Application Note: Motor Insight C441 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 C441R or C441T at [www.eaton.com/C441](http://www.eaton.com/C441)
- Add the C441R or C441T for the C441 Motor Insight to the Ethernet/IP network in RSLogix5000 using the EDS files
- Generic Ethernet Device may also be used to add the C441 to an Ethernet/IP network

Scale Factors
C441 has different Scale Factor assignments for Currents and Power (kW) depending on the size of the C441 and whether external CTs are used. These three scenarios are shown below.
- 9 amp units without external CTs
  a. **Current Scale factor:** x 0.01 amps
  b. **Power Scale factor:** x 0.01 kW
- 9 amp units with external CTs
  a. **Current Scale factor:** x 0.1 amps
  b. **Power Scale factor:** x 0.1 kW
- 90 amp units
  a. **Current Scale factor:** x 0.1 amps
  b. **Power Scale factor:** x 0.01 kW

The C441 Add-On Instructions provide the currents and power (kW) in floating point format. These programs take care of the scaling. There are 3 Add-On Instructions for the C441 using Input Assembly 115 and Output Assembly 105.

Instructions
To use one of the C441 Add-On Instructions for I/O assemblies 105/115, follow these steps.
- Open the RSLogix5000 project where it will be used
- Create an Ethernet/IP network and add the C441R or C441T module
- Select the 105/115 I/O assembly pair
- The SINT data type must be used because the Output assembly is 1 byte in length. The AOI takes care of putting the 2 byte values back together and performs the scaling for these values where necessary
- 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:

```
Controller Organizer

- Controller C441_Motor_Insight_AOI_9A
  - Controller Tags
  - Controller Fault Handler
  - Power-Up Handler

- Tasks
  - MainTask
    - MainProgram
      - Unscheduled Programs

- Motion Groups
  - Ungrouped Axes

- Add-On Instructions
  - C441_MotorInsight_9AModels_NoExtCTs_AOI
    - Parameters and Local Tags
      - Logic
    - Data Types
      - User-Defined
      - Strings
      - Add-On-Defined
      - Predefined
      - Module-Defined
    - Trends
    - Logical Model
    - I/O Configuration
      - 1756 Backplane, 1756-A4
        - [0] 1756-L71 C441_Motor_Insight_AOI_9A
        - [1] 1756-ENBT/A EIP Scanner
          - Ethernet
            - 1756-ENBT/A EIP Scanner
            - C441T C441T_Motor_Insight
```

The parameters, tags and logic for this Add-On Instruction are available to view under `C441_MotorInsight_9AModels_NoExtCTs_AOI`.
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 C441 Add-On Instruction will be displayed above it, as shown below:

Select the C441 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, C441T is used, but any name can be used. Right click on C441T and choose New “C441T” and 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 `C441T_Motor_Insight:I1.ConnectionFaulted`. This is a BOOL tag that is a 1 if the connection is lost to the Motor Insight and a 0 if the connection is good. Monitor this bit for connection status for the Motor Insight by assigning it to the “Comm_Status” tag shown below the I/O tags.

![Image](image_url)

**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 Ethernet user manual (publication MN04200002E) in the C441 Motor Insight section, for Input assembly 115 and Output assembly 105. They are located in the Parameters and Local Tags area under “MainProgram” in the RSLogix5000 project. All Input and Output tags are shown below:
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 C441 Motor Insight.

Supporting Documentation

- C441 Ethernet Module User Manual
- C441R/C441T Ethernet IP/Modbus TCP Installation Leaflet

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