

Quick Start (en)

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Revision: v.1.1



MiR 600


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1. Version history

This table shows current and previous versions of this document.

MiR600			
			
Revision	Release date	Description	HW
1.1	2021-08-12	General improvements throughout the document.	1.0
1.0	2021-07-23	First edition.	1.0

2. Safety

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

Pay particular attention to the safety instructions and warnings.



NOTICE

Mobile Industrial Robots disclaims any and all liability if MiR600 or its accessories are damaged, changed, or modified in any way. Mobile Industrial Robots cannot be held responsible for any damages caused to MiR600, accessories, or any other equipment due to programming errors or malfunctioning of MiR600.

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 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

When the robot is in an operating hazard zone, there is a risk of injury to any personnel within the zone.

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



WARNING

The robot may drive over the feet of personnel, causing injury.

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



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.

- 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 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.

**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 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.
- In case of fire, use water to put out the fire. There is no need for special extinguishing media. An ambient fire can be fought with class D 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.
- Modifications or manipulations of the battery may lead to considerable safety risks and are therefore prohibited.
- Do not use the battery for anything other than MiR600.

**WARNING**

Load falling or robot overturning if the load on the robot is not positioned or fastened correctly can cause fall injuries to nearby personnel or damage to equipment.

- Ensure that the load is positioned according to the specifications and is fastened correctly—see the user guide of your robot for safe payload distribution.

**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

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 specifications for MiR600 on the MiR website.

MiR600 is intended to be commissioned according to the guidelines in your robot's user guide. This is a prerequisite for safe usage of MiR600.

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 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 a partly complete machine 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 shall ensure a safe design according to EN ISO 12100. Guidelines outlined in this manual are not sufficient.

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
- Conveyers (powered and non-powered)
- Industrial robot arms
- Devices that tow carts
- Customized load transfer stations

**NOTICE**

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

2.4 Users

MiR600 is only intended to be used by personnel that have received training in their required tasks.

There are three types of intended users for MiR600: commissioners, operators, and direct users.

Commissioners

Commissioners have thorough knowledge of all aspects of commissioning, safety, use, and maintenance of MiR600 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 MiR600, 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 MiR600 and of the safety precautions presented in this user guide. Operators have the following main tasks:

- Servicing and maintaining MiR600.
- 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 MiR600.
- Fastening loads to MiR600 securely.
- Loading and unloading from a paused robot.

All other persons in the vicinity of MiR600 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 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 environments
- Using the robot outdoors
- Using the robot 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 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—see [IT security on page 29](#).

**NOTICE**

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

2.7 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. 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**

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.



Figure 3.1. Indicator lights on MiR600.

Table 3.1. Identification of indicator lights in <i>Figure 3.1</i>			
Pos.	Description	Pos.	Description
1	Signal lights	2	Status lights

3.1 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 in **Table 3.2**.

Table 3.2. Status light colors	
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, for example hardware, localization
Blue	Manual drive
Blue wavering	Mapping
Contracting white	Charging at charging station
White wavering	Prompt user / Waiting for user's response
Cyan wavering (robots connected to MiR Fleet only)	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.



When the robot is charging in a charging station, the status lights on the side of the robot indicate the robot's battery percentage.

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

3.3 Speakers

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

Sounds are used in missions and can be used as alerts or to attract attention, for example, when the robot has arrived at a position.

When the robot drives with muted Protective fields 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.

- Do not disable the sound in the safety system.

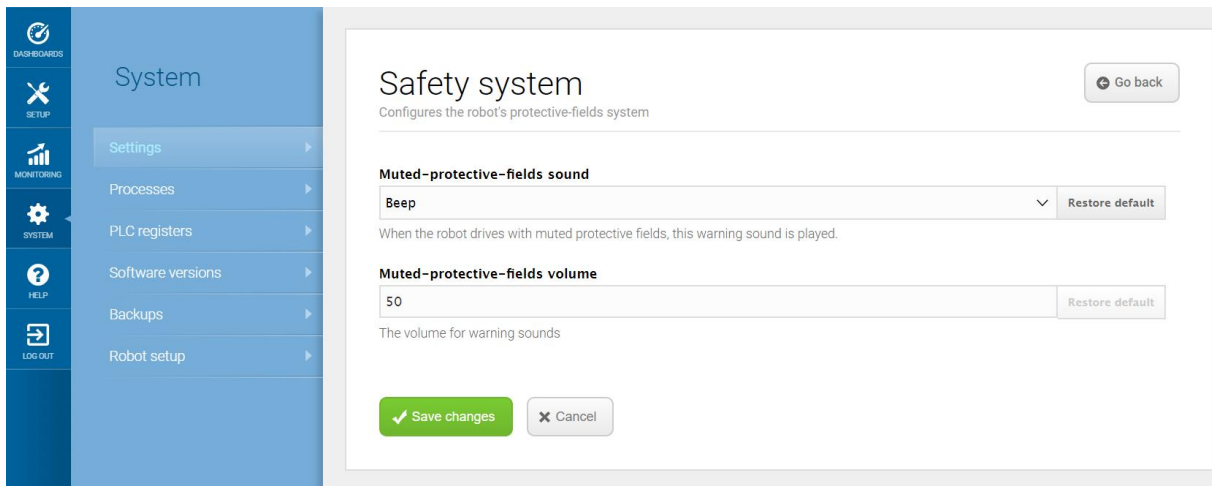


Figure 3.2. In the Safety system settings, you can modify the sounds the robot plays when the robot mutes its Protective fields.



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.

4. Control panel

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

4.1 The control panel buttons

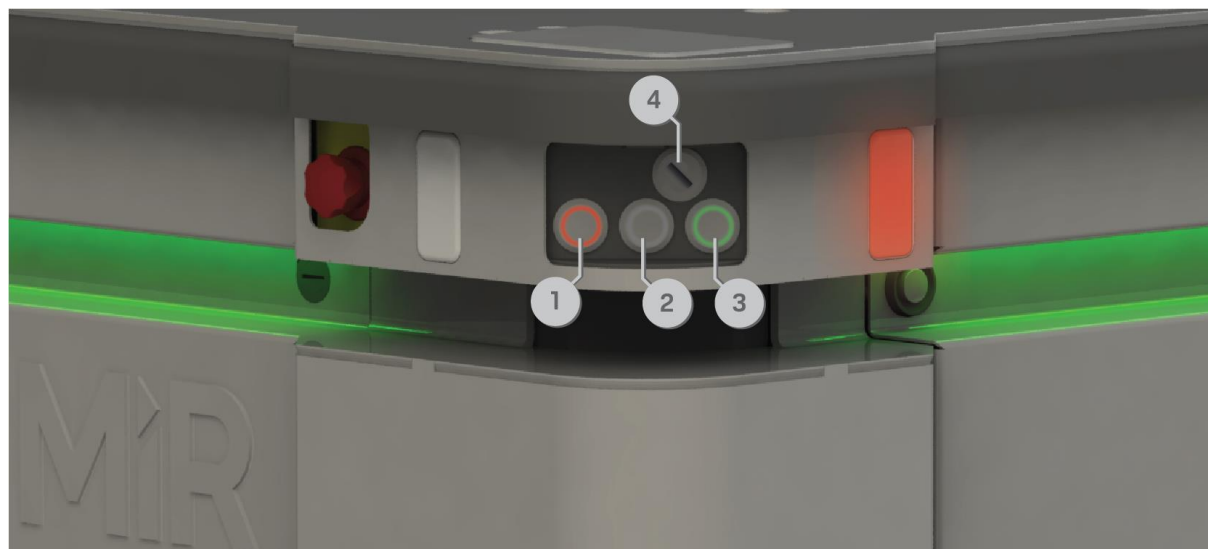


Figure 4.1. The MiR600 control panel.

Table 4.1. Identification of items on the control panel in <i>Figure 4.1</i>			
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.

4.2 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.



Remove the Operating mode key during normal operation. The vibrations from the robot's driving may shake the key and plug, and can cause an unwanted Protective stop.

5. Accessing the internal parts

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



CAUTION

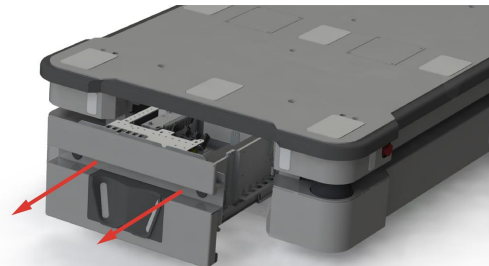
Opening or removing hatches from the robot exposes parts connected to the power supply, risking damage to the robot from a short circuit and personnel getting burnt.

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

5.1 Front compartment



To open the front compartment, turn the two screws 90° with a flat-head screwdriver, and pull out the compartment.

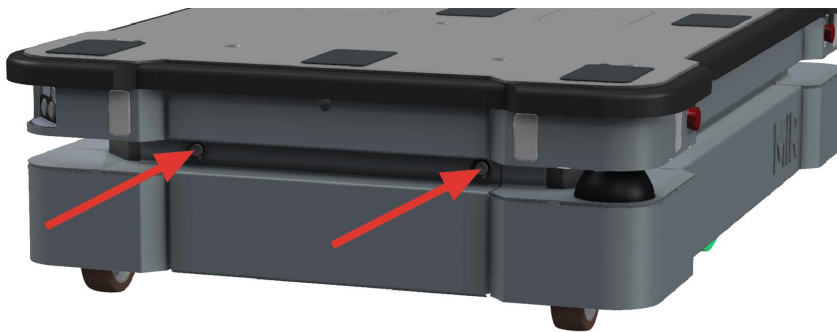


5.2 Rear compartment

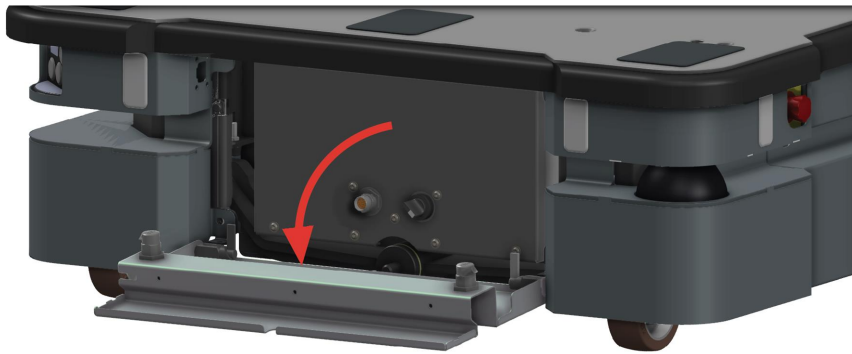


To open the rear compartment, follow these steps:

1. Push the two white buttons to unlock the hatch.



2. Pull open the hatch.

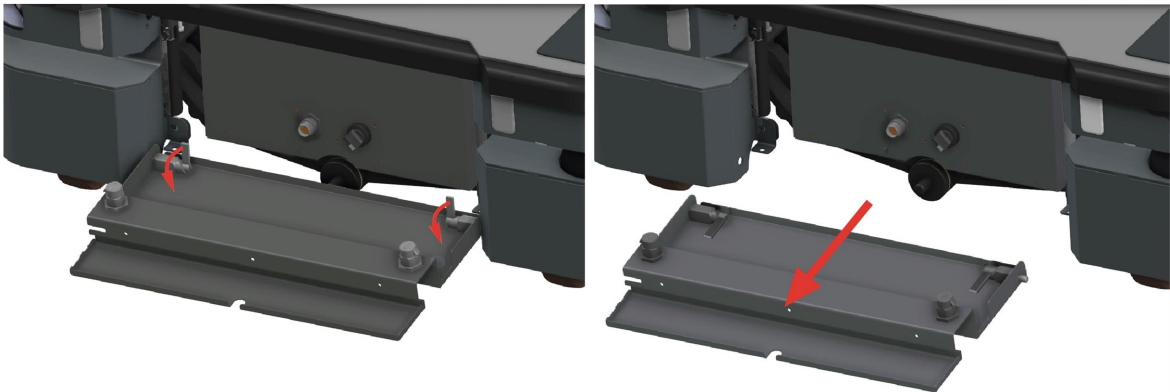


You can now access the Manual brake release switch and MiR Controller interface. To access the motor controller carrier board and dynamic brake contactors, follow these steps:

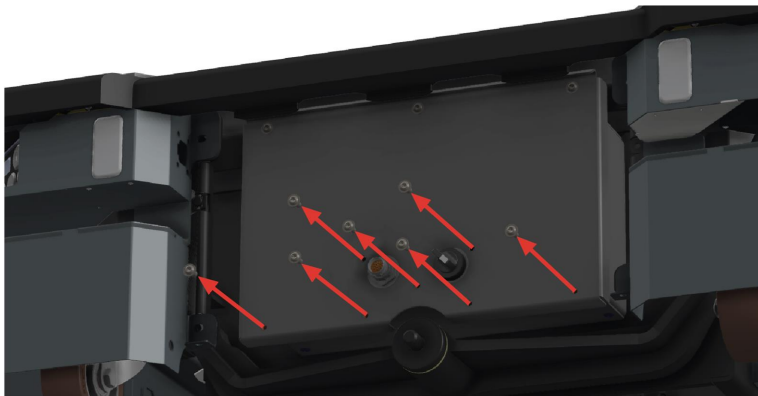
3. Disconnect the status light connector.



4. Remove the hatch by twisting the two hinges.



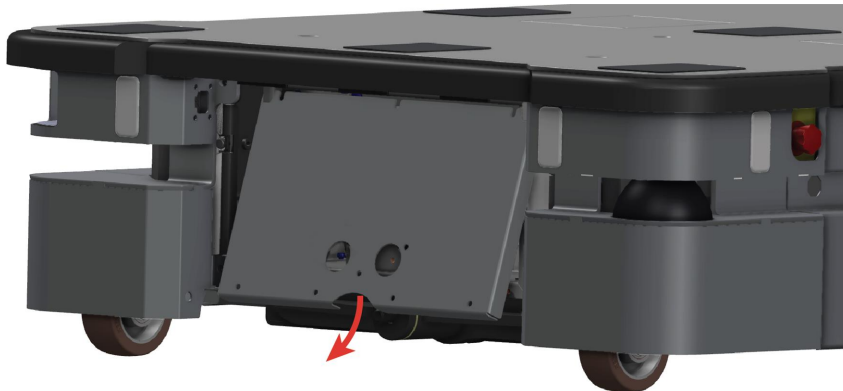
5. Remove the seven screws on the rear panel.



6. Loosen the top three screws while holding the bottom of the panel.



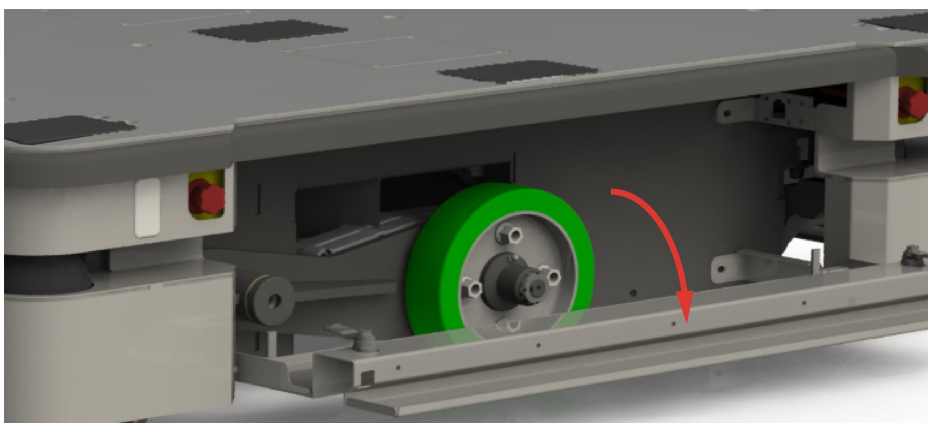
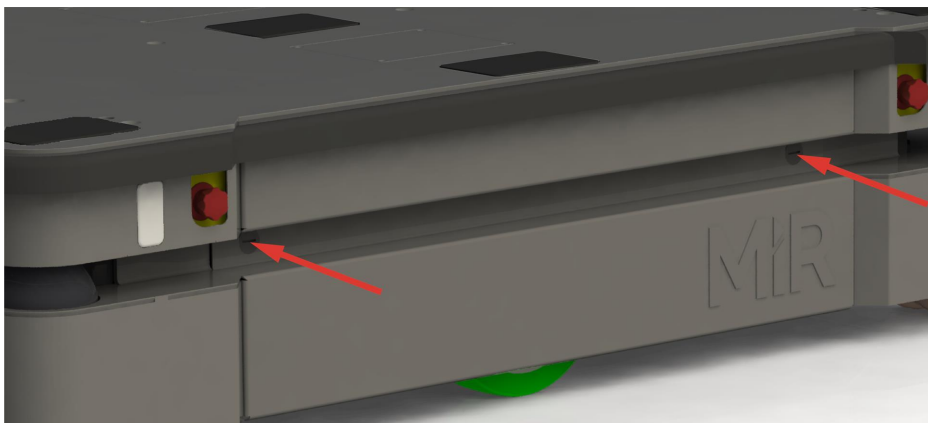
7. Remove the panel by sliding it downwards and out to access the rear maintenance compartment.



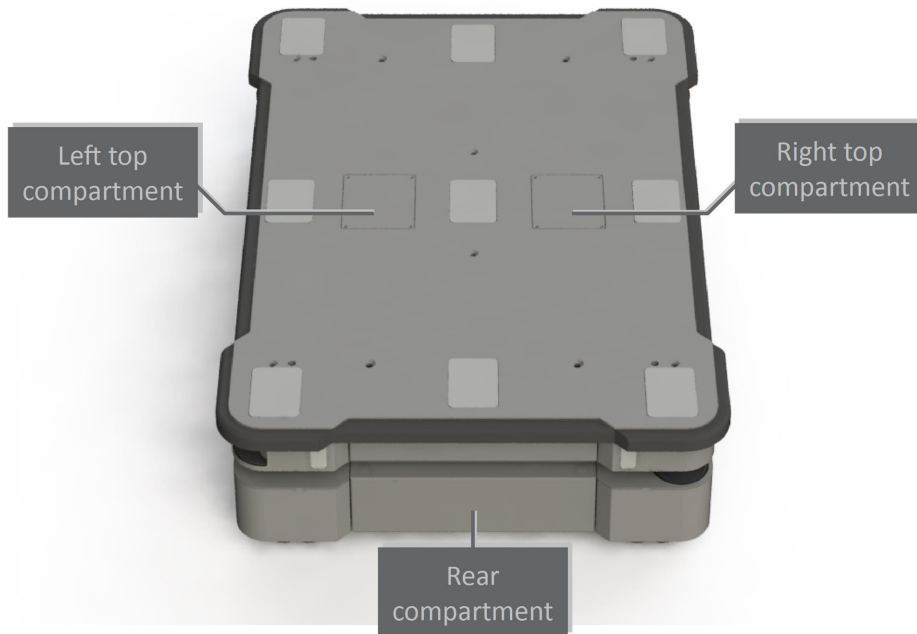
5.3 Side compartments



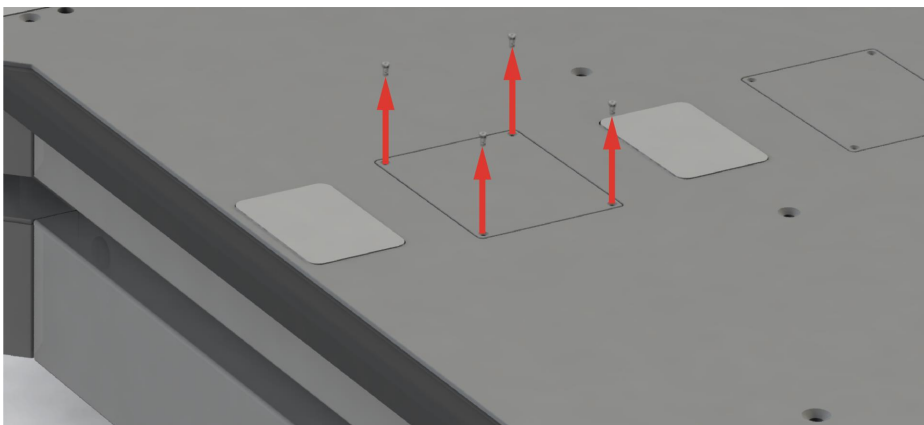
To open a side compartment, push the two white buttons to unlock the hatch, and pull it open.



5.4 Top compartments



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



6. IT security

IT security is a set of precautions you can take to prevent unauthorized personnel from accessing MiR600. This section describes the main IT-security related risks and how to minimize them when commissioning MiR600.

MiR600 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 conducting an IT-security risk assessment before commissioning the robot.



Contact your distributor for a list of FAQs about IT security and the guide *How to set up MiR products to improve the IT security*.

6.1 Managing users and passwords

Managing your users and passwords is the main way you can control access to MiR600.

There are three default users with predefined passwords for you to start using. These are described in the *MiR Robot 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 MiR600 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 MiR600, 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 MiR600, 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 previous 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.

7. Getting started

This section describes how to get started with MiR600.

**NOTICE**

To be able to use MiR600, your robot must be running software version 2.12.0 or higher.

**NOTICE**

Read [Safety on page 5](#) before powering up MiR600.



In some images in this section, the robot is shown with a MiR EU Pallet Lift 600 top module.

7.1 In the box

This section describes the contents of the MiR600 box.



Figure 7.1. The box containing the robot and accessories.

The box contains:

- The MiR600 robot
- A MiR600 document folder containing a USB flash drive and the following printed documents:
 - *MiR600 Quick Start*
 - *The CE Declaration of Conformity for your robot*
 - *Getting the robot online*
 - *Passwords*
- The unique nameplate for your robot

- The USB flash drive in the document folder has the following content:
 - *MiR600 User Guide*
 - *MiR600 Quick Start*
 - *MiR Network and WiFi Guide*
 - *MiR Robot Reference Guide*
 - *MiR Robot REST API Reference*
 - *Getting the robot online*
 - *CE Declaration of Conformity*

7.2 Unpacking MiR600

This section describes how to unpack the robot.



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.



3. Remove the lid from the box, and remove the wooden lath beneath the lid.



4. 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.



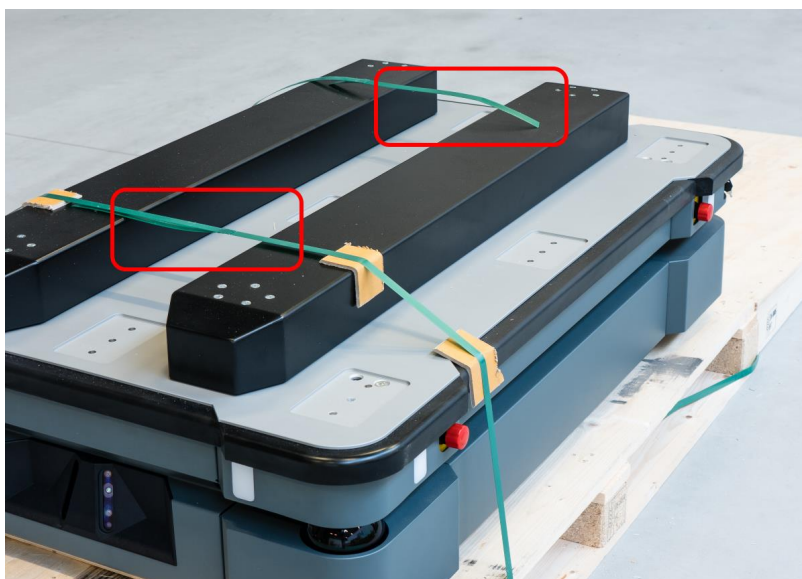
5. Take the folder with the printed documents and the USB flash drive out of the box.



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



7. Cut the protective straps.



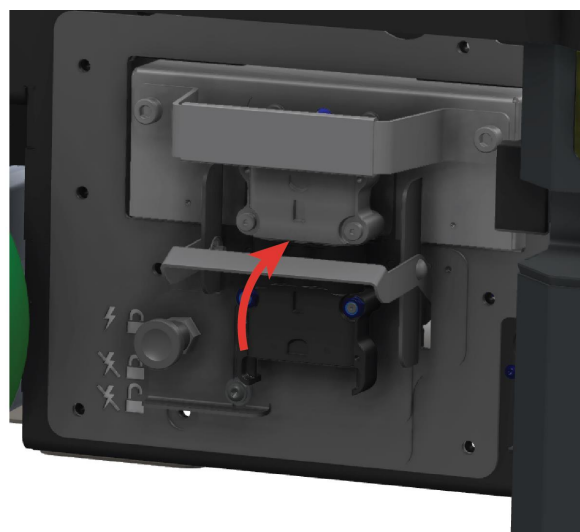
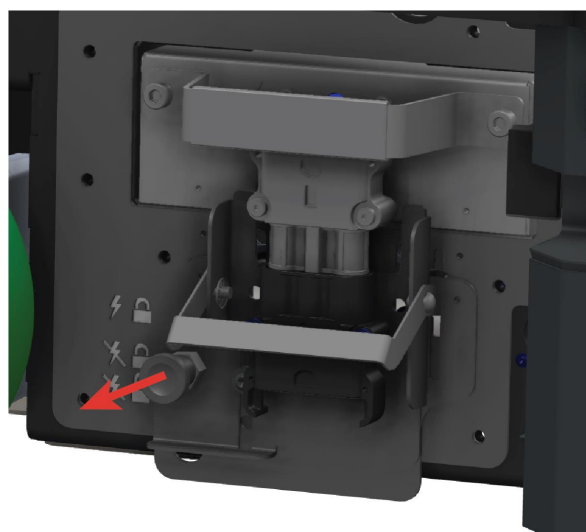
8. Remove the wheel stop board from the pallet to let the robot drive on the ramp.



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 21](#).

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.



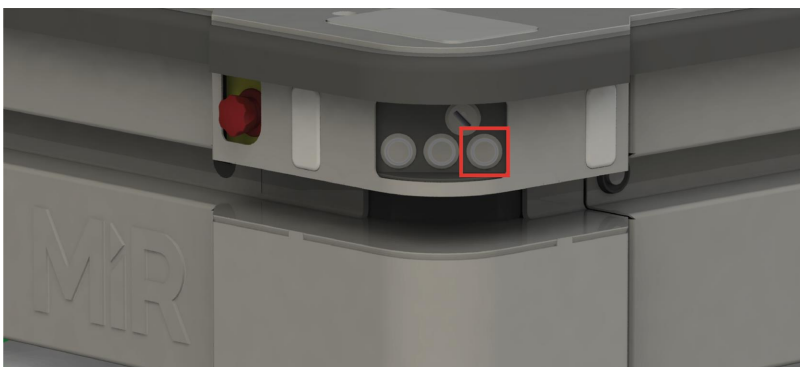
7.4 Powering up the robot

To power up the robot, follow these steps:

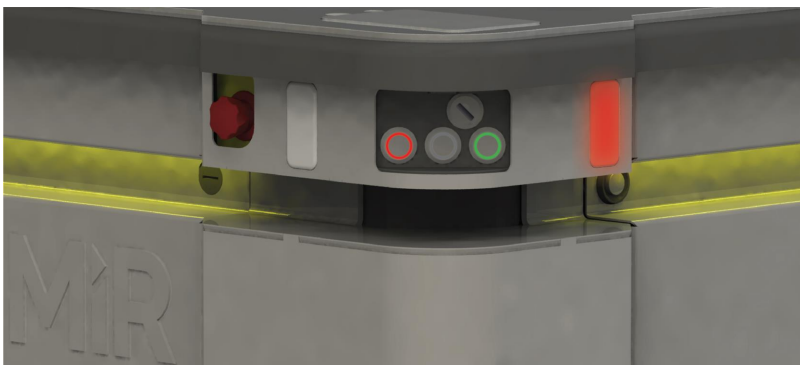
1. Ensure that all four Emergency stop buttons are in the released state. Turn an Emergency stop button counter-clockwise to release it.



2. Press the Power button for five seconds.

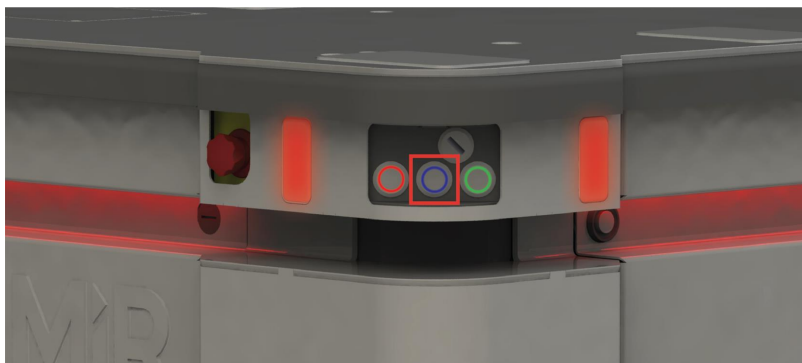


The robot turns on the red signal lights and yellow wavering status lights and starts the software initialization process.

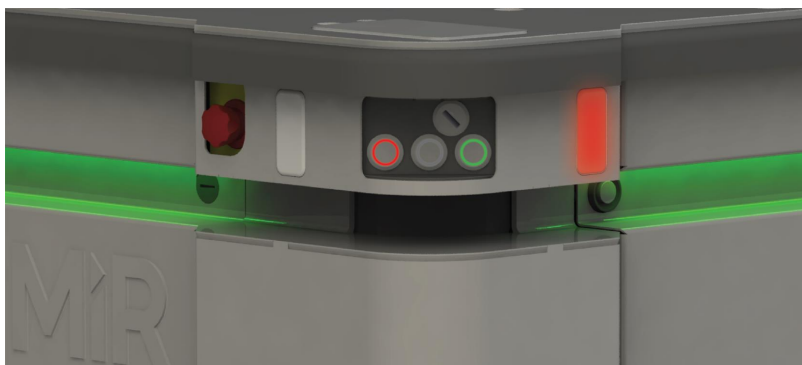


When the initialization process ends, the robot goes into Protective stop.

3. Press the Resume button to clear the Protective stop.



The robot is now ready for operation.



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 under the bumper on the front-right corner shield of the robot. Once connected, you can configure the robot's settings and connect it to a wireless network.



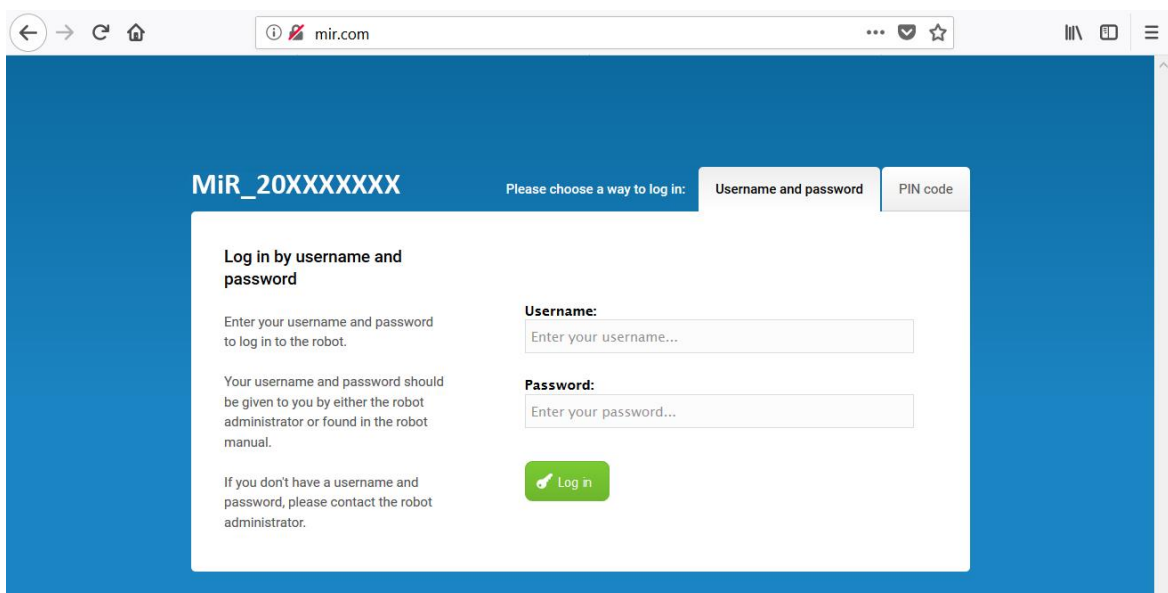
You can purchase a WiFi access point dongle from MiR to be able to connect to the robot wirelessly. Otherwise, you will need to use your own access point or an Ethernet cable to connect to the robot.

To connect to the robot interface, follow these steps:

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



2. Connect the WiFi access point dongle to the Ethernet port for a wireless connection, or connect your device directly to the robot using an Ethernet cable.
3. If you are using an access point, connect your device to the access point. The MiR WiFi dongle name has the following format: **MiRXXXXXX**.
4. In a browser, go to the address **mir.com** and sign in.



You are now signed in to the robot interface and can set up your robot for operation.

If you want to connect the robot to your local WiFi network, connect the robot to the network as described in [Connecting the robot to a WiFi network on the next page](#).

If you want to drive the robot off the pallet immediately, you can do so from the interface as described in [Driving the robot in Manual mode on page 45](#).



If you are going to drive the robot manually and you are using an Ethernet cable to connect to the robot, make sure that the cable you have used is long enough for the robot to move without disconnecting the cable.



Always make sure your robot is running the latest recommended software. This also applies to newly supplied robots, as there may have been important software updates during the storage time and shipment of the robot. Contact your distributor for the latest recommended update file.

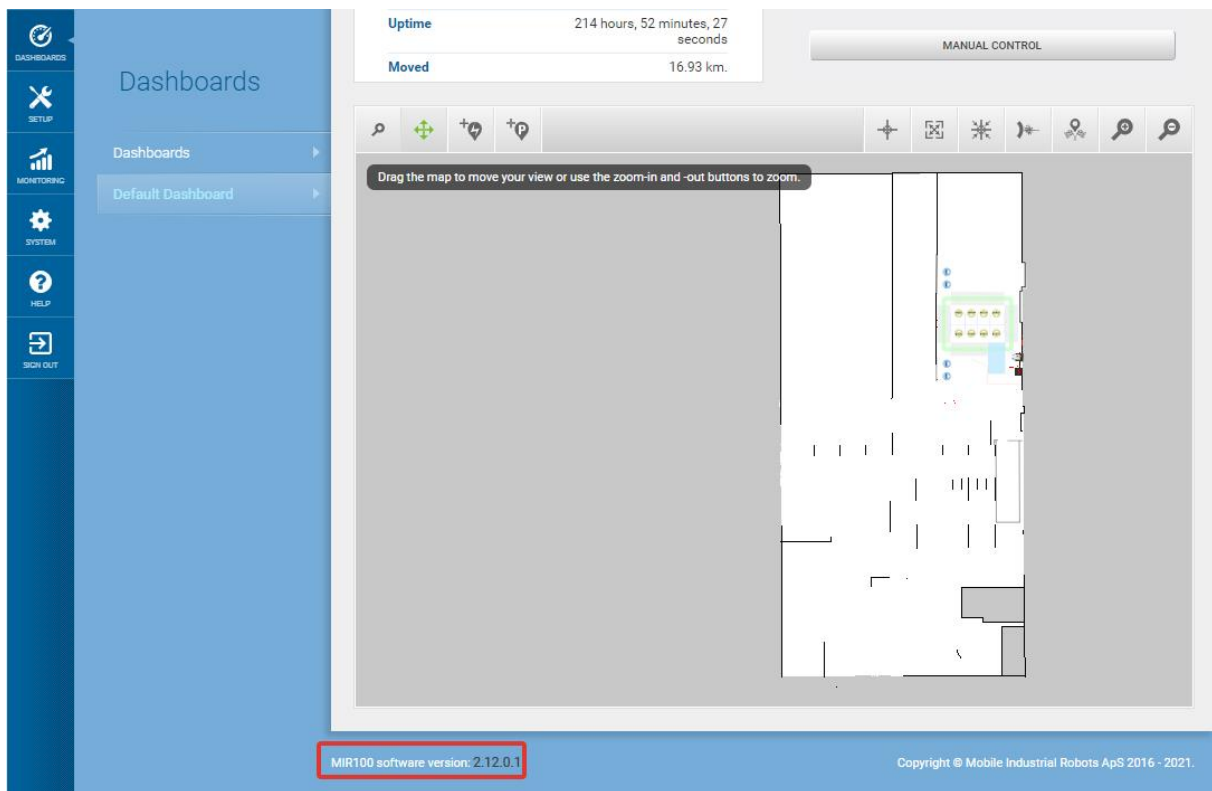


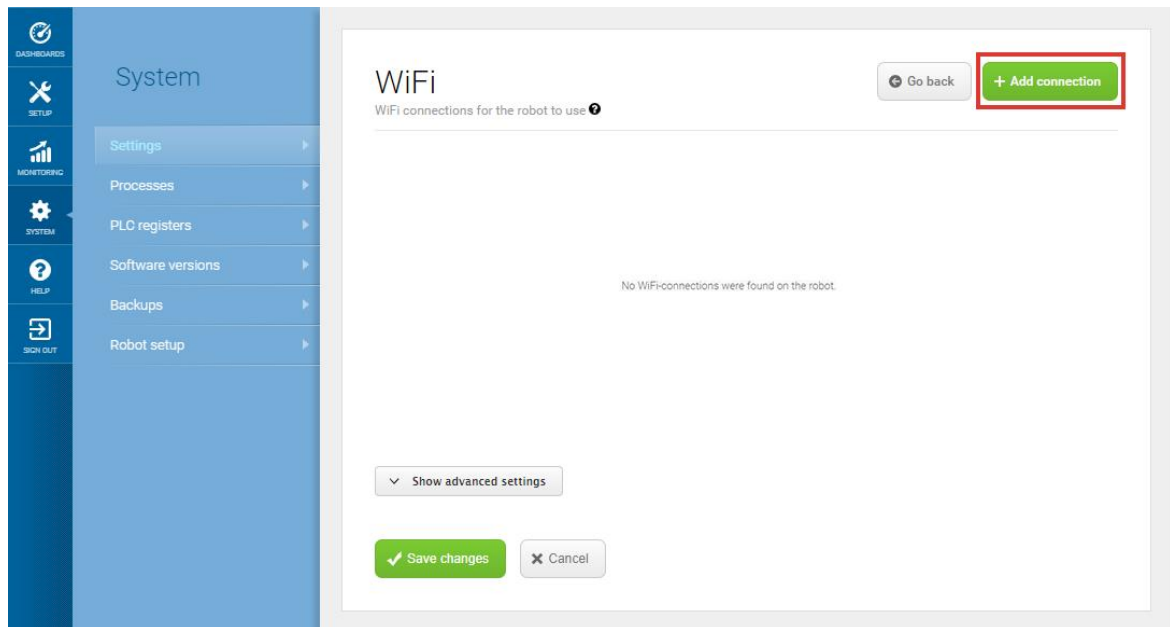
Figure 7.2. You can see the software version your robot is running in the bottom left corner of the robot interface.

7.6 Connecting the robot to a WiFi network

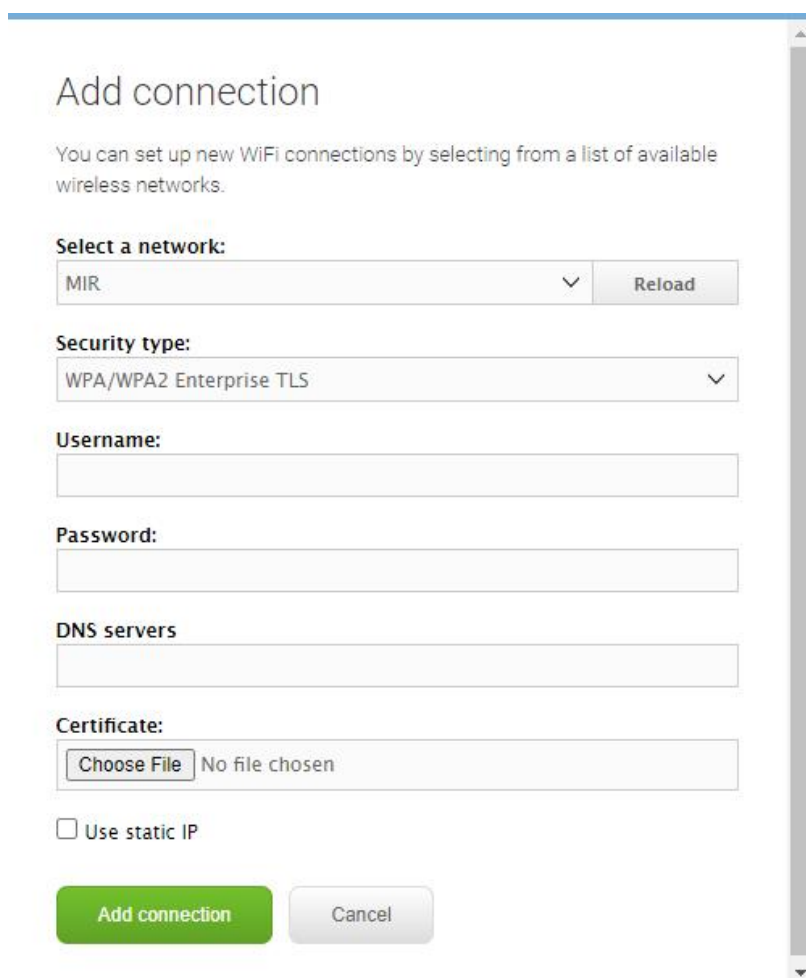
To communicate with the robot wirelessly without connecting an access point, you can connect the robot to your local WiFi network. This enables you to access the robot interface via your WiFi network by entering the assigned IP address of your robot in a web browser.

To connect the robot to a WiFi network, follow these steps:

1. Connect to your robot as described in [Connecting to the robot interface on page 39](#).
2. Go to **System > Settings > WiFi**, and select **+ Add connection**.



3. Select the network you want the robot to be connected to, and fill out the displayed fields.



Add connection

You can set up new WiFi connections by selecting from a list of available wireless networks.

Select a network:

MIR

Security type:

WPA/WPA2 Enterprise TLS

Username:

Password:

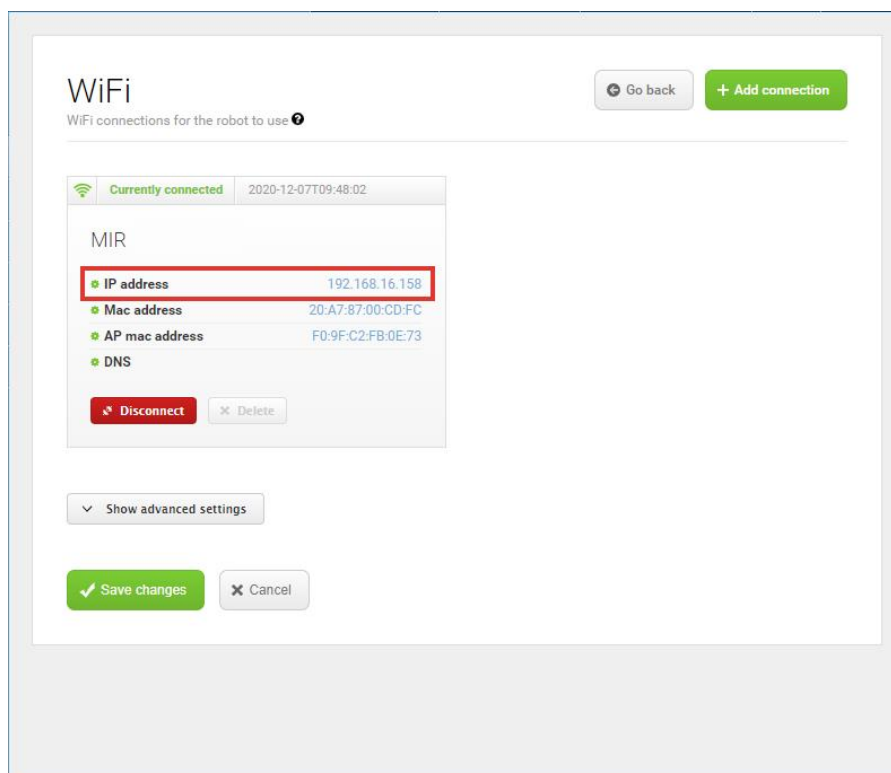
DNS servers

Certificate:

No file chosen

Use static IP

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.



7.7 Driving the robot in Manual mode



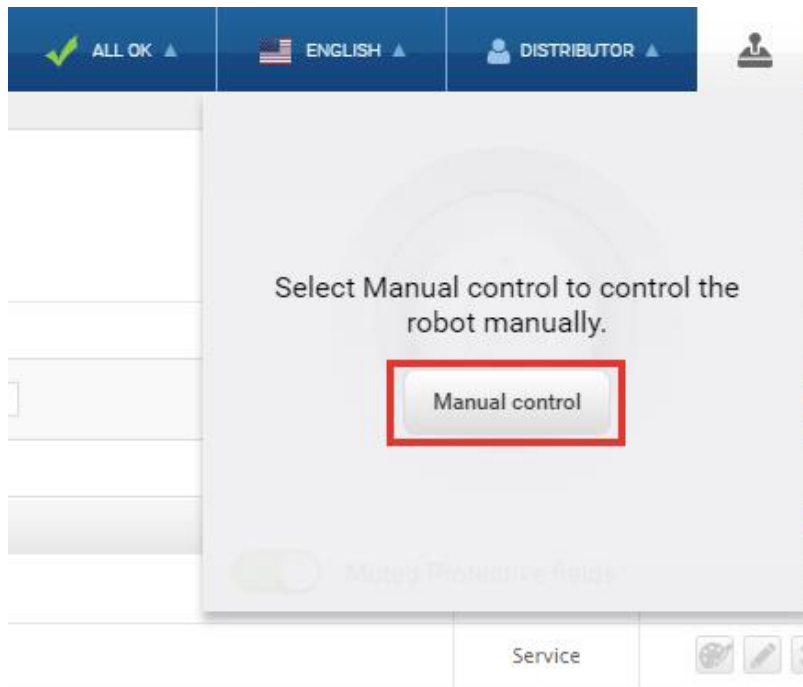
CAUTION

When driving the robot in Manual mode, it is possible to mute the Protective fields and drive the robot into Forbidden zones and Unpreferred zones on the map. This means that the robot will only stop when it is 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.

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).
2. In the robot interface, select the 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.



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

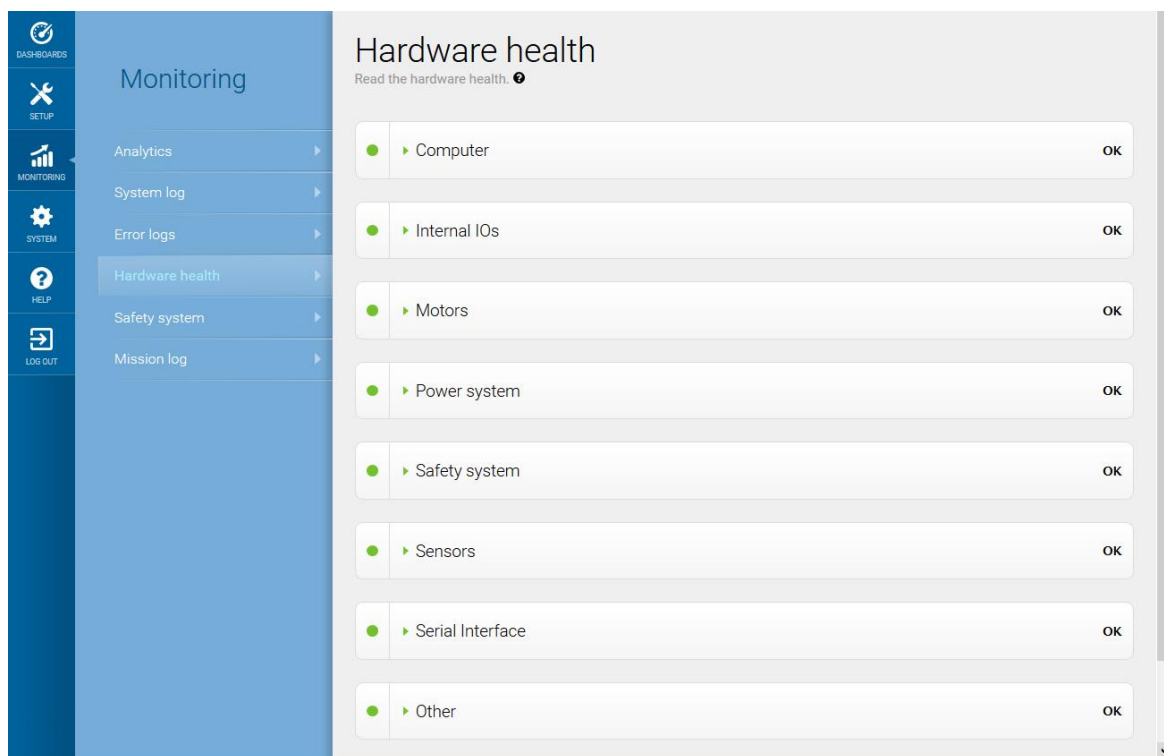


7.8 Checking the hardware status

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 39](#).
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 Reference Guide* on the MiR website.

7.9 Mounting the nameplate

Before using MiR600, 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.

To mount the nameplate correctly, follow these steps:

1. Locate the right side hatch.
2. Clean the area marked in the image below with a degreasing agent.



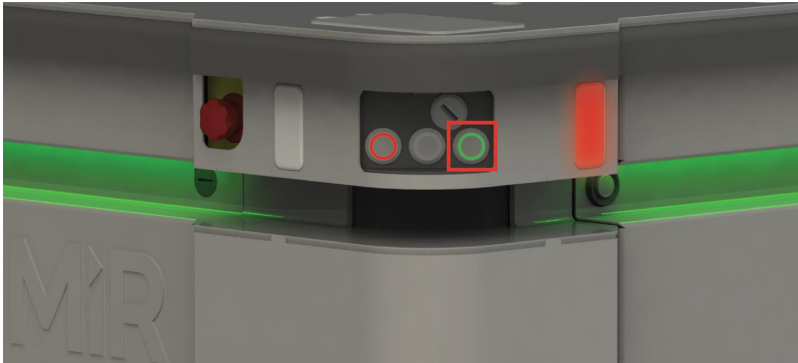
3. Mount the nameplate on the cleaned area.



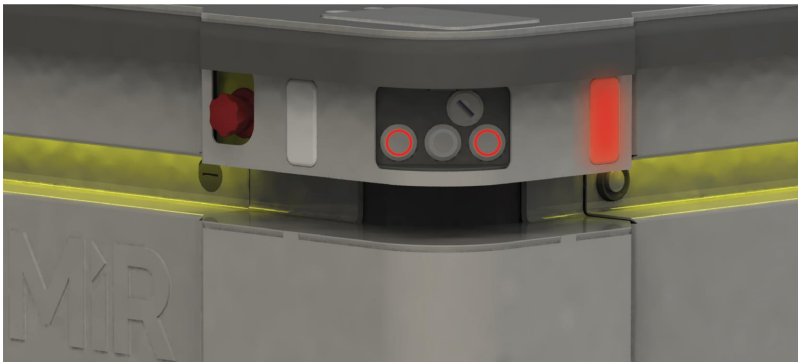
7.10 Shutting down the robot

To shut down MiR600, follow these steps:

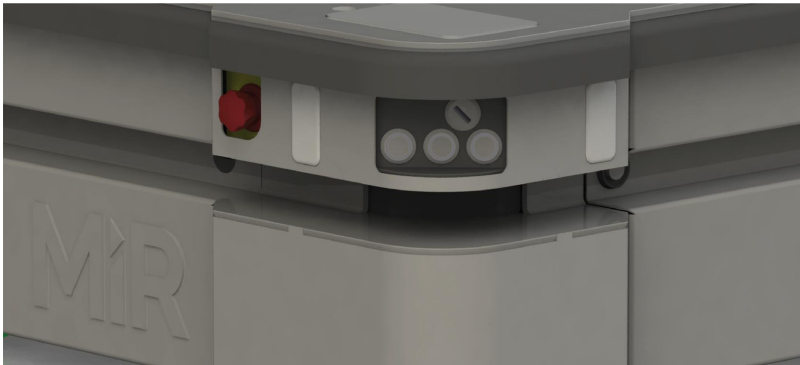
1. Ensure that the robot is not moving or executing an action.
2. Press the Power button for three seconds.



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.



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.

7.11 Charging the robot

This section describes how to charge MiR600 using a MiR cable charger.



A MiR cable charger is not part of the MiR600 standard delivery. Contact your distributor for more information.



To charge MiR600 with a standard MiR cable charger, you will also need an adapter for the cable to fit to the battery connector. The adapter is supplied by MiR.

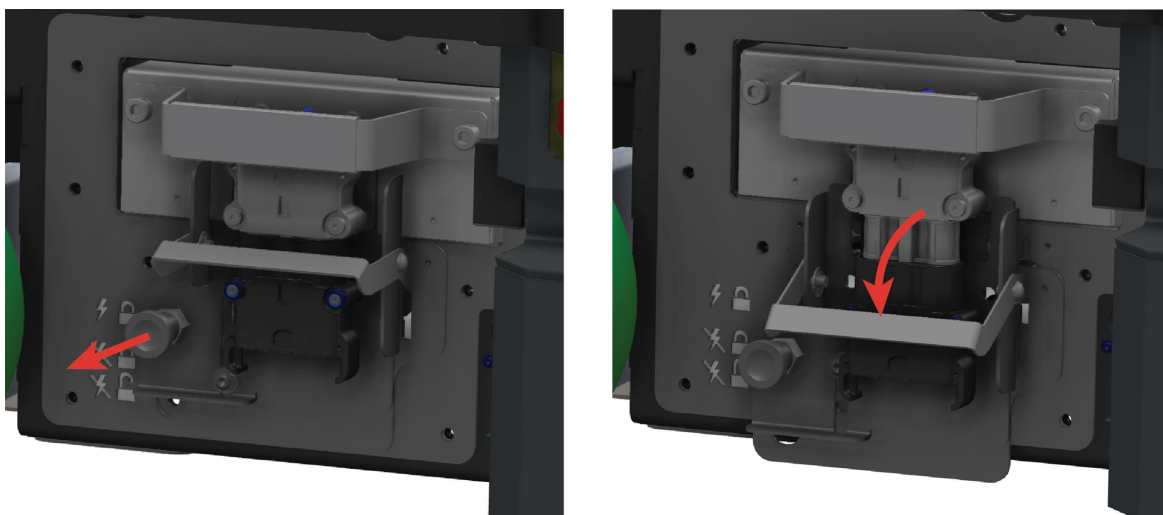


The robot is delivered 40-60% charged.

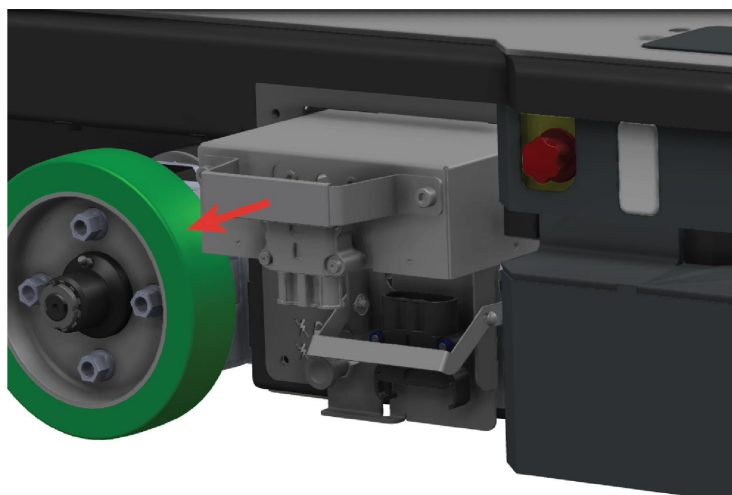
The left side compartment holds the robot's battery. To access the side compartments, see [Accessing the internal parts on page 21](#).

To charge MiR600 using the cable charger, follow these steps:

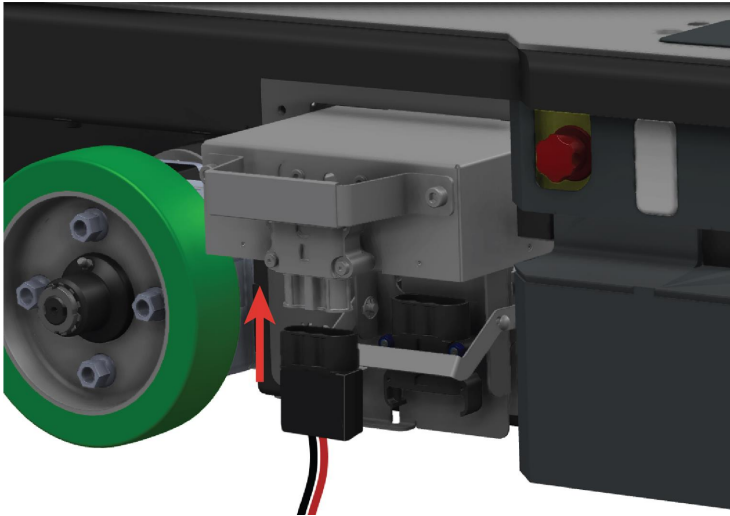
1. Plug the cable charger into an AC power supply. Always make sure to connect the cable charger to a power supply before connecting it to the robot. Overtime, the battery will take damage if you connect the charger to the battery before the power supply.
2. Connect a battery adapter to the other end of the cable charger.
3. On the robot, pull out the Battery lock pin, and pull the Battery lever down to the bottom position. The battery is now disconnected and unlocked.



4. Grab the handle, and pull the battery out approximately 10 cm.



5. Connect the adapter from the cable charger directly to the battery connector. The charger should begin humming once it starts charging the battery.



Use only an original MiR cable charger.

Once the robot has finished charging, reconnect the battery, and close the maintenance hatch.

For information about the charging time, see specifications on the MiR website.