

Connecting a Rockwell Automation PLC to an Omron Trajexia TJ2-MC64 using EtherNet/IP



Version 1.0 4/18/2011 **Section 1: Introduction:** This document explains how to connect Rockwell Automation CompactLogix or ControlLogix PLC with EtherNet/IP communications to an Omron Trajexia TJ2-MC64 motion controller with built in EtherNet/IP.

The Trajexia TJ2-MC64 motion controller contains the EtherNet/IP protocol as part of the suite of protocols supported by the built in Ethernet port. This protocol is not supported by the Trajexia TJ1-MC04 or TJ1-MC16 motion controller.

The TJ2-MC64 is capable of producing up to 500 bytes of data and consuming up to 500 bytes of data from another device, such as a PLC. Only 1 PLC can be connected to a TJ2-MC64, as the EtherNet/IP implementation supports a single connection only.

Shown below are the recommended maximum Produced and Consumed assembly sizes at 100 ms RPI and 20 ms RPI. Values higher than those shown below could affect system performance.

RPI	Input bytes (max)	Output bytes (max)
100	376	376
20	250	250

In the following example, the connection show below will be configured. A CompactLogix PLC will be used in this example, but a ControlLogix PLC would be nearly identical.



Section 2: TJ2-MC64 Configuration:

1. In CX Motion Pro or Trajexia Studio, double click on the Trajexia TJ2-MC64 to edit the Device Configuration.



 Click on the Ethernet/IP tab, and enter the TJ2-MC64 data area, starting address, Format, and Total Number of Items for Input (Consumed data) and Output (Produced data). In the following example, 125 INT16 data types (250 Bytes) are transferred to / from the TJ2-MC64.

Configuration [Device1]	$\bullet \diamondsuit \bullet \bullet$
Configuration Status	
Communications General Date Time Memory Manager	
Configuration Ethernet Configuration FINS Configuration Modbus TCF Ethernet/IP	
TJ Area Start Address Format Total Number of Items (This setting does not configure the master)	
Input VR 🔽 0 INT16 💌 125	
Output VR 🔽 125 INT16 🔽 125	
	Apply

3. Click Apply.

Configuration [Device1]	$\bullet \triangleleft \triangleright \mathbf{x}$
Configuration Status	
Communications General Date Time Memory Manager	
Configuration Ethernet Configuration FINS Configuration Modbus TCP Ethernet/IP	
TJ Area Start Address Format Total Number of Items (This setting does not configure the master)	
Input VR 🔽 0 INT16 🔽 125	
Output VR 🔽 125 INT16 🔽 125	
	<u>A</u> pply

4. Build the Solution from the **Build** / **Build Solution menus.** The process of Building the Solution automatically adds the code to the Shell program to configure the EtherNet/IP communications on startup.

3				
🍲 CX-Motion Pro				
EFile Edit Insert View	Build	Programs	Online -	
i 🛅 🧉 🔛 🛗 🎬 🖾 🛙		Build Solution	F5	
Solution Explorer		Build Device	F6	
⊡ 🚠 Devices		Build Program	F7	
<pre>'Ethernet/IP Settings: Device> Trajexia ETHERNET(1,-1,14,1,0,0) 'Start Address ETHERNET(1,-1,14,1,1,3) 'Data Type ETHERNET(1,-1,14,1,2,0) 'Data Format 'ETHERNET(1,-1,14,1,3,125) Total Items</pre>				
<pre>'Ethernet/IP Settings: Trajexia> Device ETHERNET(1,-1,14,2,0,125) 'Start Address ETHERNET(1,-1,14,2,1,3) 'Data Type ETHERNET(1,-1,14,2,2,0) 'Data Format 'ETHERNET(1,-1,14,2,3,125) Total Items</pre>				

5. After Building the Solution, Synchronize the project with the TJ2-MC64.

Section 3: CompactLogix Configuration:

- 1. Open an Existing RSLogix 5000 project, or create a new project.
- 2. Right click on the Ethernet module in the CompactLogix, and click **New Module**.



3. In the **Communications** group, select **ETHERNET-MODULE Generic Ethernet Module**, and click **OK**.

Select Module		×
Module	Description	Vendor
Communications 1783-ETAP1F 1783-ETAP2F 1788-EN2DN/A 1788-ENBT/A 1788-EWEB/A 1794-AENT Drivelogix5730 Eth ETHERNET-BRIDGE ETHERNET-MODULE Ctherweyip PSSCENA	3 Port Ethernet Tap, 1 Fiber/2 Twisted-Pair Media 3 Port Ethernet Tap, 2 Fiber/1 Twisted-Pair Media 1788 Ethernet to DeviceNet Linking Device 1788 10/100 Mbps Ethernet Bridge, Twisted-Pair Media 1788 10/100 Mbps Ethernet Bridge w/Enhanced Web Serv. 1794 10/100 Mbps Ethernet Adapter, Twisted-Pair Media 10/100 Mbps Ethernet Port on DriveLogix5730 Generic EtherNet/IP CIP Bridge Generic Ethernet Module Softcogix5500 Ethernet/IP Ethernet Adapter, Twisted-Pair Media	Allen-Bradley Allen-Bradley Allen-Bradley Allen-Bradley Allen-Bradley Allen-Bradley Allen-Bradley Allen-Bradley Allen-Bradley Allen-Bradley Allen-Bradley Allen-Bradley Allen-Bradley
Stratix 8000	26 Port Managed Switch	Allen-Bradley 💌
	<u> </u>	Add Favorite
By Category By Vi	endor Favorites	Help

4. Enter the Name, Comms Format, IP Address, and Connection Parameters as show, then click OK.

New Module						×
Tupe:	ETHERNET.MODULE Generic Etherne	t Module				
Type. Vender	Allen Bradley	(Module				
vendor:	Allen-Bradley					
Parent:		- Connection Par				
Na <u>m</u> e:	Trajexia	Connection Fai	Assessed			
Descriptions			Assembly Instance:	Size:		
Description:		lanut	101	125	🖃 деър	
		Input.		120	I (10-Dit)	
		O <u>u</u> tput:	100	125	÷ (16-bit)	
Comm <u>F</u> ormat	Data - INT 💌	Configuration	1	0	<u>ы</u> (о.ьа)	
-Address / H	ost Name	<u>c</u> oninguration.	<u> </u>	ľ		
P Addre	ess: 192.168.1.90	<u>S</u> tatus Input:				
<u> </u>		Status Output				
U <u>H</u> ost Na	me:	oforms parbor	•			
Open Module Properties OK Cancel Help						
	- · ·				1.00	-

5. Enter an RPI of 100ms. This is a recommended minimum to prevent possible negative effects on the motion control functionality of the Trajexia TJ2-MC64.

Module Properties: LocalENB (ETHERNET-MODULE 1.1)
General Connection* Module Info
<u>R</u> equested Packet Interval (RP <mark>I</mark> : 100.0
Major Fault On Controller If Connection Fails While in Run Mode
Module Fault
Status: Offline OK Cancel Apply Help

- 6. Download the project to the CompactLogix processor using RSLogix 5000.
- 7. Using RSLogix 5000 and CX Motion Pro (or Trajexia Studio), monitor the memory in the CompactLogix and Trajexia TJ2-MC64 to see the data exchange.

_	RSLogix 5000 Watch Window				
	Name 🛆	Scope	Value 🔶		
		Controller	1111		
		Controller	2222		
		Controller	3333		
		Controller	4444		

CX-Motion Pro Watch Window			
Watch			
Add 🗙 Delete			
Name	Value		
VR(0)	1111		
VR(124)	2222		
VR(125)	3333		
VR(249)	4444		



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