PURPOSE AND FUNCTIONALITIES OF THE pCOWeb CARD

The pCOWeb card is designed in the VTS application to be used as a module extending the functionality of the uPC3 controller with data exchange between AHU and building automation systems (BMS) using the BACnet or Modbus TCP / IP protocol.

Analog Variables and Digital Variables are used for communication with VTS AHUs. Their full list is available on the VTS website.

The card is equipped with a button (located on the left side of the Ethernet socket) with the following functions:

1) When booting the card, pressing it allows you to establish a connection using the factory address of the card (for more information, see the *First start-up* chapter).

2) During normal operation, it allows you to reboot the card without disconnecting the power or using the virtual *Reboot* button. To perform it with the button, hold it for at least 5, but not more than 10 seconds - after a while, the status LED will flash quickly in red-green colors, confirming that the reboot procedure has started. After about a minute, its successful completion will be confirmed by the standard blinking of the status LED.

In order to facilitate the determination of the current status, the card has been equipped with two LED diodes: status and network. The statuses they signal can be read from the tables below:

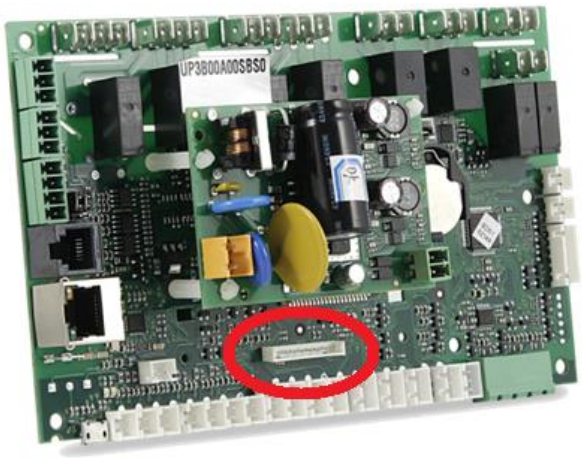
status LED (left)		
LED status	meaning	comment
flashing green (three times per second)	correct communication	during operations that use a significant amount of memory, the LED may remain green for a few seconds
flashing red (once every two seconds)	communication has not been established	-
single red blink, then blinks green	single communication error	after five incorrect answers, the LED starts blinking red until communication is restored
alternating fast flashing red-green followed by green light steady on for one minute	card in reboot process	-

lit green for one minute	card in reboot process	waiting for the result of the process
three red flashes (second on - second off)	detection of button pressing during card startup, resulting in the use of the factory connection parameters during this startup	release the button to activate the start of the card with factory settings
three red blinks (three times per second)	confirmation of the use of factory parameters for connection during this card activation	-
steady blue for one minute	firmware update	do not disconnect the power

network LED (right)		
LED status	meaning	comment
steady green	correct Ethernet connection signal	-
blinking green	correct Ethernet data exchange	-
steady red	no Ethernet signal	-

FIRST START-UP

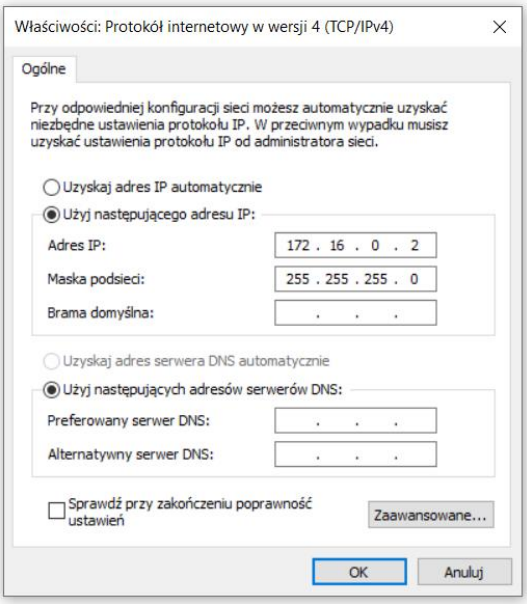
The card should be mounted directly on the uPC3 controller board, using the serial port (white slot next to the analog input bus):



After installing the card and powering the controller, perform the procedure of starting the card with factory settings: within a few seconds of powering the uPC3, when the status diode with shows steady green light, hold the button on the card for a few seconds - until the diode lights red, and release the button before three red flashes appear.

After about 40 seconds, the start-up process with factory settings will be completed, and the current status of the LEDs can be read from the table in the *Purpose and functionalities of the pCOWeb card* chapter.

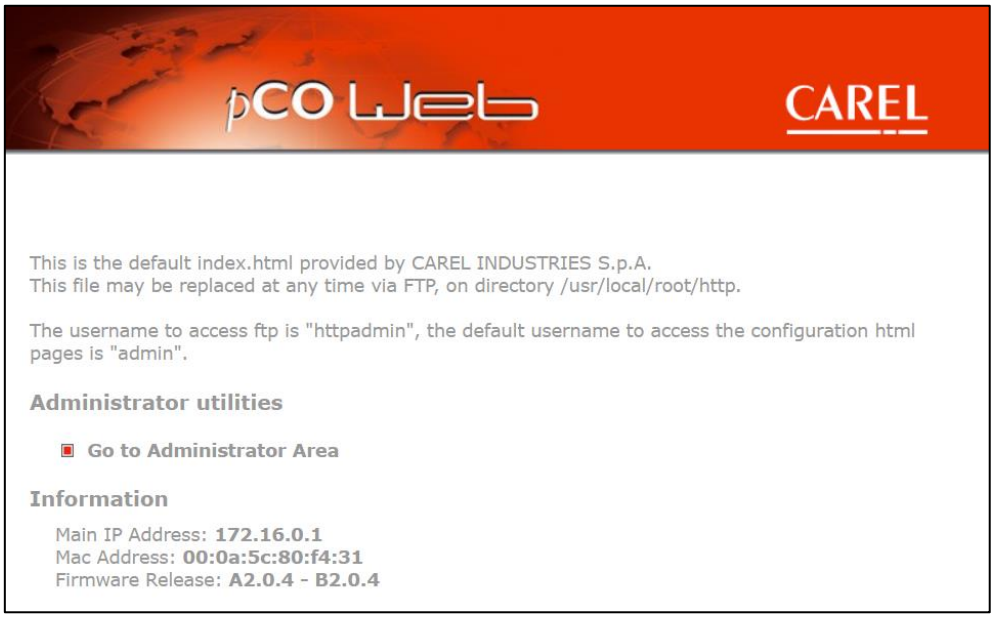
Using a shielded Ethernet cable we now connect the pCOWeb card to the computer whose Ethernet card settings must be as follows:



To access the pCOWeb card, go to its default address in your web browser:

IP: 172.16.0.1

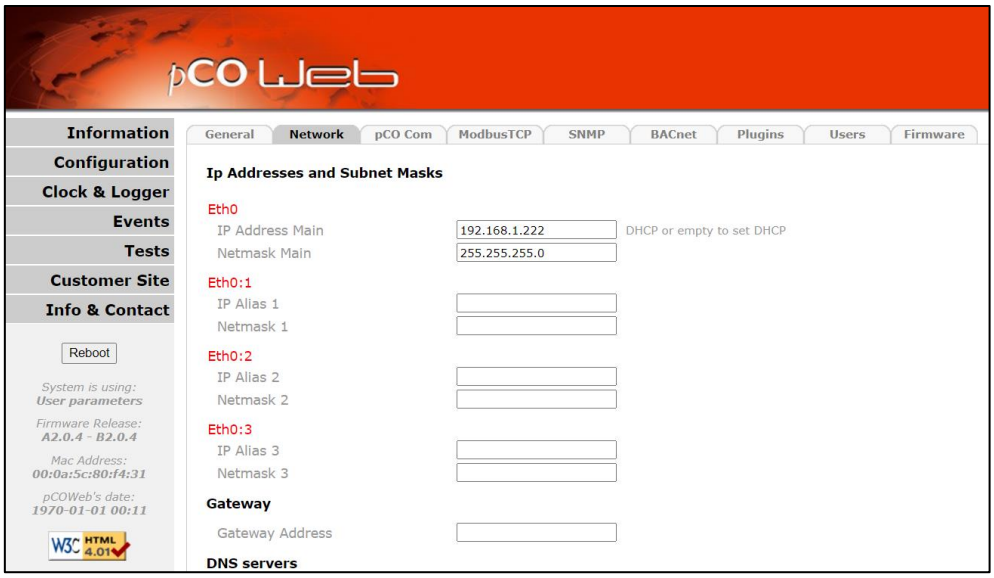
After that, the default card screen will appear:



After clicking *Go to Administrator Area*, the default access data should be entered:

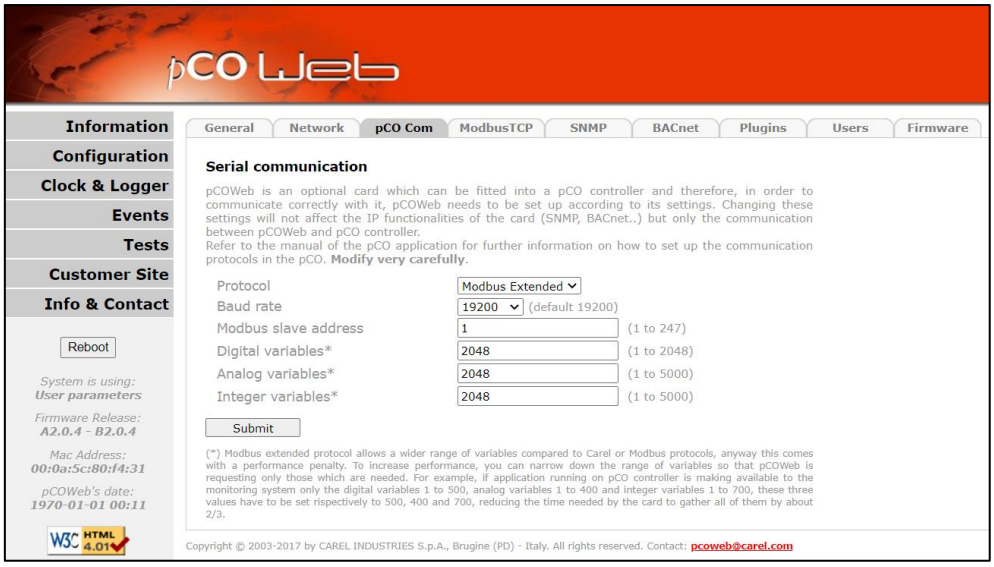
user: admin
password: fadmin

To set up your own selected IP address of the card, click *Configuration*, then select *Network* from the tab bar at the top of the screen and set the selected IP address and network mask as *Eth0*. The next time the card is launched, it will be available on the network at the selected address:



To save the changes, the card must be rebooted.

To ensure correct communication between the uPC3 controller and the pCOWeb card, the following settings must be made in the *pCO Com* tab:



In addition, you should also make sure that the uPC3 controller is properly configured - the I08 HMI Advanced screen should have the following settings:

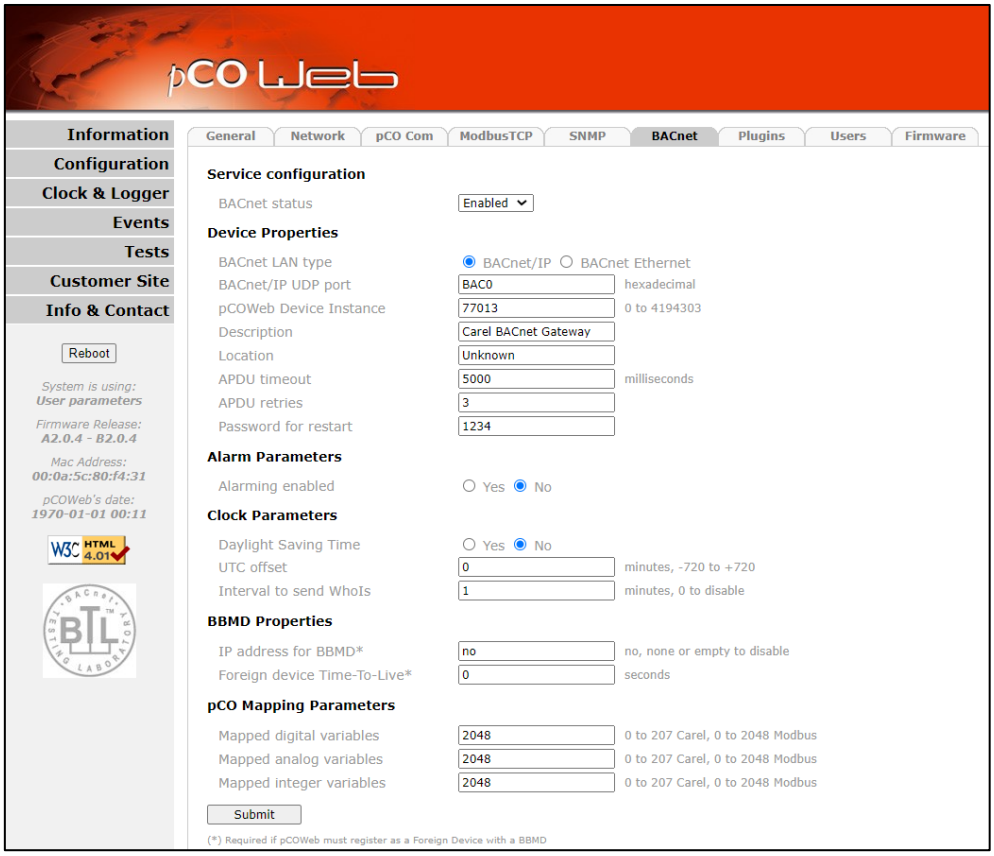
COMMUNICATION - BACnet IP PROTOCOL

Mapping Modbus Extended - BACnet IP variables follows the rules presented in the table below:

Variable type	Modbus Extended	BACnet IP
Analog Value	A0001-A2048	100001 – 102048
Binary Value	D0001-D2048	100001 – 102048

It means that, for example, *Analog Value IO – Analog Output – Cooling [%]* variable that has index 2 (A0002) will be available on 100002 address.

Below are examples of settings that ensure correct communication of the pCOWeb card with the BMS client using the BACnet IP protocol (it is important to configure the target BACnet IP client in accordance with the settings set in the pCOWeb card):



COMMUNICATION –MODBUS TCP/IP PROTOCOL

Mapping Modbus Extended variables - Modbus TCP / IP follows the rules presented in the table below:

Variable type	Modbus Extended	Modbus TCP/IP
Analog Value	A0001-A2048	1-2048
Binary Value	D0001-D2048	1-2048

It means that, for example, *Analog Value IO – Analog Output – Cooling [%]* variable that has index 2 (A0002) will be available on 2 address.

Below are examples of settings that ensure correct communication of the pCOWeb card with the BMS client using the Modbus TCP/IP protocol (it is important to configure the target Modbus TCP/IP client in accordance with the settings set in the pCOWeb card):