Quick Start (en)

Date: 07/2020

Revision: v.1.1

MiR 250

Shelf Carrier

Table of contents

1. About this document

This guide explains how to set up and start operating your MiR250 Shelf Carrier. You will also find information regarding safety precautions that must be considered when operating MiR250 Shelf Carrier.

NOTICE

Save this manual. It contains important safety and operating instructions.

1.1 Where to find more information

At the MiR website, you can find the following resources under the **Manuals** tab on each product page:

- **Quick starts** describe how you start operating MiR robots quickly. This document is in print in the box with the robots. Quick starts are available in multiple languages.
- **User guides** provide all the information you need to operate and maintain MiR robots. User guides are available in multiple languages.
- **Risk Analysis Guides** include guidelines on how to create a risk assessment of your robot solution.
- **Commissioning guides** describe how to commission your robot safely and prepare it to operate in the workplace.
- **Operating guides** describe how to set up and use top modules and accessories, such as charging stations, hooks, shelf lifts, and pallet lifts.
- **Getting started guides** describe how to set up products that are mainly software-based, such as MiR Fleet.
- **Reference guides** contain descriptions of all the elements of the robot interface and MiR Fleet interface. Reference guides are available in multiple languages.
- **REST API references** for MiR robots, MiR hooks, and MiR Fleet.
- The **MiR network and WiFi guide** specifies the performance requirements of your network and how you must configure it for MiR robots and MiR Fleet to operate successfully.

1.2 Version history

This table shows current and previous versions of this document.

Revision	Release date	Description	HW
1.0	2020-06-11	First edition	1.0
1.1	2020-07-01	Minor corrections throughout manual.	1.0

2. Safety

Read the information in this section before powering up and operating MiR250 Shelf Carrier.

Pay particular attention to the safety instructions and warnings.

NOTICE

Mobile Industrial Robots disclaims any and all liability if MiR250 Shelf Carrier or its accessories are damaged, changed, or modified in any way. Mobile Industrial Robots cannot be held responsible for any damages caused to MiR250 Shelf Carrier, accessories, or any other equipment due to programming errors or malfunctioning of MiR250 Shelf Carrier.

2.1 Safety message types

This document uses the following safety message types.

WARNING

Indicates a potentially hazardous situation that could result in death or serious injury. Carefully read the message that follows to prevent death or serious injury.

CAUTION

Indicates a potentially hazardous situation that could result in minor or moderate injury. Alerts against unsafe practices. Carefully read the message that follows to prevent minor or moderate injury.

NOTICE

Indicates important information, including situations that can result in damage to equipment or property.

2.2 General safety precautions

This section contains general safety precautions.

WARNING

If MiR250 Shelf Carrier is not running the correct software and is therefore not functioning properly, the robot may collide with personnel or equipment causing injury or damage.

- Ensure that MiR250 Shelf Carrier is always running the correct software.

WARNING

MiR250 Shelf Carrier risks damage and mechanical failure if it is used to transport pallets or anything other than safely commissioned shelves. Nearby equipment and personnel risk damage or injury if payloads fall from the robot.

- Only use MiR250 Shelf Carrier to transport safely commissioned shelves.

WARNING

Using a charging device different from the one supplied by the manufacturer can cause a fire and thereby burn injuries to nearby personnel and damage to the robot and equipment.

- Only use the original charger.

WARNING

MiR250 Shelf Carrier may drive over the feet of personnel, causing injury.

- All personnel must be informed of the side protective fields of MiR250 Shelf Carrier and be instructed to wear safety shoes near an operating robot.

WARNING

Contact with live electrical parts can cause electric shock.

- Do not touch any internal components of MiR250 Shelf Carrier while it is powered.

WARNING

Personnel standing in the blind spot of MiR250 Shelf Carrier when it is pivoting with a shelf risk being struck and injured.

- Ensure that all nearby personnel are instructed not to stand close to MiR250 Shelf Carrier when it is pivoting.
- Inform personnel that the signal lights indicate when the robot is intending to turn or pivot—see Light indicators and speakers on page 16.

WARNING

MiR250 Shelf Carrier may drive into a ladder, scaffold, or similar equipment that has a person standing on it. Personnel risk fall injuries and equipment may be damaged.

- Don't place ladders, scaffolds, or similar equipment in the robot's work environment.

WARNING

The robot may drive down staircases or holes in the floor and cause serious injury to personnel and damage to the robot and to equipment.

- Mark descending staircases and holes as forbidden zones on maps.
- Keep the maps up to date.
- Inform personnel that the robot cannot detect descending staircases and holes in the floor in time to stop.

WARNING

Personnel that are within an operating hazard zone intended for placing and picking up shelves risk colliding with the robot and thereby injury if the robot is operating within the zone.

- Ensure that all nearby personnel are instructed to stay clear of operating hazard zones when MiR250 Shelf Carrier is in the zone.

WARNING

If a load is positioned incorrectly on a shelf, the load may fall off. Nearby personnel or equipment risk injury or damage.

- Ensure that each load is positioned correctly on the shelf. It is the responsibility of the commissioner to determine correct and safe methods of loading shelves.
- Conduct a brake test while the robot is transporting a fully loaded shelf.

WARNING

If the robot attempts to dock to a shelf and the carrier pins are raised or the robot is misplaced, the robot may push the shelf. The shelf may collide with personnel or equipment, resulting in injury or damage.

- Ensure that docking positions are clearly marked as operating hazard zones with visible tape or similar marking, and that all personnel are instructed not to stand close to the robot when it is docking to a shelf.

WARNING

If the robot does not attach to the shelf correctly due to pins being offset from their correct positions, the shelf can detach at any time. Uncertain control of the shelf may result in the shelf or its load colliding with personnel or equipment resulting in injury or damage.

- Ensure the shelf is designed according to specifications—see the MiR250 User guide. The laser scanners will then be able to detect if the shelf is incorrectly positioned and will enter Protective stop before operating with the shelf.

WARNING

If the robot drives on a slope and looses grip of the attached shelf, the shelf or its load may collide with personnel or equipment causing injury or damage.

- Do not operate MiR250 Shelf Carrier on slopes.

WARNING

If a shelf operates with loads that extend the footprint of the robot, the load may collide with personnel or equipment causing injury or damage.

- Do not load the shelves with loads that exceeds the robot footprint.

WARNING

Lithium battery packs may get hot, explode, or ignite and cause serious injury if they are misused electrically or mechanically.

Observe the following precautions when handling and using lithium-ion batteries:

- Do not short-circuit, recharge, or connect with false polarity.
- Do not expose to temperatures beyond the specified temperature range or incinerate the battery.
- Do not crush, puncture, or disassemble the battery. The battery contains safety and protection devices, which, if damaged, may cause the battery to generate heat, explode, or ignite.
- Do not allow the battery to get wet.
- In the event the battery leaks and the fluid gets into one's eye, do not rub the eye. Rinse well with water and immediately seek medical care. If left untreated, the battery fluid could cause damage to the eye.
- Use only the original charger (cable charger or charging station) and always follow the instructions from the battery manufacturer.
- Do not touch damaged batteries with bare hands. Only personnel using suitable Personal Protection Equipment (PPE) and tools should handle damaged batteries.
- Isolate the battery and keep clear if the following conditions are observed:
  - The battery exhibits abnormally high temperatures.
  - The battery emits abnormal odors.
  - The battery changes colors.
  - The battery case is deformed or otherwise differs from the normal electrical or mechanical condition.
- Modifications or manipulations of the battery may lead to considerable safety risks and are therefore prohibited.
- Do not use the battery on anything other than MiR250 Shelf Carrier.

CAUTION

Robot malfunctions can cause an electrical fire, causing damage and injury to equipment and personnel.

- Personnel operating near the robot must be informed on how to use an ABC fire extinguisher to put out an electrical fire should the robot malfunction and catch on fire.

CAUTION

Risk of trapping or injury to personnel if robots malfunction or if personnel enter operating hazard zones.

- Personnel operating near the robot must be informed on how to engage the robot's Emergency stop function in emergency situations.

2.3 Intended use

MiR250 Shelf Carrier is intended to be commissioned and used in indoor industrial environments where access for the public is restricted. For details about the environmental conditions in which MiR250 Shelf Carrier should operate, see specifications for MiR250 Shelf Carrier on our website.

MiR250 Shelf Carrier is intended to be commissioned according to the guidelines in the user guide. This is a prerequisite for safe usage of MiR250 Shelf Carrier.

MiR250 Shelf Carrier is equipped with safety-related features that are purposely designed for collaborative operation where the robot operates without a safety enclosure or together with people.

NOTICE

A safe machine does not guarantee a safe system. Follow the commissioning guidelines in the user guide to ensure a safe system.

2.4 Users

MiR250 Shelf Carrier is only intended to be used by personnel that have received training in their required tasks.

There are three types of intended users for MiR250 Shelf Carrier: commissioners, operators, and direct users.

Commissioners

Commissioners have thorough knowledge of all aspects of commissioning, safety, use, and maintenance of MiR250 Shelf Carrier and have the following main tasks:

- Commissioning of the product. This includes creating maps and restricting the user interface for other users and making brake tests with a full payload.
- Conducting the risk assessment.
- Determining the payload limit, weight distribution, safe fastening methods, safe loading and unloading of loads on MiR250 Shelf Carrier, and ergonomic loading and unloading methods if relevant.
- Ensuring the safety of nearby personnel when the robot is accelerating, braking, and maneuvering.
- Marking operating hazard zones.

Operators

Operators have thorough knowledge of MiR250 Shelf Carrier and of the safety precautions presented in this User guide. Operators have the following main tasks:

- Servicing and maintaining MiR250 Shelf Carrier.
- Creating and changing missions and map features in the robot interface.

Direct users

Direct users are familiar with the safety precautions in this quick start and have the following main tasks:

- Assigning missions to MiR250 Shelf Carrier.
- Fastening loads to MiR250 Shelf Carrier securely.
- Loading and unloading from a paused robot.

All other persons in the vicinity of MiR250 Shelf Carrier are considered indirect users and must know how to act when they are close to the robot. For example, they must be aware that visibly marked operating hazard zones must be respected.

2.5 Foreseeable misuse

Any use of MiR250 Shelf Carrier deviating from the intended use is deemed as misuse. This includes, but is not limited to:

- Using MiR250 Shelf Carrier to transport people
- Using MiR250 Shelf Carrier on steep surface grades, such as ramps
- Using the wrong SICK configuration
- Driving MiR250 Shelf Carrier on cross slopes
- Exceeding the total payload
- Using the Emergency stop button for anything other than emergency stops
- Positioning or fastening loads incorrectly according to the specifications
- Driving MiR250 Shelf Carrier with anything other than safely commissioned shelves
- Using MiR250 Shelf Carrier in medical and life critical applications
- Operating MiR250 Shelf Carrier outside the permissible operating parameters and environmental specifications
- Using MiR250 Shelf Carrier in potentially explosive environments
- Using MiR250 Shelf Carrier outdoors
- Using MiR250 Shelf Carrier in hygiene zones

2.6 Residual risks

Mobile Industrial Robots has identified the following potential hazards that commissioners must inform personnel about and take all precautions to avoid:

- You risk being run over, drawn in, trapped, or struck if you stand in the path of MiR250 Shelf Carrier or walk towards MiR250 Shelf Carrier or its intended path while it is in motion.
- You risk being run over, drawn in, trapped, or struck if you stand in the path of the robot or walk towards it while it is driving in reverse. It will only drive in reverse when undocking from a marker such as a charging station or load transfer station.
- You risk being crushed or trapped if you touch MiR250 Shelf Carrier while it is in motion.
- You risk being run over, drawn in, trapped, or struck if you stand in the path of MiR250 Shelf Carrier or walk towards it while it is docking to a shelf.

- You risk being crushed, run over, drawn in, or trapped if the robot places a load outside a designated drop-off area due to faulty localization.
- You risk losing control of MiR250 Shelf Carrier if it is accessed by unauthorized users. Consider increasing the IT security of your product.

NOTICE

Other significant hazards may be present in a specific robot installation and must be identified during commissioning.

2.7 Warning label

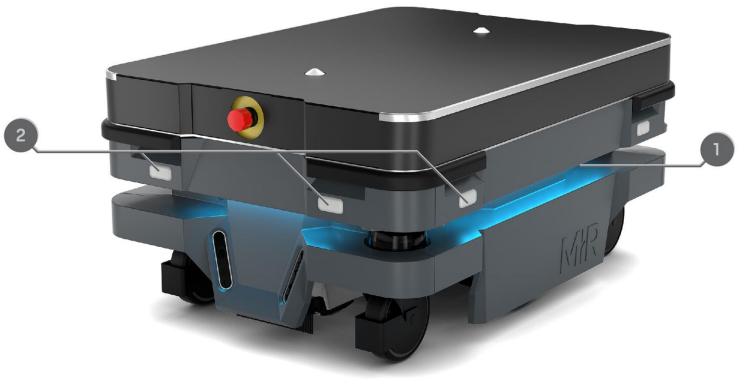
MiR250 Shelf Carrier is supplied with a warning label that specifies that it is strictly prohibited to ride on the robot.

The label must be placed on the robot or top module so that it is clearly visible.

3. Light indicators and speakers

The robot uses two types of light indicators to let people in the environment know what the robot is currently doing or planning to do.

- **Status lights**
  An LED light band on all four sides of the robot uses colors and light motion patterns to signal the current status of the robot.
- **Signal lights**
  The signal lights at the front and back of the robot show if the robot is about to turn a corner or go backwards. Front lights are white and rear lights are red. Right and left turns are indicated by blinking.



Pos.	Description	Pos.	Description
1	Status lights	2	Signal lights

3.1 Status lights

The LED light band running all the way around the robot indicates the robot's current operational state. Colors may also be used as part of missions, but as standard, the robot is delivered with the following setup.

Red	Emergency stop
Green	Ready for job
Cyan	Drives to destination
Purple	Goal / Path blocked
White	Planning / Calculating
Yellow	Mission Paused
Yellow wavering	Startup signal before PC is active
Yellow fade	Shutting down robot
Yellow blinking	Relative move, ignoring obstacles
Purple - yellow	General error e.g. hardware, localization
Blue	Manual drive joystick
Blue wavering	Mapping
Contracting white	Charging: Charging station
White wavering	Prompt user / Waiting for user's response

NOTICE

When the robot's battery reaches a critically low level of power (0-1%), the ends of the status lights flash red.

3.2 Signal lights

Signal lights are used to indicate the robot's immediate motion plans by signaling forwards-backwards-braking and left-right turns.

The signal lights work similarly to lights used on cars; white at the front, red at the back, and indicating a left or right turn by blinking.

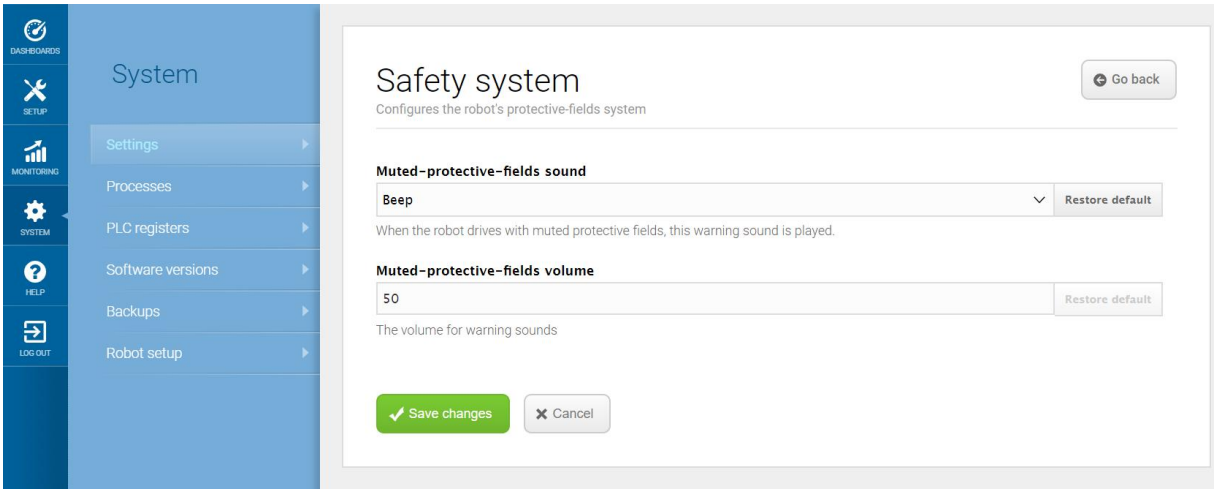
When the robot drives with muted personnel detection means, for example when docking to a marker, all signal lights blink yellow.

3.3 Speakers

When the robot drives with muted personnel detection means it emits a warning sound. In **System > Settings > Safety system**, you can choose which sound the robot makes and the volume of the sound.

CAUTION

Changing the safety system can cause the robot to not comply with safety standards.



NOTICE

It is the responsibility of the commissioner that the warning sounds are audible in the robot's work environment.

4. Control panel

MiR250 Shelf Carrier has a control panel in the rear-left corner of the robot.

4.1 The Operating mode key

The Operating mode key lets you switch between operating modes.

- **Left position: Autonomous mode**
  Puts the robot in Autonomous mode.

- **Middle position: Locked**
  Locks the robot. The robot blocks the wheels; you cannot start a mission or drive the robot manually.

- **Right position: Manual mode**
  Puts the robot in Manual mode.

4.2 The control panel buttons

The following table identifies the three buttons on the control panel.

Pos.	Description	Pos.	Description
1	Manual stop	2	Resume
3	Power		

Manual stop

Pressing this button stops the robot. After pressing this button, you must press the Resume button to let the robot continue operating.

Color indication:

- Red: It is possible to engage the Manual stop.

Resume

Pressing this button:

- Clears the Emergency stop state.
- Lets the robot continue operating after the Manual stop button was pressed or after the operating mode change.
- Lets the robot start operating after powering up.

Color indication:

- Blinking blue: The robot is waiting for a user action (clear the Emergency stop state, acknowledge the change of operating mode).

Power

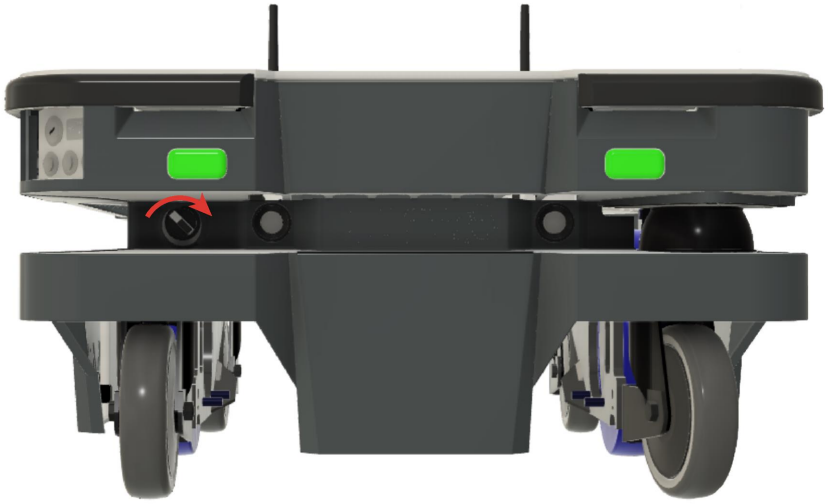
Pressing this button for three seconds turns the robot on or shuts it off.

Color indication:

- Blue: The robot is off.
- Blinking green: The robot is starting up.
- Green: Normal operation.
- Blinking red: The battery level is too low to start without additional charging or the robot is shutting down.

Manual brake release switch

The manual brake release switch is located below the control panel and releases the mechanical brakes on MiR250 Shelf Carrier. You release the brakes by turning the Manual brake release switch clockwise.



The mechanical brakes require electrical power to be released, so if the robot is without power, the mechanical brakes cannot be released.

When driving in Autonomous mode, the robot engages and releases the mechanical brakes automatically.

The robot cannot operate while the mechanical brakes are released.

5. Accessing the internal parts

Most internal parts of MiR250 Shelf Carrier are accessed through covers that open to different compartments:

- Front compartment
- Rear compartment
- Side compartments
- Top compartments

CAUTION

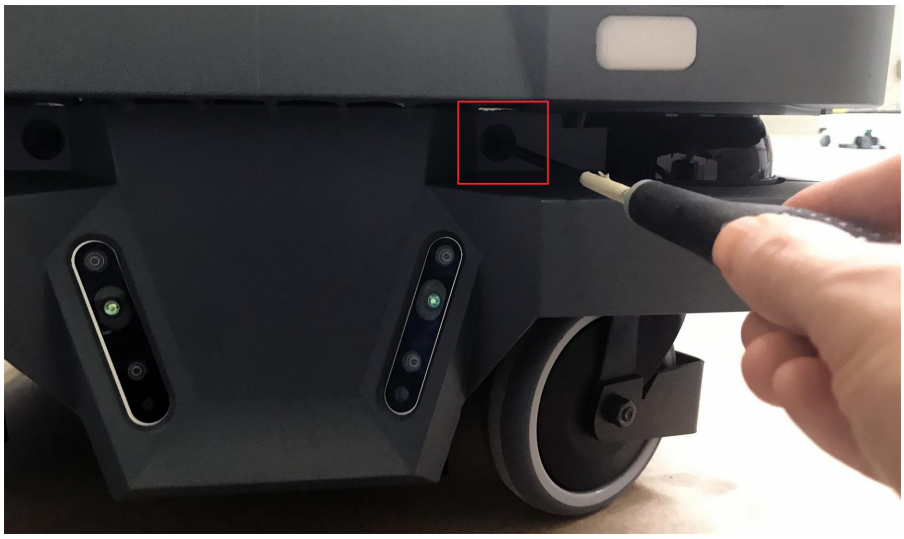
Removing covers from the robot exposes parts connected to the power supply, risking damage to the robot from a short circuit and electrical shock to personnel.

- Disconnect the battery by turning the Battery disconnect switch.

5.1 Front compartment

Follow these steps to open the front compartment:

1. Unscrew the two screws holding the front cover with a Tx30 screwdriver.



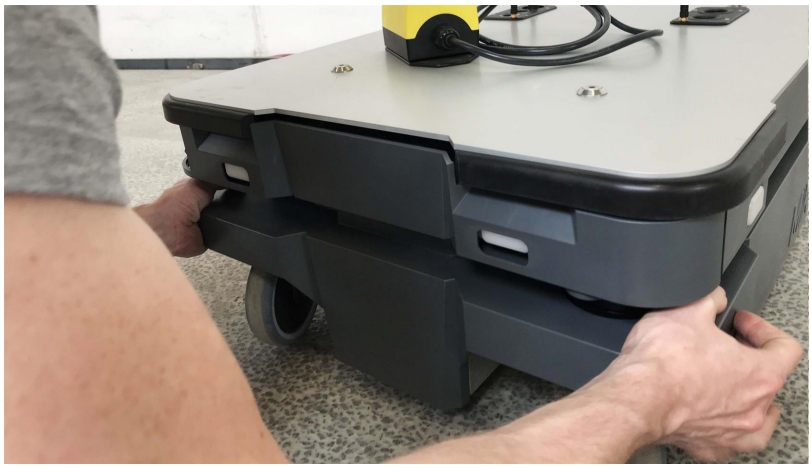
2. Pull the front cover off of the robot.

5.2 Rear compartment

Follow these steps to open the rear compartment:

1. Push the two white buttons at the same time.

2. Loosen the cover by wiggling both sides.

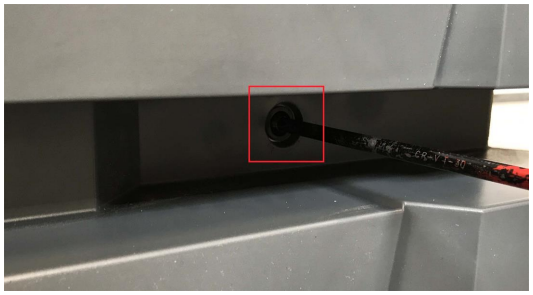


3. Pull off the cover.

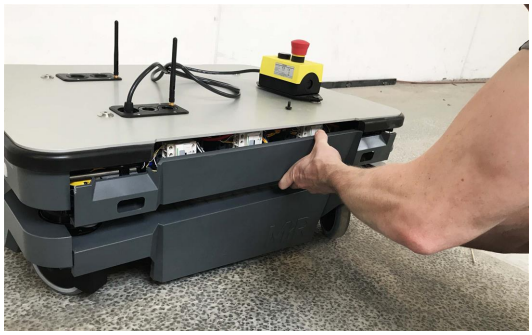
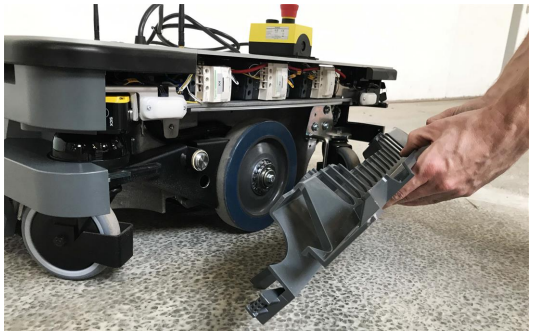
5.3 Side compartments

Follow these steps to open a side cover:

1. Turn the two screws counterclockwise with a Tx30 screwdriver.

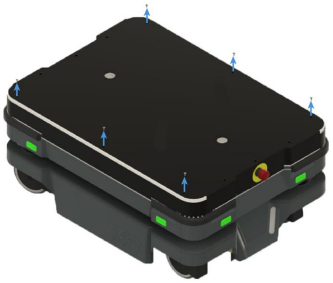
2. Pull the cover off.

The top compartments are only accessible after removing the MiR Shelf Carrier 250 top module—see Unmounting the top module REF-FAIL.

5.4 MiR Shelf Carrier 250

To access the internal parts of MiR Shelf Carrier 250, remove the top plate of the shelf carrier by unscrewing all 14 screws from the top plate.



6. IT security

IT security is a set of precautions you can take to prevent unauthorized personnel from accessing MiR250 Shelf Carrier. This section describes the main IT-security related risks and how to minimize them when commissioning MiR250 Shelf Carrier.

MiR250 Shelf Carrier communicates all data over the network that it is connected to. It is the responsibility of the commissioner to ensure that it is connected to a secure network. MiR recommends creating an IT-security risk assessment before commissioning the robot.

6.1 Managing users and passwords

Managing your users and passwords is the main way you can control access to MiR250 Shelf Carrier.

There are three default users with predefined passwords for you to start using. These are described in the *MiR Robot Interface Reference guide* along with instructions to create new users, user groups, and passwords. MiR advises you to:

- Change the default password for all predefined users if you choose to continue to use them. Make sure to choose a strong password since MiR250 Shelf Carrier does not enforce any password rules nor expire the password.
- Create new user groups if more levels of access are necessary.
- Create dedicated user accounts under the relevant user group for each person accessing MiR250 Shelf Carrier, and ensure that the users change the password on their first sign-in. It is not recommended to have several users share the same account.
- Only enable users with a minimum level of access to use a pin code to sign in. Users with a higher level of access are recommended to use a strong password to sign in instead.

6.2 Software security patches

To improve the security of MiR250 Shelf Carrier, MiR supplies security patches to the operating system in new MiR software update files. When you install a security patch, it takes approximately 10-15 minutes longer to update a MiR product.

Understanding MiR software versions

MiR uses the **Major.Minor.Patch.Hot fix** format to version software. For example, 2.8.1.1 means that the software is based on the second major release, the eighth minor release of the major version, the first patch release of the minor version, and in this example a single hot fix is included too.

- **Major releases** include the most significant changes that affect the entire robot software.
- **Minor releases** often include new features and smaller changes that only affect parts of the software.
- **Patch releases** focus on fixing small issues in the software and introducing quality improvements.
- **Hot fix releases** are only created when a patch release has introduced a critical issue that needs to be fixed immediately.

Security patch policy

MiR applies the following policy when supplying security patches:

- New security patches are distributed per every minor release.
- All patch releases under a minor release include the security patches also. In other words, if you chose not to install the first software version in a minor release, such as version 2.9.0, the security patches will still be installed when you update to 2.9.1 or higher.
- Whenever there is a new minor release with new security patches, the security patches are also made available in a separate file. In this way, you are not required to update to the latest software to apply the security patches. You can use any lower software version and just install the security patches to that software instead.

7. Getting started

This section describes how to get started with MiR250 Shelf Carrier.

NOTICE

Read Safety on page 6 before powering up MiR250 Shelf Carrier.

7.1 In the box

This section describes the contents of the MiR250 Shelf Carrier box.

The box contains:

- The MiR250 Shelf Carrier robot
- A MiR250 Shelf Carrier document folder containing a USB flash drive and the following printed documents:
  - *MiR250 Shelf Carrier Quick Start*
  - The CE declaration of Conformity for your application
  - *Getting the robot online*
  - *Passwords*
  - The unique nameplate for your application
- The USB flash drive in the document folder has the following content:
  - *MiR250 Shelf Carrier Quick Start*
  - *MiR Network and WiFi guide*
  - *MiR Robot Reference guide*
  - *MiR Robot REST API Reference*
  - *Getting the robot online*

7.2 Unpacking MiR250 Shelf Carrier

This section describes how to unpack MiR250 Shelf Carrier.

Keep the original packaging for future transportation of the robot.

1. Place the box with the robot so that there is three meters of free space at the front or the back of the box. This is necessary as the robot drives out of the box on a ramp.

2. Cut the protective straps surrounding the box.

3. Remove the lid from the box.

4. Take the folder with the printed documents and the USB flash drive out of the box.

5. Remove the walls of the box and the protective foam blocks.

6. Place the lid of the box so that you can use it as a ramp. Align the lid so that it is flush with the base of the box.

7.3 Connecting the battery and powering up

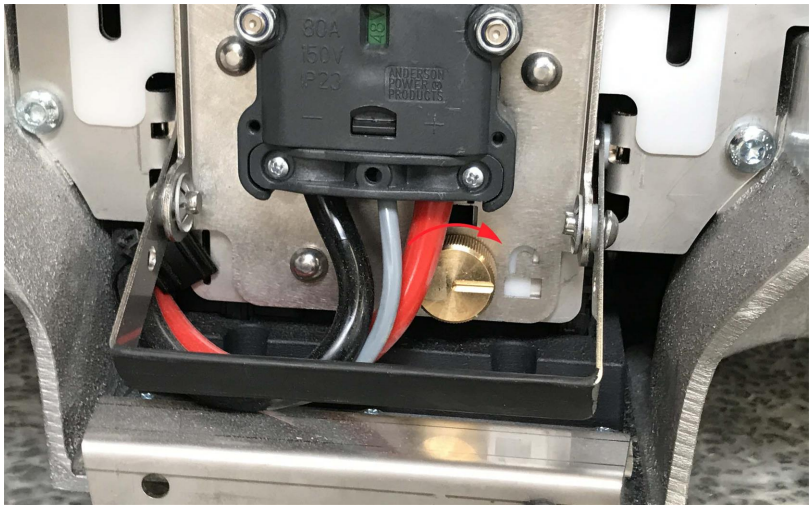
You must connect the battery before powering up the robot.

Connecting the battery

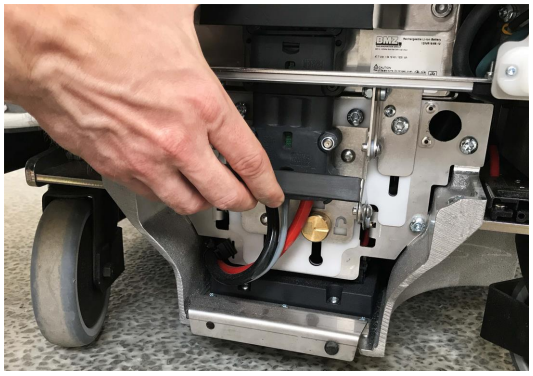
To connect the battery to the robot, you need to open the rear compartment—see Accessing the internal parts on page 23.

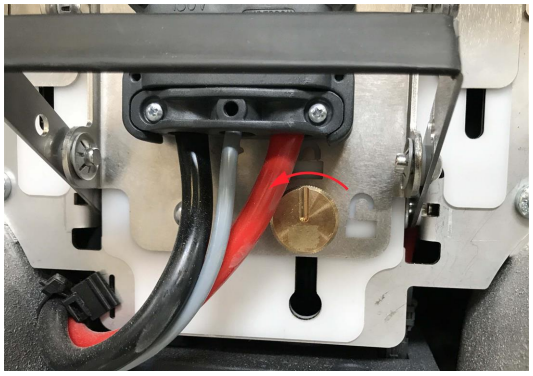
Follow these steps to connect the battery to the robot:

1. Turn the battery lever lock clockwise to unlock the battery lever.

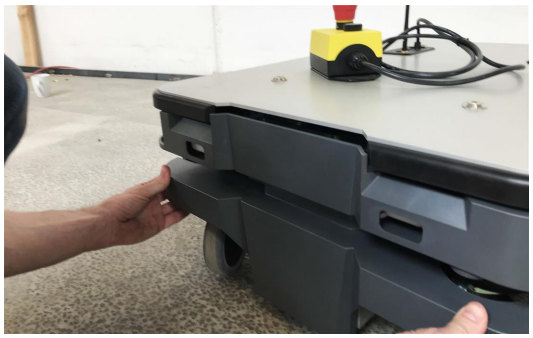


2. Pull up the lever to connect the battery connector to the battery. Then turn the battery lever lock counterclockwise to secure the battery lever.





3. Reattach the rear cover by inserting it into the two attachment sockets. When attaching the cover to the robot, press the two white buttons, and don't tilt the cover.

4. Click the cover in place.

Powering up

Follow these steps to power up the robot:

1. Press the Power button for three seconds to turn on the robot.

The status lights waver yellow, and the robot starts the software initialization process.

When the initialization process ends, the robot goes into Protective stop.

2. Press the Resume button to clear the Protective stop. The robot is now ready for operation.

7.4 Connecting to the robot interface

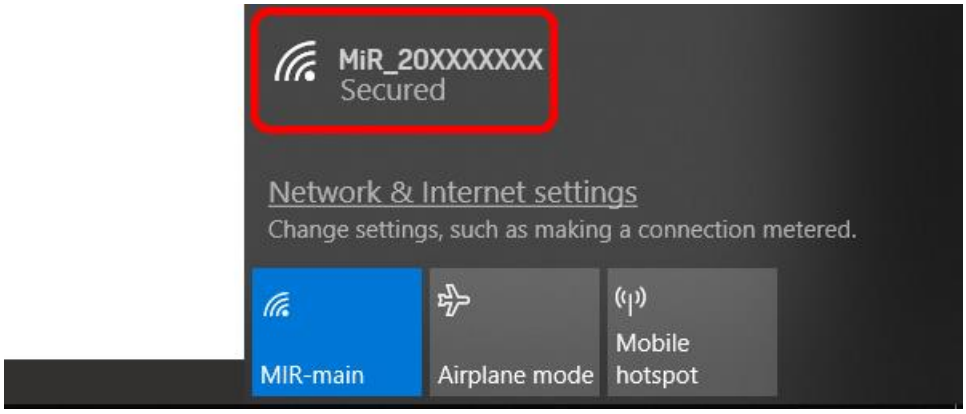
When the robot is turned on, it enables the connection to its WiFi access point. The name of the access point appears in the list of available connections on your PC, tablet, or phone.

NOTICE

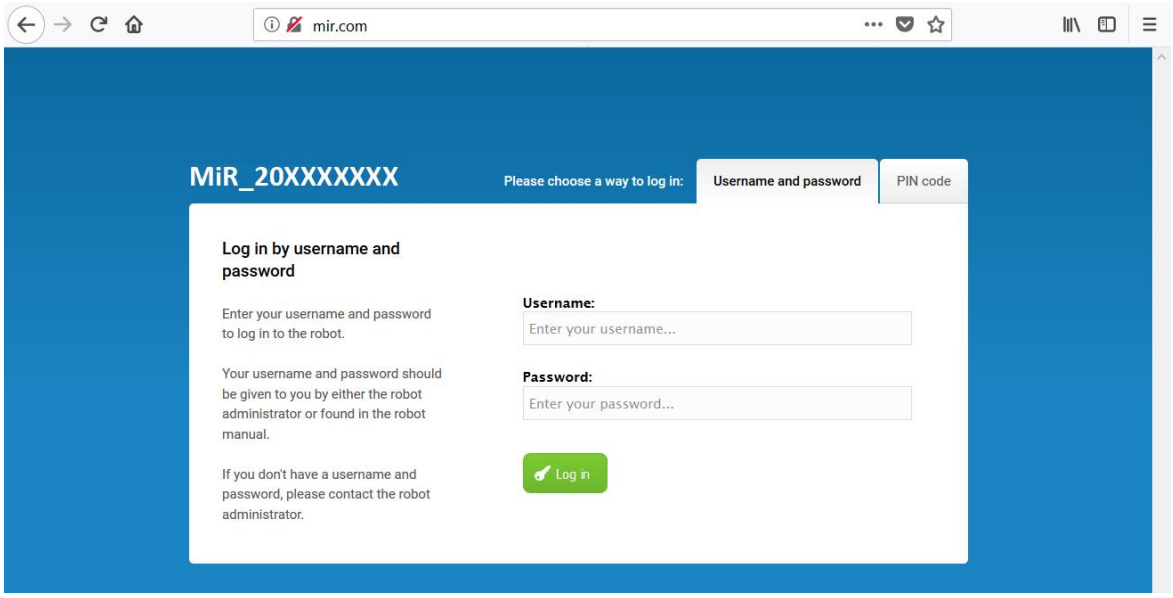
The username and password for the robot's WiFi access point and for accessing the web interface are in the MiR username and passwords document. The document is in the box with the robot.

Follow these steps to connect to the robot interface:

1. Using your pc, tablet, or phone, connect to the WiFi access point of the robot. The access point name has the following format: MiR20XXXXXXX



2. In a browser, go to the address **mir.com** and sign in.



3. Switch to Manual mode, and drive the robot down the ramp—see Driving the robot in Manual mode on the next page.

7.5 Driving the robot in Manual mode

CAUTION

When driving the robot in manual mode, it is possible to mute the personnel detection means and drive the robot into Forbidden zones and Unpreferred zones in the map. This means that the robot will only stop when very close to an obstacle and will not respond to zones on the map. This can result in injury to personnel or damage to equipment if the robot is not driven carefully.

- Drive carefully to avoid collisions with any personnel or objects when driving the robot in Manual mode.
- Avoid driving the robot manually without a clear visual of the robot.

NOTICE

Place your foot in front of the ramp while the robot drives on it to keep the ramp from slipping.

To drive the robot in Manual mode, follow these steps:

1. On the robot, turn the Operating mode key into Manual mode (turn it to the right).
2. In the robot interface, select **Manual control**. The Resume button on the robot starts blinking.

3. In the robot interface, select the joystick icon. The joystick control appears.

4. On the robot, press the Resume button. The status lights turn blue, indicating that the robot is in Manual mode.

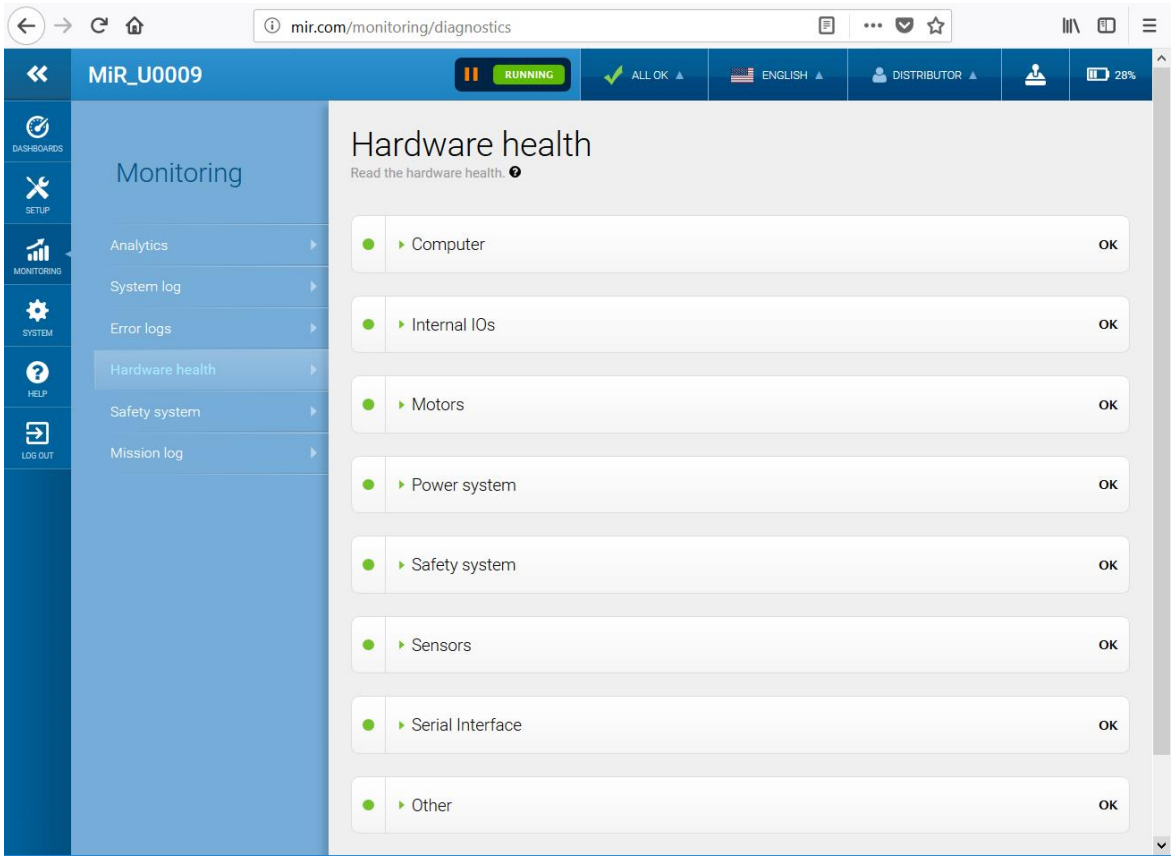
5. Drive the robot off the ramp using the joystick.

7.6 Checking the hardware status

To check that all hardware components work as intended, follow these steps:

1. Sign in to the robot interface—see Connecting to the robot interface on page 37.
2. Go to **Monitoring** > **Hardware health**.

3. Check that all elements on the page have the OK status and that they have green dots on the left.



For more information, see **Hardware health** in *MiR Robot Interface 2.0 Reference Guide* on the MiR website.

7.7 Mounting the nameplate

Before using MiR250 Shelf Carrier, you must mount its unique nameplate to it. The nameplate contains information specific to your MiR application.

NOTICE

The nameplate must be mounted as described in the following steps. If mounted incorrectly, the CE mark is invalid.

The following steps describe how to mount the nameplate correctly:

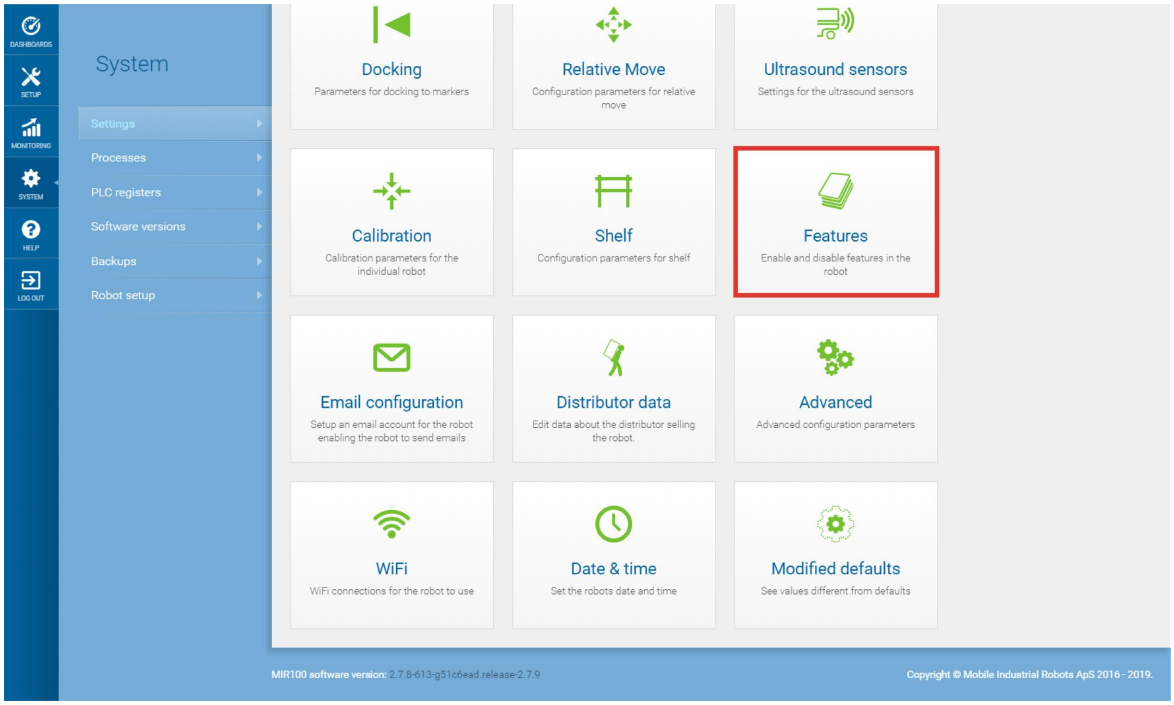
1. Locate the rear cover.
2. Clean the area marked in the image below with a degreasing agent.

3. Mount the nameplate on the cleaned area.

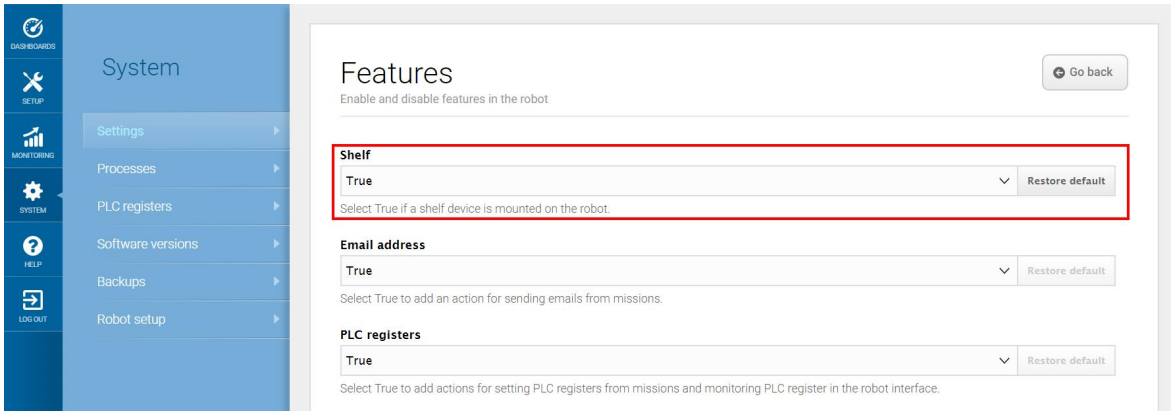
7.8 Enable MiR250 Shelf Carrier feature

To access the MiR250 Shelf Carrier settings and mission menus, the MiR250 Shelf Carrier features must be enabled. Follow these steps to check that they are enabled:

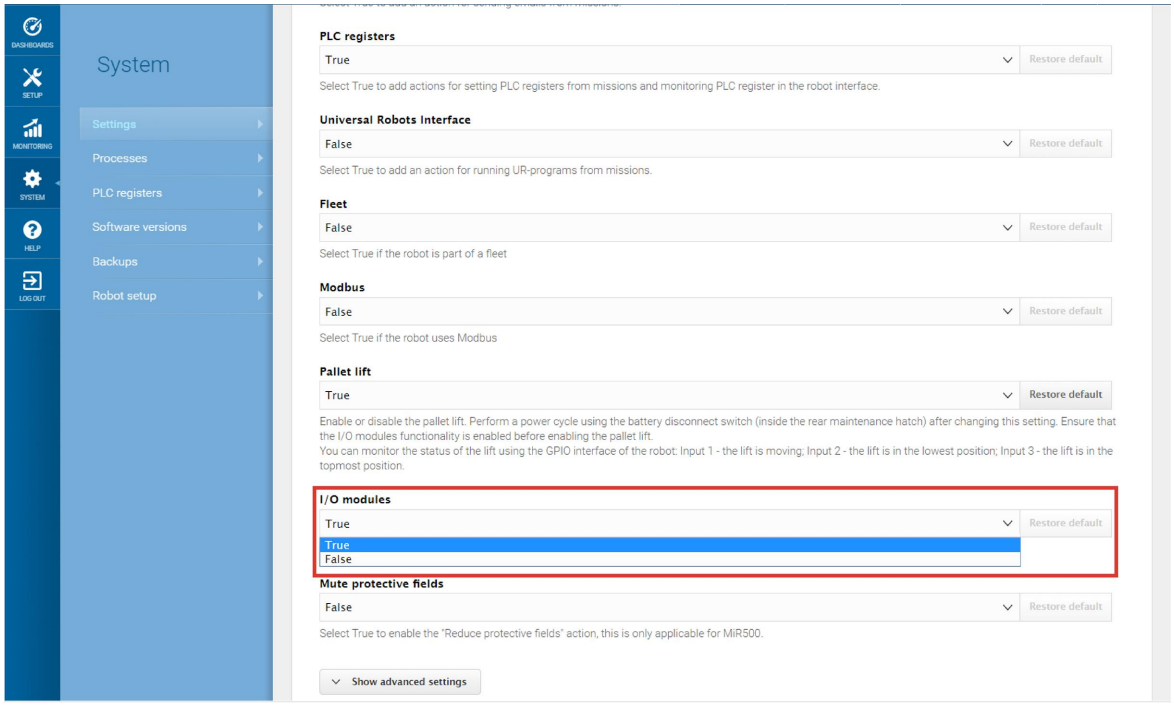
1. Sign in to the robot interface, and go to **System > Settings > Features**.



2. Under **Shelf**, select **True**.



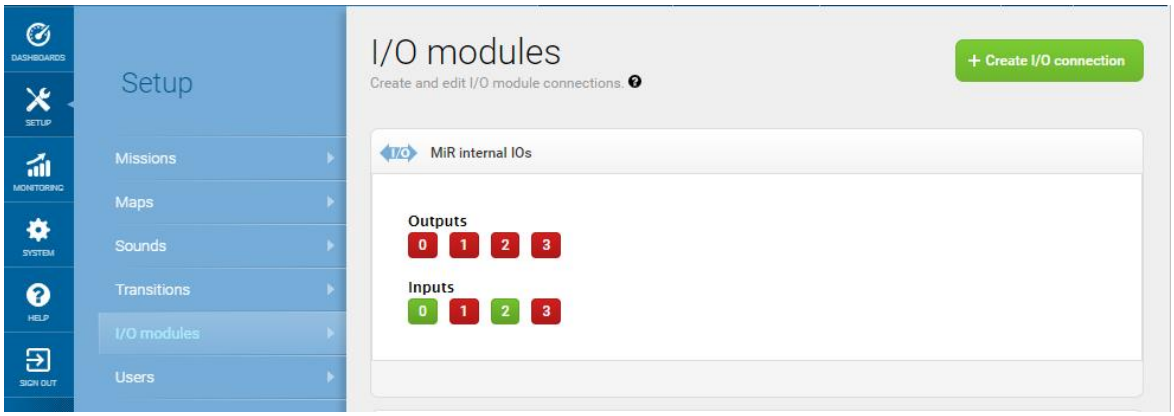
3. Under **I/O modules**, select **True**. The MiR Shelf Carrier 250 top module communicates with the robot through I/O modules, so they must be activated for the shelf carrier to work.



7.9 Testing the top application

To test that the top application of MiR250 Shelf Carrier is configured and connected correctly, follow these steps:

1. Sign in to the robot interface, and go to **Setup > I/O modules**.



2. Under **MiR internal I/Os**, complete the following sequence, and verify that the robot executes the expected action:
   a. Under **Outputs**, select **3**. Verify that the carrier pins rise up.

   b. Once the pins are raised, verify that **3** under **Inputs** is green.

   c. Under **Outputs**, select **2**. Verify that the carrier pins lower into the robot.

d. Once the pins are lowered, verify that **2** under **Inputs** is green.

If the pins were raised and lowered as expected and the correct input feedback was received, the MiR Shelf Carrier 250 is correctly installed.

If the shelf carrier did not operate correctly, verify that you have enabled the feature as described in Enable MiR250 Shelf Carrier feature on page 43. If the shelf carrier continues to fail, contact your distributor.

7.10 Shutting down the robot

To shut down MiR250 Shelf Carrier:

1. Ensure that the robot is not moving or executing an action.
2. Press the Power button for three seconds.

3. The robot starts the shutdown process. The status lights waver yellow, and the Power button blinks red.

4. When the robot finishes the shutdown process, the status and the signal lights go off, and the Power button turns blue.

When you shut down the robot for transportation, service, or repair, the battery must be disconnected.

Copyright and disclaimer

Contact the manufacturer:

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DK-5220 Odense SØ

the MiR website
Phone: +45 20 377 577
Email: support@mir-robots.com

CVR: 35251235