
SERVICE ROBOT
USER GUIDE
AKIN ROBOTICS

SERVICE ROBOT USER GUIDE (SRV001)

MANUFACTURER COMPANY: Akın Yazılım Bilgisayar İth. İhr. Ltd. Şti/AKINROBOTICS FACTORY

CONTACT : 444 40 80

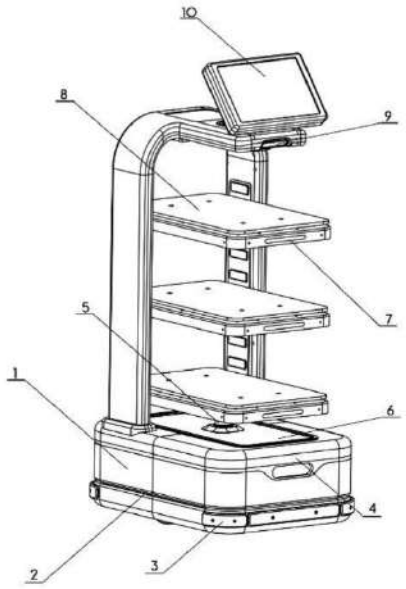
ADDRESS : Başak Mah. Konya Ereğli Cad. No:116 Karatay/Konya/ TÜRKİYE

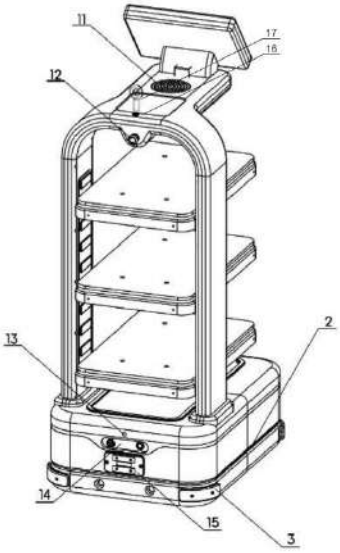
Service Robot is white in color and consists of an upper chamber consisting of 3 transport trays and a lower mechanism that provides autonomous navigation. With the service robot, transportation operations are carried out by providing unmanned and autonomous navigation in indoor areas. Service Robot reaches the desired area by following the guidance commands integrated into the system in the areas mapped with the lidar-depth camera on it. With the help of the sensors on the transport trays, it realizes that the transported products are received from the right tray, at the command to which they are directed, with an audible warning system. When it completes all commands, it returns to the starting point and ends the task.

This guide has been arranged according to the current version and you can reach the latest version information and all the details about the use of the Service Robot at

https://www.akinrobotics.com/en/robot-e-guide

SERVICE ROBOT (SRV001)





1. Technical Maintenance Cover : Area to be intervened by authorized service.
2. Status Lights :The device gives a green light when turning left and right.
3. Bumper : Bumping protection
4. Camera : Front Camera
5. Mapping Sensor : Sensor that scans its environment.
6. Technical Maintenance Cover : Area to be intervened by authorized service.
7. Tray Leds : Reports the task status in the carrying process.
8. Tray : The area where the products to be carried will be placed
9. Camera : Real session camera.
10. Touch Screen : It is the screen where the interface prepared in the robot is added and interaction is provided.
11. Speaker : Area of audible warnings
12. Emergency Stop Button : Button for one-touch shutdown in case of emergency
13. Camera : Back Camera
14. On Button : Button to start the device
    USB : Connection device
    Manual Charge Input : Charge input section.
15. Autonomous Charging : Autonomous charge input section
16. Transport Apparatus Connection Point : It is the area where the transport apparatus will be connected
17. Transport Apparatus : It is the apparratus that provides the connection between the product and the transport crate

WARNING SIGNS:

Electrical Hazard

Use outside the authorized operator is prohibited.

Lithium-ion battery is classified as hazardous waste and must be disposed of in accordance with the relevant legislation.

USAGE OF ROBOT:

1. Carefully remove the device from the shipping crate.
   Warning: Service Robot is heavy, handle with care.
2. Leave the device on a flat surface.
3. Turn on the device by pressing the on/off button
4. In order to start the programming steps, install the AR-Service programs given to you at the delivery of the robot on your computer.
5. Your device is ready for use and programming.
6. Create the programming steps as outlined below.
7. (See link for detailed explanation.)

   https://www.akinrobotics.com/en/robot-e-guide

USAGE OF ROBOT:

8. **MAPPING**:

- Connect to the Service robot via the AR-Service application. (See for connection settings.)
- https://www.akinrobotics.com/en/robot-e-guide-category/make-a-detailed-examination-for-the-installation-information-y--3-25

- For AR-Service Application General Integration Information, Make a Detailed Review. (For integration information, see.)
- https://www.akinrobotics.com/robot-e-kilavuz-kategori/ar-servis-uygulamasi-genel-entegrasyon-bilgileri-icin-detayli--3-22

- Start the mapping with the help of the Start Map button on the systems. (For systems entry, see.)
  https://www.akinrobotics.com/robot-e-kilavuz-kategori/ar-servis-uygulamasi-genel-kullanim-bilgileri-icin-detayli-inc--3-22
- After completing the mapping process, save your map.

- You can complete the Map Creation process by clicking the Finish Map button (For mapping, see.)
  https://www.akinrobotics.com/robot-e-kilavuz-kategori/ar-servis-uygulamasi-genel-kullanim-bilgileri-icin-detayli-inc--3-22
- You can view the map you created from the Ar-Service program.

WARNING:

- The device cannot detect moving objects that are narrower than 2 cm in light colored objects and 6 cm in dark colored objects as obstacles.
- The device cannot detect transparent and glossy surfaces. Areas with this feature should be marked with a light-colored security strip 10 cm wide and 22 cm high from the ground.

9. **FIELD DRAWING AND LOCATION:**

- You can reach the map you created by following the steps of AR-Service > Map.

USAGE OF ROBOT:

(For creating a design, see)
https://www.akinrobotics.com/robot-e-kilavuz-kategori/ar-servis-uygulamasi-genel-kullanim-bilgileri-icin-detayli-inc--3-22

- Create space for the locations to be serviced.
(For field creation, see)
https://www.akinrobotics.com/robot-e-kilavuz-kategori/ar-servis-uygulamasi-genel-kullanim-bilgileri-icin-detayli-inc--3-22
- After point determination, determine the charging position of the robot.
- Note: Determine the robot charging position and autonomous charging position while the robot is in autonomous charging.

- After performing the necessary operations, save and close the AR-Service program.

10. SERVICE PROCESS SCHEDULE:

- Select the Manual Order section from the robot front screen. (For order settings, see.)
https://www.akinrobotics.com/robot-e-kilavuz-kategori/manuel-siparis-verme-ekrani-icin-detayli-inceleme-yapiniz-ma--3-24

- Plan the tables and trays where the robot will take the orders. (For order planning, see.)
https://www.akinrobotics.com/robot-e-kilavuz-kategori/manuel-siparis-verme-ekrani-icin-detayli-inceleme-yapiniz-ma--3-24

- Save the task planning you created and make sure that the robot is in the starting position before starting the task.
- Your robot is ready for autonomous service.
- Clear the area where the robot will service.

11. AUTONOMOUS CHARGING:

- The starting location you set in the AR-Service application is also the location you need to set for autonomous charging.
- You can see the charge percentage of your robot on the display screen of your robot or from the R-Service Application.
- You can set the minimum and maximum percentages for autonomous charging of your robot from AR-Service > Settings > Charge Setting.
- When your robot drops to the minimum charge percentage you set, it goes to the charging station location by itself.

USAGE OF ROBOT:

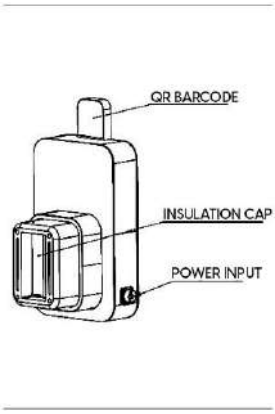
- When your robot reaches the maximum charge percentage, it will continue from where it left off.

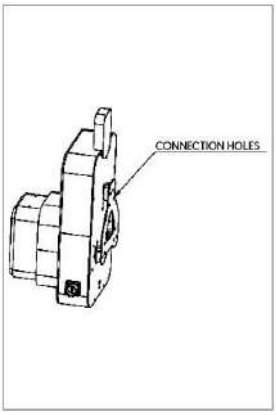
WARNING:

- The charging station must be fixed to the wall in accordance with the standards included in the charging station installation.
- No object should be positioned around the charging station (front-side and top) that could create an obstacle in the 1.5 meter direction.
- The fixed area where the charging station will be mounted must be light in color.
- For the active operation of the autonomous charging feature; The area where the charging station is located should be illuminated. (The desired operation may not be applied in the dark environment).

12. **AUTONOMOUS CHARGING STATION INSTALLATION**

Connect the connection plate to a stable surface, keeping a distance of 9.5 cm between the ground and the bottom of the plate. Tighten the fixing screws by inserting the charging station into their sockets from top to bottom. Plug the power cable into the connector on the right of the charging station.

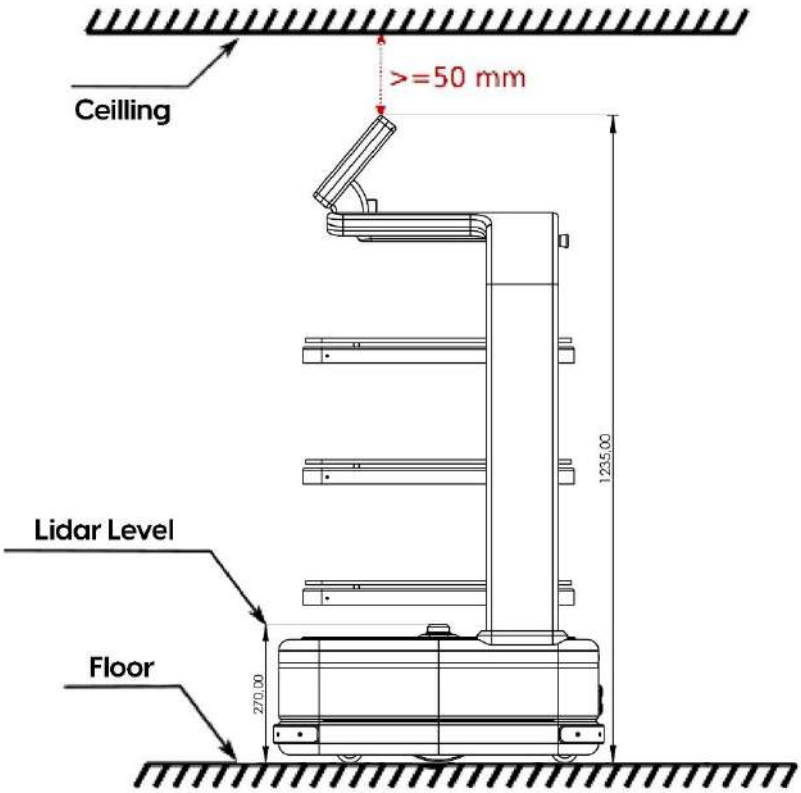




13. **DIRECT CHARGING:** Plug the power adapter cable into the power socket on the back of the device.
14. Press and hold the on/off button for 3 seconds to turn off the device.
15. After pressing the On/Off button, first the screen turns off, the motors turn off after a few seconds.

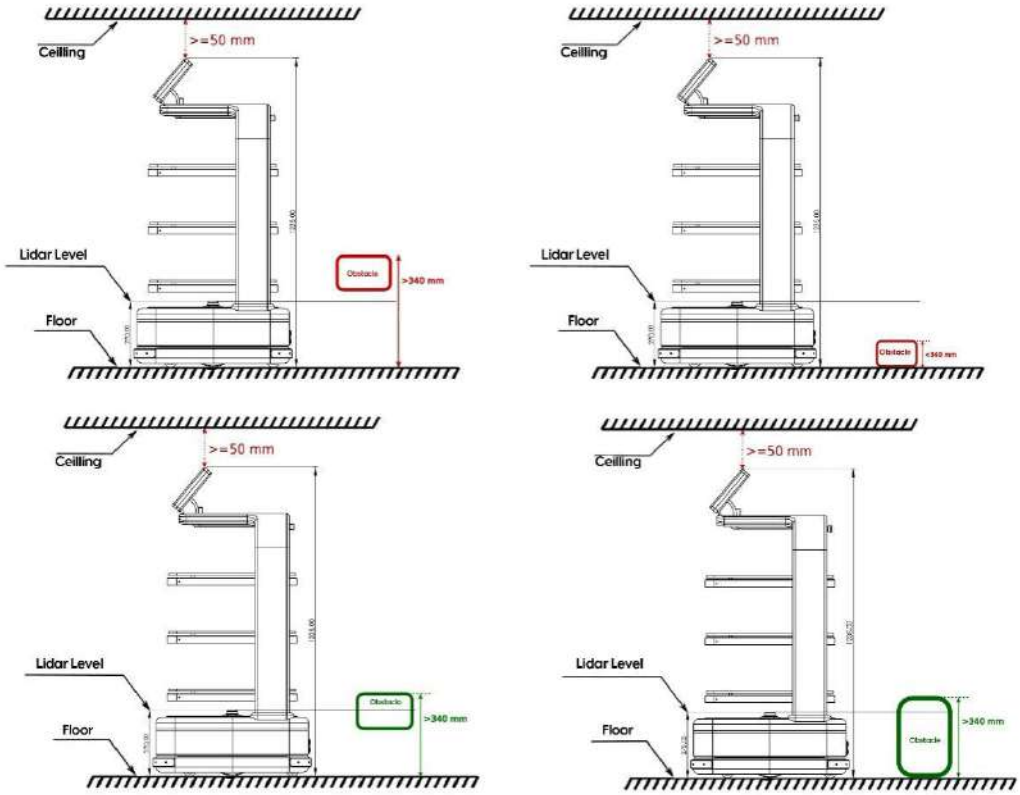
INSTRUCTIONS:

1. When using service robots, they should stay away from the device.
2. Service robot ambient temperature is 0°C~+40°C and relative humidity should be less than 70%.
3. No one other than the operator of the device should use the device.
4. When the device is operating, it moves forward by determining a new route when it receives any movement in 360° around the device, at a distance of 2 meters.
5. During autonomous navigation, the robot should not be touched and should be kept at a distance of at least 150 cm from the robot.
6. 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.



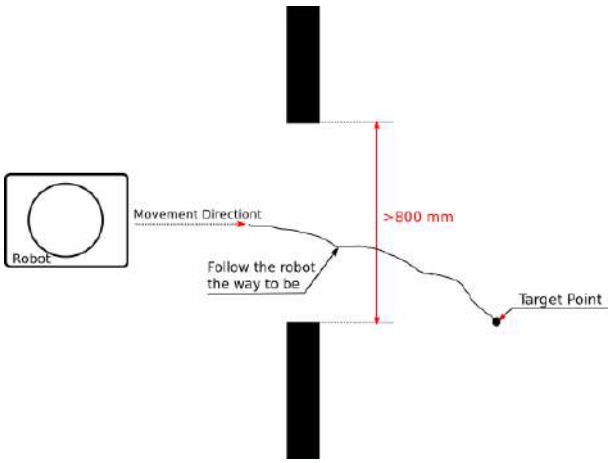
INSTRUCTIONS:

7. Obstacles above or below the lidar level cannot be detected by the robot. Therefore, it should be ensured that all obstacles are at the lidar measurement level. (For example, attention should be paid to the bottom steps of the stairs.)



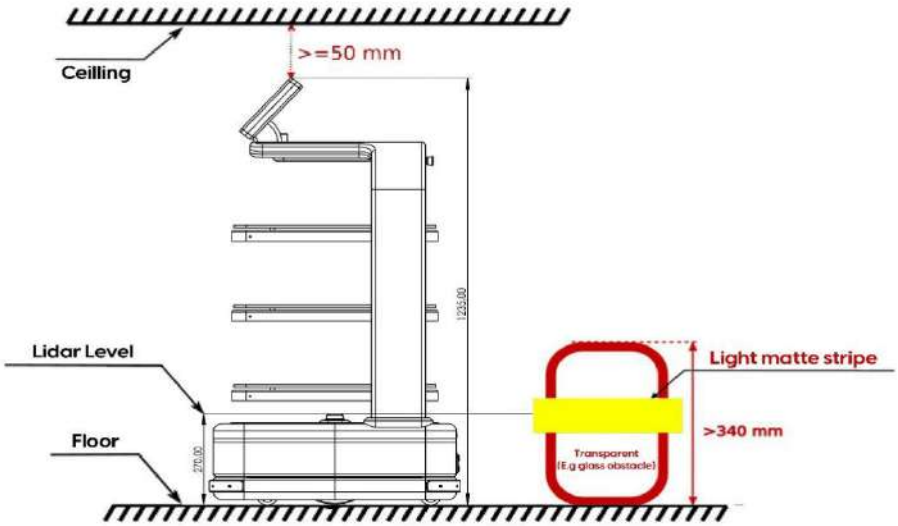
The red colored shapes are wrong, the green ones are suitable!

8. A minimum of 80 cm wide (average door width) space is required for the robot to move. It is not suitable for use in areas narrower than 80 cm.

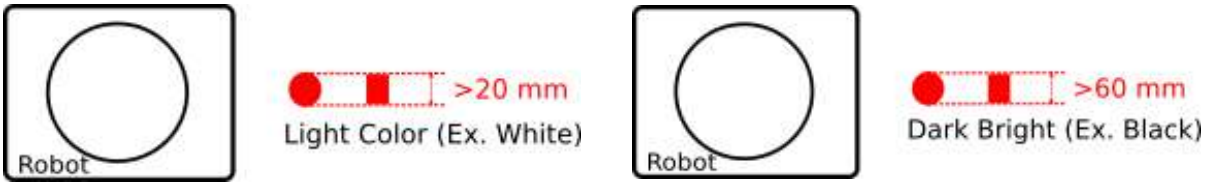


INSTRUCTIONS:

9. Glass, mirror, etc. In environments with surfaces containing transparent material, incorrect measurements can be obtained due to reflection from laser-based sensors. Therefore, it is not suitable for use in such environments. If the robot will be used in such environments, light-colored matte strips should be drawn at lidar distance to these surfaces. The width of the strips should be at least 10 cm.



10. 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 under these limits should be removed from the environment if possible, if not, matte/light colored tape, paper, etc. should be placed in the lidar distance areas. Additions should be made with materials in appropriate sizes.



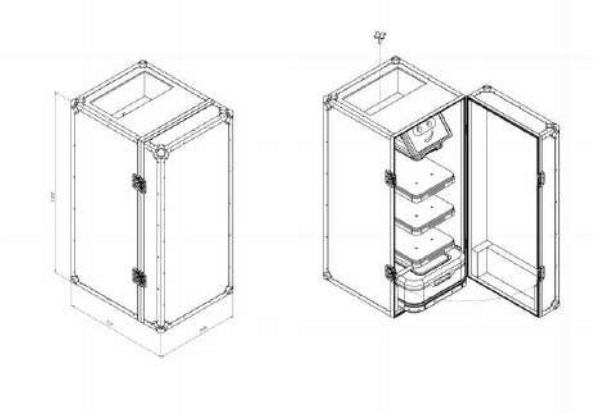
11. It is not suitable for use in open areas, in environments with heavy dust and humidity. In case the positions of the objects in the environment change after the map is drawn, the map must be renewed.

TECHNICAL FEATURES:

Dimensions	62 cm x 47 cm x 123 cm
Total Weight	60 kg
Max Speed	0.3 m/sn
Operating Temperature	0°C / +40 °C
Obstacle Clearance Height	5 mm
Climbing Ability	5°
Number of Shelves	3 pieces
Rafck Carrying Weight	15 kg
Screen	10.1 "touch
Autonomous Charging	Yes
Effective Usage Area	Indoor
Camera	Stereo Vision - Real Sense
Battery	Lithium Ion
Indoor Navigation	Lidar - Stereo Vision
Operation Time	8 hours
Charging Time	4 hours
Control	Android App
Voice Warning System	100 +

CARRIAGE:

1. The device is well packed upright in a carrying case; It is suitable for land transportation and sea transportation.
2. The equipment is suitable for transportation and storage in the temperature range of 5 ℃ to 25 ° C.
3. Transport Box Dimension is 700 x 600 x 1400 mm.



CERTIFICATION BODİES

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