CP500 Soft: First Step with AC500 series on Ethernet

Step8
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1. **Material used**

In that example we will use a CP555 with an AC500 Series (PM581)
To make the project, we will use:

- CP555 (Reference: 1SBP260179R1001)
- CAB5 (Reference: 1SBN260210R1001) or CAB6 (Reference: 1SBN260211R1001) on RS422 port
- CAB57 (Reference: 1SBN260215R1001)
- CP500Soft (Reference: 1SBS260283R1001)
- PM581-ETH (Reference: 1SAP140100R0170) CPU
- TB521-ETH (Reference: 1SAP112100R0170) Terminal Base
- DC532 (Reference: 1SAP240100R0001) 16DI / 16DO
- 24VDC Power supply
2. New display project

1- In Start / Programs / CP500Soft / CP Programmer / Programmer: Open the CP500 Programmer.

2 – Choose File / New

3 – The menu beside appears to choose the CP product and the protocol from the PLC you will use (Driver). Click on Change.

4 - Choose the display in the list and valid with OK.
   Our example: CP555

5 – Same operation for the PLC in choosing the Driver “ABB / Modbus TCP AC500 / AC500 PM581/591 Series” and valid with OK.
3. Communication configuration

6 – The first window appears, double click on Blocs (in Project Manager on the left), it represents all the project and all the pages from the application.

On the right, each rectangle represents on screen displayed next you have programmed it.

7 – In the menu Configuration / Peripherals, or with double click on “Peripheral”, open the window beside. (You will synchronise the communication between the Control Panel and the PLC).

Click right on “Slot 1” next click “Properties”. Choose IFC ETTP and “Ok”.

Slide “Controller 1” on IFC ETTP.

Slide “TCP/IP connection 1” (for example) on IFC ETTP, then right click on “TCP/IP connection 1” and change the IP address (in our case : 192.168.1.1).

Right click on “Modbus TCP AC500/AC500 PM581/591 Series” and click on “Properties”. Verify that the “IP Address” in Node 0 is 192.168.1.2, valid with OK and close the configuration window.
4. **Build of the first page**

6 – is the first page, which will appear when you power the product. Arrows represent the links between the different screens.

Double click on the window below open.

8 – On the bottom find the toolbar, it contains all the objects possible to use for the model of control panel you use.

When you put the mouse on the different objects (Wait some seconds), there functionality appears.
5. Create objects on the screen

9 – We will visualise the value from an analog value in the CPU.
Click on the object “0.3” (numeric) next click on the screen where you want it to appear. The toolbox below will appear.

Enter the variable address used, in our example we take address %MW0.0001 (signed 16 bits).
Put in “Positions”: 6 and “Decimals”: 1, “Gain”: 0.1 (Ex: The value in the PLC will be 150, but we want to see 15.0).
When you click on Apply, you will be able to visualise on the background how will appear what you parameter on the screen. Move the window if necessary.

You can change the aspect of the object in the same window. (Colour of text or Background style…)

10 – We will visualise the value from another analog variable from the PLC.
Click on the object (Vu-meter) and click on the screen where you want it to appear. The toolbox beside appears.

Enter the variable address use %MW0.2
Change the maximum value: 100
You can change the aspect of the object, and see as before the changes, every time when you click on Apply.

11 – We will visualise and change the value from output N°0 from the PLC.
Click on the object (TOR Symbol) next click on the screen where you want it to appear. The toolbox beside appears.

Enter the variable address used %MX0.0.0
Click on Select choose ROT0, next OK. Put the cursor on “Symbol ON” choose ROT1 and OK. Select “Stretch”. Put “X size” 100, “Y size” 100
In “Access” select “Enable operator input”. Valid by OK.
6. **Transfer the programme**

You have created what you want to see on the screen and make the connection between the Control Panel and the PLC. To verify the project, click on the Glasses to transfer the programme.

12. Click on to transfer the project in the CP555.

The window beside appears, click on Send.

Confirm by “Yes”.

It’s possible just to send a part of the project: unselect “Send complete project”.

Disconnect the CAB5 and connect instead CAB57 with the PM581 (Possible to use CAB6 on RS422 connector and the changes are made without to be obliged to disconnect all the time the PLC).

In AC500 you have to configure the communication and to affect the variable to the output in the PS501 Soft:  

%MX0.0.0 = %QX0.0.0

When you are Online on PS501 you can modify the analog value and see the result on CP555.

You can now see on the CP555, the values change when you change the variable in the CPU. Click on the selector, it activate or inactivate the output “0” from the CPU.
7. **AC500 Modbus variable range**

Ranges access for the different CPUs

**PM571:** 4 kB  
1 segment of variables available:  
%MX0.0.0 to %MX0.4095.7  
%MB0.0 to %MB0.4095  
%MW0.0 to %MW0.2047  
%MD0.0 to %MD0.1023

**PM581, PM582 and PM591:** 128 kB  
2 segments of variables available:  
%MX0.0.0 to %MX1.65535.7  
%MB0.0 to %MB1.65535  
%MW0.0 to %MW1.32767  
%MD0.0 to %MD1.16383

**WARNING**  
If you use data table the data could not begin in segment “1” and finish in segment 2. It will create an error message.

Structure extraction

<table>
<thead>
<tr>
<th>Byte BYTE</th>
<th>Bit (byteorientiert) BOOL</th>
<th>Wort WORD</th>
<th>Doppelwort DWORD</th>
</tr>
</thead>
<tbody>
<tr>
<td>%MB0.0</td>
<td>%MX0.0.0 .. %MX0.0.7</td>
<td>%MW0.0</td>
<td>%MD0.0</td>
</tr>
<tr>
<td>%MB0.1</td>
<td>%MX0.1.0 .. %MX0.1.7</td>
<td>%MW0.1</td>
<td></td>
</tr>
<tr>
<td>%MB0.2</td>
<td>%MX0.2.0 .. %MX0.2.7</td>
<td>%MW0.2</td>
<td>%MD0.1</td>
</tr>
<tr>
<td>%MB0.3</td>
<td>%MX0.3.0 .. %MX0.3.7</td>
<td>%MW0.3</td>
<td></td>
</tr>
<tr>
<td>%MB0.4</td>
<td>%MX0.4.0 .. %MX0.4.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>%MB0.5</td>
<td>%MX0.5.0 .. %MX0.5.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>%MB0.6</td>
<td>%MX0.6.0 .. %MX0.6.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>%MB0.7</td>
<td>%MX0.7.0 .. %MX0.7.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>..</td>
<td>..</td>
<td></td>
<td></td>
</tr>
<tr>
<td>%MB0.65532</td>
<td>%MX0.65532.0 .. %MX0.65532.7</td>
<td>%MW0.32767</td>
<td>%MD0.16383</td>
</tr>
<tr>
<td>%MB0.65533</td>
<td>%MX0.65533.0 .. %MX0.65533.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>%MB0.65534</td>
<td>%MX0.65534.0 .. %MX0.65534.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>%MB0.65535</td>
<td>%MX0.65535.0 .. %MX0.65535.7</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
8. Help: Modbus TCP configuration for AC500

Minimum of configuration in AC500 to communicate with CP500 products

In PS501 Software:

In menu Ressources / PLC Configuration / AC500 / Couplers / Internal none[Slot]

Right click on “Internal none[Slot]” and select “Replace element”

Choose PM5x1-ETH – Internal-Ethernet

MODBUS on TCP/IP[FIX] appears
Then in SYSCON Software:

- Select “Configuration” then “IP_SETUP”
- Enter “IP address”
- Verify “Net mask”

In “OMB SETUP”

- Enter in “Server connections” a value >0 (depending on your network configuration, See in AC500 documents for more information) 
  In our case we will use “2”
- Enter “Swap” = True 
  True = Motorola byte order
- Valid “OK”