Doc.No.DOC1032736



Operation Manual

PRODUCT NAME

Air gripper for collaborative robots

MODEL / Series / Product Number

RMH* Series

-CRX Plug-in Software-

SMC Corporation

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1.How to Download Software

Various software can be downloaded from SMC's website (http://www.smcworld.com). Search for the product part number (RMHZ, RMHS, etc.) on the TOP page and proceed to the detail page to download the software.

2.Install

2-1. Software for compatible robot control devices

If the software for the robot control device is V9.40P / 37 version or earlier, update to the latest version V9.40P / 38 version or later before installing the plug-in software.

2-2. Install

- ① Insert the USB memory device, where the downloaded file has been copied, into the USB port of the robot control device. Touch the menu icon on the status bar and tap "Install" under PLUGINS.
- (2) The file name of the installation package file of the plug-in software, contained in the inserted USB memory device, as well as detailed explanation of the plug-in software will appear. Tap the Install button shown at the lower right part of the screen.

EFAULT™ 10% 🛒 🗾 🔩		10% 🚟 🗾 尾
Install	Install	
ten Kan	Install	
Production	SMC_GRPRMH.IPL	
Teaching		
Setup ►		
Status ►		
Utility		
PLUGINS		
Install		
Plugin List	Description	
SME Air Grippe MHH series	SMC Air Gripper RMH* series	
	Provider : SMC Corporation	I.
	Application : Open and close t	he air gripper
	Description : SMC Air Gripper	
	Press Install Button to install the Plu	igin software.
		Install
	▲ Play	▲ Robot Operation

③ Tapping the OK button starts the installation of the plug-in software.



④ Once the installation has been completed, the screen shown below appears.



5 Turn the power supply to the robot OFF and then ON again. The installation has been completed.

3.SMC Air Gripper Configuration

3-1. SMC Air Gripper Configuration

Under PLUGINS, click the menu icon on the status bar and tap "SMC Air Gripper RMH...". The SMC AIR GRIPPER Configuration Screen appears. Configure the basic settings of the air gripper.

	10% 🔛 🛌 💊
SMC Air Gripper Configuration Screen	
Production	
Teaching	
Setupallation Settings	
Status Select a valve option Utility	Nil 🔻
PLUGINShe type of sens Implemented	Jiscrete
Install	Analog
C.Plugin List ration completion waiting time SMC Air Gripper RMH error occurs	0.50 sec

3-2. General Settings

① Select a valve option

Select the symbol corresponding to the valve option of the purchased product from the pull-down list. No symbol \Rightarrow NIL

- O (Normally open) \Rightarrow N.O.
- C (Normally closed) \Rightarrow N.C.

【Example of part number】 RMHZ2-20D-<u>051P**O**</u>-NDE The symbol at the end of the underlined part is the valve option symbol.

 ② Select the type of sensor implemented The item to be selected depends on whether the purchased product is equipped with an auto switch or a position sensor. Auto switch ⇒ "Discrete" Position sensor ⇒ "Analog" The "Analog Setting" tab is enabled when the "Analog" is selected.

[Example of part number] RMHF2-16D2-<u>051PO</u>-NDE The symbol of the 4th digit refers to an auto switch when it is P and a position sensor when it is A.

- Gripper operation completion waiting time This is the set value for the waiting time after the valve is operated for OPEN / CLOSE of the fingers. Enter the appropriate value according to the operation speed of the finger by adjusting the opening of the metering valve. The default value is 0.50sec. It can be set in the range of 0 to 5.00 sec
- ④ Output alarm when an error occurs Choose whether to display an alarm message when the air gripper unit detects an error. If you check tick the check box, when a "open / close failure" is detected, an alarm message will be displayed, and the ongoing program will be stopped.
- Manual operation
 The manual operation of the air gripper unit can be checked.
 Open or close the gripper by tapping the OPEN or CLOSE button.
- 6 Monitor sensor signal

It is possible to check the open position or close position by checking the auto switch output.

			10%		7	ľ
	SMC Air Gripper Configuration Screen					
	SMC.					
	General Settings Analog Settings					
	Installation Settings				_	
1	Select a valve option	Nil		▼		
\bigcirc	Select the type of sensor implemented	V D	iscrete]	
Ľ		A	nalog		J	
3	Gripper operation completion waiting time	C).50 s	ec]	
4	Output alarm when an error occurs				j	
_	Manual operation				ן	
(5)	OPEN CLOSE				J	
	Monitor sensor signal				ן	
୰	Open position switch : ● Close position swi	tch : 🌑			J	

3-3. Analog Settings

① Select gripping method

According to the workpiece gripping method, select the "External Gripping" or "Internal Gripping" check box.

2 Attachment Correction

In accordance with the shape of the attachment to be attached on the finger, enter a compensation value.

Enter "LE" and "FO" for "External Gripping" or "LI" and "FO" for "Internal Gripping," and enter the width as for of when the attachment is in the fully closed state to "FO." Tapping the "Add FO position" button enters the current value to "FO."

③ Manual operation

The manual operation of the air gripper unit can be checked. Open or close the gripper by tapping the OPEN or CLOSE button.

	SMC Air Gripper Configuration Screen		10%		r	Ø
	© SMC.					
	General Settings Analog Settings					
1	Select gripping method	Interna	al Gripp	oing		
2	Attachment Correction Correction Value LE 0.0 mm F0 0.0 mm Add F0 position	LI	0.0 m	m		
3	Manual operation]	
	Attachment Image					





Attachment example 2

4.Dedicated instruction

Once the plug-in software has been installed successfully, two dedicated instructions of "RMH*CLOSE" and "RMH*OPEN" will be added.

Touch the menu icon on the status bar, tap "Editor" under Teaching, and tap the Plugin tab. The RMH*CLOSE and RMH*OPEN icons will appear on the Programming tab.



- 4-1. Dedicated instruction : CLOSE (When Auto switch is selected)
- ① Select Operation

Select the behavior of the CLOSE operation.

CLOSE ONLY: It puts the gripper into the "Closed state", recognizes it as "Close success" without checking the Close position signal, and proceeds to the next operation.

CLOSE AND CHECK SIGNAL: Closes the gripper and waits for the close position signal input before proceeding to the next action. When the signal is turned on, the software recognizes it as an indication of "CLOSE success" and proceeds to the next operation.

② Output status signal to digital output port

Select whether to output a status signal to the digital output port when "Close success" or "Close failure" is detected.

Enable: Selection of the digital output port is enabled. If either of "Close success" and "Close failure" is detected, the corresponding digital output port is turned on.

Disable: The selection of the digital output port is disabled. Even if either of "Close success" and "Close failure" is detected, no status signal is output.

- ③ Output Close success / Output Close failure Sets the output destination for the status signal that is output upon close success or failure.
- (4) Manual operation

The manual operation of the air gripper unit can be checked. Open or close the gripper by tapping the OPEN or CLOSE button.

(5) Monitor sensor signal

The presence of a reaction of Open position or Close position switch can be confirmed.



4-2. Dedicated instruction : OPEN(When Auto switch is selected)

① Select Operation

Select the behavior of the OPEN operation.

OPEN ONLY: It puts the gripper into the "Opened state", recognizes it as "Open success" without checking the Open position signal, and proceeds to the next operation.

OPEN AND CHECK SIGNAL: Opens the gripper and waits for the open position signal input before proceeding to the next action. When the signal is turned on, the software recognizes it as an indication of "OPEN success" and proceeds to the next operation.

② Output status signal to digital output port

Select whether to output a status signal to the digital output port when "Open success" or "Open failure" is detected.

Enable: Selection of the digital output port is enabled. If either of "Open success" and "Open failure" is detected, the corresponding digital output port is turned on.

Disable: The selection of the digital output port is disabled. Even if either of "Open success" and "Open failure" is detected, no status signal is output.

- ③ Output Open success / Output Open failure Sets the output destination for the status signal that is output upon open success or failure.
- (4) Manual operation

The manual operation of the air gripper unit can be checked. Open or close the gripper by tapping the OPEN or CLOSE button.

(5) Monitor sensor signal

The presence of a reaction of Open position or Close position switch can be confirmed.

	Programming	Details
	SMC Air Gripper : Open	GOLO
1	Select Operation OPEN ONLY OPEN AND CHECK SIGNAL Open the gripper and proceed to the position switch signal.	ext action without checking the open
2	Output status signal to digital output	port 💿 Enable 📄 Disable
3	Output Open success Output Open failure	D0[101] ▼ D0[102] ▼
4 5	Manual operation OPEN CLOSE Monitor sensor signal Open position switch : Close pos	sition switch : ●

4-3. Dedicated instruction : CLOSE (When Position sensor is selected)

(1) Select Operation

Select the behavior of the CLOSE operation.

CLOSE ONLY: It puts the gripper into the "Closed state", recognizes it as "Close success" without checking the Close position signal, and proceeds to the next operation.

CLOSE AND CHECK SIGNAL: Closes the gripper and waits for the close position signal input before proceeding to the next action. When the signal is turned on, the software recognizes it as an indication of "CLOSE success" and proceeds to the next operation.

② Output status signal to digital output port Select whether to output a status signal to the digital output port when "Close success" or "Close failure" is detected.

Enable: Selection of the digital output port is enabled. If either of "Close success" and "Close failure" is detected, the corresponding digital output port is turned on.

Disable: The selection of the digital output port is disabled. Even if either of "Close success" and "Close failure" is detected, no status signal is output.

- ③ Output Close success / Output Close failure Sets the output destination for the status signal that is output upon close success or failure.
- ④ Gripping position setting

Enter the size of the workpiece to "WSE" for external gripping or "WSI" for internal gripping, and then enter the margin. When you tap the 'Add current position' button with the workpiece in a clamped state, the workpiece size is entered in "WSE" or "WSI." To grasp the notion of the workpiece size, refer to the icon.

- Manual operation
 The manual operation of the air gripper unit can be checked.
 Open or close the gripper by tapping the OPEN or CLOSE button.
- 6 Monitor sensor signal

This allows you to check the finger stroke position.



4-4. Dedicated instruction : OPEN(When Position sensor is selected)

(1) Select Operation

Select the behavior of the OPEN operation.

OPEN ONLY: It puts the gripper into the "Opened state", recognizes it as "Open success" without checking the Open position signal, and proceeds to the next operation.

OPEN AND CHECK POSITION: Opens the gripper and waits for the open position signal input before proceeding to the next action. When the signal is turned on, the software recognizes it as an indication of "OPEN success" and proceeds to the next operation.

② Output status signal to digital output port

Select whether to output a status signal to the digital output port when "Open success" or "Open failure" is detected.

Enable: Selection of the digital output port is enabled. If either of "Open success" and "Open failure" is detected, the corresponding digital output port is turned on.

Disable: The selection of the digital output port is disabled. Even if either of "Open success" and "Open failure" is detected, no status signal is output.

- ③ Output Open success / Output Open failure Sets the output destination for the status signal that is output upon open success or failure.
- ④ Gripping position setting

Enter the size of the workpiece to "WSE" for external gripping or "WSI" for internal gripping, and then enter the margin. When you tap the 'Add current position' button with the workpiece in a clamped state, the workpiece size is entered in "WSE" or "WSI." To grasp the notion of the workpiece size, refer to the icon.

Manual operation
 The manual operation of the air gripper unit can be checked.
 Open or close the gripper by tapping the OPEN or CLOSE button.

6 Monitor sensor signal

This allows you to check the finger stroke position.

	Outer diameter grasp selection screen		Internal diameter grasp selection screen		
	Programming Details		Programming	Details	
	SMC Air Gripper : Open		SMC Air Gripper : Open	© SMC	
\bigcirc	OPEN ONLY				
	OPEN AND CHECK POSITION		OPEN AND CHECK POSITION		
	Open the gripper, wait for it to reach the open position, and proceed to the next action.		Open the gripper, wait for it to reach t next action.	he open position, and proceed to the	
2	Output status signal to digital output port Enable Disable	2	Output status signal to digital output	port 💿 Enable 🔵 Disable	
3	Output Open success DO[101] ▼ Output Open failure DO[102] ▼	3	Output Open success Output Open failure	DO[101] ▼ DO[102] ▼	
4	Position Settings WSE 0.0 mm Margin +/- 0.5 mm Add current position	4	Position Settings WSI 0.0 mm Margin + Add current position	/- 0.5 mm	
5	Manual operation OPEN CLOSE Monitor sensor signal	5	Manual operation OPEN CLOSE Monitor sensor signal		
6	Sensor Position: 0.0 mm	6	Sensor Position : 0.0 mm		

Revision history

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Note: Specifications are subject to change without prior notice and any obligation on the part of the manufacturer. © 2023 SMC Corporation All Rights Reserved