



UV-C STERILIZATION ROBOT

USER GUIDE



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UV-C STERILIZATION ROBOT (UVC001)

324UVCUG01

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UV-C Sterilization Robot is white in color. Its upper mechanism consists of 8 UV-C fluorescents. It has sub-mechanism that provides autonomous navigation. With this robot, sterilization is done by providing by providing autonomous navigation in closed areas, unmanned. The areas are mapped by the lidar sensors and depth camera in the robot. It detects that there is no living thing inside by means of the motion sensors on it and starts the sterilization process through an audible system. At the end of the defined time, it ends the sterilization process with the audible warning system

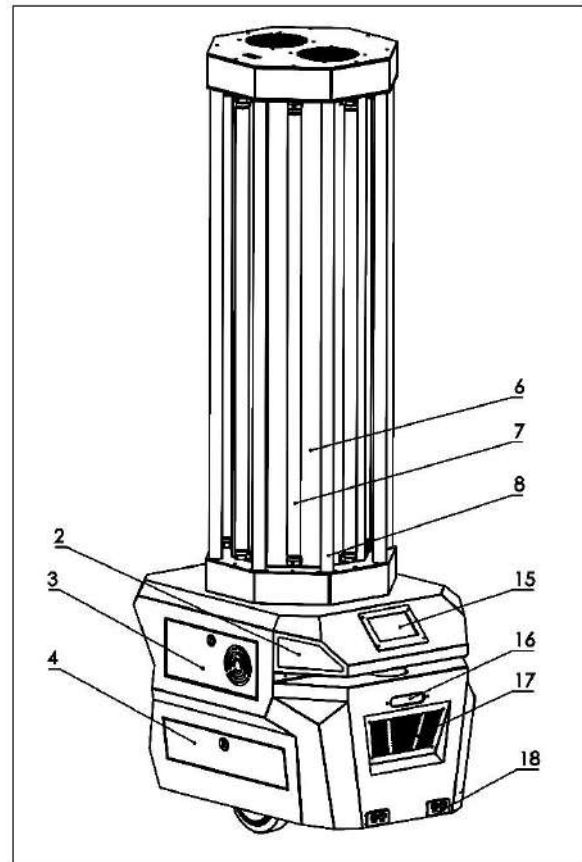
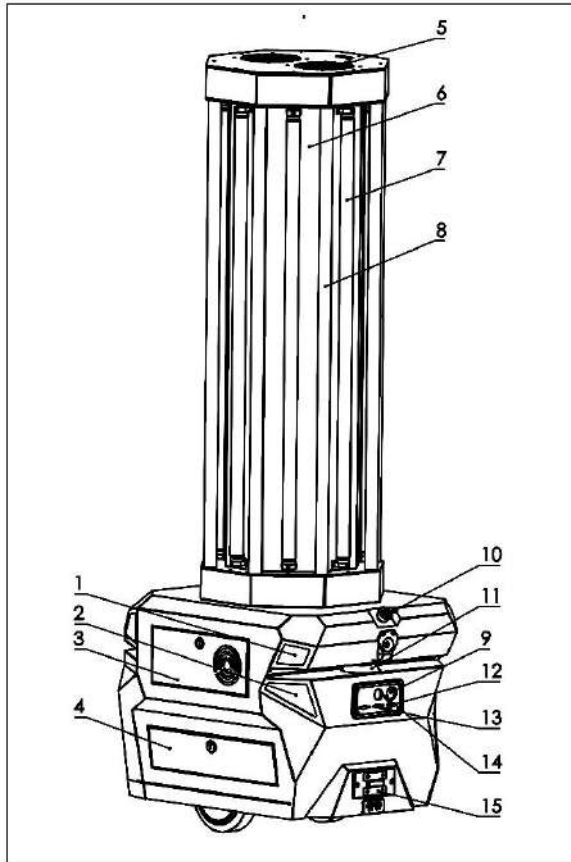
This guide is organized according to the current version. To the latest version information and all details about the use of UV-C Sterilization Robot

<https://www.akinrobotics.com/robot-e-kilavuz/uvc-sterilizasyon-robotu> you

can reach at.



UV-C STERILIZATION ROBOT (UVC001)



- | | |
|--------------------------------|--|
| 1. Status Lights | : When the device is active, it gives a green light. |
| 2. Status Lights | : The device lights turn red when an obstacle is in the way. |
| 3. Battery cover | : Provides access to the battery |
| 4. Technical Maintenance Cover | : The area to be intervened by the authorized service. |
| 5. Speaker | : The area where the audio alerts come from |
| 6. Reflective Surface | : The area that converts light into the environment by providing light refraction. |
| 7. UV-C Fluorescent | : Fluorescent lamps performing the sterilization process |
| 8. Protective Guard | : Protective compartments to prevent impact on fluorescent |
| 9. On / Off Button | : Button to turn the device on and off |
| 10. Emergency stop button | : Button for closing with a single click in emergencies |
| 11. Mapping Sensor | : Sensor that scans its environment. |
| 12. USB | : Connector |
| 13. Manual Charge Input | : Charge input section. |
| 14. Autonomous Charging | : Autonomous charging input section |
| 15. Information Display | : Displays the device charge capacity, lamp life indicators |
| 16. Camera | : Stereo Vision Camera |
| 17. Ventilation | : Internal heat protection |
| 18. Drop Sensor | : Protection against obstacles |

WARNING SIGNS:



Electrical Hazard



UV Radiation Alert



Unauthorized Use Hazard Warning



Fluorescents and lithium-ion batteries are classified as hazardous waste and according to the relevant legislation.

USING THE ROBOT:

1. Carefully remove the device from the carrying case.
Warning: UV-C Sterilization device is heavy, handle with care.
2. Place the device on a flat surface.
3. Remove the UV-C Fluorescent boxes (8 pieces) contained in the shipping case.
4. Remove UV-C Fluorescents from the boxes and check them.
5. Place the fluorescents in the fixture in the upper cabinet of the device and turn them half a turn.
6. Turn on the device by pressing the on / off button.
7. To start the programming steps, install the AR-GUI and AR-DESIGNER programs given to you in the delivery of the robot to your computer.
8. Your device is ready to use and program.
9. Create the programming steps as indicated below.
(For detailed explanation see.)

<https://www.akinrobotics.com/robot-e-kilavuz/uvc-sterilizasyon-robotu>



USING THE ROBOT:

10. MAKING A MAP:

- Connect to UV-C Sterilization robot via AR-GUI. (For detailed explanation see.)

<https://www.akinrobotics.com/robot-e-kilavuz/uvc-sterilizasyon-robotu?harita-baglanti-ayarlari>



- Please choose UV-C Programming from Program Management (For detailed explanation see)

<https://www.akinrobotics.com/robot-e-kilavuz/uvc-sterilizasyon-robotu?uv-c-programlama>



- Start mapping with the help of the Start Map button on the systems.. (For detailed explanation see)

<https://www.akinrobotics.com/robot-e-kilavuz/uvc-sterilizasyon-robotu?sistemler-girisi>



- Save your map after the mapping process is completed.
- Click on the Map Finish button to complete the Map Creation process (For detailed explanation see)

<https://www.akinrobotics.com/robot-e-kilavuz/uvc-sterilizasyon-robotu?haritalandirma>



- You can view the map you created from the AR-DESIGNER program.

WARNING:

- The device cannot detect moving objects narrower than 2 cm wide for light colored objects and 6 cm wide for dark colored objects as obstacles.
- The device cannot detect transparent and shiny surfaces. Areas with this feature should be marked with a light-colored safety strip, 10 cm wide and 34 cm high from the ground.

11. SITE DRAWING AND LOCATION DETERMINATION:

- You can access the map you created by following the AR-Designer> Design> Navigation> UV-C Map Manager steps (For detailed explanation see)

<https://www.akinrobotics.com/robot-e-kilavuz/uvc-sterilizasyon-robotu?tasarim-olusturma>



USING THE ROBOT:

- Create an area for the locations where sterilization will take place.
(For detailed explanation see)
<https://www.akinrobotics.com/robot-e-kilavuz/uvc-sterilizasyon-robotu?alan-olusturma>
- Use the Draw Area button to create an area.
- Determine the required locations for full sterilization of the created areas.
- Determine the starting position of the robot.
- Save the transactions and close the AR-DESIGNER program.



12. STERILIZATION PROCESS PROGRAMMING:

- Open the AR-GUI and select UV-C Programming from Programming Management.
(For detailed explanation see.)
<https://www.akinrobotics.com/robot-e-kilavuz/uvc-sterilizasyon-robotu?sterilizasyon-baglanti-ayarlari>
- Create the necessary process planning with the help of the program button.
(For detailed explanation see)
<https://www.akinrobotics.com/robot-e-kilavuz/uvc-sterilizasyon-robotu?sterilizasyon-programlama>
- Save the mission plan you created. Make sure the robot is in its starting position before starting the mission.
- Your robot is ready for sterilization with autonomous navigation.
- Empty the area where the robot will perform sterilization.



13. AUTONOMOUS CHARGING:

- The starting location you set on AR-Designer is also the location you need to set for autonomous charging.
- You can see the charge percentage of your robot by clicking on the AR-GUI> UV-C Programming> Robot Information button.
- AR-GUI> UV-C Programming> Robot Information, you can determine the minimum and maximum percentages of your robot for autonomous charging..
- When your robot reaches the minimum charge percentage you set, it moves to the charging station location.
- Your robot will resume the process when it reaches its maximum charge percentage.
(For detailed explanation see)
<https://www.akinrobotics.com/robot-e-kilavuz/uvc-sterilizasyon-robotu?dogrudan-sarj>



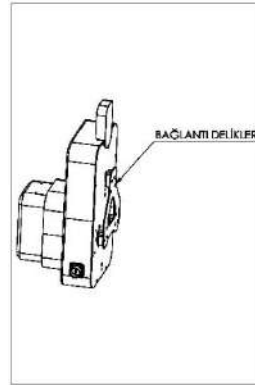
USING THE ROBOT:

WARNING:

- The charging station must be fixed to the wall.
- In front of, next to and above the charging station, in a direction of 1.5 meters, no objects that might cause obstacles should be positioned.
- The fixed area where the charging station will be mounted must be light colored
- For active operation of autonomous charging feature; The area where the charging station is located should be illuminated.

14. AUTONOMOUS CHARGING STATION INSTALLATION

Attach the connection plug to a stable surface at a distance of 9.5 cm between the floor and the plate.. Tighten the charging station by inserting the fixing screws into their slots from top to bottom.. Plug the power cord into the connector on the right of the charging station..



15. **MANUEL CHARGING:** Plug the power adapter cable into the power socket on the back of the device.

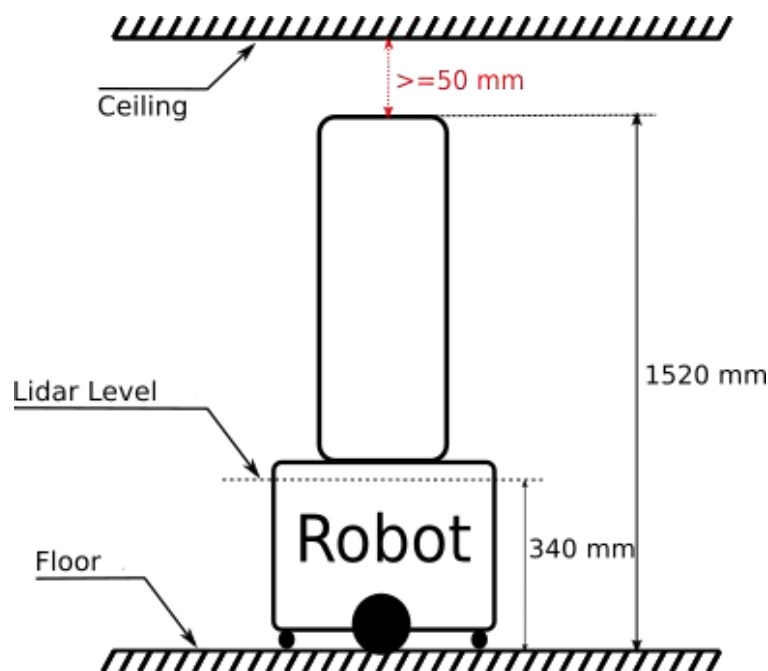
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16. Press and hold the on / off button for 3 seconds to turn off the device.
17. After pressing the shutdown power supply, the display must first be turned off. the engine will shut down after a few seconds and then the light will go out!

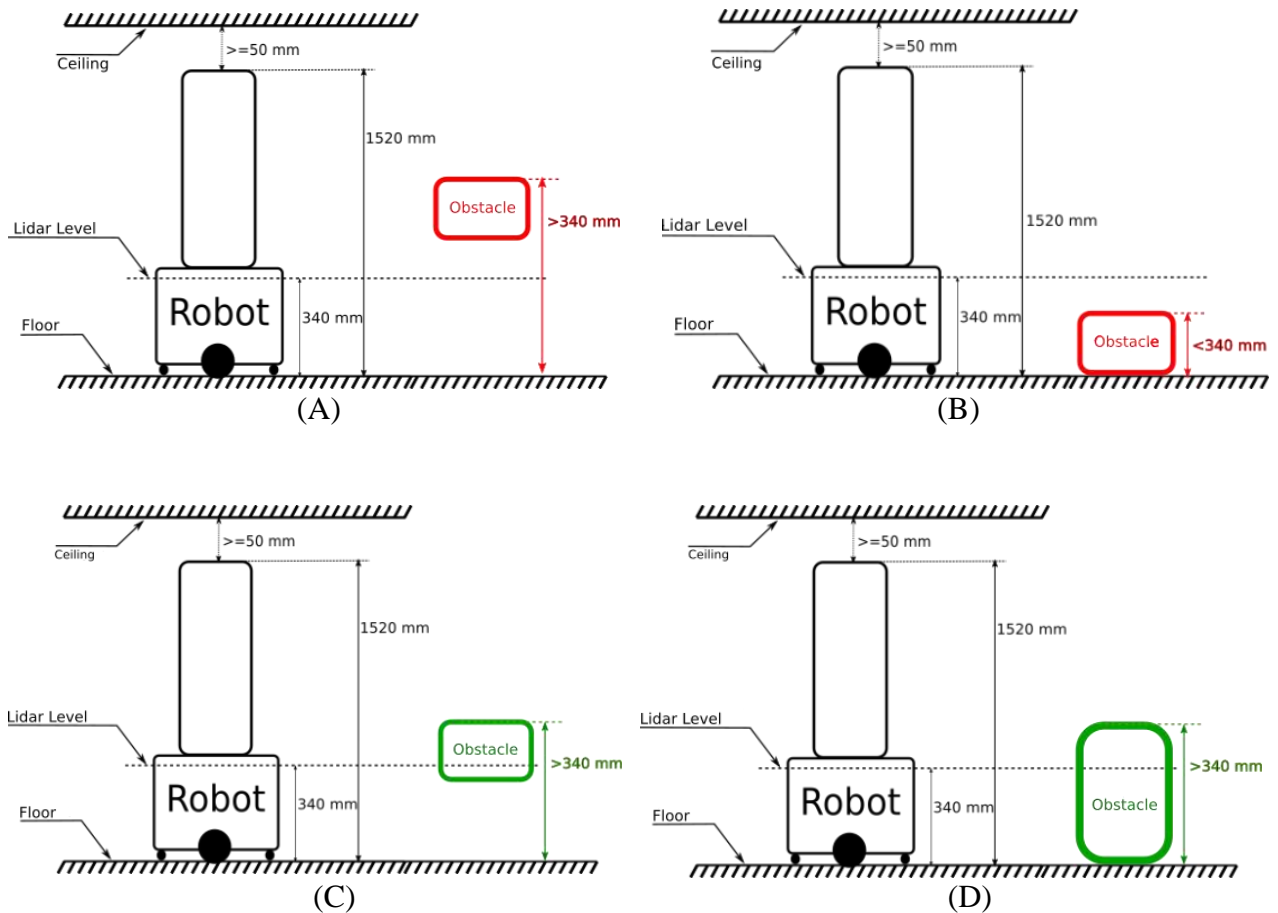
INSTRUCTIONS:

1. When using ultraviolet sterilization robots, humans and animals should stay away from the device.
2. The ambient temperature for ultraviolet sterilization and disinfection is $0^{\circ}\text{C} \sim +40^{\circ}\text{C}$. Relative humidity should be less than 70%. If the temperature is too high or too low, the sterilization effect and light exposure time can be appropriately extended.
3. During the operation of the device, eye contact with UV-C fluorescents should not be made, it should not come into contact with the skin.
4. Nobody should use the device other than the operator of the device.
5. When the device is operating, when it receives any movement within 360° around the device, within 2 meters, the fluorescents will automatically turn off. The audible warning system is activated and the system restarts after the warning.
6. During the use of the UV-C Sterilization Robot, the radiation intensity gradually decreases. The ultraviolet radiation flow should be followed regularly from the indicator on the device. It is recommended to replace the lamp after 9000 hours.
7. The lamps of the robot must be kept clean. Dust and dirt on the surface of the lamp should be removed by turning off the power of the device.
8. During navigation, the robot should not be touched, the robot should be at least 150 cm away from the robot.
9. The ceiling height of the environment where the robot will move should be at least 5 cm higher than the total height of the robot.

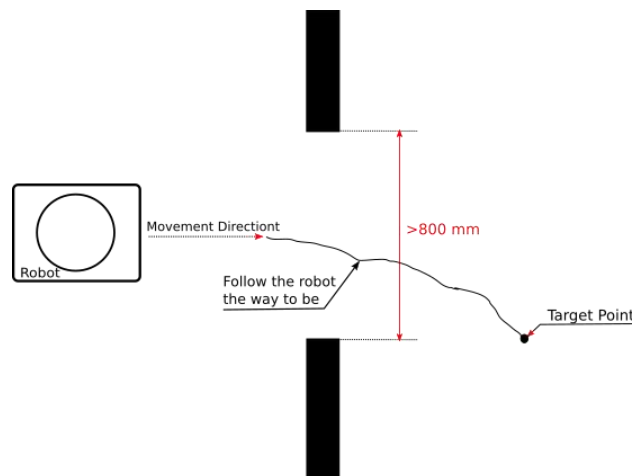


INSTRUCTIONS:

10. Obstacles below or above the Lidar level cannot be detected by the robot. Therefore, make sure that all obstacles are at the lidar measurement level.

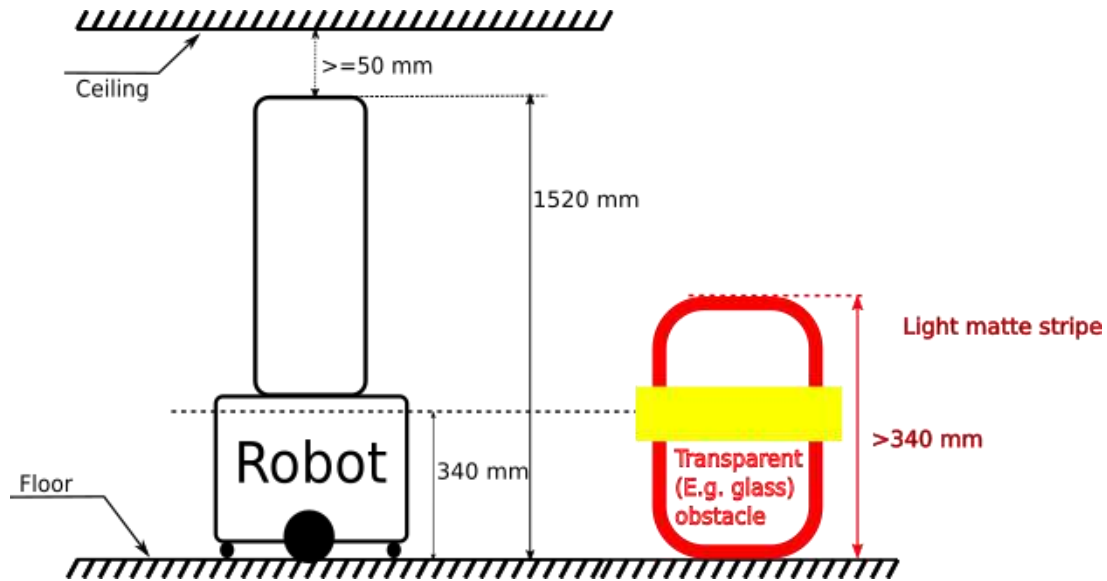


11. An area of at least 80 cm wide is required for the robot to move. It is not suitable for use in areas narrower than 80 cm.

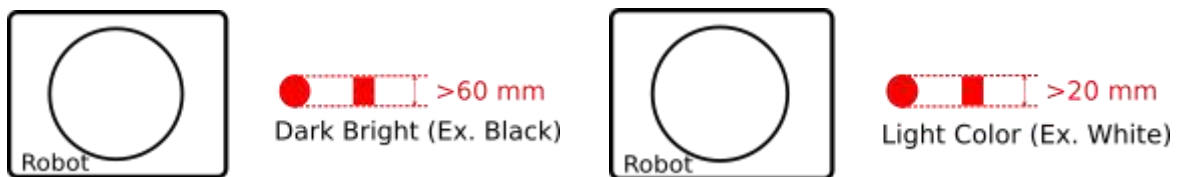


INSTRUCTIONS:

12. In environments with transparent materials such as glass and mirrors, there may be reflection from laser-based sensors. Incorrect measurements may be obtained. Therefore, it is not suitable for use in such environments. If the robot is to be used in such environments, light colored, matte stripes should be drawn from these surfaces at lidar distance. The strips should have a minimum width of 10 cm..



13. Objects in the environment should be at least 6 cm wide if they are dark colored and 2 cm wide if they are light colored. Objects below these limits should be removed from the environment. Or, attachments should be made to the lidar distance areas with matte, light colored materials such as tape, paper.



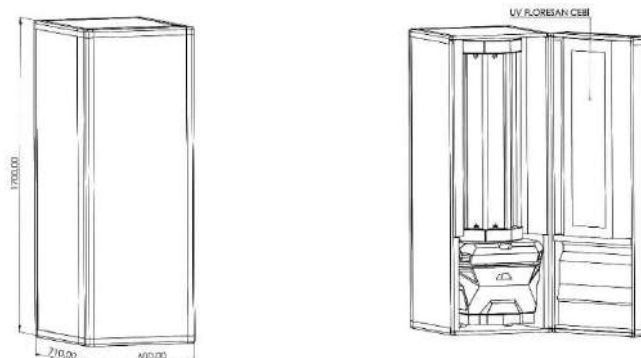
14. It is not suitable for use in environments with dense dust and humidity and in open areas. After the map is extracted, if the positions of the objects in the environment change, the map should be renewed..

PARAMETERS:

Hardware Parameters	Indicators and Performance
Product Size	60 cm x 50 cm x 15,2 cm
Product Weight	50 kg
Moving Speed	50 cm/sn
Environmental Requirements	0°C / +40 °C,
Humidity (RH)	10% ~ 70%
Obstacle Crossing Height	5 mm
Climbing Ability	5°
UV-C Fluorescent	90 cm-8 piece
UV Wavelength	254 nm
UV Effect Area	360 °
Lamp Power	30 Watt
Sterilization Time	2m ² /dk
Effective Usage Area	Indoor
Camera	Stereo Vision
Battery	Lithium Battery
Indoor Navigation	Lidar - Stereo Vision
Life Time	8 hour
Charging Time	4 hour
Control	Android App
Audible Warning System	Ok

TRANSPORT:

1. The device is suitable for upright transport. In its own carrying case; Suitable for land transport, air transport, sea transport and other transport
2. The equipment is suitable for transportation and storage in the temperature range of 5 °C to 25 ° C.
3. The size of the Transport Box is 710x600x1700 mm and there is a reservoir in which UV-C fluorescents are located on the cover part.



CERTIFICATION BODIES



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