

MRC Studio – Simulator –

Introduction

About MRC Studio – Simulator –



You can experience the operability of MRC Studio without the controller MRC01.

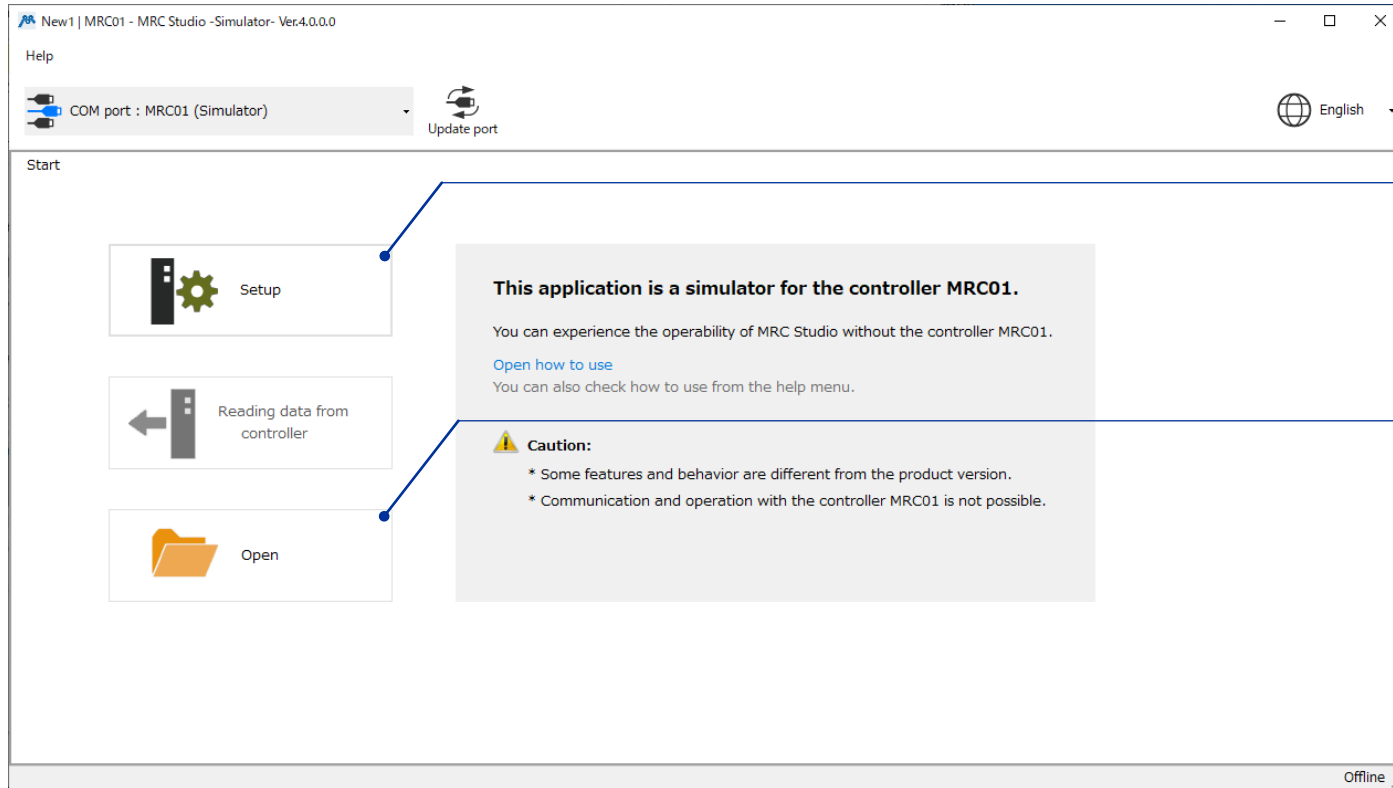
The saved data can be reflected in the product version. (refer to p.17)

■ Caution

- Some features and behavior are different from the product version.
- Communication and operation with the controller MRC01 is not possible.

How to use

Start



Setup

You can set any robot.

Open

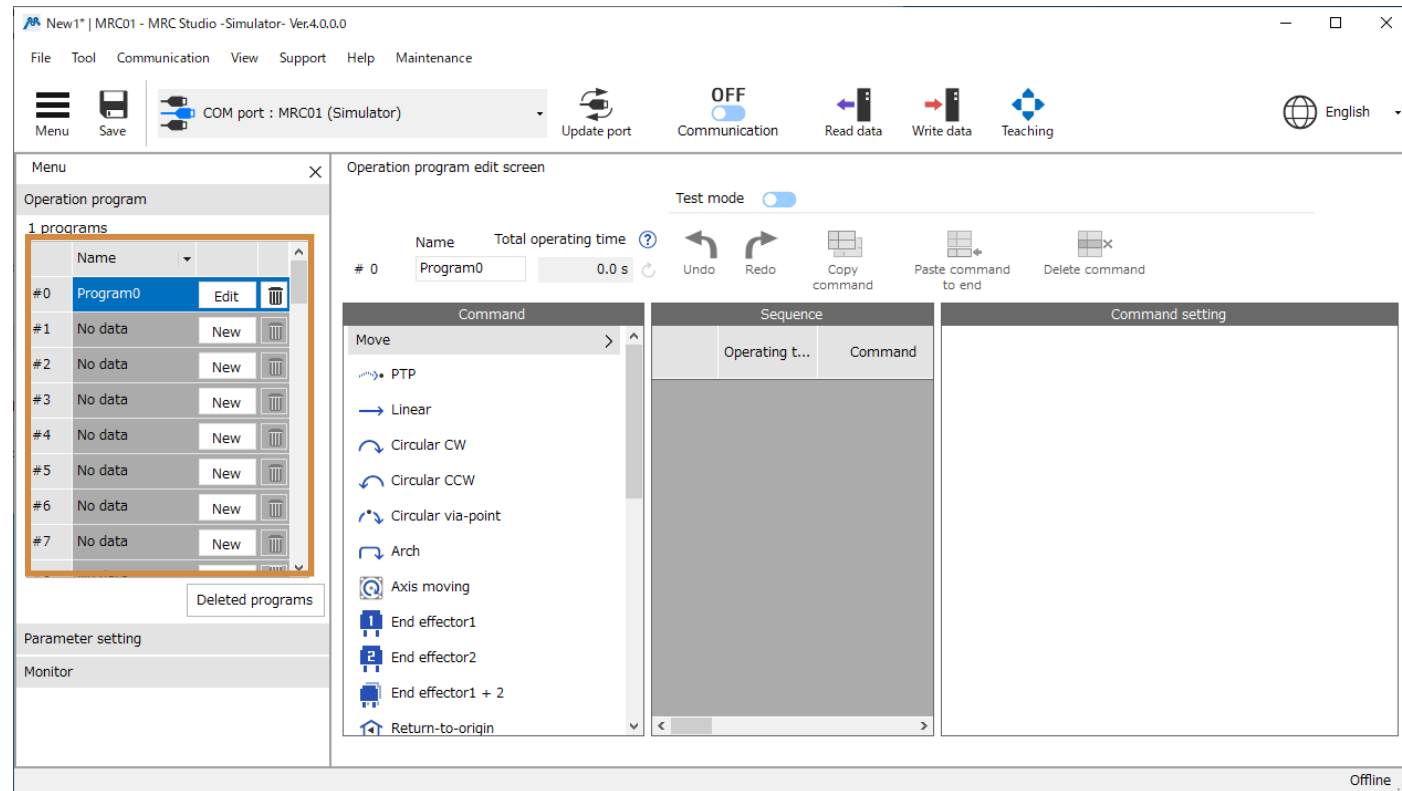
Open the saved data file.

You can start operation immediately by opening the samples file included in the installer.

* The sample files does not require the operation on pp.9-11.

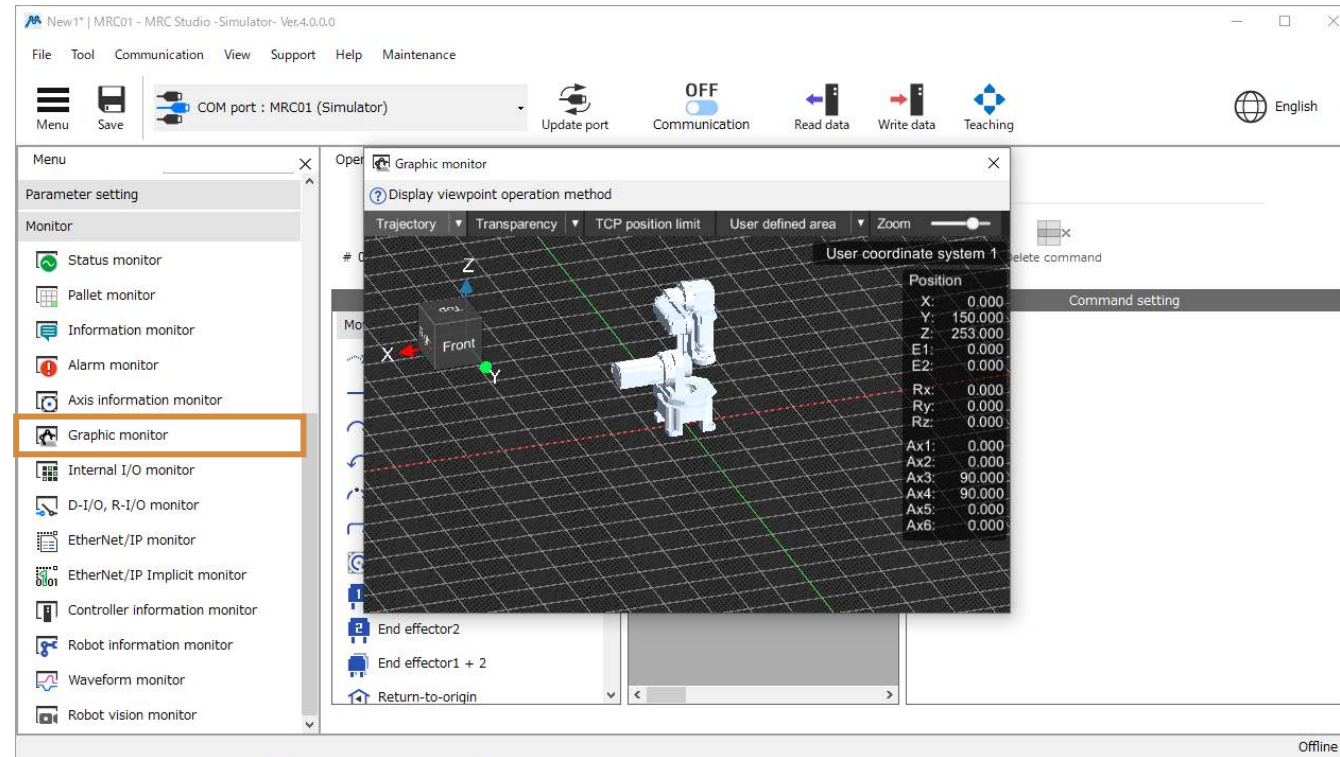
Launch the app and select "Setup" or "Open".

Operation program



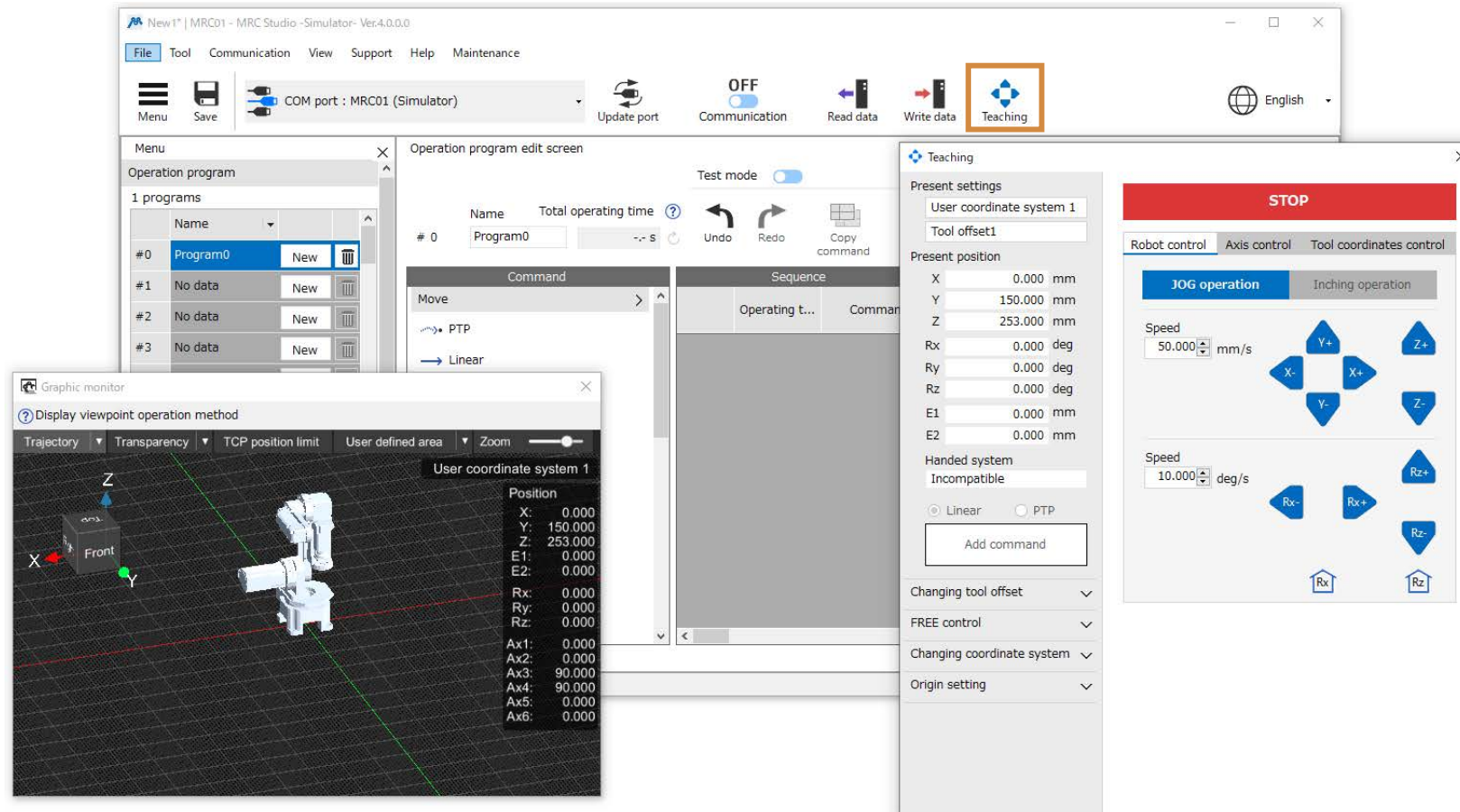
Click "New" or "Edit" of any program number to open the operation program edit screen.

Graphic monitor



Open the graphics monitor.
You can monitor the movement of the robot.

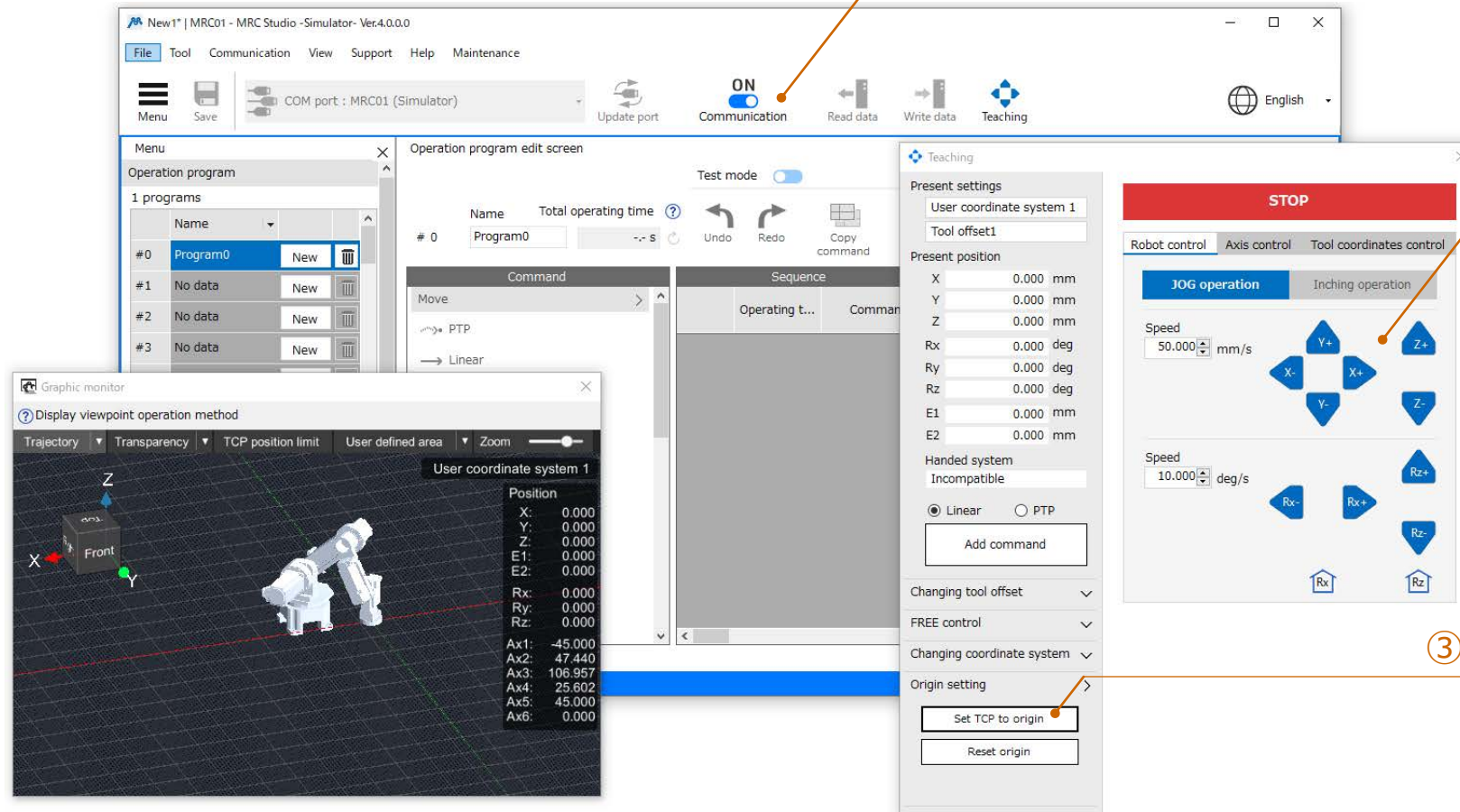
Teaching



Open the teaching screen.

Setting the origin of the user coordinate system

① Turn on communication



② Operate the robot

③ Click to set the origin

Operate the robot to set the origin at any position.

Teaching

The screenshot shows the MRC Studio software interface. The main window is titled "New1* | MRC01 - MRC Studio - Simulator - Ver.4.0.0.0". It features a menu bar (File, Tool, Communication, View, Support, Help, Maintenance) and a toolbar with icons for Menu, Save, COM port (MRC01 (Simulator)), Update port, Communication (ON), Read data, Write data, and Teaching. The main workspace is divided into several panels:

- Operation program edit screen:** Shows a table of programs. The first program is "Program0". Below the table, there are fields for "Name" (Program0) and "Total operating time". A "Test mode" toggle is visible. The "Command" panel shows "Move" and "Linear" options. The "Sequence" panel shows a table with columns for "Operating t..." and "Command".
- Teaching dialog box:** Contains "Present settings" (User coordinate system 1, Tool offset1), "Present position" (X: 300.000 mm, Y: 100.000 mm, Z: 100.000 mm, Rx: 0.000 deg, Ry: 0.000 deg, Rz: 0.000 deg, E1: 0.000 mm, E2: 0.000 mm), "Handed system" (Incompatible), and "Add command" buttons for Linear and PTP. It also has sections for "Changing tool offset", "FREE control", "Changing coordinate system", and "Origin setting".
- JOG operation panel:** Features a "STOP" button, "JOG operation" and "Inching operation" tabs, speed controls (50.000 mm/s and 10.000 deg/s), and directional buttons (X+, X-, Y+, Y-, Z+, Z-, Rx+, Rx-, Rz+, Rz-).
- Graphic monitor:** Shows a 3D view of the robot with a coordinate system (X, Y, Z) and a "Front" view. It includes controls for "Trajectory", "Transparency", "TCP position limit", "User defined area", and "Zoom". A "Position" table is displayed on the right.

Annotations with orange arrows and text indicate the following steps:

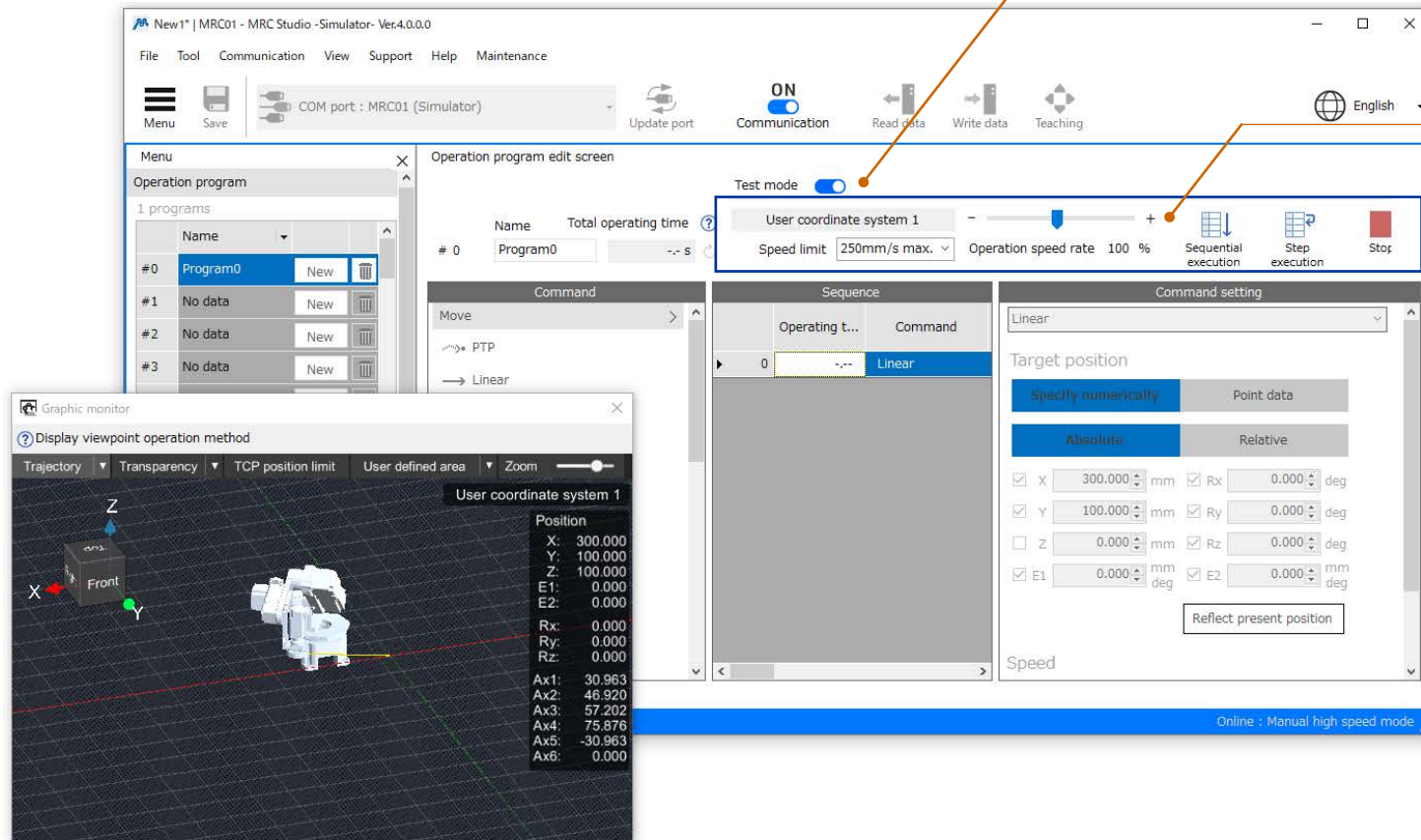
- ① Operate the robot (pointing to the JOG operation panel)
- ② Add command (pointing to the "Add command" button in the Teaching dialog box)

Operate the robot and add a command to the program.

Test execution

① Turn on test mode

② Test execution



Operation speed rate

Sets the rate of test execution.

Sequential execution

Execute sequentially from the selected command.

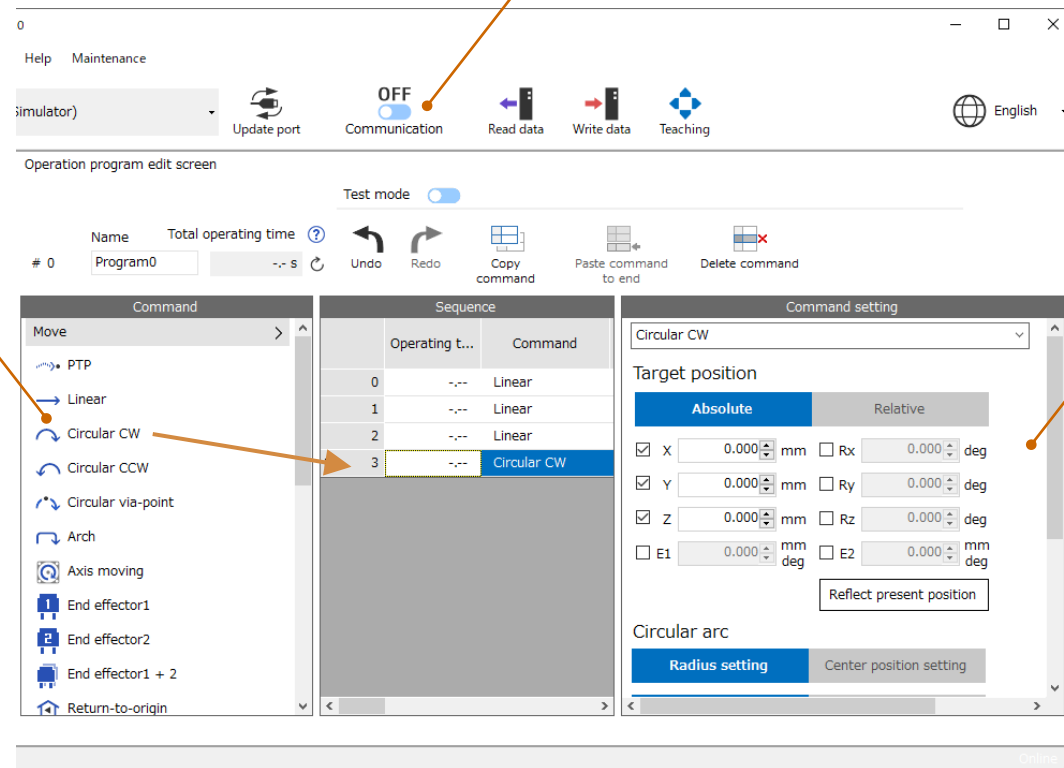
Step execution

Executes only the selected command.

You can test execution the created program.

Operation program editing

① Turn off communication

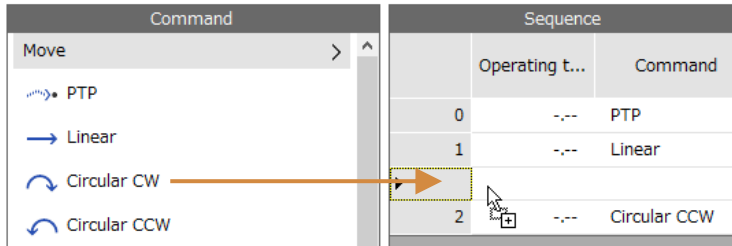


② Drag and drop or click the command you want to add

③ Enter the setting information

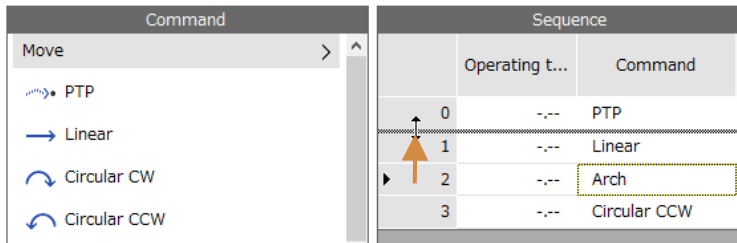
You can select and edit command.

Operation program editing



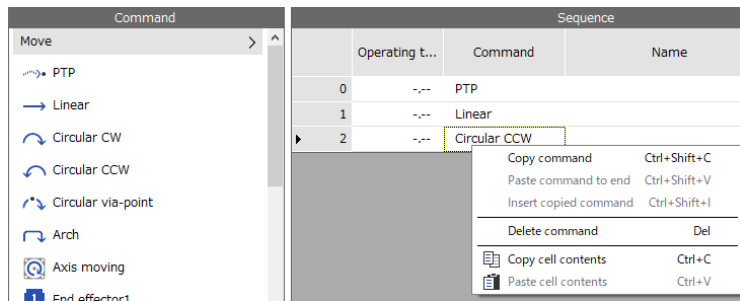
Insert

You can insert it by dragging and dropping the command.



Change order

You can change the order by dragging the row header (command number part).



Copy command

You can copy the selected commands.

Copied commands can be pasted at the end of a sequence or inserted below a selected command.

Right-click to display the edit menu.

Operation program editing

Sequence					
	Posture		Speed	Acceleration	De
		Rz			
▶ 0		0.000	25.000	1,200.000	
1			20.000	1,200.000	
2			20.000	1,200.000	
3		0.000	20.000	1,200.000	
4			20.000	1,200.000	

Edit cell

You can edit by double-clicking on the cell.

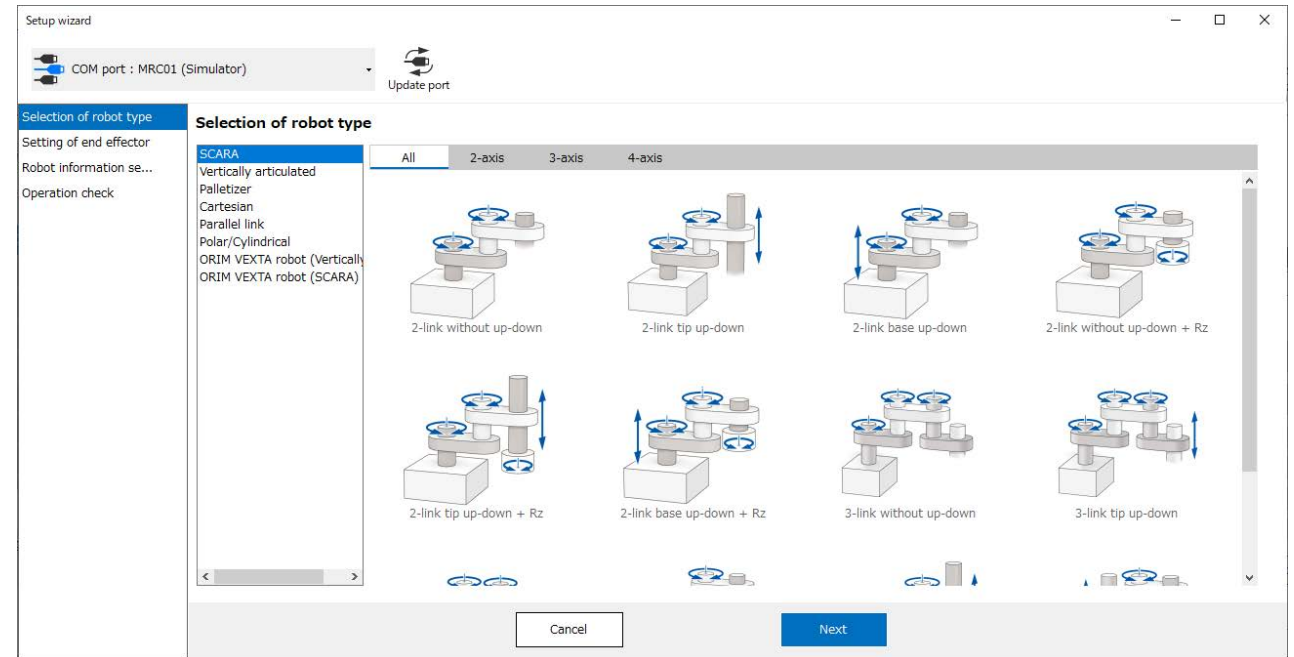
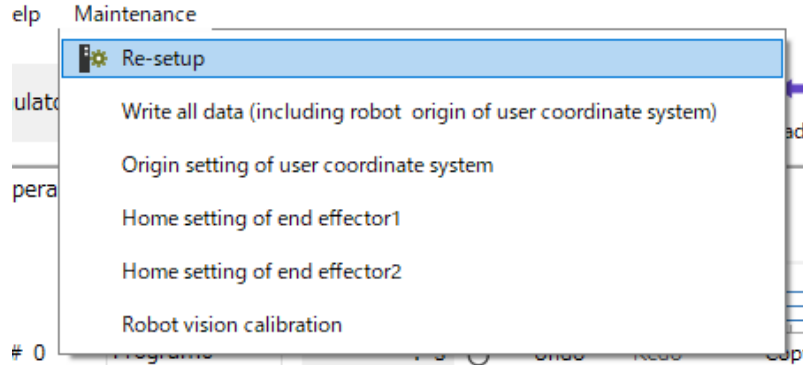
Sequence					
	Posture		Speed	Acceleration	De
		Rz			
▶ 0		0.000	25.000	1,200.000	
1			25.000	1,200.000	
2			25.000	1,200.000	
3		0.000	25.000	1,200.000	
4			25.000	1,200.000	

Copy and paste the value of the cell

You can copy and paste the value of the cell.

You can also select multiple cells and bulk copy/paste.

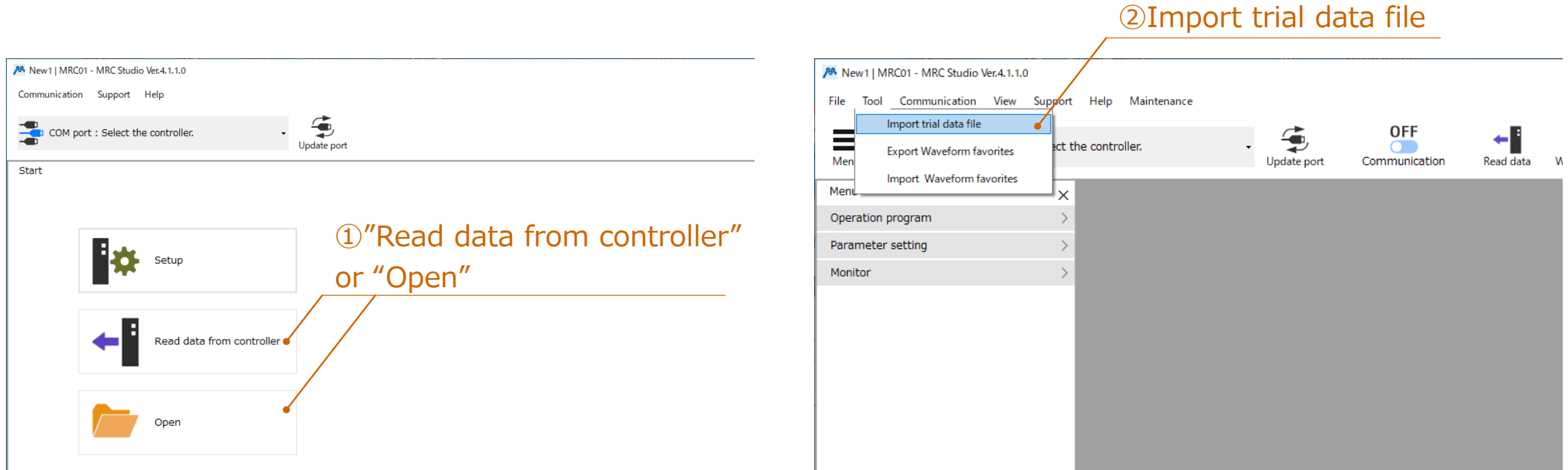
Change robot information



You can change the robot information from "Re-setup" in the maintenance menu.

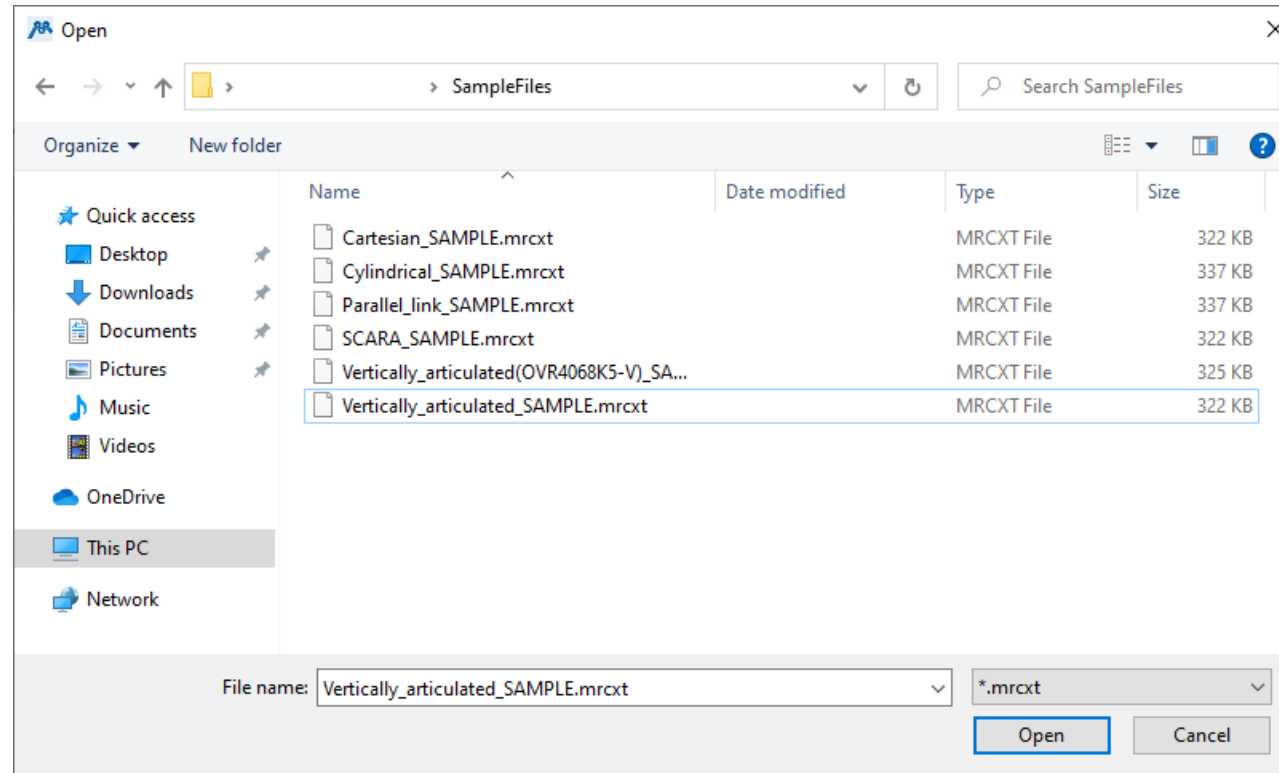
Import to the product version

Import to the product version ※Compatible with MRC Studio v4.0.0.0 or later



Launch the MRC Studio (product version) and open the file.
Execute "Import trial data file" from the Tools menu.

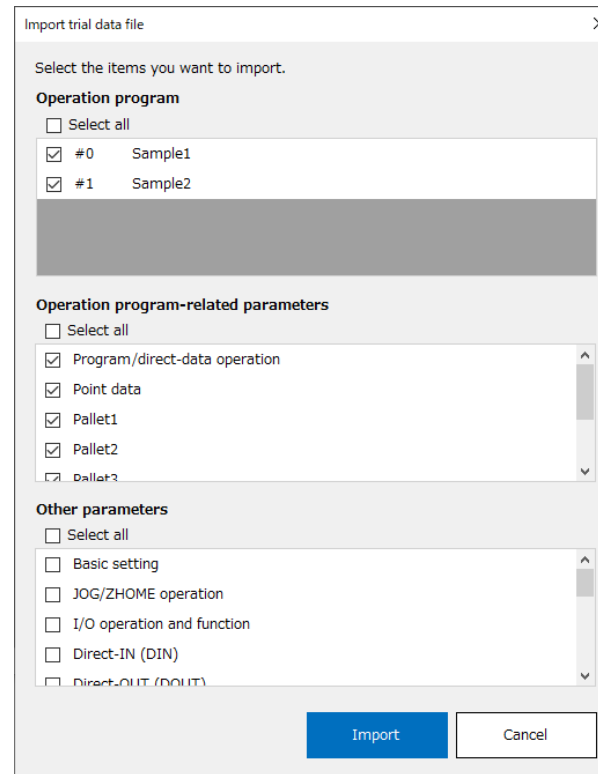
Import to the product version ※Compatible with MRC Studio v4.0.0.0 or later



A dialog will open.
Select the Simulator data file to import.

Import to the product version

※Compatible with MRC Studio v4.0.0.0 or later



Select the operation program/parameters to import and execute the import.

Import to the product version

※Compatible with MRC Studio v4.0.0.0 or later

Status monitor

Coordinate system

Present coordinate system User coordinate system 1

Origin offsets (offset from the origin of base coordinate system to the origin of user coordinate system)

	X	Y	Z
User coordinate system 1	110.000 mm	120.000 mm	130.000 mm
User coordinate system 2	210.000 mm	220.000 mm	230.000 mm
User coordinate system 3	310.000 mm	320.000 mm	330.000 mm

TCP (XYZ)

TCP command speed	0.000 mm/s
TCP feedback speed	0.000 mm/s
TCP maximum command speed	0.000 mm/s

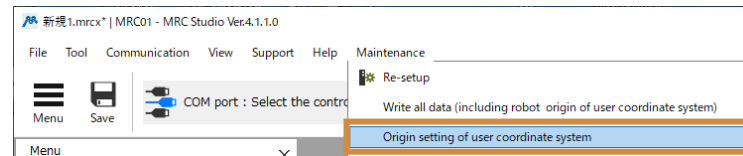
※Origin setting of user coordinate system is not imported

In order to operate the actual robot according to the simulation, the origin setting of user coordinate system in the Simulator and MRC01 must match.

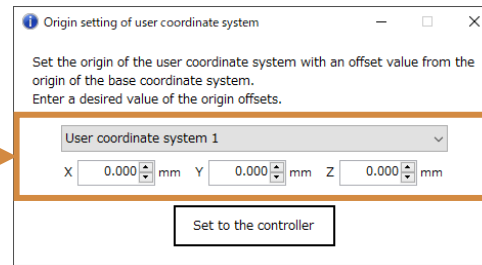
You can check the origin setting of the user coordinate system from Status monitor.

If the origin of the user coordinate system differs between simulation data and MRC01, please set it using the following method.

1. Click "Origin setting of user coordinate system" in the maintenance menu.



2. Set the same value as simulation data



Available features (Parameter/Monitor)

Available features (Parameter)

* Parameters are reflected after executing **Data writing.**

Parameter group	Program/direct-data operation		
Basic setting	8	Operating current End-effector2 [%]	100.0
Operation setting	9	End-effector1 push-motion operation setting	Enable
Program/direct-data operation	10	Push current [%]	50.0
JOG/ZHOME operation	11	End-effector2 push-motion operation setting	Enable
Point data	12	Push current [%]	50.0
Pallet setting	13	Return-to-origin operation target coordinates selection	XYZ RxRyRz
I/O setting	14	Return-to-origin operation operation mode	Linear
Protective function setting	15	Return-to-origin operation speed [mm/s or deg/s]	10.000
Communication IF	16	Return-to-origin operation acceleration/deceleration [mm/s ² or deg/s ²]	1,200.000
Robot setting	17	Circular center position Radius error tolerance [mm]	5.000

Program/direct-data operation

“Return-to-origin operation” and “Circular center position radius error tolerance” are reflected in the robot operation.

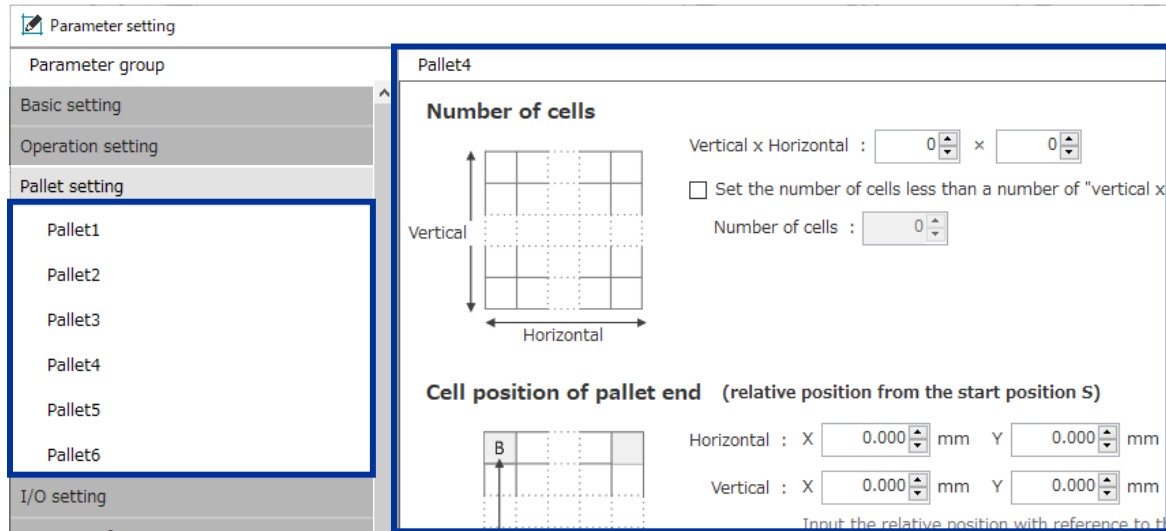
Parameter group	Point data	
Basic setting		
Operation setting		
Program/direct-data operation		
JOG/ZHOME operation		
Point data	<div style="display: flex; justify-content: space-between;"> <div style="width: 48%;"> <p>Point data 0</p> <p>X <input type="text" value="0.000"/> mm Rx <input type="text" value="0.000"/> deg</p> <p>Y <input type="text" value="0.000"/> mm Ry <input type="text" value="0.000"/> deg</p> <p>Z <input type="text" value="0.000"/> mm Rz <input type="text" value="0.000"/> deg</p> <p style="text-align: center;"><input type="button" value="Reflect present position"/></p> <p>Comment <input type="text"/></p> </div> <div style="width: 48%;"> <p>Point data 1</p> <p>X <input type="text" value="0.000"/> mm Rx <input type="text" value="0.000"/> deg</p> <p>Y <input type="text" value="0.000"/> mm Ry <input type="text" value="0.000"/> deg</p> <p>Z <input type="text" value="0.000"/> mm Rz <input type="text" value="0.000"/> deg</p> <p style="text-align: center;"><input type="button" value="Reflect present position"/></p> <p>Comment <input type="text"/></p> </div> </div>	
Pallet setting		
I/O setting		
Protective function setting		
Communication IF		
Robot setting		

Point data

You can set the palette information for Pallet 1 to 6. It can be used in combination with the pallet command of the operation program.

Available features (Parameter)

* Parameters are reflected after executing  **Data writing.**



Pallet settings

You can set the palette information for Pallet 1 to 6. It can be used in combination with the pallet command of the operation program.

Available features (Parameter)

* Parameters are reflected after executing **Data writing.**

Parameter group	Position limit		
Basic setting	1	TCP position limit operation setting	Stop with alarm
Operation setting	2	TCP position limit target coordinate system	User coordinate system
Pallet setting	3	TCP position limit X+ [mm]	1,000.000
I/O setting	4	TCP position limit X- [mm]	-1,000.000
Protective function setting	5	TCP position limit Y+ [mm]	1,000.000
	6	TCP position limit Y- [mm]	-1,000.000
Position limit	7	TCP position limit Z+ [mm]	1,000.000
	8	TCP position limit Z- [mm]	-1,000.000
AREA signal output / no entry area	9	Axis position limit operation setting	Stop with alarm
Speed limit	10	Axis position limit Axis1+ [mm or deg]	1,000.000

Position limit

TCP position limit is reflected in the robot motion and Graphic monitor.

Parameter group	Position limit		
Basic setting	9	Axis position limit operation setting	Stop with alarm
Operation setting	10	Axis position limit Axis1+ [mm or deg]	1,000.000
Pallet setting	11	Axis position limit Axis1- [mm or deg]	-1,000.000
I/O setting	12	Axis position limit Axis2+ [mm or deg]	1,000.000
Protective function setting	13	Axis position limit Axis2- [mm or deg]	-1,000.000
	14	Axis position limit Axis3+ [mm or deg]	1,000.000
Position limit	15	Axis position limit Axis3- [mm or deg]	-1,000.000
	16	Axis position limit Axis4+ [mm or deg]	1,000.000
AREA signal output / no entry area	17	Axis position limit Axis4- [mm or deg]	-1,000.000
	18	Axis position limit Axis5+ [mm or deg]	1,000.000
Speed limit	19	Axis position limit Axis5- [mm or deg]	-1,000.000
Protection operation	20	Axis position limit Axis6+ [mm or deg]	1,000.000
	21	Axis position limit Axis6- [mm or deg]	-1,000.000

Axis position limit

Axis position limit is reflected in the robot motion.

Available features (Parameter)

* Parameters are reflected after executing **Data writing.**

Parameter group	AREA signal output / no entry area		
Basic setting	1	User-defined area0 operation setting	AREA0 output
Operation setting	2	User-defined area0 target coordinate system	User coordinate system
Pallet setting	3	User-defined area0 target Coordinates	XYZ
I/O setting	4	User-defined area0 X+ [mm]	0.000
Protective function setting	5	User-defined area0 X- [mm]	0.000
	6	User-defined area0 Y+ [mm]	0.000
	7	User-defined area0 Y- [mm]	0.000
	8	User-defined area0 Z+ [mm]	0.000
	9	User-defined area0 Z- [mm]	0.000
Speed limit	10	User-defined area1 operation setting	AREA1 output
	11	User-defined area1 target coordinate system	User coordinate system

AREA signal output/no entry area

AREA signal output/no entry area are reflected in Graphic monitor.

If the operation setting is set to include “no entry”, it will be reflected in the robot motion.

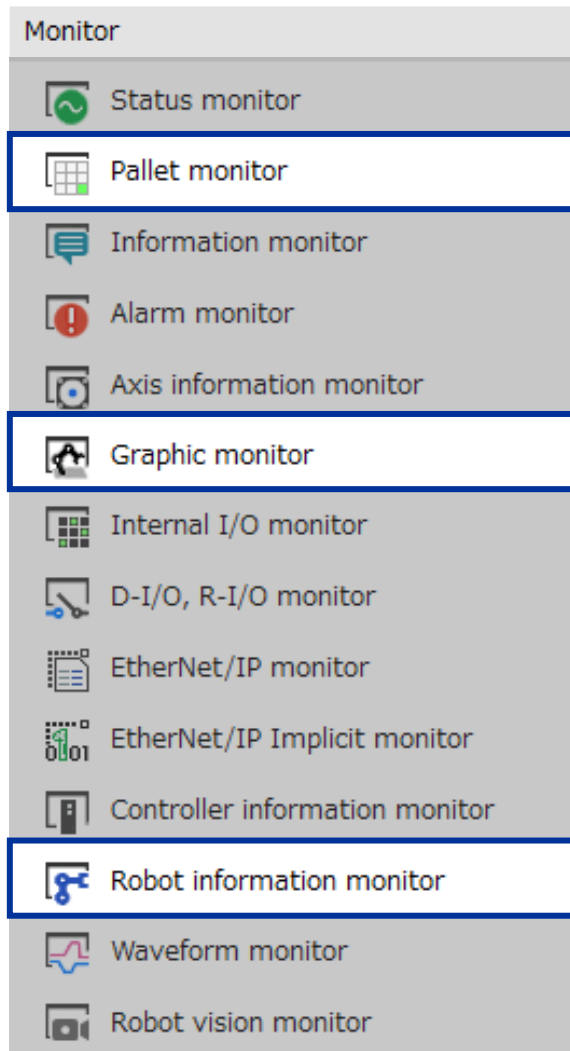
*AREA signal and AREA-AX signal are not output.

Parameter group	Speed limit		
Basic setting	1	TCP speed limit setting	Stop with alarm
	2	Maximum TCP speed [mm/s]	500.000
Pallet setting	3	Axis speed limit setting	Stop with alarm
I/O setting	4	Max speed Axis1 [mm/s or deg/s]	500.000
	5	Max speed Axis2 [mm/s or deg/s]	500.000
	6	Max speed Axis3 [mm/s or deg/s]	500.000
	7	Max speed Axis4 [mm/s or deg/s]	500.000
	8	Max speed Axis5 [mm/s or deg/s]	500.000
	9	Max speed Axis6 [mm/s or deg/s]	500.000
	10	Max speed End-effector1 [mm/s or deg/s]	500.000
	11	Max speed End-effector2 [mm/s or deg/s]	500.000

Speed limit

Speed limit is reflected in the robot motion.

Available features (Monitor)



Pallet monitor

You can monitor the status of the pallets.

You can also change the cell number of the next cell.

Graphics monitor

Display 3D graphics of the robot.

You can monitor the movement, posture, and TCP trajectory of the robot.

Robot information monitor

You can monitor the robot information.。

To change the robot information, refer to p.16.

Oriental motor