

深圳市欧铠智能机器人股份有限公司
Shenzhen OKAGV Robotics Corp. Ltd.

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Building 14, Zhongliang Fuan Robot Industrial Zone, Dayang Road, Fuhai, Baoan, Shenzhen.

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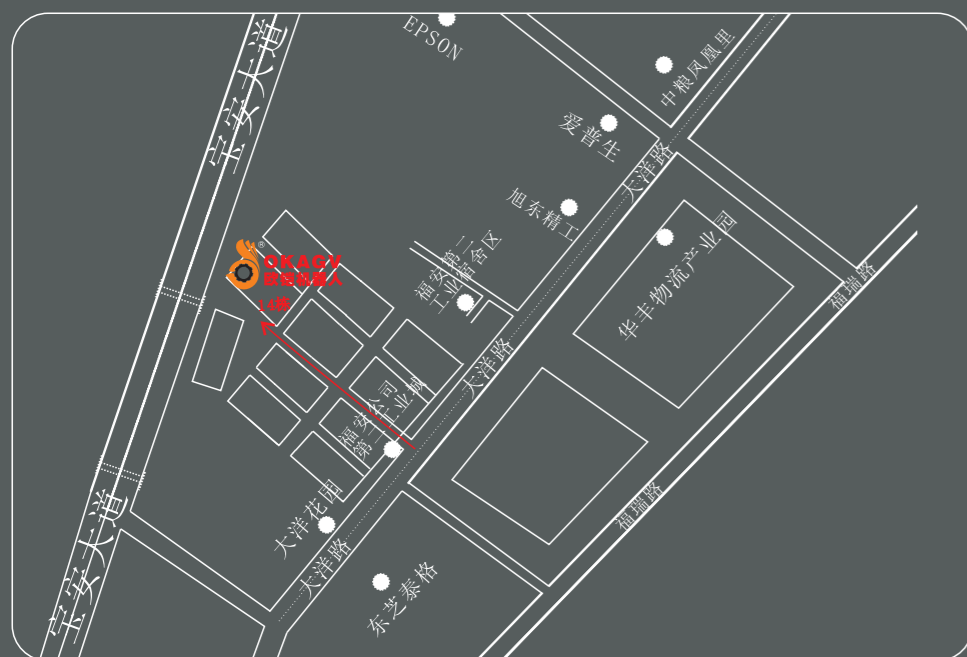
传真 (FAX): 0755-27307147

邮件 (E-mail): okagv@okagv.com

网址 (Website): http://www.okagv.com

全国服务热线(Service Hot Line):

400-007-3860



本画册仅供参考, 如有更变, 一切以实物为准。
This brochure is for reference only, please make the object as the standard.



Smart Material Handling
买AGV一定要买OK的AGV—OKAGV



深圳市欧铠智能机器人股份有限公司
Shenzhen OKAGV Robotics Corp. Ltd.



欧铠总部大楼 Headquarter Building



综合办公室 Office Building



会议室 Conference Room

Company profile 公司简介

深圳市欧铠智能机器人股份有限公司，公司成立于2013年，是一家专注于AGV无人搬运车、仓储机器人研发生产销售的国家级高新技术企业。拥有丰富的AGV产品研发定制经验,致力为行业提供高端AGV自动化物流设备及系统。

公司成立伊始就以欧洲技术质量标准，高起点起步，先后引进国际上先进的AGV技术和方案，重金打造完备的技术消化、研发团队。现在已经拥有了包括富士康、康佳集团、海信集团、美的电器、三星集团、日立电梯、合肥美菱、柳工叉车、一汽上汽、吉利、比亚迪等一大批客户的认可和支持，在航空、汽车、电子、粮油、纺织、家电、重工、光电等领域均有应用。公司以后的发展，也必将秉持技术、质量、服务、客户至上的经营理念，成为产业自动化浪潮中的一支推动力量。



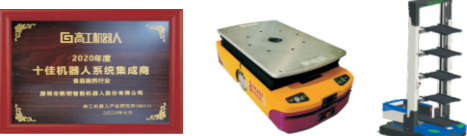
Shenzhen OKAGV Company Limited established in 2013, we are a national high tech enterprise that dedicate to manufacturing& developing AGV (automated guided vehicle) and logistics robots, constantly providing high end AGV logistics equipment and system.

Ever since the beginning, we set quality standard according to EU technics, introduced advanced AGV technology and plans, high investment into technology R&D teams. now we have gained trust and acceptance from customers like Foxconn, GREE, Midea, Panasonic, HITACHI elevator, Meiling(Hefei), Liugong Forklift, FAW, SAIC motor, etc. In many industries like aerospace, aviation, sea port, automobiles, home compliances, electronics, Opto electronics, heavy industries, banking, hospital, printing, and restaurant etc, OKAGV products are widely used.

Development History 发展历程

5月自研激光导引AGV上市
6月新款小精灵、箱式机器人上市
7月荣获2021中国智能物流行业十佳系统集成商
10月荣获高工金球奖2021年度创新产品奖

2021

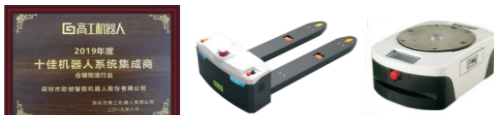


2020

6月荣获高工十佳机器人集成商荣誉奖
7月欧铠新品小精灵夹抱叉车上市
8月欧铠小精灵+机械臂协作上市

3月仓储机器人小精灵进入澳大利亚市场
6月荣获2019年度十佳机器人系统集成商
7月欧铠(AGV小叉车)小海豚上市

2019



2018

3月AGV成功应用于韩国三星集团
8月荣获2018年度十佳机器人系统集成商
10月仓储机器人小精灵进入美国市场
12月荣获中国移动机器人(AGV)产业联盟理事单位

2月公司股改完毕开始进军新三板上市
3月公司名称变更为:深圳市欧铠智能机器人股份有限公司
荣获2017第二届电子商会创新技术“蓝点奖”
11月成为中国移动机器人(AGV)理事单位

2017



3月喜迁新址:中粮福安机器人产业园
5月深圳市机器人协会会员单位、2016最具成长性企业“金手指奖”
8月仓储机器人”小精灵”国内率先上市
10月2016年度第三届工业设计红帆奖
11月荣获国家高新技术企业资质
11月荣获第十八届高新技术成果交易会“优秀产品奖”
12月高工机器人2016年度技术创新奖

2016



2月中央电视台对欧铠机器人特别报道、多项专利及软件著作权证书授权
3月自动进出电梯AGV上市
7月2015年度第二届工业设计“红帆奖”
8月欧铠与瑞典Kollmorgen成为战略合作伙伴、2015中国中小企业协会网商分会-会员单位
9月激光叉车AGV行业内率先上市
11月荣获第十七届高交会优秀产品奖

2015



2014

5月北京、上海、重庆办事处成立
7月2014国际服务机器人十大最具创新力企业、行业SMT上下板机AGV、大载重AGV上市
11月欧铠小男孩餐厅机器人亮相高交会
12月2014第十六届高交会优秀产品奖
12月授权多项专利及软件著作权证书

2013



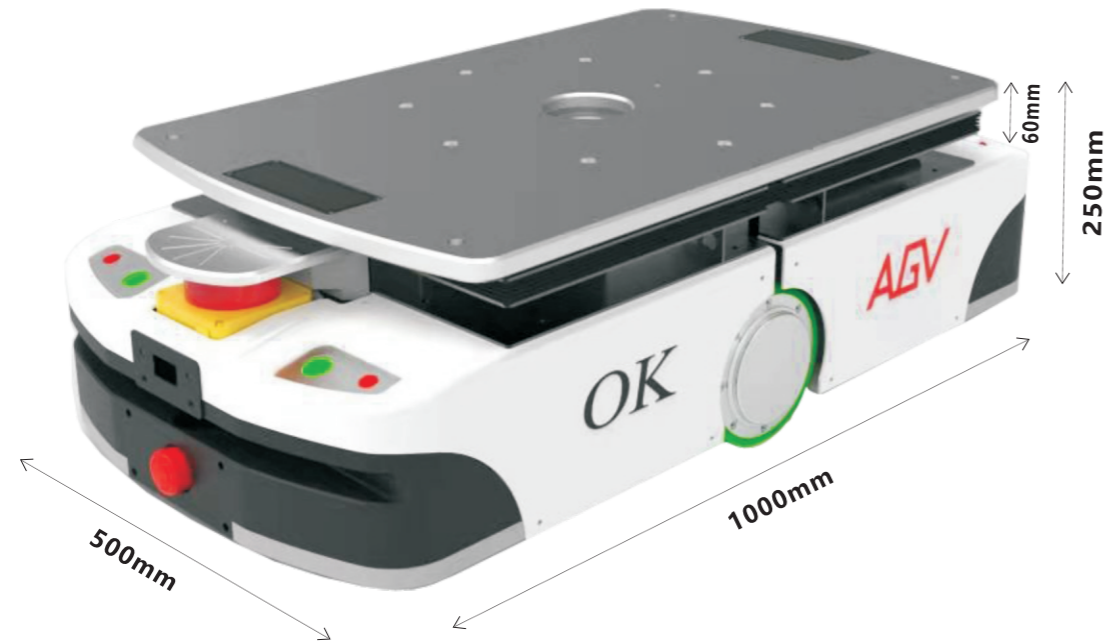
7月欧铠机器人在深圳正式成立
10月自主研发多款AGV成功上市
11月荣获2013第十五届高交会-优秀展商奖
11月无锡分公司注册成立
12月欧铠全向横移AGV上市

荣誉证书



SHARK ELFIN SERIES - SHARK ELFIN 600

白鲨系列——白鲨600



负载：600KG 举升行程：0-60mm

产品优势：PRODUCT ADVANTAGES:

导航方式：磁条/磁钉/二维码/激光/slam(可选)

走形功能：前进后退左右转弯、90°~360°旋转、原地旋转、横移

定位精度：导航停止精度均为±10mm，定制可达±5mm

多台联动：具备多台AGV联动功能(可选)

进出电梯：可与普通电梯连接，自动搭乘电梯，具备跨楼层搬运能力

使用简便：根据调度指令自动运行，无需人工干预。

拓展兼容：可根据要求定制，可与WMS、MES系统对接。

自主充电：支持无线充电，支持自动充电。

多重防护：激光避障传感器，前/后防撞条防护，前/后急停按钮。

Navigation method: magnetic tape/magnetic nail/QR code/laser/slam (optional)

Running direction: forward, backward, left and right turns, 90°/180° rotation, pivot, lateral movement

Positioning accuracy: The navigation stop accuracy is ±10mm, and the customization can reach ±5mm

Multiple linkage: with multiple AGV linkage function (optional)

Elevator in and out: can be connected with ordinary elevators, take the elevator automatically, and have the ability to carry across floors

Easy to use: run automatically according to scheduling instructions without manual intervention;

Expansion compatibility: It can be customized according to requirements, and can be connected with WMS and MES systems.

Self-charging: Support wireless charging, support automatic charging.

Multiple protection: laser obstacle avoidance sensor, front/rear bumper protection, front/rear emergency stop button.

应用案例 APPLICATION OF CASE

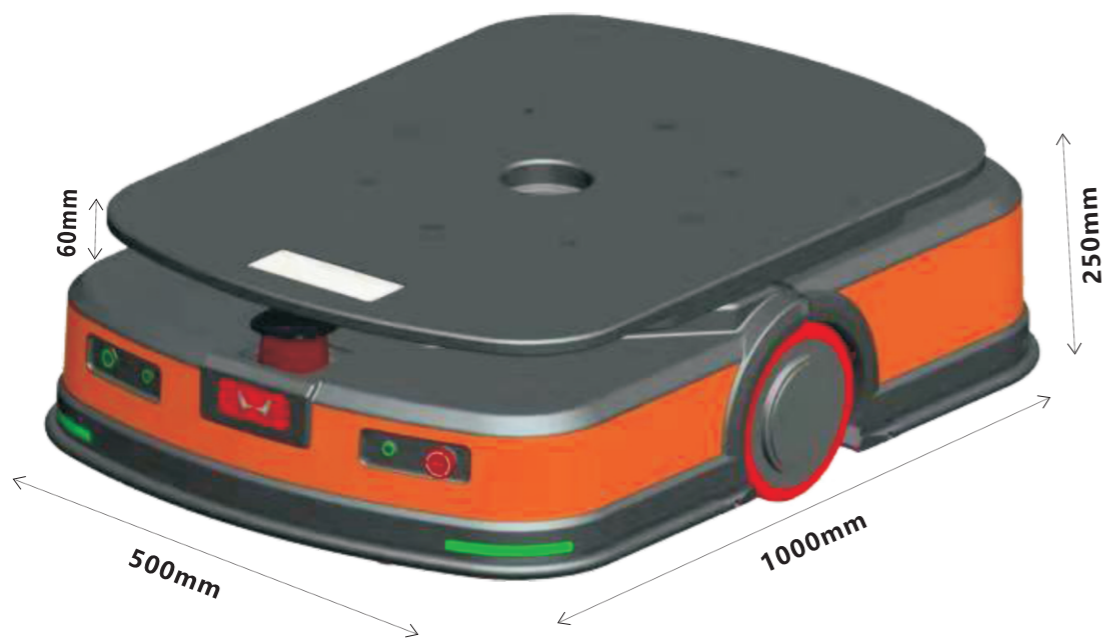


规格参数 SPECIFICATIONS

本体机种 AGV Type	白鲨600(Shark Elfin 600)
外观尺寸 Size	L1000*W500*H250(mm) 可定制 (customized)
控制方式 Control	智能运动控制系统 Intelligent motion control system
导航方式 Navigation	磁条导航、磁钉导航、二维码导航、激光导航、自然导航(可选) magnetic tape/magnetic nail/QR code/laser/slam (optional)
走行方向 Moving	前进后退、左右转弯、90°/180°旋转、原地旋转、横移 Forward and backward, turn left and right, rotate 90°/180°, rotate in place, traverse
通讯功能 Communication	无线通讯(可选) Wireless communication (optional)
驱动方式 Driving mode	差速驱动 Differential drive
驱动电源 Driving power	DC48V
举升方式 Lifting mode	自动举升 Automatic lift
载重能力 Loading capacity	600KG (可定制) (customized)
走行速度 Moving speed	0-60m/min(米/分钟)可定制 (customized)
导航精度 Guidance accuracy	±10mm
工作方式 Working time	24小时 (hs)
爬坡能力 Gradeability	≤4°
停止精度 Stop accuracy	±10mm
充电方式 Charging mode	自动充电 automatic charging 无线充电 Wireless charging
蓄电池 Battery	锂电池 Li battery 放电次数≥1500次 Discharge times ≥ 1500 times
安全感应范围 Safety sensor range	角度0~180度，距离0~3m可调 Angle from 0 to 180 degrees, adjustable from 0 to 3m
使用环境 Working environment	室内温度：0~40度，相对湿度：40%~80% Indoor temp: 0~40, Relative humidity: 40%~80%
安全防护 Safety protection	激光避障传感器，前/后防撞条防护，前/后急停按钮 Laser obstacle avoidance sensor, front/rear bumper protection, front/rear emergency stop button
设计寿命 Designed lifespan	10年(years)

SHARK ELFIN SERIES - SHARK ELFIN 1000

白鲨系列——白鲨1000



负载：1000KG 举升行程：0-60mm

产品优势：PRODUCT ADVANTAGES:

导航方式：二维码/激光/slam(可选)

走行功能：前进后退左右转弯、90°~360°旋转、原地旋转、横移

定位精度：导航停止精度均为±10mm，定制可达±5mm

多台联动：具备多台AGV联动功能(可选)

进出电梯：可与普通电梯连接，自动搭乘电梯，具备跨楼层搬运能力

使用简便：根据调度指令自动运行，无需人工干预。

拓展兼容：可根据要求定制，可与WMS、MES系统对接。

自主充电：支持无线充电，支持自动充电。

多重防护：激光避障传感器，前/后防撞条防护，前/后急停按钮。

Navigation method: QR code/laser/slam (optional)

Running direction: forward, backward, left and right turns, 90°/180° rotation, pivot, lateral movement

Positioning accuracy: The navigation stop accuracy is ±10mm, and the customization can reach ±5mm

Multiple linkage: with multiple AGV linkage function (optional)

Elevator in and out: can be connected with ordinary elevators, take the elevator automatically, and have the ability to carry across floors

Easy to use: run automatically according to scheduling instructions without manual intervention;

Expansion compatibility: It can be customized according to requirements, and can be connected with WMS and MES systems.

Self-charging: Support wireless charging, support automatic charging.

Multiple protection: laser obstacle avoidance sensor, front/rear bumper protection, front/rear emergency stop button.

应用案例 APPLICATION OF CASE



规格参数 SPECIFICATIONS

本体机种 AGV Type	白鲨1000(Shark Elfin 1000)
外观尺寸 Size	L1000*W500*H250(mm) 可定制 (customized)
控制方式 Control	智能运动控制系统 Intelligent motion control system
导航方式 Navigation	二维码/激光/slam(可选) QR code/laser/slam (optional)
走行方向 Moving	前进后退、左右转弯、90°/180°旋转、原地旋转、横移 Forward and backward, turn left and right, rotate 90°/180°, rotate in place, traverse
通讯功能 Communication	无线通讯(可选) Wireless communication (optional)
驱动方式 Driving mode	差速驱动 Differential drive
驱动电源 Driving power	DC48V
举升方式 Lifting mode	自动举升 Automatic lift
载重能力 Loading capacity	1000kg (可定制) (customized)
走行速度 Moving speed	0-60m/min(米/分钟)可定制 (customized)
导航精度 Guidance accuracy	±10mm
工作方式 Working time	24小时 (hs)
爬坡能力 Gradeability	≤4°
停止精度 Stop accuracy	±10mm
充电方式 Charging mode	自动充电 automatic charging
蓄电池 Battery	锂电池 Li battery 放电次数≥1500次 Discharge times ≥ 1500 times
安全感应范围 Safety sensor range	角度0~180度，距离0~3m可调 Angle from 0 to 180 degrees, adjustable from 0 to 3m
使用环境 Working environment	室内温度：0~40度，相对湿度：40%~80% Indoor temp: 0~40, Relative humidity: 40%~80%
安全防护 Safety protection	激光避障传感器，前/后防撞条防护，前/后急停按钮 Laser obstacle avoidance sensor, front/rear bumper protection, front/rear emergency stop button
设计寿命 Designed lifespan	10年(years)

CRAB SERIES - CRAB 2000

螃蟹系列——螃蟹2000



负载：2000KG 举升行程：0-60mm

产品优势：PRODUCT ADVANTAGES:

- 导航方式：二维码/激光/slam(可选)
- 走形功能：前进后退左右转弯、90°~360°旋转、原地旋转、横移
- 定位精度：导航停止精度均为±10mm，定制可达±5mm
- 多台联动：具备多台AGV联动功能(可选)
- 进出电梯：可与普通电梯连接，自动搭乘电梯，具备跨楼层搬运能力
- 使用简便：根据调度指令自动运行，无需人工干预。
- 拓展兼容：可根据要求定制，可与WMS、MES系统对接。
- 自主充电：支持无线充电，支持自动充电。
- 多重防护：激光避障传感器，前/后防撞条防护，前/后急停按钮。

Navigation method: QR code/laser/slam (optional)
Running direction: forward, backward, left and right turns, 90°/180° rotation, pivot, lateral movement
Positioning accuracy: The navigation stop accuracy is ±10mm, and the customization can reach ±5mm
Multiple linkage: with multiple AGV linkage function (optional)
Elevator in and out: can be connected with ordinary elevators, take the elevator automatically, and have the ability to carry across floors
Easy to use: run automatically according to scheduling instructions without manual intervention;
Expansion compatibility: It can be customized according to requirements, and can be connected with WMS and MES systems.
Self-charging: Support wireless charging, support automatic charging.
Multiple protection: laser obstacle avoidance sensor, front/rear bumper protection, front/rear emergency stop button.

应用案例 APPLICATION OF CASE

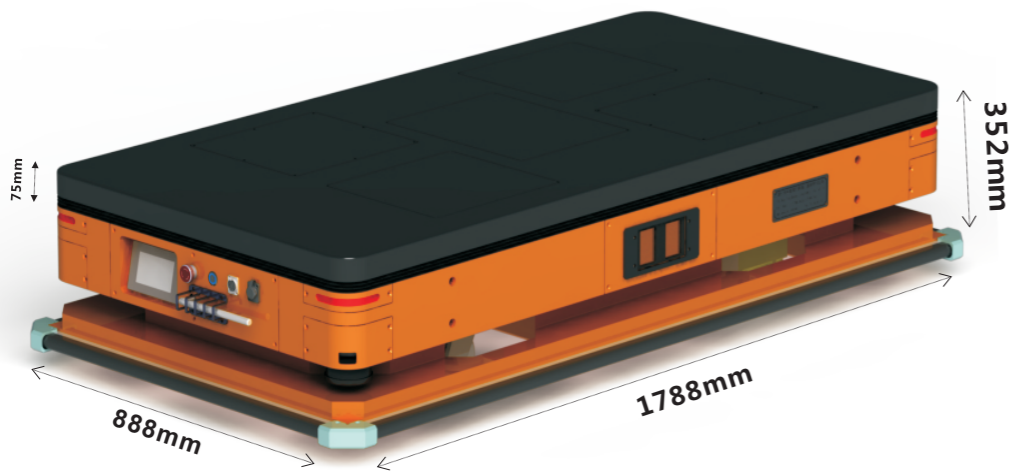


规格参数 SPECIFICATIONS

本体机种 AGV Type	螃蟹2000 Crab 2000
外观尺寸 Size	L1200*W800*H350(mm) 可定制 (customized)
控制方式 Control	智能运动控制系统 Intelligent motion control system
导航方式 Navigation	二维码/激光/slam(可选) QR code/laser/slam (optional)
走行方向 Moving	前进后退、左右转弯、90°/180°旋转、原地旋转、横移 Forward and backward, turn left and right, rotate 90°/180°, rotate in place, traverse
通讯功能 Communication	无线通讯(可选) Wireless communication (optional)
驱动方式 Driving mode	差速驱动 Differential drive
驱动电源 Driving power	DC48V
举升方式 Lifting mode	自动举升 Automatic lift
载重能力 Loading capacity	2000KG (可定制) (customized)
走行速度 Moving speed	0-40m/min(米/分钟)可定制 (customized)
导航精度 Guidance accuracy	± 10mm
工作方式 Working time	24小时 (hs)
爬坡能力 Gradeability	≤4°
停止精度 Stop accuracy	± 10mm
充电方式 Charging mode	自动充电 automatic charging
蓄电池 Battery	锂电池 Li battery 放电次数≥1500次 Discharge times ≥ 1500 times
安全感应范围 Safety sensor range	角度0~180度，距离0~3m可调 Angle from 0 to 180 degrees, adjustable from 0 to 3m
使用环境 Working environment	室内温度：0~40度，相对湿度：40%~80% Indoor temp: 0~40, Relative humidity: 40%~80%
安全防护 Safety protection	激光避障传感器，前/后防撞条防护，前/后急停按钮 Laser obstacle avoidance sensor, front/rear bumper protection, front/rear emergency stop button
设计寿命 Designed lifespan	10年(years)

Crab Series - Crab 3000

螃蟹系列——螃蟹3000



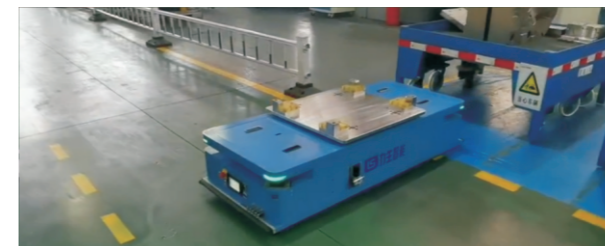
负载3000KG 举升行程0-75mm

产品优势：PRODUCT ADVANTAGES:

导航方式：二维码/激光/slam(可选)
 走形功能：前进后退左右转弯、90°~360°旋转、原地旋转、横移
 定位精度：导航停止精度均为±10mm，定制可达±5mm
 多台联动：具备多台AGV联动功能(可选)
 进出电梯：可与普通电梯连接，自动搭乘电梯，具备跨楼层搬运能力
 使用简便：根据调度指令自动运行，无需人工干预。
 拓展兼容：可根据要求定制，可与WMS、MES系统对接。
 自主充电：支持无线充电，支持自动充电。
 多重防护：激光避障传感器，前/后防撞条防护，前/后急停按钮。

Navigation method: QR code/laser/slam (optional)
 Running direction: forward, backward, left and right turns, 90°/180° rotation, pivot, lateral movement
 Positioning accuracy: The navigation stop accuracy is ±10mm, and the customization can reach ±5mm
 Multiple linkage: with multiple AGV linkage function (optional)
 Elevator in and out: can be connected with ordinary elevators, take the elevator automatically, and have the ability to carry across floors
 Easy to use: run automatically according to scheduling instructions without manual intervention;
 Expansion compatibility: It can be customized according to requirements, and can be connected with WMS and MES systems.
 Self-charging: Support wireless charging, support automatic charging.
 Multiple protection: laser obstacle avoidance sensor, front/rear bumper protection, front/rear emergency stop button.

应用案例 APPLICATION OF CASE



规格参数 SPECIFICATIONS

本体机种 AGV Type	螃蟹3000 Crab 3000
外观尺寸 Size	L1788*W888*H352(mm)可定制 (customized)
控制方式 Control	智能运动控制系统 Intelligent motion control system
导航方式 Navigation	二维码/激光/slam(可选) QR code/laser/slam (optional)
走行方向 Moving	前进后退、左右转弯、90°/180°旋转、原地旋转、横移 Forward and backward, turn left and right, rotate 90°/180°, rotate in place, traverse
通讯功能 Communication	无线通讯(可选) Wireless communication (optional)
驱动方式 Driving mode	差速驱动 Differential drive
驱动电源 Driving power	DC48V
举升方式 Lifting mode	自动举升 Automatic lift
载重能力 Loading capacity	3000KG (可定制) (customized)
走行速度 Moving speed	0-40m/min(米/分钟)可定制 (customized)
导航精度 Guidance accuracy	± 10mm
工作方式 Working time	24小时 (hs)
爬坡能力 Gradeability	≤ 4°
停止精度 Stop accuracy	± 10mm
充电方式 Charging mode	自动充电 automatic charging
蓄电池 Battery	锂电池 Li battery 放电次数≥1500次 Discharge times ≥ 1500 times
安全感应范围 Safety sensor range	角度0~180度，距离0~3m可调 Angle from 0 to 180 degrees, adjustable from 0 to 3m
使用环境 Working environment	室内温度：0~40度，相对湿度：40%~80% Indoor temp: 0~40, Relative humidity: 40%~80%
安全防护 Safety protection	激光避障传感器，前/后防撞条防护，前/后急停按钮 Laser obstacle avoidance sensor, front/rear bumper protection, front/rear emergency stop button
设计寿命 Designed lifespan	10年(years)

SMT-AGV



产品优势：PRODUCT ADVANTAGES:

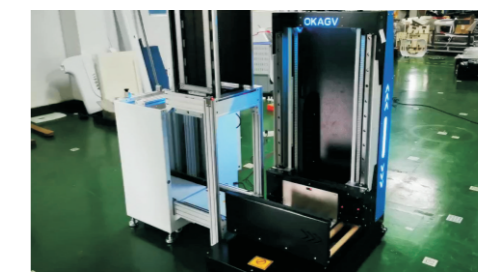
- 导航方式：二维码/激光/slam(可选)
- 走形功能：前进后退左右转弯、90°~360°旋转、原地旋转、横移
- 定位精度：导航停止精度均为±10mm，定制可达±5mm
- 多台联动：具备多台AGV联动功能(可选)
- 进出电梯：可与普通电梯连接，自动搭乘电梯，具备跨楼层搬运能力
- 使用简便：根据调度指令自动运行，无需人工干预。
- 拓展兼容：可根据要求定制，可与WMS、MES系统对接。
- 自主充电：支持无线充电，支持自动充电。
- 多重防护：激光避障传感器，前/后防撞条防护，前/后急停按钮。

Navigation method: QR code/laser/slam (optional)
Running direction: forward, backward, left and right turns, 90°/180° rotation, pivot, lateral movement
Positioning accuracy: The navigation stop accuracy is ±10mm, and the customization can reach ±5mm
Multiple linkage: with multiple AGV linkage function (optional)
Elevator in and out: can be connected with ordinary elevators, take the elevator automatically, and have the ability to carry across floors
Easy to use: run automatically according to scheduling instructions without manual intervention;
Expansion compatibility: It can be customized according to requirements, and can be connected with WMS and MES systems.
Self-charging: Support wireless charging, support automatic charging.
Multiple protection: laser obstacle avoidance sensor, front/rear bumper protection, front/rear emergency stop button.

产品介绍 PRODUCT INTRODUCTION

欧铠二维码SMT-AGV采用二维码导航，是一款专用于SMT上下板机PCB料框转运，具有前进、后退、左右转弯、横向移动，自动识别料框等功能。在SMT车间物流过程中，物料搬运活动是不断反复进行的，物料搬运效率往往会成为决定SMT生产线效率的关键。

OKAGV QR code SMT-AGV adopts QR code navigation. It is specially used for SMT loading and unloading machine PCB material frame transfer. It has functions such as forward, backward, left and right turns, lateral movement, and automatic identification of material frames. In the SMT workshop and the logistics process, the material handling activities are constantly repeated, and the material handling efficiency often becomes the key to determining the efficiency of the SMT production line.



规格参数 SPECIFICATIONS

本体机种 AGV Type	SMT-AGV
外观尺寸 Size	L1080*W685*H1412(mm)可定制 (customized)
控制方式 Control	智能运动控制系统 Intelligent motion control system
导航方式 Navigation	二维码/激光/slam(可选) QR code/laser/slam (optional)
走行方向 Moving	前进后退、左右转弯、90°/180°旋转、原地旋转、横移 Forward and backward, turn left and right, rotate 90°/180°, rotate in place, traverse
通讯功能 Communication	无线通讯(可选) Wireless communication (optional)
驱动方式 Driving mode	差速驱动 Differential drive
驱动电源 Driving power	DC24V
举升方式 Lifting mode	自动举升 Automatic lift
载重能力 Loading capacity	50kg (可定制) (customized)
走行速度 Moving speed	0-60m/min(米/分钟)可定制 (customized)
导航精度 Guidance accuracy	± 10mm
工作方式 Working time	24小时 (hs)
爬坡能力 Gradeability	≤4°
停止精度 Stop accuracy	± 10mm
充电方式 Charging mode	自动充电 automatic charging
蓄电池 Battery	锂电池 Li battery 放电次数≥1500次 Discharge times ≥ 1500 times
安全感应范围 Safety sensor range	角度0~180度，距离0~3m可调 Angle from 0 to 180 degrees, adjustable from 0 to 3m
使用环境 Working environment	室内温度：0~40度，相对湿度：40%~80% Indoor temp: 0~40, Relative humidity: 40%~80%
安全防护 Safety protection	激光避障传感器，前/后防撞条防护，前/后急停按钮 Laser obstacle avoidance sensor, front/rear bumper protection, front/rear emergency stop button
设计寿命 Designed lifespan	10年(years)

COBOT AGV 复合机器人



产品优势：PRODUCT ADVANTAGES:

导航方式：二维码/激光/slam(可选)
 走形功能：前进后退左右转弯、90°~360°旋转、原地旋转、横移
 定位精度：导航停止精度均为±10mm，定制可达±5mm
 多台联动：具备多台AGV联动功能(可选)
 进出电梯：可与普通电梯连接，自动搭乘电梯，具备跨楼层搬运能力
 使用简便：根据调度指令自动运行，无需人工干预。
 拓展兼容：可根据要求定制，可与WMS、MES系统对接。
 自主充电：支持无线充电，支持自动充电。
 多重防护：激光避障传感器，前/后防撞条防护，前/后急停按钮。

Navigation method: QR code/laser/slam (optional)
 Running direction: forward, backward, left and right turns, 90°/180° rotation, pivot, lateral movement
 Positioning accuracy: The navigation stop accuracy is ±10mm, and the customization can reach ±5mm
 Multiple linkage: with multiple AGV linkage function (optional)
 Elevator in and out: can be connected with ordinary elevators, take the elevator automatically, and have the ability to carry across floors
 Easy to use: run automatically according to scheduling instructions without manual intervention;
 Expansion compatibility: It can be customized according to requirements, and can be connected with WMS and MES systems.
 Self-charging: Support wireless charging, support automatic charging.
 Multiple protection: laser obstacle avoidance sensor, front/rear bumper protection, front/rear emergency stop button.

产品介绍 PRODUCT INTRODUCTION

复合机器人 (AGV+机械臂) 将两者成熟的技术产品相结合更具备了精确定位“行走”的功能，其搭载的机械臂实现了在各种工况下的定制作业。可以和机械臂，3D视觉镜头协作，完成精度要求±0.05mm以内的CNC机台上料。结合ERP/MES等信息系统的指令，复合机器人与信息系统结合运作。调度人员通过系统，向复合型机器人下达物料运输、上下料的指令，车间智能化由此形成。

The COBOT AGV (AGV + robotic arm) combines the two mature technology and has the function of precise positioning and "walking". The robotic arm can realize customized operations under various working conditions. It can cooperate with the robotic arm and 3D vision lens to complete the CNC machine loading and unloading within ±0.05mm. Combined with the instructions of information systems such as ERP/MES, the COBOT AGV operates in conjunction with the information system. Through the system, the dispatcher issues the instructions for material transportation and loading and unloading to the COBOT AGV, and the workshop intelligence starts from here..



规格参数 SPECIFICATIONS

本体机种 AGV Type	复合机器人 Cobot AGV
外观尺寸 Size	AGV尺寸：L1100*W700*H600(mm)可定制
控制方式 Control	智能运动控制系统 Intelligent motion control system
导航方式 Navigation	二维码导航、激光导航、自然导航、混合导航 Laser navigation, natural navigation (optional), magnetic nail navigation
走行方向 Moving	前进后退，左右转弯，分岔，自动进出电梯(可定制) Forward, left, right turning, fork-way
通讯功能 Communication	无线通讯(可选) Wireless communication (optional)
驱动方式 Driving mode	差速驱动 Differential drive
载重能力 Loading capacity	50KG (可定制) (customized)
走行速度 Moving speed	0-60m/分速度(或定制) 0-60m/min.(customized)
转弯半径 Turning radius	1100mm
导航精度 Guidance accuracy	±10-20mm
工作方式 Working time	24小时 (hs)
爬坡能力 Gradeability	≤4°
停止精度 Stop accuracy	±10-20mm
充电方式 Charging mode	自动充电 automatic charging
驱动电源 Driving power	DC48V
安全感应范围 Safety sensor range	角度0~180度，距离0~3m可调 Angle from 0 to 180 degrees, adjustable from 0 to 3m
蓄电池 Battery	免维护充电电池，连续放电次数>800次 Maintenance free charging battery, consecutive charge& discharge times: >800
使用环境 Working environment	室内温度：0~40度，相对湿度：40%~80% Indoor temp: 0-40, Relative humidity: 40%-80%
安全防护 Safety protection	激光障碍物检测传感器+机械防撞机构双重防护 Laser obstacle sensor+mechanical anti-collision
设计寿命 Designed lifespan	>10年 (years)

LASER GUIDED TUGGER AGV

激光叉车AGV



产品介绍 PRODUCT INTRODUCTION

欧铠激光叉车是根据国内外不同行业需求而研制的激光导航AGV产品，主要由车体、导航控制系统、行走驱动系统、激光定位系统、激光安全防护系统等构成。叉车类型包含平衡重型叉车、前移式叉车、托盘搬运车、举升堆高叉车。

导航模式:1.激光导航; 2.自然导航(无需反射板); 3.磁钉导航; 4.混合导航。

产品优势:

定位精确，地面无需其它定位设施；行驶灵活，迅速适应多种工作环境；快速充电，支持长时间高强度工作；安全稳定，配备高性能安全传感器；无线通讯，可与外围系统通信交流。混合导航，支持多种导航技术组合。

OKAGV laser forklift is a laser navigation AGV product developed according to the needs of different industries in China and abroad. It is mainly composed of vehicle body, navigation control system, drive system, laser positioning system and laser safety protection system. Forklift types include counter balance forklifts, reach trucks, pallet trucks, and stacker forklifts.

Navigation mode: laser navigation, natural navigation (optional), magnetic nail navigation

Product advantages:

Accurate positioning, no need other positioning facilities on the ground; flexible driving, quickly adapt to a variety of working environments;
Fast charging, support long-term high-intensity work; safe and stable, equipped with high-performance safety sensors;
Wireless communication, which can communicate with peripheral systems. Hybrid navigation supports a variety of navigation technology combinations.

应用案例 APPLICATION OF CASE



规格参数 SPECIFICATIONS

本体机种 AGV Type	激光叉车AGV Laser guided forklift AGV
外观尺寸 Size	L2250*W800*H700 (mm) 可定制 (customized)
控制方式 Control	舵轮控制 Steering wheel
导航方式 Navigation	1.激光导航; 2.自然导航(无需反射板); 3.磁钉导航; 4.混合导航。 Laser navigation, natural navigation (optional), magnetic nail navigation
走行方向 Moving	前进后退, 左右转弯, 分岔, 自动进出电梯 Forward, backward, left, right, fork-way picking, elevator
通讯功能 Communication	无线通讯(可选) Wireless communication (optional)
驱动方式 Driving mode	前轮驱动兼转向 Front wheel drive
载重能力 Loading capacity	800~3000KG (可定制) (customized)
走行速度 Moving speed	0~60m/分速度(或定制) 0~60m/min.(customized)
转弯半径 Turning radius	最小可达1850mm Min. 1850mm.
导航精度 Guidance accuracy	±5mm
工作方式 Working time	24小时 24hs
爬坡能力 Gradeability	<3°
停止精度 Stop accuracy	±5mm
充电方式 Charging mode	自动充电 auto charging
驱动电源 Driving power	DC24V/DC48V
安全感应范围 Safety sensor range	0~5米可设置, 紧急制动距离小于300mm 0~5m, adjustable, emergency stop distance<300mm
蓄电池 Battery	免维护充电电池, 连续放电次数>1600次
使用环境 Working environment	室内温度: 0~40度, 相对湿度: 40%~80% Indoor temp: 0~40, Relative humidity: 40%~80%
安全防护 Safety protection	全方位激光障碍物检测传感器 Laser obstacle sensor
设计寿命 Designed lifespan	>10年 (years)

应用案例/出货案例展示



SLAM自然导航AGV应用



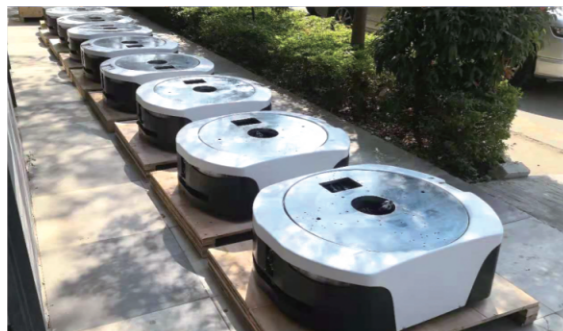
仓储机器人出口海外案例



潜伏AGV大批量出货



全向AGV批量出货



仓储机器人精灵批量出货



仓储机器人小精灵应用



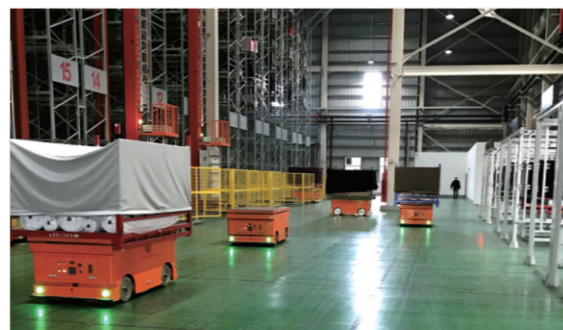
双向背负举升AGV



无轨惯导AGV应用



大型背负AGV批量出货



大型滚筒AGV应用



仓储机器人应用案例



小小精灵批量出货



机械手AGV批量应用案例



激光叉车出货展示



小小精灵批量出货



小小精灵批量出货

AGV中央调度管理系统 AGV Central Dispatching System(CCS)



AGV中央管理系统

AGV中央调度系统

仓储机器人调度管理系统

欧铠自主研发的AGV中央管理系统V1.0.0已取得国家软件著作权，是一个同时对多台AGV实行中央监管、控制和调度的系统,包括AGV搭乘电梯，对AGV小车任务发布，对AGV进行交通管制，协调多台AGV共同协作完成货物的自动搬运。实时动态显示AGV所在的位置，避免AGV出现故障及碰撞现象。通过软件可以实时了解每一台AGV的设备状态、位置信息、工作状态情况等。可与仓储系统、MES系统，产线系统等实现无缝对接，打造全柔性、高度自动化的智能工厂。

The AGV central control system V1.0.0 independently developed by OKAGV has obtained the national software copyright. It is a system for central supervision, control and scheduling of multiple AGVs at the same time, including AGV running in and out elevator, releasing the AGV mission, and managing AGV traffic coordinate multiple AGVs to complete the automatic handling job. The position of the AGV is dynamically displayed in real time to avoid malfunction and collision. The software can be used to know the location information, and working status of each AGV in real time. It can be seamlessly connected with warehouse systems, MES systems, production systems, etc., create a fully flexible, highly automated smart factory.

中央调度系统主要功能 Central control system main functions

- | | |
|---|--|
| <ol style="list-style-type: none"> 1、展示各个工位的呼叫项目和工位位置（叫料、送料）； 2、AGV的地址和背负物料信息； 3、数据库功能； 4、实时监控各项报警信息； 5、交通管制：通过实时检测各AGV的运行位置与运行状态、自动判定AGV在交汇过程中优先判定，使之能够顺利的通行，避免造成交通堵塞； 6、外界系统通讯功能； 7、外界设备对接； 8、先进的交通信号灯管制。 | <ol style="list-style-type: none"> 1. Display the calling items and station positions of each station (calling, feeding); 2. AGV address and material information; 3. database function; 4. real-time monitoring of various alarm information; 5. Traffic control: By detecting the running position and running status of each AGV in real time, it is automatically determined which AGV pass first in the intersections, so all AGV fleet can pass smoothly and avoid traffic jam; 6. the external system communication function; 7 the external equipment docking; 8. Advanced traffic signal control. |
|---|--|

系统优势 System advantages

- | | |
|--|---|
| <ol style="list-style-type: none"> 1、系统成熟稳定，可靠性高； 2、安装与卸载便捷方便：只需按照安装向导点击默认按钮就可方便的安装与卸载； 3、采用工业以太网与库物理管理系统数据库服务器、库物流管理计算机、AGV管理监控计算机互连，与库物流管理系统通过数据库完成数据交互，采用互发消息与AGV管理系统完成数据交互； 4、支持多种操作系统（Window2000/NT/XP/2003/Vista等）； 5、支持多种数据库格式（Access/SQL Server/Oracle等关系型数据库），方便与物流管理机进行数据交互； 6、系统后台自动记录AGV小车的交互信息与数据，方便用户追溯； 7、系统灵活方便设置AGV小车维护参数，根据维护时间自动提醒用户进行相应的维护操作。 | <ol style="list-style-type: none"> 1. The system is mature and stable with high reliability; 2. Easily Install and uninstall: just follow the installation wizard and click the default button to install and uninstall conveniently; 3. System use Industrial Ethernet to connects with warehouse physical management system database server, warehouse logistics management computer and AGV management monitoring computer. It communicates data with warehouse logistics management system through database. It communicates data with AGV CCS by sending mutual messages. 4. Support multiple operating systems (Window2000/NT/XP/2003/Vista, etc.); 5. Support a variety of database formats (Access/SQL Server/Oracle and other relational databases) to facilitate data interaction with the logistics management machine; 6. The system background automatically records the interactive information and data of the AGV, which is convenient for users to trace; 7. The system is flexible and convenient to set the AGV maintenance parameters, and automatically reminds the user to perform corresponding maintenance operations according to the maintenance time. |
|--|---|

AGV控制方式 Control Modes of AGV

产品介绍 PRODUCT INTRODUCTION

上位管控系统通过无线局域网与AGV之间实现大容量的数据传输，从而实时监控AGV的位置信息，报警信息，以及实现交通管制，远程调度等功能。

The upper administration system transfers mass digits with AGV by LAN, for monitoring AGV's realtime positioning and alerting information, also realizing traffic coordination long-distance dispatching as well as other functions.

方式一：系统管控 Mode 1: central system control



方式二、AGV控制盒或触摸屏无线控制 Mode 2: touch button or touchscreen control

- 1、工位通过触摸屏选择物料-确定物料-告知发料区需求备料，可采用触摸屏或电子看板显示；
- 2、工位通过AGV控制盒直接呼叫AGV前往发料；
- 3、备料区可通过触摸屏放行或自动放行AGV；



按钮盒 / Remote Control

1. Feeding information could be sent from fed to feeding stands by pressing buttons, being displayed on touchscreen or electronic displayer.
2. To call AGV by using remote control on fed stands.
3. To dispatch AGV by using touchscreen on feeding stands.



触摸屏 / Touchscreen

方式三、欧铠AGV物料管理系统 Mode 3: OKAGV material control system

欧铠AGV物料管理系统，是由欧铠自主研发设计的一款点料与管控集成一体化控制系统。该系统涵盖数十条生产线，数百上千种物料进行发料管控。该系统的成功应用为企业生产与物流环节真正实现无人化24小时连续生产发挥巨大作用。

OKAGV Calling Monitoring System (OKCMS), developed by OKAGV R&D team, is an integrated controlling system with calling and monitoring functionality. OKCMS manages feeding and dispatching of tens of production lines, and hundreds of materials. OKCMS has made great contribution on productions and logistics for 24h full-automation.



点料系统界面

Auto-charging System Introduction 快速自动充电系统介绍

当电池电量低于30%时，AGV车体进入电量不足状态，车体客户端发出充电请求信号告知管控中心，管控中心会安排AGV进入空闲的充电工位；充电装置连接机构可自动伸缩协助AGV完成充电工作。

When the battery is lower than 30%, AGV will be on powerless status, on-board client will send charging request to administration center, then the administration center will dispatch AGV to unoccupied charging stand. The charging stand can charge the battery with automatic extendable charging facility.



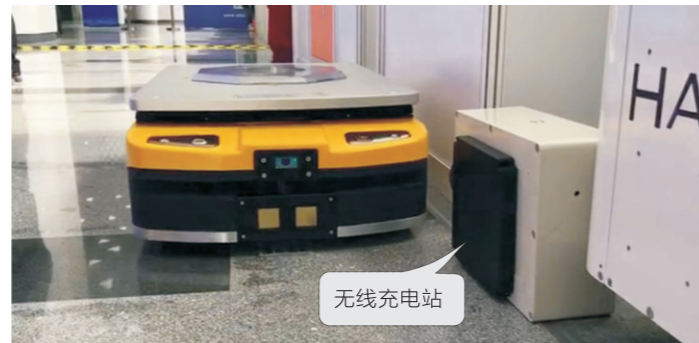
大型双滚筒AGV自动充电中

充电时间 Charging Time	续航时间 Battery Working Time
1-1.5H	6H

AGV非接触式无线充电 AGV Contactless wireless charging

AGV自动前往无线充电站，自动停靠充电站区域，AGV车身接收器与充电站自动连接，无需电极接触即可对AGV进行无线充电。

The AGV automatically goes to the wireless charging station and automatically docks at the charging station. Where the AGV body receiver is automatically connected to the charging station, the AGV can be charged wirelessly without electrode contact.



无线充电站
仓储机器人-无线充电站

AGV手动充电 AGV MANUAL CHARGING

1. 使用进口的免维护充电铅酸电池为AGV提供动力；
2. 为确保AGV能够连续不间断的工作，建议每班更换一次电池；
3. 为方便更换电池，为AGV小车配有电池推车如图所示；

1. Powered by maintenance-free lead-acid battery made special for AGVs.
2. It's suggested to replace the battery every shift for AGV's ongoing working.
3. As picture shows, AGV battery trolley is equipped for easier battery replacement.



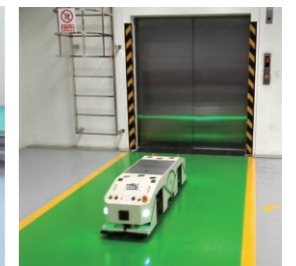
AGV Transport Across Different Floors AGV跨楼层搬运解决方案



激光潜伏AGV待进入电梯
Laser guided AGV enter& exit elevator



双向背负AGV进出电梯
2 way load transfer AGV enter& exit elevator Tugger



尾部牵引AGV进出电梯
AGV enter& exit elevator

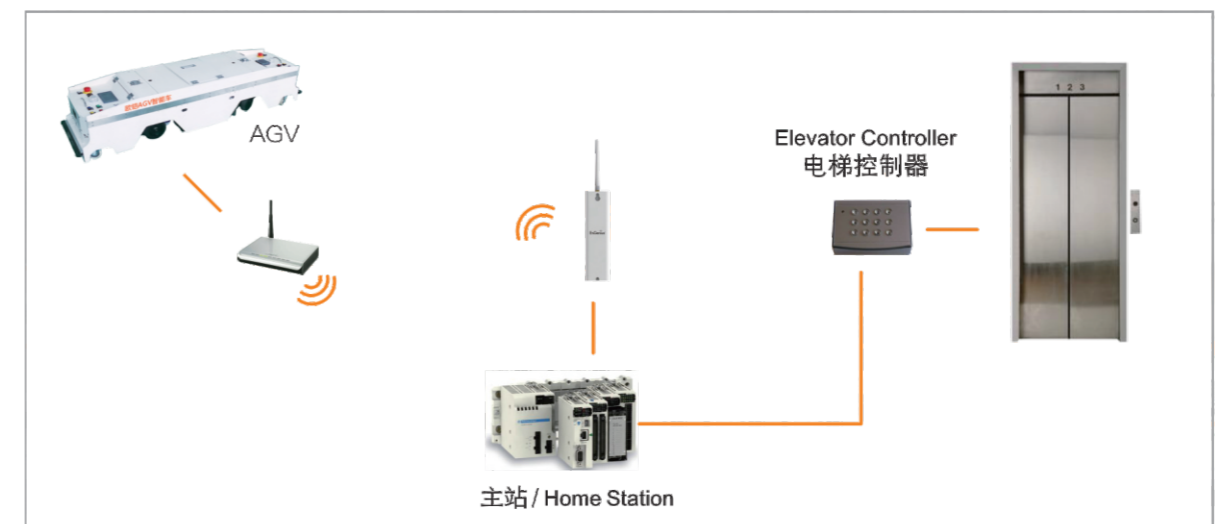
产品介绍 PRODUCT INTRODUCTION

我公司特别研发的AGV进出电梯系统，由AGV管控系统与电梯控制器采用信号交互方式通讯，实现了AGV在无人工操作情况下乘坐电梯上下楼，解决了跨楼层之间物流运输问题。

OKAGV has developed elevator enter/exit system, signal interchange has been adopted for AGV administration system and elevator controller, which makes it applicable for AGV to take a elevator without worker's operation, and it has solved the transportation problem among different floors.



双向潜伏AGV进入电梯
2 way lurking type AGV enter& exit elevator



AGV Safety & Protection

AGV安全防护介绍

安全防护 SAFETY AND PROTECTION

一重安全防护：进口激光安全传感器(重要)

采用进口激光安全传感器（检测范围0~270度，检测距离0~3m可调）组成安全防护装置，确保运行安全。0.2~0.5米范围内检测到障碍物时AGV减速运行并提出警示声；当检测到障碍物进入安全警示区域时AGV减速运行并提出警示声；当检测到障碍物进入危险区域时AGV自动停车，障碍物移走后自动恢复运行。AGV具有离线保护、偏离轨道自动纠正功能。

二重安全防护：安全触边，又叫安全边缘，是一种带状的压敏开关

安全边与安全缓冲器是柔性可弯折的带状物，通常固定在AGV前后边棱上。在一重防护失效情况下，AGV若撞上障碍物，在机械防撞机构作用下，小车立刻停止运行。

三重安全防护：紧急停止按钮

紧急停止按钮常见的是红色按钮，安装在AGV的前面或后面，如果发生紧急情况可以按下AGV车体上的急停按钮使AGV立刻停车，AGV两侧的转向灯闪烁，同时停止灯亮起来。如果想恢复AGV的正常运行，需先将急停按钮松开，然后按启动键来恢复AGV的正常运行。

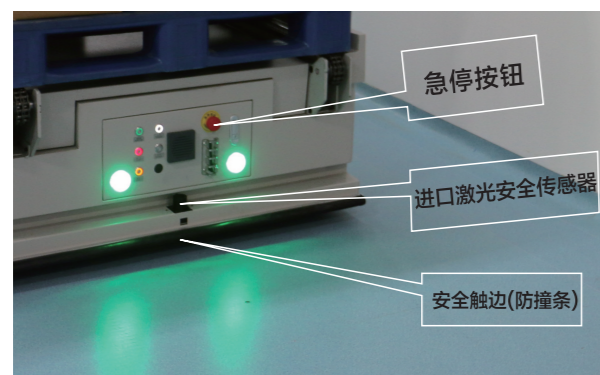
1st safety protection: laser safety sensor (important):The imported laser safety sensor (detection range 0~270 degrees, detection distance 0~3m adjustable) constitutes a safety protection device to ensure safe performance. The AGV stops when obstacle is detected within the range of 0.2 to 0.5 meters. When AGV detects that the obstacle enters the safety warning area, the AGV decelerates and raises a warning sound; when it detects that the obstacle enters the dangerous area, the AGV automatically stops, and starts again after obstacle removal. The AGV has the features of off-line protection and off-track automatic correction.

2nd safety protection: Safety bumper, also called safety edge, is a belt-shaped pressure sensitive switch.

The safety edge and safety bumper are flexible, bendable strips that are typically fixed in the front and rear edges of the AGV. In the case of 1st protection failure, if the AGV hits an obstacle, the car will immediately stop running because of the mechanical anti-collision mechanism.

3rd safety protection: emergency stop button

The emergency stop button is usually a red button that is installed in front of or behind the AGV. If an emergency occurs, press the emergency stop button on the AGV body to stop the AGV immediately. The turning lights on both sides of the AGV flash and the stop light is on. If you want to resume the normal operation of the AGV, first release the emergency stop button, then press the start button to resume the normal operation of the AGV.



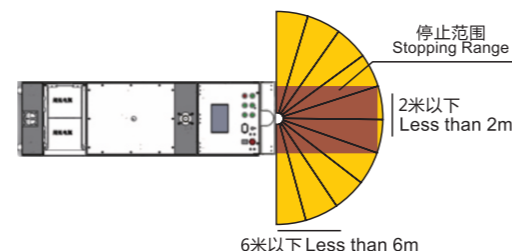
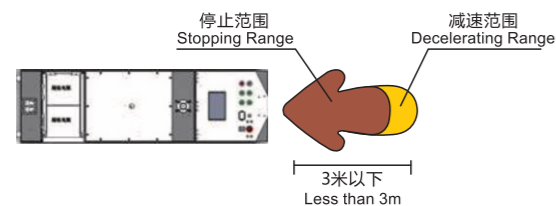
AGV三重安全防护系统介绍



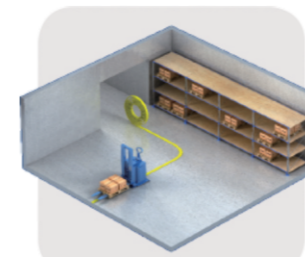
进口激光传感器



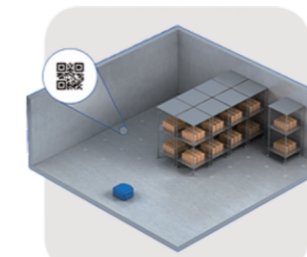
安全触边(防撞条)



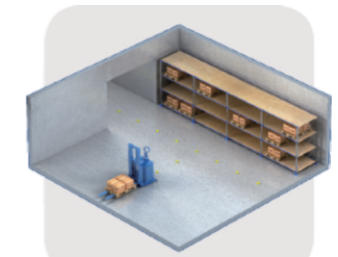
AGV导航方式介绍 Navigation mode



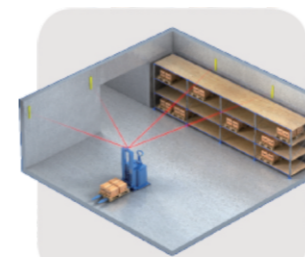
磁条导航



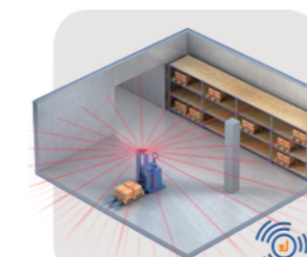
二维码导航



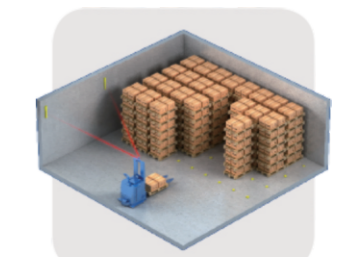
磁钉导航



激光导航



自然导航



混合导航

AGV行驶地面要求 AGV driving ground requirements

- 1、地面承载能力1.5T/m²（一般情况下），特殊载重对面承重要求不同，地面允许压强1.5MPa。
- 2、地面平整度小于5mm(用2米靠尺检测)。
- 3、地面要求能够释放自动导引车静电，绝缘电阻小于108（如无法满足要求，需加装防静电板）AGV日常行驶时，地面必须保持清洁干燥。任何地板接头、垃圾、液体、地板清洁剂、化合物都可能损害AGV的行走能力。静电操作和车轮过度摩擦可能导致部件报废。
- 4、伸缩缝、沉降缝、抗震缝及分割缝，对于这些接缝有一定的设计要求：
 - a) 应尽力避免在AGV行驶路径上出现接缝。需要综合考虑具体的面层接缝的位置、尺寸及AGV路径的规划。
 - b) 在无需特别处理的情况下，AGV可以通过5mm以下的接缝。
 - c) 对于宽度为5-50mm的接缝，可缝内上部50mm嵌填沥青油膏，下部100mm嵌泡沫塑料条，或嵌填M10水泥砂浆，其表面垫有机硅纸作隔离层。
 - d) 对于宽度为50-450mm的接缝，可利用金属盖板进行处理。
 - e) 对于一定宽度的沉降缝，可采用特殊方法或工具进行处理，例如CoGri Joint Stabilisers (CJS)进行处理。地面承重与叉车不同，AGV使用固定的行驶路径，而且AGV用聚氨酯轮胎取代充气轮胎。所以AGV行驶路面必须满足一定的承重要求：地面单位面积的负荷需高于AGV水平投影面积内单位面积负荷。
- 5、其余建筑要求：地面精加工为使AGV能平稳顺畅运行，可对地面表层实施精加工，这是指在AGV运行路面上铺上一层水泥、环氧树脂、瓷砖、木地板或其他化学纤维等，以提升地面平整度，减少接缝对AGV影响程度。



1. Ground load capacity 1.5T/m² (normally), special load requires different ground load capacity, ground permitting pressure intensity 1.5mPa.
2. Ground unevenness <10mm among the area 4000mm*2000mm.
3. The ground must be able to release AGV static, insulative resistance must <108 (anti-static board must be installed if not fulfilled) The floor must stay clean and dry during movement. Any ground floor connector, garbage, fluid, ground detergent can compromise AGV moving ability. Static operation and wheels over work may lead components scap.
4. AGV moving ground should adopt concrete structure in principle. But any magnetic guided AGV ground clearance must above 80mm. Underground metal or cables may lead influence to navigation of certain types of AGV. Metal pipes or metal things under auto doors will influence magnetic navigation, small range of metal will not influence the AGV movement.
5. Expansion joint, settlement joint, seismic joint, and split joint, there are requirements for these joints:
 - a) Avoid any joints in the AGV path. Need to consider the position of detailed layer face, size and AGV path plan.
 - b) Without special treatment, AGV can pass the joint under 5mm.
 - c) For any joint width 5-50mm, can fill the upper side with bitumen factice, fill lower side with 100mm plastic stripes embedded foam, or fill M10 concrete mortar, on the surface it's organic silicon paper as insulation layer.
 - d) For any joints 50-450mm width, use metal board.
 - e) For settlement joint, use special way or tools to deal with, like CoGri Joint Stabilisers (CJS). Ground load capacity is different from forklift, fixed AGV path, AGV use polyurethane to replace aerated wheel. So AGV path must fulfill certain load capacity: Ground loading per square must be higher than the AGV horizontal projected area loading.
6. Other architecture requirement: ground fasioning makes the AGV moves smooth, it works on the surface of ground, to put another layer of concrete, exposy resin, P type resin, wood floor or other chemical fiber, to raise the evenness of the floor, reduce joints influence to the AGV.

AGV After Sales Service AGV售后服务

- 1、交货期：收到定金后，45个工作日交货（常规车型）。
- 2、质保期：设备验收之日起1年；在设备保质期内，提供技术支持及免费维修支持。对于超出质保期后出现的设备问题以优惠价格提供备件。由于违章操作造成的严重损害，将由使用公司承担全部责任。
- 3、交货地点：送货至贵公司厂房内，按公司标准包装。
- 4、调试安装：由厂家负责设备的调试和安装。
- 5、售后服务：设备在使用时发生故障后，使用公司首先致电咨询厂家售后部门，厂家对于所提技术问题需无偿给予解答；若在厂家指导下问题仍未解决，厂家会在2小时内响应，8-48小时内到达现场解决设备出现的问题，最大限度地保证设备的正常使用。

Technical Training 技术培训

培训人员的范围、数量及时间(视具体情况)

- 1、设备管理人员：1~2人，时间2天
- 2、电器维修工程师：1~2人，时间5~7天
- 3、机械维修工程师：1~2人，时间5~7天
- 4、现场操作人员：2~3人，时间3~5天

培训的内容

- 1、经过培训的维修工程师应具备正确使用各类检查设备，准确判断故障部位的能力，对于局限在各功能模块的故障应能在规定的时间内排除。因此，甲方维修工程师应在培训后掌握AGV控制系统的结构，各功能单元的关系，主要测试点的测量方法、技术指标。
- 2、经过培训的操作人员应能按照操作规程正确操作AGV及其各保障系统，能够正确处理各类应急故障，在发生故障时了解如何尽量减少设备的损害，保证操作人员和设备的安全。
- 3、提供全套的使用维护手册和培训教材。

Customer References 荣誉客户 (以下排名不会先后)

携理想、信念、鸿途、大计；怀真知、灼见、共识、创新；向未来、向胜利、向世界，以广大客户“携手共进、共创辉煌”。
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