality should be that of a typical commercial or hospital environment
Voltage dips/ dropout EN/IEC 61000-4-11	>100% drop for 0.5 cycle At 0°, 45°, 90°, 135°, 180°, 225°, 270°, 315°: 100% dip for 1 cycle 30% dip for 25/30 cycles >100% dip for 5 s	>100% drop for 0.5 cycle At 0°, 45°, 90°, 135°, 180°, 225°, 270°, 315°: 100% dip for 1 cycle 30% dip for 25/30 cycles >100% dip for 5 s	Mains power quality should be that of a typical commercial or hospital environment If the user of the system requires continued operation during power mains interruptions, it is recommended that the system be powered from an uninterruptible power supply or battery.
Power frequency 50/60 Hz magnetic field EN/IEC 61000-4-8	30 A/m	30 A/m	Power frequency magnetic fields should be that of a typical commercial or hospital environment.

Table 11: Immunity — All equipment and systems not life-supporting

Emissions test	EN/IEC 60601 test level	Compliance level	Electromagnetic environment — guidance
Conducted RF EN/IEC 61000-4-6	3 Vrms 150 kHz – 80 MHz	(V1)=3Vrms	D=(3.5/V1)(√P)
Radiated RF EN/IEC 61000-4-3	3 V/m 80 MHz – 2.5 GHz	(E1)=3V/m	D=(3.5/E1)(√P) 80 to 800 MHz
			D=(7/E1)(√P) 800 MHz to 2.5 GHz Where P = max power in watts and D = recommended separation distance in meters. Field strengths from fixed transmitters, as determined by an electromagnetic site survey, should be less than the compliance levels (V1 and E1). Interference may occur in the vicinity of equipment containing a transmitter.

Emissions test	EN/IEC 60601 test level	Compliance level	Electromagnetic environment — guidance
Note: Portable and mobile communications equipment should be separated from the system by no less than the distances calculated or listed in Table 18: Immunity — All equipment and systems not life-supporting on page 25.			

Table 12: Separation — Equipment not life-supporting

Max output power (watts)	Separation (m) at specified frequencies:		
	Separation (m) 150 kHz to 80 MHz D=(3.5/V1)(√P)	Separation (m) 80 to 800 MHz D=(3.5/E1)(√P)	Separation (m) 800 MHz to 2.5.0 GHz D=(7/E1)(√P)
0.01	0.11667	0.11667	0.23333
0.1	0.36894	0.36894	0.73785
1.	1.1667	1.1667	2.3333
10.	3.6894	3.6894	7.3785
100.	11.667	11.667	23.3333

Equipment Classification

The x-ray system has the following equipment classification.

- Protection against electric shock - class I
- Degree of protection against electric shock - type B
- Degree of protection against ingress of water - Ordinary
- Mode of operation - Continuous

Inspecting Components

Ensure that the system components are received in good condition.

About this task

The Digital Radiology system may be shipped in several boxes. (one package box like equine system or it's different for small animal?) The Digital Radiology system is composed of sensitive electronic devices; keep the boxes upright at all times and follow the caution stickers regarding proper handling.

Procedure

1. Upon receipt of your shipment from Sound Technologies, Inc., inspect the packaging.

   A packing list is attached to the outside of one of the boxes. Check this packing list when you first receive the shipment or if the items have been removed from the packaging when they are delivered to the x-ray room. If you need another copy of the packing list or if any of the packaging is damaged, call technical support. See Technical Support for contact information.

   Note: Sound Technologies, Inc. ships the components selected by the customer. For example, if multiple receptors are discussed in this manual, a customer may have chosen only one of them for their site.

2. Open each box and check the components for damage.

   Don't discard any packaging and leave all electronic components in their original antistatic bags and foam cushioning until they are ready to be installed.

   Do not proceed if any components or cables are missing or damaged. If anything in the x-ray system appears to be damaged, contact Technical Support immediately.

3. Check cable connectors for bent or damaged pins.
4. Allow equipment to acclimatize appropriately.

   Flat panel detectors are sensitive and often require special handling including extensive acclimatization times. Review the information about the detector in the pertinent chapter of this manual and the documentation that accompanies the detector.

What to do next
After installation, take extra precautions to verify the normal operation of the configuration used at the site.

Mechanical Safety

Use only cabling and mounting hardware included with the Digital Radiology system. Do not install x-ray system components with hardware, such as extensions, shelves, or brackets, obtained from retail or other third-party sources.

Where the display monitor is to be mounted to a mobile surface or structure, such as a wheeled cart, wall-mounted armature, or overhead support, use only the mounting brackets provided or specifically approved by the manufacturer.

Verify that all signal and power cabling is appropriately secured. Provide sufficient strain relief to avoid damage due to unnecessary stress or movement of cabling. Ensure that securing mechanisms and structures are of sufficient strength to support the weight of cabling.

Cables must be routed such that they do not present trip or fall hazards to personnel or patients walking near the equipment. Do not route cabling across the floor in traffic areas such as hallways or doors.

Where wheeled devices are used, ensure that cabling on or near the floor is properly secured out of the path of wheels and is protected from crush damage where appropriate.

Ensure that all mounting and fastening hardware is tightened properly, and that all securing mechanisms on connectors and covers are properly latched.

Inspect all cabling, mounting, and securing mechanisms during each Preventive Maintenance (PM) cycle to ensure that electrical connections and other hardware do not become loose over time.

Some components of the x-ray system are of significant size and weight. Observe appropriate lifting and handling techniques when moving heavy equipment or components. Obtain assistance when necessary to avoid injury to persons or damage to equipment.

Electrical Safety

Electrical power sufficient to cause injury or death is present inside many of the x-ray system components whenever they are connected to AC power. Take appropriate safety precautions, use safety disconnects (such as fuses or breakers) wherever possible, and disconnect AC supply cables from components prior to removing covers for maintenance or service.

Caution: Internal power supplies contain capacitors that may remain charged for a period of time after the power source is removed. Before performing work inside any of the enclosures of x-raysystem components, wait at least 60 seconds after removing the AC supply cable for complete discharge.

Alimentations internes contiennent des condensateurs qui peuvent rester chargés pour une période de temps après que la source d'alimentation est débranché. Avant d'effectuer tout travail à l'intérieur des enceintes de composants du système x -ray, attendez au moins 60 secondes après avoir retiré le câble d'alimentation CA pour une décharge complète.

Components inside enclosures of the x-ray system are sensitive to electrostatic discharge (ESD). Personnel servicing components of the x-ray system must take appropriate ESD prevention measures to minimize the risk of damage to system hardware.

Do not block or restrict airflow into or out of the computer or the enclosure around the detector, if applicable. Adequate air cooling is required to prevent overheating the components inside these enclosures.

Apply measures to prevent liquids, particularly toxic or hazardous fluids, from coming into contact with the x-ray system components and equipment. When cleaning the x-ray system equipment, do not spray or pour fluid directly onto equipment surfaces. Use a soft cloth, dampened lightly with a cleaning solution, and gently wipe system components.

When electrical components must be replaced, use only components that are appropriately rated for the application. Replace fuses, switches, or connectors only with components of the same type and rating as the original equipment.

To avoid electric shock, the x-ray system must be powered from an AC supply circuit that includes an adequate earth ground. Connect the x-ray system components only to receptacles labeled or marked as medical grade.

Warning: The x-ray system and its components are designed to be connected to a properly grounded AC supply sufficient to support system operation. Using power strips or other multiple-socket outlets

that are not specifically approved for use with the x-ray system may compromise safety grounding or present other power-related safety hazards. When a power strip must be used to provide power to any component of the x-ray system, refer to the IEC60601-1 standard for guidance in selecting a power strip of appropriate type and rating.

Le système à rayons X et de ses composants sont conçus pour être relié à une alimentation CA mise à terre suffisante pour soutenir le fonctionnement du système. En utilisant des bandes de puissance ou d'autres points de vente multi-socket qui ne sont pas spécifiquement approuvés pour une utilisation avec le système x -ray peut compromettre la terre de sécurité ou présentent d'autres risques de sécurité liés à l'alimentation. Quand une bande de puissance doit être utilisé pour fournir de l'énergie à tout composant du système x- ray, reportez-vous à la norme CEI 60601-1 pour les guider dans la sélection d'une bande de puissance de type et le calibre approprié.

All components of the x-ray system must be powered off before connecting any cables.

All electrical and grounding connections to the x-ray system must be inspected during each preventive maintenance (PM) cycle. Replace or repair faulty connections prior to returning the system to service. Failure to adequately ensure safety grounding may result in injury to users or patients, or fire or other damage to equipment.

Software Safety and Use

Do not install any software that is not explicitly approved by Sound Technologies, Inc.. Unauthorized software may disrupt the processes or resources required by the x-ray system software and result in abnormal system operation.

Do not add or remove any component of the host operating system unless specifically directed to do so by Sound Technologies, Inc.. Note that Windows Updates have been known to change behaviors of the operating system and should be installed or removed only at the explicit direction of Sound Technologies, Inc..

Perform system calibration using only the processes prescribed in this manual. Any other calibration method may result in abnormal system operation or poor image quality.

After the system is operational, only properly trained and authorized personnel can access patient records on the system.

Information about operating the x-ray system is located in the User Manual. In addition, Sound Technologies, Inc. provides training for operators and service technicians to help them properly operate the system and obtain acceptable image quality.

Operator Safety

Only authorized and trained personnel may access patient records stored on the x-ray system or use the x-ray system for clinical imaging of patients. Proper operation and care are critical to maintaining system performance and optimal image quality. On-site training is available and may be scheduled by contacting Sound Technologies, Inc..

The x-ray system must not be powered up or used in the presence of a flammable or explosive atmosphere, including certain gases used for anesthesia. Electric motors and other electrical equipment within or related to the x-ray system can ignite flammable or explosive gases or vapors, resulting in injury, death, or damage. Consult the site documentation or personnel to determine the presence of and hazards posed by gases in the vicinity of the x-ray system.

Observe all cautions and warnings in this manual and in the User Manual. Failure to abide by the instructions and precautions provided in this manual may result in unnecessary risk to patients, users, or equipment.

The x-ray system must be installed and operated such that no direct patient contact with any part of the system is possible.

Do not attempt to perform service or troubleshooting on the x-ray system in the presence of patients or unauthorized personnel. Do not remove protective covers or otherwise disable safety devices while in the presence of patients.

The x-ray system is designed for use in conjunction with equipment that generates ionizing x- ray radiation. Observe appropriate precautions and wear protective equipment when the x-ray equipment is in use.

Do not bypass or otherwise disable safety mechanisms provided by the x-ray generator. Take all available and appropriate measures to pent unnecessary or unintentional radiation exposure.

Observe all cautions and warnings in this manual and in the User Manual. Failure to abide by the instructions and precautions provided in this manual may result in unnecessary risk to patients, users, or equipment.

Service Safety

Only trained personnel are authorized to service or maintain the x-ray system and related equipment. Failure to obtain training prior to servicing the x-ray system may result in support charges, voiding of product warranty, abnormal system behavior, or any of a number of potential risks to the safety of patients, users, or service engineers. Contact the manufacturer to arrange for appropriate training prior to servicing or maintaining the x-ray system.

The x-ray system must not be powered up or used in the presence of a flammable or explosive atmosphere, including certain gases used for anesthesia. Electric motors and other electrical equipment within or related to the x-ray system can ignite flammable or explosive gases or vapors, resulting in injury, death, or damage. Consult site documentation or personnel to determine the presence of and hazards posed by gases in the vicinity of the x-ray system.

Do not attempt to perform service or troubleshooting on the x-ray system in the presence of patients or unauthorized personnel. Do not remove protective covers or otherwise disable safety devices while in the presence of patients.

The x-ray system is designed for use in conjunction with equipment that generates ionizing x-ray radiation. Observe appropriate precautions and wear protective equipment when the x-ray equipment is in use.

Do not bypass or otherwise disable safety mechanisms provided by the x-ray generator. Take all available and appropriate measures to pent unnecessary or unintentional radiation exposure.

Some components of the x-ray system are of significant size and weight. Observe appropriate lifting and handling techniques when moving heavy equipment or components. Obtain assistance when necessary to avoid injury to persons or damage to equipment.

Some components of the x-ray system may have sharp edges by design or may develop sharp edges due to impact or other improper handling. Use caution and wear appropriate protective equipment when handling any component of the system.

Take appropriate measures to pent the spilling of liquids or bodily fluids on or into the components of the x-ray system.

Observe all cautions and warnings in this manual. Failure to abide by the instructions and precautions provided may result in unnecessary risk to patients, users, or equipment.

Environmental Safety

All components of the x-ray system must be stored, transported, installed, and operated in accordance with the environmental conditions provided in this manual.

The x-ray system is designed for use in conjunction with equipment that generates x-ray radiation. Observe appropriate precautions and wear protective equipment when the x-ray equipment is in use.

Take appropriate measures to pent the spilling of liquids or bodily fluids on or into the components of the x-ray system.

Do not block or restrict the airflow into or out of the computer, the detector control unit (CP2), or the enclosure around the detector, if applicable. Adequate air cooling is required to pent overheating of the components inside these enclosures.

The x-ray system must not be powered up or used in the presence of a flammable or explosive atmosphere, including certain gases used for anesthesia. Electric motors and other electrical equipment within or related to the x-ray system can ignite flammable or explosive gases or vapors, resulting in injury, death, or damage. Consult the site documentation or personnel to determine the presence of and hazards posed by gases in the vicinity of the x-ray system. Observe all cautions and warnings in this manual and in the User Manual. Failure to abide by the instructions and precautions provided in this manual may result in unnecessary risk to patients, users, or equipment.

Transport, store, and operate the electronic components of the x-ray system within recommended parameters.

Table 13: Environmental parameters for transportation storage, and operation of computer and peripherals

Action	Temperature	Humidity	Air pressure
Transportation and storage	-22 – 122ºF (-30 – 50ºC)	10 – 95% w/o condensation	613 to 1060hPa
Operation	41 – 95ºF (5 – 35Cº)	30 – 80% RH w/o condensing	613 to 1060hPa

At the end of service life of any component of the x-ray system, dispose of the component safely and in accordance with local regulations for the disposal of electronic components.

Licensing

This application is a collection of several special functions. In the unlikely event that the license for one of the functions is unavailable, the software alerts you. The alert asks if you want to enter a license key, ignore the matter for this instance, or ignore always.

We recommend that you notify a supervisor who has the authority to contact Sound Technologies, Inc. so that the pertinent licenses can be secured to provide you with the full functionality of the product.

Warranty

Any of the following actions voids the manufacturer's warranty:

- Modification, abuse, misuse, or operation of Sound Smart DR®Fusion's equipment at ambient temperatures below 41ºF or above 95ºF (5ºC, 35Cº) or at other abnormal conditions. Ambient operating temperature for the isolation transformer, if used, is 32–113ºF (0–45ºC). Consult later chapters in this manual or other manufacturers' documents for operating conditions of imaging devices.
- Use of any software other than that supplied or approved by seller
- Use of supplied software and hardware outside seller's or FDA, CSA, and VDE guidelines or applicable standards
- Misuse, negligence, or accident or unauthorized repair or alteration of the product
- Use for purposes for which the product was not designed.

Warning: Make no attempt to connect any other equipment or parts to the Sound Smart DR®Fusion system without authorization by the seller.

Faire aucune tentative pour connecter d'autres équipements ou de pièces de Sound Smart DR®Fusion système sans autorisation par le vendeur.

Safety

Apply the directions in this chapter precisely to avoid damage to the x-ray system or its components, yourself, or others; loss of data; or corruption of files. Sound Technologies, Inc. assumes no liability for failure to comply.

Caution: Federal law restricts this device to sale by or on the order of a licensed veterinarian.

La loi fédérale restreint vente de cet appareil par ou sur l'ordre d'un vétérinaire agréé.

Warning: Connect only items that have been specified as part of the x-ray system or that have been specified as being compatible with the imaging system.

Connectez uniquement les éléments qui ont été spécifiés dans le cadre du système Sound Technologies, Inc. ou qui ont été compatibles avec le système d'imagerie.

All parts of the x-ray system are suitable for use within patient environment. However, in a typical clinical installation, the host PC and the primary monitor of the system are installed outside the patient exam room, which can be more than 6 ft (2 m) away from the patient. The other parts of the system are sometimes placed within 6 ft (2 m) of the patient.

Warning: Make no attempt to connect any other equipment or parts to the x-ray system without authorization by the seller.

Faire aucune tentative pour raccorder tout autre appareil ou des parties du système Sound Technologies, Inc. sans autorisation par le vendeur.

Environmental safety

All components of the x-ray system must be stored, transported, installed, and operated in accordance with the environmental conditions provided in this manual.

- At the end of its useful life, this equipment and its accessories must be disposed of safely and in accordance with government regulations.
- Be aware that disposed electronics release materials such as lead, mercury, or cadmium into the soil, ground water, and atmosphere, thus having a negative impact on the environment.
- Follow procedures with regard to electromagnetic compatibility.

General safety

Transport, store, and operate the electronic components of the x-ray system within recommended parameters.

Table 14: Environmental parameters for transportation, storage, and operation of computer and peripherals

Action	Temperature	Humidity	Air pressure
Transportation and storage	-4 – 131ºF (-20 – 55ºC)	10 – 95% noncondensing	700 hPa – 1060 hPa (10 – 5 lbs./in2, 0.7 – 1.0 atm)

Action	Temperature	Humidity	Air pressure
Operation	50 – 90ºF (10 – 32Cº)	30 – 75% noncondensing	700 hPa – 1060 hPa (10 – 15 lbs./in2, 0.7 - 1.0 atm)

Chapter

3

Room Preparation

Contents

Review this section carefully before you begin the installation process.

Pre-installation Site Survey

Ensure that this survey is completed and submitted before the day of installation.

Sound Technologies, Inc. requires that dealers of our products assess the facilities into which the x-ray system will be installed. We give them a short form, the Pre-installation Site Survey, to complete. They submit the survey to Sound Technologies, Inc., and it helps us to send the correct equipment. This survey is helpful to the installer of the system, too. Therefore, if you do not have the completed version of the Pre-installation Site Survey, check with the administrator of the organization that purchased the x-ray system. If necessary, contact Sound Technologies, Inc. to see if a copy was submitted or if you have any questions or problems.

If you require a blank copy of the Pre-installation Site Survey, it is available, with password protection, on the Sound Technologies, Inc. website. Select the Pre-installation Site Survey that matches Sound Technologies, Inc..

Room Layout

Discuss with the site personnel the preferred location for each component. Sketch the room layout to assist with placement of the components and cabling of Sound SmartDR™ Fusion.

Power

Sound SmartDR™ Fusion system power must meet the specifications in the following table. Power must be from a dedicated AC line. Dedicated is defined as having no other branch circuits and the outlet is powered directly from a circuit breaker in the local AC distribution panel.

Table 15: System power specifications

Power Phase	V	Hz	A
Single	115 ± 10%	50/60	8
Single	230 ± 10%	50/60	4

Power must be free of noise, spikes, surges, and brownouts that exceed the nominal voltage by ±10%. If these conditions cannot be met, the optional power conditioner is required. The following conditions must also be met:

- Peak impulse levels (line to neutral) are to be under 100 V peak above nominal (peak time interval 2 ms or less).

- The neutral wire must be the same gauge as the line wire.
- Frequency requirements are: 60 Hz system: 60 Hz ±0.5 Hz, 50 Hz systems: 50 Hz ±0.5 Hz.
- Neutral to ground potential: 2 V p-p or less.

For sites using 230VAC, an approved plug must be used on the isolation transformer provided it has ratings of 250VAC and 5A or greater.

Notice: The power source must meet the power supply requirements defined in this service manual. Use of the system outside these limits voids the product warranty.

Table, Cart or Shelf Space

A flat work surface (table or cart) is required to hold the operator's controls.

Check that the area has enough room for comfortable use of the keyboard and pointing device, if used, and that the table or cart is at a suitable height. If space is limited, consider using a retractable keyboard shelf (not supplied by Sound Technologies, Inc.). Some configurations replace the physical keyboard with an on-screen touch keyboard. Consult the site personnel for their preferences.

Image Monitors

Consult site personnel to determine preferred location of the image monitors. Monitors often have removable bases.

Sound Technologies, Inc. recommends you remove the tilt-swivel base from the monitor before mounting the monitor to an unstable surface such as a cart or hanging bracket. If using a cart, Sound Technologies, Inc. recommends that you attach a handle to the cart for safe use of the cart and monitor. To attach the monitor to a cart or to a hanging bracket, consider how the monitor will be attached to the surface.

PC Placement

Ensure that the placement of the PC meets the following requirements.

- PC station provides 4 in. of clearance behind and in front of the tower for adequate ventilation.
- surface where the tower is installed is flat and level. Use a PC stand if necessary.
- PC station allows service personnel adequate access to the inside of the PC cabinet.

Canon AX-C4343W Panel Placement

The Canon AX-C4343W panel is specifically designed for fixed applications where the detector is installed in a table, chest stand, or other holding fixture.

The detector is powered and communicates with the AIO workstation by the Multi-box. The Multi-box must be within 50 cable ft (15 m) of AIO workstation. This multi-box must be located within 20 ft (6 m) of the detector.

Cable Layouts and Routing

Review this manual for details on required cables, routing restrictions, cable sizes and lengths.

Also consider cables for other devices in the x-ray room and control room. Ensure that there is an acceptable path for each cable.

Network Connection

The site must provide the network connection cable. Work with the site's network administrator to have this arranged.

Sound SmartDR™ Fusion supports 10/100/1000 Base-T connections.

Network Information

The network address must be obtained from the local network administrator. This information can then be entered into Sound SmartDR™ Fusion when the system parameters are set.

DICOM Device Connectivity Information

The site must provide connectivity data for DICOM service classes, store, worklist, and so forth that are necessary for the particular site.

X-ray Generator Function

Ensure that the x-ray generator is functioning properly before making any connections between it and Sound SmartDR™ Fusion.

Chapter

4

Installing the X-ray System

Contents

This section provides conceptual, reference, and task-related content needed for installing components of the X-ray system.

Tools Needed for Installation

The following basic tools are needed for installing the x-ray system:

Digital Volt-Ohm Meter (20,000 Ω/V)	Basic hand tools including screwdrivers
Dosimeter	ESD wrist strap. Must be able to read uR per exposure
X-ray phantoms	

Non-integrated X-ray Generator

The detector, itself, detects X-ray exposure and automatically starts capturing images. There is no need to connect the X-ray generator and imaging system.

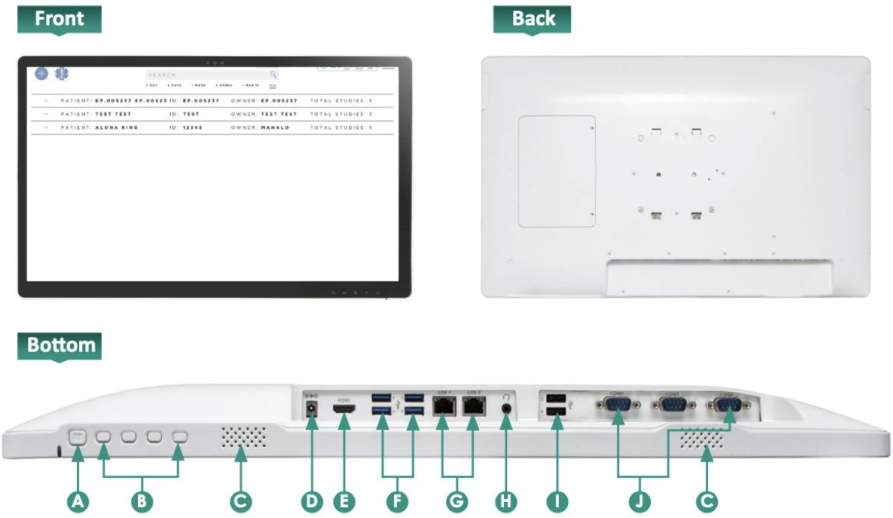
Connecting the AIO 24” Workstation

This task describes how to connect the Sound AIO 24” workstation to the power, peripherals, and ethernet.

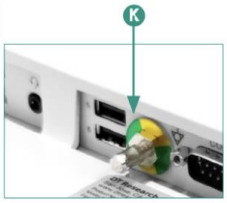
Procedure:

1. Verify the surface where the AIO and its components are to be placed is flat and level (wall mount or shelf).
2. Place the AIO and its components in the control room or area where they will be used.
3. Connect the power and ethernet to the AIO workstation. Reference the Figure XX below.

Figure 20: Sound 24” AIO controls, indicators, and connectors



A Power button	F USB 3.0 ports
B Programmable buttons	G Ethernet ports (RJ45)
C Speakers	H Audio jack
D DC-in	I USB 2.0 ports
E HDMI output	J COM ports
	K Potential equalization conductor (optional)



Installing the Canon AX-C4343W Battery

⚠ CAUTION Be sure to use only the dedicated battery pack for this product.

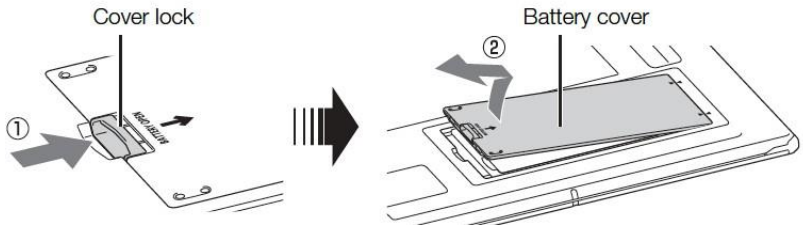
1 Attach the battery pack into the panel.

ⓘ Information

Place the detector on a flat surface before commencing the steps below. Otherwise the battery pack may fall out while it is being attached.

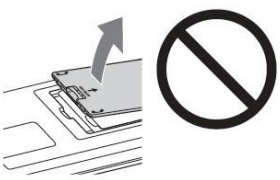
i) Remove the battery cover.

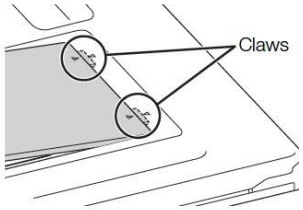
- Press and hold the battery cover lock (①) to release the lock, then lift up and pull out the battery cover (②).



Information

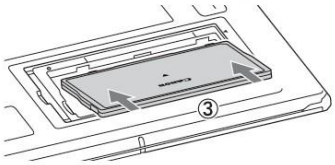
Do not lift the cover more than approximately 60° while the claws are inserted in the grooves.





ii) Attach the battery pack.

- Insert the battery pack fully (③).



Important

Check the orientation of the battery pack before inserting it.

Important

Attach the battery pack carefully.

Important

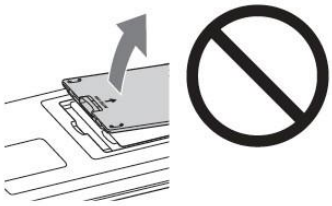
Make sure that the battery pack is correctly attached.

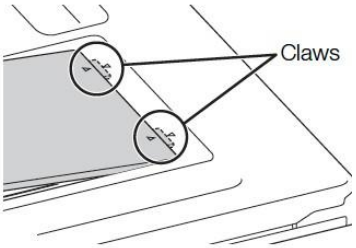
Information

Make sure that the battery pack is inserted fully.

Information

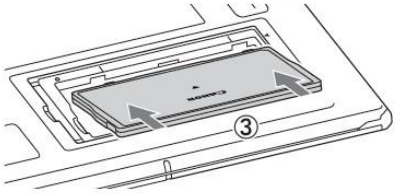
Do not lift the cover more than approximately 60° while the claws are inserted in the grooves.





ii) Attach the battery pack.

- Insert the battery pack fully (③).



Important

Check the orientation of the battery pack before inserting it.

Important

Attach the battery pack carefully.

Important

Make sure that the battery pack is correctly attached.

Information

Make sure that the battery pack is inserted fully.

iii) Attach the battery cover.

- Check that there are no foreign objects on the rubber inside the battery cover.
- Check that the rubber is free of kinks, cracks, and other damage.

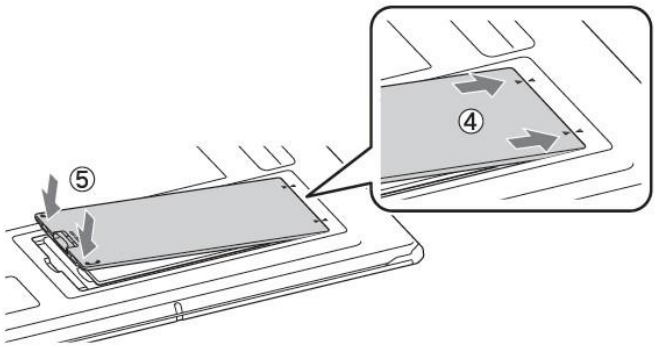
Information

If foreign objects are found on the rubber, wipe them off.

Information

If there are kinks in the rubber, fix them by hand.

- Insert the battery cover fully (④) and press down on the front of the battery cover to lock it (⑤).



Important

When inserting the battery cover, make sure it does not have a bulge in the middle. If there is a bulge, water resistance will deteriorate. Check the shape of the battery cover, and if the inside of the cover has warped into a curved shape, replace it with a new battery cover.

Information

Make sure that the battery cover is inserted fully.

Information

Make sure that the battery cover is locked securely.

Information

The remaining battery pack charge is indicated by the Power LED lamps of the detector when the detector is turned on.

Power LED					
Remaining battery charge	76% to 100%	51% to 75%	26% to 50%	5% to 25%	0% to 4%*

(▮ : Lighted up, ☼: Flashing (1 sec. cycles), ▯ : Off)

* Exposure is not possible when the remaining battery level is 0% to 4%, as indicated by flashing.

Connecting the Multi-box to the AX-C4343W Panel

This task describes how to connect the wiring cable to the cable connector of the detector

Important: *Attach the battery pack for both wired and wireless configurations.*

Reference Information:

1. IP Addresses of the AIO workstation (Local IP Address)

Item	Setting Value
Local IP Address (Wireless Panel)	192.168.100.10
Subnet Mask	255.255.255.0
Local IP Address (Wired Panel)	192.168.100.9
Subnet Mask	255.255.255.0

2. IP Addresses (target IP address) allocated to the detector

Item	Setting Value
AX detector IP address (Wireless)	192.168.100.11
Subnet Mask	255.255.255.0
AX detector IP address (Wired)	192.168.100.101
Subnet Mask	255.255.255.0

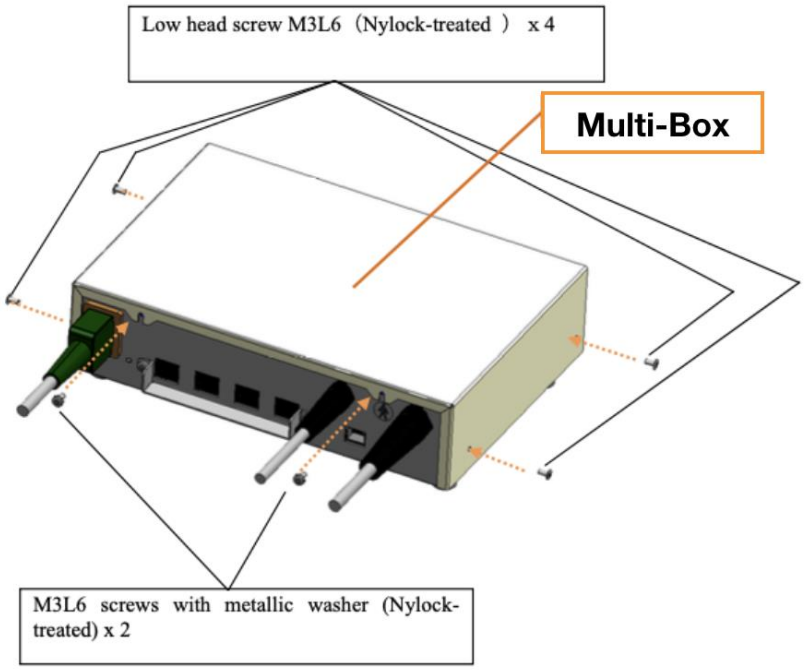
- When the link (recognition /connection) has been established, 192.168.100.11 is assigned to the wireless connection and 192.168.100.101 is assigned to the wired connections.
- When using two detectors in the same room, allocate different IP addresses.

3. IP Addresses registered to the Multi-box (factory defaults)

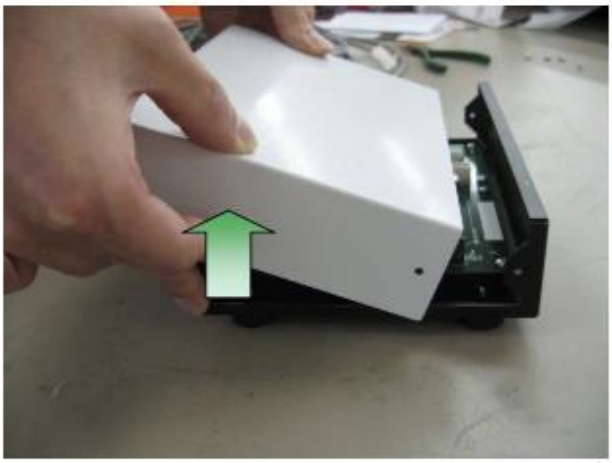
Item	Setting Value
X-ray interface box IP Address	192.169.100.96
Subnet Mask	255.255.255.0

1. Remove of top covers.

a. Remove the two screws from each the side panels (a total of four screws) and the two screws on the bottom panel of the X-ray interface box.
*** Be careful not to strip the screw heads.**



b. Lift the top cover of the multi-box and remove it.



2. Cable connection.

Table 16: List of Cables

No	Description	Specification
1	Power supply cable	AC100 to 240V The cable can be connected or disconnected by the users.
2	Sensor cable	The cable cannot be connected or disconnected by the users.
3	X-ray interface (XIF) cable	The cable cannot be connected or disconnected by the users.
4	Status indicator (SI) cable	The cable can be connected or disconnected by the users.
5	Ethernet cable	100BASE-TX or higher
6	Ethernet cable	100BASE-TX or higher
7	Ethernet cable	100BASE-TX or higher
8	Ethernet cable	100BASE-TX or higher
Wiring inside box 1	AC power supply cable	-
Wiring inside box 2	DC12Vsupply cable	-

Figure 21: Multi-box Cable Connections

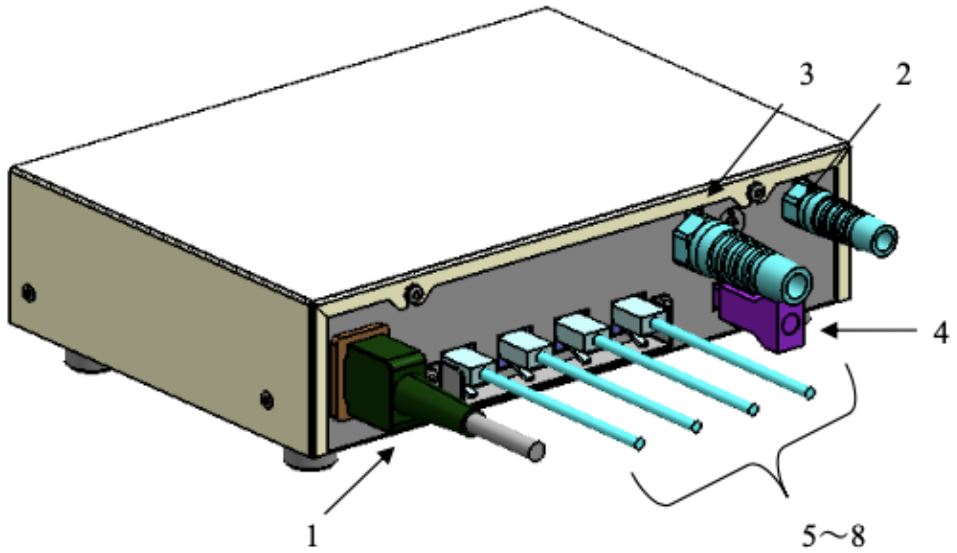
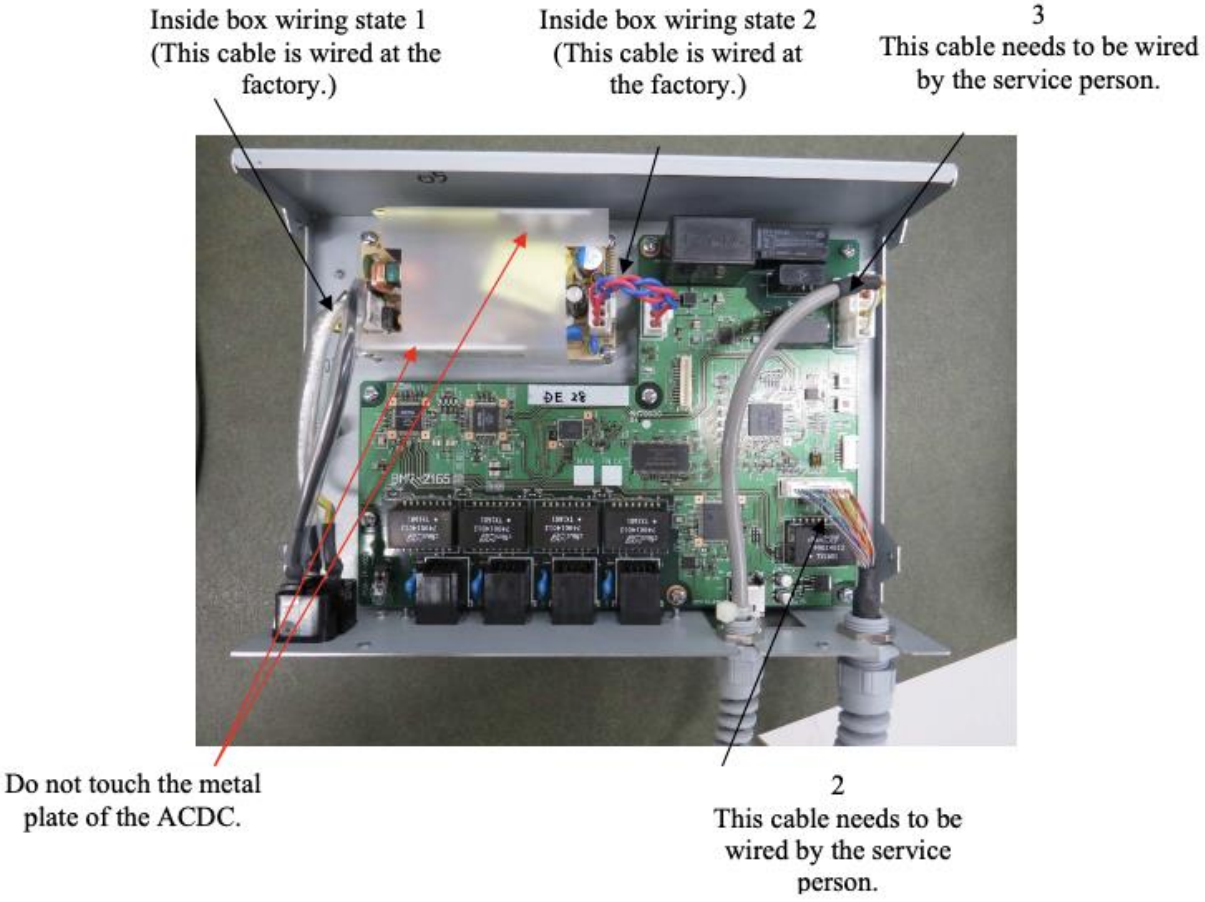
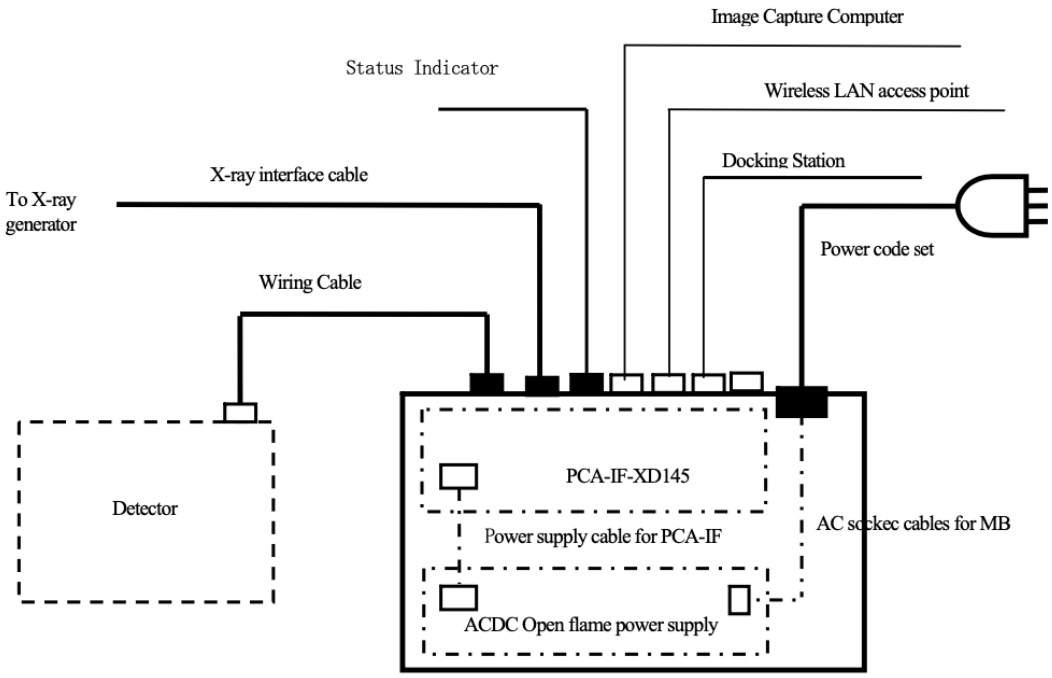


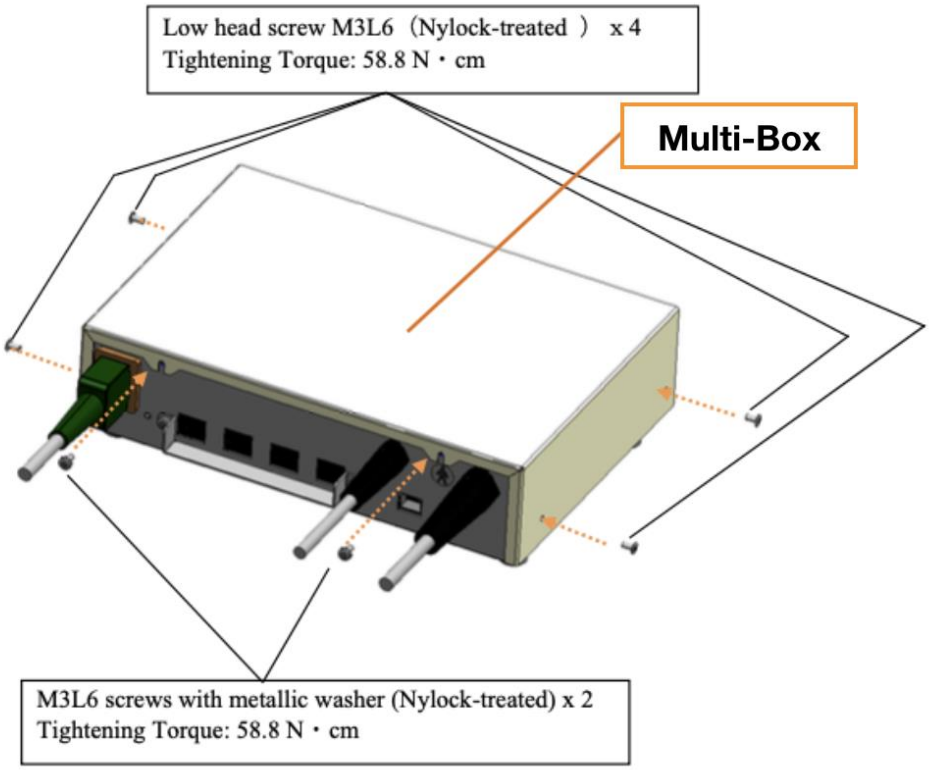
Figure 22: Wiring inside the Multi-box



a. After connecting the sensor cable (2), attach the cover of the Multi-box and secure it with the screws.
Be careful not to strip the screw heads.
The screws used for mounting must be tightened up in the following sequence: bottom panel (screws with external teeth) → both side panels (brazier head screws).

Figure 23: Wiring diagram of the Multi-box

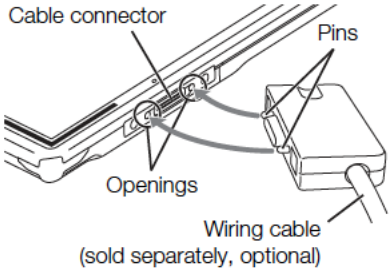




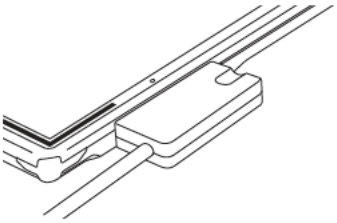
b. Connect the power supply cable, sensor cable, and ethernet cable.
c. Connect the LAN cable, which has been connected to the multi-box to the AIO PC workstation.
**Note:* *If a hub is being used, be sure to connect the LAN cable from the multi-box and AIO PC workstation is connected to the hub.*

3. Connect the wiring cable to the cable connector.

Insert the connector pins of the wiring cable connector into the openings of the cable connector. The connector of the cable is attached to the detector using magnets. Confirm that there is no space between the wiring cable connector and the cable connector.



The detector turns on and the Power LED of the detector lights up. Wired connection is automatically recognized by the CXDI control system.



Important

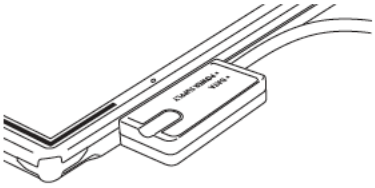
The terminals of the cable connector and the wiring cable connector should be free of any dust, dirt, oil, or grease. Be sure to clean the connector terminals regularly to maintain the contact in good condition.

Important

A poor connection may affect the quality of images.

Information

The wiring cable connector can also be attached in the opposite direction.



Connecting the Canon AX-C4343W Panel

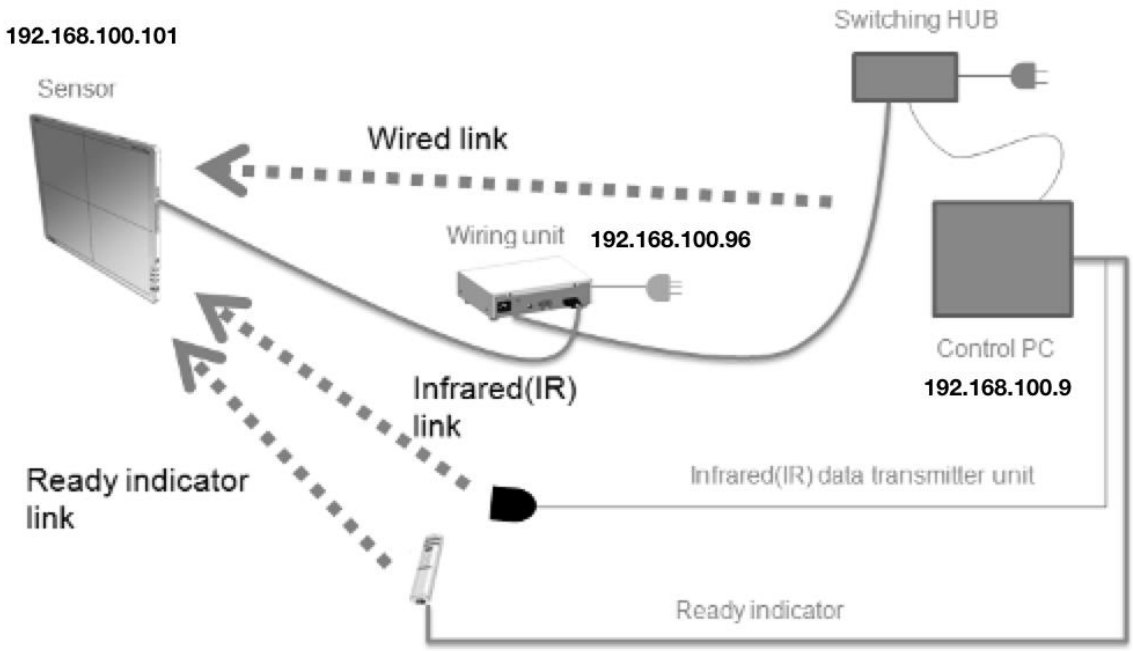
The Canon AX-C4343W panel is designed for digital radiographic imaging.

About this task

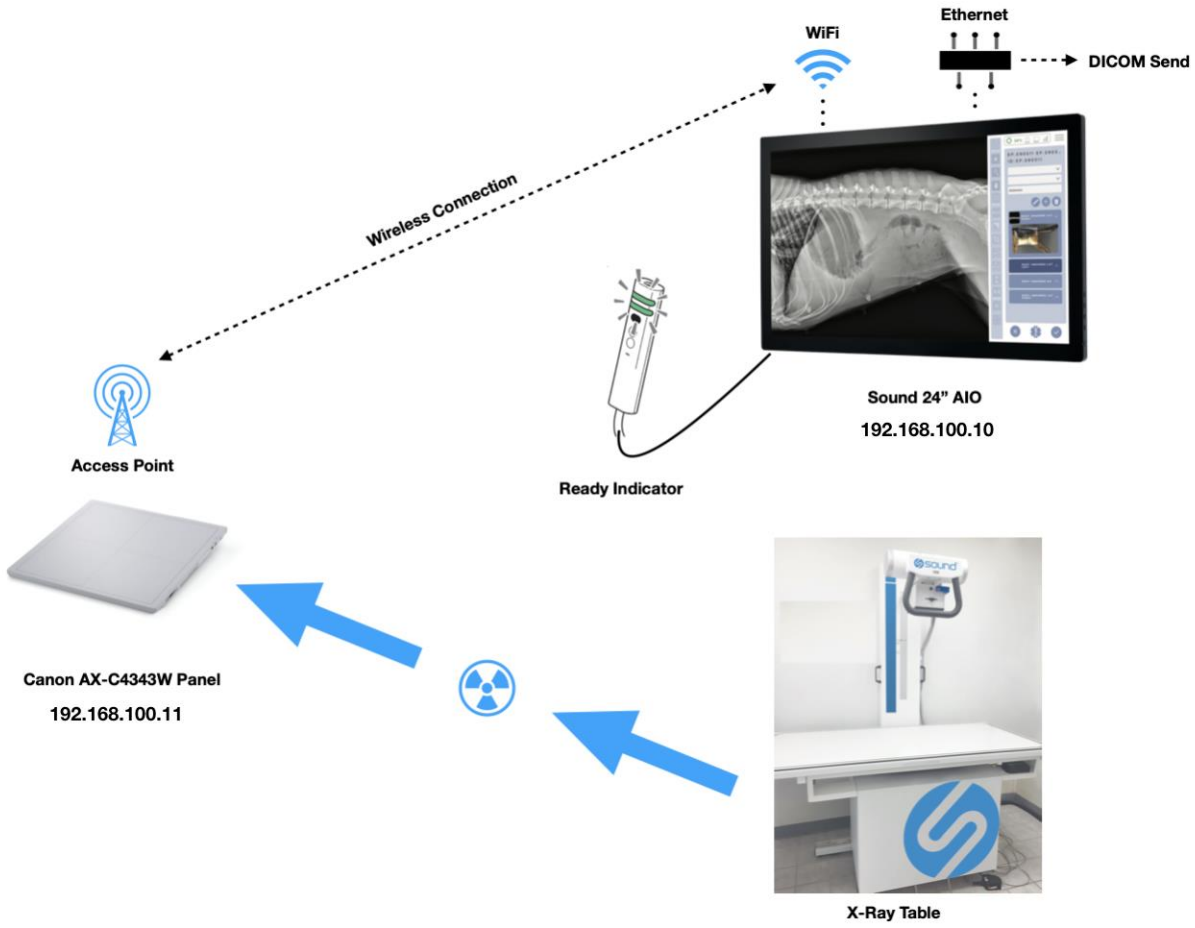
The panel communicates with the AIO workstation through an Ethernet or WiFi connections. The following figures show a detail of the cabling between the panel, multi-box, and AIO PC.

Procedure

1. Connect the cables to the panel as shown in the following image.



2. The following Diagram below displays the Wireless connections for the Canon AX-C4343W.



Registering the AX-Series Panel

About this task

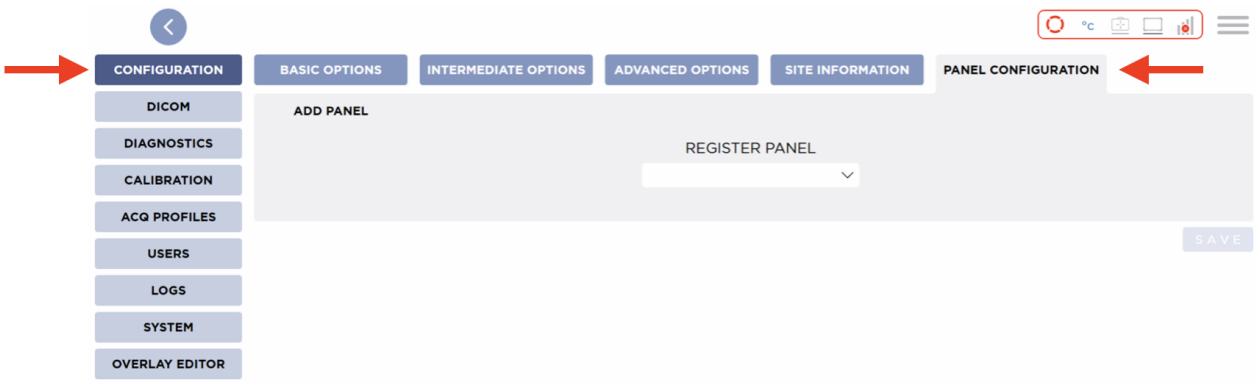
The panel comes pre-registered in the Smart DR Fusion System upon installation. The following procedure explains how to register the panel when the panel or AIO workstation is being replaced.

Procedure

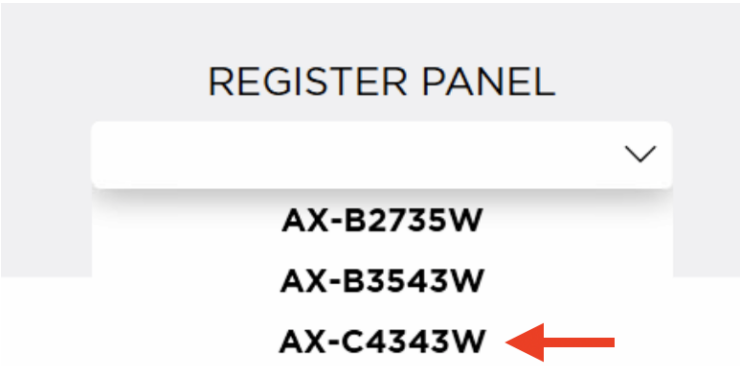
1. From the Home Screen, click on the hamburger menu located on the upper right corner.

2. Select Setting from the drop-down menu.

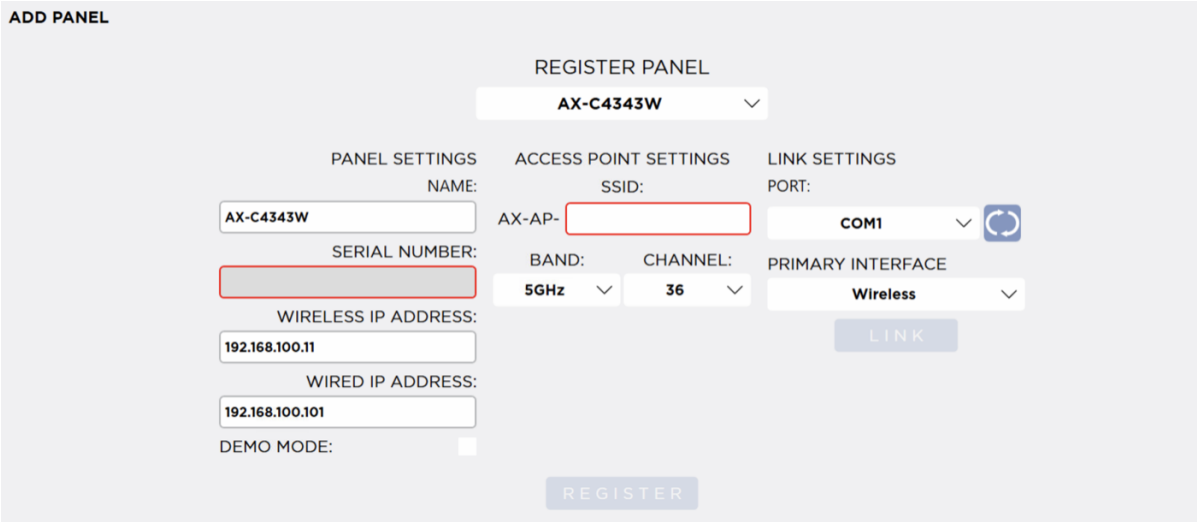
3. Select Configuration on the left-hand side. Click on the Panel Configuration tab.

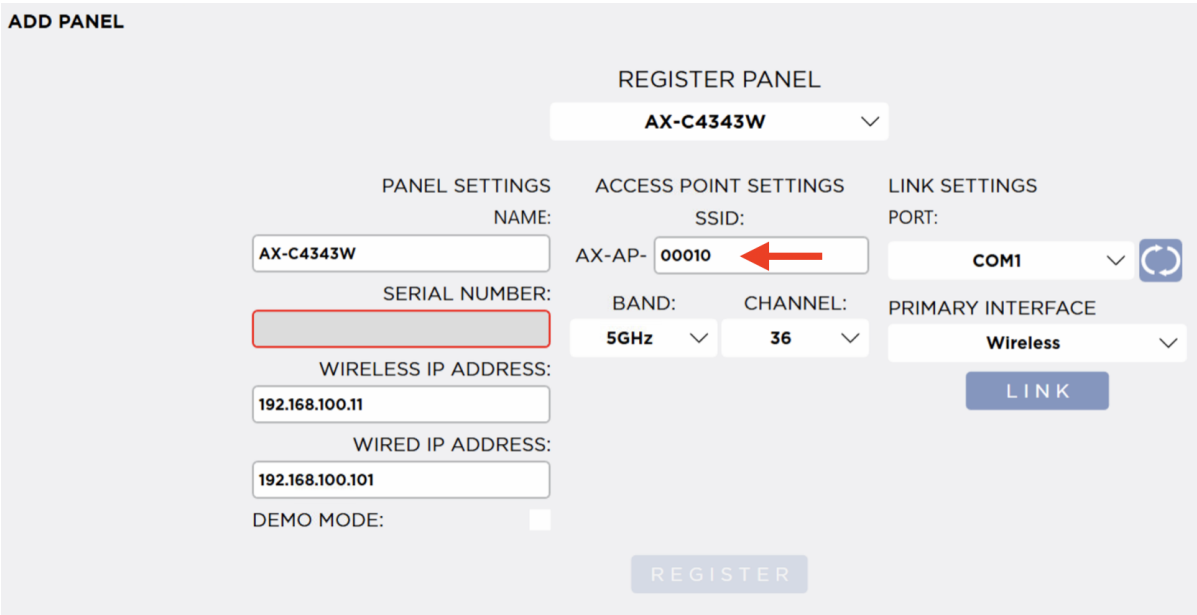


4. Click on the drop-down menu located under Register Panel. Select AX-C4343W.

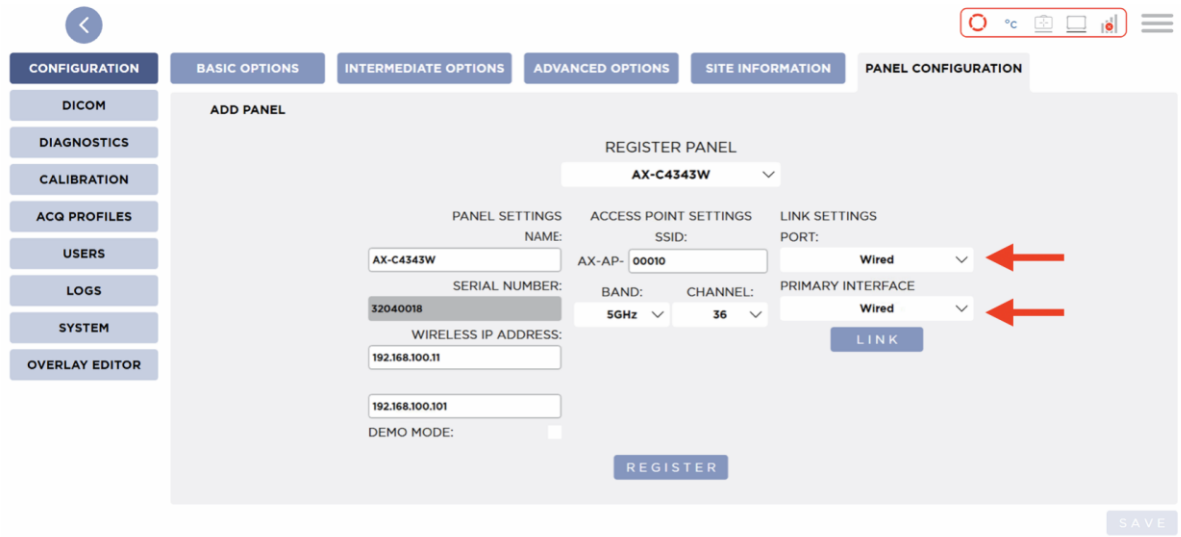


5. Enter the Access Point Setting SSID. Use the last 5 digits of the Panel Serial Number. For example, AABH00010. Enter 00010 for the SSID.



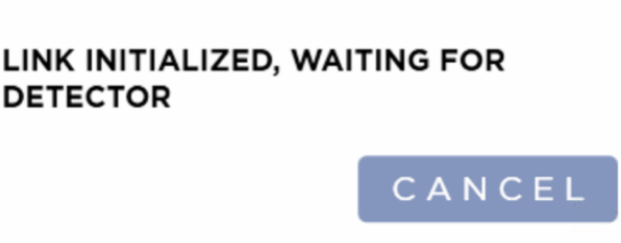


6. Change the “Link Settings Port” and “Primary Interface” to Wired.

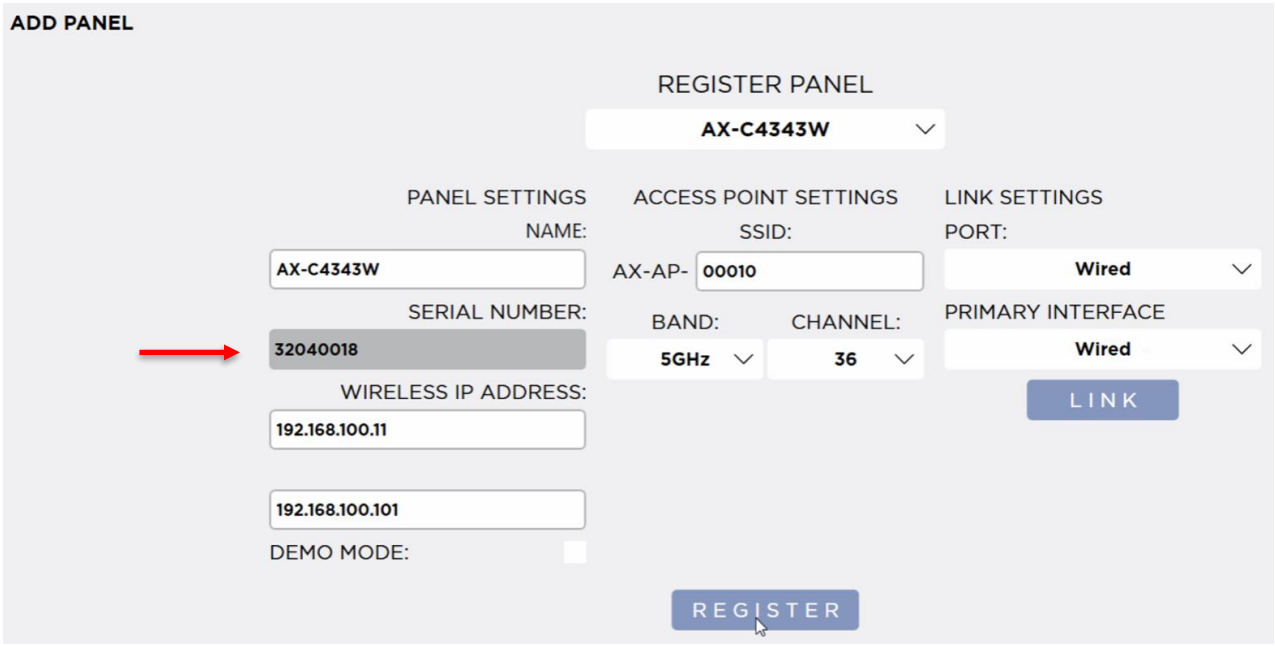


7. Click on the “Link” Button. 

8. The software will attempt to establish a link to the panel. Once the link is initialized, disconnect and reconnect the sensor cable on the panel. Refer to page 55, Connect the wiring cable to the cable connector.

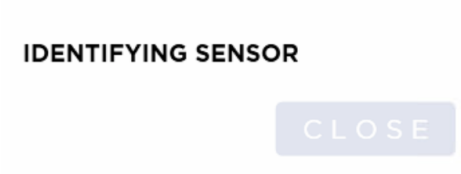


9. Once the panel link is completed, the internal panel serial number will import.

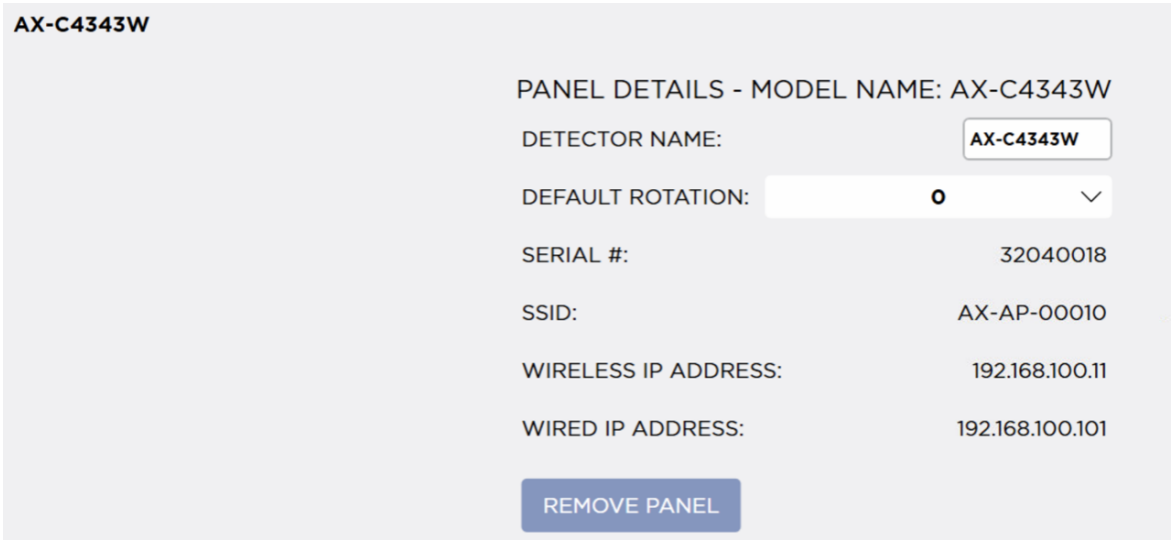


10. Click on Register

11. The software will proceed with the Panel Registration



12. Click on Close to complete the Panel Registration.



Charging the battery pack (Wireless Option Only)

Note: The use of accessories, batteries, battery chargers, or cables other than those specified in this manual, with the exception of those sold or provided by the manufacturer as replacement parts for internal components, may result in increased emissions, decreased immunity, or abnormal system operation. Use only the equipment and accessories provided or specifically approved by the manufacturer.

About this task

Use the battery charger to charge the detector's lithium-ion battery. The charger comes with a power cable, which you connect to an AC power source. The charger has a rated input of 100–240 V AC (50/60 Hz, 0.7-0.37 A, 70-90 VA). The charger rated output is 12.33 V DC (1.2 A).

Warning: Do not remove the battery charger cover. The battery charger contains no user-serviceable parts.

Warning: Ne retirez pas le couvercle du chargeur de batterie. Le chargeur de batterie ne contient aucune pièce réparable par l'utilisateur.

Warning: Do not use battery charger in an operating room or other oxygen rich environment. Do not use in conjunction with flammable agents. Do not use in an environment with condensing moisture.

Warning: Ne pas utiliser le chargeur de batterie dans une salle d'opération ou un autre environnement riche en oxygène. Ne pas utiliser en conjonction avec des agents inflammables. Ne pas utiliser dans un environnement à condensation d'humidité.

Caution: Do not use blowing liquid or immersion on the receptor, battery, battery compartment, or battery charger. Do not sterilize.

Caution: Ne pas utiliser de liquide de soufflage ou d'immersion sur le récepteur, la batterie, le compartiment des piles ou le chargeur de batterie. Ne pas stériliser.

Caution: Do not attempt to insert objects other than the battery into the charger bay.

Caution: N'essayez pas d'insérer des objets autres que la batterie dans la baie du chargeur.

Caution: Use the battery charger only with the supplied power supply and power cord.

Caution: N'utilisez le chargeur de batterie qu'avec l'alimentation et le cordon d'alimentation fournis.

Caution: Use only batteries in the battery charger and receptor. The systems are not designed to work with other battery types or designs.

Caution: N'utilisez que des piles dans le chargeur et le récepteur de la batterie. Les systèmes ne sont pas conçus pour fonctionner avec d'autres types ou conceptions de batterie.

Caution: Do not use batteries that display fault during the charging process. Contact technical support with the status indicator information.

Caution: N'utilisez pas de piles qui affichent des défauts pendant le processus de charge. Contactez le support technique avec les informations d'indicateur d'État.

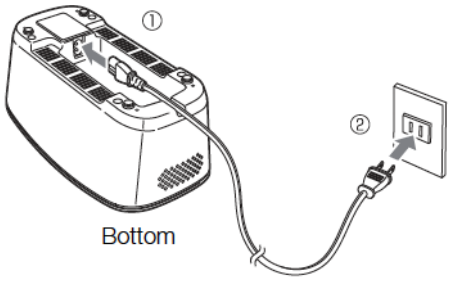
Procedure

Information Fully charge the battery pack the first time it is used.

Information The battery discharges gradually. The battery pack should be charged no more than two days before use.

1 Connect the battery charger to the power source.

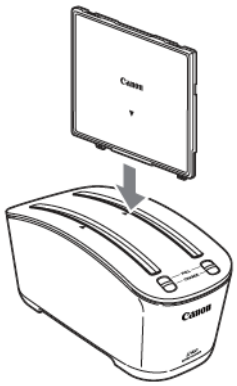
Insert the power cord into the power cord socket (①) and then insert the power cord plug into the AC outlet (②).



2 Charge the battery pack.

Insert the Battery Pack LB-1A as illustrated. Align the direction of the battery pack (▼) with the direction marker (▲) of the battery charger.

Insert the battery pack correctly and charging begins automatically.
The CHARGE lamp lights blue when the battery is being charged. After the battery charge is completed, the FULL lamp lights green.



Charge status

CHARGE lamp Blue	FULL lamp Green	Status
×	×	The battery charger is not plugged in or the battery pack is not inserted.
○	×	The battery pack is being charged.
×	○	Battery charge is completed.
☆	×	Battery charging not possible. (Waiting for temperature to reach levels suitable for battery charging.)
☆	☆	Error

○ : Lights on ☆ : Flashes × : Lights off

Information If the CHARGE or FULL lamp flashes, see Troubleshooting (→ page 14).

Information Two battery packs can be charged at the same time.

Information Battery charging is not possible when the temperature of the battery pack is too high or too low.

Information It takes approximately 3 hours (room temperature: 25ºC) to fully charge a completely discharged battery pack. The required charging time varies depending on the ambient temperature and the remaining battery level.

The remaining battery charge can be confirmed on the monitor of the CXDI control system.

Display	Battery level	Status and required action
	100-60%	Charge sufficient to perform examinations.
	59-9%	Charge sufficient to perform examinations. A spare battery pack may be required.
	8-5%	Almost discharged (a few examinations are possible). Replace the battery pack with a fully charged one.
	4-0%	Discharged. Replace the battery pack with a fully charged one.

3 **Remove the battery pack.**

Remove the charged battery pack from the battery charger.

Troubleshooting the Battery Charger

Table 17: Troubleshooting the battery charger

Symptom	Cause	Remedy
The battery pack cannot be charged.	The power cord is unplugged from the AC outlet.	Connect the plug to the AC outlet firmly.
	The battery pack is not inserted into the battery charger correctly.	Insert the battery pack into the battery charger firmly.
	Charging has automatically stopped to protect the battery charger.	Pull the plug out from the AC outlet and consult your sales representative or local Canon dealer.
	The ambient temperature is lower than -10°C or higher than 75°C.	Charge the battery in an ambient temperature of between 5 to 35°C. However, note that a rapid temperature change may result in condensation.
Only the CHARGE lamp flashes.	The battery temperature is outside the range of charging temperature.	Wait until the temperature returns to the range suitable for charging.
The CHARGE and FULL lamps flash.	An error has occurred.	Remove the battery pack from the battery charger, and insert it again after two seconds. If the problem is not resolved, stop using the battery pack and consult your sales representative or local Canon dealer.
A fully charged battery is consumed quickly.	Battery capacity decreases.	The battery pack is a consumable item (the estimated battery product life is approximately 300 uses). Use a new, fully charged battery pack.
	The battery pack was charged or used in low temperatures.	In low temperatures, battery capacity decreases. The battery consumption rate increases compared to room temperatures.

Symptom	Cause	Remedy
The battery pack bulges abnormally.	The battery pack is malfunctioning.	Stop using the battery pack and consult your sales representative or local Canon dealer.
Charging does not finish.	The battery charger or the battery pack is malfunctioning.	
	An extended period of time is required to fully charge the battery pack.	The battery charger is functioning properly. Continue charging the battery pack. However, the charging time varies depending on the ambient temperature or the status of the battery pack. It takes about 3 hours (when the ambient temperature is 25°C) to fully charge the battery pack. (A time-out error occurs if charging has not finished even after 6 hours have passed).
The detector will not turn on even though a battery pack has been attached.	The battery pack is not charged.	Fully charge the battery pack.
	The detector's power is turned off.	Press the POWER button on the detector.

Installation Report Form

IMPORTANT: Required. This installation report form, including acceptance testing, must be completed within 30 days of installing the system. Contact technical support for the correct mailing address for this form and any other questions you might have.

Enter NA if an item is not applicable.

Installation:	___New	___Reinstalled	___Used	Date:____/____/ 20____
System serial number:				

Site information	Distributor information
Name	Name
Street	Street
City, State, Zip	City, State, Zip
Department administrator	Service engineer
Phone	Phone
Email	Email
Survey completed by (print)	
Signed	Date
Room configuration	
Bucky replacement	_____Chest stand _____Table
Positioner type	Make Model
High resolution monitor type	Make Model
Control station in:	_____Exam area _____Control area
Are all interface cables clearly labeled?	_____Yes _____No
Distance from tower PC to patient area	
Modem telephone number (if any)	

Detector setup	
Detector manufacturer and model	Wireless_____Yes_____No

Mfr and model of second panel (if any)	Wireless_____Yes_____No
X-ray generator	
Manufacturer	Model
Integrated with the DR system	Wireless_____Yes_____No

Chapter

5

Operating Procedure

Contents

General Workflow

The following workflow indicates the procedures after startup of the Smart DR Premier Software and other system equipment.

Non-integrated X-ray Generator

The detector, itself, detects X-ray exposure and automatically starts capturing images. There is no need to connect the X-ray generator and imaging system.

Power-up the System

After you have connected all of the system components, you can power-up the system and verify the connections.

About this task

Danger: The x-ray system must not be powered up or used in the presence of a flammable or explosive atmosphere, including certain gases used for anesthesia. Electric motors and other electrical equipment within or related to the x-ray system can ignite flammable or explosive gases or vapors, resulting in injury, death, or damage. Consult the site documentation or personnel to determine the presence of and hazards posed by gases in the vicinity of the x-ray system. Observe all cautions and warnings in this manual and in the User Manual. Failure to abide by the instructions and precautions provided in this manual may result in unnecessary risk to patients, users, or equipment.

Le système à rayons X ne doit pas être mis sous tension ou utilisé en présence d'une atmosphère inflammable ou explosive, y compris certains gaz utilisés pour l'anesthésie.Les moteurs électriques et autres équipements électriques dans ou liés au système à rayons X peuvent enflammer des gaz ou des vapeurs inflammables ou explosifs, entraînant des blessures, la mort ou des dommages.Consulter la documentation du site ou le personnel pour déterminer la présence et les dangers des gaz à proximité du système à rayons X.Respectez toutes les mises en garde et les avertissements de ce manuel et du manuel de l'utilisateur. Le non- respect des instructions et des précautions fournies dans ce manuel peut entraîner des risques inutiles pour les patients, les utilisateurs ou l'équipement.

Procedure

1. Turn on the x-ray generator.
2. Turn on the AIO PC.

   The power button is under the lower-right edge of the casing. The AIO automatically logs in to the Sound account.
3. Turn on the multi-box by plugging the AC cord to the device.

   The multi-box is located near the x-ray table. Verify the power cord is installed and plugged into the outlet.
4. Turn on the panel.

   The power button is on the upper-right side of the panel.

   The system is now installed and ready for configuration.

Logging in to the Sound User Account

The Sound user account for the digital radiography system is pre-configured at the manufacturing site, and the credentials are provided in this manual for reference purposes. When you start or restart the AIO PC, the system logs into the Sound account automatically.

About this task

If you need to log in to the Windows Administrator account, you must switch users after the PC logs into the Sound account. See the topic, Logging into the Windows Administrator Account, for instructions. See the topic, Logging into the Windows Administrator Account in the Service Manual, for instructions.

Procedure

1. Power-on or restart the AIO PC.
2. The PC automatically logs in to the Sound account and starts the Smart DR® Fusion software.

Logging in to the Windows Administrator Account

The Windows Administrator account provides full access to the operating system and is useful for some service-related tasks.

Procedure

1. If the AIO PC is not already on, power it up. and allow it to log into the Sound account and start the software.
2. Right-click the Windows Start button and select Shut down or sign out > Sign out.
3. Select the Administrator account from the list of accounts.
4. In the password field, enter password.

   The password is case-sensitive. The PC logs in as the Windows Administrator.

Logging Out of the Smart DR® Fusion Software

Sometimes, in order to maintenance on the AIO PC using the Windows operating system, it is necessary to log off of the Smart DR® Fusion software without shutting down the PC. Refer to Log Out on page 126.

About this task

Note: If system updates are available, but have not been installed, you must complete this process twice to log off of the system.

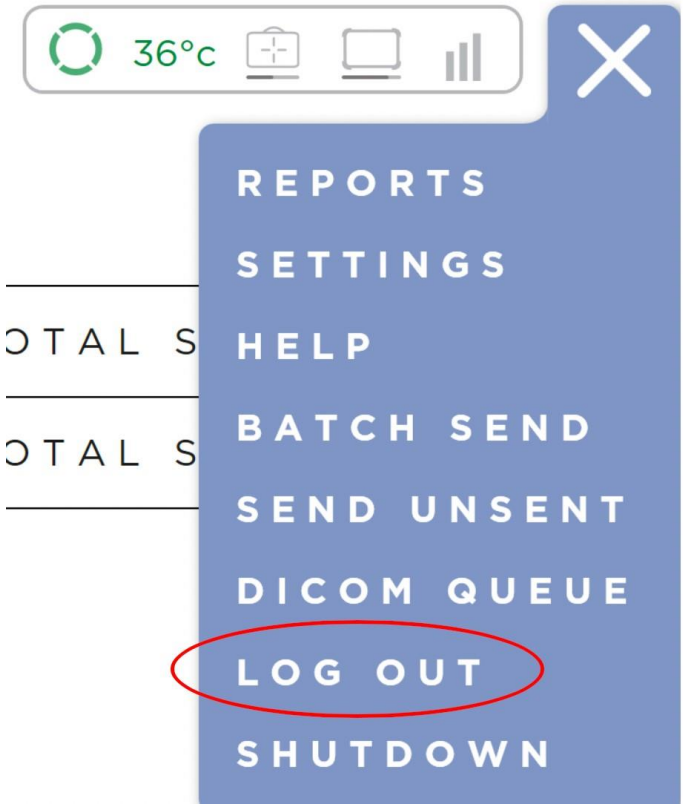
Procedure

1. From the Home Screen, click on the hamburger menu located on the upper right corner.

Figure 24: Smart DR Fusion Software Home Screen

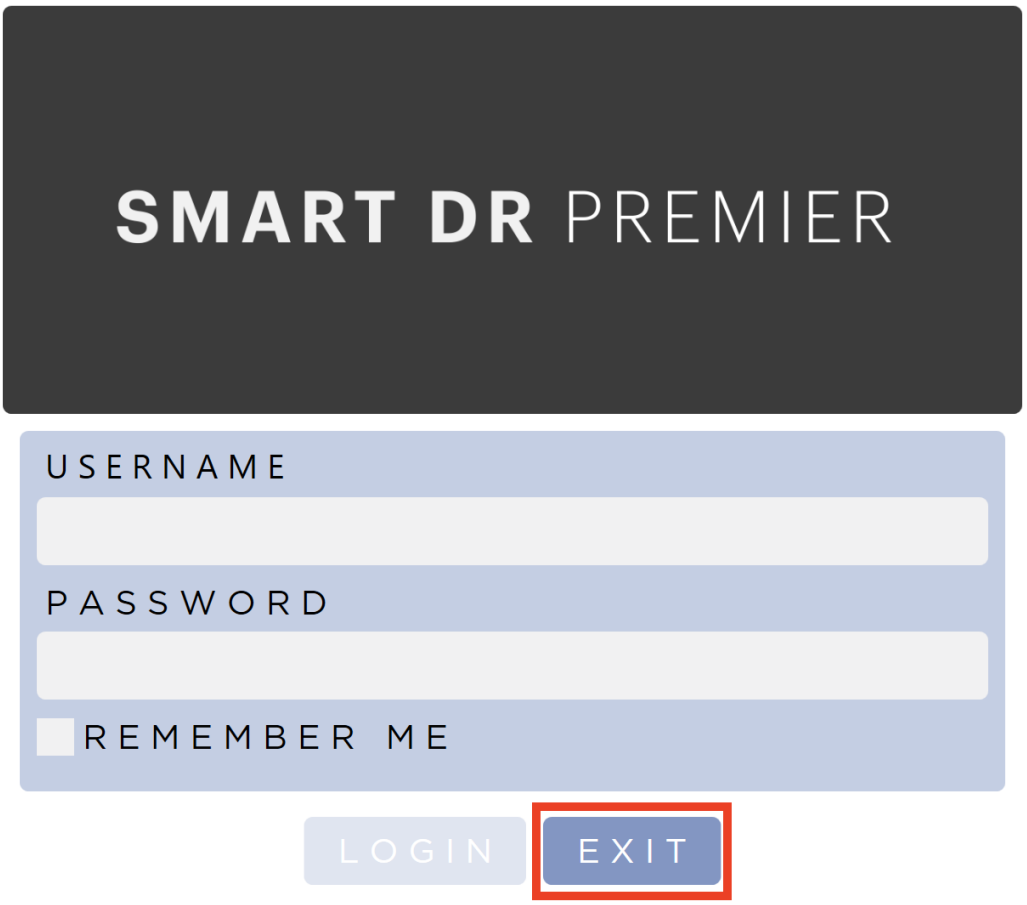
2. Select Log Out from the drop- down list.

Figure 25: Smart DR Fusion Software drop-down menu



3. Click on OK to Log Out.

4. Click on EXIT to close the Smart DR Fusion screen.



5. The following messages are displayed before the software closes to display the Windows desktop. IMPORTANT! The Smart DR Fusion software automatically backup the database if you log off or shutdown the software.


BACKUP IN
PROGRESS...
BACKUP COMPLETE.
CLOSING.

Shutting Down the AIO PC

If desired, the AIO can be shut down automatically on logging off of the AIO PC. Refer to Log Out on page 126.

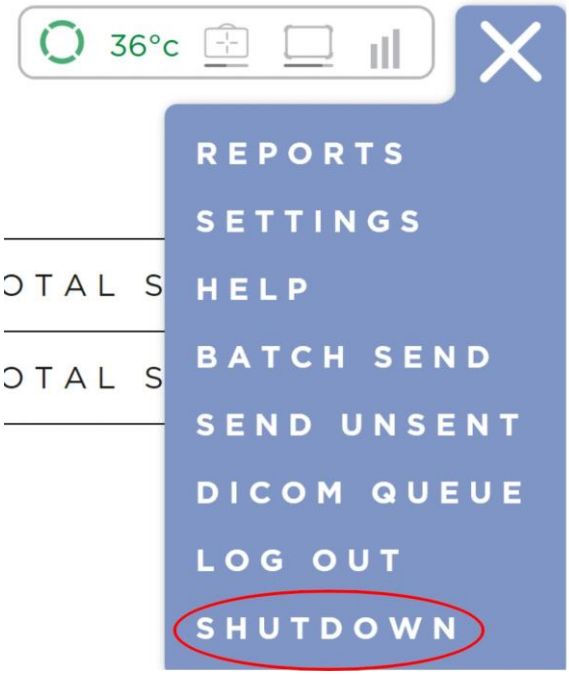
About this task

Note: If system updates are available, but have not been installed, you must complete this process twice to shut down the system.

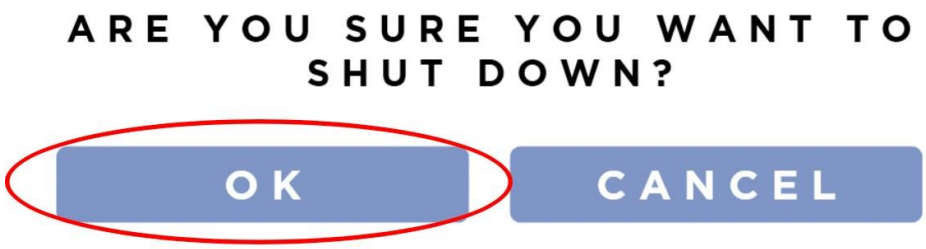
Procedure

1. From the Home Screen, click on the hamburger menu located on the upper right corner.

2. From the drop-down menu click on SHUTDOWN.



5. At the prompt, click on OK to shut down the system.



6. The following messages are displayed before the software closes to display the Windows desktop. IMPORTANT! The SMART DR Fusion software automatically backup the database if you log off or shutdown the software.

Ending use of the detector in Wireless Mode

Information

When the detector will not be used for some time, remove the battery pack. Otherwise, overdischarge may occur, leading to a shorter battery life.

1. Turn off the detector

Press and hold the POWER switch (approx.. 3 seconds). The Power LED is off.

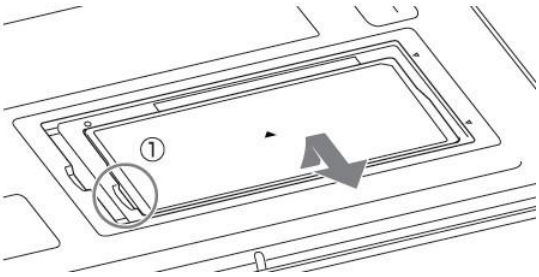
2. Remove the battery pack

i) Remove the battery cover.

ii) Remove the battery pack.

- Insert your fingers into the slot of the battery pack bay to grip the battery pack edge, and then pull the edge to remove the battery pack (①).

iii) Attach the battery cover.



Chapter

6

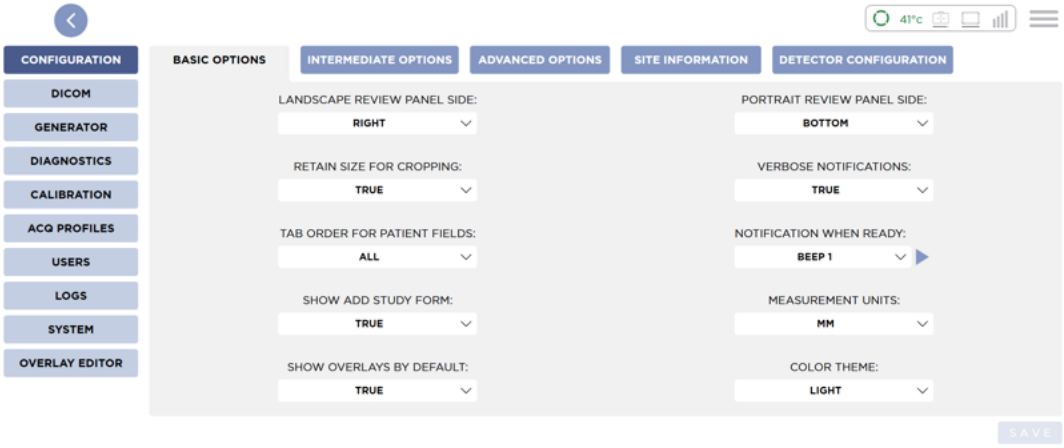
Configuring the SmartDR Premier Software

Contents

Settings Screen

To access the Settings Screen, click on the Hamburger Menu located in the upper right corner of the Main Patient Screen.

This is the Settings Screen. Here you can change the default settings of the SmartDR Premier software. There are ten sections.



1. Configuration
2. DICOM
3. Generator
4. Diagnostics
5. Calibration
6. Acq Profiles
7. Users
8. Logs
9. System
10. Overlay Editor

To return to the Main Patient Screen Press the Back button. If the system detects you made changes to the settings and not saved them you will be asked if you want to save the changes

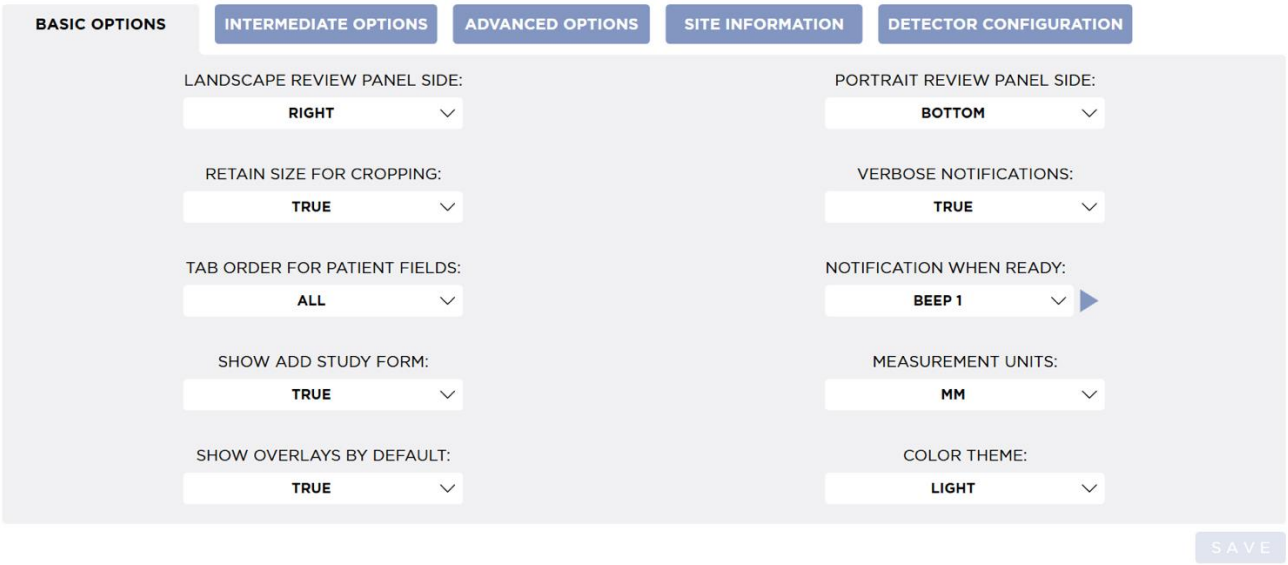
Press SAVE to save the changes and continue to the Main Patient Screen. Pressing DISCARD will continue to the Main Patient Screen without saving the changes.

Configuration

The Configuration Screen has five sections.

1. Basic Options
2. Intermediate Options
3. Advanced Options
4. Site Information
5. Detector Configuration

Basic Options



Landscape Review Panel Side

This option changes which side of the screen the Shot List and Image Tool Bar are in the Acquire Review Screen while in Landscape mode. You can choose **Left** or **Right**. The default setting is **Right**.

Portrait Review Panel Side

This option changes which side of the screen the Shot List and Image Tool Bar are in the Acquire Review Screen while in Portrait mode. You can choose **Top** or **Bottom**. The default setting is **Bottom**.

Retain Size for Cropping

This option affects how images are displayed after crop. If this option is set to **True**, the area outside the crop will be masked. If this option is set to **False**, the cropped area will not be shown. The image will appear larger in the view port. The default setting is **True**.

Verbose Notification

This option will affect the notifications you receive. Some notifications are more important than others. When this option is set to **True** all notifications will be shown. If this option is set to **False**, only the most important notifications are shown. The default setting is **True**.

Tab Order for Patient Fields

This option affects the Add and Edit Patient Forms. When the setting is set to **All** pressing Tab will move the cursor to the next field. When the setting is set to **Required**, pressing Tab will move the cursor to the next required field. The default setting is **All**.

Notification When Ready

This option affects the audible notification that the Detector is ready for acquisition in the Acquire Review Screen. There are five different tones you can choose from. You can also set it to **None** which will not play a tone when the Detector is ready for acquisition. The default setting is **Beep 1**. When you select a notification tone, it will play the notification sound. Pressing the Play button next to the combobox will also play the currently selected notification sound.

Show Add Study Form

When adding a study to a patient, if this option is set to **True**, the Add Study Form is shown. This can be disabled by setting this option to **False** allowing the user to move directly to the Shot List Screen. The default setting is **True**.

Measurement Units

This option sets the system's default measurement units. You can select **mm** or **cm**. The default setting is **cm**. This option is used when applying Annotations to an image and for the Thickness of Radiographed Area in the AAHA Study Info.

Show Overlays By Default

This option affects the Acquire Review Screen. If this option is set to **True**, Overlays will be turned on in the Acquire Review Screen. If this option is set to **False**, Overlays will be

turned off. You will still be able to toggle the Overlays on and off in the Acquire Review Screen. The default setting id **True**.

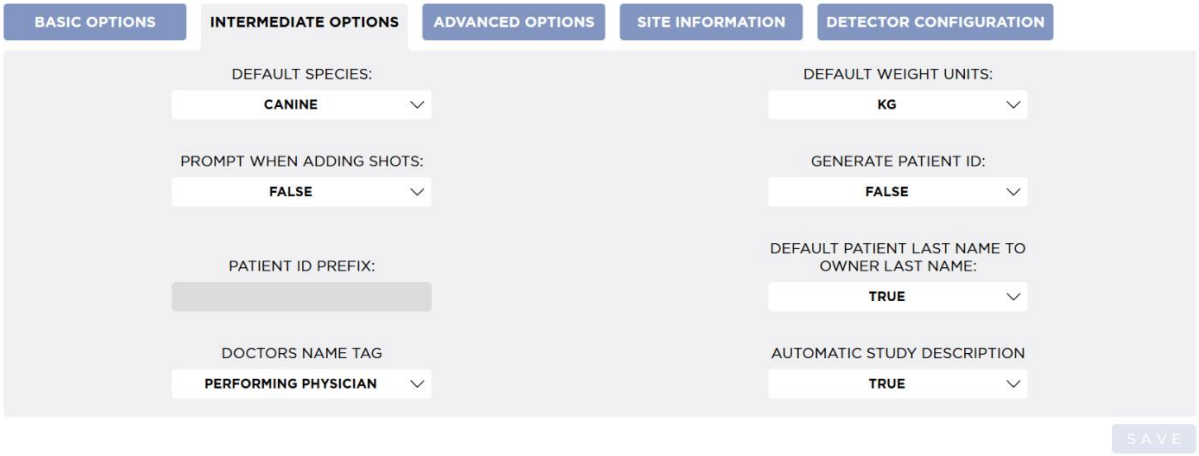
Color Theme

This option will change the color theme of the application. There is a **Light** theme and a **Dark** theme. The default setting is **Light**.

Save

To save changes you have made, press the **Save** button.

Intermediate Options



Default Species

This option will affect the default Species selected when adding a patient. By default this will be set to either **Canine** or **Equine.**

Default Weight Units

Because DICOM requires weight to be in kilograms, the system stores the patient's weight in kilograms. Setting this option to **LBS** will allow the user to enter the weight in pounds and display the weight in pounds. By default this setting is set to **KG**.

Prompt When Adding Shots

When this option is set to **True**, the system will prompt the user to confirm that they wish to add shots to a study that already has images acquired. By default it is set to **False**.

Generate Patient Id

When this option is set to **True**, the system will automatically generate a Patient Id for new patients. The default setting is **False**, The patient Id is generated from the system time and is in the from MMddyyhhmmss**.**

Patient Id Prefix

This option is disabled until Generate Patient Id is set to True. When generating a Patient Id, the system will prepend it with this value.

> **INFO**
>
> For example on December 13, 2021 at 4:55:33 PM, a Patient Id Prefix of `PID` will be added to the generated ID `121321165533` to make `PID121321165533`.

Default Patient Last Name to Owner Last Name

This option affects Creating a patient. When it is set to **True**, the user does not have to enter the Patient Last Name. The system will use the Owner's Last Name as the Patient's Last Name when the Patient Last Name field is empty. By default it is set to **True**.

Doctors Name Tag

When exporting as DICOM, the system will write the name of the Vet selected in the study to the specified tag. Options are **Performing Physician** (0008,1050) and **Referring Physician** (0008,0090). The default setting is **Performing Physician**.

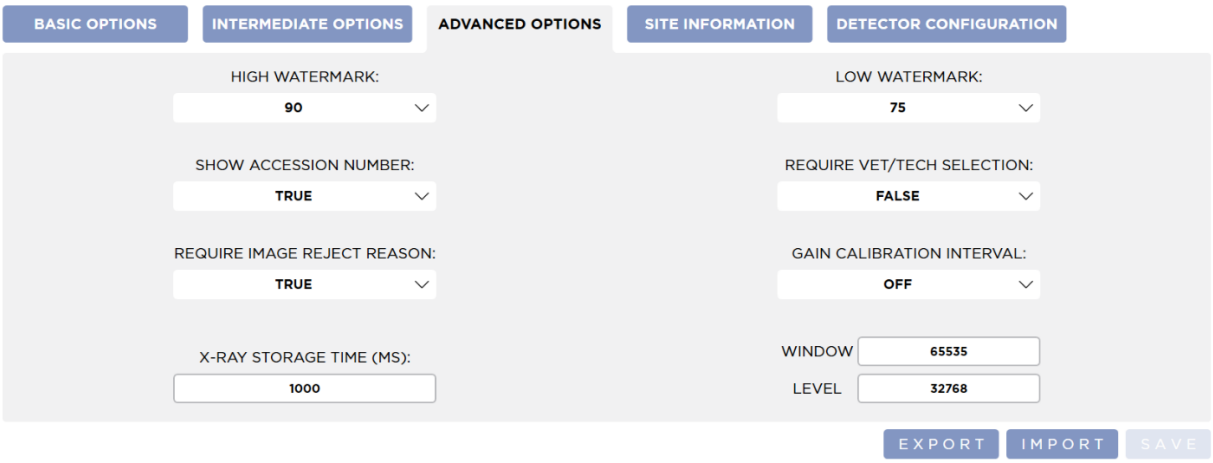
Automatic Study Description

When this option is set to **True**, the system can automatically generate a study description when the user does not provide one. It will use either the protocol name if one was used, or the name of the anatomy of the first shot in the shot list. If the option is set to **False** the system will not automatically generate a study description. The default setting is **True**.

Save

To save changes you have made, press the **Save** button.

Advanced Options



High Watermark

This option sets the percentage of disk space usage at which the Watermark system will begin to delete old studies. You can set it to **90**, **75**, or **50** percent.

To disable the Watermark feature, set this to **Never Delete**.

The default setting is **75** percent.

Low Watermark

This option sets the percentage of disk spaces usage at which the Watermark system will stop deleting old studies. It can be set to **75**, **50**, or **25** percent. However, it must be lower than the high watermark. By default this is set to **25** percent.

Show Accession Number

When this option is set to **True**, the Accession Number field will be added to the Add Study Form, the Add Study Form, and the Edit Patient Form. By default this is set to **True**.

Require Vet / Tech Selection

When set to **True** this option will require users to select a Vet and a Tech in the Acquire Review Screen before ending a study. The Vet and Tech Combo boxes will be outlined in red to indicate they are required. By default this is set to **False**.

Require Image Reject Reason

When set to **True** the user will be required to select a reason when rejecting an image. They will see a form popup with a Combo Box with reasons for the rejection. By default this is set to **False**.

Gain Calibration Interval

This option will set the period of time between the last calibrating and when you will receive a notification that it is time to do a new calibration. The system will notify once every two hours you with the message:

> The active Detector is due for a gain calibration.

If you wish to disable the notification, set this option to **Off**. The default setting for this option is **Off**.

- Quarterly
- Semiannually
- Annually
- Off

X-Ray Storage Time (ms)

This option affects the amount of time the Detector will accumulate dose. Lower values will produce less noise in the final image. The maximum value is 1000 milliseconds.

WARNING

This setting will affect image quality. It is not recommended to change this setting unless directed to do so by a Sound Customer Support.

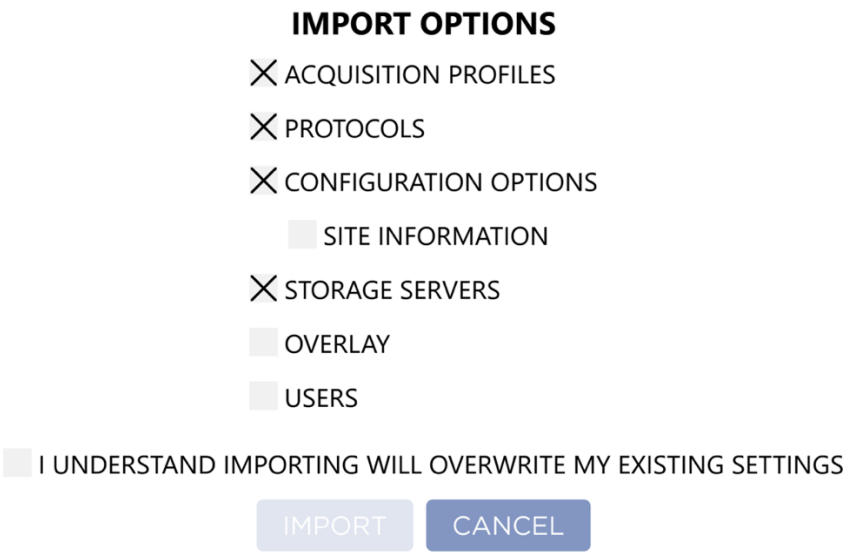
Window / Level

These options will set the default Window and Level applied to images when they are acquired. By default it is set to a Window of 65535 and a Level of 32768.

Export / Import

Click the Export button to export the system's configuration. The Save File Dialog is show. Select the location you would like to save the configuration to and give the file a name. Press the Save button.

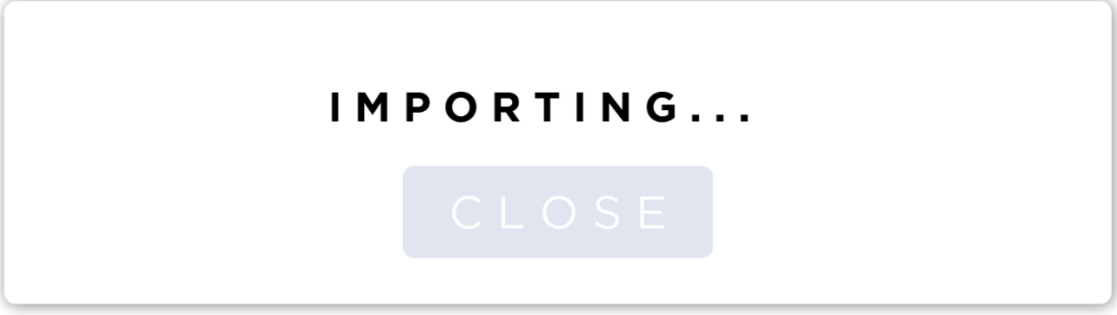
To import a previously exported configuration, press the Import Button. This will show a file selection dialog. Select the file you wish to import and press the open Button. The Import Options Form will be shown.



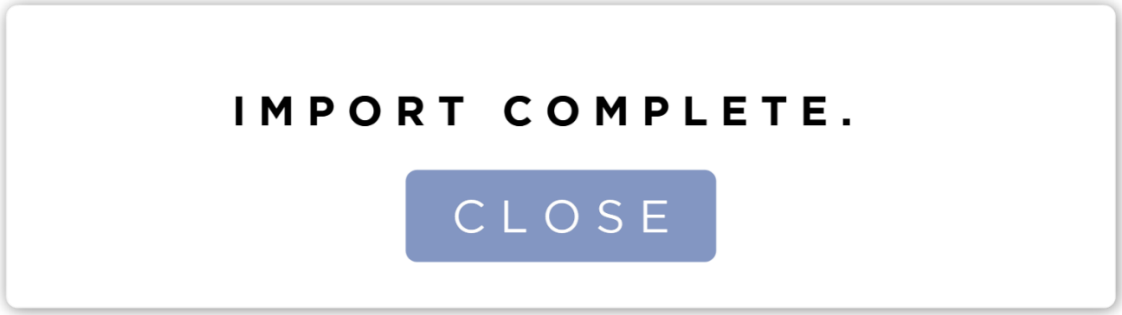
Select the configurations you wish to import.

- Acquisition Profiles
- Protocols
- Configuration Options
    - Site Information
- Storage Servers
- Overlays
- Users

Confirm you understand that importing will overwrite your existing settings. You can abort importing a configuration by pressing the cancel button. Press the Import Button to start the import process. The Import Process Dialog will show.

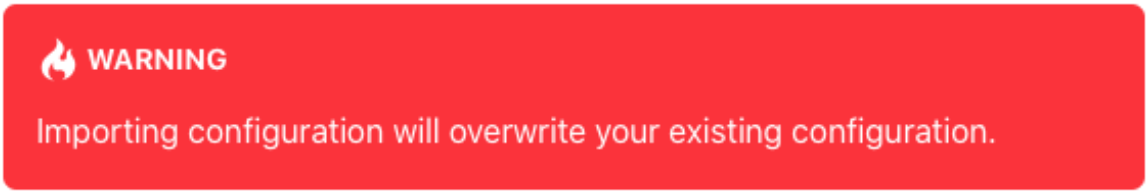


When the import completes, the Close button will be active.



Press the close button and the application will restart.

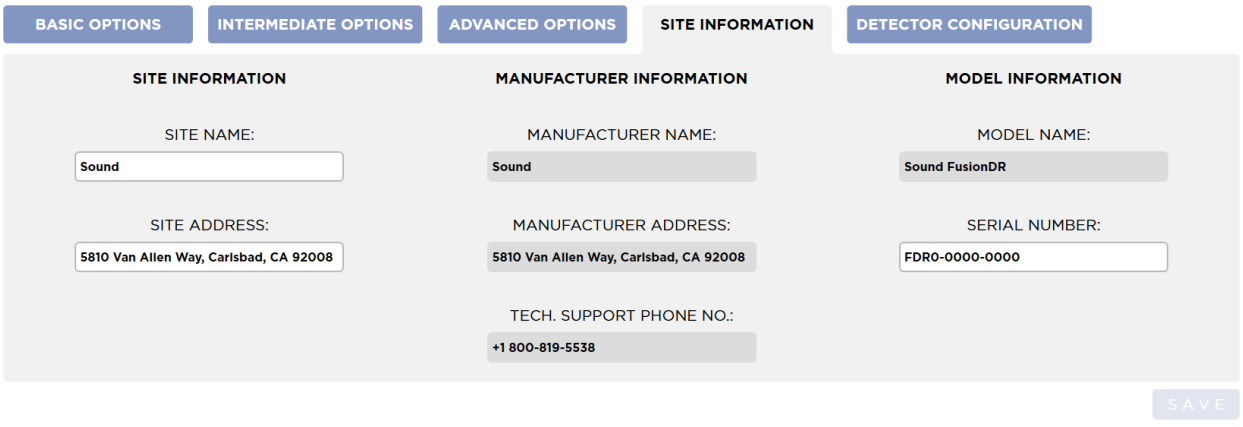
If an error occurs during import, contact Sound Customer Support.



Save

To save changes you have made, press the **Save** button.

Site Information



WARNING

These values are entered by Sound technicians before the system ships. It is not recommended to change them unless directed to do so by Sound Customer Support.

Site Information

This information is used for DICOM Exports, Overlays and Submitting a consult to AIS.

Site Name

This field should hold the name of your clinic or hospital. This field maps to Institution Name Tag (0008,0080) for DICOM Export.

Site Address

This field should hold the physical address of your clinic or hospital. This field maps to the Institution Address Tag (0008,0081) for DICOM Export.

Manufacturer Information

This information is used for DICOM Exports and Overlays. It is not editable.

Manufacture Name

This field holds the name of the Manufacture of the system. Sound. This field maps to the Manufacture Tag (0008,0070) for DICOM Export.

Manufacture Address

This is the address of the manufacture of the System.

Tech Support Phone No.

This is the phone number for Sound Customer Support.

Model Information

Model Name

This is the name of the Model of the System. This maps to Manufacturer's Model Name Tag (0008,1090) for DICOM Export.

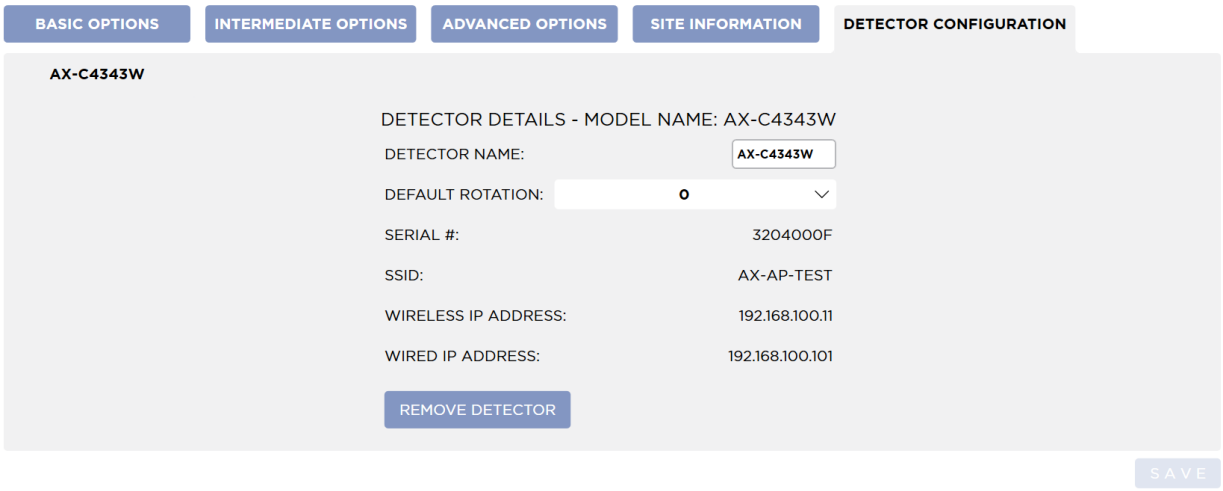
Serial Number

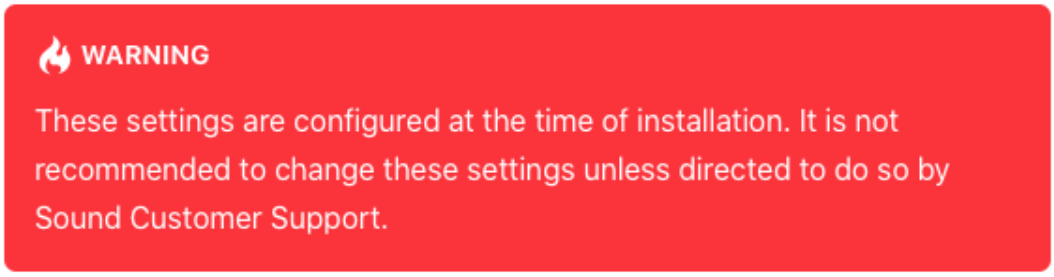
This is the Serial Number of the system. This maps to the Device Serial Number (0018,1000) for DICOM Export.

Save

To save changes you have made, press the **Save** button.

Detector Configuration





This is the Detector Configuration panel. Here you can change the Name of the detector. The default rotation of the Detector can be set here, this will apply a starting default rotation to all images acquired. Sound Installers will set this value depending on how the Detector is installed in your x-ray table.

Additional Detector information is shown here including the Model, Serial Number, SSID, and Wireless and Wired IP addresses, of the Detector.

To remove a Detector from the system, press the Remove Detector Button.

Save

To save changes you have made, press the Save button.

> **INFO**
>
> Normally this screen will show information of the currently registered Detector. However, this is also the screen where a new Detector can be registered. See Detector Registration for more information.

Detector Registration

> **CAUTION**
>
> Your detector will be configured for you by Sound before your system ships. It is not recommended to Register the Detector with your system without the assistance and guidance of Sound Customer Support.

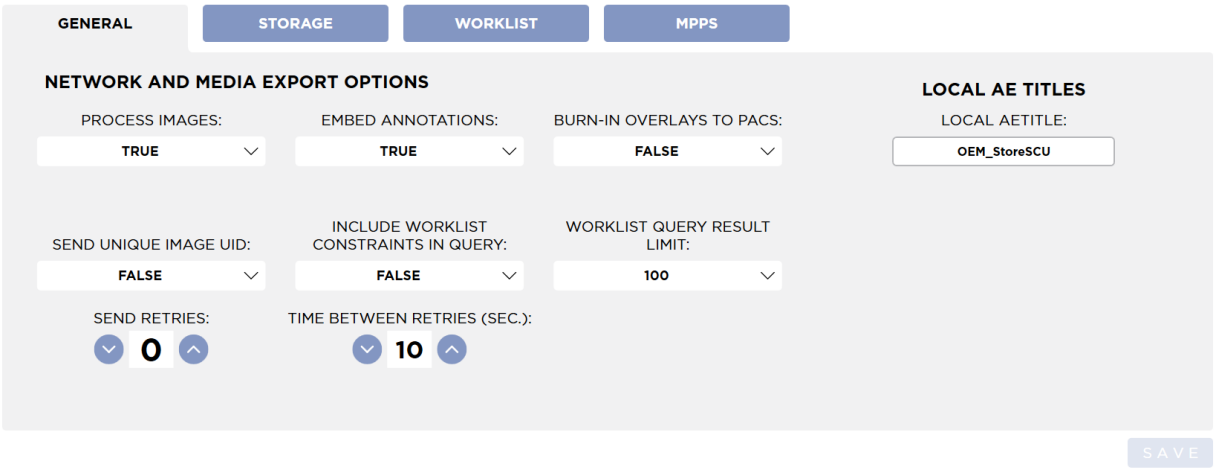
Refer to Chapter 4. Installing the X-ray System, Registering the AX-Series Panel on Page 57.

DICOM

The DICOM Configuration Screen has four sections.

1. General
2. Storage
3. Worklist
4. MPPS (Modality Preformed Procedure Step)

General



These are the General DICOM settings for the system.

> **CAUTION**
>
> These settings affect how images are exported from the system. Carefully consider the changes you make here.

Process Images

If this option is set to **False**, exported images will not have the Musica Enhancement applied to them. The default value is **True**.

Embed Annotations

If this option is set to **False**, images exported will not have annotations applied to them. The default value is **True**

Burn-In Overlays to PACS

If this option is set to **True**, overlays will be applied to images when DICOM Sending. The default value is **False**.

> **INFO**
>
> Usually PACS or other DICOM Storage Servers will have a way to show DICOM Tags as overlays built into their own editor.

Send Unique Image UID

If this option is set to **True**, each image that is DICOM sent from SmartDR Fusion will be assigned a new Unique SOP Instance UID (0008,0018). The default value is **False**.

Include Worklist Constraints in Query

If this option is set to **True**, constraints derived from the search settings will be used to query the worklist server. The default value is **False**.

Worklist Query Result Limit

This is the number of results that will be displayed when a worklist search is performed. By default it is set to **100**. Options are:

- 50
- 100
- 250
- 500
- 1000
- 2500
- 5000

Send Retires

This is the number of times the system will attempt to send an image after it has initially failed to send. The default value is **0**.

Time Between Retries (Sec)

This is the amount of time to wait in between retries in seconds. The default value is **10** seconds.

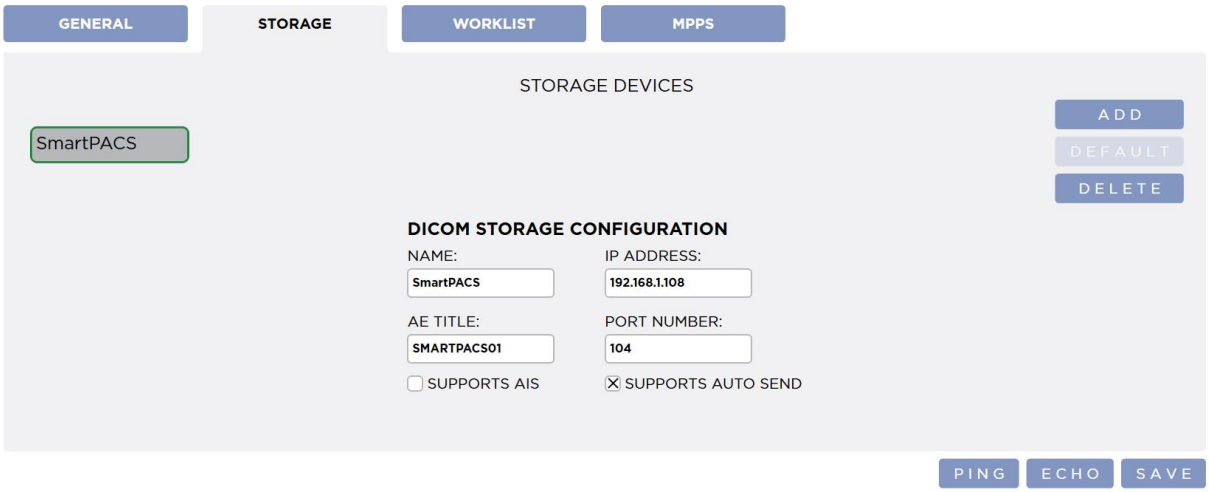
Local AE Title

This is the AE Title of the system. The system uses this value as the Calling AE Title during DICOM Association. The Default value is **OEM_StoreSCU**.

Save

To save changes you have made, press the **Save** button.

Storage



This is where you can configure DICOM Storage servers.

Add a Server

Press the Add button. Enter a name for the server. Enter the IP Address of the Server. Enter the AE Title of the Server. Enter the port number of the server. If this is an AIS DICOM Server, check the Supports AIS check box. If you want to automatically send images to this server when a study completes, check the Supports Auto Send check box. Press the Save button to save the Server.

Set a Default Server

The default server will be the server that is automatically chosen in the Export Form and the Batch Send Form. In addition, it is the server that Send Unsent will send images to. To set a server as default, select a server from the list of storage devices and press the Default Button. The Default Server will be outlined in green.

Delete a Server

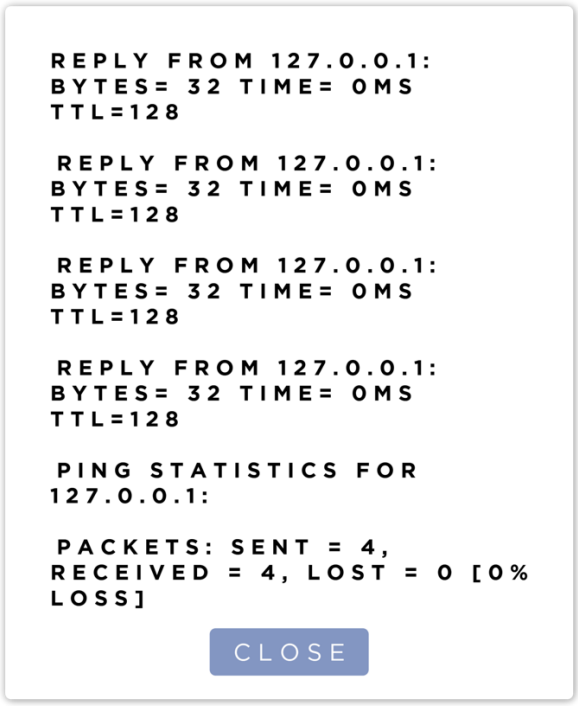
To delete a server, select the server you wish to delete and press the Delete Button.

Save

To save changes you have made, press the Save button.

Ping

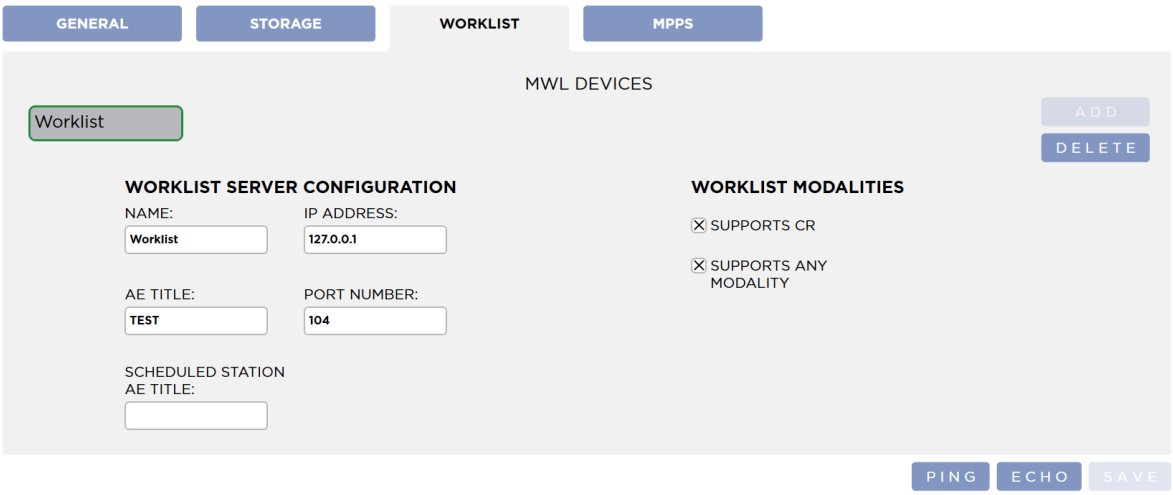
You can Ping the IP address to verify IP Connectivity with the Server By pressing the Ping button. The results of the Ping will be displayed in a popup. Press the Close button to dismiss the popup.



Echo

You can verify DICOM connectivity by pressing the Echo Button. The results will be displayed in a popup. Press the Close button to dismiss the popup.

Worklist



In order to search for Worklist Items, you will need to configure a Worklist Server. Only one worklist server is allowed.

TIP

Click here to view a list of the Practice Management systems we currently support.

Add a Server

Click the Add Button. Enter a name for the server. Enter the IP address of the Server. Enter the AE Title of the Server. Enter the port number of the server. Enter in the Scheduled Station AE Title if your workflow or Worklist server require one.

By default SmartDR Fusion only queries Worklist servers for DX modality. You can include CR Modalities by selecting the Supports CR checkbox. To query all modalities, select the Supports any modality.

Press the Save button to save the Server.

Delete a Server

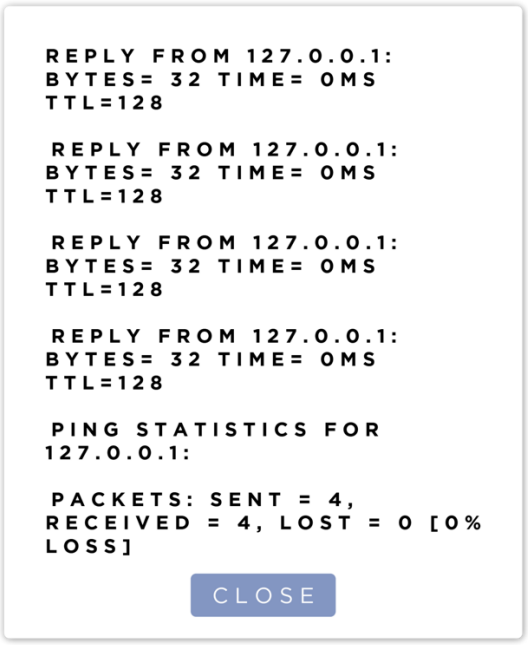
To delete a server, select the server you wish to delete and press the Delete Button.

Save

To save changes you have made, press the Save button.

Ping

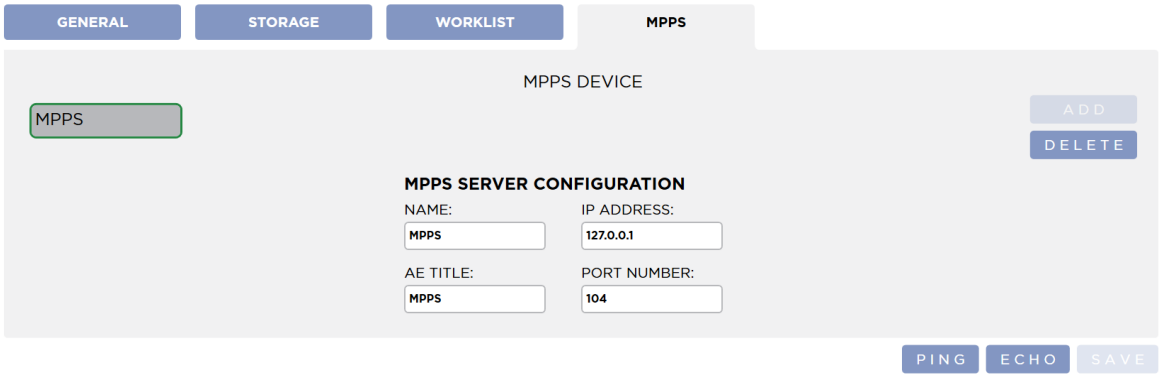
You can Ping the IP address to verify IP Connectivity with the Server By pressing the Ping button. The results of the Ping will be displayed in a popup. Press the Close button to dismiss the popup.



Echo

You can verify DICOM connectivity by pressing the Echo Button. The results will be displayed in a popup. Press the Close button to dismiss the popup.

MPPS (Modality Preformed Procedure Step)



This is where you can configure a MPPS server. Only one MPPS server is allowed.

Add a Server

Click the Add Button. Enter a name for the server. Enter the IP address of the Server. Enter the AE Title of the Server. Enter the port number of the server. Press the Save button to save the Server.

Delete a Server

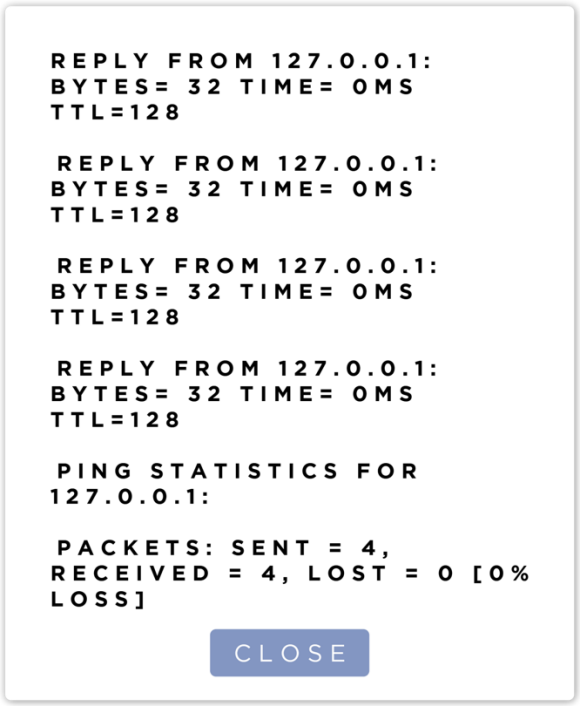
To delete a server, select the server you wish to delete and press the Delete Button.

Save

To save changes you have made, press the Save button.

Ping

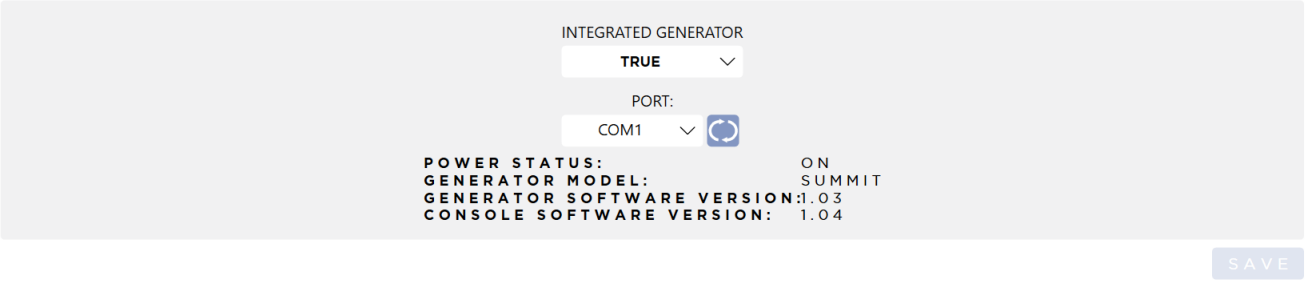
You can Ping the IP address to verify IP Connectivity with the Server By pressing the Ping button. The results of the Ping will be displayed in a popup. Press the Close button to dismiss the popup.



Echo

You can verify DICOM connectivity by pressing the Echo Button. The results will be displayed in a popup. Press the Close button to dismiss the popup.

Generator Integration



This is where a Generator can be integrated with SmartDR Premier.

When the Integrated Generator Option is set to True, the Port and Generator Information will be shown.

To configure a generator, Set the Integrated Generator option to True. Select a Port.

The Port Refresh button will re-enumerate the available COM Ports. This is useful if you have plugged in a USB Serial Port after you have entered this screen.

Press the Save button to save the changes. Once the generator is configured, the system will try to automatically turn on the Generator and read the Generator Information from it.

WARNING

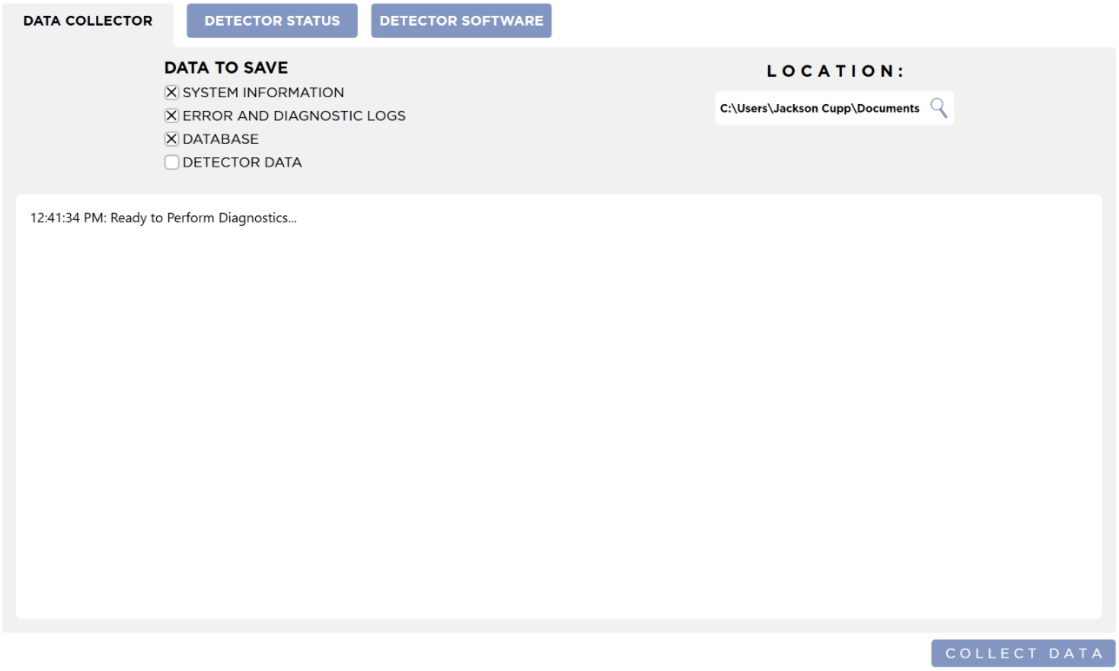
This will be configured at installation by our Installation team. It is not recommended to change these settings unless directed to do so by Sound Customer Support.

Diagnostics

The Diagnostics Configuration Screen has three sections.

1. Data Collector
2. Detector Status
3. Detector Software

Data Collector



This is a service tool used by Sound Customer Support to collect diagnostic information from your system.

The following can be chosen to be exported by the Data Collector:

- System Information
- Error and Diagnostic Logs
- Database
- Detector Data

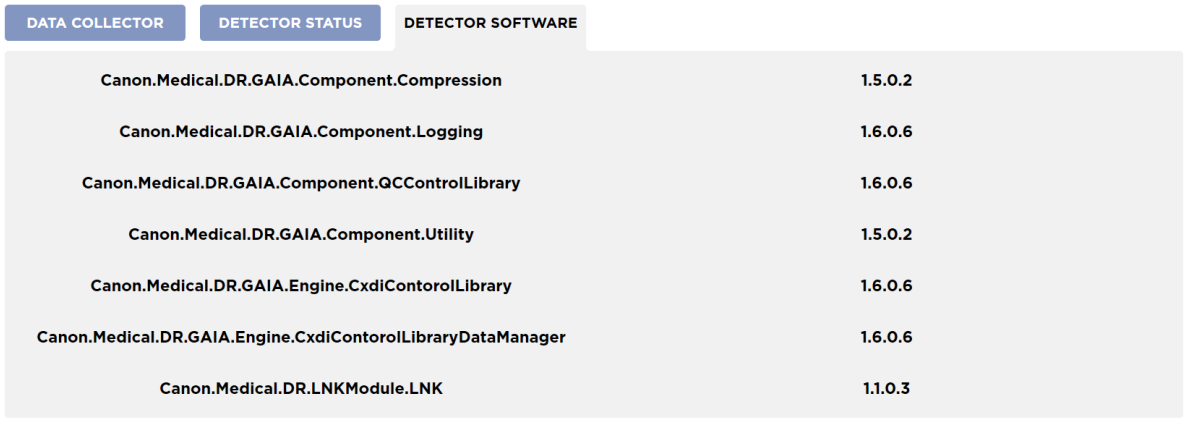
> **NOTE**
>
> When including Detector Data, ensure the Detector is powered on and connected to the system.

Select a location to export the data. Press the Collect Data to begin data collection. Wait until the data collection is done.

Detector Status

This is where you can find advanced information on the status of the Detector.

Detector Software



This is where you can find a list of the Detector software and versions, currently loaded for the current Detector.

Calibration

The Calibration Configuration Screen has two sections.

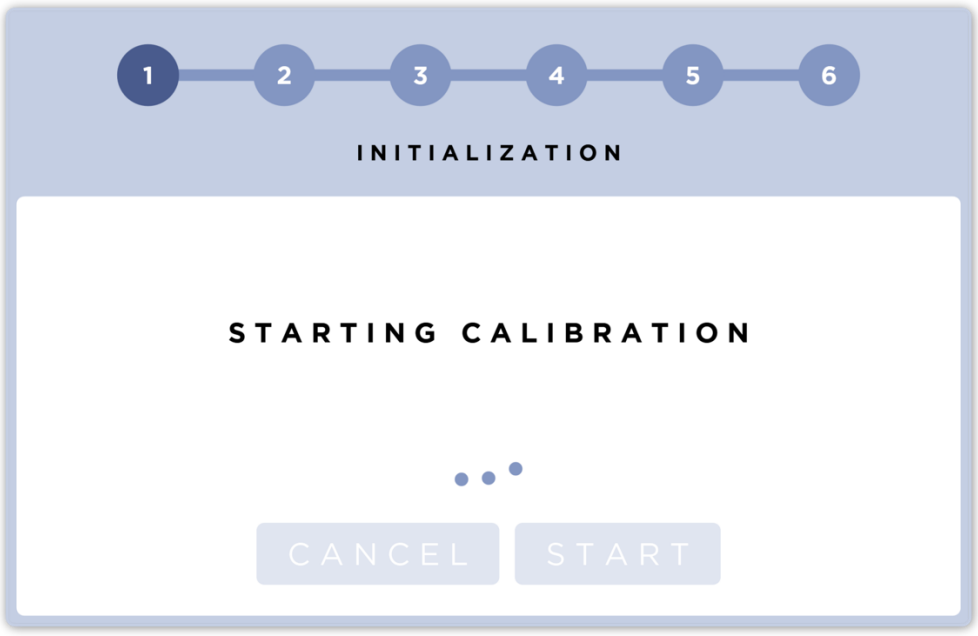
1. Calibration History
2. Self-Test History

Calibration History

This is where you can view a list of calibrations performed on the Detector and their result. You can limit the results with the Start and End Dates.

Performing a Calibration

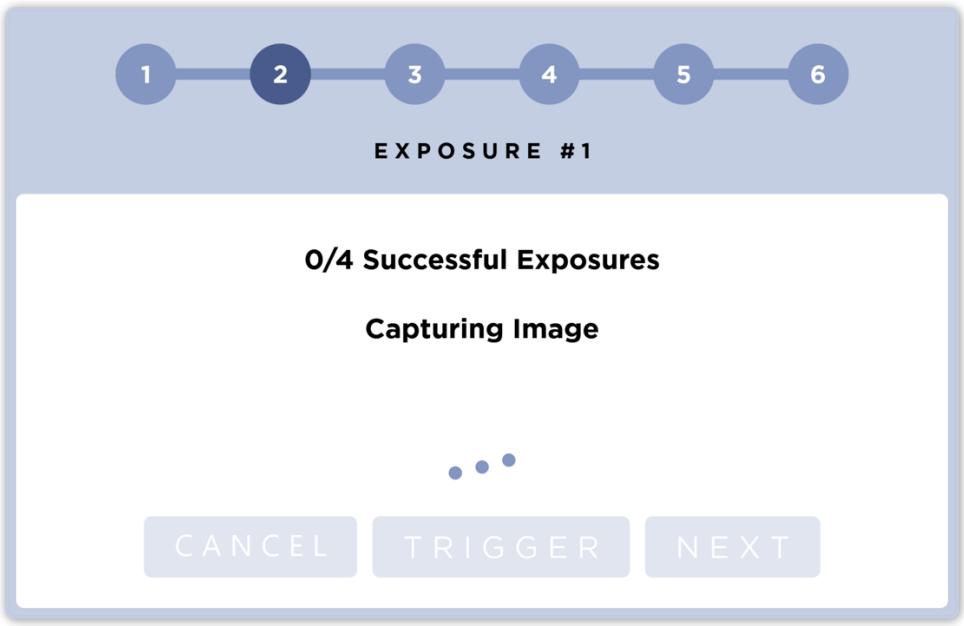
To perform a Calibration, press the Start Calibration button. The Calibration Popup will show.



When the system is Ready for Calibration, press the Start Button. You can also abort the calibration by pressing the Cancel button.

When the Detector is Ready for Exposure, the Trigger button will become active. Press half-way down on the generator foot-switch or hand-switch. Wait until your generator indicates that it is prepped for exposure.

Press the Trigger button, then press the rest of the way down on the foot-switch or hand-switch. The system will automatically capture the image.



INFO

When you press the Trigger button, there will be about 5 seconds before the Detector captures the image. If you miss this window, you will have to retake the exposure.

If the Dose is correct, the system will show, **Successful Exposure Dose: %**. Press the next button to continue to the next exposure.

If the dose is too high or too low, it will read **Failed Exposure Dose: %**. Adjust your technique up or down for the next attempt. The system will automatically retry until a successful dose is used.

TIP

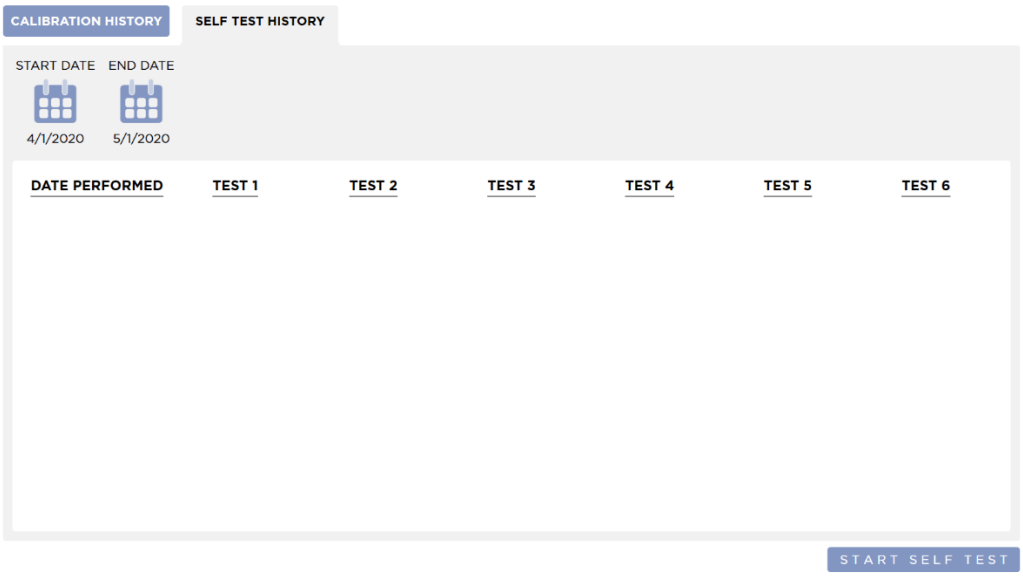
The goal is to reach a dose value of 100%. However, there is some wiggle room built in. A successful dose is 100±15%.

The system will automatically start preparations for the next exposure. Press the next button to continue to the next exposure.

The system will prepare the Detector for exposure.

Continue the same process with all four exposures. When all four exposures have been successful, press the close button to close the popup. The result of the calibration will be saved and displayed at the top of the calibration history.

Self-Test History



This is where you can view a list of Self Tests performed on the Detector and their results. You can limit the results with the Start and End Dates.

Performing a Self-Test

To perform a Self-Test, press the Start Self-Test button. The Self-Test Popup will show.

The system will automatically perform the Self-Test. When the Self-Test is complete, Press the Close button and the results will be saved. You can Cancel a Self-Test by pressing the Cancel button.

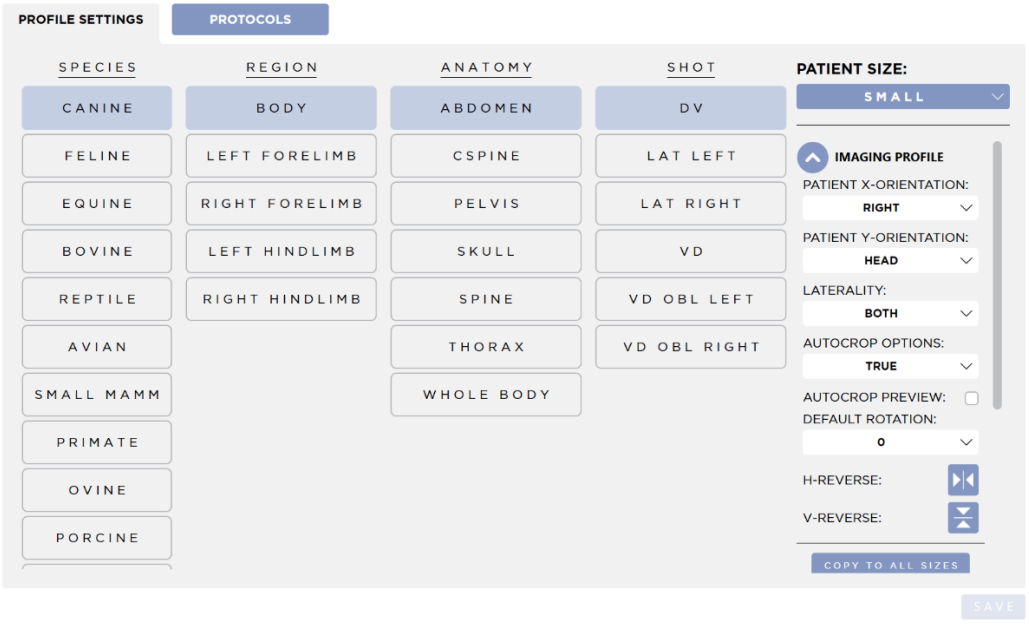
> **NOTE**
>
> The Cancel button will become active after the initialization of the Self Test.

Acq Profiles

The Acq Profiles Configuration Screen has two sections.

1. Profile Settings
2. Protocols

Profile Settings



This is the Profile Settings. Each Shot in SmartDR Premier has setting that can be manipulated here. For each shot, there are different settings depending on the Patient's weight. You can access the different settings by selecting the one you wish to view from the Patient Size combobox.

Patient Sizes

- Small : Less than 20 lbs. (9.072 kgs).
- Small Medium : Greater than or equal to 20 lbs. (9.072 kgs), less than 45 lbs. (20.412 kgs).
- Medium: Greater than or equal to 45 lbs. (20.412 kgs), less than 80 lbs. (36.287 kgs).
- Medium Large: Greater than or equal to 80 lbs. (36.287 kgs), less than 100 lbs. (45.359 kgs).
- Large: Greater than or equal to 100 lbs. (45.359 kgs).

Each Patient size has many different settings. They are broken up into three section. Imaging profile, Image Tuning, and Generator Settings. You can collapse or expand a section by clicking the expand button.

> **NOTE**
>
> Generator Settings only appears if a Generator has been integrated with the system.

Image Profile

Patient X-Orientation

This is the position of the patient in the X-Direction of the x-ray table. It is used to generate the Patient Orientation (0020,0020) DICOM Tag.

Possible values:

- Anterior
- Posterior
- Left
- Right
- Head
- Foot

Patient Y-Orientation

This is the position of the patient in the Y-Direction of the x-ray table. It is used to generate the Patient Orientation (0020,0020) DICOM Tag.

Possible values:

- Anterior
- Posterior
- Left
- Right
- Head
- Foot

Laterality

This is the laterality of the body part being examined. This is what is used to populate the Image Laterality (0020,0062) DICOM Tag.

Possible values:

- Left
- Right
- Unpaired
- Both

Autocrop Options

When this option is set to **True**, the system will automatically crop the image when acquired for this shot. See the Acquire Review Screen section of this guide for more information.

Autocrop Preview

If this check box is checked, when an image is acquired for this shot, the system will display the image uncropped with a dashed line indicating the crop the system found. See the Acquire Review Screen section of this guide for more information.

Default Rotation

This option defines how the image is rotated when the system acquires and image for this shot. This is applied in addition to the Detector's Default Rotation set in the Detector Configuration.

H-Reverse

When this toggle button is active, when an image is acquired for this shot, the image will be Horizontally Flipped.

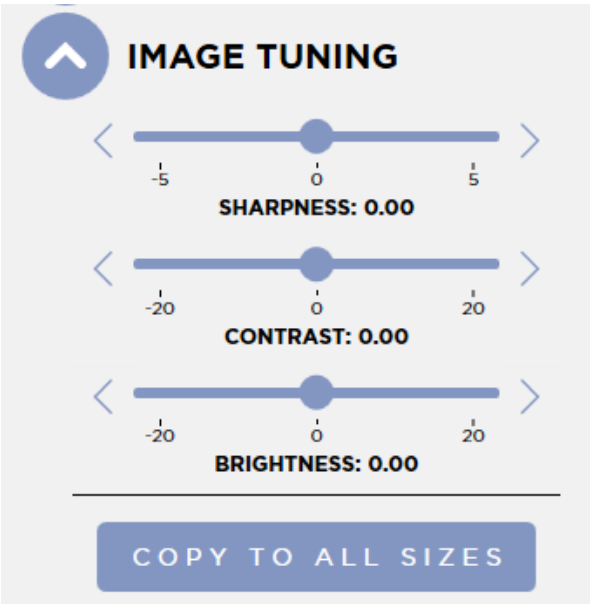
V-Reverse

When this toggle button is active, when an image is acquired for this shot, the image will be Vertically Flipped.

Copy to All Sizes

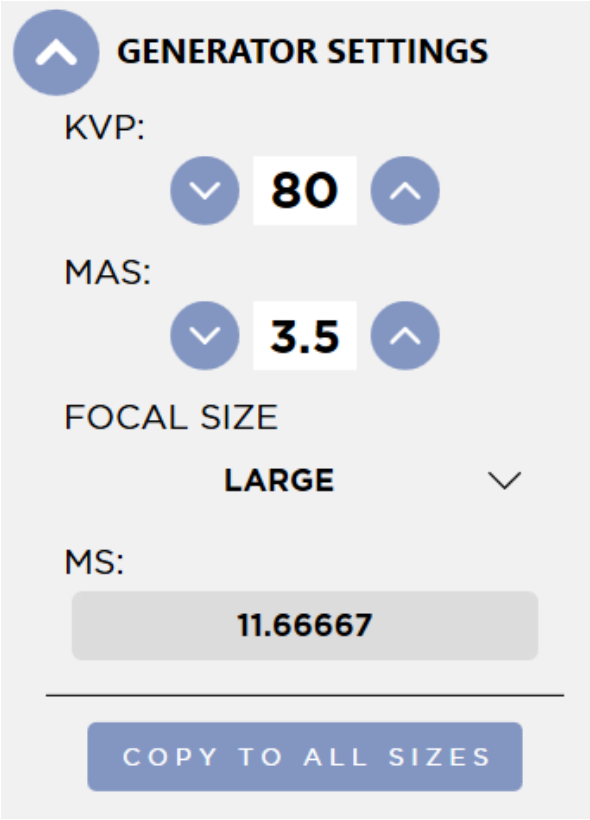
Pressing this button will copy the Image Profile settings for the current patient size to all other sizes.

Image Tuning



These are the MusicaVET Image Processing tuning parameters. You can adjust Sharpness, Contrast, and Brightness. To adjust them by dragging the circle left and right or press the arrow buttons. To apply the same tuning parameters to all sizes, press the Copy to All Sizes button.

Generator Settings



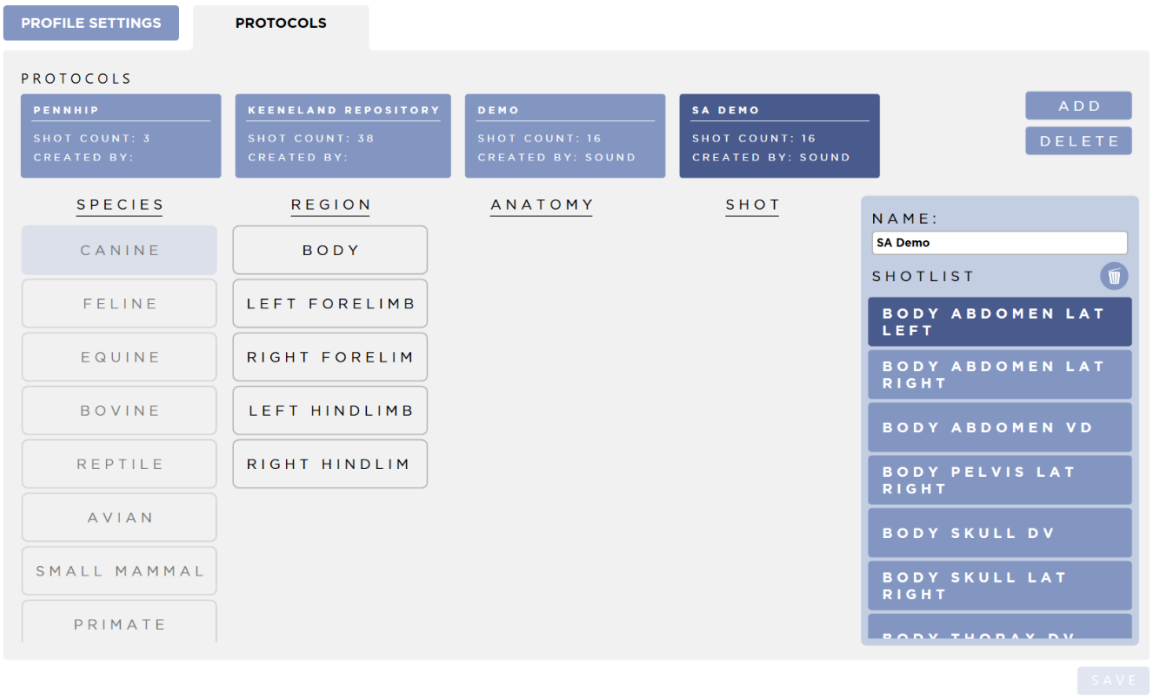
If an integrated generator is configured, the Generator Settings will be visible. Here you can adjust the kVp, mAs, and Focal Size the system will use for this shot and size. To copy the generator settings to all the sizes of this shot, press the Copy to All Sizes button.

> **NOTE**
>
> The generator must be powered On for this section to be enabled.

Saving

Press the **Save** button to save your changes.

Protocols



This is where you can add and edit protocols.

Create a Protocol

To create a Protocol, press the Add button. This will create a new protocol. Select the Species for this protocol.

To add shots to the Protocol, select a Region, Anatomy, and Shot. The shot will be added to the Shot List.

To remove a shot, select is and press the Delete button.

You can name your Protocol in the Name field above the Shot List.

You can re-order the shot list by long pressing and dragging the shot to the desired location.

When you are finished, press the Save button.

NOTE

Species cannot be changed once a shot has been added to the list. To change the species, remove all of the shots and the Species can be changed.

Edit a Protocol

To edit an existing Protocol, select it from the list.

To add shots to the Protocol, select a Region, Anatomy, and Shot. The shot will be added to the Shot List.

To remove a shot, select is and press the Delete button.

You can re-order the shot list by long pressing and dragging the shot to the desired location.

You can edit the Name of the Protocol.

When you are finished editing the Protocol, press the Save button.

NOTE

Species cannot be changed once a shot has been added to the list. To change the species, remove all of the shots and the Species can be changed.

Reordering the Protocol

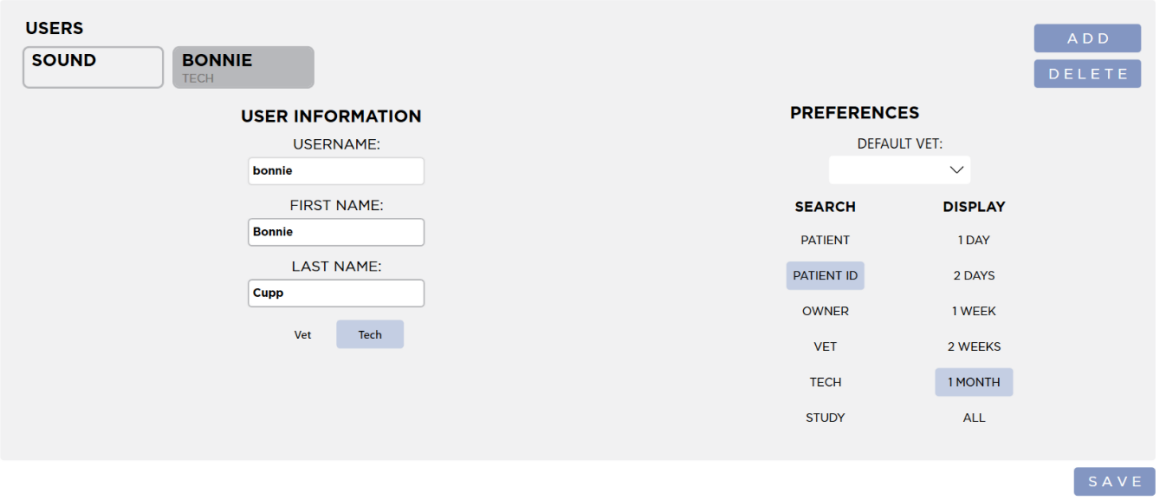
To change the order of the shots, simply touch and hold on the desired view and drag it to the desired order in the shot list.

Saving

Press the Save button to save your changes

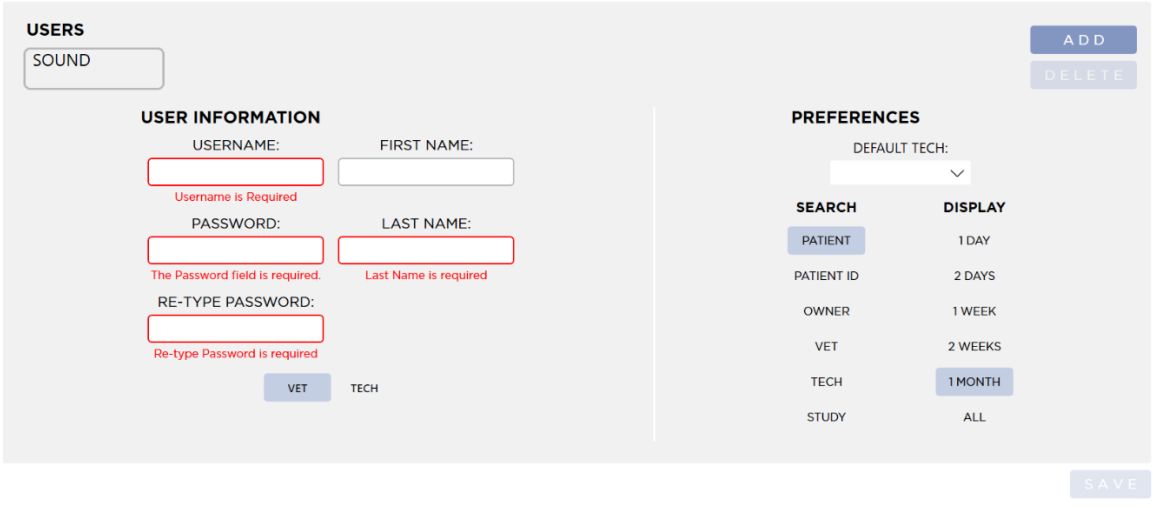
Users

Users



This is where you can add and edit users.

Add a User



To add a user, press the Add button. Enter the required information and select if the User is a Vet or Tech. When you are finished, press the Save button.

Edit a User

To edit a user, select the user from the list. Now edit the fields you want to change. Press the Save button to save your changes. You can edit the First Name and Last Name of the user and if the user is a Vet or a Tech.

> **CAUTION**
>
> Changing the name of a user will change the name that is put into the DICOM Tags for image export.

User Preferences

Each user can have different search filters and date ranges when searching the Patient List or Worklist. You can set these here. In addition, Vet users can have a Default Tech assigned to a study. You can select one from the combobox. Tech users can have a Default Vet assigned to a study. You can select on from the combobox.

Delete a User

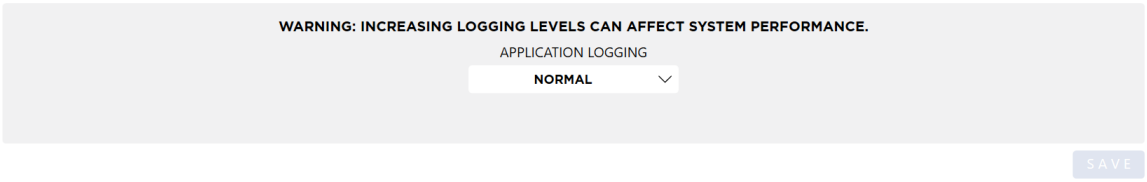
You can delete a user by selecting the user from the list, then press the Delete button. Press the Save button to save the deletion.

NOTE

The default **Sound** user cannot be deleted.

Logs

Logs



This is where you can increase or decrease the logging level of the system. The default value is **Normal**.

WARNING

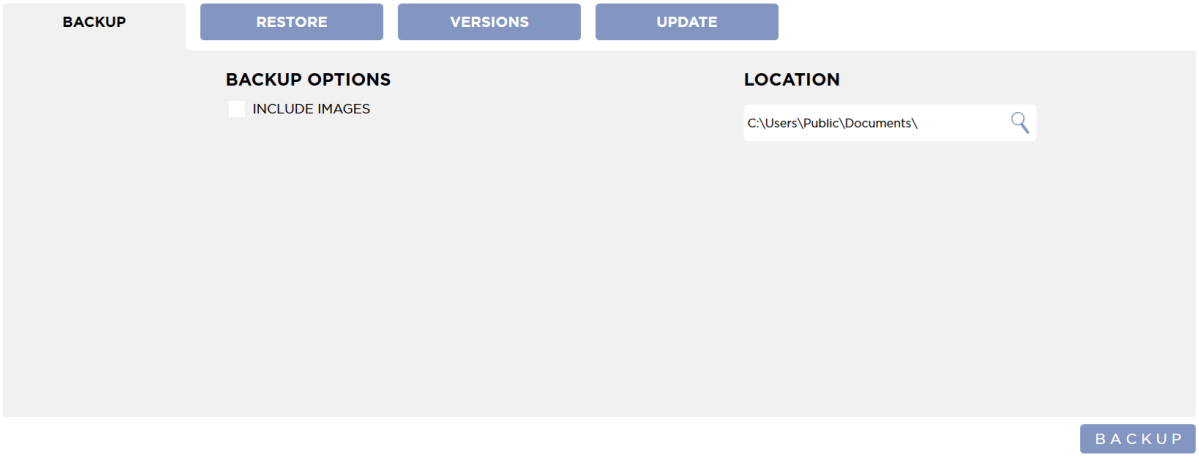
Increased logging levels can affect system performance. Only change this if directed to do so by Sound Customer Support.

System

The System Configuration Screen has four sections.

1. Backup
2. Restore
3. Versions
4. Update

Backup



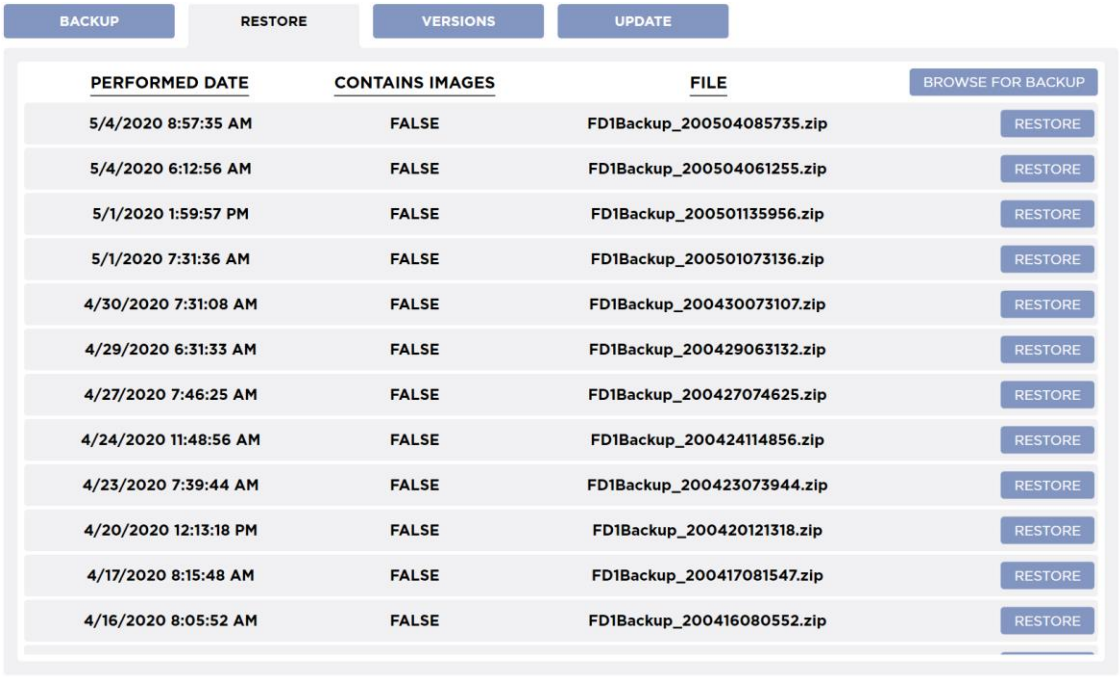
This is where you can manually backup your system. You can include images by checking the Include Images checkbox.

To change the location of the backup, press the Browse button. Browse to the folder you want to save the backup to and press the OK button.

To perform the backup, press the Backup button. The Backup Popup will show. When the backup is complete, press the close button.

> **CAUTION**
>
> Including images will significantly increase the time it takes to perform a backup. It will also require substantially more disk space. The backup may fail if there is insufficient disk space available.

Restore



System backups are listed here. Each backup lists the date it was performed, weather it contains images or not, and the file name and a Restore button. You can manually restore the system to the state it was in at the time of the backup by pressing the Restore button. You will be prompted if you would like to restore this backup. Press cancel to abort the restore or press the OK button to proceed. This will show a Restore popup.

When the Restore process is complete, press the Close button. This will restart the application.

If the software fails to find the backup file or the file is not able to be opened, the popup will display the reason for the failure. Press the Close button to close the popup.

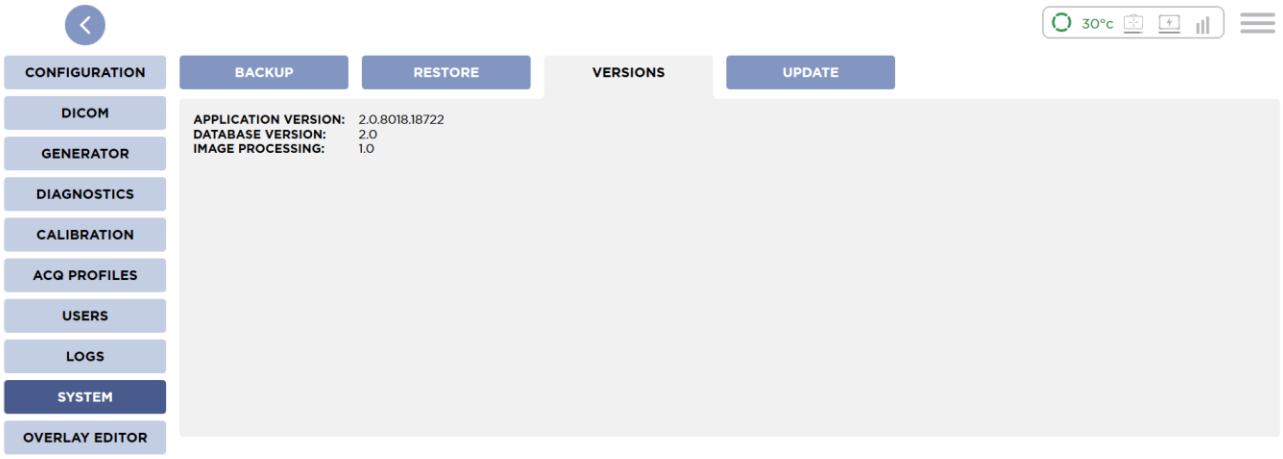
If the restoration fails because the backup has been moved or if the backup you are looking for is not in the list, press the Browse for backup button. Locate the file you want to

restore from and press the Open button. The system will attempt to restore from the file selected.

WARNING

Restoring the system to a previous state will destroy any studies acquired since the last backup. It is not recommend for users to use this feature unless directed to do so by Sound Customer Support.

Versions

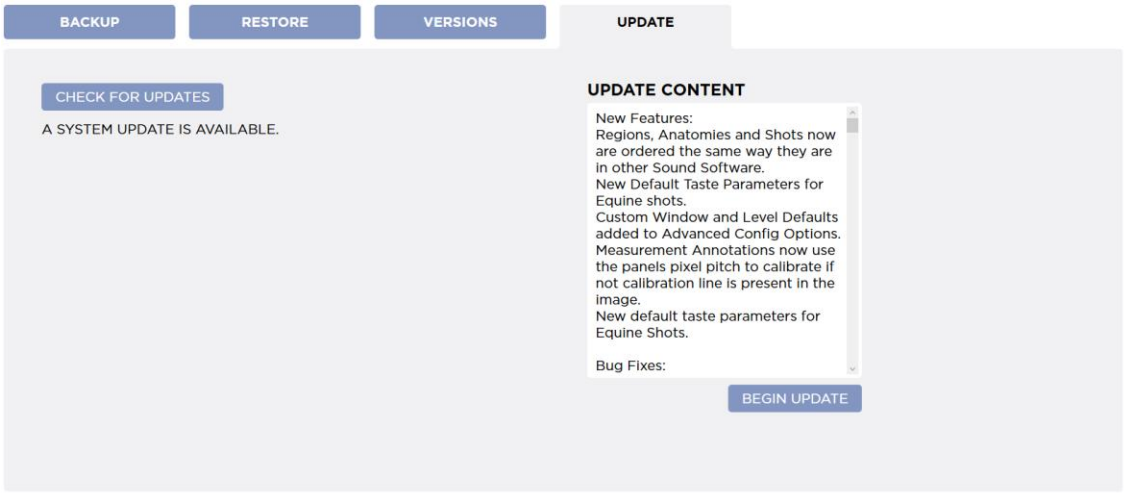


This lists the current version of the Application and the database.

Update

SmartDR Premier has Automatic Updates built in. The system will check for updates at launch and when you enter the Settings Screen. When an update is available, SmartDR Premier will notify you.

If you expand the notification, you will see instructions to go to this screen.



On this screen, you can manually check for updates, read about the new features and bug fixes in the latest version, and apply the update.

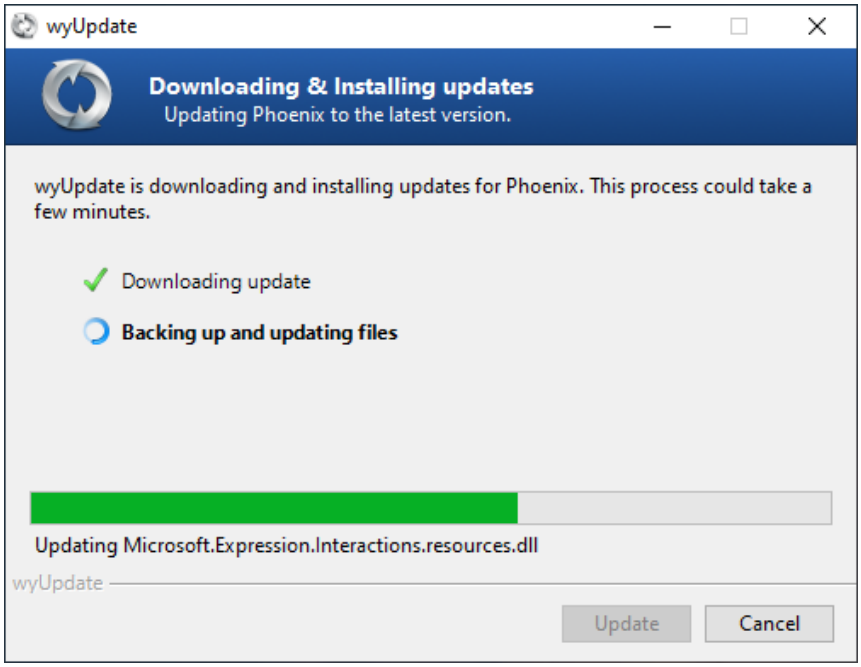
Pressing the Begin Update will start the update process.

The first thing the system will do is create a backup of the system, just in case.

The system will then start downloading the update. Most updates are small and will download quickly.

SmartDR Premier Updates are compressed to save on space and download times. When the update has finished downloading it will start extracting the update. When the update is finished extracting it will automatically begin installation of the update.

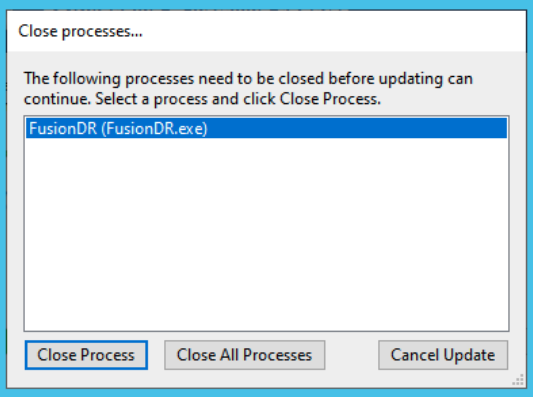
SmartDR Premier will automatically close and the update window will show.



When the update is complete SmartDR Premier will automatically restart.

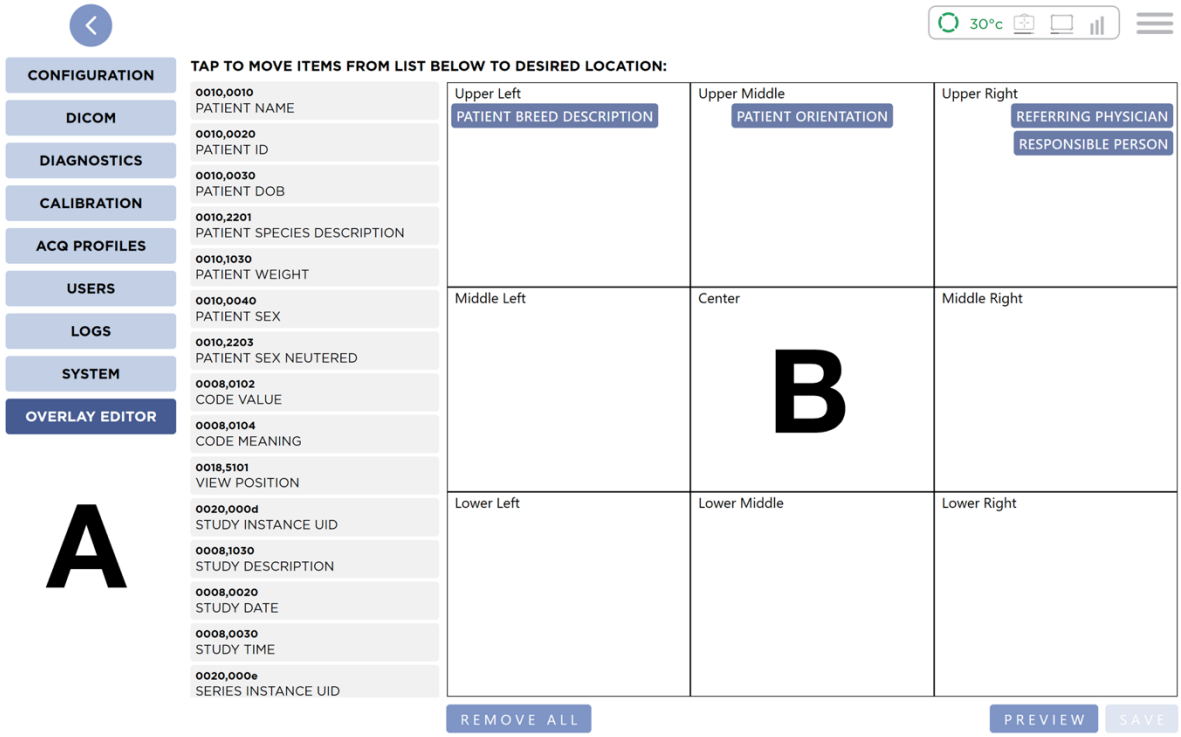
INFO

You may see a window telling you that the `FusionDR (FusionDR.exe)` process in running and needs to be closed before the updating can continue. This is just SmartDR Premier shutting down.



You do **not** need to press the Close Process button to force SmartDR Premier to close. The window will close automatically when SmartDR Premier has finished closing.

Overlay Editor

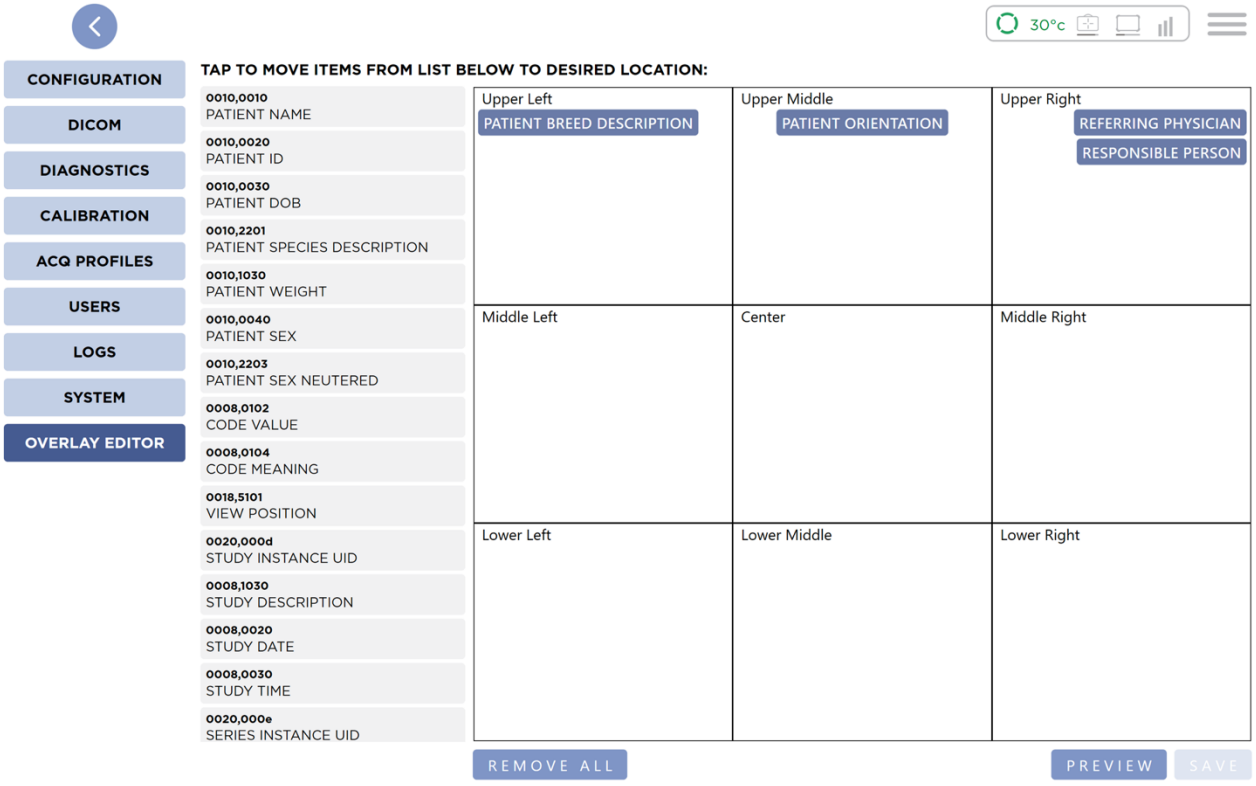


A. Overlay data elements
B. Overlay grid

This is the Overlay Editor. Here you can layout the DICOM Tags you would like displayed in the image overlay. When you are finished editing the Overlays, press the Save button to save your changes.

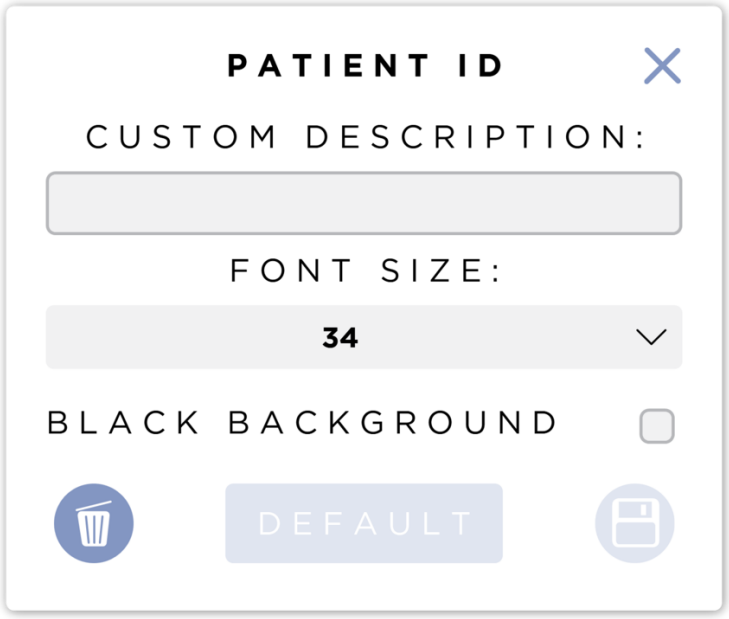
Adding Tags

Tap one of the tags from the list on the left side. Tap on the Section you would like the tag to be displayed in.

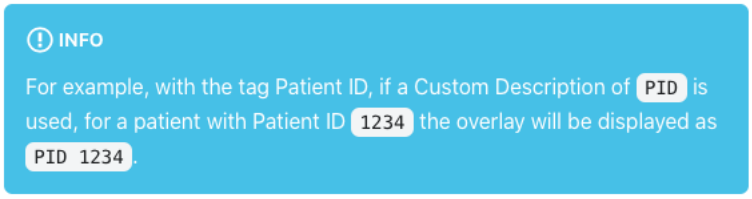


Tag Display Properties

After you have added a tag to the grid, you are able to change its display properties. To edit how a tag is displayed, right click or long press the tag. This will show the Overlay Item Edit form.



From here you can add a Custom Description to the overlay. This will prepend the Tag value.



Font size can be adjusted as well by selecting a font size from the dropdown.

All overlays are displayed in white text. This may cause a problem if the image contains mostly anatomy in the area where you wish to see the overlay. When the Black Background checkbox is checked, the overlay will have a black background making it much easier to read.

To reset the display of the overlay to the default settings, press the Default button.

To discard your changes and dismiss the form press the **X** button in the top right corner.

You can delete the overlay by pressing the Delete button. This will close the form and remove the tag from the grid.

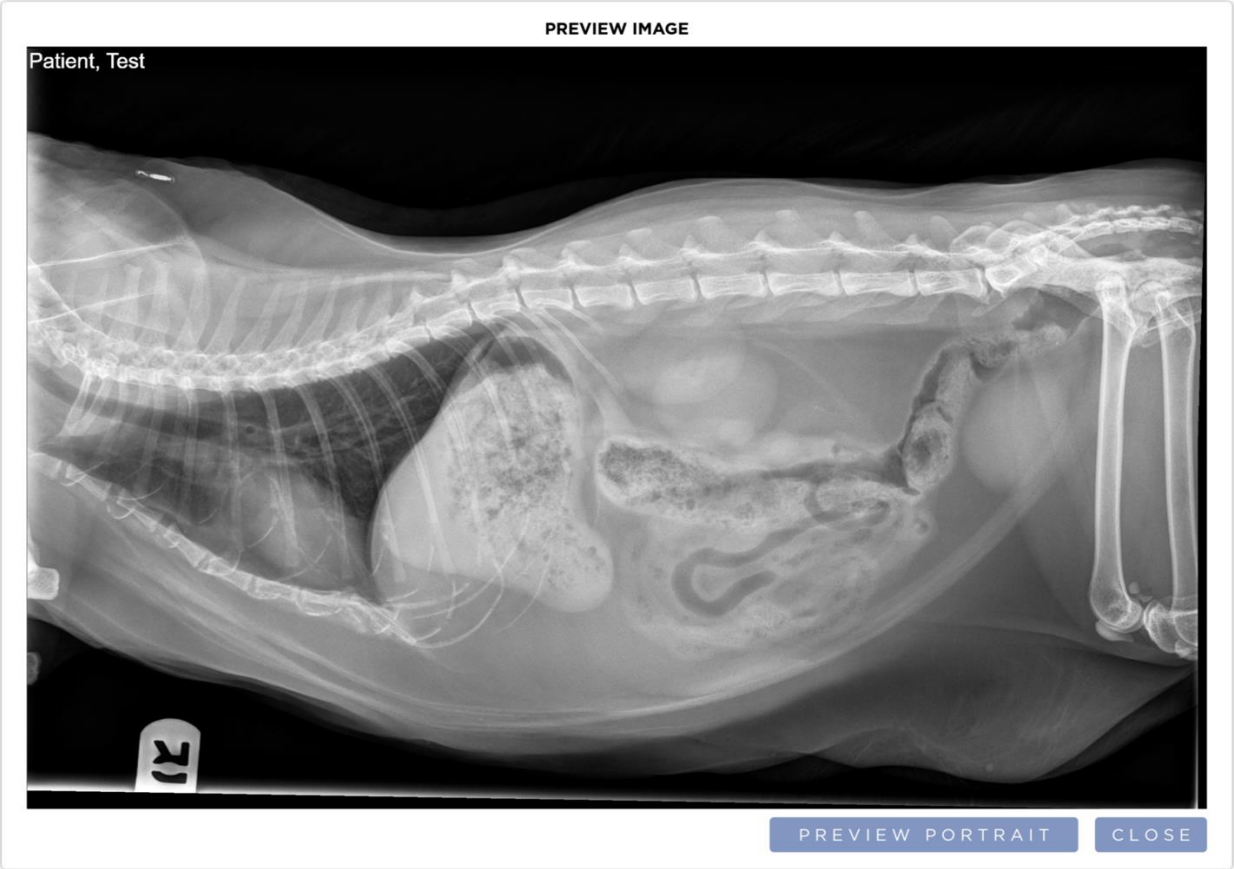
To accept the changes you have made to the overlay press the Save button.

> **NOTE**
>
> The save button will only be active if changes have been made to the tag.

Removing Tags

Tags can be deleted individually with the Overlay Item Edit Form. However, if you have many tags applied, you may wish to remove all of them to start with a clean slate. Press the Remove All button to do this.

Preview



To see a preview of how the overlays will look on the final image, press the Preview button. This will display the Preview Image popup. The image will have the overlay applied to it. By default the image is one best suited for landscape. Press the Preview Portrait to see an image in that orientation. To close the preview popup, press the Close button.

TIP

If the Default Species option is set to **Equine**, equine specific images are used for the previews.

DICOM Tag Editor

You are able to customize the look of your image overlays, using the DICOM Tag Editor. To open the
DICOM Tag Editor, simply tap a DICOM Tag description in the Overlay Editor's 3x3

display grid. The tag editor has a top and a bottom section.

The top section offers you a few controls which affect the selected tag's display. You can add a custom description, which is shown in the overlays in front of the tag. The opacity of the tag can be modified to allow you to see the image behind the tag. You can also apply a black background to enhance the view of the tag.

The bottom section allows you to customize the tag's font. In the font family section, the user can select from a wide range of fonts. The Style-Weight section allows you to determine if you want the font to be regular, bold, italic, etc. In the Size section you can determine how large or small you want to make the font size and in the final section you can select from various font colors.

Once you have selected the desired options, simply tap the Save control to lock in the changes. To close the Tag Editor without saving any changes, tap the Cancel button and to remove the tag from grid and return it to the list, tap the Delete control.

Menu

The Menu Button is in the top right of the screen. When pressed, it expands to reveal several options.

To dismiss the menu, press the **X** button or press outside the menu.

Help

This option will open the Help Options.

Icon Help

This will display an overview of the currently displayed icons on the screen and label them with their functions.

Training

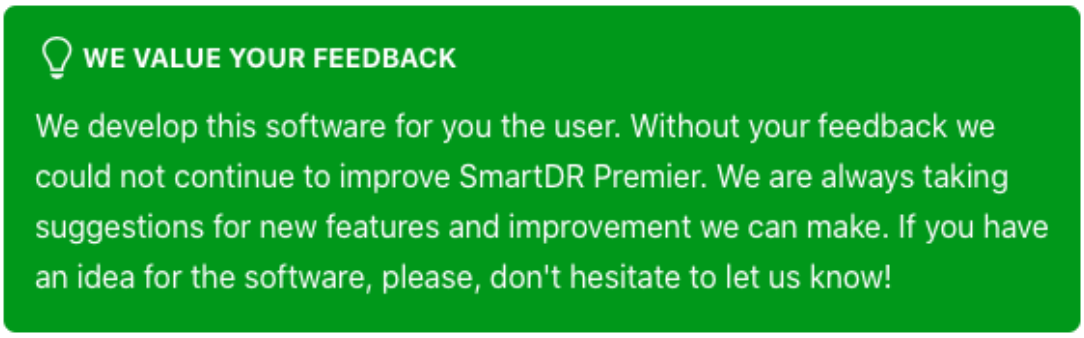
This will open a browser and take you to this website.

Support Portal

This will open a browser and take you to the Sound Experience Support Portal.

Suggest a Feature

This will open a browser and take you to Sound's UserVoice where you can suggest a feature for SmartDR Fusion and see features other users have suggested.



Log Out

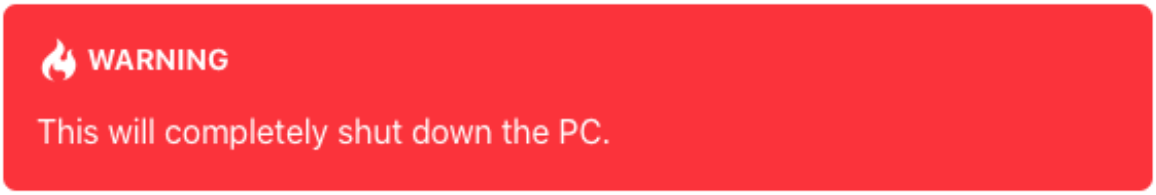
This will log you out of the software and take you back to the Login Screen.

You will be prompted if you are sure you want to log out. Press the OK button to continue logging out. Press the Cancel button to stay logged into the system.

Shutdown

This will shutdown the system.

You will be prompted if you are sure you want to shutdown. Press the OK button to continue shutting down. Press the Cancel button to stop the shutdown.



Watermark

SmartDR Premier includes a Watermark system to help manage available disk space. This can be configured from the settings screen under Advanced Options.

The Watermark system will check to see if it needs to run free up space when the software is closed.

When the Watermark system runs, it will do some pre-cleanup first and then check to see if it still needs to free up more space.

- Remove Orphaned Studies This will remove stored images for studies that the system does not have a record of in the database.
- Remove Orphaned Backups Any backup in the default backup location that do not exist in the database will be deleted.
- Clean up Backups Any backup older than 90 days will be deleted.
- Remove Soft Deleted Items When patients and studies are deleted, they are marked as soft deleted in the database. The Watermark will remove all the stored images for soft deleted studies.

Once the pre-cleanup has run, it will then check again if it still is over the high watermark. If it is, it will begin deleting studies. It will start with the oldest studies and work its way up to newer ones. After each study is deleted, the watermark will check to see if it is below the Low Watermark setting. Once the disk usage is below the Low Watermark Setting, the Watermark will stop.

Notification

Every 30 minutes the Watermark system will check the remaining disk space and check it against the High Watermark setting. If disk usage is within 5% of the high watermark setting, a notification will appear in the notification bar. The notification will say:

> The system is running low on disk space. Please delete some patients.

Automatic Backup

The software automatically creates a backup of the Database each time the software is shut down. The backups are stored in the **C:/users/public/documents** folder. The system keeps track of all backups. A list of backups can be viewed in the Settings Screen.

In addition, the software will also check the latest backup on start up. If the system has not had a backup in the last 24 hours, it will perform a backup.

Chapter

7

Troubleshooting

Figure 26: Panel error codes

Error Code	Error	Error Level	Description	Operation
2(0x02)	Sensor serial number error	Fatal Error (unrecoverable)	A dirty value is set or a value is not set to the sensor serial no.	Transit to initialization error state.
3(0x03)	MAC address error	Fatal Error (unrecoverable)	A dirty value is set to the MAC address.	Set the default value, and transit to initialization error state.
			Cannot get the MAC address from WLAN module.	Notice with ErrorInfoSet, and transit to fatal error state.
4(0x04)	WLAN module connection error	Fatal Error (unrecoverable)	A WLAN module is not connected. Or Cannot communicate with a WLAN module.	Transit to fatal error state.
10(0x0a)	Temperature error	Warning	The internal temperature became the outside of the range that imaging is forgiven.	Notice with SensorTempSet, and transit to sleep state.
12(0x0c)	FPD drive error	Fatal Error (unrecoverable)	FPD is not driven correctly.	Notice with ErrorInfoSet, and transit to fatal error state.
14(0x0e)	Ready timeout	Warning	The predetermined time passed by no operation in a Sensor Ready State.	Logging, and transit to sleep state.ErrorInfoSet does not transmit.
15(0x0f)	Power supply error	Fatal Error (unrecoverable)	The abnormality of the power supply.	Notice with ErrorInfoSet, and transit to fatal error state.
16(0x10)	RO IC configuration error	Fatal Error (unrecoverable)	Cannot set the Read Out IC normally. (Verify error, etc.)	Notice with ErrorInfoSet, and transit to fatal error state.
21(0x15)	XIF communication error	Error (recoverable)	A TCP communication error with XIF. Connection with XIF is not established.	Notice with ErrorInfoSet, and transit to error state.
23(0x17)	Image transfer error	Error (recoverable)	Cannot transmit an image within the predetermined time.	The communication socket keeps on having opened, and transit to error state.
24(0x18)	XIF protocol error	Fatal Error (unrecoverable)	There is not the compatibility of the protocol version of FPD and XIF.	Transit to fatal error state.
25(0x19)	Backup ready transition error	Fatal Error (unrecoverable)	Received a command of the transition to the state that the imaging was possible when the backup code is running.	Transit to fatal error state.

29(0x1d)	Battery charge error	Warning	Error on battery charging.	Notice with ErrorInfoSet, and the other operation continues.
30(0x1e)	FLASH write error	Warning	Error on FLASH ROM write access.	Notice with ErrorInfoSet, and the other operation continues.
31(0x1f)	FLASH erase error	Warning	Error on FLASH ROM erase access.	Notice with ErrorInfoSet, and the other operation continues.
32(0x20)	I2C error	Warning	Error on I2C access.	Notice with ErrorInfoSet, and the other operation continues.
33(0x21)	DDR access error	Fatal Error (unrecoverable)	DDR access failure that occurred in diagnosis test.	Notice with ErrorInfoSet, and transit to fatal error state.
38(0x26)	X-ray detection before detector ready	Error (recoverable)	X-ray was detected before FPD performed scan preparation completion. The image quality may be bad.	Notice with ErrorInfoSet, and transit to error state.
46(0x2E)	Notice of the SD memory life time (Warning)	Warning	SD memory is close to a life time because erase number of times or number of the bad sector are almost an upper bound.	Notice with ErrorInfoSet, and the other operation continues.
47(0x2F)	Notice of the SD memory life time (Error)	Fatal Error (unrecoverable)	SD memory reaches to a end of life because erase number of times or number of the bad sector are beyond an upper bound.	Notice with ErrorInfoSet, and transit to fatal error state.
48(0x30)	SD memory access error	Fatal Error (unrecoverable)	SD memory is not connected, or the error occurred when writing or reading, erasing.	Notice with ErrorInfoSet, and transit to fatal error state.
49(0x31)	Communication error with the docking station	Error (recoverable)	Communication with the docing station failed.	Notice with ErrorInfoSet, and the other operation continues.
50(0x32)	link error(Tetherd)	Error (recoverable)	Link speed of tethered communication changes to 10BASE-T.	Notice with ErrorInfoSet, and transit to error state.
99(0x63)	memory full (error)	Error (recoverable)	A imaging was going to be carried out with the number of non-transfer images reaching an upper bound	Notice with ErrorInfoSet, and transit to error state.

Chapter

8

Patients

Contents

Main Patient Screen

This is the first screen you will see when the application is launched. From this screen you can add new patients, create emergency patients and search for existing patients. Search results are displayed in the main body of the screen in vertically stacked tiles, as seen in the image above, which offer various functions that can be applied at both the patient and study levels.

In addition to these primary functions, you can load the Reporting screen, the Management screen or the Help files. Additionally, you can initiate batch send exports using the controls in the upper right corner of the screen.

Create a New Patient

To create a new patient, simply tap the Add Patient icon, which looks like an encircled plus sign in the upper left corner of the screen, to open the Add Patient form.

Fill in all of the required fields (shown with a red border) and any other fields as desired, The Species field automatically displays the default value set on the Management screen. You can update this field if needed. The units assigned to the Weight field, KGs or LBs, is also set on the Management screen.
If enabled on the Management screen, you can enter an accession number. Once you have completed the form, click the Next arrow in the lower right corner of the screen; this will open the Shot List screen where you will select the anatomies and views to be acquired for the study.

Create an Emergency Patient

To create an emergency patient, simply tap the Emergency Patient icon (which looks like a Caduceus or Rod of Hermes - commonly seen on paramedic badges and ambulances) in the upper left corner of the screen.

Ensure that the Species field is correct as it will auto-populate with the default species that is configured in the management screen. Fill in the Weight and tap the Save button control. This will open the Shot List screen where the user will select the anatomies and views to be acquired for the study.

Create a Patient from an MWL Study Request

Creating a patient and study from a Modality Worklist Server request can be accomplished right on the **Main Patient Screen**.

To get started, simply select the desired search options and then tap the MWL Search Icon in the search field.

This will display all of the MWL requests on the server which meet the selected search criteria. The system will create patient record from the list of MWL requests. If you import a patient that contains the same patient record that contains the same patient information as another record already in the system, Sound "Smart DR Fusion" will add the requested study to the existing patient rather than create a new patient record. If any patient information differs, the system creates a new record.

Edit Patient Information

You can edit patient information while remaining in the Shot List screen using the Edit Patient Information control, found above the Study Description in the upper right corner of the screen.

Tapping the Edit Patient Information control (which looks like a pencil) opens the Edit Patient Information form, which is basically the same as the Add Patient form which is accessed from the Main Patient Screen. The form opens on top of and partially covers the Shot List screen. Once open, simply make changes to the desired fields and then tap the Save icon in the lower right corner of the form. If enabled on the Management screen, this form also includes a field for accession number. This will close the form revealing all of the Shot List screen again.

Create a New Study

On entering the Shot List screen, you will need to select an anatomical region from the Select Region list, which will populate the Select Anatomy list with options specific to that anatomical region.

You will then select the desired anatomy from the Select Anatomy list, which will populate the Select Shots list with shots specific to the chosen anatomy. The selected shots will be displayed in the shot-list on the right side of the screen.

You can enter a study description or allow the application to provide a default value for that DICOM Tag.

You can add Slang Terms to the clinical names for any shot. These slang terms will only display in the SMART DR Fusion user interface. They are never inserted into DICOM Tags.

There are two locations where you can enter slang terms, one in the Management screen and the other in the Shot List screen. To enter a slang term, simply tap and hold the tile. Then, type the name in the field that appears.

To begin acquiring images, simply tap the right arrow in the lower right corner of the screen and the Acquire screen is displayed.

Add a Study to an Existing Patient

Add a Study to an Existing Patient To add a new study to an existing patient, simply tap the patient tile for the desired patient and then tap the New Study control found in the upper left corner of the patient tile.

The next action depends on the configuration. If configured, tapping the new study control opens an Add Study Information form, where you will enter a Study Description, weight value and sex. If configured on the Management screen, this form also includes a field for accession number. Tapping the Save control will take you to the Shot Selection screen where you can select individual shots and shot protocols, make study description changes, edit patient information, and initiate image acquisition.

The system can also be configured to skip the Add Study Information form. In this case, tapping the New Study control adds a study populated with the same values as the last study added to the patient tile. Tap the Shot list control to open the Shot Selection screen and make changes as needed. If no previous study exists, the Add Study Information form displays.

Patient Tile Controls

Patient Level Export Control - You can export one or more studies for any patient directly from that Patient Tile. To export a single study, simply tap the study tile, which will highlight the study to show that it has been selected, and then tap the export control in the upper right corner of the Patient Tile. This will open the Export form, where you can select between Local or Network export options, which are covered in the Export Studies and Images section of these Help Files.

Delete Patient - You can delete the patient and its studies by tapping the Delete icon in the Patient Tile.

Study Tiles - Each study that exists under a patient is represented by a Study Tile in the expanded Patient Tile. Each of the Study Tiles consists of the Study Description, Study Date, Send Status and five controls, which are covered in the next section, Study Tile Controls.

Study Tiles - To edit patient information, simply tap the Edit Patient icon, which looks like a pencil, in the upper right corner of the Patient Tile.

Study Tile Controls

Resume Study Control - To resume a study that has been closed, simply tap the Resume Study control, found in the lower left corner of the Study Tile.

Move Study Control - To move a study to a selected patient or owner, tap the Move Study control, found on the study tile to the right of the Resume Study control. In the selection window, search for a patient record to which you wish to add this study. Search options include: patient, owner, and patient ID. Click the Search icon. In the list of studies that display, tap the desired record. The study moves to the selected record and no longer appears on the previous record.

Add Shots Control - To add shots to a study simply tap the Add Shots control, found on the study tile to the right of the Move Study control. This will take you to the Shot List screen, where you can add individual shots or protocols to the study.

AIS (Antech Imaging Services) Control - To submit a consult to AIS for this study, simply tap the AIS control. This will initiate a DICOM send of the images to the configured AIS DICOM device, while launching a browser and taking you to the AIS Consultation Submission page.

Note: This control will appear inactive if there is no AIS device configured or if the selected study has no images.

Delete Study Control - To delete any study, simply tap the Delete icon on that Study Tile.

Patient Search — Local

You can search for existing patients in the local database from the Main Patient screen. This is accomplished using the search field in the top center of the Main Patient screen.

First select the search options that fit the search criteria which will be entered in the search field. You can search by Patient, Owner, Vet, Tech, Study, Patient ID either alone or in combination.

Next select a range of dates within which to search; 1 Day, 2 Days, 1 Week, 2 Weeks, 1 month or the entire data base can be searched by selecting All.

Once all of the options have been selected tap the Local Search icon (a magnifying glass in front of a monitor) located on the right side of the search field.

The results of the search will be displayed in horizontal Patient Tiles beneath the search field and criteria.

Patient Search — MWL

You can search the Modality Worklist Server Study Requests from the Main Patient Screen. This is accomplished using the search field in the top center of the Main Patient Screen.

First, select the search options that fit the search criteria which will be entered in the search field. You can search by Patient, Owner, Vet, Tech, Study, and Patient ID, either alone or in combination.

Next, select a range of dates within which to search; 1 Day, 2 Days, 1 Week, 2 Weeks, 1 Months or the entire data base can be searched by selecting All.

Once all of the options have been selected, tap the MWL Search Icon (which looks like a magnifying glass in front of a clipboard) located on the right side of the search field.

All study requests which fit the search criteria will be displayed in horizontal Study Request Tile

Chapter

9

Image Acquire/Review Screen

Contents

This is the Acquire/Review screen, where you will acquire, view and edit images. A number of image manipulation tools are available for editing the images and the screen has a number of additional controls which provide various functions and feedback information.

The main body of the screen is devoted to viewing images and appears as a large black area to either the right or left of the control column, depending on the configuration of the system. The control column itself is made up of several subsections which we will go over now.

Running from the top to the bottom of the screen, on the image viewing side of the control column, are the Image Manipulation tools. The individual functions are covered in the Edit Images section of the Acquire & Review Screen help files.

At the top of the inside portion of the column are the Plate Connectivity and Plate Temperature controls.

Directly beneath these controls is the Patient Information subsection, containing information specific to that patient, a link to the help files and an Edit Patient Information control like the one in the Shot List Screen. Beneath this section are the Vet and Tech fields followed by the shot-list.

At the bottom of the column are the Pause Study, Email Study, Emergency Send, and Close Study controls.

Acquire an Image

Selecting Vet & Tech - You can select both the vet and tech that will be working on the study from the two dropdown fields located above the shot-list. If you have selected a default vet or tech in your user profile, it will already be displayed in the field when you enter the Acquire screen, although the value can be changed as desired. In addition, if you have a long list of doctors or technicians, you will be able to scroll through the list with a simple flick of your finger.

Position Guide - To assist you in determining the proper positioning for your patient, based on the selected shot, we have included a Position Guide image with the most common views.

To access the Position Guide image for a shot, tap the small icon to the left of the view name on the shot-list. The shot tile will expand to reveal an image of an animal oriented in the proper position for the shot, with a highlighted target reticle centered on the correct anatomical area (as seen in the image below).

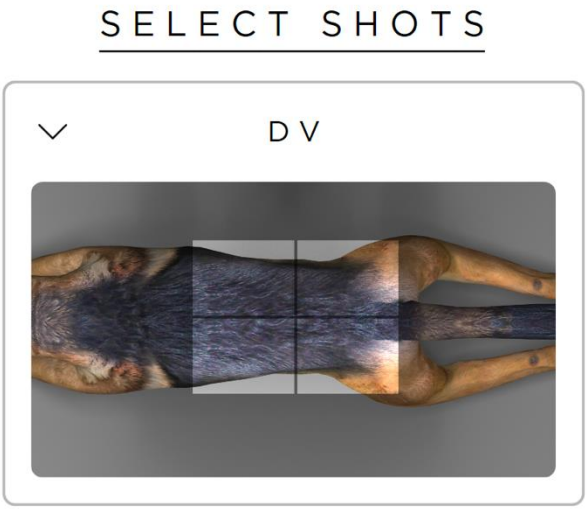


Plate Connection Icon - On entering the Acquisition/Review screen, the first shot in the shot-list will be highlighted for acquisition. In systems configured for dual panel operation, select the Plate in the upper right corner of the screen verify that the Plate Connectivity Status icon has a green circle, which indicates the plate is connected and ready for use. If the plate connection icon has a red circle it means that the plate is not connected.

Panel Connected

Panel Disconnected

Tap the Status Bar. The window will display the following information:

Panel Connection Status

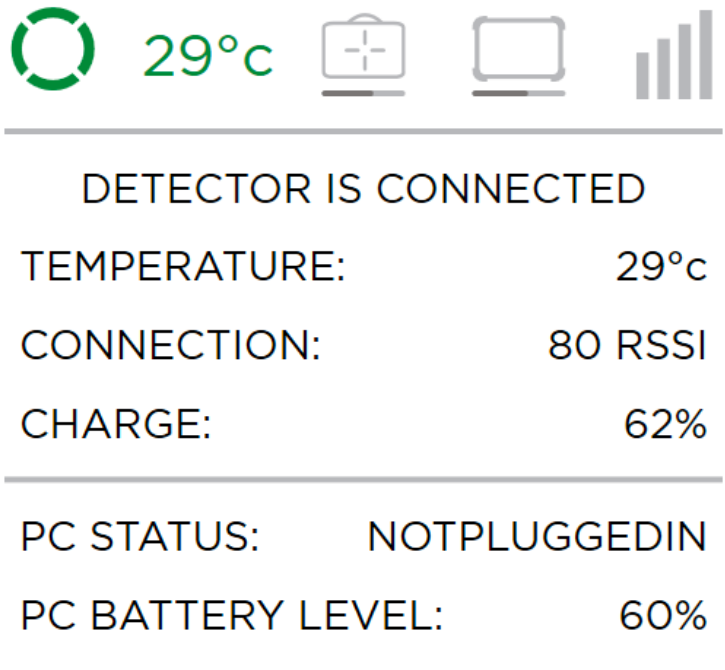
Note: Panel Connection Status indicator pulses when the panel is sleeping

Panel Temperature 29°c

Panel Battery Percentage

Tablet Battery Percentage

WiFi Connection Status



Tap Close to close the window.

Following the acquisition, the panel connection icon will remain green to indicate the plate is ready for the next acquisition. If configured on the Management screen, the system will beep when it is ready to acquire an image. You can set the number of beeps from none to five.

Reject an Image

You have the ability to reject an acquired image. This is accomplished by highlighting the shot for the image to be rejected and tapping the "X" next to the Add Shots icon.

This will place a large red "X" over the rejected image and add another instance of the same shot to the shot-list, placing it next in the order of acquisition (as seen in the images below).

A rejected image may be recalled by tapping the check mark next to the Add Shots icon. This check mark is only displayed if you have selected a rejected shot.

Edit an Image

The user is provided with a variety of tools to edit and manipulate the image once it has been acquired.

Primary Tools — There are three primary tools which are active by default. They are available once an image is displayed in the viewing pane.

1. **Window Level**
2. **Zoom**
3. **Pan**

Display Tools — Available to change the display

1. **Overlays**

Manipulation Tools — There are a number of tools available to modify the image.

1. **Region of Interest**
2. **Invert**
3. **Crop**
4. **Rotate 90 Degrees Left**
5. **Rotate 90 Degrees Right**
6. **Flip**
7. **Reverse**

Annotation & Measurement Tools - Click the Annotation Tools icon to display the annotation toolbar. This toolbar provides access to annotation and measurement tools.

Revert — The **Revert** tool allows you to return the displayed image to its original state, prior to any modifications you have made to the image.

You can apply the **Revert** tool to selected images in Two-Up mode.

Full Screen - The Full Screen tool allows you to use most of the screen to view images.

Note: This function will not undo changes that have been saved by leaving the screen.

Full Screen Mode

We have added a function which allows you to view images using almost all of the available screen area.

To view images in Full Screen mode, simply tap the Full Screen icon which is located after the Marker Tools in the Image Manipulation Toolbar. This will slide the toolbar to the edge of the screen, hiding the Shot List Column and its various controls, leaving only the Image Manipulation Toolbar and the image itself visible.

MusicaVET Tuning Bench

We have added a tool which allows you to adjust the processing of specific shots to suit your personal preferences regarding the "Taste" properties of the MusicaVET processing algorithms.

To use the MusicaVET Tuning Bench simply tap its icon, which is found above the Shot List, and the MusicaVET Tuning Bench controls will slide down revealing sliders for each "Taste" property. These "Taste" properties, Sharpness, Control and Brightness, are adjusted to higher or lower levels by moving the slider control for each property towards either the "plus" or "minus" sign for that control. Refer to Image Tuning on page 110.

Crop Function

The Crop function allows you to trim away extraneous image elements from the actively displayed image.

To select this function tap the Crop icon in the Image Manipulation Toolbar. To apply the crop to the active image, simply touch and drag your finger across the screen over the area of the image that you wish to isolate, lifting your finger to initiate the crop.
This function offers a configurable option, which allows you to choose between retaining the original size of the cropped area of the image or enlarging it to fill the display area of the Acquire view screen.

Annotations, Markers, and Measurement Tools

We have added several annotation tools to Smart DR® Fusion, allowing you to perform markups on your images without leaving the application.

To access the annotation controls, simply tap the Annotation icon, found near the bottom of the Image Manipulation Toolbar. This will place the system into Annotation Mode, which interrupts the
auto-sense process wherein the system continually scans the panel for radiation, while displaying the annotation controls over the standard Image Manipulation Toolbar.

To select a particular annotation, simply tap the correlating icon. To apply the annotation to an image, touch and drag your finger across the area of the image to which you want to apply the annotation, lifting your finger from the screen when you are done.

Tools available on the Annotation toolbar include:

1. Clear all annotations
2. Free text
3. Left marker
4. Right marker
5. Pointer arrow
6. Line Calibration tool
7. Line measurement
8. Angle tool
9. Cobb angle **10.**

Close

See the following paragraphs for a description of each tool.

1. Clear all annotations - Remove all annotations on the image.
2. Free text — This tool will allow you to place text notations anywhere on the image. To add a Free text annotation, tap the icon. The words New Text appear on the image. You can drag the text and drop it anywhere on the image. To edit the text, hold your finger on the text for about a second. The Modify Free Text Annotation form displays. Use this form to modify the text and change the size of the font. Tap Save to apply yourchanges.
3. Left marker - Place the left marker on the image to indicate the left patient orientation.
4. Right marker - Place the right marker on the image to indicate the right patient orientation.
5. Pointer arrow — To add a pointer arrow to the image, tap the arrow icon. The arrow displays on the image. To move it, touch the center of the arrow and drag it. Touch and hold the either end of the arrow to resize or re-orient the arrow.
6. Calibration tool — The Calibration button allows you to calibrate line measurements for that image to a known length. To use the tool, tap the button and draw a line on the screen. You can move or change this line by moving it or one of its endpoints.
    - Each image accepts only one calibration.
    - The calibration line remains on screen after calibration is complete.
    - Initially the line length displays in pixels. Right-click or press and hold anywhere on the line to display a pop-up you can use to enter the number of centimeters or millimeters the line represents. The units that display is selected in Settingsmode.
    - The line retains its calibration value despite changes to its length or position.

7. Line measurement tool — Using this tool you will be able to draw a line to measure portions of the displayed image in CM. You can resize the line by dragging either

endpoint of the line to another location on the image. You can also move the line by dragging it from between the endpoints.

- If you draw a line before adding a calibration line, the system displays a warning and the length using the detector pixel size and the number of detector pixels and the units selected in Service Mode configuration.
- If you modify the calibration line, other lines on the image adjust to reflect the change.
- Deleting a calibration line deletes the other lines on the image.

8. Angle tool — This tool allows you to draw angles on the image. To use the control, tap the button and draw the angle on the screen. Once you draw both legs of the angle, a label displays indicating the angle between the legs. You can drag the entire angle by a line or drag the endpoints to modify the measurement.
9. Cobb angle tool— This tool allows you to draw two lines on the image and display the angle between the two lines or line extensions.
10. Close - Close the annotation tool bar.

In addition, the following markers and tools are also available.

Automatic Orientation Marker— You can configure your system to place a small orientation marker in the upper left corner of your images on acquisition. To enable this feature, go to the Management screen, select the Intermediate Options tab, set the Apply Orientation Marker field to True, and tap Save.

MusicaVET Tuning Bench

We have added a tool which allows you to adjust the processing of specific shots to suit your personal preferences regarding the "Taste" properties of the MusicaVET processing algorithms. To use the MusicaVET Tuning Bench simply tap its icon, which is found above the Shot List, and the MusicaVET Tuning Bench controls will slide down revealing sliders for each "Taste" property. These "Taste" properties, Sharpness, Control and Brightness, are adjusted to higher or lower levels by moving the slider control for each property toward the higher or lower value. You can also use the << or >> on each side of the property to increase or decrease the value. The current numeric value for the property appears in the center.

Position Guide

To ensure that technicians are getting the image they want the first time, we have included a Position Guide. To view the proper animal placement position for a particular shot, the user simply taps the arrow found on the left side of each of the shot tiles. This will expand the tile, revealing the Position Guide image with the collimator light illuminating the appropriate viewing area. Tapping the arrow a second time will collapse the tile, hiding the image again.

The shot tile Position Guide can be accessed via the shot tile wherever it is found; in the Select Shots column and shot-list in the Shot List Screen as well as the shot-list in the Acquire Screen.

Orientation Tool

There may be times when you will prefer an orientation that differs from the default orientation in Smart DR® Fusion. To address this possibility we have provided an Orientation Tool which allows you to save changes you have made to the orientation of a shot and apply those changes as the default orientation for that shot in future acquisitions.

To save orientation changes, orient the image as you wish to see it displayed and tap the Orientation Tool icon, found above the Shot List. This will display the Orientation Tool form; to save the new.

orientation tap the Save Changes button. Tapping the Cancel button will close the form without saving the current orientation as the new default.

Shot List Screen

This is the Shot List screen, which can be displayed from a number of locations; Creating a New Patient, Resuming a Study with no images and Adding Shots to an Existing Study. To help streamline your workflow, the Shot List screen automatically scrolls as you add shots to the list in the Shot Selection screen and as you acquire images in the Acquire/Review screen.

The primary purpose of this screen is to assemble the shot-list for the currently selected study. This is done by selecting a region, an anatomy and shots for that anatomy. As the shots are selected they are displayed in a list on the right side of the screen. Shots can be

deleted from the shot-list at any time using the Delete control located near the top of the shot list.

You can also add your own slang terms to the clinical names for any shot. These slang terms only display in the Sound SMART DR®Premier user interface. They are never inserted into DICOM tags. To enter a name, tap and hold the tile, then type the name in the field that appears.

You can create protocols on this screen. Simply tap the Save control found at the top of the shot-list. This will prompt the user to provide a protocol name and click Save, at which time a protocol tile will be added to the horizontally stacked Protocols list in the upper left corner of the screen. Tapping this protocol tile will add those shots to the shot-list of any current study.

Additionally, you can apply a user-defined study description, edit patient information, launch help files specific to this screen, and view Position Guide images for most common shots.

Add Shots to the Study

You can add shots to the study from the Acquire screen.

Tapping the Add Shots icon located on top of the shot-list will slide out the Shot List screen's selection columns, allowing you to select additional shots from any region and anatomy or from any existing protocols. To help streamline your workflow, the Shot List screen automatically scrolls as you add shots to the list in the Shot Selection screen and as you acquire images in the Acquire/Review screen.

Once you have selected additional shots, tapping the right arrow icon in the lower right corner of the screen will close the shot selection columns, revealing the image display screen and image manipulation controls.

Note: If you have elected to place the shot column on the left side of the screen the arrow will face left rather than right.

Pause a Study

We have provided an additional control in the Acquire Review screen, which allows you to Pause, rather than End your study.

This control enables you to leave the Acquire Review screen without ending the study and triggering the auto route function. When you return to the Acquire Review screen and finish capturing images for the study, you can then use the familiar “End Study” control to exit the screen and initiate the auto- route process at that time.

Create a Protocol

In the Shot List screen you can create shot list protocols, which are used to quickly add groups of shots to any study.

To create a protocol, first select the Region and Anatomy with the shots that are to be added to the protocol. To add shots to the shot-list, simply tap each of the shots you want to add. You can change the order of the shots by dragging a shot tile up or down to the desired location in the list. The other shots will spread out, illustrating the position in which the shot will be placed when you release the shot tile.

Once all of the shots are in the list and ordered as desired, tap the Save icon located near the top of the shot-list. This will open a dialog box wherein you will be prompted to provide a name for the protocol. Once the name is entered in the field, tap the Save icon to create the protocol. A new protocol tile with the provided name will be added to the Protocols list in the upper left corner of the screen.

To add the shots in this protocol to a study, simply tap the protocol tile and the shots will be added to the shot-list in the order they were saved.

Small Animal Technique Chart

The following small animal technique chart provide recommended values for use with the x-ray system.

SmartDR Premier Technique Guideline sound		
Weight (lbs)	Extremity/Skull	Other
1 - 20 lbs	65 kVp / 4.0 mAs	65 kVp / 4.0 mAs
21 - 45 lbs	65 kVp / 4.0 mAs	65 kVp / 4.0 mAs
46 - 80 lbs	65 kVp / 4.0 mAs	80 kVp / 5.0 mAs
81 - 100 lbs	65 kvp / 4.0 mAs	90 kvp / 6.0 mAs
100+ lbs	90 kvp / 6.0 mAs	100 kvp / 6.5 mAs

Equine Technique Chart

The following equine technique charts provide recommended values for use with the x-ray system.

SmartDR Premier Technique Guideline					
Study	View	SID	kVp	mAs	Time
Navicular					
	65 Degree Navicular	24	80	1	0.05
	65 Degree P - 3	24	80	1	0.05
	DP	24	80	1	0.05
	Lateral	24	80	1	0.05
	Skyline	24	80	1	0.05
	Navicular Obliques	24	80	1	0.05
	65 P - 3 Obliques	24	80	1	0.05
P-3					
	Lateral	24	80	1	0.05
	65 Degree P - 3	24	80	1	0.05
	65 Degree Obiques	24	80	1	0.05
Pastern					
	DP	24	80	1	0.05
	Lateral	24	80	1	0.05
	Medial Oblique	24	80	1	0.05
	Lateral Oblique	24	80	1	0.05
Fetlock					
	DP	24	80	1	0.05
	Medial Oblique	24	80	1	0.05
	Lateral	24	80	1	0.05
	Lateral Oblique	24	80	1	0.05
	Flexed Lateral	24	80	1	0.05
	Special Palmar	24	80	1	0.05
Metacarpus/Metatarsus					
	DP	24	80	1	0.05
	Lateral	24	80	1	0.05
	Medial Oblique	24	80	1	0.05
	Lateral Oblique	24	80	1	0.05
Carpus					
	DP	24	80	1	0.05
	Medial Oblique	24	80	1	0.05
	Lateral	24	80	1	0.05
	Lateral Oblique	24	80	1	0.05
	Flexed Lateral	24	80	1	0.05
	Distal Rad. Sky	24	80	1	0.05
	Distal Row Sky	24	80	1	0.05
	Prox. Row Sky	24	80	1	0.05

Study	View	SID	kVp	mAs	Time
Tarsus					
	DP	24	80	1	0.05
	Medial Oblique	24	80	1	0.05
	Lateral	24	80	1	0.05
	Lateral Oblique	24	80	1	0.05
	Flexed DP	24	80	1	0.05
	Calcaneal Skyline	24	80	1	0.05
Skull (TMJ & Bullae)					
	DV	24	84	1.6	0.08
	Lateral	24	84	1.6	0.08
	Right Oblique	24	84	1.6	0.08
	Left Oblique	24	84	1.6	0.08
Sinus/Dental					
	DV	24	84	1.6	0.08
	Lateral	24	84	1.6	0.08
	Right Oblique	24	84	1.6	0.08
	Left Oblique	24	84	1.6	0.08
Cervical Spine					
	Cranial (Lateral)	24	80	3.92	0.28
	Middle (Lateral)	24	86	3.92	0.28
	Caudal (Lateral)	24	90	3.92	0.28
Pharnyx	Lateral	24	80	3.92	0.28
Shoulder	Lateral	24	80	4.88	0.34
Elbow					
	Cran -> Caud	24	80	3.92	0.28
	Medio - Lateral	24	80	3.92	0.28
Radius					
	Cran -> Caud	24	80	2.96	0.19
	Lateral	24	80	2.96	0.19
	Obliques	24	80	2.96	0.19
Stifle					
	Caud -> Cran	24	90	4.16	0.3
	Lateral	24	80	2.96	0.19
	Lateral Oblique	24	84	2.96	0.19
	Patellar Skyline	24	80	2.96	0.19
Tiba					
	Caud -> Cran	24	80	2.96	0.19
	Lateral	24	80	2.96	0.19
	Obliques	24	80	2.96	0.19
Withers/ Thoracic					
	Withers (Lateral)	24	80	2.96	0.19
	Mid-Thoracic (Lateral)	24	86	2.96	0.19
	Lower-Thoracic/Lumbar (Lateral)	24	90	3.92	0.28

Rename Shot Function

In the event that an image has been captured with the wrong shot information, we have provided a function which allows you to rename the shot to match the view that was actually acquired.

To initiate this function, simply tap the Rename icon, located directly above the Shot List. This will display the Shot Selection Columns in the Image Display Area.

Select the correct Region, Anatomy and then the Shot which matches the acquired image.

Once you have selected the new Shot, a form will slide up in the Shot List showing the current shot and the new shot, asking if you want to replace one with the other. Tap the Continue button to make the change or the Cancel button to leave the original Shot intact.

To rename additional shots, simply select another shot by tapping it in the Shot List and then repeat the above process to rename the shot.

Once all shots have been renamed, simply tap the Right Arrow icon in the lower right corner of the screen to restore the standard image display.

Touch Fundamentals

The touch interface control gestures, which replace the familiar mouse/cursor desktop interface, will be new to many of you. We have included this tutorial to help smooth your transition to a primarily touch environment.

Tap

Similar to the click of a mouse, the Tap gesture will replace the left-click for selecting objects on the screen. As the name suggests, simply tap the item you wish to select in situations where you would have clicked using the mouse.

Drag

The Drag gesture is now as simple as touching an object, sliding your finger across the screen and lifting your finger, rather than clicking and holding down the mouse button as you move the mouse to drag an object.

Two-Finger Drag

The Two Finger Drag gesture, as the name suggests, is a variation of the Drag function which is actuated by touching two fingers to the screen and dragging them across it.

Flick

The Flick gesture allows the user to scroll through a list by simply flicking a finger on the screen in the direction you wish to scroll, rather than clicking and holding on an arrow, or dragging a scroll bar with the mouse.

Pinch and Unpinch

The Pinch and Unpinch gestures allow the user to zoom an image in and out, without the need to click a control and then hold down a mouse button while dragging the cursor across the screen.

Image Manipulation Controls

Primary Image Controls

The functions for these controls are active by default when an image is displayed in the Acquire/ Review screen.

Win/Level

The Window/Level operation is performed using the Two Finger Drag function. Simply touch two fingers to the screen over the image display area and drag those fingers across the screen to adjust the window level values of the image. Lift the fingers from the screen to stop using the function.

Zoom

The Zoom operation is performed using the Pinch and Unpinch gestures. To begin, touch the thumb and index finger to the screen; move the two away from each other to enlarge the image and move them towards each other to shrink the image. Note: to move quickly through the entire zoom range, simply touch one finger from each hand to the screen and slide them away from or toward each other.

Pan

The pan operation is performed using the Drag gesture. On any zoomed image, touch the screen and drag your finger in any direction to move the image in that direction. Lift the finger to stop using the function.

Secondary Image Controls

The functions for these controls must be activated by tapping the control icon for the function.

ROI

The ROI operation is performed using the Drag gesture. Tap the ROI control to activate the function, then touch the screen and drag your finger diagonally across the screen to draw a box around the region of interest. Lift your finger from the screen and the Window Level value of the image will be adjusted based on the values in the selected area.

Crop

The Crop operation is also performed using the Drag gesture. Tap the Crop control to activate the function, then touch and drag your finger diagonally across the screen to draw a box around the cropped area. Lift your finger from the screen perform the crop.

Marker Placement

Marker placement can be performed using either the Tap or the Drag gesture. Tap the marker and then tap the image where you would like to place the marker or, drag the marker to the screen. To remove the marker, either drag it off the screen or flick it off the screen.

Calendar Controls

There are several calendar controls located throughout the application; in the Add Patient form, the Edit Patient form, the Reporting screen, the Batch Send form and the Calibration History screen.

When only a single date selection is required there will be a single control, but where the user will enter a date range, two of the controls will be located together.

To open the calendar control, simply tap the icon that resembles a desktop calendar. On opening, the title bar in the top portion of the calendar will display the current month and year, in addition to back and forward arrow controls while the main body of the form will display the days of the month up to the current day.

Tapping the title bar will change the displayed value from the current month and year to the current year only, with the main body of the form now showing the months for the current year, up to and including the current month.

Tapping the title bar again will change the displayed value from the current year to a range of 10 years, with the main body of the form now showing the years of the range up to the current year.

Tapping the arrow controls for any of the various title bar values will move the values backward and forward in increments that are dictated by the type of data displayed in the title bar.

Tapping any values in the main body of the form will select that value and take the user up one level with that value selected in the title bar. Once the user has determined the year and month and selected a day, the calendar control will close.

To select a range, simply pick the first date of the range using the left calendar control and pick the last date of the range using the right calendar control.

Re-ordering Various Application Lists

You can change the order of the various lists found throughout the application at any time.

To change the order of a list, simply drag one of the list items from one position and drop it in another. As you move the selected item, the remaining items will slide apart to reveal the position in which the selected item will be placed when your finger is lifted from the screen.

Navigation Form Controls

There are several navigation form controls located throughout the application; in the Local Export form, the Reporting screen and throughout the Management screen. When the user taps one of these controls, a touch optimized navigation form is opened which allows the user to select a folder on the local system, a thumb drive or an accessible network location.

The layout of the form is typical, with a folder tree in the left pane and the contents of the selected folder in the right pane. There are forward and back controls in the upper left corner of the screen and a navigation bar showing the data path of the currently selected folder.

Chapter

10

Export

Contents

Emergency Export

You can send all of the images which have been acquired to the application's default server; typically the site storage server. This can be done directly from within the Acquisition/Review screen using the Emergency Send control (which looks like the Emergency Patient icon with an arrow curving upwards in the foreground) found in the lower right corner of the screen.

1. This control is inactive until an image has been acquired.

2. Once an image has been acquired, tapping the Emergency Send icon will automatically send all acquired images.
3. You will see a Send Status value displayed on the screen as the images are sent to the storage server and once the send is complete the message will reflect that status.

The Emergency Export function also recognizes which images you sent previously and ignores them, sending only the newly acquired images. If you wish to resend an entire study, you can use the export controls from the Main Patient screen.

Patient Tile Export

You can manually export single or multiple studies for each patient to storage servers or local media from an open Patient Tile in the Main Patient Screen.

To send a single study or multiple studies, simply tap the desired study(ies) and then tap the Export Study icon in the upper right corner of that Patient Tile.

This will display the Export Form, seen below. Select either the Local or Network function by tapping the appropriate button at the top of either section of the form.

For Local exports you will be able toselect an export location and choose between the following export options: Anonymize, Export as JPG, Burn in Overlays and Include DICOM Viewer.

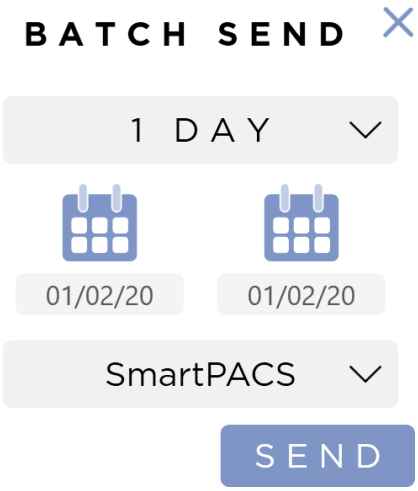
For Server exports, you may select from a list of available servers that have been configured in the Management screen.

When the export process has begun you will see a status indicator near the bottom of the form. When the send process completes, the Export Form will close automatically.

Batch Send Export

To simplify the export process, we have included a Batch Send function which allows you to send batches of studies based on selectable criteria.

To send all of the studies within a certain date range, you can use the list of pre-defined date ranges in the drop down field, or you can choose a specific date range using the calendar controls.



Once you have selected your date range, choose the destination server from the drop down field, and then tap the Send icon.

- To send all of the unsent studies on the system, regardless of date, simply tap the Send All Unsent Studies button. An export status bar also displays to provide you with some feedback on the status of batch exports jobs.
- If all studies have already been sent to the selected server you will be presented with anotification stating that there are no eligible studies found.
- A status bar indicates the progress of the export process.

AIS Export

You can export studies and images to the Antech Imaging Services website and submit a consultation for those images on the AIS website using the AIS Export control, found on each Study Tile in an expanded Patient Tile.

This process is initiated by tapping the AIS Export control, seen to the left. This will begin the DICOM Send of the images for that study in the background while a browser window will open to the AIS New Consultation page.

Once you have submitted the consultation, closing the browser window returns the system to the Main Patient screen of the application.

Auto-Route Export

The system can be set up to select a server to which each study will be auto-routed when a user closes a study, returning to the Main Patient screen. Setting up an auto-route server is done in the Management screen and can only be performed using the built-in administrator account.

In the DICOM/Storage screen, the administrator simply selects the desired server and taps the
Supports Auto Send checkbox to identify the server as the auto-route destination.

Once configured, each study will be auto-routed to the selected default server when the user ends a study and returns to the Main Patient screen.

Chapter

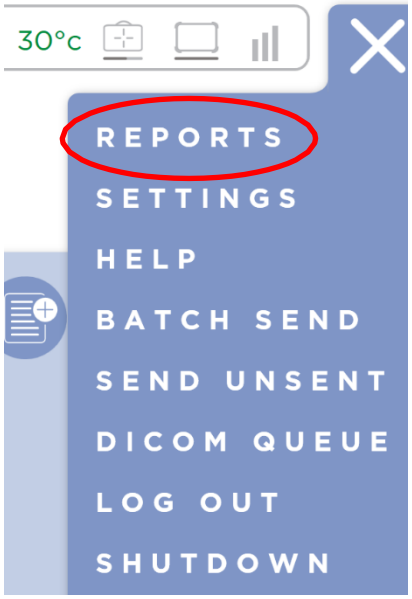
11

Reporting

Contents

You can generate and export AAHA, Billing, Study, Reject, and Advanced Billing reports. The reports can be generated in both PDF and Excel formats and exported to folders on the local system, on a network, or on a thumb drive.

The Reporting Screen is reached by tapping the Hamburger menu, seen to the right, in the upper right corner of the Main Patient Screen.



Generating a Report - Once in the Reporting Screen, select the type of report you wish to generate. This is done by tapping one of the two options in the upper left corner of the screen. By default the Billing Report is selected. Next, select the date range to be covered in the report using the Start Date and End Date calendar controls located next to the Report Type selection options in the upper left corner of the screen. When you select the options, the results are automatically displayed in the main body of the screen.

Exporting a Report - To export the generated report, select a location to which the report will be exported using the Destination search field. If the destination data path is known it can entered into the Destination field, if not, tap the Destination Search icon to open a folder navigation window. Next, select either PDF or Excel from the Export As options in the upper right corner of the screen. Tap the Save control to finish the export process.

AAHA Report

The AAHA Report lists every image taken in a given date range.

For each image the report includes:

- Study Date
- Patient Name
- Patient ID
- Owner Lastname
- Anatomy
- View
- Exposure Time
- KVP
- MAS
- MA
- Vet
- Tech
- Thickness of area (study level data)
- Grid (study level data)
- Level of Sedation (study level data)

> **NOTE**
>
> If generator integration is not configured, technique values (kVp, mAs, and mA) will be zero.

Billing Report

The Billing Report lists each study done in the selected date range.

For each study, the report includes:

- Study Date
- Tech
- Vet
- Patient Id
- Patient First Name
- Owner Last Name
- Study Type (Modality)
- Number of Captures

Study Report

The Study Report counts the number of Studies and Captures for each month in the selected date range.

For each month, the report includes:

- Month (Displayed in MM/YY format)
- Number of Studies
- Number of Captures

Reject Report

The Reject Report lists every rejected image in a given date range.

For each rejected image the report includes:

- Patient Name (First and Last)
- Acquisition Date (Date and Time)
- Operator Name

- Anatomy
- View
- Reject Reason

> **TIP**
>
> Requiring a reject reason can improve the usefulness of this report. You can turn on this feature in the Settings Screen under Advanced Options.

Advanced Billing Report

The Advanced Billing Report lists each study done in the selected date range. It is similar to the Billing report, but it includes more information for each study.

For each study, the report includes:

- Study Date
- Tech
- Vet
- Patient ID
- Patient Name
- Owner Last Name
- Anatomy
- View

Chapter

12

Cleaning the X-ray System

Contents

About this task

The x-ray system is designed and suitable for use in typical clinical environments. During use, the system, all peripherals, and the detector should be adequately protected against spilled or splashed fluids and should therefore not require disinfection beyond routine cleaning as part of preventive maintenance of the equipment.

Cleaning performed during preventative maintenance requires only compressed air and a mild soap and water solution. If disinfection is desired or becomes necessary, a disinfectant solution may be used in place of soap and water to clean the x-ray system equipment. In either case, prepare the solution in accordance with instructions provided by the manufacturer of the cleaning agent.

Warning: Do not pour or spray liquid directly onto any component of the x-ray system. Apply the cleaning agent to a clean cloth and gently wipe the equipment to clean.

Warning: Ne pas verser ou vaporiser de liquide directement sur l'un des composants du système x-ray. Appliquer l'agent de nettoyage sur un chiffon propre et essuyez doucement l'équipement à nettoyer.

Procedure

Review the information in the following topics and perform cleaning and maintenance tasks in accordance with the information provided. Cleaning and preventative maintenance should be performed approximately every six months or as required by the site.

- Disinfection and Cleaning on page 121
- Cautions on page 122

Disinfection and Cleaning

Any EPA-registered agent classified as a low- or intermediate-level product for hard, non-porous surfaces and equipment may be used. Prepare and use disinfectants in accordance with manufacturer’s instructions.

- Do not spray the detector directly with disinfectants or detergents
- Do not use highly invasive or corrosive disinfectants or solvents
- Use a neutral detergent to clean the surface of the equipment. Do not use solvents such as absolute alcohol, thinner or benzine. Doing so may damage the surface of the equipment and the wiring cable.
- When disinfecting the sensor side of the detector, wipe it with a disinfecting cloth appropriately damped with disinfectants such as disinfecting ethanol.

- When cleaning the detector, wipe it with a cloth slightly damped with diluted neutral detergents or disinfecting ethanol
- Dry the detector completely after disinfecting or cleaning it

Cautions

The system must be out-of-service for the duration of cleaning. Cleaning should therefore be performed during scheduled maintenance unless made necessary by contamination. Do not use the x-ray system for patient imaging when cleaning the equipment.

- All system components, including the table and x-ray generator must be powered down prior to cleaning the equipment. Covers are removed and, typically, a cleaning liquid is used. The removal of power is required to protect service personnel and the equipment against injury or damage caused by unintentional or excessive application of liquid to electrical components of the system.
- Allow 15 minutes after cleaning before turning equipment back on. This period allows any residual cleaning fluid to evaporate before power is re-applied to the equipment.
- After turning equipment back on, allow at least 15 minutes for the detector subsystem to initialize before attempting to use the x-ray system for imaging or calibration.

Appendix

A

Technical Support

Contents

Use the following information for contacting customer support.

Office hours	Weekdays 8:00 A.M. - 5:00 P.M. Pacific time. Emergency 24-hour support is available.
Main Office	800-268-5354
Support	800-819-5538

Shipping address

Sound Technologies, Inc.

3200 Lionshead Ave
Suite 100
Carlsbad, CA 92010 USA

Website

http://www.soundvet.com/

Locating the System Serial Number

When you contact technical support, you must provide the serial number of the system for which you are requesting assistance.

Procedure

Open the Management screen, select Config > Site Information. The system serial number is located in the Model Information section.

Appendix

B

Applicable Regulations:

ACMA Radio Regulations Radiocommunications Equipment (General) Rules 2021 Edition

Description:

Report (technical file) update due to updated EMF standard (stored at CINC, no distribution)

Compliance – applicable standards and other supporting documents

Evidence of compliance with applicable standards may be demonstrated by test reports, endorsed/accredited test reports, certification/competent body statements.

Having had regard to these documents, I am satisfied the above mentioned product complies with the requirements of the relevant ACMA Standards made under the *Radiocommunications Act 1992* and the *Telecommunications Act 1997*.

List the details of the documents the above statement was made, including the standard title, number and, if applicable, number of the test report/endorsed test report or certification/competent body statement

Radio: Radiocommunications (Short Range Devices) Standard 2014
Test Report No. 11355752S-T, 13307242S-A, 12812923S-A-R2, 13307242S-C-R1, 113555752S-P-R4
Test Report No. 11355752S-T
EMC: Radiocommunications (Electromagnetic Compatiability) Standard 2017
Test Report No. 12773836S-B-R2, 12773836S-F-R2
EME: Radiocommunications Equipment (General) Rules 2021
Test Report No. 12812927S-D, 14525282S-G

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