

# MICRO-X | ROVER™ | ROVER PLUS™

## TECHNICAL SPECIFICATIONS



## 1 - X-RAY TUBE

## MICRO-X | ROVER | ROVER PLUS

Models: Rover / Rover Plus	RV-19 Varex SW / RV-35 Varex SW*
X-ray tube type	Carbon Nano Tube (CNT) Technology with stationary anode
Housing type	Stainless steel
Tube Voltage Range: RV-19 / RV-35	40 kVp to 110 kVp / 40 kVp to 120 kVp
Tube Current Range: RV-19 / RV-35	30 mA to 70 mA / 20 mA to 100 mA
Nominal focal spot size	Variable 0.9 to 1.9 IEC 60336 equivalent at 0.1 increments
Nominal anode input power (IEC 60613): RV-19 / RV-35	8 kW for 5 ms / 9 kW for 12 ms
Nominal radiographic anode input power (IEC 60613): RV-19 / RV-35	5.2 kW / 6.7 kW
Target diameter	15 mm
Target angle	14 degrees
Target material	Tungsten
Heat storage capacity of anode: RV-19 / RV-35	12kHU** / 27 kHU
Max. heat content of tube assembly: RV-19 / RV-35	8.6 kJ / 19.3kJ
Maximum housing continuous heat dissipation	25W
Inherent filtration	2.5 mm Al at 75 kV IEC 60522
Loading factors for leakage radiation: RV-19 / RV-35	110 kVp 0.21 mA / 120 kVp 0.23 mA
High voltage connector	Claymout CA175

## 2 - X-RAY GENERATOR

Power output: Rover / Rover Plus	7.7 kW / 9 kW
kVp Selection	kVp: 40 kVp to 110 kVp / 40 kVp to 120 kVp mAs: 0.2 to 20 / 0.2 to 80 per ISO Series R'20 Time (ms): 5 to 400 / 5 to 1500 (not user selectable) mA: 30 mA to 70 mA / 20 mA to 100 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

\* 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.

### 3 - COLLIMATOR ASSEMBLY

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Manual collimator	Custom integrated design
Light output	Average luminance of 160 lux at 100 cm
Lamp type	LED
Inherent filtration	$\geq 0.5$ 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
Energy dependence	5% over the 40 to 110 kV range
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: Rover / Rover +	95kg (209 lbs) / 112 kg ( 247 lbs )
Drive handle height	1000mm (39.37 in)
Operating specifications	Temperature range: +10o C to +30o 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

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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)
<b>MOVEMENT FORCE</b>	
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
<b>HOLDING FORCE</b>	
Vertical (zeta)	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	LiFePO <sub>4</sub> , also called LFP for Lithium Ferro-Phosphate
Nominal voltage	14.4 Vdc each, total battery bank of 72 Vdc
Capacity	7.5 Ah each
<b>CHARGE POWER REQUIREMENTS</b>	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

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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 One 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

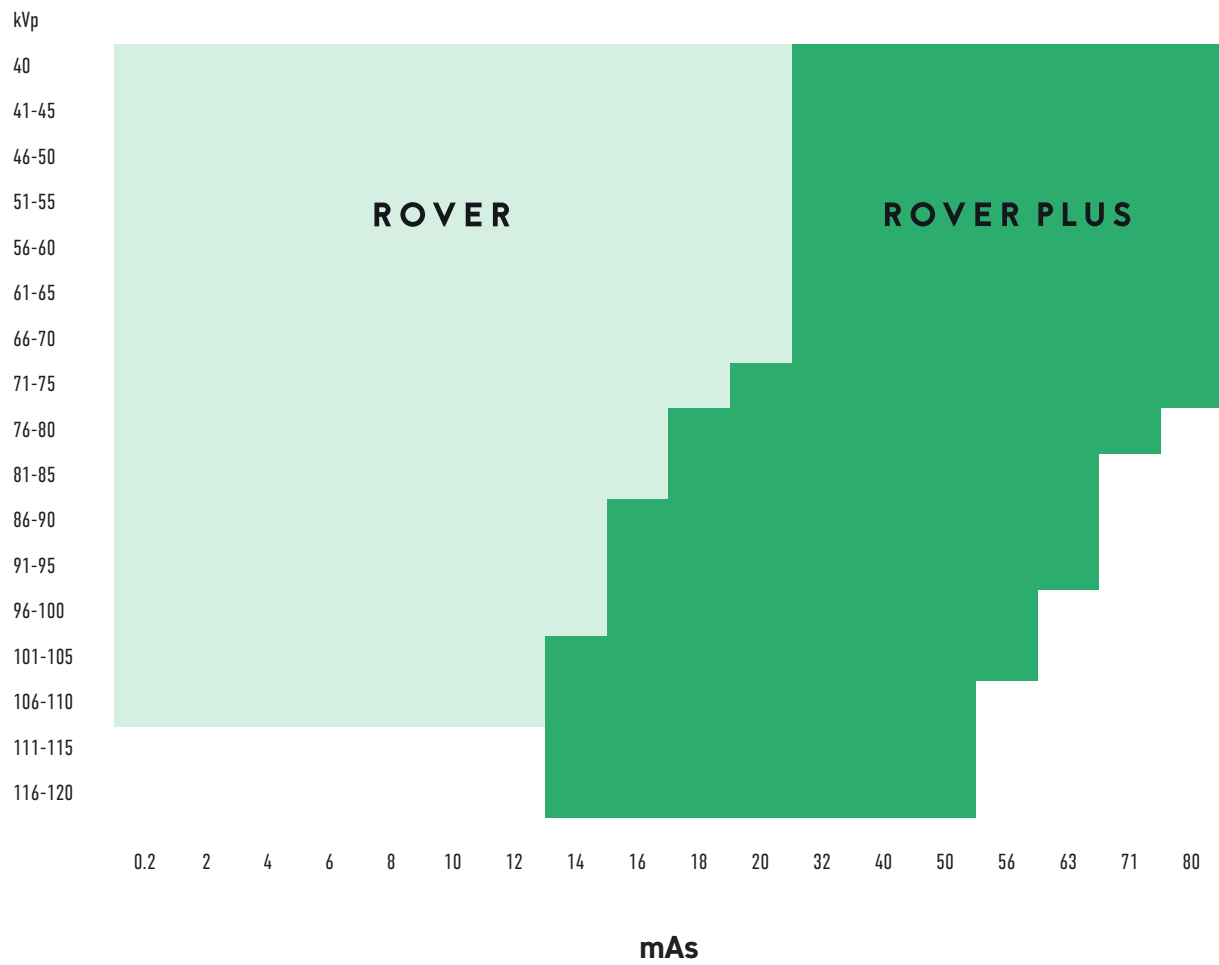
Type / size	Liquid Crystal Display (LCD), thin film transistor (TFT) 39.6 cm (15.6 in) viewable image size.
Display ratio	Full-HD (1920 x 1080)
Contrast ratio	800:1 (typical)
Response time (white-black)	30 ms
Software Platform	<b>Features:</b> Integrating exposure control, detector control, and image output <b>Operating System:</b> Microsoft Windows 10 LTSC 2019 (64-bit)
Hardware Platform	<b>Processing Module:</b> Intel Core i5-7300U <b>Memory:</b> 16GB RAM Minimum <b>On-board Storage:</b> 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>

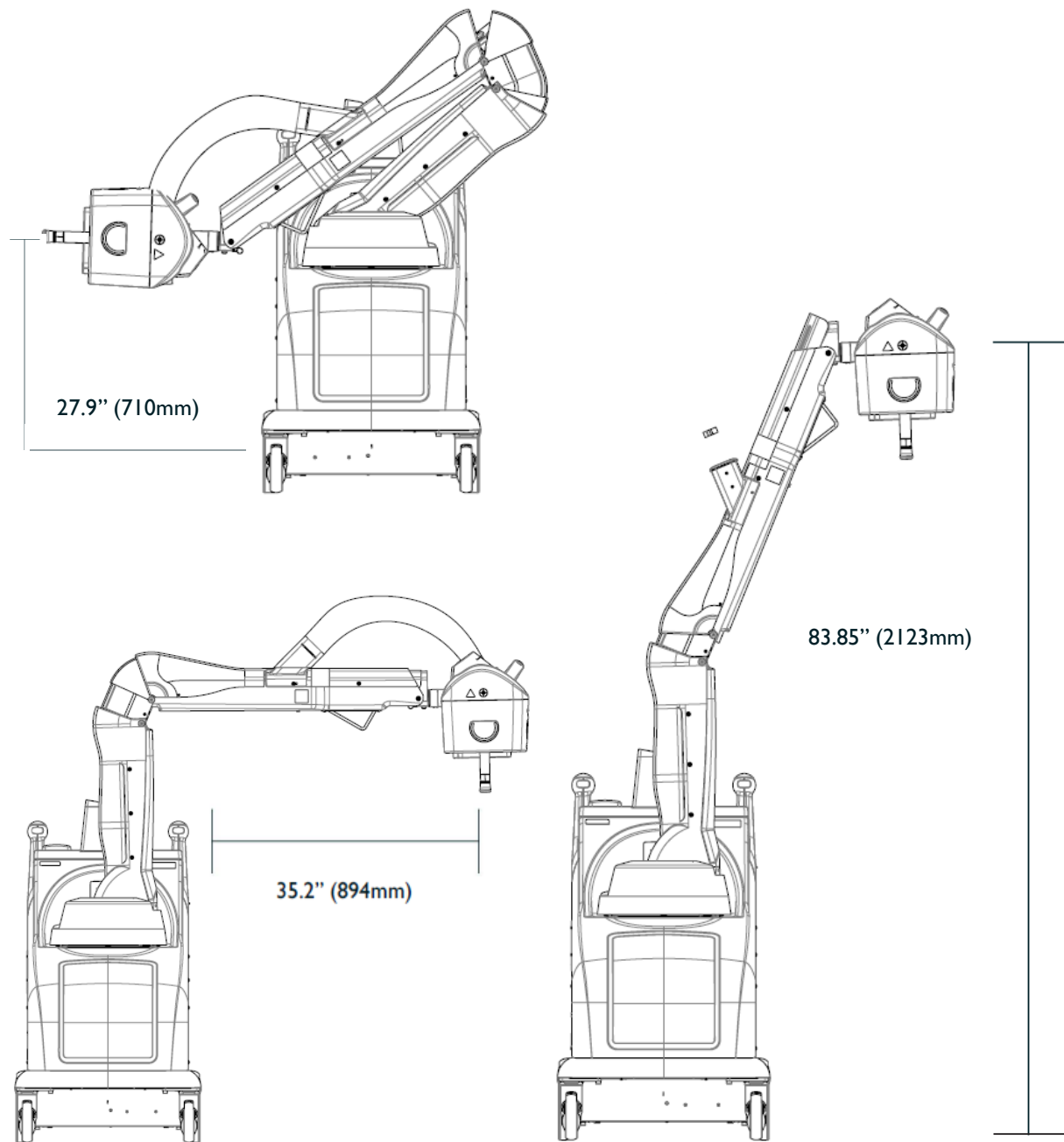
## 12 - OPERATOR CONSOLE TO HOSPITAL NETWORK WIRELESS COMMUNICATIONS

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	<p>EAP-PEAP-MS-CHAPv2</p> <p>EAP-LEAP</p> <p>EAP-PSK</p> <p>The configuration with PEAP authentication is acceptable for use in the field.</p> <p>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</p> <p>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.</p> <p>Authentication methods that require user-entered credentials at every login are not supported.</p>
Encryption	WPA2-Enterprise or Personal with AES or TKIP
Intrusion detection / prevention	Agent runs on console to prevent unauthorized processes or services from running







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	<p>Comprehensive 'train the trainer' training program and service manuals for field technicians:</p> <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	<p>Comprehensive training program and user manuals for operators:</p> <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 | ROVER | ROVER PLUS

Imaging technology supplied by:



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Legal Manufacturer: Micro-X Ltd.

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This device is designed to perform X-Ray examinations on paediatric and adult patients, in all patient treatment areas. RX Only.  
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