THE **PARAMETER®**

X-ray System



INSTRUCTIONS FOR USE

KUBTEC® SCIENTIFIC

The PARAMETER® X-ray System

Instructions for Use IFU-14 Rev E

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KUBTEC is the owner and sole manufacturer of The PARAMETER® X-ray System.

Read this manual thoroughly before using this device. Follow all safety procedures and guidelines when operating radiographic systems.

Acknowledgments

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PREFACE

Intended Use

The PARAMETER® X-ray System is a standalone unit that is used for radiographic inspection of organic and inorganic specimens. This system is intended for use by qualified/trained personnel. It is not intended for use on humans.

This system provides 2-dimensional, digital X-ray images for small animal imaging and other applications. It can be configured for compatibility with our The DIGIMUS® bone mineral density and body composition Software. The purpose of the Instructions for Use is to provide the guidance for proper use and care of the system. Keep this manual with the system for easy reference.

The Instructions for Use do not cover detailed electronic functions or major system troubleshooting and repair. For assistance in these areas, contact KUBTEC Customer Care Center.

NOTE: The most extensive system configuration is described in this manual and may not be representative of the system in your facility. Not every function, option, or accessory described in the manual may have been purchased or licensed on your system.

KUBTEC Customer Care Center

KUBTEC offers customer support through the KUBTEC Customer Care Center (CCC) at any time for problems not resolved through the use of online help or product documentation. If the Customer Care Center is closed when you call, leave a voice mail message. Make sure to have the following information available when you call:

- Your site name
- Hardware system type
- System serial number
- Software version number

Phone: USA: +1.203.364.8544, option 3
International: +1.203.364.8544, option 3

Email: service@kubtec.com

Web: www.kubtecscientific.com

Mail: KUBTEC®
111 Research Drive
Stratford, CT 06615 USA

NOTE: Any serious incident that occurs in relation to the device should be reported to the manufacturer, and the competent authority of the Member State in which the user is established.

User Responsibility

When the system is assembled, operated, maintained, and repaired in accordance with the instructions provided, the system conforms with the description in the Instructions for Use and with accompanying labels and/or inserts.

- It is the responsibility of the user to ensure that this product is checked periodically.
- Do NOT use a defective product.
- Replace broken, missing, plainly worn, distorted, or contaminated parts immediately.
- If repair or replacement is needed, request service by calling 203-364-8544, extension #3, or by emailing service@kubtec.com.
- Do NOT use this product or any of its parts other than in accordance with written instructions provided by KUBTEC and KUBTEC-trained personnel.
- Do NOT alter this product without the prior written approval of KUBTEC.
- The user of this product has the sole responsibility for any malfunction that results from improper use, faulty maintenance, improper repair, damage, or alteration by anyone other than KUBTEC.

Training

Users of the system need adequate training on safe and effective use before attempting to work with the system. Training requirements may vary from country to country. It is the responsibility of the user to make sure training is received in accordance with local laws or regulations that have the force of law. Information on training is available from your local KUBTEC representative.

Safety Information: Warnings

Observe and heed all warnings, cautions, and notes in the manual and on the system.



WARNING:

Warnings are directions that, if not followed, can cause fatal or serious injury, and/or can lead to damage to the system. Warnings in this manual are emphasized with a yellow triangle safety icon.



CAUTION:

Cautions are directions that, if not followed, can cause damage to the system and/or cause environmental pollution. Cautions in this manual are indicated with a blue circle surrounding an exclamation point.

NOTE: Notes are tips and important information to guide you in the use of the system. Notes in this manual are emphasized with the word "**NOTE**" in capital and bold letters.

Receiving and Inspection

The system undergoes thorough mechanical and electrical inspection before shipment and should be free from damage. As a normal part of receiving, make sure to do the following:

- When the system is delivered by a commercial carrier, check it for damage with the carrier. If any damage is found, contact the carrier's office and KUBTEC Customer Care Center.
- Compare the packing list with your order invoice. If there are any discrepancies, contact your regional KUBTEC office.
- Save all packing material for the system in case it should have to be moved or shipped again.

Terms and Definitions

Click - Throughout the manual, the instruction for "click" means to left-click the mouse. When a right-click is needed, it will be stated as such.

A qualified engineer/technician is a person who has completed training conducted by KUBTEC and has been certified by KUBTEC on this system.

CE Mark

Class 1

This product carries the CE Mark. The CE Declaration of Conformity becomes invalid if the product is changed without the explicit consent of the manufacturer. This applies to all parts, not only to safety elements.

ETL Mark

Conforms to UL 61010-1, UL 61010-2-091

Certified to CSA C22.2#61010-1,

C22.2#61010-2-091

Name of Product

The PARAMETER® X-ray System (XPERT40)

Manufacturer

KUB Technologies, Inc. (KUBTEC®)

111 Research Drive

Stratford, CT 06615 USA

Tel: +1.203.364.8544

www.kubtec.com

Authorized representatives

Advena Ltd. Tower Business Centre,

2nd Flr., Tower Street, Swatar,

BKR 4013 Malta

Email: info@advenamedical.com

MedEnvoy Switzerland

Gotthardstrasse 28

6302 Zug Switzerland

CHAPTER 1: GENERAL INFORMATION

Introduction

The PARAMETER® X-ray System is used to provide 2-dimensional, digital X-ray images.



Figure 1-1: The PARAMETER® System

Safety Information: Warnings

The following warnings appear at appropriate places in this manual and on the system. Contact the KUBTEC® Customer Care Center if you are unsure of the meaning of any of these statements.



WARNING: Do not remove covers. Potentially lethal voltages are present inside the system.



WARNING: For cybersecurity, ensure your network is secure.



WARNING: Never operate this system with the grounding conductor disconnected.



WARNING: This is a heavy system.

- If you need to move it, have another person help you.
- If you need to reach under it, ensure it is securely supported before you do so.

Safety Information: Cautions

The following cautions appear at appropriate places in this manual and on the system. Contact the KUBTEC Customer Care Center if you are unsure of the meaning of any of these statements.



CAUTION: The sale of this item may be subject to regulation by the U.S. Food and Drug Administration and state and local regulatory agencies.



CAUTION: This system is sensitive and needs to be handled with care. Dropping it from a height or banging it against a hard surface can damage interior components.



CAUTION: No operator serviceable parts inside. Refer servicing to qualified personnel.



CAUTION: When transporting this system, do not drag the cables along the floor.

System Handling

Transporting

- Use the utmost care when transporting this system. Any drop or bump can lead to extensive damage and the inability to produce images.
- Disconnect cables using the cable connector.
- Do not pull on the electric or data cable line, as this can result in an electric shock or fire.
- Do not drag the cables along the floor. Either hold them or drape them over the transport handle while moving the system.
- When you reach the destination, make sure the system rests on a flat surface. Then, lock the casters.

Environmental conditions

- To ensure consistent imaging, operate the system at normal room temperature within the guided operating levels stated in the specifications.
- Drastic and sudden changes in temperature will cause condensation to form on the surfaces. It is strongly recommended to wait until the condensation dissipates and the system acclimates to the surrounding environment conditions before operating the system.

System storage

Store this system in a safe, dry location with particular caution to minimize any chances of damage due to falling objects or tipping.

System Maintenance

The Maintenance chapter contains specific instructions for the care of the system. To ensure safe and consistent use of the system, make sure to read, understand, and follow the stated instructions.



CAUTION: For safety reasons, be sure to inspect the system before using it. In addition, carry out a regular inspection at least once a year.



CAUTION: Changes, additions, or maintenance to the system performed by persons without appropriate qualifications and training and/or using unapproved spare parts can lead to serious risk of injury and damage to the system as well as voiding the warranty.



CAUTION:

Use ONLY a soft cloth, neutral detergents, or cleaning liquids to wipe system parts and accessories that center in contact with samples during use. Harsh liquids or rough surface cleaners will damage the system surfaces.



CAUTION:

All KUBTEC systems come with Windows Updates turned off and Windows Defender is on. Both Windows Defender and Windows updates are the responsibility of the customer and/or facilities Security/IT department to manage and support. KUBTEC is not responsible for any mismanagement leading to unintended consequences.

System Inspection

Inspect the system daily before use following the daily inspection checklist in the Maintenance chapter. Perform annual inspections following their respective checklists in the Maintenance chapter.



WARNING:

If necessary, the dosimetry of this system must be performed by a qualified engineer only.



WARNING:

The system must be repaired by a qualified engineer only. If it is not repaired properly, it can cause a fire, electric shock, or an accident.

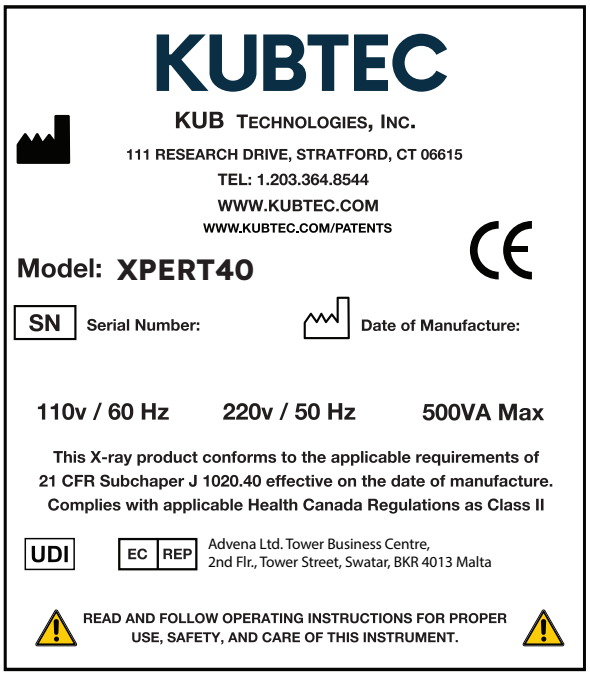
Inspection Procedures

Instructions to perform each inspection are found in the Maintenance chapter. If any problem is found during the inspection, take the measures indicated. If the problem still cannot be corrected, contact the KUBTEC representative or distributor.

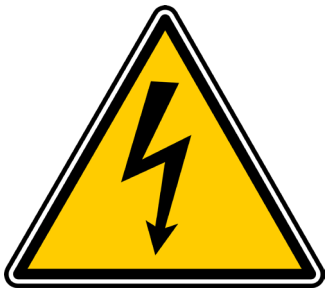
It is recommended that a record of the inspections be kept. You can make copies of the checklists, or use one provided by your facility or administrator.

Labels

Warning labels, safety labels, and a certification label are attached at various locations on the unit. These labels must remain permanently attached and in good condition. Tampering with labels is against federal law. Under NO circumstances should the labels be removed or re-affixed.





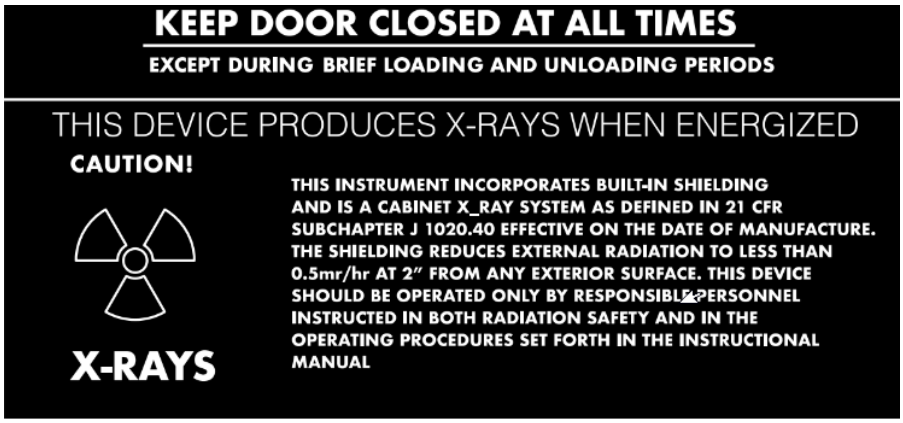


Possible shock hazard.
Disconnect power before servicing.



X-rays are produced when energized.

Labels (continued)





Fuse Rating:

250V, 5A, SB

This label is on the back of the Cabinet.



CAUTION: To ensure safe system operation, read the Instructions for Use before operating this system.

Recommended Separation Distances

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

Table 1-1: Recommended separation distances between portable and mobile RF communications equipment and this system

Rated maximum output power (W) of the transmitter	Separation distance (m) according to the frequency of the transmitter		
	150 kHz to 80 MHz $d = 1,2 \sqrt{P}$	80 MHz to 800 MHz $d = 1,2 \sqrt{P}$	800 MHz to 2.5 GHz $d = 2,3 \sqrt{P}$
0.01	0.12	0.12	0.23
0.1	0.38	0.38	0.73
1	1.2	1.2	2.3
10	3.8	3.8	7.3
100	12	12	23

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

NOTE: At 80 MHz and 800 MHz, the separation distance for the higher frequency range applies.

NOTE: These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects, and people.

Compliance

The PARAMETER® System complies with US federal guidelines that require radiation leakage of not more than 0.5 mR/hr (0.005 mSv/hr) at a distance of 5 cm from the external machine surface.

This system is designed, manufactured, and registered in accordance with strict criteria established by the Food and Drug Administration (FDA), Center for Devices and Radiological Health (CDRH), and the Department of Health and Human Services (DHHS). This system meets or exceeds all certification requirements for a cabinet X-ray system used in an industrial/laboratory environment.

The PARAMETER® System is manufactured, tested, and certified to comply with the US Federal Performance Standards for Cabinet X-ray Systems, Title 21, Sub-chapter J of the Code of Federal Regulations, Section 1020.40. Modification or damage to the equipment could result in an X-ray exposure hazard. KUBTEC recommends that you review and comply with work site safety requirements regarding radiation safety.

This system has been designed and tested for compliance when used in a controlled environment only. KUBTEC products comply with IEC Safety Standards.

The PARAMETER® System is intended for use in the electromagnetic environment specified in the next table. The customer or user of this system needs to ensure that it is used in a Guidance and Manufacturer Declaration environment.

Table 1-2: Guidance and Manufacturer Declaration for Electromagnetic Immunity

Immunity test	IEC 61010-1 test level	Compliance level	Electromagnetic environment - guidance
Electrostatic discharge (ESD) IEC 61000-4-2	±6 kV contact ±8 kV air	±6 kV contact ±8 kV air	Floors should be wood, concrete, or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30%.
Electrical fast transient/burst IEC 61000-4-4	±2 kV for power supply lines	±2 kV for power supply lines	Mains power quality should be that of a typical commercial or hospital environment.
Surge IEC 61000-4-5	±1 kV line(s) and neutral	±1 kV line(s) and neutral	Mains power quality should be that of a typical commercial or hospital environment.
Voltage dips, short interruptions, and voltage variations on power supply input lines IEC 61000-4-11	<5% U_T (>95% dip in U_T) for 0,5 cycle 40% U_T (60% dip in U_T) for 5 cycles 70% U_T (30% dip in U_T) for 25 cycles <5% U_T (>95% dip in U_T) for 5s	<5% U_T (>95% dip in U_T) for 0,5 cycle 40% U_T (60% dip in U_T) for 5 cycles 70% U_T (30% dip in U_T) for 25 cycles) <5% U_T (>95% dip in U_T) for 5s	Mains power quality should be that of a typical commercial or hospital environment. If a dip or an interruption of mains power occurs, the current of the system may drop off from the normal level, and it may be necessary to use an uninterrupted power supply or a battery.
Power frequency (50/60 Hz) magnetic field IEC 61000-4-8	3 A/m	Not applicable	Not applicable
NOTE: U_T is the AC mains voltage prior to application of the test level.			

Table 1-2: Guidance and Manufacturer Declaration for Electromagnetic Immunity (continued)

Immunity test	IEC 61010-1 test level	Compliance level	Electromagnetic environment – guidance
Conducted RF IEC 61000-4-6	3 Vrms 150 kHz to 80 MHz	3 Vrms	Portable and mobile RF communications equipment should be used no closer to any part of this system, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter. Recommended separation distance: $d = 1,2 \sqrt{P}$ $d = 1,2 \sqrt{P}$ 80 MHz to 800 MHz $d = 2,3 \sqrt{P}$ 800 MHz to 2.5 GHz • P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer and d is the recommended separation. • Distance in meters (m). Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey, and should be less than the compliance level in each frequency range. Interference may occur in the vicinity of equipment marked with the following symbol: 
Radiated RF IEC 61000-4-3	3 V/m 80 MHz to 2.5 GHz	3 V/m	
NOTE: At 80 MHz and 800 MHz, the higher frequency range applies. **NOTE**: These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects, and people.			

Field strengths from fixed transmitters, such as base stations for radio (cellular/cordless) telephones and land mobile radios, amateur radio, AM and FM radio broadcasts, and TV broadcasts cannot be predicted theoretically with accuracy. To assess the electromagnetic environment due to fixed RF transmitters, consider an electromagnetic site survey. If the measured field strength in the location in which this system is used exceeds the applicable RF compliance level, observe the system to verify normal operation. If an abnormal performance is observed, additional measures may be necessary, such as re-orienting or relocating the system.

Over the frequency range of 150 kHz to 80 MHz, field strengths should be less than 3 V/m.

Table 1-3: Performance specifications

Degree of protection against penetration of water	No protection provided
Classification in accordance with 61010-1 degree of protection against electric shock	This system has no applied parts
Methods of sterilization or disinfection	See Cleaning & Disinfection section in the Maintenance Chapter
Where equipment is not suitable for use	In the presence of flammable mixtures
Mode of operation	Suitable for continuous operation
Pollution degree rating	Pollution degree 2 (normal atmosphere)
Electromagnetic compatibility (EMC) in accordance with 61010-1 • Noise suppression • Immunity to interference	This system conforms to the requirements of IEC 61010-1 (EMC)
Variants	Software programmable variants from third-party
Product Life	Service life of the product is 7 to 10 years

Table 1-4: Wireless adapter specifications

Hardware	
Interface	M.2:PCIe
Dimensions (W x D x H)	M.2 2230: 22 mm x 30 mm x 2.4 mm [1.5 mm max (top side)/0.1 mm max (bottom side)]
Antenna type	Internal
Wireless	
IEEE WLAN standards	IEEE 802.11-2016 and select amendments (selected feature coverage) IEEE 802.11a, b, c, e, g,h, i, k, n, r, u, v, w, ac, ax; fine timing measurement based on 802.11-2016
Bluetooth®	Bluetooth® 5.1
Frequency	5 GHz 2.4 GHz
Security methods	WAP2* Personal and Enterprise; WPA3*
Authentication protocols	802.1X EAP-TLS, EAP-TTLS/MSCHAPv2, PEAPVO-MSCHAPv2 (EAP-SIM, EAP-AKA, EAP-AKA')
Encryption	64-bit and 128-bit WEP, TKIP, 128-bit AES-CCMP, 256-bit AES-GCMP
Product safety	UL, C-UL, CB (IEC 60950-1)

* Other names and brands may be claimed as the property of others.



For cybersecurity, ensure your network is secure.

WARNING:

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CHAPTER 2: COMPONENTS AND CONTROLS

System Overview

The PARAMETER® System consists of the following major components:

- Two cabinets are attached vertically and mounted on a movable cart.
- User interface that is attached to a height-adjustable extension arm.

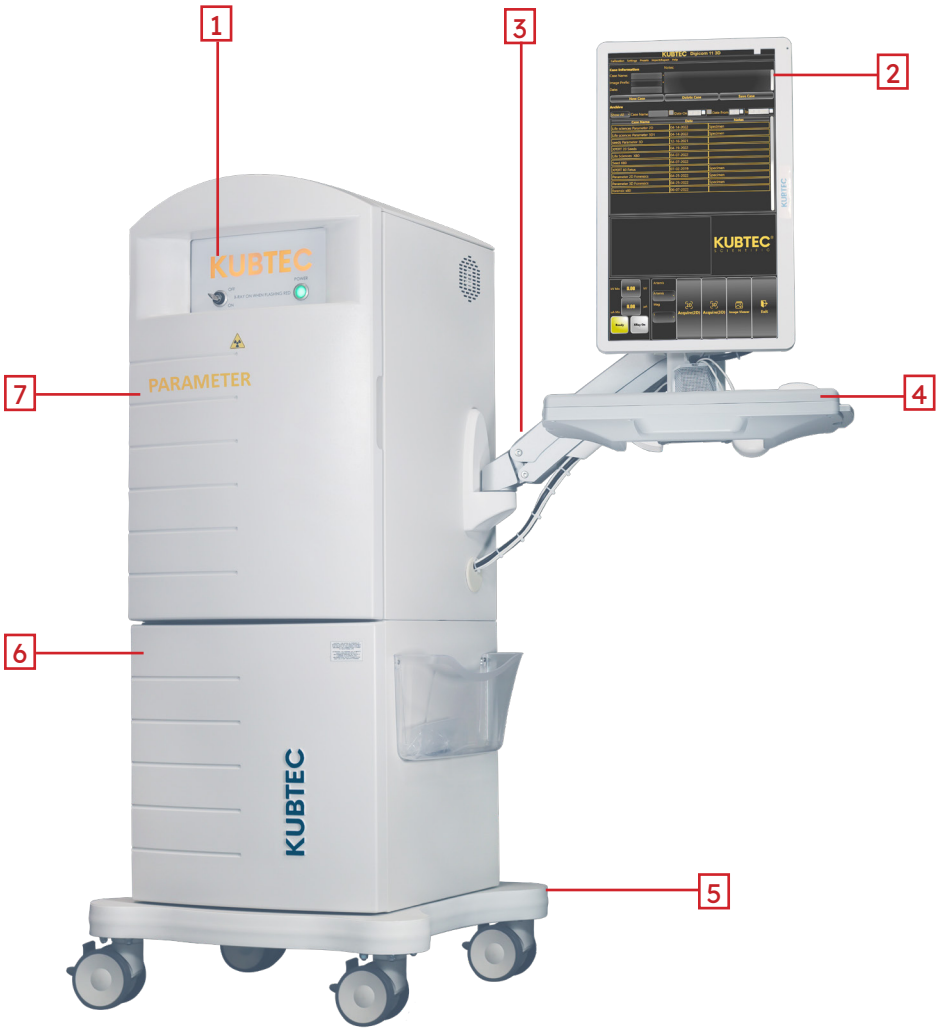


Figure 2-1: System Components

Figure Legend

1	Control Panel	**5**	Cart with Locking Casters
2	Monitor	**6**	Lower Cabinet
3	Articulating Extension Arm	**7**	Upper Cabinet
4	Keyboard Tray		

User Interface

The user interface is mounted on an articulated arm that extends off the upper cabinet. Interface components consist of a monitor and a keyboard tray that supports a keyboard and a mouse.

The keyboard tray has a slide-out work surface that can be extended to either side. The keyboard is attached with Velcro to keep it stationary. Both the keyboard and mouse have waterproof coverings to prevent potential damage from contact with fluids.

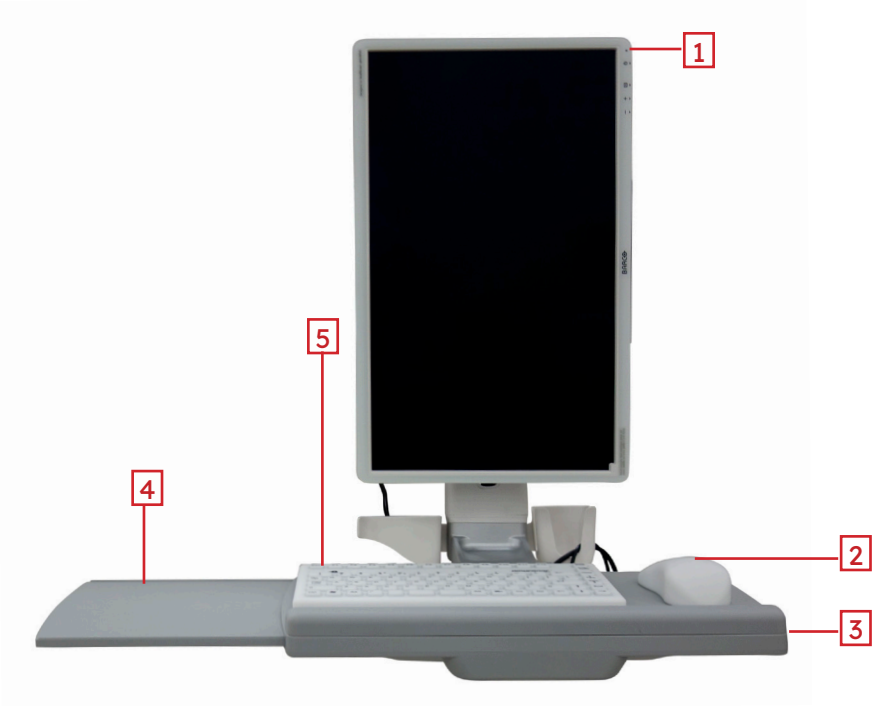


Figure 2-2: Monitor

Figure Legend

1 Monitor ON/OFF switch

2 Mouse

3 Keyboard Tray

4 Left extended work surface

5 Keyboard

User Interface (continued)

The keyboard has the functionality of a standard Windows PC keyboard with the following exceptions as indicated in the next figure.

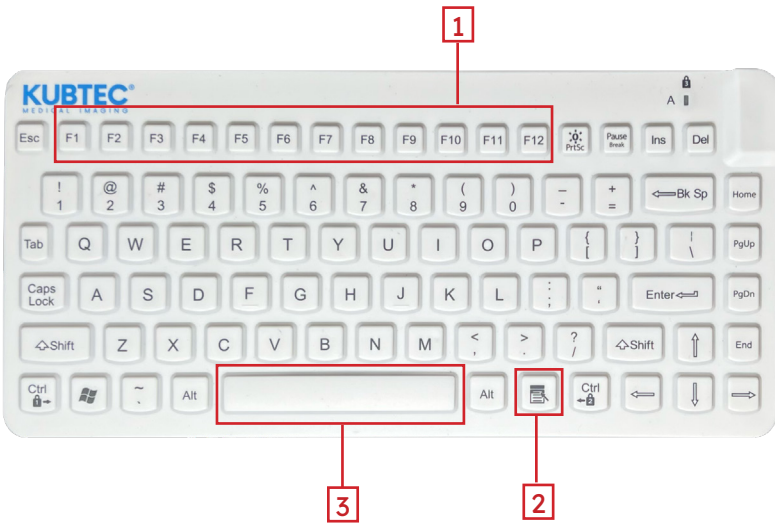


Figure 2-3: Keyboard

Figure Legend

1 "F" keys are not mapped to specific functions.

2 Access to drop-down menus.

3 Space bar.

Clean Mode functionality locks the keys so that cleaning of the keyboard can be done without input from any key. To use the Clean Mode, follow these steps:

1. To clean your keyboard while it's plugged into PC, press the left and right control (Ctrl) keys at the same time for 3 seconds to lock the keyboard.
2. When the keyboard is locked, the caps lock icon will blink.
3. After cleaning the keyboard, press both control (Ctrl) keys again for 3 seconds to unlock the keyboard.

Cabinet Components

Control Panel

The system control panel consists of the key switch, power button, and the KUBTEC® light.

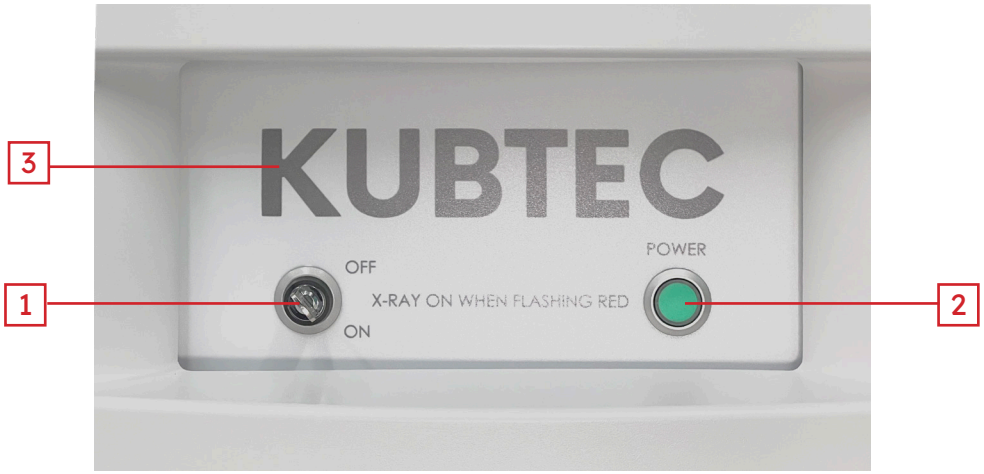


Figure 2-4: Cabinet Control Panel

Figure Legend

1	**Key switch**	OFF position = System is locked. X-rays cannot be generated. ON position = System is unlocked and ready to be powered up. X-rays can be generated. **NOTE:** The key is removable when it is in the OFF position. To prevent unauthorized use of the system, KUBTEC® recommends removal of the key when the system is not in use.
2	**Power switch**	Power ON: LED is green. Power OFF: LED is clear.
3	**KUBTEC light**	Turns amber when the system is ready to make an exposure and all interlocks are engaged. Flashes red when X-rays are generated.

Cabinet Components (continued)

Upper Cabinet

The shielded upper cabinet accommodates the following imaging in 2D:

- Contact imaging
- Magnification imaging



Figure Legend

1 Interlocks*
2 3rd Level Magnification Rail
3 Magnet
4 2nd Level Magnification Rail
5 1st Level Magnification Rail
6 Contact Tray

Figure 2-5: Upper Cabinet

*X-rays cannot be generated unless the upper cabinet door is fully closed, and the interlocks are engaged.

Cabinet Components (continued)

Lower Cabinet

The lower cabinet houses the system computer and the battery backup called the UPS or Uninterruptible Power Supply.

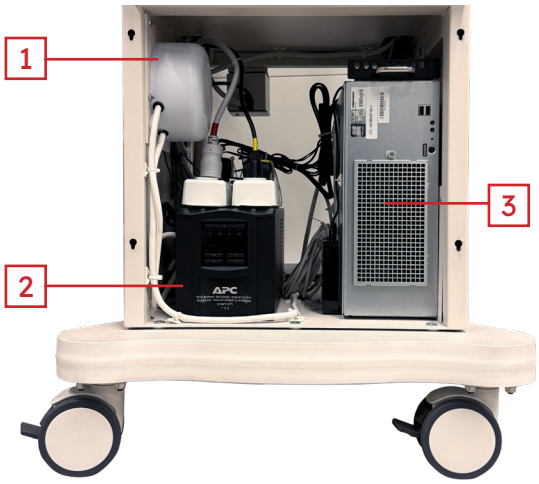


Figure Legend

1 Isolation Transformer

2 UPS

3 Computer

Figure 2-6: Lower Cabinet

The user typically does not need to open the lower cabinet. However, when access to the cabinet components is needed, follow these steps:

1. Grab both sides of the lower cabinet door.
2. Pull up, and then gently lift the door out of the slots.

To return the door to its default position:

1. Place the door over the slots.
2. Push down to lock the door in place.

Moving the System

Before moving the system, be sure to disconnect the power cord from the wall outlet and unlock the cart casters.

CAUTION:

This system is sensitive and needs to be handled with care. Dropping it from a height or banging it against a hard surface can damage interior components.

CAUTION:

When transporting this system do not drag the cables along the floor.

How to Lock/Unlock the Casters

To lock a caster, use your foot to press down on the locking lever until it snaps into the locked position.



Locked Position

To unlock a caster, use your foot to push up on the locking lever until it snaps into the unlocked position.



Unlocked Position

How to Move the Cart

1. Make sure cables are off the floor and that all components are in a secure position.
2. Unlock the casters.
3. Use the handle on the back of the upper cabinet to assist in pushing/pulling the unit.
4. When you reach the desired location, make sure the unit is on a flat surface, then lock the casters.

Cable Connections

Follow these steps to connect the cables:

1. Insert the power cord fully into the wall receptacle.
2. If you do not have a wireless connection, insert the Ethernet cable into the Ethernet jack.



CAUTION: Before using this system, make sure it is on a flat surface.



CAUTION: To prevent electromagnetic interference, be sure to maintain at least the minimum distance between portable and mobile RF communications equipment (transmitters). Table 1-1 in this manual shows the recommended separation distances.

CHAPTER 3: SYSTEM START UP AND SHUT DOWN

Introduction

Before you start the system for the first time each day, perform the daily inspection as stated in the checklist in the Maintenance chapter.

NOTE: To obtain consistent results, operate the unit at normal room temperature within the guided operating levels stated in the specifications (in Chapter 6). Drastic and sudden changes in temperature may cause condensation to form on the surface. If this happens, it is strongly recommended to wait until the condensation dissipates and the system acclimates to the surrounding environment conditions before resuming operation.

Pre-startup Checks

Make sure of the following:

- System is on a flat surface.
- Cart casters are in the locked position.
- Power cord is fully inserted into the wall outlet.

How to Start the System

1. Press the monitor power button ⏻.
2. Turn the key switch to the ON position.
3. Press the power button. The computer automatically starts.

   NOTE: At the start of each day, KUBTEC® recommends letting the X-ray tube warm up to normal operating temperature by leaving the system on for a few minutes before you take the first exposure.
4. Double-click the K icon on the desktop. When the software finishes loading, the Main screen (described on the next two pages) displays along with the **Calibration Wizard** message.

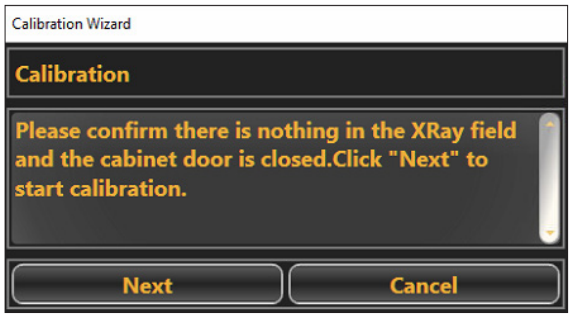


Figure 3-1: Calibration Screen

5. Ensure that there are no magnification trays in place in the cabinet.
6. Ensure that there is nothing in the X-ray field.

How to Start the System (continued)

7. Close the cabinet door tightly. The X-ray Ready light at the bottom left of the screen illuminates and the KUBTEC logo on the cabinet turns amber.
8. Select **NEXT**. The Calibration Wizard automatically performs the Detector calibrations.

   NOTE: X-rays are not emitted during the Offset calibration, but they are emitted during the Gain calibration to specified values.
9. When the calibration process completes, click **Back to Main Window**.

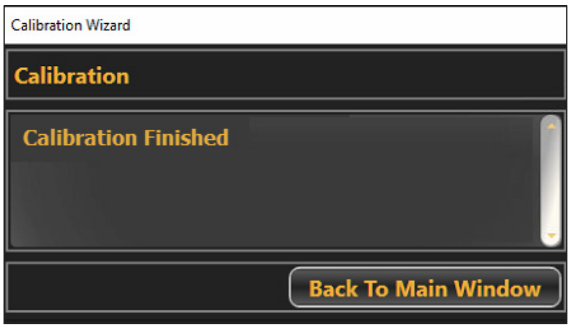


Figure 3-2: Calibration Finished Screen

10. The system is now ready to start the image acquisition process. Follow the instructions in the next chapter for acquiring images.

Main Screen

The Main screen provides access to all software functions of the system. Each component of this screen is explained in the following Legend.

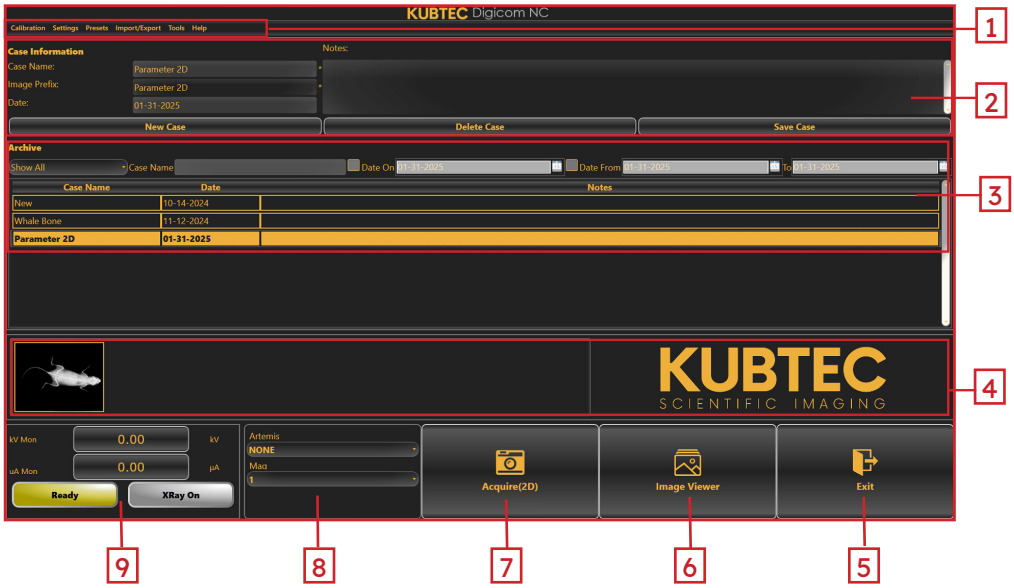


Figure 3-3: Main Screen

Main Screen Figure Legend

Legend for Main Screen

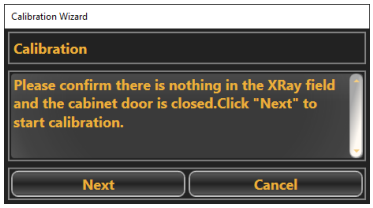
No.	Function
1	**Menu Bar Functions** • **Settings** has options to return to Factory settings; create Master settings, such as a copy path; and access the Calibration Wizard. • **Presets** displays the Presets Manager screen. • **Import/Export** Export allows images to be sent to a removable storage device, such as USB flash drive. • **Help** provides user access to the Instructions for Use and to KUBTEC® contact information. The Registration option is for service personnel to register the software for use.
2	**Case information** displays data that is retrieved from stored files or manually entered as a new case. This section of the screen also has options to Save or Delete a case and to make notes.
3	**Archive** allows searching for stored cases by case ID or by date.
4	Icons of acquired images display in this area.
5	**Exit** closes the system software program.
6	**Image Viewer** displays the last acquired image (or one selected thereafter by the user) along with a tool bar for image processing.
7	**Acquire** initiates the X-ray exposure process.
8	Image Filter and Magnification options
9	**Ready and XRay On lights** • **Ready** light illuminates when the system is prepared to generate X-rays. • **XRay On** light illuminates when the system is generating X-rays.

Menu Bar

The Menu Bar provides options for setting up the system and customizing it for client use. Use of each Menu Bar option is described next.



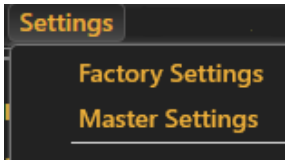
Menu Bar: Calibration



Click the **Calibration** option to access the **Calibration Wizard**, which is used to automatically calibrate the system.

1. Click **Next** to start the Wizard.
2. Click **Back to Main Window,** when the calibration ends.

Menu Bar: Settings



The two options in the **Settings** menu (Factory Settings and Master Settings) require password access.

Factory Settings are those that are in place when the system is delivered.

Master Settings include those for the Online Image Filter, for Window/Level, and for Preset Technologists and Radiologists.

Menu Bar: Presets

The Presets option accesses the **Presets Manager** screen in which users can create settings for exposure parameter combinations. Each created setting is displayed as a selectable option on the **Presets** screen, which is displayed when the manual mode is selected for image acquisition.

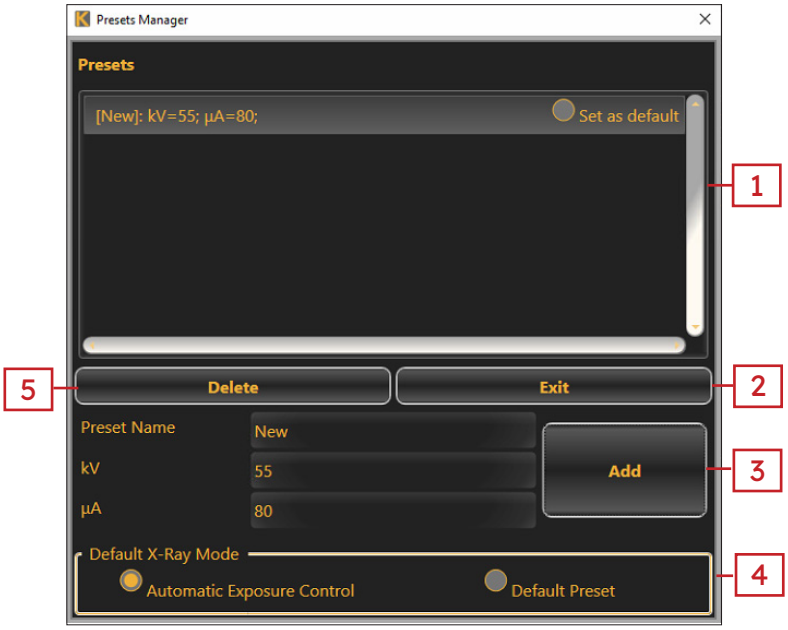


Figure 3-4: Present Management Screen

Screen Legend

1 List of existing Presets.

2 Exit the Preset Manager screen.

3 Add a new Preset.

4 Options to have the system acquire images with AEC or with the factors delineated in the Preset.

5 Delete a selected Preset.

To create a new Preset:

1. In the Presets Manager screen, enter a name for the preset that is being created.
2. Enter the desired kV and µA for this Preset
3. Click **Add**.

Menu Bar: Import/ Export

The Import option in the **Import/Export** menu allows users to import images that are saved in a different location into the current series. The Export option allows users to send images that are saved in the system to an external device.

Menu Bar: Import Image Series

The **Import Image** screen allows the user to bring images saved in a different location into the series.

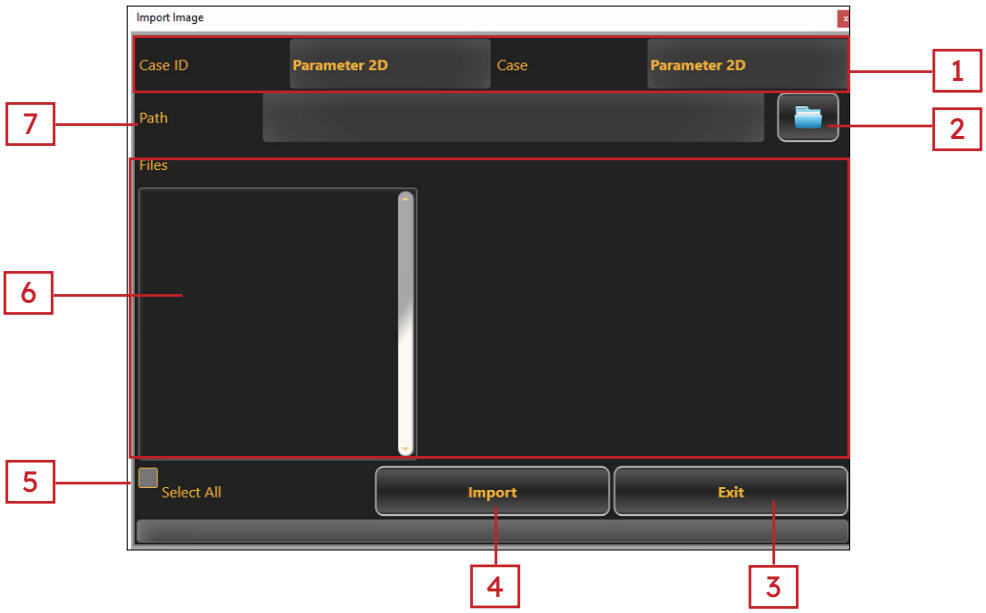


Figure 3-5: Import Image Series Screen

Screen Legend

1 Current case identification.

2 Browse to the location of the series to be imported.

3 Exit the Import screen.

4 Import the selected series into the current case.

5 Click to select all the files displayed in the list.

6 List of files for preview.

7 Location of the files to be imported.

Menu Bar: Import image

To import X-ray images into the current case:

1. Select Import from the drop-down.
2. Browse to the location of the files/folder to be imported.
3. Select the images to import, then click **Import**.
4. Click **Exit** to close the screen.

Menu Bar: Export Images

The **Export Images** option provides the means to send selected images to an external storage device.

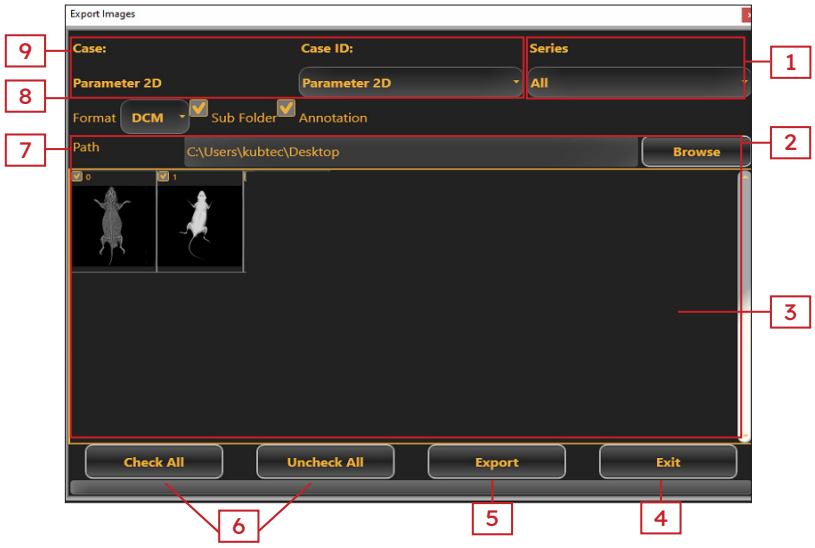


Figure 3-6: Export Images Screen

Screen Legend

1 The drop-down allows the selection of all images in the series or individual images.

2 Allows navigation to an external storage device.

3 Image preview.

4 Exit the Export screen.

5 Export selected images to the designated location.

6 Select or unselect all images in the display area.

7 Location of the images to be exported.

8 The drop-down menu options for the format of images to be exported:

- **DCM** is DICOM. This is the default and recommended format for systems that have a DICOM viewer.
- **JPEG** reduces image size, making it more compact by producing a lower resolution image.
- **TIFF** provides full-resolution image, and it is recommended for systems that do not have a DICOM viewer.

Subfolder: Option to have all selected images contained in a separate folder when they are exported to the location in the Path field.

Annotation: Option to keep existing annotations with the images to be exported.

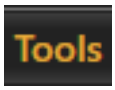
9 Current case identification

Menu Bar: Export Images (continues)

To export images:

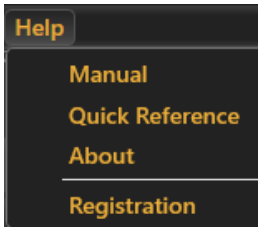
1. Select Import/Export from the menu bar, then select **Export Image**.
2. In the Export screen, select the images to export.
3. Assign a format.
4. Identify the destination.
5. Select Export.

Menu Bar: Tools



Options in the **Tools** menu display when plug-ins are enabled.

Menu Bar: Help



The **Help** option provides access to the following information about the system:

- **Manual** to access the Instructions for Use.
- **Quick Reference** to access the Quick Reference Guide.
- **About** to see KUBTEC contact information and the version of software running on the system.
- **Registration** is for service personnel to register the software.

How to Shut Down the System

To shut down the system, follow these steps:

NOTE: Log out of The DIGICOM® Software program before logging out of Windows. Neglecting to do this prevents other users from being able to launch The DIGICOM® Software.

1. Click  on the Main screen, then click **OK** to exit the program prompt.
2. Click  on the lower left area of the screen.
3. Click the power icon, and then click **Shut down** to turn off the computer.



WARNING: Do not turn off the monitor. It will automatically enter standby mode and power on with the computer.

4. On the control panel of the shielded cabinet, push the power button. The power button light extinguishes.
   - If you plan to leave the unit in its current location, leave the key switch in the **ON** position, and the power cord connected to the wall.
   - If you plan to move the unit, turn the key switch to the **OFF** position, disconnect the power cord from the wall receptacle, and prepare the unit for transport.

Uninterruptible Power Supply (UPS)

The following information applies to systems that are equipped with a UPS.

The UPS beeps when the system is running on battery backup. This occurs when the system power cord is unplugged from the wall outlet and the system is in operation. The UPS will continue to beep until one of the following happens:

- System is connected to another power source.
- Battery reserve in the UPS runs out.
- UPS is shut down.

To manually shut down the UPS:

1. Remove the lower cabinet cover.
2. Press and hold down the power button for five seconds.
3. Click **YES**, then select **Shutdown without delay**.
4. Replace the lower cabinet cover.

NOTE: Remaining runtime depends on the available charge, how long the X-rays are on, and idle power demand.

NOTE: The UPS battery backup is intended for room-to-room placement of the system, and then should be plugged into an outlet. Using the UPS to take images or leaving the system unplugged and running on UPS battery power for an extended period will result in damage to the UPS battery.

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CHAPTER 4: IMAGE ACQUISITION

Introduction

After the system is properly set up, it is ready to start the image acquisition process. The first step is to associate the sample to be X-rayed with a case.

The Main screen offers two options to do this:

- Recall an existing case from the system archive.
- Create a new case.

The use of each option is explained next.

Recall an Archived Case

To recall an archived case, follow these steps:

1. From the drop-down menu in the archive section of the screen, select **Show All** (OR, select **Show by case ID** and then enter the ID). A list of cases that are loaded in the system displays.

   NOTE: Additional filtering options allow searching the archived cases by a date or date range.

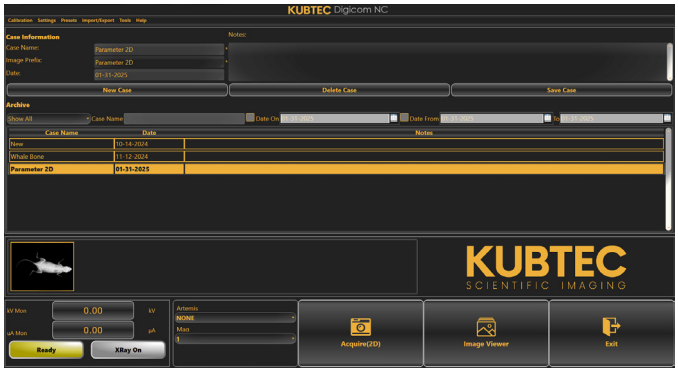


Figure 4-1: Main Screen: Case Selection Options

2. Double-click the case you want. Information about that case is displayed in the **Case Information** section of the screen, and images of the case study are displayed below the list of cases.

Create a New Case

To create a New Case, follow these steps:

1. On the Main screen, click **New Case**.
2. In the **New Case** screen, type in the required information, then click **Save Case**. The new case information is displayed at the top of the Main screen and in the Archive section.

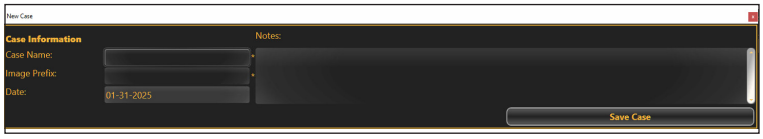


Figure 4-2: New Case Screen

Acquire X-ray Images

The system offers the following options for acquiring X-ray images:

- Automatic Exposure Control (AEC)
- Presets
- Manual

The use of each option is described in the next sections.

Acquire with AEC

Automatic Exposure Control selects the optimal kV and µA settings for image acquisition.

To use the AEC feature, follow these steps:

1. Ensure that the case selected on the Main screen is the one you want images saved to.
2. Center the sample within the imaging area indicated by the marks on the detector cover or specimen tray.
3. Close the cabinet door tightly.
4. Ensure that the X-ray ready indicator is lit.
5. Left-click the Acquire (2D) button at the bottom of the screen. X-rays turn on, the KUBTEC® logo on the control panel flashes red, and "**Acquiring images, please wait...**" displays. Shortly thereafter, the 2D image displays. An optical image is also acquired during this process.

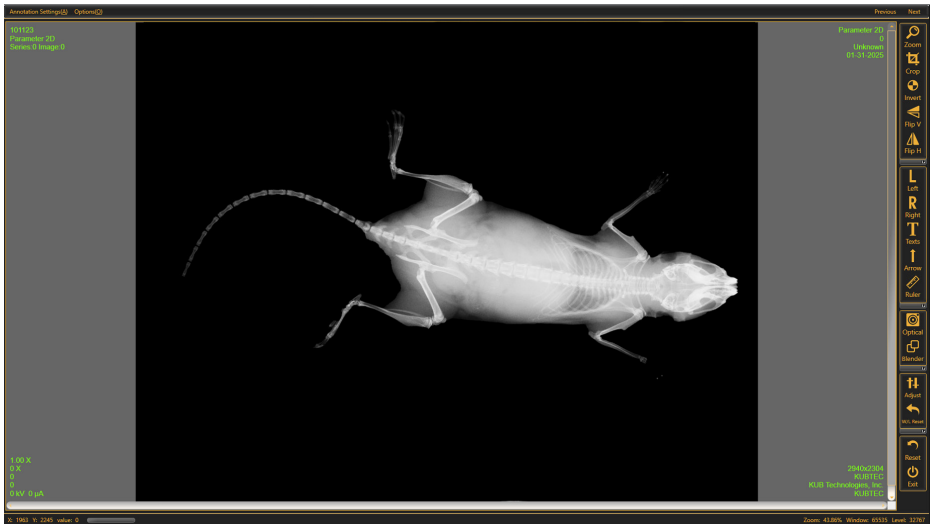


Figure 4-3: Image Viewer

Acquire with Presets and Manual

To acquire images using a Preset or with manual entry of exposure factors, follow these steps:

1. Ensure that the case selected on the Main screen is the one you want to be selected.
2. Center the sample within the imaging area indicated by the marks on the contact level or specimen magnification tray.
3. Close the cabinet door tightly.
4. Ensure the X-ray Ready indicator is lit.
5. Right-click the **Acquire(2D) button** at the bottom of the Main screen. The Preset screen displays.



Figure 4-4: Preset Screen

6. Acquire the X-ray image:
   - To acquire an X-ray image using a **Preset**, double-click the preset option that you want from the list and then click **Aquire**.
   - To acquire an X-ray image using **Manual** settings, type in the desired kV (between 20 and 50) and µA (between 200 and 1000), then click **Acquire.**

   X-rays turn on, the X-Ray On indicator on the control panel lights, and "**Acquiring images, please wait...**" displays. Shortly thereafter, the 2-D image displays. An optical image is also acquired during this process.

How to Add a Preset

To add a Preset to the Presets list, follow these steps:

1. In the menu bar at the top of the Main screen, select the Preset(P) option.
2. In the **Preset Manager** screen, type in the Preset Name, the desired kV, and the desired µA (within the range of values for your system).
3. Click **Save Preset**, then click **Exit**.

Acquire Optical Image

To acquire only an optical image, follow these steps:

1. Right-click the **Acquire(2D)** button at the bottom of the Main screen.
2. Click the **Acquire Optical Image Only** button.
   The acquired image is displayed in the Image Viewer, and the optical camera window closes. The image automatically becomes part of the case study and displays along with other acquired images in the display area of the Main screen.

Magnification

The magnification tray features visible markings to guide correct sample placement. Align each sample with the corresponding marking to ensure accurate positioning and prevent errors during use. When the sample is not positioned properly, a shadow from the cutout shows in the X-ray image. When you use a magnification greater than 1x, you may need to re-position the sample in the center of the cutout.

To acquire magnification images, follow these steps:

1. Place the magnification tray in the magnification tray rails for the level of magnification that you want.
2. Center the sample on the magnification tray.
3. Close the door tightly. Ensure the X-ray ready indicator is lit.
4. The system automatically detects the chosen magnification level.
5. Acquire the image:

   - To use **AEC**, left-click the **Acquire(2D)** button. Shortly thereafter the 2-D image displays.
   - To use a **Preset** value, right-click the **Acquire(2D)** button, then double-click the Preset option you want from the list.
   - To use **Manual** settings, right-click the **Acquire(2D) button**, type in the desired kV and µA (within the range of values for your system), then click **Acquire**.

   X-rays turn on, the X-Ray On indicator on the control panel lights, and "**Acquiring images, please wait...**" displays. Shortly thereafter, the 2-D image displays. An optical image is also acquired during this process and is cropped according to the selected magnification level.

Create a Copy Path

You can create a copy path to a designated location to store images. Once a copy path has been set up, acquired images are automatically stored in that location.

To create a copy path, follow these steps:

1. Select **Master Settings** from the **Setting(s)** tab in the menu at the top of the Main screen.
2. Enter the password (kubtec), then click **OK**.
3. Click **Copy Path**, then identify the location where you want to store acquired images.
4. Select the image type from the drop-down.
5. Click **Save** > **OK**.
6. Click **Exit** to return to the Main screen.



To avoid software issues, make sure the shared drive is always connected.

CAUTION:

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CHAPTER 5: IMAGE VIEWER TOOLS

Introduction

Tools for processing and annotating acquired images appear as icons on the right side of the Image Viewer when the monitor is positioned vertically. They appear at the bottom of the screen when the monitor is positioned horizontally.

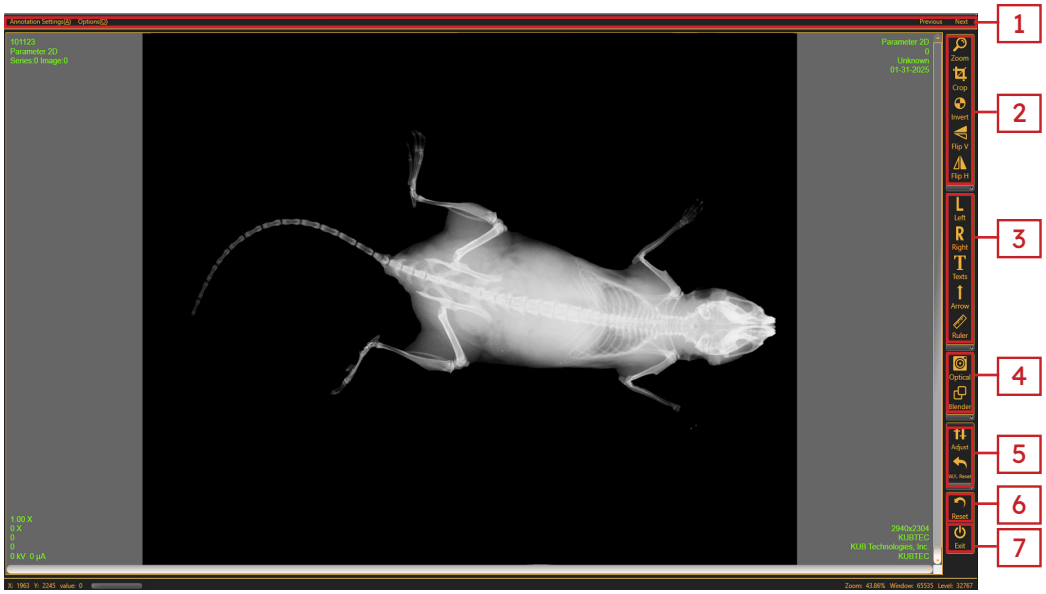


Figure 5-1: Image Viewer

Figure Legend

1	Image Viewer Menu	**5**	Window/Level adjustments
2	Image processing tools	**6**	Reset
3	Annotation tools	**7**	Exit the Image Viewer
4	Viewing options		

How to Use Image Viewer Tools

Select the image you want to use the tool on. Click a tool to activate it, then click on the image to use the tool.

- Some tools, such as Invert, Flip V, Flip H, and Reset to perform their stated function upon activation.
- Other tools require additional steps. The following tables provide details for the use of each tool:

Image Processing Tools

Table 5-1: Image processing tools

Icon	Name	Function
	**Zoom**	• Click the **Zoom** icon, then left-click on the image to zoom in, or right-click on the image to zoom out. • You can also use the left mouse button to pan the image, or the right mouse button to zoom in or out, or scroll down the mouse for zoom. • To disable it, click the Zoom icon again.
	**Crop**	• Click the **Crop** icon, then click on the image • Draw a box over the area that you want to extract from the image. • Select the Copy icon, then click OK. The cropped image is added as the last image in the series or case. • To return to the original image, keep clicking the Up arrow until you see the original image. OR, click the Exit Image Viewer icon to return to the Main screen where you can scroll to and select the original image.
	**Invert**	• Click the **Invert** icon to change the black pixels to white pixels. • Click this icon again to reverse the pixels.
	**Flip V**	• Click the **Flip V** icon to reverse the positions of the top and bottom of the image. • Click the icon again to return the image to its original position.
	**Flip H**	• Click the **Flip H** icon to reverse the positions of the left and right sides of the image. • Click this icon again to return the image to its original position.

Image Processing Tools (continued)

	**Rotate**	• Click the **Rotate** icon to display the Rotation window. • Select from one of three programmed rotation angles, or use the slider to select another rotation angle. • The Crop option removes areas of the image that fall outside of the image frame during rotation. • The Resize option fits the image within the frame so that no data is lost.
	**Magnifier**	• Click the **Magnifier** icon to display the Magnifier window which has a variety of options. • Select the tool shape, the size of the viewer, and the number of times you want the view to zoom in. • Move the mouse over the image. A window appears. As you move this window around the image, all data within the window is magnified. • To stop the tool, click the Exit icon on the Magnifier screen.
	**Apply To ALL**	Click the **Apply To ALL** check box to apply processing to all images in the grid.

Annotation Tools

Table 5-2: Annotation tools

Icon	Name	Function
	**Left Tag**	• Click the **Left** icon, then click on the image. • To access the Text Input box, which offers options for text entry and formatting and options for presets, double-click the L tag in the image. • To delete an L tag, close the Text Input box (if opened), left-click the green box above the L tag on the image, then press Delete on the keyboard. • To stop the Left Tag tool, click the highlighted L icon in the toolbar.
	**Right Tag**	• Click the **Right** icon, then click on the image. • To access the Text Input box, which offers options for text entry and formatting, and options for presets, left double-click the R tag in the image. • To delete an R tag, close the Text Input box (if opened), left-click the green box above the R tag on the image, then press Delete on the keyboard. • To stop the Right Tag tool, click the highlighted R icon in the toolbar.
	**Texts**	• Click the **Texts** icon, then click on the image. • The Text Input screen appears on the image, allowing you to add text to the image. Font size and color can be adjusted using the texts toolbar above the text box. • Close the Text Input screen to stop the Texts tool.
	**Arrow**	Click the **Arrow** icon, then click on the image. • Move the mouse to draw an arrow to a region in the image, then click to end the arrow creation. • To stop the creation of additional arrows, double right-click on the image. • To change the direction or length of the arrow, click and hold one end of the arrow while dragging it. • To stop the Arrow tool, click the highlighted Arrow icon.

Annotation Tools (continued)

Table 5-2: Annotation tools

Icon	Name	Function

	**Ruler**	• Click the **Ruler** icon, then click one end of the area on the image to be measured.
		• Move the mouse along the path to be measured, then click at the end of that path. The distance between the two points is displayed while you move the mouse.
		• To change the measurement from inches to mm or cm:
		  • Click Annotation Settings in the top menu bar.
		  • In the drop-down menu for Unit Type, select mm or cm.
		  • Click Save.
		• To delete the ruler path, select the marker on the image, then press the Delete button on the keyboard.

	**Density Box**	• Click the **Density Box** icon, then click on the image. • Drag the mouse to create a rectangle shape, then click to finish the creation of the rectangle. The average pixel intensity in the rectangular region is displayed at the top left corner of the rectangle. • To delete the density box annotation, select it, then press the delete button on the keyboard.
	**Rectangle**	• Click the **Rectangle** icon, then click on the image. • Move the mouse to create a rectangle shape, then click to finish the creation of the rectangle. • To delete the rectangle, select it, then press the delete button on the keyboard.
	**Show Grid on Image**	• Click the **Grid** icon to display a grid on the image along with the Grid Size window. • Options in this window allow to adjust the width and height of the displayed grid and to show or hide the grid. • Use the grid to section out the image into the desired dimensions.

Annotation Tools (continued)

Table 5-2: Annotation tools

Icon	Name	Function
	**Line**	• Click the **Line** icon, then click on the image. • Move the mouse to draw a line from one point to another, then click to finish the creation of the line.
	**Free Hand**	• Click the **Free Hand** icon, then click on the image. • Move the mouse to draw free hand on the image, then click to end the creation of the drawing.
	**Polygon**	• Click the **Polygon** icon, then click on the image. • Move the mouse to create one side of the shape, then click and move again to create another side of the shape. • Repeat this sequence to create the desired shape, then double-click to end the creation of the shape.
	**Ellipse**	• Click the **Ellipse** icon, then click on the image. • Move the mouse to create the shape, then click to end the creation of the shape.
	**Degree**	• Click the **Degree** icon, then click on the image. • Move the mouse and create one side of an angle, then click. • Move the mouse to create the other side of the angle, then click. The degree of the created angle displays. • To stop the tool, click the highlighted Degree icon.
	**Polygon Ruler**	• Click the **Polygon Ruler** icon, then click on the image. As you move the mouse to create one side of the shape, the measurement is displayed. • Click and move again to create another side of the shape. As you repeat this sequence to create the desired shape, measurements show. • Double-click to end creation of the shape.
	**Rectangle Area**	• Click the **Rectangle Area** icon, then click on the image. As you move the mouse to create the rectangle, the area of the shape is displayed. • Click to end creation of the shape.

Annotation Tools (continued)

Table 5-2: Annotation tools

Icon	Name	Function
	**Ellipse Area**	• Click the **Ellipse Area** icon, then click on the image. As you move the mouse to create the ellipse, the area of the shape is displayed. • Click to end creation of the shape.
	**Histogram**	View a graph (**Histogram**) of pixels vs. gray scale values of the whole image.
	**ROI His**	View a graph (**ROI His**) of pixels vs. gray scale values of a selected region of interest.
	**Density Profile**	View a graphical representation (**Density Profile**) of gray scale values as a line profile drawn through any part of the image. This tool is useful in highlighting breaks in continuity or distinct changes in the density of the image.
	**Hide**	Click the **Show/Hide** icon to show/hide annotations on an image.
	**Erase**	Click the **Erase** icon, then click Yes to the prompt to erase all annotations in the image.

View Options

Table 5-3: View options

Icon	Name	Function
	**Optical Image**	• Click the **Optical** icon to view the optical image. • Click in the optical window to switch between images in the smaller optical window and the larger main Image Viewer window.
	**Blender**	• The Blender overlays the optical image on the X-ray image. • To enable the Blender, click the **Blender** icon. A window opens and offers following options: • Slider changes the opacity of the optical image: Fully to the right shows only the optical image. Fully to the left shows only the X-ray. • Save to Series saves as a new DICOM image and becomes part of the series. • Open blended viewer allows blended images to be displayed in the main viewer. If there are many blended images, then a selection window opens for the user to choose which image to display. • Export saves the image as a .jpg or .tiff to a selected destination.
	**Compare Two Images**	• Click the **Compare** icon to enable a comparison of two images. In the screen that displays, you have options to select the accession number, series, view, image ID, and blended images. • To stop the tool, click another view icon.
	**Display 2D Image**	• Click the **2D View** icon to display the 2D image only (without the Optical image overlay.
	**Horizontal Toolbar**	• Click the **H Toolbar** icon to display the toolbar at the bottom of the screen.
	**Vertical Toolbar**	• Click the **V Toolbar** icon to display the toolbar at the side of the screen.

Window/Level Options

Table 5-4: Window/Level options

	**W/L Adjusts**	• Click the Window/Level **Adjusts** icon to display the vertical slides that allow you to adjust W/L in the displayed image. • In either slide, click and hold the button, then drag up or down the slide.
	**W/L Reset**	• Click the Window/Level (**W/L**) Reset icon to return the image to the original Window/Level settings.
	**Region of Interest**	• Click the **ROI** icon to create a box in the image. • Hold the left mouse button down and drag the box within the image to an area you want, then release the mouse. • You can now adjust the W/L within that static box. This W/L is the setting for areas that show within that box as you move around the image.
	**Window of Interest**	• This WOI icon adjusts W/L as you move the window around the image.
	**Window/ Level Preset**	• To use a Window/Level Preset, click the Preset you want. The image automatically adjusts to the values. • To change a preset, adjust the Window/Level of the image then right-click on the preset that you want to change then click **Yes** to the prompt about overwriting the existing preset. • Select **YES** to confirm the new value.

Other Image Viewer Tools

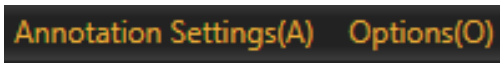
Table 5-5: Other image viewer tools

Icon	Name	Function
	**Reset**	Click the Reset icon to delete all the annotations on the displayed image.
	**Exit**	Click the Exit icon to return to the Main screen.

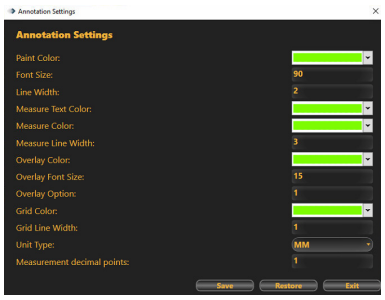
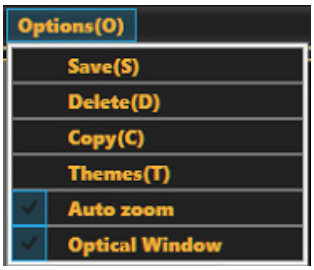
Image Viewer Menu

The Image Viewer menu at the top of the screen has options for displaying and handling acquired images. Menu items are described in the following table.

Table 5-6: Image Viewer menu

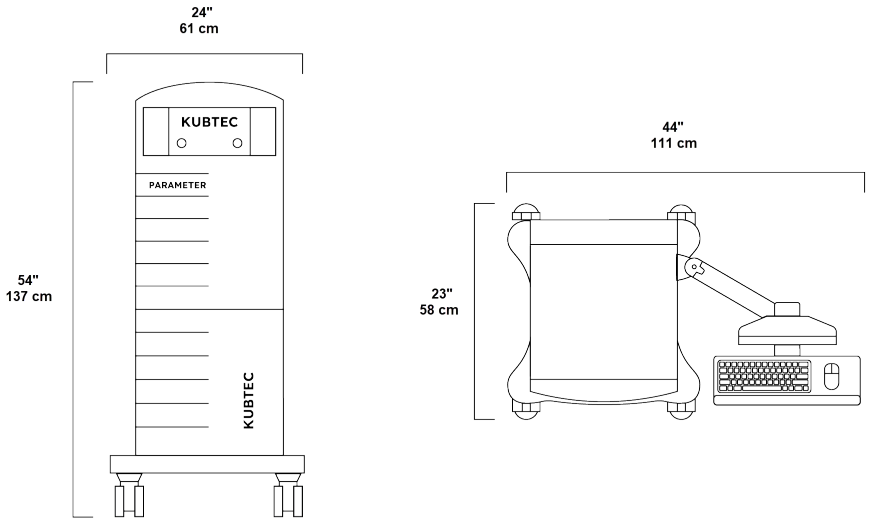




Menu Item	Function
Annotation Settings 	Provides options for the appearance of annotations on the image. You can select the color and size of the overlay as well as the grid, and you can change the unit of measurement.
Options (O) 	**Save(S)** - Click **Save** to overwrite the original image with the current image that is displayed in the image viewer. **Delete(D)** - Click **Delete** to remove the displayed image from the study. **IMPORTANT: Deleted images cannot be recovered.** **Copy(C) -** Makes a copy of the displayed image. **Themes(T) -** Provides options for changing the color scheme of the image viewer. **Auto zoom** - When enabled, uses image processing to locate the sample, then zooms in until the whole sample is visible and fills as much of the screen as possible. **Optical Window** - When enabled, the optical image will display when the Image Viewer starts.
	Provides the means to scroll through acquired images.

CHAPTER 6: SYSTEM SPECIFICATIONS

System Diagram



System Specifications

System specifications - The following tables list specifications for The PARAMETER® System components:

Electrical Requirements

Table 6-1: Electrical requirements

Input line voltage	90–250 VAC
Peak input power	500 W
Frequency	50/60 Hz

Physical Construction

Table 6-2: Physical construction

Construction	Fully integrated mobile system
External Dimensions	24″ L x 23″ W x 54″ H (61 cm x 58 cm x 137 cm)
Internal Dimensions	14.25 W x 12.87″ D x 11.68″ H (36.20 cm x 32.70 cm x 29.68 cm)
Weight without cart	300 lbs (136 kg)

Digital Image Receptor

Table 6-3: Digital image receptor

Active imaging area	5″ x 6″ (12 cm x 15 cm)
Output image	16-bit image data

X-ray Source

Table 6-4: X-ray source

Energy range	50 kVp
Anode type	Tungsten
Tube current	1 mA
Focal spot size	50 µm nominal
Filtration	0.127 mm Be

CHAPTER 7: SYSTEM MAINTENANCE

Introduction

This chapter provides information on actions that users need to perform to maintain the safe and consistent performance of the system. The first section of this chapter provides information about cleaning and disinfection. There are recommendations for products to use and procedures to follow.

The second section of this chapter contains checklists for routine system inspections. These lists detail the steps for each procedure in the inspection. KUBTEC recommends that you make a copy of each checklist to use for the inspection and keep it on file as a record of your completion of the inspection.

NOTE: To avoid damage to the system and unnecessary cleaning, protect the equipment from dust, dirt, and any other environmental hazards that damage surfaces or impair operation.

Cleaning and Disinfecting

Cleaning

For this manual, cleaning means wiping off dust, fingerprints, and other substances that do not contain bodily fluids. Solutions to use for this purpose are over-the-counter, neutral detergents and/or liquids. Be sure to use a soft cloth with these cleaners.



CAUTION: Harsh liquids or rough surfaces will damage system surfaces.



CAUTION: Use only a glass cleaner and a soft cloth on any leaded glass if present. The leaded glass is designed especially for protection against X-ray radiation exposure. Abrasives may damage its protective capabilities.

- Clean controls and stainless-steel surfaces with a no-rinse liquid cleaner.
- Clean glass and machine surfaces with a glass cleaner and a soft cloth.

Cleaning and Disinfecting (continued)

- To keep the displayed images distinct:
  - Regularly clean the top and bottom of the acrylic tray with an acrylic plastic cleaner and a soft cloth.
  - Regularly clean the top of the carbon fiber detector.

Disinfecting

For purposes of this manual, disinfecting means using approved solutions to wipe areas that have come in contact with body fluids.

Approved Cleaning Solutions

The following list shows cleaning solutions (and their main ingredients) that KUBTEC® approves for use in cleaning/disinfecting this system.

KUBTEC Approved Item	Ingredients
CaviWipes-XL	Quaternary ammonium + alcohol disinfectant
Accel-TB Wipes	Stabilized hydrogen peroxide
PDI and Clorox disinfectant bleach wipes	1:10 hypochlorite: water
PDI Super SaniCloth wipes	Quaternary ammonium and isopropyl alcohol (IPA) disinfectant

Areas to Clean/Disinfect



WARNING: To disinfect trays, use a soft cloth that is dampened with an approved solution to wipe the tray surface. DO NOT spray or spill solutions directly onto the detector surface.

In addition to cleaning/disinfecting surfaces that contact and hold the specimens, surfaces touched by the user(s) also need to be cleaned/disinfected at the end of each exam. These surfaces include:

- Interior and exterior walls of the cabinet
- Inside cover on the cabinet door
- Ruler and magnification tray rails
- Cabinet control panel buttons and indicators
- Monitor
- Keyboard and keyboard tray

NOTE: It is also recommended that you clean and disinfect the power cord before removing the system from the facility.

Daily Inspection Checklist

Perform the following inspection daily, before you use the system. Contact a KUBTEC representative or distributor if there is any problem.

Inspection	Review	Remedy
Visual	Are there any anomalies with the system?	If there are any visual anomalies during this procedure, contact KUBTEC or your distributor.
Test image	Were you able to complete a test exposure?	If there are any issues completing a test exposure, or with the quality of the image, contact KUBTEC or your distributor.

Yearly Inspection

Preventive maintenance services are to be performed annually by a KUBTEC engineer or a KUBTEC-trained engineer. This ensures your system is kept compliant with performance and regulatory guidelines.

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Frequently Asked Questions

This section provides answers to questions that users typically ask about the system.

Q: How do I turn the computer on?

The computer starts automatically when the power switch on the system cabinet is turned on.

Q: How long does the UPS last when AC power is interrupted?

The standard UPS maintains the usability of the system for about 24-30 minutes. The longevity of the usability depends on the activity being performed by the system.

Q: Do I have to keep the unit plugged in?

KUBTEC® recommends leaving the system plugged in so that the UPS is always charged.

Q: Should I remove the key at night?

Follow institutional policy regarding X-ray equipment. To prevent unauthorized use of the system, KUBTEC recommends the removal of the key when the system is not in use.

Q: Is the unit equipped with WI-FI wireless?

Yes, the unit has a Wi-Fi (wireless) adapter.

Q: Am I being exposed to radiation – do I need a lead apron for shielding?

X-rays are controlled and sealed inside the unit. A lead apron is not required.

Q: How can I clean the unit?

Wipe the tray of the specimen chamber with a soft cloth that is dampened with an ethanol or glutaraldehyde solution to disinfect and prevent infection. Do not spray or spill solutions directly onto surfaces. Refer to the Maintenance chapter in the **Instruction for Use** for more details about cleaning and disinfection.

Q: How often does the system need to be serviced?

Manufacturer recommendation is that the system get serviced once a year by a KUBTEC trained/certified technician.

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KUBTEC®
SCIENTIFIC

111 Research Drive

Stratford, CT 06615 USA

Tel: +1-203-364-8544

www.kubtecscientific.com