HAI ROBOTICS

A Flexible Solution

Warehouse automation with Autonomous Case-handling Robot (ACR) systems



About HAI ROBOTICS

Pioneer in Autonomous Case-handling Robot (ACR) Systems

HAI ROBOTICS provides efficient, intelligent and flexible solutions for warehouses and factories. We aim to reduce our customer's storage footprint and operating costs, improve warehouse productivity and maximize workflow efficiencies with increased speed & order accuracy.

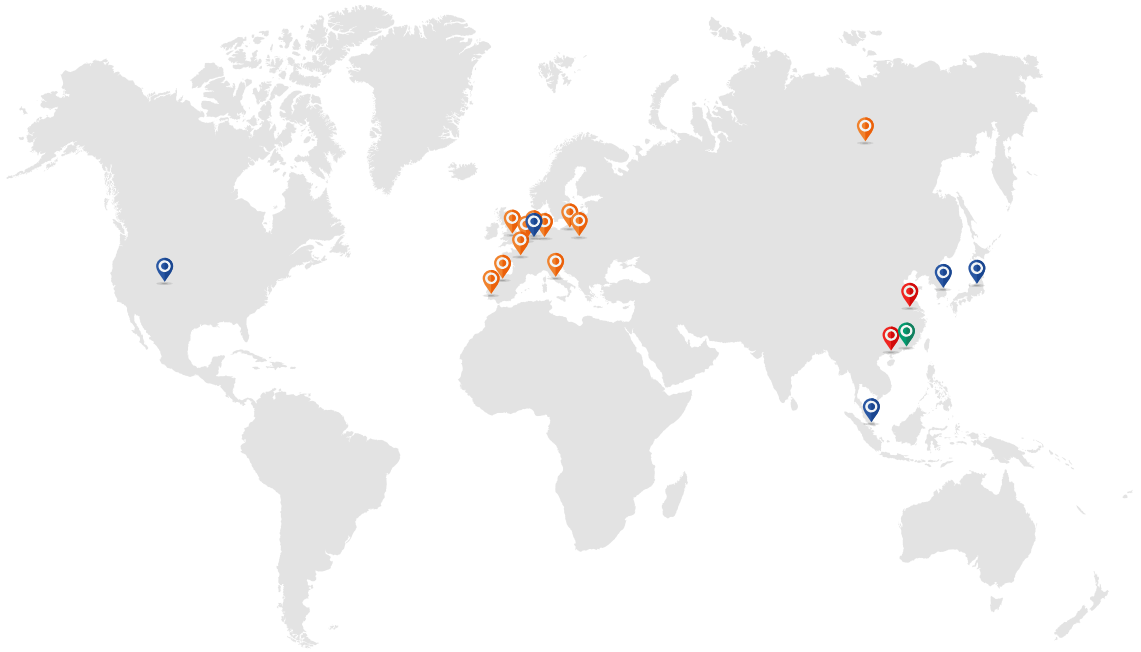
HAI ROBOTICS' solutions are helping warehousing, distribution, and manufacturing facilities advance their operations in over 30 countries worldwide. Currently, 3PL, e-commerce, apparel, retail, grocery, automotive & manufacturing, electronics, and pharmaceutical industries are already turning to HAI ROBOTICS to enhance and accelerate their operations.

/1 MILLION M²+ STORAGE AREA SERVICED

/1100+ PATENTS

/30+ COUNTRIES

/500+ PROJECTS LAUNCHED



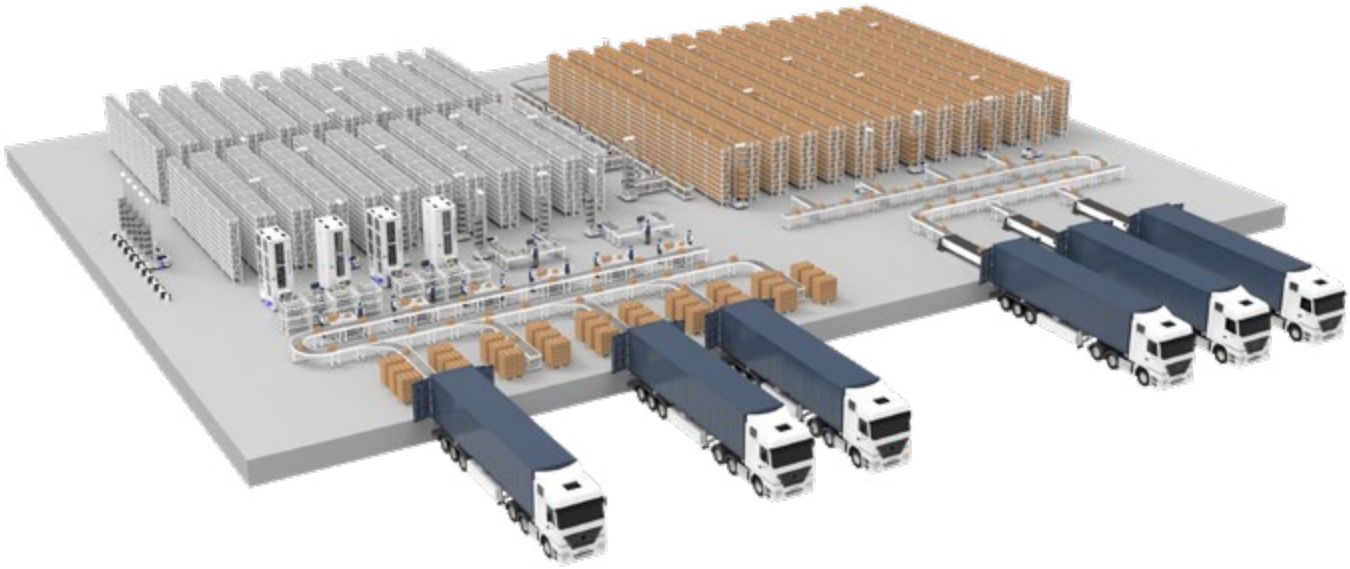
Worldwide HAI Offices European Partners & Clients Factories HAI Headquarters


HAIPICK
HAI ROBOTICS
HAIPICK
HAI

Smart SOLUTION

Enabling smart warehouses with flexible and scalable solutions

The smart warehouse of today needs to be adaptable and responsive to the shifting needs of future demands. HAI ROBOTICS designs flexible, highly efficient automated goods-to-person order picking solutions that keep your operations functioning ahead of the industry to best support business growth.



Smart. Efficient. Flexible.

The intelligent brain of the solution, the HAIQ software platform, ensures that HAIPICK robots are always operating at peak capacity and efficiency. HAIQ allows them to seamlessly integrate with any warehouse management systems that may already be in place.

HAI ROBOTICS offers a robust, cost-effective, and smart warehouse solution that allows any business to greatly increase storage density and operational efficiency. Installation is quick and painless for ongoing warehouse operations.



HAIPICK System

It incorporates HAIPICK robots, workstations, and the HAIQ software platform to perform picking, sorting, and transporting operations.

The HAIPICK system is relied upon by a long list of industries including fashion, 3PL, retail, electronics, healthcare, e-commerce, and many more. Over 500 facilities around the world use HAIPICK to achieve maximum operational efficiency.

/ Safe

- Emergency stop buttons
- Front/back obstacle avoidance
- Collision safety device
- Sound-light alarming
- CE Certified

/ Efficient

- Maximizes operational efficiency
- Intelligent picking and handling
- Move multiple totes simultaneously

/ Flexible and Scalable

- 1-2 months rapid deployment
- Highly responsive to shifting demands
- Easily expand the system

/ Space Utilization

- Condense storage density
- Improve warehouse space utilization

HAIPICK A42

Multi-layer ACR

The A42-series offers picking and storage of cases up to a height of 5.2 m. The series consists of four models which handle a wide range of case dimensions and types. All models are compatible with plastic totes and carton boxes in different sizes.



HIGH EFFICIENCY

With multiple storage trays, the robot can handle up to 9 cases simultaneously. This greatly increases your operational efficiency.

FLEXIBLE PAYLOAD DIMENSIONS

The robot supports separate and mixed picking of plastic totes and carton boxes in a wide range of case dimensions and types.

FLEXIBLE AND SCALABLE

Users can re-use existing racks and totes, if they fit the required specifications. The system can also be easily deployed in a small part of the warehouse and scaled up to a larger installation as business grows.

EFFICIENT DEPLOYMENT

Rapidly automate your warehouse without impacting existing operations.

PRODUCT SAFETY

CE certified.

Optional Features

DOUBLE-DEEP FORK

Reduce aisle area by 50% and further increase storage density.

3D VISUAL RECOGNITION

Support carton picking, compatible with multi-size cases. Adapt to conditions when containers cannot be identified by their code.

FLEXIBLE WIDTH FORK TECHNOLOGY

The size of the cases is automatically recognized for flexible picking and placement. Utilize case spacing to increase the overall storage density by more than 30%.

HAIPICK A42T

Telescopic Lift ACR

The HAIPICK A42T Telescopic ACR is the world's first ACR that can pick and store plastic totes and carton boxes at a dizzying height of up to 10 m. Increase your warehouse storage density even further with the A42T.



√ MAXIMUM PICKING HEIGHT 10 M

Improve storage density by up to an additional 100% compared to the regular A42.

√ WORLD'S FIRST TELESCOPIC ACR

Utilize your warehouse space even more efficiently by picking and storing 30 kg payloads up to 10 m high.

√ HIGH EFFICIENCY

The A42T has multiple storage trays to carry up to nine payloads simultaneously, which greatly improves picking efficiency.

√ FLEXIBLE PAYLOAD DIMENSIONS

The robot supports separate and mixed picking of plastic totes and carton boxes.

√ PRODUCT SAFETY

CE certified.

Optional Features

√ DOUBLE-DEEP FORK

Reduce aisle area by 50% and further increase storage density.

√ 3D VISUAL RECOGNITION

Support carton picking, compatible with multi-size cases. Adapt to conditions when containers cannot be identified by their code.

√ FLEXIBLE WIDTH FORK TECHNOLOGY

The size of the cases is automatically recognized for flexible picking and placement. Utilize case spacing to increase the overall storage density by more than 30%.

HAIPICK A3

Fork-Lifting ACR

With up to 5.5 m picking height, the A3 series provides high utilization of storage space. Adaptable to manufacturing operations, the series can store, pick and move goods of different shapes such as tires, trays and foam boxes. It is also suitable for dust-free requirements, handling goods such as PCBs.



PICKS A WIDE VARIETY OF MATERIALS

Trays, tires, foam boxes, and many others, meeting the needs of manufacturing industries such as electronics, automotive, etc.

CLASS10000 CLEANLINESS AND ANTI-STATIC

The load handling device is dust proof and anti-static, suitable for handling goods such as PCBAs.

CUSTOMIZABLE

A large range of standard customizations are available. The A3-series can work with different types of shelves, conveyors and other docking equipment.

INTEGRATION FLEXIBILITY

As with any HAIPICK-series, the software platform can integrate with almost any upstream software platform for the purpose of orchestrating and automating processes within warehousing and manufacturing.

PRODUCT SAFETY

CE certificate.

ABLE TO HANDLE VARIOUS MATERIALS


Foam box


Iron basket


Tire

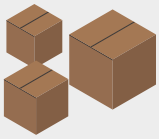

Tray

STORAGE UNITS

*Multi-size totes and cartons

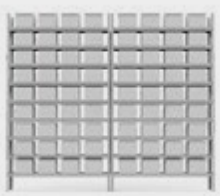
- A42
- A42T





Customizable shelves

- A42
- A42T
- A3



* Minimal size: 300 x 200 x 120 mm / maximum size: 1000 x 600 x 600 mm

HAISTATION

Multi-function workstation

HAISTATION is the backend of the solution. It typically includes a HAIPORT workstation, conveyor, put wall, buffer wall, workstation, robotic arm etc. The HAISTATION provides ultra-efficient case loading and unloading with safe human-robot interactions.



√ EFFICIENT

Significantly increases HAIPICK ACR's efficiency. Fast delivery of totes to workers helps to increase facility throughput.

√ PRODUCT SAFETY

CE certificate.

√ ERGONOMIC

Provides workers with an ergonomic workspace.

√ FRIENDLY

Human-system interaction, empowering maximum manual in-and-outbound efficiency.

√ HAIPORT-POWERED WORKSTATION

HAIPORT can load 8 cases in 3 seconds and unload 8 cases in 5 seconds, which significantly increases workflow efficiency.

√ ON-CONVEYOR PICKING WORKSTATION

Workers and HAIPICK robots are indirectly connected through an ergonomic design. Goods can be sorted on the conveyor line with minimal movement.

HAICHARGER

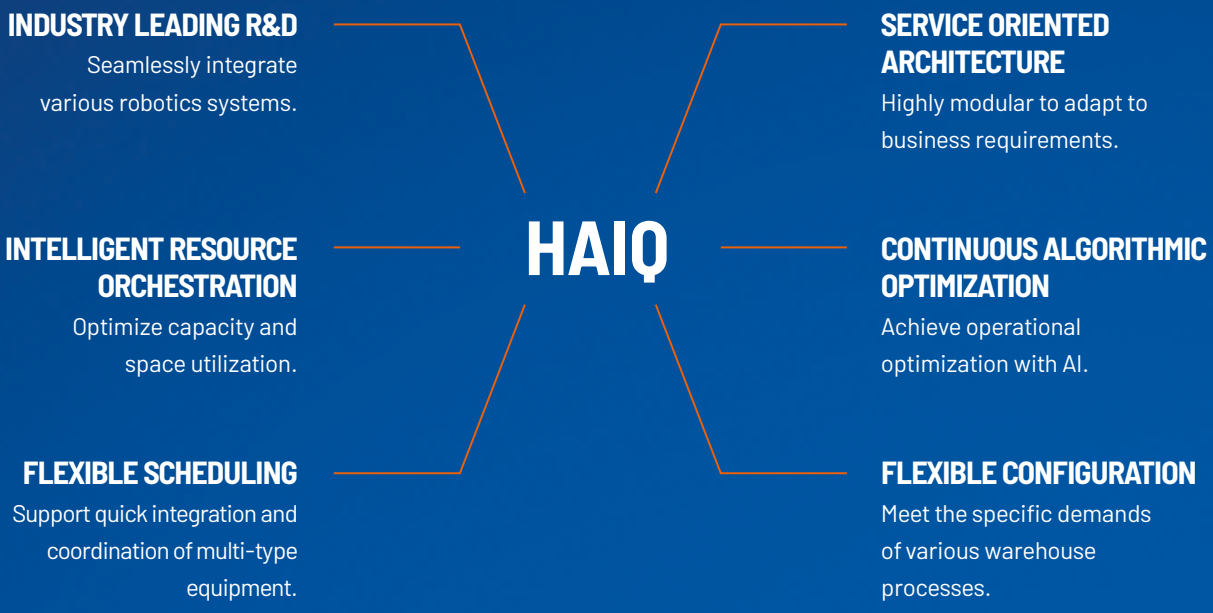
- √ Supports fast & full charging modes to ensure 24/7 operation.
- √ Easy to operate, plug and play, real-time display of charging and communication status.
- √ Multiple protection features that prevent exceeding voltage & current limits, overheating, short circuit, reverse connection, and electric shock.

Charging station



HAIQ

HAIQ is an intelligent software platform for order fulfillment and inventory management based on AI algorithms. HAIQ is the central command for inbound, outbound, inventory management, and integrating with other devices.



MULTIPLE INTEGRATION METHODS

Supports a variety of system integration methods. Proven project experience with well-known ERP and WMS suppliers.

CUSTOMER REQUIREMENTS		INTEGRATION METHODS
Inventory Management HAIQ fully operates the inventory management system and is responsible for the location management and scheduling module.	>	**Black box**
Location Management Customers use their own inventory management system. HAIQ is responsible for the location management and scheduling module.	>	**Grey box**
Task Management HAIQ manages equipment handling tasks only.	>	**White box**



SYSTEMS

Intelligent Warehouse Management System

IWMS integrates with the external warehouse management system, offering outbound, inbound, stock taking and housekeeping through an interactive interface.

IWMS

PUTAWAY STRATEGY
By product: Supports the shipper, commodity type, batch configuration.
By case: Supports totes configuration based on rack and warehouse area.

OUTBOUND STRATEGY
Support the least totes, the shortest distance, priority totes, and other hit strategy.

STOCK-TAKING STRATEGY
By tote change, discrepancy, rack, and SKU.

INVENTORY REORGANIZATION STRATEGY
By container volume proportion, empty compartment proportion, case quantity, SKU, etc.

Equipment Schedule System

ESS receives upstream system instructions and dispatches equipment to carry out tasks effectively and intelligently, optimizing warehouse capacity.

ESS

QUICKLY INTEGRATE THIRD-PARTY EQUIPMENT
Integrate and control multi-type automation equipment, such as picking robots, conveyors, PTL, robotic arms, etc.

SUPPORTS MIXING OF MULTI-TYPE DEVICES
Control different types of devices and models (AGV and AMR) in the same warehouse.

ENABLING EQUIPMENT PERFORMED IN PARALLEL
Support mixing multi-type equipment cooperation such as scheduling ACR and KIVA. Support synchronous changes in priority tasks and robot dispatch.

SUPPORTS 600+ EQUIPMENT OPERATION
Support sub-area storage and scheduling equipment through optimizing the system performance and scheduling algorithm.



Philips Manufacturing

Smart Factory Project

In recent years, Philips Zhuhai home appliance factory's demand for intelligent warehouse transformation has become increasingly urgent. Philips hoped to increase picking and handling efficiency through automation transformation and realise intelligent inbound and outbound warehousing processes with data and information-based warehousing management.

Solution

- 2 HAIPICK A42 robots, 2 u-shaped on-conveyor picking workstations.
- Boosted storage density with 4 m shelving in the 500 m^2 warehouse.
- Standardized the case turnover and the use of QR codes.
- Split orders intelligently, powered by HAIQ Software Platform.

Results

2,466
STORAGE LOCATIONS

8 CASES/M^2
STORAGE DENSITY

99.9%
PICKING ACCURACY

130
CASES/HOUR

IMPROVE
MANUAL EFFICIENCY

STANDARDIZATION
LOGISTIC PROCESS

Thomas, Senior Manager of Philips Zhuhai

"Both Philips Dutch headquarters and Philips Zhuhai attach great importance to this warehouse automation transformation project. After one year of full investigation and comprehensive evaluation, we selected ACR systems which greatly meet our storage needs, truly ptimizes the warehouse operation process and improves human efficiency."



SF-DHL

Apparel warehouse Project

One of the warehouses of SF-DHL Supply Chain, a world leading 3PL company, serves fashion brands and provides B2B & B2C order fulfillment. SF-DHL chose the HAI ROBOTICS HAIPICK solution to improve its Shanghai warehouse operation efficiency, reduce labor costs, and optimize storage density. SF-DHL was so successful using this solution that they purchased more ACR systems and applied them to 3 additional sites.

Solution

- 9 HAIPICK A42 Robots and 3 workstations.
- 1,500 m^2 shelving storage area in 2,000 m^2 warehouse.
- 4 m shelving height with 20,000 storage spaces.
- Accurate and efficient management powered by Visual Kanban.

Result

20 TIMES
INBOUND EFFICIENCY IMPROVEMENT

60%
STORAGE DENSITY INCREASE

7 DAYS
DEPLOYMENT

3 YEARS+
PROJECT SMOOTHLY RUNNING

Ping Zhifeng, General Manager of FMCG/Retail Business Unit of SF-DHL

"Through this project, we see more possibilities for intelligent warehousing in the future. SF-DHL strongly supports warehouse automation.

In the future, we will automate more warehouses with HAI ROBOTICS"



Retail Giant

Cross-border E-commerce Warehouse

China's largest online retailer and member of the Fortune 500 experienced so much success from multiple HAI ROBOTICS automation projects that they chose HAI ROBOTICS for yet another location to power their first 5G Smart Logistic zone.

Solution

- Maximize storage space with 4,3 m shelving with 27,000 locations
- HAIQ software platform-based responsive order-picking operation
- Empowering people with U-shaped on-conveyor workstations

Results

9 CASES/M²
STORAGE DENSITY

30%
STORAGE DENSITY INCREASE

1,206 PIECES/HOUR
WORKSTATION EFFICIENCY

3 TIMES
PICKING EFFICIENCY INCREASE

HIGHLY EFFICIENT
SOLUTION WITH LOW-COST INVESTMENT

Thank-you notes from the client:

"Professional, efficient and stable ACR systems address our peak season challenge. It's a solid evidence of HAI ROBOTICS' corporate value of creating value for customers, and we appreciate the help to achieve success in this project."



Winit

Cross-border E-commerce Warehouse

Winit, a cross-border e-commerce service provider, owns a warehouse in Tamworth, UK, and is faced with warehouse staff shortages and an urgent need to improve efficiency during shopping seasons in Europe. With HAI ROBOTICS' ACR systems, Winit finds the operations of their UK warehouse have improved and are more cost-efficient.

Solution

- 100 HAIPICK A42 robots with 4,8 m shelving.
- Integrated with 16 on-conveyor picking workstations.
- Automatic identification of totes by picking display interface and electronic labels.
- Cases can be adjusted according to the commodity size.

Result

3-4 TIMES
EFFICIENCY IMPROVED

1/2/4/8 GRIDS
FLEXIBLY DIVIDED

120,000+
STORAGE LOCATIONS IN 10,000 M^2 WAREHOUSE

50,000 PIECES
DAILY PROCESSING CAPACITY

Winit's official account advertised that:

"HAI ROBOTICS' autonomous case-handling robotic system, through the robot ontology, bottom positioning algorithm, control system, robot scheduling, intelligent WMS, and other independent research and development and has been the core element of the global patent layout, to achieve agile and efficient warehouse automation upgrade."



Booktopia Australia

Online Bookstore Warehouse Project

Booktopia, Australia's largest online bookstore, diligently explored technologies with high standards to help them hold more stock and increase picking and putting away efficiency. After an extensive search, Booktopia selected HAI ROBOTICS' ACR automation solution as it met all their requirements.

Solution

- Equipped with a telescopic fork and double deep capacity, the HAIPICK ACR extends 4 m high and handles both cartons and totes.
- Integrated with multi-area recirculating conveyors.
- HAIPICK robots pick/drop from 11 conveyors while staying in the same spot.

Result

2 TIMES
CAPACITY

60,000
BOOKS SHIPPED/DAY

800%
RATE IMPROVEMENT

< 3 YEARS
ROI

4-6 MONTHS
TO BE CASH FLOW POSITIVE

Tony Nash, CEO at Booktopia

"We don't do this to be the first or to get awards, we do this because it is what is best for our customers. The foundation of our innovation strategy is to meet our goal of providing our customers with the best and most efficient service we can."



LF Logistics

Apparel Warehouse Project

LF Logistics provides export, import, FCL, LCL, and other services. Due to the growth of business, LF Logistics' need for scenario diversification increased and they searched for a robust solution. Due to the high-value nature of the project, LF Logistics selected HAI ROBOTICS' ACR solution. They were originally drawn to these ACRs due to the reputation HAI ROBOTICS's products and solutions have in the industry.

Solution

- 49 HAIPICK A42 robots cooperate with HAISTATION to achieve efficient operations.
- 4,3 m shelving maximizes storage density and buffer area.
- Meets omni-channel business requirements and adapts to B2C and B2B scenarios.
- Flexibility to cope with peak seasons.

Results

30%
STORAGE DENSITY INCREASED

63,770 STORAGE LOCATIONS
WITHIN 7500 M^2

REDUCE
LABOR INTENSITY

2-2.9 TIMES
B2B/B2C PICKING EFFICIENCY INCREASE

Wendong Wang, General Manager of LF Logistics

"LF Logistics is very satisfied with the effect of warehouse automation. HAI ROBOTICS' ACR solution has improved the picking efficiency by 2.9 times for B2B business and 2 times for B2C business. The storage density has increased about 30%."

HAIPICK A42



A42-M-E4



A42-G-E4

COMPATIBLE CASE PARAMETER	Case Dimension Scope (mm)	L(300~400) × W(200~300)	L(300~600) × W(300~400)
	Case Height Scope (mm)	105~330	120~330
	Case Weight (kg)	≤30	≤30
ROBOTICS PARAMETERS	Robot Dimensions (mm)	L1300 × W800 × H3130	L1600 × W1000 × H4330
	Picking Height Range (mm)	400~3200mm	400~5200mm
	Mechanical Rotation Diameter (mm)	1300	1600
	Robot Net Weight (kg)	380	480
	Robot Max Load (kg)	≤180	≤180
	Number of Back Trays	5	6
	Certification	CE interlock version/ CE standard safety version	CE interlock version/ CE standard safety version
MAIN DEPLOYMENT PARAMETERS	Aisle Width (mm)	920mm	1110mm
	Working Environment Temperature	0~45°C	0~45°C
	Ground Flatness (mm)/2.25 (8,060 in2)	±3	±4
PERFORMANCE	Max Straight Move Speed (m/s)	1.8m	1.8m
	Stop Accuracy in Travel Direction (mm)	±10	±10
BATTERY SPECIFICATIONS	Full Charging Time (20%~100%) (h)	≤1.5	≤1.4
	Fast Charging Time (30%~80%) (min)	≤40	≤32
	Full Charge Endurance (100%~20%) (h)	≥5.4	≥6.5
	Fast Charge Endurance (80%~30%) (h)	≥3.4	≥4.0
SAFETY FUNCTIONS	Communication Encryption	√	√
	Zoned Obstacle Avoidance	√	√
	Zone Deceleration	√	√
	Emergency Stop Button	√	√
	Anti-collision Mechanism	√	√
	Sound & Light Alarm	√	√
	Motor Protection	√	√
	Battery Protection	√	√



A42-L-E4



A42-X-E4

	L(380~670) × W(380~500)	L(480~800)×W(480~600)
	120~330	120~330
	≤30	≤30
	L1830 × W1060 × H4330	L2130 × W1240 × H4420
	400~5200mm	400~5200mm
	1830	2130
	550	650
	≤180	≤180
	6	6
	CE interlock version/ CE standard safety version	CE interlock version/ CE standard safety version
	1225mm	1375mm
	0~45°C	0~45°C
	±4	±4
	1.7m	1.2m
	±10	±10
	≤1.4	≤1.4
	≤32	≤32
	≥6.5	≥6.5
	≥4.0	≥4.0
	√	√
	√	√
	√	√
	√	√
	√	√
	√	√
	√	√
	√	√

HAIPICK A42T



A42T-L-E1



A42T-X-E1

COMPATIBLE CASE PARAMETER	Case Dimension Scope (mm)	L(400~650) × W(300~500) mm	L(650~850) × W(400~650) mm
	Case Height Scope (mm)	115-330	115-330
	Case Weight (kg)	≤30	≤30
ROBOTICS PARAMETERS	Robot Dimensions (mm)	8m: L1850 × W1030 × 4890 10m: L1850 × W1030 × 5730	8m: L2220 × W1250 × 4890 10m: L1800 × W1030 × 5730
	Picking Height Range (mm)	8m: 8000mm 10m: 10000mm	8m: 8000mm 10m: 10000mm
	Mechanical Rotation Diameter (mm)	1850	2240
	Robot Net Weight (kg)	8m:900 - 10m:950	8m:1050 - 10m:1100
	Robot Max Load (kg)	≤270	≤270
	Number of Back Trays	8	8
	Certification	CE interlock version/ CE standard safety version	CE interlock version/ CE standard safety version
MAIN DEPLOYMENT PARAMETERS	Aisle Width (mm)	8m:1150mm - 10m:1160mm	8m:1370mm - 10m:1380mm
	Working Environment Temperature	0~45°C	0~45°C
	Ground Flatness (mm)/2.25 (8,060 in2)	±3	±3
PERFORMANCE	Max Straight Move Speed (m/s)	1.5m	1.5m
	Stop Accuracy in Travel Direction (mm)	±10	±10
BATTERY SPECIFICATIONS	Full Charging Time (20%~100%) (h)	≤1.4	≤1.4
	Fast Charging Time (30%~80%) (min)	≤32	≤32
	Full Charge Endurance (100%~20%) (h)	≥6.5	≥6.5
	Fast Charge Endurance (80%~30%) (h)	≥4	≥4
SAFETY FUNCTIONS	Communication Encryption	√	√
	Zoned Obstacle Avoidance	√	√
	Zone Deceleration	√	√
	Emergency Stop Button	√	√
	Anti-collision Mechanism	√	√
	Sound & Light Alarm	√	√
	Motor Protection	√	√
	Battery Protection	√	√

HAIPICK A3



A3-G-E1



A3-L-E1

	L(360~600) × W(360~500) mm	L(450~780) × W(450~780) mm
	50-450	150-350
	≤50	≤40
	L1650 × W900 × 3930	L2131 × W1220 × 5150
	330-4000mm	360-5550mm
	1650	2150
	600	650
	≤250	≤320
	5	8
	CE standard safety version	CE standard safety version
	1000	1450
	0~45°C	0~45°C
	±4	±4
	1.6m	1.5m
	±10	±10
	≤1.4	≤1.4
	≤32	≤32
	≥6.5	≥6.5
	≥4	≥4
	√	√
	√	√
	√	√
	√	√
	√	√
	√	√
	√	√
	√	√

HAI ROBOTICS

SMART. EFFICIENT. FLEXIBLE.

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