



Amadeo X-ray Systems

# The portable and fully digital X-ray system **Amadeo M mini**

for first aid services, intensive care units, emergency departments, home health care, as well as ships and mobile hospitals (e.g. container solutions)



Lightweight  
and wireless,  
swivels on the  
spot and suitable  
for all  
environments

Amadeo M mini complete systems for mobile, digital X-ray



For use on ships, yachts and oil rigs,



... for home care and in nursing homes,



... in ambulances and hospitals as a mobile bedside X-ray system or in the casualty department,



... for disaster management and casualty treatment in container or tent based ambulances or rescue units,



... in prisons, for military purposes and for health care in developing countries,



... in inaccessible areas, in laboratories and scientific stations in remote parts of the world





# Wireless digital X-ray imaging with a lightweight and portable allround solution for ambulatory and inpatient care

The advanced design of the new **Amadeo M mini** series is characterised by a sophisticated reduction to essential components and functional operating elements. The system is designed for portable use and can easily be transported due to its low overall weight and compact build. Our modern X-ray system is attractive wherever it is not possible to transfer patients to a hospital for diagnostic radiology.

The **Amadeo M mini** system includes all necessary components such as X-ray detector, X-ray generator and image processing workstation. The latter is delivered with a globally proven software package that includes a convenient X-ray positioning guide for fine adjustments (except for the AX-Version).

The **Amadeo M mini** was specifically developed for doctors and first aid services in remote and inaccessible locations, medically oriented aid organisations, as well as ships and oil rigs. The lightweight system can easily be pulled over steps and swivelled in all directions – a huge advantage in confined spaces and elevators – and does not tip over on uneven terrain. Its large, sturdy wheels permit effortless movement.

The system has the CE mark and is certified for all human X-ray applications. The **Amadeo M mini** system fits in a standard hatchback car and can be stored in a special shockproof case during flight.\*

*\* depending on the tube head*



# Benefits

## Digital X-ray imaging with **Amadeo M mini** systems

### Lightweight, mobile and wireless

The **Amadeo M mini** is one of the most lightweight and mobile wireless X-ray systems available worldwide. The sturdy system has an integrated DR X-ray detector (except for the AX version) and is designed for use in various conditions. Its small size makes the **Amadeo M mini** the best choice for X-ray imaging in confined spaces.

**Benefit:** Flexible and convenient for use anywhere

### Uninterrupted workflow after brief power outage or relocation

You know the problem: If a conventional X-ray system needs to be relocated, e.g. in another room of an ICU or in the case of a brief power outage, the system has to be switched on again to resume working. This costs valuable time and patience.

Not so with the **Amadeo M mini**. Thanks to its integrated batteries the system is able to bridge power outages of several minutes. In the case of a brief power outage you can therefore simply continue working – it is possible to take up to three X-ray images. This is an invaluable advantage if a continuous power supply cannot be guaranteed, e.g. for use in disaster areas.

If the X-ray system has to be relocated frequently during its use, like in an ICU, it is no longer necessary to shut down the system before cutting the power supply. Just pull the plug and plug the system back in at the new location – that is all. Time consuming reboots are a thing of the past. All electronic components remain ready for use for hours thanks to the batteries.

Should it be necessary to take X-ray images outside the availability of a wall socket, e.g. in the home care sector, it is possible to plug in the X-ray system for ca. 60 seconds. Afterwards images such as thorax control images can be taken while the patient is lying down.

**Benefit:** Saving time while relocation and working independent of reliable power supply\*

### High performance

Our high performance X-ray system provides the complete array of diagnostic radiology tools available in human medicine today.

**Benefit:** Mobile X-ray imaging from head to toe, including thorax and abdomen



Suitable  
for CR and  
DR systems

## Advanced industrial design

The innovative and lightweight construction „Made in Germany“ combines excellent stability, mechanical sturdiness and low weight. Its sophisticated design makes the system easy to clean. The laptop and X-ray unit are stored in splash proof compartments. All electronic components are sealed to ensure safe transport, and, where possible, cables are routed internally. The height of the tube head can easily be adjusted and freely rotated.

**Benefit:** Functional and minimalistic design results in low weight

## Easy handling and quick setup

The **Amadeo M mini** is easy to transport and fits into standard hatchback cars. The system can readily be pulled over steps, swivelled in all directions (a huge advantage in confined spaces and elevators) and does not tip over on uneven terrain. Its large, sturdy wheels permit effortless all terrain movement. The integrated block brakes ensure safe working. The entire system can be set up and ready for use in less than two minutes.

**Benefit:** Easy to transport and time saving in emergency situations

## Safe working environment

Due to excellent lead shielding, the radiation leakage from the housing of the Amadeo M mini is minimal. During the X-ray process, the exposure area is less than 1.5 m<sup>2</sup>.

**Benefit:** Outside of the small exposure area, no further radiation protection measures are required

## Reliable

The **Amadeo M mini** X-ray system functions reliably under extreme climatic conditions such as high humidity or large temperature fluctuations. For this reason, the products from this series are preferred by first aid services, military corps, research ships and oil rigs etc.

**Benefit:** Professional performance under extreme climatic conditions

## Short cycle times

Despite being small, the **Amadeo M mini** achieves a very high shot frequency because of the high output power of its X-ray tube. Under full power it produces up to six images per minute – a top performance rate for such units\*.

**Benefit:** Full performance at short exposure times



\* depending on the X-ray tube

# Specifications

## Generator **Amadeo P-110/100H**

- 5 kW, 110 kV / 100 mA
- Modern LED light
- High-performance capacitor for stable and reliable power supply
- Equipped with remote control functions by hand switch
- Flat touch panel, digital display, LED display reverse
- Constant X-ray output without influence of line power fluctuation
- 7-segment LED read-out (reversible): mAs / KV, data storage and store button, LED indicator: ready & exp. wait

See page 21 for other available X-ray generators

## Notebook and X-ray detector compartments

- Elegant design with UV resistant and sturdy outer shell
  - Protects notebook and X-ray detector from surroundings (splash water etc.)
  - Notebook compartment adjusts to fit various sizes
  - Drop down notebook compartment enables ergonomic access to the acquisition and diagnostic software
  - Adjustable detector compartment
- [Electronic components are not included in the **Amadeo M-AX mini** version]

## Stand

- Advanced industrial design
- Excellent stability and mechanical sturdiness yet lightweight
- High tipover stability on uneven terrain
- Swivels in all directions (ideal in narrow corridors and elevators)
- Designed for easy cleaning
- Integrated block brakes for safe working conditions
- All terrain access
- All parts are made and assembled in Germany
- Electronic components are sealed to ensure safe transport





only approx.  
**68 kg**



*A carefully designed compartment protects the notebook from dirt and moisture*



*The detector compartment fits various detector types*

- Almost no external components and cables
- Easy positioning of tube head for the full array of radiologic diagnostics (adjustable height, tube head rotates in all directions)

# Software

## Advantages of the professional *dicomPACS*<sup>®</sup>*DX-R* X-ray acquisition software

- Modern graphical user interface (GUI) adaptable to almost **any language**
- Capture of patient data via **DICOM Worklist, BDT/GDT, HL7** or other protocols – data may also be captured manually
- Use of **DICOM Procedure Codes** for the transfer of all relevant examination data directly from the connected patient management system (HIS/RIS)
- **Freely configurable** body parts with more than **200 projections** and numerous possible adjustments
- Safe and fast **registration of emergency patients**
- Allows the user to **switch between examinations** of a patient, for instance to avoid having to re-position the patient frequently
- Integrated **measuring, special image filters and many other tools** for measuring and image optimisation
- Allows the user to **subsequently add images** to an examination, even after that examination has already been completed
- Entry of recurring **examination procedures as macros**, e.g. thorax screenings
- **Fully integrated radiographic positioning guide** for each examination in human and veterinary medicine incl. comprehensive notes, photos, videos and correct X-ray images
- A single work station with installed *dicomPACS*<sup>®</sup>*DX-R* software may be upgraded by the following options (selection):
  - Tools for taking images of an entire spine or an entire leg (full spine) **(image stitching)**
  - Planning and working with **digital prostheses templates/ operation planning**
  - Connection of several diagnostic monitors
  - Capturing additional patient and examination data and their freely configurable statistical evaluation



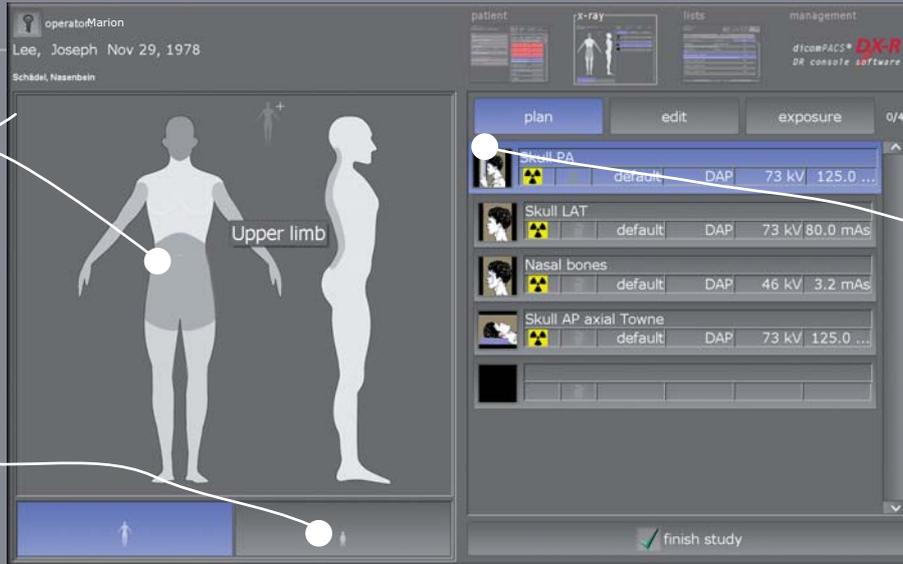


Chart for the planning of an individual X-ray job

Switch to the planning of X-ray jobs for children

The correct settings for adults and children at a mouse click

dicomPACS®DX-R job creation



Video with sound for the step by step positioning of the patient

Shows an example of a correct X-ray image

Presentation of helpful hints for the positioning of the patient, central beam, tips and tricks, frequent errors etc.

dicomPACS®DX-R radiographic positioning guide



Preview of the current X-ray image

Opens examples of inaccurate X-ray images with comments

Preview of the X-ray image and worklist in dicomPACS®DX-R

# Software

The browser based viewer solution **dicomPACS® MobileView** for mobile terminals (optional)

**dicomPACS® MobileView** is a web based viewer, that contains all the basic functions for viewing images. The viewing can take place virtually independent from the browser on mobile devices, such as an iPad. **dicomPACS® MobileView** offers doctors and nursing staff a previously unknown, mobile freedom in the workplace inside and outside of hospitals or practices, with the radiological image material available at all times.

## Fields of application of **dicomPACS® MobileView**

**dicomPACS® MobileView** can be installed in addition to existing **dicomPACS®** diagnostic modules (diagnostic workstations). It is irrelevant whether the **dicomPACS® MobileView** software is used on a network PC (pure viewing workstation) or/ and on a mobile device.

Worldwide access to all image material is available via a network connection, e.g. VPN access via the internet, of the used mobile device to the central **dicomPACS®** system in the office or clinic.

## Licensing model

**dicomPACS® MobileView** is used on a concurrent user licensing model. This means that the number of concurrent users is pre-defined.

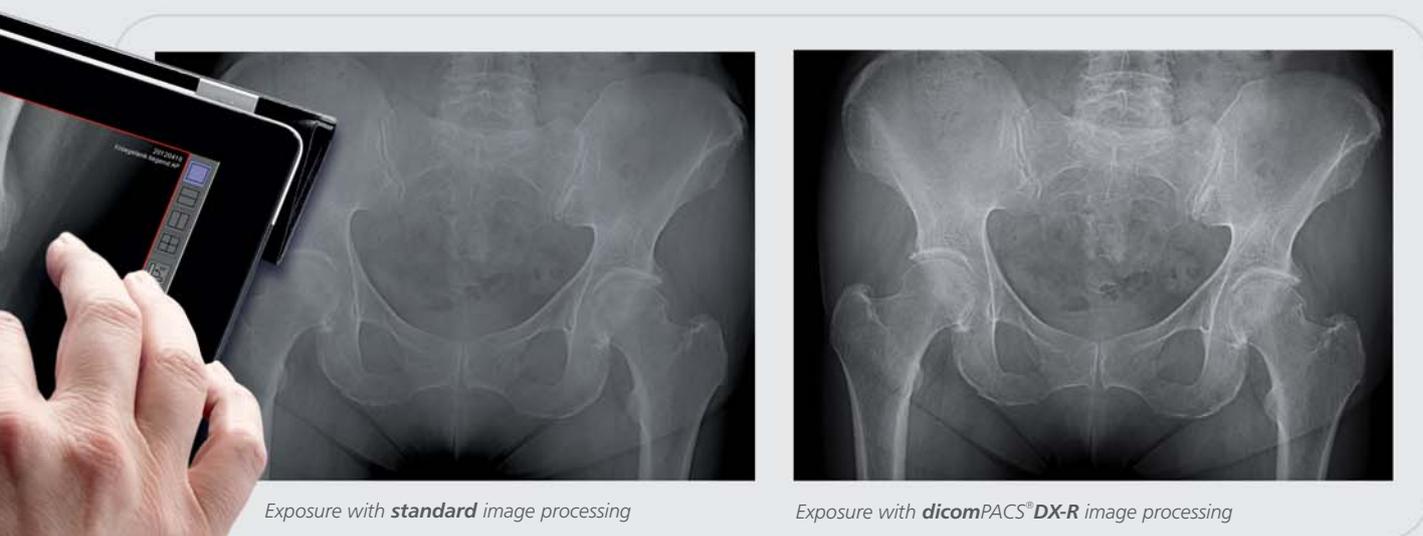
### The main advantages below at a glance:

- High flexibility through the use within various internet browsers, including Microsoft Internet Explorer, Mozilla Firefox, Google Chrome, Safari 5, Safari for iPad and Android browser Intuitive operation
- Supports the multi touch operating technology (e.g. zoom in and out with two fingers)
- Supports full screen mode
- Allows accessing the **dicomPACS® DX-R** or **dicomPACS®** database without any additional modules
- Allows playing series (e.g. ultrasound)
- High loading speed with modern streaming technology
- Uses concurrent user licenses



## Automatic image processing for optimal quality of X-ray images with **dicomPACS® DX-R** image processing

- Perfect images at all times - generally **no adjustment** required
- Integrated software for **automatic image optimisation**
- Professional, **adaptable image processing** for each individual examination to obtain best possible image settings for the needs of each customer
- Due to specially developed processes, the image processing allows the user to **vary the X-ray settings on a large scale** while the image quality remains virtually the same (**possibility of reducing the dosage**)
- **Bones and soft tissue** in one image - this enables the user to significantly improve his diagnosis
- **Details of bones and microstructures are very easy to recognise**
- Noise suppression
- **Black mask** (automatic shutters)
- Automatic **removal of grid lines** when using fixed grids



Exposure with **standard** image processing

Exposure with **dicomPACS® DX-R** image processing

# Software

## **ORCA** - the Cloud-based archive solution for X-ray images and diagnostic (optional)

Even for state of the art practices and hospitals, the rapidly rising data flood of digital images, diagnostic reports and other documents is becoming increasingly challenging. Current legislation demands safe and long-term storage of patient data which generally requires investing in expensive hardware infrastructure as well as maintenance and corresponding staff costs.

To this end, we developed the **ORCA** Cloud archiving solution, thus paving the way for cost effective and safe Cloud based data archiving in practices and clinics.

**ORCA** offers two application options:

- Safe, long term archiving of patient data with intelligent usage of internal databases
- Communication platform (exchange of images and diagnostic reports) with colleagues and specialists or as an easy way to forward image data to patients (an alternative to creating patient CDs)

Data is **exclusively** archived on European servers with the relevant safety certificates.



### Benefits of Cloud archiving through **ORCA**

Minimal expenditure: **ORCA** does not require investing in expensive infrastructure such as server and data cables.

**Scalability:** The amount of memory required when using **ORCA** is determined by the demand.

**Long term security:** **ORCA** archives data on many individual European servers in professional and air-conditioned data centres. Server technology is continuously updated.

**Accessibility:** **ORCA** stands out by being highly accessible. Since data is saved with multiple redundancy, **ORCA** guarantees more continuity than a mere server solution.

**Environmentally friendly:** **ORCA** is sustainable – through the optimised use of resources and their distribution.

**Location independent:** **ORCA** guarantees access to archived patient data - worldwide.

**Simplicity:** **ORCA** allows easy access to data from any computer – from your place of work, from the comfort of your home or from any other computer or tablet PC.

**Stress free:** **ORCA** deals with everything – no need to struggle with loose network cables, removed hard drives or software problems.





Cloud based solution to access and archive images and diagnostic reports via the internet



# Operation

Easy operation - even for untrained staff

A simple operating concept and reliability make the **Amadeo M mini** system ideal for mastering daily challenges in the field of medicine, even under adverse conditions and rotating staff assignments.

The integrated **dicomPACS® DX-R** software allows the user to quickly generate optimal X-ray images. A multimedia X-ray positioning guide illustrates and verbally describes the adjustments necessary for each examination. The simple and user friendly interface guides the user through a series of easy and understandable steps to the final X-ray image.

Recurring examinations can be stored as macros (e.g. thorax screening). The automatic image optimising function guarantees perfect images. The user interface is available in several languages.



## Zooming in on the advantages of the **Amadeo M mini**:



The LED status display shows the operational status of the system. The display changes between red, yellow and green and is clearly visible from every position.



The storage compartment ensures an ergonomic working position at the notebook as well as protecting the hardware and software from environmental influence (splash water etc.) when closed.



The integrated bidirectional generator control is easy to handle.



The brakes ensure a secure stand of the mobile system during the X-raying process.



Sophisticated processes and supportive details allow positioning the generator easily and without effort.



Stairs are no obstacle to this light weight X-ray system.

# Alternative

A combination of the **Amadeo M-AX mini** system and the **Leonardo** DR suitcase solution for additional options

Compact and portable **Leonardo** DR suitcase and backpack solutions come complete with a notebook, acquisition and diagnosis software, as well as an X-ray detector. When used in combination with the **Amadeo M-AX mini** (generator only), they represent a perfect synergy for mobile direct digital X-ray imaging, particularly for outdoor use.

Combining the two systems provides significant advantages, for example when a number of **Amadeo M-AX mini** systems are operated at different sites and the lightweight Leonardo component is transported quickly and easily back and forth. This results in a substantial cost saving because it is not necessary to purchase several expensive systems.

A modular setup can also be beneficial in the case of equipment malfunction: time and money can be saved by having to repair only one component.

## **Amadeo M-AX mini + Leonardo** (upgrade to the DR version)

Currently, two versions of the **Leonardo** system are available: the sturdy suitcase version **Leonardo DR mini** as well as the backpack solution **Leonardo DR nano**

Advantages of the **Leonardo** solutions –  
OR Technology's lightweight champions:

The very compact Leonardo solution is housed in an attractive, sturdy suitcase or padded backpack, respectively. In both cases, the system can be set up on site in just a few easy steps and is immediately operational.

The smallest and lightest solutions, weighing only 8 - 9.5 kg, can be easily transported by all personnel.

The **Leonardo** systems fit behind any car seat – saving room during transport.

The DR detectors are stored in the suitcase or backpack.



## **Amadeo M-AX mini + Divario CR system**

The **Amadeo M mini's** CR version uses cassettes to receive the images. The cassettes which are stored inside the **Amadeo** stand are read out by a **Divario** CR system and are then available in digital format.





only  
approx.  
**9,5 kg**

# Specifications

The high frequency generator in detail

**Generator Amadeo P-110/100H** (additional generators, see page 21)

<b>Construction</b>	Monoblock X-ray unit, high frequency technology (full bridge inverter system)	
<b>Output</b>	Tube vol./current	110 kV/ 100 mA
	Voltage range	40-110 kV, kV step
	mAs range	0,1 - 100 mAs, 40 steps
	Max. output	5,0 kW@.75 kV
<b>Röntgenröhre</b>	Focal Spot	1,8 mm
	HU capacity	76 kHU
	Cooling rate	57 kW/s
<b>Collimator</b>	Min. light field	5 cm x 5 cm@1 m SID
	Max. light field	35 cmx35 cm@65 cm SID
	Lamp	LED
	Auto timer	30 sec
	SID scale length	2 m
<b>Power</b>	Input	100-240 VAC (Free-Voltage)
	Frequency/phase	50/60 Hz, single phase
	Voltage	± 10 %
<b>Weight</b>	19,6 kg	
<b>Dimensions (Wx H x L)</b>	254 x 225 x 423 mm	

## Additional benefits

- 5 kW, 110 kV / 100 mA
- Modern LED light
- High performance capacitor for stable and reliable power supply
- Equipped with remote control functions by hand switch
- Flat touch panel, digital display,
- LED display reverse
- Constant X-ray output without influence of line power fluctuation
- 7 segment LED read out (reversible): mAs / KV, data storage and store button, LED indicator: ready & exp. wait



# Accessories

for portable X-ray

## VersariX - Portable X-ray detector bracket\*



In addition to the **Amadeo M mini** X-ray solution OR Technology has developed a portable and compact detector bracket for room or wardrobe doors, walls etc. Especially suitable for use in old age homes, nursing care wards and in home care, this detector bracket offers enormous benefits. The normal heavy thorax stand is no longer required and will no longer need to be carried to the patient's bed. A room door is sufficient for taking almost any X-ray images of standing or sitting patients – while observing the relevant radiation protection regulations.

## Mobile wall stand and X-ray table\*



The **Amadeo M mini** systems can be complemented with a mobile wall stand and a mobile X-ray table. Both devices may be folded up or disassembled to save space for transport and reassembled easily within a few minutes.

\* Optional components - not included

# Service

## Technical details & operational requirements

### Well thought out service concept:

- Maintenance friendly modular structure, consisting of only 2 main components
- Components can easily be disassembled and exchanged even by untrained staff
- The system is virtually maintenance free – no need for hardware maintenance contracts
- Remote maintenance module provided as standard component keeps repair costs low. (not for AX version)
- 2 years guarantee (guarantee may be extended)

### Operational requirements

Temperature range: 10 - 40° C

Humidity: 30 - 85%

Barometer: 70 - 106 kPa (700 - 1060 mbar)

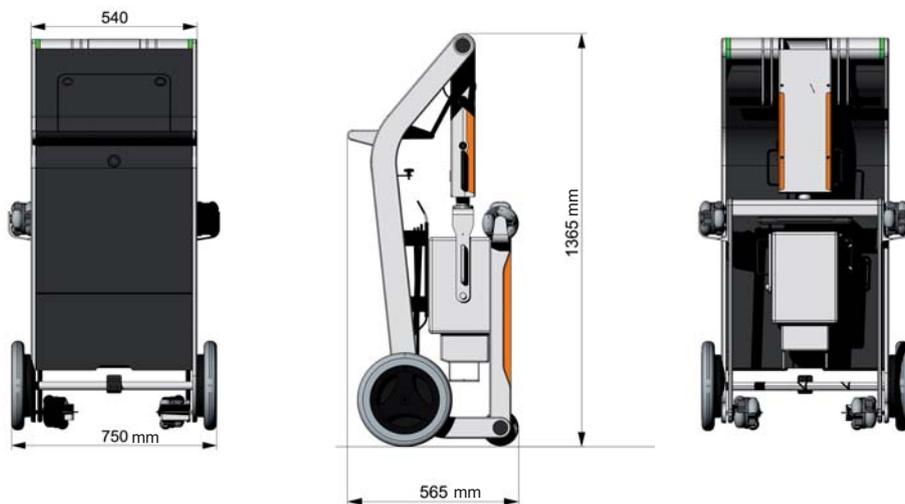
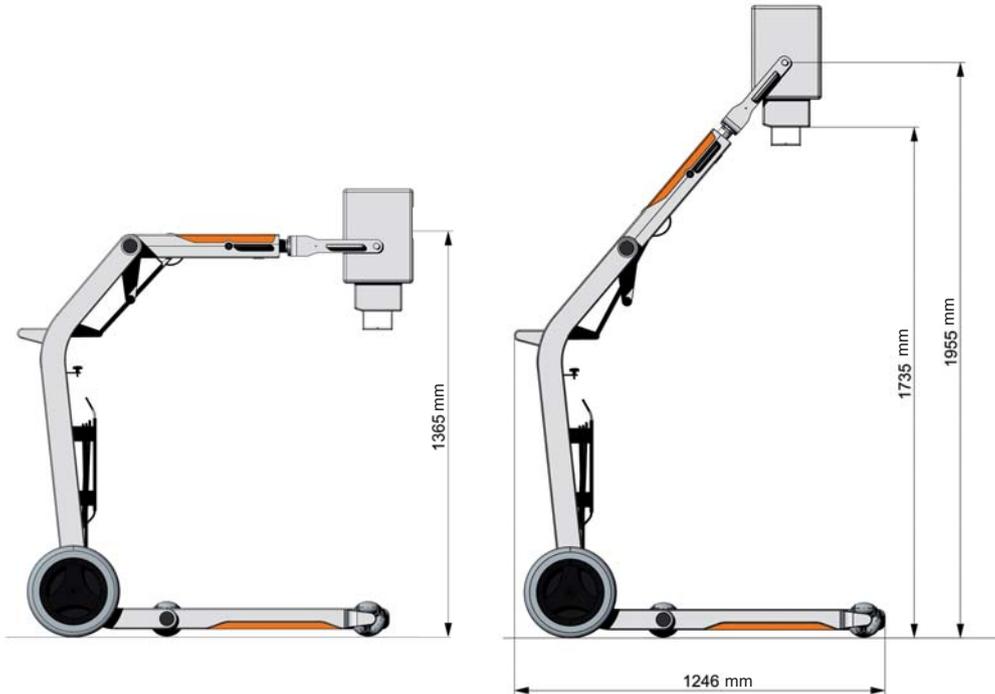
In the case of an emergency, the **Amadeo M mini** system also operates in temperatures between 0° C and 45° C. In such cases, however, the system should not be operated under full load; up to 20 exposures per hour can be taken.



## Dimensions of the X-ray system

 Amadeo M-DR *mini*

Overall weight: approx. 68 kg  
(M-AX version 60 kg)



# Scope of delivery

The Amadeo M mini systems include the following components as standard:

## Components of the mobile X-ray unit

- Dimensions: 56.5 x 136.5 cm; with maximum height positioning: 124.6 x 195.5 cm
- Weight: depending on the version



**Amadeo M-DRw mini**  
mobile X-ray system with **wireless** flat panel detector

ca. 68 kg

**Amadeo M-AX mini**  
mobile X-ray system for use with film/CR cassettes or existing DR system without generator control

ca. 60 kg

## Stand

- Advanced industrial design
- All parts are made and assembled in Germany
- Inclusive Notebook and X-ray detector compartments
- Excellent stability and mechanical sturdiness yet lightweight
- Stairs are no obstacle to this light weight X-ray system
- High tipover stability on uneven terrain
- Maximum height setting: approx. 187 cm from the floor while extending the X-ray tube to 55 cm
- Meets even the highest hygiene demands in hospitals



## High frequency generator **Amadeo P-110/100H**

- 5 kW, 110 kV / 100 mA
- Modern LED light
- High-performance capacitor for stable and reliable power supply
- Equipped with remote control functions by hand switch
- Flat touch panel, digital display, LED display reverse
- Constant X-ray output without influence of line power fluctuation
- 7 segment LED read out (reversible): mAs / KV, data storage and store button, LED indicator: ready & exp. wait



## Flat panel detector 14" x 17" wireless

Wireless X-ray imaging.  
Fits into an existing X-ray system without requiring modification (in conformity with the X-ray film cassette), fast charging, long life batteries



[example]



## Notebook with **dicomPACS® DX-R** acquisition console

...the professional console software with modern graphic user interface with generator control, integrated X-ray positioning guide and basic software modules:

- **dicomPACS® DX-R** DICOM Send SCU
- **dicomPACS® DX-R** DICOM Patient CD
- **dicomPACS® DX-R** Cognition Optimised Processing





# Portfolio Overview - products of OR Technology

## Medici DR Systems

**DR retrofits** - digital upgrade set for existing X-ray systems incl. **dicomPACS® DX-R** acquisition software, also available for stationary and mobile X-ray machines



## Leonardo DR Systems

**DR suitcases** - compact suitcase solutions for portable X-ray incl. **dicomPACS® DX-R** acquisition software



## Amadeo X-ray Systems

**Complete digital X-ray systems** (incl. stand, bucky, generator, flat panel incl. **dicomPACS® DX-R** acquisition software etc.) as well as mobile and portable X-ray solutions



## Divario CR Systems

**CR solutions** - CR systems for digital X-ray with cassettes incl. **dicomPACS® DX-R** acquisition software



## X-ray Accessories

**Accessories for X-ray** (e.g. radiation protection walls, gloves etc.)



## dicomPACS®

**Image management (PACS)** - comprises acquisition, processing, diagnosis, transfer and archiving of image material



## ORCA

**Cloud-based archive solution** - safe, long-term archiving of patient data with intelligent usage of internal databases, communication platform with colleagues and specialists and transfer of image data to patients



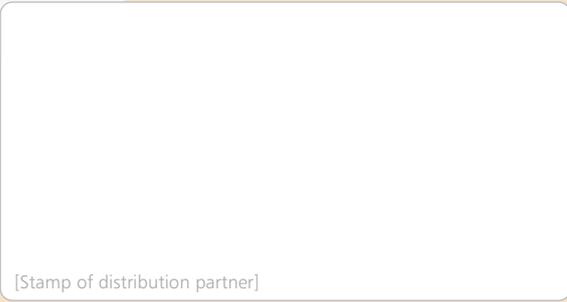
## **dicomPACS® DX-R** *X-ray Acquisition Software*

**X-ray acquisition software** [only for OEMs] - acquisition and diagnostic software for X-ray images from flat panels or CR systems



**Info hotline: +49 381 36 600 600**

**OR Technology** (Oehm und Rehbein GmbH)  
18057 Rostock, Germany, Neptunallee 7c  
Tel. +49 381 36 600 500, Fax +49 381 36 600 555  
www.or-technology.com, info@or-technology.com



[Stamp of distribution partner]