

## MICRO-X | ROVER PLUS



Reliable. Easy. Efficient.

The Rover mobile X-Ray delivers a lightweight and robust digital imaging solution for adult and pediatric patients in all patient treatment areas. At only around 220lbs, the Rover is ultra-portable with the Rover Plus for those exams when you need a little bit more power.



Custom designed colourful wraps for pediatric customers



## 1 - X-Ray Tube

X-Ray tube type	Carbon Nano Tube (CNT) Technology with stationary anode
Housing type	Stainless steel
Tube Voltage Range	40 kVp to 120 kVp
Tube Current Range	20 mA to 90 mA
Nominal focal spot size	Variable 0.9 to 1.9 IEC 60336 equivalent at 0.1 increments
Nominal anode input power (IEC 60613)	9 kW for 12 ms
Nominal radiographic anode input power (IEC 60613)	6.7 kW
Target diameter	15 mm
Target angle	14 degrees
Target material	Tungsten
Heat storage capacity of anode	27 kHU
Max. heat content of tube assembly	19.3kJ
Maximum housing continuous heat dissipation	25W
Inherent filtration	>2.5 mm Al IEC 60522
Loading factors for leakage radiation	120 kVp 0.23 mA
High voltage connector	Claymout CA175

## 2 - X-Ray Generator

Power output	9 kW
kVp Selection	kVp: 40 kVp to 120 kVp mAs: 0.2 to 80 per ISO Series R'20 Time (ms): 5 to 1500 (not user selectable) mA: 20 mA to 90 mA (not user selectable)
mAs accuracy	+/- (10% + 0.2 mAs)
Coefficient of linearity	≤ 0.2
Coefficient of reproducibility	≤ 0.05 for kVp and mAs parameters

## 3 - Collimator Assembly

Manual collimator	Custom integrated design
Light output	Average luminance of 160 lux at 100 cm
Lamp type	LED
Inherent filtration	≥ 0.5 mm Al at 75 kV IEC 60522
Filter slot	Optional paediatric filter can be installed by the user using the slot located in the front of the tube head just below the handle. It does not block light field.
Paediatric filter (option)	1.2 mm Al + 0.1 mm Cu
DAP chamber	Optional DAP meter can be fitted

## 4 - Dose Area Product Meter (Optional Accessory)

Type	Vacutec – model VacuDAP 156 00 18
Upper limit of response range	0.8 nC/cGy-cm <sup>2</sup>
Saturation	98% at 400 V, 1 Gy/s
Energy range	40 to 150 kV
Chamber filter effect	0.2 mm Al equivalent at 70 kV

## 5 - Physical Characteristics (Rover Standard)

Height	1300 mm (51.2 in), head in docked/transport position, exc. cable
Width	Wheelbase: 583 mm (22.9 in) Main chassis: 500 mm (19.7 in)
Length	1371 mm (53.9 in), head in docked/transport position
Weight	112 kg ( 247 lbs )
Drive handle height	1000mm (39.37 in)
Operating specifications	Temperature range: +10° C to +30° C Relative humidity range: 30% to 60% Atmospheric pressure range: 70 kPa to 106 kPa

## 6 - Drive Characteristics

Drive type	Manual
Speed	Walking speed
Brakes	Dead Man Braking controlled through buttons located on the drive controls
Maximum incline	5 degrees (head in docked, transport position)

## 7 - X-Ray Tube Movements

Vertical focal spot position (from floor)	Minimum: 712 mm (28.03 in) Maximum: 2148 mm (84.6 in) fully extended
Arm rotation range	±239 degrees (relative to docked position)
Tube angulation	Tube angulation (alpha): ±110 degrees Head tilt (tau): -16 to +98 degrees (axially through tube; zero is tube pointing straight down)
Collimator rotation range	±120 degrees (rotates independently of the X-Ray tube)

### Movement Force

Vertical (zeta - z)	53N
Horizontal (gamma)	3.5 lbf (15 N)
Column rotation (beta)	20 N m
Tube angulation (alpha)	24 N m
Tube tilt (tau)	18 N m

### Holding Force

Vertical (zeta - z)	40 lbf (175 N)
Horizontal (gamma)	20 lbf (93 N)
Column rotation (beta)	4 lbf (17 N)
Tube angulation (alpha)	26 N·m (230 in lb)
Tube tilt (tau)	28 N·m (250 in lb)

## 8 - Electrical/Charge Capacity

Number of batteries	5
Type	LiFePO4, also called LFP for Lithium Ferro-Phosphate
Nominal voltage	14.4 Vdc each, total battery bank of 72 Vdc
Capacity	7.5 Ah each
CHARGE POWER REQUIREMENTS	100 to 240 Vac, 50/60 Hz, 11 A to 5.5 A (1100 W max.)
Battery LED	Light indicator displays battery charge level

## 9 - Storage

Detector/grid storage	There are 3 slots: <ul style="list-style-type: none"><li>• One 25 x 30 cm</li><li>• One 36 x 43 cm</li><li>• One 43 x 43 cm or Grid Holder</li></ul>
Miscellaneous storage	Disinfectant wipes, gloves, infection control bags, papers
Portable grid and grid holder options	Grid holder with handle on both the long and short axis

## 10 - Prep/Expose Switch

Wired remote	Replaceable prep / exposure switch
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## 11 - Imaging Station

Type / size	Liquid Crystal Display (LCD), thin film transistor (TFT) 39.6 cm (15.6 in) viewable image size.
Display ratio	Full-HD (1920 x 1080)
Contrast ratio	800:1 (typical)
Response time (white-black)	30 ms
Software Platform	Features: Varex SW*, Integrating exposure control, detector control, and image output Operating System: Microsoft Windows 10 LTSC 2019 (64-bit)
Hardware Platform	Processing Module: Intel Core i5-7300U Memory: 16GB RAM Minimum On-board Storage: 250GB SSD
DICOM Standards	DICOM 3.0 compliance: <ul style="list-style-type: none"><li>• DICOM Work List</li><li>• DICOM Store</li><li>• DICOM Print</li><li>• DICOM Modality Performed Procedure Step</li><li>• DICOM Store Commit</li></ul>

## 12 - Operator Console To Hospital Network Wireless Communications

Network protocol	TCP/IP
Network type	(W)LAN
Wireless protocol	802.11 a/b/g/n/ac
Frequency band	2.4 GHz and 5 GHz
IP addressing	DHCP or Static IP for wireless and wired connections

### SECURITY

Authentication	EAP-PEAP-MS-CHAPv2 EAP-LEAP EAP-PSK  The configuration with PEAP authentication is acceptable for use in the field.  Note: the use of the certificate file to store authentication data, will require a service engineer to connect to the system (either on site or remotely) to update the file  Note: if the hospital changes the authentication specifics or the issued certificate expires on their network side, without making the necessary changes to the certificate file, the wireless communication to the hospital may stop functioning, requiring a service call to connect.  Authentication methods that require user-entered credentials at every login are not supported.
Encryption	WPA2-Enterprise or Personal with AES or TKIP
Intrusion detection / prevention	Agent runs on console to prevent unauthorized processes or services from running

\* May not be available in all geographies.

\*\* Integrated software relieves the operator of responsibility for protecting the X-ray tube; software control automatically ensures the X-ray tube never exceeds the thermal limit.

## 13 - Product Support & Training

Software updates	Upgradeable in the field by a trained operator
Field serviceability	Designed for maintenance and service in the field by field technicians
Field service & installation training & documentation	Comprehensive 'train the trainer' training program and service manuals for field technicians: <ul style="list-style-type: none"><li>• Train the Trainer Package</li><li>• Preventative Maintenance Manual</li><li>• Diagnostic Manual</li><li>• Site Planning Guide</li><li>• Adjustments &amp; Replacements Manual</li><li>• Installation Instructions</li><li>• Illustrated Parts List</li><li>• Acceptance &amp; Compliance Testing</li></ul>
Operator training & documentation	Comprehensive training program and user manuals for operators: <ul style="list-style-type: none"><li>• Train the User package</li><li>• System Hardware Guide (user manual)</li><li>• Safety and Regulatory Guide</li><li>• Software Operational Manual</li><li>• Theory of Operation</li><li>• CSA User Guide (RV01 only)</li></ul>



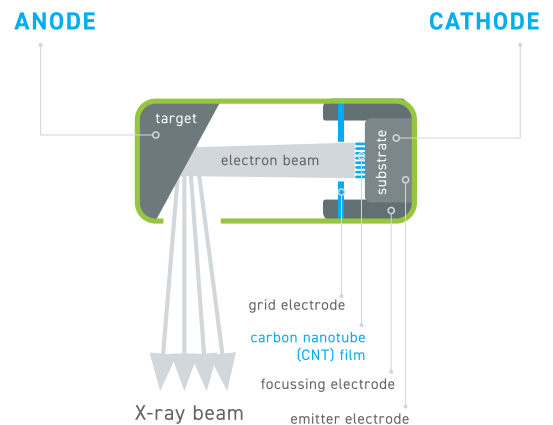
# MICRO-X

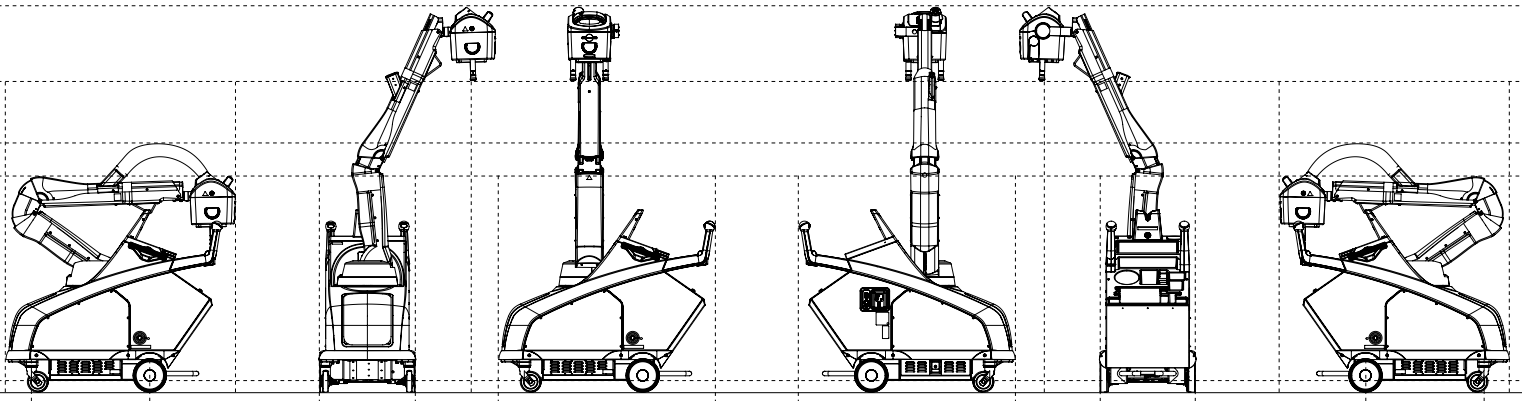
Micro-X has created proprietary Intellectual Property (IP) for the design and manufacture of electronic X-Ray tubes, based on Carbon Nanotubes (CNT). We are calling this the Nano Electronic X-Ray (NEX) Technology.

Micro-X is the first company in the world to introduce NEX Technology into medical imaging systems. NEX Technology is a simple, non-glass based X-Ray tube, with no moving parts that generate minimal heat with no oil required for cooling. It uses carbon nanotubes to offer full medical imaging performance, in a smaller, lighter, and more reliable X-Ray tube.

Micro-X's patented technology is set to revolutionize the potential of X-Rays in a variety of industries and is currently being used as a development platform for all of our future products.

- Cold cathode carbon nanotubes emit a precisely controlled electron stream to anode
- The impact on the anode, produces X-Rays
- Low heat enables simplification of tube, improving efficiencies:
  - no rotating anode or oil bath
  - light weight due to reduction in size
- X-Rays can be switched on and off instantaneously with no ramping up time





<https://mxrimaging.com/Product/61d370f5-7622-49b0-8a0e-375c069ef4e1/Micro-X-Rover>

### About MXR Imaging

MXR is the largest independent distributor of imaging sales and service in the U.S. As an industry leader, we provide a variety of New and Platinum Certified Pre-Owned imaging equipment. Additionally, we offer service support, legacy equipment assistance, equipment relocation, Mobile rentals, parts, parts repair, training, and Radiology Medical Supplies to the healthcare market. MXR possesses an extensive imaging portfolio which includes: CT, PET/CT, MRI, Ultrasound, General Radiology Imaging equipment, and PACS.

### About Micro-X

Micro-X develops and commercializes a range of innovative products for global health and security markets, based on proprietary cold cathode, carbon nanotube (CNT) emitter technology. The electronic control of emitters with this technology enables X-Ray products with significant reduction in size, weight and power requirements, enabling greater mobility and ease of use in existing X-Ray markets and a range of new and unique security and defense applications. Micro-X has a fully vertically integrated design and production facility in Adelaide, Australia. A growing technical and commercial team based in Seattle is expanding Micro-X's US business.



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