

AGIBOT Quadruped Robot

User Manual



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Legal Statement

Before using this product, users must carefully read the user manual and operate the product strictly in accordance with its contents. The company shall not be held liable for any property damage or personal injury resulting from the use of the product in violation of the instructions in this manual. This product consists of multiple components. Please ensure that children cannot access the product to avoid accidents. This product is only for use by persons aged 18 and above. To extend the product's service life, do not use it in high-temperature or high-pressure environments. This manual aims to include functional descriptions and usage instructions for the product as comprehensively as possible. However, due to continuous improvements in functionality and design changes, there may be discrepancies between the actual product and the manual content. If there are differences between the actual product and this manual in terms of color, appearance, etc., please refer to the actual product.

Warning:

The devices operating in the band 5150–5250 MHz shall only be used indoors to reduce the potential for harmful interference to co-channel mobile satellite systems.

Les appareils fonctionnant dans la bande 5150-5250 MHz ne doivent être utilisés à l'intérieur que pour réduire le risque d'interférence nuisible avec les systèmes satellites mobiles cocanalisés.

5250-5350MHz for indoor use only

5250-5350MHz pour l'usage d'intérieur seulement

This manual applies to the AGIBOT Quadruped Robot (Model: ZYCXD125M).

A. Application of Robot Dog

- **Terrain:** Please try to avoid walking on smooth surfaces such as glass or ice; if walking is necessary, try to reduce the robot dog's walking speed to prevent slipping and falling.
- **Climate/Weather:** Please avoid deploying the robot dog in severe weather conditions such as heavy fog, thunderstorms, sandstorms or strong winds whenever possible.
- **Communication Interference:** Please Do Not operate the robot dog in any environment with severe communication signal interference from sources like WiFi or RF; if necessary, be sure to turn off the interference sources or reduce their interference.
- **Electromagnetic Interference:** Please Do Not operate the robot dog in environments with strong electromagnetic interference, such as near high-voltage power lines, high-voltage substations, communication base stations or signal towers. If necessary, please consult our after-sales service first.
- **Maximum Speed:** The robot dog can reach the maximum speed of 6m/s, with significant impact force; therefore, at any high speed, please be sure to keep the robot dog away from crowds.
- **Mode of Motion:** The modes of motion of robot dog are divided into Stationary Mode, Sport Mode, Navigation Mode and Stair Climbing Mode. Please switch between different Mode of Motions according to the environmental scenario in the process of use.
- **Recovery from a Fall:** The robot dog requires space to regain its standing posture after a fall. To avoid collisions, please ensure no persons or objects within the 2m extent around the robot dog; and Do Not drag a fallen robot dog when its hard emergency stop has not been triggered.

B. Battery Application

- If the battery emits a noticeable odor, shows signs of overheating or exhibits corrosion before initial use, please contact the battery supplier.
- Before allowing children to use the equipment, adults must clearly explain how to use the equipment and the battery, and periodically follow up to confirm and ensure their proper use.
- Please Do Not use or place the battery in an extremely high temperature (e.g., over 60 °C, such as under intense direct sunlight or inside an extremely hot vehicle), otherwise, the battery may be overheated or even catch fire, its performance may degrade and its service life may be shortened.

- Please Do Not use the battery in any environment with electrostatic discharge over 1,000V, as this may damage the protection circuit and create a safety hazard.
- The battery can only be charged within the temperature range of 0 to 57°C. Charging outside this temperature range may cause the battery to leak liquid, overheat or severe damage. This may also cause degradation of the battery's performance and lifespan.
- Please Do Not charge or discharge the battery near anything flammable, as this may create a fire hazard.
- The battery will automatically enter the storage mode upon a single-cell under voltage condition is detected. In this mode, the battery will make no response to the power switch and the battery indicator light will be kept normally off. The battery can exit the storage mode after being charged.
- Once powered off via the battery button, the battery will enter the sleep mode and can be awakened by communication, pressing the button or charging.
- If the battery circuit terminal has become dirty, please wipe it clean with a dry cloth before use; otherwise, poor contact may lead to performance failure.
- The battery should be stored at room temperature and charged to 30%~60% of its capacity. To prevent the battery from being over-discharged, it is recommended to charge the battery to 50% with the standard charging method once every 3 months; if the battery has been stored for over one year, it is advised to perform one full charge-discharge cycle annually with the standard method to activate the battery.
- A battery, if left unused for an extended period, may be in an over-discharged state due to its own self-discharge (below the over-discharge protection voltage or the over-discharge voltage of cell), or even the cell may be discharged to 0V. Continued use of such battery may carry risk. To prevent over-discharge, please be sure charge the battery regularly to maintain its voltage between 30% and 60% of its capacity.
- The plug cord has limited tension resistance and excessive pulling force may damage the battery. Once the battery is installed into the machine, be sure not to swing the battery and the plug cord freely.
- Do Not use or store the battery near fire or a heater or in high-temperature environment (>80°C).
- The use of any unauthorized charger is prohibited and any damage to the battery caused thereby is not covered under warranty.
- Do Not connect the battery with reversed polarity nor short-circuit the battery by directly connecting the positive and negative terminals with wires or any other metal objects.
- Do Not incinerate or heat the battery nor cause any excessive mechanical shock on the battery such as striking, throwing or stomping. Do Not pierce the battery with nails or any other sharp objects.
- Do Not disassemble the battery, since disassembling will void the warranty!

C. Other Precautions

- If the robot dog shows signs of water ingress, immediately turn off its power, remove the battery and allow it to dry thoroughly.
- If the robot dog smokes or catches fire, prioritize using fire extinguishers such as carbon dioxide or dry powder. Do Not use foam fire extinguishers.
- If the robot dog exhibits uncontrolled motion such as leg swinging, prioritize triggering the soft or hard emergency stop and ensure the safety of personnel, then power off and remove the battery before proceeding with troubleshooting; in case of any knotty problems, report them to our technical support officers for troubleshooting, equipment repair or replacement.
- Unauthorized disassembly of the robot dog is prohibited. Warranty will be voided if disassembled!
- เครื่องใช้ไฟฟ้าและอุปกรณ์อิเล็กทรอนิกส์ต้องปฏิบัติตามมาตรฐานหรือข้อกำหนดทางเทคนิคของผลิตภัณฑ์



Moving parts, keep body parts away from moving parts.

Device Open Port

Serial Number	Edge	Port Number	Does this port need to be opened?	Function
1	D1 Max	21	Yes	Network log download service for retrieving system logs remotely.
2		22	Yes	SSH development and debugging entry for remote access and diagnostics.
3		5555	Yes	ADB debugging entry point. Port remains open; password authentication will be enforced.
4		7447	Yes	ROS topic routing entry for inter-module message passing.
5		8081	Yes	APP control port for application-layer command and control interface.
6		8554	Yes	RTSP video streaming port for real-time video data transmission (stream 1).
7		8555	Yes	RTSP video streaming port for real-time video data transmission (stream 2).
8	Remote Controller	5760	Yes	TCP connection port for remote controller communication link.
9		50000	Yes	Dedicated port for gimbal control and cloud platform integration.

FCC Warning

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

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.

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.

FCC Radiation Exposure Statement

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

IC Warning

ISED RSS warning:

This device complies with Innovation, Science and Economic Development Canada Compliance licence-exempt RSS standard (s). Operation is subject to the following two conditions:

- (1) this device may not cause interference, and
- (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique

Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:

- (1) l'appareil ne doit pas produire de brouillage, et
- (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

ISED Radiation Exposure Statement:

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

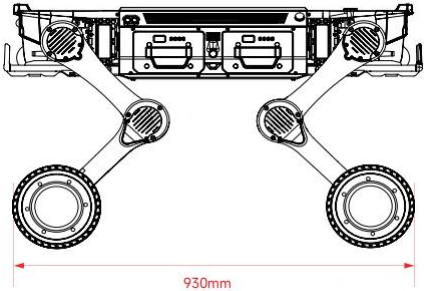
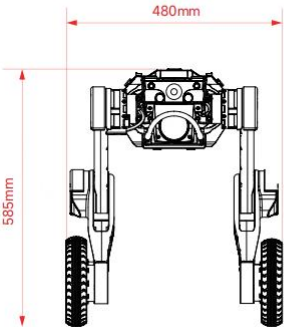
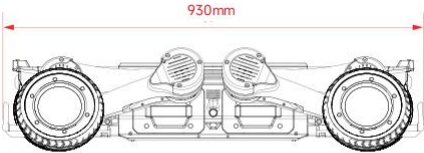
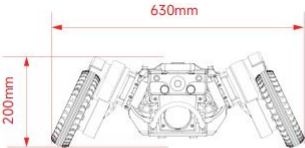
IC exposition aux radiations:

Cet équipement est conforme aux limites d'exposition aux rayonnements RF de l'isedc établies pour un environnement non contrôlé.

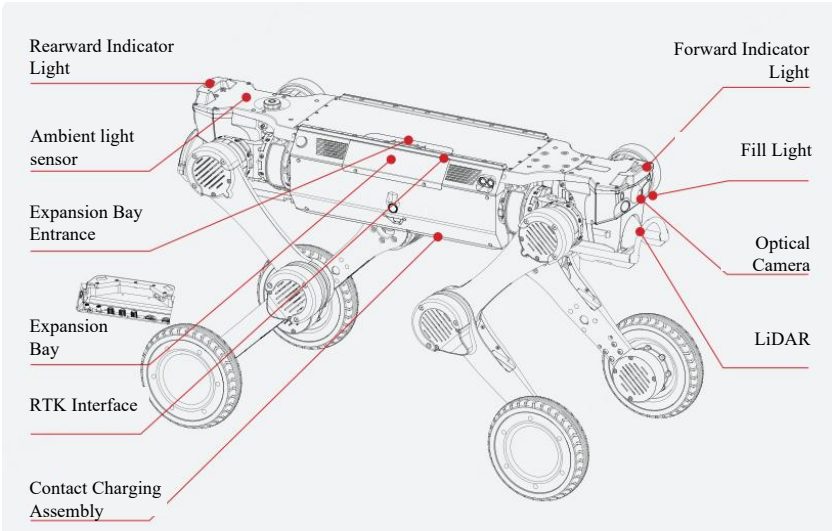
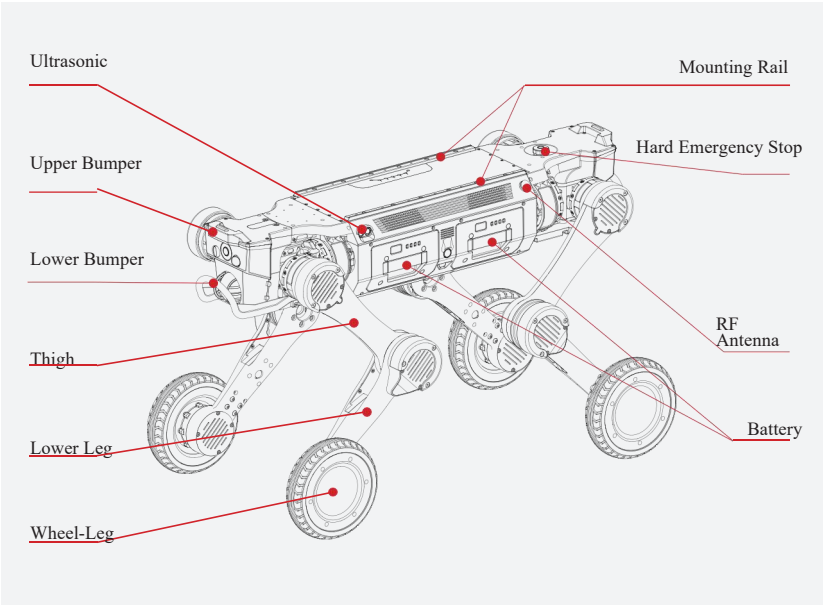
Cet émetteur ne doit pas être co-localisés ou fonctionner en conjonction avec une autre antenne ou émetteur. Cet équipement doit être installé et utilisé avec une distance minimale de 20cm entre le radiateur & votre corps.

Product Overview

D1 Max is a wheel-legged quadruped robot featuring lightweight design, high load capacity, long endurance, strong protection, and flexible, stable movement. Each leg of the robot dog is equipped with 3 joint motors and one hub motor, possessing wheeled leg . It is equipped with sensors such as LiDAR, optical cameras, ultrasonic radar, IMU, fill lights and RTK modules; internally incorporating a high- performance main platform for motion control, autonomous navigation and positioning, environmental detection and the like function, providing a rich set of power supply and communication interfaces, supporting the expansion of multiple categories of mission payloads.



Component Name



Core Specification

Category	Specification	Description
Basic Information	Product Model	ZYCXD125M
	Material	Aluminum Alloy + High-Strength Engineering Plastic
	Size (Standing)	930mm*480mm*585mm
	Size (Lying Prone)	930mm*630mm*200mm
	Machine Weight (with battery)	41kg
	Battery Weight	3.3kg/pc
	Wheel Size	8 inches
	WiFi Frequency Band	2.4GHz
	Operating Temperature	-20°C ~ 55°C
Motion Performance	Degrees of Freedom	12+4dof
	Max Speed	6m/s
	Effective Payload	30kg
	Max. Climb Angle	45°
	Continuous Climbable Step Height	25cm
	Vertical Obstacle Crossing Height	80cm
	Load-bearing span	50cm
	Minimum turning radius	Supports turning around in place and switching between forward and reverse directions
	Crawling height	34±0.5cm
Battery Parameters	Battery Capacity	504.9Wh*2, dual batteries that support quick replacement with hot-swap capability
	No-Load Runtime	5±0.5h
	Full-Load Runtime	3.5±0.5h
	No-Load Range	29±1km
	Full-Load Range	18±1km
	Charging Dock Input Voltage	AC220V
	Charging Dock Output Voltage/Current	DC63V, Max Charging Current 10A
	Charging Time	< 1.5h

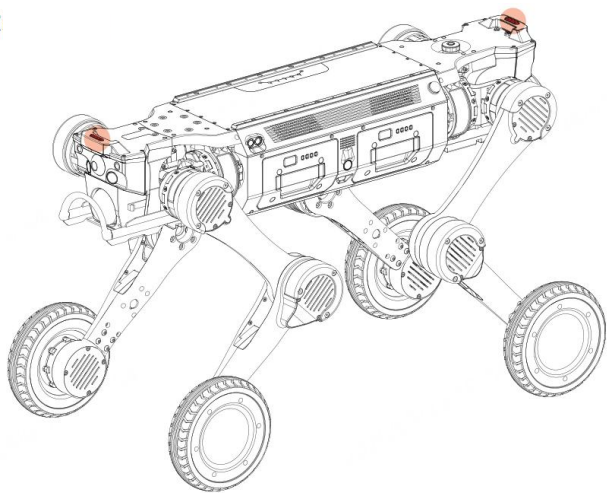
- Notes:
- (1) For instructions on using the functional expansion interface, please refer to the expansion manual.

(2) For detailed warranty terms, please refer to the product warranty manual.

(3) The above parameters are laboratory test data. Actual performance may vary due to usage environment, operation methods, and other factors. Please refer to the actual product performance.

Description of Light Effect

Status Indicator



Indicator Color	Indicator Effect	Robot Dog Status
White Light	Slow Flash	Startup in progress
	Normally On	Manual Control/Machine Work State
	Breathe	Standby
Green Light	Slow Flash	Locating/Auto Return in Progress
	Normally On	Auto Task Execution in Progress
Yellow Light	Quick Flash	Alarm State
	Normally On	Low Battery
Red	Quick Flash	Fault State
	Normally On	Soft Emergency Stop
Blue Light	Normally On	Upgrading
/	Breathing State	Charging (Optional Charging Pile)

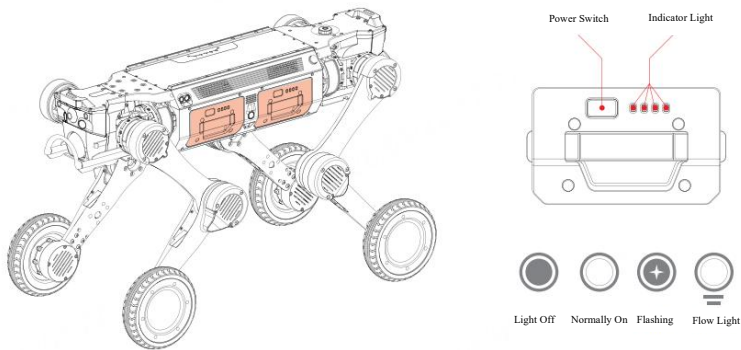


Warning
Prompt

- Hard Emergency Stop: the red light of the indicator is normally ON and the red light of the hard emergency stop button is normally ON.
- Forward/Reverse Direction Switch: When the robot dog switches between forward and reverse directions, the status light on the corresponding direction will be illuminated, followed by the execution of the aforementioned lighting effect.
- Except when switching between the forward and reverse main direction states, where the front and rear lights differ, they are consistent in all other situations.

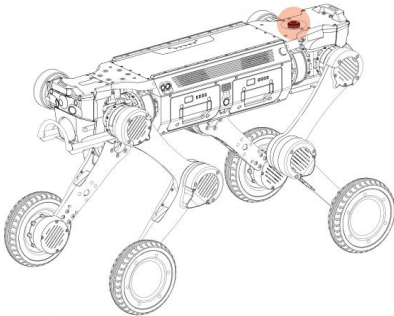
Description of Light Effect

Battery Indicator Light



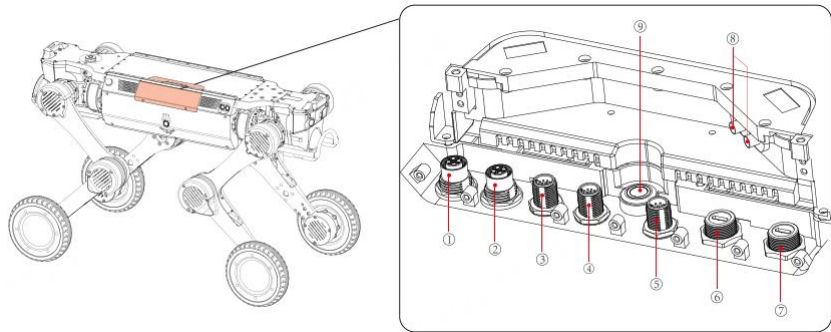
Battery Indicator Light Effect	Description of Light Effect	Battery Level Description
	4 LEDs normally ON.	Battery Level 75%~100%
	The first 3 LEDs are normally ON.	Battery Level 50%~75%
	The first 2 LEDs are normally ON.	Battery Level 25%~50%
	The first LED is normally ON.	Battery Level 0%~25%
	The first LED is flashing.	The battery level is 0%.
	4 LEDs are illuminated in sequence.	"Charging" is displayed and all 4 LED indicators stay lit when fully charged.

Emergency Stop Indicator



Light Off	Hard Emergency Stop Not Triggered
Red Light Normally On	Hard Emergency Stop Triggered

Expansion Interface



SN	Interface Name
①	48V (10A) x1
②	24V (20A) x1
③	24V (3A) + 1xEthernet Port
④	12V (5A) + 1xEthernet Port
⑤	Serial Port (RS232 x1, RS485 x1, SBUS x2 and PPS x1)
⑥、⑦	2xUSB3.0 (5V and 1A)
⑧	RTK Interface
⑨	Expansion Bay Button



Warning
Prompt

- When installing additional equipment on the back of the robot dog, regarding the planning and design of its center of gravity, position, interface and wiring, please consult our after-sales service staff before proceeding with the formal installation;
- The total power supplied by all power interfaces is $\leq 480\text{W}$;
- Some aviation connectors are equipped with protective caps; be sure to replace the protective caps on any connectors that are not in use;
- The expansion bay button is used to control the power supply to the expansion interface; when connecting assemblies, be sure to power off the expansion bay first.

Mode of Motion

The robot dog comes standard with an Reinforcement Learning Locomotion Model, featuring Stationary Mode, Sport Mode, Navigation Mode, and Stair Climbing Mode.

Stationary Mode	The robot dog remains stationary while its torso performs various actions including rotation, pitch, and height adjustment.
Sport Mode	The robot dog can automatically adapt to flat ground, slopes, stairs, and various complex terrains such as mountains, forests, and rubble. It supports forward and backward movement, in-place rotation, and can perform standing, crawling, prone, and locked postures, as well as advanced maneuvers like climbing elevated platforms and twisting motions.
Navigation Mode	In this mode, maps can be created. Once the map is generated, the fixed-point cruise function can be enabled based on the map to achieve automated inspection and fixed-point operations.
Stair Climbing Mode	In this mode, the robot dog autonomously plans its gait to traverse multi-level staircases with stability, suitable for multilevel space operations.



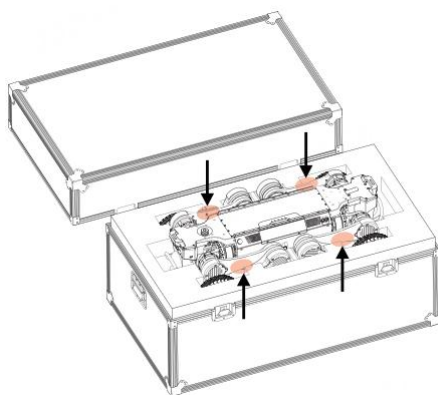
Warning Prompt

- When performing high-platform climbing stunts, ensure the robot dog has ≥ 2 battery bars and is unloaded, keep it in sight and maintain a safety distance of ≥ 2 meters from bystanders.
- When navigating stairs, slopes, or similar surfaces, ensure no one is directly above, below, or within the robot's path.
- In Motion Mode, the robot dog features standard low, medium, and highspeed settings. To ensure safe task execution, lateral movement and in-place rotation are restricted during medium and high speeds.

Environment Requirement

- Before performing the power-on operation, the operator shall thoroughly read this manual to familiarize himself/herself with all functional states, operational details and precautions of the robot dog;
- In the process of initial operation, try to avoid the robot dog moving out of sight and ensure no person nor obstacle within 2m around it so as to prevent collision;
- Temperature Required: Please be sure use the robot dog within an ambient temperature range of -20°C to 40°C;
- Weather Required: please Do Not power on and use the robot dog in severe weather conditions such as heavy fog, thunderstorms, sandstorms, tornadoes, etc.
- Electromagnetic Environment Required: Avoid using the robot dog in environments with strong electromagnetic interference (e.g., high-voltage power lines, high-voltage transmission substations, communication signal towers, etc.) to prevent magnetic breakdown;
- Communication Environment Required: please Do Not power on and use the robot dog remotely in environments with communication signal interference to avoid its communication disruption and loss of connection.

Unpacking



The robot dog is packed in a flight case, so please place the case on a flat surface with the correct orientation upward; open and remove the lid; then, sequentially remove the robot dog, battery, remote control, charger cradle, etc., and place them on a hard and flat surface.



- When moving out the robot dog, hold the designated lifting points shown in the diagram as instructed, and pay close attention to the location and content of warning labels to avoid pinching or scratching hands in the process of transporting;
- Handle the robot dog, battery, remote control and charger cradle gently in the process of transporting;
- After the transporting is completed, check and make sure that AGIBOT D1 Max's emergency stop button, battery power button, etc., have not been triggered.

Pre-start Inspection

A. Appearance and Mechanical Structure Check

- Overall Exterior Integrity: Check the body shell for cracking, deformation or detachment, focusing on vulnerable parts like joint connections and sensor protective covers; observe whether there are obvious stains, liquid residue or foreign matters on the body surface, especially around radiator holes and interfaces.
- Joint and Moving Part Check: Check each of the robot dog's leg joints and wheel legs one by one to confirm that the joint motion is smooth, without signs of sticking, abnormal noise or looseness. For wheel-legs, confirm that the anti-slip tread is clear, without cracking or peeling. Confirm that fasteners such as screws and clips at the joints are not missing or loose.

B. Battery Status Check

- Battery Appearance: Check whether the battery pack shell is bulging, leaking or damaged; bulging may indicate that the battery is aged or overcharged, so please Do Not use any batter aged or overcharged but make replacement immediately to avoid fire or explosion risk.
- Battery Connection: Check whether the connection interface between the battery and the body is clean, free from oxidation, corrosion or foreign matters; ensure the latch is fastened securely when inserting to avoid power interruption due to poor contact.
- Battery Level Check: Before power-on, you can initially judge the battery level via the indicator, on which, at least one battery should have more than 2 bars of charge; click the battery power button to display the exact charge level; in a low-battery state, charge first to avoid mid-operation shutdown due to insufficient power after startup, which could affect the lifespan the equipment.

C. Environmental Perception Sensor Check

- Optical Sensor: Check whether the lenses of its cameras and LiDAR are clean, free from stains, scratches or obstructions.
- Distance/Obstacle Avoidance Sensor: Check whether the probes of obstacle avoidance components like ultrasonic sensors are intact and unobstructed or not.

D. Remote Control Check

- Check whether the remote control button is responsive without sticking, and whether the battery has sufficient charge (indicated by the indicator of the remote control) to ensure normal operation of the robot dog once powered on.
- Check the body's display screen, indicator lights, speakers and the like feedback components; confirm that the display screen is undamaged and free of distortion, and that the indicators can be illuminated normally for facilitating timely acquisition of its operating status (e.g., battery level, fault warning) once powered on.

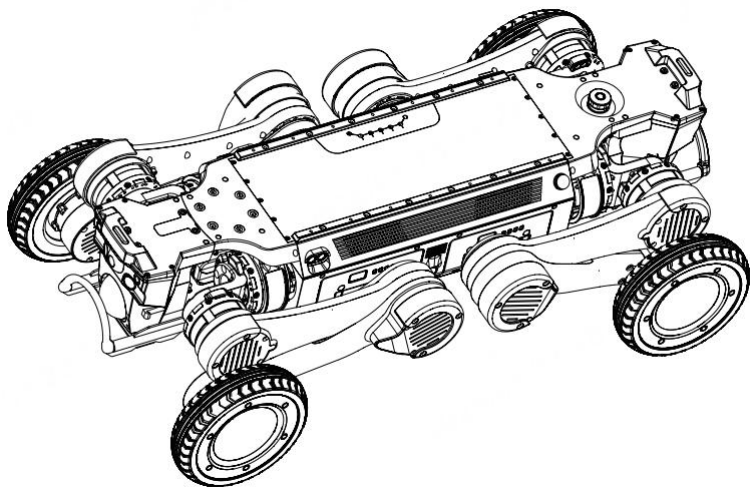
Pre-start Preparation

A. Install the Battery

The robot dog is equipped with dual battery compartments, supporting both single battery and dual-battery power supply modes, so please align the battery with the battery interface of the compartment (featuring foolproof design to prevent incorrect insertion), pull up the battery's hand strap, push the battery into the compartment till bottomed out, then release the hand strap; a "clatter" sound heard means that the latch is locked. Once installed, please check the battery installation status. The outer surface of the battery should be kept flush with the surface of the robot dog body.

B. Place the Robot Dog

Adopt a horizontal prone posture, i.e., abdomen fully flush with the ground, legs naturally positioned on either side of the body, lower legs in a minimally retracted stance, with all 4 knee joints and wheel feet flat on the ground, to keep no thigh or lower leg compressed by the torso.



Startup and Operation

A. Robot Dog Power-On Process

The power-on process for the robot dog is initiated through its battery and the specific procedure is as follows: briefly press the battery button to activate the battery, the indicator of which will be normally on and display its current charge level, then, press and hold the battery button for 3s to turn on the battery and boot up the robot dog. A white blinking status indicator signifies the startup in progress, while a steady white light indicates that the startup is completed and the robot dog has entered the Mode of Universal Motion.

The robot dog can be supplied power by single-battery and dual-battery. The specific power-on procedures are detailed as follows

Robot Dog Battery Status	Power-On Process Flow
When the robot dog is powered off and no battery is inserted	Insert only one battery: Either directly insert a battery once powered on, or first insert a powered-off battery and then power on the battery to start the robot dog;
When the robot dog is powered off and a powered off battery is inserted	Insert another powered-on battery to start the robot; for an inserted powered-off battery, it will be automatically started 1 min after insertio; Insert another powered off battery to start any one battery and power on the robot dog;
When the robot dog is powered off and 2 powered off batteries are inserted	Either battery can be powered on to start up the robot dog as a whole. The other battery will be automatically engaged without the need for manual activation.

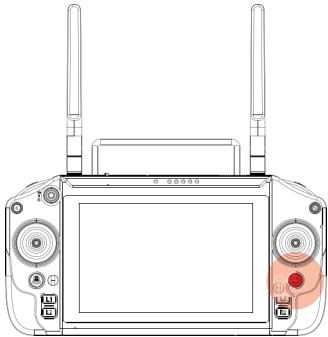


Warning Prompt

- Dual batteries feature mutual wake-up functionality. In dual-battery mode, only the states of both batteries ON or both OFF are supported; a state with one battery ON and one OFF is not supported;
- When D1 Max is powered on with a single battery, inserting another powered-on/off the battery will automatically activate and connect such battery.

B. Power on the Remote Control

If you press and hold the power button of remote control, the remote control screen and power indicator will be illuminated; since the remote control is paired one-to-one with the robot dog before it is delivered from the factory, it will be automatically connect with the robot dog upon startup.



Once the remote control is turned on, click the APP icon on the screen to enter the APP control interface. Once the health status of APP is confirmed, you can proceed to control the robot dog.

C. Operation Guide

For remote control operation, please refer to the Genisom M1 Remote Controller User Manual.

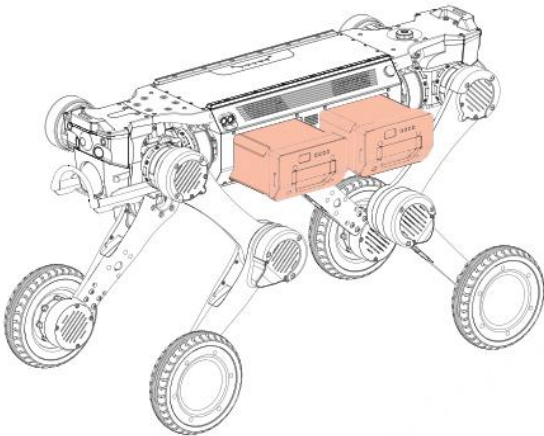
D. First Power-On Verification

- **Basic Motion Test:** Use the APP of the remote control to command the robot dog to perform simple actions such as standing, going prone, moving straight forward/backward/leftward/rightward and turning; confirm that the joint can move freely; in case of jerking, abnormal noise or inability to stand, power off immediately and check for joint jamming or incorrect posture.
- **Sensor Status Test:** All sensors of vision, laser, ultrasonic, and inertial navigation can function normally and data can be displayed properly on the APP.
- **Status Feedback Check:** Observe the equipment status indicated by the LED, LCD or the APP to confirm normal battery level, connection signal, firmware version, etc. If any fault prompt has appeared, be sure to shoot the trouble according to the operation manual.

Battery Swapping and Power-Off

A. Change the Battery

The robot dog features dual batteries with hot-swap capability. When powered by both batteries, you can directly unplug one powered-on battery and replace it with a battery in either an ON or OFF state; the robot dog can be maintained operating normally in the process of battery changing and powered by dual batteries;



B. Power Off

Robot Dog Power Off: In the single-battery or dual-battery power supply mode, turn off any battery. The battery indicator will be turned off, the robot dog status indicator will be turned off and the robot dog will be powered off;



Warning Prompt

- Whenever possible, please first adjust the robot dog to a horizontal prone posture once powered off; avoid powering off directly while the robot dog is in a standing posture.
- When the robot dog has only one powered-on battery, it is prohibited to shut down by directly pulling out the powered-on battery.

Emergency Stop and Protection

A. Hard Emergency Stop Trigger and Release

- Hard Emergency Stop Trigger: When the robot dog, whether in autonomous motion or remote control mode, is out of control or malfunctioning, the operator shall press down the red hard emergency stop button on the robot dog's back, in which case, the hard emergency stop red light will be normally on to trigger the hard emergency stop protection, and the robot dog will slowly lie down and remain motionless; a real-time pop-up alert will be displayed on APP.
- Hard Emergency Stop Release: if you turn the hard emergency stop button clockwise, the hard emergency stop will be released.

B. Soft Emergency Stop Trigger and Release

- Soft Emergency Stop Trigger: When the robot dog, whether in autonomous or remote-control mode, is out of control or malfunctioning, the operator can press down the soft emergency stop button on the remote control, then the robot dog will cease its current action and remain stationary in a standing posture; a real-time pop-up alert will be displayed on APP.
- Soft Emergency Stop Release: Once the robot dog and its surrounding environment are confirmed safe, please release the soft emergency stop via the APP, restoring both the APP and robot dog to normal status.

C. Overheat Protection

- The robot dog is equipped with comprehensive temperature detection functionality; once the joint, main control and battery of the robot dog is overheated, it will enter the state of overheat protection, ceasing all current motion, going prone and remaining still. The overheat location and temperature can be viewed on the APP; once the temperature has dropped to the normal level, you can continue to operate the robot dog.

D. Low Battery Protection

- When the charge level of both batteries is below 20%, the robot dog will enter the low battery warning state and charging should be performed immediately. When the charge level of both batteries is below 10%, the robot dog will trigger low battery protection so that it will automatically go prone and no longer respond to remote control commands from the handle. Please replace the batteries before continuing use.

E. Fall Protection

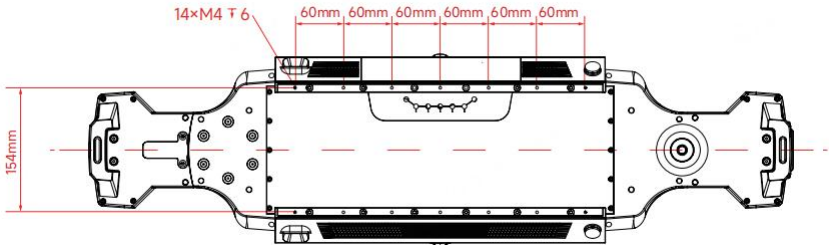
- The robot dog is designed to attempt recovery to the standing position after a fall, under the control of a reinforcement learning motion control model. When the surrounding environment does not permit recovery, the robot dog will maintain a fixed posture and give an alarm.

F. Expansion Bay Power Supply Protection

- The expansion bay is equipped with a separate power button, allowing independent control of its power on/off status. When the machine is powered on as a whole and the mounted payload has to be replaced, the expansion bay button can be triggered to directly power off all interfaces in the expansion bay without power outage of the machine as a whole. The expansion bay button should be inside the compartment to avoid accidental external contact causing the upper assembly to power down directly.

Payload Expansion

The space on the robot dog's back is flat, with a load of 30kg. It is equipped with dual rails on the back to facilitate the easy installation of mounted payload. The specific dimensions of dual rails are detailed as follows:



The back of robot dog has an expansion bay entrance. The power and communication cables of the mounted payload enter the expansion bay and connect to the aviation plug, enabling power supply and communication between the robot dog and the mounted payload;



Warning Prompt

- The robot, once fitted with a payload, shall only support the Basic Mode of Motion, so please Do Not use the Elevated Platform Mode after adding a payload.
- When adding a payload to the back of the robot, its motion performance may be affected, so please be sure to consult our after-sales service staff for related matters before installation.
- When using an external power interface to supply power to a load, please note that the total power the interface can provide externally does not exceed 480W.
- To ensure IP67 rating, all interfaces shall use IP67 aviation plugs with protective caps. Please cover any unused aviation plug interfaces with caps.
- When installing a top-mounted payload and connecting the power interface, be sure to have the robot dog powered off or have the expansion bay powered off.

Charging

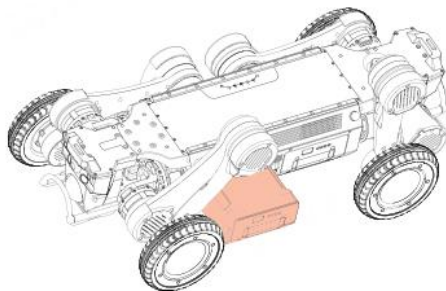
Robot Dog Battery Charging

The dual batteries equipped on the robot dog both feature a plug-and-play quick change design, so for charging, you are only required to remove the batteries and charge them using the attached dual-battery charger cradle and charging adapter. The specific operations are detailed as follows:

A. Unplug the Battery

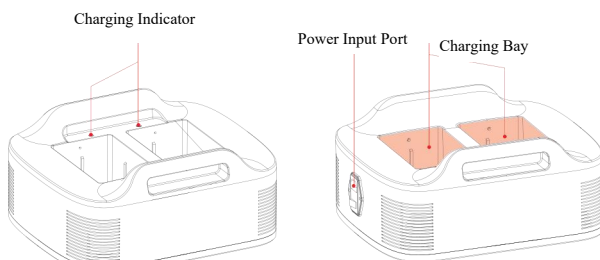
- Assume a horizontal prone posture, with the abdomen completely against the ground, legs naturally placed on both sides of the body, lower legs fully retracted, and all 4 knee joints and wheel-leg flat on the ground; lift the front/rear legs on the battery side in sequence to leave space for unplugging the battery;

- Alternatively, before turning off the robot dog, directly execute the battery swapping posture, in which case, the robot dog will automatically assume a horizontal prone posture and lift the front and rear legs on the battery side to leave space for unplugging the battery;
- Gently pull the battery hand strap to unlock the battery latch, then pull out the battery from the robot dog.



B. Charging Preparation

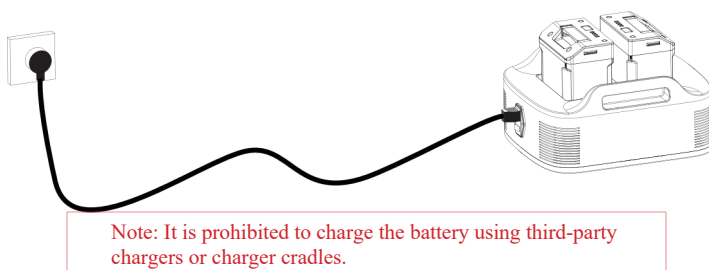
- Check the battery's exterior for integrity and confirm no bulging, leakage or other damage.
- Place the charger cradle on a hard and flat surface to ensure stable placement and prevent tipping in the process of charging.
- Connect the charger to a 220V AC power; turn on the charger cradle's rocker switch, on which the red light normally ON means that the charger cradle is connected and powered on.
- The charging environment should be kept dry and cool, away from anything flammable and explosive, with the ambient temperature around the charger cradle ranging from 0 to 50°C.



C. Battery Charging

- Align the battery with the charging interface on the charger cradle and insert it into the battery holder, which will support single-battery and dual-battery charging.

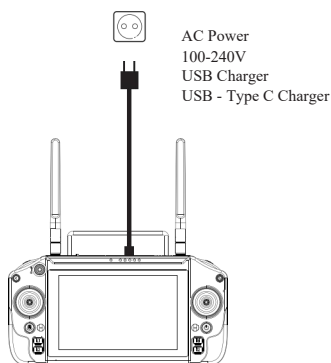
- Keep the indicator's green light on the charger cradle corresponding to the battery's charging status normally ON, indicating stable charging.
- The battery indicator will be illuminated in sequence to display the charging progress; and the LED normally ON denotes that its corresponding battery segment is fully charged, whereas a rapidly flashing LED denotes the segment presently under charging.
- When the battery is fully charged, all 4 indicator lights will remain normally ON, then please promptly disconnect the battery or the power source of charger cradle; **the time for charging should not be longer than 6 hours.**
- Once a fully charged battery is removed, please promptly turn off the charger cradle to avoid the charger cradle's plug being live, posing the risk of electric shock.



Remote Control Charging

When the battery indicator of remote control shows low level, please charge the remote control as shown in the figure below:

- Please charge the battery with the original USB charger.
- In the process of charging, the battery indicator of remote control will be illuminated in sequence to display the charging progress; and the LED normally ON denotes that its corresponding battery segment is fully charged, whereas a rapidly flashing LED denotes the segment presently under charging.
- To maintain the remote control battery in its optimal condition, please be sure to have it fully charged once a month.

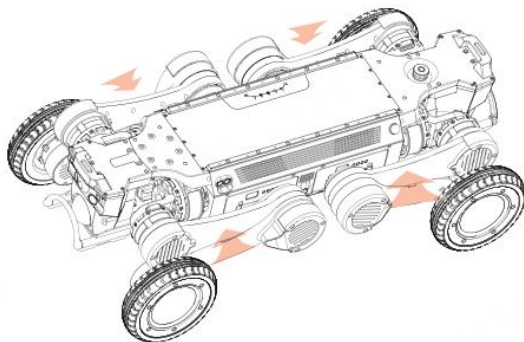


Transporting

2 modes of transporting are supported by the robot dog: transporting while powered off and transporting while powered on.

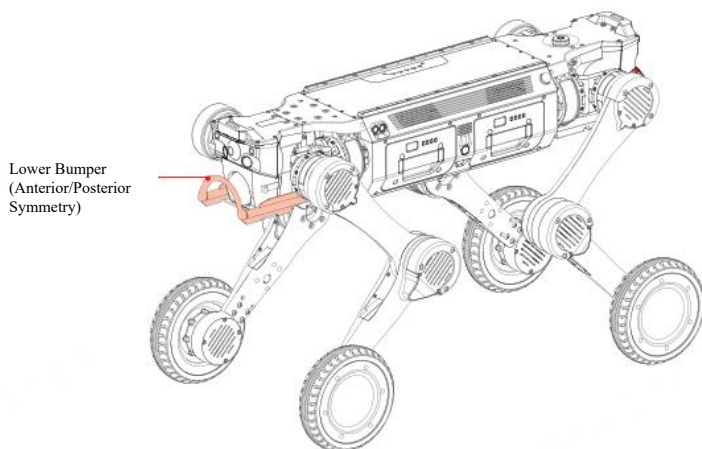
A. Transporting in Powered-Off State

- Place the robot dog in a horizontal prone posture, with its abdomen completely flush against the ground, legs naturally placed on either side of the body, lower legs fully retracted, and 4 knee joints and wheel-legs lying flat on the ground.
- In the process of transporting, 2 persons shall be caused to stand at the head and tail of the robot dog respectively, use both hands to hold the designated lifting points (the position of lower leg near the knee joint); lift the thigh and lower leg upward to the joint limit to prevent the dog's legs from swinging, enabling successful transporting of the dog.
- Once transported to the destination, place the robot dog on the ground, still in a horizontal prone posture.



B. Transporting in Powered-On State

- The robot dog features a locked posture well developed. While powered on, its limbs can be locked, allowing a single worker to carry the robot dog by gripping the bumper with both hands.



- Please pay close attention to the warning labels on the robot dog in the process of transport to avoid pinching hands with the dog's legs.
- When transporting the robot dog while it is powered on or immediately once powered off, grasp it at positions as far away from the joints and battery as possible to avoid burns from heat generated by the battery or joints.

Storage

A. Preparation before Storage

- **Environmental Preparation:** The storage environment shall be at the temperature of $-20^{\circ}\text{C}\sim 60^{\circ}\text{C}$, kept dry and ventilated, and kept away from strong magnetic fields (e.g., high-power transformers, electromagnets) and strong vibration sources (e.g., generators, crushers).
- **Cleaning:** Remove dust, stains and other impurities from the surfaces of the robot dog body, remote control, battery and charger cradle. Avoid liquids entering the robot dog's interfaces, radiator holes, etc., to prevent its internal components from being damaged by moisture.
- **Status Check:** Check the robot dog, remote control, battery, charger cradle, etc., to ensure no physical damage and keep them in a good functional state.
- **Battery Power Regulation:** Charge the battery to 50%~60%. This power range can effectively prevent battery damage due to excessive discharge, while also avoiding its capacity degradation caused by long-term storage at full charge.

B. Storage Method for Each Component

- **Storage of Robot Dog:** Power off a cleaned robot dog, pull out its batteries and place it stably inside the dedicated packing case.

- **Storage of Battery:** Place the two removed batteries in the packing case, each battery stored separately to avoid mutual compression or collision; and prevent the battery's positive and negative poles from contacting any metal object to avoid short circuiting.
- **Storage of Remote Control:** Power off the remote control, place it into the dedicated remote control protective sheath, and store both together in the packing case; avoid severe impact or compression to prevent the remote control shell from cracking, the buttons from being damaged or the display screen from breaking.
- **Storage of Charger:** Place the charger into the dedicated charger storage bag or the charger storage space inside the packing case; keep the charger isolated from other metal components to prevent wear or damage to the charger interface; check whether the charger plug is intact or not; if any damage or rust is found on the plug, replace it promptly before storage.
- **Storage of Packing Case:** Fold the packing case neatly and place it in a dry and ventilated environment; avoid moisture, mold or deformation from any heavy object pressing upon the case, which could affect its subsequent use. If the packing case is damaged or its load-bearing capacity is reduced, please promptly replace it with a new dedicated packing case to ensure safe storage and transportation of the equipment.

C. Maintenance and Inspection during Storage

a) Short-term storage (1~3 months)

- Conduct a monthly visual inspection on the robot dog, batteries, remote control and charger to confirm no damage, deformation, rust or other defects on all components.
- Check the charge level of batteries once; if below 40%, charge them to 50%~60% before continuing storage.
- Check whether the temperature and humidity of the storage environment are satisfactory or not, and promptly replace any desiccant that has become ineffective.

b) Long-term storage (over 3 months)

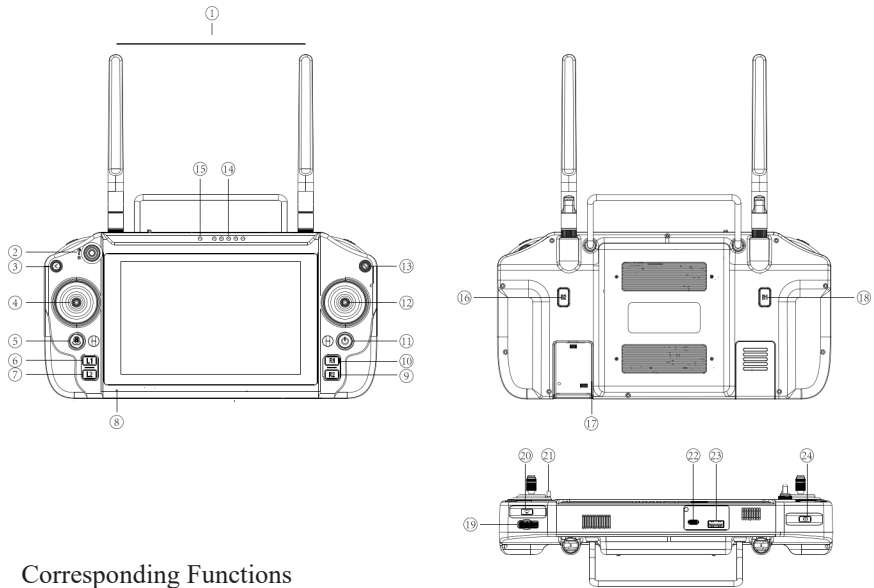
- Conduct a power-on test on the robot dog once every 2 months. Connect the robot dog to a power source (or install batteries), power it on and run it for 5~10min; check whether all functions of the robot dog are normal and whether any joint can move freely.
- Perform the charge-discharge maintenance on batteries once every month (discharge the battery to 30% and then recharge to 60%) to prevent memory effect and ensure battery capacity.
- Perform a functional check on the remote control and charger once every 3 months; test the sensitivity of remote control button and the charger's charging function for normal operation; if any abnormalities are found, promptly contact our after-sales service for repair.

D. Precautions for Storage

- Do Not store the robot dog or its accessories upside down or tilted, especially the robot dog itself, since upside-down storage may cause its internal components to shift or become damaged, thus affecting its normal operation.
- In the process of storage, Do Not place any heavy object on the equipment or its packing case to prevent deformation from deformation under pressure or component damage.
- If the equipment has to be taken out of storage for use, first place it in a room temperature environment to rest for 1~2 hours (if there is a significant temperature difference between the storage and usage environments). Wait until the device temperature matches the ambient temperature before performing the startup operation. This prevents internal condensation and damage to electronic components due to excessive temperature differences.
- Do Not let any non-professional disassemble the robot dog, battery, remote control or charger during storage; if equipment malfunctions or abnormalities are detected, promptly contact the manufacturer's after-sales service staff for professional inspection and repair to avoid any equipment damage or safety accident caused by self-disassembling.
- Detailed records related to storage (e.g., time for storage, time for inspection, maintenance status, etc.) must be properly registered to facilitate subsequent tracing of the equipment storage condition and timely identification and solution of potential problems.

Instructions for Remote Operations

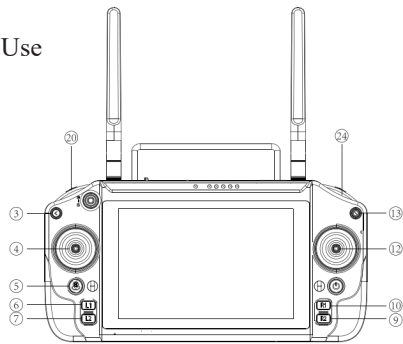
Graphical Representation



Corresponding Functions

SN	Button	SN	Button
①	2.4G/5.8G Antenna	⑬	Soft Emergency Stop
②	/	⑭	Remote Control Battery Level Indicator
③	Back	⑮	Pairing Indicator Light
④	Left Joystick	⑯	B2
⑤	H	⑰	SIM Card Slot
⑥	L1	⑱	B1
⑦	L2	⑲	Pulsator
⑧	Microphone	⑳	Fill Light
⑨	R2	㉑	Lanyard Hole
⑩	R1	㉒	Type-C Interface
⑪	Power On/Off	㉓	USB Interface
⑫	Right Joystick	㉔	Shooting/Video Recording

Details of Function Use



Button Function	Button operation	Function Definition
BACK to Previous	Click "BACK" (③)	BACK to Previous Page
Control the robot dog's forward, backward, leftward and rightward motion	Push "Left Joystick" (④)	The speed will gradually increase based on the joystick pressure and it shall be pulled to the very bottom corresponding to the upper limit set for each gear.
In-place Turning	Push "Right Joystick" (⑫)	Push the right joystick to control the robot dog's in-place turning
Turn all the way around while moving	Left Joystick + Right Joystick (④+⑫)	The left joystick is used to control movement and the right joystick is used to control direction.
Horizontal Turning Round	Stationary Mode + Right Joystick Leftward/Rightward Push (⑫)	In the stationary mode, push the right joystick leftward or rightward to perform the lean-left/lean-right action.
High/Low Posture	Stationary Mode + Right Joystick Upward/Downward Push (⑫)	In the stationary mode, push the right joystick upward or downward to perform the pitch-up/down action.
Lean-left/lean-right	H + Right Joystick Leftward/ Rightward Push (⑤+⑫)	Simultaneously push H and the right joystick leftward/rightward to perform a horizontal left/right turning action
Pitch Posture	H + Right Joystick Upward/ Downward Push (⑤+⑫)	Simultaneously push H and the right joystick upward or downward to perform the toggling action between high and low postures
Machine Forward/ Rearward Switching	Simultaneously press: L1+R1 (⑥+⑩)	Machine Directional Angle Switching
Knee Joint Mode Switching	Simultaneously press: L2+R2 (⑦+⑨)	In-phase Knee Mode/Internal Opposing Knee Mode Switching
Soft Emergency Stop	Press the "Soft Emergency Stop" Button (⑬)	Machine Stop Motion
Photograph	Click the "Shoot" Key (⑳)	Photograph
Video Recording	Press and hold the "Shoot" Key (⑳) for 3 seconds	Press and hold for 3 seconds to record video; click again to cancel
Turn on/off the fill light	Click the "Fill Light" Key (㉑)	Each click will cycle through the following sequence: "Both Fill Lights ON - Front ON and Rear OFF - Rear ON and Front OFF - Both OFF".

Instructions of APP

Connect the Robot Dog to the Remote Control

- Keep the robot dog near the remote control before connection.
- Once the robot dog is powered on, press and hold the remote control's power button to start up.
- Click to open the "GenisDog" APP and wait for the remote control and robot dog to connect automatically.

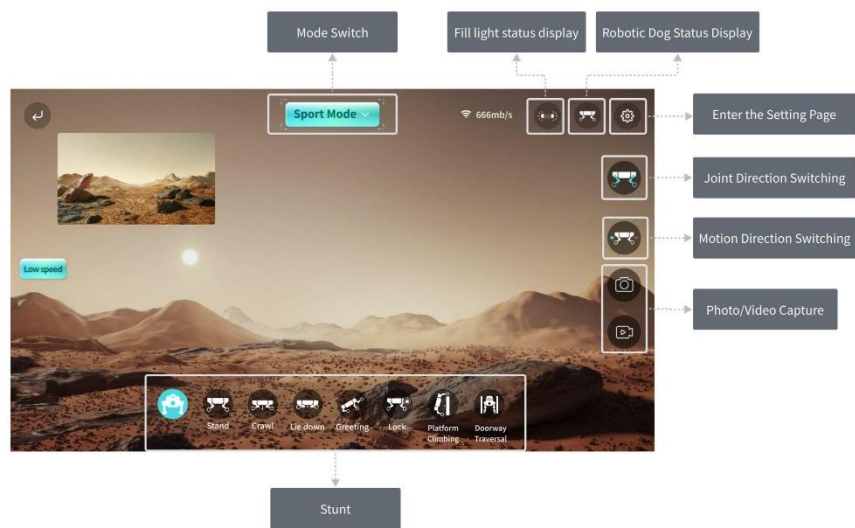
Main Functions

Click "Enter Home Page"



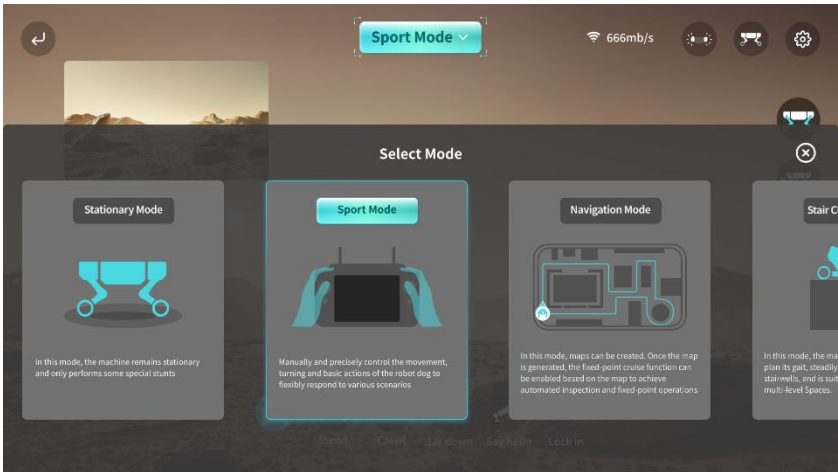
Operate or configure the robot dog using the "GenisDog" APP

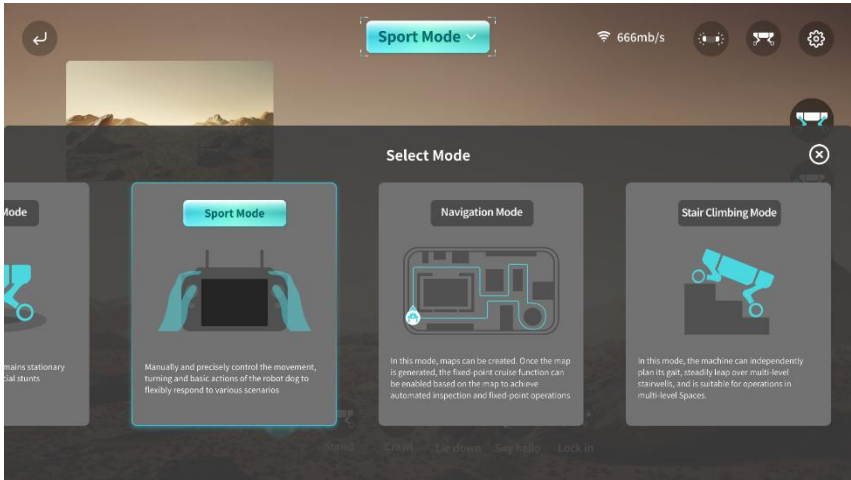
A. Main Page Function Display



B. Mode Switch

Select the appropriate function mode based on your task scenario





a) Stationary Mode

- Function Description: The robot dog will lock its function of mobility and maintain a stable standing posture in place.
- Core Purpose: Focused on performing stunt, precise calibration or equipment inspection.
- Scenarios: Power-on self-test, debugging and calibration, etc.

b) Sport Mode (Default)

- Function Description: Unlock all functions of mobility, allowing precise manual remote control of the robot dog's omnidirectional movement, turning and basic actions.
- Core Purpose: perform flexible and precise manual control in a complex environment.
- Scenarios: Complex terrain traversal, narrow space exploration, close observation of specific targets, etc.

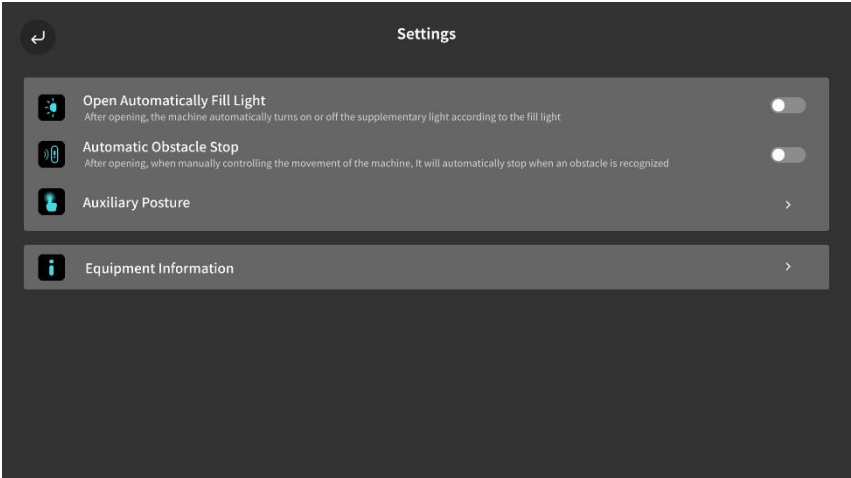
c) Navigation Mode

- Function Description: In this mode, you can first guide the robot dog to build an environmental map. After the mapping is completed, you can set fixed point tasks based on this map to initiate automated cruising and operation.
- Core Purpose: Achieve autonomous and repeatable inspection and operational tasks, thereby liberating manpower.
- Scenarios: Automated inspection, preset route patrol, etc.

d) Stair Climbing Mode

- Function Description: In this mode, the robot autonomously plans its gait to steadily traverse multi-level stairs.
- Core Purpose: Efficient execution of cross-floor tasks.
- Scenarios: Multi-story building inspections.

C. Setting Interface



- a) Auto Activation of Fill Light: Automatically activate or deactivate the front fill light based on the ambient light intensity to ensure clear video capture in a dark light environment.
- b) Automatic Obstacle Stop: When enabled, the robot will automatically stop moving forward if an obstacle is detected during manual operation. This function is designed for collision avoidance during manual control in complex environments.
- c) Auxiliary Posture:
 - * Battery Swapping Posture: Triggered when battery replacement is required, the robot dog will assume a specific posture to facilitate battery insertion and removal;
- d) Equipment Information: View the robot dog's core information, including equipment serial number and software version of each subsystem (e.g., main control, motion, vision).

Software Continuous Upgrade Statement:

The ancillary APP of this product will undergo regular iterations and feature updates; therefore, descriptions in the manual may differ from the latest version. We are committed to continuously optimizing users' experience and specific functions are subject to what is actually presented within the APP.

Anomalies	Solutions
Power dead and startup failed	Gently press the battery switch to check battery level; Reinstall the battery: Keep batteries aligned with the machine body interface and install them properly until you hear a "click" sound; Clean Interfaces: Wipe the metal contact of the battery and the machine body with a dry cloth or eraser to remove oxidation.
What to do if the remote control connection is abnormal?	First, confirm whether the robot is powered on normally; if so, check whether the emergency stop status is deactivated, if not, shoot the trouble first, then deactivate the emergency stop after troubleshooting is completed; if the emergency stop is deactivated and the robot still cannot be controlled, restart the robot. If the abnormality persists, please contact after-sales service staff.
The robot's standing posture is abnormal upon power-on. Can it still be used?	Do Not control the robot's movement at this time, but immediately press down the soft emergency stop to make the robot go prone, then power off and restart, before attempting to make the robot stand again. If the abnormality persists, please contact after-sales service staff.
Blurry/No Signal in Image Transmission Screen	Gently wipe the camera surface with a lens cloth to remove dust and stains; optimize the signal environment by avoiding strong interference sources like Wi-Fi and Bluetooth, and shorten the distance between the control terminal and the robot dog to be $\leq 10\text{m}$; Turn off the robot and the control terminal, then restart and test the image transmission. If there is still no signal after restarting, please contact after-sales service.
What terrains can the robot adapt to?	The robot is suitable for relatively flat terrain like plains and grasslands, and can navigate complex terrains such as stairs and slopes. However, please avoid operating and using the robot on extreme terrains (e.g., overly smooth surfaces like ice, sharp or highly uneven terrain, edges at heights, etc.).
What to do when encountering unsolvable problems even after consulting this manual?	Save data and promptly contact after-sales service.

A. Routine Cleaning Guidelines

After using the machine, if there are stains on the surface, please clean them promptly; before wiping the body, first turn off the power, then use a dry, clean and soft cloth to wipe, pay special attention to whether the camera and radar are cleaned thoroughly and avoid scratching lens with any hard object.

Do Not use corrosive liquids such as alcohol or disinfectants for cleaning.

B. Regular Inspection and Maintenance

To ensure the robot dog's operational stability and extend its lifespan, regular preventive inspection and targeted maintenance are required.

Maintenance Cycle	Maintenance Module	Specific Maintenance
Daily Check (Approx. 5min before each use)	Appearance and Structure	Check the body and leg links for any deformation or crack; Check whether joint and foot fastening screws are loose or not; Check the foot tires for detachment or severe wear (tread worn smooth); if present, please replace them promptly.
	Battery and Power Supply	Check whether the battery shell has exhibited no bulging or leakage; Have the battery securely installed to prevent loosening in the process of operation; Check the battery level via the screen/app (charge if below 20%)
	Functional Test	Start the equipment and operate the joystick to test whether all joints can move freely and whether there is any stuttering or abnormal "Click" sound; Check and make sure that the camera and sensor lenses are unobstructed and that the image transmission screen is clear; Test whether the remote control signal is stable within 10m (no delay).
Weekly Maintenance (Once a week, approx. 20min)	Overall Machine Maintenance	Wipe the body shell with a dry and soft cloth (for oily stains, lightly dampen with a small amount of clean water and then wipe gently); Gently wipe dust off the camera and LiDAR surfaces with a lens cloth; Use a brush to clean debris from gaps around sensors; Use tweezers to clean weeds or threads entangled in the tires to prevent jamming.
	Joints and Drive System	Wipe all joint surfaces and crevices with a dry and soft cloth to remove mud and dust; after wading, dry the bearing part using a hairdryer in low-temperature gear; Manually articulate each joint to confirm no jamming, abnormal noise, loose screws or tangled/worn cables.
	Battery Maintenance	Fully charge the battery before use (avoid storing it at below 80% charge for extended periods); perform one full charge-discharge cycle every 3 weeks (fully charge it, then use it until below 20% before recharging).

Monthly Maintenance (Once a month, approx. 30min)	Software Update	Check the firmware update via the ancillary APP or official website; Download and install the update as prompted (keep the battery level $\geq$ 50% during upgrade; Do Not cut power).
	Component Status Assessment	Check joint connectors (e.g., robotic arm shafts, leg bearings) monthly; if loose, tighten with a specialized wrench. Component Status Assessment: Check tire wear monthly; if damaged, replace promptly; check battery health every 3 months (view cycle count via the device's APP; replacement is recommended if it exceeds 500 cycles).

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Precautions

- Power off the equipment during maintenance to avoid damage from accidental operation.
- When replacing spare parts (e.g., tires, batteries), please use genuine parts; non-genuine parts may compromise the equipment safety.
- In case of any complex malfunction (e.g., joint jamming, sensor malfunction), please Do Not disassemble it yourself, but contact after sales technical support.

A. The warranty periods for main components of the product you purchased are as shown in the following table:

Component Name	Warranty Period
Overall Unit	1 year
Mainboard	12 months
Joint Module	7 months
Battery	6 months/200 cycles

Note: Vulnerable parts such as the outer shell, foot tires and accessories like the transport case are not covered under the warranty. Please consult after-sales support if needed. Different warranty periods are offered for different components of the Product and mileage limits for them are set. If either the mileage of the Product or the warranty period for specific components exceeded the limit stated in the table above, the warranty would be automatically converted to paid repair service.

After you purchase this product, the warranty period shall be commenced from the date you sign for its receipt. To protect your interest, please be sure to check and confirm on the spot that the product and its attached articles/data are in good or normal condition upon signing for the receipt, otherwise, please contact Party B immediately. According to the logistics company's requirement for claim settlement, for any damage caused by logistics transportation, you shall contact the after-sales department within 24 hours of discovering the logistics-related damage; otherwise, your request cannot be processed.

B. Exceptions to Free After-Sales Service: Under any of the following circumstances, the entitlement of free after sales service for your product under warranty will be void. However, you may still opt for paid repair services if available.

- Damage from collisions, drops, burns, etc., not caused by the product's own quality defects (e.g., human factors)
- Any acts of secondary development of the product (with or without prior authorization), hardware modification, disassembly, etc.;
- Damage caused by unauthorized repairs of components, circuit modifications, battery pack alterations or improper use of chargers;
- Damage caused by immersion in liquid, debris ingress, chemical contact, scratches, etc.
- Damage caused by any use beyond the safe load limit of the product;
- Damage caused by prolonged inactivity of the product;
- Damage caused by failure to activate, install or use the product as required by the user manual;
- Product malfunction or damage caused by the use of non-genuine accessories (including but not limited to replacement, retrofitting, etc.);
- Damage caused by operational errors/intentional actions leading to the product impact against any hard objects, drops or evident signs of impact, collision or scratches on the product surface;

- Damage caused by force majeure or extreme adverse conditions (including but not limited to strong magnetism/strong interference/high temperature/low temperature/ natural disasters);
- Damage caused by operation in environments with sharp terrain, significant undulations, smooth surfaces, etc.

C. How to Send for Repair;

- When contacting for after-sales service, please describe all defects of the product in detail. We will first attempt to diagnose and solve your problems via phone, email or remote assistance.
- If the above methods are unavailable to solve your problems, you may send the product to Party B for further test, upon which corresponding arrangements or decisions will be made. If, upon inspection, it does not comply with the free warranty policy, you may choose paid after-sales service (Party B will then confirm the relevant after-sales services and charges with you) or have the original machine returned.
- ※ You are responsible for advance payment of the mailing fees when sending the product to Party B.
- ※ Party B, upon receipt of the returned product, will conduct fault detection to determine liability for problems found. If it is confirmed through test to be the product's own quality defect and fall within the warranty period, then all related costs and courier fees for return will be borne by Party B.
- ※ If the product, upon inspection, is not eligible for free repair, you may opt for paid repair or have the faulty product returned. Party B will confirm the repair program with you, if accepted, Party A will pay all fees and expenses according to the confirmed program; if not accepted, the equipment will be returned to Party A, and all related inspection fees, labor costs or freights arising therefrom will be borne by Party A.
- ※ Water ingress to the main body of the product, charger or remote control, if occurred, will severely affect the product performance, as a result, the product will become irreparable. Therefore, Party B cannot provide repair services but may offer paid replacement services, as the case may be. Please be informed that and consider returning as appropriate.

“
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



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