

# ***ECONET EC+ / EC++ Ethernet & WiFi Configuration***



## ***Application Note 024***

*Release 1.03 2021*

## **Introduction**

This application note provides information about configuration methods and features for WiFi® and Ethernet plug-in communication boards for Econet EC+/EC++ family.

The Turbo plug-in communication boards are available in three mounting variant: WiFi, Ethernet and WiFi + Ethernet. They are fully compatible with EC+ and EC++ Econet devices and have an on-board TCP/IP stack for ready-to-use interfacing at standard industrial networks.

## **Plug-In communication boards**

Based on the “Plug-in Communication boards” are made up of a small board fitted into the Econet EC+/EC++ mainboards.



Developed around a single electronic board fitted in different variants, the communication board is mounted on the Econet EC+/EC++ motherboard. It is provided of an high performances microcontroller that handles a communication module. Thanks to its smart technology, the module takes care of handling all the information exchange tasks on the network.

Once the initial configuration has been performed, the Plug-In communication board automatically accesses at WiFi or Ethernet network and sends/receives serial data.

The WiFi version is based on Microchip RN171 stand-alone embedded wireless LAN access device module.

The Ethernet version is based on Lantronix® DeviceLinx® XPort® device server module.

Here are listed the main Plug-In communication board features:

Ethernet board	WiFi board
	
Connects devices through a TCP data channel or through a Telnet connection	Fully qualified and Wi-Fi certified 2.4 GHz IEEE 802.11 b/g transceiver
Supports UDP datagrams	FCC, CE, IC certified
Contains a web [HTTP] server allowing presentation of custom content and easy configuration through a browser.	4 µA sleep, 35 mA RX, 185 mA TX at 12 dBm (TX power <i>is</i> configurable)
ARP, UDP, TCP, ICMP, Telnet, TFTP, AutoIP, DHCP, HTTP, and SNMP for network communications and management.	On-board TCP/IP stack
TCP, UDP, and Telnet for connections to the serial port.	Output Power: 12dBm (programmable)
IP for addressing, routing, and data block handling over the network.	Secure Wi-Fi authentication via WEP, WPA-PSK (TKIP), and WPA2-PSK (AES)
User Datagram Protocol (UDP) for typical datagram applications	External antenna

## **Ethernet board configuration**

In order to operate correctly on a network, the Ethernet Plug-In board must have a unique IP address on the network. To do this, there are two basic methods for logging into the Xport device server to assign an IP address and configure the module.

### Method 1: Using DeviceInstaller

Assign an IP address and view the current XPort module configuration using a Graphical User Interface (GUI) on a PC attached to a network.

DeviceInstaller is a free utility software provided by Lantronix for configure, upgrade and manages Lantronix Device Servers. It can be downloaded from the Lantronix website at [www.lantronix.com/support/downloads](http://www.lantronix.com/support/downloads).

For instructions on using DeviceInstaller to configure the IP address and related settings or for more advanced features, see the DeviceInstaller Online Help.

To install DeviceInstaller:

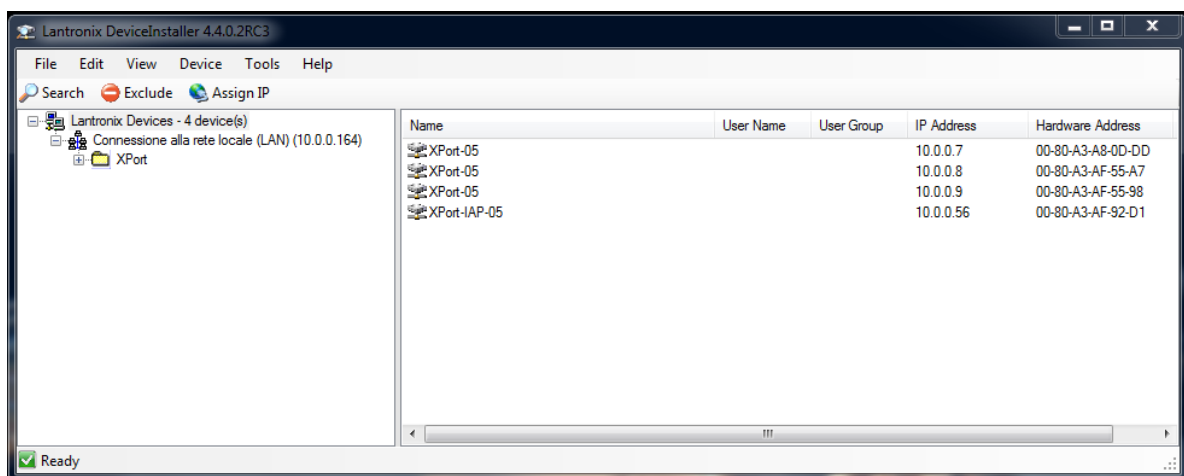
1. Download the latest version of DeviceInstaller software from Lantronix site;
2. Run the executable to start the installation process;
3. Power ON the Econet device equipped with Ethernet plug-in board;
4. Connect the Ethernet cable at the Ethernet plug-in board header;
5. Check connection by mean of flashing green Leds on the header;
6. Launch DeviceInstaller software;

To Assign IP:

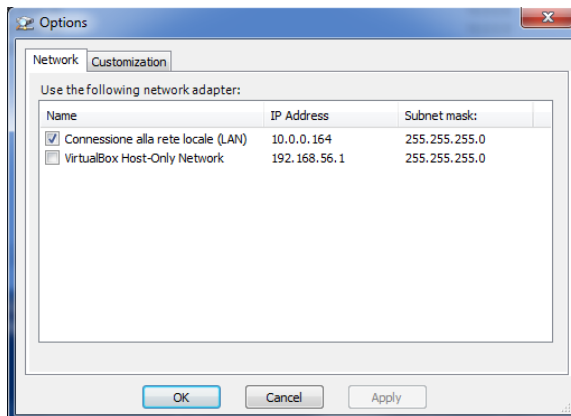
The device's IP address must be configured before it can work correctly on a network.

Using DeviceInstaller software tool the user can manually assign the IP address over the network. The unit's IP address is normally set to 0.0.0.0 at the factory.

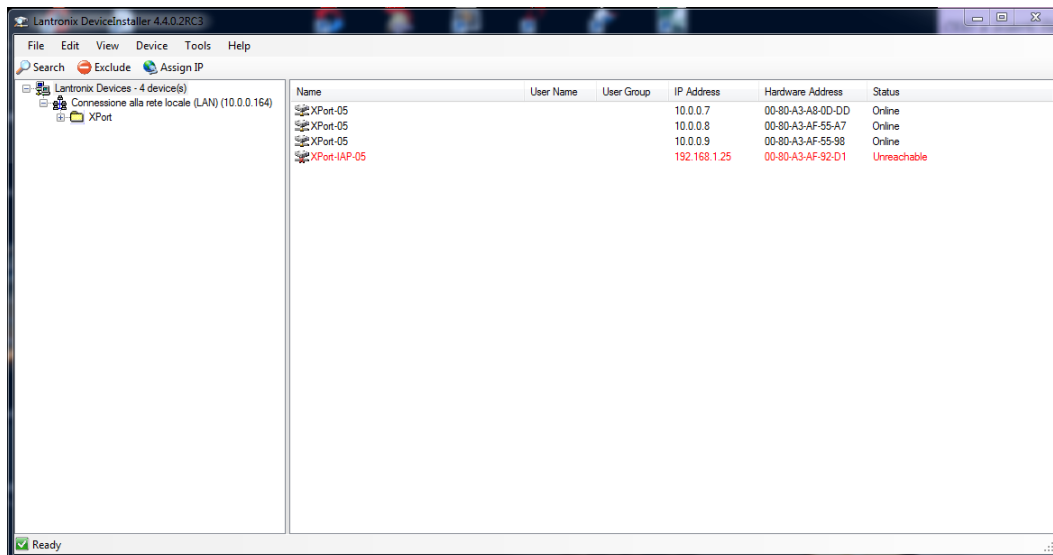
1. Double-click on DeviceInstaller.exe to launch the software;



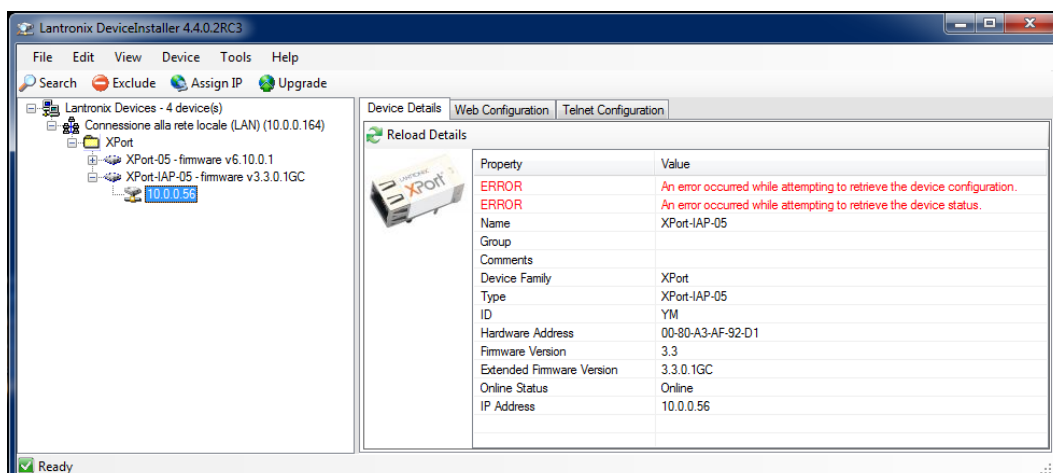
- Click **Tools** → **Options** → flag ON the **Connect to local LAN** from the window list;



- Click **Apply** and then the **OK** buttons;
- Click the **Xport folder**. The list of available Lantronix Xport device displays;

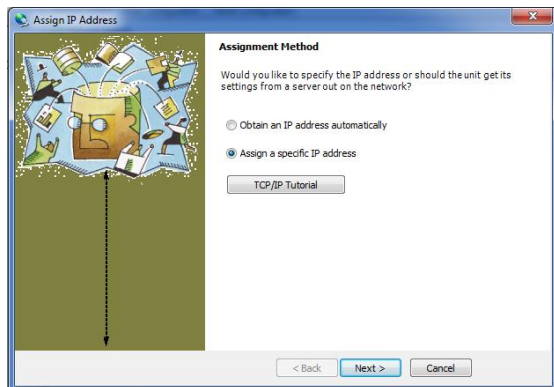


- Expand the Xport list and **select the RED Xport** unit by clicking on its IP address to view its configuration;

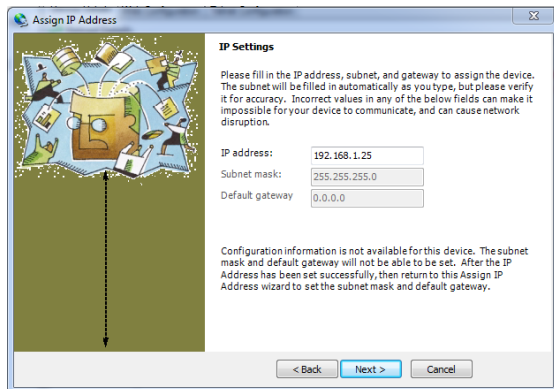




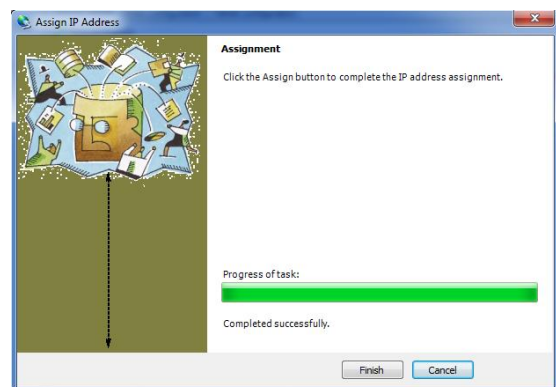
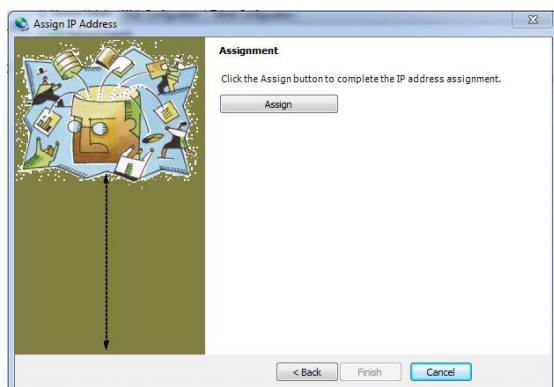
6. Select **Assign a specific IP address** and click **Next**;



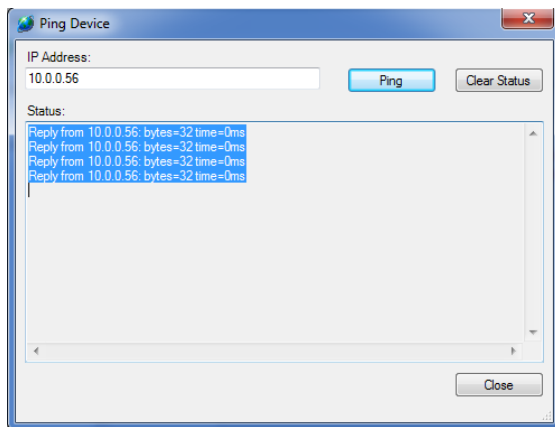
7. Enter the IP address. The subnet mask display automatically based on the IP address. The user may change it. On a local network, the user can leave the Default gateway blank (all zeros). Click **Next**.



8. Click the **Assign** button and wait several seconds until a confirmation message displays. Click **Finish**.



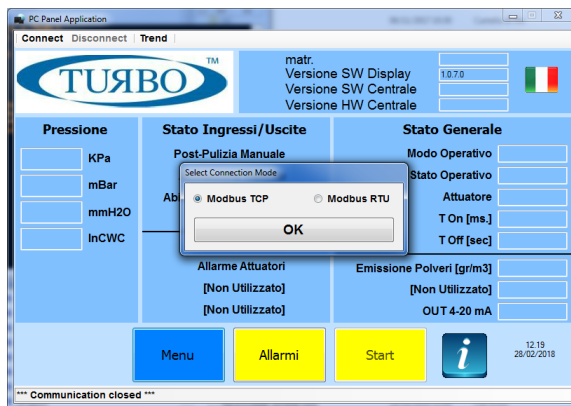
9. Select the Xport device IP assigned from main window list and select **Ping** from the Tool menu. The results display in the Status Window. Click **Clear**;



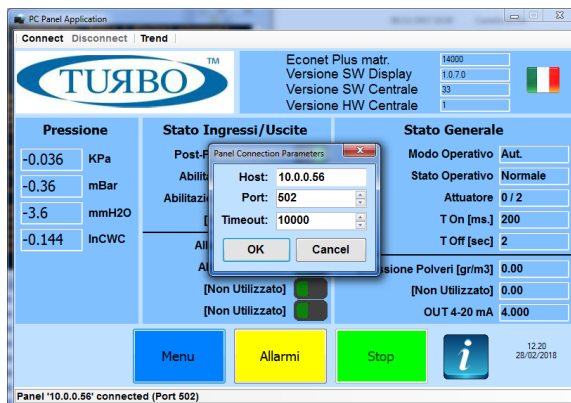
10. Close DeviceInstaller software, then power-Off/On the Econet device;

To Communicate on the network

1. Launch the user software (i.e. Turbo "PC-Panel");
2. Select the **TCP/IP** communication protocol;



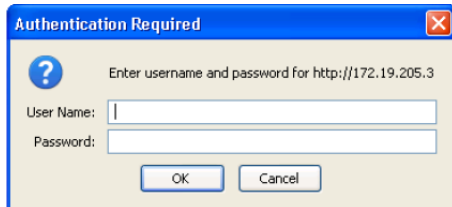
3. Enter the **device IP address**, the reserved device **port=502** and Press OK. The communication starts.



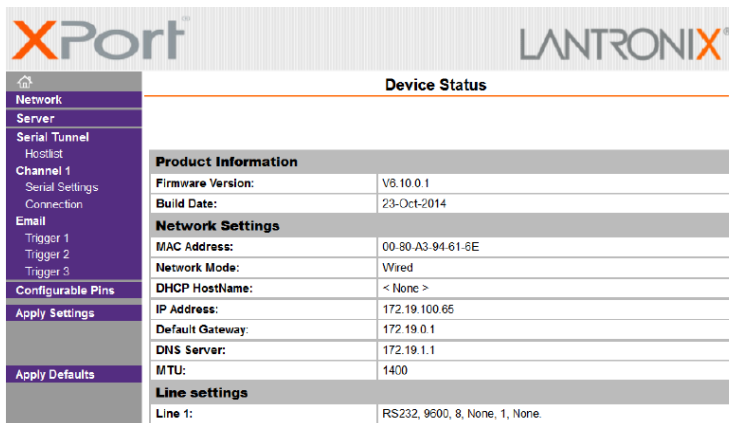
## Method 2: Using Web Manager

Through a web interface, configure the XPort and its settings using the XPort module's Web Manager.

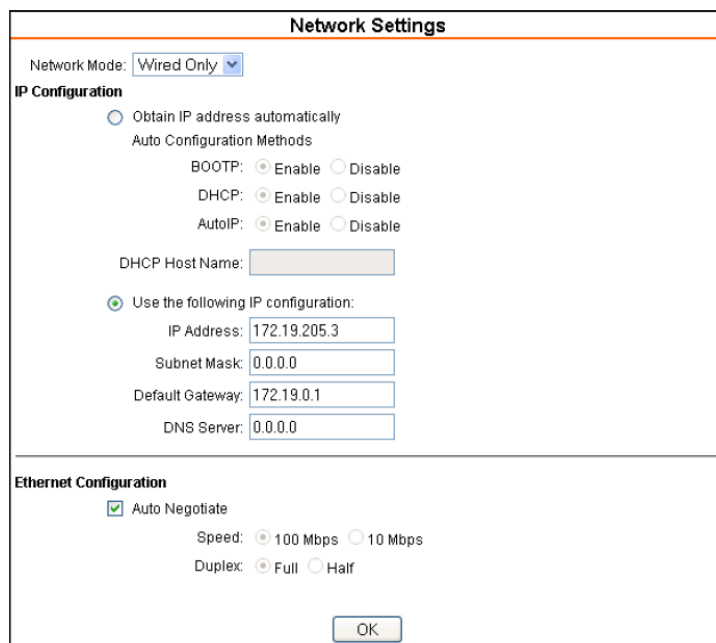
1. Run DeviceInstaller software tool and search for the list of available Lantronix device servers;
2. Click on the **Xport folder** and select the Xport unit by clicking its hardware address;
3. In the right pane, click the Web configuration tab and **click on the green arrow** to load web page;
4. A dialog box appears to prompt for a User name and Password. Press **OK** to proceed;



5. After few seconds, the Web page displays.



6. Select **Network** from the main menu on the left side, then enter the IP address and click **OK** button;



7. Press **Apply Settings** from the main menu on the left side and wait the end of save procedure.



## WiFi board configuration

In order to operate correctly on a network, the WiFi Plug-In board must have a unique IP address on the network. To do this, there are two basic methods for logging into the RN171 WiFi device to assign an IP address and configure the module.

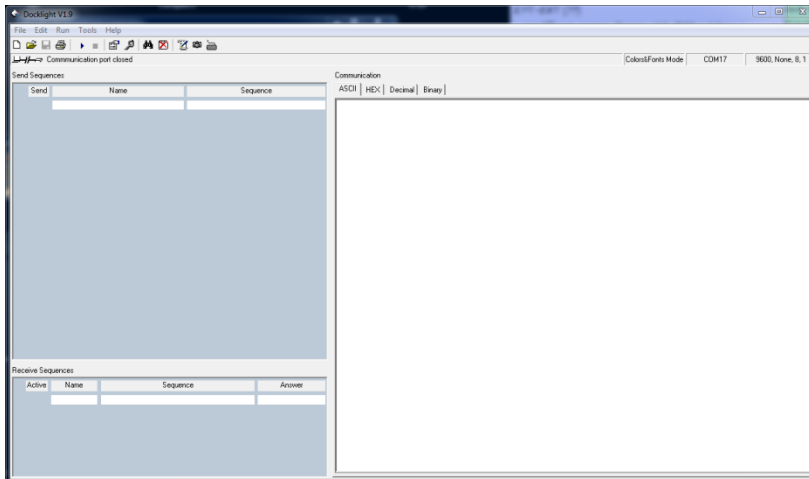
### Method 1: Using Econet Serial Port

Assign an IP address and view the current WiFi module configuration using a standard Serial Communication software installed into a PC attached to the Econet device by mean of RS485 to USB adapter cable.

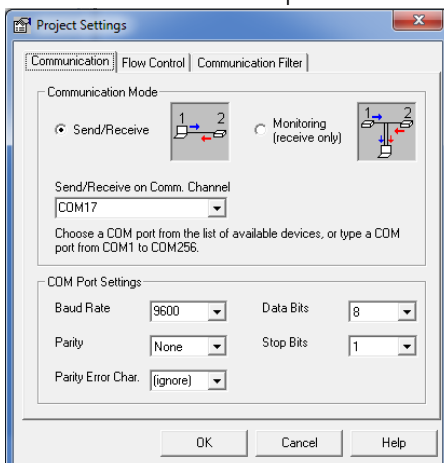
To configure WiFi module:

Using serial communication software tool (i.e. Docklight V1.9) the user can manually assign the IP address and set the most important WiFi parameters.

1. Double-click on Serial communication software executable to launch the software;



2. Double-click on COMxx port on the top right side of the toolbar to set the communication port;



3. Connect the RS485 to USB adapter cable at the Econet Serial Port (42-41 terminals), Power-On the Econet device and start the serial communication software;
4. Using the Serial communication software, send a "\$\$\$<CR>" string and wait the WiFi plug-In board response;

```
16/03/2018 15:26:59.661 [TX] - $$$
16/03/2018 15:27:00.731 [RX] - CMD<CR><LF>
```

5. Send a "scan"<CR> string to perform a network scan;

```
16/03/2018 15:25:09.805 [TX] - scan<CR>
<4.41> <CR><LF>
SCAN:Found 3<CR><LF>
01,01,-85,04,1104,28,c0,64:59:f8:dd:11:d8,Vodafone-34318725<CR><LF>
02,06,-67,04,3100,1c,00,46:d9:e7:0d:59:06,TURBO 2<CR><LF>
03,11,-71,04,1104,18,40,30:91:8f:7c:8c:1b,Telecom-59820571<CR><LF>
END:<CR><LF>
```

6. Send a "set wlan ssid *networkname*"<CR> string to set the SSID;

```
16/03/2018 15:30:21.184 [TX] - set wlan ssid networkname<CR>
AOK<CR><LF>
<4.41>
```

7. Send a "set wlan pass *passphrase*"<CR> string to set the network password;

```
16/03/2018 15:32:39.115 [TX] - set wlan pass #####<CR>
AOK<CR><LF>
<4.41>
```

8. Send a "set wlan join 1"<CR> string to set the automatic association at the device Power-Up;

```
16/03/2018 15:34:44.878 [TX] - set wlan join 1<CR>
AOK<CR><LF>
<4.41>
```

9. Send a "set ip address *xxx.xxx.xxx.xxx*"<CR> string to set the WiFi plug-In static address;

```
16/03/2018 15:35:30.678 [TX] - set ip address 10.0.0.58<CR>
AOK<CR><LF>
<4.41>
```

10. Send a "set ip dhcp 0"<CR> string to force the WiFi plug-In module to use its stored static IP address;

```
16/03/2018 15:36:10.238 [TX] - set ip dhcp 0<CR>
AOK<CR><LF>
<4.41>
```

11. Send a "save"<CR> string to store setting into the WiFi plug-In module;

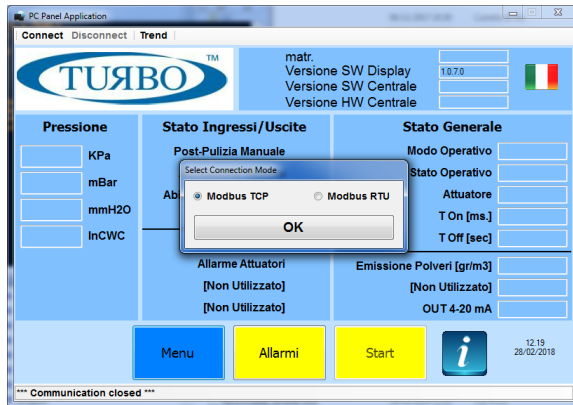
```
16/03/2018 15:37:34.011 [RX] - ave<CR>
<CR><LF>
Storing in config<CR><LF>
<4.41>
```

12. Send a "reboot"<CR> string to reboot the WiFi module;

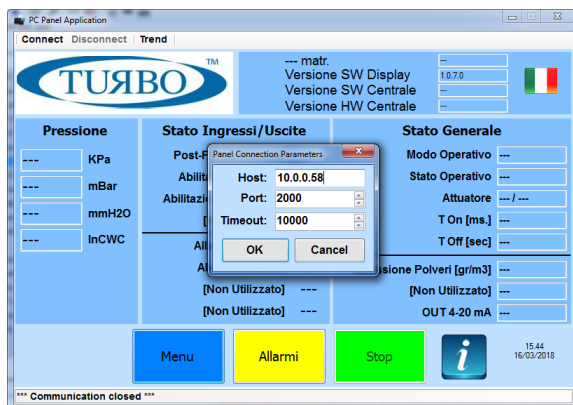
```
16/03/2018 15:39:34.412 [RX] - boot<CR>
<CR><LF>
*Reboot*wifly-EZX Ver: 4.41 Build: r1057, Jan 17 2014 10:23:54 on RN-
171<CR><LF>
MAC Addr=00:06:66:9c:9b:15<CR><LF>
*READY*<CR><LF>
Auto-Assoc TURBO 2 chan=6 mode=MIXED SCAN OK<CR><LF>
Joining TURBO 2 now..<CR><LF>
Associated!<CR><LF>
Using Static IP<CR><LF>
Listen on 2000<CR><LF>
```

To Communicate on the network:

1. Launch the user software (i.e. Turbo "PC-Panel);
2. Select the **TCP/IP** communication protocol;



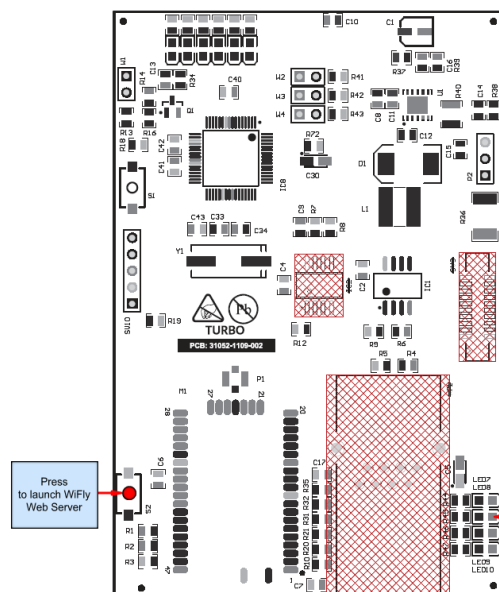
3. Enter the **device IP address**, the reserved device **port=2000 (WiFi dedicated)** and Press OK. The communication starts.



Method 2: Using Web Browser

Through a web interface, configure the WiFi plug-In settings using a common Web browser.

1. Power-On the Econet device;
2. Press and release the **“S2” pushbutton** placed on the WiFi plug-In board;



1	LED7 LED8 LED9 LED10	(1sec)	Stand-By mode
2	LED7 LED8 LED9 LED10		Data exchange
3	LED7 LED8 LED9 LED10	(1/2sec) (1/2sec)	Launch soft AP mode
4	LED7 LED8 LED9 LED10	(1/2sec)	Client associated with soft AP network
5	LED7 LED8 LED9 LED10	(1/2sec)	WEB browser launched on the Client

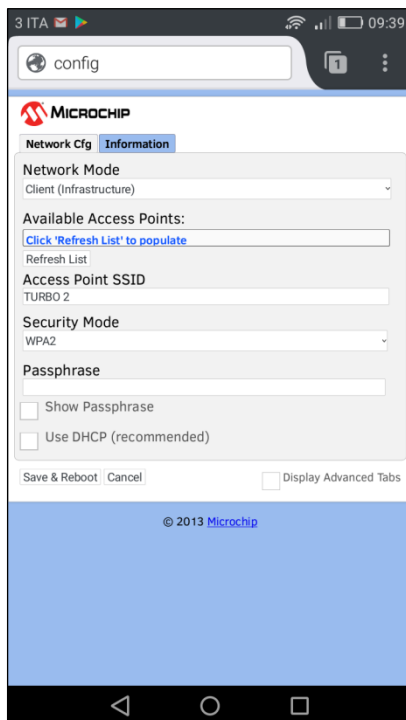
3. Check if the led information is switched from “Stand-By mode” to “Launch Soft AP mode”.  
Now the WiFly Web-Server is available for configuration activities;
4. Connect the PC or Smartphone at the WiFly open network created by the WiFi piggy-back board;



No password are needed. The WiFly is an open network.

Once the PC or smartphone is connected at the Wifly Web-Server, the led information will switch from “Launch Soft AP mode” to “Client associated with AP network”.

5. Open the Web browser on the PC or Smartphone and write <http://config>.  
The led information will switch form “Client associated with AP network” to “Web Browser launched on the Client”.  
A configuration window will appear;



6. Press “Refresh List” button to refresh the SSID network list;



7. Select your SSID network. It will appear into the “Access Point SSID” text-box. Insert the password into the “passphrase” text-box and then press the “Save & Reboot” button.
8. Checking the “Display Advanced Tabs”, the user can enable some advanced tabs to access to the extended information. Accessing “Information” Tab, the WiFi Module-Type and the MAC address will be displayed.
9. Accessing “Module Cfg” Tab, the Device ID name and the serial port configuration will be displayed;
10. Accessing “Terminal” Tab, the user can configure the WiFi module using the same strings used with Method1. At the end of strings input, press “Save & Reboot” button to store configuration.

## Appendix A – Revision History

Version draft	First draft	Dec 2017
Version 1.0	First Release	Mar 03, 2018
Version 1.01	Added Led information at Method2 of WiFi board configuration	Nov 05, 2018
Version 1.02	Added item 10 at page 9 to set dhcp=0 to force to use static IP address	Nov 13, 2018
Version 1.03	Updated Turbo HQ Address	Nov 03, 2021