Sanbot Max Product Instruction for Standard Version

Introduction

Thanks for purchasing our company product!

Please carefully read this Instruction before using the Sanbot Max Standard version robot (hereinafter referred to as Sanbot Max Std), so you can operate this robot very easily as soon as possible.

Please keep this instruction properly after reading it.

Robot is a self-operating equipment, and improper operation will lead to accidents or injuries.

Please refer to this instruction and other related guidelines to make sure safety installation and usage.

Sanbot Max Std application scenario and main function

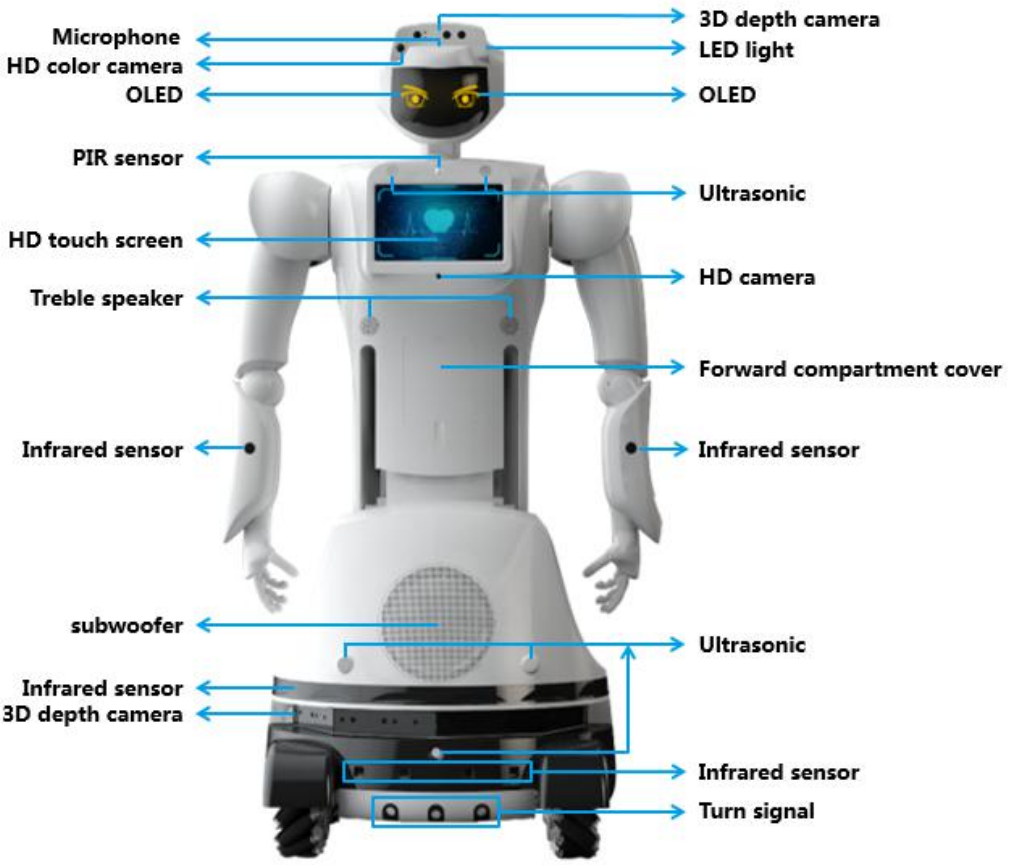
Sanbot Max Std integrates the function of consultation, guidance, propaganda, entertainment. It provides music and dance, gesture propaganda, guidance, track inspection, visitor reception, chat consultation for enterpriser, mall, hotel, bank, hospital, government affair hall and other place. With powerful function, Sanbot Max Std can satisfy repeated job post demand in service links of all kinds of enterprises and partial replace correspond post staff to save the cost of staff and management and increase service efficiency, therefore reaching continuous profit.

1. There are 10 degrees of freedom on Sanbot Max Std's two arms and 10 degrees of freedom on Sanbot Max Std's two palms. With the rotation of 2 degrees of freedom on the head, it can realize the display of diversified gesture and actions, like greeter and dance.
2. Sanbot Max Std has a comprehensive robot vision, equipped with HD color camera, HD camera, visual camera, for security protection, video call, visual positioning and visual recognition etc., function.
3. Sanbot Max Std has 11 touch sensors, 2 OLED eye displays, 4 atmosphere lamps, and all of them can be triggered or flexible switch based on different scenario.
4. Sanbot Max Std adopts voice interaction solution with 6 microphones pickup, which can make voice localization, echo cancellation beam orientation, high frequency gain,

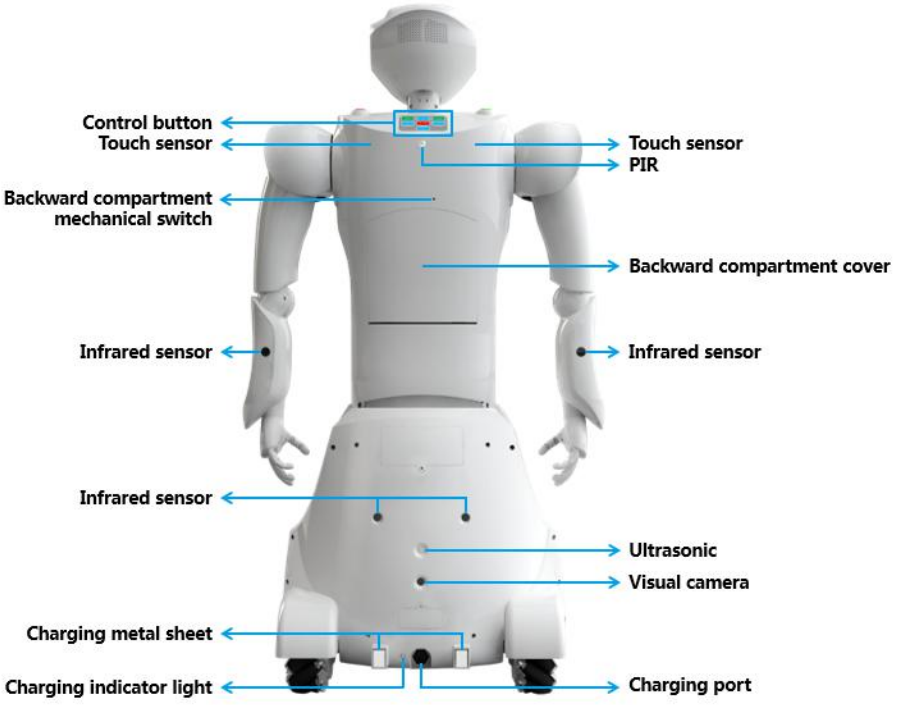
reverberation cancellation.

5. Sanbot Max Std can support 3D SLAM map building, trajectory planning, navigation. Combining 3D vision, Sanbot Max Std can realize the function of indoor space map building and positioning.
6. Combining 3D laser vision, infrared and ultrasonic to fuse obstacle avoidance mode, Sanbot Max Std can realize the function of emergency braking in case of unexpected situation and moving on bypass obstacle.
7. Sanbot Max Std chassis adopts structural design of four-wheel outer hub motor plus Mecanum wheel, so it can realize the rotation of 360 degrees, speed of movement up to 5m/s.
8. Sanbot Max Std with plenty of interfaces, such as USB, HDMI, RJ45, Audio IN, which can access to many kinds of external devices.
9. Sanbot Max Std has precise auto-charging strategy and charging safety strategy.
10. Sanbot Max Std with open system, can satisfy custom development or self-development of diversified industry customer.

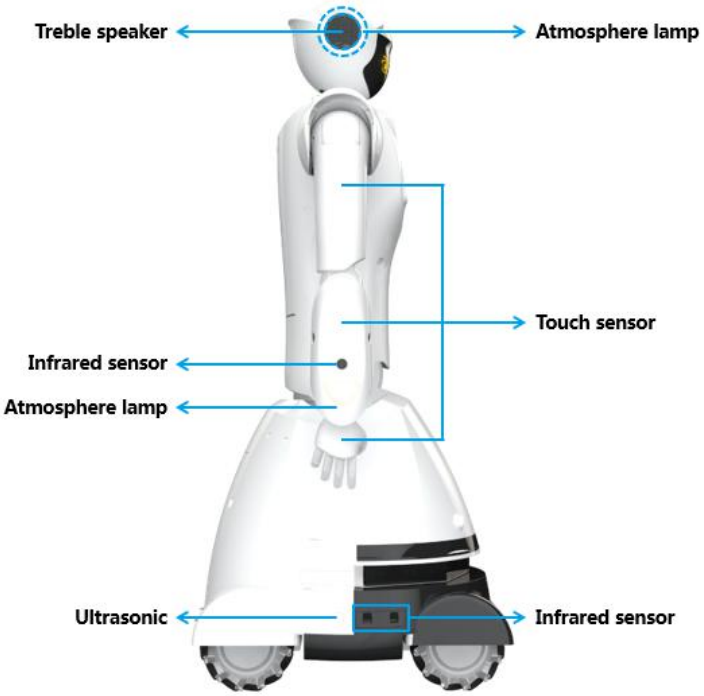
Learn about Sanbot Max Std



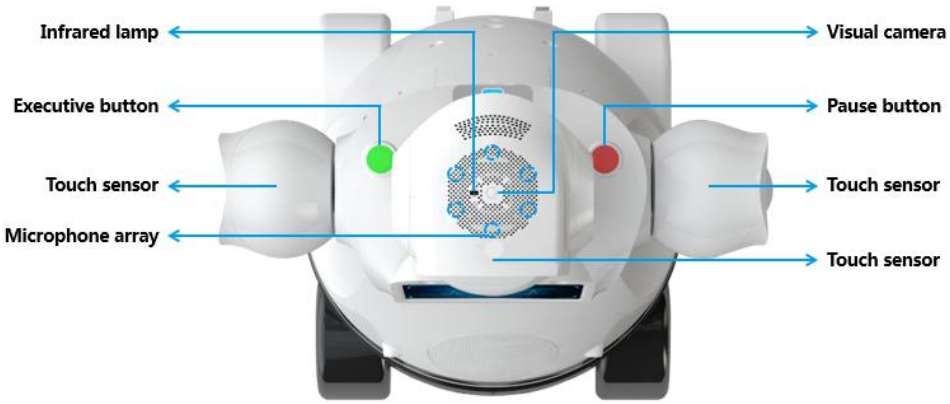
Front



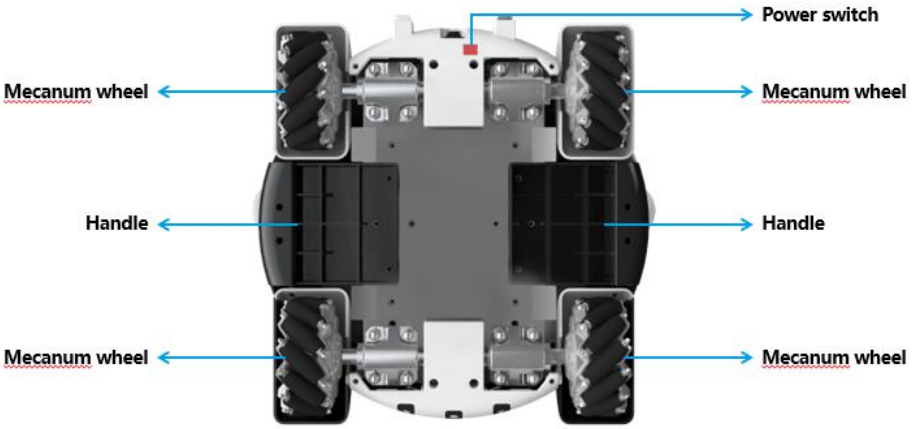
Rear



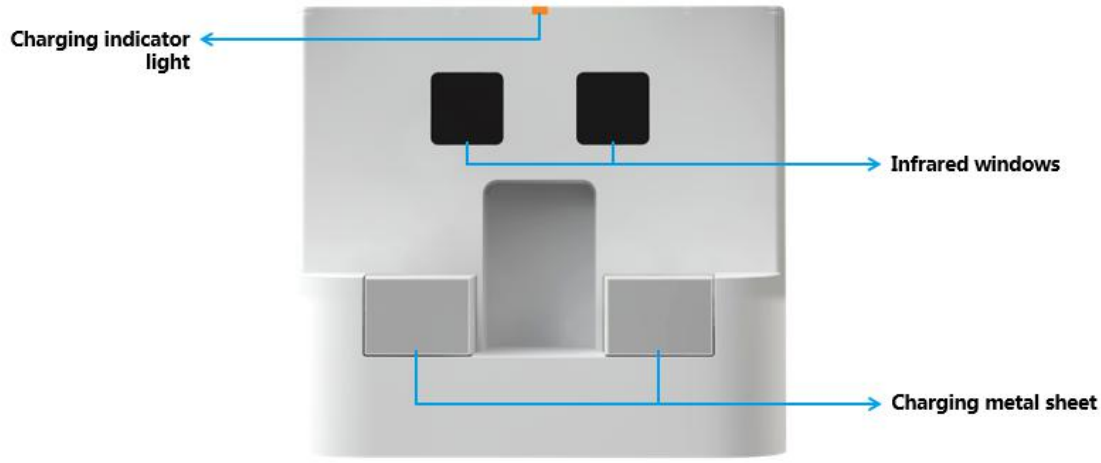
Lateral



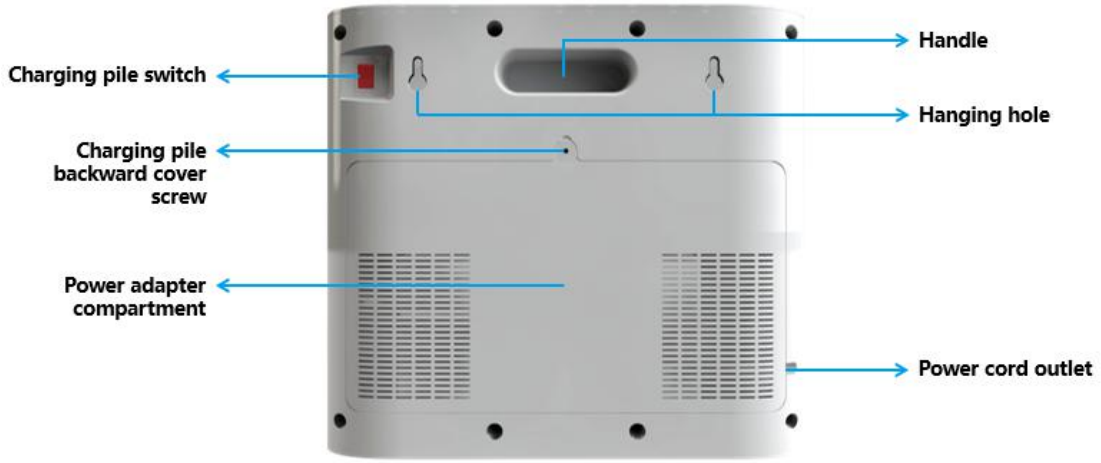
Top



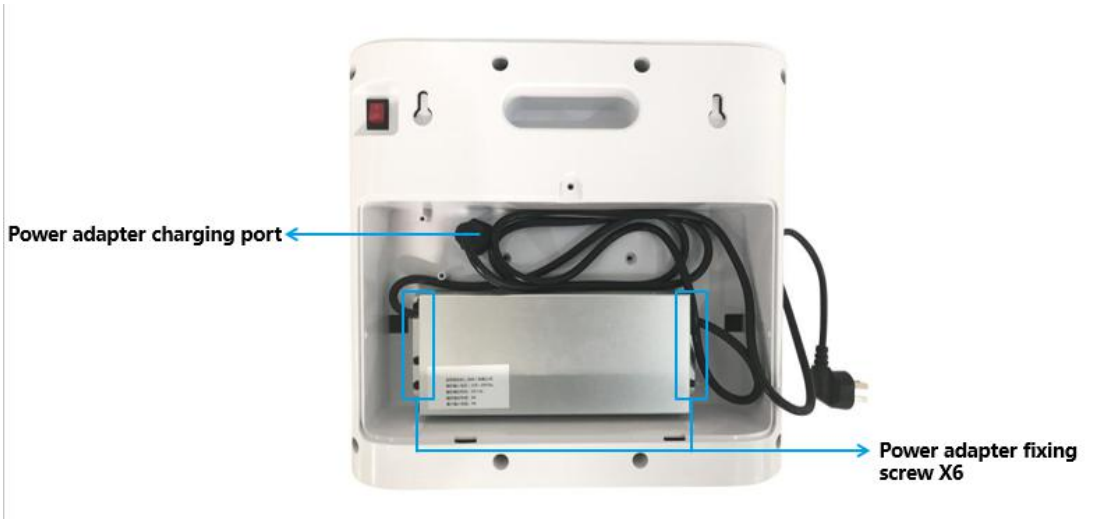
Bottom



Front of charging pile



Back of charging pile



Inner of charging pile

Unpacking Instruction

Tools needed： Cutting knife, small hammer, cloth gloves;

Unpacking environment: As the size of container is too large, if you wanna keep the carton well, please make sure that the unpacking environment height is more than 3.5 meters.

Unpacking procedure: (Picture just for your information, please prevail in kind)

1. Please remove the outer packing case from bottom to top, and remove the plastic tape covered on the poly foam.

2. Please remove the two pieces of foam from the front and back of the Sanbot Max Std, and remove the plastic film covered on the Sanbot Max Std.

3. Unscrew the butterfly nuts (4 in total) on the left and right sides of wooden pallet, then force out screws (4 in total) with hammer or by hand.


4. Take out of the two fixed wood blocks which are fixed by butterfly nuts and screw, and place them on the side of pallet behind Sanbot Max Std to make a slope (Please notice the position of hole)

5. Two staffs stand in front of and behind of the Sanbot Max Std and hold on the torso of Sanbot Max Std to slowly push the Sanbot Max Std down the pallet along slope.


Basic operation

1. Transport Sanbot Max Std

At least 3 staffs are required to transport Sanbot Max Std at the same time, and the liftable part is the handle of chassis (the specific position please referred to “know about Sanbot Max Std”--Bottom) and force is forbidden in other parts.

2. Turn on Sanbot Max Std

Before turning on Sanbot Max Std, please make sure that:

Sanbot Max Std is on a flat level ground;

There are no any other obstacles within 90 centimeters of Sanbot Max Std;

Press the power switch at bottom of robot to turn on the power supply (The specific position please referred to “Know about Sanbot Max Std”--bottom).

The first time turning on robot, please follow the instruction on the screen panel to finish start wizard.

3. Charging method

Method①: Auto-charging

Please connect the power adapter of charging pile to power socket and make sure that Sanbot Max Std’s auto-charging function is enable. During the use of robot, when the power is lower than the set value, Sanbot Max Std will automatically remind the need for charging. User also can turn on charging mode by voice command or system control.

Method②:Manual charging

Please connect the power adapter of charging pile to power socket and move the robot to make the charging metal sheet on the back of robot contact metal charging sheet of charging pile. It’s ok when you see the indicator flash on the charging pile or the charging status shows on the robot screen.

Method③: Charging by power adapter

Please remove the back cover screw of charging pile with screwdriver (the specific position please referred to “know about Sanbot Max Std”- back of charging pile) and open back cover to remove the screw of power adapter (the specific position please refer to “know about your Sanbot Max Std” – inner of charging pile), then loosen the screw nut of the power adapter charging port.

After taking out the power adapter, one end of the power adapter connects to charging port on the back of robot, and the other end of power adapter connects to power socket. It's ok when you see the indicator flash on the charging pile or the charging status shows on the robot screen.

4. Control Sanbot Max Std

There are one red button and one green button respectively on left shoulder and right shoulder of Sanbot Max Std.

Red button is stop/pause button, and green button is working/recover button. Turn on or Turn off this function is selectable.

There are a set of buttons under the back and neck of Sanbot Max Std.

Up, down, left, right button can manually control robot to move forward, backward, left and right.

Press down reset button can let robot reset.

Press down stop button can stop robot's commands and actions.

Press down option button and then press left or right button can control robot left and right lateral movement.

Press down option button and then press up or down button can control the back and front tilt of the robot's waist.

Please do not exert force on arms, fingers, head when push robot move manually.

5. Open and recover mode of forward/backward compartment and bracket

Forward compartment of Sanbot Max Std adopts press type spring switch. There is a press type spring switch at the upper and lower ends of the forward compartment respectively. Press the medium position of the upper end and the lower end of forward compartment down respectively, then you can open the forward compartment. After aligning compartment, press it again to close the compartment.

Backward compartment of Sanbot Max Std can be opened by software control or inserting a hexagonal wrench into mechanical switch hole. Aligning the backward compartment to hatch, press the medium position of the upper end of backward compartment down to close backward compartment.

Specifications & parameters

Item	Parameters		
Size	1370mm(H) x 763mm(W） x 615mm(D)		
Weight	About 90kg		
Battery	Lithium capacity: 1.0KWh; Voltage: 36V; Working hours: normally about 10 hours		
Sensors	Head	Mic x7、HD camera x1, 3D camera x1, Visual camera x1, Touch sensor x1	
	Torso	Gyroscope x1, PIR x2, Ultrasonic x2, Touch sensor x2, HD camera x1	
	Armx2	Infrared distance sensor x3（single arm）, Touch sensor x4（single arm）	
	Chassis	Infrared distance sensor x18, Mecanum wheel x4, Gyroscope x1, Visual camera x1, 3D camera x4, Ultrasonic x6	
Active parts	Head	DOF x2	Horizontal 180 degree, Vertical 45 degree
	Arm	DOF x5(each side)	
	Palm	DOF x5(each side)	
	Chassis	DOF x4	Arbitrary angle
Port	Backward compartment	Type-A USB x2	
		Micro USB x1	
		Dial switch x2	
	Forward compartment	HDMI port x1	
		Type-A USB x1	
		RJ45 Ethernet port x1	
		Audio in port x1	
		I²C interface x1	
	Charge	Back Chassis Charging interface x1	
Video	4K pixels HD camera 720P HD color camera		
Display	10.1 inch 1080P		
OS	Android/LINUX/ROS/RTOS		
Voice	Voice control, 360 degree voice localization, tweeter x4, subwoofer x1		
Wireless network	Wi-Fi: IEEE 802.11 a\b\g\n(2.4GHz\5GHz); Bluetooth 4.0; 4G（selectable）		
Atmosphere lamp	Ear x2, arm x2		
Cornering lamp	Chassis x3（straight, left, right）		
Moving speed	0~5m/s		
Grade	4.5cm		
Charging type	Auto-charging, manual charging, wired charging		

Specifications of Charging pile

Item	Parameters
Size	307mm(H) x 340.6mm(W） x 164.5mm(D)
Weight	4.8kg (including power adapter)
Input	AC 100-240V 50\60Hz
Output	DC 42Vmax\8Amax
Indicator	1 breath display
Working temperature	0℃～+35℃
Working humidity	10%～90%
Effective distance of auto-charging infrared	0~2m, 140 degree signal cover
Installation mode	Ground or wall-mounted indoor

Safety guide

In order to provide a better service for you, please follow the safety guide below (not including all possible situation). This guide is to keep the robot from unexpected damage such as collision, falling and function abnormality. Also, please operate with standard to make sure personal safety.

The placement where to place and operate Sanbot Max Std

- Place Sanbot Max Std on the flat horizontal ground.
- Generally, please make sure that there is no obstacle around the Sanbot Max Std to avoid the robot damaging during operation.
- Do not place the Sanbot Max Std on the thick carpet.
- Please make sure that there is no ladder or slope around the Sanbot Max Std.
- Please make sure that Sanbot Max Std would not collide with any surrounding cables or rope to prevent them from tripping or causing personal and property damage.
- Please make sure that Sanbot Max Std is not directly exposed to sunlight.
- Sanbot Max Std is designed for indoor use, please do not use it outdoors.
- Please make sure that Sanbot Max Std is far away from radiator or heat source.

Notices for robot use

1. It is forbidden for unauthorized non-professionals to use the robot.
2. If minors are allowed to use this robot, please be sure to teach them all kinds of precautions and power safety.
3. At any time, it is strictly forbidden to touch the joints such as head, neck, shoulder, elbow and waist of the robot so as to avoid pinch injury.
4. It is forbidden to use external force to control the abnormal movement of the head of the robot, such as twisting the head repeatedly or turning it forcefully when the head has been turned to a limited position.
5. It is forbidden to use external force to control the abnormal movement of the arm of the robot, such as twisting the arm repeatedly or turning it forcefully when the arm has been turned to a limited position.
6. During the operation of the robot, it is forbidden to use external force to prevent or accelerate the movement of head, arm and chassis so as to avoid structural damage.
7. Robot tend to lose their balance and fall when it moves forward or turns around along the edges of lower steps.
8. Robot should place on a safe, flat horizontal ground. It is forbidden to use the robot at slope, ladder, step, and high platform with small area.
9. If you need to push the robot move forward, please make sure the ground is flat and horizontal.
10. If the robot has been fallen down by accident, please make sure the power switch has been turned off before lifting it up.
11. When using this robot, please make sure that the robot is far away from valuables so as to avoid bruising or breaking valuables.
12. It is forbidden to dismantle robot, revise or try to fix any part of the robot.
13. It is forbidden to use external force to the robot. Do not lean on the robot.
14. Do not let the robot work or placed in the environment of over-heating, undercooling, over-humidity or a lot of dust.
15. Please keep the camera and sensor free of dust or debris, otherwise, the robot may not work properly.
16. Do not shake this robot. It may fall and injure the user.

17. Do not get close to the wheel of the robot, as it may overwhelm the user's toes and cause injury to people.
18. Do not let conductive objects touch the robot, otherwise, they may cause fire, malfunction due to short circuit.
19. It is forbidden to treat robot by violence such as throwing, kicking, beating, otherwise, it may lead to mechanical damage, abnormal function and performance degradation.
20. It is prohibited to insert any external objects into the outer shell of the robot (including speakers).
21. Do not cover the head and torso of the robot, wear hats, wigs, glasses, accessories, etc.. Otherwise, it may prevent the normal operation of the sensor and increase the operating temperature and lead to unexpected failure.
22. It is forbidden to immerse the liquid into the robot or put the robot in the liquid environment for cleaning. If necessary, use a rag to dip in a small amount of mild liquid for cleaning and use corrosive lotion is forbidden.
23. Please use robot legally and prohibit their use for illegal purposes.

※ If the robot does not work properly, especially unusual sounds, smells or smoke found from the robot, please turn off the power immediately and contact technical support or after-sales service department.

Notice for charging pile use

1. This charging pile is designed for Sanbot Max Std and it is forbidden to use for other products.
2. This charging pile is designed for indoor use, please do not use outdoors.
3. Charging pile must be far away from radiator, fire, heat source and avoid direct sunlight or exposure.
4. Please do not let charging pile work in the environment of over-heating, undercooling, over-humidity, and a lot of dust.
5. Please using configured charging pile when charging. It is forbidden to use other type power adapter to charge and be sure of electricity safety.
6. Please make sure that the available power supply voltage of the charging pile is adequate before charging. Do not use the power supply other than those specified.
7. Charging pile and power adapter are not waterproof, please keep dry at any time.

8. Please place the charging metal sheet of the charging pile outward and back to flat wall. Power adapter wire is arranged along the wall and make sure that there are no obstacles, thin wires and strings around the charging pile.
9. When the charging pile is connected to the power supply, it is strictly forbidden for human or conductive objects to contact the charging metal sheet.
10. Please protect the charging pile from dirt or other foreign bodies. If there is dust on the power plug, please disconnect the power supply and clean the power plug with soft dry cloth.
11. If smokes, sparks, noise or abnormal conditions are found, please immediately unplug the power plug from the wall socket and contact technical support or after-sales service department.