# **EPSON**



Rev.3

EM218S4908F

EPSON RC+Express Manual Rev.3

## EPSON RC+Express Manual

Rev.3

## PREFACE

#### FOREWARD

Thank you for purchasing our software.

This manual contains the information necessary for the correct use of the software. Please carefully read this manual and other related manuals before installing the software.

Keep this manual handy for easy access at all times.

The software and its optional parts are shipped to our customers only after being subjected to the strictest quality controls, tests, and inspections to certify its compliance with our high performance standards. Please note that the basic performance of the product will not be exhibited if our software is used outside of the usage conditions and product specifications described in the manuals.

This manual describes possible dangers and consequences that we can foresee. Be sure to comply with safety precautions on this manual to use our software safety and correctly.

#### TRADEMARKS

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#### TRADEMARK NOTATION IN THIS MANUAL

Microsoft® Windows® 10 Operating system

Throughout this manual, Windows 10 refer to above respective operating systems.

In some cases, Windows refers generically to Windows 10.

#### NOTICE

No part of this manual may be copied or reproduced without authorization.

The contents of this manual are subject to change without notice.

Please notify us if you should find any errors in this manual or if you have any comments regarding its contents.

#### MANUFACTURER

## SEIKO EPSON CORPORATION

#### CONTACT INFORMATION

Contact information is described in "SUPPLIERS" in the first pages of the following manual:

Robot System Safety Manual Read this manual first

#### Manuals

#### Symbols

Each symbol has following meanings.



This symbol indicates that a danger of possible harm to people or physical damage to equipment and facilities exists if the associated instructions are not followed properly.



This symbol describes important information to be followed for operating the Robot system. This symbol indicates that handling the product incorrectly may cause a malfunction or failure of the product.



This symbol describes hints or additional explanations for easier or alternative operations.

#### How to Read a Manual

To read a manual, tap the <?> button left of screen.

The description about the current screen is displayed, or TOP page is displayed.

The recommended browser is Microsoft Edge (Version: 86 or later).

#### **Tips and hints**

The description about the current screen is displayed.



#### Manual

TOP page of a manual is displayed. You can search by keyword, jump to the corresponding page from a bookmark, or print, etc.

When you close the page, tap the  $\langle x \rangle$  button to close the browser.





The TOP page of the manual can also be opened by the following procedure: Windows Start menu - EPSON RC+ Express Edition- Manual

The useful functions are as follows:

#### - Searching by keyword

Enter a keyword in the search window and tap to display the corresponding page. Tap the title to jump to the corresponding page.

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Moving     Programming     Functions of Command	Manual		
Program Examples (Tutorial)     Pallet     Respire Control			
More Functions     Trouble Shooting			
Settings     Appendix     HOME			
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#### - Jumping to the corresponding page from a bookmark

Tap the bookmark title displayed on the left side of the screen to display the titles in the lower outline level. Tap the title to jump to the corresponding page.

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Pallet     Remote Control     More Functions     Trouble Shooting				
<ul> <li>↔ Settings</li> <li>↔ Appendix</li> <li>↔ HOME</li> </ul>				
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#### - Printing

Tap the on th	e page to print.	
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#### - How to move a manual

Swipe the top of the screen to move the manual position freely. This is convenient when you arrange the manual and software side by side.

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#### How to Read RC+ Manual

This manual has some pages which refer to the RC+ manual.

To refer to the RC+ manual, install EPSON RC+ and select the manual from the Windows Start menu - [EPSON RC+ 7.0].

You can also refer to the RC+ manual from EPSON RC + 7.0 menu - [Help] - [Manuals].

Manual title	Contents
Safety Manual	Precautions for safety use of the robot system and contact information
EPSON RC+ User's Guide	How to use and set the robot system and EPSON RC+
SPEL+ Language Reference	Contents of SPEL+ (robot programming language)
Manipulator Manual	Robot specifications, installation, settings and
	maintenance methods
Controller Manual	Controller specifications, installation, settings and
	maintenance methods
Robot Controller	How to use Fieldbus I/O (controller option)
Option Fieldbus I/O	

The manuals referred to by this software are as follows:

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#### What EPSON RC+ Express Edition can do

You can build simple application faster and easier regardless of your robotics skills by using EPSON RC+ Express Edition.

EPSON RC+ Express Edition will help you:

- Creating robot program by drag and drop.
- Operating tablet intuitively with touch UI.
- Building simple Pick&Place program or palletizing application in a short time.

#### System Configuration

System configuration of this software is following below.

Connect Controller to your tablet using LAN cable (Ethernet communication) or USB cable.

**Operating Environments** 

Connection cables are need to be prepared by customers.Tablets are suggested, but PC is also available.





## Supported Robots

The currently installed version of this software can connect to the robots listed below.

About

Manipulator		Controller	Controller Firmware
T Series			Ver.7.5.51.0 or later
T-B Series			Ver.7.5.51.1 or later
IS D Somias	Except for LS3-B401S-V1		Ver.7.5.1.0 or later
LS-D Series	LS3-B401S-V1	КС90-Б	Ver.7.5.1.2 or later

## **Operating Environments**

The recommended operating environments for this software are as follows.

Prepare a tablet with Windows which meets the following conditions.



We recommend to use a tablet. You can also use a PC.

Item	Description
OS	Windows 10 Pro 32-bit version, 64-bit version
CPU	CPU with Core i5 or higher
GPU	Operates DirectX10.1 or later
	Corresponds OpenGL2.1 or later
Memory	2GB or more
HDD/SSD capacity	4GB or more
Display	1280x760 or bigger (horizontal display)

## How to Operate a Tablet

Item	Operation	Description
Тар	Im	Press or select a button or item.
Double-tap	X 2	Tap twice.
Flick	Am	Scroll the screen quickly.
Swipe	(m)	Press and hold down a item and move it side to side and up and down.
Drag and drop	fin fin	Press and hold down a item and move it, then release it at the location to insert.
Pinch in Pinch out	rgh Shy	Operate to zoom in or out an image (only on 3D View).

This software supports the following touch UI.

## Setup

#### **Advanced Preparations**

The preparations for using this software are as follows.

#### - Tablet (recommended), or PC

Use with installed this software. This software is created for the touch UI. We recommend to use a tablet. You can also use a PC.

**Operating Environments** 

#### - DVD drive

To install this software, store the installer from the supplied DVD on PC, tablet, shared folder, and USB memory etc.

#### - Cables

For USB connection: USB cable

The connector shape of the robot and controller is Type-B.You can put a conversion cable in between. Prepare if necessary.

For Ethernet connection: LAN (Ethernet communication) cable



When you use a PC which does not have a wired LAN interface, an external LAN (Ethernet communication) adapter is required.
To communicate via Ethernet, a robot must be connected to the network and configured.

#### Installing the Software

#### Installing (From DVD Drive)

This page describes the procedures to install this software from DVD drive on a PC.

#### **Operation procedure**

- 1. Log on to your PC with administrator privilege. If anything is unclear, check with your administrator.
- 2. Close all running applications. When you install the software while other applications are running, it may not work properly.
- 3. Insert the supplied DVD into your PC's DVD drive.
- 4. Tap [Install] on the auto play screen.



t∰ EPSON RC+ Installer Launcher Welcome to the EPSON RC+ Software Installer	EPSON
EPSON RC+ 7.0 Ware law 3.5.1 EPSON RC+ 7.0 is the project management and development software used to develop overful robot automation solutions using Epson's lineup of SCARA, 6- Axis and Linear Module robots.	Installed Status
For T/LS series> EPSON RC+ Express Edition 1.0 EPSON RC+ Express Edition is an easy robot programming software for beginners and learners of robot programming. It features a graphical interface that supports touch operation, allowing you to program your robot system with intuitive	Instantion 3.5.1 Warmilian 3.5.1 EPSON RC+ Express Edition Installed Warmilian 3.5.1

5. Follow the instructions on the screen to install.

To uninstall, refer to the following: Uninstalling

#### Installing (From USB memory stick, Shared Folder)

This page describes the procedures to install this software for tablet with no DVD drive or PC. To install this software for tablet with no DVD drive or PC, follow the procedures below.

#### **Operation procedure**

1. To save installer, insert the supplied DVD into your PC's DVD drive. By using PC with DVD drive, save the installer to USB memory stick or shared folder on the Internet. 2. When following displayed, click [Copy the installers to another device] on the auto play screen.



**3.** Specify a folder of the installer and tap the <OK> button. Save them in USB memory stick or shared folder.

Copy the installers to another device

- 4. Open the saved installer with the tablet or PC to use this software. When you use USB memory stick, insert it your tablet or PC and open the folder in explorer.
- 5. When following appeared, tap [Install].



6. Follow the instructions on the screen to install.

To uninstall, refer to the following: Uninstalling

## **Connecting to Robot**

#### Connecting to Robot (USB)

Describes how to connect controller to tablet using USB cable.

When you use the trial software, the software cannot connect to the robot. Connect to Virtual Robot and use the software. Connecting to Virtual Robot

#### **Operation procedure**

#### 1. Connect the controller to the tablet using USB cable.





2.

Both Robot and Controllers connector is Type-B.Conversion cable is also available. Prepare if you are needed.

- Double-tap **to** start the software.
- 3. When following appears, tap [Setup connection].





4. Choose the USB connection, and tap the <Connect> button.

BPSON RC+ Express Edition 1.0.0.0				-	>
		Robot Connections Select or create a connection.			
	USB	IP Address: N/A			
	+		Connect		
← Back					

After the connection is completed, the screen transit to the Home screen. Connecting Robot is completed, if it is displayed as [Program] on the upper left of the screen. The connecting Robot information is indicated in Home screen as shown below.

BFSON RC+ Express Edition 1.0.0.0						-		×
E Program		• <u> </u>	Safeguard	EStop	Error	Warning		:
Robot	Loaded program							
J.A.	MyProgram				🖙 Ed	it		
L POUR	All programs			🗋 Crea	te	👌 Imp	oort	
	Name and description			Update of	date and	l time		
72	MyProgram			3/26/20 1:09:18 P	21 M	~	< I	
Model : T3-401S Connection : USB Control device : PC								
Ø Settings								
🕂 Manual Motion								
Disconnect								
(?) AB Language								

When failed in connecting to robot, refer to the following. Failed in Connecting to Robot

#### Connecting to Robot (Ethernet)

Describes how to connect controller to tablet using Ethernet cable.



• The Robot is needed to be connected to Network and with setting finished, when

connecting controller to tablet using Ethernet cable. Connect the controller to USB, and set "IP Address", "Subnet mask" and "Default gateway" of the controller. Controller Configuration

Controller Configuration at the time of shipment is shown below. IP Address: 192.168.0.1 Subnet mask: 255.255.255.0 Default gateway: 0.0.0.0

• When you use the trial software, the software cannot connect to the robot.

Connect to Virtual Robot and use the software. Connecting to Virtual Robot

#### **Operation procedure**

1. Connect Controller to tablet using LAN cable (Ethernet connection).



If you are using PC with no wired LAN interface, you will need external LAN adapter (Ethernet connection).



- 2. Double-tap **W** to start the software.
- 3. When following appears, tap [Setup connection].



Ø

- Tap [Language] to change your languages.

- If the connection setting is completed, it is displayed as Ethernet in "Destination". If you don't need to change the Destination, tap [Connect to robot].



#### 4. Tap the <+> button.

EPSON RC+ Express Edition 1.0.0.0	-	×
	Robot Connections Select or create a connection.	
	IP Address: N/A	
	+ Connect	
← Back		

5. When following appeared, fill the blanks and tap the <Connect> button. If you want to change the password for connecting controller, tap the <Change> button to set the new password.

🛃 New connection		×
Name		
Ethernet 1		
IP Address		
0.0.0.0		
Password		
Change		
	Connect	Cancel
		-



When connecting controller which has Global IP Address using Ethernet cable, password authentication is needed. For the details, see below. *EPSON RC+ User's Guide* 

#### 6. Choose the Ethernet connection, and tap the <Connect> button.

EPSON RC+ Express Edition 1.0.0.0			-	×
		Robot Connections Select or create a connection.		
		IP Address: N/A		
	Ethernet 1	IP Address: 0.0.0.0		
	+	Connect		
← Back				

After the connection is completed, the screen transits to the Home screen. Connecting Robot is completed, if it is displayed as [Program] on the upper left of the screen. Robot information that now connecting is indicated in Home screen as shown below.

BPSON RC+ Express Edition 1.0.0.0				- 🗆 X
E Program		Motor Safeguar	e EStop Error	Marning :
Robot	Loaded program			
I.A.	MyProgram			dit
EPSON	All programs		Create	🏝 Import
W Barry J.	Name and description		Update date a	nd time
T2	MyProgram		3/26/2021 1:09:18 PM	~
Model : T3-401S Connection : EthernetT1 Control device : PC				
🕸 Settings	-			
** Manual Motion				
▲ Disconnect				
⑦ 💬 Language				

When failed in connecting to robot, refer to the following.

Failed in Connecting to Robot

#### Connecting to Virtual Robot

Describes how to connect to Virtual Robot. You can operate Robot under the virtual environment or programing Robot without connecting to real Robot.



When you use the trial software, only the screen to connect to Virtual Robot is appeared.

#### **Operation procedure**



- 1. Double-tap **I** to start the software.
- 2. When following appears, tap [Setup virtual robot].

🚰 EPSO	N RC+ Express Edition 1.0.0.0			-		<
		Welcome to EPSON Select a rob How to	RC+ Express Edition.			
		BSON				
		Connect to robot	Connect to virtual robot			
		Destination:	Destination: Virtual 2			
		Setup connection	Setup virtual robot			
0	Language			X ci	ose	

Tap [Language] to change your languages.
If the connection setting is completed, virtual robot name is displayed in "Destination". If you don't need to change the Destination, tap [Connect to virtual robot].

	Welcome to EPSON Select a rot How to	RC+ Express Edition.	
	EPSON		
	Connect to robot Destination:	Connect to virtual robot Destination:	
	Setup connection	Setup virtual robot	

#### 3. Tap the <+> button.

EPSON RC+ Express Edition 1.0.0.0		-	×
	Virtual Robots Select or create a virtual robot.		
	+ Connect		
← Back			

4. When following appeared, fill the blanks and tap the <Connect> button.



After the connection is completed, the screen transit to the Home screen. Connecting Virtual Robot is completed, if it is displayed as [Virtual] on the upper left of the screen. Virtual Robot information that now connecting is indicated in Home screen as shown below.

EPSON RC+ Express Edition 1.0.0.0				>
🔏 Virtual	년 	L Filler	EStop Err	or Marning :
Robot	Loaded program Program not loaded Load a program or create a new program.			
EPSON	All programs		Create	👌 Import
Model : T3-401S Connection : Virtual Control device : PC	Name and description		Opdate date	and time
Settings		reate a new p		
Manual House     Disconnect     O    Co  Language				

#### Home screen

#### Home screen

After connecting robot, the screen transit to the Home screen.



See below for the function of the buttons.

#### **Button functions**

Buttons	Description		
Settings	- Hand Settings		
	Settings of the hand installed to the robot.		
	Hand Settings		
	- System Settings		
	Detailed controller settings.		
	System Settings		
	- Maintenance		
	Backup/restoration of the controller data & parts maintenance. Checking part consumption		
	rate.		
	Maintenance		
Manual	Operate robot on 3D View to check the motion.		
Motion	Operating Robot		
Disconnect	Disconnect robot from controller.		

#### Status Bar

Status bar on the top of the screen shows current operating mode or status of the controller.



Operating mode Program Name Program descriptions

Controller status

Menu

#### **Operating mode**

Indicates current mode of the robot controller.

Ī	Mode	Description
	[三] Program	Program Connecting to robot.
	👫 Virtual	Virtual Connecting to virtual robot.

#### Program name

Indicates current program name.

When the program name is changed, \* is appears after the program name. Which means the program have not saved. \* disappears after saved the program.

#### **Program descriptions**

Indicates current program descriptions.

#### **Controller status**

Indicates current status of the robot controller.

Status	Description
•	Motor ON/OFF: Lights on when motor is ON. It is possible to change setting of motor ON/OFF, power mode, SFREE (Free Joints) by touching icon. SFREE (Free Joints) allows you to move robot by hands by changing all axes locked to free. It is possible to change setting regardless of motor is ON or OFF. When motor ON and SFREE indicates
	Safety door open/close: Lights on when safety door is opened.
	Emergency stop: Lights on when in emergency stop. By touching the icon, it is possible to get the detailed information for how to reset the emergency stop, and reset it.
8	Error: Lights on when error occurs. By touching the lighting icon, it is possible to check the error details and reset.
	Warning: Lights on when the warning occurs. By touching the lighting icon, it is possible to check the warning details.



#### - System History

Indicates all histories include events, errors, warnings. Set the following to change the period of time to indicate.

Data to Display:         All         Y mm:         \$/18/2021         Sign 201         Refresh           Message Contains:         Time         Top:         \$/18/2021         213.55 PM         Event 120         RC4: connected to the Controller.         \$/18/2021         \$/18/2021         \$/18/2021         213.55 PM         Event 134         Epson RC- Express failtion connected to the Controller.         \$/18/2021	🔛 System	History				- 0	×
Message Contains:         Time         Type         Number         Message         A           Date         Time         Type         Number         Message         A           5/18/2021         21:355 PM         Event         134         Epson RC+ Express Edition connected to the Controller.         5/18/2021         5/18/2021         21:355 PM         Event         134         Epson RC+ Express Edition connected to the Controller.         5/18/2021         21:355 PM         Event         120         RC+ connected to the Controller.         5/18/2021         21:352 PM         Event         120         RC+ connected to the Controller.         5/18/2021         21:320 PM         Event         3         Controller control program has completed.         5/18/2021         22:1320 PM         Event         3         Controller control program has completed.         5/18/2021         12:321 PM         Event         136         Event mas connected form the Controller.         5/18/2021         12:321 PM         Event         136         Event mas connected form the Controller.         5/18/2021         12:321 PM         Event         136         Event mas connected form the Controller.         5/18/2021         12:321 PM         Event         136         Event mas connected form the Controller.         5/18/2021         12:431 PM         Event         140         Projectf	Data to Disp	olay : All			✓ From : 5/18/2021 15 To : 5/18/2021 15	Refresh	
Date         Time         Type         Number         Message         A           5/18/2021         21:355 PM         Event         122         Working mode changed to Program.         5/18/2021         5/18/2021         5/18/2021         21:355 PM         Event         134         Epon RC+ Express Edition connected to the Controller.         5/18/2021         21:355 PM         Event         120         RC+ connected to the Controller.         5/18/2021         21:352 PM         Event         120         RC+ connected for the Controller.         5/18/2021         21:325 PM         Event         3         Controller control program has completed.         5/18/2021         21:320 PM         Event         3         RC+ disconnected form the Controller.         5/18/2021         21:320 PM         Event         3         Express Monthal AUTO.         5/18/2021         12:321 PM         Error         1104         Project file was not found.         5/18/2021         12:321 PM         Error         1104         Project file was not found.         5/18/2021         12:431 PM         Error         1104         Project file was not found.         5/18/2021         12:431 PM         Error         1104         Project file was not found.         5/18/2021         12:431 PM         Error         104         Project file was not found.         5/18/2021         12:431 PM	Message Co	intains :			Time Zone : (UTC+09:00) 大阪、札幌、東京		<b>~</b>
5/18/2021         21:355 PM         Event         12         Working mode changed to Program.           5/18/2021         21:355 PM         Event         14         Epson RC- Express Edition connected to the Controller.         Image: Connected to the Controller.           5/18/2021         21:355 PM         Event         12         Controller control program tasted.         Image: Controller control program tasted.         Image: Controller control program tasted.         Image: Controller Controller.         Image: Controller Controller.         Image: Controller Controller.         Image: Controller Controller.         Image: Co	Date	Time	Type	Number	Message		^
5/18/2021         21:355 PM         Event 134         Epon RC- Express Edition connected to the Controller.           5/18/2021         21:355 PM         Event 13         Controller control program started.           5/18/2021         21:355 PM         Event 13         Controller control program started.           5/18/2021         21:352 PM         Event 13         RC- disconcetd for the Controller.           5/18/2021         21:320 PM         Event 132         RC- disconcetd for the Controller.           5/18/2021         21:320 PM         Event 132         RC- disconcetd for the Controller.           5/18/2021         21:320 PM         Event 135         Epon RC- Express Edition disconcetd form the Controller.           5/18/2021         12:312 PM         Error 1104         Project file was not found.           5/18/2021         12:3212 PM         Error 1104         Project file was not found.           5/18/2021         12:431 PM         Error 1104         Project file was not found.           5/18/2021         12:431 PM         Error 1104         Project file was not found.           5/18/2021         12:431 PM         Error 1104         Project file was not found.           5/18/2021         12:431 PM         Error 1104         Project file was not found.           5/18/2021         12:431 PM	5/18/2021	2:13:55 PM	Event	127	Working mode changed to Program.		
5/18/2021         21:35 PM         Event 120         RC- connected to the Controller.         Image: Controller control program started.           5/18/2021         21:325 PM         Event 13         Controller control program started.         Image: Controller controller controller controller.         Image: Controller controller controller.           5/18/2021         21:325 PM         Event 13         Controller controller controller.         Image: Controller.         Image: Controller.           5/18/2021         21:320 PM         Event 135         Epcon RC- Express Edition disconnected from the Controller.         Image: Controler.         Imag	5/18/2021	2:13:55 PM	Event	134	Epson RC+ Express Edition connected to the Controller.		
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	5/18/2021	0-31-51 AM	Free	1104	Project file war not found		>

#### - 3D View preference

Setting for 3D View. The setting in here is saved on PC include controller setting. If you switched the controller to be connected, set it again.

Item	Description
General	<ul> <li>Change setting of display format for all 3D Views.</li> <li>Grid</li> <li>Indicates grid line on ground surface of robot.</li> <li>Tool</li> <li>Indicate the robot arm tip arrow at the tool position specified in the hand settings.</li> <li>Tool Offset</li> <li>World Direction</li> <li>Indicate the world direction arrow on the grid line.</li> <li>Projection type</li> </ul>
Program edit	Setting display format of the 3D view which is displayed when you tap the <jog &="" teach=""> button on the screen. - Point - Pallet</jog>
Open CAD	Open CAD file (STEP/IGES) for Hand tool . Adjusting displaying position of CAD . After setting all, tap the <apply> button to save the change. - CAD file path (STEP/IGES) - Scale unit Specify the unit used in CAD file. - Mounting position Specify the position and orientation to display the CAD with the relative value from robot arm tip. To reset to default value, tap the <restore defaults=""> button</restore></apply>

## Close the Software

When you close the software, tap the <X> button on the upper right of screen to close.

## Main Monitor

#### Manual Motion

At Manual Motion, it is possible to check the motion of the robot on 3D view by operating Jog panel.

#### 3D view

- Shows robot operation with the 3D view.
- Tap <Front>, <Top> button to change point of the view.

Jog panel A panel to operate the rob

- Pinch in or out to zoom in or out the display.



Current position view

- Shows current position of the robot as a numerical value.
- World position: Arm tip position in the 3D view
- Joint position: Motion distance of each axis
- Arm orientation: Righty/Lefty

To display Manual Motion, tap Home - [Manual Motion].

EPSON RC+ Express Edition 1.0.0.0		- 0	х
🔏 Virtual		Estop Error Warning	:
Robot	Loaded program Program not loaded Load a program or create a new program.		
EPSON	All programs	🗋 Create 🗈 Import	
T3 Model : T3-4015 Connection : Virtual Control device : PC	Name and description	Update date and time	
<ul> <li>Settings</li> <li>Manual Motion</li> <li>Disconnect</li> <li>O S Language</li> </ul>	Push [Create] to create a new		
			-

### Jog Panel

#### Motor

To operate robot, tap **Andre** to motor "ON". After motor "ON", it is possible to operate the Jog panel.



Jog Mode (World & Joint) Select motion of the arm :



#### - Joint

A mode to operate arm by specifying joints. Useful to move the robot to the rough point. It has buttons to move each joint (J1 to J4) of the robot in the + and - directions. Tap or hold the button down.

For the positions of each joint, see the red frame below.



#### - World

A mode to operate arm by specifying coordinate axes of X, Y, Z, U. Useful to move the robot to accurate position.

It has buttons to move the robot in the + and - directions along each coordinate axes. Tap or hold the button down.



Ø

You can match the direction of the arrows displayed on the 3D view with the

direction of X, Y, Z, U on the Jog panel. Tap to change the directions of X, Y, U. It is possible to make the directions on the jog screen same as the ones on the 3D display.

## Jog Speed & Jog Distance

Setting Jog Speed & Jog Distance.

#### Jog Speed

Select robot arm moving speed.

Jog Speed						
	Q Slow	Fast				
	50.0 r	nm/s				
	10.0 deg/s					

#### - Slow

10.0 mm/s, 2.0deg/s

#### - Fast

50.0 mm/s, 10.0deg/s

#### Jog Distance

Select robot arm moving amount.

Jog Distance					
<b> </b> ► Minimum	<b> </b> ► Short	<b> →</b> Middle	<b>⊢→</b> Long	<b>⊢</b> Custom	
Continuous					

#### - Move with a certain width

Choose the moving width from "Minimum", "Short", "Middle" and "Long", tap the <Jog> button to move the robot arm with a certain width.

If you want to move a certain width for continuously, hold the <Jog> button down. Following shows distance and amount of movement.

Jog Distance	Minimum	Short	Middle	Long
Linear movement (mm)/	0.01	0.1	1.0	10.0
(degree)				

#### - Move for continuously

Select "Continuous". Move the arm as long as hold the <Jog> button down.

#### - Specify moving width

Select "Custom" to set moving distance and rotation as you like. You can set the value within "0.001" to "10.0".

G	🔀 Jog distance setting						
Input jog distance.							
	linear	10.0 mm					
	Linear .	10.0					
	Rotation :	10.0 deg					
			_				
		OK	Cancel				

#### **Position View**

#### Arm Orientation

Shows whether the arm orientation is Righty or Lefty.



SCARA robot has arm orientations, right-handed or left-handed. Following image shows example of Lefty and Righty go to the same point.





When operating robot, move them to the designated point with the arm orientation you taught. If you change the arm orientation, the arm may follow an unexpected path and could damage peripherals.
# **Operating Robot**

How to operate the robot and check the motion on 3D View :

#### **Operation procedure**



2. Select Jog mode (World or Joint). In this example, select Joint. Jog Mode (World & Joint)



**3.** Tap arrow button or "Grip"/"Release" button of the hand on the Jog panel, and check the robot motion.





- You can match the direction of the arrows displayed on the 3D view with the

direction of X, Y, Z, U on the Jog panel when World is selected. Tap when World is selected. Tap when World is selected.

- If you want to change the speed, change settings of Jog Speed and Jog Distance. Jog Speed & Jog Distance

- If you want to operate with hand tool, set up the hand tool. Hand Settings

# Programing

# **Program Screen Layout**

# **Program Screen**

On this screen, use commands to create a program and check the motion.



Tap Home - [Edit] to display the program screen.



# Setting a Program Operation

On this screen, set the default value of speed etc. according to path type. The default value set in the screen is applied to the Move To command.



To display the operation setting screen, tap Home - [Edit] to appear the program screen, and then tap [Settings].



# **Operation procedure**

1. Select a path type from [Joint], [Linear] and [Jump]. When the path type is selected, jump to each setting.



2. Move the knob to set default value in "Speed" and "Accel".

🔛 Settings			×
Path Type Set t	he speed for each	path types.	
) Joint	7	Speed [%]	
📐 Linear	Joint		
🛄 Jump			
		Accel [%]	
	Restore defaults	1 5 20 > >> >> >> >> Slow Mid Fast 10	
	<u> </u>	Speed [mm/sec]	
	Linear	120 200 400 >	
		ОК Салсе	el



To reset the set default value, tap the <Restore defaults> button.

3. Only for jump: Move the "Height of Jump motion (LimZ)" knob to set the jump height

Tap the <Obtain current height> button to import the current Z-axis coordinate value to the connected robot.



# Creating/Editing a program

# Creating a Program

# Creating From a Template

For creating a program easily, we provide templates which contain the general commands to create programs.

The procedure to create a program from a template is described below.

#### **Operation procedure**

#### 1. Tap [Create].

EPSON RC+ Express Edition 1.0.0.0		- 0	×
Kirtual	•💻 📑 Motor Safegua	rd EStop Error Warning	
Robot	Loaded program		
PSN BILL	Program not loaded Load a program or create a new program.		
the second se	All programs	🖞 Create 🖪 Import	.
T3 Model : T3-401S Connection : Virtual Control device : PC			
፟ Settings	Push [Create] to create a new		
🛟 Manual Motion			
Disconnect			
⑦ 🖗 Language			

2. When the following screen is displayed, select the template of program to create.

🚰 Create program		– 🗆 X
Select a program template.		0
Empty Program	~	
3 Simple Pick & Place		
3 Simple Palletizing		
Simple Depallatizing		
Program Name		
Program_3		
Description		
	OK	Cancel

# 3. Enter [Program Name] and [Description], and then tap the <OK>.

Enter the program name using up to 24 single-byte alphanumeric characters. As an example, the followings are entered.

Program Name: Program1

Description: Simple pick and place (between 2 points)

🚰 Create program		– 🗆 X
Select a program template.		0
Empty Program	$\sim$	
3 Simple Pick & Place		
3 Simple Palletizing		
Cimple Depallatizing		
Program Name		
Program1		
Description		
Simple pick and place (between 2 points)		
	OK	Cancel

Now, you have created a program from the template. Tap [Edit] to configure advanced settings of each command, and then create a program.

Command Function List:

Command Operation List

Program Examples (Tutorial)

EPSON RC+ Express Edition 1.0.0.0						- 0	×
Kirtual		• <u></u> Motor	- Safeguard	EStop	Error	Warning	:
Robot	Loaded program Program1 Simple pick and place (between 2 points)				🕻 Ed	it	
TB	All programs Name and description Program1 Simple pick and place (between 2 points)			Creat Update 5/18/20 10:31:26	ate date and 21 5 AM	È Import I time ✓	:
Model : T3-401S Connection : Virtual Control device : PC							
🛱 Settings							
Manual Motion     Disconnect      G    C    Language							

# Creating a New Program

When the templates do not contain the program to create, create a new program. The procedure to create a new program is described below.

# **Operation procedure**

1. Tap [Create].

EPSON RC+ Express Edition 1.0.0.0					- 0	×
🔏 Virtual	- Mo	tor Safeç	juard EStop	Error	Warning	:
Robot	Loaded program Program not loaded Load a program or create a new program. All programs Name and description		Crea Update	ate date and	▲ Import d time	
T3 Model : T3-4015 Connection : Virtual Control device : PC						
<ul> <li> <sup>™</sup> Manual Motion         <ul> <li></li></ul></li></ul>		eate a ne				

2. When the following screen is displayed, select [Empty Program].

🚰 Crea	le program			-		Х
Sele	ct a program template.	_			?	)
D	Empty Program	^				
3	Simple Pick & Place		- L'	1		
3	Simple Palletizing					
-	Simple Depallatizing	~				
Prog	ram Name					
Pro	gram					
Des	ription					
			OK	Cano	cel	

**3.** Enter [Program Name] and [Description] then tap the <OK> button. Enter the program name using up to 24 single-byte alphanumeric characters.



Now, you have created an empty program. Tap [Edit]to add the required command, and then create a program. Command Function List:

Command Operation List Program Examples (Tutorial)

EPSON RC+ Express Edition 1.0.0.0								- 0	×
Kirtual			,	• Motor	Safeguard	EStop	Error	Warning	:
Robot	•	oaded program Program					[≱ Ed	it	
EPSON	A	II programs				Crea	te	👌 Import	
	N	lame and description				Update	date and	l time	
тз		Program XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX				5/20/20 5:56:54	21 PM	~	÷
Model : T3-4015 Connection : Virtual Control device : Remote I/O	,								
墩 Settings									
Manual Motion     Disconnect									
Language سي									

# **Executing a Program**

# Executing a Program to Check for Problems

When you have created a program, execute the program to check whether there are problems.

When checking the command operation separately, add [b] (break point) to the point to pause. If necessary, add the break point, and then execute a program.

#### **Operation procedure**

1. On the program, add **P** to the command to pause.

Tap the line number in the frame to add

🚰 EPS	ON RC+ Express Edition 1.0.0.	100	- 🗆 ×
	Virtual	Program* 📃 🖸 🔿 😵	Marning :
	🗠 🍠 Basic	ち 근 🖽 🖧 🛱 📋 🏛 📖 🕂 💱 Motor On	🥶 🥐
_	🍠 Move To	Undo Redo Save Cut Copy Paste Delete Skip = Settings [Motor On] turns on the m ready to operate.	notors to get the robot
=	Rick from	Power	
(†) (†)	<table-cell-rows> Place at</table-cell-rows>	Move To Home Position Select power mode.	
Ħ	📑 Container	3 V Cop Infinite	
	∽ '로 Motor	Parts Feeding pos	
	😼 Motor On	✓ 10 > ŢPlace at Target position	
	🔆 Motor Off		
	~ 渇 Hand		
	👵 Grip		
	r Release		
	∨ 🖬 Pallet		
0	Move forward	rd and a second	
»	© Event Log	Start Pauce Continue Stop Step	I/O 3D View

- 2. Tap the <Start> button, and execute the program following the screen instructions. The command after the break point is executed in the following way.
  - Tap the <Step> button to execute commands one by one
  - Tap the <Continue> button to execute commands until the next break point



The types of operation buttons are as follows.

Icon	Usage
	Tap to start debugging.
н	Tap to pause when a program is running.
IÞ	Tap to resume a program when the program is in break or pause.
	Tap to stop.
M	Tap to execute commands one by one from a break point.

- When clearing the break point, after pausing a program, tap 🍋. When a program is running, you cannot clear the break point.

- Only when in Virtual mode, tap the <3D View> button to display the 3D View window and then check the robot motion. The screen layout is as follows:

- Front/Top: Changes the view.



**3.** When following appeared, adjust the speed limitation and tap the <Run> button. When you check [Force Low Power Mode], the motor will be low power and the speed will be slow regardless of the speed limitation value.



# 4. Check the command being executed.

While a program is running, the program edit screen and commands are surrounded by a blue frame. A  $\blacktriangleright$  (blue) appears next to the command being executed.



- When a program is running, you cannot edit the commands.

- When an error occurs while a program is running, a <x> appears at the beginning of a command and the command blinks in red. Tap the Error icon to check the message and countermeasure.

# Checking Event Log

Check Event Log for the details and the occurrence date and time of errors which occurred while a program was running.

Tap 🖾 (Event Log) to display the event log.

Messages are displayed in black, errors in red, and warnings in blue.



The types of Event Log icons are as follows.

Icon	Description
$\Box$	There is no event log.
d o	There is a new event log.
<b>D</b>	There is a error event log.

# Editing a program

# **Command Operation List**

Commands are operation instructions such as moving, gripping Hand, and turning the motor ON/OFF. The commands are used in programming. This page describes how to operate the commands.



For adding a command, refer to the following: Adding a Command

The operation except for adding the command are as follows.

Icon	Usage
5	Cancels the previous operation if you operate by mistake. Undo, Redo
Ç	Cancels [Undo]. Undo, Redo
	Saves the edited program. Save
Å	Copies the selected command and then deletes. Cut and Paste
Ŋ	Copies the selected command. Copy and Paste
Ĉ	Inserts the [Copy] command. Cut and Paste
Ŵ	Deletes the selected command. Deleting a Command
:::::	When a program is run, skips (not execute) the command. The skipped command is displayed in italics. Skipping a Command
₹.	Operation buttons are hidden. When there are some buttons not displayed, tap the icon.
	You can set the default value of the speed and acceleration. Setting a Program Operation

# Adding a Command

Tap the command to add. After adding the command, drag and drop the command to move to any position. You can change the command operation order by moving commands. You can add a command to the position directly by drag and drop.



Undo, Redo Tap (Undo) to cancel the previous operation and undo.



Tap  $\mathcal{C}$  (Redo) to cancel the undone operation.



# Save

Edit a program and tap (Save).

🔀 EPSC	IN RC+ Express Edition 1.0.0.0	0											-		×
Æ	Virtual	Program*							• Motor	Safeguard	EStop	Error	Warnin		:
	🗸 🍠 Basic	5	Ç	لگ 🖾	D) (	Ĵ Ŵ			-1-1-	🖣 Pick	from			¢	?
	🍠 Move To	Undo	Redo	Save Cut	Copy P	aste Delete	Skip	÷	Settings	Specify can ed	the positi it the coor	on of the de dinate value	estinatio s direct	in. You ily belo	
∍	Rick from	1		To Move To			Point1			or tead	h them us	ing the Jog	& Teach	n pane	
÷			>	Pick from			Point2	)		x	Teach:	39	5.922 7.65 A	v [m	
	TPlace at		、	Diaco at			Doint2			7	Teach.	-5	0.000	· (II	
==1	📑 Container	Ū	1	T: Flace at			Points			-	Teach:	-12	2 3 9 8	× Id	eal
	∨ 🖳 Motor	14	>	Pick from			Point4				Teach:	12	Lefty	~ [0	-91
	🖅 Motor On	4								Þ			,		
	🔆 Motor Off										J	og & Teach			
	∨ ऊ Hand									[Go he positio	re] is to m n specifiec	ove the rob above.		to the	
	🙏 Grip												G	o here	
										Decom	pose com	mands			
	r7 Release									Decorr	npose into	a set of nor			ls
	∨ 👪 Pallet									to edit	more deta	uls.			
(?)	Move forward										[	Decompose			
»	Event Log	► Start		ause Continue	Stop	► Step							I/O	30	View

Copy and Paste Operation procedure

1. Select the command to copy and tap (Copy). The selected command is displayed in blue.



2. Select the command which is at the position to insert and tap (Paste). The command is inserted under the selected command.



# Deleting a Command

Tap (Delete) with a command selected.

🔛 EPS	ON RC+ Express Edition 1.0.0.	10	- 🗆 X
	Virtual	Program* *	Safeguard EStop Error Warning
	🗠 🍠 Basic	※ (1) (1) (1) (1) (1) (1) (1) (1) (1) (1)	🖣 Pick from 🧉 🕐
-	🍠 Move To	Undo Redo Save Cut Copy Paste Delete Skip = Settings	Specify the position of the destination. You can edit the coordinate values directly below or teach them using the Jog & Teach pane.
-	rick from		X Teach: 395.922 ~ [mm]
÷	<table-cell-rows> Place at</table-cell-rows>	Pick from Point2	Y Teach: -37.654 × [mm]
Ħ	Container	8 > The second s	Z Teach: 0.000 ¥ [mm]
	∨ 🖫 Motor	14 > Pick from Point4	U Teach: -12.398 × [deg]
	😻 Motor On		
	😻 Motor Off		Jog & Teach
	~ る Hand		[Go here] is to move the robot arm to the position specified above.
	👵 Grip		Go here
	Release		Decompose commands
	∨ III Pallet		Decompose into a set of normal commands to edit more details.
0	Move forward		Decompose
»	Event Log	Start Pause Continue Stop Step	I/O 3D View

Cut and Paste Operation Procedure

1. Select the command to cut and tap  $\overset{\checkmark}{\longrightarrow}$  (Cut).



2. Select the command which is at the position to add and tap  $\Box$  (Paste). The command is inserted under the selected command.

<b>6</b> 7			
E EPSC	ON RC+ Express Edition 1.0.0.		- U ×
	Virtual	Program* The Motor	Safeguard EStop Error Warning
	🗸 🍠 Basic	· · · · · · · · · · · · · · · · · · ·	🖣 Pick from 🧉 💡
	📑 Move To	Undo Redo Save Cut Copy Paste Pelete Skip 🗢 Settings	Specify the position of the destination. You can edit the coordinate values directly below
∍	S Diele German	1 Nove To Point1	or teach them using the Jog & Teach pane.
±	Tr Pick from	2 Pick from Point2	X Teach: 399.989 ~ [mm]
Ŧ	<table-cell-rows> Place at</table-cell-rows>		Y Teach: 1.937 ~ [mm]
Ħ	Container	8 > Trace at Point3	Z Teach: 0.000 ~ [mm]
		Rid > Pick from Point2	U Teach: 0.634 ~ [deg]
	✓ Ξ Motor		Teach: Righty ~
	🖅 Motor On	•	
	🔆 Motor Off		Jog & leach
	×る Hand		[Go here] is to move the robot arm to the position specified above.
			Golhere
	🔿 Grip		
	Release		Decompose commands
	∨ 👪 Pallet		Decompose into a set of normal commands to edit more details.
?	A start farmed		Decompose
<u> </u>	Nove forward		
»	Event Log	Start Pause Continue Stop Step	I/O 3D View

# Skipping a Command

Tap (Skip) with a command selected. The skipped command is displayed in italics.

	🗸 🍠 Basic		5	$\circ$		] X	D	Ĉ	Ŵ	1_	-1-1-	🖣 Pic	k from		1	Ç	3
_	🍠 Move To		Unc	lo Rec	so Sav	e Cut	Сору	Paste	Delete Skip		Settings	can e	edit the coor	rdinate valu	iestinati ies direc	tly bel	u wo
=	Pick from					NOVE IO			Point			0112	X Teach:	39 ang the 50g	99.989	× (n	
÷	<table-cell-rows> Place at</table-cell-rows>			>	1	Pick fron	7		Point2				Y Teach:		1.937	~ (r	
Ħ	📑 Container		8	>	- 🤤	Place at			Point3			-	Z Teach:		0.000	~ (r	
	∨ 🖅 Motor		14	>	-	Pick from	n		Point2			1	U Teach:		0.634	~ [c	leg
	🖅 Motor On	•										•	Teach:	F	Righty	~	
	🔆 Motor Off											IGo I	Jarel is to m	log & Teac	h bot arm	to the	
	~ る Hand											posit	ion specified	d above.	bot ann	10 112	
	👃 Grip														G	o here	•
	-											Deco	mpose con	nmands			
	Release											Decc	ompose into	a set of no	ormal co	mman	
	Release محم Release											to ec		ails.			
0	<ul> <li>Release</li> <li>Pallet</li> <li>Move forward</li> </ul>											to ec	lit more deti	ails. Decompos	e		



# **Program File**

# Switching Programs

To switch programs to edit, select the program to switch and tap (Load). The name of the loaded program is displayed in the program field.

EPSON RC+ Express Edition 1.0.0.0						- 0	×		
👫 Virtual		• Motor	Safeguard	EStop	Error	A Warning	:		
Robot	Loaded program								
$\frown$	PointToPallet				D≱ Ed	lit			
	Conveying from point to pallet								
EPSON	All programs			🗋 Create 🛛 🔥 Ir					
· · · · · · · · · · · · · · · · · · ·	Name and description			Update date and time					
	PickandPlace		5/17/2021						
	Pick and place (between 2 points)		6:49:25 PM						
13	PickandPlace_1			5/17/202	1				
Model : T3-401S	Pick and place (between 3 points)			7:01:32 F	M				
Connection : Virtual	PickandPlace_2 Sorting Non-defective/Defective Products			5/18/2021 9·17·30 AM		1 Load	1		
Control device : PC	PointToPallet			5/17/202	1				
	Conveying from point to pallet			7:31:38 P	M	$\checkmark$			
<ul> <li>Settings</li> <li>Manual Motion</li> <li>Disconnect</li> <li>O Consumption</li> </ul>									

Changing a Program Name and Description

This page describes how to change a name and description of a program.

# **Operation procedure**

- EPSON RC+ Express Edition 1.0. • 🔏 Virtual • ⊗ A Robot Loaded program Program 🛯 Edit All programs Create 👌 Import Name and description Update date and time \Lambda Rename Model : T3-401S 🗂 Duplicate Connection : Virtual 🗓 Delete Control device : PC 🛃 Export 🕸 Settings i Detailed Info 🕂 Manual Motion Disconnect ② Q3 Language
- 1. Select a program and tap [Rename].

2. Change the name and description of the program and tap the <OK> button. Enter the program name using up to 24 single-byte alphanumeric characters.

🔀 Rename program		-	
Program Name			?
PickandPlace_2			
Description			
Sorting Non-defective/Defective Products			
	ОК	Can	cel

# Duplicating

This page describes how to duplicate a program.

# **Operation procedure**

1. Select the program to duplicate and tap - [Duplicate] .

EPSON RC+ Express Edition 1.0.0.0						-		×
🔏 Virtual		• <u>—</u> Motor Sa	feguard	EStop	Error	Warning		:
Robot	Loaded program							
$\mathbf{\land}$	Program				🖙 Ed	it		
EPSON	All programs			🗋 Crea	te	🕭 Imp	ort	
T TT	Name and description			Update	date and	l time		
	Program			5/18/202 9:19:10 A	21 \ <u>M</u>	~		
T3					\Lambda Ren	iame		1
Model : T3-401S					ີ່ງ <b>ີງ</b> Dup	olicate		٦
Connection : Virtual Control device : PC					前 Del	ete		
A c					🛃 Exp	ort		
101 Settings					(i) Det	ailed Info		
🕂 Manual Motion								
Disconnect								
② ③ Language								

2. Enter a name and description of program and tap the <OK> button. Enter the program name using up to 24 single-byte alphanumeric characters.

🔀 Rename program		-	□ ×			
Program Name			0			
PickandPlace_2						
Description						
Sorting Non-defective/Defective Products						
	ОК	Cano	el			

Deleting This page describes how to delete a program.

# **Operation procedure**

1. Select the program to delete and tap - [Delete].

🚡 Virtual		Motor Safeguard EStop Error Warning	
Robot	Loaded program		
J.A.	Program	🕞 Edit	
EPSON	All programs	🗋 Create 🏻 👌 Imp	ort
	Name and description	Update date and time	
	Program	5/18/2021	
тз День		Stistic AM	
Model : T3-401S		Duplicate	
Connection : Virtual		Delete	
Control device : PC		Event.	
🕸 Settings			
And the second		U Detailed Info	2
T Manual Motion			
<ul> <li>Disconnect</li> </ul>			

2. Confirm the screen and tap the <OK> button.

# Functions of command

# **About Command**

Commands are operation instructions such as moving, gripping, and turning the motor ON/OFF. The commands are used in programming. This page describes functions of the commands.

For details of the way of operating commands, refer to the following: Command Operation List

#### Badge

Indicates the specified names of command or the simplified settings on the command. Indicates badge only for commands that have contents be set.



#### Comment

comment

A function that allows you to input comment of command. The comment indicated out of the command frame.

This function has nothing to do with the program operation.







To add comment, tap the command and tap of detail settings then input a comment.





No limits on the number of characters but only indicates two lines of the comment on the program.

#### **Command manual**

Tap a command and tap to show the command's description.



Swipe the top of the screen to move the manual position freely. This is convenient when you arrange the manual and software side by side. You can zoom in/out by dragging the outer frame of the screen.

# **Command Function List**

This page describes functions of the commands.

Com	nand	Function
	Move To	Moving from current point to destination point.
Ľ.	Pick from	A series of operations until gripping a workpiece.
÷.	Place at	A series of operations until releasing a workpiece.
<b>L</b> ∱	Container	Combines multiple commands in it.

# Motor

Command		Function						
4	Motor O <u>N</u>	Turn the motor ON, and the robot ready to move.						
*	Motor O <u>FF</u>	Turn the motor OFF, and the robot is non-excitation state.						

# Hand

Command		Function
₿	Grip	Gripping a workpiece by the hand.
•	Release	Releasing a workpiece holding by hand.

# Pallet

Command		Function
~	Move forward	Moving the current position of the specified pallet to next.
Ð	Reset	Reseting the current position of the specified pallet to the first point (1).

Logic		
Command		Function
	Output	To output signal to the specified output.
С	Wait	Waiting until whether the specified time elapsed or the specified condition established.
ల	Loop	Repeating the operation of specified number of times or while the specified conditions are establishing.
$\prec$	If	Changing the program operation depending on whether the specified conditions are established.
<b>1</b>	Comment	Indicating comment or explanation on the program.
	Quit	Stopping the program immediately.

# Dialog

Command	Function
Ask	It is possible to ask user to question to answer (OK / Cancel) during program executed.
Notify	It is possible to ask user to question to answer (OK) during program executed.

# Log

Command		Function
-	Event Log	Input the message to indicate in the event log.

# Advanced

Command		Function
SPEL	SPEL+ Command	Execute the operation of the directly to input SPEL+ code.

# Move To

A command for the robot to move to the destination point. It is possible to set destination or moving speed.

# **Detailed Settings**



# Motion

Select a motion type of the robot.



Joint (PTP motion)

Moves from current point to destination without specifying path. The most efficient path type.



Moves from current point to destination by moving straight on the path.



Moves from current point to destination with gate motion. Useful when moving around obstacles.



The gate motion is a motion that moving directly above  $\rightarrow$  side  $\rightarrow$  directly below like a



# The height of Jump motion

Indicates the height of Jump motion setting when only "Jump" selected at [Motion]. Input the height of Jump [mm].

When "Use the [Settings] value." is selected from pull down list, the value set in the Settings is used.

Setting a Program Operation



# By lowering the jump height, you can reduce unnecessary motions and shorten the jump motion time. However be careful not to hit obstacles when setting the height.

# Destination

Select based point of robot destination.



# Fixed point

Enter the coordinate directly or Jog & Teach to move to the destination.

**Operation Procedure** 

 Enter the destination coordinate of X, Y, Z, U directly or tap the <Jog & Teach> button to specify the position. Operating Robot



You can name point (Max.127 characters).

# 2. Select the arm orientation from pull down.

- Current Position
- Hold the current arm position.
- Righty / Lefty

Select arm orientation whether Righty or Lefty.



Tap the <Go here> button to check the position you taught or the operation of the robot.



Select a pallet to use and enter how far away (relative position) it is from the position of the selected pallet.

Move to the creating pallet wizard to select the "Create a new pallet ..." from pull down list.

Creating New Pallet

# **Operation Procedure**

- 1. Select a pallet to use.
- 2. Enter directly the relative position from the selected pallet position in X, Y, Z, U.

# 3. Select the arm orientation from pull down.

Current Position
Hold the current arm position.
Righty / Lefty
Select arm orientation whether Righty or Lefty.



Use the <Go here> button when checking [Begin] point of pallet or checking the robot operation after created program.

# Speed

Select the operation speed of the robot. The default value in [Settings] is used for "Slow", "Mid" and "Fast". Setting a Program Operation

Select "Custom" to set separately "Speed" and "Accel".

# **Pick from**

A combined command that moves the robot arm to the destination and gripping a workpiece by hand.

Pick from	Point6
Move To	Approach Pt.
C Move To	Destination
👵 Grip	
🕑 Wait	Time, 0.5
S Move To	Departure Pt.

# ■ Contents of command

Command	Label	Operation	
Move To Approach Pt. Move with jump motion to approaching		Move with jump motion to approaching point	
Move To	Destination	Move straight to destination point	
Grip - Grip a workpiece		Grip a workpiece	
Wait	Time, 0.5	Waits 0.5 seconds	
Move To	Departure Pt.	Move straight to departure point	

# Detailed Settings



#### Destination

Select based point of destination.



#### Fixed Point

Input the destination point directly or tap the <Jog & Teach> button and set the position by jog operation. Operating Robot



You can name the point (up to 127 characters).



Select a pallet to be based point from pull down list, and select the arm position. Choose "Create a new pallet ..." to create new one. Creating New Pallet

#### Decompose commands

To move or delete commands in the container, tap <Decompose> to edit.

Once you tapped the <Decompose> button, and edited commands, you can not restore the original settings.

# Place at

A combined command that moves the robot arm to the destination and releasing a workpiece from hand.

Sp Place at	Point4
C Move To	Approach Pt.
C Move To	Destination
Release	
( Wait	Time, 0.5
To Move To	Departure Pt.

# Contents of command

Command Label		Operation	
Move To	Approach Pt.	Move with jump motion to approaching point	
Move To	Destination	Move straight to destination point	
Release	-	Release a workpiece	
Wait	Time, 0.5	Waits 0.5 seconds	
Move To	Departure Pt.	Move straight to departure point	



# Destination

Select based point of destination.



- Fixed Point

Input the destination point directly or tap the <Jog & Teach> button and set the position by jog operation. Operating Robot



You can name the point (up to 127 characters).



Select a pallet to be based point from pull down list, and select the arm position. Choose "Create a new pallet ..." to create new one. Creating New Pallet

#### **Decompose commands**

To move or delete commands in the container, tap <Decompose> to edit. Once you tapped <Decompose>, and edited commands, you can not restore the original settings.

#### Container

It is possible to put multiple commands in the container. It is possible to show commands compactly by put some commands in the container, and move, delete and copy and paste with whole container.

Container	
👍 Motor On	Low
> 👇 Pick from	Point1
> 👎 Place at	Point2

# Motor ON

Turn the motor ON, and the robot ready to move.

# Detailed Settings

Power
Select power mode. High

#### Power

The motor power of the robot is High or Low.



When Power is set to Low, operation speed is limited up to , 250 mm/sec.

# Motor OFF

Turn the motor OFF, and the robot is non-excitation state.

#### Grip

Gripping a workpiece by the hand. To use this command, set up the Hand settings. Hand Settings

#### Release

Releasing a workpiece holding by hand. To use this command, set up the Hand settings. Hand Settings

#### Move forward

A command to move current position of the pallet to the next.

#### Detailed Settings

Select a pallet.		
Select a pallet.		
0	Select a pallet	~
-	Select a pallet	

#### Select a pallet

Select a pallet from setup pallets. Choose "Create a new pallet ..." to create new one. Creating New Pallet

#### Reset

A command to move current position of the pallet to the first point (1).

#### Detailed Settings



#### Select a pallet

Select a pallet to move to the first point (1) from setup pallets. Choose "Create a new pallet ..." to create new one. Creating New Pallet

# Output

A command to output ON/OFF signal to the specified output target.

#### Detailed Settings

**Output Target** Select a Output Bits from the pull down lists. I/O Functions



It is possible to select category of outputs and show less as you like by using the filter. Bits used in Remote I/O is not shown.

#### Signal

Select ON/OFF of the outputs.

#### Wait

A command to wait until whether the specified time elapsed or established the specified conditions.

It's useful when start moving after a while after gripped a workpiece by the hand.

#### Detailed Settings



Wait Target Specify what to wait.



Input time to wait. (Unit: Seconds) Starts waiting after reached to this command. Restarts the program from next command after time out the specified time.



You can use number from 0 to 2147483 for waiting time. Also possible until the second decimal place.



**Condition** Restarts the program from next command after established the condition of waiting.



When some conditions are set, the judgment is made in order from the condition set first. For example, when condition 1, 2 and 3 are set, the condition 1 and 2 is judged first. After that, the result of condition 1, 2 and condition 3 is judged.  $\{(A \text{ and/or } B) \text{ and/or } C\}$
#### Steps to set conditions

1. Tap [+ Add Condition].



2. Tap pull down and select the condition type.



# - Setting with •••• (Bits input signal)

Select the number of Input bit and the state of Input bit like following below. "If (Input bits) equals (state: ON/OFF)"



- You can select category of Input and show less as you like by using the filter. For the details of I/O types to show or Input bits, refer to the following. Setting for the I/O

- Bits used in Remote I/O is not shown.



Judged by whether the hand gripping a workpiece or not. Select like following below. "If (Hand (Gripped / Released)) equals (True / False)"

# 3. When adding more conditions, tap <+> button to add conditions.

It is possible to add operators between conditions when there are more than two conditions.

And: Both condition A and condition B is established. Or: Whether condition A or condition B is established.

Condition					
Con	diti	on 1			×
8	lf	Unselected		~	equals
		OFF	~	the	n
		Ð			

# Wait Time

It is possible to select Wait Time when selected Time at Wait Target. When 0 is selected: Waits unconditionally until specified conditions established. When selected other than 0 and over the specified time limit: Stop waiting and restarts the program from next command.



For example, when set condition to "Wait <5 seconds> until Input is ON with [condition] ", if the condition is not established even after 5 seconds, the wait time will be canceled due to timeout, and restarts the program from next command.

## Loop

A command to repeat the operation of specified number of times or while the specified conditions are met.

# Detailed Settings



# Loop

Select the type of the loop.



Count

Specify the number of times to repeat the operation.



Condition

Specify the condition to repeat the operation.



Repeats the operation of the command in the container.

# **Loop Count**

Tap +, - button to select the repetition (up to 32767).

Restarts the program from next command after finished the number of times to repeat.

#### Loop Condition

Tap [+ Add Condition] to set conditions. Repeats the operation while the condition meets. For the details of setting conditions, refer to the following: If

#### Add Exit If

Add an Exit If command, that breaks the loop immediately. Adding this command, even if the set number of times is not repeated or the set condition is met, the program starts from the next command.

For the details of Add Exit If, refer to the following: If

# lf

A command to change the program operation depending on whether the specified conditions are met.

When reached to this command, the robot judges whether the current robot status is met to the condition that specified.

- Met: The program starts from the command of "Then" in the container.

- Not met: The program starts from the command of "Else" in the container.
- Multiple conditions are set: The judgment is made in order from the condition set first.

When some conditions are set, the judgment is made in order from the condition set first. For example, when condition 1, 2 and 3 are set, the condition 1 and 2 is judged first. After that, the result of condition 1, 2 and condition 3 is judged. {(A and/or B) and/or C}

#### Steps to set conditions

#### 1. Tap [+Add Condition].



2. Tap pull down and select the condition type.

	Condition 1		×	
	0	If Unselected	~	equals
		<b>5</b>		
Gripped				
Released				

# - Setting with (Bits input signal)

Select the number of Input bit and the state of Input bit like following below. "If (Input bits) equals (state: ON/OFF)"

64



- It is possible to select category of Input and show less as you like by using the filter. For the details of I/O types to show or Input bits, refer to the following. Setting for the I/O - Bits used in Remote I/O is not shown.



Judged by whether the hand is gripping a workpiece or not. Select like following below. "If (Hand (Gripped / Released)) equals (True / False)"



Operates specified processing at the position (Begin / End) that specified. Input like following below.

"If (Pallet x) equals (Position: Begin / End) then"

3. Drag and drop a command that you want to add to both [Then] and [Else].

~	→ If	0
	~	📑 Then
		Output #4=Off
	~	Else
		Wait Time, 1.0

#### 4. When adding more conditions, tap <+> button to add conditions.

It is possible to add operators between conditions when there are more than two conditions.

And: Both condition A and condition B is established.

Or: Whether condition A or condition B is established.

Condition						
Con	diti	on 1				×
8	lf	Unselected			~	equals
		OFF		~	the	n
			$ \pm $			

#### Comment

A command to indicate comment or explanation you inputted on the program. This command will not be executed.

#### Quit

When the program reached to this command, the program stops.

#### Ask

This is a command to ask a user a question while the program is running and change its operation depending on the answer.

Type a question (within the 122 words) and drag and drop the command to add operation to both [OK] and [Cancel].

When the program reached to this command, the question inputted is shown in the dialog. EPSON RC+Express Manual Rev.3

[OK]: Restarts the program from next command. [Cancel]: Restarts the program from the junction of [Cancel].

~	VX As	
	~	📑 ок
		Add commands for "OK"
	~	Cancel
		Add commands for "Cancel"



You can not use double quotation (" ") in question.

# Notify

This is a command to send user a notification and restarts the program after user answered OK.

Type a message (within the 122 words) that you want to notify and drag and drop the command to add a operation for [OK].

When the program reached to this command, message inputted is shown in the dialog. When answered [OK], restarts the program from next command.

~		tify
	~	📑 ок
		Add commands for "OK"



You can not use double quotation ("").

# Event Log

This is a command to show a message (within the 127 words) into the event log. When the program reached to this command, the question inputted is shown in the dialog like following below.





You can not use double quotation ("").

# SPEL+ Command

This is a command to execute the operation of the directly input SPEL+ Command. Cannot break a line.



# Following SPEL Commands are available:

# Robot Control Commands

SPEL Command	Description
Reset	Resets the controller.
SFree	Removes servo power from the specified servo axis.
SLock	Restores servo power to the specified servo axis.
Jump	Jumps to a point using point to point motion.
Arch	Sets / returns arch parameters for Jump motion.
LimZ	Sets the upper Z limit for the Jump command.
LimZMargin	Sets / returns the margin for error detection when the operation starts t the position higher than LimZ value.
Sense	Specifies and displays the condition to stop the manipulator above the target coordinate when Sense is specified by Jump command.
Go	Moves the robot to a point using point to point motion.
Pass	Executes simultaneous four joint Point to Point motion, passing near but not through the specified points.
Pulse	Moves the robot to a position defined in pulses.
BGo	Executes Point to Point relative motion, in the selected local coordinate system.
BMove	Executes linear interpolation relative motion, in the selected local coordinate system.
TGo	Executes Point to Point relative motion, in the current tool coordinate system.
TMove	Executes linear interpolation relative motion, in the selected tool coordinate system.
Till	Specifies motion stop when input occurs.
TillOn	Returns the current Till status.
!!	Process statements during motion.
Speed	Sets / returns speed for point to point motion commands.
Accel	Sets / returns acceleration and deceleration for point to point motion.
SpeedFactor	Sets / returns speed for point to point motion commands.
Inertia	Specifies or displays the inertia settings for the robot arm.
Weight	Specifies or displays the weight settings for the robot arm.
Arc	Moves the arm using circular interpolation.
Move	Moves the robot using linear interpolation.
SpeedS	Sets / returns speed for linear motion commands.
SpeedR	Sets / returns speed for tool rotation.
AccelR	Sets / returns acceleration and deceleration for tool rotation.
Home	Moves robot to user defined home position.
HomeClr	Clears the home position definition.
HomeSet	Sets user defined home position.
Hordr	Sets motion order for Home command.

Pallet	Defines a pallet or returns a pallet point.
PalletClr	Clears a pallet definition.
Fine	Specifies and displays the positioning error limits. (Unit: pulse)
FineDist	Specifies and displays the positioning error limits. (Unit: mm)
СР	Sets CP (Continuous Path) motion mode.
WaitPos	Waits for robot to decelerate and stop at position before executing the next
	statement while path motion is active.
XY	Returns a point from individual coordinates that can be used in a point
	expression.
PTPBoost	Specifies or displays the acceleration, deceleration and speed algorithmic
	boost parameter for small distance PTP (point to point) motion.
CX	Sets / returns the X axis coordinate of a point.
CY	Sets / returns the Y axis coordinate of a point.
CZ	Sets / returns the Z axis coordinate of a point.
CU	Sets / returns the U axis coordinate of a point.
JTran	Perform a relative move of one joint.
PTran	Perform a relative move of one joint in pulses.
SoftCP	Sets / returns SoftCP motion mode.
Here	Teach a robot point at the current position.
CP_Offset	Sets the offset time to start the subsequent motion command when executing
	CP On.
AvgSpeedClear	Clears and initializes the average of the joint speed.
PeakSpeedClear	Clears and initializes the peak speed for one or more joints.

Input / Output Commands

SPEL Command	Description
On	Turns an output on.
Off	Turns an output off.
Oport	Reads status of one output bit.
Sw	Reads status of input.
In	Reads 8 bits of inputs.
InW	Reads the status of the specified input word port.
InBCD	Reads 8 bits of inputs in BCD format.
Out	Sets / returns 8 bits of outputs.
OutW	Outputs 1 word (16 bit) output data, used for I/O and memory I/O
OpBCD	Simultaneously sets 8 output bits using BCD format.
MemOn	Turns a memory bit on.
MemOff	Turns a memory bit off.
MemSw	Returns status of memory bit.
MemIn	Reads 8 bits of memory I/O.
MemOut	Sets / returns 8 memory bits.
MemInW	Returns the status of the specified memory I/O word port. Each word port contains 16 memory I/O bits.
MemOutW	Simultaneously sets 16 memory I/O bits.
Wait	Wait for condition or time.
TMOut	Sets default time out for Wait statement.
TW	Returns the status of the Wait condition and Wait timer interval.

InReal	Reads an input data of 2 words (32 bits) as a floating-point data (IEEE754 compliant) of 32 bits.
	This command is used for I/O.
OutReal	Output the output data of real value as the floating-point data (IEEE754 compliant) of 32 bits to the output port 2 words (32 bits).
	This command is used for I/O.

# Point Management Commands

SPEL Command	Description
ClearPoints	Clears all point data in memory.
P#	Defines a specified point.
PDef	Returns the definition status of a specified point.
PDel	Deletes specified position data.
PLabel\$	Returns the point label associated with a point number.

# Program Control Commands

SPEL Command	Description
Error	Generates a user error.

For details of each SPEL command, refer to the following: SPEL + Language Reference

# Program Examples (Tutorial)

# Pick and Place (between 2 points)

Pick and Place (between 2 points)

This tutorial describes the basic usage of the program screen through creating a simple program.

Create a simple pick and place (between 2 points) program from an empty program.

Simple pick and place (between 2 points) is a program which moves a workpiece from point A to point B as shown in the figure below.

For example, a part which come out of a processing equipment and placed at point A can be transported to the conveyor at point B.



#### **Operation procedure**

# 1. Tap [Create].

You can create a new program.

EPSON RC+ Express Edition 1.0.0.0			– 🗆 ×
🔏 Virtual	•💻 Motor Safe	eguard EStop E	ror Warning
Robot	Loaded program		
	Program not loaded		
	Load a program or create a new program.		
EPSON	All programs	🗋 Create	👌 Import
The state of the s	Name and description	Update date	and time
13			
Model : T3-401S			
Control device : PC			
M			
🕸 Settings			
🛟 Manual Motion			
Disconnect			
⑦ P Language			

2. When the following screen appears, confirm that [Empty Program] is selected.

6	Create program	-		$\times$
	Select a program template.		(	3
	Empty Program			
	Simple Pick & Place	1		
	3 Simple Palletizing			
	Simple Depallatizing			
	Program Name			
	Program			
	Description			
	ОК	Cano	cel	

**3.** Enter "Program Name" and "Description" then tap the <OK> button. As an example, enter the followings. Program Name: PickandPlace Description: Pick and place (between 2 points)

🚰 Cr	eate program			-		×
Se	ect a program template.				(	0
	Empty Program	^				
	Simple Pick & Place		'	٦		
	Simple Palletizing					
	Cimple Depallatizing	~				
Pro	ogram Name					٦
Pi	ckandPlace					
De	scription					
Pi	ck and place (between 2 points)					
			ОК	Cano	cel	

# 4. Tap [Edit].

You can edit the program.

EPSON RC+ Express Edition 1.0.0.0					- 🗆 ×			
Kirtual		• Motor	Safeguard	EStop Error	Warning			
Robot	Loaded program PickandPlace Pick and place (between 2 points)			🕞 Edit				
EPSON	All programs Name and description			Create	▶ Import			
тз	PickandPlace Pick and place (between 2 points)			5/17/2021 6:34:25 PM	~ <u>:</u>			
Model : T3-401S Connection : Virtual Control device : PC	-							
礅 Settings								
<ul> <li> <sup>+</sup>/<sub>4</sub> Manual Motion         <ul> <li>▲ Disconnect</li> </ul> </li> </ul>								
② S Language								

5. When the following screen appears, tap the "Motor ON" command to add. Motor turns ON.



- 6. Follow the instructions below to configure the motion to move to a picking point and then grip a workpiece.
- (1) Tap the "Pick from" command to add.

A series of operation commands are added.

- (2) Name the destination "Picking point".
- (3) Tap the <Jog & Teach> button. After moving a robot to the destination, tap the <Teach> button.

Operating Robot

🔛 EPS	ON RC+ Express Edition 1.0.0.					- 🗆 X
	Virtual	ckandPlace* Pick and place	(between 2 points)	• <u>—</u> Motor	Safeguard EStop Error	Warning :
	🗸 🍠 Basic	5 0 🖽 🖥	· ت ش ش	클	🖣 Pick from	🥶 ?
	📑 Move To	Undo Redo Save C	ut Copy Paste Delete Skip ᆕ	Settings		
∍	rick from	1 🥳 Moto	r On Low		Fixed point Pallet	
÷	Stace at	Pick f	rom Picking point		Specify the name of the des	tination.
Ħ	Container	3	Move To Approach	Pt.	Picking point Specify the position of the c	destination. You
	∽ '፹ Motor	4	Move To Destinat	ion	or teach them using the Jog	a Teach pane.
	🖅 Motor On	5	S Grip		× 40	00.000 ¥ [mm]
	Motor Off		Duris C		Y	0.000 ¥ [mm]
		•	Wait lime,	0.5	Z	0.000 ¥ [mm]
	∨ ð Hand	7	Move To Departure	Pt.	U	0.000 ~ [deg]
	👵 Grip					Righty ~
	Release				Jog & Teac	h
	∨ 📰 Pallet				[Go here] is to move the rol	bot arm to the
?	Move forward				position specified above.	
»	© Event Log	Start Pause Cont	▶ ■ ▶I nue Stop Step			I/O 3D View

- 7. Follow the instructions below to configure the motion to move to a placing point and then release a workpiece.
- (1) Tap the "Place at" command to add.
- A series of operation commands are added.
- (2) Name the destination "Placing point".
- (3) Tap the <Jog & Teach> button. After moving a robot to the destination, tap the <Teach> button.

Operating Robot

🚰 EPS	ON RC+ Express Edition 1.0.0.0	:	<
4	Virtual	PickandPlace* Pick and place (between 2 points)	
<b>^</b>	✓ ➡ Basic ➡ Move To	5 C III & D III IIII IIII IIII IIII IIII	?
- +	Pick from Pick at	Comparison of the destination.     Comparison of the destination.     Comparison of the destination.     Placing point	
	Container  Motor	R8     ● ✓	
	₩ Motor Off	9 Move To Approach PL 0 Y Y (mm) 10 Move To Destination 2 Z Y (mm)	
	👵 Grip	11     Image: Constraint of the second	
0	✓ ■ Pallet Move forward	13 Cohere] is to move the robot arm to the position specified above.	
»	© Event Log	III         III         III         III         III         III         III         III         IIII         IIII         IIII         IIII         IIII         IIII         IIII         IIII         IIII         IIIII         IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	w

- 8. Follow the instructions below to configure the motion to repeat "Pick from" and "Place at".
- (1) Tap the "Loop" command to add.
- (2) Move the "Pick from" and "Place at" commands which configured in procedures 7 and 8 into the "Loop" command.
- (3) Tap the <+> button in [Loop Count] to specify the number of times to repeat the motion.



# 9. Tap [Start] to check for problems of the robot motion.

Only when in Virtual mode, tap the <3D View> button to display the 3D View window. Executing a Program to Check for Problems



10. Tap the "Motor ON" command in the program to set the [Power] to "High". When there is no problem for the robot motion, set the power to high.



-1-÷

11.

Tap (Settings) to increase the "Speed" and "Accel" of Jump.

🔛 Settings				×
Path Type Set	the speed for each	path types.		
Joint	5	Speed [%]		
📐 Linear	Joint	1 5 20 > >> >>> Slow Mid Fast	100	
		Accel [%]		
	Restore defaults	1 5 20 3 33 Slow Mid Fast	100	
	~	Speed [mm/sec]		
	Linear	120 200 400 > >> Mid Fast	2000	
			ОК	Cancel

12. Tap the <Start> button, and execute the program following the screen instructions. Executing a Program to Check for Problems

Now, you have created the simple pick and place (between 2 points) program. The templates contain a series of commands to create a program. Using the template makes creating a program easier. Creating From a Template

# Pick and Place (between 3 points)

This tutorial describes the procedure of editing an existing program to create a more complex program. Create a pick and place (between 3 points) program based on the program created in [Pick and Place (between 2 points)]. Pick and Place (between 2 points)

Pick and place (between 3 points) is a program which moves a workpiece from point A to point B and waits for a while, then moves to point C as shown in the figure below. For example, places the material which a conveyor carried to point A in a processing equipment at point B. After processing, moves the material to point C.



# **Operation procedure**

1. Tap - [Duplicate] on the program of pick and place (between 2 points).





When another program is loaded, perform the following operations: 1. Tap the pick and place (between 2 points) program.

- 2. Tap (Load) to load the program.
- Enter "Program Name" and "Description" then tap the <OK> button. As an example, enter the followings. Program Name: PickandPlace\_1 Description: Pick and place (between 3 points)



# 3. Tap [Edit].

EPSON RC+ Express Edition 1.0.0.0							×
🔏 Virtual		• <u> </u>	- Safeguard	EStop I	Error	Warning	:
Robot	Loaded program PickandPlace_1			[	≱ Ed	it	
	Pick and place (between 3 points)						
EPSON	All programs			Create		🏝 Import	
	Name and description			Update dat	e and	l time	
	PickandPlace			5/17/2021			
	Pick and place (between 2 points)			6:49:25 PM			
13 2 4 4	PickandPlace_1			5/17/2021		$\sim$	:
Model : T3-401S	Pick and place (between 3 points)			6:49:38 PM			
Connection : Virtual							
Control device : PC							
da c.u.							
2Qs Settings							
🛟 Manual Motion							
<ul> <li>Disconnect</li> </ul>							
⑦ 🚱 Language							

- 4. Follow the instructions below to configure the motion to move to a processing point and then release a workpiece.
- Tap the "Place at" command to add under the "Pick from" command. A series of operation commands which moves a workpiece to the processing point and place it are added.
- (2) Name the destination "Processing point".

(3) Tap the <Jog & Teach> button. After moving a robot to the processing point, tap the <Teach> button. Operating Robot



- 5. Follow the instructions below to configure the motion to move to a processing standby point.
- (1) Tap the "Move to" command to add under the "Place at" command (Processing point).
- (2) Select "Jump" in [Motion].
  - Specify the height of Jump motion as desired.
- (3) Select "Fixed point" in [Destination].
- (4) Name the destination "Processing standby point".
- (5) Tap the <Jog & Teach> button. After moving a robot to the processing standby point, tap the <Teach> button.
  - Operating Robot



- 6. Follow the instructions below to configure the waiting time until the processing is completed.
- (1) Tap the "Wait" command to add under the "Move to" command.
- (2) Tap with the comment field and enter "Waiting for completion".
- (3) Select "Time" in [Wait Target].
- (4) Enter the waiting time until the processing is completed in [Time].

🔛 EPS	ON RC+ Express Edition 1.0.0	10														-		×
	Virtual	Pick	andPlac	:e_1* i	Pick and	place (	betwee	n 3 poi	ints)			- Motor	- Safeguard	EStop	Error	Warning		:
â	Reset		5	ightarrow		Å	Ŋ	Ĉ	Ŵ	1	_		🕑 Wa	it			<b>1</b>	?
-	~ ≺ Logic		Undo		Save	Cut	Сору	Paste	Delete	Skip	Ŧ	Settings	Waitin	g for comp	oletion			
=	Output				<b>39</b> M	otor Or	n			High			[Wait	] waits until	the specifi	ed condit	ions are	e
÷	🕑 Wait			~	<b>د</b> د د د د د د د د د د د د د د د د د د	ор			C	ount, 1			satisf Wait	ied. Target				
	👛 Loop		3		>	-7:	Pick fro	m		Picking	g point		Spec	ify what to	wait (time c			
	🕂 lf		9		• >	-	Place at	t	(	Processing	g point		Č					
	🥵 Comment	•	15		0		Move To	ō		Fixed	d point		► Wait	Time	unuu			
	Quit		16			C	Wait			Tir	me, 1.0	Waiting fo	Spec	ify waiting t	ime. (Unit:			
	🗸 🖂 Dialog		17		>	-	Place at	t		Placing	g point		1.0					
	💌 Ask		23			C	Wait			Tir	me, 0.5							
	Notify			_	_		_	_	_									
	∨ . Log																	
<i>©</i>	Event Log			_			_											
»	Event Log		Start	Pa	use (	Continue	Sto	i p	► Step							I/O	зD	View

- 7. Follow the instructions below to configure the motion to move to the processing point.
- (1) Tap the "Pick from" command to add under the "Wait" command.
- (2) Select "Fixed point" in [Destination].
- (3) Name the destination "Processing point".
- (4) Tap the <Jog & Teach> button. After moving a robot to the processing point, tap the <Teach> button.

Manual Motion

🚰 EPS	ON RC+ Express Edition 1.0.0.0													-		$\times$
	Virtual	PickandF	lace_1*	Pick and pla	ce (betwee	en 3 poir	nts)			• <u>—</u> Motor	safeguard	EStop	Error	Warning		:
â	∽ 🖱 Basic	← Uni	do Redo	Save C	ut Copy	Paste	ÎÎÎ Delete	Skip	÷	 Settings	🖣 Pick	from			<u>2</u>	?
3	Move To	1		🖅 Moto	On			High			Comme	ent				_
÷	Place at	2	~	Loop			Cou	int, 1			(Pick fi moves grip h	rom] is a co ; the robot and.	arm to the d	nmand t estinatio	hat on and	
Ħ	Container	3		> <	Pick fro	om		Picking	point	)	Destin	ation				
	<ul><li>✓ 'Ξ Motor</li></ul>	9		> 3	Place a	at	Pro	ocessing	point	)	Select	destination	n type.			
	🕵 Motor On	4 15			Move	То		Fixed	point	)	Fixed	point Pal	J llet			
	😻 Motor Off	16			🕑 Wait			Tim	ne, 1.0	Waiting for	Specif	y the name	of the destir	nation.		
	∨ 弓 Hand	<b>R</b> 17		> 🛃	Pick fr	om	Pro	ocessing	point		Specif	u the positi	on of the de	tination	You	-
	👵 Grip	23		>	Place a	at	(	Placing	point	)	can ec or tea	it the coor th them us	dinate values	directly Teach	, hou below pane.	
	Release				D							Teach:	399	988 ~	(mm	
	∨ III Pallet	29			Wait			lim	ne, 0.5	/		Teach:	2	118 ~	[mm	
?	Move forward										z	Teach:	0	000 ~	(mm	1]
»	Event Log	► Sta	rt P	ause Cont	nue St	op	►I Step							I/O	3D V	niew View

8. Tap the <Start> button to check for problems of the robot motion. Only when in Virtual mode, tap the <3D View> button to display the 3D View window. Executing a Program to Check for Problems

🔛 EPS	ON RC+ Express Edition 1.0.0.	0												-		×
	Virtual	PickandPl	ace_1*	Pick and	place (b	etween 3 p	oints)			• <u>—</u> Motor	Safeguar	d EStop	Error	Warnin	9	:
	🗸 🍠 Basic	5	Ċ		Å	<b>b</b> 🖄	Ŵ			-1-1-	🖣 Pi	ck from			<u></u>	?
	🍠 Move To	Unde		Save	Cut	Copy Paste	Delete	Skip	Ŧ	Settings	Com	ment				
∍	Rick from	1		🦅 Mo	otor On			High			[Pic	k from] is a	combined o	ommand	that	
÷	react at		~	٥	ор		G	ount, 1			mo grip	ves the robo hand.	t arm to th	e destinat		
	Container	3		>	- <b>-</b>	Pick from		Picking	g point		Des	tination				
	✓ 'Ξ Motor	9		>	<b>.</b>	Place at		Processin	g point		Sele	ect destinatio	on type.			
	牙 Motor On	4 15				Nove To		Fixed	d point		Fix	ed point F	allet			
	🔆 Motor Off	16			۳	Vait		Ti	me, 1.0	Waiting fo	Spe	cify the nam	ne of the de	stination.		
	∨ 弓 Hand	Par		>		Pick from	6	Processing	a point		Pr	ocessing po	pint			-11
	👃 Grip					N		Dist			can	edit the coo	tion of the ordinate val	destinatio ues direct	n. You Iy belo	
	release				71 1	nace at		Placing	g point		011	X Teach:	3	99.988	Y (m	
	∨ III Pallet	29			Сv	Vait		Ti	me, 0.5			Y Teach:		2.118	~ (m	
0	Move forward											Z Teach:		0.000	~ (m	
»	Event Log	► Start	P	ause C	I) Continue	Stop	► Step							U/O	зD	View

Now, you have created the pick and place (between 3 points) program.

# Palletizing

This tutorial describes the basic usage of the program screen through creating a simple program.

Create a palletizing program from an empty program.

Palletizing is a program which conveys a workpiece from point to pallet. Define the order of the conveying. The program works to convey workpieces in the defined order.



# **Operation procedure**

1. Tap [Create].

BPSON RC+ Express Edition 1.0.0.0			- 🗆 ×
Kirtual	•💻 🛛 Motor Safe	eguard EStop Error Wa	
Robot	Loaded program Program not loaded Load a program or create a new program. All programs Name and description	Create Update date and time	Import 2
Model : T3-401S Connection : Virtual Control device : PC			
<ul> <li>Settings</li> <li>Manual Motion</li> <li>Disconnect</li> <li>O E Language</li> </ul>	Push [Create] to create a r		

2. Confirm that [Empty Program] is selected.



**3.** Enter "Program Name" and "Description" then tap the <OK> button. As an example, the followings are entered. Program Name: PointToPallet

Description: Conveying from point to pallet

🔂 Creat	e program			-		×
Sele	ct a program template.					?
D	Empty Program	^				
3	Simple Pick & Place		- L '	۶.		
3	Simple Palletizing			_		
-	Cimple Depallatizing	$\sim$				
Prog	ıram Name					
Poir	ntToPallet					
Desc	ription					
Con	veying from point to pallet					
			ОК	Can	icel	

4. Tap the created program to select. The selected program has blue background.

EPSON RC+ Express Edition 1.0.0.0						- 0	×
🔏 Virtual		Motor	5afeguard	EStop	Error	Warning	:
Robot	Loaded program						
$\frown$	PointToPallet				🖙 Ed	it	
	Conveying from point to pallet						
EPSON	All programs			Creat	te	👌 Impor	t
The second secon	Name and description			Update of	date and	d time	
and the second se	PickandPlace			5/17/202	21		
та	Pick and place (between 2 points)			6:49:25 P	'M		
	Pick and place (between 3 points)			7:01:32 P	2 I PM		
Model : T3-401S	PointToPallet			5/17/202	21		
Connection : Virtual	Conveying from point to pallet			7:06:09 F	PM	~	
Control device : PC							
袋 Settings							
💠 Manual Motion							
▲ Disconnect							
② ④ Language							

# 5. Tap [Edit].

EPSON RC+ Express Edition 1.0.0.0						- 0	×
🔏 Virtual		- Motor	Safeguard	EStop	Error	Warning	:
Robot	Loaded program						_
$\mathbf{\wedge}$	PointToPallet			. [	🛯 🖉 Edi	it	
	Conveying from point to pallet						
EPSON	All programs			Creat	e	👌 Import	
The state of the s	Name and description			Update o	late and	time	
	PickandPlace			5/17/202	1		
в	Pick and place (between 2 points)			6:49:25 P	1		
	Pick and place (between 3 points)			7:01:32 P	M		
Model : I3-401S	PointToPallet			5/17/202	1		:
Connection : Virtual	Conveying from point to pallet			7:06:09 P	M	× L	
Control device : PC							
🛱 Settings							
🛟 Manual Motion							
Disconnect							
(i) Qi Language							

Ø

When another program is loaded, perform the following operations: 1. Tap the point to pallet program.

2. Tap (Load) to load the program.

6. When the editing screen appears, tap to open Pallets screen.



7. Tap the <Create> button.



8. Set the number of cells using <+> and <-> button, then tap the <Next> button. As an example, create a 3×4 pallet.

🔛 EPSO	N RC+ Express Edition 1.0.0	.0						- 1	- ×
Æ	Virtual	Program		• <u>—</u> Motor		EStop	Error	Warning	:
<ul> <li>▲</li> <li>↓</li> <li>↓</li></ul>			Name Pallet1 Rows / Columns Enter the number of rows and columns.					Tormg	
0	Cancel		- 4 + Back (1/3)	] Next	]			Finish	
»								1/O	3D View

9. Turn the motor "ON" to teach the pallet position.



- EPSON RC+ Express Edition 1.0.0.0 × • 8 ▲ Kirtual н Teach the four corner points "A" to "D". â Motor Off On World ∎ Top 0.000 m 0.121 d ÷ Ħ <u>^</u> 🕑 Teach P Point Y(mm) Z(mm) U(deg) X(mm) 300.000 100.000 0.000 0.000 А 100.000 300.000 300.000 0.000 0.000 0.000 0.000 0.000 0.000 100.000 B C D ð 100.000 300.000 50.0 mm/s Go here (2/3) ? Cancel Back Next .... »
- **10.** With a workpiece placed on the pallet, move the robot to the position of point A. Manual Motion

# **11.** Tap the <Teach> button.





You can edit each coordinate value (X, Y, U, Z) directly.

12. Repeat the procedures 11 and 12 to teach all the 4 points and tap the <Next> button.



**13.** Select the [Begin] point of the palletizing and [Direction] from the point. Now, you have created a pallet.



- 14. Follow the instructions below to add the "Motor ON" and "Loop" commands. Create a pick and place (between 2 points) program.
- (1) Return to the program screen.
- (2) Add the "Motor ON" and "Loop" commands.
- (3) Select "Infinite" in the property of the "Loop" command.



- 15. Follow the instructions below to add the "Pick from" command above the "Wait" command.
- (1) Tap the "Pick from" command to add.
- (2) Select "Fixed point" in [Destination].
- (3) Name the destination "Picking point".



**16.** Tap the <Jog & Teach> button to move the robot to the picking point. Manual Motion



**17.** Tap the <Teach> button.



# 18. Follow the instructions below to add the "Place at" command and configure.

- (1) Tap the "Place at" command to add.
- (2) Select "Pallet" in [Destination].
- (3) Select the pallet created in the procedure 14.



- 19. Follow the instructions below to add the "Move forward" command and configure.
- (1) Tap the "Move forward" command to add.
- (2) Select the pallet created in the procedure 14 in [Select a pallet.].

🔂 EPS	ON RC+ Express Edition 1.0.0.		- 🗆 X
	Virtual	PointToPallet* Conveying from point to pallet	Safeguard EStop Error Warning
	📑 Move To	· う ご 凹 🌡 🗅 📋 📖 🛛 🏦	🖓 Move forward 🛛 🥶 💡
_	<b>Pick from</b>	Undo Redo Save Cut Copy Paste Delete Skip = Settings	[Move forward] moves the current position of the specified pallet to next.
=	🖣 Place at	Motor On	Select a pallet.
÷	Container	2 V Cop Infinite	Select a pallet.
Ð	<ul><li>✓ I Motor</li></ul>	3 > Pick from Fixed point	Pallet1
	🕵 Motor On	9 > Place at Pallet1	Create a new pallet
	🔆 Motor Off	<ul> <li>▲ Is</li> <li>O Move forward</li> </ul>	•
	~ る Hand	16 Wait Time, 0.5	
	👃 Grip		
	Release		
	∨ 🏭 Pallet		
	Move forward		
?	Reset		
»	ত Event Log	III         III         III         III         III         III         III         IIII         IIII         IIIII         IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	VO 3D View

# 20. Tap [Start] to execute the program.

When in Virtual mode, open 3D View and tap [Start]. Executing a Program to Check for Problems



Now, you have created the palletizing program to convey from point to pallet. The templates contain a series of commands to create a program. Using the template makes creating a program easier. Creating From a Template

# Sorting Non-defective/Defective Products

This tutorial describes the procedure of connecting with an external device using the input/output function of robot to create a more complex program. Create a program to sort non-defective/defective products based on the program created in [Pick and Place (between 3 points)].

Simple pick and place (between 3 points)

To use an inspection machine, it is necessary to connect to the controller. As an example, the connection specifications of the inspection machine are as follows.

Bit	Allocation
Input Bit 8	Done
Input Bit 9	Results
Output Bit 10	Start/Stop

# **Operation procedure**

1. Select - [Duplicate] on the program of pick and place (between 3 points). Duplicate a base program.

EPSON RC+ Express Edition 1.0.0.0						- 0	×
🔏 Virtual		Motor	5afeguard	EStop	Error	Warning	:
Robot	Loaded program						
	PointToPallet				C Ed	lit	
	Conveying from point to pallet						
EPSON	All programs			Creat	e	👌 Import	
Y mart.	Name and description			Update o	late and	d time	
encourse and a second second second	PickandPlace			5/17/202	1		
тз	Pick and place (between 2 points)			5/17/202	1		
NA 11 TO 1015	Pick and place (between 3 points)			7:01:32 P	M	Load	:
Model : 13-4015	PointToPallet			5/17/202	\Lambda Rei	name	
Control device : PC	Conveying from point to pallet			7:23:00	<b>โำ้ D</b> u	plicate	
control device . I c					L =		
🛱 Settings					i De	iete	
					🛃 Exp	port	
🐨 Manual Motion					(i) De	tailed Info	
<ul> <li>Disconnect</li> </ul>							
② Q Language							

2. Enter a name and description of program and tap the <OK> button.

🔀 Copy program		-	□ ×
Program Name			0
PickandPlace_2			
Description			
Sorting Non-defective/Defective Products			
	ОК	Cano	cel

3. Tap [Edit].



When another program is loaded, perform the following operations: 1. Tap the pick and place (between 2 points) program.

2. Tap (Load) to load the program.

4. Tap [I/O].

Ø

Label the I/O numbers connected to the inspection machine.

EPSC	ON RC+ Express Edition 1.0.0.	10														-		×
Æ	Virtual	Pick	andPlac	e_1 Pi	ck and p	olace (b	oetweer	h 3 poir	nts)			• <u></u> Motor	safeguard	EStop	Error	Warning	3	:
	🗸 🍠 Basic		5	ightarrow		Å	D	Ĉ	Ŵ			-1-1-	🐼 Mot	or On			<b>1</b>	?
-	C Move To		Undo	Redo	Save	Cut	Сору	Paste	Delete	Skip	Ŧ	Settings	[Moto ready	r On] turns to operate	s on the m	otors to g	et the r	obot
=	Pick from				See Ma	stor U	n			High			Power					
÷	<table-cell-rows> Place at</table-cell-rows>		2	~	٥Ľ	ор			C	ount, 1			Select	: power mo High				
	时 Container		3		>	7	Pick fro	m		Picking	g point		Ō	.ow				
	∽ '로 Motor		9		>	-	Place a	t	ſ	Processing	g point							
	🕵 Motor On	•	15			3	Move T	ío		Fixed	d point		•					
	🔆 Motor Off		16			C	Wait			Tir	me, 1.0	Waiting fo	r					
	∨ 3 Hand		17		>		Pick fro	om	6	Processing	a point							
	👵 Grip				>		Place a			Placing	a point							
	Release					4.												
	∨ 👪 Pallet		29			C	Wait			Tir	me, 0.5							
0	Move forward																	
»	ত Event Log		► Start	Pa	use (	I> Iontinue	Sto	<b>o</b> p	►I Step							I/O	3D	Ì∎¶ View

5. Tap the <Edit labels> button.

63	٧O	- Virtual I/O								-	>	<
Fi	ilter	r : All Categorie	s	~							Edit labels	]
In	put	Bits					Outp	ut Bits				
E	Bit	Туре	State		Label		Bit	Туре	State	Lab	el	
	0	Standard Inputs	5	Start		^	0	Standard Outputs	•	Ready	☆	^
	1	Standard Inputs	5	SelProg1			1	Standard Outputs		Running	☆	
	2	Standard Inputs	5	SelProg2	$\Diamond$		2	Standard Outputs		Paused	☆	
	3	Standard Inputs	5	SelProg4			3	Standard Outputs		Error	☆	
	4	Standard Inputs	5	Stop			4	Standard Outputs	5		☆	
	5	Standard Inputs	5	Pause			5	Standard Outputs		SafeguardOn	☆	
	6	Standard Inputs		Continue	☆	~	6	Standard Outputs	•	SError	$\overleftrightarrow$	

6. Enter the following and tap the <Done> button.

Bit	Allocation
Input Bit 8	Done
Input Bit 9	Results
Output Bit 10	Start/Stop

记 I/O	- Virtual I/O									-	
Filte	r: All Categor								Restore		Done
Input	Bits					Outp	ut Bits				
Bit	Туре	State		Label		Bit	Туре	State	L	abel	
6	Standard Inputs	5	Continue	☆	^	8	Standard Outputs	•	EStopOff		☆
7	Standard Inputs	5	Reset			9	Standard Outputs	5			☆
8	Standard Inputs	5	Done	☆		10	Standard Outputs	5	Start/Stop		☆
9	Standard Inputs	5	Results			11	Standard Outputs	5			☆
10	Standard Inputs	5		☆		12	Standard Outputs	5			☆
11	Standard Inputs	5		\$		13	Standard Outputs	5			☆
12	Standard Inputs	5		\$		14	Standard Outputs	5			☆
					$\sim$						

7. Follow the instructions below to add the "Output" command and configure. Program the input/output with the inspection machine. (1) Tap the "Output" command to add under the "Move to" command.

After a robot moved to the inspection standby position, start/stop the inspection machine.

- (2) Select "Output #10 Start/Stop" in [Output Target].
- (3) Select "ON" in [Signal].
- (4) Tap , then enter "Start inspection" in the comment field.



# 8. Follow the instructions below to add the second "Output" command and configure.

- (1) Tap the "Output" command to add under the "Wait" command.
- (2) Select "Output #10 Start/Stop" in [Output Target].
- (3) Select "OFF" in [Signal].
- (4) Enter "Stop inspection" in the comment field.



- 9. Follow the instructions to change the setting to wait for an input from the inspection machine.
- (1) Tap the "Wait" command on the program.
- (2) Select "Condition" in [Wait Target].
- (3) Select "If Input #8 Done equals ON then" in [Condition].


- 10. Follow the instructions below to configure conditional branch to check the inspection results and then sort the placing point.
  - Configure the program to change the action according to inspection results.
- (1) Tap the "If" command to add under the "Pick from" command.
- (2) In [Condition], tap the <Add Condition> button to select "If Input #9 Results equals ON then".
- (3) Enter "Check the inspection results and sort" in the comment field.



#### 11. Follow the instructions below to configure the program of sorting nondefective/defective products.

- (1) Move the "Place at" command (placing point) into the "Then" command.
- (2) Name the destination "Placing point (non-defective products)".



### 12. Follow the instructions below to configure the "Then" command.

(1) Tap the "Event Log" command to add under the "Place at" command (placing point (non-defective products)).

In the event log, the records of sorting non-defective/defective products are logged.

(2) Enter "OK" in [Content].



### 13. Follow the instructions below to configure the "Else" command.

- (1) Copy the "Place at" commands created in the procedure 11 and paste into the "Else" command.
- (2) Rename the destination "Placing point (defective products)".
- (3) Tap the <Jog & Teach> button. After moving a robot to the placing point (defective products), tap the <Teach> button. Manual Motion



- 14. Follow the instructions below to add the "Event Log" command and configure.
- (1) Tap the "Event Log" command to add under the "Place at" command (placing point (defective products)).
- (2) Enter "NG" in [Content].



**15.** Tap [Start] to check for problems of the robot motion. When in Virtual mode, open 3D View and tap [Start]. Executing a Program to Check for Problems

🔛 EPSC	ON RC+ Express Edition 1.0.0.	.0														-		×
Æ	Virtual	Picka	ndPlac	:e_2*	Sorting N	lon-de	fective,	/Defec	tive Pro	ducts		• Motor	Safeguar	d EStop	Error	Warning		:
	∨ ≺ Logic		5	ightarrow		Å	Ŋ	Ĉ	Ŵ			-1-1-	🖳 Ev	ent Log			<u>1</u>	?
_	Output		Undo 15	Redo	Save	Cut ve To	Сору	Paste	Fixed	Skip point		Settings	Com	ment				
_≡ ⊥	🕑 Wait		16		🕑 Wa	it			Tin	ne, 1.0	Waitin	g for completi	Ev the	ent Log] writ	es the spec	ified mess	age int	
<b>Ŧ</b>	👛 Loop		17	>	Pic	k from		Pro	cessing	point			Cor	tent				
	🕂 lf			$\sim$	-₹ If				Result	s=ON	Check	the inspection	Inp	ut the messa	ige to write	into the e	event lo	g.
	🚅 Comment		24		~	<b>D</b> da T	hen						N	G				
	Quit	۹.											•					
	🗸 🖂 Dialog					,	4	Place	at	Pla	cing poi	nt (non						
	💌 Ask		31				9	Even	t Log			ОК						
	ok Notify		32		~	e de la compañía de l	lse											
	∨ 💌 Log		33			>		Place	at	Plac	ing poir	nt (defe						
	Event Log		-					1										
0	> SPEL Advanced		39					, Even	t Log			NG						
»	Event Log		► Start	Pi	ause C	I) Continue	St	op	► Step							i/o	зD	View

Now, you have created a program to sort non-defective/defective products.

# **Pallet Settings**

# **Pallet Configuration**

In pallets tab, you can create (max.16 pallets), edit, delete pallet. The pallets created in this tab, it is possible to select at program tab when using pallet command.



To display pallet tab, tap Home – [Edit] and go to the program tab and tap left of the screen.



# **Creating New Pallet**

Describes how to create new pallet.

### **Operation procedure**

1. Tap the <Create> button.



### 2. Enter "Name".



3. Enter the number of rows and columns with +/- button and tap the <Next> button.

🔛 EPSON	RC+ Express Edition 1.0.0.0	)			-	0 X
Æ	Virtual	Program		EStop E	rror Warning	:
			Name			
			Pallet1			
≣			Rows / Columns Enter the number of rows and columns.			
=			+ 3 -			
			- 4 +			
0	Cancel		Back (1/3) Next		Finish	
»					1/0	3D View

4. Turn the motor "ON".

Motor



### 5. Move the robot to the point A.

You can also enter the X, Y, Z, and U point manually. Operating Robot



### 6. Tap the <Teach> button.



7. Repeat step 6, 7 and teach other points (B, C, D) and tap the <Next> button.



8. Select beginning point and direction on the pallet.



# 9. Tap the **<**Finish**>** button.



# **Remote Control**

# Remote I/O in This Software

Remote control is a function that uses I/O Input/Output or Ethernet (TCP/IP) to control the start/stop of a program from an external device such as a PLC. Following are supported control devices of this software.

- PC

- Remote I/O
- Remote Ethernet

For setting of control device, refer to the following: Controller Configuration

# Using Remote I/O

### **Operation procedure**

1. Tap Home - [Settings] to display setting. Starting set up for Remote I/O.

EPSON RC+ Express Edition 1.0.0.0			- 🗆 ×
👫 Virtual	• <u></u> Motor Safeguard	EStop Error	Warning :
Robot	Loaded program		
	Program not loaded Load a program or create a new program.		
	All programs	Create	🏝 Import
The state of the s	Name and description	Update date and	time
T3 Model : T3-401S			
Connection : Virtual Control device : PC			
🕸 Settings	Push [Create] to create a new		
🗘 Manual Motion			
▲ Disconnect			
⑦ 🐼 Language			

2. Choose "Remote I/O" at [System Settings] - [Controller Configuration] - [Controller device change].

Controller Configuration

🔛 EPSC	N RC+ Express Edition 1.0.0	1.0								-		×
Æ	Virtual	Settings :	> System settings			• <u></u> Motor	Safeguard	EStop	Error	Warning		:
÷	Controller		Change the controlle	er's network addres	ses and select th	e control	device.					
r <del>4</del>	Inputs / Outputs		Controller device change									
<del>R</del>	Remote Control		O PC									
%	Motion Range		Remote I/O									
			Remote RS232									
			• ТРЗ									
			Network address change									
			IP Address:	127.0.0.1								
			Subnet mask:	255.255.255.0								
			Default gateway:	127.0.0.2								
0			Connection Password:	Changed								
»										Apply and	d Resta	art

3. Choose Input bit of "Start" and "SelProg1" at [Remote Control] tab - [Remote Input/Output], and tap the <Apply and Restart> button.

For the details of Remote Input/Output, see the following below.

EPSON RC+User's Guide - 12.1 Remote I/O

🔂 EPSO	N RC+ Express Edition 1.0.0	LO						- 0
Æ	Virtual	Settings > Sy	stem settings			Motor Safeguard ES	Stop Error Wa	ning :
÷	Controller Configuration		View and change the bit Change the Remote Eth	t assignment of ernet settings.	Remote I/O.			
₽¥,	Inputs / Outputs	Rei	note Input/Output					
₽	Remote Control		Export settings		Import settings			
%	Motion Range		Input Signal	Inpu	t Bits	Output Signal	Output Bit	s
			Start	0	~	Ready	0	v ^
			SelProg1	1	~	Running	1	~
			SelProg2	2	~	Paused	2	~
			SelProg4	3	~	Error	3	~
			SelProg8	Not used	~	EStopOn	Not used	~
			SelProg16	Not used	~	EStopOff	8	~
			SelProg32	Not used	~	SafeguardOn	5	~
					~			~
			Def	ault		De	efault	
(?)								
»							App	y and Resta

### 4. Follow the procedure below.

Starting operate program with Remote I/O

When connected to external equipment such as PLC: After set the Input bit of "SelProg1" to "ON" from the external equipment, and then set the Input bit of "Start" to "ON" to execute the program.

When using Virtual Mode: Follow the step 5 to 6.

5. Go to the Program edit screen, and tap [Remote I/O].



6. When following appeared, adjust the speed limitation and tap the <Run> button. The program waits for execution once.

When you check Force Low Power Mode, the motor will be low power and the speed will be slow regardless of the speed limitation value.

🔀 EPSON RC+ Express Edition	×
Speed Limitation	
	<b>100</b> %
Force Low Power Mode	
Make sure the surroundings of the robot are safe	before starting the proc
Run	Cancel

7. Tap [I/O].

63	PSON RC+ Express Edition 1.0.0.	0						- 0 ×
E	Kirtual	Program*				• <u>—</u> Motor	Safeguard EStop Error	Marning :
<i>(</i> )	Motor Off	5	< ≞ .‱	<b>b</b> 🖞	::::: ش	1	😂 Loop	🥶 ?
	イ る Hand	Undo F	Redo Save Cut	Copy Paste	Delete Skip	⇒ Settings	[Loop] repeats the comm	ands placed inside it.
1	👵 Grip	1	Motor Or	1	Low		Select the continuation co	ondition of the loop
÷	Release	2 🔇	Move To		Point1		<u></u>	¢
Ŧ	V III Pallet	<b>Fils</b>	> 🖄 Loop		Infinite		Count Condition	Infinite
	Move forward						Add Exit If	
	Reset	•					immediately.	mai breaks the loop
	∨ ≺ Logic							
	Output							
	🕑 Wait							
	👛 Loop							
	🔫 if							
<u>ې</u>	🚅 Comment							
»	Event Log	Remote I/O	Pause Continue	Stop	► Step			I/O 3D View

8. Set the Input bit of "selprog1" to "ON" then set the Input bit of "Start" to "ON". The program executed.

<b>i</b> /0	- Virtual I/O								-	
Filte	r: All Categorie	s	~							Edit labels
nput	Bits				1	Outp	ut Bits			
Bit	Туре	State		Label		Bit	Туре	State	Labe	d
0	Standard Inputs	٢	Start	☆	<	0	Standard Outputs	•	Ready	☆
1	Standard Inputs	٢	SelProg1	☆		1	Standard Outputs		Running	☆
2	Standard Inputs	5	SelProg2	☆		2	Standard Outputs		Paused	☆
3	Standard Inputs	5	SelProg4	☆		3	Standard Outputs		Error	☆
4	Standard Inputs	5	Stop	☆		4	Standard Outputs	5		☆
5	Standard Inputs	5	Pause	☆		5	Standard Outputs		SafeguardOn	☆
6	Standard Inputs	5	Continue	☆		6	Standard Outputs		SError	☆
		-			$\sim$					

# Using Remote Ethernet

Remote Ethernet is to operate a program using remote command from an external device such as PLC connected via Ethernet (TCP/IP).

### **Operation procedure**

1. Tap Home - [Settings] to display setting. Starting set up for Remote Ethernet.

EPSON RC+ Express Edition 1.0.0.0				- 0	×
🔏 Virtual			EStop Error	Warning	:
Robot	Loaded program Program not loaded Load a program or create a new program.				
EPSON .	All programs	[	Create	🏝 Import	
The second s	Name and description	U	Jpdate date an	d time	
T3 Model : T3-4015 Connection : Virtual Control device : PC					
🛱 Settings		te a new pro			
Manual Motion     Disconnect     Disconnect					

2. Choose "Remote Ethernet" at [System Settings] - [Controller Configuration] -[Controller device change]. Controller Configuration

🔛 EPS	ON RC+ Express Edition 1.0.0	0.0							-	• ×
Æ	Virtual	Setting	s > System settings		• <u>—</u> Motor	Safeguard	EStop	Error	Warning	:
÷	* Controller Configuration		Change the controlle	r's network addresses and	select the control	device.				
F4	Inputs / Outputs		Controller device change							
<b>₽</b>	Remote Control		PC							
%	Motion Range		✓ Remote Ethernet	]						
			Remote RS232	-						
			• ТРЗ							
			Network address change							
			IP Address:	127.0.0.1						
			Subnet mask:	255.255.255.0						
			Default gateway:	127.0.0.2						
0			Connection Password:	Changed						
»									Apply and	Restart

# 3. Fill each item at [Remote Control] tab - [Remote Ethernet], and tap the <Apply and Restart>.

For the details of Remote Ethernet, see the following below. EPSON RC+ User's Guide - 12.1 Remote I/O



- 4. Follow the steps below and operate program with Remote Ethernet. When connected to external equipment such as PLC: Executes program to send signals to the robot via Ethernet from external device. When using Virtual Mode: Follow the step 5 to 6.
- 5. Go to the Program edit screen, and tap [Ethernet].



### 6. When following appeared, adjust the speed limitation and tap the <Run> button. The program waits for execution once.

When you check Force Low Power Mode, the motor will be low power and the speed will be slow regardless of the speed limitation value.

EPSON RC+ Express Edition	×
Speed Limitation	100 %
Force Low Power Mode	
Make sure the surroundings of the robot are safe before	starting the proc
Run	Cancel

7. Specify "1" to the parameter (function number) from external device such as PLC, and execute "Start" command. The program executed.

# Setting I/O Functions

### I/O Functions

I/O is a function which communicate with external device via Input/Output terminals installed on the robot controller.

Following are supported I/O devices.

Item	Explanation
Standard I/O	Standard digital I/O of the controller.
Hand I/O (Only T	A Standard digital I/O only for T Series. This is displayed only when
Series)	Hand I/O is set in robot controller.
Extended I/O	A I/O board added to the controller to extend standard I/O. It is
	possible to add the board which has 24 Inputs and 16 Outputs. T
	Series manipulator can not be added the boards.
Fieldbus Slave I/O	A option to add Fieldbus Slave function to the controller. When
	using LS-B series, it is possible to add one board that support
	Fieldbus Slave. When using T Series, it is possible to add one
	module that support Fieldbus Slave.
	For the details, see below.
	Robot Controller Option Fieldbus I/O

I/O number assignment is following below.

### -T Series

I/O	Input Bit No.	Output Bit No.
Standard I/O	0~17	0~11
Hand I/O	18 ~ 23	12 ~ 15
Fieldbus I/O	512 ~ 2559	512 ~ 2559

### -LS-B Series

I/O	Input Bit No.	Output Bit No.
Standard I/O	0~23	0~15
Extended I/O(1 st)	64 ~ 87	64 ~ 79
Extended I/O(2 nd)	96~119	96~111
Fieldbus I/O	512 ~ 2559	512 ~ 2559

For I/O wiring arrangement, refer to the following: *Manipulator Manual* 

For setting, adding and checking of Fieldbus, refer to the following: *Robot Controller Option Fieldbus I/O* 

# Checking for the I/O setting

At Inputs/Outputs, it is possible to check the status of I/O that installed on the controller. When connecting to Virtual Robot, it is possible to change all status of Input Bit and Output Bit at I/O monitor.

To display the Inputs/Outputs screen, tap Home - [Settings] to appear the robot setting screen, and then tap [System Settings] - [Inputs / Outputs].

🚰 EPS	ON RC+ Express Edition 1.0.0.0						– 🗆 ×
	Virtual	Settings > Syst	em settings		📃 🗖 Motor Safegua	rd EStop Error V	A i
<del>ب</del> ⊈	Controller Configuration	Inpu	View the controller's settir	igs of the standard	d I/O, extended I/O, and fieldb	us.	
_			Туре	Installed	Inputs	Outputs	
H	Remote Control	_	Standard	Virtual	0 - 23	0 - 15	
2	Motion Range		Standard R-I/O	Virtual	24 - 25		
			Drive Unit 1	Virtual	32 - 55	32 - 47	
			Drive Unit 1 R-I/O	Virtual	56 - 57		
			Extended Board 1	Virtual	64 - 87	64 - 79	
			Extended Board 2	Virtual	96 - 119	96 - 111	
			Extended Board 3	Virtual	128 - 151	128 - 143	
		Field	bus Slave	10.1			
?			Fieldbus Type:	Virtual			
			Innut Rutec	256	×		
»							Apply

# Setting for the I/O

It is possible to check I/O status or change settings at I/O monitor.

记 i/o	- Virtual I/O								- 0	×
Filte	r: All Categor	ies	Y						Edit labe	els
Input	t Bits				Outp	ut Bits				
Bit	Туре	State		Label	Bit	Туре	State	Lal	pel	
0	Standard Inputs	5	Start	$\hat{\Sigma}$	0	Standard Outputs	•	Ready	2	^ ۲
1	Standard Inputs	5	SelProg1	$\overleftrightarrow$	1	Standard Outputs	•	Running	2	3
2	Standard Inputs	5	SelProg2	$\stackrel{\frown}{\simeq}$	2	Standard Outputs		Paused	2	ζ
3	Standard Inputs	5	SelProg4	$\Diamond$	3	Standard Outputs		Error	2	ζ
4	Standard Inputs	5	Stop	$\stackrel{\frown}{\simeq}$	4	Standard Outputs	5		2	ζ
5	Standard Inputs	5	Pause	$\Diamond$	5	Standard Outputs		SafeguardOn	2	3
6	Standard Inputs	5	Continue	$\stackrel{\frown}{\simeq}$	6	Standard Outputs		SError	22	3

I/O

To display I/O monitor, tap the program edit screen or the Jog panel -

🔁 EPSC	ON RC+ Express Edition 1.0.0	0 - 0	×
2	Virtual	Program* 📜 🔲 🗢 ጰ 🛦	:
	🗠 🍠 Basic	5 ご 凹 み 白 白 前 💷 👫 🤗 Drag & drop commands here.	
_	📑 Move To	Undo Redo Save Cut Copy Paste Delete Skip ∓ Settings	
=	Pick from	1 Drig & drop commands here.	
÷	<table-cell-rows> Place at</table-cell-rows>		
	📑 Container		
	∨ 👤 Motor		
	蠌 Motor On	▲	
	🔆 Motor Off		
	∨ 🕏 Hand		
	👵 Grip		
	Release		
	∨ 🏭 Pallet		
?	Move forward		
»	© Event Log	Ethermet Pause Continue Stop VO 30	View

I/O states are shown like following below.

Item	Description
ON, cannot be changed	You can not change status at I/O monitor.
OFF, cannot be changed	You can not change status at I/O monitor.
ON, can be changed	You can change status at I/O monitor.
OFF, can be changed	You can change status at I/O monitor.
5	



You can not change I/O status under the following conditions: - In emergency stop - Output bits used in Remote I/O.

Tap the <Edit labels> button to change labels.

🔂 I/O	- Virtual I/O									- 🗆 ×	_
Filte	r : All Categori	es	~							Edit labels	
Input	t Bits				ç	Dutp	ut Bits				
Bit	Туре	State		Label		Bit	Туре	State	Lab	el	
0	Standard Inputs	5	Start	$\Diamond$	^	0	Standard Outputs	٠	Ready		~
1	Standard Inputs	5	SelProg1	☆		1	Standard Outputs		Running	$\overrightarrow{\mathbf{x}}$	
2	Standard Inputs	5	SelProg2	$\overleftrightarrow$		2	Standard Outputs		Paused	\$	
3	Standard Inputs	5	SelProg4	$\overleftrightarrow$		3	Standard Outputs		Error	$\overrightarrow{x}$	
4	Standard Inputs	5	Stop	$\Diamond$		4	Standard Outputs	5		$\overrightarrow{x}$	
5	Standard Inputs	5	Pause	$\overleftrightarrow$		5	Standard Outputs		SafeguardOn	☆	
6	Standard Inputs	5	Continue	$\overleftrightarrow$		6	Standard Outputs		SError	☆	

It is possible to name labels whatever you like. However, label status information is not transferred when the program is exported to RC+.
You can not edit bits used in Remote I/O or Hand I/O.



# **More Functions**

# **Registering to Custom Template**

Custom template is to register the program that created by user as a template. It is possible to register a program exported as a custom template.

#### Steps

- 1. Export the program you want to register as a custom template. Export
- 2. Tap Home [Create].

EPSON RC+ Express Edition 1.0.0.0				- 🗆 ×
Kirtual		• <u>—</u>	rd EStop Erro	Warning E
Robot	Loaded program			
J.A.	Program_1			Edit
EPSON	All programs		🗋 Create	👌 Import
The second secon	Name and description		Update date a	nd time
	Program		5/17/2021 2:15:05 PM	
T3	Program_1		5/17/2021 4:39:47 PM	<ul> <li>✓ 1</li> </ul>
Connection : Virtual Control device : PC				
፟ Settings				
+ → Manual Motion				
▲ Disconnect				
⑦ 🖗 Language				

3. Select [Import], and tap the <Browse> button and specify the saving destination of exported data.



4. Enter program name and description and tap the <OK> button. When not entering program name, it is registered as "Custom" or "Custom\_\* (number)".

						7
强 Create	program			-		
Select	a program template.				(?)	
3	Simple Depalletizing	Template	data path			
D	Custom			Bro	wse	
2	Import	Specify the imported.	e folder to be	C	ЭК	
Progr	am Name					
Prog	ram_2					
Descr	iption					
				C		
			OK	Canc	.ei	
Editi Selec	ng custom template t custom template and tap		to cha	inge the	e name	and edi <sup>1</sup>
upio	24 characters.					
Delet	ing custom template	廁				
Selec	t custom template and tap	-	to dele	te them	1.	

Ø

K

# Export / Import Program

# Export

Exporting is to extract program data from robot and saving it on PC. The saved data can be imported to robot when you needed.

#### Steps

1. Select the program to export and tap, - [Export].

EPSON RC+ Express Edition 1.0.0.0				- 0	×
Kirtual		Motor Safegu	ard EStop Erro	r Warning	•
Robot	Loaded program				
J.A.	Program			Edit	
EPSON	All programs		Create	👌 Import	
The second secon	Name and description		Update date a	and time	
	Program		5/17/2021 2:15:05 P <u>M</u>	✓ :	
T3			A F	Rename	
Model : T3-401S			<b>C</b> ) (	Duplicate	
Connection : Virtual				Delete	
Control device : PC				woort	1
贷 Settings					
+ Manual Motion			U l	Jetailed Info	
Disconnect					
② Q3 Language					

2. Tap the <Reference> button and specify the saving destination of the program you want to export and tap the <OK> button.

Exporting a program			×
Destination folder			_
CRUSSES BUSISH FORCUMEN	a	Reference	
○ Export as an RC+ project	ОК	Cancel	



Check in the check box of "Export as an RC + project" when using the program on

RC+. Exporting Program to RC+

### Import

It is to import the exported program to the robot.

If the robot when the program was created is different from the connected robot, a warning

is given. To check the robot for which the program was created, tap - [Detailed Info]. If you edit the program and then save it, the warning disappears because it changes to the robot you are currently connected to.

Steps

1. Tap the <Import> button.

EPSON RC+ Express Edition 1.0.0.0				- 0	×
Kirtual	•  Moto	Safeguard	EStop Err	or Warning	:
Robot	Loaded program				
I.A.	Program not loaded Load a program or create a new program.			_	
EPSON .	All programs		🗋 Create	👌 Impor	
	Name and description		Update date	and time	
T3 Model : T3-4015 Connection : Virtual Control device : PC					
段 Settings		ate a new pr			
Manual Motion     Disconnect					
⑦ 🖓 Language					

2. Tap the <Browse> button and specify the saving destination of the program you want to import and tap the <OK> button.



If a program with the same name has already existed, you can overwrite it and import it. In case yoou need to keep the existing prgram, change the name of the program and then import.

# Communicating with RC+

# Exporting Program to RC+

It is possible to export a program created in this software to RC+ and edit it. Check in the check box of "Export as an RC+ project" when exporting a program. It is possible to export a program in a form that can be used with RC +. Export

🔀 Exporting a program			Х
Destination folder			
C:¥EpsonRC70¥projects		Reference	
Export as an RC+ project	ОК	Cancel	



You can not export when there are unset items in the program and it cannot be converted to a SPEL program.

# **Trouble Shooting**

# When the icon at the top of the screen lights up

The status icons on the upper part of the screen

lights up when an error

occurred or informing you a message.

How to reset:

Tap the icon to check the message and how to reset it. For the meaning of each icon, see the following below. Status

# Powered off accidentally while editing program

When powered off accidentally while editing program, [Program recovery] is displayed at Home screen.

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#### Solution:

If you want to recover the program, tap "Recover", and if you don't need the program, tap "Delete".

If you want to save the data, tap "Save to local".



### Failed in Connecting to Robot

Failed in connecting to robot for any of the following reasons:

- No robot is added to the controller.

Solution: Register a robot at RC+. You can not register a robot by this software. RC+ User's Guide 10.1.1 Adding a standard robot

- Controller is executing tasks.

Solution: If you are using Remote I/O or Remote Ethernet, stop executing the task. - Controller firmware version is not matching to this software.

Solution: Update your version of the controller firmware.

- The setting of IP address of the network is wrong.

Solution: Check your setting of IP address of the network and set it again. Controller Configuration Check your setting of IP address of the controller and set it again. *EPSON RC+ User's Guide - 14.1.2 IP Address.* 

- Your controller preference is valid in "not to connect to EPSON RC+ Express Edition".

Solution:

Change to invalid at RC+.

EPSON RC+ User's Guide - 5.12.2 [System Configuration] Command (Setup Menu)

# I want operation speed of the robot to move faster

The robot moves slowly for any of the following reasons:

Solution:

If you want to operate the robot faster, change the speed of each path type in [Settings]. If it still does not speed up, the Power mode of the "Motor on" command may be "Low". Change to "High" to speed up.

### [Arm reached the limit of motion range.] message showed up

The message will showed up when you moving robot out of the limit of motion range.

Solution:

When you received this message while operating Jog & Teach or after tapped <Go here>, the settings of position of destination, current position or Range setting may be wrong. Check your those settings.

# Settings

# **Robot Settings**



In the setting tab, you can set of system, hand and maintenance.

A warning is given if the setting is different from the recommended value in system settings. It is possible to change setting to tap the warning.
A warning is given when the recommended replacement period for controller consumable has passed. You can change setting to tap the warning. About Parts Consumption Information

To display setting tab, tap Home - [Settings].

EPSON RC+ Express Edition 1.0.0.0						-		×
Kirtual		• <u>—</u> Motor	Safeguard	EStop	Error	Marning		:
Robot	Loaded program							
I.A.	Program				🕻 Ed	<b>≱</b> Edit		
EPSON	All programs			Creat	e	👌 Imp	ort	
The second se	Name and description	ogram More Seleguard Coo Seleguard Erro Manne : Cogram More Seleguard Coo Seleguard Coo Seleguard IIII ms □ Create b Import description Update date and time S/17/2021 2:15:05 PM						
T3	Program			5/17/202 2:15:05 P	1 M	~		
Model : T3-4015 Connection : Virtual Control device : PC	•							
Ø Settings								
🛟 Manual Motion	C+ Expres Edition 1.000 □ × fritual to Case and the program C case and the program Program All programs All programs Program C case and time Program S/17/2021 2:15:05 PM C case and time Program C case and time C case and time Program C case and time C case and time Program C case and time Program C case and time Program C case and time C							
Disconnect								
② QD Language								

# **System Settings**

### **Controller Configuration**

It is possible to set followings for the Controller.

To display Controller Configuration tab, tap Settings - [System Settings] - [Controller Configuration].

🔛 EPSO	N RC+ Express Edition 1.0.0.0							- 0	x c
Æ	Virtual Set	tings > System settings		• <b></b> Motor	Safeguard	EStop	Error	Warning	:
÷	Controller Configuration	Change the controlle	er's network addresses and se	elect the control	device.				
육	Inputs / Outputs	Controller device change							
<b>₽</b>	Remote Control	✓ PC							
22	Motion Range	Remote I/O     Remote Ethernet     Remote RS232     TP3							
		Network address change							
		IP Address:	127.0.0.1						
		Subnet mask:	255.255.255.0						
		Default gateway:	127.0.0.2						
0		Connection Password:	Changed						
»								Apply	y

### **Controller device change**

Set up the device that control program of start or stop with Auto mode. After changed the device, tap the <Apply> button to reflect the changes. Followings are devices you can select.

Item	Description
PC	Start / End program by USB or PC with Ethernet connection.
Remote I/O	Start / End program from I/O Input of external equipment.
Remote	Start / End program by remote command from external equipment with Ethernet
Ethernet	connection (TCP/IP).

#### Network address change

Set up for controller network.

After changed the device, tap the <Apply> button to reflect the changes. Following are supported devices of this software.

Item	Description
IP Adress	Set up for IP Address of LAN (Ethernet connection) port.
	Set the IP Address on the same subnet as the operating terminal.
Subnet mask	Set up for Subnet mask of LAN (Ethernet connection) port.
	Match the subnet mask with the subnet mask used in the network.
Default gateway	Set up for the default gateway of LAN (Ethernet connection) port.
	This is needed when accessing to controller from outside of local network.
Connection	When using global IP address in controller, a connection password (more than 8
Password	characters) setting is needed.

### **Environment setting**

You can check controller environment setting. In default setting, following is already checked:

To reset to default value, tap the <Default> button.

- Outputs off during emergency stop
- Walk stops for output commands
- Include project files when status exported
- Auto safeguard position recovery
- Independent mode
- Clear globals when MainXX function started

For details of each item, refer to the following: *EPSON RC+ User's Guide* 

### Inputs/ Outputs

It is possible to check I/O number assignment that connected to the controller and change settings of Fieldbus Slave.

To display the Inputs/Outputs tab, tap Settings - [System Settings] - [Inputs/Outputs].

🚰 EPS	DN RC+ Express Edition 1.0.0.	.0					-	o ×
Â	Virtual	Settings > Sys	stem settings		· <u>—</u> Motor Safeguar	d EStop Error	Warning	:
←	Controller Configuration		View the controller's setting	s of the stand	ard I/O, extended I/O, and fieldbu	IS.		
육	Inputs / Outputs	Inp	uts/Outputs					
<b></b>	Remote Control		Туре	Installed	Inputs	Outputs		
হ্য ৯	Motion Range		Standard	Virtual	0 - 23	0 - 15		
			Standard R-I/O	Virtual	24 - 25			
			Drive Unit 1	Virtual	32 - 55	32 - 47		
			Drive Unit 1 R-I/O	Virtual	56 - 57			
			Extended Board 1	Virtual	64 - 87	64 - 79		
			Extended Board 2	Virtual	96 - 119	96 - 111		
			Extended Board 3	Virtual	128 - 151	128 - 143		
		Fiel	dbus Slave					
?			Fieldbus Type:	Virtual				
»							Арр	

#### **Inputs/ Outputs**

You can check current status and bits assigned to the Input / Output. If you want to use Standard I/O, Hand I/O or Extended I/O, refer to the following: *Manipulator Manual* 



When connected to the virtual robot, [Installed] is indicated as "Virtual".

#### **Fieldbus Slave**

Indicates information of Fieldbus that installed in the controller, and it is possible to change the value. For details of Fieldbus, refer to the following: *Robot Controller Option Fieldbus I/O Manual* 

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The displayed items differ depending on the type of fieldbus.

## **Remote Control**

It is possible to make the necessary settings when using remote I/O or Remote Ethernet as a control device.

To display Remote Control tab, tap Settings - [System Settings] - [Remote Control].

EPSON	RC+ Express Edition 1.0.0.0						-	C	1
æ	Virtual	Settings > S	ystem settings			Motor Safeguard E	Stop Error Warr	ing	
<del>(</del>	Controller Configuration	Ģ	View and change the bi Change the Remote Eth	t assignment of Re ernet settings.	mote I/O.				
À	Inputs / Outputs	R	emote Input/Output						
<b>,</b>	Remote Control		Export settings	Imj	port settings				
8	Motion Range		Input Signal	Input Bi	ts	Output Signal	Output Bits		
			Start	0	~ ^	Ready	0	~	^
			SelProg1	1	~	Running	1	~	
			SelProg2	2	~	Paused	2	~	
			SelProg4	3	~	Error	3	~	
			SelProg8	Not used	~	EStopOn	Not used	~	
			SelProg16	Not used	~	EStopOff	8	~	
			SelProg32	Not used	~	SafeguardOn	5	~	
					~				~
			Det	ault		D	efault		
יי									

### **Remote Input/Output**

Indicates bits assigned to each signals when Input/Output of remote. Following shows each button functions:

Item	Description
Default	Reflects the default value on all Input / Output bits.
	Following shows options:
	- Clear All
	Applies "Not used" to all item. In this case, all I/O bits can be used as normal
	Inputs/Outputs.
	- Standard I/O
	- Extended I/O
	- Fieldbus Slave I/O
Export	It is possible to save bit assignments of Remote Input / Output on PC. Specify the save
settings	location and tap the <export> button.</export>
	The default file name is "Remotes_(Date).dat".
Import	You can load a file that saves bit assignments for remote Input / Output and reflect them in
settings	the current settings.
	Specify the folder where the data you want to inport is saved, tand tap the <import> button.</import>

### **Remote Ethernet**

Set up Remote Ethernet. If you want to reset to default value, tap the <Default> button. Following Item are setting items:

Item	Description
TCP/IP Port	Port settings of TCP/IP communication. You can use number 0 to 65535.
Terminator	Settings for terminator. You can choose from CRLF, CR and LF.
Timeout	Settings of Timeout. You can enter a real number up to 4 digits.
Password	It is possible to change Password Tap the <change> button and enter with half-width characters.</change>
	You can enter up to 16 characters
Use Only for monitoring	If checked, it can be used as a monitor.

## Motion Range

It is possible to set XYZLimits Setting and Range Setting.

To display Motion Range tab, tap Settings - [System Settings] - [Motion Range].

🚰 EPSO	ON RC+ Express Edition 1.0.0.	.0									- 0	×
Æ	Virtual	Setting	s > System	settings			• <u>—</u> Motor	Safeguard	EStop	Error	Warning	:
÷	Controller Configuration		Ch	nange the motion ran	ge se	ttings						
r <del>]</del>	Inputs / Outputs		XYZLimit	ts Setting								
<del>.</del>	Remote Control		XYZLii	mits restricts the mot	ion o	f the robot within the	range specified	by X, Y, Z.				
2	Motion Range		<b>x</b> :	0.0	-	0.0	mm					
			Υ:	0.0	-	0.0	mm					
			z :	0.0	-	0.0	mm					
			De	efault								
												_
			Range S	etting								
			Motio	n range of each joint	in jo	int pulse value						
			J1 :	-95574	•	505174	Pulse					
0			J2 :	-320854		320854	Pulse					
»											Apply	

#### **XYZLimits Setting**

In the world coordinate system, you can set the limits that the robot can operate in each coordinate system.

Enter the upper limit and lower limit position of X, Y and Z axis, and set the XYZLimits. For the details of XYZLimits, refer to the following: *SPEL+ Language Reference* 

Tap the <Default> button to input default value (0, 0, 0, 0) and there is no limits in XYZLimits.

#### **Range Setting**

Enter lower limit of each joint axis and the value of encoder pulse value of upper limit and then set XYZLimits of each joints. For the details of Range Setting, refer to the following: SPEL+ Language Reference



Tap the <Default> button to input default value. The default value depends on the model. Refer to the following: Manipulator Manual specification sheet Max. Pulse Range

# Hand Srttings

# General

It is possible to set the hand I/O and operation parameters. To display General tab, tap Settings - [Hand Settings] - [General].

🚼 EPSC	ON RC+ Express Edition 1.0.0.0		- 🗆 ×
Æ	Virtual Setting	s > Hand settings	Error Warning
÷	General	Set the hand type and change I/O asignment.	
ĥ	Tool Offset	Hand Type :	
H-	Weight	Not Set 🗸	
≫		Hand type is not set. State :	
		Gripped	
		Released Select hand	l type.
		Test	
		🚡 Grip 👼 Release	
0			Apply
»			VO 3D View

#### Steps

**1.** Select a hand from pull down [Hand Type :]. Shows kinds of Hand supported in controller.

EPSON RC+ Express Edition 1.0	0.0					-		×
Kirtual	Settings > Hand settings	• <u>—</u> Motor	Safeguard	EStop	Error	Warning	:	
← General	Set the hand type and change I/O asignment.							
Tool Offset	Hand Type :							
₽ Weight	Not Set							
*	Chuck Hand(Output :1, Input :0) Chuck Hand(Output :1, Input :1) Chuck Hand(Output :1, Input :2) Chuck Hand(Output :2, Input :0) Chuck Hand(Output :2, Input :0) Chuck Hand(Output :2, Input :2) Suction Hand(Output :1, Input :2) Suction Hand(Output :1, Input :2) Suction Hand(Output :2, Input :2)		Sele	ct hand typ	e.			
0						A		
»						I/O	3D Vi	ł ew

2. Set the I/O when gripping / releasing a work, and tap the <Apply> button. The setting items differ depending on the type of hand selected.



After changed the kinds of hand, I/O settings on the right will be cleared.
After changed hand, [Test] can not be used until tap the <Apply> button.

😭 EPS	ON RC+ Express Edition 1.0.0.0		- 🗆 X
2	Virtual Settings	> Hand settings	Motor Safeguard EStop Error Warning
+ ₽ ₽ %	* General Tool Offset Weight	Set the hand type and change I/O asignment. Hand Type : Chuck Hand(Output :1, Input :0) Output bits from controller to hand :1 Input bits from hand to controller :0 State : Gripped Released Test Grip Release	Set I/O for gripping.         Output:       4       -       OFF         Wait times:       1.0 sec.         Release         Set I/O for releasing.         Output:       4       -       OFF         Wait times:       1.0 sec.
(?) >>			Apply

3. Tap Grip / Release and test the operation.

🚰 EPSO	N RC+ Express Edition 1.0.0.0		- 🗆 X							
Æ	Virtual	Settings > Hand settings	Hotor Safeguard EStop Error Warning							
←	General	Set the hand type and change I/O asignment.								
ra 1	Tool Offset	Hand Type :	🐻 Grip							
- <b>∺</b>	Weight	Chuck Hand(Output :1, Input :0)  Output bits from controller to hand :1 Input bits from hand to controller :0	Set I/O for gripping. Output : 4 - OFF -							
~		State : Gripped Released Test C Grip Release	Wait times:     1.0 sec.       Release       Set I/O for releasing.       Output:     4       V       Vait times:       1.0 sec.							
0			Apply							
»			VO 3D View							

## **Tool Offset**

Tool position is a distance from robot arm tip to holding a work. Setting the tool position in advance is convenient because even if you change hands, you can use the same program simply by changing the tool position.

It is possible to change indicator of current coordinate of the robot and change the base of point definition. To operate the hand correctly, enter manually X, Y, Z. U values or input the value by using wizard.

The wizard can only enter X, Y values. Z and U value need to be entered by manually.

Example:

When set up the suction pad surface of suction hand to Tool1 coordinate system with a SCARA robot:

If the center of the suction pad surface of the attached hand is 20 mm in the X-axis direction and -100 in the Z-axis direction from the center of the shaft at the lower end of the shaft, set up as follows.

X: 20mm, Y: 0, Z: - 100mm, U: 0



To display Tool Offset tab, tap Settings - [Hand Settings] - [Tool Offset].

EPSON RC+ Express Edition 1.0.0.0 – 🗆 🗙											
2	Virtual Settings	> Hand set	tings			• Motor	Safeguard	EStop	Error	Warning	:
÷	General	iv لڑ	ew and change tool offset.								
₽Å	Tool Offset	Specify to bottom of	ol offset, which is offset from í the shaft to the tool center p	Front							
믂	Weight	(TCP). 3D View is	s showing the current setting						To	φ	
*		You can e and Y with always be									
		x	0.000	mm							
		Y	0.000	mm		Į					
		Z	0.000	mm			BPSON	<b>-</b>			
		U	0.000	deg		-	54	1			
			Reset								
?										Aj	oply
»										V0	3D View

To enter tool position, follow either way to enter the value manually or to input the value by using wizard.

When entering the value manually, enter them manually and tap the <Apply> button. When using wizard, tap the <Tool Offset Wizard>. Following shows steps:

Steps

1. Tap [Tool Offset Wizard].

🚰 EPS	ON RC+ Express Edition 1.0.0.0									- (	×
2	Virtual Settin	igs > Hand settings				• <b></b> Motor	Safeguard	EStop	Error	Warning	:
+ ₽	General Tool Offset Weight	View an Specify tool offs bottom of the s (TCP). 3D View is show	d change tool offset. et, which is offset from haft to the tool center p ring the current setting .	the ioint as a						From	1
*		tool frame. You can edit X, Y and Y with Tool always be edited	Y, Z, U directly or calcula Offset Wizard (U and Z d by hand).	rectly or calculate X /izard (U and Z must d).							
		Y	0.000	mm		ĩ	$\mathbf{\Gamma}$	)			
		z	0.000	mm		ģ	EFSON	i i			
		U	0.000	deg				4			
		To	Tool Offset Wizard								
			Reset								
?										App	
»										1/0	3D View
Jog & Teach the position of first based point and tap the <Teach> button. You can check the motion of the robot when connected to the virtual robot. Operating Robot



Z and U value need to be entered by manually. Go back to step 1, and enter the value.



**3.** Jog & Teach the position of second based point and tap the <Teach> button. Teach the same position of first based point (red point) with different posture of robot.



To find the second point accurately, teach with the X and Y positions at the tip of the hand the same as the first and the U rotated about 90 degrees.



# 4. Tap the <Apply> button to apply calculated data.

After applied calculated data of tool offset to X and Y coordinate of tool position, the arrow indicates tool position will change on the 3D view.



# Weight

It is possibel to set hand weight and its details. To display setting tab, tap Settings - [Hand Settings] - [Weight]. For the details, see below.

Manipulator Manual

🔂 EPS	ON RC+ Express Edition 1.0.0	0.0		-		×
2	Virtual	Setting	s > Hand settings 📃 🔳 🗢 😣 Mater Saleguard EStop Error	War	ning	:
+ ₽ ₽ %	General Tool Offset Weight		<ul> <li>Set weight, moment of inertia, and eccentricity.</li> <li>Decentricity</li> </ul>			
② 》				1/0	Appl	y aD View

# Weight

Displays Hand weight set in controller.

# Distance, Moment of Inertia, and Eccentricity

Tap to display weight set in controller. When changing each item, input the value and tap the <Apply> button. The settings apply to the controller.

# Language Settings

It is possible to change language in this software. To change, select connecting display or Home - [Language]. When the dialog appeared, follow the steps to change language.

EPSON RC+ Express Edition 1.0.0.0						-	
Kirtual		• <u>—</u> Motor S	afeguard	EStop	Error	Warning	:
Robot	Loaded program						
J.A.	Program				C Ed	lit	
EPSON	All programs			🗋 Crea	ate	👌 Imp	ort
The second secon	Name and description			Update	date and	d time	
72	Program			5/17/20 2:15:05	21 PM	~	
Model : T3-401S Connection : Virtual Control device : PC							
रध्र Settings							
Manual Motion     Disconnect      Language							

This software supports following languages, however available languages are different depends on OS of your PC.

- Japanese
- English
- French
- German
- Simplified Chinese
- Traditional Chinese

# Backup

It is possible to back up of the controller data.

The backed up data can be restored to robot in needed. Useful when copying the settings of current connecting robot to another robot.

Tap display Backup tab, tap Settings - [Maintenance] - [Backup].



### Steps

1. Tap <Backup controller data>.

🔛 EPS	ON RC+ Express Edition 1.0.0.	.0										- 1	- ×
Â	Virtual	Settings	> Maint	tenance				• <u> </u>	Safeguard	EStop	Error	Warning	:
←	Backup		È	Save all co	ntroller data to t	he PC local d	rive						
₽ ₽	Restore Parts Maintenance	e	Backu	μ									
₩ %				Backup	controller da	ata							
		l											
0													
»												App	ly

2. When following appeared, tap the <Browse> button.

🚱 Controller data backup		×
Specify a folder to save the controller data.		
CRiteria 9006311/Cooluments		Browse
	ОК	Cancel

- 3. Select the folder where back up data saved and then tap the <OK> button.
- 4. Check the contents of indication tap the <OK> button.

Summary of the backup data:

Destination Folder	Contraction of the second second
Controller name	CONTRACTOR AND A CONTRACTOR
Serial number	Contraction of the second second
Firmware version	7,5,0,81
Total active time of the controller	11.381
Project name	Contraction of the second second
IP address	Constant of the second second
Subnet mask	Contraction of the second second
Default gateway	Contraction of the second second
	OK Cancel

5. When following appeared, tap the <OK> button.



# Restore

Restores the controller data backed up on the PC. Tap Setting - [Maintenance] - [Restore].

🚼 EPSC	N RC+ Express Edition 1.0.0.0	0								×
Â	Virtual	Settings >	Maint	enance	• <b></b> Motor	Safeguard	EStop	Error	Warning	:
←	Backup	-	Ð	Restore all controller data from the PC local drive						
ĥ	Restore	R R	Resto	re						
₩ ₩				Restore controller data						
			<b>∱</b> Nc	te: The controller is rebooted once restoring is done.						
0		-								
»									Apply	·

Steps

1. Tap <Restore controller data>.

🚼 EPS	DN RC+ Express Edition 1.0.0.	0							- 0	×
Â	Virtual	Setting	s > Main	tenance	• <u>—</u> Motor	Safeguard	EStop	Error	Warning	:
←	Backup		Ð	Restore all controller data from the PC local drive						
₽ ₽	Restore Parts Maintenance	e	Resto	ore						
.⊓ ≫				Restore controller data						
			A N	ote: The controller is rebooted once restoring is done.						
0										
»									Apply	

2. When following appeared, tap the <Browse> button.



3. Select the folder where back up data saved and then tap the <OK> button.

# 4. Check the contents of indication, tap the <OK> button.

The controller starts rebooting. Disconnected to this software and automatically reconnected to this software after rebooting.

<ul> <li>Robot name, Seria</li> <li>Parts maintenance</li> <li>Project</li> <li>Vision hardware se</li> <li>Security settings</li> <li>Force/Torque sens</li> <li>Password authenti</li> </ul>	I number, Calibration data esettings or I/F configuration ication settings
Source folder	Construction of the second
Saved time	2021/03/26 03:59:52:550
Controller name	Virtual Controller
Serial number	
Firmware version	Construction of the second
Controller energizing time	12.889
Project name	
IP address	
Subnetmask	
Default gateway	

5. When following appeared after rebooting, tap the <OK> button.



# Parts Maintenance

### About Parts Consumption Information

Go check to the Parts Maintenance tab if you want to know about replacement time of consumption parts or Consumption rate.

Indicates Parts consumption information got from the controller at the Parts Maintenance tab. Following shows parts needs to be replacement:

- Battery for controller
- Battery for robot
- Grease up
- Timing belt
- Motor
- Reduction gear unit
- Ball screw spline unit

To display Parts Maintenance tab, tap Setting - [Maintenance] - [Parts Maintenance].

🔛 EPS	ON RC+ Express Edition 1.0.0.0								- 0	×
Å	Virtual Setting	s > Maintenance		1	• <b></b> Motor	Safeguard	EStop	Error	A Warning	:
←	Backup	View and manag	e consumption rates	of parts.						
₽ ₽	Restore Parts Maintenance	Parts Maintenance	There is no comp	onent consumption r	managen	nent inforn	nation.			
Π		Component	Axis number	Part type	Cor	nsumption	rate 0-1009	%	Status	
		Parts consumption inf	formation							
		Axis number:		Date of purcha Remaining mor	se/replac	ement: 00			15	
		Part type:		Consumption r	ate:					
				Status:						
0		Clear								
»									Apply	



Parts consumption information cannot be changed or check when connecting to virtual controller or [Enable robot maintenance data] is "OFF" in Environment setting.
 You can not check information when the parts consumption information is disabled, even

- You can not check information when the parts consumption information is disabled, even if connected to actual controller.

- A warning badge appeared in Parts Maintenance tab when any part has a Consumption rate above the threshold (100%).

### Parts consumption information

Following shows information indicated in the Parts consumption information.

Item	Contents
Component	Controller / Robot
Axis number	Axis number of robot
Part type	Battery / Belt / Grease / Motor / Gear / Ball screw
Date of	Following of Date of purchase/replacement
purchase/replacement	Battery / Grease up / Timing belt / Motor / Reduction gear unit / Ball screw
	spline unit
Remaining month	Remaining month calculated by past operating status
Consumption rate	Recommended time of replacement of maintenance parts is L10
	Indicates L10 as 100% until the period up to the 10% breakage probability.
Status	Blank (when not set) / OK / Warning

# **Consumption rate**

Parts consumption information appears in the list, a color indicating the consumption rate and a band are displayed in the background.

# - Controller

Consumption rate	Color
0% ~ 99%	Green
100%	Blue

# - Robot

Consumption rate	Color
0% ~ 99%	Green
100% ~ 499%	Yellow
500% ~ 999%	Blue

Making Changes in Parts Consumption Information When replacement time is approaching, replace the consumption parts and change information of Parts Consumption. Replacing consumption parts shall be performed by qualified personnel.

To display Parts Maintenance tab, tap Setting - [Maintenance] - [Parts Maintenance].

🚼 EPSC	ON RC+ Express Edition 1.0.0.0									-		×
Æ	Virtual	Settings >	• Maintenance		l	• Motor	safeguard	EStop	Error	Warning		:
←	Backup		View and manage	e consumption rates	of parts.							
₽ ₽	Restore Parts Maintenance	-	Parts Maintenance	rts Maintenance There is no component consumption management information.								
Π	Torto Mantenarie		Component	Axis number	Part type	Co	nsumption	rate 0-100	%	Statu	5	
76		l	Parts consumption inf	ormation	ion							
			Component: Axis number:		Date of purchas Remaining mor	se/repla nth:	cement: 00			15		
			Part type:		Consumption r	ate:						
0			Clear		Status:							
»										Ap	ply	

# **Operation procedure**

# 1. Replace the part.

For how to exchange the components, refer to the following: *Manipulator Maintenance Manual* 

🚼 EPSO	N RC+ Express Edition 1.0.0.	D					- 0	×
E	Program	Settings >	Maintenance			Motor Safeguard EStop Error	Warning	:
÷	Backup		View and manag	e consumption rates	of parts.			
윩	Restore	F	Parts Maintenance	Note: If Consump	tion is 100% or more	, the part should be replaced.		
<b>₽</b>	Parts Maintenance		Component	Axis number	Part type	Consumption rate 0-100%	Status	
2			T3 booth10		Battery	132.6%	Warning	<u>^</u>
			T3401S	Axis 3	Timing belt	0%	OK	
			T3401S	Axis 4	Timing belt	0%	ОК	
			T3401S	Axis 3	Grease	35.2%	ОК	~
			Parts consumption in	formation				
			Component: T3 bo	poth10	Date of purchas	se/replacement: 2014/01/01	15	
			Axis number: 0		Remaining mor	nth: 99999		
			Part type: Batte	ry	Consumption ra	ate: 0 132.6%		
					Status:	Warning		
0			Clear	Note: The consumpti	on warning is reporte	d about this part. Push [Clear] to m	ute it.	
»							Apply	

# 2. Select the line of replaced parts.

3. Change the date of [purchase/replacement].

🚼 EPSC	N RC+ Express Edition 1.0.0.0	)					- 0	×
[E]	Program	Settings >	Maintenance		- N	Let Safeguard EStop Error	Warning	:
÷	Backup		View and manag	ge consumption rates	of parts.			
	Restore	P	Parts Maintenance	Note: If Consump	tion is 100% or more,	the part should be replaced.		
Ť	Parts Maintenance		Component	Axis number	Part type	Consumption rate 0-100%	Status	
2			T3 booth10		Battery	132.6%	Warning	^
			T3401S	Axis 3	Timing belt	0%	ОК	
			T34015	Axis 4	Timing belt	0%	ОК	
			T34015	Axis 3	Grease	35.2%	ОК	~
			Parts consumption in	formation				
			Component: T3 b	poth10	Date of purchase	e/replacement: 2021/02/21	15	
			Axis number: 0		Remaining mont	:h: 9999		
			Part type: Batte	ery	Consumption ra	te: 0132.6%		
					Status:	Warning		
			Clear	Note: The consumption	on warning is reported	about this part. Push [Clear] to mu	te it.	
0								
»							Apply	



After changed [purchase/replacement], settings changed badge (\*) is appeared in the [Parts Maintenance] tab on the left side of the screen.

4. After following displayed, tap the <OK> button.

🚼 EPS	ON RC+ Express Edition 1.0.0.0								-	- ×
19	Program Setting	s > Maintenance			۰ <u>س</u> Motor S	5afeguard	EStop	Error	Warning	:
÷	Backup	View and manage	e consumption rates	of parts.						
₽ ₽	Restore Parts Maintenance	Parts Maintenance	Note: If Consumpt	ion is 100% or more,	the part shou	ld be repl	aced.			
. "		Component	Axis number	Part type	Consump	tion rate (	0-100%		Status	
*		T3 booth10	N RC+ Express Edition	Ratteny	×	1.6%			ОК	^
		T3401S				0%			OK	
		тз4015 🚺	Applied all the change	rs.		0%			ОК	
		T34015				35.2%			ОК	
		Parts consumption int	ormation	ОК						~
		Component, T2 ho	ath10	Data of purchase	tranlacoment	2021/03	2/21	15		
		Axis number: 0	ourio	Remaining mont	h.	9999	2/21			
		Part type: Batter	v	Consumption ra	te:	0 1.6%				
			·	Status:		OK				
		Clear								
0										
»									Арр	bly

Warning and how to reset The parts managed in Parts Maintenance, when the [Consumption rate] is "100%", a warning displayed at controller status. When displayed warnings, reset them immediately.

To display Parts Maintenance tab, tap Setting - [Maintenance] - [Parts Maintenance].

🚼 EPSC	ON RC+ Express Edition 1.0.0.0									-	□ ×
Æ	Virtual	Settings >	> Maintenance			Motor S	5afeguard	EStop	Error	Warning	:
←	Backup		View and manag	e consumption rates	of parts.						
ا بط	Restore Parts Maintenance	-	Parts Maintenance	There is no comp	onent consumption I	managem	ent inforr	nation.			
<b>7</b>	Parts Maintenance		Component	Axis number	Part type	Cons	sumption	rate 0-100	%	Status	
			Parts consumption inf	formation							
			Component:		Date of purcha	purchase/replacement: 0001/01/01			15		
			Axis number:		Remaining mor	nth:					
			Part type:		Consumption r	ate:					
					Status:						
0			Clear								
»										Арр	bly

# **Operation procedure**

1. Select the waring state parts at [Parts Maintenance] tab – Parts Maintenance.

🚼 EPSO	N RC+ Express Edition 1.0.0.0								- 0	×
(E)	Program	Settings	> Maintenance			Motor Safegu	ard EStop	Error	Warning	:
÷	Backup		View and manage	ge consumption rates	of parts.					
₽ ₽	Restore		Parts Maintenance	Note: If Consump	tion is 100% or more	e, the part shou	ld be replacec	I.		
Π	Tures Maintenance		Component	Axis number	Part type	Consumpt	tion rate 0-10	0%	Status	
<b>%</b>			T3 booth10		Battery		132.6%		Warning	^
			T3401S	Axis 3	Timing belt		0%		OK	
			T3401S	Axis 4	Timing belt		0%		OK	
			T3401S	Axis 3	Grease		35.2%		OK	~
			Parts consumption in	formation						
			Component: T3 b	ooth10	Date of purchas	se/replacement	2014/01/01		15	
			Axis number: 0		Remaining mor	nth:	9999			
			Part type: Batte	ery	Consumption ra	ate:	• 132.6%			
					Status:		Warning			
0		Clear Note: The consumption warning is reported about this part. Push [Clear] to mute it.								
»									Apply	,

2. When following appeared, tap the <OK> button.

🚼 EPS	ON RC+ Express Edition 1.0.0.0		– 🗆 ×							
	Program Settin	ngs > Maintenance								
÷	Backup	View and manage consumption rates of parts.								
÷	Restore	estore Parts Maintenance Note: If Consumption is 100% or more, the part should be replaced.								
Ť		Component Axis number Part type Consumption rate 0-100%	Status							
28		T3 boo 😭 EPSON RC+ Express Edition 🛛 🗙 132.6%	Warning							
		T340 Clear the selected alarm. 0%	ОК							
		T340 The next time the controller is started the alarm status will be cleared. 0%	ОК							
		T340 OK Cancel 35.2%	ок ~							
		Component: T3 booth10 Date of purchase/replacement: 2014/01/01	15							
		Axis number: 0 Remaining month: 9999								
		Part type: Battery Consumption rate: • 132.6%								
		Status: Warning								
0		Clear Note: The consumption warning is reported about this part. Push [Clear] to	mute it.							
»			Apply							

In this point,[Status], [Consumption rate] and [Remaining month] are not going to be restored. Change the settings of Parts consumption information. Making changes in Parts Consumption Information

# **Rebooting Controller**

Reboot the controller. It is possible to change settings to Dryrun or Virtual I/O mode to reboot the controller.

To display rebooting tab, tap [Settings].

EPSON RC+ Express Edition 1.0.0	LO						- 0	×
📓 Virtual			• <u> </u>	safeguard	EStop	Error	Warning	:
Robot		Loaded program						
J.	The P	Program				☐ <b>2</b> Ed	it	
EPSON		All programs			Crea	ite	👌 Import	
	-J.	Name and description	Update date and time					
		Program			5/17/20 2:15:05	21 PM	~	
Model : T3-4 Connection : Virtu Control device : PC ☆ Settings + Manual Motion	015 ial							
<ul> <li>Disconnect</li> <li>O S Language</li> </ul>	e							

Steps

1. Tap [Reboot Controller].



2. After following appeared, set details in case you needed. You can tap [Details] to select the controller status of when its rebooted.

BEPSON RC+ Express Edition X										
Reboot the controller?										
🔿 Details										
Options below are not available for virtual controllers.										
Go to Dry Run mo	Go to Dry Run mode after reboot									
Image: Section of the section of	✓ Go to Virtual I/O mode after reboot									
				'						
	01/	Caral								
	OK	Cancel								

Following shows controller status:

Item	Contents
Dryrun	Without connecting controller to robot, all programs can be executed.
(Executed without connecting	Executes operation commands at almost the same time as when
robot)	connected to a robot.
Virtual I/O mode	Executes program with Virtual I/O. There is no effect to the hardware
	I/O.

# 3. Tap the **<OK>** button.

EPSON RC+ Express Edition	×
Reboot the controller?	
O Details	
Options below are not available for virtual controllers.	
☑ Go to Dry Run mode after reboot	
☑ Go to Virtual I/O mode after reboot	
OK Cancel	

# 4. After following appeared, tap the <OK> button.

This software cannot be used during the rebooting because the connection will be lost. After complete rebooting automatically reconnected to this software and then you can use it.



# Appendix

# About

Describes how to check what version of the software.

### Steps

1. Tap the <?> button - [About].



### 2. Check your version of the software.

Version: The version of the software.

Command set: The version of the commands which is used in programming. Robot Package: The version of additional program of Robot model.



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# Uninstalling

How to uninstall this software.

Steps

- 1. Tap Windows Start menu [Settings].
- 2. Tap[Apps] [Apps & features].
- 3. Tap [EPSON RC+ Express], and tap [Uninstall].