AC500 eCo PLC Serial and Ethernet connection protocols

1 Introduction:

This application note shows you step-by-step to set up the serial and Ethernet connections to AC500 eCo CPU.

2 Objective:

In this application example, we use AC500 eCo PM564 ETH CPU with TK503/504 cable for serial connection. For Ethernet connection, the CAT5 cable will be used between PC and PLC.

Equipment list for this application note:

Description	Quantity
PM564-ETH CPU	1
PC with Automation Builder V1.1 or later software installed	1
TK503/504 cable	1
CAT5 Ethernet patch cable	1







3 Setup the Ethernet communication in Windows:

Before you are able to download the compiled program the first time from the PC to the PLC, you have to setup the communication parameter. There are two options you can use to login to the PLC, either with Ethernet or serial with TK503 USB cable.

For this exercise, we are using Ethernet connection for online access to this PLC.

Online Access with Ethernet setup for your PC:

To verify the IP address of your PC

Make sure that your PC address is in the same subnet (first 3 octets) are identical as the CPU's IP address. The factory setting of the CPU for IP address is 192.168.0.10. Then the IP of the PC should be **192.168.0.x**, x should be different number than **10** so that it will not have an IP conflict with the CPU. Subnet mask should be 255.255.255.0.

To change the IP address in your PC, go to:

- 5.1 Go to Windows Control Panel > Network and Internet > Network and Sharing Center
- 5.2 Click on Change adapter settings
- 5.3 Select Local Area Connection (in this example is **PLC network** connection below) and right click it to open the menu.



- 5.4 Choose **Properties** (Status is active when the Ethernet connection between PC and PLC is active)
- 5.5 Select Internet Protocol Version 4 (TCP/IPv4) and double click to see properties.
- 5.6 Key in your desired IP address and subnet mask then click OK.

PLC network Status	PLC network Properties	Internet Protocol Version 4 (TCP/IPv4) Properties
General	Networking Sharing	General
Connection IPv4 Connectivity: No Internet access	Connect using:	You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.
IPv6 Connectivity: No network access Media State: Enabled Duration: 01:04-22	Configure This connection uses the following items:	Obtain an IP address automatically
Speed: 100.0 Mbps	Client for Microsoft Network Utual PC Network Filter Drive	IP address: 192 . 168 . 3 . 249
Details	Gos Packet Scheduler Ele and Printer Sharing for Microsoft Networks Internet Protocol Version 6 (TCP/IPv6)	Subnet mask: 255 . 255 . 255 . 0 Default gateway:
Activity		Obtain DNS server address automatically Other the following DNS server addresses:
Sent — Received	Install Uninstall Properties	Preferred DNS server:
	Description Transmission Control Protocol/Internet Protocol. The default wide area network protocol that provides communication	Alternate DNS server:
	across diverse interconnected networks.	Validate settings upon exit Advanced
Close	OK Cancel	OK Cancel

4 Setup the IP address in Automation Builder software:

- Make sure the CPU's RUN switch is at STOP position
- Click IP-Configuration to access Scan tool

- Click on Scan button for searching active PLC on the network
- Highlight the active IP address in the search window
- Change the IP address to new IP address such as 192.168.3.20
- Click on Send Configuration button to send new IP address to PLC.

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• The warning message window display is shown below for this change.

- This screen shows the progress of IP address settings is sending to CPU. Wait about 30 seconds for CPU to register new IP address (the RUN and ERR lights are flashing during this process).
- Click OK to accept this new IP address for this CPU.

• Press "Scan" button again to verify the IP address of CPU. This window shows the Configured IP address sent to CPU successfully. This IP address will be used in IEC 61131-3 CoDeSys to download your PLC project to CPU.

Abort scan	1 PLC_A	C500 II	P-Configuration	×			
1ΔC address	Device name	Position	Serial number	Device ID	Current IP Address	Configured IP A	ddress Auth. supp
00-24-59-04-03-A1	PM554-T-ETH	Slot 0	0000005929	0x00	192.168.3.20	192.168.3.20	no

5 Download and Go online with project:

5.1 From Online menu, select Communication Parameters.

CoDeSys - AC500.pro*		
ile Edit Project Insert Extras	Online Window Help	
▋≝◙終キョ≧≧\$	Login Logout	Alt+F8 Ctrl+F8
➡ POUs └──₩ PLC_PRG (PRG)	Download Run Stop Reset Reset (ord) Reset (ord) Reset (ord)	F5 Shift+F8
	Toggle Breakpoint Breakpoint Dialog Sicp over Sicp in Single Cycle	F9 F10 F8 Ctrl+F5
	Write Values Force Values Release Force Write/ForceDialog	Ctrl+F7 F7 Shift+F7 Ctrl+Shift+
	Show Call Stack Display Flow Control	
Г	Simulation mode	
ц	Surrection Contractors	

- 5.2 In the Communication Parameter dialog box, click New... button to add a new channel. Type the name for this channel. In this example below, 192.168.3.20 is the name for this channel.
- 5.3 In the popup Communication Parameters: New Channel dialog, fill in the "Name" field with 192.168.3.35, select TCP/IP in Device window then click OK.

Communication Parameters	X
Channels Communication Parameters: New Channel Communication Parameter	OK Cancel New Remove Gateway Update

5.4 Click Gateway then select Local for Connection from popup Communication Parameters: Gateway window as shown below.

Channels OK 192.168.3.150 Tcp/lp 192.168.3.15 Name Value Comment 192.168.3.15 Address 192.168.3.20 IP address or hostname 192.168.3.61 Name Value Comment 192.168.3.61 Name Value Comment 192.168.3.61 New New CM574 Cods New CM574 Cods New CM574 Cods New CM574 Cods New CM574 Code New CM574 Connection: Local 192.168.3.17 Connection: Local 192.168.3.101 Connection: Local OK J92.168.3.101 Address: Cancel Update I92.168.3.20 Password: Password: Password: Port: 1210 Intervention Intervention

- 5.5 Double click in each Value field to replace with
 - Address: **192.168.3.20**
 - Port: 1201
 - Motorola byteorder: Yes

Click OK to accept these entries.

Channels				- OK
192.168.3.150 🔺	Tcp/lp			
192.168.3.10	1	,		-
192.168.3.15	Name	Value	Comment	Lance
192.168.3.15	Address	192.168.3.20	IP address or hostname	-
192.168.3.61	Port	1201		
CM574	Motorola byteorder	Yes		New
CM574_Slot1				
192.168.1.7				Hemov
- Local_ =				
192.168.3.150_				
100.100.100.10				Liateway
192.168.3.99				
192.168.3.101				Updat
192.168.0.10				
- 192.168.3.10				
- 192 168 3 20 -				

5.6 Click Online>login in top menu to download the changes and go online with CPU. **Click Yes** when message appear below.

🌯 CoDeSys - AC500.AC500PRO - [PL 🎭 File Edit Project Insert Extras	C_PRG (PRG-LD)]				
	Login Tagaut	Alt+F8 Ctrl+E8			
Carpon PLC_PRG (PRG)	Download Run Stop Reset Reset (cold) Reset (cold) Reset (cold)	F5 Shift:#F8	CoDeSys	No program on the controlle	Y Download the new program?
	Toggle Breakpoint Breakpoint Dialog Step over Sten in	F9 F10 F8		Yes No	Cancel

5.7 The download progress as shown below. The CPU status is **ONLINE** and in **STOP** mode.

After the program downloaded, select **Online>RUN** from software to put CPU in **RUN** mode. The screen below shows PC and PLC is **ONLINE** and **RUN** mode.

5.8 Click on Online>Run to put CPU in RUN mode.

6 Serial communication setup:

6.1 Go to the Online menu and create the communications port for talking to the PLC

When the port is setup, your screen should look similar to below. Make sure the communication set you created is highlighted (as shown) and click OK. The last communication set you have highlighted is the ne the program will use when you try to login.

6.2 Go online and download the program. Follow the steps:

Required: The PLC has to be connected to the PC via selected communication port

1. Select "Online", "Login"	CoDeSps - PROGRAM_Laws	
	File Edk Project Inset Eat a Online Wind w Help	
Message window pops up when SYSTEM changes were made.	Image: Second temperature Distribution Image: Second temperature Distribution <t< td=""><td></td></t<>	
CoDeSys	⊕ Bory System to 10 10	
The program has charged Download the new program?	Alimeted (Mo Section and Alimeted Section 2014) Section and Alimeted Section 2014 Section	
	PLC - Bower PLC Configuration Disclary Films Control	
Selecting YES will load the entire progra	am. A taget Sening: Taget Sening: Take configuation Take configuation	
PLC goes to STOP mode.	Wardy and Recipe Mar Workspace Overlap boot existent	
	General State	
2. Save the program in Flash EPROM by selecting "Create boot project".		
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Once is this is completed successfully you should be online, but the PLC will not be running the program until you have told it to do so. Follow the next steps:

You now have successfully connected and go online with your PLC.

