

INTELLIGENT LIGHT-LOAD DUAL-TRACK SHUTTLE SYSTEM

智能轻载双轨穿梭车系统





PRODUCT INTRODUCTION

产品介绍

该系统采用模块化车体、载具与轨道设计，实现生产及成品物料的空中三维智能转运，支持多向自由运行与动态变更路径，大幅提升空间利用率与运输灵活性。

系统集成高精度定位、双驱安全冗余技术，结合多车协同调度与智能中枢实时优化路径，确保运行快、稳、准，可适配复杂工况与高频作业需求，全面兼容产线柔性调整。高效完成工序区内、工序间及跨厂区物料转运，助力企业实现智能、稳定且节能的物料流转与全周期运维，是现代智能物流与柔性产线的重要装备。

The system adopts modular design, enabling 3D material transport, supporting dynamic paths and boosting space use. Integrating precision positioning, multi-vehicle scheduling and real-time path optimization, it ensures fast, stable, accurate operation—adapting to complex conditions, high-frequency tasks, and flexible production line adjustments. Efficient in inter-process and cross-plant material transfer, it aids intelligent, stable, energy-efficient material flow as key equipment for smart logistics and flexible production lines.

OPERATING ENVIRONMENT

使用环境

环境温度
Temperature



-5°C ~ 40°C

相对湿度
Relative Humidity



≤85% (25°C时 at 25°C)
无凝露 non-condensing

温度变化率
Temperature Change Rate



≤±0.5°C/min
≤±10°C/h

相对湿度变化率
Relative Humidity Change Rate



≤±10%/h

海拔高度
Altitude



≤2000m

建筑空间使用高度
Clear Height for Building Space



≥3m

SYSTEM ADVANTAGES

系统优势



01.空间增效 Space Efficiency



优化三维空间穿梭布局，释放地面空间，实现场地的高利用率；采用模块化设计，灵活标准拼装，既满足常规需求，又适配低温、抗震、窄巷道场景，能应对冷链、医药等特殊环境需求。

Frees ground space for high site utilization; modular design enables flexible assembly, fitting low-temperature, anti-vibration, narrow-aisle scenarios and cold chain/pharmaceutical needs.

02.实时变径 Real-Time Track Change



车体搭载动态导向轮组机构，无需轨道切换，0秒即可变更路径；可动态规划最优路径、调整车辆调度策略，适配产线调整，柔性响应产能需求，助力实现高质量升级。

Dynamic guide wheel mechanism enables 0sec path change (no track switching); dynamically plans optimal paths, adjusts scheduling to adapt to production lines & meet capacity needs.

03.智能高效 Intelligent Efficiency



智能派车，规避拥堵；可灵活增减车辆，兼具动态任务适应性与灵活性，高效节能地应对产能调整。

Smart vehicle dispatching avoids congestion; it supports flexible vehicle adjustments, with dynamic task adaptability, enabling efficient and energy-efficient handling of capacity adjustments.

04.快速定制 Rapid Customization



采用标准化、模块化、参数化设计，实现空中与地面穿梭车零部件100%通用互换，减少零部件品类，优化制造及装配工艺，大幅缩短生产周期，便于售后运维的改造升级；可依据客户方案快速高效定制。

Standard/modular/parameterized design with 100% universal overhead/ground parts, reducing part types, shortening production cycles; enables fast customization & upgrades.

05.精准可靠 Precision & Reliability



双轨结构叠加防摇摆技术，有效抑制载具晃动，实现行走与升降的动态毫秒级同步，确保高速运行中的同步定位精准。

Dual-track structure with anti-sway technology effectively suppresses carrier sway, enabling millisecond synchronization of travel and lifting, ensuring safety and precision during high-speed operation.

06.高精定位 High-Precision Positioning



采用全伺服控制系统，实现±1mm以内重复定位精度，满足高精机床、机器人及自动化产线的对接需求。

Full servo control system enables ±1mm repeat positioning accuracy; meets docking needs of robots & automated production lines.

07.安全防护 Safety Protection



集成紧急启停、站台安全联动、火警故障防护，守护作业安全；可选配轨道防坠网、车载卷帘、车载避障雷达、车载读码器等核心软硬件，以满足系统运行的高安全可靠要求。

Integrates emergency stop, platform safety interlock, and fire fault protection, safeguarding operational safety; optional overhead fall-prevention nets, on-board roller shutters, obstacle avoidance radars, and code readers to meet high safety and reliability requirements.

PRODUCT PARAMETERS

设备参数

技术参数 Product Parameters	第三代智能轻载双轨天梭 3rd Gen. Intelligent Light-load Dual-track Sky Shuttle 	第五代智能轻载穿梭车 5th Gen. Intelligent Light-load RGV 
最大载荷 MAX. LOAD	100KG	100KG
空载最大行走速度 TRAVEL SPEED (EMPTY)	300m/min (加速度 Acceleration: 2.5m/s²)	300m/min (加速度 Acceleration: 2.5m/s²)
实载最大行走速度 TRAVEL SPEED (LOADED)	260m/min (加速度 Acceleration: 1.5m/s²)	260m/min (加速度 Acceleration: 1.5m/s²)
行走定位精度 POSITIONING ACCURACY	±1mm	±1mm
升降方式 LOADING AND UNLOADING METHOD	同步带升降 Lifting belt lifting	/
升降速度 LIFTING SPEED	60m/min (加速度 Acceleration: 1m/s²)	/
位置检测 POSITION DETECTION	二维码 QR Code	二维码 QR Code
轨道 TRACK	铝型材双轨道 Aluminum Profile Dual-Track	铝型材双轨道 Aluminum Profile Dual-Track
供电方式 POWER SUPPLY METHOD	滑触线 Slide wire	滑触线 Slide wire
通讯方式 COMMUNICATION METHOD	工业级 WIFI / 漏波电缆 Industrial-Grade WiFi / Leaky Wave Cable	工业级 WIFI / 漏波电缆 Industrial-Grade WiFi / Leaky Wave Cable
电源规格 POWER SUPPLY	AC220v50/60Hz	AC220v50/60Hz
车轮 WHEELS	四个车轮驱动，材料高弹性进口聚氨酯，硬度邵氏≥95° Four-wheel drive, high-elasticity PU, Shore hardness ≥95D	

注：出口设备可根据采购方指定的电源电压和频率设计
Note: Exported equipment can be designed according to the specified power supply voltage and frequency.

APPLICATION SCENARIOS 应用场景

◆ 应用行业 INDUSTRY APPLICATIONS

第三代智能轻载双轨天梭
3rd Gen. Intelligent Light-load Dual-track Sky Shuttle



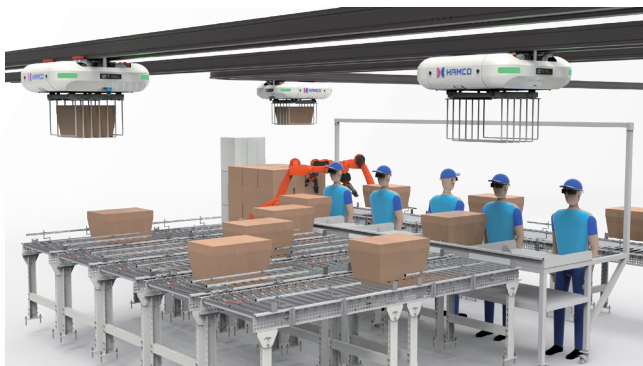
- 轮胎制造 Tire Manufacturing
- 医院物流 Hospital Logistics
- 生产制造 Manufacturing
- 光伏 Photovoltaic
- 电力巡检 Electric Power Inspection
- 食品饮料 Food and Beverage
- 加工 Processing
- 新零售 New Retail

第五代智能轻载穿梭车 (RGV)
5th Gen. Intelligent Light-load RGV



- 快递物流 Express Logistics
- 机场行李周转 Airport Baggage Handling
- 食品 Food
- 医院 Healthcare Sector
- 图书馆档案 Library Archives Management
- 家具行业板材 Furniture Board Manufacturing

◆ 应用场景 APPLICATION SCENARIOS



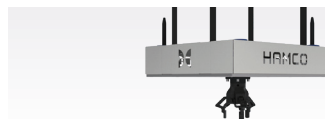
- 产线中的原材料搬送 Material Feeding
- 中间工艺 In-process Handling
- 成品的搬送 Finished Product Conveyance
- 跨厂房/区域搬送 Cross-plant Logistics

◆ 适配载具 ADAPTIVE CARRIERS

应用场景与行业不同，夹具适配方案各异，种类可按实际技术需求定制。
With different application scenarios and industries, carrier solutions also vary, and can be customized per actual technical needs.

载具种类 CARRIER TYPES:

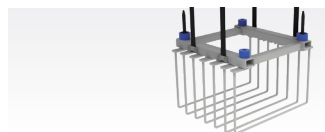
- 吊篮
Suspension baskets
- 夹抱机构
Clamping mechanisms
- 夹爪
Gripper jaws
- 机械手
Robotic manipulators
- 辊筒/链条/皮带输送部
Roller/chain/belt conveyor units



机械手 (适用于柱状物料)
Robotic Manipulator (for Cylindrical Materials)



夹爪 (适用于轮胎)
Gripper Jaw (for Tire Handling)



吊篮 (适用于箱状物料)
Suspension Basket (for Box-Type Materials)



夹抱 (适用于箱状物料)
Clamping Mechanism (for Box-Type Materials)

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