Medilink MedixDR and MedixC90
DEXA Bone Densitometry Solutions

MEDIX DR

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MEDICAL | SCIENTIFIC | SOLUTIONS

Medilink DEXA Bone Densitometry
Innovative solutions for osteoporosis detection

Medilink is dedicated to improving bone health by developing solutions to help specialists monitor people at risk of osteoporosis, as well as to diagnose, and successfully treat those who suffer from it. Medilink's complete range of bone densitometry solutions address practitioner's needs on every level - from routine screening to complete diagnostic and monitoring tools.

MedixDR | *Whole Body DEXA system*

Medilink's latest innovation in bone densitometry and body composition is the MedixDR Whole Body DEXA system. The MedixDR features state-of-the-art 2D narrow-angle fan beam technology based on a 256 element detector, which provides excellent image quality as well as fast exam times, making it the ideal solution for all types of practices.

The MedixDR is powered by Eazix, Medilink's powerful software platform, designed with usability and efficiency in mind.

Because of the reduced magnification and distortion effects (parallax errors) inherent to wide-angle fan beam densitometry, the 2D narrow-angle fan beam technology in the MedixDR ensure that area, BMD and geometric measurements are always accurate.

MedixDR Features

- Uses proven Narrow-Angle 2D Fan Beam technology
- The 256 element detector ensures excellent image quality
- Full size DEXA unit capable of whole body composition and regional bone density scans
- Quick scan times of 11 seconds for hip and 15 seconds for AP spine when using 'Fast Mode' (See page 6 for more)
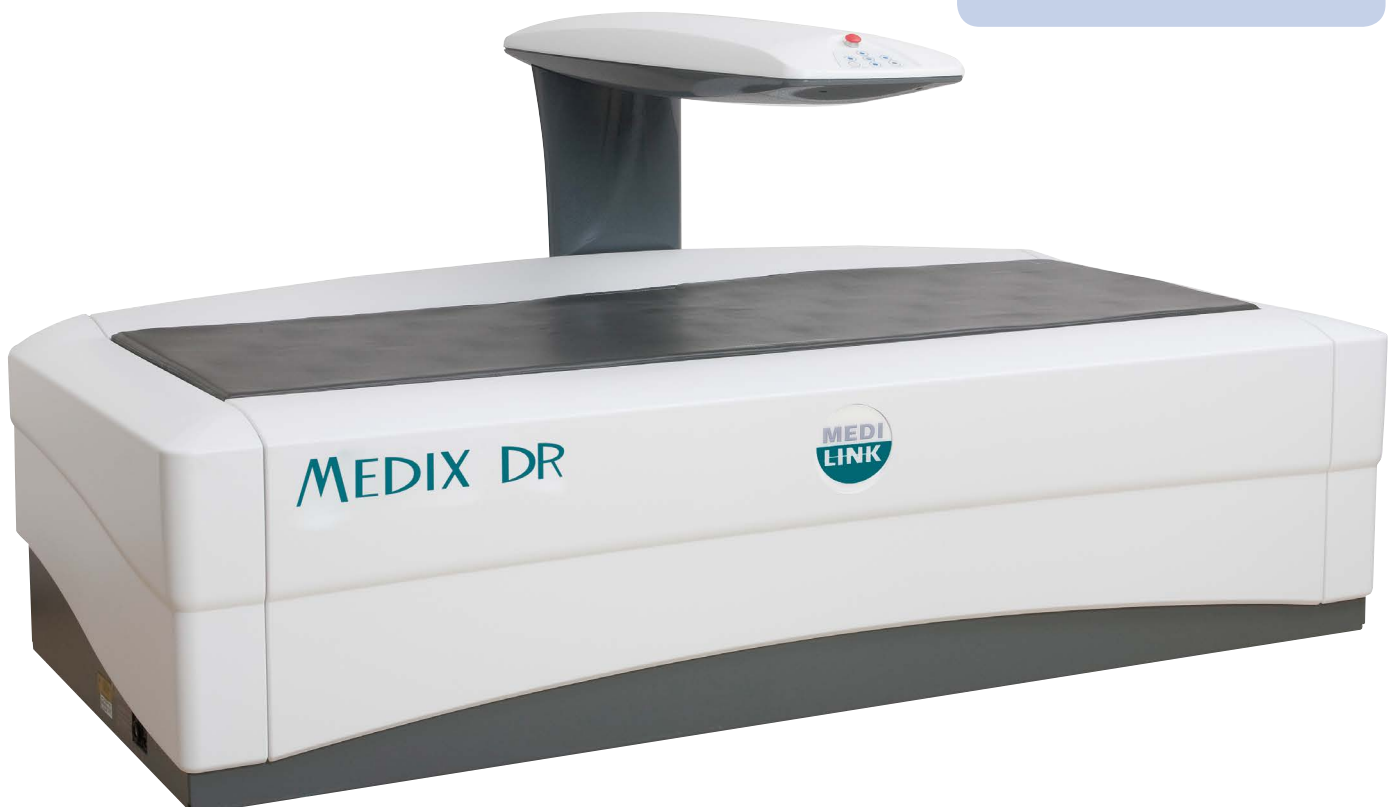
MedixC90 | *New Generation Compact DEXA System*

The MedixC90 is the economical and compact bone denistometry DEXA solution from Medilink, which featues Digital Fast Beam technology, and is powered by Eazix, the same intuitive software platform used by the MedixDR. The MedixC90 is a versatile device, capable of fast examination times without compromising on accuracy.

Adapted to all types of structures, including high-workflow practices, the MedixC90 is the ideal solution for routine osteoporosis screening and it guarantees a maximum return on investment.

In addition to calculating bone density on the three sites implicated in the detection of osteoporosis: hip, spine and forearm, the Medix 90 includes the most relevant options for complementary exams, including Orthopaedics and Paediatrics.

MedixC90 Features

- Uses Digital Fast Beam® technology
- Designed for routine osteoporosis screening
- Measuring only 2m long, the compact MedixC90 is perfect for practices with limited floorspace
- Quick scan times of around 60 seconds for spine, hip or forearm (See page 6 for more)
- Medilink's cost effective DEXA solution

MedixDR and C90 Features

One complete solution

The Medix range of DEXA units are complete solutions, ensuring you can easily perform routine exams for osteoporosis diagnosis, as well as a wide range of applications covering all of your clinical needs.

DR: Optimal Diagnosis

The MedixDR uses proven narrow-angle fan beam technology with 256 elements, providing the highest quality images for an optimal diagnosis.

C90: Digital Fast Beam®

The MedixC90 uses the latest generation of Digital Fast Beam technology, which uses a mono detector enabling an accurate result, and produces a better image resolution in a faster time than traditional Pencil Beam scanners.

Flexible, powerful software

The MedixDR and MedixC90 are powered by Eazix, a powerful software platform that conveniently optimises the acquisition, processes, stores and recalls data, as well as saving you time and providing consistent results.

Perform fast scans

Perform fast hip, spine or wrist scans in as little as 15 seconds (DR) and 60 seconds (C90), and whole body composition scans in 5 minutes (in Fast Mode on the DR). See page 6 for more information.

Data importation

The MedixDR and MedixC90 are capable of importing existing exams and databases from all DEXA brands, ensuring upgrading to Medilink is a simple and seamless process.

Diagnostic tools and examination sites
*Complete Exam Mode*

Medilink offers practitioners one complete solution, ensuring you can easily perform routine exams for osteoporosis diagnosis, as well as a wide range of applications covering all of your clinical needs. The MedixDR and MedixC90 also help to improve your workflow, with a fully automated exam mode, from calibration to data processing.


Multi-site Exams

For cases where multiple scans will be conducted, the scan initiation menu allows for a smooth and time efficient follow through by enabling the selection of all anatomical sites being scanned during each appointment.

Perform multi-site exams, including AP spine, forearm, hip and dual hip. Measure for Bone Mineral Density (BMD), Bone Mineral Content (BMC), T-score, Z-score and Area.
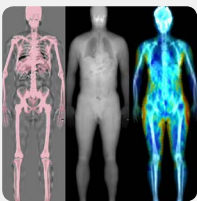
Whole Body Exams*

- Total Bone Mineral Density
- Local Bone Mineral Density
- Bone Mineral Mass
- Area
- Body Composition (Total and Local)
- Fat Mass and Lean Mass
- Colour mapping image for visualising fat density/areas
- T-score and Z-score
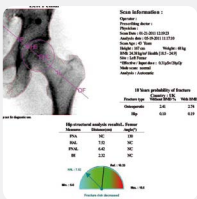
## Automated Hip Structural Analysis (HSA)

Measure and evaluate fracture risk information:

- Hip Axis Length (HAL)
- Femoral Neck Axis Length (FNAL)
- Intertrochanter to Femoral Head Centre Distance (IH)
- Femoral Axis versus Neck Axis Angle (FNA)
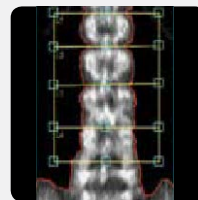
Automatic ROI selection

The ROI (Region of Interest) is automatically selected in order to minimise operator involvement and to improve the accuracy and reproducibility of results.
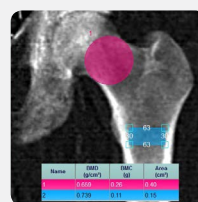
Custom ROI selection

The custom ROI (region of interest) option allows calculation of BMD from any selected site. Regions can be colour coded and measured for consistency between scans.

* This feature is only available on the MedixDR.

FRAX® Tool

Evaluate the 10 year probability of osteoporotic fractures and intervention thresholds with the FRAX® tool.


Digital Vertebral Assessment (DVA)

DVA provides a low dose, lateral image to view all the vertebrae of the spine. Deformation or compression is precisely diagnosed, measured and classified.

This analysis can be either automatic using the Genant's semi-quantitative classification, or manual using the Genant's visual classification.
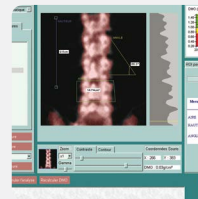
Advanced Morphometric Tools

Morphometric tools help measure and evaluate significant predictors of fracture in all available scanning functions and aid in therapeutic monitoring. Easily print-out patient results to guarantee therapeutic monitoring.
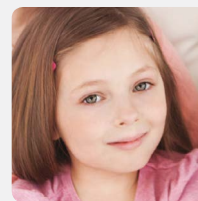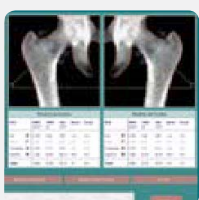

Paediatrics

The Paediatric option makes it possible to evaluate the BMD, BMC, Area and Body composition in children. Users can also calculate Z-score and compare skeletal age with this function.

Combi-scan

Two exams (hip and spine) can be performed in one single operation thus improving workflow and comfort for both patients and users.

Orthopaedics

With the Orthopaedic option, Easix makes it possible to measure BMD around the prosthesis, enabling smart implant management. The Orthopaedic option also enables measurement of the hand, forearm, elbow, shoulder, spine, hip, AP knee, lateral knee and feet.

Automatic detection of ROI is available for hip, knee and lateral knee exams.

Twin-hip

Precise comparative information can be obtained for BMD measures in both hips in order to detect the lowest measurement and obtain the most complete information for diagnosis.

Please note: Application thumbnails, diagnostic images and screenshots are taken from the Medilink MedixDR system.

Orthopaedic Module | *Smarter prothesis management*

Medilink produces one of the most comprehensive orthopaedic measurement devices, easily measuring the region around a prosthesis in various areas around the body, with the added convenience of automatic detection of the region of interest and mask management for optimising the detected prothesis.
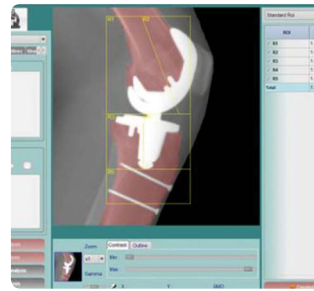
The MedixDR/90's unique Orthopaedic Module conveniently enables automatic detection of the Region of Interest for hip, knee and lateral knee areas.
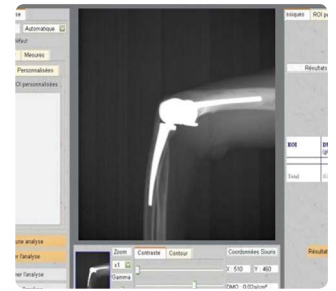
In addition, the MedixDR/90 can measure prothesis in the hand, forearm, elbow, shoulder, spine and foot, allowing practitioners to monitor a greater range of orthopaedics than ever before.

Shoulder

Knee

Elbow

Orthopaedic Mask Management

The Orthopaedic Mask Management feature optimises the detection of the prosthesis, by selectively masking certain areas for specific viewing.
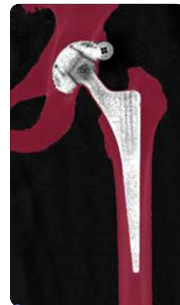
Bone Mask

Tissues Mask
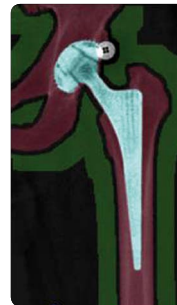
Air Mask
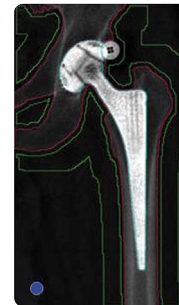
Exclusion Mask

Prothesis Mask

Scan Times | *Typical scan times for various sites*

AP SPINE

	MedixDR	MedixC90
Fast	15 sec	60 sec
Normal	30 sec	90 sec
Precision	60 sec	3 min

HIP

	MedixDR	MedixC90
Fast	11 sec	60 sec
Normal	22 sec	90 sec
Precision	45 sec	3 min

LATERAL DVA

	MedixDR	MedixC90
Fast	46 sec	60 sec
Normal	3 min	90 sec
Precision	3 min	3 min

AP DVA

	MedixDR	MedixC90
Fast	54 sec	3 min
Normal	3.5 min	5 min
Precision	3.5 min	8 min

FOREARM

	MedixDR	MedixC90
Fast	10 sec	60 sec
Normal	18 sec	90 sec
Precision	30 sec	3 min

WHOLE BODY

	MedixDR	MedixC90
Fast	5 min	N/A
Normal	6 min	N/A
Precision	6 min	N/A

Eazix | *Powerful and intuitive software*

Easix is Medilink's software interface dedicated to optimising the acquisition, processing, storing and recalling of your data. While capable of the most sophisticated functions, Eazix's ingenuity lies in its simplicity – it is remarkably user-friendly, making all essential information accessible with the simple click of a button.

Reporting

- Patient follow-up graphs
- Multi-reporting options for comparative purposes
- Customisable reports
- Detailed colour print out of reports are configurable by the physician
- Density displayed in RGBIV spectrum

Tools

- Easy scan repositioning from software
- Additional Morphometric tools to complete the fracture risk information

Importing and archiving

- Import previous exam input and database information from all other DEXA devices
- Customise automatic/semi-automatic database archiving
- Save data to CD, DVD or hard drive

Reference data

- Reference Population (Reference Normality curve): Caucasian, Asian, N-HANES III, African, Turkish, Hispanic, Japanese, Korean and Geelong
- Personalised multiple reference populations (normality curves editor)

Options

- Multiple languages available
- Help menu available

User and interface options

- Multi-user mode/profiles: configure different profiles for different users
- Customisable user interface and image display tools ensure user comfort

Connectivity | *Archiving and DICOM*

Today's medical environment is extremely fast-paced and requires practitioners to be equipped with cutting edge technology. The connectivity options featured on the MedixDR and MedixC90 including DICOM Push & Print, DICOM Worklist, telemaintenance software, and touchscreen compatibility are made possible by the Eazix software.

DICOM

The DICOM option gives you the ability to output and manage information in the HIS/RIS/PACS server, plus transferring, recalling, archiving and managing data has never been so quick and easy.

Tele-maintenance

Training and maintenance are simplified: an InMed Service Engineer can connect to the device from a distance in order to help with any queries or to guide the user through a tutorial of the software interface.

Workstation mode

In order to help workflow increase, the MedixDR and MedixC90 offer the possibility of allowing multiple workstations to connect to the device's data from a distance. A connection via the local network allows approved administrators in another part of the hospital (or in another hospital) to connect to the server and access and work on exams and reports.

MedixDR | *Technical Specifications*

AQUISITION CHAIN PARAMETERS

AQUISITION METHOD

Medix DR	DEXA / 2D Narrow Angle Fan Beam

GENERATOR

X-ray continuous generator	High frequency monoblock
Manufacturer	PSM
Cooling system	Immersion in oil and cooling fans
High voltage	90 kV
Maximum tube current	2.4 mA

X-RAY TUBE

Type	Tungsten fixed anode
Localisation	Under the patient
Anode angle	12°
Anode-cathode direction	Horizontal
X-ray beam	Fan type
Focal point dimension	0.6 mm x 0.6 mm
Energy splitting	43 keV / 70 keV (filtering: samarium 200 µm / aluminium 2mm)

TUBE COLLIMATOR

Material	Lead
Size	18 mm × 2.5 mm
Collimator-patient distance	77 mm
Tube-patient distance	270 mm
Shutter	4 mm lead

DETECTOR COLLIMATOR

Material	Brass
Height	30 mm
Size	72 mm x 8 mm

DETECTOR

Quantity	1 (2D array: 4 x 64 pixels)
Type of detection	Direct detection
Material	cdTe (1 mm)
Specification	Photon counting, energy sensitive
Detector pixel pitch	1.1 mm x 1.6 mm
Localisation	Above the patient

AQUISITION CHAIN PARAMETERS (CONT.)

SCANNER

Scanning method	Rectilinear scan
Maximum scan area	200 cm x 65 cm
Scanning type	Motorised arm with X and Y kinematics
Table type	Fixed for all exams including whole body mode

ACQUISITION WINDOWS

Scan window size	Adjustable to patient's morphology
Multisite (L x W)	Customizable scan area
Total Body (L x W)	200 x 65 cm maximum

Isotropic image without magnification

EXAMINATION PARAMETERS

DOSES

Staff doses at 1m	Negligible
Dose to patient*	Low dose adapted to patient morphology
	Hip: <0.5 µSv
	Dual femur: <1 µSv
	Spine: <2 µSv
	Forearm: <0.01 µSv
Surface entrance dose*	Hip: <15 µGy
	Spine: <25 µGy
	Whole body: <0.4 µGy

*Doses when in standard mode

PATIENT POSITIONING

Laser light	Easy scan repositioning through the software

METHOD OF EXAMINATION

Pre-regulated exam modes	Exam parameters adjusted automatically based on patient's morphology (thinness, health and overweight)
Personalised options	Motor drive speed (mm/sec) and selectable image height and width
Intelligent Scan Acquisition	Automatic and manual selection of the Region of Interest (ROI)
IntelliScan	Smart reduction of the scan window and of the examination time

SPECIFICATIONS OF THE CLINICAL PARAMETERS

Age grouping	15 – 95 years old (4 - 18 years old in paediatric mode)
Weight	< 202 kg

MANUAL AND AUTOMATIC ANALYSIS
PARAMETERS AVAILABLE ON FINAL MEDICAL REPORT

Multisite

Bone Mineral Density (BMD) expressed in g/cm2, stands for the mineral density of the bones

Bone Mineral Content (BMC) expressed in g, stands for the mineral mass of the bones

Z-score = Difference between the patient's BMD and the mean BMD of a population of healthy subjects of the same age, divided by the standard deviation of BMD of the healthy subjects

T-score = Difference between the patient's BMD and the mean BMD of a young population of healthy subjects of the same gender and from the same ethnic background as the patient, divided by the standard deviation of BMD of the young population of healthy subjects

Area expressed in cm2, 2D projection of the bone

Whole body

Total Bone Mineral Density (BMDt)	Bone Mineral mass
Local Bone Mineral Density (BMDl)	Total and local body composition
Area	Colour mapping (to visualise fat areas)
Body Composition	T-score
Fat mass	Z-score
Lean mass	

Orthopaedic (option)

Bone Mineral Density (BMD)	Area
Bone Mineral Content (BMC)	Automatic ROI selection (ex: Gruen zone), for hip, knee and lateral knee

Paediatric (option)

Bone Mineral Density (BMD)	Body composition
Bone Mineral Content (BMC)	Z-score
Area	Skeletal age comparison

Reference curve

Displays the BMD according to the age for the examined region(s). It enables to supply T-score and Z-score values as diagnosis values

Morphometry

Quantitative morphometry (areas, lengths, angles). Ex: Automatic Hip Structural Analysis (HSA)

SPECIFICATION OF THE CLINICAL DATA

Bone Mineral Density (BMD)	± 1.0% in vivo (± 0.5% in vitro)

PHYSICAL SPECIFICATIONS
DIMENSIONS AND WEIGHT

Dimensions	L 240 x W 125 x H 145 cm
Examination table	L 240 x W 110 cm
Mattress	L 208 x W 72.5 cm
Patient table lowest height	60 cm
Weight	250 kg

CALIBRATION AND QUALITY CONTROL

Quality Control	Quality control using external phantom
	QC trend plotting integrated in the software
	Control of internal calibration between scans
Auto-calibration disk	Integrated disk reduces noise level and improves reproducibility and accuracy
Dual-beam collimator	Optimises image quality and patient dose for each exam site

ENVIRONMENTAL DATA AND ELECTRICAL
ENVIRONMENTAL DATA

Operating temperature	20 to 28 °C
Operating humidity	20% - 80% (without condensation)
Pressure	0.8 – 1.2 Bar
Storage temperature	10 to 40°C
Storage humidity	20% - 80% (without condensation)
Radioprotection	No external shielding required. X-ray safety requirements may vary upon destination. Please inquire with local authorities to comply with regulations.

ELECTRICAL SPECIFICATIONS

Voltage-Current	110 VAC - 10 A
	210 - 230 VAC - 5 A
Frequency	50/60 Hz
Power consumption	560 W

COMPUTER PARAMETERS
MINIMAL COMPUTER CONFIGURATION

Operating system	Windows XP, Vista or Seven
Processor	Intel Pentium IV or core duo 1GHz or better
RAM	1 GB
Hard disk	60 GB minimum
CD ROM or DVD drive	For updating software
Archiving	CD, DVD burner or external hard drive
Monitor	SVGA display with 1024 x 768 resolution or higher
Printer	Hewlett Packard 690, Epson Stylus or any other printer compatible with Windows XP or Vista
Connectivity	2 LAN port for communication and DICOM (LAN for DICOM can be supplied by USB-to-LAN converter)
Options	Touchscreen

MedixC90 | *Technical Specifications*

AQUISITION CHAIN PARAMETERS

AQUISITION METHOD

Medix C90	Dual Energy X-ray Absorptiometry (DEXA) / Digital Fast Beam with X and Y kinematics

GENERATOR

X-ray continuous generator	High frequency monoblock
Manufacturer	PSM
Cooling system	Immersion in oil + cooling fans
High voltage	90 kV
Filament current	0.1 to 2 mA
Maximum heat load to be stated	60°C (140°F)

X-RAY TUBE

Type	Tungsten fixed anode
Localization	Under the patient
Anode angle	12°
Anode-cathode direction	Horizontal
X-ray beam	Collimated pencil type
Focal point dimension	0.6 x 0.6 mm
Energy splitting	35 keV and 65 keV (using 200 µm samarium filters)

COLLIMATOR

Materials	Lead and brass
Height	5 mm
Diameter	1 and 2 mm
Collimator-patient distance	50 mm
Tube-patient distance	160 mm
Shutter	5 mm lead

DETECTOR

Quantity	1 (photomultiplier + scintillator)
Type	High performance photomultiplier tube
Scintillator	La-Halide
Resolution	1 mm
Localization	Above the patient

AQUISITION CHAIN PARAMETERS (CONT.)

SCANNER

Scanning method	Rectilinear scan
Maximum scan area	200 cm x 65 cm
Scanning type	Motorised arm with X and Y kinematics
Table type	Fixed for all exams including whole body mode

ACQUISITION WINDOWS

Scan window size	Adjustable to patient's morphology
Multisite (L x W)	Customizable scan area
Total Body (L x W)	200 x 65 cm maximum

Isotropic image without magnification

EXAMINATION PARAMETERS

DOSES

Staff doses at 1m	Negligible
Dose to patient (in standard mode)	Low dose adapted to patient morphology
	Hip: <0.5 µSv
	Dual femur: <1 µSv
	Spine: <2 µSv
	Forearm: <0.025 usv
Surface entrance dose (in standard mode)	Hip: <15 µGy
	Spine: <25 µGy

PATIENT POSITIONING

Laser light	Easy scan repositioning through the software

METHOD OF EXAMINATION

Pre-regulated exam modes	Exam parameters adjusted automatically based on patient's morphology (Thinness, Health and Overweight)
Personalised options	Motor drive speed (mm/sec) and selectable image height and width
Intelligent Scan Acquisition	Automatic and manual selection of the Region of Interest (ROI)
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Area expressed in cm2, 2D projection of the bone

Orthopaedic (option)

Bone Mineral Density (BMD)	Area
Bone Mineral Content (BMC)	Automatic ROI selection (ex: Gruen zone), for hip, knee and lateral knee

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Bone Mineral Density (BMD)	Body composition
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ENVIRONMENTAL DATA

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