

# 潜伏顶升 600KG AGV

## 600KG Underhung Lifting AGV



### 设备介绍 Equipment Introduction

该 AGV 是一款具备激光 SLAM 导航定位的智能潜伏顶升车，潜伏式底盘可潜入载具底部顶升，适配产线仓储自动化转运

This AGV is an intelligent under-ride lifting vehicle equipped with laser SLAM navigation and positioning. Its under-ride chassis can slide beneath cargo carriers for lifting operations, making it suitable for automated transportation in production lines and warehouses.

#### ● 搭前后双激光，安全可双保障

Dual front and rear lasers for double safety assurance

车头置导航激光，车尾装避障激光，行驶更安全

The vehicle is equipped with a navigation laser at the front and an obstacle avoidance laser at the rear, ensuring safer operation.

#### ● 全向旋转设计，取放运更灵活

Omnidirectional rotation for flexible handling.

集成操控本体转向与货物顶升转向，窄巷、密架区等场景灵活畅行

Integrated steering control and cargo lifting for agile movement in tight spaces.

#### ● 复合导航技术，定位精度更高

Hybrid navigation for higher positioning accuracy.

定位精度达  $\pm 10\text{mm}$ ，支持 SLAM、二维码、反光板多模导航，可依场景适配导航方案

Positioning accuracy up to  $\pm 10\text{mm}$ , supports multi-mode navigation (SLAM, QR code, reflector), adaptable to scenario-based navigation planning.

#### ● 软件优化迭代，强力赋能提升

Software optimization and iteration for enhanced performance.

搭载自研系统，可高效完成全厂区 AGV 部署调度、操作管理等，且能与工厂 MES 系统无缝对接，全流程作业更流畅

Equipped with a self-developed system, it enables efficient plant-wide AGV deployment, scheduling, and operation management. Seamless integration with factory MES ensures smoother workflow.

### 设备参数 Device Specifications

额定载荷能力 Rated Load	600kg	自重 (含电池) Self-weight (incl. battery)	144kg
整车尺寸 (长 × 宽 × 高) Overall Dimensions(L × W × H)	860 × 600 × 250mm	最大速度 Max speed	≤ 1.5m/s
电池规格 Battery Specs	48V/30Ah 磷酸铁锂电池 48V/30Ah LiFePO4 Battery	综合续航 Comprehensive endurance	> 8h
导航方式 Navigation Method	激光 SLAM+ 二维码 Laser SLAM + QR Code	定位精度 Positioning accuracy	$\pm 10\text{mm}$ $\pm 0.5^\circ$
运动方式 Locomotion Type	双轮差速 Differential Drive	工作温湿度 Operating temperature & humidity	0°C ~50°C /10%~90%
充电形式 Charging Method	自动 / 手动 Auto/Manual	充电时间 Charging time	≤ 2h



# 潜伏顶升 1000KG AGV

## 1000KG Underhung Lifting AGV



### 设备介绍 Equipment Introduction

该 AGV 是一款具备激光 SLAM 导航定位的智能潜伏顶升车，潜伏式底盘可潜入载具底部顶升，适配产线仓储自动化转运

This AGV is an intelligent under-ride lifting vehicle equipped with laser SLAM navigation and positioning. Its under-ride chassis can slide beneath cargo carriers for lifting operations, making it suitable for automated transportation in production lines and warehouses.

#### 重载运输，可高度承载适配

Heavy-duty transport, highly adaptable to load capacities

千公斤载重轻松运大件，高强钢车身配减震稳运输

Effortlessly handles 1000kg loads for large items, with high-strength steel body and shock absorption for stable transport.

#### 顶升灵活，多场景作业适配

Flexible jacking operation, adaptable to multiple working scenarios.

可定制上装至 200-500mm 适配多场景，模块化载具兼容多样搬运

Integrated steering control and cargo lifting for agile movement in tight spaces.

#### 自动运行，可提高物流效率

Automatic operation, boosts logistics efficiency

激光与视觉导航赋能 AGV 自主避障调度，多系统协同实现 24 小时无人化作业运行

Laser and vision navigation empower AGVs with autonomous obstacle avoidance and scheduling, while multi-system collaboration enables 24/7 unmanned operations.

#### 安全保障，助人机协同作业

Safety assurance, enhances human-robot collaboration

多传感器全场景监测环境遇障自动停机，声光预警结合急停按钮保障制动，数据实时上传助安全追溯优化

Multi-sensor comprehensive environmental monitoring enables automatic obstacle-induced shutdown; audible/visual alerts combined with emergency stop buttons ensure braking reliability; real-time data upload facilitates safety traceability and optimization.

### 设备参数 Device Specifications

额定载荷能力 Rated Load	1000kg	自重 (含电池) Self-weight (incl. battery)	164kg
整车尺寸 (长 × 宽 × 高) Overall Dimensions(L × W × H)	920 × 658 × 260mm	最大速度 Max speed	≤ 1.5m/s
电池规格 Battery Specs	48V/30Ah 磷酸铁锂电池 48V/30Ah LiFePO4 Battery	综合续航 Comprehensive endurance	> 8h
导航方式 Navigation Method	激光 SLAM+ 二维码 Laser SLAM + QR Code	定位精度 Positioning accuracy	± 10mm ± 0.5°
运动方式 Locomotion Type	双轮差速 Differential Drive	工作温湿度 Operating temperature & humidity	0°C ~50°C /10%~90%
充电形式 Charging Method	自动 / 手动 Auto/Manual	充电时间 Charging time	≤ 2h



# 地面搬运叉车 AGV

## Ground Handling Forklift AGV

### 设备介绍 Equipment Introduction

该 AGV 是一款具备激光 SLAM 导航定位的智能地面搬运叉车，采用叉臂式举升结构，标配平衡重 / 前移式设计，适配工厂仓储托盘货物水平转运与短距堆垛

This AGV is an intelligent ground-handling forklift equipped with laser SLAM navigation and positioning. It adopts a fork-arm lifting mechanism with a standard counterbalance/reach-type design, suitable for horizontal transport and short-distance stacking of palletized goods in factory warehouses.



#### ● 重物装载强，地形适应力佳

Strong loading capacity, excellent terrain adaptability

吨级负载适配重型物料，全地形通过且货叉可调

Ton-level load capacity for heavy materials, all-terrain accessibility with adjustable forks.

#### ● 多模式导航，动态智能调度

Multi-mode navigation, dynamic intelligent scheduling

复合导航实现室内外切换，智能避障多机协同高效作业

Hybrid navigation for seamless indoor-outdoor transition. Intelligent obstacle avoidance and multi-vehicle coordination enable efficient operations.

#### ● 多载具识别，实现精准取放

Multi-carrier recognition, enables precise pick-and-place

可识别多规格颜色栈板、料架等载具，多角度高精度自适应保障稳定取放货物

Recognizes pallets and racks of various specifications and colors. A multi-angle, high-precision adaptive system ensures stable load handling.

#### ● 多重传感器，360° 安全防护

Multiple sensors, 360° safety protection

全系列标配双避障激光、插尖防护光电及防护触边，可搭载 360° 立体安全防护激光，保障人机交互场景安全

The entire series comes standard with dual obstacle avoidance lasers, fork tip protection photoelectric sensors, and protective edges. It can be equipped with 360° for safe human-machine interaction.

### 设备参数 Device Specifications

额定载荷能力 Rated Load	1600kg	自重 (含电池) Weight (incl. battery)	460kg
整车尺寸 (长 × 宽 × 高) Overall Dimensions(L × W × H)	1681x880x1896 mm	满载 / 空载速度 Loaded/No-load speed	1.5/1.8 m/s
货叉尺寸 (长 × 宽 × 高) Fork dimensions(L × W × H)	1220x173x60 mm	货叉外宽 Fork outside width	550/600/680 mm
电池规格 Battery Specs	51.2 V/40 Ah 磷酸铁锂电池 Lithium Iron Phosphate (LFP) Battery	综合续航 Comprehensive range	> 8h
导航方式 Navigation Method	激光 SLAM+3D 视觉 Laser SLAM + 3D Vision	定位精度 Positioning accuracy	± 10mm ± 1°
运动方式 Locomotion Type	双轮差速 Differential Drive	载具类型 Carrier type	川字
充电形式 Charging Method	自动 / 手动 Auto/Manual	充电时间 Charging time	≤ 1h



# 堆高叉车 AGV

## Stacking Forklift Robot



### 设备介绍 Equipment Introduction

该 AGV 是一款具备激光 SLAM 导航定位的智能堆高叉车，具备垂直堆垛能力，采用叉臂式举升 + 防倾覆设计，适配立体仓库高位货架存取与密集存储场景

This AGV is an intelligent stacker equipped with laser SLAM navigation and positioning. It features vertical stacking capability, utilizing a fork-arm lifting mechanism with anti-tip design, making it suitable for high-level rack access in automated storage systems and dense storage scenarios.

#### ● 重载能力提升，作业柔性更强

Strong loading capacity, excellent terrain adaptability

吨级负载高叉臂提升，货叉调节兼容多载具

Ton-level lifting capacity with high fork arms. Adjustable forks compatible with multiple carrier types.

#### ● 精准导航定位，运行稳定可靠

Precise navigation and positioning, stable and reliable operation.

激光 SLAM 与视觉复合导航，防倾覆底盘保障高位作业稳定

Laser SLAM and vision hybrid navigation with an anti-tip chassis ensuring stability during high-level operations.

#### ● 三维防护全面，安全保障护航

Comprehensive 3D Protection, Ensured Safety.

3D 避障 + 安全触边 + 距离传感器，构建立体安全防护网

3D Obstacle Avoidance + Safety Bumpers + Distance Sensors, Building a Stereoscopic Safety Protection Network

#### ● 窄道通无压力，纤薄机身灵活

Effortless navigation in narrow aisles with a slim, agile chassis.

超小回转半径设计，面对狭窄通道也能灵活完成转向作业，轻松应对空间受限场景

With its ultra-small turning radius design, it can flexibly complete steering operations even in narrow passageways, easily handling scenarios where space is limited

### 设备参数 Device Specifications

额定载荷能力 Rated Load	1400kg	自重 (含电池) Weight (incl. battery)	680/740kg
整车尺寸 (长 × 宽 × 高) Overall Dimensions(L × W × H)	1710x989x1998 mm 1710x989x2247 mm	满载 / 空载速度 Loaded/No-load speed	1.2/1.5 m/s
货叉尺寸 (长 × 宽 × 高) Fork dimensions(L × W × H)	1220x180x70 mm	货叉外宽 Fork outside width	570/680 mm
电池规格 Battery Specs	24V/210Ah 磷酸铁锂电池 Lithium Iron Phosphate (LFP) Battery	综合续航 Comprehensive range	> 10h
导航方式 Navigation Method	激光 SLAM+3D 视觉 Laser SLAM + 3D Vision	定位精度 Positioning accuracy	± 10mm ± 0.5°
运动方式 Locomotion Type	双轮差速 Differential Drive	载具类型 Carrier type	川字
充电形式 Charging Method	自动 / 手动 Auto/Manual	充电时间 Charging time	≤ 2h



# 复合机器人 composite robot

## ■ 功能说明 Functional Specification

1. 实现自主移动与精准定位，适配车间、仓库等多场景路径规划；
2. 搭载机械臂完成物料抓取、搬运、装卸等自动化操作；
3. 支持视觉引导，精准识别工件位置、姿态，提升作业精度；
4. 可与产线设备（如 conveyor、机床）联动，实现工序衔接自动化；
5. 具备人机协作能力，通过安全传感器避免碰撞，保障人机同场作业安全；
6. 能完成装配、检测等精细化作业，替代人工重复劳动；
7. 可对接 MES、WMS 等系统，实现作业数据追溯与远程监控。

1. Achieve autonomous movement and precise positioning, adapting to multi-scenario path planning in workshops, warehouses, etc.;
2. Be equipped with a robotic arm to complete automated operations such as material grabbing, handling, loading and unloading;
3. Support vision guidance, accurately identify the position and posture of workpieces, and improve operation precision;
4. Can link with production line equipment (e.g., conveyors, machine tools) to realize automated process connection;
5. Possess human-robot collaboration capabilities, avoid collisions through safety sensors, and ensure the safety of human-machine co-site operations;
6. Can complete refined operations such as assembly and inspection, replacing manual repetitive labor;
7. Can connect to systems such as MES and WMS to realize operation data traceability and remote monitoring.



# 复合机器人 composite robot

## 优势亮点 Advantages And Highlights



### 高适配性与柔性

支持多场景路径规划，能快速适配不同工作环境，不同工件规格

It supports multi-scenario path planning and can quickly adapt to different working environments and workpiece specifications.



### 作业精度高

搭载视觉引导，精准识别工件位置与姿态，作业精度可达毫米级

With a visual guidance, it can accurately identify the position and posture of workpieces, with an operation accuracy of up to the millimeter level.



### 人机协作更安全

配备安全传感器与碰撞检测功能，可实时感知周边人员与障碍物

It is furnished with safety sensors and collision detection functions, enabling real-time detection of surrounding personnel and obstacles.

## 设备参数 Device Specifications

额定载荷能力 [ 可定制 ] Rated Load Capacity	Up to 20 kg
导航方式 Navigation Method	激光 SLAM+ 二维码 Lidar SLAM with Fiducial Markers
载具类型 Vehicle Type	各类定制托盘 Various Types of Custom Pallets
自重 (含电池) Weight (including battery)	<250KG
整车尺寸 (长 × 宽 × 高) Overall Dimensions (L × W × H)	高度定制 Highly Customizable/860 × 600mm/920 × 658mm
电池规格 Battery Specification	48V/50Ah
综合续航 Overall Battery Life	> 7h
充电时间 Charging Time	≤ 2.5h
充电形式 Charging Method	自动 / 手动 Automatic / Manual
定位视觉相机 [ 选配 ] Positioning Vision Camera: [Optional]	海康 / 大华 Hikvision/Dahua
避障激光 Laser Obstacle Avoidance	2 个
3D 避障相机 [ 选配 ] 3D Obstacle Avoidance Camera: [Optional]	1 个

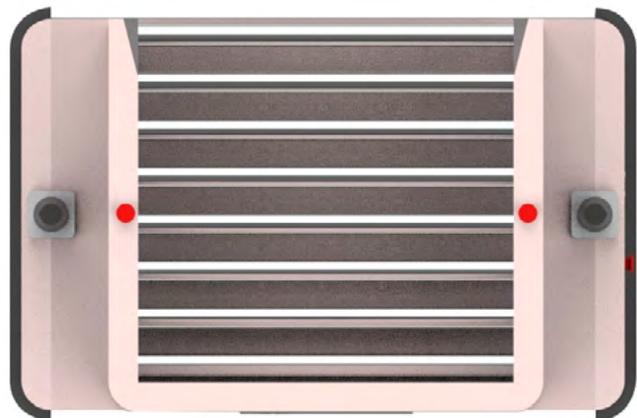


# 滚筒 Roller AGV

## 功能说明 Functional Specification

1. 自主移动与路径规划：支持激光 / 视觉导航，可自主规划最优路径，自动避开障碍物，无需人工引导。
2. 滚筒式自动接驳：通过自带滚筒输送装置，可与产线 conveyor、分拣台等设备无缝对接，实现物料的自动上下料与转运。
3. 精准定位与停靠：搭载定位传感器，停靠精度可达  $\pm 5\text{mm}$ ，确保与对接设备的位置匹配，避免物料偏移或掉落。
4. 状态监控与报警：实时反馈电量、运行状态、故障信息，异常时自动暂停并触发报警，便于及时运维。

1. Autonomous Movement and Path Planning: Supports laser/visual navigation, enabling autonomous planning of optimal paths and automatic obstacle avoidance without manual guidance.
2. Roller-Type Automatic Docking: Via its built-in roller conveyor device, it can seamlessly connect with equipment such as production line conveyors and sorting tables to realize automatic loading, unloading and transfer of materials.
3. Precise Positioning and Docking: Equipped with positioning sensors, the docking accuracy can reach  $\pm 5\text{mm}$ , ensuring position matching with docking equipment and preventing material deviation or falling.
4. Status Monitoring and Alarm: Real-time feedback of power level, operating status and fault information; it automatically pauses and triggers an alarm in case of abnormalities, facilitating timely operation and maintenance.



# 滚筒 Roller AGV

## 优势亮点 Advantages And Highlights



### 高适配性

可通过调整滚筒间距、速度，适配不同尺寸、重量的物料

It can adapt to materials of different sizes and weights by adjusting the roller spacing and speed.



### 作业效率高

无需人工参与，滚筒输送与移动一体化，缩短物料配送时间

No manual intervention is required; the roller conveying and movement functions are integrated to shorten the material distribution time.



### 柔性化生产

无需铺设轨道，可根据产线调整或订单变化灵活修改路径

There is no need to lay tracks, and the path can be flexibly modified according to production line adjustments or order changes.

## 设备参数 Device Specifications

额定载荷能力 [ 可定制 ] Rated Load Capacity	Up to 200 kg
导航方式 Navigation Method	激光 SLAM+ 二维码 Lidar SLAM with Fiducial Markers
载具类型 Vehicle Type	各类定制托盘 Various Types of Custom Pallets
自重 (含电池) Weight (including battery)	<250KG
整车尺寸 (长 × 宽 × 高) Overall Dimensions (L × W × H)	高度定制 Highly Customizable/860 × 600mm/920 × 658mm
电池规格 Battery Specification	48V30Ah
综合续航 Overall Battery Life	> 8h
充电时间 Charging Time	≤ 2h
充电形式 Charging Method	自动 / 手动 Automatic / Manual
定位视觉相机 [ 选配 ] Positioning Vision Camera: [Optional]	海康 / 大华 Hikvision/Dahua
避障激光 Laser Obstacle Avoidance	2 个
3D 避障相机 [ 选配 ] 3D Obstacle Avoidance Camera: [Optional]	1 个



# 锁附机器人

## Screw Fastening Robot



样品展示 Sample Display



上位机界面 upper computer interface

### 特点 Features

- **精度高:** 锁附精度达  $\pm 3\%$ ,  $CPK \geq 1.67$ 。
- **高柔性:** 可根据产品需要配置多种配方, 随时切换产品
- **作业效率高:** 机器人速度可调, 作业效率比人工高 30% 左右
- **简洁易用:** 视觉引导机械臂, 高精度自动对准螺丝孔, 质量稳定
- **系统高度集成,** 融合机器人控制、运动算法与锁附工艺于一体;
- **支持 MES 接口定制开发及数据采集**
- **实时显示锁附结果与锁附曲线,** 若出现锁附 NG, 可精确定位异常螺钉位置。
- **生产数据自动汇总至表格,** 实现数据智能处理;
- **High Precision:** Fastening accuracy up to  $\pm 3\%$ , with  $CPK \geq 1.67$ .
- **High Flexibility:** Supports multiple recipe configurations for different products, enabling quick switchovers.
- **High Operational Efficiency:** Adjustable robot speed increases operational efficiency by approximately 30% compared to manual labor.
- **Simplicity and Ease of Use:** Vision-guided robotic arm enables high-precision automatic alignment with screw holes, ensuring consistent quality.
- **Highly Integrated System:** Combines robot control, motion algorithms, and fastening processes into a unified platform.
- **Custom MES Interface Development and Data Collection:** Supports tailored MES interface development and data acquisition.
- **Real-Time Fastening Results and Curves:** Displays real-time fastening results and curves, with precise localization of abnormal screw positions in case of fastening failures.
- **Automated Production Data Compilation:** Automatically aggregates production data into reports, enabling intelligent data processing.

应用行业: 汽车电子、家用电器、3C 电子产品、光伏储能等。

Application Industries: Automotive Electronics; Household Appliances; Computer, Communication, and Consumer Electronics; Photovoltaic and Energy Storage Systems, among others.



## 功能简介 Overview

- 可配合线体作业，也可单独作业；
- 使用螺丝机器人锁付，设备占用空间小，锁付覆盖面积大；
- 独立工作站，可根据生产工艺灵活布置设备，移动调整方便；
- 标配视觉系统，产品放置无需精准，上、下料简单快捷；
- Compatible with both inline production and standalone operation.
- Utilizes a compact screw-fastening robot, offering a small footprint while ensuring extensive fastening coverage.
- Independent workstation design allows flexible equipment layout based on production needs, with easy mobility and repositioning.
- Equipped with a standard vision system, enabling simple and rapid loading/unloading without requiring precise product placement.
- 标配智能电批，每个点位可设置独立扭力、转速等锁付参数；
- 智能上位机系统实时显示生产数据；灵活对接 MES、ERP 等；CAD 图纸导入功能，无需人工对点。
- Features an intelligent electric screwdriver as standard, allowing independent setting of torque, speed, and other fastening parameters for each point.
- Smart host computer system displays real-time production data, supports seamless integration with MES/ERP systems, and includes CAD drawing import functionality for automatic point alignment without manual calibration.

## 设备参数 Device Specifications

机 型 Model/Type		HZ-HR600-AS4001-VX1	HZ-HR600-ABS4001-VC1
名称 name		气缸吸料式在线锁附机器人	气缸吹吸式在线锁附机器人
设备尺寸 (LxWxH)		800x800x1800 mm	
产品流通方式 Product distribution method		客户线体 Customer Production Lines	
产品定位方式 Product positioning method		顶升 + 压杆 Lifting + Pressing Rod	
锁附范围 Fastening range		400x300x150 mm	
送钉方式 Nail delivery method		吸钉 Screw Auto-Loading	吹吸式 Blow-Suction Type
设备精度 Equipment accuracy		±0.02 mm	
螺丝锁付单元 Screw locking unit	锁附模组 Locking module		SCL-AS
	适用螺丝 Applicable screws	螺纹直径 thread diameter	2 ~ 5mm
	※1 ※2	螺纹长度 thread length	最大 Max 25mm
扭矩范围 ※3 Torque range ※3		0.1 ~ 10 N.m	
视觉 vision	相机像素 camera pixel		600 W (分辨率 Resolution 3072x2048)
	拍照高度 Photographing height		200 mm
	单相素精度 Single-phase pixel accuracy		0.03 mm
适用机器人 Applicable robot		SCR-HR600, MOR-OL352	
控制系统 Control system		PC+ 运动控制卡 Motion Control Card	
操作界面 Operation interface		鼠标 + 键盘 + 上位机 Mouse + keyboard + host computer	
操作系统 Operating system		WIN11	
锁附节拍 Lock the beat		1.2~3 S/Pcs 螺钉 screw	
电源 Power supply		220V 50Hz	
气源压力 Air source pressure		0.4 ~ 0.6 MPa	
设备功率 Equipment power		1.5 kW	
设备重量 ※4 Equipment weight ※4		150 kg	
送钉机 Nail feeder		SDJ6900	SDJ210

