



# Lunar iDXA™

The intelligent DXA



# The best of DXA technology for bone and metabolic health assessment

With a state-of-the-art design, Lunar iDXA offers research-grade image resolution and clarity with exacting precision, designed to provide you a high degree of clinical confidence across all body types for bone health and body composition. Consider Lunar iDXA not only for today's imaging needs but also as an enduring platform for the future.



**Bone Health**

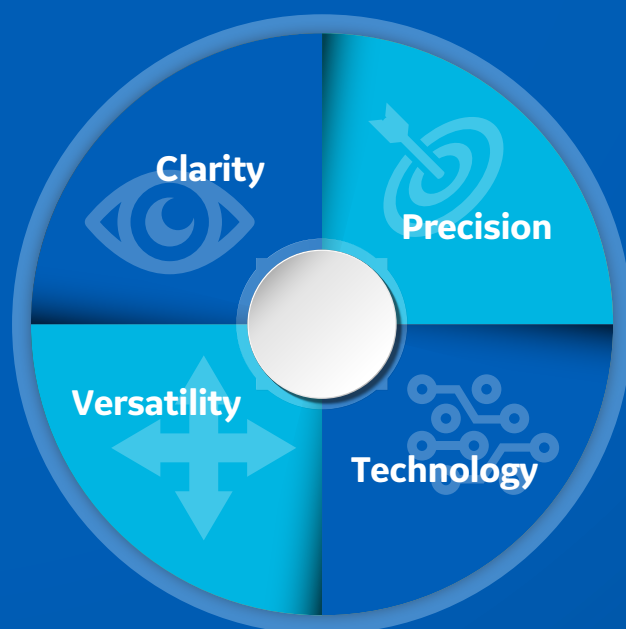


**Metabolic Health**

## See More. Know More.

Research-grade analysis helps you manage patients with confidence.

In your search for answers to a patient's health concerns, information is everything. And with Lunar iDXA, GE Healthcare offers our most advanced system to provide the data and images you need. Whether you're assessing bone density, fracture risk, metabolic health, pediatric development or sarcopenia Lunar iDXA gives you a clear view inside the body.



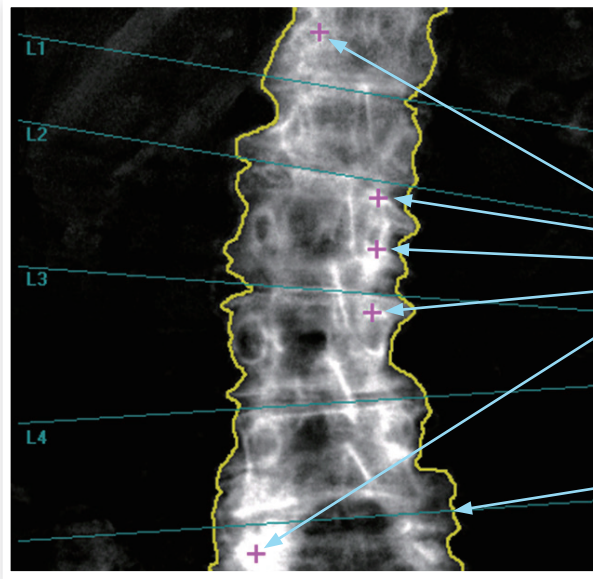
# Clarity

## Exceptional capabilities.

One in four women over the age of 50 will suffer a vertebral fracture in her remaining lifetime, with severe impact on quality of life.<sup>1</sup>

Assessment is made easy with Lunar iDXA system's extra-crisp images.

Lunar iDXA offers the latest generation of DXA technology from GE Healthcare. It's vertebral assessment is comparable to radiographs in identifying and classifying deformities concerning etiology, grade, and shape,<sup>1</sup> while using a lower dose of radiation.



Enhanced ability to detect unusually high density for exceptional measurement accuracy.

Enhanced edge detection for outstanding accuracy and reproducibility of bone mineral density (BMD) results.

## High-resolution images bring anatomy into focus.

Lunar iDXA delivers crisp, high resolution images of all skeletal sites, revealing details that were never seen before. It clearly renders the end plates on Spine images and identifies intervertebral spaces easily. You can see proximal femur details like the femoral head, visualize cortical thickness, and see unprecedented total body images.

Lunar iDXA helps you detect a variety of asymptomatic compression fractures.

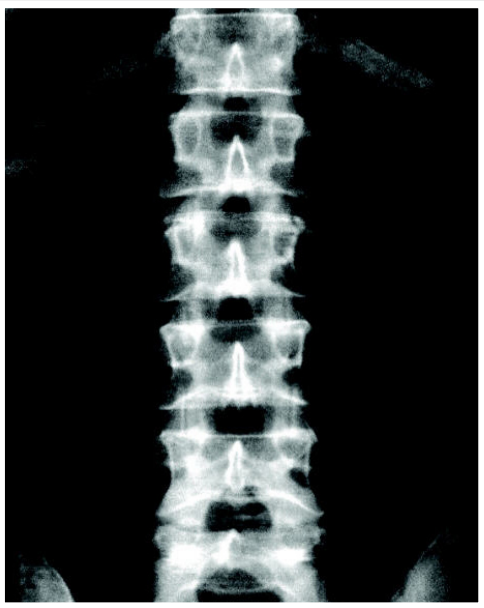
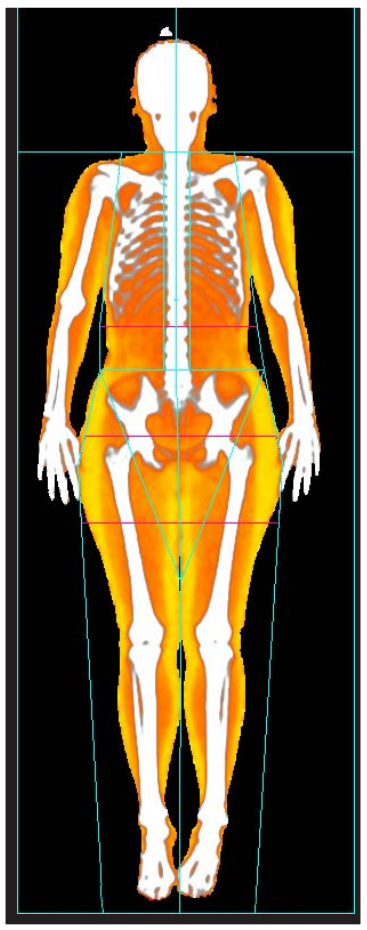
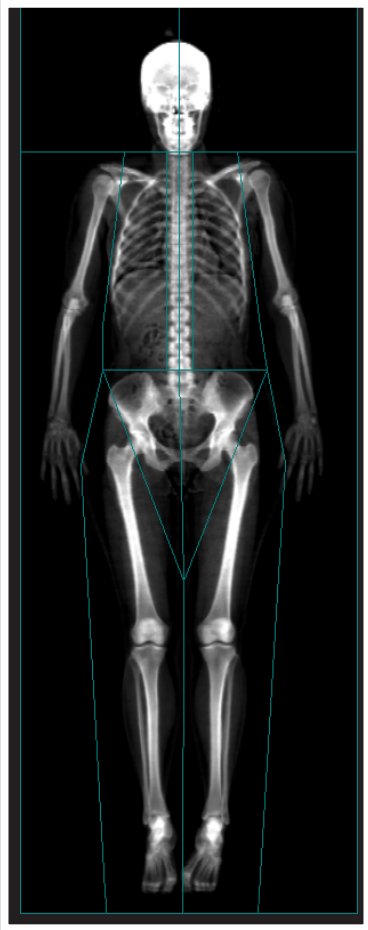


See vertebral bodies clearly with dual-energy soft tissue subtraction.





# High Resolution Images. Low Dosage DXA Technology.





# Precision

Precision you can see for detecting bone and body changes through faster scans.<sup>2,3</sup>

## 6-Point Calibration ensures precision & accuracy in BMD and soft tissue

The Lunar iDXA is up to twice as precise and accurate as competing systems thanks to an exclusive 6-Point Calibration technique. When assessing bone density, soft tissue values should be subtracted to ensure only BMD is measured. Therefore, it's critical to take into account the entire body – bone, fat, and lean tissue.

Most systems today do not calibrate across the full range of BMD and fat/lean values, rather they only calibrate to average patients. This can result in an inaccurate assessment. The Lunar iDXA performs a 6-Point Calibration with normal, osteopenic, and osteoporotic BMD values, as well as lean, normal and obese values. The result is more clinical confidence than ever before.

## Higher precision means better patient compliance

You know that it can be challenging to motivate patients with bone deficiencies to stay on their treatment plans. Osteoporosis treatment requires time, and feedback on progress can take years. With Lunar iDXA, any change in bone or body composition can be better detected through higher precision and image resolution.

Lunar iDXA's detector technology enables an extremely precise measurement of the bone, allowing you to track changes that had previously been too minor to detect. You can better manage treatment plans, which promotes better patient compliance.

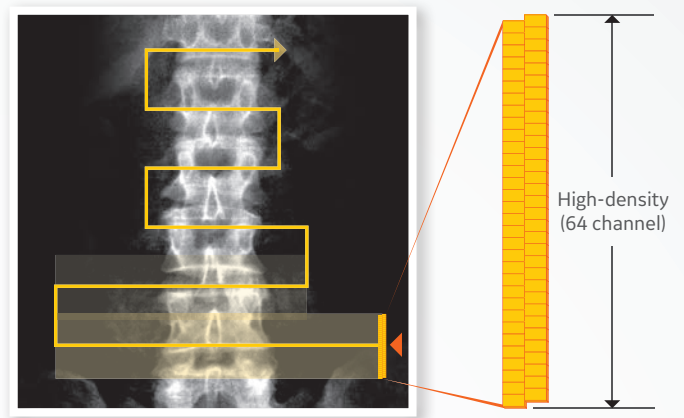
Higher precision enables best estimate of Appendicular Lean Mass (ALM) for effective assessment of sarcopenia.



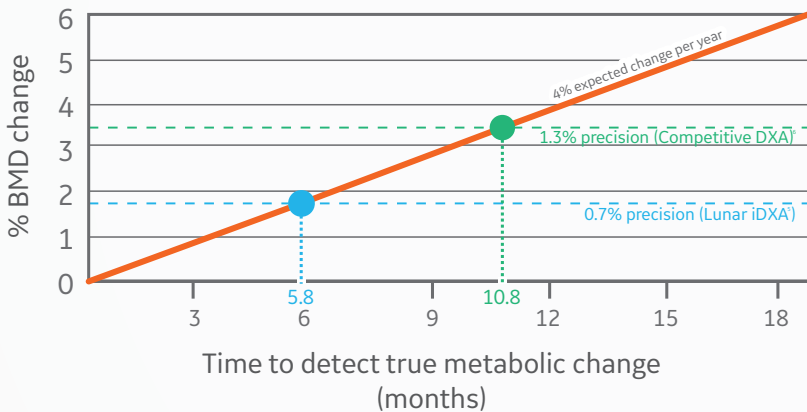
# Precise measurement helps you detect small changes nearly twice as fast.

Osteoporosis treatment and other clinical interventions require time to monitor. Lunar iDXA helps with exceptional precision, due to its direct-to-digital detector plus staggered array and narrow-angle fan beam technology with Multi-View Image Reconstruction (MVIR). This corrects magnification error that is observed with competitive wide-angle fan beam systems<sup>4</sup>

What's all this precision worth to you? It enables you to detect small and significant changes sooner, which can help motivate patient compliance, guide treatment decisions and reduce sample size required for clinical trials.



Direct-to-digital detector plus staggered array enhance precision and create high-resolution images.



In this example, analysis shows that precision with Lunar iDXA allows clinicians to detect true metabolic change as early as 5.8 months, compared with 10.8 months for competitive equipment (95% confidence).



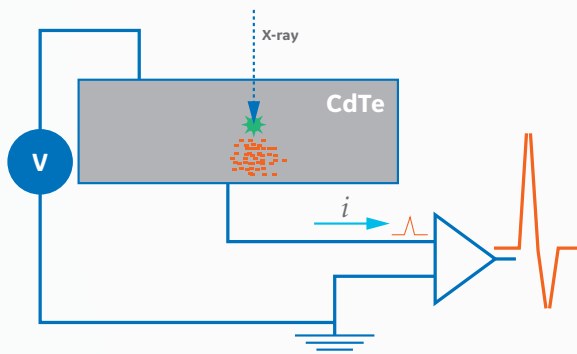


# Technology

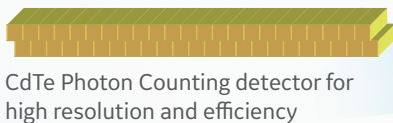
## Superior Technology. Incredible Results.

The brains behind Lunar iDXA – photon counting based detector technology provides near-radiographic image quality, allowing you to see more clearly than ever before.

Lunar iDXA detectors use solid-state crystals (Cadmium Telluride or CdTe) that absorb the X-ray energy and result in the immediate release of electrons from their atoms (i.e. *direct conversion*). An applied voltage pushes the electrons out of the crystal, effectively creating a current pulse whose magnitude is proportional to the X-ray energy. Sensitive, low-noise amplifiers boost the signal so that counting electronics can perform the final identification as low or high energy.



Lunar iDXA X-ray detector signal generation



### Unique Performa X-Ray Tube provides superior reliability.

GE Healthcare's Performa X-ray Tube is the basis of Lunar iDXA's unique integrated X-ray generation system, designed from the ground up to deliver the ultra-stable output needed for high precision, image clarity, and long-term reliability. The Performa X-ray Tube delivers X-ray flux to measure and image patients up to 204 kg (450 lbs.), but still provides low-dose performance.

### Narrow Fan Beam Scan

Patented narrow fan beam technology that combines the best features of pencil beams (no magnification, low dose) with the short scan time of wide fan beams while reducing magnification error inherent to wide-angle fan beam systems.

### Photon Counting Detector

Dose-efficient photon counting detector technology that simultaneously counts low and high energy X-rays photons resulting in lower dosage to the patient and faster and efficient scans.

### SmartScan™

Unique feature exclusive to GE Healthcare bone densitometry systems that identifies bone regions after each transverse sweep to estimate where to begin exposing the patient to X-rays on the subsequent sweep, thereby reducing the scan time and the dose to the patient.

### K-edge Filter

A unique "K-edge filter" that absorbs the X-rays in the middle energy range and protects the patient against unnecessary exposure.

### Multi-View Image Reconstruction (MVIR)

Using narrow fan beam technology to perform multiple, spaced and transverse sweeps across the site of interest resulting in accurate determination of bone-height above the tabletop, minimization of magnification errors, and thereby providing higher precision and accuracy.

### Low Scattered Radiation

Due to narrow-fan beam technology, low scatter radiation in comparison to wide-angle fan beam systems.

## Increase your workflow with connectivity options.

### **DICOM facilitates your PACS connectivity**

DICOM is an option flexible enough to meet any PACS connectivity requirements, and Lunar bone densitometers are the only DXA systems to achieve IHE5 compliance. Features include DICOM structured reports, image storage and commitment, DICOM worklist, and DICOM print. It sends reports and images to your PACS server in color or black and white, and can integrate with your RIS worklist and modality performance procedure step.

### **MUDBA allows multiple users access**

The Multi-User Database Access (MUDBA) option permits multiple computer workstations to access DXA scan files simultaneously, even remotely – allowing up to 40 remote computers to be connected. Multiple images from GE Healthcare's Lunar bone densitometers can be saved in a common database.



### **HL7 interfaces with your electronic records system**

The flexible HL7 feature allows the Lunar iDXA to receive and transmit records. That includes receiving patient demographics and exporting patient exam results. This option integrates your densitometer with your existing electronic medical records, thereby closing the loop on your records and billing system. HL7 can also attach images to your compliant EMR.

### **TeleDensitometry emails reports directly from the workstation**

The TeleDensitometry option connects the Lunar iDXA to existing computer networks and phone lines, so you can e-mail or fax DXA reports directly from the densitometer.





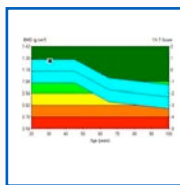
# Versatility

## Breadth of applications and features for a wide range of patients.

A large scan window plus high weight limit and arm height on the Lunar iDXA comfortably accommodate many patient sizes and conditions. A long list applications for Lunar iDXA with the enCORE software platform – from visceral fat measurement, color fat mapping and pediatric assessment to small animal scanning – helps explain why it's chosen by leading hospitals, clinics, and physicians around the world.

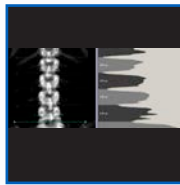
### BMD

Measures the bone mineral density of a preferred skeletal site that can be compared to an adult reference population at the sole discretion of the physician. Generates a reference chart with Z-score and T-score.



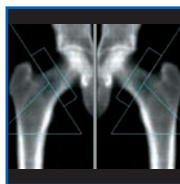
### AP Spine

Provides an estimate of bone mineral density for the lumbar spine.



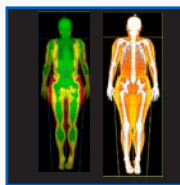
### Femur/ Dual Femur

Measures both single femur or both the femurs in one scan, helping you assess the weakest femur through measuring bone mineral density for the proximal femur.



### Color Mapping/ Color Coding

Color Mapping can be used to set thresholds on fat %, while color coding can be used to code bone, lean tissue and fat tissue.



### LVA Morphometry & Spine Geometry

LVA Morphometry measurement and analysis provides an x-ray image of the spine for qualitative visual assessment in order to identify vertebral deformations and estimate vertebral heights (morphometry), while LVA and APVA Spine Geometry measure Cobb angles.



### Dual-energy Vertebral Assessment (DVA)

Lateral and anterior views of the spine with soft tissue equalization to identify vertebral deformations. Performs both LVA and APVA in one protocol.



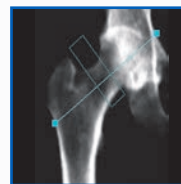
### Lateral Spine Measurement

Lateral Spine measurement and analysis provides an estimate of bone mineral density for the lumbar spine.



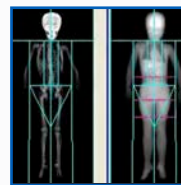
### Hip Axis Length (HAL)

Measurement of the distance along the femoral neck axis, extending from the bone edge at the base of the trochanter to the bone edge at the inner pelvic brim



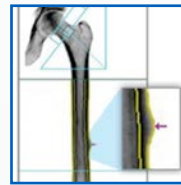
### Pediatrics

Pediatric measurement and analysis feature provides BMD, BMC, fat mass, and lean mass for patients from birth to 20 years old.



### Atypical Femur Fracture (AFF)\*

AFF measurement and analysis provides an x-ray image of the entire femur for both qualitative visual assessment and quantitative measures in order to identify areas of focal thickening along the lateral cortex of the femoral shaft.



### FRAX

FRAX 10-Year Fracture Risk provides an estimate of 10-year probability of hip fracture and 10-year probability of a major osteoporotic fracture for men and post-menopausal women ages 40-90 years.



### Hand Measurement

Hand measurement and analysis provides an estimate of the bone mineral density for the hand.



### Forearm

Measures radius and ulna, providing additional clinical information on BMD for the distal forearm. This measurement can be taken in both sitting or supine position.



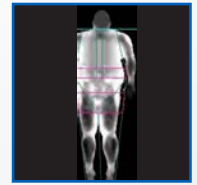
### CoreScan™

CoreScan software feature estimates the VAT (Visceral Adipose Tissue) mass and volume within the android region.



### MirrorImage Scan

The MirrorImage function can be used to estimate the total body composition and bone mineral density (BMD) when regions of the body are outside of the scan window by using scanned data from the corresponding region(s) on the opposite half of the body.

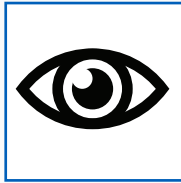


\*Feature only available with enCORE version 17

# Breadth of applications and features for a wide range of patients.

## OneVision

The OneVision feature allows you to set up multiple measurements in one exam. This eliminates keystrokes and improves throughput for customers that routinely perform multiple measurements on each patient.



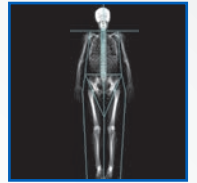
## Metabolic Information

Provides insight on metabolic information such as Resting Metabolic Rate (RMR) and Relative Skeletal Muscle Index (RSMI) with ability to capture Total Body Water (TBW), Intracellular Water (ICW), & Extracellular Water (ECW).



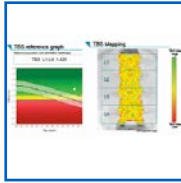
## Body Composition - Total/Regional

Performs total body scan to measure bone mass, lean mass and fat mass. Also measures regional and whole body bone mineral density (BMD), lean and fat tissue mass.



## Trabecular Bone Score (TBS)

Provides trabecular bone score based on bone structure assessment of the trabecular region of the bone.



## Practice Management

Provides general-purpose business reporting tools to view existing patient population as well as follow-up on next site visit.



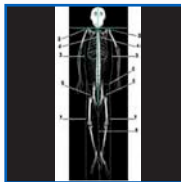
## Orthopedic Knee

Orthopedic Knee measurement and analysis provides an estimate of the bone mineral density around knee implants pre and post-surgery.



## Small Animal Body Scan

Small Animal measurement and analysis is for investigational use on laboratory animals or for other tests that do not involve human subjects.



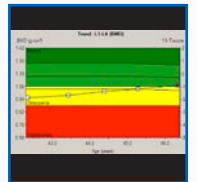
## Custom Reference Population

Physicians can create a custom reference population and use that population for comparison to your patients' results.



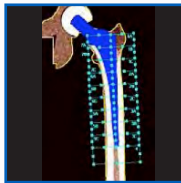
## Patient BMD Trending

Monitoring tool to view changes in a patient's BMD over time. To view trending results, all of the trended measurements must be from the same site.



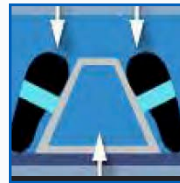
## Orthopedic - Hip Implant

Measure the delicate region around the hip implant and visualizes 19 Gruen zones.



## OneScan

OneScan performs an AP Spine and Dual Femur exam without repositioning between scans.



## ScanCheck

ScanCheck assists the user in detecting Spine, Femur, Forearm and Total Body abnormalities.



## Composer

Composer feature provides many pre-generated report formats as well as ability to create custom reports.



## Multi-User Database Access

Allows up to 40 remote computers to be connected with the a common patient database allowing multiple users to access and analysis patient data.



## Sarcopenia\*

Sarcopenia software calculates values based on published definitions and thresholds using measured appendicular lean mass in combination with patient demographics and entered values of muscle strength and physical performance.



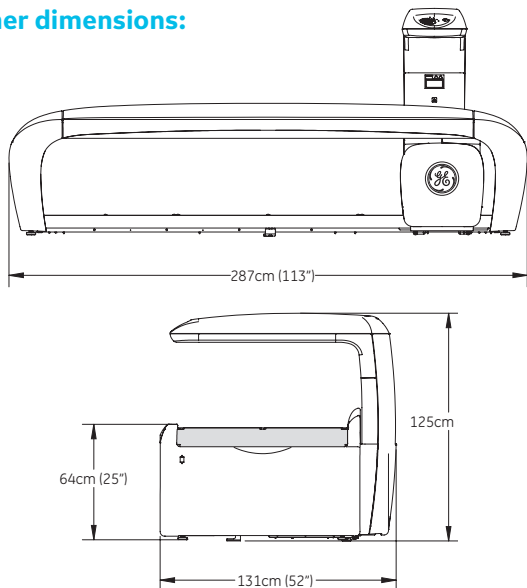
## QuickView

QuickView offers a fast, 10 second spine or femur scan. Measurement and analysis procedures are the same as other scan modes.



# Specifications

## Scanner dimensions:



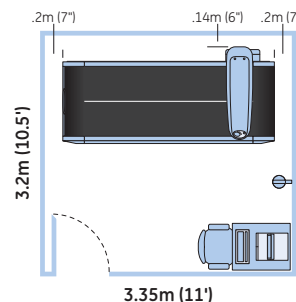
## Scanner table specifications:

Scanner size ..... 2.87m x 1.31m x 1.25m (113" x 52" x 49")  
 Scanner weight ..... 360kg (792lbs)  
 Patient table top height (adjustable)..... 64cm (25")  
 Maximum patient weight supported.....204kg (450 lbs)  
 Drive system ..... stepper motor with reinforced drive belts  
 Active scan area ..... 198cm x 66cm  
 Start position indicator ..... cross laser light (class II, <1mW power)  
 Pad ..... washable patient mat, includes paper roll dispenser  
 Attenuation of patient support table ..... <1.2mm AL  
 Communication cable ..... Ethernet  
 Scanner leakage current ..... meets IEC 60601-1 safety standard

## Detector specifications:

Detector ..... high-definition, direct-digital detector

## Minimum room dimensions<sup>11</sup>



The Lunar iDXA is designed to have minimal impact on your practice in both the installation requirements and required operating space. The Lunar iDXA is shown in a 3.5 m x 3.2 m exam room with the included workstation. No operator shielding or special site preparation beyond a dedicated 100-127/200-240 VAC duplex outlet is usually required.<sup>12</sup> The outlet should be placed near the desired location of the operator's console

## Minimum Computer Specifications:

- Intel® Core™ i3 Processor
- Windows® 7 Professional 32-bit or 64-bit with SP1
- RAM 2 GB
- Hard Drive 250 GB; 1 GB must be available for enCORE
- Optical Drive DVD-R
- Monitor 17" SVGA (minimum resolution 1024x768 32 bit color)
- Archive 320 GB USB hard drive
- Internet Explorer 11
- Adobe Reader 9.0 or greater
- Windows®-compatible printer
- Two 10/100 Mbit Ethernet ports

## Environmental specifications

Power..... 100-127 VAC 50/60Hz 20A dedicated circuit  
 200-240 VAC 50/60Hz 10A dedicated circuit  
 Consumption ..... Idling 40VA, Scanning 750VA  
 Distortion ..... sinusoidal waveform, less than 5% THD  
 Humidity..... 20%-80% non-condensing  
 Room temperature..... 18°C-27°C (65°F-81°F)  
 Scanner heat output ..... idling 150 BTU/hr, scanning 1500BTU/hr  
 Console heat output ..... approx. 400BTU/hr with 17" monitor  
 Ventilation ..... all cooling vents must remain unblocked  
 Dust, fumes, debris..... install system in clean, ventilated area

## Lunar iDXA with Advance Package

Configured for advanced musculoskeletal and metabolic health assessment

### Software Features:

#### Standard:

- Advanced Body Comp
- Advanced Hip Analysis
- AP Spine
- Composer
- Dual Femur
- DVA
- Femur
- Forearm
- FRAX® Fracture Risk Tool<sup>7,8</sup>
- Nonseated Forearm
- OneVision
- Orthopedic Hip
- Orthopedic Knee
- Pediatric - AP Spine
- Pediatric - Femur
- Pediatric - TB (Birth to 20 YO)
- Practice Management
- Quick View
- ScanCheck
- Spine Geometry
- SQL Database
- Total Body BMD
- Total Body Comp

#### Optional:

- Atypical Femur Fracture<sup>9</sup>
- CoreScan™
- DICOM™
- Hand
- HL7
- Multiuser Database (1-3)
- Multiuser Database (1-40)
- OneScan
- Sarcopenia<sup>13</sup>
- Small Animal<sup>9</sup>
- TBS iNsite<sup>13</sup>
- Teledensitometry<sup>10</sup>

## Lunar iDXA with Pro Package

Tailored for essential skeletal health assessment

### Software Features:

#### Standard:

- AP Spine
- Composer
- Dual Femur
- Femur
- Forearm
- FRAX® Fracture Risk Tool<sup>7,8</sup>
- Nonseated Forearm
- OneVision
- Practice Management
- Quick View
- ScanCheck
- SQL Database
- Total Body BMD
- Total Body Comp

#### Optional:

- Advanced Body Comp
- Advanced Hip Analysis
- Atypical Femur Fracture<sup>13</sup>
- CoreScan™
- DICOM™
- DVA
- Hand
- HL7
- Multiuser Database (1-3)
- Multiuser Database (1-40)
- OneScan
- Orthopedic Hip
- Orthopedic Knee
- Pediatric - AP Spine
- Pediatric - Femur
- Pediatric - TB (Birth to 20 YO)
- Sarcopenia<sup>13</sup>
- Small Animal<sup>9</sup>
- Spine Geometry
- TBS iNsite<sup>13</sup>
- Teledensitometry<sup>10</sup>



## References:

1. Armbrrecht G, Felsenberg D. Diagnostic of vertebral deformities: Comparison of VFA (GE iDXA) to conventional radiographs. ASBMR 2009.
2. In vivo precision of the GE Lunar iDXA for the assessment of lumbar spine, total hip, femoral neck, and total body bone mineral density in severely obese patients; Carver TE., Christou NV., Court O., Lemke H., Andersen RE.; J Clin Densitom. 2014 Jan-Mar;17(1):109-15. doi: 10.1016/j.jocd.2013.06.001.
3. In vivo precision of the GE Lunar iDXA densitometer for the measurement of total-body, lumbar spine, and femoral bone mineral density in adults; Hind K, Oldroyd B, Truscott JG; J Clin Densitom. 2010 Oct-Dec;13(4):413-7. doi: 10.1016/j.jocd.2010.06.002.
4. IDXA precision (Total Femur BMD). Ergun DL, Wacker WK, Zhou QQ, et al. Performance of the Lunar iDXA. Presented at the 17th International.
5. IDXA precision (Total Femur BMD). Ergun DL, Wacker WK, Zhou QQ, et al. Performance of the Lunar iDXA. Presented at the 17th International Bone Densitometry Workshop, Kyoto, Japan, November 2006.
6. Hologic Delphi precision (Total Left Hip BMD). Shepherd JA, Fan B, Lu Y, et al. Comparison of BMD precision for Prodigy and Delphi spine and femur scans. Osteoporos Int. 2006;17:1303-1308.
7. Unavailable in Germany.
8. DVO available in Germany.
9. Laboratory animals only.
10. Additional hardware may be required for fax capabilities.
11. An isolation transformer may be required. Please refer to local regulations.
12. Consult and Follow local X-ray regulations.
13. Not available in all markets.

© 2017 General Electric Company – All rights reserved.

GE Healthcare reserves the right to make changes in specifications and features shown herein, or discontinue the product described at any time without notice or obligation. Contact your GE Healthcare representative for the most current information. GE, the GE Monogram, imagination at work, CoreScan, SmartScan, and Lunar iDXA are trademarks of General Electric Company. GE Healthcare, a division of General Electric Company. GE Medical Systems, Inc., doing business as GE Healthcare.



May 2017  
JB48997XX