



MARAKEB TECHNOLOGIES

Marakeb Technologies is a leading autonomous technology provider that designs and manufactures advanced technological products ranging from autonomous devices to ground control stations. Due to the current pandemic nature of the COVID-19 virus, Marakeb has utilized its engineering capabilities to develop several solutions to combat the spread of the virus. Our core objective to ensure the safety and wellness of individuals in different workspaces and environments shaped our approach to the successful launch of seven products: **EP Vent**, **MAP IR3**, **CoDi BOT**, **UVC Broom**, **UVC 3.0**, **UVC Rail**, and **UVC Tunnel** .

The **EP Vent** is an *emergency ventilator unit* designed for use during medical crises which require quick, affordable access to urgent, life-saving equipment. Equipped with a bag valve mask (BVM) or “self-inflating bag”, in a ruggedized aluminum enclosure, the ventilator enables the patients to move breathable air into and out of their lungs, particularly in cases of pulmonary obstruction. Once connected to a supply of pressurized air, the **EP Vent** is ready to be used.



The **MAP IR3** is a *mass fever screening system* that screens up to 300 people per minute, identifies and captures images of feverish subjects, issues real-time audible alerts upon detection, and auto-tracks and captures facial snapshots of all individuals that pass within the frame providing real-time data analytics and videos recordings. All event alerts, images and videos are stored to the local PC or cloud storage for immediate action and/or post-event review.



The **CoDi BOT** is a *disinfectant robot* designed primarily for medical use for the confinement and disinfection of pandemic viruses such as COVID-19. The CoDi bot is equipped with 360-degree UVC lighting and nozzles connected to a refillable disinfectant compartment, and a MAP IR3 system. It can run in manual mode where it is controlled by a joystick remotely or in autonomous mode where it follows pre-programmed routes and functions and is monitored from an operations room.



The **UVC Broom** is a collapsible, transportable device designed to disinfect carpets, tiles, floors, and other surfaces with the use of UV-C radiation. Equipped with four UV-C lights, the **UVC Broom** utilizes UVC radiation 5 cm above the surface enabling operators to disinfect thoroughly and continuously without the need to recharge the device. UV-C Radiation has been proven to be the leading disinfection method to combat pandemic viruses. It is primarily used in mosques, malls, warehouses, airports, offices, schools, and homes.



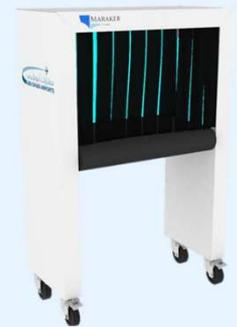
The **UVC 3.0** is a fixed installation system that is inclusive of three UV-C lights and a switch which can be used to disinfect large spaces during non-operational hours. To avoid the exposure of the operator, the **UVC 3.0** is connected to an external key switch and timer where the operator would activate the lights upon leaving the space and deactivate them upon their return. It is primarily used in shops, offices, classrooms, homes, and warehouses.



The **UVC Rail** is two identical devices that are fitted at the entry and/or exit of escalators to disinfect the handrails from any bacteria or virus. Equipped with two UV-C lights, the **UVC Rail** utilizes UVC radiation 10 cm away from the handrails of escalators, enabling a thorough and continuous disinfection during standard operations. The **UVC Rail** significantly decreases the risk of transmission of bacteria and viruses between individuals on escalators which transport hundreds and thousands of people daily.



The **UVC Tunnel** is a modular device designed to be used on the output side of X-Ray machines to disinfect luggage, personal belongings, and reusable carry-on baggage trays. Equipped with twelve UV-C lights, the **UVC Tunnel** thoroughly and continuously disinfects all items as they pass on the conveyor belt and ensures the safety of all travelers and airport security personnel without human intervention and/or chemical washdowns.





EP VENT

The **EP Vent** from Marakeb Technologies is an **emergency ventilator unit** designed for use during medical crises which require quick, affordable access to urgent, life-saving equipment. Equipped with a bag valve mask (BVM) or “self-inflating bag”, in a ruggedized aluminum enclosure, the ventilator enables the patients to move breathable air into and out of their lungs, particularly in cases of pulmonary obstruction. Once connected to a supply of pressurized air, the **EP Vent** is ready to be used. The knobs and buttons on its interface control values such as the tidal volume and breaths per minute, with all vital numbers displayed on its built-in LCD screen. The unit is compact, easy to transport, and a vital aid in states of emergency.



EMERGENCY PNEUMATIC VENTILATOR

Efficient Control of BVM

- **Pneumatically actuated**, using air supply of 2 bars or 29 psi.
- Sudden changes to pneumatic supply dampened using a **pressure regulator**.
- Easily removable and replaceable **BVM**.
- Ruggedized aluminum enclosure.

Safety Features

- **Alarm** buzzer indicating low breaths per minute, high breaths per minute, loss of tidal volume, tidal volume overshoot, loss of power supply, and low battery.
- **BVM** fitted with emergency release valve and Positive End Expiratory Pressure (PEEP) valve.
- **Backup battery** of up to 6 hours in case of power failure from the mains supply.

Clear, Compact Interface

The **EP Vent** control interface consists of the following:

- **LCD Panel**, which displays user parameters, hours of operation, and system alarms.
- **Tidal Volume (V_T) Control Knob**, which adjusts between 25%-100% of the max capacity, 800mL.
- **Inspiration/Expiration Ratio (I/E Ratio) Control Knob**, with a setting range of 1:1 - 1:4.
- **Flow Rate Control Knob**, which enables the operator to adjust breaths per minute.
- **Power Button**
- **Warning Snooze Button**



Specifications

Electrical Specifications

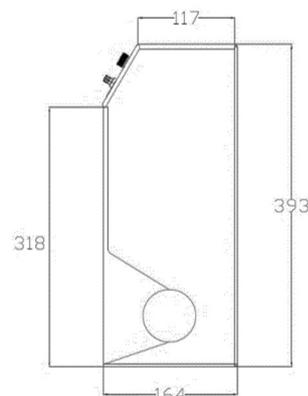
Operating Voltage	220V @ 50 Hz
Battery Life	6 hours

Mechanical Specifications

Weight	3.8 kg
Dimensions	393 x 164 x 117 (in mm)
Ambu-Bag Volume	1000 mL

Operating Conditions

Operating Temperature	-10 °C to 50 °C
-----------------------	-----------------





MASS FEVER SCREENING & PANDEMIC CONTROL SYSTEM



Overview

Marakeb Technologies is a leading integrator of proven pandemic control systems that are used to contain the spread of viruses such as COVID-19 through intelligent analyses and processing in real-time. Due to the pandemic nature of the virus, the utilization of these systems enables the identification and tracking of feverish people in areas with large human traffic up to 300 people per minute.

The autonomous system automatically adjusts and adapts to the surrounding ambient temperature without any human intervention. A built-in sophisticated detection algorithm accurately identifies febrile subjects, issues audible alerts upon detection, and auto-tracks to identify the subject. An intuitive dual display provides easy target identification, simplifies operation, and minimizes handling. With continuous video-recording option, operators can use the recorded videos to run post-screening data reports.

Equipped with a dual-thermal camera coupled with intelligent tracking UI that provides an essential security solution for any modern organization seeking to safeguard human assets and sustain business operations during a pandemic outbreak. The powerful system can be mounted on walls or ceilings that can scan wider areas without long waiting lines risking further contamination.

Applications

- Airports
- Schools
- Nurseries
- Hospitals
- Government Facilities
- Public Events
- Public Transport
- Buildings
- Malls

Features

- Non-contact rapid screening
- Large area detection (300 ppm)
- Multi-point temp. measurement
- Cross-infection Avoidance
- Automatic alarm capture
- Facial recognition capture
- Temp measurement $< +0.3C$
- Continuous video recording
- Rapid deployment



Thermal Infrared Temperature Monitoring



The importance of detecting potential victims of infectious or contagious diseases cannot be over-emphasized. Screening people in high-traffic areas and checking them for simple fevers such as colds or influenza or something more serious needs a quick and effective system such as that provided by IR3.

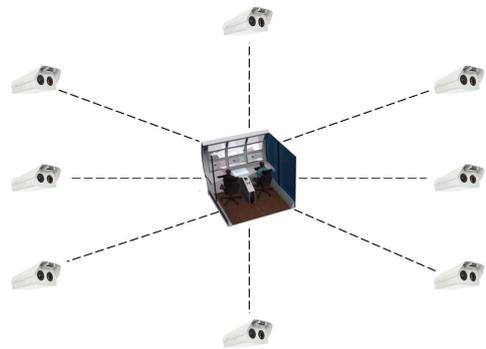
The IR3 is used to scan high traffic areas for feverish symptoms and identify and track the subjects. Any individual showing an abnormal temperature stands out from the crowd and can be automatically identified, tracked, and an alert sent to medical assurance team at the centralized command center for further inspection.

Centralized Command Station

Marakeb Technologies designs and integrates a fully centralized station to monitor each of the installed pandemic control systems located around a specific area like hospitals, airports, and more.

Real-time video and audible alerts are routed from each of the installed systems back to the command station providing the operators with full situational awareness of their operations.

This networking system enables operators to identify and track any high-risk individuals and to alert response teams to intercept and carry out further processing.



Technical Specifications

Visible Light

Sensor Type	1/1.8" CMOS 200W
Resolution	1920 x 1080
Video Encoding	H.264/H.265
Frame Rate	1~30fps adjustable
Focal Length	3.6~10mm electric adjustable

Thermal Imaging

Sensor Type	LWIR uncooled FPA
Resolution	384 x 288
Pixel Size	17 micrometers
NETD	<0.05C @ 27C, f1.0
Wave Range	8-14 micrometers
Non-uniform Correction	Shuttle
Lens	13mm

General

Measurement Range	+26C ~ +46C
Accuracy	+0.3 C
Distance	< 8 meters
Face Detection	Available
Face Recognition	Available
Mask Wearing Detection	Available
Internet	10/100m Ethernet, RJ45 Female Interface
Power	12V DC, DC5.5*2.1 Female Interface
Power Consumption	<10W
Operating Temperature	0C ~ +40C
Weight	2.4 kg
Size	365 mm x 216 mm x 138 mm





CoDi BOT



DISINFECTION, CONFINEMENT, AND PROTECTION

Overview

The **CoDi BOT UGV** (Unmanned Ground Vehicle) by **Marakeb Technologies** is designed primarily for **medical use** for the confinement and disinfection of pandemic viruses such as COVID-19. Due to the pandemic nature of the virus, the utilization of CoDi BOT UGV enables the medical teams to carry out safer missions, eliminating the risk of self-contamination.

The UGV is controlled by our MAP Pro autonomous system which provides the remote operators located at a centralized command and control station either to set pre-programmed routes for disinfectant spraying across areas ranging from small confined spaces to larger areas or to manually control the UGV by utilizing a joystick to focus on specific areas within the mission.

Equipped with Gimbal-stabilized EO/IR camera with tracking capabilities, 4G communication links, fixed cameras, and a complete disinfectant system, the video is fed live from the vehicle to the Ground Control Station direct to remote operators, providing them with real-time situational awareness.

Applications

- Schools Disinfection
- Hospital Disinfection
- Real-time Heat Monitoring
- Quarantine Support
- First-Response Unit
- Exploratory Missions

Full UGV Control

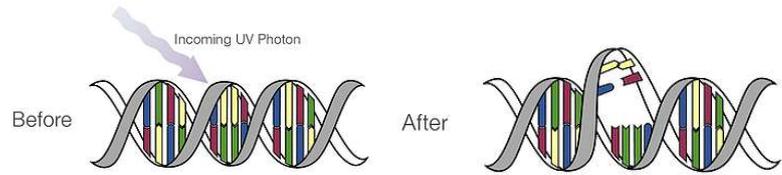
- Plan and upload routes for autonomous navigation through the **MAP Planner** software.
- Access thermal imaging, live video, disinfectant system, power system information from the UGV.
- Control onboard payload specific to the current mission.



Infectious Disease Control with UV-C

- 360 degree UVC Light Emitting Diodes covering the entire spectrum of germicidal UV
- No-touch automated disinfection eliminates human error in the disinfection process.

UV-C photons penetrate cells and damage the nucleic acid, rendering them incapable of reproduction, or microbiologically inactive.



Thermal Infrared Temperature Monitoring

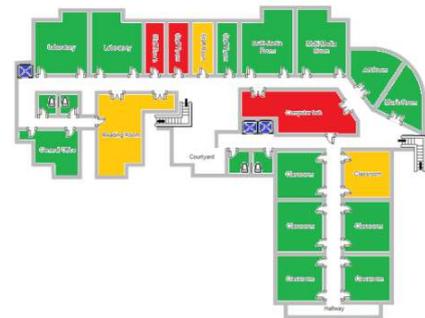


The importance of detecting potential victims of infectious or contagious diseases cannot be over-emphasized. Screening people in high-traffic areas and checking them for simple fevers such as colds or influenza or something more serious needs a quick and effective system such as that provided by CoDi BOT.

The CoDi BOT IR thermal cameras are used to scan a number of people at once. Anyone showing an abnormal temperature stands out from the crowd and can be automatically identified and an alert sent to medical assurance team at the centralized command center for further inspection.

On-Demand Robotic Cleaning and Monitoring Services

The CoDi BOT software allows facility managers and cleaning teams to set pre-programmed cleaning schedules, follow, track and observe, in real-time, the cleaning and thermal monitoring operations throughout their facility. With live updates and cleaning progress reports, managers can request the assistance of the CoDi BOT on-demand to specified locations. Utilizing a team of CoDi BOTs for large facilities, operations managers can ensure 24-hour infectious disease control with live updates and tracking.



Technical Specifications

Physical Specifications

Dimensions	1100mm x 700mm x 1700mm
Weight	160kg
Speed	Up to 10km/hr
Operating time	4 hours

Electrical Specifications

Power	220V AC, 12V DC
Communications System	4G LTE, Wifi

UVC Specifications

Wavelength	200-300nm
Lifetime	10,000 hours
Warm-up Time	Instantaneous

Thermal Specifications

Thermal Resolution	640 x 480
Detector Type	VOx Microbolometer
Field of View	25° x 20°
Focal Length	25mm





UVC BROOM

The **UVC Broom** is a collapsible, transportable device designed to disinfect carpets, tiles, floors, and other surfaces with the use of UV-C radiation. Equipped with four UV-C lights, the **UVC Broom** utilizes UVC radiation 5 cm above the surface enabling operators to disinfect thoroughly and continuously without the need to recharge the device. UV-C Radiation has been proven to be the leading disinfection method to combat pandemic viruses. Due to potential user error, the UVC Broom has several precautions in place to avoid any direct contact of UV light to human exposure and can operate in the presence of people as most of the UVC radiation is pointed down at the surface. It is primarily used in mosques, malls, warehouses, airports, offices, schools, and homes.

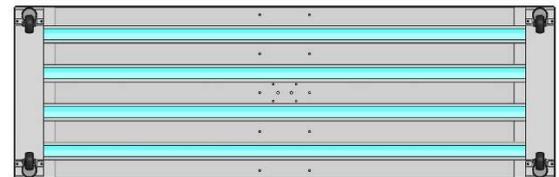


MARAKEB TECHNOLOGIES COVID-19 RESPONSE

Features

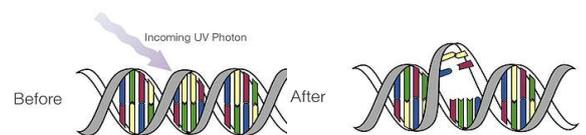
The **UVC Broom** features consist of the following:

- **UVC indicator:** which displays indicator lights that notify the operator that each of the UVC lights is operational or if it needs to be replaced.
- **Handle On/Off Button:** which is located on the handle for easy powering on and off the device.
- **Power Cord:** for continuous use as opposed to recharging so often.
- **Detachable Handle & Swivel Wheels:** which provides ease of storage and transportability



Infectious Disease Control with UV-C

- **UVC Light Emitting Diodes:** covering the entire spectrum of germicidal UV penetrate the cells and damage the nucleic acid, rendering them incapable of reproduction, or microbiologically inactive.
- **No Human Exposure:** Disinfection only occurs on the horizontal surface beneath the device so there is no human contact.



Specifications

Physical Specifications

Dimensions (Extended)	125 cm x 40 cm x 100 cm
Dimensions (Collapsed)	125 cm x 40 cm x 17 cm
Weight	6 kg

Electrical Specifications

Power	220V AC, 12V DC
Power Cord Length	5 meters

UVC Specifications

Wavelength	200-300nm
Lifetime	10,000 hours
Warm-up Time	Instantaneous





UVC 3.0

The **UVC 3.0** system is a fixed installation system to disinfect large spaces with the use of UV-C radiation which has been proven to be the leading disinfection method to combat pandemic viruses. Equipped with three UV-C lights and a key switch, the three lights can be positioned by the operator in equidistant locations for the area they would like to cover to disinfect thoroughly and continuously during non-operational hours. To avoid the exposure of the operator, the UVC 3.0 is connected to an external key switch and timer where the operator would activate the lights upon leaving the space and deactivate them upon returning to the space. It is primarily used in malls, warehouses, airports, offices, schools, and homes.



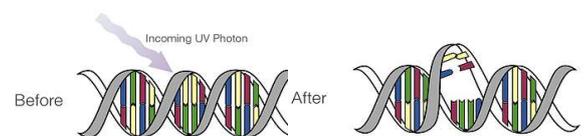
MARAKEB TECHNOLOGIES COVID-19 RESPONSE

Use Cases



Infectious Disease Control with UV-C

- **UVC Light Emitting Diodes:** covering the entire spectrum of germicidal UV penetrate the cells and damage the nucleic acid, rendering them incapable of reproduction, or microbiologically inactive.
- **No Human Exposure:** Disinfection only occurs on the horizontal surface beneath the device so there is no human contact.



Specifications

Physical Specifications

Dimensions – UVC light	123 cm x 5 cm x 6 cm
Weight	0.5 kg

Electrical Specifications

Power	35-40 W
-------	---------

UVC-LED Specifications

Wavelength	253.7 nm
Lifetime	10,000 hours
Warm-up Time	Instantaneous
Effective Area	< 40 m ²





UVC RAIL

The **UVC Rail** is a combination of two devices that are fitted at the entry and/or exit of escalators to disinfect the handrails from any bacteria or virus. Equipped with two UV-C lights, the **UVC Rail** utilizes UVC radiation 10 cm away from the handrails of escalators, enabling a thorough and continuous disinfection during standard operations. UV-C radiation has been proven to be the leading disinfection method to combat pandemic viruses. The installation of the **UVC Rail** will significantly decrease the risk of transmission of bacteria and viruses between individuals on escalators which transport hundreds and thousands of people daily.

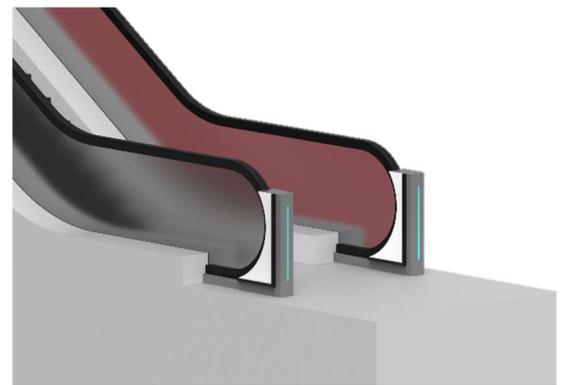


MARAKEB TECHNOLOGIES COVID-19 RESPONSE

Features

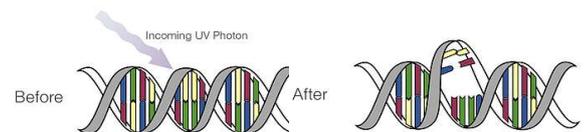
The **UVC Rail** features consist of the following:

- **Exterior Slits:** which displays indicator lights that notify the operator that each of the UVC lights is operational or if it needs to be replaced.
- **On/Off Switch:** which is located on the bottom for precautionary measures during maintenance.
- **Power Cable:** for either integration into the escalator wiring circuit or to have its own electric circuit.
- **Protective Skirting:** which avoids any direct exposure to individuals passing through the escalator.
- **Serviceable Access:** for quick replacement of bulbs once it is required.



Infectious Disease Control with UV-C

- **UVC Light Emitting Diodes:** covering the entire spectrum of germicidal UV penetrate the cells and damage the nucleic acid, rendering them incapable of reproduction, or microbiologically inactive.
- **No Human Exposure:** Disinfection only occurs on the horizontal surface beneath the device so there is no human contact.



Specifications

Physical Specifications

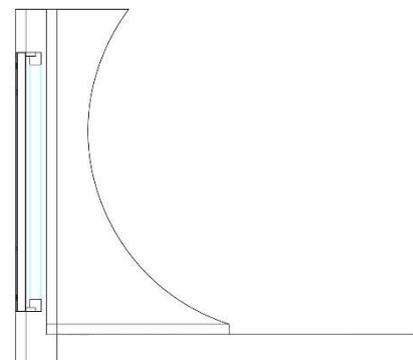
Dimensions (Extended)	97 cm x 20 cm x 87 cm ⁽¹⁾
Weight	8 kg

Electrical Specifications

Power	220V AC, 12V DC
-------	-----------------

UV-C Specifications

Wavelength	253.7 nm
Lifetime	10,000 hours
Warm-up Time	Instantaneous
Certification	ASTM E3135-18

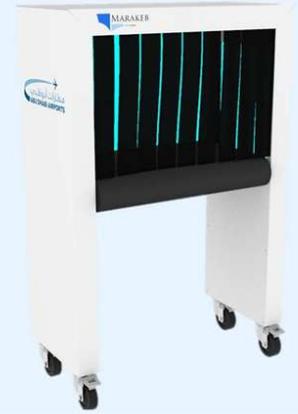


⁽¹⁾ Standard model dimensions- length, width, and height can be customized to fit a variety of escalators.



UVC TUNNEL

The **UV-C Tunnel** is a modular device designed to be used on the output side of X-Ray machines to disinfect luggage, personal belongings and reusable carry-on baggage trays with the use of UVC radiation. Equipped with twelve UV- C lights, the x-ray **UV-C Tunnel** thoroughly and continuously disinfects all items as they pass on the conveyor belt and ensures the safety of all travelers and airport security personnel without human intervention and/or chemical washdowns. UV-C radiation can help mitigate the risk of infection from bacteria and viruses and has been used extensively for more than 40 years.

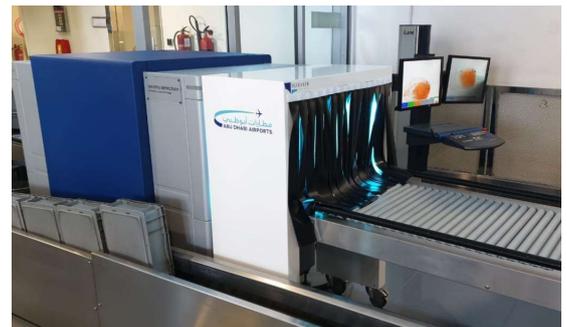


MARAKEB TECHNOLOGIES COVID-19 RESPONSE

Features

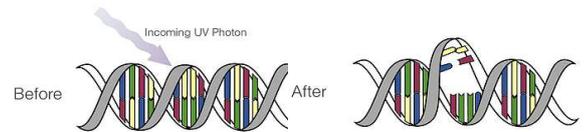
The **UVC Tunnel** features consist of the following:

- **Powerful:** a combination of 480 W UVC disinfection power.
- **Compact:** rigid steel design weighing less than 75 kg.
- **Customizable:** can be designed to fit X-Ray machines of varying sizes.
- **Instant Startup:** one touch operation for quick activation.
- **Ease of Transport:** equipped with swivel wheels that have a locking capability during operation.



Infectious Disease Control with UV-C

- **UVC Light Emitting Diodes:** covering the entire spectrum of germicidal UV penetrate the cells and damage the nucleic acid, rendering them incapable of reproduction, or microbiologically inactive.
- **No Human Exposure:** No-touch automated disinfection only occurs on the horizontal surface eliminating the need for humans.



Specifications

Physical Specifications

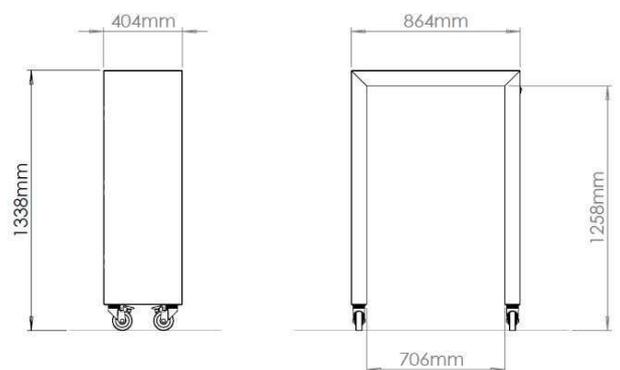
Dimensions (External)	40.4 cm x 86.4 cm x 134 cm ⁽¹⁾
Dimensions (Internal)	40.4 cm x 70.6 cm x 126 cm ⁽¹⁾
Weight	74 kg

Electrical Specifications

Power	220V AC, 480 W
Power Cord Length	5 meters

UV-C Specifications

Wavelength	253.7 nm
Lifetime	10,000 hours
Warm-up Time	Instantaneous
Certification	ASTM E3135-18



⁽¹⁾ Standard model dimensions- length, width, and height can be customized to fit a variety of X-Ray machines.