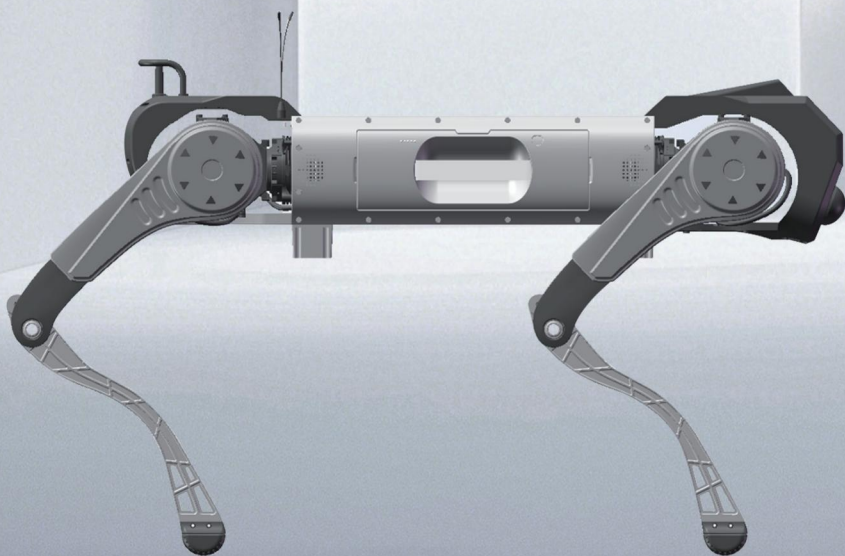


智元 D1 MaxPro

产 品 说 明 书



智元四足机器人售后服务指南

AGIBOT Quadruped Robot After-Sales Service Guide

报修方式/Methods for Reporting Repairs

我们提供7x12小时（国家法定节假日除外）服务,并承诺在收到请求后30分钟内首次响应,您可通过以下任一渠道联系我们:

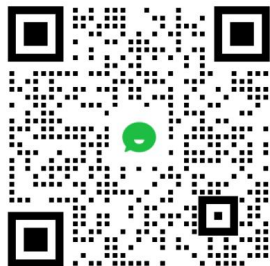
- 服务热线: 400-186-0818
- 微信公众号: 智元AGIBOT → 点击“在线咨询” → 选择“售后咨询”
- 服务邮箱: AfterSalesService@agibot.com

We provide 7x12-hour service (excluding national statutory holidays) and guarantee an initial response within 30 minutes of receiving your request. You may contact us through any of the following channels:

- Service Hotline: 400-186-0818
- WeChat Official Account: Zhiyuan AGIBOT → Click “Online Consultation” → Select “After-Sales Support” Service
- Email: AfterSalesService@agibot.com

企业微信售后

Wechat After-sales Support



智元创新(上海)科技股份有限公司
咨询热线: 400-186-0818
官网: zhiyuan-robot.com

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法律声明

在使用本产品前，请用户务必仔细阅读本产品使用说明书，并严格按照本手册内容操作本产品。本产品严禁载人，任何情况下请勿乘坐或搭载人员。任何违反本手册内容使用而导致的财产损失或人身伤害，本公司概不负责。本产品由多个零部件构成，请确保儿童无法接触本产品，以避免意外发生。本产品仅限 18 周岁以上人士使用。为延长产品使用寿命，请勿在高温、高压环境中使用。本手册尽可能包含本产品的功能介绍和使用说明，但由于功能不断完善和设计变更等原因，实物与手册内容可能存在偏差。如实物与本手册在颜色、外观等方面有出入，请以实物为准。

产品概述

D1 MaxPro（产品型号ZYCXD150M）是一款行业应用级四足机器人底盘，每条腿上有 3 个电机，共有 12 个自由度，具备行走、小跑、爬楼梯，跨壕沟等运动能力。本产品的主要特点是负载能力强，续航长，复杂地形的适应能力强。

A 负重能力：

主打大负重特性，平地长时负重可达 50 公斤，（爬楼梯、废墟场景、爬楼梯等非典型场景除外）站立负重更是高达 100 公斤，负重能力相较于前代提升 2.5 倍，能够满足诸如物资运输、工业搬运等重载需求场景。

B 自主巡逻与环境感知：

可依赖激光雷达实现自主巡逻功能，同时集成了激光雷达、头部摄像头、IMU 以及 GPS 等丰富传感器，能够在复杂环境下进行全方位的环境感知，构建地图并规划路径，适应如公安巡逻、水务巡检、石油巡检等不同场景的应用。

C 运动性能：

具备出色的运动灵活性，能灵活上下 45° 的楼梯，稳健攀爬镂空工业楼梯，越障能力突出，可跨越单台阶 30cm 的障碍。摔倒恢复机制成熟，摔倒爬起时间小于 20 秒，能在复杂地形或意外状况下快速恢复作业状态。其空载速度达到 2.5m/s（高速版 3.5m/s），可快速响应突发任务需求，深入复杂场景与作业盲区。

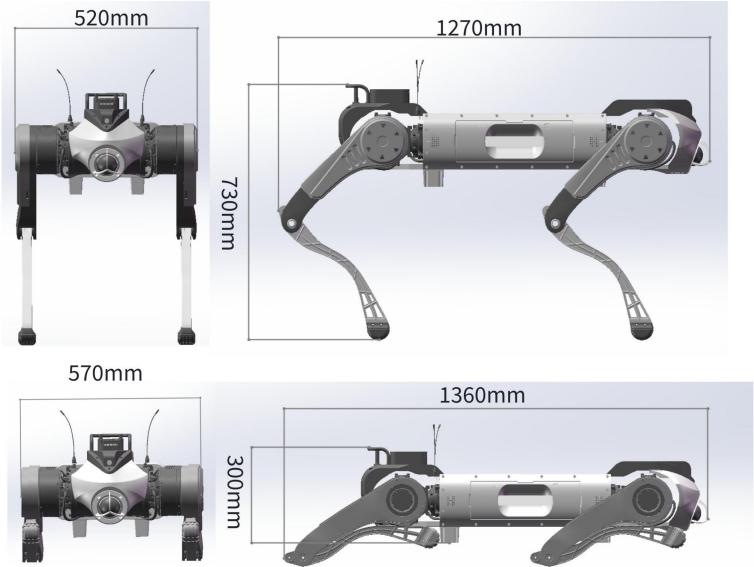
D 环境适应性：

拥有 IP67 工业级防护，能在 -20°C 至 55°C 的宽泛温度区间以及涉水深度 30cm 的环境下正常作业，不惧极寒酷暑、风雨天气，保证在多种恶劣自然条件下稳定运行。

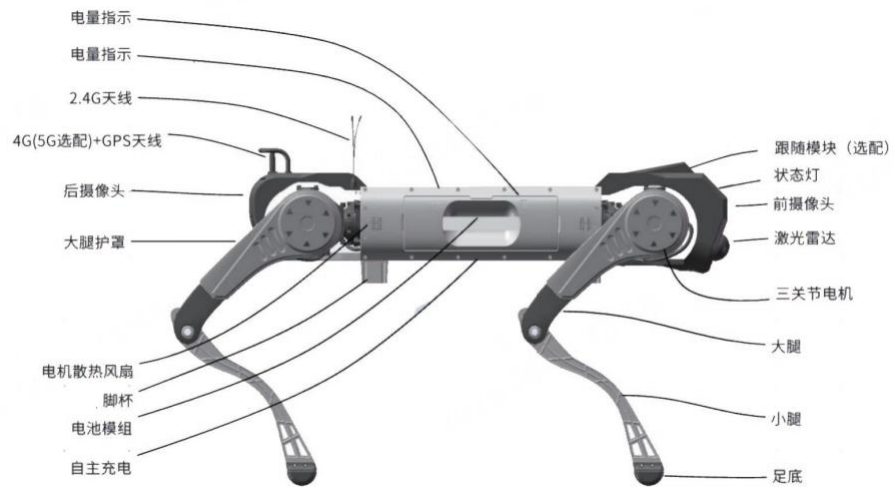
E 续航保障：

电池电量为 2123Wh，负载续航时间提升 28%，且电池支持现场快速拆换，为特殊任务以及行业应用中的紧急情况提供有力续航保障，减少停机时间，提升工作效率。

产品尺寸



产品详情



产品参数

分类	规格	说明
基础信息	材质信息	铝合金+高强度工程塑料
	站立尺寸（长 × 宽 × 高）	1270mm×520mm×730mm
	趴地尺寸（长 × 宽 × 高）	1360mm×570mm×300mm
	整机重量（含电池）	68±1kg
	自由度	整机自由度12，单腿自由度3
	工作温度	-20℃ ~55℃
	防护等级	IP67
	算力模组	117TOPS算力GPU、ARM CPU
	电池	电池电量2160Wh，额定容量45±1Ah，电压48V±2V
	充电时长	约4.5h（电量10%-90%）
	续航时间 ^{（1）}	空载5.5h，负载50kg情况下为2h
	续航里程	空载21±1km，满载11±1km
性能参数	持续行走速度	0-1.2m/s
	最大速度 ^{（2）}	3m/s
	额定负载	50kg
	连续攀爬楼梯高度	30cm
	最大爬坡角度	45°
整机关节参数	最大关节扭矩	最大扭矩300N·m，软件限制180N·m
	关节运动空间（机身）	-45° ~45°
	关节运动空间（大腿）	-200° ~20°
	关节运动空间（小腿）	30° ~160°

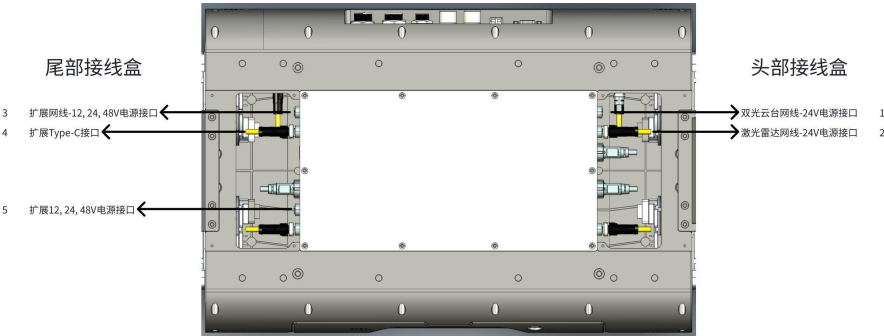
产品参数

分类	规格	说明
传感单元	激光雷达	前置一个96线激光雷达，覆盖角度360° * 90°，覆盖直径范围 120m，精度1.5cm
	广角相机	前后各一个广角相机，工业级200万像素，视场角：DFOV150°，HFOV130°，VFOV73°，帧率30fps
	IMU	数量1个，车规级
功能列表	标准动作	站立、趴下、阻尼、卸力；上下楼梯、越障
	实时图像传输	支持
	二次开发	目前SDK支持基于TCP和ROS两种通信方式，提供X86及ARM架构的SDK包
	通讯功能	支持WIFI6.0，WiFi频段2.4GHz，WiFi发射功率72dBm。蓝牙5.2，4G模块可选
	功能拓展接口	通讯接口为千兆网口*3、USB3.0*2、百兆网口*1、串口。供电接口12V、24V、48V，最大输出功率720w。充电接口支持电池直插充电
配件	适配器	标配
	电池充电转接头	标配
	遥控器	带屏遥控器，带手动急停模式，最大遥控距离500m
	自主充电桩	选配

注释说明

- (1) 由于测试方法不同以及工作环境不同，空载实际续航时间为5.5h±0.5h；
- (2) 该数据为实验室环境下极限测试得到，处于安全考虑已进行软件限制，实际产品限速至2m/s；
- (3) 以上参数为实验室测试数据，实际表现可能因使用环境、操作方式等因素有所差异，请以实际为准；
- (4) 功能拓展接口使用说明，详见拓展说明手册；
- (5) 详细的保修条款，详见产品保修手册；

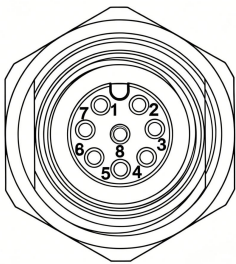
背部接口布局定义



备注：背部接口主要有两个模块，头部通讯接线盒和尾部电源接线盒

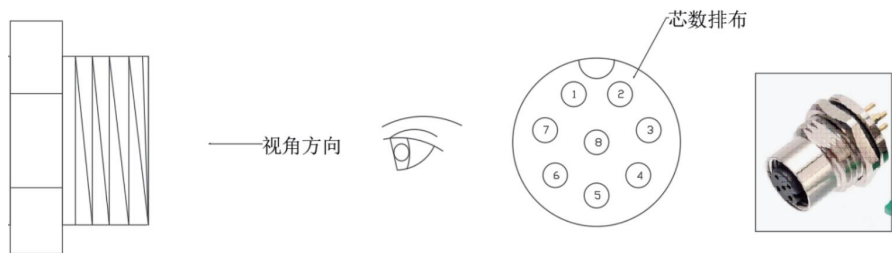
序号	接口	接口型号	对插型号	数量	功能
1	双光云台接口	M12A-8P母头	M12A-8P公头	1	接头部双光云台通讯12V，24V/1.5A 电源
2	激光雷达接口	M12A-8P母头	M12A-8P公头	1	接上装激光雷达通讯24V/2A 电源
3	扩展网络接口	M12A-17P母头	M12A-17P公头	1	接扩展网线，12V；24V；48V/1.5A 电源
4	扩展 Type-C 接口	Type-C 防水插座	USB Type-C	1	扩展 USB 3.1 10Gbps 接口
5	12V；24V；48V/15A电源接口	M12K 母头	M12K 公头	1	给上装设备电源 12V；24V；48V/15A输出

头部接线盒 M12A-8P 母头航插双光云台接口定义



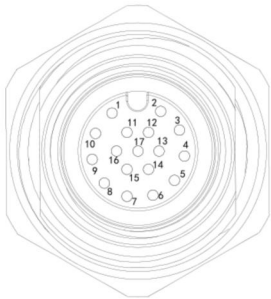
M12A 母头序号	定义	网线水晶头序号	电流	功能
1	24V 正		2A	24V 电源正极
2	RX+	1		数据接收正端
3	RX-	2		数据接收负端
4	TX+	3		数据发送正端
5	TX-	6		数据发送负端
6	空			
7	空			
8	24V 负			24V 电源负极

头部接线盒 M12A-8P 母头航插激光雷达接口定义



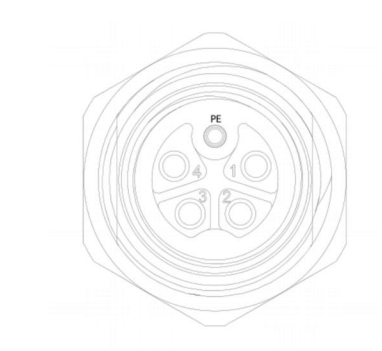
M12A 母头序号	定义	网线水晶头序号	电流	功能
1	24V 正		2A	24V 电源正极
2	RX+	1		数据接收正端
3	RX-	2		数据接收负端
4	TX+	3		数据发送正端
5	TX-	6		数据发送负端
6	空			
7	空			
8	24V 负			24V 电源负极

尾部接线盒 M12A-17P 母头航插接口定义



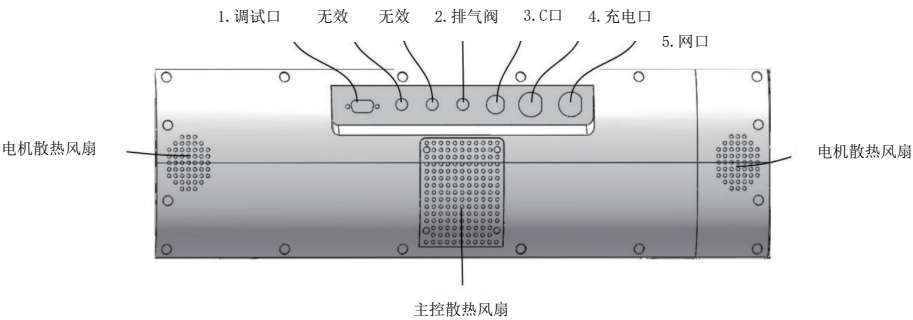
M12A 母头序号	定义	网线水晶头序号	电流	功能
1	48V 正		1.5A	48V 电源正极
2	RX+	1		数据接收正端
3	RX-	2		数据接收负端
4	TX+	3		数据发送正端
5	TX-	6		数据发送负端
6	12V 正			12V 电源正极
7	12V 负			12V 电源负极
8	12V 正			12V 电源正极
9	12V 负			12V 电源负极
10	24V 正			24V 电源正极
11	24V 负			24V 电源负极
12	24V 正			24V 电源正极
13	24V 负			24V 电源负极
14	48V 正			48V 电源正极
15	48V 负			48V 电源负极
16	48V 正			48V 电源正极
17	48V 负			48V 电源负极

尾部电源 M12K 接口定义



M12A 母头序号	定义	电流	功能
1	48V 正	10A	48V 电源正极
2	48V 负		48V 电源负极
3	24V 正		24V 电源正极
4	12/24V 负		24V 电源负极
PE	12V 正		12V 电源正极

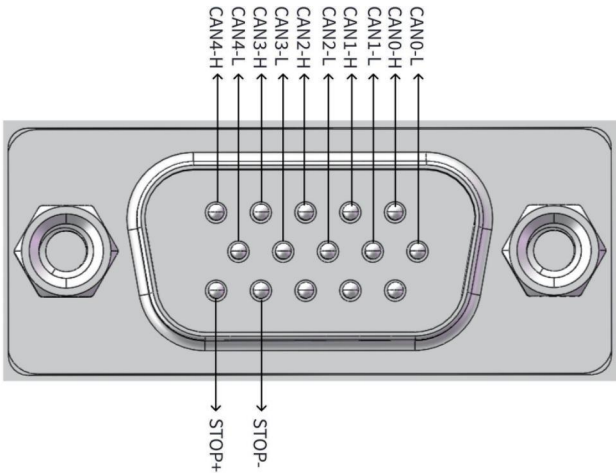
左侧接口布局定义



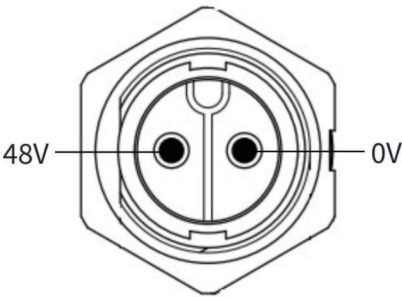
序号	器件名称	型号	数量	功能
1	调试接口	DB15 母头	1	电机 CAN 诊断，电池 CAN 诊断，调试急停
2	气压平衡阀	M12	1	平衡内外气压
3	Type-C 接口	E10T-FT3-PWF/MT3-NWA-xxFPC	1	Type-C 接口和主控板通讯
4	充电口	E13T-P2B-PPF-01		48V 充电口
5	网口	E13T-FR5-PRF-180		百兆网口/调试网口

注：若需要Wi-Fi升级软件程序请前往<https://www.agibot.com.cn/智元官网的开源文档中的D1 MaxPro资料下载>。

调试口接口定义

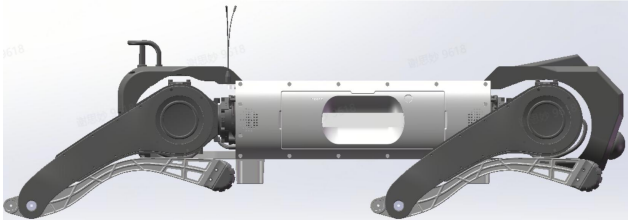


充电口接口定义



开箱

请注意，头部激光雷达护罩与尾部天线护罩严禁承受外力！
先将机器狗四肢展开，手持其小腿部位，平稳将机器狗从包装箱中取出。机器狗四肢展开，将机器狗放置到平地，小腿尽量靠近机身，参考下图。

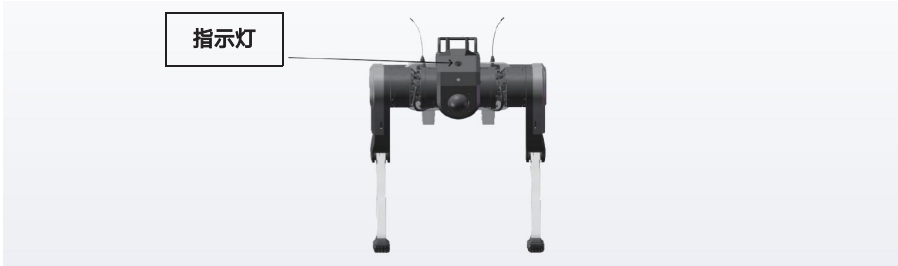


开机

长按电池开关，如下图，过程中 LED 灯会从右往左亮灯（从红灯亮起直到绿灯亮完），直至所有 LED 灯都亮了就可以把手松开，这样电池就已经激活放电功能，电池给主控板供电后就自动开机。



等待 55s 后，指示灯会亮绿灯，表示机器狗在可以控制状态。新机首次 SSH 登录需要强制修改密码，未改密无线 SSH 不可用。



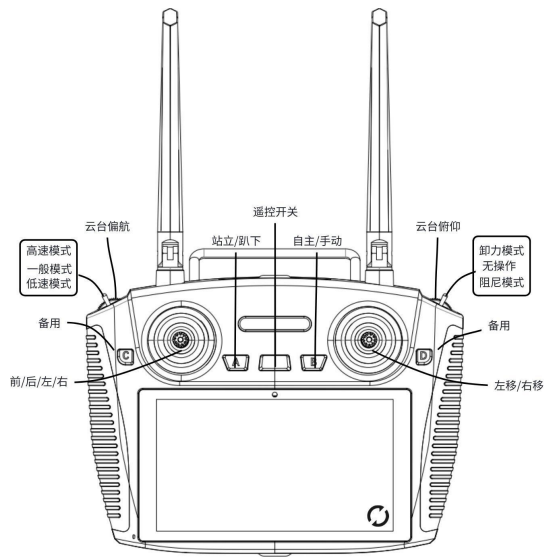
关机

机器狗需要确保处于趴下姿态，然后长按启动按钮，过程中 LED 灯会从左往右灭灯（从绿灯灭起直到红灯灭完）电池上的所有 LED 灯都灭完了后，进入关机状态。如果要重新启动，机器狗需要按照准备工作和开机启动操作一遍。



手柄布局和操作

备注：遥控器充电状态下无法操作机器狗！！



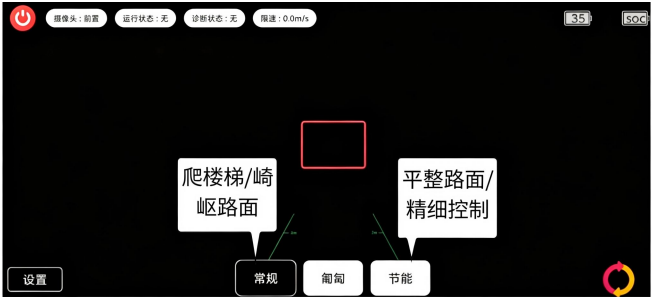
注：云台偏航以及俯仰功能需加配云台上装使用。

动作状态	型号	功能
站立	A 键	开机第一次站立需要连续按键 2 次，后续待机情况下连续按键 1 次可实现站立
趴下	A 键	需要在站立状态，按键 1 次可实现趴下
阻尼	右侧拨杆 拨到右侧	无论什么状态下，拨杆拨到对应状态，可进入阻尼模式
卸力	右侧拨杆 拨到左侧	先切换到阻尼模式，拨杆再拨到对应位置，可进入卸力模式

控制模式	操控方式	操控需求
低速模式	左侧拨杆拨到左侧	控制模式需要在低速模式 动作状态需要在站立静止状态
中速模式	左侧拨杆在中间	控制模式需要在中速模式 动作状态需要在站立静止状态
高速模式	左侧拨杆拨到右侧	控制模式需要在高速模式 动作状态需要在站立静止状态

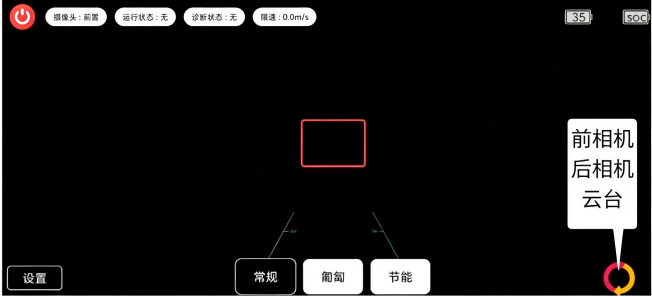
特殊功能	操控方式	操控需求
常规模式（上下楼梯，越障使用 常规模式）	屏幕上的触摸按键	控制模式需要在一般模式 动作状态需要在站立静止状态
姿态调整（内部工程使用）	屏幕上的触摸按键	控制模式需要在一般模式或高速 模式 动作状态需要在站立静止状态

姿态调整、节能、常规模式：点击屏幕，高亮显示为选中状态



屏幕显示前、后图像切换操作

在前摄像头显示画面中，点击屏幕循环按键，切换为后摄像头显示图片



系统密码管理

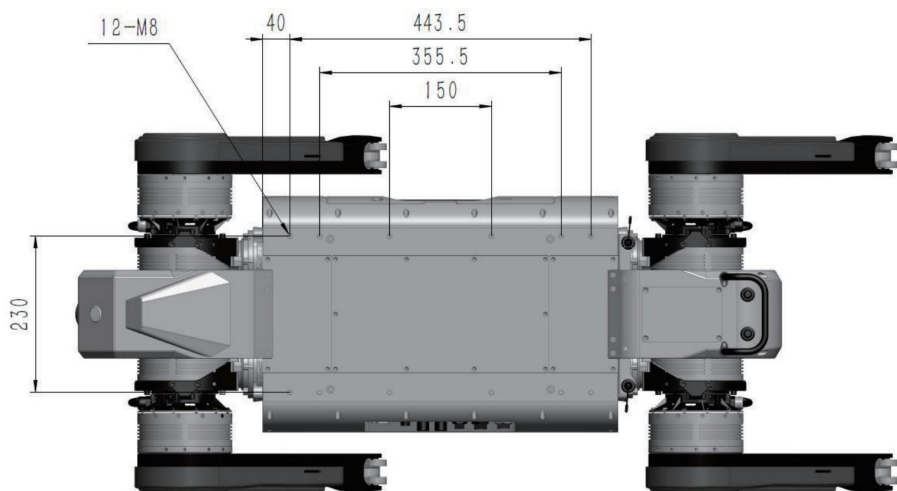
1. 本体系统密码：机器首次SSH登录用默认密码User12345!登录,强制修改密码,不能跳过;未修改新密码,SSH无法使用；密码规则:12-16位,需包含大小写字母、数字、特殊符号。
2. 遥控器锁屏密码:首次使用提示设置密码，若选择跳过后续可以进入【设置-安全】修改,仅支持6位数字,连续输错会触发锁定。

指示灯状态

序号	指示灯	灯语
1	常亮绿灯	可控制状态
2	常亮蓝灯	电池 SOC 小于 20%或者电机高温和预警/异常
3	常亮红灯	电池 SOC 小于 5%或者电机故障
4	不亮灯	线路出问题

机器狗具备自适应负载功能，加装负载范围为 0 ~ 50kg；具体操作：加装负载需要让机器狗处于趴下的状态，把负载加装上去，固定稳固后，让机器狗在站立状态下，它会自动识别负载重量，等待 3s 后负载重量识别完成，可以进行其他操作。

机器狗机身上有相应的螺丝孔，用户可以根据螺丝孔自己制作工装，用来固定上装设备。



如果在操作过程中出现关节甩打的情况，请立即按阻尼模式（拨杆 F 向右拨），阻尼模式能减轻关节因为摔倒导致的伤害。

电源适配器介绍

输入参数	AC 100-240V
输出参数	DC 54.6V
充电电流	10A

充电器上有两个 LED 提示灯（LED1，LED2），当充电器接上电源插头后，LED1 亮红灯；接上充电口后，LED2 亮红灯，充满或者没有充上 LED2 亮绿灯，充电器灯状态如下表：

序号	状态	描述
1	正常充电	散热风扇启动，LED1 亮红灯，LED2 亮红灯
2	充电完成或者因某些因素充不上电	散热风扇关闭，LED1 亮红灯，LED2 亮绿灯



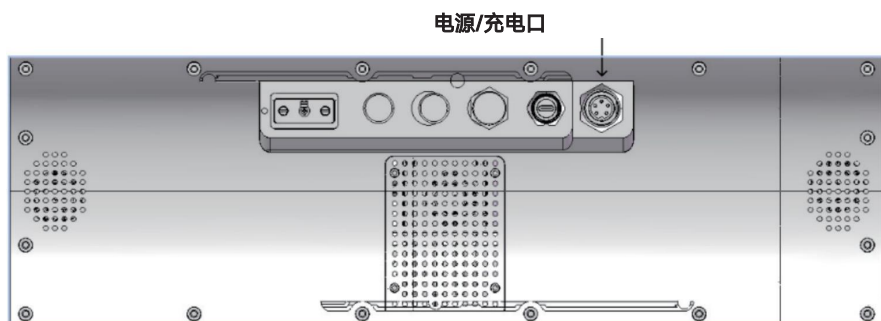
充电中



充电完成

充电

机器狗的充电方式为直插充电，使用的是三元锂电池。使用配送的充电器，一头为三孔插接头（电源插头），另一端为两孔插头（与机器狗机身的充电口对接），充电口位于机身左侧，如下图，充电器插上充电口后电器设备会自动启动，这是正常现象，遥控手柄不能控制机器狗。



查看电量

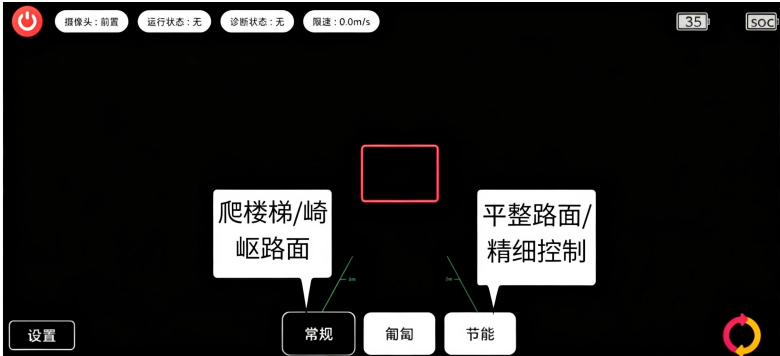
手动按一下电池启动键，LED 灯就会显示电量，共有 5 个 LED 灯，每个灯代表 20%电量。



充电注意事项

- 确保机器狗处于关机状态
- 先接电池充电口端，再接电源插头。

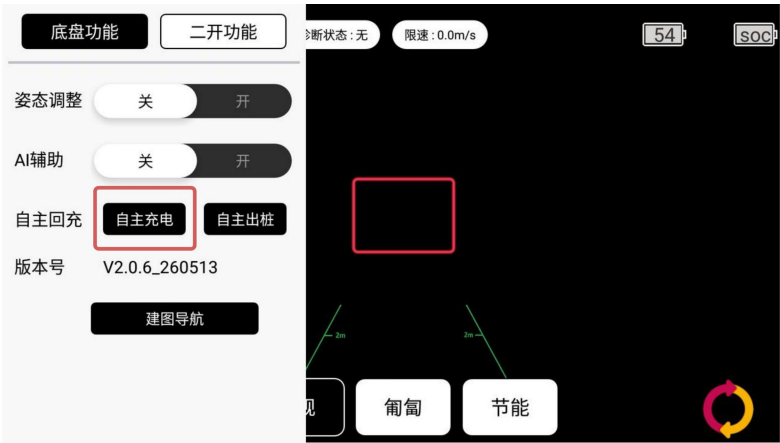
地形模式切换



场景	注意事项
增加负载	机器狗本身带质量估计功能，往机器狗上加负载时，建议让机器狗处于趴下的状态下加负载。
斜坡地形	坡度不超过 45°。上斜坡与下斜坡使用常规模式
草地，沙地地形	建议使用 常规模式 ，特殊地形路面需要慢慢行走。
楼梯地形	楼梯台阶每一节高度不超过 30cm，整个台阶地形的角度不超过 45°；使用机器狗上下楼梯或者台阶时，使用 常规模式 ；爬完楼梯或者台阶之后进入平地地形，使用 节能模式 适用于平地走。

需选配充电桩，当机器人尾部朝向充电桩且与充电桩距离为 0.5 ~ 1 米时，操作步骤如下：

A. 点击屏幕上的自主回充按键，该按键将以高亮状态显示选中；



B. 按下手柄的 B 键，启动自主回充功能；



C. 机器人开始自主回充。

充电完成后，操作步骤如下：

a. 点击屏幕上的自主出桩按键，该按键将以高亮状态显示选中；



b. 按下手柄的 B 键，关闭自主回充功能；



c. 机器人解除自主回充功能；

d. 此时可对机器人进行正常遥控操作。

- 现阶段 SDK 已实现的功能如下：
- 基础动作：站立、趴下
- 运动控制：前后左右移动、向上向下转向（固定）、停止运动、将速度指令置零、持续移动、前后移动指定距离、左右移动指定距离、结束移动动作
- 特殊模式：0 力矩模式、阻尼模式、参数调整模式
- 状态获取：机器运动状态、速度、倾斜角度、本体高度、左右移动距离、前后移动距离、机器狗状态、机器狗 x、y、z 轴速度及角速度、SDK 版本号
- 参数设置：本体高度、速度

“
成为智能机器人
全球领军企业
开创通用机器人生态

To Become a Global Leader
in Intelligent Robots
and Create a General Purpose
Robot Ecosystem

”



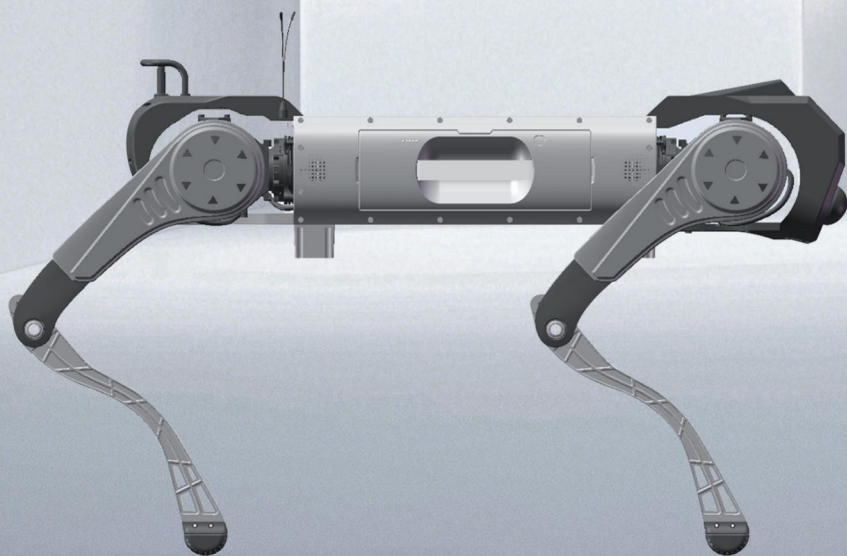
— 微信公众号 —



— 官方网站 —

AGIBOT D1 MaxPro

User Manual



1. Product Introduction

- 01 Product Overview
- 02 Product Dimensions
- 03 Product Details
- 04 Product Parameters
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- 04 System Password Management

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6. Emergency Operation

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9. Auto Recharging

**10. Secondary Development SDK
Implemented Functions**

Legal Statement

Before using this product, users must carefully read this product manual and strictly follow the instructions contained herein. This product is strictly prohibited from carrying people. Under no circumstances should it be ridden or used to transport personnel. The company assumes no responsibility for any property damage or personal injury resulting from failure to comply with the instructions in this manual. This product consists of multiple components. Ensure that children cannot access the product to avoid accidents. This product is to be used only by persons aged 18 years or older. To extend the service life of the product, do not use it in high-temperature or high-pressure environments. This manual contains product functions and usage instructions to the greatest extent possible. However, due to ongoing functional enhancements and design changes, there may be discrepancies between the actual product and the manual. In the event of any differences in color, appearance, or other aspects between the actual product and the manual, the actual product shall prevail.

Product Overview

The AgiBot D1 MaxPro (Product model ZYCXD150M) is an industrial-grade quadruped robotic chassis. Each leg is equipped with three motors, totaling 12 degrees of freedom, enabling locomotion such as walking, trotting, stair climbing, and trench crossing. The main features of this product include high payload capacity, long endurance, and strong adaptability to complex terrains.

A. Payload Capacity:

Designed for heavy-load applications, supporting a continuous flat-terrain load of up to 50 kg (excluding atypical scenarios such as stair climbing, rubble environments, and steep ladders), and a standing load of up to 100 kg. Compared with the previous generation, the payload capability has been increased by 2.5 times, meeting the demands of heavy-duty scenarios such as material transport and industrial handling.

B. Autonomous Patrol and Environmental Perception:

The robot can perform autonomous patrol functions using LiDAR. It also integrates a rich set of sensors including LiDAR, a head-mounted camera, IMU, and GPS, enabling comprehensive environmental perception in complex environments, enabling map construction and path planning. The system is adaptable to various applications such as public security patrols, water utility inspection, and petroleum pipeline inspection.

C. Motion Performance:

The robot offers outstanding mobility. It can smoothly ascend and descend 45° staircases, stably climb open-frame industrial stairs, and overcome obstacles up to 30 cm high. The self-righting mechanism is highly reliable, allowing the robot to recover from a fall within 20 seconds, ensuring quick resumption of operations under complex terrain or unexpected conditions. With a no-load speed of 2.5 m/s (3.5 m/s for the high-speed version), it can rapidly respond to emergent tasks, operating efficiently in complex or restricted environments.

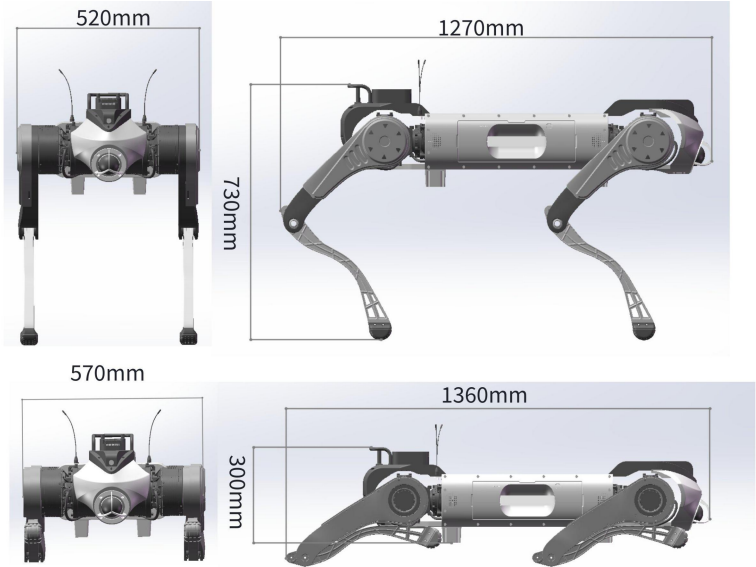
D. Environmental Adaptability:

With an IP67 industrial-grade protection rating, the robot functions reliably in ambient temperatures ranging from -20°C to 55°C and can operate in water up to 30 cm deep. It is designed to withstand extreme cold, heat, rain, and other harsh conditions, ensuring stable performance in diverse and demanding environments.

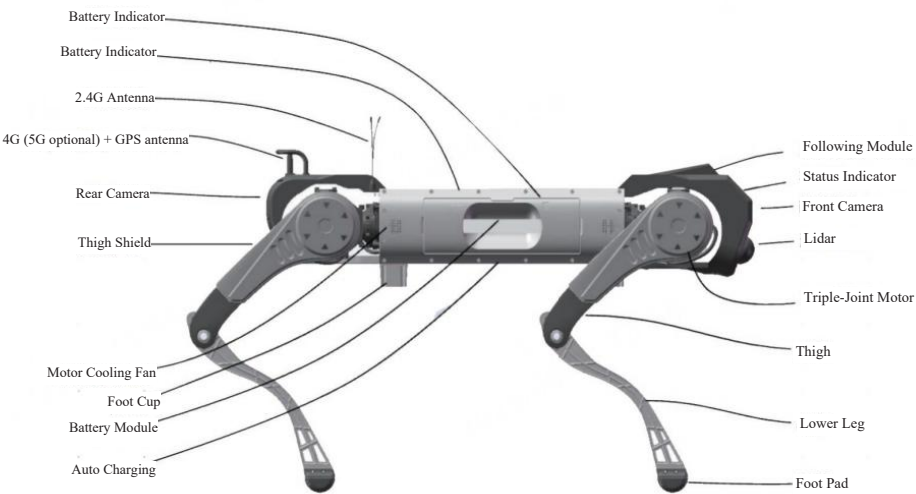
E. Endurance Assurance:

The 2123 Wh battery pack provides 28% longer endurance under load, and supports rapid field replacement, ensuring uninterrupted power supply for special missions and critical industry applications. This design significantly reduces downtime and improves operational efficiency.

Product Dimensions



Product Details



Product Parameters

Category	Specification	Description
Basic Information	Material	Aluminum alloy with high-strength engineering plastic
	Standing Dimensions (L × W × H)	1270mm × 520mm × 730mm
	Prone Dimensions (L × W × H)	1360mm × 570mm × 300mm
	Total Weight (with battery)	68 ± 1kg
	Degree of Freedom	Entire machine: 12, Each leg: 3
	Operating Temperature	-20° C ~55° C
	Ingress Protection Rating	IP67
	Computing Modules	117 TOPS GPU, ARM CPU
	Battery	Battery capacity: 2160Wh, rated capacity: 45±1Ah, voltage: 48V ± 2V
	Charging Duration	about 4.5h (Battery level: 10%~90%)
	Battery Life ⁽¹⁾	5.5h at no-load, 2h loaded with 50kg
	Operating Range	21 ± 1km at no load, 11 ± 1km at full load
Performance Parameters	Continuous walking speed	0-1.2m/s
	Maximum Speed ⁽²⁾	3m/s
	Rated Payload	50kg
	Continuous Stair-Climbing Height	30cm
	Maximum Climbing Angle	45°
Overall Joint Parameters	Maximum Joint Torque	Maximum torque: 300 N·m; software- limited torque: 180 N·m
	Joint Range of Motion (Body)	-45° ~45°
	Joint Range of Motion (Thigh)	-200° ~20°
	Joint Range of Motion (Calf)	30° ~160°

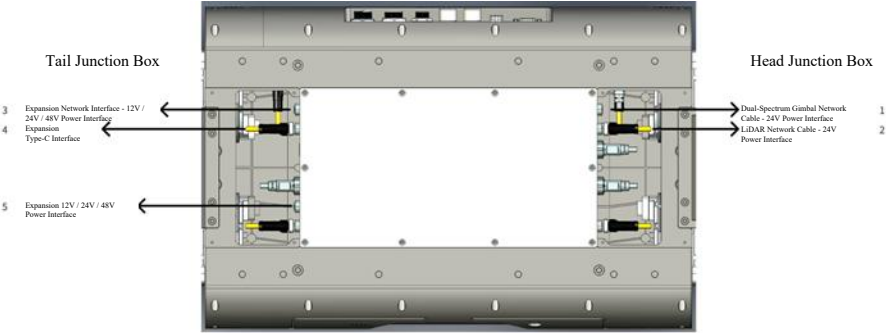
Product Parameters

Category	Specification	Description
Sensors	Lidar	One front-mounted 96-line LiDAR with a 360° × 90° coverage angle, 120m detection range, and 1.5cm accuracy
	Wide-Angle Camera	One industrial-grade 2MP wide-angle camera at the front and one at the rear; field of view: DFOV 150° , HFOV 130° , VFOV 73° , frame rate: 30fps
	IMU	1, automotive grade
Function List	Standard Actions	Standing, lying down, damping, unloading; stair climbing and obstacle crossing
	Real-Time Image Transmission	Supported
	Secondary Development	The SDK currently supports communication via TCP and ROS protocols, offering SDK packages for both x86 and ARM architectures
	Communication Features	Supports WiFi 6.0, Wi-Fi frequency band is 2.4 GHz, Wi-Fi transmission power is 72 dBm. Supports Bluetooth 5.2, with optional 4G module
	Functional Expansion Ports	Communication interfaces: 3x Gigabit Ethernet ports, 2x USB 3.0, 1x Fast Ethernet (100Mbps), and serial port Power output interfaces: 12V, 24V, 48V; maximum output power 720W. Charging interface: supports direct battery plug-in charging
Accessories	Power Adapter	Standard
	Battery Charging Adapter	Standard
	Remote Control	Screen Remote Control, with manual emergency stop mode, Maximum remote control range: 500m
	Autonomous Charging Dock	Optional

Notes:

- (1) Due to differences in testing methods and operating environments, the actual battery life under no-load conditions is 5.5 hours ± 0.5 hours;
- (2) These figures were obtained from extreme testing conducted in a laboratory setting. For safety reasons, software limitations have been applied; the actual product is limited to a speed of 2 m/s;
- (3) The above parameters are based on laboratory test data; actual performance may vary depending on factors such as the operating environment and usage methods. Actual results may differ;
- (4) For instructions on using the expansion interfaces, please refer to the expansion manual;
- (5) For detailed warranty terms, please refer to the product warranty manual;

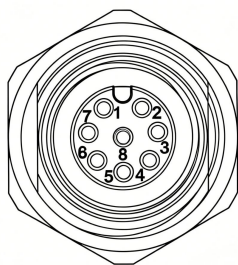
Rear Interface Layout Definition



Note: The rear interface consists of two main modules - the head communication junction box and the tail power junction box

No.	Interface	Interface Type	Mating Connector Type	Quantity	Function
1	Dual-Spectrum Gimbal Interface	M12A-8P Female	M12A-8P Male	1	Connects to head-mounted dual-spectrum gimbal communication; 12V and 24V/1.5A power
2	LiDAR Interface	M12A-8P Female	M12A-8P Male	1	Connects to upper-mounted LiDAR communication; 24V/2A power supply
3	Expansion Network Interface	M12A-17P Female	M12A-17P Male	1	Connects to expansion network cable; 12V, 24V, 48V/1.5A power
4	Expansion Type-C Interface	Type-C Waterproof Socket	USB Type- C	1	Expansion USB 3.1 interface, 10Gbps
5	12V, 24V, 48V/15A Power Interface	M12K Female	M12K Male	1	Provides power to upper-mounted equipment; 12V, 24V, 48V/10A output

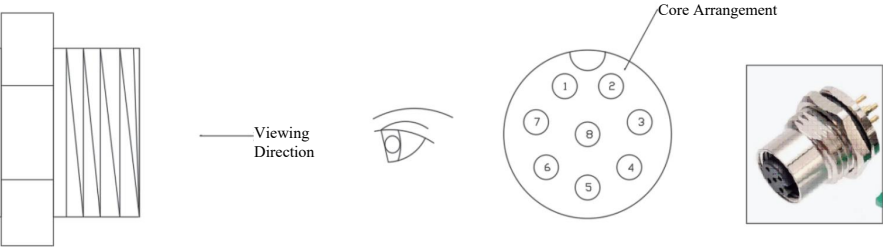
Head Junction Box — M12A-8P Female Aviation Connector
Dual-Spectrum Gimbal Network CablePin Definition



M12A Female Pin No.	Definition	RJ45 Pin No.	Current	Function
1	24V +		2A	24V Power Positive
2	RX+	1		Data Receive Positive
3	RX-	2		Data Receive Negative
4	TX+	3		Data Transmit Positive
5	TX-	6		Data Transmit Negative
6	NC			
7	NC			
8	24V -			24V Power Negative

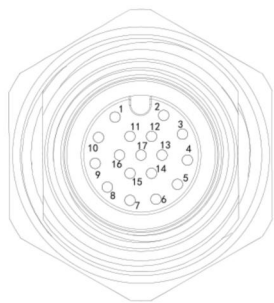
Head Junction Box - M12A-8P Female Aviation Connector

LiDAR Network Cable Pin Definition



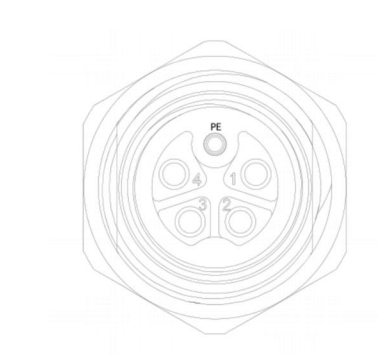
M12A Female Pin No.	Definition	RJ45 Pin No.	Current	Function
1	24V +		2A	24V Power Positive
2	RX+	1		Data Receive Positive
3	RX-	2		Data Receive Negative
4	TX+	3		Data Transmit Positive
5	TX-	6		Data Transmit Negative
6	NC			
7	NC			
8	24V -			24V Power Negative

Tail Junction Box — M12A-17P Female Aviation Connector Pin Definition



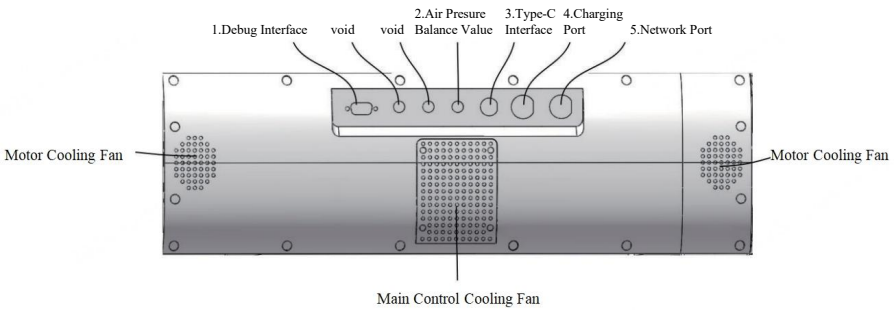
M12A Female Pin No.	Definition	RJ45 Pin No.	Current	Function
1	48V +		1.5A	48V Power Positive
2	RX+	1		Data Receive Positive
3	RX-	2		Data Receive Negative
4	TX+	3		Data Transmit Positive
5	TX-	6		Data Transmit Negative
6	12V +			12V Power Positive
7	12V -			12V Power Negative
8	12V +			12V Power Positive
9	12V -			12V Power Negative
10	24V +			24V Power Positive
11	24V -			24V Power Negative
12	24V +			24V Power Positive
13	24V -			24V Power Negative
14	48V +			48V Power Positive
15	48V -			48V Power Negative
16	48V +			48V Power Positive
17	48V -			48V Power Negative

Tail Power M12K Interface Definition



M12A Female Pin No.	Definition	Current	Function
1	48V +	10A	48V Power Positive
2	48V -		48V Power Negative
3	24V +		24V Power Positive
4	12/24V -		24V Power Negative
PE	12V +		12V Power Positive

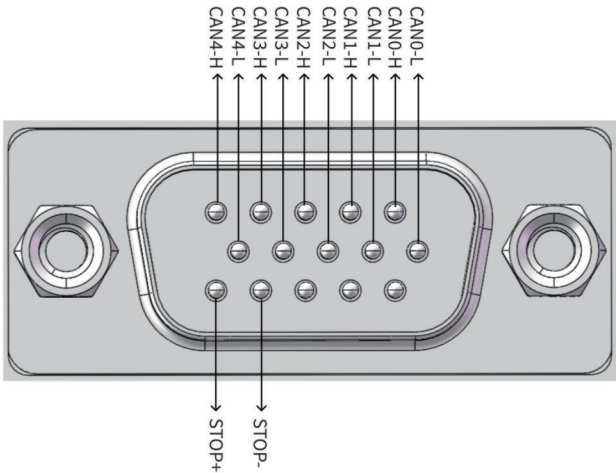
Left-Side Interface Layout Definition



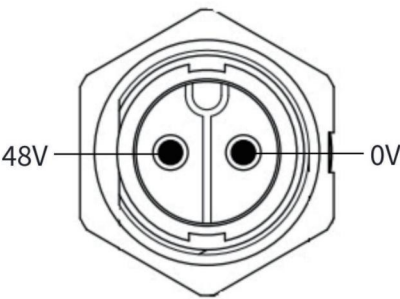
No.	Device Name	Model	Quantity	Function
1	Debug Interface	DB15 Female	1	Motor CAN diagnosis, Battery CAN diagnosis, Debug Emergency Stop
2	Air Pressure Balance Valve	M12	1	Balances internal and external air pressure
3	Type-C Interface	E10T-FT3-PWF / MT3-NWA-xxFPC	1	Type-C interface communication with main control board
4	Charging Port	E13T-P2B-PPF-01		48V charging port
5	Network Port	E13T-FR5-PRF-180		100M Ethernet port / Debug network port

Note: If you need the Wi-Fi firmware update, please visit <https://www.agibot.com.cn/> and download the D1 MaxPro documentation from the open-source section of AGIBOT official website.

Debug Port Interface Definition



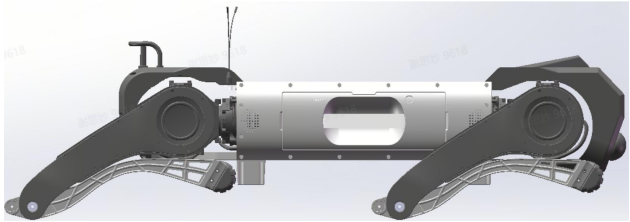
Charging Port Interface Definition



Unboxing

Please note the front LiDAR shield and rear antenna shield must not be subjected to external force!

First, extend the quadruped robot's limbs. Hold it by the lower legs and carefully lift it out of the packaging box. With all limbs extended, place the quadruped robot on a flat surface, positioning the lower legs as close to the body as possible, as shown in the illustration below.

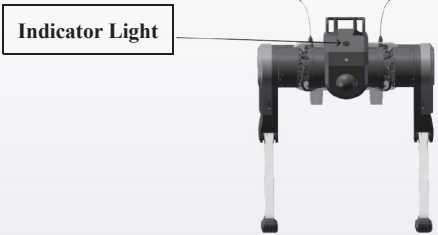


Power On

Press and hold the battery power switch as shown below. During the startup process, the LED indicators will light sequentially from right to left (starting from red to green). When all LED lights are fully illuminated, release the button. At this point, the battery discharge function is activated, and once the main control board receives power, the system automatically powers on.



After approximately 55 seconds, the indicator light turns green, indicating that the quadruped robot is now in a controllable state. The first-time SSH login requires mandatory password modification. Wireless SSH is unavailable until the password is changed.



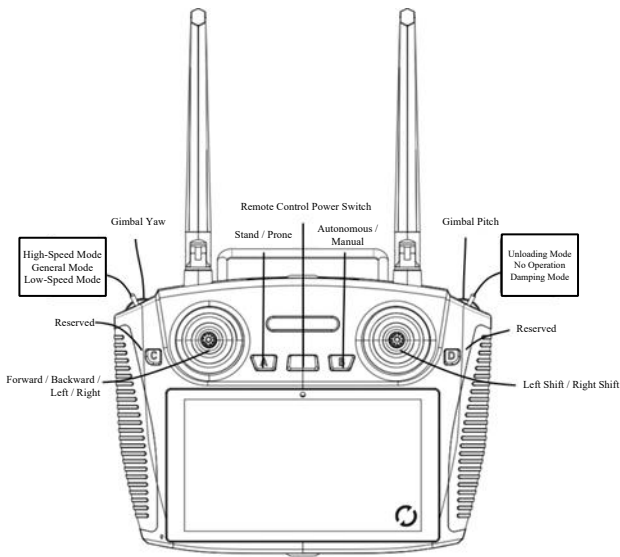
Power Off

Before powering off, ensure that the quadruped robot is in the prone position. Press and hold the power button; during this process, the LED indicators will turn off sequentially from left to right (starting from green to red). Once all LEDs on the battery are completely off, the robot enters the shutdown state. To restart, perform the preparation and power-on procedures again.



Controller Layout and Operation

Note: The quadruped robot cannot be operated while the remote controller is charging!



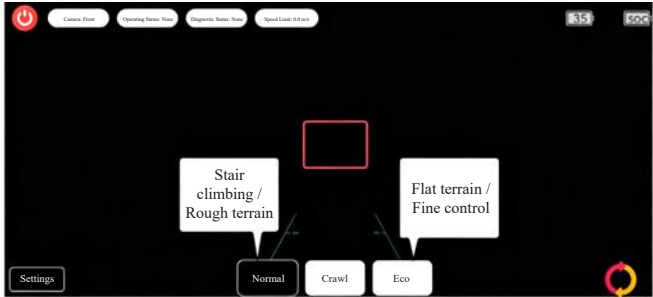
Notes: The Yaw and Pitch functions of the gimbal require the installation of an additional gimbal mount.

Action State	Model	Function
Standing	Button A	During the first startup, press the button 2 times continuously to make the robot stand up. In standby mode, press once continuously to enter standing posture
Prone	Button A	While in the standing posture, press once to make the robot lie down.
Damping	Right Toggle Switch to Right Position	In any state, toggle to this position to enter Damping Mode.
Unload	Right Toggle Switch to Left Position	Switch to Damping Mode first, then toggle to this position to enter Unloading Mode.

Control Mode	Operation Mode	Requirements
Low-Speed Mode	Left toggle switch to left position	Control mode must be set to low-speed mode Action status must be standing and stationary
Medium-Speed Mode	Left toggle switch in the middle position	Control mode must be set to medium-speed mode Action status must be standing and stationary
High-Speed Mode	Left toggle switch to the right position	Control mode must be set to high-speed mode Action status must be standing and stationary

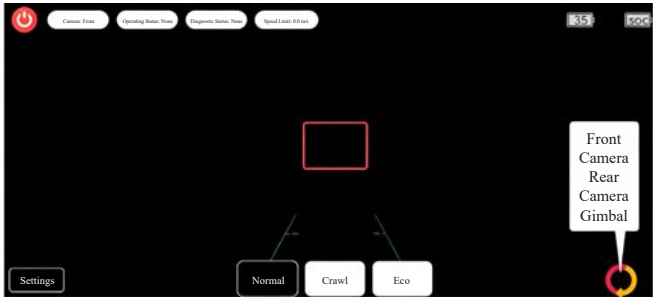
Special Function	Operation Mode	Requirements
Normal Mode (for stair climbing, obstacle crossing)	Touch button on the screen	Control mode must be set to normal mode Action status must be standing and stationary
Posture Adjustment (for internal engineering use)	Touch button on the screen	Control mode must be set to normal mode or high-speed mode Action status must be standing and stationary

Posture Adjustment / Energy Saving / Normal Mode: Tap on screen — highlighted indicates selected state



Screen Display — Front/Rear Camera Switching Operation

In the front camera display interface, tap the screen cycle button to switch to the rear camera view



System Password Management

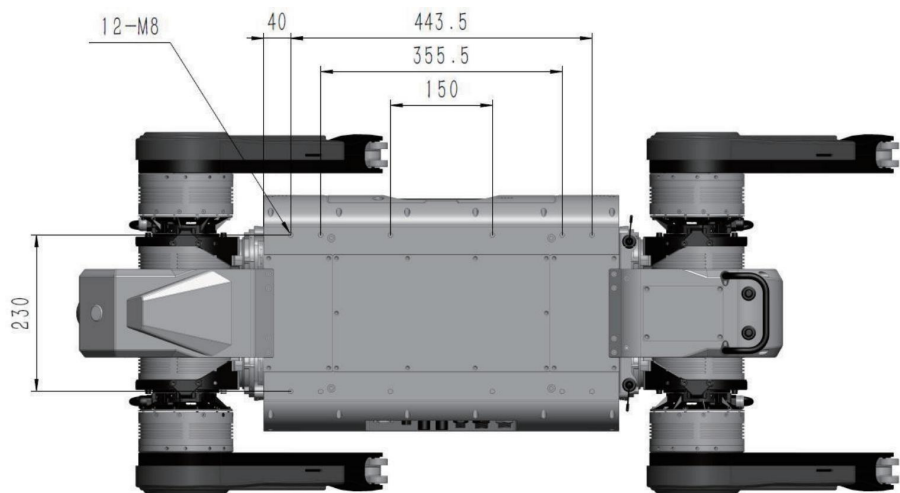
- 1. Robot System Password: When logging in via SSH for the first time, use the default password User12345!. Password modification is mandatory and cannot be skipped. SSH will not work until a new password is set. Password requirement: 12- 16 characters, must include uppercase letters, lowercase letters, numbers and special symbols.
- 2. Remote Controller Lock PIN: You will be prompted to set a PIN on first use. If skipped, you may modify it later via 【Settings- Security】 . Only 6- digit numbers are supported. Consecutive wrong inputs will trigger lockout.

Indicator Light Status

No.	Indicator Light	Indication
1	Solid Green	Controllable state
2	Solid Blue	Battery SOC below 20%, or motor overheating / warning / anomaly
3	Solid Red	Battery SOC below 5%, or motor fault
4	Off	Circuit malfunction

The quadruped robot features adaptive payload functionality, supporting a load range of 0– 50kg. Operation Procedure: When installing a payload, ensure the robot is in the prone position. Securely mount and fasten the payload, then switch the robot to the standing position. The robot will automatically detect the payload weight, completing the identification process after approximately 3 seconds, after which normal operation can continue.

The robot chassis is equipped with predefined screw holes. Users can design and install custom fixtures based on these screw holes to mount upper-level devices.



If any joint swinging or striking occurs during operation, immediately activate the Damping Mode (move toggle switch F to the right). The Damping Mode helps reduce joint damage that may occur due to a fall or impact.

Power Adapter Introduction

Input Parameters	AC 100-240V
Output Parameters	DC 54.6 V
Charging Current	10A

The charger is equipped with two LED indicators (LED1 and LED2): When the charger is connected to power plug, LED1 lights red. When connected to the charging port, LED2 lights red during charging. When fully charged or not charging, LED2 lights green. The charger light statuses are as follows:

No.	Status	Description
1	Normal Charging	Cooling fan activated; LED1 Red, LED2 Red
2	Fully Charged or Not Charging	Cooling fan off; LED1 Red, LED2 Green



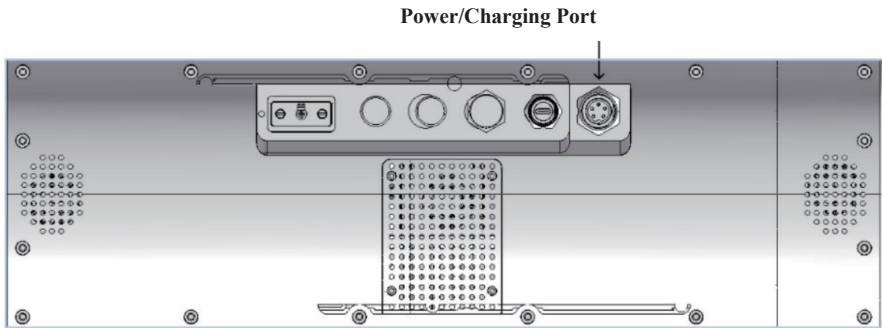
Charging in Progress



Charging Completed

Charging

The quadruped robot is charged via direct plug-in charging and uses a ternary lithium battery. Use the supplied charger, which has a three-pin plug (for connection to the power plug) and a two-pin plug (for connection to the robot's charging port). The charging port is located on the left side of the body, as shown below. Once the charger is connected to the charging port, the electrical system automatically powers on, which is normal behavior. During charging, the remote controller cannot control the robot.



Checking Battery Level

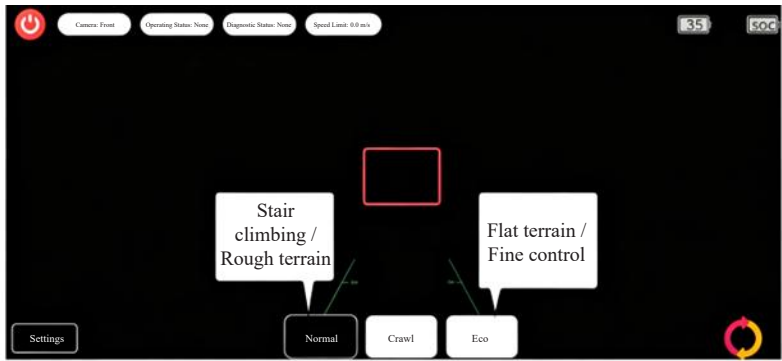
Press the battery power button once manually — the LED indicators will display the remaining battery level. There are five LED lights, and each light represents 20% of total battery capacity.



Charging Precautions

- Ensure the quadruped robot is powered off before charging.
- Connect the battery charging port first, and then plug in power plug.

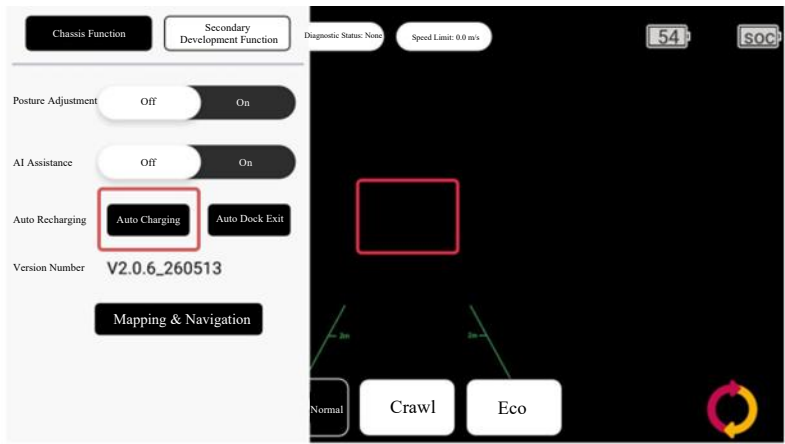
Terrain Mode Switching



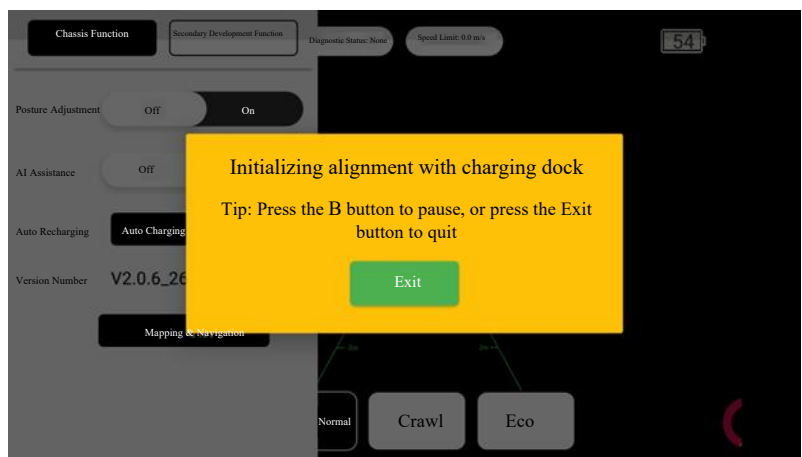
Scenario	Precautions
Adding Payload	The robot features a mass estimation function. When adding payload, ensure the robot is in the prone position.
Sloped Terrain	Slope gradient should not exceed 45°. Use normal mode for both ascending and descending slopes
Grassland / Sandy Terrain	<u>Normal Mode</u> is recommended. Walk slowly on special terrain surfaces.
Stairs / Steps	The height of each individual stair step should not exceed 30 cm, and the overall angle of the staircase should not exceed 45°. When using the robot to climb up or down stairs or steps, use <u>Normal Mode</u> . After climbing stairs or steps and transitioning to flat terrain, use <u>Eco Mode</u> for flat-ground walking.

An optional charging dock is required. When the rear of the robot dog is facing the charging dock and the distance between them is 0.5 to 1 meter, follow the steps below:

A. Tap the Auto Recharging button on the screen — the button will be highlighted to indicate selection;



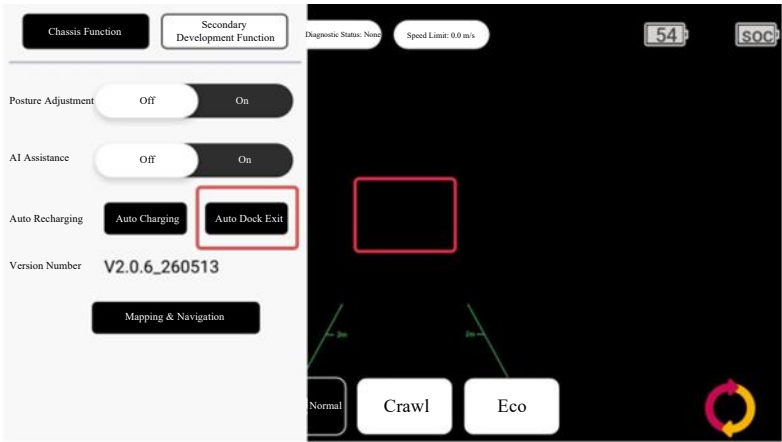
B. Press the B button on the remote controller to initiate the auto recharging function;



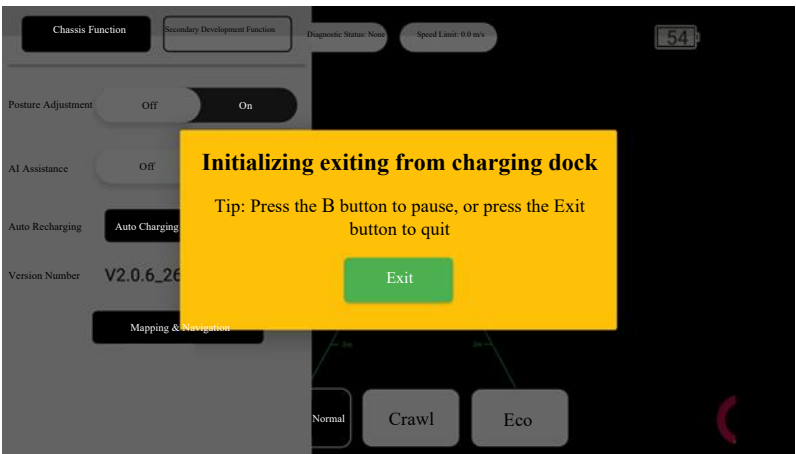
C. The robot will begin autonomous recharging.

After charging is completed, follow these steps:

a. Tap the Auto Dock Exit button on the screen — the button will be highlighted to indicate selection;



b. Press the B button on the remote controller to deactivate the auto recharging function;



c. The robot deactivates the auto recharging function;

d. The robot can now be operated normally via remote controller.

- The SDK currently supports the following functions:
- Basic Actions: Standing, Prone
- Motion Control: Forward / backward / lateral movement, upward / downward rotation (fixed), stop motion, set velocity to zero, continuous movement, move specified distance forward / backward, move specified distance laterally, end motion command
- Special Modes: Zero Torque Mode, Damping Mode, Parameter Adjustment Mode
- State Acquisition: Motion state, velocity, tilt angle, body height, lateral and longitudinal displacement, robot status, velocity and angular velocity along X/Y/Z axes, SDK version number
- Parameter Settings: Body height, velocity

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