

# The Future In Motion



# The future of logistics automation is here

Mobile Industrial Robots (MiR) is a leading manufacturer of collaborative mobile robots. We are dedicated to develop user-friendly, flexible and safe robots to help companies increase their efficiency.

Our autonomous robots are a new generation of advanced mobile robots, which give you a rapid return on investment, often with a payback period of less than a year.

These unique, collaborative robots are now used by manufacturers in a wide range of industries and sectors, to automate their in-house transportation.

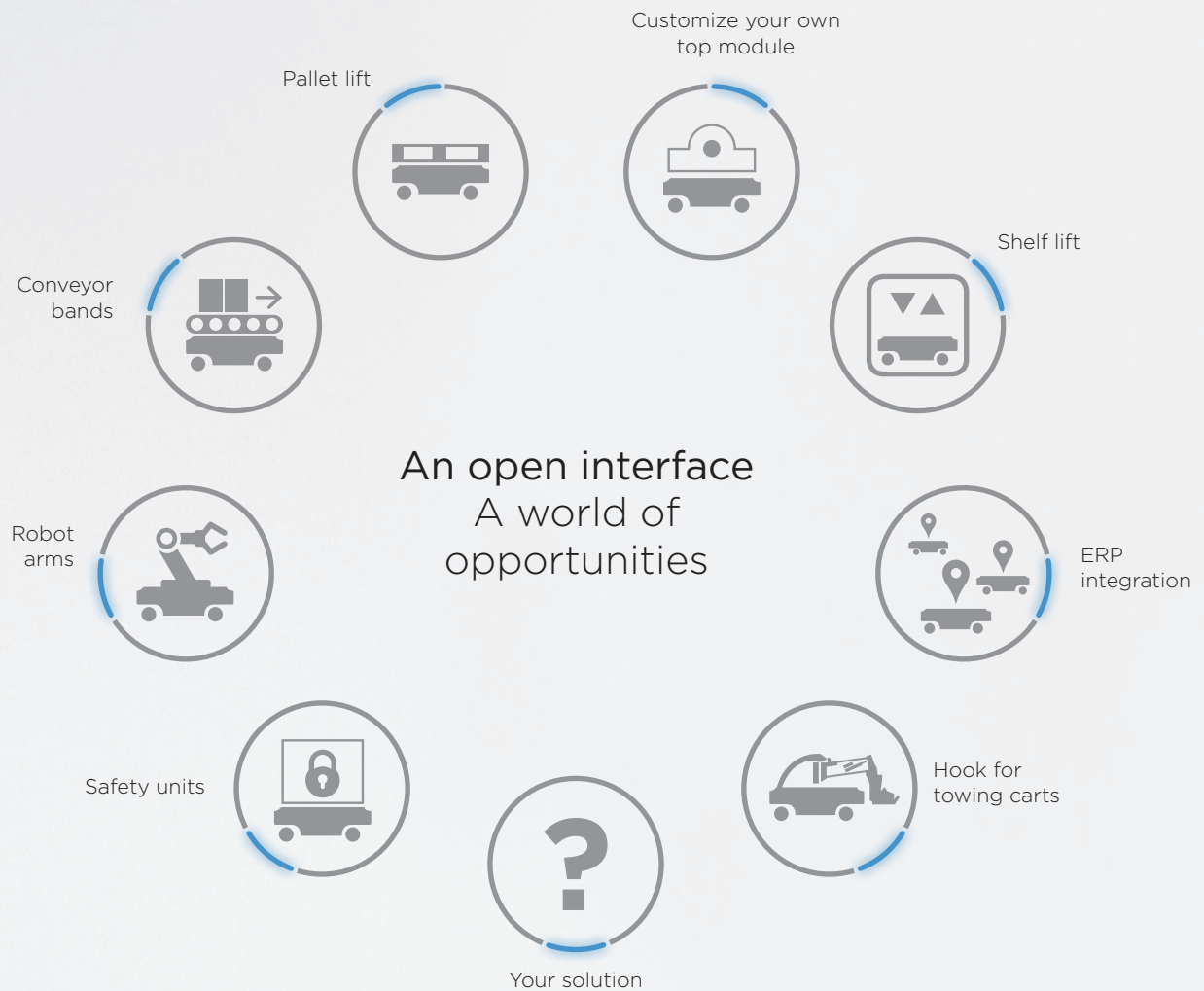
As a first mover in the field, we have enjoyed a rapid, worldwide adoption of our unique and innovative robots.

## Reap all the benefits

- Install quickly and easily without changing the workplace layout.
- Can be redeployed for different tasks with various topmodules.
- Very user-friendly and is easily programmed with no prior experience needed.
- Allows employees to focus on high-value activities, not deliveries.
- Automate material handling and internal logistics.
- Enhance production flow and make significant progress.
- Safely and efficiently maneuvers around people and obstacles.
- Eliminates material flow bottlenecks to increase productivity.
- Offers fast ROI.



MiR500

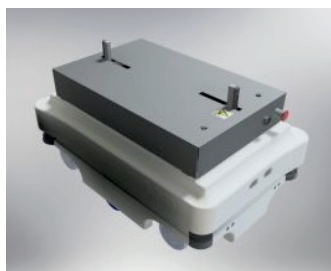


## MiR TradeForum

MiR TradeForum is our online showroom where you can see different accessories made by our distributors and by integrators for the customization of our mobile robots.

Be inspired and see how you can use the robots from MiR in different applications. Check it out; maybe there is just the accessory you need in order to optimize your internal logistics.

Visit <http://www.mir-robots.com/mir-tradeforum/>



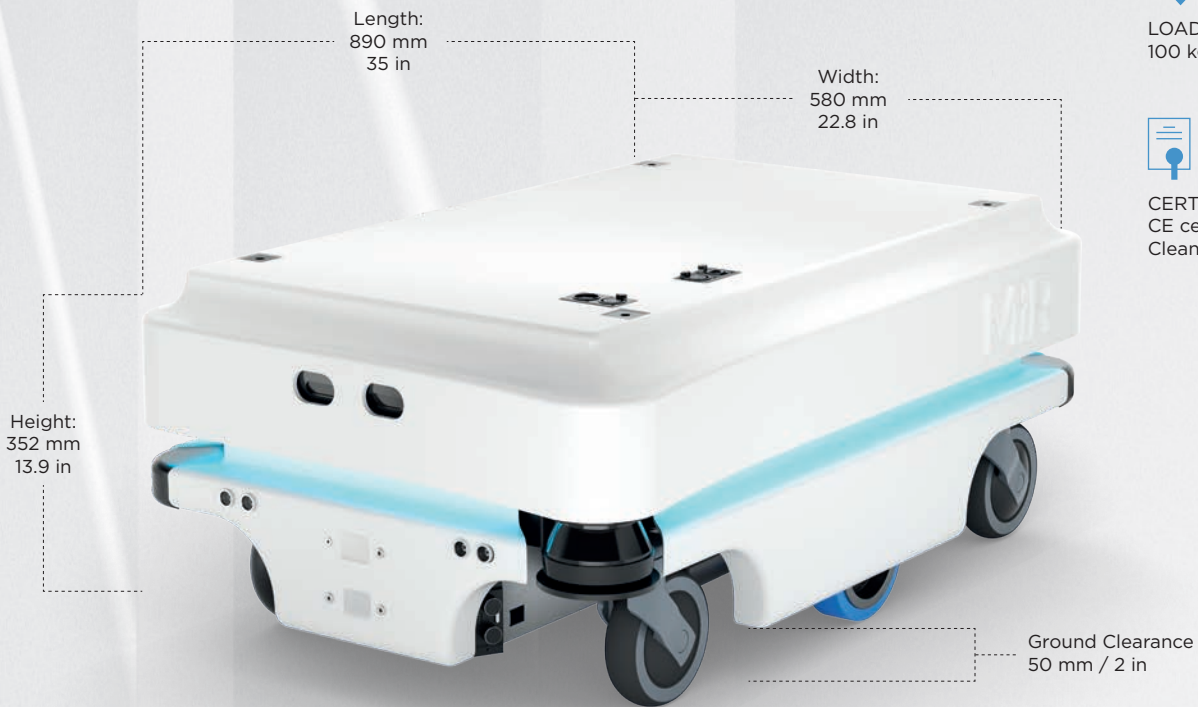
# MIR100



LOAD WEIGHT:  
100 kg / 220 lbs



CERTIFICATIONS:  
CE certified  
Clean Room Certified



## Safe and cost-effective mobile robots

The **MIR100** and **MIR200** are safe, cost-effective mobile robots that quickly automates your internal transportation and logistics. The robots optimize workflows, freeing staff resources so you can increase productivity and reduce costs. The highly flexible mobile robots autonomously transport up to 200 kg (440 lbs). They can be mounted with customized top modules such as bins, racks, lifts, conveyors or even a collaborative robot arm—whatever your application demands. Top modules are easy to change so the robot can be redeployed for different tasks.

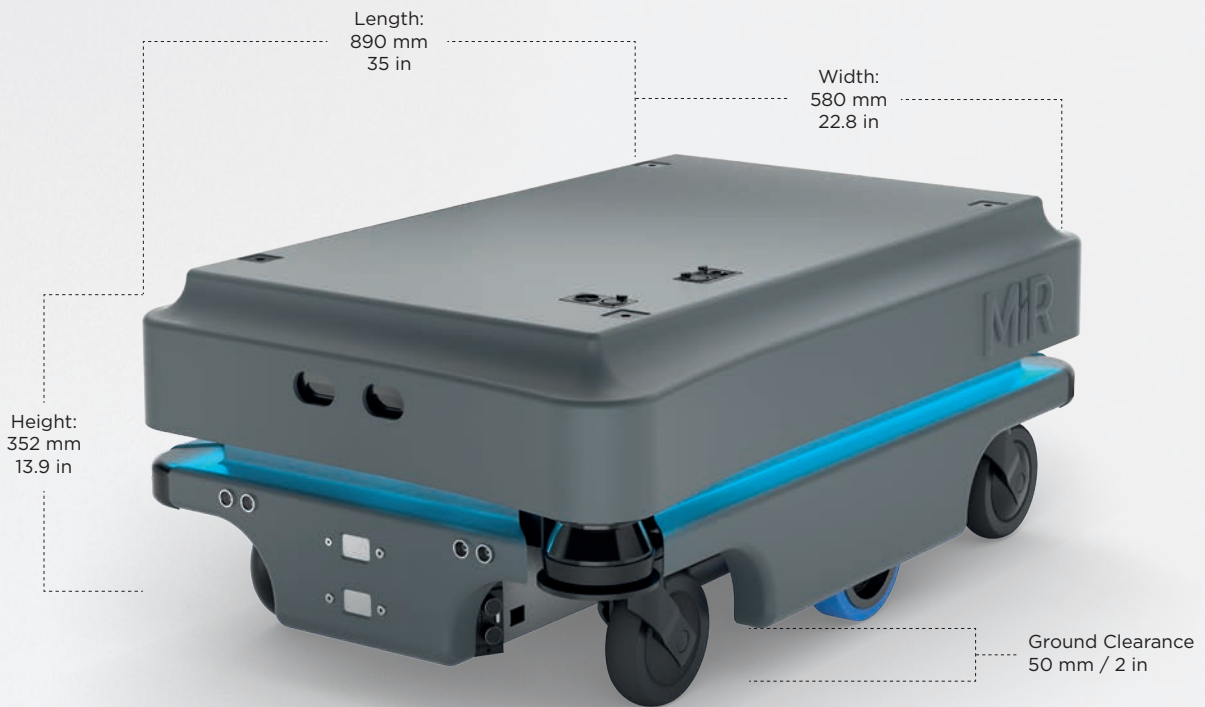
## MIRFleet

### Fleet management for optimized robot traffic

- Fast and central configuration of a fleet of robots. Automatic prioritization and selection of the robot which is best suited for a job, based on position and availability.
- Planning of the use of different top modules, hook, and other accessories.
- Full featured REST-API for ERP implementation.



# MiR200



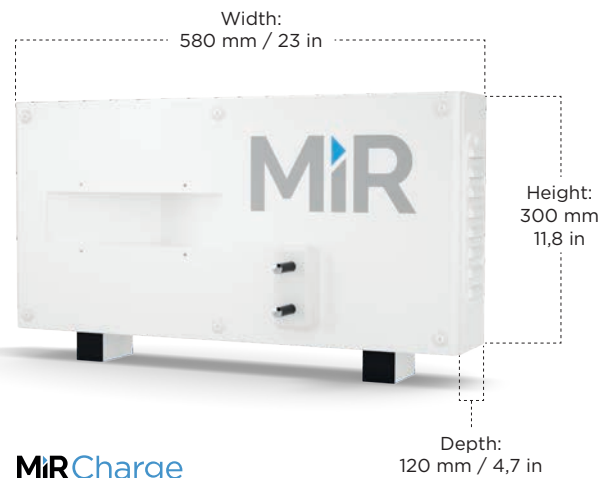
LOAD WEIGHT:  
200 kg / 440 lbs



CERTIFICATIONS:  
CE certified  
ESD approved  
Clean Room certified

## Extremely user-friendly interface

- Works on PC, tablet and smartphone
- Customizable dashboard makes it easy to tailor the interface to the individual user's needs.



## MiRCharge

### A fully automatic charging solution

The MiR100 and the MiR200 move and connect autonomously to the charging station.

# MIR Hook

## Automated in-house transport solutions

Autonomously picks up and unloads carts and is ideal for a wide range of towing jobs.

Moves heavy products between locations effectively.



Highest position above ground: 1180 mm 46.5 in

Lowest position above ground: 1275 mm 50.2 in



TOWING CAPACITY:  
500 kg / 1100 lbs



TOWING CAPACITY:  
300 kg / 661 lbs





11

km pr. day

## Nidec

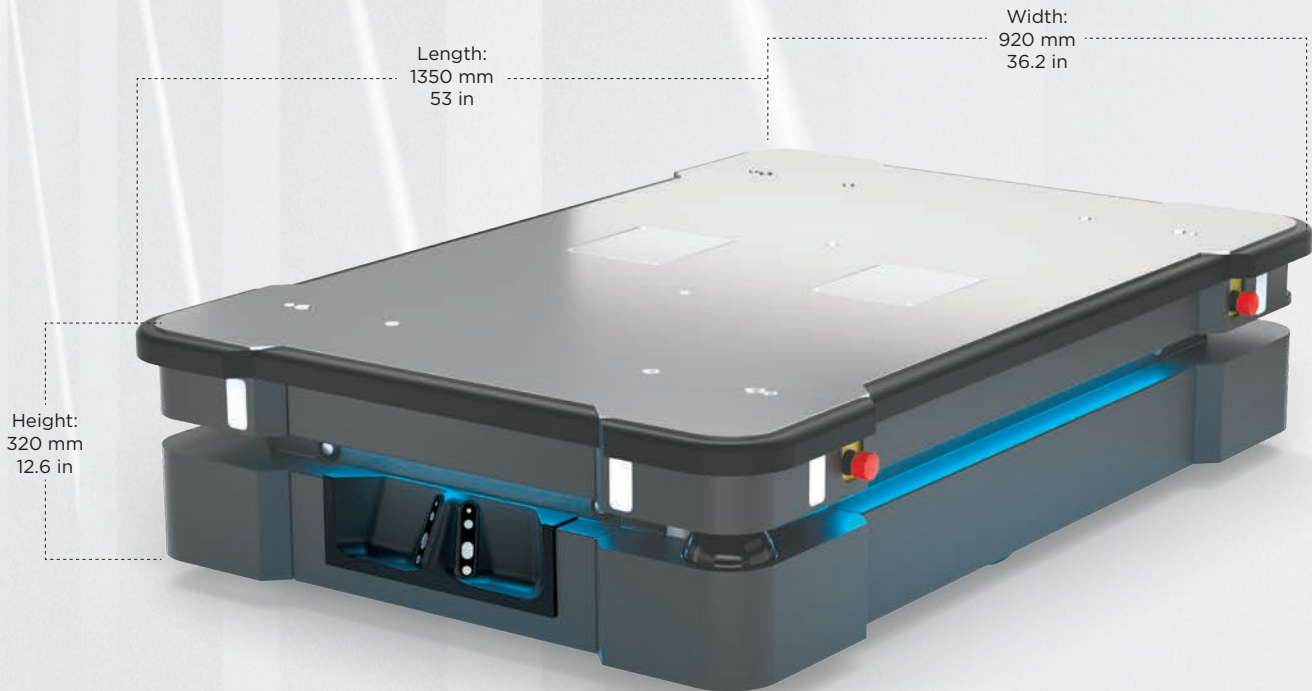
Three MiR100 with MiRHooks optimize the internal transportation of carts at German Nidec. Each robot drives 11 km a day, and they autonomously pickup, transport and deliver carts in two different production areas and move them to the warehouse.

Taking over the repetitive transportation tasks, the mobile robots free up employees for R&D while they are also keeping the stock low as they are able to move materials from the assembly lines immediately.



# MiR500

**MiR500** transports heavy loads and pallets autonomously. With the MiR500 Lift or EU Pallet Lift, the robot can automatically pick up, transport and deliver pallets.



**LOAD WEIGHT:**  
500 kg / 1100 lbs

**MiR500** is designed to automate the transportation of pallets and heavy loads across industries. With a payload of 500 kg and a footprint of 1350x920 mm, MiR500 is the largest, most powerful robust collaborative, autonomous mobile robot from MiR.

With the MiR500 EU Pallet Lift or the MiR500 Lift, the MiR500 picks up, transports and delivers pallets autonomously, freeing up employees for more valuable tasks. MiR500 is compliant with ISO/EN 13849 and fulfills the EMC requirement for industrial and light industrial use. The rugged MiR500 is designed for industry use with robust exterior that can withstand dropped cargo and can easily navigate up and down ramps and even through shallow water puddles.

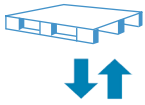




## MiR500 Lift



LOAD WEIGHT:  
500 kg / 1100 lbs



Designed for transport of pallets  
and for lift applications



## MiR500 EU Pallet Lift



LOAD WEIGHT:  
500 kg / 1100 lbs



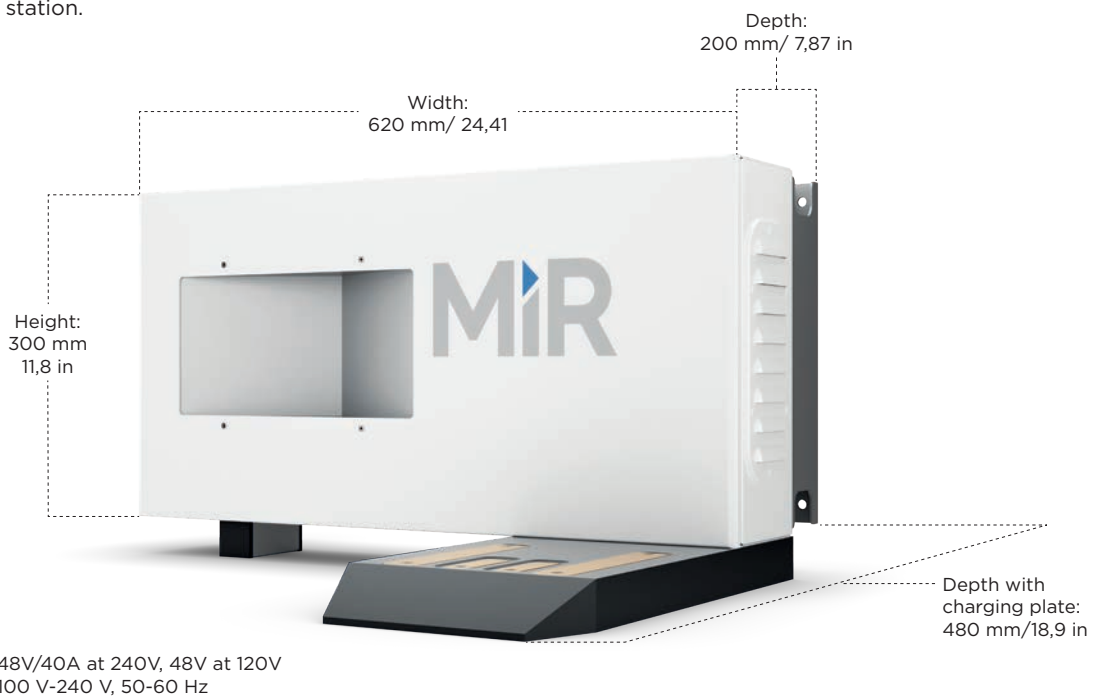
EU PALLET DIMENSIONS:  
Width: 800 mm / 31.5 in  
Length: 1200 mm / 47.2 in



## MiRCharge500

### A fully automatic charging solution

The MiR500 move and connect autonomously  
to the charging station.



## Johnson Controls Hitachi

A MiR200 improves the productivity and safety at Johnson Controls Hitachi in Barcelona. The mobile robot picks up shelving units in the storeroom and carries materials to the production line where it picks up waste packaging.

The robot operates during a full 8-hour shift and has eliminated electric trolleys from the factory floor, making it a safer place for all.



Hours  
pr. day

**MiR100**
**MiR200**
**MiR500**
**DESIGNATED USE**

Collaborative mobile robot	For smaller transport tasks within the industry, logistics and healthcare	For smaller transport tasks within the industry, logistics and healthcare	for internal transportation of heavy loads and pallets within the industry and logistics
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**DIMENSIONS**

Length	890 mm / 35 in	890 mm / 35 in	1350 mm / 53 in
Width	580 mm / 22.8 in	580 mm / 22.8 in	920 mm / 36.2 in
Height	352 mm / 13.9 in	352 mm / 13.9 in	320 mm / 12.6 in
Height above floor	50 mm / 2 in	50 mm / 2 in	30 mm / 1.2 in
Weight (without load)	65 kg / 143 lbs	65 kg / 143 lbs	250 kg / 551 lbs
Load surface	600 x 800 mm	600 x 800 mm	1300 x 900 mm

**COLOR**

RAL color	RAL 9010 / Pure White	RAL 7011 / Iron Grey	RAL 7011 / Iron Grey
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**PAYLOAD**

Robot Payload	100 kg / 220 lbs (maximum 5% incline)	200 kg / 440 lbs (maximum 5% incline)	500 kg / 1100 lbs
Towing Capacity	300 kg / 660 lbs (see MiRHook 100 specifications)	500 kg / 1100 lbs (see MiRHook 200 specifications)	

**SPEED AND PERFORMANCE**

Battery running time	10 hours or 20 km / 12 mi	10 hours or 15 km / 9 mi	8 hours
Maximum speed	Forwards: 1.5 m/s (5.4 km/h) Backwards: 0.3 m/s (1 km/h)	Forwards: 1.1 m/s (4 km/h) Backwards: 0.3 m/s (1 km/h)	1.2 m/s - upgrade kit for 2.0 m/s speed available from 01.01.2019
Turning Radius	520 mm / 20 in (around center of robot)	520 mm / 20 in (around center of robot)	
Positioning accuracy	+/- 50 mm / 2 in of position, +/- 10 mm / 0.4 to docking marker	+/- 50 mm / 2 in of position, +/- 10 mm / 0.4 to docking marker	
Traversable gap and sill tolerance	20 mm / 0.8 in	20 mm / 0.8 in	

**POWER**

Battery	Li-NMC, 24 V, 40 Ah	Li-NMC, 24 V, 40 Ah	Li-NMC, 48 V, 40 Ah
Charging time	With cable: up to 4.5 hours (0-80%: 3 hours) With charging station: up to 3 hours (0-80%: 2 hours)	With cable: up to 4.5 hours (0-80%: 3 hours) With charging station: up to 3 hours (0-80%: 2 hours)	1 hour (10% to 90%) MiR Charge 2 hours (10% to 90%) cable charger
External Charger	Input: 100-230 V ac, 50-60 Hz Output: 24 V, max 15 A	Input: 100-230 V ac, 50-60 Hz Output: 24 V, max 15 A	Input: 100-230 V ac, 50-60 Hz / Output: 48 V, max 40 A
Battery charging cycle			Minimum 600 cycles

**ENVIRONMENT**

Ambient temperature range	+5°C to 50°C (humidity 10-95% non-condensing)	+5°C to 50°C (humidity 10-95% non-condensing)	+5°C to 40°C (humidity 10-95% non-condensing)
IP Class	IP 20	IP20	IP21
Certifications	CE certified Clean Room Certified	ESD certified Clean Room Certified ESD Approved	5 safety functions according to ISO 13849-1 EMC: EN61000-6-2, EN61000-6-3

**COMMUNICATION**

WiFi	Dual-band wireless AC/G/N/B	Dual-band wireless AC/G/N/B	Dual-band wireless AC/G/N/B
Bluetooth	4.0 LE, range: 10-20 m / 33-66 ft	4.0 LE, range: 10-20 m / 33-66 ft	
I/Os	USB and Ethernet	USB and Ethernet	4 digital inputs, 4 digital outputs, 1 Ethernet port with Modbus protocol

**SENSORS**

SICK microScan3 safety system (2 pcs.)	SICK safety laser scanners S300 (front and back) 360° visual protection around robot	SICK safety laser scanners S300 (front and back) 360° visual protection around robot	360° visual protection around robot
3D camera (2 pcs.)	3D camera Intel RealSense™ Detection of objects ahead 50-500 mm above floor	3D camera Intel RealSense™ Detection of objects ahead 50-500 mm above floor	2 pcs.: Intel RealSense D435. FoV: Detects objects 1700 mm high at a distance of 950 mm in front of the robot. 114° total horizontal view. Ground view, minimum distance from robot: 250 mm

**TOP MODULE**

Max. height from floor to top	1800 mm / 70 in	1800 mm / 70 in	
Center of gravity	< 900 mm / 35 in above the floor	< 900 mm / 35 in above the floor	

## MIRHook100

## MIRHook200

### DESIGNATED USE

Collaborative mobile robot with hook for fully-automated pick-up and delivery of carts for fully-automated pick-up and delivery of carts

### DIMENSIONS

Length (highest to lowest positions of hook arm)	1180 to 1275 mm / 46.5 to 50.2 in	1180 to 1275 mm / 46.5 to 50.2 in
Width	580 mm / 22.8 in	580 mm / 22.8 in
Height (lowest to highest positions of hook arm)	550 to 900 mm / 21.7 to 35.4 in	550 to 900 mm / 21.7 to 35.4 in
Height above floor	Robot: 50 mm / 2 in Gripping height: 50-390 mm / 2-13.4 in	Robot: 50 mm / 2 in Gripping height: 50-390 mm / 2-13.4 in
Weight (without load)	98 kg / 216 lbs	98 kg / 216 lbs

### COLOR

RAL color	RAL 9010 / Pure White	RAL 7011 / Iron Grey
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### TOWING CAPACITY

Load incl. cart	Up to 300 kg / 661 lbs at <1% incline 200 kg / 441 lbs at 5% incline	Up to 500 kg / 1100 lbs at <1% incline 300 kg / 661 lbs at 5% incline
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### SPEED AND PERFORMANCE

Running time (depending on load)	8-10 hours or 15-20 km / 9.3-12.4 mi	8-10 hours or 15-20 km / 9.3-12.4 mi
Maximum speed	1.5 m/s (5.4 km/h) / 4.9 ft/s (3.6 mph)	1.1 m/s (4 km/h) / 3.6 ft/s (2.5 mph)
Turning radius (without cart)	520 mm / 20.5 in (around center of robot)	520 mm / 20.5 in (around center of robot)
Swinging radius (with cart)	Total length of robot and cart plus 550 mm / 21.7 in	Total length of robot and cart plus 550 mm / 21.7 in
Positioning accuracy (placing cart)	+/- 200 mm / 7.9 in from center of position, 10° accuracy	+/- 200 mm / 7.9 in from center of position, 10° accuracy

### POWER

Battery	Li-NMC, 24 V, 40 Ah	Li-NMC, 24 V, 40 Ah
Charging time	Up to 3 hours (0-80%: 2 hours)	Up to 3 hours (0-80%: 2 hours)
Internal charger	Input: 100-230 V ac, 50-60 Hz Output: 24 V, max 15 A	Input: 100-230 V ac, 50-60 Hz Output: 24 V, max 15 A

### ENVIRONMENT

Ambient temperature range (humidity 10-95% non-condensing)	+5°C to 50°C	+5°C to 50°C
IP class	IP20	IP20

### COMMUNICATION

WiFi	Dual-band wireless AC/G/N/B	Dual-band wireless AC/G/N/B
Bluetooth	4.0 LE, range: 10-20 m / 32.8-65.6 ft	4.0 LE, range: 10-20 m / 32.8-65.6 ft
I/Os	USB and Ethernet	USB and Ethernet

### SENSORS

SICK safety laser scanners S300 (front and back)	360° visual protection around robot	360° visual protection around robot
3D camera Intel RealSense™ on robot	detection of objects ahead 50-500 mm / 2-20 in above floor	detection of objects ahead 50-500 mm / 2-20 in above floor
3D camera Intel RealSense™ on front of hook	detection of objects ahead up to 2000 mm / 78.7 in above floor	detection of objects ahead up to 2000 mm / 78.7 in above floor

### CART

Length	500 to 2400 mm / 20 to 94.5	500 to 2400 mm / 20 to 94.5
Width	400 to 1500 mm / 15.7 to 59	400 to 1500 mm / 15.7 to 59
Height	200 to 2000 mm / 7.9 to 78.7	200 to 2000 mm / 7.9 to 78.7

## MiR500 Lift

## MiR500 EU Pallet Lift

### DESIGNATED USE

Lift for MiR500	for autonomous pickup and unloading of pallets and for lift applications	for autonomous pickup and unloading of EUR-pallets
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### DIMENSIONS

Length	Frame Length: 1304 mm / 51.3 in Lift Length: 1174 mm / 46.2 in	1200 mm / 47.2 in
Width	Frame Width: 910 mm / 35.8 in Lift Width: 710 mm / 28 in	162 mm / 6.4 in
Total height in lowered position	90 mm / 3.5 in	95 mm / 3.7 in
Total height in lifted position	150 mm / 5.9 in	155 mm / 6.1 in

### COLOR

RAL color	Frame color: RAL 7011 / Iron Grey Lift Color: RAL 9005 / Signal Black	RAL 9005 / Signal Black
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### PAYLOAD

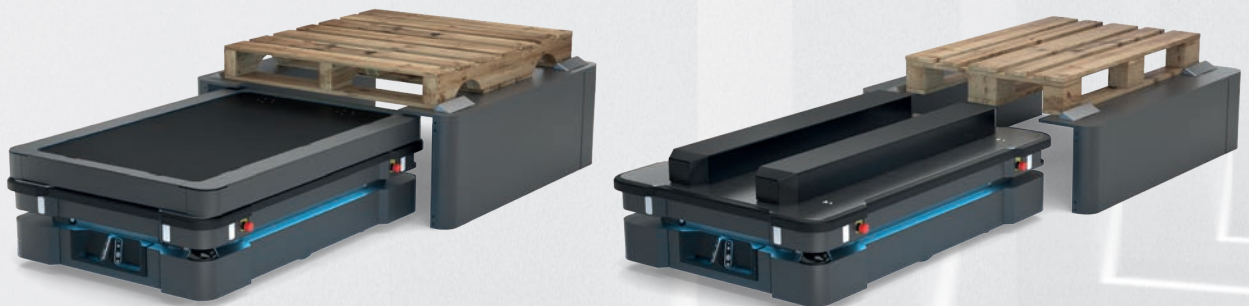
Lift Payload	500 kg / 1100 lbs	500 kg / 1100 lbs
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### PERFORMANCE

Lift height	60 mm / 2.4 in	60 mm / 2.4 in
Lifting cycle	Minimum 50,000 cycles	Minimum 60,000 cycles

### PALLETS

Length x width	Supported with MiR500 Lift Pallet Rack: 1016 mm x 1219 mm / 40 in x 48 in Can be used for different pallet dimensions	1200 mm x 800 mm / 47.2 x 31.5 in
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## MiR500 Lift Pallet Rack

## MiR500 EU Pallet Rack

### DESIGNATED USE

Pallet Rack for MiR500	for autonomous pickup and unloading of 40" x 48" pallets	for autonomous pickup and unloading of EUR-pallets
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### DIMENSIONS

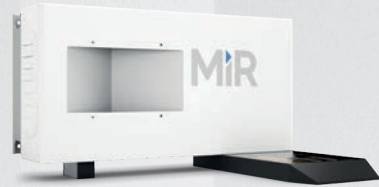
Length	1300 mm / 51.2 in	1300 mm / 56.3 in
Width	1182 mm / 45.5 in	1182 mm / 45.5 in
Height	442 mm / 17.4 in	352 mm / 13.9 in

### COLOR

RAL color	RAL 7011 / Iron Grey	RAL 7011 / Iron Grey
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### PAYLOAD

Pallet Rack payload	500 kg / 1100 lbs	500 kg / 1100 lbs
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## MiRCharge

## MiRCharge500

### DESIGNATED USE

Automatic charger for MiR robots	The robot moves and connects to the docking station.	The robot moves and connects to the docking station
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### DIMENSIONS

Width	580 mm / 22.8 in	620 mm
Height	300 mm / 11.8 in	340 mm
Depth	120 mm / 4.7 in	200 mm (with charging plate: 480 mm)
Weight	10.5 kg / 22 lbs	21 kg

### MOUNTING SPECIFICATIONS

Wall mounting	to be mounted flush with floor	
Mounting height above	floor 45 mm / 1.8 in from floor to bottom edge	

### RATED OPERATING CONDITIONS

Ambient temperature range	+5°C to 50°C	+5°C to 40°C
Humidity	10-95% non-condensing	10-95% non-condensing
Power	Output: 24 V, max. 25 A Input: 100/230 V ac, 50-60 Hz	Output: 48V/40A at 240V, 48V at 120V Input: 100 V-240 V, 50-60 Hz

### COMPLIANCE

Standard	EN 60204-1	EN 60204-1
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## MiRFleet

### DESIGNATED USE

Centralized control of a fleet of robots	Up to 100 robots
Order handling	Prioritization and handling of orders among multiple robots
Battery level control	Monitoring of robot battery levels and automatic handling of recharging
Traffic control	Coordination of critical zones with multiple robot intersections

### TWO VERSIONS AVAILABLE

Linux PC	Comes as a physical PC box
Virtual Machine Image	For installation in existing server system

### MIRFLEET PHYSICAL LINUX PC

PC type	Intel® Maple Canyon NUC
CPU	Intel® Core i3-5010U (3MB cache, 2.1GHz base clock)
RAM	8GB DDR3L-1600
SSD	120GB 2.5"
Operating system	Linux Ubuntu 16.04
Network capabilities	1 Gbit Ethernet, no wireless option
Required connections	110 V or 230 V power socket and Ethernet network cable
Installation requirements	Must run on the same physical network as the robots

### MIRFLEET VIRTUAL MACHINE IMAGE

Image file size	3 GB
Server requirements	Dual core processor with min, 2.1 GHz clock
RAM	Min. 4 GB (8 GB recommended)
HDD	10 GB
Virtualization software	Oracle VirtualBox or VMware



## Zealand University Hospital

Five hospital departments at Zealand University Hospital in Denmark receive daily autonomous deliveries from the hospital's sterilization center with a MiR100. Before the mobile robot arrived, service assistants were providing weekly deliveries of disposable equipment to hospital departments. A manual procedure that involved heavy lifting.

Now the MiR100 improves the ergonomics, make sure that deliveries are made on time, and frees up time for the service assistants to do warmer tasks like patient care.



Departments  
Served  
pr. day

# Born Global

Mobile Industrial Robots is rapidly expanding. We have established offices in Denmark (HQ), New York, Spain, Germany, China, San Diego, and Singapore and with **+150 distributors** in more than **40 countries** and still more to come, we are able to offer our robots to customers worldwide.



## HEADQUARTER

**Mobile Industrial Robots ApS**  
Emil Neckelmanns Vej 15F  
5220 Odense SØ  
Denmark

+45 20 377 577  
mail@mir-robots.com

Technical Support  
+45 24 465 777  
support@mir-robots.com

## SALES OFFICE

**Mobile Industrial Robots Inc.**  
1340-2 Lincoln Ave  
Holbrook, NY 11741

+1 (631) 675-1838  
emu@mir-robots.com

Technical Support  
+1 (631) 388-4265  
support@mir-robots.com

## SALES OFFICE

**Mobile Industrial Robots Inc - West**  
2150 W Washington Street, Suite 401  
San Diego, CA 92110

+1 (631) 553 5328  
nte@mir-robots.com

Technical Support  
+1 (516) 246 1510  
support@mir-robots.com

## SALES OFFICE

**MiR Robots (Shanghai) Co., Ltd.**  
名傲移动机器人(上海)有限公司  
Rm. 203, No. 618 Shenchang Rd.; 申长路 618 号 203 室  
Shanghai 201100, China; 中国 上海 闵行区

+86 158 0172 8490  
wid@mir-robots.com

Technical Support  
+86 158 0172 8490  
support@mir-robots.com

## SALES OFFICE

**Mobile Industrial Robots South-East Asia**  
47 Tannery Lane, #06-04, Elite Industrial Building  
Singapore 347794

+65 8127 9082  
support@mir-robots.com

Technical Support  
+65 8127 9082  
support@mir-robots.com

## SERVICE & SUPPORT CENTER

**Mobile Industrial Robots GmbH**  
Am Oxer 7 24955  
Harrislee

+45 24 465 777  
support@mir-robots.com

Technical Support  
+45 24 465 777  
support@mir-robots.com