MASTER 万事达

Specialized In Logistics Equipment

多 层 穿 梭 车 密 集 存 储 系 统
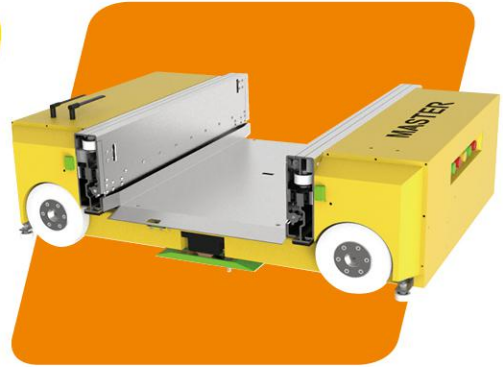MULTI-LAYER SHUTTLE INTENSIVE STORAGE SYSTEM

天津万事达物流装备有限公司

Tianjin Master Logistics Equipment Co., Ltd.

Multi-layer Shuttle Intensive Storage System

多层穿梭车密集存储系统

两向多穿车
Two-way multilayer shuttle

四向多穿车
Four-way multilayer shuttle

货架系统
Racking system

输送系统
Conveying system

WMS
库房管理系统

提升机系统
Elevator lift

WCS
设备控制系统

系统由多组高速运行在专用货架单元上存取货物（件箱）的穿梭车、提升机、箱式输送系统、分拣线、WMS 管理系统和 WCS 控制系统组成。是一种集合"货到人"分拣和密集存储为一体的全新自动化存储模式，相比传统的 MINILOAD 系统更为先进、高效的适用于件箱物流的自动化存储。
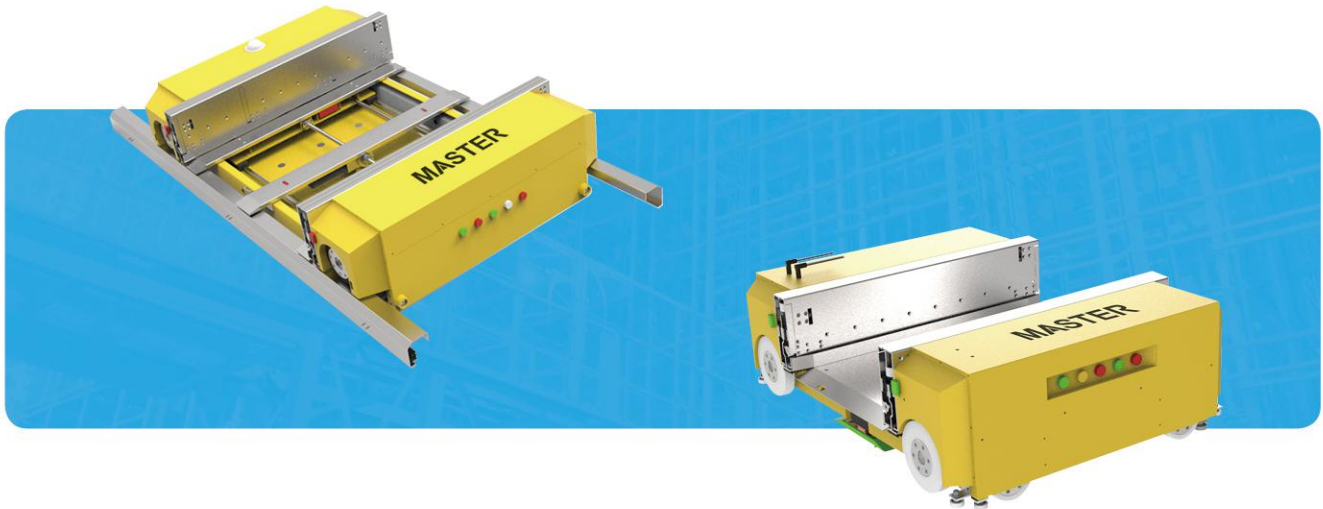
多层穿梭车系统对货物（件箱）存储可进行单、双进深设计，双向、四向设计。广泛地适用于汽车配件、电子、生物制药等轻型件箱物流模式。

The system is composed of multiple sets of shuttles, elevators, box-type conveying systems, sorting lines, WMS management systems and WCS control systems which are running on dedicated racking units at high speed to access goods (piece box). It is a new automatic storage mode that integrates "goods to people" sorting and dense storage features. Compared with traditional MINILOAD system, it is more advanced and efficient for automatic storage of piece box logistics.

The multi-layer Shuttle system can carry out single and dual depth design, two-way and four-way design for storage of goods (piece box). It is widely used in light parts box logistics modes such as auto parts, electronics, and biopharmaceuticals.

Multi-layer Shuttle (Two-way / Four-way)
多层穿梭车（双向 / 四向）

多层穿梭车负责横纵两个方向上的物料搬运

快速且可扩展，可用于重达 50kg 的周转箱或纸箱。结构设计非常紧凑，比一般及传统的解决方案占地面积减少了 30%—50%。

立方形状的多层穿梭车采用的单 / 双深位布局，大大提高所需的存储货位。相同空间布局系统中，多层穿梭车系统出入库处理能力比传统仓储系统提升了 5—10 倍。

多层穿梭车采用低电压供电、相同货物处理量情况下与传统堆垛机相比节省电能 10%。

MULTI-LAYER SHUTTLE IS USED FOR MATERIAL HANDLING IN BOTH HORIZONTAL AND VERTICAL DIRECTIONS

It's fast and scalable, and can be used for turnover boxes or cartons weighing up to 50kg. Its structure is designed to be very compact, so that the floor space is reduced by 30% –50% compared with conventional and traditional solutions.

Cubic multi-layer Shuttle is designed with single / dual depth position layout, thus greatly improving the required storage space. Compared with other same space layout systems, the handling capacity of the multi-layer Shuttle system is 5-10 times higher than that of traditional storage systems.

The multi-layer Shuttle adopts low-voltage power supply and saves 10% of power consumption compared to traditional stackers with the same cargo handling capacity.

序号 Number	名称 Name	参数 Parameter
1	最大承载 Maximum load	50 KG
2	WIFI 接收系统 WIFI receiving system	西门子（信号稳定、速率快、覆盖范围广） Siemens (stable signal, fast speed, wide range)
3	光电系统 Photoelectric system	倍加福（寿命长、信号稳定、故障率低） Pepperl Fuchs (long service life, stable signal, low failure rate)
4	PLC	西门子（稳定、计算速率快） Siemens (stable, fast calculation speed)
5	控制方式 Control mode	联机自动 / 单机手动 Online automatic / single manual
6	电机 Motor	英福莱诺 伺服电机 Infranor Servo Motor
7	空车速度 No-load speed	4 米 / 秒 4 m/s
8	重载速度 Overload speed	3 米 / 秒 3 m/s
9	供电方式 Power supply	电池或滑触线 Battery or slide wire
10	电机功率 Motor Power	行走 750W，货叉伸缩 400w Travel 750W, fork expansion 400W
11	定位系统 GPS	光电定位 Photoelectric positioning
12	适用温度 Suitable temperature	−20℃ ~ 50℃

Box-type Conveying System

箱式输送系统

箱式输送系统

箱式输送分拣系统一般包含多楔带滚筒输送机、多楔带转弯辊筒输送机、滚筒线输送机。

广泛应用于物流行业物体和容器的传输、分拣、存储以及空容器的回收。同时也必须依照用户特定要求和使用场地情况，灵活地配置组成适应工艺流程的系统设备，并通过各种探测仪器和信息输入装置，经控制系统处理，对物体的运行状况进行实时控制，完成数据统计和通讯、上位机管理等工作。

具有结构简单，可靠性高，使用维护方便等特点。

BOX-TYPE CONVEYING SYSTEM

The box-type conveying and sorting system generally includes a poly V-belt roller conveyor, a poly V-belt turning roller conveyor, and a drum line conveyor.

It is widely used in the transportation, sorting, storage of objects and containers in the logistics industry, as well as the recycling of empty containers. At the same time, it is also necessary to flexibly configure system equipment that complies with the process flow according to the specific requirements of the user and the site. Through various detection instruments and information input devices, it can conduct real-time control of the object operating conditions by processing by the control system, thus completing data statistics and communication, principal computer management, etc.

It has the characteristics of simple structure, high reliability, convenient use and easy maintenance.

序号 Number	名称 Name	参数 Parameter
1	额定承载 Rated load	100 KG
2	条码阅读系统 Barcode reading system	倍加福（定位精准） Pepperl Fuchs (precise positioning)
3	光电系统 Photoelectric system	倍加福 Pepperl Fuchs
4	PLC	西门子 Siemens
5	控制方式 Control mode	具有联机自动 / 单机手动功能 With online automatic / stand-alone manual function
6	高度 Height	可根据用户需求定制 Can be customized according to user's needs
7	适用温度 Suitable temperature	-20℃ ~ 50℃
8	空载速度 No-load speed	4 米 / 秒 4 m/s
9	重载速度 Overload speed	3 米 / 秒 3 m/s
10	电机 Motor	西门子 Siemens
11	电机功率 Motor Power	11 kw
12	提升系统 Elevator lift	同步带提升 Timing belt lift
13	传动系统 Transmission system	同步带 Timing belt
14	精度控制 Precision control	二维码精定位定位误差 ±2mm QR code accurate positioning error ± 2mm

Elevator Lift

提升机

提升机负责垂直方向上的物料搬运及车辆换层

链式提升：提升机用链条代替钢丝绳，避免了传统提升机经常碰到的钢丝绳断股或变形量大等问题，保证了提升机的安全稳定性。

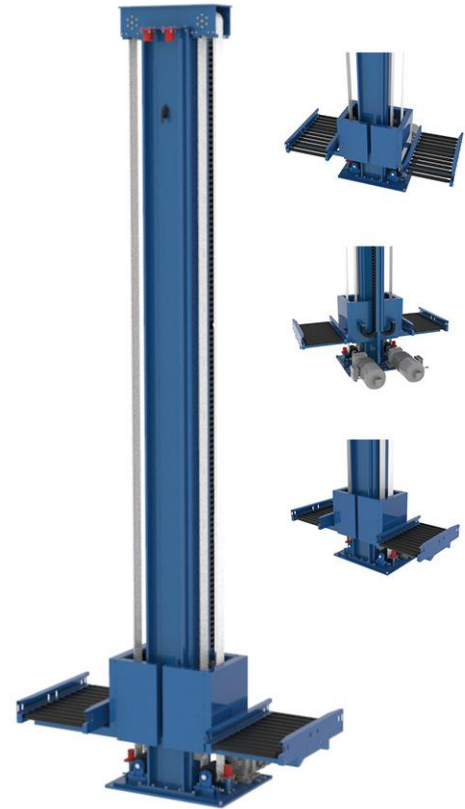双重制动：一为二维码系统，二为电机上的编码器，保证了制动信息的可靠性，实现提升平台的稳定运行，避免冲顶及触底事故。

提升机前端设计有缓存机构，既可以进行货物的输送也可以作为四向车进出提升的运行通道，并且可以提高效率。

THE ELEVATOR LIFT IS USED FOR VERTICAL MATERIAL HANDLING AND VEHICLE LAYER CHANGE IN THE VERTICAL DIRECTION

Chain lifting: The elevator lift uses a chain instead of a wire rope to avoid problems such as broken strands or large deformation of the wire rope which are often encountered in traditional elevators, thus ensuring the safety and stability of the elevator.

Dual braking: one is a QR code system, and the other one is an encoder on the motor, which ensures the reliability of the braking information, improves the stable operation of the platform, and avoids top and bottom accidents.

The front end of the elevator lift is designed with a buffer mechanism, which can not only transport the goods, but also serve as a running channel for the four-way shuttle to enter and exit, and can improve efficiency.
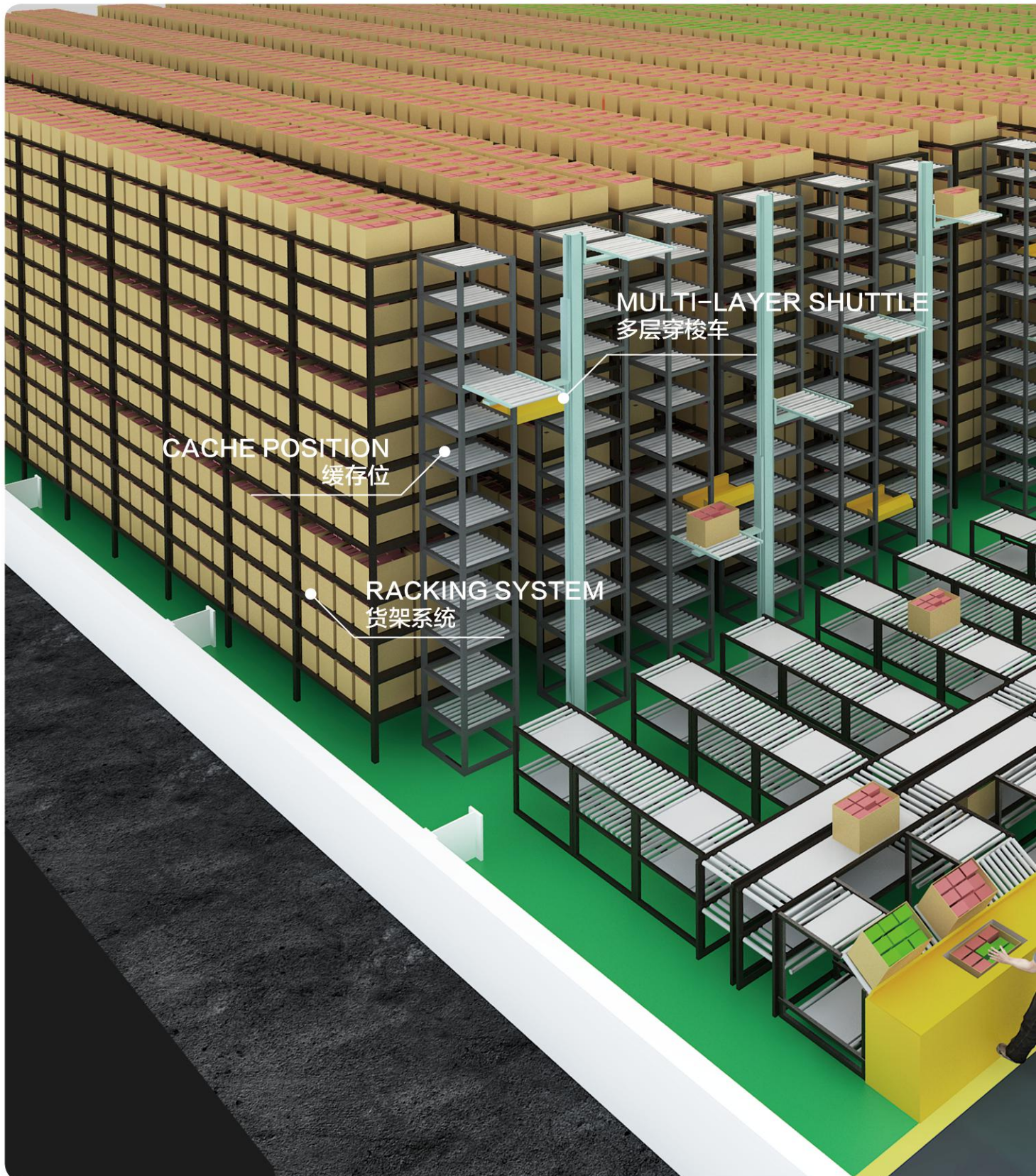
序号 Number	名称 Name	参数 Parameter
1	机架 Frame structure	碳钢机架 Carbon steel frame
2	滚筒 / 辊子 Roller / roller	Φ50 多楔带轮滚筒，筒体不锈钢 φ50 poly V-belt pulley drum, stainless steel cylinder
3	机架内档宽度 Frame structure inner width	详见设备清单 See equipment list for details
4	滚筒间距 Drum distance	100、75mm
5	输送单元载荷 Conveying unit load	30-50 KG/ 箱 30-50 kg/box
6	输送速度 Transfer speed	根据项目设定 Set according to the project
7	输送工件方向 Direction of conveying workpiece	单向 Unidirectional
8	输送方式 Conveying method	多楔带传动 Poly V-belt drive
9	驱动方式 Drive mode	小电机 Small motor
10	涂装 Paint	喷塑 Spraying plastics

Multi-layer Shuttle Intensive Storage S

多层穿梭车密集存储系统鸟瞰图

MULTI-LAYER SHUTTLE
多层穿梭车

CACHE POSITION
缓存位

RACKING SYSTEM
货架系统

ELEVATOR LIFT
提升机

CONVEYING SYSTEM
输送系统

MASTER 万事达

Specialized In Logistics Equipment

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