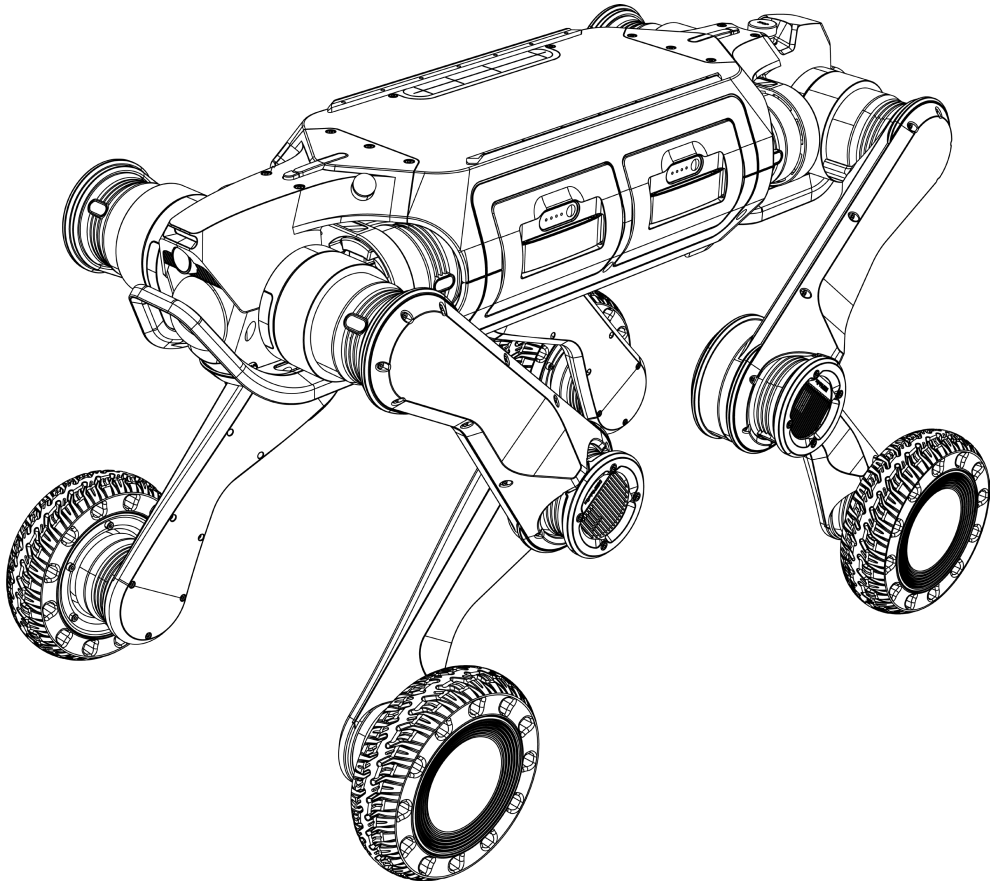
DEEP Robotics



LYNX M20

Hardware Manual V0.0.4-0(2025.07.08)

Statement

- This manual is the information asset owned by Hangzhou Yunshenchu Technology Co.,Ltd. (hereafter referred to as DEEP Robotics) and any reproduction of part or all of this manual is strictly prohibited without the permission of DEEP Robotics.
- This manual explains the key dimensions, mechanical interfaces, and electrical interfaces of "Lynx M20". Be sure to read and understand this manual carefully before operating the robot.
- Basic information on safe use is described in detail in the "Reading Tips", so be sure to read this part thoroughly to ensure proper use.
- The diagrams and photographs in this manual are representative examples and may differ in details from the product purchased.
- This manual may be modified as appropriate for product improvements, specification changes, etc.
- The contents of this manual do not exclude the possibility of misremembering or omission.If this manual is damaged or lost or if you have questions about the contents of this manual, please contact us promptly.
- Failure caused by unauthorized disassembly or modification of the product by the customer is not covered by our warranty, see "Service & Warranty" for details.

Reading Tips

Description of Symbol

Before use (installation, transportation, maintenance, inspection), please be sure to read and master this manual, and familiarize yourself with the equipment and safety matters before you start using it. The safety matters in this manual are divided into three kinds: "Caution", "Mandatory" and "Prohibition". Even the contents of "Caution" may have serious consequences depending on the situation, so any of these safety matters are extremely important and should be strictly observed.

Caution Usage tips or operational recommendations. Improper using or operating the robot may cause damage to it.

Mandatory Matters that must be observed.

Prohibition Matters prohibited. Misoperation is dangerous and may cause injury to operators or damage to the robot.

Get Help

For more resources to assist you in using Lynx M20 proficiently, you can also visit DEEP Robotics' corporate website: http://www.deeprobotics.cn.

Content

1 Mechanical Dimensions

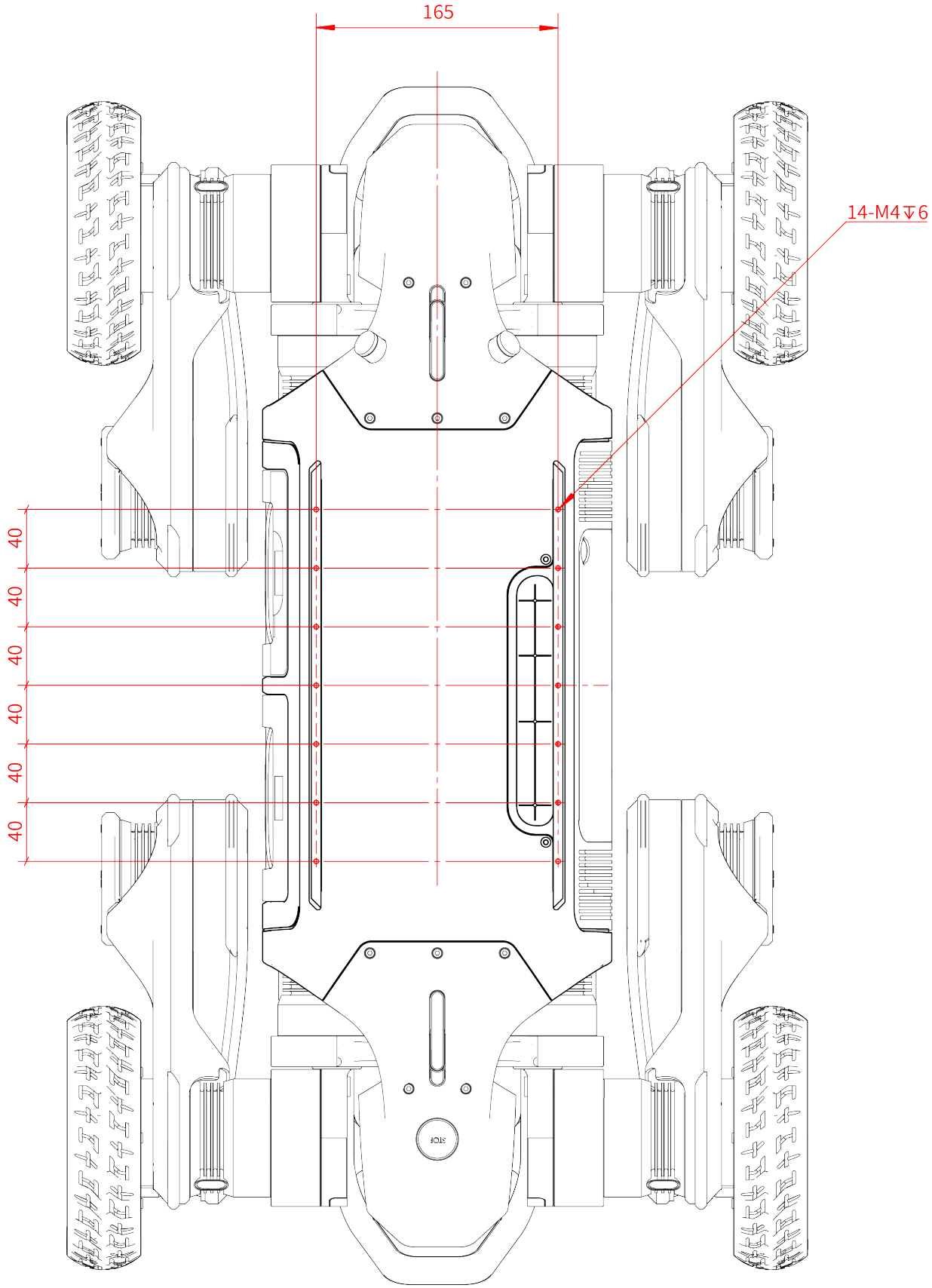
1.1 Key Dimensions

※Key dimensions are measured while the robot is in a normal standing posture, with the legs slightly retracted toward the body.

1.2 Installation Platform

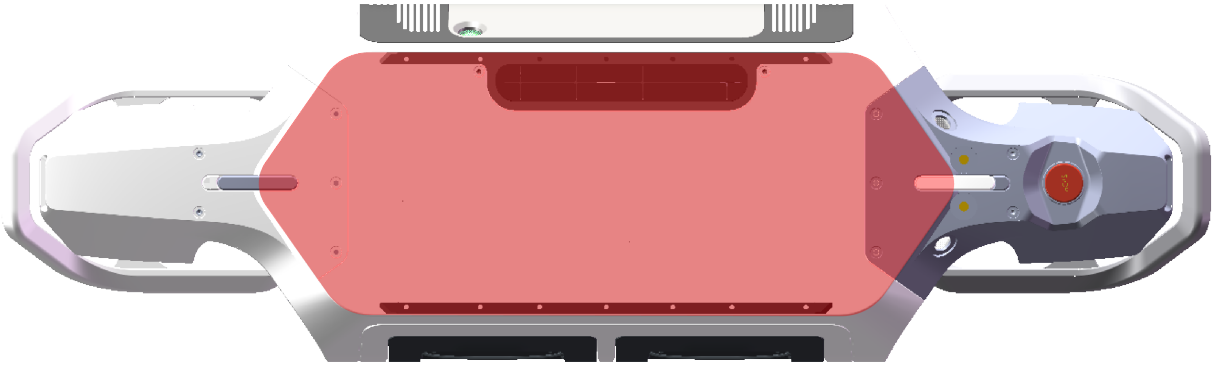
1.3 Mechanical Interfaces

The 14 M4 holes in the two mounting rails can be used to secure the backload with the dimensions shown:

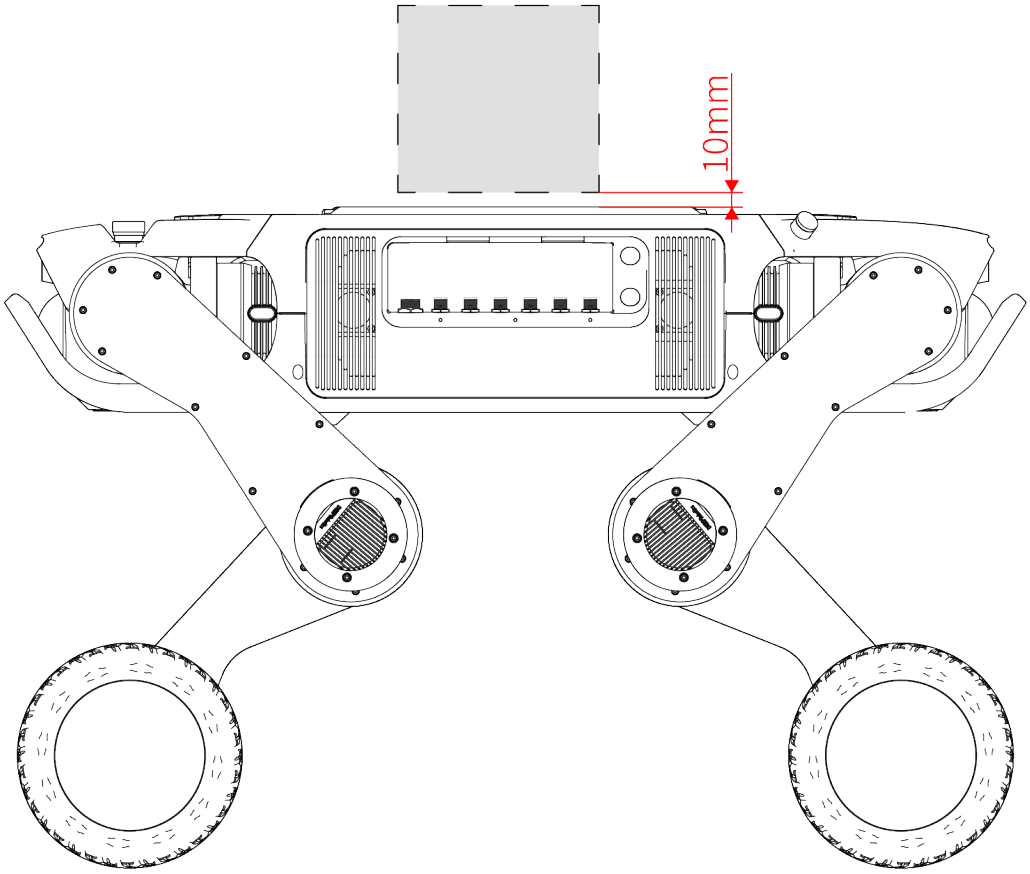


1.4 Installation Range

The weight of the backload should be no more than 15kg, the height of the backload should be no more than 30cm, and the range of the backload is not recommended to exceed the following red area:

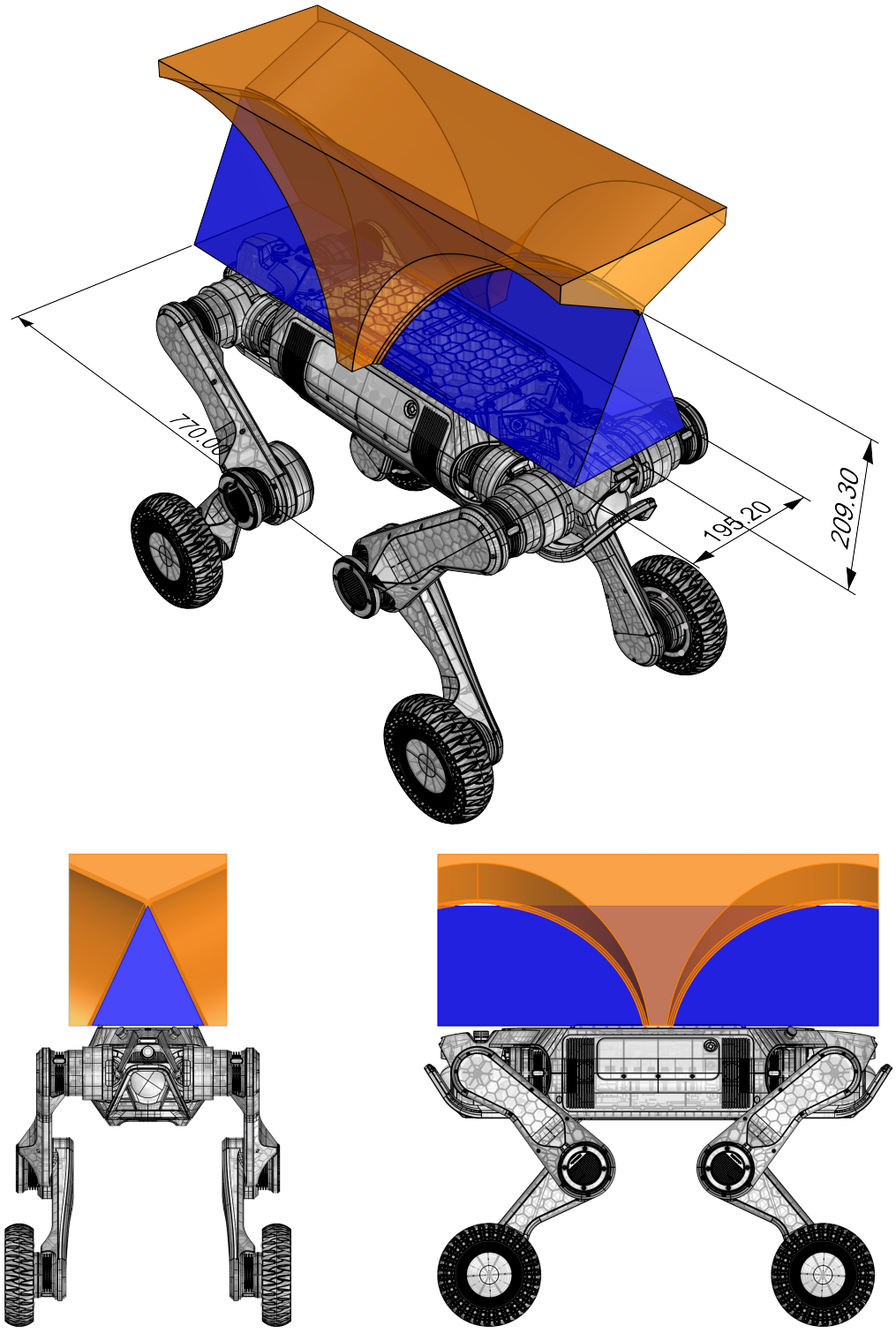


The pass through for official cables is located on the back of the robot. When designing the backload, it is necessary to reserve at least 10mm from the top of the mounting rail as space for wiring.

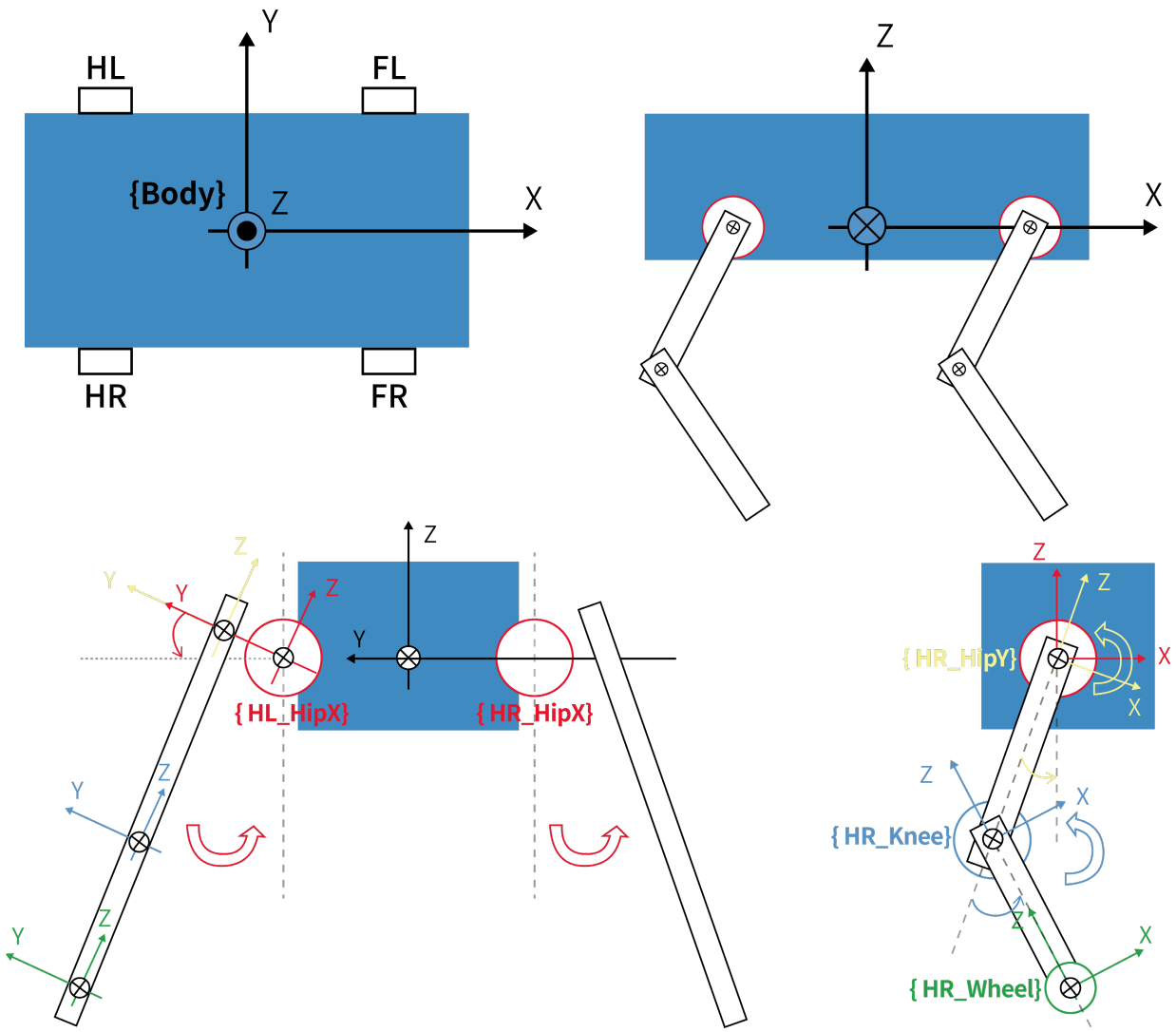


1.5 Motion Interference Range

Due to the large movement range of the leg joints of the Lynx M20 series robot, which can rotate above the robot's back plane in extreme cases, please take care to avoid any interference with the legs when installing backloads. As shown in the figure below, both the orange and blue spatial ranges can avoid interfering with the range of leg movement. Under normal conditions, such as walking on flat ground or stairs, the leg movement range usually doesn't exceed the robot's back plane, users can consider appropriately expanding the installation range.

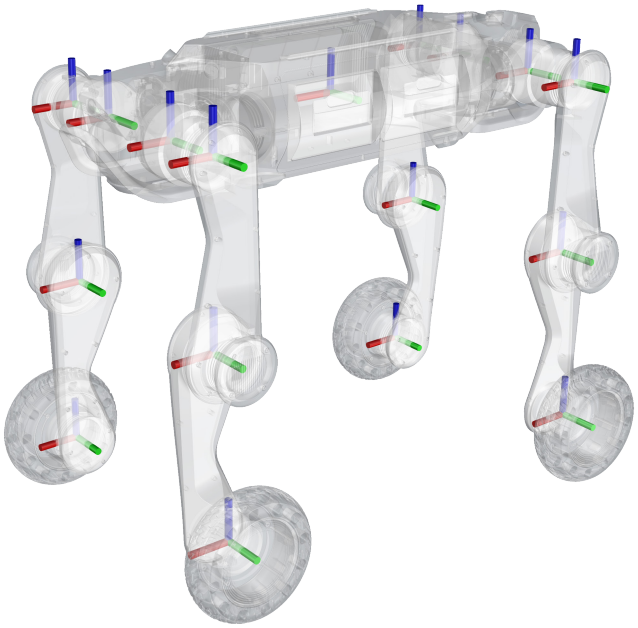


1.6 Body and Joint Coordinate System

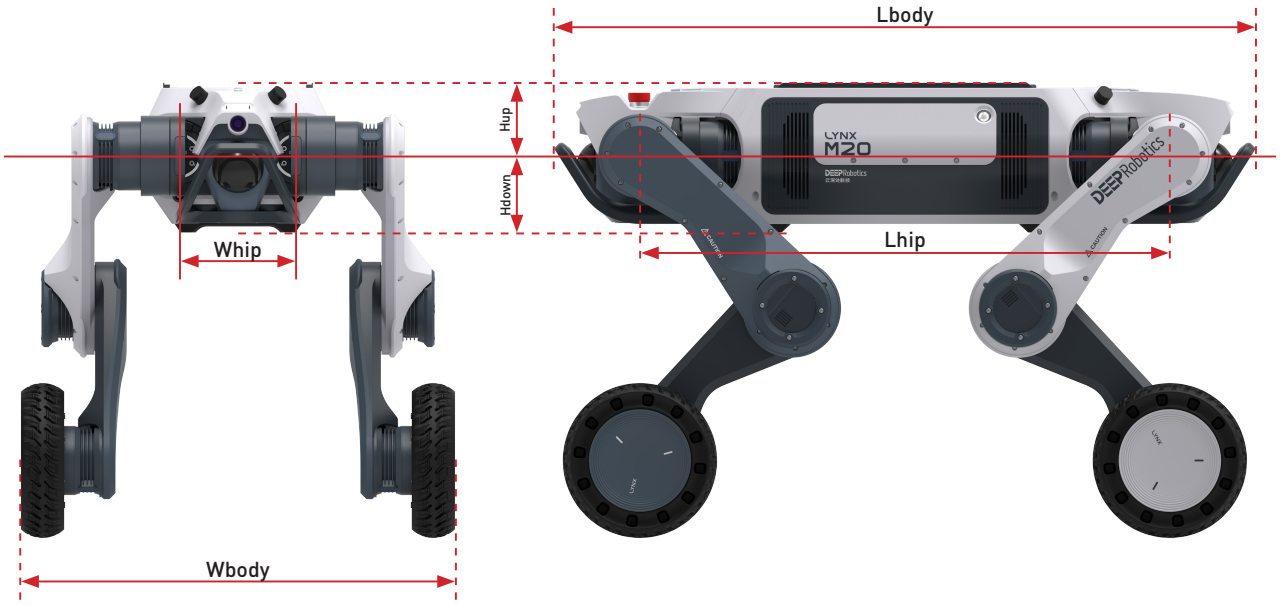


※The arc-shaped arrow indicates the positive direction of rotation for the joint coordinate system with the same color.

※When all joints are at zero degrees, the coordinate systems are as shown below. Red is the x-axis, green is the y-axis, and blue is the z-axis.Please refer to the figure above for the axis of rotation and positive direction of rotation of the joint.

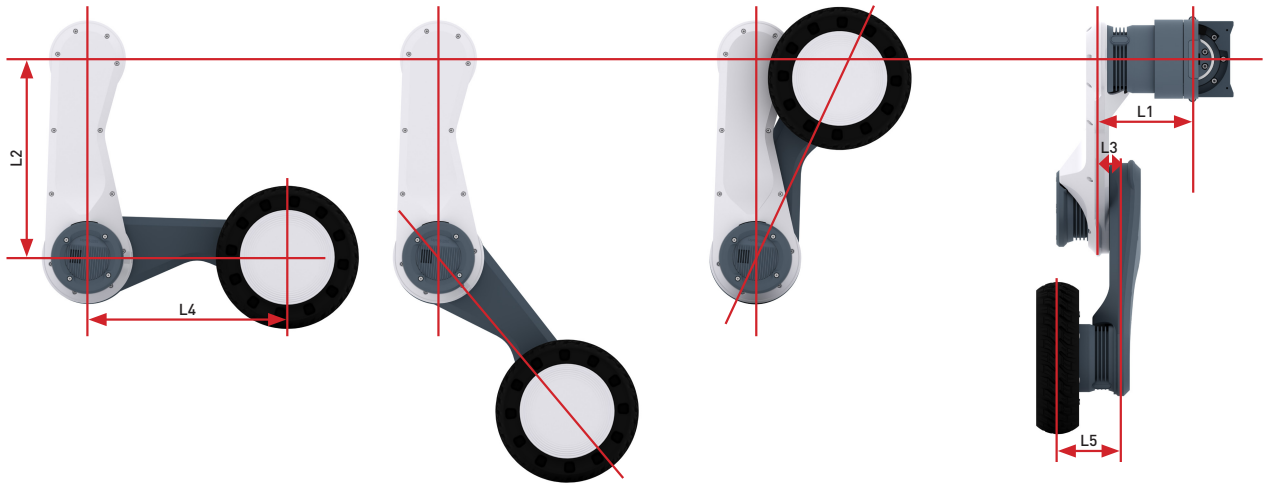


1.7 Link Lengths of Body



Parameter	Value	Description
Lbody	0.82m	length of body
Lhip	0.625m	distance between the centers of front HipY and rear HipY
Whip	0.137m	distance between the centers of left HipX and right HipX
Wbody	0.506m	width of body

1.8 Link Lengths of Leg



Parameter	Value	Description
L1	0.104m	distance between the centers of upper leg and HipX
L2	0.25m	length of upper leg

Parameter	Value	Description
L3	0.029m	distance between the centers of upper leg and lower leg
L4	0.25m	length of lower leg
L5	0.073m	distance between the centers of lower leg and Wheel
RWheel	0.18m	Wheel tyre radius

1.9 Joint Parameters

Joint	Range / Nominal Velocity	Max Torque
HipX	-35°~25°	76Nm@72V
HipY	-140°~140°	76Nm@72V
Knee	22°~328°	76Nm@72V
Foot	68rad/s@72V	21.6Nm@72V

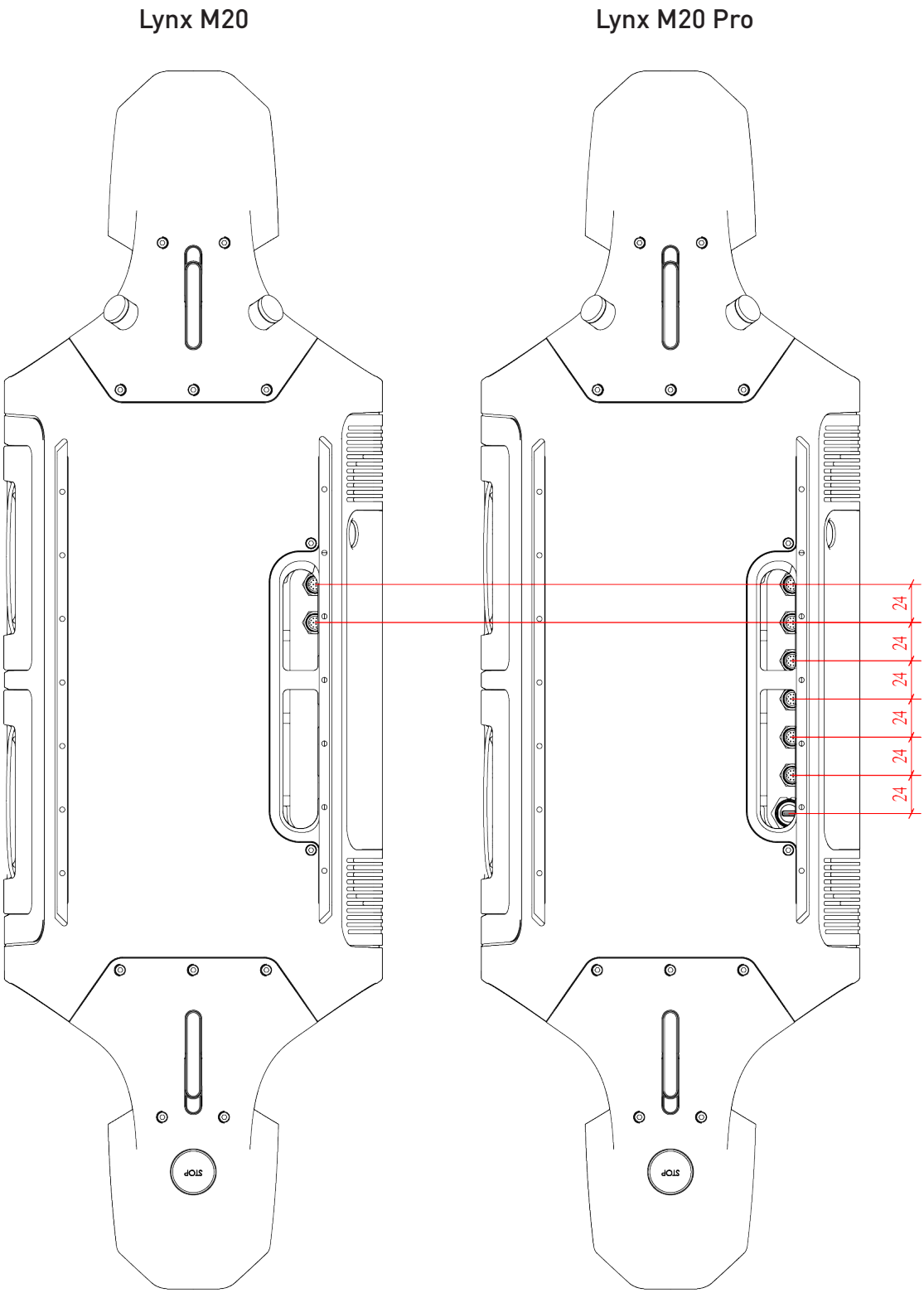
1.10 Sensor Coordinates

Sensor	Coordinate system values (relative to the body coordinate system)		
	X(mm)	Y(mm)	Z(mm)
IMU	63.2	-26.8	-43.5
Front Camera	376.46	0	37.38
Rear Camera	-376.46	0	37.38
Front LiDAR	320.28	0	-13
Rear LiDAR	-320.28	0	-13

※Additional dynamics parameters for Lynx M20 are available in the URDF file provided.

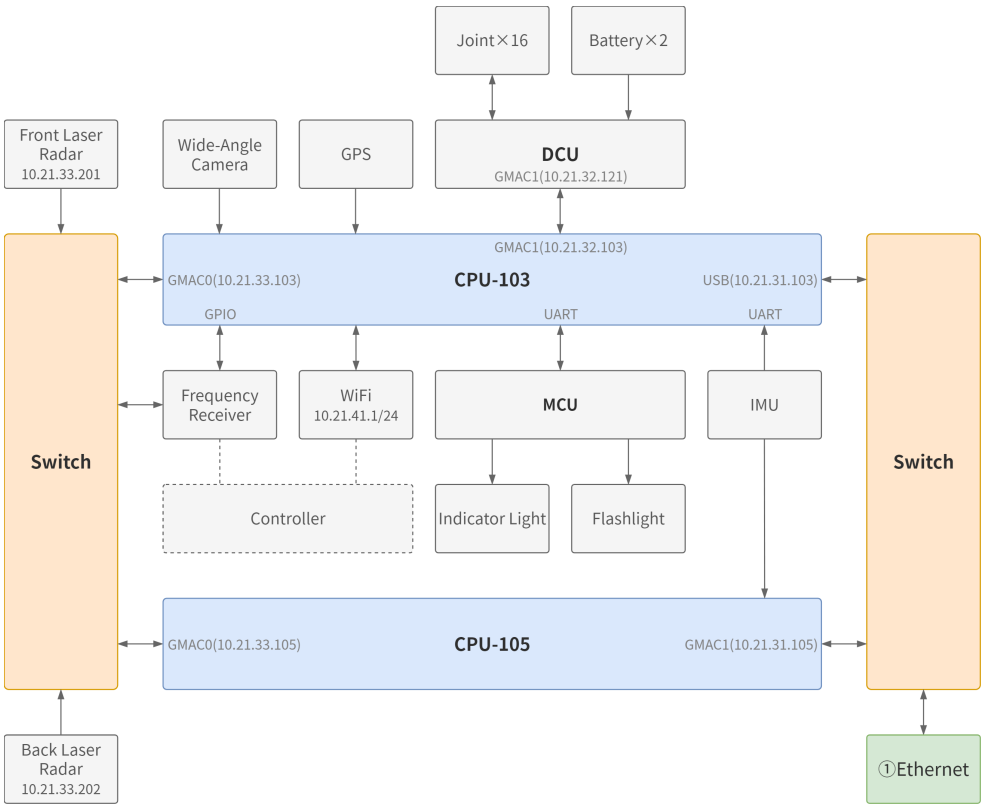
2 Electrical Interface

2.1 Interface Size

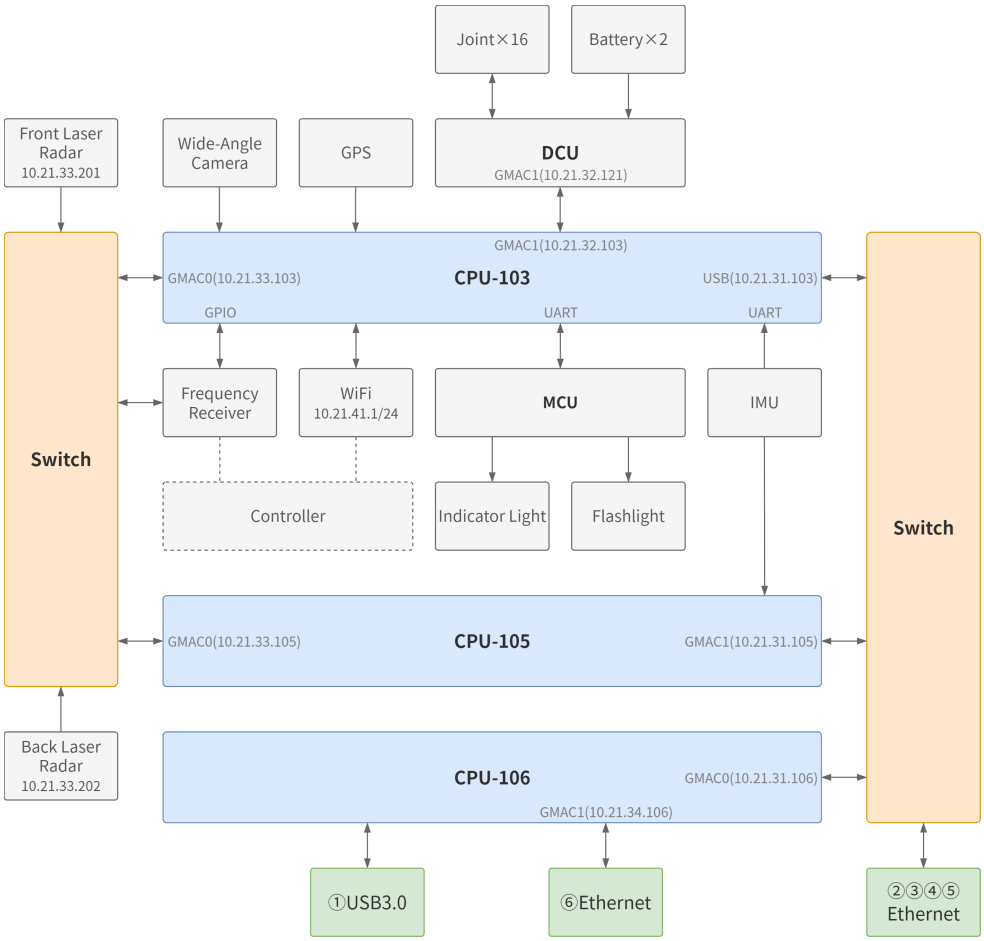


2.2 Network Architecture

Lynx M20

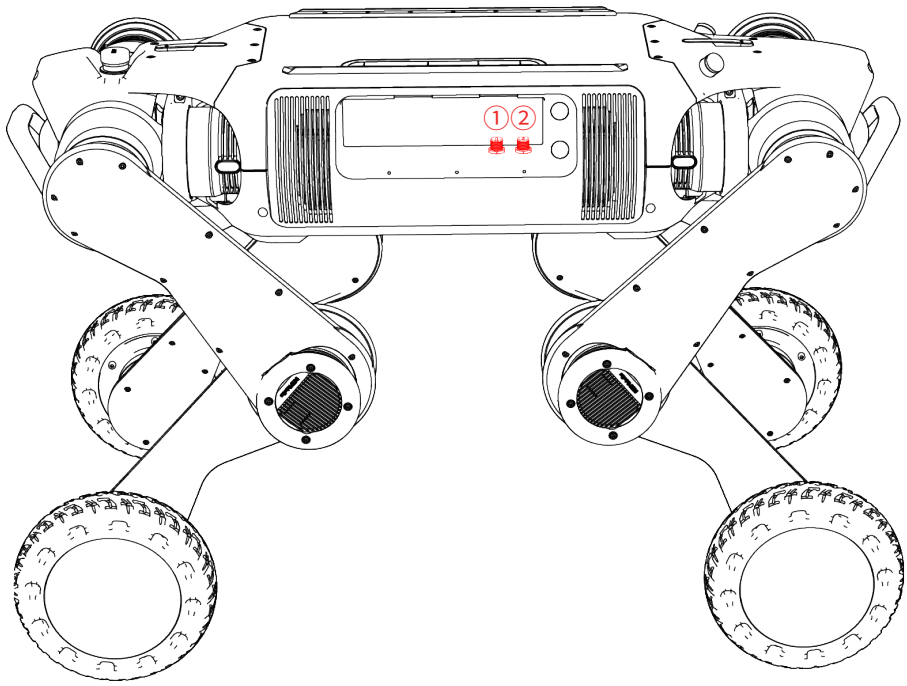


Lynx M20 Pro



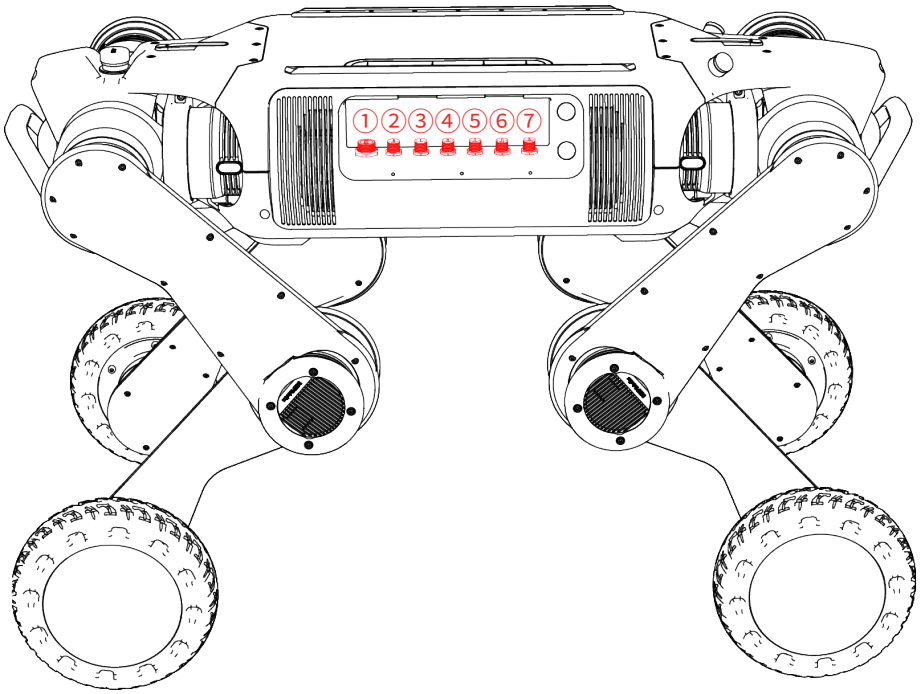
2.3 Interface Definition

The robot provides power supply and communication interfaces. The maximum total power it can supply externally is 360W, of which the maximum total power for the 24V power supply interface is 250W.



Lynx M20

① Ethernet
② 72V 5A



Lynx M20 Pro

① USB3.0 (Type-C)
② 24V 3A + Ethernet
③ 24V 3A + Ethernet
④ 24V 3A + Ethernet
⑤ 24V 3A + Ethernet
⑥ Ethernet
⑦ 72V 5A

2.4 Cable Definition

The robot provides official cables for each interface, with pin defined as described below.

2.4.1 72V 5A

Number	Colour	Definition
1	Blue	GND
2		GND
3	Brown	VCC
4		VCC

2.4.2 24V 3A + Ethernet

Number	Colour	Definition
1	Black	GND
2	Red	24V
3	Brown	TX+
4	Grey	TX-
5	Yellow	RX+
6	White	TX2+
7	Green	TX2-
8	Blue	RX2-
9	Light green	GND
10	Pink	24V
11	Orange	RX-
12	Purple	RX2+

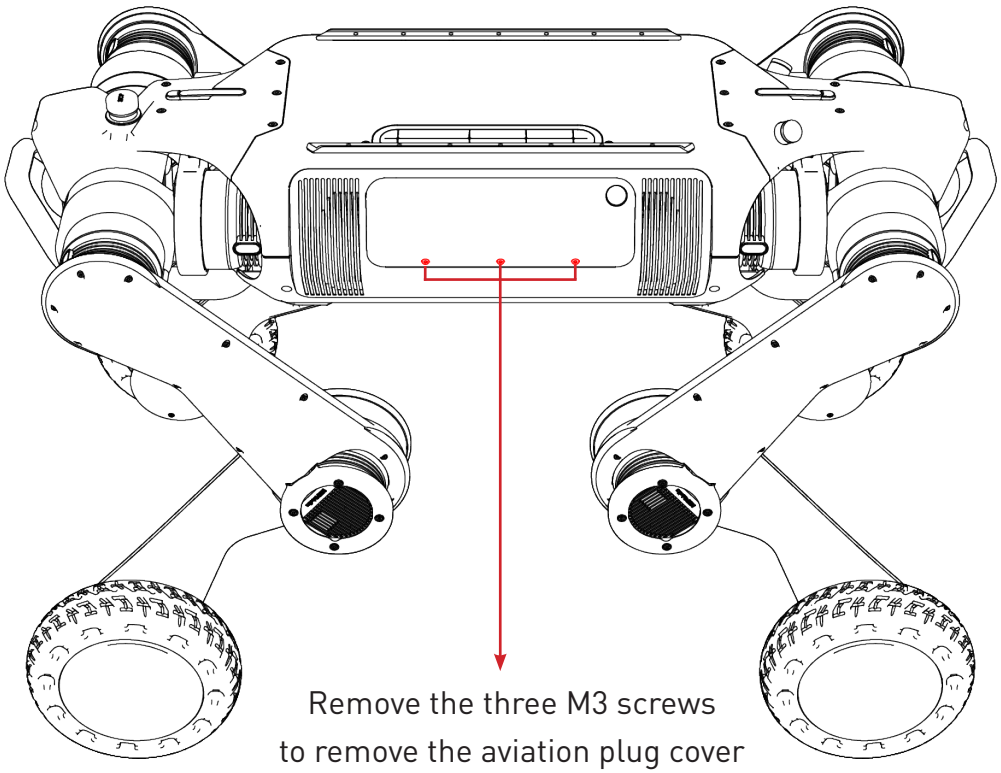
2.4.3 Ethernet

Number	Colour	Definition
1	-	-

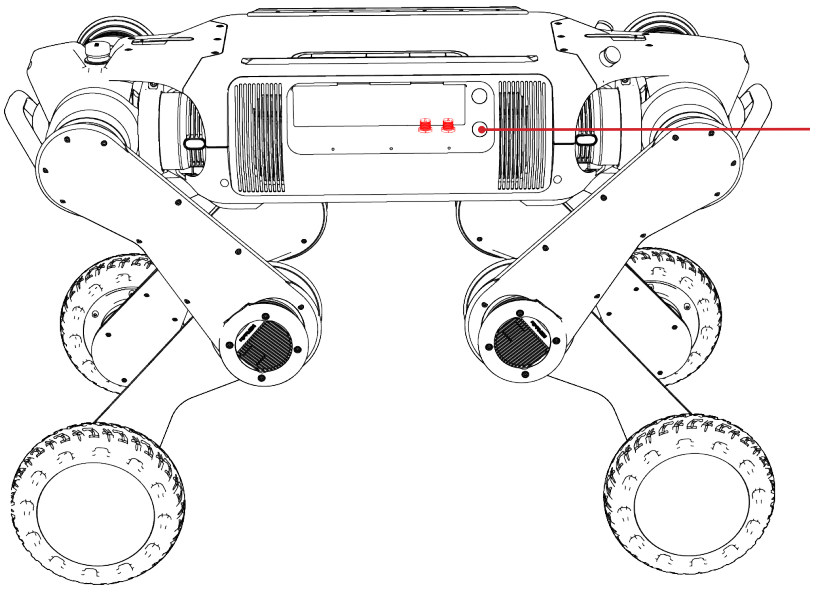
Number	Colour	Definition
2	-	-
3	Orange+White	TX+
4	Orange	TX-
5	Green+White	RX+
6	Blue	TX2+
7	Blue+White	TX2-
8	Brown	RX2-
9	-	-
10	-	-
11	Green	RX-
12	Brown+White	RX2+

2.5 Installation Steps for Cables

The pass through for official cables is located on the back of the robot. For ease of operation, the aviation plug cover can be removed before installing the cables. Once installed, user should verify that the external power supply button under the cover is turned on, and then install the aviation plug cover in its original position.



Remove the three M3 screws
to remove the aviation plug cover



External Power Supply Button

Light Off
External Power Supply Off

Light On(green)
External Power Supply On

DEEP Robotics

Hangzhou Yunshenchu Technology Co.,Ltd.

ADD: Building 3, Zijin Dream Plaza, No.36 Xinran Street, Sandun Town,
Xihu District, Hangzhou, Zhejiang, China
TEL: +86 400-0559-095
WEB: www.deeprobotics.cn