

Configure Anybus Communicator EtherNet/IP Adapter with RSLogix 5000









More info about the network and products

For the latest manuals, EDS-files, etc., see www.anybus.com

For more information concerning the EtherNet/IP network, see the Open EtherNet/IP Vendor Organization's web at www.odva.org

For information on the PLC, see the Rockwell Automation web at www.automation.rockwell.com

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Applicable Anybus products

Description	Name / Type
Anybus Communicator	EtherNet/IP

1.Requirements

Description	Name / Type	Version
Anybus Communicator	RS-232/422/485	
Rockwell PLC	ControlLogix5000	n.a.
PLC software	RSLogix 5000	21.0.0
IPconfig tool	IPconfig	3.0.1.5
Communicator User Manual	Anybus Communicator for Ethernet, User Manual	4.00
Power supply 24VDC	n.a.	n.a
Configuration cables	n.a.	n.a.
Anybus Configuration Manager		4.3.1.1



2. Solution overview

This application note describes how to configure an Anybus Communicator EtherNet/IP adapter module with a Rockwell PLC using RSLogix 5000. An overview of the system described in this document is provided below. There may be other nodes attached to the network.

The configuration is described in two steps.

- 1. The PLC and network configurations see section 4.1.
- 2. Configuration of the IP settings and the I/O data of the Communicator see section 3

The configuration is described step-by-step. The reader is assumed to be familiar with industrial communication, EtherNet/IP networks and the Anybus Communicator.



Figure 1 Hardware connection overview.



3. Anybus configuration

3.1. IP settings

The IP settings for the Communicator can be configured by various methods, for example by using the IP config tool as described below, or directly in the communicator configuration software.

IPconfig							
			[I	[=	
IP A	SN	GW	DHCP	Vers	Туре	MAC	
192.168.0.21	255.255.255	0.0.0.0	Off	2.07.1	ABS-EIP	00-30-11-06-3D-A6	
192.168.0.25	255.255.255	0.0.0.0	Off	1.07.3	Anybus X-gateway Modbus	00-30-11-05-95-C1	
192.168.0.75	255.255.255	0.0.0.0	Off	1.08.2	Communicator CAN	00-30-11-05-F3-3E	
192.168.0.111	255.255.255	0.0.0.0	Off	3.01.1	Anybus Communicator - Slave	00-30-11-0D-42-C7	
I							
					Settings	Scan	Exit

Figure 2 The IPconfig tool.

Start the program and the main window will appear. The program scans the network for the Communicator Ethernet module. The settings can be configured manually, or the DHCP function can be used which is the default for the Communicator Ethernet module. To change the settings manually, double-click on the module and enter the IP settings, as in the example below.

Configure: 00-30-	11-0B-BB-E8	X
- Ethernet configuration	on	
IP address:	192 . 168 . 0 . 111	DHCP
Subnet mask:	255 . 255 . 225 . 0	C On
Default gateway:	0.0.0.0	(• Uff
Primary DNS:	0.0.0.0	
Secondary DNS:	0.0.0.0	
Hostname:		
Password:		Change password
New password:		
		Set Cancel

Figure 3 Configuring the IP settings.



The PLC must later be configured with the same I/O size and IP settings as the Communicator.

Note: For the PLC I/O size, see the Subnet Monitor in ACM Communicator, as in the example below.

Anybus Configuration Manager - Communicator RS232/422/485 - Untit	ied 📃 🗖 🗙
File Subnetwork Tools View Help	
🗅 🚅 🖬 📥 🖮 🛛 🌡 🖻 🛍 🗙 🥍 🖉 🧳 🍯 💷 🖉	۲۵ م ۲۵
Communicator RS232/422/485 - Generic Data	Mode - Untitled
Communicator RS232/422/485 - Generic Data Devices: Communicator RS232/422/485 Communicator RS232/422/4	Mode - Untitled Configuration: Alphabetic Categorized Communication Bitrate (bits/s) 9600 Data bits 8 Parity None rk Monitor ns select All S (512) Out Area 1 bytes (512) 0200
0010 0020 0030	0210 0220 0230 0230
	0250
Subnetwork	2014-09-29 15:41 Config Line 🙌



4.EtherNet/IP configuration

The RSLogix 5000 tool is used to configure the PLC and the EtherNet/IP network. The PLC must be configured first, followed by the EtherNet/IP network. Start the RSLogix 5000 program and follow the steps below.

4.1. PLC configuration

Use an existing project or create a new one. To create a new configuration, open the **File** menu and select **New**. In the dialog that appears, select the type of PLC, in this case 1756-L71 (see e.g. the product label). Enter a name for the controller and then click **Next**.

ổ New Project		<u>? ×</u>
Logix	Search	×
Name:	CLOGIX5000	
Location:	C:\Users\Admin\Documents\Studio 5000\Projects	Browse
	Cancel Back Next	Finish

Figure 4 Adding the PLC to the configuration.

In the next dialog, select the chassis type and slot number (see e.g. the product label). To accept the settings, click **Finish**.

💰 New Project		? ×
Project Configu clogix5000 (v21, 1	Jration 756-1.71 ControlLogix® 5570 Controller)	
Chassis:	1756-A4 4-Slot ControlLogix Chassis	
Slot:	0 💌	
Security Authority:	No Protection	
	Use only the selected Security Authority for authentication and authorization	
Description:		
Enable redunda		
		_
	Cancel Back Next	Finish

Figure 5 Selecting the chassis type and slot.



Now add the Ethernet I/O module, by right-clicking on the I/O configuration directory in the navigation list to the left, as shown below.

@ L	ogix	Designe	r - CLLOGIX	5000 i	n CLOGIX50	00.ACD	[1756-L71	1 21.1	1]*			
File	Edit	View	Search Logi	ic Cor	nmunications	Tools	Window H	Help				
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Offli	ine		🗓 🗸 🗐 RU	N		- A - I	Path: <r< th=""><th>none></th><th></th><th></th><th></th><th></th></r<>	none>				
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Red			rá I No			۵		Favor	ites 🖌	Add-Or	n 🖌 Sar	fety 👗
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	ė.(🗎 I/O C	onfiguration									
		ė – į	756 Backplani	1	New Module							
			g [0] 1756-c.		Discover Mo	dules						
				B	Paste		Ctrl+V					
					Properties		Alt+Ente	:r				
					Print			•				

Figure 6 Adding the Ethernet module.

Click on **New module** and select the required Ethernet module, which in this case is the Ethernet Bridge 1756-EN2T. Click **Create**. This is the scanner module in the PLC.

	s search realition would be	ура	Clear Fil	ters			Hide Filters	*
	Module Typ	e Category Filters	•	v	M	odule Type Vendor	Filters	
	Motion				Allen-Bradley			
	Other			\checkmark	Advanced Micro	Controls Inc. (AMC	3)	
	Programmable Logic Conti	roller		\checkmark	Hardy Instrumen	ts, Inc.		
	Specialty		_	\checkmark	Molex Incorporal	ed		_
			`		Online Develope	sant lina (Automatia	n1/skus) []	Ě
<u> </u>				•				_
-	Catalog Number	Description				Vendor	Category	
	1756-DNB	1756 DeviceNet So	canner			Allen-Bradley	Communication	_
	1756-EN2F	1756 10/100 Mbps	Ethernet Bridge	, Fibe	r Media	Allen-Bradley	Communication	
	1756-EN2F 1756-EN2T	1756 10/100 Mbps 1756 10/100 Mbps	Ethernet Bridge Ethernet Bridge	, Fibe , Twi	r Media sted-Pair Media	Allen-Bradley Allen-Bradley	Communication Communication	
	1756-EN2F 1756-EN2T 1756-EN2TR	1756 10/100 Mbps 1756 10/100 Mbps 1756 10/100 Mbps	Ethernet Bridge Ethernet Bridge Ethernet Bridge	, Fibe , Twis , 2-Po	r Media sted-Pair Media ort, Twisted-P	Allen-Bradley Allen-Bradley Allen-Bradley	Communication Communication Communication	
	1756-EN2F 1756-EN2T 1756-EN2TR 1756-EN2TSC	1756 10/100 Mbps 1756 10/100 Mbps 1756 10/100 Mbps 1756 10/100 Mbps 1756 10/100 Mbps	Ethernet Bridge Ethernet Bridge Ethernet Bridge Ethernet Bridge	, Fibe , Twi , 2-Po , Twi	r Media sted-Pair Media ort, Twisted-P sted-Pair Medi	Allen-Bradley Allen-Bradley Allen-Bradley Allen-Bradley	Communication Communication Communication Communication	
	1756-EN2F 1756-EN2T 1756-EN2TR 1756-EN2TSC 1756-EN2TSC 1756-EN3TR	1756 10/100 Mbps 1756 10/100 Mbps 1756 10/100 Mbps 1756 10/100 Mbps 1756 10/100 Mbps	Ethernet Bridge Ethernet Bridge Ethernet Bridge Ethernet Bridge Ethernet Bridge	, Fibe , Twi , 2-Po , Twi , 2-Po	r Media sted-Pair Media ort, Twisted-P sted-Pair Medi ort, Twisted-P	Allen-Bradley Allen-Bradley Allen-Bradley Allen-Bradley Allen-Bradley	Communication Communication Communication Communication Communication	
	1756-EN2F 1756-EN2T 1756-EN2TR 1756-EN2TSC 1756-EN3TR 1756-ENBT	1756 10/100 Mbps 1756 10/100 Mbps 1756 10/100 Mbps 1756 10/100 Mbps 1756 10/100 Mbps 1756 10/100 Mbps 1756 10/100 Mbps	Ethernet Bridge Ethernet Bridge Ethernet Bridge Ethernet Bridge Ethernet Bridge Ethernet Bridge	, Fibe , Twis , 2-Po , Twis , 2-Po , Twis	r Media sted-Pair Media ort, Twisted-P sted-Pair Medi ort, Twisted-P sted-Pair Media	Allen-Bradley Allen-Bradley Allen-Bradley Allen-Bradley Allen-Bradley Allen-Bradley	Communication Communication Communication Communication Communication Communication	

Figure 7 Selecting the type of module.



Enter the required settings and click **OK**.

lendor. Parent	1756-EN2T 1756 10/100 Mbpc Ethernet Brid Alten Bradley Local	pe, Twetted-Par Media
Varier.	Ethernet Endor	C Phivate Network: 192.168.1
Description:		7 IP Addens 192 . 168 . 0 . 110
Revision Electronic K Rack Conne Time Sync I	5.1 syng Diable Keying cton None Jonnection: None	

Figure 8 Configuring the settings for the Ethernet module.

4.2. Select Install Method

The Communicator can be added to the network in 2 different ways, depending on the version of the RSLogix 5000 software being used:

- By using an EDS file requires version 20.00 or later of RSLogix 5000. See section 4.3.
- By configuring a generic module for earlier versions of RSLogix5000. See section 4.4.

4.3. Add Communicator using an EDS file

The EDS-file is available at <u>www.anybus.com/support</u>, where the file can be located by entering the AB code for your product.

4.3.1. EtherNet/IP Network configuration

Add the Communicator module to the configuration in the PLC. Start by setting the program in "Offline" mode **①**. Then right-click on the EtherNet/IP bridge in the I/O configuration, and select "New Module" **②**.



Figure 9 Adding the Anybus module.



A dialog window will appear. In this dialog, select "Anybus Communicator Slave" and click Create.

Se	lect M	Mod	Je Type							
	Lata	l goi	Module Discovery Favori	tes						
	ŀ	Enta	Search Text for Module Ty	pø	Clear F	ilters			Hide Filters	*
	ŀ		Module Type Category Filters Communication Communications Adapter Controller		^		EANILIE C	Module Type Vendor Filters		
		M				님	FANUE Corpo	ration		
		R				H H	HMS Industria	l Networks AB		
		ً	Digital		Mettler-Toledo)			
		7	DDI to Ethoritict /ID		_ _ _	Ω.	Dark or U specifi	in Corneration		<u> </u>
	L	· ·				<u> </u>				
	Γ	•	Catalog Number	Description		Ven	dor	Category		
	ľ	- 0	05A_000C_0054	Anybus Communicator -	Slave	HMS	i Industrial	Communications Adapter		
	1	of 3	13 Module Types Found						Add to Fa	vorites
-										
	Г	Clo	ise on Create					Create	Close	Help
										/

Figure 10 Setting the module type.

-

Give the module a name and click **Change** in the module definition field to alter the input/output data sizes. See the image below.

Vendor:	HMS Industrial Networks AB	
Parent:	Ethernet_Bridge	
Name:	Communicator	Ethernet Address
Description:		C Private Network: 192.168.1.
		C Host Name:
Module Defi	nition	
Revision:	3.1	
Electronic K	eying: Compatible Module	
Connection	8: Exclusive Owner	

Figure 11 Change input/output sizes.



The "module definition" window will now appear, in which the size and data type for the input/output data of the Communicator should be set. This example uses Data-SINT, which will represent the data in the Communicator module as a field of 8-bit values. It is also possible to select Data-INT, which will represent the data as 16-bit values, or Data-DINT, which will represent it as 32-bit values.

The size of the input and output connections must correspond to the size configured for the Communicator module. Using Data-SINT or Data-DINT would mean re-calculating the size to match the data type, so if Data-SINT was twenty 8-bit values, then Data-INT would be ten 16-bit values and Data-DINT would be five 32-bit values. The example below only uses 2 x 8-bit input values and 1 x 8-bit output value.

Click OK.

General Conne Type: Vendor: Parent: Name: Description: Revision: Electronic Ke Connections:	ection Module Info Internet Protocol Port Configuratio Anybus Communicator - Slave HMS Industrial Networks AB Ethernet_Bidge Communicator	Ethemet Address C Private Network: 192.168.1. G IP Address: 192.168.0 111 C Host Name:	Module Definition X Revision: I Electronic Keying: Compatible Module Connections: V Name Size Exclusive Owmer Input: 2 Output: 1 SINT OK Cancel Help
itatus: Offline		OK Cancel Apply Help	OKCancel Help

Figure 12 Module definition.

Finally, the IP address configured for the module should be entered - 192.168.0.111 in this example. The IP address should be in the same range as the IP address for the PLC system.

Click **OK** once more to proceed.

In the controller tags for the PLC (to the left), the configured I/O data values for the implemented Communicator can be seen. Now proceed to section 4.5.

		- VE 99 4	sëvt language	-			
B. FRUN	Path AB_ETHIP\192168.0.110\Backglarv	N# - 80					
E DK	and the second second second						
E LO	4 H bi bi - +F +F - (2)	ROP -623					
arry 3.4	+ + + + Favorzes & Anton & Aliens	A TR & Tree Courter &	-				
- 1 X							
Control by CLI OCTISION	Scope [] CLL0GD/5000 _ Shove ^{Al} Tep						
Controller Tags	Name III	Value 🔹 🖡	ioro • Siyle	Data Type	Description	Constant	
Controller Fault Handler	- Convicator I	() [)	_005A.000C_005		F	
Power-Up Handler	-Communicator I.Connection	0	Decimal	BOOL			
- S Tasks	E-Communicator I Data	() (> Decimal	SINT[2]			
E-Op ManTesk	E Communicator I. D ata(0)	0	Decimal	SINT			
Program Tags	E Communicator I Data[1]	0	Decimal	SINT			
ManRoutine	- Communicator 0	[+++] [_005A-000C_005		F	
Unscheduled Programs / Phases	E Communicator 0. Data	[Decimal	SINT(1)			
Construction C							

Figure 13 Configured values.



4.4. Add Communicator to Network – Generic Module

4.4.1. EtherNet/IP Network configuration

Add the Communicator to the configuration in the PLC. Start by setting the program in "Offline" mode**O**. Right-click on the EtherNet/IP bridge in the I/O configuration, and select "New Module"**2**.



Figure 14 Adding the generic module.

A dialog window will now appear. Select "Generic Ethernet module" and click Create.

Catalog N	fodule Discovery Favo	ites				
generic	;	Clear	Filters]		Hide Filters 🕱
	Module Ty	pe Category Filters		М	odule Type Vendor	Filters 🔺
	Communication			Allen-Bradley		
🛛 🖸 🛛	Communications Adapter			Cognex Corpora	tion	_
Image: Contract of the second seco	Controller			Endress+Hause	r	
	Digital			FANUC Corpora	tion	_
	DD to Ethodal at //D	()	17	CAMUR Dahatia	Amoriaa	
Catalo	og Number	Description			Vendor	Category
ET	HERNET-BRIDGE	Generic EtherNet/IP CIP Bridge			Allen-Bradley	Communication
ET	HERNET-MODULE	Generic Ethernet Module			Allen-Bradley	Communication
I						
2 of 314	Module Types Found					Add to Favorites

Figure 15 Selecting the Generic Ethernet Module.



In the following dialog, RSLogix 5000 will request information regarding the communication to the Communicator. Firstly, enter a name for the Communicator ①. In the example below this is "Anybus". This name will create a tag in RSLogix 5000, which can be used to access the memory location in the PLC where the data for the Communicator will be stored. An optional description can also be added.

Module Properties Report: Ethernet_Bridge ((ETHERNET-MODULE 1.1)	×
Module Properties Report: Ethernet_Bridge (General Connection Module Info Type: ETHERNET-MODULE Generic Ethern Vendor: Allen-Bradley Parent: Ethernet_Bridge Name: Anybut Description: Comm Format: Data - SINT 2	ETHERNET-MODULE 1.1) net Module Connection Parameters Assembly Instance: Size: Input: 100 2 3 (8-bit) Output: 150 1 4 (8-bit) Configuration: 1 0 1 (8-bit)	×
IP Address: 192 . 160 . 50 . 111 Host Name:	Status Input:	
Status: Offline OK	Cancel Apply Help	

Figure 16 Configuring the module properties.

Now select the "Comm Format", which tells RSLogix5000 the format of the data². In this example, Data-SINT is selected, which will represent the data in the Communicator module as a field of 8-bit values. It is also possible to select Data-INT, which will represent the data as 16-bit values, or Data-DINT, which will represent it as 32-bit values.

The size of the input ③ connection and output ④ connection shall correspond to the size configured for the Communicator module, in this case 2 bytes in and one byte out.

Finally, the IP address **9** configured for the module should be entered, in this example is 192.168.0.111.

Click **OK** to proceed.



In the next dialog, enter a value for the time between each scan of the module. In this example, the interval is set to 50ms, to reduce the network load. Make sure that "Inhibit Module" is not checked. Click **OK**.

Module Properties Report: Ethernet_Bridge (ETHERNET-MODULE 1.1)							
General Connection* Module Info							
Requested Packet Interval (RPI): 50.0 = ms (1.0 - 3200.0 ms)							
Major Fault On Controller If Connection Fails While in Run Mode							
Use Unicast Connection over EtherNet/IP							
Module Fault							
Status: Offline OK Cancel Apply Help							

Figure 17 Configuring the scan interval.

The Communicator has now been added to the I/O configuration in RSLogix 5000. The main screen will look something like this:



Figure 18 The main screen showing the completed configuration.



4.5. Downloading the configuration to the PLC

First select the communication path, which can be done by opening the **Communications** menu and selecting the **Who Active** command. Select the desired communication path as seen below.



Figure 19 Configuring the communication path.



Select Go Online from the Communications menu.

Figure 20 Opening the online window.



In the new window that appears, select Download.



Figure 21 The download window.

A new window will then ask for confirmation to download the configuration. Select **Download** and the configuration will be downloaded to the PLC.

Connected To Go				
Options Gener	dies over Download	forestorestories i	1.01.54	×
Condition: The Connected Cor Cor Cor See Offline Project: Cor File Ser Set	Â	Download offline project 'CLLOGIX5000' to the controller. Image: Download Project Documentation and Extended F Connected Controller: Name: CLLOGIX5000 Type: 1756-171/8 Controll.ogix@ 5570 Co Path: AB_ETHP(192.168.0.1101(Backplant Serial Number: Security: No Protection Image: The Controller is in Remote Run mode. The mode will b Remote Program prior to download. DANGER: Unexpected hazardous motion of machinery Some devices maintain independent configuration sett not loaded to the device during the download of the c Verify these devices (drives, network devices, 3rd par have been properly loaded before placing the controll mode. Pailure to load proper configuration could result in miss and unexpected equipment operation. Download Cancel Download Cancel	roperties htroller 10 a changed to may occur. ings that are ontroller. ty products) ari into run aligned data	
		Upload Download Select File	Cance	l Help

Figure 22 Downloading the configuration to the PLC.

If there are any errors, a warning triangle will be shown on the Communicator in the I/O configuration listing. Double-click the module to view the reported error(s).