ZCNEST

MOBILE ROBOT CATALOGUE

Robotize your warehouse to Energies the productivity

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WeChat   Linkedin   YouTube

ZHONGCANG ROBOTICS (NANJING) CO., LTD
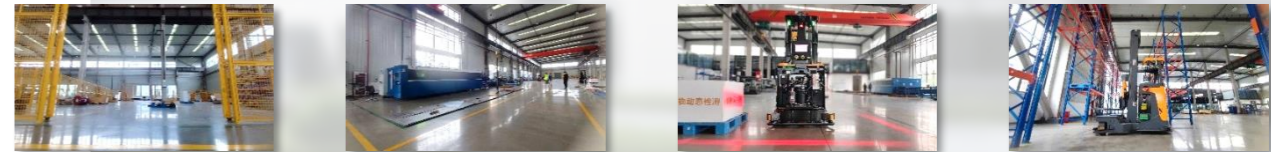
ZHONGCANG ROBOTICS (NANJING) CO., LTD

Manufacturer of Forklift AGV robots &
Service provider of warehousing solutions.

ZCNEST was founded in 2018, with forklift AGV robots as its core product, covering a full series of unmanned forklifts. The company independently develops three software systems, including AGV scheduling system, warehousing control system, and intelligent warehousing management system. Through hardware to software with a complete technology system, core algorithms and control technology for mobile robots.

**Self-produced
Optimized quality control**

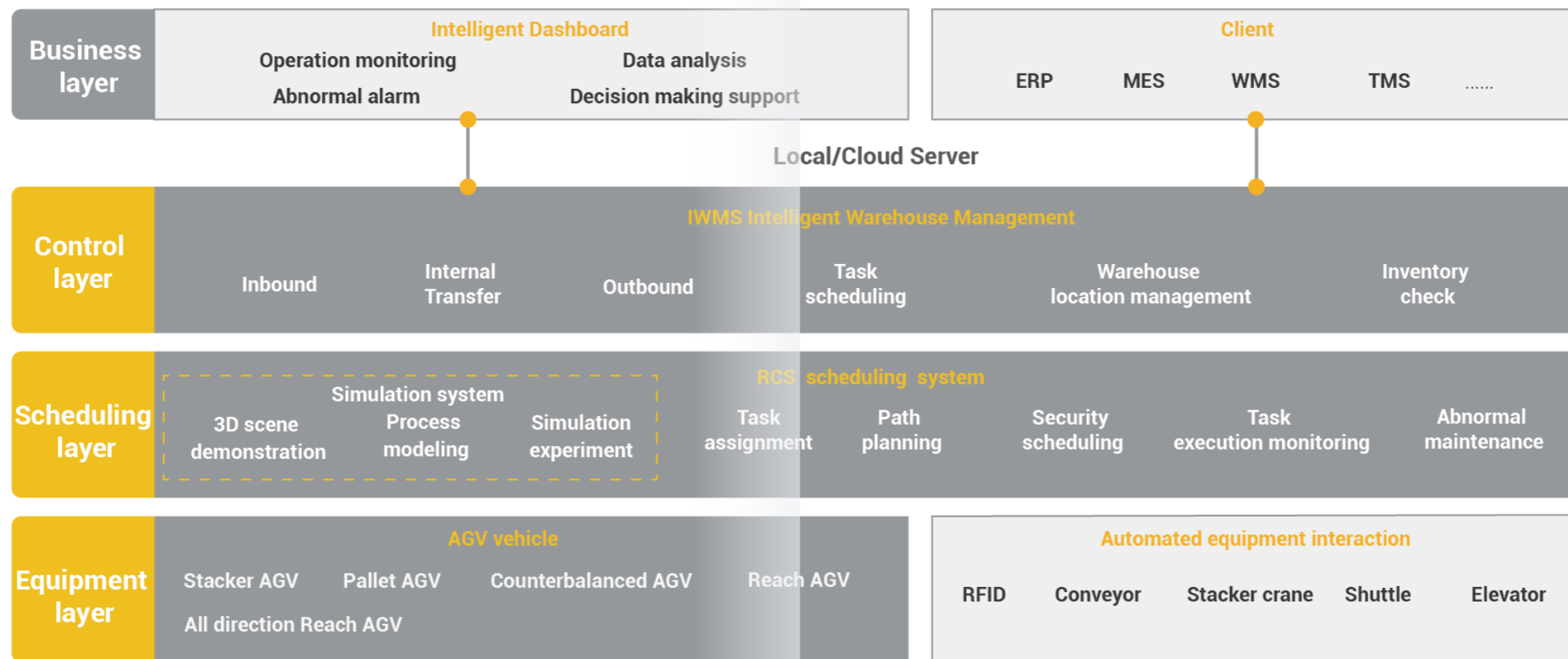| **6** +	**50** +	**120** +	**40** +
Establishment	Patents	Partners	R&D Personnel

2019
Complete the first AGV system project

2021
Completing **Pre-A** Financing

2023
New production base built, nearly 10000 square meters factory

2024
Start partnership in United States and South East Asia

2018
ZCNest is officially established Initiated the R&D of **forklift robots**

2020
Self-developed AGV systems applied in medicine and rail transit industries

2022
ZCNest Passes National High tech Enterprise Certification

2023
AGV systems applied in consumer goods, supermarkets, manufacturing, and other industries

Design

Site Renovation

Network Implementation

On-site Deployment

Efficiency Optimization

Guidance & Training

After-sale Service

System Upgrade

Product advantages

1   Complete self-developed architecture

Business layer	**Intelligent Dashboard** Operation monitoring Data analysis Abnormal alarm Decision making support	**Client** ERP MES WMS TMS ......

Local/Cloud Server

Control layer	**IWMS Intelligent Warehouse Management** Inbound Internal Transfer Outbound Task scheduling Warehouse location management Inventory check
Scheduling layer	**Simulation system** 3D scene demonstration Process modeling Simulation experiment **RCS scheduling system** Task assignment Path planning Security scheduling Task execution monitoring Abnormal maintenance
Equipment layer	**AGV vehicle** Stacker AGV Pallet AGV Counterbalanced AGV Reach AGV All direction Reach AGV **Automated equipment interaction** RFID Conveyor Stacker crane Shuttle Elevator

2   Dynamic path planning

Multi-sensor fusion → Robot algorithm and control → Multi robot task allocation and route adjustment

- ☐ Dynamic path planning based on real-time system
- ☐ Virtual reality and digital twin technology
- ☐ Dynamically interact with the position information of each robot
- ☐ Dynamic path planning based on real-time location information, various states of the robot, and related future tasks
- ☐ Capable of simultaneously scheduling a large number of robots of different models

Safety System
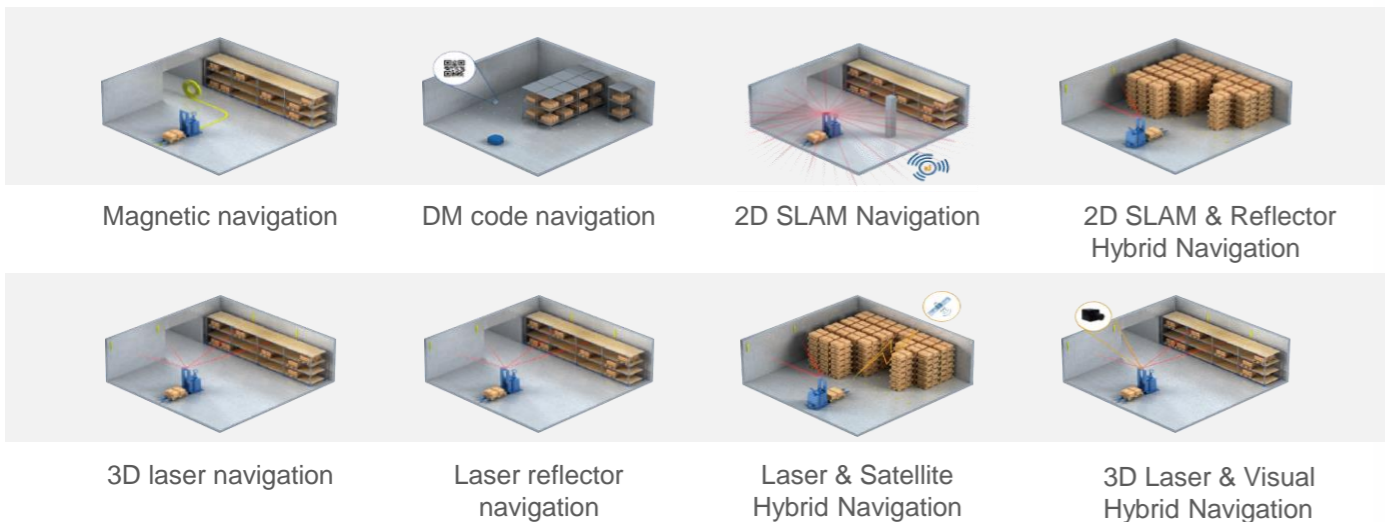
1 Self developed robot core controller 2.0

- **Distributed ARM architecture controller**
- **The protection level can reach IP68-40~70 ℃**
- **Suitable for cold storage and outdoor use**

Navigation	DM code 2D SLAM, 2D laser reflector 3D SLAM, satellite assisted navigation Visual assisted navigation
Communication	Industrial WIFI 2.4/5.8GHz 4G/5G Encrypted data transmission
Motion model	Dual differential wheel motion model Single wheel motion model Multi wheel motion model

| Safety	2D/3D laser obstacle avoidance Contact based obstacle avoidance and fall recognition
Recognition	Pallet pick-up identification shelf identification Barcode scanning DM code scanning, RFID scanning, etc
Control model	Manual/Automatic
Peripheral Interface	2*CAN 4 * Gigabit Ethernet 2*USB 2.0 4*USB3.0 2*RS485 2*RS232 8*DI/DO

2 Flexible and diverse hybrid navigation methods

- **Positioning accuracy on millimeter**
- **Ensure automatic connection of multiple forklifts**
- **Suitable for both indoor and outdoor full scene coverage**
- **Stability and reliability of positioning compared to single positioning technology**

Magnetic navigation   DM code navigation   2D SLAM Navigation   2D SLAM & Reflector Hybrid Navigation

3D laser navigation   Laser reflector navigation   Laser & Satellite Hybrid Navigation   3D Laser & Visual Hybrid Navigation

3 360° 3D Protection System

① 360 ° visual obstacle avoidance
② Navigation LiDAR
③ Multi direction emergency stop
④ Tri color indicator light
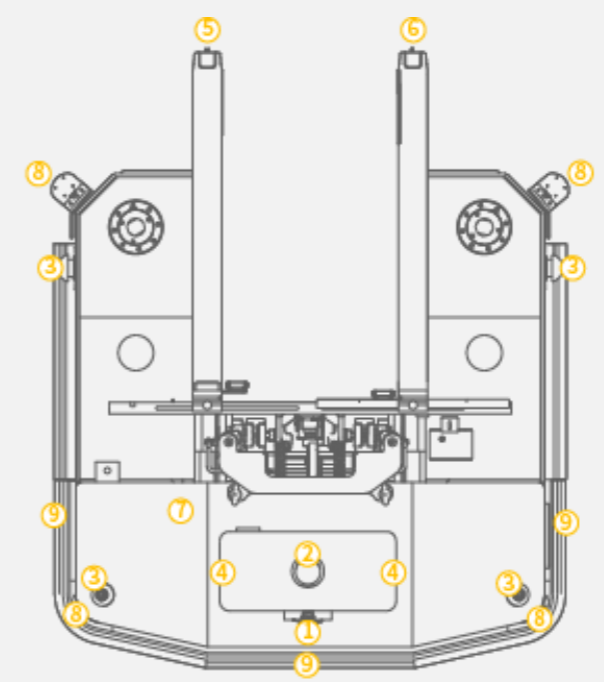
Fork nib infrared detection ⑤
Fork nib safety laser ⑥
Overload alarm ⑦
360 ° laser obstacle avoidance ⑧
270 ° safety protection edge ⑨

4 Communication Methods

	Industrial WIFI	4G	5G	Optical	Encryption
Application Cases	Common case	Long Route Wide Area	Long Route Wide Area	Confidential Area	Self-developed technology All Area(Max.3Km)
Installation Cost	Medium Cost Medium Efficiency	Medium Cost High Efficiency	Medium Cost High Efficiency	Medium Cost Low Efficiency	Low Cost High Efficiency

RCS
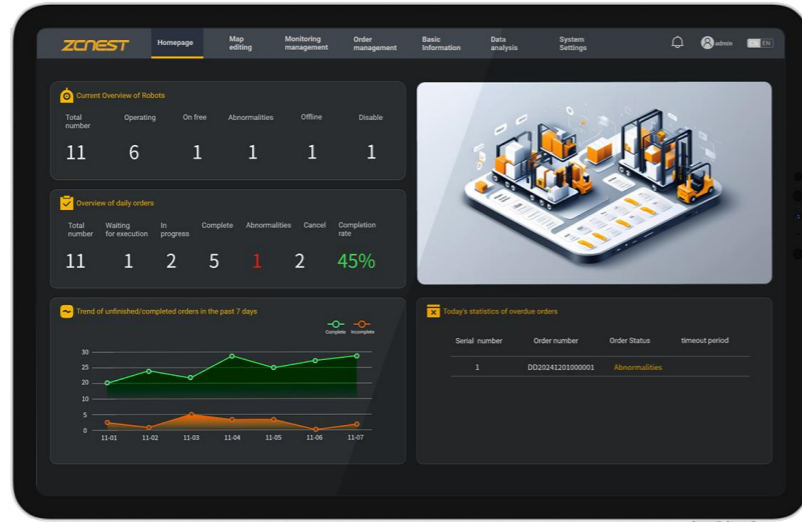
The self-developed Robot Scheduling System (RCS) by ZCNest restores the real scene through virtual models, and with the help of dynamic path planning algorithms and intelligent traffic control strategies, it can achieve dynamic optimal path planning, multi vehicle intelligent hybrid scheduling, autonomous obstacle avoidance and other functions for mobile robots, providing enterprises with efficient multi vehicle collaborative solutions and greatly improving handling efficiency

1 Features

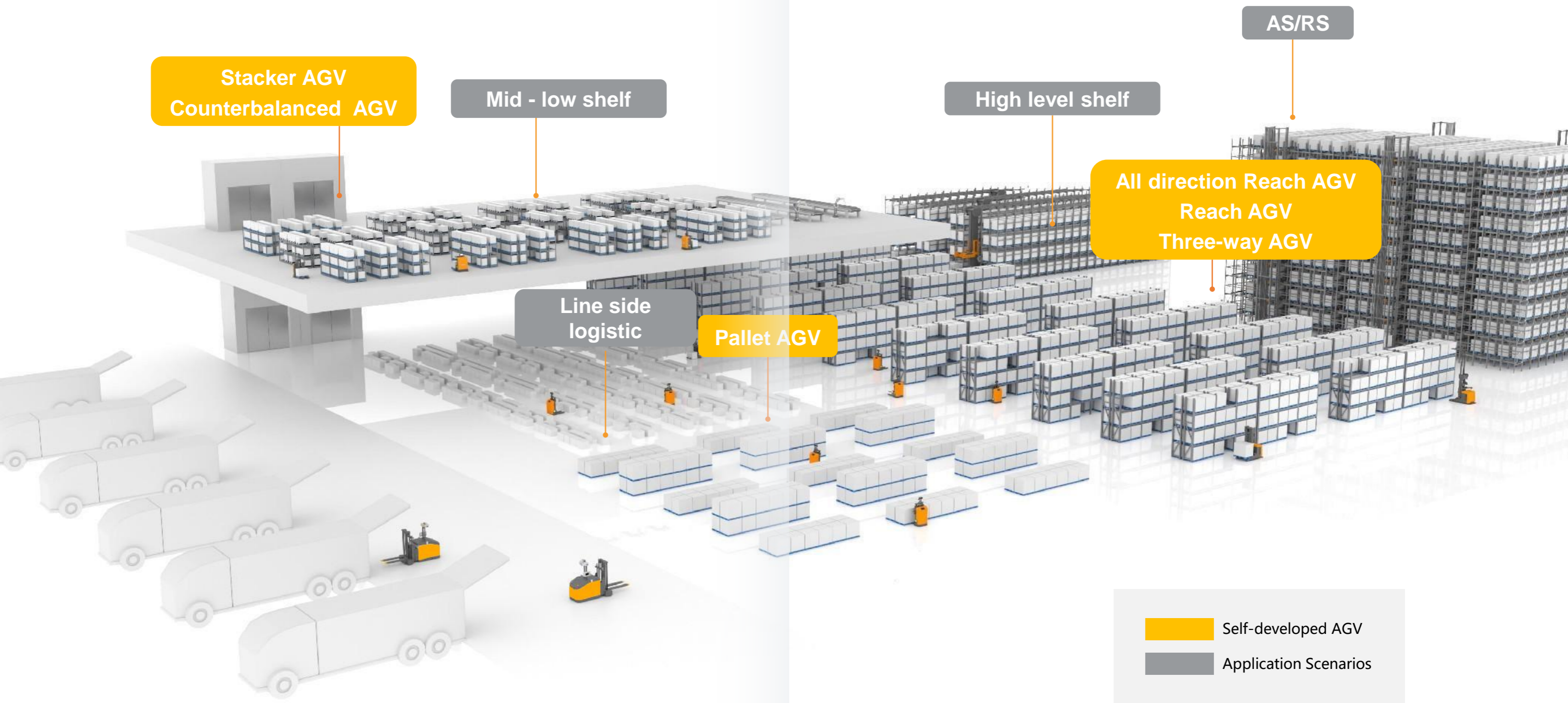|	
Multi vehicle and multi scenario support **01**	Large scale scheduling management **02**
Mature interface solution **03**	Automated mapping and fast delivery implementation **04**
Multi task distribution method **05**	Instant alarm and abnormal troubleshooting **06**
Position status management **07** Flexible charging strategy **08**	Real time monitoring of AGV **09**

WMS

The Warehouse Management System independently developed by ZCNest covers the entire process management of warehousing and logistics, and seamlessly integrates with internal ERP/MES/WCS systems to provide real-time, comprehensive, and dynamic feedback on warehouse information.

2 Features

Dynamic visualization management **01**	Handheld terminal operation mode **02**
Storage strategy **03**	Integrating warehousing and logistics management **04**
Elastic Expansion **05**	Intimate integration with other systems **06**
Refined management **07** Intelligent storage **08**	User-friendly interface **09**

AS/RS

Stacker AGV
Counterbalanced AGV

Mid - low shelf

High level shelf

All direction Reach AGV
Reach AGV
Three-way AGV

Line side
logistic

Pallet AGV

Self-developed AGV

Application Scenarios

Type	Pallet AGV	Stacker AGV			Reach AGV				Counterbalanced AGV	All-direction Reach AGV	Three-way AGV
Model	PG-CD16	PG-CR02	PG-CR16	PG-CR20	PG-HCQ16	PG-HCQ20	PG-HCQ25	PG-HCQ30	PG-CP20	CQD15	PG-MCA16
Max Lifting height (mm)	120	1600	3700	3700	8500				3700	4000	8500
Rated load (kg)	1600	200	1600	2000	1600	2000	2500	3000	2000	1500	1600
Loading and unloading channel 1200*1000 Pallet (mm)	2600	2750	2700	2700	2891	2948	3056	3102	3480	2600	1900
Navigation mode	Laser mixing										
Walking mode	Steering wheel driven										
Forklift body L/W/H (mm)	1685/860/1950	1950/850/1920	1960/1060/2365	1960/1060/2365	2250/1360/2611	2293/1360/2611	2458/1360/2185	2458/1360/2185	2970/1375/2150	2150/1760/2750	3455/1570/3445
Running speed (m/s)	1.3	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Communication mode	Wifi 2.4G / Wifi 5G / 5G										
Carrier type (pallet)	●		●			●			●	●	●
Carrier type (box 2x2)						●			●	●	●
Carrier type (mesh)	●		●			●			●	●	●
Carrier type (shelf)			○			●			●	●	●
Carrier type (long)										●	
Application Scenarios – Line side logistic	●		●							●	
Application Scenarios – Ground warehouse	●		●			●			●		
Application Scenarios – High shelf storage			○			●			○	●	●
Application Scenarios – High density storage			●			●			●	●	

Pallet AGV

Type		Parameter
Product Name		Pallet AGV
Model		PG-CD16
Rated load		1600
Load center distance (mm)		● 600
General	Lifting height	● 120
	Fork size	Thickness： ● 60mm
		Single fork width： ● 190mm　○ 173mm
		Length： ● 1150mm
	Fork width	● 680　○ 620　○ 570
	Minimum ground clearance height of fork	● 90
Obstacle surmounting ability	Steps	● 10mm
	Slope	● 3%
	Cross ditch	● 30mm
Battery	mAh	● 48V50Ah　○ 48V105Ah
	Heating film + Temperature control	△ Heating film
Navigation	2D reflector panel	○
	3D Slam(mid360)	○
	3D Slam(mid360)+2D reflector panel	●
	3D Slam+Visual Tag Navigation	○
Communication	WIFI 2.4/5.8GHz	●
	Encrypted data transmission	○
	Optical communication	○
Safety	Voice alarm	●
	Navigation and obstacle avoidance	●
	Tri color light	●
	Warning light	● Curved light ○ Position light
	Secure Edge	●
	2D obstacle avoidance LiDAR	● Two 2D laser radars on the front of the robot
	3D visual obstacle avoidance camera	△ 1 set; three-dimensional obstacle avoidance in the direction of the front end △ 3 sets; Front end direction and both sides
	Emergency stop switch	● Three sides
	Fork nib protection	○ Mechanical collision avoidance+photoelectric ● Dual photoelectric obstacle avoidance ○ Depth camera obstacle avoidance+photoelectric
Interaction	Human-machine interface	● Bilingual(Chinese/English)
Identification Function	Pick up identification function	○ Fork nib camera
	Release identification function	○ Fork nib camera
	Tray in place detection	● Mechanical in place inspection ○ Non contact in place detection
Information identification	RFID reader/writer	○
	Code reader	○
Weighing function	Overweight detection	●
	Accurate weighing	○

● Standard　　○ Option　　△ Additional　　／ No support

Stacker AGV

Type		Parameter
Product Name		Stacker AGV
Model		PG-CR
Rated load		●1600kg 〇 2000kg
Load center distance (mm)		●600mm
	Lifting height	● 1600　〇2700　〇3700
	Fork size	Thickness：●56mm Single fork width： ●190mm　〇170mm Length：●1150mm
	Fork width	●680　　〇620　　〇570
	Minimum ground clearance height of fork	●90
	Wide legs	〇 1600
Obstacle surmounting ability	Steps	●10mm
	Slope	●5%
	Cross ditch	●35mm
Battery	mAh	●48V50Ah
	Heating film + Temperature control	△Heating film
Navigation	2D reflector panel	〇
	3D Slam(mid360)	〇
	3D Slam(mid360)+2D reflector panel	●
	3D Slam+Visual Tag Navigation	〇
Communication	WIFI 2.4/5.8GHz	●
	Encrypted data transmission	〇
	Optical communication	〇
Safety	Voice alarm	●
	Navigation and obstacle avoidance	●
	Tri color light	●
	Warning light	● Curved light 〇　Position light
	Secure Edge	●
	2D obstacle avoidance LiDAR	● Two 2D laser radars on the front of the robot
	3D visual obstacle avoidance camera	△ 1 set; three-dimensional obstacle avoidance in the direction of the front end △ 3 sets; Front end direction and both sides
	Emergency stop switch	● Three sides
	Fork nib mechanical anti-collision	〇 Mechanical collision avoidance+photoelectric ● Dual photoelectric obstacle avoidance 〇 Depth camera obstacle avoidance+photoelectric
Interaction	Human-machine interface	●Bilingual(Chinese/English)
Identification Function	Reverse driving safety	● Optoelectronic obstacle avoidance 〇　Laser/visual obstacle avoidance
	Pick up identification function	〇 Drooping follow-up camera 〇 Drooping follow-up multi line laser
	Release identification function	〇 Drooping follow-up camera 〇 Drooping follow-up multi line laser
	Cargo height detection function	〇 Drooping follow-up camera 〇 Drooping follow-up multi line laser
	Goods appearance inspection	/
	Tray in place detection	● Mechanical in place inspection 〇Non contact in place detection
Information identification	RFID reader/writer	〇
	Code reader	〇
Weighing function	Overweight detection	●
	Accurate weighing	〇

● Standard　　〇 Option　　△ Additional　　/ No support

Reach AGV
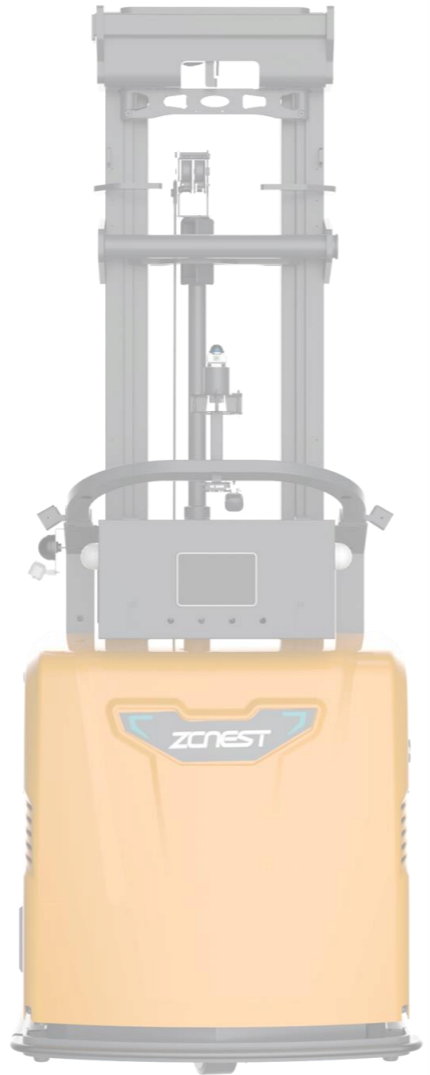
Type		Parameter
Product Name		Reach AGV
Model		PG-HCQ
Rated load		○1600 ○2000 ○2500 ○3000
Load center distance (mm)		●600
General	Lifting height	○4600 ○6300 ○8500
	Wheelbase	●1350
	Fork size	Thickness：●40mm
		Single fork width：●122mm
		Length：●1150mm
Obstacle surmounting ability	Steps	●10mm
	Slope	●5%
	Cross ditch	●35mm
Part type	Side shifter	● Overall lateral displacement
	Adjustable distance fork	○
	dip angle	●
Battery	mAh	●80V202Ah ○80V280Ah
	Heating film + Temperature control	△Heating film
Hand operated equipment	Wire	●
Navigation	2D reflector panel	○
	3D Slam(mid360)	○
	3D Slam(mid360)+2D reflector panel	●
	3D Slam+Visual Tag Navigation	○
Communication	WIFI 2.4/5.8GHz	●
	Encrypted data transmission	○
	Optical communication	○
Safety	Voice alarm	●
	Navigation and obstacle avoidance	●
	Tri color light	●
	Warning light	● Curved light ○ Position light
	Secure Edge	●
	2D obstacle avoidance LiDAR	● Two 2D laser radars on the front of the robot
	3D visual obstacle avoidance camera	△ 1 set; three-dimensional obstacle avoidance in the direction of the front end △ 3 sets; Front end direction and both sides
	Emergency stop switch	● Three sides
	Fork nib mechanical anti-collision	○ Mechanical collision avoidance + photoelectric ● Dual photoelectric obstacle avoidance
Interaction	Human-machine interface	●Bilingual(Chinese/English)
Identification Function	Reverse driving safety	● Optoelectronic obstacle avoidance ○ Laser/visual obstacle avoidance
	Pick up identification function	○ Drooping follow-up camera ○ Drooping follow-up multi line laser
	Release identification function	○ Drooping follow-up camera ○ Drooping follow-up multi line laser
	Tray in place detection	● Mechanical in place inspection ● Mechanical tray compression/detachment detection ○ Non contact in place detection
Information identification	RFID reader/writer	○
	Code reader	○
Weighing function	Overweight detection	●
	Accurate weighing	○

● Standard   ○ Option   △ Additional   / No support

Counterbalanced AGV

Type		Parameter
Product Name		Counterbalanced AGV
Model		PG-CP20
Rated load		2000kg
Load center distance (mm)		● 600
General	Lifting height	○ 1600 ● 2700 ○ 3700
	Wheelbase	● 1445
	Fork size	Thickness：● 40mm
		Single fork width：● 120mm
		Length：● 1150mm
	Fork width	● 680 ○ 620 ○ 570
	Minimum ground clearance height of fork	● 90
Obstacle surmounting ability	Steps	● 10mm
	Slope	● 5%
	Cross ditch	● 35mm
Part type	Side shifter	△
	Adjustable distance fork	△
	dip angle	△
Battery	mAh	● 48V200Ah
	Heating film + Temperature control	△ Heating film
Navigation	2D reflector panel	○
	3D Slam(mid360)	○
	3D Slam(mid360)+2D reflector panel	●
	3D Slam+Visual Tag Navigation	○
Communication	WIFI 2.4/5.8GHz	●
	Encrypted data transmission	○
	Optical communication	○
Safety	Voice alarm	●
	Navigation and obstacle avoidance	●
	Tri color light	●
	Warning light	● Curved light ○ Position light
	Secure Edge	●
	2D obstacle avoidance LiDAR	● Two 2D laser radars on the front of the robot
	3D visual obstacle avoidance camera	△ 1 set; three-dimensional obstacle avoidance in the direction of the front end △ 3 sets; Front end direction and both sides
	Emergency stop switch	● Three sides
	Fork nib mechanical anti-collision	○ Mechanical collision avoidance + photoelectric ● Dual photoelectric obstacle avoidance
Interaction	Human-machine interface	● Bilingual(Chinese/English)
Identification Function	Reverse driving safety	● Optoelectronic obstacle avoidance ○ Laser/visual obstacle avoidance
	Pick up identification function	○ Drooping follow-up camera ○ Drooping follow-up multi line laser
	Release identification function	○ Drooping follow-up camera ○ Drooping follow-up multi line laser
	Tray in place detection	● Mechanical in place inspection ○ Non contact in place detection
Information identification	RFID reader/writer	○
	Code reader	○
Weighing function	Overweight detection	●
	Accurate weighing	○
● Standard ○ Option △ Additional / No support		

All-direction Reach AGV
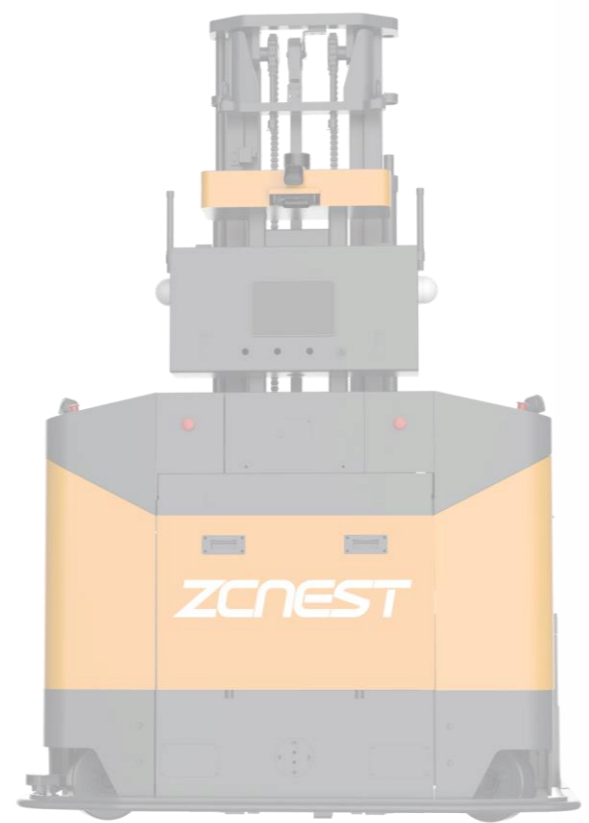
Type		Parameter
Product Name		All-direction Reach AGV
Model		PG – CQD15
Rated load		1500
Load center distance (mm)		● 600
General	Lifting height	● 4000mm
	Fork size	Thickness：● 40mm
		Single fork width：● 110mm
		Length：● 1150mm
Obstacle surmounting ability	Steps	● 5mm
	Slope	● 5%(unload)
	Cross ditch	● 35mm(unload)
Battery	mAh	● 48V200Ah
Navigation	2D reflector panel	● Cockpit
	3D Slam(mid360)	○
	3D Slam(mid360)+2D reflector panel	●
	3D Slam+Visual Tag Navigation	○
Communication	WIFI 2.4/5.8GHz	●
	Encrypted data transmission	○
	Optical communication	○
Safety	Voice alarm	●
	Navigation and obstacle avoidance	●
	Tri color light	●
	Warning light	●
	Secure Edge	●
	2D obstacle avoidance LiDAR	● Two 2D laser radars on the front of the robot
	3D visual obstacle avoidance camera	△ 1 set; three-dimensional obstacle avoidance in the direction of the front end △ 3 sets; Front end direction and both sides
	Emergency stop switch	● Three sides
	Fork nib protection	○ Mechanical collision avoidance + photoelectric ● Dual photoelectric obstacle avoidance
Interaction	Human-machine interface	●
	Reverse driving safety	●
Identification Function	Pick up identification function	○ Drooping follow-up camera ○ Drooping follow-up multi line laser
	Release identification function	○ Drooping follow-up camera ○ Drooping follow-up multi line laser
	Tray in place detection	● Mechanical in place inspection ● Mechanical tray compression/detachment detection ○ Non contact in place detection
Information identification	RFID reader/writer	○
	Code reader	○
Weighing function	Overweight detection	●
	Accurate weighing	/

● Standard ○ Option △ Additional / No support

Three-way AGV

Type		Parameter
Product Name		Three-way AGV
Model		PG-MCA16
Rated load		1600
Load center distance (mm)		●600
General	Lifting height	○4500 ○6500 ○8500
	Fork size	Thickness：●50mm
		Single fork width：●125mm
		Length：●1200mm
Obstacle surmounting ability	Steps	●5mm
	Slope	●8%(unload)
	Cross ditch	●20mm(unload)
Battery	mAh	●48V460Ah ○48V600Ah
Navigation	2D reflector panel	●Cockpit
	3D Slam(mid360)	○
	3D Slam(mid360)+2D reflector panel	●
	3D Slam+Visual Tag Navigation	○
Communication	WIFI 2.4/5.8GHz	●
	Encrypted data transmission	○
	Optical communication	○
Safety	Voice alarm	●
	Navigation and obstacle avoidance	●
	Tri color light	●
	Warning light	●
	Secure Edge	●
	2D obstacle avoidance LiDAR	●Two 2D laser radars on the front of the robot
	3D visual obstacle avoidance camera	△ 1 set; three-dimensional obstacle avoidance in the direction of the front end △ 3 sets; Front end direction and both sides
	Emergency stop switch	●Three sides
	Fork nib protection	○ Mechanical collision avoidance + photoelectric ● Dual photoelectric obstacle avoidance
Interaction	Human-machine interface	●
Identification Function	Reverse driving safety	●
	Pick up identification function	○ Drooping follow-up camera ○ Drooping follow-up multi line laser
	Release identification function	○ Drooping follow-up camera ○ Drooping follow-up multi line laser
	Tray in place detection	● Mechanical in place inspection ● Mechanical tray compression/detachment detection ○ Non contact in place detection
Information identification	RFID reader/writer	○
	Code reader	○
Weighing function	Overweight detection	●
	Accurate weighing	/

● Standard   ○ Option   △ Additional   / No support

中国烟草 CHINA TOBACCO

中国中车 CRRC

中国航天 CASC

CSIC 中船重工

国家电网 STATE GRID

国家能源集团 CHN ENERGY

国药集团 SINOPHARM

南京地铁 NANJING Metro

一汽-大众

山西焦煤 SHANXI COKING COAL

CAYI 嘉益股份

LTK 乐庭电线 LTK Cable

FedEx Express

KERRY COLD CHAIN SOLUTION 嘉里志甄物流

Kimberly-Clark 金佰利

金龙鱼

MELING 美菱

格创东智 GETECH.CN

CIMC 南通中集

Haier 海尔

TOM 汤姆

SINOSTAR 中辰股份

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Pharmaceutical

Energy & Material