Error codes and solutions

Troubleshooting guide (en)

This document lists all current error codes that MiR robots can report. The robot error codes are categorized into the following groups:

- **Mission errors** are errors that require manual intervention to resolve or the implementation of a Try/Catch action to provide the robot with an alternative action. Mission errors occur if the robot cannot complete an action in its current mission. These errors can often be resolved by changing your mission or modifying the robot's work environment, for example, by moving an obstacle.
- **Hardware errors** are internal errors that occur when the system detects discrepancies or unexpected results from the robot components. These issues can sometimes resolve themselves, for example, if a connection is reestablished. If the issue persists, you have to address the issue by determining the cause of the issue. Often, the issue is caused by faulty cable connections or broken components. Before inspecting the robot's internal parts, it is a good idea to see if restarting the robot resolves the issue automatically.
- **Environmental errors** are errors that continue to occur due to the environment the robot operates in and cannot be remedied without changing the work environment. These are errors such as localization errors or stall and slip detection errors. You cannot use Try/Catch actions to provide an alternative approach to these errors since they indicate that the robot is operating in an unsuitable work environment or with incorrect settings.

You can see short description of each error code and possible solutions for solving the error. If the suggested solutions do not remove the error, you can try using the troubleshooting guides on the Distributor site to see if the issue you are experiencing is described there. Otherwise, contact Technical Support for assistance with your case.

Safety

Before beginning this troubleshooting guide, refer to the safety chapter in your MiR product's user guide or operating guide.

> ⚠️ **WARNING**
>
> To troubleshoot your robot effectively, you may need to investigate the internal or external parts while the robot is turned on. You will be exposed to electrical and mechanical hazards.
>
> - Only connect the battery in the steps where it is necessary for the robot to be active.
> - Disconnect the battery in the steps where it is not necessary for the robot to be active.
> - Only qualified personnel may perform the steps in this troubleshooting guide.

Contacting Technical Support

If you are asked to contact Technical Support in a step or solution in this guide, or if the solution you reach at the end of the guide does not remedy the issue, you can create a support request through the Distributor site under **Contact Support**.

> ℹ️ Before creating a support request, it is highly recommended to update to the latest recommended software, as this may resolve the issue. It will also enable your robot to generate a more detailed error log, providing Technical Support with more information to troubleshoot the issue correctly.

In your support request, describe the problem you are experiencing and your observations for each step in the guide you have completed. To document this, download the troubleshooting documentation sheet with the same title as this guide from the Distributor site.

To ensure that Technical Support can diagnose and solve the issue correctly, attach an error log retrieved from the robot. It is important that the error log is generated as described in the guide *How to generate an error log* found on the Distributor site. To assist Technical Support further, include any reported error codes, images, or videos of the issue.

How to check cable connections

Most faults in the connectivity across cables occur in the connectors. To determine where the fault is in a cable, we therefore recommend to start by checking the connectors.

There are two steps in checking the connectors:

- Check that the cable is properly connected to its end connectors. If hey are visible, verify that each wire is connected to a connector pin by pulling each wire gently (approximately 10 N). Avoid pulling harder than necessary, as this may damage the connection between the wire and connector. When checking a wire, it should only be able to move 0.5 mm from its original position at most.
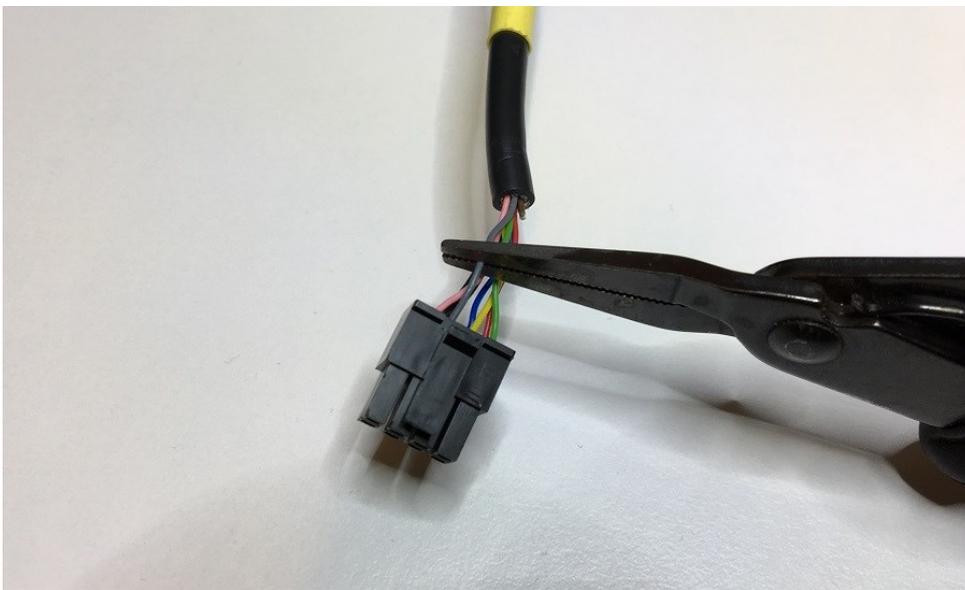
- If the cable and connector are securely fixed together, ensure that the connector is correctly plugged into its socket. The connector is loose if it can be pulled out of the socket easily. To ensure that the connector is correctly plugged in, gently push the connector into its socket. If a connector has a lock or screws, check that you cannot unplug it without unlocking or unscrewing it.

> Cables are occasionally labeled incorrectly or are missing labels. To locate the correct cable, it is a good idea to refer to the images shown in the guide or the wiring diagrams found on the Distributor site.

MiR100 and MiR200

Error code	Error type	Description	Solution
101, "CPU load is too HIGH - Above 90% for more than 3 minutes"	Hardware error. Can resolve itself.	An issue has occurred in the robot software, requiring unusual amounts of processing power.	Reboot the robot. If the problem persists, and you have not updated to the latest software, it is recommended to update your robot. this may solve the issue. If the issue occurred after a software update to the latest version, try to roll back to a functioning software version and report the issue to Technical Support.
201, "Free Memory is VERY low"	Hardware error. Can resolve itself.	An issue has occurred in the robot software.	Reboot the robot. If the problem persists, and you have not updated to the latest software, it is recommended to update your robot. this may solve the issue. If the issue occurred after a software update to the latest version, try to roll back to a functioning software version and report the issue to Technical Support.
301, "No ethernet adapter found"	Hardware error. Can resolve itself.	An issue has occurred in the robot computer.	Reboot the robot. If this does not solve the issue, contact Technical Support.

Error code	Error type	Description	Solution
302, "Ethernet is not connected"	Hardware error. Can resolve itself.	The connection between the robot computer and the router is faulty.	Replace the Ethernet cable from the robot computer and the router with an Ethernet cable you are certain is functional. If the issue persists, swap the port the Ethernet cable connects to in the router. If a new error is shown, replace the router. If the error remains the same, contact Technical Support as described in Contacting Technical Support on page 4.
401, "Very low free space on harddrive"	Hardware error. Requires interaction.	The hard drive memory is almost filled up.	Begin by deleting old backups stored on the robot. this can be done through the robot interface under **System > Backups**. If the issue persists, execute a USB restore. See the guide *How to USB restore MiR100/MiR200*, found on the Distributor site.
501, "Battery MIR 100/200: Battery is TOO low."	Hardware error. Requires interaction.	The robot has only 5% power left.	Recharge the robot.
503, "Battery MIR 100/200: Missing charging status message"	Hardware error. Can resolve itself.	The CAN bus connection from the battery management system is faulty.	Check wire 194 that connects the MiR board to the battery. If the wire is correctly connected and the issue persists, replace the wire or the MiR board.

Error code	Error type	Description	Solution
504, "Battery MIR 100/200: Unable to detect hardware configuration."	Hardware error. Can resolve itself.	There is an error in the robot software that prevents it from determining the hardware configuration.	Reboot the robot. If the problem persists, and you have not updated to the latest software, it is recommended to update your robot. this may solve the issue. If the issue occurred after a software update to the latest version, try to roll back to a functioning software version and report the issue to Technical Support. If the issue persists, execute a USB restore. See the guide *How to USB restore MiR100/MiR200*, found on the Distributor site.
601, "Teensy: Gyroscope data timed out - Last Gyroscope message received % (seconds)d seconds ago"	Hardware error. Can resolve itself.	The MiR board is not receiving data from the gyroscope.	Try rebooting the robot. If the issue persists, check cable 110 that connects the robot computer to the MiR board (see *Figure 1.1* and *Figure 1.2*). If the cable is correctly connected, try to replace the cable or the MiR board.
602, "Teensy: Gyroscope data is jumping ALOT!"	Hardware error. Can resolve itself.	See error 601, "Teensy: Gyroscope data timed out - Last Gyroscope message received % (seconds)d seconds ago" above.	
650, "Unable to find LightController MCU"	Hardware error. Can resolve itself.	The connection from the robot computer to the MiR board is faulty.	Try rebooting the robot. If the issue persists, check cable 110 that connects the robot computer to the MiR board (see *Figure 1.1* and *Figure 1.2*). If the cable is correctly connected, try to replace the cable or the MiR board.

Error code	Error type	Description	Solution
650, "Unable to get version of LightController MCU"	Hardware error. Can resolve itself.	See the error above.	
650, "Connecting to Lightcontroller MCU failed"	Hardware error. Can resolve itself.	See the error above.	
650, "No firmware available for this Lightcontroller MCU"	Hardware error. Can resolve itself.	The MiR board is missing its software.	Reboot the robot. If the problem persists, and you have not updated to the latest software, it is recommended to update your robot. this may solve the issue. If the issue occurred after a software update to the latest version, try to roll back to a functioning software version and report the issue to Technical Support. If the issue persists, execute a USB restore. See the guide *How to USB restore MiR100/MiR200*, found on the Distributor site.
650, "Upgrading firmware failed"	Hardware error. Can resolve itself.	This error may occur if the MiR board failed to update during a software update.	Try rebooting the robot. You can also try upgrading the software again. If the issue persists, execute a USB restore. See the guide *How to USB restore MiR100/MiR200*, found on the Distributor site.

Error code	Error type	Description	Solution
650, "Multiple teensies found - this is not supported!"	Hardware error. Requires interaction.	This error should only occur if you try to connect another controller board to the robot computer.	Disconnect any devices that have been connected directly to the robot computer or router.
651, "Teensy: Programming MiR controller MCU…"	Hardware error. Can resolve itself.	This error may occur during a software update when the software is being uploaded to the MiR board.	Wait at least ten minutes to give the robot time to finish uploading. Otherwise, if the uploading time seems excessive, cancel the upload and try to update the software again.
701, "MIR100/200 Motor Controller: Motor power usage above limit!"	Environmental error. Requires interaction. Hardware error. Requires interaction.	The motors are using more power than expected.	This error can occur if the wheels or axles are blocked, the robot is pulling too heavy a load, the robot or its load is colliding with an object that is not detected by the scanners, or the robot is traveling up too steep an incline relative to its load. If the issue persists, you can also modify the threshold for stall detection in the robot interface under **System > Settings > Motor controller> Advanced settings**.

Error code	Error type	Description	Solution
710, "MIR100/200 Motor Controller: Initialization failed!"	Hardware error. Can resolve itself.	The connection between the motor controller and the robot computer is faulty.	Verify that power is delivered to the motor controller. There is a power LED light that will light green if both the 5V and 24V power is delivered (see *Figure 1.4*). If either of these lights is turned off, you will need to inspect the cables supplying the power to the motor controller. For the 24V supply, wire 041 begins the connection from the controller to the battery via relays and fuses. For the 5V power supply, wire 071 begins the connection. Refer to the MiR100/MiR200 wiring diagram found on the Distributor site. If the motor controller is receiving power, check the wires 085, 086 and 088 that connect from the motor controller to the robot computer.
711, "MIR100/200 Motor Controller: Unable to connect to motor controller!"	Hardware error. Can resolve itself.	See error 710, "MIR100/200 Motor Controller: Initialization failed!" above.	
712, "MIR100/200 Motor Controller: Lost connection to motor controller!"	Hardware error. Can resolve itself.	See error 710, "MIR100/200 Motor Controller: Initialization failed!" above.	

Error code	Error type	Description	Solution
801, "SICK S300: Lost connection to scanner"	Hardware error. Can resolve itself.	See error 10202, "E_LOCALIZATION_FAILED_NO_SCANNER_DATA" on page 25.	
802, "SICK S300: No data for >15 sec"	Hardware error. Can resolve itself.	See error 10202, "E_LOCALIZATION_FAILED_NO_SCANNER_DATA" on page 25.	
803, "SICK S300: Got xx failed transmissions in the last xx seconds"	Hardware error. Can resolve itself.	See error 10202, "E_LOCALIZATION_FAILED_NO_SCANNER_DATA" on page 25.	
850, "Waiting for reboot"	Hardware error. Can resolve itself.	This error occurs while hook software is being updated.	This error only occurs after you have uploaded a new software file to an attached MiRHook. Wait until the software has completely finished uploading. This may take a few minutes.
850, "Uploading Firmware"	Hardware error. Can resolve itself.	See the error above.	

Error code	Error type	Description	Solution
901, "Camera (OpenNI): Waiting for connection is taking longer than expected!"	Hardware error. Requires interaction.	The connection between at least one of the cameras and the robot computer is faulty.	Check the USB cables that connect the robot computer to the cameras. These are USB cables 3 and 4 that connect to the top of the robot computer (see *Figure 1.2*). Verify that they are correctly plugged in and that there are no obvious signs of damage. If no faults are found, try hooking up the camera to your computer via the USB cable that connects to the robot computer. If you are unable to connect to the camera, try replacing the cable. If you are still not able to connect to the camera, replace the camera. If you were able to connect to the camera, replace the robot computer.
902, "Camera (OpenNI): No Data for xx seconds"	Hardware error. Requires interaction.	See error 901, "Camera (OpenNI): Waiting for connection is taking longer than expected!" above.	
910, "Camera (realsense **<R200/D435>**): Lost connection to camera. No data for xx seconds."	Hardware error. Can resolve itself.	See error 5101, "Unable to connect to camera." on page 17.	

Error code	Error type	Description	Solution
911, "Camera (realsense **<R200/D435>**): Unable to connect to camera, however it seems to be available. "	Hardware error. Can resolve itself.	This error may occur after a new camera or robot computer has been installed.	If the error occurred after a software update, or you have replaced either one of the cameras or the robot computer, try rebooting the robot. Otherwise, verify that you are using the latest firmware (5.10.6) on the camera . If the latest firmware is being used and the issue persists, refer to the solution in error 901, "Camera (OpenNI): Waiting for connection is taking longer than expected!" on the previous page..
911, "Camera (realsense **<R200/D435>**): Unable to detect camera with serial: 'xxxx,yyyy,zzzz, (etc)', however xx other cameras are connected with serial: xxxx,yyyy,zzzz, (etc)"	Hardware error. Requires interaction.	Both cameras have another serial number than those the robot computer is searching for.	In the robot interface, go to **System > Settings > 3D cameras**. Change the serial number of the cameras to the last two serial numbers reported in the error. Select **Save changes**. If the error does not disappear within a minute, try rebooting the robot. If the robot does not operate correctly, especially during docking, you may have swapped the serial numbers between the right and left side camera. Go back to the 3D camera setttings, and swap the two serial numbers.

Error code	Error type	Description	Solution
911, "Camera (realsense **<R200/D435>**): Unable to detect camera with serial: 'xxxx,yyyy,zzzz, (etc)', however 1 other camera are connected with serial: xxxx"	Hardware error. Requires interaction.	One of the cameras has another serial number than the number the robot computer is searching for.	In the robot interface, go to **System > Settings > 3D cameras**. Change the serial number of the undetected cameras to the last serial number reported in the error. Select **Save changes**. If the error does not disappear within a minute, try rebooting the robot.
911, "Camera (realsense **<R200/D435>**): Unable to detect camera with serial: 'xxxx,yyyy,zzzz, (etc)' and no other cameras available"	Hardware error. Requires interaction.	See error 5101, "Unable to connect to camera." on the next page.	
912, "Camera (realsense **<R200/D435>**): The serial number is not configured for this camera!"	Hardware error. Requires interaction.	The robot computer does not have any serial number to search for.	In the robot interface, go to **System > Settings > 3D cameras**. Insert the correct serial number for the cameras that do not display any serial numbers.

Error code	Error type	Description	Solution
1001, "SICK PLC (MIR100/200): Receiving SICK Safety PLC data timed out."	Hardware error. Can resolve itself.	The communication between the safety PLC and the robot computer is faulty.	Replace the Ethernet cable from the safety PLC and the router with an Ethernet cable you are certain is functional (see *Figure 1.3*). If the issue persists, swap the port the Ethernet cable connects to in the router. If a new error is shown, replace the router. If the error remains the same, try the same steps but with the Ethernet cable that connects the robot computer to the router.
1004: "Unsupported SICK program version"	Hardware error. Requires interaction.	You have modified the SICK program on the safety PLC. If you are experiencing errors in the safety system, we cannot troubleshoot programs with custom modifications.	Download a new standard configuration file from the robot interface and upload it to the safety PLC. Refer to the how-to guide *How to apply the default configuration of the SICK safety system on MiR100/MiR200* found on the Distributor site.
1005: "Gear ratio configuration mismatch! Sick is configured with: xxx and Robot software is configured with: yyy"	Hardware error. Requires interaction.	Either the safety PLC or the robot computer is using the wrong gear ratio configuration.	Refer to the solution in error Safety on page 3. If the robot does not drive correctly after this, contact Technical Support for assistance with correcting the gear ratio.
5101, "Unable to connect to camera."	Hardware error. Can resolve itself.	The robot computer is not able to communicate to one of the 3D cameras.	See the solution in error 901, "Camera (OpenNI): Waiting for connection is taking longer than expected!" on page 14.

Error code	Error type	Description	Solution
5102, "Missing data from camera: Time since last frame [s] "	Hardware error. Can resolve itself.	See error 5101, "Unable to connect to camera." on the previous page.	
5103, "Lost connection to camera: Time since last frame [s] "	Hardware error. Can resolve itself.	See error 5101, "Unable to connect to camera." on the previous page.	
5001, "Robot and hook is out of time sync!"	Hardware error. Can resolve itself.	The hook computer is still syncing with the robot computer.	Wait approximately ten minutes to see if the computers begin to sync. If not, reboot the robot. If the issue still persists, you can manually sync the robot and hook under **System > Settings > Time and date.**
5210, "Hook controller: Initialization failed!"	Hardware error. Can resolve itself.	The connection between the hook's motor controllers and the hook computer is faulty.	Remove the cover from MiRHook, and check the connections from the top interface to the motor controllers. (see *Figure 1.5*) If the motor controllers are receiving power, check the connections from the hook computer to the motor controllers.
5211, "Hook controller: Unable to connect to motor controller!"	Hardware error. Can resolve itself.	See error 5210, "Hook controller: Initialization failed!" above.	

Error code	Error type	Description	Solution
5212, "Hook controller: "Lost connection to motor controller!""	Hardware error. Can resolve itself.	See error 5210, "Hook controller: Initialization failed!" on the previous page.	
5302, "Hook brake failed: Moved too far!"	Hardware error. Requires interaction.	The brake was expected to reach a current limit for successful activation, but the motor moved too many encoder ticks before the current limit was reached.	There is likely a mechanical error in the hook. Check the various parts of the hook as described in the maintenance chapter in the MiR Hook 100 and MiR Hook 200 Operating guide. You can also test the brake by signing into the robot and going to **Hook > Manual control** and selecting **Activate** and **Deactivate brake**.
5302, "Hook brake failed: Timeout!"	Hardware error. Requires interaction.	The brake was expected to reach a current limit for successful activation of the brake, but the limit was not reached before timeout (5 seconds).	See the solution description above.
5302, "Hook brake failed: Fault flag active!"	Hardware error. Requires interaction.	The brake was expected to reach a current limit for successful activation of the brake, but a fault flag was raised by the motor controller before activation.	Sign into the robot interface and go to **Monitoring > Hardware health** and locate the error. Errors such as **Undervoltage** or **Short circuit** indicate issues due to the wiring of the hook brake. Otherwise, follow the solution description in error Safety on page 3

Error code	Error type	Description	Solution
5302, "Hook brake release failed: Above ampere limit!"	Hardware error. Requires interaction.	The brake was expected to move a certain number of encoder ticks for successful release of the brake, but the motor was drawing too much current.	See the solution description in error Safety on page 3.
5302, "Hook brake release failed: Timeout!"	Hardware error. Requires interaction.	The brake was expected to move a certain number of encoder ticks for successful release of the brake, but this was not achieved before timeout (5 seconds).	See the solution description in error Safety on page 3.
5302, "Hook brake release failed: Fault flag active!"	Hardware error. Requires interaction.	The brake was expected to move a certain number of encoder ticks for successful release of the brake, but a fault flag was raised by the motor controller before release.	See the solution description in error Safety on page 3.
5302, "Hook brake error: Missing encoder signal"	Hardware error. Can resolve itself.	Detection of missing encoder signals from the brake motor. No encoder ticks have been detected while motor power has been applied.	Remove the cover from MiRHook, and check the wiring from the encoders to the motor controllers. Refer to *Figure 1.5*.
5302, "Hook brake error: Stall detected"	Hardware error. Can resolve itself.	Detection of stall from the brake motor. No encoder ticks have been detected while a large amount of motor power has been applied.	See the solution description in error Safety on page 3.

Error code	Error type	Description	Solution
5302, "Hook brake error: Reversed encoder signal"	Hardware error. Requires interaction.	Detection of reversed encoder signals for brake motor. The encoder ticks are moving in the opposite direction than expected by the motor controller for the power applied.	Remove the cover from MiRHook, and check the wiring from the encoders to the motor controllers. Refer to *Figure 1.5*.
5302, "Hook brake error: Average current above limit"	Hardware error. Can resolve itself.	The average current drawn is too high for the brake motor. This error may happen if you consecutively activate and deactivate the brake due to the duty cycle of the brake motor.	See the solution description in error Safety on page 3.
5310, "Hook brake : Initialization failed!"	Hardware error. Can resolve itself.	Initialization of the brake motor failed.	Check the connection between the brake motor controller and the brakes or the connection between the brake motor controller and the hook computer. Refer to *Figure 1.5*.
5311, "Hook brake : Unable to connect to motor controller!"	Hardware error. Can resolve itself.	The communication between the hook computer and one of the motor controllers is faulty.	Check the USB connection from the hook computer to the motor controllers. If these seem fine, validate the setup on the hook configuration page. Refer to *Figure 1.5*.
5312, "Hook brake : Lost connection to motor controller!"	Hardware error. Can resolve itself.	The communication between the hook computer and one of the motor controllers was lost.	See the solution description above.

Error code	Error type	Description	Solution
5401, "Hook angle encoder: any combination of ['Acceleration error', 'Magnetic pattern error', 'System error', 'Power supply error', 'Readhead temperature is out of range', 'Signal lost. Readhead ', 'Signal amplitude low', 'Signal amplitude too high']"	Hardware error. Can resolve itself.	An error has been detected from the hook angle encoder.	The encoder may need to be re-calibrated for issues related to signal amplitude or lost signal.
5412, "Hook angle encoder: Not connected to encoder!" (cable fault)	Hardware error. Can resolve itself.	The connection between the hook computer and the hook encoders is faulty.	Remove the cover from MiRHook, and check the wiring from the encoders to the motor controllers. Refer to *Figure 1.5*.
9000, "Diagnostics monitoring: Stale error (Expected diagnostics messages missing)"	Hardware error. Can resolve itself.	The robot computer is expecting diagnostics messages that have not arrived in time. The error should describe which diagnostics message is missing.	Depending on the description in the error code, check various fields in **Hardware Health** to locate the exact error. Browse the troubleshooting guides on the Distributor site to see if any of them describe the situation you are experiencing. If not, contact Technical Support.

Error code	Error type	Description	Solution
10101, **<actionname>** aborted - **<current_ action_name>** failed to start (**<status>**)"	Mission error. Requires interaction.	An action in your mission cannot be completed. The reason for the failure is described in the error code text.	Review the mission you tried to execute. Verify that the chosen actions are executable, such as ensuring that positions are part of the active map. Consider adding a Try/Catch action to provide the robot with an alternative action if the attempted action failed. This will prevent the error from appearing in future cases.
10110, "Goal position '**<position_ name>**' is in forbidden area"	Mission error. Requires interaction.	The position you would like to move the robot to is inside a forbidden area.	If the robot must go to that position, review your active map and remove the forbidden area, move the position to an accessible area for the robot or use the relative move action. Consider adding a Try/Catch action to provide the robot with an alternative action if the attempted action failed. This will prevent the error from appearing in future cases.
10111, "Goal position '**<position_ name>**' is in obstacle"	Mission error. Requires interaction.	The position you would like to move the robot to is inside an obstacle defined in your active map.	Review your active map, and check that dynamic obstacles (objects in the area that are likely to move) are not included. Only permanent obstacles, such as walls and stationary machinery, should be included in a map. Consider adding a Try/Catch action to provide the robot with an alternative action if the attempted action failed. This will prevent the error from appearing in future cases.

Error code	Error type	Description	Solution
10112, "Unable to drive autonomously as an unknown cart is attached"	Mission error. Requires interaction.	The robot has been turned off and then turned on again while a cart is attached to the hook.	Manually make the robot release the cart through the hook robot interface. To reattach the cart, use a pick up cart action, and allow the robot to read the QR code to determine which cart it is towing.
10120, "Failed to reach goal position '<position_name>'"	Mission error. Requires interaction.	The position you would like the robot to move to is blocked by an obstacle.	Check that the area you would like to move the robot to is clear. Consider adding a Try/Catch action to provide the robot with an alternative action if the attempted action failed. This will prevent the error from appearing in future cases.
10198, "Invalid action parameters. Update mission list before running again"	Mission error. Requires interaction.	One of the parameters you have set in your mission is invalid.	Review the failed mission. This can often happen if you choose to use a template mission where one of the parameters has not been edited to fit your map or after a software update, some action requires more defined parameters. If you cannot find the issue, open the mission editor and save the mission again, or save a copy of the mission and run the copy instead.

Error code	Error type	Description	Solution
10201, "E_ LOCALIZATION_ FAILED"	Environmental error. Requires interaction.	The robot is not able to localize itself correctly .	If the red scanner lines do not align enough with the black wall lines in the active map in the robot interface, it indicates that the robot is not able to localize itself. This often occurs if the active map does not include enough landmarks, includes dynamic obstacles that are no longer there, or if the set gear ratio in the robot computer and the safety PLC are both incorrect. In the latter case, you will experience that the robot is able to correctly localize itself at first, but as soon as it begins to move, the robot in the map moves either faster or slower than it does in reality, resulting in the red scanner lines being misaligned with the walls.
10202, "E_ LOCALIZATION_ FAILED_NO_ SCANNER_ DATA"	Hardware error. Can resolve itself.	The robot computer is not receiving scanner information from the laser scanners.	Check the connection from the robot computer to the laser scanners (see *Figure 1.2*). This is the USB cable that leads directly from the laser scanner to the robot computer if your robot is HW version 2.2 or lower for MiR100 or HW version 1.3 or lower for MiR200. For all other versions the cables lead from the scanners to a scanner converter and then to the robot computer. Refer to the how-to guide *How to replace the Safety laser scanner front and rear USB cables* for a description of how the cables should be installed and where they connect.

Error code	Error type	Description	Solution
10401, "Robot detected skid condition!"	Environmental error. Requires interaction. Hardware error. Requires interaction.	The wheels on the robot are turning, but the robot is not moving. This often occurs during docking.	Check that the floor is clean, the robot wheels have traction with the floor, and the robot is not excessively or unevenly loaded. If the issue persists, you can also modify the threshold for skid detection in the robot interface under **System > Settings > Error handling > Advanced settings**.
10702, "motor stall detected!"	Environmental error. Requires interaction. Hardware error. Requires interaction.	See error Safety on page 3.	
10701, "Left motor encoder signal missing!"	Hardware error. Can resolve itself.	The motor controller is missing a connection to the left side motor encoder.	Check the encoder cables (see the section about checking encoder cables in the troubleshooting guide *Troubleshoot MiR200 going into Protective stop randomly*). If the cables and the connectors are fine, replace the motor and bogie as described in the guide *How to replace the bogie with motor on MiR100/MiR200*.
10711, "Right motor encoder signal missing!"	Hardware error. Can resolve itself.	The motor controller is missing a connection to the right side motor encoder.	See 10701, "Left motor encoder signal missing!" above.

Error code	Error type	Description	Solution
13000, "Precision docking disconnected: There is no communication with the Raspberry Pi of the precision docking "	Hardware error. Can resolve itself.	The robot computer has lost connection to the controller for the precision docking locking mechanism.	Check that the precision docking controller (Raspberry Pi) is on and receiving power. You can tell that it is receiving power by checking that the diodes on the board are lit. If the controller in on, try to replace the Ethernet cable connecting the controller to the robot computer.

MiR250, MiR500, and MiR1000

Error code	Error type	Description	Solution
101, "CPU load is too HIGH - Above 90% for more than 3 minutes"	Hardware error. Can resolve itself.	An issue has occurred in the robot software, requiring unusual amounts of processing power.	Reboot the robot. If the problem persists, and you have not updated to the latest software, it is recommended to update your robot. this may solve the issue. If the issue occurred after a software update to the latest version, try to roll back to a functioning software version and report the issue to Technical Support.
201, "Free Memory is VERY low"	Hardware error. Can resolve itself.	An issue has occurred in the robot software.	Reboot the robot. If the problem persists, and you have not updated to the latest software, it is recommended to update your robot. this may solve the issue. If the issue occurred after a software update to the latest version, try to roll back to a functioning software version and report the issue to Technical Support.
301, "No ethernet adapter found"	Hardware error. Can resolve itself.	An issue has occurred in the robot computer.	Reboot the robot. If this does not solve the issue, contact Technical Support.

Error code	Error type	Description	Solution
302, "Ethernet is not connected"	Hardware error. Can resolve itself.	The connection between the robot computer and the router may be faulty.	Replace the Ethernet cable from the robot computer and the router with an Ethernet cable you are certain is functional. Swap the port the Ethernet cable connects to in the router. If a new error is shown, replace the router. If the error remains the same, contact Technical Support as described in Contacting Technical Support on page 4.
401, "Very low free space on harddrive"	Hardware error. Can resolve itself.	The hard drive memory is almost filled up.	Begin by deleting old backups stored on the robot. this can be done through the robot interface under **System > Backups**. If the issue persists, execute a USB restore. See the guide *How to USB restore MiR500/MiR1000*, found on the Distributor site.
501, "Battery MIR 500/1000: Battery is TOO low."	Hardware error. Requires interaction.	The robot has only 5% charge left.	Recharge the robot.
502, "Battery MIR 500/1000: No BMS communication available."	Hardware error. Can resolve itself.	The CAN bus connection from the battery management system is faulty.	Check CAB-30 (see *Figure 1.6* and *Figure 1.8*), that leads from the battery to the power board. In the battery connector, the CAN bus connection is across the wires from pin P2, S1, and S2 on the battery and J10-64, J10-72, and J10-69 on the power board connector.

Error code	Error type	Description	Solution
503, "Battery MIR 500/1000: Missing charging status message."	Hardware error. Can resolve itself.	The power board is expecting a message regarding the charging status.	Reboot the robot. If the problem persists, and you have not updated to the latest software, it is recommended to update your robot. this may solve the issue. If the issue occurred after a software update to the latest version, try to roll back to a functioning software version and report the issue to Technical Support.
801, "SICK Microscan 3: Lost connection to scanner"	Hardware error. Can resolve itself.	See error 10202, "E_LOCALIZATION_FAILED_NO_SCANNER_DATA" on page 43.	
802, "SICK Microscan 3: No data for >15 sec"	Hardware error. Can resolve itself.	See error 10202, "E_LOCALIZATION_FAILED_NO_SCANNER_DATA" on page 43.	
910, "Camera (realsense D435): Lost connection to camera. No data for xx seconds.."	Hardware error. Can resolve itself.	See error 5101, "Unable to connect to camera." on page 39.	

Error code	Error type	Description	Solution
911, "Camera (realsense D435): Unable to connect to camera, however it seems to be available. "	Hardware error. Can resolve itself.	This error may occur after a new camera or robot computer has been installed.	If the error occurred after a software update or you have replaced either one of the cameras or the robot computer, try rebooting the robot. Otherwise, verify that you are using the latest firmware (5.10.6) on the camera. If the latest firmware is being used and the issue persists, refer to the solution in error 5101, "Unable to connect to camera." on page 39.
911, "Camera (realsense D435): Unable to detect camera with serial: 'xxxx,yyyy,zzzz, (etc)', however xx other cameras are connected with serial: xxxx,yyyy,zzzz, (etc)"	Hardware error. Requires interaction.	Both cameras have another serial number than those the robot computer is searching for.	In the robot interface, go to **System > Settings > 3D cameras**. Change the serial number of the cameras to the last two serial numbers reported in the error. Select **Save changes**. If the error does not disappear within a minute, try rebooting the robot. If the robot does not operate correctly, especially during docking, you may have swapped the serial numbers between the right and left side camera. Go back to the 3D camera setttings, and swap the two serial numbers.

Error code	Error type	Description	Solution
911, "Camera (realsense D435): Unable to detect camera with serial: 'xxxx,yyyy,zzzz, (etc)', however 1 other camera are connected with serial: xxxx"	Hardware error. Requires interaction.	One of the cameras has another serial number than the number the robot computer is searching for.	In the robot interface, go to **System > Settings > 3D cameras**. Change the serial number of the undetected cameras to the last serial number reported in the error. Select **Save changes**. If the error does not disappear within a minute, try rebooting the robot.
911, "Camera (realsense D435): Unable to detect camera with serial: 'xxxx,yyyy,zzzz, (etc)' and no other cameras available"	Hardware error. Requires interaction.	See error 5101, "Unable to connect to camera." on page 39.	
912, "Camera (realsense D435): The serial number is not configured for this camera!"	Hardware error. Requires interaction.	The robot computer does not have any serial number to search for.	In the robot interface, go to **System > Settings > 3D cameras**. Insert the correct serial number for the cameras that do not display a serial number.
1001, "SICK (MIR500/1000) Robot is in Emergency stop: xxx	Hardware error. Can resolve itself.	The safety system has detected a fault in the robot.	Refer to the troubleshooting guide *Troubleshoot MiR500/MiR1000 going in to Protective stop due to safety system error.*

Error code	Error type	Description	Solution
1002, "SICK (MIR500/1000) Safety system error: xxx	Hardware error. Can resolve itself.	See error 1001, "SICK (MIR500/1000) Robot is in Emergency stop: xxx on the previous page.	
1003, "Invalid SICK program"	Hardware error. Requires interaction.	You have uploaded a SICK program that the safety PLC does not recognize.	Download a new standard configuration file from the robot interface and upload it to the safety PLC. Refer to the how-to guide *How to upgrade the SICK safety system for MiR500/MiR1000* found on the Distributor site.
1004: "Unsupported SICK program version"	Hardware error. Requires interaction.	You have modified the SICK program on the safety PLC. If you are experiencing errors in the safety system, we cannot troubleshoot programs with custom modifications.	Refer to the solution in error 1003, "Invalid SICK program" above.
1005: "Gear ratio configuration mismatch! Sick is configured with: xxx and Robot software is configured with: yyy"	Hardware error. Requires interaction.	Either the safety PLC or the robot computer is using the wrong gear ratio configuration.	Refer to the solution in error 1003, "Invalid SICK program" above. If the robot does not drive correctly after this, refer to the article *Guide to gear ratios on MiR robots* found under **Articles** on the Distributor site.
2100, "Voltage monitor: HWRevision"	Hardware error. Can resolve itself.	An error has been detected in the power board.	Replace the power board. Refer to the how-to guide *How to replace the power board on MiR500/MiR1000*.

Error code	Error type	Description	Solution
2101, "Voltage monitor: TopGpioCurr"	Hardware error. Can resolve itself.	The top application is drawing a larger current than the allowed 1 A from the GPIO electrical interface.	Inspect your top application. Contact your top application distributor for assistance.
2102, "Voltage monitor: MCFuseCurr"	Hardware error. Can resolve itself.	The current delivered to the motor controller carrier board is outside the limits.	Check CAB-017 (see *Figure 1.8* and *Figure 1.9*) that provides the motor controller carrier board with power from the power board via the STO relays.
2103, "Voltage monitor: TopFuseCurr"	Hardware error. Can resolve itself.	The current delivered to the top application power interface is outside the limits (max 20 A).	Inspect your top application. Contact your top application distributor for assistance.
2104, "Voltage monitor: GpioRtnDiag"	Hardware error. Can resolve itself.	Power is being drawn through the GPIO wire in the top application that is dedicated to ground.	Inspect your top application. Contact your top application distributor for assistance.
2105, "Voltage monitor: XioRtnDiag"	Hardware error. Can resolve itself.	Power is being drawn through the ground wires in CAB-074 that lead to the safety PLC.	Inspect the safety PLC and CAB-074 for a short circuit (see *Figure 1.8*).
2106, "Voltage monitor: VIn"	Hardware error. Can resolve itself.	The voltage delivered to the power board is outside the limits (40-55 V).	Inspect the battery and the cables leading from the battery to the power board. If the fault persists, replace the power board.

Error code	Error type	Description	Solution
2107, "Voltage monitor: V_Dock"	Hardware error. Can resolve itself.	A robot docks to MiR Charge 48V, and the delivered voltage to the battery through the power board is 0 V.	Replace the power board. Refer to the how-to guide *How to replace the power board on MiR500/MiR1000*.
2108, "Voltage monitor: V_Charger"	Hardware error. Can resolve itself.	A cable charger is plugged into a robot, and the delivered voltage to the battery through the power board is 0 V.	Replace the power board. Refer to the how-to guide *How to replace the power board on MiR500/MiR1000*.
2109, "Voltage monitor: VBat"	Hardware error. Can resolve itself.	The voltage delivered from the battery is outside the limits.	Inspect the cable from the battery to the power board. If no faults are found, replace the battery.
2110, "Voltage monitor: VBat_Fuse"	Hardware error. Can resolve itself.	The voltage delivered from the battery past the battery fuse is outside the limits.	If there is an error 2109, follow the solution description for that error. If there is only a 2110 error, the fuse is likely switched off due to a too high current. Investigate the connection from the battery to the power board, and if the fault persists, try replacing the power board.
2111, "Voltage monitor: 12V"	Hardware error. Can resolve itself.	The 12 V power supply is faulty.	Replace the power board. Refer to the how-to guide *How to replace the power board on MiR500/MiR1000*.
2112, "Voltage monitor: 19V"	Hardware error. Can resolve itself.	The 19 V power supply is faulty.	See the solution in 2111, "Voltage monitor: 12V" above.

Error code	Error type	Description	Solution
2113, "Voltage monitor: 24V"	Hardware error. Can resolve itself.	The 24 V power supply is faulty.	See the solution in 2111, "Voltage monitor: 12V" on the previous page.
2114, "Voltage monitor: 3v3"	Hardware error. Can resolve itself.	The 3.3 V power supply is faulty.	See the solution in 2111, "Voltage monitor: 12V" on the previous page.
2115, "Voltage monitor: TOP_ FUSE"	Hardware error. Can resolve itself.	The voltage delivered to the top application interface is outside the limits.	Check CAB-041 (see *Figure 1.8*) that leads from the power board to the top application interface. if no faults are found in the cable
2116, "Voltage monitor: 5V0"	Hardware error. Can resolve itself.	The 5 V power supply is faulty.	See the solution in 2111, "Voltage monitor: 12V" on the previous page.
2117, "Voltage monitor: **<MC_ Logic/MC_ TOP>**"	Hardware error. Can resolve itself.	Too much power is being drawn from the top application. Over 2 A and the fuse will burn over.	Inspect your top application. Contact your top application distributor for assistance. When you are sure that the top application will not burn the fuse again, you can replace the fuse with a new 2 A fuse. To replace the fuse, you must unmount the power board, remove the cover, locate the green fuse in the back of the board, replace it, and mount the power board back in the robot.

Error code	Error type	Description	Solution
2118, "Voltage monitor: MC_ Fuse"	Hardware error. Can resolve itself.	There is a short circuit from the power board to the motor controller carrier board.	Check CAB-017 (see *Figure 1.8* and *Figure 1.9*) for any damage that may cause a short circuit. If the cable is fine, replace the carrier board.
2119, "Voltage monitor: 12V_ Int"	Hardware error. Can resolve itself.	The 12 V power supply is faulty.	See the solution in 2111, "Voltage monitor: 12V" on page 35.
2120, "Voltage monitor: 12V_ Inp"	Hardware error. Can resolve itself.	The 12 V power supply is faulty.	See the solution in 2111, "Voltage monitor: 12V" on page 35.
2121, "Voltage monitor: 5V_Inp"	Hardware error. Can resolve itself.	The 5 V power supply is faulty.	See the solution in 2111, "Voltage monitor: 12V" on page 35.
2203, "Can Bus Error: Right MotorController"	Hardware error. Can resolve itself.	The CAN bus connection to the right side motor controller is faulty.	Check CAB-014 (see *Figure 1.8* and *Figure 1.9*) that connects the power board to the motor controller carrier board. If no faults are found, replace the cable. If this has not remedied the issue, replace the carrier board.
2204, "Can Bus Error: Left MotorController"	Hardware error. Can resolve itself.	The CAN bus connection to the left side motor controller is faulty.	See solution description above.

Error code	Error type	Description	Solution
2210, "Can Bus Error: Proximity sensor/Light controller: Front Left"	Hardware error. Can resolve itself.	The connection to one of the proximity sensors is faulty.	Refer to the troubleshooting guide *Troubleshoot MiR500/MiR1000 faulty light indicators, proximity sensors, and motor controller carrier board.*
2210, "Can Bus Error: Proximity sensor/Light controller: Left side Front"	Hardware error. Can resolve itself.	See error above.	
" 2210, "Can Bus Error: Proximity sensor/Light controller: Left side Back"	Hardware error. Can resolve itself.	See error above.	
2210, "Can Bus Error: Proximity sensor/Light controller: Back Left"	Hardware error. Can resolve itself.	See error above.	
2210, "Can Bus Error: Proximity sensor/Light controller: Back Right"	Hardware error. Can resolve itself.	See error above.	
2210, "Can Bus Error: Proximity sensor/Light controller: Right side Back"	Hardware error. Can resolve itself.	See error above.	

Error code	Error type	Description	Solution
2210, "Can Bus Error: Proximity sensor/Light controller: Right side Front"	Hardware error. Can resolve itself.	See error above.	
2210, "Can Bus Error: Proximity sensor/Light controller: Front Right"	Hardware error. Can resolve itself.	See error above.	
2220, "Can Bus Error: Brake logic controller"	Hardware error. Can resolve itself.	The CAN bus connection to the brake controller in the motor controller carrier board is faulty.	See the solution description for error 2203, "Can Bus Error: Right MotorController" on page 37.
5101, "Unable to connect to camera."	Hardware error. Can resolve itself.	The robot computer is not able to communicate to one of the 3D cameras.	Check the USB cables that connect the robot computer to the cameras. Verify that they are correctly plugged in and there are no obvious signs of damage. If no faults are found, try hooking up the camera to your computer via the USB cable that connects to the robot computer. If you are unable to connect to the camera, try replacing the cable. If you are still not able to connect to the camera, replace the camera. If you were able to connect to the camera, replace the robot computer.

Error code	Error type	Description	Solution
5102, "Missing data from camera: Time since last frame [s] "	Hardware error. Can resolve itself.	See error 5101, "Unable to connect to camera." on page 17.	
5103, "Lost connection to camera: Time since last frame [s] "	Hardware error. Can resolve itself.	See error 5101, "Unable to connect to camera." on page 17.	
9000, "Diagnostics monitoring: Stale error (Expected diagnostics messages missing)"	Hardware error. Can resolve itself.	The robot computer is expecting diagnostics messages that have not arrived in time. The error should describe which diagnostics message is missing.	Depending on the description in the error code, check various fields in **Hardware Health** to locate the exact error. Browse the troubleshooting guides on the Distributor site to see if any of them describe the situation you are experiencing. If not, contact Technical Support.
10101, **<actionname>** aborted - **<current_ action_name>** failed to start (**<status>**)"	Mission error. Requires interaction.	An action in your mission cannot be completed. An exception has been thrown that was not caught in your mission. The reason for the failure is described in the error code text.	Review the mission you tried to execute. Verify that the chosen actions are executable, such as ensuring that positions are part of the active map. Consider adding a Try/Catch action to provide the robot with an alternative action if the attempted action failed. This will prevent the error from appearing in future cases.

Error code	Error type	Description	Solution
10110, "Goal position '**<position_ name>**' is in forbidden area"	Mission error. Requires interaction.	The position you would like to move the robot to is inside a forbidden area.	If the robot must go to that position, review your active map and remove the forbidden area, move the position to an accessible area for the robot or use the relative move action. Consider adding a Try/Catch action to provide the robot with an alternative action if the attempted action failed. This will prevent the error from appearing in future cases.
10111, "Goal position '**<position_ name>**' is in obstacle"	Mission error. Requires interaction.	The position you would like to move the robot to is inside an obstacle defined in your active map.	Review your active map, and check that dynamic obstacles (objects in the area that are likely to move) are not included. Only permanent obstacles, such as walls and stationary machinery, should be included in a map. Consider adding a Try/Catch action to provide the robot with an alternative action if the attempted action failed. This will prevent the error from appearing in future cases.
10120, "Failed to reach goal position '**<position_ name>**'"	Mission error. Requires interaction.	The position you would like the robot to move to is blocked by an obstacle.	Check that the area you would like to move the robot to is clear. Consider adding a Try/Catch action to provide the robot with an alternative action if the attempted action failed. This will prevent the error from appearing in future cases.

Error code	Error type	Description	Solution
10198, "Invalid action parameters. Update mission list before running again"	Mission error. Requires interaction.	One of the parameters you have set in your mission is invalid.	Review the failed mission. This can often happen if you choose to use a template mission where one of the parameters has not been edited to fit your map or, if after a software update, some action requires more defined parameters. If you cannot find the issue, open the mission editor and save the mission again, or save a copy of the mission and run the copy instead.
10201, "E_LOCALIZATION_FAILED"	Environmental error. Requires interaction.	The robot is not able to correctly localize itself.	When looking in the active map in the robot interface, if the red scanner lines do not align enough with the black wall lines in the active map, the robot is not able to localize itself. This often occurs if the active map does not include enough landmarks, includes dynamic obstacles that are no longer there, or if the set gear ratio in the robot computer and the safety PLC are both incorrect. In the latter case, you will experience that the robot is able to correctly localize itself at first, but as soon as it begins to move, the robot in the map moves either faster or slower than it does in reality, resulting in the red scanner lines being misaligned with the walls. TO fix this refer to the article *Guide to gear ratios on MiR robots* found under **Articles** on the Distributor site.

Error code	Error type	Description	Solution
10202, "E_ LOCALIZATION_ FAILED_NO_ SCANNER_DATA"	Hardware error. Can resolve itself.	The robot computer is not receiving scanner information from the laser scanners.	Check the connection from the robot computer to the laser scanners and the power input to the safety system (see *Figure 1.7* and *Figure 1.8*). A fault in the following cables could cause this error: • The Ethernet cable in port 4 that leads to the safety PLC • CAB-012 and CAB-013 from the power board to the front and rear scanners. • CAB-010 from the PLC to the front scanner and CAB-011 from the front to the rear scanner. • CAB-074 from the power board to the safety PLC.
10401, "Robot detected skid condition!"	Environmental error. Requires interaction. Hardware error. Requires interaction.	The wheels on the robot are turning, but the robot is not moving. This often occurs during docking.	Check that the floor is clean, the robot wheels have traction with the floor, and that the robot is not loaded excessively or unevenly. If the issue persists, you can also modify the threshold for stall detection in the robot interface under **System > Settings > Error handling > Advanced settings**.

Error code	Error type	Description	Solution
10701, "Left motor encoder signal missing!"	Hardware error. Can resolve itself.	The motor controller is missing a connection to the left side motor encoder.	Check the CAB-23 (see *Figure 1.8*) that leads from the motor encoder to the center compartment. If this cable is fine, you will either need to replace the left side bogie or the motor controller carrier board. Refer to the how-to guide How to replace the bogie with motor on MiR500/MiR1000 or How to replace the motor controller carrier board on MiR500/MiR1000.
10702, "Left motor stall detected!"	Environmental error. Requires interaction. Hardware error. Requires interaction.	There is a high power output to the left motor, but the robot is not moving.	This error can occur if the wheels or axles are blocked, the robot pulls too heavy a load, the robot or its load collides with an object not detected by the scanners, or if the robot travels up too steep an incline relative to its load. If the issue persists, you can also modify the threshold for stall detection in the robot interface under **System > Settings > Motor controller> Advanced settings**.
10702, "Left motor encoder reversed!"	Hardware error. Requires interaction.	The wheel is turning the wrong way relative to the encoder.	Try swapping the encoder cables, CAB-23 and CAB-75 (see *Figure 1.9*), connected to the motor controller carrier board.

| Error code	Error type	Description	Solution
10711, "Right motor encoder signal missing!"	Hardware error. Can resolve itself.	The motor controller is missing a connection to the right side motor encoder.	Check the CAB-75 (see *Figure 1.9*) that leads from the motor encoder to the center compartment. If this cable is fine, you will either need to replace the left side bogie or the motor controller carrier board. Refer to the how-to guide How to replace the bogie with motor on MiR500/MiR1000 or How to replace the motor controller carrier board on MiR500/MiR1000.
10712, "Right motor stall detected!"	Environmental error. Requires interaction. Hardware error. Requires interaction.	See error 10702, "Left motor stall detected!" on the previous page.	
10712, "Right motor encoder reversed!"	Hardware error. Requires interaction.	See error 10702, "Left motor encoder reversed!" on the previous page.	

Reference images

MiR100/MiR200
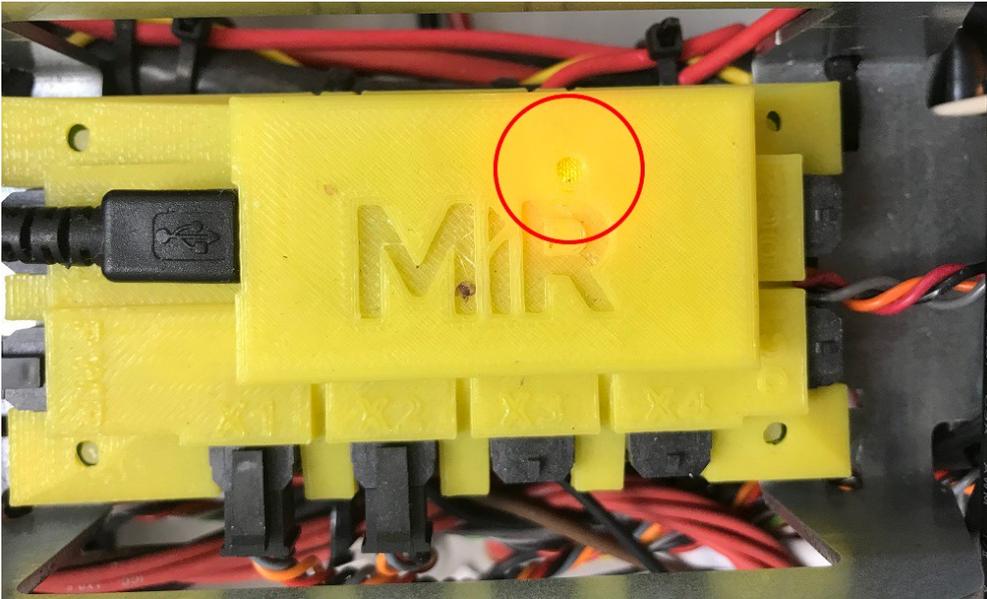
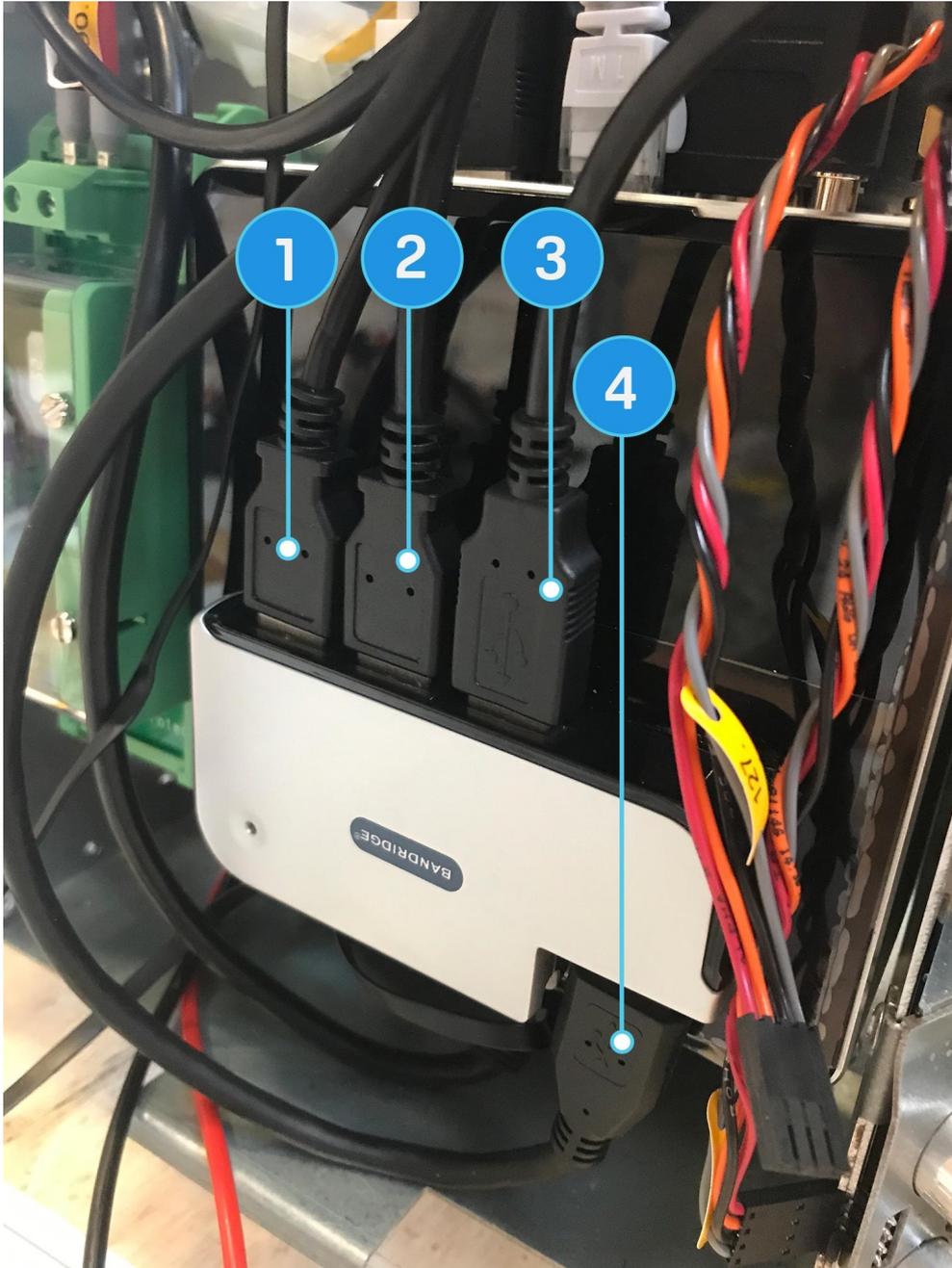Figure 1.1. Power light on MiR board. The top left USB connector connects the board to the robot computer.

Figure 1.2. Robot computer USB connections

Label no.	Description	Label no.	Description
1	Connects to front laser scanner	2	Connects to rear laser scanner
3	Connects to MiR board	4	Connects to 3D camera

Figure 1.3. Router and its inputs

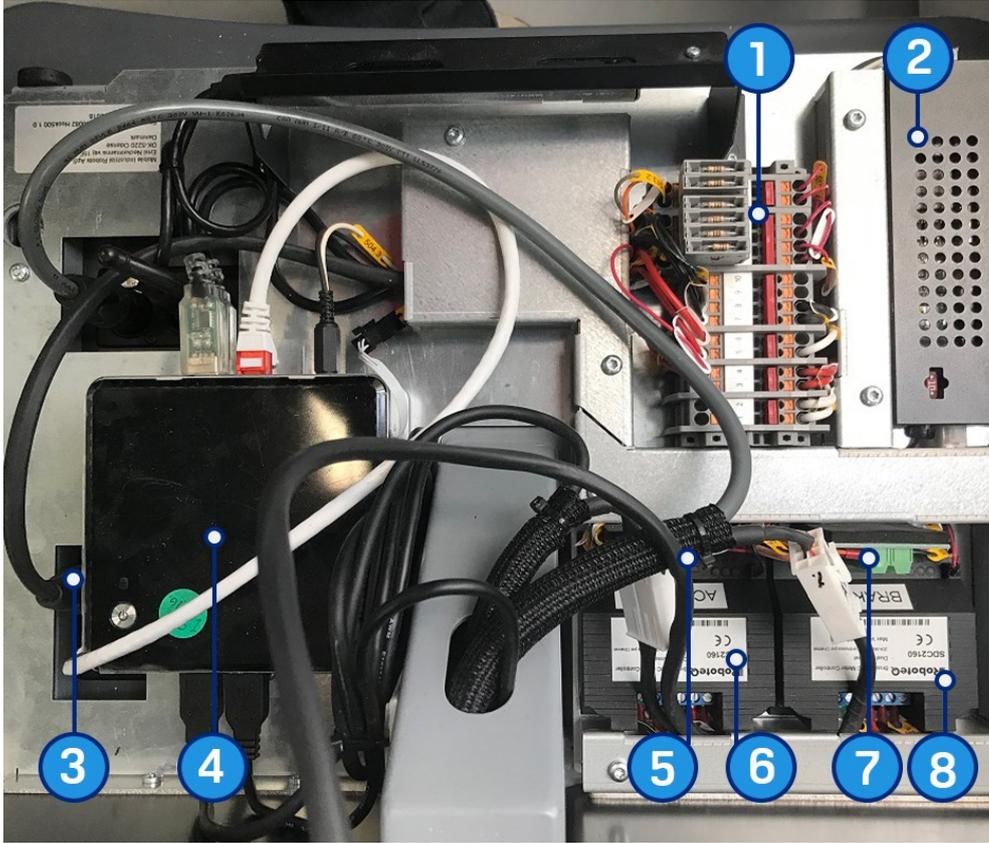| Label no.	Description	Label no.	Description
1	Connects to the robot computer	2	Connects to safety PLC
3	Connects to top application		

Figure 1.4. Motor controller LED

MiR Hook 100/MiR Hook 200

Figure 1.5. MiR Hook 100/MiR Hook 200 internal components

Label no.	Description	Label no.	Description
1	Fuse box	2	DC/DC-USB
3	Top application power interface	4	Hook computer
5	Encoder connections	6	Activator motor controller
7	Encoder connections	8	Brake motor controller

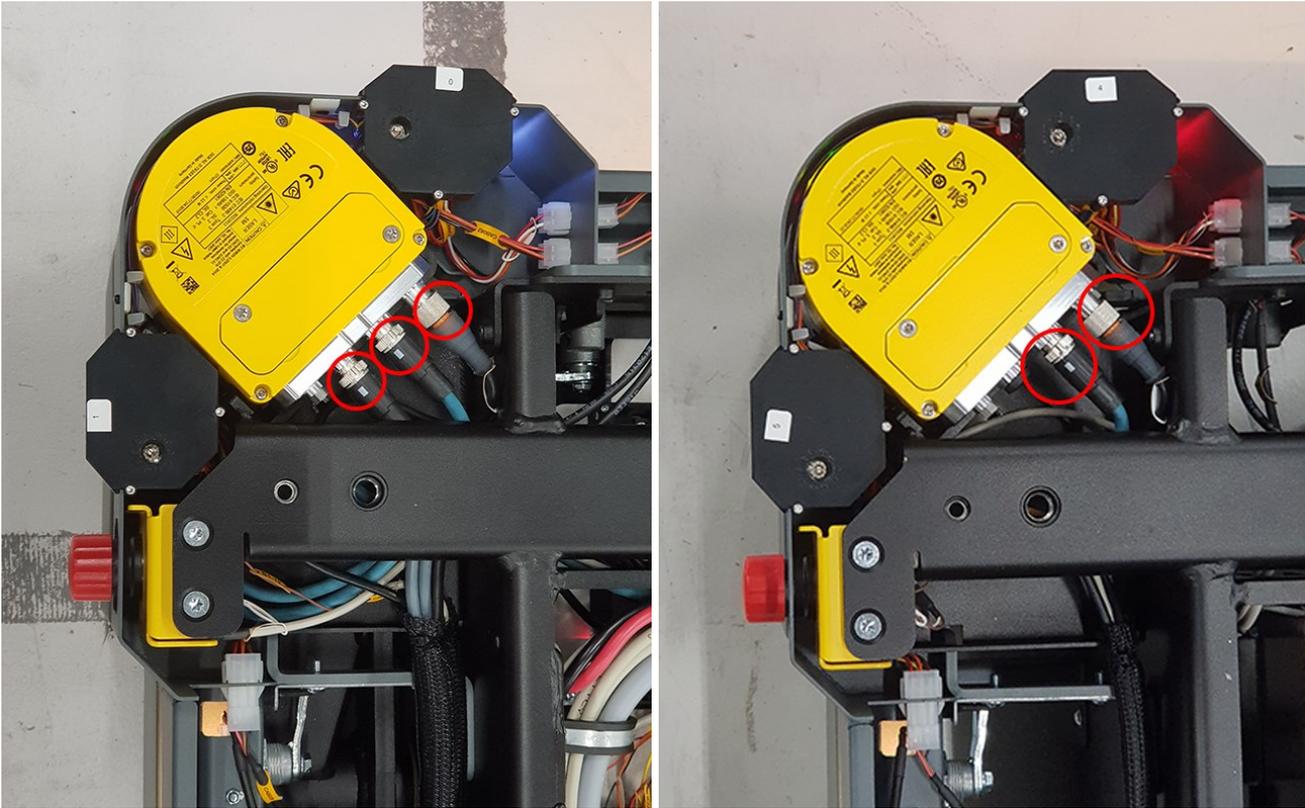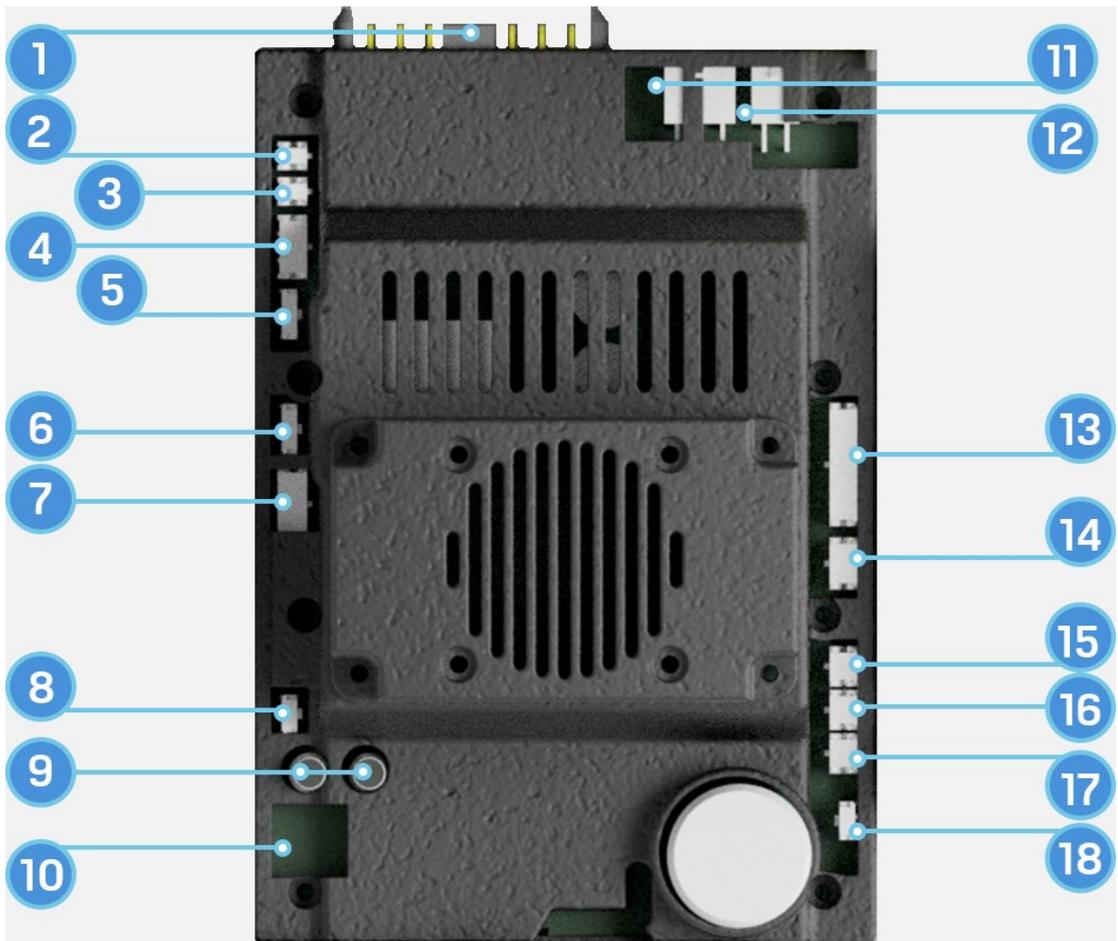# MiR500/MiR1000
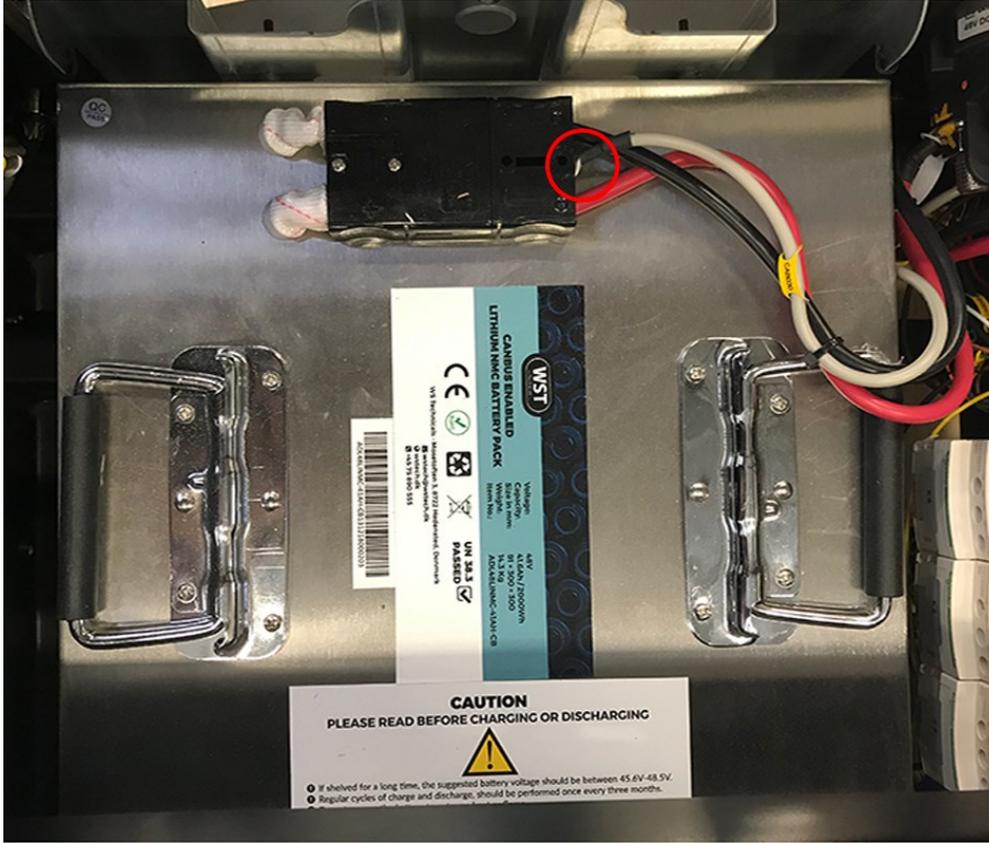
Figure 1.6. CAB-30 from the battery

Figure 1.7. Front and rear laser scanner respectively. The black cable are the power cables CAB-012 and CAB-013, and the blue cable are the connection cables CAB-010 and CAB-011. The rear scanner connects to the front through CAB-011, and the front connects to the safety PLC through CAB-010.

Lable no.	Cable connection	Label no.	Cable connection
1	CAB-30: Battery/charger connection	2	CAB-038
3	CAB-039	4	CAB-074: Safety PLC power
5	CAB-012: Front laser scanner power	6	CAB-013: Rear laser scanner power
7	CAB-018: Router and computer power	8	CAB-071: Speaker
9	Audio for computer	10	CAB-019: Ethernet connection to router
11	CAB-017: Motor controller carrier board power via STO relays	12	CAB-041: Top application power

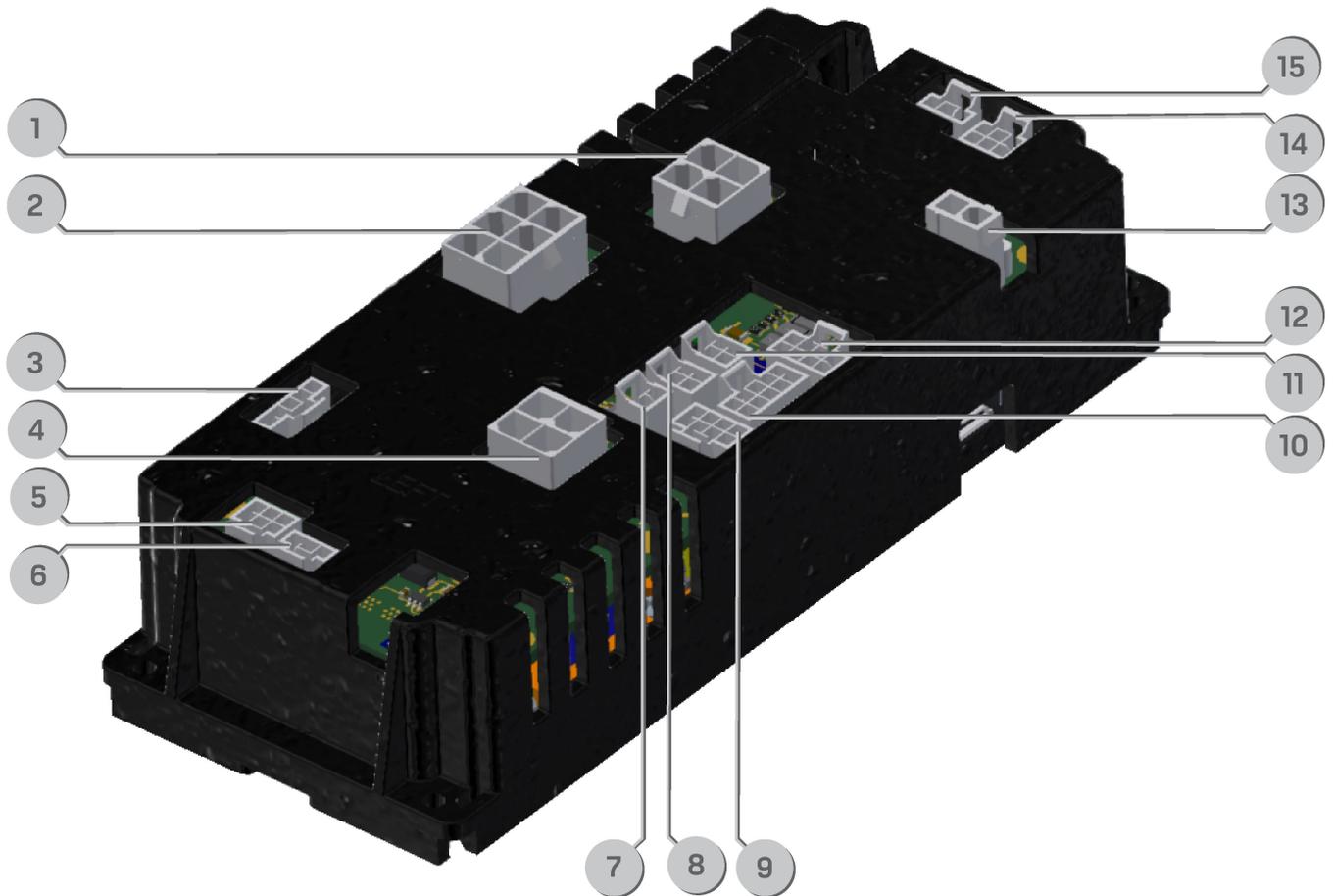| Lable no.	Cable connection	Label no.	Cable connection
13	CAB-040: Top application GPIO	14	CAB-067: On/Off swith power.
15	CAB-014: CAN bus connection to motor controller carrier board	16	CAB-066: Pendant
17	Unused	18	CAB-027

Figure 1.8. Power board sockets

Figure 1.9. Motor controller carrier board sockets connections

Pos.	Cable connection	Pos.	Cable connection
1	CAB-078: Right motor power	2	CAB-017: Power via STO relays
3	Unused	4	CAB-052: Left motor power
5	CAB-022: Left Hall sensor	6	CAB-025 LEFT: Left feedback
7	CAB-016: Protective stop	8	CAB-014: CAN bus connection to power board
9	CAB-023: Left motor encoder	10	CAB-015: Motion controller module
11	CAB-01: CAN bus connection to proximity sensors	12	CAB-075: Right motor encoder
13	CAB-074: Brake power	14	CAB-077: Right Hall sensor
15	CAB-025 RIGHT: Right feedback		

Document history

Version	Date	Description
1.0	2019-11-11	First edition.
1.1	2020-07-23	Added description of error code types. Added error 13000. Added errors 10711 and 10701 to MiR100/MiR200 list. Decreased side margins.