DIA◇OND

All-In-One Digital Radiography System

DRGEM

DRGEM Corporation

DIAMOND DR SYSTEM

Go filmless - the easy way!

Take advantage of all the features digital system can offer!!

Fully Automatic Operation

The DIAMOND DR System is a fully automatic digital radiographic system providing state-of-the-art image quality, image processing and user interface; making the system easy to use and reliable while providing high quality digital radiographic images with reduced dose.

Selection of an anatomical study on the imaging software automatically sets up the x-ray generator's preprogrammed exposure technique setting, motorized radiographic stand positioning, x-ray collimation and post image processing for selected study. Also, removable high resolution grids which have 100 and 180cm (40 and 72 inch) focal distance supplies excellent image quality per each SID.

The **DIAMOND** DR System has been specially developed for moderate budgets and small spaces. A fully digital workflow, convenient auto-positioning, and advanced image processing, make this versatile system a sensible choice.

Experience the quality and value in a DIAMOND digital radiography system for all common applications!
The DIAMOND DR system will serve you to achieve the big performance with small effort.

Outstanding Image Quality

Digital radiography via flat panel detector improves your workflow, exam speed and comfort with efficiency. Digital flat panel detector wirh CsI screen provides excellent spatial resolution, MTF, DQE and stability based on fine pixel pitch.
A 3-field ion-chamber is provided for AEC function.
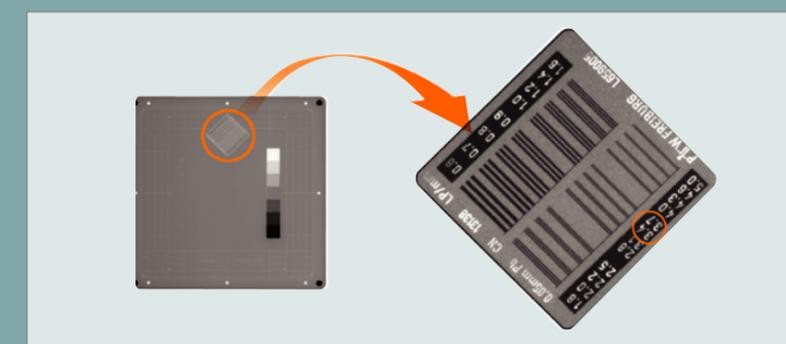
(Spatial Resolution Chart: PTW Normi-13)

Removable High Resolution Grids

- Two removable grids are provided : SID 100/180cm (40/72 inch)
- System will sense the focal distance of each grid when it is inserted
- False grid insertion will be warned by software when usable range of grid's focal distance is not suitable with SID
- Each removable grid are protected by aluminum frame with handle

Digital Detector Assembly

- Front Cover
- Removable Grid
- AEC Ion Chamber
- Digital Flat Panel Detector
- Detector Case (Aluminum Casting)
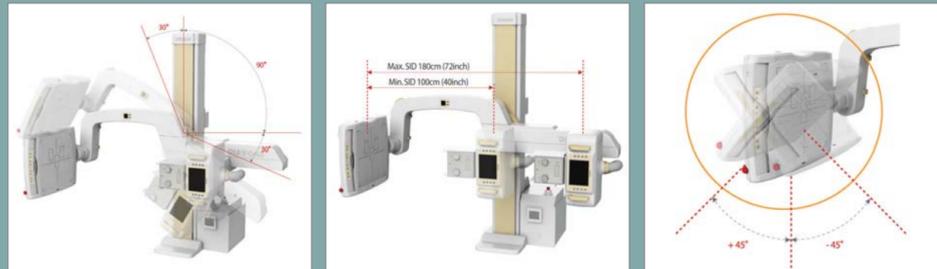- Spare Grid Holder

Automatic Positioning

Radiographic stand has four motorized joints, and automatic positioning can be accomplished by pre-programmed data which can be easily reprogrammed by operator.
Total of seven safety sensors are located over U-arm, detector and tube side to protect against collision with patient or obstacles to control the speed or stop the positioning.
Also, a mobile patient table with heavy patient load is provided for radiographic study which needs table. A remote-control is provided for remote motorized control of stand, and the movement stops as soon as you lift your finger from the key by dead-man control type.
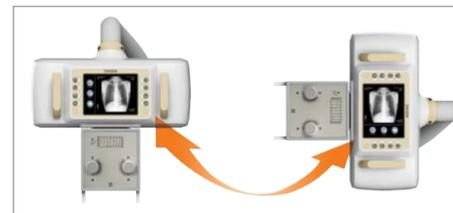
Trustworthy X-ray Source

The core part of x-ray source adopts high quality tube assembly (VARIAN, SIEMENS, TOSHIBA), motorized x-ray collimator, HV cable assembly and DRGEM's high frequency x-ray generator which has worldwide reputation on excellent performance, lifetime and stability. Touch screen x-ray control console provides user-friendly interface and easy technique selection. Automatic collimator supports high accuracy for selected x-ray field size over any SID.

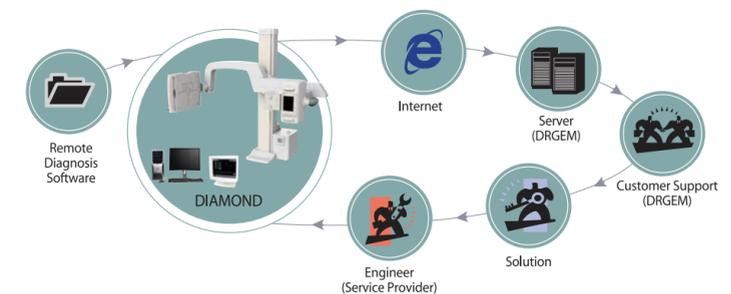# Full Featured Imaging Software & Excellent Digital Image Processing

A high performance imaging workstation and software serves you a convenient interface and easy operation. Anatomical view-based digital image processing automatically optimizes and enhances the quality of the captured images. Automatic image storage and print with DICOM 3.0 networking capability increases exam throughput and decreases examination time.

Motorized Radiographic Stand
- Fully automatic motorized movement
- Ergonomic and convenient handling
- Automatic move to pre-defined positions for the most frequent applications
- Safety features protect against collision with patient and obstacles
- Supports forced air cooling for tube assembly and manual tube rotation

- Micro Processor Controlled High Frequency Switching
- Real-time Monitoring Self Diagnosis, Tube Overload and Anode Heat Unit Protection
- User programmable APR
- Full-Auto mA Calibration, Adaptive mA Calibration for long-term tube usage
- Automatic Exposure Control (AEC)
- Touch Screen Control Console

- Provides convenient user interface and easy operation
- Included anatomical view-based digital image processing automatically optimizes and enhances the quality of the captured image for the imaged anatomy
- Radiographic stand & automatic collimator control function
- DICOM 3.0 networking interface includes Worklist, Print, Store, Query for integration with any PACS or RIS

Mobile Patient Table
- Mobile table designed for conventional radiography applications
- Freely revolving casters with brakes
- Max. Patient weight: 250 kg (550 lbs)

Automatic Collimation
- Motorized collimator with dual leaf
- Automatic x-ray field size control corresponds to varying SID
- User adjustable lamp timer with on/off switch (supports software control)

Integrated Touch Screen Console

Thanks to the integrated touch screen console located in tube side, operator can easily controls the radiographic techniques and stand positioning. Furthermore, operator can verify the digital x-ray image on this screen.

- The GUI of integrated touch screen console is automatically rotates corresponds to rotation angle of U-arm

Remote Diagnosis

Remote diagnosis function enables fast and accurate diagnosis on problems and saves service cost and system downtime.

Remote Diagnosis Software

DIAMOND

Internet

Server (DRGEM)

Customer Support (DRGEM)

Engineer (Service Provider)

Solution

Specification

Radiographic Stand

Vertical Movement	Max. 110cm (43.3inch)
U-arm Rotation	+120°(CW) ~ -30°(CCW)
SID Movement	100 ~ 180cm (40~72inch)
Detector Rotation	+45° ~ -45°

Ion-Chamber and Preamplifier for AEC

Field	3 Fields
X-ray Energy Range	40~150kV

Removable High Resolution Grids

Size	17 x 17 inch
Resolution	200 line/inch
Ratio	12:1
Focal Distance	100 / 180cm (40 / 72inch)
Cover Material	Carbon Fiber

Motorized X-ray Collimator

Rated X-ray Shielding	150kV max.
X-ray Field Coverage	Max. 48 x 48cm at 100cm SID (Max. 18.9 x 18.9inch at 40inch SID)
Luminosity	Over 160 Lux
X-ray Field Precision	< 2% SID
Leakage Radiation	< 40mRh at 150kVp / 4mA, 100cm(40inch) SID

Digital Flat Panel Detector

Imaging Area	43x43cm(17x17inch)
Pixel Matrix	9 Mega pixels (3,072x3,072pixels)
Pixel Pitch	139 μm
Scintillator Material	CsI
Limiting Spatial Resolution	3.6 lp/mm
MTF	0.60 at 1 lp/mm, 0.29 at 2 lp/mm, 0.14 at 3 lp/mm
DQE	0.57 at 1 lp/mm, 0.40 at 2 lp/mm, 0.24 at 3 lp/mm

High Frequency X-ray Generator

System Model	DIAMOND-5A	DIAMOND-6A	DIAMOND-8A
Model	GXR-52	GXR-68	GXR-82
Output Rating	52kW	68kW	82kW
Line Power	400/480VAC, 3 Phase, 50/60Hz, ±10% Voltage Range		
kV Range	40~150kV, 1kV step		
mA Range	10~640mA, 19 steps	10~800mA, 20 steps	10~1,000mA, 21 steps
Max. Output	640mA/81kV 500mA/104kV 400mA/130kV 320mA/150kV	800mA/85kV 640mA/106kV 500mA/136kV 400mA/150kV	1,000mA/82kV 800mA/102kV 640mA/128kV 500mA/150kV
Timer Range	0.001~10 sec, 38 steps		
mAs Range	0.1~500mAs		
Rotor Supply	Low Speed (Optional Dual Speed)	Dual Speed	
Reproducibility	Coefficient of Variation: kV < 0.005, Time < 0.005, mAs < 0.01		
Accuracy	kV< ±(1%+1kV), mA< ±(3%+1mA), Time< ±(1%+0.5ms), mAs< ±(3%+0.1mAs)		
Linearity	Coefficient of Linearity < 0.01 : CL = (X1-X2)/(X1+X2), where X is mR/mAs		

X-ray Tube Assembly

Model	RAY-12	E7252X	RAD-14	RAD-21
Maker	SIEMENS	TOSHIBA	VARIAN	VARIAN
Maximum Tube Voltage	150kV	150kV	150kV	150kV
Anode Heat Storage Capacity	230kHU	300kHU	300kHU	300kHU
Focal Spot Size	0.6 / 1.2 mm	0.6 / 1.2 mm	0.6 / 1.2 mm	0.6 / 1.2 mm
Maximum Input Energy at 0.1sec	22 / 54kW	27 / 75kW	32 / 77kW	36 / 100kW

Imaging Workstation

CPU	Intel(R) Core2 Duo E7500 (2.93GHz, 1066MHz FSB, 3MB L2 Cache)
Memory	2GB DDR2 800MHz SDRAM
Display	Intel GMA 4500
Storage	250GB x 2, 7200RPM SATA HDD
Monitor	20.1 inch Color LCD, Display resolution: 1600 x 1200 pixels
Maker	DELL International

Options

- PACS Software
- DAP(Dose Area Product) Function with Sensor
- UPS for Imaging Workstation

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