

MODULAR CONTROLLER TO CONTROLLOGIX VIA ETHERNET IP

ABSTRACT

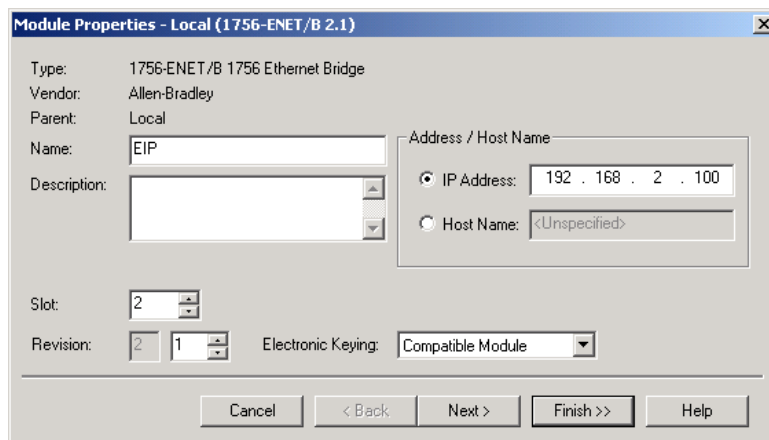
The purpose of this document is to describe the configuration steps necessary to establish a communication path between the Modular Controller and a ControlLogix unit. You will need either a 1756-ENET/B or a 1756-ENBT/A together with a Logix5550 controller. It may be possible to upgrade a 1756-ENET/A to the required 1756-ENET/B by flashing the firmware; you should check the hardware version with your vendor before hand to ensure its suitability. You will also need Rockwell Software's RSLinx and RSLogix 5000 software configuration utilities.

INTRODUCTION

In the following example, the ControlLogix will establish a Class1 connection and I/O data will be exchanged between the ControlLogix and the Modular Controller. The network parameters used in this example will almost certainly not apply to your application. Be sure to consult your network administrator when selecting appropriate values.

CONTROLLOGIX CONFIGURATION

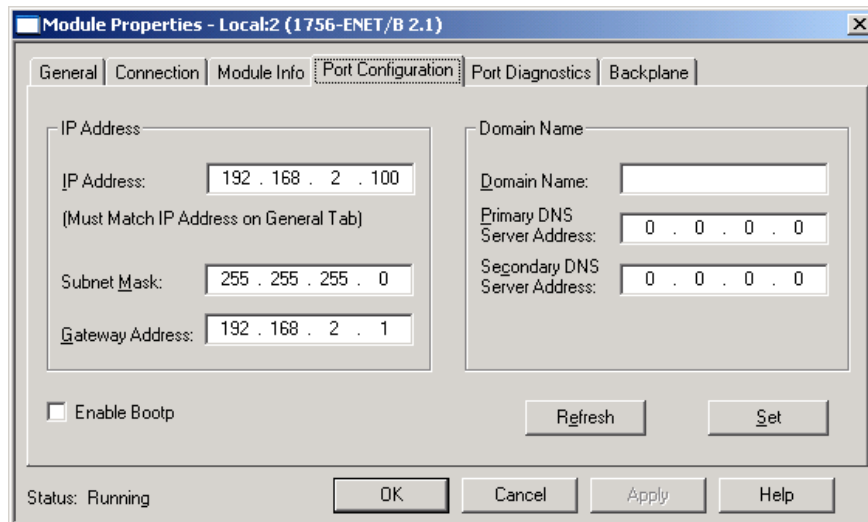
1. Run the RSLogix 5000 program and create a new configuration.
2. Add a 1756-ENET/B or a 1756-ENBT/A to your I/O configuration. You will need to:
 - Switch to offline mode.
 - Right click on the I/O Configuration node in the Controller Organiser view and choose Add Module.
 - In the Select Module Type dialog choose 1756-ENET/B or 1756-ENBT/A entry. RSLogix will open the Module Properties dialog box.



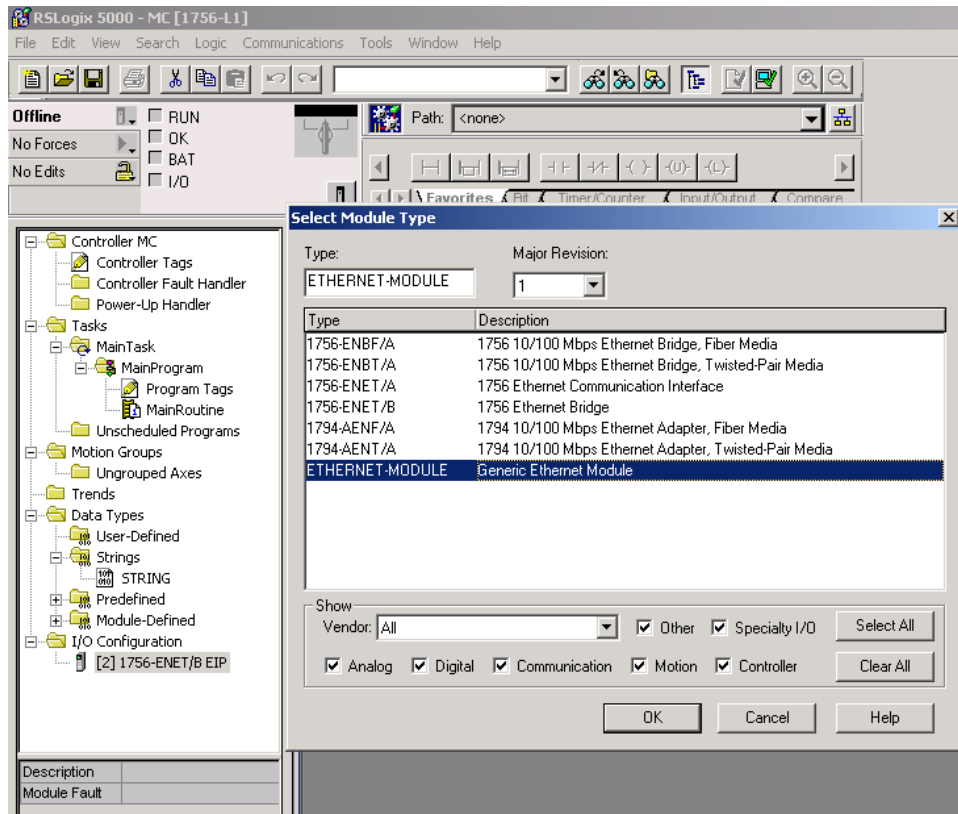
Module Properties - Local (1756-ENET/B 2.1)

Type: 1756-ENET/B 1756 Ethernet Bridge
Vendor: Allen-Bradley
Parent: Local
Name: EIP
Description:
Address / Host Name:
 IP Address: 192 . 168 . 2 . 100
 Host Name: <Unspecified>
Slot: 2
Revision: 2 1
Electronic Keying: Compatible Module
Cancel < Back Next > Finish >> Help

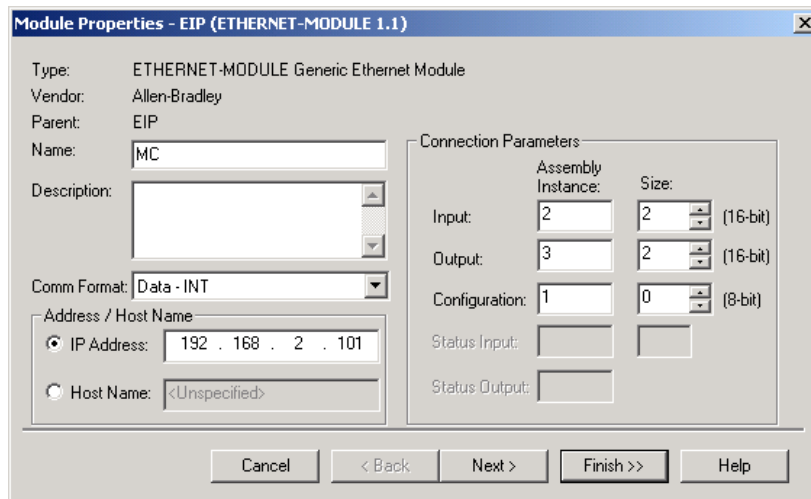
- Enter the IP Address of the ENET/B or ENBT/A interface.
- Click Finish to add the interface to your I/O configuration.
- Download the configuration.
- Switch to online mode and open the 1756-ENET/B or 1756-ENBT/A node properties under the I/O Configuration in the Controller Organiser.
- Select the Port Configuration Tab from the Module Properties dialog box.
- You should now enter the IP Address and Subnet Mask. The IP Address must match the IP Address entered from the General properties page.
- Apply the settings using the Set button.



- You can now verify the network module network communications with your unit using suitable diagnostic tools such as Ping.
3. Now add the Modular Controller to the RSLogix configuration through the following steps:
- Switch to offline mode.
 - Right click on the 1756-ENET/B or 1756-ENBT/A node under the I/O Configuration in the Controller Organiser view and choose Add Module.



- In the Select Module dialog choose Generic Ethernet Module.
- Click OK. This will open the Module Properties dialog.



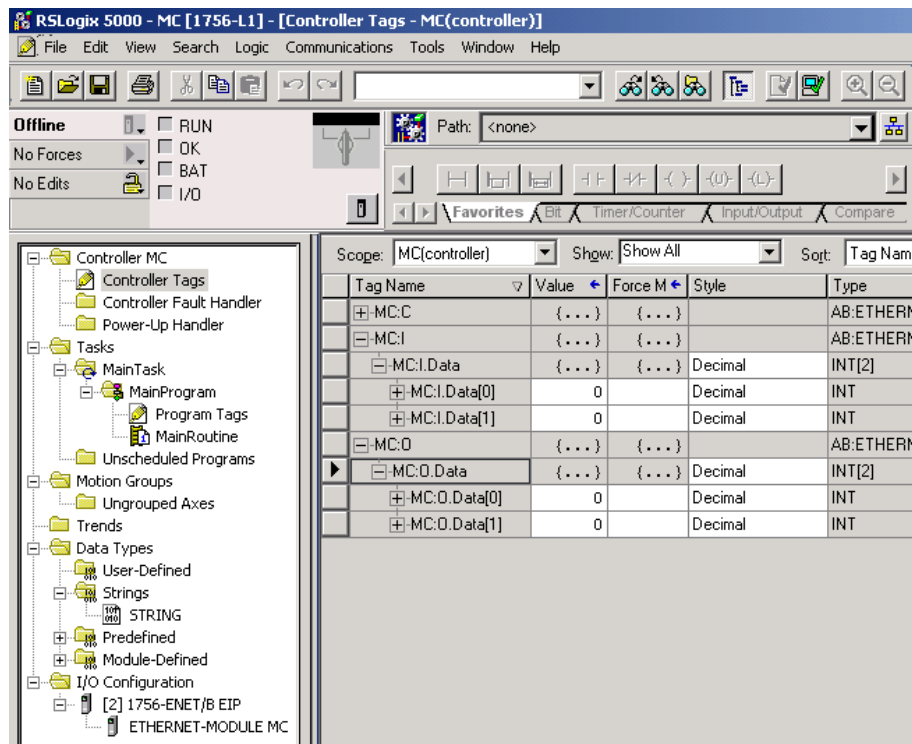
- In the Name enter a descriptive name to identify the module.
- Select Data – INT for the Comm Format.
- In the Address/Host Name enter the IP Address of the Modular Controller.

- Enter 2 in the Input Assembly Instance and a size of 2. This will match a read only Slave Gateway block configured in the Modular Controller, and will be used for reading data from the Modular Controller to the ControlLogix.
- Enter 3 in the Output Assembly Instance and a size of 2. This will match a read/write Slave Gateway block configured in the Modular Controller, and will be used for writing data from the ControlLogix to the Modular Controller.
- Enter 1 in the Configuration Assembly and a size of 0. Configuration data is not supported by the Modular Controller.
- Press Finish to add the MC to the I/O configuration.

The instances and sizes are arbitrary, as long as the instance, size, and direction are matched in the configuration of the Modular Controller.

Assembly instance direction is always relative to the originator, which in the case of the current Modular Controller Ethernet/IP implementation is always the device and never the Modular Controller. An *input* instance therefore specifies data flow from the Modular Controller to the device, and an *output* instance specifies data flow from the device to the Modular Controller.

You should now see a new "ETHERNET-MODULE MC" branch of the 1756-ENET/B node in the I/O Configuration view. You should also see 3 new entries in the Controller Tags view: MC:I to view the input data, MC:O to modify the output data and MC:C to view the configuration data:



4. Download the new I/O configuration to the controller. Once the download is complete, the controller will automatically establish a new Class1 connection with the Modular Controller.

MODULAR CONTROLLER CRIMSON CONFIGURATION

1. Add modules first, so that their data is available when configuring communications.
2. Ethernet Settings.
 - Configure the IP Address to 192.168.2.101. This should match the Address/Host Name as entered in ETHERNET-MODULE MC module properties.
3. Protocol Settings.
 - Select the Ethernet/IP Slave communications driver.

The ENET/B module prefixes all output data with a header containing status information about the originator's run/idle state. With the Run/Idle Header checked, the communications driver will automatically process the header, and data will be ignored if the device is in the 'Idle' state. With the option unchecked, extra space must be allocated in the block to receive the status information; all data is accepted regardless of the device state.

4. Device Settings.

A block must be created for each instance of a connection.

For the purpose of configuring the data transfer direction, the terms *input* and *output* refer to the originator of the connection, and are therefore relative to the device and not the Modular Controller. An *input* instance of a connection is therefore specified by 'System to PLC' and an *output* instance of a connection is specified by 'PLC to System'.

Assembly instance mapping is defined in the 'Start Address' block setting and comprises of the instance and a data offset. The instance must match that specified by the originator; the offset can be used to skip over data not required by the Modular Controller, useful mainly on shared connections.

The following settings mirror the I/O settings of the ControlLogix configuration detailed earlier.

4.1. Input Assembly Instance

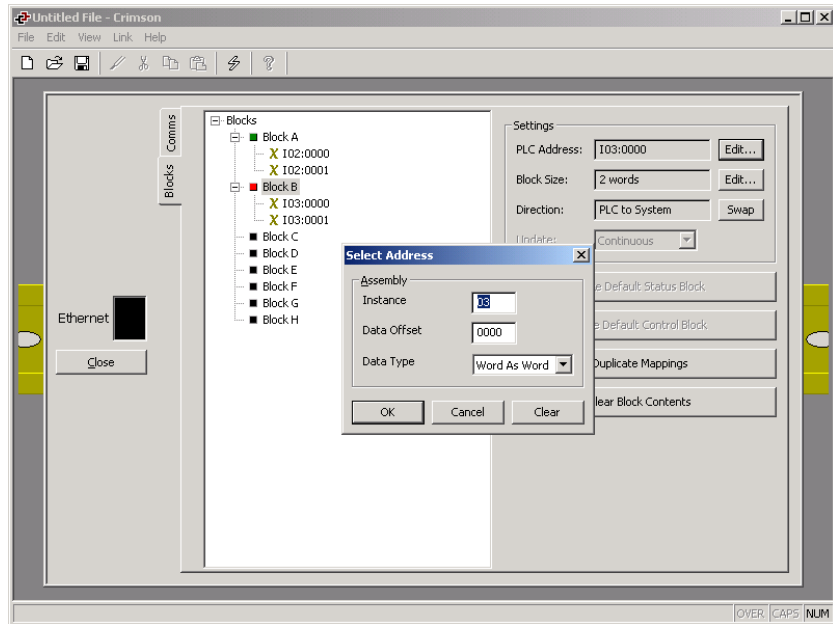
Configure Block A with the following parameters:

Assembly Instance:	2
Data Offset:	0000
Data Type:	Word As Word
Block Size:	2
Direction:	System to PLC

4.2. Output Assembly Instance

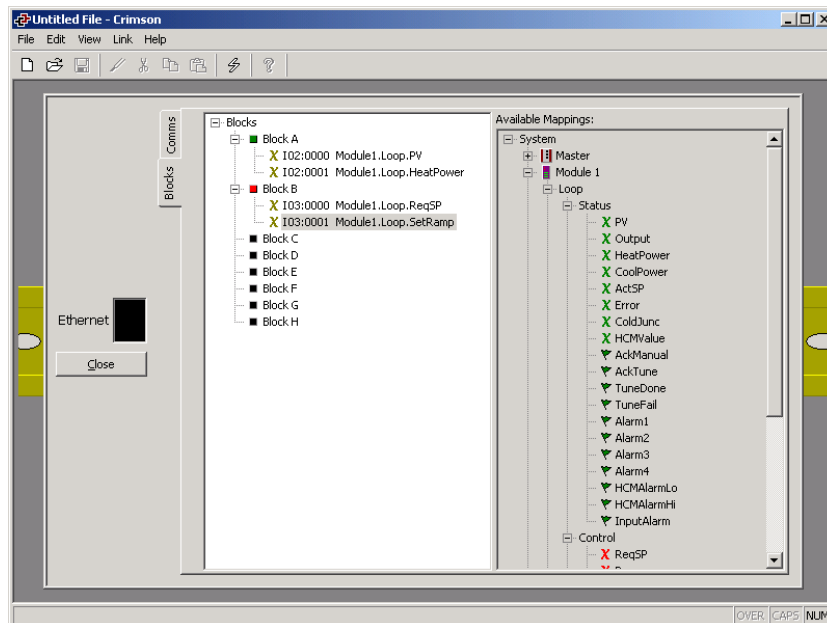
Configure Block B with the following parameters:

Assembly Instance: 3
Data Offset: 0000
Data Type: Word As Word
Block Size: 2
Direction: PLC to System



5. Data Mapping

Select each of the data items created, and from the right hand list of available data, drag and drop the desired information onto them.



6. Testing

Using the RSLogix5000 program, you can modify tags MC:O and verify they are written into *ReqSP* and *SetRamp*, and verify changes made in the Modular Controller's *PV* and *HeatPower* are updated in MC:I. Ensure the device is in the Run mode otherwise the data transfer will be ignored by the Modular Controller.