

# Product Data

## Matrix dr

X RAY SYSTEM



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## Premise

This document was created by IBIS in order to provide its customers and / or potential new customers with all the necessary information on the products; the purpose of this document is to group all the technical specifications of each device created by IBIS.

However, it is necessary to take into account that, according to the model chosen, it is possible to use different electrical, mechanical or radiological components which can be listed in the product technical dossier.

In the case of special requests, therefore, we invite you to contact our technical service that will send you all the details and technical specifications related to the configuration you have chosen.

The specifications indicated in this document refer to standard configurations.

IBIS designs and manufactures medical x-ray equipment for both the human and veterinary sectors. The human range includes Mobile Units, complete Radiology rooms, "C" arms for fluoroscopy examinations, Image Intensifiers and portable generators; for the veterinary sector we produce the CDR vet tables used both in multifunctional clinics and in veterinary clinics, "C" arms for clinics and portable units useful for in-field diagnostics or for radiological examinations on large animals.

The company operates worldwide through distributors that provide the end customer with direct technical support; all internal and external technicians are properly trained to solve any hardware and software problems.

The strong points of IBIS are the continuous commitment to develop new products, the relationship with the customer, the great reliability of the products and the technical assistance.

IBIS, as a manufacturer of imaging equipment, is constantly improving its products; we therefore invite you to download the most up-to-date revision concerning the product of your interest from the website [www.ibisray.it](http://www.ibisray.it).

If you need further technical details you can contact our technical department by contacting us by phone or by sending an e-mail to [technical@ibisray.it](mailto:technical@ibisray.it); one of our technicians will answer you and give you all the required details.

## General description

*(Valid for the entire MatriX range)*

MatriX is a mobile unit designed for radiological applications and diagnostic investigations in hospital environments (operating theaters, pediatrics, orthopedics, sports medicine) and emergency departments. Thanks to its lightness, it is easily transportable within the hospital unit between the various departments as well as directly in the hospital ward where it is necessary to avoid the patient moving to the diagnostic imaging department.

The combination of maneuverability, ease of use and wide movement of the arm offers to the users an intuitive product with rapid activation.

The movable arm allows to move the monoblock from the bottom upwards and vice versa until reaching the correct position of exposure; MatriX also offers the movement of the arm on the horizontal axis that is very used for bedside activities. The wide excursion ensures the possibility of use in various environments such as patients bedded, on stretcher, on wheelchair, etc.

The arm travel on the horizontal axis is 180 ° thus allowing an easy positioning even in environments with little room for maneuver available.

The possibility of freely rotating the monobloc with a total excursion of 125 ° (-20 ° / + 105 °) also makes it possible to use the MatriX unit also with radiographs or in the case of particular positions. It is possible to orbit the monoblock by +/- 180 °, showing, through the built-in goniometer, the exact angle of exposure.

The overall dimensions in transport conditions are very reduced, allowing easy maneuverability inside the departments and easy storage when not in use.

A large 19 "HD color monitor (only on MatriX *dr*) allows the operator to immediately have all the exposure data and images available and can easily change them with just one touch.

The monobloc excursion is facilitated by a comfortable handle; the same for pushing the unit through a handle that also incorporates the brake.

The brakes are "dead man" type, so, in the absence of pressure on the handle, the equipment activates the mechanical brakes preventing accidental movements of the unit.



The front twin wheels are designed to overcome small differences in level, such as entry into the elevator or low obstacles; in the case of higher obstacles, it is possible to tilt the unit through a light pressure of the foot on a bar placed under the unit.

MatriX è dotato di un sistema di antiribaltamento che impedisce cadute od oscillazioni dovute allo sbraccio orizzontale dell'unità.

A back pocket has been added to the MatriX unit in order to be able to freely insert a detector panel.

The unit is equipped with a double-snap button with spiral cable which allows the operator to perform the X-rays in complete safety at an adequate distance.

The units of the MatriX series are available in the following versions:

MatriX HP with 32 kW generator

MatriX *evo* with 32 kW generator and battery/plug powered

MatriX *dr* with 32 kW generator



### Product Specification: MatriX *dr*

MatriX *dr* uses two types of radiological technique: two-point with choice of kV and mAs and three point with choice of kV, mA and mS.

These values can be viewed on the large touch screen display.

The unit is equipped with an automatic shut-off system after 30 minutes of inactivity. This feature prevents the unit from being switched on by mistake for long periods, thus avoiding compromising the operation of the X-ray tube (focuses always on).

As per regulations, all the radiological units of IBIS can be equipped with a dosimetric system.



User interface and “touch screen” display with image acquisition, archiving and post processing software. The acquired studies can be exported to common storage formats (CD/DVD/USB) or even transferred to any PACS. The system is able to acquire the worklist from the hospital server. The dose data (if in the presence of a dosimeter) are displayed overlaid on the acquired images and sent as a Dose Report to the PACS.

The unit is ready for the d.a.p. and for the potter bucky.

Manual radius button with double click and extensible cable



The pouch has been designed to accommodate a detector panel with a 35x43 format. The material is soft, shockproof and suitable for inserting the digital panel and has two pockets for housing two batteries.

The relevant feature of MatriX *dr* is the ability to immediately process images and to present them to the operator on the on-board HD screen. This operation is possible thanks to a PC inserted inside the unit able to interface with most of the direct digital panels available on the market. The operation is facilitated by the touch screen panel on which is possible to view the software related to the panel in use; all exposure parameters can be freely entered through this 19" high-definition screen. The image data is transferred from the panel to the computer and vice versa via a wireless network generated directly by the unit through powerful antennas.

The computer is able to store the images acquired through an additional HD coupled to that used for the management of the operating system and software.

MatriX *dr* can only be used through the mains power, however the computer is kept switched on via a UPS system inserted in the equipment; this allows the user to be able to move freely in the departments or rooms without having to worry about switching off and restarting the operating system.

These features make MatriX *dr* one of the most functional digital image acquisition systems on the market thanks to the speed of acquisition of exposures, the ability to immediately have a result and to be able to process it directly on the acquisition place.

ATTENTION: for the correct use of the equipment refer to the user manual of the product



## Radiological and Electrical Characteristics of the Product

### MatriX *dr*

#### Radiological and Electrical Characteristics of the Product

#### Generator

Max Power	32 kW Large Focus – 11 kW Small Focus
Max Voltage of the Monobloc	125 kV
Max Current of the Monobloc (piloted)	400 mA
Work frequency	100 kHz
Ripple at Max Power	≤3%
Total Filtration	> 2,7 mm Al
Inverter Model	HF1 100/2
kV Variation	1 kV
Max mAs	220 mAs (28 Steps)
Step mAs	0,2 / 0,5 / 0,8 / 1 / 1,3 / 1,6 / 2 / 2,5 / 3,2 / 4 / 5 / 6,3 / 8 / 10 / 13 / 16 / 20 / 25 / 32 / 40 / 50 / 63 / 80 / 100 / 130 / 160 / 200 / 220
Operating Modality	2 or 3 points techniques
Anatomical Technique (APR)	Customizable
Exposure times	Minimum 0,003s Maximum 2,2s*

*\*time can be modified on request*

#### Monobloc\*

Monobloc Type	E 100R HF
Max Voltage of the Monobloc	125 kV
Max Current of the Monobloc	425 mA
Thermal Capacity of the Monobloc	900 kJ - 1200 kHU
Continuous Thermal Dissipation of the Monobloc	60 W
Available Thermal Capacity (X-Ray)	600 kJ – 800 kHU
Ripple Monobloc at Max Power	1%

*\*standard model; available with different models. Please refer to technical manual.*

#### Tube\*

Insert Type	IAE X22C	Kailong KL65
Focuses Dimensions	0,6 – 1,3 mm	0,6 – 1,3 mm
Type of tube	Rotating Anode	Rotating Anode
Anode speed	3000 rpm	3000 rpm
Anodic Angle	15°	15°
Maximum Thermal Capacity of the Insert	80 kJ - 107 kHU	80 kJ - 107 kHU
Maximum Capacity Dissipation of the	300 W	300 W

*\*standard model; available with different models. Please refer to technical manual.*

#### Power features

Main system power supply voltage	Single Phase, 230 Vac +/-10%
Frequency	50/60 Hz
Absorption connected to the network	0,5 A standby; 230 Vac - 12 A pulsed

**MatriX *dr***
**Collimator characteristics**

<b>Model *</b>	RALCO R104
<b>Shutters</b>	2 pairs of mobile leaded shutters + extra fixed focal length
<b>Light</b>	LED light high intensity 250 lux at 100 cm, with 30 sec ON / OFF timer (standard).
<b>Dimensions</b>	271x222x140 mm
<b>Field covered</b>	Square field with single plane, variable from 0x0 cm to 43x43 cm at 100 cm DFF
<b>Angle of the light cone</b>	24°
<b>Minimal inherent filtration</b>	Equivalent to 2 mm Al
<b>Additional Filtration (Optional)</b>	RO258 = Al + (0,1 mm Cu / 0,2 mm Cu / 2 mm Al) RO258/1 = Al + (0,1 mm Cu / 0,2 mm Cu / 0,3 mm Cu)

\* Also available in R108 or R221 for Ralco. For further details refer to technical dept IBIS S.r.l.

**MatriX *dr***
**Operational Features**

<b>User Interface</b>	19 " HD color monitor touch for the insertion of all parameters and for the display of images and any error messages or system anomalies. Optional 18.5 "medical grade HD touch FHD color monitor with Dicom color curves (also works with work gloves) for entering all parameters and for viewing images and any error messages or system anomalies.
<b>DAP / KERMA Camera</b>	Yes (optional)
<b>Automatic Closedown</b>	An automatic device automatically shuts down the system after 30 minutes of inactivity for tube prevention (based on the chosen management software).
<b>X-Ray Button</b>	Double click manual with extensible spiral cable
<b>Safety devices</b>	<ul style="list-style-type: none"> <li>• Protection and automatic control of filament current</li> <li>• Protection against over current and over voltage</li> <li>• Overload protection of the x-ray tube</li> <li>• Indications of operational errors or malfunction</li> <li>• Anti-tipping protection</li> </ul>
<b>Net Interface</b>	Wireless or ethernet LAN connections
<b>Dose data transfer</b>	DAP and KAP transfer on Dicom header

**MatriX *dr***
**Operational Features**
**Acquisition Console**

SFF computer with Intel i5 Quad Core processor, 8GB ram (16GB optional). 256GB SSD system disk and additional 1TB SSD study archive disk (2TB optional). 24X DVD burner. RJ45 Ethernet and Wireless connection.

**Uninterruptible Power Supply**

Uninterruptible Power Supply system (UPS) to ensure the operation of the computer and display, even in a leak of power source. Additional protection for any current and voltage overloads. Command for switching off the on-board auxiliary system.

**Storage capacity**

Around 32.000 images in RAW format with 1TB disk and around 64.000 images in RAW format with 2TB disk.

**Flat panel connection**

WiFi or cable connection

**Dicom features\***

- Storage
- Print
- Worklist (worklist acquisition)
- MPPS
- PACS/RIS interfacing
- Stitching

**Print features**

Local or net printers, with or without Dicom protocol language

**Wireless command (optional)**

Wireless command with operating frequency of 433,92 MHz for X-ray emission with indicative range of 10 meters\*  
\*the range depends on any obstacles present, walls, bulkheads, etc.

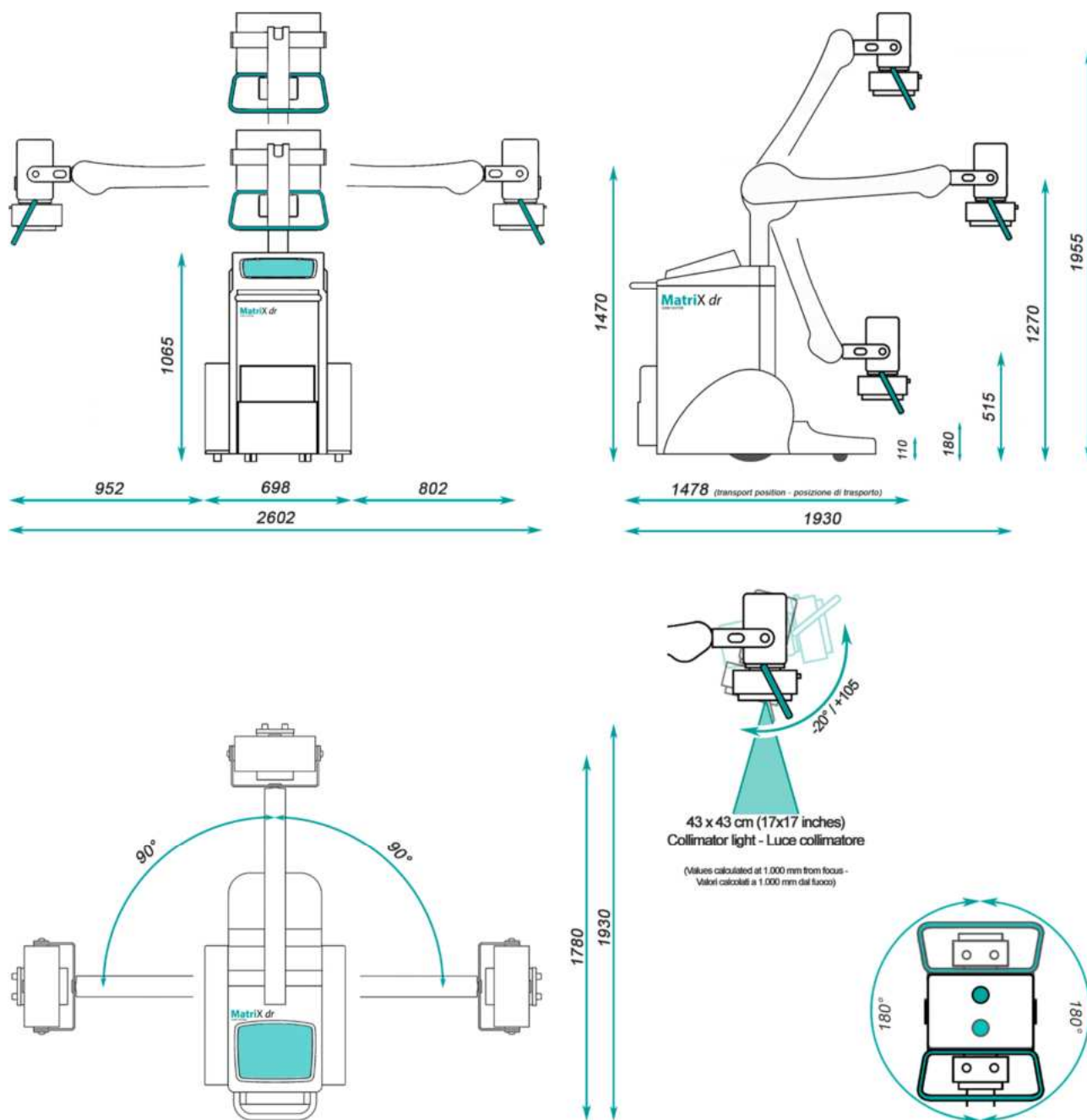
## Mechanical characteristics

### MatriX *dr*

#### Mechanical characteristics

Monobloc inclination (rotation on Y axis)	-20° / +105°
Monobloc rotation (rotation on X axis)	+/- 180°
Collimator rotation	+/- 90°
Width	698 mm
Length (at maximum arm extension)	1930 mm
Length (in transport configuration)	1478 mm
Height (in transport configuration)	1470 mm
Maximum focus height	1968 mm
Maximum DFF at floor level	1968 mm
Minimum DFF to the floor	528 mm
Maximum front reach (from the column)	1301 mm
Stop system	"Dead man" braking system on the handlebar
Weight	310 kg ( <i>without optional</i> )
Rear wheels diameter	420 mm
Front wheels diameter	100 mm
Maximum obstacle height that can be overcome	110 mm

## Dimensions



## Labelling







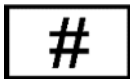








Fac- Simile of the label used for the MatriX *dr* and its usual positioning.



The positioning of the label is shown below. Further identification label is applied inside the equipment next to the inverter label.



## Reference symbols

	CONSULT THE ANNEXED DOCUMENTATION
	ATTENTION
	SYMBOL OF DANGER: IONIZING RADIATIONS - PHYSIOLOGICAL EFFECTS
	DEVICE THAT REQUIRES A CORRECT DISPOSAL (2012/19 / EC)
	MANUFACTURER
	CE MARKING
	UNIT MODEL
	UNIT CODE
	SERIAL NUMBER
	MEDICAL DEVICE
	UDI CODE
	PROTECT FROM HUMIDITY
	DO NOT USE IF THE PACKAGE IS DAMAGED
	FRAGILE
	INDICATION OF THE DISTRIBUTOR

## Product Certifications

The MatriX *dr* mobile unit is classified in class II b (annex IX 93/42 / CE) and complies with the requirements of the European directive ue 2017/745.

The product has been developed according to UNI EN ISO 9001: 2015 and UNI EN ISO 13485: 2016.

It complies with the following standards:

CEI EN 60601-1

CEI EN 60601-1-2

CEI EN 60601-1-6



## Registration to the Ministry of Health

MatriX *dr* is a Class IIb medical device regularly registered at the Italian Ministry of Health.

The product identification code is as follows:

<b>Medical Device Class:</b>	<b>IIB – Class IIb</b>
<b>Commercial and model name:</b>	<b>MATRIX DR</b>
<b>Registration ID:</b>	<b>BD/RDM 2551540</b>
<b>CND code:</b>	<b>Z11039016</b>
<b>GMDN code:</b>	<b>37647</b>
<b>Product code:</b>	<b>01.15.027.001</b>
<b>GS1 code:</b>	<b>8034041670160</b>
<b>Date of first publication:</b>	<b>14 March 2024</b>



## Installation and Warranty

MatriX *dr* must only be installed by properly trained IBIS authorized personnel.

Each device produced or sold by IBIS has one year warranty from the date of shipment unless otherwise agreement between IBIS and the Customer.

The contractual guarantee can be extended to the necessary terms.

The warranty conditions are detailed in the General Conditions of Sale in force on the date of purchase of the product.

## Conclusive Notes

All information contained in this document is confidential and its disclosure, even partial, is forbidden without due notice and authorization by IBIS S.r.l ..

IBIS relieves itself from any responsibility for the unlawful or improper use of its products.

Any information or technical detail included in this document is subject to change; IBIS reserve the right to modify, add, delete parts / details of this document without prior notice and without prior authorization.

All images are inserted for illustrative purposes. The products are subject to change without notice.

IBIS has no obligation to communicate any changes to this document.

For any information not indicated in this document, please contact IBIS S.r.l. to the references indicated on page 4.

## Document revisions

Revision Number	Date	Modifications
Rev.00	10-01-2019	N/A
Rev.01	18-04-2020	Product Specification: MatriX <i>dr</i> Radiological and Electrical Characteristics of the Product Mechanical Characteristics Registration to the Ministry of Health Conclusive notes
Rev.02	06-03-2024	Product logo update Variation of display and dosimeter image MatriX / Simply series product update Label update Symbols update Update of product registration data at the Italian Ministry of Health Update of regulatory references (according to MDR)
Rev.03	28-06-2024	Added acquisition console specification Added maximum exposure time