

COBOTTA Parameter Tool

User's Guide

ver. 1.4.1

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1. Introduction

This document is a user's guide of COBOTTA Parameter tool that sets parameters to COBOTTA.

By using this tool, you can change parameters of your COBOTTA.

1.1. Safety Precautions

This tool changes parameters that determine the speed and the motion range of COBOTTA. When you change the factory default parameters, please conduct the risk assessment (See ISO 12100, ISO 10218-2) of your target robot system, take necessary safety measures, and confirm that the risks to human are sufficiently reduced.

1.2. System Requirements

COBOTTA Parameter tool requires the following system requirements:

- | | |
|---------------|---------------------------------------|
| - OS | Microsoft Windows XP, Vista, 7, 8, 10 |
| - CPU | Pentium® IV 1.5GHz or more |
| - Memory size | 512MB or more |

1.3. Functions of COBOTTA Parameter Tool

COBOTTA Parameter tool has the following functions.

- Setting parameters
- Scene list
- Movement simulation
- Sending parameters

1.3.1. Setting parameters

This function allows you to set the control parameters of COBOTTA.

Control parameters:

- Speed limit (J1 to J8) parameter
- Translation speed parameter
- Rotation speed parameter
- Negative direction SAL
- Positive direction SAL
- Negative direction SAL enable
- Positive direction SAL enable
- Negative software motion limit
- Positive software motion limit
- Slow Start (SS) setting
- Stopping time to start SS
- Operation time to complete SS
- Max speed of SS
- Gripper (+/-) button setting
- Brake release by position acquisition button
- TCP speed Limit
- Wait time until mode lock is activated

For details on how to set these parameters, refer to “2.3 Parameter setting tabs”.

1.3.2. Scene list

This function allows you to register the current parameter setting as a scene.

If you use COBOTTA in various environments or various scenes, you can easily reconfigure parameters by reading a scene from the scene list.

For details on how to use the scene list, refer to “2.5 Scene list”.

1.3.3. Movement simulation

Based on parameters that you set, you can simulate the movement of COBOTTA. With this function, you can check the speed and the motion range of COBOTTA without moving the actual robot.

For details, refer to “3. Movement simulation”.

1.3.4. Sending parameters

This function allows you to send an edited parameters to COBOTTA.

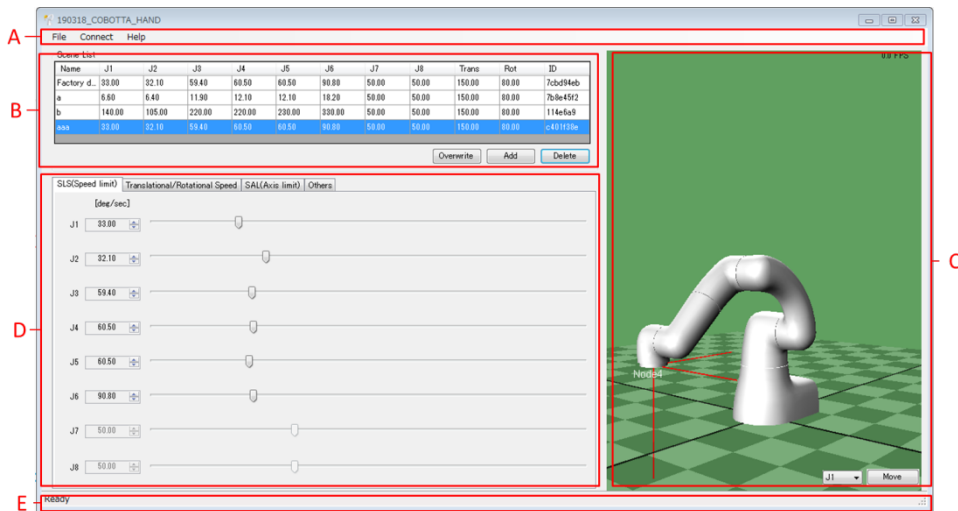
After sending, those parameters will be reflected to COBOTTA.

For details, refer to “4. Sending parameters”.

2. COBOTTA Parameter Tool Screen Components

2.1. Main window

COBOTTA Parameter tool consists of the following general window layout.



A : Menu

For each menu's function, see "2.2 Menu".

B : Scene list

Scene list displays scenes that you registered, [Overwrite], [Add], and [Delete] buttons.

C: Arm 3D view

Arm 3D view displays 3D view window.

While executing movement simulation, the movement of the selected joint will be simulated in this view.

For details, see "3. Movement simulation".

D : Parameter setting tabs

Parameter setting tabs display control parameters of COBOTTA.

For details, see "2.3 Parameter setting tabs".

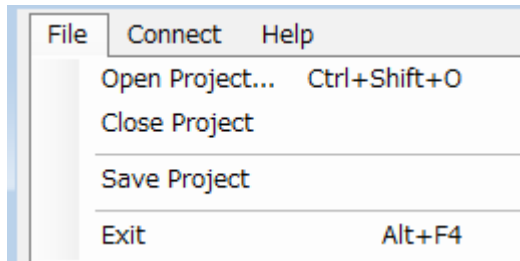
E : Status bar

Status bar shows the current status of COBOTTA Parameter tool.

2.2. Menu

This section explains respective menu items of COBOTTA Parameter tool.

2.2.1. File menu



[Open Project]

To open a WINCAPS III project.

[Close Project]

To close the current opening project.

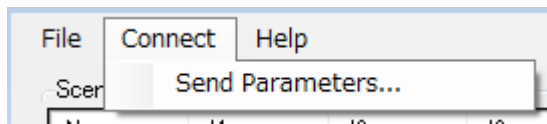
[Save Project]

To save the current opening project.

[Exit]

To exit COBOTTA Parameter tool.

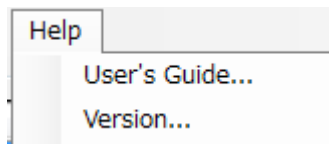
2.2.2. Connect menu



[Send parameter]

To send control parameters to COBOTTA.

2.2.3. Help menu



[User's Guide]

To display the User's Guide of COBOTTA Parameter tool.

[Version]

To display the version information.

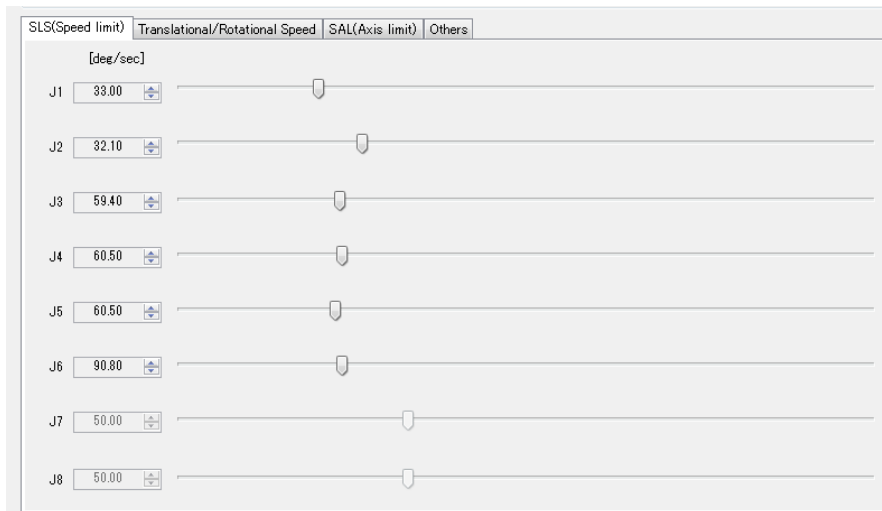
2.3. Parameter setting tabs

In parameter setting tabs, you can edit parameters that determine the speed and the motion range of COBOTTA.

2.3.1. Speed limit tab

In speed limit tab, you can edit speed limit parameters of COBOTTA.

Speed limit parameters that you can edit are followings:

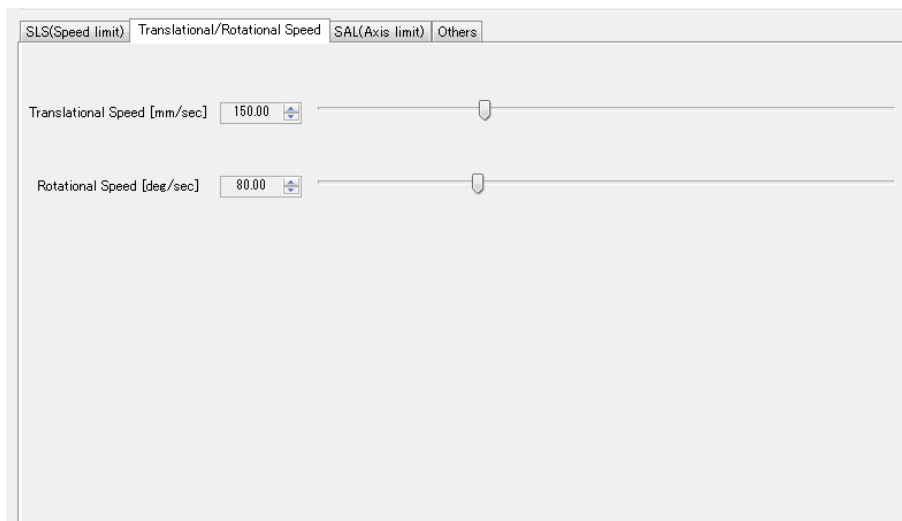


COBOTTA: 1 to 6 joints

Extended-joint: 7 and 8 joints.

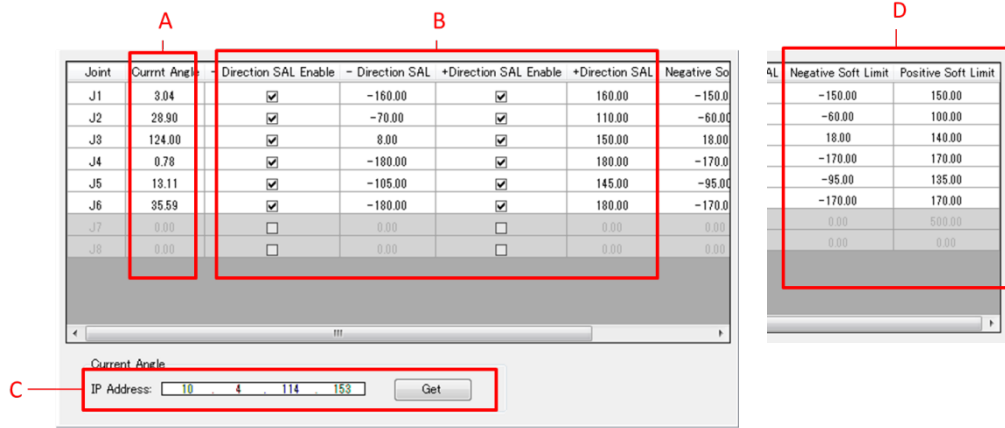
2.3.2. Translational/Rotational speed tab

In translational/rotational speed tab, you can edit translation and rotation speed parameters.



2.3.3. Angle limit tab

In angle limit tab, you can edit software motion limit and parameters that are used by SAL (Soft Axis Limiting). SAL is a safety function that monitors the angle of each joint within the specified operating range. If the angle exceeds the specified range, STO is requested.



- A: Current angle
- B: SAL parameter setting
- C: Current angles [Get] button
- D: Software motion limit setting

A: Current Angle

The current angle recognized by safety function are displayed.

These values are acquired when you click the [Get] button.

Before getting the current angles, [Current Angle] cells are grayed out as shown below.

Joint	Curmnt Angle	- Director
J1	0.00	
J2	0.00	
J3	0.00	
J4	0.00	
J5	0.00	
J6	0.00	
J7	0.00	
J8	0.00	

B: SAL parameter setting

In SAL parameter setting, you can edit following four parameters used by SAL.

1. Negative direction SAL enable
2. Negative direction SAL
3. Positive direction SAL enable
4. Positive direction SAL

- Direction SAL Enable	- Direction SAL	+Direction SAL Enable	+Direction SAL	N
<input checked="" type="checkbox"/>	-160.00	<input checked="" type="checkbox"/>	160.00	
<input type="checkbox"/>	-70.00	<input checked="" type="checkbox"/>	110.00	
<input checked="" type="checkbox"/>	8.00	<input type="checkbox"/>	150.00	
<input checked="" type="checkbox"/>	-180.00	<input type="checkbox"/>	180.00	
<input type="checkbox"/>	-105.00	<input checked="" type="checkbox"/>	145.00	
<input checked="" type="checkbox"/>	-180.00	<input checked="" type="checkbox"/>	180.00	
<input type="checkbox"/>	0.00	<input type="checkbox"/>	0.00	
<input type="checkbox"/>	0.00	<input type="checkbox"/>	0.00	

SAL Enable points to the first column of checkboxes. SAL Disable points to the second column of checkboxes.

C: Software motion limit setting

In software motion limit setting, you can edit negative and positive software motion limit.

Note: When you set SAL value, software motion limit is also set inside for SAL as a recommended value.

AL	Negative Soft Limit	Positive Soft Limit
	-150.00	150.00
	-60.00	100.00
	18.00	140.00
	-170.00	170.00
	-95.00	135.00
	-170.00	170.00
	0.00	500.00
	0.00	0.00

D: Get current angle button

To get the current angles recognized by safety function, enter the IP address and then click the [Get] button.

Current Angle

IP Address:

2.3.4. Others tab

The screenshot displays the 'Others' tab of the COBOTTA Parameter Tool. It contains the following parameters and their current values:

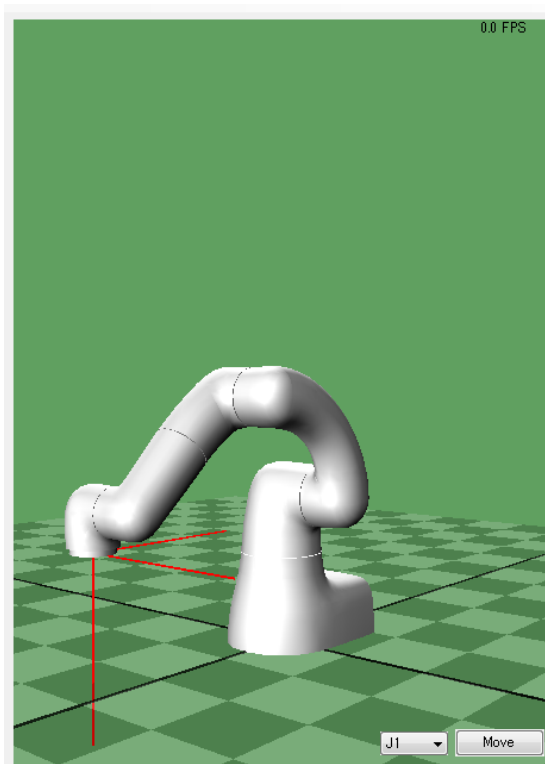
- Slow Start (SS) function setting: Enable Disable
- Stopping time to start SS [sec]: 10
- Operation time to complete SS [sec]: 10
- Max speed of SS [mm/sec]: 125
- Gripper (+/-) button setting: Enable Disable
- Brake release function by function button: Enable Disable
- TCP Speed Limit [mm/sec]: 250
- Wait time until mode lock is activated [min]: 3

In others tab, you can edit following parameters.

- Slow Start (SS) setting
- Stopping time to start SS
- Operation time to complete SS
- Max speed of SS
- Gripper (+/-) button setting
- Brake release by position acquisition button
- TCP speed Limit
- Wait time until mode lock is activated

2.4. Arm 3D view

Arm 3D view displays COBOTTA output from WINCAPS III in 3D image.



2.5. Scene list

In scene list, you can read, overwrite, add, and delete a scene.

2.5.1. Reading a scene

To read a scene, select a scene that you want to read in a scene list.

Then, parameters of the scene will be reflected to parameter setting tab.

The screenshot displays the 'Scene List' window with the following table:

Name	J1	J2	J3	J4	J5	J6	J7	J8	Trans	Rot	ID
Factory default	33.00	32.10	59.40	60.50	60.50	90.80	50.00	50.00	150.00	80.00	7cbd94eb
Scene1	6.60	6.40	11.90	12.10	12.10	12.20	50.00	50.00	150.00	80.00	ccc291e8
Scene2	140.00	105.00	220.00	220.00	230.00	330.00	50.00	50.00	150.00	80.00	4c7b903

Below the table are buttons for 'Overwrite', 'Add', and 'Delete'. The 'Rotational Speed' section shows the following values:

- J1: 140.00
- J2: 105.00
- J3: 220.00
- J4: 220.00
- J5: 230.00
- J6: 330.00
- J7: 50.00
- J8: 50.00

2.5.2. Overwriting a scene

You can edit parameters of a specific scene in the scene list.

First, select the scene that you want to edit.

Scene List

Name	J1	J2	J3	J4	J5	J6	J7	J8	Trans	Rot	ID
Factory default	33.00	32.10	59.40	60.50	60.50	90.80	50.00	50.00	150.00	80.00	4d5eae51
Scene1	6.60	6.40	11.90	12.10	12.10	18.20	50.00	50.00	150.00	80.00	fd21ab52
Scene2	140.00	105.00	220.00	220.00	230.00	330.00	50.00	50.00	150.00	80.00	352483b9

Overwrite Add Delete

Make sure that the scene to edit is highlighted. Then, change a parameter in the parameter setting tabs.

Scene List

Name	J1	J2	J3	J4	J5	J6	J7	J8	Trans	Rot	ID
Factory default	33.00	32.10	59.40	60.50	60.50	90.80	50.00	50.00	150.00	80.00	4d5eae51
Scene1	6.60	6.40	11.90	12.10	12.10	18.20	50.00	50.00	150.00	80.00	fd21ab52
Scene2	140.00	105.00	220.00	220.00	230.00	330.00	50.00	50.00	150.00	80.00	352483b9

Overwrite Add Delete

SLS(Speed limit) Translational/Rotational Speed SAL(Axis limit) Others

[deg/sec]

J1 28.62

J2 6.40

J3 11.90

Finally, click [Overwrite] button to overwrite edited parameters to the selected scene.

Scene List

Name	J1	J2	J3	J4	J5	J6	J7	J8	Trans	Rot	ID
Factory default	33.00	32.10	59.40	60.50	60.50	90.80	50.00	50.00	150.00	80.00	4d5eae51
Scene1	28.62	6.40	11.90	12.10	12.10	18.20	50.00	50.00	150.00	80.00	875950f7
Scene2	140.00	105.00	220.00	220.00	230.00	330.00	50.00	50.00	150.00	80.00	352483b9

Overwrite Add Delete

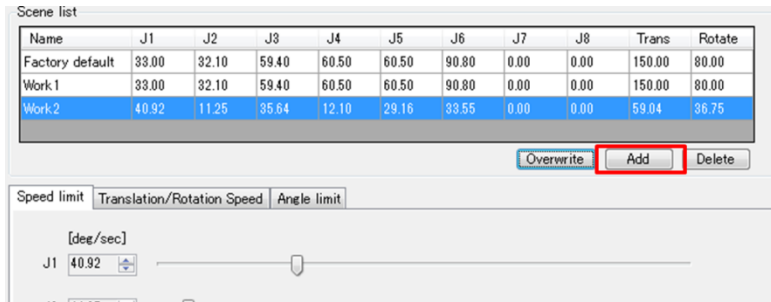
SLS(Speed limit) Translational/Rotational Speed SAL(Axis limit) Others

[deg/sec]

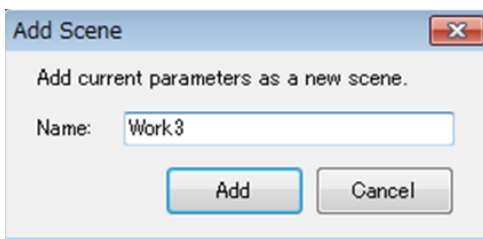
J1 28.62

2.5.3. Adding a scene

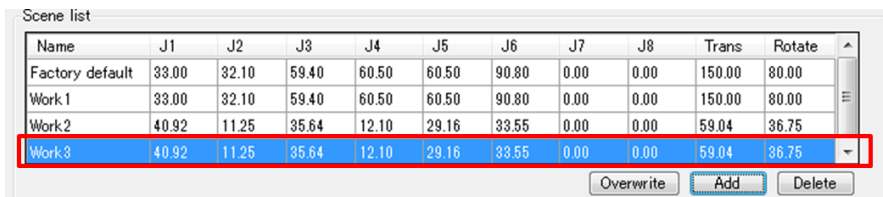
To create a new scene, click [Add] button.



After click [Add] button, enter a name of a scene to be added.



Click [Add] button, then the new scene will be added to the scene list.



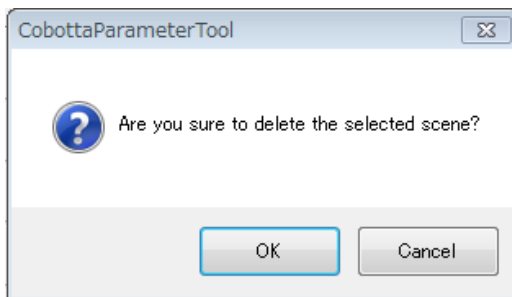
2.5.4. Deleting a scene

To delete a scene in the scene list, select the scene that you want to delete, and then click the [Delete] button.

Scene list

Name	J1	J2	J3	J4	J5	J6	J7	J8	Trans	Rotate
Factory default	33.00	32.10	59.40	60.50	60.50	90.80	0.00	0.00	150.00	80.00
Work 1	33.00	32.10	59.40	60.50	60.50	90.80	0.00	0.00	150.00	80.00
Work 2	40.92	11.25	35.64	12.10	29.16	33.55	0.00	0.00	59.04	36.75
Work 3	40.92	11.25	35.64	12.10	29.16	33.55	0.00	0.00	59.04	36.75

Make sure that the scene to delete is highlighted. Then, click [OK] button.



The selected scene is deleted from the scene list.

Scene list

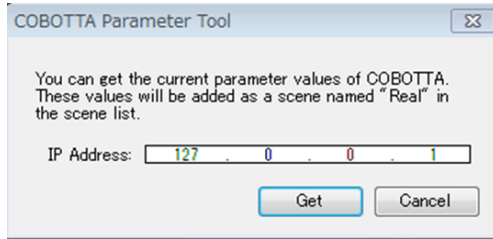
Name	J1	J2	J3	J4	J5	J6	J7	J8	Trans	Rotate
Factory default	33.00	32.10	59.40	60.50	60.50	90.80	0.00	0.00	150.00	80.00
Work 1	33.00	32.10	59.40	60.50	60.50	90.80	0.00	0.00	150.00	80.00
Work 3	40.92	11.25	35.64	12.10	29.16	33.55	0.00	0.00	59.04	36.75

2.5.5. Getting the current parameter values

When opening a WINCAPS III project, you can get the current parameter values of COBOTTA.

From the [File] menu, chose the [Open Project].

After opening a project, the following window is displayed.



Enter the IP address of your COBOTTA, and then click [Get] button.

If processing is successfully completed, these values will be added as a new scene named “Real” in the scene list.

Scene List											
Name	J1	J2	J3	J4	J5	J6	J7	J8	Trans	Rot	ID
Factory default	33.00	32.10	59.40	60.50	60.50	90.80	50.00	50.00	150.00	80.00	4d5eae51
Scene1	28.62	6.40	11.90	12.10	12.10	18.20	50.00	50.00	150.00	80.00	30136189
Scene2	140.00	105.00	220.00	220.00	230.00	330.00	50.00	50.00	150.00	80.00	352483b9
Real	33.00	32.10	59.40	60.50	60.50	90.80	0.00	0.00	151.00	100.01	934a0165

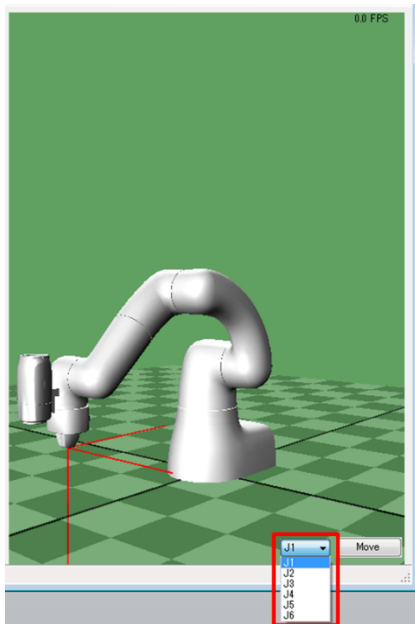
3. Movement simulation

Movement simulation allows you to check the speed of a joint that you edited without moving a actual COBOTTA.

There are two ways to start movement simulation.

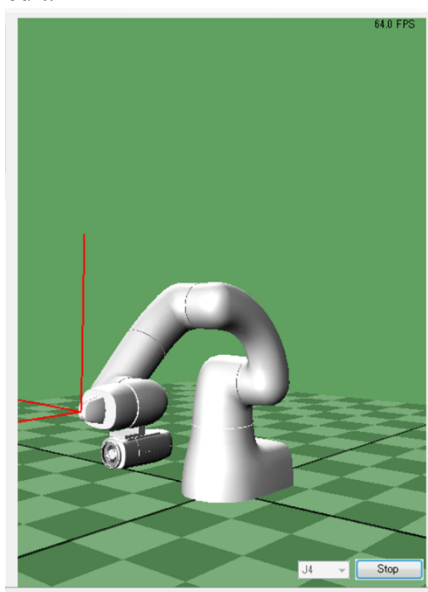
3.1. Starting a simulation from Arm 3D view

Select the joint that you want to simulate from the [J1 to J6] dropdown list in Arm 3D view.



Click the [Move] button to start movement simulation of the selected joint.

While simulating, COBOTTA moves the selected joint based on the speed limit value that you edit.



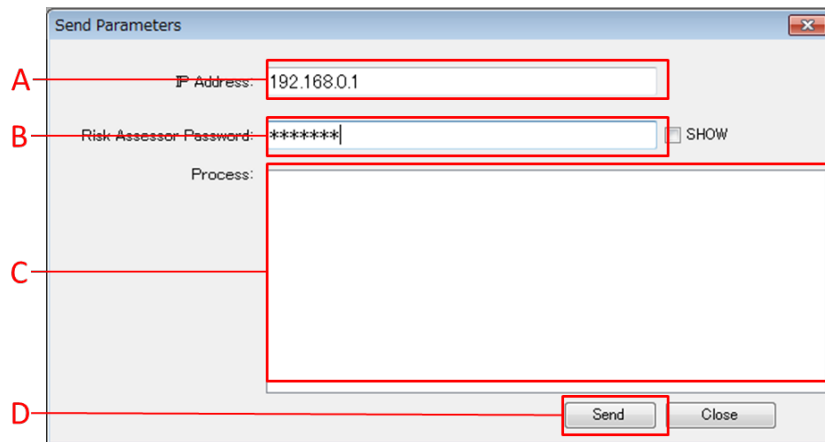
To stop the simulation, click [Stop] button.

3.2. Starting a simulation from Parameter setting tabs

Movement simulation is automatically executed while changing a speed limit value with the slider bar. This enables you to edit a speed with checking its effect.

4. Sending parameters

This window is used to send control parameters to COBOTTA.



A: IP Address

To enter the IP address of COBOTTA.

B: Risk Assessor Password

If the controller's version of COBOTTA is greater than 2.7 please enter the Risk Assessor Password.

C: Process view

This view shows the result of sending parameters.

D: [Send] button

To start sending parameters.

4.1. The procedure after sending parameters

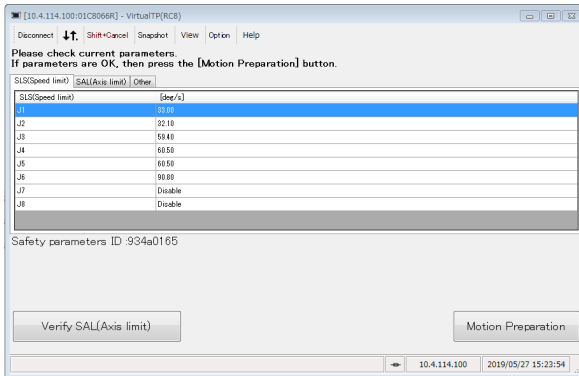
Once parameters are successfully sent, COBOTTA issues the error [84500330 Safety parameters were updated rightly.], and then transits to the safe state. After clearing the error, COBOTTA transits to the standby.

To switch the mode from standby to normal, use your control device such as VirtualTP, RemoteTP, or CobottaWorld.

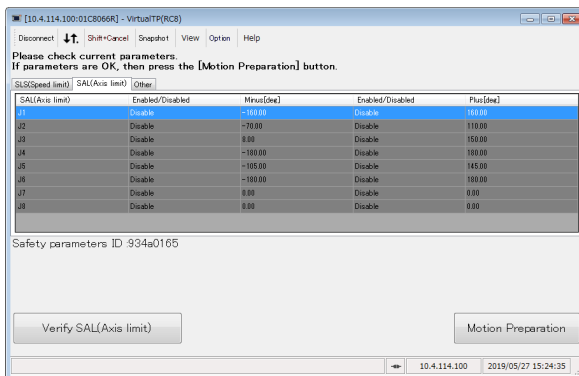
4.1.1. VirtualTP

When COBOTTA is in the standby, VirtualTP displays the parameters that you sent by COBOTTA Parameter tool as shown below. Make sure that parameters in VirtualTP are the same as those in COBOTTA Parameter tool. After that, click the [Motion Preparation] button to transit COBOTTA to the normal mode.

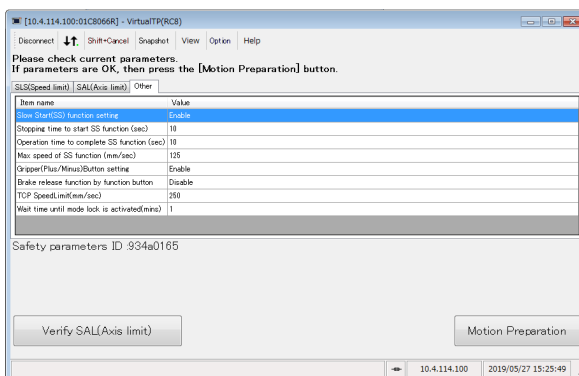
[SLS (Speed limit)]



[SAL (Axis limit)]



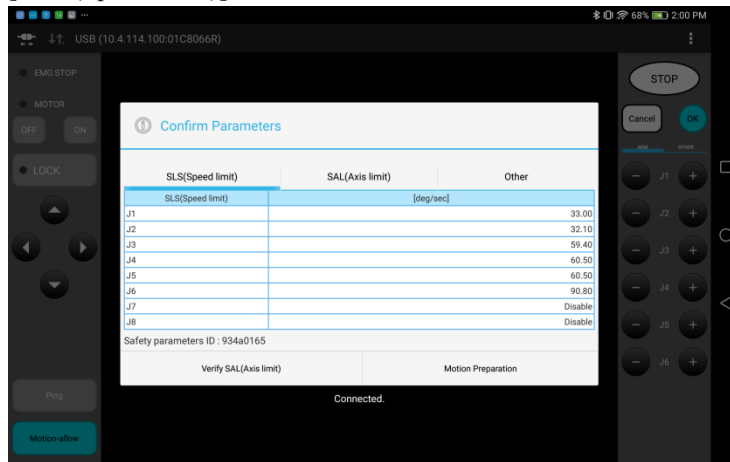
[Other]



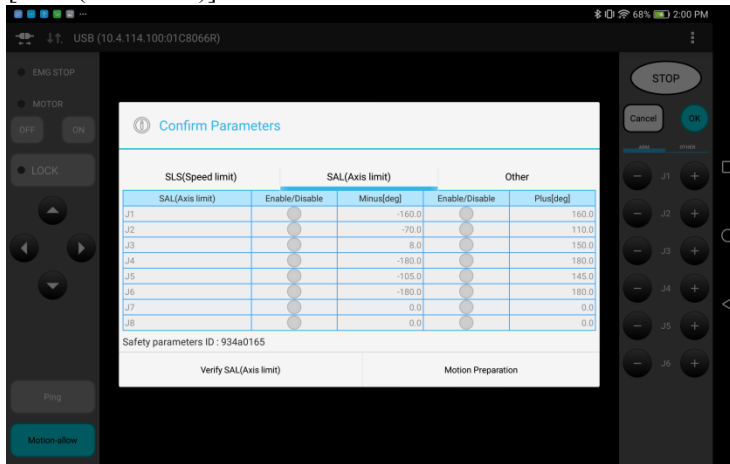
4.1.2. RemoteTP

When COBOTTA is in the standby, RemoteTP displays the parameters that you sent by COBOTTA Parameter tool as shown below. Make sure that parameters in RemoteTP are the same as those in COBOTTA Parameter tool. After that, click the [Motion Preparation] button to transit COBOTTA to the normal mode.

[SLS (Speed limit)]



[SAL (Axis limit)]



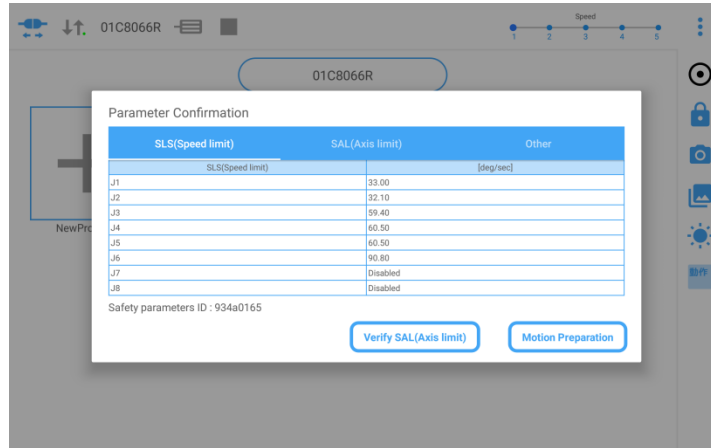
[Other]



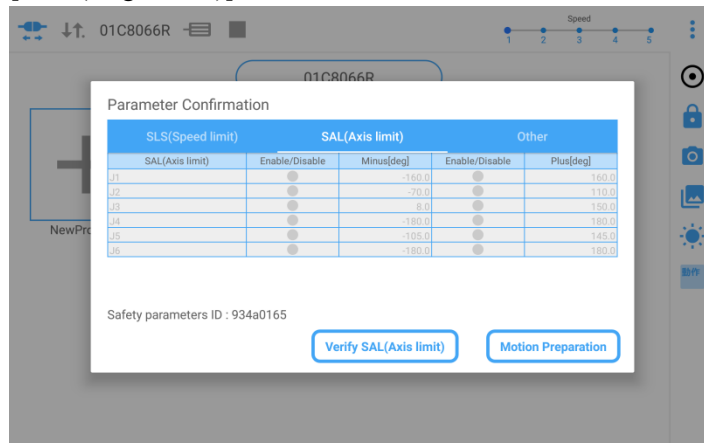
4.1.3. CobottaWorld

When COBOTTA is in the standby, CobottaWorld displays the parameters that you sent by COBOTTA Parameter tool. Make sure that parameters in CobottaWorld are the same as those in COBOTTA Parameter tool. After that, click the [Start] button to transit COBOTTA to the normal mode.

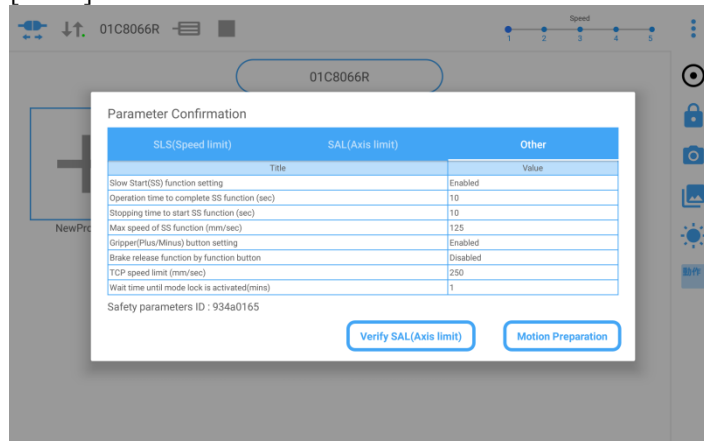
[SLS (Speed limit)]



[SAL (Angle limit)]



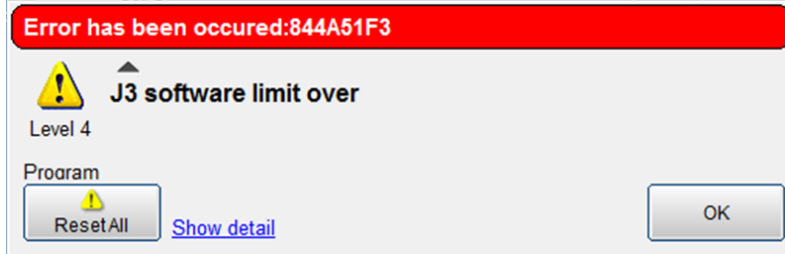
[Other]



5. Error recovery handling

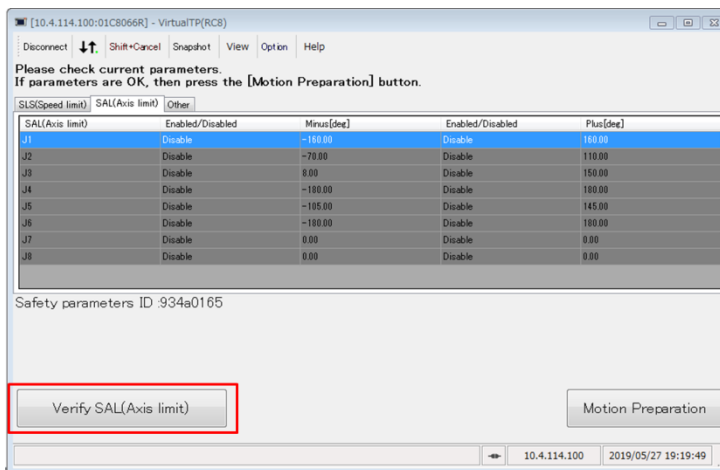
5.1. SAL

When COBOTTA moves out of range of SAL angle limit, the error [844A51F3 J* software limit over] occurs.

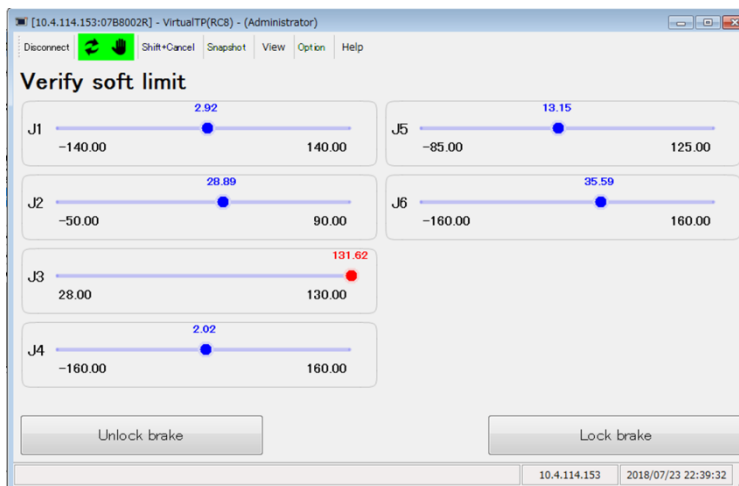


To clear this error, please take the following procedure.

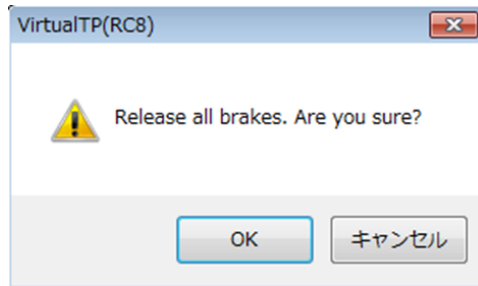
1. Clear the error message displayed on VirtualTP or RemoteTP.
2. Click the [Verify soft limit]



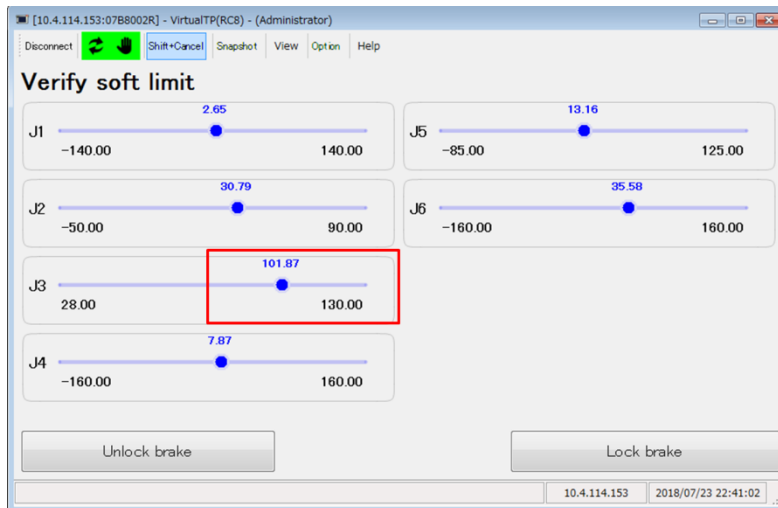
3. You can confirm the current angles and SAL angle limits.
Red colored circle indicates a joint that is the out of range of angle limit.



- Click the [Unlock brake].
- Click the [OK] on the confirmation screen to release all brakes.
Note: To avoid colliding with the floor, make sure supporting the arm with your hand.

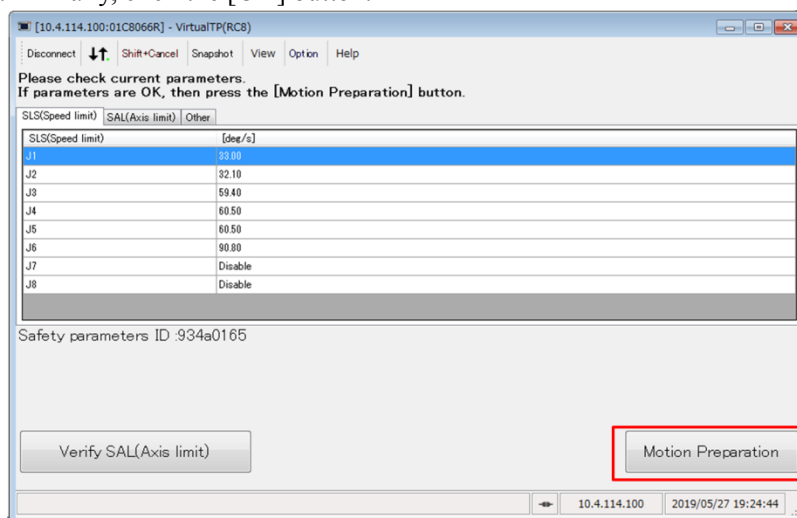


- Move the arm to the range of the angle limit while checking the current angle.



- Click the [Lock brake] to lock all brakes.

- Finally, click the [OK] button.



6. COBOTTA Parameter Tool for Android

6.1. Main window

COBOTTA Parameter tool for Android consists of the following general window layout.



A : Menu

For each menu's function, see "6.2 Menu".

B : Scene list

To display a scene that has been registered before. "Factory default" scene is a special scene that is exist at any time. Also, when parameters configured in your actual COBOTTA are obtained, a special scene named [Real] will be registered. You can overwrite, add and delete a scene from the scene list. For details about functions of scene list, see "2.5 Scene list".

C : Arm 3D view

To display 3D view window.

While executing movement simulation, the movement of the selected joint will be simulated in this view.

For details, see "3. Movement simulation".

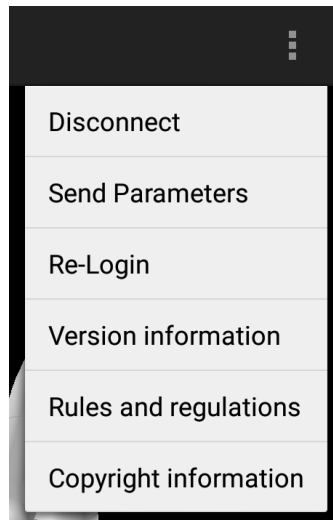
D : Parameter setting tabs

To display control parameters of COBOTTA.

For details, see "2.3. Parameter setting tabs".

6.2. Menu

This section explains respective menu items of COBOTTA Parameter tool.



- **Connect/Disconnect**
To connect/disconnect to/from a COBOTTA. If a COBOTTA has been connected with this tool, [Disconnect] is displayed.
- **Send Parameter**
To send control parameters to COBOTTA.
- **Re-Login**
To retry log in to a currently connected COBOTTA
- **Version information**
To display the version information.
- **Rules and regulations**
To display the user policy of COBOTTA Parameter tool for Android.
- **Copyright information**
To display the copyright information of COBOTTA Parameter tool for Android.

6.3. Difference from Windows version

- **Log in**
Windows version asks for login when you send parameters.
Android version asks for login when you establish a connection.
- **Reading parameters**
To display parameters in Windows version, receive a project from COBOTTA with WINCAPSI and then read parameters with the parameter tool.
In Android version, parameters are obtained and displayed when the parameter tool is connected to a COBOTTA.

Revision History

Revised on:	Version	Content
2018/02/12	1.0.0	First edition
2018/07/24	1.2.2	Supported SAL.
2019/01/18	1.3.0	Supported risk assessor and other parameters.
2019/02/14	1.3.2	Added information about Android version.
2019/05/27	1.4.1	Supported COBOTTA Version 2.8

The purpose of this manual is to provide accurate information in the handling and operating of the robot. Please feel free to send your comments regarding any errors or omissions you may have found, or any suggestions you may have for generally improving the manual.

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