Application Note Rockwell Automation PLC / PAC and RSLinx / RSLogix

This document guides you through the setup of proprietary vendor specific software installed on you PC. Your supervisor may provide you with additional or alternative instructions.

The document consists of standard instructions that may not fit your particular solution. Please visit our support website for latest revisions of documentation and firmware:

http://www.secomea.com

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Prerequisites for This Guide

The following guide will assist you to setup a remote and online connection to the Allen-Bradley and Rockwell equipment placed on the customer site using your RSLinx/RSLogix programming software installed on your PC.

Prerequisites for this guide are:

- You have an operational LinkManager installed on your PC with a LinkManager certificate that allows you to connect to the SiteManager agents.
- You have the Rockwell Automation PLC / PAC and RSLinx/RSLogix software installed.
- You have the Allen-Bradley or Rockwell device agent installed and configured on the SiteManager at the remote site, and there is access between the SiteManager and the PLC. (A Serial attached PLC must be configured with agent device type Serial or Ethernet+Serial on the SiteManager. A network attached PLC must be configured with agent device type Ethernet or Ethernet+Serial on the SiteManager).

If this is not the case, we kindly ask you to contact the person / department responsible within your own company or at the company responsible hereof.

System Overview

The communication path is as follows:

RSLinx/RSLogix \rightarrow LinkManager \rightarrow GateManager \rightarrow SiteManager \rightarrow PLC.

This guide will elaborate on the components marked with **bold**.

The following system overview depicts a SiteManager 3134 at the customer location:





1. Ethernet Connection

The following describes how to connect the RSLinx/RSLogix to a Rockwell PLC that is attached to a SiteManager via Ethernet.

1. Locate the agent that represents you TCPI/IP attached PLC



2. You will not see any activity on it yet. This only starts when you connect to the PLC via your project (Make a note of the IP address of the PLC):

Lin sect	Kl	Manager							1	1
		Dis	connect Logout S	ervices	Sr	hiffer				
		Ro	ckwell Micrologic 1100* (SiteM	anager) (172.24.	2.120	Dee			
		Agent	Address	Status	ok	fail	tx	rx	tx	rx
@*	•	Rockwell Micrologic 1100*	172.24.2.120:80,2222,44818	IDLE	0	0	0	0	0	0
			:44818 (udp)	IDLE	0	0	0	0	0	0

3. Start RSLinx and select Communications





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4. Select Configure Drivers and select Ethernet devices:



5. Specify the Target PLC IP address, and click OK

RSLinx Classic Lite				
ile View Communications	onfigure d	Iriver: Rockwell	? 🛛	
	Station Map	ping		
Configure D	Station	Host Name	Add New	? 🗙
- Available D	0	172.24.2.120		Close
Ethernet	63	Driver	Delete	Help
- Configured				
Name a				
1722412				Configure
AB_DF1				Startup
AB_ETH AB_ETH				
AB_ETH				Start
Ethernet		TRIAL VERSION		Stop
Ethernet Bocwell				Delata
				Delete
-				
		OK Cancel Apply	Help	
Help, press E1				11/08/09 02:48 PM

6. The PLC should be found on the specified IP in RSLinx

Note: If the device appear with a yellow question mark, you may want to try selecting the **Ethernet/IP driver** instead. This driver works over UDP, which is also supported by this solution. LinkManager will, however, not be able to propagate a UDP broadcast, so the device may not appear in RSLinx, but you will still be able to connect from RSLogix to the IP address of the PLC.

7. Start up RSLogix and choose your project. Note that the IP address in the project must correspond to the PLC.



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8. Select Remote Run and you should now become online on the PLC:



9. You can now observe data traffic in the LinkManager:

Lir	nkl bme	Manager							1	1
		Dis ROOT.de	connect Logout Semo.Toplevel.EMEA.Denmark.C	ervices ustomer <mark>F</mark>	.Produe	niffer	nt 1			
_		Ro	ckwell Micrologic 1100* (SiteMa	anager) -	172.24	2.120	1990 - SA			
		Agent	Address	Status	Con	nects	Pac	kets	By	tes
		rigene		Status	ok	fail	tx	rx	tx	rx
'⊕*	•	Rockwell Micrologic 1100*	172.24.2.120:80,2222,44818	IDLE	0	0	62	62	1,942	3,586
			:44818 (udp)	IDLE	0	0	0	0	0	0



2. Serial Connection

The following describes how to connect RSLinx to a Rockwell PLC that is attached to a SiteManager via a Serial cable.

1. Locate the agent that represents you serial attached PLC

🕁 LinkManager Console - Peter Koldig Hansen @ Li	🛐 🔻 🗟 👻 🖃 🖶 👻 Page 🔻 Safety 👻 Tools 👻 🔞
LinkManager secomea	ch
Logout Services	Sniffer Refresh
ROOT.demo.Toplevel.EMEA.Denn	nark.CustomerF.Production Plant 2
Customer demo E Customer E Customer E MEA CustomerF CustomerF Production Plant 1 E CustomerF Customer	Show all
Expand all Show all	

2. When connecting the agent, you should see some activity in the tray icon area, which is the auto configuring of a virtual serial port. If your SiteManager, and PLC is correctly attached, you should also see the status of the agent become OK, and a few bytes of traffic:

LinkMo secomea	anager								d
	RC	Disconnect Logou OT.demo.Toplevel.EMEA.	ut Ser Denmark.Cus	vices stomerF	Snif	fer ion Plant	2		
		Rockwell	Serial (SiteM	anager)					
	Acont	Address	Status	Con	nects	Pac	kets	By	tes
	Agent	Address	Status	ok	fail	tx	rx	tx	rx .
31	Rockwell Serial	172.24.2.1:23> 127.0	.0.1 IDLE	1	0	3	3	63	73

3. Now right click the LinkManager system tray Icon, and select **Status**. Make note of the Serial port that has been assigned (in this case COM5):





Right click the LinkManager system tray icon again, and select **Options**. Enter the number of the COM port you found under status. This will ensure that you will always get this port in the future (note that this feature only exist in Link-Manager version v6041_10185 and newer). Note that if you change the port you must stop and start the LinkManager.

Options	
COM port	Net Type C Bridged C NAT
ОК	Cancel

Note: You can also force another COM port (e.g. COM2). Just ensure in your Windows device manager, that the port is not conflicting with an existing COM port. See Appendix A for info on how to organize COM ports.

4. Open RSLinx and select **Communications** → **Configure drivers**:



5. Select the driver type **RS-232 DF1 devices**. Click on the **Add New...** button. (DF1 is the protocol that all Rockwell PLCs have by factory default):



RSLinx Classic Li	te - [RSWho - 1]	106	
음 File View Commu 윤L 역 周니	nicadoris scadori DDEpore Security Mindow	пар	
Autobrows Config	ure Drivers		? 🛛
已 Li Avail	able Driver Types: -232 DF1 devices	Add New	Close Help
N.	gured Drivers: ame and Description	Status	Configure
			Startup
			Start
			Stop
			Delete

6. RSLinx will ask for a name, you can leave it at the default name AB_DF1-1:

Autobrows	onfigure Drivers	? 🗙
● <mark>勇</mark> Workst ● 器 Lir	Available Driver Types: RS-232 DF1 devices Add New	Close Help
	Name and Description Add New RSLinx Classic Driver Image: Choose a name for the new driver. OK Choose a name for the new driver. OK (15 characters maximum) Cancel	Configure Startup Start Stop

7. Set the parameters to communicate with the PLC and select **OK**. The COM port should match the one defined previously for the LinkManager:



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🍓 RSLinx Classic Lite - [RS	Who - 1]		_ 🗆 🗙
Re View Communications	Station DDE/OPC Security Window Help		- 8 ×
유 않 🙆	Configure RS-232 DF1 Devices	_	
ability ability Configure Drive Image: State of the state of th	Device Name: AB_DF1-1 Comm Port COM5 Baud Rate: 38400 Parity: None Parity: None Stop Bits: 1 Protocot: Full Duplex Auto-Configure	Close Help startup Start Stop Delete	
For Help, press F1	OK Cancel Delete Help	10/13/10	12:21 PM

8. Observe that the status of the driver is "Running". This means the PC has opened the COM port and is trying to communicate with the configured parameters. Select **Close**.

Autobrows Co	onfigure Drivers		2 🛛
IJ Workst 표 品 Lir 표 品 AB	Available Driver Types: RS-232 DF1 devices	Add New	Close Help
	Name and Description AB_DF1-1 DH485 Sta: 0 CDM5: RUNNING	Status Running	Configure Startup Start Stop Delete

 Before opening RSLogix, you can check if you can communicate with the PLC with the configured parameters. Open **RSWho** inside RSLinx, and select the driver (AB_DF1-1). If the PLC is represented by a PLC icon the PC is communicating with the PLC through the serial driver:



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10. Now open RSLogix and select **Comms** → **System Comms...**. This is the menu that contains the features "Go Online", "Upload" and "Download".





11. Select the PLC and select the Online button

📲 RSLogix 500	
File View Comms Tools Window Help	
	※ ※ 第 2 8 A Q □ 0 → + · → ·
OFFLINE Ivo Faces No Edds Increase Dirabilied Driver: AB DF1:1 Node: 1d	그 3 E 3 E 〈> <> <> <> <> <> <> <> <> <> <> <> <> <>
Communications	
Autobrowse Refresh	Browsing - node 0 found OK
□ - 馬 Workstation, ALBERTOVM ■ - 器 Linx Gateways, Ethernet	Address Device Type Online Name Cancel
AB_DF1-1, DH-485	Morstation Driecons Help
IIII 00, Workstation, DF1-COM5	Online
	Upload
- Current Selection	Driver AD DE1 1 Reply Timeout:
Node: T Decimal (=1 Octal)	Type: SLC500
For Help, press F1	0:0000 2:00 READ

12. You are now online with the PLC

RSLogix 500 - ML1400		
We Edit View Search Comms Tools Window He	¢	
🗅 🥩 🖬 🚳 👗 🗞 🖻 \cdots 🕞 B250:1.	l/15 ・ あおう は F え ミ ロ � ・ + - + -	
REMOTE FLOR: 1 No Forces 1 Edit: Active 4 Forces: Enabled 4 Node: 1d		
🖥 ML 1400 🔹 🗆 🔀 👹 LAD 7	MAIN_PRDG	
🗏 🔄 Project 📃 🔥 🛴 🗐	N 0 X 2 3	
3 🔄 Help		
🔒 🧰 Controller	TIMER	TIMER
Controller Properties	140	Timet On Dalar
Control Files	DN	Timer T40
UI to deate action		Time Base 0.001
in the Consideration		Pariet 2000<
in the Comparison		Access 3004
B sysa		
B SYS1.		TIMER OUTFUT 1
ALLAD 2 - MAN PROD		ORT 000
🖓 🦳 Data Files		Some A T40 ACC 0
Cross Reference		306<
00 - OUTFUT		Source B 1000
🖸 II - NFUT		1000<
S2 · STATUS		
B3-BNARY		
- T4 - TMER (001		<end></end>
CS - COUNTER		
RS - CONTROL		
N7 - NTEGER		
PB-FLOAT		
🗄 🧰 Data Logging		
Conguration		
Con Distriction		
Hur Congunition Files		
X TEL	All PROS /	2

13. You can now observe data traffic in the LinkManager:

inkM ecomea	anager								d
	RC	Disconnect Logout	nmar <mark>k.Cu</mark> s	vices stomerF	Sn Produc	iffer	nt 2		
		Rockwell Se	erial (SiteM	anager)					
	Agent	Address	Status	Con	nects fail	Pa	rx	tx	Bytes rx
1	Rockwell Serial	172.24.2.1:23> 127.0.0.	1 IDLE	1	0	328	410	9,368	17,927



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3. Ethernet connection via WindowsXP under VMWare

You can run the RSLinx/RSLogix software inside a VMWare engine, to a Allen-Bradley / Rockwell PLC that is Ethernet attached to a SiteManager.

Note: LinkManager must be installed on the hosting machine,- and NOT inside the VMWare Windows XP image. LinkManager cannot run inside a VMWare virtual machine.

The following illustrates VMWare Player, which can be downloaded from http://www.vmware.com/support/product-support/player/

10. Locate your WindowsXP that has RSLinx/RSLogix installed, and enter **Edit** virtual machine settings.

🛞 VMware Player File + VM + Help +	_ ×
Home	
	Windows XP Professional 2 State: Powered Off DS: Windows XP Professional Version: Workstation 5.x virtual machine RAM: 1024 MB
	Play virtual machine
	ل س ware

11. Make sure the Network Adapter settings is set to NAT:



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Device	Summary	Device status
Memory Memory Frocessors Hard Disk (IDE) CD/DVD (IDE) Floppy Network Adapter USB Controller Serial Port	1024 MB 1 8 GB (Preallocated) Auto detect Using drive A: NAT Present Using port COM6	Connected ✓ Connect at power on Network connection O Bridged: Connected directly to the physical network Replicate physical network connection state ③ NAT: Used to share the host's IP address O Host-only: A private network shared with the host

- 12. Start the VMWare engine and on the host PC start LinkManager.
- 13. Follow the procedure of section **2 TCP Ethernet Access** to get access to the PLC via LinkManager

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4. Serial connection via WindowsXP under VMWare

You can run the RSLinx/RSLogix software inside a VMWare engine, to a Allen-Bradley / Rockwell PLC that is Serial attached to a SiteManager.

Note: LinkManager must be installed on the hosting machine - and NOT inside the VMWare Windows XP image. LinkManager cannot run inside a VMWare virtual machine.

The following illustrates VMWare Player, which can be downloaded free of charge from http://www.vmware.com/support/product-support/player/

1. Locate your WindowsXP that has RSLinx/RSLogix installed, and enter Edit virtual machine settings.

B VMware Player File + VM + Help +	-
Home	
Windows XP Professional 2	
N N	
	p
	Windows XP Professional 2
	State: Powered Off
	OS: Windows XP Professional
	Version: Workstation 5.x virtual machine
	RAM: 1024 MB
	Play virtual machine
	Edit virtual machine settings
	Dumware

2. Make sure there is a Serial Port available in the hardware list. If not, you should add it like this:



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Device S Memory 1 Processors 1 Hard Disk (IDE) 8	Summ 1024 1 8 GB	Add Hardware Wizard Hardware Type What type of hardware do you want to install?			
COJUND (JDE) Floppy Network Adapter USB Controller	Auto – Using NAT Prese	Hardware Hard Disk CD/DVD Drive Floppy Drive Hoppy Drive Sound Card Parallel Port Serial Port Serial Port Serial Port	Explanation Add a serial port.		
		Add Remove	< Back Next > Cancel		

Note: The PC you are installing on must have a physical or virtual COM port defined in order for VMWare to allow adding a Serial Port. You can verify if you have a Serial port on your PC, under Windows Control Panel \rightarrow System \rightarrow Hardware \rightarrow Device Manager \rightarrow Ports (COM & LPT). Alternatively you can start LinkManager and connect to the serial Agent, which will create a COM port.

On Windows 7 it is possible to add a COM port under the device manager even though the PC does not have a physical COM port available.



3. Check that it is set to use the physical serial port on the host.



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- 4. Click **Next**. If you have not started the LinkManager, you will probably only have COM1 and maybe COM2 available. This does not matter for now, as you can change that when the VMWare image is running.
- 5. Press **OK** twice, and select the Select **Finish** and **OK**, Start the VMWare WindowsXP image, and start the RSLinx/RSLogix software.
- 6. Follow the procedure described in section **3 Serial Access** on getting access to the PLC via LinkManager.



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Appendix A, Organizing COM ports in Windows

Clean up Windows Registry for redundant COM ports:

You may want to use a lower COM port number. In case your PC assigns a COM port of e.g. 13, it may be due to previous installs of virtual COM ports from in relation to installation of other programs.

You can clean your PC for redundant COM ports in Windows registry:

- 1. Open regedit (Start \rightarrow run \rightarrow Regedit)
- 2. Navigate to:

HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\COM Name arbiter

- 3. In the ComDB set all values to 00
- 4. Restart your PC

Enable LinkManager to use COM1:

If you prefer the COM port to be COM1:

Even if no COM ports are installed on the PC, Windows will never assign a COM port lower than COM3 to the LinkManager. You therefore have to do the following to force LinkManager to use COM1:

- Open Windows Control Panel → System → Hardware → Device Manager → Ports (COM & LPT).
- 2. If there already are physical COM ports listed, you must re-assign the port numbers to free up COM1.

Right click a COM port and select Properties \rightarrow Port Settings \rightarrow advanced

- 3. Change the COM port number in the drop down list.
- 4. Restart your PC.
- 5. Right click the LinkManager system tray icon and select Options.
- 6. Enter 1 in the COM port field.

Options	
COM port	Net Type C Bridged © NAT
ОК	Cancel

7. Stop and Start the LinkManager and start the Serial agent.



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Notices

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