Application Note

Festo Maintenance Tool with Rockwell RSLogix 5000 L5K file Export/Import

CPX-FB32;
CPX-FB36

This document provides procedures to use the FMT (Festo Maintenance Tool Software) to export a "*.L5K" Rockwell Automation file. This file is then imported by RSLogix 5000/Logix Designer 5000 Rockwell Automation Software. The import creates a GENERIC ETHERNET-MODULE used as a EtherNet/IP connection to the device configured in the FMT (Festo Maintenance Tool Software).

One of the main benefits of using the GENERIC ETHERNET-MODULE in this manner, is that this allows the CPX valve terminal parameters to be stored within the PLC (Programmable Logic Controller) project. This avoids further configuration requirements when modules are replaced that have been parameterized outside of the manufacturing defaults.

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Table of contents

1 Components/Software/ IP address used

Type/ Name	Version Software/ Firmware	IP address	Subnet mask
Laptop	--	192.168.001.007	255.255.255.0
Festo Maintenance Tool Software	V 4.21.209	--	--
CPX-FB32 (EtherNet/IP)	Up to Rev 20	192.168.001.033	255.255.255.0
CPX-FB36 (EtherNet/IP)	Up to Rev 1.14	192.168.001.139	255.255.255.0

Table 1.1: 1 Components/Software used

1.1 Recommended Manuals

A) CPX-FB32 Wiring & Installation Manual

Manual P.BE-CPX-FB32-EN
Fieldbus - EtherNet/IP

Associated products
- Bus node CPX-FB32 (541302)
- Control System YCCP (8061000)
- CP-electrical part CTEC (539641)
- Motion Terminal VTEM (8047502)
- Terminal CPX (197330)
- Terminal CPX-P (562818)

Manual
File and language versions
★★★★★ (1)

Reference:
https://www.festo.com/net/en-ca_ca/SupportPortal/default.aspx?q=541302&tab=3&s=t#result

B) CPX-FB36 Wiring & Installation Manual

Manual CPX-FB36-EN
Bus node - Modbus TCP - EtherNet/IP

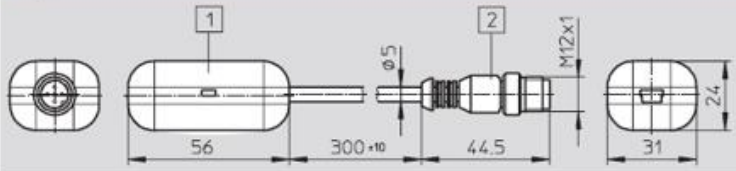
Associated products
- Bus node CPX-FB36 (1912451)
- Control System YCCP (8061000)
- Motion Terminal VTEM (8047502)
- Terminal CPX (197330)
- Terminal CPX-P (562818)

Manual
File and language versions
★★★☆☆ (10)

Reference:
https://www.festo.com/net/en-ca_ca/SupportPortal/default.aspx?tab=3&q=1912451

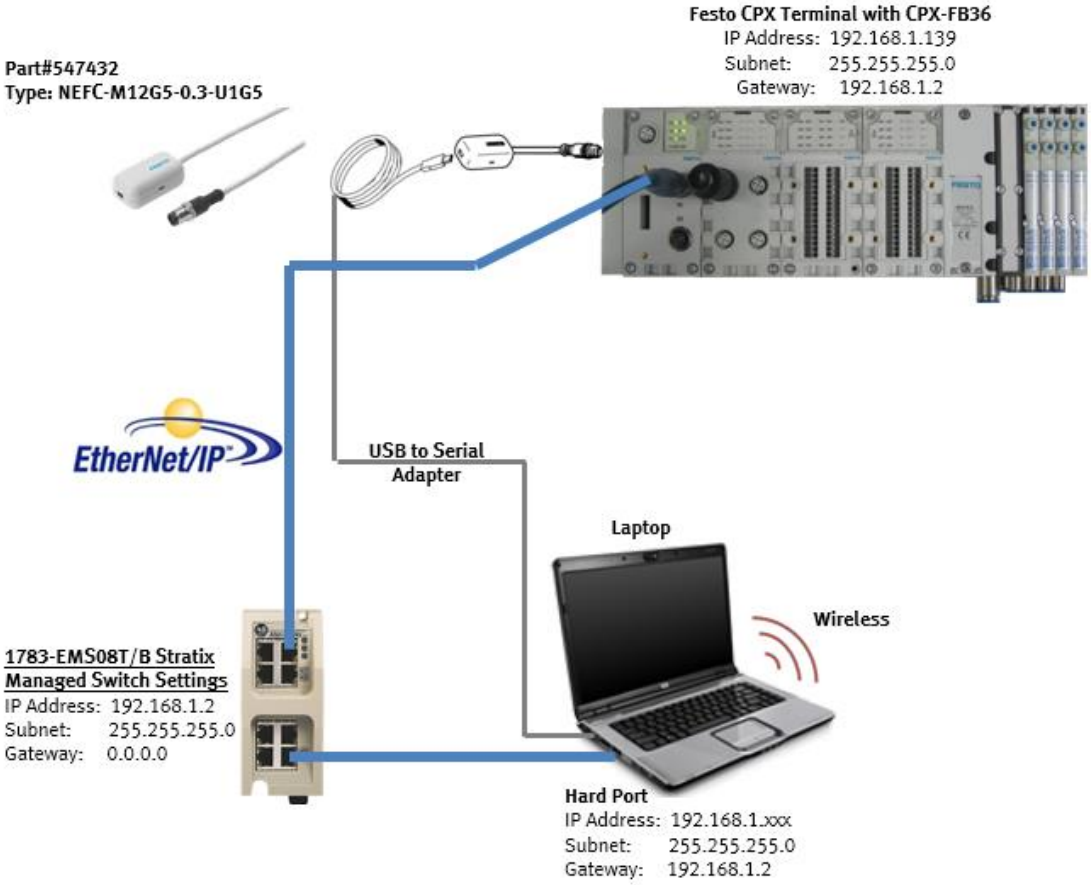
1.2 Network Topology Example

Adapter



Ordering data

Designation		Part No.	Type
	CPX Maintenance Tool (CPX-FMT), software and USB-to-M12 adapter	547432	NEFC-M12G5-0.3-U1G5

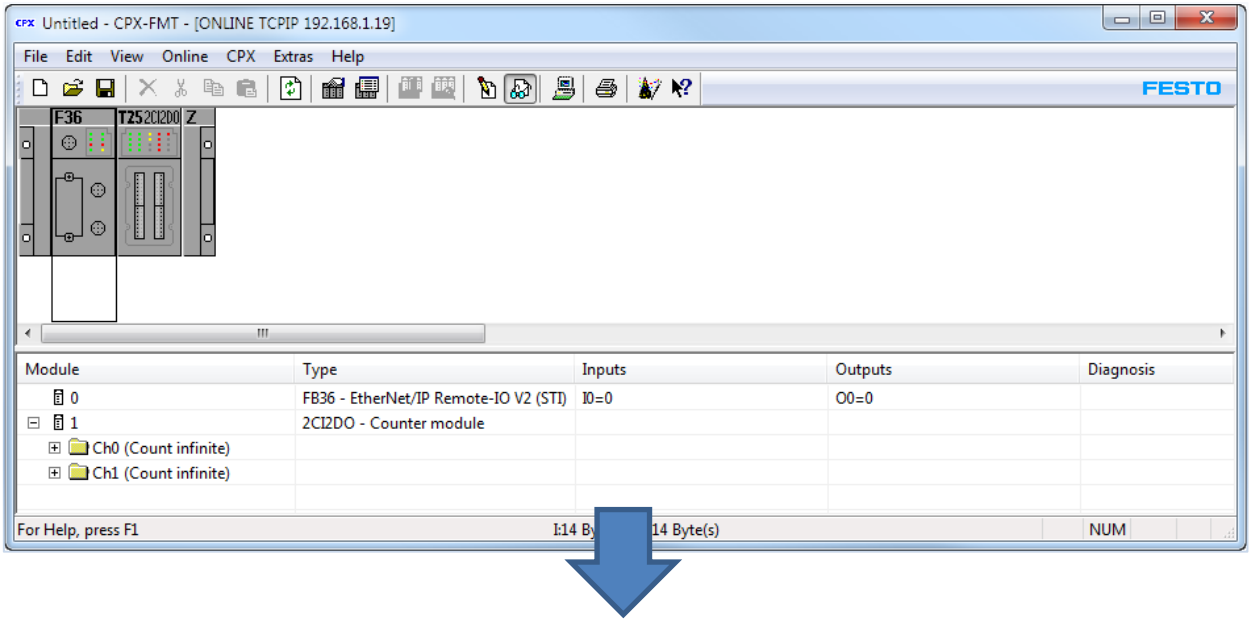


2 Festo Maintenance Tool Software

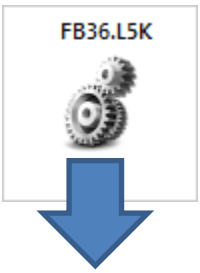
2.1 RSLogix L5K Export Overview

Festo offers a software tool called Festo Maintenance Tool (FMT) that allows the “export” of the current configuration (Like a snapshot in time) of the CPX-Terminal for EtherNet/IP (CPX-FB32 & CPX-FB36). The export creates a “.L5K” file compatible with Rockwell RSLogix 5000/Logix Designer 5000 Software. Within this “.L5K” file will be a fully configured “GENERIC ETHERNET-MODULE”. This file can then be opened with RS5000 software and it will create a project “.ACD” file. The “GENERIC ETHERNET-MODULE” can then be copied from this temporary project to your existing PLC Project and used instead of one you would create manually (discussed later in this guide). An overview of the process is shown next.

The Festo Maintenance Tool (FMT) is used to create/modify parameters with the modular configuration

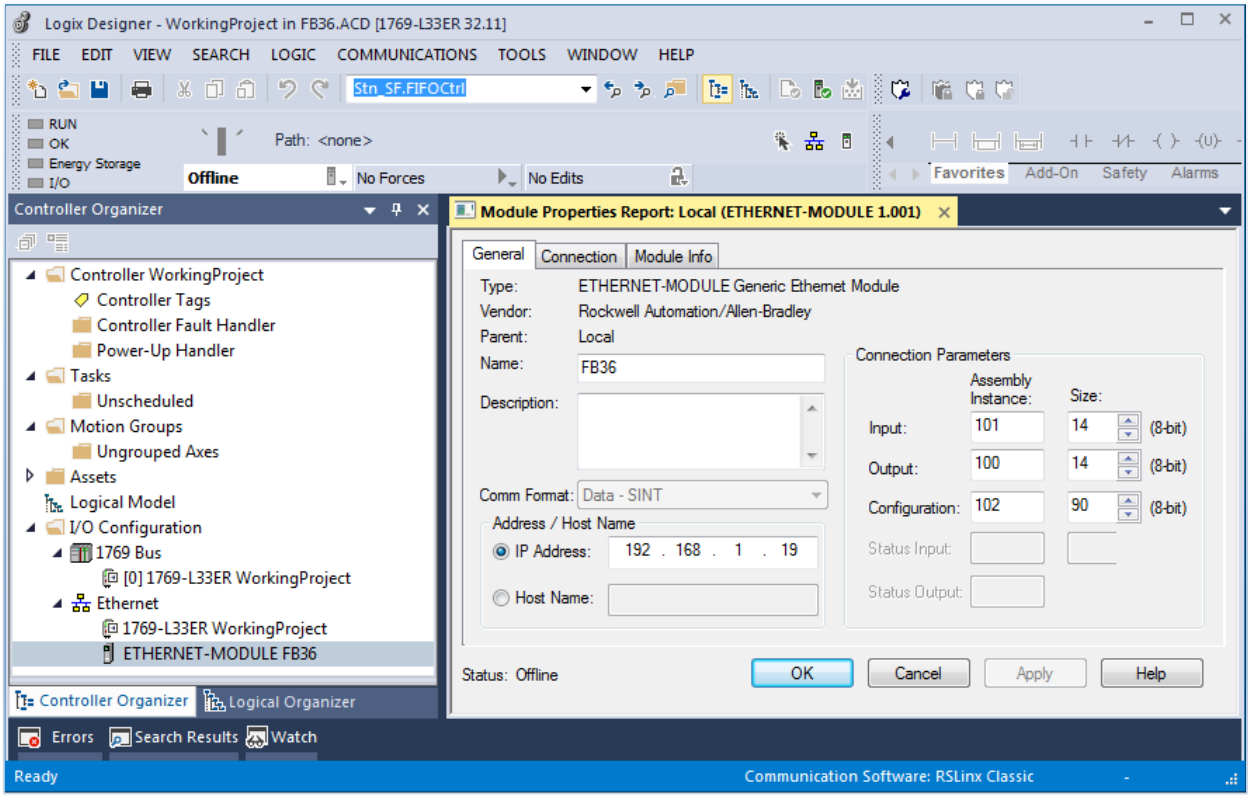


The user exports the configuration as a RSLogix5000 project-import file (.L5K)



The user Imports the .L5K file into new temporary RSLogix5000 project.

The user then copies the " GENERIC ETHERNET-MODULE " from the temporary project to their own project.

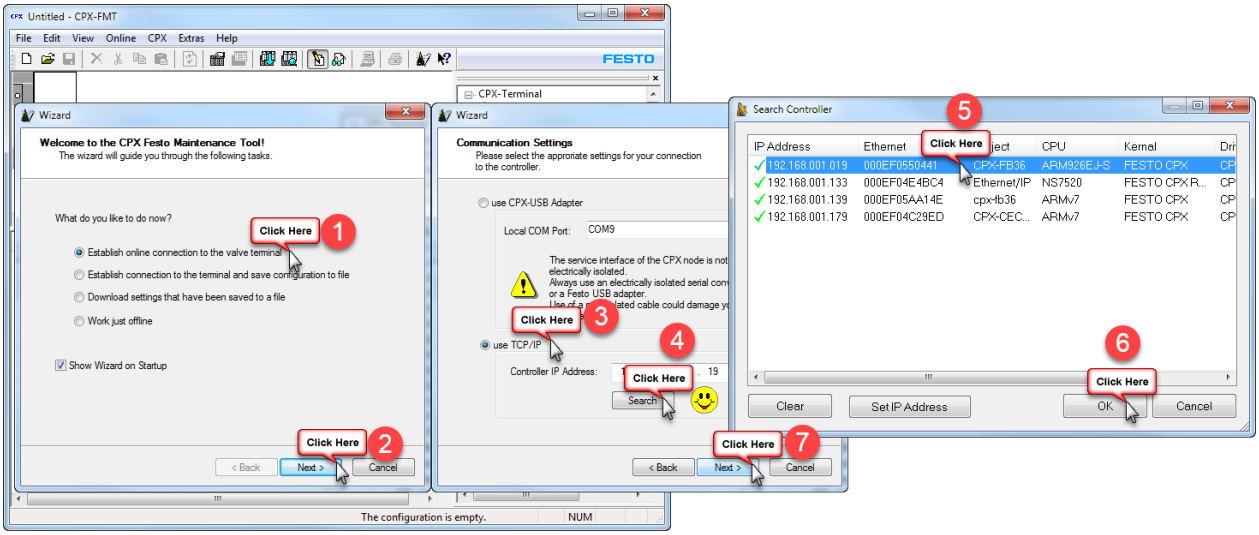


2.2 Establish Connection

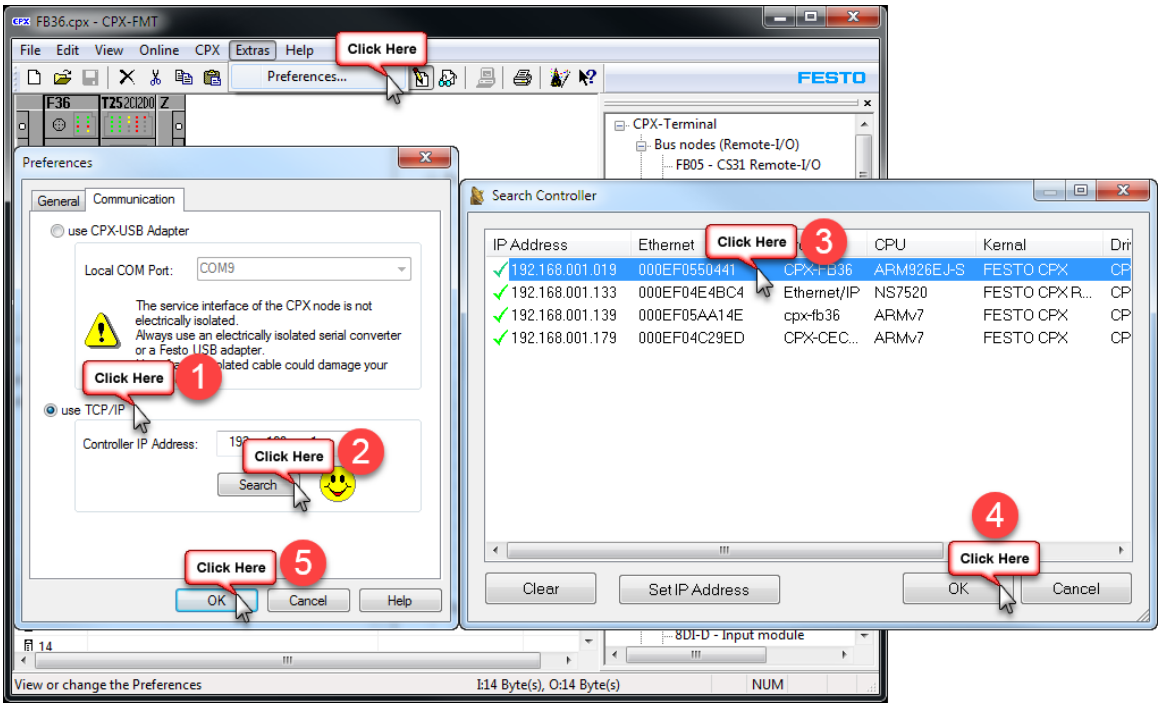
For the example shown below, a CPX-FB36 module was used in the CPX-Terminal. As shown in section "Network Topology Example", this module can be connected via a Festo USB device or direct via the EtherNet TCP/IP connection. Using EtherNet TCP/IP is shown below because it is the most common method.

2.2.1 Select Target Device

When starting the Festo Maintenance Tool Software for the first time, the user is prompted to select a type of connection as shown next.

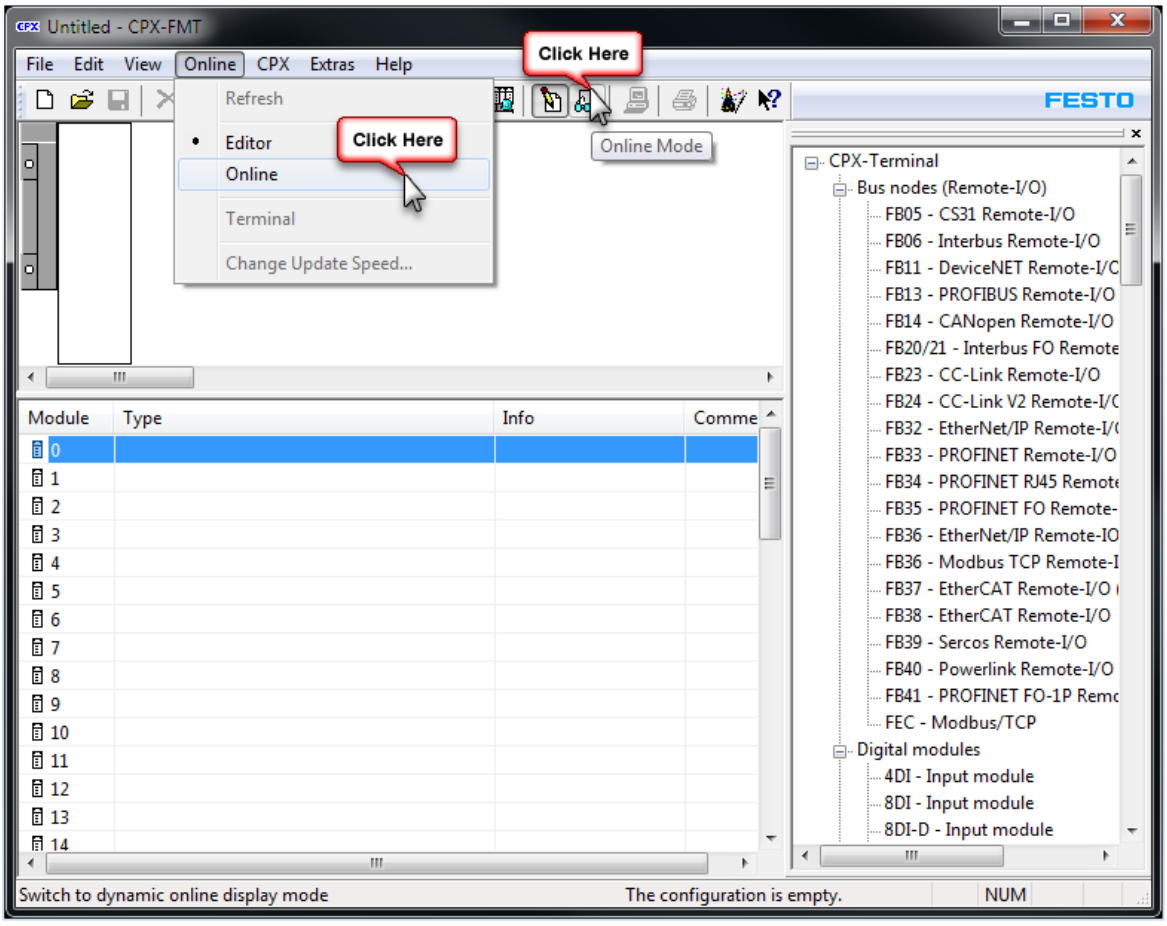


Alternatively, when the software is already open, the user can configure a type of connection as shown next.



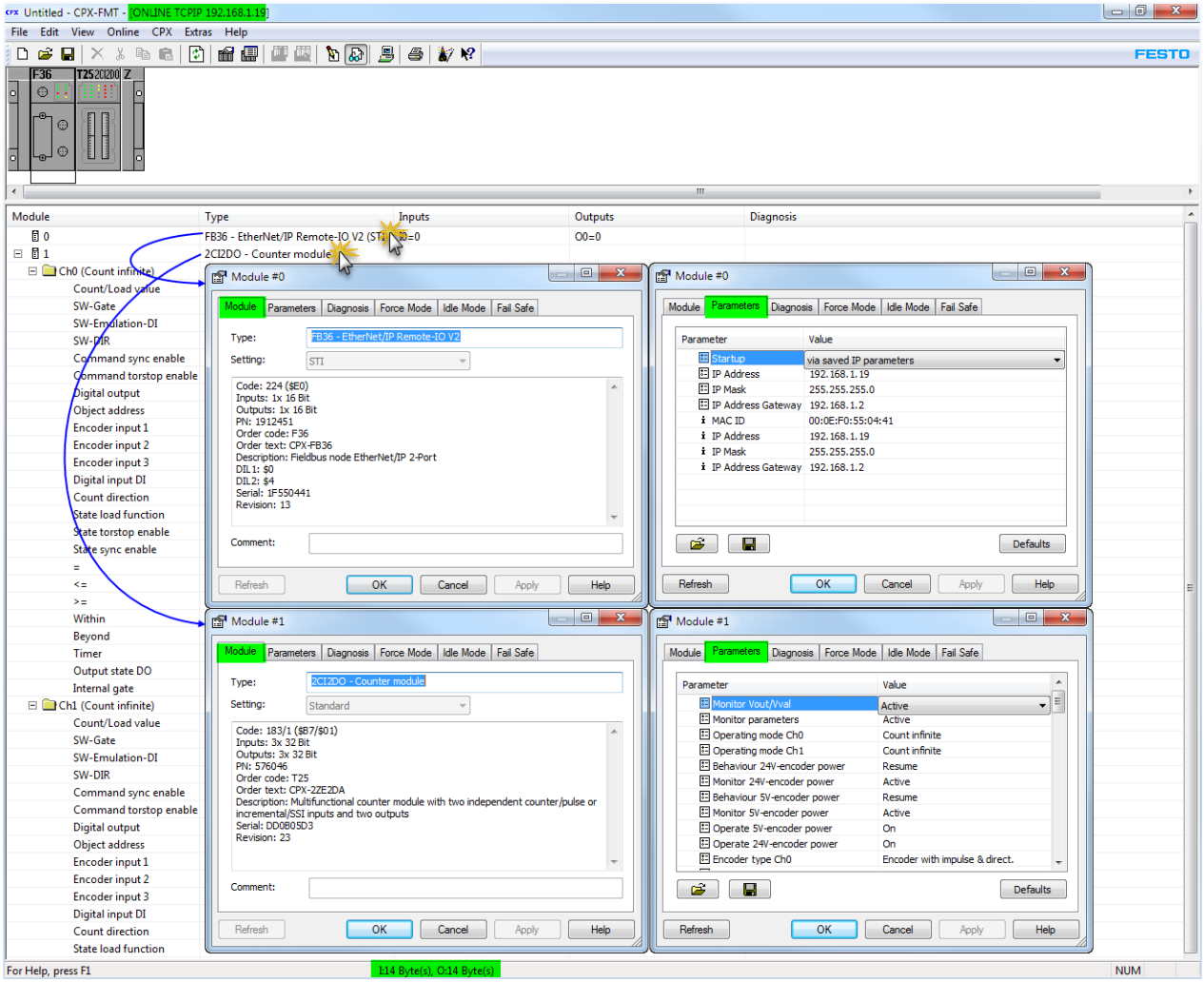
2.2.2 Connect Online

Click one of the shown methods below to establish an online connection to the CPX-FB36. The software will now upload the configuration into the software.



2.2.3 Connection Overview

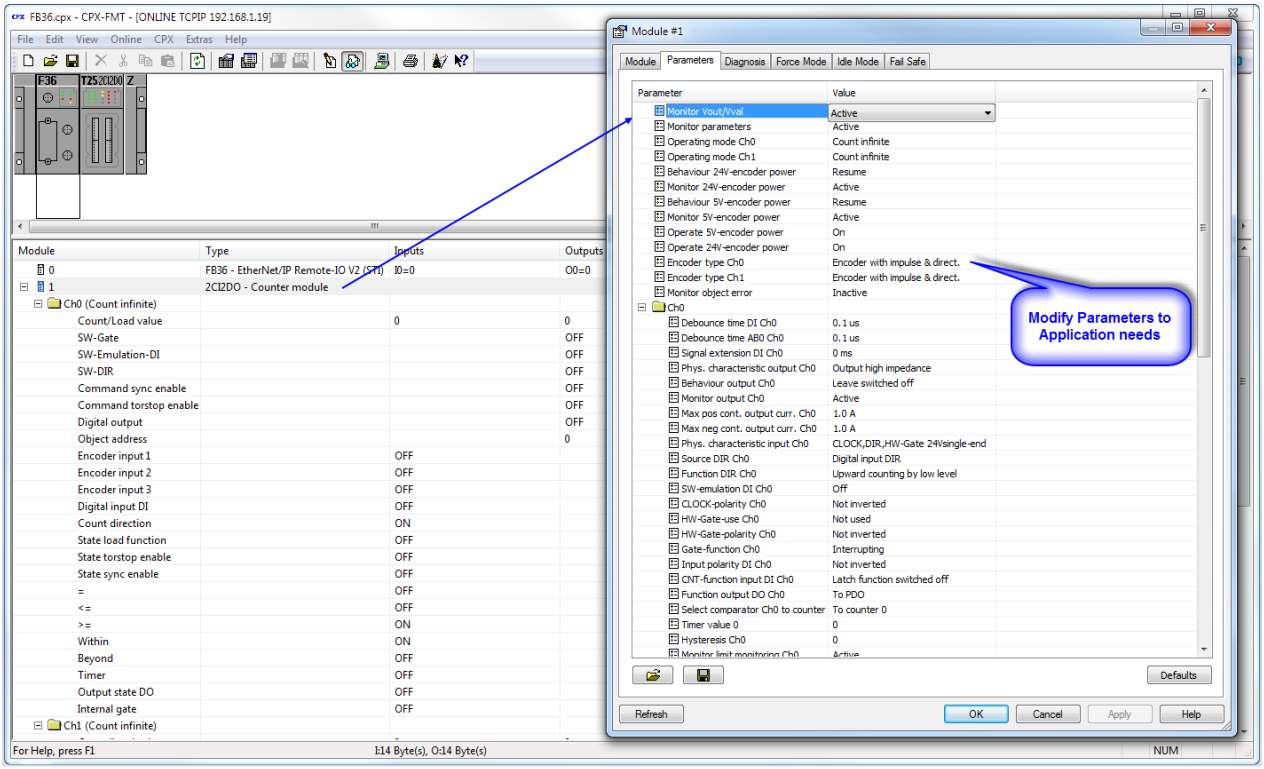
While online, if the user double clicks a module, popup windows provide parameters/configuration settings. The total I/O size is shown at the bottom of the FMT software.



2.3 RSLogix Export L5K Procedure

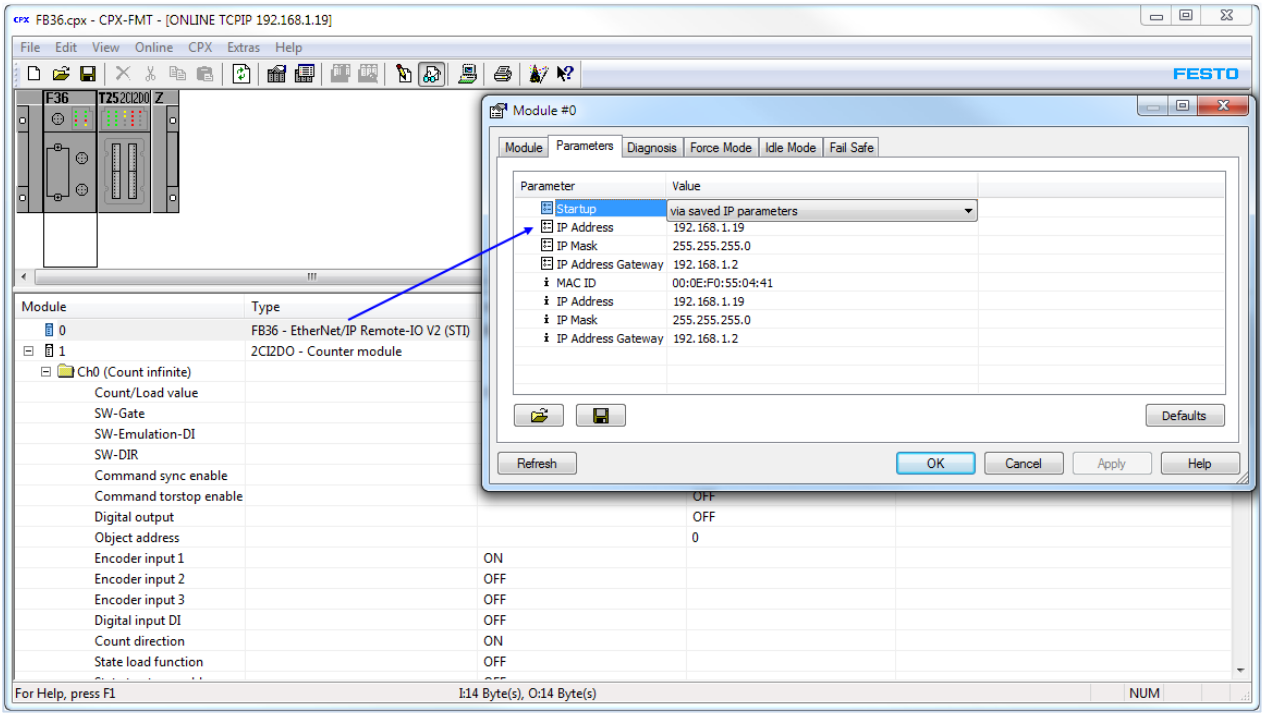
2.3.1 Manually configure the CPX-Terminal parameters while offline or online.

Change the parameters as needed for the application. Double clicking the module will provide the popup dialog.



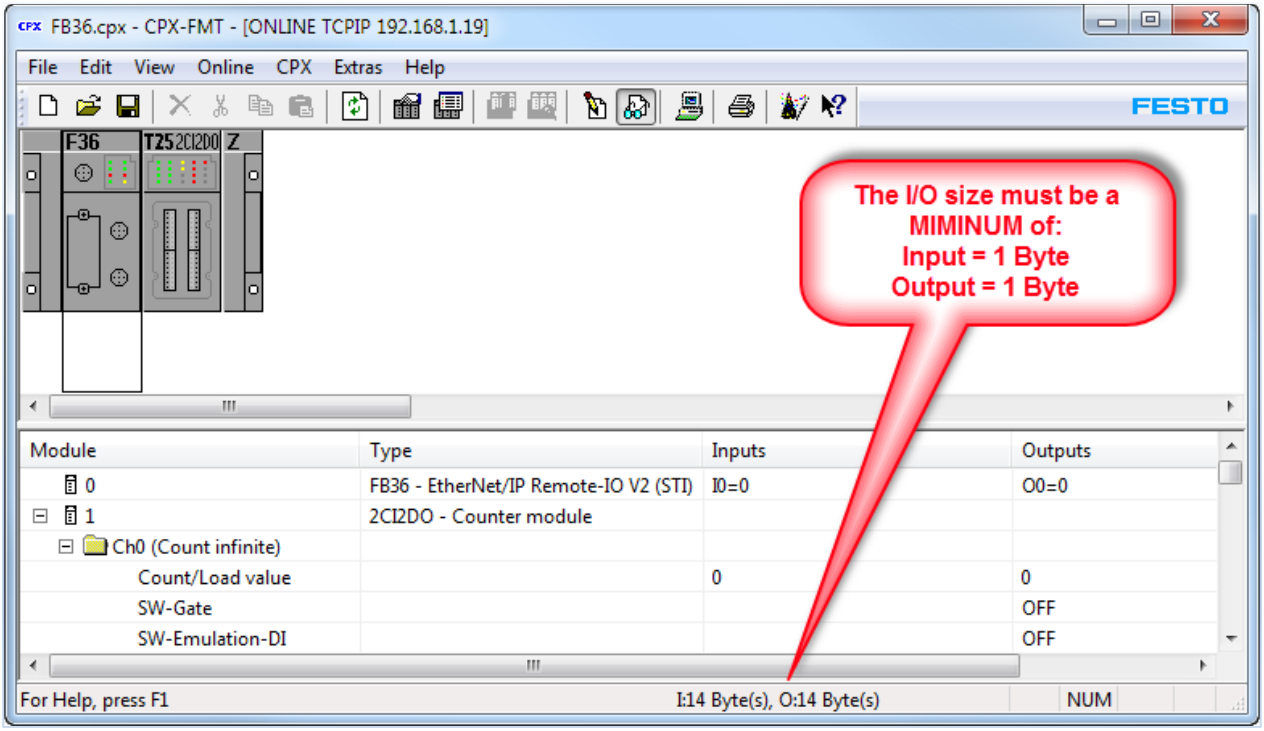
2.3.2 Confirm or change the IP Address settings of the CPX-FB36/FB32

These changes will be reflected within the ".L5K" export and therefore within your PLC project.



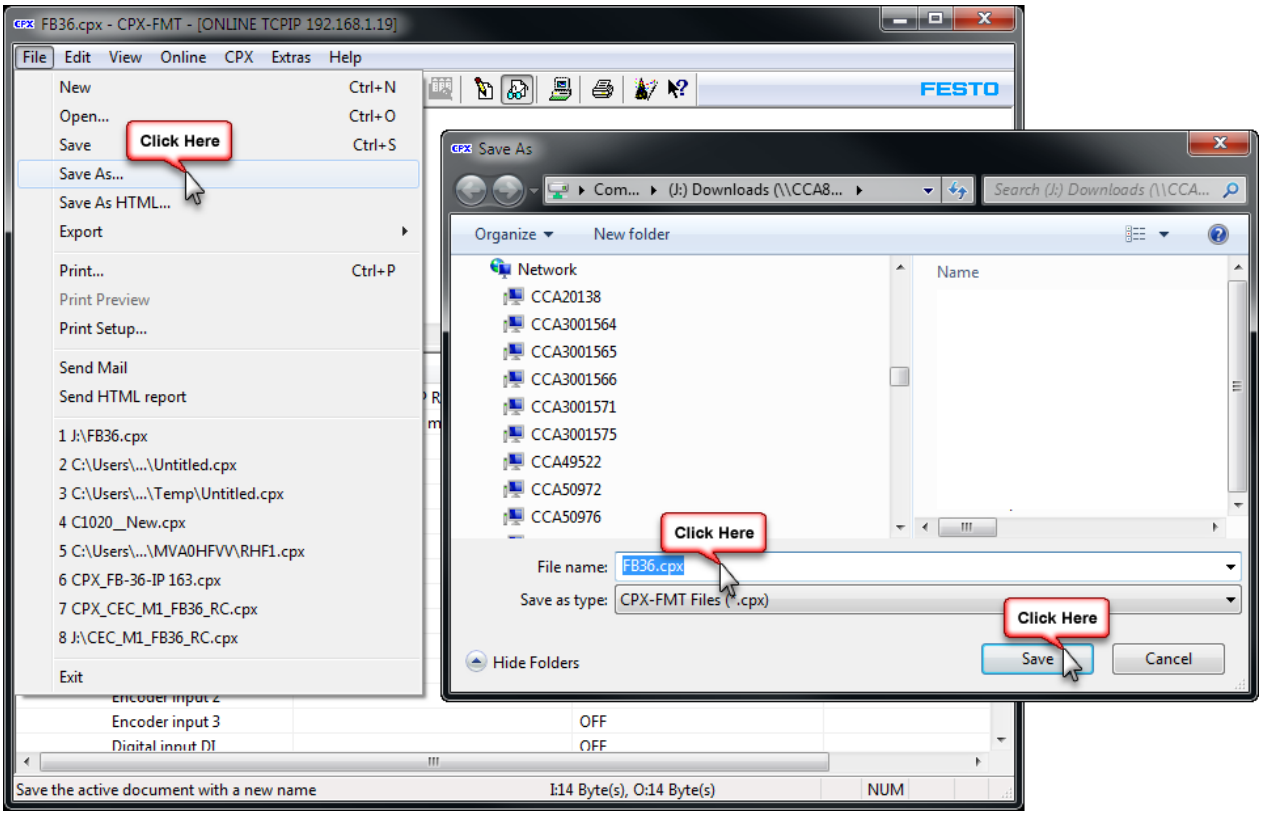
2.3.3 Confirm the IO (Inputs/Outputs) size of the entire Festo CPX-Terminal

RSLogix5000 software requires as a minimum 1 input byte and 1 output byte of data. If needed, activate DIP/DIL switches on the fieldbus terminal so that both conditions are fulfilled.



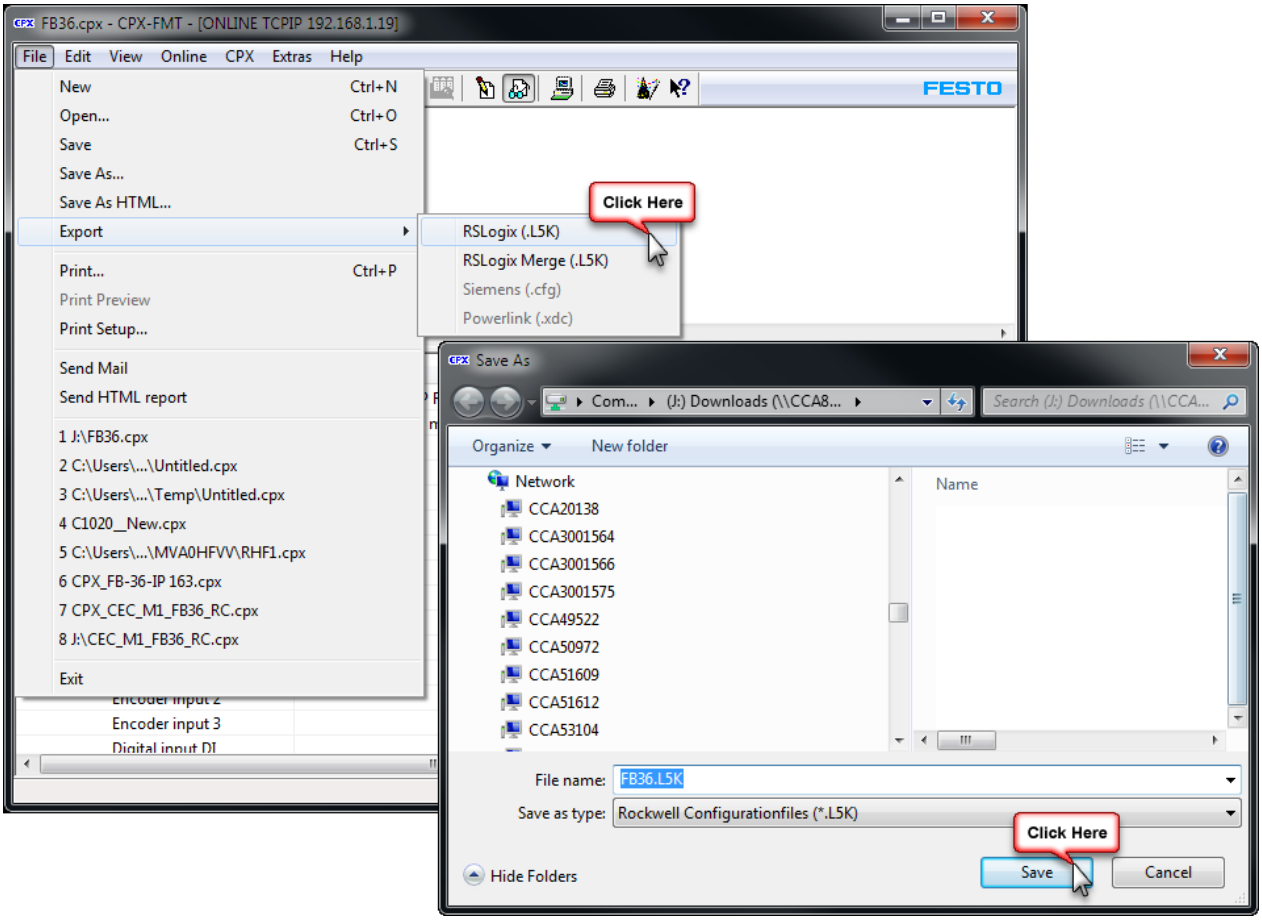
2.3.4 Save the FMT (Festo Maintenance Tool Software) file

Be certain to comply with standard IEC-1131 naming like FB32 or FB36. Keep the name simple otherwise you will encounter errors later when attempting to import to the Rockwell RSLogix 5000/Logix Designer 5000 Software.



2.3.5 Export the "L5K" file

Select the File menu, then "Export", then "RSLogix (.L5K)" and then save the file to a desired location .

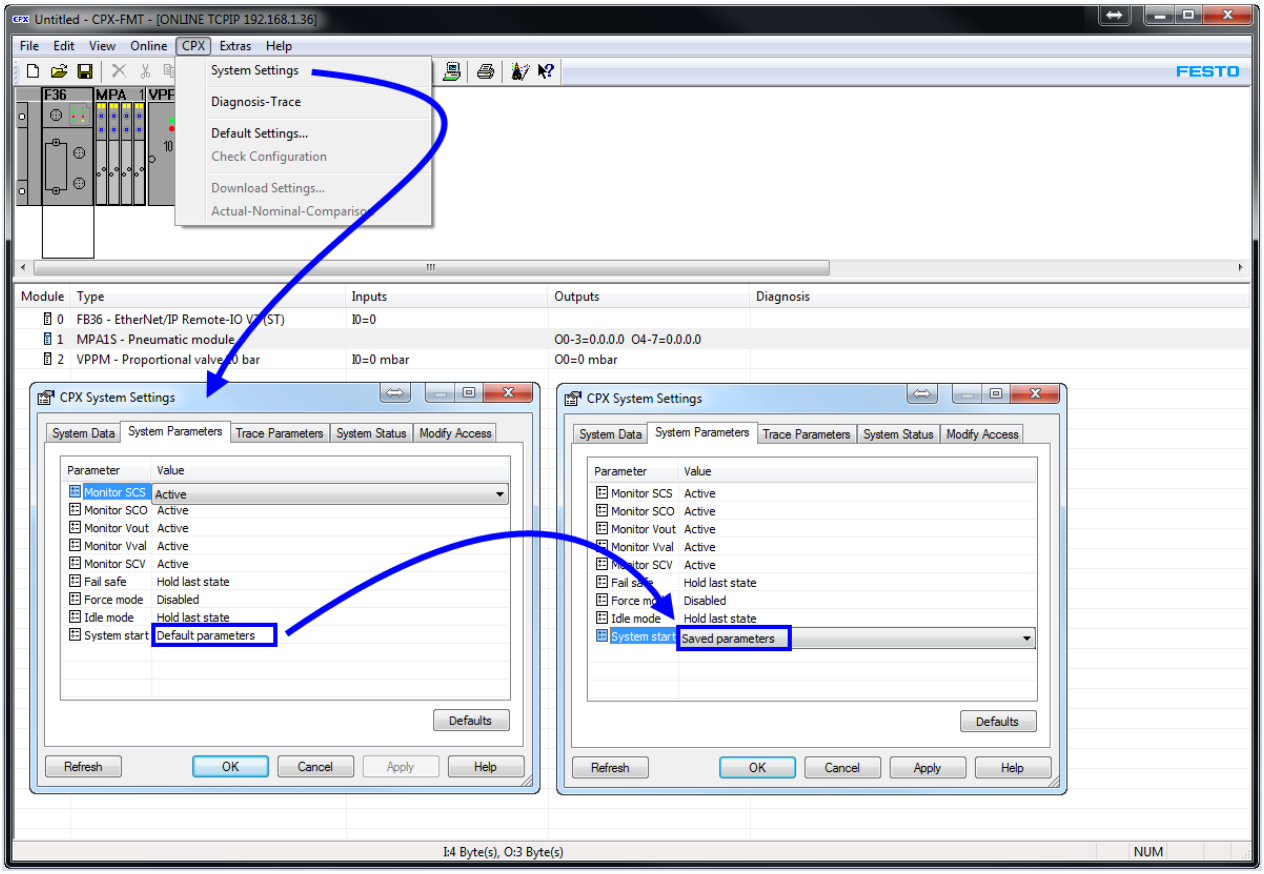


2.4 Making changes to an existing Installation

If you utilize FMT (Festo Maintenance Tool Software) to make **any configuration changes** to the existing CPX-Terminal, it will **require the RSLogix Export/Import L5K file process to be repeated from the start.** If the process is not repeated, then the PLC (Programmable Logic Controller) will overwrite any changes made the next time the PLC (Programmable Logic Controller) power is cycled.

2.5 Saved Parameters Parameter

Another method of saving configuration data in the CPX is via the feature “Saved Parameters” in the system settings of the FMT (Festo Maintenance Tool Software). The “M” LED illuminates solid yellow to indicate “Saved Parameters” is active. The parameters are written to all sub-modules any time a cycle of power occurs. The parameters are stored in the fieldbus module and if this is replaced, the parameters are lost forever.



Question:

If the FMT "Saved Parameters" is used at the same time a FMT Export/Import concept is used, which procedure will apply parameters to the CPX terminal as a result.

Answer:

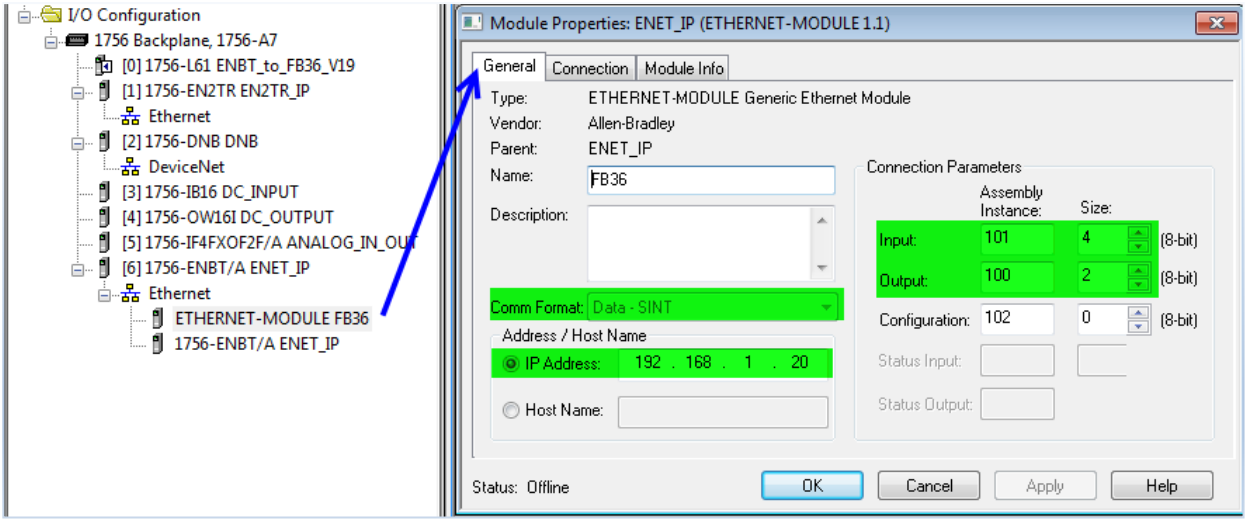
The FMT "Saved Parameters" immediately writes all data to sub-modules when power on occurs.
The PLC (Programmable Logic Controller) can take up to 7 seconds to make a connection to the remote node. Due to the delay in the PLC connection, the PLC will over-write the CPX terminal saved parameters with its own data. The CPX terminal will reflect the parameters that were stored in the PLC (Programmable Logic Controller) at this point.

3 RSLogix 5000/Logix Designer 5000 Software

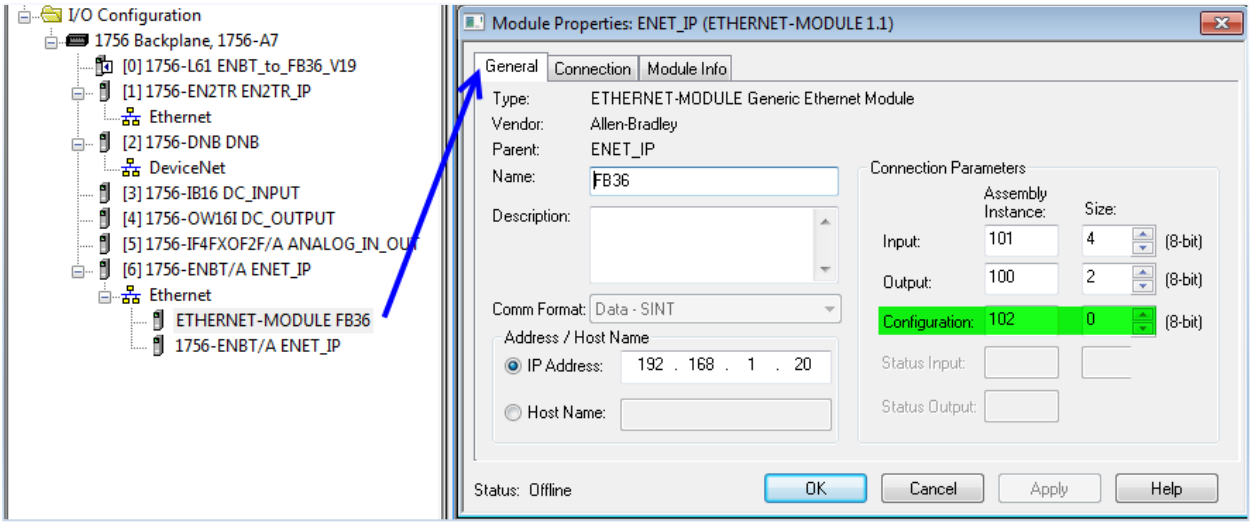
3.1 GENERIC ETHERNET-MODULE Overview

The Rockwell RSLogix 5000/Logix Designer 5000 Software offers a “GENERIC ETHERNET-MODULE” to allow connection to devices without EDS (Electronic Data Sheet) files. The Festo CPX-Terminal can be manually added to the RSLogix project using this method. The normal method to manually configure this is to specify the following:

- Input and output data-size
- Data format (normally SINT, 8-bit)
- IP-address



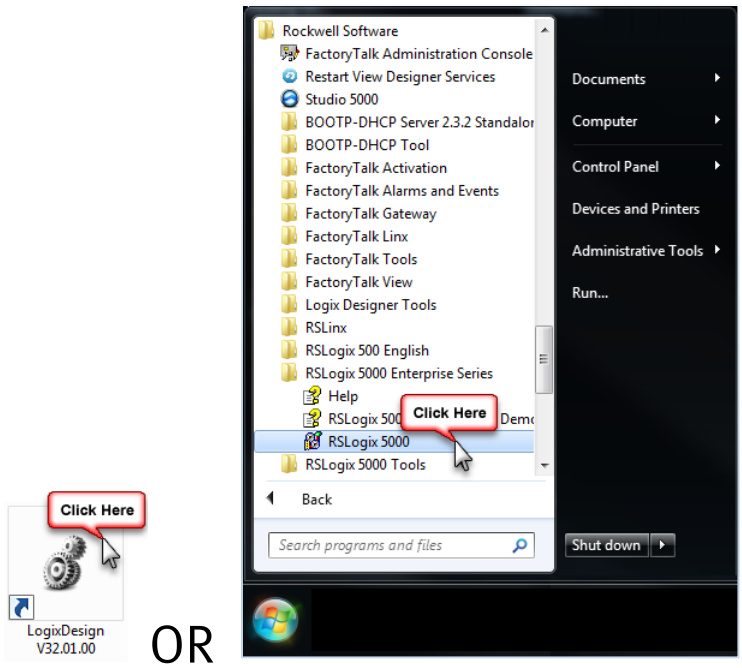
The "Configuration" data (device start-up parameters discussed later in this guide) is normally set to zero as shown here.



3.2 RSLogix Import L5K Procedure

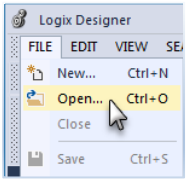
3.2.1 Start RSLogix 5000/Logix Designer 5000 Software

Either double click a desktop icon or select RSLogix 5000 from the Start menu to run the software

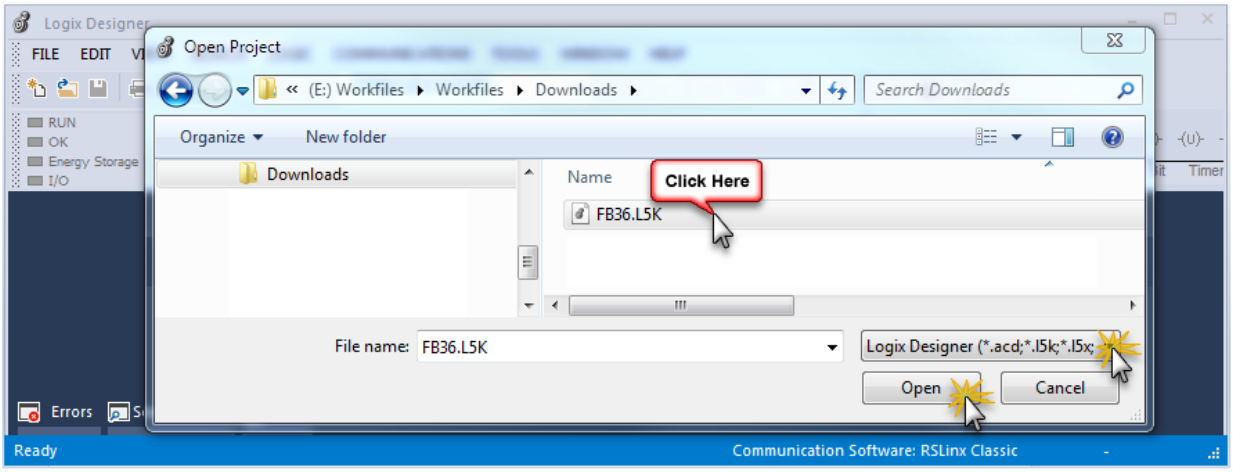


3.2.2 Open .L5K file

From the File menu, choose Open.

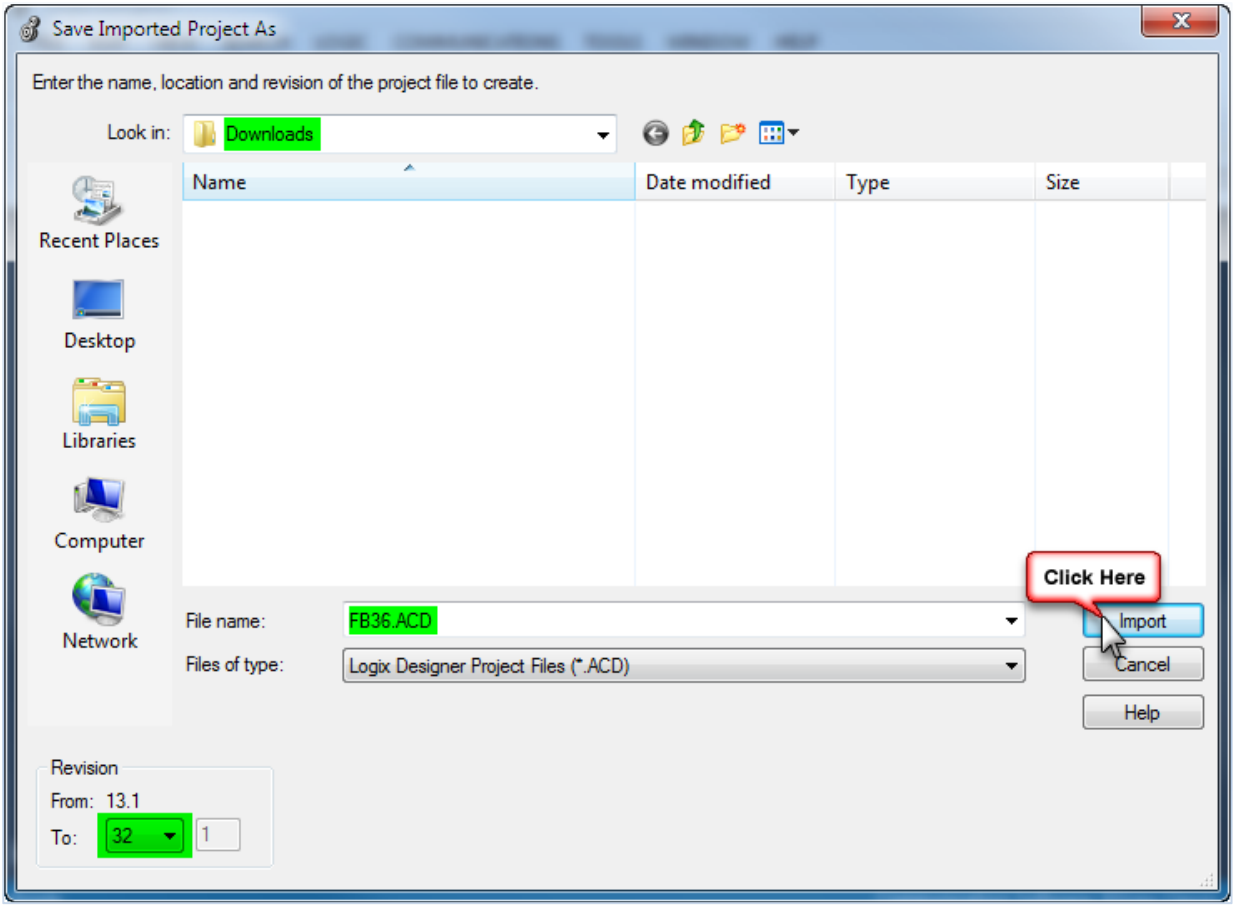


The Open Project dialog appears. Select the name of the project file you want to open. Click Open to open the selected .L5K file.



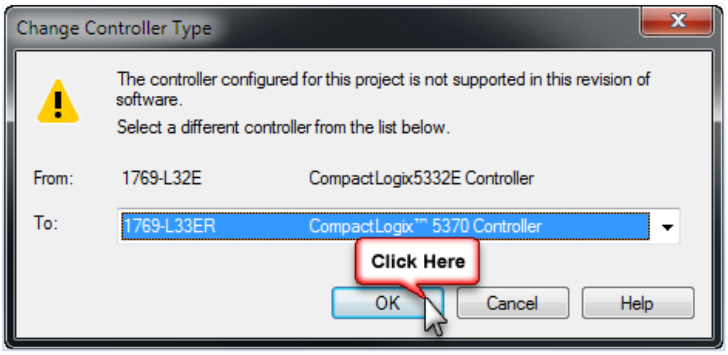
3.2.3 Save Imported Project

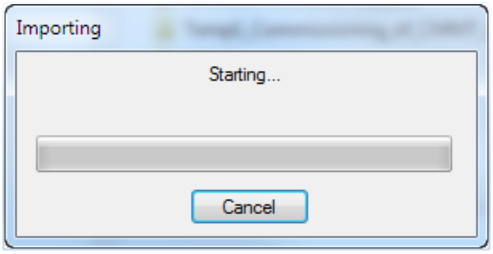
The import process must create a project file and you must specify the name and location of this file. The Save Imported Project As dialog opens. Select the directory, filename and desired "Revision" for your project and then select the Import button.



3.2.4 Change Controller Type

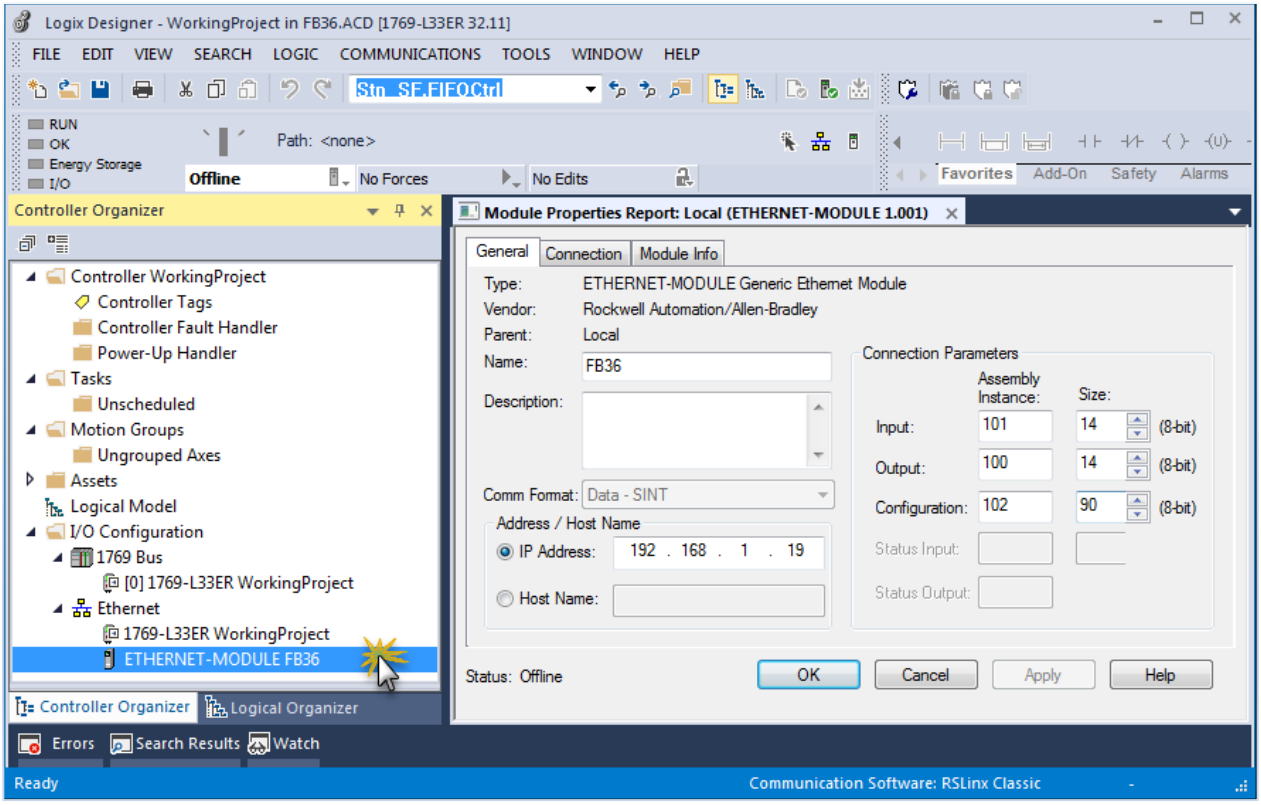
The Change Controller Type dialog now opens. Leave the default CompactLogix selection otherwise you may experience errors later. The Importing dialog will open and start the process.





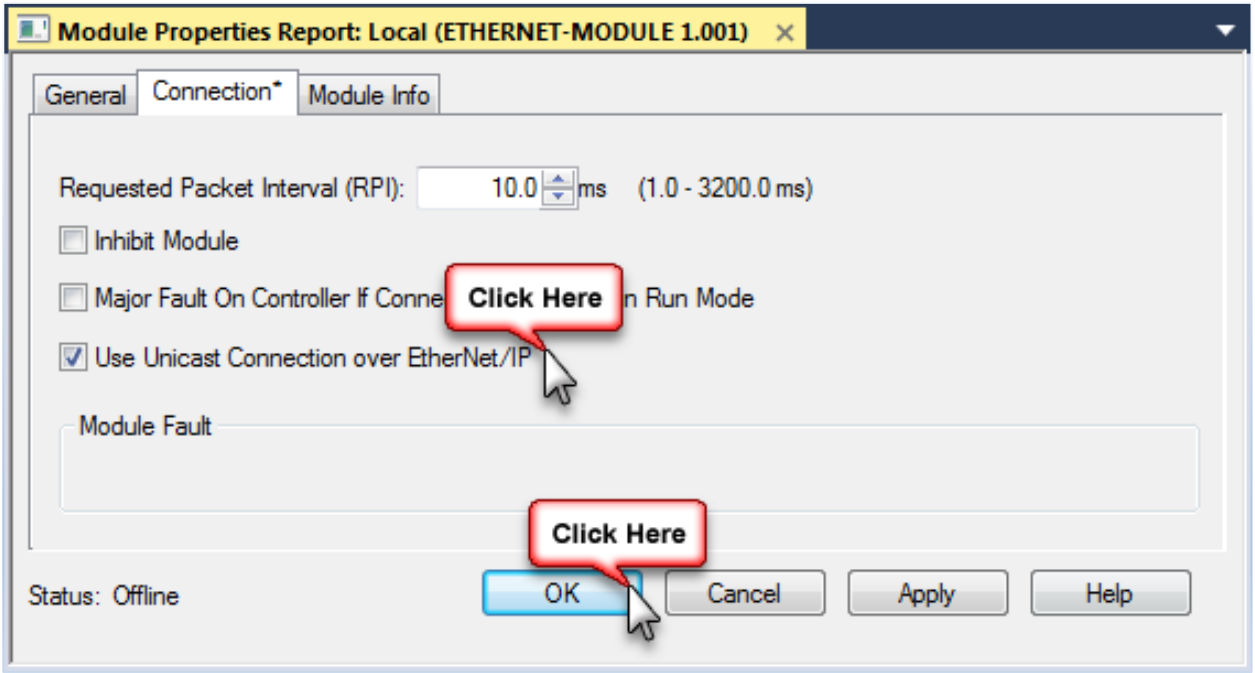
3.2.5 Open .L5K file Results

Once the project file is opened, the Controller Organizer appears. You can now see the "ETHERNET-MODULE" that was created by the FMT (Festo Maintenance Tool Software) Export.



3.2.6 Option to Select ETHERNET-MODULE Unicast Connection

It is up to the user to manually select "Use Unicast Connection over EtherNet/IP". This is a very common setting and is recommended for optimum network performance.

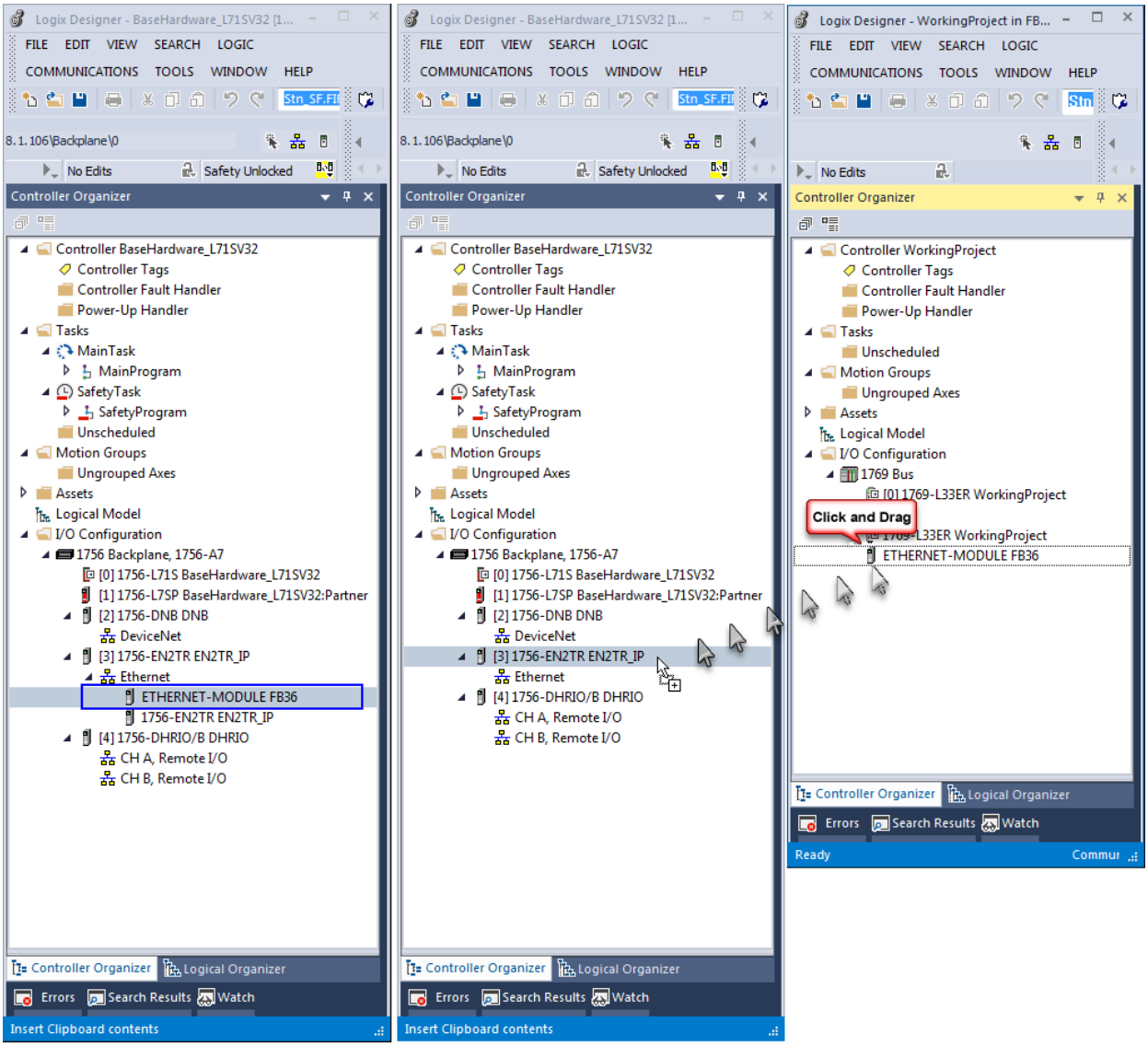


3.3 Copy generic ETHERNET-MODULE to your existing Project

You have 2 methods to copy the generic module from the temporary RSLogix5000 project to your project

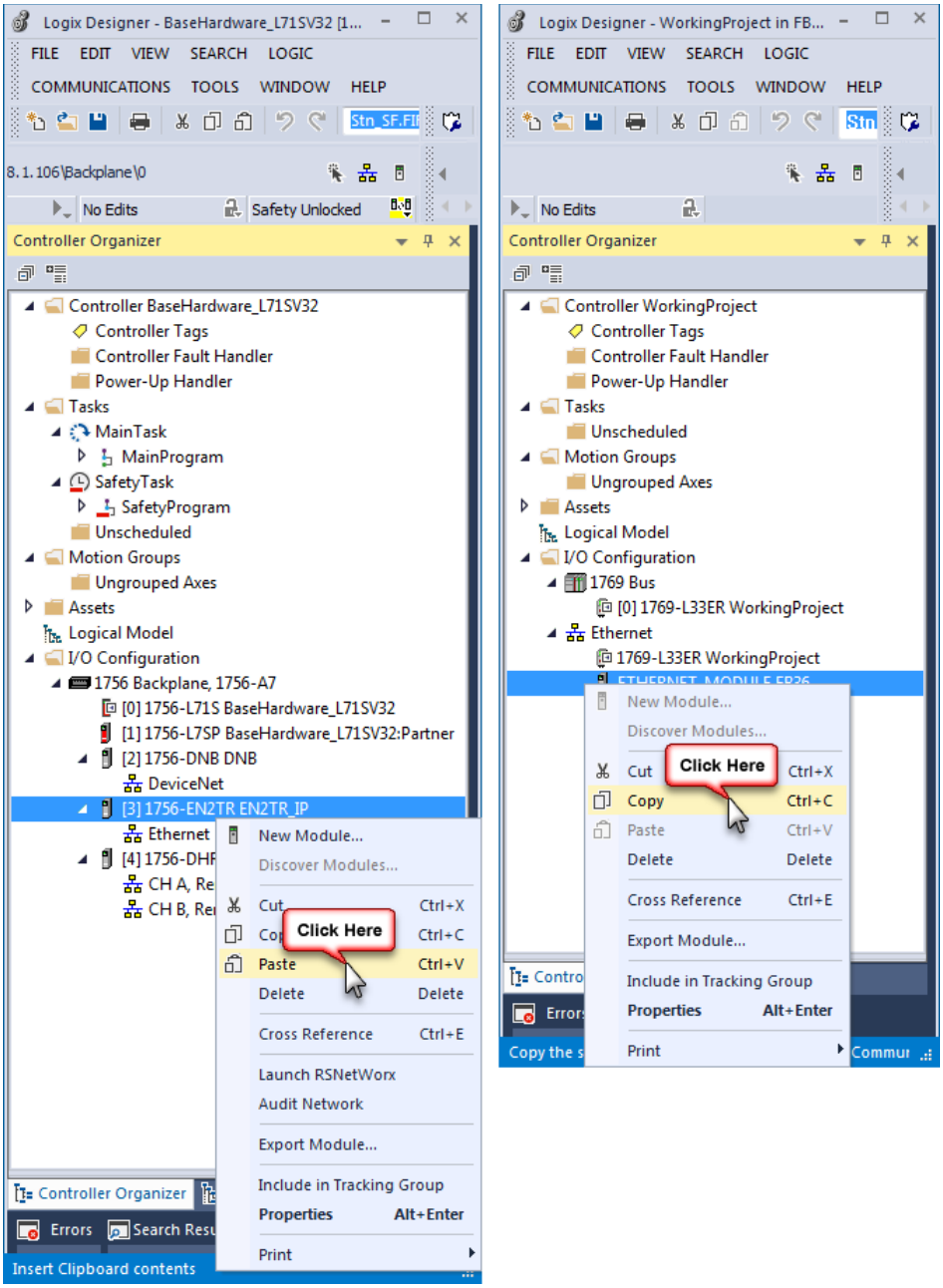
3.3.1 Drag & Drop

If you click and hold the left mouse button, you can then begin to drag the ETHERNET-MODULE to your existing project. Release the left mouse button when you are over top of an acceptable EtherNet device.



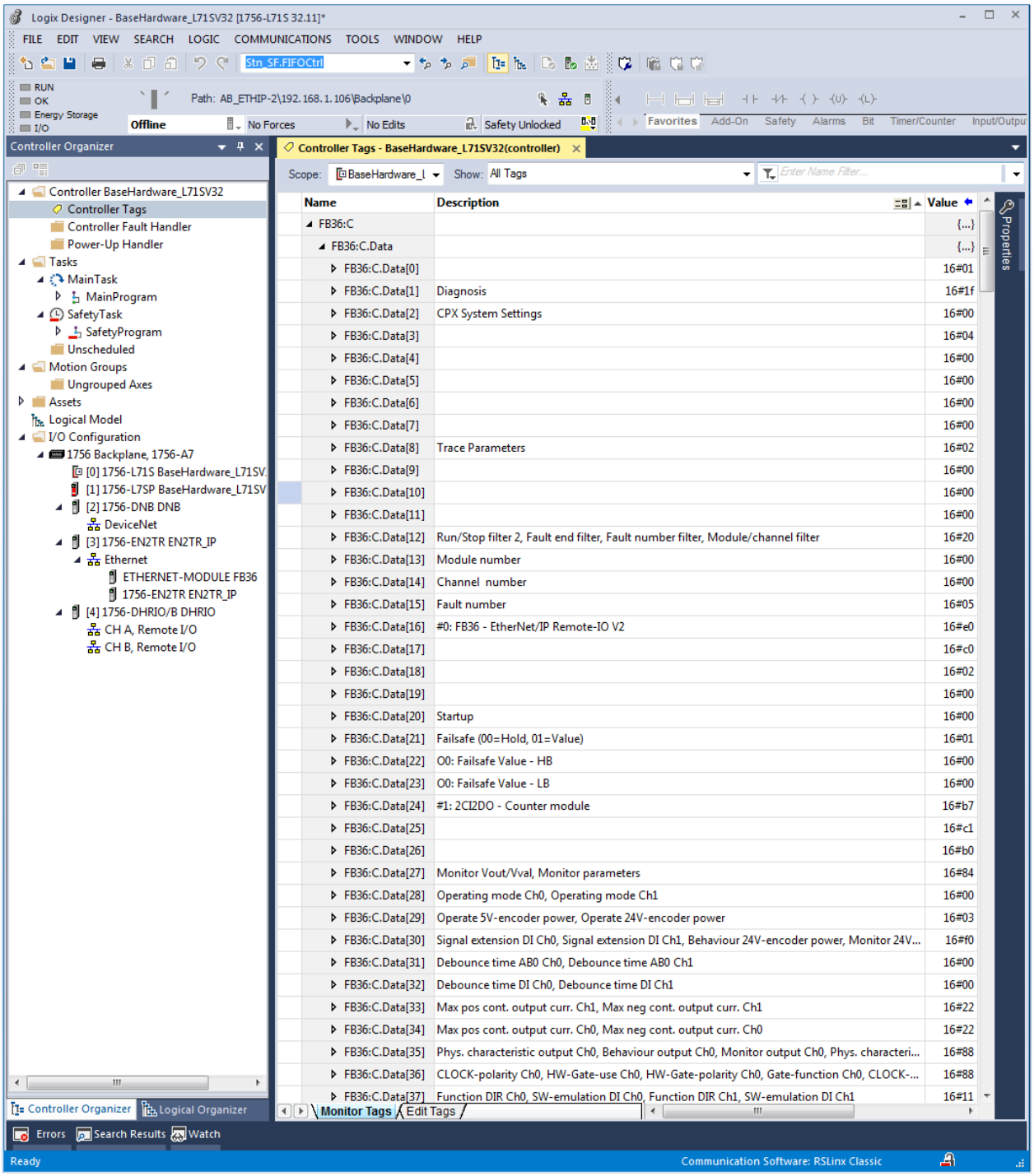
3.3.2 Copy & Paste

By using the right mouse button and the menu within, you can copy and paste the ETHERNET-MODULE to your existing project.



3.3.3 RSLogix Configuration/Tag Results

You have now completed the Export/Import process. The Controller Tags will now have the full configuration of the CPX-Terminal. In the image below, you can see data is a byte array and the relevant bytes have descriptions to match the FMT (Festo Maintenance Tool Software) configuration. The values stored here are used as the CPX-Terminal start-up parameters.



With the Configuration instance is set to a NON-ZERO value (e.g. 90 is shown here), when a connection is first established with the remote node, this configuration data is downloaded to the controller.

This is an extremely useful concept as it avoids further re-configuration when modules are replaced on the CPX terminal in the field and they have been adjusted away from a default condition.