EtherNet/IP®

Oriental motor

Version 3.0, 03/09/2020

User Guide for AOIs

Product: AZ series EtherNet/IP Compatible driver

Controller: Rockwell Automation, Inc. L18 controller

Software: Studio 5000 V30.11 and V32.11

This document describes the system configuration, set up AOIs and how to use AOIs.

Table of Contents

Version 3.0, 03/09/2020

Cautions

(1) When building an actual system, check the specifications of each device and equipment that make up the system. For example, for safety reasons such as safety circuits that minimize the danger even if there is a failure.

(2) In order to use the system safely, consult the operators manual and instruction manuals for each device and equipment that make up the system. Confirm the contents, including the warning and safety precaution manual.

(3) Customers are responsible for confirming the standards/regulations that the system should comply with.

(4) Copy or redistribute of part of all of this document without the permission of Oriental Motor Co., Ltd. is prohibited.

(5) The information in this document is current as of August 2019. The contents of this document are subject to change without prior notice.

(6) This document describes the procedure for establishing a communication connection between devices. The details of the wiring method are not described. For details other than the communication connection procedure, refer to the instruction manual of the product or contact Oriental Motor.

Product and manuals

Version 3.0, 03/09/2020

■ Applicable product

- Scanner : Controller1769-L18ER-BB1B manufactured by Rockwell Automation, Inc.
- Adapter : AZ series EtherNet/IP compatible driver AZD-AEP / AZD-CEP / AZD-KEP

Driver with AZ series motor and motorized actuator equipped with AZ series, can be combined.

■ Preparation

Prepared user manuals which you can download from the Orientalmotor web site.

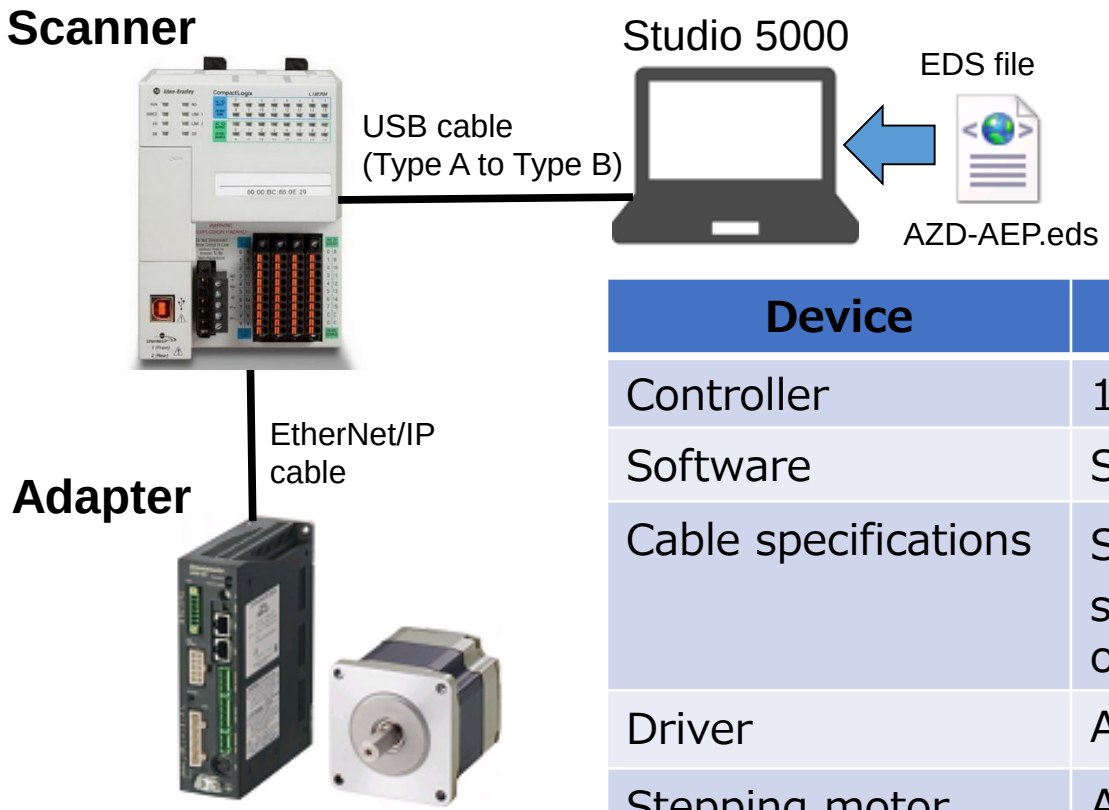
①	-	Install EIP Support Software (MEXE02 v4)
②	HM-60372	AZ series EtherNet/IP Compatible driver

EtherNet/IP compatible AZ driver

System Configuration

Version 3.0, 03/09/2020

The system configuration described in this document is shown below.



Download the correct EDS file from our website according to your driver product name.

Device	number
Controller	1769-L18ER-BB1B (Rockwell Automation)
Software	Studio 5000 V30.11 (Rockwell Automation)
Cable specifications	Shielded twisted pair (STP) cable straight-through/crossover cable, category 5e or higher
Driver	AZD-AEP
Stepping motor	AZM46AC
Cable set	CC005VZF
Support software	EtherNet/IP Compatible Software (MEXE02 ver.4.0)

Setting IP address

Version 3.0, 03/09/2020

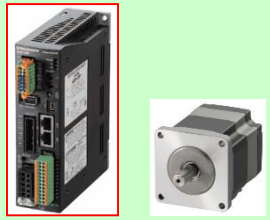
Scanner

Regarding EtherNet/IP communication, the controller is called “scanner” and the driver is called “adapter”. The scanner sends “communication command (Implicit Message)” to the IP address of the target driver.

IP address
“**192.168.1.21**”

EtherNet/IP communication

Adapter



EtherNet/IP compatible
AZ driver

IP address of driver
“**192.168.1.1**”

Adapter

EtherNet/IP compatible
AZ driver

IP address of driver
“**192.168.1.2**”

The IP address of the AZ driver is set by “Switch” and “Parameter”. In this document, we are using the “Switch” selection.

Setting IP address

Version 3.0, 03/09/2020

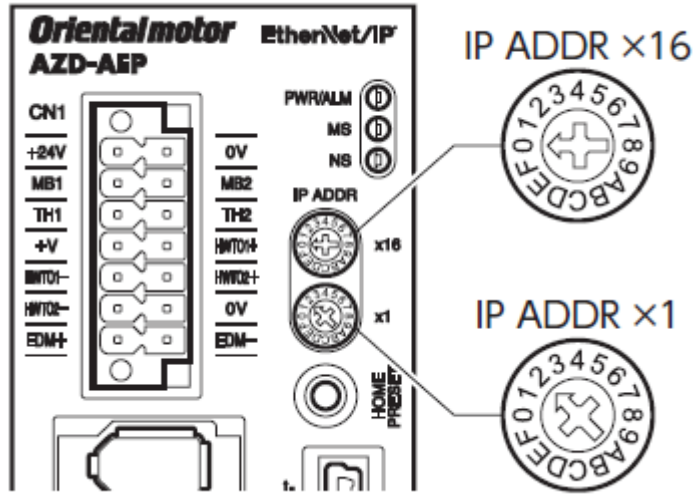
Setting switches on the driver

IP address is set by switches on the driver.

※Refer to the users manuals for other ways.

The switch settings are shown on the figure to the right.

The IP address of the driver is “**192.168.1.2**”.



Switch setting		IP address	Description
×16	×1		
0	0	Enable by parameter or DHCP server.	Initial setting at factory
0	1	XXX.XXX.XXX.1	The fourth octet of the IP address is “1”
F	E	XXX.XXX.XXX.254 ※	The fourth octet of the IP address is “254”
F	F	192.168.1.1	The IP address is fixed regardless of setting by parameter and DHCP server.

※ The “X” of XXX.XXX.254 can be set by parameters.
Initial value is “192.168.1.254”.

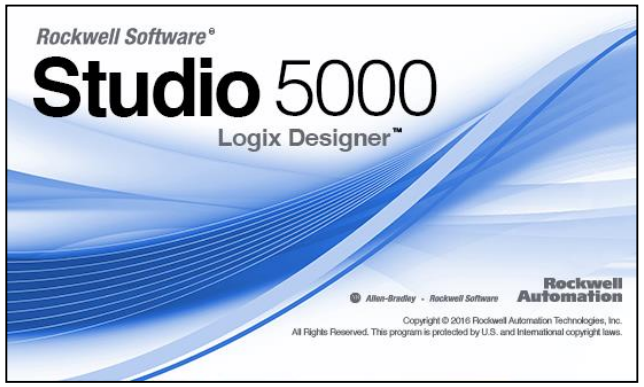
Register of EDS file

Version 3.0, 03/09/2020

New project

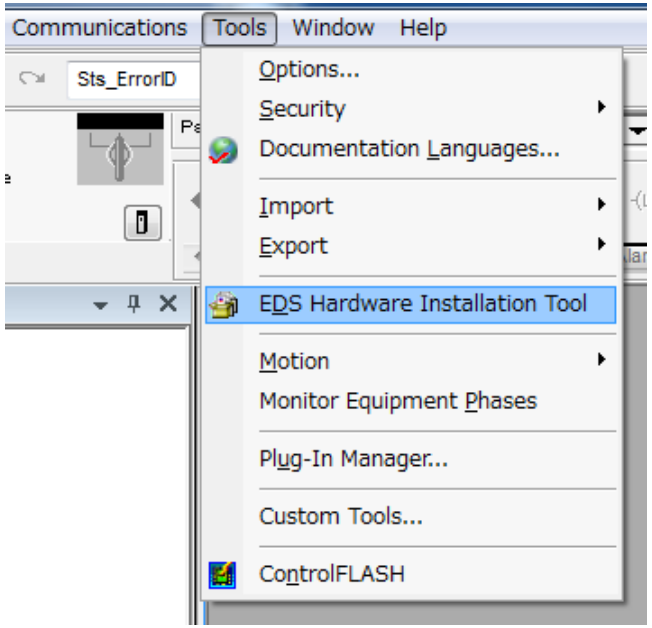
Start up Studio5000. In the create wizard, select “New Project.”
Choose your controller from the list and name the project.

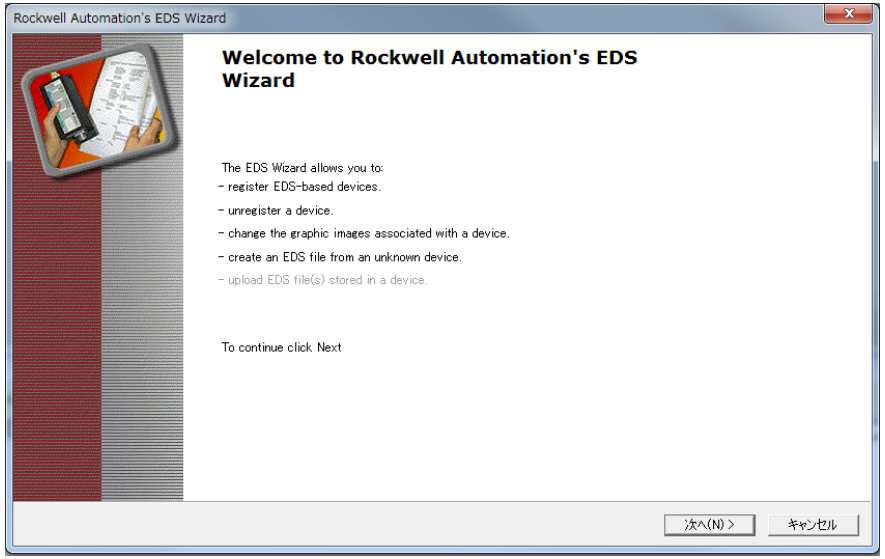
※This document assumes that the user has a license of Studio5000 which has been already activated.



Register EDS file

Select “EDS Hardware Installation Tool” in Tools menu.



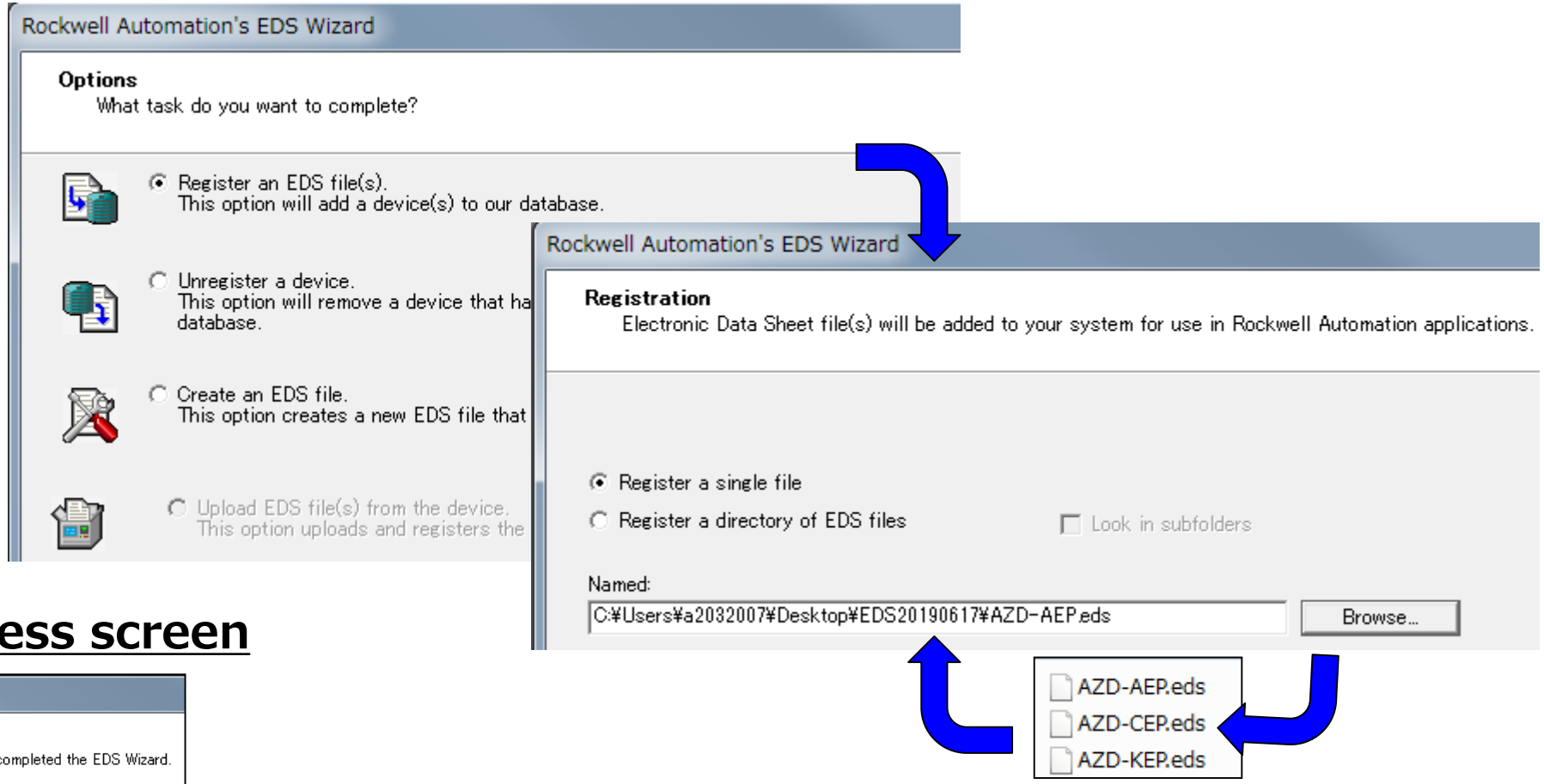


Register of EDS file

Version 3.0, 03/09/2020

Installation of the EDS file

Select the “Register an EDS file”



Registration success screen

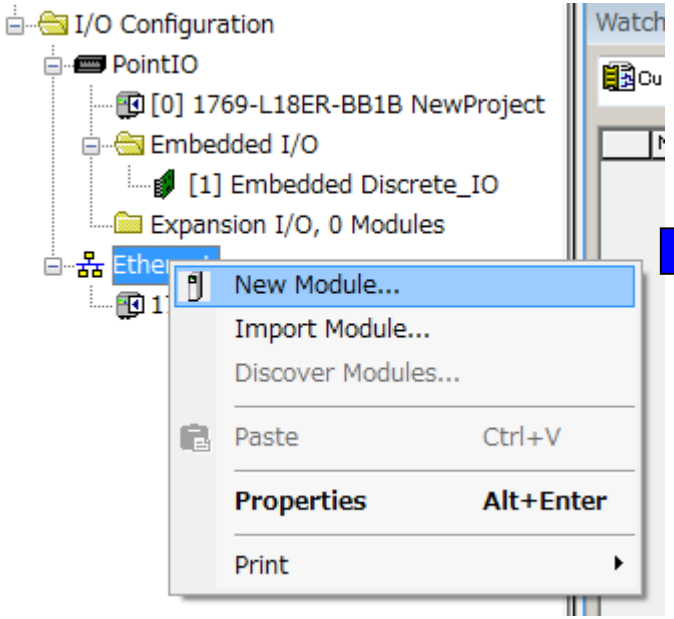
Click “Browse” button, select correct EDS file according to your driver product name.

New Module

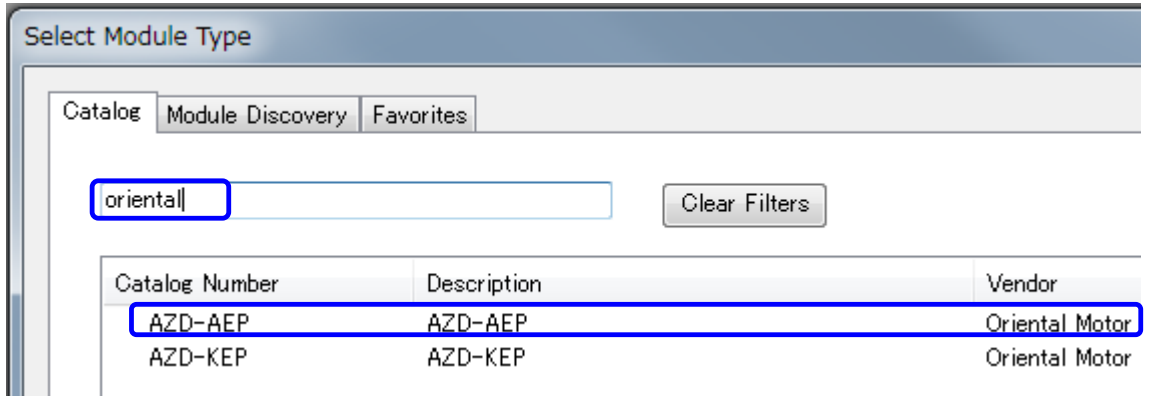
Version 3.0, 03/09/2020

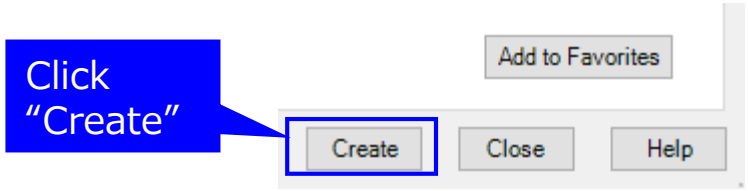
Register of a New Module

Right click on the “Ethernet” and select “New Module”.



Enter “oriental” in the “filters” section, the researched results are shown. Select your driver from the catalog number below.

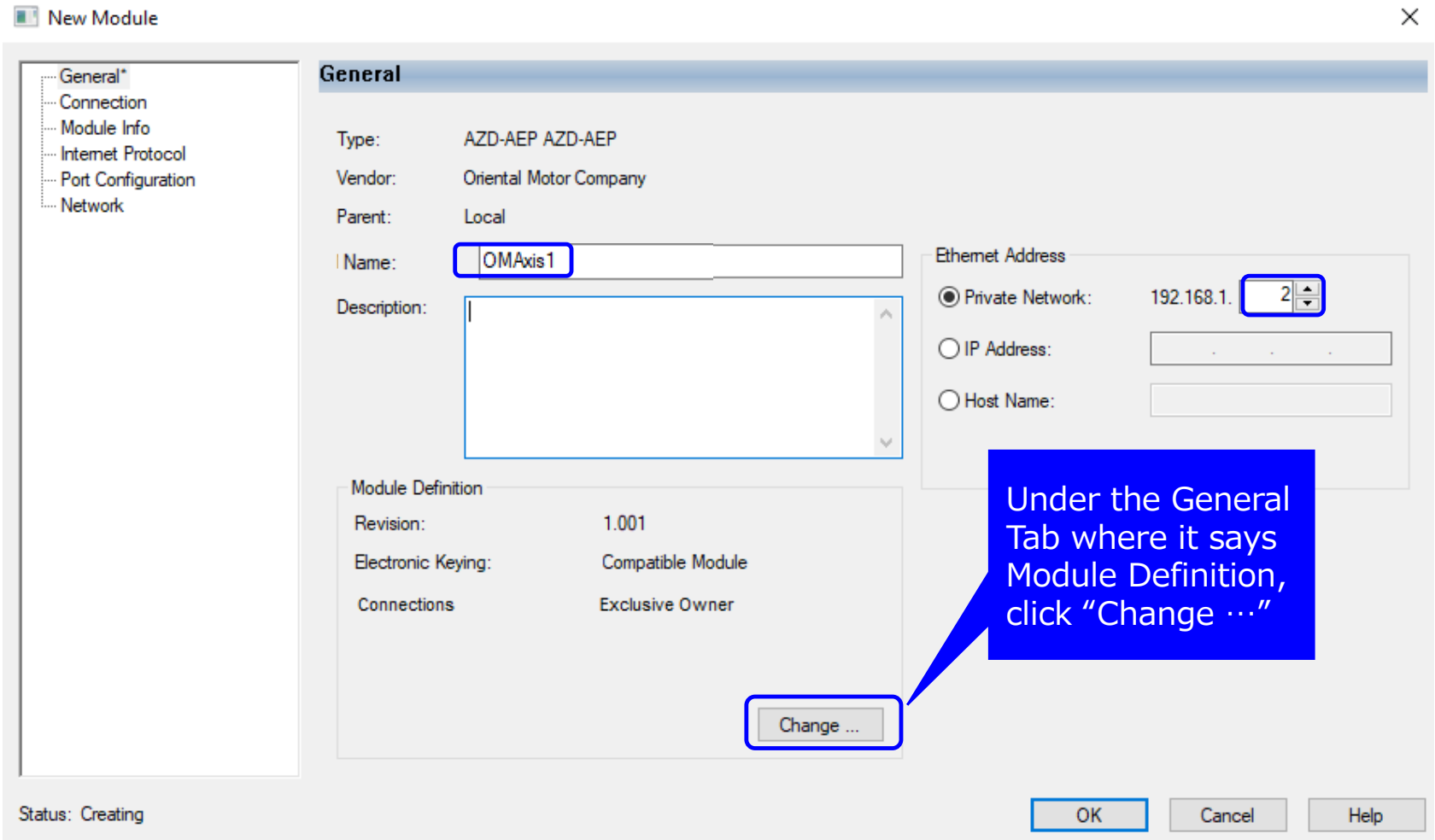




New Module

Version 3.0, 03/09/2020

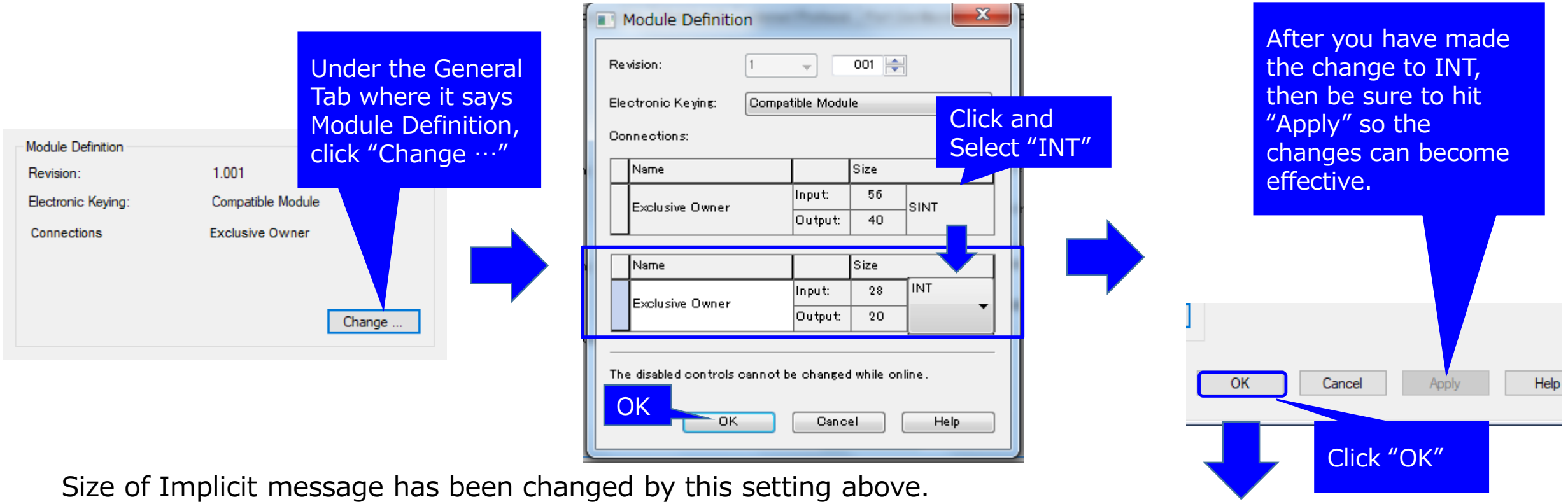
Enter a “Name” (our example is OMAxis1) and the “Ethernet Address”. In this case, the fourth octet of Ethernet address is “2” set by the switches. (referred on slide 7). Before hitting OK we need to change the Module properties.



New Module

Orientalmotor
Version 3.0, 03/09/2020

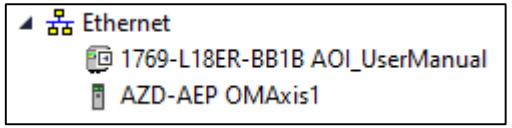
Before importing the module: Change Size from “SINT” -> “INT” in Module Definition.
Orientalmotor’s AOIs are designed based on the INT size.



Size of Implicit message has been changed by this setting above.

Implicit Message	SINT(Short INT)	INT
Input	OMaxis1:I.Data[56]	OMaxis1:I.Data[28]
Output	OMaxis1:O.Data[40]	OMaxis1:O.Data[20]

Registration success screen



New Module

Version 3.0, 03/09/2020

*1: As a note on the previous slide

By changing the size to INT, the Monitor Tags and Watch list will now have a different assignment.

→ Ex. What used to be Motor O: Data[0] and Data [1] will now be Motor O: Data[0]. Ref: 2 byte = 1 Word

4-1 Implicit message format

This section shows transfer contents of Implicit message. The order of data is in little-endian format.
Contents of Implicit message is fixed and cannot be changed.

SINT

Byte	Input (driver → scanner)	Output (scanner → driver)
0, 1	Remote I/O (R-OUT)	Remote I/O (R-IN)
2, 3	Operation data number selection_R	Operation data number selection
4, 5	Fixed I/O (OUT)	Fixed I/O (IN)
6, 7	Present alarm	Direct data operation operation type
8, 9	Feedback position (lower)	Direct data operation position (lower)
10, 11	Feedback position (upper)	Direct data operation position (upper)
12, 13	Feedback speed [Hz] (lower)	Direct data operation operating speed (lower)
14, 15	Feedback speed [Hz] (upper)	Direct data operation operating speed (upper)
16, 17	Command position (lower)	Direct data operation starting/changing rate (lower)
18, 19	Command position (upper)	Direct data operation starting/changing rate (upper)
20, 21	Torque monitor	Direct data operation stopping deceleration (lower)
22, 23	CST operating current	Direct data operation stopping deceleration (upper)
24, 25	Information (lower)	Direct data operation operating current
26, 27	Information (upper)	Direct data operation forwarding destination
28, 29	Reserved	Reserved
30, 31	Read parameter ID_R	Read parameter ID
32, 33	Read/write status	Write request
34, 35	Write parameter ID_R	Write parameter ID
36, 37	Read data (lower)	Write data (lower)
38, 39	Read data (upper)	Write data (upper)
40, 41	Assignable monitor 0 (lower)	–
42, 43	Assignable monitor 0 (upper)	–
44, 45	Assignable monitor 1 (lower)	–
46, 47	Assignable monitor 1 (upper)	–
48, 49	Assignable monitor 2 (lower)	–
50, 51	Assignable monitor 2 (upper)	–
52, 53	Assignable monitor 3 (lower)	–
54, 55	Assignable monitor 3 (upper)	–

Ref. Page 90 in manual

4-1 Implicit message format

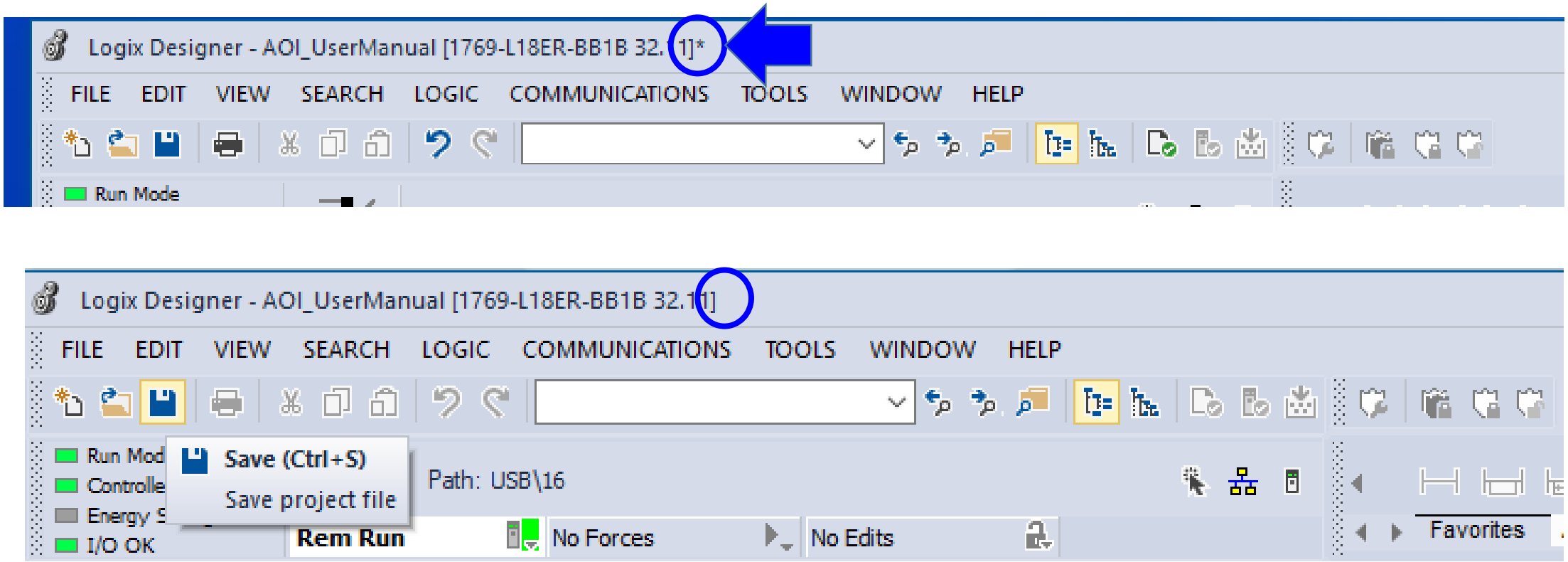
This section shows transfer contents of Implicit message. The order of data is in **Integer format.**
Contents of Implicit message is fixed and cannot be changed.

INT

Word	Input (driver → scanner)	Output (scanner → driver)
0	Remote I/O (R-OUT)	Remote I/O (R-IN)
1	Operation data number selection_R	Operation data number selection
2	Fixed I/O (OUT)	Fixed I/O (IN)
3	Present alarm	Direct data operation operation type
4	Feedback position (lower)	Direct data operation position (lower)
5	Feedback position (upper)	Direct data operation position (upper)
6	Feedback speed [Hz] (lower)	Direct data operation operating speed (lower)
7	Feedback speed [Hz] (upper)	Direct data operation operating speed (upper)
8	Command position (lower)	Direct data operation starting/changing rate (lower)
9	Command position (upper)	Direct data operation starting/changing rate (upper)
10	Torque monitor	Direct data operation stopping deceleration (lower)
11	CST operating current	Direct data operation stopping deceleration (upper)
12	Information (lower)	Direct data operation operating current
13	Information (upper)	Direct data operation forwarding destination
14	Reserved	Reserved
15	Read parameter ID_R	Read parameter ID
16	Read/write status	Write request
17	Write parameter ID_R	Write parameter ID
18	Read data (lower)	Write data (lower)
19	Read data (upper)	Write data (upper)
20	Assignable monitor 0 (lower)	–
21	Assignable monitor 0 (upper)	–
22	Assignable monitor 1 (lower)	–
23	Assignable monitor 1 (upper)	–
24	Assignable monitor 2 (lower)	–
25	Assignable monitor 2 (upper)	–
26	Assignable monitor 3 (lower)	–
27	Assignable monitor 3 (upper)	–

New Module

In addition, when the * is seen at the top of the Studio 5000 file, this means that unsaved changes are on the program. Usually, you want to save before Downloading to the PLC.



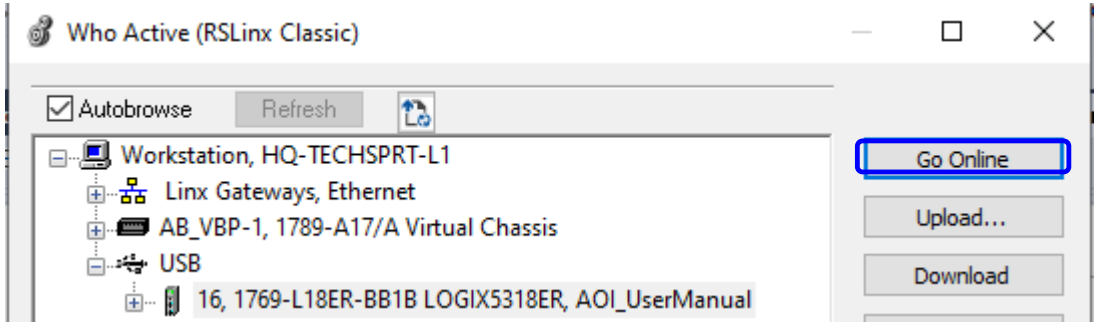
*NOTE: These screen shots come from version 32.11

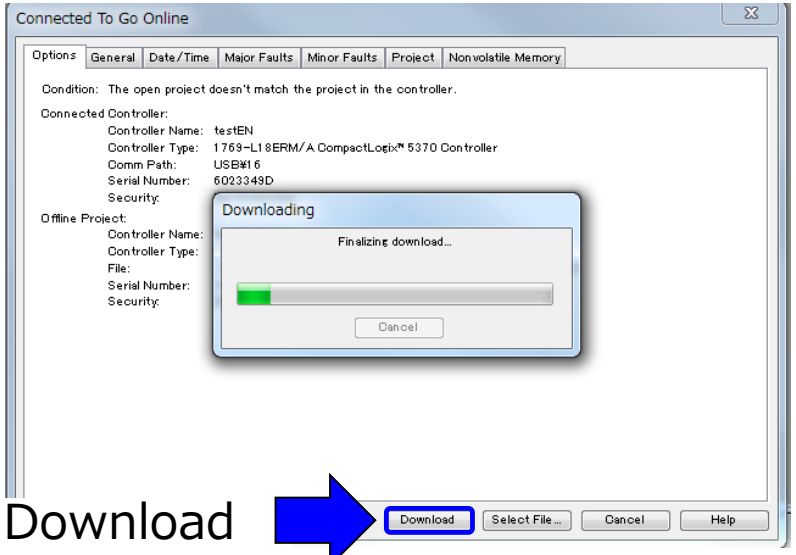
New Module

Version 3.0, 03/09/2020

Connect EtherNet/IP

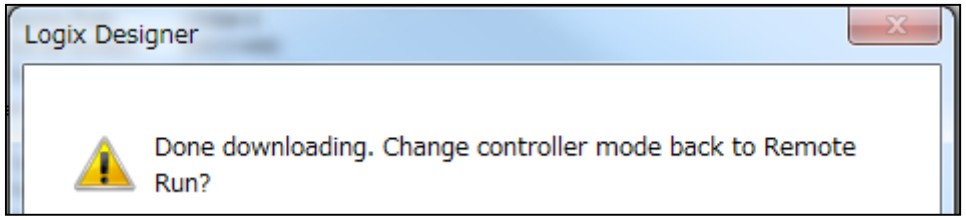
Select “Who Active” in “Communications” menu. In this document, the controller and PC are connected by a USB cable. Select “Controller” in the USB tree, and click on “Go Online.”





Click Download

Note :
Switch “REM” setting in controller. When download, message is shown as below, you can select “RUN MODE” remote from controller.



Jog Operation

Version 3.0, 03/09/2020

Implicit message

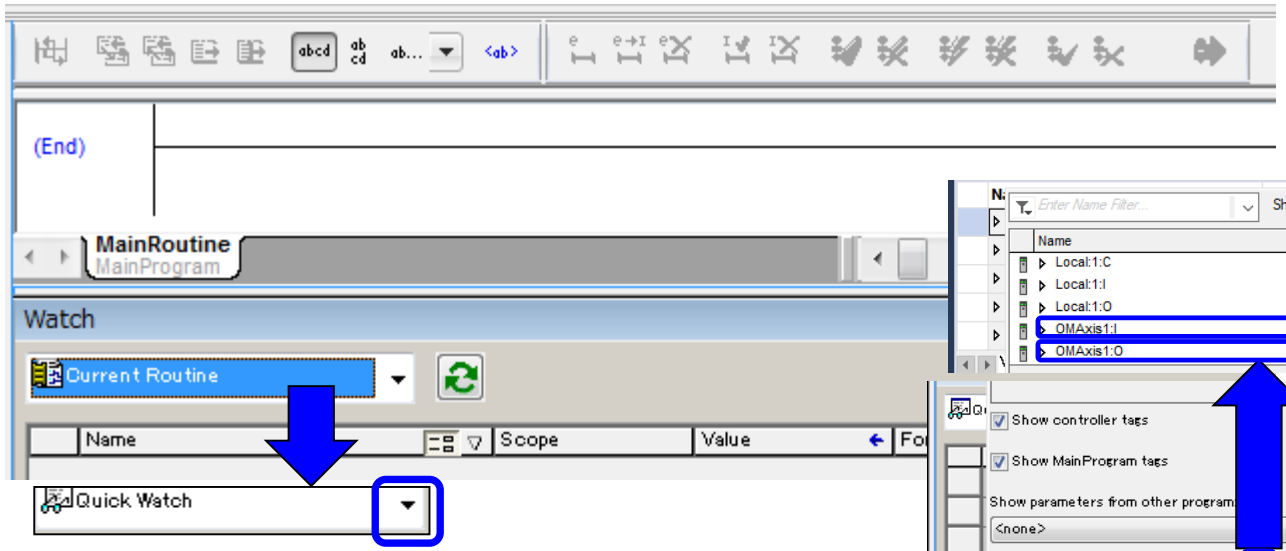
After enabling EtherNet/IP communication by downloading, you can see the screen as shown below.

Jogging

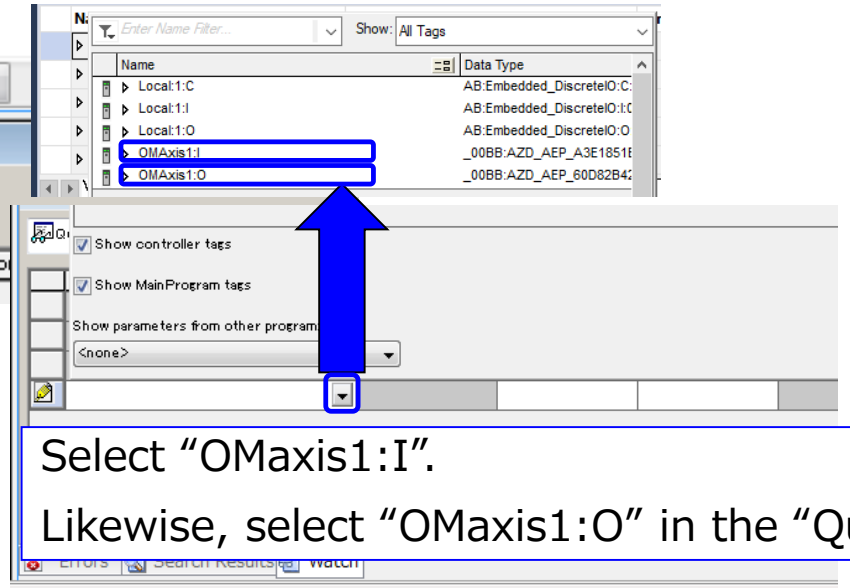
Let’s begin moving the motor shaft in a forward and reverse direction.

Jog Operation

Currently there is no program in the MainRoutine. Monitor the Implicit Message of the adapter(driver) by “Watch” function.



Select “Quick Watch” from the Pull-down menu. Next, click pull-down button on the right of “Quick Watch” The screen on the right is shown.



Select “OMaxis1:I”.

Likewise, select “OMaxis1:O” in the “Quick Watch”.

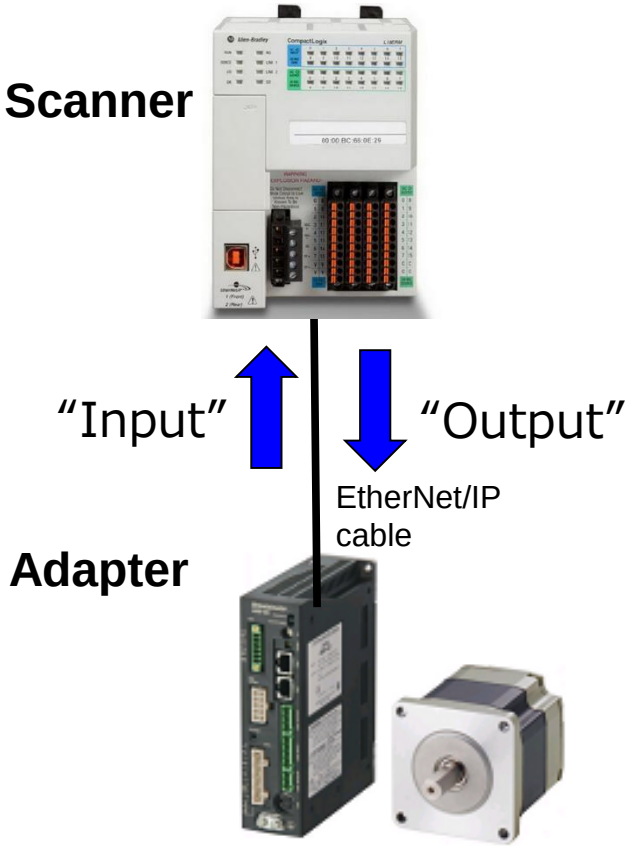
Jog Operation

Version 3.0, 03/09/2020

Implicit message format

The list of Implicit message is extracted from the user-manual.

From the scanner(controller) point of view, “Input” and “Output” are defined.



INT OMaxis1:I OMaxis1:O

Word	Input (driver → scanner)	Output (scanner → driver)
0	Remote I/O (R-OUT)	Remote I/O (R-IN)
1	Operation data number selection_R	Operation data number selection
2	Fixed I/O (OUT)	Fixed I/O (IN)
3	Present alarm	Direct data operation operation type
4	Feedback position (lower)	Direct data operation position (lower)
5	Feedback position (upper)	Direct data operation position (upper)
6	Feedback speed [Hz] (lower)	Direct data operation operating speed (lower)
7	Feedback speed [Hz] (upper)	Direct data operation operating speed (upper)
8	Command position (lower)	Direct data operation starting/changing rate (lower)
9	Command position (upper)	Direct data operation starting/changing rate (upper)
10	Torque monitor	Direct data operation stopping deceleration (lower)
11	CST operating current	Direct data operation stopping deceleration (upper)
12	Information (lower)	Direct data operation operating current
13	Information (upper)	Direct data operation forwarding destination
14	Reserved	Reserved
15	Read parameter ID_R	Read parameter ID
16	Read/write status	Write request
17	Write parameter ID_R	Write parameter ID
18	Read data (lower)	Write data (lower)
19	Read data (upper)	Write data (upper)
20	Assignable monitor 0 (lower)	–
21	Assignable monitor 0 (upper)	–
22	Assignable monitor 1 (lower)	–
23	Assignable monitor 1 (upper)	–
24	Assignable monitor 2 (lower)	–
25	Assignable monitor 2 (upper)	–
26	Assignable monitor 3 (lower)	–
27	Assignable monitor 3 (upper)	–

Ref. Page 90 in manual

Jog Operation

Version 3.0, 03/09/2020

FW-JOG, RV-JOG

Set “1” to FW-JOG or RV-JOG, “Jog operation” will be started. Check assigned memory of “FW-JOG” and “RV-JOG” in Implicit Message.

Implicit Message

Output is 40 bytes changed to 20 Words.
(Ref. New module section, SINT to INT.)

Fixed I/O(IN)

Second word in 20 words

FW-JOG, RV-JOG

0bit and 1bit
in “Fixed I/O(IN)“

You can specify assigned memory as below.

“FW-JOG” is OMaxis1:O.Data[2].0

“RV-JOG” is OMaxis1:O.Data[2].1

Word	Input (driver → scanner)	Output (scanner → driver)
0	Remote I/O (R-OUT)	Remote I/O (R-IN)
1	Operation data number selection_R	Operation data number selection
2	Fixed I/O (OUT)	Fixed I/O (IN)
3	Present alarm	Direct data operation operation type

Ref. Page 90 in manual

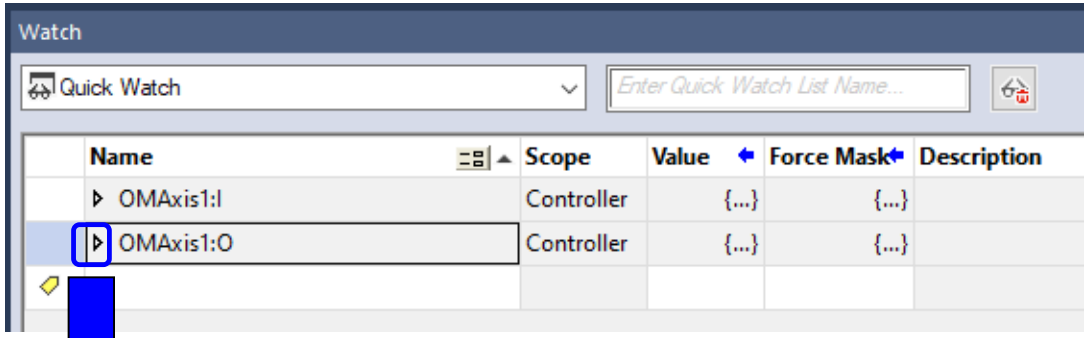
Bit	Name	Description	Initial value
0	FW-JOG	This is used to execute JOG operation in the forward direction.	0
1	RV-JOG	This is used to execute JOG operation in the reverse direction.	
2	Reserved	A value is disregarded.	
3	START	This is used to execute stored data operation.	
4	ZHOME	This is used to execute high-speed return-to-home operation.	
5	STOP	This is used to stop the motor.	
6	FREE	This is used to shut off the motor current to remove the motor excitation. In the case of an electromagnetic brake motor, the electromagnetic brake is released.	
7	ALM-RST	This is used to reset the alarm being generated presently.	
8	TRIG	This is used to execute direct data operation.	
9	TRIG-MODE	This is used to set the judgment level for the TRIG. 0: Start at ON edge 1: Start at ON level	
10	ETO-CLR	This is used to release the ETO-mode.	
11	Reserved	A value is disregarded.	
12	FW-JOG-P	This is used to execute inching operation in the forward direction.	
13	RV-JOG-P	This is used to execute inching operation in the reverse direction.	
14	FW-POS	This is used to execute continuous operation in the forward direction.	
15	RV-POS	This is used to execute continuous operation in the reverse direction.	

Ref. Page 96 in manual

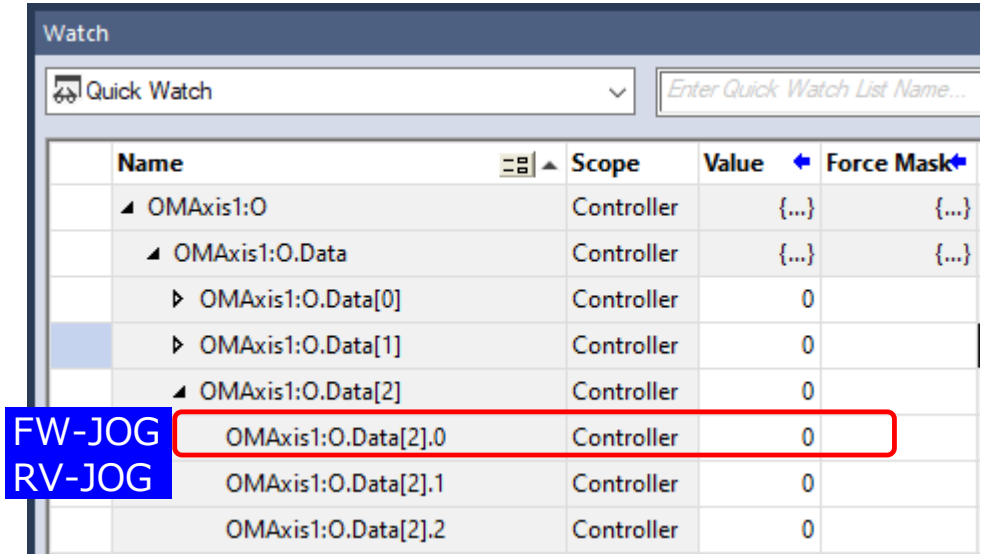
Jog Operation

Version 3.0, 03/09/2020

"Quick Watch" is displayed as below. Click ⊞ on the right of "OMaxis1:O".



On the previous page, "FW-JOG" is assigned in OMaxis1:O.Data[2].0.



Enter "1" in the value of "FW-JOG", and the motor will rotate clockwise.

Then enter "0" in the value field. Confirm motor stops.

Similarly, you can confirm "RV-JOG," which will rotate the motor counter-clockwise.

Add-On Instructions (AOIs)

Version 3.0, 03/09/2020

Orientalmotor has created the following Add-On Instructions (AOIs) for the AZ Drives:

1. Direct Data Operation (DDO)
2. Data Select Operation (MOVE)
3. Read Data
4. Write Data
5. Home Operation without position sensor (ZHOME)
6. Monitoring

- Each AOI has parameter fields which the user can enter while referring to the users manual of the AZ EIP driver.

- The AOIs will only be enabled if the AZ series EtherNet/IP compatible driver has been registered using the Orientalmotor EDS file.

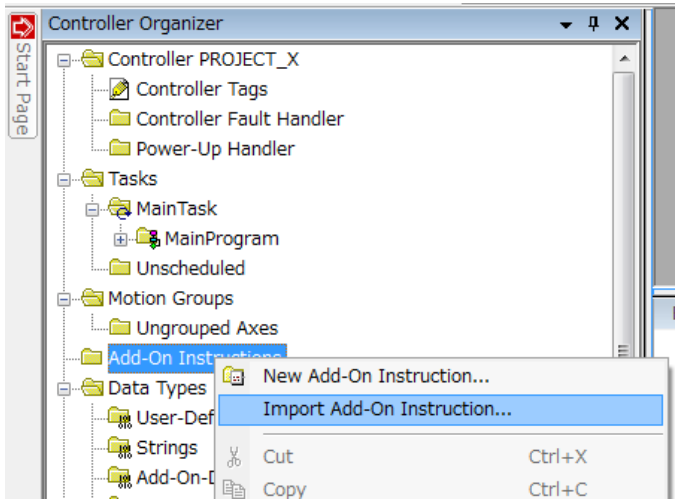
OM_AZ_DDO.L5X
OM_AZ_MOVE.L5X
OM_AZ_READ.L5X
OM_AZ_WRITE.L5X
OM_AZ_ZHOME.L5X
OM_AZ_MONITOR.L5X

Add-On Instructions (AOIs): ZHOME

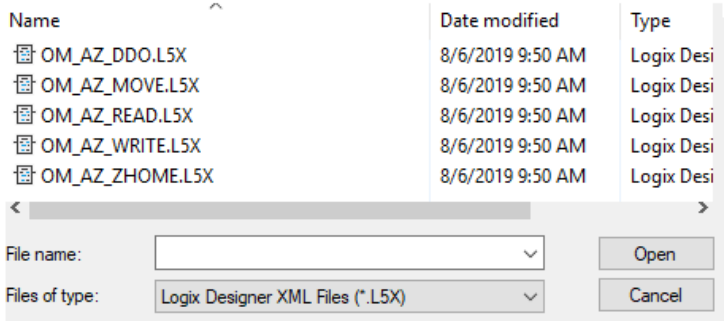
Oriental motor
Version 3.0, 03/09/2020

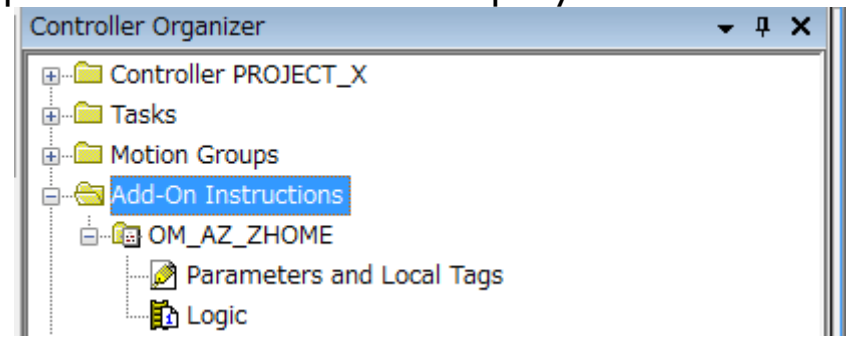
The OM_AZ_ZHOME example shows how to import AOI and set up AOI.
[OM_AZ_ZHOME] This AOI is used to execute high-speed return-to-home operation.
Note: In advance, set the position coordinate by P-PRESET input or HOME PRESET Switch. Otherwise home position is not fixed, return-to-home operation is not performed.

STEP1. Right click on “Add-On Instructions” in the Organizer tree. Then select “Import Add-On-Instructions”.



STEP2. Select AOI (*.L5X) file and open. The imported AOI must be displayed in Controller Organizer.

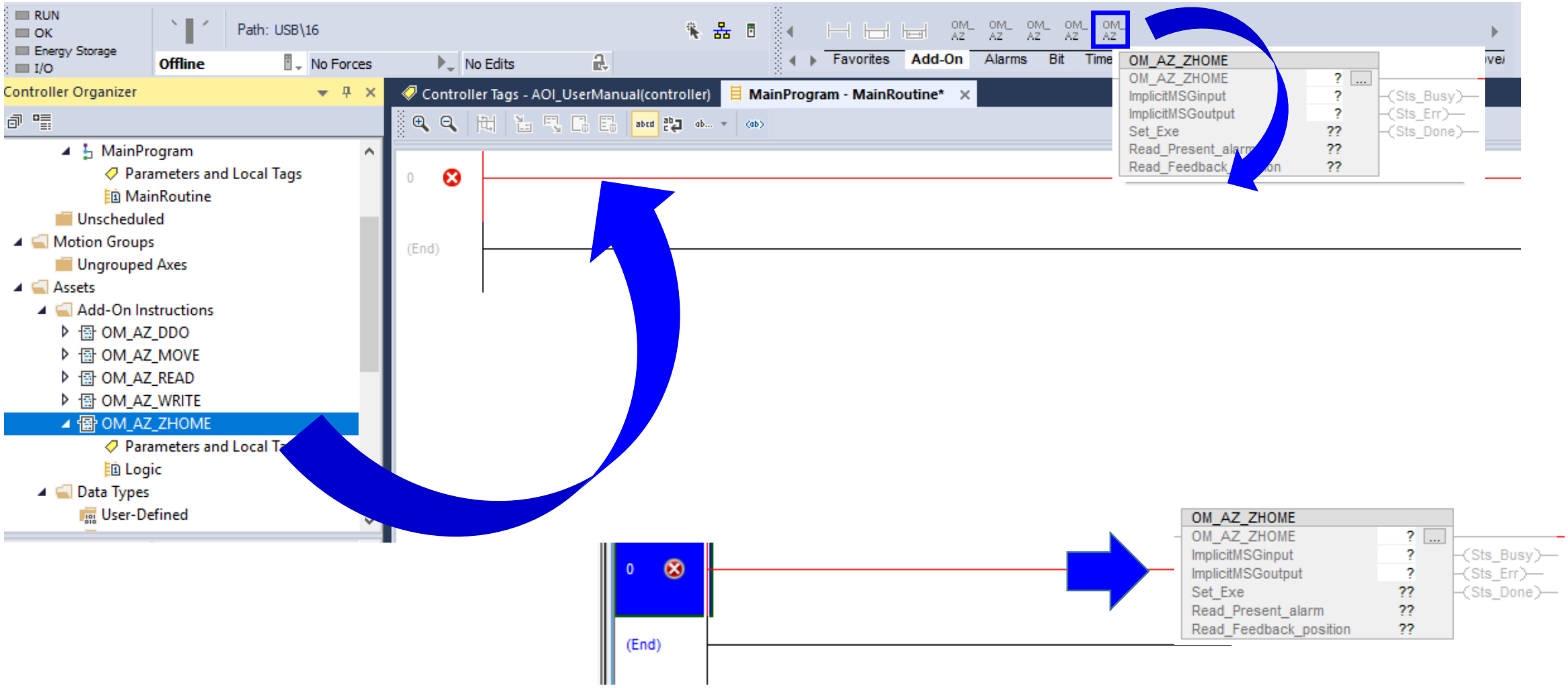




Add-On Instructions (AOIs): ZHOME

Oriental motor
Version 3.0, 03/09/2020

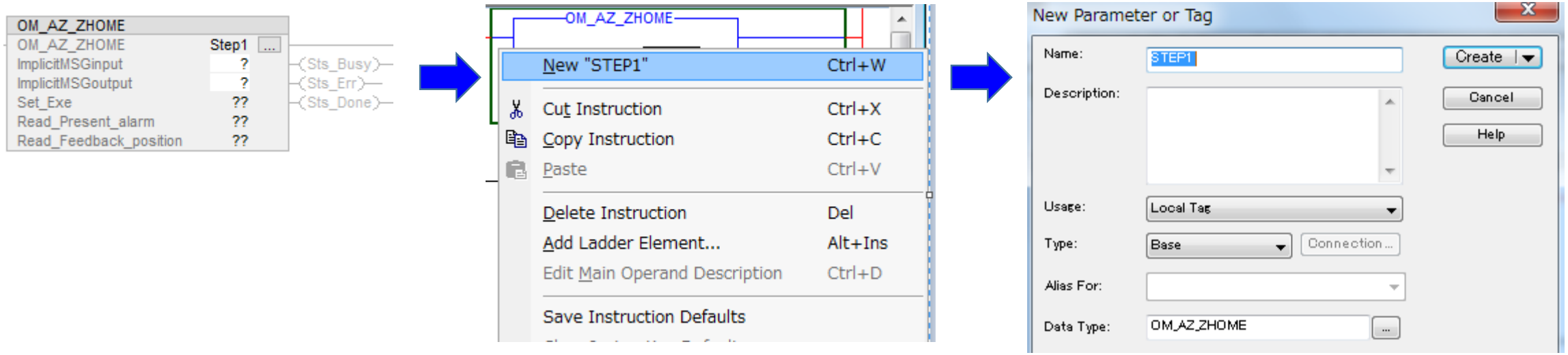
STEP3. Open “MainRoutine”.
Add Rung. You can either Drag and Drop the AOI from the Controller Organizer tree, or select the AOI from the “Add-On” tab.



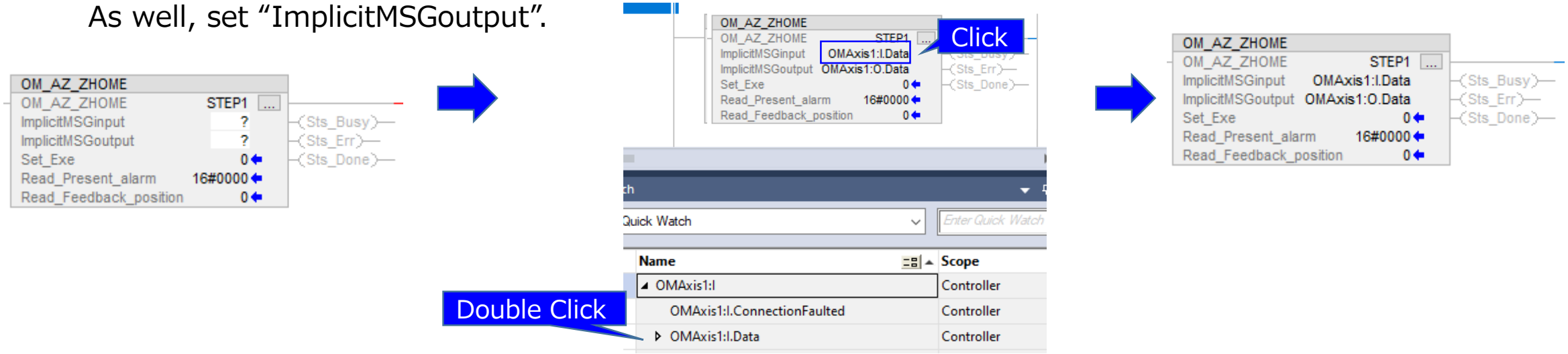
Add-On Instructions (AOIs): ZHOME

Oriental motor
Version 3.0, 03/09/2020

STEP4. Set parameters and Local tag in AOI.
Right click on the tag (in this example, we are using “STEP1”). Create New Tag ”STEP1”.



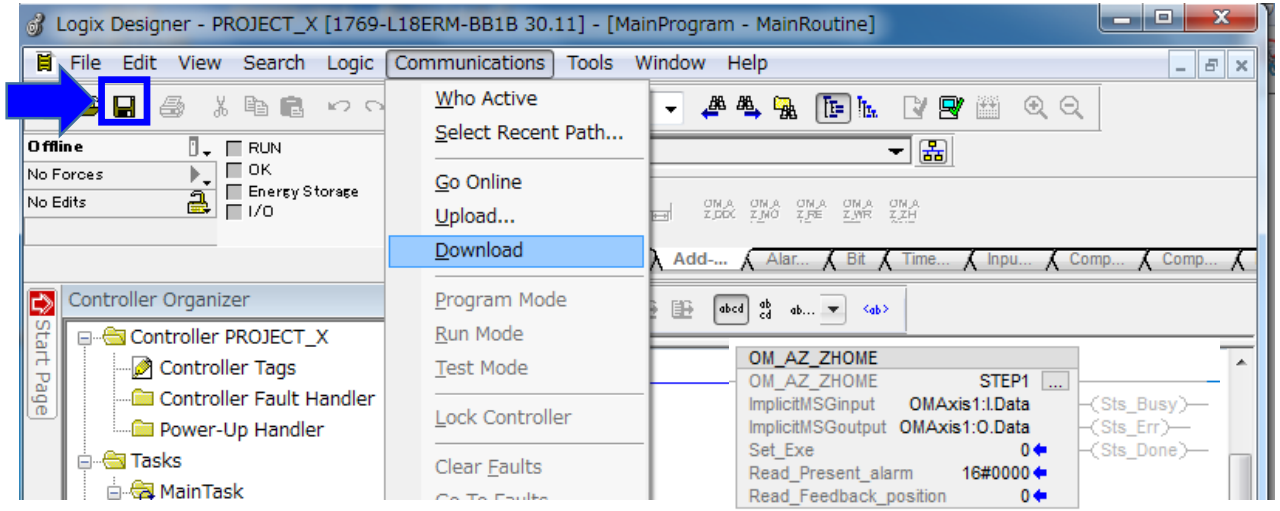
STEP5. Set “ImplicitMSGinput” in AOI. In this case, select “OMAxis1:I.Data” which is defined as a new module.
As well, set “ImplicitMSGoutput”.



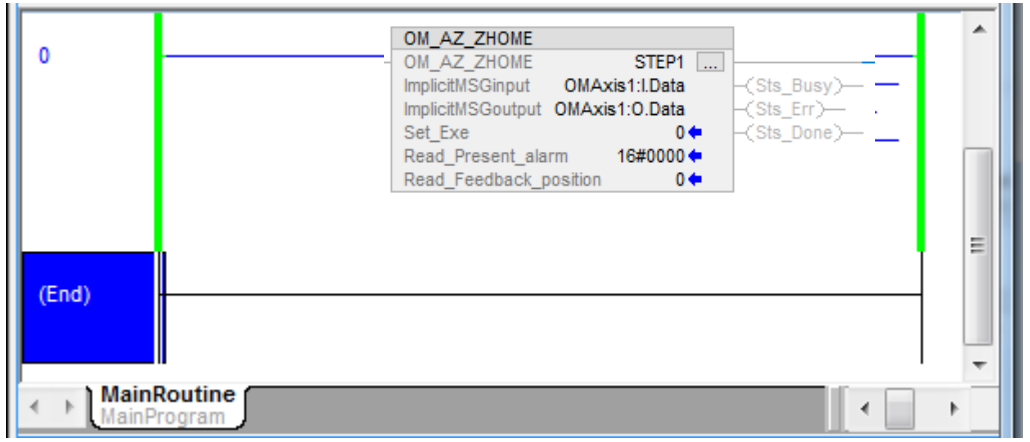
Add-On Instructions (AOIs): ZHOME

Oriental motor
Version 3.0, 03/09/2020

STEP6.　Save project and Download.



After Done-downloading, this screen is displayed.



Add-On Instructions (AOIs): ZHOME

Oriental motor
Version 3.0, 03/09/2020

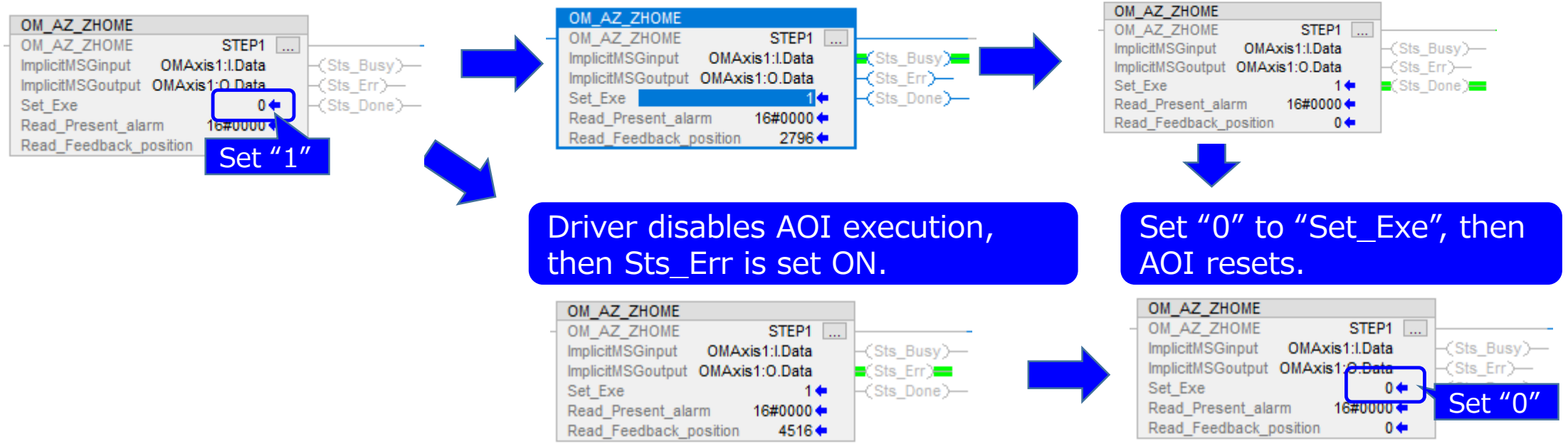
STEP7. Set “1” to “Set_Exe” in AOI while Online of Run Mode. AOI has 3 status of Sts_Busy, Sts_Err and Sts_Done.

Name	Data Type	Usage	Description
Set_Exe	BOOL	Input	1:Execution AOI, 0: No execution
Sts_Busy	BOOL	Output	1:Executing AOI
Sts_Err	BOOL	Output	1: No executing AOI due to unacceptable driver-status
Sts_Done	BOOL	Output	1:Successfully done AOI

Set “1” to “Set_Exe”, then AOI execution starts.

During execution AOI, “Sts_Busy” is set ON.

Successfully done AOI, then “Sts_Done” is set ON.

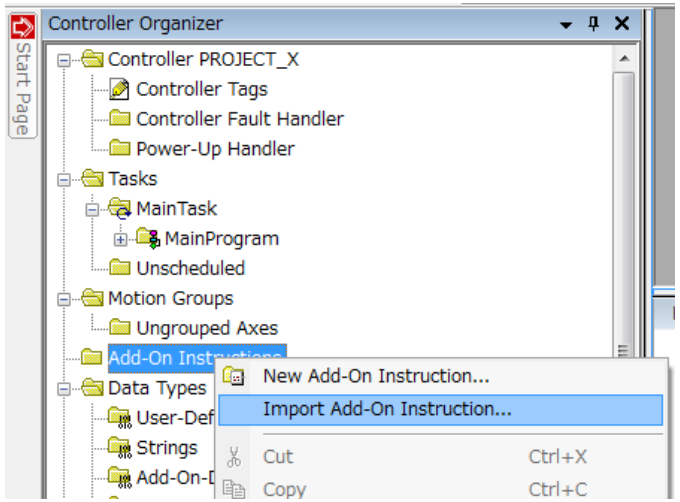


Add-On Instructions (AOIs): WRITE

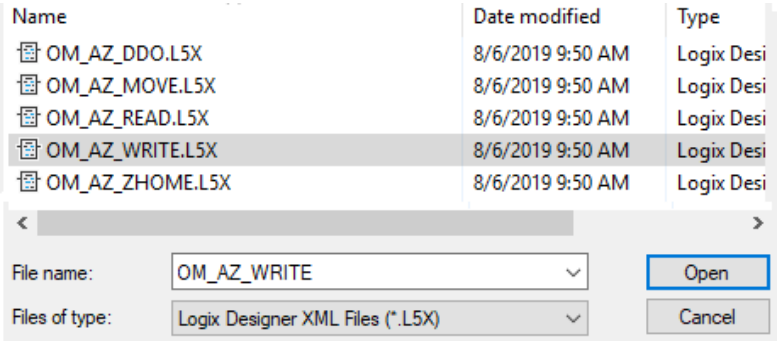
Oriental motor
Version 3.0, 03/09/2020

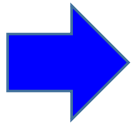
We will now add on the **OM_AZ_Write AOI** to modify our operation data no 0.

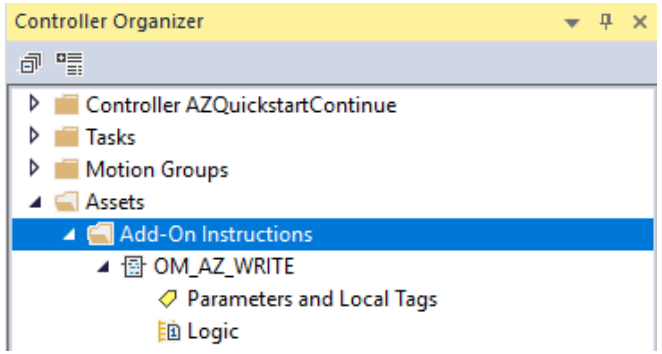
STEP1. Right click on “Add-On Instructions” in the Organizer tree. Then select “Import Add-On-Instructions”.



STEP2. Select AOI (*.L5X) file and open. The imported AOI must be displayed in the Controller Organizer.



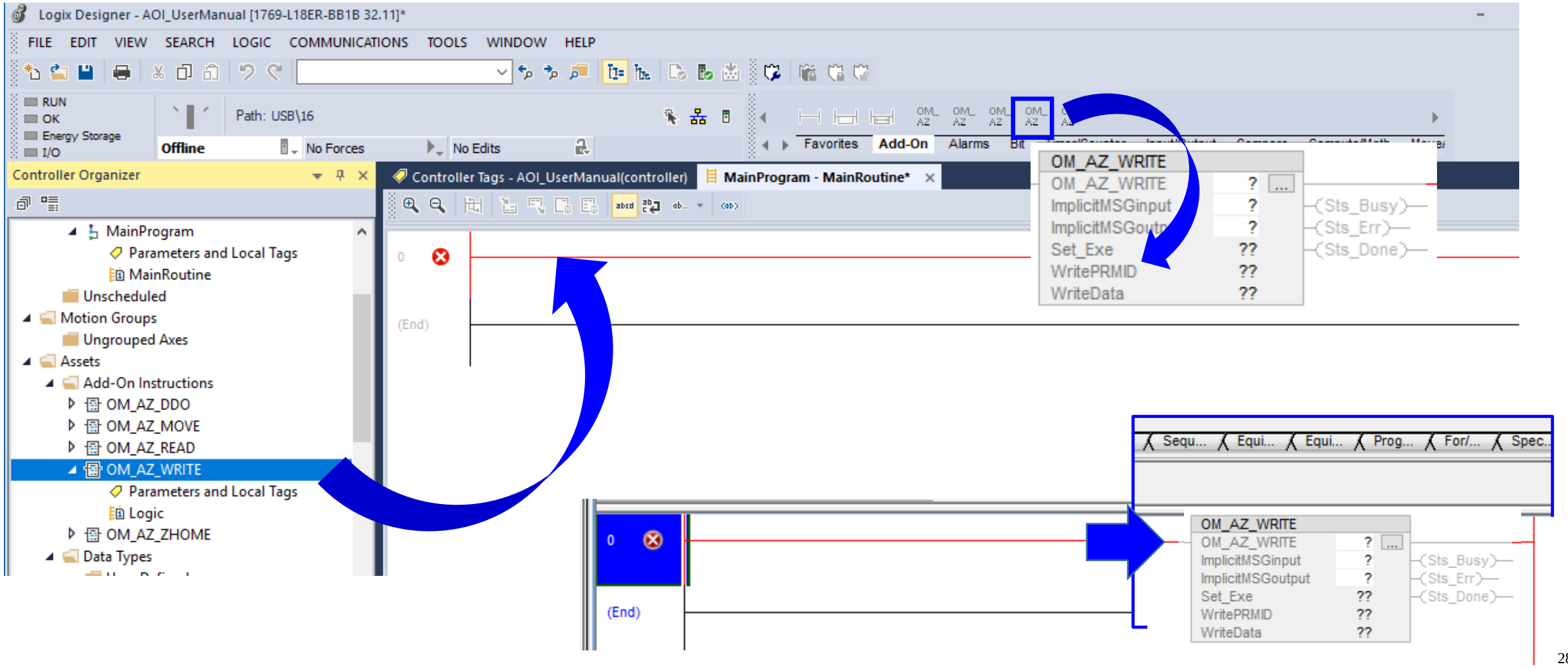




Add-On Instructions (AOIs): WRITE

Oriental motor
Version 3.0, 03/09/2020

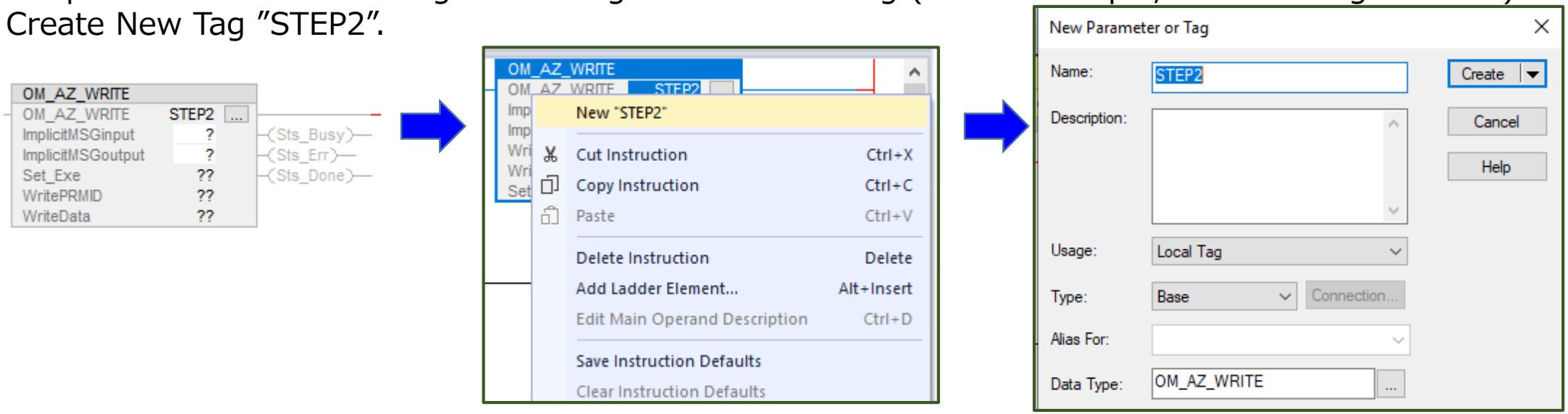
STEP3. Open “MainRoutine”.
Add Rung. You can either Drag and Drop the AOI from the Controller Organizer tree, or select the AOI from the “Add-On” tab.



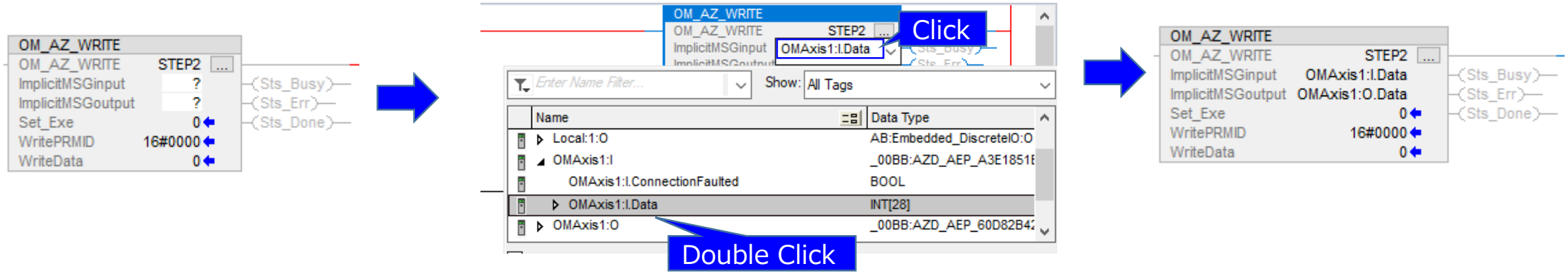
Add-On Instructions (AOIs): WRITE

Oriental motor
Version 3.0, 03/09/2020

STEP4. Set parameters and Local tag in AOI. Right click on the tag (in this example, we are using “STEP2”). Create New Tag ”STEP2”.



STEP5. Set “ImplicitMSGinput” in AOI. In this case, select “OMAxis1:I.Data” which is defined as a new module. As well, set “ImplicitMSGoutput”.



Add-On Instructions (AOIs): WRITE

Oriental motor
Version 3.0, 03/09/2020

STEP6. Write position and speed parameter to Operation data no. 0. (ref. page 118 in the manual).

4 Operation data R/W commands

This is a method in which the parameter ID (base address) of the base operation data number is specified to input data.
Refer to "4-3 Setting example" on p.121 for how to use the base address.

4-1 Base address of each operation data number

Base address		Operation data No.	Base address		Operation data No.	Base address		Operation data No.	Base address		Operation data No.
Dec	Hex		Dec	Hex		Dec	Hex		Dec	Hex	
3072	0C00h	No. 0	4288	10C0h	No. 38	5504	1580h	No. 76	6720	1A40h	No. 114
3104	0C20h	No. 1	4320	10E0h	No. 39	5536	15A0h	No. 77	6752	1A60h	No. 115
3136	0C40h	No. 2	4352	1100h	No. 40	5568	15C0h	No. 78	6784	1A80h	No. 116

Base address		Operation data No.
Dec	Hex	
3072	0C00h	No. 0

3072 decimal
0C00 hex is the base address

Add-On Instructions (AOIs): WRITE

Oriental motor
Version 3.0, 03/09/2020

STEP6 (cont).

4-2 Parameter ID

The setting item of operation data is set with the operation data R/W command.
The parameter ID for the setting item is arranged based on the base address of the operation data number.
(Base address ⇨p.118)
For example, in the case of the setting item "Position," 1 is added to the base address.

Parameter ID	Name	Setting range	Initial value	Update
Base address +1	Position	–2,147,483,648 to 2,147,483,647 steps	0	
Base address +2	Operating speed	–4,000,000 to 4,000,000 Hz	1,000	

Desired position will be 5000 steps.

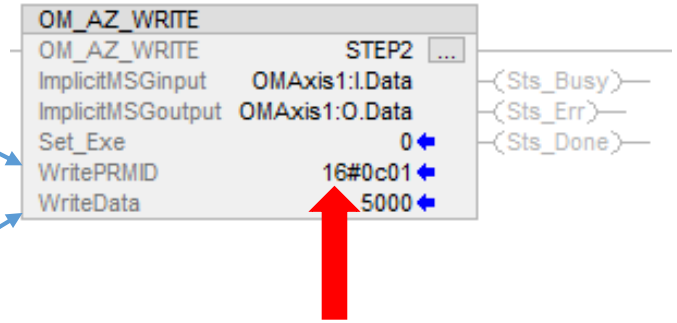
Enter Base address +1 for **position parameter** = 3072 +1 = 3073dec = 0C01h

Base address		Operation data No.
Dec	Hex	
3072	0C00h	No. 0

+1 =

Position Parameter

Specified value

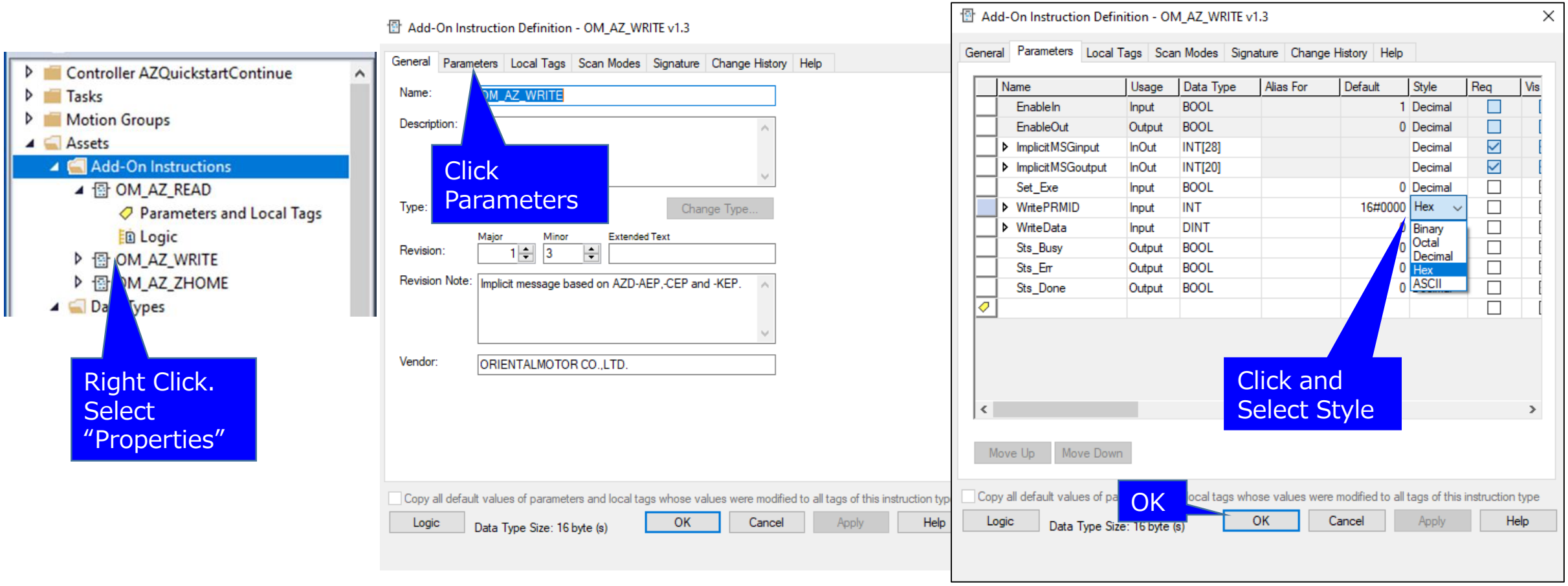


*2: The AOI has base 16 as the default

Add-On Instructions (AOIs): WRITE

Oriental motor
Version 3.0, 03/09/2020

*2 As a note, we are using register address 0C00 as the default setting for the AOI is base 16, however this setting can be changed by right clicking on the AOI and selecting properties.

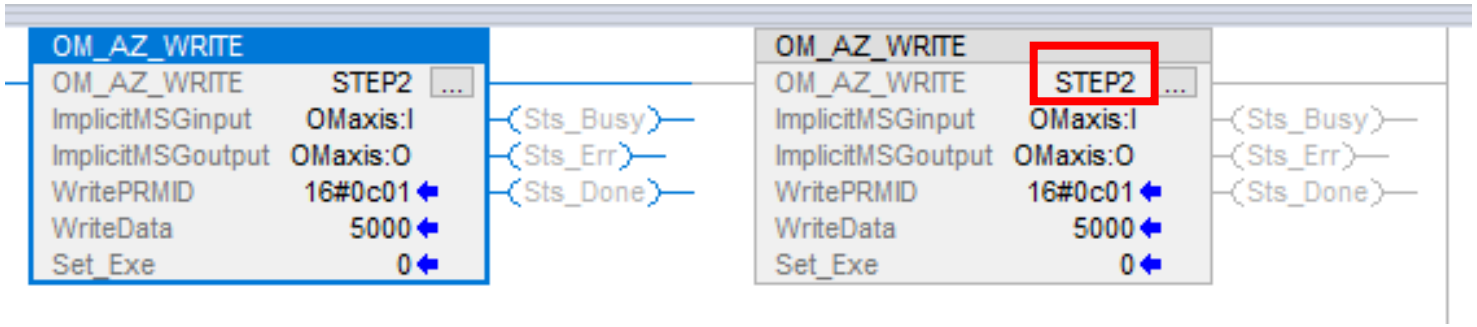


From there, click on the parameters tab and click on the "Style" pull-down selection menu for the WritePRMID. Here, you can set the preferred input type. Once selected be sure to hit OK or Apply before leaving this screen.

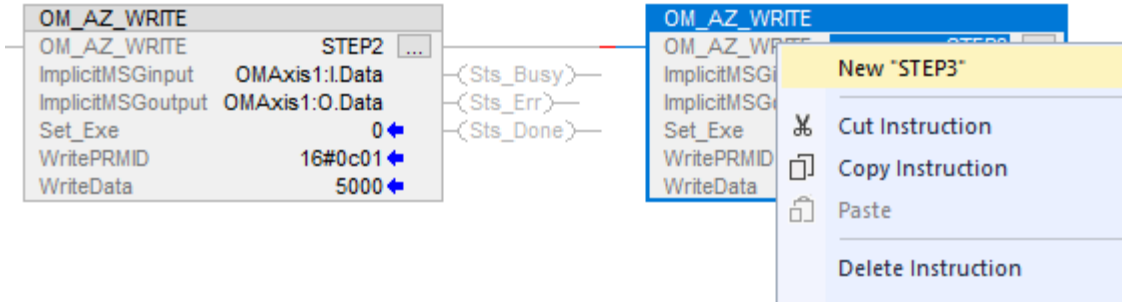
Add-On Instructions (AOIs): WRITE

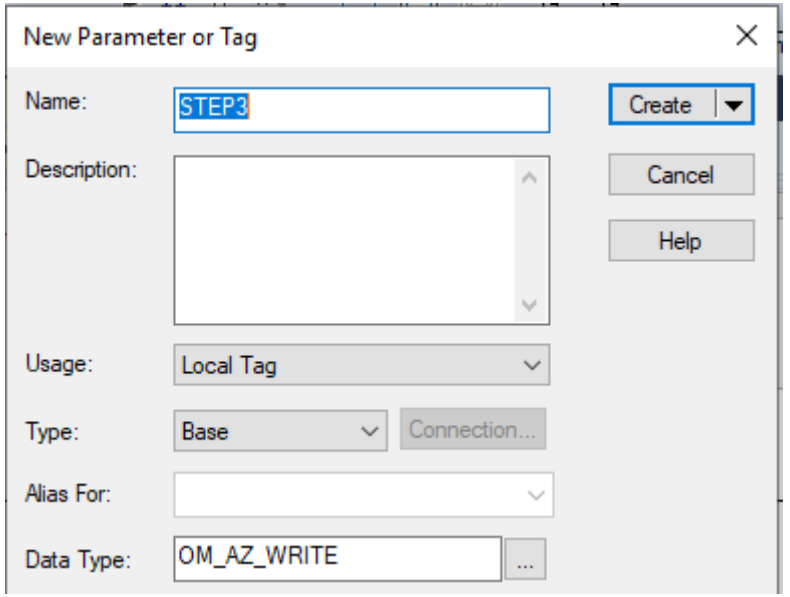
Oriental motor
Version 3.0, 03/09/2020

STEP6 (cont). To set the desired speed, copy OM_AZ_Write on the main program and create a new tag (in this example, we are using “STEP3”)



Right click on the tag “STEP3”. Create New Tag ”STEP3”.





Add-On Instructions (AOIs): WRITE

Oriental motor
Version 3.0, 03/09/2020

STEP6 (cont).

4-2 Parameter ID

The setting item of operation data is set with the operation data R/W command.
The parameter ID for the setting item is arranged based on the base address of the operation data number.
(Base address ⇨p.118)
For example, in the case of the setting item "Position," 1 is added to the base address.

Parameter ID	Name	Setting range	Initial value	Update
Base address +1	Position	–2,147,483,648 to 2,147,483,647 steps	0	
Base address +2	Operating speed	–4,000,000 to 4,000,000 Hz	1,000	

Desired position speed will be 2000Hz for tag STEP3.

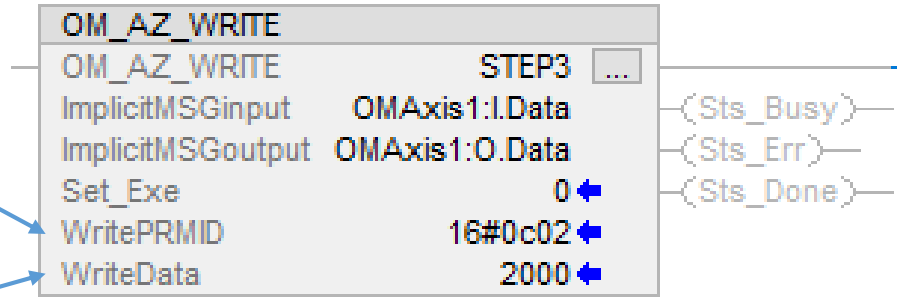
Enter Base address +2 for **Operation speed parameter** = 3072 +2 = 3074dec = 0C02h

Base address		Operation data No.
Dec	Hex	
3072	0C00h	No. 0

+2 =

Operation Speed Parameter

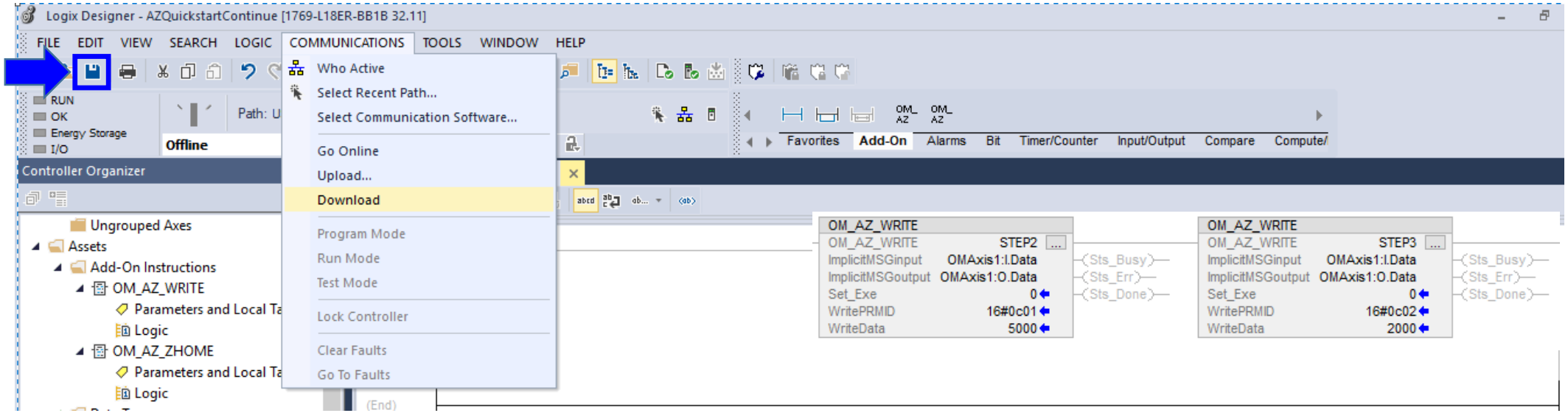
Specified value



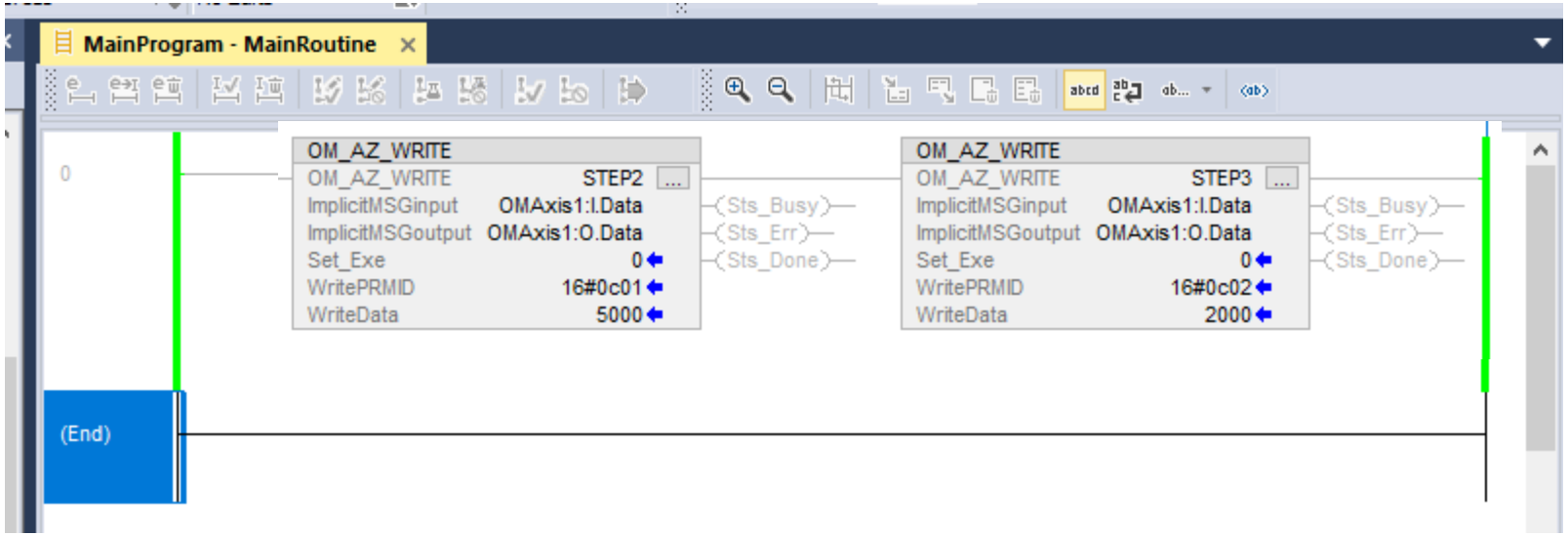
Add-On Instructions (AOIs): WRITE

Version 3.0, 03/09/2020

STEP7.　Save project and Download.



After Done-downloading,
this screen is displayed.



Add-On Instructions (AOIs): WRITE

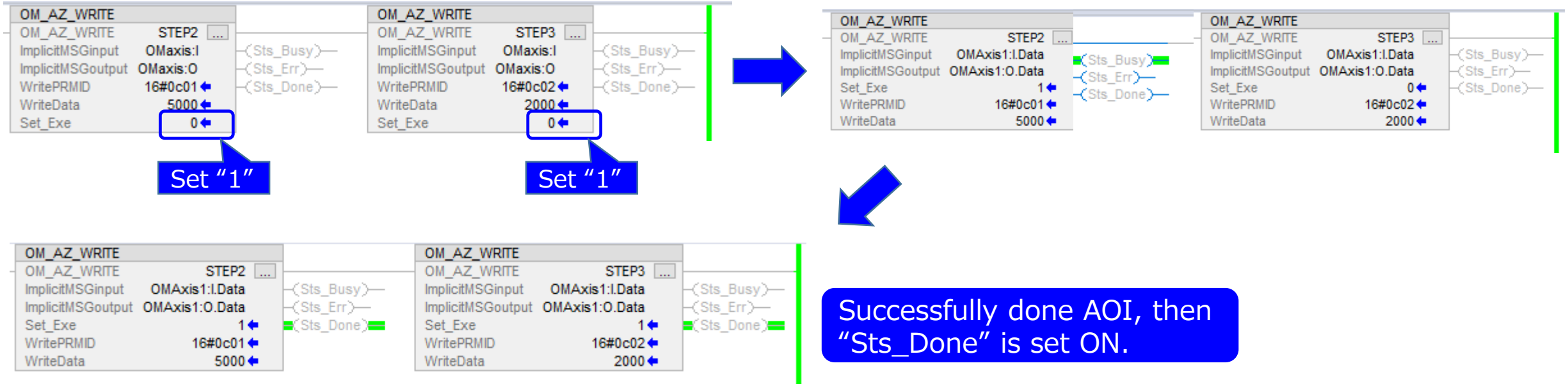
Oriental motor
Version 3.0, 03/09/2020

STEP8. Set “1” to “Set_Exe” in AOI while Online of Run Mode. AOI has 3 status of Sts_Busy, Sts_Err and Sts_Done.

Name	Data Type	Usage	Description
Set_Exe	BOOL	Input	1:Execution AOI, 0: No execution
Sts_Busy	BOOL	Output	1:Executing AOI
Sts_Err	BOOL	Output	1: No executing AOI due to unacceptable driver-status
Sts_Done	BOOL	Output	1:Successfully done AOI

Set “1” to “Set_Exe”, then AOI execution starts.

During execution AOI, “Sts_Busy” is set ON.



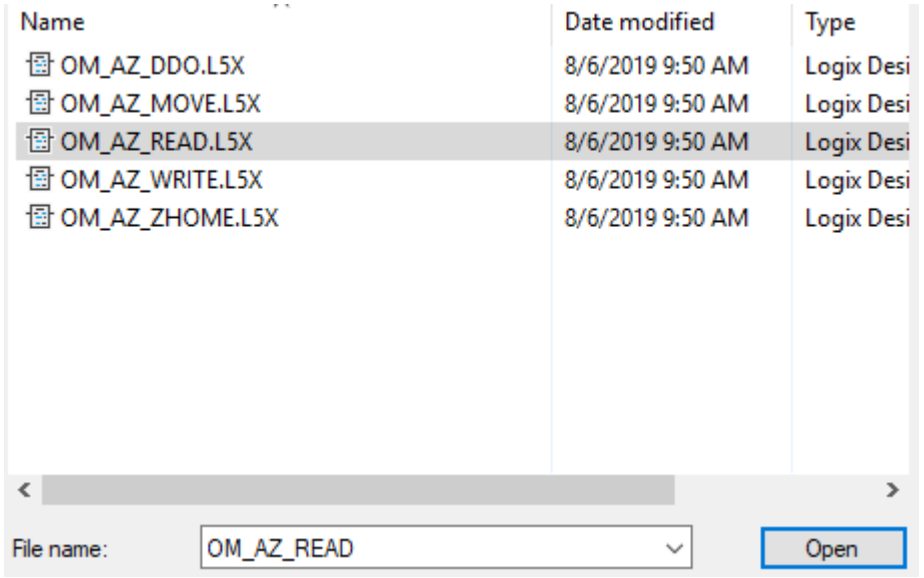
Successfully done AOI, then “Sts_Done” is set ON.

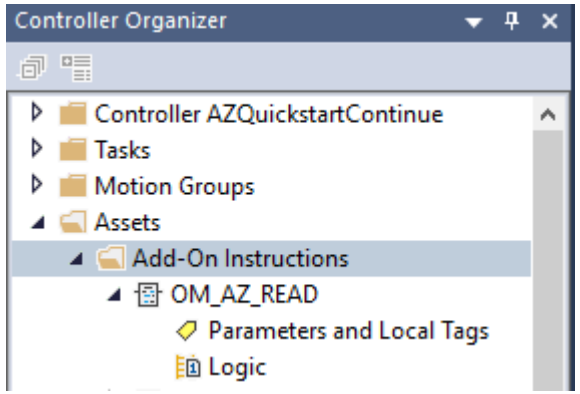
Add-On Instructions (AOIs): READ

Oriental motor
Version 3.0, 03/09/2020

We will now add on the **OM_AZ_Read** AOI to view our operation data no 0.

STEP1.　Follow similar add on procedures as OM_AZ_Write AOI except using OM_AZ_Read.

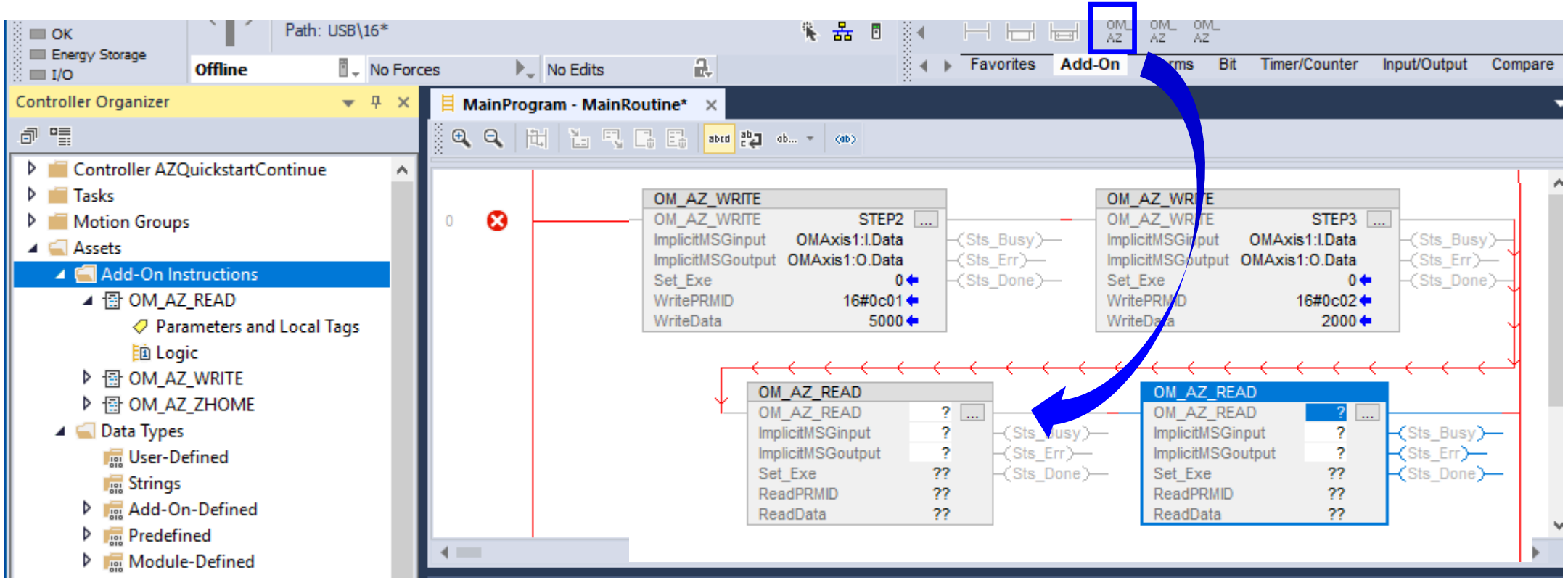




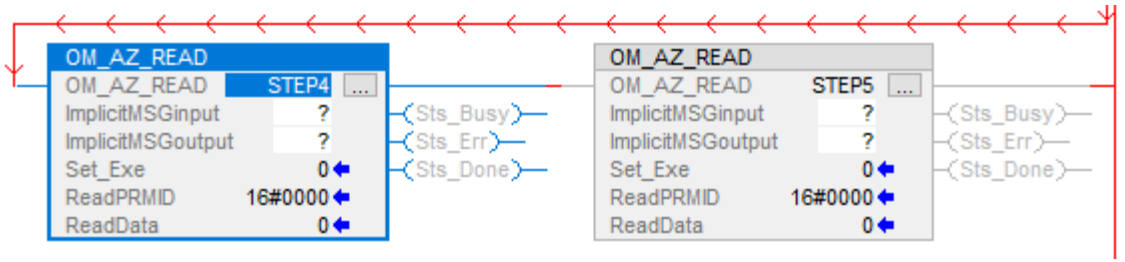
Add-On Instructions (AOIs): READ

Oriental motor
Version 3.0, 03/09/2020

STEP2. Add two OM_AZ_READ AOI after the OM_AZ_WRITE AOI.



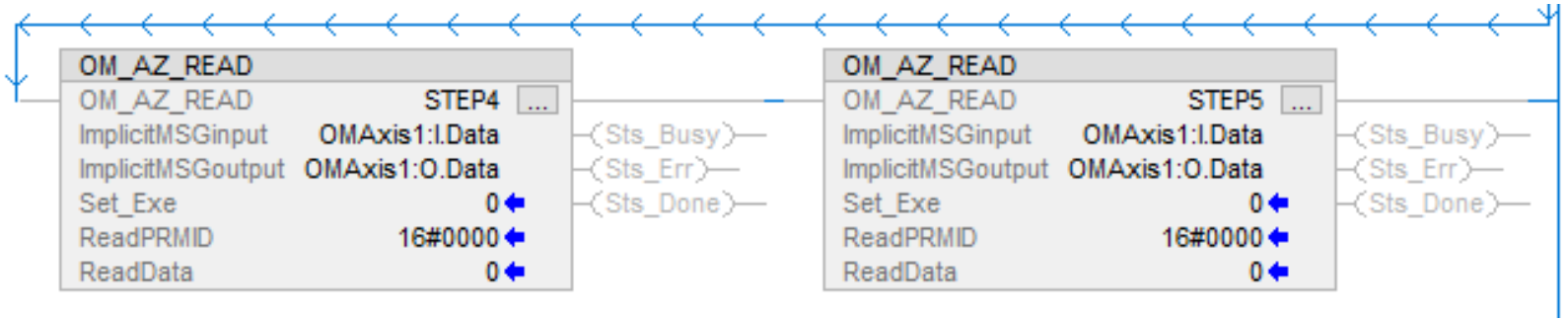
Step 3. Add new tags, (In this example we used “Step 4” and “Step 5.”)



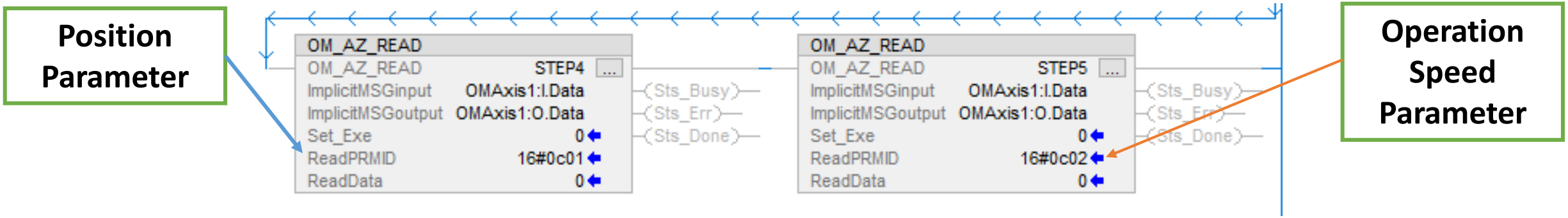
Add-On Instructions (AOIs): READ

Version 3.0, 03/09/2020

STEP4. Set “ImplicitMSGinput” in AOI. In this case, select “OMAxis1:I.Data” which is defined as a new module. As well, set “ImplicitMSGoutput”.



STEP5. Read **position** and operation **speed parameter** for **Operation data no. 0**. (ref. page 118 in the manual). Position parameter address = **0C01h**, Speed parameter address = **0C02h** (referred on slides 31 and 34).



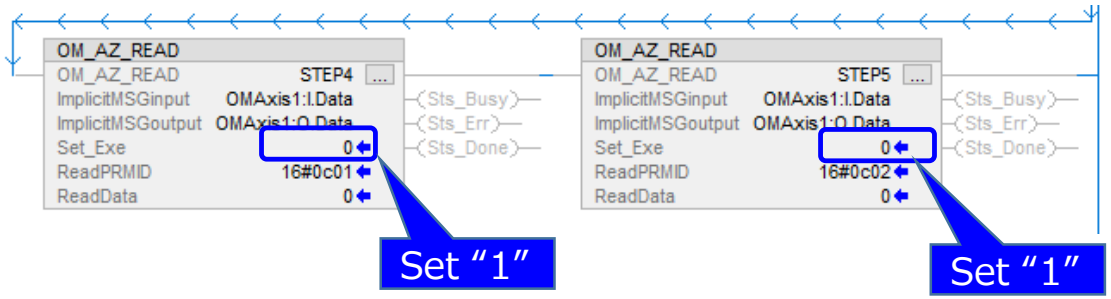
Add-On Instructions (AOIs): READ

Oriental motor
Version 3.0, 03/09/2020

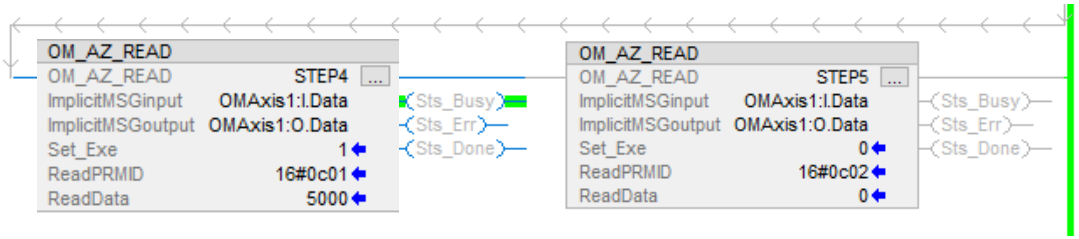
STEP6. Set “1” to “Set_Exe” in AOI while Online of Run Mode. AOI has 3 status of Sts_Busy, Sts_Err and Sts_Done.

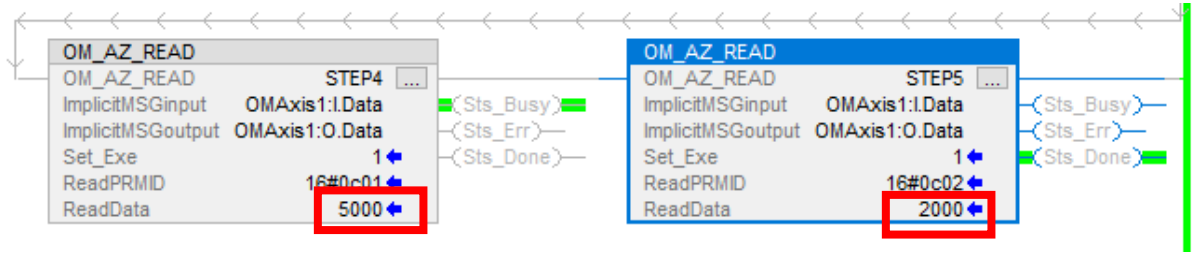
Name	Data Type	Usage	Description
Set_Exe	BOOL	Input	1:Execution AOI, 0: No execution
Sts_Busy	BOOL	Output	1:Executing AOI
Sts_Err	BOOL	Output	1: No executing AOI due to unacceptable driver-status
Sts_Done	BOOL	Output	1:Successfully done AOI

Set “1” to “Set_Exe”, then AOI execution starts.



During execution AOI, “Sts_Busy” is set ON.





Successfully done AOI, then “Sts_Done” is set ON.

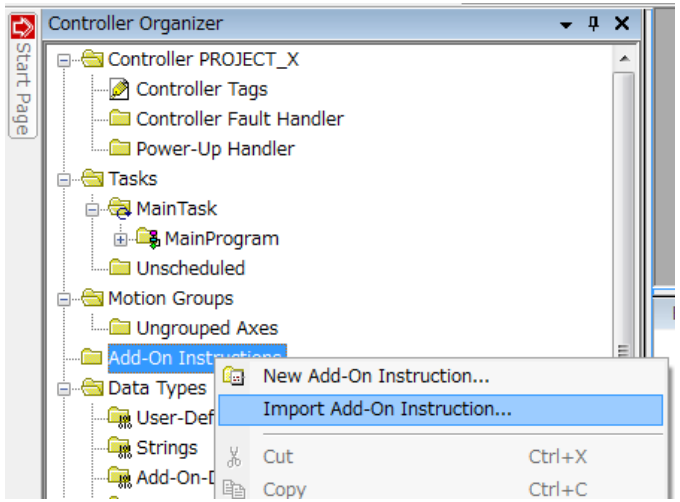
We now see our position and speed are set correctly at 5000 steps and 2000Hz.

Add-On Instructions (AOIs): MOVE

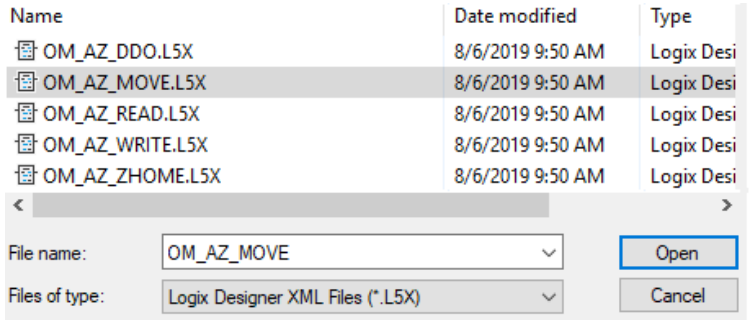
Oriental motor
Version 3.0, 03/09/2020

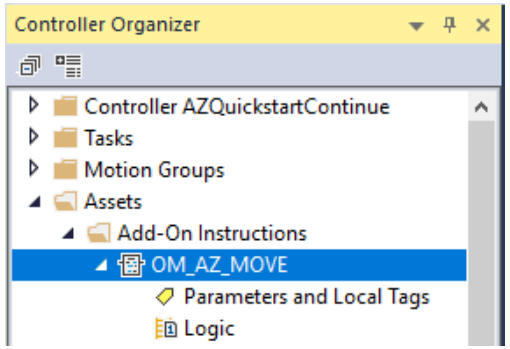
How do I move operation data No. 0? This is possible with the **OM_AZ_MOVE AOI**.

STEP1. Right click on “Add-On Instructions” in the Organizer tree. Then select “Import Add-On-Instructions”.



STEP2. Select AOI (*.L5X) file and open. The imported AOI must be displayed in Controller Organizer.

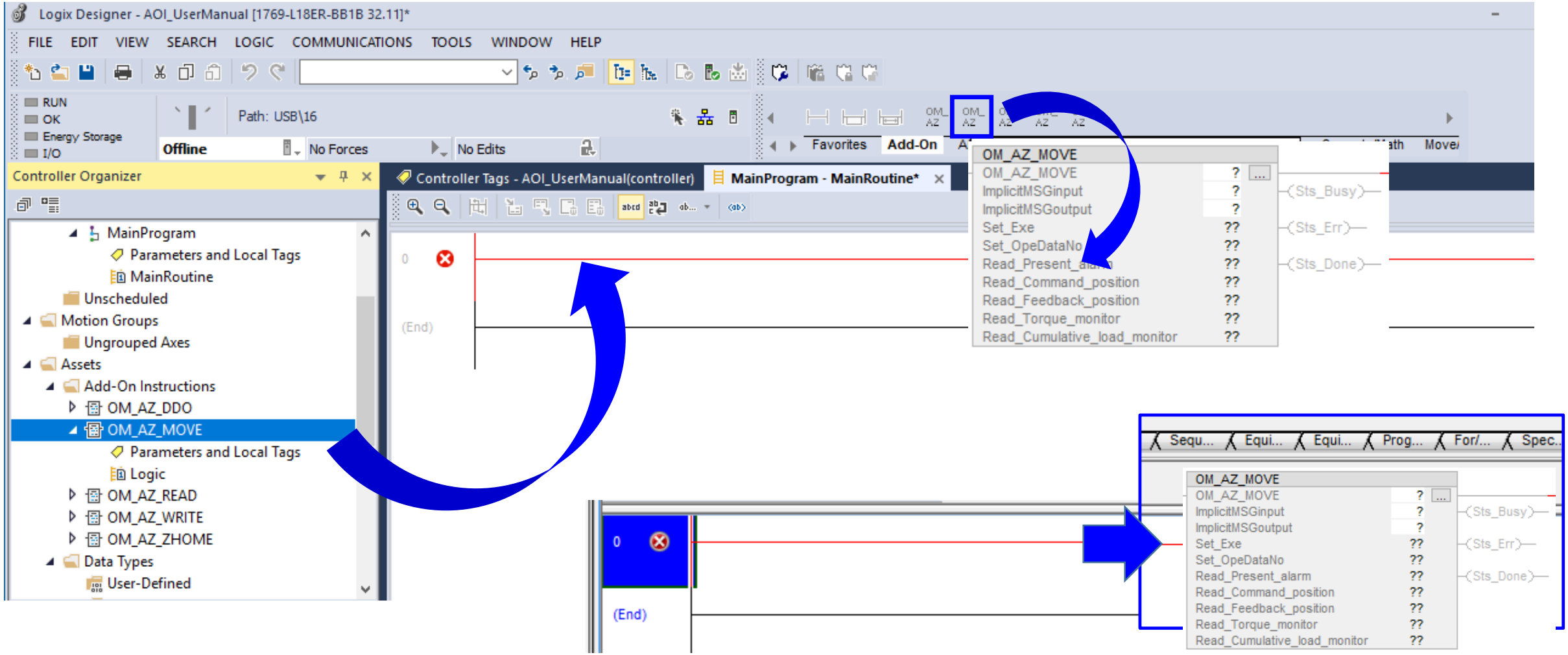




Add-On Instructions (AOIs): MOVE

Oriental motor
Version 3.0, 03/09/2020

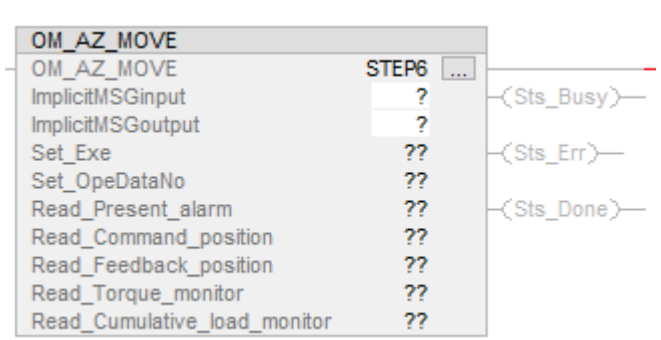
STEP3. Open “MainRoutine”.
Add Rung. You can either Drag and Drop the AOI from the Controller Organizer tree, or select the AOI from the “Add-On” tab.

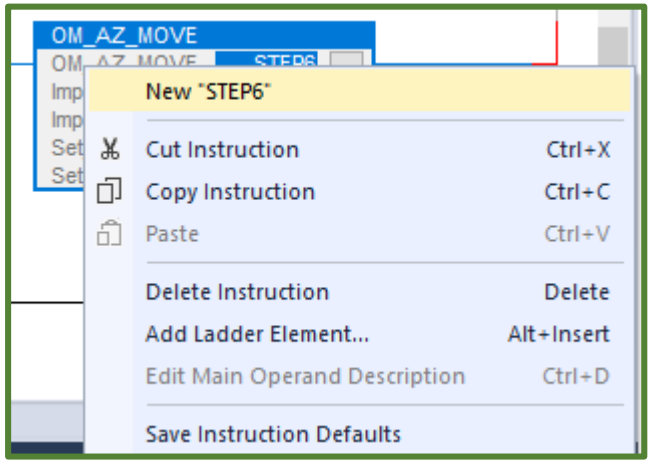


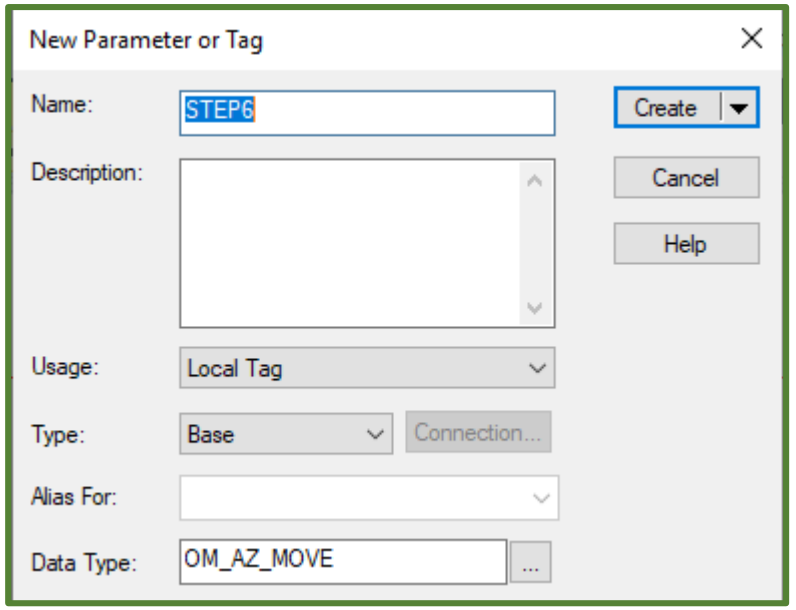
Add-On Instructions (AOIs): MOVE

Oriental motor
Version 3.0, 03/09/2020

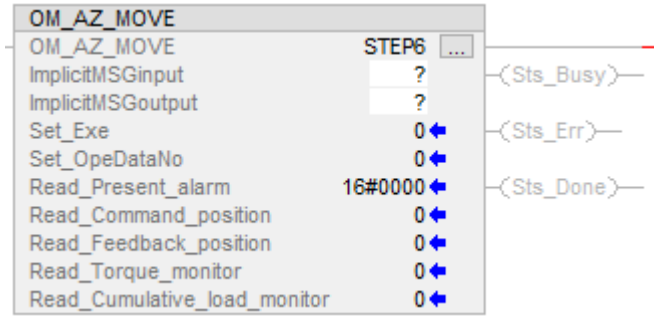
STEP4. Set parameters and Local tag in AOI. Right click on the tag (in this example, we use “STEP6”). Create New Tag ”STEP6”.

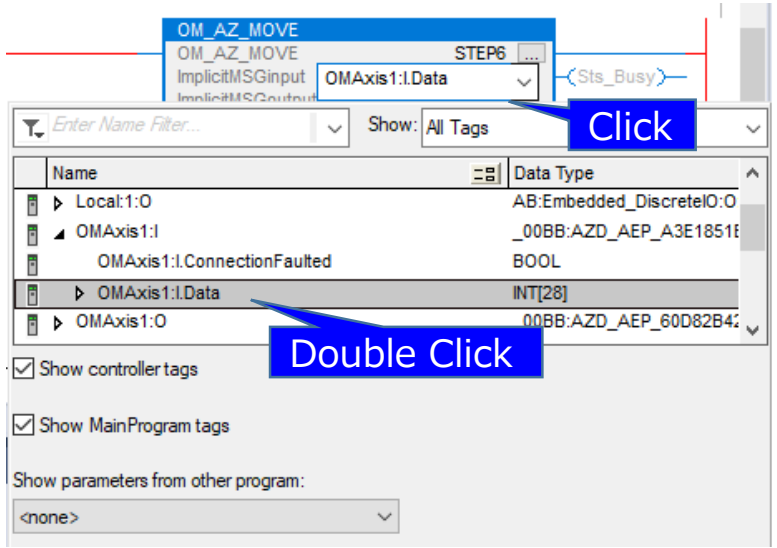


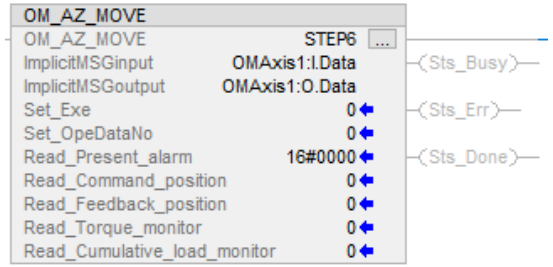




STEP5. Set “ImplicitMSGinput” in AOI. In this case, select “OMAxis1:I.Data” which is defined as a new module. As well, set “ImplicitMSGoutput”.



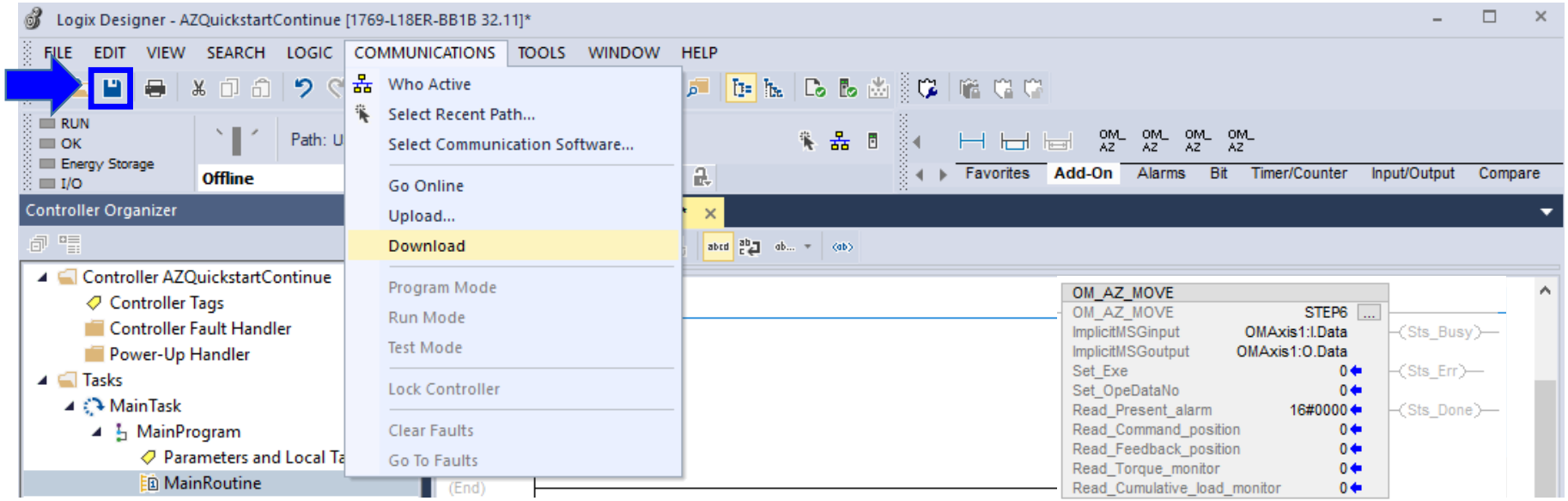




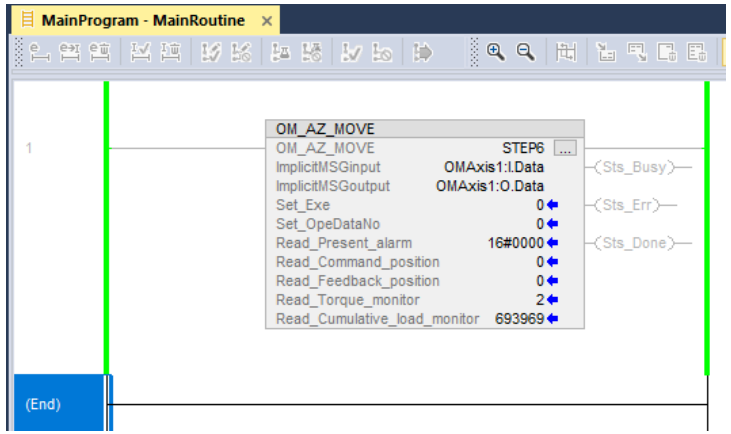
Add-On Instructions (AOIs): MOVE

Version 3.0, 03/09/2020

STEP6. Save project and Download.



After Done-downloading, this screen is displayed.



We will now run Operation data no. 0

Add-On Instructions (AOIs): MOVE

Oriental motor
Version 3.0, 03/09/2020

STEP7.　Set “1” to “Set_Exe” in AOI while Online of Run Mode. AOI has 3 status of Sts_Busy, Sts_Err and Sts_Done.

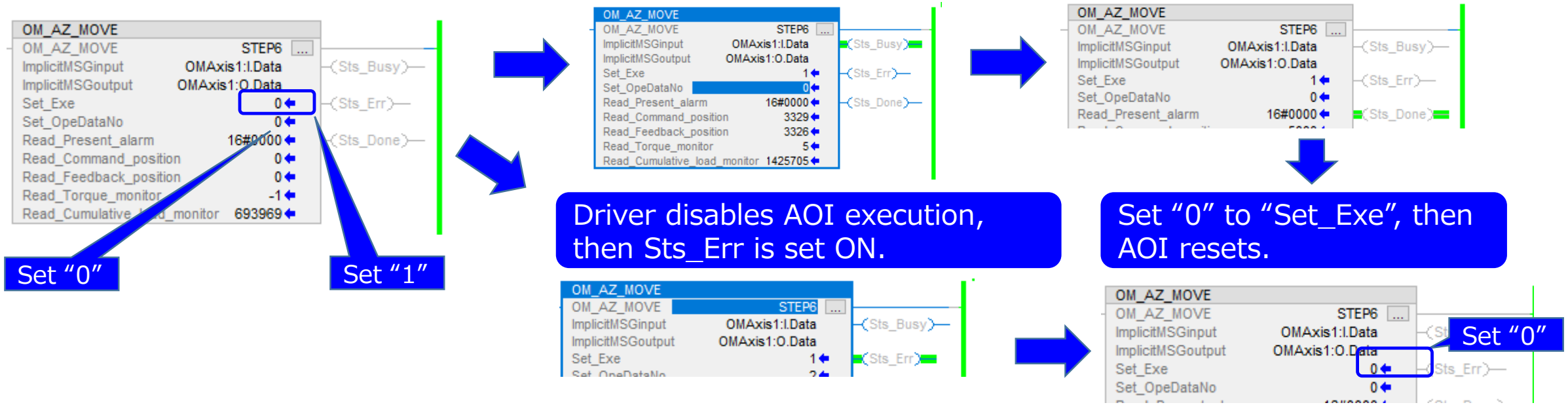
Operation Data no. 0 will now move 5000 steps at 2000 Hz

Name	Data Type	Usage	Description
Set_Exe	BOOL	Input	1:Execution AOI, 0: No execution
Sts_Busy	BOOL	Output	1:Executing AOI
Sts_Err	BOOL	Output	1: No executing AOI due to unacceptable driver-status
Sts_Done	BOOL	Output	1:Successfully done AOI

Set “1” to “Set_Exe”, then AOI execution starts.

During execution AOI, “Sts_Busy” is set ON.

Successfully done AOI, then “Sts_Done” is set ON.



Driver disables AOI execution, then Sts_Err is set ON.

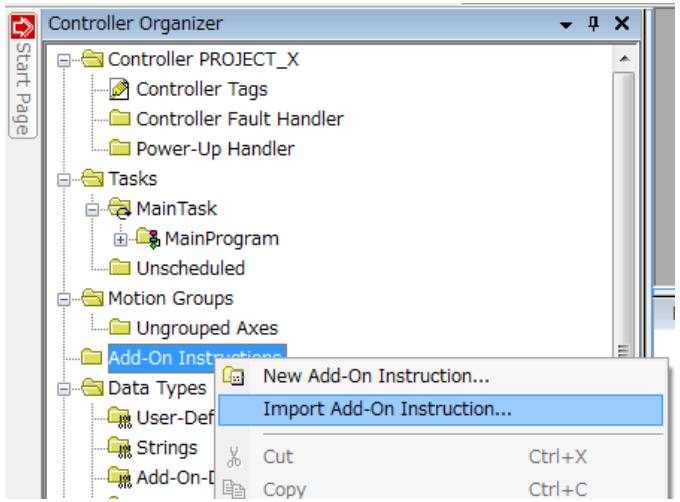
Set “0” to “Set_Exe”, then AOI resets.

Add-On Instructions (AOIs): DDO

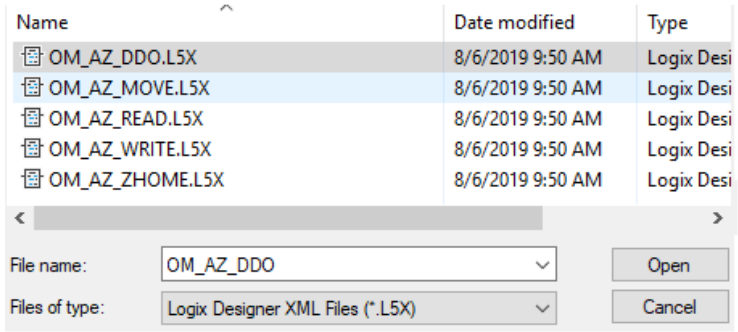
Version 3.0, 03/09/2020

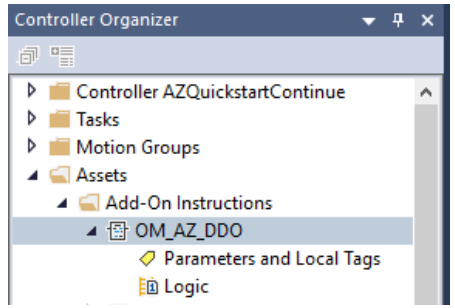
How do I change data on the fly? This is possible with the **OM_AZ_DDO AOI**.

STEP1. Right click on “Add-On Instructions” in the Organizer tree. Then select “Import Add-On-Instructions”.



STEP2. Select AOI (*.L5X) file and open. The imported AOI must be displayed in Controller Organizer.

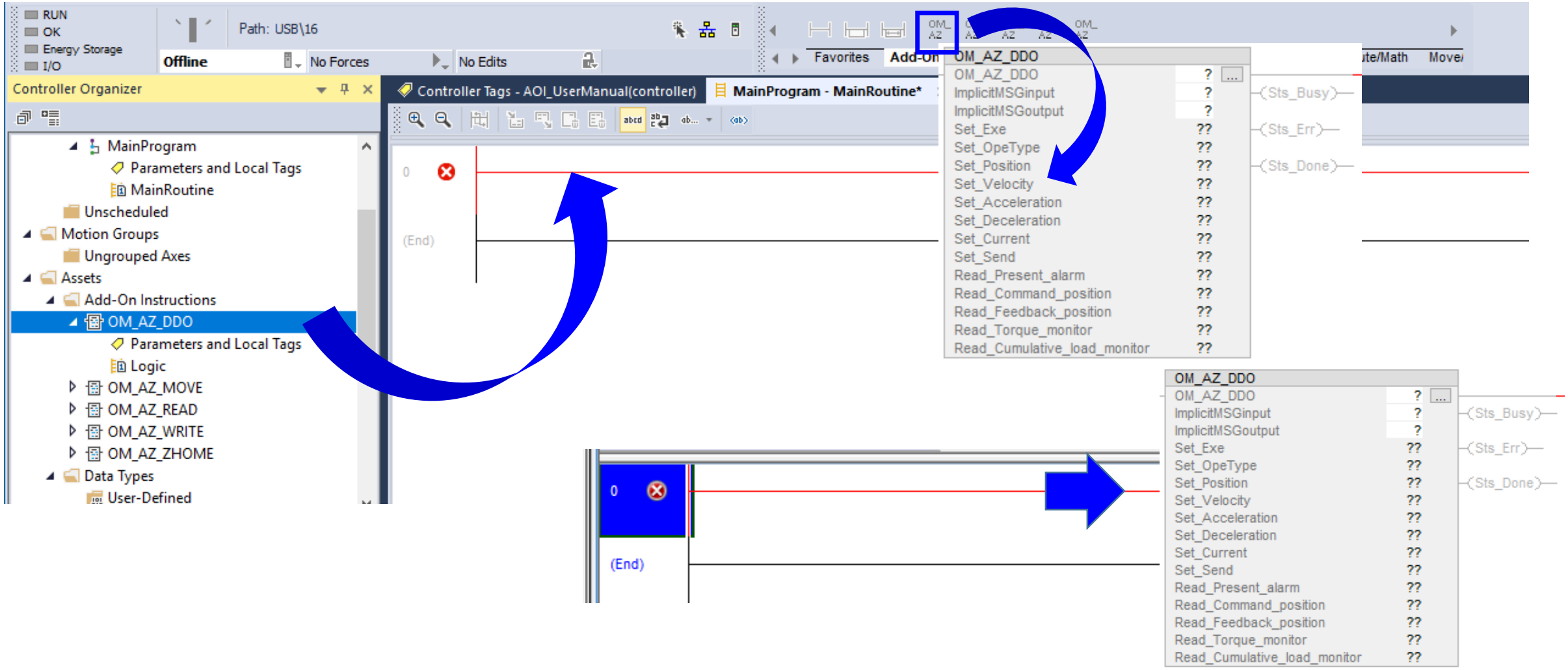




Add-On Instructions (AOIs): DDO

Oriental motor
Version 3.0, 03/09/2020

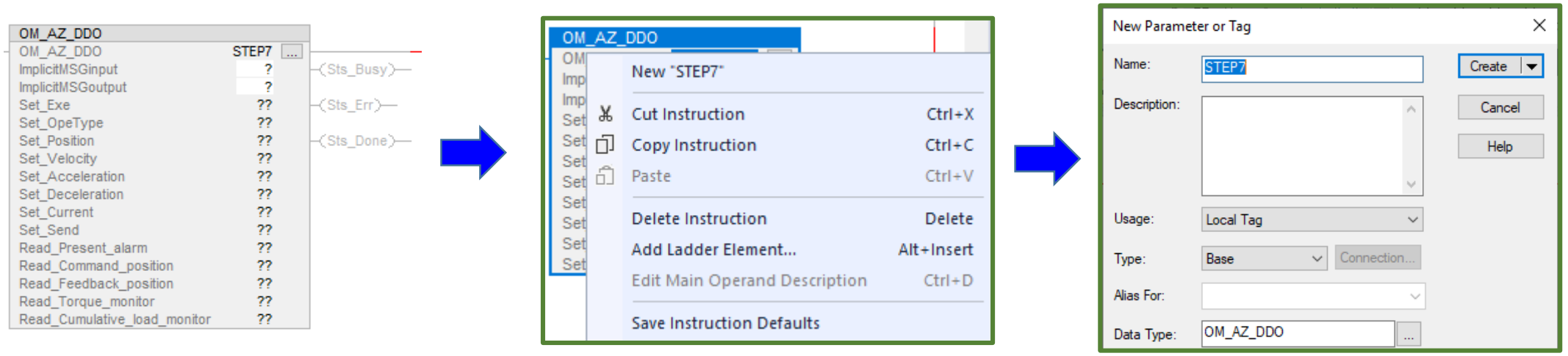
STEP3. Open “MainRoutine”.
Add Rung. You can either Drag and Drop the AOI from the Controller Organizer tree, or select the AOI from the “Add-On” tab.



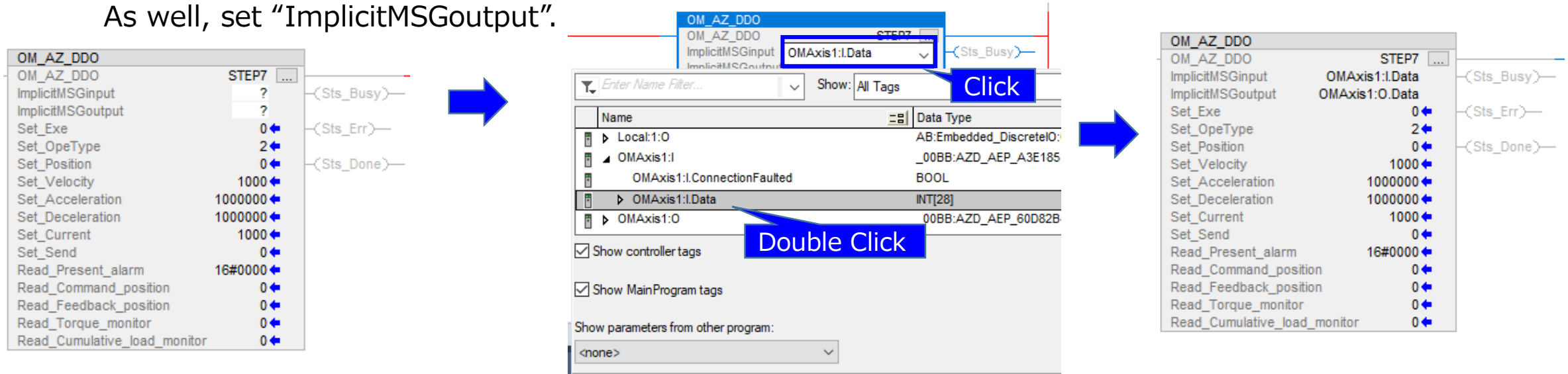
Add-On Instructions (AOIs): DDO

Oriental motor
Version 3.0, 03/09/2020

STEP4. Set parameters and Local tag in AOI.
Right click on the tag (in this example, we are using “STEP7”). Create New Tag ”STEP7”.



STEP5. Set “ImplicitMSGinput” in AOI. In this case, select “OMAxis1:I.Data” which is defined as a new module.
As well, set “ImplicitMSGoutput”.

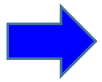


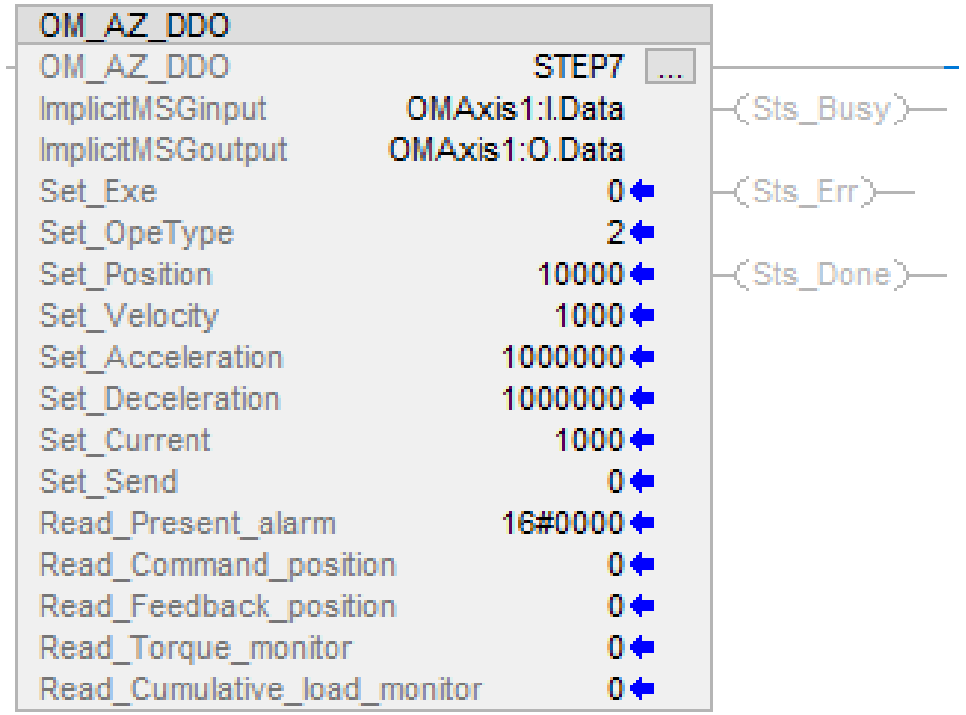
Add-On Instructions (AOIs): DDO

Oriental motor
Version 3.0, 03/09/2020

STEP6. Enter desired parameter values (Reference Direct Data Operation starting on page 104 of the manual)

Example:
Set Operation type = 2 (incremental position)
Set_Position = 10000 (steps)
Set_Velocity = 1000 (Hz)
Set_Acceleration = 1,000,000 (1000 kHz/s)
Set_Deceleration = 1,000,000 (1000 kHz/s)
Set_Current = 1000 (100%)
Set_Send = 0 (Execution memory)

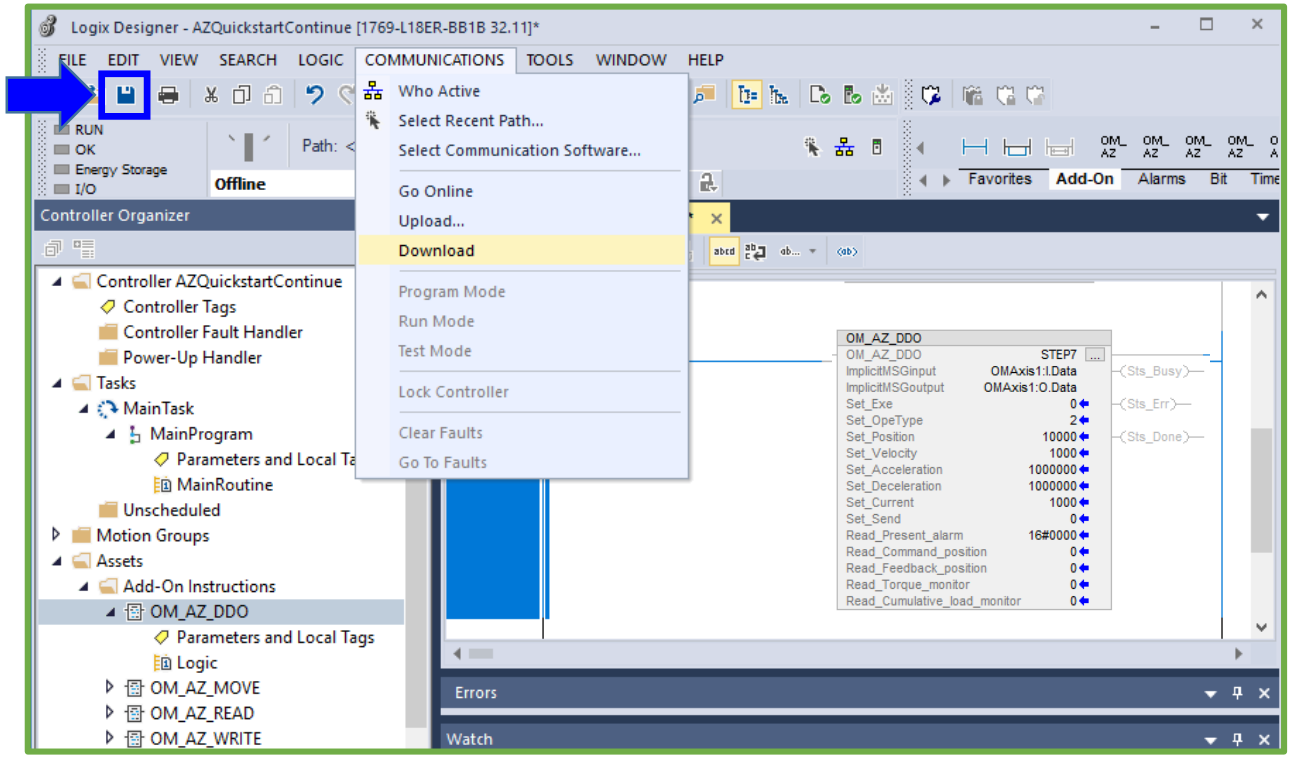


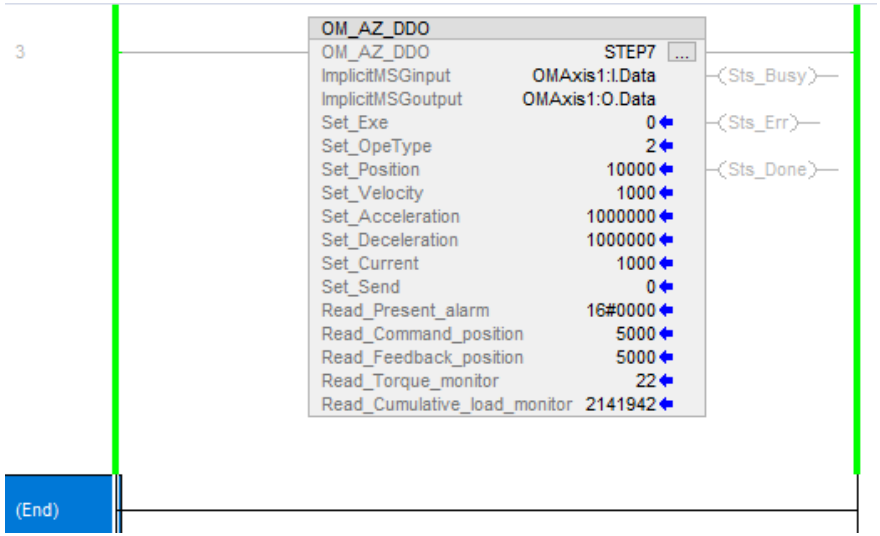


Add-On Instructions (AOIs): DDO

Version 3.0, 03/09/2020

STEP7.　Save project and Download. After Done-downloading, this screen is displayed.





Add-On Instructions (AOIs): DDO

Oriental motor
Version 3.0, 03/09/2020

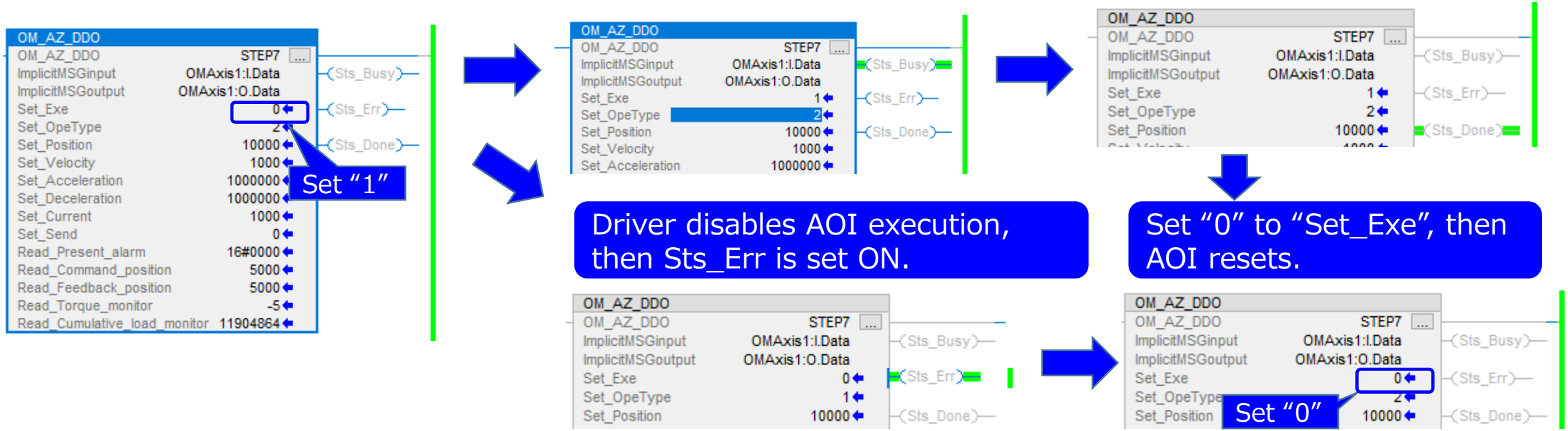
STEP8. Set “1” to “Set_Exe” in AOI while Online of Run Mode. AOI has 3 status of Sts_Busy, Sts_Err and Sts_Done.

Name	Data Type	Usage	Description
Set_Exe	BOOL	Input	1:Execution AOI, 0: No execution
Sts_Busy	BOOL	Output	1:Executing AOI
Sts_Err	BOOL	Output	1: No executing AOI due to unacceptable driver-status
Sts_Done	BOOL	Output	1:Successfully done AOI

Set “1” to “Set_Exe”, then AOI execution starts.

During execution AOI, “Sts_Busy” is set ON.

Successfully done AOI, then “Sts_Done” is set ON.

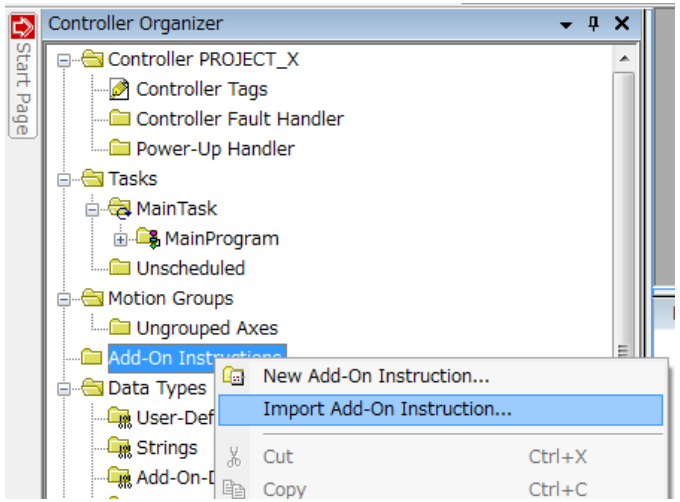


Add-On Instructions (AOIs): MONITOR

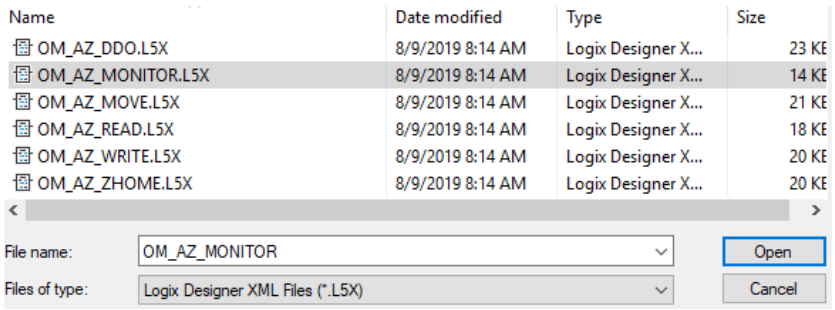
Version 3.0, 03/09/2020

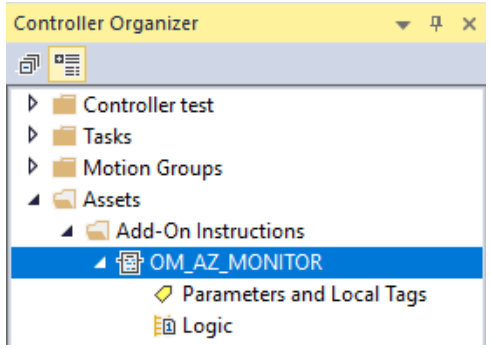
How do I monitor my speed or position, etc? This is possible with the **OM_AZ_MONITOR AOI**.

STEP1. Right click on “Add-On Instructions” in the Organizer tree. Then select “Import Add-On-Instructions”.



STEP2. Select AOI (*.L5X) file and open. The imported AOI must be displayed in the Controller Organizer.

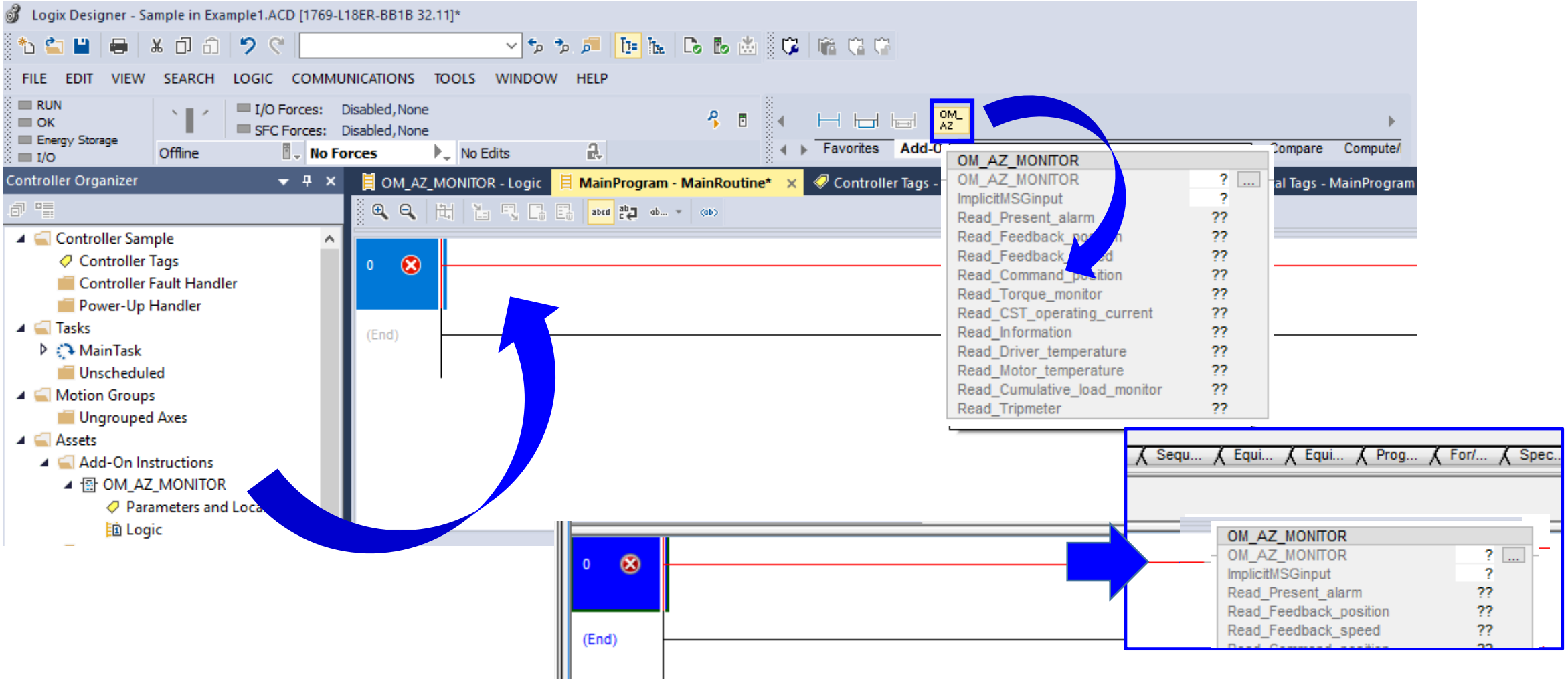




Add-On Instructions (AOIs): MONITOR

Oriental motor
Version 3.0, 03/09/2020

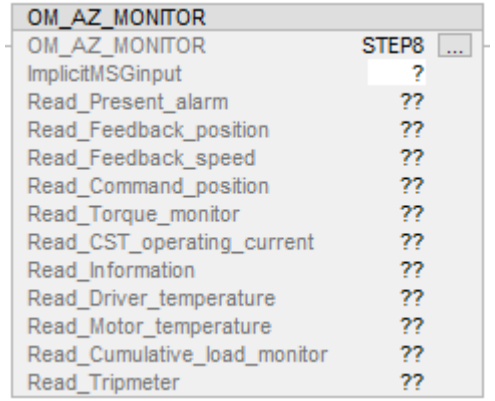
STEP3. Open “MainRoutine”.
Add Rung. You can either Drag and Drop the AOI from the Controller Organizer tree, or select the AOI from the “Add-On” tab.

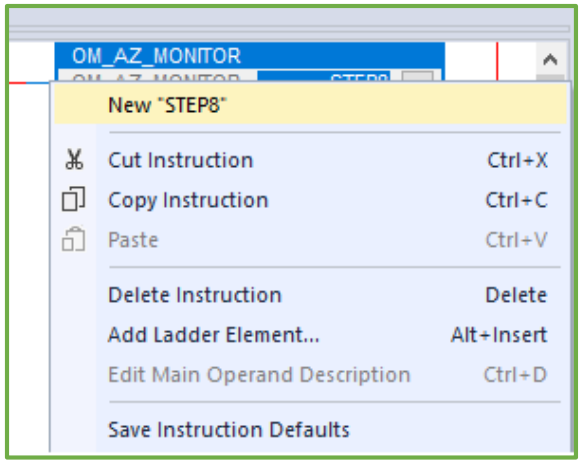


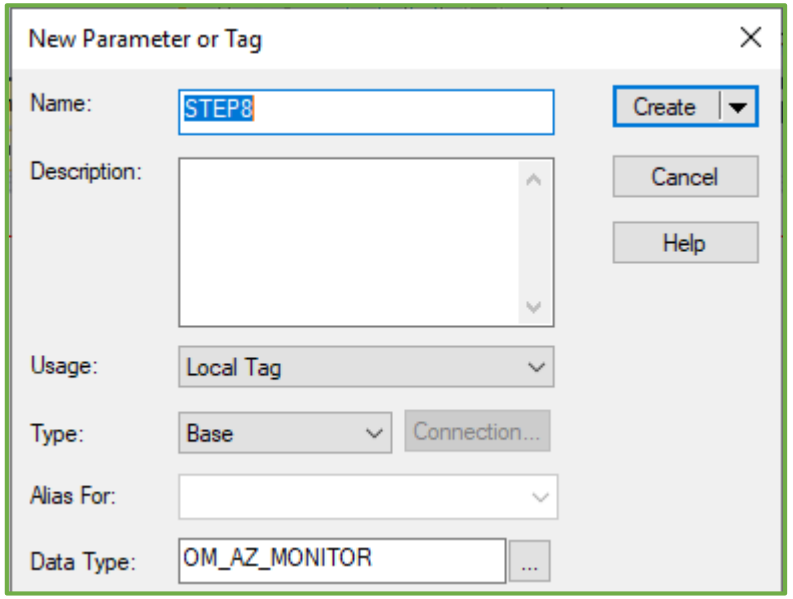
Add-On Instructions (AOIs): MONITOR

Oriental motor
Version 3.0, 03/09/2020

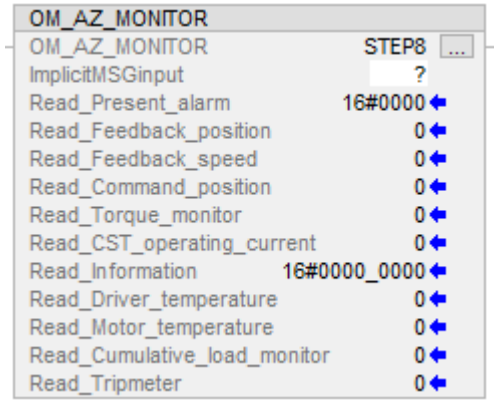
STEP4. Set parameters and Local tag in AOI. Right click on the tag (in this example, we use “STEP8”). Create New Tag ”STEP8”.

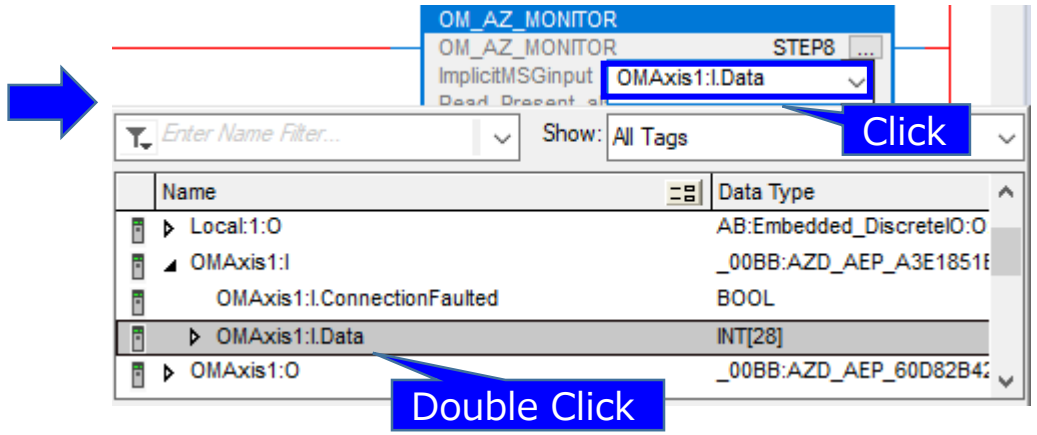


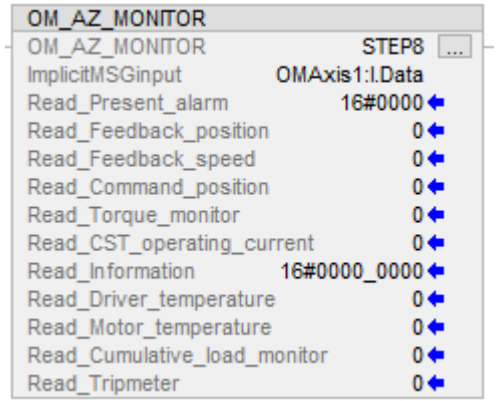




STEP5. Set “ImplicitMSGinput” in AOI. In this case, select “OMAxis1:I.Data” which is defined as a new module.



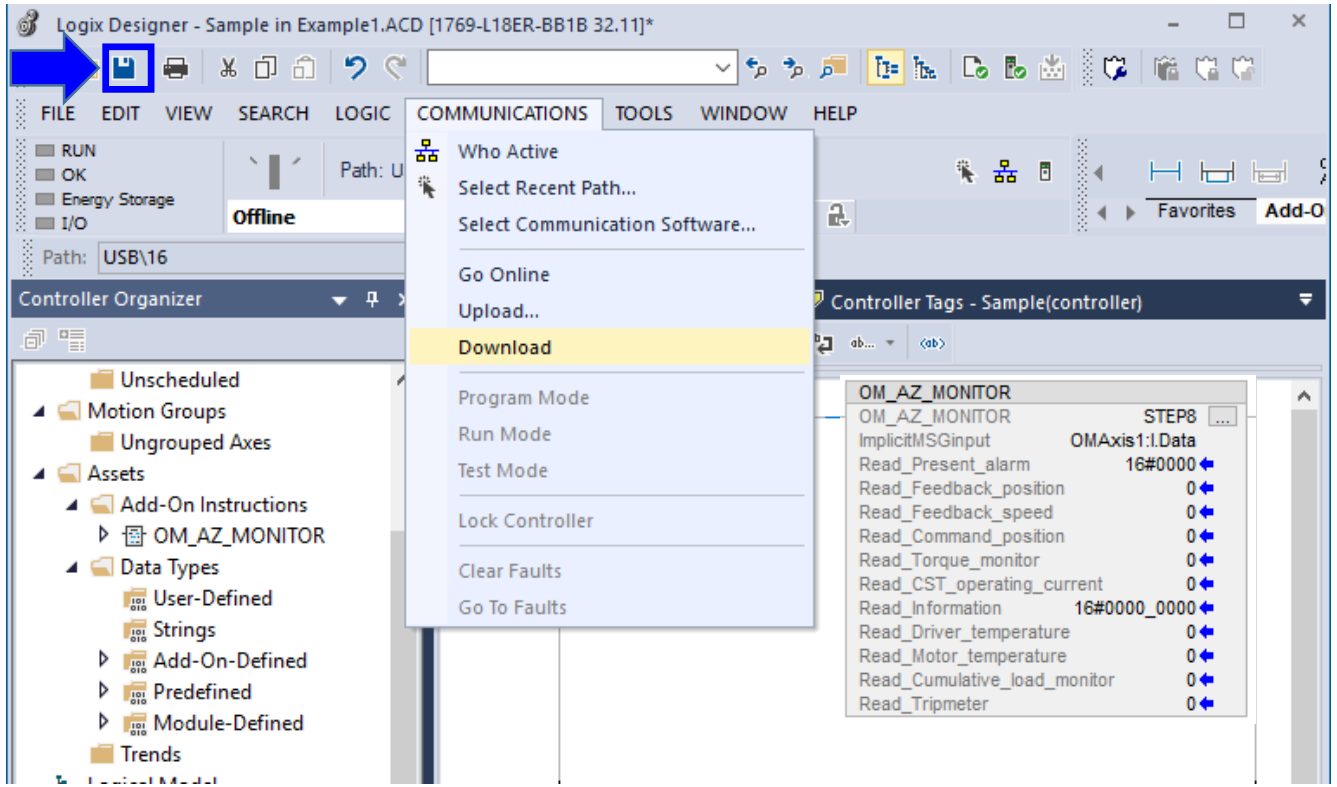


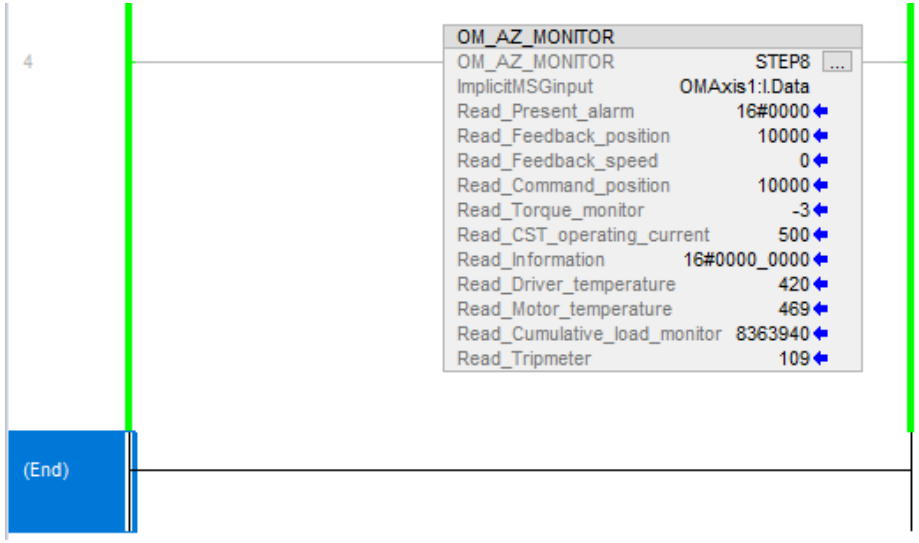


Add-On Instructions (AOIs): MONITOR

Oriental motor
Version 3.0, 03/09/2020

STEP6.　Save project and Download. After Done-downloading, this screen is displayed.





We can now view the position, speed, alarms, temperature and current etc.

Version History		
Version	Description	Date
1	Initial Release	08/09/2019
2	Added Monitor AOI. Fixed formatting. Added note INT format for new module creation. EIP software naming. Added 2 byte = 1 Word, manual pages, AOI #, and jogging section.	09/24/2019
3	Images updated for AOI's. OMaxis:I to OMAxis1:I.Data. 1769-L18ERM-BB1B to 1769-L18ER-BB1B. Add AZD-KEP. Remove # section on AOI.	03/09/2020