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Discovery XR656 Plus 2D

Discovery XR656 Plus Base System with TWO FlashPad Detectors

The Discovery XR656 Plus is an advanced digital radiographic imaging system that provides excellent image quality, a variety of image manipulation and post-processing tools as well as the option to utilize GE Healthcare's exclusive advanced clinical applications. Powered by FlashPad, GE's wireless digital detector, workflow is streamlined with TWO portable detectors that can be used in the table, wall-stand or freely to best accommodate most 2D exam requirements as well as advanced radiographic requirements.

At its core, the Discovery XR656 Plus delivers improved productivity through an efficient and intuitive workflow. The base system comes equipped with a systems cabinet, acquisition review workstation, image processing tools, short-term storage and quick in-room viewing of images. Also included is a host of networking and connectivity options, dose reporting and system maintenance. These features are designed to make this system easy to use and reliable while providing high quality radiographic images in a digital environment.

The Discovery XR656 Plus's core feature set can help streamline even the toughest exam. Consistent image quality helps reduce retakes, and unique image processing helps save time. With DICOM connectivity, the Discovery XR656 Plus connects easily to HIS, RIS or PACS for efficient data transfer.

The Discovery XR656 Plus base system includes:

Two wireless Digital Detectors with batteries and optional tether.

- Single panel (non-tiled) amorphous silicon detector with a Cesium Iodide scintillator and two handgrips that facilitate easy positioning and a secure grip.
- Wireless connectivity through Ultrawide Band Technology for fast, efficient and secure communications between the detector and the base system.
- Image area 40.4 cm x 40.4 cm (15.9 in. x 15.9 in.)

- Active matrix 2022 x 2022 pixels.
- Pixel pitch 200 microns.
- Typical upper dynamic range 7.8 mR @ RQA5.
- TypicalDQE 68 @ 0lp @ RQA5.
- Weighs 4.32 kg (9.52 lb.) without battery, 0.18 kg (0.40 lb.) battery weight.
- Dimensions: L 580 mm, H 452 mm, T 24 mm.
- Can support up to 160 kg (352 lb.) of distributed load.
- Battery or tethered operated. Includes two rechargeable and exchangeable batteries and 7 m cable (4 m or 10 m optional) for optimal connectivity and power.
- One 6:1 clip-on grid for FlashPad detectors.
- Battery allows for 150 images to be taken in 3 hours.
- QAP (Quality Assurance Procedure)
- FlashPad detector can support Advanced Applications that are options available on the Discovery XR656

Acquisition Workstation

The Acquisition Workstation is the primary interface to the network and provides image post-processing capabilities. The System Controller Module provides single point control, directing and coordinating overall system operation, while monitoring all system modules automatically through software.

The Acquisition Workstation includes:

- Two 19-inch Flat Panel Monitors that help minimize desktop space required.
- Keyboard and Mouse
- CPU Tower with 6GB RAM, 320 GB of hard drive storage and capacity for over 22,000 images.
- 120/140 VAC, 50/60 Hz.
- Easy Image Manipulation and
- Image Display Tools which include:
- Window width and level
- Gray scale/contrast invert
- Interpolated zoom and roam

- Image flips (horizontal, vertical) with automatic indicator
- Image Rotate - 90 degree increments
- Free rotation - 360 degrees
- Image orientation management
- Electronic Left/Right Markers
- Free text annotation
- Manual shuttering
- Image Annotations and Measurement Tools
- Multi-Resolution Post Processing
- Customizable Image Processing to Match
- User Preferences
- CD-RW and DVD Drive for Image Archive
- Image Viewer on Archive CD's and DVD's

Acquisition Control System

- Single Point System Control and Monitoring.
- Auto-Protocol Programming:comes with default set of exam and view protocols and the ability to build an infinite number of exams or views through the editor function. User also has the ability to attach acquisition protocols.
- System manager allows equipment error logging and provides resident power-up diagnostics.
- kVp selections range from 40-150 in 1 kVp increments
- Focal Spot Sizes of 0.6 and 1.2 mm - mA

Patient Management

- DICOM Modality Worklist for HIS/RIS - SCU (with programmable auto refresh)
- Patient edit/auto-foldering (Copy exam)
- Patient Dose Reporting Calculated Dose Monitoring (mGry)
- "Patient Directory" provides fast access to the image and exam database for case reviews and file management.
- Detector Exposure Indicator: tool for detector dose feedback to ensure exposure was within normal limits.
- Emergency Patient Exam Capability Emergency patient

feature - allows user to open exam and acquire images without a worklist entry.

- The Copy Patient function allows merging of the patient information with the exam images.
- Fast Image Display - Average time for a partially processed image is approximately three seconds and less than eight seconds for a fully processed image. Times may vary based on how the detector is connected to the system (i.e. docked, tethered or wireless)
- Set of default adult and pediatric protocols allows quick selection of the appropriate techniques for common proceedures/exams with the ability to define unlimited number of custom protocols.
- Set of 4 Factory (GE pre-set) image processing selections (looks) optimized for each anatomical view with the ability to define multiple Custom looks for each anatomical view/ patient size combination.
- Automatic image storage and print with DICOM 3.0 and IHE Compliant networking, further increasing exam throughput and decreasing examination time for patients.

Image Quality and Dose
- Multi-resolution image processing capability
- Tissue Equalization used to correct over-penetrated and under-penetrated areas within the image.
- Auto and manual image shuttering cropping tool.
- Automated brightness/contrast setting (Smart Windowing)
- Orthopedic Magnification/Print.
- Detector Exposure Index (DEI) - dose tracking and QC metric.
- Dose Area Product (DAP) - entrance dose metric.
- Grid Line Reduction (selectable)
- Intelligent Collimator Edge Detection automated, image based cropping/shuttering tool that relies solely on image information to locate the collimator edges present in the image.
- Orthopedic Magnification/Print

DICOM and Standard Networking Capabilities Images may be transmitted manually or automatically through the DICOM interface to

printers, archival devices, servers or review workstations.

Please refer to the DICOM Conformance Statement for complete definition of supported DICOM connectivity services.

DICOM and Standard Networking Capabilites include:

- Ethernet Network Link - DICOM 3.0.
- DICOM Storage (with auto-send to different locations)
- DICOM Storage Commitment (with programmable auto delete function)
- DICOM Modality Worklist for HIS/RIS (with auto refresh)
- DX/CR Worklist Filtering.
- DICOM Media Interchange on DVD-R.
- DICOM Modality Perform Procedure Step (MPPS) feedback to the HIS/RIS (SPS PPS)
- DICOM Grayscale Print (with print layout at the console)
- DICOM Query/Retrieve (retrieves images back from PACS)
- System Access & Authorization Control to support HIPAA Compliance.
- Full Range of Printing Options.
- Numerous Layout and Format Options.

Systems Cabinet

- Built-in System Distribution Power Module and Circuit Breaker for Single Point Power Feed to Room Subsystems
- Modular Designed X-ray Systems Based on a Digital Communications Network for Improved Reliability and Image Quality.

Quality Control/System Reliability Features

Preventing customer experienced system failures and reducing unplanned system downtime are critical.

The following features help to achieve these goals:

- Using the integrated system Quality Assurance Procedure

(QAP), image quality checks can be easily performed by the customer.

- The QAP includes a phantom, optimized for Digital Image Quality testing and is included with the system.
- System changes are highlighted and can be corrected before they become a problem.

Discovery XR656 Overhead Tube Suspension

The Overhead Tube Suspension (OTS) system with motorized movement delivers excellent levels of operational support for efficient operation and precise positioning.

The Overhead Ceiling Tube Suspension Package includes:
- Auto-Positioning Package (included in base)
- Auto-Positioning enables the users to select a predefined system position from the system console and automatically move the equipment by simply holding the "Auto Positioning" buttons. This feature reduces user fatigue and increases the productivity of the operator.
- Auto-Positioning is controlled at the acquisition workstation or with the IR remote control, allowing the user to remain in the room while moving the system.
- Pre-set positions at the table, wallstand and park position at various SIDs and vertical and horizontal orientations.
- Auto-Positioning will incorporate angulation of the tube, longitudinal, lateral, rotational and vertical positioning of OTS, table detector longitudinal positioning, wallstand detector vertical positioning.
- Auto-Positioning comes with 7 default positions and up to 10 additional user defined positions can be added to the system.
- Tube and Detector Tracking Synchronized tube and detector tracking enables convenient workflow by keeping the tube correctly aligned with the wall-stand or table detector.
- Motorized 5-axis movements Supported Positions: park, table 100 cm SID (head, center, foot), wallstand 100 cm and 180 cm CID, and horizontal wallstand 100 cm SID.

- IR Remote - The infrared remote is an in-room control allowing the technologist greater flexibility & ability to pre-position the system automatically in preparation for the next clinical exam/view.
- Auto or manual positioning with single lock release and auto detents for assisted manual positioning.
- Touch-screen user interface with LCD screen display helps confirm patient data, review techniques, receptor selection and modify/confirm wireless detector association.The easy to Read, Auto Rotating user screen also includes a message readout line and easy to see light indicators.
- Patient Side Touch Screen User provides the following functions to the user:
- Lock, Detent Control
- Field of View Image Size Selection
- Collimator Field Light Selection
- Technique Adjust (kVp, mAs)
- Receptor Selection (table, wallstand, wireless or cassette)
- Exam Inhibit Display
- Collimator Manual Override
- Position Display (Source-to-Image Distance, X-ray Tube Angle, Column Rotation Angle)
- Display of Patient Name for In-Room Verification (this feature can be disabled)

2	1	2, 3, or 4 Meter Longitudinal Drive Belt Kit
		2, 3 or 4 Meter Longitudinal Drive Belt Kit
3	1	Inboard Rail Select
		2, 3 or 4 Meter Longitudinal Rail Select (Dependent on Room Size)
4	1	2, 3, or 4 Meter Bridge Select
		2, 3 or 4 Meter Bridge Select (Dependent on Room Size)
5	1	2, 3, or 4 Meter Bridge Cable Select
		2, 3 or 4 Meter Bridge Cable Select

6	1	2, 3, or 4 Meter Bridge Cable Drape Select
		2, 3 or 4 Meter Bridge Cable Drape Select
7	1	Required Language Labels
		Required System Language Labels - English

8   1   80kW High Frequency Generator

80kW High Frequency Generator, 50 or 60Hz The high frequency 80kW power unit is designed for radiographic applications and utilizes microprocessor controlled power and parameter adjustment

Specifications:
- 1000mA at 80kVp
- 800mA at 100kVp

Input Power: 360-480VAC, 3 Phase, 60Hz

kVp Range: 40-150kVp, 1kVp increments

kVp Accuracy: 3% +/-2kVp mA Range:
- Small Focal Spot: 10-320mA
- Large Focal Spot: 160-1000mA

9   1   Table without Detector

Elevating table with floating tabletop and 3 AEC ion-chamber. Includes cross lateral detector holder.&

10   1   TABLE REAR FOOT PEDAL

Table Rear Foot Pedal

11   1   XR656 Plus Wallstand Std

Discovery XR656 Plus Tilting Wallstand with Standard Length Arm

Discovery XR656 Plus Digital Tilting Wallstand is designed for radiography applications with the patient standing, sitting or lying on a guerney.

The Discovery XR656 Plus wallstand is designed for use with GE's exclusive FlashPad wireless digital detector, overhead tube

suspension and ion chamber. The FlashPad wireless digital detector can be operated docked, tethered or in a wireless digital cassette mode.

- The wallstand is motorized. Electromagnetic braking secures vertical motion.
- Motorized receptor tilting controlled with either IR remote control or hand switches located on the arm.
- Vertical motorization of the wallstand with foot switch or IR remote control.
- Auto-tracking from the overhead tube suspension.
- Graphic outlines of image sizes and ion chamber scan areas on the front panel enhance accuracy and safety. Preparation is fast and simple for better patient throughput.
- The wallstand tilts from -20 degrees to 90 degrees.
- The wallstand grids are removable from the side.
- It is configurable for either left or right side insertion.
- The wallstand come with one removable grid.
  - 180 cm (72 in.) focus grid with a SID range of 145 cm - 245 cm (70 lines/cm, 13:1 ratio)
  - Automatic Exposure Control (AEC) utilizes three ion chamber sensors, which are mounted between the patient and digital detector.
  - Includes patient handgrips and a lateral support bar.

| 12 | 1 | VolumeRAD Table - Horizontal |

VolumeRAD Horizontal Sweep Table

VolumeRAD is an advanced application in radiographic X-ray imaging which allows the retrospective reconstruction of a number of planes (slices) from a series of low dose exposures acquired within a limited angular range. These slices show anatomical structures at different depths

This application supports the following sweep:
- Table Horizontal sweep of the tube over the table for prone or supine imaging

| 13 | 1 | Repeat and Reject Analysis for the Discovery XR656 |

Repeat and Reject Analysis for the Discovery XR656

The Repeat and Reject Analysis (RRA) software package is a quality control (QC) application available for the Discovery XR656 that allows for repeat or reject images to be captured and categorized by technologist. It is designed to help track and analyze the X-ray repeat rate

- The easy-to-use operator interface helps technologists classify each image they reject and to select a specific reason for the repeat /image rejection.
- RRA can be a helpful teaching tool because it includes links to actual JPEGs of the rejected images to help the user analyze why the image was rejected.
- The RRA application tracks the rejected image data by operator, exam type, date and reason code.
- Reports can be exported in DVD, CD or USB format for ease of use.

| 14 | 1 | Auto Field of View for the Discovery XR656 |

Auto Field of View for the Discovery XR656

Auto Field of View enables the user to pre define the collimation size on an individual view basis. Helps improve workflow by reducing the time is takes to make the final collimation adjustment for a particular exam.

| 15 | 1 | Auto Protocol Assist for the Discovery XR656 |

Auto Protocol Assist for the Discovery XR656

Auto-Protocol Assist - the Discovery XR656 system will automatically transition directly to the Acquire screen when the protocol code downloaded from the HIS/RIS (automatically performed with worklist refresh) matches the exam code contained in the protocol database. This tool eliminates the user steps required to select patient exam types and initiate an exam.

| 16 | 1 | 110CM TABLE GRID |

110CM TABLE GRID

| 17 | 1 | 180cm Focus Grid |

		180 cm Focus Wallstand Grid
		- 180 cm (72 inch) focus Wallstand Grid - 13:1 ratio, 70 lines/cm
18	1	Wallstand Mid-Range Crosstable Grid
		Wallstand Mid-Range Crosstable Grid
		- 130 cm (51 inch) focus - 10:1 ratio, 70 lines/cm - Used for SID ranges from 90 to 190 cm
19	1	100cm Focus Grid
		100 cm Focus Wallstand Grid
		- 100 cm (40 inch) focus - 13:1 ratio, 70 lines/cm
20	1	Mid-Range 130cm Focus Grid
		Mid-Range Wallstand Grid
		- 130 cm (51 inch) focus - 10:1 ratio, 70 lines/cm - Used for SID ranges from 90 to 190 cm
21	1	25 KAIC X-Ray Main Disconnect Panel 80 Amp, 480 V / 208 V

25 KAIC X-Ray Main Disconnect Panel 80 Amp, 480 V / 208 V

FEATURES/BENEFITS

- Serves as the main power disconnect between the X-Ray system and the facility 480V or 208V power source
- Provides emergency shut down, undervoltage protection and overcurrent protection for the X-Ray power distribution cabinet
- Standardized design provides a platform for future upgrades of the system
- Offers a number of advantages by combining a variety of individual components into a single pre-engineered and factory tested panel
- UL and cUL listed for compliance with NEC Article 100 and Article 110-3
- Remote emergency off pushbutton located by X-Ray control provides immediate shut down of the entire system to comply with NEC required disconnecting means

- Surface or semi-flush mounting

SPECIFICATIONS

- Dimensions (H x W x D): 48" x 20" x 6.68"
- Weight: 80 lbs.
- Mounting: via keyhole slots; Width is 16" on centers, Height is 45.5" on centers

COMPATIBILITY

- GE Three Phase X-Ray generators

NOTES:

- Customer is responsible for rigging and arranging for installation with a certified electrician
- ITEM IS NON-RETURNABLE AND NON-REFUNDABLE

22	1	6 Day X-ray System Training

6 Day XR System Training

One 4 day and one 2 day TiP Onsite Training visits for the X-ray system.

Includes T&L expenses. Days provided consecutively.

This training program must be scheduled and completed within 12 months after the date of product delivery.

23	1	VolumeRAD TiP Training: 4 Days Onsite (3 Days + 1 Day)

VolumeRAD TiP Training: 4 Days Onsite (3 Days + 1 Day)

One 3 day and one 1 day TiP onsite applications training visit covering the VolumeRAD software functionality.

Onsite training provided from 8AM to 5PM, Monday through Friday. Includes T&L expenses.

This training program must be scheduled and completed within 12 months after the date of product delivery.

24	1	Auto Image Paste TiP Training: 2 Consecutive Days Onsite

Auto Image Paste TiP Training: 2 Consecutive Days Onsite

Two consecutive days of TiP Applications Onsite X-ray training covering the Auto Image Paste function.

Onsite training provided from 8AM to 5PM, Monday through Friday. Includes T&L expenses.

This training program must be scheduled and completed within 12 months after the date of product delivery.

25	1	WALLSTAND CABLE SELECT

Connection cables for the wallstand

26	1	TABLE CABLE SELECT

Connection cables for the table

1   **TECHNICAL SERVICES TRAINING ROC**

27	1	REV DIGITAL RAD SYSTEM IR

Revolution Digital Rad Systems (Class/Lab)

The Revolution Digital Rad Systems service training consists of an online course & 1 week of in-residence class and labs. The systems taught in the course include: Revolution XQI, Revolution XRd (Gipeto), Revolution XRd-2x (Lightning), Definium 8000 (Thunder), Optima XR640, and Discovery XR650. This course must be taken within 2 years from the purchase date.

28	10	Meals And Lodging Expense

Meals and Lodging Expense has been developed to allow the customer the convenience of prepaying for their meals and lodging expenses when attending Technical Service Training at the GE Healthcare Institute located in Waukesha, WI.

The price of this convenience is based on a per day basis. Thus a quantity of 1 is equal to 1 day's meals and lodging expense. When purchasing the meals and lodging expense please be mindful of weekend days during the training stay and include 2 days to cover a weekend in the purchase quantity.

Examples: A 5-day course needs a quantity of 5. Any course longer than 5 days should include 2 days to account for the weekend stay. Any course longer than 10 days will require an

additional 4 days of the meals and lodging expense to cover the 2 weekends of the stay. Thus a 15-day course would have a quantity of 19 days to cover the 2 weekends of the stay. This expense must be used within 2 years from the purchase date.

Three meals a day Monday thru Thursday, 2 meals on Friday, pluse breaks are provided in the onsite cafeteria. The GE Healthcare Institute cafeteria closes Friday after lunch and reopens Monday morning for breakfast. Weekend meals are the responsibility of the customer.

Only for In-resident courses to be taken at the GE Healthcare Institute.

| 29 | 1 | Airfare Expense |

The AIRFARE EXPENSE has been developed to allow the customer the convenience to prepay their roundtrip Airfare expenses when attending Technical Service Training at the GE Healthcare Institute located in Waukesha, WI. To be used for engineers attending In-Resident Class/Lab courses for Diagnostic Imaging.

Customer will make their Airfare arrangements thru the GE Travel Center. Specific directions will be provided to the customer upon confirmation of class. Please note that this expense must be used within 2 years of the purchase date

| 30 | 1 | DISCOVRY XR656 DIFFERNCES |

Discovery XR656 Differences Training

The Discovery XR656 Differences training is a web based course. It highlights what is new and unique with the Discovery XR656 system, FlashPad and associated components compare to the Discovery XR650 system. It is designed for the engineer who has previously completed training on the Discovery XR650 system. Moving forward content on the Discovery XR656 as well as the the Discovery XR650 will be included in the Digital Rad Systems course R0122RY. This course must be taken within 2 years from the purchase date.

| 31 | 1 | X-RAY BASIC SERVICE (WEB) |

X-RAY BASIC SERVICE (WEB)

This course is a prequisite to R0182RY and is included in the purchase of the In-residence course. This course consists of 2 sections: Prerequisite and Reference course material. Prequisite course material includes: Radiographic basic applications and Fluoroscopic basic applications. Reference course materials include: X-ray principles, Radiographic components, Fluoroscopic components. Studying the prerequisite course material and passing the 2 tests is required before attending R0182RY X-RAY BASIC SERVICE in-resident course. This course must be taken within 2 years from the purchase date.

Def 8000 Trade-In (12266M33)

Item No.	Qty	Description	Ext Sell Price
32	1	Auto Image Paste for the Discovery XR656 Wallstand and Table	$38,700.00

Wallstand Auto Image Paste for Spine and Long Bone Imaging

- Fully automated acquisition and processing of a series of images with user defined start and stop locations on the anatomical regions of interest.
- Average acquisition time for a 3-image exam (90 cm coverage) is less than 10 seconds. Image pasting and processing time for a 3-image exam is less than 15 seconds from the last exposure.
- Allows 2 to 5 images to be pasted together with a maximum range of 150 cm.
- Includes imaging of the spine for scoliosis evaluation and imaging of the legs for orthopedic evaluations.
- Supports anatomies/view combinations of Spine Antero-posterior, Spine Postero anterior, Spine Lateral, Leg Antero-posterior, Leg Postero-anterior.
- Includes a patient stand with screen to keep the patient comfortable during acquisition.

Table Auto Image Paste for Spine and Long Bone Imaging

- Fully automated acquisition and processing of a series of images with user defined start and stop locations on the anatomical regions of interest.
- Average acquisition time for a 3-image exam (90 cm coverage) is less than 10 seconds. Image pasting and processing time for a 3-image exam is less than 15 seconds from

last exposure.

- Allows 2 to 3 images to be pasted together with a maximum range of 100 cm.
- Includes imaging of the spine for scoliosis evaluation and imaging of the legs for orthopedic evaluations.
- Supports anatomies/view combinations of Spine Antero-posterior, Spine Postero anterior, Spine Lateral, Leg Antero-posterior.

(Quoted prices do not reflect state and local taxes if applicable. Total Net Se Includes Trade In allowance, if applicable.)