### 

# MP8000

# SETTING UP THE PLC PROJECT

# ROCKWELL PLC

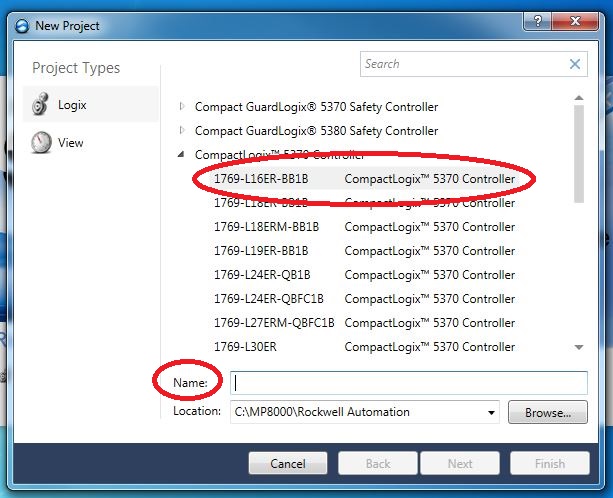
1. First open the Studio 5000 software by double-clicking the shortcut icon on the desktop



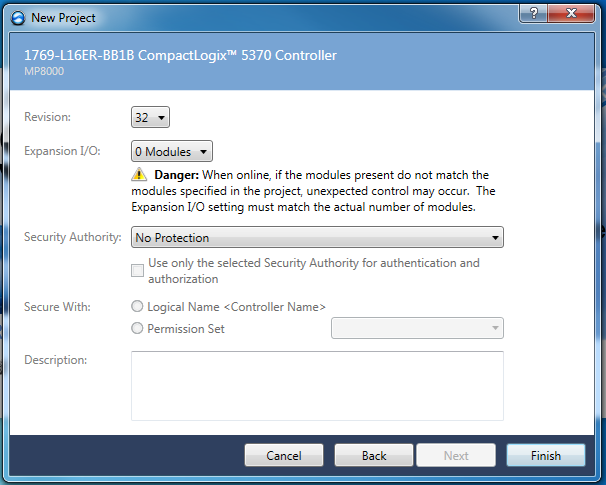
1. Select “New Project” in the “Create” menu



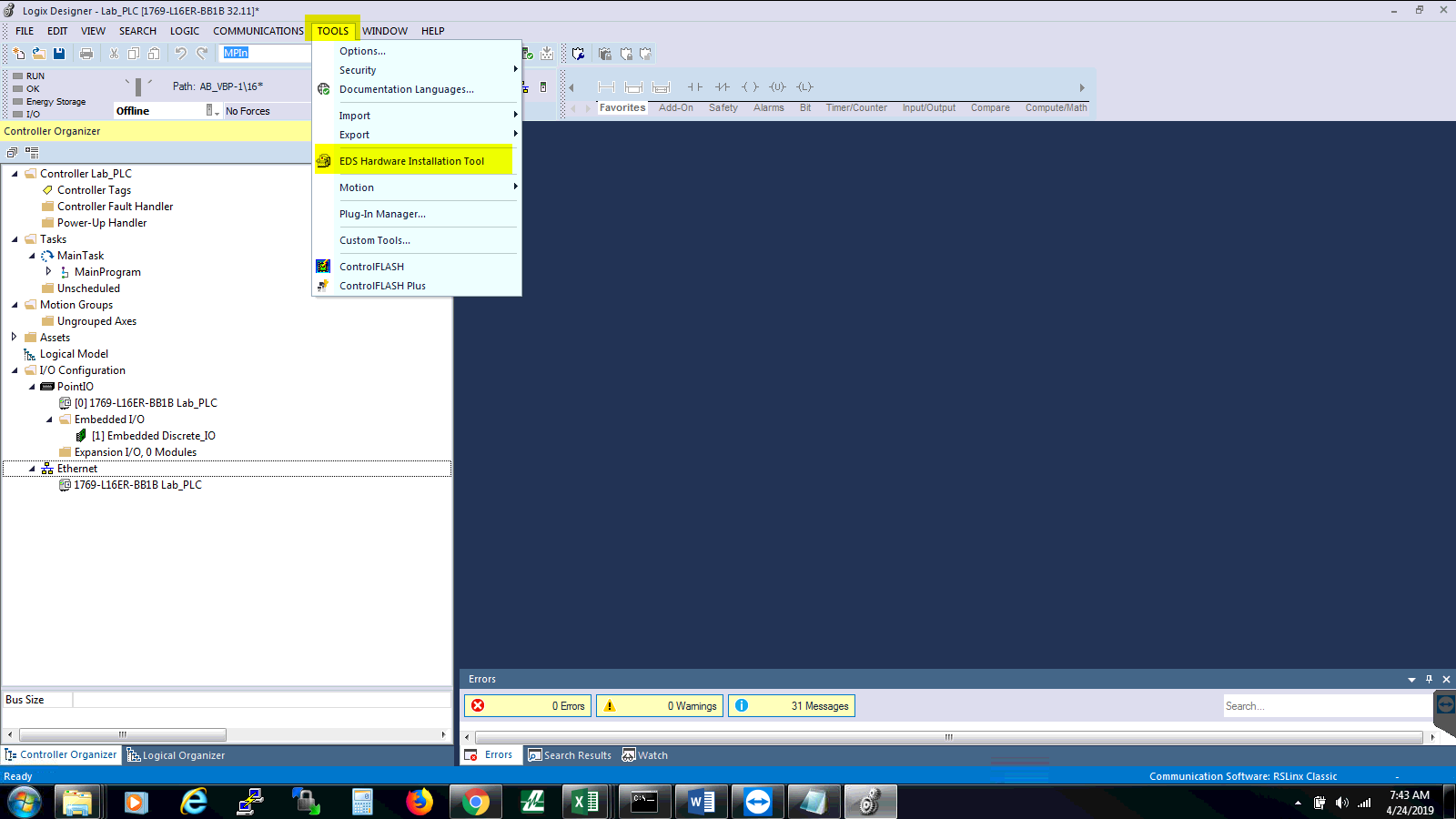
1. Select the correct PLC controller type from the list, give the project a name, and select a location where the project will be stored



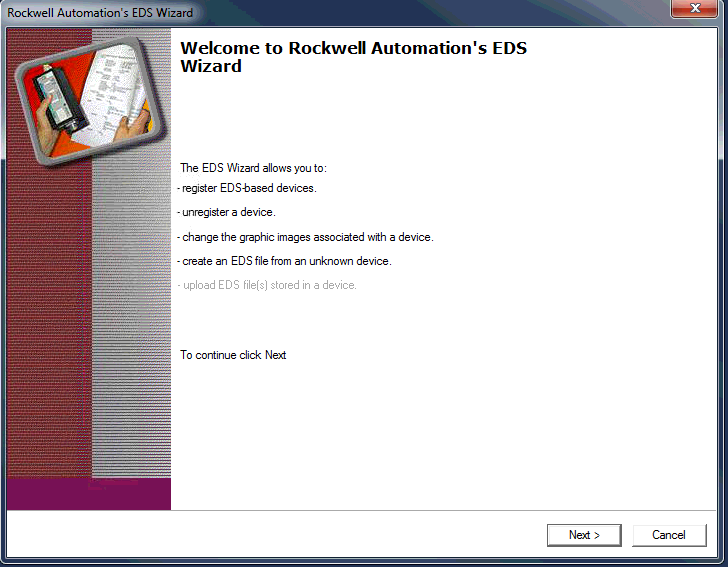
1. Select the revision of the controller code, the number of “Expansion I/O” modules, and the level of “Security Authority” desired



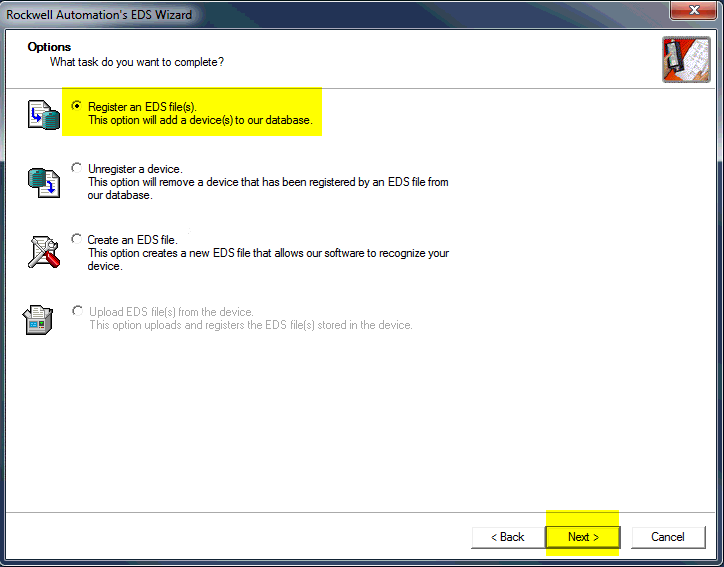
1. Click the “Finish” button
2. The newly created project will open in the Studio 5000 environment
3. Add the MP8000 EDS file to the Studio 5000 Logix Designer project
4. From the TOOLS menu, select EDS Hardware Installation Tool



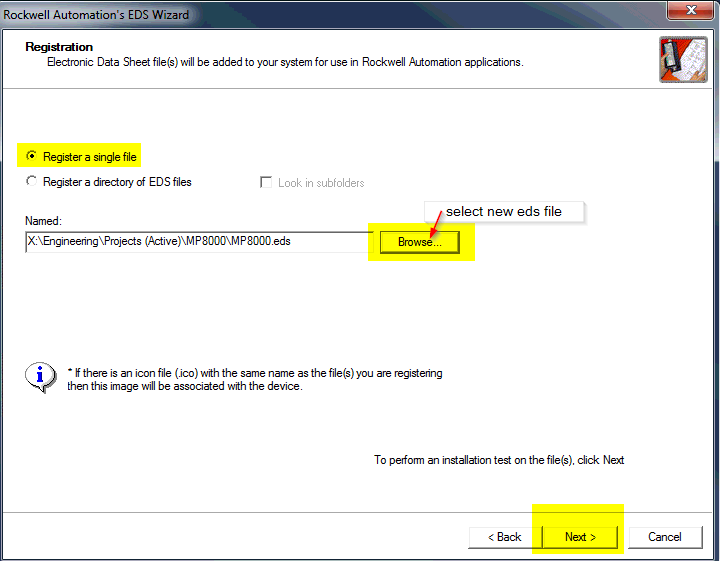
1. The Rockwell Automation EDS Wizard will open



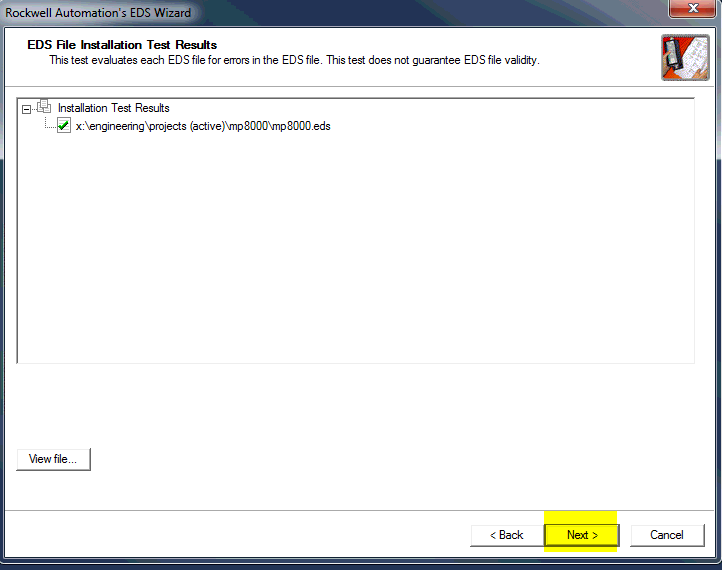
1. Click the “Next” button
2. Select the radial button next to “Register an EDS File”
3. Click the “Next” button



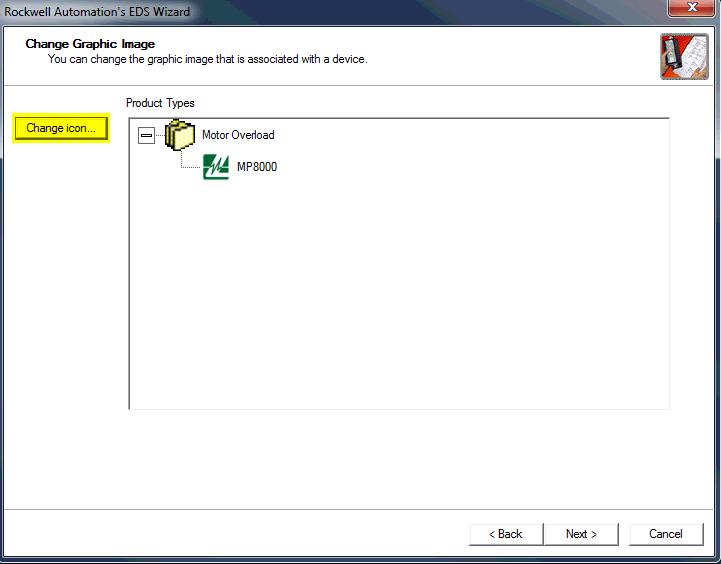
1. On the next screen, click the radial button next to “Register a single file”
2. Use the “Browse” button to point the wizard to the location of the MP8000.eds file



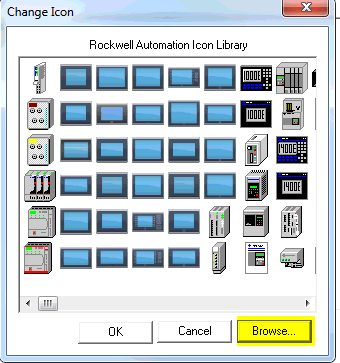
1. Click the “Next button” to begin an installation test of the EDS file
2. The wizard will display the results of the installation test of the EDS file



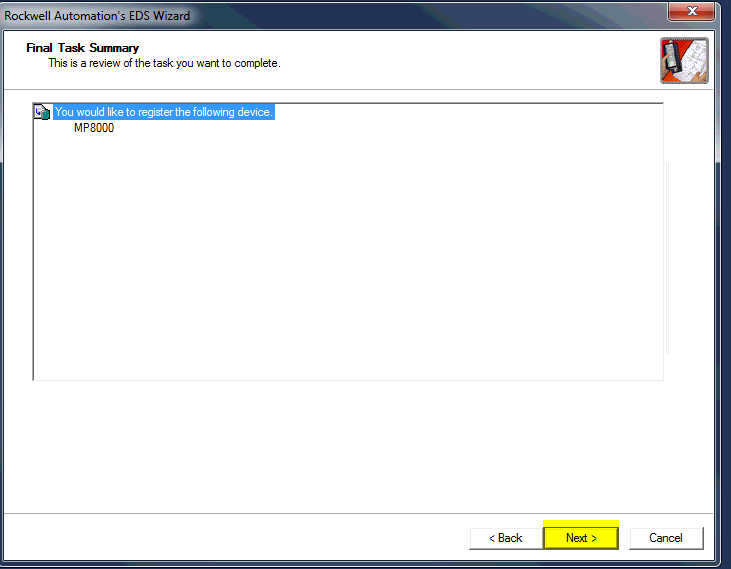
1. Click the “Next” button
2. Now the wizard will allow you to change the icon shown for the EDS file
3. Click the “Change icon…” button
   * If the Littelfuse icon is already shown, click the “Next” button and skip to step 22



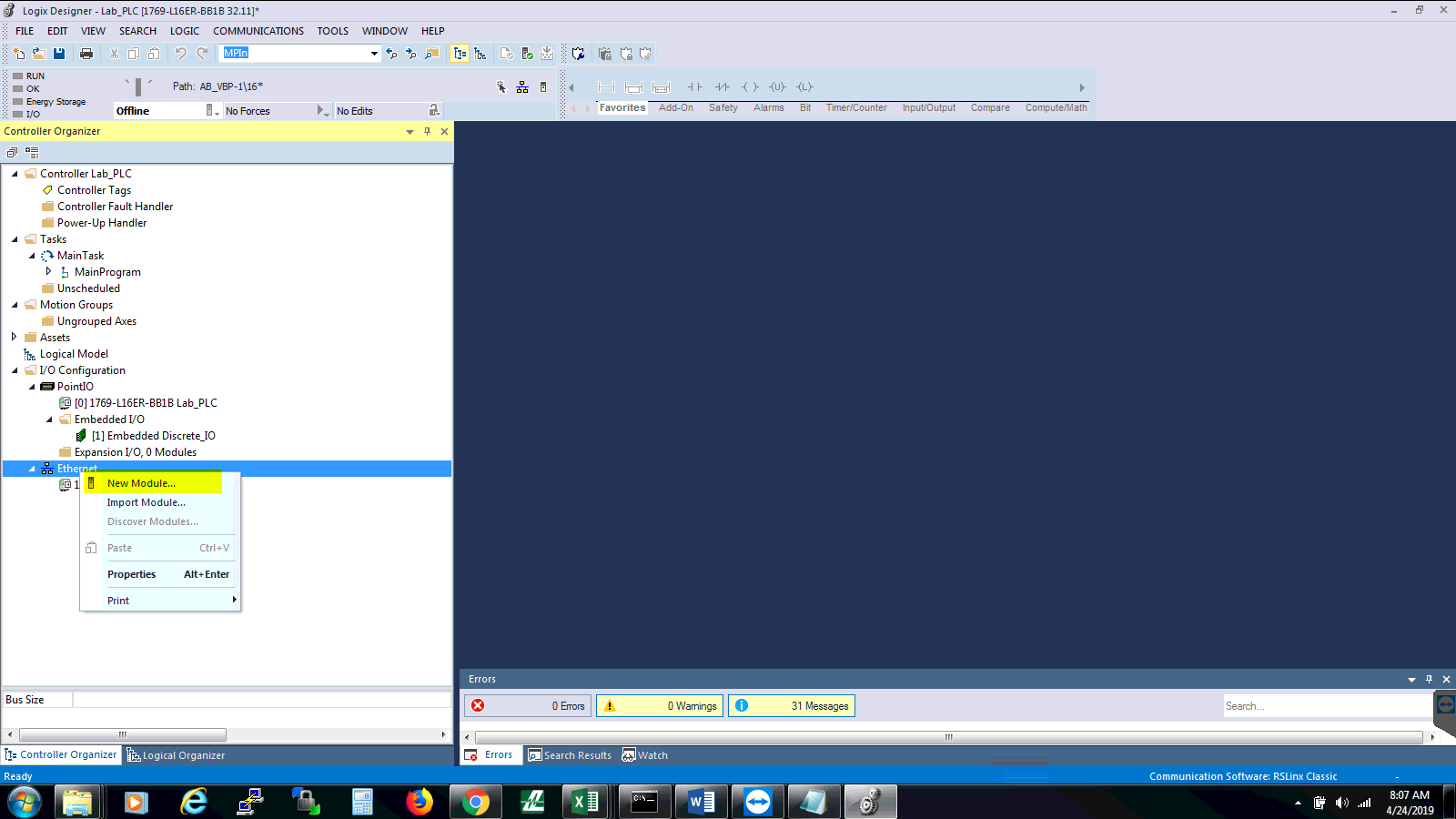
1. The “Change Icon” screen will appear
2. Click on the “Browse” button on navigate to the location of the LittelfuseIcon.ico file



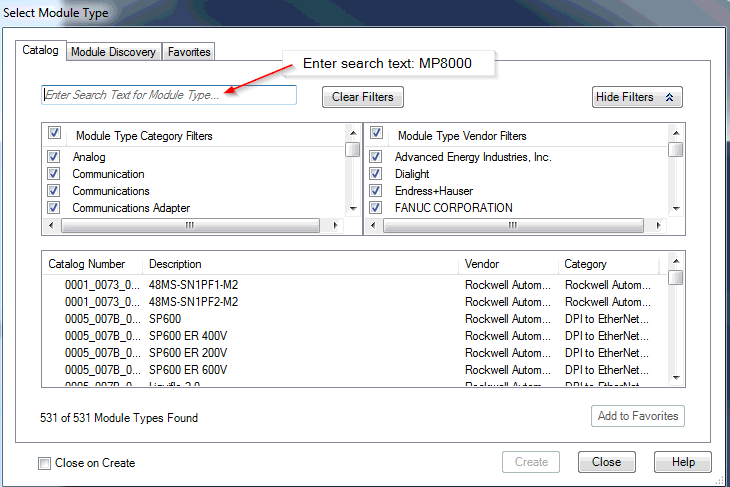
1. After you click the “Open” button, the wizard will show the “Final Task Summary” screen



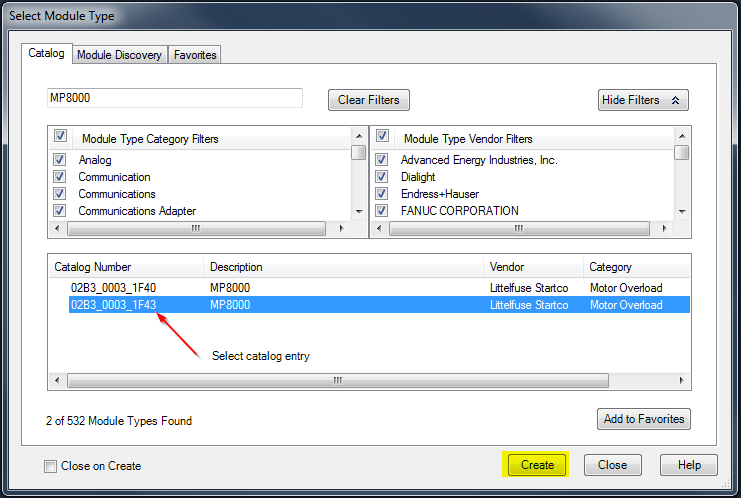
1. Click the “Next” button if everything is proper and correct
2. Click the “Finish” button to complete the EDS file installation
3. To begin working with the newly registered EDS file, right-click I/O Configuration->Ethernet in the tree-view of the left pane of the Logix Designer window and select “New Module…”



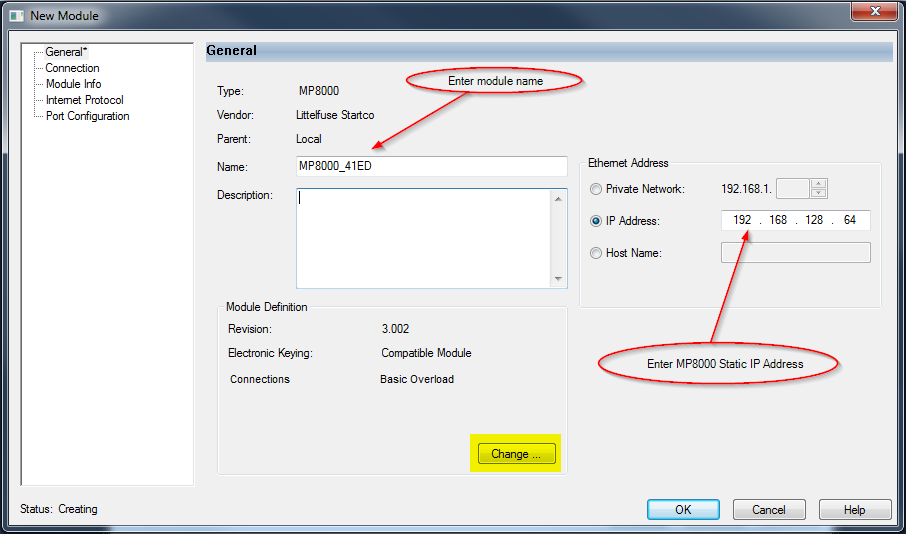
1. The “Select Module Type” window will open
2. In the “*Enter Search Text for Module Type…*” field, enter the search text “MP8000”



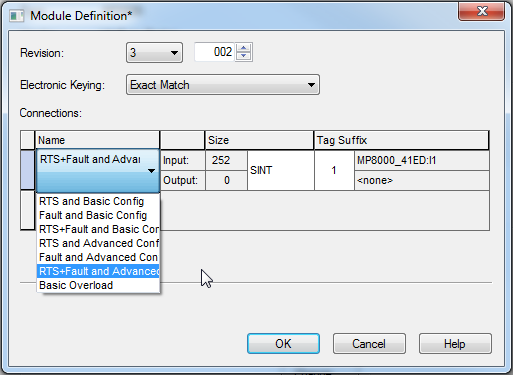
1. Select the MP8000 catalog entry, then press the “Create” button
   * The correct entry will have the Product Code of 8003 (hex 1F43) shown in its catalog number



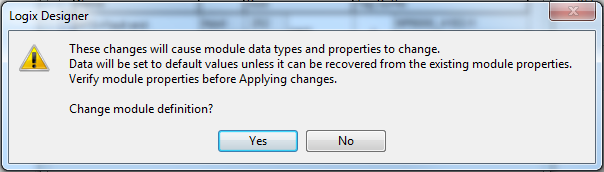
1. Add a “Name” field, enter the static IP address of the MP8000, and press the “Change…” button



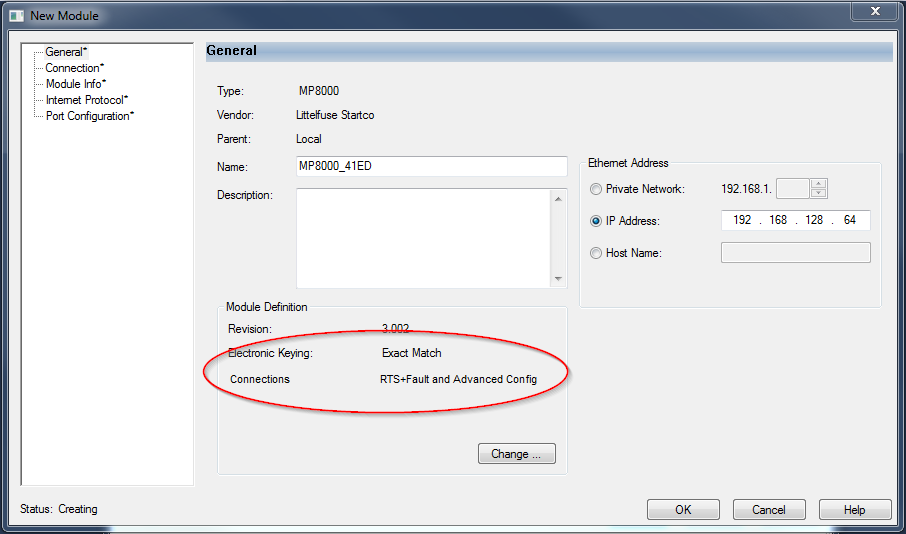
1. Use the drop-down menu to select the type of “Electronic Keying” you would like to use
   * Exact Match, Compatible Module, or Disable Keying
2. Click on the “Basic Overload” selection to reveal the drop-down menu to determine connection
   * Select “RTS+Fault and Advanced Config”



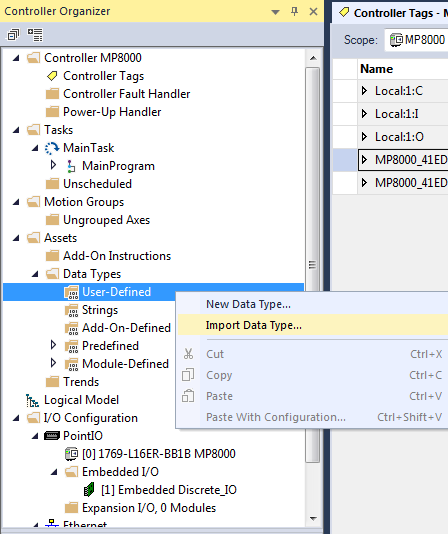
1. Click the “OK” button
2. Logix Designer will ask you if you would like to “Change module definition”, select “Yes”



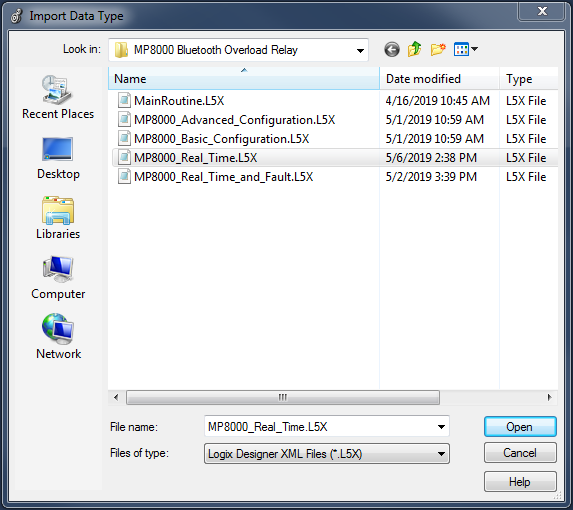
1. Ensure that the correct Electronic Keying and Connections types are displayed in the “New Module” window, then press the “OK” button



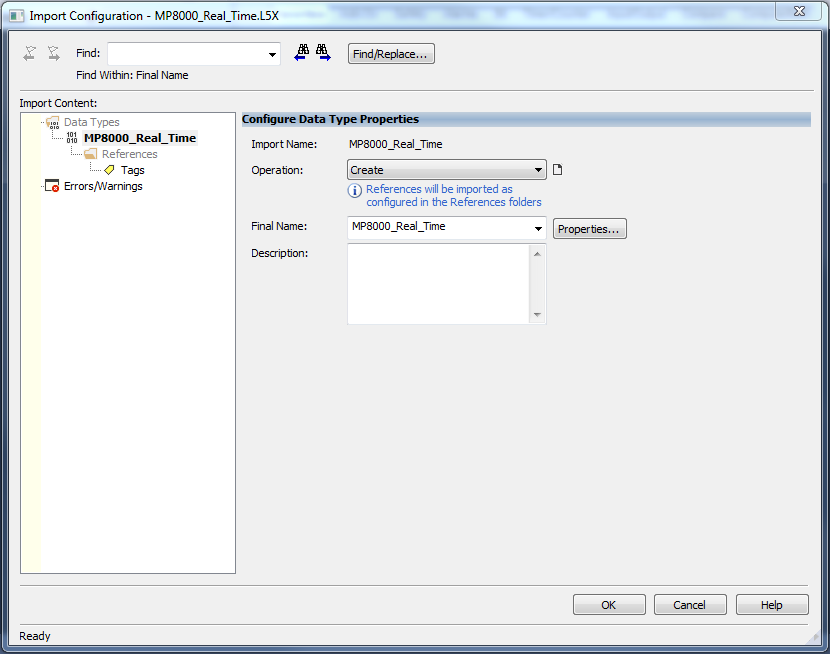
1. Close the “Select Module Type” window
2. The newly created module will now appear in the tree-view panel in the I/O Configuration -> Ethernet of the project
3. In the tree-view panel, right-click “Assets -> Data Types -> User-Defined” and select “Import Data Type…”



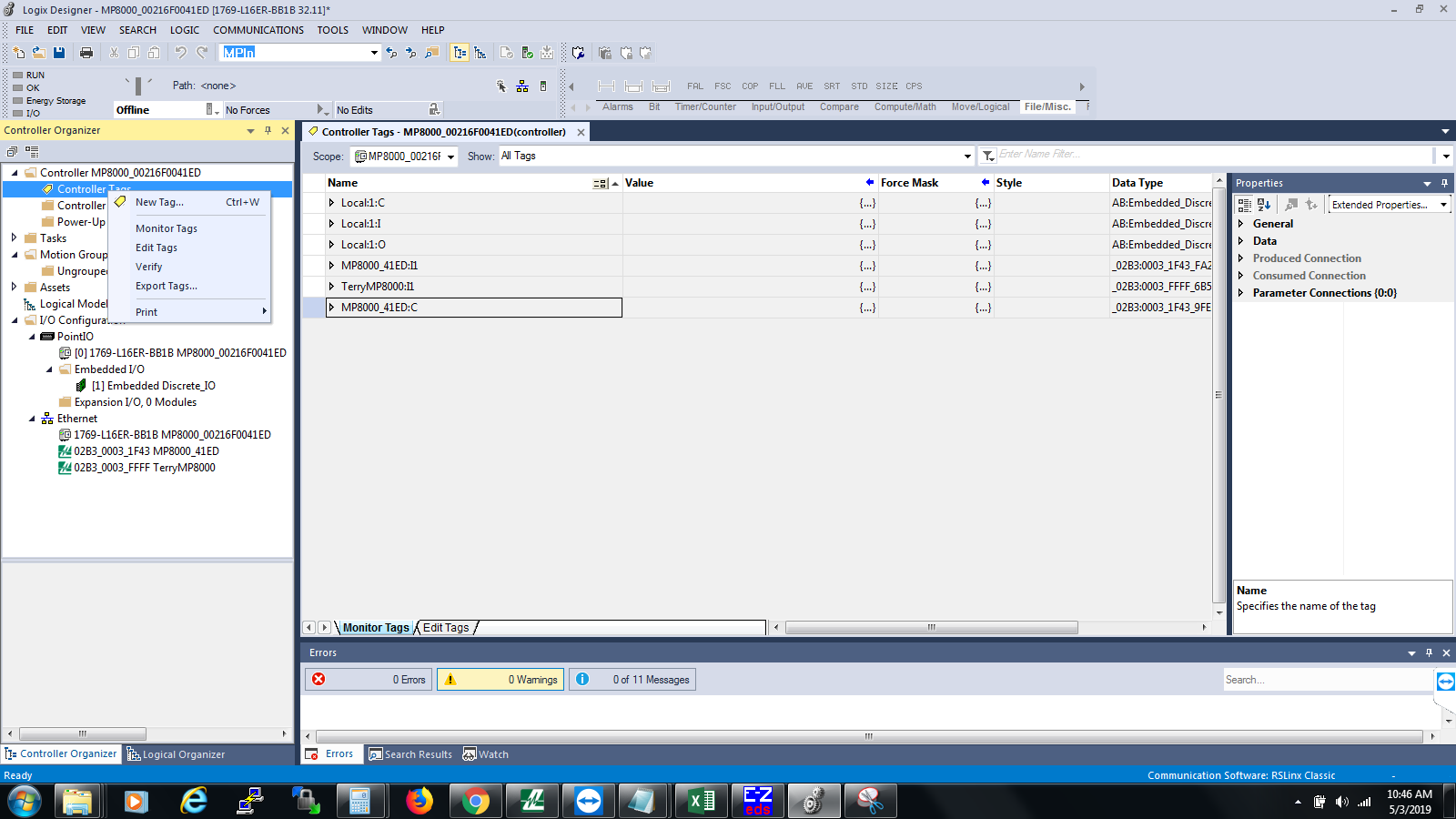
1. In the “Import Data Type” window, navigate to the location of a previously created Data-type
2. Highlight the desired .L5X file and then click the “Open” button



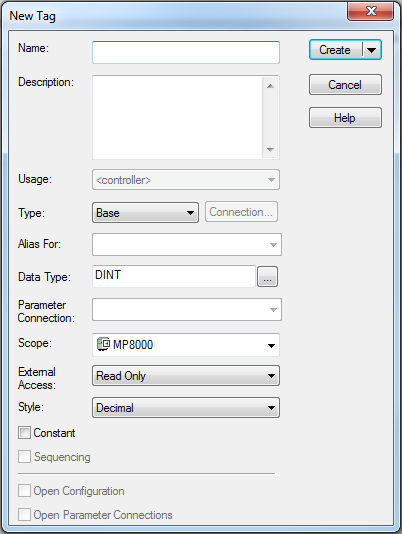
1. The “Import Configuration” window will open, just press the “OK” button



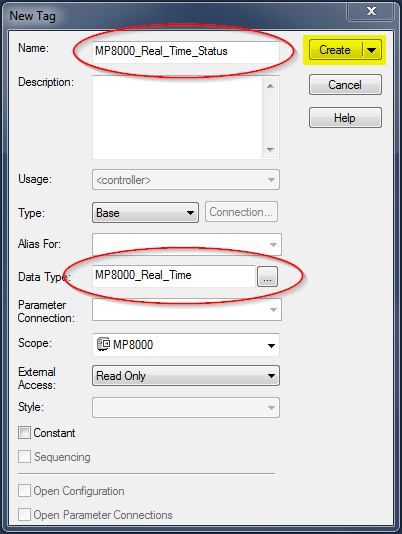
1. In the tree-view panel, right click “Controller Tags” and select “New Tag…”



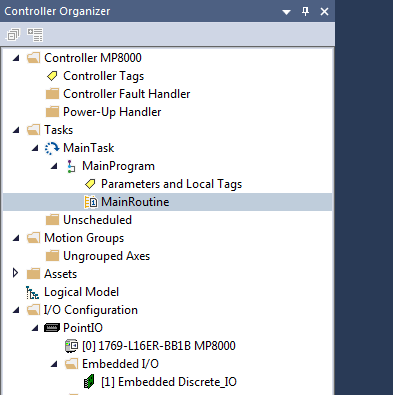
1. The “New Tag” window will open



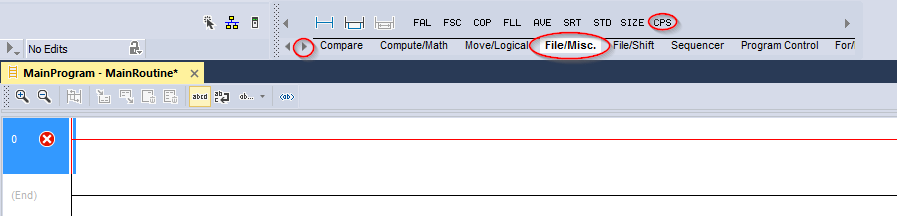
1. In the “Name” field, give the tag a unique identifier
2. In the “Data Type” field, click the “…” button and scroll down in the list until you find the correct data type
3. Click the “Create” button



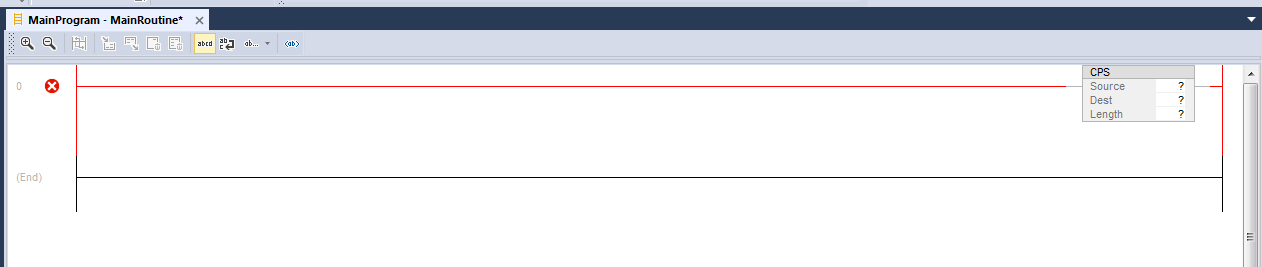
1. In the tree-view panel, expand Tasks -> Main Task -> Main Program -> Main Routine



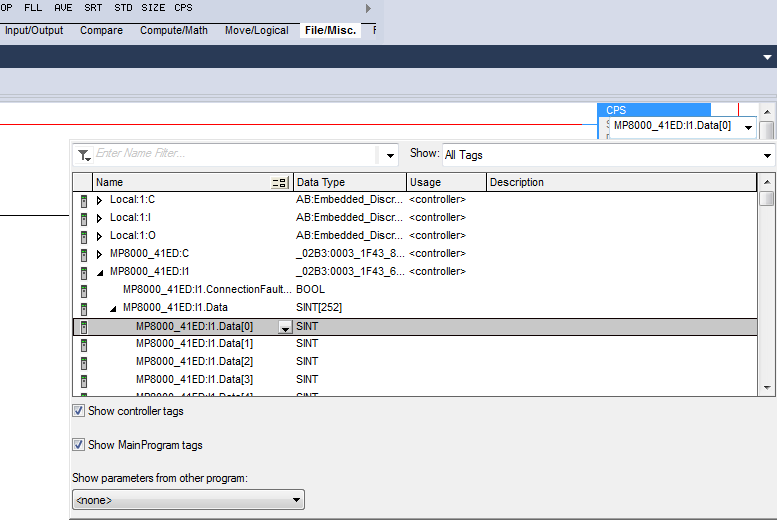
1. Above the “Main Routine” tab, use the “right arrow” to scroll until you see “File/Misc.”, then click on “CPS”



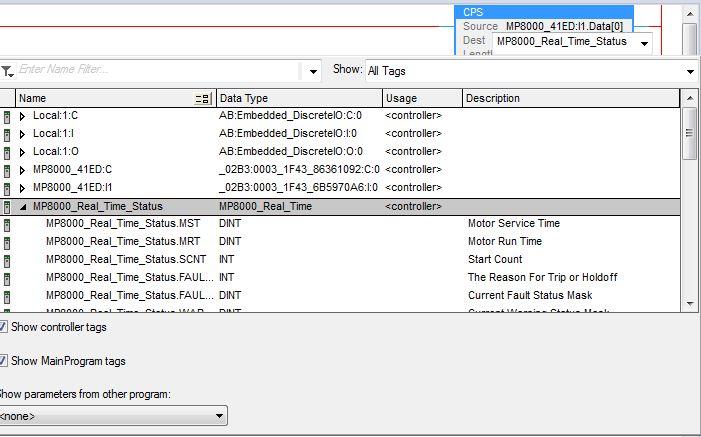
1. The CPS instruction will appear in the first rung of the Main Routine ladder logic



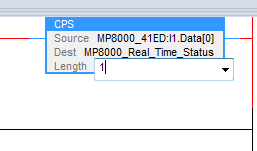
1. Double-clicking the “?” next to “Source” will allow you to tell the routine where the data is coming from
   * In the case of REAL TIME data, the source should always be pointed at {*MODULENAME*:I1.Data[0]}



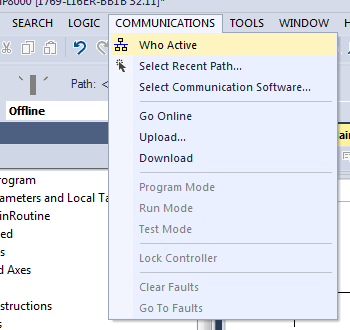
1. Double-clicking the “?” next to “Dest” will allow you to tell the routine where the data will be parsed to
   * This will be the Controller Tag created in steps 41-45



1. Single click the “?” next to “Length” and type a 1 in the box



1. In the main tool bar, open COMMUNICATIONS -> “Who Active”



1. The “Who Active” window will open

A screenshot of a social media post

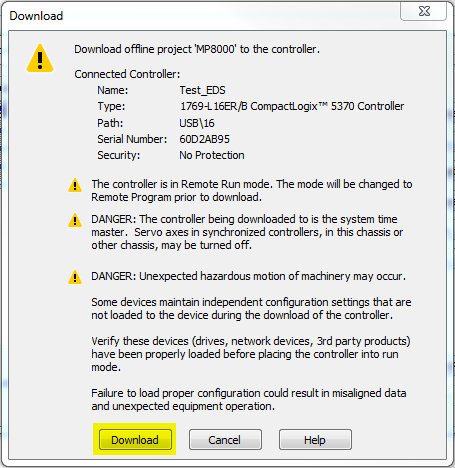
Description automatically generated

1. As all of our communications in the lab setting are to be done via the Ethernet connection, expand the “EtherNetIP\_Dr,Ethernet” selection in the “Who Active” window
2. Highlight the entry for the connected PLC
3. Click on the “Download” button
   * If the “Download” button remains greyed-out, manually remove all of the links below “EtherNetIP\_Dr, Ethernet” and then press the “Refresh” button at the top of the window
   * Also make sure the wifi of the laptop is turned off

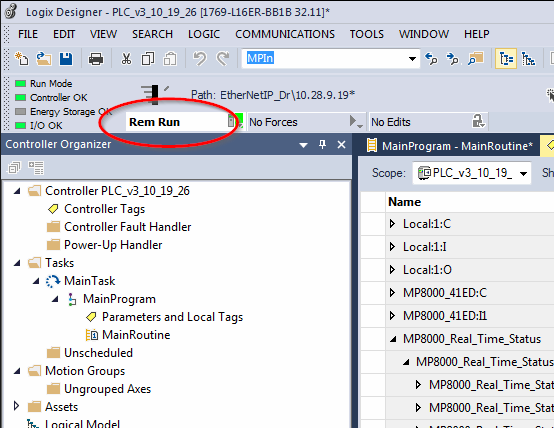
A screenshot of a cell phone

Description automatically generated

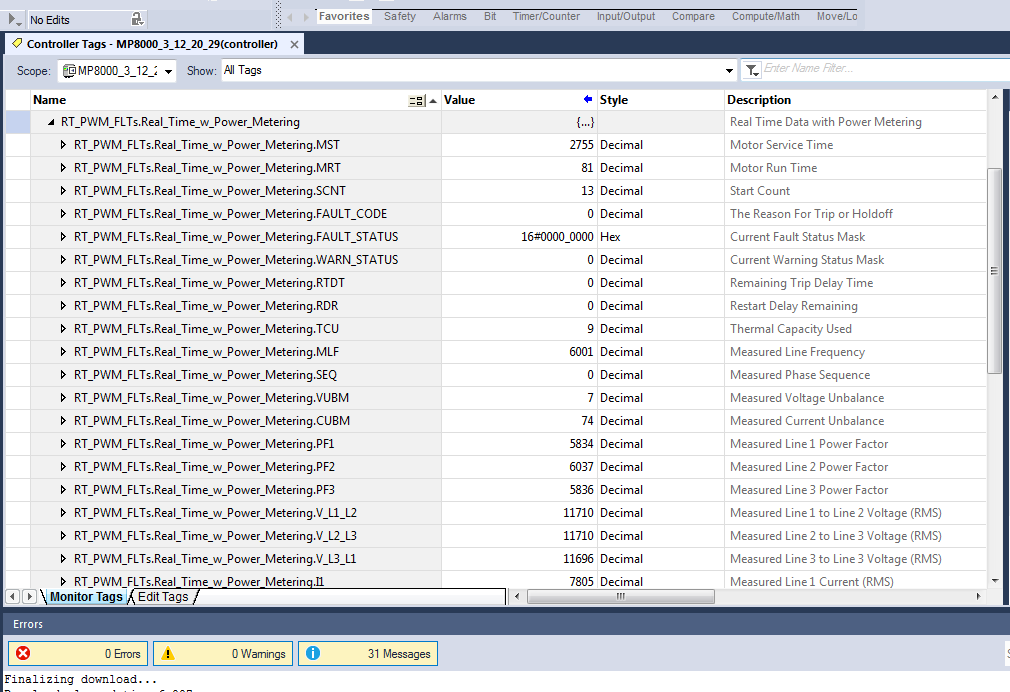
1. The “Download” window will appear, click the “Download” button



1. The PLC will switch to “Rem Prog” mode after the download has occurred
2. The download will cause the default configuration values stored in the .eds file to be set on the connected MP8000
   * Make sure to correct the Configuration Values prior to beginning to use the MP8000
   * If the CNFG values are anything but 0x6001, they are incorrect for a default setting
3. Controller status must be set to “Rem Run” for communication to take place
   * If no communication occurs, but no module errors shown, verify this setting



1. If you open a previously created project, the communication path will have to be re-established using the same steps described in process steps 52-57
2. Real time data from the MP8000 that is shown in the Logix Designer environment is displayed as the raw data from the unit. This data can be interpreted as described by the following table.



|  |  |  |
| --- | --- | --- |
| **Parameter Name** | **Description** | **Interpret the Data** |
| MST | Motor Service Time | A count shown in seconds |
| MRT | Motor Run Time | A count shown in seconds |
| SCNT | Start Count | A count |
| FAULT\_CODE | The Reason For Trip or Holdoff | Fault codes in table below |
| FAULT\_STATUS | Current Fault Status Mask | Fault status masks in table below |
| WARN\_STATUS | Current Warning Status Mask | Warning status masks in table below |
| RTDT | Remaining Trip Delay Time | A count shown in seconds |
| RDR | Restart Delay Remaining | A count shown in seconds |
| TCU | Thermal Capacity Used | Divide by 100 to show actual value |
| MLF | Measured Line Frequency | Divide by 100 to show actual value |
| SEQ | Measured Phase Sequence | 0 – ABC ; 1 – ACB |
| VUBM | Measured Voltage Unbalance | Divide by 100 to show actual value |
| CUBM | Measured Current Unbalance | Divide by 100 to show actual value |
| PF1 | Measured Line 1 Power Factor | Divide value by 16383 (0x3FFF) |
| PF2 | Measured Line 2 Power Factor | Divide value by 16383 (0x3FFF) |
| PF3 | Measured Line 3 Power Factor | Divide value by 16383 (0x3FFF) |
| V\_L1\_L2 | Measured L1 to L2 Voltage (RMS) | Divide by 100 to show actual value |
| V\_L2\_L3 | Measured L2 to L3 Voltage (RMS) | Divide by 100 to show actual value |
| V\_L3\_L1 | Measured L3 to L1 Voltage (RMS) | Divide by 100 to show actual value |
| I1 | Measured Line 1 Current (RMS) | Divide by 100 to show actual value |
| I2 | Measured Line 2 Current (RMS) | Divide by 100 to show actual value |
| I3 | Measured Line 3 Current (RMS) | Divide by 100 to show actual value |
| P1 | Measured Line 1 Power | Divide by 1000 to show actual value |
| P2 | Measured Line 2 Power | Divide by 1000 to show actual value |
| P3 | Measured Line 3 Power | Divide by 1000 to show actual value |
| IGF | Ground Fault Current | Divide by 100 to show actual value |
| PTC | Positive Temperature Coefficient | A raw number used by FW |
| MOTORR | Motor Relay State | 0 – Relaxed ; 1 – Energized |
| AUXR | Auxiliary Relay State | 0 – Relaxed ; 1 – Energized |
| KW | Instantaneous Real Power Measurement (kW) | Shown as Watts |
| VAR | Instantaneous Reactive Power Measurement (kVAR) | Shown as VARs |
| INPUT | Input I/O States | 0-None; 1-I0 high; 2-I1 high; 3-both |
| MKW | Metered Real Power Accumulation (kWhr) | Shown as Whrs, divide by 1000 |
| MVAR | Metered Reactive Power Accumulation (kVARhr) | Shown as VARhrs, divide by 1000 |
| FW\_REV | Firmware Revision | A representation of the FW revision |
| PC | Product Code | The Product Code of the unit |

|  |  |  |
| --- | --- | --- |
| **Fault Condition** | **Code (Decimal)** | **Status (Hex)** |
| No fault or warning condition | 0 | 0x00000000 |
| Tripped on overcurrent | 1 | 0x00000001 |
| Tripped on undercurrent | 2 | 0x00000002 |
| Tripped on current unbalance | 3 | 0x00000004 |
| Tripped on current single-phasing | 4 | 0x00000008 |
| Tripped on contactor failure | 5 | 0x00000010 |
| Tripped on ground fault | 6 | 0x00000020 |
| Tripped on High Power Fault | 7 | 0x00000040 |
| Tripped on low power fault | 8 | 0x00000080 |
| Low Control Voltage Fault | 9 | 0x00000100 |
| Trip or holdoff due to PTC fault | 10 | 0x00000200 |
| Tripped triggered from remote source | 11 | 0x00000400 |
| Tripped on Linear Overcurrent | 12 | 0x00000800 |
| Tripped Motor Stall | 13 | 0x00001000 |
| Active Restart Delay Field Bit 0 | N/A | 0x00010000 |
| Active Restart Delay Field Bit 1 | N/A | 0x00020000 |
| Active Restart Delay Field Bit 2 | N/A | 0x00040000 |
| Tripped on PTC Short | 14 | 0x00200000 |
| Tripped on PTC Open | 15 | 0x00400000 |
| Manual Restart Required | N/A | 0x00080000 |
| MP8000 FMEA Fault | 4097 | 0x01000000 |

**Fault Code and Status Table**

|  |  |  |
| --- | --- | --- |
| **Warning Condition** | **Code (Decimal)** | **Status (Hex)** |
| No Warning Condition Present | N/A | 0x00000000 |
| Overcurrent Detected | N/A | 0x00000001 |
| Undercurrent Detected | N/A | 0x00000002 |
| Current Unbalance Detected | N/A | 0x00000004 |
| Current Single Phasing Detected | N/A | 0x00000008 |
| Contactor Failure Detected | N/A | 0x00000010 |
| Ground Fault Detected | N/A | 0x00000020 |
| High Power Detected | N/A | 0x00000040 |
| Low Power Detected | N/A | 0x00000080 |
| Low Control Voltage Detected | N/A | 0x00000100 |
| PTC Holdoff | N/A | 0x00000200 |
| Linear Overcurrent Detected | N/A | 0x00000800 |
| Motor Stall Detected | N/A | 0x00001000 |
| Low voltage Holdoff | 100 | 0x00010000 |
| High Voltage Holdoff | 101 | 0x00020000 |
| Voltage Unbalanced Holdoff | 102 | 0x00040000 |
| Phase Sequence Holdoff | 103 | 0x00080000 |
| Undefined Holdoff | N/A | 0x00100000 |
| Ground Fault Alarm | 16 | 0x00800000 |

**Warning Code and Status Table**