



Application Note

Beckhoff PLC and TwinCAT System



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.kepfrance.fr>

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Table of Contents

1. Prerequisite for this guide	3
2. Logon the LinkManager	4
3. Click and Choose in the LinkManager	4
4. Online with Beckhoff and TwinCAT	5
Appendix A, Connecting to PLC on Uplink port	9
Appendix B, Dealing with DHCP assigned PLC address	12
B1: Using DHCP on the SiteManager DEV port	12
B2: Set a fixed IP address on the PLC via LinkManager using CERHOST	14
Notices	17

1. Prerequisite for this guide

The following guide will assist you to setup a remote and online connection to the equipment placed on the customer site using your proprietary vendor specific software installed on your PC. A prerequisite for this guide is:

- You have an operational LinkManager installed on your PC and you are able to see the vendor specific equipment.
- You have the proprietary vendor specific software installed on your PC
- You have the Beckhoff device agent installed and configured towards a PLC on the DEV port of the SiteManager.

Note: If you are connecting to a PLC on the Uplink port of the SiteManager please follow the guide, and additionally refer to Appendix A for special precautions.

System overview

The Remote Device Management system is a complete end-to-end solution for easy and secure remote access, monitoring and management of industrial equipment for the automation- and machine builder industry.

The Remote Device Management solution enables machine builders, service providers and end-users to instantly access, monitor, and manage machines and equipment remotely and effectively over secure high speed internet connections.

The following system overview is with a SiteManager 3034 or 3134 at the customer location:

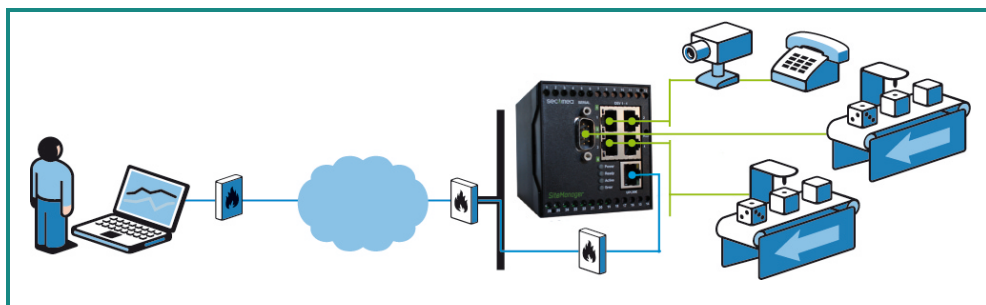


Figure 1 - System overview

2. Logon the LinkManager

This describes how to logon your LinkManager software. If you are already logged on, please go to number 3.

1. Start the LinkManager from the START > Programs > Secomea Link-Manager.
2. Select Console menu from the LinkManager Tray Icon menu.
3. Login uses the GateManager certificate and password which is obtained from you GateManager administrator. Then please click **Login**.

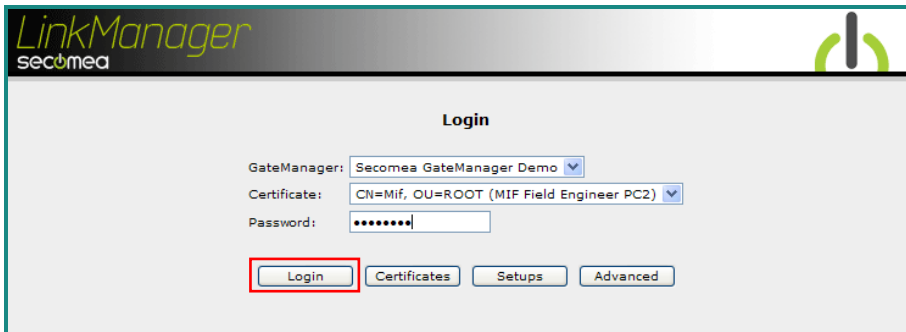


Figure 2 LinkManager login Screen

3. Click and Choose in the LinkManager

This describes how to click and choose the device you wish to get online with. If you are already online, please go to number 4.

1. Click **<Connect all>** to connect to all devices or click a specific device to connect to only this single device:

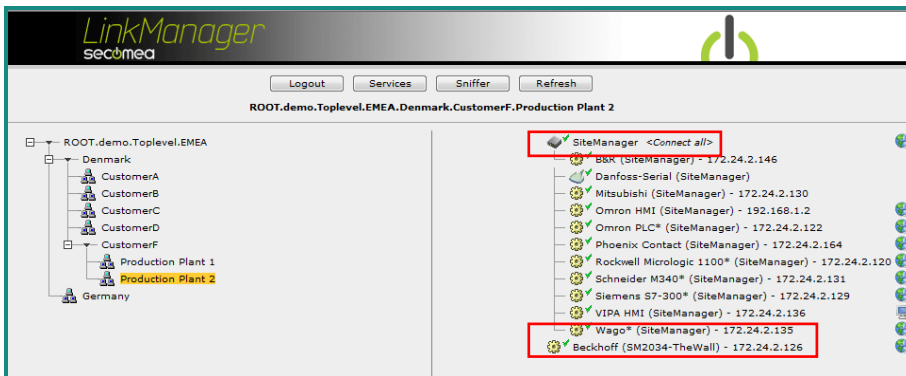


Figure 3 LinkManager Screen (example) Access to all devices or to a single device

4. Online with Beckhoff and TwinCAT

Get online with your Beckhoff PLC:

1. Start up your TwinCAT System Manager

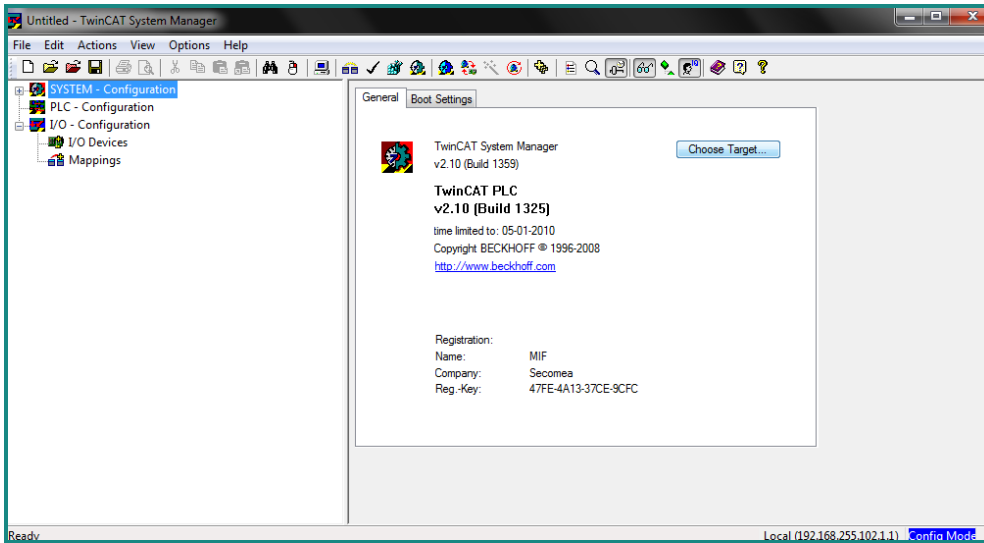


Figure 4 TwinCAT System Manager Screen

2. Click >> Choose Target <<
3. Click >> Search (Ethernet)

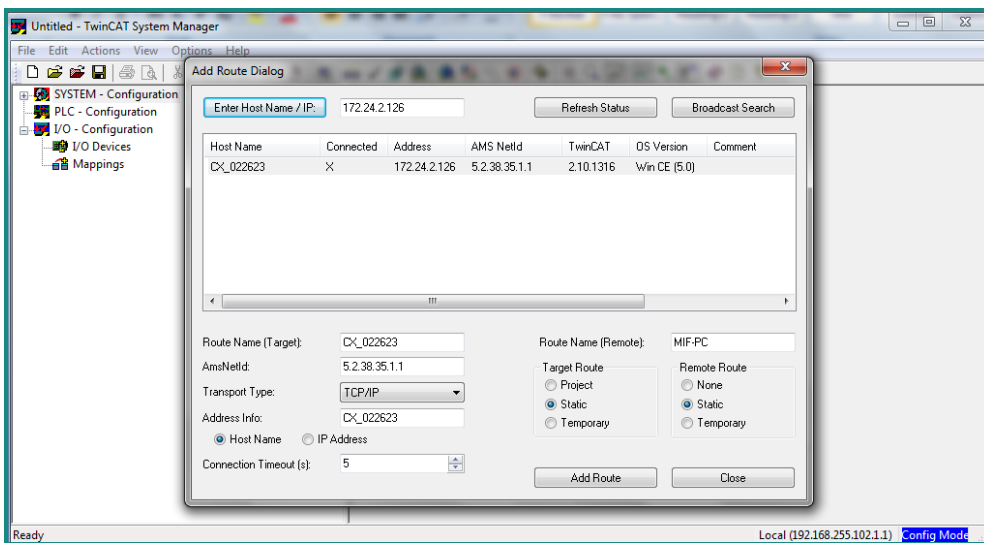


Figure 5 TwinCAT Add Route Dialog Screen

4. Enter Host Name / IP – Enter IP address
5. Click >> Refresh Status <<
6. If this is the first time to connect to this route and no “X” appear in the “Connected”, please see Figure 6

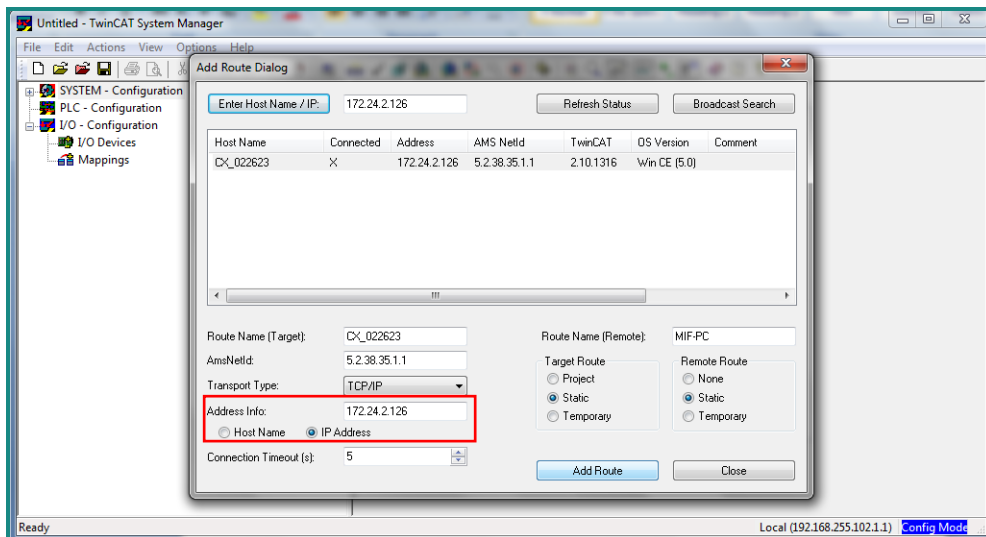


Figure 6 TwinCAT Add Route Dialog Screen

7. Select IP Address
8. Press “Add Route”

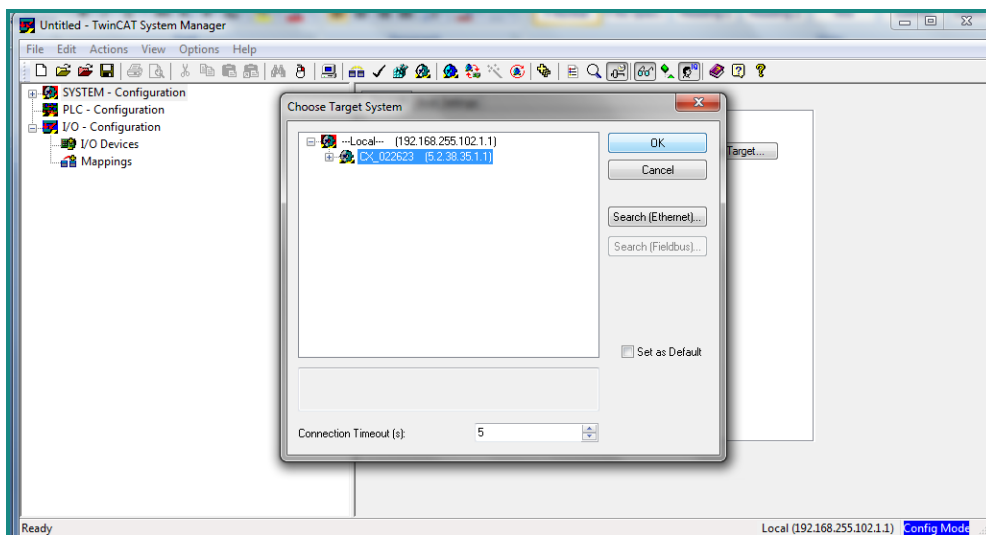


Figure 7 TwinCAT System Manager Screen

9. Choose Target System
10. Press “OK”

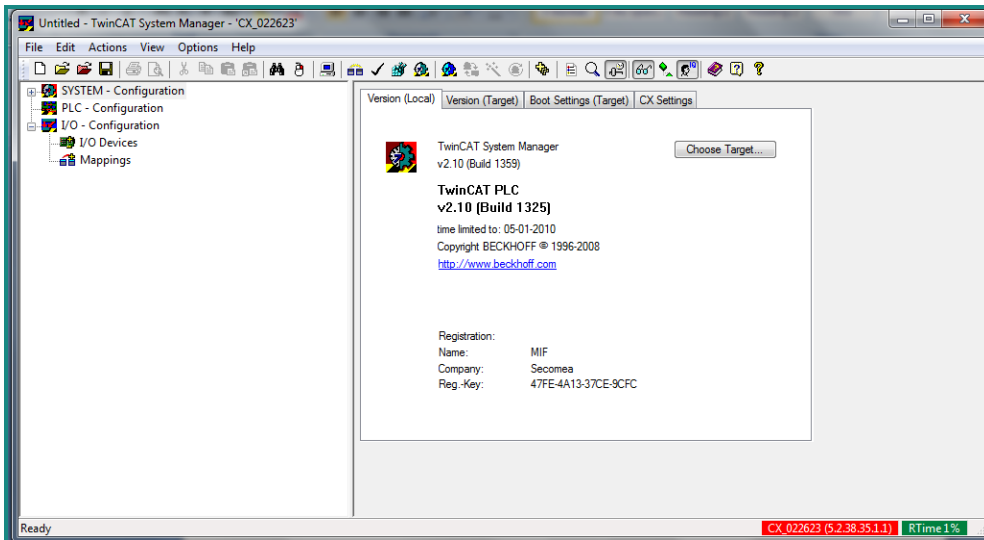


Figure 7 TwinCAT System Manager Screen

11. Target System chosen – in this guide “CX_022623”

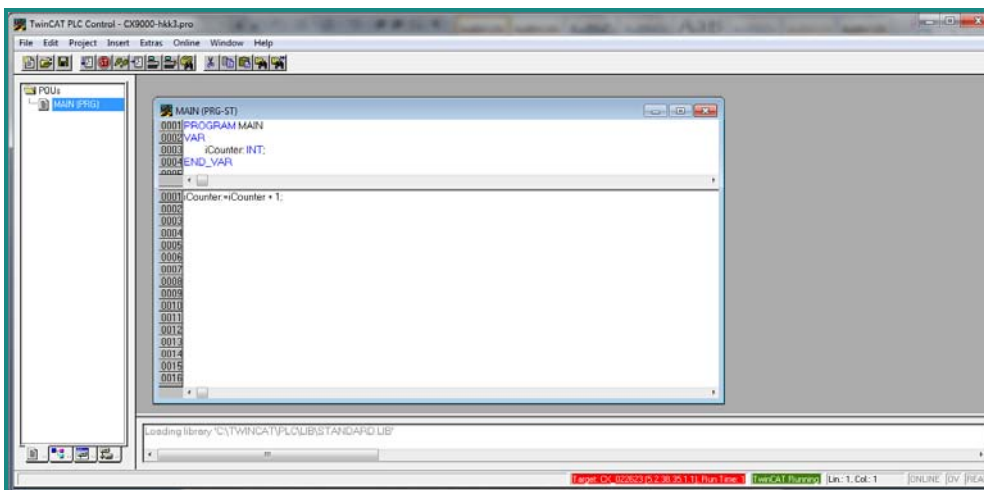


Figure 8 TwinCAT PLC Control Screen

12. Start up your TwinCAT PLC Control
13. Open project

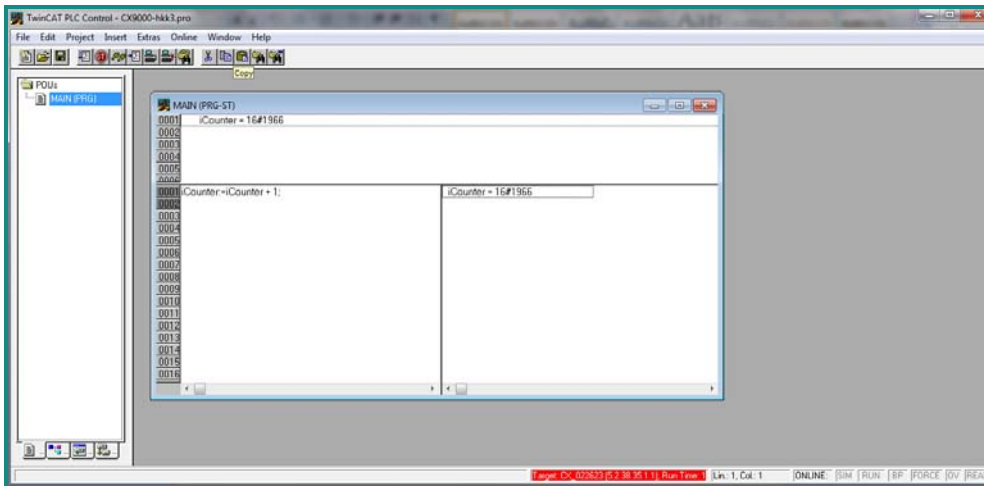


Figure 9 TwinCAT PLC Control Screen

14. Press “Online” in the top menu and select “login”

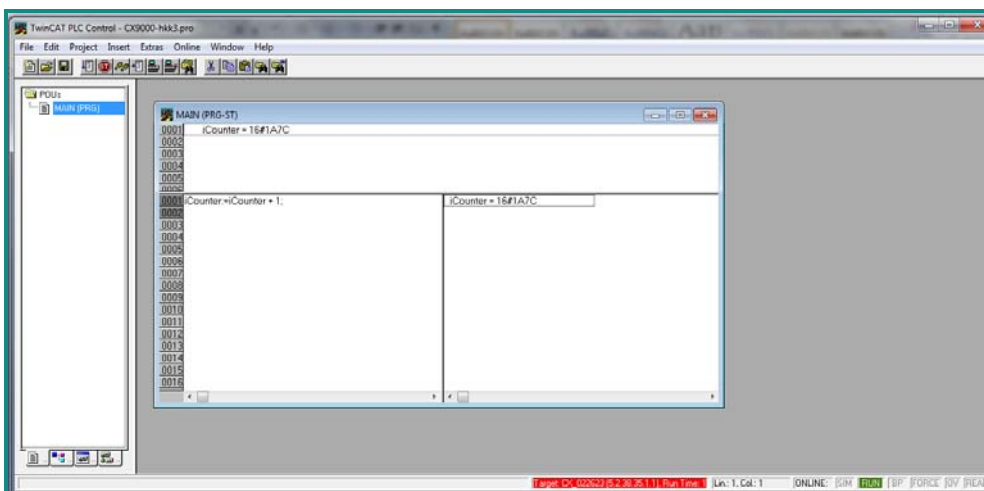


Figure 10 TwinCAT PLC Control Screen

15. Press “Online” in the top menu and select “Run”
16. You are now online with the PLC

Appendix A, Connecting to PLC on Uplink port

With RDM firmware 11017 or earlier it is not possible automatically to install the necessary route in the Beckhoff PLC if the PLC is attached to the UPLINK interface, and not the DEV interface of the SiteManager.

This must currently be solved manually by the following procedure (keep updated on new firmware updates that may solve this issue).

1. In the TwinCat System Manager, select **System Manager > Chose Target.. > Search Ethernet >**

Add Route Dialog

Enter Host Name / IP: Refresh Status Broadcast Search

Host Name	Connected	Address	AMS NetId	TwinCAT	OS Version	Comment
CX_022623		172.24.2.197	5.2.38.35.1.1	2.10.1316	Win CE (5.0)	

Route Name (Target): Route Name (Remote):

AmsNetId:

Transport Type:

Address Info:

☐ Host Name ☒ IP Address

Connection Timeout (s):

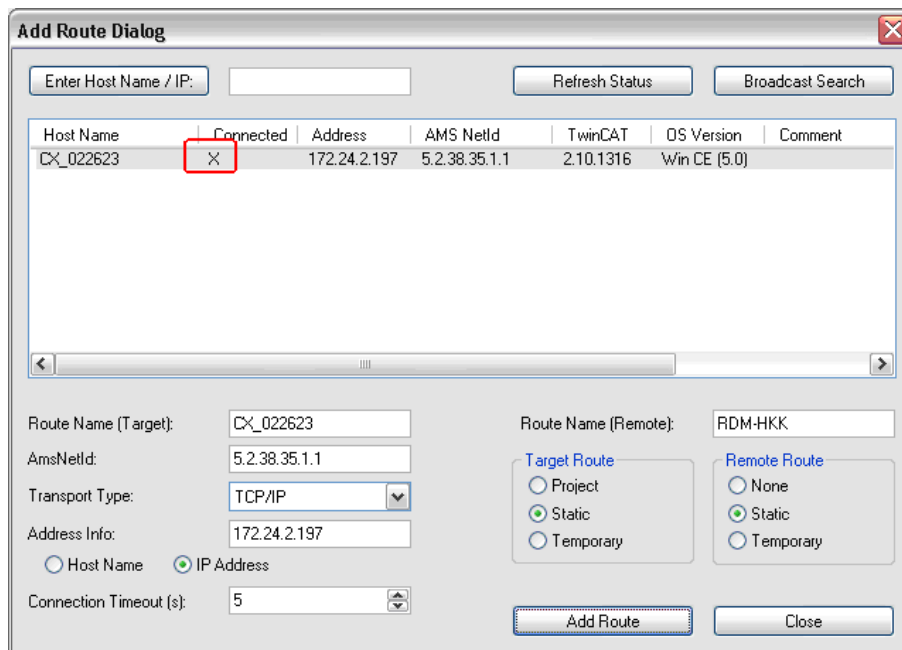
Target Route: ☐ Project ☒ Static ☐ Temporary

Remote Route: ☐ None ☒ Static ☐ Temporary

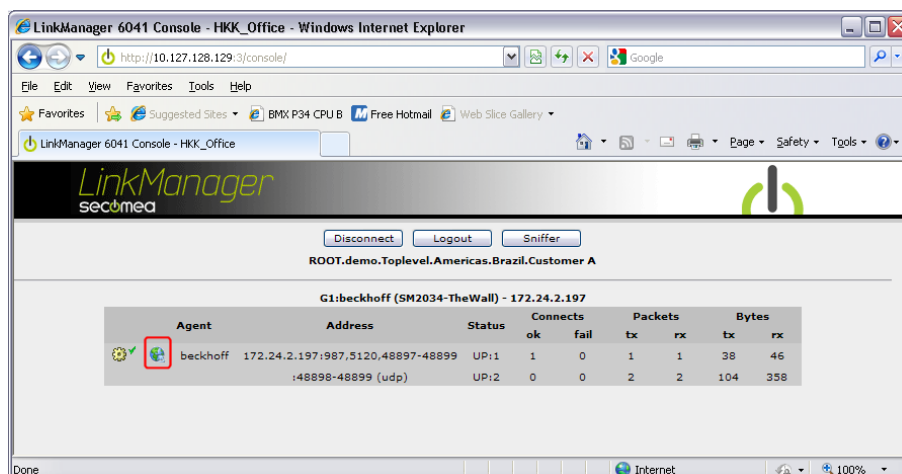
Add Route Close

2. If there is NOT an "X" in column "Connected" after the Add Route is pressed then the route table in the PLC is not updated correctly, and you must manually enter it through the PLC Web interface. Follow the below steps to do so.

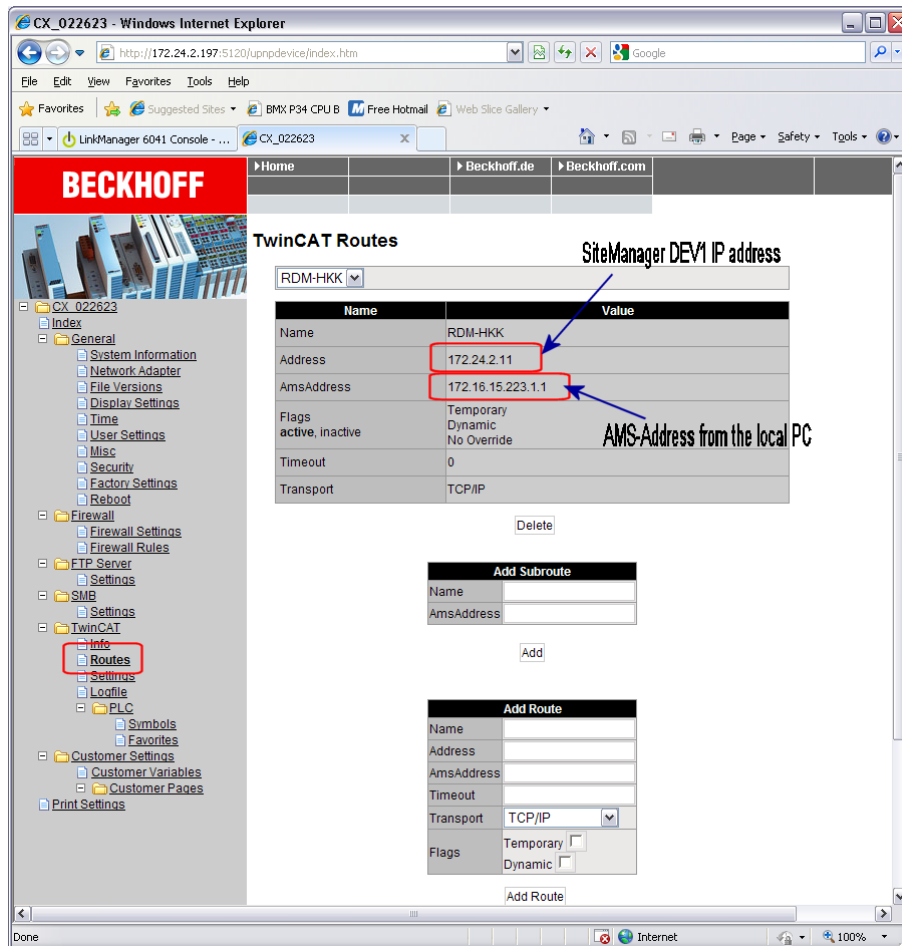
Important: if there is an "X" in column "Connected" do NOT press "Add Route" this might overwrite the already working connection.



3. Connect the LinkManager to the PLC and click the **Go To Appliance** icon, which will launch the WEB interface of the Beckhoff PLC

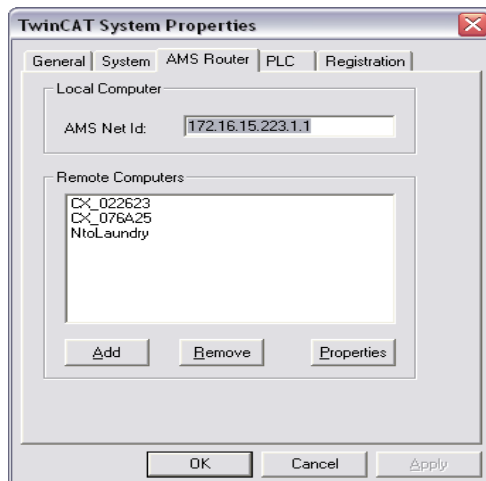


4. Press: **TwinCat > Routes**, Select the PC Name (in the below example "RDM-HKK"). "Address" must show the DEV1 IP address of the Site-Manager. If not then the route is installed wrong (If the PLC is attached via the Uplink interface, the address will most likely be the LinkManager IP address, which will not work.)
5. Select **Add Route** to add the route manually: (If a route already exist it should be deleted)



Name = RDM-HKK
 Address=172.24.2.11
 AmsAddress=172.16.15.223.1.1

(The AMS Router can be found on the PC's TwinCat program):



Appendix B, Dealing with DHCP assigned PLC address

As default the CXxxx type Beckhoff PLCs are default delivered with DHCP enabled.

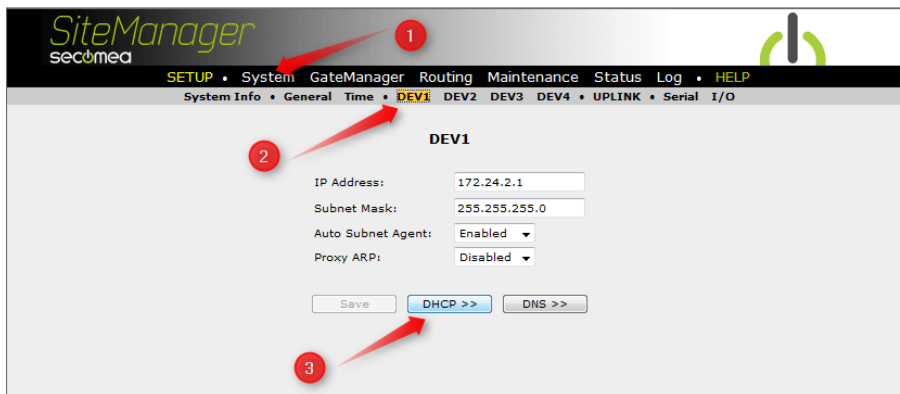
This Appendix explains how you can use the SiteManager to ensure the DHCP address is always the same, or alternatively how you can access the PLC with the CERHOST program to change the DHCP setting to a fixed IP address.

B1: Using DHCP on the SiteManager DEV port

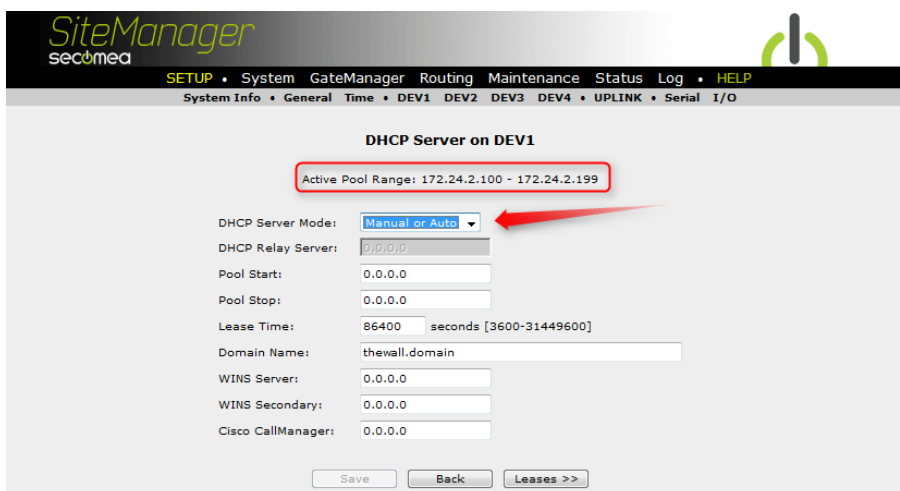
If you are connecting the PLC to the DEV port of the SiteManager, it is recommended to leave the DHCP setting, and make the IP address “static” in the SiteManagers DHCP lease table.

This will ensure that the PLC will always receive the same IP address.

1. In the SiteManager GUI, enter the DEV port on which the DHCP enabled PLC is attached.



2. Ensure that DHCP is enabled. If not just enable it and it will automatically suggest a DHCP range. You may have to reboot the SiteManager to activate the DHCP:



3. Make sure the Beckhoff PLC is connected to the DEV1 port and is powered on after the DHCP server has been enabled.

4. Go to the DHCP Leases >>

DHCP Server on DEV1

Active Pool Range: 172.24.2.100 - 172.24.2.199

DHCP Server Mode:

DHCP Relay Server:

Pool Start:

Pool Stop:

Lease Time: seconds [3600-31449600]

Domain Name:

WINS Server:

WINS Secondary:

Cisco CallManager:

5. You should now be able to identify the PLC in the lease list by its MAC address or it's Hostname. Select the **Lock** check box and press **Save**.

SiteManager
secu**mea**

SETUP • System GateManager Routing Maintenance Status Log • HELP

System Info • General Time • DEV1 DEV2 DEV3 DEV4 • UPLINK • Serial I/O

DHCP Server Leases

Using 1 static and 1 dynamic leases

Static Leases					
Disable	Interface	IP address	MAC address	Hostname	Comment
☐	DEV1	172.24.2.181	00:14:D1:F1:84:60	TV-IP422W	

Dynamic Leases					
Lock	Interface	IP address	MAC address	Hostname	Expires
☒	DEV1	172.24.2.199	00:01:05:02:26:23	CX_022623	2011/02/12 09:28:28

6. The MAC address of the PLC is now associated with a Static DHCP lease, which means the PLC will always receive the same IP address from the SiteManager. You are also able to change it here, in case it conflicts with another device in the network.

SiteManager
secu**mea**

SETUP • System GateManager Routing Maintenance Status Log • HELP

System Info • General Time • DEV1 DEV2 DEV3 DEV4 • UPLINK • Serial I/O

DHCP Server Leases

Using 2 static and 0 dynamic leases

Static Leases					
Disable	Interface	IP address	MAC address	Hostname	Comment
☐	DEV1	172.24.2.181	00:14:D1:F1:84:60	TV-IP422W	
☐	DEV1	172.24.2.199	00:01:05:02:26:23	CX_022623	

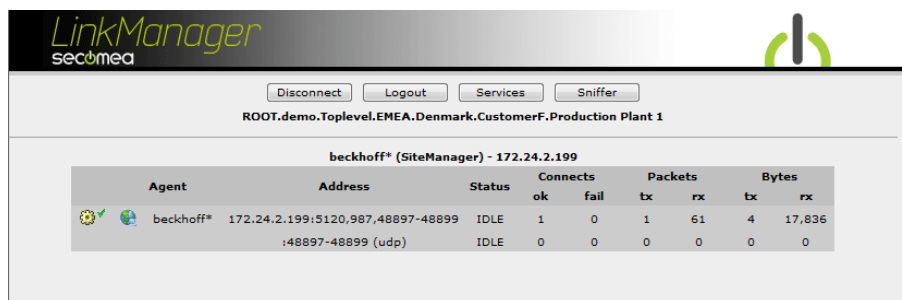
B2: Set a fixed IP address on the PLC via LinkManager using CERHOST

The CERHOST client software is provided by Microsoft for obtaining remote display control of a Windows CE device.

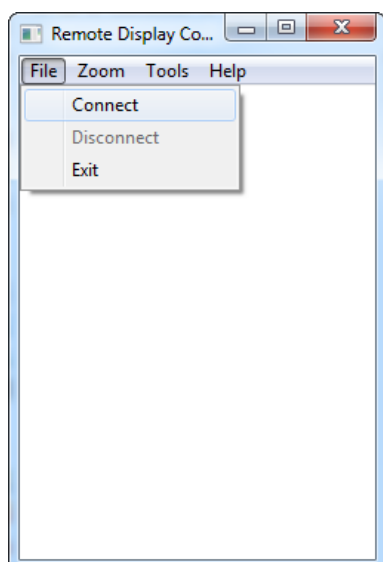
This tool is typically used for establishing access to a CX1xxx type Beckhoff PLC to change the IP address of the PLC from the DHCP assigned IP, to a static IP address.

The CERHOST.exe utility is freeware and can be downloaded from the Beckhoff website, and various other public sites.

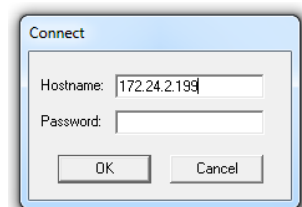
1. Connect with LinkManager to the PLC



2. State the CERHOST.exe utility, and select **Connect**

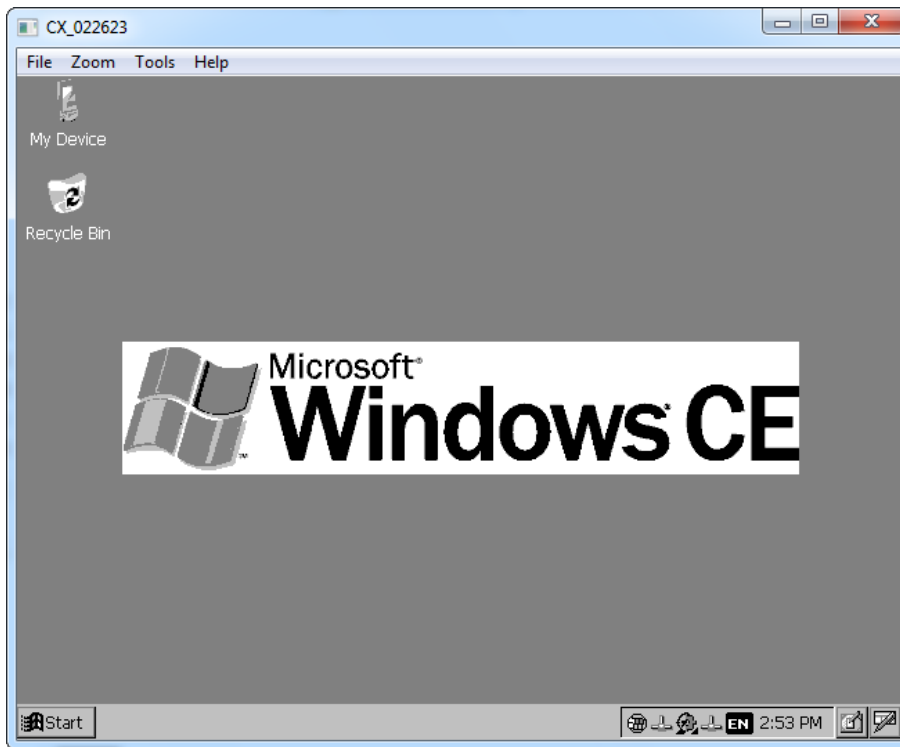


3. Type in the IP address of the PLC and password if needed, otherwise leave it blank. Press OK to connect.

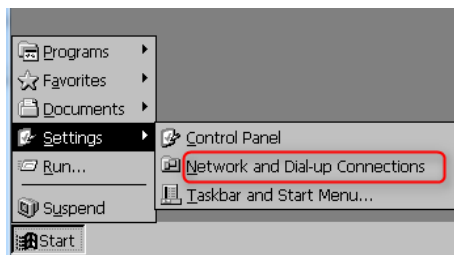


Note: You cannot use the DNS name (e.g. CX_022632), as indicated in some guides, since you do not have access to the DNS server that can resolve it.

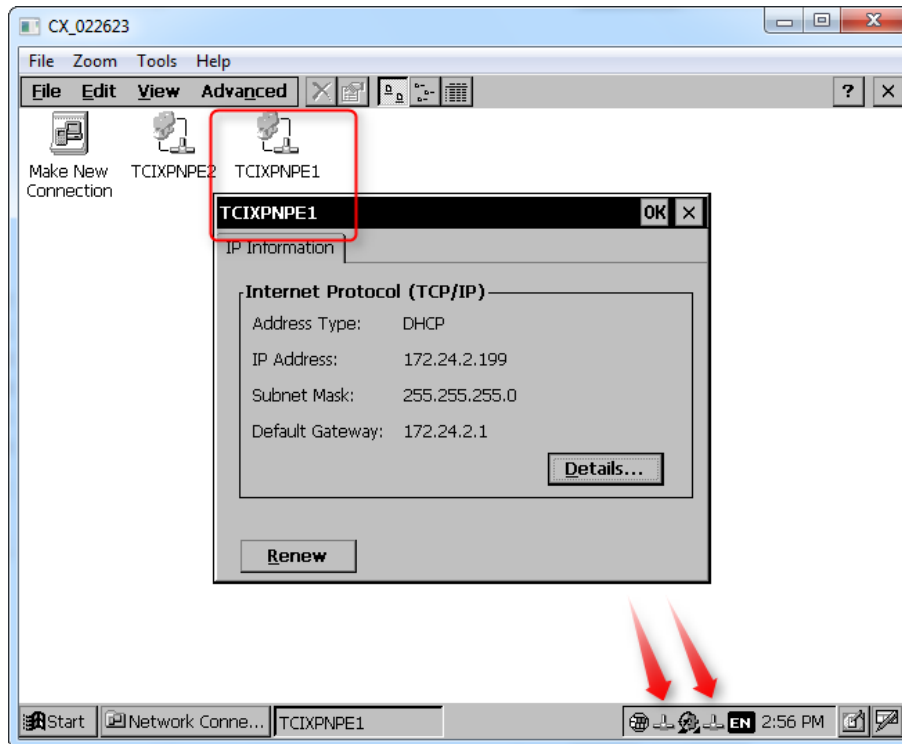
4. You are now online with the PLC.



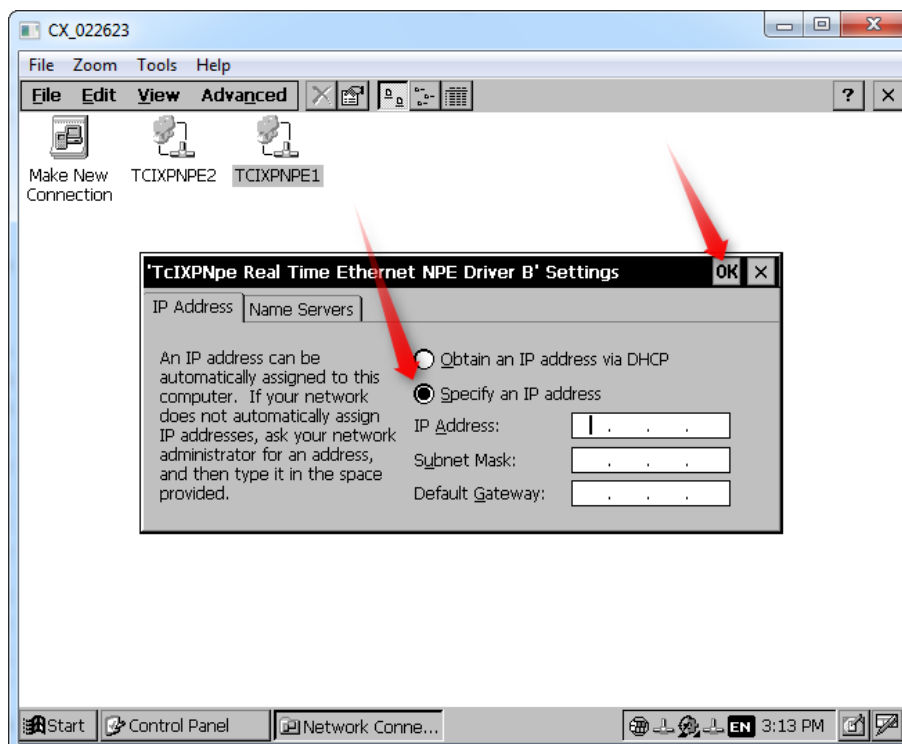
5. Select Start → Settings → Network and Dial-up Connections.



6. If there is more than one Ethernet adapter, you can double click each of the adapter icons in the system tray, to determine which has the IP address you have connected to.



7. Right-click and select properties for the adapter, and select "Specify an IP address", and enter relevant settings:



8. Press OK, and Restart the PLC to activate the new address..

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