

Application Note

DirectLogic/Koyo and DirectSOFT 5



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>

Version: 3.0, May 2012



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Prerequisites for This Guide

The following guide will assist you to setup a remote and online connection to the Koyo equipment placed on the customer site using your DirectSOFT software installed on your PC.

Prerequisites for this guide are:

- You have an operational LinkManager installed on your PC with a GateManager certificate that allows you to connect to the SiteManager agents.
- You have the Koyo software installed.
- You have the Koyo device agent installed and configured on the SiteManager at the remote site, and there is access between the SiteManager and the Koyo PLC. The PLC must be configured with agent device type **Koyo/Ethernet** on the SiteManager.

If any of these prerequisites are not met, you should contact the person / department responsible within your own company or at the company responsible hereof.

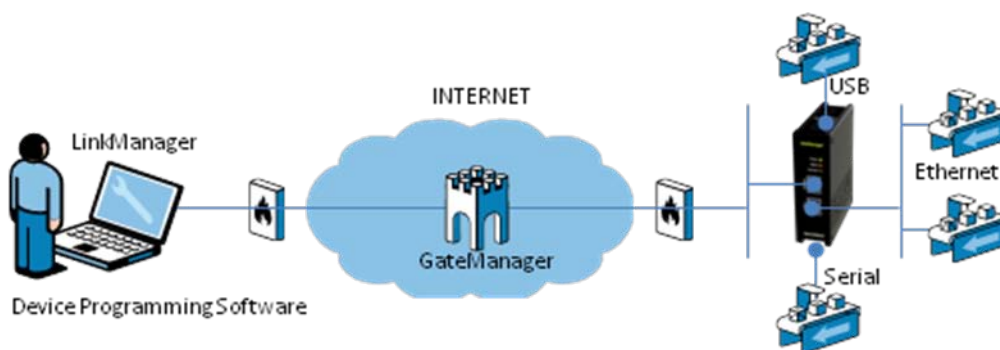
System Overview

The communication path is as follows:

DirectSOFT → **LinkManager** → GateManager → SiteManager → PLC.

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

The following system overview depicts a SiteManager 3229 at the customer location:

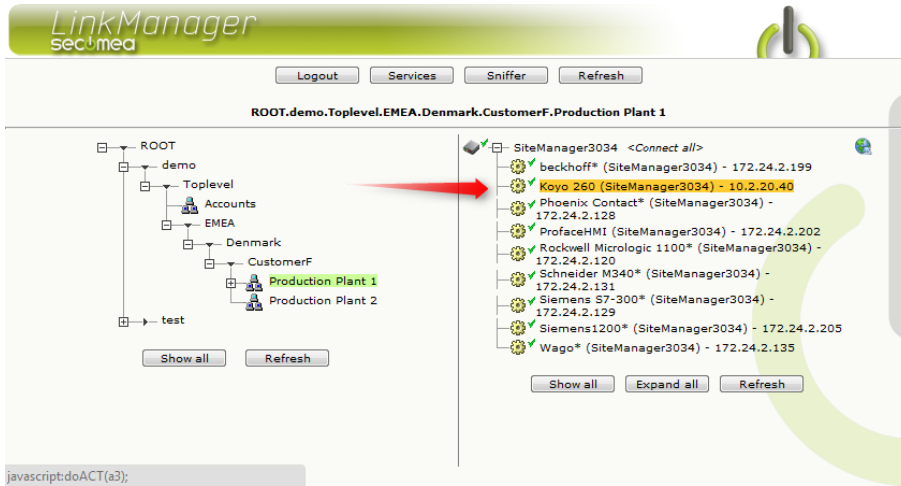


1. UDP/IP Access from Windows XP

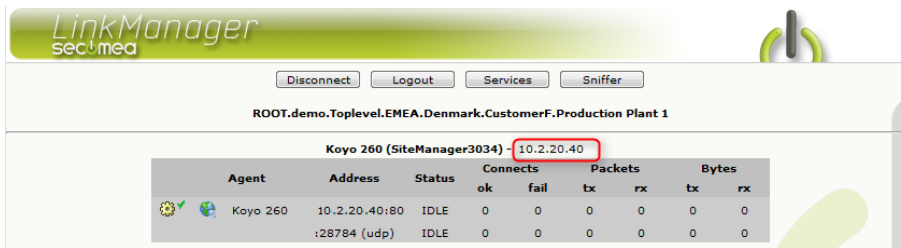
The following describes how to connect the DirectSOFT 5 to a Koyo PLC that is attached to a SiteManager via Ethernet. The description shows a Koyo 205 series, but it could be any Ethernet enabled Koyo.

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

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

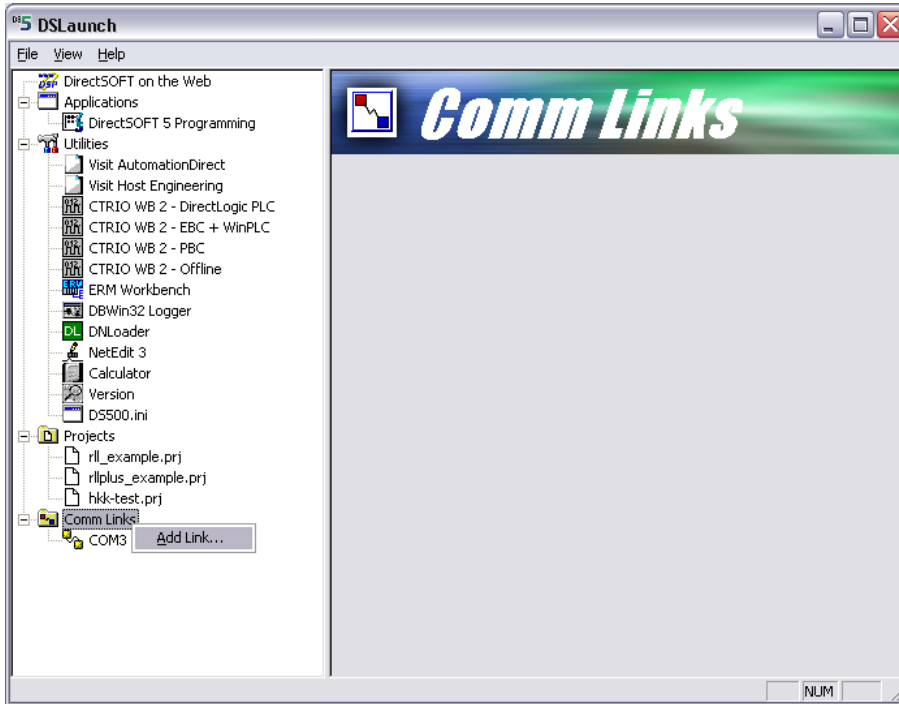


2. You will not see any activity on it yet. This only starts when you connect to the PLC via your project (Make a note of the IP address of the PLC):

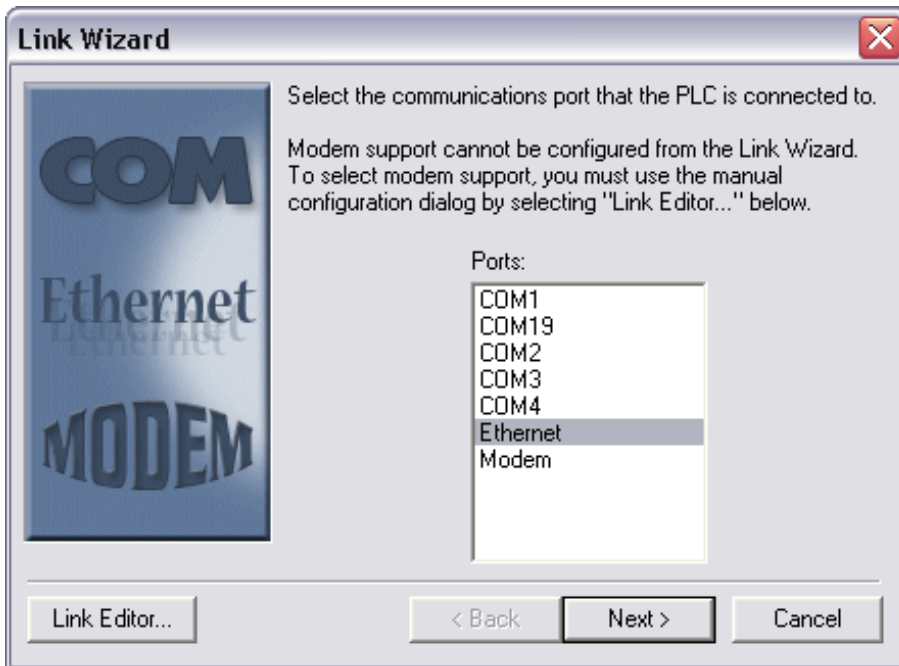


NOTE: The DirectSOFT NetEdit's "Scan Network" function is not supported. You need to create a Comm Link as shown in the following.

3. Start DirectSoft5 -> DSLaunch.exe



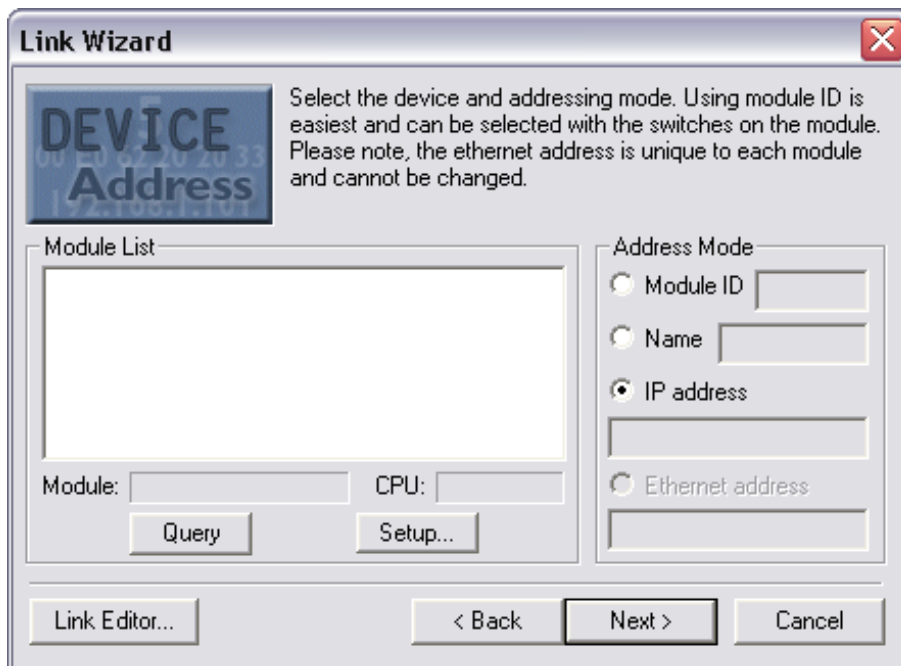
4. Right click on the "Comm Links" and select Add Link. Select **Ethernet** and press **Next**



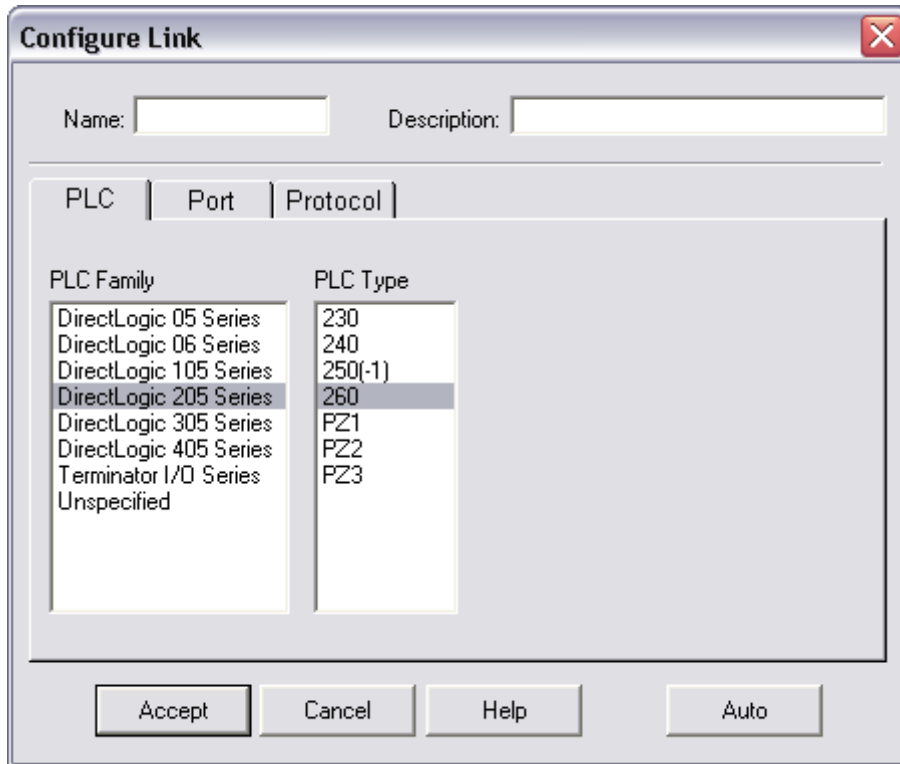
5. Select UDP/IP and press **Next**



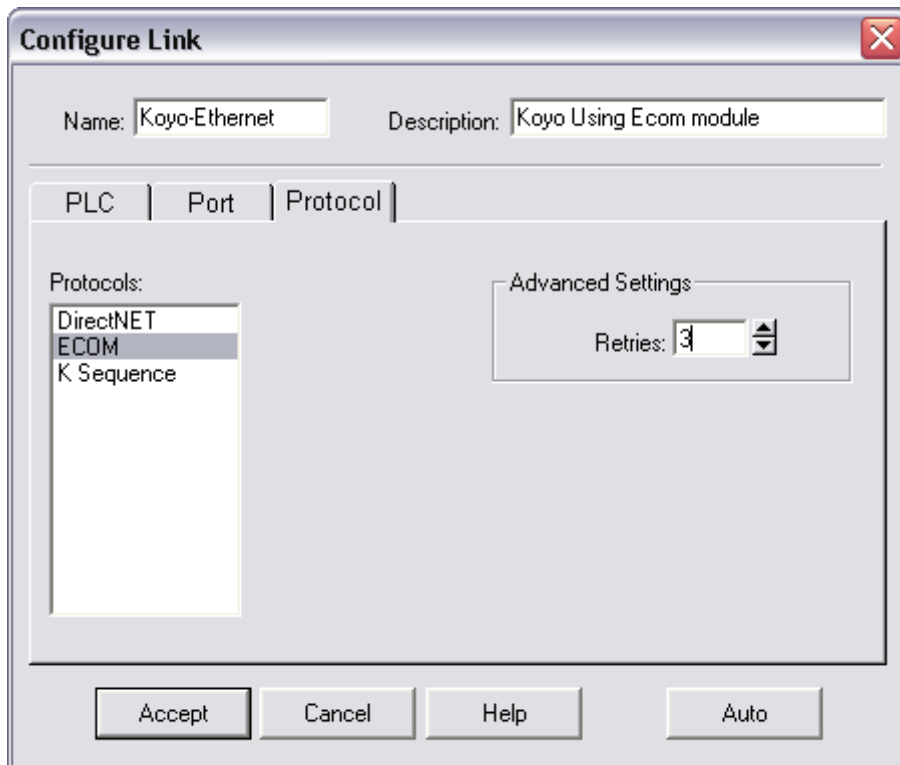
6. Select Link Editor



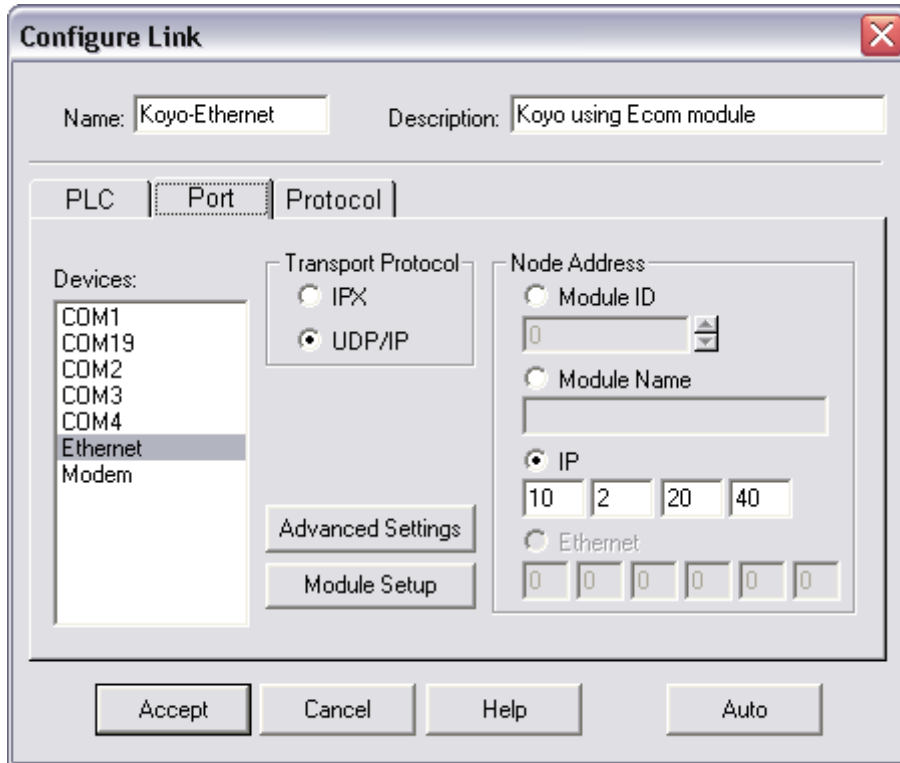
7. Select the correct PLC type and press Accept



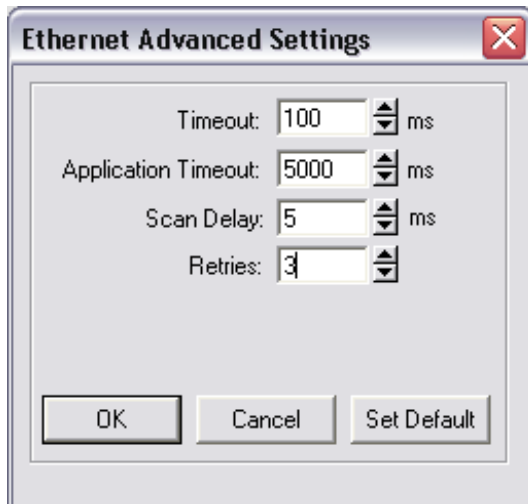
8. Set protocol to ECOM, Retries to 3 and fill in a Name: e.g. "Koyo-Ethernet"



- Fill the IP address field with the physical IP address of the PLC, and select **Advanced Settings**



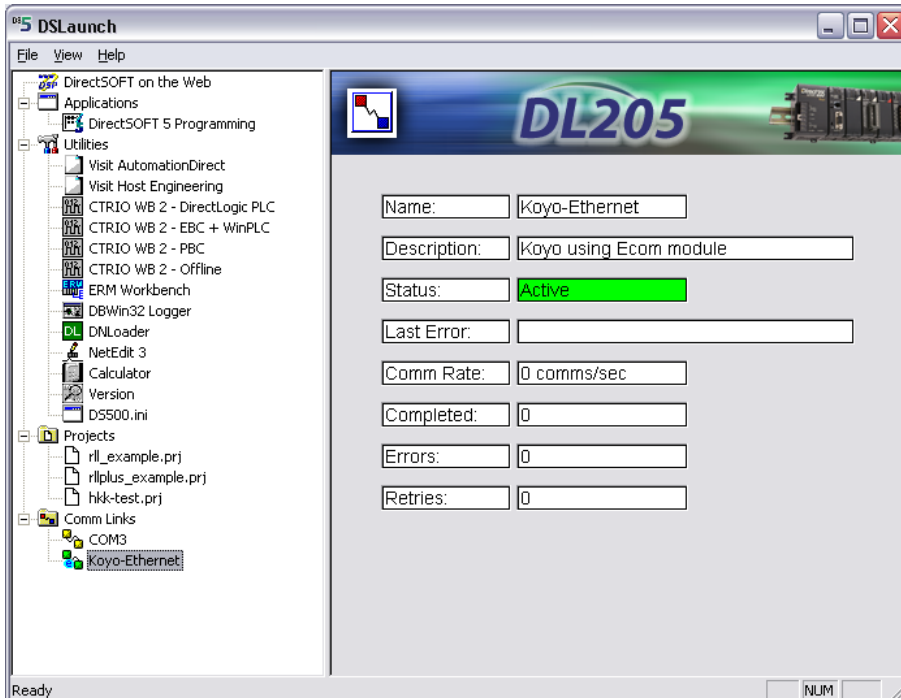
- Set the Set the options like shown above, and press **OK**



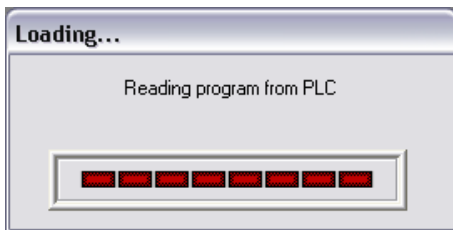
Note: If you experience the communication is interrupted you might increase Timeout or Scan Delay.

- Select **Accept** to save the Comm link settings

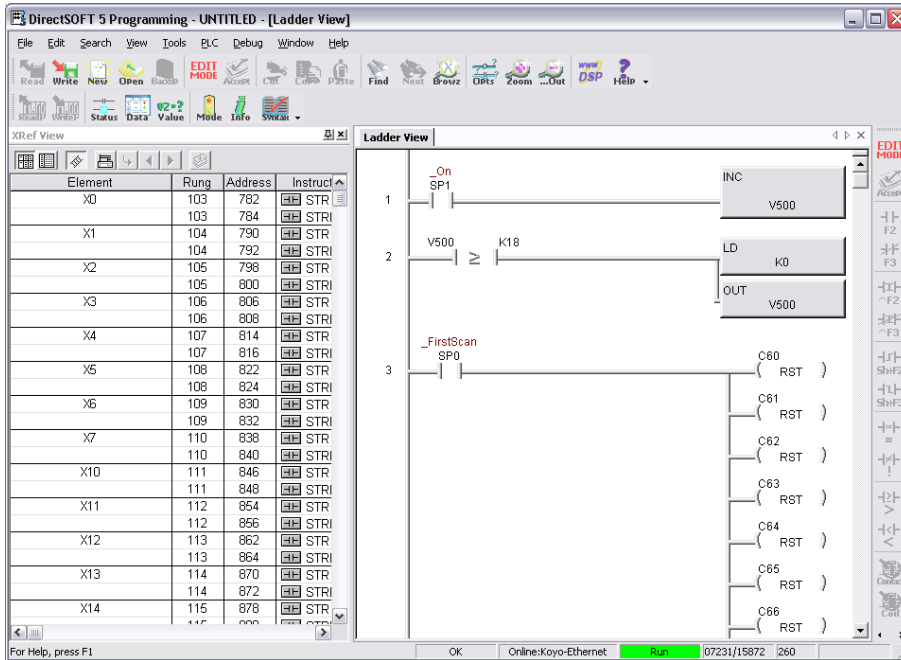
12. In DSLaunch Double Click “Koyo-Ethernet”



13. The program will be read from the PLC, and the DirectSOFT programming GUI will be launched.



14. You are now online



2. UDP/IP Access from Windows 7

Koyo DSLaunch has by design a limitation to connect via routed connections as it uses non-directed broadcasts (aka. 255.255.255.255 broadcasts). This method is used by various other PLC/HMI manufactures such as Siemens and Rockwell.

Similar to other products the Koyo Comm Links setup allows you to define a specific target IP address, which will direct the broadcast to this address. This will allow accessing equipment across Layer 3 (IP) routers, such as VPN and LinkManager connections.

DSLlaunch does, however, have a limitation with this method when run on Windows7 if there are multiple network adapters. This scenario is quite normal as the PC will typically have Ethernet, Wireless and one or more virtual adapters for e.g. VPN access.

Koyo has stated that currently the only work around is to disable all adapters but the physical one that is used for communicating to the network of the PLC.

Since secure remote access will require an encryption adapter for a VPN client or in our case the LinkManager combined with the physical Internet connection, this work around cannot be used.

Until Koyo hopefully solves this issue in DSLaunch, the only solution would be to install DSLaunch on Windows inside a virtual machine where only one adapter is active.

2.1. LinkManager running inside VMWare

From LinkManager version 12155 you can choose to run the LinkManager inside or outside the virtual machine.

Running DSLaunch inside the virtual machine and also install the LinkManager inside the virtual machine should not require anything else. Refer to section **2 UDP/IP Access from Windows XP** on how to set up DSLaunch and LinkManager inside 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.

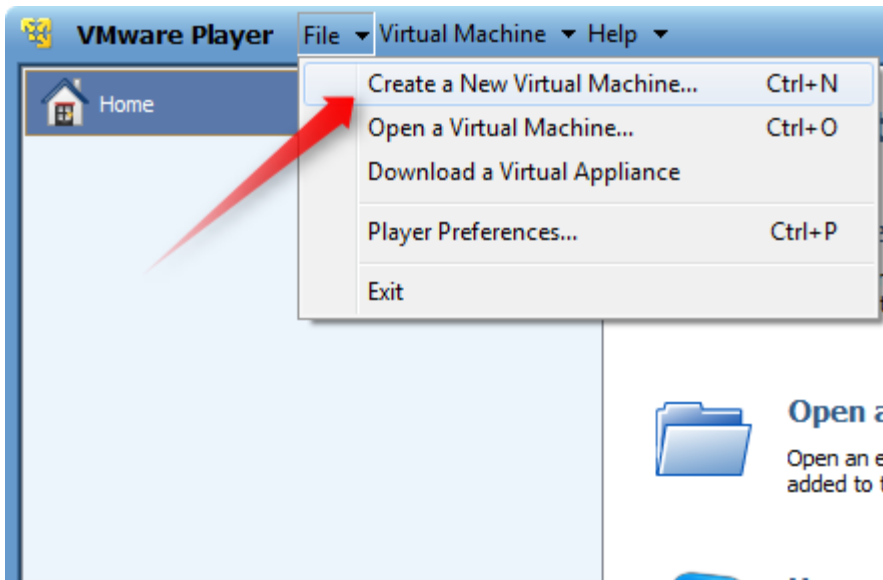
2.2. LinkManager running outside VMWare

If your PC's CPU does not support virtualization and/or your host OS is not Windows 7, you will have to install the LinkManager on the host OS outside the virtual machine, and then intercept the broadcast on the Windows7 host machine.

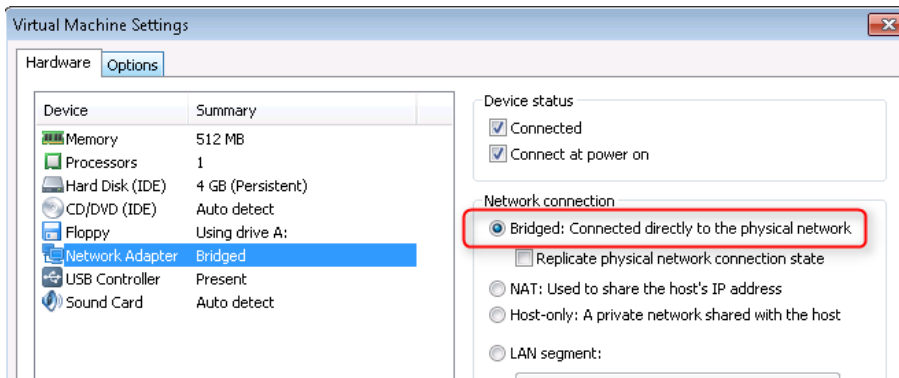
The following will explain how.

1. Install LinkManager on your Windows 7 PC
2. Download the free VMWare player from:
<http://www.vmware.com/products/player>.
(you can also use VMWare Server og VMWare Workstation)

3. Create a new virtual machine, in which you install Windows XP

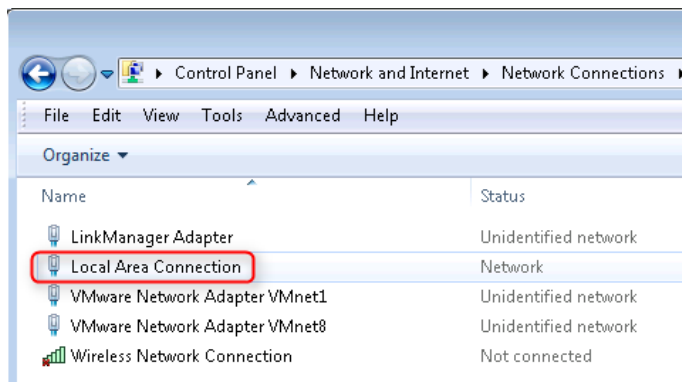


4. Install DSLaunch in the Windows XP virtual machine (Do NOT install LinkManager inside the Windows XP virtual machine)
5. Configure the virtual machine Network Adapter to "Bridged" and restart the virtual machine.

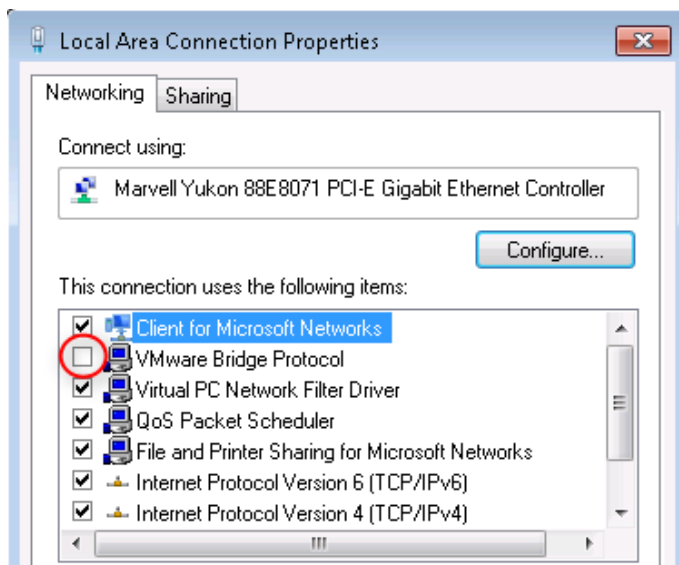


Info: The setup requires that the adapter to which bridging is made is the "LinkManager Adapter". VMWare does not have a setting to specify which adapter is used for bridging and will typically select the physical adapter (which will not work). Therefore the VMWare bridge protocol binding should be removed from the physical adapter

6. Open the Windows 7 control panel and find the network adapter:



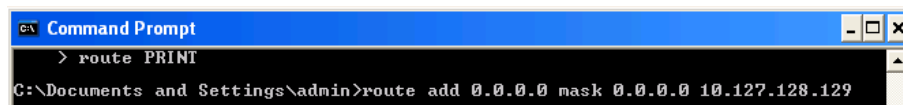
7. Right click the adapter and deselect the VMWare Bridge Protocol:



Info: Next challenge is to make sure the output is routed to the LinkManager. This is done by creating a route inside the virtual machine that routes to the LinkManager adapter.

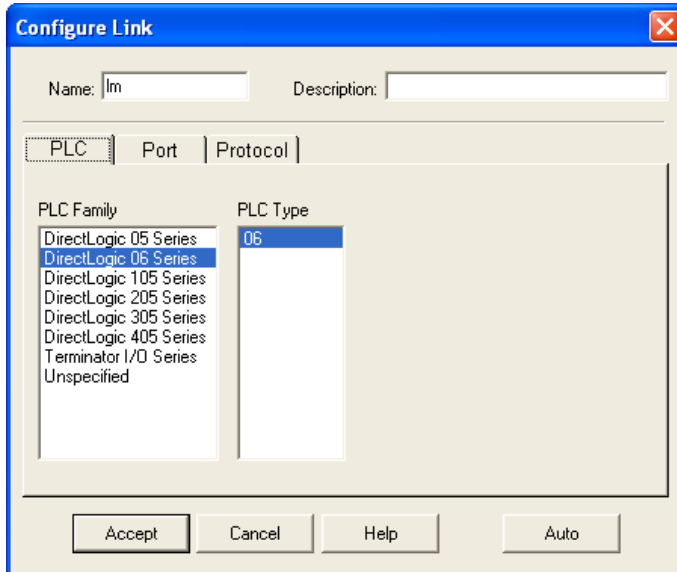
8. In the virtual machine open a command prompt and write

route add 0.0.0.0 mask 0.0.0.0 10.127.128.129

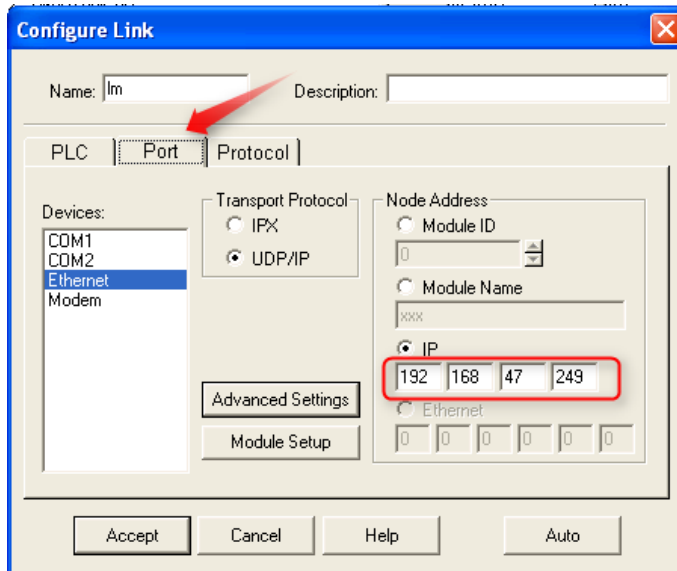


Note: This must be done everytime the Windows XP virtual machine is started. It could therefore ideally be placed in a startup script.

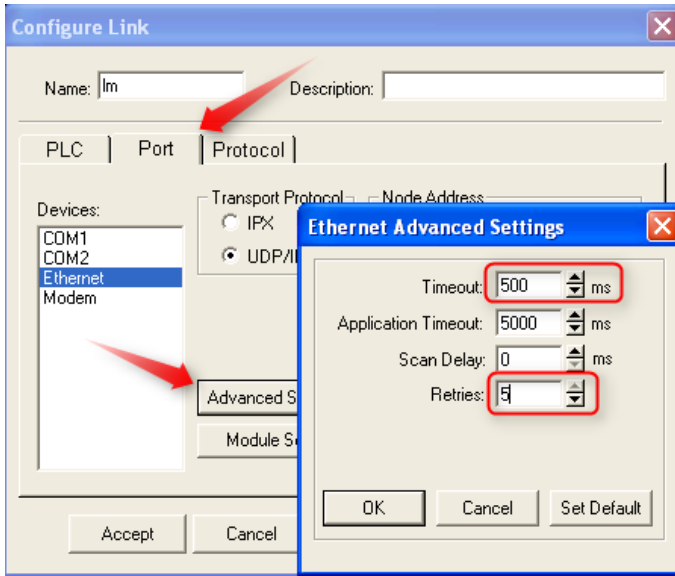
9. Start DSLaunch inside the virtual machine and open Comm Links and select your PLC type:



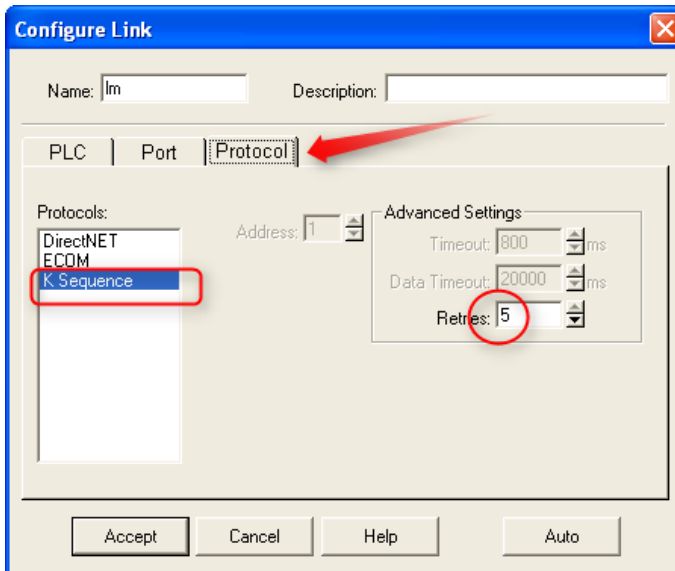
10. Go to the **Port** folder and select Ethernet and enter the physical IP address of the PLC .



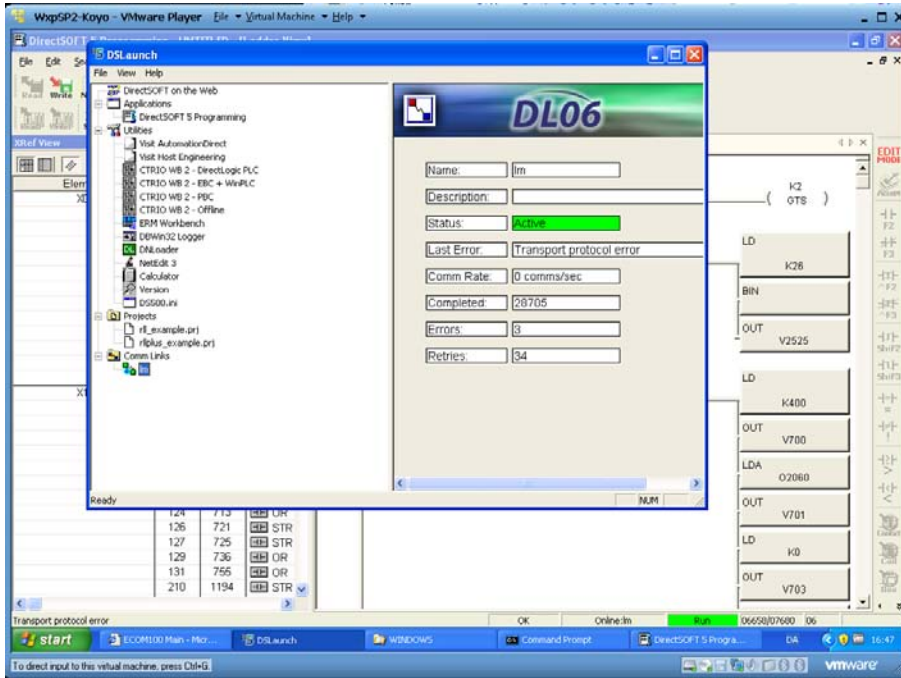
11. Select **Advanced Settings** and set the Timeout to 500ms and Retries to 5.



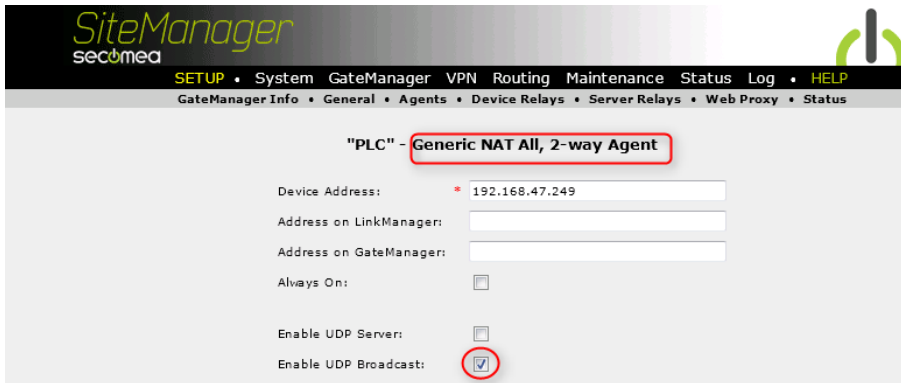
12. Go to the **Protocol** folder and select **K Sequence** and set Retries to 5. Press **Accept** to save your Comm Links settings.



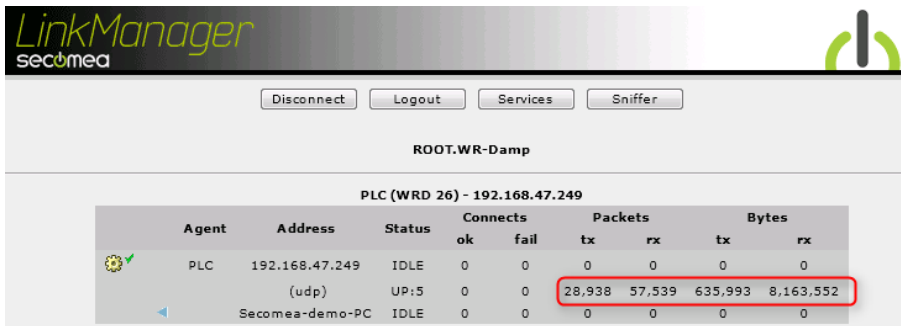
- Establish connection to the Koyo PLC with LinkManager and you should now be able to access the PLC.



Hints: If you have problems with the regular Koyo agent, you can try creating a Generic / NAT All 2-way agent, and check UDP Broadcast under the agent Parameter details:



When connected with DSLaunch, you will see the traffic being UDP data.



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