Application Note: Power Xpert C445 Add-on Instructions

Overview

This document is a procedure on how to import an Add-On Instruction and use it in the Main Routine of an RSLogix5000 project.

Before you Start

Before importing the Add-On Instruction follow these steps

- Download EDS files for C445 at www.eaton.com/C445
- Add the C445 to the Ethernet/IP network in RSLogix5000 using the EDS files
- Generic Ethernet Device may also be used to add the C445 to an Ethernet/IP network

Scale Factors

C445 has different Scale Factor assignments for Current and Power depending on the current range:

| scale	FLA, min (A)	FLA, max (A)
1000	0.3	2.4
1000	1.0	5.0
100	4.0	32.0
100	6.0	45.0
100	9.0	72.0
10	11.0	90.0
10	17.0	136.0

The C445 Add-On Instructions provide current and power (kW) in floating point format. These programs take care of the scaling, so there are 3 Add-On Instructions for any selected I/O pair. C445 AOIs are available for I/O pairs 116/3 and 106/110.

| Measurement Module Parts	Current Range	AOI
C445MA…	0.3 - 5 A	C445_AOI_116_3_SmallFrameSize.L5X C445_AOI_106_110_SmallFrameSize.L5X
C445MB…	4 - 72 A	C445_AOI_116_3_MediumFrameSize.L5X C445_AOI_106_110_MediumFrameSize.L5X
C445MC…	11 - 136 A	C445_AOI_116_3_LargeFrameSize.L5X C445_AOI_106_110_LargeFrameSize.L5X

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Instructions

To use one of the C441 Add-On Instructions for I/O assemblies 116/3, follow these steps. The same steps apply for other I/O assemblies like 106/110.

- Open the RSLogix5000 project where it will be used
- Create an Ethernet/IP network and add the C445
- Select the *116/3* I/O assembly pair
- Right click on *Add-On Instructions* on the tree on the left of the screen and select *Import Add-On Instruction*
- Locate the Add-On Instruction on your computer and select Open. The tree in RSLogix5000 should look like the following:
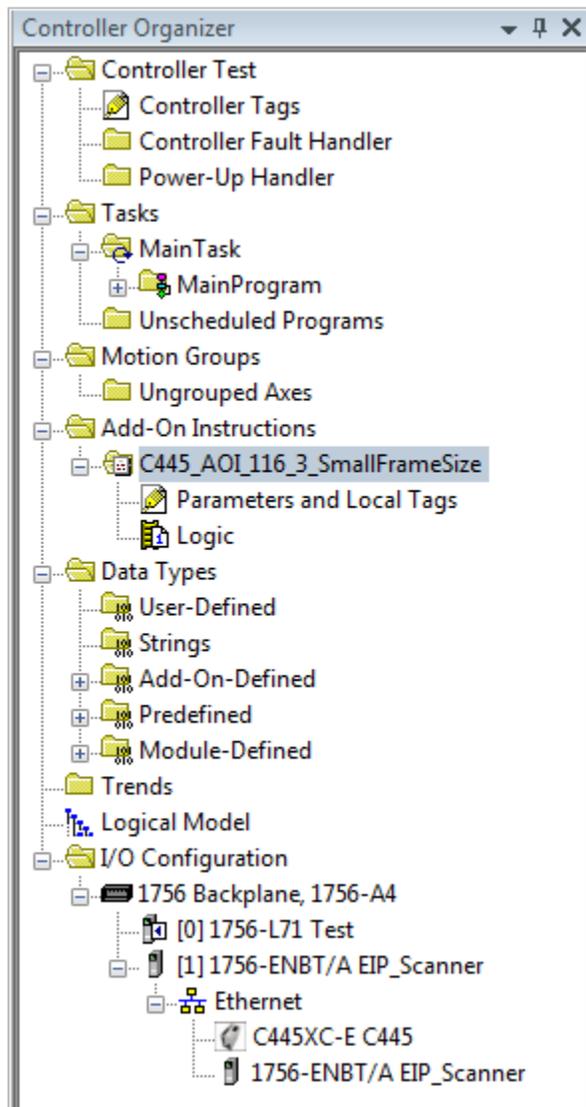

- The parameters, tags and logic for this Add-On Instruction are available to view under *C445_AOI_116_3_SmallFrameSize (*Small frame size used in this example)

- To add this Add-On Instruction to the Main Routine, open the *MainRoutine* as shown below:
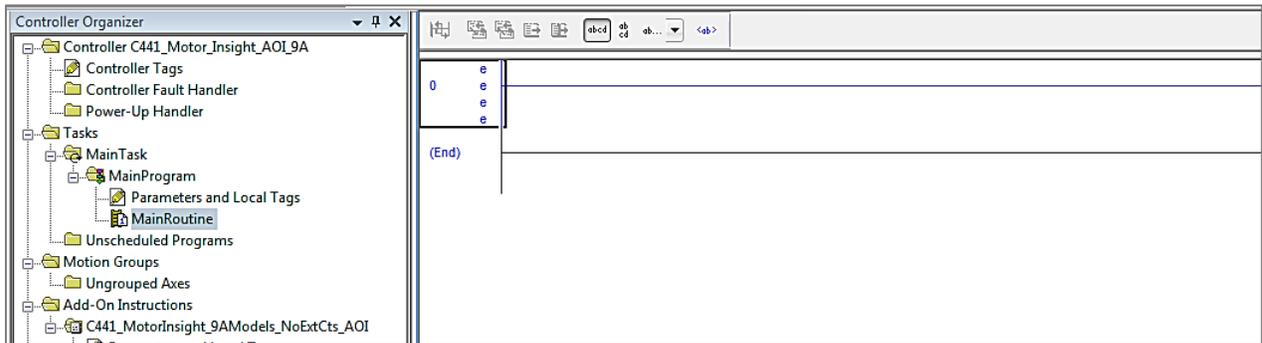
- In the area above where logic is entered are all of the available instructions. Select the category called "Add-On" and the C445 Add-On Instruction will be displayed above it, as shown below:
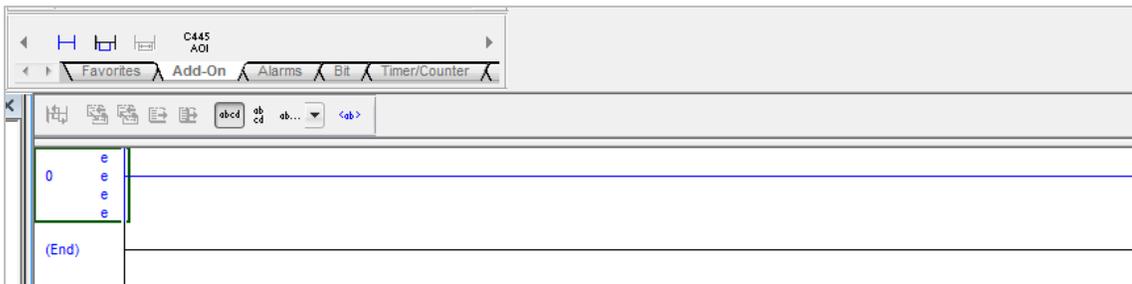

- Select the C445 AOI to add it to your program as shown below:

- Double click the "?" to the left of the ellipses and enter a name for this AOI block. For this example, C445 is used. Right click on C445 and choose New "C445" - the following window will open:
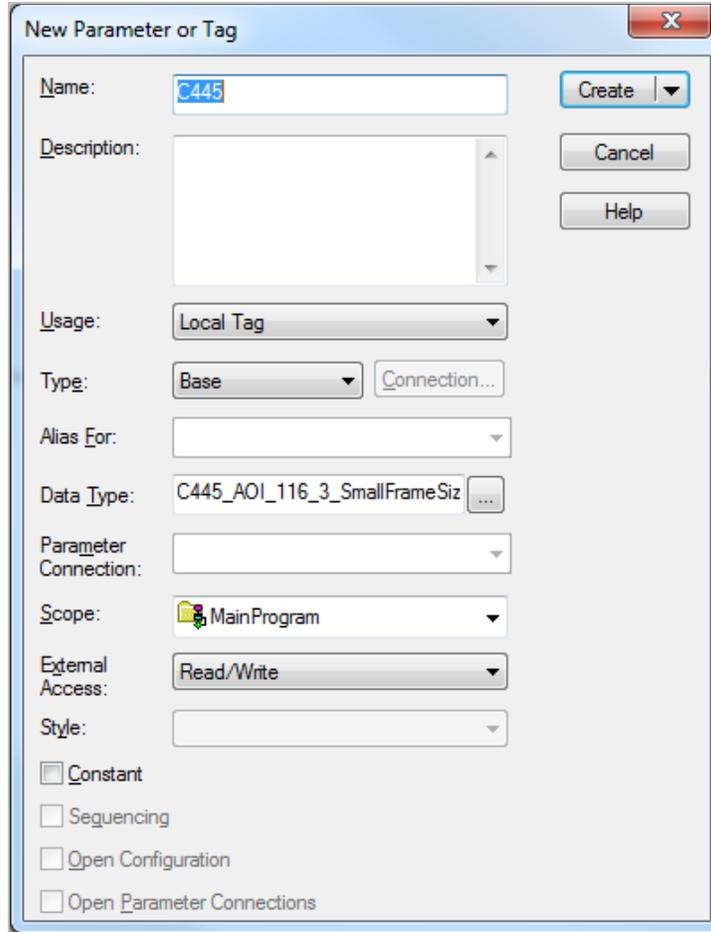
- Be sure all fields have the selections shown above, then select "Create"
- Add the Input and Output addresses by selecting the "?" next to each one and select the addresses as shown below
- Note: Under the Input tag category is *C445:I1.ConnectionFaulted*. This is a BOOL tag that is a 1 if the connection is lost to the C445 and a 0 if the connection is good. Monitor this bit for connection status for the C445 by assigning it to the "Comm_Status" tag shown below the I/O tags
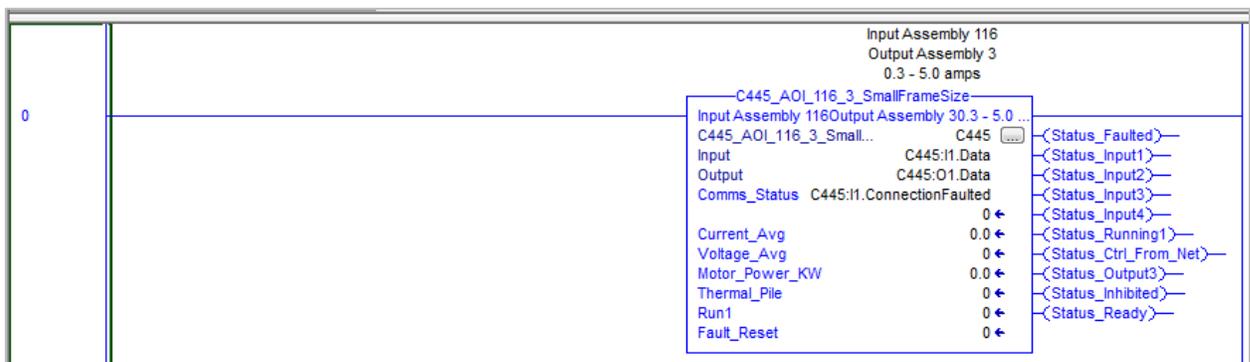
Complete!

The information for the Add-On Instruction will now be displayed and the instruction is now included in your logic. Specific tags were selected to be displayed in the instruction, but all I/O tags are now available to be used in the program

Tags correspond to the tag names documented in the C445 user manual (publication MN0420003EN) Appendix C for Input assembly 116 and Output assembly 3. They are located in the Parameters and Local Tags area under "MainProgram" in the RSLogix5000 project. All Input and Output tags are shown below for 116/3. Refer to user manual for tags used with 106/110.

Name	Usage	Value	Force Mask	Style	Data Type
Scope: MainProgram Show: All Tags					Enter Name Filter...
− C445	Local	{...}	{...}		C445_AOI_116_3_SmallFrameSize
C445.EnableIn		1		Decimal	BOOL
C445.EnableOut		0		Decimal	BOOL
C445.Comms_Status		0		Decimal	BOOL
C445.Status_Faulted		0		Decimal	BOOL
C445.Status_Warning		0		Decimal	BOOL
C445.Status_Output1		0		Decimal	BOOL
C445.Status_Output2		0		Decimal	BOOL
C445.Status_Input1		0		Decimal	BOOL
C445.Status_Input2		0		Decimal	BOOL
C445.Status_Input3		0		Decimal	BOOL
C445.Status_Input4		0		Decimal	BOOL
C445.Status_Running1		0		Decimal	BOOL
C445.Status_Running2		0		Decimal	BOOL
C445.Status_Ctrl_From_Net		0		Decimal	BOOL
C445.Status_Output3		0		Decimal	BOOL
C445.Status_Inhibited		0		Decimal	BOOL
C445.Status_Ready		0		Decimal	BOOL
C445.Status_At_Reference		0		Decimal	BOOL
C445.Current_L1		0.0		Float	REAL
C445.Current_L2		0.0		Float	REAL
C445.Current_L3		0.0		Float	REAL
C445.Current_Avg		0.0		Float	REAL
+ C445.Voltage_L1L2		0		Decimal	INT
+ C445.Voltage_L2L3		0		Decimal	INT
+ C445.Voltage_L3L1		0		Decimal	INT
+ C445.Voltage_Avg		0		Decimal	INT
C445.Motor_Power_KW		0.0		Float	REAL
+ C445.Voltage_Unbalance		0		Decimal	INT
+ C445.Current_Unbalance		0		Decimal	INT
C445.Apparent_Power_Factor		0.0		Float	REAL
C445.Residual_GND_Current		0.0		Float	REAL
C445.Line_Frequency		0.0		Float	REAL
C445.Trip_UV		0		Decimal	BOOL
C445.Trip_OV		0		Decimal	BOOL

C445.Trip_High_Res_GF		0		Decimal	BOOL	
C445.Trip_Residual_GF		0		Decimal	BOOL	
C445.Trip_Current_Phase_Loss		0		Decimal	BOOL	
C445.Trip_Current_Unbalance		0		Decimal	BOOL	
C445.Trip_Instantaneous_OC		0		Decimal	BOOL	
C445.Trip_Jam		0		Decimal	BOOL	
C445.Trip_PF_Deviation		0		Decimal	BOOL	
C445.Trip_Voltage_Phase_Loss		0		Decimal	BOOL	
C445.Trip_Voltage_Unbalance		0		Decimal	BOOL	
C445.Trip_Freq_Deviation_Fast		0		Decimal	BOOL	
C445.Trip_Freq_Deviation_Slow		0		Decimal	BOOL	
C445.Trip_UC		0		Decimal	BOOL	
C445.Trip_High_Power		0		Decimal	BOOL	
C445.Trip_Low_Power		0		Decimal	BOOL	
C445.Trip_OL		0		Decimal	BOOL	
C445.Trip_Stall		0		Decimal	BOOL	
C445.Trip_Phase_Rotation		0		Decimal	BOOL	
C445.Trip_Exceeds_Starts_Limit		0		Decimal	BOOL	
C445.Trip_Initialization_Fault		0		Decimal	BOOL	
C445.Trip_NV_Memory_Fault		0		Decimal	BOOL	
C445.Trip_Comm_Loss		0		Decimal	BOOL	
C445.Trip_Comm_Msg_Error		0		Decimal	BOOL	
C445.Warning_UV		0		Decimal	BOOL	
C445.Warning_OV		0		Decimal	BOOL	
C445.Warning_High_Res_GF		0		Decimal	BOOL	
C445.Warning_Residual_GF		0		Decimal	BOOL	
C445.Warning_Current_Phase_Loss		0		Decimal	BOOL	
C445.Warning_Current_Unbalance		0		Decimal	BOOL	
C445.Warning_Instantaneous_OC		0		Decimal	BOOL	
C445.Warning_Jam		0		Decimal	BOOL	
C445.Warning_PF_Deviation		0		Decimal	BOOL	
C445.Warning_Voltage_Phase_Loss		0		Decimal	BOOL	
C445.Warning_Voltage_Unbalance		0		Decimal	BOOL	
C445.Warning_Freq_Deviation_Fast		0		Decimal	BOOL	
C445.Warning_Freq_Deviation_Slow		0		Decimal	BOOL	

C445.Warning_UC		0		Decimal	BOOL	
C445.Warning_High_Power		0		Decimal	BOOL	
C445.Warning_Low_Power		0		Decimal	BOOL	
C445.Warning_OL		0		Decimal	BOOL	
C445.Warning_Stall		0		Decimal	BOOL	
C445.Warning_Phase_Rotation		0		Decimal	BOOL	
C445.Warning_Exceeds_Starts_Limit		0		Decimal	BOOL	
C445.Warning_Initialization_Fault		0		Decimal	BOOL	
C445.Warning_NV_Memory_Fault		0		Decimal	BOOL	
C445.Warning_Comm_Loss		0		Decimal	BOOL	
C445.Warning_Comm_Msg_Error		0		Decimal	BOOL	
+ C445.Thermal_Pile		0		Decimal	INT	
C445.Run1		0		Decimal	BOOL	
C445.Fault_Reset		0		Decimal	BOOL	
+ C445.I_L1		0		Decimal	INT	
+ C445.I_L2		0		Decimal	INT	
+ C445.I_L3		0		Decimal	INT	
+ C445.I_Avg		0		Decimal	INT	
+ C445.Power		0		Decimal	DINT	
+ C445.RGC		0		Decimal	INT	
+ C445.LF		0		Decimal	INT	
+ C445.APF		0		Decimal	INT	

The Logic area for the Add-On Instruction associates the generic I/O tags RSLogix5000 creates with the descriptive tags shown above. These generic I/O tags are created when a device is added to the Ethernet network. The generic I/O tags can be found in the Controller Tags area.

The descriptive tags shown above may now be used to control and monitor the C445.

Supporting Documentation
C445 User Manual   MN0420003EN
www.eaton.com/C445

Additional Help
In the event that additional help is needed, contact the Technical Resource Center at
1-877-ETN-CARE Option 2, Sub Option 2

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