

SLAM1000

手持激光雷达扫描仪

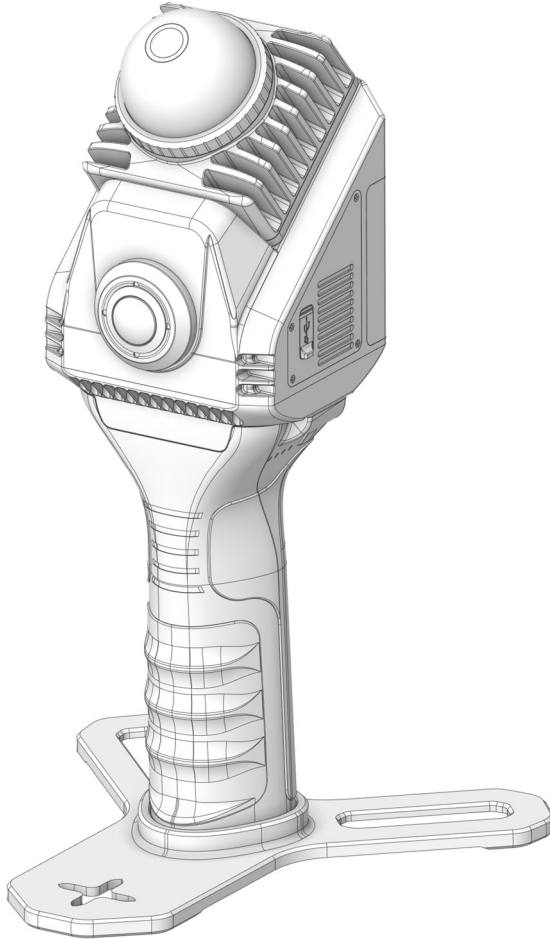
LASER SCANNER

202501

快速使用指南

Quick Start Guide

(中文/English)



深圳飞马机器人股份有限公司
Shenzhen Feima Robotics Co., Ltd.

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(中文)

提示说明

本文为《SLAM1000 快速使用指南》，关于此设备更详细说明请详见《SLAM1000 产品手册》。

提示：——特别提醒的重要内容

注意！——如操作错误有可能造成设备损坏的重要内容

⚠️ 警告——如操作错误有可能造成设备损坏甚至人身伤害的重要内容

⚠️ 警告

- 作业人员在获取数据时应时刻注意周围环境，避免因注意力分散导致的安全事故；
- SLAM1000 不具备防爆属性，严禁在加油站附近或瓦斯、天然气、甲烷、等易燃易爆气体聚集的矿井、坑道、化粪池等危险场景使用；
- 避免火灾、物权损失和人身伤害，使用电池、充电以及存储过程务必按照该手册指引操作。

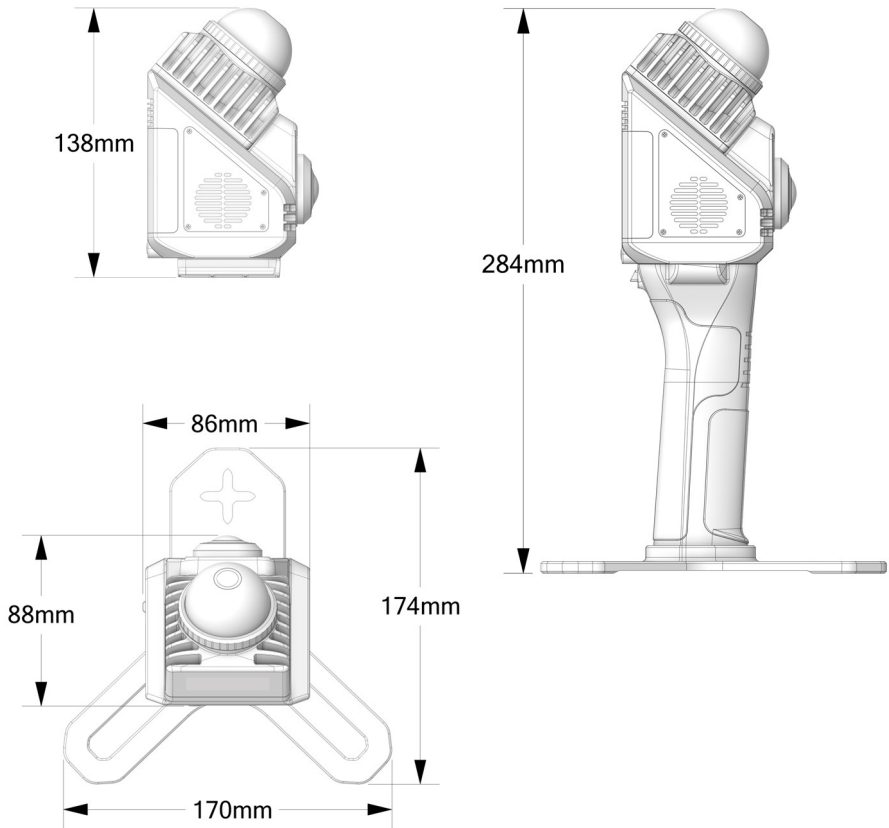
注意！

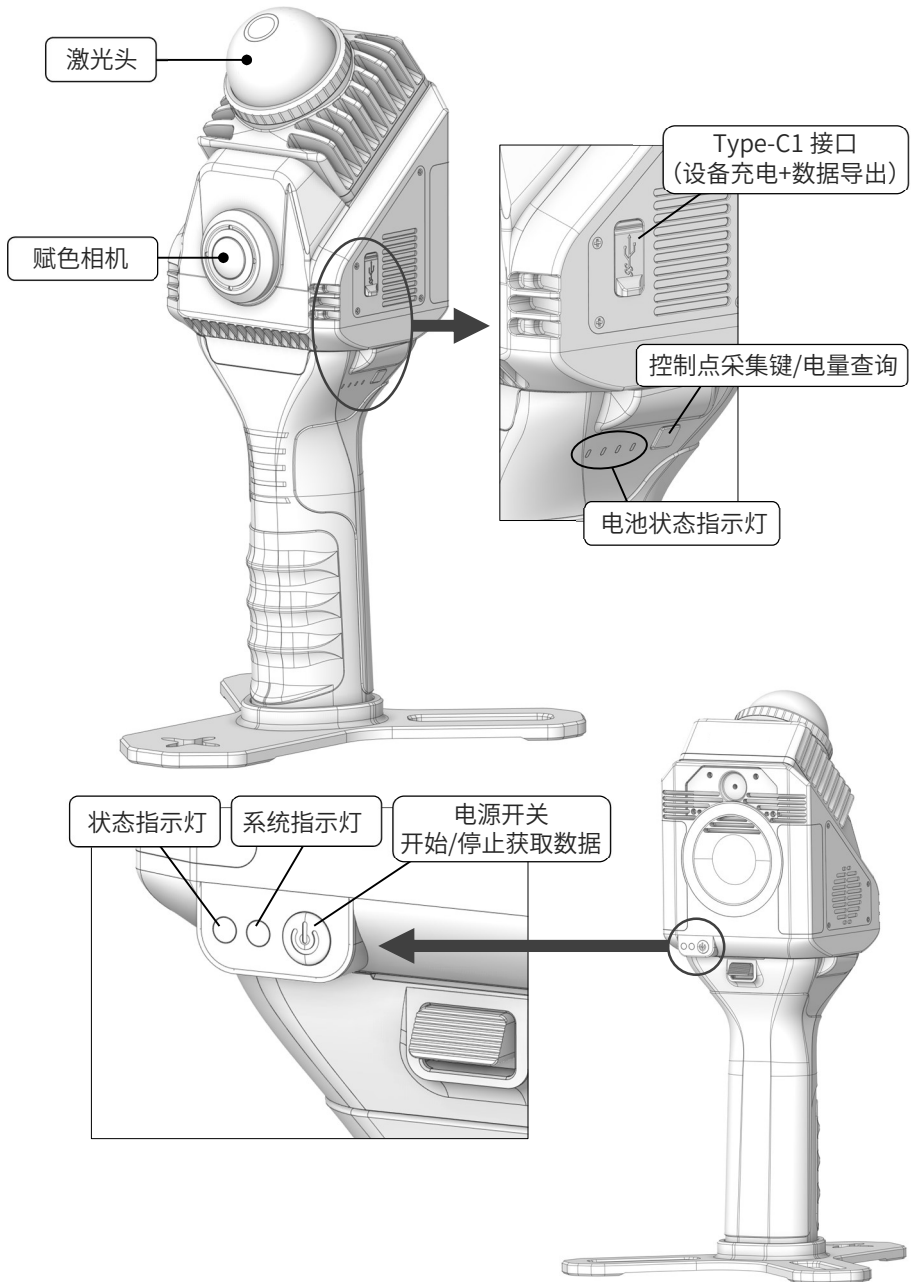
- SLAM1000 为高精度控制装置，摔落或受到外力碰撞可能会使 SLAM1000 损坏，导致工作异常；
- SLAM1000 连电脑拷贝数据结束后，请先“安全弹出硬件”再断开 USB 电缆；
- 当需要关闭 SLAM1000 设备时，请通过开关键关机，切勿在开机状态下直接移除电池手柄或断开电源（USB-PD 供电等）；
- 使用 SLAM1000 的过程中请注意防尘防沙；
- 使用 SLAM1000 时请注意保护激光器和相机镜头避免被硬物刮花；
- 防溅、抗水、防尘功能并非永久有效，防护性能可能会因正常磨损而下降。浸液损坏不在保修保障范围内；
- 为了防止浸液损坏，请避免以下操作：
 - ①将 SLAM1000 置于高压或高流速的水中或故意将 SLAM1000 浸入水中；
 - ②使 SLAM1000 跌落到地上或受到其他撞击；
 - ③拆解 SLAM1000,包括拧下螺丝。

产品概述

SLAM1000 是飞马机器人创新研发的一款高精度手持三维激光雷达扫描仪。该设备具有全景式激光视场角，集成赋色相机，机身内置高精度惯导芯片以及高性能计算单元，可进行实时高精度数据采集，内置 MagSafe 磁吸环，可便捷固定手机。SLAM1000 可广泛应用于封闭空间、方量测绘、应急救援、实时导航等多种场景。

部件说明





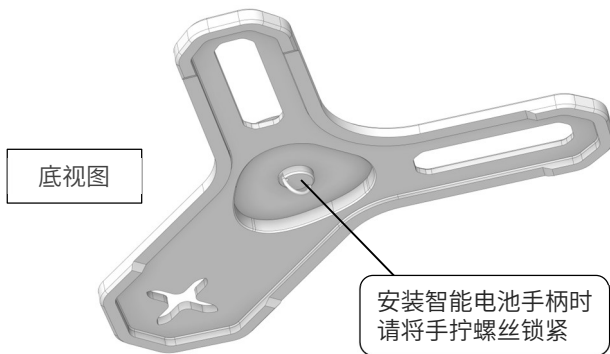


SLAM1000 使用流程



设备组装

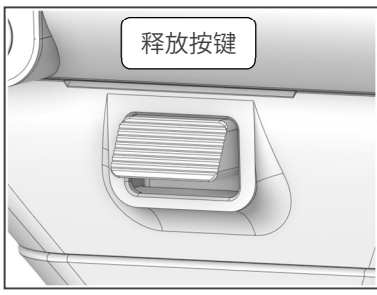
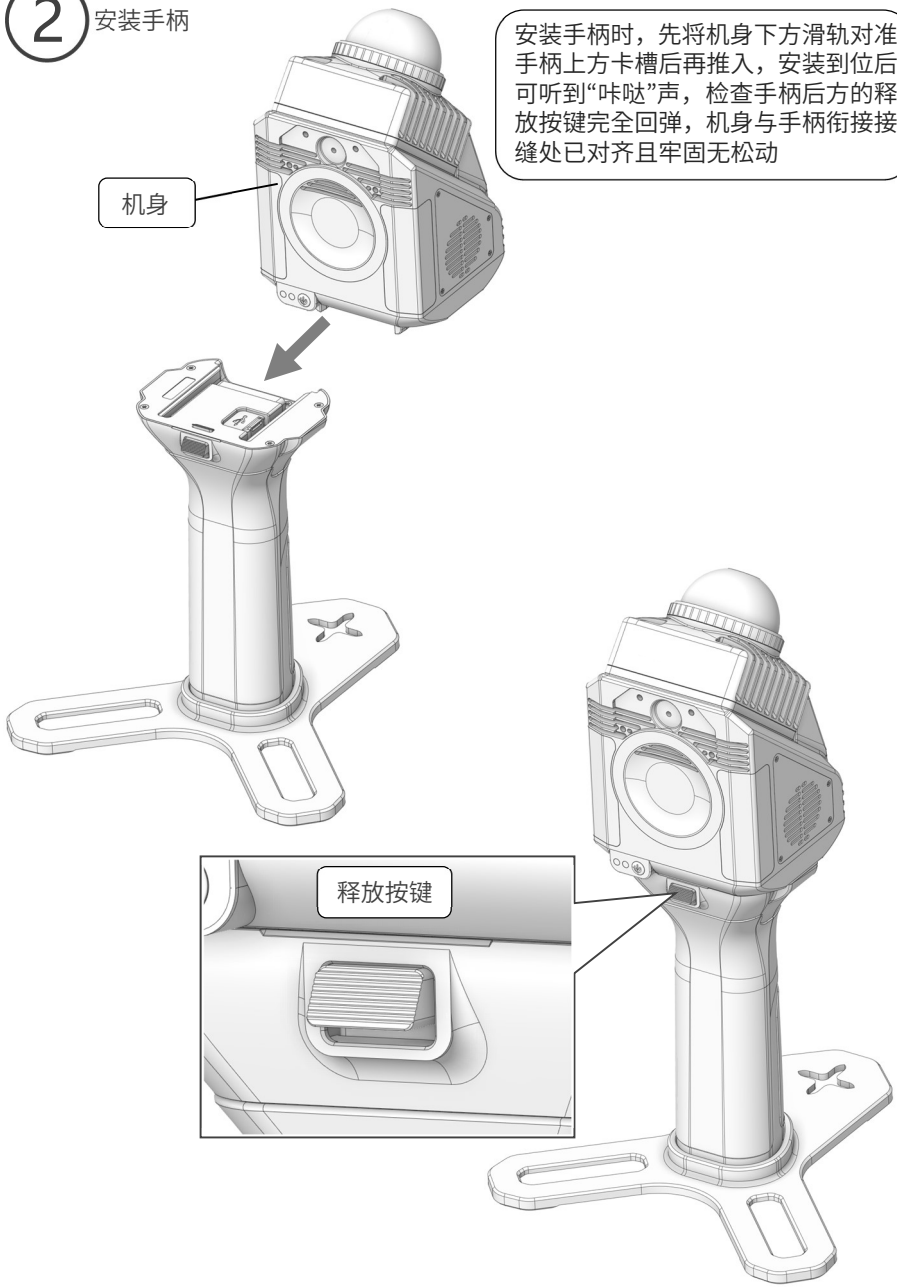
1 安装底座



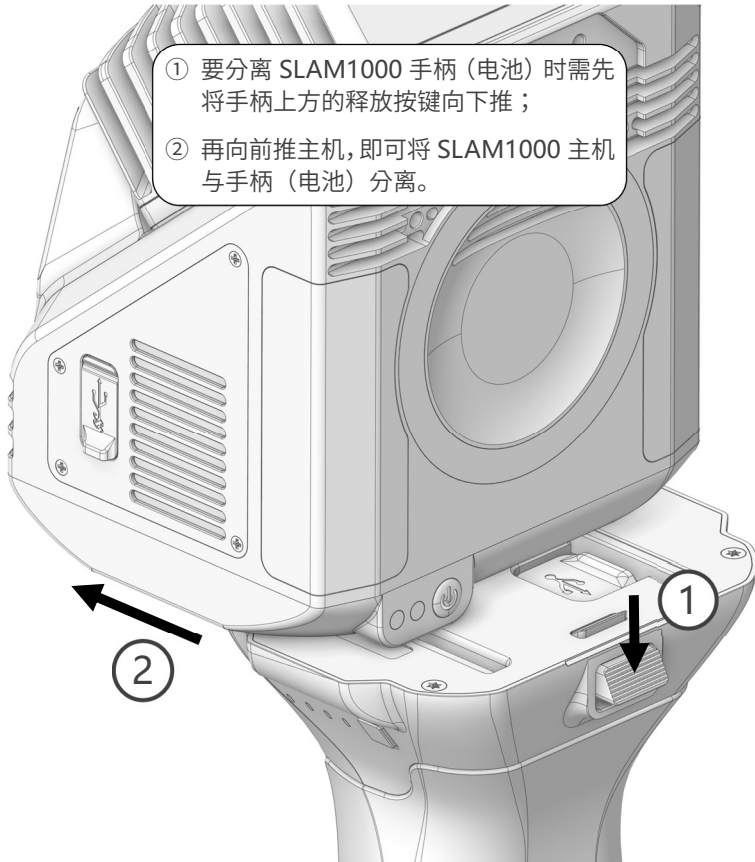
2 安装手柄

安装手柄时，先将机身下方滑轨对准手柄上方卡槽后再推入，安装到位后可听到“咔哒”声，检查手柄后方的释放按键完全回弹，机身与手柄衔接接缝处已对齐且牢固无松动

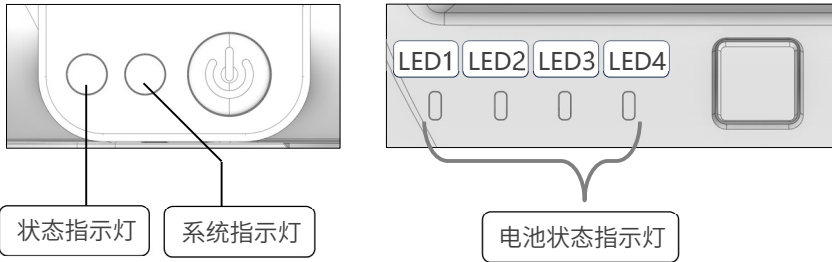
机身



设备回收



指示灯说明



LED	显示	说明
状态灯	白灯快闪	MCU固件升级中
	红灯常亮	设备正在初始化, 未准备好
	绿灯常亮	设备准备完成
	绿灯闪	正在采集数据
	绿灯快闪	停止采集, 正在保存数据
	蓝灯闪烁至熄灭	关机
系统灯	白灯常亮	系统固件升级中
	红灯闪	系统未准备好
	蓝灯常亮	系统准备完成

	状态	提示音
蜂鸣器	开机	嘀一声
	关机	嘀一声
	低电量	每10秒 嘀一声
	超低电量	每1秒 嘀一声
	Mark点信息采集	点信息采集成功 嘀一声
	开始采集	嘀一声
	停止采集	嘀一声
	开始工作1分钟开始建图时	嘀一声
	结束工作, 数据存储完成	嘀一声

SLAM1000 电池 LED 指示灯状态表

状态		LED1	LED2	LED3	LED4
放电保护状态	欠压	快闪(5Hz)	慢闪(1Hz)	灭	灭
	放电低温	快闪(5Hz)	灭	慢闪(1Hz)	灭
	放电超温	快闪(5Hz)	灭	灭	慢闪(1Hz)
	放电过流	快闪(5Hz)	慢闪(1Hz)	慢闪(1Hz)	灭
	放电短路	快闪(5Hz)	慢闪(1Hz)	慢闪(1Hz)	慢闪(1Hz)
充电保护状态	过压	慢闪(1Hz)	灭	灭	快闪(5Hz)
	充电低温	灭	慢闪(1Hz)	灭	快闪(5Hz)
	充电超温	灭	灭	慢闪(1Hz)	快闪(5Hz)
	充电过流	慢闪(1Hz)	慢闪(1Hz)	灭	快闪(5Hz)
电量指示	0%~12%	慢闪(1Hz)	灭	灭	灭
	13%~24%	常亮	灭	灭	灭
	25%~37%	常亮	慢闪(1Hz)	灭	灭
	38%~49%	常亮	常亮	灭	灭
	50%~62%	常亮	常亮	慢闪(1Hz)	灭
	63%~74%	常亮	常亮	常亮	灭
	75%~87%	常亮	常亮	常亮	慢闪(1Hz)
	88%~100%	常亮	常亮	常亮	常亮
充电指示	0%~24%	LED1->LED4 跑马灯显示			
	25%~49%	常亮	LED2->LED4 跑马灯显示		
	50%~74%	常亮	常亮	LED3->LED4 跑马灯显示	
	>=75%	常亮	常亮	常亮	慢闪(1Hz)
	充满	常亮	常亮	常亮	常亮
升级状态		慢闪(1Hz)	慢闪(1Hz)	慢闪(1Hz)	慢闪(1Hz)

说明：按键查询电量时 LED 灯会点亮 6 秒，前 3 秒显示电量，后三秒如果电池正常就显示电量，否则显示保护状态。

电池充电

电池充电器



对 SLAM1000 电池手柄进行充电，
约 2 小时充满（0%至 100%）

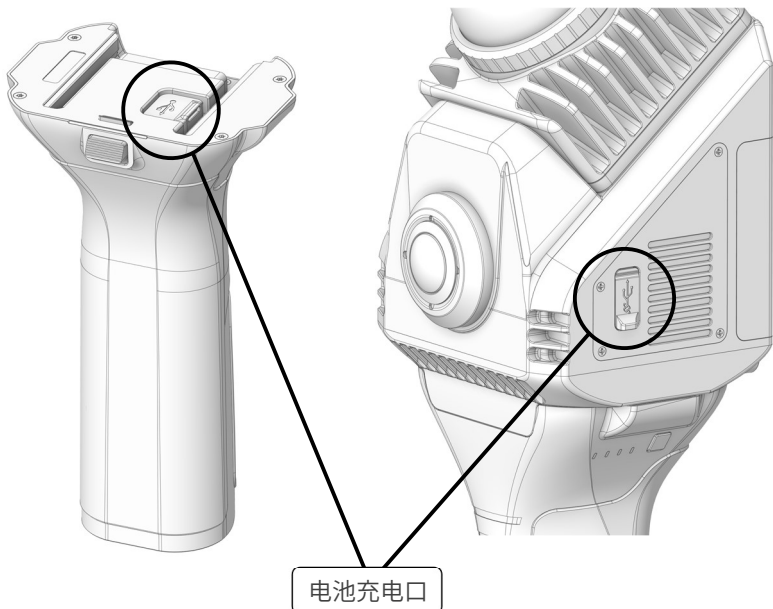
输入：交流 100 V -240V ~50/60 Hz

输出：支持 PD3.0 协议 20V 3A

充电方式

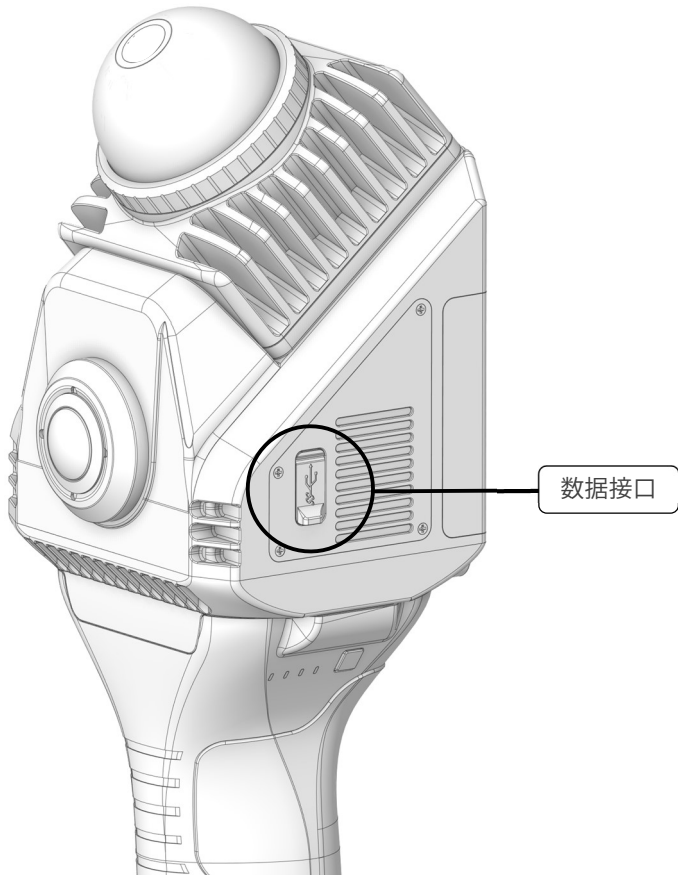
方式一：将充电器连接至 SLAM1000 智能电池手柄的 Type-C2 接口进行充电。

方式二：当智能电池手柄已安装至 SLAM1000 机身时，将充电器连接至机身 Type-C1 接口进行充电。



数据存储

- SLAM1000 采用内置 SSD 存储器，容量 512GB，通过数据线连接 PC 进行数据交互；
- SLAM1000 SSD 接口（Type-C1）支持开机/关机状态下都可读取数据；
- 建议 SSD 磁盘至少保留 5% 以上的容量，避免因数据过多而导致磁盘读写速度降低以及容量不足问题；
- 删除数据时建议使用格式化的方式(可以快速格式化)，这样能够使 SSD 磁盘获取更好的存储速度。



产品激活

扫描仪在使用前需注册飞马账号并进行设备激活，具体软件获取地址及注册、激活流程详见《SLAM1000 产品手册》“SLAM GO”部分。

外业数据采集

设备开机

长按扫描仪开关键 3 秒，设备上电后首先会开启自检，请等待。。。。

- 系统指示灯【蓝灯常亮】；
- 状态指示灯【绿灯常亮】；

此时设备启动成功，为待机状态。

注意！

- 设备开机时请平稳握持扫描仪，并保持激光头竖直向上；
- 可将扫描仪置于安全稳固的桌面或平整的地面上。

开始采集

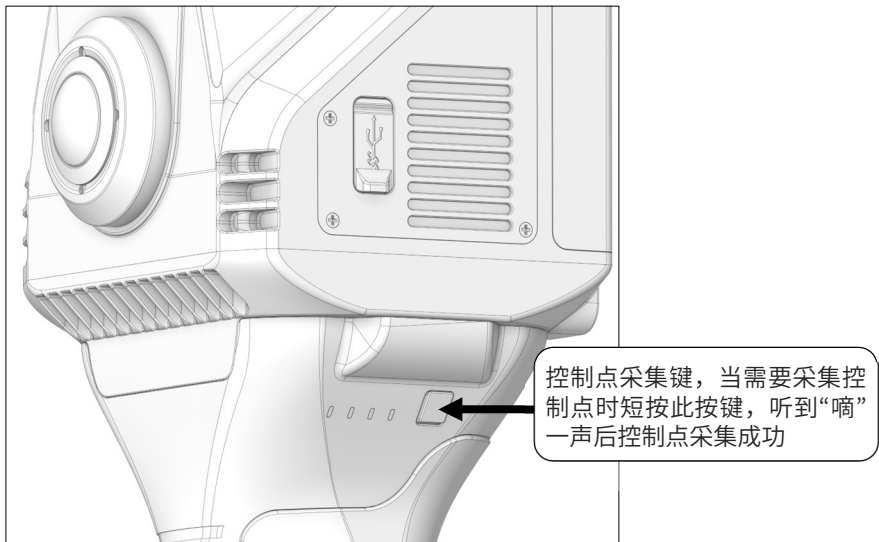
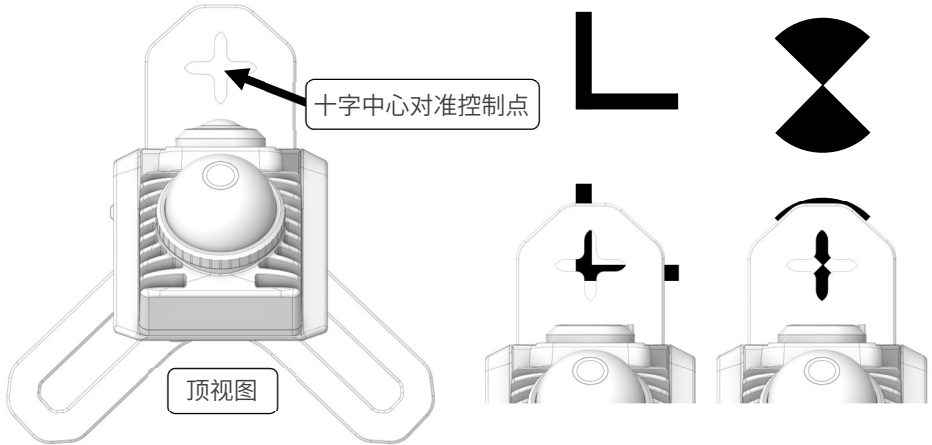
扫描仪开始数据采集前需要先进行静置校准，摆放位置要求距离被测物体距离 >0.4 米且不宜过远，静置阶段至少需要 60 秒再开始运动采集，静置时不可将扫描仪拿在手上，必须平稳的放置于安全的地面或者桌面等固定表面，短按扫描仪开关键，状态指示灯先会改为【绿色快闪】，此时设备正在进行校准，时长为 60 秒（手机 APP 会显示读秒倒计时），60 秒后状态指示灯改为【绿色慢闪】，并开始数据采集。静置时如放置位置略有倾角但可保证扫描仪静置不动也同样符合静置要求。

提示：

- 数据采集过程中请保持扫描仪处于身体前方，与行走方向一致，请保持设备直立；
- 设备在上电开机后和数据获取过程中机身可能会发热，并伴有散热风扇转动的声音属于正常现象。

控制点采集

当需要采集控制点时，请先将设备底座的十字中心对准控制点，此时短按控制点采集键，听到“嘀”一声后控制点采集成功，采集控制点时无需等待，采集完当前点信息后可继续进行之后的数据采集。



停止采集

短按扫描仪开关键，结束数据采集，状态指示灯恢复【绿灯常亮】待机状态。

设备关机

长按扫描仪开关键可关闭设备，待系统指示灯与状态指示灯全部熄灭，此时设备关闭。

注意！

- 在系统指示灯与状态指示灯全部熄灭前请不要将智能电池手柄移除。

数据检查

数据采集完毕后可将扫描仪关闭，使用数据线连接 SLAM1000 与 PC，找到以“SN_XXXX”命名的文件夹并将其拷贝至备份目录；每次数据采集完成后系统都将自动生成此文件夹，根据文件夹名称尾号数字大小可识别数据采集先后顺序。

问题分析

当采集的数据出现问题时，请将扫描仪存储卡内以“LOG”命名的文件夹打包压缩后提交给飞马售后部门进行分析。



了解更多产品详细信息，请通过以下网址访问【起司行业知识库】

<http://knowledge.cheesi.cn/>

如果您对说明书有任何疑问或建议，请通过电子邮箱联系我们：

aftersales@feimarobotics.com


(English)

Notice

This article is the SLAM1000 Quick Start Guide. For more details about this device, please refer to the SLAM1000 Product Manual.

Tips : —Important content of special reminders.

Notice! — Important elements that may cause damage to the equipment if operated incorrectly.

 Warning—Important content. The wrong operation may cause equipment damage or even personal injury.

Warning

- Operators should always pay attention to the surrounding environment when collecting data to avoid safety accidents caused by distractions.
- SLAM1000 does not have explosion-proof attributes, and is strictly prohibited to be used near gas stations or in dangerous scenes such as mines, pits, septic tanks, etc. where gas, natural gas, methane, and other flammable and explosive gases gather.
- To avoid fire, property damage and personal injury, use the battery, charging and storage process must follow the guidelines in this manual.

Notice !

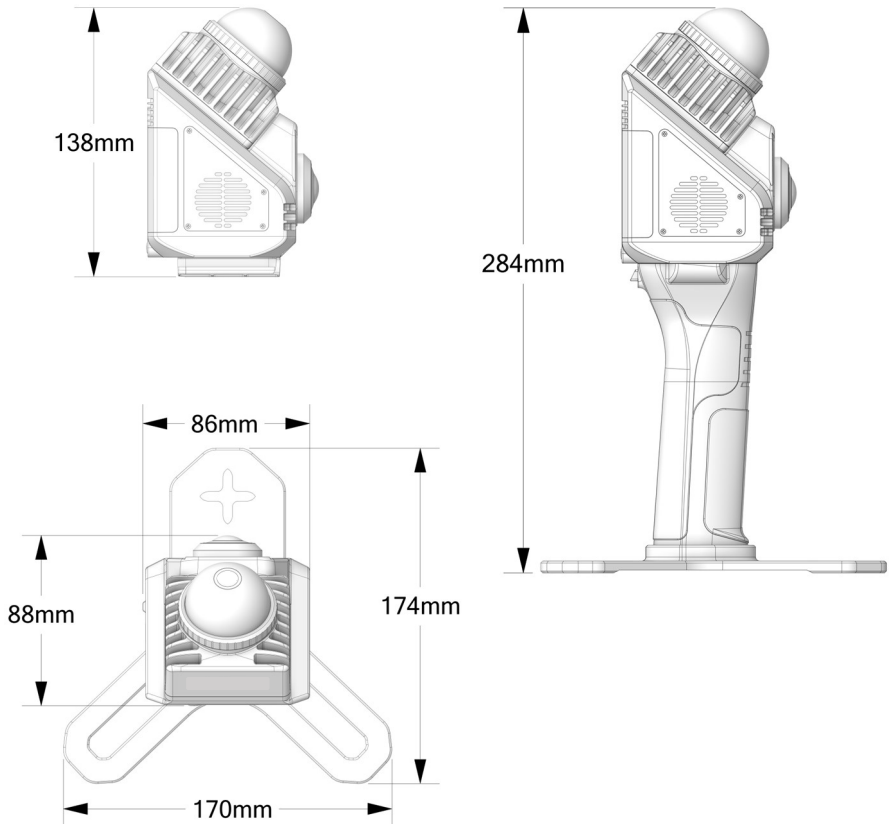
- The SLAM1000 is a high-precision control device. Dropping or any impact may cause damage to the SLAM1000, resulting in malfunction.
- After transferring data from the SLAM1000 to a computer, please “Safely Remove Hardware” before disconnecting the USB cable.
- To power off the SLAM1000 device, please use the power button. Do not remove the battery handle or disconnect the power source (such as USB-PD) while the device is powered on.

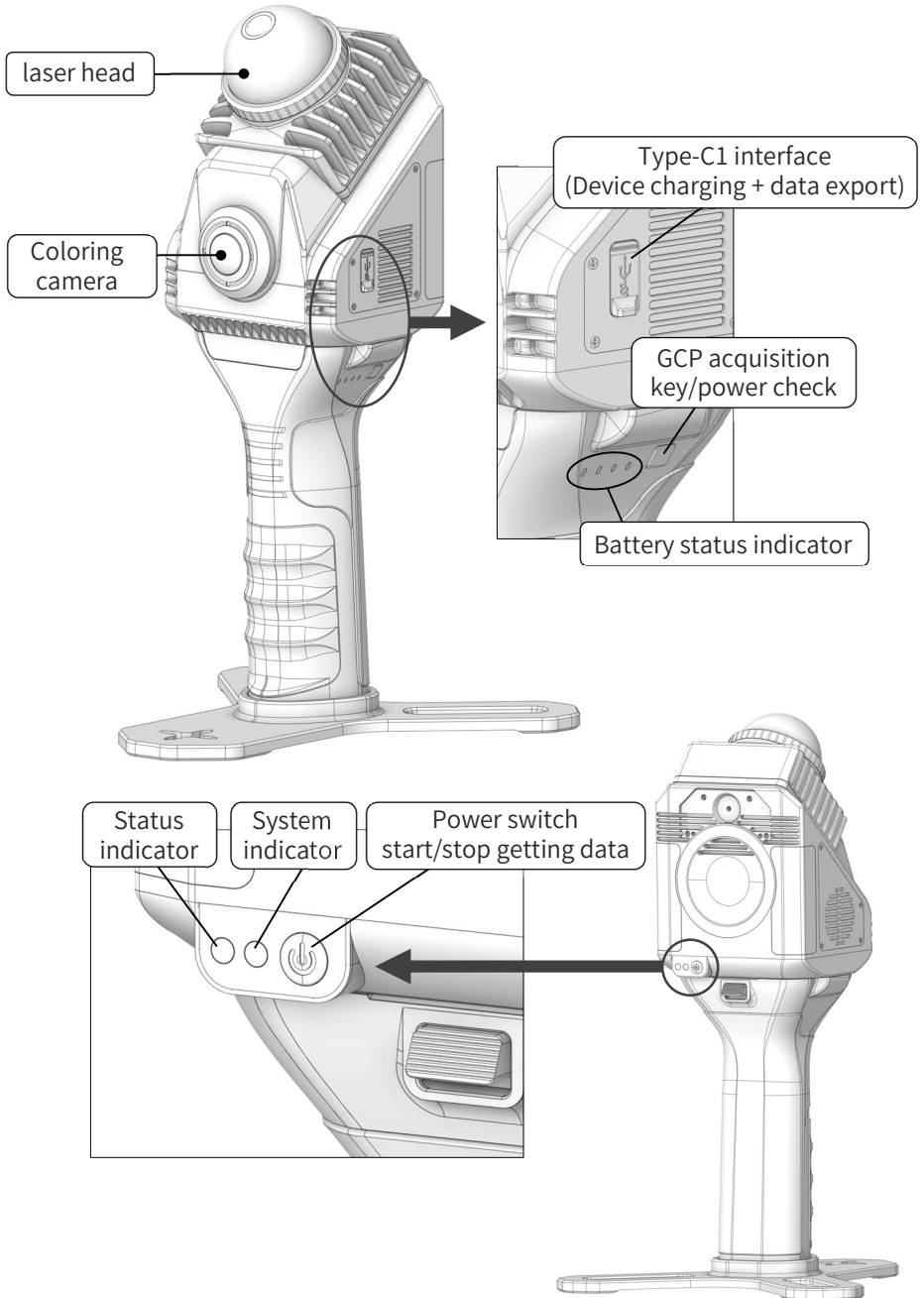
- During use of the SLAM1000, please ensure protection against dust and sand.
- When using the SLAM1000, protect the laser and camera lens from scratches caused by hard objects.
- The splash-proof, water-resistant, and dustproof features are not permanently effective. Protective performance may decrease with normal wear, and liquid damage is not covered under warranty.
- To prevent liquid damage, please avoid the following actions:
 - ① Placing the SLAM1000 in high-pressure or high-flow water, or intentionally submerging it in water.
 - ② Dropping the SLAM1000 onto the ground or subjecting it to other impacts.
 - ③ Disassembling the SLAM1000, including unscrewing any screws.

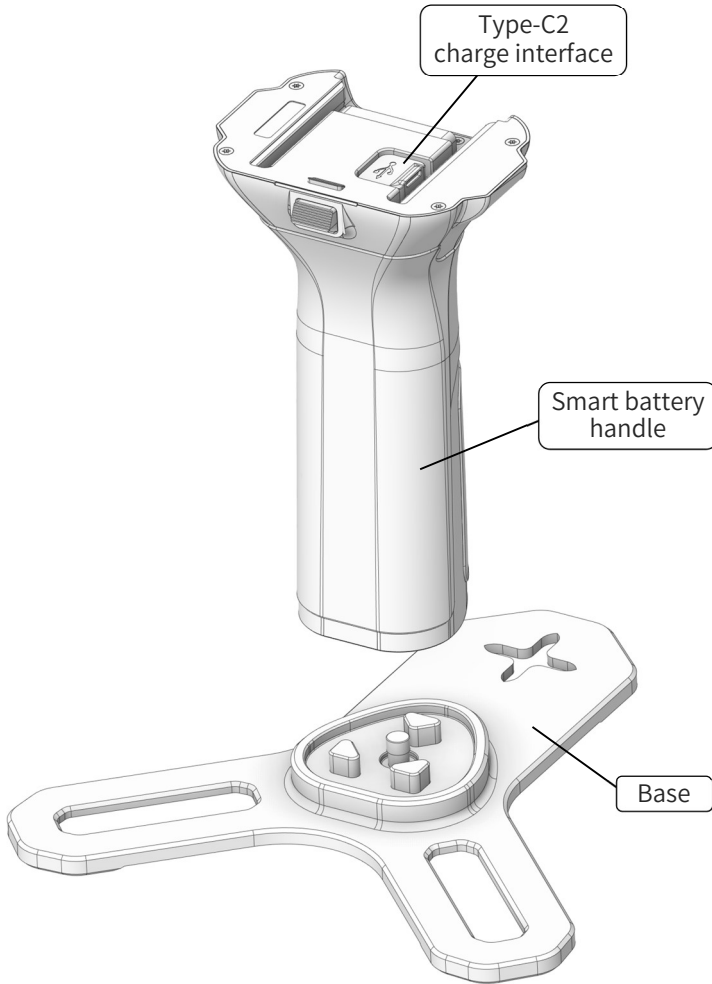
Product Overview

The SLAM1000 is a high-precision handheld 3D laser scanner. The device features a panoramic laser field of view, an integrated color camera, a built-in high-precision inertial navigation chip, and a high-performance computing unit, enabling real-time high-precision data acquisition. It also includes a MagSafe magnetic ring for convenient phone attachment. The SLAM1000 can be widely used in various scenarios, including confined space mapping, volume measurement, emergency rescue, and real-time navigation.

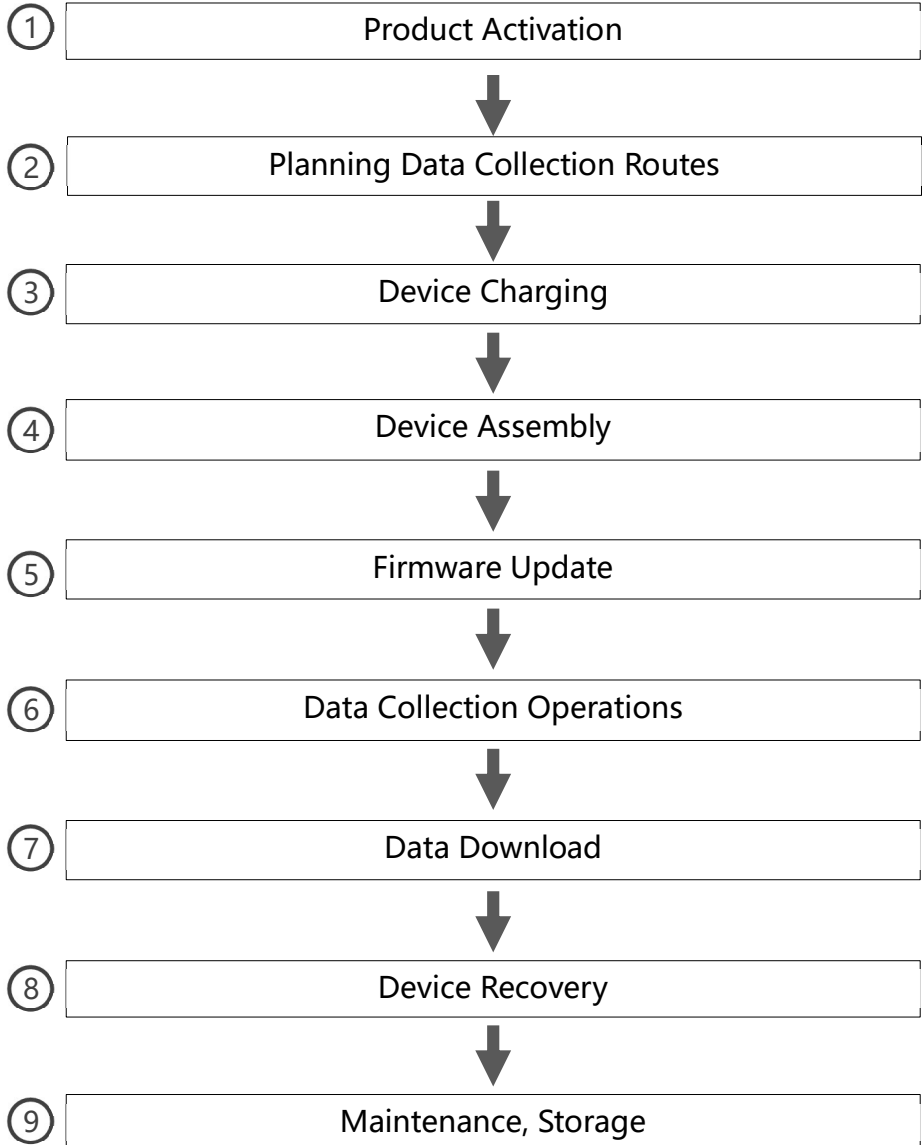
Part Introduction





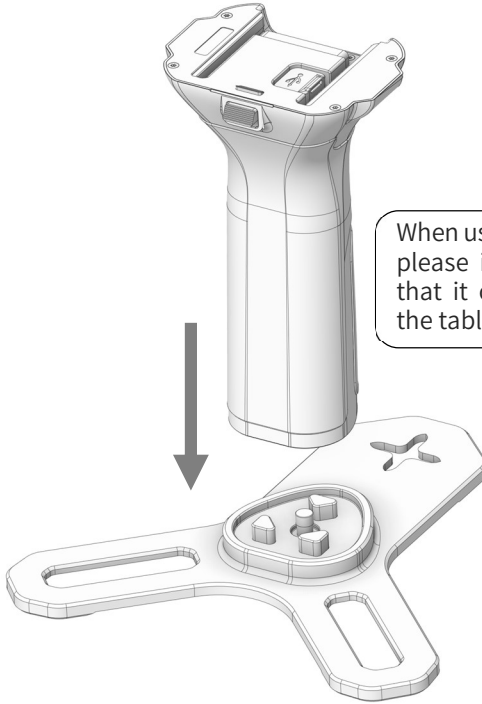


SLAM1000 Operating Process

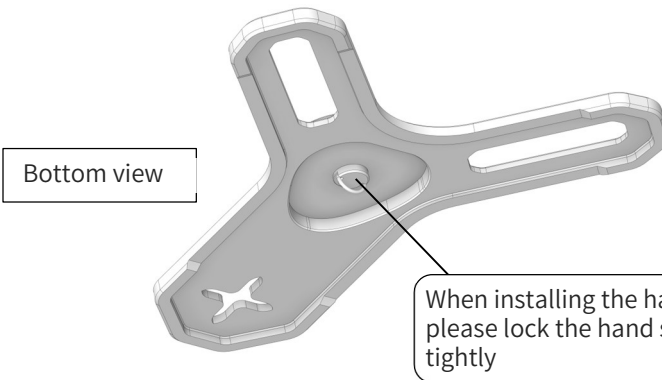


Device Assembly

1 Mounting Base



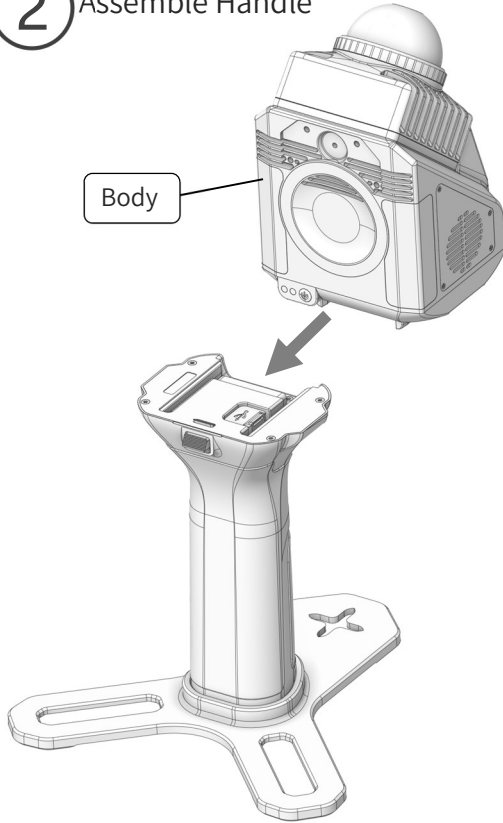
When using the device handheld, please install the base first, so that it can be safely placed on the table or floor



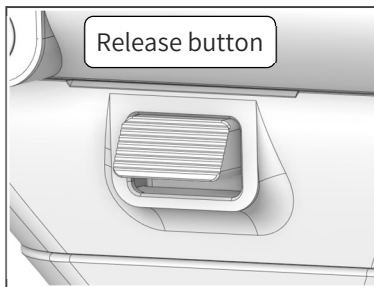
Bottom view

When installing the handle please lock the hand screw tightly

2 Assemble Handle

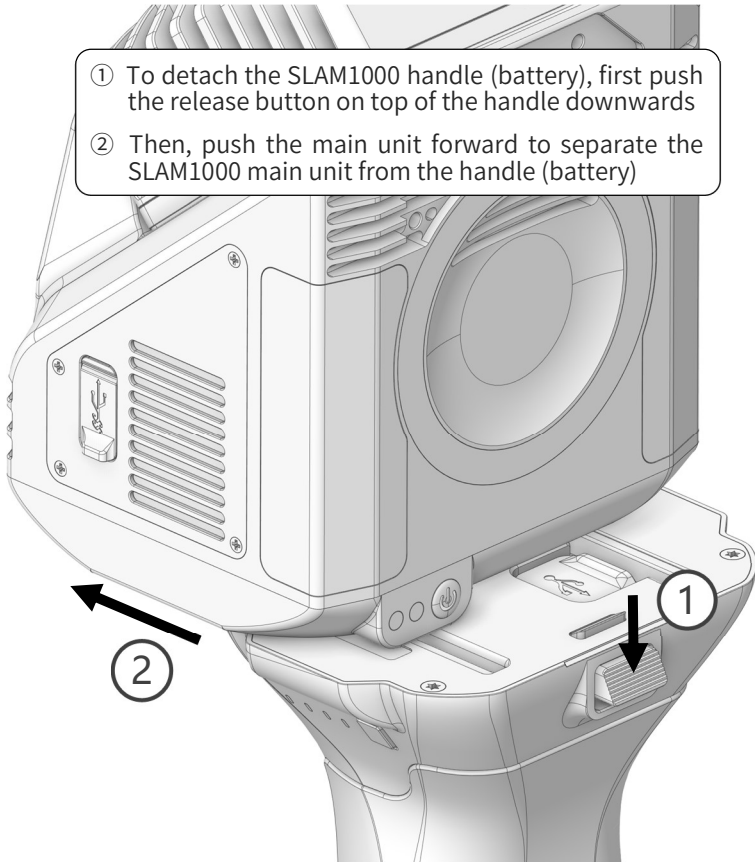


When installing the handle, first align the slide rail under the handle with the slot above the handle and then push it in, after installing it in place, you can hear the "click" sound, check that the release button at the back of the handle is fully rebound, and the joints between the body and the handle have been aligned and are solid and free of looseness

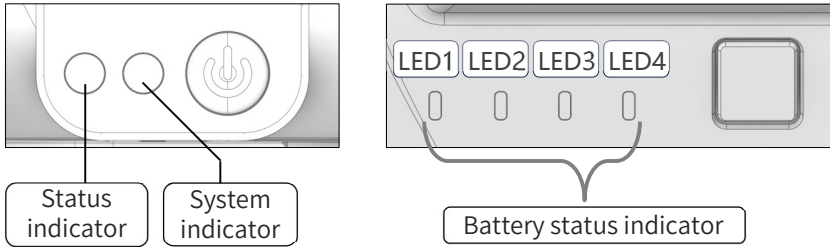


Equipment Recovery

- ① To detach the SLAM1000 handle (battery), first push the release button on top of the handle downwards
- ② Then, push the main unit forward to separate the SLAM1000 main unit from the handle (battery)



Indicator Description



LED	Display	Introduction
Status Indicator	White Light Fast Flashing	MCU Firmware Upgrading
	Red Light On	Device Initializing and Not Ready
	Green Light On	Device Ready
	Green Light Flashing	Data Collecting
	Green Light Fast Flashing	Stop Collection, Saving Data
	Blue Light Flashing to End	Power Off
System Indicator	White Light On	System Firmware Upgrade in Progress
	Red Light Flashing	System Not Ready
	Blue Light Always On	System Ready

	Status	Prompt Tone
Buzzer	Power On	Beep
	Power Off	Beep
	Low Battery	Beep Every 10 Seconds
	Ultra-low Battery	Beep Every Second
	Mark Point Information Collection	Click Information Collection Success
	Start Collection	Beep
	Stop Collection	Beep
	Start Work 1 Minute to Start Mapping	Beep
	Data Storage Complete	Beep

X40GO Battery LED Indicator Status List					
Status		LED1	LED2	LED3	LED4
Discharge Protection Status	Undervoltage	Flash(5Hz)	Slow Flash(1Hz)	Out	Out
	Discharge Low Temperature	Flash(5Hz)	Out	Slow Flash(1Hz)	Out
	Discharge Over Temperature	Flash(5Hz)	Out	Out	Slow Flash(1Hz)
	Discharge Overcurrent	Flash(5Hz)	Slow Flash(1Hz)	Slow Flash(1Hz)	Out
	Discharge Short Circuit	Flash(5Hz)	Slow Flash(1Hz)	Slow Flash(1Hz)	Slow Flash(1Hz)
Charge Protection Status	Overvoltage	Slow Flash(1Hz)	Out	Out	Flash(5Hz)
	Charging Low Temperature	Out	Slow Flash(1Hz)	Out	Flash(5Hz)
	Charging Over Temperature	Out	Out	Slow Flash(1Hz)	Flash(5Hz)
	Charging Overcurrent	Slow Flash(1Hz)	Slow Flash(1Hz)	Out	Flash(5Hz)
Power Indicator	0%~12%	Slow Flash(1Hz)	Out	Out	Out
	13%~24%	Always On	Out	Out	Out
	25%~37%	Always On	Slow Flash(1Hz)	Out	Out
	38%~49%	Always On	Always On	Out	Out
	50%~62%	Always On	Always On	Slow Flash(1Hz)	Out
	63%~74%	Always On	Always On	Always On	Out
	75%~87%	Always On	Always On	Always On	Slow Flash(1Hz)
	88%~100%	Always On	Always On	Always On	Always On

Charging Indicator	0%~24%	LED1->LED4 Streaming Lamp Display			
	25%~49%	Always On	LED2->LED4 Streaming Lamp Display		
	50%~74%	Always On	Always On	LED3->LED4 Streaming Lamp Display	
	>=75%	Always On	Always On	Always On	Slow Flash(1Hz)
	Full	Always On	Always On	Always On	Always On
Upgrade Status		Slow Flash(1Hz)	Slow Flash(1Hz)	Slow Flash(1Hz)	Slow Flash(1Hz)

Description:

The LED will light up for 6 seconds when you press the key to check the power level, the first 3 seconds will show the power level, the last 3 seconds will show the power level if the battery is normal, otherwise it will show the protection.

Battery Charging

Battery Charger



Charge the SLAM1000 battery handle, about 2 hours to full (0% to 100%)

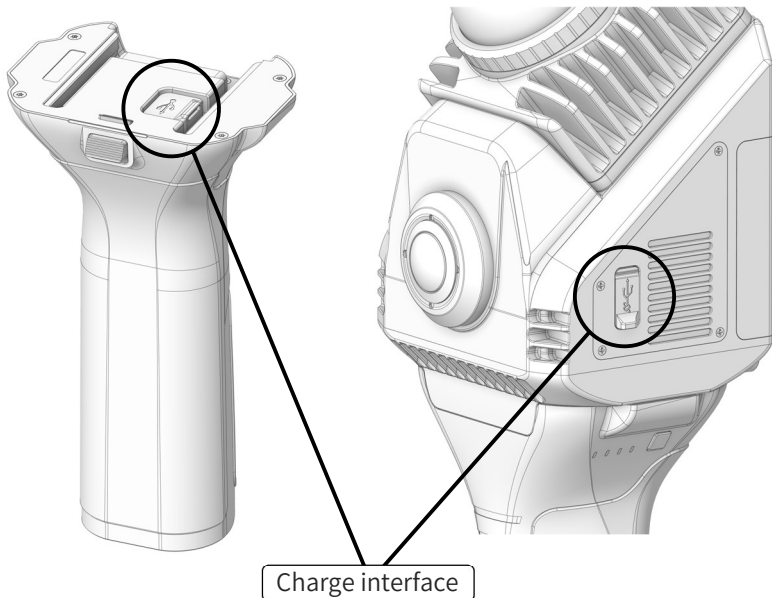
Input: AC 100 V to 240V to 50/60 Hz

Output: Support PD3.0 Protocol 20V 3A

Charging Method

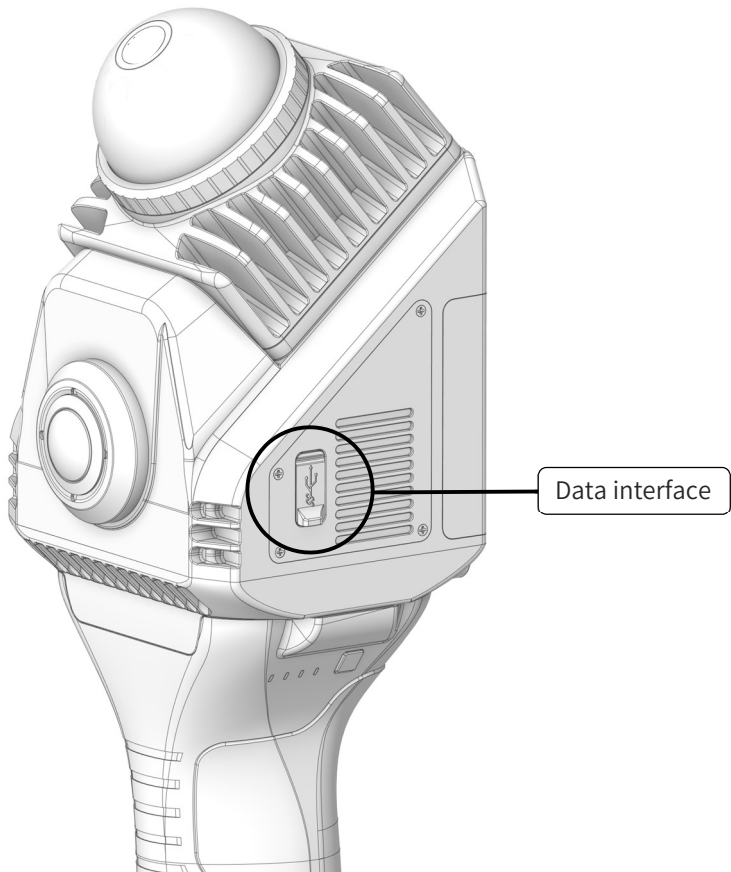
Method 1: Connect the charger to the Type-C2 port of the SLAM1000 smart battery handle for charging.

Method 2: When the smart battery handle is installed on the SLAM1000 body, connect the charger to the Type-C1 port on the body for charging.



Data Storage

- The SLAM1000 uses an internal SSD with a capacity of 512GB, and data can be transferred via a data cable connected to a PC.
- The SLAM1000 SSD interface (Type-C1) supports data reading in both powered-on and powered-off states.
- It is recommended to keep at least 5% of the SSD disk space free to avoid slow read/write speeds and insufficient capacity due to excessive data.
- When deleting data, it is recommended to use formatting (quick format is acceptable) to optimize the SSD disk's storage speed.



Device Activation

The scanner must be registered with a Feima account and activated before use. For specific software download addresses and the registration and activation process, please refer to the "SLAM GO" section in the *SLAM1000 Product Manual*.

Data Collection

Device Power-On

Press and hold the scan button for 3 seconds to power on the device. After powering on, the device will perform a self-test. Please wait...

- The system indicator light will show a **steady blue light**.
- The status indicator light will show a **steady green light**.

At this point, the device has successfully started and is in standby mode.

Notice !

- When powering on the device, please hold the scanner steadily, keeping the laser head facing upward.
- You can place the scanner on a stable, flat surface such as a desk or floor.

Start Data Collection

Before starting data collection, the scanner needs to perform a calibration. The placement requirements are: the distance from the object being measured should be greater than 0.4 meters, but not too far. The calibration phase must last at least 60 seconds before motion-based data collection begins. During calibration, do not hold the scanner in your hand; it must be placed steadily on a safe surface like the floor or a table.

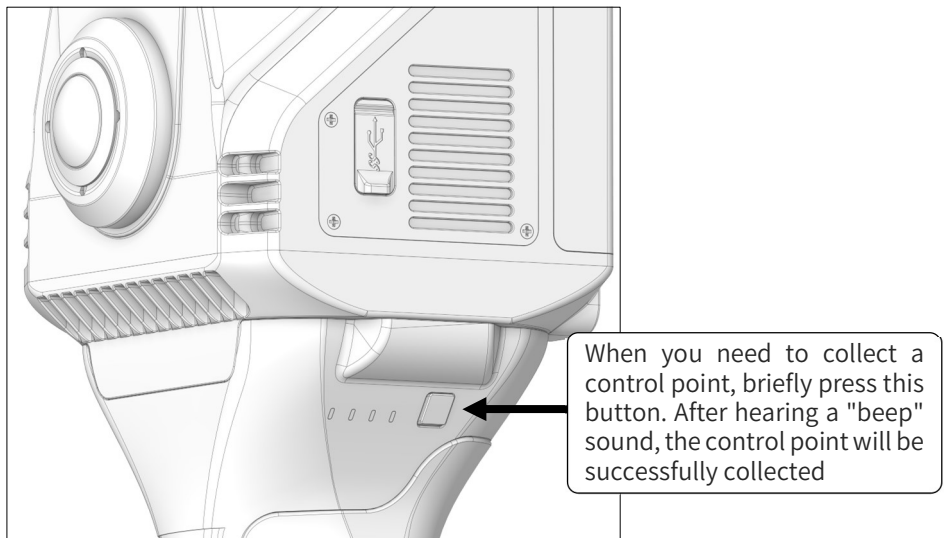
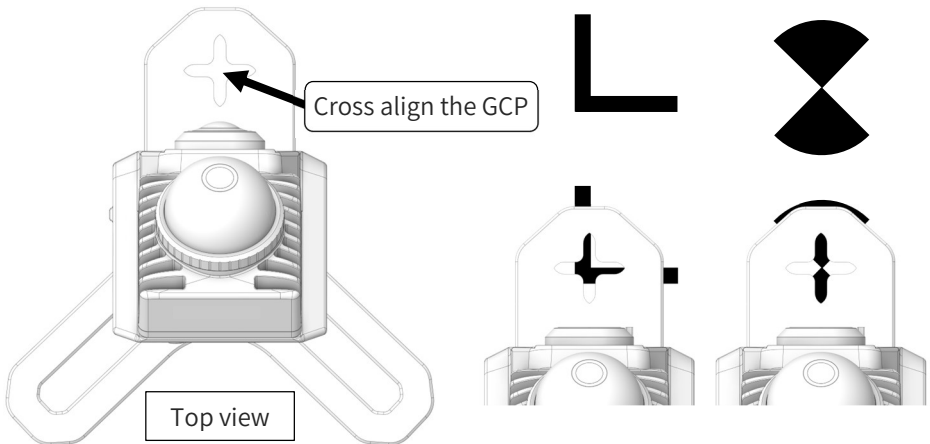
Press the scan button briefly, and the status indicator light will start flashing green rapidly. At this time, the device is performing calibration, which takes 60 seconds (the mobile app will show a countdown). After 60 seconds, the status indicator light will switch to flashing green slowly, and data collection will begin. If the scanner is placed at a slight angle but remains stationary, it still meets the calibration requirement.

Tips :

- During data collection, keep the scanner in front of your body and aligned with your walking direction. Please keep the device upright.
- After powering on and during data collection, the device may heat up, and the sound of the cooling fan may be heard. This is a normal phenomenon.

Control Point Collection

When collecting control points (GCPs), first align the cross center on the device base with the control point. Then, briefly press the control point collection button. After hearing a “beep” sound, the control point will be successfully collected. There is no need to wait during control point collection; once the current point information is collected, you can continue with the subsequent data collection.



Stop Data Collection

Press the scan button briefly to stop data collection. The status indicator light will return to steady green, indicating the device is in standby mode.

Power Off the Device

Press and hold the scan button to power off the device. Wait until both the system indicator and status indicator lights are completely off, at which point the device will be powered off.

Notice !

- Please do not remove the smart battery handle before both the system and status indicator lights are completely off.

Data Check

After data collection is completed, you can turn off the scanner and connect the SLAM1000 to a PC using a data cable. Locate the folder named “SN_XXXX” and copy it to a backup directory. After each data collection session, the system will automatically generate this folder. The numerical suffix at the end of the folder name helps identify the order in which the data was collected.

Troubleshooting

If there are any issues with the collected data, please compress and submit the folder named “LOG” from the scanner’s storage card to your dealer for analysis.

FCC Warning

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.

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

Note: 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.

Operation of this device in the band 5150-5250MHz is restricted to indoor use only.

Specific Absorption Rate (SAR) information:

This product meets the government's requirements for exposure to radio waves. The guidelines are based on standards that were developed by independent scientific organizations through periodic and thorough evaluation of scientific studies. The standards include a substantial safety

margin designed to assure the safety of all persons regardless of age or health.

FCC RF Exposure Information and Statement

The SAR limit of USA (FCC) is 1.6 W/kg averaged over one gram of tissue. Model: SLAM1000 (FCC ID: 2A7JA-SLAM1000) has also been tested against this SAR limit. This device was tested for typical body-worn operations 0mm from the body. To maintain compliance with FCC RF exposure requirements, use accessories that maintain a 0mm separation distance between the user's body.

Body-worn Operation

This device was tested for typical body-worn operations. To comply with RF exposure requirements, a minimum separation distance of 0mm must be maintained between the user's body , including the antenna. Third-party belt-clips, holsters, and similar accessories used by this device should not contain any metallic components. Body-worn accessories that do not meet these requirements may not comply with RF exposure requirements and should be avoided. Use only the supplied or an approved antenna.



For more detailed product information, please visit the following website:

<http://knowledge.cheesi.cn/>

If you have any questions or suggestions regarding the manual, please feel free to contact us via email at:

aftersales@feimarobotics.com.

www.feimarobotics.com