

# EPSON

## **AX Portal Troubleshooting**

Original instructions

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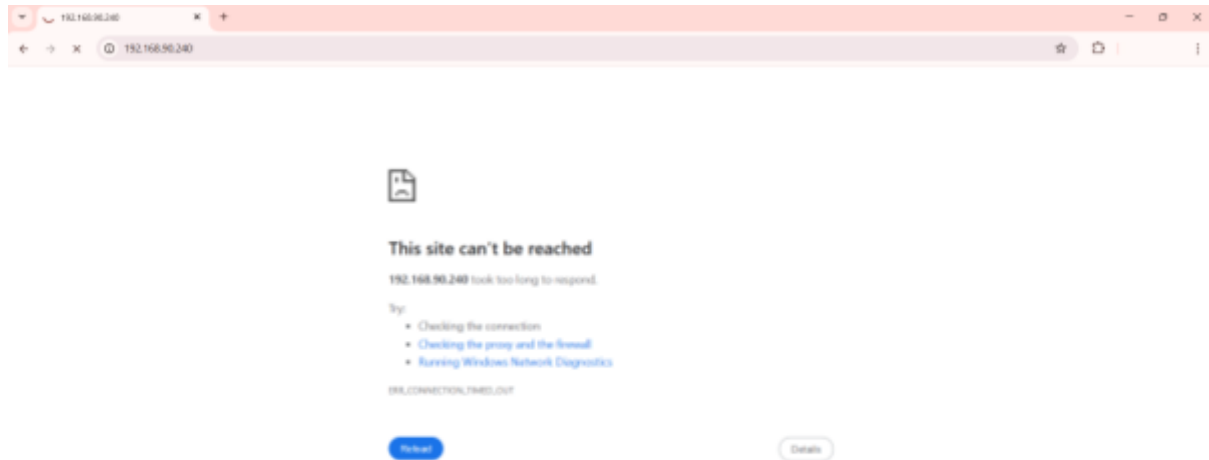
# **1. Introduction**

This manual was written to suggest approaches for finding solutions when users encounter unexpected behavior. These approaches may not always lead directly to a solution.

## **2. Power or Startup Issues**

## 2.1 AX Portal cannot be reached

It is not possible to reach the AX Portal interface and the error “This site cannot be reached” is showing.



Suggested approach: Please check that the IP is correct. If you do not know the IP, follow the chapter “Installation and first use” from “Collaborative Robot: 6-Axis Robots AX6 Quick Start / Setup Manual”.

## 2.2 Slow Connection Message

AX Portal is not accessible and a “slow connection” message is shown:



Suggested approaches:

- The network cable might be unplugged and/or broken. Check the proper plugging of the connectors, then try again. If the message still shows, try to replace the network cable.
- If the robot is connected to your network, check your LAN connection (WI-FI and/or network cables).
- If the lights from the plug on the controller box are off (but the lights on the connecting device are on), it may be faulty. In this case, please contact the service department.

## 2.3 Bad Gateway – Error 502

You were connected to the robot previously, turned it off and tried to reconnect with the same window. The previous URL link is trying to access the desktop interface directly which needs some time to load.



Suggested approach: Wait a few seconds and reload the page. You will be directly redirected to the AX Portal logging page.

### **3. Communication Issues**

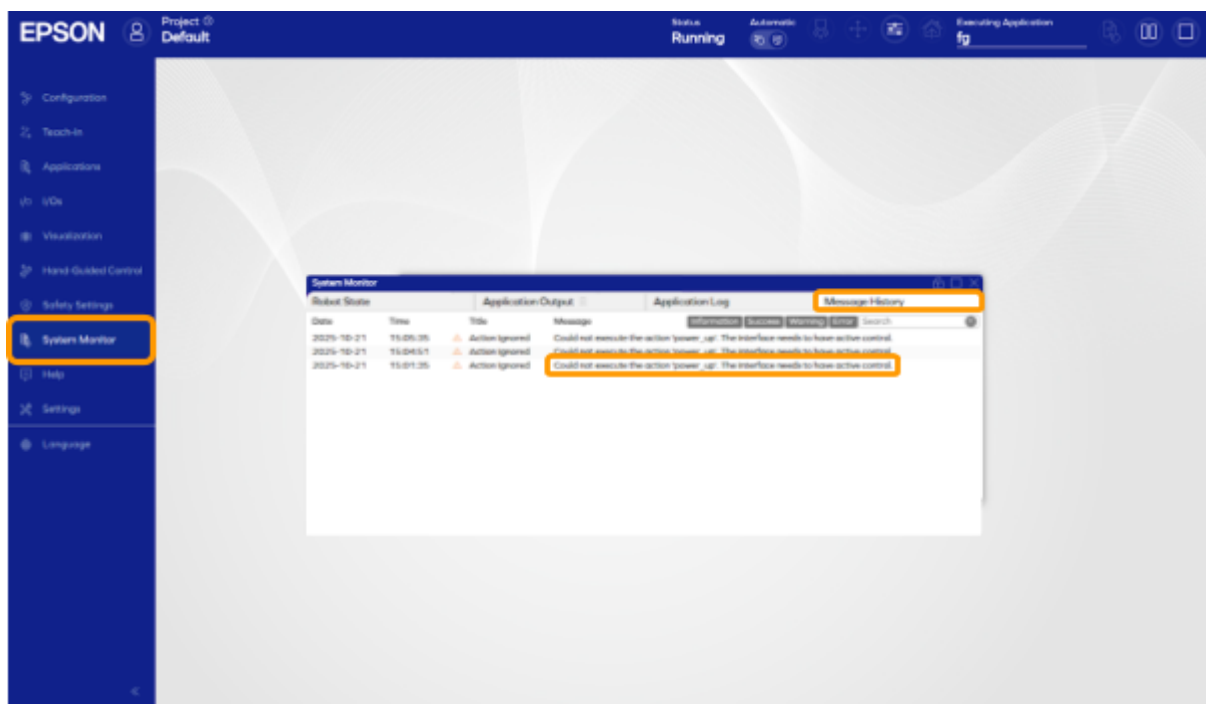
### 3.1. Manipulator Not Responding Via TCP, Modbus, REST, ROS

The robot does not move/react when sending commands via TCP, Modbus, REST or ROS interface.

**Solution:** This is most likely because the interface does not have active control of the robot. To enable active control, click on the ‘System Monitor’ tab and check the ‘Message History’. You should see the following message: “Could not execute the action ‘...’. The interface needs to have active control.”.

First request active control, then send the commands desired.

For details on the active control, see “AX Portal User’s Guide”.



## **4. Motion and Positioning Issues**

## 4.1. Manipulator showing resistance when moving in Hand-Guided Mode

While using the hand-guided mode, the robot seems to resist and require more force than usual to be moved. There can be multiple reasons for this behavior.

### 4.1.1. High Friction

If the manipulator was just started and is still cold, the force required to move it can be slightly higher than usual. However, if only some of the joints are harder to move, the issue can come from a broken gear.

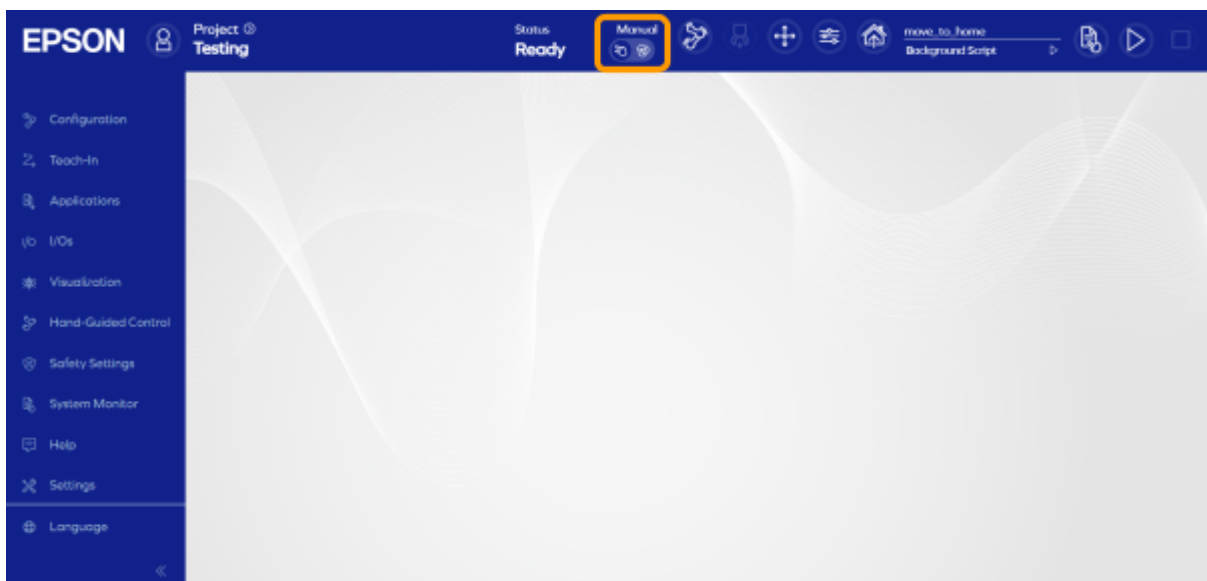
Suggested approaches: If the manipulator was just started, it might just need some time to reach its operating temperature.

If you notice one or a few specific joints are harder to move than the others, and it affects the usability of the robot, please contact the service department.

### 4.1.2. Wrong operation mode

In manual mode, the linear velocity is, by default, reduced to 250mm/s for safety reasons.

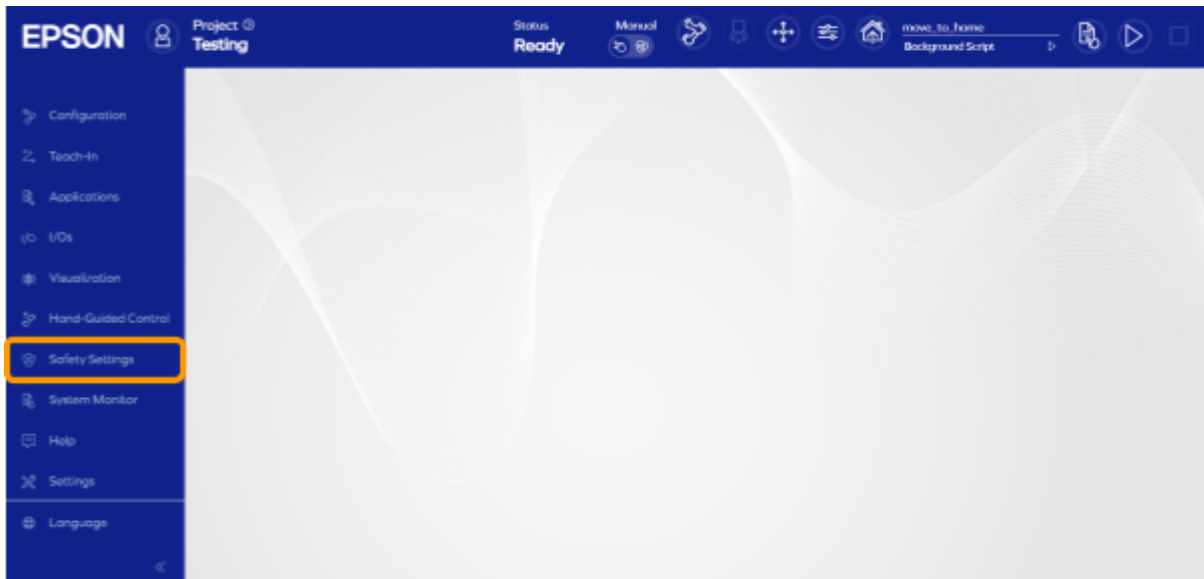
Suggested approach: Switch to automatic mode if you want to move the manipulator faster by clicking on the hand at the top:



### 4.1.3. Velocity Safety Limits

If a speed limit is set lower than the default values in the safety settings, the robot will be restricted in any case.

Suggested approach: You can verify the safety parameters by clicking on the “Safety Settings” tab:



Then you can switch safe case or modify the safety parameter values, as explained in “AX Portal Users Guide”.

#### 4.1.4. Wrong payload configuration

If the payload settings are not correct, a wrong compensation will be applied to the manipulator which can make it easier or harder to move.

Suggested approaches: If extra force is needed to move the robot closer to the ground, the payload is set higher than it should be. On the contrary, if extra force is needed to move the robot upwards, the payload is set lower than it should be.

If no tool is mounted, make sure that “no tool” is selected from the drop down menu. If a tool is unintentionally selected, power down the robot to edit the settings.

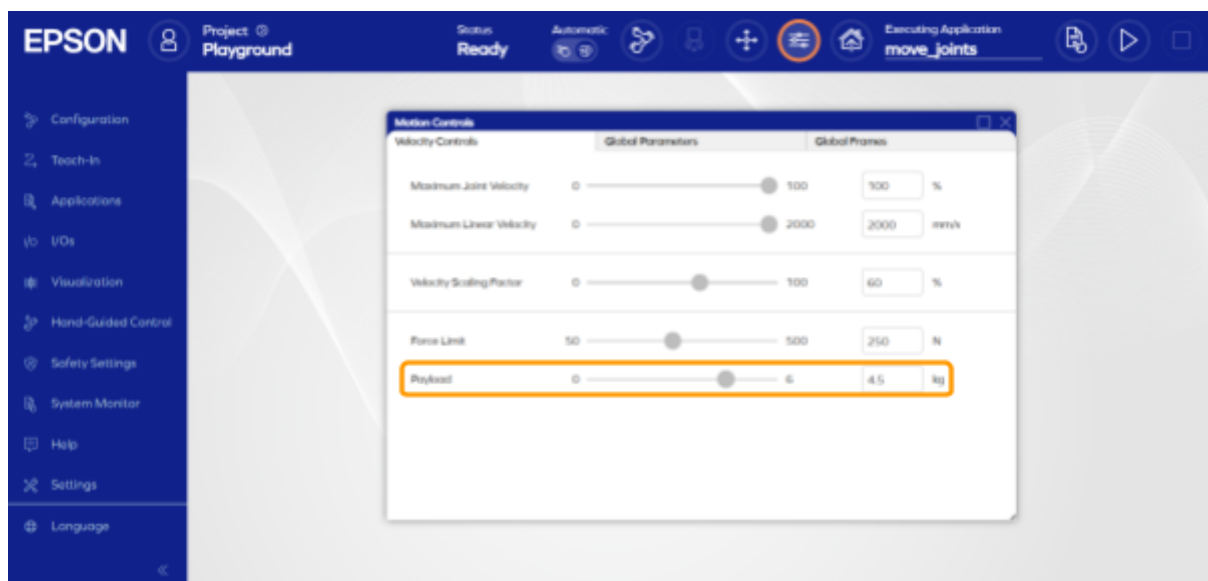


If a tool is mounted on the end-effector, make sure its mass (in kg) is set correctly from the “configuration” tab. With the robot unpowered, “edit custom tool” and adapt the mass accordingly:



If a payload is added, it needs to be specified. Once the robot is powered up, in the “motion controls”, set your desired payload.

If a tool is already mounted, the payload set should correspond to the sum of the weight of the tool and of the extra payload.



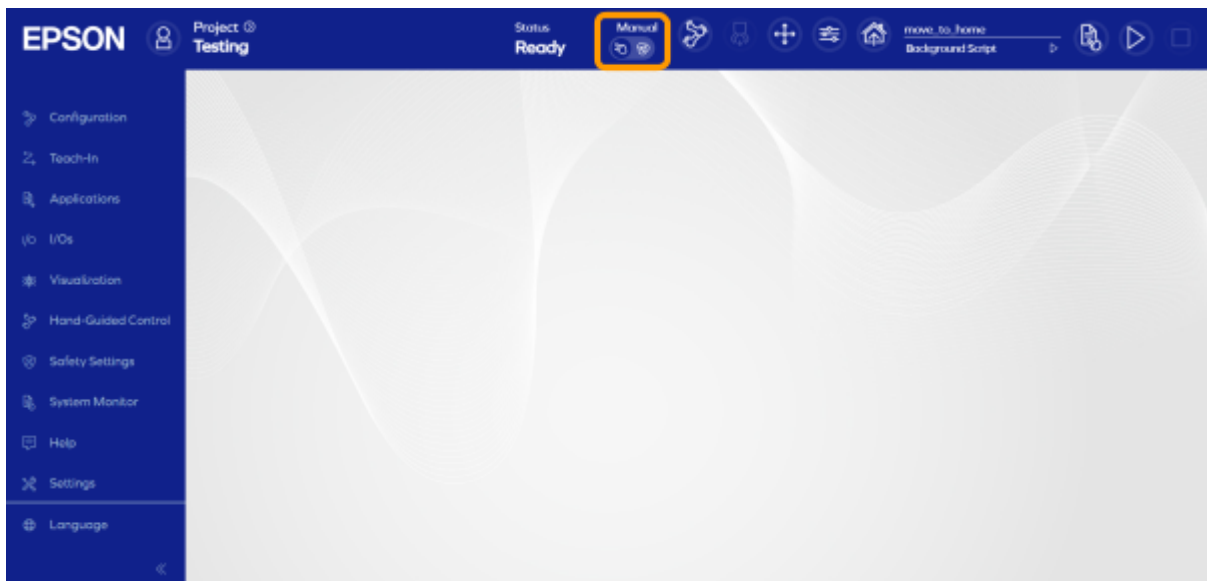
## 4.2. Manipulator moving slower than expected during a script execution

The manipulator moves at a slower speed than expected or, while a script is running, the manipulator slows down unexpectedly. Multiple reasons can explain this behavior.

### 4.2.1. Wrong operation mode

In manual mode, the linear velocity is, by default, reduced to 250mm/s for safety reasons.

Suggested approach: Switch to automatic mode if you want to move the manipulator faster by clicking on the hand at the top:

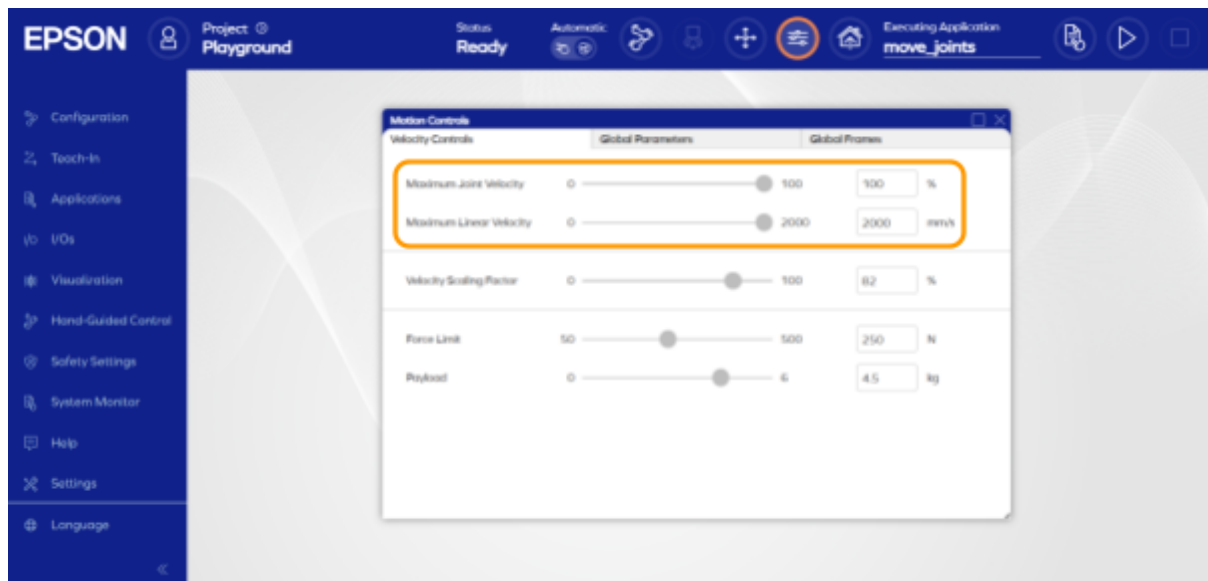


### 4.2.2. Wrong velocity/acceleration setting

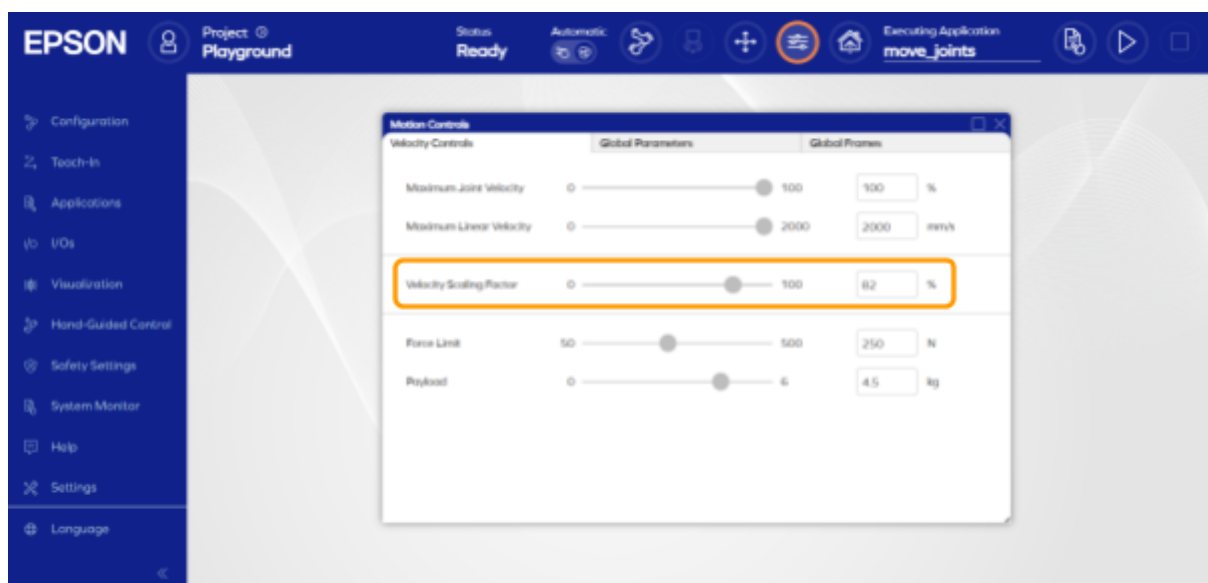
A joint velocity/acceleration or a linear velocity/acceleration setting can be limiting the behavior and needs to be changed.

Suggested approaches: Check the following parameters are as expected:

- First check the maximum velocities allowed, this will limit the robot speed in any case to the value selected.



- Check that the “Velocity Scaling Factor” is as you expect it in the “Motion Control” window. This parameter scales down the velocities and acceleration (defined in the script and/or in the global parameters) to the selected percentage.

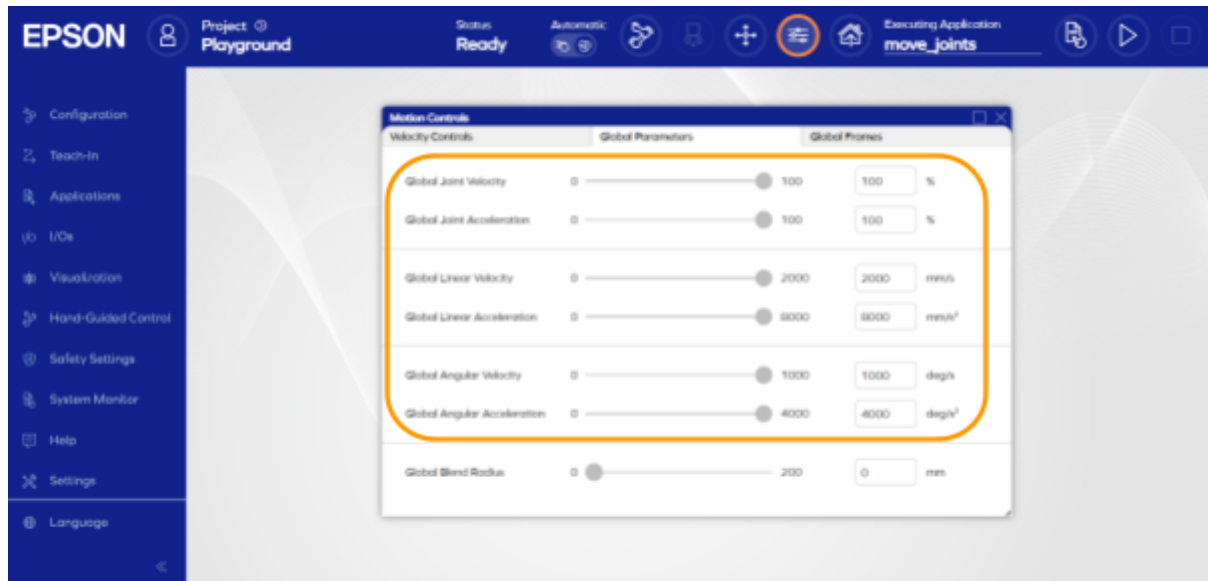


- A velocity or acceleration parameter could be set directly in a function of your code, like in the example below. Make sure they are set as you expect it. In this case, the global parameters from the “motion control” window are ignored.

Python

```
move_joints(joints, position, joint_velocity=20, joint_acceleration=40)
```

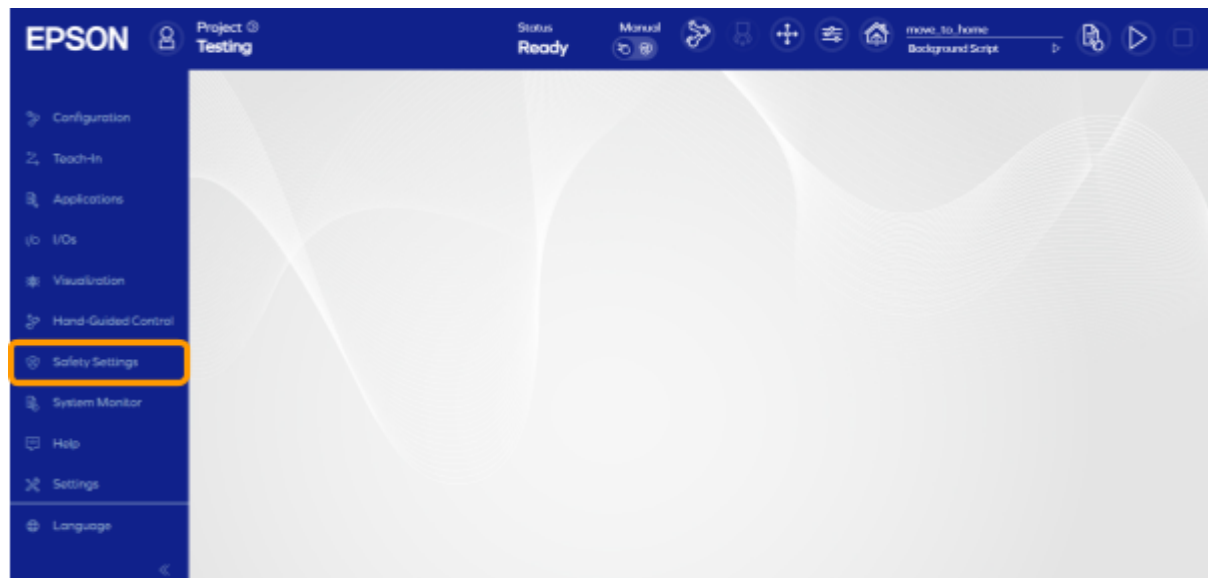
- Finally, verify that the global velocity and acceleration settings are as you expect them in the “Motion Control” window. If no velocity or acceleration is defined in your script, these values will automatically apply.



#### 4.2.3. Velocity Safety Limits

If a speed limit is set lower than the default values in the safety settings, the robot will be restricted in any case.

Suggested approach: You can verify the safety parameters by clicking on the “Safety Settings” tab:

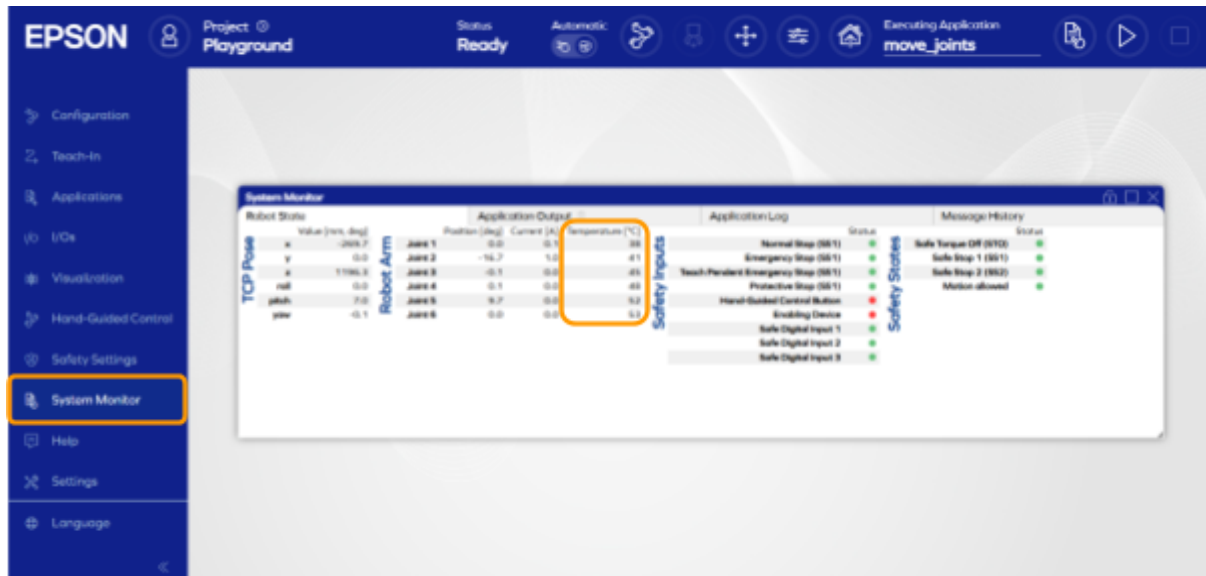


Then you can switch safe case or modify the safety parameter values, as explained in “AX Portal Users Guide”.

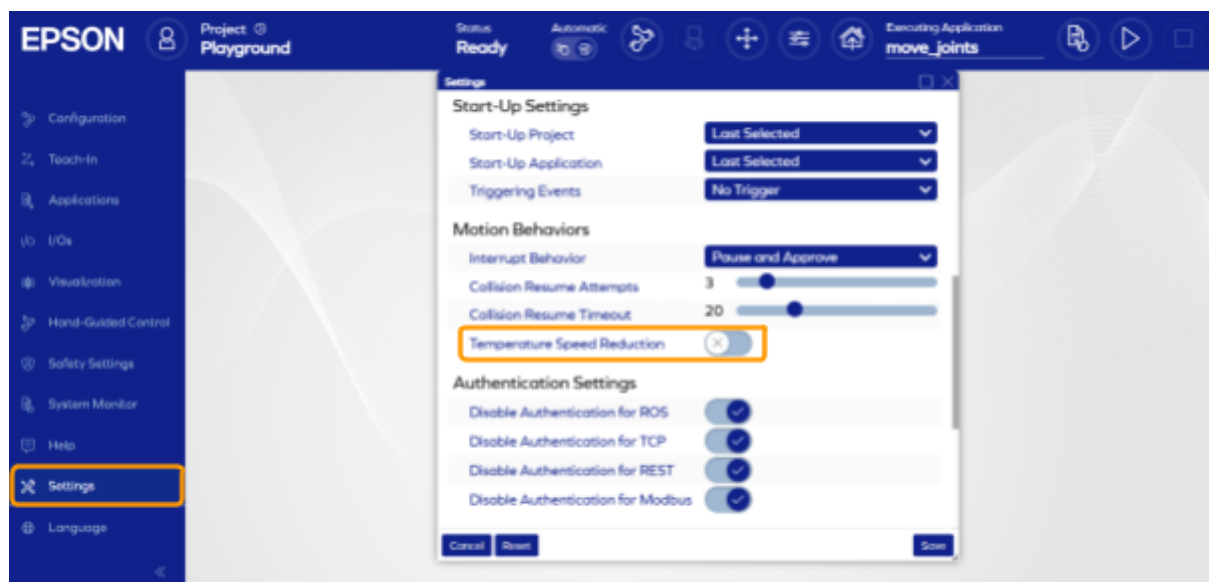
#### 4.2.4. Temperature limit

In case of overheat risk, when the joint temperature is higher than 70°C, the manipulator automatically slows down to protect the components and prevent overheating.

**Suggested approaches:** If the manipulator slows down while a script is running, its temperature could be too high. You can check if it is close to 70°C by clicking on ‘System Monitor’ on the left. In this case, the manipulator automatically slows down to protect the components and prevent overheating. Preferably reduce the robot's workload (e.g., lower the payload or velocity) to prevent this safety feature from being activated.



If this feature needs to be deactivated for specific reasons, open the “Settings” and disable “Temperature Speed Reduction:



### 4.3. Robot moving downwards unexpectedly

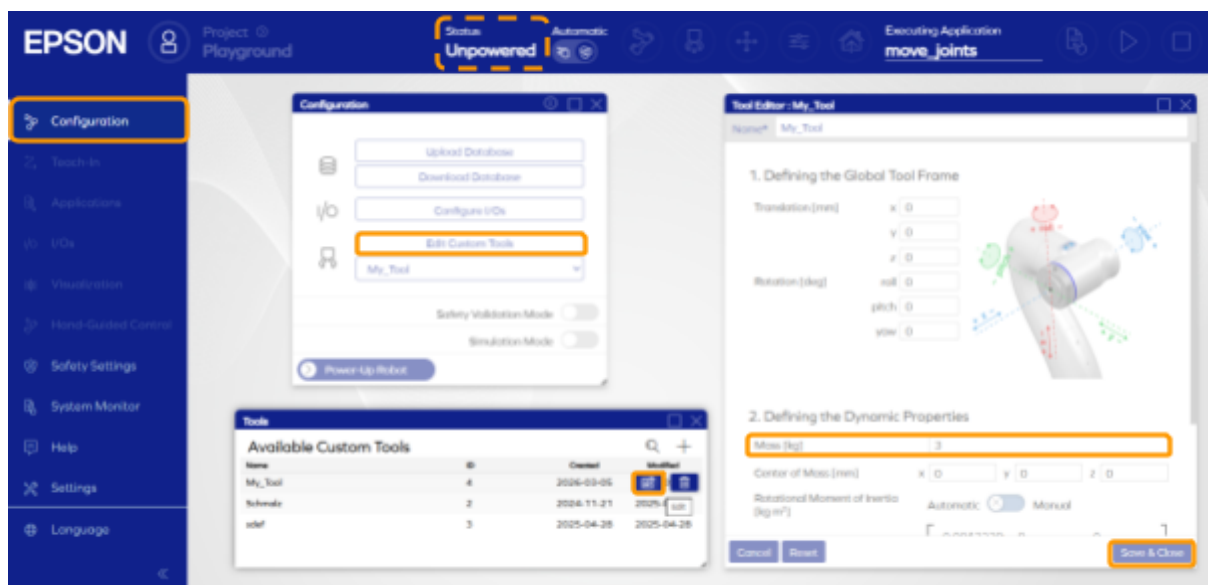
If the payload settings are not correct, a wrong compensation will be applied to the manipulator which can make it easier or harder to move.

**Suggested approaches:** If extra force is needed to move the robot closer to the ground, the payload is set higher than it should be. On the contrary, if extra force is needed to move the robot upwards, the payload is set lower than it should be.

If no tool is mounted, make sure that “no tool” is selected from the drop down menu. If a tool is unintentionally selected, power down the robot to edit the settings.

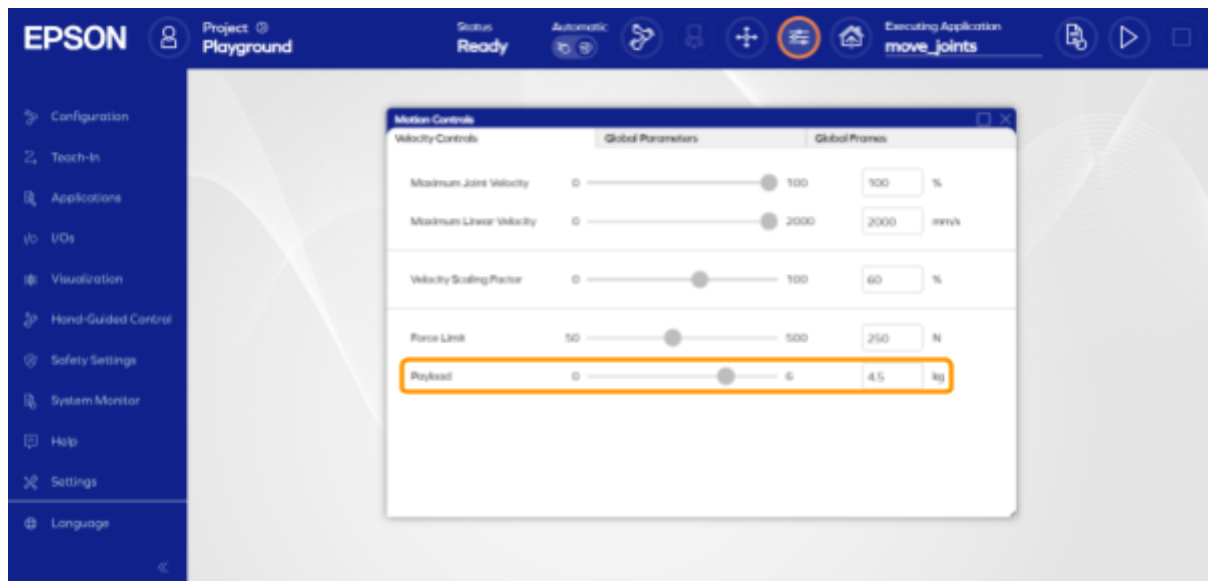


If a tool is mounted on the end-effector, make sure its mass (in kg) is set correctly from the “configuration” tab. With the robot unpowered, “edit custom tool” and adapt the mass accordingly:



If a payload is added, it needs to be specified. Once the robot is powered up, in the “motion controls”, set your desired payload.

If a tool is already mounted, the payload set should correspond to the sum of the weight of the tool and of the extra payload.



#### 4.4. Manipulator moving to the Wrong Position

The manipulator moves in an unexpected position (different from the desired one).

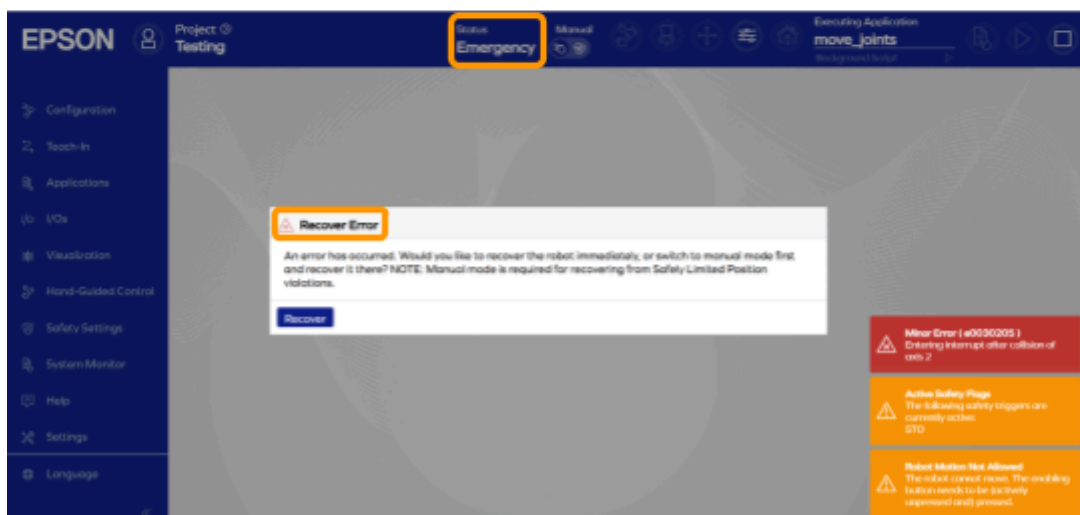
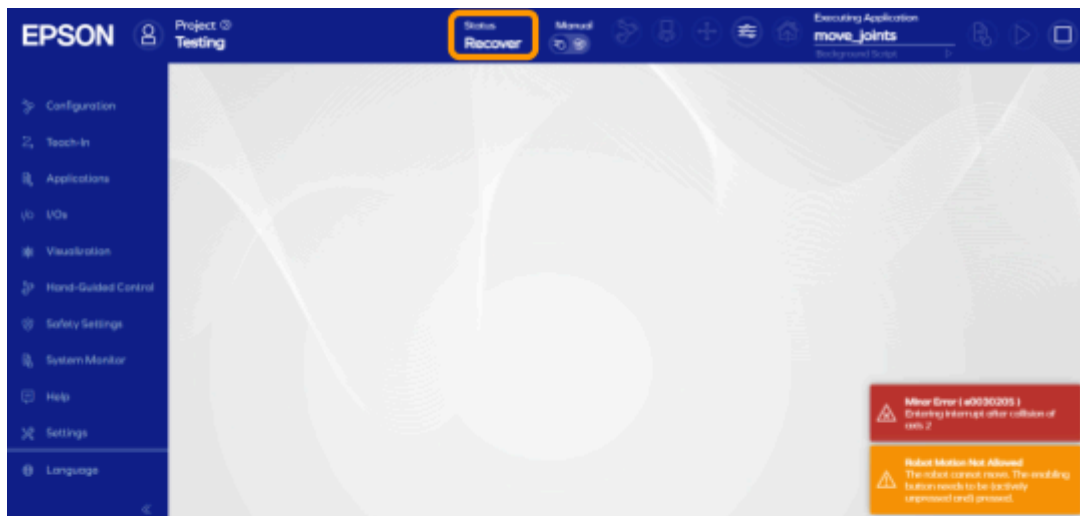
Solution: Make sure that the coordinate frame chosen is the correct one when creating/editing the pose.



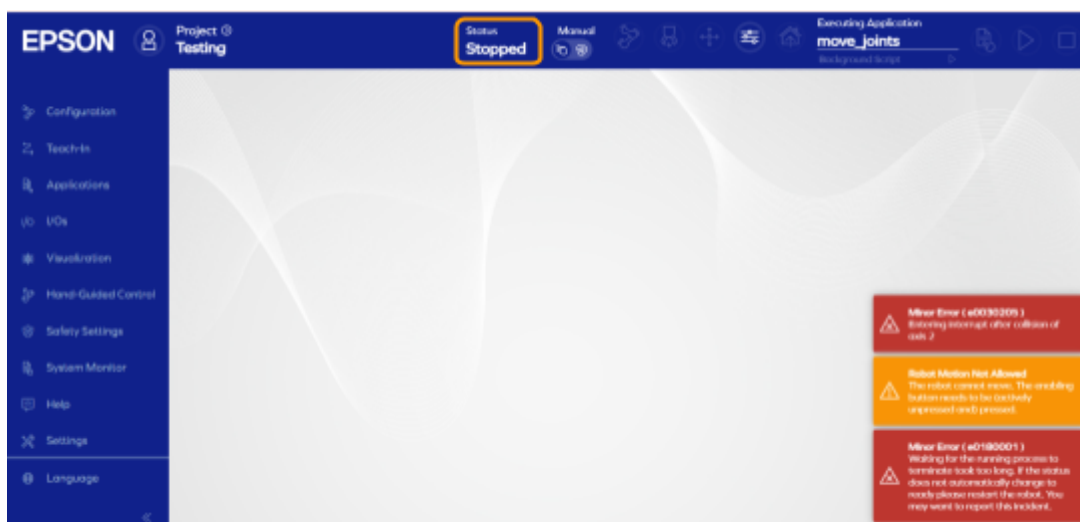
#### 4.5. AX Portal Remains Hanging in “Recover” or “Stopped” Mode

In manual mode, if an interrupt event (collision, emergency stop or safe guard stop) occurs, depending on the behavior selected, the manipulator might get stuck in a ‘Recovering’ or ‘Stopped’ state:

- ‘Recovering’ state with “Pause and Resume” or “Pause and Approve” behavior.



- “Stopped” state with a “Stop and Error” behavior



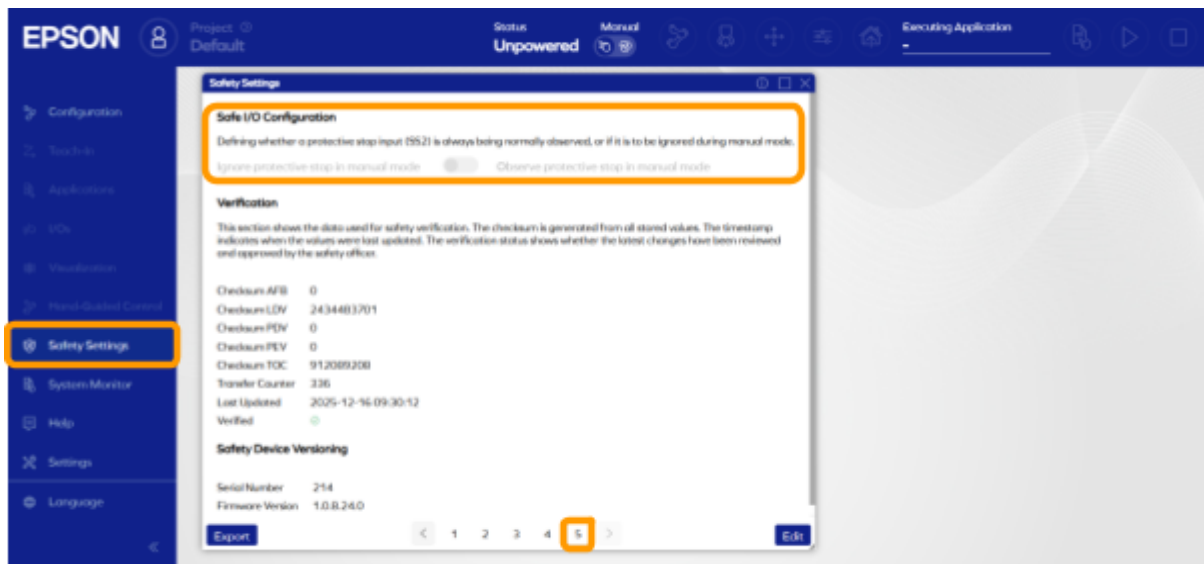
Solution: In order for the robot to perform any motion or recovery movement, the enable button' needs to be pressed. Make sure it is the case, then the motion should resume or the robot should be in 'Ready' state.

## **5. Safety device**

## 5.1. No Reaction When Pressing the 'Protective Stop' Button (SS2)

The robot and AX Portal do not react when the protective stop is pressed.

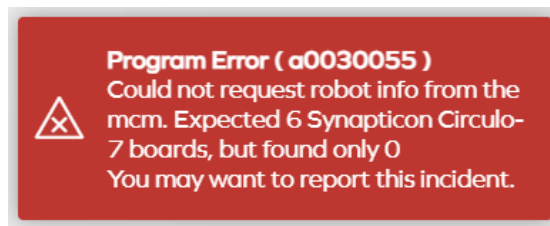
**Solution:** Please check the safety settings, on the last page, there is possibility to “Ignore protective stop in manual mode”. If you want the protective stop to be taken into account, change this setting back to “Observe protective stop in manual mode”.



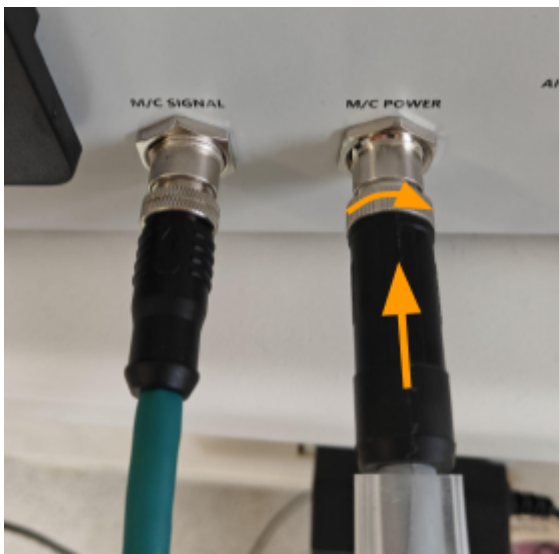
## **6. Error Messages**

## 6.1. Could Not Request Robot Info – Program Error

This error message appears when the manipulator has no proper connection to the controller box:

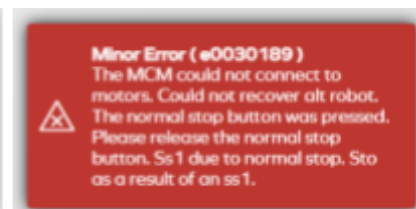
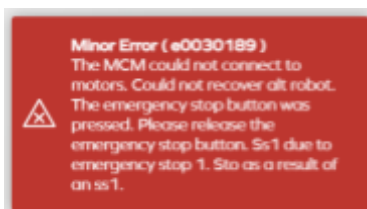


**Solution:** Switch off the controller box and verify that the manipulator signal and power cables are connected correctly. They need to be slightly pushed while screwing (see arrows on the picture). Then try to connect again.



## 6.2. Stop Button Issue – Minor Error

...

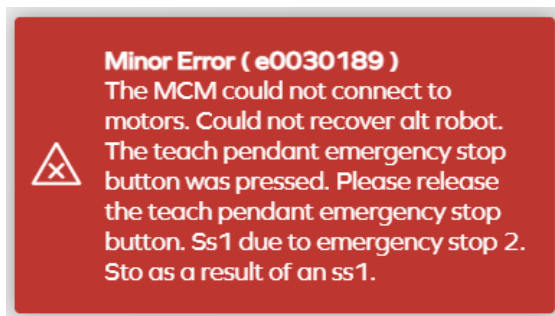


One or more connectors of the stop button(s) from the safety panel are not connected correctly, have their button pressed, or the jumper connector is disconnected or faulty.

**Solution:** On the safety panel, verify that the stop button mentioned in the error message (Emergency Stop, Protective Stop and/or Normal Stop/Confirm) has a jumper connector or a button properly plugged, and that the button is not pressed. If the error message still shows, the jumper connector/button might be defective.



### 6.3. Teaching Device Issue – Minor Error



There is no teach pendant connected or the safety stop on the teach pendant is pressed.

Solution: Make sure that there is a jumper, hand held button or teach pendant holder connected properly to the teaching device plug. The connector can be securely plugged following those steps:

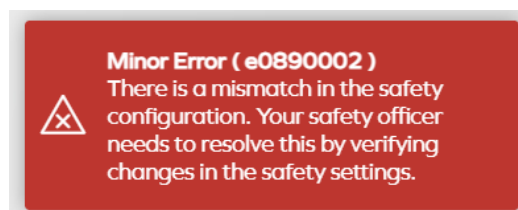
1. The connector is inserted a little until it holds on its own,
2. The ring is turned until it can be pushed in,
3. The connector can then be pushed all the way in,
4. The ring can be turned until it clicks (loose in the beginning and requires a bit more force to click).

If done already, verify that the safety stop is not pressed. If the error message still shows, the teaching device might be defective.



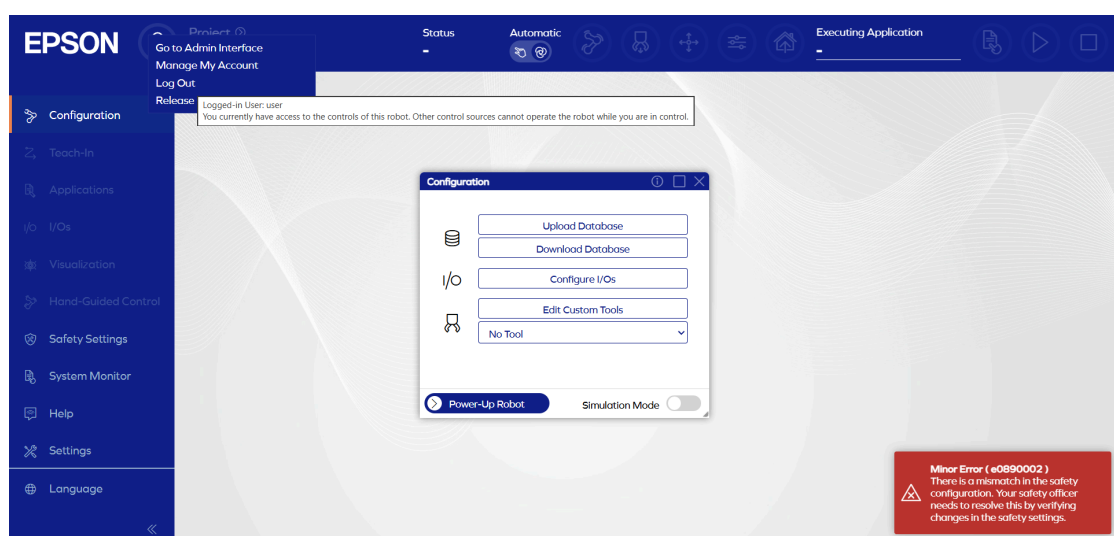
## 6.4. Mismatch in the Safety Configuration – Minor Error

This message indicates that the safety parameters have not yet been verified, resulting in a mismatch in the safety configuration.



### Solution:

1. Log out from the user account

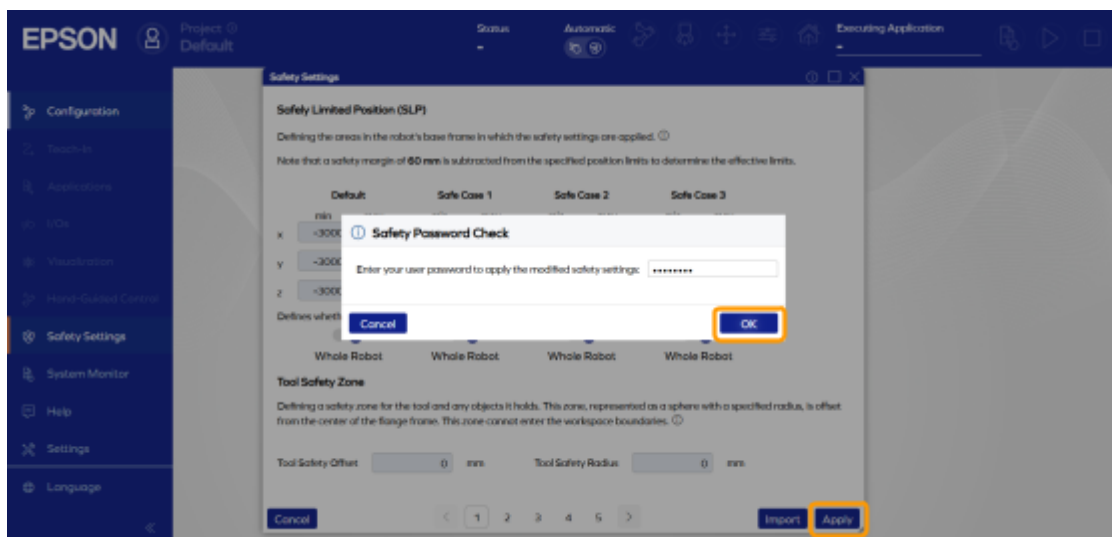


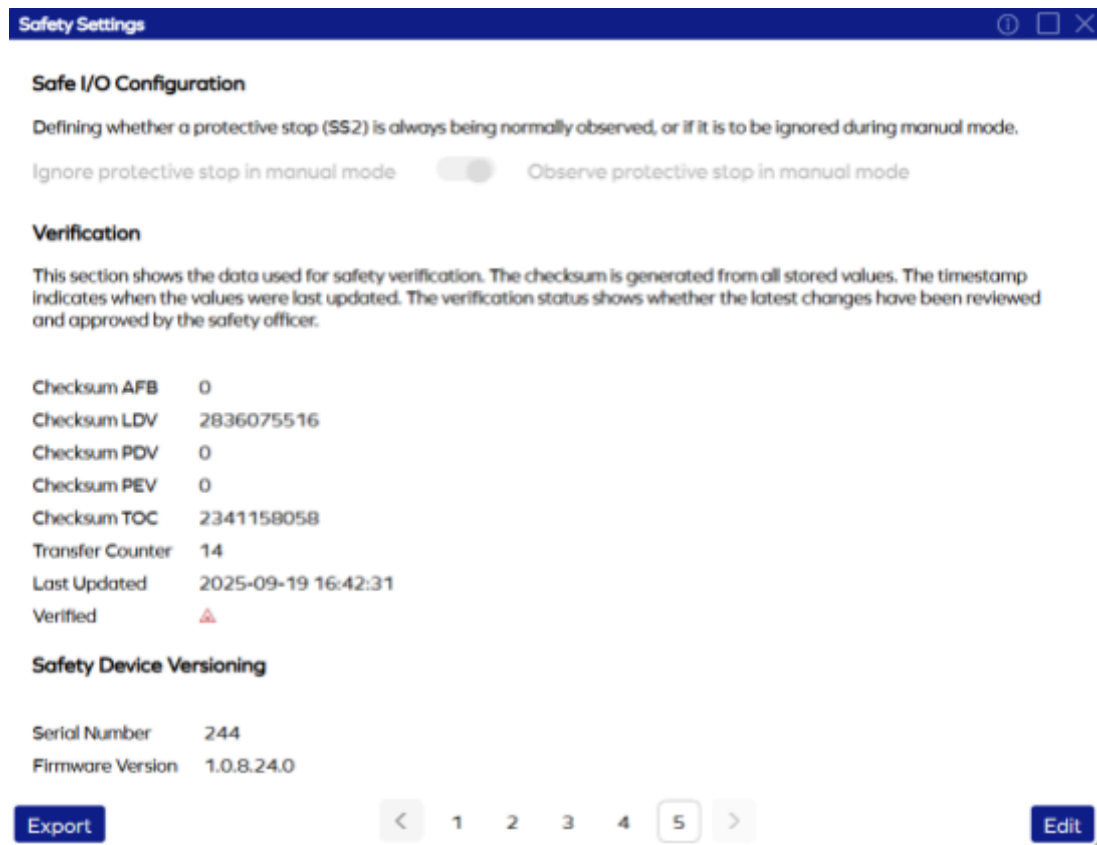
2. Log in with the safety user account (create one if needed)

- Click on “Safety Settings”, then on “Edit”



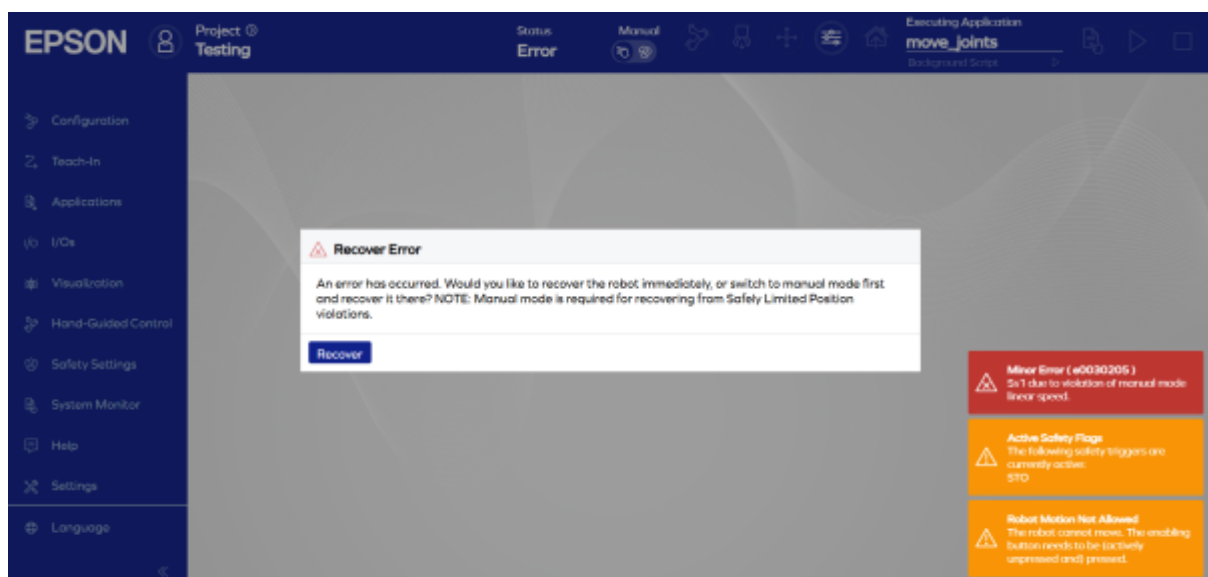
- Enter the safety password and press “OK”:



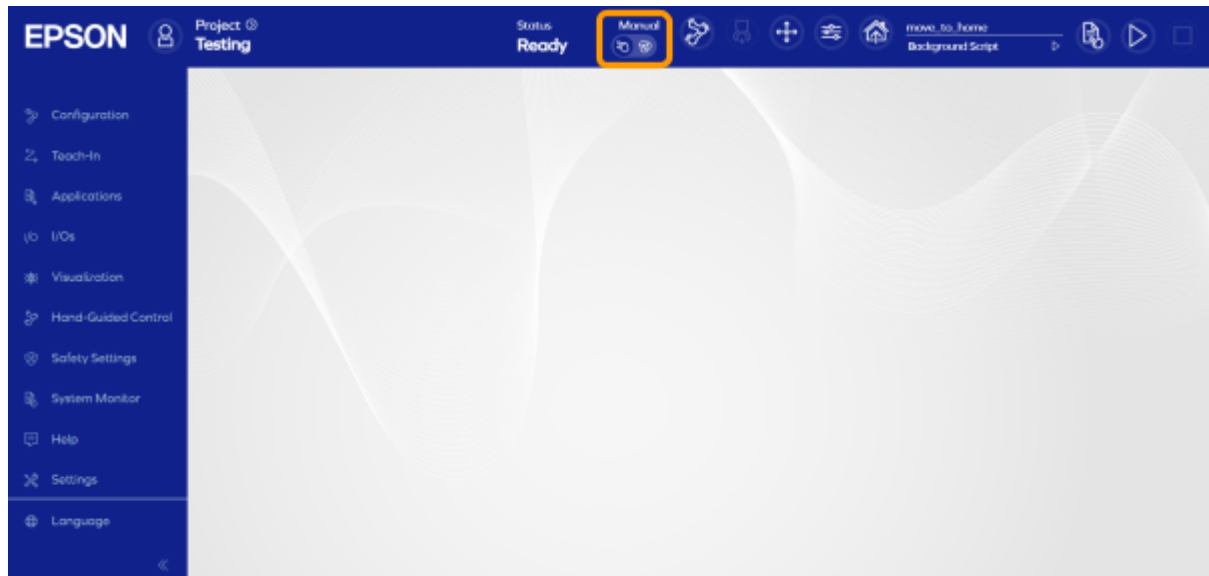


## 6.5. SS1 Error Message Due to Violation of Manual Mode Linear Speed – Minor Error

In manual mode, an error is triggered while trying to move the robot in the hand-guided mode.

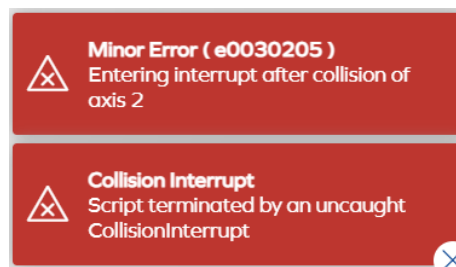


**Solution:** This is due to moving the robot faster than the velocity limit (250 mm/s). Make sure not to move the robot above its limit by slowing down when the resistance increases or use the automatic mode if you would like to move the robot faster.



## 6.6. Collision Detection False Trigger – Minor Error

A collision detection fault is triggered even though the manipulator has not collided with anything. .

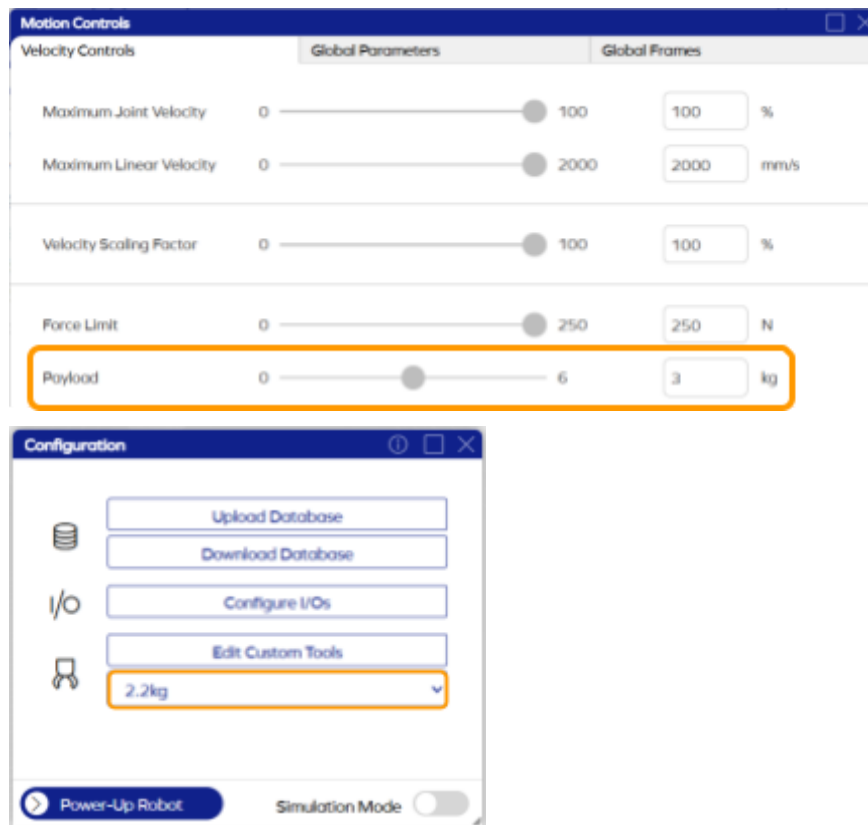


### Solutions:

1. The safety threshold is too sensitive; the force limit should be increased.

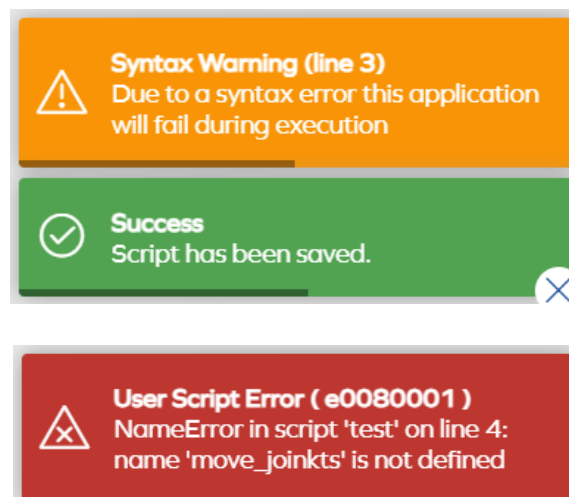


2. A wrong tool or payload parameter is set. Make sure that it matches the conditions of the robot.



## 6.7. Wrong Syntax – User Script Error

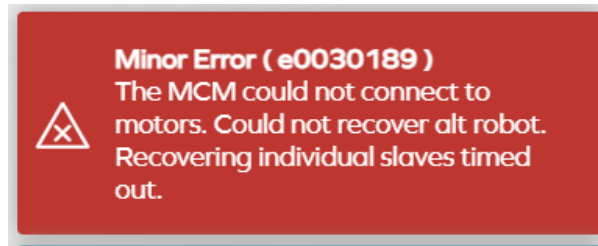
The script written has a syntax error which is detected when compiling (raises a warning while saving) or when running (raises an error while running the code).



**Solution:** Check the specified line for typos or syntax errors.

## 6.8. MCM Could Not Connect to Motors – Minor Error

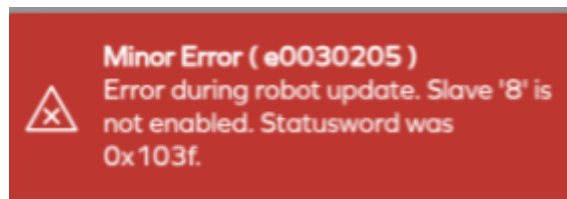
Joints are in an error state which cannot be recovered by the MCM.



**Solution:** Power down the robot and try to power it up again. If the error shows again, turn off the controller box for 5 seconds then turn it back on and try to power up the robot again. In some rare cases, repeating the operation multiple times might be needed. As long as the error shows up, repeat the operation (at least 5 times). If this does not help, contact the support service.

## 6.9. Error During Robot Update – Minor Error

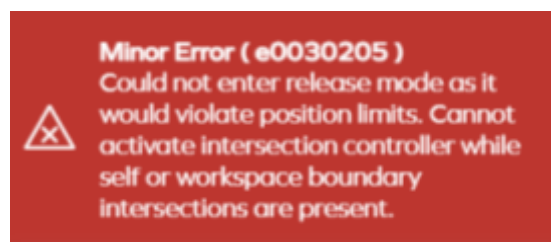
If the release button is slightly pressed but not enough to be detected as an intentional press from the user, the system will trigger this error as a security measure.



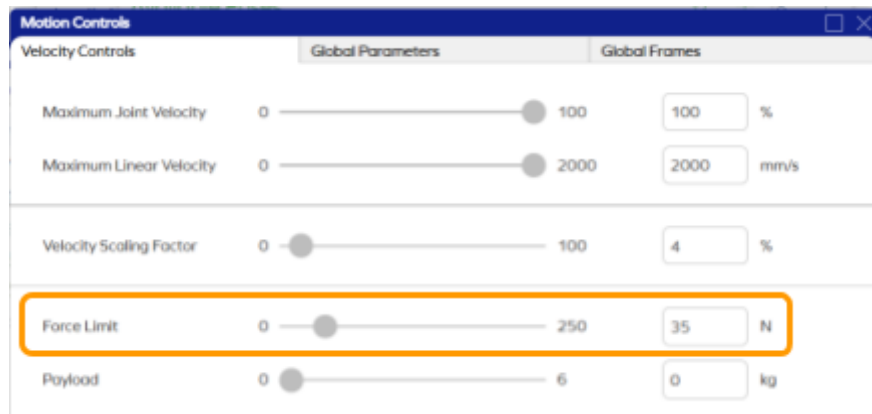
**Solution:** In order to recover from it, the robot should be powered down and the controller box needs to be turned off for 5 seconds then turned on again.

## 6.10. Violation of Position Limits – Minor Error

If a workspace limit is reached (robot outside of the workspace or self-collision), a resistance behavior occurs. If this resistance is overcome, the error will be raised.

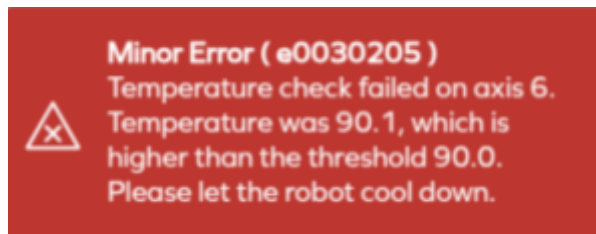


**Solution:** In order to move out of the position limit, it is possible to reduce the force limit to the minimum then forcefully push the robot away from the limit.



### 6.11. Temperature Higher than the Threshold – Minor Error

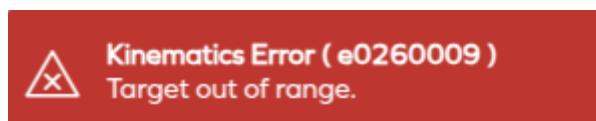
If a joint in the robot reaches a temperature higher than the safety threshold of 90 °C, the manipulator will raise an error and stop.



**Solution:** Do not use the robot and let it cool down. Ideally, power down the robot and switch off the controller box for faster cooling. If the error occurs again, you might want to reduce the velocity or change your script (avoid static positions in a demanding way, like horizontal with payload, for too long).

### 6.12. Target Out of Range – Kinematics Error

The robot cannot reach the target.

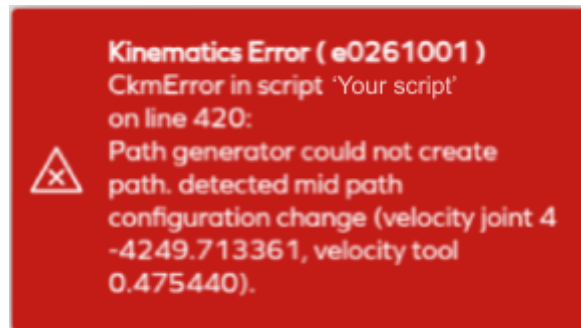


**Solution:** Verify that the target is not located:

1. At a position that would create a self-collision,
2. outside the default robot workspace,
3. outside the limits defined in the safety settings.

### 6.13. Path Generator Could Not Create Path – Kinematics Error

This error occurs when the path requires a configuration change that would result in a jump in joint positions and very high motion in between. Therefore, the path is not executed.



Solution: Try adjusting the path slightly, by changing the start, the intermediate or the end pose, so that the configuration change is no longer necessary.

### 6.14. Internal Error Due to Safety Device

If the following error message appears when powering-up the robot, there is a mismatch between the two channels of an emergency stop switch, a safe digital I/O or the teaching device. This could be caused by incorrect wiring, a defective or misconnected connector, broken devices or broken cables.



Solution: A power cycle of the controller box is needed to reset the error. Please power down the controller box, verify the cables and connections of the teaching device and of all the jumpers/buttons shown below:

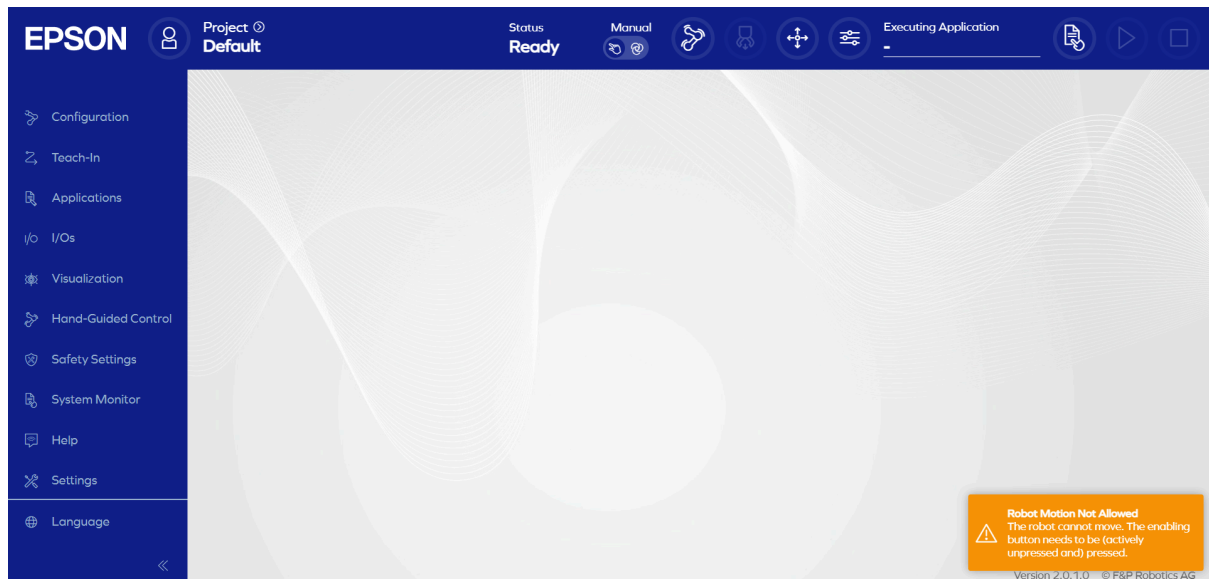


If no issue is detected visually, check the continuity of the jumpers/buttons or replace all of them with functioning jumpers and try to power up again.

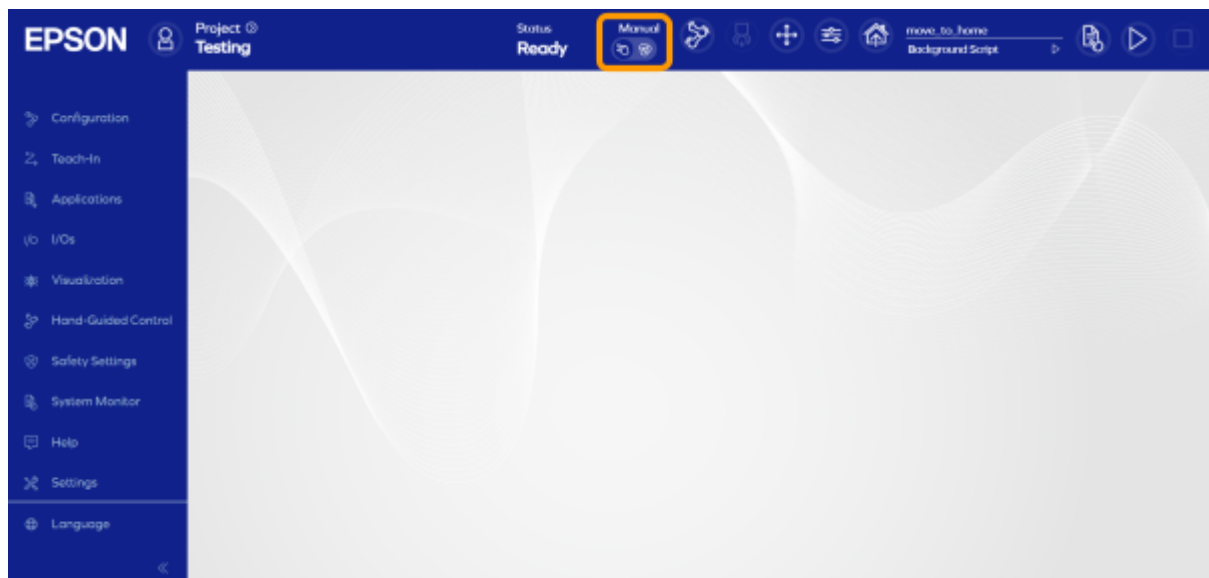
## **7. Warnings**

## 7.1. Robot Motion Not Allowed

If only using the teach pendant jumper (no button):



**Solution:** switch from manual to automatic mode, by clicking on the hand at the top, in order to move the robot.



## 7.2. Safe DI 1, 2 or 3 Not Connected

One or more connectors of the Safe Digital Inputs from the safety panel are not connected correctly or have their switch 'off'.



**Solution:** On the safety panel, verify that the safe digital switch mentioned in the error message (SDI 1, 2 and/or 3) has a jumper connector or a switch properly plugged, and that the button is not 'off'. If the error message still shows, the jumper connector/switch might be defective.



## **8. Service Needed**

## 8.1. Joint(s) not Reachable – Minor Error

One or more joint(s) not reachable. If the manipulator caps were opened, switch off the power and check the EtherCAT connections.



### Minor Error ( e0030189 )

The MCM could not connect to motors. Expected 6 synapticon circulo-7 boards, but found only 2