

# ***PMXNOW0300 Wireless Companion***

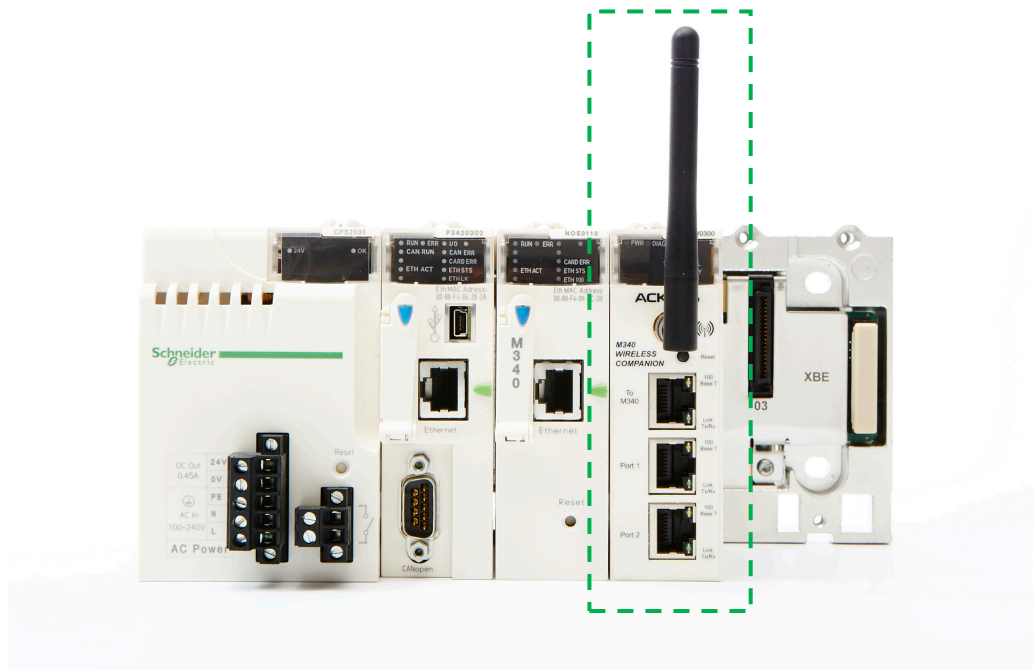
## ***Application note***

The PMXNOW0300 wireless companion is a single slot backplane compatible module that allows the M340 or M580 processors to interface easily with the WiFi wireless network, in order to communicate with devices located remotely.

The module can be used either as Access point to create the wireless network infrastructure, as a Bridge to connect network equipments or even as Repeater to extend the wireless network coverage.

The module offers point to point or point to multipoint communication schemes and supports all Ethernet based protocols including MODBUS/TCP, Ethernet/IP, ...

This document will address some possible use cases for the PMXNOW0300 wireless companion.



## Configure the PMXNOW0300 wireless companion as Access Point (AP)

We will be using one module configured in "Access Point" mode and one in "Bridge" mode. For the access point, we configure a static IP address 192.168.0.253

**BASIC**

WIZARD

LAN

DHCP

WIRELESS

SNMP

TFTP

ALARM

Save Settings Don't Save Settings

this access point will get a static IP address

**LAN SETTINGS**

IP Address Mode :  Static  DHCP

Host Name : AdSysWLM54

IP Address : 192.168.0.253

Subnet Mask : 255.255.255.0

Gateway : 192.168.0.1

Primary DNS : 192.168.0.2

Secondary DNS : 0.0.0.2

Local Domain Name : (optional)

Backward compatibility :  Enable the security compatibility for 802.11n

the IP address we configure

Don't leave empty

Note: Most of the configuration parameters are already set by default and do not need to be changed; we will just configure a network name (SSID) and select a security mode to encrypt the communication

**BASIC WIRELESS SETTINGS**

Wifi Mode :  Bridge  Access Point

Enable WDS :

Wireless Network Name : CAPP acksys (Also called)

Visibility Status :  Visible  Invisible

802.11 Mode : Mixed 802.11g and 802.11b

Super AG™ Mode : Disabled

Region / Country : Europe

Auto Channel Select :

Channel : 2.437 GHz - CH 6

Antenna : Diversity

Transmission Rate : Best (automatic) (Mbit/s)

select access point

Enter the SSID (name of the Network we will create)

select your area

**WIRELESS SECURITY MODE**

Security Mode :  None  WEP  WPA/WPA2-PSK  WPA/WPA2

select WPA for maximum encryption

**WPA / WPA2**

WPA requires stations to use high grade encryption and authentication. NOTE: WDS will not function with WPA security.

WPA Mode : WPA

Cipher Type : TKIP

Group Key Update Interval : 3600 (seconds)

enter a key

**PRE-SHARED KEY**

Pre-Shared Key : .....

## Configure a PMXNOW0300 wireless companion as a Bridge

For the Bridge, we configure a static IP address 192.168.0.252

**ACKSYS COMMUNICATIONS & SYSTEMS BRIDGE**

**BASIC** | ADVANCED | TOOLS | STATUS

**BASIC**

- LAN
- WIRELESS
- NAT
- SNMP
- TFTP
- ALARM

**LAN**

**Network Settings**

Use this section to configure the internal network settings of your bridge. The IP Address is the IP Address you will use to access the Web-based management interface. If you are here, you may need to adjust your PC's network settings to access the network again.

**Save Settings** | **Don't Save Settings**

**LAN SETTINGS**

IP Address Mode :  Static  DHCP

IP Address : 192.168.0.252

Subnet Mask : 255.255.255.0

Gateway : 192.168.0.1

Annotations: "select static" points to the Static radio button. "enter IP address" points to the IP Address input field.

**ENABLE**

Enable Wireless Radio :

Annotation: "select Bridge" points to the checked checkbox.

**BASIC WIRELESS SETTINGS**

Wifi Mode :  Bridge  Access Point

Wireless Mode :  Infrastructure  Ad-Hoc

Wireless Network Name : CAPP acksys (Also called the SSID)

802.11 Mode : Mixed 802.11g and 802.11b

Super AG™ Mode : Disabled

Region / Country : Europe

Auto channel select :

Channel : 2.412 GHz - CH 1, 2.417 GHz - CH 2, 2.422 GHz - CH 3, 2.427 GHz - CH 4, 2.432 GHz - CH 5

Antenna : Diversity

Transmission Rate : Best (automatic) (Mbit/s)

Annotation: "enter same SSID as access point" points to the Wireless Network Name field.

Annotation: "To make multiple selections/deselect from the list, use Ctrl+Click" points to the Channel list.

**WIRELESS ROAMING MODE**

Roaming Mode :  Disable  Enable

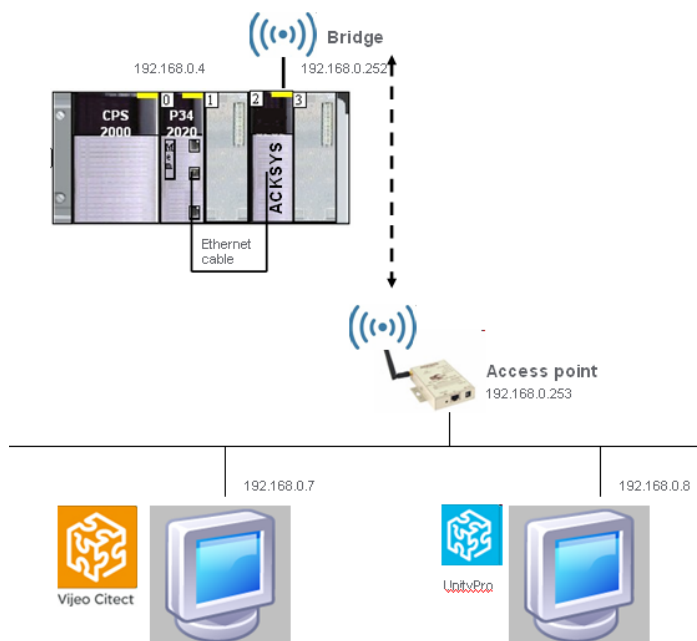
Annotation: "select same security as access point and enter the correct password" points to the Disable radio button.

**WIRELESS SECURITY MODE**

Security Mode :  None  WEP  WPA/WPA2-PSK  WPA/WPA2

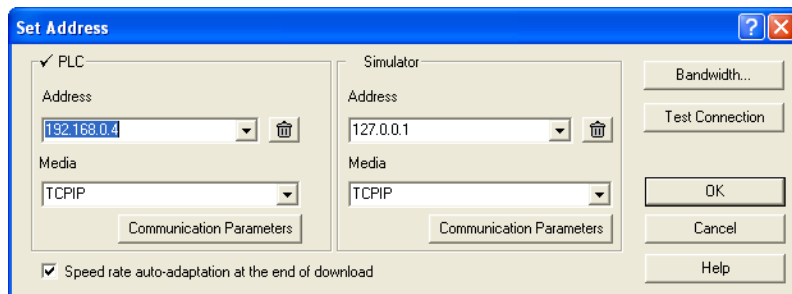
## Use case 1

### Wireless access to the M340 or M580 from VijeoCitect or UnityPro



The M340 or M580 CPU, along with the PMXNOW0300, acts as a wireless Modbus-tcp server, whereas VijeoCitect and UnityPro software are Modbus-tcp clients. In that case the Ethernet port of the M340 or M580 CPU is connected to the Acksys PMXNOW0300 wireless module and there is no need for an extra BMX NOE in-chassis module.

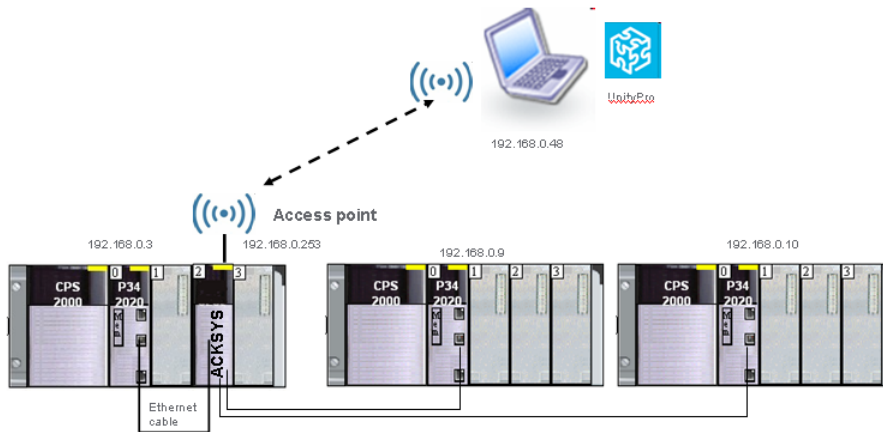
The Acksys PMXNOW0300 wireless module is transparent in the communication path. When you want to connect to the M340 or M580, the destination address is 192.168.0.4.



When you configure the M340 or M580 UnityPro CPU there is strictly nothing to do about the acksys PMXNOW0300 wireless companion.

## Use case 2

### Wireless access and embedded Ethernet switch capabilities



In this network architecture, we take the benefit of the embedded Ethernet switch capabilities of the PMXNOW0300 wireless companion to connect up to 3 M340 or M580 PLCs together. There will be no need for an external Ethernet switch.

192.168.0.48 is a laptop computer with a WiFi client connection. It connects to the M340 or M580 PLC network through the Acksys PMXNOW0300 wireless companion configured as an access point. There is no configuration to be done within the UnityPro project side regarding the PMXNOW0300.

## Use case 3

### Exchange process data between PLCs



In the use case pictured above we want to read and/or write some of the process data values both ways. We can use the READ\_VAR / WRITE\_VAR function blocks just like if both PLCs were connected on an Ethernet cable. We do not need any extra BMX NOE in chassis module.

From the PLC 192.168.0.4 we want to read 64 words in the PLC 192.168.0.3 from the starting address %MW100

```
Tab_addr_CONF_P1:=ADDM('Ethernet_CPU{192.168.0.3}');
ReadExchArea[2]:=30; (* 3 seconds time-out for reading *)
ReadExchArea[3]:=0;
IF ReadVar and not(ReadExchArea[0].0) THEN
    IF ReadExchArea[1] <> 0 THEN
        CptErrMsg:=CptErrMsg+1;
        ReadExchArea[1]:=0;
    END_IF;
    READ_VAR (Tab_addr_CONF_P1, '%MW',
    100,
    64,
    ReadExchArea,      (* Exchange managing area *)
    ReadBuffer);      (* Data storing area *)
END_IF;
```

From PLC 192.168.0.3 we want to write 16 words into the PLC 192.168.0.4 starting address %MW56

```
(* Write the WriteBuffer words into the destination address *)
Tab_addr_CONF_P1:=ADDM('Ethernet_CPU{192.168.0.4}');
WriteExchArea[2]:=30; (* 3 seconds time-out for writing *)
WriteExchArea[3]:=0;

IF WriteVar and not(WriteExchArea[0].0) THEN
    IF WriteExchArea[1] <> 0 THEN
        CptErrMsg:=CptErrMsg+1;
        WriteExchArea[1]:=0;
    END_IF;
    WRITE_VAR (Tab_addr_CONF_P1,
    '%MW',
    56,
    16,
    WriteBuffer,      (* Data area to write *)
    WriteExchArea);  (* Exchange managing area *)
END_IF;
```

## Use case 4

### Exchange process data between PLCs through global data

Global Data requires a BMX NOE to be connected to the PMXNOW0300 wireless companion. There are also considerations to be carefully evaluated regarding a potential wireless traffic congestion related to the number of stations that need to be exchanging data values.

