How to program a producer/consumer data messaging in RSLogix 5000 using Ethernet (X)

This is the basic method. There are many ways including message based. Some methods are very complicated.

RSLogix 5000 - Final_Project [1769-L35E 20.12]*	- [MainProgram - MainRoutine*]	1769-L32E 20.12]* - [[MainProgram - MainRoutine*]	
File Edit View Search Logic Commu	nications Tools Window Help	File Edit View Search Logic Communicat	ions Tools Window Help	- 8
■ ● ▲ ● ▲ ● ● ● ● ● ● ● ● ● ● ● ● ● ● ●	🗸 🌲 🐁 🌆 🍞 🖉 🍳 🔍 - Selenpuspe		- # # % 🖪 [# # Q C	🔾 Select a Lang 🔹 💭
Offline Image: Constraint of the second se	Patr Teacher/1921681.20/Backplane/0 Control ball in the start (> 000 -> > > > > > > > > > > > > > > > >	Offline	Path: Teacher/192168.1.25/Backplane/0* H H H H Add-On Alarms Bt Tmer/Co Tavorites Add-On Alarms Bt Tmer/Co H H H H Add-On Alarms Bt Tmer/Co	→ Ba
Controller Final Project Controller Tags Controller Tags Controller Fault Handler Power-Up Handler MainTask MainTask MainTogram Program Tags MainRoutine Unscheduled Programs / Phases	(End) This side is a 1769-L35E at 20.12	Controller Tank, Program Controller Tank, Program Controller Tags Controller Fault Handler Power-Up Handler Power-U	(End) This side is a 1769-L32E ;	at 20.12
Add-On Instructions Add-On Instructions Sota Types User-Defined Sofa Add-On-Defined Sofa Add-On-Defin	Sender Addr .20	Configuration Configuration	Receiver Addr .25	
■ Backplane, CompactLogis System ■ 1769-1355 Enthemet Port LocalENB ■ 1769-1355 Ethernet Port LocalENB ■ 1769-1355 Ethernet ■ 171769-1316/A input ■ 111769-1316/A input ■ 111760	MainRoutine* Authorities	1769-132E Tank, Program 1769-132E Tank, Program 1769-132E Ethernet Port LocalENB Ethernet GrompectBus Local [2] [2] 1769-0W16/A output [3] 1769-IF4/B ana	AlinBoutine*	
Ready		Add Rung		Rung (End) of R

First step is to set up the ethernet connection so they know where to look.

On the L35 side select "Ethernet" under the 1769-L35E Ethernet Port LocalENB rack symbol, and select New Module under right click menu.

	1769-L35E Ethernet Port LocalENB
1	aa Ethernet
in 100	CommentPrestand

Search for and select the 1769-L32E Ethernet Port 10/100 Mbps ... from the catalog. Basically we are telling the PLC about the other PLC's communications setup.

alog Module Discovery Favor	tes			
Enter Search Text for Module 7	Clear Filters		Show Filters	¥
Catalog Number	Description	Vendor	Category	*
1769-L18ER-BB1B 1769-L18ERM-BB1B	CompactLogix 5318ER-8B1B Controller CompactLogix 5318ERM-8B1B Controller	Allen-Bradley Allen-Bradley	Controller Controller	
1769-L23E-QBFC1 Ether 1769-L23E-QBFC1 Ether 1769-L24ER-QB1B	10/100 Mops Ethemet Port on CompactLogix5323E-Q. 10/100 Mops Ethemet Port on CompactLogix5323E-Q. CompactLogix5324ER-QB18 Controller	Alen-Bradley Alen-Bradley Alen-Bradley	Communication Controller	
1769-L24ER-QBFC1B 1769-L27ERM-QBFC1B	CompactLogix5324ER-QBFC1B Controller CompactLogix5327ERM-QBFC1B Controller	Allen-Bradley Allen-Bradley	Controller Controller	
1769-L30ER 1769-L30ERM	CompactLogix5330ER Controller CompactLogix5330ERM Controller	Allen-Bradley Allen-Bradley	Controller Controller	
1769-L30ER-NSE 1769-L32E Ethemet Port	CompactLook5330ER-NSE Controller 10/100 Maps Ethemet Part on CompactLook5332E	Alen-Bradley Alen-Bradley	Communication	1
1769-L33ER 1769-L33ERM 1769-L33ERM	CompactLogix5333EH Controller CompactLogix5333ERM Controller 10/100 Miss Ethemet Pot on CompactLogix533EE	Alen-Bradley Alen-Bradley Alen-Bradley	Controller Controller Communication	-
209 of 209 Module Types Four	ď		Add to Favor	ites
Close on Create		Create	Close	Help
			- 7	
ct Major Revision				
Select major revision for ne Ethernet Port module being	ew 1769-L32E			
	Then click	Create and so	elect the mate	ching major revisi
Major Revision: 20				
UK Cano	nep nep			

In the next dialog we will name our new module. The name describes the other PLC which, in this case, is the receiver. We enter the IP address of the other PLC as well. We are telling the L35 what address to go out and look for.

Type: Vendor: Parent: Name: Description:	1769-L32E Ethernet Port 10/100 Mbps B Allen-Bradley LocalENB	Ethernet Port on Comp	pactLogis5332E
	Receiver	 IP Address: Host Name: 	ame 192 . 168 . 1 . 25
Slot:	1 Align Revision: 20		

On the L35 side we now have this...



Now we will do the same for the L32E PLC, we will register the L35's information.



All tags which are used to communicate between PLCs must be created and stored in the Controller Tags group under Controller.



We will create a tag called "Signal_to_be_sent", it is a **Produced** type tag, this will cause the data type to become DINT. Now click the **Connection** button and confirm the entry for Max Consumers is set to 1.

Isage:	<normab-< th=""><th></th><th>3</th></normab-<>		3
Туре:	Produced	Conection	Q
Alias For:		-	4
Data Tupe:	DINT		

Connection	Status			
Max Consu	mers: 8			Advanced
Send Da	sta State Cha	nge Event	To Consume	r(s)

onnection Stat	us	
O Connection S	Status Included	
(i) Connect	tion Status is inclu	ded when the tags data type is a user defined data
Connect type who	tion Status is inclu ose first member is	ded when the tags data type is a user defined data CONNECTION STATUS.
Connect type who Data Type:	tion Status is inclu ose first member is DINT	ded when the tags data type is a user defined data CONNECTION STATUS

Now we create a simple program with the contact being a local input and the coil being on the other plc. But first we must specify which bit inside the data type DINT we wish to send. We can only send 1 bit.

	e e	PB1 <local:11.data.0></local:11.data.0>	Signal_to	_be_s	Sent	•		ń.		
0	e		V. EnterNa	na Alac			show	All Tags		•
			Name					Data Type	Description	-
(End)		j ⊞ Local j ⊞ Local j ⊞ Local j ⊞ Local P81 PL1	11:1 13:0 13:1 13:0				AB:1769_DI1 AB:1769_D0 AB:1769_D0 AB:1769_D0 B00L B00L	549. 1499 1499	10	
			* Signa	to be	Sent		-	DINT		1
			R	1 2	3 4	5	6	7		Ц
			- 64 1	Ised: N	P	13	14	15		-
			16 0	INT Use	d: Y*	21	22	23		
			24 2	5 26	27 28	29	30	31		

Once we select the bit we see it represented in the tag name above the coil.

0	PB1 <local:1:i.data.0></local:1:i.data.0>	Signal to be Sent 0
(End)		

Above is the Producer side.

On the consumer (receiver) side we will set up a similar arrangement, but the contactor will be a bit we send from L35 (this is likely the reason we had to select a single bit above). The coil will be a local physical output. Other data types can likely receive more than on bit. Under Controller Tags create a new tag called Signal_Received of type Consumed then click Connection and select the Producer item "Sender_Controller" and then enter the tag name of the tag sending the data on the Sender side.

Producer: Sender_Controller	
Remote Data: Signal_to_be_Sent	
(Tag Name or Instance Number)	
RPI: 20.0 👘 ms	
Use Unicast Connection over EtherNet/IP	

lame:	Signal_Received		Croste -
Description			Cancel
			пер
Usage:	cnormab	Ψ	
Туре:	Consumed • Co	nnection	
Alias For:		-	
Data Type:	DINT		
Scoper	D Tank_Program	-	
o cope.			
External Access:	Read/Write	•	

Make sure you specify the proper bit on the contactor tag name.

	Signal_Received PL2 <local:2:0.data.1></local:2:0.data.1>	
	V. EnterNane Filter Show: All Tags	•
	Name II Data Type Description	
	AB:1769_D0	
F	AB:1769_D0	
	AB:1769_D0	
	AB:1769_F4	2
	AB:1769_IF4:	1
	PL2 BOOL	
	Signa, Received DINT	
	Q 1 2 3 4 5 6 7	
	4 Used: N 2 13 14 15	2
	16 DINT Used: Y 10 21 22 23	
	24 25 26 27 28 29 30 31	



Now download each program to its respective controller. Put the controllers in remote run. Run the test cases.



Use a message command to send data of larger types. Data going the other way works the same.

How to set up a Producer/Consumer Message Exchange (X)

How to set up a message instruction on a ControlLogix platform? The machine we are working on is the Consumer. The second machine is referred to as Produce in the hardware tree.



Message instructions must have a name, the example above is named Read_Total. Keep in mind this name is not a tag, it, the name, does not transmit or receive data. Now click the eclipse to bring up the configuration dialog box.

Configuration Tab

Message Type:	CIP Data Table Read		<u>*</u>	
Source Element:	Counter_1.ACC			
Number Of Elements:	1 -			
Destination Element:	Total_ACC_Count	-		New Tag
			-	
) Enable 🔾 Enable	sWaiting ◯ Start	Done	Done Length:	1

Message Type: tells the application what type of equipment you are connecting to, offers generic as well.

Source Element: tag name on the other machine you wish to link to. You can include the dot attributes as well, for ex. .ACC.

Number of Elements: size of the data table.

Destination Element: tag name of destination tag (on same PC).

Red is the local tag which will receive the data acquired from the other computer on the network.

Blue is the tag on the other networked computer that we will read, we will transfer its data from the other computer to our local computer and the tag Total_ACC_Count will receive that data.

Communications Tab

Producer PLC			Browse
Communication Metho CIP C DH+ CIP With Source ID	d Shannet Source Link, 🚺 🗧	Destination I	ink: 0 🖆 lode 0 🖆 (Octal
Connected	Cache I	Connections 🔶	

Path: brings up the network tree so you can select the other hardware. In this case we are selecting the **Producer** PLC.



<u>Tag Tab</u>

lessage Con	iguration - Read_1	otal			x
Configuration	Communication	lag			
Name:	Read_Total				
Description	M: rec Cou	SG instruction, eiving total from inter in Producer	8		
Type:	Base		<u>×</u>		
Data Type: Scope:	MESSAGE				
🔾 Enable	O Enable Waiting	Start	🔵 Done	Done Length: 1	
 Error Cox Error Path: Error Text: 	Extend	ed Error Code:		Timed Out •	
		OK	Cancel	Apply	Help

Name: the name given to the IO block. This is not the data tag!



In this example our MSG FB will retrieve the data on the other machine

With the other machine set up appropriately (and with a tag named Counter_1.ACC, the data will be extracted, moved into Total_ACC_Count, and the transferred to TEMP.

Code from Producer computer:



onfiguration Communication	n Tag
Path: Producer_PLC	Browse
Producer_PLC	
Communication Method — C DIP C DH+ Cher	nnel 🗾 Destination Link. 🛛 🛨
C CIP With Sour	rce Link. 🛛 🛨 Destination Node 🖡 🛱 (Oct
Connected	Cache Connections
Enable 🔾 Enable Waiti	ing 🔾 Start 🔹 Done Done Length: 1
Enable O Enable Walti Error Code: Es	ing ◯ Start ● Done Done Length: 1 xtended Error Code: Timed Out ◆
Enable O Enable Waiti Error Code: Es or Path;	ing ◯ Start ● Done Done Length: 1 stended Error Code: ☐ Timed Out ◆
Enable O Enable Waiti Error Code: Es or Path: or Text: Error m	ing Start Done Done Length: 1 Intended Error Code: Timed Out • Thessages will appear in this area.