Application Note

AC500 eCo PLC
Serial and Ethernet connection protocols

1 Introduction:

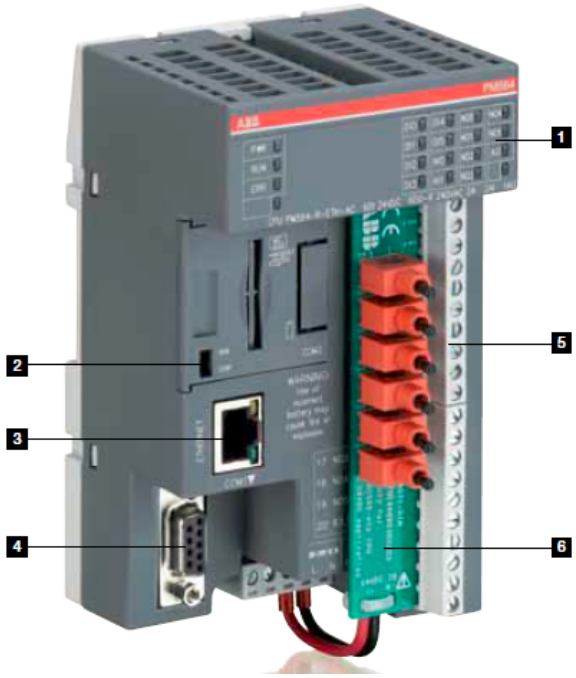
This application note shows you step-by-step to set up the serial and Ethernet connections to AC500 eCo CPU.

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



1 Status LED indicators
CPU operation and onboard I/O status

2 Run / Stop Switch
Control CPU operation

3 Ethernet CPU (in selected models)
with RJ45 Port

4 COM1
Online access, Modbus RTU, CS31-Bus master, ASCII

5 Integrated onboard I/O
Convenient cost effective solution

6 Simulator input, inserted into the terminals and screws tightened

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.

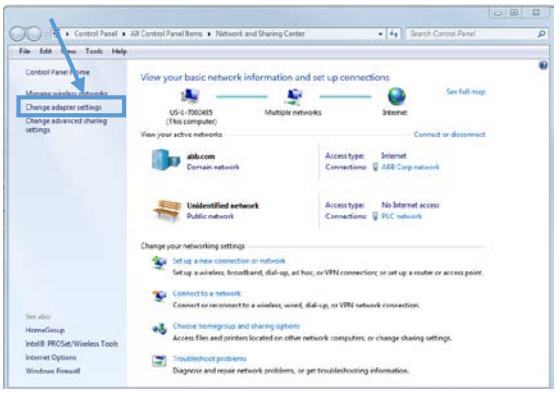
For this exercise, we are using Ethernet connection for online access to this PLC.

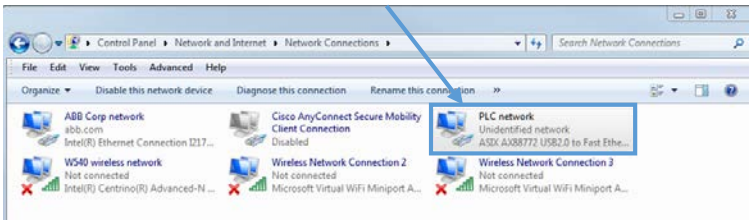
Online Access with Ethernet setup for your PC:

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.

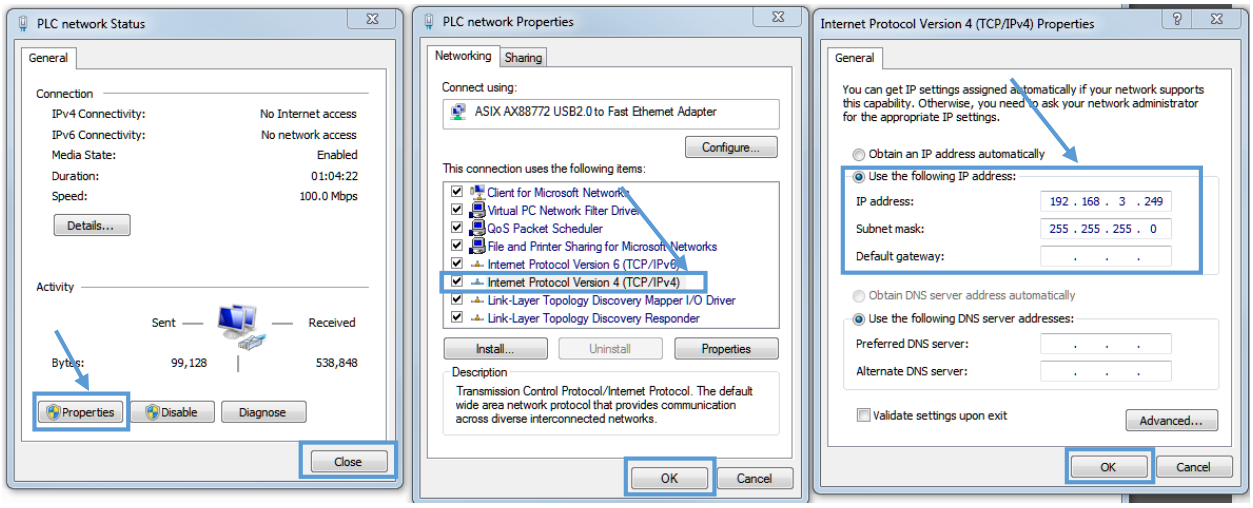
To change the IP address in your PC, go to:

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.



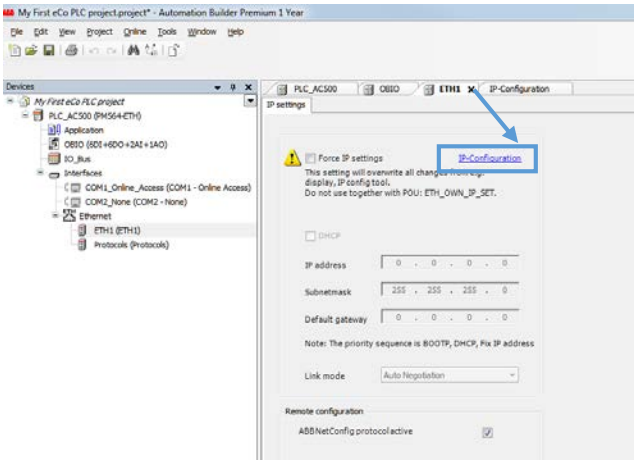


5.4 Choose **Properties** (Status is active when the Ethernet connection between PC and PLC is active)
5.5 Select **Internet Protocol Version 4 (TCP/IPv4)** and double click to see properties.
5.6 Key in your desired IP address and subnet mask then click OK.

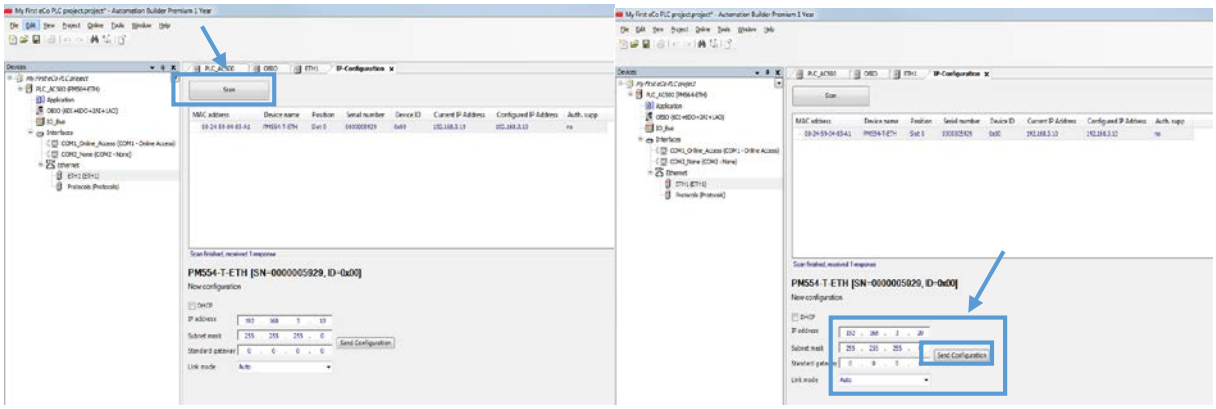


4 Setup the IP address in Automation Builder software:

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

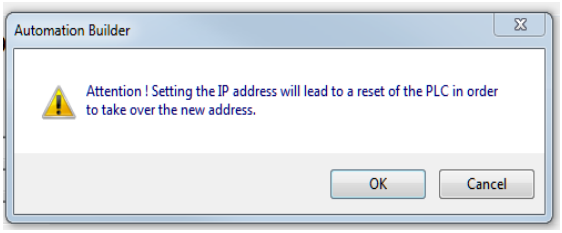


- Click on Scan button for searching active PLC on the network
- Highlight the active IP address in the search window
- Change the IP address to new IP address such as 192.168.3.20
- Click on Send Configuration button to send new IP address to PLC.

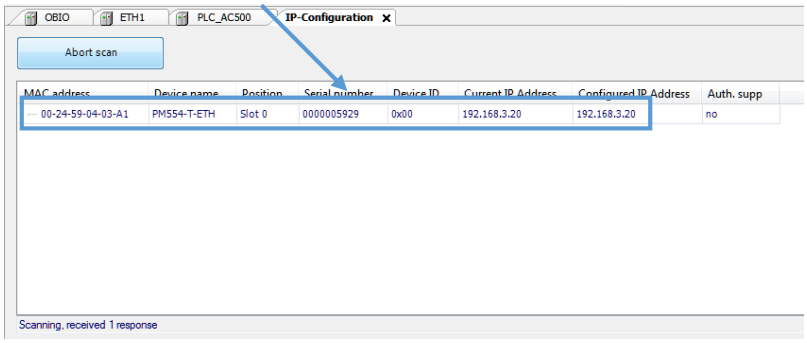


- The warning message window display is shown below for this change.

- 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.

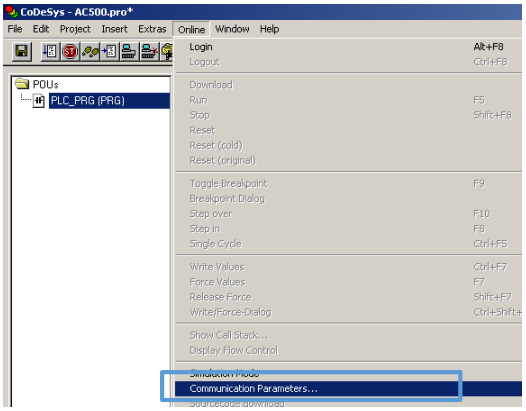


- Press "**Scan**" button again to verify the IP address of CPU. This window shows the Configured IP address sent to CPU successfully. This IP address will be used in IEC 61131-3 CoDeSys to download your PLC project to CPU.



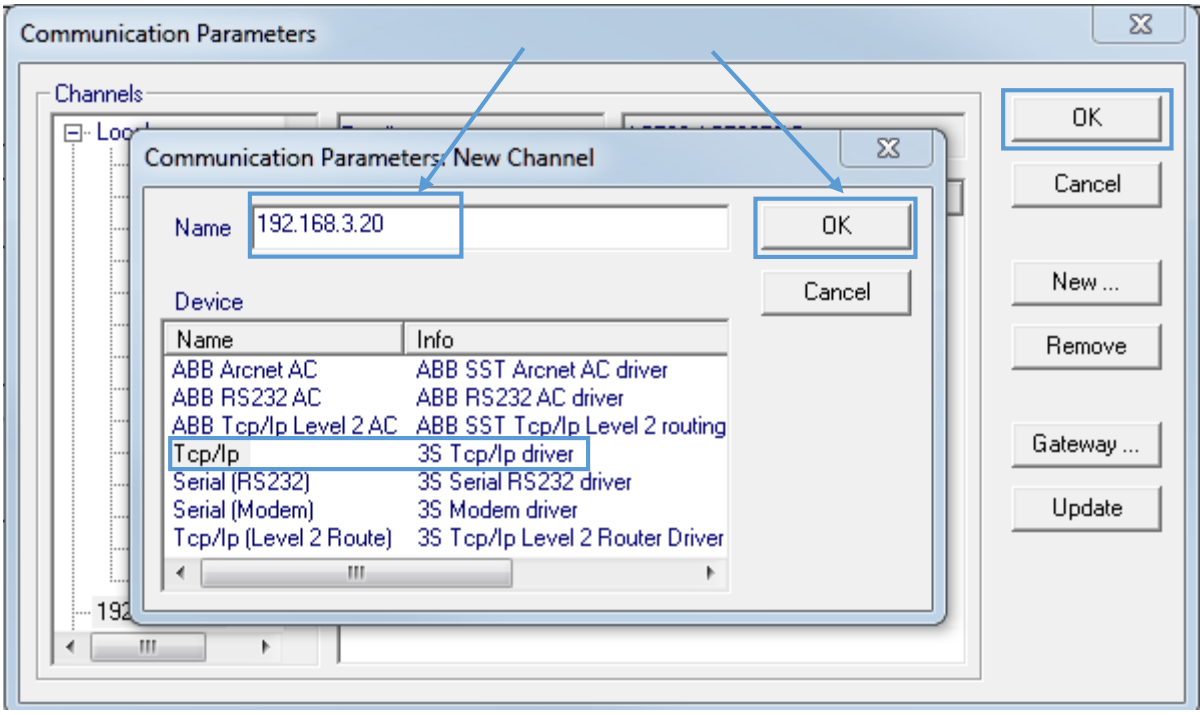
5 Download and Go online with project:

5.1 From **Online** menu, select **Communication Parameters**.

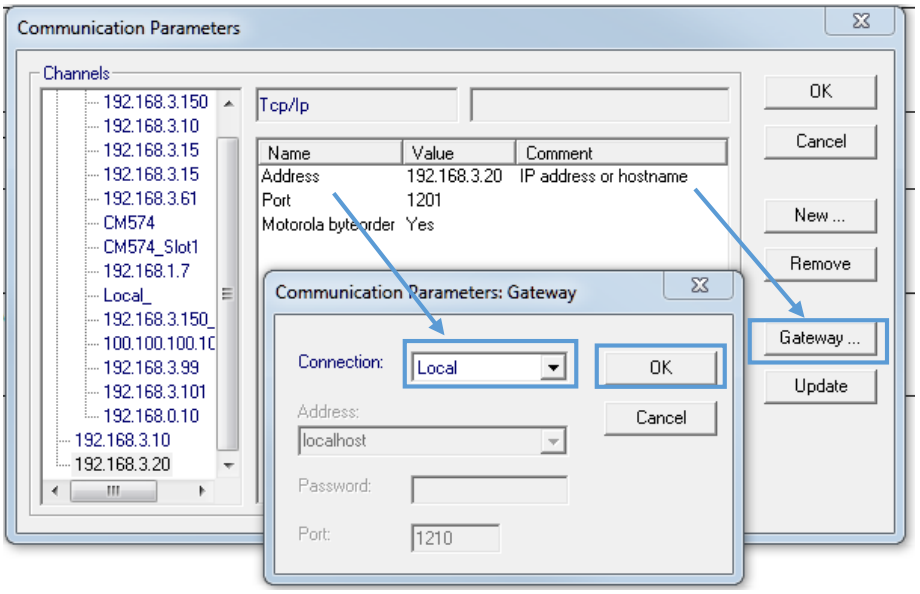


5.2 In the **Communication Parameter** dialog box, **click New…** button to add a new channel. Type the name for this channel. In this example below, **192.168.3.20** is the name for this channel.

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**.



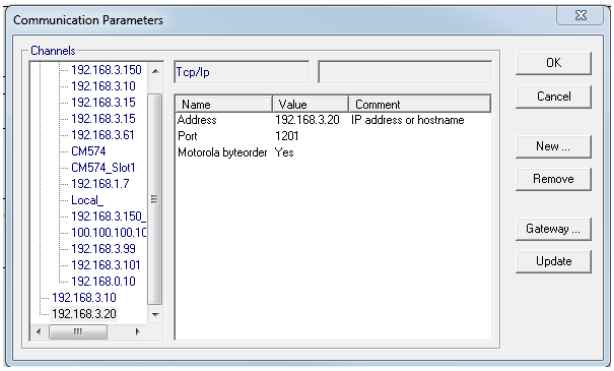
5.4 Click **Gateway** then select **Local** for **Connection** from popup **Communication Parameters: Gateway** window as shown below.



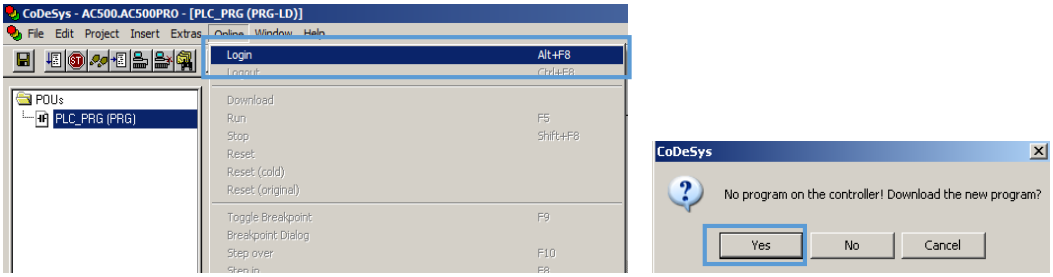
5.5 **Double click** in each **Value** field to replace with

- Address: **192.168.3.20**
- Port: **1201**
- Motorola byteorder: **Yes**

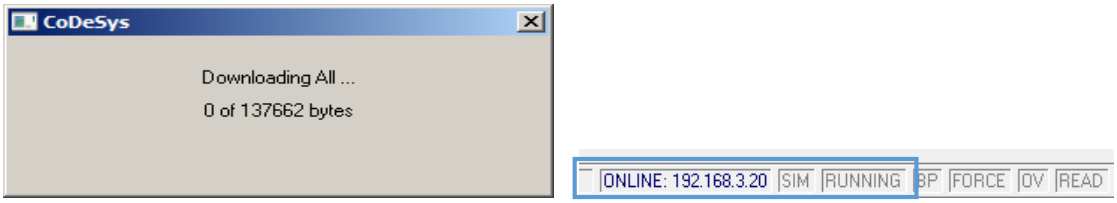
Click **OK** to accept these entries.



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



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.

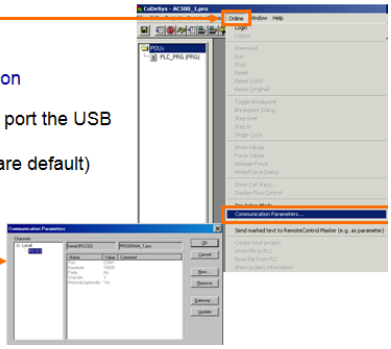
5.8 Click on Online>Run to put CPU in RUN mode.

6 Serial communication setup:

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

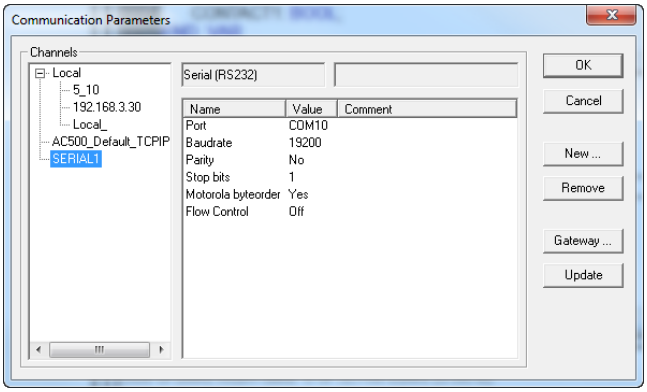
When the port is setup, your screen should look similar to below. Make sure the communication set you created is highlighted (as shown) and click OK. The last communication set you have highlighted is the ne the program will use when you try to login.

1. Select "Online", "Communication Parameters"



2. Choose Serial (RS232) option

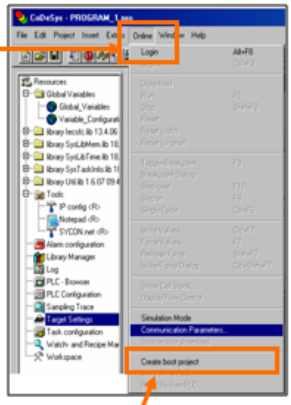
Port - COM1 or the correct port the USB converter is set to
Baud rate – 19200 (hardware default)
Parity - No
Stop Bit – 1 (default)
Motorola byte order – Yes



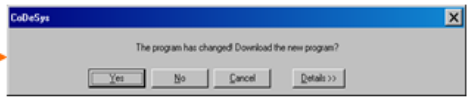
6.2 Go online and download the program. Follow the steps:

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

1. Select "Online", "Login"



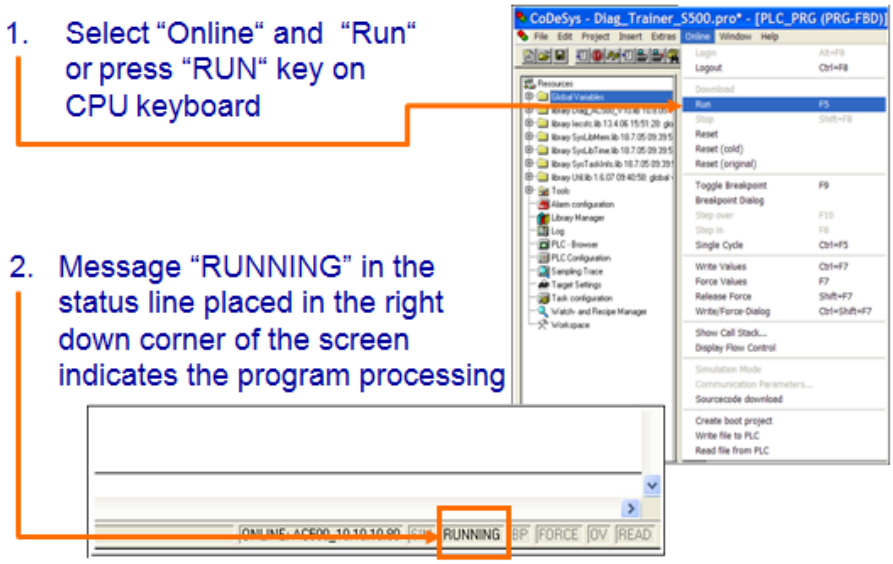
Message window pops up when SYSTEM changes were made.



Selecting **YES** will load the entire program.
PLC goes to STOP mode.

2. Save the program in Flash EPROM by selecting "Create boot project".

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.