

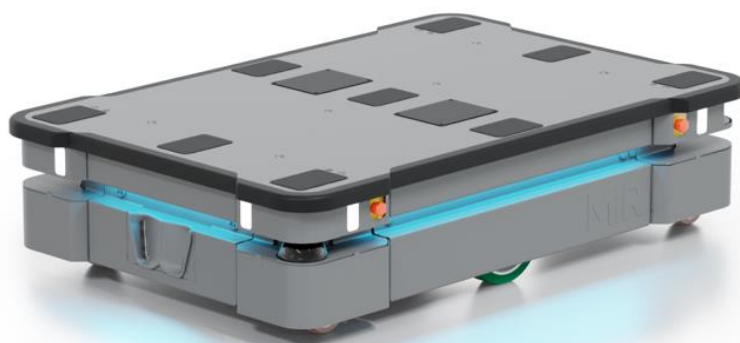


MiR600 Quick Start

Date: 12/2023

Version: 2.0 (en)

Robot hardware version: 1.0



For the full documentation package and for translated guides for your robot, go to:
<https://www.mobile-industrial-robots.com/product-documents/mir600-hw-10-sw-3-v1/>



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Original instructions (English)

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1. Version history

This table shows current and previous versions of this document.

Revision	Description
2.0	Date: 2023-12-05 Robot HW: 1.0 <ul style="list-style-type: none">Updated for software version 3.x with new user interface and new features.
1.6	Date: 2023-09-21 Robot HW: 1.0 <ul style="list-style-type: none">Updated link to documentation overview page.Added notice that the robot cannot detect forklift forks and empty pallets reliably. Affects section: General safety precautions.
1.5	Date: 2023-06-08 Robot HW: 1.0 <ul style="list-style-type: none">Updated for TÜV approval.Added link to a documentation package page. Affects section: Front cover.Removed instructions for charging with cable charger. Affects section: Battery and charging.Removed section: Cybersecurity.
1.4	Date: 2023-01-31 Robot HW: 1.0

Revision	Description
	<ul style="list-style-type: none"> • Updated copyright. • Updated reference to <i>MiR Robot Reference Guide</i> to <i>MiR Robot Interface Guide</i>. • Added more information about storage of robots and batteries. New section: Storage. • Updated status light table. Affects section: Light indicators and speakers. • Added references to videos showing how to access internal parts. Affects section: Accessing the internal parts. • Removed adapter cable to connect a cable charger directly to the battery. Affects section: In the box. • Updated style.
1.3	<p>Date: 2022-05-31</p> <p>Robot HW: 1.0</p> <ul style="list-style-type: none"> • Added notice that cable chargers only charge the robot's battery to 80–90%. Affects section: Charging the robot. • Added more information about storage of robots and batteries. New section: Storage.
1.2	<p>Date: 2021-10-07</p> <p>Robot HW: 1.0</p> <ul style="list-style-type: none"> • Updated manual to ensure compliance with radio equipment directives. Affects sections: Safety, Connecting to the robot interface, and Connecting the robot to a Wi-Fi network

Revision	Description
1.1	Date: 2021-08-12 Robot HW: 1.0 <ul style="list-style-type: none">• General improvements throughout the manual.
1.0	Date: 2021-07-23 Robot HW: 1.0 <ul style="list-style-type: none">• First edition.

2. Safety

Read the information in this section before powering up and operating MiR600.

Pay particular attention to the safety instructions and warnings.

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.



Tells you where you can find more information about the topic.

2.2 General safety precautions

This section contains general safety precautions.



CAUTION

Harmful electromagnetic interference might be the result of having two radio modules transmitting at the same time. The robot is certified to have only one radio module active at any given time.

- Do not attach an access point or additional radio modules to the robot while it is connected to a wireless network.



CAUTION

If the robot starts up unexpectedly, there is a risk of injury to nearby personnel or damage to equipment.

- Inform personnel that robots may start driving without any warning.
- Design missions so the robot indicates to personnel that it will begin an action that makes it move. You can, for example, use a Play sound or Show light action to warn nearby personnel.



WARNING

If the robot 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 the robot is always running the correct software.



WARNING

The robot 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.

- Do not 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 all descending staircases and holes as Forbidden zones on maps.
- Install physical barriers around descending staircases and holes that are in the robot's operating area. If the hazard is not close to the robot's operating area, it may be sufficient to use a Forbidden zone on its own.
- 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**

Contact with live electrical parts can cause electric shock.

- Do not touch any internal components of the robot while it is powered.

**NOTICE**

The robot cannot reliably detect forklift forks or empty pallets. The robot may drive into forks or pallets causing damage to the robot's load, the robot, or equipment.

- Avoid leaving empty forklifts in the robot's operating environment.
- Inform personnel that the robot will not detect forklift forks or empty pallets.
- Inform personnel that the safety laser scanners are the only safety-rated sensors, but are limited to the scanner detection plane and are not intended for detecting forks and pallets. At any other height, only the 3D cameras and proximity sensors can potentially detect obstacles.
- Any modifications to the camera filter settings or the Obstacle clearing settings may affect how well the robot can detect obstacles in front of the robot, above or below the safety laser scanner detection plane. Test and evaluate the robot's performance after applying any changes to ensure the robot performs as intended.

**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.
- Ensure that all personnel are instructed to stay clear of operating hazard zones when the robot is in the zone.

2.3 Intended use

MiR600 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 MiR600 should operate, see the manual for your robot application.

MiR600 is intended to be commissioned according to the guidelines in *MiR Commissioning Guide*. This is a prerequisite for safe usage of MiR600. You can find this guide on [MiR Support Portal](#).

MiR600 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.

MiR600 is only intended to be used with top modules made for MiR600.

MiR600 is intended to be used with top modules supported by Mobile Industrial Robots or custom modules that:

- Do not have any moving parts.
- Do not extend the physical dimensions of the robot.
- Operate within the environmental conditions required for MiR600.
- Are within the weight distribution requirements—see your robot's user guide.

If used with custom modules, all obligations of a manufacturer apply to the individual who performs the modifications. All modifications must be in accordance with the machinery directive.

MiR600 is designed for and all risks are considered when used with one of the following types of top modules:

- MiR Pallet Lift 600 used with MiR Pallet Rack
- MiR EU Pallet Lift 600 used with MiR EU Pallet Rack
- MiR Shelf Lift to transport MiR supported shelves

MiR600 can be used as partly completed machinery as defined in the EU machinery directive with top modules that do not meet the above limitations. Those who design, manufacture, or commission a system that does not meet the limitations of use of MiR600 carry the obligations of a manufacturer and must ensure a safe design according to EN ISO 12100. Guidelines outlined in this manual are not sufficient.

**NOTICE**

A safe machine does not guarantee a safe system. Follow the commissioning guidelines in *MiR Commissioning Guide* to ensure a safe system. You can find this guide on [MiR Support Portal](#).

2.4 Foreseeable misuse

Any use of MiR600 deviating from the intended use is deemed as misuse. This includes, but is not limited to:

- Using the robot to transport people
- Using the robot on inclines outside the robot's specifications
- Making changes to the SICK configuration
- Driving the robot on cross slopes
- Exceeding the maximum payload
- Positioning or fastening loads incorrectly according to the specifications
- Using Emergency stop buttons for anything other than emergency stops
- Using the robot in medical and life critical applications

- Operating the robot outside the permissible operating parameters and environmental specifications
- Using the robot in potentially explosive ATEX environments
- Using the robot outdoors
- Using the robot in hygiene zones
- Using MiR top modules that are not specifically made for the robot
- Using the robot together with an external radio module that in any way results in simultaneously active radio transmitters

The following list gives examples of custom modules that are foreseeable misuse of MiR600:

- Top modules (including the payload) that increase the physical dimensions of MiR600
- Conveyors (powered and non-powered)
- Industrial robot arms
- Devices that tow carts
- Customized load transfer stations
- Top modules or modifications that use additional antennas or result in transmitting radio signals simultaneously with the existing radio module

2.5 Residual risks

Mobile Industrial Robots has identified the following potential hazards that commissioners must inform personnel about and take all precautions to avoid when working with MiR600:

- You risk being run over, drawn in, trapped, or struck if you stand in the path of the robot or walk towards the robot 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. The robot only drives 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 the robot while it is in motion.
- You risk being crushed or trapped if the robot places a load outside a designated drop-off area due to faulty localization.
- You risk losing control of the robot if it is accessed by unauthorized users. Consider increasing the IT security of your product.

**WARNING**

Other significant hazards may be present in a specific robot installation. Failure to identify hazards may result in injury to personnel or damage to equipment.

- Identify all hazards specific to your robot installation during commissioning.

2.6 Warning label

MiR600 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.

Figure 2.1 The warning label must be placed on the robot or top module



3. Storage

The main component that can be affected by storage is the robot's battery. It is important to keep track of the battery percentage both before and while the robot or battery is in storage to ensure the battery is not damaged by being undercharged.

3.1 Preparing the robot for storage

If you are taking the robot out of operation for any duration, we recommend the following:

- Charge the robot's battery before storage.
- Store the robot in an area at room temperature with a non-condensing relative air humidity—see specifications on MiR Support Portal. Temperatures and humidity below or above the specifications will shorten the service life of the battery.
- Disconnect the battery from the robot before storing the robot. You can store the battery inside the robot, but keeping the battery connected to the robot greatly reduces the storage time. Make sure to disconnect the battery completely.
- Protect the battery immediately after removing it from the battery charger or robot. Never allow any moisture or foreign particles to get into the battery. If you store the battery outside the robot, you can protect the battery by storing it in a clean and airtight container or plastic wrap.
- Check the state of charge of the battery regularly, and make sure to recharge the battery if the state of charge is low. Always disconnect the battery after checking or charging it.

3.2 Storage time

The storage time of the robot and battery depends on the battery's state of charge, the storage conditions, and the battery version. For more information about storage time, see *MiR 48V Battery Technical Guide*. You can find this guide on [MiR Support Portal](#).

The storage times in this guide apply for new batteries. Over time, the storage time will shorten.

**CAUTION**

If the battery is stored incorrectly or stored for too long, it will reach an undercharged state where the battery cells may be damaged or the battery shuts down permanently.

- Always check that the battery is disconnected before storing the robot. If the battery is connected to the robot, the storage time is reduced significantly.
- Check the battery percentage and charge the battery regularly to ensure it is not undercharged.

Table 3.1 Overview of battery modes where the battery stops supplying power

Battery percentage	Mode	Reactivate method
Low or battery unused for longer time	Power save mode	<ul style="list-style-type: none">• Disconnect the battery from the robot for 30 seconds, reconnect it to the robot, wait 30 seconds, and then turn on the robot.• Connect a 48V cable charger directly to the battery while it is disconnected from the robot.
Critically low	Deep sleep mode	Depending on how long the battery has been in Deep sleep, you may be able to revive it using MiR Cable Charger Lite 48V 3A.



To properly troubleshoot any battery issues and for information about the exact time periods and battery voltages that trigger the transitions between states, see *MiR 48V Battery Technical Guide*. You can find this guide on [MiR Support Portal](#).

4. Light indicators and speaker

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

- **Status lights**

The LED light bands on all four sides of the robot use 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 backward. Front lights are white and rear lights are red. Right and left turns are indicated by blinking.

- **Speaker**

The speaker plays sounds to alert personnel. You can trigger sounds using zones and mission actions, and you can enable the robot to play warning sounds whenever the Protective fields are muted.

Figure 4.1 Light indicators on MiR600

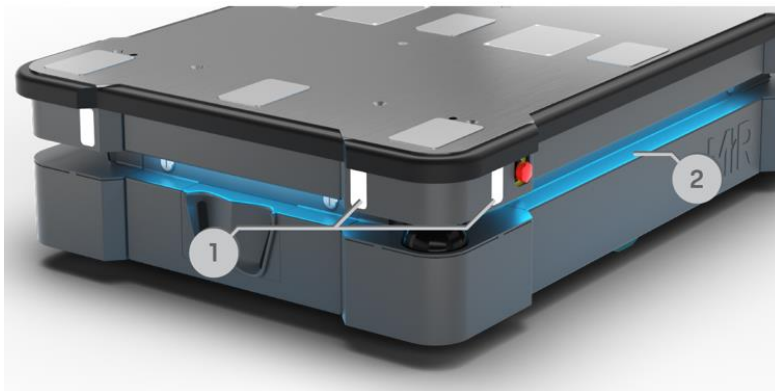





Table 4.1 Identification of light indicators in [Figure 4.1](#)

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

4.1 Status lights

The LED light bands running all the way around the robot indicate the robot's current operational state. Colors may also be used as part of missions, but as standard, status lights indicate the statuses described below.

			
Red Emergency stop or Protective stop	Green Ready for job	Cyan Drives to destination	Purple Goal/Path blocked
			
Wavering white Planning path	Orange Mission paused	Wavering orange Startup signal before PC is active	Fading orange Shutting down robot
			
Blinking orange Relative move, ignoring obstacles	Wavering purple and orange General error	Blue Manual drive	Wavering blue Mapping
			
State of charge Charging at charging station	Wavering cyan Waiting for MiR Fleet resource or for another MiR robot to move		

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

4.2 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 Protective fields, for example, when docking to a charging station, all signal lights blink yellow.

4.3 Speaker

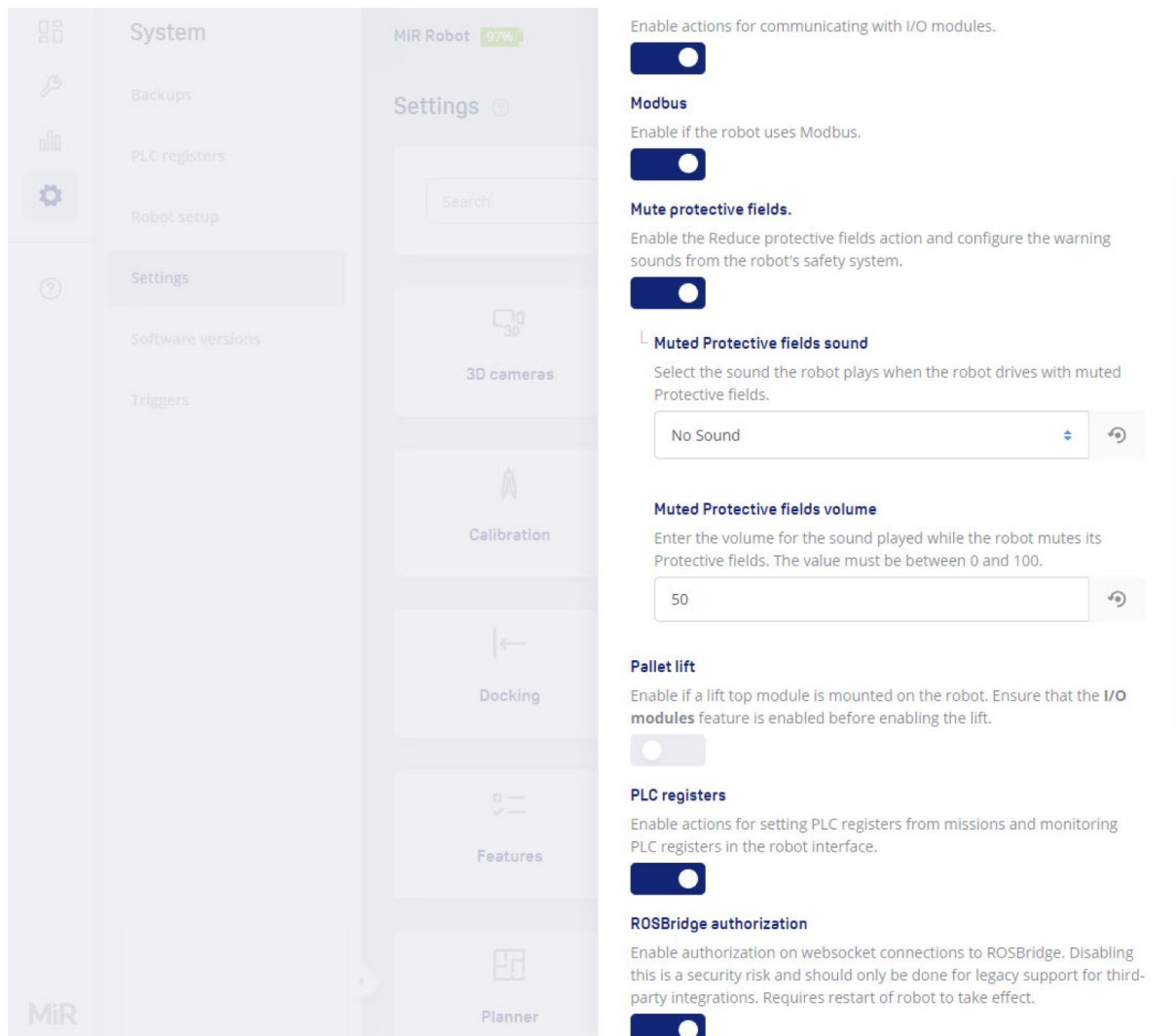
In **Setup > Sounds**, you can upload new sounds to the robot or edit the volume and length of the default sounds.

Sounds can be used in missions and zones to alert or to attract people's attention.

For more information about how to set up sounds, see *MiR Commissioning Guide*. You can find this guide on [MiR Support Portal](#).

When the robot drives with muted Protective fields it emits a warning sound. In **System > Settings > Features**, you can choose which sound the robot makes and the volume of the sound.

Figure 4.2 In the Features settings, you can modify the sounds the robot plays when the robot mutes its Protective fields



**CAUTION**

Unaware personnel may not see the robot in certain situations and risk colliding with the robot. This may result in injury to personnel or damage to equipment.

- Make sure to adjust the volume of the robot's warning sounds so they are audible in the robot's work environment.
- Implement warning sounds from the robot in missions and areas where it can reduce the risk of hazardous situations.
- Do not disable the sound in the safety system. This will also cause the robot to not comply with safety standards.

5. Control panel

MiR600 has a control panel in the rear-left corner of the robot.

Figure 5.1 The MiR600 control panel

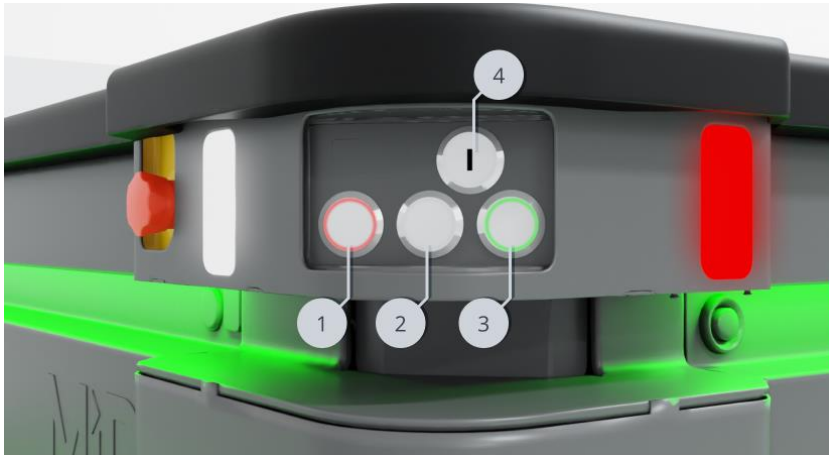


Table 5.1 Identification of items on the control panel in [Figure 5.1](#)

Pos.	Description	Pos.	Description
1	Manual stop button	2	Resume button
3	Power button	4	Operating mode key

Manual stop button

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 button

Pressing this button:

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

Color indication:

- Blinking blue: The robot is waiting for a user action. For example, press the button to clear a Protective stop or acknowledge the change of operating mode.

Power button

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

Color indication:

- Blinking green: The robot is starting up.
- Green: Normal operation.
- Blinking blue: The robot is checking that the battery level is high enough to start up.
- Blinking red: The battery level is too low to start without additional charging, or the robot is shutting down.

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 mode. 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.

6. Accessing the internal parts

Most internal parts of MiR600 are accessed through maintenance hatches that open to different compartments.



CAUTION

Opening or removing hatches from the robot exposes parts connected to the power supply, which can result in a short circuit that will damage the robot and could injure personnel.

- Before removing any hatches, turn off the robot.
- Start by removing the left hatch, and disconnect the battery—see your robot's user guide for instructions on disconnecting the battery.

6.1 Accessing the front compartment



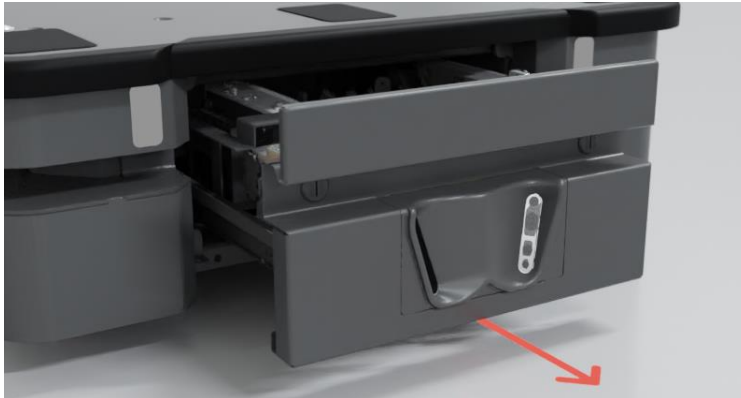
See a [video](#) of the process on the MiR TechComm videos channel on vimeo.com.

1


Turn the two screws on the front compartment hatch 90°. Use a flat-head screwdriver.



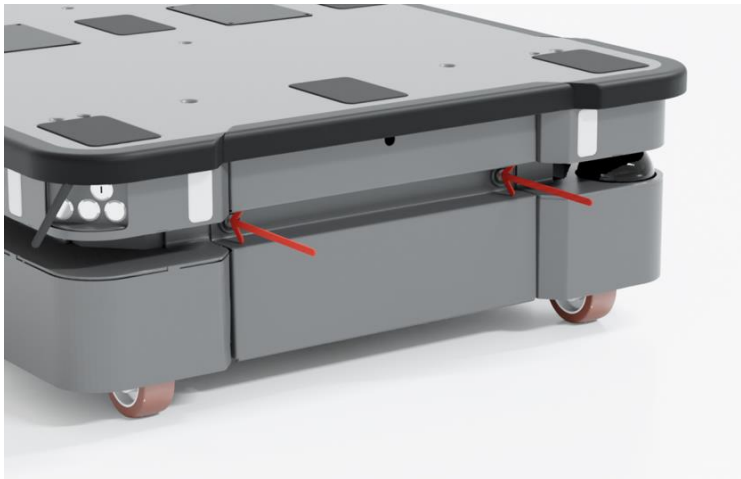
- 2 Pull out the electronics drawer.



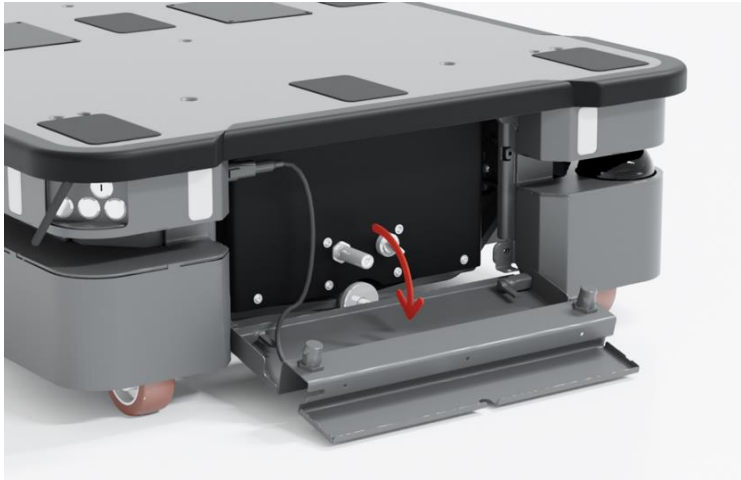
6.2 Accessing the rear maintenance compartment

-  See a [video](#) of the process on the MiR TechComm videos channel on vimeo.com.

- 1 Press the two buttons on the rear hatch.



- 2 Pull open the hatch.



You can now access the Manual brake release switch and MiR Controller interface.

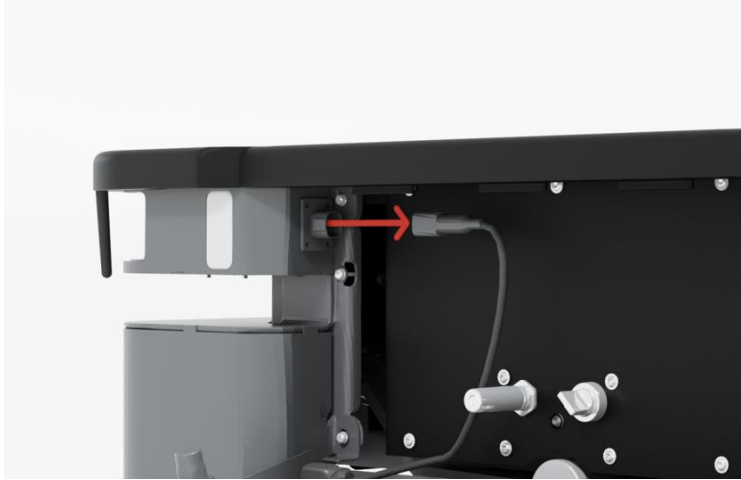
To access the motor controller carrier board and dynamic brake contactors, you must remove the rear compartment cover.



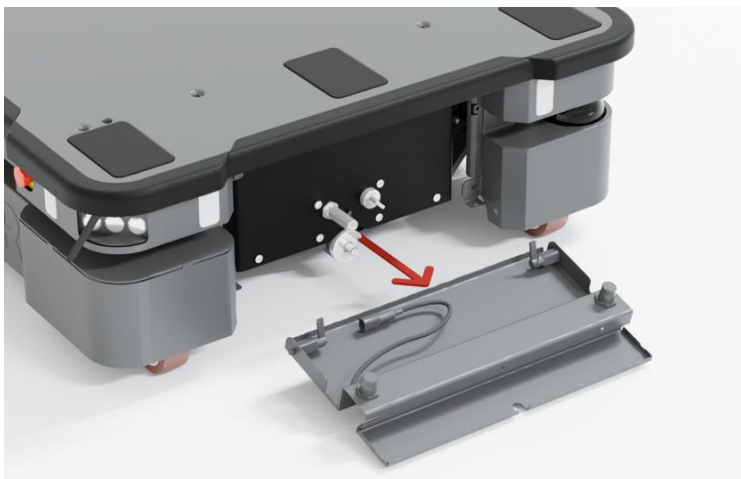
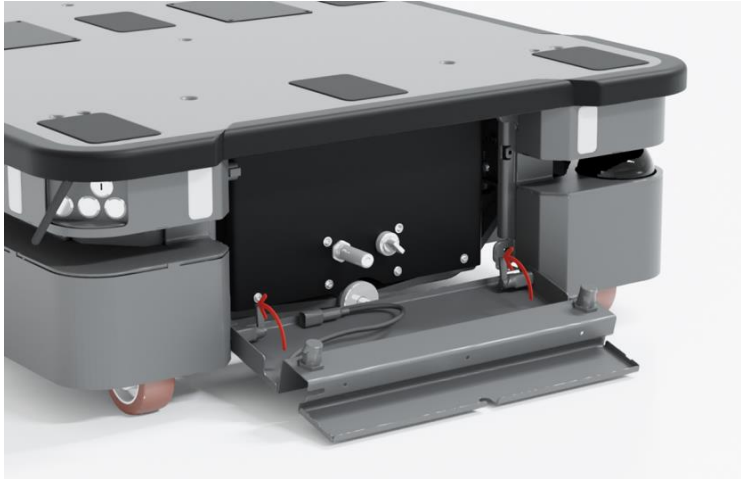
See a [video](#) of the process on the MiR TechComm videos channel on vimeo.com.

To remove the cover, follow these steps:

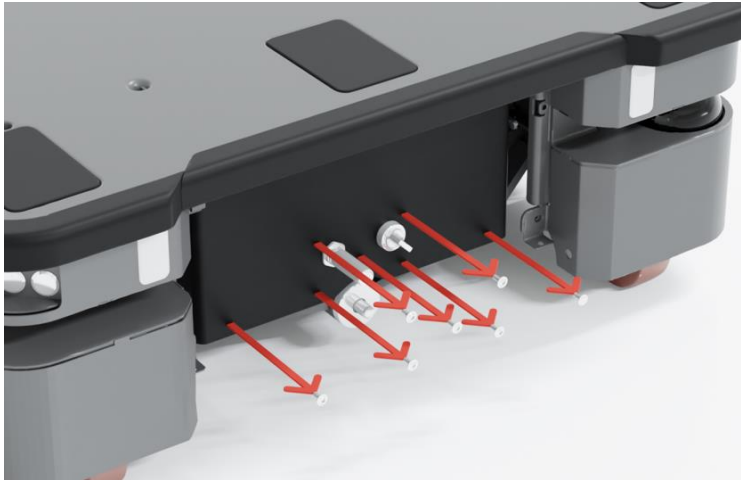
- 1 Disconnect the status light cable.



- 2 Turn the two hinges in the bottom corners to release the hatch, and remove the hatch from the robot.



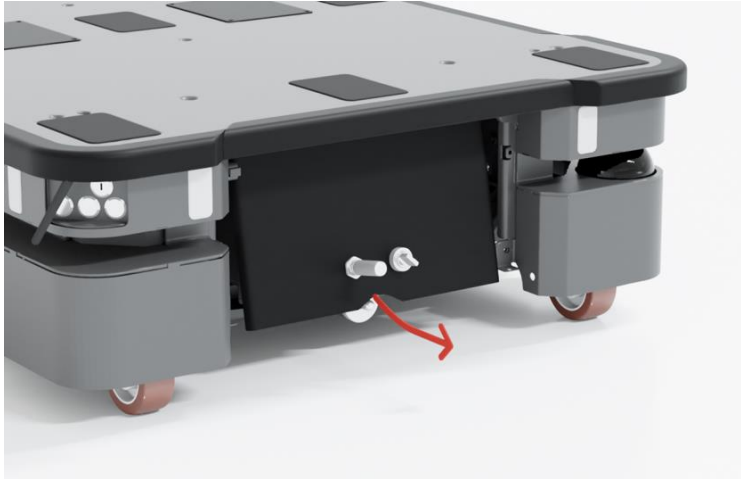
- 3 Remove the seven screws on the rear cover. Use a T25 bit.




- 4 Loosen the top three screws while holding the bottom of the cover. Use a T25 bit.



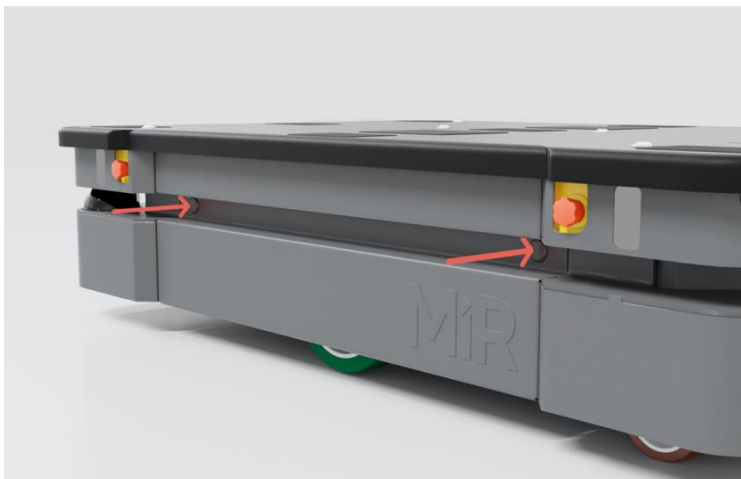
- 5 Remove the cover by sliding it downwards and out to access the rear maintenance compartment.



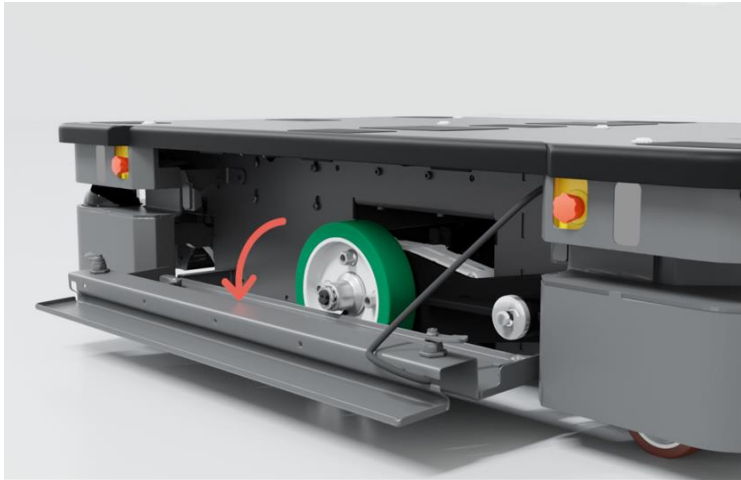
6.3 Accessing the side compartment

-  See a [video](#) of the process on the MiR TechComm videos channel on vimeo.com.

- 1 Press the two buttons on the side maintenance hatch.

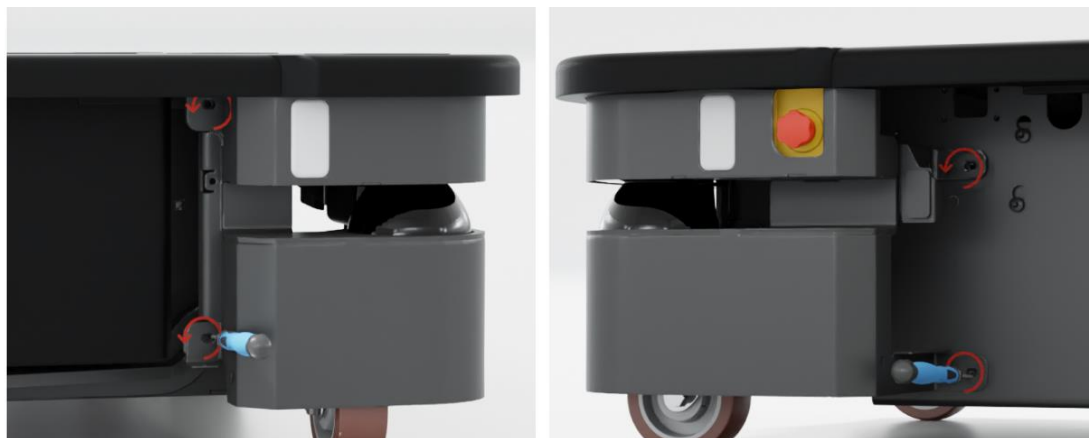


- 2 Pull open the hatch.

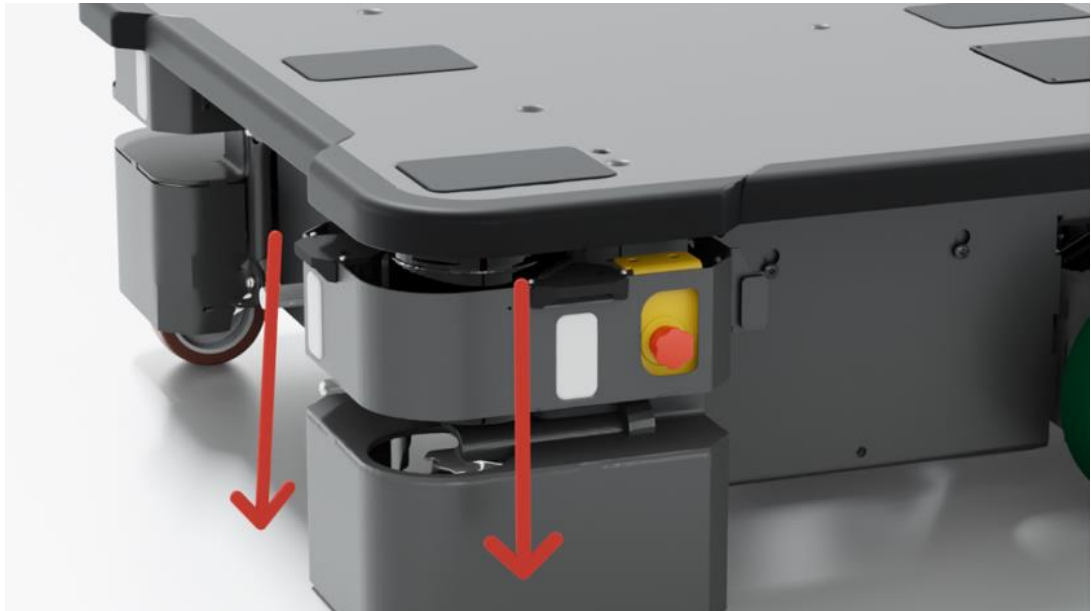


Removing the corner shield

- 1 Press the Emergency stop button on the corner shield you are going to remove. After reassembling, remember to release the button again.
- 2 Remove the four screws from the corner shield. Use a T30 screwdriver. When reattaching the corner shields, tighten the screws to 11.6 Nm.

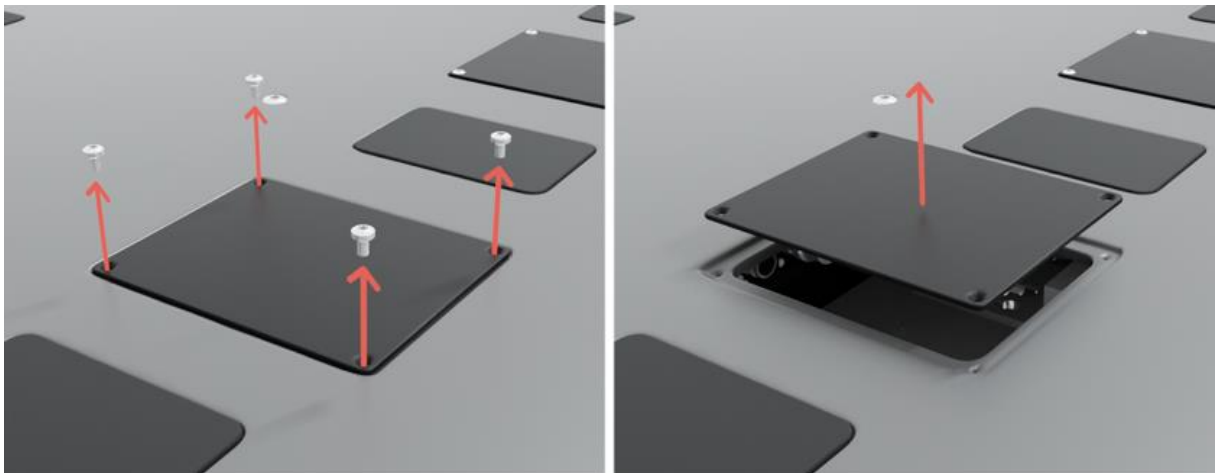


- 3 Remove the corner shield. It may require some force to disconnect the shield from the corner bumper. Pull it downward firmly to remove it from the bumper.



6.4 Accessing the top compartments

To open a top compartment, remove the four screws, and lift off the top cover. Use a T20 bit.



7. Getting started

This section describes how to get started with MiR600.

MiR600 hardware version 1.0 must be running software version 3.3.2 or higher.

Read "[Safety](#)" on [page 8](#) before powering up MiR600.

7.1 In the box

The box contains:

- The MiR600 robot
- Anti-slip paper
- A SICK safety laser scanner optics cover cleaning cloth
- A MiR600 document folder containing the following printed documents:
 - *MiR600 Quick Start*
 - *The CE Declaration of Conformity* for your robot
 - *Unpacking note*

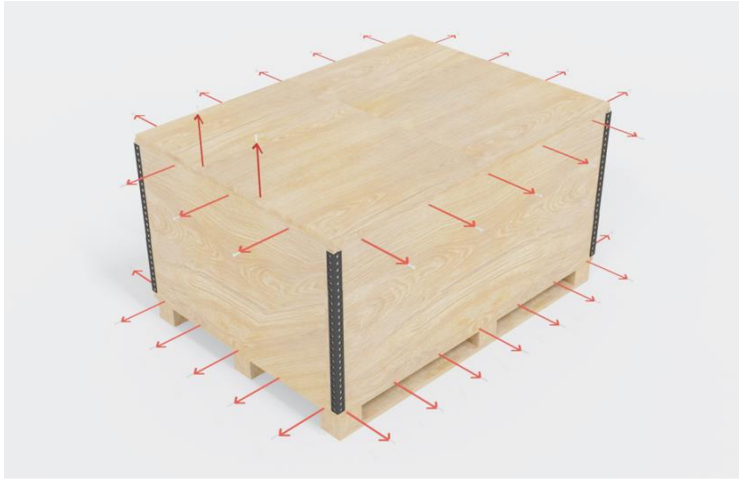
7.2 Unpacking MiR600

Keep the original packaging for future transportation of MiR600.

To unpack the robot, follow these steps:

- 1 Place the box with the robot so that there is at least 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.

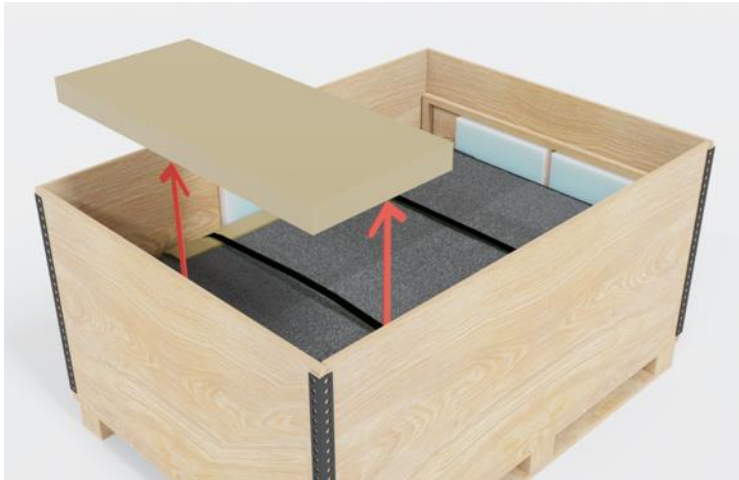
- 2 Remove the screws that attach the walls of the box to the box lid and the base of the box. Use a T20 bit.



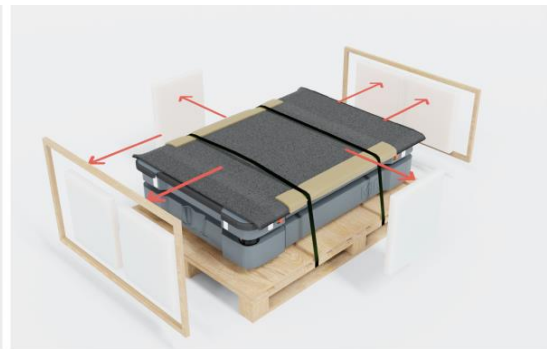
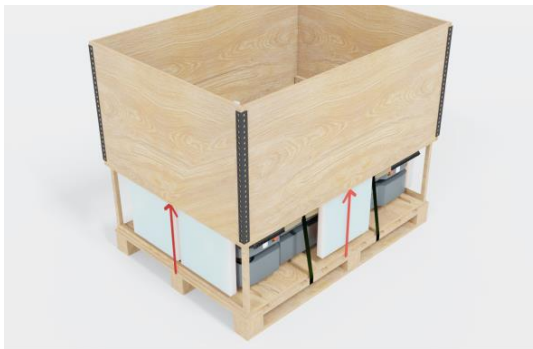
- 3 Remove the lid from the box, and remove the wooden lath beneath the lid. Use a T20 bit.



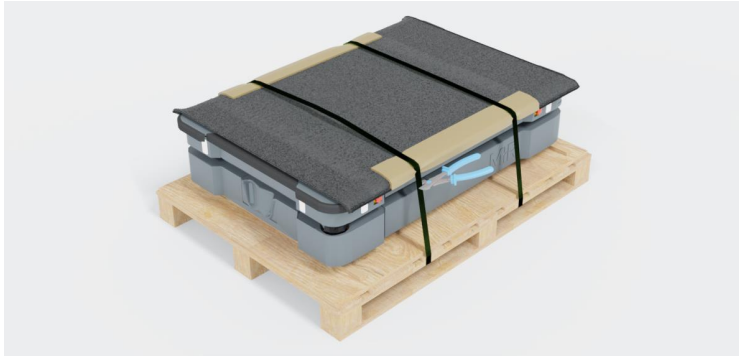
- 4 Take the package with the printed documents and accessories out of the box.



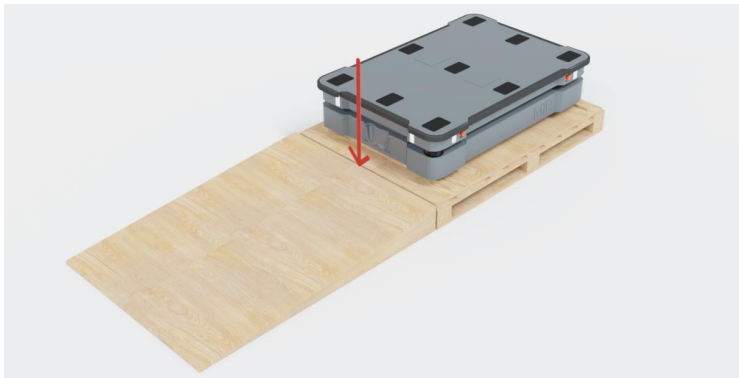
- 5 Remove the pallet collars and the protective foam blocks.



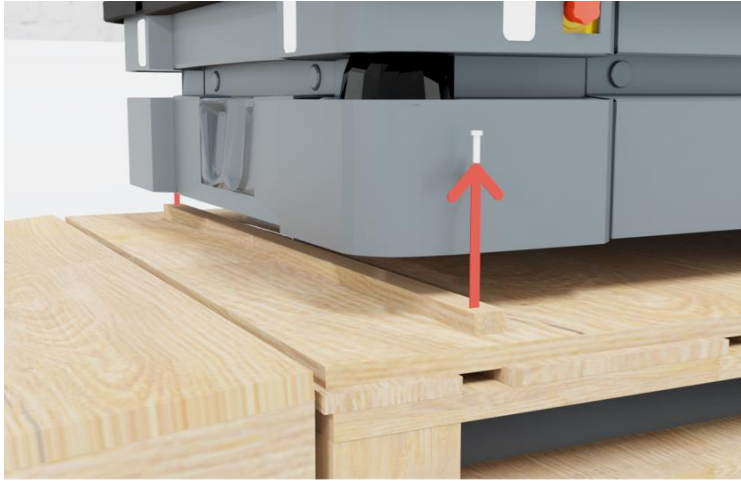
- 6 Cut the protective straps.



- 7 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.



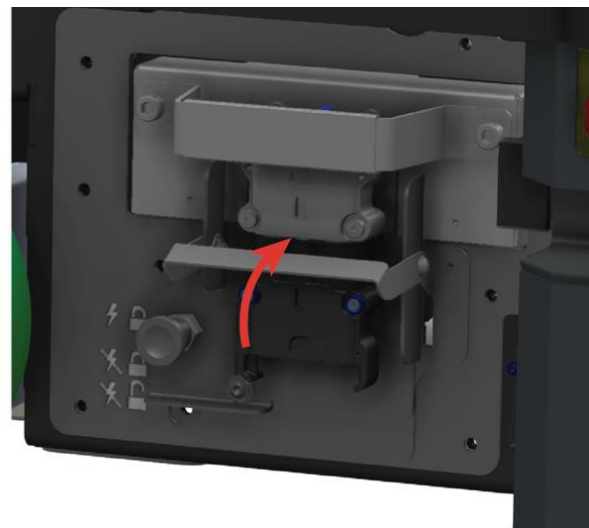
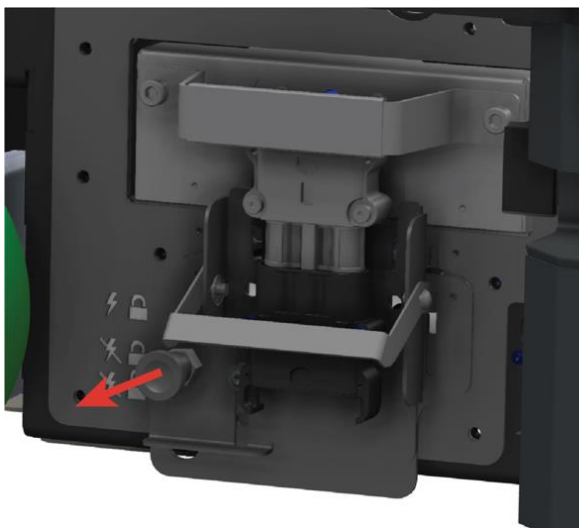
- 8 Remove the wheel stop board from the pallet to let the robot drive on the ramp. Use a T20 bit.



7.3 Connecting the battery

To connect the battery to the robot, you need to open the left side compartment—see ["Accessing the internal parts" on page 24](#).

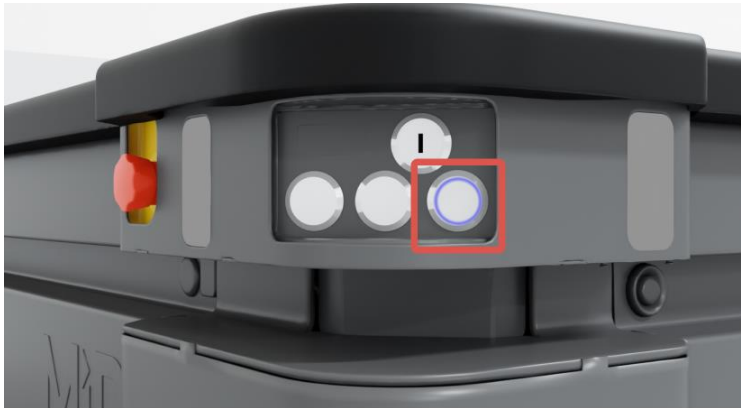
Once you have accessed the left side compartment, pull the Battery lock pin out, and pull the Battery lever to the top position. The battery is now connected, and you can close the side maintenance hatch.



7.4 Powering up the robot

To power up the robot, follow these steps:

- 1 Press the Power button for five seconds.



The robot turns on the red signal lights and the orange wavering status lights and 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.



-  If you are not able to power up the robot upon delivery, see *MiR 48V Battery Technical Guide* to troubleshoot the issue. You can find this guide on [MiR Support Portal](#).

7.5 Connecting to the robot interface

When the robot is turned on, you can connect a PC, tablet, or phone to the robot's internal network via the RJ45 Ethernet port on the robot. Once connected, you can configure the robot's settings and connect it to a wireless network.

You can connect to the robot using an Ethernet cable or an access point. If you are located in North America, the EU, or a part of the EAC, you can purchase a MiR Access Point from MiR. Outside these areas, you need to use your own access point that is approved for use in your region. If you choose to use an access point, you must ensure that the robot is disconnected from the wireless network before attaching the access point to remain compliant—see ["Connecting the robot to a Wi-Fi network" on page 42](#).

Whether you connect via Ethernet cable or an access point, it is recommended that your device is configured to DHCP. If you require a static IP on your device, assign an address above 192.168.12.150, and set the DNS server and Gateway address to 192.168.12.1.



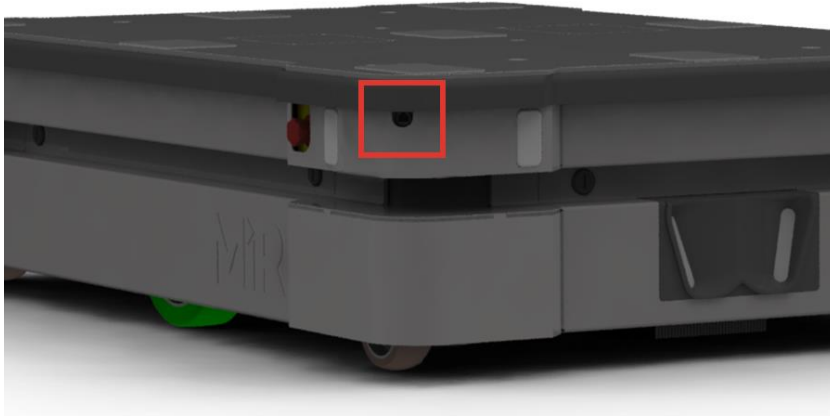
CAUTION

Harmful electromagnetic interference might be the result of having two radio modules transmitting at the same time. The robot is certified to have only one radio module active at any given time.

- Do not attach an access point or additional radio modules to the robot while it is connected to a wireless network.

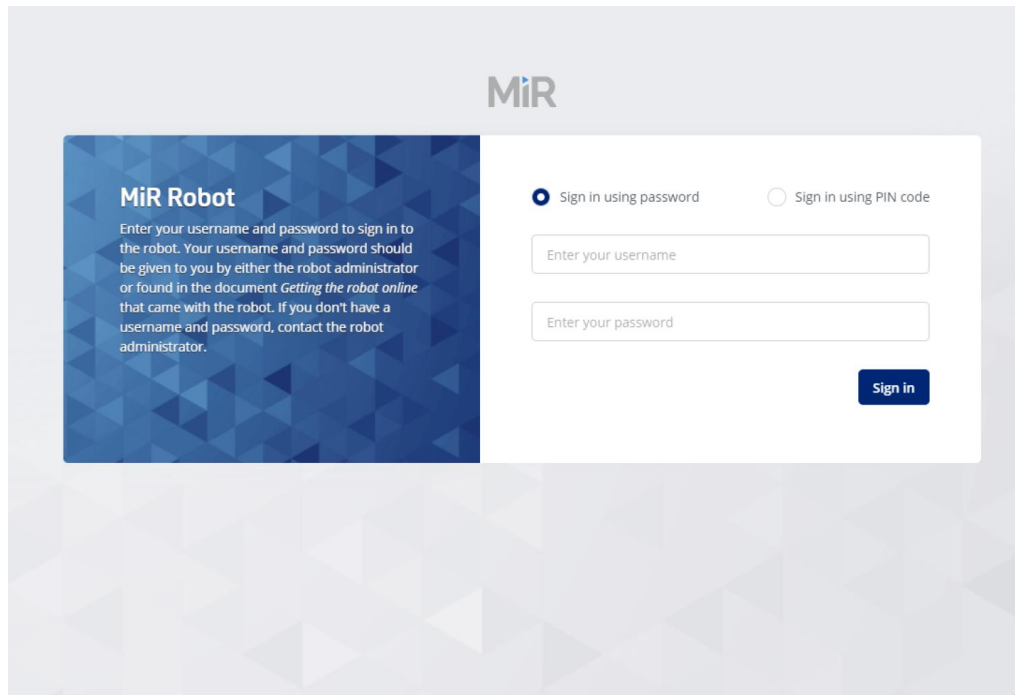
To connect to the robot interface, follow these steps:

- 1 Locate the RJ45 Ethernet port below the bumper on the front-right corner shield of the robot.



- 2 Connect your device directly to the robot using an Ethernet cable, or connect an access point to the Ethernet port for a wireless connection.
- 3 If you are using an access point, connect your device to the access point. The MiR Access Point Wi-Fi has the following format: **MiR_3042XXXXX**. Use the password shipped with the access point to connect.

- 4 In a browser, go to the address **192.168.12.20** and sign in.

The image shows the MiR Robot login web interface. At the top center is the MiR logo. Below it, on the left, is a blue box with the title "MiR Robot" and instructions: "Enter your username and password to sign in to the robot. Your username and password should be given to you by either the robot administrator or found in the document *Getting the robot online* that came with the robot. If you don't have a username and password, contact the robot administrator." On the right is a white login form. It has two radio buttons at the top: "Sign in using password" (which is selected) and "Sign in using PIN code". Below these are two input fields: "Enter your username" and "Enter your password". At the bottom right of the form is a blue "Sign in" button. The background of the entire page is a light gray with a subtle geometric pattern of triangles.

7.6 Connecting the robot to a Wi-Fi network

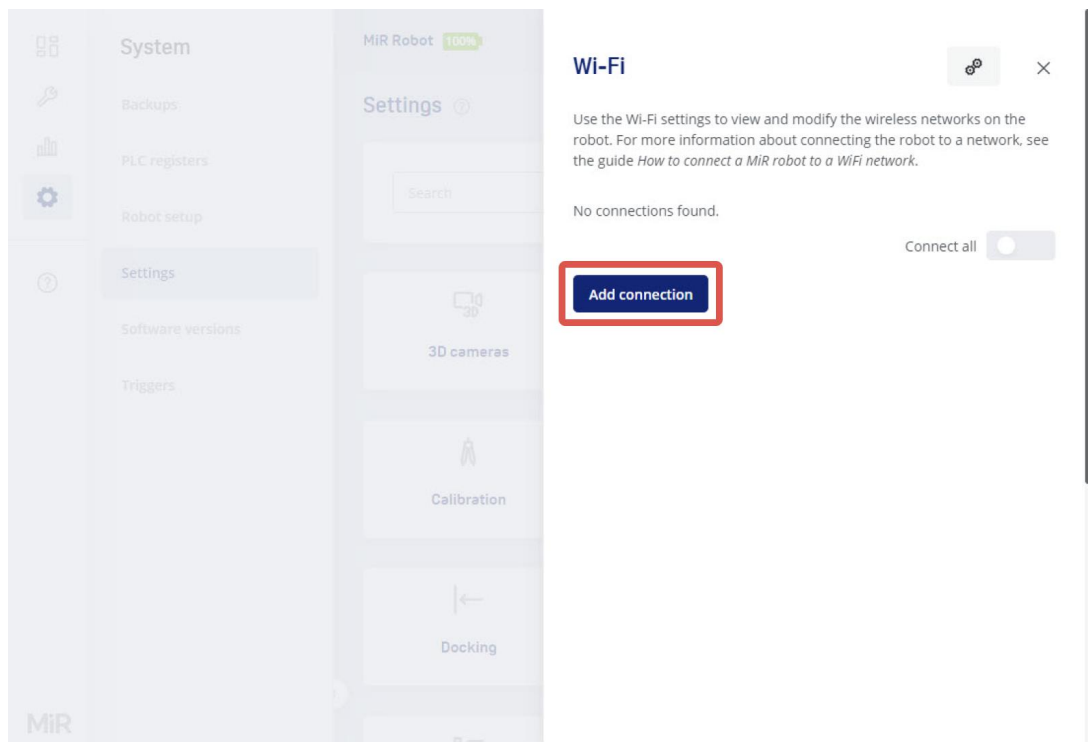
To communicate with the robot wirelessly without using an access point, connect the robot to your local Wi-Fi network. This enables you to access the robot interface via your Wi-Fi network by entering the assigned IP address of your robot in a web browser.

To connect the robot to a Wi-Fi network, follow these steps:

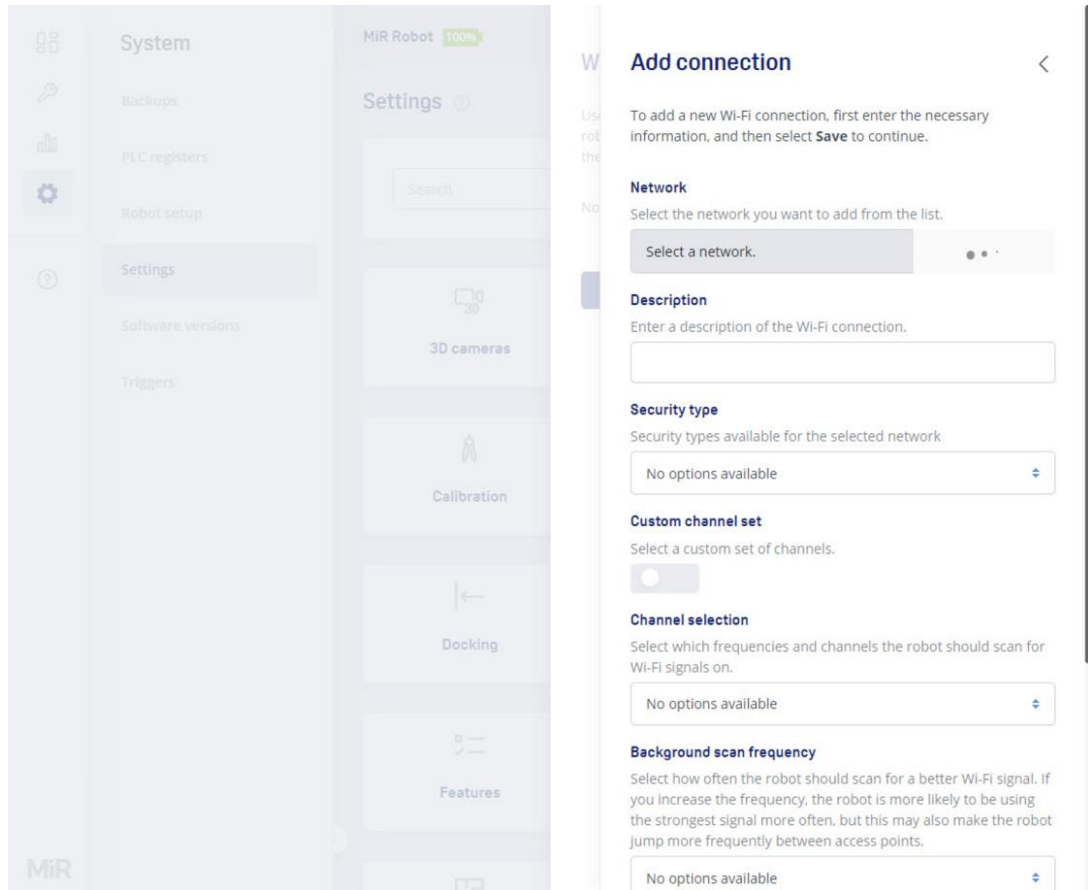
- 1 Connect to your robot as described in "[Connecting to the robot interface](#)" on page 40.

To comply with the robot's certification, you must use an Ethernet cable to avoid simultaneously active radio transmitters while setting up the connection to the local Wi-Fi network.

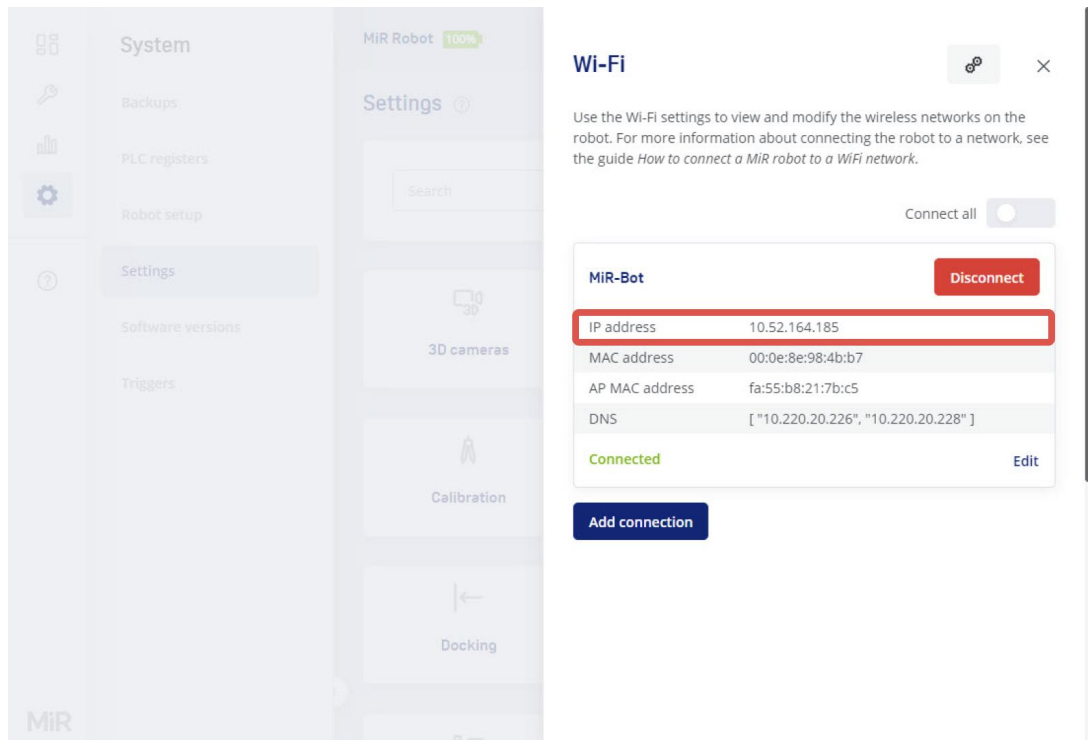
- 2 Go to **System > Settings > Wi-Fi**, and select **Add connection**.



- 3 Select the network you want the robot to be connected to, and fill out the displayed fields—see the guide *How to connect a MiR robot to a Wi-Fi network* for more information about the Wi-Fi settings. You can find this guide on [MiR Support Portal](#).



- 4 Select **Add connection** when you have finished. The robot is now connected to the network. When you are connected to the same network, you can access the robot's interface by entering the IP address displayed under the connection description into your internet browser.



To disconnect the robot from a Wi-Fi network, select **Disconnect**.

7.7 Driving the robot in Manual mode



CAUTION


When driving the robot in Manual mode it is the driver's responsibility to ensure the safety of nearby personnel. Failure to be aware of the risks and operate the robot with caution can result in injury to personnel or damage to equipment.

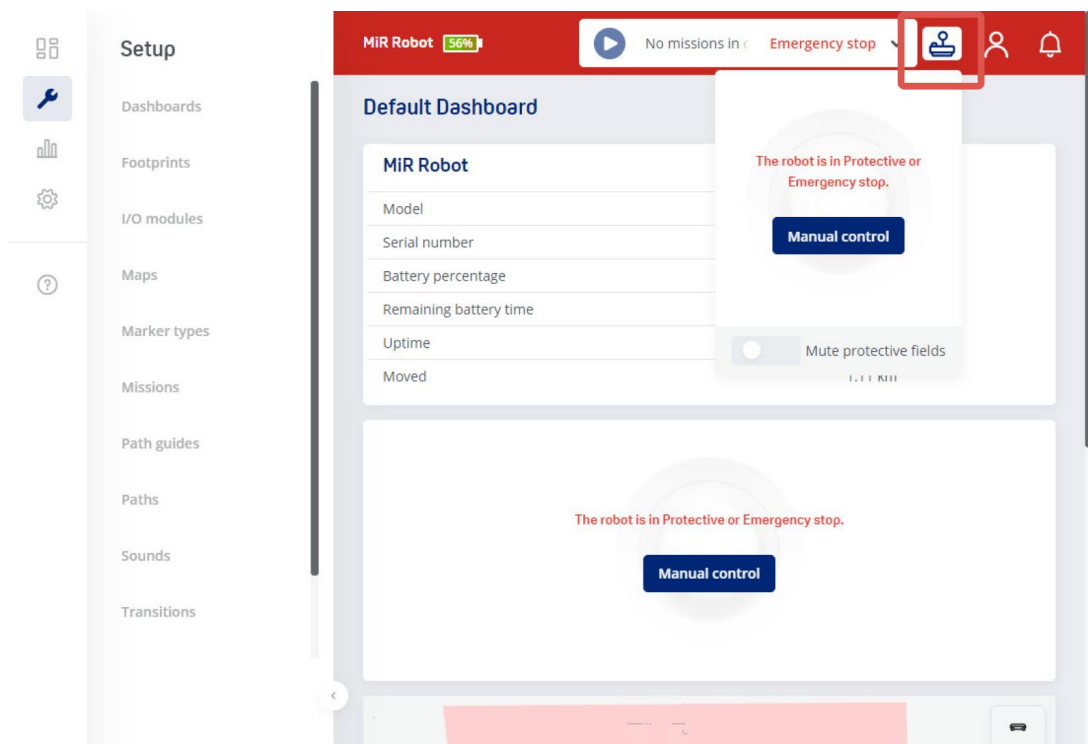
- Drive carefully to avoid collisions with any personnel or objects when driving the robot in Manual mode.
- Avoid driving the robot manually without a clear visual of the robot.
- Be aware that you can drive the robot into Forbidden zones and Unpreferred zones on the map.
- Be aware that you can make the robot collide with obstacles even if you do not mute the Protective fields. If you mute the Protective fields the robot will not stop at all for detected obstacles.
- Manual mode is only intended for initialization and maintenance situations, including potential deadlocks.

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

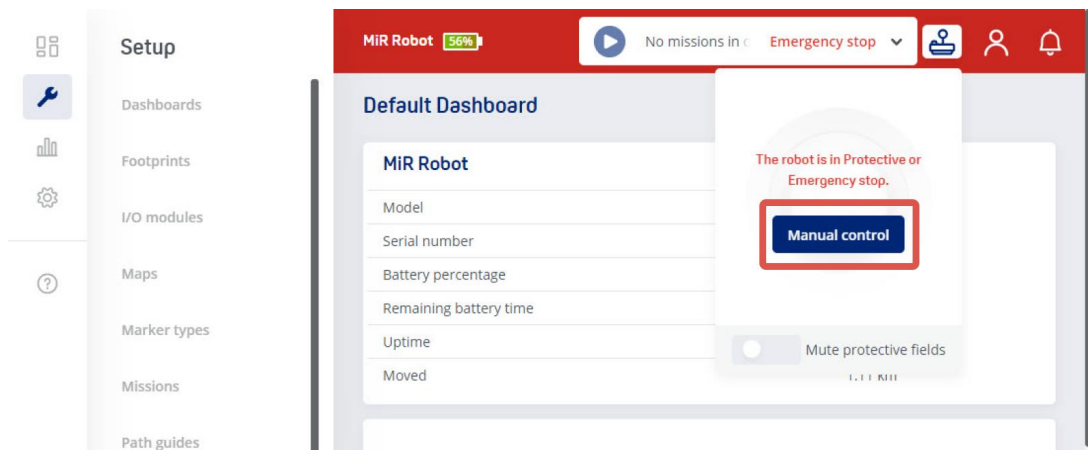
1

On the robot, turn the Operating mode key to Manual mode (turn it to the right). The robot enters Emergency stop.

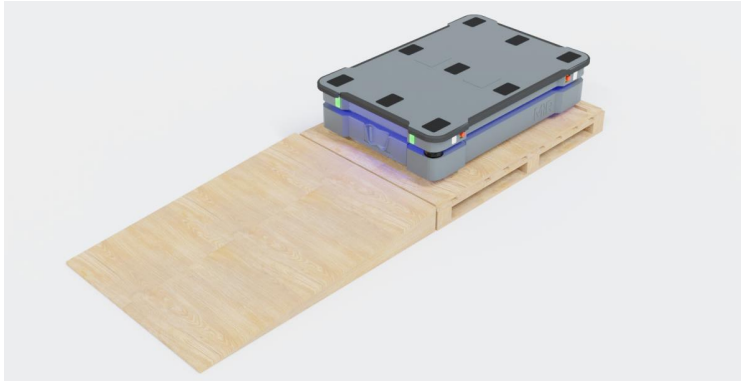
- 2 In the robot interface, select the **Manual control** joystick icon .



- 3 Select **Manual control**. The Resume button on the robot starts blinking.



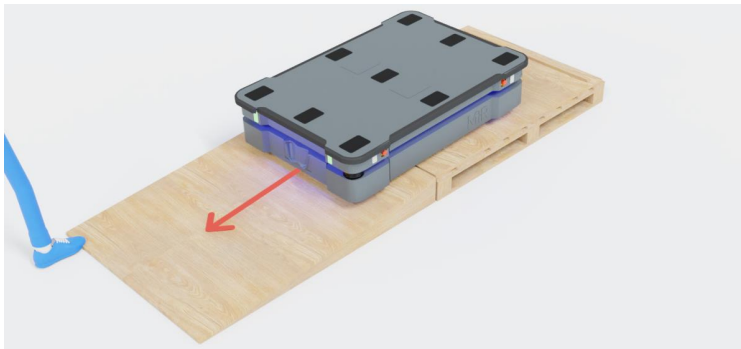
- 4 On the robot, press the Resume button. The status lights turn blue, indicating that the robot is in Manual mode.



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

**NOTICE**

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



7.8 Checking the robot

To ensure the robot is ready for use, check the following:

- Check the robot for any visual defects, such as dents, scratches, or cracked parts.
- Individually test each of the Emergency stop buttons on the robot. Make sure the robot enters Emergency stop when a button is pressed, and can be brought out of Emergency stop by releasing the button and pressing the Reset button.
- Check that the robot can drive straight and responds correctly when driving in Manual mode—see ["Driving the robot in Manual mode" on page 46](#).
- Check that you can charge the robot using the charging stations or charging cables that are intended for MiR600.
- Check the battery percentage and charge the robot if the battery percentage is low. Even if you do not intend to use the robot immediately, you should keep the battery charged to ensure that it is not damaged or permanently shutdown from being undercharged.

- Your robot may not be delivered with the latest software if it was packaged before the software was released. To avoid an out of box failure that could look like a hardware failure, we strongly recommend that you update to the newest software version when you receive a robot. This also applies to newly supplied robots, as there may have been important software updates during the storage time and shipment of the robot.

You can see the software version your robot is running in the bottom left corner of the robot interface.

The screenshot displays the MiR600 robot interface. On the left, a 'Setup' menu is visible with various options. At the bottom left, a red box highlights the software version information. On the right, the 'Dashboards' section shows a table of installed dashboards.

Setup Menu:

- Footprints
- I/O modules
- Maps
- Marker types
- Missions
- Path guides
- Paths
- Sounds
- Transitions
- User groups
- Users

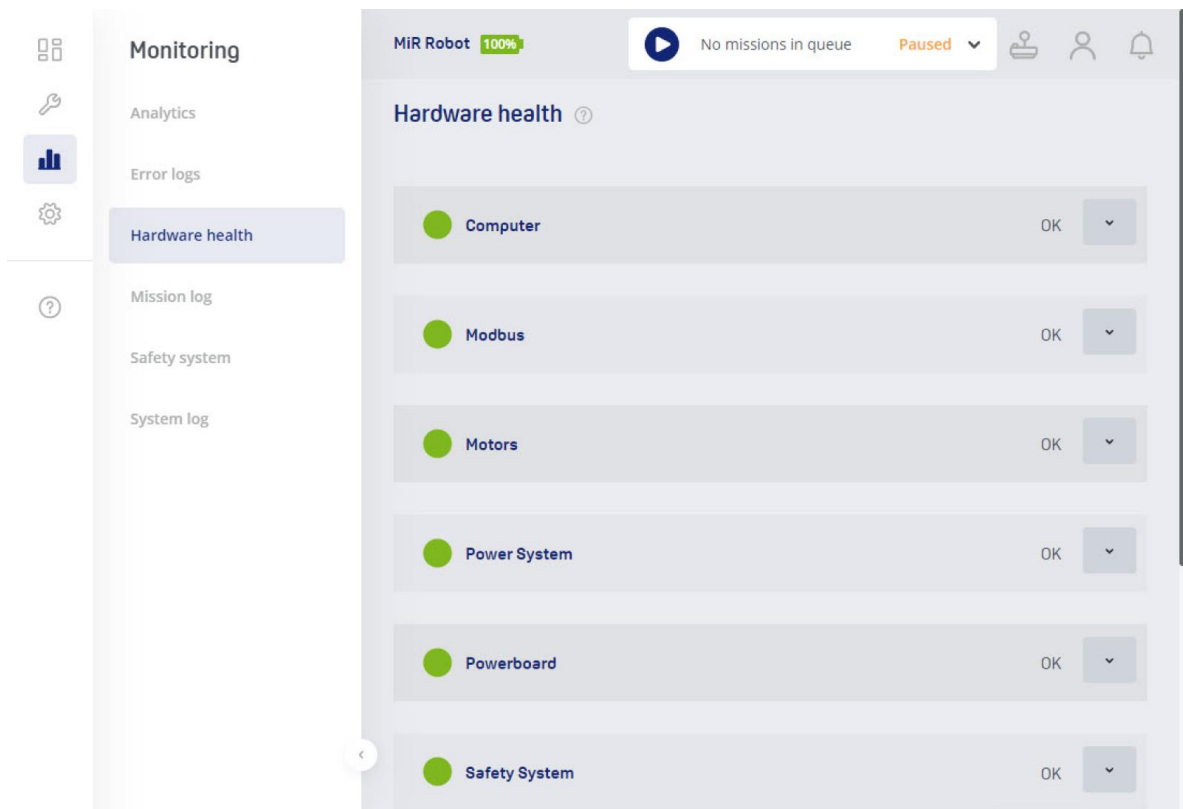
Software Version Information (bottom left):

MiR600
Software version: 3.0.0
Copyright © Mobile Industrial Robots A/S 2016 - 2022

Dashboards Table:

Name	Created by	Actions
Default Dashboard	MiR	
Map	Service	
Quick access	Service	
Hook testing	Service	
Distributor speed test	Distributor	
kkDash01	Distributor	

- Check that all hardware components work as intended under **Monitoring > Hardware health**. All elements on the page must have the **OK** status and a green dot on the left.



- If you for any reason suspect that the safety configuration may have been modified, verify that the checksum values of the safety configuration have not been changed—see *MiR600 User Guide*.

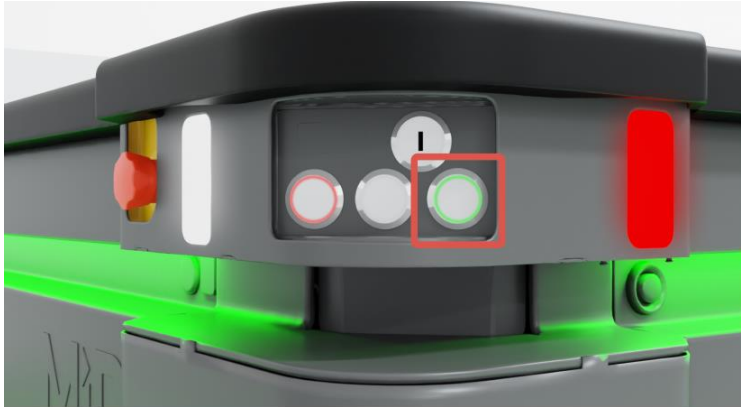
7.9 Shutting down the robot

To shut down MiR600, follow these steps:



See a [video](#) of the process on the MiR TechComm videos channel on vimeo.com.

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



- 3 Wait for the robot to finish the shutdown process. The status lights waver orange, and the Power button blinks red.



When the robot finishes the shutdown process, the status and signal lights go off.



When you shut down the robot for transportation, service, or repair, the battery must be disconnected—see your robot's user guide for instructions on disconnecting the battery.

7.10 Battery and charging

The robot is powered by a lithium-ion battery that can be charged with a MiR cable charger or a MiR Charge 48V charging station. Instructions for charging depend on the charger type and are described in the guides included with each charger.



NOTICE

Do not parallel couple the battery with more batteries. Parallel coupling the batteries will result in the batteries shutting down.



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 an original MiR charger.

**WARNING**

Lithium-ion 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 connect or charge a potentially defective or damaged battery.
- 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.
- In case of fire, use water to put out the fire. There is no need for special extinguishing media.
- 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 color.
 - The battery case is deformed or otherwise differs from the normal electrical or mechanical condition.
- Do not modify or manipulate of the battery. This may lead to considerable safety risks and is therefore prohibited.
- Never smoke or allow an open spark or flame in the vicinity of the robot's battery.
- Do not use the battery for anything other than MiR600.



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