

The PMXNOW0300 wireless companion is a single slot backplane compatible module that allows the M340 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, 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 case for the PMXNOW0300 wireless companion.

Configure the PMXNOW0300 as access point

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

The screenshot displays the configuration web interface for the PMXNOW0300 module. On the left is a sidebar menu with options: BASIC (highlighted in red), WIZARD, LAN, DHCP, WIRELESS, SNMP, TFTP, and ALARM. The main content area is titled 'LAN' and contains a 'Network Settings' section. This section includes a descriptive text about configuring the internal network settings and two buttons: 'Save Settings' and 'Don't Save Settings'. Below this is the 'LAN SETTINGS' section, which contains several fields: 'IP Address Mode' (with 'Static' selected and 'DHCP' unselected), 'Host Name' (set to 'AckSysWLM54'), 'IP Address' (set to '192.168.0.253'), 'Subnet Mask' (set to '255.255.255.0'), 'Gateway' (set to '192.168.0.1'), and 'Local Domain Name' (empty, with '(optional)' text). Two red annotations are present: a box labeled 'this access point will get a static IP address' with an arrow pointing to the 'Static' radio button, and another box labeled 'the IP address we configure' with an arrow pointing to the 'IP Address' text field.

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 a SSID (the network name that we will connect to)

select your area

select WPA for maximum encryption

WIRELESS SECURITY MODE

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

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 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** **select static**

LAN SETTINGS **enter IP address**

IP Address Mode : ☒ Static ☐ DHCP

IP Address : 192.168.0.252

Subnet Mask : 255.255.255.0

Gateway : 192.168.0.1

ENABLE

Enable Wireless Radio : ☒ **select Bridge**

BASIC WIRELESS SETTINGS

Wifi Mode : ☒ Bridge ☐ Access Point

Wireless Mode : ☒ Infrastructure ☐ Ad-Hoc

Wireless Network Name : CAPP acksys (Also called the SSID) **enter same SSID as access point**

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 **To make multiple selections/deselect from the list, use Ctrl+Click**

Antenna : Diversity

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

WIRELESS ROAMING MODE

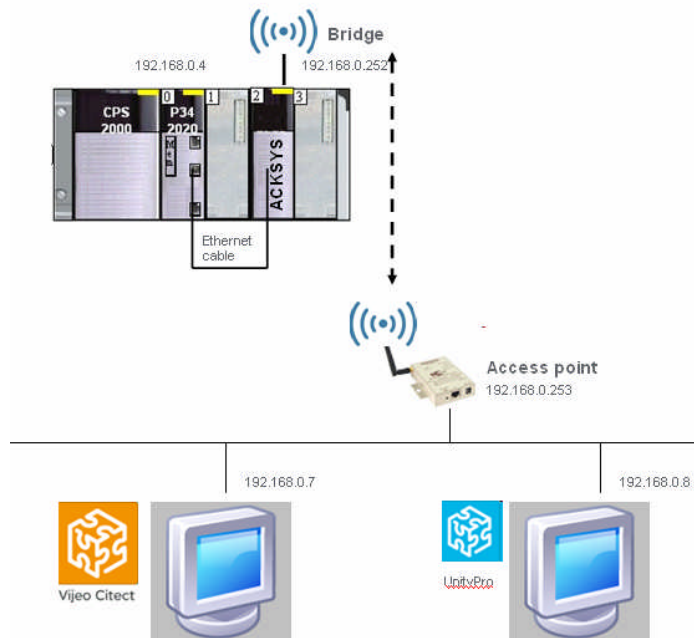
Roaming Mode : ☒ Disable ☐ Enable **select same security as access point and enter the correct password**

WIRELESS SECURITY MODE

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

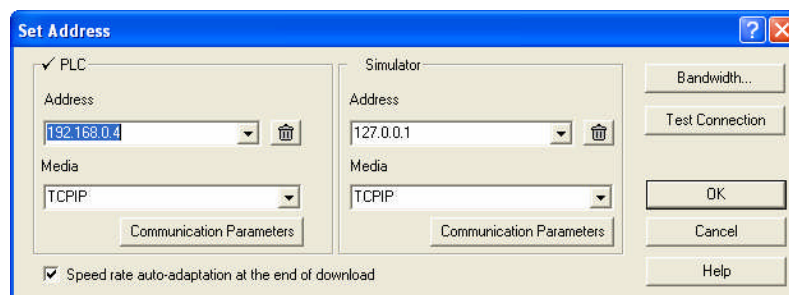
Use case 1

Wireless access to the M340 from VijeoCitect or UnityPro



The M340 acts as a modbus-tcp server. VijeoCitect and UnityPro software are modbus-tcp clients. In that case the Ethernet port of the M340 cpu is connected to the Acksys PMXNOW0300 wireless module and there is no need for an extra BMX NOE in-chassis module.

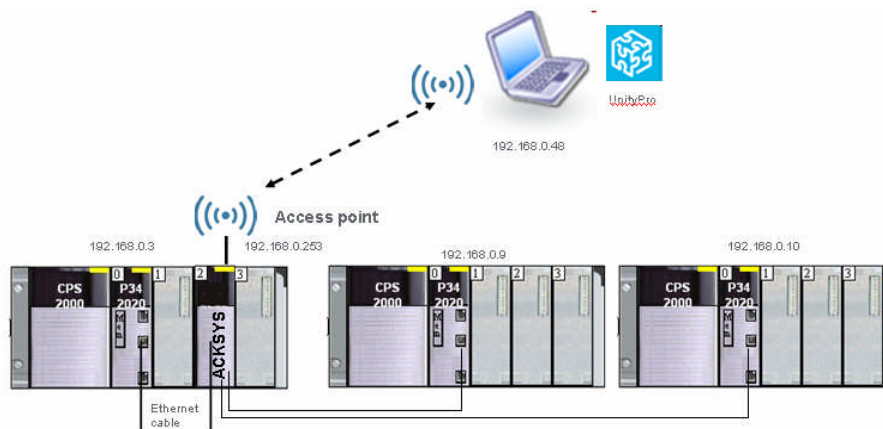
The PMXNOW0300 wireless module is transparent in the communication path. When you want to connect to the M340, the destination address is 192.168.0.4.



When you configure the M340 UnityPro cpu there is strictly nothing to do about the acksys PMXNOW0300.

Use case 2

Wireless access and embedded Ethernet switch capabilities

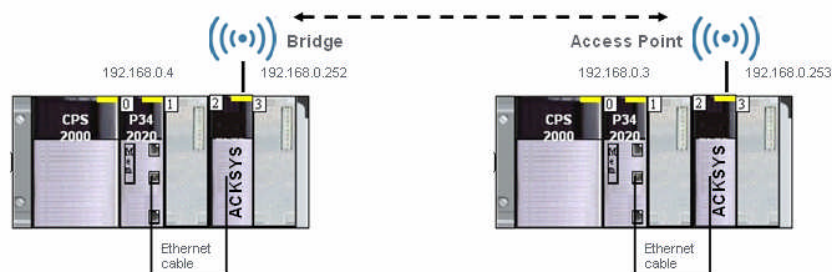


In this network architecture, we take the benefit of the embedded Ethernet switch capabilities of the PMXNOW0300 to connect up to 3 M340 PLCs together. There will be no need for an external Ethernet switch.

192.68.0.48 is a laptop computer with a WiFi client connection. It connects to the M340 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.

