Application Note Schneider PLC and Unity Pro XL

This document guides you through the setup of proprietary vendor specific software installed on your 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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Table of Contents

Pre	requisites for This Guide	3
1.	Ethernet Connection	4
2.	USB Connection	8
3.	Ethernet connection via Windows XP under VMWare	14
4.	USB connection via Windows XP under VMWare	16
Not	ices	18



Page 2 of 18

Prerequisites for This Guide

The following guide will assist you to setup a remote and online connection to the Schneider equipment placed on the customer site using the Unity Pro XL software.

This guide concentrates on the Schneider Electric Modicon M340, but may also work with other Ethernet and/or USB enabled Schneider PLCs and software packages.

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 Schneider PLC and the Unity Pro XL software installed.
- You have the Schneider device agent installed and configured on the SiteManager at the remote site, and there is access between the SiteManager and the PLC by one of the following methods:
 - A network attached PLC must be configured with agent device type **Schneider Electric / Ethernet PLC** on the SiteManager.
 - A USB attached PLC must be configured with agent device type Schneider Electric / USB PLC on the SiteManager. Note that this connection type requires a SiteManager model with USB support and minimum SiteManager and LinkManager version 12155.

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:

Unity Pro XL \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 3229 at the customer location:



USB supported Schneider devices

At the time of writing this guide, the agent **Schneider electric / USB Adapter** covers the following configurations:

- Telemecanique Modicon M340
- TSX C USB 485 (USB-RS485 Adapter for Inverter, Brushless)
- Telemecanique XBT ZG935 (Adapter/Cable for XBTGT HMIs)



Page 3 of 18

Telemecanique Modicon TM238/258. Since these models require the SoMachine software for programming, they are in principle out of scope for this document although the connection method is the same. (refer to the separate guide "Schneider PLC and SoMachine" for these PLCs)

This guide concentrates on the Schneider Electric Modicon M340.

1. Ethernet Connection

The following describes how to connect the Unity Pro XL to a Modicon M340 PLC that is attached to a SiteManager via Ethernet.

Note: A network attached PLC must be configured with agent device type **Schneider electric / Ethernet PLC** on the SiteManager.

1. Login with your LinkManager and locate the agent that represents your TCPI/IP attached PLC. Click the text (that turns orange at mouse over) to connect to the PLC.

LinkManager secimea	
Logout Services	Sniffer Refresh
Peter Hansen @ Accounts: ROOT.der	no.Toplevel.EMEA.Ireland.Customer A
	-∰ ⁷ B&R X20* (SiteManager3034) - 172.24.2.200 €
Accounts	-@* beckhoff* (SiteManager3034) - 172.24.2.199
EMEA Ireland	- 👹 * Omron PLC* (SiteManager3034) - 172.24.2.122
Customer A	
Customer B	- 😳 🖌 ans1200* (Sit Trnager3034) - 172.24.2.205
i → test	TrendNetWEB (Site) 6ger3034) - 172.24.2.181
Show all Expand all Refresh	√*-⊞- SM1029_D0 <connect all=""></connect>
	Show all Expand all Refresh

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):

Li	LinkManager secimea										
Disconnect Logout Services Sniffer											
ROOT.demo.Toplevel.EMEA.Ireland.Customer A											
Schneider (SiteManager3034) - 172.24.2.211											
Agent Add		Agent	Address	Statue	Connects		Packets		Bytes		
		, address	Status	ok	fail	tx	rx -	tx	rx 🛛		
	`@*	8	Schneider	172.24.2.211:80,502,6000-6001,13777	IDLE	0	0	0	0	0	0

Hint: You are in princple now connected to the PLC, and you could make a ping to the PLC IP address.

- 3. Start the Unity Pro XL and communicate on the IP address as you would normally have done if you were sitting in the local network with the PLC. The following illustrates some basic screenshots:
- 4. Open your project in the Unity Pro XL, and select PLC → Select Address



Page 4 of 18

5. Ensure that your project is configured with the IP address that the LinkManager is connected to, by selecting the PLC

♦ Unity Pro XL : SECOMEA01	IX
File Edit View Services Tools Build PLC Debug Window Help	
゜ ☞ 묘 중 ℡ ※ € 📌 🤜 🔽 ♥ 🗣 🗵 ■ 盐 ◈ 🎬 🖽 📾 🖶 ¾ ⅔ 🎟 🗨	RUN
Project Browser	-1
Es Structural view	
Preiset Bus: 0 BMX P34 2020 02.00	
Set Address	
Simulator Bandwidth ■	
Address Address	
172.24.2.131 ▼ 👘 172.24.2.131 ▼ 👘 Test Connection	1
Merija Merija	1
	1
Communication Parameters 1 Communication Parameters 1 Cancel	1
Help	1
E Discrete	_
CANopen PLC bus	
×	_
∬ Import/export λ User errors λ Search/Replace /	
Ready HMI R/W mode OFFLINE TCPIP:172.24.2.131	//

6. At this point you can select **Test Connection**.

Se	t Address					? ×
	✓ PLC Address	UnityXL	Sim	ulator	×	Bandwidth
	Media TCPIP	•		cted to the cur	rently selected target.	ОК
	Communi	cation Para	meters	Comm	nunication Parameters	Cancel Help

Page 5 of 18

7. Or simply go online, by selecting **PLC** \rightarrow **Connect**

♦ Unity Pro XL : SECOMEA01	×
File Edit View Services Tools Build PLC Debug Window Help	
」	
Project Browser X Structural view Bus: BMX P34 2020 02.00	1
CPS 034 1 2 3 4 5 6 7 0 : BMX X8P 0 : BMX	
Hardware catalog Modicon M340 local drop Communication Communication Counting Discrete	
CANopen PLC bus	
Ready HMI R/W mode DIFFERENT RUN UPLOAD INFO OK TCPIP:172.24.2.131	

8. You can now also observe data traffic in the LinkManager:

Disconnect Logout Services Sniffer						
ROOT.demo.Toplevel.EMEA.Ireland.Customer A						
Schneider (SiteManager3034) - 172.24.2.211						
Agapt Address Status Connects Packets Bytes						
ngent nulless status ok fail tx rx tx rx						
Schneider 172.24.2.211:80,502,6000-6001,13777 UP:1 2 0 402 403 9,009 31,871						

9. You can also try to click the globe Icon.

LinkManager secimea							C			
Disconnect Logout Services Sniffer										
ROOT.demo.Toplevel.EMEA.Ireland.Customer A										
	Schneider (SiteManager3034) - 172.24.2.211									
Agent	Address	Ctature	Connects		Packets		By	tes		
Agent	Address	Status	ok	fail	tx	rx	tx	rx		
Schneider	172.24.2.211:80,502,6000-6001,13777	UP:1	2	0	402	403	9,009	31,871		



10. This will start your web browser for the PLC:





Page 7 of 18

2. USB Connection

In SiteManager firmware version 12035 in combination with LinkManager 12081, true USB support is introduced. The new LinkManager version will, when connecting to the agent, create a USB controller on the PC that will perform redirection to the USB port on the SiteManager.

This means that Schneider Unity Pro XL should be configured to use a USB connected device.

The following steps have been performed with Unity Pro XL V4.0 and USB drivers already installed on the PC.

1. Locate the Schneider USB agent and click on it to establish a connection to it:



2. First time the connection is opened, the "Found New Hardware" Wizard will pop up. Select to not search for drivers on Windows Update site.

Found New Hardware Wizard						
	Welcome to the Found New Hardware Wizard					
	Windows will search for current and updated software by looking on your computer, on the hardware installation CD, or on the Windows Update Web site (with your permission). <u>Read our privacy policy</u>					
	Can Windows connect to Windows Update to search for software?					
	Yes, now and every time I connect a device					
	(● No, not this time)					
	Click Next to continue.					
	< Back Next > Cancel					



3. Select "Install the software automatically".



4. Windows recognizes the device, so you can let it install the driver automatically. The driver is not WHQL signed, but you can safely select Continue Anyway:

Hardware Installation							
⚠	The software you are installing for this hardware: BMX CPU has not passed Windows Logo testing to verify its compatibility with Windows XP. (Tell me why this testing is important.) Continuing your installation of this software may impair or destabilize the correct operation of your system either immediately or in the future. Microsoft strongly recommends that you stop this installation now and contact the hardware vendor for software that has passed Windows Logo testing.						
	Continue Anyway						



5. It should then complete the wizard:



6. And you will observe the USB icon in the taskbar



7. Clicking the icon will bring up a status bar:

	🛱 PLC USB Driver 🛛 🔀						
	General						
	Activity						
	Status : Connected						
	Times : 00.07.20						
	Driver Manager						
•							
	OK						



Page 10 of 18

8. Selecting Driver Manager will bring up the Windows Device Manager, and you will find the device as BMX CPU under the Modems class.



BMX CPU	J Properties	? 🔀				
General	Modem Diagnos	tics Advanced Driver Details				
1	BMX CPU					
	Device type:	Modems				
	Manufacturer:	Telemecanique				
	Location:	Location 1 (on USB/IP Enumerator)				
Devic	e status	Location 1 (on USB/IP				
This If you start	device is working p u are having probler the troubleshooter.	roperly. ms with this device, click Troubleshoot to <u>Iroubleshoot</u>				
Device usage: Use this device (enable)						
		OK Cancel				



Page 11 of 18

9. In Unity Pro XL, select Standard Mode in the PLC menu:



10. Select Set Address in the PLC menu, and set Media to "USB".

Set Address		? 🔀
✓ PLC Address	Simulator	Bandwidth
SYS 👤 🏛	127.0.0.1	Test Connection
Media USB	Media TCPIP	- OK
MODBUS01 TCPIP	Communication Parameters	Cancel
USB		Help

11. Select **Connect** in the PLC menu:

🔶 Unity Pro XL			
File View Tools	PLC Help		
🎽 🖻 🗐 🚑	<u>C</u> onnect	Ctrl+K	
	Set <u>A</u> ddress		
	📆 Standard Mode		
	🔩 Simulation Mode		
	Transfer Project from PLC Transfer Data from PLC to File	Ctrl+Shift+L	

12. The status line will show that the connection is active (but project is different).:

I						
		Import/export	V User errors	Search/Replace		
	Ready		HMI R/W mode		AD INFO OK USB:SYS	

Page 12 of 18

13. Select Transfer Project from PLC in the PLC menu:

Overwritten F	PC Project	PLC Project -	
Name: Version: Last Build:	[no binary found]	Name: Version: Last Build:	Station 0.0.15 9/5/2008 2:20:59 PM
	Transfer Project from PLC	Can	cel

Packet 16/55 is successfully sent.	
	Cancel

14. If successful:

¥[{10_Control : [MAST]} : 0 error(s), 0 warning(s)	~
Counter : [MAST]] : 0 error(s), 0 warning(s] Process succeeded : 0 Error(s) , 0 Warning(s)	×
Transfer Project from PLC Import/export User errors Search/Replace	
Project Successfully Transferred From PLC. HMI R/W mode EQUAL RUN UPLOAD INFO OK USB:SYS	BUILT 🔐 //

IMPORTANT: If LinkManager status is DOWN:

Lin	KMu mea	anage	er							
			Disconnect Logo	ut Serv	ices	Sniff	er			
				ROOT.PH						
			Schneid	er (SiteManage	er3239)					
		Agent	Address	Status	Conr	nects	Pac	cets	Byt	les
					ok	fail	tx	rx	tx	rx
	.⊜≁	Schneider	1 172.24.2.57:3240> 127.0.	0.1 DOWN						

In the current LinkManager version, the connection is not automatically restored in case the PLC restarts, or if the cable is un-plugged/re-plugged.

It is necessary to Disconnect and re-establish the connection (first step of this section).



Page 13 of 18

3. Ethernet connection via Windows XP under VMWare

You can run the Unity Pro XL software inside a VMWare engine, to a PLC that is Ethernet attached to a SiteManager.

From LinkManager version 12155 you can choose to run the LinkManager inside or outside the virtual machine. Note that LinkManager can only run inside VMWare if the host OS is Windows 7 and the PC's CPU has support for virtualization.

The following illustrates VMWare Player, which can be downloaded from <u>http://www.vmware.com/support/product-support/player/</u>, and for LinkManager running outside the virtual machine (i.e. on the host system)

1. Locate your WindowsXP that has Unity Pro installed, and enter **Edit virtual machine settings.**





Page 14 of 18

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

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

- 3. Start the VMWare engine and on the host PC start LinkManager.
- 4. Follow the procedure of section **1. Ethernet Connection** to get access to the PLC via LinkManager.



Page 15 of 18

4. USB connection via Windows XP under VMWare

You can run the Unity Pro XL software inside a VMWare engine, to a Schneider PLC that is USB attached to a SiteManager.

Important: LinkManager must run inside the virtual machine also and must be version 12155 or later. Note that LinkManager can only run inside VMWare if the host OS is Windows 7 and the PC's CPU has support for virtualization.

The following illustrates VMWare Player, which can be downloaded from http://www.vmware.com/support/product-support/player/, and for LinkManager running outside the virtual machine (i.e. on the host system)

5. Locate your Windows XP that has Unity Pro XL installed, and enter **Edit vir**tual machine settings.

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

Page 16 of 18

6. Make sure that USB Controller has been added as Hardware component:

Virtual Machine Settings	5	
Hardware Options		
Device Memory Processors Hard Disk (IDE) CD/DVD (IDE) Floppy Network Adapter	Summary 512 MB 1 4 GB (Persistent) Auto detect Using drive A: NAT Present	Connections Enable high-speed support for USB 2.0 devices Automatically connect new USB devices Show all USB input devices Share Bluetooth devices with the virtual machine
Sound Card	Auto detect Using port COM8	
	Add Remove]
		OK Cancel Help

- 7. Start the VMWare engine and the LinkManager inside the VMWare engine.
- 8. Follow the procedure of section **2 USB Connection** on page **8** to get access to the PLC via LinkManager



Page 17 of 18

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Secomea A/S Denmark

CVR No. DK 31 36 60 38

E-mail: sales@secomea.com www.secomea.com



Page 18 of 18