

York-P1

Multimodal Intelligent Navigation Robot



Product Details

01



Suitable courses: <C Language Programming>, <Principles and Applications of Robot Operating System (ROS)>, <STM32 Embedded Development>



The York-P1 series of intelligent vehicles feature high-performance chassis modules and are powered by STM32F series processors. equipped with an RK3588 main control board, depth camera, single-line laser radar, and IMU inertial measurement unit, featuring a standard serial interface and supports functions such as visual and laser SLAM, autonomous navigation with path planning, laser radar mapping, camera-based visual line following, video surveillance, and dynamic autonomous obstacle avoidance. It is suitable for skill training tasks related to testing, calibration, and calibration of environmental perception sensors; It can also be used for skill training related to line-controlled chassis applications, including linear velocity calibration, angular velocity calibration, odometer calibration, drive motor PID calibration, and line-controlled chassis kinematic analysis.



Part Details

02

9.7-inch
display screen



IMU module

Single-line 2D laser radar



Main control board

Depth camera

York-P1

Multimodal Intelligent Navigation Robot



Overview of the functions of the multimodal Intelligent Navigation robot

03



York-P1 Intelligent Mobile Robot Basic Knowledge Section

01

Chassis Structure Disassembly Practice

Includes detailed analysis and disassembly of each part of the chassis structure to understand chassis design principles.

02

Wireless Chassis System Calibration Practice

Includes calibration and debugging of wireless chassis system parameters to ensure control accuracy and stability.

03

Chassis Motion Control and Communication System Practice

Includes the implementation of chassis motion control algorithms and the configuration of communication systems with external devices.

04

ROS Operation Practice

Includes the installation, configuration, and basic operations of the Robot Operating System (ROS), mastering the use of ROS.



York-P1 Intelligent Mobile Robot Advanced Learning Section

01

Calibration of various sensors and practical use of ROS

Includes the calibration process for various sensors (such as LiDAR and cameras) and their integration and application in ROS.

02

Autonomous driving based on laser navigation

Includes practical examples of laser navigation technology in autonomous driving and performance evaluation.

03

Practical Applications of Autonomous Driving Based on Visual Navigation

Includes practical examples of computer vision technology in autonomous driving, exploring its navigation capabilities and limitations.

04

Practical Applications of Navigation Functions Based on Multi-Sensor Fusion

Includes the implementation of multi-sensor data fusion technology to enhance the navigation accuracy and reliability of autonomous driving systems.



York-P1 Intelligent Mobile Robot Advanced Practice Section

01

Visual Automatic Tracking

Includes the implementation of automatic tracking algorithms based on visual sensors, exploring their application in mobile robots.

02

Visual and Lidar Fusion Mapping and Navigation

Utilises RTAB visual algorithms and LiDAR multi-sensor fusion to achieve three-dimensional map construction and navigation in complex environments.

03

Visual Object Recognition

Includes the implementation of object recognition technology based on computer vision, analysing its practical applications in autonomous driving and navigation.

04

Laser Mapping

Includes techniques for environmental mapping using lidar, with a focus on SLAM (Simultaneous Localisation and Mapping) methods and their implementation processes.

York-P1

Multimodal Intelligent Navigation Robot



Product Parameter

04

Overall dimensions (length*width*height):	390 x 310 x 336 (mm)
Driving Mode:	Four-wheel differential motion mode (rubber wheel) Mecanum wheel omnidirectional motion mode (Mecanum wheel)
Maximum Speed (empty load):	1m/s
Self-weight:	6.5kg
Navigation method:	2D SLAM laser navigation
Positioning Accuracy:	$\pm 5\text{cm}$
Battery Capacity:	12V 10AH
Control mode:	Serial communication
Supported Systems:	ROS、Ubuntu
Sensors and accessories:	Single-line 2D laser radar RK3588 main control board IMU module Depth camera Scene sandbox (optional) 9.7-inch display screen Packaging box Model aircraft remote control

York-P1

Multimodal Intelligent Navigation Robot

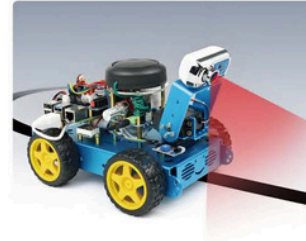


Teaching Features of York-P1 Intelligent Mobile Robot

Multiple mobility modes



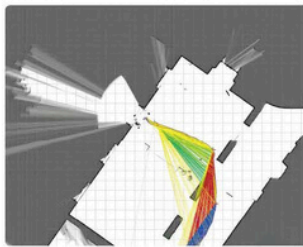
The smart car offers flexible switching between four-wheel differential and Mecanum wheel omnidirectional mobility modes, which students can easily adjust using a dip switch. This feature helps students understand and apply different modes of mobility.



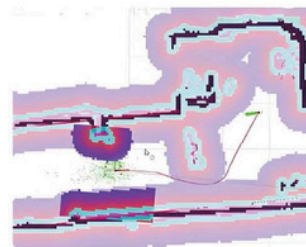
Visual Tracking Autonomous Driving

Students will use high-definition cameras and image processing algorithms to achieve visual tracking autonomous driving, improving their practical skills and problem-solving abilities to cope with complex driving environments.

Laser Radar Map Building



Using single-line laser radar technology, students can build high-precision two-dimensional maps in real time, enhancing their environmental perception and data analysis capabilities, and gaining a deeper understanding of how robots recognise and respond to their environment.



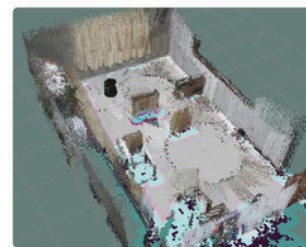
Path Planning and Dynamic Obstacle Avoidance

Students learn to use laser radar data for environmental analysis and optimal path calculation, thereby cultivating logical thinking and algorithm design capabilities, and enhancing their ability to cope with complex environments.

Depth Camera Algorithm Recognition



Students will integrate cutting-edge computer vision and depth vision technologies to gain a deep understanding of how depth cameras work and their applications, thereby enhancing their artificial intelligence innovation capabilities.



Visual and Lidar Fusion Navigation

Utilising the RTAB-VSLAM algorithm, this course fuses visual and radar data to construct a three-dimensional colour map, enabling navigation and obstacle avoidance within the three-dimensional map. Users can obtain depth image data through a 3D depth camera, independently set up and deploy a simulation environment, and achieve target tracking, among other functions.



York-P1 Intelligent Mobile Robot Application Examples



AMR-P1

Intelligent Networked Mobile Robot



Product Details

01

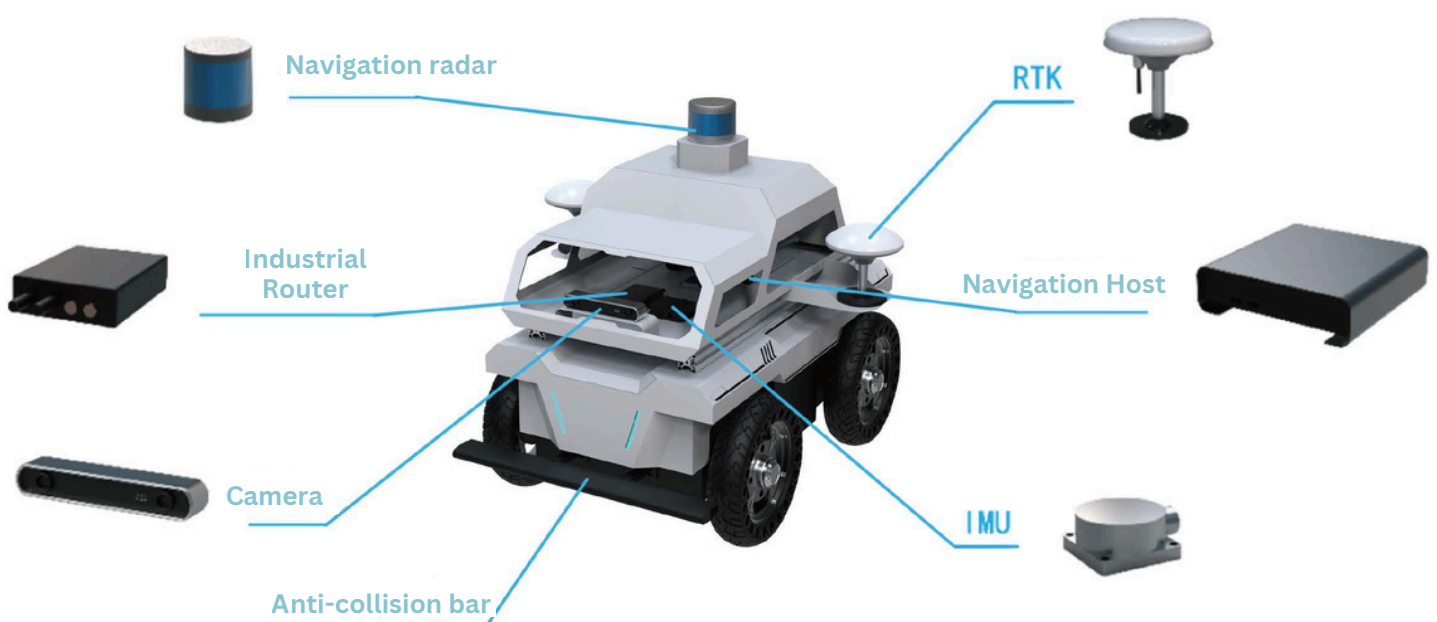


The AMR-P1 series of intelligent navigation mobile robots is based on the PT-01Pro series mobile platform, a four-wheel differential model that supports four-wheel differential, in-place rotation, and other modes. Its simple motion control modes make it easy to quickly learn and practical. This series of intelligent navigation robots is also equipped with a 3D lidar (16-line lidar), a depth camera, a high-precision IMU module, a high-precision differential RTK module, and a high-performance computing board. Based on these sensors, our company has developed algorithms for 3D laser navigation, RTK navigation, vision, and laser multi-sensor fusion, all of which are open for development.



Part Details

02



AMR-P1

Intelligent Networked Mobile Robot



Overview of the functions of the four-wheel differential intelligent navigation mobile robot

03



AMR-P1 Intelligent Mobile Robot - Basic Cognitive Learning



ROS Basic Cognitive Learning

A beginner-friendly ROS course designed for those with no prior experience, offering a progressive learning path from theory to practical application.



Basic Data Analysis for Intelligent Robots

Master sensor data subscription, line-controlled chassis command parsing, and basic control logic in the ROS environment.



Chassis Program Protocol Control

Provides standard communication protocols to master the parsing and control of line-controlled chassis commands, enabling control of the robot's speed, steering, braking, and other functions.



RC Model Remote Control Usage

Master the basic use of RC model remote controls, familiarise yourself with function key triggers, and correctly use them to control intelligent robots.



AMR-P1 Intelligent Mobile Robot - Sensor Data Display



3D Laser Mapping and SLAM Technology

Learn 3D environment modelling and map construction technology based on LiDAR.



Topic Data Curve Display

Provide graphical tools to monitor chassis speed, gyroscope, and other dynamic topic data in real time, displayed as curves, which can be recorded, saved, and played back.



ROS Sensor Function Package Usage

Provide open-source sensor configuration usage code, support sensor activation via ROS commands, and enable data subscription and viewing.



Motion State Visualisation

Real-time output of odometer data via serial port/CAN bus, supporting RVIZ dynamic visualisation monitoring.



AMR-P1 Intelligent Mobile Robot - Intelligent Connectivity and Innovative Applications



Sensor Fusion Calibration Application

Supports camera sensor internal parameter calibration, IMU memory calibration, and provides laser radar-camera fusion calibration tools and calibration guidance processes.



Odometer IMU Data Visualisation

Records odometer information and uses RVIZ to graphically display changes in the vehicle's three-axis attitude.



AI Visual Recognition

Supports object and road sign detection, semantic segmentation, and other functions, enabling real-time target selection and display of target matching confidence information.



RTK Outdoor Integrated Navigation

Utilises RTK integrated navigation technology to enable outdoor open-area latitude/longitude point navigation, waypoint recording, and radar obstacle avoidance.



AMR-P1 Intelligent Mobile Robot - Autoware Advanced Practice Section



Autoware Framework Analysis

Master the architectural design and module communication mechanisms of autonomous driving systems.



Point Cloud Data Processing

Practical training in noise reduction, segmentation, and feature extraction of laser point clouds.



Laser Mapping and Path Planning

Support practical training in point cloud recording, map construction, path planning, and tracking under the Autoware architecture.



ROS_QT Integrated Operating Interface

Provide open-source Autoware multi-line laser mapping navigation quick-start functionality, enabling rapid construction of 3D point cloud maps and experience trajectory tracking navigation functionality.

AMR-P1

Intelligent Networked Mobile Robot



Product Parameter

04

Overall dimensions (length*width*height):	995 x 715 x 740 (mm)
Driving Mode:	Four-wheel differential motion model
Maximum Speed (empty load):	1.2m/s
Chassis Load:	80kg
Self-weight:	80kg
Climbing Ability (unladen):	15°
Obstacle course (vertical steps):	10cm
Navigation Method:	3D SLAM laser navigation, RTK navigation
Positioning Accuracy:	±10cm
Battery Capacity (expandable):	48V 40AH Lithium-ion (Li-ion)
Control mode:	RS232 serial port communication
Supported Systems:	ROS、Ubuntu
Sensors and accessories:	16-line 3D laser radar RTK positioning module Navigation industrial control computer Depth camera 15.6-inch display screen ROS high-precision inertial measurement unit (IMU-Sealand) Anti-collision bar Recharge module (optional)

AMR-P1

Intelligent Networked Mobile Robot



Teaching Features of AMR-P1 Intelligent Mobile Robot



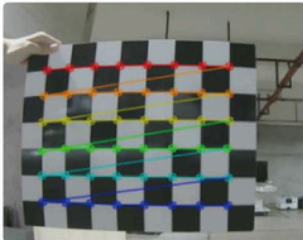
Smart Traffic Light Recognition

Students learn radar technology to detect pedestrians and non-motorised vehicles in real time, as well as camera-based smart traffic light signal recognition, improving their safe driving decision-making abilities and mastering smart avoidance mechanisms.



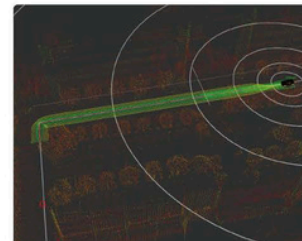
Multi-sensor system learning

Students will use multiple sensors to integrate basic knowledge, master software fault diagnosis and handling techniques, and enhance their adaptability and technical flexibility in complex environments.



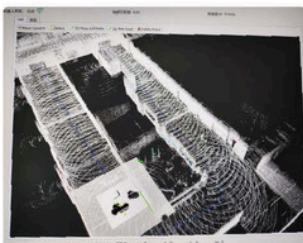
Sensor Data Analysis and Calibration

Students will learn in-depth analysis and calibration techniques for visual sensors, lidar, and IMUs, mastering how to obtain and process sensor data to ensure system accuracy and reliability.



Autonomous driving simulation software

Students will use autonomous driving simulation software to test, optimise algorithms, and verify functions in a safe virtual environment, thereby deepening their understanding of autonomous driving system design and testing processes.



Map Creation and Path Planning

In indoor and outdoor scenarios, students will learn how to combine vehicle pose and obstacle information for map creation and path planning, thereby mastering efficient navigation design and implementation skills.

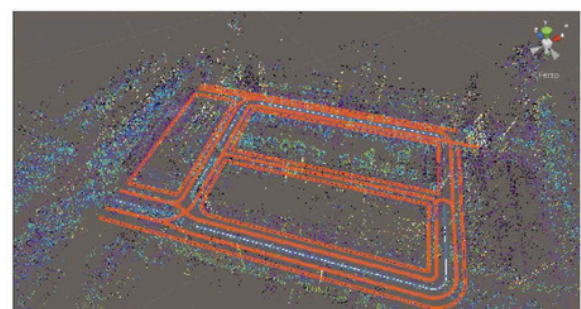
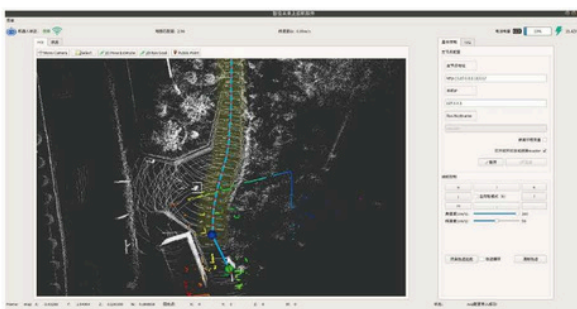


RTK Positioning and Navigation Practice

Students will gain a deep understanding of the principles and applications of high-precision RTK positioning technology through hands-on practice. They will perform precise navigation and path planning in outdoor scenarios to understand the working mechanisms of RTK technology.



AMR-P1 intelligent mobile robot application examples



AMR-M1

Intelligent Networked Mobile Robot



Product Details

01

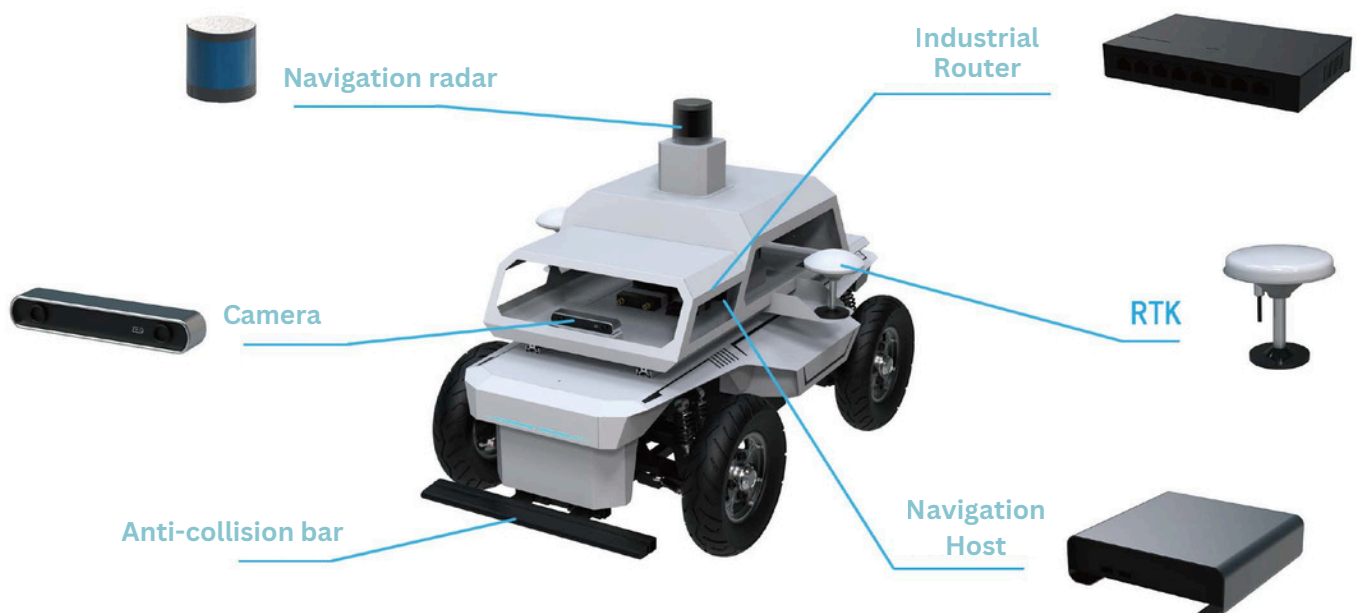


The AMR-M1 series of intelligent navigation mobile robots is based on the MT-04 Pro series mobile platform, which is an Ackermann front steering model. It has good load capacity and movement performance, and its movement control mode is relatively simple, making it easy to learn and use. This series of intelligent navigation robots is also equipped with a 3D laser radar (16-line laser radar), depth camera, high-precision IMU module, high-precision differential RTK module, and high-performance computing board, among other components. Our company has developed algorithms such as 3D laser navigation, RTK navigation, and visual and laser multi-sensor fusion based on these sensors, all of which are open for development.



Part Details

02



AMR-M1

Intelligent Networked Mobile Robot



Ackermann Steering Intelligent Navigation Mobile Robot Features Overview

03



AMR-M1 Intelligent Mobile Robot - Basic Cognitive Learning

01

ROS Basic Cognitive Learning

A beginner-friendly ROS course designed for those with no prior experience, offering a progressive learning path from theory to practical application.

02

Basic Data Analysis for Intelligent Robots

Master sensor data subscription, line-controlled chassis command parsing, and basic control logic in the ROS environment.

03

Chassis Program Protocol Control

Provides standard communication protocols to master the parsing and control of line-controlled chassis commands, enabling control of the robot's speed, steering, braking, and other functions.

04

RC Model Remote Control Usage

Master the basic use of RC model remote controls, familiarise yourself with function key triggers, and correctly use them to control intelligent robots.



AMR-M1 Intelligent Mobile Robot - Sensor Data Display

01

3D Laser Mapping and SLAM Technology

Learn 3D environment modelling and map construction technology based on lidar.

02

Topic Data Curve Display

Provide graphical tools to monitor chassis speed, gyroscope, and other dynamic topic data in real time, displayed as curves, which can be recorded, saved, and played back.

03

ROS Sensor Function Package Usage

Provide open-source sensor configuration usage code, support sensor activation via ROS commands, and enable data subscription and viewing.

04

Motion State Visualisation

Real-time output of odometer data via serial port/CAN bus, supporting RVIZ dynamic visualisation monitoring.



AMR-M1 Intelligent Mobile Robot - Intelligent Connectivity and Innovative Applications

01

Sensor Fusion Calibration Application

Supports camera sensor internal parameter calibration, IMU memory calibration, and provides laser radar-camera fusion calibration tools and calibration guidance processes.

02

Odometer IMU Data Visualisation

Records odometer information and uses RVIZ to graphically display changes in the vehicle's three-axis attitude.

03

AI Visual Recognition

Supports object and road sign detection, semantic segmentation, and other functions, enabling real-time target selection and display of target matching confidence information.

04

RTK Outdoor Integrated Navigation

Utilises RTK integrated navigation technology to enable outdoor open-area latitude/longitude point navigation, waypoint recording, and radar obstacle avoidance.



AMR-M1 Intelligent Mobile Robot - Autoware Advanced Practice Section

01

Autoware Framework Analysis

Master the architectural design and module communication mechanisms of autonomous driving systems.

02

Point Cloud Data Processing

Practical training in noise reduction, segmentation, and feature extraction of laser point clouds.

03

Laser Mapping and Path Planning

Support practical training in point cloud recording, map construction, path planning, and tracking under the Autoware architecture.

04

ROS_QT Integrated Operating Interface

Provide open-source Autoware multi-line laser mapping navigation quick-start functionality, enabling rapid construction of 3D point cloud maps and experience trajectory tracking navigation functionality.

AMR-M1

Intelligent Networked Mobile Robot



Product Parameter

04

Overall dimensions (length*width*height):	1535 x 810 x 465 (mm)
Driving Mode:	Ackermann front-to-rear wheel drive
Maximum Speed (empty load):	2.4m/s
Chassis Load:	200kg
Self-weight:	110kg
Climbing Ability (unladen):	20%
Obstacle course (vertical steps):	8cm
Navigation Method:	3D SLAM laser navigation, RTK navigation
Positioning Accuracy:	$\pm 10\text{cm}$
Battery Capacity (expandable):	48V 20AH Lithium-ion (Li-ion)
Control mode:	CAN communication
Supported Systems:	ROS、Ubuntu
Sensors and accessories:	16-line 3D laser radar RTK positioning module Navigation industrial control computer Depth camera 15.6-inch display screen ROS high-precision inertial measurement unit (IMU-Sealand) Anti-collision bar

AMR-M1

Intelligent Networked Mobile Robot



Teaching Features of AMR-M1 Intelligent Mobile Robot



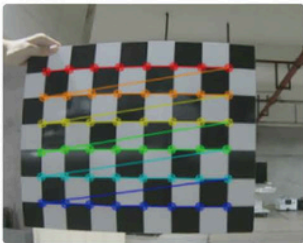
Smart Traffic Light Recognition

Students learn radar technology to detect pedestrians and non-motorised vehicles in real time, as well as camera-based smart traffic light signal recognition, improving their safe driving decision-making abilities and mastering smart avoidance mechanisms.



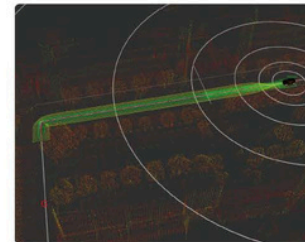
Multi-sensor system learning

Students will use multiple sensors to integrate basic knowledge, master software fault diagnosis and handling techniques, and enhance their adaptability and technical flexibility in complex environments.



Sensor Data Analysis and Calibration

Students will learn in-depth analysis and calibration techniques for visual sensors, lidar, and IMUs, mastering how to obtain and process sensor data to ensure system accuracy and reliability.



Autonomous driving simulation software

Students will use autonomous driving simulation software to test, optimise algorithms, and verify functions in a safe virtual environment, thereby deepening their understanding of autonomous driving system design and testing processes.



Map Creation and Path Planning

In indoor and outdoor scenarios, students will learn how to combine vehicle pose and obstacle information for map creation and path planning, thereby mastering efficient navigation design and implementation skills.

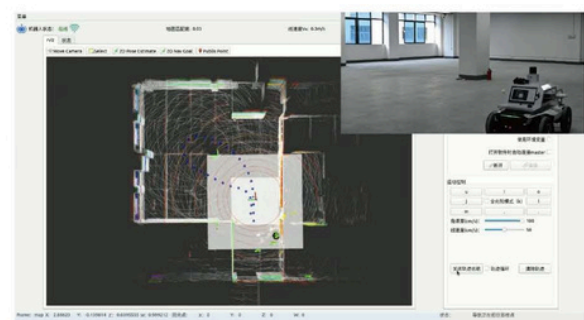
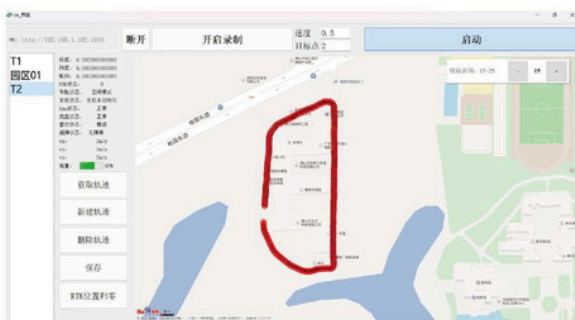


RTK Positioning and Navigation Practice

Students will gain a deep understanding of the principles and applications of high-precision RTK positioning technology through hands-on practice. They will perform precise navigation and path planning in outdoor scenarios to understand the working mechanisms of RTK technology.



AMR-M1 Intelligent Mobile Robot Application Examples



AMR Sensor-M1

Intelligent Networked Mobile Robot Platform



Product Details

01



Course Adaptation: 'Automotive Intelligent Connectivity Technology,' 'Intelligent Vehicle Planning and Decision-Making,' 'Low-Speed Autonomous Vehicle Technology Practical Training'

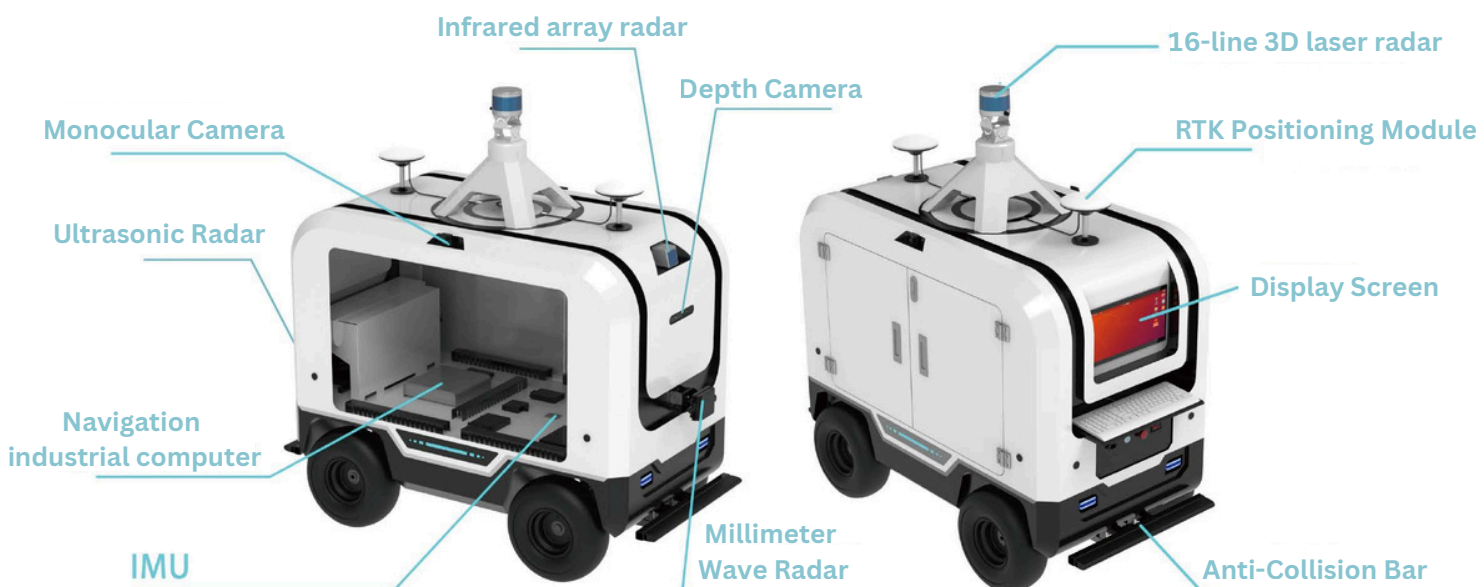


The training platform (AMR Sensor-M1) can perceive the road environment through its perception system, automatically plan driving routes, and control the vehicle to reach the predetermined destination. Hardware components include lidar, millimeter-wave radar, ultrasonic radar, IMU sensors, RTK sensors, visual sensors, autonomous driving processors, displays, and other devices. Software components include positioning software, perception software, traffic light recognition software, mapping software, global path planning software, local path planning software, control software, driver software, calibration software, and other software. The system enables intelligent vehicle combination navigation and laser radar interface interaction, joint calibration of visual and laser radar systems, secondary development of whole-vehicle sensor applications, comprehensive road testing of actual vehicles, development and testing/validation of whole-vehicle intelligent driving functionality algorithms, and more. It can be used for teaching and training tasks such as sensor installation/removal, debugging, testing, fault diagnosis, and calibration, as well as for teaching and training tasks related to automated driving system functionality testing, high-precision map data collection, and mapping.



Part Details

02



AMR Sensor-M1

Intelligent Networked Mobile Robot Platform



Overview of the Multi-Functional Low-Speed Autonomous Driving Training Platform

03



1 AMR Sensor-M1 Intelligent Mobile Robot - Basic Cognitive Learning

01

ROS Basic Cognitive Learning

A beginner-friendly ROS course designed for those with no prior experience, offering a progressive learning path from theory to practical application.

02

Basic Data Analysis for Intelligent Robots

Master sensor data subscription, line-controlled chassis command parsing, and basic control logic in the ROS environment.

03

ROS Package Software Troubleshooting

Supports common fault settings and diagnostics for ROS sensor functionality packages.

04

Fundamental Data Analysis for Intelligent Robots

Gain an intuitive understanding of sensor data visualization for LiDAR, cameras, IMUs, and other sensors, laying the foundation for developing autonomous driving perception systems.



2 AMR Sensor-M1 Intelligent Mobile Robot - Core Technology Learning

01

3D Laser Mapping and SLAM Technology

Learn 3D environment modelling and map construction technology based on lidar.

02

High-Precision Navigation Control

Develop centimeter-level positioning and adaptive obstacle avoidance algorithms based on lidar.

03

RTK Outdoor Navigation Technology

Integrate GPS/Beidou dual-mode positioning, master the principles of RTK differential positioning technology, and achieve RTK outdoor positioning and navigation.

04

Intelligent Path Planning

Implement dynamic path decision-making in complex scenarios using algorithms such as A* and Dijkstra.



3 AMR-Sensor M1 Intelligent Mobile Robot - Intelligent Connectivity and Innovative Applications

01

Multi-sensor collaborative calibration

Provides a laser radar-camera calibration toolkit and calibration process guidance.

02

AI vision development platform

Supports target detection (YOLO series) and semantic segmentation model deployment.

03

Motion State Visualisation

Real-time output of odometer data via CAN bus, supporting RVIZ dynamic visualisation monitoring.

04

Ultrasonic Obstacle Avoidance Settings

Supports simulated navigation ultrasonic obstacle avoidance functionality, with configurable parameters including travel distance, speed, direction, and obstacle avoidance distance.



4 AMR-Sensor M1 Intelligent Mobile Robot - Autoware Advanced Practice Section

01

Autoware Framework Analysis

Master the architectural design and module communication mechanisms of autonomous driving systems.

02

Point Cloud Data Processing

Practical training in noise reduction, segmentation, and feature extraction of laser point clouds.

03

High-Precision Map Construction

Learn vector map creation and semantic information annotation based on Autoware.

04

Multi-Sensor Fusion Navigation

Integrate lidar/camera/IMU data to achieve multi-sensor fusion autonomous driving.

AMR Sensor-M1

Intelligent Networked Mobile Robot Platform



Product Parameter

04

Overall dimensions (length*width*height):	1560 x 890 x 1541(mm)
Driving Mode:	Ackermann front-to-rear wheel drive
Maximum Speed:	8km/h
Self-weight:	200kg
Vertical Load:	200kg
Maximum climbing angle:	10% (fully loaded)
Navigation Method:	3D SLAM laser navigation, RTK navigation
Positioning accuracy:	±10cm
Battery capacity (expandable):	48V 40AH
Control mode:	CAN communication
Supported Systems:	ROS、Ubuntu
Sensors and accessories:	16-line 3D laser radar RTK positioning module Ultrasonic module Millimeter wave radar Infrared array radar (optional) Navigation industrial control computer Monocular camera 15.6-inch display screen ROS high-precision inertial measurement module (IMU-Sealand) Anti-collision bar

AMR Sensor-M1

Intelligent Networked Mobile Robot Platform



Teaching Features of AMR Sensor-M1 Intelligent Mobile Robot



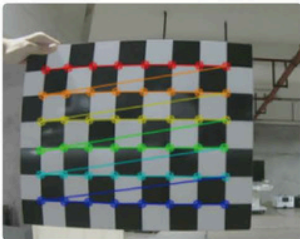
Smart Traffic Light Recognition

Students learn radar technology to detect pedestrians and non-motorised vehicles in real time, as well as camera-based smart traffic light signal recognition, improving their safe driving decision-making abilities and mastering smart avoidance mechanisms.



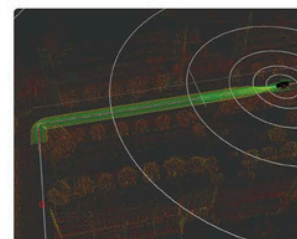
Multi-sensor system learning

Students will use multiple sensors to integrate basic knowledge, master software fault diagnosis and handling techniques, and enhance their adaptability and technical flexibility in complex environments.



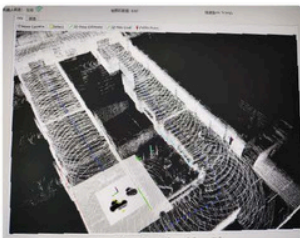
Sensor Data Analysis and Calibration

Students will learn in-depth analysis and calibration techniques for visual sensors, lidar, and IMUs, mastering how to obtain and process sensor data to ensure system accuracy and reliability.



Autonomous driving simulation software

Students will use autonomous driving simulation software to test, optimise algorithms, and verify functions in a safe virtual environment, thereby deepening their understanding of autonomous driving system design and testing processes.



Map Creation and Path Planning

In indoor and outdoor scenarios, students will learn how to combine vehicle pose and obstacle information for map creation and path planning, thereby mastering efficient navigation design and implementation skills.

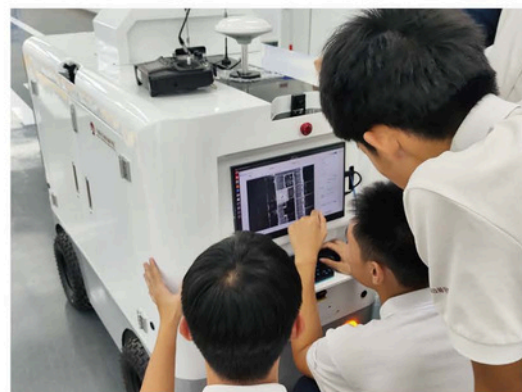


Extensive teaching resources

Students will learn about the application of the Robot Operating System (ROS) and Autoware navigation framework, and master the secondary development capabilities of the vehicle sensor system. Through real-vehicle verification, students will enhance their practical programming and project implementation capabilities, laying a foundation for future scientific research and career development.



AMR Sensor-M1 Intelligent Mobile Robot Application Examples



CMR-D1

Intelligent Multi-functional Composite Robot with Body



Product Details

01



The CMR-D1 embodied intelligent multi-functional composite robot is an upgraded version of the DT-01 S1 platform, deeply integrating a 6-axis collaborative robotic arm and a 3D vision system. This model continues the lightweight chassis design and adds an aluminum alloy robotic arm module with a 600 mm working radius, equipped with an electric flexible gripper at the end, supporting 1.5 kg of dynamic load grasping. By integrating RGB-D depth cameras with 3D vision algorithms, it achieves precise multi-modal recognition of colour, shape, and feature points. Combined with adaptive path planning algorithms, the robot can perform two-dimensional coordinate positioning and dynamic obstacle avoidance in complex environments. The system adopts a modular architecture with an open ROS control interface. The robotic arm is compatible with Python/C++ development environments, allowing users to program or deeply customise robotic arm trajectories and grasping strategies through a visual interface. The built-in high-performance main control unit separately handles navigation logic and AI visual computations, supporting SLAM mapping, object sorting, automated palletising, and other educational and light industrial scenarios. Combined with pre-installed deep learning model libraries and open-source algorithms, it can rapidly deploy embodied intelligent applications such as smart warehousing and retail logistics.



Part Details

02



CMR-D1

Intelligent Multi-functional Composite Robot with Body

CMR-D1 Robot Specifications

Product Technical Parameters	
Overall Dimensions	500*420*310 (mm)
Chassis Weight	35KG
Materials	Q235
Vertical Load	50KG
Encoder Line Count	4096 Lines
Protection Rating	IP22
Operating Temperature	-10-60°
Charging Time	<3H
Motor Power	60W*2
Motor Type	Hub motor (brushless DC)
Maximum Speed	1.3M/S
Theoretical Battery Life	3H
Battery Capacity	24V 20AH (lithium battery, expandable)
External Power Supply	24V/19V/12V
Emergency Stop Method	Remote emergency stop/hardware emergency stop/software emergency stop
System Support	ROS/WIN/UBUNTU
Navigation Method	Laser navigation (2D SLAM)
Navigation Accuracy	±50MM
Navigation Protocol	MQTT
Remote Control Mode	2.4G RC Model Remote Control
Obstacle Avoidance Method	Supports obstacle detection and obstacle avoidance
Navigation Mode	Point-to-point, predetermined route, trajectory, etc.
Turning Radius	Rotate in place (0°)
Auxiliary Positioning Accuracy	±10MM

Robotic Arm Parameters	
Working radius	626MM
Payload	1.5KG
Material/Body weight	Aluminum alloy + plastic shell/4.2KG
Repeatable Accuracy	±0.1mm
Terminal Velocity	≤2M/S
Power consumption	Maximum power consumption ≤120W, comprehensive power consumption ≤40W
Control method	Drag teaching/offline trajectory/API/host computer
Noise	<60db
Power supply	DC24V (24V~26V)
Protection rating	IP54
Communication	CAN
Working environment	-20-50°C, humidity: 25%-85%, non-condensing

Motorized Jaw Parameters	
Weight	0.5kg
Accuracy	±0.5mm
Opening and closing distance	0-70mm
Rated clamping force	40N
Maximum clamping force	50N
Supply voltage	DC24V
Power consumption	Maximum power consumption ≤ 50W Total power consumption ≤ 30W
Self-locking	Not supported
Contact surface material	Rubber
External interface	Power interface*1, CAN interface*1



CMR-D1 Intelligent Mobile Robot Features

01

Laser Mapping and Obstacle Avoidance

Large-scale indoor mapping and dynamic obstacle avoidance.

02

High-precision Navigation

±5cm positioning accuracy and path planning

03

Robotic Arm Gripping

Equipped with robotic arm control gripping and open ROS interface functionality

04

Multi-Source Data Closed-Loop

IMU/odometer/voltage real-time feedback

05

Low Battery Automatic Recharging

Fixed charging position and low battery trigger condition settings

06

Standard Protocols and Data Communication

Provides navigation and robotic arm interface control and open protocols

CMR-D1 Pro

Intelligent Multi-functional Composite Robot with Body



Product Details

01

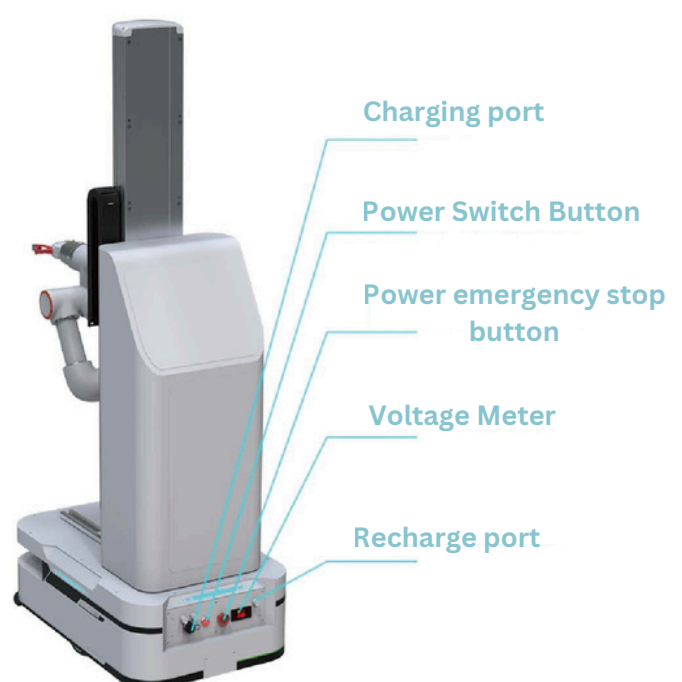
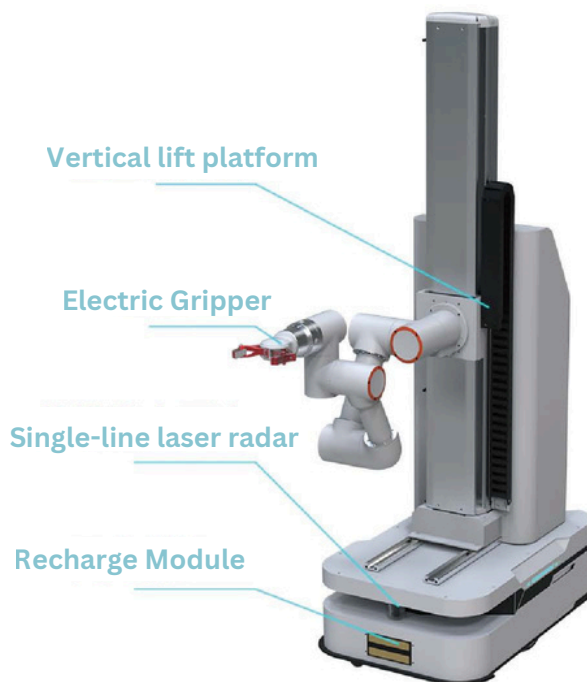


CMR-D1 Pro Multi-functional Embodied Intelligent Composite Robot, based on the upgraded DT-01 Pro S1 chassis, integrates a 6-axis collaborative robotic arm ($\pm 1\text{cm}$ repeatability) and a 1000mm vertical travel electric lifting platform, compatible with high-precision laser navigation ($\pm 2\sim 3\text{cm}$ positioning) and a 3D vision system. The chassis retains an 80kg load capacity and dual obstacle avoidance protection (laser + anti-collision strip). The newly added robotic arm is made of lightweight aluminum alloy and ABS material, with a flexible gripper/electromagnetic suction cup at the end. It works with an RGB-D depth camera and vision algorithms to achieve centimeter-level material recognition and dynamic obstacle avoidance compensation. The lift table supports precise lifting at 250 mm/s, expanding the three-dimensional working space to 600 mm. The navigation system has improved SLAM algorithms to achieve dynamic obstacle avoidance in dense environments (response time < 0.5 seconds). The robotic arm is compatible with Python/C++ development environments, allowing users to program via a visual interface or deeply customise robotic arm trajectories and grasping strategies. With open ROS interfaces and modular navigation protocols, compared to the educational version CMR-D1, its overall efficiency has improved by 50%, and operational costs have decreased by 30%, making it a core automated solution integrating 'space-precision-load' in smart factories.



Part Details

02



CMR-D1 Pro

Intelligent Multi-functional Composite Robot with Body

CMR-D1 Pro Robot Specifications

Product Technical Parameters	
Overall Dimensions	730*460*260 (mm)
Chassis Weight	46KG
Materials	Q235
Vertical Load	120KG
Encoder Line Count	4096 lines
Protection Rating	IP22
Operating Temperature	-10-60°
Charging Time	<3H
Motor Power	150W*2
Motor Type	Hub motor (brushless DC)
Maximum Speed	1.5M/S
Theoretical Battery Life	>4H
Battery Capacity	24V 40AH (lithium battery, expandable)
External Power Supply	24V/19V/12V
Emergency Stop Method	Remote emergency stop/hardware emergency stop/software emergency stop
System Support	ROS/WIN/UBUNTU
Navigation Method	Laser navigation (2D SLAM)
Navigation Accuracy	±30MM
Navigation Protocol	MQTT
Remote Control Mode	2.4G RC Model Remote Control
Obstacle Avoidance Method	Supports obstacle detection and obstacle avoidance
Navigation Mode	Point-to-point, predetermined route, trajectory, etc.
Turning Radius	Rotate in place (0°)
Auxiliary Positioning Accuracy	±10MM

Robotic Arm Parameters	
Working radius	622MM
Payload	3KG
Material/Body weight	Aluminum + steel / about 10KG
Repeatable Accuracy	±0.05mm
Terminal Velocity	≤2M/S
Human-computer interaction	10.1-inch teaching device or mobile terminal app
IO port	2DI、2DO、1AI、1AO
Noise	<65db
Power supply	24V/1.5A
Protection rating	IP54
Typical power	200W (average), 230W (peak)
Working environment	-20-60°C, humidity: 90% RH (no condensation)

Motorized Jaw Parameters	
Recommended Load	3 kg
Weight	0.46 kg
Rated clamping force	10-35 N
Power Supply	24 V (DC)
Opening and closing distance	0-90 mm
Communication	RS485
Controller	Built-in
Self-locking	Not supported
IO Port	2 DI / 2 DO
External interface	1 UART



CMR-D1 Pro Intelligent Mobile Robot Features

01

Laser Mapping and Obstacle Avoidance

Large-scale indoor mapping and dynamic obstacle avoidance.

02

High-precision Navigation

±5cm positioning accuracy and path planning

03

Robotic Arm Gripping

Equipped with robotic arm control gripping and open ROS interface functionality

04

Multi-Source Data Closed-Loop

IMU/odometer/voltage real-time feedback

05

Vertical Electric Lift Expansion

(250 mm/s lifting speed + 1000 mm vertical travel range)

06

Standard Protocols and Data Communication

Provides navigation and robotic arm interface control and open protocols

CMR-D2 Pro

Intelligent Multi-functional Composite Robot with Body



Product Details

01

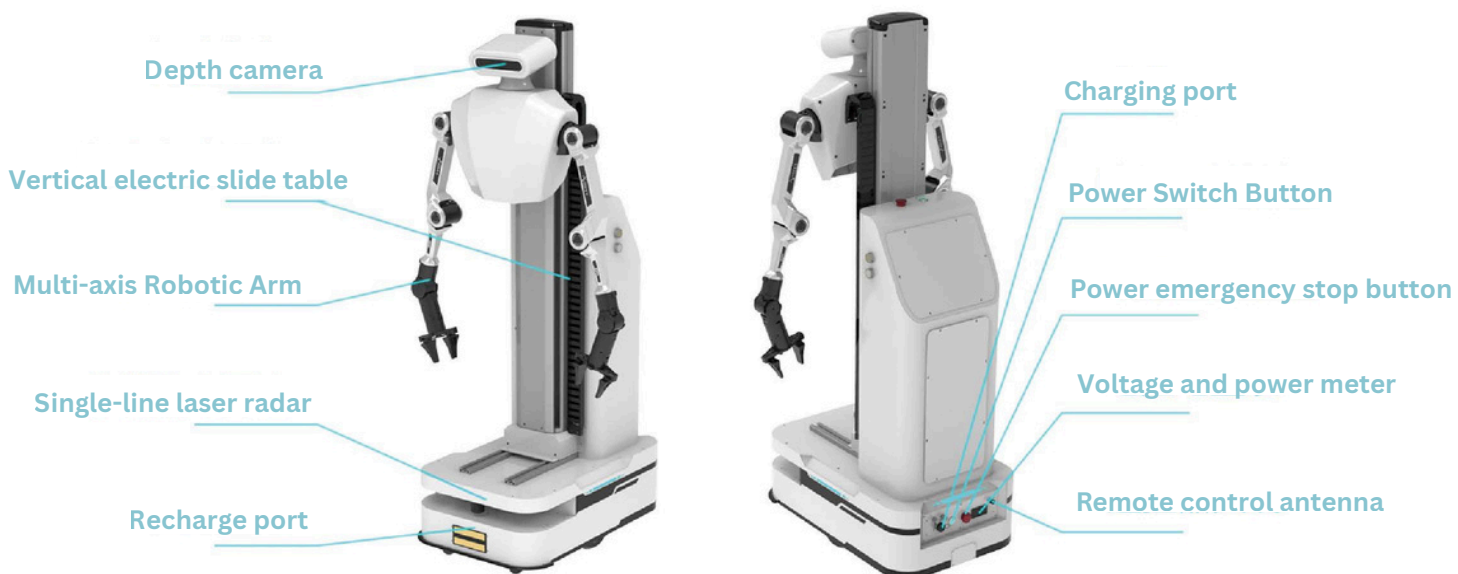


The CMR-D2 Pro is based on the DT-01 Pro S1 two-wheel differential chassis and integrates dual 6-axis bionic robotic arms ($\pm 0.8\text{mm}$ repeatability), a 1000mm electric lifting platform, and dual RGB-D depth cameras. It is designed for universities and research institutions and focuses on robot collaborative control and intelligent perception research. Its dual robotic arms employ a master-slave force-position hybrid control strategy, supporting 0.5mm-level precision assembly and asynchronous handling of a 1.5kg load with a single arm. Flexible grippers (3–20 cm adaptive opening/closing) combined with electromagnetic suction cups enable multi-modal grasping experiments. The lift table (250 mm/s precision) synchronises with the stereo camera to perform vertical space operations such as layered fruit picking in orchards and 3D palletising in warehouses. In research scenarios, the equipment provides open ROS interfaces and Python/C++ development environments, pre-installed dual-arm collaborative path planning algorithms, visual models, and Gazebo virtual simulation datasets. Combined with high-speed cameras and mechanical analysis tools, it enables research into topics such as grasping damage mechanisms and dynamic obstacle avoidance (response time < 0.3 seconds). Single-line laser radar fusion with IMU inertial compensation enables 0.8m narrow-track S-shaped trajectory planning, achieving an 80% efficiency improvement over the single-arm version. This provides universities and research institutions with a full-chain research platform from perception to decision-making to execution, driving innovation and breakthroughs in the field of intelligent robotics.



Part Details

02



CMR-D2 Pro

Intelligent Multi-functional Composite Robot with Body

CMR-D2 Pro Robot Specifications

Product Technical Parameters	
Overall Dimensions	730*460*260 (mm)
Chassis Weight	46KG
Materials	Q235
Vertical Load	120KG
Encoder Line Count	4096 lines
Protection Rating	IP22
Operating Temperature	-10-60°
Charging Time	<3H
Motor Power	150W*2
Motor Type	Hub motor (brushless DC)
Maximum Speed	1.5M/S
Theoretical Battery Life	>4H
Battery Capacity	24V 40AH (lithium battery, expandable)
External Power Supply	24V/19V/12V
Emergency Stop Method	Remote emergency stop/hardware emergency stop/software emergency stop
System Support	ROS/WIN/UBUNTU
Navigation Method	Laser navigation (2D SLAM)
Navigation Accuracy	±30MM
Navigation Protocol	MQTT
Remote Control Mode	2.4G RC Model Remote Control
Obstacle Avoidance Method	Supports obstacle detection and obstacle avoidance
Navigation Mode	Point-to-point, predetermined route, trajectory, etc.
Turning Radius	Rotate in place (0°)
Auxiliary Positioning Accuracy	±10MM

Robotic Arm Parameters	
Working radius	626MM
Payload	1.5KG
Material/Body weight	Aluminium alloy + plastic shell/4.2KG
Repeatable Accuracy	±0.1mm
Terminal Velocity	≤2M/S
Power consumption	Maximum power consumption ≤ 120W, Total power consumption ≤ 40W
Control method	Drag teaching/offline trajectory/API/host computer
Noise	<60db
Power supply	DC24V (24V~26V)
Protection rating	IP54
Communication	CAN
Working environment	-20-50°C, humidity: 25%-85% RH (non-condensing)

Motorized Jaw Parameters	
Weight	0.5kg
Accuracy	±.0.5mm
Opening and closing distance	0-70mm
Rated clamping force	40N
Maximum clamping force	50N
Supply voltage	DC24V
Power consumption	Maximum power consumption ≤ 50W Total power consumption ≤ 30W
Self-locking	Not supported
Contact surface material	Rubber
External interface	Power supply interface*1, CAN interface*1



CMR-D2 Pro Smart Mobile Robot Features

01

Laser Mapping and Obstacle Avoidance

Large-scale indoor mapping and dynamic obstacle avoidance.

02

High-precision Navigation

±5cm positioning accuracy and path planning

03

Precision control of dual bionic robotic arms

±10mm repeatability + 1.5kg load handling

04

Multi-Source Data Closed-Loop

IMU/odometer/voltage real-time feedback

05

Vertical Electric Lift Expansion

(250 mm/s lifting speed + 1000 mm vertical travel range)

06

Standard Protocols and Data Communication

Provides Navigation and Manipulator Interface Control and Protocols

CMR-H1

Omnidirectional Single-Arm Composite Robot



Product Details

01



The CMR-H1 omnidirectional mobile single-arm composite robot is optimised for high-density space operations. It is equipped with the HT-01 Mini omnidirectional chassis (lateral/diagonal/zero-radius turning), integrated with a single 6-axis collaborative robotic arm and a 1000mm lifting slide table, and features a compact design suitable for scenarios such as warehouse sorting and medical supply distribution. The chassis integrates a 16-line laser radar ($\pm 8\text{cm}$ positioning accuracy) and an IMU inertial navigation system, enabling centimeter-level obstacle avoidance in narrow passages (1m wide) while carrying a 120kg load. The robotic arm uses lightweight modular joints (peak torque 18 N·m) with a silicone adaptive gripper (3-15 cm grasping span) at the end. Combined with an RGB-D camera on the head, it enables single-arm dynamic tracking and centimeter-level target segmentation. The lifting slide table (250 mm/s) provides vertical coverage up to a 1 m working height. It features an open ROS interface, compatible with gesture teaching and lightweight AI algorithm porting, redefining efficiency in light industrial scenarios through single-arm high agility combined with an omnidirectional chassis.



Part Details

02



CMR-H1

Omnidirectional Single-Arm Composite Robot

CMR-H1 Robot Specifications

Product Technical Parameters	
Overall Dimensions	710*490*385 (mm)
Chassis Weight	70KG
Materials	Q235
Vertical Load	120KG
Encoder Line Count	4096 lines
Protection Rating	IP54
Operating Temperature	-10-60°
Charging Time	3H
Motor Power	Drive motor 150W*4 + steering motor 60W*4
Motor Type	100MM
Maximum Speed	2.0M/S
Theoretical Battery Life	3H
Battery Capacity	48V 25AH (lithium battery, expandable)
External Power Supply	48V/24V/19V/12V
Emergency Stop Method	Remote emergency stop/hardware emergency stop/software emergency stop
System Support	ROS/WIN/UBUNTU
Climbing	20%
Obstacle crossing (vertical steps)	5CM
Movement mode	Omnidirectional movement mode
Slope hold	Servo hill hold
Navigation method	Laser navigation (3D SLAM)
Navigation accuracy	±80MM
Navigation protocol	MQTT
Remote control mode	2.4G RC Model Remote Control

Robotic Arm Parameters	
Working radius	622MM
Payload	3KG
Material/Body weight	Aluminum + steel / about 10KG
Repeatable Accuracy	±0.05mm
Terminal Velocity	≤2M/S
Human-computer interaction	10.1-inch teaching device or mobile terminal app
IO port	2DI、2DO、1AI、1AO
Noise	<65db
Power supply	24V/1.5A
Protection rating	IP54
Typical power	200W (average), 230W (peak)
Working environment	-20-60°C, humidity: 90% RH (no condensation)

Motorized Jaw Parameters	
Recommended Load	3 kg
Weight	0.46 kg
Rated clamping force	10-35 N
Power Supply	24 V (DC)
Opening and closing distance	0-90 mm
Communication	RS485
Controller	Built-in
Self-locking	Not supported
IO Port	2 DI / 2 DO
External interface	1 UART

3

CMR-H1 Intelligent Mobile Robot Features

01

Multi-line laser navigation and obstacle avoidance

Outdoor mapping navigation + dynamic obstacle avoidance for objects at different heights

02

High-precision Navigation

±5cm positioning accuracy and path planning

03

Robotic Arm Gripping

Equipped with robotic arm control gripping and open ROS interface functionality

04

Omnidirectional Chassis for High-Flexibility Movement

Lateral/Diagonal/Zero-Radius Turning + 1m Narrow Path Passage

05

Vertical Electric Lift Expansion

(250 mm/s lifting speed + 1000 mm vertical travel range)

06

Standard Protocols and Data Communication

Provides Navigation and Robotic Arm Interface Control and Protocol Accessibility

CMR-H2

Omnidirectional dual-Arm Composite Robot



Product Details

01



CMR-H2 Omnidirectional Dual-Arm Composite Robot, developed based on the HT-01 Mini four-wheel, four-rotation omnidirectional chassis, integrates a humanoid dual-arm system and a 1000mm lifting slide table, suitable for high-mobility scenarios such as industrial assembly and warehouse logistics. The chassis adopts an omnidirectional drive architecture (lateral/diagonal/zero-radius turning), equipped with multi-line laser radar and IMU fusion navigation, achieving $\pm 8\text{cm}$ positioning accuracy on complex terrain and 120kg load transport. The dual arms feature modular joints, with adaptive grippers (3-15cm grasping span) at the end effectors. These are paired with a head-mounted RGB-D depth camera for dynamic target tracking, combined with visual algorithms to achieve centimeter-level segmentation and obstacle avoidance. The slide table supports 250mm/s vertical movement, expanding the vertical range to a 1m biomimetic workspace, enabling access to high-level shelves. It offers open ROS/API interfaces, compatible with gesture teaching and deep learning algorithm porting, centered on human-like operation, omnidirectional high-precision movement, and industrial-grade scalability, empowering the upgrade of embodied intelligent manufacturing.



Part Details

02



CMR-H2

Omnidirectional dual-Arm Composite Robot

CMR-H2 Robot Specifications

Product Technical Parameters	
Overall Dimensions	710*490*385 (mm)
Chassis Weight	70KG
Materials	Q235
Vertical Load	120KG
Encoder Line Count	4096 lines
Protection Rating	IP54
Operating Temperature	-10-60°
Charging Time	3H
Motor Power	Drive motor 150W*4 + steering motor 60W*4
Height Above ground	100MM
Maximum Speed	2.0M/S
Theoretical Battery Life	3H
Battery Capacity	48V 25AH (lithium battery, expandable)
External Power Supply	48V/24V/19V/12V
Emergency Stop Method	Remote emergency stop/hardware emergency stop/software emergency stop
Supported Systems	ROS/WIN/UBUNTU
Climbing	20%
Obstacle crossing (vertical steps)	5CM
Movement mode	Omnidirectional movement mode
Slope hold	Servo hill hold
Navigation method	Laser navigation (3D SLAM)
Navigation accuracy	±80MM
Navigation protocol	MQTT
Remote control mode	2.4G RC Model Remote Control

Robotic Arm Parameters	
Working radius	626MM
Payload	1.5KG
Material/Body weight	Aluminium alloy + plastic shell/4.2KG
Repeatable Accuracy	±0.1mm
Terminal velocity	≤2M/S
Power consumption	Maximum power consumption ≤ 120W, Total power consumption ≤ 40W
Control method	Drag teaching/offline trajectory/API/host computer
Noise	<60db
Power supply	DC24V (24V~26V)
Protection rating	IP54
Communication	CAN
Working environment	-20-50°C, humidity: 25%-85% RH (non-condensing)

Motorized Jaw Parameters	
Weight	0.5kg
Accuracy	±0.5mm
Opening and closing distance	0-70mm
Rated clamping force	40N
Maximum clamping force	50N
Supply voltage	DC24V
Power consumption	Maximum power consumption ≤ 50W Total power consumption ≤ 30W
Self-locking	Not supported
Contact surface material	Rubber
External interface	Power supply interface*1, CAN interface*1

3

CMR-H2 Intelligent Mobile Robot Features

01

Multi-line laser navigation and obstacle avoidance

Outdoor mapping navigation + dynamic obstacle avoidance for objects at different heights

02

High-precision Navigation

±5cm positioning accuracy and path planning

03

Precision control of dual bionic robotic arms

±10mm repeatability + 1.5kg load handling

04

Omnidirectional Chassis with High Mobility

Lateral/Diagonal/Zero-Radius Turning + 1m Narrow Path Passage

05

Vertical Electric Lift Expansion

(250 mm/s lifting speed + 1000 mm vertical travel range)

06

Standard Protocols and Data Communication

Provides Navigation and Manipulator Interface Control with Open Protocols