

# Preliminary technical data



## MEDIX DR

2D-FanBeam Whole Body Densitometer

PROGRESS THROUGH INNOVATION

**MEDI  
LINK**

# MEDIX DR

2D-Fan Beam Whole Body Densitometer

## Acquisition chain parameters

Dual Emission X-ray Absorptiometry (DEXA)  
2D-FanBeam with X and Y kinematics

Generator	
X-ray continuous generator	High frequency monoblock
Manufacturer	IMD
Cooling system	Immersion in oil + cooling fans
High voltage	110 kV
Maximum tube current	2.4 mA

X-ray tube	
Type	Tungsten fixed anode
Localization	Under the patient
Anode angle	12°
Anode-cathode direction	Horizontal
X-ray beam	fan type
Focal point dimension	0.6 x 0.6 mm
Energy splitting	Filtering: samarium 200 µm + aluminium 2mm

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

Detector Collimator	
Material	Brass
Height	30 mm
Size	72 mmx8 mm

Detector	
Quantity	1( 2D array 4 x 64 pixels)
Type of detection	Direct detection
Material	cdTe (1mm)
Specification	Photon counting, energy sensitive
Detector pixel pitch	1.1 mm x 16 mm
Localization	Above the patient

Scanner	
Scanning method	Rectilinear scan
Maximum scan area	200 x 65 cm
Scanning type	Motorized arm with X and Y kinematics
Table type	Fixed for all exams including the Whole Body mode

Acquisition method	
Type	2D Fan Beam technology
Method	Dual Energy X ray Absorptiometry (90/110 kV)

Acquisition windows	
Scan window size	Adjustable to patient's morphology
Multisite (L x W)	Customizable scan area
Whole Body (L x W)	200 x 65 cm maximum
Isotropic image without magnification	

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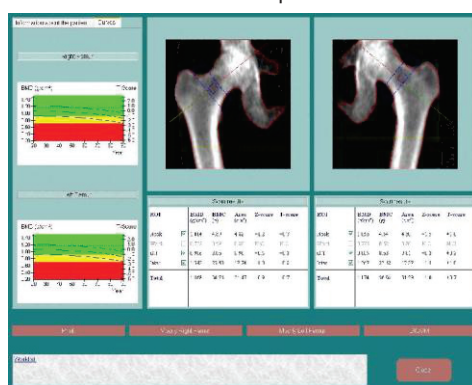
2D-Fan Beam Whole Body Densitometer

## Diagnostic tools

Advanced Morphometric tools  
Fracture risk information using Hip Structural Analysis (HSA)

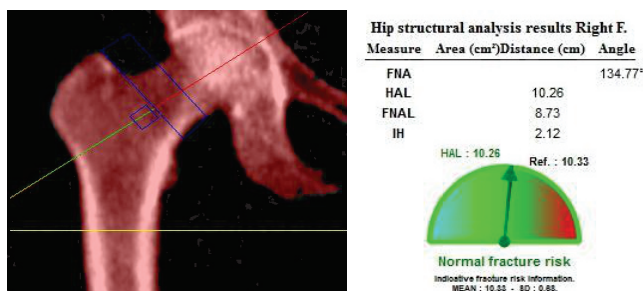
Examination sites	
AP spine (L1- L4)	
Forearm: Ultradistal, Mid-radius and Distal (1/3)	
Hip: Total Hip, Femoral neck, trochanter, intertrochanter, Ward zone	
Total Hip: Combined examination of the left and right hip	
In-Row Scan: Combined examination of the lumbar spine and of the left or right hip	
Whole body: total or local (left arm, right arm, left ribs, right ribs, t spine, l spine, pelvis, left leg, right leg, head)	

Twin Hip



Diagnostic tools
Calculation of Bone Mineral Density (BMD), Bone Mineral Content (BMC), surface, T-score and Z-score
Advanced Morphometric tools (surface, distance and angle): Bone can be measured on every type of examination (spine, hip, forearm)
Automated Hip Structural Analysis (HSA): Hip Axis Length (HAL), Femoral Neck Axis Length (FNAL), Intertrochanter to Femoral Head Center Distance (IH) and Femoral axis versus Neck axis Angle (FNA)
Fracture risk information using Hip Structural Analysis (HSA)
FRAX tool to evaluate probability of osteoporotic fractures

Fracture risk information



Diagnostic tools
Whole body examination: Total BMD, Total BMC, surface, local BMD, local BMC, Tscore, Zscore and body composition
Digital Vertebral Assessment (DVA): Provides a low dose, lateral image of the spine (to view all the vertebrae of the spine).The 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 (L4 - T2)
Lateral spine BMD: To measure the bone density of the vertebrae of the lumbar spine from a lateral angle and without spinal backbone
Paediatrics: To measure the BMD (spine and whole body) and the whole body composition
Orthopaedics: To measure the BMD around the prosthesis (ex: Gruen zone selection). Enables a smart implant management. Available for hand, forearm, elbow, shoulder, spine, hip, AP knee, lateral knee, feet. Automatic detection of ROI for hip, knee and lateral knee examinations

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## 2D-Fan Beam Whole Body Densitometer

### Analysis

Manual and automatic analysis for all exams

Parameters available on final medical report	
Multisite	Bone Mineral Density (BMD) expressed in g/cm <sup>2</sup> , stands for the mineral density of the bones
	Bone Mineral Content (BMC) expressed in g, stands for the mineral mass of the bones
	Area expressed in cm <sup>2</sup> , 2D projection of the bone
	T-score = Difference between the patient's values and the mean value 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 a young population of healthy subjects
	Z-score = Difference between the patient's value and the mean value of a population of healthy subjects of the same age, divided by the standard deviation
Whole body	Total Bone Mineral Density (BMDt)
	Local Bone Mineral Density (BMDl)
	Area
	Body Composition
	Fat mass
	Leanmass
	Bone mineral mass
	Total and local body composition
	Color mapping for visualizing the fat areas
	T-score
Z-score	
Orthopaedic	Bone Mineral Density (BMD)
	Bone Mineral Content (BMC)
	Area
	Automatic ROI selection (ex: Gruen zone), for hip, knee and lateral knee
Paediatric	Bone Mineral Density (BMD)
	Bone Mineral Content (BMC)
	Area
	Body composition
	Skeletal age comparison
Reference curve	Displays the BMD according to the age for the examined region(s). It enables to supply T-score and Zscore 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)

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2D - Fan Beam Whole Body Densitometer

## Software

New user friendly interface  
Evolutionary software

### Software tools

Patient follow-up graphs

Advanced Morphometric tools (distance, angle and area) ex: hip length axis

Calculation of standardized BMD (comparison to NHANES III normative data)

Easy scan repositioning from PC method

Customizable user interface (colours, trend, results, print out, etc.)

Multi-user (different profiles can be configured: operator, physician, etc.)

Reference population (reference normality curve): Caucasian, Asian, NHANES-III, African, Turkish, Hispanic, Japanese and Korean

Personalized multiple reference populations (normality curves editor)

Patient's data follow-up: Data base importation from another device + Previous data input

Customizable automatic/semi automatic database archiving

Multi-report for comparative purposes

Customizable reports (header, footer, predefined forms, letters, etc.)

Detailed colour print out of reports (bone + reference curve + analysis report + operator comments + patient and physician letters + followup), configurable by the physician

Email reports sending

Automatic and customizable letter (patient and physician)

Image display tools: Contrast, brightness and zoom

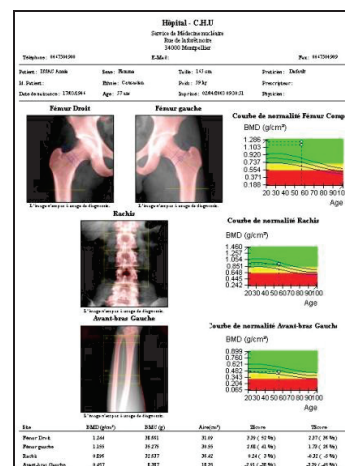
Density display in colour scale

Multi-language software: Chinese simplified, Czech, German, English, Spanish, French, Italian, Polish and Turkish (other languages can be translate)

Help menu

DVO recommendations (Certified by DachVerband Osteologie)

### Multi report



### Optional software tools

Telemaintenance software: network connection required

Touch screen

### Storage

CD, DVD or external hard drive

### Connectivity

DICOM compatibility (Output HIS, RIS, PACS (options))

Push & Print : Storing, printing and transferring patient's data

Worklist (option) To manage the patient list

Workstation mode (option): Possibility to connect from multiple distant workstations and access to device data

Multi-user mode (option) : Login, logout and rights management

Formatted to export image data: .jpg or .pdf

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## 2D-Fan Beam Whole Body Densitometer

### Examination parameters

Automatic and manual selection of the Region Of Interest (ROI)  
 Low dose adapted to patient morphology

#### Doses

#### Examination time and pixel size

Hip	Pixel size	Examination time	Scanning speed
Fast	1 mm	30 s	220 mm/s
Accuracy	0.5 mm	60 s	220 mm/s

DVA	Pixel size	Examination time	Scanning speed
Fast	1 mm	60 s	280 mm/s
Accuracy	0.5 mm	2 min	280 mm/s

AP Spine	Pixel size	Examination time	Scanning speed
Fast	1 mm	30 s	280 mm/s
Accuracy	0.5 mm	60 s	280 mm/s

Forearm	Pixel size	Examination time	Scanning speed
Fast	1 mm	30 s	220 mm/s
Accuracy	0.5 mm	60 s	220 mm/s

Lateral Spine	Pixel size	Examination time	Scanning speed
Fast	1 mm	30 s	250 mm/s
Accuracy	0.5 mm	60 s	250 mm/s

Whole body	Pixel size	Examination time	Scanning speed
Fast	2 mm	3 min	260 mm/s
Normal	1 mm	5 min	260 mm/s
Accuracy	1 mm	8 min	260 mm/s

Body composition: 3 min, achieved at the same time of the Whole body exam

Total hip: 1min

In Row Scan: 1 min

#### Patient positioning

Laser light

Easy scan repositioning from PC method

#### Method of examination

Preregulated exam modes: Exam parameters adjusted automatically based on patient's morphology (Thinness, Health and Overweight)

Personalized: Motor drive speed (mm/sec) and selectable image height and width

Automatic and manual selection of the Region Of Interest (ROI) = Intelligent Scan Acquisition

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 < 210 kg

#### Calibration and quality control

Quality control using external phantom

Quality control trend plotting integrated to the software

Control by internal reference between each scan

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### Computer parameters

Minimal computer configuration	
Operating system	Windows XP, Vista, Seven, 8, 8.1 or Windows 10
Processor	Processor dual core 1GHz
RAM	1 GB
Hard disk	100 GB
CD Rom or DVD drive	For updating software
Archiving	CD, DVD burner or external hard drive
Monitor	SVGA resolution 1024x768
Printer	Color
Connectivity	2 LAN port for communication and DICOM (LAN for DICOM can be supplied by USB to LAN converter)

### Environmental data and electrical specifications

Environmental data	
Operating temperature	20 to 28 °C (68 to 82.4 °F)
Operating humidity	20%- 80% (without condensation)
Pressure	0.8 – 1.2 Bar
Storage temperature	10 to 40°C (50 to 104°F)
Storage humidity	20%- 80% (without condensation)
Radioprotection	No external shielding required
Electrical specifications	
Voltage-Current	110 VAC- 10 A
	210- 230 VAC - 5 A
Frequency	50/60 Hz
Power consumption	560 W

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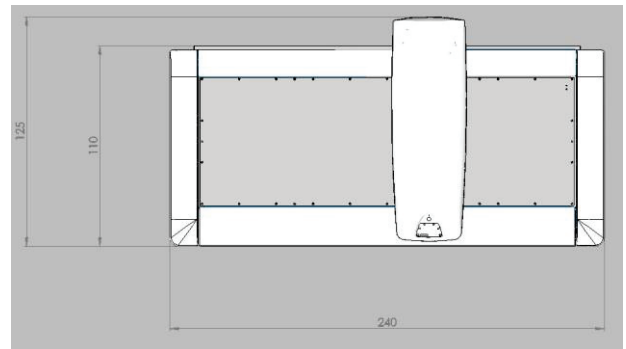
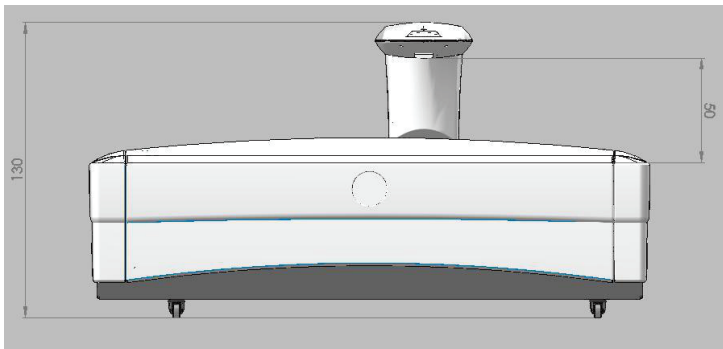
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## Physical description

### Dimensions and weight

Dimensions	L 240 x W 125 x H 130 cm (L 94" x W 49"x H 51")
Examination table	L 240 x W 110 cm (L 94" x W 43")
Mattress	L 208 x W 72.5 cm (L 82" x W 28")
Patient table lowest height	60 cm (24")
Weight	250 kg (521 lbs)

### Physical characteristics



### Room layout

