iRAYPLE

600KG LATENT LIFTING AMR INTRODUCTION

Zhejiang HuaRay Technology Co.,Ltd.

Product Overview

Main Purpose and Scope of Application

This product belongs to our intelligent Autonomous Mobile Robot range or AMR for short. The AMR solves common issues experienced in traditional warehousing operations, such as high labor costs, poor warehouse management efficiency, and high order error rates. The AMR range can be an essential addition of any efficient, intelligent warehousing solution.

This product is an Autonomous Mobile Robot (AMR), a perfect solution for small to medium-sized items in multi-category e-commerce and manufacturing logistics centers. It completes warehousing operations, including placing items on shelves, item picking, returning products, and replenishing inventory.

Product Features

Simple Operation, Maintenance, and Low Cost

- The site layout is easily deployed on-demand, with simple implementation, short cycle time, and cost effective.
- The AMR can be used for the circulation of goods across production and warehousing floors, effectively reducing overall labor requirements and improving costs.

Flexible Scheduling and High Efficiency

- Hundreds of AMR's can be dispatched simultaneously to work collaboratively without interfering with each other, to meet the needs of multi-scenario warehousing businesses. Requirements include: Procurement warehousing, production warehousing, production picking, and finished product delivery.

Visual Management, More Intuitive

- The system can monitor the running status of each robot in real-time and give live feedback on the position of any robot, realizing intelligent operation and maintenance.

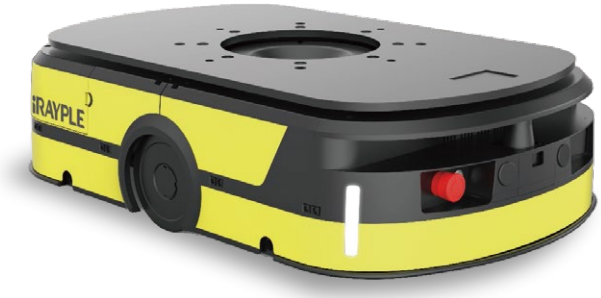
Feature-rich Functions and More Comprehensive

- Use inertial navigation, visual navigation or laser SLAM navigation and other technologies to achieve millimeter-level precise positioning.
- The maximum load is up to 600kg. It also supports motion control, such as forward, backwards, and in-situ rotation and the AMR's motion process is smooth and fluid.
- Intelligent autonomous charging, 24 hours uninterrupted operation.

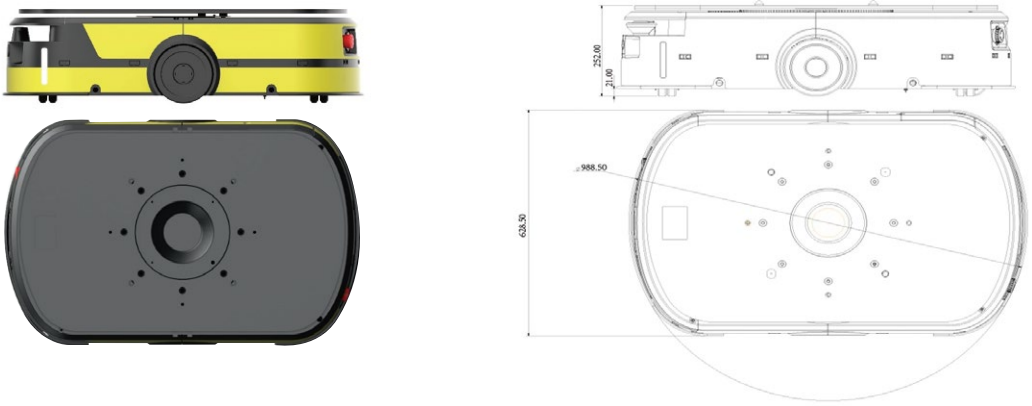
Pull-out Replaceable Battery

· The AMR also supports replaceable batteries, in heavy use scenarios, to save time on charging, the batteries can be simply switched within 2.5 min.

Specification



Product Dimension



Equipment Dimensions (Unit: mm)

Front Panel

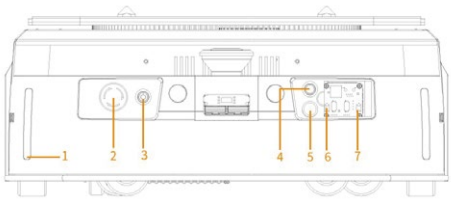


Table 1-1. Front Panel Description

Number	Name	Description
1	Light Strip	1. Normal standby, no task, yellow light is on 2. During normal tasks, charging, the green light is on 3. In case of failure or malfunction, the red light flashes every second 4. Low battery, red light flashes every three seconds **Attention**：Lights show priority, fault priority
2	Emergency	1. Press this button to indicate that the device stops running 2. Rotate this button to pop up, indicating that the device has resumed operation and self-checking
3	Power Button	Device power switch
4	Maintenance/Auto	To switch equipment maintenance/automatic mode 1.Press the button to enter the maintenance mode, and you can manually push the AMR 2. Bounce the button, the light is off, it is the mission mode, cannot be pushed
5	Confirm	Confirmation button to complete manual intervention
6	Restore Factory Button	Long press for 15s to restore initialization, long press for 30s to restore the factory
7	Release the Brake	After the brake is released, the AMR can operate normally

Rear Panel

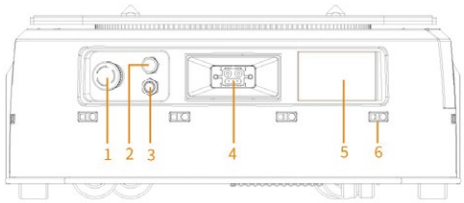


Table 1-2. Rear Panel Description

Number	Name	Description
1	Emergency	1. Press this button to indicate that the device has stopped working 2. Rotate this button to pop up, indicating that the device has resumed operation and self-checking
2	Maintenance/Auto	Used to switch equipment maintenance/automatic mode 1. Press the button to enter the maintenance mode, and you can manually push the AMR 2. Bounce the button, the light is off, it is automatic mode, cannot be pushed
3	Confirm	Confirmation button to complete manual intervention
4	Charging Port	For automatic charging
5	Display Screen	Used to display equipment real-time operation information, abnormal/failure display, lift control, etc.
6	Anti-drop Sensor	Obstacle avoidance induction during AMR operation

Charging Station

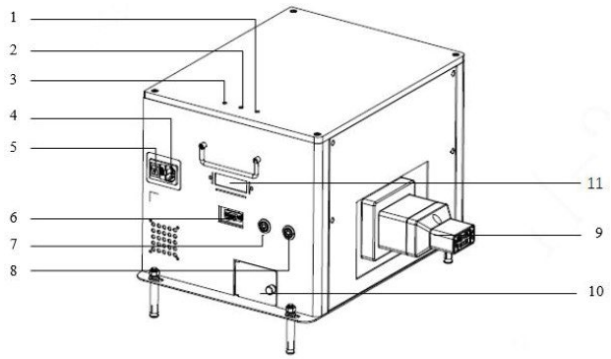


Table 1-1. Front Panel Description

Number	Name	Description
1	Power Indicator	The steady red light indicates that the charging station is power on. Otherwise, there is no power.
2	Charging Status Indicator	1. The steady green light indicates that automatic charging is in progress. 2. The steady red light indicates manual charging 3. The steady yellow light indicates that the charging state is idle. 4. Flashing red light indicates that the charging station is faulty and unavailable 5. If the blue light is on, it means the charging and docking is in progress, and it turns to green if it is successful
3	Wi-Fi Connection Indicator	1.The blue light is on to indicate that Wi-Fi is connected 2. The blue light flashes to indicate that Wi-Fi is not connected or is connecting
4	Power Connector	Connect 220V power supply
5	Power Switch	Charging on/off switch
6	Device Debugging Interface	Used for charging debugging and program upgrade
7	Auto Button	The device defaults to automatic charging mode
8	Manual Button	Manual button is used to manually connect the charging cable to charge, the manual charging port is hidden in the cover. After loosening the screws with a tool, remove the cover. Pull out the manual charging plug and connect the charging cable to the AMR manual charging port
9	Charging Plug	Used for AMR automatic charging
10	Manual Charging Cable	For manual charging
11	Display Screen	Real-time display of charging station status and other information

◎ Charging Station Usage Requirements

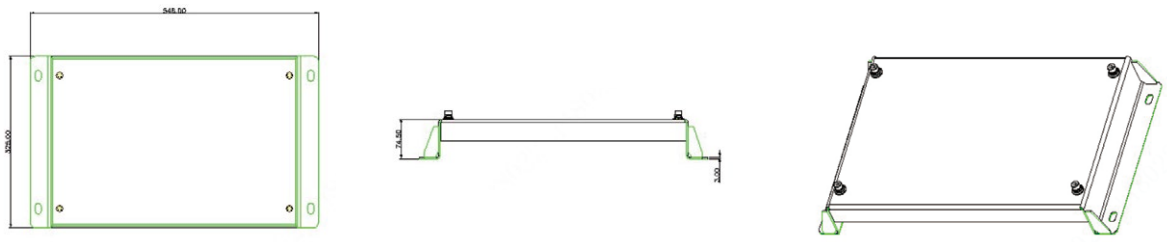
· The usage requirements are as follows:

1. The altitude does not exceed 3000m
2. Ambient temperature: 0 ~ 50 °C.
3. Ambient humidity: 0 ~ 95%RH (when the ambient air temperature is 25 ±5°C)
4. Input voltage: 90VAC-264VAC*
5. Input current: 16A Max.

*Attention：The charging station will modify according to each country's regulation.

◎ Charging Station Base

The base is a necessary accessary for increasing the height of charging station, convenient to connect AMR to complete charging.

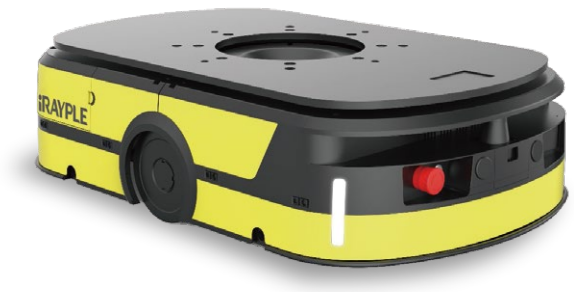


AMR Usage Environment

· Use venue: indoor.
· Altitude: no more than 2000m.
· Ambient temperature: 0°C~40°C.
· Ambient humidity: 10%~90%RH, no condensation.
· Air: No dust, flammable, explosive and corrosive gas.
· Static electricity: In order to easily discharge static electricity, the ground material should be easily discharged.
· In an environment that is easily disturbed by electromagnetic waves, scattered light, ultrasonic waves and static electricity, users and manufacturers need to work together in advance to confirm whether it affects the normal operation of the AMR.

Product Parameters

600kg Latent Lifting AMR



Features

- Visual navigation (QR code) + inertial navigation , Laser SLAM navigation + inertial navigation
- Load capacity: 600kg
- Maximum operating speed (No load): 2m/s , Maximum operating speed (Full load): 1m/s
- Can be adapted to different shapes of pallets or shelves

Model		RTA-C060-Q-LI	RTA-C060-LQ-LI
Basic Parameters	Overall Dimensions L × W × H (mm)	990 × 630 × 250	990 × 630 × 250
	Communication Mode	802.11b/g/n/ac	802.11b/g/n/ac
	5G	○	○
	Rotation Diameter (mm)	990	990
	Lifting Height (mm)	70	70
	Clearance Height (mm)	20	20
	Lifting Platform Dimensions (mm)	900*550	900*550
	Lifting Mode	Electric	Electric
	Net Weight (kg)	135	135
	Rated Load (kg)	600	600
	Navigation Modes	Visual (QR code)	SLAM/Visual (QR code)
	Screen	●	●

● Included ○ Optional — None

Safety and Protection Features	Laser Obstacle Avoidance	Front laser	Front laser
	Infrared (IR) Detection	Rear IR + side IR	Rear IR + side IR
	Protection Strip Detection	Front/rear pressure-sensitive protection strip detection	Front/rear pressure-sensitive protection strip detection
	Emergency Stop Button	Front/rear emergency stop button	Front/rear emergency stop button
	Sound and Light Alarm	●	●
Motion Performance	Rated Operating Speed (No Load) (m/s)	2.0	2.0
	Rated Acceleration (No Load) (m/s^2)	1.0	1.0
	Stop Angle Accuracy (°)	±1	±1
	Stop Position Accuracy (mm)	±10	±10
	Climbing Performance	5%	5%
Battery Performance	Capacity	48V/36Ah	48V/36Ah
	Operating Time under Rated Working Conditions (h)	⩾8	⩾8
	Charging Time (h)	Charging Time after Full Discharge ⩽ 1.5	Charging Time after Full Discharge ⩽ 1.5

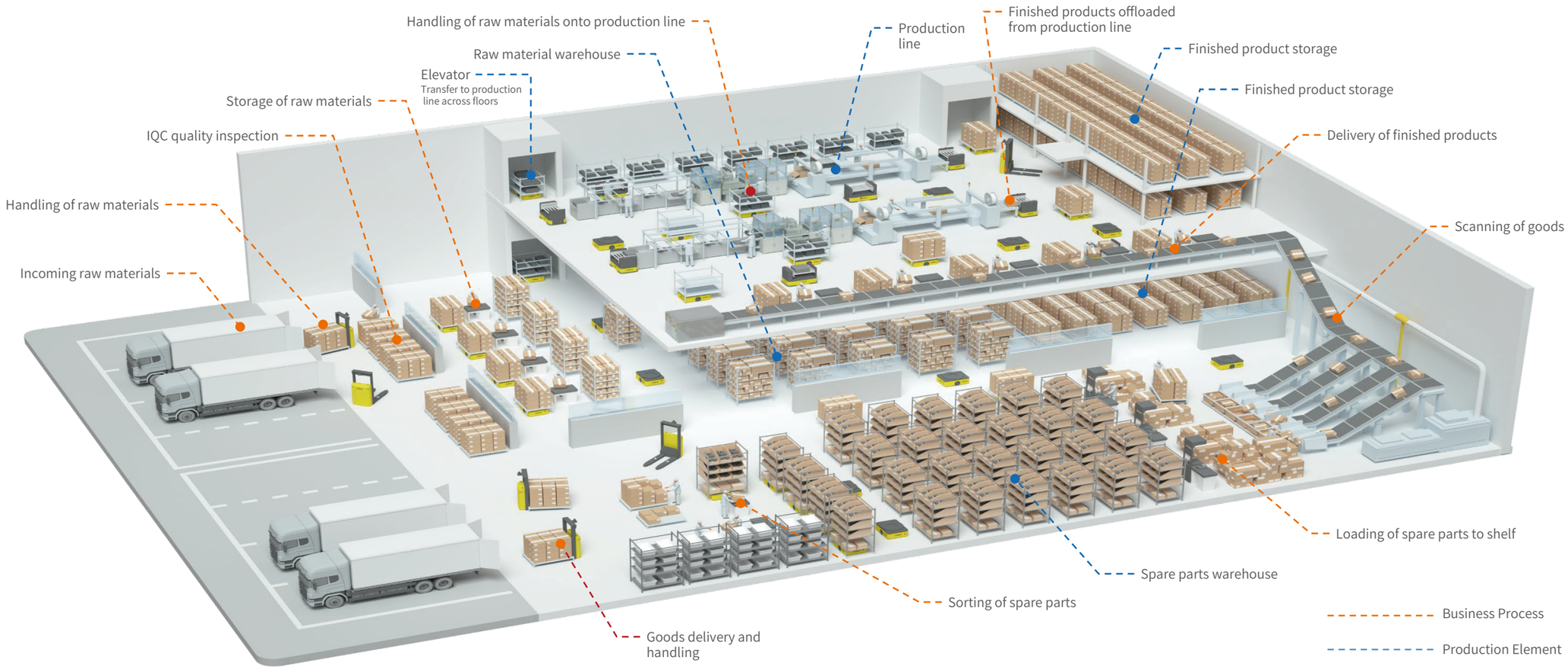
Charging Station

Model	DH-RTP-4830_1*
Dimension L× W × H (mm)	460 × 458 × 292
Input Voltage (VAC)	220
Output Voltage (VDC)	48
Output Current (A)	Max. 25
Weight (kg)	23
Working Temperature (°C)	0-50
Adaptive Devices	600kg Latent Lifting AMR
Charging Mode	Manual/Auto

*Attention：The charging station model will change with the certification of each country.

Typical Cases

Solution Components



Application


Machining


3C


Automobile


E-commerce


Food and Drug Processing

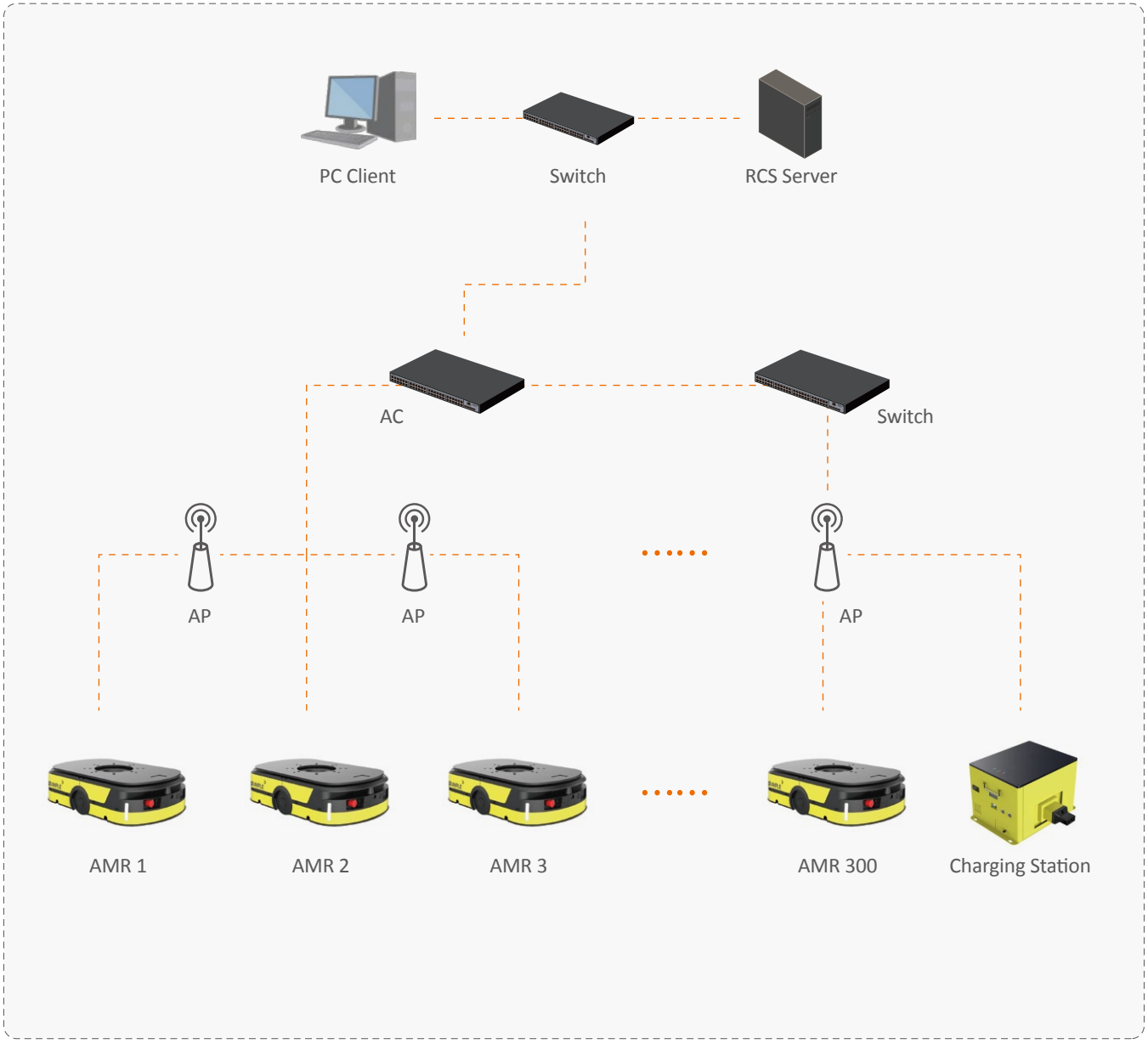

Appliances


New Energy


Logistics

3C, express delivery/e-commerce, automotive, manufacturing, medicine, tobacco, food and beverage and other factory production environments that involve operations, including raw materials, parts receiving and dispatching, transfer and other logistics links.

Appendix 1. Systematic Structure



Appendix 2. Configuration List

Detailed configuration list (including models, quantity and etc.) varies from each project's specific requirement. Below list is a standard DEMO configuration list, quantity and models are not involved, FOR REFERENCE ONLY.

DEMO			
No.	Product	Model	Notes
HARDWARE			
1	600kg Latent Lifting AGV	DH-RTA-C060-Q-LI-100	
2	Charging Station	DH-RTP-4830-1	
3	Charging Station Base	DH261W1	
4	Server	—	
5	Server Cabinet	—	
6	Dongle	DHI-RT-RCS-EK	RCS license
7	Switch	—	Network
8	AC	—	
9	AP	—	
10	AC License	—	
11	PAD	—	Manual task trigger (Optional)
12	PDA	—	
13	Pager	—	
14	Controller	—	AMR manipulation (Optional)
15	UPS	—	Uninterruptible Power Supply for server
16	PC	—	For installing RCS client
17	Keyboard Mouse	—	
18	Toolkit	BT-100	
SOFTWARE			
1	AMR RCS	DHI-RT-RCS	
2	Integrated control system ICS	DHI-RT-ICS	
3	PAD software	DHI-RT-C-ML-A	If PAD involved
4	System customization	—	
LABOUR COST			
1	Installation, debugging		
2	Transportation, insurance		

Appendix 3. Controller

The Controller allows manual control of the AMR (1x Controller to 1x AMR), Moving it forwards, backwards, turning left or right, and lifting pallet. The AMR can be moved to a designated point as the operator wishes by using the Controller. This can be done even without the server. Moreover, for laser SLAM navigation AMR, scanning the on-site environment and building a map can be done simply and conveniently.

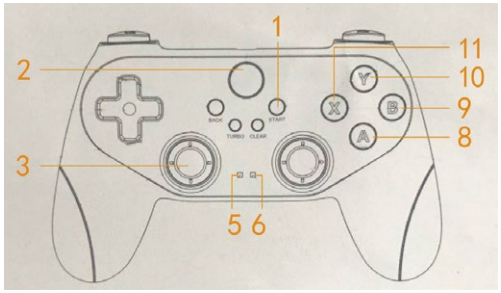


Table 1-3. Description of Controller Buttons

Types	Number	Button	Description
General	1	Enter	Controller confirmation button, after operating the open/close controller control button, you need to short press this button to confirm, and you can turn on/off the controller remote control.
	2	Controller Control Button	Turn on/off the controller remote control, long press for 5 seconds to switch. **Attention:** After the controller control is over, be sure to turn off the controller remote control, otherwise the 'RCS dispatching management system' cannot control the AMR equipment normally
	5	Battery Indicator	The indicator light flashes when the battery is low
	6	Controller Operation Indicator	Blinking means connecting, steady on means connected
AMR Control	3	Left Stick	Flick up and down: Indicates that the device is forward or backward, the default is 0.5m/s, and the maximum is 1.5m/s Flick left and right: Indicates that the device turns left or right, the default is 0.5 rad/s, the maximum is 1 rad/s
	8	A	Equipment chassis deceleration key. Each time you press it, the equipment chassis speed decreases by 0.1m/s
	10	Y	Equipment chassis acceleration key. Each time you press it, the equipment chassis speed increases by 0.1m/s
Pallet Control	9	B	Short press this button, it means to raise the shelf
	11	X	Short press this button, it means to put down the shelf

MAKE FACTORY SMARTER

※ This manual will provide accurate information as far as possible, but there may still be errors,for reference only.
Product information is subject to update without prior notice, and our company is not responsible for the resulting liability.

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