

Automationdirect.com

Add-On Instruction Walkthrough: GS30A-CM-EIP2

EiploDataMapping_GS30A_CM_EIP2

Contents

Purpose	2
Purpose of this document:	2
Purpose of this Add-On Instruction:	2
Notes	3
Introduction	4
Register EDS File	5
Create New Module	10
Import Add-On Instruction	13
Use Add-On Instruction in Project	15
Reference	19
Studio 5000 Instruction Mnemonic Update Table	19

Purpose

Purpose of this document:

The purpose of this document is to help guide the user through the process of successfully integrating the EiploDataMapping_GS30A_CM_EIP2 Add-On Instruction into their Studio 5000 project.

Purpose of this Add-On Instruction:

The EiploDataMapping_GS30A_CM_EIP2 Add-On Instruction unpacks raw Input Data (T->O) from an array and maps this data into meaningful device related status tags for the user. Likewise, the Add-On Instruction also maps meaningful device related command tags and packs the data into the raw Output Data (O->T) array. The purpose of the Add-On Instruction is to simplify the mapping (packing/unpacking) of raw Input/Output Data. For the operation of the device, the user must provide their own logic.

Notes

Note: For the most current mapping and descriptions of the Input and Output Data for the GS30A-CM-EIP2, see Appendix B of the GS30 Series Drives User Manual.

Note: While images used in this document may differ slightly from what a user might see in their software as a result of updates to the Add-On Instruction, the process outlined in the document should be the same.

Note: The following items were used to create this document and are referenced in the walkthrough:

- *Part Number: GS30A-CM-EIP2*
- *EDS File: GS30A_CM_EIP2_Rev1_0.eds*
- *Add-On Instruction File: EiploDataMapping_GS30A_CM_EIP2_AOI.L5X*
- *Add-On Instruction Name: EiploDataMapping_GS30A_CM_EIP2*
- *Studio 5000 version: 37.00.00*
 - *IMPORTANT: In version 36 of Studio 5000, the mnemonics for some instructions were changed/updated by Rockwell. When using a version of Studio 5000 earlier than version 36 with this Add-On Instruction, the user may need to change these instructions from the NEW mnemonic to the OLD mnemonic. A table showing affected instructions can be found in the [Reference](#) section of this document.*

Introduction

The Add-On Instruction for the GS30A-CM-EIP2 removes the cumbersome task of having to map the IO Messaging data to/from generic array elements into/out of specific and meaningful tags. This helps you as a user to get integrated faster.

This walkthrough will cover:

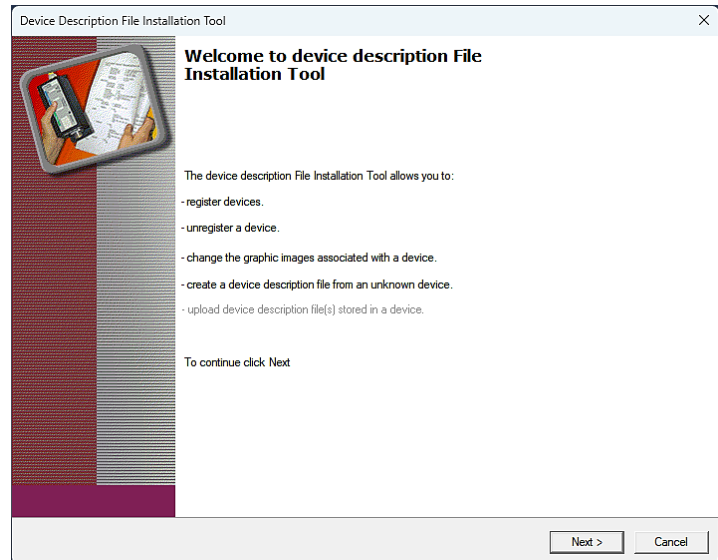
- Registering the EDS file for the GS30A-CM-EIP2
- Creating a new module (IO Messaging adapter) in Studio 5000
- Importing the Add-On Instruction
- Placing the Add-On Instruction into the Studio 5000 project

mapping (packing/unpacking)		
EipIoDataMapping_GS30A_CM_EIP2		
EipIoDataMapping_GS30A_CM_EIP2	MyDrive (...)	
mod_EipInputData	MyGs30:I	(sts_Stop)
mod_EipOutputData	MyGs30:O	(sts_DecelDuringStop)
cmd_Run	1	(sts_Standby)
cmd_Stop	0	(sts_Run)
cmd_Jog	0	(sts_Fwd)
cmd_DirectionCommand	0	(sts_TransitioningRevToFwd)
cmd_NthAccelDecel	0	(sts_TransitioningFwdToRev)
cmd_NthStepSpeedFrequency	0	(sts_Rev)
cmd_EnableBitFunction_6_11	0	(sts_JogActive)
cmd_FrequencyCommand	60.0	(sts_FreqFromComm)
cmd_ExternalFaultTrigger	0	(sts_FreqFromAnalogOrDiscrete)
cmd_ResetCommand	0	(sts_CommandFromCommKeypad)
cmd_ExternalInterruption	0	(sts_ParametersLocked)
sts_WarningCode	0	(sts_DriveStopped)
sts_FaultCode	0	(sts_DriveRunning)
sts_FreqCommand_PIDSetpoint	60.0	
sts_OutputFrequency	60.0	
sts_OutputCurrent	0.0	
sts_DcBusVoltage	343.5	
sts_OutputVoltage	219.9	
sts_MultiSpeed_PIDStepNumber	0	
sts_MaxOutputTorque	56	
sts_DigitalInputCounterValue	0	
sts_PowerFactorAngle	72.0	
sts_OutputTorque	-5.6	
sts_ActualMotorSpeed	1800	
sts_EncoderFeedbackCounts	0	
sts_PulseCommandPositionCounts	0	
sts_PowerOutput	0	

Register EDS File

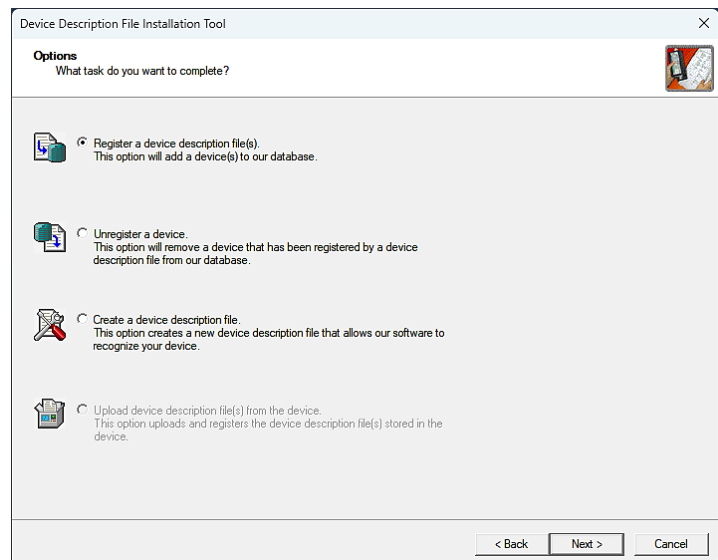
Step 1: Open Rockwell Automation's Device Description File Installation tool (EDS Wizard) from the tools Menu in Studio 5000 and register the EDS file for the GS30A-CM-EIP2

Click 'Next'.

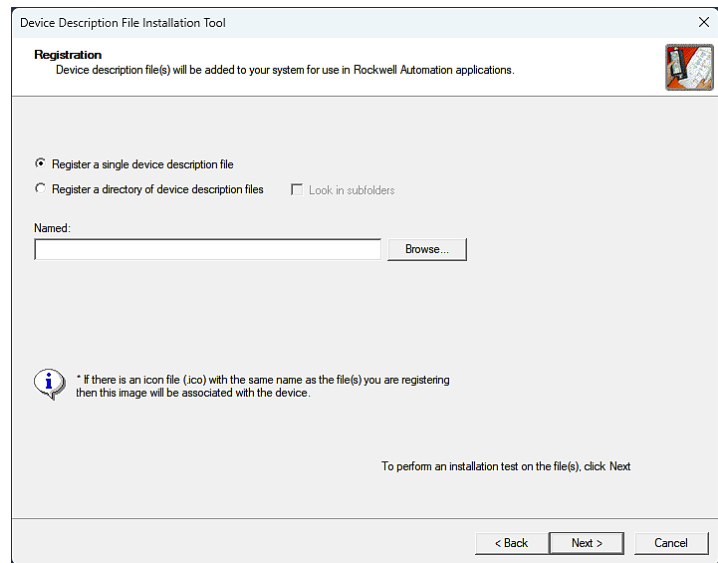


Step 2: Select 'Register an EDS file.'

Click 'Next'.

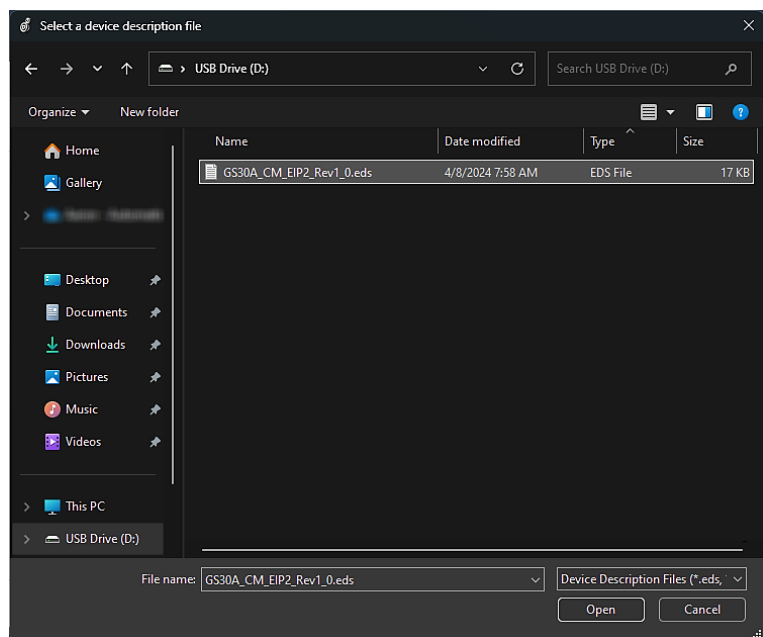


Step 3: Select 'Register a single file' and 'Browse' to select the directory where the EDS file resides.



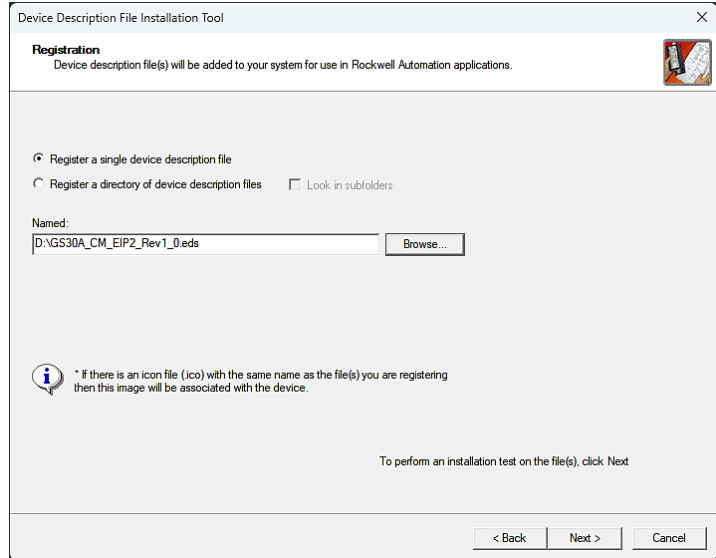
Step 4: Select the EDS file.

Click 'Open'



Step 5: The Named field should show the directory path to the EDS file.

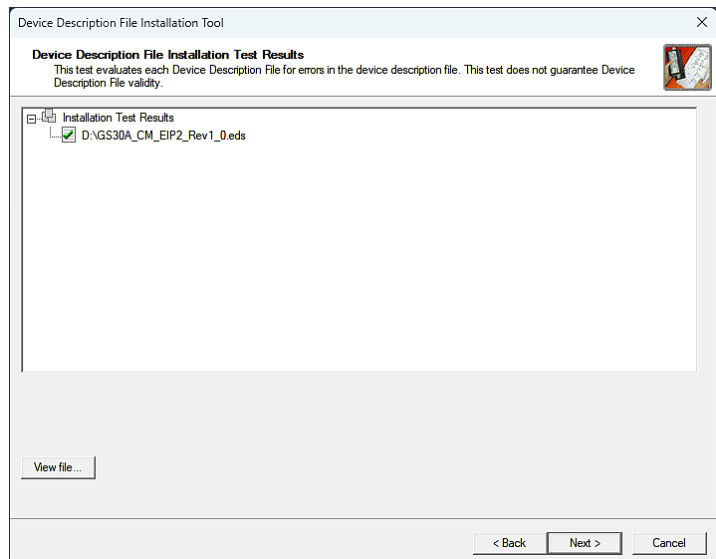
Click 'Next'.



The screenshot shows the 'Registration' window of the 'Device Description File Installation Tool'. The title bar reads 'Device Description File Installation Tool'. Below the title bar, the text says 'Registration' and 'Device description file(s) will be added to your system for use in Rockwell Automation applications.' There are two radio buttons: 'Register a single device description file' (selected) and 'Register a directory of device description files'. A checkbox 'Look in subfolders' is also present. Below this, there is a 'Named:' label and a text box containing 'D:\GS30A_CM_EIP2_Rev1_0.eds'. A 'Browse...' button is to the right of the text box. At the bottom, there is an information icon and a note: '* If there is an icon file (.ico) with the same name as the file(s) you are registering then this image will be associated with the device.' Below this note, it says 'To perform an installation test on the file(s), click Next'. At the very bottom, there are three buttons: '< Back', 'Next >', and 'Cancel'.

Step 6: The Device Description File Installation Tool (EDS File Wizard) will evaluate the EDS file. The green checkmark indicates a valid EDS file.

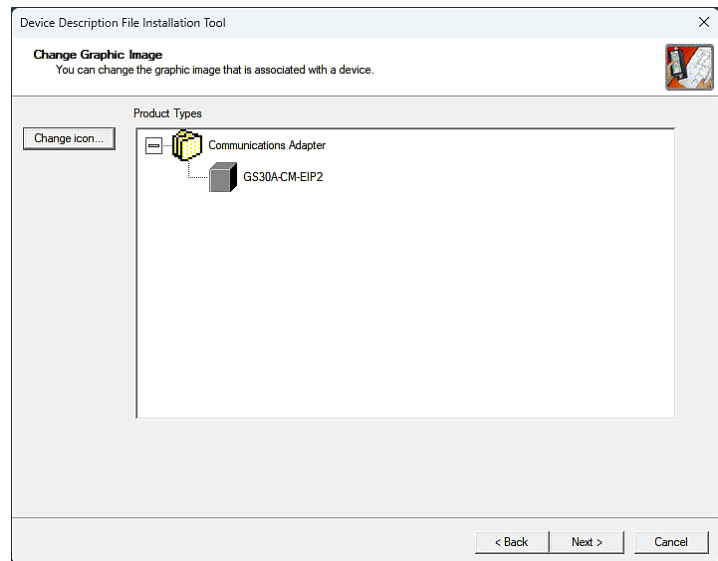
Click 'Next'.



The screenshot shows the 'Device Description File Installation Test Results' window of the 'Device Description File Installation Tool'. The title bar reads 'Device Description File Installation Tool'. Below the title bar, the text says 'Device Description File Installation Test Results' and 'This test evaluates each Device Description File for errors in the device description file. This test does not guarantee Device Description File validity.' There is a list box titled 'Installation Test Results' containing one entry: 'D:\GS30A_CM_EIP2_Rev1_0.eds' with a green checkmark icon next to it. Below the list box, there is a 'View file...' button. At the bottom, there are three buttons: '< Back', 'Next >', and 'Cancel'.

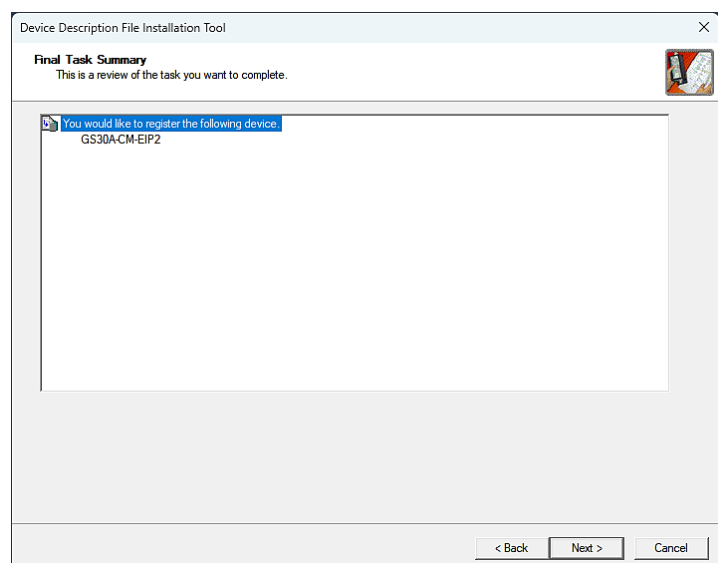
Step 7: The Device Description File Installation Tool (EDS Wizard) allows for the icon of the device to be changed. This step can be skipped.

Click 'Next'.



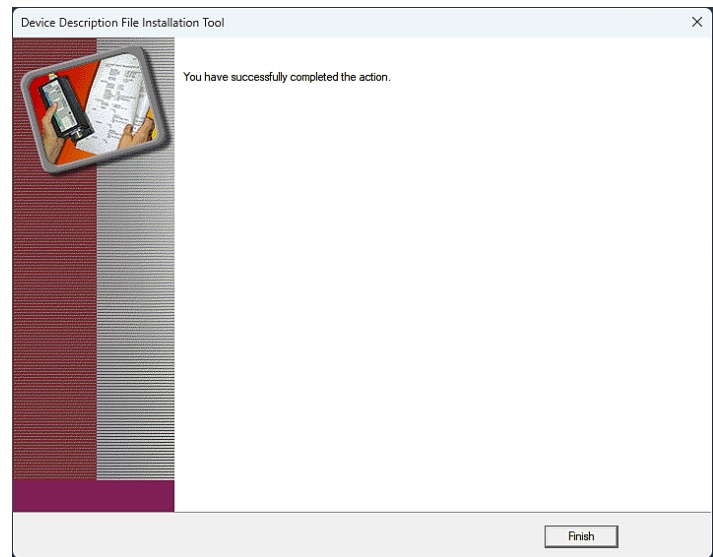
Step 8: Confirm that the EDS file being registered corresponds to the intended device.

Click 'Next'.



Step 9: The EDS file has been successfully registered.

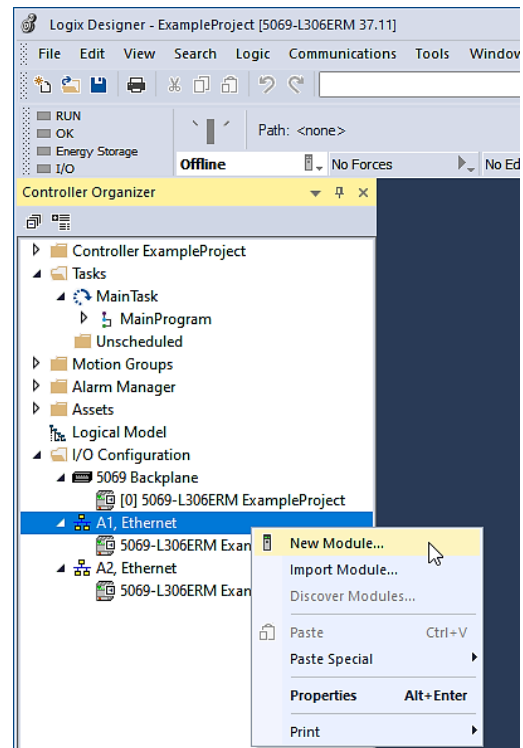
Click 'Finish'.



Create New Module

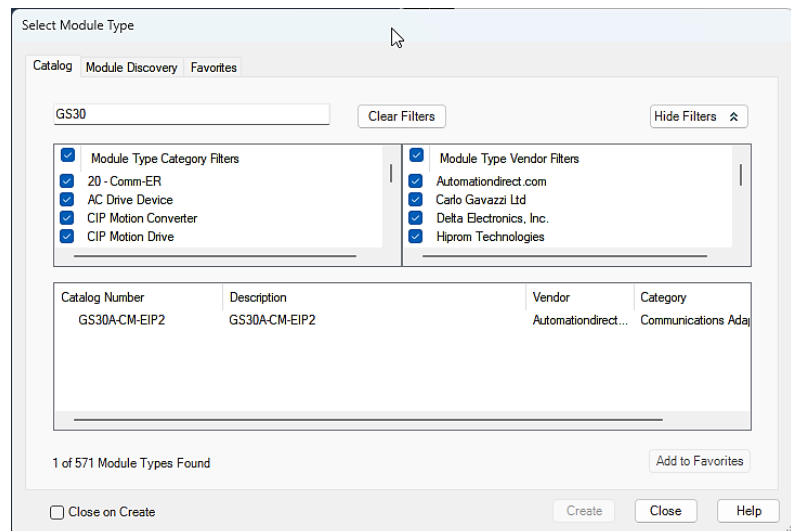
Step 1: In the Studio 5000 project, right-click on the network adapter that is connected to the GS30A-CM-EIP2.

Select 'New Module'.



Step 2: Type the first few characters of part number in the filter field. The GS30A-CM-EIP2 catalog number shows in the results.

Select the result and click 'Create'.



Step 3: In the New Module window, provide the following:

- A name for the device
- The IP address of the GS30A-CM-EIP2

Click 'OK'.

The 'New Module' dialog box shows the following configuration:

- General Tab:**
 - Type: GS30A-CM-EIP2 GS30A-CM-EIP2
 - Vendor: Automationdirect.com
 - Parent: Local
 - Name: MyGs30
 - Description: (empty)
- Ethernet Address:**
 - Private Network: 192.168.1.
 - IP Address: 10.11.0.50
 - Host Name: (empty)
- Module Definition:**
 - Revision: 1.001
 - Electronic Keying: Compatible Module
 - Connections: Drive Control and Status

Status: Creating

Step 4: Close the 'Select Module Type' window.

Step 5: Take note of the Module-Define Data Types created for the Input Data and Output Data arrays:

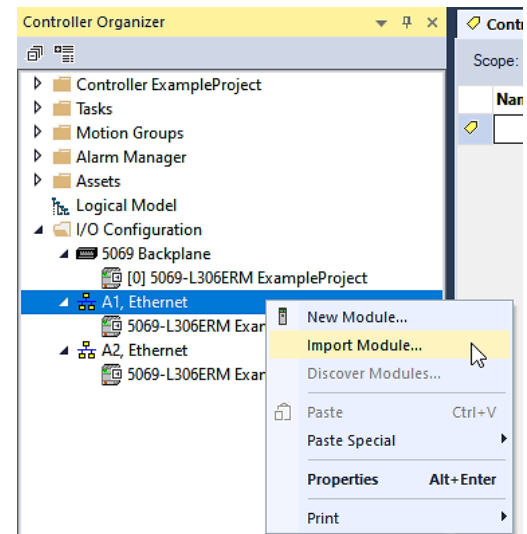
- _0294:GS30A_CM_EIP2_E8411017:I:0
- _0294:GS30A_CM_EIP2_E771E08B:O:0

These Module-Define Data Types will be referenced by the Add-On Instruction for data mapping. A mismatch of these Module-Defined Data Types between the module definition and the Add-On Instruction will lead to errors.

The 'Controller Tags' window displays the following data:

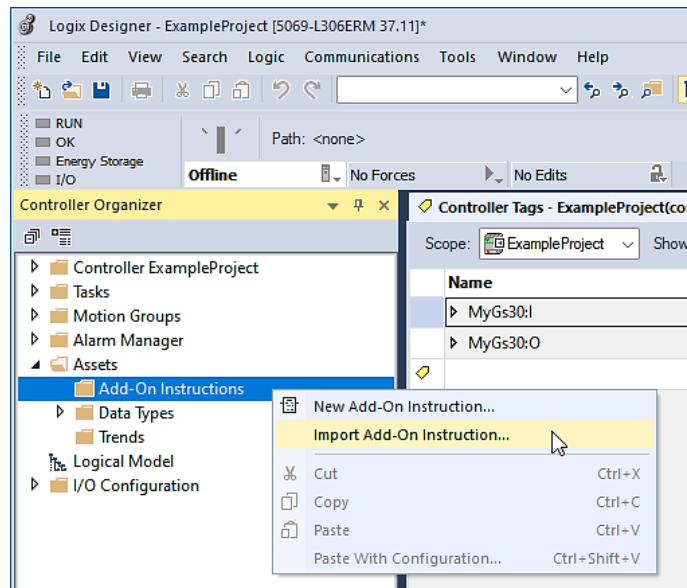
Name	Data Type
MyGs30:I	_0294:GS30A_CM_EIP2_E8411017:I:0
MyGs30:O	_0294:GS30A_CM_EIP2_E771E08B:O:0

Note: If for any reason the Module-Defined Data Types created in the project do NOT match those shown in the walkthrough, use the 'Import Module' feature in the Controller Organizer to import the MODULE definition included in the Add-On Instruction download.



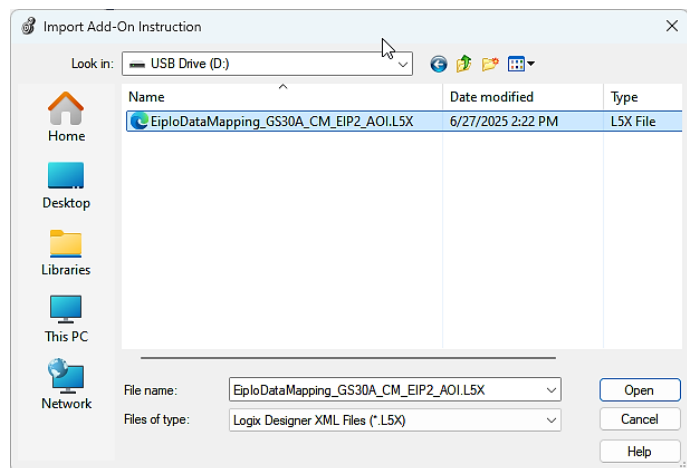
Import Add-On Instruction

Step 1: From the Controller Organizer window, right-click on 'Add-On Instructions' and select 'Import Add-On Instruction.'



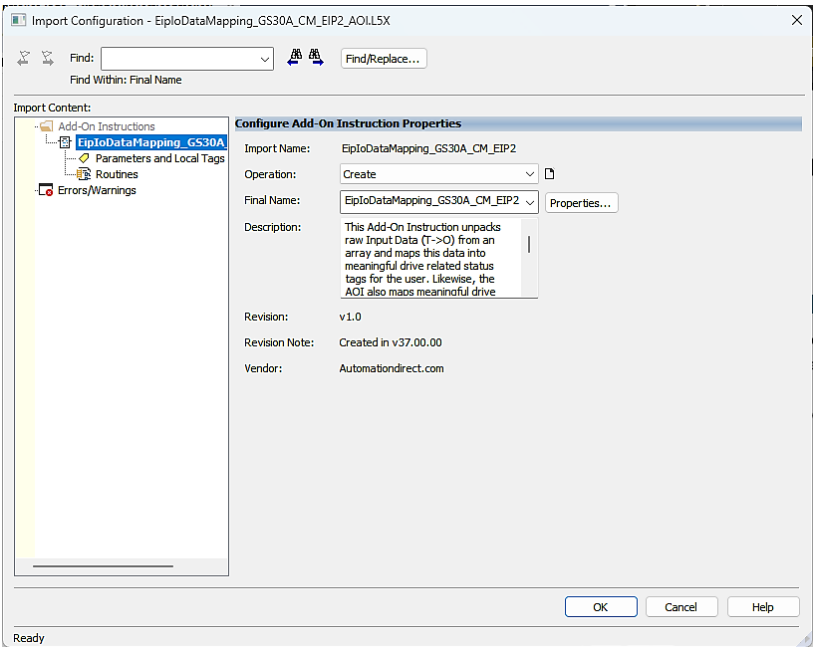
Step 2: Select the directory where the Add-On Instruction file resides.

Click 'Open'.

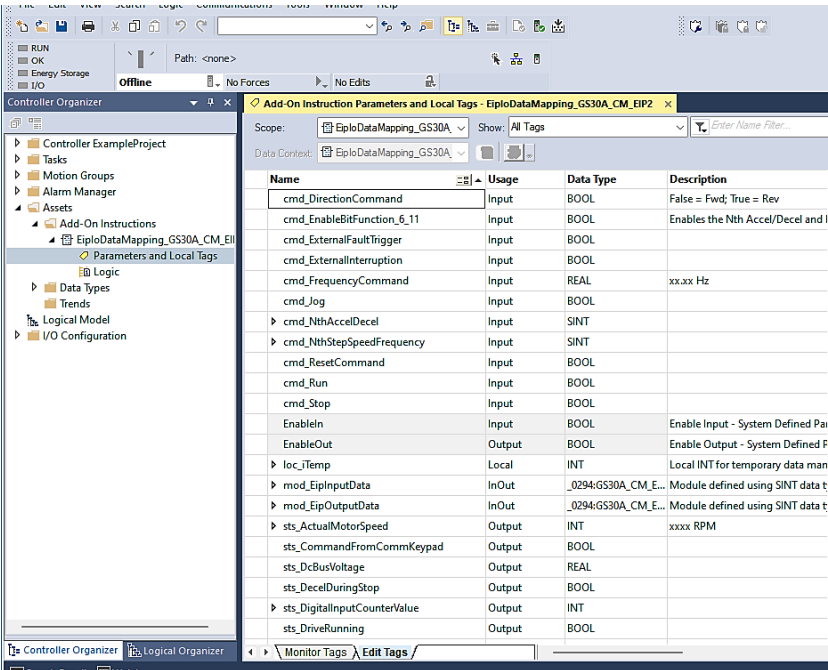


Step 3: The Import Configuration window opens.

Click 'OK'.

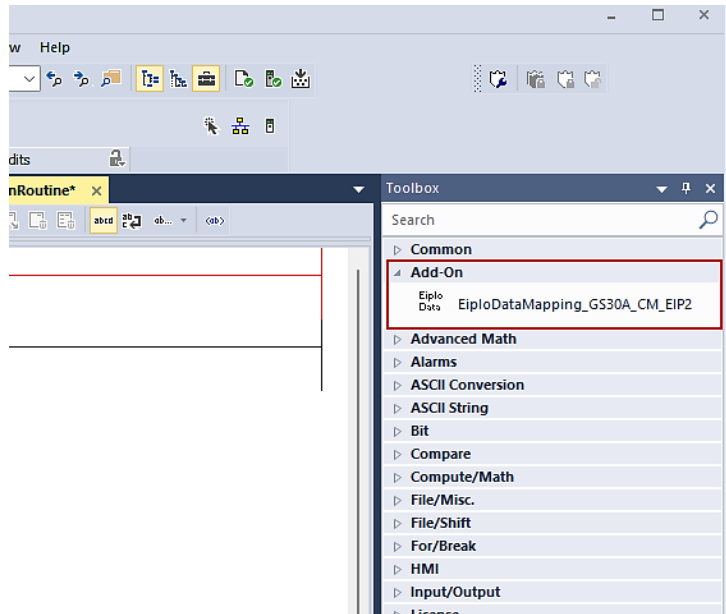


Step 4: The import successfully brings in the Parameters, Local Tags, and Logic that makes up the Add-On Instruction.



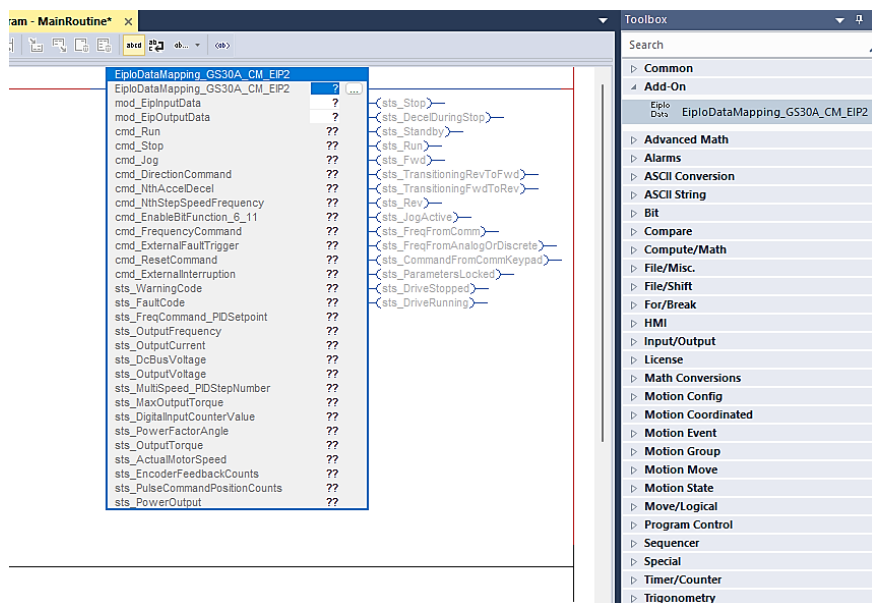
Use Add-On Instruction in Project

Step 1: From the Main Program – Main Routine, drag the Add-On Instruction into the ladder from the ‘Add-On’ instruction category.

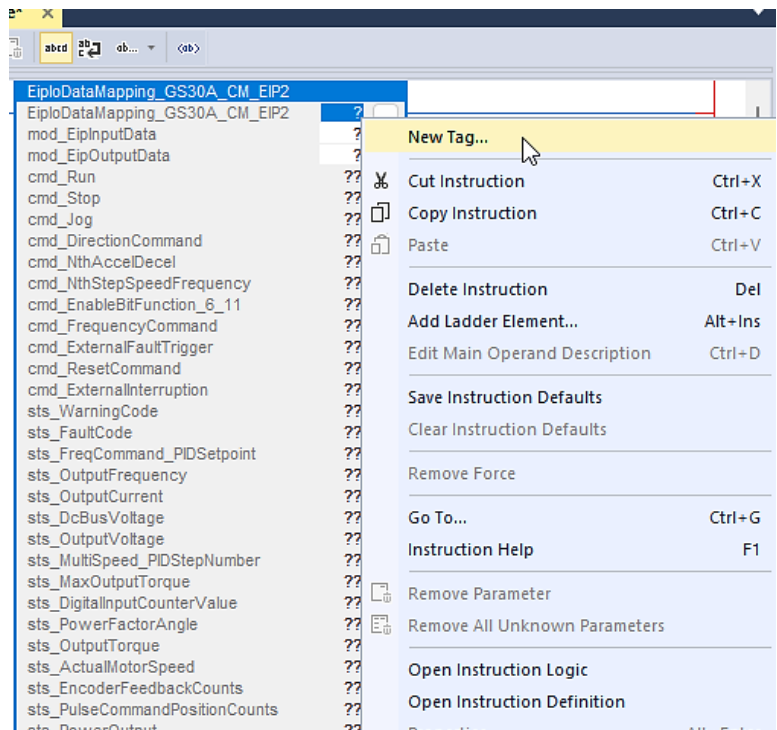


Step 2: Three fields within the Add-On Instruction are required to be completed:

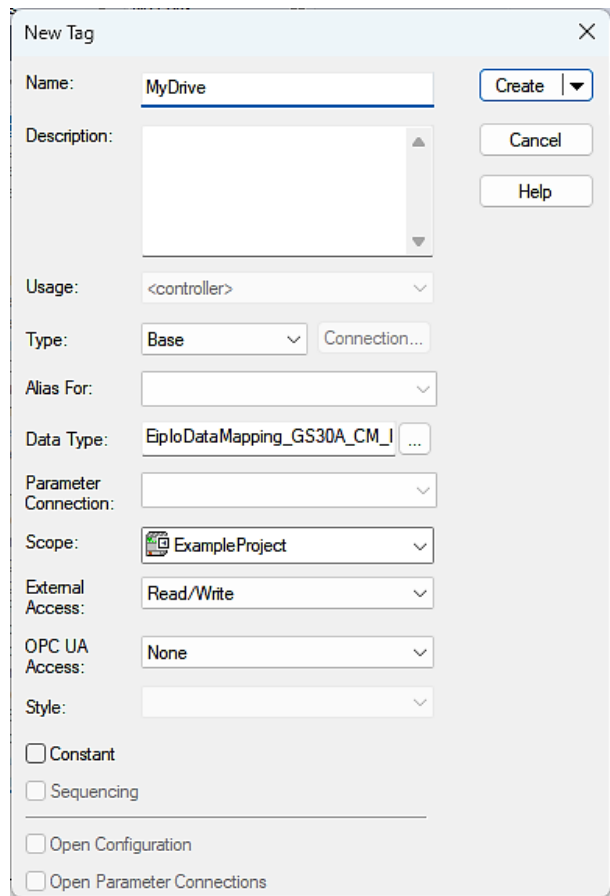
- Specify/create a tag for the instantiated Add-On Instruction.
- Provide the source of the Input Data that will be passed to the Add-On Instruction. This will be the Module-Defined Data Type corresponding to the module Input Data.
- Provide the destination of the Output Data that will be returned from the Add-On Instruction. This will be the Module-Defined Data Type corresponding to the module Output Data.



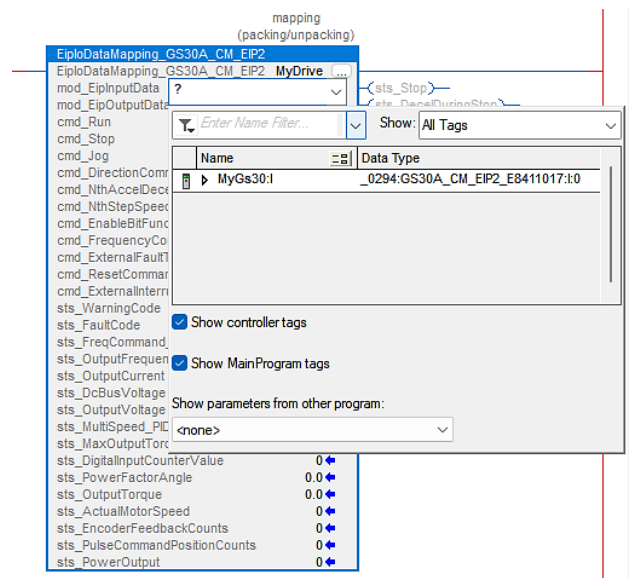
Step 3: Right-click on the name field of the Add-On Instruction and select ‘New Tag...’



Provide a Tag Name for the newly created instance of the Add-On Instruction.

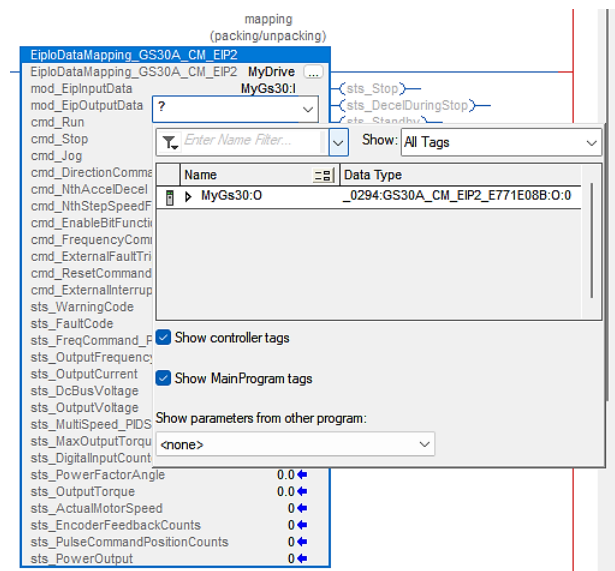


Step 4: In the ‘mod_EipInputData’ field, select the Module-Defined Data Type that corresponds to the module’s Input Data.



The Module-Defined Data Type is: _0294:GS30A_CM_EIP2_E8411017:I:0

Step 5: In the ‘mod_EipOutputData’ field, select the Module-Defined Data Type that corresponds to the module’s Output Data.



The Module-Defined Data Type is: _0294:GS30A_CM_EIP2_E771E08B:O:0

The object 'MyDrive' has been created with each of the associated structure members defined by the Add-On Instruction definition.

Controller Tags - ExampleProject(controller)		
Scope: ExampleProject		Show: All Tags
Name	Data Type	
MyDrive	EipIoDataMapping_GS30A_CM_EIP2	
MyDrive.EnableIn	BOOL	
MyDrive.EnableOut	BOOL	
MyDrive.cmd_Run	BOOL	
MyDrive.cmd_Stop	BOOL	
MyDrive.cmd_Jog	BOOL	
MyDrive.cmd_DirectionCommand	BOOL	
MyDrive.cmd_NthAccelDecel	SINT	
MyDrive.cmd_NthStepSpeedFrequency	SINT	
MyDrive.cmd_EnableBitFunction_6_11	BOOL	
MyDrive.cmd_FrequencyCommand	REAL	
MyDrive.cmd_ExternalFaultTrigger	BOOL	
MyDrive.cmd_ResetCommand	BOOL	
MyDrive.cmd_ExternalInterruption	BOOL	
MyDrive.sts_WarningCode	SINT	
MyDrive.sts_FaultCode	SINT	
MyDrive.sts_Stop	BOOL	
MyDrive.sts_DecelDuringStop	BOOL	
MyDrive.sts_Standby	BOOL	
MyDrive.sts_Run	BOOL	
MyDrive.sts_Fwd	BOOL	
MyDrive.sts_TransitioningRevToFwd	BOOL	
MyDrive.sts_TransitioningFwdToRev	BOOL	
MyDrive.sts_Rev	BOOL	
MyDrive.sts_LogActive	BOOL	

Step 6: Download the project to the CPU and observe the mapping of the EtherNet/IP IO Data.

mapping (packing/unpacking)		
EipIoDataMapping_GS30A_CM_EIP2	MyDrive	
mod_EipInputData	MyGs30:I	
mod_EipOutputData	MyGs30:O	
cmd_Run	1	sts_Stop
cmd_Stop	0	sts_DecelDuringStop
cmd_Jog	0	sts_Standby
cmd_DirectionCommand	0	sts_Run
cmd_NthAccelDecel	0	sts_Fwd
cmd_NthStepSpeedFrequency	0	sts_TransitioningRevToFwd
cmd_EnableBitFunction_6_11	0	sts_TransitioningFwdToRev
cmd_FrequencyCommand	60.0	sts_Rev
cmd_ExternalFaultTrigger	0	sts_JogActive
cmd_ResetCommand	0	sts_FreqFromComm
cmd_ExternalInterruption	0	sts_FreqFromAnalogOrDiscrete
sts_WarningCode	0	sts_CommandFromCommKeypad
sts_FaultCode	0	sts_ParametersLocked
sts_FreqCommand_PIDSetpoint	60.0	sts_DriveStopped
sts_OutputFrequency	60.0	sts_DriveRunning
sts_OutputCurrent	0.0	
sts_DcBusVoltage	343.5	
sts_OutputVoltage	219.9	
sts_MultiSpeed_PIDStepNumber	0	
sts_MaxOutputTorque	56	
sts_DigitalInputCounterValue	0	
sts_PowerFactorAngle	72.0	
sts_OutputTorque	-5.6	
sts_ActualMotorSpeed	1800	
sts_EncoderFeedbackCounts	0	
sts_PulseCommandPositionCounts	0	
sts_PowerOutput	0	

Reference

Studio 5000 Instruction Mnemonic Update Table

In version 36 of Studio 5000, the mnemonics for some instructions were updated by Rockwell to align with IEC-61131-3 and PLCopen standards.

Instruction	Mnemonic in versions 35 and earlier	Mnemonic in versions 36 and later
Arc Cosine	ACS	ACOS
Arc Sine	ASN	ASIN
Arc Tangent	ATN	ATAN
Convert to BCD	TOD	TO_BCD
Convert to Integer	FRD	BCD_TO
Equal To	EQU	EQ
Greater Than	GRT	GT
Greater Than or Equal To	GEQ	GE
Less Than or Equal To	LEQ	LE
Less Than	LES	LT
Limit	LIM	LIMIT
Move	MOV	MOVE
Not Equal To	NEQ	NE
Square Root	SQR	SQRT
Truncate	TRN	TRUNC
X to the Power of Y	XPY	EXPT