



ARAPL RaaS

PRODUCT MANUAL

www.araplraaS.com

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COMPANY OVERVIEW

We are a hardware agnostic tech company in the Warehouse Automation and Robotics domain. We combine our Intelligent Software (WCS, ECS, ROS, QR) with our driverless autonomous reach trucks, pallet jacks, counterbalanced forklifts, and other AGVs to provide end-to-end one-stop solutions for the warehousing industry. We offer a wide range of robotic solutions powered by our AI and ML based i-ware with 8 patents and 3 proprietary software suites that can integrate with all kinds of robots. Our range of robots – MobiWare – complements our i-ware for quick integration and fast 'go live'.



PROBLEMS WE SOLVE

01

Autonomous Robots

enables lights out operations,
Driverless Reach Trucks and
Counterbalanced Forklifts

02

Complete Solution

for all kinds of warehouse needs
- Pallet. No licence needed.
Forklift operators need licence
which is difficult to get

03

Ease of Adoption

- a. Easy of integration - minimal IT bandwidth required , can run with manual input in HMI / web UI
 - b. no change in current infrastructure / process
 - c. Try it - Like it - Buy it
-

04

Impressive Vertical Reach

it can lift materials and pallets to
a staggering height of up to 9.5
meters, maximizing your vertical
storage space

05

Cost Savings

Reduce labor costs and minimize
the risk of human errors, saving
you money in the long run.



INNOVATION

Powered by :



A Proprietary AI and ML
based Intelligent system

iWare core modules

Navigation

For precise and efficient route planning and control, allowing robots to autonomously navigate through complex environments while avoiding obstacles and optimizing their paths.

Fleet Manager

A centralized control system that supervises and coordinates multiple robots within a fleet, ensuring seamless task allocation, monitoring, and optimization of their operations in a warehouse or industrial setting

RCS (Robot Control System)

RCS is a specialized software system designed to control and coordinate the actions and behaviors of robots. It provides the necessary algorithms, logic, and communication protocols to facilitate robot movements

WAS or WES

WMS (Warehouse Management System) is primarily designed for managing various aspects of warehouse operations, including inventory management, order fulfillment, and resource allocation

WCS Extend

WCS (Warehouse Control System) plays a crucial role in controlling and coordinating automated systems such as robots, conveyors, and AGVs within the warehouse, ensuring efficient material flow and optimal utilization of these systems



ATLAS – AR29

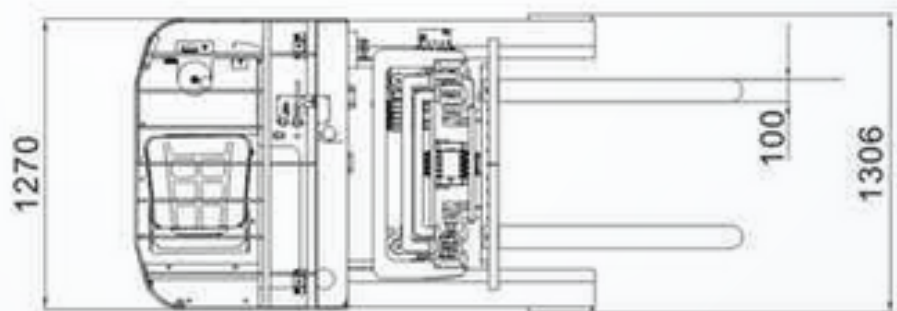
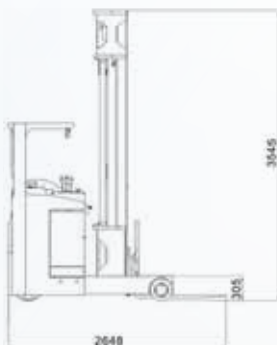
Autonomous Reach truck

Are you ready to revolutionize your warehouse operations and take efficiency to the next level by effortlessly **handling pallets at a 29 Ft-height?** Look no further than the Atlas AR29 Autonomous Reach Truck AMR!"



Product Parameters

Rated Capacity	: 1500Kg
Lifting height	: up to 9000mm (Can Customize)
Turning radius	: 1900mm
Dimensions	: 2648* X 1306* X 3545*mm
Max Traveling Speed	: 1 / 1.2 m/s (loaded/unloaded)
Stacking Aisle	: 3300mm
Navigation method	: Laser navigation
Positional Accuracy	: +/- 10mm
Fork ground clearance	: 45mm
Battery time	: Li. Ion
Max Gradeability	: 5% / 8% (loaded/ unloaded)
Body Weight	: 2100Kg (without load)



ATLAS – AC1500

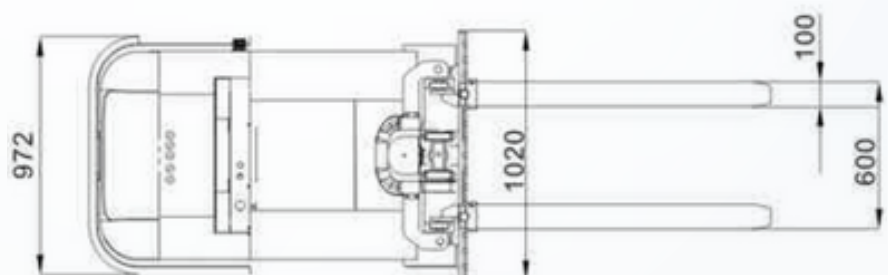
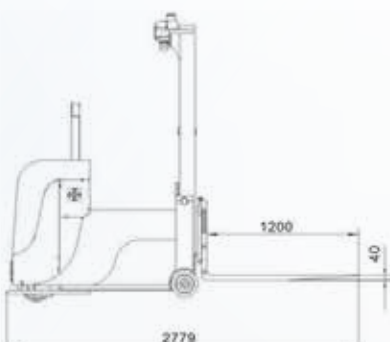
Autonomous Counterbalanced forklift

Experience a new era of warehouse and logistics automation with the Atlas AC1500 Autonomous Counterbalanced Forklift AMR. This cutting-edge technology is designed to **load and unload materials from trucks**, boosting your operational efficiency to unprecedented levels.



Product Parameters

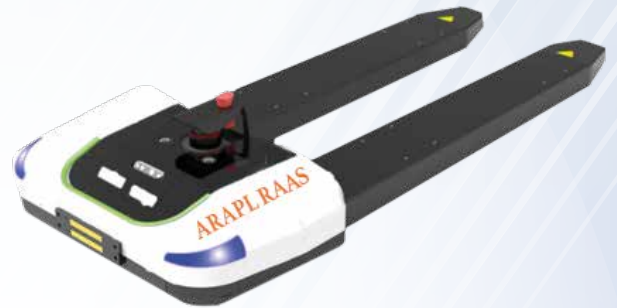
Rated Capacity	: 1500Kg
Lifting height	: 2500 mm (Can Customize)
Turning radius	: 1310 mm
Dimensions	: 2779* X 1020* X 2249* mm
Max Traveling Speed	: 1 / 1.2 m/s (loaded/unloaded)
Stacking Aisle	: 3300mm
Navigation method	: Laser navigation
Positional Accuracy	: +/- 10mm
Fork ground clearance	: 45mm
Battery time	: Li. Ion
Max Gradeability	: 5% / 8% (loaded/ unloaded)
Body Weight	: 2000Kg (without load)



MAIA – M1000

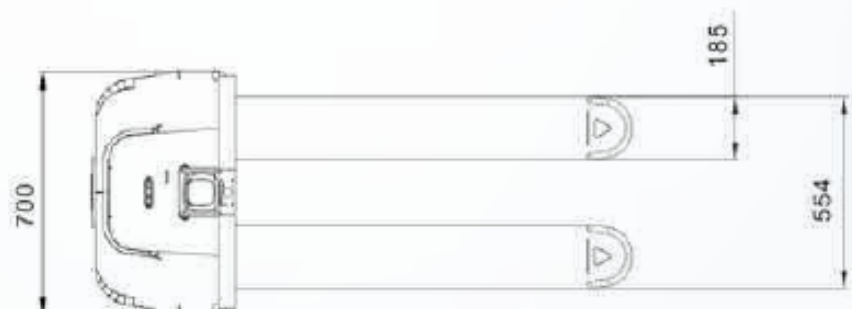
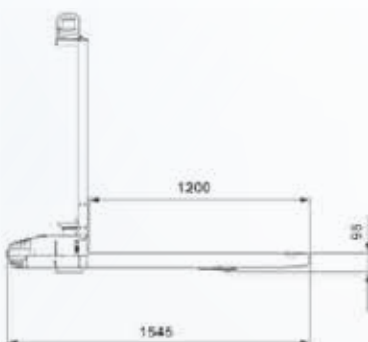
Autonomous pallet truck

Welcome to the future of warehouse automation! Introducing the Maia-M2000, Autonomous Pallet Truck AMR, meticulously designed for **seamless ground-to-ground transport of open base pallets**.



Product Parameters

Rated Capacity	: 1000Kg
Lifting height	: up to 60 mm
Turning radius	: 1000mm
Dimensions	: 1545* X 700* X 280/1300* mm
Max Traveling Speed	: 0.7 / 1.0 m/s (loaded/unloaded)
Stacking Aisle	: 2100mm
Navigation method	: Laser navigation
Positional Accuracy	: +/- 10mm
Fork ground clearance	: 98mm
Battery time	: Li. Ion
Max Gradeability	: 5% / 8% (loaded/ unloaded)
Body Weight	: 260Kg (without load)



SAFETY FEATURES

01

Lidar Sensors – Scanning

Reach trucks are equipped with sensors, cameras, and LIDAR systems to detect obstacles and people in their path. They can slow down or stop to prevent collisions

02

E Stop Buttons

Reach trucks are equipped with emergency stop buttons and systems that can halt the vehicle's motion in case of a safety breach or emergency

03

3D Camera

Reach trucks are designed to detect obstacles in their path and take evasive action to avoid collisions, such as stopping, changing direction, or backing up

04

Lidar Sensors – SLAM

Reach trucks can be programmed to operate within specific zones, and they can be configured to slow down or stop when entering restricted areas or high-traffic zones.



BATTERY

High Energy Density

Our forklifts are equipped with high-energy-density batteries, ensuring extended operation without frequent recharging.

Fast Swapping/ Replacement

Swift battery swapping and replacement options are available, ensuring your forklifts can run 24/7.

Fast Charging

Our forklifts support quick charging, in 1.5 hrs charge it will work upto 8 hrs.

Intelligent Battery Management

Our forklifts feature intelligent battery management systems that optimize energy use and enhance overall efficiency.

Long Cycle Life

Enjoy extended, reliable performance with forklift batteries designed for a long cycle life, perfect for daily, continuous operation.

Compatibility with Charging Infrastructure

Our forklifts are compatible with various charging infrastructures, ensuring seamless integration into your facility.

AFTER SALES & SERVICE

Assigned Service Dealer

Every client will be assigned to the nearest authorized service dealer, ensuring a local point of contact for any service needs.

Comprehensive Training

We offer comprehensive training programs to help clients and their in-house teams better understand the maintenance and operation of our autonomous forklifts.

Regular Maintenance Programs

Clients can opt for regular maintenance programs, tailored to their specific needs, to proactively address potential issues and optimize forklift performance.

Stocked Spare Parts and Batteries

Each service location will maintain an inventory of readily available spare parts and batteries, reducing downtime and ensuring quick replacements when needed.

Service Reports and Documentation

Clients will receive detailed service reports and documentation after every service visit, providing transparency and ensuring that all service activities are well-documented.

Remote Diagnostics

Our forklifts are equipped with remote diagnostic capabilities, allowing our service engineers to identify and resolve certain issues remotely, further reducing downtime.

Software Updates

Regular software updates are available to enhance forklift performance and ensure the latest features and improvements.

Online Knowledge Base

Access to an online knowledge base with resources, guides, and FAQs to assist with common issues and questions.

Dedicated Automation Engineer

Our authorized service dealers have dedicated automation engineers who specialize in our autonomous forklift technology. They are trained to provide rapid and accurate service, maintenance, and troubleshooting.

Choice of Service Vendor

Clients have the flexibility to choose their preferred service vendor for any service resolution, with a commitment to a 6-hour turnaround time (TAT) to minimize disruptions to operations.

Feedback Mechanism

Clients are encouraged to provide feedback on the service experience, which is valuable for continuous improvement and enhancing customer satisfaction.

HOW IS IT GOING TO WORK?

Process Steps

1

Initial Configuration

When the AMR arrives at the warehouse, the first step is to establish its initial configuration. This typically involves designating a starting position, which often corresponds to a charging station.

2

Map Generation

- To create a comprehensive understanding of the warehouse layout, an engineer will manually guide the AMR throughout the facility for the initial mapping process.
- The robot's sensors, such as LIDAR or cameras, collect data to generate a detailed map that includes crucial information like paths, docking stations, potential obstacles, and hazard zones.

3

Zone Definition

With the generated map in place, specific operational zones can be defined. This may involve marking areas as "no-fly zones" to prevent the AMR from entering certain locations, as well as designating picking and dropping points for material handling.

4

Mission Assignment

- Once the operational areas are clearly defined, tasks or missions can be assigned to the AMR. These missions can be initiated through either the Human-Machine Interface (HMI) or a computer (PC).
- Depending on the specific requirements, missions may involve single or multiple pick-up and drop-off locations.

5

WMS Integration

- In situations where tasks involve Zone-to-Zone material transfers, it's essential to ensure integration with the existing Warehouse Management System (WMS).
- The AMR system must communicate seamlessly with the WMS to receive and execute tasks efficiently.

6

Scalability and Reuse

An important advantage of this installation process is its scalability and ease of expansion. When adding another AMR to the fleet, there is no need to regenerate the warehouse map. The existing map can be employed, simplifying the integration process.

FREQUENTLY ASKED QUESTIONS

1/3

01 What does the truck do?

It is designed for material handling, especially in high-rack storage environments (upto 29FT) These vehicles can autonomously lift, move, and stack pallets, and they are equipped with safety features and advanced navigation systems to operate safely in shared spaces.

02 What will we gain from doing this?

Reduced Labour Costs : Autonomous reach trucks decrease the reliance on human operators, resulting in reduced labour costs. Organizations can reallocate labour to more value-added tasks or use the cost savings to invest in other areas of the business.

Precision and Accuracy : Autonomous reach trucks provide precise and consistent material handling, reducing the likelihood of product damage.

Real-Time Inventory Management : AGVs can help improve inventory accuracy by providing real-time tracking and updating of inventory levels. This prevents stockouts and overstock situations and enhances inventory control.

Integration with Systems : Autonomous reach trucks can integrate with warehouse management systems (WMS) and enterprise resource planning (ERP) software, streamlining material handling processes and order management.

Optimal Space Utilization : They are designed for vertical reach, making them efficient in maximizing the use of vertical storage space in warehouses. This can lead to a better utilization of available space.

03 What does client need to do to make it work?

No need of any existing process change or infrastructure change, if any infrastructure changes will be required then it will be mention in the purchase agreement

FREQUENTLY ASKED QUESTIONS

2/3

04 What is the recurring cost?

- First year covers under comprehensive warranty
- 2nd year onwards technology fees will be 10% of product cost
- All automation spares i.e 2D Lidar sensors, 3D cameras & master controller will be under technology fees.
- SMC starts from 2nd year for \$5000 per year

05 Does it need QR codes on the floor?

There is no need of QR code on the floor, it is worked on SLAM navigation

06 Basically, how will the Forklift know that there's pallets to put away?

- In a particular staging area, there will be ground numbering (location ID) for defined pallet location
- When the operator will place the pallet after palletisation he will add a floor number in his handheld device and map the location for specific pallet or material ID
- Once's pallet Mapping is completed the location data will automatically deliver to WMS system
- Then It will be ready for start the mission which will be given by WMS or manually through HMI

07 Is there anything that we will need to do on our end that will have a cost?

No need of any existing process change or infrastructure change, only need to provide charging points location with power connection.

FREQUENTLY ASKED QUESTIONS

3/3

08 Will there need to be IT integration or WMS on Client end?

There is no need of it integration or WMS from your side, if you need a real time data monitoring in your WMS then only we need to do some API interfacing work, which can be discussed. For trials this may not be needed. For Demo we can give mission through Excel Input

09 What are the Benefits to use Autonomous forklifts?

Reduced Labour Costs : Autonomous reach trucks decrease the reliance on human operators, resulting in reduced labour costs. Organizations can reallocate labour to more value-added tasks or use the cost savings to invest in other areas of the business.

Precision and Accuracy : Autonomous reach trucks provide precise and consistent material handling, reducing the likelihood of product damage.

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Optimal Space Utilization : They are designed for vertical reach, making them efficient in maximizing the use of vertical storage space in warehouses. This can lead to a better utilization of available space.

10 For the demo, if we decide not to use our WMS can the AMR still take a pallet from Receiving and place it in a rack?

Yes, we need not required to use WMS for demo. For Demo we can give mission through Excel Input