

修订履历 Document modification record			
修订日期 Revision date	版本 Versions	修订内容 Revision content	修订人 Revised by
2025/7/22	1.0	新增项目	陈嘉圣

部门 Established Dept.	制订 Prepared by	审核 Checked by	批准 Approved by	发布部门 Release Dept.	实施日期 Implemented Date
技术中心				研发中心	
会签栏					
接收部门 Received Dept	☐ 销售部 ☐ 运维部 ☐ 工程部 ☐ 技术部 ☐ 产品部 ☐ 制造部				

	PSA24317-NT PIF4-Muwayh PV2. 35GW 项目清扫机 机器人安装说明	版本 Versions: 1.0
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	☐ 质量部 ☐ 采购部 ☐ 综合管理部 ☐ 智能研发部
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本说明是太阳能清洁机器人的一般指南。、

This manual serves as a general guide for the solar-powered cleaning robot.

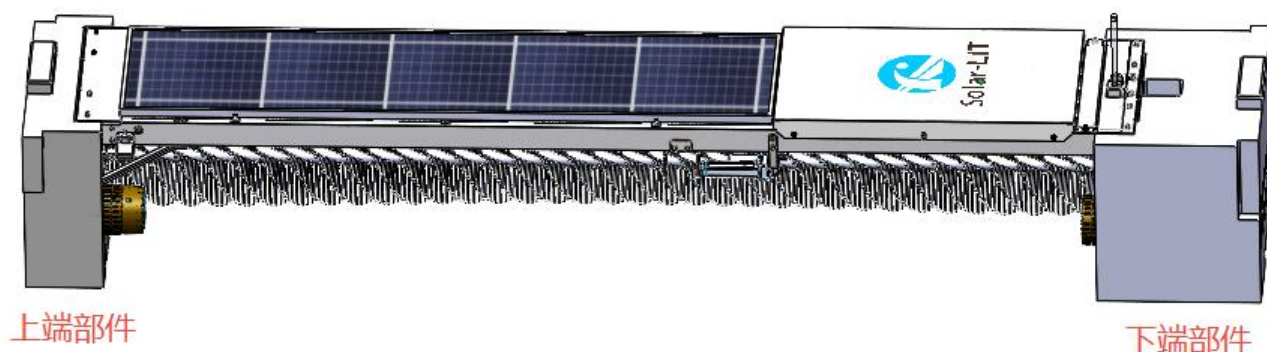
安装前，请根据我们在相关包装中提供的零件清单检查所有组件是否准备就绪。

Before installation, please verify all components are ready by checking against the parts list provided in the relevant packaging.

第 1 部分：机器人装配

1. 机器人整机基本安装完成，出货运送到现场需要安装挂轮和挂钩；

The primary phase of the robot’s assembly has been completed. Installation of the suspension wheels and hooks shall be conducted following shipment to the facility.

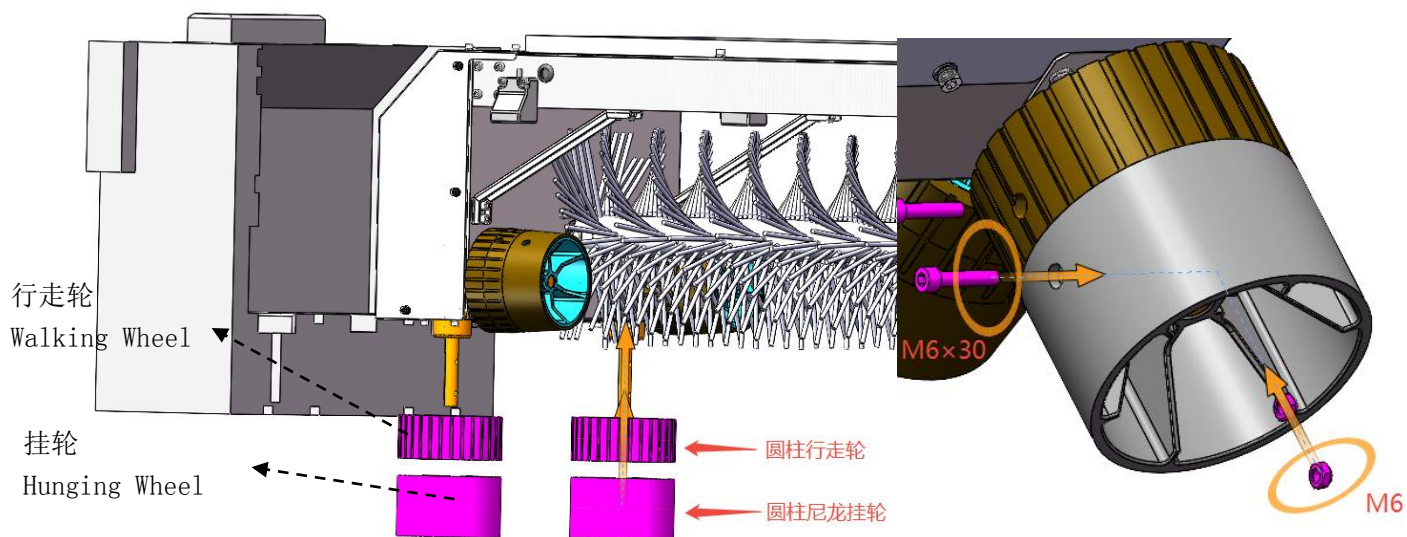


2. 拆除包装，上端部件安装挂轮和上挂钩；

De-pack the system and affix the hanging wheels along with the upper suspension hook to the designated upper module.

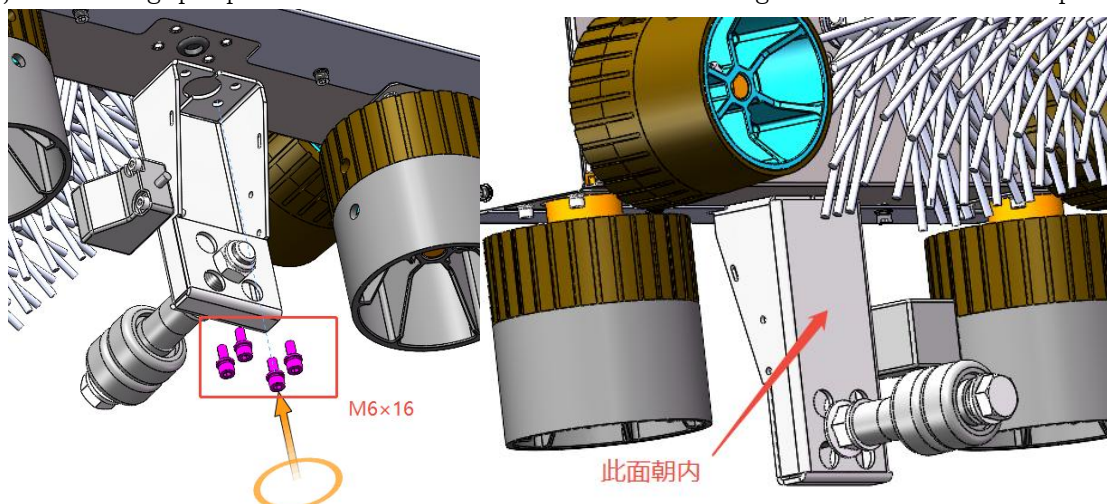
Step 1: 安装行走轮和尼龙挂轮，使用内六角圆柱头螺钉（M6×30）和防松螺母（M6）锁紧挂轮；
Step 1: Install the Walking Wheel and Hunging Wheel. Secure the hanging wheels using socket head cap screws (M6×30) and lock nuts (M6).

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Step 2: 确认挂钩状态，安装上防脱挂钩，使用内六角圆柱头组合螺钉（M6×16）锁紧，安装过程注意挂钩朝向；

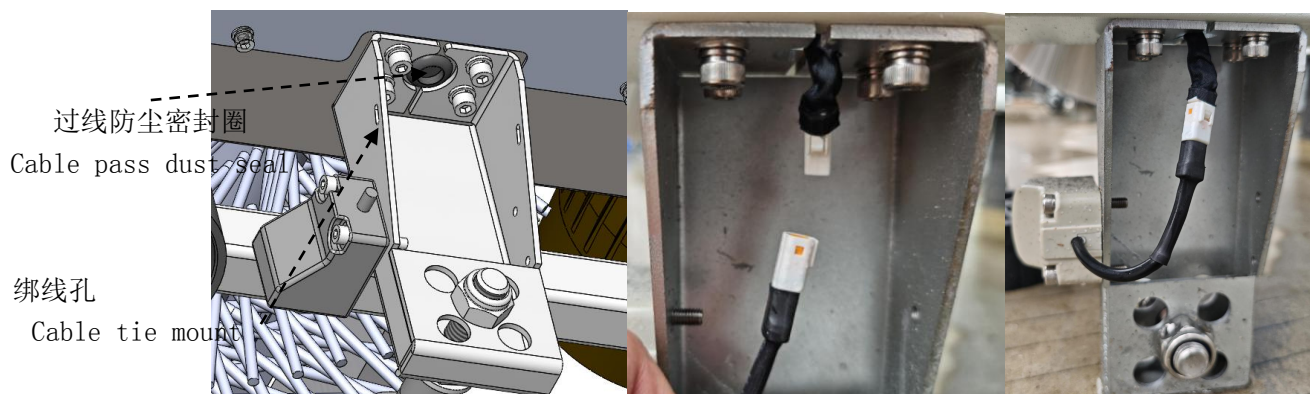
Step 2: Inspect the hook assembly status, then proceed with the installation of the anti-disengagement hook unit. Secure the assembly using hex socket head combination screws (M6×16), ensuring proper orientation of the hook during the installation process.



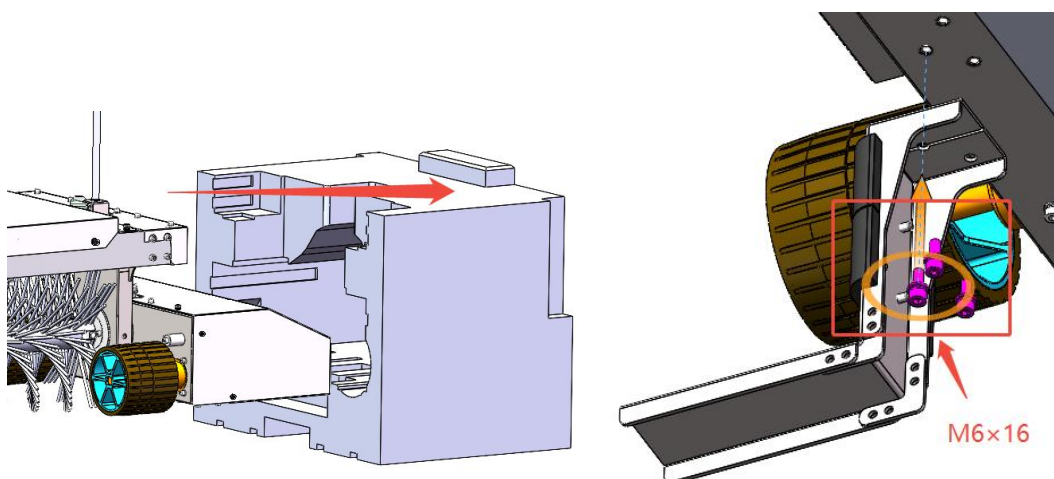
Step 3: 接近开关延长线由端板内侧经过线防尘密封圈引出，在外侧和风载接近开关对接，对接后使用扎带将线固定在挂钩绑线孔上；

Step 3: Route the proximity switch extension cable through the dust-proof sealing ring on the end plate's interior side. Connect it to the wind-load proximity switch on the exterior side, then secure the cable to the hook's wire-binding orifice using cable ties after connection.

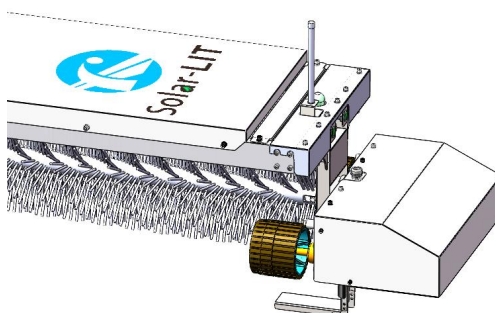
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3. 拆除包装，下端部件安装挂钩，使用内六角圆柱头组合螺钉（M6×16）锁紧；
Step 3: Remove the packaging, install the hook on the lower assembly, and secure it with hex socket head combination screws (M6×16).



4. 拧上天线，螺纹拧紧。
Rotate the antenna clockwise until full thread engagement is achieved.



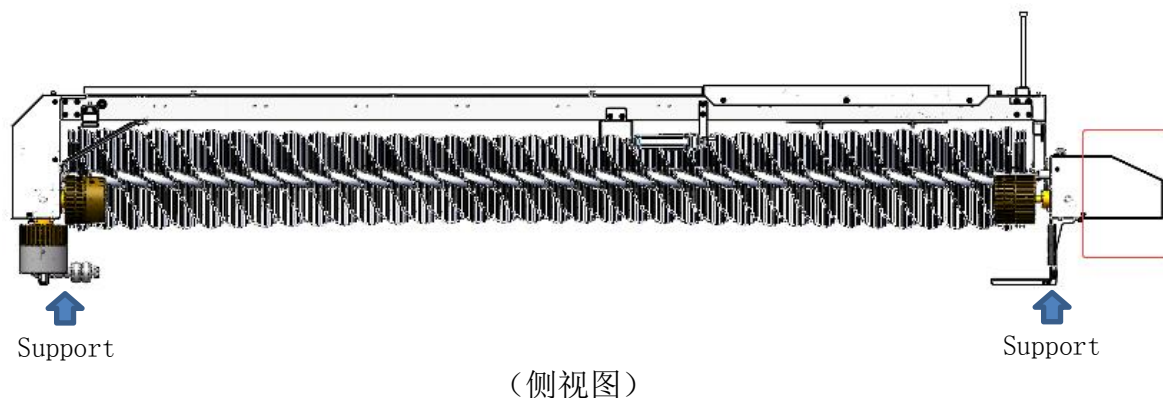
第 2 部分：将清洁机器人放在面板上

1. 现场需要两个人来帮忙搬运，下端外罩无法受力（红色方框），注意避让，人员分布受力点如

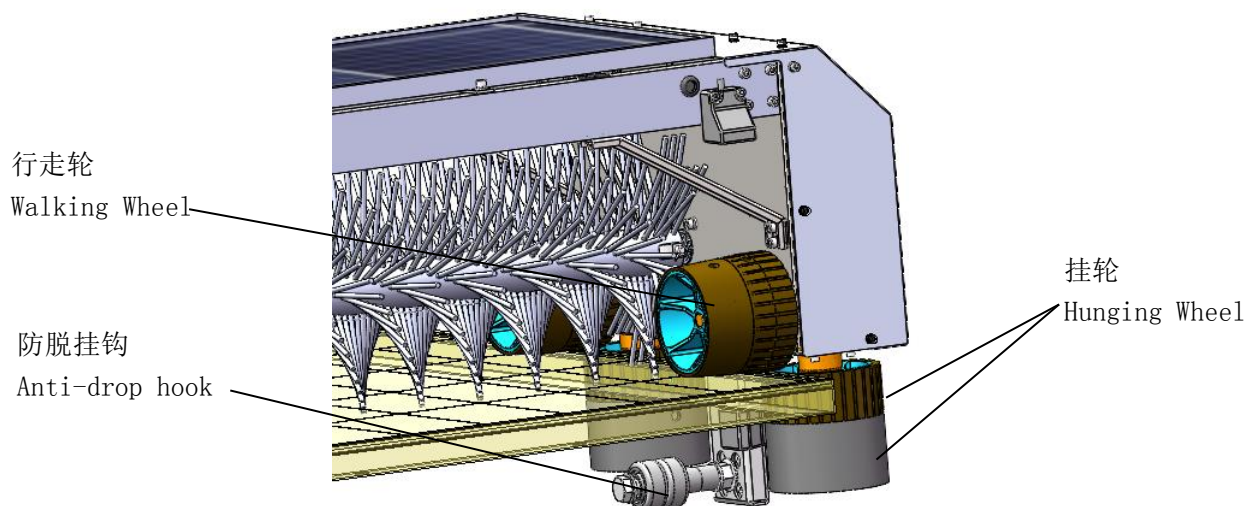
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下:

1. On-site assistance from two personnel is required for transportation. The lower cover is non-load-bearing (as indicated by the red box) and must be avoided. Personnel should distribute force exclusively at the designated load-bearing points illustrated below.

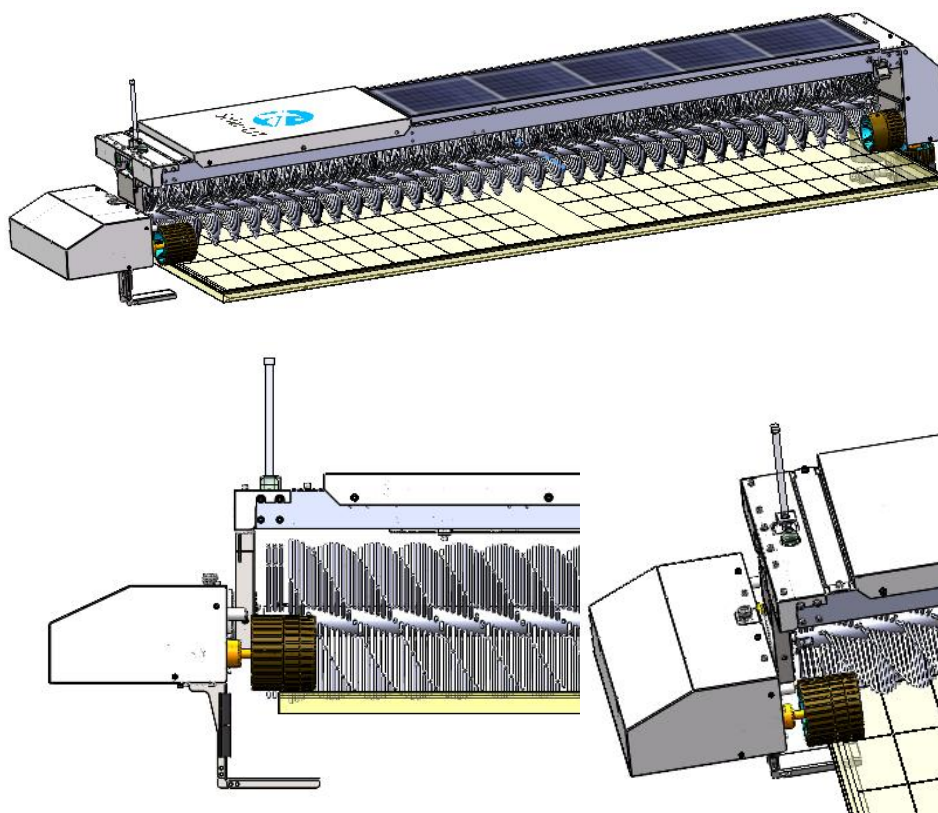


2. 小心抬起机器人，将上端挂轮扣在面板侧边缘上，确保挂轮和上端行走轮紧密接触面板金属边框，防脱挂钩位于面板下方。
2. Carefully lift the robot and engage the upper hanging wheels onto the side edge of the panel. Ensure both the hanging wheels and the upper travel wheels maintain full contact with the metal frame of the panel, with the anti-disengagement hook positioned beneath the panel.



3. 小心地缓慢下降机器人的下部，直到下行走轮接触到下端面板边缘金属边框。
3. Carefully and slowly lower the lower section of the robot until the lower travel wheels make full contact with the metal frame on the bottom panel edge.

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注意：请记住，操作时必须非常小心，以防光伏组件或机器人受损。

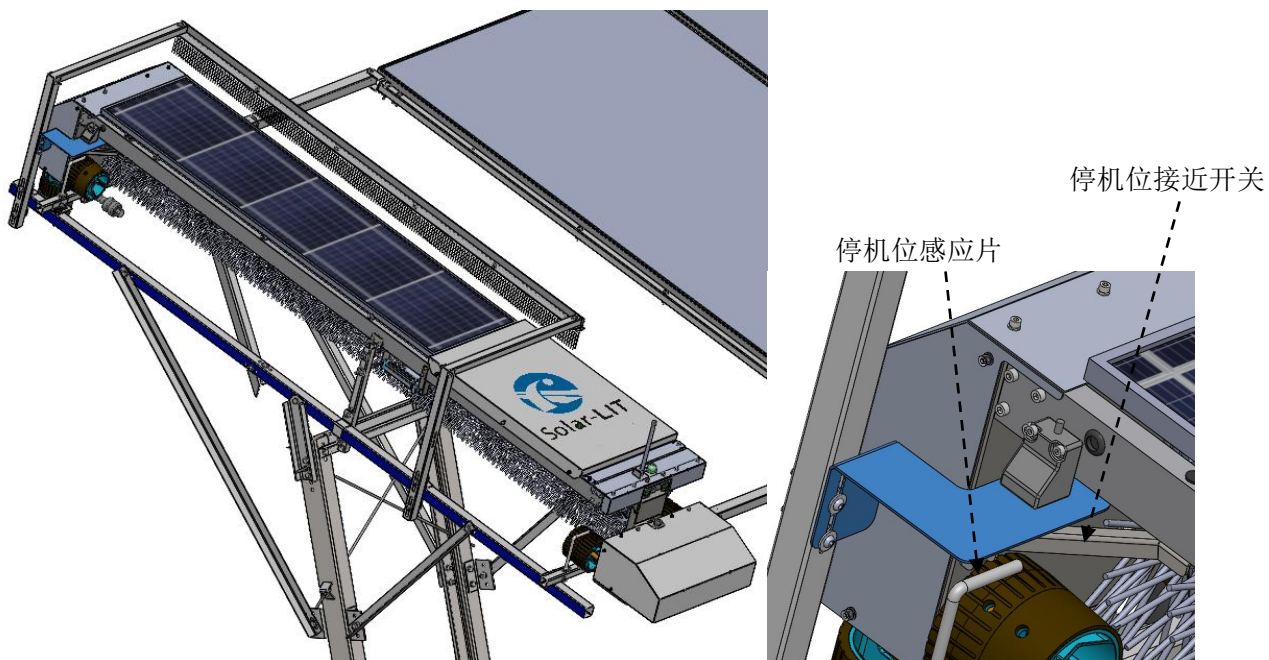
Important: Exercise extreme caution during operation to prevent damage to photovoltaic modules or the robot system.

3. 停机位接近开关对位：确保停机位接近开关与停机位感应片基本对中，且两者竖向间距保持在5~15mm。

4. Parking Position Proximity Switch Alignment: Ensure the parking position proximity switch is roughly centered with the induction plate, maintaining a vertical clearance of 5-15mm between them.

4.

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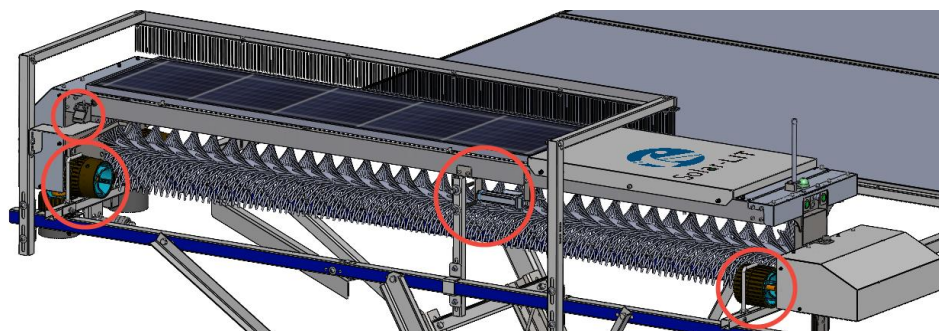


5. 停机位上轮挡杆、防风支架、感应片三者对位：确保机器人轮子顶住挡杆的时候，推杆可以顺畅的推入防风支架，同时接近开关处于感应片上方不能脱离。

5. Alignment of Parking Position Components (Wheel Stopper, Windproof Bracket & Sensor Plate), Ensure when the robot wheels contact the stopper bar:

The push rod can smoothly engage the windproof bracket

The proximity switch remains positioned above the sensor plate without disengagement

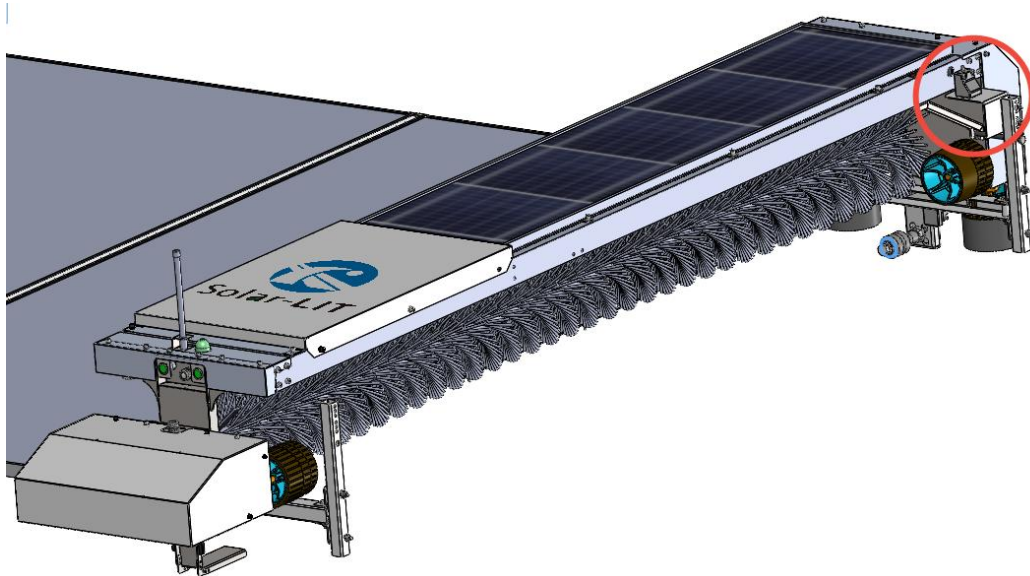


6. 返机位接近开关对位：确保停机位接近开关与停机位感应片基本对中，且两者竖向间距保持在5~15mm。与第4步骤一致。

6. Return Position Proximity Switch Alignment

Ensure the return position proximity switch is concentrically aligned with the induction plate, maintaining a vertical clearance of 5-15mm between components. (Note: Same technical requirements as Step 4)

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第 3 部分：试跑前的检查

Part 3: Pre-Run Inspection (Robot in Parking Position)

1. 按下电源开关，机器人指示灯亮红灯自检，自检通过后机器人绿灯常亮，此时机器人状态正常可运行。

1. Power-On Self-Test

- Press the power button to activate the robot
- Self-test sequence:

Red LED = System initializing (duration: ≤ 30 sec)

Green LED (steady) = Self-test passed / Operational ready

2. 检查接近开关与感应片相对位置是否正确。

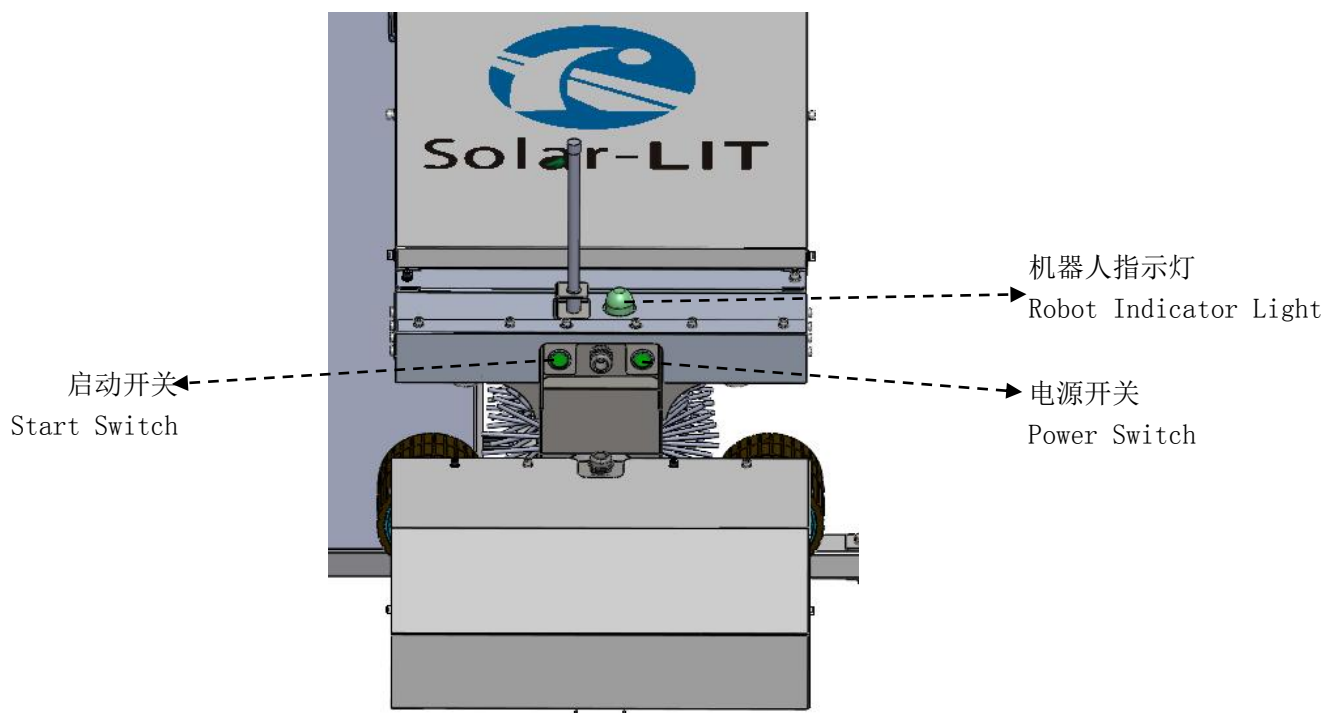
2. Proximity Switch Alignment Verification

- Required alignment:
 - Sensor-to-target gap: 5-15mm (optimal: 10mm)

3. 在正确位置接近开关指示灯常亮。

3. Sensor Status Confirmation

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左侧接近开关（常亮）
Left-side proximity switch
(normally illuminated)



右侧接近开关（常亮）
Right-side proximity switch
(normally illuminated)

第 4 部分：启动和停止机器人

物理操作：按启动电源，等待 2~3 秒机器人即可运行。

Physical Operation (Manual Control)

Steps:

Press the power button (hold for 1 second).

Wait 2-3 seconds for system self-check (solid green light indicates readiness).

The robot will enter standby mode and is ready for tasks.

手机 APP 操作：

Mobile App Operation:

1. 打开控制 APP 扫描机器人下端部的 SN 二维码，进行蓝牙连接。

1. Open the control APP and scan the SN QR code located at the lower part of the robot to establish Bluetooth connection.

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2. APP 首页即有控制按钮可直接进行控制。
2.The APP homepage provides direct control buttons for immediate operation.



第 5 部分：机器人运行逻辑

1. 每天定时自动从停机位出发到返机位返回，来回清扫一趟。清扫时间可在上位机上设定。
- 1.Autonomous operation:
- Daily scheduled launch from parking position (left side)
 - Predefined route: Parking position → Return position (right side) → Parking position
 - Cleaning parameters:
 - Start time programmable via HMI (00:00-23:59)
2. 若机器人停在组件上，按启动键机器人自动返回停机位。

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2. Emergency Return Protocol (Component Parking Scenario)

Operation Logic: When robot is stationary on PV modules.

FCC Statement:

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This

Equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a Particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

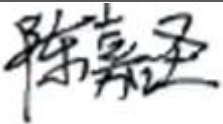
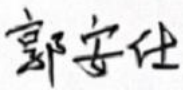
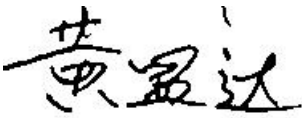
- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

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This equipment should be installed and operated with minimum distance 20cm between the radiator&your body.

制定		日期	2025-08-05
审核		日期	2025-08-05
批准		日期	2025-08-06
受控		日期	2025-08-07