RICHMOND ROLLING ROBOTICS | Forward Robotics

Autonomous Mobile Robot (AMR) Product Overview

2025

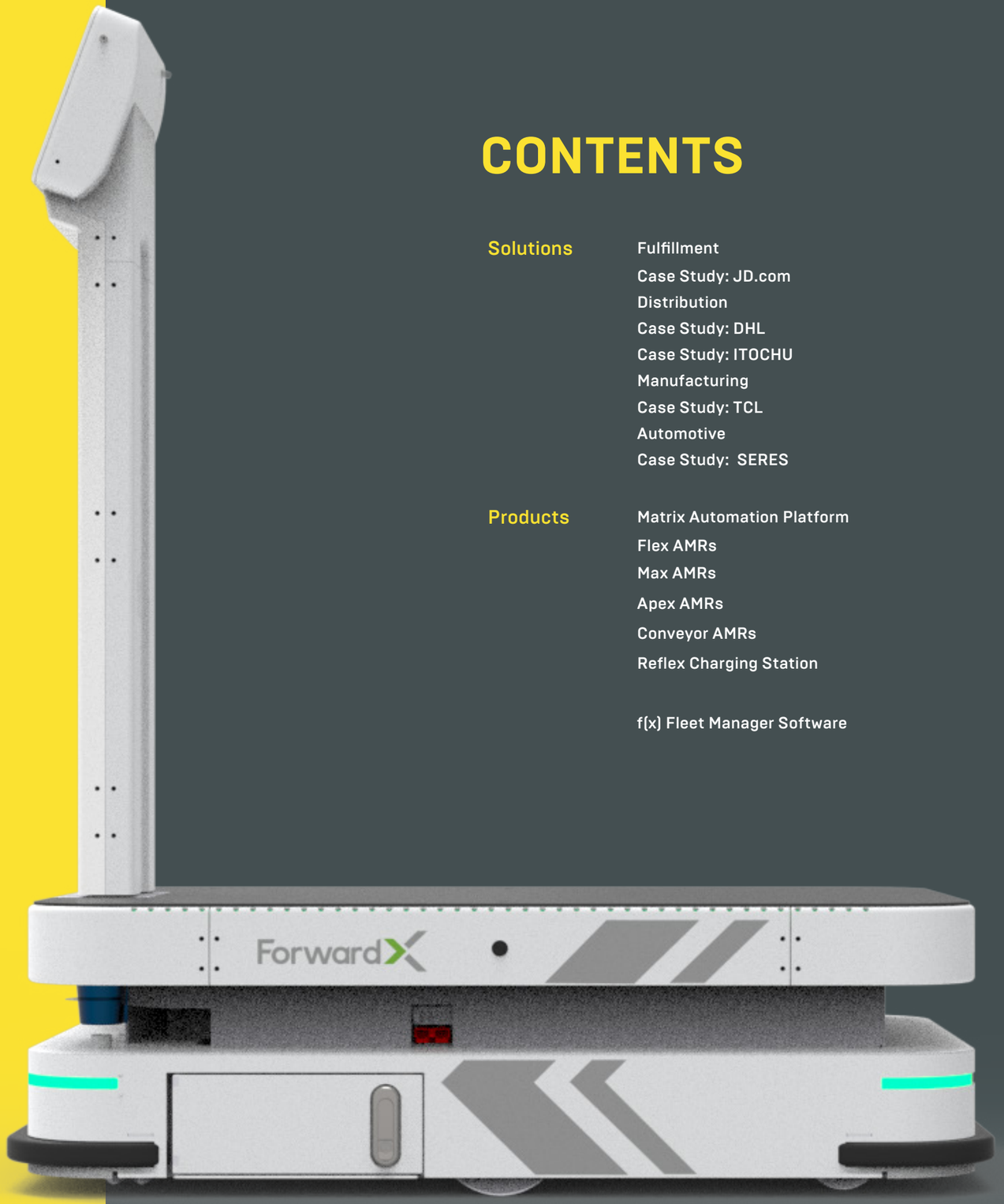
richmondrobotics.com.au

RICHMOND
ROLLING ROBOTICS

At Richmond Rolling Robotics we've partnered with ForwardX, a global leading person-to-goods Autonomous Mobile Robot (AMR) solutions provider, to distribute its next generation products across Australia and New Zealand.

Our AMR solutions help to reduce operational costs, while improving the overall efficiency in warehouses, retail facilities, distribution centres and manufacturing plants, and represent the most intelligent AMRs available today.

Our exclusive partnership with ForwardX represents a unique opportunity for Australian and New Zealand businesses to invest in the latest equipment to improve their processes and transform their operations.



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Fulfillment

Workflows

Piece Picking
Use Flex AMRs for batch picking or discrete order picking of small individual items.

Case Picking
Use Flex or Max AMRs for larger individual items or case loads of smaller items.

Pick and Pack
Use Flex or Max AMRs to pick and place items directly into packing containers and apply shipping labels on the fly.

Your Current Pain Points

Low Productivity
Rising ecommerce volume means more orders and pieces to pick. The traditional manual methods are slow, labor intensive, and restrictive.

High Labor Costs
Piece picking requires more space and more labor. Traditional operations spend more money to hire and retain workers, and this results in lower margins.

Low Efficiency
Wasted movement is wasted time and wasted money. Traditional operations are limited by low efficiency and need smart automation.

High Error Rate
Manual methods cause errors, and errors waste time and money. Errors also result in a poor customer experience, and error resolution is costly.

Industries

3PL

Omnichannel

Ecommerce

Results We Deliver

Productivity: 2x–3x UPH Increase
ForwardX solutions increase productivity through consolidated workflows that reduce wasted time and increase output. Double or even triple your pickers' units picked per hour by removing insignificant tasks.

Accuracy: Up to 99.9% Picking Accuracy
Instead of pick lists, f(x) organizes and distributes orders directly to employees. Use on-screen visual directions and onboard RFID scanning, so your workers can pick correctly the first time, every time.

Payback: ROI in Under 9 Months
ForwardX solutions deliver immediate results. See a marked improvement and financial gain in under 2 weeks, and get a guaranteed return on investment in less than 9 months.

Efficiency: 60% Reduction in Walking Time
AMRs handle material movements, allowing employees to focus on more important tasks. Reduce traveling, picking, and order reviewing time to achieve more in a shorter period.

Savings: 50% Reduction in Labor Costs
AMRs address recruitment and turnover issues by increasing productivity and worker satisfaction. Automate repetitive workflows and redistribute your work force to cut your fully burdened labor costs in half.

JD.com

JD.com chose a ForwardX Max solution for case picking workflows in both B2B retail store replenishment and B2C ecommerce fulfillment. The Max solution consists of Max 600 AMRs to increase picking efficiency and reduce high labor turnover, due to the physically demanding nature of case picking. After the flagship project, over 30 more projects of this nature have been deployed with JD Logistics.

Results

2.36x
Productivity Increase

~4,000
Daily Orders

>30
More Management Deployed Since Flagship Project

Case Study - JD.com

Distribution

Workflows

Piece Picking
Use Flex AMRs for batch picking or discrete order picking of small individual items.

Case Picking
Use Flex or Max AMRs for larger individual items or case loads of smaller items.

Pallet Picking
Use Max AMRs to pick direct to pallets.

Pick and Pack
Use Flex or Max AMRs to pick and place items directly into packing containers and apply shipping labels on the fly.

Your Current Pain Points

High Labor Intensity
Distribution environments can be harsh, and workflows can be physically draining. High labor intensity results in errors and worker turnover.

High Labor Costs
Labor intense work means high labor and recruitment costs. Traditional methods squeeze profit margins and are at the mercy of a growing labor shortage.

Low Efficiency
Traditional methods are time-consuming and inefficient. Changing logistics network design results in a need for faster and more efficient workflows.

Safety Concerns
Heavy goods in larger quantities means safety risks, and traditional forklift methods contribute to rising instances of accidents.

Industries

3PL

Wholesale

Omnichannel

Results We Deliver

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Case Study - DHL

DHL

DHL chose a ForwardX Flex solution to simplify picking and sorting workflows. The Flex solution consisted of a fleet of Flex 300-S AMRs with custom-built racking and f(x) Fleet Manager. The facility supports 600 retail stores with varying delivery frequencies.Increasing productivity, eliminating errors, and decreasing labor dependency was key.

Results

<2

Years ROI

3x

Productivity Increase

43%

Labor Cost Reduction

ITOCHU

ITOCHU Logistics China (ILC) chose a ForwardX Flex solution to automate picking and packing workflows in its Tianjian location. Consisting of a fleet of ForwardX Flex 300 AMRs and f(x) Fleet Manager, the solution was designed to minimize travel, reduce cognitive fatigue, lower labor dependency, and allow for rapid scalability. Onsite deployment took less than 2 weeks, and ILC was able to cut labor costs in half, double its productivity, and reach 99.99% order accuracy.

Results

2.13x
Productivity Increase

99.99%
Picking Accuracy

52%
Labor Cost Reduction

Case Study - ITOCHU

Manufacturing

Workflows

Cart Transport
Use Flex L or Max L AMRs for point-to-point cart transportation, such as line delivery, WIP movement, and finished goods.

Pallet Transport
Use Max L AMRs for point-to-point pallet transportation, such as inbound receiving of raw materials, putaway, and production-to-warehouse movement.

Your Current Pain Points

Low Flexibility
SKUs are increasing, and product life cycles are decreasing. This means production lines must change to keep up, but current operations are too rigid.

Low Predictability
Manual operation lacks predictability due to complicated processes between lines with different cycles. Therefore, large material buffers are required.

High Labor Costs
Labor intensity is high, turnover is fast, and recruitment and training costs are high. This causes huge labor cost pressures for manufacturers.

High Error Rate
Complex material requirements and frequent iterations make operations complicated and lead to frequent errors.

Industries

Electronics

Semiconductor

Automotive Parts

Home Appliance

Results We Deliver

Reliability: Uptime Availability of 99.5%
f(x) continuously coordinates the autonomous fleet for hands-free operations and best-in-class uptime. Automate your operations to increase predictability, reducing delays and minimizing your need for manual intervention.

Efficiency: Cycle Time Reduction
Reliable workflows improve the cadence of production and reduce waiting times. Meet your demand quicker by reducing start-to-finish production time with fewer delays.

Flexibility: Changeover Speed Increase
AMR workflows can be modified in real-time with a simple click.
Reduce your changeover times and increase operational agility using f(x)'s map builder.

Savings: 50% Reduction in Labor Costs
Automating undesirable work and redeploying workers reduces recruitment requirements and keeps the workforce happy. Use ForwardX solutions to decrease turnover and bring down costs.

Payback: ROI in <2 Years
AMRs deliver a return on investment in under 2 years. Instead of waiting 5–10 years for payback, use AMRs for a quick deployment with flexible payment options, without any need for infrastructure changes.

TCL

TCL chose a ForwardX Flex solution in what was the globe's first, and RBR50's Innovation Award winning, 5G-enabled AMR project to automate the movement of materials across the production facility. The solution consisted of dozens of ForwardX Flex 300-LS AMRs connected through a 5G network set up as part of TCL's 5G+ Smart Factory Initiative. The solution was designed to improve productivity, decrease labor dependency, and increase inventory turnover.

Results

360º
Obstacle Avoidance for Safe Navigation

99.5%
Uptime Availability

1st
5G-Enabled AMR Project Worldwide

Case Study - TCL

Automotive

Automotive: Warehouse-to-Line

Solutions

End-to-End Production Support
From receiving of raw materials, to warehouse picking, production line delivery, finished goods handling, and outbound staging, ForwardX provides a comprehensive set of solutions for automotive manufacturing.

Efficient Digitalization
Achieve full traceability of parts and process through digitization with smart automation.

Challenges

Complex Workflows
Coordination and orchestration of complex processes is difficult with manual operations. Automation adds a level of transparency and control that leads to more efficient production flow.

Low Flexibility
In today's changing landscape, rigid infrastructure & operations are no longer viable options to achieve output KPIs.

Delivering Value

Autonomous Material Transport
Automatically organize and deliver KLT, GLT, SLT, and other materials in batch and JIT workflows.

Industry 4.0

Digital Optimization
Analysis of robot operational data through smart BI and visualization tools, ForwardX helps you optimize your operations for maximum efficiency in real-time.

SERES

SERES Automobile Co., Ltd. is an electric vehicle (EV) and new energy vehicle (NEV) company. ForwardX Robotics deployed its Lynx series AMRs and f(x) Fleet Manager at a SERES manufacturing plant as part of a digital transformation. The project covers the final assembly workshop's assembly line, the raw material warehouse, and the fixed rotor workshop. The robots handle roughly 100 logistics tasks daily in the material collection and distribution area, the line-side storage area, and between production lines. Through practical applications, the employees on the SERES production line have significantly reduced the labor intensity of material handling and achieved digital data management and unmanned material distribution.

Pain Points

Fast-paced, changing industry

Constant production and assembly line changes

Inflexible and difficulty in adapting to new layouts

ROI

Rapid Deployment

Elastic Scalability

Customer Value

Intelligent task management efficiently adapts to changes

Quick deployment for various scenarios

Flexible and scalable to meet production requirements

±5 mm (±0.2 in)

Precision Docking

Autonomous

Changeover Between Empty and Full Containers

Case Study - SERES Automobile Co., Ltd.

Matrix Automation Platform

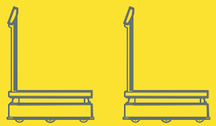
ForwardX Matrix

The Flexible Automation Platform

ForwardX Matrix seamlessly connects with your existing software infrastructure. Once WMS is connected, the platform autonomously orchestrates your operations for maximum productivity while offering you deep insight into and control of every inch of your facility.

Top Modules and Add-ons for Smart Warehousing

Powered by
ForwardX Cortex



ForwardX Flex®
Visual Autonomous Mobile Robots for up to 600kg (1,322 lbs)

Perfect for small to medium load movements like picking, Flex AMRs collaborate with human workers to remove unproductive tasks like long-distance walking and increase the efficiency and accuracy of human work.

ForwardX Max®
Visual Autonomous Mobile Robots for up to 2,500 kg (5,511 lbs)

Built for medium to high payloads up to 2,500 kg (5,511 lbs) , Max and Max L AMRs support the automation of multiple workflows across your warehouse including heavy piece, case, and pallet picking.

Your Systems
WMS, WCS

Seamlessly connects with f(x) through API integration, transmitting vital data back and forth from f(x).

f(x) Fleet aManager

f(x) Core
Edge-Based Robot Control System

Integrates with f(x) Plus and uses intelligent cluster scheduling technology to give you best-in-class automated capabilities.

f(x) Plus
Cloud-Based Business Management Platform

Connects with your existing systems to intelligently orchestrate efficient business processes and drive effective man-machine collaboration. Using algorithm optimization, f(x) Plus improves your business operations.

Tailored Scenario for Smart Warehousing

Other Scenarios (Retail, Health)

f(x) Dashboard
Desktop Application

Built for management level staff to control operations, track performance, and analyze data, f(x) Dashboard gives you a birds-eye view of your facility.

f(x) Mobile
Mobile Application for PDAs, Smart Watches, and Cellphones

Used by warehouse operators, supervisors, and other staff on the floor, f(x) Mobile improves human performance through directed workflows that help workers focus on value-adding activities.

ForwardX Flex AMRs

Intelligently Reshaping Warehousing and Manufacturing Business Processes

The Flex 300-L is specifically designed for ultra-narrow aisles, allowing for agile navigation in confined workspaces. Equipped with a lightweight body and an intelligent lifting system, it can adapt to narrow aisle challenges.

The Flex 300-LS is equipped with a lifting function for autonomous rack docking and an interactive touchscreen with customizable UI for operation efficiency improvement.

The Flex 300-SCB is tailored for warehouse picking and sorting tasks. Its compact design is ideal for narrow aisles, greatly improving operational space flexibility and efficiency. Additionally, it offers optional printer and barcode scanner integration for enhanced functionality.

Flex 300-L

Flex 300-LS

Flex 300-SCB

OPTIONAL ACCESSORIES

Single-layer Rack With Wheels

Triple-layer Rack With Wheels

Material Container

	Flex 300-L	Flex 300-LS	Flex 300-SCB
Dimensions			
Length	850 mm (33.46 in)	850 mm (33.46 in)	850 mm (33.46 in)
Width	480 mm (18.89 in)	480 mm (18.89 in)	480 mm (18.89 in)
Height	295 mm (11.61 in)	1,237 mm (48.70 in)	1,400 mm (55.11 in)
Turning Diameter	960 mm (37.79 in)	960 mm (37.79 in)	1,100 mm (43.30 in)
Ground Clearance	25 mm (0.98 in)	25 mm (0.98 in)	25 mm (0.98 in)
Load Surface	640x370 mm (25.19x14.56 in)	640x370 mm (25.19x14.56 in)	780x500 mm (30.70x19.68 in)
Lifting Height	60 mm (2.36 in)	60 mm (2.36 in)	-
Payload			
Weight	120 kg (264 lbs)		
Max. Payload	300 kg (661 lbs)		
Performance			
Navigation Mode	Real-time Optimal / Road Network / Hybrid		
Positioning Mode	Laser SLAM / Visual / Ground QR code / Wall QR Code		
Communication			
Wi-Fi (IEEE 802.11a/b/g/n/ac)	Yes		
Wi-Fi (IEEE 802.11ax)	Optional		
Cellular Network (Public 4G/5G)	Optional		
Power			
Endurance	~8 hrs Per Charge		
Charging Mode	DC CC-VC		
Sensors			
LiDAR	4		
UWA Cameras	1 (Front)		
3D Cameras	1 (Front)		
Odometer	1		
IMU	1		
Interaction			
Audio	Yes		
Lights	Yes		
Configuration Screen	-		
Safety			
Safety Bumper	Yes	Yes	Yes
Emergency Stop Button	1	1	2
Movement Obstacle Perception	Yes	Yes	Yes
Audible And Visual Alarm	Yes	Yes	Yes
Pallet Hump	Optional	Optional	-
Compliance			
CE	Yes		

ForwardX Flex AMRs

Intelligently Reshaping Warehousing and Manufacturing Business Processes

The Flex 600-L boasts a thinner and sleeker body design, increased payload capacity, and an intelligent lifting system, making it compatible with a wider range of racks and carts. This new model is equipped with four LiDAR sensors for 360-degree obstacle recognition and avoidance.

The Flex 600-LS features an intuitive touchscreen for enhanced operational efficiency, a lifting function that handles payloads up to 600 kg (1,322 lbs), and a thinner design for improved adaptability to various container types.

Flex 600-ST is a one-of-a-kind towing AMR. Equipped with an on-board screen for streamlined workflows, and advanced sensors offering complete 360° obstacle recognition, this autonomous tugger is the epitome of safety and efficiency. Let Flex 600-ST handle all the tugging, towing, and pulling, to revolutionize your warehouse operations.

Flex 600-L

Flex 600-LS

Flex 600-ST

OPTIONAL ACCESSORIES

Pallet Station

Euro Pallet Station + Hump

Triple-layer Rack

Pallet Lifting Station

	Flex 600-L	Flex 600-LS	Flex 600-ST
Dimensions			
Length	950 mm (37.40 in)	950 mm (37.40 in)	1,300 mm (51.18 in)
Width	650 mm (25.59 in)	650 mm (25.59 in)	650 mm (25.59 in)
Height	245 mm (9.64 in)	1,185.5 mm (46.67 in)	1,240 mm (48.81 in)
Turning Diameter	1,120 mm (44.09 in)	1,120 mm (44.09 in)	1,660 mm (65.35 in)
Ground Clearance	20 mm (0.78 in)	20 mm (0.78 in)	20 mm (0.78 in)
Load Surface	950x650 mm (37.40x25.59 in)	858x650 mm (33.77x25.59 in)	-
Lifting Height	60 mm (2.36 in) (Tolerance +0,-5mm (0.01 in))	60 mm (2.36 in) (Tolerance +0,-5mm (0.01 in))	-
Payload			
Weight	150 kg (330 lbs)	160 kg (352 lbs)	180 kg (396 lbs)
Max. Payload	600 kg (1,322 lbs)	600 kg (1,322 lbs)	-
Function			
Towing Module	-	-	1Yes
Towing Capacity	-	-	600 kg (1,322 lbs)
Ground Clearance (Towing Module)	-	-	120-320 mm (4.72-12.59 in) (Customizable)
Performance			
Navigation Mode	Real-time Optimal / Road Network / Hybrid		
Positioning Mode	Laser SLAM / Visual / Ground QR code / Wall QR Code		
Communication			
Wi-Fi (IEEE 802.11a/b/g/n/ac)	Yes		
Wi-Fi (IEEE 802.11ax)	Optional		
Cellular Network (Public 4G/5G)	Optional		
Power			
Endurance	~8 hrs Per Charge	~8 hrs Per Charge	~5.5 hrs Per Charge
Charging Mode	DC CC-VC	DC CC-VC	DC CC-VC
Q.D.	-	-	Yes
Sensors			
LiDAR	4	4	3
UWA Cameras	1 (Front)+1 (Side)	1 (Front)+1 (Side)	1 (Front)+1 (Side)
3D Cameras	1 (Front)	1 (Front)	-
Odometer	1	1	1
IMU	1	1	1
Interaction			
Audio	Yes		
Lights	Yes		
Configuration Screen	Yes		
Safety			
Safety Bumper	Yes	Yes	Yes
Emergency Stop Button	2	2	2
Movement Obstacle Perception	Yes	Yes	Yes
Audible And Visual Alarm	Yes	Yes	Yes
Pallet Hump	Optional	Optional	-
Compliance			
CE	Yes		

The information, pictures, and claims made in this document are for reference purposes only.

ForwardX Max AMRs

Point-to-Point, End-to-End Smart Transportation

Max 1500-L is specifically designed for case picking applications. With full 360° obstacle detection and avoidance, a loading capacity of 1,500 kg (3,306 lbs), highly precise docking capabilities and lifting functions for pallets and racks, it excels in safely and efficiently transporting medium-sized and heavier goods in case picking scenarios.

Max O2500-L supports omnidirectional towing with a maximum load capacity of 2,500 kg (5,511 lbs), capable of operating flexibly in relatively restricted working environments, greatly enhancing the flexibility and safety of production lines. At the same time, the AMR is equipped with a powerful jacking system that can support the jacking of oversized shelves, helping to improve productivity and ease of work.

Max 1500-L

Max O2500-L

OPTIONAL ACCESSORIES

Euro Pallet Station + Hump

Pallet Station

Single-layer Rack With Wheels

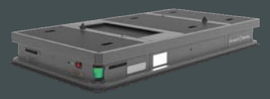
Single-layer Rack

Material Rack

Pallet Lifting Station

Roller Conveyor

Max 1500-L



Max O2500-L

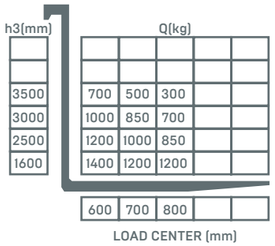
	Max 1500-L	Max O2500-L
Dimensions		
Length	1,250 mm (49.21 in)	2,100 mm (82.67 in)
Width	850 mm (33.46 in)	1,100 mm (43.30 in) (Customizable)
Height	245 mm (9.64 in)	310 mm (12.20 in) (Customizable)
Turning Diameter	1,340 mm (52.75 in)	2,239 mm (88.14 in)
Ground Clearance	25 mm (0.98 in)	30 mm (1.18 in)
Load Surface	1,200x830 mm (47.24x32.67 in)	2,100x1,100 mm (82.67x43.30 in)
Lifting Height	60 mm (2.36 in) (Tolerance +0,-5mm (0.01 in))	145 mm (5.70 in)
Payload		
Weight	250 kg (551 lbs)	700 kg (1,543 lbs)
Max. Payload	1,500 kg (3,306 lbs)	2,500 kg (5,511 lbs) (Customizable)
Performance		
Navigation Mode	Real-time Optimal / Road Network / Hybrid / Fllowing	
Positioning Mode	Laser SLAM / Visual / Optional QR Code Navigation	
Communication		
Wi-Fi (IEEE 802.11a/b/g/n/ac)	Yes	
Wi-Fi (IEEE 802.11ax)	Optional	
Cellular Network (Public 4G/5G)	Optional	
Power		
Endurance	~8 hrs Per Charge	~7 hrs Per Charge
Charging Mode	DC CC-VC	DC CC-VC
Q.D.	-	Yes
Sensors		
LiDAR	4	2
UWA Cameras	1 (Front)+1 (Right)	2 (Front)+2 (Side)
3D Cameras	Optional	Optional
QR Code Cameras-downward	Yes	Yes
Odometer	Yes	Yes
IMU	Yes	Yes
Interaction		
Audio	Yes	
Lights	Yes	
Configuration Screen	Yes	
Safety		
Safety Bumper	Yes	Yes
Emergency Stop Button	2	2
Movement Obstacle Perception	Yes	Yes
Audible And Visual Alarm	Yes	Yes
	Optional	-
Compliance		
CE	Yes	-

ForwardX Apex AMRs

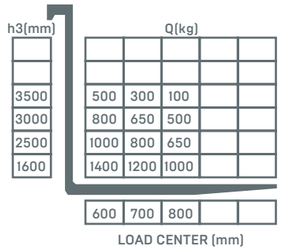
The Optimal Autonomous Forklift

Apex series autonomous forklifts are divided into three types: **Apex 1400-L** pallet stacker forklift, **Apex C1500-L** counterbalanced forklift, and **Apex 2000** pallet jack forklift.

Apex 1400-L CAPACITY CHART

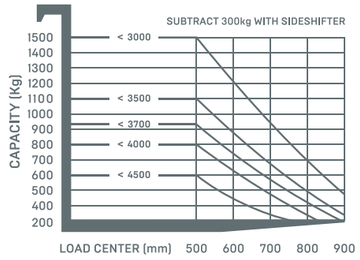


outer width of the forks 680



outer width of the forks 560

Apex C1500-L CAPACITY CHART



Apex 1400-L

Apex C1500-L

Apex 2000

***For Apex 1400-L:**

When the outer width of the forks is greater than 620, the load curve is executed according to a width of 680. When the outer width of the forks is between 560 and 620, the load curve is executead according to a width of 560.

OPTIONAL ACCESSORIES

Plastic Euro Pallet

Euro Pallet

Nine-leg Pallet

EPAL Box

CHEP Pallet
(Apex C1500-L Only)

GMA Pallet
(Apex C1500-L Only)

	Apex 1400-L	Apex C1500-L	Apex 2000
Dimensions			
Length	1,830 mm (72.04 in)	2,495 mm (82.22 in)	1,725 mm (67.91 in)
Width	1,050 mm (41.33 in)	1,250 mm (49.21 in)	1,050 mm (41.33 in)
Height	2,080 mm (81.88 in)	2,190 mm (86.22 in)	2,090 mm (82.28 in)
Turning Diameter	2,260 mm (88.97 in)	2,750 mm (108.26 in)	3,152 mm (124.09 in)
Aisle Width (Ast)	2,547 mm (100.27 in)*	3,186 mm (125.43 in)*	2,456 mm (96.69 in)*
Payload			
Weight	880 kg (1,940 lbs)	2,700 kg (5,952 lbs)	400 kg (881 lbs)
Max. Payload	1,400 kg (3,086 lbs)	1,500 kg (3,306 lbs)	2,000 kg (4409 lbs)
Function			
Fork Dimensions	1,160/170/60 mm (45.66/6.69/2.36 in)	1,070/122/40 mm (42.12/4.80/1.57 in)	1,200/170/40 mm (47.24/6.69/1.57 in)
Fork Carriage Width	680/560 mm (26.77/22.04 in)	680/560/460 mm (26.77/22.04/18.11 in)	680/560 mm (26.77/22.04 in)
Default Fork Height	85 mm (3.34 in)	40 mm (1.57 in)	85 mm (3.34 in)
Max. Fork Height	1,600 mm (62.99 in)-1,400 kg (3,086 lbs)	3,000 mm (118.11 in)-1,500 kg (3,306 lbs)	195 mm (7.67 in)
(Customizable)	3,500 mm (137.79 in)-700 kg (1,543 lbs)	4,500 mm (177.16 in)-600 kg (1,322 lbs)	-
Load Center Distance	600 mm (23.62 in)	500 mm (19.68 in)	600 mm (23.62 in)
Pallet Compatibility	Euro Pallets, Customized Pallets*	Euro Pallets, GMA Pallets, Customized Pallets*	Euro Pallets, Customized Pallets*
Performance			
Navigation Mode	Road Network / Preferred Route / Real-time Optimal	Road Network / Preferred Route / Hybrid	Road Network / Preferred Route / Hybrid
Positioning Mode	Laser SLAM / Visual Semantics	Laser SLAM / Visual Semantics / Optional QR Code Navigation	Laser SLAM / Visual Semantics
Communication			
Wi-Fi (IEEE 802.11a/b/g/n/ac)	Yes		
Wi-Fi (IEEE 802.11ax)	Optional		
Cellular Network (Public 4G/5G)	Optional		
Power			
Endurance	~10 hrs Per Charge	~8 hrs Per Charge	~4 hrs Per Charge
Charging Mode	DC CC-VC	DC CC-VC	DC CC-VC
Sensors			
Lidar	5 (TSA:2 AMR:2+1)	5 (TSA:2 AMR:2+1)	5 (TSA:2 AMR:2+1)
Pallet In-Place Sensor	2	2	2
Pallet Off-Position Sensor	2	2	-
QR Code Cameras-downward	-	Optional	-
UWA Cameras	3 (TSA)	3+2 (TSA)	3 (TSA)
Safety			
Safety Bumper	Yes		
Emergency Stop Button	2		
Compliance			
CE	Yes		

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ForwardX Conveyor AMRs

Automatic Loading, Unloading, and Docking with AS/RS

ForwardX Conveyor AMRs are suitable for transporting and handling a variety of containers including totes and pallets. They can be incorporated with your existing production lines or automatic storage and retrieval systems (AS/RS).

Our Conveyor AMRs are extensions of our Flex and Max series. Depending on your business needs, these AMRs can be customized to include up to two layers and two rows of rollers, such as one row on the bottom layer with two rows on the top layer.

Conveyor accessories can be customized according to customer requirements.

Flex 600 Conveyor
2 Layers, 2 Rows

Length	1,050 mm (41.30 in)
Width	650 mm (25.60 in)
Height	1,186 mm (46.70 in)
Payload Capacity	100 kg (220 lbs) Per Shelf
Load Surface Area	650x365x200 mm (25.60x14.30x7.90 in)
Loading Height	Bottom Layer: 555 mm (21.80 in) Top Layer: 1,150 mm (45.30 in)

Conveyor 1 Layers, 2 Rows

Conveyor 2 Layers, 1 Row

Conveyor 1 Layer, 1 Row

Reflex Charging Station

Smart, Robust and Space-efficient

The ForwardX Reflex charging station serves as a crucial component, providing essential charging support for the fleet. It handles charging tasks with impressive speed and energy capacity, incorporating multiple safety protections to safeguard both employees and AMRs within your facility.

Three available models are capitable with different series of AMRs.

CS- 30050-S
CS- 30100-S

CS- 40070-GD

CS-30050-S

CS-30100-S

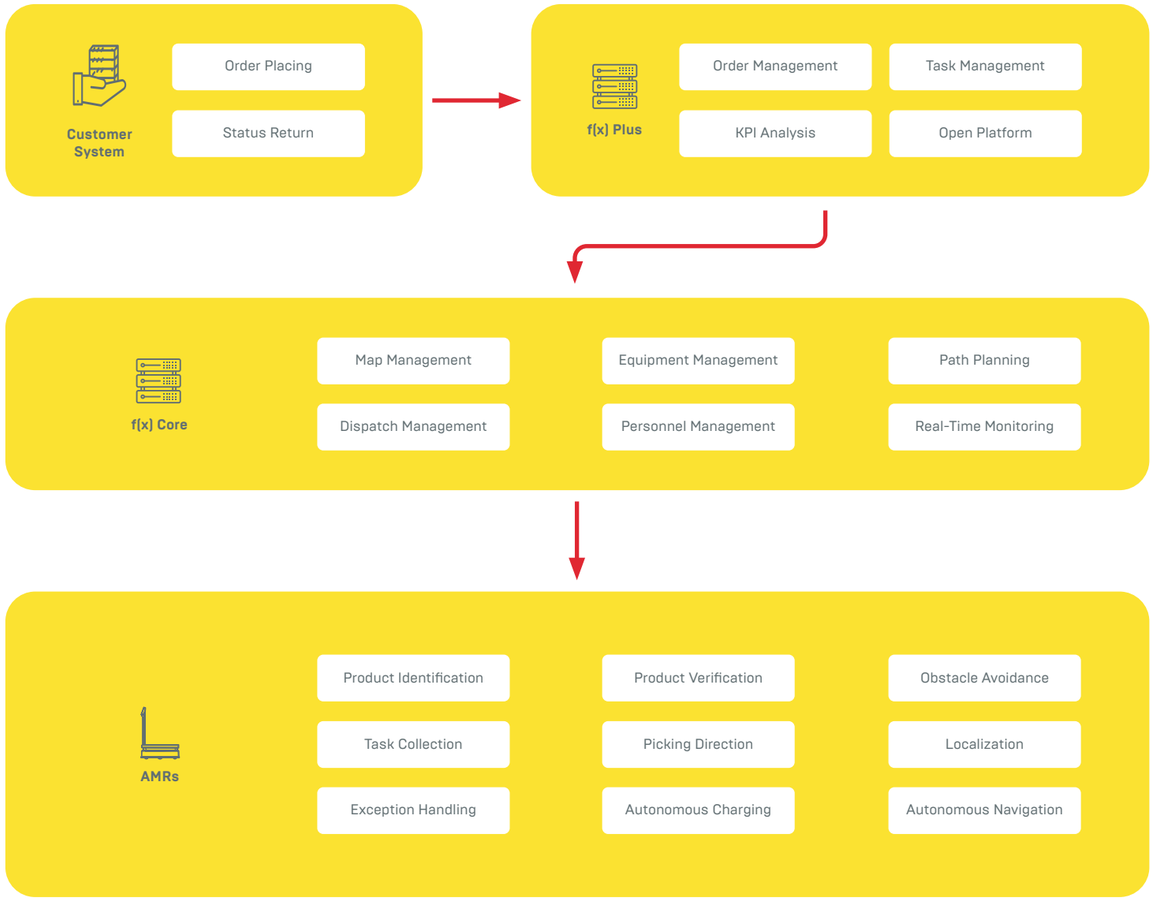
CS-40070-GD

Dimensions			
Length	600 mm (23.62 in)	600 mm (23.62 in)	600 mm (23.62 in)
Width	300 mm (11.81 in)	300 mm (11.81 in)	300 mm (11.81 in)
Height	285 mm (11.22 in)	285 mm (11.22 in)	285 mm (11.22 in)
Weight	30 kg (66 lbs)	30 kg (66 lbs)	30 kg (66 lbs)
Contact Mount Bracket Length	73 mm (2.87 in)	73 mm (2.87 in)	-
Contact Mount Ground Clearance	95 mm (3.74 in)	120 mm (4.72 in)	10.5 mm (0.41 in)
Input			
Input Voltage	AC 220 V	AC 220 V	AC 220 V
Input Current	14 A	15 A	20 A
Rated Power	3000 W	3000 W	4000 W
Plug Type	GB/T 16A	GB/T 16A	ABC 25A
Output			
Output Voltage	DC 54.75 V	DC 29.2 V	DC 54.75V
Maximum Output Current	50 A	100 A	70 A
Environment			
	IP Rating	IP20	
	Ambient Temperature Range	0-40	
	Humidity (Non-condensing)	5-85 %	
Safety			
Output Over Current Protection	Yes	Yes	Optional
Output Short Circuit Protection	Yes	Yes	Yes
Output Over Voltage Protection	Yes	Yes	Yes
Input Over Voltage Protection	Yes	Yes	Yes
Input Under Voltage Protection	Yes	Optional	Yes
Output High Voltage Shutdown Protection	Optional	Optional	Optional
Over Temperature Protection	Yes	Yes	Yes
Output Anti Reverse Protection	Optional	Optional	Optional
Compatibility			
Compatible With AMR Series	Flex Series	Apex I400-L	Max O2500-L
	Max Series	Apex CI500-L	
	Apex 2000		

f(x) Fleet Manager

Take Control of Your Warehouse

ForwardX f(x) Fleet Manager is an Industry 4.0-compatible solution that provides end-to-end automation and future-proof digitization. Acting as your command center, f(x) Fleet Manager connects with your software platforms to receive, optimize, and dispatch tasks in one central location.



Key Features

Unmatched AMR Fleet Capacity

Expand your fleet with no growing pains. Our best-in-class machine learning algorithms ensure your Fleet Manager will intelligently manage and orient your robots to their environment, regardless of robot density, rack density, or picking strategy.

Traffic & Congestion Control

Relieve congestion and alleviate inefficiency caused by traffic with a truly intelligent solution. Our Fleet Manager provides machine learning-based traffic and congestion control to address bottlenecks, like auto-door delays from required manual intervention.

Productivity and Efficiency Tracking

Understand how productive and efficient your fleet can be as you watch in real-time. Our dashboards provide customization so that you can see exactly how your fleet operates, helping you make changes where they matter.

Optimized Battery Management for 24/7 Operation

Benefit from superior uptime effortlessly. ForwardX's Fleet Manager automatically optimizes a battery management schedule to keep your site moving forward non-stop.

Intelligent Job Assignment

f(x) receives, organizes, and assigns tasks according to your operational strategy. Constantly monitoring and anticipating your operations, f(x) reduces wasted time and movement by using Artificial Intelligence to assign tasks for the best results.

Automatic Updates

f(x) provides automatic over-the-air updates to every AMR within your fleet to ensure your fleet is up to date with our latest improvements.

Seamless Integration

f(x) connects to your existing operational systems, such as your WMS, MES, or ERP, without any hassle. Once connected, f(x) circulates tasks across your fleet automatically and in real-time.

Smart Device Collaboration

If you have elevators or automatic doors in your facility, f(x) empowers your fleet to intelligently interact with and navigate through tricky environments. For example, f(x) allows Flex AMRs to wait for and enter elevators together.

Optimized Utility

ForwardX solutions are made to be flexible and versatile to enable you to put them to work across your facility. Based on the tasks available, f(x) will ensure that your robots contribute value wherever possible.

Customizable Dashboards

In f(x), you can customize the way you see data, prioritizing metrics most important to you. With the data constantly at your fingertips, you can create actionable plans to improve your business.

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