

# MiR

MOBILE INDUSTRIAL ROBOTS



A better way

# Do logistics in a better way

Want to optimize your productivity, internal workflows and increase your competitiveness? Bring your internal logistics up to speed with autonomous mobile robots that automate repetitive and injury-prone material transportation and work safely alongside your employees to boost productivity.

MiR's collaborative mobile robots are simple to integrate and easy to program, with no need for expensive and disruptive reconfiguration of your infrastructure. You'll see an immediate impact on your ability to process orders faster and reduce material handling costs to get fast ROI on your mobile robots – often, in less than 12 months.

Need flexibility? User-friendly MiR robots enable you to adapt to changing market demands, new products, and new production flows. Very easily, you can switch out top modules, change missions, and add new functionality, without the need for external integration services.

See how companies from different industries around the world – and from family-owned regional businesses to global companies with multiple locations – have found a better way to do logistics with MiR. With local sales offices around the world and a global distribution network, we are ready to support your business wherever you are located.

MiR | a better way

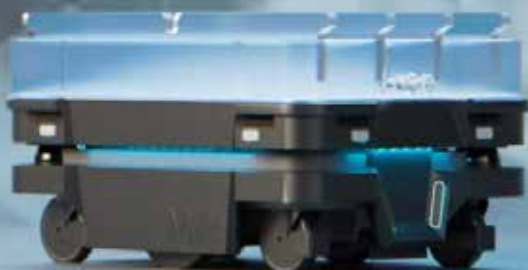


MiR250

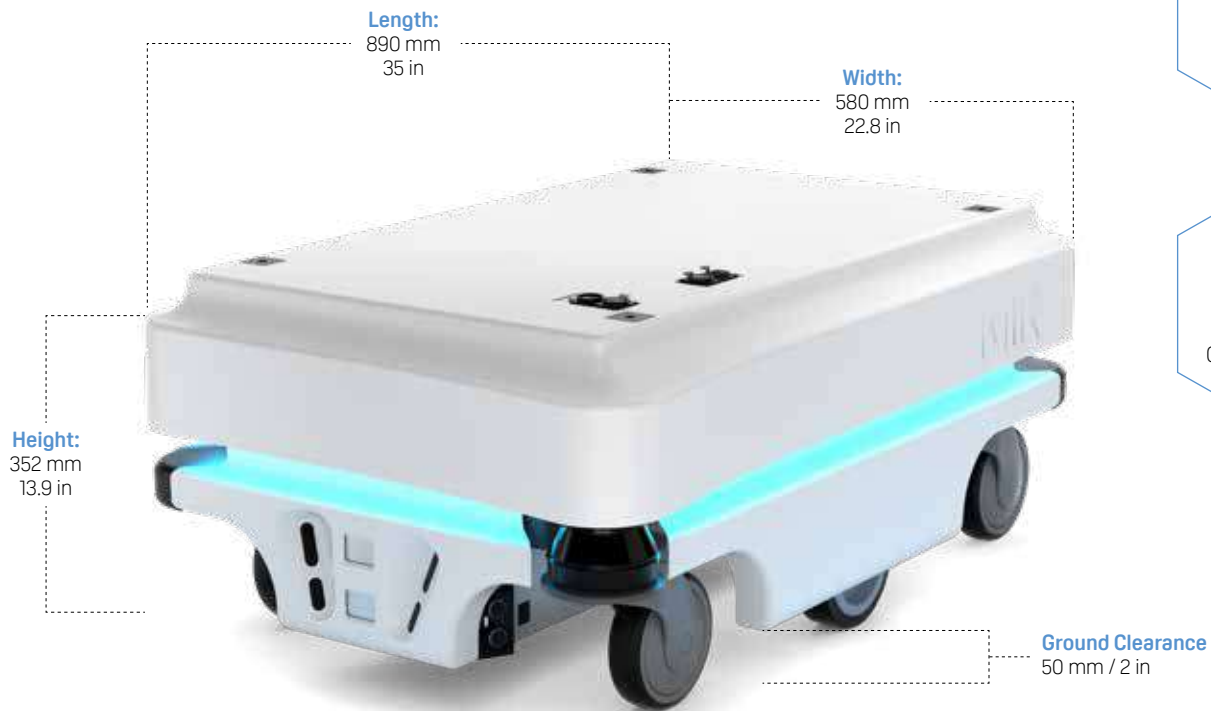
## An open interface supports different applications



Check it out, maybe there's just the accessory you need in order to optimize your internal logistics.



# MiR100



## Safe and cost-effective mobile robots

The **MiR100** and **MiR250** are safe, cost-effective mobile robots that quickly automate your internal transportation and logistics of smaller parts. 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.

## MiR Charge 24V

### A fully automatic charging solution

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



## DEWALT Stanley Black & Decker

**MiR200** robots are used as mobile workbenches that connect the assembly lines and robotic cells at DEWALT Stanley Black & Decker. The MiR200s are part of a fully automated process where they transport pallets of 180 kg, and free up workers for more valuable tasks in the production.



**180**  
kg



## FORD

Ford implemented 3 **MiR100**. With a payload of 100 kg. each, they deliver spare parts to Ford's manufacturing plant, often in a hostile environment. The mobile robots avoid unforeseen obstacles, can modify their route or stop when necessary, and they work safely alongside people and other vehicles in the 300,000m<sup>2</sup> plant.



**3**  
MiR100



# MiR250



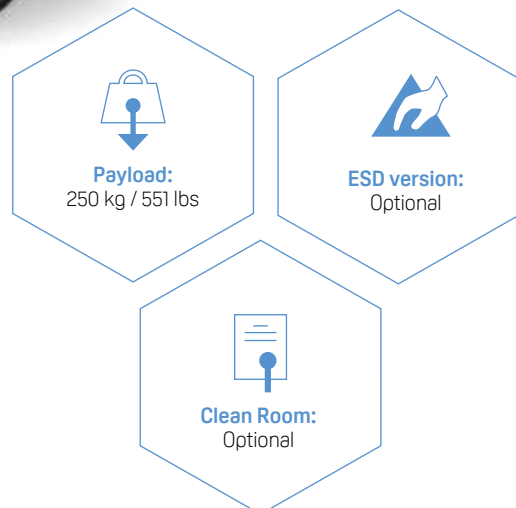
## Exceed expectations with MiR250

The **MiR250** sets new standards for internal logistics with a robot that is faster, safer and more agile than any other solution in the same category on the market.

The innovative **MiR250** is packed with the newest technology, designed for serviceability and it can navigate smoothly and efficiently in dynamic environments.

### Increased agility with MiR250 Dynamic

MiR250 Dynamic is another version of MiR250 with the possibility to modify settings that enables it to drive closer to objects. Subject to risk assessment, the MiR250 Dynamic can typically be used for driving in narrow corridors, doors and other spaces.



## MiR Shelf Carrier

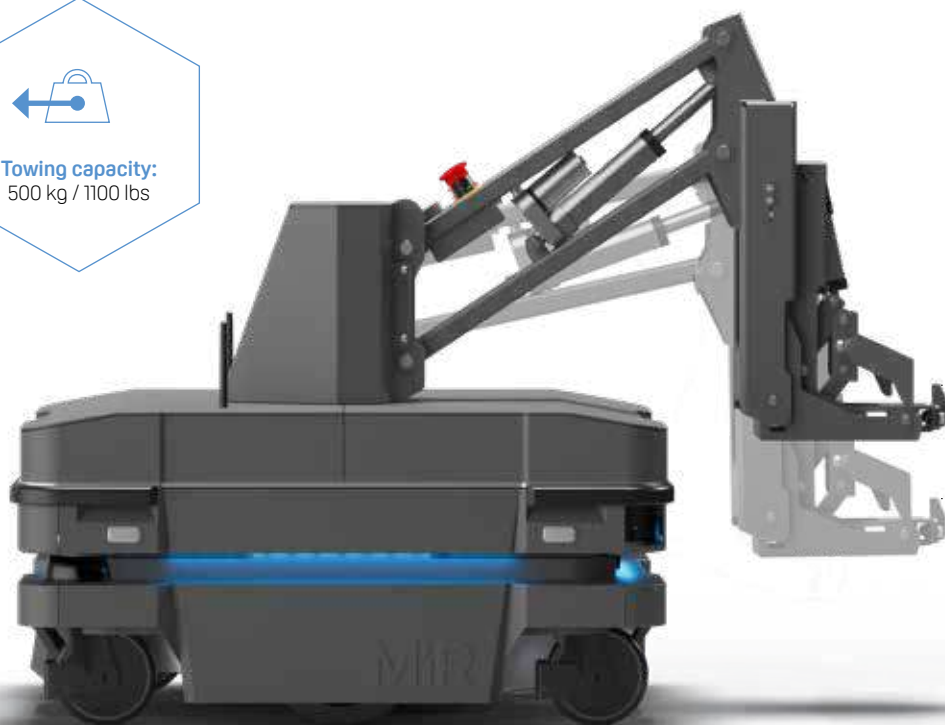
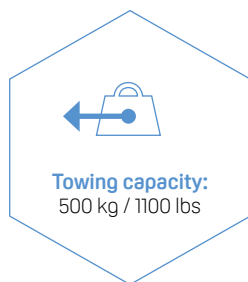
### Streamline your logistics

Together with the **MiR250**, we have developed a standard top module: The Shelf Carrier.

The Shelf Carrier is an anchoring device, which enables the robot to collect and deliver carts, shelves or similar, and is available directly from MiR.

Visit our webpage to learn more about the MiR250 and Shelf Carrier at: [mir-robots.com/solutions](http://mir-robots.com/solutions)





**Highest gripping height above floor**  
350 mm  
13.8 in

**Lowest gripping height above floor:**  
80 mm  
3.1 in

## 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.

Patented solution from MiR – only AMR in the market with towing functionality.



## MiR Charge 48V

### A fully automatic charging solution

The MiR robots move and connect autonomously to the charging station. **MiR250**, **MiR600**, and **MiR1350** use the **MiR Charge 48V**, that is IP52 rated.



### 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.



# Safe Mobile Robots

## Designed for driving safely in industrial environments

The MiR robots are designed to collaborate with people and to navigate in industrial environments alongside their human co-workers.

For daily operation a reliable and safe driving pattern of the MiR robots is ensured by a multi-sensor system that feeds data into an advanced planning algorithm, which lets the robot know where it drives and that decides if the robot should adjust its path or make a safe and immediate stop to avoid collisions.

2 SICK MicroScan3 or  
NanoScan3  
FoV: 360° up to 30 m in a  
plane at 200 mm height.

Proximity sensors  
in each corners to detect  
feet and pallets.

Detects objects 0-1700 mm high  
FoV: 114° horizontal view.

## Next Generation AMRs raise the bar for AMR safety

A fundamental part in meeting safety standards is to include additional functions that address unanticipated risks to ensure that the robots react safely even if primary control systems fail for any reason. The MiR600 and MiR1350 are the first AMRs designed to comply with ISO 3691-4. Minor exceptions to ISO 3691-4 are identified and handled via MiRs Safety & Compliance documentation, which is always available per request.

The safety functions of the MiR robots are documented with a Sistema report, which can be shared by MiR via our distributors.

| FUNCTION                        | MiR600     | MiR1350    |
|---------------------------------|------------|------------|
| E-stop                          | PLd, cat 3 | PLd, cat 3 |
| Field switching                 | PLd, cat 3 | PLd, cat 3 |
| Personnel detection             | PLd, cat 3 | PLd, cat 3 |
| Overspeed detection             | PLd, cat 3 | PLd, cat 3 |
| Field muting/speed monitor      | PLd, cat 3 | PLd, cat 3 |
| Safe guarded stop               | PLd, cat 3 | PLd, cat 3 |
| Locomotion                      | PLd, cat 3 | PLd, cat 3 |
| System E-stop                   | PLd, cat 3 | PLd, cat 3 |
| Mode selection                  | PLc, cat 1 | PLc, cat 1 |
| Pallet lift position monitoring | PLb, cat 1 | PLb, cat 1 |
| Shelf lift position monitoring  | PLb, cat 1 | PLb, cat 1 |
| Shelf detection                 | PLb, cat 1 | PLb, cat 1 |

# MiR600



**Rating:**  
IP52

**Load weight:**  
600 kg / 1320 lbs

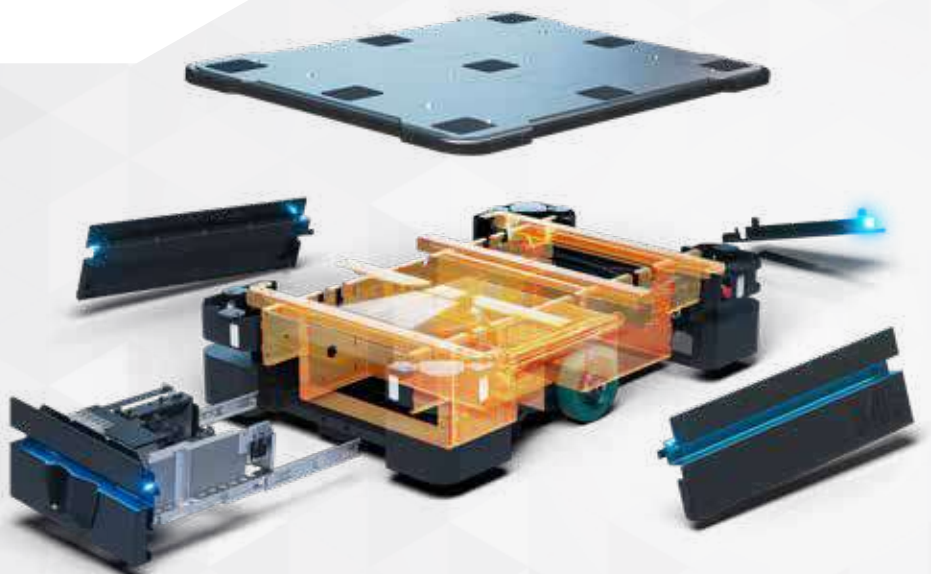
**Compliance:**  
ISO-3691-4\*

The **MiR600** and **MiR1350** are next generation AMRs that maximize the efficiency of your internal logistics.

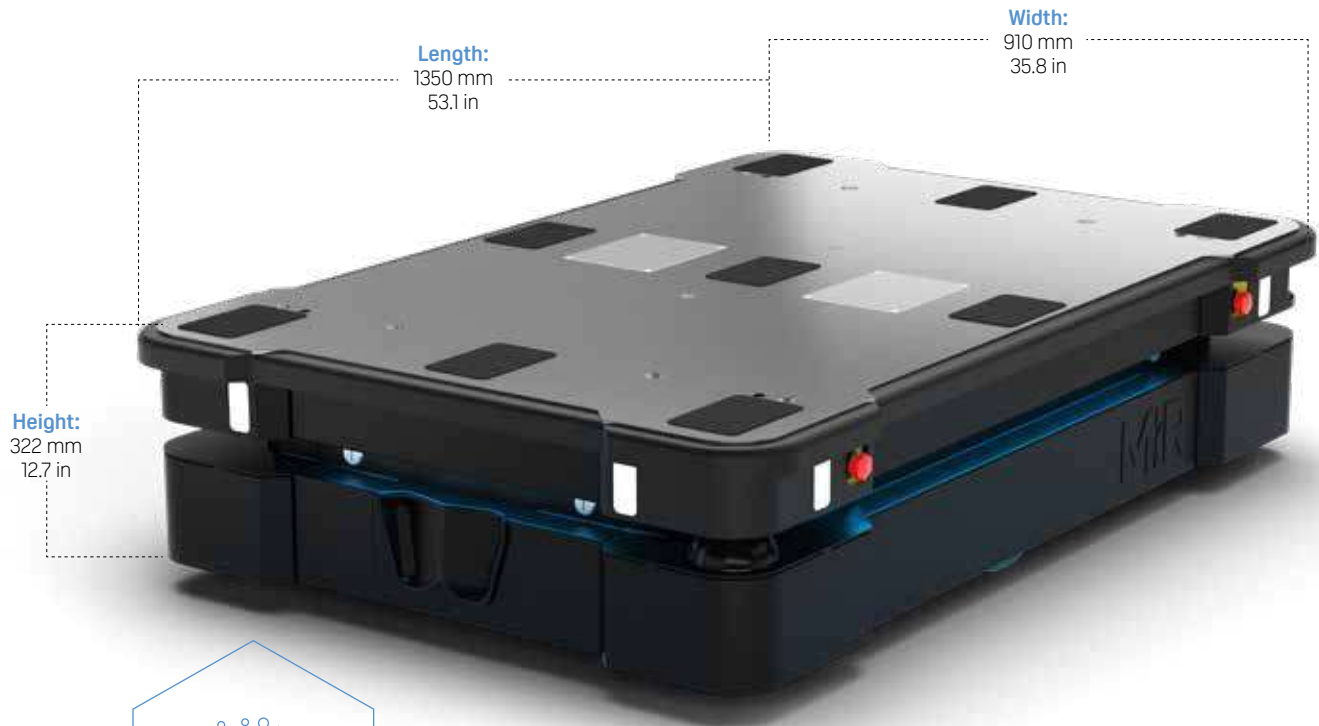
The AMRs can pick-up, transport and deliver pallets or other heavy loads automatically even in highly dynamic environments and constitute a safe and efficient alternative to traditional AGVs, pallet lifts, and forklifts.

## Industry grade AMRs

The MiR600 and MiR1350 are industry grade robots. The two AMRs have improved chassis and bogie to withstand the high payload. All components are industrial quality and protected, and easily accessible for service via pullout compartments, making the MiR600 and MiR1350 stronger and superior AMRs.



# MiR1350



**Rating:**  
IP52



**Load weight:**  
1350 kg / 2976 lbs



**Compliance:**  
ISO-3691-4\*

The **MiR600** and **MiR1350** are designed to comply with the highest available safety standards, making them superior to other AMRs. The two robots are the first IP52 rated AMRs in the market. This means that they have the ability to withstand dust particles and waterdrops and can be used in more challenging environments than other AMRs.

\*Minor exceptions to ISO 3691-4 are identified and handled via MiRs Safety & Compliance documentation.



## Novo Nordisk

Five **MiR500s** improve the warehouse logistics within the Chinese plant of Novo Nordisk by transporting packaging materials from the depot area to the warehouse. The distance is 100 metres per trip with 3 to 4 twists and turns and driving in crowded areas. MiR robots were the obvious solution to take on this task with their autonomous technology, and the robots save Novo Nordisk 35 manhours per week.

35

manhours saved  
per week



## Florisia

Five **MiR1000s** have improved productivity, safety and eliminated storage problems within the Florisia plant, a company that operates in the textile segment. Previously, the plant used manned forklifts to transport 90 tons of fabric to the production floor every day. MiR's automated solutions have allowed up to 200 tons to be transported per day which represents a 122% increase on what was previously achieved.

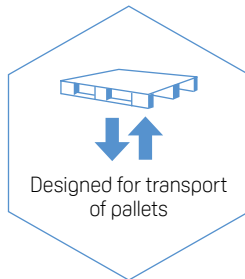
200

tons transported  
per day

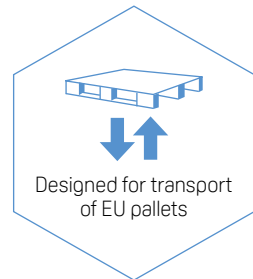


Optimize transportation of heavy loads and pallets with out-of-box solutions from MiR.

## MiR Pallet Lift



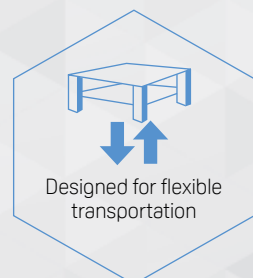
## MiR EU Pallet Lift



## MiR Shelf Lift

Optimize transportation of heavy loads without changing facility layout.

With **MiR Shelf Lift**, the MiR600, and MiR1350 can autonomously pick up a cart or shelf, transport and deliver it. This ensures a flexible transportation of heavy loads of different sizes, without the need of a pallet rack.





## MiR Fleet

Fleet management for optimized robot traffic

- Fast and central configuration of a fleet of robots.
- 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.
- Planning of the use of different types of MiR robots

## MiR Academy

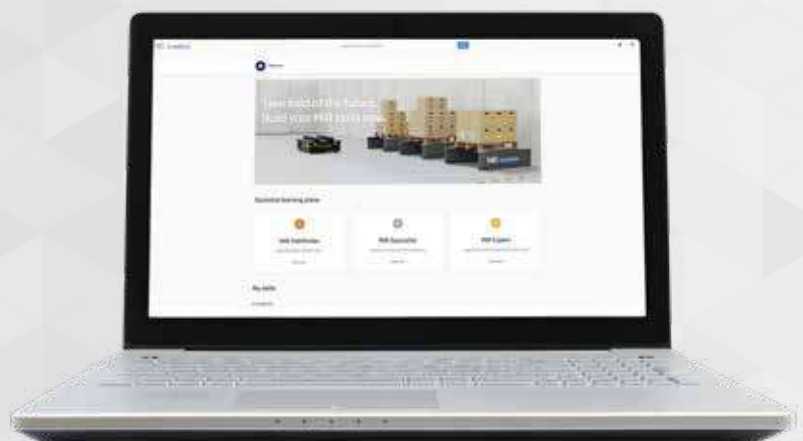
### Free online trainings for MiR robots

At MiR, we strive to help you to learn more about autonomous mobile robots (AMRs), how they work and how you can use them.

MiRAcademy makes the technology behind AMRs gettable with engaging, online training courses. Are you already working with the MiR robots, or do you just want to learn more? Then MiRAcademy is the place to start!

Learn how a MiR robot navigates, the differences between AMRs and traditional AGVs, what a mobile robot sees and much more.

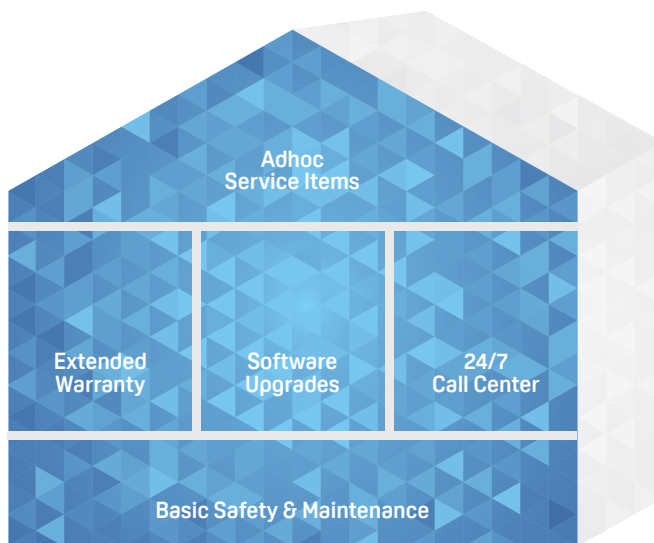
Visit  
<https://www.mobile-industrial-robots.com/mir-academy/>



## MiR | Service

Optimize uptime and increase productivity of your logistics operations with MiR Service's preventive and reactive services that you can customize for your specific set-up.

Future-proof logistics solutions must fit seamlessly into your operational processes, integrate into your automation systems, be scalable, and adapt flexibly to new workflows and environments. And production delays or downtime due to AMR maintenance or repair is not an option. With MiR Service we ensure that you are prepared for the unexpected with a service concept based on reliability, availability, responsiveness, flexibility, and expertise.



### Customize your MiR Service solution

The foundation of our service offering bases on prevention rather than repair. You get maintenance and a basic safety inspection to ensure safety, that you comply with legislation and you get access to our help desk during the warranty period.

We offer extended warranty, access to software upgrades, access to 24/7 call center as standard service offerings, while you also have an opportunity of having ad hoc service items as spare part packages, maintenance kits, training, and more according to your needs.

## MiR | Finance

Companies in all types of industries, large and small, are grappling with ways to become more efficient, while at the same time keeping their costs as low as possible.

Automation is a way to optimize productivity and provide a competitive edge. Concerns surrounding ROI speed should not slow automation down. The cost-efficient mobile robots from MiR offer a fast ROI, with a payback period in often less than a year. If you want to see immediate return on investment and have low or no upfront costs for your AMRs, you can lease your MiR robots with MiR Finance.

### Benefits

- No cash-out and low monthly costs
- The entire solution, including robot, top module and installation service can be financed
- No CAPEX needed
- Easier internal approval process for OPEX
- Match costs with income stream



## 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 serviced pr. day



## Cabka USA

A **MiR500** equipped with a MiR500 Lift is a key component in a fully automated production line at pallet manufacturer, Cabka in Missouri. The mobile robot for heavy loads and pallets is loaded with finished pallets by a six-axis robot and transports them from production to a separate staging area as soon as the job is complete, keeping the production floor clear.

The MiR500 takes over the internal transportation task from a traditional forklift and helps Cabka minimize dependency on temporary workers while also improving product quality and worker safety.



Fast ROI



## Stera Technologies

A **MiR500** has automated the transportation of components from the warehouse to the production at Stera Technologies in Turku, Finland. The MiR500 transports 10 different types of pallets and ensures on time deliveries, so the company avoids downtime in the production.

10

Different  
pallet sizes



30

Deliveries  
per day



## ICM

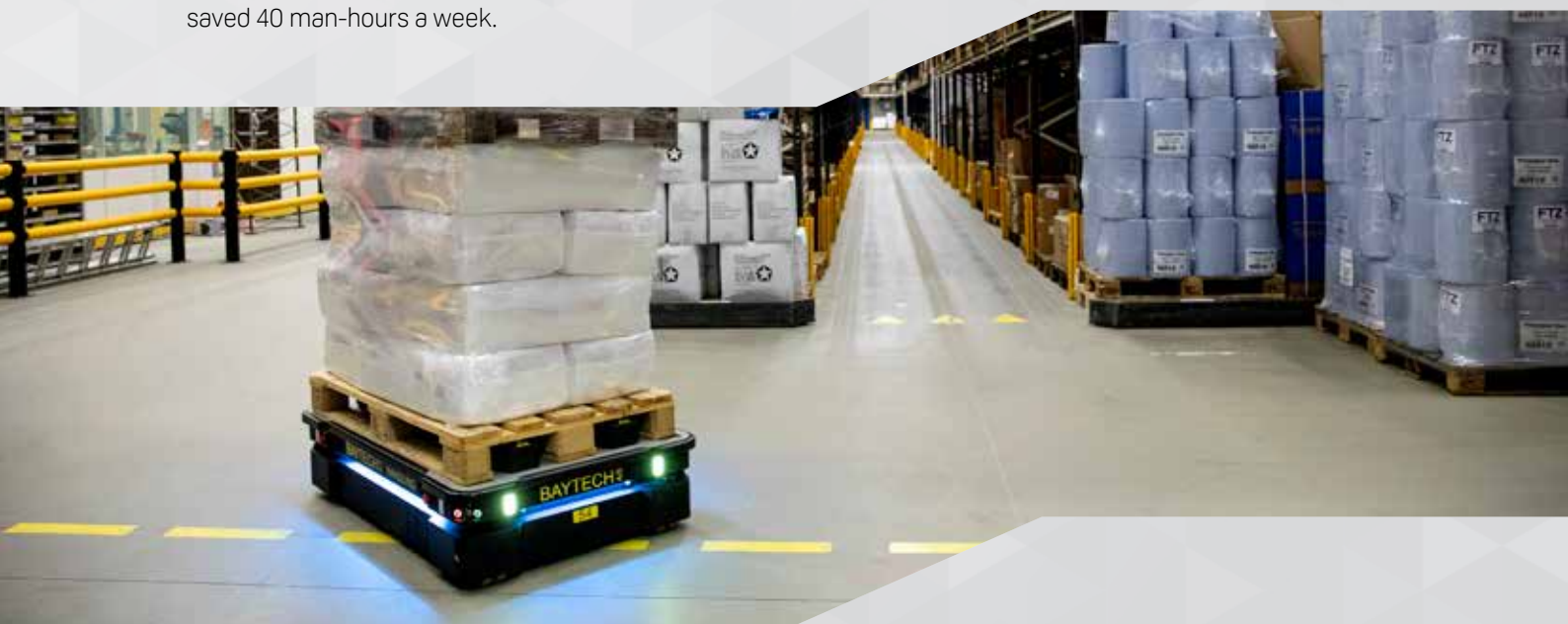
A fleet of 3 **MiR1000** robots collect pallets from their inbound area and transport them to the aisles inside the high-rise warehouse, in a steady stream. The robots drop off the pallets next to the narrow aisles, formed by racks that reach 12m high, where a narrow aisle forklift takes over.

The internal traffic consists of forklifts and robots in close collaboration. This automated pallet transport setup has saved 40 man-hours a week.



40

Man hour saved  
pr week



## MiR100

### GENERAL INFORMATION

|                |                                                                                           |
|----------------|-------------------------------------------------------------------------------------------|
| Designated use | Autonomous mobile robot (AMR) for internal transportation of smaller transportation tasks |
| Colour         | ATHLONE White ABS 542D (RAL9003)                                                          |

### DIMENSIONS

|                  |                  |
|------------------|------------------|
| Length           | 890 mm / 35 in   |
| Width            | 580 mm / 22.8 in |
| Height           | 352 mm / 13.9 in |
| Ground Clearance | 50 mm / 2 in     |
| Weight           | 77 kg / 170 lbs  |

### PAYLOAD

|                 |                  |
|-----------------|------------------|
| Maximum payload | 100 kg / 220 lbs |
|-----------------|------------------|

### SPEED AND PERFORMANCE

|                            |                       |
|----------------------------|-----------------------|
| Operational corridor width | 1,00m (default setup) |
| Maximum incline/decline    | +/- 5 pct at 0.5 m/s  |
| Maximum speed              | 1,5 m/s               |
| Traversable gap tolerance  | Up to 20mm            |

### BATTERY AND CHARGER

|                                    |                                           |
|------------------------------------|-------------------------------------------|
| Battery type                       | Li-Ion, 24V, 33,6 or 56 Ah                |
| Charging ratio                     | Up to 1:6                                 |
| Active operation time with no load | Up to 9 hrs (standard), 13 hrs (extended) |
| Number of full charging cycles     | Min. 1000 cycles                          |

### ENVIRONMENT

|                                      |                          |
|--------------------------------------|--------------------------|
| Environment                          | For indoor use only      |
| Ambient temperature range, operation | +5°C to +40°C            |
| Humidity                             | 10-85 pct non-condensing |

### COMPLIANCES AND APPROVALS

|                                          |                                  |
|------------------------------------------|----------------------------------|
| Safety standards for industrial vehicles | CE, EN1525, ANSI B56.5, RIA15.08 |
| Cleanroom                                | Class 4 (ISO 14644-1)            |
| EMC                                      | EN61000-6-2, EN61000-6-4         |
| IP Class                                 | IP20                             |

### COMMUNICATION

|      |                                          |
|------|------------------------------------------|
| I/Os | USB and Ethernet                         |
| WiFi | 2.4 GHz 802.11 g/n, 5 GHz 802.11 a/n/ac. |

### SENSORS AND CAMERAS

|                          |                          |
|--------------------------|--------------------------|
| 3D cameras               | 2 x Intel RealSense D435 |
| 2 x Intel RealSense D435 | 2 x SICK S300            |

### LIGHTS AND AUDIO

|                          |                             |
|--------------------------|-----------------------------|
| Audio                    | Buzzer, speaker             |
| Signal and status lights | Indicator lights on 4 sides |



**MiR250****MiR250 Dynamic****GENERAL INFORMATION**

|                |                                                                                            |                                                                                            |
|----------------|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|
| Designated use | Autonomous mobile robot (AMR) for internal transportation of small- and medium-sized loads | Autonomous mobile robot (AMR) for internal transportation of small- and medium-sized loads |
| Color          | RAL7011, Iron Grey                                                                         | RAL7011, Iron Grey                                                                         |

**DIMENSIONS**

|                  |                                                        |                                                        |
|------------------|--------------------------------------------------------|--------------------------------------------------------|
| L x W x H        | 800 mm / 31.5 in x 580 mm / 22.8 in x 300 mm / 11.8 in | 800 mm / 31.5 in x 580 mm / 22.8 in x 300 mm / 11.8 in |
| Ground clearance | 28 mm / 1.1 in                                         | 28 mm / 1.1 in                                         |
| Weight           | 97 kg / 214 lbs                                        | 97 kg / 214 lbs                                        |

**PAYLOAD**

|                 |                  |                                       |
|-----------------|------------------|---------------------------------------|
| Maximum payload | 250 kg / 551 lbs | 250 kg / 551 lbs (maximum 5% incline) |
|-----------------|------------------|---------------------------------------|

**PERFORMANCE**

|                                |                                                              |                                                              |
|--------------------------------|--------------------------------------------------------------|--------------------------------------------------------------|
| Operational corridor width     | 1,45m (default setup), 0,85m (minimized setup)               | 1,45m (default setup), 0,85m (minimized setup)               |
| Operational doorway width      | 1,30m (default setup), 0,75m (minimized setup)               | 1,30m (default setup), 0,75m (minimized setup)               |
| Accuracy, docking to VL-marker | +/- 3 mm   0.12 in on X-axis, +/- 3 mm   0.12 in on Y-axis   | +/- 3 mm   0.12 in on X-axis, +/- 3 mm   0.12 in on Y-axis   |
| Accuracy, moving to position   | +/- 20 mm   0.79 in on X-axis, +/- 20 mm   0.79 in on Y-axis | +/- 20 mm   0.79 in on X-axis, +/- 20 mm   0.79 in on Y-axis |
| Maximum incline/decline        | +/- 5 pct at 0.5 m/s                                         | +/- 5 pct at 0.5 m/s                                         |
| Traversable gap tolerance      | Up to 20mm                                                   | Up to 20mm                                                   |
| Maximum speed                  | 2 m/s                                                        | 2 m/s                                                        |

**BATTERY AND CHARGER**

|                                         |                                               |                                               |
|-----------------------------------------|-----------------------------------------------|-----------------------------------------------|
| Battery type                            | Li-Ion, 48V, 34,2 Ah                          | Li-Ion, 48V, 34,2 Ah                          |
| Charging ratio                          | Up to 1:16 (10 mins charging = 2h40m runtime) | Up to 1:16 (10 mins charging = 2h40m runtime) |
| Active operation time with maximum load | Up to 13 hrs                                  | Up to 13 hrs                                  |
| Active operation time with no load      | Up to 17,5 hrs                                | Up to 17,5 hrs                                |

**ENVIRONMENT**

|                                |                          |                          |
|--------------------------------|--------------------------|--------------------------|
| Environment                    | For indoor use only      | For indoor use only      |
| Ambient temperature, operation | +5°C to +40°C            | +5°C to 40°C             |
| Humidity                       | 10-85 pct non-condensing | 10-85 pct non-condensing |

**COMPLIANCE AND APPROVALS**

|                                          |                                                                                                    |                                                                                                    |
|------------------------------------------|----------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|
| Safety standards for industrial vehicles | CE, EN1525, ANSI B56.5, ANSI R15.08                                                                | EN1525, ANSI B56.5, ANSI R15.08                                                                    |
| Cleanroom                                | Optional Class 4                                                                                   | Optional Class 4                                                                                   |
| EMC                                      | EN61000-6-2, EN61000-6-4, (EN12895)                                                                | EN61000-6-2, EN61000-6-4, (EN12895)                                                                |
| ESD                                      | Optional                                                                                           | Optional                                                                                           |
| IP Class                                 | IP21                                                                                               | IP21                                                                                               |
| Safety functions                         | 8 safety functions according to ISO 13849-1.<br>The robot stops if a safety function is triggered. | 8 safety functions according to ISO 13849-1.<br>The robot stops if a safety function is triggered. |

**COMMUNICATION**

|      |                                                                                         |                                                                                         |
|------|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| WiFi | 2.4 GHz 802.11 g/n, 5 GHz 802.11 a/n/ac.                                                | 2.4 GHz 802.11 g/n, 5 GHz 802.11 a/n/ac.                                                |
| I/Os | 4 digital inputs, 4 digital outputs (GPIO), 1 Ethernet port, 1 Auxiliary emergency stop | 4 digital inputs, 4 digital outputs (GPIO), 1 Ethernet port, 1 Auxiliary emergency stop |

**SENSORS AND CAMERAS**

|                            |                                                                                                                                                                                                            |                                                                                                                                                                                                            |
|----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 3D cameras                 | 2 pcs.: Intel RealSense D435. FoV:<br>Detects objects 1800 mm high at a distance of 1200 mm in front of the robot. 114 degrees total horizontal view.<br>Ground view, minimum distance from robot: 250 mm. | 2 pcs.: Intel RealSense D435. FoV:<br>Detects objects 1800 mm high at a distance of 1200 mm in front of the robot. 114 degrees total horizontal view.<br>Ground view, minimum distance from robot: 250 mm. |
| SICK safety laser scanners | 2 pcs.: SICK Nanoscan3. FoV: 360 degrees                                                                                                                                                                   | 2 pcs.: SICK Nanoscan3. FoV: 360 degrees                                                                                                                                                                   |
| Proximity sensors          | 8 pcs                                                                                                                                                                                                      | 8 pcs                                                                                                                                                                                                      |

**LIGHTS AND AUDIO**

|                          |                                                                  |                                                                  |
|--------------------------|------------------------------------------------------------------|------------------------------------------------------------------|
| Audio                    | Speaker                                                          | Speaker                                                          |
| Signal and status lights | Indicator lights on 4 sides, 8 signal lights (2 at each corner). | Indicator lights on 4 sides, 8 signal lights (2 at each corner). |

## MiR250 Hook

### GENERAL INFORMATION

|                                      |                                                                                            |
|--------------------------------------|--------------------------------------------------------------------------------------------|
| Collaborative mobile robot with hook | Autonomous mobile robot (AMR) for internal transportation of small- and medium-sized loads |
| Color                                | RAL 7011 / Iron Grey                                                                       |

### DIMENSIONS

|                  |                                                                            |
|------------------|----------------------------------------------------------------------------|
| L x W x H        | 1130-1220 mm / 44,5-48,0 in x 580 mm   22,8 in x 645-895 mm / 25,4-35,2 in |
| Weight           | 202 kg   445 lbs                                                           |
| Ground clearance | 28 mm   1.1 in                                                             |

### PAYLOAD

|                    |                               |
|--------------------|-------------------------------|
| Maximum tow weight | 500 kg   1102 lbs recommended |
|--------------------|-------------------------------|

### PERFORMANCE

|                            |                                              |
|----------------------------|----------------------------------------------|
| Operational corridor width | 2,25m (default setup w/ cart=70x115 cm)      |
| Operational doorway width  | 1,70m (default setup w/ cart=70x115 cm)      |
| Maximum incline/decline    | +/- 5 pct at decreased speed, payload=300 kg |
| Traversable gap tolerance  | Up to 20mm                                   |
| Maximum speed              | 2 m/s                                        |

### BATTERY AND CHARGER

|                                         |                                               |
|-----------------------------------------|-----------------------------------------------|
| Battery type                            | Li-Ion, 48V, 34,2 Ah                          |
| Charging ratio                          | Up to 1:16 (10 mins charging = 2h40m runtime) |
| Active operation time with maximum load | Up to 10 hrs                                  |
| Active operation time with no load      | Up to 14 hrs                                  |
| Number of full charging cycles          | Min. 3000 cycles                              |

### ENVIRONMENT

|                                |                          |
|--------------------------------|--------------------------|
| Environment                    | For indoor use only      |
| Ambient temperature, operation | +5°C to +40°C            |
| Humidity                       | 10-85 pct non-condensing |

### COMPLIANCE AND APPROVALS

|                                          |                                                                                                 |
|------------------------------------------|-------------------------------------------------------------------------------------------------|
| Safety standards for industrial vehicles | CE, EN1525, ANSI B56.5, ANSI R15.08                                                             |
| IP Class                                 | P21                                                                                             |
| Safety functions                         | 8 safety functions according to ISO 13849-1. The robot stops if a safety function is triggered. |

### COMMUNICATION

|      |                                                                                         |
|------|-----------------------------------------------------------------------------------------|
| WiFi | 2.4 GHz 802.11 g/n, 5 GHz 802.11 a/n/ac.                                                |
| I/Os | 4 digital inputs, 4 digital outputs (GPIO), 1 Ethernet port, 1 Auxiliary emergency stop |

### SENSORS AND CAMERAS

|                            |                                                                                         |
|----------------------------|-----------------------------------------------------------------------------------------|
| 3D camera                  | Hook: 1 Intel RealSense D435 looking backwards for detection of carts (see also MiR250) |
| SICK safety laser scanners | 2 pcs.: SICK Nanoscan3. FoV: 360 degrees.                                               |
| Proximity sensors          | 8 pcs (on robot)                                                                        |

### LIGHTS AND AUDIO

|                          |                                                                  |
|--------------------------|------------------------------------------------------------------|
| Audio                    | Speaker                                                          |
| Signal and status lights | Indicator lights on 4 sides, 8 signal lights (2 at each corner). |



## MiR Shelf Carrier 250

### DESIGNATED USE

|            |                                                                                                       |
|------------|-------------------------------------------------------------------------------------------------------|
| Top module | The MiR Shelf Carrier is an anchoring device, that makes it possible to lock to shelves and move them |
|------------|-------------------------------------------------------------------------------------------------------|

### DIMENSIONS

|                     |                                               |
|---------------------|-----------------------------------------------|
| Length              | 778 mm / 30.6 in                              |
| Width               | 560 mm / 22.8 in                              |
| Height              | 77 mm / 3 in                                  |
| Weight (with robot) | 146 kg / 321 lbs (without battery or payload) |
| Load surface        | 800 x 580 mm / 31.5 x 22.8 in                 |

### COLOR

|           |                      |
|-----------|----------------------|
| RAL color | RAL 9005 / Jet Black |
|-----------|----------------------|

### CAPACITY

|                                              |                                                                         |
|----------------------------------------------|-------------------------------------------------------------------------|
| Carrier capacity                             | Up to 300 kg / 661 lbs including the weight of the cart at <1 % incline |
| Number of lift cycles (with maximum payload) | Min. 150,000 cycles                                                     |

**MiR600****MiR1350****GENERAL INFORMATION**

|                |                                                                                       |                                                                                       |
|----------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Designated use | Autonomous mobile robots (AMR) for internal transportation of heavy loads and pallets | Autonomous mobile robots (AMR) for internal transportation of heavy loads and pallets |
| Color          | RAL7011, Iron Grey                                                                    | RAL9005, Jet Black                                                                    |

**DIMENSIONS**

|                  |                                                         |                                                         |
|------------------|---------------------------------------------------------|---------------------------------------------------------|
| L x W x H        | 1350 mm / 53.2 in x 910 mm / 35.8 in x 322 mm / 12.7 in | 1350 mm / 53.2 in x 910 mm / 35.8 in x 322 mm / 12.7 in |
| Ground clearance | 27 mm / 1.0 in                                          | 27 mm / 1.0 in                                          |
| Weight           | 243 kg / 536 lbs                                        | 247 kg / 545 lbs                                        |

**PAYLOAD**

|                                                         |                   |                    |
|---------------------------------------------------------|-------------------|--------------------|
| Maximum payload                                         | 600 kg / 1322 lbs | 1350 kg / 2976 lbs |
| Total lifting capacity with a MiR EU-/US-lift installed | 500 kg / 1102 lbs | 1250 kg   2755 lbs |
| Total lifting capacity with a MiR Shelf lift installed  | 500 kg / 1102 lbs | 1000 kg   2205 lbs |

**PERFORMANCE**

|                                |                                                                                    |                                                                                    |
|--------------------------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| Operational corridor width     | 2.15m (default setup), 1.20m (minimized setup)                                     | 2.15m (default setup), 1.20m (minimized setup)                                     |
| Operational doorway width      | 2.05m (default setup), 1.20m (minimized setup)                                     | 2.05m (default setup), 1.20m (minimized setup)                                     |
| Accuracy, docking to VL-marker | +/- 2 mm   0.08 in on X-axis, +/- 3 mm   0.12 in on Y-axis, +/- 0.25 degrees yaw   | +/- 2 mm   0.08 in on X-axis, +/- 3 mm   0.12 in on Y-axis, +/- 0.25 degrees yaw   |
| Accuracy, moving to position   | +/- 100 mm   3.94 in on X-axis, +/- 83 mm   3.27 in on Y-axis, +/- 3.4 degrees yaw | +/- 100 mm   3.94 in on X-axis, +/- 83 mm   3.27 in on Y-axis, +/- 3.4 degrees yaw |
| Maximum incline/decline        | +/- 3 pct at decreased speed                                                       | +/- 1 pct at full speed                                                            |
| Traversable gap tolerance      | Less than 30mm                                                                     | Less than 30mm                                                                     |
| Maximum speed                  | 2 m/s                                                                              | 1.2 m/s                                                                            |

**BATTERY AND CHARGER**

|                                         |                                               |                                               |
|-----------------------------------------|-----------------------------------------------|-----------------------------------------------|
| Battery type                            | Li-Ion, 48V, 34.2 Ah                          | Li-Ion, 48V, 34.2 Ah                          |
| Charging ratio                          | Up to 1:12 (10 mins charging = 2 hrs runtime) | Up to 1:12 (10 mins charging = 2 hrs runtime) |
| Active operation time with maximum load | Up to 8.5 hrs                                 | Up to 7 hrs                                   |
| Active operation time with no load      | Up to 11 hrs                                  | Up to 10 hrs                                  |
| Number of full charging cycles          | Min. 3000 cycles                              | Min. 3000 cycles                              |

**ENVIRONMENT**

|                                |                          |                          |
|--------------------------------|--------------------------|--------------------------|
| Environment                    | For indoor use only      | For indoor use only      |
| Ambient temperature, operation | +5°C to +40°C            | +5°C to +40°C            |
| Humidity                       | 10-85 pct non-condensing | 10-85 pct non-condensing |

**COMPLIANCE AND APPROVALS**

|                                          |                                                                                                  |                                                                                                  |
|------------------------------------------|--------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|
| Safety standards for industrial vehicles | CE, EN1525, ANSI B56.5, ISO3691-4, ANSI R15.08, ISO13849-1                                       | CE, EN1525, ANSI B56.5, ISO3691-4, ANSI R15.08, ISO13849-1                                       |
| EMC                                      | EN61000-6-2, EN61000-6-4, (EN12895)                                                              | EN61000-6-2, EN61000-6-4, (EN12895)                                                              |
| IP Class                                 | IP52                                                                                             | IP52                                                                                             |
| Safety functions                         | 12 safety functions according to ISO 13849-1. The robot stops if a safety function is triggered. | 12 safety functions according to ISO 13849-1. The robot stops if a safety function is triggered. |

**COMMUNICATION**

|      |                                                                           |                                                                           |
|------|---------------------------------------------------------------------------|---------------------------------------------------------------------------|
| WiFi | 2.4 GHz 802.11 g/n, 5 GHz 802.11 a/n/ac.                                  | 2.4 GHz 802.11 g/n, 5 GHz 802.11 a/n/ac.                                  |
| I/Os | 4 digital inputs, 4 digital outputs, 1 Ethernet port with Modbus protocol | 4 digital inputs, 4 digital outputs, 1 Ethernet port with Modbus protocol |

**SENSORS AND CAMERAS**

|                            |                                                                                                                                                                                                      |                                                                                                                                                                                                      |
|----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 3D camera                  | 2 pcs.: Intel RealSense D435. FoV: Detects objects 1800 mm high at a distance of 1200 mm in front of the robot. 114 degrees total horizontal view. Ground view, minimum distance from robot: 250 mm. | 2 pcs.: Intel RealSense D435. FoV: Detects objects 1800 mm high at a distance of 1200 mm in front of the robot. 114 degrees total horizontal view. Ground view, minimum distance from robot: 250 mm. |
| SICK safety laser scanners | 2 pcs.: SICK Microscan3. FoV: 360 degrees.                                                                                                                                                           | 2 pcs.: SICK Microscan3. FoV: 360 degrees.                                                                                                                                                           |
| Proximity sensors          | 8 pcs                                                                                                                                                                                                | 8 pcs                                                                                                                                                                                                |

**LIGHTS AND AUDIO**

|                          |                                                                  |                                                                  |
|--------------------------|------------------------------------------------------------------|------------------------------------------------------------------|
| Audio                    | Speaker                                                          | Speaker                                                          |
| Signal and status lights | Indicator lights on 4 sides, 8 signal lights (2 at each corner). | Indicator lights on 4 sides, 8 signal lights (2 at each corner). |

## MiR Pallet Lift

## MiR EU Pallet Lift

## MiR Shelf Lift

### DESIGNATED USE

|                              |                                                                        |                                                    |                                                                                   |
|------------------------------|------------------------------------------------------------------------|----------------------------------------------------|-----------------------------------------------------------------------------------|
| Lifts for MiR600 and MiR1350 | For autonomous pickup and unloading of pallets of different dimensions | For autonomous pickup and unloading of EUR-pallets | For autonomous pick up and delivery of carts, shelves and other lift applications |
|------------------------------|------------------------------------------------------------------------|----------------------------------------------------|-----------------------------------------------------------------------------------|

### DIMENSIONS

|                           |                                                                   |                   |                                                                   |
|---------------------------|-------------------------------------------------------------------|-------------------|-------------------------------------------------------------------|
| Length                    | Frame Length: 1304 mm / 51.3 in<br>Lift Length: 1174 mm / 46.2 in | 1200 mm / 47.2 in | Frame Length: 1304 mm / 51.3 in<br>Lift Length: 1174 mm / 46.2 in |
| Width                     | Frame Width: 910 mm / 35.8 in<br>Lift Width: 710 mm / 28 in       | 162 mm / 6.4 in   | Frame Width: 910 mm / 35.8 in<br>Lift Width: 710 mm / 28 in       |
| Total height when lowered | 94 mm / 3.7 in                                                    | 87 mm / 3.4 in    | 94 mm / 3.7 in                                                    |
| Total height when lifted  | 156 mm / 6.1 in                                                   | 150 mm / 5.9 in   | 156 mm / 6.1 in                                                   |

### COLOR

|                             |                      |                      |                      |
|-----------------------------|----------------------|----------------------|----------------------|
| RAL color for MiR600 lifts  | RAL 7011 / Iron Grey | RAL 9005 / Jet Black | RAL 9005 / Jet Black |
| RAL color for MiR1350 lifts | RAL 9005 / Jet Black | RAL 9005 / Jet Black | RAL 9005 / Jet Black |

### PAYLOAD

|                          |                    |                    |                    |
|--------------------------|--------------------|--------------------|--------------------|
| Lift payload for MiR600  | 500 kg / 1100 lbs  | 500 kg / 1100 lbs  | 500 kg / 1100 lbs  |
| Lift payload for MiR1350 | 1250 kg / 2755 lbs | 1250 kg / 2755 lbs | 1250 kg / 2755 lbs |

### PERFORMANCE

|               |                                                                                                    |                                                                                                    |                                                                                                         |
|---------------|----------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|
| Lift height   | 60 mm / 2.4 in                                                                                     | 60 mm / 2.4 in                                                                                     | 60 mm / 2.4 in                                                                                          |
| Lifting cycle | Minimum 50,000 cycles for lifts for MiR500/1000<br>Minimum 90,000 cycles for lifts for MiR600/1350 | Minimum 60,000 cycles for lifts for MiR500/1000<br>Minimum 90,000 cycles for lifts for MiR600/1350 | Minimum 50,000 cycles for shelf lift for MiR500/1000<br>Minimum 90,000 cycles for shelf for MiR600/1350 |

### PALLETS

|                |                                                                                  |                                   |  |
|----------------|----------------------------------------------------------------------------------|-----------------------------------|--|
| Length x width | 1016 mm x 1219 mm / 40 in x 48 in<br>Can be used for different pallet dimensions | 1200 mm x 800 mm / 47.2 x 31.5 in |  |
|----------------|----------------------------------------------------------------------------------|-----------------------------------|--|



## MiR Pallet Rack



## MiR EU Pallet Rack

### DESIGNATED USE

|                                  |                                                          |                                                    |
|----------------------------------|----------------------------------------------------------|----------------------------------------------------|
| Pallet Rack for MiR600 & MiR1350 | For autonomous pickup and unloading of 40" x 48" pallets | For autonomous pickup and unloading of EUR-pallets |
|----------------------------------|----------------------------------------------------------|----------------------------------------------------|

### DIMENSIONS

|        |                   |                   |
|--------|-------------------|-------------------|
| Length | 1300 mm / 51.2 in | 1300 mm / 51.2 in |
| Width  | 1182 mm / 46.5 in | 1182 mm / 46.5 in |
| Height | 442 mm / 17.4 in  | 352 mm / 13.9 in  |

### COLOR

|           |                      |                      |
|-----------|----------------------|----------------------|
| RAL color | RAL 7011 / Iron Grey | RAL 7011 / Iron Grey |
|-----------|----------------------|----------------------|

### PAYLOAD

|                     |                    |                    |
|---------------------|--------------------|--------------------|
| Pallet Rack payload | 1350 kg / 2976 lbs | 1350 kg / 2976 lbs |
|---------------------|--------------------|--------------------|



### MiR Charge 24V



### MiR Charge 48V

#### DESIGNATED USE

|                                  |                                                      |                                                      |
|----------------------------------|------------------------------------------------------|------------------------------------------------------|
| Automatic charger for MiR robots | The robot moves and connects to the charging station | The robot moves and connects to the charging station |
|----------------------------------|------------------------------------------------------|------------------------------------------------------|

#### DIMENSIONS

|        |                  |                                                                          |
|--------|------------------|--------------------------------------------------------------------------|
| Width  | 620 mm / 24.4 in | 622 mm / 24.5 in                                                         |
| Height | 350 mm / 13.8 in | 287 mm / 11.3 in                                                         |
| Depth  | 120 mm / 4.7 in  | 487 mm / 19.2 in (in operational mode)<br>237 mm / 9.33 in (when folded) |
| Weight | 10.5 kg / 22 lbs | 20 kg / 44.1 lbs                                                         |

#### RATED OPERATING CONDITIONS

|                           |                                                          |                                                        |
|---------------------------|----------------------------------------------------------|--------------------------------------------------------|
| Ambient temperature range | 5°C to 40°C / 41-104°F                                   | 5°C to 40°C / 41-104°F                                 |
| Humidity                  | 10-95% non-condensing                                    | 10-95% non-condensing                                  |
| Power                     | Output: 24 V, max. 25 A<br>Input: 100/240 V ac, 50-60 Hz | Output: 48 V, Max 40 A<br>Input: 100 V-240 V, 50-60 Hz |

#### COMPLIANCE

|          |               |                                                                      |
|----------|---------------|----------------------------------------------------------------------|
| Standard | EN-60335-2-29 | EN60335-1-12, EN60335-2-29:2004, EN61000-6-1:2007, EN61000-6-4:2007, |
|----------|---------------|----------------------------------------------------------------------|

## MiR Fleet

#### 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 SOLUTIONS AVAILABLE

|                           |                                                    |
|---------------------------|----------------------------------------------------|
| MiR Fleet PC              | Comes as a physical PC box                         |
| MiR Fleet Server Solution | For installation in existing server infrastructure |

#### MIR FLEET PC

|                           |                                                      |
|---------------------------|------------------------------------------------------|
| Model                     | NUC7i3DNB                                            |
| PC                        | Intel® Maple Canyon NUC                              |
| CPU                       | Intel® Core™ i3-7100U Processor (3M Cache, 2.40 GHz) |
| RAM                       | 8GB DDR4-2400                                        |
| SSD                       | 128GB 2.5"                                           |
| Operating system          | Linux Ubuntu 16.04                                   |
| Network capabilities      | 1 Gbit Ethernet, no wireless option                  |
| Required connections      | 110V or 230V power socket and Ethernet network cable |
| Installation requirements | Must run on the same physical network as the robots  |

#### MIR FLEET SERVER

|                             |                                                                                            |
|-----------------------------|--------------------------------------------------------------------------------------------|
| Installation file size      | 3GB                                                                                        |
| MiR Fleet update file size  | ~300 MB                                                                                    |
| Server requirements         | Dual core processor with min. 2.1 GHz clock                                                |
| RAM                         | Min. 8 GB                                                                                  |
| HDD                         | 80 GB                                                                                      |
| Supported operating systems | Ubuntu 18.04 LTS, Ubuntu Server 18.04 LTS, Debian 9, CentOS 7, Redhat Enterprise Linux 7.4 |

# Born Global

Mobile Industrial Robots is rapidly expanding. We have established offices in Denmark (HQ), United States, Spain, Germany, China, Singapore, Korea and Japan and with **+200 distributors** in more than **60 countries** and still more to come, we are able to offer our robots to customers worldwide.



#### HEADQUARTER

##### **Mobile Industrial Robots AS**

Emil Neckelmanns Vej 15F  
5220 Odense SØ  
Denmark

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

#### SALES OFFICE

##### **MIR Robots (Shanghai) Co., Ltd.**

Rm. 203, No. 618 Shenchang Rd.;  
Shanghai 201100, China

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

#### SALES OFFICE

##### **MIR Robots S.L.**

Calle de Agricultura 106  
08019 Barcelona  
Spain

+34 649 551 252  
south-eu@mir-robots.com

#### SALES OFFICE

##### **Mobile Industrial Robots Inc. - East**

90-9B Colin Drive  
Holbrook, NY 11741  
USA

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

#### SALES OFFICE

##### **Mobile Industrial Robots Pte. Ltd.**

51 Science Park Road, #02-16 The Aries,  
Singapore Science Park 2  
Singapore 117586  
Singapore

+65 6904 0521  
apac@mir-robots.com

#### SALES OFFICE

##### **Mobile Industrial Robots Japan**

MM Park Building 7F  
3-6-3, Minato Mirai, Nishi-ku  
Yokohama 220-0012  
Japan

+65 6904 0521  
apac@mir-robots.com

#### SALES OFFICE

##### **Mobile Industrial Robots Inc - West**

10509 Vista Sorrento Parkway, Suite 116  
San Diego, CA 92111  
USA

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

#### SALES OFFICE

##### **Mobile Industrial Robots GmbH**

Frankfurter Str. 27  
65760 Eschborn - Frankfurt am Main  
Germany

+49 175 733 4022  
dach@mir-robots.com

#### SALES OFFICE

##### **Mobile Industrial Robots Korea**

10F, HiBrand BD.16, Maeheon-ro,  
Seocho-gu,  
Seoul, 06771,  
Korea

+82 2 2155 2888  
apac@mir-robots.com

Follow us:



mir-robots.com