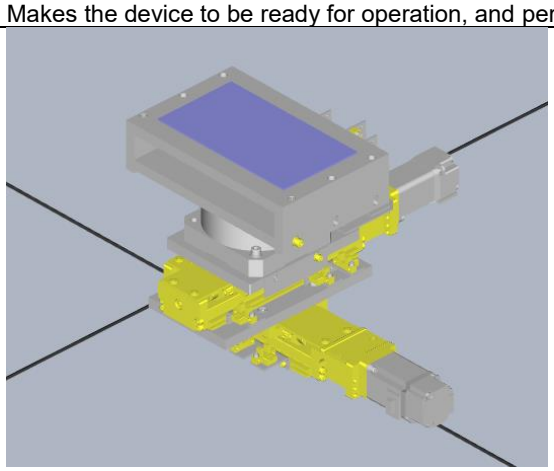
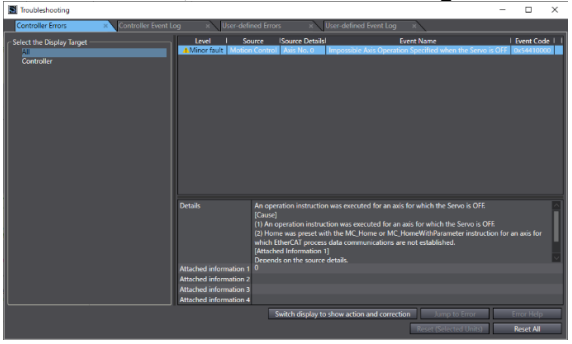
3D Simulation Sample Program No.20	X-Y-Theta mechanism

Basic function	Makes the device to be ready for operation, and performs homing, jog, and demonstration.	
3D image	 CAD data: MISUMI Corporation inCAD Library No.000296 (*) The CAD data was edited by OMRON. Refer to the Sysmac Studio 3D Simulation Function Operation Manual (W618-E1) for the editing procedures. (*The component name is not listed in the English website of MISUMI Corporation.)	
File name	3DSimulationSample_20_X-Y-Theta_mechanism_V1_00.smc2	
Applicable model	Sysmac Studio (64-bit version)	SYSMAC-SE2xxx Ver.1.40 or higher
	Sysmac Studio 3D Simulation Option	SYSMAC-SA4xxL-64
Used language	Ladder programming	
Used materials and equipment	OMROM 1S-series Servo System is used as the motor component in this simulation.	
Function description	・ When the Execute_Ready variable (BOOL) changes to TRUE, the Servo Drive becomes ready to operate. ・ When the Execute_Home variable (BOOL) changes to TRUE, the MC_Home instruction is executed to move each axis to its home. ・ While the following variable (BOOL) is TRUE, the jog operation is performed to move the axis in the specified direction. X_Jog_Posi (BOOL): Jogs the Axis X in the positive direction. X_Jog_Nega (BOOL): Jogs the Axis X in the negative direction. Y_Jog_Posi (BOOL): Jogs the Axis Y in the positive direction. Y_Jog_Nega (BOOL): Jogs the Axis Y in the negative direction. R_Jog_Posi (BOOL): Jogs the Axis R(Theta) in the positive direction. R_Jog_Nega (BOOL): Jogs the Axis R(Theta) in the negative direction. ・ When the Excute_Demo variable (BOOL) changes to TRUE, a demonstration is performed.	
Mechanical component types provided on the Sysmac Studio	X-Y Tables (XY Theta)	
Precaution for use	・ This sample program is specifically prepared for 3D simulation. Do no use this program in actual machine operation. ・ MISUMI Corporation may not offer all parts in each application design. Available parts can only be purchased separately not as a unit shown in each application design. MISUMI Corporation does not guarantee quality, accuracy, functionality, safety or reliability for the combination of the parts in each application example.	
Restrictions and others	・ Error processing is not included in the sample program. To reset errors, select **Troubleshooting** from the Tools Menu, then click the **Reset** All button. 	

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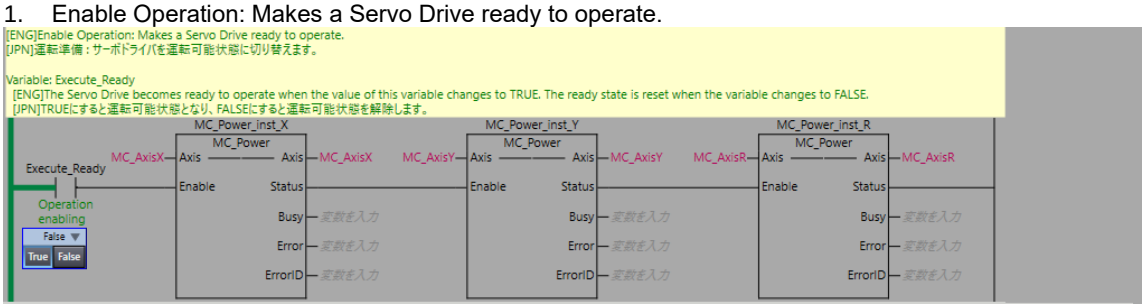
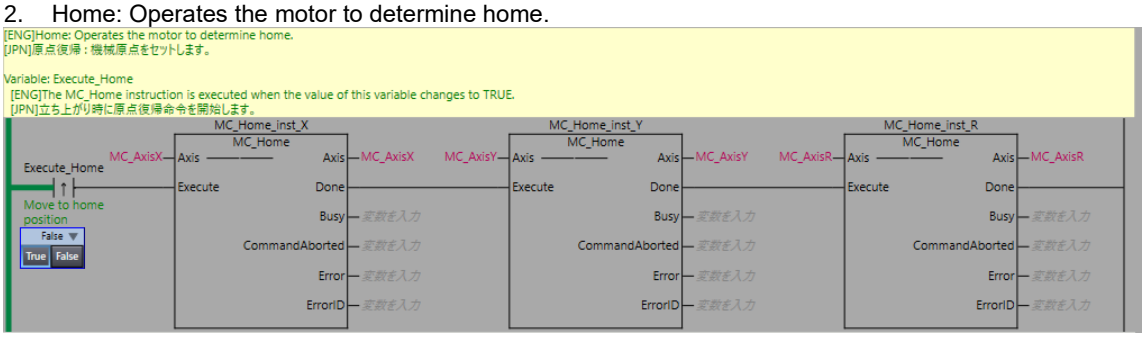
Application example

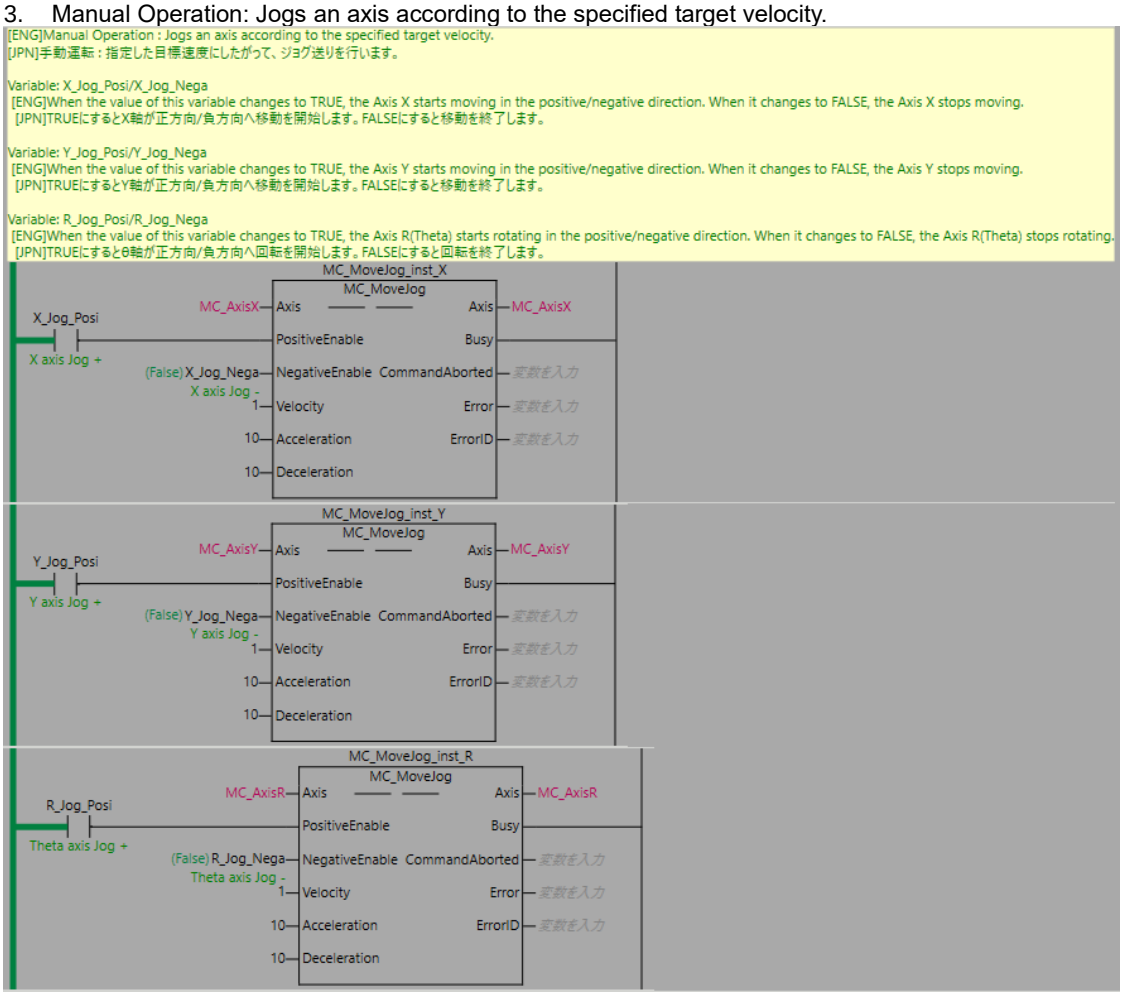
1. Enable Operation: Makes a Servo Drive ready to operate.



2. Home: Operates the motor to determine home.



3. Manual Operation: Jogs an axis according to the specified target velocity.



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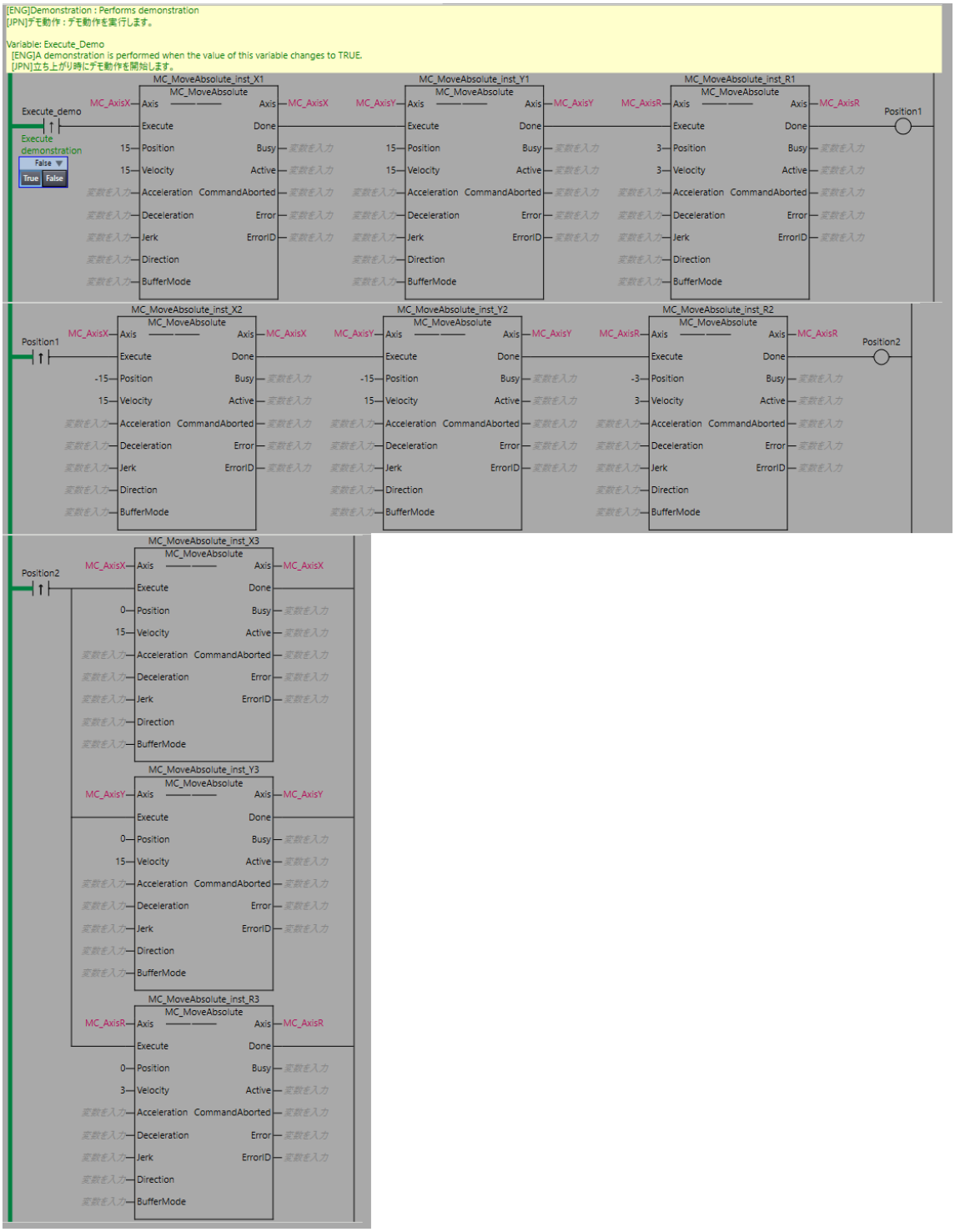
4. Demonstration: Performs demonstration.



(Additional information)
To confirm 3D operation, select **3D Visualizer** from the View menu. You can confirm the operation on the 3D Visualizer.

Related manuals	Sysmac Studio Version 1 Operation Manual (W504-E1) Sysmac Studio 3D Simulation Function Operation Manual (W618-E1)

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■ Variable Tables

Input Variables

Meaning	Name	Data type	Default	Range	Description
Enable Operation	Execute_Ready	BOOL		TRUE or FALSE	The Servo Drive becomes ready to operate when the value of this variable changes to TRUE. The ready state is reset when the variable changes to FALSE.
Home	Execute_Home	BOOL		TRUE or FALSE	The MC_Home instruction is executed when the value of this variable changes to TRUE.
Jog Axis X in Positive Direction	X_Jog_Posi	BOOL		TRUE or FALSE	When the value of this variable changes to TRUE, the Axis X starts moving in the positive direction. When it changes to FALSE, the Axis X stops moving.
Jog Axis X in Negative Direction	X_Jog_Nega	BOOL		TRUE or FALSE	When the value of this variable changes to TRUE, the Axis X starts moving in the negative direction. When it changes to FALSE, the Axis X stops moving.
Jog Axis Y in Positive Direction	Y_Jog_Posi	BOOL		TRUE or FALSE	When the value of this variable changes to TRUE, the Axis Y starts moving in the positive direction. When it changes to FALSE, the Axis Y stops moving.
Jog Axis Y in Negative Direction	Y_Jog_Nega	BOOL		TRUE or FALSE	When the value of this variable changes to TRUE, the Axis Y starts moving in the negative direction. When it changes to FALSE, the Axis Y stops moving.
Jog Axis R(Theta) in Positive Direction	R_Jog_Posi	BOOL		TRUE or FALSE	When the value of this variable changes to TRUE, the Axis R starts rotating in the positive direction. When it changes to FALSE, the Axis R stops rotating.
Jog Axis R(Theta) in Negative Direction	R_Jog_Nega	BOOL		TRUE or FALSE	When the value of this variable changes to TRUE, the Axis R starts rotating in the negative direction. When it changes to FALSE, the Axis R stops rotating.
Demonstration	Execute_Demo	BOOL		TRUE or FALSE	A demonstration is performed when the value of this variable changes to TRUE.

Output Variables

Meaning	Name	Data type	Range	Description

■ Version History

Version	Date	Contents
1.00	March 2021	Original production.

■ Note

This document explains the function of the sample programs specifically prepared for 3D simulation.
It does not provide information of restrictions on the use of Units and Components or combination of them. For actual applications, make sure to read the operation manuals of the applicable product.

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