Motors

Automation

Energy

Transmission and Distribution

Coatings

CFW11 - AOI

Configuration

Driving efficiency and sustainability

WEG CFW11 AOI Configuration

Prerequisites

Exclusions

This document does not go into detail of setting up a controller in RSLOGIX/STUDIO 5000.

The connection and configuration of the IP network is beyond the scope of this document.

All non-communication specific parameters on the CFW11 are excluded from the configuration requirements of this document.

System Components

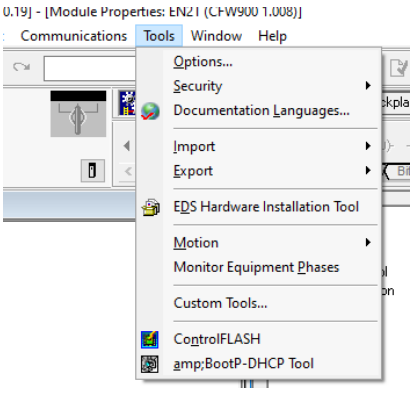
This document assumes that the following components are available and configured:

- ControlLogix or CompactLogix PLC controller running version 20 (or higher) firmware
- 10/100 or faster ethernet network with IP connectivity and IP addresses for both the PLC and CFW11

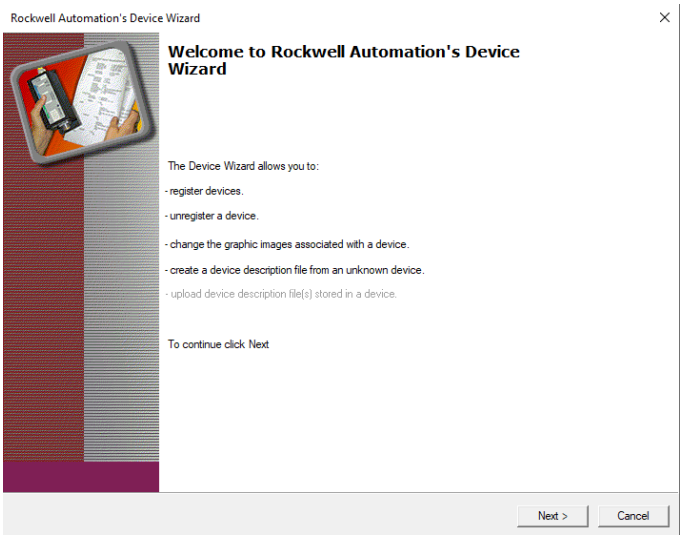
EDS Installation

Begin by adding the EDS file for the CFW11 if it is not already in the project.

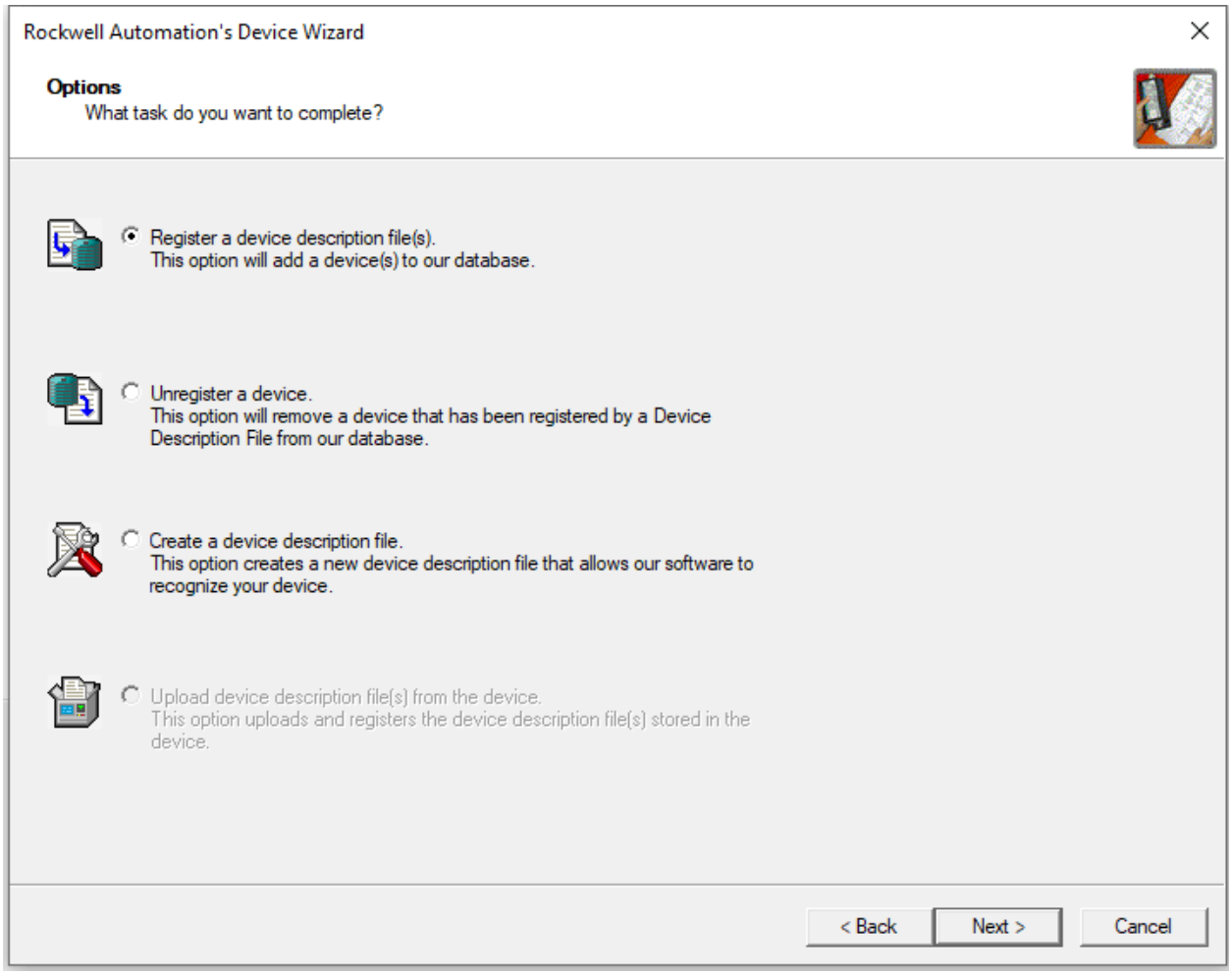
Note: please be sure to select the correct version of the EDS file. There are two versions. One with a single ethernet interface, and one with dual. In this example, a dual interfaced EDS file is used.



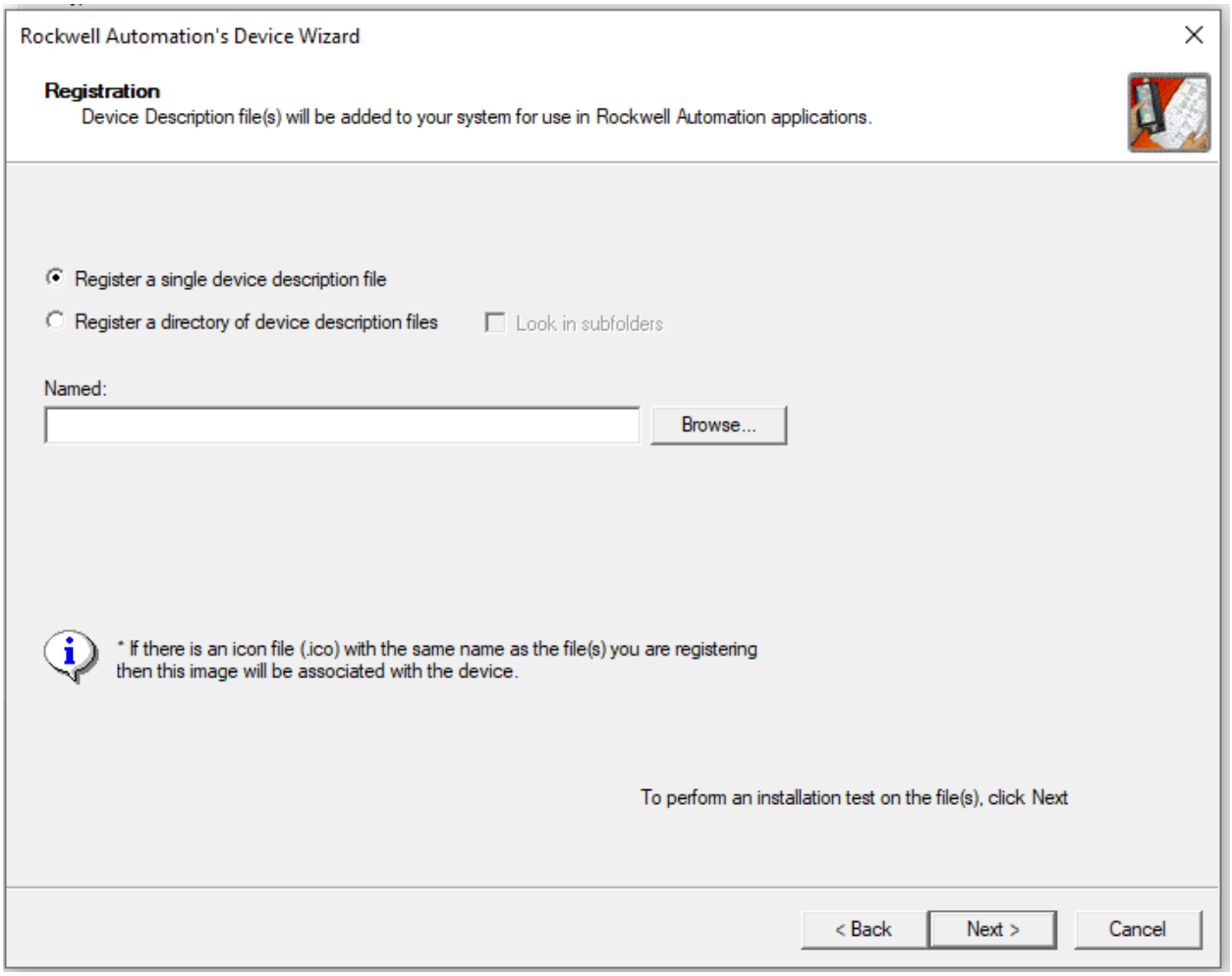
From inside Logix Designer, go to Tools -> EDS Hardware Installation Tool



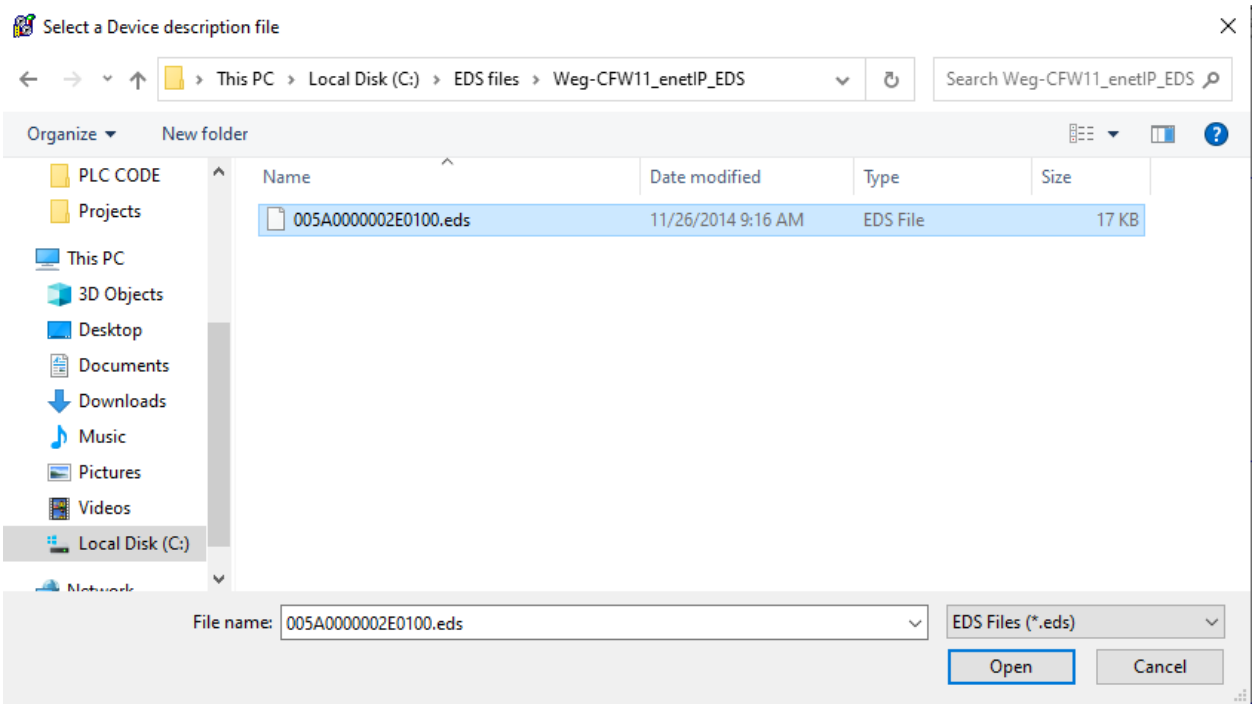
Click Next >



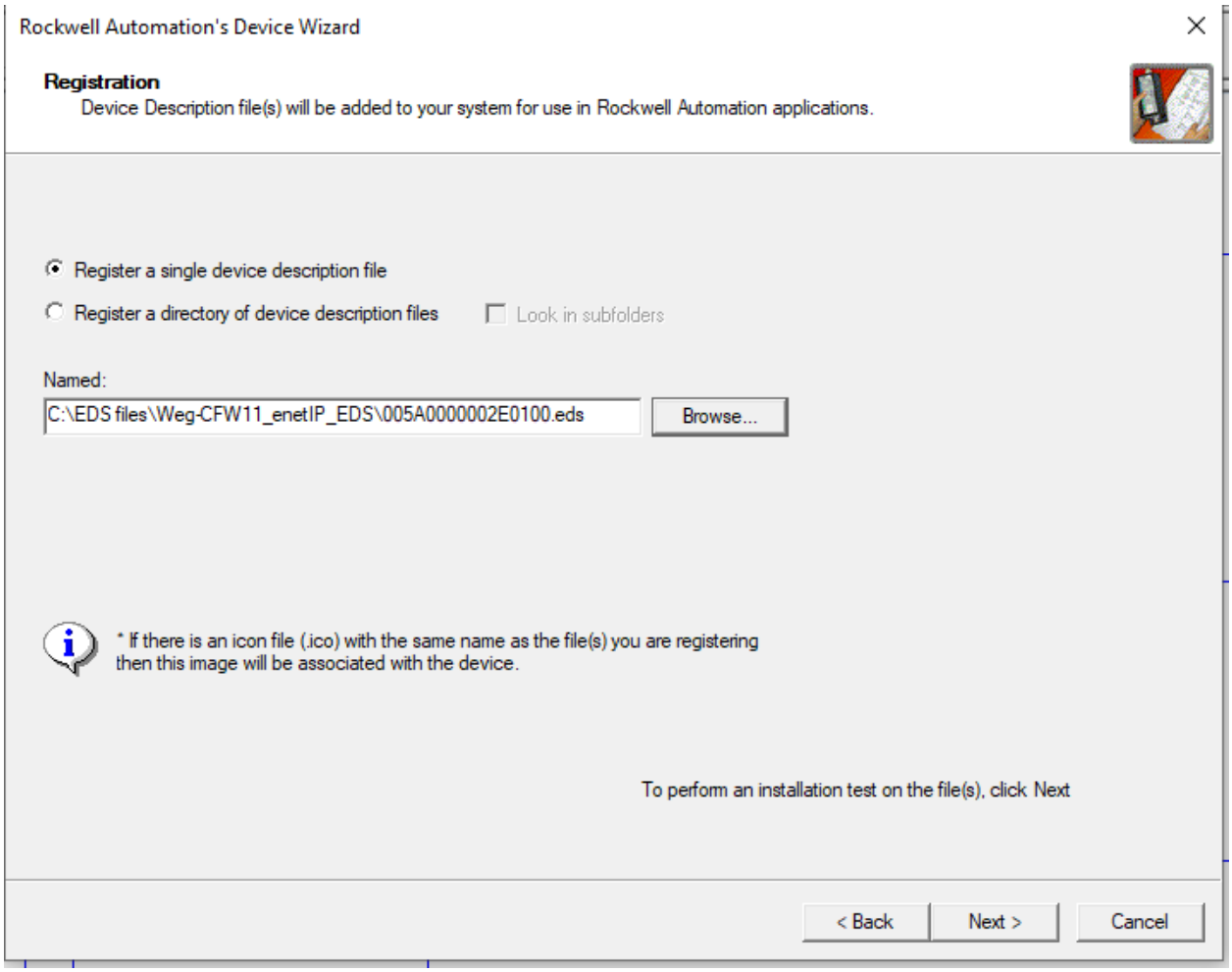
Click Next >



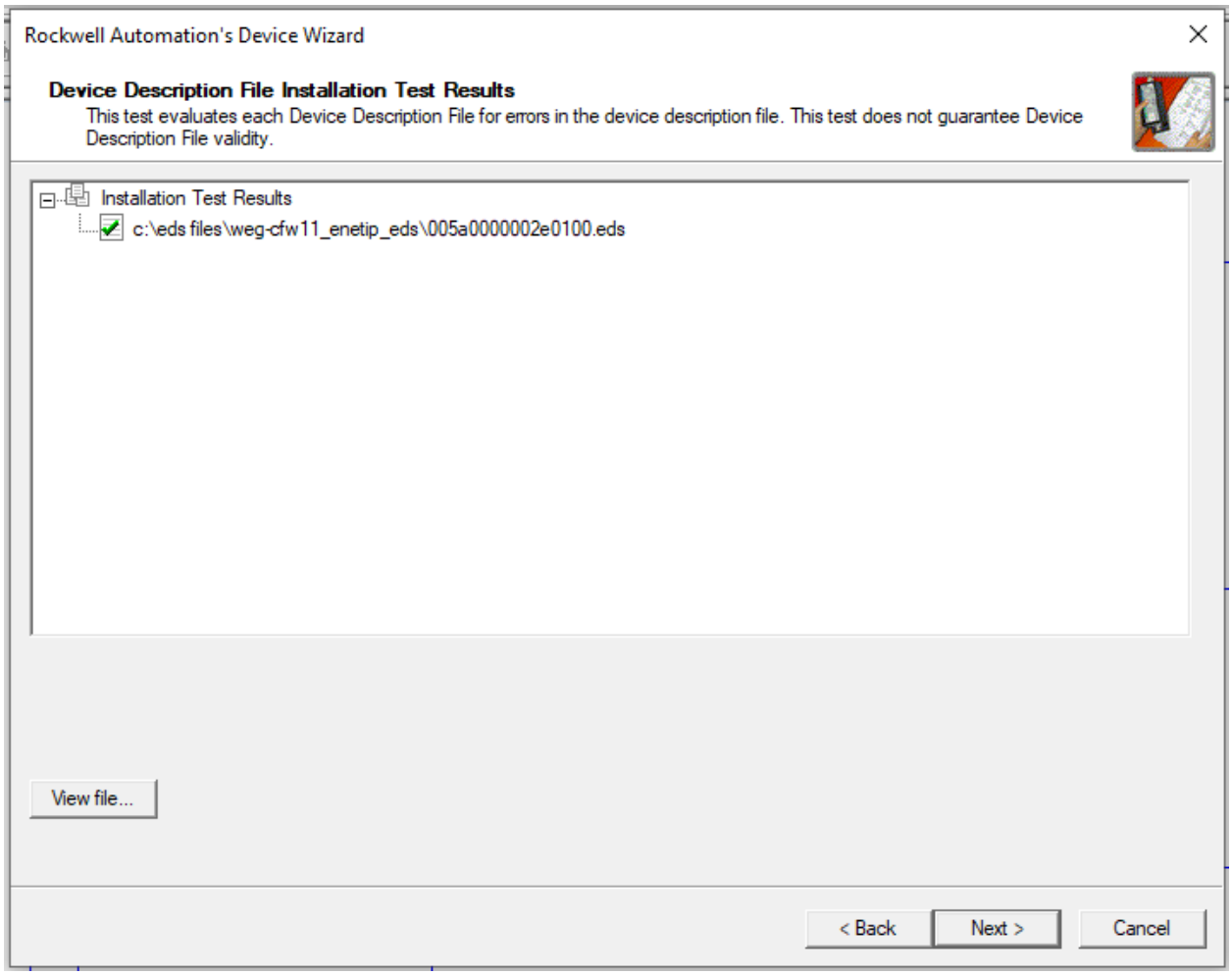
Click Browse ...



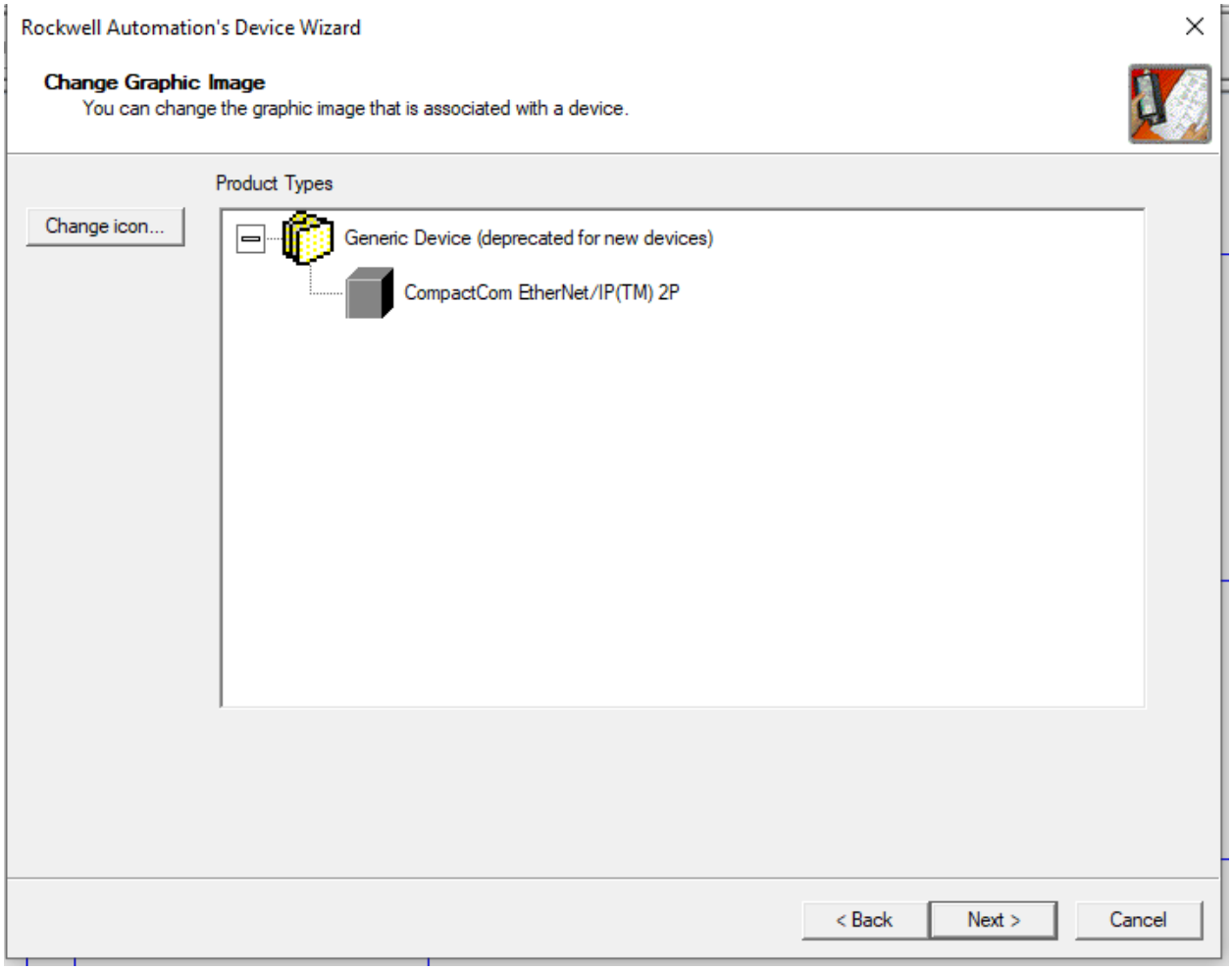
Browse to where the downloaded eds file is located and click Open


Rockwell Automation's Device Wizard
Registration
Device Description file(s) will be added to your system for use in Rockwell Automation applications.
Register a single device description file
Register a directory of device description files
Look in subfolders
Named:
C:\EDS files\Weg-CFW11_enetIP_EDS\005A0000002E0100.eds
Browse...
* 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.
To perform an installation test on the file(s), click Next
< Back
Next >
Cancel

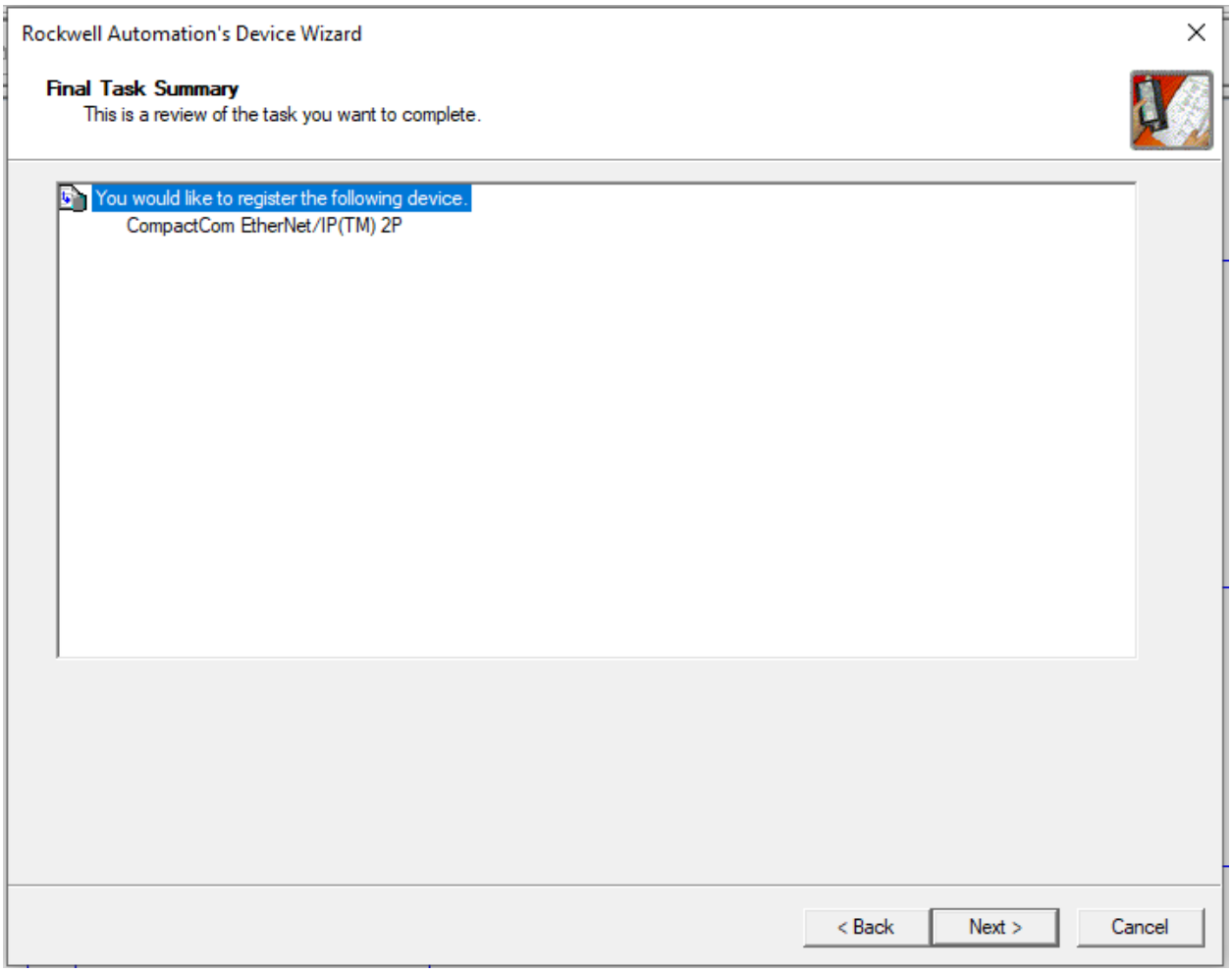
Click Next >



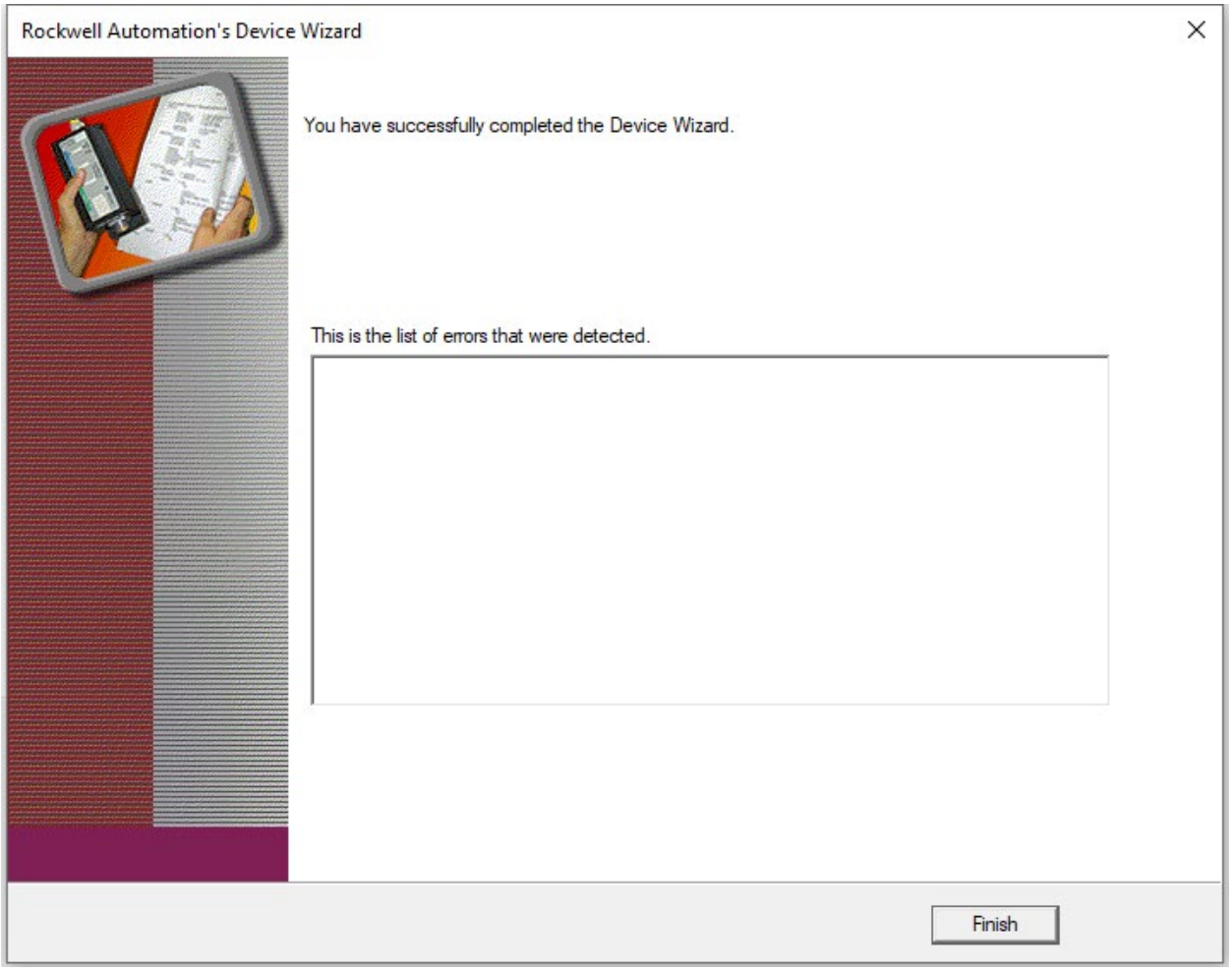
There should be a green checkmark. Click Next >


Rockwell Automation's Device Wizard
Change Graphic Image
You can change the graphic image that is associated with a device.
Product Types
Change icon...
Generic Device (deprecated for new devices)
CompactCom EtherNet/IP(TM) 2P
< Back
Next >
Cancel

Click Next >


Rockwell Automation's Device Wizard
Final Task Summary
This is a review of the task you want to complete.
You would like to register the following device.
CompactCom EtherNet/IP(TM) 2P
< Back
Next >
Cancel

Click Next >



Click Finish

The EDS file is now installed and the CFW11 can be added as an Ethernet/IP device in the device tree.

AOI

CFW11

This AOI controls the CFW11 and handles the following additional parameters:

Outputs

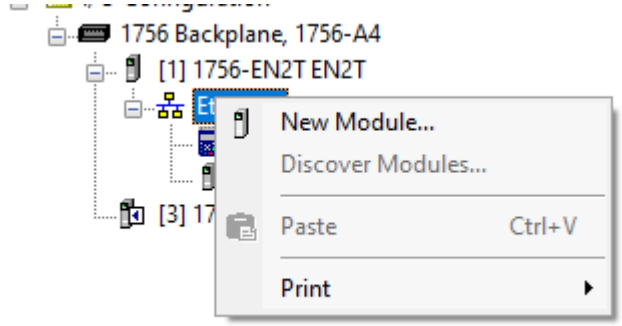
- Output Current
- Output Torque
- Output Voltage
- Output Frequency

- Last Fault Code

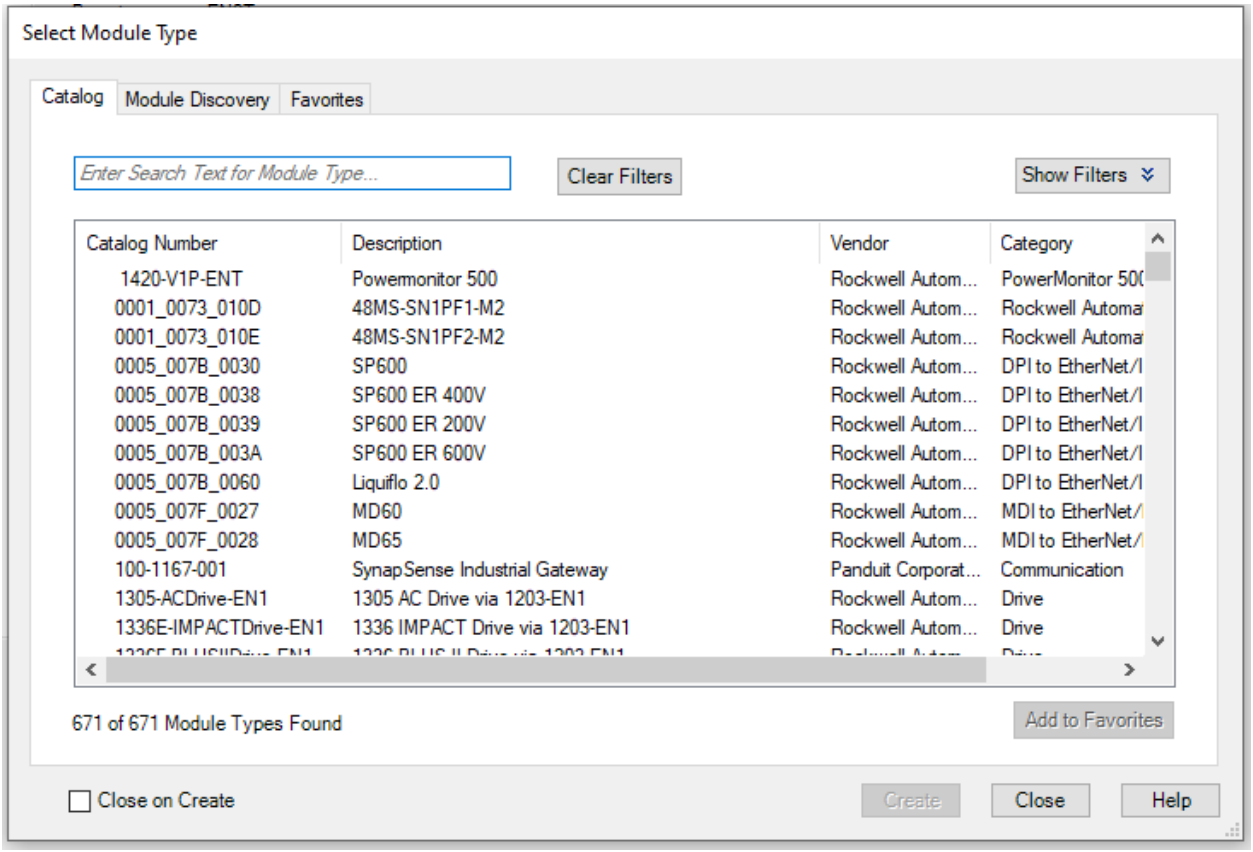
Inputs

- Acceleration Ramp 1
- Deceleration Ramp 1
- Torque Reference Clockwise
- Torque Reference CounterClockwise

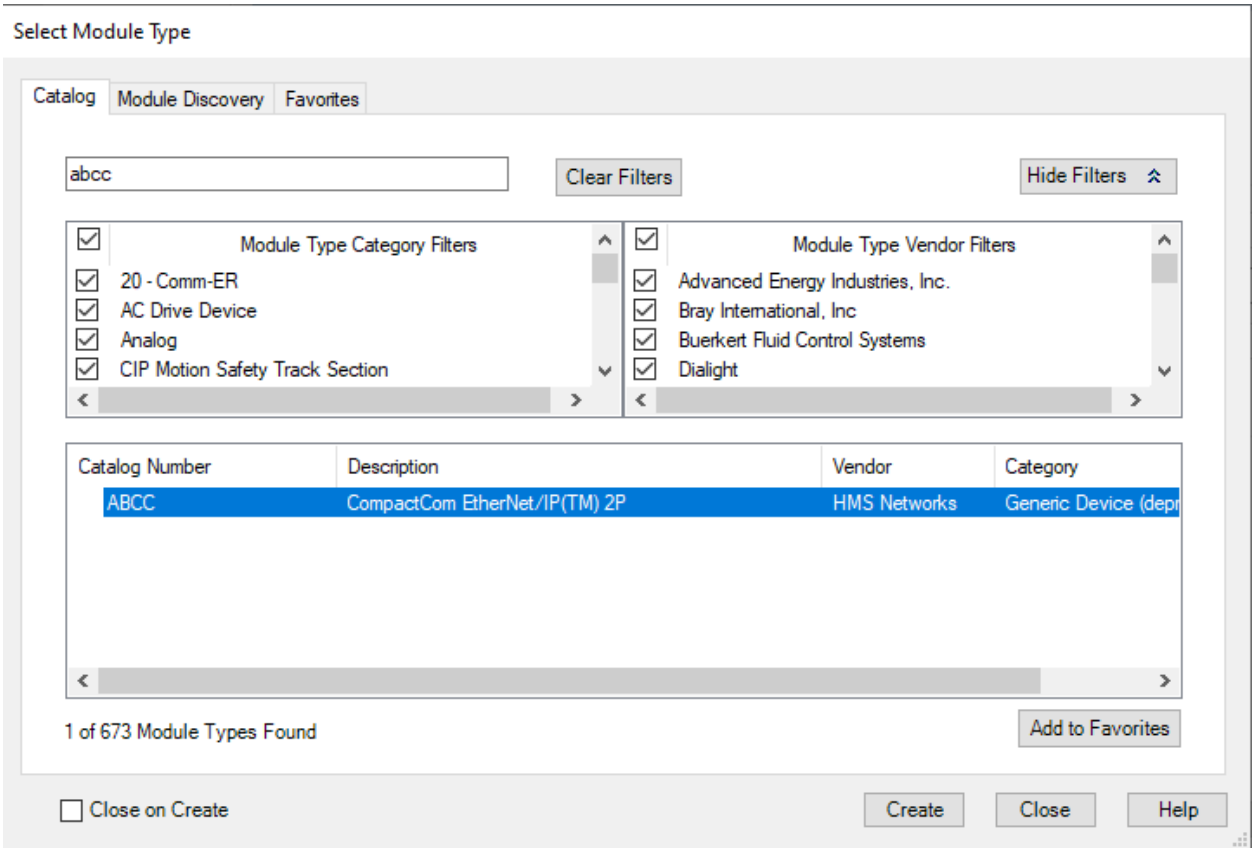
Create the Ethernet/IP Device



In the device tree, right click on the Ethernet bus that will contain the CFW11 and click New Module….

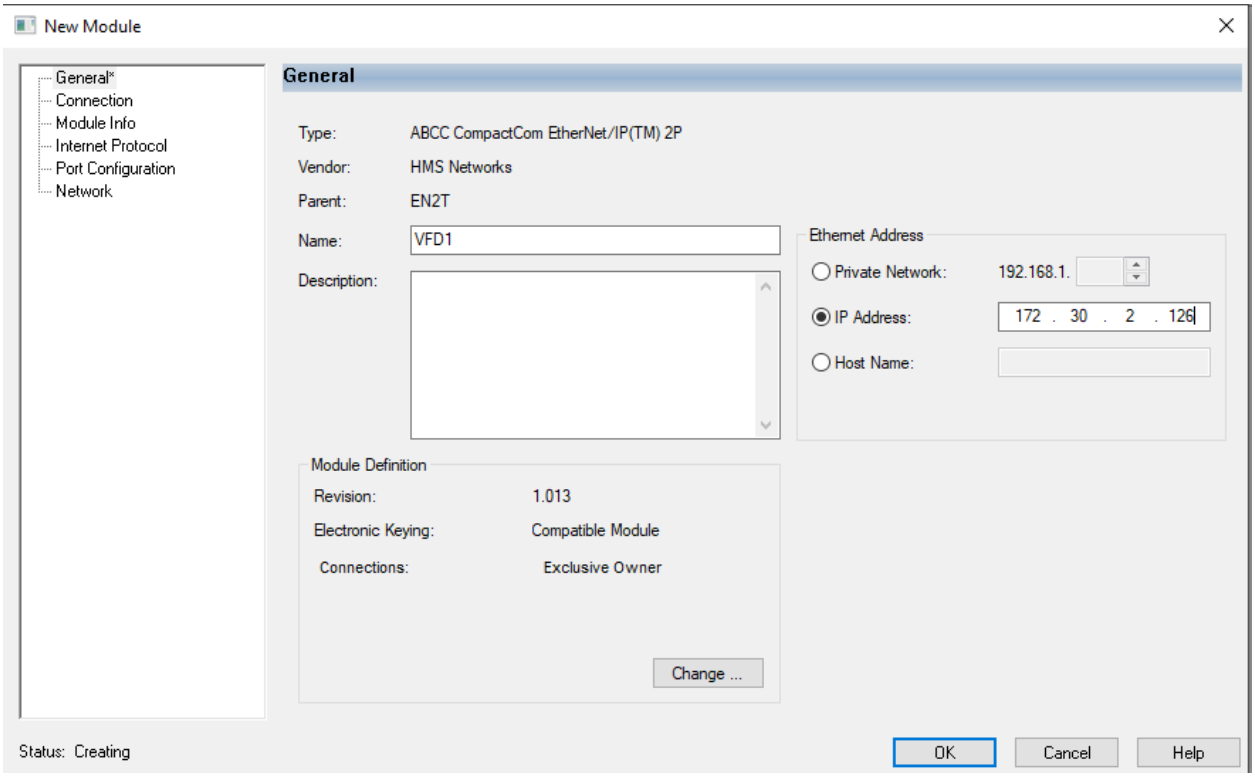


In the Select Module Type dialog box, enter in “ABCC” in the search field

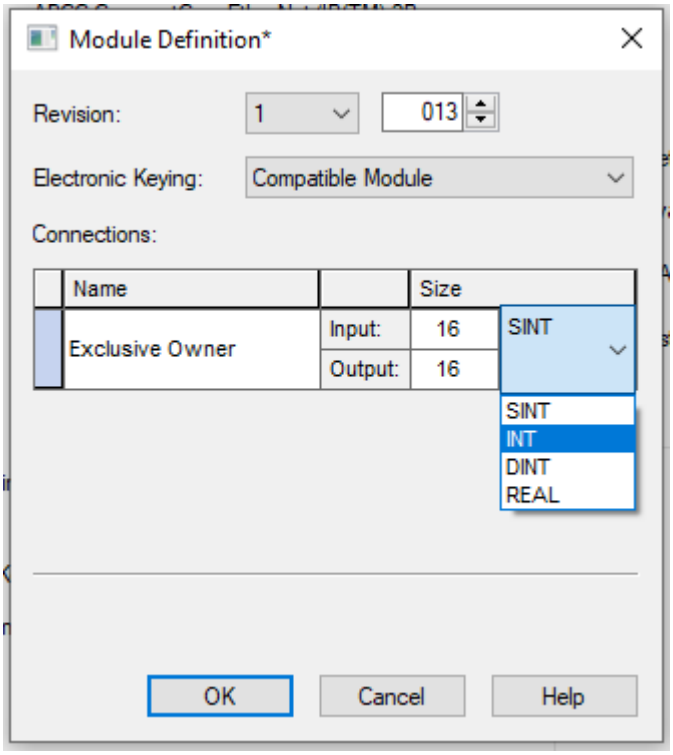


There should be an entry matching the above screenshot.

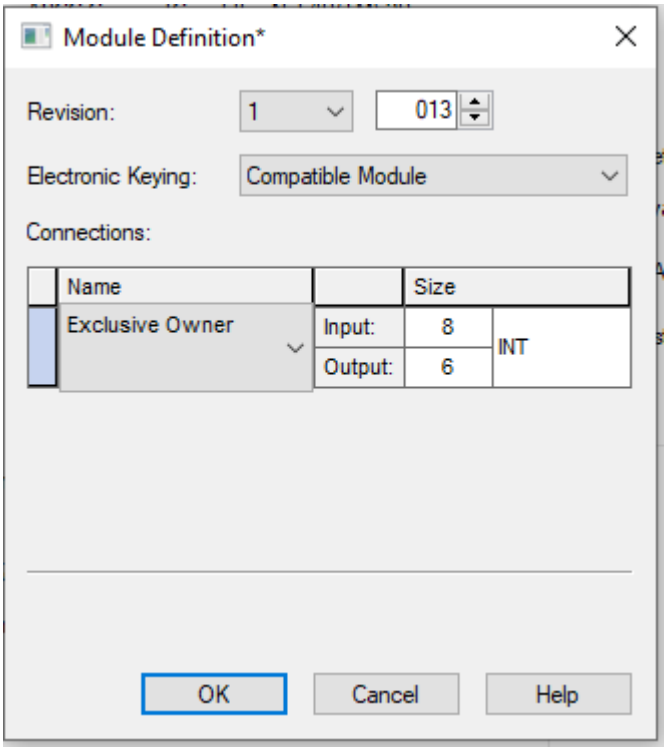
Highlight the ABCC and click Create



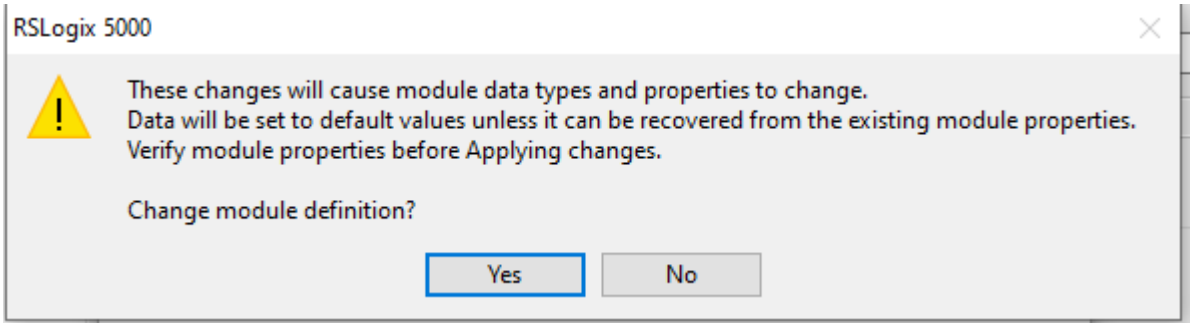
Give the CFW11 a Name and IP address. Before clicking on OK, click on the Change … button in the module definition.



Change the type to INT



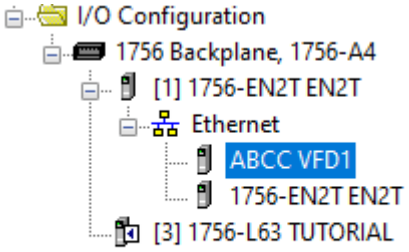
The Input and output size should be set to 8 and 6 respectively. Click OK



Click Yes

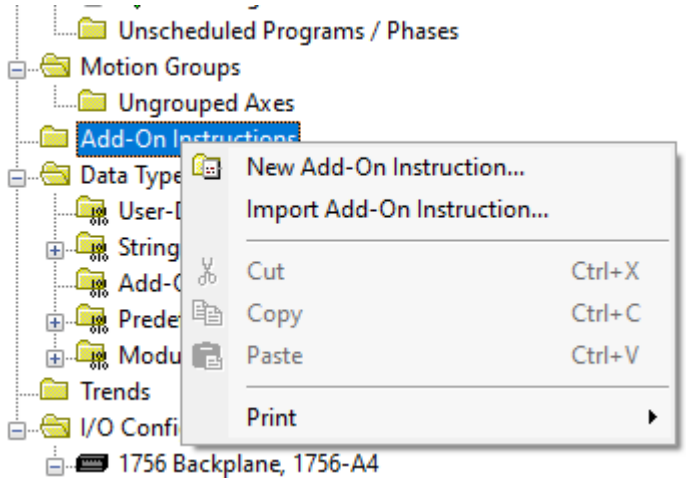
At this point, no other changes are required. However, changing the RPI can be done, if the need arises.

Once satisfied with the settings, Click OK

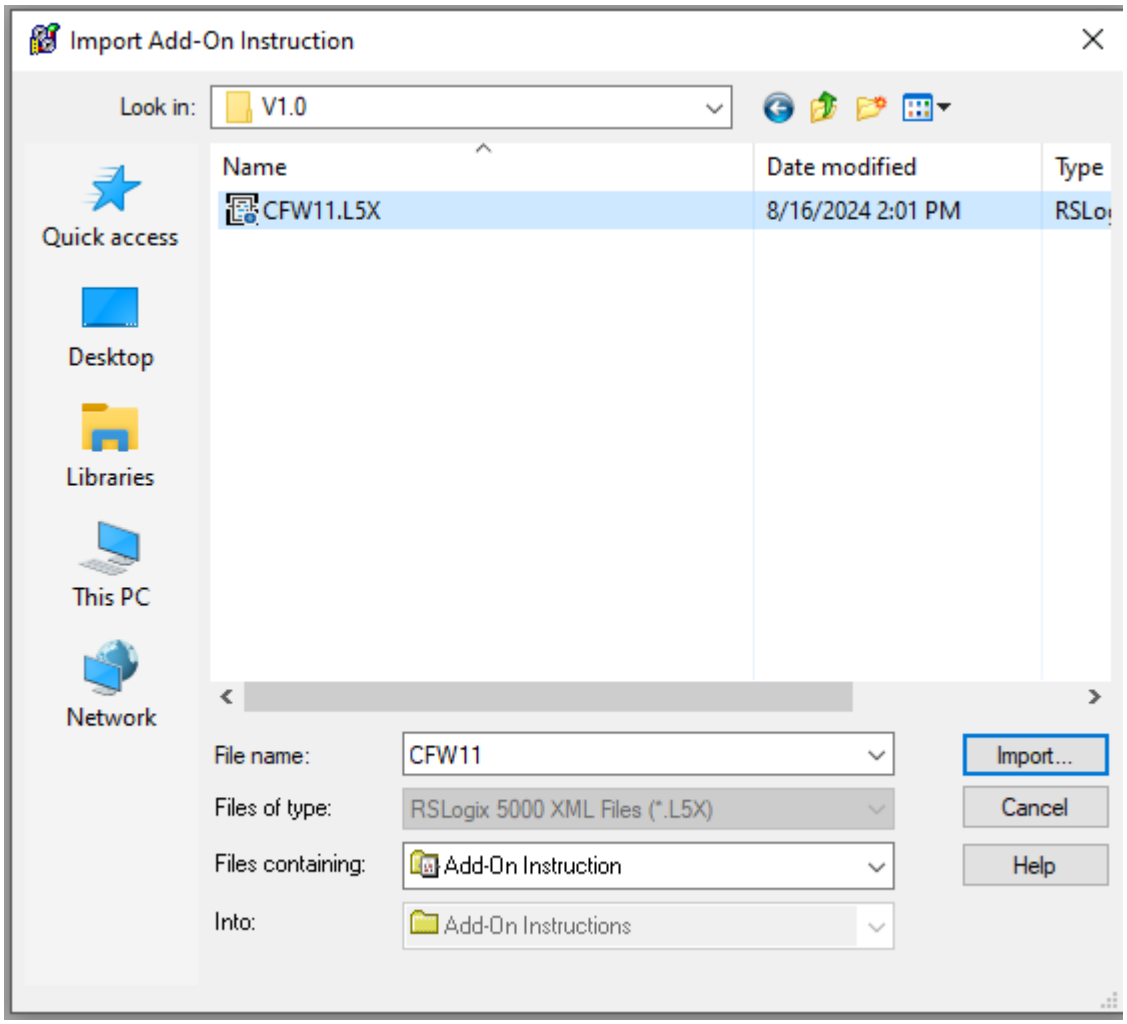


There should now be an instance of the CFW11 in the device tree

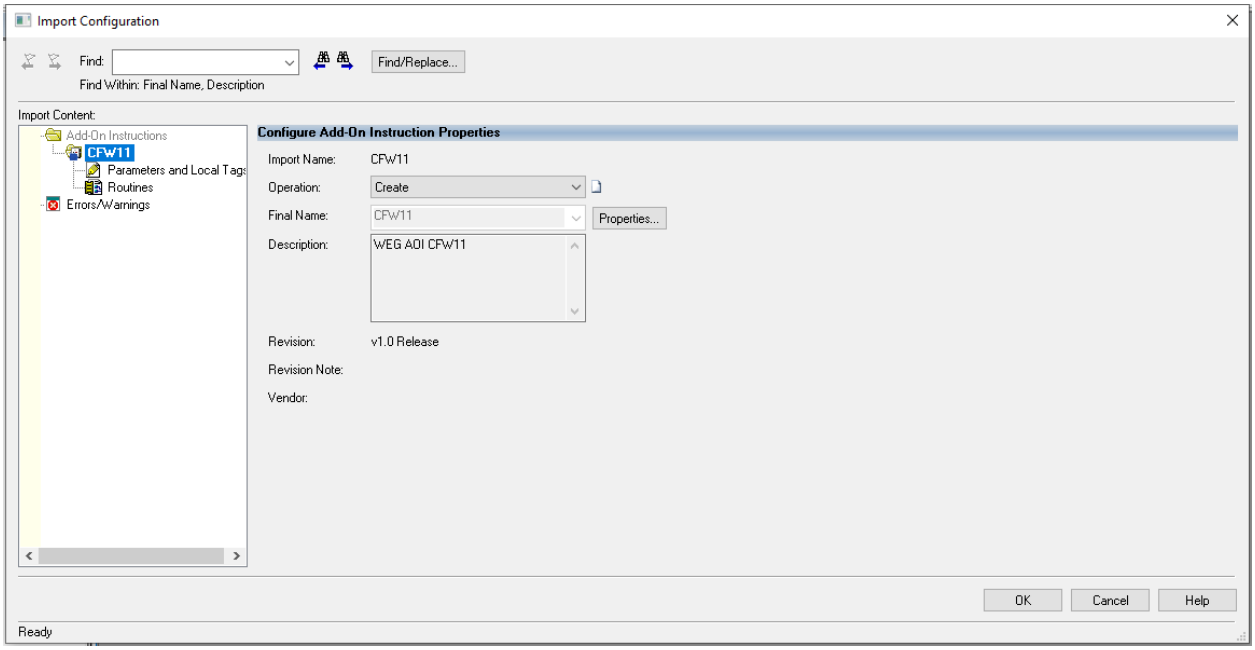
AOI Import



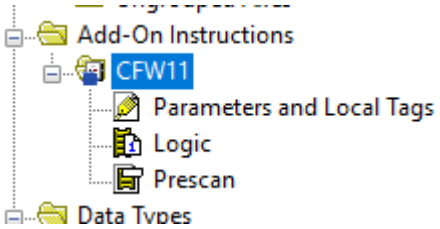
In the device tree, right click on Add-On Instructions and click on Import Add-On Instruction...



Select the appropriate add-on instruction (CFW11.L5X) and click Import....

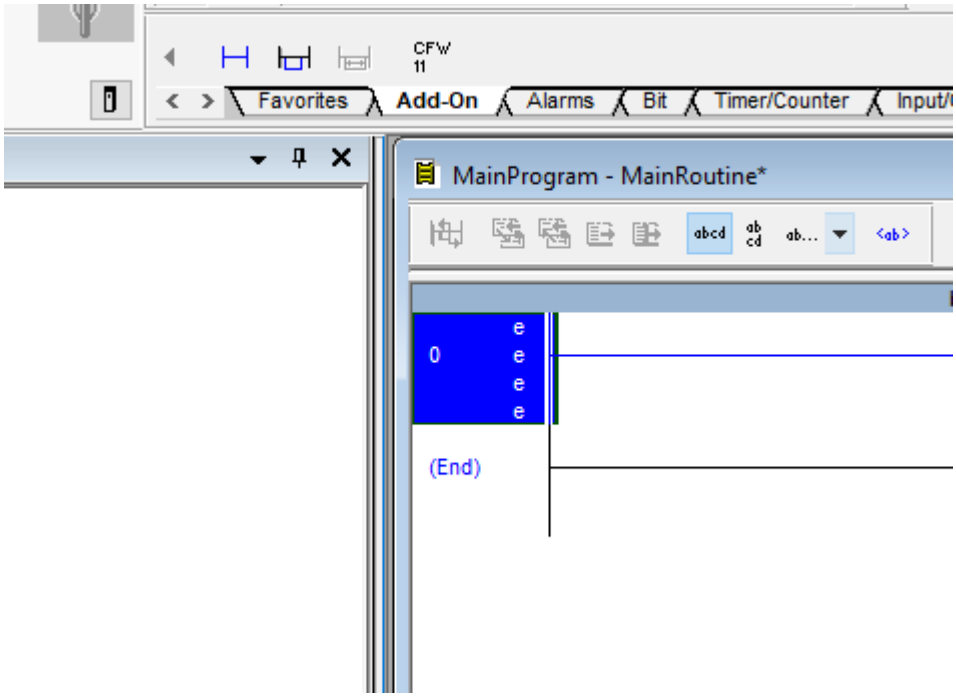


Review the proposed changes and click OK

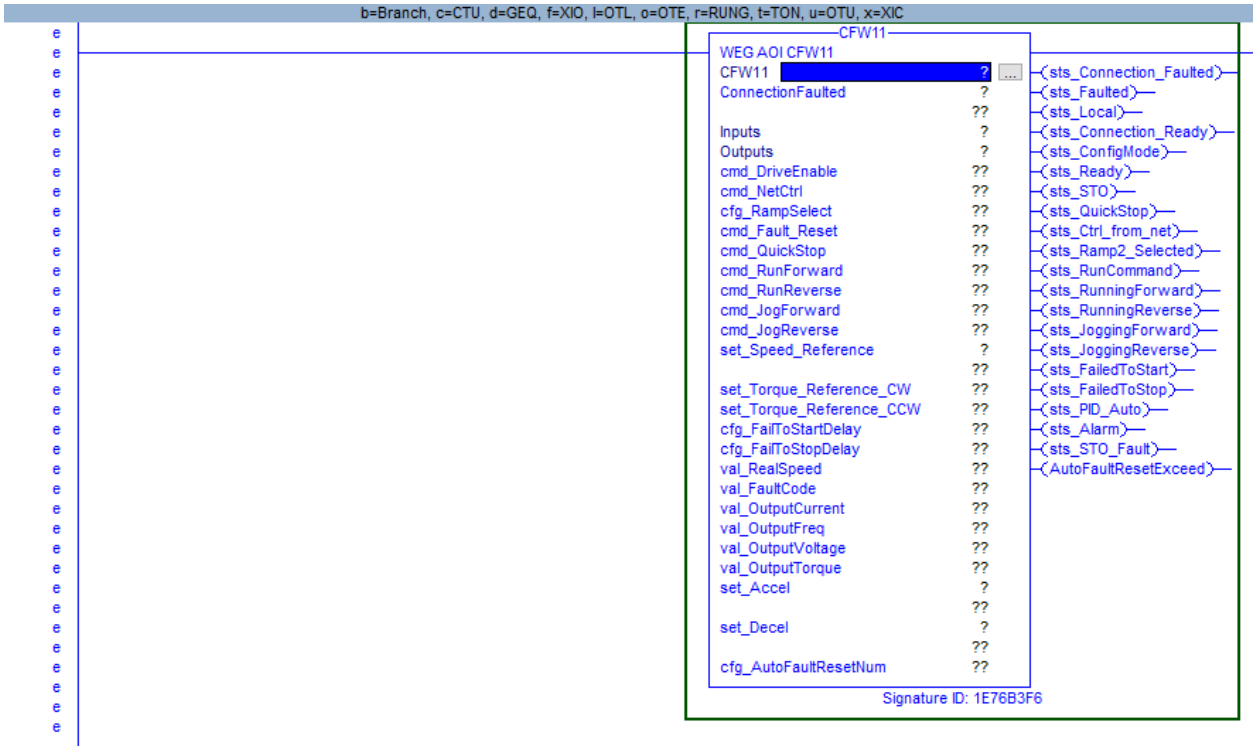


There should now be this add-on instruction in the project.

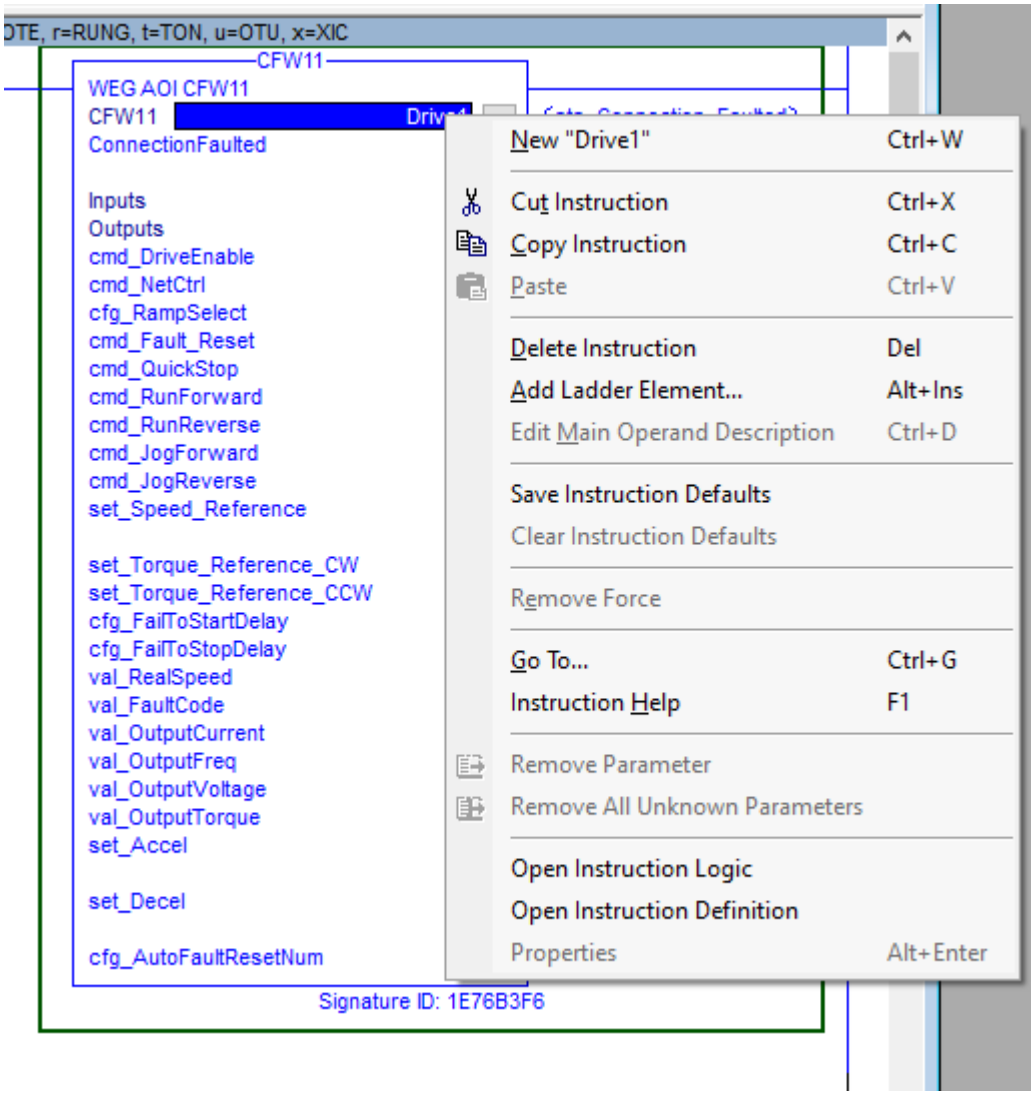
AOI Usage

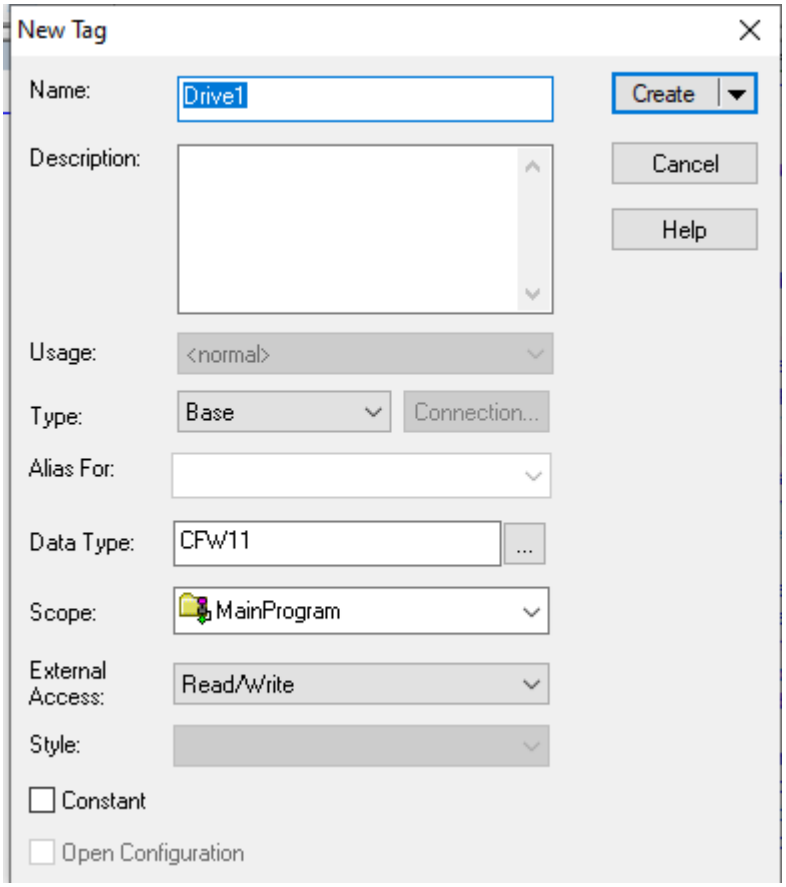


On an empty rung of ladder, add an instance of the newly imported add-on instruction by clicking on the Add-On bar and clicking the CFW11 symbol

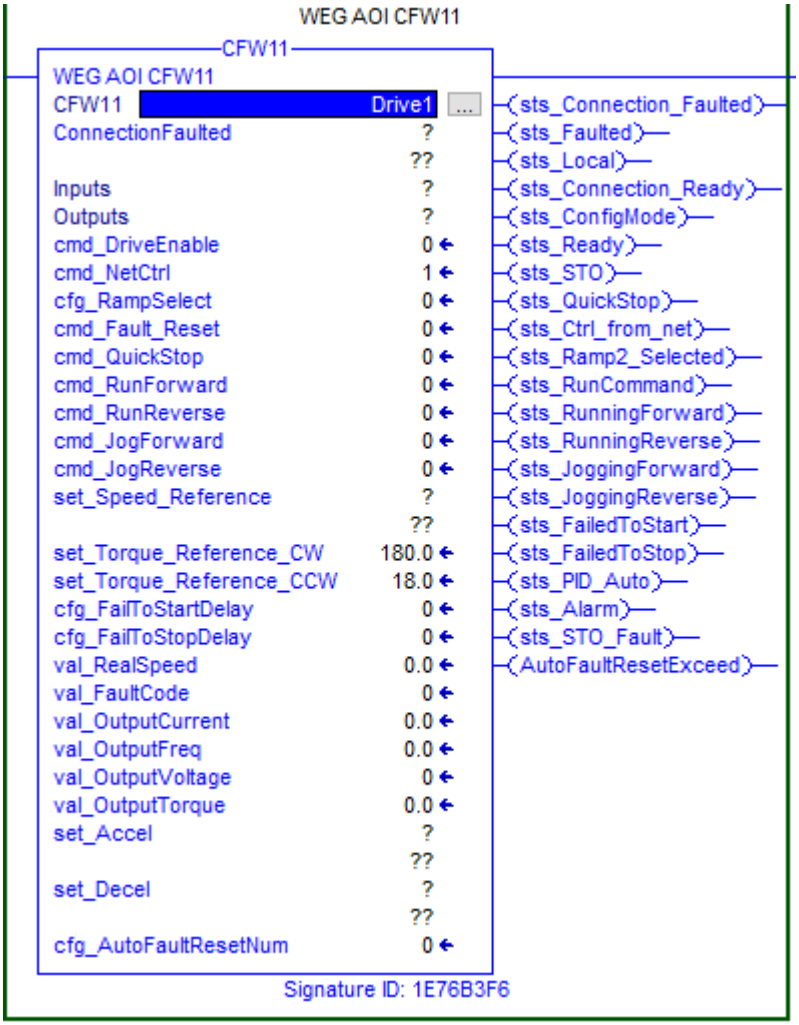


The Add-On requires a tag to be created. Create this tag by typing a name in the CFW11 field and right-clicking and selecting New “Tag”

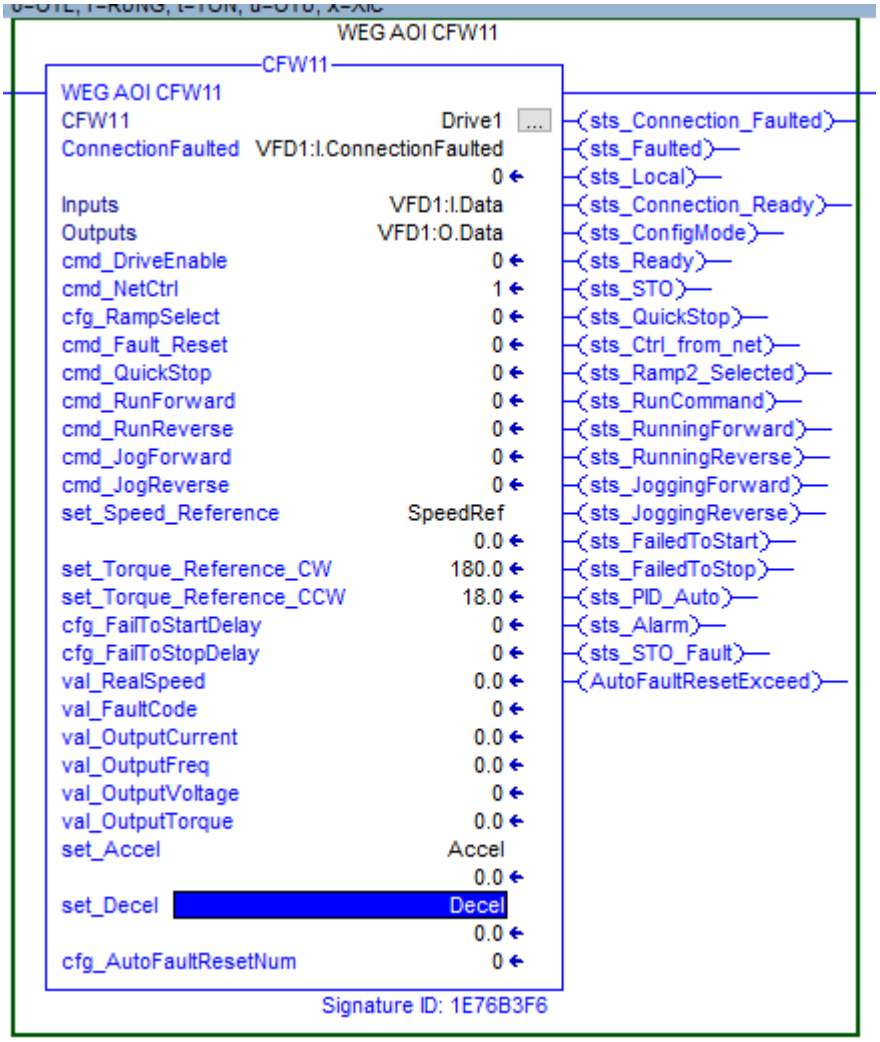

OTE, r=RUNG, t=TON, u=OTU, x=XIC
CFW11
WEG AOI CFW11
CFW11
ConnectionFaulted
Inputs
Outputs
cmd_DriveEnable
cmd_NetCtrl
cfg_RampSelect
cmd_Fault_Reset
cmd_QuickStop
cmd_RunForward
cmd_RunReverse
cmd_JogForward
cmd_JogReverse
set_Speed_Reference
set_Torque_Reference_CW
set_Torque_Reference_CCW
cfg_FailToStartDelay
cfg_FailToStopDelay
val_RealSpeed
val_FaultCode
val_OutputCurrent
val_OutputFreq
val_OutputVoltage
val_OutputTorque
set_Accel
set_Decel
cfg_AutoFaultResetNum
Signature ID: 1E76B3F6
New "Drive1" Ctrl+W
Cut Instruction Ctrl+X
Copy Instruction Ctrl+C
Paste Ctrl+V
Delete Instruction Del
Add Ladder Element... Alt+Ins
Edit Main Operand Description Ctrl+D
Save Instruction Defaults
Clear Instruction Defaults
Remove Force
Go To... Ctrl+G
Instruction Help F1
Remove Parameter
Remove All Unknown Parameters
Open Instruction Logic
Open Instruction Definition
Properties Alt+Enter



Give any appropriate description and scope (the tag can be either program or controller scoped)



Next the Connection Faulted, Inputs, Outputs, set_Speed_Reference, set_Accel, and set_Decel need to be populated as follows:



SpeedRef, Accel, and Decel are REAL tags to be created.

AOI Parameter Description

InOut Parameters

Parameter	Type	Description
Inputs	INT[8]	Input Assembly from CFW11
Outputs	INT[6]	Output Assembly to CFW11

Input Parameters

Parameter	Type	Description
Cfg_FailToStartDelay	DINT	Time in seconds before faulting on fail to start if VFD does not start when commanded Set to 0 to disable

Cfg_FailToStopDelay	DINT	Time in seconds before faulting on fail to stop if VFD does not stop when commanded Set to 0 to disable
ConnectionFaulted	BOOL	From CFW11 Ethernet Module. 1 = Connection is faulted 0 = Connection is OK
cfg_RampSelect	BOOL	1 = Ramp 2 (P0102/P0103) 0 = Ramp 1 (P0100/P0101)
cmd_DriveEnable	BOOL	1 = Enable operation of VFD 0 = Disable operation of VFD
cmd_Fault_Reset	BOOL	1 = Send Reset Fault Signal to VFD 0 = No action
cmd_JogForward	BOOL	1 = Jog Forward 0 = No Action / Stop
cmd_JogReverse	BOOL	1 = Jog Reverse 0 = No Action / Stop
cmd_NetCtrl	BOOL	1 = Remote (Ethernet) control 0 = Local (Other) control
cmd_QuickStop	BOOL	1 = Quick stop 0 = No Quick Stop (must be 0 to run)
cmd_RunForward	BOOL	1 = Run Forward 0 = Stop
cmd_RunReverse	BOOL	1 = Run Reverse 0 = Stop
set_Speed_Reference	REAL	Speed Setpoint (0-100%)
set_Accel	REAL	Acceleration Ramp 1 Setpoint (0.1-999.0) in Seconds
set_Decel	REAL	Deceleration Ramp 1 Setpoint (0.1-999.0) in Seconds
set_Torque_Reference_CW	REAL	Clockwise Torque Reference in %
set_Torque_Reference_CCW	REAL	Counter-Clockwise Torque Reference in %
cfg_AutoFaultResetNum	DINT	Maximum number of tries that AOI will send fault reset command while being maintained

Output Parameters

Parameter	Type	Description
sts_ConfigMode	BOOL	1 = VFD in Config Mode 0 = VFD in Operation Mode

sts_Connection_Faulted	BOOL	Goes high when connections interrupted. If “Run” signal is set, it must be reset before this will clear 1 = Connection has been faulted from VFD to PLC 0 = Connection OK
sts_Connection_Ready	BOOL	1 = Connection from VFD to PLC is established 0 = Connection not established
sts_Ctrl_from_net	BOOL	1 = VFD controlled remotely (PLC) 0 = VFD controlled locally
sts_Faulted	BOOL	1 = VFD Fault, connection fault, or failedToStart/Stop Fault 0 = No faults
sts_FailedToStart	BOOL	1 = VFD failed to start in time allotted 0 = Normal
sts_FailedToStop	BOOL	1 = VFD failed to stop in time allotted 0 = Normal
sts_FireMode	BOOL	1 = Drive Operating in Fire Mode
sts_PID_Auto	BOOL	1 = PID in Automatic Mode 0 = PID in Manual Mode
sts_Local	BOOL	1 = Local 0 = Remote
sts_QuickStop	BOOL	1 = Quick stop commanded 0 = No Quick stop commanded
sts_Ramp2_Selected	BOOL	1 = Ramp 2 rates selected 0 = Ramp 1 rates selected
sts_Ready	BOOL	1 = VFD is ready to operate (states Ready, Enabled, or Stopping) 0 = VFD is not ready to operate
sts_RunCommand	BOOL	1 = Commanded to run 0 = Not commanded to run
sts_RunningForward	BOOL	1 = Running forward 0 = Not running forward
sts_RunningReverse	BOOL	1 = Running reverse 0 = Not running reverse
sts_STO	BOOL	1 = Safe Torque Off is active 0 = Safe Torque Off is not active
sts_STO_Fault	BOOL	1 = AOI is preventing running due to STO trip until

		cmd_RunForward/Reverse shows a rising edge 0 = Normal Operation
val_FaultCode	DINT	Fault code 1 from VFD
val_OutputCurrent	REAL	Output current in Amps from VFD
val_OutputFreq	REAL	Output frequency in Hertz from VFD
val_OutputVoltage	REAL	Output voltage in Volts from VFD
val_OutputTorque	REAL	Output Torque Applied to Motor
AutoFaultResetExceed	BOOL	Indicates when the maximum number of automatic fault clears has been exceeded. Set cmd_Fault_Reset to 0 to reset and allow fault clear to resume. 1 = Max number of fault clears reached. Fault Reset Disabled 0 = Under threshold for automatic fault clears. Fault Reset Allowed.

CFW11 Parameter Requirements

The following parameters must be set in the CFW11:

Parameter	**Setting**
P0105	4
P0220	7
P0222	10
P0226	7
P0227	3
P0228	4
P0727	1
P0728	9
P0729	49
P0730	3
P0731	5
P0732	7
P0733	6
P0734	100
P0735	101
P0736	169
P0737	170

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US.CFW11.AOI.Configuration